

Addendum No. 01

Date:	January 16, 2019
Project Name:	Ho-Chunk Gaming Wisconsin Dells Hotel Renovations S3214 County Road BD Baraboo, Wisconsin 53913
Project Number:	18-22107
Bid Date:	To be determined by Owner
Architect/Engineer:	ISG 201 Main Street Suite 1020 La Crosse, Wisconsin 54601

The following items shall be appended to and become a part of the plans and specification for the above reference project and shall supersede any conflicting provisions of these documents.

Clarifications

1. Bidding and Construction Schedule

- A. All dates on the Bidding and Construction schedule will be at a date and time selected by the Owner.

Refer to Project Manual

1. Refer to revised Section 00 1113 – Invitation to Bid

- A. Sealed Prime General Contract bids will be received by the Owner.

2. Refer to revised Section 00 4100 – Bid Form

- A. Add Alternate No. 3: All work associated with Suite 1401 and adjacent King Room 1308 shall be completed per the contract documents (Base Bid: Exclude all scope of work associated with Suite 1401 and adjacent existing King Room 1308).

Attachments

1. Revised Sections 00 1113 and 00 4100.

End of Addendum No. 1

Addendum No. 02

Date:	March 26, 2019
Project Name:	Ho-Chunk Gaming Wisconsin Dells Hotel Renovations S3214 County Road BD Baraboo, Wisconsin 53913
Project Number:	18-22107
Bid Date:	To be determined by Owner
Architect/Engineer:	ISG 201 Main Street Suite 1020 La Crosse, Wisconsin 54601

The following items shall be appended to and become a part of the plans and specification for the above reference project and shall supersede any conflicting provisions of these documents.

Refer to Project Manual

1. Refer to Section 00 7200 – General Conditions
 - A. Omit AIA Document A201-2017 – General Conditions of the Contract for Construction

Attachments

1. Revised Project Manual

End of Addendum No. 2

HO-CHUNK GAMING WISCONSIN DELLS

BARABOO, WISCONSIN

Project Manual for: HOTEL RENOVATIONS

ISSUE DATE 01/07/2019

Owner:

Ho-Chunk Gaming Wisconsin Dells
Kenneth Stonefish
S3214 County Road BD
Baraboo, Wisconsin 53913
Phone Number: 608.356.6210

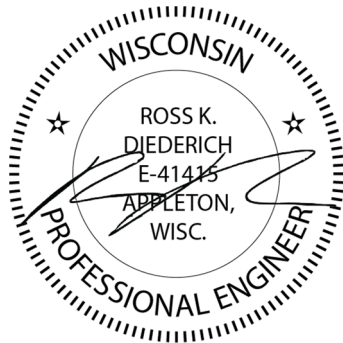
Date: January 07, 2019
Project Number: 18-22107



ISG

SECTION 00 0105
CERTIFICATIONS PAGE

HO-CHUNK GAMING WISCONSIN DELLS
HOTEL RENOVATIONS
BARABOO, WISCONSIN
ISG NO. 18-22107



DATED THE 7TH DAY OF JANUARY, 2019
END OF SECTION

ISSUE DATE 01/07/2019

**SECTION 00 0110
TABLE OF CONTENTS**

PROCUREMENT AND CONTRACTING REQUIREMENTS

1.01 DIVISION 00 -- PROCUREMENT AND CONTRACTING REQUIREMENTS

- A. 00 0000 - Project Manual Cover
- B. 00 0105 - Certifications Page
- C. 00 0110 - Table of Contents
- D. 00 2113 - Instructions to Bidders
- ~~E. 00 7200 - General Conditions~~
 - ~~1. Attachment -- AIA Document A201, 2017 Edition~~
- F. 00 7300 - Supplementary Conditions

SPECIFICATIONS

2.01 DIVISION 01 -- GENERAL REQUIREMENTS

- A. 01 2000 - Price and Payment Procedures
- B. 01 3000 - Administrative Requirements
 - 1. Attachment -- Shop Drawing Submittal Form
 - 2. Attachment -- Requirements for Electronically Submitted Shop Drawings
- C. 01 4000 - Quality Requirements
- D. 01 5000 - Temporary Facilities and Controls
- E. 01 6000 - Product Requirements
 - 1. Attachment -- Substitution Request Form
- F. 01 7000 - Execution and Closeout Requirements
- G. 01 7800 - Closeout Submittals

2.02 DIVISION 02 -- EXISTING CONDITIONS

2.03 DIVISION 03 -- CONCRETE

- A. 03 3000 - Cast-in-Place Concrete

2.04 DIVISION 04 -- MASONRY

2.05 DIVISION 05 -- METALS

2.06 DIVISION 06 -- WOOD, PLASTICS, AND COMPOSITES

- A. 06 1000 - Rough Carpentry
- B. 06 2000 - Finish Carpentry
- C. 06 4100 - Architectural Wood Casework

2.07 DIVISION 07 -- THERMAL AND MOISTURE PROTECTION

- A. 07 8400 - Firestopping
- B. 07 9200 - Joint Sealants

2.08 DIVISION 08 -- OPENINGS

- A. 08 1213 - Hollow Metal Frames
- B. 08 1416 - Flush Wood Doors
- C. 08 7100 - Door Hardware

2.09 DIVISION 09 -- FINISHES

- A. 09 0561 - Common Work Results for Flooring Preparation
- B. 09 2116 - Gypsum Board Assemblies
- C. 09 3000 - Tiling
- D. 09 6813 - Tile Carpeting

- E. 09 9123 - Interior Painting
- 2.10 DIVISION 10 -- SPECIALTIES**
 - A. 10 2601 - Wall and Corner Guards
 - B. 10 2800 - Toilet, Bath, and Laundry Accessories
 - C. 10 3100 - Manufactured Fireplaces
- 2.11 DIVISION 11 -- EQUIPMENT**
- 2.12 DIVISION 12 -- FURNISHINGS**
 - A. 12 3600 - Countertops
- 2.13 DIVISION 13 -- SPECIAL CONSTRUCTION**
- 2.14 DIVISION 14 -- CONVEYING EQUIPMENT**
- 2.15 DIVISION 21 -- FIRE SUPPRESSION**
- 2.16 DIVISION 22 -- PLUMBING**
 - A. 22 0719 - Plumbing Piping Insulation
 - B. 22 1005 - Plumbing Piping
 - C. 22 4000 - Plumbing Fixtures
- 2.17 DIVISION 23 -- HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)**
 - A. 23 3700 - Air Outlets and Inlets
- 2.18 DIVISION 26 -- ELECTRICAL**
- 2.19 DIVISION 27 -- COMMUNICATIONS**
 - A. 27 5121 - Biophilic Audio-Visual Environmental Systems
- 2.20 DIVISION 28 -- ELECTRONIC SAFETY AND SECURITY**
- 2.21 DIVISION 31 -- EARTHWORK**
- 2.22 DIVISION 32 -- EXTERIOR IMPROVEMENTS**
- 2.23 DIVISION 33 -- UTILITIES**

END OF SECTION

ISSUE DATE 01/07/2019

**SECTION 00 1113
INVITATION TO BID**

**HO-CHUNK GAMING WISCONSIN DELLS
HOTEL RENOVATIONS
BARABOO, WISCONSIN
ISG NO. 18-22107**

Sealed Prime General Contract bids for Ho-Chunk Gaming Wisconsin Dells Hotel Renovations will be received by the Architect at the office of the Architect, 201 Main Street, Suite 1020, La Crosse, Wisconsin 54601 by mail or personal delivery until Tuesday, January 29, 2019 at 2:00 p.m. at which date and time the bids will be opened and read privately.

A prebid conference will be held Tuesday, January 15, 2018 at 2:00 p.m. at the location of the Work.

Project Scope: Selective demolition and construction of interior hotel renovations and other Work indicated in the drawings and specifications.

Bidders shall submit their proposal on the forms provided. Proposal shall be filled in clearly and correctly with ink or other permanent format. Proposal shall be signed in ink by the individual, members of the partnership, or by one or more officers of the corporation making the proposal.

All bids shall be sealed in an opaque envelope upon which shall be plainly marked "BID ON HO-CHUNK GAMING WISCONSIN DELLS HOTEL RENOVATIONS – BARABOO, WISCONSIN" and the name of the bidder. If a bid is to be mailed, the bid envelope shall be sealed in a regular mailing envelope. FAX and E-mail Bids will not be accepted. The Owner reserves the right to hold and consider the bids for 30 days after the date of the bid opening. Bids shall be accompanied by a cashiers check, bidder's bond, or certified check payable to HO-CHUNK GAMING for not less than five percent (5%) of the amount of such bid including add-alternates. A bidder's bond shall include certified copy of the power of attorney.

The right to waive any informality in any bid and reject any or all bids is reserved to the Owner.
Dated the 7th day of January, 2018.

END OF SECTION

SECTION 00 2113
INSTRUCTIONS TO BIDDERS

SUMMARY

1.01 DOCUMENT INCLUDES

- A. Invitation
 - 1. Bid Submission
 - 2. Contract Time
- B. Bid Documents and Contract Documents
 - 1. Definitions
 - 2. Contract Documents Identification
 - 3. Availability
 - 4. Examination
 - 5. Creating a level bidding environment
 - 6. Inquiries/Addenda
 - 7. Product/Assembly/System Substitutions
- C. Site Assessment
 - 1. Site Examination
 - 2. Prebid Conference
- D. Qualifications
 - 1. Subcontractors/Suppliers/Others
- E. Bid Submission
 - 1. Submission Procedure
 - 2. Bid Ineligibility
- F. Bid Enclosures/Requirements
 - 1. Security Deposit
 - 2. Performance Assurance
 - 3. Bid Form Requirements
 - 4. Bid Form Signature
 - 5. Additional Bid Information
 - 6. Permits, Fees, and Utility Costs
- G. Offer Acceptance/Rejection
 - 1. Duration of Offer
 - 2. Acceptance of Offer

1.02 RELATED DOCUMENTS

- A. Document 00 7300 - Supplementary Conditions:

ADVERTISEMENT

2.01 BID SUBMISSION

- A. Refer to Section 00 1113 for bid submission information.
- B. Offers submitted after the time indicated in Section 00 1113 shall be returned to the bidder unopened.
- C. Offers will be opened immediately after the time for receipt of bids as indicated in section 00 1113.

2.02 CONTRACT TIME

- A. Perform the Work within the time stated in Document 00 7300 - Supplementary Conditions.

BID DOCUMENTS AND CONTRACT DOCUMENTS

3.01 DEFINITIONS

- A. Bid Documents: Contract Documents supplemented with Advertisement for Bids Instructions to Bidders, Bid Form Bid securities identified.
- B. Contract Documents: Defined in AIA A201 Article 1 including issued Addenda.
- C. Bid, Offer, or Bidding: Act of submitting an offer under seal.

D. Bid Amount: Monetary sum identified by the Bidder in the Bid Form.

3.02 CONTRACT DOCUMENTS IDENTIFICATION

A. The Contract Documents are identified as Project Number 18-22107 with contents as identified in the Table of Contents of the drawings and specifications.

3.03 AVAILABILITY

A. Bid Documents are made available only for the purpose of obtaining offers for this project. Their use does not grant a license for other purposes.

3.04 EXAMINATION

- A. Bid Documents may be viewed at the office of Architect which is located at 201 Main St., Ste. 1020, La Crosse, Wisconsin 54601.
- B. Upon receipt of Bid Documents verify that documents are complete. Notify Architect should the documents be incomplete.
- C. Immediately notify Architect upon finding discrepancies or omissions in the Bid Documents.

3.05 CREATING A LEVEL BIDDING ENVIRONMENT

- A. Drawings and specifications are complementary and do not create a hierarchy.
- B. By submitting a bid, bidders agree that they have reviewed, in detail, all documents issued for bidding purposes.
- C. The following will not entitle a contractor to a change order increasing the overall project cost after the project has been awarded:
 - 1. Selectively choosing less significant content from the drawings or specifications where conflicting information is evident.
 - 2. Disregarding content that only appears in one part of the Bidding Documents.
- D. A written request for clarification during the bidding process will result in an addendum being issued to resolve such errors, inconsistencies, or omissions in the Bidding Documents therefore creating a level bidding environment for all bidders.

3.06 INQUIRIES/ADDENDA

- A. Direct questions to the Architect's Representative:
 - 1. Casey Stadler, telephone: 608.789.2034, e-mail: casey.stadler@is-grp.com.
- B. Addenda may be issued during the bidding period. All Addenda become part of the Contract Documents. Include resultant costs in the Bid Amount.
- C. Verbal answers are not binding on any party.
- D. Clarifications requested by bidders must be in writing not less than 7 days before date set for receipt of bids. The reply will be in the form of an Addendum, a copy of which will be forwarded to known recipients.

3.07 PRODUCT/ASSEMBLY/SYSTEM SUBSTITUTIONS

A. See Section 01 6000 - Product Requirements for additional requirements.

SITE ASSESSMENT

4.01 SITE EXAMINATION

A. Examine the project site before submitting a bid.

4.02 PREBID CONFERENCE

- A. Refer to Section 00 1113 for prebid conference information.
- B. All general contract and subcontract bidders and suppliers are invited.
- C. Representatives of Architect will be in attendance.
- D. Information relevant to the Bid Documents will be recorded in an Addendum, issued to Bid Document recipients.

QUALIFICATIONS

5.01 SUBCONTRACTORS/SUPPLIERS/OTHERS

A. Owner reserves the right to reject a proposed subcontractor for reasonable cause.

- B. Refer to General Conditions.

BID SUBMISSION

6.01 SUBMISSION PROCEDURE

- A. Bidders shall be solely responsible for the delivery of their bids in the manner and time prescribed.
- B. Submit one copy of the executed offer on the Bid Forms provided, signed and sealed with the required security in a closed opaque envelope, clearly identified with bidder's name, project name and Owner's name on the outside.
- C. Improperly completed information, irregularities in bid bond, may be cause not to open the Bid Form envelope and declare the bid invalid or informal.
- D. An abstract summary of submitted bids will be made available to all bidders following bid opening.

6.02 BID INELIGIBILITY

- A. Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may at the discretion of the Owner, be declared unacceptable.
- B. Bid Forms, Appendices, and enclosures that are improperly prepared may, at the discretion of Owner, be declared unacceptable.
- C. Failure to provide security deposit, bonding or insurance requirements may, at the discretion of Owner, be waived.

BID ENCLOSURES/REQUIREMENTS

7.01 SECURITY DEPOSIT

- A. Bids shall be accompanied by a security deposit as follows:
 - 1. Bid Bond of a sum no less than 5 percent of the Bid Amount on AIA A310 Bid Bond Form.
- B. Endorse the Bid Bond in the name of the Owner as obligee, signed and sealed by the principal (Contractor) and surety.
- C. The security deposit will be returned after delivery to the Owner of the required Performance and Payment Bond(s) by the accepted bidder.
- D. Include the cost of bid security in the Bid Amount.
- E. After a bid has been accepted, all securities will be returned to the respective bidders .
- F. If no contract is awarded, all security deposits will be returned.

7.02 PERFORMANCE ASSURANCE

- A. Accepted Bidder: Provide a Performance and Payment bond as described in Document 00 7300 - Supplementary Conditions.
- B. Include the cost of Performance and Payment Bonds in the Bid Amount.

7.03 BID FORM REQUIREMENTS

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

7.04 BID FORM SIGNATURE

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

4. Joint Venture: Each party of the joint venture shall execute the Bid Form under their respective seals in a manner appropriate to such party as described above, similar to the requirements of a Partnership.

7.05 ADDITIONAL BID INFORMATION

- A. Submit the following Supplements 24 hours after bid submission if you are the apparent low bidder or as requested to do so by the Architect or the Owner:
 1. List of Subcontractors: Include the names of all Subcontractors and the portions of the Work they will perform.
 2. Proposed Schedule of Values: Identify the Bid Amount allotted to each portion of the Work.

7.06 PERMITS, FEES, AND UTILITY COSTS

- A. The General Contractor is responsible for contacting the city and state in which the project is to be constructed to obtain a building permit, other fees and permits, and coordinating with subcontractors who are to include fees and permits in their bid amount. Include the cost of building permit, and other fees and permits in the Base Bid amount. Other fees and permits may include but are not limited to:
 1. Plan Review.
 2. City Water and Sewer Access.
 3. Parkland Dedications.
 4. Inspection.
 5. Connection.
 6. All other similar types of permits and fees.
- B. The General Contractor is responsible for contacting, or requiring their subcontractors to contact, the local utility companies to design and install temporary and permanent utilities including service meters. Include the costs of design and installation in the Base Bid.

7.07 SELECTION AND AWARD OF ALTERNATES

- A. Bids will be evaluated based on the lowest proposed base bid or on the lowest proposed bid fee calculated by the combined sums of the base bid and selection of the alternates chosen by the Owner. The Owner reserves the right to choose either the lowest base bid alone, or the lowest base bid in combination with the alternates in the order listed.

OFFER ACCEPTANCE/REJECTION

8.01 DURATION OF OFFER

- A. Bids shall remain open to acceptance and shall be irrevocable for the number of days after the bid closing date as indicated in Section 00 1113.

8.02 ACCEPTANCE OF OFFER

- A. Owner reserves the right to accept or reject any or all offers.
- B. After acceptance by Owner, Architect on behalf of Owner, will issue to the successful bidder, a written Notice of Award.

END OF SECTION

**SECTION 00 3113
BIDDING AND CONSTRUCTION SCHEDULE**

**HO-CHUNK GAMING WISCONSIN DELLS
HOTEL RENOVATIONS
BARABOO, WISCONSIN
ISG NO. 18-22107**

Tuesday, January 08, 2019	Send out Invitation to Bid.
Tuesday, January 15, 2019	Prebid meeting, walk-through. 2:00 p.m.
Tuesday, January 29, 2019	Receive Bids before 2:00 p.m.
Friday, February 01, 2019	Estimated date to issue Notice of Award.
Monday, January 04, 2019	Estimated commence construction date.
Friday, May 24, 2019	Substantial completion, perform final walk through and inspection with Owner and Architect. Owner can occupy.
Friday, May 31, 2019	Final Completion.

END OF SECTION

ISSUE DATE 01/07/2019

SECTION 00 4100

BID FORM

HO-CHUNK GAMING WISCONSIN DELLS

HOTEL RENOVATIONS

BARABOO, WISCONSIN

ISG NO. 18-22107

SUBMITTED BY (COMPANY NAME)

DATE

Ladies and Gentlemen:

The undersigned being familiar with the conditions; having made a field inspection and investigation I/we deem necessary; having studied the Plans and Specifications for the work, and being familiar with all factors and other conditions affecting the work and cost thereof, hereby propose to furnish all labor, tools, materials, skills, equipment, building permit, other fees and permits, and all else necessary to completely construct the project in accordance with the Plans and Specifications as prepared by ISG, 201 Main Street, Suite 1020, La Crosse, Wisconsin 54601 for the prices as entered on the following pages of this proposal.

I/We hereby certify that I am/we are the only person, persons, firm or corporation interested in this proposal as principals and that it is made without collusion with any person, firm or corporation.

It is understood that the following Bid/Bids shall include all necessary materials, labor, supervision, machinery, equipment, tools, bracing, false work and other means of construction, including all necessary tests incidental to such installation.

I/We guarantee all of the work performed under this contract to be done in accordance with the plans and specifications, and in a good and workmanlike manner, and to redo or repair any work which may be rejected due to defective materials or workmanship, prior to the final acceptance of the project, and for a period of two years after such final acceptance, by the Project Architect and the Owner.

I/We propose to begin work and to prosecute the work so as to complete the same as indicated.

BASE BID: Selective demolition and construction of interior hotel renovations and other Work indicated in the drawings and specifications for the Sum of:

_____ Dollars
(_____)

Labor Only (No Tax Exempt Materials):

_____ Dollars
(_____)

Tax Exempt Materials Only (No Labor):

_____ Dollars
(_____)

Combined Total (Labor and Materials):

_____ Dollars
(_____)

ISSUE DATE 01/07/2019

ALTERNATE NO. 1: All demolition to be by General Contractor (Base Bid: All demolition is by Owner that exposes structural and non-structural stud framing. The General Contractor is responsible for removal of non-structural framing where applicable and slab-on-grade concrete.) on the drawings for the Sum of:

Labor Only (No Tax Exempt Materials):

_____ Dollars
(_____)

Tax Exempt Materials Only (No Labor):

_____ Dollars
(_____)

(Add) (Deduct) Combined Total (Labor and Materials):

_____ Dollars
(_____)

ALTERNATE NO. 2: Owner procures FFE and the General Contractor installs (Base Bid: Owner procures and installed FFE) on the drawings for the Sum of:

Labor Only (No Tax Exempt Materials):

_____ Dollars
(_____)

Tax Exempt Materials Only (No Labor):

_____ Dollars
(_____)

(Add) (Deduct) Combined Total (Labor and Materials):

_____ Dollars
(_____)

CONTRACT TIME: If this Bid is accepted, I/we will:

Commence work as soon as possible after Receipt of Notice to Proceed and shall complete the Work by the time indicated per Section 00 7300 - Supplementary Conditions.

BID SECURITY - CONTRACTS: A properly executed bid bond of a sum no less than five percent (5%) of the base bid amount or a certified check in the amount of \$_____ equal to no less than five percent (5%) of the base bid amount accompanies this proposal.

It is understood that bids may not be withdrawn for a period of 30 days after the date and time set for the opening of bids. It is understood that the Owner reserves the right to retain the bid security of the bidders for a period not to exceed 30 days after the date set for the opening of bids.

Acknowledgement or Receipt of Addendum (if issued)

Received Addendum No. 1, dated _____

Received Addendum No. 2, dated _____

Received Addendum No. 3, dated _____

(A CORPORATION)
(A LIMITED PARTNERSHIP)
(A GENERAL PARTNERSHIP)
(A SOLE PROPRIETORSHIP)

(CIRCLE ONE OR INDICATE COMPANY OWNERSHIP STRUCTURE TYPE ABOVE)

COMPANY NAME: _____

ADDRESS: _____

SUBMITTED BY: _____

(PRINT OR TYPE NAME)

TITLE: _____

PHONE NUMBER: _1_(_____) _____ - _____

FAX NUMBER: _1_(_____) _____ - _____

E-MAIL ADDRESS: _____

SIGNATURE: _____

END OF SECTION

ISSUE DATE 01/07/2019

**SECTION 00 7200
GENERAL CONDITIONS**

FORM OF GENERAL CONDITIONS

1.01 THE GENERAL CONDITIONS APPLICABLE TO THIS CONTRACT ARE AS FOLLOWS:

- ~~A. AIA Document A201, General Conditions of the Contract for Construction, 2017 Edition, is the General Conditions between the Owner and Contractor.~~
- B. The General Conditions applicable to this contract is attached following this page.

1.02 RELATED REQUIREMENTS

- A. SECTION 00 7300 - Supplementary Conditions.

1.03 SUPPLEMENTARY CONDITIONS

- A. Refer to document 00 7300 - Supplementary Conditions for amendments to these general conditions.

END OF SECTION

ISSUE DATE 01/07/2019

**SECTION 00 7300
SUPPLEMENTARY CONDITIONS**

PART 1 GENERAL

1.01 SUMMARY

- A. These Supplementary Conditions amend and supplement the General Conditions defined in Document 00 7200 - General Conditions and other provisions of the Contract Documents as indicated below. Provisions that are not so amended or supplemented remain in full force and effect.
- B. The terms used in these Supplementary Conditions that are defined in the General Conditions have the meanings assigned to them in the General Conditions.

1.02 MODIFICATIONS TO GENERAL CONDITIONS

1.03 MODIFICATIONS TO AIA A201

1.04 ARTICLE 1.1 - BASIC DEFINITIONS

- A. 1.1.9 Workmanship:
 - 1. The degree of skill in which the Work is completed.
 - 2. All Work is to be completed in a professional manner by a skilled and experienced craftsman in accordance with the manufacturer's installations instructions.
 - 3. All pipes, conduits, ducts, and supports are to be installed parallel or perpendicular to the building lines while maintaining the integrity of the installation.

1.05 ARTICLE 1.2 - CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

- A. 1.2.1.1 Add Subparagraph:
 - 1. If there is an inconsistency in the quality and/or quantity of Work required by the Contract Documents, either the greater quality and/or quantity of Work indicated shall be provided in accordance with the engineer/architect's interpretation without change in the contract sum.

1.06 ARTICLE 7.2 - CHANGE ORDERS

- A. Add the following subparagraph:
 - 1. 7.2.2: The following fees apply to Changes in the Work:
 - a. A 10 percent maximum on overhead and profit for the direct cost of Work performed by a Contractor or Subcontractor;
 - b. A 5 percent maximum overhead and profit on indirect costs of a Contractor's Subcontractors;
 - c. The total mark-up shall not exceed 20 percent and all mark-ups are subject to the Architect approval.
 - d. On Work deleted from the Contract, credit to the Owner shall be the Architect approved net cost plus 1/2 of the overhead and profit percentage noted above.
 - 2. In the case of an increase or decrease in the contract sum, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data, showing adjustments on the basis of reasonable expenditures and savings of those performing the Work attributable to the change.

1.07 ARTICLE 7.3 - CONSTRUCTION CHANGE DIRECTIVES

- A. Add the following subparagraph:
 - 1. 7.3.11: The following fees apply to Changes in the Work in accordance with Subparagraph 7.3.6:
 - a. A 10 percent maximum on overhead and profit for the direct cost of Work performed by a Contractor or Subcontractor;
 - b. A 5 percent maximum overhead and profit on indirect costs of a Contractor's Subcontractor;
 - c. The total mark-up shall not exceed 20 percent and all mark-ups are subject to the Architect approval.
 - d. On Work deleted from the Contract, credit to the Owner shall be the Architect approved net cost plus 1/2 of the overhead and profit percentage noted above.
 - 2. In the case of an increase or decrease in the contract sum, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with

appropriate supporting data, showing adjustments on the basis of reasonable expenditures and savings of those performing the Work attributable to the change.

1.08 ARTICLE 8 - TIME

- A. Add the following subparagraph:
 - 1. 8.2.4: Contract Time is identified in Section 00 3113 - Bidding and Construction Schedule.

1.09 ARTICLE 11.1 - CONTRACTOR'S LIABILITY INSURANCE

- A. Add the following Paragraph as follows:
- B. Insurance:
- C. The Contractor shall secure and maintain such insurance from an insurance company authorized to write casualty insurance in the State where the work is located as will protect himself, his subcontractors and which shall indemnify and save harmless the Owner and the Architect and their officers, agents, and employees from and against all claims for bodily injury, death or property damage which may arise from the Contractor's operations under this contract, whether such operations be by himself or by any subcontractor or by anyone directly or indirectly employed by the Contractor and Subcontractor.
- D. The Contractor shall not commence work under this Contract until he has obtained all insurance required under this section and shall have filed the certificate of insurance with the Owner and a copy with the Owner's attorney. Each insurance policy shall contain a clause assuring the insurance company will not cancel the insurance without thirty days written notice to the Owner, the Owner's attorney, and the Architect of intention to cancel. The amounts of such insurance shall be not less than the following, or greater if required by law:
 - 1. Commercial General Liability (Including Premises- Operations; Independent Contractors' Protective; Products and Completed Operations; Broad Form Property Damage):
 - a. Bodily Injury and Property Damage (Name Owner as additional insured):
 - 1) \$1,000,000 Each Occurrence
 - 2) \$50,000 Damage to Rented Premises (Each Occurrence)
 - 3) \$5,000 Med Exp (Any One Person)
 - 4) \$1,000,000 Personal & Advertising Injury
 - 5) \$2,000,000 General Aggregate
 - 6) \$2,000,000 Annual Aggregate
 - b. Products and Completed Operations to be maintained for two years after final payment.
 - c. Property Damage Liability Insurance shall provide X, C, or U coverage as applicable.
 - d. Contractual Liability to be included.
 - 2. Comprehensive Automobile Liability:
 - a. Bodily Injury:
 - 1) \$1,000,000 CSL Each Person
 - 2) \$(included) Each Occurrence
 - b. Property Damage:
 - 1) \$(included) Each Occurrence
 - 3. Umbrella Excess Liability: Name Owner as additional insured:
 - a. Excess Liability:
 - 1) \$3,000,000 Each Occurrence
 - 2) \$3,000,000 Aggregate
 - 4. Worker's Compensation:
 - a. State Statutory
 - b. Applicable Federal Statutory
 - 1) (e.g. Longshoremen's)
 - c. Employer's Liability
 - 1) \$1,000,000 Each Accident
 - 2) \$1,000,000 Disease - EA Employee
 - 3) \$1,000,000 Disease - Policy Limit
 - 5. Rented Equipment:
 - a. Special/Replacement Cost
 - 1) \$100,000 Rented Equipment

6. Per occurrence - 30 day notice of cancellation/non-renewal - no waiver of subrogation.

1.10 ARTICLE 11.2 - PROPERTY INSURANCE

- A. The Owner will be responsible for purchasing and maintaining a "special form" or equivalent policy as described in the General Conditions of the Contract for Construction.
 - 1. The General Conditions refers to the policy as an "all-risk" policy. This verbiage shall be replaced with "special form".
- B. A copy of the General Conditions of the Contract for Construction can be obtained at the office of the Architect.

1.11 ARTICLE 11 - PERFORMANCE BOND AND PAYMENT BOND

- A. Add the following:
 - 1. 11.1.4: The bond value requirements are as follows:
 - a. Provide bonds on a standard surety bond form.
 - b. Provide a 100 percent Performance Bond.
 - c. Provide a 100 percent Payment Bond.
 - d. Deliver bonds within 3 days after execution of the Contract.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

ISSUE DATE 01/07/2019

SECTION 01 2000
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

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

1.02 RELATED REQUIREMENTS

- A. Section 00 7200 - General Conditions and Document 00 7300 - Supplementary Conditions: Additional requirements for progress payments, final payment, changes in the Work.

1.03 SCHEDULE OF VALUES

- A. Use Schedule of Values Form: AIA G703, edition stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.
- C. Forms filled out by hand will not be accepted.
- D. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- E. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification section. Identify site mobilization.
- F. Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.
- G. Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: On the first of the month, ninety-five (95%) for the portion of the contract sum properly allocable to labor, materials, and equipment incorporated to the last day of the month. Request for payments should be submitted by the Contractor.
- B. Use Form AIA G702 and Form AIA G703, edition stipulated in the Agreement.
- C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- D. Forms filled out by hand will not be accepted.
- E. For each item, provide a column for listing each of the following:
 - 1. Item Number.
 - 2. Description of work.
 - 3. Scheduled Values.
 - 4. Previous Applications.
 - 5. Work in Place and Stored Materials under this Application.
 - 6. Authorized Change Orders.
 - 7. Total Completed and Stored to Date of Application.
 - 8. Percentage of Completion.
 - 9. Balance to Finish.
 - 10. Retainage.
- F. Execute certification by signature of authorized officer.
- G. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- H. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.
- I. Submit three copies of each Application for Payment when submitting paper copies.

- J. Include the following with the application:
 1. Transmittal letter as specified for submittals in Section 01 3000.
 2. Construction progress schedule, revised and current as specified in Section 01 3000.
 3. Project record documents as specified in Section 01 7800, for review by Owner which will be returned to the Contractor.
- K. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.05 MODIFICATION PROCEDURES

- A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to the Contract Documents.
- B. For minor changes not involving an adjustment to the Contract Price or Contract Time, Architect will issue instructions directly to Contractor.
- C. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 2. Promptly execute the change.
- D. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within seven days.
- E. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on work by separate or other contractors. Document any requested substitutions in accordance with Section 01 6000.
- F. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
 1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
 2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
 3. For pre-determined unit prices and quantities, where applicable, the amount will be based on the fixed unit prices.
 4. For change ordered by Architect without a quotation from Contractor, the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.
- G. Substantiation of Costs: Provide full information required for evaluation.
 1. On request, provide the following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 2. Support each claim for additional costs with additional information:
 - a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
 3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

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

1.06 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
 - 1. All closeout procedures specified in Section 01 7000.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

ISSUE DATE 01/07/2019

SECTION 01 3000
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preconstruction meeting.
- B. Progress meetings.
- C. Construction progress schedule.
- D. Submittals in general.
- E. Submittals for review, information, and project closeout.
- F. Number of copies of submittals.
- G. Submittal procedures.

1.02 RELATED REQUIREMENTS

- A. Section 01 7000 - Execution and Closeout Requirements: Additional coordination requirements.
- B. Section 01 7800 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

1.03 PROJECT COORDINATOR

- A. Project Coordinator: General Contractor.
- B. Cooperate with the Project Coordinator in allocation of mobilization areas of site; for field offices and sheds, for employee access, traffic, and parking facilities.
- C. During construction, coordinate use of site and facilities through the Project Coordinator.
- D. Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
- E. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities.
- F. Coordinate field engineering and layout work under instructions of the Project Coordinator.
- G. Make the following types of submittals to Architect through the Project Coordinator:
 - 1. Requests for Interpretation.
 - 2. Shop drawings, product data, and samples.
 - 3. Test and inspection reports.
 - 4. Design data.
 - 5. Manufacturer's instructions and field reports.
 - 6. Applications for payment and change order requests.
 - 7. Progress schedules.
 - 8. Coordination drawings.
 - 9. Correction Punch List and Final Correction Punch List for Substantial Completion.
 - 10. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

- A. Architect will schedule a meeting after Notice of Award.
- B. Attendance Required:
 - 1. Owner.
 - 2. Architect.
 - 3. Contractor.
- C. Note: The following agenda items are not intended to be the final or a complete list of the items that will be discussed. A complete agenda will be distributed at the preconstruction meeting.
- D. Agenda:
 - 1. Execution of Owner-Contractor Agreement.

2. Submission of executed bonds and insurance certificates.
 3. Distribution of Contract Documents.
 4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
 5. Designation of personnel representing the parties to Contract, Owner and Architect.
 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 7. Scheduling.
 8. Shop drawings submittal, review times, and overall process.
 9. Open for comments; attendees are encouraged to bring other topics or concerns up for discussion at this time.
- E. Architect will record minutes and distribute copies within two days after meeting to participants, with copies to the Contractor, Owner, participants, and those affected by decisions made.

3.02 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the work at maximum bi-weekly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required:
 1. Contractor.
 2. Owner.
 3. Architect.
 4. Contractor's superintendent.
 5. Major subcontractors.
- D. Agenda:
 1. Review minutes of previous meetings.
 2. Review of work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems that impede, or will impede, planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of off-site fabrication and delivery schedules.
 7. Maintenance of progress schedule.
 8. Corrective measures to regain projected schedules.
 9. Planned progress during succeeding work period.
 10. Maintenance of quality and work standards.
 11. Effect of proposed changes on progress schedule and coordination.
 12. Other business relating to work.
- E. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.03 CONSTRUCTION PROGRESS SCHEDULE

- A. Within 7 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.
- B. If preliminary schedule requires revision after review, submit revised schedule within 5 days.
- C. Within 7 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
 1. Include written certification that major contractors have reviewed and accepted proposed schedule.
- D. Within 5 days after joint review, submit complete schedule.
- E. Submit updated schedule with each Application for Payment.

3.04 SUBMITTALS IN GENERAL

- A. All submittals shall be submitted to the Architect through the Project Coordinator - No exceptions.
- B. PDFs by e-mail is the preferred method; coordinate with Architect's representative.

1. Refer to "Requirements for Electronically Submitted Shop Drawings" attached to this section.
- C. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- D. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- E. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.
- F. By submitting submittals, the General Contractor represents to Architect that General Contractor has:
 1. Reviewed and approved them.
 2. Determined and verified materials, field measurements and field construction criteria related thereto, or will do so.
 3. Checked and coordinated the information contained within such submittals with the requirements of the Work of the Contract Documents.
- G. Submittals that do not appear to be reviewed and approved will be returned to the General Contractor without the Architect's review. Time delays for this breach in procedure will be at the sole expense of the General Contractor.
- H. All shop drawings shall be submitted no later than 45 days after execution of the contract.

3.05 SUBMITTALS FOR REVIEW

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

3.06 SUBMITTALS FOR INFORMATION

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

3.07 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit Correction Punch List for Substantial Completion.
- B. Submit Final Correction Punch List for Substantial Completion.
- C. When the following are specified in individual sections, submit them at project closeout in conformance to requirements of Section 01 7800 - Closeout Submittals:
 1. Project record documents.
 2. Operation and maintenance data.
 3. Warranties.

- 4. Bonds.
- 5. Other types as indicated.
- D. Submit for Owner's benefit during and after project completion.
- E. Refer to Section 01 7800 - Closeout Submittals.

3.08 SUBMITTAL PROCEDURES

- A. General Requirements:
- B. Shop Drawing Procedures:
 - 1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting the Contract Documents and coordinating related work.
 - 2. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
- C. Transmit each submittal with a copy of approved submittal form.
- D. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- E. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.
- F. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- G. Schedule submittals to expedite the Project, and coordinate submission of related items.
- H. For each submittal for review, allow 10 days excluding delivery time to and from the Contractor.
- I. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
- J. Provide space for Contractor and Architect review stamps.
- K. When revised for resubmission, identify all changes made since previous submission.
- L. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- M. Submittals not requested will not be recognized or processed.

END OF SECTION

ISSUE DATE 01/07/2019

SECTION 01 3000 -- ATTACHMENT

SHOP DRAWING SUBMITTAL FORM

Architects Project No: 18-22107 Date: _____

Project Name: Ho-Chunk Gaming Wisconsin Dells Hotel Renovations

Specification Section Number: _____ Shop Drawing # _____

Specification Section Name: _____

Description: _____

Subcontractor or Supplier Approval:	General Contractor or Construction Manager Approval:
Architect / Engineer Review:	Other Reviews and Comments:

SECTION 01 3000 -- ATTACHMENT

REQUIREMENTS FOR ELECTRONICALLY SUBMITTED SHOP DRAWINGS:

1. The Contractor shall fill out and include the submittal cover sheet included in the project manual.
2. The shop drawings are to be reviewed by the Contractor before submitting. All field required verifications and missing information shall be completed and duly noted on the drawings. The Contractor shall review them and verify that the products submitted are acceptable per the specifications. The Contractor shall then affix their stamp on the submittal cover sheet. Contractor must review - No pass through drawings are permitted.
3. The Contractor shall prepare a single PDF file so that all sheets of the submittal are included in one document. Only ONE specifications section per submittal is permitted. Each PDF shall contain Bookmarks set to the destination of separate items contained within the file. If the Contractor elects to use their own transmittal sheet it shall be a separate attachment.
4. Scans shall be in color. All pages shall be oriented correctly. Actual sheet sizes for the submittal shall be 11x17 or 8 ½ x11 whenever possible. All print and details must be legible at those sizes. Larger file sheets such as 24x36 sheet size shall be identified in the e-mail.
5. The e-mail subject line shall list the five digit project number first followed by the project name. Then the section number and a brief description of the submittal contents shall follow the submittal number. Example: *12345 High School Addition 23 3700-Air outlets & inlets Sub #05.*
6. The PDF file or attachment shall be named as follows. Example: *23 3700-Air outlets & inlets 12345 High School Addition Sub #05.pdf*
7. Samples and color selections associated with the drawings shall be included in a separate attachment when practical. Actual samples, color selections shall be delivered to ISG and the shop drawings will not be reviewed until actual samples are received.
8. The Architect / Engineer will review the drawings, make notes as required on the drawings and stamp them. The PDF file shall then be renamed by adding the action required such as REVIEWED, FURNISH AS CORRECTED, REVISE AND RESUBMIT or REJECTED. Example: *23 3700-Air outlets & inlets 12345 High School Addition Sub #05 REVIEWED.pdf*
9. The Architect / Engineer shall then use the original email and attach the reviewed drawings and forward back to the contractor. The e-mail that they are attached to will be considered the transmittal. Any notes in the body of the email from the engineer / architect shall be considered as written on the sheets of the PDF file.
10. No hard copies will be sent by the Architect / Engineer. Note: Hard copies will be required to be included in the O&M Manuals as part of the project close out submittals.

END OF ATTACHMENT

SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

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

1.02 RELATED REQUIREMENTS

- A. Document 00 7200 - General Conditions: Inspections and approvals required by public authorities.
- B. Section 01 3000 - Administrative Requirements: Submittal procedures.
- C. Section 01 6000 - Product Requirements: Requirements for material and product quality.

1.03 REFERENCE STANDARDS

- A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008 (Reapproved 2014).
- B. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2017.
- C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2015a, with Editorial Revision (2016).
- D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2012a.
- E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2014a.
- F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2015.
- G. ASTM E699 - Standard Specification for Agencies Involved in Testing, Quality Assurance, and Evaluating of Manufactured Building Components; 2016.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. General: As indicated in individual specification sections.
- C. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the contract documents, or for Owner's information.
- D. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Contractor.
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test/inspection.
 - h. Date of test/inspection.
 - i. Results of test/inspection.

- j. Compliance with Contract Documents.
 - k. When requested by Architect, provide interpretation of results.
 - 2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the contract documents, or for Owner's information.
- E. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
 - 1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
- F. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- G. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
 - 1. Submit report in duplicate within 30 days of observation to Architect for information.
 - 2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the contract documents.
- H. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for Owner.
 - 1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the contract documents.
 - 2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.

1.05 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.06 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Owner will employ and pay for services of an independent testing agency to perform other specified testing and inspection.
 - 1. Where indicated in individual specification sections the Contractor shall employ and pay for services of an independent testing agency to perform specified testing and inspection.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- C. Contractor Employed Agency:
 - 1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM E699, ASTM C1021, ASTM C1077, ASTM C1093, and ASTM D3740.
 - 2. Inspection agency: Comply with requirements of ASTM D3740 and ASTM E329.
 - 3. Laboratory: Authorized to operate in the State in which the Project is located.

4. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
5. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.03 TESTING AND INSPECTION

- A. See individual specification sections for testing and inspection required.
- B. Testing Agency Duties:
 1. Test samples of mixes submitted by Contractor.
 2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 3. Perform specified sampling and testing of products in accordance with specified standards.
 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 5. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
 6. Perform additional tests and inspections required by Architect.
 7. Submit reports of all tests/inspections specified.
- C. Limits on Testing/Inspection Agency Authority:
 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 2. Agency may not approve or accept any portion of the Work.
 3. Agency may not assume any duties of Contractor.
 4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:
 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.

- b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
- c. To facilitate tests/inspections.
- d. To provide storage and curing of test samples.
- 4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
- 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- 6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- E. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.
- F. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.04 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship as applicable, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.05 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not complying with specified requirements.
- B. If, in the opinion of Architect, it is not practical to remove and replace the work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION

ISSUE DATE 01/07/2019

SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary utilities.
- B. Temporary sanitary facilities.
- C. Temporary Controls: Barriers, enclosures, and fencing.
- D. Vehicular access and parking.
- E. Waste removal facilities and services.
- F. Field offices.

1.02 TEMPORARY UTILITIES

- A. Owner will provide the following:
 - 1. Electrical power, consisting of connection to existing facilities.
 - a. Contractor shall provide portable generator power as required when connection to existing facilities is not adequate to complete the Work.
 - 2. Water supply, consisting of connection to existing facilities.
- B. Provide and pay for all additional lighting, heating and cooling, and ventilation required to complete the Work.
- C. Provide and pay for all temporary heating shelters required to complete the work. The Owner will not consider any requests for extra charges related to weather.
- D. Provide and maintain a minimum light level of 5 foot-candles for a safe work environment throughout the project.
- E. Permanent convenience receptacles may be utilized during construction.
 - 1. Replace all damage and worn receptacles used during construction prior to substantial completion.
- F. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.03 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Use of existing sanitary facilities is permitted, pending approval from Owner.
- C. Maintain daily in clean and sanitary condition.
- D. At end of construction, return facilities to same or better condition as originally found.

1.04 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.
 - 1. The term "non-owned" refers to insurance coverage for other vehicles not owned by the named insured's.

1.05 FENCING

- A. Construction: Commercial grade, safety orange color, heavy duty diamond mesh safety fence; Product Guardian by Tenax Corporation: www.tenaxus.com or equivalent.
- B. Installation: Install safety fencing according to manufacturer's instructions, and according to local governing authorities.

1.06 INTERIOR ENCLOSURES

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

1. Dust and Airborne Particulates: Prevent deposition of dust and other particulates in HVAC ducts and equipment.
 - a. Cleaning of ductwork is not contemplated under this Contract.
 - b. Contractor shall bear the cost of cleaning required due to failure to protect ducts and equipment from construction dust.
 - c. Establish condition of existing ducts and equipment prior to start of alterations.
 - d. If extremely dusty or dirty work must be conducted, shut down HVAC systems for the duration; remove dust and dirt completely before restarting systems.
- B. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:

1.07 SECURITY

- A. Provide security and facilities to protect Work, and Owner's operations from unauthorized entry, vandalism, or theft.

1.08 VEHICULAR ACCESS AND PARKING

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

1.09 WASTE REMOVAL

- A. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.
- B. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.
- C. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- D. Provide containers with lids. Remove trash from site periodically.
- E. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

1.10 FIELD OFFICES

- A. Provide space for Project meetings, with table and chairs to accommodate 6 persons.

1.11 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General product requirements.
- B. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Base specified/scheduled products and design intent.
- E. Inconsistencies.
- F. Substitutions in general.
- G. Substitution limitations.
- H. Procedures for Owner-supplied products.
- I. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Submittals.
- B. Section 01 4000 - Quality Requirements: Product quality monitoring.
- C. Section 22 0513 - Common Motor Requirements for Plumbing Equipment: Motors for plumbing equipment.

1.03 REFERENCE STANDARDS

- A. NEMA MG 1 - Motors and Generators; 2016.

PART 2 PRODUCTS

2.01 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by the Contract Documents.
- B. The Contractor shall assure the Owner that all new equipment and materials are asbestos free. The Contractor, subcontractors, and material suppliers are required to provide letters of non-asbestos confirmation with supporting documentation prior to material installations. The Owner may select materials to test for asbestos at any time including prior to and/or after installation. If suspect asbestos materials are tested and found to contain asbestos, the materials shall be abated in accordance with asbestos regulations by an Owner approved consultant and abatement contractor. New asbestos free products shall be re-installed by the contractor supplying such material. The Contractor shall be responsible for any and all new materials. If asbestos is found in the new materials, the cost for asbestos design, on-site monitoring, abatement, and replacement shall be the responsibility of the Contractor. Owner will collect and pay for the testing of any random suspect asbestos samples.
- C. DO NOT USE products having any of the following characteristics:
 - 1. Made using or containing CFC's or HCFC's.
- D. Where all other criteria are met, Contractor shall give preference to products that:
 - 1. Are extracted, harvested, and/or manufactured closer to the location of the project.
 - 2. Have longer documented life span under normal use.
 - 3. Result in less construction waste.
 - 4. Have a published GreenScreen Chemical Hazard Analysis.
- E. Motors: Refer to Section 22 0513 - Common Motor Requirements for Plumbing Equipment, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.

2.02 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.
- D. Products that do not meet project specifications may be rejected at any time during the project.
- E. Cost associated with replacement product and delay in project schedule due to rejection shall be at sole expense of Contractor.

2.03 MAINTENANCE MATERIALS

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

PART 3 EXECUTION

3.01 BASE SPECIFIED/SCHEDULED PRODUCTS AND DESIGN INTENT

- A. Certain specification sections will indicate a base manufacturer and will then list other acceptable manufacturers. Similarly, certain specification sections will list multiple acceptable manufacturers but only one of the manufacturers will be scheduled on a plan sheet. In these scenarios, the designer has designed the system with considerations for the base manufacturer or the product scheduled on the plan sheet. It is the responsibility of all bidders, contractors, suppliers to ensure that when bidding using an acceptable manufacturer other than the base manufacturer or the scheduled manufacturer that the design intent is met. Providing a product by an acceptable manufacturer other than the base specified or scheduled manufacturer constitutes a representation that the submitter:
 - 1. Has investigated supplied product and determined that it meets or exceeds the quality level of the base specified/scheduled product.
 - 2. Will provide the same warranty for the supplied product as for the base specified/scheduled product.
 - 3. As a result of differences between the base specified/scheduled product and the other acceptable manufacturers will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
 - 5. Will reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.
 - 6. Will maintain dimensions, locations, clearances, accesses and other design intent shown on the plan or otherwise provided by the base specified/scheduled product.

3.02 INCONSISTENCIES

- A. If there is an inconsistency in the quality and/or quantity of Work required by the Contract Documents, either the greater quality and/or quantity of Work indicated shall be provided in accordance with the Engineer/Architect's interpretation without change in the contract sum.

3.03 SUBSTITUTIONS IN GENERAL

- A. Proposed substitutions are required to be equivalent in all aspects to the specified products including but not limited to appearance, quality, and performance.
- B. When specified in individual sections actual samples shall be provided a minimum of 12 days prior to the bid due date for Architect's review and approval before products other than those scheduled or specified with be accepted; No Exceptions.

3.04 SUBSTITUTION PROCEDURES

- A. Where the Bid Documents stipulate a particular product, substitutions will be considered up to 10 days before receipt of bids.
- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
 - 1. The substantiating data shall provide a side by side comparison consisting of sufficient information to determine acceptability of such products.
- C. A request for substitution constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.

2. Agrees to provide the same warranty for the substitution as for the specified product.
 3. Agrees to coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
 4. Waives claims for additional costs or time extension that may subsequently become apparent.
 5. Agrees to reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.
- D. Provide complete information on required changes to other Work to accommodate each proposed substitution.
- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- F. When a request to substitute a product is made, Architect may approve the substitution and will issue an Addendum to known bidders.
- G. Substitution Submittal Procedure
1. Transmit each substitution request with the Substitution Request cover letter attached to this specification section.
 2. PDFs by e-mail is the preferred method; coordinate with Architect's representative. Only submit paper copies where necessary as follows:
 - a. Submit five copies of request for substitution for consideration.
 3. The submitter shall prepare a single PDF file when submitting by e-mail so that all sheets of a submittal are included in one document. Only ONE major product per submittal is permitted. Each PDF shall contain Bookmarks set to the destination of separate item contained within the file. If the submitter elects to use their own transmittal sheet it shall be a separate attachment.
 - a. Scans shall be in color, pages shall be oriented correctly, actual sheet sizes for the submittal shall be 11x17 or 8 1/2x11 whenever possible, and all content must be legible.
 4. Limit each request to one proposed substitution.
 5. Multiple proposed substitutions submitted on one form will only be considered when products are directly related. Major products and components should be listed first.
 6. Submit shop drawings, product data, certified test results, etc. attesting to the proposed product equivalence. Burden of proof is on proposer.
 7. The Architect will reply with a decision to accept or reject request in a timely manner.
- H. Substitution Submittal Procedure (after contract award):
1. Requests for Substitutions received after Bid Opening will not be considered except in such cases where it is necessary to make a substitution due to strikes, lockouts, bankruptcy, discontinuance of a product, and similar circumstances. Such Requests for Substitution of materials after Contract Award shall be made in writing to the Architect and shall be made within ten (10) days of the date that the Contractor ascertains they cannot obtain the material or equipment specified.
 2. Requests for Substitution will not be considered when they are indicated or implied on Shop Drawings or Product Data submittals without a separate previously submitted Request for Substitution Form, or when acceptance will require substantial revision of the Contract Documents.
 3. The Architect with approval by the Owner will be the judge of the acceptability of all Requests for Substitution received after Bid Opening.

3.05 OWNER-SUPPLIED PRODUCTS

- A. Owner's Responsibilities:
1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
 2. Arrange and pay for product delivery to site.
 3. On delivery, inspect products jointly with Contractor.
 4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
 5. Arrange for manufacturers' warranties, inspections, and service.

- B. Contractor's Responsibilities:
 - 1. Review Owner reviewed shop drawings, product data, and samples.
 - 2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
 - 3. Handle, store, install and finish products.
 - 4. Repair or replace items damaged after receipt.

3.06 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.07 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- G. Comply with manufacturer's warranty conditions, if any.
- H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- I. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- J. Prevent contact with material that may cause corrosion, discoloration, or staining.
- K. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- L. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 6000 -- ATTACHMENT

SUBSTITUTION REQUESTS

Architects Project No: 18-22107 Date: _____

Project Name: Ho-Chunk Gaming Wisconsin Dells Hotel Renovations

Specification Section	Manufacturer Specified	Proposed Manufacturer

Indicate drawing sheet name in lieu of specification section where applicable.

Vendor/Supplier

Name: _____

Address: _____

Contact: _____ E-Mail: _____

Telephone: _____ Fax: _____

Reason for Substitution: _____

Does Specification Allow for Substitutions of Proposers Items? Yes: ___ No: ___

Will the Substitution Provide Cost Savings to the Owner? Yes: ___ No: ___

Are Proposed Substitutions Equivalent/Superior to those Specified? Yes: ___ No: ___

Did you provided marked-up product information showing side by side comparisons for both the specified products and proposed products? Yes: ___ No: ___

I, _____, accept responsibility for coordination of proposed substitution and accept all additional costs resulting from the incorporation of proposed substitution into the Project. (Proposers Signature Required)

For Architect's Use:.....**Comments:** _____

Accepted: ___ Not Accepted: ___ _____

No Action Required: ___ _____

Submission: Incomplete: ___ Too Late: ___ _____

Reviewed By: _____

Date: _____

ISSUE DATE 01/07/2019

SECTION 01 7000
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Access panels required by trade.
- C. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.
- D. Pre-installation meetings.
- E. Cutting and patching.
- F. Cleaning and protection.
- G. Starting of systems and equipment.
- H. Demonstration and instruction of Owner personnel.
- I. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- J. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Submittals procedures, Electronic document submittal service.
- B. Section 01 5000 - Temporary Facilities and Controls: Temporary exterior enclosures.
- C. Section 01 5000 - Temporary Facilities and Controls: Temporary interior partitions.
- D. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.
- E. Section 07 8400 - Firestopping.
- F. Individual Product Specification Sections:
 - 1. Advance notification to other sections of openings required in work of those sections.
 - 2. Limitations on cutting structural members.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate Contractor.
 - 6. Include in request:
 - a. Identification of Project.
 - b. Location and description of affected work.
 - c. Necessity for cutting or alteration.
 - d. Description of proposed work and products to be used.
 - e. Alternatives to cutting and patching.
 - f. Effect on work of Owner or separate Contractor.
 - g. Written permission of affected separate Contractor.
 - h. Date and time work will be executed.
- C. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.04 QUALIFICATIONS

- A. For demolition work, employ a firm specializing in the type of work required.
 - 1. Minimum of five years of documented experience.
- B. For field engineering, employ a professional engineer of the discipline required for specific service on Project, licensed in the State in which the Project is located.

1.05 PROJECT CONDITIONS

- A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.

1.06 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Notify affected utility companies and comply with their requirements.
- C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean-up of work of separate sections.
- G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.

- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Architect four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of examination, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.04 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 ACCESS PANELS REQUIRED BY TRADE

- A. Trade requiring access shall provide and install access panels where not show or specified.
- B. The finished appearance and function will be subject to approval by the Architect/Owner.
- C. Provide panels that accommodate adjacent finishes in finished spaces.
- D. Access panels shall meet all code requirements for each location they are installed and shall be sized appropriately.

3.06 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as indicated.
 - 2. Report discrepancies to Architect before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
 - 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 .
 - 2. Provide walk-off mats as required to separate demolition and construction from existing building.
- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
 - 1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
 - 2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.
- D. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
 - 2. Remove items indicated on drawings.
 - 3. Relocate items indicated on drawings.

4. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
 5. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- E. Services (Including but not limited to HVAC, Plumbing, and Electrical): Remove, relocate, and extend existing systems to accommodate new construction.
1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
 - b. Provide temporary connections as required to maintain existing systems in service.
 4. Verify that abandoned services serve only abandoned facilities.
 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- F. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.
- G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
- H. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- I. Refinish existing surfaces as indicated:
1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- J. Remove demolition debris and abandoned items from alterations areas and dispose of off-site.
- K. Do not begin new construction in alterations areas before demolition is complete.
- L. Comply with all other applicable requirements of this section.

3.07 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
 1. Complete the work.
 2. Fit products together to integrate with other work.
 3. Provide openings for penetration of mechanical, electrical, and other services.
 4. Match work that has been cut to adjacent work.
 5. Repair areas adjacent to cuts to required condition.
 6. Repair new work damaged by subsequent work.
 7. Remove and replace defective and non-conforming work.

- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
 - 1. All other cutting and patching is to be performed by the responsible trade.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.
- J. Patching:
 - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 - 2. Match color, texture, and appearance.
 - 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.08 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.09 PROTECTION OF EXISTING AND NEWLY INSTALLED WORK

- A. Protect existing and newly installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for existing and newly installed products. Control activity in immediate, adjacent, and other areas related to the Work to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Prohibit traffic from landscaped or grass covered areas.
- H. Remove protective coverings when no longer needed; reuse or recycle materials if possible.
- I. Replace soiled or damaged existing and newly installed work that cannot be cleaned to a condition equal to or better than the condition prior to the work; or cleaned to a like new condition for newly installed work.

3.10 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

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

3.11 DEMONSTRATION AND INSTRUCTION

- A. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- C. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of owner personnel.

3.12 ADJUSTING

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

3.13 FINAL CLEANING

- A. Execute final cleaning prior to Substantial Completion.
 - 1. The intent of final cleaning is to provide the Owner with a product that is free of all dust, dirt, and debris related to the Work, and in a like new condition.
- B. Use cleaning materials that are nonhazardous.
- C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- E. Wipe clean wood and laminate surfaces including doors, countertops, cabinets, windows, sills and all other similar surfaces.
- F. Wipe clean all painted surfaces.
- G. Clean all hard finish floors including tile and sealed concrete and all others according to manufacturer's instructions.
- H. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- I. Clean filters of operating equipment.
- J. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner.

3.14 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
 - 1. Provide copies to Architect and Owner.
- B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
- C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.
- D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.

- E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.
- F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- G. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.
- H. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

3.15 MAINTENANCE

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

ISSUE DATE 01/07/2019

**SECTION 01 7800
CLOSEOUT SUBMITTALS**

PART 1 GENERAL

1.01 SECTION INCLUDES

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

1.02 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- B. Individual Product Sections: Specific requirements for operation and maintenance data.
- C. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

- A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
- B. Preliminary Operation and Maintenance Manual: Submit preliminary draft of proposed format and outline of contents in a PDF format before start of Work. Architect will review draft and return with comments.
- C. Final Operation and Maintenance Manual: Submit final manual and electronic copies with claim for final Application for Payment. Architect will retain one electronic copy. The original manual and one electronic copy will be provided to the Owner.
 - 1. At the option of the Owner provide only an electronic copy in PDF format.
- D. Warranties and Bonds: Include originals and electronic copy of each in operation and maintenance manuals, indexed separately on Table of Contents.
- E. Operation and Maintenance Data:
 - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
 - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
 - 4. Submit two sets of revised final documents in final form within 10 days after final inspection.
- F. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.

6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 1. Manufacturer's name and product model and number.
 2. Product substitutions or alternates utilized.
 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 1. Measured depths of foundations in relation to finish first floor datum.
 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 4. Field changes of dimension and detail.
 5. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
 1. Product data, with catalog number, size, composition, and color and texture designations.
 2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Additional information as specified in individual product specification sections.
- D. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 1. Description of unit or system, and component parts.
 2. Identify function, normal operating characteristics, and limiting conditions.
 3. Include performance curves, with engineering data and tests.
 4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

- D. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- E. Provide servicing and lubrication schedule, and list of lubricants required.
- F. Include manufacturer's printed operation and maintenance instructions.
- G. Include sequence of operation by controls manufacturer.
- H. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- I. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- J. Include test and balancing reports.
- K. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor, and subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- H. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.
- I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- J. Arrangement of Contents: Organize each volume in parts as follows:
 1. Project Directory.
 2. Table of Contents, of all volumes, and of this volume.
 3. Operation and Maintenance Data: Arranged by system, then by product category.
 - a. Source data.
 - b. Product data, shop drawings, and other submittals.
 - c. Operation and maintenance data.
 - d. Field quality control data.
 - e. Original warranties and bonds.
- K. Electronic Copy: Provide two copies of all operation and maintenance data in a PDF format on compact disk. Locate storage devices in the front of the operation and maintenance manual. Label device with project name and substantial completion date.

3.06 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.

- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

END OF SECTION

ISSUE DATE 01/07/2019

SECTION 03 3000
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete formwork.
- B. Floors and slabs on grade.
- C. Concrete reinforcement.
- D. Joint devices associated with concrete work.
- E. Concrete curing.
- F. Concrete finishing.
 - 1. Floor surfaces to be left exposed.

1.02 RELATED REQUIREMENTS

- A. Section 07 9200 - Joint Sealants: Products and installation for sealants and joint fillers for saw cut joints and isolation joints in slabs.
- B. Section Division 22 - Plumbing Piping Specialties: Mechanical items for casting into concrete.
- C. Section Division 26 - Grounding and Bonding for Electrical Systems: Electrical items for casting into concrete. Coordinate location with electrical contractor.

1.03 REFERENCE STANDARDS

- A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
- B. ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).
- C. ACI 302.1R - Guide for Concrete Floor and Slab Construction; 2004 (Errata 2007).
- D. ACI 302.2R - Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials
- E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000.
- F. ACI 305R - Hot Weather Concreting; 2010.
- G. ACI 306R - Cold Weather Concreting; 2010.
- H. ACI 308R - Guide to Curing Concrete; 2001 (Reapproved 2008).
- I. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2011.
- J. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.
- K. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2012.
- L. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2016.
- M. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2016b.
- N. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2015.
- O. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2016a.
- P. ASTM C150/C150M - Standard Specification for Portland Cement; 2016.
- Q. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2016.
- R. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2014.
- S. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.
- T. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2015.
- U. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2014.

- V. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2013.
- W. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures; 2014.
- X. ASTM E1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers; 1996 (Reapproved 2008).
- Y. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2011.
- Z. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2011.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
- C. Mix designs: Submit mix design for each mix showing compliance with specified requirements.
- D. Test Reports: Submit report for each test or series of tests specified.
- E. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.
- F. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
- B. Follow recommendations of ACI 305R when concreting during hot weather.
- C. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 PRODUCTS

2.01 FORMWORK

- A. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
 - 1. Form Facing for Exposed Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
 - 2. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
 - 3. Form Ties: Contractor's choice of standard product type that will leave no metal within 1-1/2 inches of concrete surface.

2.02 REINFORCEMENT MATERIALS

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
 - 1. Type: Deformed billet-steel bars.
 - 2. Finish: Unfinished, unless otherwise indicated.
- B. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gage, 0.0508 inch.
 - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
 - 3. Do not use clay bricks or similar blocks/chunks of material as rebar chairs. Concrete dobies as rebar chairs are acceptable.

2.03 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
 - 1. Acquire cement for entire project from same source.
- B. Fine and Coarse Aggregates: ASTM C33/C33M.
 - 1. Acquire aggregates for entire project from same source.
 - 2. Provide aggregate free of shale at all slab locations exposed to freeze/thaw action.
- C. Fly Ash: ASTM C618, Class C or F.

- D. Calcined Pozzolan: ASTM C618, Class N.
- E. Silica Fume: ASTM C1240, proportioned in accordance with ACI 211.1.
- F. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

2.04 ADMIXTURES

- A. Chemical Admixture:
 - 1. Manufacturers by concrete supplier:
 - a. BASF: www.basf.com.
 - b. Grace Construction Products: www.grace.com.
 - c. Fritz-Pak: www.fritzpak.com.
 - d. Mapei GRT: www.mapei.com.
 - e. Sika Corporation U.S.: www.sika.com.
 - f. Euclid Chemical: www.euclidchemical.com.
 - g. Substitutions: See Section 01 6000 - Product Requirements.
- B. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- C. Admixtures shall comply with ASTM C494.
- D. Air Entrainment Admixture: ASTM C260/C260M.

2.05 ACCESSORY MATERIALS

- A. Underslab Vapor Barrier: Polyethylene or equivalent, complying with ASTM E 1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. The use of single ply polyethylene is prohibited.
 - 1. Acceptable Products:
 - a. Stego Wrap 15 mil, Class A by Stego Industries, LLC: www.stegoindustries.com.
 - b. Griffolyn Vaporguard by Reef Industries, Inc.: www.reefindustries.com.
 - c. Vaporflex 15 by Layfield, Inc.: www.layfieldgeosynthetics.com.
 - d. WR Meadows 15 mil Perminator HP: www.wrmeadows.com.
 - e. Substitutions: See Section 01 6000 - Product Requirements.
 - 2. Vapor Barrier Accessories: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations in vapor barrier.
 - 3. Location: Use at and adjacent (96 inches) to locations with Moisture-Sensitive Flooring Materials; refer to ACI 302.2R-06.
- B. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
 - 1. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
 - 2. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.

2.06 BONDING AND JOINTING PRODUCTS

- A. Latex Bonding Agent: Non-redispersible acrylic latex, complying with ASTM C1059 Type II.
 - 1. Manufacturers:
 - a. SpecChem, LLC; Strong Bond Acrylic Bonder: www.specchemllc.com/#sle.
 - b. W. R. Meadows, Inc; ACRY-LOK-: www.wrmeadows.com/#sle.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
- B. Expansion-Joint Filler: Polyethylene/polypropylene semi-rigid closed-cell backing complying with ASTM D 3575/ASTM D 8139/ASTM D 1751, 1/2 inch thick and full depth of slab less 1/2 inch with peel-off feature. Provide product by BASF Construction Chemicals-Building Systems, W.R. Meadows, Namaco, or equivalent.
 - 1. Place peel-off feature at top of slab when sealants are specified. Remove peel-off portion of expansion-joint filler prior to application of sealants.
 - 2. Place peel off feature at bottom of slab when no sealants are specified.
- C. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with rectangular or round knockout holes for conduit or rebar to pass through joint form at 6 inches on center; ribbed steel stakes for setting.

2.07 CURING MATERIALS

- A. Liquid Membrane Curing Compound: ASTM C 309, Type 2, Class B, White Pigmented.
 - 1. Product: CURE R-2 by L&M Construction Materials, Inc. or approved equivalent.
 - a. Other Approved Products:
 - 1) SpecRez White by SpecChem.
- B. Moisture-Retaining Sheet: ASTM C171.
 - 1. White-burlap-polyethylene sheet, weighing not less than 3.8 ounces per square yard.

2.08 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
 - 1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
- C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.
- D. Materials In General: Do not use materials or combinations thereof that will result in a reaction that is detrimental to the structural integrity or visual appearance of concrete.
- E. Normal Weight Concrete: Refer to structural notes on the drawings.

2.09 MIXING

- A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
- B. Transit Mixers: Comply with ASTM C94/C94M.
- C. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

- A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.
- B. Verify that forms are clean and free of rust before applying release agent.
- C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- D. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.
 - 1. Use latex bonding agent only for non-load-bearing applications.
- E. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.
- F. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade according to ASTM E 1643 and manufacturer's written instructions; place sheets in position with longest dimension parallel with direction of pour.
 - 1. Vapor Retarder Over Granular Fill: Install compactable granular fill before placing vapor retarder as shown on the drawings. Do not use sand unless indicated otherwise.
 - 2. Install vapor barrier in lieu of retarder at indicated locations. Refer to accessory materials of this section.
 - 3. Level and compact base material.
 - 4. Extend vapor barrier to the perimeter of the slab. If practicable, terminate it at the top of the slab, otherwise (a) at a point acceptable to the Architect or (b) where obstructed by impediments (such as dowels, waterstops, or any other site condition requiring early

termination of the vapor barrier). At the point of termination, seal vapor barrier to the foundation wall, grade beam or slab itself.

5. Lap joints minimum 6 inches and seal with manufacturer's recommended tape.
6. Apply seam tape to a clean and dry vapor barrier.
7. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions.
8. Avoid the use of non-permanent stakes driven through vapor retarder.
9. If non-permanent stakes are driven through vapor retarder, repair as recommended by vapor retarder manufacturer.
10. Repair damaged vapor retarder before covering with vapor barrier material of similar (or better) permeance, puncture and tensile.
11. Install vapor barrier in lieu of retarder at indicated locations. Refer to accessory materials of this section.

3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

3.04 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Place concrete for floor slabs in accordance with ACI 302.1R.
- C. Ensure reinforcement, inserts, and other similar items will not be disturbed during concrete placement.
- D. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.05 SLAB JOINTING

- A. Locate joints as indicated on drawings.
 1. If no pattern is shown, contractor shall provide for 15 by 15 feet saw cut areas and shall contact Engineer for exact locations of joints.
- B. Anchor joint fillers and devices to prevent movement during concrete placement.
- C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
 1. Install wherever necessary to separate slab from other building members, including columns, walls, equipment foundations, footings, stairs, manholes, sumps, and drains.
- D. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 24 hours after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab.
 1. Do not exceed 2 inches deep when/if slab thicknesses are greater than 8 inches.
- E. Construction Joints: Where not otherwise indicated, use metal combination screed and key form, with removable top section for joint sealant.

3.06 FLOOR FLATNESS AND LEVELNESS TOLERANCES

- A. Refer to structural notes on the drawings.

3.07 CONCRETE FINISHING

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.
- C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide the following finishes only where/when indicated on the drawings:
 1. Grout Cleaned Finish: Wet areas to be cleaned and apply grout mixture by brush or spray; scrub immediately to remove excess grout. After drying, rub vigorously with clean burlap, and keep moist for 36 hours.
- D. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
 1. Other Surfaces to Be Left Exposed: Trowel as described in ACI 302.1R, minimizing burnish marks and other appearance defects.

- a. Installation of sealant is recommended prior to installation of floor sealers to prevent the need for cleaning of saw cut joints for proper sealant adhesion.
- b. Chemical Curer/Sealer/Dustproofer/Hardener(When Applicable): Apply product per manufacturer's instructions after curing and protection procedures are complete.
 - 1) Acceptable Product:
 - (a) L&M Construction Chemicals, Inc: www.laticrete.com.
 - (b) Product: L&M Dress & Seal; Acrylic Cure, Sealer, and Dustproofer.
 - (1) Location: Storage/mechanical/exposed areas not to receive other finishes.
 - (c) Product: L&M Seal Hard; Concrete Sealer, Densifier, Chemical Hardener.
 - (1) Location: Garage/shop/warehouse type areas.
 - 2) Other Acceptable Manufacturers:
 - (a) Dayton Superior Corporation: www.daytonsuperior.com.
 - (b) BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
 - (c) Ashford Formula by Curecrete Distribution, Inc: www.ashfordformula.com.
 - (d) L.M. Scofield Company: www.scofield.com.
 - (e) The Euclid Chemical Company: www.euclidchemical.com.
 - 3) Substitutions: See Section 01 6000 - Product Requirements.
- E. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains as indicated on drawings.
- F. At interior slabs do not over trowel where concrete is to be left exposed to avoid slippery surfaces when wet. Review finishing with Architect's representative prior to completing the work.

3.08 CURING AND PROTECTION

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Surfaces Not in Contact with Forms:
 - 1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than 7 days by saturated burlap unless noted otherwise.
 - a. Saturated Burlap: Saturate burlap-polyethylene and place burlap-side down over floor slab areas, lapping ends and sides; maintain in place.
 - 2. Final Curing: Begin after initial curing but before surface is dry.

3.09 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Submit proposed mix design of each class of concrete to Architect for review prior to commencement of concrete operations.

3.10 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
 - 1. Concrete damaged by the construction activities required to complete the Work of this section shall also be considered defective concrete.
- C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

END OF SECTION

ISSUE DATE 01/07/2019

**SECTION 06 1000
ROUGH CARPENTRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preservative treated wood materials.
- B. Fire retardant treated wood materials.
- C. Miscellaneous framing and sheathing.

1.02 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- B. AWPA U1 - Use Category System: User Specification for Treated Wood; 2012.
- C. PS 1 - Structural Plywood; 2009.
- D. PS 20 - American Softwood Lumber Standard; 2010.
- E. WWPA G-5 - Western Lumber Grading Rules; 2011.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
 - 2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

2.02 DIMENSION LUMBER

- A. Grading Agency: Western Wood Products Association; WWPA G-5.
- B. Sizes: Nominal sizes as indicated on drawings, S4S.
- C. Moisture Content: S-dry or MC19.
 - 1. Plates: MC15 or KD15.
- D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No. 2 or Standard Grade.
 - 2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

- A. Miscellaneous Applications:
 - 1. Plywood Concealed From View But Located Within Exterior Enclosure: PS 1, C-C Plugged or better, Exterior grade.
 - 2. Plywood Exposed to View But Not Exposed to Weather: PS 1, A-D, or better.
 - 3. Other Locations: PS 1, C-D Plugged or better.
 - 4. Electrical Component Mounting: APA rated sheathing, fire retardant treated.

2.04 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
 - 2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.

- B. Prefabricated Blocking Systems: DANBACK 3/4 inch standard/treated plywood or approved equivalent: www.danback.com.

2.05 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
 - 1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
 - 2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.
- B. Fire Retardant Treatment:
 - 1. Manufacturers:
 - a. Arch Wood Protection, Inc: www.wolmanizedwood.com.
 - b. Hoover Treated Wood Products, Inc: www.frtw.com.
 - c. Osmose, Inc: www.osmose.com.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- C. Preservative Treatment:
 - 1. Manufacturers:
 - a. Arch Wood Protection, Inc: www.wolmanizedwood.com.
 - b. Viance, LLC: www.treatedwood.com.
 - c. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

- A. All wood exposed to or in contact with masonry or concrete shall be Preservative Treated Wood.
- B. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.
- C. Securely install blocking, size within 1/16 of required dimension, and install plumb and level.

3.02 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- C. Provide the following specific non-structural framing and blocking:
 - 1. Cabinets and shelf supports.
 - 2. Wall brackets.
 - 3. Handrails.
 - 4. Grab bars.
 - 5. Towel and bath accessories.
 - 6. Wall-mounted door stops.
 - 7. Chalkboards and marker boards.
 - 8. Wall paneling and trim.
 - 9. Joints of rigid wall coverings that occur between studs.
 - 10. Wall mounted TVs.
 - 11. Sectional door wood jambs.
 - 12. All other items indicated on the drawings and in the specifications.

3.03 INSTALLATION OF CONSTRUCTION PANELS

- A. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
 - 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.

2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
3. Install adjacent boards without gaps.

3.04 CLEANING

- A. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
- B. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

ISSUE DATE 01/07/2019

SECTION 06 2000
FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Finish carpentry items.
- B. Hardware and attachment accessories.

1.02 REFERENCE STANDARDS

- A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
- B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.0; 2016.
- C. BHMA A156.9 - American National Standard for Cabinet Hardware; 2010.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with installation of associated and adjacent components.
- B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data:
 - 1. Provide instructions for attachment hardware and finish hardware.
- C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
 - 1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
 - 2. Provide the information required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect work from moisture damage.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.
- C. Interior Woodwork Items:
 - 1. Window Sills: Match existing species.
 - 2. Fireplace Mantel: Mantels Direct: Product Breckenridge Unfinished; www.mantelsdirect.com.
 - 3. Faux Beams: Species Maple Rift cut.
 - 4. Other items indicated on the drawings.

2.02 WOOD-BASED COMPONENTS

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

2.03 FASTENINGS

- A. Fasteners: Of size and type to suit application; no special finish in concealed locations and zinc plated finish in exposed locations.
- B. Concealed Joint Fasteners: Threaded steel.

2.04 ACCESSORIES

- A. Lumber for Shimming and Blocking: Softwood lumber of SPF species.
- B. Wood Filler: Solvent base, tinted to match surface finish color.

2.05 HARDWARE

- A. Hardware: Comply with BHMA A156.9.

2.06 FABRICATION

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

2.07 SHOP FINISHING

- A. Sand work smooth and set exposed nails and screws.
- B. Apply wood filler in exposed nail and screw indentations.
- C. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.
- D. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
 - 1. Transparent:
 - a. Manufacturer's Standard.
 - b. Stain: As selected by Architect.
 - c. Sheen: As selected by the Architect.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 INSTALLATION

- A. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.
- B. Set and secure materials and components in place, plumb and level.
- C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.
- D. Install components with nails, set exposed nails, and apply matching wood filler.

3.03 TOLERANCES

- A. Maximum Variation from True Position: 1/16 inch.
- B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION

ISSUE DATE 01/07/2019

SECTION 06 4100
ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Specially fabricated cabinet units.
- B. Cabinet hardware.
- C. Preparation for installing utilities.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.
- B. Section 09 2116 - Gypsum Board Assemblies: Prefabricated Wood Blocking System.

1.03 REFERENCE STANDARDS

- A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
- B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.0; 2016.
- C. BHMA A156.9 - American National Standard for Cabinet Hardware; 2010.
- D. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
 - 1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
 - 2. Provide the information required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
- C. Product Data: Provide data for hardware accessories.
- D. Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, texture, and patterns.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect units from moisture damage.

1.07 FIELD CONDITIONS

- A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.01 CABINETS

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Plastic Laminate Faced Cabinets: Custom grade.

2.02 WOOD-BASED COMPONENTS

- A. Hardwood Lumber: NHLA; Graded in accordance with, Grade II/Custom; average moisture content of 5-10 percent; species as follows:

2.03 PANEL MATERIALS

- A. Particleboard: ANSI A208.1; medium density industrial type as specified in AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, composed of wood chips bonded with interior grade adhesive under heat and pressure; sanded faces; thickness as required; use for concealed components.

- B. Medium Density Fiberboard (MDF): ANSI A208.2; type as specified in AWI/AWMAC Architectural Woodwork Quality Standards Illustrated; composed of wood fibers pressure bonded with interior grade adhesive to suit application; sanded faces; thickness as required.
 - 1. Use as backing for plastic laminate unless otherwise indicated.
- C. Plywood for Non-Decorative Purposes: NIST PS 1, Interior rated adhesives, core of wood plies from listed species unless otherwise indicated, thickness as indicated or as required by application.
- D. Hardboard: AHA A135.4; Pressed wood fiber with resin binder, Class 1 - Tempered, 1/4 inch thick, smooth two sides (S2S); use for drawer bottoms, dust panels, and other components indicated on drawings.

2.04 LAMINATE MATERIALS

- A. Manufacturers:
 - 1. Formica Corporation: www.formica.com/#sle.
 - 2. Lamin-Art, Inc: www.laminart.com.
 - 3. Panolam Industries International, Inc; Nevamar: www.nevamar.com.
 - 4. Panolam Industries International, Inc\Pionite: www.pionitelaminates.com.
 - 5. Wilsonart: www.wilsonart.com.
 - 6. Arborite High Pressure Laminates: www.arborite.com/en.
 - 7. Substitutions: See Section 01 6000 - Product Requirements.
- B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.
- C. Provide specific types as indicated.
 - 1. Horizontal Surfaces: HGS, 0.048 inch nominal thickness, color and finish as selected by Architect from manufacturers full range of colors.
 - 2. Vertical Surfaces: VGS, 0.028 inch nominal thickness, color and finish as selected by Architect from manufacturers full range of colors.
 - 3. Cabinet Liner: CLS, 0.020 inch nominal thickness, color and finish as selected by Architect from manufacturers full range of colors.

2.05 ACCESSORIES

- A. Adhesive: Type recommended by fabricator to suit application.
- B. Plastic Edge Banding: Extruded PVC, flat shaped; smooth finish; with or without self-locking serrated tongue; of width to match component thickness.
 - 1. Color: Match adjacent plastic laminate.
 - 2. Materials Thickness:
 - a. Door and Drawer Edges: 0.118 inches.
 - b. Other Edges: 0.018 inches.
 - 3. Use at exposed sheet material edges and perimeter of all doors and drawers.
 - 4. Products:
 - a. WoodTape by Doellken-Woodtape: www.doellken-woodtape.com.
 - b. Canplast: www.canplast.com.
 - c. Rehau: www.rehau.com.
 - d. PVC Bumper Molding by Patwin Plastics: www.patwin.com.
- C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.
- D. Concealed Joint Fasteners: Threaded steel.
- E. Grommets: Standard plastic grommets for cut-outs, in color as selected by Architect.

2.06 HARDWARE

- A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.
- B. Locking Shelf Supports: Standard side-mounted system using multiple holes for pin supports with locking clips, clear finish, for nominal 1 inch spacing adjustments.
 - 1. Product: 8705CL 1/4" Pin Shelf Lock for 3/4" Shelf, Finish Clear manufactured by www.hardwareresources.com.

- C. Drawer and Door Pulls: "U" shaped wire pull, steel with satin finish, 4 inch centers.
- D. Cabinet Locks: Keyed cylinder, two keys per lock, master keyed, steel with satin finish.
- E. Drawer Slides:
 - 1. Type: Full extension.
 - 2. Static Load Capacity: 100 lbs minimum.
 - 3. Mounting: Side mounted.
 - 4. Stops: Integral type.
 - 5. Features: Provide self closing/stay closed type.
 - 6. Manufacturers:
 - a. Accuride International, Inc; Model 3832EC: www accuride.com.
 - b. Grass America Inc: www.grassusa.com/#sle.
 - c. Hettich America, LP; Quadro: www.hettich.com/sle.
 - d. Knappe & Vogt Manufacturing Company; Model 6505: www.knappeandvogt.com/#sle.
 - e. Substitutions: See Section 01 6000 - Product Requirements.
- F. Hinges: European style concealed self-closing type, steel with polished finish.
 - 1. Manufacturers:
 - a. Grass America Inc; Nexis: www.grassusa.com.
 - b. Hardware Resources; 22855-000: www.hardwareresources.com/#sle.
 - c. Hettich America, LP; Sensys: www.hettich.com/sle.
 - d. Julius Blum, Inc; Clip top Blumotion: www.blum.com.
 - e. Substitutions: See Section 01 6000 - Product Requirements.

2.07 FABRICATION

- A. Cabinet Style: Flush overlay.
- B. Cabinet Doors and Drawer Fronts: Flush style.
- C. Drawer Construction Technique: As specified in AWI/AWMAC Architectural Woodwork Quality Standards Illustrated.
- D. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
 - 1. Provide separate base to be installed and leveled prior to cabinet installation.
- E. Finished Ends: Finish ends of all casework not hidden by permanent construction; including locations adjacent to appliances and removable lowers cabinets.
- F. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
- G. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
- H. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.
- I. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Seal cut edges.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 INSTALLATION

- A. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
 - 1. Set separate base, plumb, level, and secure rigidly in-place prior to setting cabinets.
- B. Use fixture attachments in concealed locations for wall mounted components.
- C. Use concealed joint fasteners to align and secure adjoining cabinet units.

- D. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
- E. Secure cabinets to floor using appropriate angles and anchorages.
- F. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

3.03 ADJUSTING

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

3.04 CLEANING

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

END OF SECTION

ISSUE DATE 01/07/2019

SECTION 07 8400

FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Firestopping systems.
- B. Firestopping of all joints and penetrations in fire resistance rated and smoke resistant assemblies, whether indicated on drawings or not.
- C. Marking and identification of fire walls, fire barriers, fire partitions, smoke barriers, and smoke partitions, or any other wall required to have protected openings or penetrations.

1.02 REFERENCE STANDARDS

- A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2018a.
- B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a (Reapproved 2017).
- C. ITS (DIR) - Directory of Listed Products; current edition.
- D. FM (AG) - FM Approval Guide; current edition.
- E. UL (FRD) - Fire Resistance Directory; Current Edition.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Each respective trade shall provide submittals as it relates to their Scope of Work.
- C. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.
- D. Product Data: Provide data on product characteristics, performance ratings, and limitations.
- E. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- F. Installer Qualification: Submit qualification statements for installing mechanics.

1.04 QUALITY ASSURANCE

- A. Fire Testing: Provide firestopping assemblies of designs that provide the specified fire ratings when tested in accordance with methods indicated.
 - 1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.
 - 2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at www.icc-es.org will be considered as constituting an acceptable test report.
 - 3. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.
- B. Installer Qualifications: Personnel specializing and trained in performing the work of this section and:
 - 1. Trained by manufacturer.
- C. Each respective trade shall perform the Work of this section as it relates to their Scope of Work. Coordinate between all trades.
- D. Prior to installation of any of the fire-resistive "through" or "membrane" penetration fire block systems and any fire-resistive "joint" systems, detailed testing and installation information on each of the specific listed assemblies intended for use must be submitted to Building Official for code review. The specific assemblies must also be listed for each intended use (i.e. proper penetration size and rating condition and for the type of construction material that it is being used in/on). Each trade person responsible for sealing said conditions must provide this information to the building inspector for review prior to installation of any assembly.

1.05 FIELD CONDITIONS

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

- B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.01 MATERIALS

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

2.02 FIRESTOPPING SYSTEMS

- A. Firestopping: Any material meeting requirements.
 - 1. Fire Ratings: Use any system that is listed by UL (FRD) and tested in accordance with ASTM E814 with F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and in compliance with other specified requirements.

2.03 MATERIALS

- A. Firestopping Sealants: Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.
- B. Intumescent Firestop Sealants
 - 1. FlameSafe FS 1900 Intumescent Elastomeric Sealant.
 - 2. 3M Fire Barrier Caulk CP25WB+
 - 3. A/D Firebarrier Intumescent Caulk.
 - 4. Hilti USA
 - 5. Specified Technologies, Inc: www.stifirestop.com.
- C. Endothermic Water-Based Sealants
 - 1. FlameSafe FS 900 Endothermic Sealant
 - 2. 3M Interam FireDam 150 Caulk
 - 3. A/D Firebarrier Seal & Seal NS
 - 4. Hilti USA
 - 5. Specified Technologies, Inc: www.stifirestop.com.
- D. Elastomeric Firestop Coating
 - 1. FlameSafe FS2900 Intumescent Elastomeric Firestop Coating
 - 2. 3M FireDam Spray
 - 3. A/D Firebarrier Spraymastic
 - 4. Hilti USA
 - 5. Specified Technologies, Inc: www.stifirestop.com.
- E. Intumescent Firestop Putty
 - 1. FlameSafe FSP 1000 Intumescent Putty
 - 2. 3M Fire Barrier Moldable Putty+
 - 3. A/D Firebarrier Putty
 - 4. Hilti USA
 - 5. Specified Technologies, Inc: www.stifirestop.com.
- F. Firestop Mortar
 - 1. FlameSafe Mortar Seal
 - 2. 3M Fire Barrier Mortar
 - 3. A/D Firebarrier Mortar
 - 4. Hilti USA
 - 5. Specified Technologies, Inc: www.stifirestop.com.
- G. Firestop Bags
 - 1. FlameSafe Intumescent Firestop Bags
 - 2. A/D Firebarrier Pillows
 - 3. Hilti USA
 - 4. Specified Technologies, Inc: www.stifirestop.com.
- H. Firestop Sleeves
 - 1. FlameSafe Intumescent Sleeve
 - 2. Hilti USA
 - 3. Specified Technologies, Inc: www.stifirestop.com.

- I. Wrap Strips
 - 1. FlameSafe Intumescent Wrap Strip
 - 2. 3M Fire Barrier FS-195+ Wrap/Strip
 - 3. A/D Firebarrier Wrap Strip
 - 4. Hilti USA
 - 5. Specified Technologies, Inc: www.stifirestop.com.
- J. Restraining Collars
 - 1. FlameSafe FSRC 100/FSRC 150 Restraining Collars
 - 2. 3M Fire Barrier RC-1 Restraining collar
 - 3. A/D Firebarrier Collars & Collar Strips
 - 4. Hilti USA
 - 5. Specified Technologies, Inc: www.stifirestop.com.
- K. Composite Sheet
 - 1. 3M Fire Barrier CS-195+ Composite Sheet
 - 2. Hilti USA
 - 3. Specified Technologies, Inc: www.stifirestop.com.
- L. Accessories
 - 1. Forming or Damming Materials as specified by the manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter that could adversely affect bond of firestopping material.
- B. Remove incompatible materials that could adversely affect bond.
- C. Install backing materials to arrest liquid material leakage.

3.03 INSTALLATION

- A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
- B. Do not cover installed firestopping until inspected by authorities having jurisdiction.
- C. Install labeling required by code.
 - 1. Marking and Identification: Fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions or any other wall required to have protected openings or penetrations shall be effectively and permanently identified with signs or stenciling. Such identification shall:
 - a. Be located in accessible concealed floor, floor-ceiling or attic spaces;
 - b. Be located within 15 feet of the end of each wall and at intervals not exceeding 30 feet measured horizontally along the wall or partition; and
 - c. Include lettering not less than 3 inches in height with a minimum 3/8 inch stroke in a contrasting color incorporating the suggested wording. "FIRE AND/OR SMOKE BARRIER-PROTECT ALL OPENINGS" or other wording.

3.04 CLEANING

- A. Clean adjacent surfaces of firestopping materials.

3.05 PROTECTION

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

END OF SECTION

**SECTION 07 9200
JOINT SEALANTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

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

1.02 REFERENCE STANDARDS

- A. ASTM C834 - Standard Specification for Latex Sealants; 2014.
- B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.
- C. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2013.
- D. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2002 (Reapproved 2013).

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
 - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
 - 2. List of backing materials approved for use with the specific product.
 - 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
 - 4. Substrates the product should not be used on.
- C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
- D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.
- E. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section and with at least five years of documented experience.

1.05 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Base Manufacturer: Tremco Global Sealants: www.tremcosealants.com.
- B. Other Acceptable Manufacturers:
 - 1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
 - 2. Bostik Inc: www.bostik-us.com.
 - 3. Manus Products, Inc.: www.manus.net.
 - 4. Pecora Corporation: www.pecora.com.
 - 5. PSI, Polymeric Systems, Inc.: www.polymericsystems.com.

6. Red Devil: www.reddevil.com.
7. Sherwin-Williams Company: www.sherwin-williams.com.
8. Sika Corporation US: usa.sika.com.
9. W.R.Meadows: www.wrmeadows.com.
10. Substitutions: See Section 01 6000 - Product Requirements.

2.02 JOINT SEALANT APPLICATIONS

- A. Scope:
1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
 - a. Wall expansion and control joints.
 - b. Joints between door, window, and other frames and adjacent construction.
 - c. Joints between different exposed materials.
 - d. Openings below ledge angles in masonry.
 - e. Other joints indicated below.
 2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
 - a. Joints between door, window, and other frames and adjacent construction.
 - b. Other joints indicated below.
 - c. Other joints where indicated on the drawings.
 3. Do not seal the following types of joints.
 - a. Intentional weepholes in masonry.
 - b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
 - c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
 - d. Joints where installation of sealant is specified in another section.
 - e. Joints between suspended panel ceilings/grid and walls.
- B. Exterior Joints: Use nonsag polyurethane sealant, unless otherwise indicated.
1. Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane "traffic-grade" sealant.
- C. Interior Joints: Use nonsag polyurethane sealant, unless otherwise indicated.
1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant.
 2. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; Refer to colors below.
- D. Interior Wet Areas: Bathrooms, restrooms, kitchens, food service areas, and food processing areas; fixtures in wet areas include plumbing fixtures, food service equipment, countertops, cabinets, and other similar items.

2.03 JOINT SEALANTS - GENERAL

- A. Colors: Color shall be selected by the Architect from manufacturer's full range unless specifically indicated to be a specific color.

2.04 NONSAG JOINT SEALANTS

- A. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
1. Manufacturers:
 - a. Tremsil 200 manufactured by Tremco Commercial Sealants.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
- B. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multicomponent; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 25 percent, minimum.
 2. Manufacturers:
 - a. Dymonic FC or Dymeric 240 FC manufactured by Tremco Commercial Sealants.
 - b. Sonolastic NP1 or NP2 manufactured by BASF Construction Chemicals-Building Systems.

- c. Substitutions: See Section 01 6000 - Product Requirements.
- C. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
 - 1. Manufacturers:
 - a. TremFlex 834 manufactured by Tremco Commercial Sealants.
 - b. Substitutions: See Section 01 6000 - Product Requirements.

2.05 SELF-LEVELING SEALANTS

- A. Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Uses M and A; single or multicomponent; explicitly approved by manufacturer for traffic exposure; not expected to withstand continuous water immersion .
 - 1. Movement Capability: Plus and minus 25 percent, minimum.
 - 2. Manufacturers:
 - a. THC-900, Vulkem 45SSL (also Dymonic FC, or Dymeric 240 FC) manufactured by Tremco Commercial Sealants.
 - b. Sonolastic SL1, SL2 (also NP1, or NP2 manufactured by BASF Construction Chemicals-Building Systems.
 - c. Substitutions: See Section 01 6000 - Product Requirements.

2.06 ACCESSORIES

- A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
 - 1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type B - Bi-Cellular Polyethylene.
 - 2. Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type C - Closed Cell Polyethylene.
 - 3. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.
- B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
- C. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.
- D. Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.
- E. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

- D. Install bond breaker backing tape where backer rod cannot be used.
- E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.
- H. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

3.04 CLEANING

- A. Clean adjacent soiled surfaces.

3.05 PROTECTION

- A. Protect sealants until cured.

END OF SECTION

ISSUE DATE 01/07/2019

SECTION 08 1213
HOLLOW METAL FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Non-fire-rated hollow metal frames for non-hollow metal doors.
- B. Fire-rated hollow metal frames for non-hollow metal doors.

1.02 RELATED REQUIREMENTS

- A. Section 08 7100 - Door Hardware: Hardware and silencers.
- B. Section 09 9123 - Interior Painting: Field painting.

1.03 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2011.
- C. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2014.
- D. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2011.
- E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- F. ASTM A879/A879M - Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface; 2012.
- G. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2016.
- H. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2015.
- I. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames; 2014.
- J. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2009.
- K. ITS (DIR) - Directory of Listed Products; current edition.
- L. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.
- M. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2011.
- N. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.
- O. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2012.
- P. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.
- Q. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- R. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced grade standard.
- C. Shop Drawings: Details of each opening, showing elevations, frame profiles, and identifying location of different finishes, if any.
- D. Samples: Submit one sample of frame metal, 2 inch by 2 inch, showing factory finishes, colors, and surface textures.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 5 years of documented experience.
- B. Maintain at project site copies of reference standards relating to installation of products specified.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Hollow Metal Frames with Integral Casings:
 - 1. Ceco Door; Curries of Fleming, an Assa Abloy Group company: www.assaabloydss.com.
 - 2. Republic Doors, an Allegion brand: www.republicdoor.com/#sle.
 - 3. Steelcraft, an Allegion brand: www.allegion.com/sle.
 - 4. Mesker: www.meskerdoor.com.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.
- B. Hollow Metal Frames with Applied Casings, Prefinished:
 - 1. Timely Industries, Inc: www.timelyframes.com/#sle.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 DESIGN CRITERIA

- A. Door Frame Type: Provide hollow metal door frames with integral casings.
- B. Steel used for fabrication of frames shall conform to one or more of the following requirements; galvanized steel conforming to ASTM A653/A653M, cold-rolled steel conforming to ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel conforming to ASTM A1011/A1011M, Commercial Steel (CS) Type B for each.
- C. Accessibility: Conform to ICC A117.1 and ADA Standards.
- D. Combined Requirements: If a particular door and frame unit is indicated to conform to more than one type of requirement, conform to the specified requirements for each type; for instance, an exterior frame that is also indicated as being sound-rated must conform to the requirements specified for exterior frames and for sound-rated frames; where two requirements conflict, conform to the most stringent.
- E. Hardware Preparations, Selections and Locations: Comply with BHMA A156.115, NAAMM HMMA 830, NAAMM HMMA 831 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
- F. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.
- G. Frames Depth: Size frame depth to accommodate wall assembly thickness and to allow proper attachment to assembly components.

2.03 HOLLOW METAL DOOR FRAMES WITH INTEGRAL CASINGS

- A. Frame Finish: Factory primed and field finished.
- B. Interior Door Frames, Non-Fire Rated: Face welded type.
 - 1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
 - a. Level 2 - Heavy-duty.
 - b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
 - c. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
- C. Fire-Rated Door Frames: Face welded type.
 - 1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
 - a. Level 2 - Heavy-duty.
 - b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
 - c. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
 - 2. Fire Rating: As indicated on Door and Frame Schedule, tested in accordance with UL 10C or NFPA 252 ("positive pressure fire tests").
 - 3. Provide units listed and labeled by ITS (DIR) or UL (DIR).
 - a. Attach fire rating label to each fire rated unit.

2.04 HOLLOW METAL DOOR FRAMES WITH APPLIED CASINGS

- A. Frame Type: Knockdown, slip-on drywall frames; separate jambs and head with separate snap-on casings both sides; factory-applied finish on exposed surfaces.
 - 1. Frame Material: Cold-rolled steel complying with ASTM A1008/A1008M.
 - 2. Casing Material: Formed steel.
 - 3. Casing Profile: As indicated.
 - 4. Finish: Factory-applied baked enamel finish, or electrostatically applied water-based paint.
 - a. Color: As selected from manufacturer's full line.
- B. Interior Door Frames, Non-Fire-Rated:
 - 1. Frame Metal Thickness: 18 gage, 0.042 inch, minimum.
 - 2. Frames in Wet Areas: Electro-galvanize components prior to finishing in accordance with ASTM A879/A879M, with manufacturer's standard coating thickness.
- C. Interior Door Frames, Fire-Rated: Provide smoke gaskets.
 - 1. Frame Metal Thickness: 18 gage, 0.042 inch, minimum.
 - 2. Frames in Wet Areas: Electro-galvanize components prior to finishing in accordance with ASTM A879/A879M, with manufacturer's standard coating thickness.
 - 3. Fire Rating: As indicated on Door and Frame Schedule, tested in accordance with UL 10C or NFPA 252 ("positive pressure fire tests").
 - a. Provide units listed and labeled by testing agency acceptable to authorities having jurisdiction, ITS (DIR), or UL (DIR).
 - b. Attach fire rating label to each fire rated unit.
 - 4. Smoke and Draft Control Doors (Indicated with Letter "S" on Drawings and/or Door Schedule): In addition to required fire rating, provide door assemblies tested in accordance with UL 1784 with maximum air leakage of 3.0 cfm/sq ft of door opening at 0.10 inch w.g. pressure at both ambient and elevated temperatures; with "S" label; if necessary, provide additional gasketing or edge sealing.

2.05 FINISHES

- A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

2.06 ACCESSORIES

- A. Silencers: Resilient rubber, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.
- B. Grout for Frames: Portland cement grout with maximum 4 inch slump for hand troweling; thinner pumpable grout is prohibited.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 PREPARATION

- A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.
- B. Fill exterior doors and doors between heated and unconditioned space with foam-in-place insulation. Product: Great Stuff Pro window and door by Dow or approved equivalent.

3.03 INSTALLATION

- A. Install frames in accordance with manufacturer's instructions and related requirements of specified frame standards or custom guidelines indicated.
- B. Install fire rated units in accordance with NFPA 80.
- C. Coordinate frame anchor placement with wall construction.
- D. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.
- E. Install door hardware as specified in Section 08 7100.

3.04 TOLERANCES

- A. Maximum Diagonal Distortion: 1/16 inch measured with straight edges, crossed corner to corner.

END OF SECTION

ISSUE DATE 01/07/2019

**SECTION 08 1416
FLUSH WOOD DOORS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Flush wood doors; flush configuration; fire-rated and non-rated.

1.02 RELATED REQUIREMENTS

- A. Section 08 1213 - Hollow Metal Frames.
- B. Section 08 7100 - Door Hardware.

1.03 REFERENCE STANDARDS

- A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
- B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.0; 2016.
- C. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.
- D. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.
- C. Samples: Submit two samples of door veneer, 4 by 4 inch in size illustrating wood grain, stain color, and sheen.
- D. Specimen warranty.
- E. Warranty, executed in Owner's name.

1.05 QUALITY ASSURANCE

- A. Maintain one copy of the specified door quality standard on site for review during installation and finishing.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Package, deliver and store doors in accordance with specified quality standard.
- B. Accept doors on site in manufacturer's packaging. Inspect for damage.
- C. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

1.07 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Interior Doors: Provide manufacturer's warranty for the life of the installation.
- C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Wood Veneer Faced Doors:
 - 1. Eggers Industries: www.eggersindustries.com.
 - 2. Graham Wood Doors: www.grahamdoors.com.
 - 3. Marshfield DoorSystems, Inc: www.marshfielddoors.com.
 - 4. VT Industries: www.vtindustries.com.
 - 5. Mohawk Flush Doors, Inc: www.mohawkdoors.com.
 - 6. Oshkosh Door Company: www.oshkoshdoor.com.
 - 7. Substitutions: See Section 01 6000 - Product Requirements.

2.02 DOORS

- A. Doors: Refer to drawings for locations and additional requirements.
 - 1. Quality Standard: Custom Grade, Heavy Duty performance, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
 - 2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.
- B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
 - 1. Provide solid core doors at each location.
 - 2. Fire Rated Doors: Tested to ratings as indicated on drawings in accordance with UL 10C - Positive Pressure; Underwriters Laboratories Inc. (UL) or Intertek/Warnock Hersey (WHI) labeled without any visible seals when door is open.
 - 3. Wood veneer facing with factory transparent finish at all wood door locations.

2.03 DOOR AND PANEL CORES

- A. Non-Rated Solid Core and 20 Minute Rated Doors: Type structural composite lumber core (SCLC), plies and faces as indicated.
- B. Fire-Rated Doors: Mineral core type, with fire resistant composite core (FD), plies and faces as indicated above; with core blocking as required to provide adequate anchorage of hardware without through-bolting.

2.04 DOOR FACINGS

- A. Veneer Facing for Transparent Finish: wood species as scheduled on the drawings, veneer grade in accordance with quality standard indicated, plain sliced (flat cut), with book match between leaves of veneer, running match of spliced veneer leaves assembled on door or panel face; unless otherwise indicated.
 - 1. Vertical Edges: Same species as face veneer.
 - 2. "Pair Match" each pair of doors; "Set Match" pairs of doors within 10 feet of each other when doors are closed.
- B. Facing Adhesive: Type I - waterproof.

2.05 DOOR CONSTRUCTION

- A. Fabricate doors in accordance with door quality standard specified.
- B. Cores Constructed with stiles and rails:
- C. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
- D. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
- E. Provide edge clearances in accordance with the quality standard specified.

2.06 FACTORY FINISHING - WOOD VENEER DOORS

- A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
 - 1. Transparent:
 - a. System - 5, Varnish, Conversion.
 - b. Stain: As selected by Architect.
 - c. Sheen: Semigloss.
- B. Factory finish doors in accordance with approved sample.
- C. Seal door top edge with color sealer to match door facing.
 - 1. This requirement only applies when top edge is visible from elevated areas.

2.07 ACCESSORIES

- A. Hollow Metal Door Frames: As specified in Section 08 1113.
- B. Door Hardware: As specified in Section 08 7100.

PART 3 EXECUTION**3.01 INSTALLATION**

- A. Install doors in accordance with manufacturer's instructions and specified quality standard.

1. Install fire-rated doors in accordance with NFPA 80 requirements.
- B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.
- C. Use machine tools to cut or drill for hardware.
- D. Coordinate installation of doors with installation of frames and hardware.

3.02 TOLERANCES

- A. Conform to specified quality standard for fit and clearance tolerances.
- B. Conform to specified quality standard for telegraphing, warp, and squareness.

3.03 ADJUSTING

- A. Adjust doors for smooth and balanced door movement.
- B. Adjust closers for full closure.

3.04 SCHEDULE - SEE DRAWINGS

END OF SECTION

ISSUE DATE 01/07/2019

**SECTION 08 7100
DOOR HARDWARE**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Hardware for wood doors.
- B. Hardware for fire-rated doors.
- C. Electrically operated and controlled hardware.
- D. Weatherstripping and gasketing.

1.02 RELATED REQUIREMENTS

- A. Section 08 1213 - Hollow Metal Frames.
- B. Section 08 1416 - Flush Wood Doors.

1.03 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. BHMA A156.1 - American National Standard for Butts and Hinges; 2013.
- C. BHMA A156.2 - American National Standard for Bored and Preassembled Locks & Latches; 2011.
- D. BHMA A156.4 - American National Standard for Door Controls - Closers; 2013.
- E. BHMA A156.5 - American National Standard for Cylinders and Input Devices for Locks; 2014.
- F. BHMA A156.16 - American National Standard for Auxiliary Hardware; 2013.
- G. BHMA A156.18 - American National Standard for Materials and Finishes; 2012.
- H. BHMA A156.22 - American National Standard for Door Gasketing and Edge Seal Systems, Builders Hardware Manufacturers Association; 2012.
- I. DHI (LOCS) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames; 2004.
- J. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors; 1993; also in WDHS-1/WDHS-5 Series, 1996.
- K. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2009.
- L. ITS (DIR) - Directory of Listed Products; current edition.
- M. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- N. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.
- O. NFPA 101 - Life Safety Code; 2015.
- P. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2016.
- Q. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2012.
- R. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.
- S. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- T. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.
- B. Keying Requirements Meeting:
 - 1. Schedule meeting at project site prior to Contractor occupancy.
 - 2. Attendance Required:
 - a. Contractor.
 - b. Owner.

- c. Architect.
- d. Installer's Architectural Hardware Consultant (AHC).
- 3. Agenda:
 - a. Establish keying requirements.
- 4. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system including, but not limited to, the following:
- 5. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.
- 6. Deliver established keying requirements to manufacturers.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.
- C. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
 - 1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
 - 2. Provide complete description for each door listed.
- D. Shop Drawings - Electrified Door Hardware: Submit diagrams for power, signal, and control wiring for electrified door hardware that include details of interface with building safety and security systems. Provide elevations and diagrams for each electrified door opening as follows:
 - 1. Prepared by or under supervision of Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC).
 - 2. Elevations: Submit front and back elevations of each door opening showing electrified devices with connections installed and an operations narrative describing how opening operates from either side at any given time.
 - 3. Diagrams: Submit point-to-point wiring diagram that shows each device in door opening system with related colored wire connections to each device.
- E. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
- F. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- G. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Tools: One set of each special wrench or tool applicable for each different or special hardware component, whether supplied by hardware component manufacturer or not.

1.06 QUALITY ASSURANCE

- A. Standards for Fire-Rated Doors: Maintain one copy of each referenced standard on site, for use by Architect and Contractor.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least three years of documented experience.
- D. Supplier Qualifications: Company with certified Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC) to assist in work of this section.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

- B. Warranty against defects in material and workmanship for period indicated, from Date of Substantial Completion.
 - 1. Closers: Five years, minimum.
 - 2. Exit Devices: Three years, minimum.
 - 3. Locksets and Cylinders: Three years, minimum.
 - 4. Other Hardware: Two years, minimum.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

- A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.
- B. Provide individual items of single type, of same model, and by same manufacturer.
- C. Provide door hardware products that comply with the following requirements:
 - 1. Applicable provisions of federal, state, and local codes.
 - 2. Accessibility: ADA Standards and ICC A117.1.
 - 3. Applicable provisions of NFPA 101.
 - 4. Fire-Rated Doors: NFPA 80, listed and labeled by qualified testing agency for fire protection ratings indicated, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.
 - 5. Hardware on Fire-Rated Doors: Listed and classified by UL (DIR), ITS (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for application indicated.
 - 6. Hardware for Smoke and Draft Control Doors: Provide door hardware that complies with local codes, and requirements of assemblies tested in accordance with UL 1784.
 - a. Air Leakage Rate: Tested in accordance with UL 1784, with air leakage rate not to exceed 3.0 cfm/sf of door opening at 0.10 inch of water for both ambient and elevated temperature tests.
 - 7. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified.
- D. Electrically Operated and/or Controlled Hardware: Provide necessary power supplies, power transfer hinges, relays, and interfaces as required for proper operation; provide wiring between hardware and control components and to building power connection in compliance with NFPA 70.
 - 1. Refer to Section 28 1000 for additional access control system requirements.
- E. Fasteners:
 - 1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
 - a. Aluminum fasteners are not permitted.
 - b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
 - 2. Fire-Rated Applications: Comply with NFPA 80.
 - a. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
 - b. Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.

2.02 HINGES

- A. Manufacturers:
 - 1. McKinney; an Assa Abloy Group company: www.assaabloydss.com.
 - 2. Bommer Industries, Inc: www.bommer.com.
 - 3. Hager Companies: www.hagerco.com/#sle.
 - 4. Stanley, dormakaba Group: www.stanleyhardwarefordoors.com/#sle.
 - 5. Ives, an Allegion brand: www.allegion.com/us.
 - 6. Substitutions: See Section 01 6000 - Product Requirements.
- B. Hinges: Complying with BHMA A156.1, Grade 1.
 - 1. Provide hinges on every swinging door.
 - 2. Provide five-knuckle full mortise butt hinges unless otherwise indicated.

3. Provide ball-bearing hinges at each door.
4. Provide non-removable pins on exterior outswinging doors.
5. Provide non-removable pins on interior outswinging doors at locations where hinge knuckle is to non-secured side.
6. Provide stainless steel hinges on exterior doors and interior doors in wet locations.
7. Provide power transfer hinges where electrified hardware is mounted in door leaf.
8. Provide following quantity of butt hinges for each door:
 - a. Doors From 60 inches High up to 90 inches High: Three hinges.
 - b. Doors 90 inches High up to 120 inches High: Four hinges.
 - c. Doors over 36 inches Wide: One additional hinge per each additional 12 inches in width.

2.03 LOCK CYLINDERS

- A. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
 1. Provide standard type cylinders, Grade 1, with six-pin core in compliance with BHMA A156.5 at locations indicated.
 2. Provide cylinders from same manufacturer as locking device.
 3. Provide cams and/or tailpieces as required for locking devices.

2.04 CYLINDRICAL LOCKS

- A. Manufacturers:
 1. Basis of Design: Grade 1 - Lever Handle as Selected.
 2. Corbin Russwin, Sargent, or Yale; an Assa Abloy Group company: www.assaabloydss.com.
 3. Best, dormakaba Group: www.bestaccess.com/#sle.
 4. Hager Companies: www.hagerco.com/#sle.
 5. Schlage, an Allegion brand: www.allegion.com/us.
- B. Cylindrical Locks (Bored): Complying with BHMA A156.2, Grade 1, 4000 Series.
 1. Bored Hole: 2-1/8 inch diameter.
 2. Latchbolt Throw: 1/2 inch, minimum.
 3. Backset: 2-3/4 inch unless otherwise indicated.
 4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
 - a. Finish: To match lock or latch.

2.05 CLOSERS

- A. Manufacturers; Surface Mounted:
 1. Basis of Design: Grade 1 - Parallel Arm Push Side Mount - Metal Cover Plate - Sprayed to match.
 2. Corbin Russwin, Norton, Rixson, Sargent, or Yale; an Assa Abloy Group company: www.assaabloydss.com.
 3. Hager Companies: www.hagerco.com/#sle.
 4. LCN, an Allegion brand: www.allegion.com/us.
 5. Substitutions: See Section 01 6000 - Product Requirements.
- B. Closers: Complying with BHMA A156.4, Grade 1.

2.06 FLOOR STOPS

- A. Manufacturers:
 1. Basis of Design: Rockwood 442 Dome Stop.
 2. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
 3. Hiawatha, Inc, division of Activar Construction Products Group, Inc: www.activarcpg.com/hiawatha/#sle.
 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Floor Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
 1. Material: Aluminum housing with rubber insert.

2.07 WEATHERSTRIPPING AND GASKETING

- A. Manufacturers:
 1. Pemko; an Assa Abloy Group company: www.assaabloydss.com.
 2. Hager Companies: www.hagerco.com/#sle.
 3. National Guard Products, Inc: www.ngpinc.com.
 4. Zero International, Inc: www.zerointernational.com.
 5. Substitutions: See Section 01 6000 - Product Requirements.
- B. Weatherstripping and Gasketing: Complying with BHMA A156.22.
 1. Head and Jamb Type: Adjustable.
 2. Door Sweep Type: Encased in retainer.
 3. Material: Aluminum, with brush weatherstripping.
 4. Provide gasketing for smoke and draft control doors that complies with local codes, requirements of assemblies tested in accordance with UL 1784.
 5. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated; .
 6. Provide door bottom sweep on each exterior door, unless otherwise indicated.
 7. Provide sound-rated gasketing and automatic door bottom on doors indicated as "Sound-Rated", "Acoustical", or with "Sound Transmission Class (STC) rating"; fabricate as continuous gasketing, do not cut or notch gasketing material.

2.08 SILENCERS

- A. Manufacturers:
 1. Basis of Design: Hager 307D (Metal Frame) and/or 308D (Wood Frame) or Equivalent.
 2. Ives, an Allegion brand: www.allegion.com/us.
 3. Rockwood; an Assa Abloy Group company: www.assaabloydss.com.
 4. Hager Companies: www.hagerhinge.com.
 5. Substitutions: See Section 01 6000 - Product Requirements.
- B. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.
 1. Single Door: Provide three on strike jamb of frame.
 2. Pair of Doors: Provide two on head of frame, one for each door at latch side.
 3. Material: Rubber, gray color.

2.09 FINISHES

- A. Finishes: Provide door hardware of same finish, unless otherwise indicated.
 1. Primary Finish: 626; satin chromium plated over nickel, with brass or bronze base material (former US equivalent US26D); BHMA A156.18.
 2. Secondary Finish: 626; satin chromium plated over nickel, with brass or bronze base material (former US equivalent US26D); BHMA A156.18.
 - a. Use secondary finish in kitchens, bathrooms, and other spaces containing chrome or stainless steel finished appliances, fittings, and equipment; provide primary finish on one side of door and secondary finish on other side if necessary.
 3. Exceptions:
 - a. Where base material metal is specified to be different, provide finish that is an equivalent appearance in accordance with BHMA A156.18.
 - b. Hinges for Fire-Rated Doors: Steel base material with painted finish, in compliance with NFPA 80.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.
- B. Verify that electric power is available to power operated devices and of correct characteristics.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.

- B. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80.
- C. Install hardware for smoke and draft control doors in accordance with NFPA 105.
- D. Use templates provided by hardware item manufacturer.
- E. Do not install surface mounted items until application of finishes to substrate are fully completed.
- F. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
 - 1. For Steel Doors and Frames: Install in compliance with DHI (LOCS) recommendations.
 - 2. For Wood Doors: Install in compliance with DHI WDHS.3 recommendations.
- G. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.03 ADJUSTING

- A. Adjust work under provisions of Section 01 7000 - Execution and Closeout Requirements.
- B. Adjust hardware for smooth operation.
- C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.04 CLEANING

- A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.05 PROTECTION

- A. Protect finished Work under provisions of Section 01 7000 - Execution and Closeout Requirements.
- B. Do not permit adjacent work to damage hardware or finish.

PART 4 SCHEDULE

4.01 BASIC DOOR HARDWARE AND DOOR OPERATION INTENT HAS BEEN LISTED BELOW. PROVIDE ANY ADDITIONAL HARDWARE TO MEET APPLICABLE CODES AND TO ACHIEVE OPERATION, FUNCTION, AND INTENT. IF INTENT IS UNCLEAR TO BIDDER, CONTACT THE ARCHITECT REPRESENTATIVE FOR CLARIFICATION. PLEASE NOTE THAT SOME REQUIRED DOOR HARDWARE ITEMS ARE ONLY LISTED ABOVE AND NOT WITHIN THE HARDWARE GROUP.

5.01 HARDWARE GROUP 1

- A. Hinges
- B. Cylindrical Lockset - Privacy Function
- C. Floor Stop
- D. Silencers

5.02 HARDWARE GROUP 2

- A. Hinges
- B. Cylindrical Latchset - Passage Function
- C. Floor Stop
- D. Silencers

5.03 HARDWARE GROUP 3

- A. Hinges
- B. Cylindrical Latchset - Passage Function
- C. Closer
- D. Floor Stop
- E. Gasketing

5.04 HARDWARE GROUP 4

- A. Floor Stop

END OF SECTION

ISSUE DATE 01/07/2019

SECTION 09 0561

COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This section applies to floors identified in contract documents that are receiving the following types of floor coverings:
 - 1. Any type of flooring that can trap moisture and cause failure of setting adhesives.
- B. Removal of existing floor coverings.
- C. Preparation of new and existing concrete floor slabs for installation of floor coverings.
- D. Testing of concrete floor slabs for moisture and alkalinity (pH).
- E. Patching compound.
- F. Remedial floor coatings.

1.02 RELATED REQUIREMENTS

- A. Section 01 4000 - Quality Requirements: Additional requirements relating to testing agencies and testing.

1.03 REFERENCE STANDARDS

- A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2016a.
- B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete; 1999 (Reapproved 2014).
- C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.
- D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2011.
- E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2011.
- F. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; Resilient Floor Covering Institute; October 2011.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Visual Observation Report: For existing floor coverings to be removed.
- C. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
 - 1. Moisture and alkalinity (pH) limits and test methods.
 - 2. Manufacturer's required bond/compatibility test procedure.
- D. Testing Agency's Report:
 - 1. Description of areas tested; include floor plans and photographs if helpful.
 - 2. Summary of conditions encountered.
 - 3. Moisture and alkalinity (pH) test reports.
 - 4. Copies of specified test methods.
 - 5. Recommendations for remediation of unsatisfactory surfaces.
 - 6. Submit report not more than two business days after conclusion of testing.
- E. Adhesive Bond and Compatibility Test Report.
- F. Copy of RFCI (RWP).
- G. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.

1.06 QUALITY ASSURANCE

- A. The flooring contractor shall begin tracking and monitoring Moisture and pH testing results 4 weeks prior to scheduled installation of resilient flooring.
- B. Report all results, in writing, to the General Contractor and Architect.
- C. Moisture and pH testing may be performed by flooring installers own personnel.
- D. In the event that test values exceed manufacturer's limits, a third party testing agency may be brought in to retest and verify the results.
 - 1. The Owner shall pay for third party testing.
- E. Remedial Coating Installer Qualifications: Company specializing in performing work of the type specified in this section, trained by or employed by coating manufacturer, and able to provide at least 3 project references showing at least 3 years' experience installing moisture emission coatings.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, handle, and protect products in accordance with manufacturer's instructions and recommendations.
- B. Deliver materials in manufacturer's packaging; include installation instructions.
- C. Keep materials from freezing.

1.08 FIELD CONDITIONS

- A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.
- B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS**2.01 MATERIALS**

- A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
 - 1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
 - 2. Latex or polyvinyl acetate additions are permitted; gypsum content is prohibited.
 - 3. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.
- B. Alternate Flooring Adhesive: Floor covering manufacturer's recommended product, suitable for the moisture and pH conditions present; low-VOC. In the absence of any recommendation from flooring manufacturer, provide a product recommended by adhesive manufacturer as suitable for substrate and floor covering and for conditions present.
- C. Remedial Floor Coating: Single- or multi-layer coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
 - 1. Products:
 - a. ARDEX Engineered Cements; ARDEX MC RAPID: www.ardexamericas.com/#sle.
 - b. Custom Building Products; TechMVC Moisture Vapor and Alkalinity Barrier: www.custombuildingproducts.com/#sle.
 - c. Sika Corporation; Sikafloor Moisture Tolerance Epoxy Primer and Sikafloor Self-Leveling Moisture Tolerant Resurfacer: www.sikafloorusa.com.
 - d. SCHONOX SHP (Special Acrylic Primer), EPA (Two-Part, Epoxy Based Moisture Mitigation System), and ZM (Cement Based Self-Leveling Compound by SCHONOX HPS North America: www.hpsubfloors.com.
 - e. Sinak Corporation; Vect-R System: www.sinakcorp.com.
 - f. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

- A. Perform following operations in the order indicated:
 - 1. Preliminary cleaning.
 - 2. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
 - 3. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
 - 4. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
 - 5. Specified remediation, if required.
 - 6. Patching, smoothing, and leveling, as required.
 - 7. Grinding, filling, and leveling, as required.
 - 8. Other preparation specified.
 - 9. Adhesive bond and compatibility test.
 - 10. Protection.
- B. Notification:
 - 1. Notify the Owner/Architect immediately upon discovery of test results that inhibit proper installation of flooring products. Owner/Architect will determine how to proceed.
- C. Remediations:
 - 1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
 - 2. Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for installation of the flooring; if not, apply remedial floor coating or remedial sheet membrane over entire suspect floor area.
 - 3. Excessive Alkalinity (pH): If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

3.02 REMOVAL OF EXISTING FLOOR COVERINGS

- A. Comply with local, State, and federal regulations and recommendations of RFCI Recommended Work Practices for Removal of Resilient Floor Coverings, as applicable to floor covering being removed.
- B. Dispose of removed materials in accordance with local, State, and federal regulations and as specified.

3.03 PRELIMINARY CLEANING

- A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.
- B. Do not use solvents or other chemicals for cleaning.

3.04 MOISTURE VAPOR EMISSION TESTING

- A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
- B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.
- C. Test in accordance with ASTM F1869 and as follows.
- D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.

- E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet per 24 hours.
- F. Report: Report the information required by the test method.

3.05 INTERNAL RELATIVE HUMIDITY TESTING

- A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
- B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.
- C. Test in accordance with ASTM F2170 Procedure A and as follows.
- D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.
- E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.
- F. Report: Report the information required by the test method.

3.06 ALKALINITY TESTING

- A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
- B. The following procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.
- C. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.
- D. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.
- E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

3.07 PREPARATION

- A. See individual floor covering section(s) for additional requirements.
- B. Comply with requirements and recommendations of floor covering manufacturer.
- C. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.
- D. Do not fill expansion joints, isolation joints, or other moving joints.

3.08 ADHESIVE BOND AND COMPATIBILITY TESTING

- A. Comply with requirements and recommendations of floor covering manufacturer.

3.09 APPLICATION OF REMEDIAL FLOOR COATING

- A. Install in accordance with coating manufacturer's instructions.
- B. Comply with requirements and recommendations of coating manufacturer.

3.10 PROTECTION

- A. Cover prepared floors with building paper or other durable covering.

END OF SECTION

SECTION 09 2116
GYPSON BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Performance criteria for gypsum board assemblies.
- B. Metal stud wall framing.
- C. Acoustic insulation.
- D. Gypsum wallboard.
- E. Joint treatment and accessories.
- F. Prefabricated Wood Blocking System.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.

1.03 REFERENCE STANDARDS

- A. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.
- B. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2015.
- C. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2014.
- D. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.
- E. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2015.
- F. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2013.
 - 1. GA-214 - Recommended Levels of Gypsum Board Finish; Gypsum Association; 2007.
- G. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2015.
- H. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2016.
- I. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base; 2014a.
- J. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2014.
- K. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels; 2015.
- L. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.
- M. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009.
- N. ASTM E413 - Classification for Rating Sound Insulation; 2016.
- O. GA-216 - Application and Finishing of Gypsum Board; 2013.
- P. GA-600 - Fire Resistance Design Manual; 2015.
- Q. UL (FRD) - Fire Resistance Directory; Current Edition.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate the location of all expansion joints in plan and elevation view. Include details at intersections of walls, floors, ceilings, and other construction.
- C. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing gypsum board installation and finishing, with minimum five years of documented experience.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
- B. Interior Partitions, Indicated as Acoustic: Provide completed assemblies with the following characteristics:
 - 1. Acoustic Attenuation: STC as indicated calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.
 - 2. Walls indicated to received sound insulation that are not indicated to meet an STC rating are not intended to be constructed as an acoustic assembly.
- C. Fire Rated Assemblies: Provide completed assemblies complying with applicable code.
 - 1. Gypsum Association File Numbers: Comply with requirements of GA-600 for the particular assembly.
 - 2. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL (FRD).

2.02 METAL FRAMING MATERIALS

- A. Manufacturers - Metal Framing, Connectors, and Accessories:
 - 1. Clarkwestern Dietrich Building Systems LLC: www.clarkdietrich.com.
 - 2. Marino: www.marinoware.com.
 - 3. Phillips Manufacturing Co: www.phillipsmfg.com/#sle.
 - 4. The Steel Network, Inc: www.steelnetwork.com.
 - 5. Custom Stud, Inc: www.customstud.com.
 - 6. Telling Industries: www.buildstrong.com.
 - 7. Substitutions: See Section 01 6000 - Product Requirements.
- B. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf.
 - 1. Shapes and Sizes: As indicated on the drawings.
- C. Partition Head To Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short and fastened as indicated on drawings.

2.03 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
 - 1. American Gypsum Company: www.americangypsum.com.
 - 2. CertainTeed Corporation: www.certainteed.com.
 - 3. Georgia-Pacific Gypsum: www.gpgypsum.com.
 - 4. Lafarge North America Inc: www.lafargenorthamerica.com.
 - 5. National Gypsum Company: www.nationalgypsum.com.
 - 6. PABCO Gypsum: www.pabco gypsum.com.
 - 7. USG Corporation: www.usg.com.
 - 8. Substitutions: See Section 01 6000 - Product Requirements.
- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 - 1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
 - 2. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
 - 3. Thickness:
 - a. Vertical Surfaces: 5/8 inch.
- C. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
 - 1. Application: Vertical surfaces behind thinset tile, except in wet areas.

2. Type X Thickness: 5/8 inch.
3. Edges: Tapered.

2.04 ACCESSORIES

- A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Thickness: 3 or more inches as required to fill wall depth.
 1. ASTM E84 surface burning characteristics: Flame Spread Index 25 or less; Smoke Developed Index 450 or less.
- B. Finishing Accessories: ASTM C1047, galvanized steel, rolled zinc, rigid plastic, or aluminum, unless noted otherwise.
 1. Types: As detailed or required for finished appearance.
 - a. Products for specific applications:
 - 1) Expansion Joints (V-Groove Joint): Trim-Tex #093V Expansion joint or approved equal shall be used at expansion joints in flat wall or ceiling applications.
 - 2) Angled Joints: Trim-Tex Magic Corner or approved equal shall be used at angular walls and ceilings.
 - 3) Wall Termination: Trim-Tex Tear Away XT Extra Tall Masking or approved equal shall be used at all location where new construction terminates into existing construction or non-gypsum construction.
 2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.
 3. Products:
 - a. Same manufacturer as framing materials.
 - b. Phillips Manufacturing Co: www.phillipsmfg.com/#sle.
 - c. Trim-Tex, Inc.: www.trim-tex.com.
 - d. Fry Reglet: www.fryreglet.com.
 - e. Substitutions: See Section 01 6000 - Product Requirements.
- C. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
 1. Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.
 2. Ready-mixed vinyl-based joint compound.
 3. Powder-type vinyl-based joint compound.
- D. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inch in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion resistant.
- E. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion resistant.
- F. Prefabricated Blocking Systems: DANBACK 3/4 inch standard/treated plywood or approved equal: www.danback.com.
- G. Steel Column and Beam Drywall Clips:
 1. The Claw Column & Beam Single Step Clips by Claw International: www.clawintl.com.
 2. GRABBER Steel Columns & Beam Drywall Clips: www.gravverman.com.
 3. GripClip drywall and sheathing to column or beam Clips: www.steelnetwork.com.
 4. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.
- B. Studs: Space studs as permitted by standard.
 1. Extend partition framing to structure where indicated and to ceiling in other locations.

2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
 3. Partitions Terminating at Structure: Attach extended leg top runner to structure, maintain clearance between top of studs and structure, and brace both flanges of studs with continuous bridging.
- C. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.
- D. Blocking: Install wood blocking for support of:
1. Wall mounted cabinets.
 2. Plumbing fixtures.
 3. Toilet partitions.
 4. Toilet accessories.
 5. Wall mounted door hardware.
 6. All other items indicated on the drawings and in the specifications.

3.03 ACOUSTIC ACCESSORIES INSTALLATION

- A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

3.04 BOARD INSTALLATION

- A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Provide solid continuous shims under first layer of gypsum board as necessary to minimize variations in plane. Tolerance of surface shall be as indicated.
- C. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
1. Exception: Tapered edges to receive joint treatment at right angles to framing.
- D. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
- E. Installation on framing: Use screws for attachment of gypsum board.

3.05 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as follows:
1. Not more than 30 feet apart on walls, soffits, and ceilings in any direction.
 2. At intersections of soffits and intersecting walls.
 3. At intersection of half height wall and intersecting walls.
 4. At locations indicated on the drawings.
 5. Other locations where cracking may occur due to changes in height and structure.
 6. All jointing locations shall be indicated on shop drawings.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.06 JOINT TREATMENT

- A. Paper Faced Gypsum Board: Use paper joint tape, bedded with ready-mixed vinyl-based joint compound and finished with ready-mixed vinyl-based joint compound.
- B. Finish gypsum board in accordance with levels defined in ASTM C 840 (additional reference guideline; GA-214 - Recommended Levels of Gypsum Board Finish), as follows:
1. Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish and other areas including the following: (Level 5 shall be a thin skim coat of joint compound trowel applied; no spray or roller applied products will be accepted.)
 - a. Walls that are perpendicular to large glazed openings where glazed openings are 50% or more of the area of the wall, within the room, in which they are located.
 - b. Tall wall 16'-0" and taller.
 - c. Long walls and ceilings 30'-0" and longer.
 - d. Large wall and ceilings area of 500 square feet and larger.
 - e. Walls with glass-mat-faced wallboard products.

- f. Walls, ceilings, and areas specifically indicated on the drawings.
 - 2. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
 - a. No visible defects should be apparent under normal lighting conditions. Provide Level 5 finish where defects become apparent at no additional cost to the Owner.
 - b. Contractors that cannot guarantee their Level 4 finish will be free of visible defects under normal lighting conditions should provide a Level 5 finish.
 - c. If the Architect or Owner is unsatisfied with a Level 4 finish due to visible defects under normal lighting conditions then a Level 5 finish shall be installed at no additional cost to the Owner. No exceptions.
 - 3. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
 - 4. Level 1: Wall areas above finished ceilings, whether or not accessible in the completed construction.
- C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
- 1. Feather coats of joint compound so that camber is maximum 1/32 inch.
 - 2. Tapered edges of gypsum board that are not located at taped and filled joints shall also be filled and sanded smooth to match the plane of the wall.

3.07 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

ISSUE DATE 01/07/2019

SECTION 09 3000

TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Tile for floor applications.
- B. Tile for wall applications.
- C. Cementitious backer board as tile substrate.
- D. Non-ceramic trim.
- E. Waterproofing Membrane System at Showers.

1.02 RELATED REQUIREMENTS

- A. Section 07 9200 - Joint Sealants: Sealing joints between tile work and adjacent construction and fixtures.

1.03 REFERENCE STANDARDS

- A. ANSI A108/A118/A136.1 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2013.1.
 - 1. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2014.
 - 2. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
 - 3. ANSI A108.1c - Specifications for Contractors Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Bed with Dry-Set or Latex-Portland Cement; 1999 (Reaffirmed 2010).
 - 4. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive; 2009 (Revised).
 - 5. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
 - 6. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy; 1999 (Reaffirmed 2010).
 - 7. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (Reaffirmed 2010).
 - 8. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 1999 (Reaffirmed 2010).
 - 9. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 1999 (Reaffirmed 2010).
 - 10. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2010 (Reaffirmed 2016).
 - 11. ANSI A108.11-SystemDeleted - American National Standard for Interior Installation of Cementitious Backer Units; 2010 (Revised).
 - 12. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior glue plywood) Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
 - 13. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2010).
 - 14. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2012 (Revised).
 - 15. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation; 2010 (Revised).
 - 16. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 1999 (Reaffirmed 2016).

17. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-set Ceramic Tile and Dimension Stone Installation; 2014.

B. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2015.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- C. Verification Samples: Submit two samples in actual sizes illustrating color and pattern for each tile product specified.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Tile: 2 percent of each size, color, and surface finish combination, but not less than 3 of each type.

1.05 QUALITY ASSURANCE

- A. Maintain one copy of and ANSI A108/A118/A136.1 and TCNA (HB) on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.
- C. Installer Qualifications: Company specializing in performing tile installation, with minimum of five years of documented experience.

PART 2 PRODUCTS

2.01 TILE

- A. Tile Finishes:
 - 1. Products as scheduled on the drawings including:
 - a. Tile Flooring.
 - b. Wall Tiles.
- B. Manufacturers: All products by the same manufacturer.
 - 1. Ceramics Technics Ltd.: www.ceramictechnics.com.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 TRIM AND ACCESSORIES

- A. Non-Ceramic Trim: Satin natural anodized extruded aluminum, style and dimensions to suit application, for setting using tile mortar or adhesive.
 - 1. Manufacturers:
 - a. Schluter-Systems: www.schluter.com/#sle.
 - b. M-D Building Products: www.mdteam.com.
 - c. Substitutions: See Section 01 6000 - Product Requirements.

2.03 SETTING MATERIALS

- A. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4.
 - 1. Applications: Use this type of bond coat where indicated and where no other type of bond coat is indicated.
 - 2. Products:
 - a. ARDEX Engineered Cements: www.ardexamericas.com.
 - b. LATICRETE International, Inc: www.laticrete.com.
 - c. ProSpec, an Oldcastle brand: www.prospec.com.
 - d. Bostik, Inc: www.bostik-us.com.
 - e. Custom Building Products: www.custombuildingproducts.com.
 - f. Tec Specialty: www.tecspecialty.com.
 - g. MAPEI Corporation: www.mapei.us.
 - h. H.B. Fuller Construction Products Inc: www.tecspecialty.com.
 - i. Substitutions: See Section 01 6000 - Product Requirements.

2.04 GROUTS

- A. Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.

1. Applications: Use this type of grout where indicated and where no other type of grout is indicated.
2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
3. Color(s): As scheduled on the drawings.
4. Products:
 - a. ARDEX Engineered Cements: www.ardexamericas.com.
 - b. Bostik Inc: www.bostik-us.com.
 - c. LATICRETE International, Inc: www.laticrete.com.
 - d. ProSpec, an Oldcastle brand: www.prospec.com.
 - e. Custom Building Products: www.custombuildingproducts.com.
 - f. Tec Specialty: www.tecspecialty.com.
 - g. MAPEI Corporation: www.mapei.us.
 - h. H.B. Fuller Construction Products Inc: www.tecspecialty.com.
 - i. Substitutions: See Section 01 6000 - Product Requirements.

2.05 ACCESSORY MATERIALS

- A. Concrete Floor Slab Crack Isolation Membrane: Material complying with ANSI A118.12; not intended as waterproofing.
 1. Thickness: 20 mils, maximum.
 2. Crack Resistance: No failure at 1/8 inch gap, minimum.
 - a. Cracks exceeding 1/8 inch shall be treated in accordance with TCNA handbook. Do not exceed the limitation of each product. Provide a combination of product when required to isolate larger cracks, sawed joints, and construction joints.
 3. Description and Locations: Sheet membrane and liquid applied materials for isolating cracks and joints in floor; covering of entire floor is not intended unless specifically noted or required by flooring manufacturer.
 4. Products:
 - a. Laticrete 170 Sound N' Crack Isolation Mat.
 - b. Mapeguard 2 by Mapei.
 - c. NobleSeal TS by the Noble Company.
 - d. CrackBuster Pro Crack Prevention Mat Underlayment by Custom Building Products.
 - e. TEC HydraFlex with Mesh by Fuller Construction Products, Inc.
 - f. RedGard with Mesh by Custom Building Products.
 - g. Mapelastic CI with Mesh by MAPEI.
 - h. GoldPlus with Mesh by Bostik.
 - i. Substitutions: See Section 01 6000 - Product Requirements.
- B. Waterproofing Membrane: Ready-to-use elastomeric membrane for interior and exterior substrates that create monolithic waterproofing and crack prevention membrane.
 1. Material: Liquid-applied elastomeric membrane, 30 mils dry, minimum.
 - a. Custom Building Products, RedGard: www.custombuildingproducts.com.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
 2. Application: Provide at all toilet room and restroom floors on second floor under floor tile; extend up walls 12 inches for base, stop at base if and where wall transitions to a non-ceramic tile finish; provide at shower walls and floors under tile.
- C. Waterproofing Membrane System at Showers: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
 1. Product: Schluter - Commercial Grade Shower System, Including the following components:
 - a. Kerdi-Waterproofing Membrane.
 - b. Kerdi-Band Waterproofing Strips.
 - c. Kerdi-Kereck-F Waterproofing Corners.
 - d. Kerdi-Seal-PS/-MV
 - e. Kerdi-Drain with integrated bonding flange and 6 inch round stainless steel grate.
 - f. Kerdi-Shower-ST Tray; or as recommended by installation instructions.
 - g. Kerdi-Shower-SC Curb; only where indicated at non-accessible shower stalls.
 - h. Dilex-EHK, Stainless Steel.

2. Include additional components as recommended by the system manufacturer to create a complete waterproofing system.
3. Coordinate system components with plumbing contractor.
4. Manufacturers:
 - a. Schluter-Systems: www.schluter.com.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
- D. Backer Board: Cementitious type complying with ANSI A118.9; high density, glass fiber reinforced, 1/2 inch thick; 2 inch wide coated glass fiber tape for joints and corners.
- E. Grout Sealer: Easy-to-apply, penetrating sealer that resists most common oil-based and water-based stains.
 1. Material: Ready-to-use for spray or brush application.
 2. Locations: All standard grout.
 3. Manufacturers:
 - a. Custom Building Products; TileLab Grout and Tile Sealer: www.custombuildingproducts.com.
 - b. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.
- C. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of setting materials to sub-floor surfaces.
- D. Verify that concrete sub-floor surfaces are ready for tile installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within limits recommended by tile manufacturer and setting materials manufacturer.
- E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Protect surrounding work from damage.
- B. Vacuum clean surfaces and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
- D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.

3.03 INSTALLATION - GENERAL

- A. Install tile, thresholds, and stair treads and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.13, manufacturer's instructions, and TCNA (HB) recommendations.
- B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
- C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly.
- D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
- E. Form internal angles square and external angles bullnosed.
- F. Install non-ceramic trim in accordance with manufacturer's instructions.
- G. Sound tile after setting. Replace hollow sounding units.
- H. Keep control and expansion joints free of mortar, grout, and adhesive.
- I. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
- J. Grout tile joints unless otherwise indicated.

K. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

L. Apply grout sealer to all cementitious grouts.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS

A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.

1. Isolate cracks and joints in concrete floor with crack isolation membrane.

3.05 INSTALLATION - SHOWERS AND BATHTUB WALLS

A. At tiled shower receptors install in accordance with TCNA (HB) Method B415, mortar bed floor, and W244, thin-set over cementitious backer unit walls.

B. At bathtub walls install in accordance with TCNA (HB) Method B412, over cementitious backer units with waterproofing membrane.

C. Grout with standard grout as specified above.

3.06 INSTALLATION - WALL TILE

A. Over gypsum wallboard on wood or metal studs install in accordance with TCNA (HB) Method W243, thin-set with dry-set or latex-Portland cement bond coat, unless otherwise indicated.

3.07 CLEANING

A. Clean tile and grout surfaces.

3.08 PROTECTION

A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

ISSUE DATE 01/07/2019

SECTION 09 6813

TILE CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Carpet tile flooring, fully adhered.
- B. Matching roll carpet for direct glue installation on base.
- C. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 09 0561 - Common Work Results for Flooring Preparation: Testing of concrete slabs, removal of existing floor coverings and coating (where applicable), cleaning, and preparation.

1.03 REFERENCE STANDARDS

- A. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2005.
- B. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.
- C. Verification Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.
- D. Submit two, 6 inch long samples of base cap.
- E. Manufacturer's Installation Instructions: Indicate special procedures.
- F. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.
 - 3. Extra Roll Carpet: 36 sq ft of each type, color, and pattern installed.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum five years documented experience.
- B. Installer Qualifications: Company specializing in installing carpet tile with minimum five years documented experience and approved by carpet tile manufacturer.

1.06 FIELD CONDITIONS

- A. Store materials in area of installation for minimum period of 24 hours prior to installation.
- B. Maintain minimum 70 degrees F ambient temperature 24 hours prior to, during and 24 hours after installation.
- C. Ventilate installation area during installation and for 72 hours after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Carpet Tile Products:
 - 1. Products as scheduled on the drawings.
- B. Carpet Tile Manufacturers:
 - 1. Milliken & Company: www.milliken.com.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 ACCESSORIES

- A. Sub-Floor Filler: White premix latex; type recommended by flooring material manufacturer.
- B. Moldings and Edge Strips: As scheduled on the drawings.
- C. Carpet Tile Adhesive: Recommended by carpet tile manufacturer; releasable type.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that sub-floor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.
- B. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to sub-floor surfaces.
- C. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for flooring installation by testing for moisture and pH.
 - 1. Test in accordance with ASTM F710.
 - 2. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.
- D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- B. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.
- C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.
- D. Vacuum clean substrate.

3.03 INSTALLATION

- A. Starting installation constitutes acceptance of sub-floor conditions.
- B. Install carpet tile in accordance with manufacturer's instructions.
- C. Blend carpet from different cartons to ensure minimal variation in color match.
- D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.
- E. Lay carpet tile in pattern indicated on the drawings. If no pattern is indicated contract the architect for additional direction.
- F. Fully adhere carpet tile to substrate.
- G. Adhere roll carpet as base finish up vertical surfaces to form base. Terminate top of base with cap strip. Base to six inches tall unless noted otherwise.
- H. Trim carpet tile neatly at walls and around interruptions.
- I. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING

- A. Provide training classes for owner's cleaning staff by flooring manufacturer's representative prior to substantial completion. Invite Architect's representative to attended class.
 - 1. Contractor's representative to attend class to insure initial cleaning meets all requirement of products installed under this section.
- B. Remove excess adhesive without damage, from floor, base, and wall surfaces.
- C. Clean and vacuum carpet surfaces.

END OF SECTION

SECTION 09 9123
INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints, stains, and varnishes.
- C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
 - 1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
 - 2. Exposed surfaces of primed and unprimed metal items in finished areas unless specifically indicated to not be painted.
 - 3. Mechanical and Electrical:
 - a. In finished areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, electrical equipment, and pipes, unless otherwise indicated.
 - b. In finished areas, paint shop-primed items.
- D. Do Not Paint or Finish the Following Items:
 - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
 - 2. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
 - 5. Floors, unless specifically indicated.
 - 6. Glass.
 - 7. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

- A. Section 09 2116 - Gypsum Board Assemblies: Joint and surface treatment prior to painting.

1.03 DEFINITIONS

- A. Conform to ASTM D16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2014.
- C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition, www.paintinfo.com.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
 - 2. MPI product number (e.g. MPI #47).
 - 3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
 - 4. Manufacturer's installation instructions.
 - 5. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.
- C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.

1. Where sheen is specified, submit samples in only that sheen.
 2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens definitely not required.
 3. Allow 15 days for approval process, after receipt of complete samples by Architect.
 4. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as factory finished items, have been approved.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 6000 - Product Requirements, for additional provisions.
 2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
 3. Label each container with color in addition to the manufacturer's label.
 4. Do not provide or leave extra paint materials for the Owner.
 5. Do provide product info, color names, and installation locations for all products and colors. Information shall be included in the Operation and Maintenance Manual.

1.06 QUALITY ASSURANCE

- A. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five years documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.08 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
- B. Paints:
1. Base Manufacturer: Sherwin Williams: www.sherwin-williams.com.
 2. Other Manufacturers: Approved products shall meet performance and physical characteristics of base manufacturer (basis of design) product including published ratio of solids by volume, plus or minus two percent.
- C. Other Acceptable Manufacturers: Submit product information for each line of paint for Architect's approval. Substitutions of Base Manufacturer's products may not be accepted during the shop drawing process.
1. Behr Process Corporation: www.behr.com/#sle.
 2. Benjamin Moore & Co: www.benjaminmoore.com.
 3. Diamond Vogel Paints: www.diamondvogel.com/#sle.
 4. PPG Paints: www.ppgpaints.com/#sle.
 5. Pratt & Lambert Paints: www.prattandlambert.com/#sle.
 6. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
 7. Tnemec: www.tnemec.com.
 8. Valspar Corporation: www.valsparpaint.com/#sle.

D. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.
1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - a. Spayed finish; is preferred on all metal surfaces; is required on the following surfaces:
 - 1) Metal doors and frames; prior to hardware installation.
 - 2) Metal door frames for wood doors; prior to hardware installation.
 2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
 3. Provide commercial grade paint systems by approved paint manufacturer for substrates not specifically covered under paint systems.
 - a. Consult with Architect/Engineer/Designer for approval of additional products and systems. Provide quantifiable product information.
 4. Supply each paint material in quantity required to complete entire project's work from a single production run.
 5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
- B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
- C. Volatile Organic Compound (VOC) Content:
1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
 2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
- E. Colors: As indicated on drawings.
1. Where indicated or scheduled colors do not match the paint product lines indicated below it is anticipated that colors will be color matched; product lines below are intended to set a level of standard for the product lines used for each application.
 2. Locations Not Indicated: Selection to be made by Architect after award of contract.
 3. Extend colors to surface edges; colors may change at any edge as directed by Architect.
 4. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.
- F. Coats: The number of coats specified, are based on manufacturer's recommendations. Provide for additional coats, as necessary, for complete coverage and true color. Additional coats due to a lack of coverage shall be provided at no additional cost to the Owner. No exceptions.
- G. Coverage: Do not stretch products beyond their recommended coverage rate nor install fewer coats than specified regardless of appearance after previous coats are applied. Thin product application may show surface imperfections or inconsistencies that would otherwise not be visible. Additional coats due to a lack of proper coverage shall be provided at no additional cost to the Owner. No exceptions.

2.03 PAINT SYSTEMS - INTERIOR

- A. Paint Product: **ProMar 200 Zero VOC Interior Latex**
1. Primer: One coat primer sealer in all locations; primer shall be installed under paint products even if product is considered self-priming.
 2. Number of Paint Coats Over Primer: Two.
 3. Types of Substrates:

- a. Drywall.
- 4. Sheen: As scheduled on the drawings.
- 5. Locations Types:
 - a. Walls unless noted otherwise.
 - b. Ceilings unless noted otherwise.
 - c. Soffits unless noted otherwise.
 - d. Bulkheads unless noted otherwise.
- B. Varnish Product: **Wood Classics FastDry Oil Varnish**
 - 1. Stain: Wood Classics Interior Oil Stain.
 - 2. Filler Coat: Wood Classics FastDry Sanding Sealer.
 - 3. Types of Substrates:
 - a. Wood.
 - 4. Location Types:
 - a. Finish Carpentry Items.
 - 5. Number of Varnish Coats: Two.

2.04 ACCESSORY MATERIALS

- A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin application of paints and finishes until substrates have been properly prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- E. Test shop-applied primer for compatibility with subsequent cover materials.
- F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 1. Gypsum Wallboard: 12 percent.

3.02 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask and/or protect all surfaces, appurtenances not affiliated with coating process, including but not limited to electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

3.03 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- E. Painting shall be free from paint runs; no exceptions.

- F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

ISSUE DATE 01/07/2019

**SECTION 10 2601
WALL AND CORNER GUARDS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Corner guards.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Blocking for wall and corner guard anchors.

1.03 REFERENCE STANDARDS

- A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2018a.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate physical dimensions, features, anchorage details, and rough-in measurements.
- C. Samples: Submit two sections of product, 24 inch long, illustrating component design, configuration, color and finish.
- D. Manufacturer's Instructions: Indicate special procedures, perimeter conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Wall and Corner Guards:
 - 1. Inpro: www.inprocorp.com/#sle.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 COMPONENTS

- A. Corner Guards - Surface Mounted:
 - 1. Material: High impact vinyl with full height extruded aluminum retainer.
 - 2. Width of Wings: 2 inches.
 - 3. Corner: Square.
 - 4. Color: As scheduled on the drawings.
 - 5. Height: As scheduled on the drawings.
 - 6. Length: One piece.
 - 7. Preformed end caps.
 - 8. Products:
 - a. InPro Corporation: Model 160; Surface Mount Corner Guard.

2.03 FABRICATION

- A. Fabricate components with tight joints, corners and seams.
- B. Pre-drill holes for attachment.
- C. Form end trim closure by capping and finishing smooth.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to wall framing members only.

3.02 TOLERANCES

- A. Maximum Variation From Required Height: 1/4 inch.
- B. Maximum Variation From Level or Plane For Visible Length: 1/4 inch.

END OF SECTION

SECTION 10 2800
TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Commercial toilet accessories.
- B. Commercial shower and bath accessories.
- C. Mirrors.

1.02 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2011.
- C. ASTM C1036 - Standard Specification for Flat Glass; 2016.
- D. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2008 (Reapproved 2013).

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design: Products listed are made by Bobrick: www.bobrick.com.
- B. Commercial Toilet, Shower, and Bath Accessories:
 - 1. AJW Architectural Products: www.ajw.com.
 - 2. ASI - American Specialties, Inc: www.americanspecialties.com.
 - 3. Bradley Corporation: www.bradleycorp.com.
 - 4. Bobrick Washroom Equipment, Inc: www.bobrick.com.
 - 5. Gamco USA: www.gamcousa.com.
 - 6. Basco Incorporated: www.bascoinc.com.
 - 7. Substitutions: Section 01 6000 - Product Requirements.
- C. Provide products of each category type by single manufacturer.

2.02 MATERIALS

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
- B. Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.

2.03 FINISHES

- A. Stainless Steel: Satin finish, unless otherwise noted.
- B. Chrome/Nickel Plating: ASTM B456, SC 2, polished finish, unless otherwise noted.

2.04 COMMERCIAL TOILET ACCESSORIES

- A. Toilet Paper Dispenser: Double roll, surface mounted bracket type, satin finished cast aluminum brackets, eccentric-shaped plastic spindle for 1/2 revolution delivery designed to prevent theft of tissue roll.
 - 1. Products:
 - a. B-2740 manufactured by Bobrick.
- B. Mirror: Novo Mirror by Electric Mirror Company: Product Novo LED Lighted Mirror; www.electricmirror.com.

1. Size: 36 by 60 inches.
 2. Substitutions: Not permitted.
- C. Mirrors: Stainless steel framed, 1/4 inch thick annealed float glass; ASTM C1036.
1. Size: 36 by 36 inches.
 2. Frame: 0.05 inch angle shapes, with mitered and welded and ground corners, and tamperproof hanging system; satin finish.
- D. Grab Bars: Stainless steel, nonslip grasping surface.
1. Standard Duty Grab Bars:
 - a. Push/Pull Point Load: 250 pound-force, minimum.
 - b. Dimensions: 1 1/2 inch outside diameter, minimum 0.05 inch wall thickness, exposed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
 - c. Length and Configuration: As indicated on drawings.
 - d. Products:
 - 1) B-6806 Series manufactured by Bobrick.
 - 2) Substitutions: Section 01 6000 - Product Requirements.

2.05 COMMERCIAL SHOWER AND BATH ACCESSORIES

- A. Folding Shower Seat: Wall-mounted surface; welded tubular seat frame, structural support members, swing-down legs, hinges, and mechanical fasteners of Type 304 stainless steel, rectangular seat.
1. Seat: Teakwood slats secured to supporting frame members with stainless steel screws. Ease edges of each slat.
 2. Size: ADA Standards compliant.
 3. Products:
 - a. Moen: Product DN7110 Teak Wood Home Care Teak Folding Shower Seat; www.moen.com.
 - b. Substitutions: Not permitted.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify exact location of accessories for installation.
- C. Verify that field measurements are as indicated on drawings.

3.02 INSTALLATION

- A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.

3.03 PROTECTION

- A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION

ISSUE DATE 01/07/2019

SECTION 10 3100
MANUFACTURED FIREPLACES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Manufactured steel box fireplace electric.

1.02 RELATED REQUIREMENTS

- A. Section 26 0583 - Wiring Connections.

1.03 REFERENCE STANDARDS

- A. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.
- B. UL 127 - Standard for Factory-Built Fireplaces; Current Edition, Including All Revisions.

1.04 DESIGN REQUIREMENTS

- A. Power Data: AC 120V/60Hz, 15 Amps.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide fire box cabinet dimensions, clearances required from adjacent dissimilar construction, applicable regulatory agency approvals, electrical characteristics of fan.
- C. Manufacturer's Certificate: Certify that fireplace components meet or exceed UL (DIR) requirements.
- D. Manufacturer's Instructions: Indicate installation procedures and component installation sequence, clearances and tolerances from adjacent construction.

1.06 REGULATORY REQUIREMENTS

- A. Products Requiring Electrical Connection: Listed and labeled by 1 or testing firm acceptable to authorities having jurisdiction, as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufactured Fireplaces:
 - 1. Great Company: www.electricfireplacesdirect.com.
 - a. Product: GreatCo 50 Inch Gallery Linear Wall Mount Electric Fireplace - GE-50.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 ACCESSORIES

- A. Fasteners and Anchors: Galvanized steel type.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

- A. Verify that prepared openings are ready to receive work and opening dimensions are as indicated on drawings.
- B. Verify that proper power supply is available.

3.02 INSTALLATION

- A. Install unit assembly in accordance with manufacturer's instructions and UL requirements.
- B. Carefully cut holes for fan wall switch and grilles.

3.03 TOLERANCES

- A. Maximum Variation of Chimney From Plumb: 1/2 inch.

END OF SECTION

**SECTION 12 3600
COUNTERTOPS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Countertops for architectural cabinet work.

1.02 RELATED REQUIREMENTS

- A. Section 06 4100 - Architectural Wood Casework.

1.03 REFERENCE STANDARDS

- A. ASTM D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position; 2014.
- B. ISFA 3-01 - Classification and Standards for Quartz Surfacing Material; 2013.
- C. MIA (DSDM) - Dimensional Stone Design Manual; VII, 2007.
- D. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Specimen warranty.
- C. Shop Drawings: Complete details of materials and installation; combine with shop drawings of cabinets and casework specified in other sections.
- D. Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and patterns.
- E. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.06 FIELD CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 COUNTERTOPS

- A. Natural Quartz and Resin Composite Countertops: Sheet or slab of natural quartz and plastic resin self-supporting over structural members.
 - 1. Flat Sheet Thickness: 1-1/4 inch, minimum.
 - 2. Natural Quartz and Resin Composite Sheets, Slabs and Castings: Complying with ISFA 3-01 and NEMA LD 3; orthophthalic polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
 - a. Manufacturers:
 - 1) Wilsonart; Quartz Serene Q1001: www.wilsonart.com/#sle.
 - 2) Substitutions: Not permitted.
 - b. Factory fabricate components to the greatest extent practical in sizes and shapes indicated; comply with the MIA Dimension Stone Design Manual.
 - c. Finish on Exposed Surfaces: Polished.
 - 3. Other Components Thickness: 3/4 inch, minimum.
 - 4. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.

2.02 MATERIALS

- A. Counter Support Brackets with Skirt/Apron Support:
 - 1. ADA Vanity Bracket by A&M Hardware, Inc, or equivalent.
 - 2. Stone Pro ADA Compliant Countertop Support #3743 by Braxton-Bragg, Rakks EHV-Vanity Supports, or equivalent.
 - a. Other equivalent brackets are acceptable.
 - 3. Fasteners: Provide Flat head 1/4" - 20 thread with 4 mm hex drive connector bolts in chrome, black, or oil rubbed bronze. Color as selected by Architect.
- B. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.
- C. Joint Sealant: Mildew-resistant silicone sealant, clear.

2.03 FABRICATION

- A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
 - 1. Join lengths of tops using best method recommended by manufacturer.
 - 2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
 - 3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.
- B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
 - 1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
 - 2. Height: 4 inches, unless otherwise indicated.
- C. Solid Surfacing: Fabricate tops up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 PREPARATION

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

3.03 INSTALLATION

- A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.
- B. Attach wood countertops using screws with minimum penetration into substrate board of 5/8 inch.
- C. Seal the exposed front underside edge of plastic laminate countertops with clear solvent based polyurethane at all locations; or wrap with plastic laminate back to face of casework below.
- D. Seal joint between back/end splashes and vertical surfaces. Paintable sealant to be selected by Architect.

3.04 TOLERANCES

- A. Variation From Horizontal: 1/8 inch in 10 feet, maximum.
- B. Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.
- C. Field Joints: 1/8 inch wide, maximum.

3.05 CLEANING

- A. Clean countertops surfaces thoroughly.

3.06 PROTECTION

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

END OF SECTION

ISSUE DATE 01/07/2019

SECTION 22 0010

BASIC MECHANICAL PLUMBING REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Basic Mechanical Plumbing Requirements specifically applicable to Division 22 in addition to Division 1 - General Requirements.

1.02 SCOPE OF WORK

- A. The Mechanical Plumbing Contract shall also include furnishing and installing a complete plumbing system for the new building and all other related work as called for under the specifications and shown on plans.

1.03 WORK INCLUDED

- A. The Mechanical Plumbing Contract shall include all work under the listed Division 22 of the Specifications Index and all related Mechanical work as shown on the Drawings for the project.
- B. A Complete table of Mechanical Reference Symbols is shown on the plans.
- C. Under this Contract the Mechanical Contractor shall furnish the Owner with two 3-ring binders of all pertinent systems related documents. Submit manuals to the Engineer for his review. The Engineer will then turn books over to the Owner. The books shall contain the following items:
 - 1. Shop drawings on all major equipment.
 - 2. Operating Instructions for all major equipment.
 - 3. Maintenance Instructions for all major equipment.
 - 4. Wiring diagrams for all equipment.
 - 5. Test and Balance Reports.
- D. The Mechanical Contractor is responsible for contacting the utility companies and coordinating the water, sewer and natural gas connections for the building service. Include all costs in bid.
- E. The Mechanical installation to be made under Divisions 22 is set up for contract bidding as follows:
 - 1. Mechanical Plumbing Contractor is a sub-contractor to the General Contractor.
 - a. The Mechanical contractor is responsible for own equipment, such as cranes, lifts, etc. in order to provide a complete installation of mechanical systems.
 - b. The Mechanical contractor shall be a sub-contractor to the General Contractor and shall include in his bid, prices from sub-contractors for control wiring, and other trades necessary to complete the entire job.

1.04 SPECIFICATIONS COMPLIANCE

- A. The requirements of these specifications shall be complied with in every respect. Therefore, it shall be absolutely mandatory that the job foreman, all lead mechanics, subcontractors and their foreman have completely studied these specifications, be completely knowledgeable as to their entire contents, and maintain a copy at the job-site. Failure to comply with this requirement will be reason to presume the mechanic or subcontractor is not in responsible charge of his work due to ignorance of job requirements, and will be reason for the owner to require dismissal and replacement with approved personnel. Every foreman and lead mechanic shall be provided with a complete copy of this specification.

1.05 INCONSISTENCIES

- A. If there is an inconsistency in the quality and/or quantity of Work required by the Contract Documents, either the greater quality and/or quantity of Work indicated shall be provided in accordance with the Engineer/Architect's interpretation without change in the contract sum.

1.06 WORK NOT INCLUDED

- A. The following work is not included as part of the Contract.
 - 1. The removal and storage of any equipment in the building required to be moved or relocated during the construction process.

1.07 CODES, FEES AND LATERAL COSTS

- A. The Plumbing Installation shall meet all applicable local, state and federal codes and standards.

- B. All permits necessary for a complete plumbing installation shall be paid for by this Contractor.
- C. This contractor shall contact the local utilities for gas, water, sanitary and storm sewers, and include in their bid the any costs associated with service installation charges of the utility(s).
- D. Except in those municipalities which provide state- approved electrical inspection, all installation of electrical equipment wiring shall be inspected by the State Board of Electricity. Allowance shall be made in the bid and contract for the cost of such inspection.
 - 1. Fees for such inspection will be charged in accordance with the rules and regulations of the State Board of Electricity. Evidence of payment of fees shall be provided by the Contractor with his Request for Payment.

1.08 REFERENCES

- A. All equipment, piping, etc., shall be new and shall be installed to meet the approval of the following additional ordinances: ASME Rules for Pressure Tanks, National Board of Fire Underwriter's Rules, American Waterworks and the American Gas Association.

1.09 SUBMITTALS

- A. Submit under provisions of Division 01 3000.
- B. Submit shop drawings and product data grouped to include complete submittals of related systems, products, and accessories in a single submittal.
- C. All documents shall be submitted in .pdf format unless pre-approved by Engineer.
- D. The contractor shall not use any equipment or materials that does not have the engineer's stamped approval.
- E. Mark dimensions and values in units to match those specified.

1.10 PROJECT/SITE CONDITIONS

- A. Install Work in locations shown on Drawings, unless prevented by Project conditions.

1.11 SEQUENCING AND SCHEDULING

- A. Construct Work in sequence under provisions of Division 1.

1.12 PRE-CONSTRUCTION COORDINATION AND VERIFICATION

- A. This Contractor shall coordinate his work with other Contractors on this job. Any conflict which cannot be resolved shall be settled by the Architect/Engineer.
- B. Field verification of scale dimensions on plans is directed since actual locations, distances and levels will be governed by actual field conditions.
- C. The Contractors shall check architectural, structural, plumbing, heating, ventilating and electrical plans to avert possible installation conflicts. Should drastic changes from original plans be necessary to resolve such conflicts this Contractor shall notify the Architect/Engineer and secure written approval and agreement on necessary adjustments before the installation is started.
- D. Discrepancies shown on different plans or between plans and actual field conditions or between plans and specifications shall promptly be brought to the attention of the Architect/Engineer for a decision.
- E. The Contractor shall consider and review the complete set of documents, etc., Architectural, Structural, Mechanical, Electrical, etc., (Drawings and Specifications) as his complete set. He will be responsible for any and all mechanical work shown or stated (to be by him), to include this work in his bid and install such items even though they are not specifically shown or stated on the Mechanical section of the plans and specifications.

1.13 COORDINATION

- A. Contractor shall be responsible for continual coordination of the mechanical work with other trades so as to avoid conflicts in installation. Contractor shall cooperate with other trades to assure that construction proceeds in an orderly and timely manner.
- B. Study the civil, structural, electrical, shop and any specialty drawings and specifications to determine required coordination.
 - 1. Anchor bolts, sleeves, inserts and supports that may be required for the mechanical work shall be furnished and installed under the same division of the specifications as the

- respective items to be supported. Excluded from this requirement are cast in place anchor bolts.
2. Slots, chases, openings and recesses through floors and walls as specified will be provided by the various trades in their respective materials, but the trade requiring them shall see that they are properly located in zones provided or otherwise approved by the Engineer or Architect and/or Owner.
 3. Locations of pipes, panels, equipment, fixtures, etc., shall be adjusted to accommodate interferences encountered. The Project Coordinator shall determine the exact rerouting and location of each pipe and/or duct encountered prior to fabrication.
 - a. Right-of-Way: Lines which pitch shall have the right of way over those which do not pitch. Lines whose elevations cannot be changed shall have the right of way over lines whose elevations can be changed.
 - b. Offsets, transitions and changes in direction in pipes shall be made as required to maintain proper head room and pitch of sloping lines whether or not indicated on the drawings.
 4. Installation of Arrangement: The contractor shall install all mechanical work to permit removal of, and access to, (without damage to other parts) all parts requiring periodic replacement or maintenance.
- C. Layout Priority:
1. All trades shall understand that other trades will need to work in the same areas during the project. All final decisions as to the right-of-way and runs of utility lines (pipes, ducts, etc.) shall be made by Owner and/or Architect. In general, priority shall be given as follows:
 - a. Process piping which must be drainable
 - b. Sheet metal ductwork
 - c. Light Fixtures
 - d. Plumbing waste lines, downspouts, and vents
 - e. Sprinkler piping
 - f. Gravity water lines
 - g. Ice water or steam lines
 - h. Refrigerant lines
 - i. Gas and air lines
 - j. Plumbing water
 - k. Electrical conduit
 - l. Control air lines
- D. PREPARE DETAILED SHOP DRAWINGS WHERE NECESSARY TO ASSURE PROPER FIT AND NECESSARY CLEARANCE.

1.14 CUTTING, PATCHING AND FIRESTOPPING

- A. This Mechanical Contractor shall set all sleeves in construction for his work. Where cutting is required, it shall be done by this Contractor. All patching shall be done by the General Contractor. General contractor shall provide and install firestopping materials.

1.15 ELECTRICAL

- A. Electrical Contractor shall furnish all motor starters and motor controls and provide all wiring for motor control operation, except if specified otherwise.

1.16 ADDITIONAL ELECTRICAL COSTS

- A. If the Mechanical Contractor substitutes equipment for specified units, the mechanical contractor shall be responsible for any additional electrical installation costs for this substitution whether the other equipment was listed as equal in the specification or was approved equal after the project was in the bidding process.

1.17 GUARANTEE

- A. This Contractor shall be responsible for the proper installation and working of everything in this contract and shall guarantee to remedy free of charge any defects in workmanship and materials that may appear to give or gives rise to trouble of any kind for a period of one year from date of final substantial completion.

PART 2 PRODUCTS
2.01 NOT USED
PART 3 EXECUTION
3.01 NOT USED

END OF SECTION

ISSUE DATE 01/07/2019

SECTION 22 0719
PLUMBING PIPING INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Piping insulation.
- B. Jackets and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping.
- B. Section 22 1005 - Plumbing Piping: Placement of hangers and hanger inserts.

1.03 REFERENCE STANDARDS

- A. Applicable State Plumbing Code with Amendments
 - 1. Wisconsin: State Plumbing Code
- B. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- C. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- D. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2014.
- E. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2013.
- F. ASTM C195 - Standard Specification for Mineral Fiber Thermal Insulating Cement; 2007 (Reapproved 2013).
- G. ASTM C449 - Standard Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement; 2007 (Reapproved 2013).
- H. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2017.
- I. ASTM C533 - Standard Specification for Calcium Silicate Block and Pipe Thermal Insulation; 2013.
- J. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2016.
- K. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation; 2017.
- L. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation; 2016a.
- M. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2015a.
- N. ASTM C585 - Standard Practice for Inner and Outer Diameters of Thermal Insulation for Nominal Sizes of Pipe and Tubing; 2010 (Reapproved 2016).
- O. ASTM C591 - Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation; 2017.
- P. ASTM C610 - Standard Specification for Molded Expanded Perlite Block and Pipe Thermal Insulation; 2016.
- Q. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel; 2008 (Reapproved 2013).
- R. ASTM D1056 - Standard Specification for Flexible Cellular Materials--Sponge or Expanded Rubber; 2014.
- S. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics; 2012.
- T. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.
- U. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- V. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.
- C. Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with not less than three years of documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified in this section with minimum 3 years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.

1.07 FIELD CONDITIONS

- A. Maintain ambient conditions required by manufacturers of each product.
- B. Maintain temperature before, during, and after installation for minimum of 24 hours.

PART 2 PRODUCTS**2.01 REGULATORY REQUIREMENTS**

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 GLASS FIBER

- A. Manufacturers:
 - 1. Johns Manville Corporation; _____: www.jm.com/#sle.
 - 2. Knauf Insulation: www.knaufinsulation.com/#sle.
 - 3. Owens Corning Corp: www.owenscorning.com.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Insulation: ASTM C547 and ASTM C795; rigid molded, noncombustible.
 - 1. 'K' Value: ASTM C177, 0.24 at 75 degrees F.
 - 2. Maximum Service Temperature: 850 degrees F.
 - 3. Maximum Moisture Absorption: 0.2 percent by volume.
- C. Insulation: ASTM C547 and ASTM C795; semi-rigid, noncombustible, end grain adhered to jacket.
 - 1. 'K' Value: ASTM C177, 0.24 at 75 degrees F.
 - 2. Maximum Service Temperature: 650 degrees F.
 - 3. Maximum Moisture Absorption: 0.2 percent by volume.
- D. Vapor Barrier Jacket: White Kraft paper with glass fiber yarn, bonded to aluminized film; moisture vapor transmission when tested in accordance with ASTM E96/E96M of 0.02 perm-inches.
- E. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.
- F. Vapor Barrier Lap Adhesive: Compatible with insulation.
- G. Insulating Cement/Mastic: ASTM C195; hydraulic setting on mineral wool.
- H. Fibrous Glass Fabric:
 - 1. Cloth: Untreated; 9 oz/sq yd weight.
 - 2. Blanket: 1.0 lb/cu ft density.
 - 3. Weave: 5 by 5.

2.03 CELLULAR GLASS

- A. Manufacturers:
 - 1. Pittsburgh Corning Corporation: www.foamglasinsulation.com.

2. Substitutions: See Section 01 6000 - Product Requirements.
- B. Insulation: ASTM C552, Type II.
 1. Apparent Thermal Conductivity; 'K' Value: Grade 6, 0.35 at 100 degrees F.
 2. Service Temperature: Up to 800 degrees F.
 3. Water Vapor Permeability: 0.005 perm inch.
 4. Water Absorption: 0.5 percent by volume, maximum.

2.04 JACKETS

- A. PVC Plastic.
 1. Manufacturers:
 - a. Johns Manville Corporation: www.jm.com.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
 2. Jacket: One piece molded type fitting covers and sheet material, off-white color.
 - a. Minimum Service Temperature: 0 degrees F.
 - b. Maximum Service Temperature: 150 degrees F.
 - c. Moisture Vapor Permeability: 0.002 perm inch, maximum, when tested in accordance with ASTM E96/E96M.
 - d. Thickness: 10 mil.
 - e. Connections: Brush on welding adhesive.
 3. Covering Adhesive Mastic: Compatible with insulation.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that piping has been tested before applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with North American Insulation Manufacturers Association (NAIMA) National Insulation Standards.
- C. Exposed Piping: Locate insulation and cover seams in least visible locations.
- D. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.
- E. Glass fiber insulated pipes conveying fluids below ambient temperature:
 1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.
 2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.
- F. For hot piping conveying fluids 140 degrees F or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.
- G. For hot piping conveying fluids over 140 degrees F, insulate flanges and unions at equipment.
- H. Glass fiber insulated pipes conveying fluids above ambient temperature:
 1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples.
 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
- I. Inserts and Shields:
 1. Application: Piping 1-1/2 inches diameter or larger.
 2. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
 3. Insert Location: Between support shield and piping and under the finish jacket.
 4. Insert Configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.

- 5. Insert Material: Hydrous calcium silicate insulation or other heavy density insulating material suitable for the planned temperature range.
- J. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, refer to Section 07 8400.
- K. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces: Finish with PVC jacket and fitting covers.

3.03 SCHEDULES

A. Plumbing Systems:

- 1. Domestic Hot Water Supply (140°F or less):
 - a. Glass Fiber Insulation:
 - 1) Pipe Size Range: 0-1.25 inch.
 - (a) Thickness: 1 inch.
 - 2) Pipe Size Range: 1.5 inch & UP.
 - (a) Thickness: 2 inch.
 - b. Cellular Glass Insulation:
 - 1) Pipe Size Range: 0-1.25 inch.
 - (a) Thickness: 1 inch.
 - 2) Pipe Size Range: 1.5 inch & UP.
 - (a) Thickness: 2 inch.
- 2. Domestic Hot Water Recirculation (140°F or less):
 - a. Glass Fiber Insulation:
 - 1) Pipe Size Range: 0-1.25 inch.
 - (a) Thickness: 1 inch.
 - 2) Pipe Size Range: 1.5 inch & UP.
 - (a) Thickness: 2 inch.
 - b. Glass Fiber Insulation:
 - 1) Pipe Size Range: 0-1.25 inch.
 - (a) Thickness: 1 inch.
 - 2) Pipe Size Range: 1.5 inch & UP.
 - (a) Thickness: 2 inch.
- 3. Domestic Cold Water:
 - a. Glass Fiber Insulation:
 - 1) Pipe Size Range: All sizes.
 - (a) Thickness: 1 inch.
 - b. Cellular Glass Insulation:
 - 1) Pipe Size Range: All sizes.
 - (a) Thickness: 1 inch.
- 4. Roof Drainage Within 10 Feet of the Exterior:
 - a. Glass Fiber Insulation:
 - 1) Pipe Size Range: 0-2.5 inch.
 - (a) Thickness: 1 inch.
 - 2) Pipe Size Range: 3 inch & UP.
 - (a) Thickness: 2 inch.
 - b. Cellular Glass Insulation:
 - 1) Pipe Size Range: 0-2.5 inch.
 - (a) Thickness: 1 inch.
 - 2) Pipe Size Range: 3 inch & UP.
 - (a) Thickness: 2 inch.
 - c. Roof Drainage Run Horizontal at Roof Level:1"
- 5. Plumbing Vents Within 10 Feet of the Exterior:
 - a. Glass Fiber Insulation:
 - 1) Pipe Size Range: 0-2.5 inch.
 - (a) Thickness: 1 inch.
 - 2) Pipe Size Range: 3 inch & UP.
 - (a) Thickness: 2 inch.
 - b. Cellular Glass Insulation:

- 1) Pipe Size Range: 0-2.5 inch.
 - (a) Thickness: 1 inch.
- 2) Pipe Size Range: 3 inch & UP.
 - (a) Thickness: 2 inch.

END OF SECTION

ISSUE DATE 01/07/2019

**SECTION 22 1005
PLUMBING PIPING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pipe, pipe fittings, specialties, and connections for piping systems.
 - 1. Sanitary sewer.
 - 2. Domestic water.
 - 3. Storm water.
 - 4. Natural gas
 - 5. Flanges, unions, and couplings.
 - 6. Pipe hangers and supports.
 - 7. Valves.

1.02 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping.
- B. Section 08 3100 - Access Doors and Panels.
- C. Section 09 9123 - Interior Painting.
- D. Section 22 0516 - Expansion Fittings and Loops for Plumbing Piping.
- E. Section 22 0719 - Plumbing Piping Insulation.
- F. Section - Expansion Fittings and Loops for Plumbing Piping.
- G. Section 26 0583 - Wiring Connections: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

- A. Applicable State Plumbing Code with Amendments
 - 1. Wisconsin: State Plumbing Code
- B. ANSI Z21.22 - American National Standard for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems; 2015.
- C. ANSI Z223.1 - National Fuel Gas Code; 2016.
- D. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300; 2016.
- E. ASME B16.4 - Gray Iron Threaded Fittings: Classes 125 and 250; 2016.
- F. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2012.
- G. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2018.
- H. ASME B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes; 2018.
- I. ASME B31.1 - Power Piping; 2018.
- J. ASME B31.9 - Building Services Piping; 2014.
- K. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing and Fusing Operators; 2017.
- L. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2018.
- M. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings; 2017.
- N. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service; 2018a.
- O. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).
- P. ASTM B42 - Standard Specification for Seamless Copper Pipe, Standard Sizes; 2015a.
- Q. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2016.
- R. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2016.
- S. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube; 2016.

- T. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings; 2016.
- U. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings; 2014.
- V. ASTM D2513 - Standard Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing, and Fittings; 2018a.
- W. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems; 2012 (Reapproved 2018).
- X. ASTM D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings; 2014.
- Y. ASTM D2683 - Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing; 2014.
- Z. ASTM D2855 - Standard Practice for the Two-Step (Primer & Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets; 2015.
- AA. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2016.
- AB. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems; 2010.
- AC. AWWA C651 - Disinfecting Water Mains; 2014.
- AD. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and Vent Piping Applications; 2009 (Revised 2012).
- AE. CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications; 2011 (Revised 2012).
- AF. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2009.
- AG. MSS SP-70 - Cast Iron Gate Valves, Flanged and Threaded Ends; 2011.
- AH. MSS SP-80 - Bronze Gate, Globe, Angle and Check Valves; 2013.
- AI. MSS SP-85 - Cast Iron Globe & Angle Valves, Flanged and Threaded Ends; 2011.
- AJ. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010.
- AK. NSF 61 - Drinking Water System Components - Health Effects; 2016.
- AL. NSF 372 - Drinking Water System Components - Lead Content; 2016.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.
- C. Project Record Documents: Record actual locations of valves.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with applicable codes.
- B. Valves: Manufacturer's name and pressure rating marked on valve body.
- C. Welding Materials and Procedures: Conform to ASME BPVC-IX and applicable state labor regulations.
- D. Welder Qualifications: Certified in accordance with ASME BPVC-IX.
- E. Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Provide temporary protective coating on cast iron and steel valves.
- C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.07 FIELD CONDITIONS

- A. Do not install underground piping when bedding is wet or frozen.

1.08 EXTRA MATERIALS

- A. See Section 01 6000 - Project Requirements, for additional provisions.

PART 2 PRODUCTS**2.01 GENERAL REQUIREMENTS**

- A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.
- B. Drain, Waste and Vent Systems:
 - 1. PVC piping and fittings shall be installed per IAPMO IS 9-2006.
 - 2. Cast Iron piping and fittings shall be installed per IAPMO IS 6-2006.

2.02 SANITARY SEWER PIPING, BURIED WITHIN 5 FEET OF BUILDING

- A. Cast Iron Pipe: CISPI 301, hubless.
 - 1. Fittings: Cast iron.
 - 2. Joints: CISPI 310, neoprene gasket and stainless steel clamp and shield assemblies.
 - 3. All cast iron soil pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute (CISPI) and be listed by NSF international.
- B. PVC Pipe: ASTM D2665.
 - 1. Fittings: PVC.
 - 2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.03 SANITARY SEWER PIPING, ABOVE GRADE

- A. Cast Iron Pipe: CISPI 301, hubless, service weight.
 - 1. Fittings: Cast iron.
 - 2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.
 - 3. All cast iron soil pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute (CISPI) and be listed by NSF international.
- B. PVC Pipe: ASTM D2665.
 - 1. Fittings: PVC.
 - 2. Joints: Solvent welded, with ASTM D2564 solvent cement.
 - 3. Not Allowed in Return Air Plenums.

2.04 DOMESTIC WATER PIPING, ABOVE GRADE

- A. Copper Tube: ASTM B88 (ASTM B88M), Type L (B), Drawn (H).
 - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
 - 2. Joints: ASTM B32, alloy Sn95 solder.
- B. Steel Pipe: ASTM A 53/A 53M Schedule 40, galvanized.
 - 1. Threaded Joints: ASME B16.4 cast iron fittings.
 - 2. Grooved Joints: AWWA C606 grooved pipe, cast iron fittings, and mechanical couplings.
 - 3. Fittings: Cast iron.

2.05 FLANGES, UNIONS, AND COUPLINGS

- A. Unions for Pipe Sizes 3 Inches and Under:
 - 1. Ferrous pipe: Class 150 malleable iron threaded unions.
 - 2. Copper tube and pipe: Class 150 bronze unions with soldered joints.

- B. Flanges for Pipe Size Over 1 Inch:
 1. Ferrous Pipe: Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets.
 2. Copper Tube and Pipe: Class 150 slip-on bronze flanges; preformed neoprene gaskets.
- C. Grooved and Shouldered Pipe End Couplings:
 1. Housing: Malleable iron clamps to engage and lock, designed to permit some angular deflection, contraction, and expansion; steel bolts, nuts, and washers; galvanized for galvanized pipe.
 2. Sealing gasket: "C" shape composition sealing gasket.
- D. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.06 PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.
 1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
 2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
 3. Trapeze Hangers: Welded steel channel frames attached to structure.
 4. Vertical Pipe Support: Steel riser clamp.
- B. Plumbing Piping - Drain, Waste, and Vent:
 1. Conform to ASME B31.9.
 2. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Malleable iron, adjustable swivel, split ring.
 3. Hangers for Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
 4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
 5. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
 6. Wall Support for Pipe Sizes 4 Inches and Over: Welded steel bracket and wrought steel clamp.
 7. Vertical Support: Steel riser clamp.
 8. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 9. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
- C. Plumbing Piping - Water:
 1. Conform to ASME B31.9.
 2. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Malleable iron, adjustable swivel, split ring.
 3. Hangers for Cold Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
 4. Hangers for Hot Pipe Sizes 2 Inches to 4 Inches: Carbon steel, adjustable, clevis.
 5. Hangers for Hot Pipe Sizes 6 Inches and Over: Adjustable steel yoke, cast iron pipe roll, double hanger.
 6. Multiple or Trapeze Hangers: Steel channels with welded supports or spacers and hanger rods.
 7. Multiple or Trapeze Hangers for Hot Pipe Sizes 6 Inches and Over: Steel channels with welded supports or spacers and hanger rods, cast iron roll.
 8. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
 9. Wall Support for Pipe Sizes 4 Inches and Over: Welded steel bracket and wrought steel clamp.
 10. Wall Support for Hot Pipe Sizes 6 Inches and Over: Welded steel bracket and wrought steel clamp with adjustable steel yoke and cast iron pipe roll.
 11. Vertical Support: Steel riser clamp.
 12. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 13. Floor Support for Hot Pipe Sizes to 4 Inches: Cast iron adjustable pipe saddle, locknut, nipple, floor flange, and concrete pier or steel support.
 14. Floor Support for Hot Pipe Sizes 6 Inches and Over: Adjustable cast iron pipe roll and stand, steel screws, and concrete pier or steel support.

15. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

2.07 BALL VALVES

- A. Manufacturers:
 1. Grinnell Products, a Tyco Business: www.grinnell.com.
 2. Conbraco Industries: www.apollovalves.com.
 3. Milwaukee Valve Company: www.milwaukeevalve.com.
 4. Nibco, Inc: www.nibco.com.
 5. Uponor, Inc: www.uponorengineering.com/sle.
 6. Substitutions: See Section 01 6000 - Product Requirements.
- B. Construction, 4 Inches and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze or ductile iron body, 304 stainless steel or chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, threaded or grooved ends with union.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- D. Install piping to maintain headroom, conserve space, and not interfere with use of space.
- E. Group piping whenever practical at common elevations.
- F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment. Refer to Section 22 0516.
- G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- H. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.
- I. Prepare exposed, unfinished pipe, fittings, supports, and accessories ready for finish painting.
 1. All metals that are not resistant to corrosion shall be painted per section 9000.
- J. This contractor shall be responsible for removing all spoils from excavation and trenching from the site.
- K. All below grade plumbing piping shall be installed on a 3" minimum pea-rock base.
- L. All below grade plumbing piping shall be buried in pea-rock with a 4" minimum cover.
- M. All trenches above the pea-rock shall be backfilled with select granular fill up to the sand base. Select granular fill shall have a maximum aggregate size of 2", with a maximum of 10% on a 200 sieve. Trenches shall be compacted to 98% proctor density. General Contractor shall finish final grade.
- N. Pipe vents from gas pressure reducing valves to outdoors.
- O. Install water piping to ASME B31.9.
- P. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.
- Q. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.

- R. Inserts:
 1. Provide inserts for placement in concrete formwork.
 2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
 3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
 4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
 5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above slab.
- S. Pipe Hangers and Supports:
 1. Install in accordance with ASME B31.9.
 2. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
 3. Place hangers within 12 inches of each horizontal elbow.
 4. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
 5. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
 6. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
 7. Provide copper plated hangers and supports for copper piping.
 8. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

3.04 APPLICATION

- A. Use grooved mechanical couplings and fasteners only in accessible locations.
- B. Install unions downstream of valves and at equipment or apparatus connections.
- C. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.
- D. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- E. Install globe valves for throttling, bypass, or manual flow control services.
- F. Provide spring loaded check valves on discharge of water pumps.
- G. Provide plug valves in natural gas systems for shut-off service.
- H. Provide flow controls in water recirculating systems where indicated.

3.05 TOLERANCES

- A. Drainage Piping: Establish invert elevations within 1/2 inch vertically of location indicated and slope to drain at minimum of 1/4 inch per foot slope.
- B. Water Piping: Slope at minimum of 1/32 inch per foot and arrange to drain at low points.

3.06 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Disinfect water distribution system in accordance with Section 33 0110.58.
- B. Prior to starting work, verify system is complete, flushed and clean.
- C. Ensure acidity (pH) of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
- D. Inject disinfectant, free chlorine in liquid, powder, tablet or gas form, throughout system to obtain 50 to 80 mg/L residual.
- E. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.
- F. Maintain disinfectant in system for 24 hours.
- G. If final disinfectant residual tests less than 25 mg/L, repeat treatment.
- H. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.

- I. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

3.07 SERVICE CONNECTIONS

- A. Provide new sanitary sewer services. Before commencing work check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.
- B. Provide new water service complete with approved reduced pressure backflow preventer and water meter with by-pass valves, pressure reducing valve, and sand strainer.
 1. Provide sleeve in wall for service main and support at wall with reinforced concrete bridge. Calk enlarged sleeve and make watertight with pliable material. Anchor service main inside to concrete wall.
 2. Provide 18 gage, 0.0478 inch galvanized sheet metal sleeve around service main to 6 inch above floor and 6 feet minimum below grade. Size for minimum of 2 inches of loose batt insulation stuffing.
- C. Provide new gas service complete with gas meter and regulators. Gas service distribution piping to have initial minimum pressure of 2 psi. Provide regulators on each line serving gravity type appliances, sized in accordance with equipment.

3.08 SCHEDULES

- A. Pipe Hanger Spacing:
 1. Metal Piping:
 - a. Pipe Size: 1/2 inches to 1-1/4 inches:
 - 1) Maximum Hanger Spacing: 6.5 ft.
 - 2) Hanger Rod Diameter: 3/8 inches.
 - b. Pipe Size: 1-1/2 inches to 2 inches:
 - 1) Maximum Hanger Spacing: 10 ft.
 - 2) Hanger Rod Diameter: 3/8 inch.
 - c. Pipe Size: 2-1/2 inches to 3 inches:
 - 1) Maximum Hanger Spacing: 10 ft.
 - 2) Hanger Rod Diameter: 1/2 inch.
 - d. Pipe Size: 4 inches to 6 inches:
 - 1) Maximum Hanger Spacing: 10 ft.
 - 2) Hanger Rod Diameter: 5/8 inch.
 - e. Pipe Size: 8 inches to 12 inches:
 - 1) Maximum hanger spacing: 14 ft.
 - 2) Hanger Rod Diameter: 7/8 inch.
 - f. Pipe Size: 14 inches and Over:
 - 1) Maximum Hanger Spacing: 20 ft.
 - 2) Hanger Rod Diameter: 1 inch.
 2. Plastic Piping:
 - a. All Sizes:
 - 1) Maximum hanger spacing: 32 inches.
 - 2) Hanger Rod Diameter: 3/8 inch.
 3. Cast Iron Piping:
 - a. All Sizes:
 - 1) Minimum hanger spacing: 5 ft.
 - 2) When 10'-0" pipe lengths used: 10 ft.
 4. Copper Tubing:
 - a. Pipe size: 1/2 inches to 1-1/2 inches:
 - 1) Maximum hanger spacing: 6.0 ft.
 - 2) Hanger rod diameter: 3/8 inches.
 - b. Pipe size: 2 inches and over:
 - 1) Maximum hanger spacing: 10 ft.
 - 2) Hanger rod diameter: 3/8 inch.

END OF SECTION

SECTION 22 4000
PLUMBING FIXTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Water closets.
- B. Dual flush water closets.
- C. Lavatories.
- D. Sinks.
- E. Showers.
- F. Emergency showers.

1.02 RELATED REQUIREMENTS

- A. Section 07 9200 - Joint Sealants: Sealing joints between fixtures and walls and floors.
- B. Section 22 1005 - Plumbing Piping.
- C. Section 22 1006 - Plumbing Piping Specialties.
- D. Section 22 3000 - Plumbing Equipment.
- E. Section 26 0583 - Wiring Connections: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

- A. Applicable State Plumbing Code with Amendments
 - 1. Wisconsin: State Plumbing Code
- B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- C. IAPMO Z124 - Plastic Plumbing Fixtures; 2017.
- D. ANSI Z358.1 - American National Standard for Emergency Eyewash and Shower Equipment; 2014.
- E. ASHRAE Std 18 - Methods of Testing for Rating Drinking-Water Coolers with Self-Contained Mechanical Refrigeration; 2013.
- F. ASME A112.6.1M - Supports for Off-the-Floor Plumbing Fixtures for Public Use; 1997 (Reaffirmed 2017).
- G. ASME A112.18.1 - Plumbing Supply Fittings; 2018.
- H. ASME A112.19.1 - Enamelled Cast Iron and Enamelled Steel Plumbing Fixtures; 2018.
- I. ASME A112.19.2 - Ceramic Plumbing Fixtures; 2013.
- J. ASME A112.19.3 - Stainless Steel Plumbing Fixtures; 2017.
- K. ASME A112.19.5 - Flush Valves and Spuds for Water Closets, Urinals, and Tanks; 2017.
- L. ASME A112.19.14 - Six Liter Water Closets Equipped with Dual Flushing Device; 2013.
- M. ASSE 1070 - Performance Requirements for Water Temperature Limiting Devices; 2015.
- N. IAPMO Z124 - Plastic Plumbing Fixtures; 2017.
- O. NSF 61 - Drinking Water System Components - Health Effects; 2016.
- P. NSF 372 - Drinking Water System Components - Lead Content; 2016.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.
- C. Manufacturer's Instructions: Indicate installation methods and procedures.
- D. Maintenance Data: Include fixture trim exploded view and replacement parts lists.
- E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

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

1.06 REGULATORY REQUIREMENTS**1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Accept fixtures on site in factory packaging. Inspect for damage.
- B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year manufacturer warranty for electric water cooler.

PART 2 PRODUCTS**2.01 GENERAL**

- A. Potable Water Systems: Provide plumbing fittings and faucets that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.02 DUAL FLUSH WATER CLOSETS

- A. Dual Flush Water Closets: ASME A112.19.14; high efficiency and low consumption, vitreous china, dual flush, tank type.
 - 1. Flush System: Gravity feed, wash down with a half-flush consumption of 0.8 GPF.
 - 2. Bowl: Elongated.
 - 3. Rough in: 12 inch.
 - 4. Seat: Manufacturer's standard or recommended elongated closed front seat with lid.
 - 5. Color: White.

2.03 LAVATORIES

- A. Lavatory Manufacturers:
 - 1. American Standard, Inc: www.americanstandard-us.com.
 - 2. Kohler Company: www.kohler.com.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.
- B. Vitreous China Counter Top Basin: ASME A112.19.2; vitreous china self-rimming counter top lavatory, (refer to schedule) with drillings on 4 inch centers, front overflow, soap depression, seal of putty, calking, or concealed vinyl gasket.
- C. Supply Faucet: ASME A112.18.1; chrome plated combination supply fitting with pop-up waste, water economy aerator with maximum flow of 2.2 gallons per minute, indexed handles.
- D. Accessories:
 - 1. Chrome plated 17 gage, 0.0538 inch brass P-trap with clean-out plug and arm with escutcheon.
 - 2. Offset waste with perforated open strainer.
 - 3. Wheel handle stops.
 - 4. Rigid supplies.
 - 5. Carrier:
 - a. Manufacturers:
 - 1) JOSAM Company: www.josam.com.
 - 2) Zurn Industries, Inc: www.zurn.com.
 - 3) Substitutions: See Section 01 6000 - Product Requirements.
 - b. ASME A112.6.1M; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded studs for fixture hanger, bearing plate and studs.

2.04 SINKS

- A. Sink Manufacturers:
 - 1. American Standard, Inc: www.americanstandard-us.com.
 - 2. Kohler Company: www.kohler.com.
 - 3. ELKAY.

4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Single Compartment Bowl: ASME A112.19.3; _____ by _____ by _____ inch outside dimensions 20 gage, 0.0359 inch thick, Type 302 stainless steel, self rimming and undercoated, with ledge back drilled for trim.
- C. Double Compartment Bowl: ASME A112.19.3; _____ by _____ by _____ inch outside dimensions 20 gage, 0.0359 inch thick, Type 302 stainless steel, self rimming and undercoated, with ledge back drilled for trim.

2.05 SHOWERS

- A. Shower Manufacturers:
 1. American Standard, Inc: www.americanstandard-us.com.
 2. Kohler Company: www.kohler.com.
 3. Warm Rain
 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Trim: ASME A112.18.1; concealed shower supply with pressure balanced mixing valves, integral service stops, bent shower arm with adjustable spray ball joint shower head with maximum flow, and escutcheon.
- C. Shower Head:
 1. ASME A112.18.1; chrome plated vandal-proof institutional head with integral wall bracket, built-in 2.5 gpm flow control.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.
- B. Verify that electric power is available and of the correct characteristics.
- C. Confirm that millwork is constructed with adequate provision for the installation of counter top lavatories and sinks.

3.02 PREPARATION

- A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.03 INSTALLATION

- A. Install each fixture with trap, easily removable for servicing and cleaning.
- B. Provide chrome plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons.
- C. Install components level and plumb.
- D. Seal fixtures to wall and floor surfaces with sealant as specified in Section 07 9200, color to match fixture.

3.04 INTERFACE WITH WORK OF OTHER SECTIONS

- A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.

3.05 ADJUSTING

- A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

3.06 CLEANING

- A. Clean plumbing fixtures and equipment.

3.07 PROTECTION

- A. Protect installed products from damage due to subsequent construction operations.
- B. Repair or replace damaged products before Date of Substantial Completion.

3.08 SCHEDULES

- A. Refer to plans for plumbing fixture schedule

B. Refer to Architectural Plans for mounting heights of all fixtures.

END OF SECTION

ISSUE DATE 01/07/2019

SECTION 23 3700
AIR OUTLETS AND INLETS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Diffusers.
- B. Registers/grilles.

1.02 RELATED REQUIREMENTS

- A. Section 09 9123 - Interior Painting: Painting of ducts visible behind outlets and inlets.

1.03 REFERENCE STANDARDS

- A. AMCA 500-L - Laboratory Methods of Testing Louvers for Rating; 2015.
- B. ARI 890 - Standard for Air Diffusers and Air Diffuser Assemblies; Air-Conditioning and Refrigeration Institute; 2001.
- C. ASHRAE Std 70 - Method of Testing the Performance of Air Outlets and Inlets; 2006 (Reaffirmed 2011).
- D. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005 (Revised 2009).

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.
 - 1. Include complete performance data and descriptive literature including finish and accessory items.
- C. Samples: Submit two of each required air outlet and inlet type.
- D. Project Record Documents: Record actual locations of air outlets and inlets.

1.05 QUALITY ASSURANCE

- A. Test and rate air outlet and inlet performance in accordance with ASHRAE Std 70.
- B. Test and rate louver performance in accordance with AMCA 500-L.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Hart & Cooley, Inc: www.hartandcooley.com.
- B. Krueger: www.krueger-hvac.com.
- C. Price Industries: www.price-hvac.com.
- D. Titus: www.titus-hvac.com.
- E. Halton; www.haltoncompany.com
- F. Nailor
- G. Metal Aire
- H. Tuttle & Bailey
- I. Substitutions: See Section 01 6000 - Product Requirements.

2.02 RECTANGULAR CEILING DIFFUSERS

- A. Type: Square and rectangular, adjustable pattern, multi-louvered diffuser to discharge air in 360 degree pattern with sectorizing baffles where indicated.
- B. Fabrication: Steel with baked enamel finish.
- C. Color: As indicated.

2.03 CEILING SUPPLY REGISTERS/GRILLES

- A. Type: Streamlined and individually adjustable curved blades to discharge air along face of grille, one-way deflection.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting and gasket.
- C. Color: As indicated.
- D. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face.

2.04 CEILING EXHAUST AND RETURN REGISTERS/GRILLES

- A. Type: Streamlined blades, 3/4 inch minimum depth, 3/4 inch maximum spacing, with blades set at 45 degrees, vertical face.
- B. Fabrication: Steel with 20 gage, 0.0359 inch minimum frames and 22 gage, 0.0299 inch minimum blades, steel and aluminum with 20 gage, 0.0359 inch minimum frame, or aluminum extrusions, with factory baked enamel finish.
- C. Color: As indicated.

2.05 WALL SUPPLY REGISTERS/GRILLES

- A. Type: Streamlined and individually adjustable blades, 3/4 inch minimum depth, 3/4 inch maximum spacing with spring or other device to set blades, vertical face, single deflection.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting and gasket.
- C. Fabrication: Steel with 20 gage, 0.0359 inch minimum frames and 22 gage, 0.0299 inch minimum blades, steel and aluminum with 20 gage, 0.0359 inch minimum frame, or aluminum extrusions, with factory baked enamel finish.
- D. Color: As indicated.
- E. Damper: Integral, gang-operated opposed blade type with removable key operator, operable from face.

2.06 WALL EXHAUST AND RETURN REGISTERS/GRILLES

- A. Type: Streamlined blades, 3/4 inch minimum depth, 3/4 inch maximum spacing, with spring or other device to set blades, vertical face.
- B. Frame: 1-1/4 inch margin with countersunk screw mounting.
- C. Fabrication: Steel frames and blades, with factory baked enamel finish.
- D. Color: As indicated on the drawings.
- E. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face.

PART 3 EXECUTION**3.01 INSTALLATION**

- A. The contractor shall inspect all equipment for damage upon delivery and shall immediately report damage to the owner and replace or repair such damage to the satisfaction of the owner. Install in accordance with manufacturer's instructions.
- B. Check location of outlets and inlets and make necessary adjustments in position to conform with architectural features, symmetry, and lighting arrangement.
- C. All diffusers and grilles shall be installed tight on their respective mounting surfaces, installed plumb and true with room dimensions, and accurately centered on projections, recesses, windows, ceiling grids, light fixtures, or doors. Provide appropriate frame wherever necessary to adapt to mounting surface.
- D. Install items in accordance with manufacturer's instructions.
- E. Install diffusers to ductwork with air tight connection.
- F. Provide balancing dampers on duct take-off to diffusers, and grilles and registers, despite whether dampers are specified as part of the diffuser, or grille and register assembly.
- G. Paint ductwork visible behind air outlets and inlets matte black. Refer to Section 09 9123.

3.02 ADJUSTING AND CLEANING

- A. All installed materials shall have debris removed and shall be vacuumed clean of dust. Remove any strippable protective coating using manufacturer's recommended method.

END OF SECTION

ISSUE DATE 01/07/2019

