

# PROJECT MANUAL

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For the Construction of:

Elevator Remodel

Coltman 1, 2 Wards  
Idaho Falls ID East Stake  
Idaho Falls, Idaho

THE CHURCH OF  
JESUS CHRIST  
OF LATTER-DAY SAINTS

July 2020



## INTRODUCTORY INFORMATION

Project Manual

For

**Elevator Remodel  
Coltman 1, 2 Wards  
Idaho Falls ID East Stake  
Idaho Falls, Idaho**

Church Property #504-7005  
Architect Project #19010

July 2020

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Architect

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Structural Engineer

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Mechanical Engineer

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Pocatello, Idaho 83201  
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Pocatello, Idaho 83201  
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**1.1 LIST OF DRAWINGS**

- A. Drawings: Drawings consist of the Contract Drawings and other drawings listed on the Table of Contents page of the separately bound drawing set titled Elevator Remodel for Coltman 1, 2 Wards, Idaho Falls ID East Stake, Idaho Falls, Idaho, dated July 2020, as modified by subsequent Addenda and Contract modifications.

**END OF DOCUMENT 00 0115**





## PROCUREMENT REQUIREMENTS

# INVITATION TO BID (U.S.)

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**1. GENERAL CONTRACTORS INVITED TO BID THE PROJECT:**

To Be Determined

**2. PROJECT:**

Elevator Remodel  
Coltman 1, 2 Wards  
Idaho Falls ID East Stake  
Idaho Falls, Idaho

**3. LOCATION:**

12448 North 5<sup>th</sup> East  
Idaho Falls, Idaho 83402

**4. OWNER:**

Corporation of the Presiding Bishop of  
The Church of Jesus Christ of Latter-day Saints, a Utah corporation sole  
c/o  
Rigby Idaho FM Group  
10633 N. 34 E.  
Idaho Falls, Idaho 83401

**5. CONSULTANT:**

NBW Architects, P.A..  
990 John Adams Parkway  
P.O. Box 2212  
Idaho Falls, Idaho 83403-2212

**6. DESCRIPTION OF PROJECT:**

- A. Remodel of existing foyer for installation of new elevator including wood framing, roofing, new finishes, electrical and lighting.
- B. Products or systems may be provided under a Value Managed Relationship (VMR) the Owner has negotiated with the supplier. VMR products and systems are indicated as such in the Specifications.

**7. TYPE OF BID:** Bids will be on a lump-sum basis. Segregated bids will not be accepted.

**8. TIME OF SUBSTANTIAL COMPLETION:** The time limit for substantial completion of this work will be 120 calendar days and will be as noted in the Agreement.

**9. BID OPENING:** Sealed bids will be received at date, time and place to be announced. Bids will be publicly opened at date, time and place to be announced.

**10. BIDDING DOCUMENTS:**

- A. Bidding Documents may be examined at the following plan room locations:
  - 1) McGraw Hill Construction  
Website: [construction.com/dodge](http://construction.com/dodge)

2) Mountainlands Area Plan Room  
583 W 3560 S, Suite 4  
Salt Lake City, UT 84115  
Phone: (801)288-9136  
Fax: (801)288-1184  
www.MAPRonline.com

- B. Bidding Documents may be obtained at the Architect's office with a refundable deposit of \$50.00 per set. Deposit will be refunded if documents are returned complete and in good condition within five days of bid opening.
11. **BID BOND:** Bid security in the amount of 5 percent (5%) of the bid will accompany each bid in accordance with the Instruction to Bidders.
12. **BIDDER'S QUALIFICATIONS:** Bidding by the General Contractors will be by invitation only.
13. **OWNER'S RIGHT TO REJECT BIDS:** The Owner reserves the right to reject any or all bids and to waive any irregularity therein.

END OF DOCUMENT

# INSTRUCTIONS TO BIDDERS (U.S.)

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## 1. DEFINITIONS:

- A. The definitions set forth in Section 1 of the General Conditions are applicable to the documents included under Bidding Requirements.
- B. Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The proposed Contract Documents consist of the documents identified as Contract Documents in the Form of Agreement, except for Modifications. The Bidding Requirements are those documents identified as such in the proposed Project Manual.
- C. Addenda are written or graphic documents issued by the Architect prior to execution of the Contract which modify or interpret the Bidding Documents. They become part of the Contract Documents as noted in the Form of Agreement upon execution of the Contract.

## 2. BIDDER'S REPRESENTATIONS:

- A. By submitting a bid, the bidder represents that
  - 1) Bidder has carefully studied and compared the Bidding Documents with each other. Bidder understands the Bidding Documents and the bid is fully in accordance with the requirements of those documents,
  - 2) Bidder has thoroughly examined the site and any building located thereon, has become familiar with local conditions which might directly or indirectly affect the contract work, and has correlated its personal observations with the requirements of the proposed Contract Documents, and
  - 3) Bid is based on the materials, equipment, and systems required by the Bidding Documents without exception.

## 3. BIDDING DOCUMENTS:

- A. Copies
  - 1) Bidding Documents may be obtained as set forth in the Invitation to Bid.
  - 2) Partial sets of Bidding Documents will not be issued.
  - 3) Bidders will use complete sets of Bidding Documents in preparing bids and make certain that those submitting sub-bids to them have access to all portions of the documents that pertain to the work covered by sub-bid, including General Conditions, Supplementary Conditions, and Division 01. Bidder assumes full responsibility for errors or misinterpretations resulting from use of partial sets of Bidding Documents by itself or any sub-bidder.
- B. Interpretation or Correction of Bidding Documents
  - 1) Bidders will request interpretation or correction of any apparent errors, discrepancies and omissions in the Bidding Documents.
  - 2) Corrections or changes to Bidding Documents will be made by written addenda.
- C. Substitutions and Equal Products
  - 1) Generally speaking, substitutions for specified products and systems, as defined in the Uniform Commercial Code, are not acceptable. However, equal products may be approved upon compliance with Contract Document requirements.
  - 2) The terms '*Acceptable Manufacturers*', '*Approved Manufacturers*' '*Suppliers*', '*Installers*' and '*VMR (Value Managed Relationship) Manufacturers / Suppliers / Installers*' are used throughout the Project Manual to differentiate among the options available to Contractor regarding specified products, manufacturers, and suppliers. See Section 016000 for options available regarding acceptance of equal products.
  - 3) Base bid only on materials, equipment, systems, suppliers or performance qualities specified in the Bidding Documents.

- 4) Architect is only authorized to consider requests for approval of equal products to replace specified products in Sections where the heading 'Acceptable Manufacturers' is used and statement, 'Equal as approved by Architect before bidding. See Section 016000' or 'Equal as approved by Architect before installation. See Section 016000,' appears. In Sections where the afore-mentioned statements do not appear and a different heading is used, Architect is authorized as Owner's representative to decline consideration of requests for approval of equal products. Approvals of equal products in such Sections must be made by Owner and will generally be for subsequent Projects.
- D. Addenda - Addenda will be sent to bidders and to locations where Bidding Documents are on file no later than one week prior to bid opening or by fax no later than 48 hours prior to bid opening.

#### 4. BIDDING PROCEDURES:

##### A. Form and Style of Bids

- 1) Use Owner's Bid Form.
- 2) Fill in all blanks on Bid Form. Signatures will be in longhand and executed by representative of bidder duly authorized to make contracts.
- 3) Bids will bear no information other than that requested on bid form. Do not delete from or add to the information requested on the bid form.

##### B. Bid Security

- 1) Each bid will be accompanied by a bid bond naming Owner, as listed in the Agreement, as obligee. If Bidder refuses to enter into a Contract or fails to provide bonds and insurance required by the General Conditions, amount of bid security will be forfeited to Owner as liquidated damages, not as a penalty.
- 2) Bid bond will be issued by a surety company meeting requirements of the General Conditions for surety companies providing bonds and will be submitted on AIA Document A310, Bid Bond or AIA authorized equivalent provided by surety company. The attorney-in-fact who executes the bond on behalf of the surety will affix to the bond a certified and current copy of the power of attorney.
- 3) Owner may retain bid security of bidders to whom an award is being considered until -
  - a. Contract has been executed and bonds have been furnished,
  - b. Specified time has elapsed so bids may be withdrawn, or
  - c. All bids have been rejected.

##### C. Submission of Bids

- 1) Submit bid in sealed opaque envelope containing only bid form and bid security. Envelopes will be sealed, bear bidder's name, and include the following:

BID FOR

\_\_\_\_\_ (Project Name) \_\_\_\_\_  
 \_\_\_\_\_ (number) \_\_\_\_\_

If bid is sent by mail, enclose sealed envelope in separate mailing envelope with notation 'SEALED BID ENCLOSED' on face.

- 2) It is bidder's sole responsibility to see that its bid is received at specified time. Bids received after specified bid opening time will be returned to bidders unopened.
  - 3) No oral, facsimile transmitted, telegraphic, or telephonic bids, modifications, or cancellations will be considered.
- D. Modification or Withdrawal of Bid
- 1) Bidder guarantees there will be no revisions or withdrawal of bid amount for 45 days after bid opening.
  - 2) Prior to bid opening, bidders may withdraw bid by written request or by reclaiming bid envelope.
  - 3) Prior to bid opening, bidder may mark and sign on the sealed envelope that bidder

acknowledges any or all Addenda.

**5. CONSIDERATION OF BIDS:**

- A. Opening of Bids - See Invitation to Bid.
- B. Rejection of Bids - Owner reserves right to reject any or all bids and to waive any irregularity therein.
- C. Acceptance of Bid
  - 1) No bidder will consider itself under contract after opening and reading of bids until Agreement between Owner and Contractor is fully executed.
  - 2) Bidder's past performance, organization, subcontractor selection, equipment, and ability to perform and complete its contract in manner and within time specified, together with amount of bid, will be elements considered in award of contract.

**6. POST-BID INFORMATION:**

- A. The conditionally accepted bidder submitting a bid involving subcontractors will submit its list of proposed subcontractors in a meeting to be held immediately after bid opening.

**7. PERFORMANCE BOND AND PAYMENT BOND:**

- A. Bond Requirements - Performance Bond and Labor and Material Payment bond will be required for this Project as specified in the General Conditions.
- B. Time of Delivery of Bonds - Bonds will be delivered to Owner with Agreement signed by bidder.

**8. FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR:**

- A. Agreement form will be "Agreement Between Owner and Contractor for a Fixed Sum (U.S.)" provided by Owner.

**9. MISCELLANEOUS:**

- A. Pre-Bid Conference
  - 1) A pre-bid conference will be held at a time and place to be announced.
- B. Liquidated Damages - Conditions governing liquidated damages are specified in the General Conditions and in the Supplementary Conditions.
- C. Examination Schedule for Existing Building and Site
  - 1) Site may be examined following the Pre-Bid Conference.
- D. Exemption from local taxes - See Supplementary Conditions

END OF DOCUMENT

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## SUBCONTRACTORS AND MAJOR MATERIALS SUPPLIERS LIST

Project Name: \_\_\_\_\_ Date: \_\_\_\_\_

Stake: \_\_\_\_\_ Project No: \_\_\_\_\_

General Contractor: \_\_\_\_\_

General Contractor is to provide the names of the following subcontractors and suppliers to the Owner's Project Manager immediately following the bid opening:

### VMR SUBCONTRACTORS

Roofing \_\_\_\_\_

Doors, Frames & Hardware \_\_\_\_\_

Other \_\_\_\_\_

Other \_\_\_\_\_

### SUBCONTRACTORS AND SUPPLIERS

Demolition \_\_\_\_\_

Building Concrete \_\_\_\_\_

Structural Steel \_\_\_\_\_

Framing \_\_\_\_\_

Insulation \_\_\_\_\_

Soffit / Fascia \_\_\_\_\_

Drywall \_\_\_\_\_

Acoustical Tile \_\_\_\_\_

Painting \_\_\_\_\_

Wall Coverings \_\_\_\_\_

Elevators / Lifts \_\_\_\_\_

Electrical \_\_\_\_\_



# EQUAL PRODUCT APPROVAL REQUEST FORM (U.S.)

Project Name: \_\_\_\_\_ Request Number: \_\_\_\_\_

TO: \_\_\_\_\_

FROM: \_\_\_\_\_

BID DATE: \_\_\_\_\_

A proposed product is not legally approved and cannot legally be included in a bid or used in the Work until it appears in an Addendum or other Contract Modification as defined in the General Conditions. See Instructions To Bidders Paragraph 3.C, General Conditions, and Section 016000.

**PROPOSED EQUAL PRODUCT:**

Specification Section: \_\_\_\_\_

Specified Products: \_\_\_\_\_

Proposed Product: \_\_\_\_\_

The Undersigned certifies:

1. Proposed equal product has been fully investigated and determined to be equal or superior in all respects to specified products.
2. Same warranty will be furnished for proposed equal product as for specified products.
3. Same maintenance service and source of replacement parts, as applicable, is available.
4. Proposed equal product will have no adverse effect on other trades and will not affect or delay progress schedule.
5. Proposed equal product does not affect dimensions and functional clearances.

**ATTACHMENTS:**

Include the following attachments -

1. Copy of the Project Manual Section where the proposed equal product would be specified, rewritten or red-lined to include any changes necessary to correctly specify the proposed equal product. Identify completely changes necessary to the original Project Manual Section.
2. Copies of details, elevations, cross-sections, and other elements of the Project Drawings redone as necessary to show changes necessary to accommodate proposed equal product. Identify completely the changes from the original Drawings.
3. Complete product literature and technical data, installation and maintenance instructions, test results, and other information required to show complete conformance with requirements of the Contract Documents.

**SIGNED:** \_\_\_\_\_

Printed Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City, State, Zip Code \_\_\_\_\_

Telephone \_\_\_\_\_ Fax \_\_\_\_\_

**REVIEW COMMENTS:**

\_\_\_\_\_ Accepted. See Addenda Number \_\_\_\_\_.

\_\_\_\_\_ Submission Not In Compliance With Instructions. Respond to attached comments and resubmit.

\_\_\_\_\_ Proposed Equal Product Not Acceptable. Use specified products.

\_\_\_\_\_ Not Reviewed. Submission received too late. Use specified products.

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**ADDITIONAL COMMENTS:**

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

# B I D F O R M

FOR GENERAL CONTRACT WORK (U.S.)

**PROJECT IDENTIFICATION:**

Coltman 1, 2 Wards Elevator Remodel

**OWNER:**

Corporation of the Presiding Bishop of the Church of Jesus Christ of Latter-day Saints, a Utah corporation sole ("Owner"), Ammon FM Group

**ARCHITECT:**

NBW Architects, P.A.

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## B I D

1. In submitting this Bid, Bidder represents that:
  - a. If this Bid is accepted, Bidder will enter into an agreement with Owner to perform and furnish the Work described in the Bidding Documents for the Bid Price and within the Time of Substantial Completion indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
  - b. Bidder has carefully examined Set(s) Number \_\_\_\_\_ of the Bidding Documents consisting of the Project Manual containing the Bidding Requirements, the Conditions of the Contract, and the Specifications, entitled \_\_\_\_\_, the Drawings entitled \_\_\_\_\_ and dated \_\_\_\_\_, and including sheets numbered \_\_\_\_\_, and addenda numbers \_\_\_\_\_.
  - c. Bidder has examined the site of the work, existing conditions, and all other conditions affecting the work on the above-named Project.
  - d. Bidder has carefully correlated the information known to Bidder and information and observations obtained from visits to the site with the Bidding Documents.
  - e. Bidder is familiar with federal, State, and local laws and regulations applicable to Project.
  - f. Bidder guarantees there will be no revisions or withdrawal of bid amount for forty-five (45) days after the bid opening.
2. **Base Bid:** Bidder hereby proposes to furnish all materials, labor, equipment, tools, transportations, services, licenses, fees, permits, etc., required by said documents to complete the Work described by the Contract Documents for the lump-sum of: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_).
3. Bidder agrees to achieve substantial completion of the Work within the number of days indicated in the Invitation to Bid.
4. Enclosed is a Bid Bond for not less than five percent (5%) of the bid.

RESPECTFULLY SUBMITTED:

_____	Signature	
_____	Printed name	
_____	Title	
_____	Company name	
_____	Business Address	
_____	City, State, and Zip Code	
_____	Telephone	Fax
_____	Contact Email Address	

Date

License No.

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# CONSTRUCTION MATERIAL ASBESTOS STATEMENT (U.S.)

**PROJECTS FOR:  
CORPORATION OF THE PRESIDING BISHOP OF  
THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS**

Building Name: \_\_\_\_\_

Building Plan Type: \_\_\_\_\_

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

Building Owner: Corporation of the Presiding Bishop of The Church of Jesus Christ of Latter-day Saints, a Utah corporation sole.

Project Number: \_\_\_\_\_

Completion Date: \_\_\_\_\_

As PROJECT CONSULTANT and principal in charge; based on my best knowledge, information, inspection, and belief; I certify that on the above referenced Project, no asbestos-containing building materials were specified in the construction documents or given approval in shop drawings or submittals.

\_\_\_\_\_  
Project Consultant and Principal in Charge (signature)      Date

\_\_\_\_\_  
Company Name

As GENERAL CONTRACTOR in charge of construction; based on my best knowledge, information, inspection, and belief; I affirm that on the above-referenced Project, no asbestos-containing building materials were used in the construction.

\_\_\_\_\_  
General Contractor (signature)      Date

\_\_\_\_\_  
Company Name





## CONTRACTING REQUIREMENTS

# AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR A FIXED SUM (U.S.)

Corporation of the Presiding Bishop of The Church of Jesus Christ of Latter-day Saints, a Utah corporation sole, (“Owner”) and \_\_\_\_\_ (“Contractor”) hereby enter into this *Agreement Between Owner and Contractor for a Fixed Sum (U.S.)* (“Agreement”) and agree as follows:

1. **Property/Project.**

Property/Project Number:  
Property Address (“Project Site”):  
Project Type:  
Project Name (“Project”):  
Stake Name:

2. **Scope of the Work.** Contractor will furnish all labor, materials, equipment, construction, and services necessary to complete the Work in accordance with the Contract Documents.

3. **Contract Documents.**

- a. The Contract Documents consist of:
  - 1) This Agreement;
  - 2) The General Conditions for a Fixed Sum (U.S.), the Supplementary Conditions, and the Specifications (Divisions 01 through 49) contained in the Project Manual entitled \_\_\_\_\_, dated \_\_\_\_\_ and prepared by \_\_\_\_\_ (“Architect”);
  - 3) The Drawings prepared by Architect entitled \_\_\_\_\_, sheet numbers \_\_\_\_\_, dated \_\_\_\_\_;
  - 4) Addendum No. \_\_\_\_\_ dated \_\_\_\_\_; and
  - 5) All Modifications to the Contract Documents.
- b. The Contract Documents are incorporated into this Agreement by reference as if fully set forth herein.
- c. The definitions set forth in the General Conditions for a Fixed Sum (U.S.) will apply to the Contract Documents.
- d. The Contract Documents contain the entire and integrated agreement between the parties hereto and supersede all prior negotiations, representations, or agreements, either written or oral.
- e. Modifications or other amendments to the Contract Documents must be in writing and as provided in the General Conditions for a Fixed Sum (U.S.).

4. **Time of Commencement and Substantial Completion.**

- a. Contractor will commence the Work on the date for commencement set forth in the Written Notice to proceed from Owner to Contractor.
- b. Contractor will achieve Substantial Completion and have the Work ready for Owner’s inspection no later than \_\_\_\_\_ (\_\_\_\_\_) days from the date of commencement set forth in the Written Notice to proceed from Owner to Contractor, as adjusted in accordance with the Contract Documents.
- c. Time is of the essence.

5. **Contract Sum.**

- a. Owner will pay Contractor for performance of Contractor’s obligations under the Contract Documents the Contract Sum in the amount of \_\_\_\_\_ Dollars (\_\_\_\_\_), subject to additions and deductions as provided in the Contract Documents.
- b. Owner will make payments to Contractor in accordance with the Contract Documents.

6. **Relationship of the Parties.** Contractor is an independent contractor and is not the agent or employee of Owner.

7. **Assignment.** Neither party to this Agreement will assign any right or obligation hereunder without the prior written consent of the other, which consent may be granted or withheld in such party’s absolute discretion. Contractor will not assign moneys due or to become due to Contractor hereunder, nor will Contractor pledge the credit of Owner or bind Owner to any third party.

- 8. **Notice.** The parties designate the addresses, facsimile numbers, and email addresses as set forth in the signature blocks below to be used for sending Written Notice to the other party:
- 9. **Effective Date.** The effective date of this Agreement is the date indicated by the Owner's signature.

<b>OWNER:</b> Corporation of the Presiding Bishop of The Church of Jesus Christ of Latter-day Saints, a Utah corporation sole.	<b>CONTRACTOR:</b> (company)
Signature: _____	Signature: _____
Print Name: _____	Print Name: _____
Title: _____	Title: _____
Address: _____	Address: _____
Telephone No: _____	Telephone No: _____
Facsimile No: _____	Facsimile No: _____
Email: _____	Email: _____
Effective Date: _____	Fed. I.D. or SSN: _____
	License No: _____
Reviewed By: _____	Date Signed: _____

# GENERAL CONDITIONS

## For a Fixed Sum (U.S.)

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## SECTION 1 - GENERAL PROVISIONS

### 1.1 DEFINITIONS

- A. Adverse Weather: weather conditions that are seasonally abnormal and could not have been reasonably anticipated.
- B. Agreement: the document entitled "Agreement Between Owner and Contractor for a Fixed Sum (U.S.), executed by Owner and Contractor for performance of the Work.
- C. Architect: the entity identified as such in the Agreement.
- D. Change In The Work: a modification to the requirements of the Contract Documents or a delay in Substantial Completion resulting from an instruction from Owner or Architect to Contractor or from another event or circumstance.
- E. Change Order: a written instrument prepared by Architect and signed by Owner, Contractor, and Architect stating their agreement upon the following: (1) the occurrence of a Change in the Work; (2) the amount of the adjustment, if any, in the Contract Sum as a result of the Change in the Work; and (3) the extent of the adjustment, if any, in the Contract Time as a result of the Change in the Work.
- F. Construction Change Directive: a written order prepared by Architect and signed by Architect and Owner which: (1) orders a Change in the Work if the terms of a Change Order cannot be agreed upon prior to performance of a Change in the Work described in Section 7.1 or after occurrence of an event or circumstance described in Section 7.2; and (2) states a proposed basis for adjustment, if any, in the Contract Sum, the Contract Time, or both, resulting from the Change in the Work.
- G. Contract Documents: the documents identified as such in the Agreement.
- H. Contract Sum: the total amount set forth in the Agreement payable by Owner to Contractor for performance of the Work.
- I. Contract Time: the period of time set forth in the Agreement for the Substantial Completion of the Work.
- J. Contractor: the entity identified as such in the Agreement.
- K. Day: calendar day unless otherwise specifically defined.
- L. Direct Costs: actual costs for labor, materials, equipment, insurance, bonds, subcontract costs and onsite supervision relating to the Project. They do not include labor costs for project managers or other off-site administration.
- M. Drawings: the documents identified as such in the Agreement.
- N. Field Change: a written order prepared by Architect and signed by Architect and Contractor for a minor Change in the Work consistent with the general intent of the Contract Documents costing \$1,000 or less, resulting in no time extension, and which is necessary to avoid delaying the Work.
- O. Modification: a written amendment to the Contract Documents in the form of a:
  - 1. Change Order;
  - 2. Construction Change Directive; or
  - 3. Field Change.
- P. Owner: the entity identified as such in the Agreement.

- Q. Project: the total construction designed by Architect of which the Work performed under the Contract Documents may be the whole or a part.
- R. Product Data: standard illustrations, schedules, performance charts, instructions, brochures, diagrams, and other information furnished by Contractor to illustrate details regarding materials or equipment to be used in the Work, or the manner of installation, operation, or maintenance of such materials or equipment.
- S. Project Manual: the document identified as such in the Agreement.
- T. Samples And Mock-ups: physical examples that illustrate materials, equipment, or workmanship and establish standards by which the Work will be judged.
- U. Shop Drawings: drawings, diagrams, illustrations, schedules, performance charts, fabrication and installation drawings, setting diagrams, patterns, templates, and other data which illustrate some portion of the Work and confirm dimensions and conformance to the Contract Documents specially prepared by Contractor or any Subcontractor, manufacturer, supplier, or distributor.
- V. Specifications: the documents identified as such in the Agreement.
- W. Subcontractor: any entity supplying labor, materials, equipment, construction or services for the Work under separate contract with Contractor or any other Subcontractor.
- X. Submittals: Shop Drawings, Product Data, Samples and Mock-ups and any other documents or items furnished by Contractor or its Subcontractors to Owner or Architect to demonstrate how any portion of the Work will be accomplished or the type of materials or products that will be used in the Work.
- Y. Substantial Completion: Completion of the Work to a point where Owner can use the Work for its intended purposes. The date of Substantial Completion is the date certified as such by Architect in accordance with the Contract Documents.
- Z. Work: all labor, materials, equipment, construction, and services required by the Contract Documents.
- AA. Written Notice: notice in writing given from one party to the other at the addresses or facsimile numbers listed in the Agreement, or at such other addresses or facsimile numbers as the parties will designate from time to time by Written Notice, and will be effective at the earliest of:
  1. The date of personal delivery to the other party with signed acknowledgment of receipt; or
  2. The date sent by facsimile transmission to the other party provided receipt of the facsimile is verified by an electronic confirmation report by the party sending the facsimile transmission and further provided that a confirmation copy is sent to the other party by courier or by registered or certified mail within twenty-four (24) hours after the time and date of the facsimile transmission; or
  3. The date of receipt by the other party as stated on the return receipt if sent by registered or certified mail, or by courier.

## 1.2 CORRELATION AND INTENT OF CONTRACT DOCUMENTS

- A. The intent of the Contract Documents is to require Contractor to provide all labor, materials, equipment, construction, and services necessary for the proper execution and completion of the Work. The Contract Documents are complementary and what is required by any one will be as binding as if required by all. Contractor will perform the Work in accordance with the requirements expressly set forth in or reasonably inferable from the Contract Documents.
- B. The organization of the Contract Documents is not intended to control Contractor in dividing the Work among Subcontractors or to establish the extent of the Work to be performed by any trade.
- C. Words used in the Contract Documents that have well known technical or trade meanings are used therein in accordance with such recognized meanings.
- D. In the interest of brevity, the Contract Documents may 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.

## 1.3 OWNERSHIP AND USE OF CONTRACT DOCUMENTS

The Drawings, the Project Manual, and copies thereof are the property of Owner. Contractor will not use these documents on any other project. Contractor may retain one copy of the Drawings and the Project Manual as a contract record set and will return or destroy all remaining copies following final completion of the Work.

## 1.4 PUBLIC STATEMENTS REGARDING PROJECT

Contractor will not make any statements or provide any information to the media about the Project without the prior written consent of Owner. If Contractor receives any requests for information from media, Contractor will refer such requests to Owner.

## 1.5 OWNERSHIP AND USE OF RENDERINGS AND PHOTOGRAPHS

Renderings representing the Work are the property of Owner. All photographs of the Work, whether taken during performance of the

Work or at completion, are the property of the Owner. The Owner reserves all rights including copyrights to renderings and photographs of the Work. No renderings or photographs shall be used or distributed without written consent of the Owner

## **1.6 NO COMMERCIAL USE OF TRANSACTION OR RELATIONSHIP**

Without the prior written consent of Owner, which Owner may grant or withhold in its sole discretion, neither Contractor nor Contractor's affiliates, officers, directors, agents, representatives, shareholders, members, Subcontractors, Sub-subcontractors or employees shall make any private commercial use of their relationship to Owner or the Project, including, without limitation:

- A. By referring to this Agreement, Owner, or the Project verbally or in any sales, marketing or other literature, letters, client lists, press releases, brochures or other written materials except as may be necessary for Contractor to perform Contractor's obligations under the terms of this Agreement;
- B. By using or allowing the use of any photographs of the Project or any part thereof, or of any service marks, trademarks or trade names or other intellectual property now or which may hereafter be associated with, owned by or licensed by Owner in connection with any service or product; or
- C. By contracting with or receiving money or anything of value from any person or commercial entity to facilitate such person or entity obtaining any type of commercial identification, advertising or visibility in connection with the Project.

Notwithstanding the foregoing, Contractor may include a reference to Owner and the services and equipment provided under this Agreement in a professional résumé or other similar listing of Contractor's references without seeking Owner's written consent in each instance; provided, that such reference to Owner, the services and equipment is included with at least several other similar references and is given no more prominence than such other references.

## **1.7 CONFIDENTIALITY / PROPERTY RIGHTS**

- A. Owner will retain ownership and intellectual property rights in all plans, designs, drawings, documents, concepts, and materials provided by or on behalf of Owner to Contractor and to all work products of Contractor for or relative to Work performed under this Agreement, such products, services, and Work of Contractor constituting works made for hire. Contractor will not reuse any portions of such items provided by Owner or developed by Contractor for Owner pursuant to this Agreement, or disclose any such items to any third party without the prior written consent of Owner. Owner may withhold its consent in its' absolute discretion.
- B. In addition, Contractor shall ensure that Contractor, Subcontractors, and the employees, agents and representatives of Contractor and its Subcontractors maintain in strict confidence, and shall use and disclose only as authorized by Owner all Confidential Information of Owner that Contractor receives in connection with the performance of this Agreement. Notwithstanding the foregoing, Contractor may use and disclose any information to the extent required by an order of any court or governmental authority, but only after it has notified Owner and Owner has had an opportunity to obtain reasonable protection for such information in connection with such disclosure. For purposes of this Agreement, "Confidential Information" means:
  - 1. The name or address of any affiliate, customer or contractor of Owner or any information concerning the transactions of any such person with Owner;
  - 2. Any information relating to contracts, agreements, business plans, budgets or other financial information of Owner to the extent such information has not been made available to the public by the Owner; and
  - 3. Any other information that is marked or noted as confidential by the Owner at the time of its disclosure.

## **1.8 COMPLY WITH INTELLECTUAL PROPERTY RIGHTS OF OTHERS**

Contractor represents and warrants that no Work (with its means, methods, goods, and services attendant thereto), provided to Owner will infringe or violate any right of any third party and that Owner may use and exploit such Work, means, methods, goods, and services without liability or obligation to any person or entity (specifically and without limitation, such Work, means, methods, goods, and services will not violate rights under any patent, copyright, trademark, or other intellectual property right or application for the same).

## **SECTION 2 - OWNER**

### **2.1 OWNER'S DESIGNATED REPRESENTATIVE**

Owner will designate in writing a representative who will have express authority to bind Owner with respect to all matters requiring Owner's approval or authorization.

### **2.2 INFORMATION AND SERVICES REQUIRED OF OWNER**

- A. Owner will be responsible for establishment of property lines and benchmarks for grading.
- B. Owner will furnish to Contractor any information or services it is required to furnish under the Contract Documents with reasonable promptness to avoid delay in the orderly progress of the Work.
- C. Owner will furnish to Contractor a reasonable number of copies of the Drawings, the Project Manual, and the Addenda.

### **2.3 OWNER'S RIGHT TO INSPECT THE WORK**

Owner and its representatives will have the right to inspect any portion of the Work wherever located at any time.

### **2.4 OWNER'S RIGHT TO STOP THE WORK**

If Contractor fails to carry out the Work in accordance with the Contract Documents or fails to correct Work which is not in accordance with the Contract Documents in a timely manner, Owner may order Contractor in writing to stop the Work, or any portion thereof, until the cause for that order has been eliminated.

## **SECTION 3 - CONTRACTOR**

### **3.1 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR**

- A. By executing the Agreement, Contractor represents that it has visited the Project site, familiarized itself with the local conditions under which the Work is to be performed, and correlated its own observations with the requirements of the Contract Documents.
- B. Contractor will carefully review and compare the Contract Documents and any other available information relating to the Project prior to commencing and during performance of each portion of the Work and will immediately report to Architect any errors, inconsistencies, and omissions it discovers.
- C. Should Contractor or any of its Subcontractors become aware of any question regarding the meaning or intent of any part of the Contract Documents prior to commencing that portion of the Work about which there is a question, Contractor will request an interpretation or clarification from Architect before proceeding. Contractor proceeds at its own risk if it proceeds with the Work without first making such a request and receiving an interpretation or clarification from Architect. If neither Contractor nor its Subcontractors become aware of the question until after work on the relevant portion of the Work has commenced, then the following precedence will govern for purposes of determining whether resolution of the question constitutes a Change in the Work:
  - 1. The Agreement takes precedence over all other Contract Documents.
  - 2. The Supplementary Conditions take precedence over the General Conditions.
  - 3. The General Conditions and Supplementary Conditions take precedence over the Drawings and the Specifications.
  - 4. An Addendum or a Modification takes precedence over the document(s) modified by the Addendum or Modification.
  - 5. The Specifications take precedence over the Drawings.
  - 6. Within the Drawings, larger scale drawings take precedence over smaller scale drawings, figured dimensions over scaled dimensions, and noted materials over graphic indications.
- D. Contractor will give Architect notice of any additional drawings, specifications, or instructions required to define the Work in greater detail, or to permit the proper progress of the Work, sufficiently in advance of the need for information so as not to delay the Work.
- E. It is not Contractor's responsibility to ascertain that the Contract Documents are in accordance with requirements of applicable laws, statutes, ordinances, building codes, rules and regulations. However, if Contractor observes that portions of the Contract Documents are at variance with those requirements, Contractor will immediately notify Architect in writing. Contractor will not proceed unless Owner and/or Architect effects Modifications to the Contract Documents required for compliance with such requirements. Contractor will be fully responsible for any work knowingly performed contrary to such requirements and will fully indemnify Owner against loss and bear all costs and penalties arising therefrom.
- F. Contractor will take field measurements and verify field conditions and will compare such field measurements and conditions and other information known to Contractor with the Contract Documents before ordering any materials or commencing construction activities. Contractor will immediately report errors, inconsistencies, and omissions that it discovers to Architect. If Contractor orders materials or commences construction activities before taking field measurements and verifying field conditions, Contractor will not be entitled to any compensation for additional costs to Contractor resulting from field measurements or conditions different from those anticipated by Contractor which would have been avoided had Contractor taken field measurements and verified field conditions prior to ordering the materials or commencing construction activities.
- G. If site conditions indicated in the Contract Documents or other information provided by Owner or Architect to Contractor differ materially from those Contractor encounters in performance of the Work, Contractor will immediately notify Architect in writing of such differing site conditions.
- H. Where the Contract Documents require the Contractor to provide professional services for architecture or engineering, the Contractor shall cause such services to be performed by appropriately licensed professionals.

### **3.2 SUPERVISION OF CONSTRUCTION PROCEDURES**

- A. Contractor will supervise and direct the Work. Contractor will be solely responsible for all construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the Work. All loss, damage, liability, or cost of correcting defective work arising from the use of any construction means, methods, techniques, sequences or procedures will be borne by Contractor, notwithstanding that such construction means, methods, techniques, sequences or procedures are referred to, indicated or implied by the Contract Documents, unless Contractor has given timely notice to Owner and Architect in writing that such means, methods, techniques, sequences or procedures are not safe or suitable, and Owner has then instructed Contractor in writing to proceed at Owner's risk.
- B. Contractor will utilize its best skill, efforts, and judgment to provide efficient business administration and supervision, to furnish at all times an adequate supply of workers and materials, and to perform the Work in an expeditious and economical manner consistent with the interests of Owner.
- C. Contractor will be responsible for:
  - 1. The proper observance of property lines and set back requirements as shown in the Contract Documents;

2. The location and layout of the Work as shown in the Contract Documents with respect to the position of the Work on the property and the elevation of the Work in relation to grade; and
  3. Setting and maintaining construction stakes.
- D. Contractor will be responsible to Owner for the acts and omissions of its employees and Subcontractors as well as persons either directly or indirectly employed by Subcontractors.
  - E. Contractor will not be relieved of its obligation to perform the Work in accordance with the Contract Documents as a result of any tests, inspections, or approvals by Owner, Architect or their consultants.
  - F. Contractor will be responsible for inspection of portions of the Work already completed to determine that such portions are in proper condition to receive subsequent portions of the Work.
  - G. Contractor recognizes that the Project site and the surrounding area is frequently visited by the public and is important to Owner's image and function and will maintain the premises free from debris and waste materials resulting from Construction. At the completion of Construction, Contractor shall promptly remove construction equipment, tools, surplus materials, waste materials and debris.

### **3.3 LABOR AND MATERIALS**

- A. Unless otherwise provided in the Contract Documents, Contractor will provide and pay for all labor, materials, equipment, tools, water, heat, utilities, transportation, and other facilities and services necessary for the proper execution and completion of the Work.
- B. Contractor will at all times enforce strict discipline and good order among those performing the Work and will not permit employment of any unfit person or anyone not skilled in the tasks assigned to them.
- C. Contractor is fully responsible for the Project and all materials and work connected therewith until Owner has accepted the Work in writing. Contractor will replace or repair at its own expense any materials or work damaged or stolen, regardless of whether it has received payment for such work or materials from the Owner.
- D. Contractor will remedy all damage or loss to any property caused in whole or in part by Contractor, any Subcontractor, or by anyone for whose acts any of them may be liable.
- E. Contractor will be responsible for determining that all materials furnished for the Work meet all requirements of the Contract Documents. Architect may require Contractor to produce reasonable evidence that a material meets such requirements, such as certified reports of past tests by qualified testing laboratories, reports of studies by qualified experts, or other evidence which, in the opinion of Architect, would lead to a reasonable certainty that any material used, or proposed to be used, in the work meets the requirements of the Contract Documents. All such data will be furnished at Contractor's expense. This provision will not require Contractor to pay for periodic testing of different batches of the same material, unless such testing is specifically required by the Contract Documents to be performed at Contractor's expense.
- F. Contractor will coordinate and supervise the work performed by Subcontractors so that the Work is carried out without conflict between trades and so that no trade, at any time, causes delay to the general progress of the Work. Contractor and all Subcontractors will at all times afford each trade, any separate contractor, or Owner, reasonable opportunity for the installation of Work and the storage of materials.
- G. Contractor warrants to Owner that the materials and equipment furnished for the Work will be new unless otherwise specified by the Contract Documents, and that the Work will be free from defects, and will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective in the discretion of Owner. If required by Architect, Contractor will furnish satisfactory evidence as to the kind and quality of the materials and equipment used in performing the Work.
- H. Owner may elect to purchase materials required for the Work. In that event, Contractor will comply with the procedures set forth in the Contract Documents relating to such materials.

### **3.4 COMPLIANCE WITH LAWS**

Contractor will comply with all applicable laws, ordinances, rules, regulations, and orders of any public authorities relating to performance of the Work.

### **3.5 TAXES**

- A. Contractor will pay all sales, use, consumer, payroll, workers compensation, unemployment, old age pension, surtax, and similar taxes assessed in connection with the performance of the Work.
- B. Owner will pay all taxes and assessments on the real property comprising the Project site.

### **3.6 PERMITS AND FEES**

- A. Owner will obtain and pay for all zoning and use permits and permanent easements necessary for completion of the Work.



- B. Contractor will obtain and pay for the building permit, and all other permits, governmental fees, licenses and inspections necessary for the proper execution and completion of the Work.
- C. Contractor will secure any certificates of inspection and of occupancy required by authorities having jurisdiction over the Work. Contractor will deliver these certificates to Architect prior to issuance of the Certificate of Substantial Completion by Architect.

### **3.7 CONTRACTOR'S ON-SITE REPRESENTATIVE**

Contractor will employ a competent representative acceptable to Owner to supervise the performance of the Work. This representative will be designated in writing by Contractor prior to commencement of work and will not be changed prior to final inspection of the Work without prior written consent of Owner. This representative will represent Contractor for all purposes, including communication with Owner.

### **3.8 CONTRACTOR'S CONSTRUCTION SCHEDULES**

- A. Contractor will prepare and submit for Owner's and Architect's information Contractor's construction schedule for the Work in accordance with the requirements of the Contract Documents.
- B. Contractor will prepare and maintain a Submittal schedule which is coordinated with Contractor's construction schedule and sets forth specified times for Architect to review Submittals.

### **3.9 DOCUMENTS AND SUBMITTALS AT THE SITE**

Contractor will keep at the Project site for use by Owner, Architect, or their representatives, a record copy of the Project Manual, the Drawings, all Addenda, and all Modifications. These documents will be maintained in good order and currently marked to record changes and selections made during construction. In addition, Contractor will keep at the Project site one copy of all Submittals.

### **3.10 SUBMITTALS**

- A. Submittals are not Contract Documents and do not alter the requirements of the Contract Documents unless incorporated into the Contract Documents by a Modification.
- B. Contractor will review, approve, and submit to Architect Submittals in accordance with the Contract Documents. By approving Submittals, Contractor represents that it has determined and verified field measurements, field construction criteria, materials, catalog numbers, and similar data, and that it has checked and coordinated each Submittal with the requirements of the Work and of the Contract Documents or will make such determination, verification, check, and coordination prior to commencing the relevant portion of the Work. In reviewing Submittals Architect will be entitled to rely upon Contractor's representation that such information is correct and accurate.
- C. Contractor will inform Architect in writing at the time of submission of any Submittal or portion thereof which deviates from the requirements of the Contract Documents. Contractor will provide Architect with documentation demonstrating to Architect that the Submittal is equal to or better than the specified product or work. Contractor will not be relieved of responsibility for deviations from the requirements of the Contract Documents by Architect's acceptance of a Submittal unless Contractor has informed Architect in writing of the deviation and Architect has incorporated the deviation into the Contract Documents by a Modification.
- D. Contractor will not perform any portions of the Work requiring Submittals until the respective Submittal has been reviewed and accepted in writing by Architect.
- E. When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, Owner will be entitled to rely upon such certifications, and neither Owner nor Architect will be expected to make any independent examination with respect thereto.
- F. Submittals not required by the Contract Documents may be returned to Contractor without action.

### **3.11 CUTTING AND PATCHING**

Contractor will be responsible for any cutting, fitting, and patching that may be required to complete the Work and make its parts fit together properly.

### **3.12 ACCESS TO WORK**

Contractor will permit Owner, Architect, their representatives and consultants, access to the Work wherever located at any time.

### **3.13 ROYALTIES AND PATENTS**

Contractor will pay all royalties and license fees required by the Work or by Contractor's chosen method of performing the Work. Contractor will defend and hold Owner harmless from all suits or claims for infringement of any patent, license or other intellectual property rights or any loss on account thereof.

### **3.14 INDEMNIFICATION**

- A. Contractor will indemnify and hold harmless Owner and Owner's representatives, employees, agents, architects, and consultants from and against any and all claims, damages, liability, demands, costs, judgments, awards, settlements, causes of action, losses and expenses (collectively "Claims" or "Claim"), including but not limited to attorney fees, consultant fees, expert fees, copy costs, and other expenses, arising out of or resulting from performance of the Work, attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of real or personal property, including loss of use resulting therefrom, except to the extent that such liability arises out of the negligence of Owner, its representatives, agents, and employees. This indemnity includes, without limitation, indemnification of Owner from all losses or injury to Owner's property, except to the extent that such loss or injury arises out of the negligence of Owner, its representatives, agents, and employees. This indemnity applies, without limitation, to include Claims occurring both during performance of the Work and/or subsequent to completion of the Work. In the event that any Claim is caused in part by a party indemnified hereunder, that party will bear the cost of such Claim to the extent it was the cause thereof. In the event that a claimant asserts a Claim for recovery against any party indemnified hereunder, the party indemnified hereunder may tender the defense of such Claim to Contractor. If Contractor rejects such tender of defense and it is later determined that the negligence of the party indemnified hereunder did not cause all of the Claim, Contractor will reimburse the party indemnified hereunder for all costs and expenses incurred by that party in defending against the Claim. Contractor will not be liable hereunder to indemnify any party for damages resulting from the sole negligence of that party.
- B. In addition to the foregoing, Contractor will be liable to defend Owner in any lawsuit filed by any Subcontractor relating to the Project. Where liens have been filed against Owner's property, Contractor (and/or its bonding company which has issued bonds for the Project) will obtain lien releases and record them in the appropriate county and/or local jurisdiction and provide Owner with a title free and clear from any liens of Subcontractors. In the event that Contractor and/or its bonding company are unable to obtain a lien release, Owner in its absolute discretion may require Contractor to provide a bond around the lien or a bond to discharge the lien, at Contractor's sole expense.
- C. In addition to the foregoing, Contractor will indemnify and hold Owner harmless from any claim of any other contractor resulting from the performance, nonperformance or delay in performance of the Work by Contractor.
- D. The indemnification obligation herein will not be limited by a limitation on the amount or type of damages, compensation or benefits payable by or for Contractor or a Subcontractor under worker's compensation acts, disability benefit acts, or other employee benefit acts.

### **3.15 PROJECT MEETINGS**

Contractor will attend and participate in meetings as required by the Contract Documents.

## **SECTION 4 - ADMINISTRATION OF THE CONTRACT**

### **4.1 ARCHITECT**

In the event that Owner terminates its contractual relationship with Architect, Owner will appoint in writing another architect, whose status under the Contract Documents will be that of the former Architect in all respects.

### **4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT**

- A. Architect will make periodic visits to the site to familiarize itself generally with the progress and quality of the Work and to determine if the Work is proceeding in accordance with the Contract Documents. Although Architect is required to make periodic inspections, it is not required to make exhaustive or continuous onsite inspections. On the basis of its observations while at the site, Architect will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defects and deficiencies in the Work. Architect's failure to observe a defect or deficiency in the Work will not relieve Contractor of its duty to perform the Work in accordance with the Contract Documents.
- B. Architect will review Contractor's payment requests and determine the amounts due Contractor in accordance with Section 9.
- C. Communications between Contractor and Owner relating to the Work will be through Architect. Communications between Owner or Contractor with Architect's consultants relating to the Work will be through Architect. Communications between Owner or Architect and subcontractors relating to the Work will be through Contractor. Communications between Contractor and any separate contractor will be through Architect, except as otherwise specified in the Contract Documents.
- D. Owner and/or Architect will have the right to reject and require removal of the following at Contractor's expense:
  1. Any portion of the Work that does not meet the requirements of the Contract Documents.
  2. Any portion of the Work damaged or rendered unsuitable during installation or resulting from failure to exercise proper protection.
- E. Architect will have authority to suspend the Work, with concurrence of Owner, whenever such suspension may be necessary in its reasonable opinion to insure the proper performance of the Work.
- F. Architect will review Contractor's Submittals and will accept or take other appropriate action regarding the Submittals. Architect's review of the Submittals will be for the limited purpose of checking for general conformance with the Contract Documents and will not be conducted for the purpose of determining the accuracy and completeness of details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of Contractor. Architect's review of Submittals will not relieve Contractor of its obligations under the Contract Documents. Architect's review of Submittals will not constitute acceptance of safety precautions or construction

means, methods, techniques, sequences or procedures. Architect's acceptance of a specific item will not indicate acceptance of an assembly of which the item is a component.

- G. Architect has authority to order Construction Change Directives and Field Changes in accordance with Section 7.
- H. Architect will conduct inspections to determine the dates of Substantial Completion and final completion, will receive and review written guarantees and related documents required by the Contract and assembled by Contractor, and will review and certify or reject Contractor's final payment request.
- I. Architect will be the interpreter of the performance and requirements of the Contract Documents. Architect's interpretations will be in writing or in the form of drawings.
- J. Architect's decisions in matters relating to aesthetic effect will be final if consistent with the Contract Documents and approved by Owner.

## **SECTION 5 - SUBCONTRACTORS**

### **5.1 AWARD OF SUBCONTRACTS FOR PORTIONS OF THE WORK**

- A. Contractor will enter into contracts with Subcontractors to perform all portions of the Work that Contractor does not customarily perform with its own employees.
- B. Contractor will not contract with any Subcontractor who has been rejected by Owner. Contractor will not be required to contract with any Subcontractor against whom it has a reasonable objection.
- C. If Owner rejects any Subcontractor proposed by Contractor, Contractor will propose an acceptable substitute to whom Owner has no reasonable objection.
- D. Contractor will not make any substitution for any Subcontractor that has been accepted by Owner and Architect without the prior written approval of Owner and Architect.

### **5.2 SUBCONTRACTUAL RELATIONS**

- A. Contractor's responsibility for the Work includes the labor and materials of all Subcontractors, including those recommended or approved by Owner. Contractor will be responsible to Owner for proper completion and guarantee of all workmanship and materials under any subcontracts. Any warranties required for such work will be obtained by Contractor in favor of Owner and delivered to Architect. It is expressly understood and agreed that there is no contractual relationship between Owner and any Subcontractor, and under no circumstances will Owner be responsible for the non-performance or financial failure of any Subcontractor or any effects therefrom.
- B. Contractor agrees to pay the Subcontractors promptly upon receipt of payment from Owner for that portion of the funds received which represents the Subcontractor's portion of the Work completed to Contractor's satisfaction for which Owner has made payment.
- C. Contractor will require each Subcontractor to:
  - 1. Be licensed by the state in which the Project is located where such licensing is required by the governing authority;
  - 2. Be bound by the terms of the Contract Documents as far as they are applicable to the Subcontractor's work;
  - 3. Assume toward Contractor the same obligations Contractor has assumed toward Owner, including the prompt payment of its Subcontractors;
  - 4. Submit its applications for payment to Contractor in time to permit Contractor to make timely application to Owner;
  - 5. Execute claim or lien releases or lien waivers for payments made by Contractor; and
  - 6. Make all claims for Changes in the Work to Contractor in the same manner as Contractor is required to make such claims to Owner.

## **SECTION 6 - CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS**

### **6.1 OWNER'S RIGHT TO PERFORM WORK OR AWARD SEPARATE CONTRACTS**

- A. Owner reserves the right to perform work itself or to award separate contracts in connection with the Project.
- B. When separate contracts are awarded, "Contractor" in the Contract Documents in each case will mean the contractor who signs each separate contract.

### **6.2 MUTUAL RESPONSIBILITY**

- A. Contractor will afford other contractors reasonable opportunity to place and store their materials and equipment on site and to perform their work and will properly connect and coordinate its Work with theirs where applicable.
- B. If any part of Contractor's Work depends upon the work of any separate contractor for proper performance or results, Contractor will inspect and promptly report to Architect any apparent discrepancies or defects in such work that render it unsuitable for

proper performance and results. Failure of Contractor to so inspect and report will constitute an acceptance of the work of the separate contractor as fit and proper to receive Contractor's Work, except as to defects not then reasonably discoverable.

- C. Contractor will promptly remedy damage caused by Contractor or any Subcontractor to the completed or partially completed work of other contractors or to the property of Owner or other contractors.

### **6.3 OWNER'S RIGHT TO CLEAN UP**

If a dispute arises among Contractor and separate contractors as to the responsibility under their separate contracts for maintaining the Project free from waste materials and rubbish, Owner may clean the Project, allocate the cost among those responsible as Owner and Architect determine to be just, and withhold such cost from any amounts due or to become due to Contractor.

## **SECTION 7 - CHANGES IN THE WORK**

### **7.1 CHANGES IN THE WORK RESULTING FROM AN INSTRUCTION BY OWNER OR ARCHITECT TO CONTRACTOR**

- A. If Owner or Architect gives Contractor an instruction that modifies the requirements of the Contract Documents or delays Substantial Completion, Contractor may be entitled to an adjustment in the Contract Sum and/or the Contract Time. If compliance with the instruction affects the cost to Contractor to perform the Work, the Contract Sum will be adjusted to reflect the reasonable increase or decrease in cost subject to the conditions set forth in Section 7.1, Paragraphs B through G. If compliance with the instruction delays Substantial Completion, the Contract Time will be extended for a period of time commensurate with such delay subject to the conditions set forth in Section 7.1, Paragraphs B through G and Section 7.3, Paragraph A and Contractor will be paid liquidated damages for the delay as set forth in Section 7.3, Paragraph B.
- B. If Contractor receives an instruction from Owner or Architect that Contractor considers to be a Change in the Work, Contractor, before complying with the instruction, will notify Architect in writing that Contractor considers such instruction to constitute a Change in the Work. If Architect agrees that compliance with the instruction will constitute a Change in the Work, Contractor will furnish a proposal for a Modification in accordance with Section 7.1, Paragraphs C. and D. within ten (10) days.
- C. If Contractor claims that it is entitled to an adjustment in the Contract Sum (including without limitation costs related to a time extension) as a result of an instruction by Owner or Architect, Contractor will furnish a proposal for a Change Order containing a price breakdown itemized as required by Owner. The breakdown will be in sufficient detail to allow Owner to determine any increase or decrease in Direct Costs as a result of compliance with the instruction. Any amount claimed for subcontracts will be supported by a similar price breakdown and will itemize the Subcontractor's profit and overhead charges. Profit and overhead will be subject to the following limitations:
  - 1. The Subcontractor's profit and overhead will not exceed ten (10) percent of its Direct Costs on work performed. Subcontractor's profit and overhead will not exceed five (5) percent on work performed by its sub-subcontractors.
  - 2. Contractor's profit and overhead on work performed by its own crews will not exceed ten (10) percent of its Direct Costs.
  - 3. Contractor's profit and overhead mark up on work performed by its Subcontractors will not exceed five (5) percent of the Subcontractors' charges for such work.
  - 4. Amounts due Owner as a result of a credit change will be the actual net savings to Contractor from the Change in the Work as confirmed by Architect. On credit changes, profit and overhead on the originally estimated work will not be credited back to Owner. If both additions and credits are involved in a single Change in the Work, overhead and profit will be figured on the basis of net increase, if any, related to that Change in the Work.
- D. If Contractor claims that it is entitled to an adjustment in the Contract Time as a result of an instruction from Owner or Architect, Contractor will include in its proposal justification to support Contractor's claim that compliance with the instruction will delay Substantial Completion.
- E. Upon receipt of Contractor's proposal for Modification, Architect and Owner will determine whether to proceed with the Change in the Work. If Architect and Owner determine to proceed with the Change in the Work, they will issue a Change Order, a Construction Change Directive or a Field Change as appropriate.
- F. Contractor agrees that if it complies with an instruction from Owner or Architect without first giving written notice to Architect as provided in Section 7.1., Paragraph B, and receiving a Change Order, Construction Change Directive or Field Change, Contractor will not be entitled to any adjustment in the Contract Sum or the Contract Time as a result of the instruction and waives any claim therefor.
- G. If Contractor is instructed to perform work which it claims constitutes a Change in the Work but which Owner and Architect do not agree constitutes a Change in the Work, Contractor will comply with the instruction. Contractor may submit its claim for adjustment to the Contract Sum, the Contract Time, or both as a dispute pursuant to Section 13 within thirty (30) days after compliance with the instruction. Contractor agrees that if it fails to submit its claim for resolution pursuant to Section 13 within thirty (30) days after compliance with the instruction, then Contractor will not be entitled to any adjustment in the Contract Sum or the Contract Time as a result of the instruction and waives any claim therefor.
- H. Contractor agrees that it is responsible for submitting accurate cost and pricing data to support its Change Order Proposals. Owner will have the right to examine the Contractor's records to verify the accuracy and appropriateness of the pricing data used to price change order proposals.

### **7.2 CHANGE IN THE WORK RESULTING FROM AN EVENT OR CIRCUMSTANCE**

- A. If an event or circumstance other than an instruction from Owner or Architect affects the cost to Contractor of performing the Work or delays Substantial Completion, Contractor may be entitled to an adjustment in the Contract Sum and/or the Contract

Time. If the circumstance or event affects the cost to Contractor to perform the Work and is caused by a willful or negligent act or omission of Owner or Architect, the Contract Sum will be adjusted to reflect the reasonable increase or decrease in Contractor's cost to perform the Work resulting from the event or circumstance, subject to the conditions set forth in Section 7.2, Paragraphs B through F. If the event or circumstance delays Substantial Completion and is described in Section 7.3, Paragraph A, the Contract Time will be extended for a period of time commensurate with such delay subject to the conditions set forth in such section. If the circumstance or event delays Substantial Completion and is caused by a willful or negligent act or omission of Owner or Architect, then Contractor will be compensated for costs incident to the delay in accordance with Section 7.3, Paragraph B. Contractor will not be entitled to any adjustment to the Contract Sum or other damages from Owner as a result of any event or circumstance unless the event or circumstance results from a willful or negligent act or omission of Owner or Architect.

- B. If a Change in the Work results from any event or circumstance caused by the willful or negligent act or omission of Owner or Architect, Contractor will give Owner Written Notice of such event or circumstance within twenty-four (24) hours after commencement of the event or circumstance so that Owner can take such action as is necessary to mitigate the effect of the event or circumstance. Contractor will not be entitled to any adjustment in either the Contract Time or the Contract Sum based on any damages or delays resulting from such event or circumstance during a period more than twenty-four (24) hours prior to Contractor giving such Written Notice to Owner.
- C. Contractor will submit in writing any claims for an adjustment in the Contract Time and/or the Contract Sum resulting from an event or circumstance within the time limits set forth below. In the event that Contractor fails to submit its claim in writing within the time limits set forth below, then Contractor agrees it will not be entitled to any adjustment in the Contract Time or the Contract Sum or to any other damages from Owner due to the circumstance or event and waives any claim therefor.
  - 1. Claims for an adjustment in the Contract Time due to Adverse Weather will be made by the tenth (10th) of the month following the month in which the delay occurred.
  - 2. Claims for an adjustment in the Contract Time and/or the Contract Sum due to any other circumstance or event will be submitted within seven (7) days after the occurrence of the circumstance or event.
- D. If Contractor claims that it is entitled to an adjustment in the Contract Sum (including without limitation costs related to a time extension) because of an event or circumstance resulting from the willful or negligent act or omission of Owner or Architect, Contractor will furnish a proposal for a Change Order containing a price breakdown as described in Section 7.1, Paragraph C. Any amount claimed for increased labor costs as a result of the event or circumstance must be supported by a certified payroll. Any claim for rented equipment or additional material costs must be supported by invoices.
- E. If Contractor claims that it is entitled to an adjustment in the Contract Time as a result of an event or circumstance, Contractor will include with its claim copies of daily logs, letters, shipping orders, delivery tickets, Project schedules, and other supporting information necessary to justify Contractor's claim that the event or circumstance delayed Substantial Completion. If Contractor is entitled to an adjustment in the Contract Time as a result of an event or circumstance caused by the willful or negligent act or omission of Owner or Architect, Contractor will be compensated for all costs related to the delay in accordance with Section 7.3, Paragraph B.
- F. Within thirty (30) days after receipt of Contractor's claim, Architect will either deny the claim or recommend approval to Owner. If Owner approves the claim, the adjustment in the Contract Time and/or Contract Sum will be reflected in a Change Order pursuant to Section 7.5 or a Construction Change Directive pursuant to Section 7.6. If Owner or Architect denies Contractor's claim, Contractor may submit its claim as a dispute pursuant to Section 13 within thirty (30) days of receipt of the denial of the claim. If Contractor fails to submit its claim for resolution pursuant to Section 13 within the thirty (30) day time period, then Contractor agrees it is not entitled to any adjustment in the Contract Time and/ or Contract Sum or any other damages as a result of the event or circumstance and waives any claim therefor.

### **7.3 EXTENSIONS OF TIME**

- A. If Substantial Completion of the Project is delayed because of any of the following causes, then the Contract Time will be extended by Change Order for a period of time equal to such delay:
  - 1. Labor strikes or lock-outs;
  - 2. Adverse weather;
  - 3. Unusual delay in transportation;
  - 4. Unforeseen governmental requests or requirements;
  - 5. A Change in the Work resulting from an instruction by Owner or Architect to Contractor subject to the conditions set forth in Section 7.1.; or
  - 6. Any other event or circumstance caused by the willful or negligent act or omission of Owner or Architect.
- B. Contractor will not be entitled to any compensation for delay described in Section 7.3, Paragraph A, subparagraphs 1, 2, 3 and 4. For each day of delay in Substantial Completion described in Section 7.3, Paragraph A, subparagraphs 5 and 6, Contractor will be paid liquidated damages in the amount per day set forth in the Supplementary Conditions to compensate Contractor for all damages resulting from any delay including but not limited to damages for general conditions costs, additional job site costs, additional home office overhead costs, disruption costs, acceleration costs, increase in labor costs, increase in subcontract costs, increase in materials costs, and any other costs incident to the delay. Contractor will be entitled to no other compensation relating to the delay.
- C. In no event will any time extension or cost adjustment be given on account of delay which reasonably should have been anticipated by the Contractor or in circumstances where performance of the Work is, was, or would have been, delayed by any other cause for which the Contractor is not entitled to an extension.

### **7.4 DOCUMENTATION OF CHANGES IN THE WORK**

Every Change in the Work will be documented by a Change Order, a Construction Change Directive or a Field Change. If Owner, Architect and Contractor reach agreement regarding the adjustment in the Contract Sum, if any, and the adjustment in the Contract Time, if any, resulting from a Change in the Work, then the parties will execute a Change Order pursuant to Section 7.5. If Owner, Architect and Contractor cannot reach agreement regarding the adjustment in Contract Sum or the adjustment in Contract Time resulting from a Change in the Work, then Owner and Architect will issue a Construction Change Directive pursuant to Section 7.6. Field Changes require the agreement of Architect and Contractor only.

## **7.5 CHANGE ORDERS**

Contractor's signature upon a Change Order is Contractor's acknowledgment that it is not entitled to any additional adjustment in the Contract Sum or the Contract Time or any other damages or compensation as a result of the Change in the Work other than that provided for in the Change Order, irrespective of whether a subsequent claim for additional compensation or time extensions relating to the Change in the Work is described as a change in the requirements of the Contract Documents, a delay, a disruption of the Work, an acceleration of the Work, an impact on the efficiency of performance of the Work, an equitable adjustment, or other claim and irrespective of whether the impact of the Change in the Work is considered singly or in conjunction with the impact of other Changes in the Work.

## **7.6 CONSTRUCTION CHANGE DIRECTIVES**

- A. Contractor will promptly comply with all Construction Change Directives.
- B. Pending final resolution of any adjustment in the Contract Sum or Contract Time relating to a Construction Change Directive, the amounts proposed by Owner in the Construction Change Directive may be included in Contractor's payment requests once the work relating thereto is completed.
- C. If after the work described in the Construction Change Directive is completed, Owner, Architect, and Contractor reach agreement on adjustments in the Contract Sum, Contract Time, or both, such agreement will be reflected in an appropriate Change Order.
- D. If the parties do not reach agreement regarding an adjustment to the Contract Sum, Contract Time, or both relating to the Construction Change Directive within thirty (30) days of the completion of the work described therein, then Contractor may submit its claim for an adjustment pursuant to Section 13 within thirty (30) days of the completion of such work. Contractor agrees that if it fails to submit its claim for resolution pursuant to Section 13 within thirty (30) days of completion of the work described in the Construction Change Directive, then it will not be entitled to an adjustment in Contract Sum or Contract Time resulting from such work except as set forth in the Construction Change Directive and waives any claim therefor.

## **7.7 FIELD CHANGES**

Architect and Contractor will sign a Field Change order listing the Change In The Work and the Contract Sum including markups before Contractor proceeds with the Field Change.

## **7.8 WAIVER OF CLAIMS**

Except as set forth in Section 7, Contractor will not be entitled to any adjustment in the Contract Sum or the Contract Time or for any damages of any kind whatsoever resulting from an instruction from Owner or Architect, any event or circumstance, or any act or omission of Owner or Architect and Contractor expressly waives any and all claims therefor.

# **SECTION 8 - TIME**

## **8.1 TIME IS OF THE ESSENCE**

All time limits stated in the Contract Documents are of the essence. By executing the Agreement, Contractor confirms that the Contract Time is a reasonable period for performing the Work. Contractor will proceed expeditiously with adequate resources and will achieve Substantial Completion within the Contract Time.

## **8.2 COMMENCEMENT OF THE WORK**

Contractor will not commence work on the Project site until the date set forth in the Written Notice to proceed. However, Contractor may enter into subcontracts and secure material for the Project after receipt of the Agreement with Owner's authorized signature. Owner will issue the Written Notice to proceed within forty-five (45) days after Owner receives acceptable bonds and evidence of insurance pursuant to Section 11 unless Owner earlier terminates the Agreement pursuant to Section 14.

## **8.3 DELAY IN COMPLETION OF THE WORK**

- A. For each day after the expiration of the Contract Time that Contractor has not achieved Substantial Completion, Contractor will pay Owner the amount set forth in the Supplementary Conditions as liquidated damages for Owner's loss of use of the Project and the added administrative expense to Owner to administer the Project during the period of delay. In addition, Contractor will reimburse Owner for any additional Architect's fees, attorneys' fees, expert fees, consultant fees, copy costs, and other expenses incurred by Owner as a result of the delay. Owner may deduct any liquidated damages or reimbursable expenses from any money due or to become due to Contractor. If the amount of liquidated damages and reimbursable expenses exceeds any amounts due to Contractor, Contractor will pay the difference to Owner within ten (10) days after receipt of a written request from Owner for payment.

- B. At the time Architect certifies that Contractor has achieved Substantial Completion, Architect will identify the remaining items to be completed for final completion of the Work and will establish with Contractor a reasonable time for completion of those items. Architect will set forth the items to be completed and the time established for their completion in a Certificate of Substantial Completion. For each day that Contractor exceeds the time allowed for completion of the items set forth in the Certificate of Substantial Completion, Contractor will pay to Owner as liquidated damages for additional administrative expenses the amount set forth in the Supplementary Conditions. In addition, Contractor will reimburse Owner for any additional Architect's fees, attorneys' fees, expert fees, consultant fees, copy costs, and other expenses incurred by Owner as a result of the delay in completing such items.

## **SECTION 9 - PAYMENTS AND COMPLETION**

### **9.1 SCHEDULE OF VALUES**

Contractor will submit to Architect a schedule of values which allocates the Contract Sum to various portions of the Work. The schedule of values will be supported by such data to substantiate its accuracy as required by Architect. This schedule, when accepted by Owner and Architect, will be used as a basis for reviewing Contractor's payment requests.

### **9.2 PAYMENT REQUESTS**

- A. Not more than once a month, Contractor will submit a payment request to Architect for Work completed, materials stored on the site, and for materials stored offsite as of the date of the payment request. The amount of the payment request will be based upon the schedule of values and will be equal to the value of the Work completed:

1. Less retention;
2. Less all prior amounts paid by Owner to Contractor as part of the Contract Sum; and
3. Less allowable offsets.

The payment request may include Changes in the Work that have been performed by Contractor and authorized by Owner and/or Architect pursuant to Section 7. If a payment request includes materials stored offsite, Contractor will include with the payment request a list of the materials, the location where they are stored and the written request of Contractor and its performance bond surety that payment be made for such materials.

- B. Contractor warrants and guarantees that upon the receipt of payment for materials and equipment, whether incorporated in the Project or not, title to such materials and equipment will pass to Owner free and clear of all liens, claims, security interests, or encumbrances. Notwithstanding this payment and passage of title, Contractor will remain responsible for all such materials and equipment until actual delivery to the project site, incorporation into the Work, and final acceptance by Owner. Contractor further warrants that no material or equipment covered by a payment request is subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or any other person or entity.

### **9.3 PAYMENT REQUEST CERTIFICATION**

- A. Architect will, within seven (7) days after receipt of Contractor's payment request, forward to Owner the payment request certified for such amount as Architect determines is properly due. If Architect certifies less than the full amount of the payment request, Architect will notify Contractor and Owner of Architect's reasons for withholding certification of the full amount requested.
- B. The certification of the payment request will constitute a representation by Architect to Owner based upon Architect's observations at the site and the data comprising the payment request, that the Work has progressed to the point indicated and that, to the best of Architect's knowledge, information, and belief, the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to minor deviations from the Contract Documents correctable prior to completion, and to specific qualifications expressed by Architect. However, the certification of the payment request will not constitute a representation that Architect has:
  1. Conducted exhaustive or continuous on-site inspections to check the quantity or quality of the Work;
  2. Reviewed construction means, methods, techniques, sequences, or procedures;
  3. Reviewed copies of requisitions received from Subcontractors or other data requested by Owner to substantiate Contractor's right to payment; or
  4. Made examination to ascertain how or for what purpose Contractor has used money previously paid on account of the Contract Sum.
- C. In taking action on Contractor's payment request, Owner will be entitled to rely on the accuracy and completeness of the information furnished by Contractor.

### **9.4 DECISIONS TO WITHHOLD CERTIFICATION AND PAYMENT**

- A. Architect may withhold certification of a payment request in whole or in part to the extent reasonably necessary to protect Owner if, in the opinion of Architect, the representations to Owner required by Section 9.3, Paragraph B cannot be accurately made. If Architect is unable to certify payment in the amount of the payment request, Architect will notify Contractor and Owner as provided in Section 9.3, Paragraph A. If Contractor and Architect cannot agree on a revised amount, Architect will promptly certify a payment request for the amount for which Architect is able to make such representations to Owner. Architect may also decide not to certify payment or, because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a payment request previously certified, to such extent as may be necessary in Architect's opinion to protect Owner from loss because of:
  1. Defective work not remedied;

2. Third-party claims filed or reasonable evidence indicating probable filing of such claims;
  3. Failure of Contractor to make payments properly to Subcontractors for labor, materials, equipment, construction or services;
  4. Reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
  5. Damage to Owner or another contractor for which Contractor is responsible;
  6. Reasonable evidence that the Work will not be completed within the Contract Time and that the unpaid balance will not be adequate to cover the cost of completing the Work and damages for the anticipated delay; or
  7. Contractor's persistent failure to carry out the Work in accordance with the Contract Documents.
- B. Owner reserves the right to withhold payments to Contractor, subsequent to Architect's certification of any payment request, in order to protect Owner from loss due to any condition described in Section 9.4, Paragraph A, Subparagraphs 1 through 7. Upon satisfactory resolution of any such conditions, payments so withheld will be made.

## **9.5 PROGRESS PAYMENTS**

- A. Owner will pay Contractor progress payments within the parameters of Section 9.2 within fifteen (15) days after Owner receives the certified payment request from Architect.
- B. Owner will make payments to Contractor by either placing the payments in the mail addressed to Contractor or by electronic transfer at Owner's discretion.
- C. Upon receipt of any payment from Owner, Contractor will pay to each Subcontractor the amount paid to Contractor on account of such Subcontractor's portion of the Work.
- D. Contractor will maintain a copy of each payment request at the Project site for review by the Subcontractors.
- E. No payment made under the Contract Documents, either in whole or in part, will be construed to be an acceptance of defective or improper materials or workmanship.
- F. In addition and notwithstanding the foregoing, Owner will also withhold and retain 10% of payments made to Contractor.
- G. Owner will pay any unpaid retention less any amounts withheld pursuant to Section 9.4 within forty-five (45) days after Contractor achieves Substantial Completion, submits its payment request for retained funds, delivers to the Architect Owner's form entitled "Contractor's Substantial Completion Affidavit and Consent of Surety" fully executed by Contractor and its surety, obtains Waiver and Release documents executed by all subcontractors and suppliers having claim against the retained funds, and Owner receives a certificate of occupancy.

## **9.6 FINAL PAYMENT**

- A. Owner will make full and final payment of the Contract Sum within thirty (30) days of the completion of all of the following requirements:
  1. Contractor has submitted its final payment request;
  2. Architect has declared to Owner in writing that the Work is complete;
  3. Contractor has obtained waiver and release upon final payment documents executed by all of the subcontractors performing work and/or providing materials covered by the Contractor's final payment request; and
  4. Contractor has collected and provided to Owner all manufacturers' and other guaranties and warranties, properly signed and endorsed to Owner, that are required by the Contract Documents that extend for a period beyond one year after substantial completion. (Delivery of such guaranties and warranties will not relieve Contractor for any obligation assumed under any other provision of the Contract Documents.)
- B. Acceptance of final payment by Contractor or any Subcontractor will constitute a waiver of claims by the payee except for those claims previously made in writing pursuant to Section 7 and identified by Contractor in its affidavit as still pending.
- C. If the aggregate of previous payments made by Owner exceeds the amount due Contractor, Contractor will reimburse the difference to Owner.

# **SECTION 10 - PROTECTION OF PERSONS AND PROPERTY**

## **10.1 SAFETY PRECAUTIONS AND PROGRAMS**

Contractor will be responsible to Owner for initiating and supervising all safety programs in connection with the performance of the Work.

## **10.2 SAFETY OF PERSONS AND PROPERTY**

- A. Contractor will take reasonable precautions to prevent damage, injury, or loss to:
  1. All persons on the site;
  2. The Work and materials and equipment to be incorporated into the Work; and
  3. Other property at the site or adjacent to it.
- B. Contractor will give notices and comply with applicable laws, ordinances, rules, regulations, and other lawful requirements of public authorities bearing on the safety or protection of persons and property. No work will be performed that may pose an undue safety hazard to Contractor, Contractor's employees, or any other person.



- C. Contractor will designate a responsible member of its organization at the site whose duty will be the prevention of accidents. This person will be Contractor's onsite representative unless otherwise designated in writing by Contractor to Owner and Architect.

### 10.3 EMERGENCIES

In case of an emergency endangering life or threatening the safety of any person or property, Contractor may, without waiting for specific authorization from Architect or Owner, act at its own discretion to safeguard persons or property. Contractor will immediately notify Architect of such emergency action and make a full written report to Architect within five (5) days after the event.

### 10.4 HAZARDOUS MATERIALS

In the event the Contractor encounters on the site material reasonably believed to be hazardous materials which have not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and Architect in writing. The Work in the affected area shall be resumed in the absence of hazardous materials, or when it has been rendered harmless, by written agreement of the Owner and Contractor.

## SECTION 11 - INSURANCE AND BONDS

### 11.1 CONTRACTOR'S LIABILITY INSURANCE

- A. Contractor will obtain the following insurance and provide evidence thereof as described below prior to commencement of the Work or within ten (10) days after signing the Agreement, whichever is earlier:
  - 1. Workers Compensation Insurance.
  - 2. Employers Liability Insurance with minimum limits of the greater of \$500,000 E.L. each accident, \$500,000 E. L. disease-each employee, \$500,000 E.L. disease-policy limit or as required by the law of the state in which the Project is located.
  - 3. Commercial General Liability Insurance – ISO Form CG 00 01 (12/07) or equivalent Occurrence policy which will provide primary coverage to the additional insureds (the Owner and the Architect) in the event of any Occurrence, Claim, or Suit with:
    - a. Limits of the greater of: Contractor's actual coverage amounts or the following:
      - 1) \$2,000,000 General Aggregate;
      - 2) \$2,000,000 Products - Comp/Ops Aggregate;
      - 3) \$1,000,000 Personal and Advertising Liability;
      - 4) \$1,000,000 Each Occurrence;
      - 5) \$50,000 Fire Damage to Rented Premises (Each Occurrence).
    - b. Endorsements attached to the General Liability policy including the following or their equivalent:
      - 1) ISO Form CG 25 03 (05/09), Amendment of Limits of Insurance (Designated Project or Premises), describing the Agreement and specifying limits as shown above.
      - 2) ISO Form CG 20 10 (07/04), Additional Insured -- Owners, Lessees, Or Contractors (Form B), naming Owner and Architect as additional insureds.
  - 4. Automobile Liability Insurance, with:
    - a. Combined Single Limit each accident in the amount of \$1,000,000 or Contractor's actual coverage, whichever is greater; and
    - b. Coverage applying to "Any Auto."
- B. Contractor will provide evidence of such insurance to Owner as follows:
  - 1. Deliver to Owner a Certificate of Liability Insurance, on ACORD 25 (2010/05) Form, or equivalent:
    - a. Listing Owner as the Certificate Holder and Additional Insured on the general liability and any excess liability policies;
    - b. Attaching the ISO or equivalent endorsements set forth above to the Certificate of Liability Insurance;
    - c. Identifying the Project;
    - d. Listing the insurance companies providing coverage (All companies listed must be rated in A.M. Best Company Key Rating Guide-Property-Casualty and each company must have a rating of B+ Class VII or higher. Companies which are not rated are not acceptable); and
    - e. Bearing the name, address and telephone number of the producer and signed by an authorized representative of the producer. The signature may be original, stamped, or electronic.
- C. Contractor will maintain, from commencement of the Work, Insurance coverage required in Section 11.1 as follows:
  - 1. Commercial General Liability Insurance through expiration of warranty period specified in Section 12.2, Paragraph B. including completion of any warranty repairs; and
  - 2. All other insurance through Final Payment.
- D. Owner reserves the right to reject any insurance company, policy, endorsement, or certificate of insurance with or without cause.
- E. Owner may, in writing and at its sole discretion, modify the insurance requirements.
- F. The cost of insurance as required above will be the obligation of Contractor. Contractor will be responsible for payment of all deductible amounts under all insurance.
- G. Owner will provide builders risk insurance for the cost of the Project. The policy will be written on an all risk basis with coverage for perils of wind, flood, earthquake, and terrorism, with exclusions standard for the insurance industry. The policy will be subject to a \$5,000 deductible per occurrence which will be the responsibility of Contractor and will not be a reimbursable expense. Owner will provide a copy of the terms and conditions of the builders risk policy to Contractor upon Contractor's

request. Contractor will comply with terms, conditions, and deadlines of the builders risk policy. The terms, conditions, and deadlines of the builders risk policy shall govern coverage. In addition, when there is a loss which may be covered by the builders risk insurance policy, Contractor will comply with the following:

1. Contractor will report the loss immediately to builders risk commercial insurer by calling 1-866-537-7475 and shall make such further written submissions as required and otherwise comply with all requirements of the builders risk policy.
2. Contractor will report the loss immediately to the Owner.
3. Contractor will immediately notify its general liability insurance carrier of the loss.
4. Contractor will take all necessary and appropriate actions to protect the property and individuals from further loss, harm, and injury. In the event there are damages resulting from fire or water, restoration shall be performed only by a certified restoration contractor.
5. To the extent possible, Contractor will preserve and not disturb the evidence of the loss until after the builders risk commercial insurer and all interested parties and their insurance carriers have had the opportunity to view and investigate the site and loss.
6. Contractor will cooperate with Owner and the builders risk commercial insurer in the investigation, documentation, and settlement of loss claims, including without limitation promptly responding to all requests for information and documentation from the builders risk commercial insurer and/or Owner.

## **11.2 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND**

- A. Prior to commencement of the Work or within ten (10) days after signing the Agreement, whichever is earlier, Contractor will furnish to Owner a performance bond and a labor and material payment bond each in an amount equal to one hundred percent (100%) of the Contract Sum as security for all obligations arising under the Contract Documents. Such bonds will:
  1. Be written on Form AIA Document A312 (1984).
  2. Be issued by a surety company or companies licensed in the state in which the Project is located and holding valid certificates of authority under Sections 9304 to 9308, Title 31, of the United States Code as acceptable sureties or reinsurance companies on federal bonds.
  3. Have a penal sum obligation not exceeding the authorization shown in the current revision of Circular #570 as issued by the United States Treasury Department, i.e. "Treasury List".
  4. Be accompanied by a certified copy of the power of attorney stating the authority of the attorney-in-fact executing the bonds on behalf of the surety.
- B. Owner reserves the right to reject any surety company, performance bond, or labor and material payment bond with or without cause.
- C. The cost of the bonds as required above will be the obligation of Contractor.

## **SECTION 12 - UNCOVERING AND CORRECTION OF WORK**

### **12.1 UNCOVERING OF WORK**

Contractor will notify Architect at least twenty-four (24) hours in advance of performing work that would cover up work or otherwise make it difficult to perform inspections required by the Specifications or by applicable governing authorities. Should any such work be covered without proper notification having been given to Architect, Contractor will uncover that work for inspection at its own expense.

### **12.2 CORRECTION OF WORK**

- A. Contractor will promptly correct any portion of the Work that is rejected by Architect or which fails to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed, or completed. Contractor will bear the cost of correcting such rejected Work, including additional testing and inspection costs, compensation for Architect's services, and any other expenses made necessary thereby.
- B. Contractor will remedy any defects due to faulty materials, equipment, or workmanship which appear within a period of one (1) year from the date of Substantial Completion or within such longer period of time as may be prescribed by law or by the terms of any applicable special warranty required by the Contract Documents. Contractor will pay all costs of correcting faulty work, including without limitation additional Architect's fees, attorneys' fees, expert fees, consultant fees, copy costs, and other expenses when incurred.
- C. Nothing in the Contract Documents will be construed to establish a period of limitation within which Owner may enforce the obligation of Contractor to comply with the Contract Documents. The one-year period specified above has no relationship to the time within which compliance with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish Contractor's liability with respect to Contractor's obligations.

### **12.3 ACCEPTANCE OF NONCONFORMING WORK**

- A. If Owner prefers to accept any portion of the Work not in conformance with the Contract Documents, Owner may do so instead of requiring removal and correction of the nonconforming Work. In that event, the Contract Sum will be reduced by an amount agreed upon by the parties that reflects the difference in value to Owner between the Work as specified and the nonconforming Work. Such adjustment may consider increased maintenance costs, early replacement costs, increased inefficiency of use, and the like and will be effective whether or not final payment has been made. Such adjustment will be reflected in a Change Order pursuant to Section 7.5.

- B. Temporary or trial usage by Owner or Architect of mechanical devices, machinery, apparatus, equipment, or other work or materials supplied under the Contract Documents prior to written acceptance by Architect, will not constitute Owner's acceptance.

## **SECTION 13 - RESOLUTION OF DISPUTES**

### **13.1 SUBMITTAL OF DISPUTE**

In the event there is any dispute arising under this Agreement which cannot be resolved by agreement between the parties, either party may submit the dispute with all documentation upon which it relies to the Director of Architecture, Engineering, and Construction, Physical Facilities Department, 50 East North Temple, Salt Lake City, Utah 84150, who will convene a dispute resolution conference within thirty (30) days. The dispute resolution conference will constitute settlement negotiations and any settlement proposal made pursuant to the conference will not be admissible as evidence of liability. In the event that the parties do not resolve their dispute pursuant to the dispute resolution conference, either party may commence legal action to resolve the dispute. Any such action must be commenced within six (6) months from the first day of the dispute resolution conference or be time barred. Submission of the dispute to the Director as outlined above is a condition precedent to the right to commence legal action to resolve any dispute. In the event that either party commences legal action to adjudicate any dispute without first submitting the dispute to the Director, the other party will be entitled to obtain an order dismissing the litigation without prejudice and awarding such other party any costs and attorneys fees incurred by that party in obtaining the dismissal, including without limitation copy costs, and expert and consultant fees and expenses.

### **13.2 CONTRACTOR TO PROCEED WITH DILIGENCE**

Pending final resolution of a dispute hereunder, Contractor will proceed diligently with the performance of its obligations under this Agreement.

## **SECTION 14 - TERMINATION**

### **14.1 TERMINATION BY CONTRACTOR**

In the event Owner materially breaches any term of the Contract Documents, Contractor will promptly give Written Notice of the breach to Owner. If Owner fails to cure the breach within ten (10) days of the Written Notice, Contractor may terminate the Agreement by giving Written Notice to Owner and recover from Owner the percentage of the Contract Sum represented by the Work completed on the Project site as of the date of termination together with any out of pocket loss Contractor has sustained with respect to materials and equipment as a result of the termination prior to completion of the Work, less any offsets. Contractor will not be entitled to unearned profits or any other compensation or damages as a result of the termination and hereby waives any claim therefor. Contractor will provide to Owner all warranty, as built, inspection, and other close out documents as well as materials that Contractor has in its possession or control at the time of termination. Without limitation, Contractor's indemnities and obligations under section 3.14 as well as all warranties in the specifications relative to Work provided through the date of termination survive a termination hereunder.

### **14.2 TERMINATION BY OWNER FOR CAUSE**

Should Contractor fail to provide Owner with the bonds and certificates of insurance required by Section 11 within the time specified therein, make a general assignment for the benefit of its creditors, fail to apply enough properly skilled workmen or specified materials to properly prosecute the Work in accordance with Contractor's schedule, or otherwise materially breach any provision of the Contract Documents, then Owner may, without any prejudice to any other right or remedy, give Contractor Written Notice thereof. If Contractor fails to cure its default within ten (10) days, Owner may terminate the Agreement by giving Written Notice to Contractor. In such case, Owner may, in Owner's sole discretion, take legal assignment of subcontracts and other contractual rights of Contractor and/or take possession of the premises and all materials, tools, equipment, and appliances thereon, and finish the Work by whatever method Owner deems expedient. Contractor will not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Sum exceeds the expense of finishing the Work, including compensation for additional administrative, architectural, consultant, and legal services (including without limitation attorneys fees, expert fees, copy costs, and other expenses), such excess will be paid to Contractor. If such expense exceeds the unpaid balance, Contractor will pay the difference to Owner. Contractor will provide to Owner all warranty, as built, inspection, and other close out documents as well as materials that Contractor has in its possession or control at the time of termination. Without limitation, Contractor's indemnities and obligations under section 3.14 as well as all warranties in the specifications relative to Work provided through the date of termination survive a termination hereunder.

### **14.3 TERMINATION BY OWNER FOR CONVENIENCE**

Notwithstanding any other provision contained in the Contract Documents, Owner may, without cause and in its absolute discretion, terminate the Agreement at any time. In the event of such termination, Contractor will be entitled to recover from Owner the percentage of the Contract Sum equal to the percentage of the Work which Architect determines has been completed on the Project site as of the date of termination together with any out of pocket loss Contractor has sustained with respect to materials and equipment as a result of the termination prior to completion of the Work, less any offsets. Contractor will not be entitled to unearned profits or any other compensation as a result of the termination and hereby waives any claim therefor. Contractor will provide to Owner all warranty, as built, inspection, and other close out documents as well as materials that Contractor has in its possession or control at the time of termination. Owner may, in Owner's sole discretion, take legal assignment of subcontracts and other contractual rights of Contractor. Without limitation, Contractor's indemnities and obligations under section 3.14 as well as all warranties in the specifications relative to Work provided through the date of termination survive a termination hereunder.

## **SECTION 15 - MISCELLANEOUS PROVISIONS**

### **15.1 GOVERNING LAW**

The parties acknowledge that the Contract Documents have substantial connections to the State of Utah. The Contract Documents will be deemed to have been made, executed, and delivered in Salt Lake City, Utah. To the maximum extent permitted by law, (i) the Contract Documents and all matters related to their creation and performance will be governed by and enforced in accordance with the laws of the State of Utah, excluding conflicts of law rules; and (ii) all disputes arising from or related to the Contract Documents will be decided only in a state or federal court located in Salt Lake City, Utah and not in any other court or state. Toward that end, the parties hereby consent to the jurisdiction of the state and federal courts located in Salt Lake City, Utah and waive any other venue to which they might be entitled by virtue of domicile, habitual residence, place of business, or otherwise.

### **15.2 NO WAIVER**

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

### **15.3 RULE OF CONSTRUCTION**

Owner and Contractor agree that the Contract Documents will be deemed to have been drafted by both Owner and Contractor and will not be construed against either Owner or Contractor because of authorship.

### **15.4 ENFORCEMENT**

In the event either party commences legal action to enforce or rescind any term of the Contract Documents, the prevailing party will be entitled to recover its attorneys fees and costs, including without limitation all copy costs and expert and consultant fees and expenses, incurred in that action and on all appeals, from the other party.

### **15.5 TESTS AND INSPECTIONS**

- A. Owner and Architect have the right to have tests made when they deem it necessary. Tests conducted by Owner or Architect will be paid for by Owner. Should a test reveal a failure of the Work to meet Contract Document requirements, the cost of the test as well as subsequent tests related to the failure necessary to determine compliance with the Contract Documents will be paid for by Owner, with the cost thereof deducted from the Contract Sum by Modification.
- B. Tests will be made in accordance with recognized standards by a competent, independent testing laboratory. Materials found defective or not in conformity with Contract Document requirements will be promptly replaced or repaired at the expense of Contractor.
- C. Owner and Architect have the right to obtain samples of materials to be used in the Work and to test samples for determining whether they meet Contract Document requirements. Samples required for testing will be furnished by Contractor and selected as directed by Architect. Samples may be required from the sample's source, point of manufacture, point of delivery, or point of installation at Architect's discretion. Samples not required as a Submittal in the Specifications will be paid for by Owner. Should tests reveal a failure of the Sample to meet the Contract Document requirements, Contractor will provide other Samples that comply with the requirements of the Contract Documents.

END OF DOCUMENT



# SUPPLEMENTARY CONDITIONS

## FIXED SUM (U.S.)

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### **ITEM 1 - GENERAL**

1. Conditions of the Contract apply to each Division of the Specifications.
2. Provisions contained in Division 01 apply to all Divisions of the Specifications.

### **ITEM 2 - LIQUIDATED DAMAGE AMOUNTS:**

1. The amount of liquidated damages to the benefit of the Contractor for delays under General Conditions Section 7.3, Paragraph B is \$500.00 per day.
2. The amount of liquidated damages to the benefit of the Owner for delays in Substantial Completion of the Work under General Conditions Section 8.3, Paragraph A is \$500.00 per day.
3. The amount of liquidated damages to the benefit of the Owner for delays in completing work itemized on the Substantial Completion Certificate under General Conditions Section 8.3, Paragraph B is \$250.00 per day.

### **ITEM 3 - PERMITS**

1. Delete Section 3.6, Paragraph B of the General Conditions and replace with the following:
  - B. The Contractor shall purchase and pay for the General Building Permit. This cost shall NOT be included in its bid amount. The Owner will reimburse the Contractor for this amount outside of the Bid Amount. All other permits and fees are the responsibility of the Contractor and shall be included in its Bid amount.

### **ITEM 4 - STATE SPECIFIC SUPPLEMENTARY CONDITIONS**

#### **RETENTION APPLIED TO CONTRACTOR PAYMENTS FOR PROJECTS IN IDAHO:**

*Replace section 9.5.F of the General Conditions with the following:*

- F In addition and notwithstanding the foregoing, Owner may also withhold and retain 5% of payments made to Contractor.

#### **PAYMENT OF RETAINED FUNDS IN IDAHO:**

*Replace section 9.5 G of the General Conditions with the following:*

- G. Owner will pay any unpaid retention less any amounts withheld pursuant to Section 9.4 within thirty (30) days after Contractor achieves Substantial Completion, submits its payment request for retained funds, delivers to the Architect Owner's form entitled "Contractor's Substantial Completion Affidavit and Consent of Surety" fully executed by Contractor and its surety, obtains Waiver and Release documents executed by all subcontractors and suppliers having claim against the retained funds, and Owner receives a certificate of occupancy.

END OF DOCUMENT



## SPECIFICATIONS



# DIVISION 01: GENERAL REQUIREMENTS

## 01 1000 SUMMARY

01 1100 SUMMARY OF WORK  
01 1400 WORK RESTRICTIONS

## 01 2000 PRICE AND PAYMENT PROCEDURES

01 2100 ALLOWANCES  
01 2900 PAYMENT PROCEDURES

## 01 3000 ADMINISTRATIVE REQUIREMENTS

01 3100 PROJECT MANAGEMENT AND COORDINATION  
01 3200 CONSTRUCTION PROGRESS DOCUMENTATION  
01 3300 SUBMITTAL PROCEDURES  
01 3500 SPECIAL PROCEDURES

## 01 4000 QUALITY REQUIREMENTS

01 4000 QUALITY REQUIREMENTS  
01 4200 REFERENCES  
01 4301 QUALITY ASSURANCE - QUALIFICATIONS  
01 4523 TESTING AND INSPECTION SERVICES

## 01 5000 TEMPORARY FACILITIES AND CONTROLS

01 5100 TEMPORARY UTILITIES  
01 5200 CONSTRUCTION FACILITIES  
01 5400 CONSTRUCTION AIDS  
01 5600 TEMPORARY BARRIERS AND ENCLOSURES

## 01 6000 PRODUCT REQUIREMENTS

01 6100 COMMON PRODUCT REQUIREMENTS  
01 6200 PRODUCT OPTIONS  
01 6400 OWNER-FURNISHED PRODUCTS  
01 6600 PRODUCT DELIVERY, STORAGE, AND HANDLING REQUIREMENTS

## 01 7000 EXECUTION AND CLOSEOUT REQUIREMENTS

01 7300 EXECUTION  
01 7400 CLEANING AND WASTE MANAGEMENT  
01 7700 CLOSEOUT PROCEDURES  
01 7800 CLOSEOUT SUBMITTALS

END OF TABLE OF CONTENTS

**SECTION 01 1100****SUMMARY OF WORK****PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes But is Not Limited To:
1. Administrative and procedural requirements Summary of Work requirements.

**1.2 WORK COVERED BY CONTRACT DOCUMENTS**

- A. Provisions contained in Division 01 apply to Sections of Divisions 02 through 49 of Specifications. Instructions contained in Specifications are directed to Contractor. Unless specifically provided otherwise, obligations set forth in Contract Documents are obligations of Contractor.
- B. Contractor shall furnish total labor, materials, equipment, and services necessary to perform The Work in accordance with Contract Documents.

**1.3 WORK BY OWNER**

- A. Owner will furnish and install some portions of The Work with its own forces. Contractor will be provided with schedule of when these items are to be performed.
1. General:
    - a. Complete work necessary to accommodate work to be performed by Owner before scheduled date for performance of such work. Contractor will be back charged for actual expenses incurred by Owner for failure to timely complete such work.
    - b. Store and protect completed work provided by Owner until date of Substantial Completion.
  2. Work furnished and installed by Owner include, but are not limited to, following:
    - a. Carpet and Carpet Base.

**PART 2 - PRODUCTS Not Used****PART 3 - EXECUTION Not Used****END OF SECTION**

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**SECTION 01 1400**

**WORK RESTRICTIONS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes But is Not Limited To:
  - 1. Administrative and procedural requirements for Work Restrictions.

**1.2 PROJECT CONDITIONS**

- A. During construction period, Contractor will have use of premises for construction operations. Contractor will ensure that Contractor, its employees, subcontractors, and their employees comply with following requirements:
  - 1. Confine operations to areas within Contract limits shown on Drawings. Do not disturb portions of site beyond Contract limits.
  - 2. Do not allow alcoholic beverages, illegal drugs, or persons under their influence on Project site.
  - 3. Do not allow use of tobacco in any form on Project Site.
  - 4. Do not allow pornographic or other indecent materials on site.
  - 5. Do not allow work on Project site on Sundays except for emergency work.
  - 6. Refrain from using profanity or being discourteous or uncivil to others on Project Site or while performing The Work.
  - 7. Wear shirts with sleeves, wear shoes, and refrain from wearing immodest, offensive, or obnoxious clothing, while on Project Site.
  - 8. Do not allow playing of obnoxious and loud music on Project Site. Do not allow playing of any music within existing facilities.
  - 9. Do not build fires on Project Site.
  - 10. Do not allow weapons on Project Site, except those carried by law enforcement officers or other uniformed security personnel who have been retained by Owner or Contractor to provide security services.
  
- B. Do not load or permit any part of the structure to be loaded with a weight that will endanger its safety. Questions of structural loading as part of construction means and methods shall be addressed by a licensed structural engineer engaged by Contractor, subject to the review by Architect.

**PART 2 - PRODUCTS Not Used**

**PART 3 - EXECUTION Not Used**

**END OF SECTION**

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**SECTION 01 2100**

**ALLOWANCES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes But is Not Limited To:
  - 1. Administrative and procedural requirements to prepare and process Allowances.

**1.2 CASH ALLOWANCES**

- A. Include following Allowances in bid:
  - 1. Single-Ply Roofing Repair  
**Allow \$20,000**
  - 2. Division 09 Painting in the existing building unrelated to the elevator remodel area  
**Allow \$28,000**
- B. If actual purchase price differs from Allowance, change order will be issued adjusting Contract Sum by amount of difference.
- C. Actual purchase price is actual amount paid by Contractor, including applicable sales and use taxes, before taking into account cash discounts for prompt payment.

**PART 2 - PRODUCTS Not Used**

**PART 3 - EXECUTION Not Used**

**END OF SECTION**

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**SECTION 01 2900**

**PAYMENT PROCEDURES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes But is Not Limited To:
  - 1. Administrative and procedural requirements to prepare and process Applications for Payments.

**1.2 PAYMENT REQUESTS**

- A. Use Payment Request forms provided by Owner.
- B. Each Payment Request will be consistent with previous requests and payments certified by Architect and paid for by Owner.
- C. Request Preparation:
  - 1. Complete every entry on Payment Request form.
  - 2. Entries will match data on approved schedule of values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.
  - 3. Submit signed Payment Request to Architect with current Construction Schedule.
- D. Provide following submittals before or with submittal of Initial Payment Request:
  - 1. List of Subcontractors.
  - 2. Initial progress report.
  - 3. Contractor's Construction Schedule.
  - 4. Submittal Schedule.
- E. Provide Affidavit of Contractor and Consent of Surety with Payment Request following Substantial Completion.

**1.3 SCHEDULE OF VALUES**

- A. Submit schedule of values on Owner's standard form to Architect 20 days minimum before submission of Initial Payment Request as a necessary condition before payment will be processed. Coordinate preparation of schedule of values with preparation of Contractor's Construction Schedule. Correlate line items in Schedule of Values with other required administrative schedules and forms, including:
  - 1. Contractor's Construction Schedule.
  - 2. Payment Request form.
  - 3. Schedule of Allowances.

**PART 2 - PRODUCTS Not Used**

**PART 3 - EXECUTION Not Used**

**END OF SECTION**



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**SECTION 01 3100****PROJECT MANAGEMENT AND COORDINATION****PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes But is Not Limited To:
  - 1. Administrative and procedural requirements for Project Management and Coordination on Projects.

**1.2 PROJECT COORDINATION**

- A. Project designation for this Project is LDS 599-1393-17-01-03-01 Rigby ID E Stake.
- B. This Project designation will be included on documents generated for Project by Contractor and Subcontractors, or be present on a cover letter accompanying such documents.

**1.3 MULTIPLE CONTRACT COORDINATION**

- A. Contractor shall be responsible for accurately maintaining and reporting schedule of The Work from Notice to Proceed to date of Substantial Completion.
- B. Contractor shall be responsible for providing Temporary Facilities And Controls for those who perform work on Project from Notice to Proceed to date of Substantial Completion.
- C. Contractor shall be responsible for providing Construction Waste Management And Disposal services for those who perform work on Project from Notice to Proceed to date of Substantial Completion.
- D. Contractor shall be responsible for Final Cleaning for entire Project.

**1.4 PROJECT MEETINGS AND CONFERENCES**

- A. Preconstruction Conference:
  - 1. Attend preconstruction conference and organizational meeting scheduled by Architect at Project site or other convenient location.
  - 2. Be prepared to discuss items of significance that could affect progress, including such topics as:
    - a. Construction schedule.
    - b. Critical Work sequencing.
    - c. Current problems.
    - d. Designation of responsible personnel.
    - e. Distribution of Contract Documents.
    - f. Equipment deliveries and priorities.
    - g. General schedule of inspections by Architect and its consultants.
    - h. General inspection of tests.
    - i. Office, work, and storage areas.
    - j. Preparation of record documents and O & M manuals.
    - k. Procedures for processing interpretations and Modifications.
    - l. Procedures for processing Payment Requests.
    - m. Project cleanup.
    - n. Security.
    - o. Status of permits.

- p. Submittal of Product Data, Shop Drawings, Samples, Quality Assurance / Control submittals.
  - q. Use of the premises.
  - r. Work restrictions.
  - s. Working hours.
3. Architect will record minutes of meetings and distribute copies to Owner and Contractor within three (3) working days.
- B. Progress Meetings:
1. Attend progress meetings at Project site at regularly scheduled intervals determined by Architect, at least once a month.
  2. Progress meetings will be open to Owner, Architect, Subcontractors, and anyone invited by Owner, Architect, and Contractor.
  3. Be prepared to discuss items of significance that could affect progress, including following:
    - a. Progress since last meeting.
    - b. Whether Contractor is on schedule.
    - c. Activities required to complete Project within Contract Time.
    - d. Labor and materials provided under separate contracts.
    - e. Off-site fabrication problems.
    - f. Access.
    - g. Site use.
    - h. Temporary facilities and services.
    - i. Hours of work.
    - j. Hazards and risks.
    - k. Project cleanup.
    - l. Quality and Work standards.
    - m. Status of pending modifications.
    - n. Documentation of information for Payment Requests.
    - o. Maintenance of Project records.
  4. Architect will prepare minutes of progress meetings and distribute copies of minutes to Owner and Contractor within three (3) working days.
- C. Pre-Installation Conferences:
1. Attend pre-installation conferences specified in Contract Document.
    - a. If possible, schedule these conferences on same day as regularly scheduled Progress Meetings. If this is not possible, coordinate scheduling with Architect.
    - b. Request input from attendees in preparing agenda.
  2. Be prepared to discuss following items:
    - a. Requirements of Contract Documents.
    - b. Completed work necessary for installation of items or systems.
    - c. Conditions not in compliance with installation requirements.
    - d. Installation and inspection schedule.
    - e. Coordination between trades.
    - f. Space and access limitations.
    - g. Testing.
  3. Architect will prepare meeting minutes and distribute minutes to Owner and Contractor within three (3) working days.

**PART 2 - PRODUCTS Not Used****PART 3 - EXECUTION Not Used****END OF SECTION**

**SECTION 01 3200****CONSTRUCTION PROGRESS DOCUMENTATION****PART 1 - GENERAL****1.1 SUMMARY****A. Section Includes But is Not Limited To:**

1. Administrative and procedural requirements for documenting the progress of construction during performance of the Work.

**1.2 SCHEDULING OF WORK****A. Bar Chart Schedule:**

1. Submit horizontal bar chart schedule before Preconstruction Conference. Provide separate time bar for each construction activity listed on Owner's payment request form. Within each time bar, show estimated completion percentage. Provide continuous vertical line to identify first working day of each week. Show each activity in chronological sequence. Show graphically sequences necessary for completion of related portions of The Work. As The Work progresses, place contrasting mark in each bar to indicate actual completion.
2. Provide copies of schedule for Architect and Owner and post copy in field office.
3. Revise schedule monthly. Send copy of revised schedule to Owner and Architect and post copy in field office.
4. Project Management Software Programs:
  - a. Any software project management program capable of Bar Chart Scheduling for projects of equal size and complexity is approved by Contractor and approved by Owner's Project Manager.

**B. Daily Construction Reports:**

1. Prepare daily reports of operations at Project including at least following information:
  - a. List of Subcontractors at site.
  - b. Approximate count of personnel at site by trade.
  - c. High and low temperatures, general weather conditions.
  - d. Major items of equipment on site.
  - e. Materials, equipment, or Owner-furnished items arriving at or leaving site.
  - f. Accidents and unusual events.
  - g. Site or structure damage by water, frost, wind, or other causes.
  - h. Meetings, conferences, and significant decisions.
  - i. Visitors to the job including meeting attendees.
  - j. Stoppages, delays, shortages, losses.
  - k. Any tests made and their result if known.
  - l. Meter readings and similar recordings.
  - m. Emergency procedures.
  - n. Orders and requests of governing authorities.
  - o. Modifications received, carried out.
  - p. Services connected, disconnected.
  - q. Equipment or system tests and start-ups.
  - r. Brief summary of work accomplished that day.
  - s. Signature of person preparing report.
2. Submit daily reports to Architect at least weekly.
3. Maintain copies of daily reports at field office.

**PART 2 - PRODUCTS Not Used**

**PART 3 - EXECUTION Not Used**

**END OF SECTION**

**SECTION 01 3300****SUBMITTAL PROCEDURES****PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes But is Not Limited To:
  - 1. Administrative and procedural requirements for Submittal Procedures.
- B. Related Requirements:
  - 1. Section 01 7800: 'Closeout Submittals' for administrative and procedural requirements for closeout submittals.

**1.2 SUBMITTAL SCHEDULE**

- A. Furnish submittal schedule within 20 days after receipt of Notice to Proceed, listing items specified to be furnished for review to Architect including product data, shop drawings, samples, and Informational submittals.
  - 1. Coordinate submittal schedule with Contractor's construction schedule.
  - 2. Enclose the following information for each item:
    - a. Scheduled date for first submittal.
    - b. Related Section number.
    - c. Submittal category.
    - d. Name of Subcontractor.
    - e. Description of part of the Work covered.
    - f. Scheduled date for resubmittal.
    - g. Scheduled date for Architect's final release or approval.
- B. Print and distribute copies to Architect and Owner and post copy in field office. When revisions are made, distribute to same parties and post in same location.
- C. Revise schedule monthly. Send copy of revised schedule to Owner and Architect and post copy in field office.

**1.3 SUBMITTAL PROCEDURES**

- A. Coordination:
  - 1. Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently before performance of related construction activities to avoid delay.
    - a. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
    - b. Coordinate transmittal of different types of submittals required for related elements of The Work so processing will not be delayed by need to review submittals concurrently for coordination. Architect reserves right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
  - 2. Processing Time:
    - a. Allow sufficient review time so installation will not be delayed by time required to process submittals, including time for resubmittals.
      - 1) Allow 21 days for initial review. Allow additional time if processing must be delayed allowing coordination with subsequent submittals. Architect will promptly advise Contractor when submittal being processed must be delayed for coordination.

- 2) If an intermediate submittal is necessary, process same as initial submittal.
  - 3) Allow 10 days for reprocessing each submittal.
  - 4) No extension of Contract Time will be authorized because of failure to transmit submittals to Architect in sufficient time before work is to be performed to allow processing.
3. Identification:
- a. Place permanent label or title block on each submittal for identification. Include name of entity that prepared each submittal on label or title block.
    - 1) Provide space approximately 4 by 5 inches on label or beside title block on Shop Drawings to record Contractor's review and approval markings and action taken.
    - 2) Include following information on label for processing and recording action taken:
      - a) Project name.
      - b) Date.
      - c) Name and address of Architect.
      - d) Name and address of Contractor.
      - e) Name and address of Subcontractor.
      - f) Name and address of supplier.
      - g) Name of manufacturer.
      - h) Number and title of appropriate Specification Section.
      - i) Drawing number and detail references, as appropriate.
4. Transmittal:
- a. Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using transmittal letter. On transmittal, record relevant information and requests for data. Include Contractor's certification that information complies with Contract Document requirements, or, on form or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations.
  - b. Submittals received from sources other than Contractor or not marked with Contractor's approval will be returned without action.

#### 1.4 ACTION SUBMITTALS

- A. Product Data:
1. Submit Product Data, as required by individual Sections of Specifications.
  2. Mark each copy of each set of submittals to show choices and options used on Project. Where printed Product Data includes information on products that are not required for Project, mark copies to indicate information relating to Project.
  3. Certify that proposed product complies with requirements of Contract Documents. List any deviations from those requirements on form or separate sheet.
  4. Submit five copies of each required submittal unless otherwise required. Architect will return three copies marked with action taken and with corrections or modifications required.
  5. Submit electronic files PDF: Architect will return a PDF copy marked with action taken and with corrections or modifications required.
- B. Shop Drawings:
1. Submit newly prepared graphic data to accurate scale. Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 36 by 48 inches (915 by 1 200 mm). Highlight, encircle, or otherwise show deviations from Contract Documents. Include following information as a minimum:
    - a. Dimensions.
    - b. Identification of products and materials included.
    - c. Compliance with specified standards.
    - d. Notation of coordination requirements.
    - e. Notation of dimensions established by field measurement.
  2. Do not reproduce Contract Documents or copy standard information as basis of Shop Drawings. Standard printed information prepared without specific reference to Project is not acceptable as Shop Drawings.
  3. Review and designate (stamp) approval of shop drawings. Unless otherwise specified, submit to Architect six copies of shop drawings required by Contract Documents. Shop drawings not

required by Contract Documents, but requested by Contractor or supplied by Subcontractor, need not be submitted to Architect for review.

C. Samples:

1. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.
  - a. Mount, display, or package Samples to ease review of qualities specified. Prepare Samples to match samples provided by Architect, if applicable. Include following:
    - 1) Generic description of Sample.
    - 2) Sample source.
    - 3) Product name or name of manufacturer.
    - 4) Compliance with recognized standards.
    - 5) Availability and delivery time.
2. Submit Samples for review of kind, color, pattern, and texture, for final check of these characteristics with other elements, and for a comparison of these characteristics between final submittal and actual component as delivered and installed.
  - a. Where variations in color, pattern, texture or other characteristics are inherent in material or product represented, submit set of three samples minimum that show approximate limits of variations.
  - b. Refer to other specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.
  - c. Refer to other Sections for Samples to be returned to Contractor for incorporation into The Work. Such Samples shall be undamaged at time of use. On transmittal, indicate special requests regarding disposition of Sample submittals.
3. Where Samples are for selection of color, pattern, texture, or similar characteristics from a range of standard choices, submit full set of choices for material or product. Preliminary submittals will be reviewed and returned with Architect's mark indicating selection and other action.
4. Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit three sets. One will be returned marked with action taken.
5. Samples, as accepted and returned by Architect, will be used for quality comparisons throughout course of construction.
  - a. Unless noncompliance with Contract Documents is observed, submittal may serve as final submittal.
  - b. Sample sets may be used to obtain final acceptance of construction associated with each set.

## 1.5 INFORMATIONAL SUBMITTALS

- A. Informational submittals are design data, test reports, certificates, manufacturer's instructions, manufacturer's field reports, and other documentary data affirming quality of products and installations. Submit five copies of each required submittal unless otherwise required. Architect will return three copies marked with action taken and with corrections or modifications required. [or] Submit electronic files: PDF. Architect will return a PDF copy marked with action taken and with corrections or modifications required.
1. Certificates: Describe certificates intended to document affirmations by Contractor or others that the work is in accordance with the Contract Documents, but do not repeat provisions of Parts 2 or 3.
  2. Delegated Design Submittals / Design Data: Describe submittals intended to demonstrate design work prepared by Contractor's licensed professionals.
  3. Test And Evaluation Reports: Describe submittal of test reports or evaluation service reports intended to document required tests.
  4. Manufacturer Instructions: Describe submittals intended to document manufacturer instructions.
  5. Source Quality Control Submittals: Describe submittal of source quality control documentation.
  6. Field Quality Control Submittals: Describe submittal of field quality control documentation.



7. Manufacturer Reports: Describe submittal of Manufacturer reports as documentation of manufacturer activities.
8. Special Procedure Submittals: Describe submittals intended to document special procedures. An example would be construction staging or phasing for remodeling an existing facility while keeping it in operation. While the Contractor would normally be responsible for managing this, submittal of his plan as documentation could be specified.
9. Qualification Statements: Describe submittals intended to document qualifications of entities employed by Contractor.

## 1.6 CLOSEOUT SUBMITTALS

- A. This title groups submittals that occur during project closeout. Coordinate with section 01 7800 Closeout Submittals.
  1. As Built Record Drawings as defined in the Agreement.
  2. Project Manual: Complete Project Manual including Addenda and Modifications as defined in General Conditions.
  3. Maintenance Contracts: Describe submittal of the maintenance contract specific to the Section.
  4. Operations & Maintenance Data: Describe submittal of operation and maintenance data necessary for products of the Section.
  5. Warranty Documentation: Describe submittal of final executed warranty document specific to the Section.
  6. Record Documentation: Describe submittal of record documentation specific to the Section.
  7. Software: Describe submittal system software and programming software specific to the Section.

## 1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. This title groups maintenance material required submittals specific to the Section. Items may be provided at completion of Work or submitted with section 01 7800 Closeout Submittals:
  1. Spare Parts: Describe spare parts necessary for Owner's use in facility operation and maintenance. 'Parts' are generally understood to be items such as filters, motor drive belts, lamps, and other similar manufactured items that require only simple replacement.
  2. Extra Stock Materials: Describe extra stock materials to be provided for Owner's use in facility operation and maintenance. Extra stock materials are generally understood to be items such as ceiling tiles, flooring, paint etc.
  3. Tools:
    - a. Describe tools to be provided for Owner's use in facility operation and maintenance. Tools are generally understood to be wrenches, gauges, circuit setters, etc, required for proper operation or maintenance of a system.

## PART 2 - PRODUCTS Not Used

## PART 3 - EXECUTION Not Used

**END OF SECTION**

**SECTION 01 3500****SPECIAL PROCEDURES****PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes But is Not Limited To:
1. Administrative and procedural requirements for Special Procedures.

**1.2 REFERENCES**

- A. Association Publications:
1. U.S. Department of Labor, Occupational Safety and Health Administration:
    - a. 29 CFR 1926 OSHA, 'Construction Industry Regulations' (January 2014 or latest version).
      - 1) 29 CFR 1926.20, 'General Safety And Health Provisions'.
      - 2) 29 CFR 1926.64, 'Hot Work Permit'.
      - 3) 29 CFR 1926.352, 'Fire Prevention'.
      - 4) 29 CFR 1926.500, 'Fall Protection'.

**1.3 ADMINISTRATIVE REQUIREMENTS**

- A. Acceleration of Work:
1. Complete The Work in accordance with Construction Schedule. If Contractor falls behind schedule, take such actions as are necessary, at no additional expense to Owner, to bring progress of The Work back in accordance with schedule.
  2. Owner may request proposal for completion of The Work at date earlier than expiration of Contract Time:
    - a. Promptly provide requested proposal showing cost of such acceleration of The Work. Consult with Owner and Architect regarding possible options to decrease cost of such acceleration.
    - b. If Owner determines to order acceleration of The Work, change in Contract Sum and Contract Time resulting from acceleration will be included in a Change Order.

**1.4 QUALITY ASSURANCE**

- A. Regulatory Agency Sustainability Approvals:
1. Meet regulations of 29 CFR 1926 OSHA, 'Construction Industry Regulations'.
  2. Owner's Safety Requirements:
    - a. Personal Protection:
      - 1) Contractor shall ensure:
        - a) Positive means of fall protection, such as guardrails system, safety net system, personal fall arrest system, etc, is provided to employees whenever exposed to a fall **6 feet (1.80 m)** or more above a lower level.
        - b) Personnel working on Project shall wear hard hats and safety glasses as required by regulation and hazard.
        - c) Personnel working on Project shall wear long or short sleeve shirts, long pants, and hard-toed boots or other sturdy shoes appropriate to type and phase of work being performed.
    - b. Contractor Tools And Equipment:
      - 1) Contractor shall ensure:

- a) Tools and equipment are in good working condition, well maintained, and have necessary guards in place.
  - b) Ground Fault Circuit Interrupters (GFCI) is utilized on power cords and tools.
  - c) Scaffolding and man lifts are in good working condition, erected and maintained as required by governmental regulations.
  - d) Ladders are in good condition, well maintained, used as specified by Manufacturer, and secured as required.
- c. Miscellaneous:
- 1) Contractor shall ensure:
    - a) Protection is provided on protruding rebar and other similar objects.
    - b) General Contractor Superintendent has completed the OSHA 10-hour construction outreach training course or equivalent.
    - c) Implementation and administration of safety program on Project.
    - d) Material Safety Data Sheets (MSDS) are provided for substances or materials for which an MSDS is required by governmental regulations before bringing on site.
    - e) Consistent safety training is provided to employees on Project.
    - f) Implement and coordinate Lockout / Tagout procedures with Owner's Representative as required.
  - 2) Report accidents involving injury to employees on Project that require off-site medical treatment to Owner's designated representative.
- d. Hot Work Permit:
- 1) Permit shall document that fire prevention and protection requirements in 29 CFR 1926.352, 'Fire Prevention' have been implemented prior to beginning hot work operations.
  - 2) Required for doing hot work involving open flames or producing heat or sparks such as:
    - a) Brazing.
    - b) Cutting.
    - c) Grinding.
    - d) Soldering.
    - e) Thawing pipe.
    - f) Torch applied roofing.
    - g) Welding.

**PART 2 - PRODUCTS Not Used**

**PART 3 - EXECUTION Not Used**

**END OF SECTION**

**SECTION 01 4000****QUALITY REQUIREMENTS****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Related Requirements:
  - 1. Section 01 3100: 'Project Management and Coordination' for Pre-Installation Conferences for testing and inspection.
  - 2. Section 01 3200: 'Construction Progress Documentation' for developing a schedule of required tests and inspections.
  - 3. Section 01 3300: 'Submittal Procedures'.
  - 4. Section 01 4301: 'Quality Assurance – Qualifications' establishes minimum qualification levels required.
  - 5. Section 01 4523: 'Testing and Inspecting Services' for testing and inspection, and testing laboratory services for materials, products, and construction methods.
  - 6. Section 01 7300: 'Executions' for cutting and patching for repair and restoration of construction disturbed by testing and inspecting activities.
  - 7. Divisions 01 thru 49 establish responsibility for providing specific testing and inspections.

**1.3 REFERENCES**

- A. Definitions:
  - 1. Accreditation: Process in which certification of competency, authority, or credibility is presented. Verify that laboratories have an appropriate quality management system and can properly perform certain test methods (e.g., ANSI, ASTM, and ISO test methods) and calibration parameters according to their scopes of accreditation.
  - 2. Approved: To authorize, endorse, validate, confirm, or agree to.
  - 3. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with requirements indicated; and having complied with requirements of authorities having jurisdiction.
  - 4. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a construction operation, including installation, erection, application, and similar operations.
    - a. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of corresponding generic name.
  - 5. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish standard by which the Work will be judged.

6. Observation: Visual observation of building / site elements or structural system by registered design professional for general conformance to approved construction documents at significant construction stages and at completion. Observation does not include or waive responsibility for performing inspections or special inspections.
  7. Preconstruction Testing: Tests and inspections that are performed specifically for Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
  8. Product Testing: Tests and inspections that are performed by testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
  9. Service Provider: Agency or firm qualified to perform required tests and inspections.
  10. Source Quality Control Testing: Tests and inspections that are performed at source, i.e., plant, mill, factory, or shop.
  11. Testing Agency: Entity engaged to perform specific tests, inspections, or both.
  12. Testing Agency Laboratory: Agency or firm qualified to perform field and laboratory tests to determine characteristics and quality of materials and workmanship.
  13. Verification: Act of reviewing, inspecting, testing, etc. to establish and document that product, service, or system meets regulatory, standard, or specification requirements.
- B. Reference Standards:
1. International Code Council (IBC) (2015 or most recent edition adopted by AHJ):
    - a. IBC Chapter 17, 'Structural Tests and Special Inspections'.

#### 1.4 ADMINISTRATIVE REQUIREMENTS

- A. Conflicting Requirements:
1. General:
    - a. If compliance with two or more standards is specified and standards establish different or conflicting requirements for minimum quantities or quality levels, comply with most stringent requirement.
    - b. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.
  2. Minimum Quantity or Quality Levels:
    - a. Quantity or quality level shown or specified shall be minimum provided or performed.
    - b. Actual installation may comply exactly with minimum quantity or quality specified, or it may exceed minimum within reasonable limits.
    - c. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for context of requirements.
    - d. Refer uncertainties to Architect for decision before proceeding.
- B. Coordination:
1. Coordinate sequence of activities to accommodate required quality assurance and quality control services with minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
- C. Scheduling:
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

#### 1.5 QUALITY ASSURANCE

- A. Testing and inspecting services are used to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.
1. Specific quality assurance and quality control requirements for individual construction activities are specified in Sections that specify those activities and Section 01 4523. Requirements in those Sections may also cover production of standard products.

2. Specified tests, inspections, and related actions do not limit Contractor's other quality control procedures that facilitate compliance with Contract Document requirements.
  3. Requirements for Contractor to provide quality assurance and quality control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- B. Quality Assurance Services:
1. Activities, actions, and procedures performed before and during execution of the Work to verify compliance and guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
  2. Owner or Owner's designated representative(s) will perform quality assurance to verify compliance with Contract Documents.
- C. Activities performed by Owner's Quality Assurance Testing Agency include, but are not limited to following:
1. Individual Sections in Division 01 through Division 49:
    - a. Pre-Installation Conference agenda review items for:
      - 1) Schedule requirements.
      - 2) Testing and inspection requirements:
      - 3) Requirements and frequency of testing and inspections.
      - 4) Mock-up or sample requirements.
      - 5) Submittals requirements.
    - b. Quality Assurance personal qualifications.
      - 1) Qualification documentation including certificates if required.
    - c. Non-Conforming Work:
      - 1) Prepare non-compliance log to track non-compliant testing or inspections.
  2. Weekly Activities:
    - a. Summarize and track any non-compliance issues.
    - b. Provide summary report of previous week's performed Work.
    - c. Visit contractors periodically to find out if they have any concerns with Quality Assurance inspectors and check on any schedule changes.
    - d. Visit Owner's Representatives periodically to find out if they have any concerns with how project is progressing.
- D. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with following requirements, using materials indicated for completed Work:
1. Coordinate with individual section in Division 01 through Division 49 if there are any additional requirements or modification to these requirements:
    - a. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
    - b. Notify Architect seven days in advance of dates and times when mockups will be constructed.
    - c. Demonstrate proposed range of aesthetic effects and workmanship.
    - d. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
      - 1) Allow seven days for initial review and each re-review of each mockup.
    - e. Maintain mockups during construction in undisturbed condition as standard for judging completed Work.
      - 1) Demolish and remove mockups when directed, unless otherwise indicated.

## 1.6 QUALITY CONTROL

- A. Quality Control Services:
1. Quality Control will be sole responsibility of Contractor.
    - a. Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements performed by Contractor:
      - 1) They do not include inspections, tests or related actions performed by Architect, Owner, governing authorities or independent agencies hired by Owner or Architect.
      - 2) Quality assurance performed by Owner will be used to validate Quality Control performed by Contractor.

- b. Where services are indicated as Contractor's responsibility, engage a qualified Testing Agency to perform these quality control services.
  - 1) Contractor shall not employ same testing entity engaged by Owner, without Owner's written approval.
  
- B. Manufacturer's Field Services: Where indicated, engage factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 01 3300: 'Submittal Procedures'.
  
- C. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality control services, and provide reasonable auxiliary services as requested. Notify Testing Agency sufficiently in advance of operations to permit assignment of personnel. Provide following:
  - 1. Access to the Work.
  - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
  - 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist Testing Agency in obtaining samples.
  - 4. Facilities for storage and field curing of test samples.
  - 5. Delivery of samples to testing agencies.
  - 6. Preliminary design mix proposed for use for material mixes that require quality control by Testing Agency.
  - 7. Security and protection for samples and for testing and inspecting equipment at Project site.
  
- D. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections:
  - 1. Civil And Structural Testing:
    - a. Civil and structural field tests, laboratory testing, and inspections are provided by Owner's independent Testing Agency as specified in Section 01 4523 'Testing And Inspection Services'. Quality Control is sole responsibility of Contractor:
      - 1) Owner's employment of an independent Testing Agency does not relieve Contractor of Contractor's obligation to perform testing and inspection as part of his Quality Control:
        - a) Testing and inspections, if performed by Contractor, will be responsibility of Contractor to be performed by an independent entity.
      - 2) Contractor bears full responsible for compliance with all contract requirements and quality control on project and will be responsible for quality of asphalt mixture and asphalt installation.
    - b. Weekly Activities:
      - 1) Ensure that non-compliance log is current.
      - 2) Provide summary reports of performed Work.

## **PART 2 - PRODUCTS Not Used**

## **PART 3 - EXECUTION**

### **3.1 REPAIR AND PROTECTION**

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
  - 1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
  - 2. Comply with Contract Document requirements for Section 01 7300 'Execution' for cutting and patching.
  
- B. Protect construction exposed by or for Quality Assurance and Quality Control activities.

- C. Repair and protection are Contractor's responsibility, regardless of assignment of responsibility for Quality Assurance and Quality Control Services.

**END OF SECTION**



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**SECTION 01 4200****REFERENCES****PART 1 - GENERAL****1.1 SUMMARY****A. Section Includes But is Not Limited To:**

1. Reference standards, definitions, specification format, and industry standards.

**1.2 REFERENCES****A. Definitions:**

1. **Approved:** The term "approved," when used to convey Architect's action on Contractor's submittals, applications, and requests, is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
2. **Directed:** The term "directed" is a command or instruction by Architect. Other terms including "requested," "authorized," "selected," "approved," and "permitted" have the same meaning as "directed."
3. **Experienced:** The term "experienced," when used with an entity, means having successfully completed a minimum often previous projects similar in size and scope to this Project; being familiar with the special requirements indicated, and having complied with requirements of authority having jurisdiction.
4. **Furnish:** The term "furnish" means supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
5. **General:** Basic Contract definitions are included in the Conditions of the Contract.
6. **Indicated:** The term "indicated" refers to requirements expressed by graphic representations, or in written form on Drawings, in Specifications, and in other Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference.
7. **Install:** The term "install" describes operations at Project site including unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
8. **Installer:** An "Installer" is the Contractor or another entity engaged by the Contractor, as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
9. **Project Site:** The term "Project site" means the space available for performing construction activities. The extent of the Project site is shown on the Drawings and mayor may not be identical with the description of the land on which the Project is to be built.
10. **Provide:** The term "provide" means to furnish and install, complete and ready for the intended use.
11. **Regulations:** The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
12. **Submitted:** The terms "submitted," "reported," "satisfactory" and similar words and phrases means submitted to Architect, reported to Architect and similar phrases.
13. **Testing Agencies:** A "testing agency" is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, or to report on and, if required, to interpret results of those inspections or tests.
14. **Trades:** Using terms such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

**B. References Standards:**

1. Specification Format: Specifications will follow MasterFormat™ 2004 for organizing numbers and titles. (The Construction Specifications Institute, Project Resource Manual/CSI Manual of Practice, 5<sup>th</sup> Edition. New York, McGraw-Hill, 2005).
  - a. Specification Identifications:
    - 1) The Specifications use section numbers and titles to help cross referencing in the Contract Documents.
    - 2) Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of sections in the Contract Documents.
  - b. Specification Language:
    - 1) Specifications should be prepared, with concern and respect for their legal status. Specifications should be Clear, Concise, Correct and Complete.
    - 2) Streamlining: Streamlining is used to list products, materials, reference standards, and other itemized specifications. This technique places the subject first and provides keywords for quick reference
  - c. Sentence Structure:
    - 1) Specifications to be written in the “Imperative Mood”.
      - a) The verb that clearly defines the action becomes the first word in the sentence.
      - b) The imperative sentence is concise and readily understandable.
    - 2) Streamlining is used to list products, materials, reference standards, and other itemized specifications. This technique places the subject first and provides keywords for quick reference.
  - d. Abbreviated Language:
    - 1) Abbreviations should be used only on drawings and schedules where space is limited.
    - 2) Abbreviations with multiple meanings should be avoided, unless used in different disciplines where their meaning is clear from the context in which they are used.
    - 3) Abbreviations should be limited to five or fewer letters
      - a) The verb that clearly defines the action becomes the first word in the sentence.
  - e. Symbols:
    - 1) Caution should apply to symbols substituted for words or terms.
  - f. Numbers:
    - 1) The use of Arabic numerals rather than words for numbers is recommended.

C. Industry Standards:

1. Except where Contract Documents specify otherwise, construction industry standards will apply and are made a part of Contract Documents by reference.
2. Where compliance with two or more standards is specified and standards apparently establish different or conflicting requirements for minimum quantities or quality levels, refer to Architect for decision before proceeding. Quantity or quality level shown or specified will be minimum provided or performed. Actual installation may comply exactly with minimum quantity or quality specified, or it may exceed minimum within reasonable limits. In complying with these requirements, indicated numeric values are minimum or maximum, as appropriate for context of requirements. Refer uncertainties to Architect for decision before proceeding.
3. Each entity engaged in construction on Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with Contract Documents. Where copies of standards are needed for performance of a required construction activity, Contractor will obtain copies directly from publication source.
4. Trade Association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations, as referenced in Contract Documents, are defined to mean association names. Names and addresses are subject to change and are believed to be, but are not assured to be, accurate and up to date as of date of Contract Documents.

AABC	Associated Air Balance Council	Washington	DC	(202) 737-0202	<a href="http://www.aabchq.com">www.aabchq.com</a>
AAMA	American Architectural Manufacturers Association	Schaumburg	IL	(847) 303-5664	<a href="http://www.aamanet.org">www.aamanet.org</a>
AASHTO	American Association of State Highway & Transportation Officials	Washington	DC	(202) 624-5800	<a href="http://www.aashto.org">www.aashto.org</a>

AAMA	American Architectural Manufacturers Association	Schamamburg	IL	(847) 303-5774	<a href="http://www.aamanet.org">www.aamanet.org</a>
AASHTO	American association of State Highways and Transportation Officials	Washington	DC		<a href="http://www.transportation.org">www.transportation.org</a> <a href="http://www.aashto.org">www.aashto.org</a>
ACI	American Concrete Institute International	Farmington Hills	MI	(248) 848-3700	<a href="http://www.aci-int.org">www.aci-int.org</a>
AGA	American Gas Association	Washington	DC	(202) 824-7000	<a href="http://www.aga.org">www.aga.org</a>
AHRI	Air Conditioning Heating & Refrigeration Institute	Arlington	VA	(703) 524-8800	<a href="http://www.ari.org">www.ari.org</a>
AIA	American Institution of Architects	Washington	DC	(202) 626-7300	<a href="http://www.aia.org">www.aia.org</a>
AISC	American Institute of Steel Construction	Chicago	IL	(312) 670-2400	<a href="http://www.aisc.org">www.aisc.org</a>
AISI	American Iron & Steel Institute	Washington	DC	(202) 452-7100	<a href="http://www.steel.org">www.steel.org</a>
AITC	American Institution of Timber Construction	Englewood	CO	(303) 792-9559	<a href="http://www.aitc-glulam.org">www.aitc-glulam.org</a>
AMCA	Air Movement & Control Association International	Arlington Heights	IL	(847) 394-0150	<a href="http://www.amca.org">www.amca.org</a>
ANSI	American National Standards Institute	New York	NY	(212) 642-4900	<a href="http://www.ansi.org">www.ansi.org</a>
APA	APA-Engineered Wood Association	Tacoma	WA	(253) 565-6600	<a href="http://www.apawood.org">www.apawood.org</a>
API	American Petroleum Institute	Washington	DC	(202) 682-8000	<a href="http://www.api.org">www.api.org</a>
AQMD	South Coast Air Quality Management District	Diamond Bar	CA	(909) 396-2000	<a href="http://www.aqmd.gov">www.aqmd.gov</a>
ASHRAE	American Society of Heating, Refrigerating, & Air-Conditioning Engineers	Atlanta	GA	(404) 636-8400	<a href="http://www.ashrae.org">www.ashrae.org</a>
ASME	American Society of Mechanical Engineers International	New York	NY	(800) 843-2763	<a href="http://www.asme.org">www.asme.org</a>
ASTM	ASTM International	West Conshohocken	PA	(610) 832-9500	<a href="http://www.astm.org">www.astm.org</a>
AWI	Architectural Woodwork Institute	Potomac Falls	VA	(571) 323-3636	<a href="http://www.awinet.org">www.awinet.org</a>
AWPA	American Wood Protection Association	Birmingham	AL	(205) 733-4077	<a href="http://www.awpa.com">www.awpa.com</a>
AWS	American Welding Society	Miami	FL	(800) 443-9353	<a href="http://www.aws.org">www.aws.org</a>
AWWA	American Water Works Assoc	Denver	CO	(303) 794-7711	<a href="http://www.awwa.org">www.awwa.org</a>
BHMA	Builders Hardware Manufacturers Association	New York	NY	(212) 297-2122	<a href="http://www.buildershardware.com">www.buildershardware.com</a>
BIA	Brick Industry Association	Reston	VA	(703) 620-0010	<a href="http://www.bia.org">www.bia.org</a>
CFI	International Certified Floorcovering Installers, Inc.	Kansas City	MO	(816) 231-4646	<a href="http://www.cfi-installers.org">www.cfi-installers.org</a>
CRI	Carpet & Rug Institution	Dalton	GA	(706) 278-3176	<a href="http://www.carpet-rug.com">www.carpet-rug.com</a>
CRSI	Concrete Reinforcing Steel Institute	Schaumburg	IL	(847) 517-1200	<a href="http://www.crsi.org">www.crsi.org</a>
CISPI	Cast Iron Soil Pipe Institute	Chattanooga	TN	(423) 892-0137	<a href="http://www.cispi.org">www.cispi.org</a>
DHI	Door & Hardware Institute	Chantilly	VA	(703) 222-2010	<a href="http://www.dhi.org">www.dhi.org</a>
DIPRA	Ductile Iron Pipe Research Association.	Birmingham	AL	(205) 402-8700	<a href="http://www.dipra.org">www.dipra.org</a>
EIMA	EIFS Industry Members Association	Morrow	GA	(800) 294-3462	<a href="http://www.eima.com">www.eima.com</a>
FM	FM Global	Johnston	RI	(401) 275-3000	<a href="http://www.fmglobal.com">www.fmglobal.com</a>

FSC	Forest Stewardship Council	Bonn, Germany		+49 (0) 228 367 66 0	<a href="http://www.fsc.org">www.fsc.org</a>
GA	Gypsum Association	Hyattsville	MD	(301) 277-8686	<a href="http://www.gypsum.org">www.gypsum.org</a>
GS	Green Seal	Washington	DC	(202) 872-6400	<a href="http://www.greenseal.org">www.greenseal.org</a>
HPVA	Hardwood Plywood & Veneer Association	Reston	VA	(703) 435-2900	<a href="http://www.hpva.org">www.hpva.org</a>
ICC	International Code Council	Washington	DC	(888) 422-7233	<a href="http://www.iccsafe.org">www.iccsafe.org</a>
ICC-ES	ICC Evaluation Service	Whittier	CA	(562) 699-0543	<a href="http://www.icc-es.org">www.icc-es.org</a>
ICBO	International Conference of Building Officials				(See ICC)
ISO	International Organization for Standardization	Geneva, Switzerland			<a href="http://www.iso.org">www.iso.org</a>
ISSA	International Slurry Surfacing Association	Annapolis	MD	(410) 267-0023	<a href="http://www.slurry.org">www.slurry.org</a>
KCMA	Kitchen Cabinet Manufactures Association	Reston	VA	(703) 264-1690	<a href="http://www.kcma.org">www.kcma.org</a>
LPI	Lightning Protection Institute	Maryville	MO	(800) 488-6864	<a href="http://www.lightning.org">www.lightning.org</a>
MFMA	Maple Flooring Manufacturers' Association	Deerfield	IL	(888) 480-9138	<a href="http://www.maplefloor.org">www.maplefloor.org</a>
MSS	Manufacturer's Standardization Society of The Valve and Fittings Industry	Vienna	VA	(703) 281-6613	<a href="http://www.mss-hq.com">www.mss-hq.com</a>
NAAMM	National Association of Architectural Metal Manufacturers	Glen Ellyn	IL	(630) 942-6591	<a href="http://www.naamm.org">www.naamm.org</a>
NEC	National Electric Code	(from NFPA).			
NEMA	National Electrical Manufacturer's Association	Rosslyn	VA	(703) 841-3200	<a href="http://www.nema.org">www.nema.org</a>
NFPA	National Fire Protection Association	Quincy	MA	(800) 344-3555	<a href="http://www.nfpa.org">www.nfpa.org</a>
NFRC	National Fenestration Rating Council	Greenbelt	MD	(301) 589-1776	<a href="http://www.nfrc.org">www.nfrc.org</a>
NSF	NSF International	Ann Arbor	MI	(734) 769-8010	<a href="http://www.nsf.org">www.nsf.org</a>
PCA	Portland Cement Association	Skokie	IL	(847) 966-6200	<a href="http://www.cement.org">www.cement.org</a>
PCI	Precast / Prestressed Concrete Institute	Chicago	IL	(312) 786-0300	<a href="http://www.pci.org">www.pci.org</a>
PEI	Porcelain Enamel Institute	Norcross	GA	(770) 676-9366	<a href="http://www.porcelainenamel.com">www.porcelainenamel.com</a>
RFCI	Resilient Floor Covering Institute	LaGrange	GA	(706) 882-3833	<a href="http://www.rfci.com">www.rfci.com</a>
SCTE	Society of Cable Telecommunications Engineers	Exton	PA	(800) 542-5040	<a href="http://www.scte.org">www.scte.org</a>
SDI	Steel Deck Institute	Fox River Grove	IL	(847) 458-4647	<a href="http://www.sdi.org">www.sdi.org</a>
SDI	Steel Door Institute	Westlake	OH	(440) 899-0010	<a href="http://www.steeldoor.org">www.steeldoor.org</a>
SIGMA	Sealed Insulating Glass Manufacturer's Association	Chicago	IL	(312) 644-6610	<a href="http://www.arcata.com">www.arcata.com</a>
SJI	Steel Joist Institute	Myrtle Beach	SC	(843) 293-1995	<a href="http://www.steeljoist.org">www.steeljoist.org</a>
SMACNA	Sheet Metal & Air Conditioning Contractors National Association	Chantilly	VA	(703) 803-2980	<a href="http://www.smacna.org">www.smacna.org</a>
SPIB	Southern Pine Inspection Bureau	Pensacola	FL	(850) 434-2611	<a href="http://www.spib.org">www.spib.org</a>
SSMA	Steel Stud Manufacturer's Association	Glen Ellyn	IL	(630) 942-6592	<a href="http://www.ssma.com">www.ssma.com</a>

TCNA	Tile Council of North America	Anderson	SC	(864) 646-8453	<a href="http://www.tileusa.com">www.tileusa.com</a>
TPI	Truss Plate Institute	Alexandria	VA	(703) 683-1010	<a href="http://www.tpinst.org">www.tpinst.org</a>
TPI	Turfgrass Producers International (formally American Sod Producers Association)	East Dundee	IL	(847) 649-5555	<a href="http://www.turfgrasssod.org">www.turfgrasssod.org</a>
UL	Underwriters Laboratories	Camas	WA	(877) 854-3577	<a href="http://www.ul.com">www.ul.com</a>
WDMA	Window and Door Manufacturer's Association	Chicago	IL	(312) 321-6802	<a href="http://www.nwwda.org">www.nwwda.org</a>
WWPA	Western Wood Products Association	Portland	OR	(503) 224-3930	<a href="http://www.wwpa.org">www.wwpa.org</a>

D. Federal Government Agencies:

- Names and titles of federal government standard or specification producing agencies are often abbreviated. Following acronyms or abbreviations referenced in Contract Documents represent names of standard or specification producing agencies of federal government. Names and addresses are subject to change but are believed to be, but are not assured to be, accurate and up to date as of date of Contract Documents.

CS	Commercial Standard (U S Department of Commerce)	Washington	DC	(202) 512-0000	<a href="http://www.doc.gov">www.doc.gov</a>
EPA	Environmental Protection Agency	Washington	DC	(202) 272-0167	<a href="http://www.epa.gov">www.epa.gov</a>
FCC	Federal Communications Commission	Washington	DC	(888) 225-5322	<a href="http://www.fcc.gov">www.fcc.gov</a>
FS	Federal Specifications Unit (Available from GSA)	Washington	DC	(202) 619-8925	<a href="http://www.gsa.gov">www.gsa.gov</a>
MIL	Military Standardization Documents (U S Department of Defense)	Philadelphia	PA	(215) 697-2179	<a href="http://www.dod.gov">www.dod.gov</a>
NIST	National Institute of Standards and Technology, technology Administration (US Department of Commerce)	Gaithersburg	MD	(301) 975-4500	<a href="http://www.ts.nist.gov">www.ts.nist.gov</a>
OSHA	Occupational Safety & Health Administration (U S Department of Labor)	Washington	DC	202) 219-8148	<a href="http://www.osha.gov">www.osha.gov</a>
PS	Product Standard of NBS (U S Department of Commerce)	Washington	DC	(202) 512-1800	<a href="http://www.doc.gov">www.doc.gov</a>

E. Governing Regulations / Authorities:

- Contact authorities having jurisdiction directly for information and decisions having a bearing on the Work.
- Obtain copies of regulations required to be retained at Project Site, available for reference by parties who have a reasonable need for such reference.

**PART 2 - PRODUCTS Not Used**

**PART 3 - EXECUTION Not Used**

**END OF SECTION**

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**SECTION 01 4301****QUALITY ASSURANCE - QUALIFICATIONS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Related Documents:
  - 1. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.
- B. Related Requirements:
  - 1. Section 01 4000: 'Quality Requirements' includes administrative and procedural requirements for quality assurance and quality control.
  - 2. Section 01 4523: 'Testing and Inspecting Services' for testing and inspection, and testing laboratory services for materials, products, and construction methods.

**1.2 REFERENCES**

- A. Definitions:
  - 1. Accreditation: Process in which certification of competency, authority, or credibility is presented. Verify that laboratories have an appropriate quality management system and can properly perform certain test methods (e.g., ANSI, ASTM, and ISO test methods) and calibration parameters according to their scopes of accreditation.
  - 2. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
  - 3. Testing Agency: Entity engaged to perform specific tests, inspections, or both.
  - 4. Testing Agency Laboratory: Agency or firm qualified to perform field and laboratory tests to determine characteristics and quality of materials and workmanship.
- B. Reference Standards:
  - 1. ASTM International:
    - a. ASTM E329-14a, 'Standard Specification for Agencies Engaged in Construction Inspection and/or Testing.'

**1.3 QUALIFICATIONS**

- A. Qualifications: Qualifications paragraphs in this Article establish minimum qualification levels required; individual Specification Sections specify additional requirements:
  - 1. Fabricator / Supplier / Installer Qualifications: Firm experienced in producing products similar to those indicated for this Project and with record of successful in-service performance, as well as sufficient production capacity to produce required units.
    - a. VMR (Value Managed Relationship):
      - 1) Where heading '*VMR (Value Managed Relationship) / Manufacturers / Suppliers / Installers*' is used to identify list of specified suppliers or installers, Owner has established relationships that extend beyond requirements of this Project.
      - 2) No other *Suppliers / Installers* will be acceptable.
      - 3) Follow specified procedures to preserve relationships between Owner and specified suppliers / installers and advantages that accrue to Owner from those relationships.
      - 4) Following areas of the Work have restrictions on sub-bids by Contractor:
        - a) Accordion Folding Partitions, Section 10 2233: VMR, no other Manufacturer / Installers accepted.



- b) Aluminum-Framed Entrances And Storefronts, Section 08 4113: VMR, no other Manufacturer / Installers accepted.
  - c) Architectural Woodwork, Section 06 4001: VMR, no other Fabricator accepted except approved Alternate Fabricator.
  - d) Asphalt Shingles, Section 07 3113: VMR, no other Manufacturer / Installers accepted.
  - e) Common Finish Hardware Requirements, Section 08 7101: VMR Supplier, no other Supplier accepted:
    - (1) Accessories, Section 08 7109.
    - (2) Accessories for Pairs of Doors, Section 08 7105.
    - (3) Closing Devices, Section 08 7106.
    - (4) Hanging Devices, Section 08 7102.
    - (5) Operating Trim, Section 08 7104.
    - (6) Protective Plates and Trim, Section 08 7107.
    - (7) Securing Devices, Section 08 7103.
    - (8) Stops and Holders, Section 08 7108.
  - f) Ethylene-Propylene-Diene-Monomer Roofing: EPDM, Section 07 5323: VMR, no other Manufacturer / Installers accepted.
  - g) Flush Wood Doors: Factory Finished, Clear, Section 08 1429: VMR Supplier, no other Supplier accepted.
  - h) Hollow Metal Frames, Section 08 1213: VMR Supplier, no other Supplier accepted.
  - i) Hollow Metal Doors, Section 08 1313: VMR Supplier, no other Supplier accepted.
  - j) Metal Shingles: Stone Coated, Section 07 3116: VMR, no other Manufacturer / Installers accepted.
  - k) Pews, Section 12 6713: VMR, no other Manufacturer / Installers accepted.
  - l) Sheet Carpeting, Section 09 6816: VMR, no other Manufacturer / Installers accepted.
  - m) Tile Carpeting, Section 09 6813: VMR, no other Manufacturer / Installers accepted.
  - n) Wood Athletic Flooring, Section 09 6466: VMR, no other Manufacturer / Installers accepted.
  - o) Wood Framing, Division 06 'Wood', VMR Supplier, no other Supplier accepted for USA Projects Only except approved Supplier:
    - (1) Glue-Laminated Construction, Section 06 1800.
    - (2) Structural Composite Lumber, Section 06 1712.
    - (3) Wood Framing, Section 06 1100.
    - (4) Wood 'I' Joists, Section 06 1733.
    - (5) Wood-Panel Product Sheathing, Section 06 1636.
- b. Approved:
- 1) Where heading '*Approved Suppliers / Distributors / Installers / Applicators / Fabricators*' is used to identify list of specified suppliers / distributors / installers / applicators / fabricators, use only listed suppliers / installers / fabricators.
  - 2) No substitutions will be allowed.
  - 3) Following areas of the Work have restrictions on sub-bids by which may be accepted by Contractor:
    - a) Architectural Woodwork, Sections 06 4001: Alternate Fabricator approved by Architect before bidding.
    - b) Audio Systems, Section 27 5117: Alternate Installers approved by Owner before bidding.
    - c) Ceramic Tiling, Section 09 3013: No other Suppliers accepted.
    - d) Electric And Electronic Control System for HVAC, Section 23 0933, No other Distributors accepted.
    - e) Rough Carpentry, Sections 06 1100, 06 1636, 06 1712, 06 1733, and 06 1800: Alternate Supplier approved by Architect before bidding.
    - f) Sound, Division 27: Installers approved by Architect before bidding.
    - g) Video Systems, Section 27 4117: Alternate Installers approved by Owner before bidding.
- c. Acceptable Suppliers / Installers:

- 1) Where heading '*Acceptable Suppliers / Installers / Fabricators*' is used, qualifications as specified in Quality Assurance in Part 1 of individual sections will be used to determine requirements of those that will be acceptable to be used on Project. Lists for acceptable installers can include additional installers that may be approved before bidding or by addendum.
  - a) Underground Sprinklers, Section 32 8423: Acceptable Landscape Installers approved by Landscape Architect before bidding. Equal Landscape Installers to be approved by Architect before bidding.
- 2) Following areas of the Work have restrictions on sub-bids by Contractor:
  - a) Baptismal Font Railing, Section 11 9119, Acceptable Installers are listed for each state. Equal Installers to be approved by Architect before installation.
2. Factory-Authorized Service Representative Qualifications:
  - a. Authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
3. Installer Qualifications:
  - a. Firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
4. Manufacturer Qualifications:
  - a. Firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
5. Manufacturer's Field Services Qualifications:
  - a. Experienced authorized representative of manufacturer to inspect field-assembled components and equipment installation, including service connections.
6. Professional Engineer Qualifications:
  - a. Professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of kind indicated. Engineering services are defined as those performed for installations of system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.
7. Specialists:
  - a. Certain sections of Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations.
  - b. Specialists shall satisfy qualification requirements indicated and shall be engaged for activities indicated.
  - c. Requirement for specialists shall not supersede building codes and regulations governing the Work.
8. Testing Agency Qualifications:
  - a. Independent Testing Agency with experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E329; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
    - 1) Testing Laboratory:
      - a) AASHTO Materials Reference Laboratory (AMRL) Accreditation Program.
      - b) Cement and Concrete Reference Laboratory (CCRL).
      - c) Nationally Recognized Testing Laboratory (NRTL): Nationally recognized testing laboratory according to 29 CFR 1910.7.
      - d) National Voluntary Laboratory (NVLAP): Testing Agency accredited according to National Institute of Standards and Technology (NIST) Technology Administration, U. S. Department of Commerce Accreditation Program.

## **PART 2 - PRODUCTS Not Used**

## **PART 3 - EXECUTION Not Used**

**END OF SECTION**

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**SECTION 01 4523****TESTING AND INSPECTING SERVICES****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section

**1.2 SUMMARY**

- A. This Section includes testing, inspections, special testing, special inspections, and testing laboratory services for materials, products, and construction methods as specified hereafter for the Work.
- B. Specified tests, inspections, and related actions do not limit Contractor's quality control procedures to fully comply with Contract Document requirements in all regards.
- C. Costs: Costs of initial services for testing and inspection personnel will be paid by Owner unless otherwise noted.
  - 1. If initial tests indicate non-compliance with contract document requirements, any subsequent testing will be performed by same personnel and paid for by Contractor.
- D. Related Requirements:
  - 1. Section 01 4000: 'Quality Requirements' includes administrative and procedural requirements for quality assurance and quality control.
  - 2. Section 01 4301: 'Quality Assurance – Qualifications' establishes minimum qualification levels required.
  - 3. Division 01 through Division 49 establish responsibility for providing specific testing and inspections and Field Tests and Inspections.

**1.3 REFERENCES**

- A. Association Publications:
  - 1. Council of American Structural Engineers. CASE Form 101: *Statement of Special Inspections*. Washington, DC: CASE, 2001. (c/o American Council of Engineering Companies, 1015 15<sup>th</sup> St., NW, Washington, DC 20005; 202-347-7474; [www.acec.org](http://www.acec.org)).
  - 2. International Code Council (IBC):
    - a. IBC Chapter 17, 'Structural Tests and Special Inspections'.
- B. Definitions:
  - 1. Accreditation: Process in which **certification** of competency, authority, or credibility is presented. Verify that laboratories have an appropriate quality management system and can properly perform certain test methods (e.g., ANSI, ASTM, and ISO test methods) and calibration parameters according to their scopes of accreditation.
  - 2. Approved: To authorize, endorse, validate, confirm, or agree to.
  - 3. Field Quality Control: Testing, Inspections, Special Testing and Special Inspections to assure compliance to Contract Documents.
  - 4. Inspection/Special Inspection:
    - a. Inspection: Not required by code provisions but may be required by Contract Documents.
    - b. Special Inspection: Inspection required of materials, installation, fabrication, erection or placement of components and connections requiring special expertise to ensure compliance

- with approved construction documents and reference standards (required by code provisions and by Contract Documents).
- c. Special Inspection-Continuous: Full-time observation of the Work requiring inspection by approved inspector who is present in area where the Work is being performed.
  - d. Special Inspection-Periodic: Part-time or intermittent observation of the Work requiring inspection by approved inspector who is present in area where the Work has been or is being performed and at completion of the Work.
5. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation. They are not samples. Approved mockups establish standard by which the Work will be judged.
  6. Observation: Visual observation of building / site elements or structural system by registered design professional for general conformance to approved construction documents at significant construction stages and at completion. Observation does not include or waive responsibility for performing inspections or special inspections.
  7. Preconstruction Testing: Tests and inspections that are performed specifically for Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
  8. Quality Assurance: Testing, Inspections, Special Testing and Special Inspections provided for by Owner.
  9. Quality Control: Testing, Inspections, Special Testing and Special Inspections provided for by Contractor.
  10. Special Inspection: See Inspection.
  11. Special Inspector: Certified individual or firm that implements special inspection program for project.
  12. Special Test: See Test.
  13. Test/Special Test: Field or laboratory tests to determine characteristics and quality of building materials and workmanship:
    - a. Test: Not required by code provisions but may be required by Contract Documents.
    - b. Special Test: Required by code provisions and by Contract Documents.
  14. Testing Agency: Entity engaged to perform specific tests, inspections, or both.
  15. Testing Agency Laboratory: Agency or firm qualified to perform field and laboratory tests to determine characteristics and quality of materials and workmanship.
  16. Verification: Act of reviewing, inspecting, testing, etc. to establish and document that product, service, or system meets regulatory, standard, or specification requirements.
- C. Reference Standards:
1. ASTM International:
    - a. ASTM A898/A898M-17, 'Standard Specification for Straight Beam Ultrasonic Examination of Rolled Steel Structural Shapes'.
    - b. ASTM C42/C42M-16, 'Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete'.
    - c. ASTM C138/C138M-17a, 'Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete'.
    - d. ASTM C597-16, 'Standard Test Method for Pulse Velocity Through Concrete'.
    - e. ASTM C803/C803M-17, 'Standard Test Method for Penetration Resistance of Hardened Concrete'.
    - f. ASTM C805/C805M-13a, 'Standard Test Method for Rebound Number of Hardened Concrete'.
    - g. ASTM C1019-16, 'Standard Test Method for Sampling and Testing Grout'.
    - h. ASTM C1021-08(2014), 'Standard Practice for Laboratories Engaged in Testing of Building Sealants'.
    - i. ASTM C1077-16a, 'Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation'.
    - j. ASTM C1093-15a, 'Standard Practice for Accreditation of Testing Agencies for Masonry'.
    - k. ASTM D3666-16, 'Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials'.

- l. ASTM D3740-12a, 'Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction'.
  - m. ASTM E114-15, 'Standard Practice for Ultrasonic Pulse-Echo Straight-Beam Examination by the Contact Method'.
  - n. ASTM E164-13, 'Standard Practice for Contact Ultrasonic Testing of Weldments'.
  - o. ASTM E329-14a: 'Standard Specification for Agencies Engaged in Construction Inspection and/or Testing'.
  - p. ASTM E488-15, 'Standard Test Methods for Strength of Anchors in Concrete Elements'.
  - q. ASTM E543-15, 'Standard Specification for Agencies Performing Nondestructive Testing'.
  - r. ASTM E587-15, 'Standard Practice for Ultrasonic Angle-Beam Examination by the Contact Method'.
  - s. ASTM E709-15, 'Standard Guide for Magnetic Particle Testing'.
  - t. ASTM E1212-17, 'Standard Practice for Quality Management Systems for Nondestructive Testing Agencies'.
  - u. ASTM F710-11, 'Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring'.
  - v. ASTM F2170-16b, 'Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes'.
2. Code of Federal Regulations:
    - a. 29 CFR 1910, Subpart A, Section 1910.7, 'Definition and Requirements for a Nationally Recognized Testing Laboratory'.
  3. International Code Council (IBC 2015 or latest approved edition):
    - a. IBC Chapter 17, 'Special Inspections And Tests'.
      - 1) Section 1704, 'Special Inspections And Tests, Contractor Responsibility And Structural Observations'.
      - 2) Section 1705, 'Required Special Inspection And Tests'.
        - a) Section 1705.2, 'Steel Construction'.

#### 1.4 SUBMITTALS

- A. Informational Submittals:
  1. General: Additional submittal requirements are specified in Individual Sections in Division 01 through Division 50.
  2. Certificates:
    - a. Testing Agency will submit certified written report of each inspection, test, or similar service.
  3. Tests and Evaluation Reports:
    - a. Testing Agency or Agencies will prepare logs, test reports, and certificates applicable to specific tests and inspections and deliver copies (or electronic record) distributed as follows:
      - 1) 1 copy to Owner's Representative.
      - 2) 1 copy to Architect.
      - 3) 1 copy to Consulting Engineers (Engineer of Record).
      - 4) 1 copy to General Contractor.
      - 5) 1 copy to Authorities Having Jurisdiction (if required).
    - b. Other tests, certificates, and similar documents will be obtained by Contractor and delivered to Owner's Representative and Architect in such time as not to delay progress of the Work or final payment therefore.
    - c. Submittal Format:
      - 1) Schedule of Tests and Inspections: Prepare in tabular form and include following:
        - a) Specification Section number and title.
        - b) Description of test and inspection.
        - c) Identification of applicable standards.
        - d) Identification of test and inspection methods.
        - e) Number of tests and inspections required.
        - f) Time schedule or time span for tests and inspections.
        - g) Entity responsible for performing tests and inspections.
        - h) Requirements for obtaining samples.
      - 2) Certified written reports of each inspection, test, or similar service will include, but not be limited:

- a) Date of issue.
  - b) Project title and number.
  - c) Name, address, and telephone number of Testing Agency.
  - d) Dates and locations of samples and tests or inspections.
  - e) Names of individuals making tests and inspections.
  - f) Description of the Work and test and inspection method.
  - g) Identification of product and Specification Section.
  - h) Complete test or inspection data.
  - i) Test and inspection results and an interpretation of test results.
  - j) Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  - k) Comments or professional opinion on whether tested or inspected Work complies with Contract Document requirements.
  - l) Name and signature of laboratory inspector.
  - m) Recommendations on retesting and re-inspecting.
4. Source Quality Control Submittals:
- a. Testing Agency will submit following prior to commencing the Work:
    - 1) Qualifications of Testing Agency management and personnel designated to project.
    - 2) Testing Agency 'Written Practice for Quality Assurance'.
    - 3) Qualification records for Inspector and non-destructive testing technicians designated for project.
    - 4) Testing Agency non-destructive testing procedures, equipment calibration records, and personnel training records.
    - 5) Testing Agency Quality Control Plan for monitoring and control of testing operations.
    - 6) Welding Inspection Procedures (Structural Steel testing).
    - 7) Bolting Inspection Procedures (Structural Steel testing).
    - 8) Shear Connector Stud Inspection Procedures (Structural Steel testing).
    - 9) Seismic Connections Inspection Procedures (Structural Steel testing).

## 1.5 QUALITY ASSURANCE

- A. Owner or Owner's designated representative(s) will perform quality assurance. Owner's quality assurance procedures may include observations, inspections, testing, verification, monitoring and any other procedures deemed necessary by Owner to verify compliance with Contract Documents.
- B. Owner will employ independent Testing Agencies to perform certain specified testing, as Owner deems necessary.
- C. Certification:
  - 1. Product producers and associations, which have instituted approved systems of quality control and which have been approved by document approval agencies, are not required to have further testing.
  - 2. Concrete mixing plants, plants producing fabricated concrete and wood or plywood products certified by agency, lumber, plywood grade marked by approved associates, and materials or equipment bearing underwriters' laboratory labels require no further testing and inspection.
- D. Written Practice for Quality Assurance:
  - 1. Testing Agency will maintain written practice for selection and administration of inspection personnel, describing training, experience, and examination requirements for qualification and certification of inspection personnel.
  - 2. Written practice will describe testing agency procedures for determining acceptability of structure in accordance with applicable codes, standards, and specifications.
  - 3. Written practice will describe Testing Agency inspection procedures, including general inspection, material controls, visual welding inspection, and bolting inspection.

## 1.6 QUALITY CONTROL

- A. Quality Control will be sole responsibility of Contractor. Contractor will be responsible for testing and inspections, coordination, start-up, operational checkout, and commissioning of all items of the Work included in Project. All costs for these services will be included in Contractor's cost of the Work.
- B. Contractor will assign one (1) employee to be responsible for Quality Control. This individual may have other responsibilities and may be Contractor's Project superintendent or Contractor's Project Manager.
- C. Notify results of all Testing and Inspection performed by Contractor's independent Testing Agencies to Architect and Owner's Representative within twenty four (24) hours of test or inspection having been performed.
  - 1. Testing and Inspection Reports will be distributed as follows:
    - a. 1 copy to Owner's Representative.
    - b. 1 copy to Architect.
    - c. 1 copy to Consulting Engineer(s) (Engineer of Record).
    - d. 1 copy to Authorities Having Jurisdiction (if required).
- D. Contractor's Responsibility:
  - 1. Owner's employment of an independent Testing Agency does not relieve Contractor of Contractor's obligation to perform the Work in strict accordance with requirements of Contract Documents.
  - 2. Tests and inspections that are not explicitly assigned to Owner are responsibility of Contractor.
  - 3. Cooperate with Testing Agency(s) performing required inspections, tests, and similar services and provide reasonable auxiliary services as requested. Notify Testing Agency before operations to allow assignment of personnel. Auxiliary services required include but are not limited to:
    - a. Providing access to the Work and furnishing incidental labor, equipment, and facilities deemed necessary by Testing Agency to facilitate inspections and tests at no additional cost to Owner.
    - b. Taking adequate quantities of representative samples of materials that require testing or helping Testing Agency in taking samples.
    - c. Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.
    - d. Providing Testing Agency with preliminary design mix proposed for use for materials mixes that require control by Testing Agency.
  - 4. Contractor will integrate Owner's independent Testing Agency services within Baseline Project Schedule and with other Project activities.
  - 5. For any requested inspection, Contractor will complete prior inspections to ensure that items are ready for inspection.
  - 6. All Work is subject to testing and inspection and verification of correct operation prior to 100% payment to Contractor of line item(s) pertaining to that aspect of the Work.
  - 7. For Mechanical Equipment, inspection and documented approval of individual equipment and/or system(s) must be accomplished prior to requesting Substantial Completion Inspection for any area affected by said equipment and/or system:
    - a. Contractor will perform thorough checkout of operations with manufacturer's representatives prior to requesting formal inspection by Owner.
    - b. Contractor must notify Owner's Representative, in advance, as to when manufacturer's representative is scheduled to arrive at Site.
  - 8. Comply:
    - a. Upon completion of Testing Agency's inspection, testing, sample-taking, and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes.
    - b. Comply with Contract Documents in making such repairs.
  - 9. Data: Furnish records, drawings, certificates, and similar data as may be required by testing and inspection personnel to assure compliance with Contract Documents.
  - 10. Defective Work (Non-Conforming Work): Non-conforming Work as covered in General Conditions applies, but is not limited to following requirements:



- a. Where results of inspections, tests, or similar services show that the Work does not comply with Contract Document requirements, correct deficiencies in the Work promptly to avoid Work delays.
  - b. Where testing personnel take cores or cut-outs to verify compliance, repair prior to acceptance.
  - c. Contractor responsible for any and all costs incurred resulting from inspection that was scheduled prematurely or retesting due to failed tests.
  - d. Remove and replace any Work found defective or not complying with contract document requirements at no additional cost to Owner.
  - e. Should test return unacceptable results, Contractor will bear all costs of retesting and re-inspection as well as cost of all material consumed by testing, and replacement of unsatisfactory material and/or workmanship.
11. Protection:
- a. Protect construction exposed by or for quality assurance and quality control service activities, and protect repaired construction.
12. Scheduling: Contractor is responsible for scheduling times for inspections, tests, taking samples, and similar activities:
- a. Schedule testing and inspections in advance so as not to delay the Work and to eliminate any need to uncover Work for testing or inspection.
  - b. Notify Testing Agency and Architect as noted in Sections in Division 01 through Division 50 prior to any time required for such services.
  - c. Incorporate adequate time for performance of all inspections and correction of noted deficiencies.
  - d. Schedule sequence of activities to accommodate required services with minimum of delay.
  - e. Schedule sequence of activities to avoid necessity of removing and replacing construction to accommodate testing and inspections
13. Test and Inspection Log:
- a. Provide system of tracking all field reports, describing items noted, and resolution of each item. Prepare record of tests and inspections. Include following:
    - 1) Date test or inspection was conducted.
    - 2) Description of the Work tested or inspected.
    - 3) Date test or inspection results were transmitted to Architect.
    - 4) Identification of Testing Agency or inspector conducting test or inspection.
  - b. Maintain log at Project site:
    - 1) Post changes and modifications as they occur.
    - 2) Provide access to test and inspection log for Architect's reference during normal working hours.

## 1.7 TESTING AND INSPECTIONS - GENERAL

- A. Testing specifically identified to be conducted by Owner, will be performed by an independent entity and will be arranged and paid for by Owner.
- B. Individual Sections in Division 01 through Division 49 indicate if Owner will provide testing and inspection of the Work of that Section.
- C. Tests include but not limited to those described in detail in 'Field Quality Control' in Part 3 of Individual Sections in Divisions 01 through Division 49.
- D. Owner may engage additional consultants for testing, air balancing, commissioning, or other special services:
  - 1. Activities of any such Owner consultants are in addition to Contractor testing of materials or systems necessary to prove that performance is in compliance with Contract requirements.
  - 2. Contractor must cooperate with persons and firms engaged in these activities.
- E. Taking Specimens:
  - 1. Except as may be specifically otherwise approved by Architect, only testing laboratory shall secure, handle, transport, or store any samples and specimens for testing.

- F. Scheduling Testing Agency:
  - 1. Contractor will coordinate the Work and facilitate timeliness of such testing and inspecting services so as not to delay the Work.
  - 2. Contractor will notify Testing Agency and Architect to schedule tests and / or inspections.
- G. For 'building-wide' and/or life safety systems, such as emergency lighting, emergency power uninterruptible power supply systems, fire alarm, fire sprinkler systems, smoke evacuation systems, toxic gas monitoring, capturer exhaust systems, etc. formal start-up inspection will be completed prior to requesting Substantial Completion Inspection for any area of Project:
  - 1. Manufacturer's representatives and installing contractor will demonstrate both operation and compliance to Owner's agents and consultants. If coordinated and scheduled appropriately by Contractor, these equipment and/or systems inspections may also serve to provide required Owner training, if approved in advance by Owner.
  - 2. Contractor responsible for requesting that Architect arrange for inspection of materials, equipment, and work prior to assembly or enclosure that would make materials, equipment, or work inaccessible for inspection and at other times as may be required.

## 1.8 TESTING AGENCY SERVICES AND RESPONSIBILITIES

- A. Testing Agency, including independent testing laboratories, will be licensed and authorized to operate in jurisdiction in which Project is located.
  - 1. Approved Testing Agency Qualifications: Requirements of Section 01 4301 apply.
- B. Testing and Inspection Services:
  - 1. Testing Agency will not release, revoke, alter, or increase Contract Document requirements or approve or accept any portion of the Work.
  - 2. Testing Agency will not give direction or instruction to Contractor.
  - 3. Testing Agency will have full authority to see that the Work is performed in strict accordance with requirements of Contract Documents and directions of Owner's Representative and/or Architect.
  - 4. Testing Agency will not provide additional testing and inspection services beyond scope of Work without prior approval of Owner's Representative and / or Architect.
- C. Excavation Support and Protection:
  - 1. Anchor tie-back System:
    - a. Observe and record proof tests.
  - 2. Soil Nail Systems:
    - a. Observe and record proof tests.
    - b. Observe drilling for changes in soil type, hole diameter, length, and cleanliness.
    - c. Periodically observe placement of drainage materials, reinforcing, and shotcrete.
    - d. Review compressive strength test results of grout and shotcrete.
- D. Testing Agency Duties:
  - 1. Independent Testing Agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual specification Sections will cooperate with Architect and Contractor in performance of its duties and will provide qualified personnel to perform required inspections and tests.
  - 2. Testing Agency will test or obtain certificates of tests of materials and methods of construction, as described herein or elsewhere in technical specification.
  - 3. Testing Agency will provide management, personnel, equipment, and services necessary to perform testing functions as outlined in this section.
  - 4. Testing Agency must have experience and capability to conduct testing and inspecting indicated by ASTM standards and that specializes in types of tests and inspections to be performed.
  - 5. Testing Agency will comply with requirements of ASTM E329, ASTM E543, ASTM C1021, ASTM C1077, ASTM C1093, ASTM D3666, ASTM D3740, and other relevant ASTM standards.
  - 6. Testing Agency must calibrate all testing equipment at reasonable intervals (minimum yearly) with accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

7. Welding Procedure Review: Testing Agency will provide review and approval or rejection of all welding procedures to be used and will verify compliance with all reference standard requirements.

E. Testing and Inspection Reports:

1. Conduct and interpret tests and inspections and state in each report whether tested and inspected the Work complies with or deviates from requirements.
2. Laboratory Reports: Testing Agency will furnish reports of materials and construction as required, including:
  - a. Description of method of test.
  - b. Identification of sample and portion of the Work tested.
    - 1) Description of location in the Work of sample.
    - 2) Time and date when sample was obtained.
    - 3) Weather and climatic conditions at time when sample was obtained.
  - c. Evaluation of results of tests including recommendations for action.
3. Inspection Reports:
  - a. Testing Agency will furnish 'Inspection at Site' reports for each site visit documenting activities, observations, and inspections.
  - b. Include notation of weather and climatic conditions, time and date conditions and status of the Work, actions taken, and recommendations or evaluation of the Work.
4. Reporting Testing and Inspection (Conforming Work):
  - a. Submit testing and inspection reports as required within twenty four (24) hours of test or inspection having been performed.
5. Reporting Testing and Inspection Defective Work (Non-Conforming Work):
  - a. Testing Agency, upon determination of irregularities, deficiencies observed or test failure(s) observed in the Work during performance of its services of test or inspection having been performed, will:
    - 1) Verbally notify results to Architect, Contractor, and Owner's Representative within one hour of test or inspection having been performed (if Defective Work (Non-Conforming Work) is incorporated into project).
    - 2) Submit written inspection report and test results as required within twenty four (24) hours of test or inspection having been performed.
  - b. Prepare non-compliance log to track non-compliant testing or inspections.
6. Final Report:
  - a. Submit final report of tests and inspections at Substantial Completion, which identify unresolved deficiencies.

## 1.9 ARCHITECT'S RESPONSIBILITIES

A. Architect Duties:

1. Notify Owner's Representative before each test and/or inspection.

## PART 2 - PRODUCTS Not Used

## PART 3 - EXECUTION

### 3.1 FIELD QUALITY CONTROL

A. Field Tests And Inspections:

1. Field Tests and Inspections requirements are described in 'Field Quality Control' of individual Sections in Division 01 through Division 49.

**END OF SECTION**

**SECTION 01 5100****TEMPORARY UTILITIES****PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes But is Not Limited To:
  - 1. Administrative and procedural requirements for Temporary Utilities.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Where necessary, connect to existing service.
  - 1. Comply with industry standards and applicable laws and regulations of authorities having jurisdiction.
- B. Provide and maintain temporary sanitary toilet.
- C. Erect adequate barricades, warning signs, and lights necessary to protect persons from injury or harm.
- D. Contractor is responsible for security of materials, tools, and equipment. Do not permit others to use building keys provided by Owner. Safeguard building and contents while the Work is being performed and secure building when the Work is finished for day.
- E. Protect existing trees and plants. Remove and replace vegetation that dies or is damaged beyond repair due to construction activities.
- F. Provide temporary enclosures at exterior building openings for security and protection from weather, theft, and vandalism. Erect and maintain dust-proof partitions and enclosures as required to prevent spread of dust and fumes to occupied portions of building.
- G. Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and reduce possibility that air, waterways, and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near site. Protect the Work, materials, apparatus, and fixtures from injury due to weather, theft, and vandalism.

**1.3 TEMPORARY ELECTRIC POWER**

- A. Owner will provide electric power for construction activities within limits available at existing facility.

**1.4 TEMPORARY FIRE PROTECTION**

- A. Install and maintain temporary fire protection facilities of types needed to protect against predictable and controllable fire losses. At a minimum, provide and maintain in working order two Standard UL Labeled ABC all-purpose 10 lb fire extinguishers. Do not incorporate these extinguishers into final Project.
  - 1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher.
  - 2. Store combustible materials in containers in fire-safe locations.
  - 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways, and other access routes for fighting fires.

- 4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.
- 5. At earliest feasible date in each area of Project, complete installation of permanent fire protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.
- 6. Exercise caution to avoid fire damage. Do not build fires on site.

**1.5 HEATING, COOLING, AND VENTILATING:**

- A. Permanent mechanical system may be operated subject to following conditions:
  - 1. Do not operate system when work causing air-borne dust is occurring or when dust caused by such work is present without installation of temporary filtering system approved by Architect.
  - 2. Operate system at no cost to Owner, including cost of fuel.
  - 3. Assume all responsibility and risk for operation of system.
  - 4. Return permanent mechanical equipment to 'like-new' condition for Substantial Completion Inspection.
  - 5. Do not interfere with normal set-back temperature patterns except as approved by Project Manager.

**1.6 TEMPORARY LIGHTING**

- A. Existing lighting system may be used by Contractor.

**1.7 TEMPORARY TELEPHONES**

- A. Provide temporary telephone service for all personnel engaged in construction activities, throughout construction period.
- B. Contractor will pay for Local calls. Party making call will pay for long-distance and toll calls.
- C. At each telephone, post list of important telephone numbers.

**1.8 TEMPORARY WATER SERVICE**

- A. Contractor will use existing water supply for construction purposes to extent of existing facilities.

**PART 2 - PRODUCTS Not Used**

**PART 3 - EXECUTION Not Used**

**END OF SECTION**

**SECTION 01 5200**

**CONSTRUCTION FACILITIES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes But is Not Limited To:
  - 1. Administrative and procedural requirements for Construction Facilities.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Prepare schedule indicating dates for implementation and termination of each temporary facility.
- B. Keep temporary facilities clean and neat in appearance. Operate in safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or allow them to interfere with progress of The Work. Do not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or persist on Project site.
- C. Maintain facilities in good operating condition until removal.
- D. Remove each temporary facility when need has ended, or when replaced by authorized use of permanent facility, or by Substantial Completion. Complete permanent construction that may have been delayed because of interference with temporary facility. Repair damaged work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
  - 1. Materials and facilities that make up temporary facilities are property of Contractor.
  - 2. By Substantial Completion, clean and renovate permanent facilities used during construction period.

**1.3 FIELD OFFICES**

- A. Provide and maintain insulated, weather tight temporary office of sufficient size to accommodate Contractor's personnel at Project site and for use by Owner, Architect and Subcontractors.
  - 1. Keep office clean and orderly.
  - 2. Heat and cool office as needed.
  - 3. Furnish office with locking door, light(s), table(s), bench(es), rack(s) for drawings, telephone, and FAX machine.
  - 4. Make office available for progress meetings.
  - 5. Provide an operable fire extinguisher in facility.
  - 6. Provide hardhats for Owner's Representatives for site visits.
- B. If Owner agrees to permit removal of temporary office before Substantial Completion, Contractor may use a room as an office after temporary office is removed. Equip room as specified above and restore to 'like-new' condition before Substantial Completion.

**1.4 SANITARY FACILITIES**

- A. Provide temporary sanitary toilet. Service and maintain temporary toilet in a clean, sanitary condition.

**PART 2 - PRODUCTS Not Used**

**PART 3 - EXECUTION Not Used**

**END OF SECTION**

**SECTION 01 5400**  
**CONSTRUCTION AIDS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes But is Not Limited To:
  - 1. Administrative and procedural requirements for Construction Aids.

**1.2 SCAFFOLDING, PLATFORMS, STAIRS, ETC**

- A. Furnish and maintain equipment such as temporary stairs, ladders, ramps, platforms, scaffolds, hoists, runways, derricks, chutes, and elevators as required for proper execution of The Work.
- B. Apparatus, equipment, and construction shall meet requirements of applicable laws and safety regulations.

**PART 2 - PRODUCTS Not Used**

**PART 3 - EXECUTION Not Used**

**END OF SECTION**



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**SECTION 01 5600****TEMPORARY BARRIERS AND ENCLOSURES****PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes But is Not Limited To:
1. Administrative and procedural requirements for Temporary Barriers and Enclosures.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Protection Of Existing Improvements: Protect streets, private roads, and sidewalks, including overhead protection where required. Repair damage to existing improvements caused by construction activities.
- B. Protection Of Adjacent Property: Provide necessary protection for adjacent property and lateral support thereof.
- C. Proprietary Camera Services: In its absolute discretion, and with or without notice to Contractor, Owner may provide from time to time, but is not obligated to provide, one or more cameras on or about Project site and/or signage or notices of the same:
1. If provided by Owner, such camera(s) and/or signage and notices are solely for Owner's benefit and convenience and shall not be for benefit of Contractor, Subcontractor(s) or for any third person.
  2. Owner shall have no liability, obligation, or responsibility to Contractor, Subcontractors, or any third person relative to such camera(s), signage, or notices, or absence of camera(s), signage, or notices, including without limitation, installation, maintenance, operation, repair, testing, functionality, capacity, recording, monitoring, posting, etc., of the same (hereafter 'Proprietary Camera Services').
  3. Contractor, with Owner's prior consent (which shall not be unreasonably withheld), may relocate such camera(s), signage, or notices as necessary to not unreasonably, materially and physically interfere with work at Project Site.
  4. Contractor's obligations under Contract Documents, including but not limited to, Contractor's obligation for security of Project Site, are not modified by Owner's opportunity to provide, actually providing, or not providing Proprietary Camera Services and/or signage or notices regarding the same.
  5. This Specification Section does not preclude Contractor from providing its own camera(s), signage, or notices pursuant to terms and conditions of this Agreement. Neither does this Section reduce, expand or modify any other right or obligation of Owner pursuant to terms of this Agreement.

**1.3 TEMPORARY BARRICADES**

- A. Comply with standards and code requirements in erecting barricades, warning signs, and lights.
- B. Take necessary precautions to protect persons, including members of the public, from injury or harm.

**1.4 TEMPORARY FENCING**

- A. Before construction begins, install 6 foot high enclosure fence with lockable entrance gates. Locate where shown on Drawings. If not shown on Drawings, enclose entire site or portion sufficient to accommodate construction operations.

**1.5 TEMPORARY SECURITY BARRIERS**

- A. Install temporary enclosures of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and other violations of security.
- B. Secure materials and equipment stored on site.
- C. Secure building at the end of each work day.
- D. Maintain exterior building security until Substantial Completion.

**PART 2 - PRODUCTS Not Used**

**PART 3 - EXECUTION Not Used**

**END OF SECTION**

**SECTION 01 6100****COMMON PRODUCT REQUIREMENTS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes But is Not Limited To:
1. Administrative and procedural requirements for Common Product Requirements.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Provide products that comply with Contract Documents, that are undamaged, and, unless otherwise indicated, new and unused at time of installation. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for complete installation and for intended use and effect.
- B. Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on surfaces of products that will be exposed to view in occupied spaces or on building exterior.
1. Locate required product labels and stamps on concealed surface or, where required for observation after installation, on accessible surface that is not conspicuous.
  2. Provide permanent nameplates on items of service-connected or power-operated equipment. Locate on easily accessible surface that is inconspicuous in occupied spaces. Nameplate will contain following information and other essential operating data:
    - a. Name of product and manufacturer.
    - b. Model and serial number.
    - c. Capacity.
    - d. Speed.
    - e. Ratings.
- C. Where specifications describe a product or assembly by specifying exact characteristics required, with or without use of brand or trade name, provide product or assembly that provides specified characteristics and otherwise complies with Contract requirements.
- D. Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by manufacturer for application described. General overall performance of product is implied where product is specified for specific application. Manufacturer's recommendations may be contained in published product literature, or by manufacturer's certification of performance.
- E. Where specifications only require compliance with an imposed code, standard, or regulation, select product that complies with standards, codes or regulations specified.
- F. Where Specifications require matching an established Sample, Architect's decision will be final on whether proposed product matches satisfactorily. Where no product available within specified category matches satisfactorily nor complies with other specified requirements, refer to Architect.
- G. Where specified product requirements include phrase ` . . . as selected from manufacturer's standard colors, patterns, textures . . . ' or similar phrase, select product and manufacturer that comply with other specified requirements. Architect will select color, pattern, and texture from product line selected.

- H. Refer to individual Specification Sections and Allowance provisions in Division 01 for allowances that control product selection, and for procedures required for processing such selections.
- I. Remove and replace products and materials not specified in Contract Documents but installed in the Work with specified products and materials at no additional cost to Owner and for no increase in Contract time.
- J. Informational Submittals:
  - 1. Sustainable Design Submittals:
    - a. Submit five copies of each required submittal unless otherwise required. Architect will return three copies marked with action taken and with corrections or modifications required.
    - b. Submit electronic files: PDF. Architect will return a PDF copy marked with action taken and with corrections or modifications required.

**PART 2 - PRODUCTS Not Used**

**PART 3 - EXECUTION Not Used**

**END OF SECTION**

**SECTION 01 6200****PRODUCT OPTIONS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes But is Not Limited To:
1. Administrative and procedural requirements for Product Options.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Product Selection:
1. When option of selecting between two or more products is given, product selected will be compatible with products previously selected, even if previously selected products were also options.
- B. Non-Conforming Work:
1. Non-conforming work as covered in Article 12.3 of General Conditions applies, but is not limited, to use of non-specified products or manufacturers.
- C. Product selection is governed by Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include:
1. Substitutions And Equal Products:
    - a. Generally speaking, substitutions for specified products and systems, as defined in the Uniform Commercial Code, are not acceptable. However, equal products may be approved upon compliance with Contract Document requirements.
    - b. Approved Products / Manufacturers / Suppliers / Installers:
      - 1) Category One:
        - a) Owner has established 'Value Managed Relationships' that extend beyond requirements of this Project. No substitutions or equal products will be allowed on this Project.
        - b) Follow specified procedures to preserve relationships between Owner and specified manufacturers / suppliers and advantages that accrue to Owner from those relationships.
      - 2) Category Two:
        - a) Owner has established National Contracts that contain provisions extending beyond requirements of this Project. No substitutions or equal products will be allowed on this Project.
        - b) Follow specified procedures to preserve relationships between Owner and specified manufacturers / suppliers and advantages that accrue to Owner from those relationships.
      - 3) Category Three:
        - a) Specified products are provided to Church Projects under a National Account Program. Use these products to preserve advantages that accrue to Owner from those programs. No substitutions or equal products will be allowed on this Project.
      - 4) Category Four:
        - a) Provide only specified products available from manufacturers listed. No substitutions, private-labeled, or equal products, or mixing of manufacturers' products is allowed on this Project.
        - b) In Sections where lists recapitulating Manufacturers previously mentioned in Section are included under heading '*Manufacturers*' or '*Approved Manufacturers*', this is intended as a convenience to Contractor as a listing of contact information

only. It is not intended that all manufacturers in list may provide products where specific products and manufacturers are listed elsewhere in Section.

- c. Acceptable Products / Manufacturers / Suppliers / Installers:
  - 1) Type One: Use specified products / manufacturers unless approval to use other products / manufacturers has been obtained from Architect by Addendum.
  - 2) Type Two: Use specified products / manufacturers unless approval to use other products and manufacturers has been obtained from Architect in writing before installing or applying unlisted or private-labeled products.
  - 3) Use 'Equal Product Approval Request Form' to request approval of equal products, manufacturers, or suppliers before bidding or before installation, as noted in individual Sections.
- d. Quality / Performance Standard Products / Manufacturers:
  - 1) Class One: Use specified product / manufacturer or equal product from specified manufacturers only.
  - 2) Class Two: Use specified product / manufacturer or equal product from any manufacturer.
  - 3) Products / manufacturers used shall conform to Contract Document requirements.

**PART 2 - PRODUCTS Not Used**

**PART 3 - EXECUTION Not Used**

**END OF SECTION**

**SECTION 01 6400****OWNER - FURNISHED PRODUCTS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Administrative and procedural requirements for Owner-Furnished Products. Install items furnished by Owner or receive and store in safe condition items purchased directly by Owner according to requirements of Contract Documents:
1. Baby Changing Station. See Section 10 2814.
  2. Display Cases. See Section 10 1200.
  3. Fixed Chalkboards. See Section 10 1113.
  4. Fixed Markerboards. See Section 10 1116.
  5. Fixed Tackboards. See Section 10 1123.
  6. Interior Signage. See Section 10 1495.
  7. Network Equipment. See Section 27 1501:
    - a. Internet Firewall.
    - b. ISP Modem.
    - c. Network Switch.
    - d. Wireless Access Port.
  8. Network Streaming Equipment: See Section 27 4117 and Section 27 5117.
  9. Projection Screens. See Section 11 5213.
  10. Serving Area Appliances. See Section 11 3114.
  11. Wall Padding. See Section 11 6626 for safety wainscot.
  12. Volleyball Equipment – As specified in Section 11 6625:
    - a. Volleyball floor sleeves (anchors) installed concrete slab by Section 03 3111.
    - b. Volleyball upright (standard) storage unit installed by Section 06 2001.
    - c. Volleyball cover plates and outer rings install by floor installer (Division 09).

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. General:
1. Review 'Contractor Notice of Owner Furnished Materials' notice listing Owner-furnished products to be delivered for Project:
    - a. Review due (delivery) dates and vendor lead times for each item and coordinate with construction schedule. Immediately report recommended changes to Owner's Purchasing Coordinator listed in 'Contractor Notice of Owner Furnished Materials'. Contact vendors directly if changes to delivery dates become necessary during construction.
    - b. Report problems in coordinating due (delivery) dates with construction schedule to Architect and Owner's Purchasing Coordinator.
  2. Receive unload, store and protect Owner-furnished materials and products.
    - a. Provide labor and equipment necessary to receive, unload, and store materials and products.
    - b. Count number of pieces received and note any discrepancies on Delivery Receipt before driver leaves:
      - 1) Compare ' Contractor Notice of Owner Furnished Materials' notice' with packing slips.
      - 2) Note discrepancies in number, size, color, model numbers, etc. on Delivery Receipt.
    - c. Include Project Name and Project Number on Delivery Receipt.
    - d. Check for visible evidence of damage such as holes, tears, or crushed portions of cartons and note on Delivery Receipt before driver leaves:
      - 1) Include Project Name and Project Number on Delivery Receipt.



- 2) If you are unsure if carton is damaged, take photo of cartons and share it with Owner's Purchasing Coordinator.
- e. Properly store and protect all deliveries of Owner Furnished materials and Products.
3. Within forty-eight (48) hours of delivery:
  - a. Open and inspect each piece of freight delivered. Take picture of any concealed damage not reported at time of delivery and report it to Owner's Purchasing Coordinator.
  - b. Compare 'Contractor Notice of Owner Furnished Materials' with packing slips. Note discrepancies in number, size, color, model numbers, etc.
  - c. Deliver copy of Delivery Receipt (bill of lading) on which you have noted any loss or damage to Owner's Purchasing Coordinator. Include in your submission any report of concealed damage, discrepancies or photos.
4. Failure to strictly follow above procedures will result in your assumption of all financial responsibility for this shipment. All replacement and reorders must be made through Owner's Purchasing Coordinator and must allow Owner's vendor sufficient lead time to produce and ship new product.
5. When above procedures are strictly followed, shortages and damaged items will be replaced by Owner at Owner's cost.

**PART 2 - PRODUCTS Not Used**

**PART 3 - EXECUTION Not Used**

**END OF SECTION**

**SECTION 01 6600**

**PRODUCT DELIVERY, STORAGE, AND HANDLING REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes But is Not Limited To:
  - 1. Administrative and procedural requirements for Product Delivery, Storage, and Handling Requirements.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Deliver, store, and handle products according to manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.

**1.3 DELIVERY AND ACCEPTANCE REQUIREMENTS**

- A. Schedule delivery to reduce long-term storage at site and to prevent overcrowding of construction spaces.
- B. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
- C. Deliver products to site in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
- D. Inspect products upon delivery to ensure compliance with Contract Documents, and to ensure that products are undamaged and properly protected.

**1.4 STORAGE AND HANDLING REQUIREMENTS**

- A. Store products at site in manner that will simplify inspection and measurement of quantity or counting of units.
- B. Store heavy materials away from Project structure so supporting construction will not be endangered.
- C. Store products subject to damage by elements above ground, under cover in weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

**PART 2 - PRODUCTS Not Used**

**PART 3 - EXECUTION Not Used**

**END OF SECTION**

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**SECTION 01 7300****EXECUTION****PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes But is Not Limited To:
1. Administrative and procedural requirements for governing Execution of the Work.

**1.2 COMMON INSTALLATION PROVISIONS**

- A. Manufacturer's Instructions: Comply with Manufacturer's installation instructions and recommendations to extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents. Notify Architect of conflicts between Manufacturer's installation instructions and Contract Document requirements.
- B. Provide attachment and connection devices and methods necessary for securing Work. Secure work true to line and level. Anchor each product securely in place, accurately located, and aligned with other Work. Allow for expansion and building movement.
- C. Visual Effects: Provide uniform joint widths in exposed work. Arrange joints in exposed work to obtain best visual effect. Refer questionable choices to Architect for final decision.
- D. Install each component during weather conditions and Project status that will ensure best possible results. Isolate each part of completed construction from incompatible material as necessary to prevent deterioration.
- E. Coordinate temporary enclosures with required inspections and tests, to reduce necessity of uncovering completed construction for that purpose.
- F. Mounting Heights: Where mounting heights are not shown, install individual components at standard mounting heights recognized within the industry or local codes for that application. Refer questionable mounting height decisions to Architect for final decision.

**PART 2 - PRODUCTS Not Used****PART 3 - EXECUTION Not Used****END OF SECTION**

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**SECTION 01 7400****CLEANING AND WASTE MANAGEMENT****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Administrative and procedural requirements for Cleaning and Waste Management as described in Contract Documents.
- B. Related Requirements:
  - 1. Section 01 1200: Coordination of responsibilities for waste management.
  - 2. Section 01 6400: Waste removal of Owner furnished products.
  - 3. In addition to standards described in this section, comply with all requirements for cleaning-up as described in various other Sections of these Specifications.

**1.2 REFERENCES**

- A. Definitions:
  - 1. Asphalt Pavement, Brick, and Concrete (ABC) Rubble: Rubble that contains only weathered (cured) asphalt pavement, clay bricks and attached mortar normally used in construction, or concrete that may contain rebar. The rubble shall not be mixed with, or contaminated by, another waster or debris.
  - 2. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
  - 3. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
  - 4. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
  - 5. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
  - 6. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
  - 7. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

**PART 2 - PRODUCTS: Not Used****PART 3 - EXECUTION****3.1 PROGRESS CLEANING**

- A. Comply with regulations of authorities having jurisdiction and safety standards for cleaning.
- B. Keep premises broom clean during progress of the Work.
- C. Keep site and adjoining streets reasonably clean. If necessary, sprinkle rubbish and debris with water to suppress dust.
- D. During handling and installation, protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from soiling, damage, or deterioration until Substantial Completion.

- E. Clean and maintain completed construction as frequently as necessary throughout construction period. Adjust and lubricate operable components to ensure ability to operate without damaging effects.
- F. Organ Chamber:
  - 1. Clean debris from inside Organ Chamber and leave dust free before organ speakers are installed.
- G. Supervise construction activities to ensure that no part of construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.
- H. Before and during application of painting materials, clear area where such work is in progress of debris, rubbish, and building materials that may cause dust. Sweep floors and vacuum as required and take all possible steps to keep area dust free.
- I. Clean exposed surfaces and protect as necessary to avoid damage and deterioration.
- J. Place extra materials of value remaining after completion of associated work have become Owner's property as directed by Owner or Architect.
- K. Construction Waste Management And Disposal:
  - 1. Remove waste materials and rubbish caused by employees, Subcontractors, and contractors under separate contract with Owner and dispose of legally. Remove unsuitable or damaged materials and debris from building and from property.
    - a. Provide adequate waste receptacles and dispose of materials when full.
    - b. Properly store volatile waste and remove daily.
    - c. Do not deposit waste into storm drains, sanitary sewers, streams, or waterways. Do not discharge volatile, harmful, or dangerous materials into drainage systems.
  - 2. Do not burn waste materials or build fires on site. Do not bury debris or excess materials on Owner's property.

### 3.2 FINAL CLEANING

- A. Immediately before Substantial Completion, thoroughly clean building and area where The Work was performed. Remove all rubbish from under and about building, landscaped areas and parking lot and leave building and Project Site ready for occupancy by Owner.
- B. Comply with individual manufacturer's cleaning instructions.
- C. Clean each surface or unit to condition expected in normal, commercial building cleaning and maintenance program, including but not limited to:
  - 1. Interior Cleaning:
    - a. Clean inside glazing, exercising care not to scratch glass.
    - b. Remove marks, stains, fingerprints and dirt.
    - c. Clean and polish woodwork and finish hardware.
    - d. Remove labels that are not permanent labels.
    - e. Clean plumbing fixtures and tile work. Remove spots, soil or paint.
    - f. Clean surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean light fixtures and lamps.
    - g. Clean other fixtures and equipment and remove stains, paint, dirt, and dust.
    - h. Remove temporary floor protection and clean floors.
  - 2. Exterior Cleaning:
    - a. Clean outside glazing, exercising care not to scratch glass.
    - b. Remove marks, stains, and dirt from exterior surfaces.
    - c. Clean and polish finish hardware.
    - d. Remove temporary protection systems.
    - e. Clean dirt, mud, and other foreign material from paving, sidewalks, and gutters.

- f. Clean drop inlets, through-curb drains, and other drainage structures.
- g. Remove trash, debris, and foreign material from landscaped areas.

**END OF SECTION**



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**SECTION 01 7700**  
**CLOSEOUT PROCEDURES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes But is Not Limited To:
1. Administrative and procedural requirements for Closeout Procedures.

**1.2 GENERAL**

- A. Closeout process consists of three specific project closeout inspections. Contractor shall plan sufficient time in construction schedule to allow for required inspections before expiration of Contract Time.
- B. Contractor shall conduct his own inspections of The Work and shall not request closeout inspections until The Work of the contract is reasonably complete and correction of obvious defects or omissions are complete or imminent.
- C. Date of Substantial Completion shall not occur until completion of construction work, unless agreed to by Architect and included on Certificate of Substantial Completion.

**1.3 PRELIMINARY CLOSEOUT REVIEW**

- A. When Architect, Owner and Contractor agree that project is ready for closeout, Pre-Substantial Inspection shall be scheduled. Preparation of floor substrate to receive carpeting and any work which could conceivably damage or stain carpet must be completed, as carpet installation will be scheduled immediately following this inspection.
- B. Prior to this inspection, completed test and evaluation reports for HVAC system and font, where one occurs, are to be provided to Project Manager, Architect, and applicable consultants.
- C. Architect and his appropriate consultants, together with Contractor and mechanical, plumbing, fire protection, and electrical sub-contractors shall conduct a space by space and exterior inspection to review materials and workmanship and to demonstrate that systems and equipment are operational.
1. Punch list of items requiring completion and correction will be created.
  2. Time frame for completion of punch list items will be established, and date for Substantial Completion Inspection shall be set.

**1.4 SUBSTANTIAL COMPLETION INSPECTION**

- A. When Architect, Owner and Contractor agree that project is ready for Substantial Completion, an inspection is held. Punch list created at Pre-Substantial Inspection is to be substantially complete.
- B. Prior to this inspection, Contractor shall discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups and similar elements.
- C. Architect, Owner and Contractor review completion of punch list items. When Owner and Architect confirm that Contractor has achieved Substantial Completion of The Work, Owner, Architect and Contractor will execute Certificate of Substantial Completion that contains:
1. Date of Substantial Completion.

2. Punch List Work not yet completed, including seasonal and long lead items.
  3. Amount to be withheld for completion of Punch List Work.
  4. Time period for completion of Punch List Work.
  5. Amount of liquidated damages set forth in Supplementary Conditions to be assessed if Contractor fails to complete Punch List Work within time set forth in Certificate.
- D. Contractor shall present Closeout Submittals to Architect and place tools, spare parts, extra stock, and similar items required by Contract Documents in locations as directed by Facilities Manager.

**1.5 FINAL ACCEPTANCE MEETING**

- A. When punch list items except for any seasonal items or long lead items which will not prohibit occupancy are completed, Final Acceptance Meeting is held.
- B. Owner, Architect and Contractor execute Owner's Project Closeout - Final Acceptance form, and verify:
1. All seasonal and long lead items not prohibiting occupancy, if any, are identified, with committed to completion date and amount to be withheld until completion.
  2. Owner's maintenance personnel have been instructed on all system operation and maintenance as required by the Contract Documents.
  3. Final cleaning requirements have been completed.
- C. If applicable, once any seasonal and long lead items are completed, Closeout Inspection is held where Owner and Architect verify that The Work has been satisfactorily completed, and Owner, Architect and Contractor execute Closeout portion of the Project Closeout - Final Acceptance form.
- D. When Owner and Architect confirm that The Work is satisfactorily completed, Architect will authorize final payment.

**PART 2 - PRODUCTS Not Used**

**PART 3 - EXECUTION Not Used**

**END OF SECTION**

**SECTION 01 7800****CLOSEOUT SUBMITTALS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes But is Not Limited To:
  - 1. Administrative and procedural requirements for Closeout Submittals.
- B. Related Requirements:
  - 1. Section 01 3300: 'Submittal Procedures' for administrative and procedural requirements for submittal procedures.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Project Record Documents:
  - 1. Do not use record documents for construction purposes:
    - a. Protect from deterioration and loss in secure, fire-resistive location.
    - b. Provide access to record documents for Architect's reference during normal working hours.
  - 2. Maintain clean, undamaged set of Drawings:
    - a. Mark set to show actual installation where installation varies from the Work as originally shown.
    - b. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
    - c. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work.
    - d. Mark new information that is important to Owner, but was not shown on Drawings.
    - e. Note related Change Order numbers where applicable.
- B. As Built Record Drawings:
  - 1. As required in agreement with the Owner:
    - a. Architect will provide two full-size sets of prints of the As Built Record Drawings to the Facilities Management Office, printed from the updated AutoCAD drawing files or updated Revit model files, as specified by Owner, that have been modified to show actual dimensions and location of equipment, material, utility lines, and other work as actually constructed, based upon information provided by Contractor. Architect will submit updated As Built Record Drawings in PDF (ISO32000 format) to Owner.
    - b. Architect will submit following:
      - 1) Updated AutoCAD as built record drawing files with associated plot style tables or Revit as built record model files, as specified by Owner.
      - 2) Revit Model O&M lifecycle requirements to be tracked by Facility Manager.

**1.3 CLOSEOUT SUBMITTALS**

- A. Operations And Maintenance Manual:
  - 1. General:
    - a. Include closeout submittal documentation as required by Contract Documentation.
    - b. Include workmanship bonds, final certifications, equipment check-out sheets, and similar documents.
    - c. Releases enabling Owner unrestricted use of The Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

- d. Include Project photographs, damage or settlement survey, and similar record information required by Contract Documents.
- e. Submittal Format:
  - 1) Digital copies unless otherwise noted, required for each individual specification section that include 'Closeout Submittals'.
  - 2) Include only closeout submittals as defined in individual specification section as required in Contract Documents.
- 2. Project Manual:
  - a. Copy of complete Project Manual including Addenda, Modifications as defined in General Conditions, and other interpretations issued during construction:
    - 1) Mark these documents to show variations in actual Work performed in comparison with text of specifications and Modifications.
    - 2) Show substitutions, selection of options, and similar information, particularly on elements that are concealed or cannot otherwise be readily discerned later by direct observation.
- 3. Maintenance Contracts:
  - a. Digital format only.
- 4. Operations and Maintenance Data:
  - a. Digital format only:
    - 1) Cleaning instructions.
    - 2) Maintenance instructions.
    - 3) Operations instructions.
    - 4) Equipment list.
    - 5) Parts list.
- 5. Warranty Documentation:
  - a. Digital format of final, executed warranties.
- 6. Record Documentation:
  - a. Digital format only.
    - 1) Certifications.
    - 2) Color and pattern selections.
    - 3) Design Data.
    - 4) Geotechnical Evaluation Reports (soils reports).
    - 5) Manufacture Reports.
    - 6) Manufacturer's literature or cut sheets.
    - 7) Shop Drawings.
    - 8) Source Quality Control.
    - 9) Special Procedures.
    - 10) Testing and Inspection Agency Reports.
    - 11) Testing and Inspection Reports.
- 7. Software:
  - a. Audio and Video System software, programming and set-files.
- 8. Irrigation Plan.
  - a. Laminated and un-laminated reduced sized hard copies.
- 9. Landscape Management Plan (LMP):
  - a. Irrigation Section:
    - 1) Submittal Format: Digital format and hard copy of each.
    - 2) Documentation required by sections under 32 8000 Heading: 'Irrigation'.
  - b. Landscaping Section:
    - 1) Submittal Format: Digital format and hard copy of each.
    - 2) Documentation required by sections under 32 9000 Heading: 'Planting'.

**B. Revit Model O&M Requirements:**

- 1. Architect to include all information for each instance that occurs from below list within associated family in Revit model (ie. serial numbers, warranty information, manufacturer, etc):
  - a. Revit Model Items:

<b>Item</b>	<b>Inventory Name</b>	<b>Categories</b>
735	Internet Connection Equipment	Computer Equipment

535	Generator, Fixed	Electrical Distribution & Fixtures
1058	UPS System	Electrical Distribution & Fixtures
14	Floor, Carpet	Floors
213	Air Handler, With Coils	HVAC Distribution System
212	Air Handler, Without Coils	HVAC Distribution System
199	Boiler, Hot Water	HVAC Distribution System
200	Boiler, Steam	HVAC Distribution System
456	Boiler, Steam, Power Generating	HVAC Distribution System
215	Chiller, Water	HVAC Distribution System
641	Coils, Evaporator (A Coil)	HVAC Distribution System
214	Condensing Unit	HVAC Distribution System
217	Cooler, Evaporative (Swamp)	HVAC Distribution System
216	Cooling Tower	HVAC Distribution System
622	Dehumidifier System	HVAC Distribution System
209	Fan Coil Unit	HVAC Distribution System
202	Furnace, Duct	HVAC Distribution System
201	Furnace, Forced Air	HVAC Distribution System
208	Heat Pump	HVAC Distribution System
207	Heat Pump, Mini Split, Exterior	HVAC Distribution System
206	Heat Pump, Mini Split, Interior	HVAC Distribution System
205	Heat Pump, Room, Thru Wall	HVAC Distribution System
448	Heater, Radiant Tube	HVAC Distribution System
253	Heater, Wall Mounted, Gas	HVAC Distribution System
621	Humidifier System	HVAC Distribution System
204	HVAC Package Unit (Roof Top)	HVAC Distribution System
1056	Outside Air Tempering Unit	HVAC Distribution System
295	Chemical, Treatment & Filtration System	HVAC Distribution System
1050	Cooling Tower Water Filter	HVAC Distribution System
501	Tank, Motor Fuel, Underground	HVAC Distribution System
497	Tank, Water Storage	HVAC Distribution System
73	Organ Pipe	Musical Instruments
962	Heater, Unit Steam/Hot Water	Plumbing Distribution & Fixtures
988	Water Filter System, Water Main	Plumbing Distribution & Fixtures
779	Backflow Preventer	Plumbing Distribution & Fixtures
151	Roofing, Asphalt Shingles	Roofing
157-A	Roofing, Single Ply Membrane (EPDM)	Roofing
281	Satellite Receiver (IRD)	Sound, Satellite, Security, & Fire Systems
717	Glycol System	Sound, Satellite, Security, & Fire Systems
676	Fire Alarm System, Active	Sound, Satellite, Security, & Fire Systems
1033	Sign, Exit Illuminated Tritium (nuclear)	Sound, Satellite, Security, & Fire Systems

#### 1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Submit item(s) required by Section 01 3300 'Submittal Procedures' and as defined in individual specification section if required in Contract Documents. Items may be provided at completion of Work or with Closeout Submittals.

#### 1.5 WARRANTIES

- A. When written guarantees beyond one (1) year after substantial completion are required by Contract Documents, secure such guarantees and warranties properly addressed and signed in favor of Owner. Include these documents in Operations & Maintenance Manual(s) specified above.

- B. Delivery of guarantees and warranties will not relieve Contractor from obligations assumed under other provisions of Contract Documents.

**PART 2 - PRODUCTS Not Used**

**PART 3 - EXECUTION Not Used**

**END OF SECTION**

# DIVISION 02: EXISTING CONDITIONS

## 02 4000 DEMOLITION AND STRUCTURE MOVING

02 4113 SELECTIVE SITE DEMOLITION

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**SECTION 02 4113**  
**SELECTIVE DEMOLITION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Demolish and remove portions of existing facilities as described in Contract Documents.
- B. Related Requirements:
  - 1. New and replacement work specified in appropriate specification Sections.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Scheduling:
  - 1. Include on Construction Schedule specified in Section 01 3200 detailed sequence of individual site demolition operations.

**1.3 SUBMITTALS**

- A. Closeout Submittals:
  - 1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
    - a. Record Documentation:
      - 1) Identify abandoned utility and service lines and capping locations on record drawings.

**PART 2 - PRODUCTS: Not Used**

**PART 3 - EXECUTION**

**3.1 PERFORMANCE**

- A. Execute work in orderly and careful manner, with due consideration for neighbors and the public.
- B. Carefully remove, disassemble, or dismantle as required, and store in approved location on site, existing items to be reused in completed work. Coordinate with Owner for equipment and materials to be removed by Owner.

**3.2 CLEANING**

- A. Promptly remove demolition materials, rubbish, and debris from property.

**END OF SECTION**

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# **DIVISION 03: CONCRETE**

## **03 1000 CONCRETE FORMING AND ACCESSORIES**

03 1113 STRUCTURAL CAST-IN-PLACE CONCRETE FORMING

## **03 2000 CONCRETE REINFORCING**

03 2100 REINFORCEMENT BARS

## **03 3000 CAST-IN-PLACE CONCRETE**

03 3111 CAST-IN-PLACE STRUCTURAL CONCRETE

03 3923 MEMBRANE CONCRETE CURING

END OF TABLE OF CONTENTS

**SECTION 03 1113****STRUCTURAL CAST-IN-PLACE CONCRETE FORMING****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Design, construction, and safety of formwork.
  - 2. Furnish and install required formwork ready for placing of concrete.
  - 3. Strip and dispose of formwork.
- B. Related Requirements:
  - 1. Section 03 3111: 'Cast-In-Place Structural Concrete' for:
    - a. Tolerances for placing structural concrete.
    - b. Pre-installation conference held jointly with other concrete related sections.

**1.2 REFERENCES**

- A. Reference Standards:
  - 1. American Concrete Institute:
    - a. ACI 318-14, 'Building Code Requirements for Structural Concrete and Commentary'.

**1.3 ADMINISTRATIVE REQUIREMENTS**

- A. Pre-Installation Conference:
  - 1. Participate in pre-installation conference as specified in Section 03 3111.
  - 2. In addition to agenda items specified in Section 01 3100 and 31 3111, review following:
    - a. Review Section 01 4523 for Testing and Inspection administrative requirements and responsibilities and Field Quality Control tests and inspections required of this section.
      - 1) Review requirements and frequency of testing and inspections.
- B. Scheduling:
  - 1. Notify Testing Agency and Architect as directed in Section 03 3111.

**1.4 SUBMITTALS**

- A. Informational Submittals:
  - 1. Manufacturer Instructions:
    - a. Printed application instructions for form release agents.

**PART 2 - PRODUCTS****2.1 COMPONENTS**

- A. Forms: Wood, metal, or plastic as arranged by Contractor:
  - 1. Forming material shall be compatible with specified form release agents and with finish requirements for concrete to be left exposed or to receive a smooth rubbed finish.

## 2.2 ACCESSORIES

- A. Form Release Agents:
  - 1. Unexposed Surfaces Only: Contractor's option.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Forms:
  - 1. Assemble forms so forms are sufficiently tight to prevent leakage.
  - 2. Properly brace and tie forms.
  - 3. Make proper form adjustments before, during, and after concreting.
  - 4. Use new forms, or used forms that have been cleaned of loose concrete and other debris from previous concreting and repaired to proper condition. Use APA Plyform B-B Class I, or APA HDO Plyform B-B Class I, on exposed to view concrete that do not receive a smooth rubbed finish.
- B. Accessories:
  - 1. General:
    - a. Provide for installation of inserts, templates, fastening devices, sleeves, and other accessories to be set in concrete before placing.
    - b. Position anchor bolts for hold-down anchors and columns and securely tie in place before placing concrete.
  - 2. Form Release / Finish Agents:
    - a. Film thickness shall be no thicker than as recommended by Manufacturer.
    - b. Allow no release / finish agent on reinforcing steel or footings.

### 3.2 FIELD QUALITY CONTROL

- A. Field Tests And Inspections:
  - 1. Concrete Formwork:
    - a. Inspections are not required and will be performed at discretion of Architect.

**END OF SECTION**

**SECTION 03 2100****REINFORCEMENT BARS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install concrete reinforcement bars as described in Contract Documents.
- B. Related Requirements:
  - 1. Section 01 4523: 'Testing and Inspecting Services' for testing and inspection, and testing laboratory services for materials, products, and construction methods.
  - 2. Section 03 1113: 'Structural Cast-In-Place Concrete Forming'.
  - 3. Section 03 3111: 'Cast-In-Place Structural Concrete' for:
    - a. Reinforcement installed in concrete.
    - b. Pre-installation conference held jointly with other concrete related sections.

**1.2 REFERENCES**

- A. Association Publications:
  - 1. American Concrete Institute:
    - a. ACI 'Detailing Manual' (2004 Edition).
  - 2. Concrete Reinforcing Steel Institute (CRSI):
    - a. CRSI, 'Manual of Standard Practice' (2009 28th Edition).
- B. Reference Standards:
  - 1. American Concrete Institute:
    - a. ACI 117-10: 'Specifications for Tolerances for Concrete Construction and Materials and Commentary' (Reapproved 2015).
    - b. ACI 318-14, 'Building Code Requirements for Structural Concrete and Commentary'.
  - 2. ASTM International (Following are specifically referenced for reinforcement bars testing):
    - a. ASTM A615/A615M-18, 'Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement'.

**1.3 ADMINISTRATIVE REQUIREMENTS**

- A. Pre-Installation Conferences:
  - 1. Participate in pre-installation conference as specified in Section 03 3111.
  - 2. In addition to agenda items specified in Section 01 3100, and Section 03 3111, review following:
    - a. Installation scheduling and reinforcing placement.
    - b. Review Section 01 4523 for Testing and Inspection administrative requirements and responsibilities and Field Quality Control tests and inspections required of this section.
      - 1) Review requirements and frequency of testing and inspections.
- B. Scheduling:
  - 1. Notify Testing Agency and Architect as directed in Section 03 3053 and Section 03 3111.

**1.4 SUBMITTALS**

- A. Action Submittals:
  - 1. Shop Drawings:

- a. Reinforcing placement drawings.
- B. Informational Submittals:
  - 1. Certificates:
    - a. Mill certificates for mill tests for reinforcing in accordance with ASTM A615/A615M.
- C. Closeout Submittals:
  - 1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
    - a. Record Documentation:
      - 1) Testing and Inspection Reports:
        - a) Testing Agency Inspection Reports of reinforcement bars.

## 1.5 QUALITY ASSURANCE

- A. Regulatory Agency Sustainability Approvals:
  - 1. Comply with provisions of following codes and standards except where more stringent requirements are shown or specified:
    - a. American Concrete Institute:
      - 1) ACI 318, 'Building Code Requirements for Structural Concrete and Commentary'.
    - b. Concrete Reinforcing Steel Institute:
      - 1) CRSI, 'Manual of Standard Practice'.
- B. Qualifications:
  - 1. Throughout progress of the work of this section, provide at least one (1) person who shall be thoroughly familiar with Construction Documents and other applicable specified requirements, completely trained and experienced in necessary skills, and who shall be present at site and shall direct all work performed under this Section:
    - a. In actual installation of the work of this Section, use adequate numbers of skilled workmen to ensure installation in strict accordance with approved design.
    - b. In acceptance or rejection of work performed under this Section, no allowance will be made for lack of skill on part of workmen.
- C. Testing And Inspection:
  - 1. Owner is responsible for Quality Assurance. Quality assurance performed by Owner will be used to validate Quality Control performed by Contractor.
  - 2. Owner will provide Testing and Inspection for inspection of reinforcement bars:
    - a. Owner will employ testing agencies to perform testing and inspection for inspection of reinforcement bars as specified in Field Quality Control in Part 3 of this specification:
      - 1) Owner's employment of an independent Testing Agency does not relieve Contractor of Contractor's obligation to perform the Work in strict accordance with requirements of Contract Documents and perform contractor testing and inspection.
      - 2) See Section 01 1200: 'Multiple Contract Summary'.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery And Acceptance Requirements:
  - 1. Deliver bars separated by size and tagged with manufacturer's heat or test identification number.
  - 2. Reinforcement bars shall be free of heavy rust scales and flakes, or other coating at time of delivery and placing.
- B. Storage And Handling Requirements:
  - 1. Properly protect rebar on site after delivery.

## PART 2 - PRODUCTS

### 2.1 MATERIAL

#### A. Reinforcement Bars:

1. Bars shall have grade identification marks and conform to ASTM A615/A615M:
  - a. Grade 60 minimum, except dowels that are to be field bent, Grade 40 minimum.
2. Bars shall be deformed type.
3. Bars shall be free of heavy rust scales and flakes, or other bond-reducing coatings.

### 2.2 ACCESSORIES

#### A. Bar Supports:

1. Concrete masonry units or bricks are not acceptable.
2. For exposed-to-view concrete surfaces, where legs of supports are in contact with forms, provide supports with legs which are plastic protected (CRSI, Class 1) or stainless steel protected (CSRI, Class 2).
3. Type Two Acceptable Products:
  - a. Concrete 'dobies' or blocks wired to reinforcing.
  - b. Manufactured chairs with 4 sq inch (25.8 sq cm) bearing surface on sub-grade, or other feature to prevent chair from being pushed into sub-grade or damaging vapor retarder under slabs on grade.
  - c. Equals as approved by Architect before installation. See Section 01 6200.

### 2.3 FABRICATION

- #### A. Fabricate reinforcement bars according to the Concrete Reinforcing Steel Institute (CRSI) 'Manual of Standard Practice' and details on Contract Documents.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

#### A. General:

1. Avoid cutting or puncturing vapor retarder during reinforcement placement and concrete operations.
2. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.
3. Blowtorch shall not be used to facilitate field cutting or bending or any other reinforcing work.
4. Reinforcement shall not be bent after partially embedded in hardened concrete.

#### B. Placing Reinforcement:

1. Comply with Concrete Reinforcing Steel Institute CRSI 'Manual of Standard Practice' recommended practice for 'Placing Reinforcing Bars' for details and methods of reinforcement placement and supports. and as herein specified.
2. Accurately position, support, and secure reinforcement against displacement by formwork, construction, or concrete placement operations:
  - a. Locate and support reinforcing by chairs, runners, bolsters, bar supports, spacers, or hangers, as required as recommended by 'ACI Detailing Manual, except slab on grade work.
  - b. Support bars in slabs on grade and footings with specified bar supports around perimeter and at 4-1/2 feet on center each way maximum to maintain specified concrete cover.
  - c. Install bar supports at bar intersections.
3. Bend bars cold.



4. Dowel vertical reinforcement for formed concrete columns or walls out of footing or structure below with rebar of same size and spacing required above.
  5. Securely anchor and tie reinforcement bars and dowels before placing concrete. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- C. Splices:
1. Non-Concrete Structural System:
    - a. Avoid splices of reinforcement bars at points of maximum stress. Lap bars 60 bar diameters minimum unless dimensioned otherwise on Drawings. Run reinforcement bars continuous through cold joints.
  2. Concrete Structural System:
    - a. In beams, slabs, and walls, avoid splices of reinforcement bars at points of maximum stress.
    - b. Lap bars as follows:
      - 1) Compression Splices: 45 bar diameters minimum.
      - 2) Tension Splices: In accordance with ACI 318 Class B requirements.
      - 3) No splice shall be less than **20 inches (508 mm)**.
      - 4) For epoxy coated rebar, increase lap-splice lengths by 1.5 times those listed above.
    - c. In columns, splices in vertical bars are permitted only at floor levels or points of lateral support and shall consist of 45 bar diameter laps.
    - d. Run reinforcement bars continuous through cold joints.
- D. Tolerances:
1. Provide following minimum concrete cover for reinforcement as per ACI 318 or ACI 318M. Arrange, space and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations:
    - a. Concrete cast against and permanently exposed to earth:
      - 1) Interior Slabs on Grade: **1 inches (25 mm)**, clear from top of slab at **4 inches (100 mm)** slabs, **2 inches (50 mm)** clear at **6 inches (150 mm)** slabs.
      - 2) Sections other than Slabs: **3 inches (75 mm)**.
    - b. Concrete Exposed to Earth or Weather:
      - 1) No. 6 and Larger Bars: **2 inches (50 mm)**.
      - 2) No. 5 and Smaller Bars, W31 and D31 Wire: **1-1/2 inches (38 mm)**.

### 3.2 FIELD QUALITY CONTROL

- A. Field Tests And Inspections:
1. Civil and structural field tests, laboratory testing, and inspections are provided by Owner's independent Testing Agency as specified in Section 01 4523 'Testing And Inspection Services':
    - a. Quality Control is sole responsibility of Contractor.
      - 1) Owner's employment of an independent Testing Agency does not relieve Contractor of Contractor's obligation to perform testing and inspection as part of his Quality Control:
        - a) Testing and inspections, if performed by Contractor, will be responsibility of Contractor to be performed by an independent entity.
  2. Reinforcement Bars:
    - a. Testing Agency shall provide inspection for Reinforcement Bars. See Section 03 3111 for Testing and Inspection requirements.

**END OF SECTION**

**SECTION 03 3111****CAST-IN-PLACE STRUCTURAL CONCRETE****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
1. Furnish and install concrete work as described in Contract Documents including:
    - a. Quality of concrete used on Project but furnished under other Sections.
    - b. Concrete mix information and use of admixtures.
    - c. Field Quality Control Testing and Inspection requirements for concrete.
    - d. Pre-installation conference held jointly with other concrete related sections.
    - e. Sealants and curing compounds used with concrete.
    - f. Compact aggregate base for miscellaneous cast-in-place concrete.
- B. Products Installed But Not Furnished Under This Section:
1. Concrete accessories.
  2. Inserts, bolts, boxes, templates, and fastening devices for other work, including those for bases only for Mechanical and Electrical.
  3. Membrane Concrete Curing.
- C. Related Requirements:
1. Section 01 0000: 'General Requirements'.
  2. Section 01 4523: 'Testing and Inspecting Services' for testing and inspection, and testing laboratory services for materials, products, and construction methods.
  3. Section 03 1113: 'Structural Cast-In-Place Concrete Forming'.
  4. Section 03 2100: 'Reinforcement Bars'.
  5. Section 03 3923: 'Membrane Concrete Curing' for quality of curing materials used.
  6. Section 05 1223: 'Structural Steel For Buildings' for:
    - a. Furnishing of elevator support beam.
  7. Section 07 9213: 'Elastomeric Joint Sealant' for quality of sealants.
  8. Section 31 0501: 'Common Earthwork Requirements' for:
    - a. General procedures and requirements for earthwork.
    - b. Pre-installation conference held jointly with other common earthwork related sections.
  9. Section 31 1123: 'Aggregate Base' for aggregate base under miscellaneous cast-in-place concrete and exterior slabs, under interior slabs-on-grade concrete, and asphalt paving.
  10. Section 31 2323: 'Fill' for compaction procedures and tolerances.
  11. Divisions 22, 23, And 26: Mechanical and electrical devices including boxes, conduits, pipes, hangers, inserts, and other work to be embedded in concrete work before placing.
  12. Furnishing of items to be embedded in concrete specified in Section involved.
  13. Owner will provide concrete leveling compounds and patching compounds required for carpet installation.

**1.2 REFERENCES**

- A. Association Publications:
1. American Concrete Institute, Farmington Hills, MI [www.concrete.org](http://www.concrete.org). Abstracts of ACI Periodicals and Publications.
    - a. ACI 117.1R-14: 'Guide for Tolerance Compatibility in Concrete Construction'.
    - b. Certifications:
      - 1) ACI CP-1(16), 'Technical Workbook for ACI Certification of Concrete Field Testing Technician-Grade 1'.

- 2) ACI CP-10(10), 'Craftsman Workbook for ACI Certification of Concrete Flatwork Technician/Finisher'.
- 3) ACI CP-19(16), 'Technical Workbook for ACI Certification of Concrete Strength Testing Technician'.

B. Definitions:

1. Cold Weather, as referred to in this Section, is four (4) hours with ambient temperature below **40 deg F (4.4 deg C)** in twenty-four (24) hour period.
2. Floor Flatness (F<sub>F</sub>): Rate of change in elevation of floor over **12 inches (305 mm)** section.
3. Floor Levelness (F<sub>L</sub>): Measures difference in elevation between two points which are **10 feet (3.05 m)** apart.
4. Hot Weather, as referred to in this Section, is ambient air temperature above **100 deg F (38 deg C)** or ambient air temperature above **90 deg F (32 deg C)** with wind velocity **8 mph (12.9 kph)** or greater.

C. Reference Standards:

1. American Association of State and Highway Transportation Officials:
  - a. AASHTO M 153-06 (2016), 'Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction'.
2. American Concrete Institute
  - a. ACI 117-10 (R2015): 'Specifications for Tolerances for Concrete Construction and Materials and Commentary'.
  - b. ACI 305.1-14, 'Specification for Hot Weather Concreting'.
  - c. ACI 306.1-90 (R2002), 'Standard Specification for Cold Weather Concreting'.
  - d. ACI 318-14, 'Building Code Requirements for Structural Concrete' (ACI 318) and 'Commentary on Building Code Requirements for Structural Concrete' (ACI 318R).
3. ASTM International:
  - a. ASTM C31/C31M-19, 'Standard Practice for Making and Curing Concrete Test Specimens in the Field'.
  - b. ASTM C33/C33M-18, 'Standard Specification for Concrete Aggregates'.
  - c. ASTM C39/C39M-18, 'Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens'.
  - d. ASTM C94/C94M-17a, 'Standard Specification for Ready-Mixed Concrete'.
  - e. ASTM C140/C140M-18a, 'Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units'.
  - f. ASTM C143/C143M-15a, 'Standard Test Method for Slump of Hydraulic-Cement Concrete'.
  - g. ASTM C150/C150M-18, 'Standard Specification for Portland Cement'.
  - h. ASTM C172/C172M-17, 'Standard Practice for Sampling Freshly Mixed Concrete'.
  - i. ASTM C173/C173M-16, 'Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method'.
  - j. ASTM C192/C192M-18, 'Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory'.
  - k. ASTM C231/C231M-17a, 'Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method'.
  - l. ASTM C260/C260M-10a(2016), 'Standard Specification for Air-Entraining Admixtures for Concrete'.
  - m. ASTM C330/C330M-17a, 'Standard Specification for Lightweight Aggregates for Structural Concrete'.
  - n. ASTM C494/C494M-17, 'Standard Specification for Chemical Admixtures for Concrete'.
  - o. ASTM C496/C496M-17, 'Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens'.
  - p. ASTM C567/C567M-14, 'Standard Test Method for Determining Density of Structural Lightweight Concrete'.
  - q. ASTM C595/C595M-18, 'Standard Specification for Blended Hydraulic Cements'.
  - r. ASTM C618-19, 'Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete'.
  - s. ASTM C1077-17, 'Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation'.
  - t. ASTM C1157/C1157M-17, 'Standard Performance Specification for Hydraulic Cement'.

- u. ASTM D1751-18, 'Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types)'.
  - v. ASTM E329-18: 'Standard Specification for Agencies Engaged in Construction Inspection and/or Testing'.
  - w. ASTM E1155-14, 'Standard Test Method for Determining  $F_F$  Floor Flatness and  $F_L$  Floor Levelness Numbers'.
4. International Code Council (IBC) (2018 or latest approved edition):
- a. IBC Chapter 17, 'Special Inspections And Tests'.
    - 1) Section 1704, 'Special Inspections And Tests, Contractor Responsibility And Structural Observations'.
    - 2) Section 1705, 'Required Special Inspection And Tests'.
      - a) Section 1705.2, 'Steel Construction'.

### 1.3 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conference:
- 1. Participate in MANDATORY pre-installation conference as specified in Section 01 3100 and held jointly with following sections:
    - a. Section 03 1113: 'Structural Cast-In-Place Concrete Forming'.
    - b. Section 03 2100: 'Reinforcement Bars'.
  - 2. Schedule pre-installation conference prior to placing of footings, installation of foundation forms and reinforcing steel, and installation of anchors, dowels, inserts, and block outs in foundation walls and slabs.
  - 3. In addition to agenda items specified in Section 01 3100, review following:
    - a. Set up concrete placement pour card system and verify that all relevant trades have signed off prior to concrete placement.
    - b. Obtaining trade sign-offs on each pour card will be responsibility of General Contactor's foreman or whoever is in charge of ordering concrete.
    - c. Pour cards will be turned in to Quality Assurance representative after the work has been completed so that they can be reviewed and filed.
    - d. Review installation scheduling, coordination, placement of building concrete, and placement of items installed in and under concrete.
    - e. Review installation scheduling, coordination and placement of site concrete and of items installed in concrete.
    - f. Review 'Verification of Conditions' requirements.
    - g. Review requirements for preparation of subgrade and aggregate base requirements.
    - h. Review formwork requirements.
    - i. Review approved mix design requirements, mix designs and use of admixtures.
    - j. Review reinforcing bar submittals.
    - k. Review installation schedule and placement of reinforcing bars.
    - l. Review placement, finishing, and curing of concrete, including cold and hot weather requirements.
    - m. Review joint layout plan for control and expansion joints, fillers for sidewalks, curbs, and gutters:
      - 1) Review jointing requirements.
    - n. Review smooth rubbed concrete finish procedures and requirements (applied immediately after removing concrete formwork while concrete is 'green').
    - o. Review concrete slab tolerances and corrective measures if tolerances not met.
    - p. Review safety issues.
    - q. Review Section 01 4523 for Testing and Inspection administrative requirements and responsibilities and Field Quality Control tests and inspections required of this section.
      - 1) Review requirements and frequency of testing and inspections.
- B. Scheduling:
- 1. Notify Testing Agency and Architect twenty-four (24) hours minimum before placing concrete.

## 1.4 SUBMITTALS

- A. Action Submittals:
1. Joint layout plan for control and expansion joints for sidewalks, curbs, and gutters for written approval before starting work on this Section.
  2. Shop Drawings:
    - a. Show dimensioned locations of anchor bolts for hold-down anchors and columns.
    - b. Show reinforcement and all necessary bending diagrams and reinforcing steel list, and construction joint locations.
    - c. Provide bar schedules and bending details.
    - d. Reinforced concrete walls shall be shown in scale elevation (scale at least one quarter inch to one foot). Details shall be in accordance with ACI rules.
    - e. Show all formwork for concrete surfaces which are to remain exposed in the finished work.
- B. Informational Submittals:
1. Certificates:
    - a. Installers:
      - 1) Certification for National Ready Mixed Concrete Association (NRMCA).
      - 2) Certification for ACI-certified Flatwork Finishers and Technicians.
  2. Design Data:
    - a. Mix Design:
      - 1) Furnish proposed mix design to Architect for review prior to commencement of Work.
        - a) Include density (unit weight) and void content determined per ASTM C1688/C1688M for fresh mixed properties and per ASTM C140/C140M for hardened concrete properties.
        - b) Mix design shall show proposed admixture, amount, usage instructions, and justification for proposed use.
    - b. Ready-Mix Supplier:
      - 1) Require mix plant to furnish delivery ticket for each batch of concrete. Keep delivery tickets at job-site for use of Owner or his representatives. Tickets shall show following:
        - a) Name of ready-mix batch plant.
        - b) Serial number of ticket.
        - c) Date and truck number.
        - d) Name of Contractor.
        - e) Name and location of Project.
        - f) Specific class or designation of concrete conforming to that used in Contract Documents.
        - g) Amount of concrete.
        - h) Amount and type of cement.
        - i) Total water content allowed by mix design.
        - j) Amount of water added at plant.
        - k) Sizes and weights of sand and aggregate.
        - l) Time loaded.
        - m) Type, name, manufacturer, and amount of admixtures used.
        - n) Design Data.
      - 2) Provide certificates with supporting testing reports verifying compliance with Contract Document requirements and that materials provided are from single source for following:
        - a) Cement.
        - b) Aggregate.
        - c) Fly Ash.
  3. Source Quality Control Submittals:
    - a. Concrete mix design: Submit mix designs to meet following requirements:
      - 1) Mix Type A:
        - a) General purpose concrete type mix used for footings and for exterior concrete (excluding concrete paving) where not subject to freeze/thaw cycles and deicing or where higher strength is needed due to soil conditions.
        - b) 3000 psi (20.68 MPa) minimum at twenty-eight (28) days.
        - c) Water / Cementitious Material: 0.45 to 0.50 by weight.
      - 2) Mix Type B:

- a) Unexposed interior concrete slabs on grade.
  - b) 3500 psi (24.13 MPa) minimum at twenty-eight (28) days.
  - c) Water / Cementitious Material: 0.45 maximum by weight.
  - 3) Mix Type F - Self-Consolidating Concrete (SCC):
    - a) Rarely used optional mix type.
    - b) Self-consolidating concrete may be used for all architectural concrete, heavily reinforced concrete, concrete for structural repairs, and other members as described in contract documents.
    - c) 4000 psi (27.58 MPa) minimum at twenty-eight (28) days.
    - d) All self-consolidating concrete shall contain high-range water-reducing admixture and viscosity-modifying admixture where required.
    - e) Minimum flow of 20 inches (508 mm) – 30 inches (762 mm) or as required by successful test placement.
    - f) Workability, pump ability, finish ability, and setting time of mix design shall be verified with successful test placement onsite.
    - g) Viscosity Modifying Admixture (VMA) shall be used to optimize viscosity of Self-Consolidating Concrete (SCC) at dosage rates per manufacturer's recommendation.
  - 4) Air Entrainment: Six (6) percent, plus or minus 1-1/2 percent for exterior concrete and foundation walls exposed to freeze/thaw cycles.
  - 5) Do not add water any time during mixing cycle above amount required to meet specified water / cement ratio. No reduction in amount of cementitious material is allowed.
  - b. Slump:
    - 1) 4 inch (100 mm) slump maximum before addition of high range water reducer.
    - 2) 8 inch (200 mm) slump maximum with use of high range water reducer.
  - c. Admixtures:
    - 1) Mix design shall show proposed admixture, amount, usage instructions, and justification for proposed use. Do not use any admixture without Architect's written approval.
    - 2) Fly ash: Amount of specified Class F (or Class C where Class F is not available) fly ash not to exceed twenty-five (25) percent of weight of cementations materials may used.
    - 3) Chemical:
      - a) Specified accelerator or retarder may be used if necessary to meet environmental conditions.
      - b) Special additives to promote rapid drying concrete, or moisture vapor reduction (MVRA), may be used in interior concrete slabs on grade and elevated concrete decks that will receive flooring if necessary to meet construction schedules.
- C. Closeout Submittals:
- 1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
    - a. Record Documentation:
      - 1) Pour Reports:
        - a) Provide report that records following information:
        - b) Date and time of start of pour, Date and time of end of pour, and Date and time of end of finishing procedures.
        - c) Temperature at start of pour, Temperature at end of Pour, and Maximum temperature during performance of finishing procedures.
        - d) Wind speed at start of pour, Wind speed at end of pour, and Maximum wind speed during performance of finishing procedures.
        - e) Humidity at start of pour, Humidity at end of pour, and High and low humidity during performance of finishing procedures.
        - f) Cloud cover at start of pour, Cloud cover at end of pour, and High and low cloud cover during performance of finishing procedures.
        - g) Screeding method and equipment used.
        - h) Saw cut method and equipment used.
      - 2) Testing and Inspection Reports:
        - a) Testing Agency Testing and Inspecting Reports of concrete.
      - 3) Warranty. Submit rapid concrete drying or MVRA manufacturer warranties for concrete moisture vapor emission induced flooring failure and adhesion; ensure both have been completed in project's name and registered with manufacturer.

- a) Provide warranty to cover cost of flooring failures due to moisture migration from slabs for life of concrete. Include cost of repair or removal of failed flooring, placement of topical moisture remediation system, and replacement of flooring with comparable flooring system.
- b) Provide stand-alone adhesion warranty matching duration of flooring adhesive or primer manufacturer's material defect warranty.

## 1.5 QUALITY ASSURANCE

- A. Qualifications: Requirements of Section 01 4301 applies, but is not limited to following:
  1. Installers and Installation Supervisor:
    - a. ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
  2. Ready-Mix Supplier:
    - a. Comply with ASTM C94/C94M requirements and be certified according to NRMCA's 'Certification of Ready Mixed Concrete Production Facilities'.
  3. Testing Agencies:
    - a. Independent agency qualified according to ASTM C1077 and ASTM E329.
      - 1) Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technicians, Grade I according to ACI CP-1 or equivalent certification program.
      - 2) Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be ACI-certified Concrete Laboratory Testing Technician - Grade II.
- B. Testing And Inspection:
  1. Owner is responsible for Quality Assurance. Quality assurance performed by Owner will be used to validate Quality Control performed by Contractor.
  2. Owner will provide Testing and Inspection on concrete:
    - a. Owner will employ testing agencies to perform testing and inspection on concrete as specified in Field Quality Control in Part 3 of this specification:
      - 1) Owner's employment of an independent Testing Agency does not relieve Contractor of Contractor's obligation to perform the Work in strict accordance with requirements of Contract Documents and perform contractor testing and inspection.
      - 2) See Section 01 1200: 'Multiple Contract Summary'.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery And Acceptance Requirements:
  1. Expansion Joint Filler Material:
    - a. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage And Handling Requirements:
  1. Expansion Joint Filler Material:
    - a. Store materials in a clean, dry area in accordance with manufacturer's instructions.
    - b. Protect materials during handling and application to prevent damage.

## PART 2 - PRODUCTS

### 2.1 SYSTEM

- A. Manufacturers:
  1. Manufacturer Contact List:
    - a. Aridus Admixture by US Concrete, Euless, TX [www.us-concrete.com/aridus/](http://www.us-concrete.com/aridus/).



- b. BASF (Construction Chemicals Division), Cleveland, OH [www.master-builders-solutions.basf.us/en-us](http://www.master-builders-solutions.basf.us/en-us).
  - c. Bonsal American, Charlotte, NC [www.bonsal.com](http://www.bonsal.com).
  - d. Concure Systems Admixture by Concure Systems, Phoenix, AZ [www.ConcureSystems.com](http://www.ConcureSystems.com).
  - e. Dayton Superior Specialty Chemicals, Kansas City, KS [www.daytonsuperiorchemical.com](http://www.daytonsuperiorchemical.com).
  - f. Euclid Chemical Company, Cleveland, OH [www.euclidchemical.com](http://www.euclidchemical.com).
  - g. Fritz-Pak Concrete Admixtures, Dallas, TX [www.fritzpak.com](http://www.fritzpak.com).
  - h. GCP Applied Technologies, Cambridge, MA [www.gcpat.com/construction/en-us](http://www.gcpat.com/construction/en-us).
  - i. ISE Logik Industries, Gulfport, MS [www.iselogik.com](http://www.iselogik.com).
  - j. Kryton International Inc., Vancouver, British Columbia, Canada [www.kryton.com](http://www.kryton.com).
  - k. L & M Construction Chemicals, Omaha, NE [www.lmcc.com](http://www.lmcc.com).
  - l. Larsen Weldcrete by Larsen Products Corp, Rockville, MD [www.larsenproducts.com](http://www.larsenproducts.com).
  - m. Sika Corporation, Lyndhurst, NJ [www.sikaconstruction.com](http://www.sikaconstruction.com) and Sika Canada, Pointe Claire, QC [www.sika.ca](http://www.sika.ca).
  - n. Unitex, Kansas City, MO [www.unitex-chemicals.com](http://www.unitex-chemicals.com).
  - o. U S Mix Products Co, Denver, CO [www.usspec.com](http://www.usspec.com).
  - p. W R Meadows, Hampshire, IL [www.wrmeadows.com](http://www.wrmeadows.com).
- B. Performance:
1. Design Criteria: Conform to requirements of ASTM C94/C94M unless specified otherwise:
  2. Capacities:
    - a. For testing purposes, following concrete strengths are required:
      - 1) At 7 days: 70 percent minimum of 28 day strengths.
      - 2) At 28 days: 100 percent minimum of 28 day strengths.
- C. Materials:
1. Hydraulic Cement: Meet requirements of ASTM C150/C150M, Type **<Insert Type>**.
    - a. Meet requirements of ASTM C595/C595M, Type **<Insert Type>**.
    - b. Meet requirements of ASTM C1157/C1157M, Type **<Insert Type>**.
  2. Aggregates:
    - a. Coarse:
      - 1) Meet requirements of ASTM C33/C33M or nonconforming aggregate that by test or actual service produces concrete of required strength and conforms to local governing codes.
      - 2) Aggregate shall be uniformly graded by weight.
    - b. Fine:
      - 1) Meet requirements of ASTM C33/C33M.
      - 2) Aggregate shall be uniformly graded by weight.
  3. Water: Clear, apparently clean, and potable.
  4. Admixtures And Miscellaneous:
    - a. Fly Ash:
      - 1) Meet requirements of ASTM C618, Class F (or Class C where Class F is not available) and with loss on ignition (LOI) of three (3) percent maximum.
    - b. Chemical:
      - 1) No admixture shall contain calcium chloride nor shall calcium chloride be used as an admixture. All chemical admixtures used shall be from same manufacturer and compatible with each other.
      - 2) Air Entraining Admixture:
        - a) Meet requirements of ASTM C260/C260M.
        - b) Type Two Acceptable Products:
          - (1) Equal as approved by Architect before use. See Section 01 6200.
      - 3) Water Reducing Admixture:
        - a) Meet requirements of ASTM C494/C494M, Type A and containing not more than 0.05 percent chloride ions.
        - b) Type Two Acceptable Products:
          - (1) Equal as approved by Architect before use. See Section 01 6200.
      - 4) Water Reducing, Retarding Admixture:
        - a) Meet requirements of ASTM C494/C494M, Type D and contain not more than 0.05 percent chloride ions.



- b) Type Two Acceptable Products:
  - (1) Equal as approved by Architect before use. See Section 01 6200.
- 5) High Range Water Reducing Admixture (Superplasticizer):
  - a) Meet requirements of ASTM C494/C494M, Type F or G and containing not more than 0.05 percent chloride ions.
  - b) Type Two Acceptable Products:
    - (1) Equal as approved by Architect before use. See Section 01 6200.
- 6) Non-Chloride, Non-Corrosive Accelerating Admixture:
  - a) Meet requirements of ASTM C494/C494M, Type C or E and containing not more than 0.05 percent chloride ions.
  - b) Type Two Acceptable Products:
    - (1) Equal as approved by Architect before use. See Section 01 6200.
- 7) Corrosion Inhibiting Admixture:
  - a) Liquid admixture to inhibit corrosion of steel reinforcement in concrete by introducing proper amount of anodic inhibitor. Admixture shall contain thirty (30) percent calcium nitrite solution and shall be used where called for in specifications or on drawings.
  - b) Type Two Acceptable Products:
    - (1) Eucon CIA by Euclid.
    - (2) DCI or DCI-S by GCP Applied Technologies.
    - (3) Equal as approved by Architect before use. See Section 01 6200.
- 8) Alkali-Silica Reactivity Inhibiting Admixture:
  - a) Specially formulated lithium nitrate admixture for prevention of alkali-silica reactivity (ASR) in concrete. Admixture must have test data indicating conformance to ASTM C1293.
  - b) Type Two Acceptable Products:
    - (1) Eucon Integral ARC by Euclid.
    - (2) RASIR by W R Grace.
    - (3) Equal as approved by Architect before use. See Section 01 6200.
- 9) Viscosity Modifying Admixture (VMA):
  - a) Liquid admixture used to optimize viscosity of Self-Consolidating Concrete (SCC). Subject to compliance with requirements, provide following at dosage rates per manufacturer's recommendation.
  - b) Type Two Acceptable Products:
    - (1) Equal as approved by Architect before use. See Section 01 6200.
- 10) Shrinkage Reducing Admixture (SRA):
  - a) Liquid admixture specifically designed to reduce drying shrinkage and potential for cracking.
  - b) Type Two Acceptable Products:
    - (1) Equal as approved by Architect before use. See Section 01 6200.
- 11) Rapid Drying Admixture in Interior Concrete Slabs on Grade:
  - a) Admixture specifically designed to promote rapid drying of concrete.
  - b) Type Two Acceptable Products:
    - (1) Equal as approved by Architect before use. See Section 01 6200.
- 12) Moisture Vapor Reduction Admixture (MVRA):
  - a) Liquid, inorganic, ASTM C494/C494M Type S Admixture free of volatile organic compounds (VOCs); specifically formulated to close capillary systems formed during concrete placement and to reduce moisture vapor emission and transmission with no adverse effect on concrete properties or finish flooring.
  - b) Type Two Acceptable Products:
    - (1) MVRA 900 by ISE Logik Industries: [www.iselogik.com](http://www.iselogik.com).
    - (2) Concure Systems Admixture by Concure Systems, Phoenix, AZ [www.ConcureSystems.com](http://www.ConcureSystems.com).
    - (3) Equal as approved by Architect before use. See Section 01 6200.
- 13) Waterproofing Admixture: Admixture formulated to reduce permeability to liquid water, with no adverse effect on concrete properties:
  - a) Functioning by growth of crystals in capillary pores.
  - b) Permeability of Cured Concrete: No measurable leakage when tested in accordance with COE CRD-C 48 at 200 feet of head; provide test reports.
  - c) Type Two Acceptable Products:

- (1) CWPA 800 by ISE Logik Industries: [www.iselogik.com](http://www.iselogik.com).
- (2) Krystol Internal Membrane (KIM) by Kryton: [www.kryton.com](http://www.kryton.com).
- (3) Equal as approved by Architect before use. See Section 01 6200.

## 2.2 ACCESSORIES

- A. Formwork:
1. Meet requirements specified in Section 03 1113:
- B. Bonding Agents:
1. Type Two Acceptable Products:
    - a. Acrylic Additive by Bonsal American.
    - b. Day Chem Ad Bond (J-40) by Dayton Superior.
    - c. Flex-Con by Euclid Chemical Co.
    - d. Larsen Weldcrete by Larsen Products Corp.
    - e. Everbond by L & M Construction Chemicals.
    - f. MasterEmaco A 660 (formally Acryl 60) by BASF.
    - g. U S Spec Multicoat by U S Mix Products.
    - h. Intralok by W R Meadows.
    - i. Equal as approved by Architect before use. See Section 01 6200.
- C. Expansion Joint Filler:
1. Expansion Joint Filler Material:
    - a. Design Criteria:
      - 1) Resilient, flexible, non-extruding, expansion-contraction joint filler meeting requirements of ASTM D1751.
      - 2) **1/2 inch (12.7 mm)** thick.
      - 3) Resilience:
        - a) When compressed to half of original thickness, recover to minimum of seventy (70) percent of original thickness.
    - b. Type Two Acceptable Products:
      - 1) Fiber Expansion Joint by W R Meadows, Hampshire, IL [www.wrmeadows.com](http://www.wrmeadows.com).
      - 2) Equal as approved by Architect before installation. See Section 01 6200.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verification Of Conditions:
1. Concrete Forms:
    - a. Verify dimensions and spot elevations for locations of forms for concrete footings, stem walls, building slabs, curbs, gutters, walkways, and drainage systems are correct before concrete is placed.
      - 1) Notify Architect of incorrect dimensions or spot elevations in writing.
      - 2) Do not place concrete until corrections are made and verified.

### 3.2 PREPARATION

- A. Concrete Mixing:
1. General:
    - a. All concrete shall be machine mixed.
    - b. Water gauge shall be provided to deliver exact predetermined amount of water for each batch.
    - c. Reliable system must be employed to insure that no less than predetermined amount of cement goes into each batch.

- d. Re-tempering partly set concrete will not be permitted.
- 2. Transit Mix:
  - a. Transit mix concrete may be used provided it conforms to Specifications and tests herein described and ASTM C94/C94M.
  - b. Central plant producing concrete and equipment transporting it are suitable for production and transportation of controlled concrete and plant is currently approved by local state DOT.
  - c. Maximum elapsed time between time of introduction of water and placing shall be one (1) hour.
  - d. Minimum time of mixing shall be one (1) minute per cubic yard after all material, including water, has been placed in drum, and drum shall be reversed for an additional two (2) minutes.
  - e. Mixing water shall be added only in presence of Inspecting Engineer or inspector employed by Testing Agency.
  - f. Trucks shall not be overloaded in excess of rated capacity as recommended by manufacturer.
- B. Surface Preparation:
  - 1. Earthwork Preparation:
    - a. Aggregate base and subgrade:
      - 1) Prepare aggregate base as specified in Section 31 1123.
      - 2) Prepare natural soil subgrade as specified in Section 31 2213.
      - 3) Prepare fill subgrade as specified in Section 31 2323.
  - 2. Inserts, bolts, boxes, templates, pipes, conduits, and other accessories required by Divisions 22, 23, and 26 shall be installed and inspected before placing concrete.
  - 3. Install inserts, bolts, boxes, templates, pipes, conduits, and other accessories furnished under other Sections to be installed as part of work of this Section:
- C. Removal:
  - 1. Remove water and debris from space to be placed:

### 3.3 INSTALLATION

- A. Placing Concrete:
  - 1. General:
    - a. Place as soon after mixing as possible.
    - b. Deposit as nearly as possible in final position.
    - c. No concrete shall be deposited in water.
    - d. Placing of concrete shall be continuous until panel or section is complete.
    - e. Compact concrete in forms by vibrating and other means where required.
      - 1) Thoroughly consolidate concrete around reinforcing bars (Consolidation not required in concrete around reinforcing bars with Mix Type G).
      - 2) Use and type of vibrators shall conform to ACI 309.
    - f. Form vertical surfaces full depth. Do not allow concrete to flow out from under forms in any degree into landscaped areas.
    - g. Consolidate concrete thoroughly.
    - h. Do not embed aluminum in concrete.
    - i. Do not use contaminated, deteriorated, or re-tempered concrete.
    - j. Avoid accumulation of hardened concrete.
    - k. Dusting with cement not permitted.
  - 2. Footings:
    - a. Bear **12 inches (300 mm)** minimum into undisturbed earth or on mechanically compacted engineered fill.
    - b. Level top of finish footing and leave rough.
    - c. Where joints are required, bulkhead, key horizontally, and dowel with two No. 5 reinforcing bars, **48 inches (1 200 mm)** long.
  - 3. Foundation Walls: Leave steel projecting where required for floor tie.
  - 4. Joints:
    - a. Control Joints (Contraction Joints):

- 1) Form control joints with early-entry, dry-cut saws as soon as final trowel operations are complete, and joints can be cut without raveling.
  - 2) Depth of control joints shall be approximately one quarter of concrete slab thickness, but not less than **one inch (25 mm)**.
  - 3) Control joints to be hand tooled in sidewalks, curbs and gutters, mow strips, and aprons.
5. Bonding Fresh And Hardened Concrete:
- a. Re-tighten forms.
  - b. Roughen surfaces.
  - c. Clean off foreign matter and laitance.
  - d. Wet but do not saturate.
  - e. Slush with neat cement grout or apply bonding agent.
  - f. Proceed with placing new concrete.
6. Anchor Bolts:
- a. Place anchor bolts not tied to reinforcing steel immediately following leveling of concrete. Reconsolidate concrete around bolt immediately after placing bolt.
  - b. Do not disturb bolts during finishing process.
- B. Finishing:
- a. Trowel Finish:
    - 1) Steel trowel slab after concrete has set enough to avoid bringing water and fines to surface.
    - 2) Perform troweling with power-driven trowels with exception of areas inaccessible to power-driven trowels, which may be hand-troweled.
    - 3) Continue troweling passes and re-straightening with **10 foot (3 meter)** highway straightedge until surface is free of trowel marks and uniform in texture and appearance.
    - 4) Apply burnished, burned-out trowel finish.
- C. Curing:
1. Membrane Concrete Curing:
    - a. As specified in Section 09 3923 'Membrane Concrete Curing'.
    - b. Follow Manufacturer's written instructions for preparation, application rates, placement, and cleanup:
      - 1) Apply as soon as troweling on interior concrete is complete.
      - 2) Spraying application is required.
      - 3) Do not dilute or thin product.
      - 4) Do not apply when temperature of concrete is less than **40 deg F (4.4 deg C)**.
      - 5) Apply uniformly without puddles or ponding.
      - 6) Do not apply before bleed water has dissipated.
      - 7) Do not apply over standing water.
- D. Tolerances:
1. General:
    - a. Tolerances shall conform to requirements of ACI 117 or CSA A23.1/A23.2, except where specified differently:
      - 1) Floor test surfaces shall be measured and reported within seventy two (72) hours after completion of slab concrete finishing operations and before removal of any supporting shores to eliminate any curling effect F-numbers.
    - b. Maximum Variation Tolerances:
      - 1) Table Three:

Maximum Variation Tolerances		
Thickness, standard	<b>plus 3/8 inch, minus 1/4 inch</b>	<b>plus 9.5 mm, minus 3 mm</b>
Thickness, footings	<b>minus 0 inch</b>	<b>minus 0 mm</b>
Plan, 0 - 20 feet	<b>1/2 inch</b>	<b>12.7 mm</b>
Plan, 40 feet or greater	<b>3/4 inch</b>	<b>19 mm</b>
Plan, footings	<b>plus 1/2 inch</b>	<b>plus 12.7 mm</b>

Eccentricity, footings	2 inch maximum standard, 1/2 inch at masonry	50 mm maximum standard, 12.7 mm at masonry
Openings, size	minus 1/4 inch, plus one inch	minus 6 mm, plus 25.4 mm
Openings, location	plus / minus 1/2 inch at center	plus / minus 12.7 mm at center
Plumb	1/2 inch maximum	12.7 mm maximum
Consecutive Steps, treads	1/4 inch	6 mm
Consecutive Steps, risers	1/8 inch	3 mm
Flight of Stairs, treads	1/4 inch in total run	6 mm in total run
Flight of Stairs, risers	1/8 inch in total height	3 mm in total height

2. Local Flatness / Levelness of Interior Slabs:
  - a. Carpet and Tile Areas:
    - 1) Specified Overall Value of  $F_{F25}$  /  $F_{L20}$  and Minimum Local Value of  $F_{F15}$  /  $F_{L13}$  when tested in accordance with ASTM E1155.
    - 2) Specified Overall Value of  $F_{F30}$  /  $F_{L20}$  and Minimum Local Value of  $F_{F18}$  /  $F_{L13}$  when tested in accordance with ASTM E1155 in ceramic, resilient or vinyl tiled areas.
    - 3) Used on building slabs to be covered by carpet and tile as shown on Contract Drawings. Verify and coordinate with Finish Schedule.
    - 4) Remedy For Out-of-Tolerance Building Slabs:
      - a) Sections of building slabs which do not meet specified tolerances but are within ten (10) percent of specified tolerances, may be corrected by grinding or filling, at Owner's option.
      - b) Remove and replace sections of slabs measuring outside specified correctable tolerances.
      - c) Carpet areas: If floor leveling compounds or concrete patching compounds are required to bring floor into specified tolerances, they will be provided by Owner in conjunction with carpet installation and back-charged to Contractor.

### 3.4 FIELD QUALITY CONTROL

- A. Field Tests And Inspections:
  1. Civil and structural field tests, laboratory testing, and inspections are provided by Owner's independent Testing Agency as specified in Section 01 4523 'Testing And Inspection Services':
    - a. Quality Control is sole responsibility of Contractor:
      - 1) Owner's employment of an independent Testing Agency does not relieve Contractor of Contractor's obligation to perform testing and inspection as part of his Quality Control:
        - a) Testing and inspections, if performed by Contractor, will be responsibility of Contractor to be performed by an independent entity.
  2. Reinforcement Bars and Bolts:
    - a. Testing Agency shall provide inspections will include following:
      - 1) Bolts:
        - a) Inspection of bolts to be installed in concrete prior to and during placement of concrete.
        - b) Periodic inspection of anchors installed in hardened concrete.
      - 2) Reinforcement Bars:
        - a) Periodic inspection of reinforcement bars and placement prior to concrete placement to verify grade, size, cover, spacing, and position of reinforcing.
        - b) Inspect that all reinforcement bars are be positively identified as to heat number and mill analysis.
        - c) Confirm surface of reinforcing bars is free of form release oil or other deleterious substances.
  3. Concrete:
    - a. Testing Agency shall provide testing and inspection for concrete as per ASTM C1077.
    - b. Testing and inspections, if performed, will include following:
      - 1) Periodic inspection verifying use of required design mix.
      - 2) Inspection of reinforcing bars and anchor bolts before placement of concrete for proper installation.

- 3) Inspection at time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests, and determine temperature of concrete.
  - 4) Inspection of concrete placement for proper application techniques.
    - a) Steel tools are not to be used on exterior concrete.
  - 5) Periodic inspection for maintenance of specified curing temperature and techniques:
    - a) Steel tools are not to be used on exterior concrete. Bull floating and finish floating is to be performed with magnesium or wood floats.
  - 6) Periodic inspect of formwork for shape, location and dimensions of concrete member being formed:
    - a) Certified Inspector shall inspect forms for general location, configuration, camber, shoring, sealing of form joints, correct forming material, concrete accessories, and form tie locations.
  - 7) Periodic inspection of concrete finishing operations for proper finishing techniques.
  - 8) Periodic inspection for placement of specified curing compounds.
  - c. Testing Agency will sample and test during placement of concrete as directed by Architect and may include following:
    - 1) Sampling Fresh Concrete: ASTM C172/C172M, except modified for slump to comply with ASTM C94/C94M:
      - a) Slump: ASTM C143/C143M, test each time set of compressive specimens are made.
      - b) Air Content: ASTM C173/C173M, volumetric method for lightweight or normal weight concrete: ASTM C231/C231M, pressure method for normal weight concrete each time set of compression test specimens are made.
      - c) Concrete Temperature: Test each time set of compressive specimens are made.
      - d) Unit Weight: ASTM C567/C567M, test each time set of compressive specimens are made.
    - 2) Concrete floor flatness and floor levelness of interior slabs as per ASTM E1155.
    - 3) Concrete moisture and alkalinity testing. See Section 09 0503 Flooring Substrate Preparation.
  - d. Compression Test Specimen: ASTM C31/C31M, one (1) set of four (4) standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.
  - e. Compressive Strength Tests: ASTM C39/C39M:
    - 1) Obtain one (1) composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd (4 cu m), but less than 50 cu. yd (38 cu m), plus one (1) set for each additional 50 cu. yd (38 cu m) or fraction thereof.
    - 2) One (1) specimen tested at seven (7) days, two (2) specimens tested at twenty-eight (28) days, and one (1) specimen retained in reserve for later testing if required.
    - 3) If strength of field-cured cylinders is less than eighty-five (85) percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing in-place concrete.
    - 4) Strength level of concrete will be considered satisfactory if averages of sets of three (3) consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive strength by more than 500 psi (3.45 MPa).
  - f. Samples:
    - 1) Fresh Concrete: ASTM C172/C172M except modified for slump to comply with ASTM C94/C94M.
      - a) Slump: ASTM C143/C43M, test each time set of compressive specimens are made.
      - b) Air Content: ASTM C173/C173M, volumetric method for lightweight or normal weight concrete: ASTM C231/C231M, pressure method for normal weight.
      - c) Concrete Temperature: Test each time set of compressive specimens are made.
      - d) Unit Weight: ASTM C567/C567M, test each time set of compressive specimens are made.
- B. Non-Conforming Work: Non-conforming work as covered in the General Conditions applies, but is not limited to the following:
1. Correct any work found defective or not complying with contract document requirements at no additional cost to the Owner.

### **3.5 CLEANING**

- A. General:
  - 1. Curing:
    - a. Clean tools, equipment as directed by Manufacturer's instructions.

### **3.6 PROTECTION**

- A. Concrete:
  - 1. Protect concrete that has not received its initial set from precipitation to avoid excess water in mix and unsatisfactory surface finish.
  - 2. Do not allow materials resulting from construction activities, which will affect concrete or application of finish floor systems adversely, to come in contact with interior concrete slabs.
  - 3. Protect interior concrete floors from stains, paint, mortar and other construction activities.
- B. Curing:
  - 1. Restrict foot or vehicle traffic as curing membrane dries as recommended by Manufacturer.

**END OF SECTION**

**SECTION 03 3923****MEMBRANE CONCRETE CURING****PART 1 - GENERAL****1.1 SUMMARY**

- A. Products Furnished But Not Installed Under This Section:
  - 1. Quality of membrane concrete curing as described in Contract Documents.
- B. Related Requirements:
  - 1. Section 03 3111: 'Cast-In-Place Structural Concrete' for application of membrane concrete curing.

**1.2 REFERENCES**

- A. Definitions:
  - 1. Curing: Process by which hydraulic-cement concrete matures and develops hardened properties, over time, as result of continued hydration of cement in presence of sufficient water and heat. Also used to describe action taken to maintain moisture and temperature conditions in freshly placed concrete.
- B. Reference Standards:
  - 1. American Association of State and Highway Transportation Officials:
    - a. AASHTO M 148-05, 'Standard Specification for Liquid Membrane-Forming Compounds for Curing'.
  - 2. ASTM International:
    - a. ASTM C309-11, 'Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete'.

**1.3 SUBMITTALS**

- A. Action Submittals:
  - 1. Product Data:
    - a. Manufacturer's product data.
    - b. Material Safety Data Sheets (MSDS).
- B. Informational Submittals:
  - 1. Manufacturer Instructions:
    - a. Printed installation instructions.

**1.4 QUALITY ASSURANCE**

- A. Regulatory Agency Sustainability Approvals:
  - 1. Comply with applicable VOC standards and other local requirements.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery And Acceptance Requirements:
  - 1. Materials shall be delivered in original, unopened packages with labels intact.



**B. Storage And Handling Requirements:**

1. Follow Manufacturer's written instructions for handling and storage of product:
  - a. Store in unopened containers in clean, dry area between **35 deg F (2 deg C)** and **110 deg F (43 deg C)** (Keep from freezing) or as directed by Manufacturer's instruction.
2. Shelf Life: Do not use curing compound that is over one (1) year from manufacturer date.

**1.6 FIELD CONDITIONS****A. Ambient Conditions:**

1. Do not apply curing compound when temperature of concrete is less than **40 deg F (4.4 deg C)**.

**PART 2 - PRODUCTS****2.1 MATERIALS****A. Membrane Concrete Curing:**

1. Description:
  - a. Clear water-based, ready-to use membrane curing agent that cures freshly placed concrete, forming effective barrier against moisture loss from concrete surface.
2. Design Criteria:
  - a. Exterior Concrete:
    - 1) Dissipating or non-dissipating membrane curing agent.
  - b. Interior Concrete:
    - 1) Dissipating membrane curing agent only.
  - c. VOC-compliant compound.
  - d. Meet requirements of ASTM C309 and AASHTO M 148, Type 1 or 1-D, Class B.
  - e. Interior concrete: containing no mineral spirits, naphtha, or other components detrimental to finish flooring installation.
  - f. Maintain ninety-five (95) percent of mix water present in concrete mass after application.
  - g. Gradually dissipate after twenty-eight (28) days without leaving stain or discoloring concrete surface.
3. Horizontal and Vertical Cast-In-Place Structural Concrete:
  - a. Type One Acceptable Products.
    - 1) Exterior Concrete:
      - a) Clear Cure J7WB by Dayton Superior Corporation, Miamisburg. OH [www.daytonsuperior.com](http://www.daytonsuperior.com).
      - b) Clear Water Resin by Right Point, Dekalb, IL [www.rightpointe.com](http://www.rightpointe.com).
      - c) L&M Cure R by L&M Construction Chemicals, Inc. Omaha, NE [www.lmcc.com](http://www.lmcc.com).
      - d) VOCOMP 20 (do not use when concrete sealer will be applied in areas of freeze/thaw and deicer salts) by W.R. Meadows, Inc. Hampshire, IL [www.wrmeadows.com](http://www.wrmeadows.com).
      - e) 1100-Clear by W. R. Meadows, Inc. Hampshire, IL [www.wrmeadows.com](http://www.wrmeadows.com).
    - 2) Interior Concrete:
      - a) Clear Cure J7WB by Dayton Superior Corporation, Miamisburg. OH [www.daytonsuperior.com](http://www.daytonsuperior.com).
      - b) Clear Water Resin by Right Point, Dekalb, IL [www.rightpointe.com](http://www.rightpointe.com).
      - c) L&M Cure R by L&M Construction Chemicals, Inc. Omaha, NE [www.lmcc.com](http://www.lmcc.com).
      - d) 1100-Clear by W. R. Meadows, Inc. Hampshire, IL [www.wrmeadows.com](http://www.wrmeadows.com).
  - b. Equal product meeting design criteria requirements as approved by Architect/Owner's Representative before BID. See Section 01 6200.

**PART 3 - EXECUTION: Not Used****END OF SECTION**

# **DIVISION 05: METALS**

## **05 0500 COMMON WORK RESULTS OF METALS**

05 0503 SHOP-APPLIED METAL COATINGS

## **05 1000 STRUCTURAL METAL FRAMING**

05 1223 STRUCTURAL STEEL FOR BUILDINGS

END OF TABLE OF CONTENTS

**SECTION 05 0503**

**SHOP-APPLIED METAL COATINGS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Quality of factory or shop-applied priming applied to steel supplied to Project without finish coat.
  - 2. Quality of and procedures for field touch-up and repair of factory-applied priming and galvanizing.
- B. Related Requirements:
  - 1. Sections under 09 9000 heading: Finish painting.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Pre-Installation Conference:
  - 1. Participate in pre-installation conference.

**1.3 SUBMITTALS**

- A. Action Submittals:
  - 1. Product Data:
    - a. Product data and samples, if requested by Architect.

**PART 2 - PRODUCTS**

**2.1 FINISHES**

- A. Factory And Shop-Applied Primer:
  - 1. Compatible with and of equal or better quality than finish paint system to be applied by Sections under 09 9000 heading.
  - 2. Primer on unexposed, unfinished surfaces may be fabricator's standard shop coat.
- B. Repairs To Primed Surface:
- C. Unless otherwise specified, use primer which matches characteristics of original primer and is compatible with and of equal or better quality than finish paint system to be applied by Sections under 09 9000 heading.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Surface Preparation:
  - 1. General:
    - a. Clean, grind, or otherwise prepare welds in steel that is to be coated within limits acceptable to welder responsible for structural integrity.
    - b. Surfaces to be coated shall be clean, dry and free of oil, grease, and corrosion products.

2. Preparation Of Primed, Ungalvanized Surfaces:
  - a. Clean welds and grind serious abrasions.

### 3.2 REPAIR / RESTORATION

- A. Repairs To Primed, Ungalvanized Surfaces:
  1. Thoroughly clean metal and give one (1) prime coat of specified material, well-worked into metal joints and open spaces. Match existing primed finish as required.
    - a. Do not apply primer at temperatures below 45 deg F (7 deg C).
    - b. Protect un-primed machine-finished surfaces against corrosion by priming.

**END OF SECTION**

**SECTION 05 1223****STRUCTURAL STEEL FOR BUILDINGS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Products Furnished But Not Installed Under This Section:
  - 1. Miscellaneous structural steel including following:
    - a. Elevator hoist beam.
- B. Related Requirements:
  - 1. Section 05 0503: 'Shop-Applied Metal Coatings' for quality of priming.
  - 2. Section 06 1100: 'Wood Framing' for installation of miscellaneous structural steel.

**1.2 REFERENCES**

- A. Reference Standards:
  - 1. American Society For Testing And Materials:
    - a. ASTM A36/A36M-14, 'Standard Specification for Carbon Structural Steel'.
    - b. ASTM A53/A53M-18, 'Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless'.
    - c. ASTM A500/A500M-18, 'Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes'.

**PART 2 - PRODUCTS****2.1 COMPONENTS**

- A. Materials:
  - 1. Miscellaneous Steel:
    - a. Meet requirements of ASTM A36/A36M for the following:
      - 1) Miscellaneous structural steel.
- B. Fabrication:
  - 1. Shop prime steel provided under this Section.

**PART 3 - EXECUTION: Not Used****END OF SECTION**

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# **DIVISION 06: WOOD, PLASTICS, AND COMPOSITES**

## **06 1000 ROUGH CARPENTRY**

- 06 1011 WOOD FASTENINGS
- 06 1100 WOOD FRAMING
- 06 1636 WOOD PANEL PRODUCT SHEATHING
- 06 1712 STRUCTURAL COMPOSITE LUMBER: SCL

## **06 2000 FINISH CARPENTRY**

- 06 2001 COMMON FINISH CARPENTRY REQUIREMENTS
- 06 2024 DOOR, FRAME, AND FINISH HARDWARE INSTALLATION

## **06 4000 ARCHITECTURAL WOODWORK**

- 06 4512 ARCHITECTURAL WOODWORK WOOD TRIM

END OF TABLE OF CONTENTS

**SECTION 06 1011****WOOD FASTENINGS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Quality of wood fastening methods and materials used for Rough Carpentry unless specified otherwise.
- B. Related Requirements:
  - 1. Furnishing and installing of other fasteners are specified in individual Sections where installed.

**1.2 REFERENCES**

- A. Reference Standards;
  - 1. ASTM International:
    - a. ASTM A153/A153M-16a, 'Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware'.
    - b. ASTM D3498-18, 'Standard Specification for Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems'.
    - c. ASTM F1667-18a, 'Standard Specification for Driven Fasteners: Nails, Spikes, and Staples'.

**1.3 SUBMITTALS**

- A. Action Submittals:
  - 1. Product Data:
    - a. Manufacturer's literature on framing anchors and powder actuated fasteners.
  - 2. Shop Drawings:
    - a. Submit diameter and lengths of fasteners proposed for use on Project. If length or diameter of proposed fasteners differ from specified fasteners, also include technical and engineering data for proposed fasteners including, but not limited to:
      - 1) Adjusted fastener spacing where using proposed fasteners and,
      - 2) Adjusted number of fasteners necessary to provide connection capacity equivalent to specified fasteners.
    - b. Submit on powder-actuated fasteners other than those specified in Contract Documents showing design criteria equivalents at each application.
    - c. Show type, quantity, and installation location of framing anchors. Where necessary, reference Drawing details, etc, for installation locations.

**PART 2 - PRODUCTS****2.1 MANUFACTURED UNITS**

- A. Description:
  - 1. Nail Terminology:
    - a. When following nail terms are used in relation to this Project, following lengths and diameters will be understood. Refer to nails of other dimensions by actual length and diameter, not by one of listed terms:



Nail Term	Length	Diameter	Length	Diameter
8d Box	2-1/2 inches	0.113 inch	63.5 mm	2.827 mm
8d Common	2-1/2 inches	0.131 inch	63.5 mm	3.389 mm
10d Box	3 inches	0.128 inch	76.2 mm	3.251 mm
10d Common	3 inches	0.148 inch	76.2 mm	3.759 mm
16d Box	3-1/2 inches	0.135 inch	88.9 mm	3.411 mm
16d Sinker	3-1/4 inches	0.148 inch	82.6 mm	3.759 mm
16d Common	3-1/2 inches	0.162 inch	88.9 mm	4.115 mm

B. Materials:

1. Fasteners:

a. General:

- 1) Fasteners for preservative treated and fire-retardant-treated wood shall be of hot dipped zinc-coated galvanized steel, stainless steel, silicon bronzed, or copper. Coating weights for zinc-coated fasteners shall be in accordance with ASTM A153/A153M.

b. Nails:

- 1) Meet requirements of ASTM F1667.
- 2) Unless noted otherwise, nails listed on Drawings or in Specifications shall be common nail diameter, except 16d nails, which shall be box diameter.

c. Wood Screws:

- 1) SDS Screws:
  - a) Category Four Approved Products. See Section 01 6200 for definitions of categories.
    - (1) SDS Screws by Simpson Strong Tie Co, Dublin, CA [www.strongtie.com](http://www.strongtie.com).
  - 2) All Other: Standard type and make for job requirements.

d. Powder-Actuated Fasteners:

- 1) Type One Quality Standard: Hilti X-DNI 62P8.
- 2) Manufacturers:
  - a) Hilti, Tulsa, OK [www.us.hilti.com](http://www.us.hilti.com).
  - b) Redhead Division of ITW, Wood Dale, IL [www.itw-redhead.com](http://www.itw-redhead.com) and Markham, ON [www.itwconstruction.ca](http://www.itwconstruction.ca).
  - c) Equals as approved by Architect through shop drawing submittal before installation. See Section 01 6200.

2. Adhesives:

a. Construction Mastics:

- 1) Meet requirements of 'APA-The Engineered Wood Association' Specification AFG-01 or ASTM D3498.
- 2) Use phenol-resorcinol type for use on pressure treated wood products.

3. Framing Anchors:

- a. Framing anchors and associated fasteners in contact with preservative hot dipped zinc-coated galvanized steel or stainless steel. Do not use stainless steel items with galvanized items.
- b. Type Two Acceptable Products:
  - 1) KC Metals Inc, San Jose, CA [www.kcmetals.com](http://www.kcmetals.com).
  - 2) Simpson Strong Tie Co, Dublin, CA [www.strongtie.com](http://www.strongtie.com).
  - 3) United Steel Products Co Inc (USP), Montgomery, MN [www.uspconnectors.com](http://www.uspconnectors.com).
  - 4) Equals as approved by Architect through shop drawing submittal before installation. See Section 01 6200.

## PART 3 - EXECUTION

### 3.1 ERECTION

- A. Secure one Manufacturer approved fastener in each hole of framing anchor that bears on framing member unless approved otherwise in writing by Architect.
- B. Provide washers with bolt heads and with nuts bearing on wood.

**END OF SECTION**

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**SECTION 06 1100****WOOD FRAMING****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install wood framing and blocking as described in Contract Documents.
- B. Products Installed But Not Furnished Under This Section:
  - 1. Structural composite lumber.
- C. Related Requirements:
  - 1. Section 06 1712: 'Structural Composite Lumber - SCL'.

**1.2 REFERENCES**

- A. Association Publications:
  - 1. American Lumber Standard Committee (ALSC) (Maintains NIST standard):
    - a. Voluntary Product Standard:
      - 1) PS 20-15, 'American Softwood Lumber Standard'.
  - 2. National Institute of Standards and Technology (NIST), U. S. Department of Commerce:
    - a. Voluntary Product Standard DOC PS 20-15, 'American Softwood Lumber Standard'.

**1.3 ADMINISTRATIVE REQUIREMENTS**

- A. Pre-Installation Conference:
  - 1. Participate in MANDATORY pre-installation conference held jointly with Section 06 1636.
    - a. Schedule pre-installation conference immediately before beginning framing work.

**1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery And Acceptance Requirements:
  - 1. Protect lumber and sheathing and keep under cover in transit and at job site.
  - 2. Do not deliver material unduly long before it is required.
- B. Storage And Handling Requirements:
  - 1. Store lumber and sheathing on level racks and keep free of ground to avoid warping.
  - 2. Stack to insure proper ventilation and drainage.

**PART 2 - PRODUCTS****2.1 MATERIALS**

- A. Dimension Lumber:
  - 1. Design Criteria:
    - a. Meet requirements of PS 20 and National Grading Rules for softwood dimension lumber.

- b. Bear grade stamp of WWPA, SPIB, or other association recognized by American Lumber Standards Committee identifying species of lumber by grade mark or by Certificate of Inspection.
- c. Lumber **2 inches (50 mm)** or less in nominal thickness shall not exceed 19 percent in moisture content at time of fabrication and installation and be stamped 'S-DRY', 'K-D', or 'MC15'.
- d. Preservative Treated Plates / Sills:
  - 1) **2x4 (38 mm by 64 mm)**: Standard and better Douglas Fir, Southern Pine, or HemFir, or StrandGuard by iLevel by Weyerhaeuser Boise, ID [www.ilevel.com](http://www.ilevel.com). (LSL 1.3 E)
  - 2) **2x6 (38 mm by 140 mm)** And Wider: No. 2 or or MSR 1650f - 1.5e Douglas Fir, Southern Pine, HemFir, or StrandGuard by iLevel by Weyerhaeuser, Boise, ID [www.ilevel.com](http://www.ilevel.com). (LSL 1.3 E).

- B. Lumber Ledgers:
1. Design Criteria:
    - a. No. 2 Douglas Fir-Larch, or Southern Pine.

## 2.2 ACCESSORIES

- A. Blocking:
1. Sound lumber without splits, warps, wane, loose knots, or knots larger than **1/2 inch (13 mm)**.
- B. Sill Sealer:
1. Closed-cell polyethylene foam, **1/4 inch (6 mm)** thick by width of plate.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. General:
1. Use preservative treated wood for wood members in contact with concrete or masonry, including wall, sill, and ledger plates, door and window subframes and bucks, etc.
- B. Interface With Other Work:
1. Coordinate with other Sections for location of blocking required for installation of equipment and building specialties. Do not allow installation of gypsum board until required blocking is in place.
  2. Where manufactured items are to be installed in framing, provide rough openings of dimensions within tolerances required by manufacturers of such items. Confirm dimensions where not shown on Contract Drawings.
- C. Tolerances:
1. Walls:
    - a. **1/4 inch (6 mm)** in **20 feet (6 meters)**, non-cumulative in length of wall.
    - b. **1/8 inch (3 mm)** in **10 feet (3 meters)** with **1/4 inch (6 mm)** maximum in height of wall.
    - c. Distances between parallel walls shall be **1/4 inch (6 mm)** maximum along length and height of wall.
- D. Walls:
1. Openings: Single, bearing stud supporting header and one adjacent (king) stud continuous between top and bottom plates, unless shown otherwise.
  2. Corners And Partition Intersections: Triple studs.
  3. Top Plates In Bearing Partitions: Doubled or tripled and lapped. Stagger joints at least **48 inches (1 200 mm)**.
  4. Sill Plates:
    - a. Non-Structural Walls: Fasten with powder actuated fasteners.

- b. In addition to requirements of paragraphs 'a' and 'b' above, set sill plates of interior walls measuring less than **36 inches (900 mm)** in length in solid bed of specified construction adhesive, except where sill sealer is used.
  - c. Install specified seal sealer under sill plates of exterior walls of main building and of acoustically insulated interior walls.
5. Installation of Structural Composite Lumber:
- a. Install temporary horizontal and cross bracing to hold members plumb and in safe condition until permanent bracing is installed.
  - b. Install permanent bracing and related components before application of loads to members.
6. Secure headers and header backing to structure as described in Contract Documents.
- E. Accessory / Equipment Mounting And Gypsum Board Back Blocking (nailers) for Wood Framing):
- 1. Furnish and install blocking in wood framing required for hardware, specialties, equipment, accessories, and mechanical and electrical items, etc.

**END OF SECTION**

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**SECTION 06 1636****WOOD PANEL PRODUCT SHEATHING****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install wood panel product sheathing required for walls and roof as described in Contract Documents.
- B. Related Requirements:
  - 1. Section 01 0000: 'General Requirements':

**1.2 REFERENCES**

- A. Association Publications:
  - 1. National Institute of Standards and Technology (NIST), U. S. Department of Commerce:
    - a. Voluntary Product Standard DOC PS 1-09. 'Structural Plywood'.
    - b. Voluntary Product Standard DOC PS 2-04. 'Performance Standard for Wood-Based Structural-Use Panels'.
  - 2. The Engineered Wood Association (APA), Tacoma, WA [www.apawood.org](http://www.apawood.org).
    - a. Performance Rated Panels, 'Product Guide' (for products bearing the APA trademark) December 2011.
    - b. Voluntary Product Standard:
      - 1) PS 1-09. 'Structural Plywood'.
      - 2) PS 2-04. 'Performance Standard for Wood-Based Structural-Use Panels'.
    - c. PRP-108 'Performance Standards and Policies for Structural-Use Panels'.
  - 3. TECO, Cottage Grove, WI [www.tecotested.com](http://www.tecotested.com).
    - a. TECO PRP-133: ('Fire Rated Assemblies – OSB substitution for plywood in UL fire-rated assemblies that specify plywood).
- B. Reference Standards:
  - 1. International Code Council (IBC) (2018 or latest AHJ approved edition):
    - a. IBC Chapter 17, 'Special Inspections And Tests'.

**1.3 ADMINISTRATIVE REQUIREMENTS**

- A. Pre-Installation Conference:
  - 1. Participate in pre-installation conference as specified in Section 06 1100.
  - 2. In addition to agenda items specified in Section 01 3100 and Section 06 1100, review following:
    - a. Review Section 01 4523 for Testing and Inspection administrative requirements and responsibilities and Field Quality Control inspection required of this section.
- B. Scheduling:
  - 1. Notify Testing Agency and Architect twenty-four (24) hours minimum before placing sheathing.

**1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery And Acceptance Requirements:
  - 1. Do not deliver material unduly long before it is required.
  - 2. Protect sheathing and keep under cover in transit and at job site.



- B. Storage And Handling Requirements:
  1. Store sheathing on level racks and keep free of ground.
  2. Stack to insure proper ventilation and drainage.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. Performance:
  1. Design Criteria:
    - a. Meet requirements of PS 1, PS 2, or PRP-133 (TECO). Except where plywood is specifically indicated on Contract Drawings, oriented strand board (OSB) is acceptable.
- B. Sheathing:
  1. Sheathing:
    - a. Sheathing shall bear grade stamp from American Plywood Association (APA) or equal grading organization.
    - b. Sheathing shall not exceed 18 percent moisture content when fabricated or more than 19 percent when installed in Project.
    - c. Sheathing **23/32 inch (18.3 mm)** thick and thicker used for single-layer subflooring shall be tongue and groove.
    - d. Sheathing used for same purpose shall be of same thickness. In all cases, thickness specified is minimum required regardless of span rating.
    - e. Minimum span ratings for given thicknesses shall be as follows:

Thickness	Span Rating
<b>15/32 inch actual</b>	32 / 16
<b>1/2 inch nominal</b>	32 / 16
<b>19/32 inch actual</b>	40 / 20
<b>5/8 inch nominal</b>	40 / 20

**2.2 ACCESSORIES**

- A. Nails:
  1. As indicated on Contract Drawings.

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. General:
  1. Top of nail heads shall be flush with sheathing surface.
  2. Use of edge clips to provide spacing between sheathing panels is acceptable.
- B. Wall Sheathing:
  1. Spacing:
    - a. Provide **1/8 inch (3 mm)** space between sheets at end and edge joints.
  2. Edge Bearing And Blocking:
    - a. Panel edges shall bear on framing members and butt along their center lines.
    - b. Back block panel edges, which do not bear on framing members, with **2 inch nominal (45 mm)** framing.
  3. Nail Spacing:
    - a. As indicated on Contract Drawings.

- b. Place nails not less than **3/8 inch (9.5 mm)** in from edge.
  - 4. Thickness:
    - a. As indicated on Contract Drawings.
  - 5. Do not install any piece of wall sheathing with shortest dimension of less than **12 inches (300 mm)**.
- C. Roof Sheathing:
- 1. Placing:
    - a. Lay face grain at right angles to supports. Provide blocking for support if framing turns at roof overhang.
    - b. Provide **1/8 inch (3 mm)** space between sheets at end and side joints.
    - c. Stagger panel end joints.
    - d. Sheathing shall be continuous of two spans minimum.
  - 2. Edge Bearing and Blocking:
    - a. As indicated on Contract Drawings.
  - 3. Nail Spacing:
    - a. As indicated on Contract Drawings.
    - b. Place nails at least **3/8 inch (9.5 mm)** in from edge.
  - 4. Thickness:
    - a. As indicated on Contract Drawings.
  - 5. Do not install any piece of roof sheathing with shortest dimension of less than **24 inches (600 mm)** unless support is provided under all edges.

### 3.2 FIELD QUALITY CONTROL

- A. Field Inspections:
- 1. Sheathing:
    - a. General:
      - 1) Owner is responsible for Quality Assurance. Quality assurance performed by Owner will be used to validate Quality Control performed by Contractor.
      - 2) Quality Control is sole responsibility of Contractor as specified in Section 01 4523 'Testing And Inspection Services'.
    - b. For walls and roof areas where nail spacing is **4 inches (100 mm)** and less on center, Inspector shall verify wood panel sheathing, grade, thickness and nominal size of framing members, adjoining panel edges, nail size and spacing, bolting and other fastening of other components.

### 3.3 PROTECTION

- A. Protect roof sheathing from moisture until roofing is installed.

**END OF SECTION**

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**SECTION 06 1712****STRUCTURAL COMPOSITE LUMBER: SCL****PART 1 - GENERAL****1.1 SUMMARY**

- A. Products Furnished But Not Installed Under This Section:
  - 1. Laminated Veneer Lumber (LVL).
- B. Related Requirements:
  - 1. Section 06 1100: 'Wood Framing' for installation, securing, bracing, etc.

**1.2 REFERENCES**

- A. Reference Standards:
  - 1. ASTM International:
    - a. ASTM D2559-12a(2018), 'Standard Specification for Adhesives for Structural Laminated Wood Products for Use Under Exterior Exposure Conditions'.
    - b. ASTM D5456-18, 'Standard Specification for Evaluation of Structural Composite Lumber Products'.

**1.3 SUBMITTALS**

- A. Informational Submittals:
  - 1. Certificates: Provide certification confirming that material structural design properties and design stresses have met or exceed requirements shown on Drawings.
  - 2. Test And Evaluation Reports: Copies of ICC or CCMC reports showing approval materials.

**1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Storage And Handling Requirements:
  - 1. Store members on job site in accordance with Manufacturer's instructions.
  - 2. Keep dry and provide supports to keep members off floor or ground.
  - 3. Split plastic wrappers of members stored encased in plastic on bottom side to allow for air circulation.

**PART 2 - PRODUCTS****2.1 MANUFACTURED UNITS**

- A. Acceptable Manufacturers:
  - 1. Boise Cascade Corp, Boise, ID [www.bc.com](http://www.bc.com).
  - 2. Georgia-Pacific Corp, Atlanta, GA [www.gp.com](http://www.gp.com).
  - 3. Jager Industries Inc, Calgary, AB [www.jagerbuildingsystems.com](http://www.jagerbuildingsystems.com).
  - 4. Louisiana Pacific Corp, Portland, OR [www.lpcorp.com](http://www.lpcorp.com).
  - 5. Roseburg Forest Products, Roseburg, OR [www.roseburg.com](http://www.roseburg.com).
  - 6. Trus Joist Corp, Div Weyerhaeuser, Boise, ID [www.tjm.com](http://www.tjm.com) or Surrey, BC (604) 588-7878.
  - 7. Web Joist, Chehalis, WA [www.webjoist.com](http://www.webjoist.com).
  - 8. Weyerhaeuser, Engineered Lumber Products, Boise, ID [www.woodbywy.com](http://www.woodbywy.com).

9. Equal as approved by Architect before bidding. See Section 01 6200.
- B. Design Criteria:
  1. Materials shall be tested and evaluated in accordance with ASTM D5456.
  2. Materials shall have current ICC-ES Evaluation Report, report approved by International Codes Council, or report issued by Architect approved model code evaluation service and shall comply with requirements of report.
- C. Materials:
  1. Members:
    - a. Identify materials by stamp or stamps indicating manufacturer's name, product trade name, grade, species (if applicable), evaluation report number, plant number, and name or logo of independent inspection agency.
  2. Adhesive: Meet requirements of ASTM D2559.
- D. Fabrication: Materials shall be manufactured in a plant evaluated for fabrication by governing code evaluation service and under supervision of third party inspection agency listed by governing code evaluation service.

**PART 3 - EXECUTION: Not Used**

**END OF SECTION**

**SECTION 06 2001****COMMON FINISH CARPENTRY REQUIREMENTS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install sealants required for items installed under this Section, as described in Contract Documents.
  - 2. Furnish and install following items as described in Contract Documents:
- B. Products Installed But Not Furnished Under This Section:
  - 1. Miscellaneous Wood Trim.
  - 2. Selected Equipment.
  - 3. Miscellaneous as specified elsewhere.
- C. Related Requirements:
  - 1. Section 06 1100: 'Wood Framing' for furring and blocking.
  - 2. Section 06 2210: 'Miscellaneous Wood Trim'.
    - a. Wood Trim.
  - 3. Sections under 06 4000 Heading: Furnishing of Architectural Woodwork.
    - a. Section 06 4001: 'Common Architectural Woodwork Requirements':
      - 1) Approved Fabricators.
      - 2) Quality of wood materials to be used in Finish Carpentry.
    - b. Section 06 4005: 'Plastic Laminate' for countertops.
    - c. Section 06 4114: 'Wood-Veneer-Faced Architectural Cabinets'.
      - 1) Custom Casework:
    - d. Section 06 4512: 'Architectural Woodwork Wood Trim'.
  - 4. Section 07 9213: 'Elastomeric Joint Sealants' for quality of sealants, submittal and installation requirements.

**1.2 REFERENCES**

- A. Association Publications:
  - 1. Architectural Woodwork Institute / Architectural Woodwork Manufacturers Association of Canada / Woodwork Institute, 46179 Westlake Drive, Suite 120, Potomac Falls, VA [www.awinet.org](http://www.awinet.org).
    - a. Architectural Woodwork Standards (AWS), 2nd Edition, 2014.
- B. Definitions:
  - 1. Grade: Unless otherwise noted, this term means Grade rules for Economy, Custom, and/or Premium Grade:
    - a. Economy Grade: The lowest acceptable grade in both material and workmanship requirements, and is for work where price outweighs quality considerations.
    - b. Custom Grade: Typically specified for and adequately covers most high-quality architectural woodwork, providing a well-defined degree of control over a project's quality of materials, workmanship, or installation.
    - c. Premium Grade: The highest Grade available in both material and workmanship where the highest level of quality, materials, workmanship, and installation is required.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Glue: Waterproof and of best quality.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verification Of Conditions:
  - 1. Verify walls, ceilings, floors, and openings are plumb, straight, in-line, and square before installing Architectural Woodwork.
  - 2. Report conditions that are not in compliance to Architect before starting installation.

### 3.2 PREPARATION

- A. Surface Preparation:
  - 1. Install Architectural Woodwork after wall and ceiling painting is completed in areas where Architectural Woodwork is to be installed.
- B. Items Installed But Not Furnished Under This Section: Install in accordance with requirements specified in Section furnishing item.

### 3.3 INSTALLATION

- A. Special Techniques:
  - 1. AWS Custom Grade is minimum acceptable standard, except where explicitly specified otherwise, for installation of architectural woodwork.
- B. General Architectural Woodwork Installation:
  - 1. Fabricate work in accordance with measurements taken on Project site.
  - 2. Scribe, miter, and join accurately and neatly to conform to details.
  - 3. Exposed surfaces shall be machine sanded, ready for finishing.
  - 4. Allow for free movement of panels.
  - 5. Countersink nails. Countersink screws and plug those exposed to view.
  - 6. Attach custom casework as specified in Sections under 06 4000 Heading: 'Furnishing of Architectural Woodwork' to wall blocking with #10 x 3 inch (76 mm) minimum Cabinet Screws. Attach wall cabinets with screws equally spaced horizontally not to exceed 12 inches (305 mm) O.C. with 3 inch (76 mm) maximum spacing at cabinet edges.

**END OF SECTION**

**SECTION 06 2024****DOOR, FRAME, AND FINISH HARDWARE INSTALLATION****PART 1 - GENERAL****1.1 SUMMARY**

- A. Products Installed But Not Furnished Under This Section:
  - 1. Flush wood doors.
  - 2. Relocated existing finish hardware.
- B. Related Requirements:
  - 1. Section 08 1416: 'Flush Wood Doors'.
  - 2. Section 07 2116: 'Blanket Insulation' for quality of fiberglass insulation.
  - 3. Section 07 9213: 'Elastomeric Joint Sealants' for quality of sealants.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Pre-Installation Conference.
  - 1. Participate in pre-installation conference.
  - 2. In addition to agenda items specified in Section 01 3100, review following:
    - a. Check for appropriate blocking and for correct hardware models and fasteners for substrates.

**1.3 SUBMITTALS**

- A. Informational Submittals:
  - 1. Installer Report:
    - a. Report verifying correct operation and adjustment of installed hardware.
  - 2. Special Procedure Submittals:
    - a. Copy of 'Installation Guide for Doors & Hardware' by Door & Hardware Institute. Guide may be obtained from Door and Hardware Institute (DHI).

**1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery And Acceptance Requirements:
  - 1. Wood Doors:
    - a. Do not have doors delivered to building site until after plaster, cement, and taping compound are dry.
    - b. If doors are to be stored at job-site for more than one week, seal top and bottom edges if not factory sealed.
- B. Storage And Handling Requirements:
  - 1. Wood Doors:
    - a. Store flat on a level surface in a dry, well ventilated building.
      - 1) Cover to keep clean but allow air circulation
    - b. Handle with clean gloves and do not drag doors across one another or across other surfaces.
    - c. Do not subject doors to abnormal heat, dryness, or humidity or sudden changes therein
      - 1) Condition doors to average prevailing humidity of locality before hanging.



**PART 2 - PRODUCTS: Not Used****PART 3 - EXECUTION****3.1 INSTALLATION**

- A. Doors:
  - 1. When Project is completed, doors shall not bind, stick, or be mounted so as to cause future hardware difficulties.
  - 2. Do not impair utility or structural strength of door in fitting of door, applying hardware, or cutting and altering door louvers, panels, or other special details.
- B. Hardware:
  - 1. General:
    - a. Mount closers on jamb stop side of door in parallel arm configuration where it is physically possible to do so and not damage or hinder operation of door or closer.
  - 2. Hardware for Wood Doors:
    - a. If doors are not factory-machined, use hardware templates furnished by Hardware Manufacturer when mounting hardware.
    - b. Set hinges flush with edge surface. Be sure that hinges are set in a straight line to prevent distortion.
    - c. Mount door latches high in strike plate opening so when door later settles, latch will not bind.

**3.2 FIELD QUALITY CONTROL**

- A. Field Tests:
  - 1. Arrange to have keys brought to Project site and, in meeting attended by local representatives and Architect, test every new key and locking mechanism.
- B. Non-Conforming Work: Non-conforming work as covered in the General Conditions applies, but is not limited to the following:
  - 1. Correct any work found defective or not complying with contract document requirements at no additional cost to the Owner.

**END OF SECTION**

**SECTION 06 4512****ARCHITECTURAL WOODWORK WOOD TRIM****PART 1 - GENERAL****1.1 SUMMARY**

- A. Products Furnished But Not Installed Under This Section:
  - 1. Casings, stops, handrails, and jambs.
  - 2. Chair rails.
  - 3. Hardwood trim for wall covering.
  
- B. Related Requirements:
  - 1. Section 06 1100: 'Wood Framing' for wall blocking required for Wood Trim.
  - 2. Section 06 2001: 'Common Finish Carpentry Requirements':
    - a. Installation of Wood Trim.
  - 3. Section 06 2210: Remaining Wood Trim.
  - 4. Section 06 4001: 'Common Architectural Woodwork Requirements':
    - a. General standards for materials and fabrication of Architectural Woodwork.
  - 5. Section 08 1429: Interior Flush Wood Doors.
  - 6. Section 09 9324: 'Interior Clear-Finished Hardwood'.

**1.2 REFERENCES**

- A. Association Publications:
  - 1. Architectural Woodwork Institute / Architectural Woodwork Manufacturers Association of Canada / Woodwork Institute, 46179 Westlake Drive, Suite 120, Potomac Falls, VA [www.awinet.org](http://www.awinet.org).
    - a. Architectural Woodwork Standards (AWS), 2nd Edition, 2014.
  
- B. Definitions:
  - 1. Grade: Unless otherwise noted, this term means Grade rules for Economy, Custom, and/or Premium Grade.
    - a. Custom Grade: Typically specified for and adequately covers most high-quality architectural woodwork, providing a well-defined degree of control over a project's quality of materials, workmanship, or installation.
  - 2. Plain-Sawn: A hardwood figure developed by sawing a log lengthwise at a tangent to the annual growth rings. It appears as U-shaped or straight markings in the board's face.
  - 3. Running Trim: Generally combined in the term "standing and running trim" and refers to random, longer length trims delivered to the jobsite (e.g., baseboard, chair rail, crown molding).

**1.3 SUBMITTALS**

- A. Action Submittals:
  - 1. Shop Drawings:
    - a. Include materials used, standing and running trim profiles, joint details, and hardware.
  - 2. Samples:
    - a. Interior Hardwood for Transparent Finish:
      - 1) Before performing work of this Section, prepare Control Sample, to match sample available from Owner, to be used as finishing standard for interior clear finished hardwood as specified in Section 09 9324.
      - 2) Design Criteria:
        - a) Provide 8 inch by 10 inch (200 mm by 255 mm) sample of Red Oak to match Owner provided stain color selected for Project.

- b) Control Sample will be used as performance standard for evaluating finish provided.

B. Informational Submittals:

1. Source Quality Control Submittals:

a. Samples:

- 1) Interior Hardwood for Transparent Finish:
  - a) Owner will provide Control Sample for finish.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

A. Manufacturers:

- 1. Approved Fabricators. See Section 06 4001 for Approved Fabricators.

B. Performance / Design Criteria: Conform to requirements of Section 06 4001 'Common Architectural Woodwork Requirements'.

- 1. Glue: Waterproof and of best quality.
- 2. Factory-finish to match Owner selected sample as specified in Section 09 9324.

C. Architectural Woodwork Wood Trim:

1. Interior Hardwood For Transparent Finish:

a. Design Criteria:

- 1) Solid wood shall be plain sawn Red Oak.
- 2) Paneling shall be panel product with plain sliced Red Oak veneer.
- 3) Finish to match Owner selected sample as specified in Section 09 9324.

b. Match existing Project Color Scheme:

- 1) Control Sample provided by Owner:
  - a) Control Sample will be existing wood item from Project.

### **2.2 SOURCE QUALITY CONTROL**

A. Inspections:

1. Clear Finished Hardwood:

- a. Color matches Owner provided sample specified in Section 09 9324.

## **PART 3 - EXECUTION Not Used**

**END OF SECTION**

# DIVISION 07: THERMAL AND MOISTURE PROTECTION

## 07 2000 THERMAL PROTECTION

07 2116 BLANKET INSULATION

## 07 3000 STEEP SLOPE ROOFING

07 3113 ASPHALT SHINGLES

## 07 4000 ROOFING AND SIDING PANELS

07 4619 STEEL SIDING

## 07 6000 FLASHING AND SHEET METAL

07 6310 STEEP SLOPE ROOF FLASHING: ASPHALT SHINGLES

07 6311 METAL SOFFIT PANELS

07 6322 STEEL FASCIA

## 07 9000 JOINT PROTECTION

07 9213 ELASTOMERIC JOINT SEALANTS

END OF TABLE OF CONTENTS

**SECTION 07 2116****BLANKET INSULATION****PART 1 - GENERAL****1.1 SUMMARY**

## A. Includes But Not Limited To:

1. Furnish and install faced acoustic batt insulation as described in Contract Documents.

## B. Related Requirements:

1. Section 06 2024: 'Door, Frame, And Finish Hardware Installation' for furnishing and installing of insulation in hollow metal door frames.

**1.2 REFERENCES**

## A. Reference Standards:

1. ASTM International:
  - a. ASTM C665-17, 'Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing'.

**1.3 QUALITY ASSURANCE**

## A. Regulatory Agency Sustainability Approvals:

1. Insulation shall be manufactured and installed in compliance with International Building Code (IBC) or other applicable building codes.

**PART 2 - PRODUCTS****2.1 SYSTEMS**

## A. Manufacturers:

## 1. Insulation:

## a. Type One Acceptable Manufacturers:

- 1) Certaineed Corp, Valley Forge, PA [www.certainteed.com](http://www.certainteed.com).
- 2) FiberTEK, Salt Lake City, UT [www.fibertekinsulation.com](http://www.fibertekinsulation.com).
- 3) Guardian Fiberglass, Greer, SC [www.guardianbp.com](http://www.guardianbp.com).
- 4) Johns Manville, Denver, CO [www.jm.com](http://www.jm.com).
- 5) Knauf Fiber Glass, Shelbyville, IN [www.knaufusa.com](http://www.knaufusa.com).
- 6) Owens-Corning Fiberglass Corporation, Toledo, OH [www.owens-corning.com](http://www.owens-corning.com).
- 7) Thermafiber, Wabash, IL [www.thermafiber.com](http://www.thermafiber.com).

## b. Equal as approved by Architect before bidding. See Section 01 6200.

## B. Materials:

## 1. Acoustic Insulation:

- a. Order insulation by 'R' value rather than 'U' value, rating, or thickness, either 16 or 24 inches (400 or 600 mm) wide according to framing spacing.
- b. Faced Insulation:
  - 1) Kraft faced meeting requirements of ASTM C665, Type II, Class C.
- c. Unfaced Insulation: Meet requirements of ASTM C665, Type I.
- d. 'R' Value Required:

## 1) Wood Wall Stud Framing:

R-11	3-1/2 inches deep	89 mm deep
R-19	5-1/2 inches deep	140 mm deep

**PART 3 - EXECUTION****3.1 INSTALLATION**

## A. General:

1. Leave no gaps in insulation envelope.
2. If two layers of insulation are used to attain required 'R' value, only layer towards interior of building shall have facing.
3. Provide minimum clearance around recessed lighting fixtures as approved by local code.

## B. In Framing:

1. Install insulation behind plumbing and wiring, around duct and vent line penetrations, and in similar places.
2. Fit ends of batts snug against top and bottom plates.
3. Fit batts snug against stud framing at each side.

**END OF SECTION**

**SECTION 07 3113****ASPHALT SHINGLES****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install Asphalt Shingle Roofing System as described in Contract Documents.
- B. Products Installed But Not Furnished Under This Section:
  - 1. Miscellaneous flashing and sheet metal:
    - a. Drip metal.

**1.2 REFERENCES**

- A. Definitions:
  - 1. Flame Spread Classification: Categories as per ASTM E84/UL 723 or CAN/ULC-S102:
    - a. Class A: Highest fire-resistance rating for roofing as per ASTM E108. Indicated roofing is able to withstand severe exposure to fire exposure to fire originating from sources outside building.
    - b. Class B: Fire-resistance rating indicating roofing materials are able to withstand moderate exposure to fire originating from sources outside of building.
    - c. Class C: Fire-resistance rating indicating roofing materials are able to withstand light exposure to fire originating from sources outside of building.
  - 2. Wind Uplift: Wind-induced forces on roof system or components in roof system. Wind uplift generally includes negative pressure component caused by wind being deflected around and across surfaces of building and positive pressure component from air flow beneath roof deck.
- B. Reference Standards:
  - 1. ASTM International:
    - a. ASTM D226-09/D226M-17, 'Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing'.
    - b. ASTM D1970/D1970M-18, 'Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection'.
    - c. ASTM D3018/D3018M-11(2017), 'Standard Specification for Class A Asphalt Shingles Surfaced with Mineral Granules'.
    - d. ASTM D3019/D3019M-17, 'Standard Specification for Lap Cement Used with Asphalt Roll Roofing, Non-Fibered, Asbestos-Fibered, and Non-Asbestos-Fibered'.
    - e. ASTM D3161/D3161M-16a, 'Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method)'.
    - f. ASTM D3462/D3462M-16, 'Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules'.
    - g. ASTM D4869/D4869M-16a, 'Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing'.
    - h. ASTM D7158/D7158M-17, 'Standard Test Method for Wind Resistance of Asphalt Shingles (Uplift Force/Uplift Resistance Method)'.
    - i. ASTM E84-18b, 'Standard Test Method for Surface Burning Characteristics of Building Materials'.
    - j. ASTM E108-17, 'Standard Test Methods for Fire Tests of Roof Coverings'.
    - k. ASTM F1667-18, 'Standard Specification for Driven Fasteners: Nails, Spikes, and Staples'.
  - 2. Canadian Standards Association (CSA Group):
    - a. CSA A123.5-16, 'Asphalt Shingles Made from Organic Felt and Surfaced with Mineral Granules / Asphalt Shingles Made From Glass Felt and Surfaced With Mineral Granules'.

3. International Building Code (IBC) (2018 Edition or latest edition adopted by AHJ):
  - a. Chapter 15, 'Roof Assemblies And Rooftop Structures'.
4. National Fire Protection Association:
  - a. NFPA 101: 'Life Safety Code' (2015 Edition).
5. Standards Council of Canada:
  - a. CAN/ULC-S102:2018, 'Method of Test for Surface Burning Characteristics of Building Materials and Assemblies'.
  - b. CAN/ULC-S107:2010-R2017, 'Methods of Fire Tests of Roof Coverings'.
6. Underwriters Laboratories (UL):
  - a. UL 580: 'Tests for Uplift Resistance of Roof Assemblies' (5th Edition).
  - b. UL 723, 'Tests for Safety Test for Surface Burning Characteristics of Building Materials' (11th Edition).
  - c. UL 790, 'Standard Test Methods for Fire Tests of Roof Coverings' (8th Edition).
  - d. UL 2218, 'Standard for Impact Resistance of Prepared Roof Covering Materials' (2nd Edition).

### 1.3 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conference:
  1. Participate in MANDATORY pre-installation conference:
    - a. Roofing Installer's Foreman and those responsible for installation of roofing to be in attendance. Include Shingle Manufacturer's Representative if available.
  2. Schedule pre-installation conference at project site after completion of the installation of roof sheathing but before installation of any roofing system component.
  3. In addition to agenda items specified in Section 01 3100, review following:
    - a. Review if Project could have ice dam problems.
    - b. Review Shingle Manufacturer's ventilation requirements.
    - c. Review Shingle Manufacturer's Ambient Conditions requirements.
    - d. Review existing roof conditions including moisture on deck, protruding deck fasteners, specified gaps between sheathing, and other items affecting issuance of roofing warranty.
    - e. Review proper lashing, secondary underlayment, sealants, and nailing requirements.
    - f. Review racking installation method is not permitted.
    - g. Review Special Procedure Submittal for Warranty Information to be given to Manufacturer before Manufacture will issue Roof Warranty by Installer.
    - h. Review safety issues.
- B. Sequencing:
  1. Sequence of Roofing Materials:
    - a. Apply continuous **12 inches (300 mm)** wide strip at edge of eaves and rakes of secondary underlayment.
    - b. Metal drip edge.
    - c. Secondary underlayment.
    - d. Primary underlayment.
    - e. Asphalt shingles.
    - f. Counter flashings over step flashing.
  2. Coordinate sequencing of products furnished in Section 07 7226: 'Ridge Vents'.

### 1.4 SUBMITTALS

- A. Action Submittals:
  1. Product Data:
    - a. Color and style selection.
  2. Samples:
    - a. Full size shingle.
- B. Informational Submittals:
  1. Certificates:



- a. Installers:
    - 1) Provide current Certification for completion of certified training from Shingle Manufacturer.
    - 2) Installer's signed certificate stating roofing system complies with Contract Documents performance requirements and work only performed by trained and authorized personnel in those procedures.
  2. Tests And Evaluation Reports:
  3. Reports:
    - a. Manufacturer's test reports.
    - b. Wind speed coverage for warranted wind speed.
    - c. High wind reports and approvals if required by AHJ.
  4. Manufacturers' Instructions:
    - a. Shingle Manufacturer's installation instructions and details for installation of secondary underlayment at penetrations, dormers, eaves, rakes, etc, to fit environmental conditions at Project.
  5. Special Procedure Submittals:
    - a. Contact Owner's Representative (FM Group or Project Manager) for following information:
      - 1) Installer to include following mandatory information to be added to 'Roofing Manufacturer System Warranty' submitted with Closing Documents.
        - a) Name of Owner (name of FM Group) \_\_\_\_\_
        - b) Mailing Address (FM office address) \_\_\_\_\_
        - c) Building Property ID (unique 7 digit identifier) \_\_\_\_\_
        - d) Project site address: \_\_\_\_\_
        - e) Roof Completion Date \_\_\_\_\_
        - f) Any addition data required from Manufacturer.
      - 2) Installer to include following mandatory information to be added to 'Roof Installer Workmanship Warranty' submitted with Closing Documents:
        - a) Name of Owner (name of FM Group) \_\_\_\_\_
        - b) Mailing Address (FM office address) \_\_\_\_\_
        - c) Building Property ID (unique 7 digit identifier) \_\_\_\_\_
        - d) Project site address: \_\_\_\_\_
        - e) Roof Completion Date \_\_\_\_\_
        - f) Any addition data required from Manufacturer.
  6. Qualification Statement:
    - a. Installer:
      - 1) Asphalt Shingles:
        - a) Provide Qualification documentation.
- C. Closeout Submittals:
1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
    - a. Warranty Documentation:
      - 1) Asphalt Shingles:
        - a) Final, executed copy of 'Roofing Manufacturer System Warranty' including wind speed coverage and required Owner mandatory information.
        - b) Final, executed copy of 'Roof Installer Workmanship Warranty' including required Owner mandatory information.
      - 2) Verify mandatory information as specified in Special Procedure Submittal has been included in Final Warranty.
    - b. Record Documentation:
      - 1) Manufacturers Documentation:
        - a) Manufacturer's literature.
        - b) Color selections.
        - c) Test and evaluation reports.
      - 2) Roofing Inspection Documentation:
        - a) Include copy of roof inspection report.
      - 3) Certificate: Installer statement of compliance for performance requirements.
      - 4) Certificate: Installer completion of certified training.
      - 5) Test And Evaluation Report: UL fire-resistance rating test report.
      - 6) Test And Evaluation Report: NFPA 101 Class A approval.
      - 7) Test And Evaluation Report: Wind resistance requirements required.

- D. Maintenance Material Submittals:
  - 1. Extra Stock Materials:
    - a. Provide one (1) square minimum of bundled shingles.

## 1.5 QUALITY ASSURANCE

- A. Regulatory Agency Sustainability Approvals:
  - 1. Building Codes:
    - a. Meet requirements for NFPA 101 Class A roof assembly.
    - b. Roof system will meet requirements of all federal, state, and local codes having jurisdiction.
  - 2. Fall Protection: Meet requirement of fall protection as required by federal, state, and local codes having jurisdiction.
  - 3. Fire Characteristics:
    - a. Provide shingles and related roofing materials with fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency:
      - 1) Exterior Fire-Test Exposure: Class A; UL 790, CAN/ULC-S102, or ASTM E108, for application and roof slopes indicated.
        - a) Materials shall be identified with appropriate markings of applicable testing agency.
    - b. Shingles:
      - 1) Show compliance with 1626.1, HVHZ – Impact Test for Wind-Bourn Debris’.
      - 2) Submit Notice of Acceptance (NOA) documentation to show compliance.
    - c. Underlayments:
      - 1) Show compliance with 1626.1, HVHZ – Impact Test for Wind-Bourn Debris’.
      - 2) Submit Notice of Acceptance (NOA) documentation to show compliance.
  - 4. Wind Resistance:
    - a. Meet ASTM D3161/D3161M for wind resistance.
      - 1) Installation shall comply with IBC Table 1507.2.7, 'Attachment'.
  - 5. Wind Speed:
    - a. As required to meet local codes having jurisdiction.
  - 6. Wind Uplift Resistance:
    - a. Meet UL 580 wind uplift of roof assemblies.
    - b. Meet UL 1897 uplift test for roof covering systems.
    - c. Meet ASTM D7158/D7158M for wind resistance for uplift force/uplift resistance.
- B. Qualifications:
  - 1. Manufacturer:
    - a. Asphalt Shingles:
      - 1) Asphalt shingles are required to be produced under quality control program administered by inspection agency currently accredited by ICBO ES or recognized by National Evaluation Service, Inc. Quality control manual developed in consultation with approved agency, and complying with ICBO ES Acceptance Criteria for Quality Control Manuals (AC10), must be submitted.
    - b. Underlayment:
      - 1) Underlayment is required to be manufactured under approved quality control program with inspections by inspection agency accredited by International Accreditation Service (IAS) or otherwise acceptable to ICC-ES.
      - 2) Quality documentation complying with ICC-ES Acceptance Criteria for Quality Documentation (AC10) shall be submitted for roof underlayment.
  - 2. Roof Installer Foreman Qualifications:
    - a. Requirements of Section 01 4301 applies but not limited to the following:
      - 1) Provide documentation if requested by Architect.
        - a) Approved and authorized by Roofing Manufacturer to install Manufacturer's product and eligible to receive Manufacturer's warranty before bid.
        - b) Completed Shingle Manufacturer's certified trained.
        - c) Have thorough knowledge of installing asphalt shingle roofing and have minimum of five (5) years roofing experience.

- d) Current license for the city, county, and state where project is located and license for specific type of roofing work to be performed.
  - e) Roofing Installer's foreman shall be skilled in his trade and qualified to lay out and supervise the Work.
  - f) Flashing installation shall be performed by personnel trained and authorized by Roofing Manufacturer.
3. Roof Installer:
- a. Provide 'Roof Installer Workmanship Warranty' as specified in Warranty in Part 1 of this specification.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery And Acceptance Requirements:
- 1. Make no deliveries to job site until installation is about to commence, or until approved storage area is provided.
  - 2. Deliver products job site in Manufacturer's original unopened containers or wrappings with labels intact and legible bearing all seals and approvals.
  - 3. Deliver materials in sufficient quantities to allow continuity of work.
  - 4. Remove any material not approved from job site.
- B. Storage And Handling Requirements:
- 1. Storage Requirements:
    - a. Follow Manufacturer's instructions and precautions for storage and protection of materials.
    - b. Protect roof materials from physical damage, moisture, soiling, and other sources in a clean, dry, protected location.
    - c. Stacking:
      - 1) Shingles: Bundles should be stacked flat.
      - 2) Underlayment:
        - a) Do not double-stack pallets.
        - b) Stack rolls upright until installation.
    - d. Temperature:
      - 1) Shingles:
        - a) Store in covered ventilated area at maximum temperature of 110 deg F (43 deg C).
        - b) Use extra care in handling shingles when temperature is below 40 deg F (4.4 deg C).
      - 2) Underlayment: Store in area with temperature between 40 deg F and 100 deg F (4.4 deg C and 38 deg C).
    - e. Unacceptable Material:
      - 1) Remove from job site materials that are determined to be damaged by Architect or by Roofing Manufacturer and replace at no additional cost to Owner.
  - 2. Handling Requirements:
    - a. Handle rolled goods to prevent damage to edge or ends.
  - 3. Roof Top Loading:
    - a. Lay shingle bundles flat.
    - b. Do not bend over ridge.

## 1.7 FIELD CONDITIONS

- A. Ambient Conditions:
- 1. General:
    - a. Proceed with installation only when existing and forecasted weather conditions permit roofing to be performed according to manufacturer's written instructions and warranty requirements.
  - 2. Shingles:
    - a. Do not install shingles at lower temperatures than allowed by Shingle Manufacturer for application.
  - 3. Underlayment:

- a. Install self-adhering sheet underlayment within range of ambient and substrate temperatures recommended by manufacturer.

## 1.8 WARRANTY

1. Standard Wind Areas:
  - a. Roofing system will resist blow-offs in winds up to **110 mph (177 kph)** for ten (10) years when installed as specified below.
  - b. Meet requirements of ASTM D3161/D3161M UL Class D.
2. Roof Installer Workmanship Warranty:
  - a. Provide ten (10) year workmanship warranty on roofing system and related components, including flashings, and responsible for all repairs to roofing system and related components due to roof installer's own negligence or faulty workmanship:
    - 1) In the event that, during ten (10) year period following installation, Roof Installer defaults or fails to fulfill its obligation in relation to workmanship warranty as specified in Manufacturer's Agreement, Manufacturer will assume that obligation for remainder of ten (10) year period following original installation and Owner shall have no obligation to make or pay for repairs to or materials for roofing system that are necessary due to Roof Installer's negligence or faulty installation during that period.

## PART 2 - PRODUCTS

### 2.1 SYSTEM

#### A. Manufacturers:

1. Manufacturer Contact List (Shingles shall match existing):
  - a. CertainTeed Roofing Products, Valley Forge, PA [www.certainteed.com](http://www.certainteed.com).
    - 1) Contact Information: Wendy Fox, (800) 404-9880 [wfox@dataworksintl.com](mailto:wfox@dataworksintl.com).
  - b. GAF Materials Corp., Wayne, NJ [www.gaf.com](http://www.gaf.com).
    - 1) Contact Information: John Arellano (office) (210) 896-1041 (fax) (210) 259-8050.
  - c. Owens Corning, Toledo, OH [www.owenscorning.com](http://www.owenscorning.com).
    - 1) Duration Premium shingles are available in all areas of the USA and Canada including all Duration Premium colors under Church contract. Request shingles through local distribution. Any distribution questions, contact Area Sales Manager.
    - 2) For all other questions, Contact: Sam Baroudi (419) 248-7754 [sam.baroudi@owenscorning.com](mailto:sam.baroudi@owenscorning.com). or Robert Hill (801) 553-2417 [Robert.Hill@owenscorning.com](mailto:Robert.Hill@owenscorning.com).

#### B. Components:

1. Shingles And Underlayment:
  - a. Fiberglass mat shingles meeting or exceeding requirements of:
    - 1) UL Class A Fire Resistance.
    - 2) ASTM D3018/D3018M, Type I (self sealing).
    - 3) Standard Wind Areas: ASTM D3161/D3161M UL Class D.
    - 4) ASTM E108 Class A.
    - 5) CSA A123.1/A123.5 (Canada).
    - 6) ASTM D3462/D3462M where required by local codes.
    - 7) Secondary Underlayment: Meet requirements of ASTM D1970/D1970M and UL 790 Class A Fire Resistance.
    - 8) Primary (Synthetic) Underlayment: Meet requirements of ASTM D226/D226M and ASTM D4869/D4869M (physical properties only) or ASTM D1970/D1970M and ASTM E108 Class A Fire.
    - 9) Color as selected by Architect from Shingle Manufacturer's full color line to match existing.
  - b. Category Three Approved Manufactures and Products. See Section 01 6200 for definitions of Categories. Match existing shingles:
    - 1) CertainTeed:

- a) Shingles:
  - (1) Standard Wind: Landmark Premium.
- b) Primary Underlayment Under Shingles:
  - (1) Synthetic Underlayment: Diamond Deck.
- c) Secondary Underlayment Under Shingles:
  - (1) WinterGuard Granular.
  - or
  - (2) WinterGuard Sand.
  - or
  - (3) WinterGuard High Tack/High Temperature.
- 2) GAF:
  - a) Shingles:
    - (1) Standard Wind: Timberline Ultra HD.
  - b) Primary Underlayment Under Shingles:
    - (1) Synthetic Underlayment: Tiger Paw.
  - c) Secondary Underlayment Under Shingles:
    - (1) Weatherwatch.
    - or
    - (2) StormGuard.
- 3) Owens Corning:
  - a) Note:
    - (1) Duration Premium shingles are available in all areas of the USA and Canada including all Duration Premium colors under Church contract. Request shingles through local distribution.
    - (2) Any questions, contact Manufactures Area Sales Manager.
  - b) Shingles:
    - (1) Standard Wind: Duration Premium shingles.
  - c) Primary Underlayment Under Shingles:
    - (1) Synthetic Underlayment: Deck Defense High Performance Roof Underlayment.
  - d) Secondary Underlayment Under Shingles:
    - (1) Weatherlock G Granulated Self-Sealing Ice & Water Barrier.
    - or
    - (2) Weatherlock Specialty Tile & Metal for High Temperature.
    - or
    - (3) Weatherlock Cold Climate for cold weather adhesion and flexibility.

## 2.2 ACCESSORIES

### A. Elastomeric Roofing Sealant:

- 1. Design Criteria:
  - a. Meet requirements of ASTM D3019/D3019M.
  - b. Non-asphalt roofing cement (not permitted).
  - c. Elastomeric.
  - d. Cold temperature pliability.
  - e. Compatible with roof penetration boots.
- 2. Category Four Products And Manufacturers. See Section 01 6200 for definitions of Categories:
  - a. Flintbond SBS Modified Bitumen Caulk by CertainTeed.

### B. Fasteners:

- 1. Primary Underlayment:
  - a. Corrosion resistant roofing nails with **one inch (25 mm)** diameter head and **3/4 inch (19 mm)** long shank minimum.
    - 1) If shingles applied as underlayment is laid, use metal or plastic head Simplex roofing nails.
    - 2) If shingles not applied as underlayment is laid, use plastic head only.
  - b. Staples not permitted.
- 2. Shingles:
  - a. Design Criteria:

- 1) Meet following requirements for nails:
  - a) Comply with ASTM F1667, Type I, Style 20-Roofing Nails.
  - b) Eleven gauge galvanized steel or equivalent corrosion-resistant roofing nail.
  - c) Nail head sizes: **3/8 inch (9.5 mm)** nominal diameter.
  - d) Sufficient length to penetrate through roof sheathing **1/4 inch (6 mm)** or **3/4 inch (19 mm)** minimum into solid wood decking.
  - e) Hot-dipped galvanized or electroplated fasteners comply with requirements of ASTM A153, Class D.
  - f) Stainless-steel fasteners meet requirements of Type 304 (UNS S30400) or Type 316 (UNS S31600).
- b. General:
  - 1) Hot-dipped galvanized, electroplated non-corrosive gun-driver nails, or stainless-steel fasteners may be used.
  - 2) Fasteners within **15 miles (24.1 km)** of coastal areas (oceanside) applications must use hot-dipped galvanized or stainless steel.
  - 3) All exposed fasteners (including ridge shingles) must use hot-dipped galvanized or stainless steel.
  - 4) Staples not permitted:
    - a) Architect/Roof Consultant may approve in writing, staple gun that installs exposed fasteners with staples.

## PART 3 - EXECUTION

### 3.1 INSTALLERS

- A. Category Three Approved Manufacture's Roofing Installers: See Section 01 4301.
  1. All Areas except Utah:
    - a. CertainTeed:
      - 1) Smith Roofing Inc., Rigby, ID, 208-745-7588.
      - 2) Briggs Roofing Co, Rigby, ID, 208-745-9002.
      - 3) Gold's North Fork Roofing, Saint Anthony, ID, 208-206-0317.
      - 4) Thomas D Robison Roofing Inc., Blackfoot, ID, 208-785-4626.
      - 5) Tom Miller Roofing LLC, Sandpoint, ID, 208-610-3018.
    - b. GAF:
      - 1) Rooftop Solutions Inc., Rigby, ID, 208-745-6860.
      - 2) Western Roofing, Inc., Nampa, ID, rob@western-roofing.com.
    - c. Owens-Corning:
      - 1) Roof Rescue, Idaho Falls, ID 208-206-0995, rescueyourroof@gmail.com.

### 3.2 EXAMINATION

- A. Verification Of Conditions:
  1. Examine deck to determine if it is satisfactory for installation of roofing system. Conditions include, but are not limited to, moisture on deck, protruding deck fasteners, specified gaps between sheathing, and other items affecting issuance of roofing warranty.
    - a. Report unsatisfactory conditions in writing to Architect.
    - b. Commencement of Work by installer is considered acceptance of substrate.
  2. Verify existing soffit meet ventilation code requirements.
    - a. Report inadequate ventilation conditions with recommendations in writing to Architect.

### 3.3 PREPARATION

- A. Protection Of In-Place Conditions:
  1. Install only as much roofing as can be made weathertight each day, including flashing and detail work.

- B. Surface Preparation:
  - 1. Clean roof deck:
    - a. Remove dirt, protruding nails, shingle nails, and debris, before installation of underlayment.
  - 2. Roof deck must be dry to help prevent buckling of deck, which can result in deck movement and damage to primary underlayment.
  - 3. Following Manufacturer's recommendations for placing materials on roof.
    - a. Prevent material from sliding off roof.

### 3.4 INSTALLATION

- A. General:
  - 1. Schedule and execute work without exposing interior building areas to effects of inclement weather. Protect existing building and its contents against all risks.
- B. Sequence of Roofing Materials as shown and noted on Contract Drawings:
  - 1. 12 inch strip Secondary Underlayment at Eave.
  - 2. Metal Drip Edge.
  - 3. General Secondary Underlayment.
  - 4. General Primary Underlayment.
  - 5. Asphalt Shingles.
- C. Underlayment:
  - 1. General:
    - a. Temporary Roof:
      - 1) Do not use permanent underlayment installation as temporary roof.
      - 2) If temporary roof is used, remove completely before installation of permanent underlayment.
    - b. Follow Shingle Manufacturer's recommendations for installation of primary and secondary underlayment, particularly at eaves, rakes, and penetrations, unless specified installation procedures and Contract Drawing details are more stringent.
    - c. Avoid scuffing underlayment that can compromise surface and cause leaking. If scuffing occurs, following Manufacturer's recommendation for repair.
    - d. Staples are not permitted.
    - e. Weather conditions:
      - 1) Do not leave underlayment exposed to weather more than thirty (30) days after beginning of underlayment installation even if Manufacture allows longer period of time.
      - 2) If underlayment is exposed for more than thirty (30) days after beginning of underlayment installation, treat as temporary roof under first paragraph above.
      - 3) If moisture is deposited on exposed underlayment, obtain written approval from Shingle Manufacturer's Representative before installing shingles.
    - f. Install valley secondary underlayment, valley primary underlayment, and valley metal after installation of general secondary underlayment, but before installation of general primary underlayment.
  - 2. Primary Underlayment:
    - a. Apply **48 inch (1 200 mm)** wide courses over complete deck, including areas covered with secondary underlayment unless specified otherwise.
      - 1) Overlap underlayment before fastening.
      - 2) Maintain end laps of **6 inch (150 mm)** and side laps of **3 inch (76 mm)**.
      - 3) Stop primary underlayment between **3 and 6 inches (75 and 150 mm)** of inside edge of strip of secondary underlayment installed over edge of formed valley metal.
    - b. Nailing Synthetic Underlayment:
      - 1) Use low-profile plastic or steel cap corrosion resistant nails with **1 inch (25 mm)** diameter heads to fasten underlayment in place. (Fastening underlayment without caps is not permitted).
      - 2) Nails must be driven properly. Improperly driven fasteners such as over-driving, under-driving and nails driven at an angle are not permitted.
      - 3) Fasteners should be long enough to penetrate at least **3/4 inch (19 mm)** into roof sheathing. Fasteners must be lie flush to roof deck at 90 degree angle to roof deck and tight with underlayment.

- 4) Do not nail through metal flashing, except drip edge, when installing primary underlayment.
  - 5) Follow Shingle Manufacturer's installation instructions for following:
    - a) Securing underlayment to roof deck adjusting for roof slope nailing requirements.
    - b) Side lap, end lap, and overlapping nailing requirements.
    - c) Rake and eave nailing requirements.
    - d) High wind condition nailing requirements.
    - e) Sealants recommendations.
3. Secondary Underlayment:
- a. Under Shingles:
    - 1) Lap end joints **6 inches (150 mm)** and side joints **3 inch (76 mm)** minimum.
    - 2) Apply continuous **12 inches (300 mm)** wide strip at edge of eaves and rakes before installing drip edge.
    - 3) Apply two (2) **36 inch (900 mm)** wide courses along eaves and rakes as described in Contract Documents with first course overlapping drip edge and **12 inches (300 mm)** wide previously applied strip.
- D. Shingles:
1. Before installing shingles, inspect underlayment and metal installation with Architect and Owner. Correct improperly installed and damaged material before beginning shingle installation.
  2. Racking installation method is not permitted by Owner and will be considered non-conforming work.
  3. Starter shingles:
    - a. Manufacturer's starter shingles are required for Shingle Warranty.
    - b. Install shingles at eave and rakes in accordance with Shingle Manufacturer's instructions.
    - c. Cut shingles in accordance with Shingle Manufacturer's instructions, or use approved starter course.
    - d. Nail to eave granule side up in continuous mastic bed with cut edge down-slope and edge overhanging eave **3/8 inch (9 mm)** so sealing tabs are at edge of eave.
    - e. Install shingles with maximum exposure recommended by Shingle Manufacturer.
    - f. Lay first course directly over starter strip with ends flush with starter strip at eaves and so joints in starter strip are offset **4 inches (100 mm)** minimum from joints in first course.
  4. Lay shingles so end joints are offset in accordance with Shingle Manufacturer's installation procedures.
  5. Insure alignment by snapping chalk line at least each fifth course to control horizontal and vertical alignment.
  6. Run courses true to line with end joints properly placed. Leave shingles flat without wave and properly placed.
  7. Nailing:
    - a. General:
      - 1) Six (6) Nail Pattern as recommended by Shingle Manufacturer for Shingle Warranty in each shingle.
      - 2) Place in relation to top edge of shingle as required by Shingle Manufacturer.
      - 3) Place nails **one inch (25 mm)** from each end of shingle and remainder evenly spaced between.
      - 4) Should any nail fail to penetrate sheathing by **1/4 inch (6 mm)** minimum, drive additional nail nearby.
    - b. Nailing guns:
      - 1) Nails must be driven properly. Improperly driven fasteners such as over-driving, under-driving and nails driven at an angle are not permitted.
      - 2) Adjust nail gun pressure for nailing flush and tight to deck without cutting shingle surface.
      - 3) Drive nails perpendicular to shingle surface so nail head is flat against shingle.
      - 4) Should any nail fail to penetrate sheathing by **1/4 inch (6 mm)** minimum, drive additional nail nearby.
  8. Hand-Sealing:
    - a. If ambient temperature or exposure to sun will not be sufficient to secure adhesive strip to under-lying shingle within one week, hand seal shingles with elastomeric roofing sealant.



**3.5 FIELD QUALITY CONTROL**

- A. Non-Conforming Work:
  - 1. Correct any work found defective or not complying with Contract Document requirements at no additional cost to the Owner.
  - 2. Raking installation method is not permitted by Owner and will be considered to be not complying with Contract Document requirements and must be corrected at no additional cost to Owner.

**3.6 CLEANING**

- A. General:
  - 1. All tools and unused materials must be collected at end of each workday and stored properly off finished roof surface and protected from exposure to elements.
  - 2. Leave metals clean and free of defects, stains, and damaged finish.
    - a. Replace fascia metal that is scratched through finish to base metal.
  - 3. Properly clean finished roof surface after completion.
  - 4. Clean shingles and building of soiling caused by this installation.
  - 5. Clean and restore all damaged surfaces to their original condition.
- B. Waste Management:
  - 1. Disposal:
    - a. All work areas are to be kept clean, clear and free of debris always.
    - b. Do not allow trash, waste, or debris to collect on roof. These items shall be removed from roof daily.
    - c. Remove debris resulting from work of this Section from roof and site. Dispose of or recycle all trash and excess material in manner conforming to current EPA regulations and local laws.

**3.7 PROTECTION**

- A. Do not permit traffic over finished roof surface.

**END OF SECTION**

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**SECTION 07 4619****STEEL SIDING****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install steel siding as described in Contract Documents.

**1.2 REFERENCES**

- A. Reference Standards:
  - 1. ASTM International:
    - a. ASTM A653/A653M-18, 'Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.'

**1.3 SUBMITTALS**

- A. Informational Submittals:
  - 1. Manufacturer Instructions:
    - a. Manufacturer's published installation instructions.
- B. Closeout Submittals:
  - 1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
    - a. Warranty Documentation:
      - 1) Final, executed copy of Warranty.
    - b. Record Documentation:
      - 1) Manufacturers documentation:
        - a) Manufacturer's literature.
        - b) Color selection.

**1.4 WARRANTY**

- A. Manufacturer Warranty:
  - 1. Manufacturer's written 15-year guarantee for baked enamel and PVC finishes and 20-year guarantee for Polyvinylidene Fluoride finishes.

**PART 2 - PRODUCTS****2.1 SYSTEMS**

- A. Manufacturers:
  - 1. Horizontal Lap Siding:
    - a. Type One Acceptable Manufacturers:
      - 1) Alcoa Architectural Products, Eastman, GA [www.alcoaarchitecturalproducts.com](http://www.alcoaarchitecturalproducts.com).
      - 2) Alside Inc, Cuyahoga Falls, OH [www.alside.com](http://www.alside.com).
      - 3) ATAS Aluminum Products, Allentown, PA [www.atas.com](http://www.atas.com).
      - 4) Gentek Building Products, Akron, OH and Burlington, ON [www.gentekinc.com](http://www.gentekinc.com).
      - 5) Equal as approved by Architect before bidding. See Section 01 6200

- B. Materials:
  - 1. Description:
    - a. Steel: 29 ga (0.36 mm), hot-dipped galvanized to meet requirements of ASTM A653/A653M, 1.25 oz per sq ft and complete with accessories recommended by Manufacturer for proper installation.
    - b. Configuration: Horizontal Lap Siding.
  - 2. Color:
    - a. As selected by Architect from Manufacturer's standard colors.
- C. Finishes: Double baked enamel, PVC, or Polyvinylidene Fluoride (Kynar 500 or Hylar 5000) with protective coating on back side.

## 2.2 ACCESSORIES

- A. Fasteners:
  - 1. Unpainted 1 inch (25 mm) corrosion-resistant screws or 1-1/2 inches (38 mm) ring-shanked nails.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Isolate dissimilar metals to prevent electrolytic action.
- B. Paint exposed fasteners to match siding.

**END OF SECTION**

**SECTION 07 6310****STEEP SLOPE ROOF FLASHING: Asphalt Shingles****PART 1 - GENERAL****1.1 SUMMARY**

- A. Products Furnished But Not Installed Under This Section:
  - 1. Roof flashing including:
    - a. Miscellaneous flashing.
- B. Related Requirements:
  - 1. Section 07 3113: 'Asphalt Shingles' for installation.
  - 2. Section 07 9213: 'Elastomeric Joint Sealants' for quality of sealants.

**1.2 REFERENCES**

- A. Definitions:
  - 1. Base Flashing: That portion of flashing attached to or resting on roof deck to direct flow of water onto the roof covering.
  - 2. Cap Flashing: Material used to cover top edge of base flashings or other flashings to prevent water seepage behind base flashing. Cap flashing overlaps base flashing.
  - 3. Collar: Pre-formed flange placed over vent pipe to seal roof around vent pipe opening. Also called vent sleeve.
  - 4. Drip Edge: Non-corrosive, non-staining material used along eaves and rakes to allow water runoff to drip clear of underlying building.
  - 5. Flange: Metal pan extending up and down roof slope around flashing pieces. Usually at plumbing vents.
  - 6. Flashing: Components used to prevent seepage of water into a building around any intersection or projection in a roof such as vent pipes, adjoining walls, and valleys.
  - 7. Metal Flashing: Roof components made from sheet metal that are used to terminate roofing membrane or other material alongside roof perimeters as well as at roof penetrations.
  - 8. Penetration: Any object that pierces surface of roof.
  - 9. Pipe Boot: Prefabricated flashing piece used to flash around circular pipe penetrations. Also known as a Roof Jack.
  - 10. Roof Jack: Term used to describe a Pipe Boot or Flashing Collar.
  - 11. Valley: Internal angle formed by intersection of two sloping roof planes to provide water runoff.
  - 12. Vent: Any outlet for air that protrudes through roof deck such as pipe or stack. Any device installed on roof, gable or soffit for purpose of ventilating underside of roof deck.
  - 13. Vent Sleeve: See collar.
- B. Reference Standards:
  - 1. ASTM International:
    - a. ASTM A653/A653M-18, 'Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process'.
    - b. ASTM A792/A792M-10(2015), 'Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process'.
  - 2. ASTM International: (specifically referenced for pipe flashing only):
    - a. ASTM B117-18, 'Standard Practice for Operating Salt Spray (Fog) Apparatus'.
    - b. ASTM E283-04(2012), 'Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen'.
    - c. ASTM E330/E330M-14, 'Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference'.

- d. ASTM E331-00(2016), 'Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference'.
- e. ASTM E2140-01(2017), 'Standard Practice for Water Penetration of Metal Roof Panel Systems by Static Water Pressure Head'.

### 1.3 SUBMITTALS

- A. Informational Submittals:
  1. Tests And Evaluation Reports:
    - a. Manufacturer's test reports:

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Manufacturers:
  1. Type Two Acceptable Manufacturers:
    - a. CMG – Coated Metals Group, Denver, CO [www.cmgmetals.com](http://www.cmgmetals.com).
    - b. Drexel Metals, LLC, Ivyland, PA [www.drexmet.com](http://www.drexmet.com).
    - c. Fabral, Lancaster, PA [www.fabral.com](http://www.fabral.com).
    - d. Firestone Metal Products, Anoka, MN [www.unaclad.com](http://www.unaclad.com).
    - e. MBCI, Houston, TX [www.mbc.com](http://www.mbc.com).
    - f. Metal Sales Manufacturing Corp, Sellersburg, IN [www.mtlsales.com](http://www.mtlsales.com).
    - g. O'Neal Flat Rolled Metals (member of O'Neal Industries), Brighton, CO [www.ofrmetals.com](http://www.ofrmetals.com).
    - h. Petersen Aluminum Corp, Elk Grove, IL [www.pac-clad.com](http://www.pac-clad.com).
    - i. Ryerson, Chicago, IL [www.ryerson.com](http://www.ryerson.com).
    - j. Equal as approved by Architect before installation. See Section 01 6200.
- B. Formed Drip Edge:
  1. Metal:
    - a. Steel: Minimum 24 ga (0.635 mm), hot-dipped galvanized to meet requirements of ASTM A653/A653M, 1.25 oz/sq ft. or galvalume meeting requirements of ASTM A792/A792M AZ50, 50 ksi.
- C. Fabrication:
  1. Profiles, bends, and intersections shall be even and true to line.
- D. Finishes:
  1. Face coating polyvinylidene Fluoride (PVF<sub>2</sub>) Resin-base finish (Kynar 500 or Hylar 5000) for coil coating components containing seventy (70) percent minimum PVF<sub>2</sub> in resin portion of formula. Thermo-cured two coat system consisting of corrosion inhibiting epoxy primer and top coat factory applied over properly pre-treated metal.
  2. Reverse side coating of steel flashings to be thermo-cured system consisting of corrosion inhibiting epoxy primer applied over properly pre-treated metal.
  3. Color as selected by Architect from Manufacturer's standard colors.

## PART 3 - EXECUTION (Not Used)

END OF SECTION

**SECTION 07 6311**

**METAL SOFFIT PANELS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install metal soffit panel system as described in Contract Documents.

**1.2 REFERENCES**

- A. Reference Standards:
  - 1. ASTM International:
    - a. ASTM A653/A653M-18, 'Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process'.
    - b. ASTM A792/A792M-10(2015), 'Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process'.
    - c. ASTM B209-14, 'Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate'.
    - d. ASTM E84-18b, 'Standard Test Method for Surface Burning Characteristics of Building Materials'.

**1.3 SUBMITTALS**

- A. Action Submittals:
  - 1. Product Data:
    - a. Manufacturer's literature or cut sheet for products furnished.
- B. Closeout Submittals:
  - 1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
    - a. Warranty Documentation:
      - 1) Final, executed copy of Warranty.

**1.4 QUALITY ASSURANCE**

- A. Regulatory Agency Sustainability Approvals:
  - 1. Fire Characteristics Performance Requirement:
    - a. Meet requirements of ASTM E84 Class A fire rating.
- B. Qualifications:
  - 1. Installer:
    - a. Minimum three (3) years experience with installations of comparable quality, scope, similar size, and complexity before bidding.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery And Acceptance Requirements:
  - 1. Materials shall be delivered in original, unopened packages with labels intact.
  - 2. Inspect delivered material for damage.
- B. Storage And Handling Requirements:

1. Stack panels on pallets or above ground, covered with weathertight and ventilated covering. Prevent condensation build-up or moisture entrapment in materials.
2. Store panels not in contact with other materials that might cause staining, denting or other surface damage.

## 1.6 WARRANTY

- A. Manufacturer Warranty:
1. Manufacturer's standard warranty against manufacturer defects.
  2. Manufacturer's written thirty five (35) year warranty on paint finish against cracking, peeling, blistering, chalk, and color change.

## PART 2 - PRODUCTS

### 2.1 SYSTEMS

- A. Manufacturers:
1. Type One Acceptable Manufacturers Of Metal:
    - a. AEP / Span, Dallas, TX [www.aep-span.com](http://www.aep-span.com).
    - b. ATAS Aluminum Products, Allentown, PA [www.atas.com](http://www.atas.com).
    - c. Fabral, Lancaster, PA [www.fabral.com](http://www.fabral.com).
    - d. Fashion Inc, Ottawa, KS [www.fashioninc.com](http://www.fashioninc.com).
    - e. Firestone Metal Products, Anoka, MN [www.unaclad.com](http://www.unaclad.com).
    - f. MBCI, Houston, TX [www.mbc.com](http://www.mbc.com).
    - g. O'Neal Flat Rolled Metals (member of O'Neal Industries), Brighton, CO [www.ofrmetals.com](http://www.ofrmetals.com).
    - h. Petersen Aluminum Corp, Elk Grove, IL [www.pac-clad.com](http://www.pac-clad.com).
    - i. Ryerson, Chicago, IL [www.ryerson.com](http://www.ryerson.com).
    - j. Equal as approved by Architect before bidding. See Section 01 6200.
- B. Performance:
1. Design Criteria:
    - a. Flush panel design.
      - 1) Panels shall be interlocked full length of panel.
      - 2) Panels shall be perforated for ventilation.
      - 3) Panel widths shall be Manufacturer's standard.
    - b. Performance Standard: ATAS Wind-LOK Soffit MPS120.
- C. Materials:
1. **0.032 inch (0.8 mm)** thick minimum 3105-H24 alloy aluminum meeting requirements of ASTM B209.
  2. **24 ga (0.0276 in) (0.7010 mm)** galvanized iron or steel meeting requirements of A653/A653M, G 90.
  3. **24 ga (0.0276 in) (0.7010 mm)** minimum 50 ksi galvalume steel meeting requirements of ASTM A792/A792M AZ-55.
- D. Fabrication:
1. Panels shall be uniformly dimensioned, roll formed to lengths to avoid trimming.
  2. Panel system shall be anchored as recommended by Manufacturer.
  3. Panels shall be continuous.
- E. Finish:
1. Polyvinylidene Fluoride (PVF<sub>2</sub>) Resin-base (Kynar 500 or Hylar 5000) finish for coil coating components containing 70 percent minimum PVF<sub>2</sub> in resin portion of formula. Thermo-cured two coat system consisting of corrosion inhibiting epoxy primer and top coat factory applied over properly pre-treated metal.
  2. Color as selected by Architect from Manufacturer's standard colors.



## 2.2 ACCESSORIES

- A. Fastening Devices: 1-1/2 inch (38 mm) cadmium or zinc plated ring shanked nails.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verification Of Conditions:
  - 1. Examine substrate and verify framing is suitable for installation of soffit system.
  - 2. Notify Architect of unsuitable conditions in writing.
    - a. Do not install soffit over unsuitable conditions.
    - b. Commencement of Work by installer is considered acceptance of substrate.

### 3.2 INSTALLATION

- A. Conceal fasteners where possible. Paint heads of exposed fasteners to match background.
- B. Isolate from dissimilar metals to prevent electrolytic action.

### 3.3 FIELD QUALITY CONTROL

- A. Non-Conforming Work: Non-conforming work as covered in the General Conditions applies, but is not limited to the following:
  - 1. Correct any work found defective or not complying with contract document requirements including buckling or bowing due to improper installation and touch up of minor scratches and spots at no additional cost to the Owner.

### 3.4 CLEANING

- A. General:
  - 1. Clean exposed panel surfaces promptly after installation in accordance with manufacturer's instructions.
- B. Waste Management:
  - 1. Dispose of waste in provided waste receptacles (dumpsters) as specified in Section 01 7400.

**END OF SECTION**

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**SECTION 07 6322****STEEL FASCIA****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install metal fascia as described in Contract Documents.

**1.2 REFERENCES**

- A. Reference Standards:
  - 1. ASTM International:
    - a. ASTM A653/A653M-18, 'Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process'.
    - b. ASTM A792/A792M-10(2015), 'Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process'.
    - c. ASTM E84-18b, 'Standard Test Method for Surface Burning Characteristics of Building Materials'.

**1.3 SUBMITTALS**

- A. Action Submittals:
  - 1. Product Data:
    - a. Manufacturer's literature or cut sheet for products furnished.
- B. Closeout Submittals:
  - 1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
    - a. Warranty Documentation:
      - 1) Final, executed copy of Warranty.

**1.4 QUALITY ASSURANCE**

- A. Regulatory Agency Sustainability Approvals:
  - 1. Fire Characteristics Performance Requirement:
    - a. Meet requirements of ASTM E84 Class A fire rating.
- B. Qualifications:
  - 1. Installer:
    - a. Minimum three (3) years experience with installations of comparable quality, scope, similar size, and complexity before bidding.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery And Acceptance Requirements:
  - 1. Materials shall be delivered in original, unopened packages with labels intact.
  - 2. Inspect delivered material for damage.
- B. Storage And Handling Requirements:

1. Stack panels on pallets or above ground, covered with weathertight and ventilated covering. Prevent condensation build-up or moisture entrapment in materials.
2. Store panels not in contact with other materials that might cause staining, denting or other surface damage.

## 1.6 WARRANTY

- A. Manufacturer Warranty:
1. Manufacturer's standard warranty against manufacturer defects.
  2. Manufacturer's written thirty five (35) year warranty on paint finish against cracking, peeling, blistering, chalk, and color change.

## PART 2 - PRODUCTS

### 2.1 ASSEMBLIES

- A. Manufacturers:
1. Type One Acceptable Manufacturers Of Metal:
    - a. AEP / Span, Dallas, TX [www.aep-span.com](http://www.aep-span.com).
    - b. ATAS Aluminum Products, Allentown, PA [www.atas.com](http://www.atas.com).
    - c. CMG – Coated Metals Group, Denver, CO [www.cmgmetals.com](http://www.cmgmetals.com).
    - d. Drexel Metals, LLC, Ivyland, PA [www.drexmet.com](http://www.drexmet.com).
    - e. Fabral, Lancaster, PA [www.fabral.com](http://www.fabral.com).
    - f. Firestone Metal Products, Anoka, MN [www.unaclad.com](http://www.unaclad.com).
    - g. Hunter-Douglas Canada Ltd, Brampton, ON [www.hunterdouglasgroup.com](http://www.hunterdouglasgroup.com).
    - h. Kaycan Ltd, Montreal, PQ (514) 334-7550 [www.kaycan.com](http://www.kaycan.com).
    - i. MBCI, Houston, TX [www.mbc.com](http://www.mbc.com).
    - j. Metal Sales Manufacturing Corp, Sellersburg, IN [www.mtlsales.com](http://www.mtlsales.com).
    - k. O'Neal Flat Rolled Metals (member of O'Neal Industries), Brighton, CO [www.ofrmetals.com](http://www.ofrmetals.com).
    - l. Petersen Aluminum Corp, Elk Grove, IL [www.pac-clad.com](http://www.pac-clad.com)
    - m. Ryerson, Chicago, IL [www.ryerson.com](http://www.ryerson.com).
    - n. VicWest, Oakville, ON [www.vicwest.ca](http://www.vicwest.ca)
    - o. Equal as approved by Architect before bidding. See Section 01 6200.
- B. Materials: Minimum **24 ga (0.635 mm)**, hot-dipped galvanized to meet requirements of ASTM A653/A653M, 1.25 oz/sq ft or galvalume meeting requirements of ASTM A792/A792M AZ50, 50 ksi and complete with accessories recommended by Manufacturer for proper installation.
- C. Fabrication: Fascia may either be shop-fabricated using metal from a specified manufacturer, or a factory-fabricated standard system from a specified manufacturer.
- D. Finishes:
1. Face coating polyvinylidene Fluoride (PVF<sub>2</sub>) Resin-base finish (Kynar 500 or Hylar 5000) for coil coating components containing 70 percent minimum PVF<sub>2</sub> in resin portion of formula. Thermo-cured two coat system consisting of corrosion inhibiting epoxy primer and top coat factory applied over properly pre-treated metal.
  2. Reverse side coating thermo-cured system consisting of corrosion inhibiting epoxy primer applied over properly pre-treated metal.
  3. Color as selected by Architect from Manufacturer's standard colors.

### 2.2 ACCESSORIES

- A. Fastening Devices: Galvanized steel screws.

**PART 3 - EXECUTION****3.1 EXAMINATION**

- A. Verification Of Conditions:
  - 1. Examine substrate and verify framing is suitable for installation of fascia.
  - 2. Notify Architect of unsuitable conditions in writing.
    - a. Do not install fascia over unsuitable conditions.
    - b. Commencement of Work by installer is considered acceptance of substrate.

**3.2 INSTALLATION**

- A. Conceal fasteners except where details might require a minimum number to be exposed. Paint heads of exposed fasteners to match background.
- B. Install with slip joints at each end. Screw to substrate through pre-drilled, over-size holes.
- C. Isolate from dissimilar metals not part of fascia system to prevent electrolytic action.

**3.3 FIELD QUALITY CONTROL**

- A. Non-Conforming Work: Non-conforming work as covered in the General Conditions applies, but is not limited to the following:
  - 1. Correct any work found defective or not complying with contract document requirements including buckling or bowing due to improper installation and touch up of minor scratches and spots at no additional cost to the Owner.

**3.4 CLEANING**

- A. General:
  - 1. Clean exposed panel surfaces promptly after installation in accordance with manufacturer's instructions.
- B. Waste Management:
  - 1. Dispose of waste in provided waste receptacles (dumpsters) as specified in Section 01 7400.

**END OF SECTION**

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**SECTION 07 9213****ELASTOMERIC JOINT SEALANTS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install sealants not specified to be furnished and installed under other Sections.
  - 2. Quality of sealants to be used on Project not specified elsewhere, including submittal, material, and installation requirements.
- B. Related Requirements:
  - 1. Furnishing and installing of sealants is specified in Sections specifying work to receive new sealants.

**1.2 REFERENCES**

- A. Definitions:
  - 1. Sealant Types and Classifications:
    - a. ASTM Specifications:
      - 1) Type:
        - a) Type S: Single-component sealant.
      - 2) Grade:
        - a) Grade NS: Non-sag or gunnable sealant used for vertical and non-traffic joints.
      - 3) Classes: Represent movement capability in percent of joint width.
        - a) Class 100/50: Sealant that, when tested for adhesion or cohesion under cyclic movement shall withstand of at least 100 percent increase and decrease of at least 50 percent of joint width as measured at time of application.
        - b) Class 50: Sealant that, when tested for adhesion or cohesion under cyclic movement shall withstand increase and decrease of at least 50 percent of joint width as measured at time of application.
        - c) Class 25: Sealant that, when tested for adhesion or cohesion under cyclic movement shall withstand increase and decrease of at least 25 percent of joint width as measured at time of application.
        - d) Class 12: Sealant that, when tested for adhesion and cohesion under cyclic movement shall withstand increase and decrease of at least 12 percent of joint width as measured at time of application.
      - 4) Use:
        - a) NT (Non-Traffic): Sealant designed for use in joints in non-traffic areas.
        - b) O (Other): Sealant that meets bond requirements when tested on substrates other than standard substrates, being glass, aluminum, mortar.
    - 2. Silicone: Any member of family of polymeric products whose molecular backbone is made up of alternating silicon and oxygen atoms and which has pendant hydrocarbon groups attached to silicon atoms. Used primarily as a sealant. Offers excellent resistance to water and large variations in temperature (minus 100 deg F to + 600 deg F) (minus 73.3 deg C to + 316 deg C).
  - B. Reference Standards:
    - 1. ASTM International:
      - a. ASTM C920-14a, 'Standard Specification for Elastomeric Joint Sealants'.
      - b. ASTM C1193-16, 'Standard Guide for Use of Joint Sealants'.
      - c. ASTM C1330-18, 'Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants'.

- d. ASTM C1481-12(2017) 'Standard Guide for Use of Joint Sealants with Exterior Insulation & Finish Systems (EIFS)'.
- e. ASTM D5893/D5893M-16, 'Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements'.

### 1.3 ADMINISTRATIVE REQUIREMENTS

- A. Scheduling:
  1. Schedule work so waterproofing, water repellents and preservative finishes are installed after sealants, unless sealant manufacturer approves otherwise in writing.
  2. Ensure sealants are cured before covering with other materials.

### 1.4 SUBMITTALS

- A. Action Submittals:
  1. Product Data:
    - a. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
    - b. Manufacturer's literature for each Product.
    - c. Schedule showing joints requiring sealants. Show also backing and primer to be used.
- B. Informational Submittals:
  1. Certificates:
    - a. Manufacturer's Certificate:
      - 1) Certify products are suitable for intended use and products meet or exceed specified requirements.
      - 2) Certificate from Manufacturer indicating date of manufacture.
  2. Manufacturers' Instructions:
    - a. Manufacturer's installation recommendations for each Product.
    - b. Manufacturer's installation for completing sealant intersections when different materials are joined.

### 1.5 QUALITY ASSURANCE

- A. Qualifications:
  1. Manufacturer: Company specializing in manufacturing products specified in this section with minimum ten (10) years documented experience.
  2. Applicator Qualifications:
    - a. Company specializing in performing work of this section.
    - b. Provide if requested, reference of projects with minimum three (3) years documented experience, minimum three (3) successfully completed projects of similar scope and complexity, and approved by manufacturer.
    - c. Designate one (1) individual as project foreman who shall be on site at all times during installation.
- B. Preconstruction Testing:
  1. Pre-construction testing is not required when sealant manufacturer can furnish data acceptable to Architect based on previous testing for materials matching those of the Work.
- C. Mockups:
  1. Provide mockups including sealant and joint accessories to illustrate installation quality and color if requested by Architect or Project Manager.
    - a. Incorporate accepted mockup as part of Work.



## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Acceptance Requirements:
  - 1. Deliver and keep in original containers until ready for use.
  - 2. Inspect for damage or deteriorated materials.
- B. Storage and Handling Requirements:
  - 1. Handle, store, and apply materials in compliance with applicable regulations and material safety data sheets (MSDS).
  - 2. Handle to prevent inclusion of foreign matter, damage by water, or breakage.
  - 3. Store in a cool dry location, but never under 40 deg F (4 deg C) or subjected to sustained temperatures exceeding 90 deg F (32 deg C) or as per Manufacturer's written recommendations.
  - 4. Do not use sealants that have exceeded shelf life of product.

## 1.7 FIELD CONDITIONS

- A. Ambient Conditions:
  - 1. Do not install sealant during inclement weather or when such conditions are expected. Allow wet surfaces to dry.
  - 2. Follow Manufacturer's temperature recommendations for installing sealants.

## 1.8 WARRANTY

- A. Manufacturer Warranty:
  - 1. Signed warranties against adhesive and cohesive failure of sealant and against infiltration of water and air through sealed joint for period of three (3) years from date of Substantial Completion.
    - a. Manufacturer's standard warranty covering sealant materials.
    - b. Applicator's standard warranty covering workmanship.

## PART 2 - PRODUCTS

### 2.1 SYSTEMS

- A. Manufacturers:
  - 1. Manufacturer Contact List:
    - a. Dow Corning Corp., Midland, MI [www.dowcorning.com](http://www.dowcorning.com).
    - b. Franklin International, Inc. Columbus, OH [www.titebond.com](http://www.titebond.com).
    - c. GE Sealants & Adhesives (see Momentive Performance Materials Inc.).
    - d. Laticrete International Inc., Bethany, CT [www.laticrete.com](http://www.laticrete.com).
    - e. Momentive Performance Materials Inc. (formally GE Sealants & Adhesives), Huntersville, NC [www.ge.com/silicones](http://www.ge.com/silicones).
    - f. Sherwin-Williams, Cleveland, OH [www.sherwin-williams.com](http://www.sherwin-williams.com).
    - g. Sika Corporation, Lyndhurst, NJ [www.sikaconstruction.com](http://www.sikaconstruction.com) or Sika Canada Inc, Pointe Claire, QC [www.sika.ca](http://www.sika.ca).
    - h. Tremco, Beachwood, OH [www.tremcosealants.com](http://www.tremcosealants.com) or Tremco Ltd, Toronto, ON (800) 363-3213.
- B. Materials:
  - 1. Design Criteria:
    - a. Compliance: Meet or exceed requirements of these standards:
      - 1) ASTM C920: Elastomeric joint sealant performance standard.
      - 2) ASTM D5893/D5893M: Silicone Joint Sealant for Concrete Pavements.
    - b. Comply with Manufacturer's ambient condition requirements.
    - c. Sealants must meet Manufacturer's shelf-life requirements.

- d. Sealants must adhere to and be compatible with specified substrates.
  - e. Sealants shall be stable when exposed to UV, joint movements, and environment prevailing at project location.
  - f. Primers (Concrete, stone, masonry, and other nonporous surfaces typically do not require a primer. Aluminum and other nonporous surfaces except glass require use of a primer. Installer Option to use Adhesion Test to determine if primer is required or use primer called out in related sections):
    - 1) Adhesion Test:
      - a) Apply silicone sealant to small area and perform adhesion test to determine if primer is required to achieve adequate adhesion. If necessary, apply primer at rate and in accordance with Manufacturer's instructions. See 'Field Quality Control' in Part 3 of this specification for Adhesive Test.
      - 2) If Primer required, shall not stain and shall be compatible with substrates.
      - 3) Allow primer to dry before applying sealant.
2. Sealants At Exterior Sheet Metal And Miscellaneous:
- a. Description:
    - 1) Weathersealing expansion, contraction, perimeter, and other movement joints which may include all or part of the following for project:
      - a) Flashings.
      - b) Gutters.
      - c) Penetrations in soffits and fascias.
      - d) Roof vents and flues.
      - e) Lightning protection components.
  - b. Design Criteria:
    - 1) Meet following standards for Sealant:
      - a) ASTM C920: Type S Grade NS, Class 25 (min) Use NT, M, G, A and O.
    - 2) Limitations:
      - a) Do not use below-grade applications.
      - b) Do not use on surfaces that are continuously immersed or in contact with water.
      - c) Do not use on wet, damp, frozen or contaminated surfaces.
      - d) Do not use on building materials that bleed oils, plasticizers or solvents, green or partially vulcanized rubber gaskets or tapes.
  - c. Category Four Approved Products. See Section 01 6200 for definitions of Categories:
    - 1) Dow Corning: 790 Silicone Building Sealant.
    - 2) Momentive Performance Materials (formerly, GE Sealants & Adhesives): GE SCS2350 Silicone Elastomeric Sealant.
    - 3) Tremco: Tremsil 600 Silicone Sealant.

## 2.2 ACCESSORIES

- A. Bond Breaker Tape:
  - 1. Pressure sensitive tape as by Sealant Manufacturer to suit application.
  - 2. Provide tape to prevent adhesion to joint fillers or joint surfaces at back of joint and allow sealant movement.
- B. Joint Backing:
  - 1. Comply with ASTM C1330.
  - 2. Flexible closed cell, non-gassing polyurethane or polyolefin rod or bond breaker tape as recommended by Sealant Manufacturer for joints being sealed.
  - 3. Oversized 25 to 50 percent larger than joint width.
- C. Joint Cleaner:
  - 1. Non-corrosive and non-staining type as recommended by Sealant Manufacturer, compatible with joint forming materials.
- D. Masking Tape:
  - 1. Non-staining, non-absorbent tape product compatible with joint sealants and adjacent joint surfaces.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Verification Of Conditions:
1. Examine substrate surfaces and joint openings are ready to receive Work.
    - a. Verify each sealant is compatible for use with joint substrates.
    - b. Verify joint surfaces are clean and dry.
    - c. Ensure concrete surfaces are fully cured.
  2. Sealants provided shall meet Manufacturer's shelf-life requirements.
  3. Notify Architect of unsuitable conditions in writing.
    - a. Do not proceed until unsatisfactory conditions are corrected.
  4. Commencement of Work by installer is considered acceptance of substrate.

### **3.2 PREPARATION**

- A. Surface Preparation:
1. Surfaces shall be clean, dry, free of dust, oil, grease, dew, frost or incompatible sealers, paints or coatings that may interfere with adhesion. Prepare substrates in accordance with Manufacturer's instructions:
    - a. Porous surfaces: Clean by mechanical methods to expose sound surface free of contamination and laitance followed by blasting with oil-free compressed air.
    - b. Nonporous surfaces: Use two-cloth solvent wipe in accordance with ASTM C1193. Allow solvent to evaporate prior to sealant application.
    - c. High-pressure water cleaning: Exercise care that water does not enter through failed joints.
    - d. Primers:
      - 1) Primers enhance adhesion ability.
      - 2) Use of primers is not a substitution for poor joint preparation.
      - 3) Primers should be used always in horizontal application where there is ponding water.
  2. Field test joints in inconspicuous location.
    - a. Verify joint preparation and primer required to obtain optimum adhesion of sealants to joint substrate.
    - b. When test indicates sealant adhesion failure, modify joint preparation primer, or both and retest until joint passes sealant adhesion test.
  3. Masking: Apply masking tape as required to protect adjacent surfaces and to ensure straight bead line and facilitate cleaning.
- B. Joints:
1. Prepare joints in accordance with ASTM C1193.
    - a. Clean joint surfaces of contaminants capable of affecting sealant bond to joint surface using Manufacturer's recommended instructions for joint preparation methods.
    - b. Remove dirt, dust, oils, wax, paints, and contamination capable of affecting primer and sealant bond.
    - c. Clean concrete joint surfaces to remove curing agents and form release agents.
- C. Protection:
1. Protect elements surrounding the Work of this section from damage or disfiguration.

### **3.3 APPLICATION**

- A. General:
1. Apply silicone sealant in accordance with Manufacturer's instructions.
  2. Do not use damaged or deteriorated materials.
  3. Install primer and sealants in accordance with ASTM C1193 and Manufacturer's instructions.
  4. Apply primer where required for sealant adhesion.
  5. Install sealants immediately after joint preparation.

6. Do not use silicone sealant as per the following:
  - a. Apply caulking/sealant at temperatures below 40 deg F (4 deg C).
  - b. Below-grade applications.
  - c. Brass and copper surfaces.
  - d. Materials bleeding oils, plasticizers, and solvents.
  - e. Structural glazing and adhesive.
  - f. Surfaces to be immersed in water for prolonged time.
  
- B. Joint Backing:
  1. Install joint backing to maintain sealant joint ratios recommended by Manufacturer.
  2. Install without gaps, twisting, stretching, or puncturing backing material. Use gage to ensure uniform depth to achieve correct profile, coverage, and performance.
  3. Rod for open joints shall be at least 1-1/2 times width of open joint and of thickness to give solid backing. Backing shall fill up joint so depth of sealant bite is no more than 3/8 inch (9.5 mm) deep.
  
- C. Bond Breaker:
  1. Install bond breaker where joint backing is not used or where backing is not feasible.
    - a. Apply bond-breaker tape in shallow joints as recommended by Sealant Manufacturer.
  
- D. Sealant:
  1. Apply sealant with hand-caulking gun with nozzle of proper size to fit joints. Use sufficient pressure to insure full contact to both sides of joint to full depth of joint. Apply sealants in vertical joints from bottom to top.
  2. Fill joint opening to full and proper configuration.
  3. Apply in continuous operation.
  4. Tool joints immediately after application of sealant if required to achieve full bedding to substrate or to achieve smooth sealant surface. Tool joints in opposite direction from application direction, i.e., in vertical joints, from the top down. Do not 'wet tool' sealants.
  5. Depth of sealant bite shall be 1/4 inch (6 mm) minimum and 1/2 inch (12.7 mm) maximum, but never more than one half or less than one fourth joint width.
  
- E. Caulk gaps between painted or coated substrates and unfinished or pre-finished substrates. Caulk gaps larger than 3/16 inch (5 mm) between painted or coated substrates.

### 3.4 TOLERANCES

- A. Provide joint tolerances in accordance with Manufacturer's printed instructions.

### 3.5 FIELD QUALITY CONTROL

- A. Adhesion Test (Installer Option to use adhesion test to determine if primer is required).
  1. Perform adhesion tests in accordance with Manufacturer's instructions and ASTM C1193, Method A, Field-Applied Sealant joint Hand-Pull Tab:
    - a. Perform five (5) tests for first 1,000 linear feet (300 meters) of applied silicone sealant and one (1) test for each 1,000 linear feet (300 meters) seal thereafter or perform one (1) test per floor per building elevation minimum.
    - b. For sealants applied between dissimilar materials, test both sides of joints.
  2. Sealants failing adhesion test shall be removed, substrates cleaned, sealants re-installed, and re-testing performed.
  3. Maintain test log and submit report to Architect indicating tests, locations, dates, results, and remedial actions.

### 3.6 CLEANING

- A. Remove masking tape and excess sealant.

- B. Clean adjacent materials, which have been soiled, immediately (before setting) as recommended by Manufacturer.
- C. Waste Management: Dispose of products in accordance with manufacturer's recommendation.

**END OF SECTION**

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# DIVISION 08: OPENINGS

## 08 1000 DOORS AND FRAMES

08 1429 FLUSH WOOD DOORS: FACTORY-FINISHED, CLEAR

END OF TABLE OF CONTENTS

**SECTION 08 1429****FLUSH WOOD DOORS: Factory-Finished, Clear****PART 1 - GENERAL****1.1 SUMMARY**

- A. Products Furnished But Not Installed Under This Section:
  - 1. Factory-finished flush wood doors.
- B. Related Requirements:
  - 1. Section 06 2024: 'Door, Frame, And Finish Hardware Installation' for installation.
  - 2. Section 09 9324: 'Interior Clear-Finished Hardwood'.

**1.2 REFERENCES**

- A. Abbreviations And Acronyms:
  - 1. AWS: Architectural Woodwork Standards (formerly AWI).
  - 2. FD: Fire-resistant core, fire-resistant materials assembled to stiles and rails according to methods prescribed by the testing agency to meet rigorous smoke, flame, and pressure tests.
  - 3. FD-5: Core with 2 layers on each side.
  - 4. ME: Matching edges, i.e., vertical edges same as decorative faces.
  - 5. PC: Particleboard core, solid core door with stiles and rails bonded to the core and abrasive planed flat prior to the application of the faces.
  - 6. PC-5: Core with 2 layers on each side.
- B. Association Publications:
  - 1. Architectural Woodwork Institute / Architectural Woodwork Manufacturers Association of Canada, 46179 Westlake Drive, Suite 120, Potomac Falls, VA [www.awinet.org](http://www.awinet.org).
    - a. Architectural Woodwork Standards (AWS), 2nd Edition, 2014.
- C. Definitions:
  - 1. Book-Match: Matching between adjacent veneer leaves on one panel face. Every other piece of veneer is turned over so that the adjacent leaves are "opened" as two pages in a book. The fibers of the wood, slanting in opposite directions in the adjacent leaves, create a characteristic light and dark effect when the surface is seen from an angle.
  - 2. Fire-rated: Fire-retardant particleboard with an Underwriters' Laboratory (UL) stamp for Class 1 fire rating (Flame Spread 20, Smoke Developed 25). Fire-rated doors are available with particleboard and mineral cores for ratings up to 1-1/2 hours.
  - 3. Fire-rated Door: A door made of fire-resistant material that can be closed to prevent the spread of fire and can be rated as resisting fire for 20 minutes (1/3 hour), 30 minutes (1/2 hour), 45 minutes (3/4 hour) (C), 1 hour (B), or 1-1/2 hours (B). The door must be tested and carry an identifying label from a qualified testing and inspection agency.
  - 4. Grade: Unless otherwise noted, this term means Grade rules for Economy, Custom, and/or Premium Grade.
    - a. Custom Grade: Typically specified for and adequately covers most high-quality architectural woodwork, providing a well-defined degree of control over a project's quality of materials, workmanship, or installation.
    - b. Premium Grade: The highest Grade available in both material and workmanship where the highest level of quality, materials, workmanship, and installation is required.
  - 5. Running Match: Each panel face is assembled from as many veneer leaves as necessary. Any portion left over from one panel may be used to start the next.
- D. Reference Standards:



1. American Architectural Manufacturers Association / Window & Door Manufacturers Association / CSA Group:
  - a. AAMA/WDMA/CSA 101/I.S.2/A440-17, 'North American Fenestration Standard/Specification for windows, doors, and skylights'
2. ASTM International:
  - a. ASTM C1036-16, 'Standard Specification for Flat Glass'.
  - b. ASTM C1048-18, 'Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass'.
3. Hardwood, Plywood, and Veneer Association:
  - a. HPVA HP-1-2016 'Standard for Hardwood and Decorative Plywood'.
4. National Particleboard Association / Composite Panel Association:
  - a. NPA A208.1-2009, 'Particleboard'.

### 1.3 SUBMITTALS

- A. Action Submittals:
  1. Shop Drawings:
    - a. Schedule showing type of door at each location. Included shall be size, veneer, core type, fire rating, hardware prep, openings, blocking, etc.
    - b. Indicate factory finish color and type.
  2. Samples:
    - a. Interior Hardwood for Transparent Finish:
      - 1) Before performing work of this Section, prepare Control Sample, to match sample available from Owner, to be used as finishing standard for interior clear finished hardwood as specified in Section 09 9324.
      - 2) Design Criteria:
        - a) Provide **8 inch by 10 inch (200 mm by 255 mm)** sample of Red Oak to match Owner provided stain color selected for Project.
        - b) Control Sample will be used as performance standard for evaluating finish provided.
- B. Informational Submittals:
  1. Source Quality Control Submittals:
    - a. Samples:
      - 1) Interior Hardwood for Transparent Finish:
        - a) Owner will provide Control Sample from project for finish.
- C. Closeout Submittals:
  1. Include following information in Operations And Maintenance Manuals specified in Section 01 7800:
    - a. Record Documentation:
      - 1) Manufacturers Documentation:
        - a) Manufacturer's product literature on doors and factory finish.
        - b) Maintenance and repair instructions.

### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Delivery And Acceptance Requirements:
  1. Deliver in clean truck and, in wet weather, under cover.
  2. Deliver to building site only after plaster, cement, and taping compound are completed and dry and after interior painting operations have been completed.
  3. Individually wrap in polyethylene bags for shipment and storage.
- B. Storage And Handling Requirements:
  1. Store doors in a space having controlled temperature and humidity range between 25 and 55 percent.
  2. Store flat on level surface in dry, well ventilated space.

3. Cover to keep clean but allow air circulation.
4. Do not subject doors to direct sunlight, abnormal heat, dryness, or humidity.
5. Handle with clean gloves and do not drag doors across one another or across other surfaces.
6. Leave shipping bag on door after installation until immediately before substantial completion inspection.
7. Doors have been acclimated to the field conditions for a minimum of 72 hours before installation is commenced.

## 1.5 WARRANTY

### A. Manufacturer Warranty:

1. Manufacturer's standard full door warranty for lifetime of original installation.
  - a. Warranty shall include finishing, hanging, and installing hardware if manufacturing defect was discovered after door was finished and installed.
  - b. Warranty to include defects in materials including following:
    - 1) Delaminating in any degree.
    - 2) Warp or twist of **1/4 inch (6 mm)** or more in door panel at time of one-year warranty inspection.
    - 3) Telegraphing of core assembly: Variation of **1/100 inch (0.25 mm)** or more in **3 inch (75 mm)** span.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURED UNITS

#### A. Suppliers:

1. Category Three Approved Suppliers. See Section 01 6200 for definitions of Categories and Section 01 4301 for Qualification Requirements:
  - a. Architectural Building Supply, Salt Lake City, UT [www.cookandboardman.com](http://www.cookandboardman.com):
    - 1) Contact Information: Russ Farley: phone (800) 574-4369, fax 801-484-6817, or e-mail [russf@absdoors.com](mailto:russf@absdoors.com).
  - b. Beacon Metals Inc, Salt Lake City, UT [www.beacon-metals.com](http://www.beacon-metals.com):
    - 1) Contact Information: Jared Butler: phone (801) 486-4884, cell (435) 216-2297, FAX 801-485-7647, or e-mail [Jared@beacon-metals.com](mailto:Jared@beacon-metals.com).
  - c. Midwest D-Vision Solutions, Salt Lake City, UT [www.mwdsutah.com](http://www.mwdsutah.com).
    - 1) Contact Information: Dan Mercer, office (801) 377-4355, cell (801) 618-9456, e-mail [danm@mwdsutah.com](mailto:danm@mwdsutah.com).

#### B. Manufacturers:

1. Category Four Approved Manufacturers. See Section 01 6200 for definitions of Categories:
  - a. Graham Wood Doors, Mason City, IA.
  - b. Marshfield Door Systems Inc, Marshfield, WI.
  - c. VT Industries, Holstein, IA.

#### C. Wood Doors:

1. Type: AWS PC-5ME or FD-5ME.
2. Grade: AWS Premium, except face veneer.
3. Fully Type I Construction: Adhere all glue lines with Type I adhesive, including veneer lay-up.
4. Face Veneer:
  - a. Plain sliced Red Oak meeting requirements of AWS Grade A, **1/50 inch (0.5 mm)** thick minimum immediately before finishing.
  - b. Face veneers shall be running book matched.
5. Core:
  - a. Fully bonded to stiles and rails and sanded as a unit before applying veneers.
  - b. Non-Rated:

- 1) 32 lb density meeting requirements of ANSI A208.1 Mat Formed Wood Particle Board, Grade 1-L-1 minimum.
  - 2) Stiles:
    - a) 1-3/8 inches (35 mm) deep minimum before fitting.
    - b) Stile face to be hardwood matching face veneer material, thickness manufacturer's standard.
  - 3) Rails:
    - a) 1-1/8 inches (28 mm).
    - b) Manufacturer's option.
- D. Fabrication:
1. Doors shall be factory-machined. Coordinate with Section 08 1213 and Sections under 08 7000.
- E. Finishes:
1. Factory Finishing:
    - a. Applied by Door Manufacturer before leaving factory.
    - b. Performance / Design Criteria:
      - 1) Finish factory-finish to match Owner selected sample as specified in Section 09 9324.
    - c. Match existing Project Color Scheme:
      - 1) Control Sample provided by Owner:
        - a) Sample of existing finished hardwood.
    - d. Finish: AWS Finish System TR-6 Catalyzed Polyurethane Premium Grade for unfilled, open-grain woods.

## 2.2 SOURCE QUALITY CONTROL

- A. Inspections:
1. Verification of Performance:
    - a. Doors shall have following information permanently affixed on top of door:
      - 1) Manufacturer:
      - 2) Door designation or model.
      - 3) Veneer species.
      - 4) Factory finish.
  2. Clear Finished Hardwood:
    - a. Color matches Owner provided sample specified in Section 09 9324.

## PART 3 - EXECUTION: Not Used

END OF SECTION

# **DIVISION 09: FINISHES**

## **09 0500 COMMON WORK RESULTS FOR FINISHES**

09 0503 FLOORING SUBSTRATE PREPARATION

## **09 2000 PLASTER AND GYPSUM BOARD**

09 2117 GYPSUM BOARD SHAFT WALL ASSEMBLIES  
09 2900 GYPSUM BOARD

## **09 5000 CEILING**

09 5116 ACOUSTICAL TILE CEILINGS

## **09 6000 FLOORING**

09 6816 SHEET CARPET: BACK CUSHION, DIRECT GLUE

## **09 7000 WALL FINISHES**

09 7226 SISAL WALL COVERINGS

## **09 9000 PAINTS AND COATINGS**

09 9001 COMMON PAINTING AND COATING REQUIREMENTS  
09 9123 INTERIOR PAINTED GYPSUM BOARD, PLASTER  
09 9324 INTERIOR CLEAR-FINISHED HARDWOOD  
09 9413 INTERIOR TEXTURED FINISHING

END OF TABLE OF CONTENTS

**SECTION 09 0503**

**FLOORING SUBSTRATE PREPARATION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Preparing floor substrate to receive flooring as described in Contract Documents.
  - 2. Remove existing carpet and prepare floor as described in Contract Documents.
  - 3. Perform building modifications and repairs to accommodate carpet and carpet base as described in Contract Documents.
  
- B. Related Requirements:
  - 1. Pre-Installation conferences held jointly with Section 09 0503 as described in Administrative Requirements on Part 1 of this specification section.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Pre-Installation Conference:
  - 1. Participate in MANDATORY pre-installation conference held jointly if possible for all related Division 09 6000 'Flooring' used for Project.
  - 2. Schedule conference after substrate preparation and before installation of flooring system. (If more than one (1) flooring system is included for project, hold conference at same time if schedule permits).
  - 3. Conference may be held at project site or another convenient site. Participants may also attend by video or audio conference if approved by Project Manager.

**1.3 DELIVERY, STORAGE, AND HANDLING**

- A. Storage And Handling Requirements:
  - 1. Provide storage space and protection for flooring and installation accessories if materials are delivered before start of flooring installation.

**1.4 FIELD CONDITIONS**

**PART 2 - PRODUCTS Not Used**

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Flooring Preparation:
  - 1. General:
    - a. Prepare floor substrate in accordance with ASTM F710, 'Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring' (This standard is used for preparing concrete floors for all flooring).
    - b. Concrete floor slab patching:
      - 1) Cracks, chips and joints must be properly patched or repaired.

- c. Concrete surface cured, clean, dry, and free of dirt, dust, grease, wax, and other foreign substances that will compromise flooring installations.
    - 1) Removal of curing compounds.
    - 2) Remove paint, sealer, grease, oil, silicone sealants, and other materials incompatible with flooring adhesives.
    - 3) Removal of overspray from painted walls (essential so glue will stick).
  - d. Vacuum and damp mop floor areas to receive flooring before flooring installation.
2. Carpeted floor areas:
- a. Prepare floor substrate in accordance with Carpet And Rug Institute (CRI) best practices to receive carpet installation and to provide installation that meets Carpet Manufacturer's warranty requirements.
- B. Carpet Accessories:
- 1. Sundry items, such as adhesives, shall be conditioned to building ambient conditions before use.

**END OF SECTION**

**SECTION 09 2117****GYPSUM BOARD SHAFT WALL ASSEMBLIES****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install gypsum shaft liner required for interior of elevator shafts as described in Contract Documents.
- B. Related Requirements:
  - 1. Section 07 2116: 'Blanket Insulation' for acoustic blanket insulation.

**1.2 REFERENCES**

- A. Reference Standards:
  - 1. ASTM International:
    - a. ASTM C1396/C1396M-17, 'Standard Specification for Gypsum Board'.

**1.3 ADMINISTRATIVE REQUIREMENTS**

- A. Pre-Installation Conference: Participate in conference specified in Section 09 2900.

**1.4 SUBMITTALS**

- A. Action Submittals:
  - 1. Product Data:
    - a. Provide technical product data and installation instructions.
    - b. Provide recommendations for each component of system.
- B. Informational Submittals:
  - 1. Test And Evaluation Reports:
    - a. ICC Evaluation Report.
  - 2. Manufacturer Instructions:
    - a. Installation instructions in conjunction with tested assembly.

**PART 2 - PRODUCTS****2.1 SYSTEM**

- A. Gypsum Shaft Liner Board:
  - 1. Meet requirements of ASTM C1396/C1396M, **one inch (25 mm)** thick Type X, faced with moisture-resistant facing material front and back, and having non-combustible, water-resistant core.
  - 2. Class Two Quality Standard: USG Sheetrock Brand Gypsum Liner Panels – Enhanced.
- B. Fasteners: Rust resistant bugle head screws as recommended by Sheathing Manufacturer.

**PART 3 - EXECUTION****3.1 EXAMINATION**

- A. Examine substrate and verify framing is suitable for installation of sheathing. Notify Architect of unsuitable conditions in writing. Do not install sheathing over unsuitable conditions.

**3.2 INSTALLATION**

- A. Install in accordance with ASTM C1280 except where tested assembly requirements call for more restrictive requirements.
- B. Fastening:
1. Apply from center of wallboard towards ends and edges.
  2. Do not apply screws closer than **3/8 inch (9.5 mm)** to ends or edges. Screws on adjacent ends or edges shall be opposite each other. Space screws **7 inches (180 mm)** on center maximum.
  3. Adjust power screw-driver to set heads in **1/32 inch (0.8 mm)** dimple.
  4. Do not break face paper. If face is accidentally broken, apply second screw **2 inches (50 mm)** away.
  5. Drive screws with shank perpendicular to face of board.
- C. Single Layer Application:
1. Use board of size to give minimum number of joints.
  2. Edge joints to be parallel to and occur over framing members.
  3. Butt edges in moderate contact. Do not force in place.
  4. Leave facings true with joint, finishing flush, vertical work plumb.

**3.3 PROTECTION**

- A. Protect gypsum shaft liner from moisture.

**END OF SECTION**



**SECTION 09 2900****GYPSUM BOARD****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install gypsum board as described in Contract Documents, except behind ceramic tile.
  - 2. Furnish and install acoustical sealants as described in Contract Documents.
- B. Related Requirements:
  - 1. Section 09 9413: 'Interior Textured Finishing'.

**1.2 REFERENCES**

- A. Definitions:
  - 1. Accessories: Metal or plastic beads, trim, or moulding used to protect or conceal corners, edges, or abutments of the gypsum board construction.
  - 2. Drywall Primer: Paint material specifically formulated to fill the pores and equalize the suction difference between gypsum board surface paper and the compound used on finished joints, angles, fastener heads, and accessories and over skim coatings.
  - 3. Skim Coat: Either a thin coat of joint compound trowel applied, or a material manufactured especially for this purpose and applied in accordance with manufacturer's recommendations, over the entire surface.
  - 4. Texturing: Regular or irregular patterns typically produced by applying a mixture of joint compound and water, or proprietary texture materials including latex base texture paint, to a gypsum board surface previously coated with drywall primer.
- B. Reference Standards:
  - 1. ASTM International:
    - a. ASTM C11-18, 'Standard Terminology Relating to Gypsum and Related Building Materials and Systems'.
    - b. ASTM C475/C475M-17, 'Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board'.
    - c. ASTM C840-18a, 'Standard Specification for Application and Finishing of Gypsum Board'.
    - d. ASTM C1002-18, 'Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs'.
    - e. ASTM C1047-14a, 'Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base'.
    - f. ASTM C1178/C1178M-18, 'Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel'.
    - g. ASTM C1396/C1396M-17, 'Standard Specification for Gypsum Board'.
    - h. ASTM E84-18b, 'Standard Test Method for Surface Burning Characteristics of Building Materials'.
    - i. ASTM E119-18b, 'Standard Test Method for Fire Tests of Building Construction and Materials'.
  - 2. Gypsum Association:
    - a. GA-214-15, 'Recommended Levels of Gypsum Board Finish'.
    - b. GA-216-16: 'Application and Finishing of Gypsum Panel Products'.
    - c. GA-600-15, 'Fire Reference Design Manual'.

- d. GA-801-2017, 'Handling and Storage of Gypsum Panel Products: A Guide for Distributors, Retailers, and Contractors'.
3. International Building Code (IBC) (2018 or latest approved version):
  - a. Chapter 25, 'Gypsum Board And Plaster'.
4. Standards Council of Canada / Underwriters Laboratories of Canada:
  - a. CAN/ULC-S102:2018: 'Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies'.
5. Underwriters Laboratories, Inc.
  - a. UL 263: 'Test Method for Fire Tests of Building Construction and Materials' (14th Edition).
  - b. UL 723: 'Test for Surface Burning Characteristics of Building Materials; (11th Edition).

### 1.3 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conference:
  1. Schedule MANDATORY pre-installation conference immediately before installation of gypsum wallboard.
  2. In addition to agenda items specified in Section 01 3100, review following:
    - a. Finish requirements necessary for installation of finish materials over gypsum wallboard, and location and installation of ceramic tile backerboard.

### 1.4 SUBMITTALS

- A. Informational Submittals:
  1. Test And Evaluation Reports:
    - a. Fire test results or assembly diagrams and numbers confirming products used will provide required fire ratings with installation configurations used.

### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. General:
  1. Following recommendations of GA-801 Guide for Handling and Storage of Gypsum Panel Products unless local, state or federal laws or agency rules differing from the recommendations shall take precedence.
- B. Delivery And Acceptance Requirements:
  1. Deliver materials in original packages, containers, or bundles bearing brand name, applicable standard designation, and Manufacturer's name.
- C. Storage And Handling Requirements:
  1. Store material under roof and keep dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack gypsum board flat to prevent sagging.

### 1.6 FIELD CONDITIONS

- A. Ambient Conditions:
  1. Comply with ASTM C840 or GA-216 requirements, whichever are more stringent:
    - a. Do not install interior products until installation areas are enclosed and conditioned.
      - 1) Temperature shall be 50 deg F (10 deg C) and 95 deg F (35 deg C) maximum day and night during entire joint operation and until execution of Certificate of Substantial Completion.
      - 2) Provide ventilation to eliminate excessive moisture.
      - 3) Avoid hot air drafts that will cause too rapid drying.

- b. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

#### A. Manufacturers:

1. Manufacturer Contact List:
  - a. American Gypsum, Dallas, TX [www.americangypsum.com](http://www.americangypsum.com).
  - b. CertainTeed Gypsum, Inc; Tampa, FL [www.certainteed.com](http://www.certainteed.com).
  - c. Georgia Pacific, Atlanta, GA [www.gp.com](http://www.gp.com).
  - d. National Gypsum, Charlotte, NC [www.nationalgypsum.com](http://www.nationalgypsum.com).
  - e. Pabco Gypsum, Newark, CA [www.pabcogypsum.com](http://www.pabcogypsum.com).
  - f. United States Gypsum Co, Chicago, IL [www.usg.com](http://www.usg.com).

#### B. Materials:

1. Interior Gypsum Board:
  - a. General:
    - 1) Size:
      - a) Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.
    - 2) Class Two Quality Standard:
      - a) Core: Fire-resistant rated gypsum core.
      - b) Complies with Type X requirements of ASTM C1396/C1396M (Section 5).
      - c) Surface paper: Face paper suitable for painting.
      - d) Long edges: Tapered edge.
      - e) Overall thickness: **5/8 inch (15.9 mm)**.

### 2.2 ACCESSORIES

#### A. Manufacturers:

1. Manufacturer Contact List:
  - a. Kinetics Noise Control, Dublin, OH [www.kineticsnoise.com](http://www.kineticsnoise.com).
  - b. Magnum Products, Lenaxa, KS [www.levelcoat.com](http://www.levelcoat.com).
  - c. National Gypsum, Charlotte, NC [www.nationalgypsum.com](http://www.nationalgypsum.com).
  - d. Soundproofing Co, San Marcos, CA [www.soundproofing.org](http://www.soundproofing.org).
  - e. United States Gypsum Co, Chicago, IL [www.usg.com](http://www.usg.com).
  - f. Westpac Materials Inc, Orange, CA [www.westpacmaterials.com](http://www.westpacmaterials.com).
  - g. Wm. Zinsser & Co, Somerset, NJ [www.zinsser.com](http://www.zinsser.com).
2. Gypsum Board Mounting Accessories:
  - a. Corner And Edge Trim:
    - 1) Metal, paper-faced metal, paper-faced plastic, or solid vinyl meeting requirements of ASTM C1047. Surfaces to receive bedding cement treated for maximum bonding.
3. Joint Compound:
  - a. Best grade or type recommended by Board Manufacturer and meeting requirements of ASTM C475/C475M.
    - 1) Use Taping Compound for first coat to embed tape and accessories.
    - 2) Use Taping Compound or All-Purpose Compound for subsequent coats except final coat.
    - 3) Use Finishing Compound for final coat and for skim coat.
4. Joint Reinforcing:
  - a. Paper reinforcing tape acceptable to Gypsum Board Manufacturer.
5. Fasteners:
  - a. Bugle head screws meeting requirements of ASTM C1002:

- 1) Gypsum Board:
  - a) Type W: For fastening gypsum board to wood members, of length to penetrate wood framing **5/8 inch (15.9 mm)** minimum.
- B. Primer / Surfer On Surfaces To Receive Texturing:
  1. Type Two Acceptable Products:
    - a. Sheetrock First Coat by USG.
    - b. Prep Coat by Westpac Materials.
    - c. Level Coat by Magnum Products.
    - d. Equal as approved by Architect before bidding. See Section 01 6200.
- C. Primer On Surfaces To Receive Wallcovering:
  1. White, self-sizing, water based, all purpose wallcovering primer.
  2. Type Two Acceptable Products:
    - a. Shieldz Universal Pre-Wallcovering Primer by Wm. Zinsser and Company.
    - b. Equal as approved by Architect before application. See Section 01 6200.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verification Of Conditions:
  1. Examine substrate and verify framing is suitable for installation of gypsum board.
  2. Examine gypsum board before installation. Reject panels that are wet, moisture damaged, and mold damaged.
  3. Notify Architect of unsuitable conditions in writing.
    - a. Do not install board over unsuitable conditions.
  4. Commencement of Work by installer is considered acceptance of substrate.

### 3.2 INSTALLATION

- A. Interface With Other Work:
  1. Coordinate with Division 06 for location of backblocking for edges and ends of gypsum board and for blocking required for installation of equipment and building specialties.
  2. Do not install gypsum board until required blocking is in place.
- B. General: Install and finish as recommended in ASTM C840 or GA-216 unless specified otherwise in this Section.
- C. Interior Gypsum Board:
  1. General:
    - a. Install so trim and reinforcing tape are fully backed by gypsum board. No hollow spaces between pieces of gypsum board over **1/8 inch (3 mm)** wide before taping are acceptable.
    - b. Rout out backside of gypsum board to accommodate items that extend beyond face of framing, but do not penetrate face of gypsum board, such as metal door frame mounting brackets, etc.
    - c. On walls over **108 inches (2 700 mm)** high, apply board perpendicular to support
    - d. Butt edges in moderate contact. Do not force in place. Shim to level.
    - e. Leave facings true with joint, finishing flush. Vertical work shall be plumb and ceiling surfaces level.
    - f. Scribe work closely:
      - 1) Keep joints as far from openings as possible.
      - 2) If joints occur near an opening, apply board so vertical joints are centered over openings.
      - 3) No vertical joints shall occur within **8 inches (200 mm)** of external corners or openings.

- g. Install board tight against support with joints even and true. Tighten loose screws.
  - h. Caulk perimeter joints in sound insulated rooms with specified acoustical sealant.
2. Ceilings:
- a. Apply ceilings first using minimum of two (2) men.
  - b. Use board of length to give minimum number of joints.
  - c. Apply board perpendicular to support.
3. Fastening:
- a. Apply from center of board towards ends and edges.
  - b. Apply screws **3/8 inch (9.5 mm)** minimum from ends and edges, **one inch (25 mm)** maximum from edges, and **1/2 inch (13 mm)** maximum from ends.
  - c. Spacing:
    - 1) Ends: Screws not over **7 inches (175 mm)** on center at edges where blocking or framing occurs.
    - 2) Wood Framed Walls And Ceilings: Screws **7 inches (175 mm)** on center in panel field.
    - 3) Metal Framed Walls: Screws **12 inches (300 mm)** on center in panel field.
  - d. Set screw heads **1/32 inch (0.8 mm)** below plane of board, but do not break face paper. If face is accidentally broken, apply additional screw **2 inches (50 mm)** away.
  - e. Screws on adjacent ends or edges shall be opposite each other.
  - f. Drive screws with shank perpendicular to face of board
4. Trim:
- a. Corner Beads:
    - 1) Attach corner beads to outside corners.
      - a) Attach metal corner bead with staples spaced **4 inches (100 mm)** on center maximum and flat taped over edges of corner bead. Also, apply screw through edge of corner bead where wood trim will overlay corner bead.
      - b) Set paper-faced trim in solid bed of taping compound.
  - b. Edge Trim: Apply where gypsum board abuts dissimilar material. Hold channel and 'L' trim back from exterior window and door frames **1/8 inch (3 mm)** to allow for caulking.
5. Finishing:
- a. General:
    - 1) Tape and finish joints and corners throughout building as specified below to correspond with final finish material to be applied to gypsum board. When sanding, do not raise nap of gypsum board face paper or paper-faced trim.
    - 2) First Coat:
      - a) Apply tape over center of joint in complete, uniform bed of specified taping compound and wipe with a joint knife leaving a thin coating of joint compound. If metal corner bead is used, apply reinforcing tape over flange of metal corner bead and trim so half of tape width is on flange and half is on gypsum board.
      - b) Completely fill gouges, dents, and fastener dimples.
      - c) Allow to dry and sand lightly if necessary, to eliminate high spots or excessive compound.
    - 3) Second Coat:
      - a) Apply coat of specified joint compound over embedded tape extending **3-1/2 inches (88 mm)** on both sides of joint center. Use finishing compound only if applied coat is intended as final coat.
      - b) Re-coat gouges, dents, and fastener dimples.
      - c) Allow to dry and sand lightly to eliminate high spots or excessive compound.
    - 4) Third Coat: Apply same as second coat except extend application **6 inches (150 mm)** on both sides of joint center. Allow to dry and sand with fine sandpaper or wipe with damp sponge.
    - 5) Fourth Coat: Apply same as second coat except extend application **9 inches (425 mm)** on both sides of joint center. Allow to dry and sand with fine sandpaper or wipe with damp sponge.
  - a. Finishing Levels: Finish panels to levels indicated below and according to ASTM C840, GA-214 and GA-216:
    - 1) Gypsum Board Surfaces not painted or finished:

- a) GA-214 Level 1: 'All joints and interior angles shall have tape set in joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable'.
- 2) Gypsum Board Surfaces Under Acoustical Tile:
  - a) GA-214 Level 2: 'All joints and interior angles shall have tape embedded in joint compound and wiped with a joint knife leaving a thin coating of joint compound over all joints and interior angles. Fastener heads and accessories shall be covered with a coat of joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable. Joint compound applied over the body of the tape at the time of tape embedment shall be considered a separate coat of joint compound and shall satisfy the conditions of this level.
  - b) Note: It is critical that gypsum board ceiling be smooth before installing ceiling tile. Drywall joints must be as specified in paragraph above.
- 3) Gypsum Board Surfaces to Receive: Wall Covering Type A - Section 09 7226: 'Sisal Wall Covering':
  - a) GA-214 Level 3: 'All joints and interior angles shall have tape embedded in joint compound and one additional coat of joint compound applied over all joints and interior angles. Fastener heads and accessories shall be covered with two separate coats of joint compound. All joint compound shall be smooth and free of tool marks and ridges. Coat prepared surface with specified wall covering primer'.
- 4) Gypsum Board Surfaces to Receive: Painted Texturing - Section 09 9413: 'Interior Textured Finishing':
  - a) GA-214 Level 4: 'All and interior angles shall have tape embedded in joint compound and two separate coats of joint compound applied over all flat joints and one separate coat of joint compound applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. All joint compound shall be smooth and free of tool marks and ridges. Coat prepared surface with specified primer'.

### 3.3 FIELD QUALITY CONTROL

#### A. Non-Conforming Work:

1. Remove and replace panels that are wet, moisture damaged, and mold damaged.
  - a. Indications that panels are wet, or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  - b. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

### 3.4 CLEANING

- A. Remove from site debris resulting from work of this Section including taping compound spills.

**END OF SECTION**

**SECTION 09 5116****ACOUSTICAL TILE CEILINGS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install acoustical tile on backerboard as described in Contract Documents.
- B. Related Requirements:
  - 1. Section 09 2900: 'Gypsum Board'.

**1.2 REFERENCES**

- A. Association Publications:
  - 1. The Ceilings & Interior Systems Construction Association (CISCA), 405 Illinois Avenue, 2B, St Charles IL. [www.cisca.org](http://www.cisca.org).
    - a. '*Ceiling Systems Handbook*': Recommendations for direct hung acoustical tile installation.
    - b. '*Production Guide*': Practical reference for ceiling systems and estimating costs.
- B. Definitions:
  - 1. Absorption: Materials that have capacity to absorb sound. Absorption is the opposite of reflection.
  - 2. Ceiling Attenuation Class (CAC): Rates ceiling's efficiency as barrier to airborne sound transmission between adjacent closed offices. Shown as minimum value, previously expressed as CSTC (Ceiling Sound Transmission Class). Single-figure rating derived from normalized ceiling attenuation values in accordance with classification ASTM E413, except that resultant rating shall be designated ceiling attenuation class. (Defined in ASTM E1414.) Acoustical unit with high CAC may have low NRC.
  - 3. Class A: Fire classification for product with flame spread rating of no more than 25 and smoke developed rating not exceeding 50, when tested in accordance with ASTM E84 or UL 723.
  - 4. Flame Spread: The propagation of flame over a surface.
  - 5. Flame Spread Index: Comparative measure, expressed as a dimensionless number, derived from visual measurements of the spread of flame versus time for a material tested in accordance with ASTM E84 or UL 723.
  - 6. Light Reflectance (LR): Percentage of light a surface reflected by ceiling surface expressed in decimal form.
  - 7. Noise Reduction Coefficient (NRC): Average sound absorption coefficient measured at four frequencies: 250, 500, 1,000 and 2,000 Hertz expressed to the nearest integral multiple of 0.05. Rates ability of ceiling or wall panel or other construction to absorb sound. NRC is fraction of sound energy, averaged over all angles of direction and from low to high sound frequencies that is absorbed and not reflected.
  - 8. Smoke-Developed Index: Comparative measure, expressed as a dimensionless number, derived from visual measurements of smoke obscuration versus time for a material tested in accordance with ASTM E84 or UL 723.
  - 9. Sound Absorption: Property possessed by materials and objects, including air, of converting sound energy into heat energy. Sound wave reflected by surface always loses part of its energy. Fraction of energy that is not reflected is called sound absorption coefficient of reflecting surface. For instance, if material reflects 80 percent of sound energy, then sound absorption coefficient would be 20 percent (0.20).
  - 10. Surface Burning Characteristic: Rating of interior and surface finish material providing indexes for flame spread and smoke developed, based on testing conducted according to ASTM Standard E84 or UL 723.

11. Textured Pattern: Granular or raised (fine, coarse, or a blend), felted or matted surface as an integral part of the basic product or superimposed on the product surface.

C. Reference Standards:

1. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE):
  - a. ASHRAE Standard 62.1-2013, 'Ventilation for Acceptable Indoor Air Quality'.
2. ASTM International;
  - a. ASTM D1779-98(2017), 'Standard Specification for Adhesive for Acoustical Materials'.
  - b. ASTM E84-18b, 'Standard Test Method for Surface Burning Characteristics of Building Materials'.
  - c. ASTM E795-16, 'Standard Practices for Mounting Test Specimens During Sound Absorption Tests'.
  - d. ASTM E1264-14, 'Standard Classification for Acoustical Ceiling Products'.
  - e. ASTM E1414/E1414-16, 'Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum'.
  - f. ASTM E1477 - 98a(2017), 'Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers'.
3. International Building Code (IBC) (2018 or latest approved Edition):
  - a. Chapter 8, 'Interior Finishes':
    - 1) Section 803, 'Wall And Ceiling Finishes':
      - a) 803.1.1, 'Interior Wall and Ceiling Finish Materials'.
      - b) 803.1.2, 'Room Corner Test for Interior Wall or Ceiling Finish Materials'.
4. National Fire Protection Association:
  - a. NFPA 101: 'Life Safety Code' (2018 Edition).
  - b. NFPA 265: 'Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Coverings on Full Height Panels and Walls' (2015 Edition).
5. Underwriters Laboratories Inc.:
  - a. UL 723, 'Standard for Safety Test for Surface Burning Characteristics of Building Materials' (Tenth Edition).

### 1.3 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Conferences:

1. Participate in pre-installation conference specified in Section 09 2900 to review finish requirements for gypsum wallboard ceilings.
2. Schedule acoustical tile ceiling pre-installation conference after installation of gypsum wallboard but before beginning installation of tile.
3. In addition to items specified in Section 01 3100, review following:
  - a. Verify that tile comes from same dye lot and has same dye lot code.
  - b. Review requirements of acceptable and non-acceptable tile.

### 1.4 SUBMITTALS

A. Action Submittals:

1. Samples:
  - a. One (1) sample of each variant of specified tile series.

B. Informational Submittals:

1. Certificates:
  - a. Installer(s):
    - 1) Provide each Installer's 'Certificate of Completion - Duratile' from Manufacture showing Name and completion date with bid to be included in closing documents for project.
      - a) Certificate is valid for two (2) years from date printed on Certificate before recertification is required.
2. Test And Evaluation Reports:
  - a. If requested by Owner, provide copies of Quality Assurance requirements for 'Class A' flame spread rating and 'Room-Corner Test'.



3. Manufacturer Installations:
    - a. Published installation recommendations.
  4. Qualification Statement:
    - a. Installer(s):
      - 1) Provide Qualification documentation unless waived by Owner.
- C. Closeout Submittals:
1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
    - a. Warranty Documentation:
      - 1) Include final, executed copy of warranty.
    - b. Record Documentation:
      - 1) Manufacturers Documentation:
        - a) Manufacturer's literature on tile and adhesive.
        - b) Color and pattern selection.
      - 2) Installer(s) 'Certificate of Completion - Duratile' submitted at time of bid.
- D. Maintenance Material Submittals:
1. Extra Stock Materials:
    - a. Provide Owner with six (6) cartons of each type of tile with same dye lot code.

## 1.5 QUALITY ASSURANCE

- A. Regulatory Agency Sustainability Approvals:
1. Fire-Test-Response Characteristics: As determined by testing identical ceiling tile applied with identical adhesives to substrates according to test method indicated below by qualified testing agency. Identify products with appropriate markings of applicable testing agency.
    - a. Surface-Burning Characteristics:
      - 1) Ceiling tile shall have Class A flame spread rating in accordance with ASTM E84 or UL 723 Type 1.
        - a) Class A (Flame spread index 0-25; Smoke-developed index 0-450).
        - b) Flash point: None.
  2. Passage of 'Room-Corner Test' as recognized by AHJ, is required for system. Adhesive cited in test literature is required for installation of ceiling tile on Project.
    - a. Room Corner Tests:
      - 1) ASTM E84, 'Standard Test Method for Surface Burning Characteristics of Building Materials'.
      - 2) IBC 803.2.1, 'Room Corner Test for Interior Wall or Ceiling Finish Materials'.
      - 3) NFPA 265: 'Room Corner Test for Interior Wall or Ceiling Finish Materials'.
      - 4) UL 723, 'Standard for Safety Test for Surface Burning Characteristics of Building Materials'.
- B. Qualifications:
1. Installer: Requirements of Section 01 4301 applies, but not limited to following:
    - a. Minimum five (5) years satisfactorily completed projects of comparable quality, similar size, and complexity including a minimum of three (3) years of experience in glue-up ceiling tile installations and shall have satisfactorily completed glue-up installation(s) within in past three (3) years before bidding.
    - b. Review, understand, and comply Installer Qualifications and submitted 'Duratile' published installation recommendations provided by Manufacturer:
      - 1) Contact Armstrong CSA customer service center at (800) 442-4212 to obtain and review compliance package on Duratile prior to bidding.
      - 2) This requirement may be waived by Owner, if Installer has previously complied with Installer Qualification requirements and can document at least two (2) satisfactorily completed projects of comparable size using Armstrong 12 inch x 12 inch (300 mm x 300 mm) ceiling tile for glue-up within past three (3) years prior to bidding.
      - 3) Installer shall note complete compliance with Qualification requirements on submitted bid form.
      - 4) Submit qualification documentation unless waived by Owner.

- c. Agree to complete and pass 'Duratile Personal Learning Module' (Certificate required for all Installer(s) for Church projects). Certification valid for two (2) years:
  - 1) Go to <http://www.armstrong.com/commceilingsna/#>.
  - 2) Click on My Armstrong Upper Right hand Corner.
  - 3) First time users: Click on 'Register' button and provide all appropriate information for username and password (you must register as a contractor to have access to 'ELearning System').
  - 4) Under My Armstrong Functions (left hand side), click on 'ELearning System'.
  - 5) Click on 'Duratile Video'.
  - 6) Watch video and take Quiz (10 questions). Passing grade required for certificate.
  - 7) Print Certificate.
  - 8) Certificate must be submitted with Bid.
  - 9) Submit 'Certificate of Completion - Duratile'. Required for all projects and may not be waived by Owner.

## 1.6 DELIVERY, STORAGE, AND HANDLING

### A. Delivery and Acceptance Requirements:

1. Materials shall be delivered in original, unopened packages with labels intact.

### B. Storage And Handling Requirements:

1. Store materials where protected from moisture, direct sunlight, surface contamination, and damage.
2. Store acoustic tile in cool, dry location, out of direct sunlight and weather, and at temperatures between **32 deg F (0 deg C)** and **86 deg F (30 deg C)**.
3. Store adhesive on site at installation temperature, between **65 and 90 deg F (18 and 32 deg C)**, for one week before installation.
4. Handle acoustical ceiling tiles carefully to avoid chipping edges or damage. Use no soiled, scratched, or broken material in the Work.

## 1.7 FIELD CONDITIONS

### A. Ambient Conditions:

1. Building shall be enclosed, mechanical system operating with proper filters in place, and temperature and humidity conditions stabilized within limits under which Project will operate before, during, and after installation until Substantial Completion.
2. Temperature at time of setting tile shall be **50 deg F (10 deg C)** minimum and **100 deg F (38 deg C)** maximum.

## 1.8 WARRANTY

### A. Manufacturer Warranty:

1. Provide Manufacturer's ten (10) year limited system warranty for the following:
  - a. Manufacturer's warranty to be free from defects in materials and factory workmanship.
  - b. Manufacturer's warranty against sagging and warping.
  - c. Manufacturer's warranty against mold/mildew, and bacterial growth.

## PART 2 - PRODUCTS

### 2.1 SYSTEM

#### A. Manufacturers:

1. Manufacturer Contact List:
  - a. Armstrong World Industries, Strategic Accounts, Lancaster, PA [www.ceiling.com](http://www.ceiling.com).

- 1) For pricing and ordering of tile, contact Sherry Brunt, Phyllis Miller, or Beth Rinehart at (800) 442-4212, or [Armstrongcsa@armstrong.com](mailto:Armstrongcsa@armstrong.com).
  - 2) For Strategic Account information, contact Deborah Pickens at (480) 695-9053 [dlpickens@armstrong.com](mailto:dlpickens@armstrong.com).
- b. Franklin International, Inc., Columbus, OH [www.titebond.com](http://www.titebond.com).

B. Materials:

1. Description:
  - a. Size: **3/4 inch (19 mm)** thick minimum by **12 inches (300 mm)** square.
  - b. Color: White.
  - c. Grid Face: Tile glue-up.
  - d. Surface Finish: Factory-applied.
  - e. Wet-formed high density mineral fiber.
2. Design Criteria:
  - a. Meet requirements of ASTM E1264, Type III (mineral base with painted finish), Form 2 (water felted), Pattern CE (perforated, small holes – lightly textured), Fire Class A.
  - b. Acoustics:
    - 1) Noise Reduction Coefficient (Rating expressed according to ASTM E1284 requirements:
      - a) NRC rating: 60 minimum.
      - 2) CAC rating: 35 minimum.
  - c. Anti Mold / Mildew:
    - 1) Resistance against growth of mold/mildew.
  - d. Durable:
    - 1) Impact-resistant.
    - 2) Scratch-resistant.
  - e. Tongue and Groove.
  - f. Finish:
    - 1) Abuse-resistant/durable, factory applied vinyl latex paint.
  - g. Fire Performance:
    - 1) Panels meet ASTM E84 or UL 723 Type 1 surface burning characteristics.
  - h. High Recycled Content (HRC): Classified as containing greater than 50 percent total recycled content.
  - i. Light Reflectance (LR): 0.86 Average (Range of 0.84 to 0.88).
  - j. Sag Resistance:
    - 1) Resistance to sagging in high humidity conditions up to, but not including, standing water and outdoor applications.
  - k. Texture: Embossed texture with fine fissuring and small perforations with natural variation in texture and color appearance between tile.
  - l. VOC Emissions:
    - 1) Low formaldehyde: Contributing less than 13.5 ppb in typical conditions per ASHRAE Standard 62, 'Ventilation for Acceptable Indoor Air Quality'.
3. Acoustic Tile:
  - a. Category Three Approved Products. See Section 01 6200 for definitions of Categories:
    - 1) Duratile Item No. MN80377 by Armstrong.

C. Accessories:

1. Adhesive:
  - a. Description:
    - 1) For use on acoustical ceiling tiles.
  - b. Design Criteria:
    - 1) Meet requirements of ASTM D1779.
    - 2) Meet NFPA Class A fire rating when tested in accordance with ASTM E84.
    - 3) Fast grab and 'no sag' installation.
    - 4) Water cleanup.
    - 5) Not recommended for use on tiles larger than **12 inch x 12 inch (305 mm x 305 mm)**.
  - c. Type Two Acceptable Products:
    - 1) Titebond No. 2704 Solvent Free Acoustical Ceiling Tile Adhesive by Franklin International.

- 2) Highest quality of adhesive from manufacturer recommended by Tile Manufacturer as approved by Architect before use. See Section 01 6200.
2. Edge Molding:
  - a. Steel 'U' molding with baked enamel finish.
  - b. Type Two Acceptable Products:
    - 1) 7843 Series by Armstrong.
    - 2) Equal as approved by Architect before installation. See Section 01 6200.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verification Of Conditions:
  1. Inspect for defects in backing and support that are not acceptable.
    - a. Examine areas around HVAC diffusers and light fixtures for tile installation problems.
    - b. Examine ceiling for levelness. Cisca 'Code of Practice' requires ceiling to be free of irregularities and be level to within 1/4 inch (6 mm) in 12 foot (305 mm).
    - c. Examine substrate for any problems that will compromise adhesion of ceiling tile.
  2. Notify Architect in writing of unacceptable conditions.
  3. Do not apply ceiling tile until defects in backing and support are corrected.

### 3.2 PREPARATION

- A. Surface Preparation:
  1. Follow Manufacturer recommendations for surface preparation:
    - a. Substrate must be clean, free of grease and dirt, sound, smooth, even and level before applying tile to surface.
      - 1) Do not install new ceiling tile over old glue globs or bad substrate with any surface finish that is incompatible with tile adhesive.
    - b. Painted Surfaces: Avoid applying tile to newly painted ceiling.
    - c. Materials shall be dry and clean at time of application.

### 3.3 INSTALLATION

- A. Special Techniques:
  1. Installation shall be in accordance with Manufacturer's recommendations:
    - a. Do not install tile when room temperature exceeds or below recommended ambient conditions.
    - b. Tile is directional tile and must be installed in same direction of pattern running parallel to long dimension of each room.
    - c. Remove loose dust from back of tile and ceiling where adhesive is to be applied.
    - d. Prime 3 inch (75 mm) minimum circle near each corner by buttering very thin coat of adhesive.
    - e. Apply daub of adhesive to each corner. Daubs will be of sufficient size to form a circle 2-1/2 to 3 inches (63 to 75 mm) in diameter and 1/8 to 1/4 inch (3 to 6 mm) thick when tile is pressed firmly in place. Do not apply daubs so far in advance of installation that adhesive skins over.
    - f. Do not bend tile during installation.
  2. Tile Layout:
    - a. Lay out tile symmetrically about center lines of room.
    - b. Lay out so tiles at room perimeters are at least 1/2 full tile size.
    - c. Leave tile in true plane with straight, even joints.
    - d. Tile joints shall be straight and in alignment, and exposed surface flush and level.
    - e. Furnish and install specified molding wherever tile has exposed edges or abuts walls, columns, and other vertical surfaces, except at curves of 3 inch (75 mm) radius or smaller.

- f. Cut around penetrations that are not to receive moldings cleanly with sharp knife and at a slight angle away from cutout.
3. Ceiling mounted items:
  - a. Locate light fixtures, speakers, and mechanical diffusers and grilles symmetrically in room and centered on tile centers or tile joints insofar as possible, unless shown otherwise.
  - b. Keep method of locating ceiling mounted items as consistent as possible throughout building.
  - c. Ceiling mounted item location method within each room shall always be consistent.

### 3.4 FIELD QUALITY CONTROL

- A. Non-Conforming Work:
  1. Acoustical Tile. The following have been identified by the Manufacturer as tile defects, should not be installed, and will be replaced at no charge to Owner. Manufacturer will replace any material that does not meet product specifications. Installer to call 1 (800) 442-4212 immediately to report any tile discrepancies:
    - a. Obvious Tile Defects:
      - 1) Gross surface defects or damage.
      - 2) Gross damage to edges and corners.
      - 3) Bevels without paint.
    - b. Size Measurement:
      - 1) Tiles measure **12 inches (305 mm)**, plus or minus **1/32 inch (0.8 mm)**, measured across center of two (2) parallel sides.
    - c. Squareness Measurement:
      - 1) Measure two (2) diagonals of an individual ceiling tile.
      - 2) Diagonal measurements need to be within **1/16 inch (1.6 mm)** of each other. No more than **1/16 inch (1.6 mm)** difference.
    - d. Warp:
      - 1) Tiles specification is plus or minus **0.050 inch (1.27 mm)** as measured in the center of tile.
  2. Installer:
    - a. Substrate preparation and installation of ceiling tile not following CISCA Code of Practice will be unacceptable and considered defective and subject to replacement at no cost to Owner.

### 3.5 ADJUSTING

- A. 'Touch-up' minor abraded surfaces.

### 3.6 CLEANING

- A. Remove from site debris connected with work of this Section.

**END OF SECTION**

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**SECTION 09 6816****SHEET CARPETING: Back Cushion, Direct Glue****PART 1 - GENERAL****1.1 SUMMARY**

- A. Section Includes But Is Not Limited To:
  - 1. Coordination, sequencing, and scheduling installation of Owner-Furnished carpet, carpet base, carpet accessories, leveling compounds as described in Contract Documents and including following:
    - a. Pre-Installation Conference held in conjunction with Section 09 6813.
    - b. Maintain Building Ambient Conditions including normal levels of humidity, lighting, heating, and air conditioning for acceptability for beginning floor preparation and carpet installation.
    - c. Protection of carpet after installation of carpeting as required.
- B. Related Requirements:
  - 1. Section 01 0000: 'General Requirements':
    - a. Section 01 1200: Owner will furnish and install carpet tiles and carpet base. This Section establishes quality of materials and installation for information of Contractor, Architect, and Owner's Representatives.
  - 2. Section 09 0503: 'Flooring Substrate Preparation' for:
    - a. Floor substrate preparation.
    - b. Pre-installation conference for Sections under 09 6000 heading 'Flooring'.

**1.2 REFERENCES**

- A. Association Publications:
  - 1. The Carpet and Rug Institute (CRI), Dalton, GA [www.carpet-rug.org](http://www.carpet-rug.org). Standard for Installation Specification of Commercial Carpet:
    - a. CRI Indoor Air Quality (IAQ):
      - 1) CRI Green Label Plus Certification.
- B. Reference Standards:
  - 1. The Carpet and Rug Institute (CRI):
    - a. CRI 104, 'Standard For Installation of Commercial Carpet' (Sept 2015).
    - b. CRI TM-102, 'School Carpet Minimum Average Specifications'.

**1.3 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate completion of carpet installation with other trades.
- B. Pre-Installation Conference:
  - 1. Participate in MANDATORY pre-installation conference as specified in Section 09 0503.
  - 2. Schedule pre-installation conference before installation of flooring system.
  - 3. Conference may be held at project site or another convenient site. Participants may also attend by video or audio conference if approved by Project Manager.
  - 4. Schedule conference after substrate preparation and ONE (1) week before installation of flooring system.
  - 5. In addition to agenda items specified Section 01 3100 and Section 09 0503, review following:
    - a. Review Owner's Representative schedule for furnishing and installation carpet.

- b. Review Flooring Manufacturer's installation conditions verification procedure and requirements.
  - c. Review Building Ambient Conditions including normal levels of humidity, lighting, heating, and air conditioning for acceptability for beginning floor preparation and carpet installation.
  - d. Review cleaning and disposal requirements.
  - e. Review protection requirements of carpet after installation of carpeting.
- C. Scheduling:
1. Notify Flooring Installer when Building Ambient Conditions requirements are met before installation of flooring system.
  2. Notify Owner's Representative to coordinate installation of carpet.

#### 1.4 SUBMITTALS

- A. Closeout Submittals:
1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
    - a. Warranty Documentation:
      - 1) Copy of Warranty.
    - b. Record Documentation:
      - 1) Owner will provide Project Carpet Request Documentation forms in both hard copy and digital format:
        - a) Carpet Request Information Sheet.
        - b) Carpet Vendor Quotation.
        - c) Carpet Preinstallation Meeting Agenda.
        - d) Carpet Installation Notice to Proceed or Cancel.
        - e) Carpet Inspection and Completion.
        - f) Carpet Overage Report and Completion.
        - g) Carpet Quotation Change Request.
- B. Maintenance Material Submittals:
1. Extra Stock Materials:
    - a. Leave excess pieces of carpet, **6 feet square (1 800 sq mm)** or larger and **25 lineal feet (7.620 m)** minimum of carpet cove base.
    - b. Roll up and tie securely.

#### 1.5 QUALITY ASSURANCE

- A. Regulatory Agency Sustainability Approvals:
1. All products provided will meet requirements of all federal, state, and local codes having jurisdiction.
  2. Label meeting Federal Labeling Requirements, as stated in Textile Products Identification Act under Federal Trade Commission, shall be attached to certification samples and products delivered.
- B. Qualifications: Section 01 4301 applies, but is not limited to following:
1. Carpet Installer Qualifications:
    - a. Certified CFI Master or Contract II grade installer or FCIB certified.
    - b. Not less than five (5) years of experience in installation of commercial carpet tile of type, quantity and installation methods similar to work of this section.
    - c. Qualified and approved by Carpet Manufacturer.
  2. Carpet Manufacturer Qualifications:
    - a. Not less than five (5) years of production experience, whose published literature clearly indicates general compliance of products with requirements of this section.
    - b. Category One Approved Carpet Manufacturers:
      - 1) Approval subject to agreement process approval.



## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. General:
  - 1. Comply with instructions and recommendations of Manufacturer for special delivery, storage, and handling requirements.
- B. Delivery And Acceptance Requirements:
  - 1. Deliver materials and accessories necessary for completion of carpet installation to site before beginning installation of carpet.
  - 2. Do not deliver materials before date scheduled for installation.
  - 3. Transport carpet in manner that prevents damage and distortion. Bending or folding individual carpet rolls or cuts from rolls is not recommended. When bending or folding is unavoidable for delivery purposes, carpet is required to be unrolled and allowed to lie flat immediately upon arrival at installation site.
- C. Storage And Handling Requirements:
  - 1. Store carpet and related materials in a climate-controlled, dry space.
  - 2. Protect carpet from soil, dust, moisture and other contaminants and store on a flat surface.
  - 3. Stacking heavy objects on top of carpet rolls or stacking more than three rolls is prohibited.

## 1.7 FIELD CONDITIONS

- A. Ambient Conditions:
  - 1. Building Conditions:
    - a. Conditions inside building shall be brought to levels to be normal at occupancy of building. Conditions include normal levels of humidity, lighting, heating, and air conditioning. (HVAC must be in operation thru out carpet installation):
      - 1) Carpet installation is not to begin until HVAC system is operational and following conditions are maintained for at least forty-eight (48) hours before, during and seventy-two (72) hours after completion:
        - a) Carpet is to be installed when indoor temperature is between 65° - 95° F (18° - 35° C) with maximum relative humidity of 65%.
        - b) Substrate surface temperature should not be less than 65° F (18° C) at time of installation.
        - c) Do not allow temperature of indoor carpeted areas to fall below 50° F (10° C), regardless of age of installation.
      - 2) Maintain fresh air ventilation after installation for seventy-two (72) hours minimum or until lingering odors are gone.
  - 2. Concrete Slab:
    - a. General:
      - 1) Do not install carpet over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive.

## 1.8 WARRANTY

- A. Manufacturer Warranty:
  - 1. Provide Carpet Manufacturer's standard Warranty which includes following:
    - a. Warranty shall cover defects in installation, workmanship, and installation materials.
    - b. Warranty includes specific workmanship warranties for delamination, edge raveling, fuzzing, pilling, and other textural changes which can be controlled through proper manufacturing (no fraying, zippering, delamination, edge raveling, fuzzing, pilling in carpet is acceptable for any reason).
    - c. Warranty terms will include inspection of defective area within fifteen (15) days of receipt of written notice from Owner and completion of corrective work within forty-five (45) days, unless other arrangements are made in writing with Owner on case-by-case basis.
    - d. Carpet defect or installation defect:

- 1) Carpet Manufacturer may use any reasonable means to cure first three (3) breaches of warranty affecting an area of carpeting bounded by natural breaks such as doorways, stairs, rostrum and platform ('affected carpet area'). Such cure must preserve as uniform a blended appearance, acceptable to Carpet Manufacturer and Owner, as exists throughout Installation Site at time of breach.
- 2) If carpet defect or installation defect continues to appear after three (3) separate notices for correction from Owner, replace carpet where defects have occurred.
- e. If Carpet Manufacturer follows installation requirements of Section 09 0503 'Floor Substrate Preparation' Carpet Manufacture accepts liability of carpet installation for said given time as outlined in Special Warranty regardless of any climate or condition changes affecting RH levels of floor substrate.
2. Special Warranty:
  - a. Sheet Carpeting:
    - 1) General:
      - a) Appearance Retention to be provided with Special Warranty requirements if not already included in Standard Warranty.
    - 2) Meetinghouse, Mission Office, and O&M / R&I:
      - a) Owner Carpet Program Product: Provide twenty (20) year minimum or Carpet Manufacturer's better Warranty on carpet system.

## PART 2 - PRODUCTS

### 2.1 OWNER-FURNISHED PRODUCTS

- A. Category One Approved Manufacturers. See Section 01 6200 for definitions of Categories:
  1. Materials supplied for carpet installation shall be complete package from specified Carpet Manufacturer:
    - a. Lees, Division of Mohawk Carpets, Glasgow, VA:
      - 1) Contact Information: Help Line (800) 523-5555 or (801) 397-5626.
    - b. Mannington Commercial Carpets, Calhoun, GA:
      - 1) Contact Information: Help Line Voice Mail (800) 241-2262, ext 8045 or Mannington Installation Services, email [lds@mannington.com](mailto:lds@mannington.com) or (855) 466-2664.
    - c. Tandus Centiva: Dalton, GA [www.tandus-centiva.com](http://www.tandus-centiva.com).
      - 1) Contact Information: Tracy Riddle - cell (801) 580-5147 fax (866) 861-7522  
[Tracy.Riddle@Tarkett.com](mailto:Tracy.Riddle@Tarkett.com).
  - B. Materials:
    1. Carpet:
      - a. Category One Approved Manufacturer and Color / Patterns. See Section 01 6200 for definitions of Categories:
        - 1) Match existing carpet.
    2. Carpet Base:
      - a. **4-1/2 inch (115 mm)** wide base without cushion backing:
        - 1) Top edge of base serged with **1-1/4 inch (32 mm)** polyester binding fabric.
        - 2) Roll edges of binding fabric under and sew along top edge of carpet cove base.

### 2.2 ACCESSORIES

- A. Carpet Accessories: Snap-in vinyl reducer strips and vinyl track.
- B. Floor Leveling Compound, Floor Patching Compound, And Latex Underlayment: As recommended and approved by Carpet Manufacturer.

## 2.3 EXAMINATION

- A. Verification of Conditions:
  - 1. Verify required ambient conditions inside building for required normal levels of humidity, lighting, heating, and air conditioning have been maintained for at least forty-eight (48) hours before and during carpet installation and seventy-two (72) after installation of carpet.
- B. Evaluation And Assessment:
  - 1. Carpet Areas:
    - a. Variation In Grade:
      - 1) Plus or minus **1/8 inch (3 mm)** in any **10 foot (3 meter)** of floor slab and distance between high point and low point of slab of **1/2 inch (13 mm)**.
    - b. Testing Procedure:
      - 1) Place ends of straightedge on **3/8 inch (10 mm)** high shims.
      - 2) Floor is satisfactory if **1/4 inch (6 mm)** diameter steel rod rolled under straightedge will not touch anywhere along **10 foot (3 meter)** length and **1/2 inch (13 mm)** diameter steel rod will not fit under straightedge anywhere along **10 foot (3 meter)** length.
    - c. Notify Owner's Representative in writing if floor surface is not acceptable to install carpet:
      - 1) Do not lay carpet over unsuitable surface. Commencing installation constitutes acceptance of floor and approval of existing conditions.

## 2.4 PREPARATION

- A. Carpet Areas:
  - 1. Flooring Preparation:
    - a. Owner-Furnished Product Supplier's Responsibility:
      - 1) Prepare floor substrate in accordance with 'CRI Carpet Installation Standard' best practices to receive carpet installation and to provide installation that meets warranty requirements.
      - 2) Verify concrete surface cured, clean, dry, and free of foreign substances that will compromise carpet and/or installation.
    - b. Concrete floor slab patching:
      - 1) Cracks, chips and joints must be properly patched or repaired.
    - c. Concrete surface cured, clean, dry, and free of foreign substances that will compromise carpet and/or other flooring installations:
      - 1) Removal of curing compounds.
      - 2) Remove paint, sealer, grease, oil, silicone sealants, and other materials incompatible with flooring adhesives.
      - 3) Removal of overspray from painted walls (essential so glue will stick).
    - d. Vacuum and damp mop floor areas to receive flooring before flooring installation.
  - 2. Relaxing / Conditioning Carpet:
    - a. Highly recommended that carpet be unrolled and allowed to relax in installation area for time period that conforms to requirements of manufacturer of product being installed:
    - b. Protect carpet adequately from soil, dust, moisture and other contaminants.
    - c. Sundry items, such as adhesives, should also be conditioned.
  - 3. Carpet Accessories:
    - a. Owner-Furnished Product's Responsibility:
      - 1) Sundry items, such as adhesives, shall be conditioned to building ambient conditions before use.

## 2.5 INSTALLATION

- A. Carpet:
  - 1. General:
    - a. Install carpet and carpet base in accordance with 'CRI Carpet Installation Standard' and Manufacturer's written instructions supplied with product.

- b. Adhesion of carpet cushion (or secondary backing) to floor substrate and adhesion of carpet primary and secondary backings shall be continuous on floor surface so there are no bubble, ridges, or any separation of carpet from backings or backing from floor substrate caused by failure of carpet, backings or cushion, and adhesives as a system.
  - c. Install carpet under edge of metal thresholds where possible. Use specified carpet accessories at exposed edges.
2. Seaming Requirements:
- a. Seal seams in accordance with Carpet Manufacturer's instructions and according to CRI Carpet Installation Standard (2009) as applicable. Seam carpet base only at inside corners.
  - b. No seam separation in carpet and no more observable seams from any standing position than that which is unavoidable using best seaming materials and practices available at time of installation.
  - c. Lay rooms parallel to respective Corridors. Seam to permit best use of available carpet.
  - d. Quarter turning allowed only at cross-Corridors longer than **24 feet (7.315 m)**.
  - e. Use single or double seams at doorways (single seams preferred). Run nap of pieced carpet in same direction.
- B. Carpet Base:
- 1. Precut base so seams occur only at inside corners.
  - 2. Scribe base to floor.
  - 3. Spread adhesive over back side of base up to bottom of serging on edge or apply three **3/16 inch (4.76 mm)** minimum diameter beads of adhesive placed one inch apart on back of base with top bead placed **2 inch (50 mm)** down from serged edge of base and spread adhesive over back surface of base up to bottom edge of serging.
    - a. Bird's mouth finish should only be required when door frame is flush with wall.
    - b. If bird's mouth is required, terminate at door frames or vertical trim with 45 degree angle, bird mouth cut so serged edge turns down to contact frame or trim.
  - 4. Do not allow adhesive beyond edge of base. Remove excess adhesive.
  - 5. Do not use staples, nails, screws or other mechanical fasteners.

## 2.6 FIELD QUALITY CONTROL

- A. Field Inspections:
- 1. Carpeting:
    - a. Unacceptable carpet after installation shall include but not be limited to:
      - 1) Delaminating carpet from backings.
      - 2) Fiber loss less than specified.
      - 3) Edge raveling.
      - 4) Fuzzing of carpet fibers.
      - 5) Pilling of carpet fibers.
      - 6) Appearance retention less than control samples attached to Agreement.
      - 7) Dye bleeding.
      - 8) Zippering fibers in carpet.
      - 9) Color streaking.
      - 10) Irregular tufts of fiber.
    - b. Unacceptable workmanship shall include but not be limited to:
      - 1) Improper floor preparation before installation.
      - 2) Failure of adhesive to completely adhere carpet to floor resulting in bubbles, ridges, or ripples where carpet has separated from floor.
      - 3) Seams that do not comply with specified requirements:
        - a) Raveled or untrimmed seams.
        - b) Seams not sealed, level, straight, or even.
        - c) Open seams.
        - d) Seams visibly open when viewed by Project Manager from standing position.
      - 4) Sequence rolls, commercial match issues created by rolls being installed out of sequence will require correction or replacement.
      - 5) Failure to properly install carpet next to walls and door frames to eliminate gaps or puckering of carpet.
      - 6) Use of unspecified carpet.

- 7) Carpet base ends not finished to terminate at door frames or vertical trim shall have 45 degree angle 'birds-mouth' finish.
- 8) Adhesive exposed on carpet, on carpet base, beyond edges of carpet base, and on other surfaces of building.
- 9) Carpet base that is not scribed to fit against floor with no gaps.
- 10) Carpet base attached by means other than acceptable carpet base adhesive.

B. Non-Conforming Work:

1. Carpeting:

a. Basis of Acceptable Carpeting: Source Quality Control Testing:

- 1) Carpet products not meeting Design Criteria and Source Quality Control Testing of this specification will be considered unacceptable carpeting.

b. Unacceptable Carpeting:

- 1) Unacceptable carpeting will be rejected and shall be repaired or replaced at no additional cost to Owner. Owner's Representative will determine reasonable location of acceptable transition points for removal of unacceptable carpet. Minimum replacement size shall be:
  - a) Between nearest existing seams.
  - b) Between natural transition points or **12 feet (3.6 meters)** of running length.

## 2.7 CLEANING

A. General:

1. Carpeting:

a. Carpet Installer's Responsibility:

- 1) Remove any soiling and/or staining from carpet.
- 2) Remove excessive adhesive with manufacturer recommended adhesive removers.

B. Damage to building:

1. Carpeting:

a. Carpet Installer's Responsibility:

- 1) Carpet Installer responsible for cleaning and repair of all damaged surfaces to their original condition from carpet installation.

C. Waste Management:

1. Contractor's Responsibility:

- a. Provide adequate waste receptacles (dumpsters) and dispose of Owner Furnished materials from building and property as specified in Section 01 7400.

2. Carpet Installer's Responsibility:

- a. All work areas are to be kept clean, clear and free of debris at all times.
- b. Disposal of rubbish, wrapping paper, scraps, and trimmings in provided dumpster(s).

## 2.8 PROTECTION

A. Protection of Carpeting:

1. Contractor's Responsibility:

- a. No traffic of any kind on newly installed carpet for minimum of twenty-four (24) hours after installation is completed.
- b. No wheeled traffic of any kind placement of furniture or equipment on carpet for minimum of forty-eight (48) hours after completion of carpet installation.
- c. Protect carpet adequately from soil, dust, moisture and other contaminants after carpet installation.
- d. Protect carpet from abuse, vandalism, or damage occurring after installation is complete.

**END OF SECTION**

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**SECTION 09 7226****SISAL WALL COVERING****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnishing and installing wall covering 'Type A' (Sisal) as described in Contract Documents.
- B. Related Requirements:
  - 1. Section 06 4512: 'Architectural Woodwork Wood Trim' for wood trim for sisal wall covering.
  - 2. Section 09 2900: 'Gypsum Board' for priming of gypsum board.

**1.2 REFERENCES**

- A. Definitions:
  - 1. Class A: Fire classification for product with flame spread rating of no more than 25 and smoke developed rating not exceeding 50, when tested in accordance with ASTM E84 or UL 723.
    - a. Flame Spread: The propagation of flame over a surface.
    - b. Flame Spread Index: The numerical value assigned to a material tested in accordance with ASTM E84 or UL 723.
    - c. Smoke-Developed Index: The numerical value assigned to a material tested in accordance with ASTM E84 or UL 723.
    - d. Surface Burning Characteristic: Rating of interior and surface finish material providing indexes for flame spread and smoke developed, based on testing conducted according to ASTM Standard E84 or UL 723.
- B. Reference Standards:
  - 1. ASTM International:
    - a. ASTM E84-18, 'Standard Test Method for Surface Burning Characteristics of Building Materials'.
  - 2. International Building Code (IBC) (2015 or latest approved edition):
    - a. Chapter 8, 'Interior Finishes':
      - 1) Section 803, 'Wall And Ceiling Finishes':
        - a) 803.1.3, 'Room Corner Test for Textile Wall Coverings and Expanded Vinyl Wall Coverings'.
        - b) 803.1.4, 'Acceptance Criteria for Textile and Expanded Vinyl Wall Coverings Tested to ASTM E84 or UL 723'.
  - 3. National Fire Protection Association:
    - a. NFPA 101: 'Life Safety Code' (2015 Edition).
    - b. NFPA 265: 'Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Coverings on Full Height Panels and Walls', (2015 Edition).
  - 4. Underwriters Laboratories, Inc.:
    - a. UL 723: 'Standard for Safety Test for Surface Burning Characteristics of Building Materials'; (2010 - Tenth Edition).
- C. Reference Standards:
  - 1. ASTM International:
    - a. ASTM E84-18, 'Standard Test Method for Surface Burning Characteristics of Building Materials'.
  - 2. International Building Code (IBC) (2015 or latest approved edition):
    - a. Chapter 8, 'Interior Finishes':
      - 1) Section 803, 'Wall And Ceiling Finishes':

- a) 803.1.3, 'Room Corner Test for Textile Wall Coverings and Expanded Vinyl Wall Coverings'.
  - b) 803.1.4, 'Acceptance Criteria for Textile and Expanded Vinyl Wall Coverings Tested to ASTM E84 or CAN/ULC-S102.
3. International Organization for Standardization:
    - a. ISO 9705-1:2016, 'Reaction to fire tests - Room corner test for wall and ceiling lining products - Part 1: Test method for a small room configuration'.
  4. National Fire Protection Association:
    - a. NFPA 101: 'Life Safety Code' (2015 Edition).
    - b. NFPA 265: 'Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Coverings on Full Height Panels and Walls', (2015 Edition).
  5. National Research Council Canada:
    - a. National Fire Code of Canada (2015).
  6. Underwriters Laboratories of Canada:
    - a. CAN/ULC-S102-10: 'Method of Test for Surface Burning Characteristics of Building Materials and Assemblies'.

### 1.3 SUBMITTALS

- A. Action Submittals:
  1. Product Data:
    - a. Manufacturer's literature or cut sheet.
    - b. Maintenance instructions.
    - c. Color and pattern selection.
- B. Informational Submittals:
  1. Test And Evaluation Reports:
    - a. Copies of Quality Assurance requirements for 'Class A' flame spread rating and 'Room-Corner Test'.
  2. Qualification Statement:
    - a. Installer:
      - 1) Provide Qualification documentation if requested by Architect or Owner.
- C. Closeout Submittals:
  1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
    - a. Operations and Maintenance Data:
      - 1) Cleaning and maintenance instructions.
    - b. Record Documentation:
      - 1) Manufacturers Documentation:
        - a) Manufacturer's literature or cut sheets.
        - b) Color and pattern selections.

### 1.4 QUALITY ASSURANCE

- A. Regulatory Agency Sustainability Approvals:
  1. Fire-Test-Response Characteristics: As determined by testing identical wall coverings applied with identical adhesives to substrates according to test method indicated below by qualified testing agency. Identify products with appropriate markings of applicable testing agency.
    - a. Surface-Burning Characteristics:
      - 1) Wall covering shall have Class A flame spread rating in accordance with ASTM E84 or UL 723 Type 1.
        - a) Class A (Flame spread index 0-25; Smoke-developed index 0-450).
        - b) Flash point: None.
  2. Passage of 'Room-Corner Test' as recognized by AHJ, is required for system. Adhesive cited in test literature is required for installation of wall covering on Project.
    - a. Room Corner Tests:



- 1) ASTM E84, 'Standard Test Method for Surface Burning Characteristics of Building Materials'.
- 2) IBC 803.1.3, 'Room Corner Test for Textile Wall Coverings and Expanded Vinyl Wall Coverings'.
- 3) IBC 803.1.4, 'Acceptance Criteria for Textile and Expanded Vinyl Wall Coverings Tested to ASTM E84 or UL 723'.
- 4) NFPA 265, 'Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Coverings on Full Height Panels and Walls'.
- 5) UL 723, 'Standard for Safety Test for Surface Burning Characteristics of Building Materials'.

B. Qualifications:

1. Installer: Requirements of Section 01 4301 applies, but not limited to following:
  - a. Minimum three (3) years experience in wall covering installations.
  - b. Minimum five (5) years satisfactorily completed projects of comparable quality, similar size, and complexity in past three (3) years before bidding.
  - c. Agree to view 'No-Flame Sisal Wall Covering Recommended Installation Procedures' provided by Owner found on internet in AEC Webpage under Training in Menu tab. Contact Architect for access to video. This requirement may be waived by Owner, if Installer has viewed video before or can document at least two (2) satisfactorily completed projects of comparable size using sisal wall coverings in past three (3) years before bidding.
  - d. Upon request, submit documentation and video verification.

## 1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery And Acceptance Requirements:

1. Deliver materials in sealed containers with Manufacturer's labels intact.

B. Storage And Handling Requirements:

1. Store materials in protected area at temperatures below 90 deg F (32 deg C) and above 50 deg F (10 deg C). Keep from freezing.
2. Keep container tightly closed in well-ventilated area, and store upright when not in use.
3. Shelf life: One (1) year minimum - Unopened containers.

## 1.6 FIELD CONDITIONS

A. Ambient Conditions:

1. Apply when the temperature is between 50 deg F (10 deg C) minimum and 100 deg F (38 deg C) maximum and relative humidity is less than seventy-five (75) percent.
2. Provide good ventilation.

## 1.7 WARRANTY

A. Manufacturer Warranty:

1. Provide five (5) year warranty against manufacturing defects.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

A. Manufacturer Contact List:

1. Design Materials Inc, Kansas City, KS [www.dmikc.com](http://www.dmikc.com).
2. Fibreworks, Louisville, KY [www.fibreworks.com](http://www.fibreworks.com).

## 2.2 DESCRIPTION

- A. Colors:
1. Category Four Approved Products. See Section 01 6200 for definitions of Categories:
    - a. Match existing sisal.

## 2.3 MATERIALS

- A. Sisal Wall Covering:
1. 100 percent fire-treated sisal yarn.
  2. 1/4 inch (6 mm) pile height, 48 oz/sq yd (1 627 grams/sq meter) minimum. Sisal to be installed full height on walls shall be furnished in 9 or 13 foot (2.75 or 3.96 meters) wide goods.
  3. Reversible weave type, without backing.

## 2.4 ACCESSORIES

- A. Wall Covering Adhesive:
1. Category Four Approved Products. See Section 01 6200 for definitions of Categories.
    - a. 257 Sisal Adhesive by Fibreworks.
    - b. Sisal Adhesive No. 1-422 by Design Materials.
- B. Seam Cement:
1. Type Two Acceptable Products:
    - a. 8415 Glue-Down Carpet Seam Adhesive by Roberts Consolidated Industries, Div QEP, Henderson, NV [www.robertsconsolidated.com](http://www.robertsconsolidated.com).
    - b. Equal as recommended by Wall Covering Manufacturer with approval of Architect before installation. See Section 01 6200.

## PART 3 - EXECUTION

### 3.1 INSTALLERS

- A. Acceptable Installers:
1. Meet Quality Assurance Installer Qualifications as specified in Part 1 of this specification.

### 3.2 EXAMINATION

- A. Verification Of Conditions:
1. Examine substrate and verify that it is suitable for installation of sisal wall covering.
  2. Notify Architect of unsuitable conditions in writing.
    - a. Do not install over unsuitable conditions.
  3. Commencement of Work by installer is considered acceptance of substrate.

### 3.3 INSTALLATION

- A. Apply wall covering in accordance with Manufacturer's instructions, available on DVD from Owner through Architect. See Quality Assurance Installer Qualifications as specified in Part 1 of this specification.
- B. Using specified adhesive, glue continuously to surface to be covered with wall covering. Apply adhesive in accordance with Manufacturer's recommendations.

- C. Run 'ribs' in weaving horizontally (panel style) when installing wall covering full height. If sisal installed only as wainscoting, 'ribs' may be installed vertically. Install wall covering so it extends to within **1/8 inch (3 mm)** of floor slab.
- D. Carry sisal around corners approximately **6 inch (152 mm)** making no outside corner cuts.

**END OF SECTION**

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**SECTION 09 9001**

**COMMON PAINTING AND COATING REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Common procedures and requirements for field-applied painting and coating.
- B. Related Requirements:
  - 1. Section 05 0503: 'Shop-Applied Metal Coatings' for quality of shop priming of steel and iron.
  - 2. Section 07 9213: 'Elastomeric Joint Sealants' for quality of Elastomeric Joint Sealants.
  - 3. Sections under 09 9000 heading 'Paints and Coatings'.
    - a. Pre-Installation conferences held jointly with Section 09 9001.

**1.2 REFERENCES**

- A. Definitions:
  - 1. Damage Caused By Others: Damage caused by individuals other than those under direct control of Painting Applicator (MPI(a), PDCA P1.92).
  - 2. Gloss Levels:
    - a. Specified paint gloss level shall be defined as sheen rating of applied paint, in accordance with following terms and values, unless specified otherwise for a specific paint system.

Gloss Level '1'	Traditional matte finish - flat	0 to 5 units at 60 degrees to 10 units maximum at 85 degrees.
Gloss Level '2'	High side sheen flat - 'velvet-like' finish	10 units maximum at 60 degrees and 10 to 35 units at 85 degrees.
Gloss Level '3'	Traditional 'eggshell-like' finish	10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees.
Gloss Level '4'	'Satin-like' finish	20 to 35 units at 60 degrees and 35 units minimum at 85 degrees.
Gloss Level '5'	Traditional semi-gloss	35 to 70 units at 60 degrees.
Gloss Level '6'	Traditional gloss	70 to 85 units at 60 degrees.
Gloss Level "7"	High gloss	More than 85 units at 60 degrees.

- 3. Properly Painted Surface:
  - a. Surface that is uniform in appearance, color, and sheen and free of foreign material, lumps, skins, runs, sags, holidays, misses, strike-through, and insufficient coverage. Surface free of drips, spatters, spills, and overspray caused by Paint Applicator. Compliance will be determined when viewed without magnification at a distance of 5 feet (1.50 m) minimum under normal lighting conditions and from normal viewing position (MPI(a), PDCA P1.92).
- 4. Latent Damage: Damage or conditions beyond control of Painting Applicator caused by conditions not apparent at time of initial painting or coating work.

- B. Reference Standards:
  - 1. The latest edition of the following reference standard shall govern all painting work:
    - a. MPI(a), 'Architectural Painting Specification Manual' by Master Painters Institute (MPI), as issued by local MPI Accredited Quality Assurance Association having jurisdiction.

- b. MPI(r), 'Maintenance Repainting Manual' by Master Painters Institute (MPI), as issued by local MPI Accredited Quality Assurance Association having jurisdiction.

### 1.3 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conferences:
  1. Schedule painting pre-installation conference after delivery of paint or coatings and before or at same time as application of field samples.
    - a. Coordinate pre-installation conferences of all related painting and coating Sections under 09 9000 heading 'Paints and Coatings'.
    - b. Schedule conference before preparation of control samples as specified in Sections under 09 9000 heading 'Paints and Coatings'.
    - c. Conference to be held at same time as Section 09 2900 to review gypsum board finish preparation.
  2. In addition to agenda items specified in Section 01 3100, review following:
    - a. Review Quality Assurance for Approval requirements.
    - b. Review Quality Assurance Field Sample requirements.
    - c. Review Submittal requirements for compliance for MPI Approved Products.
    - d. Review Design Criteria requirements.
    - e. Review Cleaning requirements.
    - f. Review painting schedule.
    - g. Review safety issues.
  3. Review additional agenda items from Sections under 09 9000 heading 'Paints and Coatings'.

### 1.4 SUBMITTALS

- A. Action Submittals:
  1. Product Data:
    - a. Include following information for each painting product, arranged in same order as in Project Manual.
      - 1) Manufacturer's cut sheet for each product indicating ingredients and percentages by weight and by volume, environmental restrictions for application, and film thicknesses and spread rates.
      - 2) Provide one (1) copy of 'MPI Approved Products List' showing compliance for each MPI product specified.
        - a) MPI Information is available from MPI Approved Products List using the following link: <http://www.paintinfo.com/mpi/approved/index.shtml>.
      - 3) Confirmation of colors selected and that each area to be painted or coated has color selected for it.
  2. Samples: Provide two **4 inch by 6 inch (100 mm by 150 mm)** minimum draw-down cards for each paint or coating color selected for this Project.
- B. Informational Submittals:
  1. Manufacturer Instructions:
    - a. Manufacturer's substrate preparation instructions and application instruction for each painting system used on Project.
  2. Qualification Statement:
    - a. Applicator:
      - 1) Provide Qualification documentation if requested by Architect or Owner.
- C. Closeout Submittals:
  1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
    - a. Record Documentation:
      - 1) Manufacturer's documentation:
        - a) Manufacturer's cut sheet for each component of each system.
        - b) Schedule showing rooms and surfaces where each system was used.

## 1.5 QUALITY ASSURANCE

- A. Regulatory Agency Sustainability Approval:
  - 1. Conform to work place safety regulations and requirements of those authorities having jurisdiction for storage, mixing, application and disposal of all paint and related hazardous materials.
  - 2. Paint and painting materials shall be free of lead and mercury, and have VOC levels acceptable to local jurisdiction.
  - 3. Master Painters Institute (MPI) Standards:
    - a. Products: Comply with MPI standards indicated and listed in 'MPI Approved Products List'.
    - b. Preparation and Workmanship: Comply with requirements in 'MPI Architectural Painting Specification Manual' for products and coatings indicated.
- B. Qualifications:
  - 1. Applicator: Requirements of Section 01 4301 applies, but not limited to following:
    - a. Minimum five (5) years' experience in painting installations.
    - b. Minimum five (5) satisfactorily completed projects of comparable quality, similar size, and complexity in past three (3) years before bidding.
    - c. Maintain qualified crew of painters throughout duration of the Work.
    - d. Upon request, submit documentation.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery And Acceptance Requirements:
  - 1. Deliver specified products in sealed, original containers with Manufacturer's original labels intact on each container.
  - 2. Deliver amount of materials necessary to meet Project requirements in single shipment.
- B. Storage And Handling Requirements:
  - 1. Store materials in single place.
  - 2. Keep storage area clean and rectify any damage to area at completion of work of this Section.
  - 3. Maintain storage area at 55 deg F (13 deg C) minimum.

## 1.7 FIELD CONDITIONS

- A. Ambient Conditions:
  - 1. Perform painting operations at temperature and humidity conditions recommended by Manufacturer for each operation and for each product for both interior and exterior work.
  - 2. Apply painting systems at lighting level of 540 Lux (50 foot candles) minimum on surfaces to be painted.
    - a. Inspection of painting work shall take place under same lighting conditions as application.
    - b. If painting and coating work is applied under temporary lighting, deficiencies discovered upon installation of permanent lighting will be considered latent damage as defined in MPI Manual, PDCA P1-92.

## PART 2 - PRODUCTS

### 2.1 SYSTEMS

- A. Performance:
  - 1. Design Criteria:
    - a. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
    - b. All materials, preparation and workmanship shall conform to requirements of 'Architectural Painting Specification Manual' by Master Painters Institute (MPI).

- c. All paint manufacturers and products used shall be as listed under Approved Product List section of MPI Painting Manual.
  - d. Provide Premium Grade systems (2 top coats) as defined in MPI Architectural Painting Specification Manual, except as otherwise indicated.
  - e. Where specified paint system does not have Premium Grade, provide Budget Grade.
  - f. Provide products of same manufacturer for each coat in coating system.
  - g. Where required to meet LEED (Leadership in Energy and Environmental Design) program requirements, use only MPI listed materials having an "L" rating designation.
  - h. Color Levels:
    - 1) Color Level II:
      - a) Number and placement of interior and exterior paint colors and gloss levels shall be as defined by Color Level II from MPI Manual, PDCA P3-93 as modified in following paragraph.
      - b) No more than one paint color or gloss level will be selected for same substrate within designated interior rooms or exterior areas.
- B. Materials:
1. Materials used for any painting system shall be from single manufacturer unless approved otherwise in writing by painting system manufacturers and by Architect. Include manufacturer approvals in Product Data submittal.
  2. Linseed oil, shellac, turpentine, and other painting materials shall be pure, be compatible with other coating materials, bear identifying labels on containers, and be of highest quality of an approved manufacturer listed in MPI manuals. Tinting color shall be best grade of type recommended by Manufacturer of paint or stain used on Project.

## **PART 3 - EXECUTION**

### **3.1 APPLICATORS**

- A. Approved Applicators:
1. Meet Quality Assurance Applicator Qualifications as specified in Part 1 of this specification.

### **3.2 EXAMINATION**

- A. Verification Of Conditions:
1. Directing applicator to begin painting and coating work will indicate that substrates to receive painting and coating materials have been previously inspected as part of work of other Sections and are complete and ready for application of painting and coating systems as specified in those Sections.
- B. Pre-Installation Testing:
1. Before beginning work of this Section, examine, and test surfaces to be painted or coated for adhesion of painting and coating systems.
  2. Report in writing to Architect of conditions that will adversely affect adhesion of painting and coating work.
  3. Do not apply painting and coating systems until party responsible for adverse condition has corrected adverse condition.
- C. Evaluation And Assessment:
1. Report defects in substrates that become apparent after application of primer or first finish coat to Architect in writing and do not proceed with further work on defective substrate until such defects are corrected by party responsible for defect.



### 3.3 PREPARATION

- A. Protection Of In-Place Conditions:
1. Protect other finish work and adjacent materials during painting. Do not splatter, drip, or paint surfaces not intended to be painted. These items will not be spelled out in detail but pay special attention to the following:
    - a. Do not paint finish copper, bronze, chromium plate, nickel, stainless steel, anodized aluminum, or monel metal except as explicitly specified.
    - b. Keep cones of ceiling speakers completely free of paint. In all cases where painting of metal speaker grilles is required, paint without grilles mounted to speakers and without grilles on ceiling.
    - c. On existing work where ceiling is to be painted, speakers and grilles are already installed, and ceiling color is not being changed, mask off metal grilles installed on ceiling speakers. If ceiling color is being changed, remove metal grilles and paint, and mask off ceiling speakers.
- B. Surface Preparation:
1. Prepare surfaces in accordance with MPI requirements and requirements of Manufacturer for each painting system specified, unless instructed differently in Contract Documents. Bring conflicts to attention of Architect in writing.
  2. Fill minor holes and cracks in wood surfaces to receive paint or stain.
  3. Surfaces to be painted shall be clean and free of loose dirt. Clean and dust surfaces before painting or finishing.
  4. Do no exterior painting while surface is damp, unless recommended by Manufacturer, nor during rainy or frosty weather. Interior surfaces shall be dry before painting. Moisture content of materials to be painted shall be within tolerances acceptable to Paint Manufacturer.
  5. Sand woodwork smooth in direction of grain leaving no sanding marks. Clean surfaces before proceeding with stain or first coat application.

### 3.4 APPLICATION

- A. Interface With Other Work:
1. Coordinate with other trades for materials and systems that require painting before installation.
  2. Schedule painting and coating work to begin when work upon which painting and coating work is dependent has been completed. Schedule installation of pre-finished and non-painted items, which are to be installed on painted surfaces, after application of final finishes.
- B. Paint or finish complete all surfaces to be painted or coated as described in Contract Documents, including but not limited to following items.
1. Finish casework and wood trims that are specified to be installed under Section 06 2001 and that are not called out to be factory-or shop-finished. Back prime wood elements to be installed against concrete or masonry or that may be subjected to moisture.
- C. Apply sealant in gaps **3/16 inch (5 mm)** and smaller between two substrates that are both to be painted or coated. Sealants in other gaps furnished and installed under Section 07 9213.
- D. On wood to receive a transparent finish, putty nail holes in wood after application of stain using natural colored type to match wood stain color. Bring putty flush with adjoining surfaces.
- E. In multiple coat paint work, tint each succeeding coat with slightly lighter color, but approximating shade of final coat, so it is possible to check application of specified number of coats. Tint final coat to required color.
- F. Spread materials smoothly and evenly. Apply coats to not less than wet and dry film thicknesses and at spreading rates for specified products as recommended by Manufacturer.
- G. Touch up suction spots after application of first finish coat.

- H. Paint shall be thoroughly dry and surfaces clean before applying succeeding coats.
- I. Use fine sandpaper between coats as necessary to produce even, smooth surfaces.
- J. Make edges of paint adjoining other materials or colors clean, sharp, and without overlapping.
- K. Finished work shall be a 'Properly Painted Surface' as defined in this Section.

### **3.5 FIELD QUALITY CONTROL**

- A. Non-Conforming Work:
  - 1. Correct deficiencies in workmanship as required to leave surfaces in conformance with 'Properly Painted Surface,' as defined in this Section.
  - 2. Correction of 'Latent Damage' and 'Damage Caused By Others,' as defined in this Section, is not included in work of this Section.

### **3.6 CLEANING**

- A. General:
  - 1. As work proceeds and upon completion of work of any painting Section, remove paint spots from floors, walls, glass, or other surfaces and leave work clean, orderly, and in acceptable condition.
- B. Waste Management:
  - 1. Remove rags and waste used in painting operations from building each night. Take every precaution to avoid danger of fire.
  - 2. Paint, stain and wood preservative finishes and related materials (thinners, solvents, caulking, empty paint cans, cleaning rags, etc.) shall be disposed of subject to regulations of applicable authorities having jurisdiction.
  - 3. Remove debris caused by work of paint Sections from premises and properly dispose.
  - 4. Retain cleaning water and filter out and properly dispose of sediments.

**END OF SECTION**

**SECTION 09 9123****INTERIOR PAINTED GYPSUM BOARD, PLASTER****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Preparing, priming, and finish painting new interior gypsum board and plaster surfaces as described in Contract Documents.
- B. Related Requirements:
  - 1. Section 09 2900: 'Gypsum Board' for:
    - a. Priming new interior gypsum board surfaces to receive sheet wall covering system or texturing.
    - b. Pre-installation conference.
  - 2. Section 09 9001: 'Common Painting And Coating Requirements':
    - a. Pre-installation conference for Sections under 09 9000 heading 'Paints and Coatings'.
  - 3. Section 09 9413: 'Interior Textured Finishing' for textured finishes.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Pre-Installation Conferences:
  - 1. Participate in pre-installation conference as specified in Section 09 2900.
    - a. In addition to agenda items specified in Section 01 3100 and Section 09 2900, review following:
      - 1) Review finish level requirements of gypsum wallboard as specified in Section 09 2900.
  - 2. Participate in pre-installation conference as specified in Section 09 9001.

**PART 2 - PRODUCTS****2.1 SYSTEM**

- A. Manufacturers:
  - 1. Category Four Approved Manufacturers and Products. See Section 01 6200 for definitions of Categories.
    - a. Products listed in edition of MPI Approved Product List current at time of bidding and later are approved, providing they meet VOC requirements in force where Project is located.
- B. Description:
  - 1. All Other:
    - a. New Surfaces: Use MPI(a) INT 9.2B Latex Finish system.
    - b. Previously Finished Work: Use MPI(r) RIN 9.2B Latex Finish system.
- C. Performance:
  - 1. Design Criteria:
    - a. New Surfaces: MPI Premium Grade finish requirements.
    - b. Deteriorated Existing Surfaces: MPI Premium Grade finish requirements.
    - c. Sound Existing Surfaces: MPI Custom Grade requirements.
    - d. Gloss / Sheen Required:

- 1) Painted Surfaces: Gloss Level 5.

D. Materials:

1. Primers:
  - a. MPI Product 50, 'Primer Sealer, Latex, Interior'.
2. Finish Coats:
  - a. Painted Surfaces:
    - 1) MPI Product 141, 'Latex, Interior, High Performance Architectural, Semi-Gloss (MPI Gloss Level 5)'.

### **PART 3 - EXECUTION**

#### **3.1 APPLICATION**

- A. General: See appropriate paragraphs of Section 09 9001.
- B. New Surfaces:
  1. Primer: Apply primer to be covered with other paint coats with roller only, or with spray gun and back-rolled.
- C. Existing Painted Surfaces:
  1. Remove deteriorated existing paint down to sound substrate by scraping or sanding. Feather edges of existing paint by sanding to be smooth with adjacent surfaces.
  2. Clean surface with mild soap and water, or with tri-sodium phosphate (TSP). Wash surfaces that have been defaced with marking pens, crayons, lipstick, etc, with solvent recommended by Paint Manufacturer. Spot prime such surfaces.
  3. Spackle and tape cracks. Sand to smooth finish and spot prime.
  4. Sand or chemically etch existing painted surface as required to prepare surface to accept new paint.
  5. Re-clean surface.
  6. Apply primer coat.
  7. Apply finish coats.

**END OF SECTION**

**SECTION 09 9324****INTERIOR CLEAR-FINISHED HARDWOOD****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Preparing and finishing of new interior clear finished hardwood as described in Contract Documents.
- B. Related Requirements:
  - 1. Section 06 2210: 'Miscellaneous Wood Trim'.
  - 2. Section 06 4512: 'Architectural Woodwork Wood Trim'.
  - 3. Section 08 1429: 'Interior Flush Wood Doors'.
  - 4. Section 09 9001: 'Common Painting And Coating Requirements':
    - a. Pre-installation conference for Sections under 09 9000 heading 'Paints and Coatings'.

**1.2 REFERENCES**

- A. Reference Standards:
  - 1. Kitchen Cabinet Manufacturers Association / American National Standards Institute:
    - a. ANSI/KCMA A161.1-2000 (R2005) 23-Jan-2001 'Recommended Performance and Construction Standards for Kitchen and Vanity Cabinets.'

**1.3 ADMINISTRATIVE REQUIREMENTS**

- A. Pre-Installation Conferences:
  - 1. Participate in pre-installation conference as specified in Section 09 9001.
  - 2. In addition to agenda items specified in Section 01 3100 and Section 09 9001, review following:
    - a. Review control sample(s).

**1.4 SUBMITTALS**

- A. Action Submittals:
  - 1. Samples:
    - a. Interior Hardwood for Transparent Finish:
      - 1) Requirements for samples are specified in Related Requirement Sections listed above.
    - b. Design Criteria:
      - 1) Sample will be used as performance standard for evaluating finish provided.
- B. Informational Submittals:
  - 1. Test And Evaluation Reports:
    - a. Before beginning finish work, submit Finish Manufacturer's literature or certification that finish material meets requirements of ANSI / KCMA A161.1.

**PART 2 - PRODUCTS****2.1 SYSTEM**

- A. Materials:
1. Design Criteria:
    - a. See appropriate paragraphs of Section 09 9001.
  2. Stain: MPI 90, 'Stain, Semi-Transparent, for Interior Wood'.
  3. Clear Finish Coats:
    - a. Field Finished:
      - 1) Chemcraft International Inc:
        - a) First, Second, And Third Coats: 20 Sheen Opticlear Pre-Catalyzed Lacquer.
      - 2) ICI Dulux / Trinity:
        - a) First Coat: ICE Vinyl Sanding Sealer.
        - b) Second And Third Coats: ICI Pre-Catalyzed Lacquer.
      - 3) Lilly / Valspar:
        - a) First, Second, And Third Coats: 20 Sheen Pre-Catalyzed Lacquer 587E208.
      - 4) Sherwin-Williams:
        - a) First Coat: T67F3 Vinyl Sealer.
        - b) Second And Third Coats: T77F38 Sherwood Pre-Catalyzed Lacquer DRE.
    - b. Mill Finished: Architectural Woodwork finished in a mill may use one (1) coat of Vinyl Sealer and two (2) coats of Conversion Varnish or three (3) coats of Conversion Varnish from one (1) of the approved Finish Manufacturers, as recommended by Finish Manufacturer.
    - c. Products meeting testing requirements for finishes of ANSI / KCMA A161.1 may be used upon approval of submission by Architect before use. See Section 01 6200.
  4. Color:
    - a. Design Criteria:
      - 1) Finish to match Owner selected sample.

**PART 3 - EXECUTION****3.1 APPLICATION**

- A. General:
1. See appropriate paragraphs of Section 09 9001.
  2. Sand entire exposed surface of item to be finished lightly with 120 to 150 non-stearated sandpaper and clean before applying dye or stain.
  3. Apply stain in accordance with Manufacturer's recommendations and as necessary to attain correct color.
  4. Scuff sand with 220 non-stearated sandpaper between application of application stain and first finish coat.
  5. If wood is finished before installation, finish cut ends and other unfinished, exposed surfaces same as previously finished surfaces after installation of wood.
- B. Where back-priming is required, apply one coat of finish material.
- C. Architectural Woodwork Door Surfaces (cabinetry doors only):
1. Finish tops, bottoms, and edges before faces.
  2. Finish architectural woodwork doors with no hardware applied to doors.

**END OF SECTION**

**SECTION 09 9413****INTERIOR TEXTURED FINISHING****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and apply texturing on walls and ceilings as described in Contract Documents.
- B. Related Requirements:
  - 1. Section 09 2900: 'Gypsum Board' for priming.
  - 2. Section 09 9001: 'Common Painting And Coating Requirements' for:
    - a. Pre-installation conference for Sections under 09 9000 heading 'Paints and Coatings'.
  - 3. Section 09 9123: 'Interior Painted Gypsum Board, Plaster' for finish painting.

**1.2 REFERENCES**

- A. Definitions:
  - 1. Drywall Texture: Compound rolled, sprayed, or troweled onto sheetrock after taping and floating of joints is complete. Uses same material as joint compound, but thinned down with water and applied to wall surface:
    - a. Light Orange Peel: Sprayed texture leaves light splatter on walls. Resembles peel of orange. If done with fine spray, can be one of the lightest, least noticeable of the texture styles.
    - b. Light Skip Trowel - Texture is applied to ceilings with trowel. Trowel marks may be left on surface to give a rustic, hand crafted look.

**1.3 ADMINISTRATIVE REQUIREMENTS**

- A. Pre-Installation Conferences:
  - 1. Participate in pre-installation conference as specified in Section 09 9001.
  - 2. In addition to agenda items specified in Section 01 3100 and Section 09 9001, review following:
    - a. Review control samples.

**1.4 SUBMITTALS**

- A. Action Submittals:
  - 1. Samples: (Field verify and match existing)
    - a. Light Orange Peel Texture:
      - 1) Provide minimum of three (3) 24 inch (600 mm) square control samples on primed gypsum wallboard of 'light orange peel' texture to show possible variations.
    - b. Light Skip Trowel Texture:
      - 1) Provide minimum of three (3) 24 inch (600 mm) square control samples on primed gypsum wallboard of 'light orange peel' texture to show possible variations.

**1.5 QUALITY ASSURANCE**

- A. Field Samples:
  - 1. Before performing work of this Section, prepare control samples.

2. Architect will inspect control sample at pre-installation conference following preparation of control sample. When sample is approved, work of this Section may proceed. Approved samples will be kept at site at all times work of this section is being performed.

## **PART 2 - PRODUCTS**

### **2.1 SYSTEM**

- A. Manufacturers:
  1. Manufacturer Contact List:
    - a. National Gypsum, Charlotte, NC [www.nationalgypsum.com](http://www.nationalgypsum.com).
    - b. U S Gypsum Co, Chicago, IL [www.usg.com](http://www.usg.com).
- B. Materials:
  1. Class Two Quality Standards: See Section 01 6200.
    - a. ProForm Perfect Spray EM/HF by National Gypsum.
    - b. Sheetrock Wall & Ceiling Texture by U S Gypsum.

## **PART 3 - EXECUTION**

### **3.1 APPLICATION (Field verify and match existing texture)**

- A. Location:
  1. Walls:
    - a. Light Orange Peel Texture:
      - 1) All areas except those listed in following paragraph.
  2. Ceilings:
    - a. Light Orange Peel Texture:
      - 1) Bishop's Waiting Areas and corridor transition into Foyers (sides and bottoms of headers).
      - 2) Chapel (Includes soffit and fascia of light cove).
      - 3) High Council Rooms Areas where there is exposed gypsum board (includes soffit and fascia of coffered area at perimeter).
      - 4) Relief Society and Primary Rooms Areas where there is exposed gypsum board (includes soffit and fascia of coffered area at perimeter).
    - b. Light Skip Trowel Texture:
      - 1) Foyers (including soffits and fascias of light cove).
      - 2) Platform.
      - 3) Vestibules.
      - 4) All other locations not indicated elsewhere.
    - c. Smooth Finish (no applied texture) to be applied to the following ceilings:
      - 1) Font.
      - 2) Mechanical Rooms, Storage Rooms, and other Utility Areas.
      - 3) Restrooms.
      - 4) Serving Area.
- B. Finishing:
  1. Light Orange Peel Texture:
    - a. After gypsum board is taped and sanded, apply texture. Closely match samples accepted by Architect.
      - 1) After wall has been textured, apply priming and finish paint as specified in Section 09 9123.
  2. Skip Trowel Texture:
    - a. After gypsum board is taped and sanded, apply texture. Closely match samples accepted by Architect.



- 1) After wall has been textured, apply priming and paint as specified in Section 09 9123.
3. Smooth:
  - a. No applied texture is required. Apply priming and paint as specified in Section 09 9123.

**END OF SECTION**

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# DIVISION 14: CONVEYING EQUIPMENT

## 14 2000 ELEVATORS

14 2423 HYDRAULIC PASSENGER ELEVATORS

END OF TABLE OF CONTENTS

**SECTION 14 2423****HYDRAULIC PASSENGER ELEVATORS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install hydraulic elevators as described in Contract Documents.
  - 2. Elevator apparatus, material, and work required to make elevator installation complete and operative when current is supplied to control equipment, excepting such material and work definitely indicated in Contract Documents as not included.
  - 3. Except as otherwise specified, paint exposed metal work after installation.
  
- B. Related Requirements:
  - 1. Section 01 5600: 'Temporary Barriers And Enclosures' for protection of floor openings and personnel barriers; temporary power and lighting.
  - 2. Section 03 3111: 'Cast-In-Place Structural Concrete' for:
    - a. Setting of sleeves, inserts, and anchoring devices in concrete.
    - b. Elevator pit and elevator motor and pump foundation.
  - 3. Section 05 1223: 'Structural Steel For Buildings' for:
    - a. Providing hoist beams, steel framing, auxiliary support steel and divider beams for supporting guide-rail brackets.
    - b. Providing subsills and structural framing of hoistway entrances.
    - c. Providing steel angle sill supports and grouting hoistway entrance sills and frames.
  - 4. Section 07 1113: 'Bituminous Dampproofing' for waterproofing of elevator pit.
  - 5. Section 09 2117: 'Gypsum Board Shaft Wall Assemblies'.
  - 6. Section 28 3101: 'Fire Detection And Alarm System' for fire and smoke detectors and interconnecting devices; fire alarm signal lines to contacts in machine room.
  - 7. Division 09 'Finishes' for elevator car finish flooring.
  - 8. Division 23 'Heating, Ventilating, and Air Conditioning' for ventilation and temperature control of elevator equipment room.
  - 9. Division 26 'Electrical' for:
    - a. Electrical service to main disconnect in elevator machine room.
    - b. Electrical power for elevator installation and testing.
    - c. Electrical disconnecting device to elevator equipment prior to activation of sprinkler system.
    - d. Electrical service for machine room; machine room and pit receptacles with ground-fault current protection; lighting in machine room and pit.
    - e. Wiring for telephone service to machine room.
  - 10. Division 27 'Communications' for telephone systems (ADAAG-required emergency communications equipment).
  - 11. Division 31 'Earthwork' for excavation for cylinder well casing.

**1.2 REFERENCES**

- A. Reference Standards:
  - 1. American National Standards Institute / International Code Council:
    - a. ANSI/ICC A117.1-2017, 'Standard for Accessible and Usable Buildings and Facilities'.
  - 2. American National Standards Institute / American Welding Society:
    - a. ANSI/AWS D1.1/D1.1M:2015, 'Structural Welding Code - Steel'.
  - 3. American National Standards Institute / National Electrical Manufacturer's Association:
    - a. ANSI/NEMA LD 3-2005, 'High-Pressure Decorative Laminates (HPDL)'.
  - 4. American Society of Mechanical Engineers:

- a. ASME A17.1-2016/CSA B44-16, 'Safety Code for Elevators and Escalators' (Bi-national standard with CSA B44-10).
- b. ASME-A17.5-2014/CSA B44.1-14, 'Elevator and Escalator Electrical Equipment'.
5. Canadian Standards Association / National Standard of Canada:
  - a. CAN/CSA B44.1-14/ASME-A17.5-14, 'Elevator and Escalator Electrical Equipment'.
6. CSA Group:
  - a. CSA B44-2016, 'Safety Code for Elevators and Escalators' (Bi-national standard, with ASME A17.1-2016).
  - b. CSA C22-1-18, 'Canadian Electrical Code'.
7. International Building Code (IBC) (2018 or most recent edition adopted by AHJ).
8. National Fire Protection Association:
  - a. NFPA 70, 'National Electric Code (NEC)' (2017 or most recent edition adopted by AHJ).
  - b. NFPA 80, 'Standard for Fire Doors and Other Opening Protectives' (2019 or most recent edition adopted by AHJ).
9. Underwriters Laboratories (UL):
  - a. UL 10B, 'Fire Tests of Door Assemblies' (10th Edition - 2008).
10. Underwriters Laboratories of Council of Canada:
  - a. ULC 104: 'Standard Method for Fire Tests of Door Assemblies 'CAN/ULC S104-15)'.
11. U.S. Department of Justice (DOJ):
  - a. Americans with Disabilities Act (ADA):
    - 1) 2010 ADS Standards for Accessible Design.
    - 2) 2011 Accessibility Guidelines for Buildings and Facilities (ADAAG).

### 1.3 ADMINISTRATIVE REQUIREMENTS

- A. Temporary Usage:
  1. Contractor may use elevators as soon as they are available.
    - a. This period of temporary use could last as long as one (1) year depending on when elevators are installed.
    - b. One-year warranty shall commence at completion of Project (Substantial Completion).
    - c. Be responsible for charges for maintenance or service during period of temporary usage.
    - d. Insofar as possible, delay finishes at entries and inside cabs until end of Project to avoid possible damage during construction.

### 1.4 SUBMITTALS

- A. Action Submittals:
  1. Product Data:
    - a. Indicate capacities, sizes, performances, operations, safety features, controls, finishes, and similar information including:
      - 1) Cab design, dimensions and layout.
      - 2) Electrical characteristics and connection requirements.
      - 3) Expected heat dissipation of elevator equipment in machine room (BTU).
      - 4) Hoistway-door and frame details.
      - 5) Signal and operating fixtures, operating panels and indicators.
    - b. Indicate variations from specified requirements.
  2. Shop Drawings (submit approval layout drawings):
    - a. Include dimensioned drawings for each elevator, showing plans, elevations, sections and large-scale details indicating service at each landing, coordination with building structure and relationships with other construction:
      - 1) Indicate by highlighting variations from specified requirements plus maximum dynamic and static loads imposed on building structure at points of support.
      - 2) Indicate access and ventilation for elevator machinery rooms and hoistways.
    - b. Include following:
      - 1) Car, guide rails, buffers and other components in hoistway.
      - 2) Clear inside hoistway and pit dimensions.

- 3) Clearances and travel of car.
  - 4) Loads on hoisting beams.
  - 5) Location and sizes of access doors, hoistway entrances and frames.
  - 6) Maximum loads imposed on guide rails requiring load transfer to building structure.
  - 7) Maximum rail bracket spacing.
  - 8) Wiring diagrams detailing locations and wiring for power, signal and control systems and differentiating between manufacturer-installed wiring and field-installed wiring. Indicate maximum and average power demands.
3. Samples:
- a. Exposed finishes for car, hoistway doors, and signal equipment:
  - b. 8 to 10 inch (200 to 250 mm) square samples of sheet materials.
  - c. 10 to 12 inch (250 to 300 mm) lengths of running trim members.
- B. Close-Out Submittals:
1. Operations And Maintenance Manuals:
    - a. Bound manuals for each different type hydraulic elevator.
    - b. Include operating and maintenance instructions, parts listing with sources indicated, recommended parts inventory listing, emergency instructions, and similar information.

## 1.5 QUALITY ASSURANCE

- A. Regulatory Requirements:
1. Permits and Inspections: Provide licenses and permits and perform required inspections and tests.
  2. Work and material shall conform to requirements of ASME A17.1-2010/CSA B44-10, 'Safety Code for Elevators and Escalators' (Bi-national standard with CSA B44-10), National Electric Code, and local codes that govern requirements of installation.
  3. Elevator equipment shall be furnished and installed in accordance with applicable requirements of ASME-A17.5/CSA B44.1, 'Elevator and Escalator Electrical Equipment'.
  4. Electrical equipment for elevator shall meet or exceed applicable requirements of ASME-A17.5/CSA B44.1, 'Elevator and Escalator Electrical Equipment'.
  5. Elevator system design and installation shall comply with latest versions of ANSI A117.1 and applicable local codes.
  6. Elevator shall be designed in response to Accessibility Guidelines for Buildings and Facilities (ADAAG).
  7. Comply with NFPA 70 National Electrical Code.
  8. Comply with NFPA 80 Standard for Fire Doors and Other Opening Protectives.
  9. Comply with UL 10B Fire Tests of Door Assemblies.
  10. Comply with CSA C22-1 Canadian Electrical Code.
  11. Comply with ULC 104 Standard Method for Fire Tests of Door Assemblies.
  12. Shaft enclosure connecting four stories or more:
    - a. Fire-Rated Entrance Assemblies: Opening protective assemblies including frames, hardware, and operation shall comply with ULC 104 and NFPA Standard 80. Provide entrance assembly units bearing Class B or 2 hour label by a Nationally Recognized Testing Laboratory (2 hour label in Canada).
    - b. Shaft enclosure shall meet requirements of IBC Section 703.2.1.
  13. Shaft enclosure connecting less than four stories:
    - a. Fire-Rated Entrance Assemblies: Opening protective assemblies including frames, hardware, and operation shall comply with ULC 104 and NFPA Standard 80. Provide entrance assembly units bearing Class B or 1 hour label by a Nationally Recognized Testing Laboratory (1 hour label in Canada).
    - b. Shaft enclosure shall meet requirements of IBC Section 703.2.1.
- B. Qualifications:
1. Manufacturer:

- a. Provide elevators manufactured by firm with minimum of ten (10) years experience in fabrication of elevators equivalent to those specified. Elevator manufacturer shall be ISO9002 Certified.
- b. Provide documentation if requested by Architect.
2. Installers:
  - a. Approved by Elevator Manufacturer.
  - b. Has completed elevator installations similar in material, design, and extent to that indicated for Project that have resulted in installations with record of successful in-service performance.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery And Acceptance Requirements:
  1. Deliver elevator materials, components and equipment in Manufacturer's original protective packaging.
- B. Storage And Handling Requirements:
  1. Store materials in dry protected area. Protect and handle materials in accordance with Manufacturer's recommendations to prevent damage, soiling, or deterioration.
  2. Should building or site not be prepared to receive elevator equipment at agreed upon date, General Contractor will be responsible to provide proper and suitable storage area on or off premises.
  3. Should storage area be off-site and equipment not yet delivered, then elevator contractor, upon notification from General Contractor will divert elevator equipment to storage area.
  4. If equipment has already been delivered to site, then General Contractor shall transport elevator equipment to storage area.
  5. Cost of elevator equipment taken to storage by either party, storage, and redeliver to job site shall be at expense of General Contractor.

## 1.7 WARRANTY

- A. Manufacturer Warranty:
  1. Manufacturer's standard warranty.
- B. Maintenance Service:
  1. Maintenance service consisting of regular examinations, adjustments and lubrication of elevator equipment shall be provided by Elevator Installer for period of twelve (12) months after Substantial Completion.
  2. This service shall not be subcontracted but shall be performed by Elevator Installer.
  3. All work shall be performed by competent employees during regular working hours of regular working days and shall include emergency twenty four (24) hour callback service.
  4. This service shall not cover adjustments, repairs or replacement of parts due to negligence, misuse, abuse or accidents caused by persons other than Elevator Installer.
  5. Only genuine parts and supplies as used in manufacture and installation of original equipment shall be provided.

## PART 2 - PRODUCTS

### 2.1 SYSTEM

- A. Manufacturers:
  1. Category Four Approved Manufacturers: See Section 01 6200 for definitions of Categories.
    - a. ThyssenKrupp Elevator, Frisco, TX [www.thyssenkruppelevator.com](http://www.thyssenkruppelevator.com).

## B. Performance:

## 1. Design Criteria:

- a. Provide Manufacturer's standard pre-engineered elevator systems that will comply with requirements of Contract Documents. Where components are not otherwise indicated, provide standard components published by Manufacturer as included in standard pre-engineered elevator systems and as required for complete system.
  - 1) Elevator Model: ThyssenKrup endura Above-Ground (1-Stage)
  - 2) Elevator Type: Hydraulic Passenger
  - 3) Rated Capacity: 2100 lbs.
  - 4) Rated Speed: 80 ft./min.
  - 5) Operation System: TAC32H
  - 6) Travel: 9'-1"
  - 7) Landings: 3 total
  - 8) Openings:
    - a) Front: 1
    - b) Rear: 2
  - 9) Clear Car Inside: 5' - 8" wide x 4 - 3 1/2" deep
  - 10) Cab Height: 8'-0" standard
  - 11) Hoistway Entrance Size: 3' - 0" wide x 7'-0" high
  - 12) Door Type: Single Speed
  - 13) Power Characteristics: 230 volts, 3 Phase, 60 Hz.
  - 14) Seismic Requirements: Zone 3+
  - 15) Hoistway Dimensions: 7' - 4" wide x 6' - 8 3/4" deep
  - 16) Pit Depth: 4' - 0"
  - 17) Button & Fixture Style: Traditional Signal Fixtures
  - 18) Special Operations: None

## C. Components:

1. Hydraulic Machines and Elevator Equipment: Manufacturer's standard single-acting under-the-car hydraulic plunger-cylinder unit for each elevator, with electric pump-tank-control system equipment in machine room as indicated.
2. Piping:
  - a. Size, type, and weight piping recommended by Manufacturer.
  - b. Provide isolation couplings to prevent sound / vibration transmissions from power unit.
3. Inserts: Furnish required concrete inserts and similar anchorage devices for installation of guide rails, machinery, and other components of elevator work where installation of devices is indicated as work of another specification section.
4. Car Frame And Platform: Manufacturer's standard welded steel units.
5. Control Systems:
  - a. Manufacturer's standard control system required to provide automatic or group automatic operation of type indicated and defined in Code as 'Operations.'
  - b. Single Elevator Control: Provide solid-state 'Selective Collective Automatic Operation,' as defined in ASME / ANSI A17.1.
  - c. Single Elevator Control: Provide 'Single Automatic Operation,' as defined in ASME / ANSI A17.1.
  - d. In addition to primary control system features, provide following controls or operational features:
    - 1) Emergency power operation, where scheduled.
    - 2) Emergency hospital service.
    - 3) VIP express priority service.
    - 4) Automatic basement service.
    - 5) Loaded car by-pass.
    - 6) Independent service, for each car of a group.
    - 7) Automatic 2-way leveling.
    - 8) Automatic dispatching of loaded car, in conjunction with load weighing device.
6. Signal Equipment:
  - a. Car Control Stations:



- 1) Car control station in each car with flush-mounted metal face plates containing call button for each landing served and other buttons, switches, and controls required for specified car operation and control.
  - 2) Mount as shown or scheduled at height complying with ASME / ANSI A117.1.
  - 3) Mount in return panel adjacent to car door.
  - 4) Provide operating device symbols as required by Code.
  - 5) Mark other buttons and switches with Manufacturer's standard identification for required use or function.
- b. Car Position Indicator:
- 1) Provide either illuminated-signal type or digital-display type, located near top of each car or in car control station.
  - 2) Include direction-of-next-travel signal if not provided in car control station. In addition to visual indicator, provide audible signal to indicate to passengers that car is either stopping at or passing each of the floors served.
  - 3) Hall Push-Button Station:
    - a) Provide hall push-button station at each landing for elevator.
    - b) Provide unit with flat faceplate designed for flush-mounting on wall with body of unit recessed in wall.
      - (1) Two button station where passengers can travel either direction.
      - (2) One button station where only one direction of travel is available and indicate which direction that is.
  - 4) Hall Lanterns:
    - a) Provide units with illuminated UP and DOWN signal arrows, but provide single arrow where only one direction is possible.
    - b) Provide units projecting from faceplate for ease of angular viewing, except provide flush units where location in hoistway entrance frame is indicated.
    - c) Match materials, finishes, and mounting method of hall push-button stations.
    - d) In conjunction with each hall lantern device, provide audible signal to indicate that car is arriving in response to hall call and to indicate direction of car travel. Signal shall sound once for up direction of travel and twice for down direction.
  - 5) Hall Position Indicator:
    - a) Provide illuminated-signal type or digital-display type, located above each hoistway entrance at ground floor.
    - b) Match materials, finishes, and mounting method of hall push-button stations.
  - 6) Telephone:
    - a) Provide rough-in for telephone hand set in each car, contained in flush-mounted cabinet and complete with identification and instructions for use.
    - b) Provide manufacturer's standard emergency telephone handset fully wired and reader for use.
    - c) Provide and install telephone handset in each car. Connect hand set to dedicated phone line.
    - d) Elevator installed with auto call program to send alarm calls to Facility Manager. Contact local Elevator Service phone established by Project Manager or Facility Manager.
    - e) See Field Quality Control for testing and inspection requirements.
    - f) Connect Fire Department phone to dedicated phone line to local Fire Department.
    - g) Provide fireman's telephone cabinet or fireman's telephone jack in main elevator lobby.
  - 7) Alarm System: Provide emergency alarm bell properly located within building and audible outside hoistways, equipped to sound automatically in response to emergency stops and in response to 'Alarm' button on car control station.
- c. Miscellaneous:
- 1) Illuminated hall-call and car-call buttons that light up when activated and remain lighted until call or other function has been fulfilled. Fabricated of acrylic or other permanent translucent plastic.
  - 2) Except for buttons and illuminated signal elements, fabricate signal equipment with exposed surfaces of stainless steel with Manufacturer's standard satin finish.

7. Hoistway Entrances:
  - a. Provide Manufacturer's standard, pre-engineered, hollow metal type, sliding, door-and-frame hoistway entrances complete with track systems, hardware, safeties, sills, and accessories.
    - 1) Match car enclosure doors for size, number of door panels, and door panel movement.
    - 2) Provide frame-section size and profile to coordinate with hoistway wall construction as indicated.
  - b. Materials and Fabrication:
    - 1) Stainless Steel Door Panels: Flush stainless steel construction, AISI Type 302/304 with Manufacturer's standard satin finish.
    - 2) Sills: Extruded aluminum, with grooved surface, **1/4 inch (6 mm)** thick, mill finish.
8. Car Enclosure:
  - a. Walls: Cab type a laminate wall design, durable wood core finished on both sides with high pressure plastic laminate.
  - b. Reveals and frieze: Not applicable
  - c. Canopy: Cold-rolled steel with hinged exit.
  - d. Ceiling: Suspended type, LED lighting with translucent diffuser mounted in a metal frame. Framework shall be finished with a factory applied powder coat finish.
  - e. Cab Fronts, Return, Transom, Soffit and Strike: Provide panels faced with No. 4 brushed stainless steel
  - f. Doors: Horizontal sliding car doors reinforced with steel for panel rigidity. Hang doors on sheave type hangers with polyurethane tires that roll on a polished steel track and are guided at the bottom by non-metallic sliding guides.
  - g. Door Finish: Stainless steel panels: No. 4 brushed finish.
  - h. Cab Sills: Extruded aluminum, mill finish.
  - i. Handrail: Provide 1.5" diameter cylindrical metal on side and rear walls on front opening cars and side walls only on front and rear opening cars. Handrails shall have a stainless steel, No. 4 brushed finish.
  - j. Ventilation: Manufacturer's standard exhaust fan, mounted on the car top.
  - k. Protection pads and buttons: Not required
9. Car Top Inspection:
  - a. Provide a car top inspection station with an "Auto-Inspection" switch, an "emergency stop" switch, and constant pressure "up and down" direction and safety buttons to make the normal operating devices inoperative. The station shall give the inspector complete control of the elevator. The car top inspection station shall be mounted in the door operator assembly.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Before commencing elevator installation, examine hoistways, hoistway openings, pits, and machine rooms, as constructed (for existing projects, provide examination of existing construction before BID).
  1. Verify critical dimensions.
  2. Examine supporting structure and all other conditions under which elevator work is to be installed.
  3. Notify Architect in writing of dimensional discrepancies or other conditions detrimental to proper installation or performance of elevator work.
  4. Do not proceed with elevator installation until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Excavation:
  1. Excavate hole to accommodate plunger and cylinder for each elevator. If rock, boulders, sand, water, or any other obstruction are encountered while drilling, notify Architect.

2. Install PVC casings with waterproof seals at pit floor and with waterproof, high-pressure seal at bottom of casings.

### 3.3 INSTALLATION

- A. Comply with Manufacturer's written instructions and recommendations for work required during installation.
- B. Welded Construction:
  1. Provide welded connections for installation of elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, and replacement of worn parts.
  2. Comply with AWS standards for workmanship and for qualifications of welding operators.
- C. Coordination: Use benchmarks, lines, and levels to ensure dimensional coordination of work.
- D. Sound Isolation: Mount rotating and vibrating elevator equipment and components on vibration-absorption mounts, designed to effectively prevent transmission of vibrations to structure and eliminate sources of structure-borne noise from elevator system.
- E. Lubricate operating parts of systems, including ropes, as recommended by Manufacturer.
- F. Alignment:
  1. Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with cars.
  2. Where possible, delay final adjustment of sills and doors until car is operable in shaft.
  3. Reduce clearances to minimum, safe, workable dimension at each landing.
- G. Leveling Tolerance:
  1. **1/2 inch (12.7 mm)**, up or down, regardless of load and direction of travel.
  2. Set sills flush with finished floor surface at landings.

### 3.4 FIELD QUALITY CONTROL

- A. Field Tests:
  1. Notification:
    - a. Advise Owner, Architect, and Inspection Department of governing agencies in advance of dates and times tests are to be performed on elevators.
  2. Inspection And Testing:
    - a. Obtain and pay for required inspections, tests, permits and fees for elevator installation.
    - b. Arrange for inspections and make required tests.
    - c. Deliver reports to Owner upon completion and acceptance of elevator work.
  3. Acceptance Testing:
    - a. Upon nominal completion of each elevator installation and before permitting use of elevator, either temporary or permanent, perform acceptance tests required and recommended by Code and governing regulations or agencies.
  4. Operating Tests:
    - a. Load each elevator to its rated capacity and operate continuously for thirty (30) minutes over its full travel distance, stopping at each level and proceeding immediately to next.
    - b. Record temperature rise of elevator machine during thirty (30) minutes test period.
    - c. Record failures of elevator to perform as required.

**3.5 ADJUSTING**

- A. Make necessary adjustments of operating devices and equipment to ensure elevator operates smoothly and accurately.

**3.6 CLEANING**

- A. Before final acceptance, remove protection from finished surfaces and clean and polish surfaces in accordance with Manufacturer's recommendations for type of material and finish provided. Clean stainless steel with soap and water and dry with a non-abrasive surface.
- B. At completion of elevator work, remove tools, equipment, and surplus materials from site. Clean equipment rooms and hoistway. Remove trash and debris.

**3.7 CLOSE-OUT ACTIVITIES**

- A. Demonstration:
  - 1. Make final check of each elevator operation with Owner's Representative(s) present just before date of Substantial Completion. Determine that control systems and operating devices are functioning properly.
- B. Instruction of Owner:
  - 1. Instruct Owner's personnel in proper use, operation, and daily maintenance of elevators.
    - a. Review emergency provisions, including emergency access and procedures to be followed at time of failure in operation and other building emergencies.
    - b. Train Owner's personnel in normal procedures to be followed in checking for sources of operational failures or malfunctions.
    - c. Confer with Owner on requirements for complete elevator maintenance program.

**3.8 PROTECTION**

- A. Before Substantial Completion, provide suitable protective coverings, barriers, devices, signs, or such other methods or procedures to protect elevator work from damage or deterioration.

**END OF SECTION**

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**DIVISION 26 - ELECTRICAL**

**26 0000 ELECTRICAL**

- 26 0501 COMMON ELECTRICAL REQUIREMENTS
- 26 0502 ELECTRICAL DEMOLITION REQUIREMENTS
- 26 0519 LINE-VOLTAGE CONDUCTORS AND CABLES
- 26 0526 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
- 26 0533 RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS
- 26 0553 ELECTRICAL IDENTIFICATION

**26 2000 LOW (LINE) VOLTAGE DISTRIBUTION**

- 26 2726 WIRING DEVICES
- 26 2816 ENCLOSED SWITCHES AND CIRCUIT BREAKERS

**26 5000 LIGHTING**

- 26 5100 INTERIOR & EXTERIOR LIGHTING

END OF TABLE OF CONTENTS

**SECTION 26 0501  
COMMON ELECTRICAL REQUIREMENTS**

**PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
1. General electrical system requirements and procedures.
  2. Perform excavating and backfilling work required by work of this Division as described in Contract Documents.
  3. Make electrical connections to equipment provided under other Sections.
  4. Furnish and install Penetration Firestop Systems at electrical system penetrations as described in Contract Documents.
- B. Related Sections:
1. Division 07: Quality of Penetration Firestop Systems to be used on Project and submittal requirements.

**1.2 SUBMITTALS**

- A. Product Data:
1. Provide following information for each item of equipment:
    - a) Catalog Sheets.
    - b) Assembly details or dimension drawings.
    - c) Installation instructions.
    - d) Manufacturer's name and catalog number.
    - e) Name of local supplier.
  2. Furnish such information for following equipment:
    - a) Section 26 2726: Wiring devices.
    - b) Section 26 2816: Enclosed switches and circuit breakers.
    - c) Section 26 5100: Interior & Exterior lighting fixtures.
  3. Do not purchase equipment before approval of product data.
  4. Submit in electronically in PDF format, Submittals shall be divided into Specification Sections and shall be electronically organized. Submittals shall specifically indicate items that are to be used, Generic submittals will be rejected.
- B. Quality Assurance / Control:
1. Report of site tests, before Substantial Completion.

**1.3 QUALITY ASSURANCE**

- A. Requirements of Regulatory Agencies:
1. NEC and local ordinances and regulations shall govern unless more stringent requirements are specified.
  2. Material and equipment provided shall meet standards of NEMA or UL, or ULC, CSA, or EEMAC and bear their label wherever standards have been established and label service is available.

- B. Materials and equipment provided under following Sections shall be by same Manufacturer:
  - 1. Sections 26 2416, 26 2816, and 26 2913: Panelboards, Enclosed Switches And Circuit Breakers, and Enclosed Controllers.
- C. Contractor shall obtain all permits and arrange all inspections required by local codes and ordinances applicable to this Division.

#### **1.4 OWNER'S INSTRUCTIONS**

- A. Provide competent instructor for time required to adequately train maintenance personnel in operation and maintenance of electrical equipment and systems. Factory representatives shall assist this instruction as necessary. Schedule instruction period at time of final inspection.

#### **1.5 OPERATION AND MAINTENANCE MANUALS**

- A. Prepare and submit (4) four complete copies of the O & M Manuals—manuals to contain information listed below. Place each manual in a tabbed three-ring binder upon completion of the project.
  - 1. Operation and Maintenance manual must contain the following items:
    - a) Copies of reviewed shop drawings.
    - b) Letter of 1-year guarantee of workmanship.
    - c) Copy of voltage and ammeter readings.
    - d) Copy of letter verifying owner's receipt of spare parts.

#### **1.6 GUARANTEE**

- A. The following guarantee is a part of this specification and shall be binding on the part of the Contractor:

*"The Contractor guarantees that this installation is free from mechanical defects. He agrees to replace or repair, to the satisfaction of the Owner's Representative, any part of this installation which may fail or be determined unacceptable within a period of one (1) year after final acceptance."*

#### **1.7 RECORD DRAWINGS**

- A. During the course of construction, the Electrical Contractor shall maintain a set of drawings upon which all deviations from the original layout are recorded. These marked-up prints shall be turned over to the Architect/Engineer at the conclusion of the work.



**PART 2 - PRODUCTS: Not Used****PART 3 - EXECUTION****3.1 EXAMINATION**

- A. All relocations, reconnections, and removals are not necessarily indicated on Drawings. All such work shall be included without additional cost to Owner.
- B. Confirm dimensions, ratings, and specifications of equipment to be installed and coordinate these with site dimensions and with other Sections.

**3.2 INSTALLATION**

- A. General:
  - 1. Locations of electrical equipment shown on Drawings are approximate only. Field verify actual locations for proper installation.
  - 2. Coordinate electrical equipment locations and conduit runs with those providing equipment to be served before installation or rough-in.
    - a. Notify Architect of conflicts before beginning work.
    - b. Coordinate locations of power and lighting outlets in mechanical rooms and other areas with mechanical equipment, piping, ductwork, cabinets, etc, so they will be readily accessible and functional.
  - 3. Work related to other trades which is required under this Division, such as cutting and patching, trenching, and backfilling, shall be performed according to standards specified in applicable Sections.
- B. Install Penetration Firestop System appropriate for penetration at electrical system penetrations through walls, ceilings, and top plates of walls.

**3.3 FIELD QUALITY CONTROL**

- A. Site Tests: Test systems and demonstrate equipment as working and operating properly. Notify Architect before test. Rectify defects at no additional cost to Owner.
- B. Measure current for each phase of each motor under actual final load operation, i.e. after air balance is completed for fan units, etc. Record this information along with full-load nameplates current rating and size of thermal overload unit installed for each motor.

**END OF SECTION**

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**SECTION 26 0502  
ELECTRICAL DEMOLITION REQUIREMENTS**

**PART 1 - GENERAL****1.1 SUMMARY**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.
- B. Includes But Not Limited To
  - 1. Demolition involving electrical system as described in Contract Documents.
- C. Related Sections
  - 1. Section 260501 – Common Electrical Requirements
  - 2. New and replacement work specified in appropriate specification Section.

**PART 3 - EXECUTION****3.1 EXAMINATION**

- A. All relocations, reconnections, and removals are not necessarily indicated on Drawings. All such work shall be included without additional cost to Owner.

**3.2 PREPARATION**

- A. Disconnect equipment that is to be removed or relocated. Carefully remove, disassemble, or dismantle as required, and store in approved location on site, existing items to be reused in completed work.
- B. Where affected by demolition or new construction, relocate, extend, or repair raceways, conductors, outlets, and apparatus to allow continued use of electrical system. Use methods and materials as specified for new construction.

**3.3 PERFORMANCE**

- A. Perform drilling, cutting, block-offs, and demolition work required for removal of necessary portions of electrical system. Do not cut joists, beams, girders, trusses, or columns without prior written permission from Architect.
- B. Remove concealed wiring abandoned due to demolition or new construction. Remove circuits, conduits, and conductors that are not to be re-used back to next active fixture, device, or junction box.
- C. Patch, repair, and finish surfaces affected by electrical demolition work, unless work is specifically called for under other Sections of the specifications.

**3.4 CLEANING**

- A. Remove obsolete raceways, conductors, apparatus, and lighting fixtures promptly from site and dispose of legally.

END OF SECTION

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**SECTION 26 0519  
LINE VOLTAGE CONDUCTORS AND CABLES**

**PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Quality of conductors used on Project except as excluded below.
- B. Related Sections:
  - 1. Section 26 0501: Common Electrical Requirements.

**1.2 DEFINITIONS**

- A. Line Voltage: Over 70 Volts.

**PART 2 - PRODUCTS****2.1 COMPONENTS**

- A. Line Voltage Conductors:
  - 1. Copper with AWG sizes as shown:
    - a. Minimum size shall be No. 12 except where specified otherwise.
    - b. Conductor size No. 8 and larger.
  - 2. Insulation:
    - a. Standard Conductor Size No. 10 And Smaller: 600V type THWN or XHHW (75 deg C).
    - b. Standard Conductor Size No. 8 And Larger: 600V Type THW, THWN, or XHHW (75 deg C).
    - c. Higher temperature insulation as required by NEC or local codes.
    - d. Type TC cable is acceptable for use in cable trays only.
  - 3. Colors:
    - a. Refer to Section 26 0553 Electrical Identification for colors for conductors.
    - b. Conductors size No. 10 and smaller shall be colored full length. Tagging or other methods for coding of conductors size No. 10 and smaller not allowed.
    - c. For feeder conductors larger than No. 10 at pull boxes, gutters, and panels, use painted or taped band or color tag color-coded as specified above.
- B. Standard Connectors:
  - 1. Conductors No. 8 And Smaller: Steel spring wire connectors.
  - 2. Conductors Larger Than No. 8: Pressure type terminal lugs.
  - 3. Connections Outside Building: Watertight steel spring wire connections with waterproof, non-hardening sealant.
- C. Terminal blocks for tapping conductors:
  - 1. Terminals shall be suitable for use with 75 deg C copper conductors.
  - 2. Acceptable Products:
    - a. 16323 by Cooper Bussmann, St Louis, MO [www.bussmann.com](http://www.bussmann.com)
    - b. LBA363106 by Square D Co, Palatine, IL [www.squared.com](http://www.squared.com).

- c. Equal as approved by Engineer before bidding.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION**

- A. General:
  1. Conductors and cables shall be continuous from outlet to outlet.
  2. Do not use direct burial cable.
- B. Line Voltage Conductors (Over 70 Volts):
  1. Install conductors in raceway except where specifically indicated otherwise. Run conductors of different voltage systems in separate conduits.
  2. Route circuits at own discretion, however, circuiting shall be as shown in Panel Schedules. Group circuit homeruns to panels as shown on Drawings.
  3. Multi-wire Branch Circuits (Common Neutral) shall **NOT** be utilized, a dedicated neutral shall be ran with every homerun circuit.
  4. Pulling Conductors:
    - a. Do not pull conductors into conduit until raceway system is complete and cabinets and outlet boxes are free of foreign matter and moisture.
    - b. Do not use heavy mechanical means for pulling conductors.
    - c. Use only listed wire pulling lubricants.

END OF SECTION

**SECTION 26 0526  
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS**

**PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install grounding for electrical installation as described in Contract Documents except as excluded below.
- B. Related Sections:
  - 1. Section 26 0501: Common Electrical Requirements.

**1.2 QUALITY ASSURANCE**

- A. Pre-Installation Conference: Participate in pre-installation conference specified in Section 03 3111.

**PART 2 - PRODUCTS****2.1 COMPONENTS**

- A. Size materials as shown on Drawings and in accordance with applicable codes.
- B. Grounding And Bonding Jumper Conductors: Bare copper or with green insulation.
- C. Make grounding conductor connections to ground rods and water pipes using approved bolted clamps listed for such use.
- D. Service Grounding Connections And Cable Splices:
  - 1. Make by compression type connectors designed specifically for this purpose.
  - 2. Acceptable Products:
    - a. Burndy
    - b. Thomas & Betts.
    - c. Equal as approved by Architect before bidding.

**PART 3 - EXECUTION****3.1 INSTALLATION**

- A. Interface With Other Work: Coordinate with Section 03 3111 in installing grounding conductor and placing concrete. Do not allow placement of concrete before Architect's inspection of grounding conductor installation.
- B. Grounding conductors and bonding jumper conductors shall be continuous from terminal to terminal without splice. Provide grounding for following.

1. Electrical service, its equipment and enclosures.
  2. Conduits and other conductor enclosures.
  3. Neutral or identified conductor of interior wiring system.
  4. Main panelboard, power and lighting panelboards.
  5. Non-current-carrying metal parts of fixed equipment such as motors, starter and controller cabinets, instrument cases, and lighting fixtures.
- C. Pull grounding conductors in non-metallic raceways, in flexible steel conduit exceeding 72 inches in length, and in flexible conduit connecting to mechanical equipment.
- D. Provide grounding bushings on all feeder conduit entrances into panelboards and equipment enclosures.
- E. Bond conduit grounding bushings to enclosures with minimum #10 AWG conductor.
- F. Connect equipment grounds to building system ground.
1. Use same size equipment grounding conductors as phase conductors up through #10 AWG.
  2. Use NEC Table 250-122 for others unless noted otherwise in Drawings.
- G. Run separate insulated grounding cable from each equipment cabinet to electrical panel. Do not use intermediate connections or splices. Affix directly to cabinet.
- H. On motors, connect ground conductors to conduit with approved grounding bushing and to metal frame with bolted solderless lug.
- I. Do not bond neutral conductor of emergency generator set to generator set frame at generator location, unless utilizing 4-pole transfer switches. Refer to drawings.
- J. Ground cabinet of transformers to conduit and ground wires, if installed. Bond transformer secondary neutral conductor to cabinet.
- K. Ground each separately derived system neutral to nearest ground per NEC and local inspector.
- L. Provide a separate, insulated equipment green grounding conductor in all feeder and branch circuits. Terminate each end on a grounding lug, bus, or bushing and to all metallic enclosures. A conduit ground is not acceptable. Install grounding bushings on both ends of all feeder conduit and bond to ground system.

### **3.2 FIELD QUALITY CONTROL**

- A. Inspections: Notify Architect for inspection two days minimum before placing concrete over grounding conductor.

END OF SECTION



**SECTION 26 0533  
RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS**

**PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
1. Quality of material and installation procedures for raceway, boxes, and fittings used on Project but furnished under other Divisions.
  2. Furnish and install raceway, conduit, and boxes used on Project not specified to be installed under other Divisions.
  3. Furnish and install main telephone service raceway as described in Contract Documents and to comply with telephone company requirements.
  4. Furnish and install main electrical service raceway to comply with electrical utility company requirements.
- B. Related Sections
1. Section 26 0501: General Electrical Requirements.

**PART 2 - PRODUCTS****2.1 COMPONENTS**

- A. Raceway And Conduit:
1. Minimum Sizes:
    - a. 3/4 inch for exterior underground use.
    - b. 3/4 inch minimum Homeruns, 1/2" minimum elsewhere, unless indicated otherwise.
  2. Types: Usage of each type is restricted as specified below by product.
    - a. Galvanized rigid steel (RMC) or galvanized intermediate metal conduit (IMC) is allowed for use in all areas. Where in contact with earth or concrete, wrap buried galvanized rigid steel and galvanized IMC conduit and fittings completely with vinyl tape.
    - b. Galvanized Electrical Metallic Tubing (EMT):
      - 1) Allowed for use only in indoor dry locations where it is:
        - a) Not subject to damage.
        - b) Not in contact with earth.
        - c) Not in concrete.
      - 2) Flexible steel conduit or metal-clad cable required for final connections to indoor mechanical equipment.
    - c. Schedule 40 Polyvinyl Chloride (PVC) Conduit:
      - 1) Allowed for use only underground or below concrete with galvanized rigid steel or IMC elbows and risers.
    - d. Listed, Liquid-Tight Flexible Metal Conduit:
      - 1) Use in outdoor final connections to mechanical equipment, length not to exceed 36 inches.
  3. Prohibited Raceway Materials:
    - a. Aluminum conduit.
    - b. Armored cable type AC (BX) cable.

- B. Raceway And Conduit Fittings:
1. Rigid Steel Conduit And IMC: Threaded and designed for conduit use.
  2. EMT:
    - a. Compression type.
  3. PVC Conduit:
    - a. PVC type. Use PVC adapters at all boxes.
    - b. PVC components, (conduit, fittings, cement) shall be from same Manufacturer.
  4. Flexible Steel Conduit: Screw-in type.
  5. Liquid-tight Flexible Metal Conduit: Sealtite type.
  6. Expansion fittings shall be equal to OZ Type AX sized to raceway and including bonding jumper.
  7. Prohibited Fitting Materials:
    - a. Crimp-on, tap-on, indenter type fittings.
    - b. Cast set-screw fittings for EMT.
    - c. Spray (aerosol) PVC cement.
- C. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.
1. Provide metal supports and other accessories for installation of each box.
  2. Equip ceiling and bracket fixture boxes with fixture studs where required.
  3. Equip outlets in plastered, paneled, and furred finishes with plaster rings and extensions to bring box flush with finish surface.
  4. Telephone / data outlet boxes shall be 4sq. deep boxes with single-gang mudring where two or more cables come to one box.

## 2.2 MANUFACTURERS

- A. Contact Information:
1. Cooper B-Line, Highland, IL [www.bline.com](http://www.bline.com).
  2. Hubbell Incorporated, Milford, CT [www.hubbell-wiring.com](http://www.hubbell-wiring.com).
  3. Square D, Palatine, IL [www.squared.com](http://www.squared.com).
  4. Steel City, Div Thomas & Betts, Memphis, TN [www.tnb.com](http://www.tnb.com).
  5. Thomas & Betts, Memphis, TN [www.tnb.com](http://www.tnb.com).
  6. Walker Systems Inc, Williamstown, [www.wiremold.com](http://www.wiremold.com).
  7. Wiremold Co, West Hartford, CT [www.wiremold.com](http://www.wiremold.com).

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Confirm dimensions, ratings, and specifications of materials to be installed and coordinate these with site dimensions and with other Sections.

### 3.2 INSTALLATION

- A. Interface With Other Work:
1. Coordinate with Divisions 22 and 23 for installation of raceway for control of plumbing and HVAC equipment.
  2. Before rough-in, verify locations of boxes with work of other trades to insure that they are properly located for purpose intended.
    - a. Coordinate location of outlet for water cooler with Division 22.
    - b. Coordinate location of outlets adjacent to or in millwork with Division 06 before rough-in. Refer conflicts to Architect and locate outlet under his direction.

3. Coordinate installation of floor boxes in carpeted areas with carpet installer to obtain carpet for box doors.
4. Install pull wires in raceways installed under this Section where conductors or cables are to be installed under other Divisions.

B. Conduit And Raceway:

1. Conceal raceways within ceilings, walls, and floors, except at Contractor's option, conduit may be exposed on walls or ceilings of mechanical equipment areas and above acoustical panel suspension ceiling systems. Install exposed raceway runs parallel to or at right angles to building structure lines.
2. Keep raceway runs 6 inches minimum from hot water pipes.
3. Make no more than four quarter bends, 360 degrees total, in any conduit run between outlet and outlet, fitting and fitting, or outlet and fitting.
  - a. Make bends and offsets so conduit is not injured and internal diameter of conduit is not effectively reduced.
  - b. Radius of curve shall be at least minimum indicated by NEC.
4. Cut conduit smooth and square with run and ream to remove rough edges. Cap raceway ends during construction. Clean or replace raceway in which water or foreign matter have accumulated.
5. Install insulated bushings on each end of raceway 1-1/4 inches in diameter and larger, and on all raceways where low voltage cables emerge. Install expansion fittings where raceways cross building expansion joints.
6. Run two spare conduits from each new panelboard to ceiling access area or other acceptable accessible area and cap for future use.
7. Route conduit through roof openings for piping and ductwork where possible; otherwise. All roof penetrations shall be flashed, counter flashed and sealed per Roofing Contractor. Coordinate all roof penetrations with the Roofing Contractor.
8. Provide nylon pull string with printed footage indicators secured at each end of each empty conduit, except sleeves and nipples. Identify with tags at each end the origin and destination of each empty conduit, and indicate same on all empty or spare conduits on the as-built drawings.
9. Install expansion-deflection joints where conduit crosses building expansion, seismic, or structural isolation break (SIB) joints.
10. Where conduit penetrates fire-rated walls and floors, seal opening around conduit with UL-listed foamed silicone elastomer compound. Fill void around perimeter of conduits with nonmetallic nonshrink grout in all concrete or masonry walls.
11. Bend PVC conduit by hot box bender and, for PVC 2 inches in diameter and larger, expanding plugs. Apply PVC adhesive only by brush.
12. Installation In Framing:
  - a. Do not bore holes in joists or beams outside center 1/3 of member depth or within 24 inches of bearing points. Do not bore holes in vertical framing members outside center 1/3 of member width.
  - b. Holes shall be one inch diameter maximum.
13. Underground Raceway And Conduit:
  - a. Bury underground raceway installed outside building 24 inches deep minimum.
  - b. Bury underground conduit in planting areas 18 inches deep minimum. It is permissible to install conduit directly below concrete sidewalks, however, conduit must be buried 18 inches deep at point of exit from planting areas.
14. Conduit And Raceway Support:
  - a. Securely support raceway with approved straps, clamps, or hangers, spaced as required.
  - b. Do not support from mechanical ducts or duct supports without Architect's written approval. Securely mount raceway supports, boxes, and cabinets in an approved manner by:
    - 1) Expansion shields in concrete or solid masonry.
    - 2) Toggle bolts on hollow masonry units.

- 3) Wood screws on wood.
  - 4) Metal screws on metal.
15. Prohibited Procedures:
- a. Use of wooden plugs inserted in concrete or masonry units for mounting raceway, supports, boxes, cabinets, or other equipment.
  - b. Installation of raceway that has been crushed or deformed.
  - c. Use of torches for bending PVC.
  - d. Spray applied PVC cement.
  - e. Boring holes in truss members.
  - f. Notching of structural members.
  - g. Supporting raceway from ceiling system support wires.

C. Boxes:

1. Boxes shall be accessible and installed with approved cover.
2. Do not locate device boxes that are on opposite sides of framed walls in the same stud space. In other wall construction, do not install boxes back to back.
3. Locate boxes so pipes, ducts, or other items do not obstruct outlets.
4. Install outlets flush with finished surface and level and plumb.
5. Support switch boxes larger than two-gang with side brackets and steel bar hangers in framed walls.
6. At time of substantial completion, install blank plates on uncovered outlet boxes that are for future use.
7. Install air / vapor barrier back boxes behind outlet boxes that penetrate vapor barrier.
8. Location:
  - a. Install boxes at door locations on latch side of door, unless explicitly shown otherwise on Drawings. Verify door swings shown on electrical drawings with architectural drawings, and report discrepancies to Architect before rough-in. Distance of switch boxes from jamb shall be within 6 inches of door jamb.
  - b. Arrange boxes for ceiling light fixtures symmetrically with respect to room dimensions and structural features.
  - c. Properly center boxes located in walls with respect to doors, panels, furring, trim and consistent with architectural details. Where two or more outlets occur, space them uniformly and in straight lines with each other, if possible.
  - d. Center ceramic tile boxes in tile.

END OF SECTION

**SECTION 26 0553  
ELECTRICAL IDENTIFICATION**

**PART 1 - GENERAL**

**1.01 WORK INCLUDED**

- A. Nameplates and labels.
- B. Wire and cable markers.

**1.02 RELATED WORK**

- A. This Section shall be used in conjunction with the following other specifications and related Contract Documents to establish the total requirements for electrical identification.
  - 1. Section 26 0501 - Basic Electrical Requirements
- B. In the event of conflict regarding electrical identification requirements between this Section and any other section, the provisions of this Section shall govern.

**PART 2 - PRODUCTS**

**2.01 MATERIALS**

- A. Nameplates: Engraved three-layer laminated plastic, minimum 3/16 inch high white letters on a black background.
- B. Nameplates (Emergency Equipment): Engraved three-layer laminated plastic, minimum 3/16 inch high white letters on a red background.
- C. Wire and Cable Markers: Split sleeve or tubing type. Cloth or wraparound adhesive types not approved.
- D. Conductor-color Tape: Colored vinyl electrical tape.

**PART 3 - EXECUTION**

**3.01 INSTALLATION**

- A. Degrease and clean surfaces to receive nameplates.
- B. Install nameplates and labels parallel to equipment lines.
- C. Secure nameplates to equipment fronts. Secure nameplate to outside face of panelboard doors.
- D. Embossed tape will not be permitted for any application.
- E. Electrical Contractor shall write the circuit number to which each device is connected on the inside of the box (clearly visible when device is removed) and on the backside of each coverplate. Use a permanent black marker.

**3.02 WIRE IDENTIFICATION**

A. Conductors for power circuits to be identified per the following schedule.

	System Voltage
<u>Conductor</u>	<u>240/120 – High Leg</u>
Phase A	Black
Phase B	Orange (High-Leg)
Phase C	Blue
Neutral	White
Grounding	Green
Isolated Ground	Green with yellow stripe
Switchleg (lighting)	Pink
0-10V Dimming	Purple/Gray

**3.03 NAME PLATE ENGRAVING SCHEDULE**

A. Provide nameplates of minimum letter height as scheduled below.

B. Panelboards, Switchboards and Motor Control Centers:

1. 1st Line - Equipment Name: 1/4 inch Lettering.
2. 2nd Line - Voltage Rating: 3/16 inch Lettering
3. 3rd Line - Feed Source: 3/16 inch Lettering
4. 4th Line - Available Fault Current: 3/16 inch Lettering
5. Nameplate Examples:

**PANEL: HA**  
**480Y/277V**  
**FEED FROM:**  
**MSB-2**  
**SCA: 18,560**  
**AMPS**

**SWBD: MSB**  
**480Y/277V**  
**FEED FROM:**  
**UTIL.**  
**SCA: 35,680**  
**AMPS**

**MCC-A: SEC. 1**  
**480V-3P**  
**FEED FROM:**  
**MSB-2**  
**SCA: 18,560**  
**AMPS**

C. Individual Circuit Breakers, Switches, and Motor Starters in Switchboards, and Motor Control Centers:

1. 1st Line - Load Served: 1/4 inch Lettering.
2. 2nd Line - Location of Load: 3/16 inch Lettering
3. Nameplate Examples:

**PUMP: P-1**  
**MECH. RM 112**

D. Individual Circuit Breakers, Enclosed Switches, and Motor Starters:

1. 1st Line - Load Served: 1/4 inch Lettering.
2. 2nd Line - Voltage Rating: 3/16 inch Lettering
3. 3rd Line - Feed Source: 3/16 inch Lettering
4. Nameplate Examples:

<p><b>FAN: F-1</b> <b>480V-3P</b> <b>FEED FROM: HM-</b> <b>1,3,5</b></p>
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**SECTION 26 2726  
WIRING DEVICES**

**PART 1 - GENERAL**

**1.01 WORK INCLUDED**

- A. Wall switches.
- B. Receptacles.
- C. Device plates and box covers.
- D. Cords and caps.

**1.02 RELATED WORK**

- A. This Section shall be used in conjunction with the following other specifications and related Contract Documents to establish the total requirements for wiring devices.
  - 1. Section 26 0501 - Basic Electrical Requirements.
- B. In the event of conflict regarding requirements for wiring devices between this Section and any other section, the provisions of this Section shall govern.

**1.03 DESIGN REQUIREMENTS**

- A. FS W-C-596 - Electrical Power Connector, Plug, Receptacle, and Cable Outlet.
- B. FS W-S-896 - Switch, Toggle.
- C. NEMA WD 1 - General Requirements for Wiring Devices.
- D. NEMA WD 6 - Wiring Devices - Dimensional Requirements.

**PART 2 - PRODUCTS**

**2.01 WALL SWITCHES**

- A. Basis of Design:

<b>MFG.</b>	<b>1-Pole</b>	<b>3-Way</b>	<b>4-Way</b>	<b>Pilot Light</b>
Hubbell	1221-*	1223-*	1234-*	1221-P1 *

- B. Acceptable Manufacturers:
  - 1. Pass & Seymour
  - 2. Leviton
  - 3. Cooper
- C. Wall Switches for Lighting Circuits shall meet Federal Spec WS-896.
  - 1. AC general use snap switch with toggle rocker handle, Screw type terminals only.
  - 2. 20 Amperes and 120-277 Volts AC rated .
  - 3. \*Color: As selected by Owner/Architect, Red if connected to an Emergency Circuit. (Standard colors shall include brown, gray, ivory, black or a white for all devices.)
- D. Pilot Light Type: Red pilot handle; handlelighted when switch is ON.

- E. Provide 3-way and 4-way switches of matching style, appearance and specification as indicated on drawings.

## 2.02 RECEPTACLES

- A. Basis of Design:

STANDARD				
MFG	Duplex	GFI	USB	Tamper
Hubbell	HBL5352*	GFRST20*	USB20A5*	BR20*TR

- B. Acceptable Manufacturers:

1. Pass & Seymour
2. Leviton
3. Cooper

- C. Convenience and Straight-blade Receptacles: NEMA WD 1, Heavy Duty Specification Grade.

1. Utilize UL Tamper-Resistant and Weather-Resistant Receptacles at locations specified by the most current NEC.

- D. Locking-Blade Receptacles: NEMA WD 5.

- E. Convenience Receptacle Configuration: NEMA WD 1; Type 5-20R.

1. \*Color: As selected by Owner/Architect. Receptacles on Emergency circuit shall be Red in color. (Standard colors shall include brown, gray, ivory, black and white for all devices.)

- F. Weatherproof Receptacles: GFI, UL weather-resistant listed Receptacle mounted in a cast steel box with gasketed, weatherproof device plate and In-Use Cover.

- G. Specific-use Receptacle Configuration: NEMA WD 1 or WD 5; type as indicated on Drawings, brown nylon face.

- H. GFCI Receptacles: Duplex convenience receptacle with integral ground fault current interrupter. NEMA Type 5-20R.

1. \*Color: As selected by Owner/Architect. Receptacles on Emergency circuit shall be Red in color. (Standard colors shall include brown, gray, ivory, black and white for all devices.)
2. Feed-through type for downstream device protection.
3. All receptacles indicated to be installed in a toilet room, bathroom, roof top, and outdoors or within 6 feet of a sink, basin, tub or floor sink shall be GFCI protected

## 2.03 SPECIFIC PURPOSE RECEPTACLES

- A. NEMA WD 1 or WD 5; type as indicated on Drawings.

- B. Isolated Ground Type: Straight blade type 5-20R as indicated on the Drawings. Grey nylon face.

- C. Twist lock type. NEMA configuration as shown on the Drawings.

**2.04 WALL PLATES**

- A. Material:
  - 1. Finished Spaces: Match existing
  - 2. Unfinished Spaces: Galvanized Steel
- B. All isolated ground receptacle covers shall bear the engraved phrase "ISOLATED GROUND".
- C. Engraved Plates: Same plate as specified herein. Provide with engraved characters 1/8 inch high characters (all letters in upper case) with filler of black color.
- D. Weatherproof Cover Plate: Gasketed cast metal with hinged gasketed device covers.

**2.05 CORDS AND CAPS**

- A. Acceptable Manufacturers:
  - 1. Hubbell.
  - 2. Leviton.
  - 3. Pass and Seymour.
  - 4. Cooper
- B. Straight-blade Attachment Plug: NEMA WD 1.
- C. Locking-blade Attachment Plug: NEMA WD 5.
- D. Attachment Plug Configuration: Match receptacle configuration at outlet provided for equipment.
- E. Cord Construction: Oil-resistant thermoset insulated Type SO multiconductor flexible cord with identified equipment grounding conductor, suitable for hard usage in damp locations.
- F. Cord Size: Suitable for connected load of equipment and rating of branch circuit overcurrent protection.

**PART 3 - EXECUTION****3.01 INSTALLATION**

- A. Install wall switches 48 inches AFF, OFF position down.
- B. Install convenience receptacles 18 inches AFF, 4 inches above backsplash, or as noted, in a vertical position with grounding pole down.
- C. Install specific-use receptacles at heights shown on Contract Drawings.
- D. Install convenience receptacles in 4 square box in a vertical position with the ground pole down.

END OF SECTION

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**SECTION 26 2816  
ENCLOSED SWITCHES AND CIRCUIT BREAKERS**

**PART 1 - GENERAL****1.01 WORK INCLUDED**

- A. Fusible Disconnect switches.
- B. Nonfusible Disconnect switches.
- C. Enclosures.

**1.02 RELATED WORK**

- A. This Section shall be used in conjunction with the following other specifications and related Contract Documents to establish the total requirements for disconnect switches.
  - 1. Section 26 0501 - Basic Electrical Requirements.
  - 2. Section 26 0526 - Grounding.
- B. In the event of conflict regarding individually enclosed low-voltage protective device requirements between this Section and any other section, the provisions of this Section shall govern.

**1.03 SUBMITTALS**

- A. Product Data: For each type of enclosed switch, circuit breaker, accessor, and component indicated. Include dimensioned elevations, sections, weights, and manufacturer's technical data on features, performance, electrical characteristics, ratings, accessories and finishes.

**1.04 QUALITY ASSURANCE**

- A. Source Limitations: Obtain enclosed switches and circuit breakers, overcurrent protective devices, components and accessories within same product category from single source from single manufacturer.
- B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for enclosed switches and circuit breakers, including clearances between enclosures and adjacent surfaces and other items. Comply with indicated maximum dimensions.
- C. Electrical Components, Devices and Accessories: Listed and labeled as defined in NFPA 70 by a qualified testing agency and marked for intended location and application.
- D. Comply with NFPA 70.

**1.05 COORDINATION**

- A. Coordinate layout and installation of switches, circuit breakers and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

**1.06 SPARE PARTS**

- A. Provide fuses for switches, as required of classes, types and ratings needed to fulfill electrical requirements for services indicated. Provide spare fuses amounting to one spare fuse for each 10 installed but not less than three of any one type and size.

**PART 2 - PRODUCTS****2.01 FUSIBLE SWITCHES**

- A. Manufacturer: Subjects to compliance with requirements, provide products of one of the following (for each type of switch):
  - 1. Square D Company
  - 2. General Electric (GE)
  - 3. Cutler-Hammer (Eaton)
- B. Type HD, Heavy Duty, Single Throw, 240 or 600 VAC, 1200A and smaller: UL98 and NEMA KS 1, horsepower rated with clips or bolt pads to accommodate indicated fuses, lockable handle with capability to accept two padlocks and interlocked with cover in closed position.
- C. Accessories:
  - 1. Equipment Ground Kit: Internally mounted and labeled for copper or aluminum conductors.
  - 2. Neutral Kit (where required): Internally mounted, insulated; capable fo being grounded and bonded; labeled for copper and aluminum neutral conductors.
  - 3. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
  - 4. Lugs: Mechanical type, suitable for number, size and conductor material.

**2.02 NONFUSIBLE SWITCHES**

- A. Manufacturer: Subjects to compliance with requirements, provide products of one of the following (for each type of switch):
  - 1. Square D Company
  - 2. General Electric (GE)
  - 3. Cutler-Hammer (Eaton)
- B. Type HD, Heavy Duty, Single Throw, 240 or 600 VAC, 1200A and smaller: UL98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept two padlocks and interlocked with cover in closed position.
- C. Accessories:
  - 1. Equipment Ground Kit: Internally mounted and labeled for copper or aluminum conductors.
  - 2. Lugs: Mechanical type, suitable for number, size and conductor material.

**2.03 MOLDED-CASE CIRCUIT BREAKERS AND SWITCHES**

- A. Manufacturer: Subjects to compliance with requirements, provide products of one of the following (for each type of switch):
  - 1. Square D Company
  - 2. General Electric (GE)
  - 3. Cutler-Hammer (Eaton)
- B. Molded-Case Circuit Breaker: NEMA AB 1 with interrupting capacity to meet available fault curents.
- C. Molded-Case Circuit Breaker Features and Accessories:
  - 1. Standard frame sizes, trip ratings and number of poles.
  - 2. Lugs: Mechanical style with compression lug kits suitable for number, size, trip ratings and conductor material.

3. Application Listing: Type SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning and refrigerating equipment.

#### **2.04 ENCLOSURES**

- A. NEMA AB 1 AND NEMA KS 1 to meet environmental conditions of installed location.
  1. Indoor Locations: NEMA 250, Type 1
  2. Outdoor Locations: NEMA 250, Type 3R
  3. Kitchen Areas: NEMA 250, Type 4X, stainless steel.
  4. Other Wet or Damp Indoor Locations: NEMA 250, Type 4.

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance.

#### **3.02 INSTALLATION**

- A. Comply with applicable portions of NECA 1, NEMA PB 1.1 and NEMA PB 2.1 for installations of enclosed switches and circuit breakers.
- B. Mount individual wall-mounting switches and circuit breakers with tops at uniform height, unless otherwise indicated. (Maximum Height: 78" to top of enclosure AFF). Anchor floor-mounting switches to concrete base.
- C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels and brackets and temporary blocking of moving parts from enclosures and components.

#### **3.03 IDENTIFICATION**

- A. Enclosure Nameplates: Label each enclosure with engraved nameplate as specified in Section 26 0553 Electrical Identification.

#### **3.04 FIELD QUALITY CONTROL**

- A. Provide the following acceptance testing:
  1. Inspect mechanical and electrical connections.
  2. Verify switch and relay type and labeling verification.
  3. Inspect proper installation of type, size, quantity and arrangement of mounting or anchorage devices complying with manufacturer's certification.

#### **3.05 ADJUSTING**

- A. Set field-adjustable switches and circuit breaker trip ranges.

#### **3.06 CLEANING**

- A. On completion of installation vacuum dirt and debris from interiors; do not use compressed air to assist in cleaning.
- B. Inspect exposed surfaces and repair damaged finishes.

END OF SECTION

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**SECTION 26 5100**  
**INTERIOR & EXTERIOR LIGHTING**

**PART 1 GENERAL****1.1 SUMMARY****A. SECTION INCLUDES**

1. Interior luminaires and accessories
2. Emergency lighting & Exit Signs
3. Exterior lighting

**B. DEFINITIONS:**

1. Luminaire: A luminaire is a complete lighting unit including light source(s) and parts required to distribute the light, position and protect the light source(s), and connect the light source(s) to the power supply.
2. Average Life: The time after which 50 percent will have failed and 50 percent will **have survived under specified operating and starting condition.**

**1.2 SUBMITTALS****A. Submit the following in accordance with project submittal procedures:**

1. Interior Fixture Catalog Data: Submit catalog data describing luminaires, lamps, and ballasts. Include data substantiating that materials comply with specified requirements. Arrange data for luminaires in the order of fixture designation.
2. Exterior Fixture Catalog Data: Submit catalog data describing poles, luminaires, lamps, ballasts, and pole and luminaire finishes. Include data substantiating that materials comply with specified requirements. Arrange data for luminaires in the order of luminaire designation.
3. Performance Curves/Data:
  - a. Submit certified photometric data for each type of luminaire.
  - b. Submit supply-air, return-air, heat-removal, and sound performance data for air handling luminaires.
4. Drawings: Submit shop drawings for luminaries.

**1.3 QUALITY ASSURANCE****A. Interior Lighting**

1. Comply with the *National Electrical Code* (NEC) and the *International Building Code* (IBC) for installation requirements.
2. Provide luminaires listed and labeled by a nationally recognized testing laboratory (NRTL)

3. Use manufacturers that are experienced in manufacturing luminaires, lamps and ballasts similar to those indicated for this Project and have a record of successful in-service performance.
  4. Coordinate luminaires, mounting hardware and trim with the ceiling system.
- B. Emergency Lighting
1. Comply with ANSI/NFPA 70 - National Electrical Code (NEC), NFPA 101 - Life Safety Code, and the International Building Code (IBC) for components and installation.
  2. Emergency lighting units and exit signs shall be NRTL-listed and labeled for their indicated use, and location on this project, by a Nationally Recognized Testing Laboratory (NRTL) in accordance with UL 924–Emergency Lighting and Power Equipment.
  3. Use manufacturers that are experienced in manufacturing emergency lighting units similar to those indicated for this Project and have a record of successful in-service performance.

#### 1.4 RECEIVING, STORING AND PROTECTING

- A. Receive, store, and protect, and handle products according to the following NECA National Electrical Installation Standards:
1. NECA/IESNA 500, *Recommended Practice for Installing Indoor Commercial Lighting Systems* (ANSI).

#### 1.5 WARRANTY

- A. Submit a warranty, mutually executed by the LED luminaire manufacturer and the installer, agreeing to replace LED luminaires that fail in materials or workmanship within five years, beginning on the date of substantial completion of project.
- B. Manufacturer shall replace any luminaires that fail to operate properly within 60 months of the substantial completion date of project . Lens yellowing or hazing will be considered a failure.
- C. Manufacturer shall replace any luminaries that experience housing or finish failure within 5 years of the substantial completion date of project

### PART 2 PRODUCTS

#### 2.1 SEISMIC PERFORMANCE REQUIREMENTS

- A. The luminaires shall remain in place without separation of any parts when subjected to the design basis earthquake per Section 01 8734, *Seismic Qualification of Nonstructural Components* (IBC)

#### 2.2 INTERIOR LUMINAIRES

- A. Furnish interior luminaires that comply with requirements specified below, indicated on the Drawings, and as required to meet conditions of installation.
- B. Metal parts shall be free from burrs and sharp corners and edges.
- C. Metal components shall be formed and supported to prevent sagging and warping.

- D. Steel parts shall be finished with manufacturer's standard finish applied over a corrosion-resistant primer. Finish shall be free from runs, streaks, stains, holidays or defects.
- E. Doors and frames shall be smooth operating and free from light leakage under operating conditions. Relamping shall be possible without the use of tools. Doors, frames, lenses and diffusers shall be designed to prevent accidental falling during relamping and when secured in the operating position.
- F. Lenses, diffusers, covers and globes shall be 100 percent virgin acrylic unless specified otherwise on the Drawings. Lenses shall have 0.125 inches minimum thickness. Lenses for fluorescent troffers shall be injection molded.
- G. Luminaires shall conform to UL 1598 - *Luminaires*. Provide product with damp location listing or wet location listing as required by installation location.
- H. Light diffusers, other than those made of metal or glass, used in air-handling light fixtures shall be listed and marked "Fixture Light Diffusers for Air-Handling Fixtures."

### 2.3 INTERIOR LED LUMINAIRES

- A. For LED lighting in interior spaces, use NRTL-listed 120V or 277V luminaires with the performance characteristics listed below:
  - 1. Minimum luminaire efficacy per IES LM-79, *Approved Method: Electrical and Photometric Measurement of Solid-State Lighting Products*:
    - a. 90 lumens/watt for general lighting,
    - b. 50 lumens/watt for accent and display lighting, down-lighting, and special purpose lighting.
  - 2. Correlated color temperature (CCT) per IES LM-79 and ANSI/NEMA/ANSLG C78.377, *Specification for the Chromaticity of Solid-State Lighting (SSL) Products*:
    - a. As indicated in the fixture schedule
  - 3. LED Design life (L70): Not less than 50,000 hours per IES LM-80, *Approved Method: Measuring Lumen Maintenance of LED Light Sources*.
  - 4. Driver System Design Life: Not less than the LED design life; note that the driver system includes all associated components, not just the driver integrated circuit. Driver system design life is defined as when 2 percent of the systems would have failed.
  - 5. Power factor: 0.90 or better.
  - 6. Design ambient temperature: 35 °C (95 °F); note that this is the ambient temperature surrounding the luminaire, not the LED or driver heat-sink temperature.
  - 7. EMI/RFI: Meet FCC 47 CFR Part 15.
  - 8. Minimum dimming provisions or capability:
    - a. 0-10V dimming down to 1%.

- B. For emergency battery packs shall be factory installed, unless noted otherwise.
- C. Provide NRTL-listed luminaire disconnect assembly for each driver. Manufacturer: IDEAL "PowerPlug", Thomas & Betts "Sta-Con."

## 2.4 LUMINAIRE ACCESSORIES

- A. Provide stud supports, mounting brackets, frames, plaster rings and other accessories required for luminaire installation.
- B. Furnish hangers as specified below and as required by conditions of installation:
  - 1. Stem hangers shall be made of 1/2-inch steel tubing with 45 degrees swivel ball hanger fitting and ceiling canopy. Finish the same as the luminaire.
  - 2. Rod hangers shall be made of 1/4 inch threaded zinc-plated steel rod.
  - 3. For Highbay LED fixtures provide, power cord and locking type plug. Provide a safety chain or cable for each luminaire that will attach to the building structure, and to the reflector/diffuser assembly.
- C. Use NRTL-listed T-bar safety clips for lay-in luminaires.
- D. Where indicated on the Drawings or where lamp breakage is detrimental, such as above food counters, provide open fluorescent luminaires with:
  - 1. Self-locking sockets or lamp retainers, two per lamp, and
  - 2. Clear polycarbonate protective lamp sleeves with end caps over each lamp. Sleeve shall have a light transmission of 95 percent and shall be rated for the thermal profile of the lamp and ballast.

## 2.5 EMERGENCY LIGHTING & EXIT SIGNS

- A. Emergency LED driver
  - 1. Battery packs shall be factory installed in fixtures whenever possible.
  - 2. Non Factory installed battery packs shall be as follows:
    - a. NRTL-listed, self-diagnostic, fully automatic, battery pack in each luminaire indicated on the Drawings.
    - b. maintenance-free, sealed high-temperature nickel-cadmium or nickel-metal hydride battery with an expected service life of not less than 7 years.
    - c. Upon interruption of normal AC power, the internal controller shall automatically switch the emergency lighting load to the battery. The battery shall supply the driver with power to produce 1100 to 1400 lumens of emergency light output for a minimum of 90 minutes.
    - d. Shall have an LED charging indicator lamp and a push to test switch for installation on the luminaire at locations and positions that will be visible from the floor and operable without removing or opening luminaire lenses or covers.
    - e. Manufacturer: Bodine, IOTA, or approved equal.

**B. LED Emergency Exit Sign**

1. Furnish a NRTL-listed, self-diagnostic, fully automatic, LED illuminated emergency exit sign at each location indicated on the Drawings.
2. LED emergency exit sign shall be connectable for operation at either 120 or 277 volts and suitable for indoor dry locations with a temperature range of 32 to 104 degrees F.
3. Shall have stencil face letters, and universal mounting capability with all necessary components for each wall, ceiling, or end mounting application.
4. Shall be single face or double face with field-selectable chevron knockouts as indicated on the Drawings or as required for each location.
5. Shall have a maintenance-free battery, either nickel-cadmium or nickel-metal hydride. Battery shall be field-replaceable and shall have an expected service life of not less than 7 years.
6. Upon interruption of normal AC power, or brownout conditions exceeding a 20% drop from nominal voltage, the internal controller shall automatically switch the emergency exit sign lighting load to the battery. Emergency power will be provided for a minimum of 90 minutes. During emergency operation, the battery shall be protected from deep discharge by a low-voltage battery disconnect circuit.
7. Visibility of exit sign during normal or emergency operation shall be not less than that required in UL 924.
8. Exit sign shall provide exterior visual indication of AC power status, all self-diagnostic test cycles, and unit malfunctions including:
  - a. Battery fault
  - b. Charger fault

**PART 3 EXECUTION****3.1 EXAMINATION**

- A. Examine areas, spaces, and surfaces to receive exterior luminaire (s) or poles for compliance with installation tolerances and other conditions affecting performance of the product. Do not proceed with installation until unsatisfactory conditions have been corrected.

**3.2 INSTALLATION**

- A. Interior Lighting
  1. Install interior lighting system in accordance with the NEC, manufacturer's installation instructions, approved shop drawings, and the following NECA National Electrical Installation Standards:
    - a. NECA/IESNA 500, Recommended Practice for Installing Indoor Commercial Lighting Systems (ANSI)
  2. Have the manufacturer's installation instructions available at the Project site.

3. Mounting heights specified or indicated on the Drawings are to the bottom of the luminaire for ceiling-mounted fixtures and to the center of the luminaire for wall-mounted fixtures.
  4. Where the ceiling forms the protective membrane of a fire-resistive assembly, install protective coverings over luminaires in accordance with NRTL requirements.
  5. Install slack safety wires as described below for luminaires in or on suspended ceilings.
    - a. Wire shall be minimum 12 gauge galvanized soft annealed steel wire conforming to ASTM A641.
    - b. Attach wire to the building structure directly above the attachment point on the box or luminaire; make trapezes of framing channel material as required to span obstacles
    - c. Secure wire(s) at each end with not less than three tight turns in 1-1/2 inches.
  6. Install emergency luminaires in suspended ceilings as follows:
    - a. Fasten the four corners of each luminaire to the suspended ceiling main channels or framing members.
    - b. Use sheet metal screws or bolts to fasten luminaires above exit pathways.
    - c. Use NRTL listed clips, sheet metal screws, or bolts to fasten luminaires that are not above exit pathways.
    - d. Install two independent slack safety wires per luminaire with dimensions not exceeding 2 ft x 4 ft. Install four independent slack safety wires per luminaire with dimensions exceeding 2 ft x 4 ft. Attach wires to the luminaire not more than 6 inches from the luminaire corners.
  7. Support pendant-mounted or cable-supported luminaires directly from the structure above using a 9 gauge wire or an approved alternate support without using the ceiling suspension system for direct support.
    - a. Install seismic restraints for pendant-mounted and cable-supported luminaires.
    - b. Pendants, rods, cables, or chains 4 ft or longer shall be braced to prevent swaying using three cables at 120 degrees separation.
  8. Connect luminaires in suspended ceilings using 6 ft. lengths of flexible wiring method arranged accommodate not less than 4 inches of differential seismic movement in any direction. Refer to Section 26 0533 - Raceways and Boxes for Electrical Systems.
- B. Emergency Lighting & Exit Signs
1. Install emergency lighting system in accordance with the NEC, NECA/IESNA 500, Recommended Practice for Installing Indoor Commercial Lighting Systems

(ANSI), the manufacturer's instructions, and approved shop drawings. Have the manufacturer's installation instructions available at the construction site.

2. Mount exit signs and unit emergency lights with bottom of fixture not less than 6'-8" or more than 12'-0" above finished floor.
3. Connect each emergency power system outlet box using a minimum 2 ft length of flexible wiring method to accommodate not less than 4 inches of differential seismic movement in any direction between the outlet box and the non-flexible raceway system. Refer to Section 26 0533 - Raceways and Boxes for Electrical Systems.
4. Install slack safety wires as described below for emergency luminaires and exit signs on suspended ceilings.
  - a. Wire shall be minimum 12 gage galvanized soft annealed steel wire conforming to ASTM A641.
  - b. Attach wire to the building structure directly above the attachment point on the box or luminaire; make trapezes of framing channel material as required to span obstacles
  - c. Secure wire(s) at each end with not less than three tight turns in 1-1/2 inches.
  - d. Use connection devices at the supporting structure, outlet box, and luminaire that are capable of carrying not less than 100 pounds.
5. Install branch circuits for emergency lighting and exit signs in accordance with Article 700 of the National Electrical Code.
6. Connect unit emergency lighting equipment to a branch circuit that serves the general lighting in the area and ahead of any local or remote switches.

### 3.3 FIELD QUALITY CONTROL

- A. Make electrical connections, clean interiors and exteriors of luminaires, install lamps, energize and test luminaires, inspect interior lighting system, and deliver spare parts in accordance with manufacturer's instructions and the following NECA National Electrical Installation Standards:
  1. NECA/IESNA 500, *Recommended Practice for Installing Indoor Commercial Lighting Systems* (ANSI)
- B. Test electronic dimming drivers for full range dimming capability.
  1. Check for visually detectable flicker over the full dimming range.
- C. Provide factory certified programming and commissioning of the Lighting control systems, occupancy sensors and Daylight sensors.
- D. Aim lamps on wall-mounted emergency lighting units to obtain the following illumination of exit pathway:
  1. 1 ft-candle average
  2. 0.1 ft-candle minimum

3. Maximum-to-minimum uniformity ratio not exceeding 40 to 1.
- E. Test emergency lighting equipment in accordance with the manufacturer's instructions and NECA/IESNA 500.
- F. Inspect each installed lighting unit for damage. Replace damaged luminaires, poles, and components.
- G. Test installed luminaires for proper operation.
  1. Replace or repair malfunctioning luminaires and components then re-test.
  2. Repeat procedure until all luminaires operate properly.
- H. Replace inoperative fixtures.

### **3.4 ADJUSTING AND CLEANING**

- A. Clean each luminaire inside and out, including plastics and glassware. Use methods and materials recommended by manufacturer.
- B. Aim adjustable luminaires to provide required light intensities as indicated on the Drawings.

END OF SECTION



# **DIVISION 31: EARTHWORK**

## **31 0500 COMMON WORK RESULTS FOR EARTHWORK**

31 0501 COMMON EARTHWORK REQUIREMENTS

## **31 1000 SITE CLEARING**

31 1123 AGGREGATE BASE

## **31 2000 EARTH MOVING**

31 2213 ROUGH GRADING

31 2316 EXCAVATION

31 2323 FILL

END OF TABLE OF CONTENTS

**SECTION 31 0501****COMMON EARTHWORK REQUIREMENTS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited to:
  - 1. General procedures and requirements for earthwork.
- B. Related Requirements:
  - 1. Pre-Installation conferences held jointly with Section 31 0501 as described in Administrative Requirements on Part 1 of this specification section:

**1.2 REFERENCES**

- A. Definitions:
  - 1. Aggregate Base: Layer of granular material immediately below concrete and asphalt paving or miscellaneous site concrete (sidewalks, curbs, etc) and below interior concrete slabs on grade.
  - 2. Base: See aggregate base.
  - 3. Building Grading: sloping of grounds immediately adjacent to building. Proper grading causes water to flow away from a structure. Grading can be accomplished either with machinery or by hand.
  - 4. Compacted Fill: Placement of soils on building site placed and compacted per Contract Documents. Used to replace soils removed during excavation or to fill in low spot on building site.
  - 5. Excavation: Removal of soil from project site or cavity formed by cutting, digging or scooping on project site.
  - 6. Fine Grading (FG): Preparation of subgrade preceding placement of surfacing materials (aggregate base, asphalt or concrete paving, and topsoil) for contour of building site required. Fine Grading is conducted to ensure that earth forms and surfaces have been properly shaped and subgrade has been brought to correct elevations. It is performed after rough grading and placement of compacted fill but before placement of aggregate base or topsoil.
  - 7. Finish Grading: Completed surface elevation of landscaping areas for seeding, sodding, and planting on building site.
  - 8. Natural Grade: Undisturbed natural surface of ground.
  - 9. Rough Grading (RG): Grading, leveling, moving, removal and placement of existing or imported soil to its generally required location and elevation. Cut and fill is part of rough grading.
  - 10. Subgrade (definition varies depending upon stage of construction and context of work being performed):
    - a. Prepared natural soils on which fill, aggregate base, or topsoil is placed.
    - or
    - b. Prepared soils immediately beneath paving or topsoil.
  - 11. Topsoil Placement and Grading: Topsoil placement and finish grading work required to prepare site for installation of landscaping.

**1.3 ADMINISTRATIVE REQUIREMENTS**

- A. Pre-Installation Conference:
  - 1. Participate in MANDATORY pre-installation conference for common earthwork sections:
    - a. Schedule conference after completion of site clearing but before beginning grading work.
    - b. Participate in pre-installation conference held jointly with following sections:
      - 1) Section 03 3111: 'Cast-In-Place Structural Concrete'.
      - 2) Section 31 1123: 'Aggregate Base'.
      - 3) Section 31 1413: 'Topsoil Stripping and Stockpiling'.

- 4) Section 31 2213: 'Rough Grading'.
  - 5) Section 31 2316: 'Excavation'.
  - 6) Section 31 2323: 'Fill'.
- c. In addition to agenda items specified in Section 01 3100, review following:
- 1) Review common earthwork schedule.
  - 2) Review protection requirements.
  - 3) Review cleaning requirements.
  - 4) Review safety issues.
  - 5) Review field tests and inspections requirements.

#### 1.4 QUALITY ASSURANCE

- A. Testing And Inspection:
1. Owner is responsible for Quality Assurance. Quality assurance performed by Owner will be used to validate Quality Control performed by Contractor.
    - a. Owner will employ testing agencies to perform testing and inspection as specified in Field Quality Control in Part 3 of this specification:
      - 1) Owner's employment of an independent Testing Agency does not relieve Contractor of Contractor's obligation to perform the Work in strict accordance with requirements of Contract Documents and perform contractor testing and inspection.

#### PART 2 - PRODUCTS: Not Used

#### PART 3 - EXECUTION

##### 3.1 PREPARATION

- A. Protection:
1. Spillage:
    - a. Avoid spillage by covering and securing loads when hauling on or adjacent to public streets or highways.
    - b. Remove spillage and sweep, wash, or otherwise clean project, streets, and highways.
  2. Dust Control:
    - a. Take precautions necessary to prevent dust nuisance, both on-site and adjacent to public and private properties.
    - b. Correct or repair damage caused by dust.
  3. Existing Plants And Features:
    - a. Do not damage plants and features that are to remain.

##### 3.2 FIELD QUALITY CONTROL

- A. Field Tests And Inspections:
1. Civil and structural field tests, laboratory testing, and inspections are provided by Owner's independent Testing Agency as specified in Section 01 4523 'Testing And Inspection Services':
    - a. Quality Control is sole responsibility of Contractor. Owner's employment of an independent Testing Agency does not relieve Contractor of Contractor's obligation to perform The Work or Contractors own Testing and Inspection services.
  2. Testing and inspection of earthwork operations is required.
  3. Field Tests and Laboratory Tests:
    - a. Owner reserves right to require additional testing to re-affirm suitability of completed work including compacted soils that have been exposed to adverse weather conditions.
  4. Field Inspections:
    - a. Notify Architect forty-eight (48) hours before performing excavation or fill work.

- b. If weather, scheduling, or any other circumstance has interrupted work, notify Architect twenty-four (24) hours minimum before intended resumption of grading or compacting.
- B. Non-Conforming Work:
- 1. If specified protection precautions are not taken or corrections and repairs not made promptly, Owner may take such steps as may be deemed necessary and deduct costs of such from monies due to Contractor. Such action or lack of action on Owner's part does not relieve Contractor from responsibility for proper protection of The Work.

**END OF SECTION**

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**SECTION 31 1123****AGGREGATE BASE****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
1. Furnish and install the following as described in Contract Documents:
    - a. Aggregate Base:
      - 1) Interior concrete slabs-on-grade.
- B. Related Requirements:
1. Section 01 1200: 'Multiple Contract Summary' for multiple contracts.
  2. Section 01 4523: 'Testing and Inspecting Services' for testing and inspection, and testing laboratory services for materials, products, and construction methods.

**EDIT REQUIRED:** Include following paragraph when Section 03 3111 'Cast-In-Place Structural Concrete' is included in Project.

3. Section 03 3111: 'Cast-In-Place Structural Concrete'.
4. Section 31 0501: 'Common Earthwork Requirements':
  - a. General procedures and requirements for earthwork.
  - b. Pre-installation conference held jointly with other common earthwork related sections.
5. Section 31 2323: 'Fill' for compaction procedures and tolerances.

**1.2 REFERENCES**

- A. Reference Standards:
1. ASTM International:
    - a. ASTM C131/C131M-14, 'Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine'.
    - b. ASTM D1556/D1556M-15, 'Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method'.
    - c. ASTM D1557-12, 'Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>))'.
    - d. ASTM D1883-16, 'Standard Test Method for California Bearing Ratio (CBR) of Laboratory-Compacted Soils'.
    - e. ASTM D2167-15, 'Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method'.
    - f. ASTM D2419-14, 'Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate'.
    - g. ASTM D4318-17, 'Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils'.
    - h. ASTM D6938-17, 'Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)'.
    - i. ASTM E1643-18a, 'Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs'.

**1.3 ADMINISTRATIVE REQUIREMENTS**

- A. Pre-Installation Conferences:
1. Participate in MANADORY pre-installation conference as specified in Section 31 0501.
  2. In addition to agenda items specified in Section 01 3100 and Section 31 0501, review following:

- a. Review requirements and frequency of testing and inspections.
  - b. Review aggregate base installation requirements.
  - c. Review vapor retarder installation requirements.
  - d. Review Section 01 4523 for Testing and Inspection administrative requirements and responsibilities and Field Quality Control tests and inspections required of this section.
    - 1) Review frequency of testing and inspections.
- B. Sequencing:
- 1. Vapor Retarder below interior concrete slabs on grade:
    - a. Install below-grade vapor retarder on top of aggregate base.
  - 2. Aggregate Base:
    - a. Install aggregate base at location shown in Contract Drawings.
  - 3. Concrete Slab is installed.
- C. Scheduling:
- 1. Interior slab-on-grade concrete:
    - a. Notify Architect twenty-four (24) hours minimum before installation of concrete to allow inspection of vapor retarder installation.
    - b. Notify Testing Agency and Architect twenty-four (24) hours minimum before installation of interior concrete slabs to allow inspection of aggregate base.
    - c. Allow special inspector to review all sub grades and excavations to determine if building pad has been prepared in accordance with geotechnical report prior to placing any aggregate base.

#### 1.4 SUBMITTALS

- A. Closeout Submittals:
- 1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
    - a. Record Documentation:
      - 1) Testing and Inspection Reports:
        - a) Testing Agency Testing and Inspecting Reports of aggregate base.

#### 1.5 QUALITY ASSURANCE

- A. Testing And Inspection:
- 1. Owner will provide Testing and Inspection for aggregate base:
    - a. Owner is responsible for Quality Assurance. Quality assurance performed by Owner will be used to validate Quality Control performed by Contractor.
    - b. Owner will employ testing agencies to perform testing and inspection for aggregate base as specified in Field Quality Control in Part 3 of this specification.
      - 1) Owner's employment of an independent Testing Agency does not relieve Contractor of Contractor's obligation to perform the Work in strict accordance with requirements of Contract Documents and perform contractor testing and inspection.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery And Acceptance Requirements:
- 1. Materials shall be delivered in original, unopened packages with labels intact.

#### 1.7 FIELD CONDITIONS

- A. Ambient Conditions:
- 1. Do not perform work during unfavorable conditions as specified below:
    - a. Aggregate Base:
      - 1) Presence of free surface water.

- 2) Over-saturated sub base materials.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. Aggregate Base:
  - 1. Under Interior Slab-On-Grade Concrete (Section 03 3111 'Cast-In-Place Structural Concrete'):
    - a. New Aggregate Base:
      - 1) Gravel: 3/4 inch 18mm minimum to one inch 25 mm maximum well-graded, clean gravel or crushed rock.
      - 2) Base type gravel or crushed rock, graded by weight as follows (three-quarter to one-inch clean gap-graded gravel):
        - a) Road Base type gravel or crushed stone (slag not allowed), graded as follows:
 

(1) Sieve			Percent of Weight Passing
(a) 1 inch	(25.4 mm)		100
(b) 3/4 inch	(19.0 mm)		90 - 80
(c) 1/2 inch	(12.7 mm)		20 - 40
(d) 3/8 inch	(9.5 mm)		5 - 10
(e) No. 4	(4.750 mm)		0 - 12

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Stockpiles:
  - 1. Provide area for each stockpile of adequate size, reasonably uniform in cross-section, well drained, and cleared of foreign materials.
  - 2. Locate piles so that there is no contamination by foreign material and no intermingling of aggregates from adjacent piles. Do not use steel-tracked equipment on stockpiles.
  - 3. Do not store aggregates from different sources, geological classifications, or of different gradings in stockpiles near each other unless bulkhead is placed between different materials.
  - 4. Do not use washed aggregates sooner than twenty-four (24) hours after washing or until surplus water has drained out and material has uniform moisture content.
  - 5. Do not stockpile higher than 15 feet (4.57 m). Cover or otherwise protect stockpiles for use in HMA to prevent buildup of moisture.
- B. Surface Preparation (Interior Slab-On-Grade Concrete):
  - 1. Vapor Retarder:
    - a. Install vapor retarder in accordance with ASTM E1643 except where Contract Documents indicate otherwise and following instructions:
      - 1) Install vapor retarder over aggregate base over compacted subgrade so entire area under slab is covered.
      - 2) Install vapor retarder in accordance with ASTM E1643 at interior stem walls.
      - 3) Lap joints 6 inches (150 mm) minimum and seal with specified seam tape.
      - 4) Seal vapor retarder around pipes, conduits, and other utility items that penetrate vapor retarder using factory-fabricated boot installed as recommended by Manufacturer.
      - 5) Except for punctures required for reinforcing and anchor bolts at top of stem walls, seal tears and punctures.

**3.2 INSTALLATION**

- A. Aggregate Base:
  - 1. General:



- a. Do not place aggregate base material when subgrade is frozen or unstable.
  - b. Spread aggregate base material with equipment except in limited or restricted areas where use of hand spreading is allowed.
  - c. Spread aggregate base material in manner that does not break down material and eliminates segregation, ruts, and ridges.
  - d. Correct damage to aggregate base caused by construction activities and maintain corrected aggregate base until subsequent course is placed.
  - e. Do not allow traffic on aggregate base.
  - f. Remove all standing storm water.
2. Under interior concrete slab-on-grade aggregate base:
    - a. Place **4 inches (100 mm)** minimum of aggregate base under vapor retarder, level, and compact with vibratory plate compactor.

### 3.3 FIELD QUALITY CONTROL

#### A. Field Tests And Inspections:

1. Civil and structural field tests, laboratory testing, and inspections are provided by Owner's independent Testing Agency as specified in Section 01 4523 'Testing And Inspection Services':
  - a. Quality Control is sole responsibility of Contractor.
    - 1) Owner's employment of an independent Testing Agency does not relieve Contractor of Contractor's obligation to perform testing and inspection as part of his Quality Control:
      - a) Testing and inspections, if performed by Contractor, will be responsibility of Contractor to be performed by an independent entity.
2. Aggregate Base:
  - a. Interior slab-on-grade concrete areas:
    - 1) Testing Agency shall provide testing and inspection for interior aggregate base.
    - 2) Number of tests may vary at discretion of Architect.
    - 3) Testing Agency will test compaction of base in place according to ASTM D1556/D1556M, ASTM D2167, and ASTM D6938, as applicable. Tests will be performed at following frequency:
      - a) Building Slab Areas: One test for every **2,500 sq. ft. (232 sq. m)** or less of building slab area but no fewer than three tests.

### 3.4 PROTECTION

#### A. Interior Slab-On-Grade Concrete:

1. Vapor Retarder:
  - a. Do not allow water onto vapor retarder or aggregate base before placing concrete.
  - b. Protect membrane from possible punctures caused by reinforcing bar supports before placing concrete.

**END OF SECTION**

**SECTION 31 2213**

**ROUGH GRADING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Perform rough grading work required to prepare site for construction as described in Contract Documents.
- B. Related Requirements:
  - 1. Section 01 3100: 'Project Management and Coordination' for pre-installation conference.
  - 2. Section 31 0501: 'Common Earthwork Requirements' for:
    - a. General procedures and requirements for earthwork.
    - b. Pre-installation conference held jointly with other common earthwork related sections.
  - 3. Section 31 1123: 'Aggregate Base' for aggregate base requirements.
  - 4. Section 31 2316: 'Excavation'.
  - 5. Section 31 2323: 'Fill' for compaction procedures and tolerances for base.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Pre-Installation Conference:
  - 1. Participate in MANDATORY pre-installation conference as specified in Section 31 0501:
  - 2. In addition to agenda items specified in Section 01 3100 and Section 31 0501, review following:
    - a. Identify benchmark to be used in establishing grades and review Contract Document requirements for grades, fill materials, and topsoil.
    - b. Examine site to pre-plan procedures for making cuts, placing fills, and other necessary work.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. Materials used for fill shall be as specified for backfill in Section 31 2323 'Fill'.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Verification Of Conditions:
  - 1. Verify elevations of rough grading are correct before compacted fill, fine grading, aggregate base are placed.

**3.2 PERFORMANCE**

- A. Subgrade (Natural Soils):
  - 1. Subgrade beneath compacted fill or aggregate base under asphalt or concrete paving shall be constructed smooth and even.
- B. Special Techniques:

1. Compact fills as specified in Section 31 2323 'Fill'.
  2. If soft spots, water, or other unusual and unforeseen conditions affecting grading requirements are encountered, stop work and notify Architect.
- C. Tolerances:
1. Maximum variation from required grades shall be **1/10 of one foot (28 mm)**.

**END OF SECTION**

**SECTION 31 2316**

**EXCAVATION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Perform Project excavating as described in Contract Documents, except as specified below.
  
- B. Related Requirements:
  - 1. Section 31 0501: 'Common Earthwork Requirements' for:
    - a. General procedures and requirements for earthwork.
    - b. Pre-installation conference held jointly with other common earthwork related sections.
  - 2. Section 31 1123: 'Aggregate Base'.
  - 3. Section 31 2213: 'Rough Grading' for rough grading and preparation of natural soil subgrades below fill and aggregate base materials.
  - 4. Section 31 2323: 'Fill' for compaction procedures and tolerances for base.

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Pre-Installation Conference:
  - 1. Participate in MANDATORY pre-installation conference as specified in Section 31 0501:
  - 2. In addition to agenda items specified in Section 01 3100 and Section 31 0501, review following:
    - a. Review protection of existing utilities requirements.

**PART 2 - PRODUCTS: Not Used**

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Verification Of Conditions:
  - 1. Carefully examine site and available information to determine type soil to be encountered.
  - 2. Discuss problems with Architect before proceeding with work.

**3.2 PREPARATION**

- A. Protection of Existing Utilities:
  - 1. If existing utility lines not identified in Contract Documents are encountered, contact Architect before proceeding.

**3.3 PERFORMANCE**

- A. Interface With Other Work:
  - 1. Section 31 2213: 'Rough Grading' for rough grading and preparation of natural soil subgrades below fill and aggregate base materials.
  
- B. Excavation:
  - 1. Building Footings And Foundations:

- a. Under Building:
  - 1) Excavate as necessary for proper placement and forming of footings and foundations.
- b. Bottom of excavations to receive footings shall be undisturbed soil.
- c. Excavation Carried Deeper Than Required:
  - 1) Under Footings: Fill with concrete specified for footings.
  - 2) Under Slabs: Use specified compacted backfill material.
- 2. If unusual excavating conditions are encountered, stop work and notify Architect.

**3.4 REPAIR / RESTORATION**

- A. Repair damage to other portions of the Work resulting from work of this Section at no additional cost to Owner. On new work, arrange for damage to be repaired by original installer.

**3.5 CLEANING**

- A. Debris and material not necessary for Project are property of Contractor and are to be removed before completion of Project. However, if material necessary for Project is hauled away, replace with specified fill / backfill material.

**END OF SECTION**

**SECTION 31 2323****FILL****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
1. Perform Project backfilling and compacting as described in Contract Documents, except as specified below.
  2. Procedure and quality for backfilling and compacting performed on Project under other Sections unless specifically specified otherwise.
- B. Related Requirements:
1. Section 01 1200: 'Multiple Contract Summary' for multiple contracts.
  2. Section 01 4523: 'Testing and Inspecting Services' for testing and inspection, and testing laboratory services for materials, products, and construction methods.
  3. Section 31 0501: 'Common Earthwork Requirements' for:
    - a. General procedures and requirements for earthwork.
    - b. Pre-installation conference held jointly with other common earthwork related sections.
  4. Section 31 1100: 'Clearing and Grubbing'.
  5. Section 31 1123: 'Aggregate Base' for aggregate base requirements.
  6. Section 31 1413: 'Topsoil Stripping And Stockpiling' for stripping and storing of existing topsoil.
  7. Section 31 2213: 'Rough Grading' for grading and preparation of natural soil subgrades below fill and aggregate base materials.
  8. Section 31 2216: 'Fine Grading' for grading of subgrade below aggregate base and topsoil.
  9. Section 31 2316: 'Excavation'.
  10. Section 31 2324: 'Flowable Fill'.
  11. Section 32 9120: 'Topsoil And Placement' for topsoil evaluation and placement required for topsoil grading.
  12. Section 32 9121: 'Topsoil Physical Preparation' for physical preparation of topsoil (section included based on Topsoil Testing Report).
  13. Section 32 9122: 'Topsoil Grading' for preparation of topsoil and addition of amendments prior to landscaping.
  14. Division 32: Compaction of subgrade under walks and paving.
  15. Performance of backfilling and compacting inside and outside of building required for electrical and mechanical work is responsibility of respective Section doing work unless arranged differently by Contractor.

**1.2 REFERENCES**

- A. Reference Standards:
1. ASTM International (Following are specifically referenced for fill and aggregate base testing):
    - a. ASTM D698-12, 'Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>))'.
    - b. ASTM D1556/D1556M-15, 'Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method'.
    - c. ASTM D1557-12, 'Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>))'.
    - d. ASTM D2167-15, 'Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method'.
    - e. ASTM D2487-17, 'Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)'.
    - f. ASTM D6938-17a, 'Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)'.

### 1.3 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conferences:
  - 1. Participate in MANDATORY pre-installation conference as specified in Section 31 0501.
  - 2. In addition to agenda items specified in Section 01 3100, Section 31 0501, and Section 31 2324 if Flowable Fill is included, review following:
    - a. Review backfill requirements.
    - b. Review Section 01 4523 for Testing and Inspection administrative requirements and responsibilities and Field Quality Control tests and inspections required of this section.
      - 1) Review requirements and frequency of testing and inspections.
- B. Scheduling:
  - 1. Notify Testing Agency and Architect seventy-two (72) hours minimum before installation of fill / engineered fill to perform proctor and plasticity index tests on proposed fill or subgrade.
  - 2. Notify Testing Agency and Architect twenty-four (24) hours minimum before installation of fill / engineered fill to allow inspection.
  - 3. Allow special inspector to review all subgrades and excavations to determine if site has been prepared in accordance with geotechnical report prior to placing any fill (or concrete).
  - 4. Allow inspection and testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after inspections and test results for previously compacted work comply with requirements.

### 1.4 SUBMITTALS

- A. Closeout Submittals:
  - 1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
    - a. Record Documentation:
      - 1) Testing and Inspection Reports:
        - a) Testing Agency Testing and Inspecting Reports of fill / engineered fill.

### 1.5 QUALITY ASSURANCE

- A. Testing and Inspection:
  - 1. Owner is responsible for Quality Assurance. Quality assurance performed by Owner will be used to validate Quality Control performed by Contractor.
  - 2. Owner will provide Testing and Inspection for fill / engineering fill:
    - a. Owner will employ testing agencies to perform testing and inspection for fill / engineering fill as specified in Field Quality Control in Part 3 of this specification.
      - 1) Owner's employment of an independent Testing Agency does not relieve Contractor of Contractor's obligation to perform the Work in strict accordance with requirements of Contract Documents and perform contractor testing and inspection.
      - 2) See Section 01 1200: 'Multiple Contract Summary'.

### 1.6 FIELD CONDITIONS

- A. Ambient Conditions:
  - 1. Do not perform work during unfavorable conditions as specified below:
    - a. Aggregate Base:
      - 1) Presence of free surface water.
      - 2) Over-saturated sub base materials.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Site Material:
  - 1. Existing excavated material on site is suitable for use as fill and backfill to meet Project requirements.
- B. Imported Fill / Backfill:
  - 1. Well graded material conforming to ASTM D2487 free from debris, organic material, frozen materials, brick, lime, concrete, and other material which would prevent adequate performance of backfill.
    - a. Under Building Footprint: Fill shall comply with soil classification groups GW, CL, GP, GM, SW, SP, or SM. Fill may not contain stones over **6 inches (150 mm)** diameter and ninety-five (95) percent minimum of fill shall be smaller than **1-1/2 inch (38 mm)** in any direction.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Before placing fill, aggregate base, or finish work, prepare existing subgrade as follows:
  - 1. Do not place fill or aggregate base over frozen subgrade.

### 3.2 PERFORMANCE

- A. Interface With Other Work:
  - 1. Section 31 2213: 'Rough Grading' for rough grading and preparation of natural soil subgrades below fill and aggregate base materials.
- B. Fill / Backfill:
  - 1. Compacting:
    - a. Fill / Backfill And Aggregate Base:
      - 1) All fill material shall be well-graded granular material with maximum size less than **3 inch (76 mm)** and with not more than fifteen (15) percent passing No. 200 sieve.
      - 2) Under Building Slab:
        - a) Place in **8 inch (200 mm)** maximum layers, moisture condition to plus or minus two (2) percent of optimum moisture content, and mechanically tamp to ninety five (95) percent minimum of maximum laboratory density as established by ASTM D1557.
        - b) Under Slabs:
          - (1) Under Slabs: Place fill in **6 inch (150 mm)** layers, moisture condition to plus or minus two (2) percent of optimum moisture content, and compact to ninety five (95) percent minimum relative compaction to within **4 inches (100 mm)** of finish grade.
          - (2) Final **4 inches (100 mm)** of fill shall be aggregate base as specified in Section 31 1123.
      - 3) Other Backfills: Place other fills in **12 inch (300 mm)** layers and compact to ninety five (95) percent relative compaction.
      - 4) Loose material from compacted subgrade surface shall be immediately removed before placing compacted fill or aggregate base course.



### 3.3 REPAIR / RESTORATION

- A. Repair damage to other portions of the Work resulting from work of this Section at no additional cost to Owner. On new work, arrange for damage to be repaired by original installer.

### 3.4 FIELD QUALITY CONTROL

- A. Field Tests and Inspections:
1. Civil and structural field tests, laboratory testing, and inspections are provided by Owner's independent Testing Agency as specified in Section 01 4523 'Testing And Inspection Services':
    - a. Quality Control is sole responsibility of Contractor:
      - 1) Owner's employment of an independent Testing Agency does not relieve Contractor of Contractor's obligation to perform testing and inspection as part of his Quality Control:
        - a) Testing and inspections, if performed by Contractor, will be responsibility of Contractor to be performed by an independent entity.
  2. Fill / Engineered Fill:
    - a. Testing Agency shall provide testing and inspection for fill.
    - b. Number of tests may vary at discretion of Architect.
    - c. Testing Agency is to provide one (1) moisture-maximum density relationship test for each type of fill material.
    - d. Prior to placement of engineered fill, inspector shall determine that site has been prepared in accordance with geotechnical report.
    - e. Footing subgrade: At footing subgrades Certified Inspector is to verify that soils conform to geotechnical report.
    - f. Testing Agency will test compaction of soils according to ASTM D1556/D1556M, ASTM D2167, and ASTM D6938, as applicable. Lift thicknesses shall comply with geotechnical report. Inspector shall determine that in-place dry density of engineered fill material complies with geotechnical report. Tests will be performed at following locations and frequencies:
      - 1) Building Slab Areas: At each compacted fill and backfill layer, at least on test for every **2,500 sq. ft. (232 sq. m)** or less of building slab area but in no case less than three (3) tests.
      - 2) Foundation Wall/Continuous Footing Backfill: At each compacted backfill layer, at least one (1) test for each **40 linear feet (12 linear m)** or less of wall length, but no fewer than two (2) tests.
    - g. Required verification and inspection of soils as referenced in 2015 IBC (or latest approved edition) Table 1704.7 'Required Verification And Inspection Of Soils'. Periodic and continuous inspections include:
      - 1) Verify materials below shallow foundations are adequate to achieve design bearing capacity (periodic).
      - 2) Verify excavations are extended to proper depth and have reached proper material (periodic).
      - 3) Perform classification and testing of compacted fill materials (periodic).
      - 4) Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill (continuous).
      - 5) Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly (periodic).

### 3.5 CLEANING

- A. Debris and material not necessary for Project are property of Contractor and are to be removed before completion of Project. However, if material necessary for Project is hauled away, replace with specified fill / backfill material.

**END OF SECTION**