

**PROJECT MANUAL
FOR**

**KEN PICKERILL HOUSE RENOVATIONS
YORKVILLE, ILLINOIS**

OWNER

**KENDALL COUNTY FOREST PRESERVE DISTRICT
110 W. MADISON STREET
YORKVILLE, ILLINOIS 60560**

ARCHITECT / ENGINEER

**KLUBER, INC.
41 W. BENTON STREET
AURORA, ILLINOIS 60506**



**SECTION 00 01 01
PROJECT TITLE PAGE
PROJECT MANUAL**

FOR

**KEN PICKERILL HOUSE RENOVATIONS
6350A MINKLER ROAD
YORKVILLE, ILLINOIS 60560**

OWNER

**KENDALL COUNTY FOREST PRESERVE DISTRICT
110 W. MADISON STREET
YORKVILLE, ILLINOIS 60560**

ARCHITECT / ENGINEER

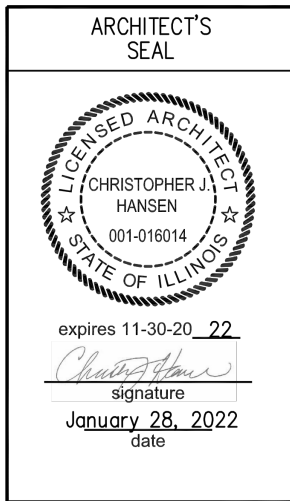
**KLUBER ARCHITECTS + ENGINEERS
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AURORA, ILLINOIS 60506**

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SECTION 00 01 07
SEALS PAGE

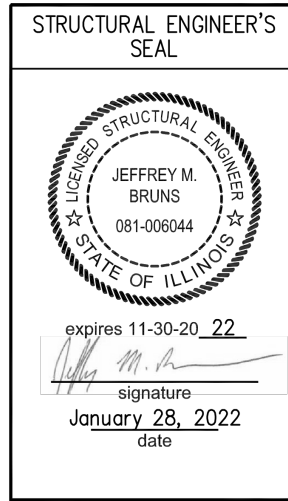
1.01 DESIGN PROFESSIONALS' SEALS

A. ARCHITECT



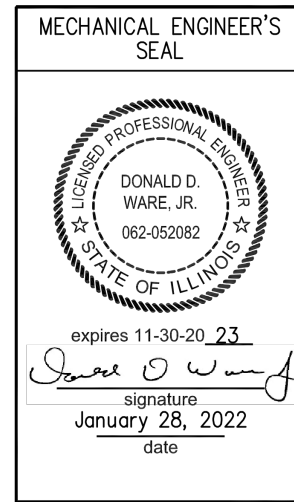
"G" SERIES, "A" SERIES

B. STRUCTURAL ENGINEER



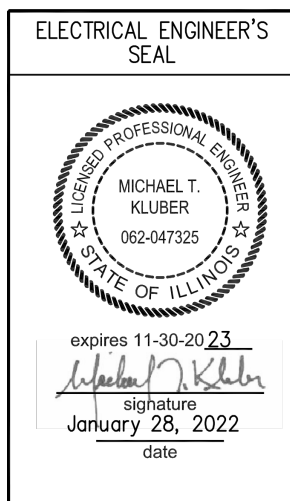
"G" SERIES, "S" SERIES

C. MECHANICAL ENGINEER



"G" SERIES, "P" SERIES,
"M" SERIES

D. ELECTRICAL ENGINEER



"G" SERIES, "E" SERIES

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END OF DOCUMENT

**SECTION 00 11 13
ADVERTISEMENT FOR BIDS**

WORK: KEN PICKERILL HOUSE RENOVATIONS
6350A MINKLER ROAD
YORKVILLE, ILLINOIS 60560

OWNER: KENDALL COUNTY FOREST PRESERVE DISTRICT
110 W. MADISON STREET
YORKVILLE, ILLINOIS 60560

**ARCHITECT/
ENGINEER: KLUBER ARCHITECTS + ENGINEERS**
41 W. BENTON STREET
AURORA, ILLINOIS 60506

DESCRIPTION OF THE WORK:

The Owner will receive bids for the renovation of Ken Pickerill Estate House (the "Work"). The Work will include: selective demolition, exterior siding and trim, new roofing, a new septic system, select interior renovations to include new public toilet rooms. Work will also include plumbing, HVAC, electrical, drywall, acoustical, finishes and a new exterior patio with canopy structure.

The Ken Pickerill House was provided to the Kendall County Forest Preserve District by the late Ken and Jacqueline Pickerill, beloved members of the Kendall County community and supporters of the Kendall County Forest Preserve District. Ken Pickerill (often referred to as "Pick") was a longtime teacher, coach, athletic director, businessman, and philanthropist who positively impacted the lives of many individuals in our community. While discussing renovations of the Pickerills' former estate, local business owners and community members have expressed interest to the Owner about donating materials and/or services toward this project to help the Owner honor the Pickerills' legacy through this project. As this truly is a "community project", Owner is seeking a Contractor who will find unique, creative, and cost-effective ways to include our community volunteers in this project and to assist the Owner in honoring the philanthropic spirit of Ken and Jacqueline Pickerill as set forth in this Section.

The District may receive donations from the public, which may include donations of materials to be used on the Work ("Donated Materials") and gratuitous services provided by competent professionals ("Donated Services"). Interested bidders should be familiar with the concept of value engineering and have the ability to provide Value Engineering Services, as defined in further detail in the Bidding Documents, so as to incorporate any Donated Materials and Donated Services into completion of the Project at no extra cost to the Owner. Any Bidder desiring to provide Donated Materials or Donated Services are encouraged to deduct the cost of same from the stipulated sum noted in their final bid. Bidders shall NOT make explicit reference to any donation anticipated to be provided by Bidder in their bid. Owner will not consider any Donated Materials or Donated Services provided by a Bidder when selecting the lowest responsible bidder except to the extent that such

donations may have the effect of rendering such bid as the lowest bid. Owner reserves the right to let the contract for the Project to the lowest responsible bidder in conformity with Illinois State Law.

Park & Recreational Facility Construction Grant Program (PARC): This project is being financed, in part, with funds from the Illinois Department of Natural Resources Park and Recreational Facility Construction Grant Program (PARC) grant program.

Minority Business Participation (MBE): Minority business firms are encouraged to submit bids on the project and bidders are encouraged to utilize minority businesses as sub-contractors, suppliers and for services related to the construction work.

BASIS OF BIDS:

Bids will be a single contract, stipulated sum.

TIME OF COMPLETION:

Subject to approval by the Kendall County Forest Preserve District Board of Commissioners the Work will commence on Monday, April 19, 2022, and be performed such that the Project will be Substantially Complete as indicated in the Document 00 31 13 - Preliminary Schedule.

BID OPENING:

Sealed bids for all Contracts will be received by the Owner until 3:00 p.m. on March 30, 2022 in a sealed envelope addressed with the name of the Bidder, Owner, name and number of Contract, and the date and time of the Bid. Deliver to the Kendall County Forest Preserve District; 100 W. Madison Street, Yorkville, IL 60560. Bids will be publicly opened at that time.

EXAMINATION AND PROCUREMENT OF DOCUMENTS:

The Bidding Documents will consist of one full set of Drawings and one Project Manual.

The Bidding Documents may be viewed free of charge online at www.kluberplanroom.com. Click on "Public Jobs", then "View Plans" or "View Specs" to browse through the drawings or specifications. No bid deposit is required to obtain the Bidding Documents. Full sets of plans and specifications in PDF format may be downloaded for a one-time charge of \$9.95. Printed copies of plans and specifications may be obtained for the cost of reproduction as indicated at the www.kluberplanroom.com project website.

BID SECURITY:

A Bid Security in the amount of 10 percent of the total Bid is required. Owner reserves the right to deny any Bid that is submitted without the requisite Bid Security.

PRE-BID MEETING:

A pre-bid meeting will be held at the project site; 6350A Minkler Road, Yorkville, IL 60560 at 10:00 a.m. on March 10, 2022. Prospective bidders are requested to attend.

RIGHT TO REJECT BIDS:

Contract award shall be made to the lowest responsible bidder whose bid properly addresses and complies with the advertisement and is most advantageous to the Owner; price and other factors

may be considered. (Factors such as discounts, transportation costs, and taxes may be considered in determining the lowest responsible bidder). Justification for acceptance of a no-bid contract or awarding of contracts to other than the lowest bidder is subject to Illinois DNR, Owner approval and applicable law.

GOVERNING LAWS AND REGULATIONS:

Prevailing wage rates will apply and must be included in the Bid amount.

END OF DOCUMENT

**SECTION 00 21 13
INSTRUCTIONS TO BIDDERS**

1.01 SUMMARY

- A. AIA Document A701 (2018 Edition) - Instructions To Bidders, as amended, is hereby made part of the Bidding Requirements to the same extent as if written out in full.
- B. The above document as amended is attached hereto. (8 Pages).

END OF DOCUMENT



AIA[®] Document A701™ – 2018

Instructions to Bidders

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

Ken Pickerill House Renovations
6350A Minkler Road
Yorkville, Illinois 60560

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

Kendall County Forest Preserve District
110 W Madison Street
Yorkville, Illinois 60560

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

Kluber, Inc.
41 W. Benton Street
Aurora, Illinois 60506

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

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

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

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

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

ARTICLE 1 DEFINITIONS

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

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

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

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

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

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

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

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

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

ARTICLE 2 BIDDER'S REPRESENTATIONS

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

- .1 the Bidder has read and understands the Bidding Documents;
- .2 the Bidder understands how the Bidding Documents relate to other portions of the Project, if any, being bid concurrently or presently under construction;
- .3 the Bid complies with the Bidding Documents;
- .4 the Bidder has visited the site, become familiar with local conditions under which the Work is to be performed, and has correlated the Bidder's observations with the requirements of the Proposed Contract Documents;
- .5 the Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception; and
- .6 the Bidder has read and understands the provisions for liquidated damages, if any, set forth in the form of Agreement between the Owner and Contractor.
- .7 the Bidder acknowledges that some of the existing conditions shown in the Bidding Documents are presented for information as an approximation and are not a substitute for the Bidder's required field verification of existing conditions relating to the Work. Failure to make the necessary field examinations will not relieve the Bidder from any of the requirements of the Contract Documents.
- .8 the submission of a Bid will constitute an incontrovertible representation by the Bidder that he has complied with every requirement of Article 2 and that the Bidding Documents are sufficient in scope and detail to indicate and convey understanding of all the terms and conditions for execution of the Work.

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 Distribution

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

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

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

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

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

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

§ 3.2 Modification or Interpretation of Bidding Documents

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

§ 3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writing and shall be received by the Architect at least seven days prior to the date for receipt of Bids. Questions about the meaning or intent of the Bidding Documents shall be submitted to Architect/Engineer in writing (fax is acceptable). Replies will be issued by Addenda faxed, mailed or delivered to all Bid Document recipients. Questions received less than seven (7) days prior to the Bid opening date will not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

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

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

§ 3.3 Substitutions

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

§ 3.3.2 Substitution Process

§ 3.3.2.1 Written requests for substitutions shall be received by the Architect at least ten days prior to the date for receipt of Bids. Requests shall be submitted in the same manner as that established for submitting clarifications and interpretations in Section 3.2.2. Substitution requests must be submitted in writing to the Architect/Engineer with substantiating data as required in Section 01 60 00. Oral requests will not be taken.

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

§ 3.3.2.3 If a Substitution Request Form is not provided, requests shall include (1) the name of the material or equipment specified in the Bidding Documents; (2) the reason for the requested substitution; (3) a complete description of the

proposed substitution including the name of the material or equipment proposed as the substitute, performance and test data, and relevant drawings; and (4) any other information necessary for an evaluation. The request shall include a statement setting forth changes in other materials, equipment, or other portions of the Work, including changes in the work of other contracts or the impact on any Project Certifications (such as LEED), that will result from incorporation of the proposed substitution.

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

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

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

§ 3.4 Addenda

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

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

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

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

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

ARTICLE 4 BIDDING PROCEDURES

§ 4.1 Preparation of Bids

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

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

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

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

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

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

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

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

§ 4.2 Bid Security

§ 4.2.1 Each Bid shall be accompanied by the following bid security:

(Insert the form and amount of bid security.)

- .1 Bid security in the form of a certified check, cashiers check or bid bond made payable to the Owner in the amount of 10 percent of the Base Bid must be attached to the submitted Bid. Bid security shall be retained until an executed Contract and Performance and Payment Bonds are received. The Owner reserves the right to retain the bid security of the next two low bidders until the lowest Bidder has executed a Contract.

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

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

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

§ 4.3 Submission of Bids

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

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

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

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

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

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

§ 4.4 Modification or Withdrawal of Bid

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

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

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

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 Opening of Bids

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

§ 5.2 Rejection of Bids

(Paragraph deleted)

Owner reserves the right to reject any and all bids and to waive any errors, omissions or irregularities in the bids or the bidding procedure when, in the opinion of the Owner, such action will serve its best interests. Any bid which is not accompanied by the required bid security or by any other documents or certifications required by the Bidding Documents, and any bid which is in any way incomplete or irregular, is subject to rejection at the sole discretion of the Owner.

§ 5.3 Acceptance of Bid (Award)

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

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

§ 5.3.3 It is the intent of the Owner to award a Contract to the lowest responsive and qualified Bidder within 90 days after the day of the Bid opening.

ARTICLE 6 POST-BID INFORMATION

§ 6.1 Contractor's Qualification Statement

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

§ 6.2 Owner's Financial Capability

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

§ 6.3 Submittals

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

- .1 a designation of the Work to be performed with the Bidder's own forces;

- .2 names of the principal products and systems proposed for the Work and the manufacturers and suppliers of each; and
- .3 names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

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

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

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

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

§ 7.1 Bond Requirements

§ 7.1.1 The Bidder shall furnish Performance and Payment Bonds in accordance with AIA Document A201-2017.

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

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

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

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

§ 7.2 Time of Delivery and Form of Bonds

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

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

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

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

ARTICLE 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

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

- .1 AIA Document A101™-2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a stipulated sum, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)

- .2 AIA Document A101™-2017, Exhibit A, Insurance and Bonds, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)

Refer to Specification Section 00 52 00 – Agreement Form.

- .3 AIA Document A201™-2017, General Conditions of the Contract for Construction, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)

Refer to Specification Section 00 72 00 – General Conditions.

- .4 Drawings (Dated 01/28/2022)

Refer to the Drawing Index - Specification Section 00 01 15 – Drawing Index.

- .5 Specifications

Refer to the Table of Contents - Specification Section 00 01 10 – Table of Contents.

- .6 Addenda:

As posted on the www.Kluberplanroom.com website during the Bidding Phase.

- .7 Other documents listed below:

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

§ 8.2 The Owner shall deliver to the successful Bidder at least three unsigned counterparts of the Agreement and all other Contract Documents. Within seven days thereafter Bidder shall sign and deliver three counterparts of the Agreement to Owner with other Contract Documents attached. Within ten days thereafter Owner will deliver one fully signed counterpart to Bidder.

§ 8.3 Provisions for Owner's Tax Exemption are set forth in the Contract.

**SECTION 00 31 13
PRELIMINARY SCHEDULE**

1.01 GENERAL

- A. The following represents the preliminary construction schedule for the Work. This schedule is the current estimate of the Owner to be used for purposes of bidding. All Bidders shall include the costs of all overtime, double-shift, or so-called "premium" time that may be necessary to meet this milestone.

1.02 PRELIMINARY SCHEDULE

- A. Award of Contract: Anticipated April 5, 2022
- B. Commencement of Construction: April 19, 2022
- C. Substantial Completion: December 5, 2022

END OF DOCUMENT

**SECTION 00 31 24
ENVIRONMENTAL ASSESSMENT INFORMATION**

- 1.01** The Owner has retained the services of an Environmental Engineer. An NESHAP Asbestos Survey was performed by Midwest Environmental Consulting Services, Inc. at the site and report was issued on September 14, 2018. Site reconnaissance was conducted and general site conditions and environmental findings are included.
- 1.02** The document "FARM HOUSE - Pickerill Piggott Forest Preserve; 6350B Minkler Road, Yorkville, IL 60560" dated September 14, 2018; MEC Project #: 18-08-530-INSP is attached for the Bidders' information. (18 pages)
- 1.03** The Owner and Architect do not guarantee the data's accuracy or validity. The Bidder is responsible for his own interpretation of the character and quantity of the materials to be encountered.
- 1.04 Bidder's Responsibilities:**
- A. Verify data and existing site conditions.
 - B. Perform additional exploration at own expense.
 - C. Utilize data to determine extent of waste material eligible to be disposed of at Clean Construction and Demolition Debris (CCDD) landfills versus the extent of waste material that will be required to be disposed of at Schedule D landfills, and include the associated hauling and disposal costs thereof in the Base Bid.

END OF DOCUMENT

**Midwest
Environmental
Consulting Services, Inc.**

Consultants ◀ Engineers ◀ Scientists

NESHAP ASBESTOS SURVEY

Performed For:

KENDALL COUNTY FOREST PRESERVE DISTRICT

110 W. Madison Street
Yorkville, IL 60560

Project Location:



FARM HOUSE PICKERALL PIGGOTT FOREST PRESERVE

6350B Minkler Road
Yorkville, IL 60560

Inspection Date: September 14, 2018

MEC Project #: 18-08-530-INSP

Yorkville Location

2551 N. Bridge St.
Yorkville, IL 60560

P: (630) 553-3989

F: (630) 553-3990

Peoria Location

3100 N. Knoxville Ave.
Suite 204

Peoria, IL 61603

P: (309) 621-4680

F: (309) 621-4690

**KENDALL COUNTY
FOREST PRESERVE DISTRICT
FARM HOUSE
PICKERALL PIGGOTT FOREST PRESERVE
6350B Minkler Road
Yorkville, IL 60560**

Table of Contents

MEC Project #: 18-08-530-INSP

<i>Narrative</i>	<i>Section 1</i>
<i>Asbestos Bulk Sample Summary Table</i>	<i>Section 2</i>
<i>Photographs of Homogeneous Areas</i>	<i>Section 3</i>
<i>Final Analytical Report</i>	<i>Section 4</i>
<i>Licensing / Certifications</i>	<i>Section 5</i>

Section 1:

Introduction:

Midwest Environmental Consulting Services, Inc. (MEC) was retained by the Kendall County Forest Preserve District to conduct a comprehensive National Emission Standards for Hazardous Air Pollutants (NESHAP) survey for suspect asbestos-containing materials (ACM) from residential building located at 6350B Minkler Road, Yorkville, IL 60560. The asbestos inspection was performed on September 14, 2018. This comprehensive NESHAP inspection was intended to address the potential existence of ACM on the interior and exterior prior to any future planned renovation or demolition of the building.

Section 2:

Protocol:

The bulk sampling strategy is based upon the protocol of homogeneous areas established by the United States Environmental Protection Agency (USEPA). A homogeneous sampling area (HSA) is defined as an area of material that is uniform in color, texture, construction, general appearance, and date of installation.

Bulk samples of suspect ACM were analyzed by Polarized Light Microscopy (PLM) utilizing the EPA-600/M4-82-020 Method. Bulk samples were analyzed using Asbestos Hazard Emergency Response Act (AHERA) "positive stop" protocol, meaning each sample of each HSA group is analyzed until asbestos is found in the HSA or all samples in the group are analyzed and are negative for asbestos content.

Section 3:

Building Description:

The structure is a two-story single family constructed in the 1950's. The building was constructed on a concrete foundation and has a full basement. The building contains approximately 1,800 square feet of usable space. The flooring consists of wood and is covered various types of tile and carpeting. Interior walls are wood stud framing and covered with drywall and wood panels. The exterior walls are constructed with face brick. The house has an attached 3-car garage. The pitched roof of the house and garage consists of asphalt-based shingles.

Section 4:

Scope of Work:

The inspection was to address the following objectives:

- * Observe, assess, and collect bulk samples of friable and non-friable asbestos containing building materials within the specific scope of work.
- * The inspection was intended to identify all homogeneous areas, and did not attempt to identify or address any other environmental health hazards.
- * The scope of work did not include identifying all potential concerns or eliminate possible

A total of nine (9) homogeneous areas were identified within the scope of work and of the nine (9) homogeneous areas, four (4) homogeneous areas tested positive for asbestos content. Three (3) homogeneous areas were assumed to contain asbestos.

Inspection Performed For:

KENDALL COUNTY FOREST PRESERVE DISTRICT

110 W. Madison Street

Yorkville, IL 60560

MEC Project #: 18-08-530-INSP

Asbestos-Containing Materials:

- **MFA - Sheet Flooring - Tile Pattern - Yellow & Brown**
- **MFB - Sheet Flooring - Beige**
- **MFC - Sheet Flooring - Stone Chips Pattern - Beige & Brown**
- **MFD - Sheet Flooring - Stone Pattern - Greenish Color**

Assumed Asbestos-Containing Materials:

- **MFE - 6x6 Clay Tile/Grout - Brown**
- **MRA - Asphalt Roofing Shingles**
- **MRB - Roofing Paper**

Section 5:

Executive Summary:

Standard practice requires that the owner provide Certified-As-Built drawings for review by the inspector. At the time of the inspection, these drawings were not available. Therefore, the accuracy of the inspection can only be based on the materials that were accessible or known about prior to the inspection. If a suspect material is identified during demolition, all work shall stop immediately until the materials can be sampled for asbestos content.

During renovation or demolition, it is recommended that a project design, project oversight, and air monitoring be in place prior to any asbestos abatement work being conducted. An Illinois Department of Public Health licensed asbestos abatement contractor must be in place prior to any asbestos abatement activities.

Prior to any planned renovation or demolition taking place, Midwest Environmental Consulting Services, Inc., strongly recommends that either the client contact Midwest Environmental Consulting Services, Inc., or the Illinois Department of Public Health or the Illinois Environmental Protection Agency in regards to applicable rules and regulations.

This survey report is for the exclusive use of the Kendall County Forest Preserve District and its respective affiliates, designees, successors, and assignees, and no other party shall have any right to rely on service provided by Midwest Environmental Consulting Services, Inc., without prior written consent. This asbestos survey is not intended to be a scope of work or project design. Estimated quantities of materials are for information only and should not be utilized for abatement bidding.

Although Midwest Environmental Consulting Services, Inc., has attempted to identify all suspect asbestos materials located on the inside of the building; some materials may have been inaccessible. Midwest Environmental Consulting Services, Inc. makes no warranty, expressed or implied.

Sincerely,



Stuart Bruce

DPH-Licensed Asbestos Building Inspector 100-03616

Asbestos Bulk Sample Field Summary Table

Client: KENDALL COUNTY
FOREST PRESERVE DISTRICT
Address: 110 W. Madison Street
Yorkville, IL 60560

Project Location: FARM HOUSE
PICKERALL PIGGOTT FOREST
Address: 6350B Minkler Road
Yorkville, IL 60560

MEC Project #: 18-08-530-INSP
Insp. Date: September 14, 2018
Inspector: Stuart Bruce
IDPH #: 100-03616

H S A	MATERIAL DESCRIPTION	MATERIAL LOCATION	ACM CATEGORY	TYPE OF ANALYSIS OR ASSUMED	MATERIAL CONDITION	MATERIAL TYPE	APPROX. QUANTITY	ACM YES/NO	COMMENTS
MFA	Sheet Flooring - Tile Pattern - Yellow & Brown	Entrances From Garage, Basement Stairs, Butler Pantry, Kitchen, Utility Room, Bathroom	Cat. I	PLM	G	M	715 S.F.	Yes	
MFB	Sheet Flooring - Beige	Second Floor Bathrooms	Cat. I	PLM	G	M	93 S.F.	Yes	
MFC	Sheet Flooring - Stone Chips Pattern - Beige & Brown	Maid's Bathroom, Laundry Room, Master Bath Rooms - His and Hers	Cat. I	PLM	G	M	550 S.F.	Yes	
MFD	Sheet Flooring - Stone Pattern - Greenish Color	Weight Room	Cat. I	PLM	G	M	145 S.F.	Yes	
MFE	6x6 Clay Tile/Grout - Brown	Rear Entrance, Center Foyer	Cat. I	Assumed	G	M	855 S.F.	Assumed	
MDA	Drywall/Joint Compound	Through	N/A	PLM	G	M	N/A	No	

ACM Category Classification:

Friable Asbestos-Containing Material = A friable ACM is a material containing more than 1% asbestos that can easily be crumbled, pulverized, or reduced to powder by hand pressure when it is dry.

Category I Non-Friable Asbestos-Containing Material = Any asbestos-containing packet, gasket, resilient floor covering, mastic, or asphalt roofing product that contains more than 1% asbestos.

Category II Non-Friable Asbestos-Containing Material = Any material excluding Category I Non-Friable material containing more than 1% asbestos that when dry cannot be crumbled, pulverized, or reduced to powder by hand pressure or mechanical forces expected to act on the material.

Analysis Type: PLM = Polarized Light Microscopy TEM = Transmission Electron Microscopy Assumed = Material was not tested and is assumed to contain ACM.

Condition: G = Good D = Damaged SD = Significantly Damaged

Material Type: M = Miscellaneous S = Surfacing T = Thermal

Asbestos Bulk Sample Field Summary Table

Client: KENDALL COUNTY
FOREST PRESERVE DISTRICT
Address: 110 W. Madison Street
Yorkville, IL 60560

Project Location: FARM HOUSE
PICKERALL PIGGOTT FOREST
Address: 6350B Minkler Road
Yorkville, IL 60560

MEC Project #: 18-08-530-INSP
Insp. Date: September 14, 2018
Inspector: Stuart Bruce
IDPH #: 100-03616

H S A	MATERIAL DESCRIPTION	MATERIAL LOCATION	ACM CATEGORY	TYPE OF ANALYSIS OR ASSUMED	MATERIAL CONDITION	MATERIAL TYPE	APPROX. QUANTITY	ACM YES/NO	COMMENTS
MMA	Door Grout	Around Garage Doors	N/A	PLM	G	M	64 S.F	No	
MRA	Asphalt Roofing Shingles	Roof of House & Garage	Cat. II	Assumed	G	M	N/A	Assumed	House Occupied and Not Sampled
MFB	Roofing Paper	Roofing Paper	N/A	Assumed	G	M	N/A	Assumed	Not Sampled - House is Occupied

ACM Category Classification:

Friable Asbestos-Containing Material = A friable ACM is a material containing more than 1% asbestos that can easily be crumbled, pulverized, or reduced to powder by hand pressure when it is dry.

Category I Non-Friable Asbestos-Containing Material = Any asbestos-containing packet, gasket, resilient floor covering, mastic, or asphalt roofing product that contains more than 1% asbestos.

Category II Non-Friable Asbestos-Containing Material = Any material excluding Category I Non-Friable material containing more than 1% asbestos that when dry cannot be crumbled, pulverized, or reduced to powder by hand pressure or mechanical forces expected to act on the material.

Analysis Type: PLM = Polarized Light Microscopy TEM = Transmission Electron Microscopy Assumed = Material was not tested and is assumed to contain ACM.

Condition: G = Good D = Damaged SD = Significantly Damaged

Material Type: M = Miscellaneous S = Surfacing T = Thermal

KENDALL COUNTY FOREST PRESERVE DISTRICT

FARM HOUSE PICKERALL PIGGOTT FOREST PRESERVE

6350B Minkler Road

Yorkville, IL 60560



Homogeneous Area:	MFA
Material Description:	Sheet Flooring - Tile Pattern - Yellow & Brown
Material Location:	Entrances From Garage, Basement Stairs, Butler Pantry, Kitchen, Utility Room, Bathroom
ACM Y/N:	Yes

Comments:



Homogeneous Area:	MFB
Material Description:	Sheet Flooring - Beige
Material Location:	Second Floor Bathrooms
ACM Y/N:	Yes

Comments:

KENDALL COUNTY FOREST PRESERVE DISTRICT

FARM HOUSE PICKERALL PIGGOTT FOREST PRESERVE

6350B Minkler Road

Yorkville, IL 60560



Homogeneous Area:	MFC
Material Description:	Sheet Flooring - Stone Chips Pattern - Beige & Brown
Material Location:	Maid's Bathroom, Laundry Room, Master Bath Rooms - His and
ACM Y/N:	Yes

Comments:



Homogeneous Area:	MFD
Material Description:	Sheet Flooring - Stone Pattern - Greenish Color
Material Location:	Weight Room
ACM Y/N:	Yes

Comments:

KENDALL COUNTY FOREST PRESERVE DISTRICT

FARM HOUSE PICKERALL PIGGOTT FOREST PRESERVE

6350B Minkler Road

Yorkville, IL 60560



Homogeneous Area:	MFE
Material Description:	6x6 Clay Tile/Grout - Brown
Material Location:	Rear Entrance, Center Foyer
ACM Y/N:	Assumed

Comments:



Homogeneous Area:	MDA
Material Description:	Drywall/Joint Compound
Material Location:	Throught
ACM Y/N:	No

Comments:

KENDALL COUNTY FOREST PRESERVE DISTRICT

FARM HOUSE PICKERALL PIGGOTT FOREST PRESERVE

6350B Minkler Road

Yorkville, IL 60560



Homogeneous Area:	MMA
Material Description:	Door Grout
Material Location:	Around Garage Doors
ACM Y/N:	No

Comments:



Homogeneous Area:	MRA
Material Description:	Asphalt Roofing Shingles
Material Location:	Roof of House & Garage
ACM Y/N:	Assumed

Comments: House Occupied and Not Sampled

KENDALL COUNTY FOREST PRESERVE DISTRICT

FARM HOUSE PICKERALL PIGGOTT FOREST PRESERVE

6350B Minkler Road

Yorkville, IL 60560



Homogeneous Area:	MFB
Material Description:	Roofing Paper
Material Location:	Roofing Paper
ACM Y/N:	Assumed

Comments: Not Sampled - House is Occupied



1612 W. Fulton Street
Chicago, Illinois 60612
312.850.3300 t 312.850.3303 f



NVLAP Lab Code 200721-0

Polarized Light Microscopy Asbestos Analysis Report
Method EPA-600/R-93/116

MTL Batch #: 18019
Date Received: 9/18/2018
Date Analyzed: 9/20/2018
Date Reported: 9/20/2018

POSTED

ESTATE

Client: Midwest Env. Consulting Svcs, Inc.
2551 N. Bridge Street
Yorkville, IL 60560
Telephone: 630-553-3989
Fax: 630-553-3990
Project Name: Kendall County Forest Preserve District
Project #: 18-08-530-INSP
Location: 6350B Minkler Road, Yorkville, IL 60560

FARM

This report does not constitute any approval or endorsement by NVLAP, NIST, or any Federal Government agency.

MTL Sample ID	Client Sample ID	Material Description	Color	Hom	Asbestos	%	Non Asbestos	%
18019 - 1	MFA-1	Sheet Flooring	Yellow Brown	Yes	Chrysotile	10-15%	Binder	85-90%
18019 - 2	MFA-2	Sheet Flooring			NA			
18019 - 3	MFA-3	Sheet Flooring			NA			
18019 - 4	MFB-1	Sheet Flooring	Beige	Yes	Chrysotile	10-15%	Binder	85-90%
18019 - 5	MFB-2	Sheet Flooring			NA			
18019 - 6	MFB-3	Sheet Flooring			NA			
18019 - 7	MFC-1	Sheet Flooring	Beige Brown	Yes	Chrysotile	10-15%	Binder	85-90%
18019 - 8	MFC-2	Sheet Flooring			NA			
18019 - 9	MFC-3	Sheet Flooring			NA			
18019 - 10	MFD-1	Sheet Flooring	Green	Yes	Chrysotile	10-15%	Binder	85-90%
18019 - 11	MFD-2	Sheet Flooring			NA			
18019 - 12	MFD-3	Sheet Flooring			NA			

The information within this report is only associated with the specific items tested.

Analyzed By: Mavis Kwarteng

NA = Sample Not Analyzed
Hom = Homogeneous
ND = Asbestos Not Detected
Page 1 of 2



1612 W. Fulton Street
Chicago, Illinois 60612
312.850.3300 t 312.850.3303 f



NVLAP Lab Code 200721-0

Polarized Light Microscopy Asbestos Analysis Report
Method EPA-600/R-93/116

MTL Batch #: 18019
Date Received: 9/18/2018
Date Analyzed: 9/20/2018
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Client: Midwest Env. Consulting Svcs, Inc.
2551 N. Bridge Street
Yorkville, IL 60560

Telephone: 630-553-3989
Fax: 630-553-3990

Project Name: Kendall County Forest Preserve District
Project #: 18-08-530-INSP
Location: 6350B Minkler Road, Yorkville, IL 60560

This report does not constitute any approval or endorsement by NVLAP, NIST, or any Federal Government agency.

MTL Sample ID	Client Sample ID	Material Description	Color	Hom	Asbestos	%	Non Asbestos	%
18019 - 13	MDA-1	Drywall	White	Yes	ND		Fiberglass Binder	1-5% 95-99%
18019 - 14	MDA-2	Drywall	White	Yes	ND		Fiberglass Binder	1-5% 95-99%
18019 - 15	MDA-3	Drywall	White	Yes	ND		Fiberglass Binder	1-5% 95-99%
18019 - 16	MDA-JC1	Joint Compound	White	Yes	ND		Binder	99-100%
18019 - 17	MDA-JC2	Joint Compound	White	Yes	ND		Binder	99-100%
18019 - 18	MDA-JC3	Joint Compound	White	Yes	ND		Binder	99-100%
18019 - 19	MMA-1	Door Grout	Brown	Yes	ND		Binder	99-100%
18019 - 20	MMA-2	Door Grout	Brown	Yes	ND		Binder	99-100%
18019 - 21	MMA-3	Door Grout	Brown	Yes	ND		Binder	99-100%

The information within this report is only associated with the specific items tested.

Analyzed By: 
Mavis Kwarteng

NA = Sample Not Analyzed
Hom = Homogeneous
ND = Asbestos Not Detected
Page 2 of 2



1612 W. Fulton Street
 Chicago, Illinois 60612
 312.850.3300 t 312.850.3303 f
 mtll@metrotechlab.com

ESTATE

FARM

CHAIN OF CUSTODY PLM BULK

Company: Midwest Environmental Consulting Services, Inc.		Results Needed:		MTL Project ID:	
Project Number: 18-08-530-INSP		Date: _____ Time: _____		18019	
Project Name: KENDAL COUNTY FOREST PRESERVE DISTRICT		TAT: Immediate: <input type="checkbox"/>		<1 Day: <input type="checkbox"/> 2 Days: <input type="checkbox"/>	
Location: VACANT FARM HOUSE - PICKERALL PIGGOTT FOREST P		3 Days: <input type="checkbox"/>		5 Days: <input checked="" type="checkbox"/>	
Address: 6350B Minkler Road Yorkville, IL 60560		Stop at First Positive: Yes: <input checked="" type="checkbox"/> No: <input type="checkbox"/> Other: _____		MTL USE ONLY	
Inspector(s): Stuart Bruce		Samples Acceptable:		Yes: <input checked="" type="checkbox"/> No: <input type="checkbox"/>	
Report To: sbruce@mec-us.com; results@mec-us.com		Checked By (Initial/Date):		AC 9/18/18	
Telephone #: (630) 553-3989 Fax: (630) 553-3990					
E-Mail: jnelson@mec-us.com					
Sample Number:	Material Description:	Notes:			
MFA	1, 2, 3 Sheet Flooring - Tile Pattern - Yellow & Brown				
MFB	1, 2, 3 Sheet Flooring - Beige				
MFC	1, 2, 3 Sheet Flooring - Stone Chips Pattern - Beige & Brown				
MFD	1, 2, 3 Sheet Flooring - Stone Pattern - Greenish Color				
MFE	1, 2, 3 6x6 Clay Tile/Grout - Brown	NOT SAMPLED			
MDA	1, 2, 3 Drywall/Joint Compound				
MMA	1, 2, 3 Door Grout				
Comments:					
Relinquished By: (Signature) <i>Stuart Bruce</i>		Date/Time: 9/14/10 ^{6:30P}		Relinquished By: (Signature)	
Received By: (Signature) <i>[Signature]</i>		Date/Time: 9/18/18		Received By: (Signature)	
		257DM			



525-535 West Jefferson Street • Springfield, Illinois 62761-0001 • www.dph.illinois.gov

STUART J BRUCE
8241 GRAND AVENUE
RIVER GROVE, IL 60171

2/2/2018

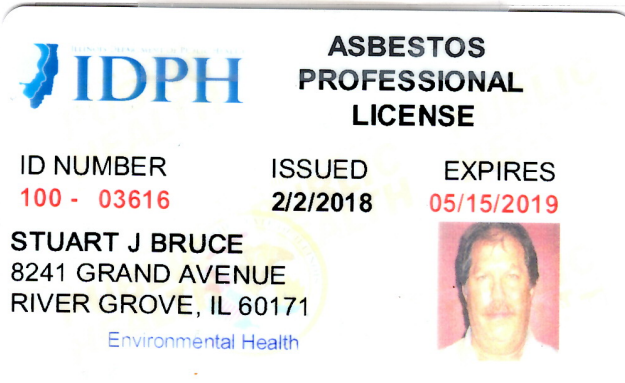
ASBESTOS PROFESSIONAL LICENSE ID NUMBER: 03616

Enclosed is your Asbestos Professional License. Please note the expiration date on the card and in the image depicted below.

COPY OF THE ASBESTOS PROFESSIONAL LICENSE

Front of License

Back of License



ENDORSEMENTS	TC EXPIRES
INSPECTOR	11/14/2018
PROJECT MANAGER AIR SAMPLING PROFESSIONAL	9/16/2018

Alteration of this license shall result in legal action
This license issued under authority of the State of Illinois
Department of Public Health
This license is valid only when accompanied by a valid
training course certificate.

If you have any questions or need further assistance, contact the Asbestos Program at (217)782-3517 or fax (217)785-5897.

Our WEB address is: dph.illinois.gov/topics-services/environmental-health-protection/asbestos
EMAIL Address: dph.asbestos@illinois.gov

Milwaukee Lead/Asbestos Information Center, Inc.

*A Division of Midwest Certificated Training, Inc.
3495 North 124th Street, Brookfield, WI 53005 Phone: 414-481-9070*



Stuart J. Bruce

*Has successfully completed a course and passed the examination on November 14, 2017
with a minimum score of 70 percent, that meets all criteria for
the State of Illinois and the State of Wisconsin Recertification as an*

Asbestos Inspector Refresher Course - English

Date of Course: November 14, 2017

Date Issued: November 14, 2017

Date of Expiration: November 14, 2018

Certification Number: AIR17111458354

Location: Milwaukee Lead/Asbestos Information
Center, 3495 North 124th Street,



*Rocky Everly, Director of Milwaukee Lead/Asbestos Information Center, Inc.
3495 North 124th Street
Brookfield, WI 53005
414-481-9070*

This training course complies with the requirements of TSCA Title II and is accredited by the State of Illinois Department of Health and is .accredited by the State of Wisconsin Department of Health Services under ch. DHS 159, WIs. Admin.Code.



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

Metro Technology Laboratory

1612 W. Fulton Street

Chicago, IL 60612-2508

Amanda Charicki

Phone: 312-850-3300 Fax: 312-850-3303

Email: amanda@metrotechlab.com

<http://www.metrotechlab.com/>

ASBESTOS FIBER ANALYSIS

NVLAP LAB CODE 200721-0

Bulk Asbestos Analysis

Code

Description

18/A01

EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples

18/A03

EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

A handwritten signature in black ink, appearing to read "Dana S. Leman".

For the National Voluntary Laboratory Accreditation Program

United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200721-0

Metro Technology Laboratory
Chicago, IL

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:*

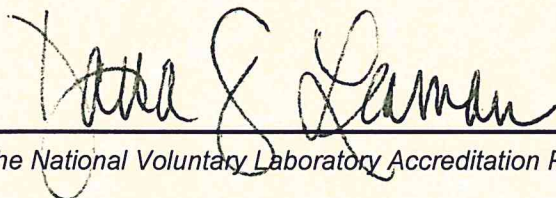
Asbestos Fiber Analysis

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).*

2018-10-01 through 2019-09-30

Effective Dates




For the National Voluntary Laboratory Accreditation Program

**SECTION 00 41 13
BID FORM - STIPULATED SUM
SINGLE CONTRACT**

PROJECT: **KEN PICKERILL HOUSE RENOVATIONS
6350A MINKLER ROAD
YORKVILLE, ILLINOIS 60560**

BID TO: **KENDALL COUNTY FOREST PRESERVE DISTRICT
110 W. MADISON STREET
YORKVILLE, ILLINOIS 60560**

BID FROM: **Corporate Name:** _____
 Address: _____
 City, State, Zip: _____
 Telephone No.: _____
 Fax No.: _____
 Email Address: _____
 Contact Person: _____

1.01 ACCEPTANCE

The undersigned Bidder agrees, if this Bid is accepted, to enter into an agreement with the Owner, in the form included in the Bidding Documents, to perform and furnish the Work as indicated in the Bidding Documents for the Bid Price and within the Bid times indicated in this Bid and in accordance with the terms and conditions of the Contract Documents.

1.02 ACKNOWLEDGMENTS

In submitting this Bid, the Bidder represents that:

- A. This Bid will remain open for acceptance for a period of 90 days from the Bid opening date;
- B. The Owner has the right to reject this Bid;
- C. The Bidder accepts the provisions of the Instructions and Supplementary Instructions to Bidders regarding the disposition of the Bid;
- D. The Bidder agrees to sign and submit the Agreement and other documents required by the Bidding Requirements within 14 days after the Owner's Notice of Award;
- E. The Bidder has examined the complete set of Bidding Documents;
- F. The Bidder has visited the site and become familiar with the general, local, and site conditions;

- G. The Bidder is familiar with Federal, State and Local Laws and Regulations;
- H. The Bidder has correlated the information known to the Bidder; information and observations obtained from visits to the site, reports and drawings identified in the Bidding Documents and additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;
- I. This Bid is genuine and not made in the interest of or on behalf of an undisclosed person, firm, or corporation and is not submitted in conformity with an Agreement or rules or group, association, organization, or corporation;
- J. The Bidder has not directly or indirectly induced or solicited another Bidder to submit a false or sham Bid; sought by collusion to obtain for itself an advantage over another Bidder or over the Owner;
- K. The Bidder is/has an ICC Certified Energy Efficiency Measures Installer to qualify for Utility Energy Incentives.
- L. The Bidder has received the following Addenda, receipt of which is hereby acknowledged:

- 1. Addendum No. _____ Date _____
- 2. Addendum No. _____ Date _____
- 3. Addendum No. _____ Date _____

The Bidder understands that, in submitting this Bid, he waives all right to plead any misunderstandings regarding the foregoing.

1.03 SINGLE CONTRACT - BASE BID PRICE:

- A. Refer to Section 01 10 00 - Summary.
- B. The Bidder will complete the Work of the Project in accordance with the Contract Documents for the following price:

- 1. Bid A: Stipulated Sum Bid Price (Pickerill House):

(Use Numerals)

(Use Words)

2. Bid B: Stipulated Sum Bid Price (Re-Roof):

(Use Numerals)

(Use Words)

3. Total Bid: Bid A + Bid B = Total Bid

(Use Numerals)

(Use Words)

1.04 BID BREAKDOWN

A. The Bidder has attached Document 00 45 10 - Bid Breakdown with this Bid.

1.05 BID BOND

A. The Bidder has attached the required bid security in the form described by Document 00 43 13 - Bid Security Form with this Bid.

1.06 ALLOWANCES

A. The Bidder has included in the Bid the appropriate allowances as specified in Section 01 21 00 - Allowances.

1.07 CONTRACT TIME

A. The Bidder agrees to begin and complete Work as indicated in Document 00 31 13 - Preliminary Schedule.

1.08 OTHER BID FORM SUPPLEMENTS

A. The following additional Documents are attached to and made a condition of this Bid:

1. Document 00 45 10 - Bid Breakdown.
2. Document 00 45 13 - Bidder's Qualifications.
3. Document 00 45 46.01 - Contractor's Certification of Legal Eligibility for Bidding.
4. Document 00 45 46.02 - Contractor's Drug-Free Workplace Certification.
5. Document 00 45 46.03 - Contractor's Certification of Background Check.
6. Document 00 45 46.04 - Contractor's Certification of No Conflict of Interest.
7. Document 00 45 46.05 - Contractor's Discrimination and Harassment Certification.

1.09 SIGNATURES

A. Respectfully submitted this _____ day of _____, 20_____.

B. Type of Firm: (check one)

_____ Individual

_____ Partnership

_____ Corporation

_____ Joint Venture

C. Corporate Seal:(SEAL)

D. Full name of firm: _____

E. Authorized Signing Officer: _____

Title: _____

F. Authorized Signing Officer: _____

Title: _____

END OF DOCUMENT

**SECTION 00 43 13
BID SECURITY FORM**

1.01 FORM OF BID BOND

- A. AIA Document A310 (2010 Edition) - Bid Bond Form.
- B. The above document may be examined at the Architect/Engineer's office or purchased at the American Institute of Architects, <http://www.aia.org/contractdocs/>.

END OF DOCUMENT

**SECTION 00 45 10
BID BREAKDOWN**

1.01 BIDDER MUST SUBMIT THIS FORM FOR THEIR BID TO BE CONSIDERED COMPLETE.

1.02 BID 'A' - BID BREAKDOWN

DESCRIPTION OF WORK	BID VALUE
General Conditions	\$ _____
Bonds & Insurance	\$ _____
Overhead & Profit	\$ _____
Contingency Allowance (01 21 00)	\$ _____
Septic System Allowance (01 21 00)	\$ _____
Demolition	\$ _____
Cast-In-Place Concrete	\$ _____
Masonry	\$ _____
Structural Steel	\$ _____
General Trades/Carpentry	\$ _____
Casework & Countertops	\$ _____
Weather Barriers	\$ _____
Fiber Cement Siding	\$ _____
Sealants	\$ _____
Doors/Hardware/Glass/Mirrors/Glazing	\$ _____
Drywall & Acoustical	\$ _____
Flooring	\$ _____
Painting & Staining	\$ _____
Division 10 Specialties (Installed)	\$ _____
Plumbing	\$ _____
HVAC	\$ _____
Electrical	\$ _____
Fire Detection & Alarm	\$ _____
Earthwork	\$ _____
Exterior Improvements	\$ _____
Other	\$ _____
Grand Total Bid 'A' =	\$ _____

1.03 BID 'B' - BID BREAKDOWN
DESCRIPTION OF WORK

BID VALUE

General Conditions	\$ _____
Bonds & Insurance	\$ _____
Overhead & Profit	\$ _____
Contingency Allowance (01 21 00)	\$ _____
Roofing Demolition & Disposal	\$ _____
New Roofing Work (Asphalt Shingles)	\$ _____
New Roofing Work (EPDM)	\$ _____
Roofing Sheet Metal Work	\$ _____
Other	\$ _____
Grand Total Bid 'B' =	\$ _____

END OF SECTION

**SECTION 00 45 13
BIDDER'S QUALIFICATIONS**

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. Attach additional pages if needed.

1. Name of Bidder _____
2. Names of principals _____
3. Names of authorized signatories _____
4. Permanent main office address _____
5. When organized or incorporated _____
6. Where organized or incorporated _____
7. How many years engaged in contracting business under present company name?

8. Previous names of companies in which the principals listed in Item 2. above have engaged in the contracting business _____

9. List contracts on hand by name of contract and gross amount

10. Have you ever defaulted on a contract? _____
If so, where and why? _____

11. Have you ever refused to sign a contract at your original bid? _____
If yes, explain _____

12. Names, background, experience and current workload of the principal members of your personnel, including the office:

Name Background Years in Contracting Current Workload

13. Furnish written evidence of amount and type of credit available.

14. Will you, upon request, submit a detailed Financial Statement and furnish any other information that may be required by the Owner? _____

15. The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by the Owner, in verification of the recitals comprising the Bid Form Supplement - Contractor's Qualifications.

Dated at _____,

this ____ day of _____, 20____.

(Name of Bidder)

By: _____
(Signature of Bidder's Representative)

Title: _____

END OF DOCUMENT

**SECTION 00 45 46.01
CONTRACTOR'S CERTIFICATION OF LEGAL ELIGIBILITY FOR BIDDING**

1.01 CONTRACTOR'S CERTIFICATION OF LEGAL ELIGIBILITY FOR BIDDING

A. _____ as part of its bid on a contract for the project
(Name of Contractor)

as identified in Document 00 01 01, hereby certifies that said contractor is not barred from bidding on the aforementioned contract as a result of a violation of either Section 33E-3 (bid rigging) or 33E-4 (bid rotating) of Article 33E of Chapter 38 of the Illinois Revised Statutes or as a result of a violation of 820 ILCS 130/1 et seq. (the Illinois Prevailing Wage Act). COMPANY further certifies by signing the Contract documents that COMPANY, its parent companies, subsidiaries, and affiliates have not been convicted of, or are not barred for attempting to rig bids, price-fixing or attempting to fix prices as defined in the Sherman Anti-Trust Act and Clayton Act. 15 U.S.C. § 1 et seq.; and has not been convicted of or barred for bribery or attempting to bribe an officer or employee of a unit of state or local government or school district in the State of Illinois in that Officer's or employee's official capacity. Nor has Contractor made an admission of guilt of such conduct that is a matter of record, nor has any official, officer, agent, or employee of Contractor been so convicted nor made such an admission.

By: _____
Authorized Agent of Contractor

Subscribed and sworn to before me

This _____ day of _____, 20____.

Notary Public

END OF DOCUMENT

SECTION 00 45 46.02
CONTRACTOR'S DRUG-FREE WORKPLACE CERTIFICATION

1.01 CONTRACTOR'S DRUG-FREE WORKPLACE CERTIFICATION

- A. Pursuant to Chapter 30, Section 580/1 of the Illinois Compiled Statutes (30 ILCS 580/1) et. seq. entitled "Drug Free Workplace Act", the undersigned contractor hereby certifies to Owner's Actual Name that it will provide a drug-free workplace by:
1. Publishing a statement:
 - a. Notifying employees that the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance, including cannabis, is prohibited in the grantee's of contractor's workplace.
 - b. Specifying the actions that will be taken against employees for violations of such prohibition.
 - c. Notifying the employee that, as a condition of employment on such contract or grant, the employee will:
 - 1) abide by the terms of the statement; and
 - 2) notify the employer of any criminal drug statute conviction for a violation occurring in the workplace no later than 5 days after such conviction.
 2. Establishing a drug free awareness program to inform employees about:
 - a. the dangers of drug abuse in the workplace;
 - b. the grantee's or contractor's policy of maintaining drug free workplace;
 - c. any available drug counseling, rehabilitation, and employee assistance program; and
 - d. the penalties that may be imposed upon employees for drug violations.
 3. Making it a requirement to give a copy of the statement required by subsection (a) to each employee engaged in the performance of the contract or grant and to post the statement in a prominent place in the workplace.
 4. Notifying the contracting agency within 10 days after receiving notice under part (B) of paragraph (3) of subsection (a) from an employee or otherwise receiving actual notice of such conviction.
 5. Imposing a sanction on, or requiring the satisfactory participation in a drug assistance or rehabilitation program by any employee who is so convicted, as required by Section 5 (30 ILCS 580/5) of the Act.
 6. Assisting employees in selecting a course of action in the event drug counseling treatment, and rehabilitation is required and indicating that a trained referral team in place.
 7. Making a good faith effort to continue to maintain a drug free workplace through implementation of Section 3 of the Drug Free Workplace Act.
- B. Failure to abide by this Contractor's Drug Free Workplace Certification shall subject the Contractor to the penalties set forth in Sections 6, 7 and 8 of the Drug Free Workplace Act.
- C. Notice: This Contractor's Drug Free Workplace Certification is to be completed by any corporations, partnerships or other entities with twenty-five or more employees at the time of the contract, or a department, division or unit thereof, directly responsible for the performance of a contract of \$5,000 or more with Owner's Actual Name.

Name of Contractor

By: _____

Its: _____

Attest:

By: _____

Its: _____

DATED: _____

2.01 INDIVIDUAL'S DRUG-FREE WORKPLACE CERTIFICATION

- A. Pursuant to Chapter 30, Section 580/1 of the Illinois Compiled Statutes (30 ILCS 580/1) et. seq. entitled "Drug Free Workplace Act", the undersigned individual hereby certifies to Owner's Actual Name that the individual will not engage in the unlawful manufacture, distribution, possession or use of a controlled substance in the performance of the contract.
- B. Failure to abide by this Contractor's Drug Free Workplace Certification shall subject the individual to the penalties set forth in Sections 6, 7 and 8 of the Drug Free Workplace Act.
- C. Notice: This Individual's Drug Free Workplace Certification is to be completed by any individual directly responsible for the performance of a contract of \$5,000 or more with Owner's Actual Name.

Name of Individual

Signature: _____

DATED: _____

END OF DOCUMENT

**SECTION 00 45 46.03
CONTRACTOR'S CERTIFICATION OF BACKGROUND CHECK**

1.01 CONTRACTOR'S CERTIFICATION OF BACKGROUND CHECK

A. Contractor shall exercise general and overall control of its officers, employees and/or agents. Contractor agrees that no one shall be assigned to perform work at Owner's facilities or on Owner's properties on behalf of Contractor, Contractor's consultants, subcontractors and their respective officers, employees, agents and assigns unless Contractor has completed a criminal background investigation for each individual to be performing work at the site. In the event that the individual's criminal background investigation reveals that the individual has a conviction record that has not been sealed, expunged or impounded under Section 5.2 of the Criminal Identification Act, Contractor agrees that the individual shall not be assigned to perform work on or at Owner's facilities or on Owner's properties absent prior written consent from Owner. Owner, at any time, for any reason and in Owner's sole discretion, may require Contractor and/or Contractor's consultants, and/or subcontractors to remove any individual from performing any further work under this Agreement.

Name of Contractor

By: _____
Its: _____

Attest:

By: _____
Its: _____
DATED: _____

END OF DOCUMENT

**SECTION 00 45 46.04
CONTRACTOR'S CERTIFICATION OF NO CONFLICT OF INTEREST**

1.01 CONTRACTOR'S CERTIFICATION OF NO CONFLICT OF INTEREST

A. Contractor affirms that no Kendall County Forest Preserve Commissioner or elected official has a direct or indirect pecuniary interest in Contractor or this Agreement, or, if any Kendall County Forest Preserve Commissioner or elected official does have a direct or indirect pecuniary interest in Contractor or this Agreement, that interest, and the procedure followed to effectuate this Agreement has and will comply with 50 ILCS 105/3.

Name of Contractor

By: _____
Its: _____

Attest:

By: _____
Its: _____

DATED: _____

END OF DOCUMENT

**SECTION 00 45 46.05
CONTRACTOR'S DISCRIMINATION AND HARASSMENT CERTIFICATION**

1.01 CONTRACTOR'S DISCRIMINATION AND HARASSMENT CERTIFICATION

- A. Contractor its officers, employees, and agents agree not to commit unlawful discrimination and agree to comply with all applicable provisions of the Illinois Human Rights Act, Title VII of the Civil Rights Act of 1964, as amended, the Americans with Disabilities Act, the Age Discrimination in Employment Act, Section 504 of the Federal Rehabilitation Act, and all applicable rules and regulations.

- B. Contractor shall comply with the Illinois Human Rights Act, 775 ILCS 5/1-101 et seq., as amended and any rules and regulations promulgated in accordance therewith, including, but not limited to the Equal Employment Opportunity Clause, Illinois Administrative Code, Title 44, Part 750 (Appendix A), 775 ILCS 5/1-102, which is incorporated herein by reference, and constituting of a written EEO Policy and a workforce profile that demonstrates its EEO practices. Furthermore, Contractor shall comply the Public Works Employment Discrimination Act, 775 ILCS 10/0.01 et seq., as amended. Contractor must have a written sexual harassment policy, which complies with 775 ILCS 15/3.

Name of Contractor

By: _____
Its: _____

Attest:
By: _____
Its: _____
DATED: _____

END OF DOCUMENT

**SECTION 00 52 00
AGREEMENT FORM**

1.01 FORM OF AGREEMENT

- A. AIA Document A101, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum (2017 Edition), as amended, forms the basis of Contract between the Owner and Contractor.
- B. The above document as amended is attached hereto. (8 Pages).

END OF DOCUMENT



AIA® Document A101® – 2017

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

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

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

Kendall County Forest Preserve District
110 W Madison St.
Yorkville, IL 60560

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

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

Ken Pickerill House Renovations
6350A Minkler Rd.
Yorkville, IL 60560

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

Kluber, Inc.
41 W Benton St.
Aurora, IL 60506

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:

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

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

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

TABLE OF ARTICLES

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

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

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

ARTICLE 2 THE WORK OF THIS CONTRACT

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

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

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

(Check one of the following boxes.)

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

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

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

§ 3.3 Substantial Completion

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

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

Init.

/

[] Not later than () calendar days from the date of commencement of the Work.

[] By the following date:

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

Portion of Work

Substantial Completion Date

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

ARTICLE 4 CONTRACT SUM

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

§ 4.2 Alternates

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

Item

Price

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

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

Item

Price

Conditions for Acceptance

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

(Identify each allowance.)

Item

Price

§ 4.4 Unit prices, if any:

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

Item

Units and Limitations

Price per Unit (\$0.00)

§ 4.5 Liquidated damages, if any:

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

§ 4.6 Other:

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

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

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

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

(Paragraphs deleted)

§ 5.1.3 Applications for Payment submitted to Owner shall be processed by Owner in compliance with the Local Government Prompt Payment Act (50 ILCS 505/1 et seq.).

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

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

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

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

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

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

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

§ 5.1.7 Retainage

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

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

§ 5.1.7.1.1 The following items are not subject to retainage:

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

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

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

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

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

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

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

§ 5.2 Final Payment

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

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

§ 5.2.2 The Owner’s final payment to the Contractor shall be made in compliance with the Local Government Prompt Payment Act (50 ILCS 505/1 et seq.).

(Paragraphs deleted)

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

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

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

§ 6.2 Binding Dispute Resolution

(Paragraphs deleted)

Any dispute arising out of related to the Contract Documents or a Claim related thereto shall be brought in the Twenty-Third Judicial Circuit Court, Kendall County, Illinois. Notwithstanding the foregoing, Owner and Contractor may agree to resolve any dispute through mediation or arbitration with a mediator or arbitrator to be chosen at the mutual election of Owner and Contractor. All costs for mediation or arbitration, exclusive of any attorney’s fees, shall be split equally amongst the Owner and Contractor..

ARTICLE 7 TERMINATION OR SUSPENSION

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

(Paragraphs deleted)

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

ARTICLE 8 MISCELLANEOUS PROVISIONS

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

§ 8.2 The Owner’s representative:

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

David Guritz, Executive Director
110 W Madison St, Yorkville, IL 60560
dguritz@co.kendall.il.us

§ 8.2.2 A copy of all written correspondence provided to Owner’s representative shall be sent to the following:
Kendall County State’s Attorney
807 John Street, Yorkville, Illinois, 60560,
Fax (630) 553-4204

§ 8.3 The Contractor’s representative:

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

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

§ 8.5 Insurance and Bonds

§ 8.5.1 Contractor shall purchase and maintain insurance throughout the duration of the Project. The insurance required to be maintained by Contractor is set forth in AIA Document A201-2017 and elsewhere in the Contract Documents..

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A201-2017 and elsewhere in the Contract Documents..

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

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

§ 8.7 Other provisions:

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ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction
- .4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013 incorporated into this Agreement.)

.5 Drawings

Number	Title	Date
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.6 Specifications

Section	Title	Date	Pages
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.7 Addenda, if any:

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

.8 Other Exhibits:

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

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

The Sustainability Plan:

Title	Date	Pages
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Supplementary and other Conditions of the Contract:

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

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™–2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor’s bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or

proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

The Project Manual for the Ken Pickerill House Renovations.

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

OWNER *(Signature)*

(Printed name and title)

CONTRACTOR *(Signature)*

(Printed name and title)

**SECTION 00 72 00
GENERAL CONDITIONS**

1.01 FORM OF GENERAL CONDITIONS

- A. AIA Document A201 - 2017 "General Conditions of the Contract for Construction" is the General Conditions between the Owner and Contractor, as amended.
- B. The above document as amended is attached hereto. (46 Pages).

END OF DOCUMENT



AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

Ken Pickerill House Renovations
6350A Minkler Rd., Yorkville, IL 60560

THE OWNER:

(Name, legal status and address)

Kendall County Forest Preserve District
110 W Madison St., Yorkville, IL 60560

THE ARCHITECT:

(Name, legal status and address)

Kluber, Inc.
41 W Benton St., Aurora IL 60506

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- 12 UNCOVERING AND CORRECTION OF WORK
- 13 MISCELLANEOUS PROVISIONS
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- 15 CLAIMS AND DISPUTES

ADDITIONS AND DELETIONS:

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

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

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

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement). A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect.

§ 1.1.2 The Contract

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

§ 1.1.3 The Work

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

§ 1.1.4 The Project

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

§ 1.1.5 The Drawings

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

§ 1.1.6 The Specifications

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

§ 1.1.7 Instruments of Service

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

§ 1.1.8 Initial Decision Maker

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

§1.1.9 Value Engineering Services

"Value Engineering Services" or "Value Engineering", as used herein, means an organized effort by Contractor to analyze the functions and utility of Donated Services and Donated Materials for the purpose of achieving the essential functions at the lowest cost consistent with required performance, reliability, quality, and safety.

§1.1.10 Value Engineering Proposal

Value Engineering Proposal, as used herein, means a change proposal proposed by the Contractor to Owner when performing Value Engineering Services.

§1.1.11 Donated Services

Donated Services, as used herein, means any labor, skilled or otherwise, provided by a third-party, including but not limited to a subcontractor, without an expectancy of consideration to be tendered for same, or an expectancy of providing

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such labor in consideration for a reduced rate of payment. Any subcontractor providing donated services shall be responsible for complying with Illinois Prevailing Wage Law, the Davis-Bacon Act, or any other law related to employee or contractor payments involving public works.

§1.1.12 Donated Materials

Donated Materials, as used herein, means any tangible personal property provided by a third-party, including but not limited to a subcontractor, without an expectancy of consideration to be tendered for same, or an expectancy of providing such materials for consideration that is less than fair market value for same.

§ 1.2 Correlation and Intent of the Contract Documents

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

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

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

§ 1.2.2.1 General Requirements govern the execution of the Work of all Sections of the specifications.

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

§ 1.3 Capitalization

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

§ 1.4 Interpretation

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

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

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

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the

Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

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

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

§ 1.7 Digital Data Use and Transmission

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

§ 1.8 Building Information Models Use and Reliance

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

§ 1.9

Notwithstanding the foregoing, it is understood and agreed to by Architect and Contractor that all contracts entered into by a government body, such as Owner, are open to public review and as such will be on file with Owner's Executive Director and may be released pursuant to the Illinois Freedom of Information Act (5 ILCS 140, et seq.). As such, Owner may be required to release the Contract Documents, the Instruments of Service or any related document pursuant to the Illinois Freedom of Information Act (5 ILCS 140, et seq.). Owner shall not be liable to Architect or Contractor for any release made by Owner in compliance with the Illinois Freedom of Information Act (5 ILCS 140, et seq.) or any other applicable state or federal law, or pursuant to a court order.

ARTICLE 2 OWNER

§ 2.1 General

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

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein. The Owner's rights under this Article 2 for Contractor's deficiencies in the Work are not the Owner's sole remedies, but are cumulative and may be exercised along with any other rights of the Owner as permitted by law.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Notwithstanding the foregoing, in the event Owner is in default under the Contract Documents because funds are not appropriated for a fiscal period subsequent to the one in which the Contract Documents were entered into which are sufficient to satisfy all or part of the Owner's obligations under the Contract Documents during said fiscal

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period, Owner agrees to provide prompt written notice of said occurrence to Contractor. In the event of a default due to non-appropriation of funds, either party has the right to terminate the Contract Documents upon providing thirty (30) days written notice to the other party. No additional payments, penalties and/or early termination charges shall be required upon termination of the Contract Documents.

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

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

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

§ 2.3 Information and Services Required of the Owner

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

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

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The furnishing of survey(s) by the Owner is not a guarantee of the accuracy of the information contained therein and shall not relieve the Contractor of its duties under the Contract Documents in general. The submission of a bid for the Work implies that the Contractor has examined the site, taking into consideration all such conditions that may affect the Work, regardless of the information contained in the survey(s). Any information furnished by the Owner shall not constitute a representation by the Owner or Architect concerning site conditions

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

§ 2.3.6 The Owner shall furnish to the Contractor one (1) PDF copy of the Contract Documents for the purposes of making reproductions pursuant to Section 1.5.2.

§ 2.3.7 Owner may receive Donated Services and Donated Materials prior to commencement of the Project, or periodically throughout the Project. Owner shall furnish a list of Donated Services and Donated Materials to Contractor within a reasonable time of Owner having received a commitment for same. Contractor may rely on the list in preparation of any Value Engineering Proposal, when preparing work schedule or devising any request for a change order.

§ 2.4 Owner's Right to Stop the Work

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

§ 2.5 Owner's Right to Carry Out the Work

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

§ 2.6 OWNER'S REMEDIES NOT EXCLUSIVE

The rights and remedies of Owner stated in this Article 2 shall be in addition to, and not in limitation, of any other rights of the Owner granted in the Contract Documents or at law or in equity.

ARTICLE 3 CONTRACTOR

§ 3.1 General

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

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

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

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation by the Contractor that, prior to the submission of its bid, the Contractor has (1) thoroughly examined the Contract Documents and determined them to be full, complete and sufficient to enable the Contractor to construct the Work outlined therein, in accordance with applicable laws and regulations, for an amount not in excess of the Contract Sum on or before the date(s) of Substantial Completion established in the Agreement; (2) visited and examined the Project site and is familiar with all of the conditions thereon; (3) examined the nature, location and character of the general area in which the Project is located, including, without limitation, its climactic conditions, available labor supply, labor costs and available equipment supply and costs; and (4) examined the quality and quantity of materials, supplies, tools, equipment, labor and professional services necessary to complete the Work, including but not limited to Donated Materials and Donated Services, in the manner and within the cost and time frame required by the Contract Documents.

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

§ 3.2.3 Intentionally Omitted.

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

§ 3.2.5 Prior to any excavation, the Contractor shall determine the locations of all existing water, gas, sewer, electric, telephone, telegraph, television, irrigation, petroleum pipelines, and other underground utilities and structures. Where the locations of existing underground and surface utilities and structures are indicated, these locations are generally approximate, and all items that may be encountered during the work are not necessarily indicated. The Contractor shall determine the exact locations of all items indicated, and the existence and locations of all items not indicated. Contractor shall notify J.U.L.I.E. for public utility locations and for Owner's private utilities at least 48 hours prior to commencement of construction so that they may locate and stake out such buried services. Any services or utilities so damaged by Contractor or Subcontractor will have to be replaced and/or repaired by Contractor at Contractor's sole expense.

§ 3.3 Supervision and Construction Procedures

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

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

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

§ 3.3.4 The Contractor has the responsibility to ensure that all material suppliers and Subcontractors, their agents, and employees adhere to the Contract Documents, and that they order materials on time, taking into account the current market and delivery conditions and that they provide materials on time. The Contractor shall coordinate its Work,

including without limitation, deliveries, storage, installations, and construction utilities with that of all others on the Project, including but not limited to delivery and storage of Donated Materials. The Contractor shall be responsible for the space requirements, locations, and routing of its equipment. In areas and locations where the proper and most effective space requirements, locations and routing cannot be made as indicated, the Contractor shall meet with all others involved, before installation, to plan the most effective method of overall installation and note the same in any affected Value Engineering Proposal.

§ 3.3.5 All manufactured articles, material and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned as directed by the manufacturer, unless herein specified to the contrary, or, for Donated Materials only, unless compliance with same is not feasible due to the nature of affected Donated Materials. Contractor shall promptly notify Owner in writing if the application, installation, connection, erections, or use of Donated Materials is not feasible due to the nature of the affected Donated Materials and reasoning therefore.

§ 3.3.6 After commencing the work, the Contractor shall use every precaution to avoid interferences with existing underground and surface utilities and structures, and protect them from damage. The Contractor shall repair or pay for all damage caused by his operations to all existing utility lines, public property, and private property, whether it is below ground or above ground, and he shall settle in total cost of all damage suits which may arise as a result of his operations at no additional costs to the Owner. To avoid unnecessary interferences or delays, the Contractor shall coordinate all utility removals, replacements and construction with the appropriate utility company. The cost of temporarily relocating utilities for convenience of the Contractor, shall be paid by Contractor.

§ 3.3.7 The Contractor shall establish and maintain benchmarks and all other grades, lines, and levels necessary for the Work, report errors or inconsistencies to the Owner and Architect before commencing Work, and review the placement of the building and permanent facilities on the site with the Owner and Architect after all lines are staked out and before foundation Work is started and note same in applicable Value Engineering Proposals.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work. Notwithstanding the foregoing, Contractor shall take into account any Donated Materials and Donated Services when providing and paying for labor, materials, equipment, tools, and the like. Any cost saving provided by the Donated Materials and Donated Services shall be exclusively the benefit of Owner, and Contractor shall not share in savings which may result from the use of Donated Materials and Donated Services.

§ 3.4.2 After the Contract has been executed, the Owner and the Architect will consider a formal request for the substitution of products in place of those specified only under the conditions set forth in Section 01 60 00 - Product Requirements. .

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

§ 3.4.4 The Contractor shall maintain harmonious labor relations on the job site. If a labor problem arises or any person(s) employed by the Contractor on the Work appear to the Owner to be Incompetent or conduct himself in a disorderly or improper manner, such person(s) shall be removed from the Work immediately on the request of the Owner. Said removal shall not create any additional cost to Owner and shall not extend the time for completion of the Work.

§ 3.4.5 Contractor shall comply therewith and pay, and require every Subcontractor to pay, the prevailing rates of wages as established by the Illinois Department of Labor for each craft or type of work needed to execute the contract in accordance with 820 ILCS 130/.01 et seq. The Contractor shall prominently post the current schedule of prevailing wages at the Contract site and shall notify immediately in writing all of its Subcontractors, of all changes in the schedule of prevailing wages. Any increases in costs to Contractor due to changes in the prevailing rate of wage during the terms of any contract shall be at the expense of Contractor and not at the expense of the Owner. Change orders shall, however, be computed using the prevailing wage rates applicable at the time the change order work is scheduled to be performed. The Contractor shall be solely responsible to maintain accurate records as required by the prevailing wage statute and to

obtain and furnish all such certified records to Owner as required by Statute including certified payroll or, in lieu thereof, a certified letter stating that the Contractor is exempt from the application of the Act. Contractor shall be solely liable for paying the difference between prevailing wages and any wages actually received by laborers, workmen and/or mechanics engaged in the Work and in every way defend and indemnify Owner against any claims arising under or related to the payment of wages in accordance with the Prevailing Wage Act. The Owner agrees to notify the Contractor or Subcontractor of the pendency of any such claim, demand, lien or suit.

§ 3.4.6 In the event of a labor dispute resulting in a slow-down or in the cessation or suspension of work, the Contractor shall not be relieved of its obligations to provide labor or for timely progress and completion of the Work. In such event, the notice provisions contained in Section 2.4 shall not apply. Instead, the Contractor shall be automatically deemed to be in default and to have committed a breach of contract unless said work stoppage or slow-down is remedied to the Owner's satisfaction in accordance with this Section. In the event of a work stoppage due to a labor dispute, the Contractor shall provide replacement labor within 24 hours of the commencement of the work stoppage. In the event of a slow-down of work due to a labor dispute, the Contractor shall provide as much supplemental labor as may be necessary to resume normal and customary progress and deadlines on the project in accordance with the time schedules established for the work. In the alternative, the Owner shall have the option to replace or supplement labor, and shall be entitled to reduce the contract sum by an amount equal to the Owner's cost of replacing or supplementing labor. If the balance of the contract sum is not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. The Owner may also pursue any other remedies it may have, including, but not limited to, remedies under the performance bond and payment bond. If any labor dispute necessitates legal action or legal intervention by the Owner, or in the event that the Owner otherwise takes legal action to enforce the terms of this section, the Contractor shall be responsible for the Owner's attorney's fees and court costs, without prejudice to any other remedies that the Owner may have.

§3.4.7 If at the time the Contract Documents are executed, or if during the term of the Contract Documents, there is a period of excessive unemployment in Illinois as defined in the Employment of Illinois Workers on Public Works Act, 30 ILCS 570/0.01 et seq., (hereinafter referred to as "the Act"), Contractor, its consultants, contractors, subcontractors and agents agree to employ Illinois laborers on the Project in accordance with the Act. Contractor understands that the Act defines (a) "period of excessive unemployment" as "as any month following two consecutive calendar months during which the level of unemployment in the State of Illinois has exceeded 5%, as measured by the United States Bureau of Labor Statistics in its monthly publication of employment and unemployment figures", and (b) "Illinois laborer" as "any person who has resided in Illinois for at least thirty (30) days and intends to become or remain an Illinois resident." See 30 ILCS 570/1. Contractor understands and agrees that its failure to comply with this provision of the Contract Documents may result in immediate termination of the Contract Documents.

§3.4.8

Contractor shall exercise general and overall control of its officers, employees and/or agents. Contractor agrees that no one shall be assigned to perform work at Owner's facilities on behalf of Contractor, Contractor's consultants, subcontractors and their respective officers, employees, agents and assigns unless Contractor has completed a criminal background investigation for each individual to be performing work at the site. In the event that the individual's criminal background investigation reveals that the individual has a conviction record that has not been sealed, expunged or impounded under Section 5.2 of the Criminal Identification Act, Contractor agrees that the individual shall not be assigned to perform work on or at Owner's facilities absent prior written consent from Owner. Owner, at any time, for any reason and in Owner's sole discretion, may require Contractor and/or Contractor's consultants, and/or subcontractors to remove any individual from performing any further work under this Agreement.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. All services, materials and components shall conform to relevant manufacturer's and equipment suppliers' specifications, and all materials and spare parts shall be obtained from the original equipment manufacturers or from suppliers approved by them. No warranties implied or explicit may be waived or denied.

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

§ 3.5.3 All services to be undertaken by Contractor shall be carried out by competent and properly trained personnel of Contractor to the highest standards and to the satisfaction of Owner.

§ 3.6 Taxes

The Owner is exempt from the Illinois Use Tax Act and the Retailer's Occupation Tax. Any taxes for which the Owner is not exempt shall be paid by the Contractor."

§ 3.7 Permits, Fees, Notices and Compliance with Laws

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

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

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

§ 3.7.4 Concealed or Unknown Conditions

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

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

§ 3.8 Allowances

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

§ 3.8.2 Unless otherwise provided in the Contract Documents,

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

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- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.
- .4 Donated Services and Donated Materials shall be considered allowances under the terms of this Section 3.8.2.

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

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. The Superintendent shall have knowledge of, and control over, the entirety of the Work, and upon request of the Owner or Architect, the Superintendent shall communicate directly to the Owner.

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

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

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall indicate the proposed completion dates for the various subdivisions of the Work, as well as the totality of the Work. The schedule shall be accompanied by Contractor's Value Engineering Proposals. The schedule and Value Engineering Proposals shall be updated every thirty (30) days and submitted to the Architect with Contractor's Application for Payment. Each schedule shall contain a comparison of actual progress with the estimated progress for such point in time stated in the original schedule. If any schedule submitted sets forth a date for Completion for the Work or any phase of the Work beyond the date(s) of Completion established in the Contract (as the same may be extended as provided in the Contract Documents), then Contractor shall submit to Architect and Owner for their review and approval a narrative description of the means and methods which Contractor intends to employ to expedite the progress of the Work to ensure timely completion of the various phases of the Work as well as the totality of the Work. To ensure such timely completion, Contractor shall take all necessary action including, without limitation, increasing the number of personnel and labor on the Project and implementing overtime and double shifts. In that event, Contractor shall not be entitled to an adjustment in the Contract Sum or the schedule. The Owner may, at its discretion, choose to withhold any payment due the Contractor until an updated schedule and Value Engineering Proposal is submitted. The Owner's or Architect's failure to object to a submitted schedule or Value Engineering Proposal that exceeds the time limits current under the Contract Documents shall not relieve the Contractor of its obligations to meet the time limits in the Contract Documents, nor shall it make the Owner or Architect liable for any of the Contractor's damages incurred as a result of increased construction time or not meeting the time limits in the Contract Documents. Similarly, the Owner's or Architect's failure to object to a Contractor's schedule showing completion in advance of the time limits in the Contract Documents shall not create or infer any rights in favor of the Contractor for acceleration of the Work.

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

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

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§ 3.11 Documents and Samples at the Site

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

§ 3.12 Shop Drawings, Product Data and Samples

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

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

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

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

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

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

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

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

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

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction

means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

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

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

§ 3.13 Use of Site

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

§ 3.14 Cutting and Patching

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

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

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall be responsible for the protection of all work (including, but not limited to, all work performed by Contractor and Subcontractors until its completion and final acceptance, and shall at Contractor's own expense replace damaged or lost materials or repair damaged parts of the work, and the Contractor shall be liable therefore. Contractor and Subcontractors shall take all risks from floods and casualties, and shall make no claim for damages for delay from such causes. The Contractor and Subcontractors may, however, be allowed a reasonable extension of time on account of such delays, subject to the conditions herein before specified. The Contractor shall remove from the vicinity of the work upon its completion all surplus material or equipment belonging to Contractor and Subcontractors or used under their direction during construction. Contractor shall remove all surplus materials, excavation, concrete and debris of all kinds from the project site, streets or portions of buildings or property at or adjacent to the site of the work, except that which may be required for refilling or grading the surface, within a reasonable time or as directed by the Owner or Architect

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

§ 3.16 Access to Work

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

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§ 3.17 Royalties, Patents and Copyrights

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

§ 3.18 Indemnification

§ 3.18.1 Contractor shall waive any right of contribution against Owner and indemnify, hold harmless and defend with counsel of Owner's own choosing, Owner, its officials, officers, employees, including their past, present, and future board members, elected officials and agents from and against all liability, claims, suits, causes of action, demands, proceedings, set-offs, liens, attachments, debts, expenses, judgments, or other liabilities including costs, reasonable fees and expense of defense, arising from any loss, damage, injury, death, or loss or damage to property, of whatsoever kind or nature as well as for any breach of any covenant in the Contract or ancillary documents and any breach by Contractor of any representations or warranties made within the contract documents (collectively, the "Claims"), to the extent such Claims result from the performance of this contract by Contractor or those Claims are due to any act or omission, neglect, willful acts, errors, omissions or misconduct of Contractor in its performance under this Agreement. The Contractor shall similarly, indemnify and hold harmless the Owner, its officials, officers, employees, including their past, present, and future board members, elected officials and agents against and from any and all claims, costs, causes, actions and expenses, including but not limited to, legal fees, incurred by reason of Contractor's breach of any of its obligations under this Contract or its default of any provisions of the Contract.

§ 3.18.1.1 Nothing contained herein shall be construed as prohibiting the Owner, its officials, directors, officers, agents and employees, from defending through the selection and use of their own agents, attorneys and experts, any claims, suits, demands, proceedings and actions brought against them. Pursuant to Illinois law, 55 ILCS 5/3-9005, any attorney representing the Owner, under this paragraph, must be approved by the Kendall County State's Attorney and shall be appointed a Special Assistant State's Attorney. The Owner's participation in its defense shall not remove Contractor's duty to indemnify, defend, and hold the Owner harmless, as set forth above.

§ 3.18.1.2 The Owner does not waive its defenses or immunities under the Local Government and Governmental Employees Tort Immunity Act (745 ILCS 10/1 et seq.) by reason of indemnification or insurance. Indemnification shall survive the termination of this contract.

§ 3.18.1.3 Pursuant to the Construction Contract Indemnification for Negligence Act (740 ILCS 35), the Parties shall not indemnify the other for any liabilities, damages, costs or expense resulting from the other party's own willful misconduct or negligence.

§ 3.18.1.4 The words "claim", "damage", "loss" and "expense" as used in this Contract shall be construed to include, but be not limited to (1) injury or damage consequent upon the failure of or use or misuse by Contractor, its Subcontractors, agents, servants or employees, of any hoist, rigging, blocking, scaffolding, or any and all other kinds of items of equipment, including those covered in the Illinois Structural Work Act whether or not the same be owned, furnished or loaned by Owner; (2) all attorneys' fees and costs incurred in bringing an action to enforce the provisions of this indemnity or any other indemnity contained herein; (3) time expended by the party being indemnified and their employees, at their usual rates plus costs of travel, long distance telephone and reproduction of documents; and (4) error or omission or defect in any submission made to Architect / Engineer for its approval or review. The Contractor and every subcontractor expressly waive all so-called Kotecki rights under the Illinois workers' compensation statutes even though the Owner has retained all such rights.

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

§3.19. Value Engineering

§ 3.19.1

As used in the Contract Documents, the following terms have the definition ascribed to them below:

1. "Value Engineering Services" or "Value Engineering" means an organized effort by Contractor to analyze the functions and utility of Donated Services and Donated Materials for the purpose of achieving the essential functions at the lowest cost consistent with required performance, reliability, quality, and safety.
2. "Donated Services" means any labor, skilled or otherwise, provided by a third-party, including but not limited to a subcontractor, without an expectancy of consideration to be tendered for same, or an expectancy of providing such labor in consideration for a reduced rate of payment. Any subcontractor providing donated services shall be responsible for complying with Illinois Prevailing Wage Law, the Davis-Bacon Act, or any other law related to employee or contractor payments involving public works.
3. "Donated Materials" means any tangible personal property provided by a third-party, including but not limited to a subcontractor, without an expectancy of consideration to be tendered for same, or an expectancy of providing such materials for consideration that is less than fair market value for same.

§ 3.19.2 The estate home was provided to the Kendall County Forest Preserve District by the late Ken and Jacqueline Pickerill, beloved members of the Kendall County community and supporters of the Kendall County Forest Preserve District. Ken Pickerill (often referred to as "Pick") was a longtime teacher, coach, athletic director, businessman, and philanthropist who positively impacted the lives of many individuals in our community. While discussing renovations of the Pickerills' former estate, local business owners and community members have expressed interest to the Owner about donating materials and/or services toward this project to help the Owner honor the Pickerills' legacy through this project. As this truly is a "community project", Owner is seeking a Contractor who will find unique, creative, and cost-effective ways to include our community in this project and to assist the Owner in honoring the philanthropic spirit of Ken and Jacqueline Pickerill.

§ 3.19.3 Contractor shall (1) perform Value Engineering Services throughout Contractor's performance of the contract to accommodate Owner's acceptance of Donated Services and Donated Materials, and (2) submit to the Owner any resulting value engineering proposal ("VEP" or "VEP's"). VEP's shall be created concurrently with, and without delay to, the schedule set forth in the Contract for each phase of the Project. Each VEP shall define specifically the scope of work to be accomplished and shall include relevant price deductions based upon Donated Services and/or Donated Materials. The Contractor shall be paid as the Contract specifies for this effort but shall not share in savings which may result from Owner's acceptance and use of Donated Services and Donated Materials (collectively referred to herein as "Donations"). Contractor shall ensure that all Donated Services and Donated Materials comply with all applicable building standards and all other applicable laws and ordinances.

§ 3.19.4 Within seven (7) business days after Contract approval, Owner shall tender to Contractor a list representing all Donated Services and Donated Materials and the names of the providers of same. Owner shall amend the list from time to time to account for any additional Donations that may arise throughout the pendency of the Project. Potential subcontractors shall be advised that Owner's acceptance of the potential subcontractor's Donations, if any, shall have no bearing on the determination of whether the potential subcontractor is retained as a subcontractor for the Project.

§ 3.19.5 After award of the Contract the Contractor shall-

- (1) Submit for approval by Owner a completed VEP for each phase of the project. Subsequent changes or substitutions to an approved VEP shall be submitted in writing to the Owner approval.
- (2) VEP preparation. At a minimum, Contractor shall include the following information in each VEP:
 - (i) A description of the cost advantages or disadvantages for accepting Donated Services and/or Donated Materials, including but not limited the fair market value of any Donated Services and Donated Material, and impacts on the cost of the Project for Owner's acceptance of same.
 - (ii) A list and analysis of design criteria or specifications that must be changed if the Donated Services and/or Donated Labor is accepted, including but not limited to any change orders that may be required to accommodate Owner's acceptance of Donations.
 - (iii) A separate detailed estimate of the impact on the timeline for completion of the project for each Donated Service and Donated Labor, if accepted and implemented by Architect/Owner, including but not limited to the impact on the date of completion for the relevant phase, the impact upon the date of completion of future phases of the project, and the reasons therefore."

§ 3.19.6 Owner and Contractor shall cooperate with one another with respect to the acceptance or modification of a VEP. If Owner's acceptance of a VEP would result in a change order subject to the requirements of the Public Works Contract Change Order Act (50 ILCS 525/1 et seq.), Owner may reject the VEP and request that Contractor prepare and submit a new VEP for the phase of the Project so impacted.

§ 3.19.7 The Contractor may include an appropriate value engineering clause in any subcontract. The Contractor may choose any arrangement for subcontractor value engineering incentive payments; provided, that these payments shall not reduce the Owner's share of the savings resulting from the subcontractor's VEP. Contractor shall encourage subcontractor value engineering where practical and in the best interest of Owner.

ARTICLE 4 ARCHITECT

§ 4.1 General

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

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

§ 4.2 Administration of the Contract

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

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

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

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

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

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority

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shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

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

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

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

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

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

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

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

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

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

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

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

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

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

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

§ 5.2.3 If the Owner has a reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner has no reasonable objection.

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

§ 5.3 Subcontractual Relations

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

§ 5.4 Contingent Assignment of Subcontracts

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

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

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

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

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

§ 5.5 Donated Services

§ 5.5.1 Contractor acknowledges that Owner may accept Donated Services which may supplant, in whole or in part, Contractor's need to retain a Subcontractor for a portion or portions of the Work. For any portion of the Work in which

Owner accepts Donated Services that supplant Contractor's need to retain a Subcontractor, any person or entity performing that or those portion(s) of the Work ("Donor") shall not be considered a Subcontractor. Contractor shall receive no direct financial benefit from Owner's acceptance of Donated Services.

§ 5.5.2 If Contractor has any objection to Owner's acceptance of Donated Services, Contractor shall set forth such objection in the Value Engineering Proposal for the portion of the Work for which the Donated Services would be accepted by Owner. Owner may, but shall not be required to reject Donated Services for the reasons set forth in Contractor's Value Engineering Proposal. Should Owner reject Donated Services in light of the objections noted in the Value Engineering Proposal, Owner and Contractor may execute a valid change order to compensate Contractor for the portion of the Work that may previously been completed by a Donor.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

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

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements or other persons or entities who have offered Donated Services that have been accepted by Owner. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors which may but shall not be required to be retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

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

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

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3 (though Owner as a government body shall have not duty to indemnify under 3.18), this Article 6, and Articles 10, 11, and 12, except where said such construction or operations related to the Project are Donated Services, in which case no contractual obligations exist between Owner and Donor.

§ 6.2 Mutual Responsibility

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

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

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

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

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

§ 6.3 Owner's Right to Clean Up

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

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

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

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

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

"§ 7.1.4 For adjustments to the Contract Sum based on other than the unit price method, overhead, profit and general conditions combined shall be calculated at the following percentages of the cost attributable to the change in the work:

- 1) For the Contractor, for any Work performed by the Contractor's own forces: 10 percent of the cost.
- 2) For the Contractor, for Work performed by his Subcontractor: 5 percent of the amount due the Subcontractor.
- 3) For each Subcontractor or Sub-subcontractor involved, for any Work performed by the Subcontractor's own forces: 10 percent of the cost.
- 4) For each Subcontractor, for Work performed by his Sub-subcontractors: 5 percent of the amount due the Sub-subcontractor.
- 5) All proposals, except those less than \$200.00, shall be accompanied by a complete itemization of costs including labor, materials and subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are subcontracts, they shall be itemized also. In no case will a change involving over \$200.00 be approved without such itemization.

§ 7.2 Change Orders

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

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

§ 7.2.2. If a change order results in an expenditure of 50% or more of the original contract price, the Project must be rebid in same manner as original Contract Documents pursuant to 50 ILCS 525/5. Change orders, or a series of change orders, of more than \$10,000 or 30 days in completion time, must be pre-approved by Owner pursuant to 720 ILCS 5/33E-9.

§ 7.3 Construction Change Directives

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

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

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

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

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit in accordance with Section 7.1.4. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

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

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

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

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

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change. No credit shall be allowed to Contractor for Owner accepted Donated Services or Donated Materials where Owner's acceptance of same was previously disclosed to Contractor and Contractor failed to properly account for such Donated Services or Donated Materials in an affected Value Engineering Proposal or construction schedule.

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

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

§ 7.4 Minor Changes in the Work

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

ARTICLE 8 TIME

§ 8.1 Definitions

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

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

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

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

§ 8.2 Progress and Completion

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

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

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

§ 8.3 Delays and Extensions of Time

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

§ 8.3.1.1 The Contractor shall not participate in any secondary boycotts or honor any informational picket lines and shall not receive credit for days or costs associated with any such labor action.

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

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

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

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

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

§ 9.2 Schedule of Values

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

§ 9.3 Applications for Payment

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

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

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

§ 9.3.1.3 Until substantial completion, the Owner shall pay only up to 90 percent of the amount due the Contractor on account of progress payments.

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

§ 9.3.2.1 In accordance with Section 9.3.2, the Contractor shall be permitted to make written petition to the Owner requesting payment for 75% of the cost of materials and equipment suitably stored off the site at a location agreed upon in writing between the Owner and the Contractor. In order to receive such payment, title to the materials and/or equipment must pass to the Owner; the materials and/or equipment must be stored in a protected, insured facility agreed to by the Owner, with the Owner named as an additional insured; and all storage costs and costs associated with handling and transporting the materials and/or equipment to the Project site must be paid for by the Contractor.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work. Contractor hereby waives any claim of lien against subject premises on behalf of Contractor, its officers, insurers, employees, agents, suppliers and/or sub-contractors employed by this Agreement. Upon completion of the project and as a condition prior to payment in full, Contractor shall tender to Owner a final waiver of lien for all subcontractors and/or suppliers.

§ 9.4 Certificates for Payment

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

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

§ 9.5 Decisions to Withhold Certification

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

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

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

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

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

§ 9.6 Progress Payments

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

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

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

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

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

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

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

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

§ 9.7 Failure of Payment

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

§ 9.8 Substantial Completion

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

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

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

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

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. The payment shall be sufficient to increase the total payments to 95 percent of the Contract sum, less such amounts as the Architect shall determine for incomplete Work and unsettled claims. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

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

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

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

§ 9.10 Final Completion and Final Payment

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

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The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

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

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

(Paragraphs deleted)

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

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

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

§ 10.2 Safety of Persons and Property

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

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

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

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

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

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

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

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

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

§ 10.2.8 Injury or Damage to Person or Property

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

§ 10.3 Hazardous Materials and Substances

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

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

(Paragraph deleted)

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

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

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

§ 10.3.7 When applicable, Contractor shall furnish Material Safety Data Sheets for the material or substance the Contractor brings onto the site, in compliance with the Illinois Toxic Substance Disclosure to Employee Act, Safety Inspection and Education Act & "Right to Know" law, 820 ILCS 255/1 *et seq.*, 820 ILCS 220/0.01 *et seq.*, and 820 ILCS 225/0.1 *et seq.*

§ 10.4 Emergencies

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

§ 10.5 Protection of Work and Clean-Up

To the extent not otherwise addressed by the Contract Documents, Contractor shall be responsible for the protection of the Work (including, but not limited to, all Work performed by the Contractors and its subcontractors, employees and agents until its completion and final acceptance by Owner. Contractor shall, at its own expense, replace all damaged or lost materials or repair damaged parts of the Work, and Contractor shall be liable therefore. Contractor and its subcontractors, employees and agents shall take all risks from floods and casualties and shall make no claim for damages for delay from such causes. Contractor may, however, be allowed a reasonable extension of time on account of such delays, subject to the conditions herein before specified and subject to approval by a majority vote of the Kendall County Forest Preserve District Commissioners present for said vote. Contractor shall remove from the vicinity of the work upon its completion all surplus material or equipment belonging to Contractor, its subcontractors, employees and agents or used under their direction during construction. Contractor shall remove all surplus materials, excavation, concrete and debris of all kinds from the project site, streets or portions of buildings or property at or adjacent to the site of the work, except that which may be required for refilling or grading the surface, within a reasonable time or as directed by Owner.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

(Paragraphs deleted)

§ 11.1.1 Contractor shall procure and maintain for the duration of the contract, and for 2 years thereafter, insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents, representatives, employees, or subcontractors. Contractor's coverage shall be at least as broad as set forth in Section 11.1.

§ 11.1.2 MINIMUM SCOPE AND LIMIT OF INSURANCE

(Paragraph deleted)

§ 11.1.2.1 **Commercial General Liability (CGL):** Insurance Services Office (ISO) Form CG 00 01 covering CGL on an "occurrence" basis, including products and completed operations, property damage, bodily injury and personal & advertising injury with limits no less than \$1,000,000 per occurrence. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project/location (ISO CG 25 03 or 25 04) or the general aggregate limit shall be twice the required occurrence limit.

§ 11.1.2.2. Automobile Liability: Insurance Services Office Form CA 0001 covering Code 1 (any auto), with limits no less than \$1,000,000 per accident for bodily injury and property damage.

(Paragraph deleted)

§ 11.1.2.3 Workers' Compensation insurance as required by the State of Illinois, with Statutory Limits, and Employers' Liability insurance with a limit of no less than **\$1,000,000** per accident for bodily injury or disease

(Paragraph deleted)

§ 11.1.2.4 If the Contractor maintains broader coverage and/or higher limits than the minimums shown above, the Owner requires and shall be entitled to the broader coverage and/or the higher limits maintained by the contractor. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the Owner.

§ 11.1.3 Self-Insured Retentions

Self-insured retentions must be declared to and approved by the Owner. The Owner may require the Contractor to purchase coverage with a lower retention or provide proof of ability to pay losses and related investigations, claim administration, and defense expenses within the retention. The policy language shall provide, or be endorsed to provide, that the self-insured retention may be satisfied by either the named insured or Owner.

(Paragraph deleted)

§ 11.1.4 Other Insurance Provisions

The insurance policies are to contain, or be endorsed to contain, the following provisions:

1. **The Owner, its officers, officials, employees, and volunteers are to be covered as additional insureds** on the CGL policy with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts, or equipment furnished in connection with such work or operations and automobiles owned, leased, hired, or borrowed by or on behalf of the Contractor. General liability coverage can be provided in the form of an endorsement to the Contractor's insurance (at least as broad as ISO Form CG 20 10, CG 11 85 or **both** CG 20 10, CG 20 26, CG 20 33, or CG 20 38; **and** CG 20 37 forms if later revisions used).
2. For any claims related to this project, the **Contractor's insurance coverage shall be primary** insurance coverage at least as broad as ISO CG 20 01 04 13 as respects the Owner, its officers, officials, employees, and volunteers. Any insurance or self-insurance maintained by the Owner, its officers, officials, employees, or volunteers shall be excess of the Contractor's insurance and shall not contribute with it.
3. Each insurance policy required by this clause shall provide that coverage shall not be canceled, except with notice to the Owner.

§ 11.1.5 Acceptability of Insurers

Insurance is to be placed with insurers authorized to conduct business in the state with a current A.M. Best rating of no less than A: VII, unless otherwise acceptable to the Owner.

§ 11.1.6 Waiver of Subrogation

Contractor hereby agrees to waive rights of subrogation which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss. Contractor agrees to obtain any endorsement that may be necessary to affect this waiver of subrogation. **The Workers' Compensation policy shall be endorsed with a waiver of subrogation** in favor of the Owner for all work performed by the Contractor, its employees, agents and subcontractors.

§ 11.1.7 Verification of Coverage

Contractor shall furnish the Owner with original Certificates of Insurance including all required amendatory endorsements (or copies of the applicable policy language effecting coverage required by this clause) and a copy of the Declarations and Endorsement Page of the CGL policy listing all policy endorsements to Owner before work begins. However, failure to obtain the required documents prior to the work beginning shall not waive the Contractor's obligation to provide them. The Owner reserves the right to require complete, certified copies of all required insurance policies, including endorsements, required by these specifications, at any time.

§ 11.1.8 Subcontractors

Contractor shall require and verify that all subcontractors maintain insurance meeting all requirements stated herein, and Contractor shall ensure that Owner is an additional insured on insurance required from subcontractors. For CGL coverage, subcontractors shall provide coverage with a form at least as broad as CG 20 38 04 13.

§ 11.1.9 Special Risks or Circumstances

Owner reserves the right to modify these requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other circumstances.

§ 11.1.10 Contractor's Performance and Payment Bonds

§ 11.1.10.1 Where the Contract Sum is equal to or greater than \$50,000.00, the Contractor, before commencing the Work, shall furnish a Performance Bond and a Labor and Material Bond. The Performance Bond shall be in an amount equal to 110% of the full amount of the Contract Sum as security for the faithful performance of the obligation of the Contract Documents, and the Labor and Material Payment Bond shall be in an amount equal to 110% of the full amount of the Contract Sum as security for the payment of all persons performing labor and furnishing materials in connection with the Contract Documents. Such bonds shall be on standard AIA Documents, issued by the American Institute of Architects, shall be issued by a surety authorized by the Illinois Department of Insurance to issue surety bonds in Illinois and otherwise satisfactory to the Owner, and shall name the Owner as a primary co-obligee. The cost of the bonds is to be included in the Bid Proposal. The Performance Bond and Labor and Material Payment Bond will become a part of the Contract. Each Bidder shall list the name of the surety company that will be furnishing the Bonds on its Bid Proposal. The failure of a Bidder to list the name of its surety company on its Bid Proposal shall be a non-responsive bid. The failure of the successful Bidder to enter into a Contract and supply the required Bonds within ten

(10) days after the Notice of Award or within such extended period as the Owner may grant if the forms do not meet its approval shall constitute a default, and the Owner may either award the Contract to the next responsible, responsive Bidder or re-advertise for bids. A charge against the defaulting Bidder may be made for the difference between the amount of the bid and the amount for which a contract for the work is subsequently executed, irrespective of whether the amount thus due exceeds the amount of the bid guarantee.

§ 11.1.10.1.1 The Contractor shall deliver the required bonds to the Owner not later than three days following the date the Agreement is entered into, or if the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.

§ 11.1.10.1.2 The Contractor shall require the attorney-in-fact who executed the required bonds on behalf of the Surety to affix thereto a certified and current copy of the power of attorney.

§ 11.1.10.2 Whenever the Contractor shall be and is declared by Owner to be in default under the Contract, the Surety and the Contractor are each responsible to make full payment to the Owner or any and all extra Work incurred by the Architect as a result of the Contractor's default, and to pay to Owner all attorney's fees and court costs incurred by Owner as a result of the Contractor's default, and in protecting Owner's rights under the Agreement to remedy Contractor's default.

§ 11.1.10.3 The Contractor shall (i) furnish all Surety Company's bonds through Surety Company's local agents approved by and/or as directed by Owner; (ii) fully covered and guarantee with said bond the faithful performance and completion of the entire Contract, including without limitation, the faithful performance of prevailing wage requirements; and (iii) guarantee with said bond payment in all cases by the Contractor or by the Surety Company for all labor performed, material and supplies furnished with the entire Work in the Contract. Said Bond shall remain in full force and effect during the entire period of all general guarantees given by the Contractor with the Contract as called for in the Specifications and Contract, except in cases where other bonds are specifically called for in the specifications and Contract in connection with special guarantees.

§ 11.1.10.4 The Contractor and all Subcontractors shall name the Owner as an obligee on all bonds.

§ 11.2 Owner's Insurance – Intentionally Omitted

§ 11.3 Waivers of Subrogation – Intentionally Omitted

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance – Intentionally Omitted.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner and made payable to the Owner for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner unless the Contractor, its consultants or Subcontractors were responsible for the incident giving rise to the insured loss, in which case such person or entity shall not be entitled the rights provided by Sections 11.5.1 and 11.5.2

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

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

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

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

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

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

§ 12.2.2 After Substantial Completion

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

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

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

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

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

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

§ 12.3 Acceptance of Nonconforming Work

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

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract and the Contract Documents shall be construed in accordance with the law and Constitution of the State of Illinois and if any provision is invalid for any reason such invalidations shall not render invalid other provisions which can be given effect without the invalid provision. The parties agree that the venue for any legal proceedings between them shall be the Circuit Court of Kendall County, Illinois, Twenty-Third Judicial Circuit, State of Illinois.

§ 13.2 Successors and Assigns

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

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

§ 13.3 Rights and Remedies

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

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

§ 13.4 Tests and Inspections

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

concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

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

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

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

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

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

§ 13.4.7 The cost of any requested retest will be borne by the party requesting the retest, unless the retest shows that the original test or the Work being tested was in error or defective, and in such event, the cost of the retest shall be borne by the other party

§ 13.5 Interest

§ 13.5.1 All references to interest payments throughout the Contract Documents are hereby voided. Payment is governed by the Illinois Local Government Prompt Payment Act..

§ 13.6 Regulations

§ 13.6.1 The Contractor or Subcontractor warrants that he is familiar with and he shall comply with Federal, State and local laws, statutes, ordinances, rules and regulations and the orders and decrees of any courts or administrative bodies or tribunals in any manner affecting the performance of the Contract including without limitation Workmen's Compensation Laws, minimum salary and wage statutes and regulations, laws with respect to permits and licenses and fees in connection therewith, laws regarding maximum working hours. No plea of misunderstanding or ignorance thereof will be considered.

§ 13.6.2 Whenever required, the Contractor or Subcontractor shall furnish the Architect and Owner with satisfactory proof of compliance with said Federal, State and local laws, statutes, ordinances, rules, regulations, orders, and decrees.

§ 13.6.3 Each bidder shall carefully examine the Occupational Safety and Health Act as issued by the Federal Register (OSHA), and the specific regulations governing procedures, techniques, safety precautions, equipment design, and the configuration of the same as required under this Act and each bidder agrees as evidenced by his submission of a bid to comply with all terms of the Act and to perform and complete in a workmanlike manner all work required in full compliance with said Act.

§ 13.6.4 Each Contractor agrees as evidenced by his submission of a bid/contract to comply with all terms of the Equal Employment Opportunity Clause of the Illinois Fair Employment Practices Commission.

§ 13.6.5 At all times Contractor shall remain in compliance with the Illinois Public Works Employment Discrimination Act (775 ILCS 10/1, et seq.) and the Illinois Human Rights Act (775 ILCS 5/2-101, et seq.) and in addition shall at all times comply with Section 2-105 of the Illinois Human Rights Act.

§ 13.6.6 Contractor certifies that Contractor, its parent companies, subsidiaries, and affiliates are not barred from entering into this Agreement as a result of a violation of either 720 ILCS 5/33E-3 or 5/33E-4 (bid rigging or bid rotating) or as a result of a violation of 820 ILCS 130/1 et seq. (the Illinois Prevailing Wage Act).

§ 13.6.7 Contractor agrees to comply with any and all applicable federal, state or local laws and regulatory requirements and to secure such licenses as may be required for its employees to conduct business in the state, municipality, county or location. Such obligation includes, but is not limited to, environmental laws, civil rights laws, prevailing wage and labor laws.

§ 13.6.8 Contractor agrees to comply with The Davis Bacon Act — 40 U.S.C. 3141 et seq. as necessary. The Davis-Bacon and Related Acts, apply to contractors and subcontractors performing on federally funded or assisted contracts in excess of \$2,000 for the construction, alteration, or repair (including painting and decorating) of public buildings or public works. Davis-Bacon Act and Related Act contractors and subcontractors must pay their laborers and mechanics employed under the contract no less than the locally prevailing wages and fringe benefits for corresponding work on similar projects in the area. The Davis-Bacon Act directs the Department of Labor to determine such locally prevailing wage rates. The Davis-Bacon Act prevailing wage provisions apply to the "Related Acts," under which federal agencies assist construction projects through grants, loans, loan guarantees, and insurance. Examples of the related Acts are the American Recovery and Reinvestment Act of 2009, the Federal-Aid Highway Acts, the Housing and Community Development Act of 1974, and the Federal Water Pollution Control Act.

§ 13.6.9 If at the time the Contract Documents are executed, or if during the term of the Contract Documents, there is a period of excessive unemployment in Illinois as defined in the Employment of Illinois Workers on Public Works Act, 30 ILCS 570/0.01 et seq., (hereinafter referred to as "the Act"), Contractor, its consultants, contractors, subcontractors and agents agree to employ Illinois laborers on this Project in accordance with the Act. Contractor understands that the Act defines (a) "period of excessive unemployment" as "as any month following two consecutive calendar months during which the level of unemployment in the State of Illinois has exceeded 5%, as measured by the United States Bureau of Labor Statistics in its monthly publication of employment and unemployment figures", and (b) "Illinois laborer" as "any person who has resided in Illinois for at least thirty (30) days and intends to become or remain an Illinois resident." See 30 ILCS 570/1. Contractor understands and agrees that its failure to comply with this provision of the Contract Documents may result in immediate termination of the Contract Documents.

§ 13.6.10 Contractor and its consultants, employees, contractors, subcontractors, and agents agree to comply with all provisions of the Substance Abuse Prevention on Public Works Act, 820 ILCS 265/1 et seq. and the Illinois Drug Free Workplace Act, 30 ILCS 580/1 et seq.

§ 13.6.11 Contractor, its officers, employees, and agents agree not to commit unlawful discrimination and agree to comply with all applicable provisions of the Illinois Human Rights Act, Title VII of the Civil Rights Act of 1964, as amended, the Americans with Disabilities Act, the Age Discrimination in Employment Act, Section 504 of the Federal Rehabilitation Act, and all applicable rules and regulations.

§ 13.6.12 PREVAILING WAGE

The Contract Documents call for the construction, demolition, maintenance and/or repair of a "public work" as defined by the Illinois Prevailing Wage Act, 820 ILCS 130/.01 et seq. ("the Act"), such work shall be covered under the Act. The Act requires contractors and subcontractors to pay laborers, workers and mechanics performing covered work on public works projects no less than the "prevailing rate of wages" (hourly cash wages plus fringe benefits) in the county where the work is performed. For information regarding current prevailing wage rates, please refer to the Illinois Department of Labor's website at: <http://www.illinois.gov/idol/Laws-Rules/CONMED/Pages/Rates.aspx>

The Department revises the prevailing wage rates and the contractor/subcontractor has an obligation to check the Department's web site for revisions to prevailing wage rates. All contractors and subcontractors rendering services under this Agreement must comply with all requirements of the Act, including, but not limited to, all wage, notice and record-keeping duties.

§ 13.6.13 The Contractor shall provide certified payroll records in accordance with the requirements established by the Prevailing Wage Act (820 ILCS 130/5).

§ 13.7 Record Keeping

§ 13.7.1 The Contractor and every Subcontractor shall keep and maintain accurate books of record and account, in accordance with sound accounting principles, of all expenditures made and all costs, liabilities and obligations incurred under this Contract, and all papers, files, accounts, reports, cost proposals with backup data and all other material relating to work under this Contract and shall make all such materials available at the office of the Owner at any reasonable time during the term of this contract and for the length of time established by law or five (5) years, whichever is longer, from the date of final payment to Contractor or termination of this Contract for audit, inspection and copying upon Owner's request. The Contractor agrees to maintain all records and documents for projects of the Owner in compliance with the Freedom of Information Act, 5 ILCS 140/1 et seq. In addition, the Contractor shall produce records which are responsive to a request received by the Owner under the Freedom of Information Act so that the Owner may provide records to those requesting them within the time frames required. If additional time is necessary to compile records in response to a request, then the Contractor shall so notify the Owner and, if possible, the Owner shall request an extension so as to comply with the Act. In the event that the Owner is found to have not complied with the Freedom of Information Act due to the Contractor's failure to produce documents or otherwise appropriately respond to a request under the Act, then the Contractor shall indemnify and hold the Owner harmless, and pay all amounts determined to be due including but not limited to fines, cost attorneys' fees and penalties.

§ 13.8 Miscellaneous

§ 13.8.1 Both parties affirm none of Owner's officer or elected official has a direct or indirect pecuniary interest in Contractor or this Agreement, or, if any of Owner's officer or elected official does have a direct or indirect pecuniary interest in Contractor or this Agreement, that interest, and the procedure followed to effectuate this Agreement has and will comply with 50 ILCS 105/3

§ 13.8.2 It is understood and agreed to by Contractor that all contracts entered into by a government body, such as Owner, are open to public review and as such will be on file with the County Clerk's office and may be released pursuant to the Illinois Freedom of Information Act (5 ILCS 140, et seq.).

§ 13.9 Contractor Warranty

By execution of this Contract, the Contractor understands, represent and warrants to the Owner that the Contractor and its Subcontractors (for which the Subcontractor takes responsibility to insure that they comply with the above-mentioned Acts) are in compliance with all requirements provided by the Acts set forth in this Article 13 and that they will remain in compliance for the entirety of the Work. A violation of any of the Acts set forth in this Article is cause for the immediate cancellation of the Contract. However, any forbearance or delay by the Owner in canceling this Contract shall not be considered as, and does not constitute, Owner's consent to such violation and a waiver of any right the Owner may have, including without limitation, cancellation of this contract.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

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

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

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

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

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

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

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

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

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

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

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

§ 14.3 Suspension by the Owner for Convenience

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

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

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

§ 14.4 Termination by the Owner for Convenience

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

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

- .1 cease operations as directed by the Owner in the notice;

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

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement. No additional payments, penalties and/or early termination charges shall be required upon termination of the Contract.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

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

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with this Agreement and within the period specified by applicable law.

§ 15.1.3 Notice of Claims

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

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

§ 15.1.4 Continuing Contract Performance

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

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

§ 15.1.5 Claims for Additional Cost

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

§ 15.1.6 Claims for Additional Time

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

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

(Paragraphs deleted)

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9 and 11.3.10, may be referred to the Initial Decision Maker for action. A decision by the Initial Decision Maker shall not be binding and shall not be required as a condition precedent to litigation.

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

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

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

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

§ 15.2.6 Either party may pursue any lawful mechanism for dispute resolution, including litigation, with regard to an initial decision at any time..

(Paragraph deleted)

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

(Paragraphs deleted)

**SECTION 00 73 40
LABOR AND WAGE REQUIREMENTS**

1.01 LABOR AND WAGE REQUIREMENTS

- A. In the employment and use of labor, the Contractor and his subcontractors shall conform to the Illinois Statutory requirements regarding labor and wages.
- B. Wage Guidelines:
1. Prevailing Rate of Wages: All Contracts for the work herein are subject to the provisions of the Illinois Prevailing Wages Act (820 ILCS 130/et seq.) providing for the payment of prevailing rate of wages to all Laborers, Workmen, and Mechanics engaged on the work, which such provisions shall be applicable to all subcontractors and material men as well as the Contractor. The Owner may at any time inquire of the Contractor as to rates of wages being paid employees of the Contractor, any Subcontractor or material men, whereupon such information shall be promptly provided to the Owner.
 - a. The terms "generally prevailing rate of hourly wages," "generally prevailing rate of wages," or "prevailing rate of wages," mean the hourly cash wage plus fringe benefits for health and welfare, insurance, vacations, and pensions paid generally, in the locality in which the work is being performed, to employees engaged in work of a similar character on public works.
 2. The Contractor shall not pay less than the rates of wages prevailing the District as determined by the Illinois Department of Labor to all Laborers, Mechanics and Workers performing any work under this Contract.
 - a. Only such laborers, workers and mechanics as are directly employed by the Contractor or Subcontractors in actual construction work on the site of the Project, and laborers, workers and mechanics engaged in the transportation of materials and equipment to or from the site, but not including the transportation by sellers and suppliers or the manufacture or processing of materials or equipment, in the execution of the Work shall be deemed to be employed on the Project for purposes of compliance with the Illinois Statutory requirements.
 3. The Contractor shall require all of its Subcontractors to comply with the requirements of the preceding paragraphs, which shall be incorporated in each and every subcontract for all or any portion of the Work.
 4. The Contractor will cooperate and coordinate his work with any subcontractors or Donors that the Owner has working on the Project at the same time.
 5. Future increases to wage rates and material cost over the course of the contract time will not be born by the Owner. Contractor to include in his Base Bid.
- C. Certified Payroll Requirements: The Contractor, and each Sub contractor and Sub-subcontractor and each Donor, where applicable, supplying laborers, mechanics, and other workers on the Project shall submit monthly a certified transcript of payroll through the Illinois Department of Labor's online Payroll Portal in accordance with State of Illinois, Department of Labor, 8/10/2005 Prevailing Wage Act Changes; "Certified Payroll Requirements" (Public Act 94-0515). With each Application For Payment, the Contractor shall submit copies of the Contractor's, Subcontractors' and Sub-subcontractors' email confirmations from the Illinois Department of Labor and copies of their respective transcripts received back from Illinois Department of Labor with those email confirmations.

1.02 WAGE DETERMINATION SCHEDULE

- A. Contact the Illinois Department of Labor for the most recent revisions to the Prevailing Rate of Wages.

END OF DOCUMENT

**SECTION 01 10 00
SUMMARY**

PART 1 GENERAL

1.01 PROJECT

- A. Project Name: KEN PICKERILL HOUSE RENOVATIONS.
- B. Owner's Name: Kendall County Forest Preserve District.
- C. Architect/Engineer's Name: Kluber Architects + Engineers.
- D. The Project consists of the alteration of the existing Ken Pickerill Estate House. Bid A includes the limited renovation of the Pickerill Estate House. Bid B includes the replacement of existing roofing systems. The work for both projects will be awarded to one contractor. The two projects have separate funding sources and will be contracted independently but coordinated by one General Contractor.

1.02 CONTRACT DESCRIPTION

- A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 52 00 - Agreement Form.

1.03 DESCRIPTION OF ALTERATIONS WORK

- A. Scope of demolition and removal work is indicated on drawings and specified in Section 02 41 00.
- B. Scope of alterations work is indicated on drawings.
- C. Plumbing: Alter existing system and add new construction, keeping existing in operation.
- D. HVAC: Alter existing system and add new construction, keeping existing in operation.
- E. Electrical Power and Lighting: Alter existing system and add new construction, keeping existing in operation.
- F. Fire Alarm: Alter existing system and add new construction, keeping existing in operation.

1.04 WORK BY OWNER

- A. Items noted NIC (Not in Contract) will be supplied and installed by Owner before Substantial Completion. Some items include:
 - 1. Furnishings.
 - 2. Small equipment.
 - 3. Rugs.
 - 4. Artwork.
- B. Owner will supply and install the following:
 - 1. Landscaping and mulch.

1.05 WORK BY DONORS

- A. Items noted NIC (Not in Contract) or in the Contract Documents may be supplied and/or installed by various Donors before Substantial Completion. Owner shall provide to Contractor a list of all

Donated Services and Donated Materials. Contractor shall facilitate the incorporation of Donated Services and Donated Materials into the Project by way of Value Engineering Proposals and for scheduling the Work throughout the Project.

1.06 OWNER OCCUPANCY

- A. Owner intends to occupy the Project upon Substantial Completion.
- B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- C. Schedule the Work to accommodate Owner occupancy.

1.07 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings.
 - 1. Locate and conduct construction activities in ways that will limit disturbance to site.
- B. Arrange use of site and premises to allow:
 - 1. Work by Owner.
 - 2. Work by Donors.
 - 3. Use of site and premises by the public.
- C. Provide access to and from site as required by law and by Owner:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- D. Time Restrictions:
 - 1. Limit conduct of especially noisy exterior work to the hours of 7:00 am - 5:00 pm.
 - 2. Limit conduct of the hours of 6:00 am - 5:00 pm.
- E. Utility Outages and Shutdown:
 - 1. Limit disruption of utility services to hours the building is unoccupied.
 - 2. Prevent accidental disruption of utility services to other facilities.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 20 00
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 52 00 - Agreement Form: Contract Sum, retainages, payment period, monetary values of unit prices.
- B. Section 00 72 00 - General Conditions: Additional requirements for progress payments, final payment, changes in the Work.
- C. Section 01 78 00 - Closeout Submittals: Project record documents.

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/Engineer for approval.
- C. Forms filled out by hand will not be accepted.
- D. Submit Schedule of Values to the Architect/Engineer at earliest possible date, but no later than 14 days prior to first Pay Request Meeting.
 - 1. After review by the Architect/Engineer, revise and resubmit Schedule as directed.
- E. Format: Utilize the Table of Contents of this Project Manual as a format for the listing of the Work.
- F. Identify as separate line items on the Schedule the costs for the following items:
 - 1. Bonds.
 - 2. Insurance.
 - 3. Site Mobilization.
 - 4. Construction Submittals.
 - 5. General Conditions.
 - 6. Demonstration and Training.
 - 7. Closeout Submittals.
 - 8. Allowances (list each Allowance on a separate line; See Section 01 21 00).
 - 9. Contractor's overhead and profit.
- G. Submit Schedule of Values in sufficient detail for the Architect/Engineer to use in evaluation of Applications for Payment.

1. Itemize the cost of the work of:
 - a. Contractor's materials from stock.
 - b. Contractor's own shop labor.
 - c. Contractor's own field labor.
 - d. Subcontractors' materials from stock.
 - e. Subcontractors' shop labor.
 - f. Subcontractors' field labor.
 - g. Suppliers of products and equipment.

H. Revise Schedule of Values to list approved Change Orders, with each Application For Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- 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/Engineer 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 one pencil/draft copy of each Application for Payment to the Architect/Engineer at least 7 days prior to the due date for the submission of the Application.
- J. Contractor or Architect/Engineer may schedule a Pay Request Meeting to review the pencil/draft copy of the Application for agreement with the progress of the Work.
- K. After receipt of Architect/Engineer's review comments, submit three final copies, signed and notarized, of each Application for Payment.
- L. Include the following with the application:
 1. Transmittal letter as specified for submittals in Section 01 30 00.

2. Construction progress schedule, revised and current as specified in Section 01 30 00.
 3. Contractor's partial waiver of lien in the amount of the Application for Payment as well as trailing partial waivers of lien for subcontractors and suppliers who were included in the previous Application for Payment, to the extent of that payment.
 - a. When an Application shows completion of a subcontractor or supplier item, submit a final or full waiver for that item.
 - b. Waivers of lien shall be submitted on forms and executed in a manner acceptable to the Owner.
 4. Email confirmations and copies of certified transcripts of payroll records accompanying those confirmations from the Illinois Department of Labor for the Contractor and for all Subcontractors and Sub-subcontractors employed on the Project who performed work on the Project during the Payment Period.
 - a. Contractor shall assemble his and all subcontractor and sub-subcontractor records prior to submitting each Application for Payment.
 - b. Applications for Payment submitted without IDOL confirmation emails and transcripts or with missing IDOL confirmation emails or transcripts will result in payment being delayed until the Contractor complies fully with the requirements set forth in the preceding paragraphs.
 5. Affidavits attesting to products or equipment suitably stored off-site in a bonded warehouse. Payments for materials stored off-site shall be conditioned upon submission of bills of sale, applicable insurance, and any other documentation or procedures satisfactory to the Owner to establish the Owner's title to such materials, or otherwise protect the Owner's interest.
- M. When Architect/Engineer 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 Sum or Contract Time, Architect/Engineer will issue instructions directly to Contractor.
- C. For other required changes, Architect/Engineer 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/Engineer 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 ten (10) days.

- E. Contractor may propose a change by submitting a request for change to Architect/Engineer, 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/Engineer 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/Engineer.
 - 3. For pre-determined unit prices and quantities, the amount will be based on the fixed unit prices.
 - 4. For change ordered by Architect/Engineer without a quotation from Contractor, the amount will be determined by Architect/Engineer 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/Engineer 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 70 00.
 2. Procedures outlined in Article 9 of the General Conditions as amended.
 3. Additional closeout procedures specified in Section 01 77 00.

C. The submittal of Final Waiver of Lien and the acceptance of the final payment by the Contractor shall be held to be a waiver of any and all claims against the Owner arising from, out of, or in any connection with the Contract.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 21 00
ALLOWANCES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Contingency allowance.
- B. Septic system allowance.
- C. Payment and modification procedures relating to allowances.

1.02 RELATED REQUIREMENTS

- A. Section 01 20 00 - Price and Payment Procedures: Additional payment and modification procedures.

1.03 CONTINGENCY ALLOWANCE

- A. Contractor's costs for products, delivery, installation, labor, payroll, taxes and equipment rental will be included in Change Orders authorizing expenditure of funds from this Contingency Allowance.
- B. Funds will be drawn from the Contingency Allowance only by Change Order.
- C. Bond, insurance, overhead and profit fees on Change Orders paid out of Contingency Allowances will not be permitted. The Contractor must carry in its Base Bid OH&P costs on Contingency Allowance funds expenditures.
- D. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.

1.04 SEPTIC SYSTEM ALLOWANCE

- A. Costs included in Septic System Allowance: Cost of engaging a certified well and septic contractor to design, obtain the proper permits for, cover all inspection costs for authorities having jurisdiction approvals and installation of a fully new septic system for the subject property. Costs shall also include: Excavation, the full removal of the old septic system and all associated structures, backfill materials and placement and 6 inches of topsoil with seed over affected area of work.
- B. Funds will be drawn from the Septic System Allowance only by Change Order.
- C. Bond, insurance, overhead and profit fees on Change Orders paid out of the Septic System Allowance will not be permitted. The Contractor must carry in its Base Bid OH&P costs on the Septic System Allowance funds expenditures.
- D. At closeout of Contract, funds remaining in the Septic System Allowance will be credited to Owner by Change Order.

1.05 ALLOWANCES SCHEDULE

- A. Contingency Allowance: Include in the Base Bid for Bid A Pickerill House the stipulated sum of \$90,000.00 for use upon Owner's instructions.
- B. Contingency Allowance: Include in the Base Bid for Bid B Re-Roof the stipulated sum of \$10,000.00 for use upon Owner's instructions.

C. Septic System Allowance: Include in your Base Bid for Bid A the Stipulated sum of \$30,000.00 for use upon Owner's instructions.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General administrative requirements.
- B. Preconstruction meeting.
- C. Site mobilization meeting.
- D. Progress meetings.
- E. Construction progress schedule.
- F. Architect/Engineer-provided CAD files.
- G. Requests for Interpretation (RFI) procedures.
- H. Submittals for review, information, and project closeout.
- I. Number of copies of submittals.
- J. Submittal procedures.

1.02 RELATED REQUIREMENTS

- A. Section 00 72 00 - General Conditions: Dates for applications for payment.
- B. Section 01 60 00 - Product Requirements: General product requirements.
- C. Section 01 70 00 - Execution and Closeout Requirements: Additional coordination requirements.
- D. Section 01 78 00 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

1.03 GENERAL ADMINISTRATIVE REQUIREMENTS

- A. Comply with requirements of Section 01 70 00 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
- B. Make the following types of submittals to Architect/Engineer:
 - 1. Requests for Interpretation (RFI).
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.
 - 4. Test and inspection reports.
 - 5. Design data.
 - 6. Manufacturer's instructions and field reports.
 - 7. Applications for payment and change order requests.
 - 8. Progress schedules.
 - 9. Coordination drawings.
 - 10. Correction Punch List and Final Correction Punch List for Substantial Completion.
 - 11. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

- A. Architect/Engineer will schedule a meeting after Notice of Award.
- B. Attendance required:
 - 1. Owner.
 - 2. Architect/Engineer.
 - 3. Contractor.
- C. 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 and Architect/Engineer.
 - 6. Procedures and processing of field decisions, Submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 7. Scheduling.
 - 8. Scheduling activities of a Geotechnical Engineer.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect/Engineer, Owner, participants, and those affected by decisions made.

3.02 SITE MOBILIZATION MEETING

- A. Architect/Engineer will schedule a meeting at the Project site prior to Contractor occupancy. May be combined with Preconstruction Meeting.
- B. Attendance required:
 - 1. Contractor.
 - 2. Owner.
 - 3. Architect/Engineer.
 - 4. Major subcontractors.
- C. Agenda:
 - 1. Use of premises by Owner and Contractor.
 - 2. Owner's requirements.
 - 3. Construction facilities and controls provided by Owner.
 - 4. Temporary utilities provided by Owner.
 - 5. Survey and building layout.
 - 6. Security and housekeeping procedures.
 - 7. Schedules.
 - 8. Application for payment procedures.
 - 9. Procedures for testing.
 - 10. Procedures for maintaining record documents.
 - 11. Requirements for start-up of equipment.

12. Inspection and acceptance of equipment put into service during construction period.

D. Record minutes and distribute copies within 2 days after meeting to participants, with copies to Architect/Engineer, Owner, participants, and those affected by decisions made.

3.03 PROGRESS MEETINGS

A. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

B. Attendance Required:

1. Contractor.
2. Owner.
3. Architect/Engineer.
4. Contractor's superintendent.
5. Major subcontractors.

C. 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. Maintenance of progress schedule.
7. Corrective measures to regain projected schedules.
8. Planned progress during succeeding work period.
9. Maintenance of quality and work standards.
10. Effect of proposed changes on progress schedule and coordination.
11. Other business relating to work.

D. Record minutes and distribute copies within 2 days after meeting to participants, with copies to Architect/Engineer, Owner, participants, and those affected by decisions made.

3.04 CONSTRUCTION PROGRESS SCHEDULE

A. If preliminary schedule requires revision after review, submit revised schedule within 7 days.

B. Submit updated schedule with each Application for Payment.

3.05 ARCHITECT/ENGINEER-PROVIDED CAD FILES

A. After the execution of the Contract, Architect/Engineer will provide, free of charge, upon receipt of a properly completed and signed request utilizing "Electronic Data Transfer Consent Form" at the end of this Specification Section, CAD files depicting graphic information for the project as follows:

1. Architectural Floor Plans: Column grid, walls, floors, stairs, doors, windows, room numbers, ceiling grid, mechanical diffusers, plumbing fixtures, sprinkler heads (if depicted in Bid Documents) and lights.

B. Contractor acknowledges and accepts that the Architectural Floor Plans do not contain structural, mechanical, electrical, plumbing, fire protection and other building systems information depicted in the Bidding Documents. Examples of information not contained in these files include, but are not limited to, title blocks, keynotes, schedules, mechanical ductwork and equipment, electrical device symbols, circuit numbers and home runs, plumbing equipment, piping runs and riser diagrams, and

architectural/engineering text or details. No other CAD files, data or information will be provided.

- C. Only requests from Prime Contractors will be honored. Subcontractors must obtain the files from their respective Prime Contractors.
- D. In submitting a request, Contractor acknowledges that:
 - 1. Architect/Engineer bears no responsibility for the data or its transmission,
 - 2. Use of the data by the Contractor or his Subcontractors in no way relieves the Contractor of his obligations under the Contract,
 - 3. Contractor is solely liable for any and all claims arising from any and all products generated by the Contractor or its Subcontractors employing the data,
 - 4. Contractor and its Subcontractors have a limited, non-exclusive license to use the data solely in connection with the Work of the Project, and that
 - 5. Architect/Engineer retains all rights, including copyright, to the data.

3.06 REQUESTS FOR INFORMATION (RFI)

- A. Definition: A request seeking one of the following:
 - 1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
 - 2. A resolution to an issue which has arisen due to field conditions and affects design intent.
- B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
- C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
 - 1. Prepare a separate RFI for each specific item.
 - a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
 - b. Do not forward requests which solely require internal coordination between subcontractors.
 - 2. Prepare in a format and with content acceptable to Owner.
 - a. Use AIA G716 - Request for Information .
 - 3. Combine RFI and its attachments into a single electronic file. PDF format is preferred.
- D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
 - 1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
 - 2. Unacceptable Uses for RFIs: Do not use RFIs to request the following:
 - a. Approval of submittals (use procedures specified elsewhere in this section).
 - b. Approval of substitutions (see Section - 01 60 00 - Product Requirements)
 - c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).
 - d. Different methods of performing work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Conditions of the Contract).

3. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
 4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.
 - a. The Owner reserves the right to assess the Contractor for the costs (on time-and-materials basis) incurred by the Architect/Engineer, and any of its consultants, due to processing of such RFIs.
- E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
1. Official Project name and number, and any additional required identifiers established in Contract Documents.
 2. Owner's, Architect/Engineer's, and Contractor's names.
 3. Discrete and consecutive RFI number, and descriptive subject/title.
 4. Issue date, and requested reply date.
 5. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
 6. Annotations: Field dimensions and/or description of conditions which have engendered the request.
 7. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.
- F. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.
- G. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
1. Indicate current status of every RFI. Update log promptly and on a regular basis.
 2. Note dates of when each request is made, and when a response is received.
 3. Highlight items requiring priority or expedited response.
 4. Highlight items for which a timely response has not been received to date.
 5. Identify and include improper or frivolous RFIs.
- H. Review Time: Architect/Engineer will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 3:00 PM will be considered as having been received on the following regular working day.
1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.
- I. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify

- the amended RFI with an R suffix to the original number.
2. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
 3. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.
 4. Notify Architect/Engineer within seven calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.

3.07 SUBMITTAL SCHEDULE

- A. Submit to Architect/Engineer for review a schedule for submittals in tabular format.
 1. Submit at the same time as the preliminary schedule.
 2. Coordinate with Contractor's construction schedule and schedule of values.
 3. Format schedule to allow tracking of status of submittals throughout duration of construction.
 4. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
 5. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
 - a. For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.

3.08 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/Engineer for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
- C. Samples will be reviewed for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with Submittal PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

3.09 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/Engineer's knowledge as contract administrator or for Owner.

3.10 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 compliance with requirements of Section 01 78 00 - 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.

3.11 NUMBER OF COPIES OF SUBMITTALS

- A. Documents for Review:
 - 1. Submit 2 paper copies, one of which will be retained by the Architect/Engineer. Contractor shall make his own copies from the original returned by the Architect/Engineer; OR
 - 2. Submit via email in Adobe PDF electronic file format at native sheet size and right-side up. Architect/Engineer will return via email a reviewed copy in Adobe PDF electronic file format. Files not properly sized and rotated will be rejected. Illegible files will be rejected.
- B. Documents for Information: Submit one copy; either paper or electronic Adobe PDF file format is acceptable. Submitted documents are for Architect/Engineer's information and reference only, and will not be reviewed or returned.
- C. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect/Engineer.
 - 1. Samples for color/finish selection must be original, physical samples. Paper or electronic copies of scanned physical original samples are not acceptable.
 - 2. After review, produce duplicates.
 - 3. Retained samples will not be returned to Contractor unless specifically so stated.

3.12 SUBMITTAL PROCEDURES

- A. General Requirements:
 - 1. Use a single transmittal for related items.
 - 2. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
 - 3. Transmit using approved form.
 - 4. Number each submittal. Prefix the submittal number with the Specification Section number to which the submittal pertains. For revised submittals use original number and a sequential alphanumeric suffix. **Items submitted without a Specification Section number, or with an incorrect Specification Section number will delay the review process.**
 - 5. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number, article and paragraph, as appropriate on each copy.
 - 6. Correlate submitted items with specified products; clearly indicate the specified product that corresponds to each submitted item. **Submitted items not clearly correlated with specified**

items will delay the review process.

7. When options or optional features available for a Product are indicated in a Submittal, and selections for those options/features are indicated in the Contract Documents, identify on the Submittal the selection indicated in the Contract Documents. **Submittals that fail to identify specified options or optional features may be returned marked "Rejected" or "Revise and Resubmit"**.
8. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
 - a. Submittals from sources other than the Contractor, or without Contractor's transmittal will not be acknowledged, reviewed, or returned.
9. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
 - a. Deliver submittals to Architect/Engineer at business address.
10. Schedule submittals to expedite the Project, and coordinate submission of related items.
 - a. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
 - b. For sequential reviews involving Architect/Engineer's consultants, Owner, or another affected party, allow an additional 7 days.
11. Clearly identify variations from the Contract Documents. Regardless of the type of variation, Contractor is solely responsible for errors in the field or performance issues that arise from Submittal variations from the requirements of the Contract Documents if those variations were not expressly noted to specifically identify for and describe to the reviewer the nature of the variation from the Contract Documents.
12. Provide space for Contractor's review stamp and a 4 inch x 3 inch clear space for Architect/Engineer's review stamp.
13. Promptly return submittals marked "Rejected" or "Revise and Resubmit" to originating subcontractor supplier, and faithfully ensure the prompt resubmittal of the correct or revised information.
14. When revised for resubmission, identify all changes made since previous submission. Use clouds, highlights or other means acceptable to Architect/Engineer. **Resubmittals that do not clearly identify all changes may be delayed and/or returned to the Contractor unreviewed.**
15. Contractor is entitled to one (1) resubmittal of each Submittal For Review or Submittal For Project Closeout rejected by Architect/Engineer or returned by Architect/Engineer for further action. Thereafter, Contractor shall pay the cost of all further Architect/Engineer reviews of any Submittal For Review or Submittal for Project Closeout, at a rate of \$200.00/hour. Cost of such further reviews will be deducted from the Contract Sum by Change Order.
16. Promptly distribute and coordinate the requirements of reviewed submittals with affected parties. Instruct parties to promptly report inability to comply with requirements.
17. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
18. Submittals not requested will be returned "Not Reviewed".

B. Product Data Procedures:

1. Submit only information required by individual specification sections.
2. Collect required information into a single submittal.
3. Submit concurrently with related shop drawing submittal.

4. Do not submit (Material) Safety Data Sheets for materials or products.
- C. Shop Drawing Procedures:
1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
 2. Use of reproductions of the Contract Documents in digital data form to create shop drawings is only permitted as defined above in Article 3.10.
 3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
- D. Samples Procedures:
1. Transmit related items together as single package.
 2. When relevant, identify each item to allow review for applicability in relation to shop drawings showing installation locations.
- E. Submittal reviews may be delayed and/or Submittals may be returned marked "Rejected" or "Revise and Resubmit" for any of the following reasons:
1. Submittals submitted outside the scheduled dates of the Submittal Schedule.
 2. Submittals are incomplete or are missing information.
 3. Submittals are not submitted in accordance with procedures outlined in this Section, including, but not limited to:
 - a. Specification Section number not indicated on submittal or transmittal.
 - b. Contractor's review stamp missing.
 - c. Submitted items not correlated with specified products.
 - d. Re-submitted items not clearly identifying changes.

3.13 SUBMITTAL REVIEW

- A. Submittals for Review: Architect/Engineer will review each submittal, and approve, or take other appropriate action.
- B. Submittals for Information: Architect/Engineer will not acknowledge receipt, and take no other action.
- C. Architect/Engineer's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
1. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.
- D. Architect/Engineer's and consultants' actions on items submitted for review:
1. Authorizing purchasing, fabrication, delivery, and installation:
 - a. "No Exception Taken", or language with same legal meaning.
 - 1) Resubmission is not required or requested.
 - 2) Resubmitted items will not be acknowledged.
 - b. "Make Corrections Noted", or language with same legal meaning.
 - 1) Resubmission is not required or requested.
 - 2) Resubmitted items may be returned marked "Not Requested, Not Reviewed".
 2. Not Authorizing fabrication, delivery, and installation:
 - a. "Revise and Resubmit".
 - 1) Resubmit revised item, with review notations acknowledged and incorporated.
 - 2) Clearly identify all revisions.

- 3) Non-responsive resubmittals may be rejected.
- b. "Rejected".
 - 1) Submit item complying with requirements of Contract Documents.
- c. "Submit Specified Item".
 - 1) Submit item complying with requirements of Contract Documents.

END OF SECTION

ELECTRONIC DATA TRANSFER CONSENT FORM

Project Name: KEN PICKERILL HOUSE RENOVATIONS
6350A MINKLER ROAD
YORKVILLE, ILLINOIS 60560

Project No.: 19-429-1250

Owner: KENDALL COUNTY FOREST PRESERVE DISTRICT

Your Work: _____

KLUBER, INC. (hereinafter referred to as "Kluber") an Illinois corporation, is providing electronic data to you solely at your request and for your convenience. By accepting and opening any of the electronic data files, you agree that Kluber bears no liability for the data or its transmission to you and that you are solely liable for any and all claims referring or relating to any and all products you, or your Subcontractors, may generate with the data.

You acknowledge that you have a limited non-exclusive license to use the information solely in connection with your work on the project captioned above, and that Kluber retains all rights, including copyright, to the data.

Acknowledged by: _____
(Printed Name) (Signature)

Company: _____

Date: _____ Email: _____

Architectural Floor Plans are transmitted for the contractors' use as backgrounds for shop drawings and as-built drawings, and, as such, contain graphic information for column grid, walls, floors, stairs, doors, windows, room numbers, ceiling grid, lights, diffusers and sprinkler heads where indicated on Bid Documents. Plans do not contain title blocks, keynotes, schedules, mechanical ductwork and equipment, electrical device symbols, circuit numbers and home runs, plumbing equipment, piping runs and riser diagrams, and architectural/engineering text and details. Plans depict entire floors and are not formatted, partial plans as depicted in the Bidding Documents. Files are provided in R2013 .DWG format.)

**SECTION 01 40 00
QUALITY REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Submittals.
- B. Quality assurance.
- C. Sequencing and scheduling of the work with testing and inspections.
- D. Testing and inspection agencies and services.
- E. Control of installation.
- F. Tolerances.
- G. Manufacturers' field services.
- H. Defect Assessment.

1.02 RELATED REQUIREMENTS

- A. Section 01 41 00 - Regulatory Requirements.
- B. Section 01 42 00 - References.
- C. Section 01 60 00 - Product Requirements: Requirements for material and product quality.

1.03 REFERENCE STANDARDS

- A. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation 2017.
- B. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction 2019.
- C. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection 2021.
- D. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing 2021.
- E. ASTM E699 - Standard Specification for Agencies Involved in Testing, Quality Assurance, and Evaluating of Manufactured Building Components 2016.
- F. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2010.
- G. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2008.
- H. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2010a.
- I. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2010b.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Test Reports: After each test/inspection, promptly submit two copies of report to Architect/Engineer 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/Engineer, provide interpretation of results.
- C. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect/Engineer, 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/Engineer.
- D. 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.

1.05 QUALITY ASSURANCE

- A. Testing Agency Qualifications:
 - 1. Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
 - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.

1.06 REGULATORY REQUIREMENTS - See Section 01 41 00

1.07 REFERENCES AND STANDARDS - See Section 01 42 00

1.08 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Contractor will employ and pay for services of an independent testing agency to perform specified testing and inspection, except where specifically indicated otherwise in the Schedule of Tests and Inspections.

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, and ASTM C1077.
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.

1.09 SEQUENCING AND SCHEDULING

A. Soils Testing: As each portion of the Work is completed, notify testing laboratory to perform compaction and moisture density tests.

1. Test compaction of existing and placed materials no more than seven (7) days prior to placement of the next portion of the Work, and only when no rain is expected between the time of the test and the placement of the next portion of the Work.
2. Proceed promptly with additional portions of the Work only after satisfactory results have been verified in writing.

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/Engineer 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/Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.03 TESTING AND INSPECTION

- A. Testing Agency Duties:
 - 1. Provide qualified personnel at site. Cooperate with Architect/Engineer and Contractor in performance of services.
 - 2. Perform specified sampling and testing of products in accordance with specified standards.
 - 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 4. Promptly notify Architect/Engineer and Contractor of observed irregularities or non-compliance of Work or products.
 - 5. Perform additional tests and inspections required by Architect/Engineer.
 - 6. Submit reports of all tests/inspections specified.
- B. 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.
- C. 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/Engineer 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.
- D. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect/Engineer.
- E. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.04 SCHEDULE OF TESTS AND INSPECTIONS:

- A. Concrete Testing and Inspection: Contractor's Testing Service.
 - 1. Section 03 30 00 - Cast-in-Place Concrete (Reinforcing Steel)
 - 2. Section 03 30 00 - Cast-in-Place Concrete:

- a. Compressive strength tests: ASTM C172 and ASTM C39.
 - 1) Samples for each day's pour greater than 5 cubic yards. Sample every 50 cubic yards.
 - 2) Sample shall consist of 4 specimens. Break schedule: 1 at 7 days, 2 at 28 days and final held for possible future break if directed by Architect/Engineer.
 - 3) Slump: ASTM C 143; one for each set of test cylinders.
 - 4) Air Content: ASTM C 231.
 - 5) Concrete Temperature: ASTM C 1064.
 - 6) Unit Weight: ASTM C 567.
 - 7) Take one additional cylinder during cold weather, cured on site under same conditions as the concrete it represents.
- B. Structural Steel/Decking Testing and Inspection: Contractor's Testing Service.
 - 1. Section 05 12 00 - Structural Steel Framing:
 - a. Provide testing and verification of shop and field-bolted connections in accordance with AISC "Specification for Structural Joints using ASTM A 325 or A 490 bolts".
 - b. Visually inspect all shop and field welds for placement and size.
- C. Soils Testing: Contractors's Testing Service.
 - 1. Section 31 23 16 - Excavation, Section 31 23 16.13 - Trenching, and Section 31 23 23 - Fill:
 - a. Test and inspect subgrades and each fill or backfill layer.
 - b. Building pad and footing subgrades to verify design bearing capacities. Perform testing in accordance with project soils report.
 - c. Test compaction of soils ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937 as applicable.
 - d. Exterior paver and garden wall area areas subgrade at least one test for every 500 square feet.
 - e. Foundation backfill compaction of initial and final layer. Perform at least one test every 25 feet.

3.05 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, start-up of equipment, test, adjust, and balance equipment 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.

3.06 DEFECT ASSESSMENT

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

END OF SECTION

**SECTION 01 41 00
REGULATORY REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General.
- B. Definitions.
- C. Quality Assurance.
- D. Regulatory Requirements.

1.02 RELATED SECTIONS

- A. Section 01 10 00 - Summary.
- B. Section 01 42 00 - References.

1.03 GENERAL

- A. Comply with all applicable laws, rules, regulations, codes and ordinances.
- B. If the Contractor observes that the Contract Documents may be at variance with specified codes, notify the Architect/Engineer immediately. Architect/Engineer shall issue all changes in accordance with the General Conditions.
- C. It shall not be the Contractor's primary responsibility to make certain that the Contract Documents are in accordance with all applicable laws, rules and regulations, however, when the Contractor performs work knowing or having reason to know that the work in question is contrary to applicable laws, rules, and regulations, and fails to notify the Architect/Engineer, the Contractor shall pay all costs arising therefrom.

1.04 DEFINITIONS

- A. Definitions:
 - 1. Codes: Codes are statutory requirements, rules or regulations of governmental entities.
 - 2. Standards: Standards are requirements that have been established as accepted criteria, set general consent.

1.05 QUALITY ASSURANCE

- A. The Architect/Engineer has designed the project to applicable code requirements and has copies of said codes available for the Contractor's inspection.
- B. The Contractor shall:
 - 1. Ensure that copies of codes and standards referenced herein or specified in individual specifications sections are available to Contractor's personnel, agents, and Sub-Contractors.
 - 2. Ensure that Contractor's personnel, agents, and Sub-Contractors are familiar with the workmanship and requirements of applicable codes and standards.

1.06 REGULATORY REQUIREMENTS

- A. Source and Requirements: Verify amendments with local code officials.
 - 1. Local code requirements:

- a. ICC International Building Code, 2018 Edition.
 - b. ICC International Mechanical Code, 2018 Edition.
 - c. ICC International Fuel Gas Code, 2018 Edition.
 - d. ICC International Existing Building Code, 2018 Edition.
 - e. ICC International Fire Code, 2018 Edition.
 - f. National Electrical Code, 2017 Edition.
2. State code requirements:
- a. Capital Development Board (CDB):
 - 1) Illinois Accessibility Code, 2018 Edition.
 - 2) Illinois Energy Conservation Code (ICC International Energy Conservation Code, 2018 Edition, with State of Illinois modifications.
 - b. Illinois Department of Labor (IDOL): Safety Glazing Materials Act - Illinois Revised Statutes, chap. 111 1/2, paragraph 3101, et seq.
 - c. Illinois Department of Public Health (IDPH):
 - 1) Illinois Plumbing Code (Illinois Administrative Code, Title 77, Chapter I, Subchapter r, Part 890).
 - d. Illinois Environmental Protection Agency (IEPA):
 - 1) Air-Pollution Standards.
 - 2) Noise Pollution Standards.
 - 3) Water Pollution Standards.
 - 4) Public Water Supplies
 - 5) Solid Waste Standards.
 - 6) Illinois Recommended Standards for Sewage Works (Illinois Administrative Code, Title 35, Subtitle C, Chapter II, Part 370).
 - e. Illinois State Fire Marshal (OSFM):
 - 1) Boiler & Pressure Vessel Safety Code (Illinois Administrative Code, Title 44, Chapter I, Part 120).
 - 2) Illinois Rules & Regulations for Fire Prevention & Safety (as amended).
 - 3) Gasoline and Volatile Oils (Illinois Revised Statutes, chap. 17 1/2, paragraph 31, et seq.).
3. Information and Requirements for Utility Services: Local utility companies.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 42 00
REFERENCES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawing symbols, abbreviations and acronyms.
- B. Definitions of terms used throughout the Contract Documents.
- C. Explanation of specification format and content.
- D. Requirements relating to referenced standards.
- E. Applicability of referenced standards.
- F. List of industry organizations and certain of their respective documents.

1.02 DRAWING SYMBOLS AND CONVENTIONS

- A. Abbreviations and graphic symbols are defined on the General Notes, Symbols & Abbreviations sheet of the drawings.
- B. Generally, symbols used on the mechanical and electrical drawings conform to those recommended by ASHRAE, though, where appropriate, these symbols are supplemented by more specific symbols as recommended by ASME, ASPE, or the IEEE.

1.03 DEFINITIONS

- A. Where the terms "indicated", "noted", "scheduled", "shown", or "specified" are used it is to help locate the reference; no limitation on location is intended except as specifically noted.
- B. Where the terms "directed", "requested", "authorized", "approved", are used as in "directed by the Architect/Engineer", no implied meaning shall be construed to extend the Architect/Engineer's responsibilities into the Contractor's purview of construction supervision.
- C. Where the term "approved" is used in conjunction with the Architect/Engineer's action on submittals, requests or applications it is limited to the duties of the Architect/Engineer as described in the Agreement, and the General and Supplemental Conditions of the Contract. Such use of the term "approval" shall not limit or release the Contractor from his responsibility to fulfill Contract requirements.
- D. Where the term "regulations" is used it means all applicable statutes, laws, ordinances, and orders issued by authorities having jurisdiction, as well as construction industry standards, rules, or conventions that address performance of the Work.
- E. The "Project Site" is the space available to the Contractor for performance of construction activities. The Project Site may be for the exclusive use of the Contractor and his activities or may be used in conjunction with others performing other construction or related activities on the Project. Unless the extent of the Project Site is indicated on the Drawings, means the limits of the area within the property line of the parcel on which the Project is located, subject to the limitations and restrictions of local ordinance and the discretion of the Owner.

- F. Where the term "furnish" is used it means supply, deliver to, and unload and store at the Project Site until the Work is ready for the item to be assembled and incorporated into the Work.
- G. Where the term "install" is used it is meant to describe operations at the Project Site to include uncrating, assembling, placing, anchoring, connecting to utilities, finishing, protecting, cleaning and all other similar operations required to fully incorporate an item into the Work.
- H. Where the term "provide" is used it means "furnish and install" as defined above.
- I. Where the term "refurbish" is used it means refinish, repair and otherwise restore to like-new condition.
- J. Where the terms "remove" or "demolish" are used they mean safely disconnect from existing utilities, permanently extract from the Work and the Project Site, and legally dispose of off-site.
- K. Where the terms "temporarily remove" or "salvage" are used they mean safely disconnect from existing utilities and carefully extract from the Work so as to prevent damage to the item and the Work.
 - 1. If the item is to be reinstalled or relocated as part of the Work, these terms also mean clean, adjust, lubricate and otherwise restore to best possible condition without repair or refinishing.
 - 2. Otherwise, these terms also mean clean item surfaces and turn over to the Owner for storage and possible future use.
- L. Where the term "reinstall" is used it means the same as "install", with respect to a temporarily removed, salvaged or relocated item.
- M. Where the term "relocate" is used it means temporarily remove and reinstall in a new location.
- N. Where the phrase "salvage in place" is used it means protect in place so as to prevent damage while adjacent elements are demolished, restore to best possible condition without repair or refinishing, and modify as necessary to properly incorporate and integrate with the Work.

1.04 SPECIFICATION FORMAT AND CONTENT

- A. These Specifications are based on the Construction Specification Institute's 49 Division format and numbering system.
- B. Language used in the Specifications and other Contract Documents is an abbreviated type. Implied words and meanings will be appropriately interpreted.
- C. Requirements expressed in imperative and streamlined language are to be performed by the Contractor. At certain locations in the text, subjective language may be used to describe responsibilities that must be fulfilled indirectly by the Contractor or others.
 - 1. Whenever a colon (:) is used within a sentence or phrase, it shall be construed to mean the words "shall be".
- D. Use of certain terms such as "carpentry" is not intended to imply that certain activities must be performed by accredited or unionized individuals of a corresponding generic name. The Specifications do, however, require that certain construction activities shall be performed by specialists who are recognized experts in the operations to be performed. Specialists shall be used for said activities, however the final responsibility for fulfilling the requirements of the Contract remains the Contractor's.

1.05 QUALITY ASSURANCE

- A. For products or 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. Conform to reference standard of date of issue specified in this section, except where a specific date is established by applicable code.
- C. Obtain copies of standards when required by the Contract Documents.
- 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 the Architect/Engineer before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Architect/Engineer shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

1.06 APPLICABILITY OF INDUSTRY STANDARDS

- A. Construction industry standards shall have the same force and effect as if bound or copied directly in the Contract Documents, except where more stringent requirements are specified. All such applicable standards are made a part of the Contract Documents by reference.
 - 1. Where compliance with two or more standards are referenced and conflicting requirements for quality or quantities occur, comply with the more stringent requirements. Refer questions regarding apparently conflicting standards to the Architect/Engineer for a decision before proceeding.
 - 2. The standard of quality or quantity levels specified, shown, or referenced shall be the minimum to be provided or performed. Refer questions regarding standards of minimum quality or quantity to the Architect/Engineer before proceeding.

1.07 CONSTRUCTION INDUSTRY ORGANIZATIONS AND DOCUMENTS

AABC -- ASSOCIATED AIR BALANCE COUNCIL

AAMA -- AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION

AASHTO -- AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS

ACI -- AMERICAN CONCRETE INSTITUTE INTERNATIONAL

ADC -- AIR DIFFUSION COUNCIL

AGA -- AMERICAN GALVANIZERS ASSOCIATION, INC.

AGA -- AMERICAN GAS ASSOCIATION

AHA -- AMERICAN HARDBOARD ASSOCIATION

AISC -- AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC.

ALSC -- AMERICAN LUMBER STANDARDS COMMITTEE

AMCA -- AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL, INC.
ANSI -- AMERICAN NATIONAL STANDARDS INSTITUTE
APA -- APA - THE ENGINEERED WOOD ASSOCIATION
ARI -- AIR-CONDITIONING AND REFRIGERATION INSTITUTE
ASA -- ACOUSTICAL SOCIETY OF AMERICA
ASCE -- AMERICAN SOCIETY OF CIVIL ENGINEERS
ASHRAE -- AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS, INC.
ASME -- THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASME A17.1 - Safety Code for Elevators and Escalators; 2004.
ASTM -- AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWI -- ARCHITECTURAL WOODWORK INSTITUTE
AWPA -- AMERICAN WOOD-PRESERVERS' ASSOCIATION
AWPB -- AMERICAN WOOD PRESERVERS BUREAU
AWS -- AMERICAN WELDING SOCIETY
BHMA -- BUILDERS HARDWARE MANUFACTURERS ASSOCIATION
BIA -- BRICK INDUSTRY ASSOCIATION
CDA -- COPPER DEVELOPMENT ASSOCIATION, INC.
CPSC -- CONSUMER PRODUCTS SAFETY COMMISSION
CRI -- CARPET AND RUG INSTITUTE
CRSI -- CONCRETE REINFORCING STEEL INSTITUTE
DHI -- DOOR AND HARDWARE INSTITUTE
DIN -- DEUTSCHES INSTITUT FUR NORMUNG
FM -- FACTORY MUTUAL RESEARCH CORPORATION
GA -- GYPSUM ASSOCIATION
GANA -- GLASS ASSOCIATION OF NORTH AMERICA
GREENSEAL -- GREEN SEAL
IAPMO -- INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS
ICBO -- INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS
ICC -- INTERNATIONAL CODE COUNCIL, INC.
IEEE -- INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS

IESNA -- ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA
IGCC -- INSULATING GLASS CERTIFICATION COUNCIL
IGMA -- INSULATING GLASS MANUFACTURERS ALLIANCE
ISDI -- INSULATED STEEL DOOR INSTITUTE
ISSFA - INTERNATIONAL SOLID SURFACE FABRICATORS ASSOCIATION
ISO -- INTERNATIONAL STANDARDS ORGANIZATION
ITS -- INTERTEK TESTING SERVICES NA, INC.
LPI -- LIGHTNING PROTECTION INSTITUTE
MPI -- MASTER PAINTERS INSTITUTE (MASTER PAINTERS AND DECORATORS ASSOCIATION)
NAAMM -- THE NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS
NCMA -- NATIONAL CONCRETE MASONRY ASSOCIATION
NEBB -- NATIONAL ENVIRONMENTAL BALANCING BUREAU
NECA -- NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION
NEMA -- NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NETA -- INTERNATIONAL ELECTRICAL TESTING ASSOCIATION
NFPA -- NATIONAL FIRE PROTECTION ASSOCIATION
NFRC -- NATIONAL FENESTRATION RATING COUNCIL, INC.
NGA -- NATIONAL GAS ASSOCIATION
NHLA -- NATIONAL HARDWOOD LUMBER ASSOCIATION
NIOSH - NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH.
NLGA -- NATIONAL LUMBER GRADES AUTHORITY
NPA -- NATIONAL PARTICLEBOARD ASSOCIATION
NPCA -- NATIONAL PAINT AND COATINGS ASSOCIATION
NRCA -- NATIONAL ROOFING CONTRACTORS ASSOCIATION
PCA -- PORTLAND CEMENT ASSOCIATION
PDCA -- PAINTING AND DECORATING CONTRACTORS OF AMERICA
PDI -- PLUMBING AND DRAINAGE INSTITUTE
PIMA -- POLYISOCYANURATE INSULATION MANUFACTURERS ASSOCIATION
RFCI -- RESILIENT FLOOR COVERING INSTITUTE
SDI -- STEEL DOOR INSTITUTE

SGCC -- SAFETY GLAZING CERTIFICATION COUNCIL
SIGMA - SEALED INSULATING GLASS MANUFACTURERS ASSOCIATION (See IGMA)
SMACNA -- SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION, INC.
SPFA -- SPRAY POLYURETHANE FOAM ALLIANCE
SPRI -- SINGLE PLY ROOFING INSTITUTE
SSPC -- THE SOCIETY FOR PROTECTIVE COATINGS
SSPMA -- SUMP AND SEWAGE PUMP MANUFACTURERS ASSOCIATION
SWRI -- SEALANT, WATERPROOFING AND RESTORATION INSTITUTE
TCA -- TILE COUNCIL OF AMERICA, INC.
TPI -- TURFGRASS PRODUCERS INTERNATIONAL
UL -- UNDERWRITERS LABORATORIES INC.
USG -- UNITED STATES GYPSUM
 USG (HB) - Gypsum Construction Handbook; Seventh Edition.
USGBC -- U. S. GREEN BUILDING COUNCIL
WWPA -- WESTERN WOOD PRODUCTS ASSOCIATION

1.08 UNITED STATES GOVERNMENT AND RELATED AGENCIES/DOCUMENTS

CFR -- CODE OF FEDERAL REGULATIONS
CPSC -- CONSUMER PRODUCTS SAFETY COMMISSION
EPA -- ENVIRONMENTAL PROTECTION AGENCY
FS -- FEDERAL SPECIFICATIONS AND STANDARDS (General Services Administration)
GSA -- U.S. GENERAL SERVICES ADMINISTRATION
USGS -- UNITED STATES GEOLOGICAL SURVEY

1.09 STATE GOVERNMENT AND RELATED AGENCIES/DOCUMENTS

CDB -- ILLINOIS CAPITAL DEVELOPMENT BOARD
IDOL -- ILLINOIS DEPARTMENT OF LABOR
IDPH -- ILLINOIS DEPARTMENT OF PUBLIC HEALTH
IEPA -- ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
OSFM -- OFFICE OF THE ILLINOIS STATE FIRE MARSHAL.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Dewatering
- B. Temporary telecommunications services.
- C. Temporary sanitary facilities.
- D. Temporary controls: Barriers, enclosures, and fencing.
- E. Security requirements.
- F. Vehicular access and parking.
- G. Waste removal facilities and services.
- H. Project identification sign.
- I. Field offices.

1.02 RELATED REQUIREMENTS

- A. Section 01 51 00 - Temporary Utilities.

1.03 DEWATERING

- A. Provide temporary means and methods for dewatering all temporary facilities and controls.
- B. Maintain temporary facilities in operable condition.

1.04 TEMPORARY UTILITIES

- A. Owner will provide the following:
 - 1. Electrical power, consisting of connection to existing facilities.
 - 2. Water supply, consisting of connection to existing facilities.
- B. Existing facilities may be used.

1.05 TELECOMMUNICATIONS SERVICES

- A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.
- B. Telecommunications services shall include:
 - 1. One (1) mobile cellular telephone for each of Contractor's and any Subcontractor's field personnel.

1.06 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Use of existing facilities is permitted.
- C. Maintain daily in clean and sanitary condition.

D. At end of construction, return facilities to same or better condition as originally found.

1.07 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 and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way.
- C. Provide protection for plants designated to remain. Replace damaged plants.
- D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.08 FENCING

- A. Construction: Commercial grade chain link fence.
- B. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.09 EXTERIOR ENCLOSURES

- A. Provide temporary weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.
- B. Provide temporary roofing as specified in Section 07 01 50.19.

1.10 INTERIOR ENCLOSURES

- A. Provide temporary partitions as indicated 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.
- B. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:

1.11 SECURITY

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

1.12 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.
- F. Existing parking areas located at project site may be used for construction parking.

1.13 WASTE REMOVAL

- A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.
- B. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- C. Provide containers with lids. Remove trash from site periodically.
- D. 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.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.14 PROJECT IDENTIFICATION

- A. Provide project identification sign 4 feet x 8 feet in size with graphics provided by Architect.
- B. Erect on site at location established by Architect/Engineer.
- C. No other signs are allowed without Owner permission except those required by law.
- D. Minimum sign content:
 - 1. Image (rendering) of project.
 - 2. Identification of Owner, Contractor, Architect & PARC Grantee.
 - 3. Grant Reference: Funded in part by a Park and Recreational Facility Construction Grant Program. Illinois Department of Natural Resources.

1.15 FIELD OFFICES

- A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack, and drawing display table.
- B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.
- C. Use of existing building for field office is permitted in a location allowed by Owner.
- D. Locate offices a minimum distance of 30 feet from existing and new structures.

1.16 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.
- D. Restore existing facilities used during construction to original condition.

E. Restore new permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 51 00
TEMPORARY UTILITIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary Utilities: Provision of electricity, lighting, heat, ventilation, and water.

1.02 RELATED REQUIREMENTS

- A. Section 01 50 00 - Temporary Facilities and Controls:
 - 1. Temporary telecommunications services for administrative purposes.
 - 2. Temporary sanitary facilities required by law.

1.03 REFERENCE STANDARDS

- A. 29 CFR 1926 - Safety and Health Regulations for Construction Current Edition.

1.04 TEMPORARY ELECTRICITY

- A. Cost: By Owner.
- B. Connect to Owner's existing power service.
 - 1. Do not disrupt Owner's need for continuous service.
 - 2. Exercise measures to conserve energy.
- C. Provide temporary electric feeder from existing building electrical service at location as directed.
- D. Furnish, install, maintain during the Work, and remove temporary electric service.
 - 1. Power Service Characteristics: 208 volt, 100 ampere, three phase, four wire.
- E. Complement existing power service capacity and characteristics as required.
- F. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.
- G. Provide main service disconnect and over-current protection at convenient location and meter.
- H. Permanent convenience receptacles may be utilized during construction.
- I. Provide adequate distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.
- J. Extend and provide service to Construction Manager's field office. Maintain for duration of the Project.

1.05 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain LED, compact fluorescent, or high-intensity discharge lighting as suitable for the application for construction operations in accordance with requirements of 29 CFR 1926 and authorities having jurisdiction.
- B. Provide and maintain 1 watt/sq ft lighting to exterior staging and storage areas after dark for security purposes.

- C. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
- D. Maintain lighting and provide routine repairs.
- E. Permanent building lighting may be utilized during construction.
- F. Cost of Energy: By Owner.
- G. Provide heating devices and heat as needed to maintain specified conditions for construction operations.
- H. Maintain minimum ambient temperature of 55 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.
- I. Owner's existing heat plant may be used.
 - 1. Exercise measures to conserve energy.
 - 2. Enclose building prior to activating temporary heat.
- J. Prior to operation of permanent equipment for temporary heating purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

1.06 TEMPORARY COOLING

- A. Cost of Energy: By Owner.
- B. Provide cooling devices and cooling as needed to maintain specified conditions for construction operations.
- C. Maintain maximum ambient temperature of 80 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.
- D. Owner's existing cooling plant may be used.
 - 1. Exercise measures to conserve energy.
 - 2. Enclose building prior to activating temporary cooling.
- E. Prior to operation of permanent equipment for temporary cooling purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.
- F. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors and gasses.
- G. Provide suitable ventilation for installation and curing of materials, to meet health regulations for safe working environment, to protect work and products.
- H. Utilize existing ventilation equipment. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.

1.07 TEMPORARY WATER SERVICE

- A. Cost of Water Used: By Owner.
- B. Provide and maintain suitable quality water service for construction operations at time of project mobilization. Maintain until permanent water service is established.

C. Extend branch piping with outlets located so water is available by hoses with threaded connections.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 57 13
TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Prevention of erosion due to construction activities.
- B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.
- C. Restoration of areas eroded due to insufficient preventive measures.
- D. Performance bond.
- E. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.02 RELATED REQUIREMENTS

- A. Section 31 10 00 - Site Clearing: Limits on clearing; disposition of vegetative clearing debris.
- B. Section 31 22 00 - Grading: Temporary and permanent grade changes for erosion control.
- C. Section 31 23 23 - Fill: Temporary and permanent roadways.

1.03 REFERENCE STANDARDS

- A. ASTM D4355/D4355M - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc-Type Apparatus 2021.
- B. ASTM D4491/D4491M - Standard Test Methods for Water Permeability of Geotextiles by Permittivity 2021.
- C. ASTM D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity. 1999a (Reapproved 2014).
- D. ASTM D4533/D4533M - Standard Test Method for Trapezoid Tearing Strength of Geotextiles 2015.
- E. ASTM D4632/D4632M - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles 2015a.
- F. ASTM D4751 - Standard Test Methods for Determining Apparent Opening Size of a Geotextile 2021a.
- G. ASTM D4873/D4873M - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples 2017 (Reapproved 2021).
- H. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit Current Edition.

1.04 PERFORMANCE REQUIREMENTS

- A. Comply with requirements of EPA (NPDES) for erosion and sedimentation control, as specified by the NPDES, for Phases I and II, and in compliance with requirements of Construction General

Permit (CGP), whether the project is required by law to comply or not.

- B. Develop and follow an Erosion and Sedimentation Prevention Plan and submit periodic inspection reports.
- C. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
 - 1. Obtain and pay for permits and provide security required by authority having jurisdiction.
- D. Provide to Owner a Performance Bond covering erosion and sedimentation preventive measures only, in an amount equal to 100 percent of the cost of erosion and sedimentation control work.
- E. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.
- F. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
 - 1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
 - 2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.
- G. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
 - 1. Control movement of sediment and soil from temporary stockpiles of soil.
 - 2. Prevent development of ruts due to equipment and vehicular traffic.
 - 3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- H. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
 - 1. Prevent windblown soil from leaving the project site.
 - 2. Prevent tracking of mud onto public roads outside site.
 - 3. Prevent mud and sediment from flowing onto sidewalks and pavements.
 - 4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- I. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
 - 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
 - 2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.
- J. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
 - 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
- K. Open Water: Prevent standing water that could become stagnant.

- L. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Erosion and Sedimentation Control Plan:
 - 1. Submit not less than 30 days prior to anticipated start of clearing, grading, or other work involving disturbance of ground surface cover.
 - 2. Include:
 - a. Site plan identifying soils and vegetation, existing erosion problems, and areas vulnerable to erosion due to topography, soils, vegetation, or drainage.
 - b. Site plan showing grading; new improvements; temporary roads, traffic accesses, and other temporary construction; and proposed preventive measures.
 - c. Where extensive areas of soil will be disturbed, include storm water flow and volume calculations, soil loss predictions, and proposed preventive measures.
 - d. Schedule of temporary preventive measures, in relation to ground disturbing activities.
 - e. Other information required by law.
 - f. Format required by law is acceptable, provided any additional information specified is also included.
 - 3. Obtain the approval of the Plan by authorities having jurisdiction.
 - 4. Obtain the approval of the Plan by Owner.
- C. Certificate: Mill certificate for silt fence fabric attesting that fabric and factory seams comply with specified requirements, signed by legally authorized official of manufacturer; indicate actual minimum average roll values; identify fabric by roll identification numbers.
- D. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Mulch: Use one of the following:
 - 1. Straw or hay.
 - 2. Erosion control matting or netting.
- B. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.
- C. Bales: Air dry, rectangular straw bales.
 - 1. Cross Section: 14 by 18 inches, minimum.
 - 2. Bindings: Wire or string, around long dimension.
- D. Bale Stakes: One of the following, minimum 3 feet long:
 - 1. Steel U- or T-section, with minimum mass of 1.33 pound per linear foot.
 - 2. Wood, 2 by 2 inches in cross section.

- E. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum average roll lengths:
1. Average Opening Size: 30 U.S. Std. Sieve, maximum, when tested in accordance with ASTM D4751.
 2. Permittivity: 0.05 sec^{-1} , minimum, when tested in accordance with ASTM D4491/D4491M.
 3. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D4355/D4355M after 500 hours exposure.
 4. Tensile Strength: 100 pounds-force, minimum, in cross-machine direction; 124 pounds-force, minimum, in machine direction; when tested in accordance with ASTM D4632/D4632M.
 5. Elongation: 15 to 30 percent, when tested in accordance with ASTM D4632/D4632M.
 6. Tear Strength: 55 pounds-force, minimum, when tested in accordance with ASTM D4533/D4533M.
 7. Color: Manufacturer's standard, with embedment and fastener lines preprinted.
- F. Silt Fence Posts: One of the following, minimum 5 feet long:
1. Steel U- or T-section, with minimum mass of 1.33 pound per linear foot.
 2. Softwood, 4 by 4 inches in cross section.
- G. Gravel: See Section 31 23 23 for aggregate.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

- A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 SCOPE OF PREVENTIVE MEASURES

- A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.
- B. Construction Entrances: Traffic-bearing aggregate surface.
1. Width: As required; 20 feet, minimum.
 2. Length: 50 feet, minimum.
 3. Provide at each construction entrance from public right-of-way.
 4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.
- C. Linear Sediment Barriers: Made of silt fences.
1. Provide linear sediment barriers:
 - a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
 - b. Along the top of the slope or top bank of drainage channels and swales that traverse disturbed areas.
 - c. Along the toe of cut slopes and fill slopes.
 - d. Perpendicular to flow across the bottom of existing and new drainage channels and swales that traverse disturbed areas or carry runoff from disturbed areas; space at maximum of 200

feet apart.

- e. Across the entrances to culverts that receive runoff from disturbed areas.
2. Space sediment barriers with the following maximum slope length upslope from barrier:
 - a. Slope of Less Than 2 Percent: 100 feet.
 - b. Slope Between 2 and 5 Percent: 75 feet.
 - c. Slope Between 5 and 10 Percent: 50 feet.
 - d. Slope Between 10 and 20 Percent: 25 feet.
 - e. Slope Over 20 Percent: 15 feet.
- D. Storm Drain Curb Inlet Sediment Trap: Protect each curb inlet using one of the following measures:
 1. Filter fabric wrapped around hollow concrete blocks blocking entire inlet face area; use one piece of fabric wrapped at least 1-1/2 times around concrete blocks and secured to prevent dislodging; orient cores of blocks so runoff passes into inlet.
 2. Straw bale row blocking entire inlet face area; anchor into pavement.
- E. Storm Drain Drop Inlet Sediment Traps: As detailed on drawings.
- F. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.
- G. Soil Stockpiles: Protect using one of the following measures:
 1. Cover with polyethylene film, secured by placing soil on outer edges.
 2. Cover with mulch at least 4 inches thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches of straw or hay.
- H. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.
- I. Temporary Seeding: Use where temporary vegetated cover is required.

3.04 INSTALLATION

- A. Traffic-Bearing Aggregate Surface:
 1. Excavate minimum of 6 inches.
 2. Place geotextile fabric full width and length, with minimum 12 inch overlap at joints.
 3. Place and compact at least 6 inches of 1 1/2 to 3 1/2 inch diameter stone.
- B. Silt Fences:
 1. Store and handle fabric in accordance with ASTM D4873/D4873M.
 2. Where slope gradient is less than 3:1 or barriers will be in place less than 6 months, use nominal 16 inch high barriers with minimum 36 inch long posts spaced at 6 feet maximum, with fabric embedded at least 4 inches in ground.
 3. Where slope gradient is steeper than 3:1 or barriers will be in place over 6 months, use nominal 28 inch high barriers, minimum 48 inch long posts spaced at 6 feet maximum, with fabric embedded at least 6 inches in ground.
 4. Where slope gradient is steeper than 3:1 and vertical height of slope between barriers is more than 20 feet, use nominal 32 inch high barriers with woven wire reinforcement and steel posts spaced at 4 feet maximum, with fabric embedded at least 6 inches in ground.
 5. Install with top of fabric at nominal height and embedment as specified.
 6. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches, with extra post.

7. Fasten fabric to wood posts using one of the following:
 - a. Four nails per post with 3/4 inch diameter flat or button head, 1 inch long, and 14 gauge, 0.083 inch shank diameter.
 - b. Five staples per post with at least 17 gauge, 0.0453 inch wire, 3/4 inch crown width and 1/2 inch long legs.
 8. Fasten fabric to steel posts using wire, nylon cord, or integral pockets.
 9. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches high with post spacing not more than 4 feet.
- C. Straw Bale Rows:
1. Install bales in continuous rows with ends butting tightly, with one bale at each end of row turned uphill.
 2. Install bales so that bindings are not in contact with the ground.
 3. Embed bales at least 4 inches in the ground.
 4. Anchor bales with at least two stakes per bale, driven at least 18 inches into the ground; drive first stake in each bale toward the previously placed bale to force bales together.
 5. Fill gaps between ends of bales with loose straw wedged tightly.
 6. Place soil excavated for trench against bales on the upslope side of the row, compacted.
- D. Mulching Over Large Areas:
1. Dry Straw and Hay: Apply 2-1/2 tons per acre; anchor using dull disc harrow or emulsified asphalt applied using same spraying machine at 100 gallons of water per ton of mulch.
 2. Erosion Control Matting: Comply with manufacturer's instructions.
- E. Mulching Over Small and Medium Areas:
1. Dry Straw and Hay: Apply 4 to 6 inches depth.
 2. Erosion Control Matting: Comply with manufacturer's instructions.
- F. Temporary Seeding:
1. When hydraulic seeder is used, seedbed preparation is not required.
 2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.
 3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft.
 4. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft.
 5. Incorporate fertilizer into soil before seeding.
 6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep.
 7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.
 8. Repeat irrigation as required until grass is established.

3.05 MAINTENANCE

- A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.
- B. Repair deficiencies immediately.
- C. Silt Fences:

1. Promptly replace fabric that deteriorates unless need for fence has passed.
2. Remove silt deposits that exceed one-third of the height of the fence.
3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

D. Straw Bale Rows:

1. Promptly replace bales that fall apart or otherwise deteriorate unless need has passed.
2. Remove silt deposits that exceed one-half of the height of the bales.
3. Repair bale rows that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

E. Clean out temporary sediment control structures weekly and relocate soil on site.

F. Place sediment in appropriate locations on site; do not remove from site.

3.06 CLEAN UP

- A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect/Engineer.
- B. Clean out temporary sediment control structures that are to remain as permanent measures.
- C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION

**SECTION 01 60 00
PRODUCT REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General product requirements.
- B. Re-use of existing products.
- C. Transportation, handling, storage and protection.
- D. Product option requirements.
- E. Substitution limitations.
- F. Procedures for Owner-supplied products.
- G. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

- A. Section 01 40 00 - Quality Requirements: Product quality monitoring.
- B. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Requirements for VOC-restricted product categories.

1.03 SUBMITTALS

- A. 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.
- B. 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.
- C. 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.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by the Contract Documents.
- B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.
- C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.

2.02 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by the Contract Documents.
- B. Designed, manufactured, and tested in accordance with industry standards.
- C. Where all other criteria are met, Contractor shall give preference to products that:
 - 1. If used on interior, have lower emissions, as defined in Section 01 61 16.
 - 2. If wet-applied, have lower VOC content, as defined in Section 01 61 16.
 - 3. Have a published GreenScreen Chemical Hazard Analysis.

2.03 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.

2.04 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to to Project site; obtain Owner's signature on receipt for delivery prior to final payment. Submit signed receipts with Closeout Submittals.

PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURES

- A. Substitutions Prior To Bid Opening: Architect/Engineer will consider a written request for substitution provided that such request is received at least seven (7) days prior to the Bid opening date. Requests received after that time will not be considered.
 - 1. If a request is approved, the Architect/Engineer will issue an appropriate addendum not less than three (3) days prior to the Bid opening date.
- B. Substitutions After Notice of Award: Architect/Engineer will consider a request for substitution only under one or more of the following conditions:
 - 1. Substitution is required for compliance with final interpretation of code requirements or insurance regulations.
 - 2. Specified product is not available through no fault of the Contractor.
 - 3. Specified product is not compatible with other specified materials/equipment.
 - 4. Manufacturer will not certify or warranty specified product as required.
- C. Document each request utilizing Substitution Request Form following this section with complete data substantiating compliance of proposed substitution with Contract Documents. Incomplete requests will not be considered. Submit a separate Substitution Request Form and accompanying documentation for each proposed substitution.
- D. Provide the following minimum documentation with each Substitution Request Form:

1. Product identification, manufacturer, product data including dimensions and weight, performance and installation instructions.
 2. Side-by-side itemized comparison of proposed substitution with specified product.
 3. Coordination information including other modifications required as a result of proposed substitution.
 4. Cost information including the effect of the proposed substitution on the Contract Sum.
- E. Sign and date the Substitution Request Form.
- F. 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/Engineer for review or redesign services associated with re-approval by authorities having jurisdiction over the Project.
- G. Architect/Engineer will notify submitter in writing of decision to accept or reject request.
- H. Substitutions of products or product characteristics/components/options/accessories will not be considered when they are indicated or implied on Contractor's submittals, without separate written request, or when acceptance will require revision to the Contract Documents, whether rejection of said substitutions is expressly identified by Architect/Engineer on Contractor's submittals or not.

3.02 OWNER-SUPPLIED PRODUCTS

- A. See Section 01 10 00 - Summary for identification of Owner-supplied products.
- B. 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.
- C. 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.
 5. Make final connections to Owner-provided equipment, and test equipment.

3.03 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.

3.04 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. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- G. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- H. Comply with manufacturer's warranty conditions, if any.
- I. Do not store products directly on the ground.
- J. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- K. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- L. Prevent contact with material that may cause corrosion, discoloration, or staining.
- M. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- N. 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

SUBSTITUTION REQUEST FORM

PROJECT: KEN PICKERILL HOUSE RENOVATIONS

SPECIFIED ITEM: _____

Specification Section	Page	Paragraph	Description
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The undersigned requests consideration of the following:

PROPOSED SUBSTITUTION: _____

Attached data includes project description, specifications, drawings, photographs, performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents which the proposed substitution will require for its proper installation.

The undersigned certifies that the following paragraphs, unless modified by attachments, are correct:

1. The proposed substitution does not affect dimensions shown on drawings.
2. The undersigned will pay for changes to the building design, including engineering design, detailing, and construction costs caused by the requested substitution.
3. The proposed substitution will have no adverse effect on other trades, the construction schedule, or specified warranty requirements.
4. Maintenance and service parts will be locally available for the proposed substitution.

The undersigned further states that the function, appearance, and quality of the proposed substitution are equivalent or superior to the specified item.

Printed Name

Signature

Date

Firm

Telephone

Email

Attachments (list):

For Use By The Architect/Engineer:

Accepted Accepted As Noted

Not Accepted Received Too Late

By: _____

Date: _____

Remarks:

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

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for VOC-Content-Restricted products.
- B. Requirement for installer certification that they did not use any non-compliant products.

1.02 RELATED REQUIREMENTS

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

1.03 DEFINITIONS

- A. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
 - 1. Interior paints and coatings applied on site.
 - 2. Interior adhesives and sealants applied on site, including flooring adhesives.
 - 3. Other products when specifically stated in the specifications.
- B. Interior of Building: Anywhere inside the exterior weather barrier.
- C. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.
- D. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.

1.04 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency current edition.
- B. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings 2005 (Reapproved 2018).
- C. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board 2019.
- D. GreenSeal GS-36 - Standard for Adhesives for Commercial Use 2013.
- E. SCAQMD 1113 - Architectural Coatings 1977 (Amended 2016).
- F. SCAQMD 1168 - Adhesive and Sealant Applications 1989 (Amended 2017).

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.
- C. Sustainable Design Reporting: Submit evidence of compliance along with Accessory Material VOC Content Certification Form following this Section.

- D. Installer Certifications Regarding Prohibited Content: Require each installer of any type of product (not just the products for which VOC restrictions are specified) to certify that either 1) no adhesives, joint sealants, paints, coatings, or composite wood or agrifiber products have been used in the installation of installer's products, or 2) that such products used comply with these requirements.

1.06 QUALITY ASSURANCE

- A. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
 - 1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Report of laboratory testing performed in accordance with requirements.
 - b. Published product data showing compliance with requirements.
 - c. Certification by manufacturer that product complies with requirements.
- B. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 PRODUCTS

2.01 MATERIALS

- A. All Products: Comply with the most stringent of federal, State, and local requirements, or these specifications.
- B. VOC-Content-Restricted Products: VOC content not greater than required by the following:
 - 1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.
 - 2. Aerosol Adhesives: GreenSeal GS-36.
 - 3. Joint Sealants: SCAQMD 1168 Rule.
 - 4. Paints and Coatings: Each color; most stringent of the following:
 - a. 40 CFR 59, Subpart D.
 - b. SCAQMD 1113 Rule.
 - c. CARB (SCM).

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

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

END OF SECTION

**SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.
- C. Pre-installation meetings.
- D. Cutting and patching.
- E. Surveying for laying out the work.
- 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 10 00 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
- B. Section 01 30 00 - Administrative Requirements: Submittals procedures, Electronic document submittal service.
- C. Section 01 50 00 - Temporary Facilities and Controls: Temporary exterior enclosures.
- D. Section 01 50 00 - Temporary Facilities and Controls: Temporary interior partitions.
- E. Section 01 77 00 - Closeout Procedures: Additional requirements for Project Closeout.
- F. Section 01 78 00 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.
- G. Section 01 79 00 - Demonstration and Training: Demonstration of products and systems to be commissioned and where indicated in specific specification sections
- H. Section 07 84 00 - Firestopping.

1.03 REFERENCE STANDARDS

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations 2022.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

- B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
 - 1. On request, submit documentation verifying accuracy of survey work.
 - 2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in compliance with Contract Documents.
 - 3. Submit surveys and survey logs for the project record.
- C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
 - 1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences. Include design drawings and calculations for bracing and shoring.
 - 2. Identify demolition firm and submit qualifications.
 - 3. Include a summary of safety procedures.
- D. 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.
- E. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.05 QUALIFICATIONS

- A. For demolition work, employ a firm specializing in the type of work required.
 - 1. Minimum of 10 years of documented experience.
- B. For surveying work, employ a land surveyor registered in the State in which the Project is located and acceptable to Architect/Engineer. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,
- C. 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. Employ only individual(s) trained and experienced in establishing and maintaining horizontal and vertical control points necessary for laying out construction work on project of similar size, scope and/or complexity.
- D. For design of temporary shoring and bracing, employ a Professional Structural Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

1.06 PROJECT CONDITIONS

- A. Use of explosives is not permitted.
- B. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- C. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion as required by local Authorities Having Jurisdiction .
- D. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- E. 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. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
 - 2. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.
- F. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
 - 1. Minimize amount of bare soil exposed at one time.
 - 2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
 - 3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
 - 4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
 - 5. Prepare all Stormwater Prevention Plan (SWPP) documentatyon with Authority Having Jurisdiction.
- G. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
 - 1. At All Times: Excessively noisy tools and operations will not be tolerated inside the building at any time of day; excessively noisy includes jackhammers.
 - 2. Outdoors: Limit conduct of especially noisy exterior work to the hours of 8 am to 5 pm.
 - 3. Indoors: Limit conduct of especially noisy interior work to the hours of 6 pm to 7 am.
- H. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
- I. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.
- J. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.07 COORDINATION

- A. See Section 01 10 00 for occupancy-related requirements.

- B. 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.
- C. Notify affected utility companies and comply with their requirements.
- D. 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.
- E. 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.
- F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- G. Coordinate completion and clean-up of work of separate sections.
- H. 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 60 00 - 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/Engineer 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/Engineer, Owner, participants, and those affected by decisions made.

3.04 LAYING OUT THE WORK

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Architect/Engineer of any discrepancies discovered.
- C. Contractor shall locate and protect survey control and reference points.
- D. Control datum for survey is that indicated on drawings.
- E. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- F. Promptly report to Architect/Engineer the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect/Engineer.
- H. Utilize recognized engineering survey practices.
- I. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.
- J. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
 - 2. Grid or axis for structures.

- 3. Building foundation, column locations, ground floor elevations.
- K. Periodically verify layouts by same means.
- L. Maintain a complete and accurate log of control and survey work as it progresses.
- M. On completion of foundation walls and major site improvements, prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction and site work.

3.05 GENERAL INSTALLATION REQUIREMENTS

- A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.
- B. 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.
- C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- D. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- E. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- F. Make neat transitions between different surfaces, maintaining texture and appearance.

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/Engineer 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 50 00 in locations indicated on drawings.
 - 2. Provide sound retardant partitions of construction indicated on drawings in locations indicated on drawings.
- 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, Fire Protection, Electrical, and Telecommunications): 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. See Section 01 10 00 for other limitations on outages and required notifications.
 - c. 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; 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.
1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect/Engineer.
 2. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
 3. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Architect/Engineer review and request instructions.
 4. Trim existing wood doors as necessary to clear new floor finish. Refinish trim as required.
- 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. Clean existing systems and equipment.
- K. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- L. Do not begin new construction in alterations areas before demolition is complete.
- M. 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 samples of installed work for testing when requested.
 8. 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.
- 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 84 00, 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 INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area 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. Protect work from spilled liquids. If work is exposed to spilled liquids, immediately remove protective coverings, dry out work, and replace protective coverings.
- G. 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.
- H. Prohibit traffic from landscaped areas.
- I. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.10 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Architect/Engineer and owner seven days prior to start-up of each item.
- C. 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.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation

prior to start-up, and to supervise placing equipment or system in operation.

H. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.11 DEMONSTRATION AND INSTRUCTION

A. See Section 01 79 00 - Demonstration and Training.

3.12 ADJUSTING

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

B. Testing, adjusting, and balancing HVAC systems: See Section 23 05 93 - Testing, Adjusting, and Balancing for HVAC.

3.13 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.

1. Clean areas to be occupied by Owner prior to final completion before Owner occupancy.

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. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

F. Clean filters of operating equipment.

G. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.

H. Clean site; sweep paved areas, rake clean landscaped surfaces.

I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.14 CLOSEOUT PROCEDURES

A. See Section 01 77 00 for additional requirements.

B. Make submittals that are required by governing or other authorities.

1. Provide copies to Architect/Engineer and Owner.

C. 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.

D. Notify Architect/Engineer when work is considered ready for Architect/Engineer's Substantial Completion inspection.

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

**SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL**

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

- A. Owner requires that this project generate the least amount of trash and waste possible.
- B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- D. Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.
- E. Methods of trash/waste disposal that are not acceptable are:
 - 1. Burning on the project site.
 - 2. Burying on the project site.
 - 3. Dumping or burying on other property, public or private.
 - 4. Other illegal dumping or burying.
- F. 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.

1.02 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
- C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.
- D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.
- E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

- I. Return: To give back reusable items or unused products to vendors for credit.
- J. Reuse: To reuse a construction waste material in some manner on the project site.
- K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.
- M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- N. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
 - 1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
 - 2. Submit Report on a form acceptable to Owner.
 - 3. Landfill Disposal: Include the following information:
 - a. Identification of material.
 - b. Amount, in tons or cubic yards, of trash/waste material from the project disposed of in landfills.
 - c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 - 4. Incinerator Disposal: Include the following information:
 - a. Identification of material.
 - b. Amount, in tons or cubic yards, of trash/waste material from the project delivered to incinerators.
 - c. State the identity of incinerators, total amount of fees paid to incinerator, and total disposal cost.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 - 5. Recycled and Salvaged Materials: Include the following information for each:
 - a. Identification of material, including those retrieved by installer for use on other projects.
 - b. Amount, in tons or cubic yards, date removed from the project site, and receiving party.
 - c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 - e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.

6. Material Reused on Project: Include the following information for each:
 - a. Identification of material and how it was used in the project.
 - b. Amount, in tons or cubic yards.
 - c. Include weight tickets as evidence of quantity.
7. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

PART 2 PRODUCTS

2.01 PRODUCT SUBSTITUTIONS

- A. See Section 01 60 00 - Product Requirements for substitution submission procedures.
- B. For each proposed product substitution, submit the following information in addition to requirements specified in Section 01 60 00:
 1. Relative amount of waste produced, compared to specified product.
 2. Cost savings on waste disposal, compared to specified product, to be deducted from the Contract Sum.
 3. Proposed disposal method for waste product.
 4. Markets for recycled waste product.

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

- A. See Section 01 30 00 for additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. See Section 01 50 00 for additional requirements related to trash/waste collection and removal facilities and services.
- C. See Section 01 60 00 for waste prevention requirements related to delivery, storage, and handling.
- D. See Section 01 70 00 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.
- B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect/Engineer.
- C. 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.
- D. Meetings: Discuss trash/waste management goals and issues at project meetings.
 1. Prebid meeting.
 2. Preconstruction meeting.
 3. Regular job-site meetings.
- E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.

1. Provide containers as required.
 2. Provide adequate space for pick-up and delivery and convenience to subcontractors.
 3. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.
- F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.
- G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
- H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.
- I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION

**SECTION 01 77 00
CLOSEOUT PROCEDURES**

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Substantial Completion Procedures.
- B. Final Completion Procedures.

1.02 RELATED REQUIREMENTS:

- A. Section 01 10 00 - Summary.
- B. Section 01 78 00 - Closeout Submittals.

1.03 SUBSTANTIAL COMPLETION PROCEDURES

- A. Pre-Substantial Completion Conference:
 - 1. General Contractor to schedule a Pre-substantial Completion Conference 15 days prior to the date of Substantial Completion, prepare an agenda with copies for the participants and preside over the meeting.
 - 2. Attendance Required: Contractor, Architect/Engineer and Owner.
 - 3. Minimum Agenda:
 - a. Schedule dates of Substantial Completion and Owner occupancy.
 - b. Schedule dates for Initial Punch Lists of respective Subcontractors to be produced.
 - c. Schedule date for written request for Substantial Completion.
 - d. Schedule target date for completion of Initial Punch List items.
 - e. Schedule delivery times for Owner-furnished items to be installed by Contractor, Owner's own forces or others under separate Contracts.
 - f. Schedule dates for Demonstration and Training of equipment and systems specified.
 - g. Schedule completion dates of testing and balancing reports for engineered Systems.
 - h. Scheduling and Sequencing of Construction operations around areas partially occupied.
 - i. Review job site security during transition of Owner occupancy.
 - j. Schedule dates for final inspections from authorities having jurisdiction for Occupancy Permits.
 - k. Review protocol for claims from potential move-in damage.
 - l. Review procedures for final cleaning.
 - m. Review potential concerns regarding environmental conditions.
 - 4. Record minutes and distribute copies within three days after meeting to participants and those affected by decisions made.
- B. Substantial Completion Procedures will be in accordance with the General Conditions of the Contract for Construction, Article 9.8 and include the following:
 - 1. When the Work or a portion of the Work is considered to be substantially complete, the Contractor inspects the project and prepares a comprehensive list of outstanding items to be completed or corrected, Initial Punch List.
 - 2. Contractor submits notice of Substantial Completion.
 - 3. Contractor completes items on the Initial Punch List.
 - 4. Architect/Engineer inspects the project to verify substantial completion and prepares a Final Punch List.

5. Architect/Engineer prepares Certificate of Substantial Completion, acceptance is required by Owner and Contractor.

1.04 FINAL COMPLETION PROCEDURES

- A. Final Completion Procedures will be in accordance with the General Conditions of the Contract for Construction, Article 9.10, and include the following:
 1. When items on Initial and Final Punch Lists are complete, the Contractor submits notice of final completion and final application for payment.
 2. Contractor submits Final Closeout Submittals as specified in Section 01 78 00.
 3. Architect inspects project and verifies the Work is acceptable and conforms with the Contract Documents.
 4. Architect processes final application for payment and closeout submittals.

1.05 CORRECTION PERIOD

- A. Correction Period commences on the date of Substantial Completion and expires two years from that date.
- B. Owner: document non-conforming or defective work over course of Correction Period. Notify Contractor in writing of nonconforming or defective work. Copy Architect/Engineer.
 1. Life safety issues requiring immediate corrective work: Contact Contractor for action.
- C. Post Construction Walk Through:
 1. Time: eleven months after the date of Substantial Completion convene a meeting on site.
 2. Attendees: Architect/Engineer, Owner's Representative, End User and Maintenance Staff.
 3. Minimum Agenda:
 - a. Review Owner's list of non-conforming or defective work.
 - b. Conduct a walk through of the building and grounds
 - c. Prepare a list of additional non-conforming or defective work items.
 4. Architect/Engineer:
 - a. Prepare written report of findings within two weeks of meeting.
 - b. Notify Contractor of impending corrective work requiring action.
 - c. Monitor execution of corrective Work.

PART 2 PRODUCTS - NOT USED.

PART 3 EXECUTION - NOT USED.

END OF SECTION

**SECTION 01 78 00
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 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- B. Section 01 70 00 - Execution and Closeout Requirements: Contract closeout procedures.
- C. Individual Product Sections: Specific requirements for operation and maintenance data.
- D. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

- A. Project Record Documents: Submit documents to Architect/Engineer with claim for final Application for Payment.
- B. Operation and Maintenance Data:
 - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect/Engineer 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/Engineer 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.
- C. 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. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Additional information as specified in individual product specification sections.
- E. 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. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
- D. Include color coded wiring diagrams as installed.
- E. 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.
- F. 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.
- G. Provide servicing and lubrication schedule, and list of lubricants required.
- H. Include manufacturer's printed operation and maintenance instructions.
- I. Include sequence of operation by controls manufacturer.
- J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- K. Provide control diagrams by controls manufacturer as installed.
- L. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
- M. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- N. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- O. Include test and balancing reports.

P. 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. Prepare instructions and data by personnel experienced in maintenance and operation of described products.
- D. Prepare data in the form of an instructional manual.
- E. 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.
- F. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- G. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect/Engineer, Consultants, Contractor and subcontractors, with names of responsible parties.
- H. 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.
- I. 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.
- J. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.
- K. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- L. 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. Photocopies of warranties and bonds.
 - 4. Design Data: To allow for addition of design data furnished by Architect/Engineer or others, provide a tab labeled "Design Data" and provide a binder large enough to allow for insertion of at least 20 pages of typed text.
 - a. Operating instructions.
 - b. Maintenance instructions for equipment and systems.

- c. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.

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 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. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
- F. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
- G. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION

**SECTION 01 79 00
DEMONSTRATION AND TRAINING**

PART 1 GENERAL

1.01 SUMMARY

- A. Demonstration of products and systems where indicated in specific specification sections.
- B. Training of Owner personnel in operation and maintenance is required for:
 - 1. All software-operated systems.
 - 2. HVAC systems and equipment.
 - 3. Plumbing equipment.
 - 4. Electrical systems and equipment.
 - 5. Items specified in individual product Sections.
- C. Training of Owner personnel in care, cleaning, maintenance, and repair is required for:
 - 1. Roofing, waterproofing, and other weather-exposed or moisture protection products.
 - 2. Finishes, including flooring, wall finishes, ceiling finishes.
 - 3. Fixtures and fittings.

1.02 RELATED REQUIREMENTS

- A. Section 01 78 00 - Closeout Submittals: Operation and maintenance manuals.
- B. Other Specification Sections: Additional requirements for demonstration and training.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Training Plan: Owner will designate personnel to be trained; tailor training to needs and skill-level of attendees.
 - 1. Submit to Architect/Engineer for transmittal to Owner.
 - 2. Submit not less than four weeks prior to start of training.
 - 3. Revise and resubmit until acceptable.
 - 4. Provide an overall schedule showing all training sessions.
 - 5. Include at least the following for each training session:
 - a. Identification, date, time, and duration.
 - b. Description of products and/or systems to be covered.
 - c. Name of firm and person conducting training; include qualifications.
 - d. Intended audience, such as job description.
 - e. Objectives of training and suggested methods of ensuring adequate training.
 - f. Methods to be used, such as classroom lecture, live demonstrations, hands-on, etc.
 - g. Media to be used, such as slides, hand-outs, etc.
 - h. Training equipment required, such as projector, projection screen, etc., to be provided by Contractor.
- C. Training Reports:
 - 1. Identification of each training session, date, time, and duration.
 - 2. Sign-in sheet showing names and job titles of attendees.
 - 3. List of attendee questions and written answers given, including copies of and references to supporting documentation required for clarification; include answers to questions that could not

be answered in original training session.

1.04 QUALITY ASSURANCE

- A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
 - 1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
 - 2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DEMONSTRATION - GENERAL

- A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.
- B. Demonstration may be combined with Owner personnel training if applicable.
- C. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
 - 1. Perform demonstrations not less than two weeks prior to Substantial Completion.
 - 2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
 - 1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.02 TRAINING - GENERAL

- A. Conduct training on-site unless otherwise indicated.
- B. Owner will provide classroom and seating at no cost to Contractor.
- C. Provide training in minimum two hour segments.
- D. Training schedule will be subject to availability of Owner's personnel to be trained; re-schedule training sessions as required by Owner; once schedule has been approved by Owner failure to conduct sessions according to schedule will be cause for Owner to charge Contractor for personnel "show-up" time.
- E. Review of Facility Policy on Operation and Maintenance Data: During training discuss:
 - 1. The location of the O&M manuals and procedures for use and preservation; backup copies.
 - 2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
 - 3. Typical uses of the O&M manuals.
- F. Product- and System-Specific Training:
 - 1. Review the applicable O&M manuals.

2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.
 3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
 4. Provide hands-on training on all operational modes possible and preventive maintenance.
 5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
 6. Discuss common troubleshooting problems and solutions.
 7. Discuss any peculiarities of equipment installation or operation.
 8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
 9. Review recommended tools and spare parts inventory suggestions of manufacturers.
 10. Review spare parts and tools required to be furnished by Contractor.
 11. Review spare parts suppliers and sources and procurement procedures.
- G. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

END OF SECTION

**SECTION 02 41 00
DEMOLITION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Selective demolition of built site elements.
- B. Selective demolition of building elements for alteration purposes.
- C. Abandonment and removal of existing utilities and utility structures.

1.02 RELATED REQUIREMENTS

- A. Section 01 10 00 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 50 00 - Temporary Facilities and Controls: Protective barriers and waste removal.
- C. Section 01 70 00 - Execution and Closeout Requirements: Project conditions and existing construction to remain.
- D. Section 31 10 00 - Site Clearing: Vegetation and existing debris removal.
- E. Section 31 23 23 - Fill: Filling holes, pits, and excavations generated as a result of removal operations.

1.03 REFERENCE STANDARDS

- A. 29 CFR 1926 - Safety and Health Regulations for Construction Current Edition.
- B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations 2022.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Fill Material: As specified in Section 31 23 23 - Fill.

PART 3 EXECUTION

3.01 SCOPE

- A. Remove portions of existing building surfaces to accommodate new materials installation.
- B. Remove other items indicated, for salvage, relocation, and recycling.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with other requirements specified in Section 01 70 00.
- B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Obtain required permits.
 - 2. Use of explosives is not permitted.
 - 3. Provide, erect, and maintain temporary barriers and security devices.
 - 4. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.

5. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 6. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
- C. Do not begin removal until built elements to be salvaged or relocated have been removed.
 - D. Do not begin removal until vegetation to be relocated has been removed and specified measures have been taken to protect vegetation to remain.
 - E. If hazardous materials are discovered during removal operations, stop work and notify Architect/Engineer and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
 - F. Perform demolition in a manner that maximizes salvage and recycling of materials.
 1. Dismantle existing construction and separate materials.
 2. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

3.03 EXISTING UTILITIES

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

- A. Drawings showing existing construction are based on casual field observation and existing record documents only.
 1. Verify that construction are as shown.
 2. Report discrepancies to Architect/Engineer before disturbing existing installation.
 3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.
- B. Separate areas in which demolition is being conducted from other areas that are still occupied.
 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 .

- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
- 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.
- E. Services (Including but not limited to HVAC, Plumbing, and Electrical): Remove existing systems and equipment as indicated.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
 - 2. 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.
 - 3. See Section 01 10 00 for other limitations on outages and required notifications.
 - 4. Verify that abandoned services serve only abandoned facilities before removal.
 - 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.
- 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.
 - 4. Patch as specified for patching new work.

3.05 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

**SECTION 03 30 00
CAST-IN-PLACE CONCRETE**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete formwork.
- B. Concrete footings, foundation walls and piers.
 - 1. Concrete reinforcement.
- C. Column base plate grouting.
- D. Concrete curing.

1.02 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION:

- A. Embedded Steel Items: Section 05 12 00 - Structural Steel.
- B. Anchor bolts and setting plates: Section 05 12 00 - Structural Steel.

1.03 RELATED REQUIREMENTS

- A. Section 32 13 13 - Concrete Paving: Sidewalks, curbs and gutters.

1.04 REFERENCE STANDARDS

- A. ACI 117 - Specification for Tolerances for Concrete Construction and Materials 2010 (Reapproved 2015).
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete 1991 (Reapproved 2009).
- C. ACI 301 - Specifications for Concrete Construction 2020.
- D. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete 2000 (Reapproved 2009).
- E. ACI 305R - Guide to Hot Weather Concreting 2020.
- F. ACI 306R - Guide to Cold Weather Concreting 2016.
- G. ACI 308R - Guide to External Curing of Concrete 2016.
- H. ACI 318 - Building Code Requirements for Structural Concrete 2019, with Errata (2021).
- I. ACI 347R - Guide to Formwork for Concrete 2014, with Errata (2017).
- J. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2021b.
- K. ASTM C150/C150M - Standard Specification for Portland Cement 2021.
- L. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete 2020.
- M. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete 2019.
- N. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete 2019.

- O. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete 2019.
- P. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures 2016.
- Q. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink) 2020.
- R. ASTM E154/E154M - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover 2008a (Reapproved 2019).
- S. NSF 61 - Drinking Water System Components - Health Effects 2020.
- T. NSF 372 - Drinking Water System Components - Lead Content 2020.

1.05 SUBMITTALS

- A. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
 - 1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.
 - 2. Anchoring epoxy and expansion anchors.
- B. Mix Designs: Submit 15 days prior to start of work.
 - 1. Submit for each type of concrete specified.
 - 2. Include back-up test data.
 - 3. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
 - 4. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 - Concrete Quality, Mixing and Placing.
- C. Test Reports: Submit report for each test or series of tests specified.

1.06 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. Formwork Design and Construction: Comply with guidelines of ACI 347R to provide formwork that will produce concrete complying with tolerances of ACI 117.
- B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
 - 1. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
 - 2. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

2.02 REINFORCEMENT

- 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.

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 C 33.
 - 1. Acquire aggregates for entire project from same source.
- C. Fly Ash: ASTM C618, Class C.
- D. Water: Clean and not detrimental to concrete.

2.04 ADMIXTURES

- A. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.
- B. High Range Water Reducing Admixture: ASTM C494/C494M Type F.
- C. Water Reducing and Accelerating Admixture: ASTM C494/C494M Type E.
- D. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.
- E. Accelerating Admixture: ASTM C494/C494M Type C.
- F. Retarding Admixture: ASTM C494/C494M Type B.
- G. Water Reducing Admixture: ASTM C494/C494M Type A.

2.05 ACCESSORY MATERIALS

- A. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
 - 1. Grout: Comply with ASTM C1107/C1107M.
 - 2. Height Change, Plastic State; when tested in accordance with ASTM C827/C827M:
 - a. Maximum: Plus 4 percent.
 - b. Minimum: Plus 1 percent.
 - 3. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
 - 4. Minimum Compressive Strength at 28 Days: 5,000 pounds per square inch.
- B. Anchoring Epoxy: Refer to drawings. Acceptable manufacturer's include...
 - 1. Hilti: HIT-RE500-SD injection anchoring system.
 - 2. Simpson Strong-Tie: SET-XP injection anchoring adhesive system.
 - 3. Powers Fasteners: PE 1000+ injection adhesive anchoring system.

- C. Expansion Anchors: Refer to drawings. Acceptable manufacturer's include...
 1. Hilti: Kwik Bolt 3 expansion anchor.
 2. Simpson Strong-Tie: Strong-Bolt 2 wedge anchor.

2.06 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/Engineer for preparing and reporting proposed mix designs.
- C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer. Submit to Architect for review and approval.
- D. Normal Weight Concrete: Type "B".
 1. Compressive Strength, when tested in accordance with ASTM C 39/C 39M at 28 days: 3,000 psi.
 2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
 3. Water-Cement Ratio: Maximum 56 percent by weight.
 4. Total Air Content: 2 percent, determined in accordance with ASTM C 173/C 173M.
 5. Maximum Slump: 4 inches.
 6. Maximum Aggregate Size: 1 inch.
- E. Column Base Plate Grout: See 2.05 Concrete Accessories.

2.07 MIXING

- A. Transit Mixers: Comply with ASTM C94/C94M.

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. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and secure in place using approved epoxy.

3.03 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.

- B. Notify Architect/Engineer not less than 24 hours prior to commencement of placement operations.
- C. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- D. Ensure reinforcement, inserts, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- E. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

3.04 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 finish as follows:
 - 1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.

3.05 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.

3.06 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.

3.07 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by the Architect/Engineer. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect/Engineer for each individual area.

3.08 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

3.09 SCHEDULE - CONCRETE TYPES AND FINISHES

Location	Mix Type	Concrete Finish
Footings	B	smooth form
Foundation walls and piers	B	smooth form
Concrete light pole bases	B	smooth formed, troweled

END OF SECTION

**SECTION 04 20 00
UNIT MASONRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Clay facing brick.
- B. Mortar.
- C. Reinforcement and anchorage.
- D. Flashings.
- E. Installation of items furnished under other Sections for embedment in masonry.
- F. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 01 40 00 - Quality Requirements.
- B. Section 07 92 00 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2020.
- C. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units 2021.
- D. ASTM C140/C140M - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units 2021.
- E. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar 2018.
- F. ASTM C150/C150M - Standard Specification for Portland Cement 2021.
- G. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes 2018.
- H. ASTM C212 - Standard Specification for Structural Clay Facing Tile 2021.
- I. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale) 2021.
- J. ASTM C270 - Standard Specification for Mortar for Unit Masonry 2019a.
- K. ASTM C404 - Standard Specification for Aggregates for Masonry Grout 2018.
- L. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete 2016.
- M. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection 2021.
- N. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing 2017.

- O. BIA Technical Notes No. 13 - Ceramic Glazed Brick Exterior Walls 2017.
- P. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2016.
- Q. Standard Practice for Bracing Masonry Walls Under Construction - Mason Contractors Association of America.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.
- C. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

1.06 QUALITY ASSURANCE

- A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.
- B. Source Limitations For Masonry Units: Obtain masonry units of a uniform texture, color and blend (within the range acceptable for each characteristic) through one source from a single manufacturer for each product required.
- C. Source Limitations For Mortar Materials: Obtain mortar components of a uniform quality from one manufacturer for each component and from one source or producer.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.
- B. Deliver packaged materials in manufacturers' original containers, with labels and markings intact and legible.
- C. Acceptance of Brick Units at Project Site:
 - 1. Remove sample brick units from each pallet and verify conformance with:
 - a. Requirements of ASTM C216.
 - 2. Immediately return pallets producing nonconforming samples to manufacturer for immediate replacement at no cost to Owner.

PART 2 PRODUCTS

2.01 BRICK UNITS

- A. Manufacturers:
 - 1. Endicott Clay Products Co: www.endicott.com.
 - 2. Glen-Gery Corporation: www.glengerybrick.com.
 - 3. Acme Brick: www.brick.com.

4. Sioux City Brick & Tile Co.: www.siouxcitybrick.com.
5. Substitutions: See section 01 60 00 - Product Requirements.

B. Facing Brick: ASTM C216, Type FBS Smooth, Grade SW.

1. Under Article 5 - Physical Properties, Paragraph 5.1- Durability, delete the following: "The saturation coefficient shall be waived provided the average cold water absorption of a random sample of five brick does not exceed 8 percent, no more than one brick of the sample exceeds 8% and its cold water absorption must be less than 10%."
2. Color and texture: to match existing.
3. Nominal size: Modular.
4. Special shapes: Molded units as required by conditions indicated, unless standard units can be sawn to produce equivalent effect.
5. Brick Types: Provide brick from a single manufacturer:
 - a. Type B-1: Any modular brick from the listed manufacturers noted above to match the existing modular brick materials on site.

2.02 MORTAR MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.

1. Hydrated Lime: ASTM C207, Type S.
2. Mortar Aggregate: ASTM C144.
3. Grout Aggregate: ASTM C404.

B. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.

1. Color(s): to match existing.
2. Manufacturers:
 - a. Davis Colors, a division of Venator Materials PLC: www.daviscolors.com/#sle.
 - b. Lambert Corporation: www.lambertusa.com/#sle.
 - c. Solomon Colors, Inc: www.solomoncolors.com/#sle.
 - d. Substitutions: See Section 01 60 00 - Product Requirements.

C. Water: Clean and potable.

D. Admixtures:

1. Air-entraining admixtures or cementitious materials containing air-entraining admixtures are not permitted in mortar.
2. Anti-freeze compounds or other substances used to lower the freezing point of mortar or grout are not permitted.
3. Admixtures containing calcium chloride are not permitted.

E. Accelerating Admixture: Nonchloride type for use in cold weather.

F. Moisture-Resistant Admixture: Water repellent compound designed to reduce capillarity.

2.03 REINFORCEMENT AND ANCHORAGE

A. Manufacturers:

1. Blok-Lok Limited: www.blok-lok.com.
2. Hohmann & Barnard, Inc: www.h-b.com/#sle.

- 3. WIRE-BOND www.wirebond.com/#sle.
- B. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi), deformed billet bars; uncoated.
- C. Strap Anchors: Bent steel shapes, 1-1/2 inch width, 0.105 inch thick, 24 inch length, with 1-1/2 inch long, 90 degree bend at each end to form a U or Z shape or with cross pins, hot dip galvanized to ASTM A153/A153M Class B.
- D. Flexible Anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not less than 5/8 inch of mortar coverage from masonry face.
 - 1. Steel frame: Crimped wire anchors for welding to frame, 0.25 inch thick, with trapezoidal wire ties 0.1875 inch thick, hot dip galvanized to ASTM A 153/A 153M, Class B.
- E. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
 - 1. Anchor plates: Not less than 0.075 inch thick, designed for fastening to structural backup through sheathing by two fasteners; provide design with legs that penetrate sheathing and insulation to provide positive anchorage.
 - 2. Wire ties: Manufacturer's standard shape, 0.1875 inch thick.
 - 3. Vertical adjustment: Not less than 3-1/2 inches.

2.04 FLASHINGS

- A. Membrane Asphaltic Flashing Materials:
 - 1. Rubberized Asphalt Flashing: ASTM D1970/D1970M; self-adhering polymer modified asphalt sheet; 40 mils (0.040 inch) minimum total thickness; 8 mil cross-laminated polyethylene bonded to adhesive rubberized asphalt, with a removable release liner.
- B. Termination Bars: Stainless steel or PVC; compatible with flashing membrane, air barrier membrane and associated sealants and adhesives.
- C. Drip Edge: ASTM A666; Type 304 Stainless steel; 26 gage thick; angled drip with hemmed edge; compatible with flashing membrane and associated sealants and adhesives.
- D. Lap Sealants and Tapes: As recommended by flashing manufacturer; compatible with flashing membrane, air barrier membrane and associated sealants and adhesives.

2.05 ACCESSORIES

- A. Preformed Control Joints: Rubber material conforming to ASTM D2000; 2-5/8 inches wide. Provide with corner and tee accessories, fused joints.
 - 1. Manufacturers:
 - a. Hohmann & Barnard, Inc (including Blok-Lok and Dur-O-Wal brands); Product #RS-Standard or #DA2001: www.h-b.com.
 - b. WIRE-BOND; Product #2901: www.wirebond.com.
 - c. Heckmann Building Products, Inc.; #352-10: www.heckmannbuildingprods.com.
- B. Joint Filler: Closed cell neoprene; oversized 50 percent to joint width; self expanding; with pressure-sensitive adhesive on one side; 3 inch wide x by maximum lengths available.
 - 1. Manufacturers:
 - a. Hohmann & Barnard, Inc (including Blok-Lok and Dur -O-Wal brands); Product #NSTA or Rapid Expansion Joint DA2015: www.h-b.com.
 - b. WIRE-BOND; Product #3300 Expansion Joint : www.wirebond.com.

- C. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
1. Mortar Diverter: Semi-rigid mesh designed for installation at flashing locations.
 - a. Manufacturers:
 - 1) Advanced Building Products, Inc; Mortar Break DT:
www.advancedbuildingproducts.com/#sle.
 - 2) Mortar Net Solutions: www.mortarnet.com.
 - 3) York Manufacturing, Inc: www.yorkmfg.com.
 - 4) Substitutions: See Section 01 60 00 - Product Requirements.
- D. Weeps: Molded PVC grilles, insect resistant, sized for full height of head joint for brick being utilized.
- E. Color(s): As selected by Architect/Engineer from manufacturer's full range.
1. Manufacturers:
 - a. Blok-Lok Limited: www.blok-lok.com.
 - b. Hohmann & Barnard, Inc: www.h-b.com.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.
- F. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.
- G. Brick and Split Face Concrete Masonry Sealer: Clear-drying, water-based silicone emulsion.
1. Product: Sure Klean Weather Seal Blok-Guard & Graffiti Control II manufactured by Prosoco, Inc.: www.prosoco.com.

2.06 MORTAR MIXES

- A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
1. Exterior, non-loadbearing masonry: Type N.
- B. Colored Mortar: Proportion selected pigments and other ingredients to match Architect/Engineer's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.
- C. Mixing: Use mechanical batch mixer and comply with referenced standards.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive masonry.
- B. Verify that related items provided under other sections are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied for installation under other sections.
- B. Temporary Bracing: Provide temporary support and bracing as required for stability, safety and proper performance of masonry during installation of masonry work. Maintain in place until connections and structural elements providing permanent bracing are fully erected and installed and have achieved full strength.

- C. Protection: Cover tops of completed and partially completed walls, projections and sills with waterproof sheeting at the end of each day's work, and maintain protection even when masonry work is not in progress. Extend sheeting minimum 48 inches down both sides of walls and hold sheeting securely in place.
- D. Prevent grout, mortar and soil from staining the face of masonry to be left exposed to view, whether scheduled to be painted or not. Immediately remove grout, mortar and soil that come in contact with such masonry.

3.03 COLD AND HOT WEATHER REQUIREMENTS

- A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

3.04 COURSING

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

3.05 PLACING AND BONDING

- A. Combine concrete masonry units and mortar to achieve a net masonry prism strength (f'm) of 1500 psi.
- B. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- C. Lay hollow masonry units with face shell bedding on head and bed joints.
- D. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- E. Remove excess mortar, mortar droppings and mortar smears as work progresses.
- F. Interlock intersections and external corners.
- G. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- H. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- I. Build cavity and multi-wythe walls to full thickness shown (adjust cavity space).
- J. Build and verify dimensions for chases and pockets for built-in items according to trade contractor and equipment requirements. Notify Architect of any discrepancies between requirements and drawings.

3.06 WEEPS/CAVITY VENTS

- A. Install weeps in veneer and cavity walls at 24 inches on center horizontally on top of through-wall flashing above shelf angles and lintels and at bottom of walls.
 - 1. Install weeps directly on flashing; ensure that flashing surface beneath weep vents is completely clear of bed joint mortar.

3.07 CAVITY MORTAR CONTROL

- A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
- B. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.
- C. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

3.08 REINFORCEMENT AND ANCHORAGE - GENERAL and CAVITY WALL MASONRY

- A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.
- E. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 24 inches horizontally and 16 inches vertically.

3.09 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER

- A. Stud Back-Up: Secure veneer anchors to stud framed back-up and embed into masonry veneer at maximum 25 inches on center vertically and 32 inches on center horizontally. Provide at least one anchor for each 2.67 sq. ft of wall area. Adjust horizontal and vertical spacings as required to meet this criteria. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 12 inches on center.

3.10 MASONRY FLASHINGS

- A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
 - 1. Extend flashings full width at such interruptions and at least 6 inches, minimum, into adjacent masonry or turn up flashing ends at least 1 inch, minimum, to form watertight pan at nonmasonry construction.
 - 2. Remove or cover protrusions or sharp edges that could puncture flashings.
 - 3. Seal lapped ends and penetrations of flashing before covering with mortar.
- B. Terminate flashing up 8 inches minimum on vertical surface of backing:
 - 1. Install vertical leg of flashing over fluid-applied or self-adhered air/vapor barriers over backing or per manufacturer's directions.
 - 2. Anchor vertical leg of flashing into backing with a termination bar and sealant.

3. Apply cap bead of sealant on top edge of termination bar.
- C. Install flashing in accordance with manufacturer's instructions and BIA Technical Notes No. 7.
- D. Support flexible flashings across gaps and openings.
- E. Hold back rubberized asphalt flashings 1 inch (min.) from exterior face of masonry. Install drip edge under rubberized asphalt flashings and adhere flashings to drip edge. Install joint sealant at underside of drip edge to prevent moisture migration under flashing.

3.11 CONTROL AND EXPANSION JOINTS

- A. Do not continue horizontal joint reinforcement through control or expansion joints.
- B. Run continuous horizontal bond beam reinforcing through control joints unless noted otherwise on drawings.
- C. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
- D. Size control joint in accordance with Section 07 92 00 for sealant performance.
- E. Form expansion joint as detailed on drawings.
- F. Provide control and expansion joints as indicated on the drawings and at the following locations:
 1. Changes in wall height.
 2. Changes in wall thickness.
 3. Changes in material types.
 4. Changes in environmental exposure.
 5. Above movement joints in foundations and floors.
 6. Below movement joints in roofs and floors.
 7. Near one or both sides of door and window openings.
 8. At offsets and setbacks.
 9. At a maximum horizontal spacing of 25 feet.

3.12 BUILT-IN WORK

- A. As work progresses, install built-in metal door frames, glazed frames, anchor bolts, and plates and other items to be built into the work and furnished under other sections.
- B. Install built-in items plumb, level, and true to line.
- C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
 1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.
- D. Do not build into masonry construction organic materials that are subject to deterioration.
- E. Coordinate with trade contractors for elements and openings in walls (plumbing, electrical, ductwork, etc.).

3.13 TOLERANCES

- A. Maximum Variation from Alignment of Columns: 1/4 inch.
- B. Maximum Variation From Unit to Adjacent Unit: 1/32 inch.

- C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
- D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
- F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.
- G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.14 CUTTING AND FITTING

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

3.15 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.
- B. Provide free access to masonry operations at project site and cooperate with the appointed firm.

3.16 CLEANING

- A. Remove excess mortar, mortar smears and mortar droppings.
- B. Replace defective mortar. Match adjacent work.
- C. Clean soiled surfaces with cleaning solution.
- D. Use non-metallic tools in cleaning operations.

3.17 PROTECTION

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.
- B. Cover tops of completed walls, projections and sills with waterproof sheeting until execution of subsequent portions of the Work provides weather protection for these elements. Extend sheeting minimum 48 inches down both sides and hold sheeting securely in place.
- C. Provide temporary support and bracing as required for stability, safety and proper performance of erected masonry work until connections and structural elements providing permanent bracing are fully erected and installed and have achieved full strength.
- D. Prevent soil and materials from other trades from staining the face of masonry to be left exposed to view, whether scheduled to be painted or not. Immediately remove soil and other foreign materials that come in contact with such masonry.

END OF SECTION

**SECTION 04 72 00
CAST STONE MASONRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Architectural cast stone.
- B. Units indicated on drawings as "cast stone".
- C. Units required are:
 - 1. Exterior wall units, including wall caps.
 - 2. Other items indicated on drawings.

1.02 RELATED REQUIREMENTS

- A. Section 04 20 00 - Unit Masonry: Installation of cast stone in conjunction with masonry.
- B. Section 07 92 00 - Joint Sealants: Sealing joints indicated to be left open for sealant.

1.03 REFERENCE STANDARDS

- A. ACI 318 - Building Code Requirements for Structural Concrete 2019, with Errata (2021).
- B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2020.
- C. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars 2019.
- D. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement 2019, with Editorial Revision (2020).
- E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2018a.
- F. ASTM C33/C33M - Standard Specification for Concrete Aggregates 2018.
- G. ASTM C150/C150M - Standard Specification for Portland Cement 2021.
- H. ASTM C270 - Standard Specification for Mortar for Unit Masonry 2019a.
- I. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete 2019.
- J. ASTM C642 - Standard Test Method for Density, Absorption, and Voids in Hardened Concrete 2021.
- K. ASTM C1364 - Standard Specification for Architectural Cast Stone 2019.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Manufacturer's Qualification Data: Documentation showing compliance with specified requirements.
- C. Product Data: Test results of cast stone components made previously by the manufacturer.

- D. Shop Drawings: Include elevations, dimensions, layouts, profiles, cross sections, reinforcement, exposed faces, arrangement of joints, anchoring methods, anchors, and piece numbers.
- E. Mortar Color Selection Samples.
- F. Verification Samples: Pieces of actual cast stone components not less than 6 inches square, illustrating range of color and texture to be anticipated in components furnished for the project.
- G. Source Quality Control Test Reports.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. A firm with a minimum of 5 years experience producing cast stone of types required for project.
 - 2. Current producer member of the Cast Stone Institute or the Architectural Precast Association.
 - 3. Manufacturer's production facility currently holds a Plant Certification from the Cast Stone Institute or the Architectural Precast Association.
 - 4. Adequate plant capacity to furnish quality, sizes, and quantity of cast stone required without delaying progress of the work.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver cast stone components secured to shipping pallets and protected from damage and discoloration. Protect corners from damage.
- B. Number each piece individually to match shop drawings and schedule.
- C. Store cast stone components and installation materials in accordance with manufacturer's instructions.
- D. Store cast stone components on pallets with nonstaining, waterproof covers. Ventilate under covers to prevent condensation. Prevent contact with dirt.
- E. Protect cast stone components during handling and installation to prevent chipping, cracking, or other damage.
- F. Store mortar materials where contamination can be avoided.
- G. Schedule and coordinate production and delivery of cast stone components with unit masonry work to optimize on-site inventory and to avoid delaying the work.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Architectural Cast Stone:
 - 1. Any current producer member of the Architectural Precast Association.
 - 2. Any current producer member of the Cast Stone Institute.

2.02 ARCHITECTURAL CAST STONE

- A. Cast Stone: Architectural concrete product manufactured to simulate appearance of natural granite, complying with ASTM C1364.
 - 1. Compressive Strength: As specified in ASTM C1364; calculate strength of pieces to be field cut at 80 percent of uncut piece.

2. Freeze-Thaw Resistance: Demonstrated by laboratory testing in accordance with ASTM C1364.
 3. Surface Texture: Fine grained texture, with no bugholes, air voids, or other surface blemishes visible from distance of 20 feet.
 4. Color: Selected by Architect/Engineer from manufacturer's full range.
 5. Remove cement film from exposed surfaces before packaging for shipment.
- B. Shapes: Provide shapes indicated on drawings.
1. Variation from Any Dimension, Including Bow, Camber, and Twist: Maximum of plus/minus 1/8 inch or length divided by 360, whichever is greater, but not more than 1/4 inch.
 2. Unless otherwise indicated on drawings, provide:
 - a. Wash or slope of 1:12 on exterior horizontal surfaces.
 - b. Drips on projecting components, wherever possible.
 - c. Raised fillets at back of sills and at ends to be built in.
- C. Reinforcement: Provide reinforcement as required to withstand handling and structural stresses; comply with ACI 318.
1. Pieces More than 24 inches in Any Dimension: Provide full length two-way reinforcement of cross-sectional area not less than 0.25 percent of unit cross-sectional area.

2.03 MATERIALS

- A. Portland Cement: ASTM C150/C150M.
1. For Mortar: Type I or II, except Type III may be used in cold weather.
- B. Coarse Aggregate: ASTM C33/C33M, except for gradation; granite, quartz, or limestone.
- C. Fine Aggregate: ASTM C33/C33M, except for gradation; natural or manufactured sands.
- D. Admixtures: ASTM C494/C494M.
- E. Water: Potable.
- F. Reinforcing Bars: ASTM A615/A615M, Grade 40 (40,000 psi), deformed bars, epoxy coated.
1. Epoxy coated in accordance with ASTM A775/A775M.
- G. Steel Welded Wire Reinforcement: ASTM A1064/A1064M, galvanized or ASTM A884/A884M, epoxy coated.
- H. Embedded Anchors, Dowels, and Inserts: Type 304 stainless steel, of type and size as required for conditions.
- I. Mortar: Portland cement-lime, ASTM C270 Type N ; do not use masonry cement.
- J. Cleaner: General-purpose cleaner designed for removing mortar and grout stains, efflorescence, and other construction stains from new masonry surfaces without discoloring or damaging masonry surfaces; approved for intended use by cast stone manufacturer and by cleaner manufacturer for use on cast stone and adjacent masonry materials.

2.04 SOURCE QUALITY CONTROL

- A. Test compressive strength and absorption of specimens selected at random from plant production.
1. Test in accordance with ASTM C642.
 2. Select specimens at rate of 3 per 500 cubic feet, with a minimum of 3 per production week.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine construction to receive cast stone components. Notify Architect/Engineer if construction is not acceptable.
- B. Do not begin installation until unacceptable conditions have been corrected.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install cast stone components in conjunction with masonry, complying with requirements of Section 04 20 00.
- C. Mechanically anchor cast stone units indicated; set remainder in mortar.
- D. Setting:
 - 1. Drench cast stone components with clear, running water immediately before installation.
 - 2. Set units in a full bed of mortar unless otherwise indicated.
 - 3. Fill vertical joints with mortar.
 - 4. Fill dowel holes and anchor slots completely with mortar or non-shrink grout.

3.03 TOLERANCES

- A. Joints: Make all joints 3/8 inch, except as otherwise detailed.
 - 1. Rake mortar joints 3/4 inch for pointing.
 - 2. Remove excess mortar from face of stone before pointing joints.
 - 3. Point joints with mortar in layers 3/8 inch thick and tool to a slight concave profile.
 - 4. Leave the following joints open for sealant:
 - a. Head joints in top courses, including copings, parapets, cornices, sills, and steps.
 - b. Joints in projecting units.
 - c. Joints between rigidly anchored units, including soffits, panels, and column covers.
 - d. Joints below lugged sills and stair treads.
 - e. Joints below ledge and relieving angles.
 - f. Joints labeled "expansion joint".
- B. Installation Tolerances:
 - 1. Variation from Plumb: Not more than 1/8 inch in 10 feet or 1/4 inch in 20 feet or more.
 - 2. Variation from Level: Not more than 1/8 inch in 10 feet or 1/4 inch in 20 feet, or 3/8 inch maximum.
 - 3. Variation in Joint Width: Not more than 1/8 inch in 36 inches or 1/4 of nominal joint width, whichever is less.
 - 4. Variation in Plane Between Adjacent Surfaces (Lipping): Not more than 1/16 inch difference between planes of adjacent units or adjacent surfaces indicated to be flush with units.

3.04 REPAIR

- A. Repair chips and other surface damage noticeable when viewed in direct daylight at 20 feet.
 - 1. Repair with matching touch-up material provided by the manufacturer and in accordance with manufacturer's instructions.
 - 2. Repair methods and results subject to Architect/Engineer 's approval.

3.05 CLEANING

- A. Keep cast stone components clean as work progresses. Waiting to clean cast stone until mortar is thoroughly set and cured is not acceptable.

3.06 PROTECTION

- A. Protect completed work from damage.
- B. Clean, repair, or restore damaged or mortar-splashed work to condition of new work.

END OF SECTION

**SECTION 05 12 00
STRUCTURAL STEEL FRAMING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Structural steel framing members.

1.02 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION:

- A. Section 03 30 00 - Cast-In-Place Concrete: Anchor Bolts and Setting Plates.
- B. Section 03 30 00 - Cast-In-Place Concrete: Embedded Steel Items.
- C. Section 04 20 00 - Unit Masonry: Embedded Steel Items.

1.03 RELATED REQUIREMENTS

- A. Section 09 91 13 - Exterior Painting : Finishes applied to ferrous metals.

1.04 REFERENCE STANDARDS

- A. AISC (MAN) - Steel Construction Manual 2017.
- B. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges 2016.
- C. AISC 325-01 - LRFD Manual of Steel Construction; American Institute of Steel Construction, Inc; 2001, Third Edition.
- D. AISC S303 - Code of Standard Practice for Steel Buildings and Bridges 2016.
- E. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.
- F. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- G. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength 2021.
- H. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength 2014.
- I. ASTM A449 - Standard Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use 2014 (Reapproved 2020).
- J. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes 2021a.
- K. ASTM A992/A992M - Standard Specification for Structural Steel Shapes 2020.
- L. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink) 2020.
- M. ASTM F436/F436M - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions 2019.
- N. ASTM F436 - Standard Specification for Hardened Steel Washers 2011.

- O. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength 2020.
- P. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination 2020.
- Q. AWS D1.1/D1.1M - Structural Welding Code - Steel 2020, with Errata (2021).

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
 - 1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
 - 2. Connections not detailed.
 - 3. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.

1.06 QUALITY ASSURANCE

- A. Fabricate structural steel members in accordance with AISC (MAN) "Steel Construction Manual."
- B. Fabricator: Company specializing in performing the work of this section with minimum 5 years of documented experience.
- C. Erector: Company specializing in performing the work of this section with minimum 5 years of documented experience.
- D. Welder Qualifications: Qualified within previous 12 months in accordance with AWS.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Steel Angles, Plates, and Channels: ASTM A36/A36M.
- B. Steel W Shapes and Tees: ASTM A992/A992M.
- C. Cold-Formed Structural Tubing: ASTM A500/A500M, Grade B.
- D. High-Strength Structural Bolts, Nuts, and Washers: ASTM A325 (ASTM A325M), Type 1, medium carbon, galvanized, with matching compatible ASTM A563 or A563M nuts and ASTM F436 washers.
- E. Unheaded Anchor Rods: ASTM F1554, Grade 36, plain, with matching ASTM A563 or ASTM A563M nuts and ASTM F436/F436M Type 1 washers.
- F. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- G. Shop and Touch-Up Primer: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

- A. Shop fabricate to greatest extent possible.
- B. Continuously seal joined members by continuous welds. Grind exposed welds smooth.

- C. Fabricate connections for bolt, nut, and washer connectors.
- D. Develop required camber for members.
- E. Provide masonry anchors on all faces of steel elements adjacent to masonry construction.
 - 1. Horizontal spacing to be 24" o.c. Vertical spacing to be 16" o.c. unless noted otherwise.
 - 2. Coordinate locations with architectural drawings.

2.03 FINISH

- A. Prepare structural component surfaces in accordance with SSPC-SP2.
- B. Shop prime structural steel members. Do not prime surfaces that will be field welded.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.

3.02 ERECTION

- A. See Section 03 30 00 for installation of anchor rods and setting plates.
- B. Erect structural steel in compliance with AISC 303.
- C. Allow for erection loads, and provide sufficient temporary bracing to maintain structure in safe condition, plumb, and in true alignment until completion of erection and installation of permanent bracing and all final connections are complete.
- D. Field weld components indicated on shop drawings.
- E. Install high-strength bolts in accordance with AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts".
- F. Do not field cut or alter structural members without approval of Architect/Engineer.
- G. Weld stud shear connectors through steel deck to structural members below.
- H. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

3.03 TOLERANCES

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

3.04 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.
- B. Provide free access to framing operations at project site and cooperate with the appointed firm.

END OF SECTION

**SECTION 06 10 00
ROUGH CARPENTRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Structural dimension lumber framing.
- B. Nonstructural dimension lumber framing.
- C. Sheathing.
- D. Underlayment.
- E. Roof-mounted curbs.
- F. Roofing cant strips.
- G. Preservative treated wood materials.
- H. Miscellaneous framing and sheathing.
- I. Concealed wood blocking, nailers, and supports.

1.02 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 06 20 00 - Finish Carpentry, Exterior Canopy Wood Decking.
- C. Section 07 25 00 - Weather Barriers: Water-resistive barrier over sheathing.

1.03 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- B. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing 2003 (Reapproved 2017).
- C. ASTM D2898 - Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing 2010 (Reapproved 2017).
- D. ASTM D3498 - Standard Specification for Adhesives for Field-Gluing Wood Structural Panels (Plywood or Oriented Strand Board) to Wood Based Floor System Framing 2019a.
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.
- F. AWPA U1 - Use Category System: User Specification for Treated Wood 2021.
- G. PS 1 - Structural Plywood 2009 (Revised 2019).
- H. PS 2 - Performance Standard for Wood Structural Panels 2018.
- I. PS 20 - American Softwood Lumber Standard 2020.
- J. WWPA G-5 - Western Lumber Grading Rules 2021.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide technical data on wood preservative materials.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. Species: Douglas Fir-Larch, unless otherwise indicated.
 - 2. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
 - 3. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
 - 4. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- 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.
- D. Stud Framing (2 by 2 through 2 by 6):
 - 1. Species: Hem-Fir or Spruce-Pine-Fir.
 - 2. Grade: No. 2.
- E. 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. Subflooring: PS 2 type, rated Sheathing.
 - 1. Bond Classification: Exterior.
 - 2. Span Rating: 48.
 - 3. Performance Category: 3/4 PERF CAT.
- B. Underlayment: APA Underlayment; plywood, Exposure 2, 1/2 inch thick. Fully sanded faces at resilient flooring.

- C. Roof Sheathing: PS 1, Structural I Rated Sheathing, Exterior Exposure Class, and as follows:
 - 1. Thickness: 3/4 inch, nominal.
- D. Roof Sheathing: Oriented strand board wood structural panel; PS 2.
 - 1. Grade: Structural 1 Sheathing.
 - 2. Bond Classification: Exposure 1.
 - 3. Performance Category: 3/4" PERF CAT.
 - 4. Span Rating: 40/20.
 - 5. Edges: Square.
 - 6. Exposure Time: Sheathing will not delaminate or require sanding due to moisture absorption from exposure to weather for up to 500 days.
 - 7. Provide fastening guide on top panel surface with separate markings indicating fastener spacing for 16 inches and 24 inches on center, respectively.
- E. Wall Sheathing, For for infilling deteriorated wall sheathing: PS 2 type.
 - 1. Bond Classification: Exterior.
 - 2. Grade: Structural I Sheathing.
 - 3. Span Rating: 24.
 - 4. Performance Category: 1/2 PERF CAT.
 - 5. Edge Profile: Square edge.
- F. Other 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.

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.
- B. Sill Gasket on Top of Foundation Wall: 1/4 inch thick, plate width, closed cell plastic foam from continuous rolls.
- C. Subfloor Adhesives: Waterproof, air cure type, cartridge dispensed; adhesives designed for subfloor applications and complying with either ASTM C557 or ASTM D3498.
- D. Water-Resistive Barrier: See Section 07 25 00.

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. Exterior Type: AWP A U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Do not use treated wood in direct contact with the ground.
2. Interior Type A: AWP A U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Treat rough carpentry items as scheduled.
 - c. Do not use treated wood in applications exposed to weather or where the wood may become wet.

C. Preservative Pressure Treatment of Lumber Above Grade: AWP A U1, Use Category UC3B, Commodity Specification A using waterborne preservative.

1. Kiln dry lumber after treatment to maximum moisture content of 15 percent.
 - a. Treat lumber exposed to weather.
2. Treat lumber in contact with flashing or waterproofing.
3. Treat lumber in contact with masonry or concrete.
4. Treat lumber less than 18 inches above grade.
5. Preservative Pressure Treatment of Plywood Above Grade: AWP A U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative.
 - a. Kiln dry plywood after treatment to maximum moisture content of 15 percent.
 - b. Treat plywood in contact with roofing, flashing, or waterproofing.
 - c. Treat plywood in contact with masonry or concrete.
 - d. Treat plywood less than 18 inches above grade.

D. Restrictions: Do not use lumber or plywood treated with chromated copper arsenate (CCA) in exposed exterior applications subject to leaching.

PART 3 EXECUTION

3.01 PREPARATION

- A. Where wood framing bears on cementitious foundations, install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches and seal.
- B. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.
- C. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 FRAMING INSTALLATION

- A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
- B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
- C. Install structural members full length without splices unless otherwise specifically detailed.
- D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AWC (WFCM) Wood Frame Construction Manual.
- E. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches of bearing at each end.
- F. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.
- G. Provide bridging at joists in excess of 8 feet span at mid-span. Fit solid blocking at ends of members.
- H. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

3.04 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 framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to authorities having jurisdiction may be used in lieu of solid wood blocking.
- C. 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.
- D. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.
- E. Provide the following specific nonstructural framing and blocking:
 - 1. Cabinets and shelf supports.

2. Wall brackets.
3. Handrails.
4. Grab bars.
5. Toilet accessories.
6. Wall-mounted door stops.
7. Marker and tack boards.
8. Joints of rigid wall coverings that occur between studs.

3.05 ROOF-RELATED CARPENTRY

- A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.
- B. Provide wood curb at each roof opening except where specifically indicated otherwise; form corners by alternating lapping side members.

3.06 INSTALLATION OF CONSTRUCTION PANELS

- A. Subflooring/Underlayment Combination: Glue and screw to framing; staples are not permitted.
- B. Subflooring: Glue and screw to framing; staples are not permitted.
- C. Underlayment: Secure to subflooring with nails.
 1. At locations where resilient flooring will be installed, fill and sand splits, gaps, and rough areas.
 2. Place building paper between floor underlayment and subflooring.
- D. Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
 1. At long edges use sheathing clips where joints occur between roof framing members.
 2. At long edges provide solid edge blocking where joints occur between roof framing members.
 3. Nail panels to framing; staples are not permitted.
- E. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.
 1. Use plywood or other acceptable structural panels at building corners, for not less than 96 inches, measured horizontally.
 2. Place water-resistive barrier horizontally over wall sheathing, weather lapping edges and ends.

3.07 SITE APPLIED WOOD TREATMENT

- A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.
- B. Allow preservative to dry prior to erecting members.

3.08 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Variation from Plane, Other than Floors: 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.09 CLEANING

- A. Waste Disposal: See Section 01 74 19 - Construction Waste Management and Disposal.

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

3.10 SCHEDULE

- A. Roof Blocking: Pressure preservative treated.
- B. Blocking in Walls: Untreated.
- C. Exterior wall sill plates: Pressure preservative treated.

END OF SECTION

**SECTION 06 17 33
WOOD I-JOISTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wood I-joists for roof framing.
- B. Bridging, bracing, and anchorage.
- C. Framing for openings.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Installation requirements for miscellaneous framing.
- B. Section 06 10 00 - Rough Carpentry: Material requirements for blocking, plates, and miscellaneous framing.

1.03 REFERENCE STANDARDS

- A. ASTM D2559 - Standard Specification for Adhesives for Bonded Structural Wood Products for Use Under Exterior Exposure Conditions 2012a (Reapproved 2018).
- B. ASTM D5055 - Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists 2019, with Editorial Revision (2020).
- C. PS 1 - Structural Plywood 2009 (Revised 2019).
- D. PS 2 - Performance Standard for Wood Structural Panels 2018.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's literature describing materials, dimensions, allowable spans and spacings, bearing and anchor details, bridging and bracing requirements, and installation instructions; identify independent inspection agency.
- C. Shop Drawings: Indicate sizes and spacing of joists, bracing and bridging, bearing stiffeners, holes to be cut (if any), and framed openings between joists.
- D. Certificate: Certification by joist manufacturer that products delivered are of the same design and construction as those evaluated by the independent inspection agency.

1.05 QUALITY ASSURANCE

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

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in manufacturer's original packaging with manufacturer's name and product identification intact and legible.
- B. Protect products from damage due to weather and breakage.

- C. Protect joists from warping or other distortion by stacking in upright position, braced to resist movement, with air circulation under coverings and around stacks.
- D. Handle individual joists in the upright position.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Wood I-Joists:
 - 1. Boise Cascade Company: www.bc.com/#sle.
 - 2. Louisiana-Pacific Corporation: www.lpcorp.com/#sle.
 - 3. Weyerhaeuser Company: www.weyerhaeuser.com/#sle.
 - 4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 MATERIALS

- A. Wood I-Joists: Solid lumber top and bottom flanges and oriented strand board (OSB) webs bonded together with structural adhesive, with published span rating to meet project requirements.
 - 1. Span Rating: Established and monitored in accordance with ASTM D5055 by independent inspection agency.
 - 2. Oriented Strand Board: Comply with PS 2.
 - 3. Adhesive: Tested for wet/exterior service in accordance with ASTM D2559.
 - 4. Depth: As indicated on drawings.
 - 5. Fabrication Tolerances:
 - a. Flange Width: Plus/minus 1/32 inch.
 - b. Flange Thickness: Minus 1/16 inch.
 - c. Joist Depth: Plus 0, minus 1/8 inch.
 - 6. Marking: Mark each piece with depth, joist spacing, and allowable span for joist spacing.
 - 7. Provide bearing stiffeners if required by span rating or joist hanger manufacturer.
- B. Wood-Based Components:
 - 1. Wood fabricated from old growth timber is not permitted.
- C. Joist Bridging: Type, size and spacing recommended by joist manufacturer.
- D. Wood Blocking, Plates, and Miscellaneous Framing: As specified in Section 06 10 00.
- E. Fasteners: Electrogalvanized steel, type to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that supports and openings are ready to receive joists.
- B. Verify that field measurements are as indicated on shop drawings.

3.02 PREPARATION

- A. Coordinate placement of bearing items.

3.03 ERECTION

- A. Install joists in accordance with manufacturer's instructions.

- B. Set structural members level and plumb, in correct position.
- C. Make provisions for erection loads and for sufficient temporary bracing to maintain structure plumb and in true alignment until completion of erection and installation of permanent bracing.
- D. Do not field cut or alter structural members without approval of Architect/Engineer.
- E. Install permanent bridging and bracing.
- F. Install headers and supports to frame openings required.
- G. Frame openings between joists with lumber in accordance with Section 06 10 00.
- H. Coordinate installation of sheathing/decking with work of this section.

3.04 TOLERANCES

- A. Framing Members: 1/2 inch maximum, from true position.

END OF SECTION

**SECTION 06 20 00
FINISH CARPENTRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Finish carpentry items.
- B. Wood door frames, glazed frames.
- C. Wood casings and moldings.
- D. Wood soffit & ceiling items.
- E. Hardware and attachment accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.
- B. Section 06 41 00 - Custom Casework: Shop fabricated custom cabinet work.
- C. Section 09 93 00 - Staining and Transparent Finishing: Staining and transparent finishing of finish carpentry items.

1.03 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).
- C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards 2021, with Errata.
- D. NHLA G-101 - Rules for the Measurement and Inspection of Hardwood and Cypress 2019.
- E. PS 1 - Structural Plywood 2009 (Revised 2019).

1.04 SUBMITTALS

- A. See Section 01 30 00 - 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 information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
- C. Samples: Submit two samples of wood trim 12 inch long.
- D. Samples: Submit two samples of Cap, Base, Column Shaft, and soffit , one-half full size, illustrating one-half finish and construction.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with AWI Architectural Woodwork Quality Standards Illustrated, Premium grade.

- B. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of experience.
 - 1. Company with at least one project within the past 5 years with value of woodwork within 20 percent of cost of woodwork for this project.
 - 2. Single Source Responsibility: Provide and install this work from single fabricator.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

- A. Quality Standard: Premium 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. Exterior Woodwork Items:
 - 1. Door Moldings: Hardwood; prepare for paint finish (Main entrance doorway).
 - 2. Soffits: Prepare for paint finish.
- D. Interior Woodwork Items:
 - 1. Moldings, Bases, Casings, and Miscellaneous Trim: Clear white pine; prepare for transparent finish.
 - 2. Door, Glazed Light, and Door Frames: Clear white pine; prepare for transparent finish.
 - 3. Window Sills: Clear white pine; prepare for transparent finish.

2.02 LUMBER MATERIALS

- A. Softwood Lumber: Clear white pine species, plain sawn, maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish.
- B. Exterior Soffit Lumber: Clear white pine species, plain sawn, maximum moisture content of 6 percent; with vertical grain, of quality suitable for primed and painted finish.
 - 1. Sizing: 1 x 6 tongue and groove. (Exterior new canopy area).
- C. Hardwood Lumber: (Main Entrance Doorway - Applied 8 Panel Molding: red oak species, plain sawn, maximum moisture content of 8 percent.

2.03 SHEET MATERIALS

- A. Softwood Plywood, Not Exposed to View: Any face species, veneer core; PS 1 Grade A-B, glue type as recommended for application.
- B. Softwood Plywood, Exposed to View: Face species Clear white pine, plain sawn, veneer core; PS 1 Grade A-B, glue type as recommended for application.

2.04 FASTENINGS

- A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.
- B. Adhesive for factory-fabricated units: Manufacturer's recommended adhesive for application.

- C. Fasteners: Of size and type to suit application; any finish in concealed locations and any finish in exposed locations. At exposed locations all fasteners shall be countersunk and filled with wood putty.
- D. Fasteners for Exterior Applications: Hot-dipped galvanized steel complying with ASTM A153/A153M; length required to penetrate wood substrate 1-1/2 inch minimum.

2.05 ACCESSORIES

- A. Adhesive: Type recommended by fabricator to suit application.
- B. Lumber for Shimming and Blocking: Softwood lumber of pine or poplar species.
- C. Primer: Alkyd primer sealer.
- D. Wood Filler: Solvent base, tinted to match surface finish color.

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.

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.
- C. See Section 06 10 00 for installation of recessed wood blocking.

3.02 INSTALLATION

- A. Install custom fabrications 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.

3.03 PREPARATION FOR SITE FINISHING

- A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.
- B. Site Finishing: See Section 09 93 00.
- C. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.04 TOLERANCES

- A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION

**SECTION 06 41 00
CUSTOM CASEWORK**

PART 1 GENERAL

1.01 SECTION INCLUDES

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

1.02 RELATED REQUIREMENTS

- A. Section 09 93 00 - Staining and Transparent Finishing: Field finishing of cabinet exterior.
- B. Section 12 36 00 - Countertops.

1.03 REFERENCE STANDARDS

- A. ANSI A208.1 - American National Standard for Particleboard 2016.
- B. ANSI A208.2 - Medium Density Fiberboard (MDF) for Interior Applications 2016.
- C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).
- D. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards 2021, with Errata.
- E. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood 2016.
- F. NEMA LD 3 - High-Pressure Decorative Laminates 2005.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting not less than one week before starting work of this section; require attendance by all affected installers.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate materials, component profiles and elevations, assembly methods, fastening methods, jointing details, and accessories, hardware locations and schedule of finishes.
 - 1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
 - 2. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
- C. Product Data: Provide data for hardware accessories.
- D. Samples: Submit actual sample items of proposed pulls, hinges, shelf standards, and locksets, demonstrating hardware design, quality, and finish.
- E. Fabricator's Qualifications Statement.

1.06 QUALITY ASSURANCE

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

1. Company with at least one project in the past 5 years with value of woodwork within 20 percent of cost of woodwork for this Project.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Reject and return to fabricator units that are missing hardware components.
- B. Protect units from moisture damage.

1.08 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.
 1. Wood Veneer Faced Cabinets: (Location: Kitchenette ADA sink base modifications).
 - a. Wood Color: (ST-1): Field stained and finished skirt, side and diagonal panels to match existing cabinet color.
 - b. Exposed Surfaces: HPVA HP-1 Grade A, Cherry, plain sliced, book-matched.
 - c. Semi-Exposed Surfaces: HPVA HP-1 Grade B, Cherry, plain sliced, random-matched.
 2. Plastic Laminate Faced Cabinets: (Location: Public toilet rooms). Custom grade, unless another grade is specified.
- B. Plastic Laminate Cabinets at Public toilets:
 1. Laminate Color: (PL-A): Wilsonart: Stickley Oak; 17003K-57-Aligned Texture.
 2. Finish - Exposed Exterior Surfaces: Decorative laminate.
 3. Finish - Exposed Interior Surfaces: Decorative laminate.
 4. Finish - Semi-Exposed Surfaces: Decorative laminate
 5. Finish - Concealed Surfaces: Manufacturer's option.
 6. Door and Drawer Front Edge Profiles: Radius edge with thick applied band.
 7. Door and Drawer Front Retention Profiles: Removable stop.
 8. Casework Construction Type: Type A - Frameless.
 9. Interface Style for Cabinet and Door: Style 1 - Overlay; flush overlay.
 10. Grained Face Layout for Cabinet and Door Fronts: Flush panel.
 - a. Premium Grade:
 - 1) Provide vertical run and match for doors, drawer fronts and false fronts within each cabinet unit.
 - 2) Provide well-matched doors, drawer fronts and false fronts across multiple cabinet faces in one elevation.
 - 3) Cathedral Grain: Point grain crown up and run in the same direction for entire project.
 11. Cabinet Design Series: As indicated on drawings.
 12. Adjustable Shelf Loading: 40 psf.
 - a. Deflection: L/144.
 13. Casework Integrity: Comply with Acceptance Level requirements of AWI/AWMAC/WI (AWS) Appendix A for the following tests.
 - a. Structural Integrity Test - Base Cabinet.

- b. Concentrated Load Test - Base Cabinet.
 - c. Torsion Test - Base Cabinet.
 - d. Structural Integrity Test - Wall Cabinet.
 - e. Door Durability Test.
 - f. Door Impact Test.
 - g. Door Hinge Test.
 - h. Drawer Bottom Impact Test.
 - i. Drawer Support Test.
 - j. Drawer and Door Pull Test.
 - k. Drawer Rolling Load Test.
 - l. Shelf Load Test.
14. Drawer Side Construction: Doweled, Dowel Screwed, Biscuit Splined or Lock Jointed and Nailed.

2.02 WOOD-BASED COMPONENTS

- A. Wood fabricated from old growth timber is not permitted.
- B. Hardwood Edgebanding: Use solid hardwood edgebanding matching species, color, grain, and grade for exposed portions of cabinetry.

2.03 PANEL MATERIALS

- A. Veneer Faced Plywood Finish (ADA Kitchenette Sink Panels): HPVA HP-1; graded in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, core of particleboard, medium density fiberboard, or engineered combination of core materials listed; type of glue recommended for specific application; thickness as required; face veneer as follows:
 - 1. Exposed Surfaces: Grade AA, Cherry, plain sliced, slip-matched.
 - 2. Semi-Exposed Surfaces: Grade A, Cherry, rotary cut, random-matched.
- B. Particleboard: ANSI A208.1; Grade M-3 medium density or any Grade high density industrial type as specified in AWI/AWMAC/WI (AWS), composed of wood chips bonded with interior grade adhesive under heat and pressure; sanded faces; thickness as specified under AWI/AWMAC/WI (AWS) Section 10.4.7 for each component type; use for components indicated on drawings.
 - 1. Density: 40 lb/cu ft (minimum for low end of range).
 - 2. Screw Holding:
 - a. Face: 225 lb (minimum).
 - b. Edge: 202 lb (minimum).
- C. Medium Density Fiberboard (MDF): ANSI A208.2; type as specified in AWI/AWMAC/WI (AWS); composed of cellulosic fibers pressure bonded with moisture resistant adhesive to suit application; sanded faces; thicknesses as specified under AWI/AWMAC/WI (AWS) Section 10.4.7 for each component type.
 - 1. Use for cabinet and countertop components, including cabinet backs (1/2" min.) and drawer bottoms (1/2" min.), unless another material is indicated on drawings.
 - 2. Use as core for decorative laminate-faced panels unless otherwise indicated.
- D. Hardwood Edgebanding: Use solid hardwood edgebanding matching species, color, grain, and grade for exposed portions of cabinetry.

2.04 LAMINATE MATERIALS

- A. Manufacturers:
 - 1. Wilsonart LLC: www.wilsonart.com.
 - 2. Substitutions: Not permitted.
- B. Thermally Fused Laminate (TFL): Melamine resin, NEMA LD 3, Type VGL laminate panels.
- C. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.
- D. Provide specific types as indicated.
 - 1. Horizontal Surfaces: HGS, 0.048 inch nominal thickness, through color, color as selected, finish as indicated.
 - 2. Vertical Surfaces: VGS, 0.028 inch nominal thickness, through color, color as selected, finish as indicated.
 - 3. Cabinet Liner: CLS, 0.020 inch nominal thickness, through color, finish as indicated.
 - 4. Laminate Backer: BKL, nominal thickness to match that of opposing face sheet, undecorated; for application to concealed backside of panels faced with high pressure decorative laminate.

2.05 COUNTERTOPS

- A. Countertops: See Section 12 36 00.

2.06 ACCESSORIES

- A. Adhesive: Type recommended by fabricator to suit application.
- B. Plastic Edgebanding: Extruded 3mm PVC or ABS, flat shaped; smooth finish; bonded to edge of component; of width to match component thickness. Provide "flexible" PVC material for curved component edges.
 - 1. Manufacturers:
 - a. Charter Industries: www.charterindustries.com.
 - b. EdgeCo, Inc.: www.edgecoinc.com.
 - c. Frama-Tech, Inc.: www.framatech.net.
 - d. Teknaform: www.teknaform.com.
 - 2. Color: Custom, to match selected laminate materials colors and patterns.
 - 3. Use at exposed edges of shelves, cabinet doors, and cabinet drawers.
- C. Fasteners: Size and type to suit application.
- D. 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.
- E. Concealed Joint Fasteners: Threaded steel.

2.07 HARDWARE

- A. Countertop Supports:
 - 1. Material: Aluminum
 - 2. Finish/Color: Black powdercoat.
 - 3. Manufacturers:

- a. Rakks/Rangine Corporation; Countertop Supports: www.rakks.com/#sle
- b. Substitutions: See Section 01 60 00 - Product Requirements.

B. Piano Hinges:

- 1. Nickel plated steel; 0.030 inch thickness; 1½ inch open width; length to suit application.
- 2. Use for hinged panels at accessible sink locations, and other locations indicated on drawings.

2.08 FIELD FINISHING MATERIALS

- A. Finishing: Field finished, see Section 09 93 00.

2.09 FABRICATION

- A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
- B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
- C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
- D. 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.
 - 1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
 - 2. Cap exposed plastic laminate finish edges with plastic trim.
- E. Matching Wood Grain: Comply with requirements of quality standard for specified Grade and as follows:
 - 1. Provide balance matched panels at each elevation.
- F. Provide cutouts for fixtures and fittings. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.
- G. Shop glaze glass materials using Interior Dry method; see Section 08 80 00.
- H. Hardware: Install hardware components in fabricator's shop. Carpenter installation of cabinet hardware components in field is not permitted.

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. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.
- B. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
- C. Use fixture attachments in concealed locations for wall mounted components.

- D. Use concealed joint fasteners to align and secure adjoining cabinet units.
- E. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
- F. Secure cabinets to floor or wall using appropriate angles and anchorages.
- G. 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. Test installed work for rigidity and ability to support loads.
- B. Adjust moving or operating parts to function smoothly and correctly. Clean sawdust from drawer slides. Re-grease slides after removing sawdust.
- C. Repair damaged and defective casework to eliminate defects functionally and visually. Where not possible to repair properly, replace casework.

3.04 CLEANING

- A. Clean casework, counters, shelves, hardware, fittings, and fixtures.
- B. Remove sawdust, leftover materials and other debris from within cabinets and drawers.

END OF SECTION

**SECTION 07 01 50.19
PREPARATION FOR RE-ROOFING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Replacement of existing roofing system in preparation for entire new roofing system.
- B. Removal of existing flashing and counterflashings.
- C. Temporary roofing protection.

1.02 RELATED REQUIREMENTS

- A. Section 07 31 13 - Asphalt Shingles.
- B. Section 07 53 00 - Elastomeric Membrane Roofing.
- C. Section 07 62 00 - Sheet Metal Flashing and Trim: Replacement of flashing and counterflashings.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Repair Existing Roof Wood Decking:
 - 1. Include in the Base Bid for Bid B: 384 SF of 5/8 inch thick exterior grade plywoodwood decking replacement.
 - 2. Scope: Includes replacing decking with new material of same thickness.

1.04 REFERENCE STANDARDS

- A. ASTM C208 - Standard Specification for Cellulosic Fiber Insulating Board 2012, with Editorial Revision (2019).
- B. ASTM D2178/D2178M - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing 2015a (Reapproved 2021).
- C. ASTM D312/D312M - Standard Specification for Asphalt Used in Roofing 2016a.
- D. ASTM D4601/D4601M - Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing 2004 (Reapproved 2020).
- E. PS 1 - Structural Plywood 2009 (Revised 2019).

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with affected mechanical and electrical work associated with roof penetrations.
- B. Preinstallation Meeting: Convene one week before starting work of this section.
 - 1. Attendees:
 - a. Architect/Engineer.
 - b. Contractor.
 - c. Owner.
 - d. Installer.
- C. Schedule work to coincide with commencement of installation of new roofing system.

1.06 QUALITY ASSURANCE

- A. Materials Removal Company Qualifications: Company specializing in performing work of type specified with at least three years of documented experience.
 - 1. Comply with removal and disposal regulations of local authorities having jurisdiction (AHJ).
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.
 - 1. When same installer as new roofing system, comply with related requirements of section indicated for new roofing system.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

1.08 FIELD CONDITIONS

- A. Existing Roofing System: Built-up asphalt and Asphalt Shingle roofing.
- B. Do not remove existing roofing membrane when weather conditions threaten the integrity of building contents or intended continued occupancy.
- C. Maintain continuous temporary protection prior to and during installation of new roofing system.

PART 2 PRODUCTS

2.01 COMPONENTS

- A. Refer to following sections for additional information on components relating to this work:
 - 1. Replacement and removal of existing roofing system in preparation for entire new roofing system, refer to Section 07 31 13 & 07 53 00.
 - 2. Remove existing flashing and counterflashings in preparation for replacement of these materials as part of this work, see Section 07 62 00 for material requirements.

2.02 MATERIALS

- A. Patching Materials: Provide necessary materials in accordance with requirements of existing roofing system.
- B. Temporary Roofing Protection Materials:
 - 1. Contractor's responsibility to select appropriate materials for temporary protection of roofing areas as determined necessary for this work.

2.03 ACCESSORIES

- A. Fasteners: Type and size as required and compatible with existing and new roofing system to resist local wind uplift.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing roof surface has been cleared of materials being removed from existing roofing system and ready for next phase of work as required.

3.02 PREPARATION

- A. Sweep roof surface clean of loose matter.
- B. Remove loose refuse and dispose of properly off-site.

3.03 MATERIAL REMOVAL

- A. Remove only existing roofing materials that can be replaced with new materials the same day.
- B. Remove metal counter flashings.
- C. Scrape roofing gravel from membrane surface.
- D. Remove roofing membrane, perimeter base flashings, flashings around roof protrusions, pitch pans and pockets.
- E. Remove vapor retarder, sheathing paper, and underlay.
- F. Repair existing wood deck surface to provide smooth working surface for new roof system.

3.04 INSTALLATION

- A. Coordinate scope of this work with requirements for installation of new roofing system, see Section 07 31 13 & 07 53 00 for additional requirements.

3.05 PROTECTION

- A. Provide temporary protective sheeting over uncovered deck surfaces.
- B. Turn sheeting up and over parapets and curbing. Retain sheeting in position with temporary fasteners.
- C. Provide for surface drainage from sheeting to existing drainage facilities.
- D. Do not permit traffic over unprotected or repaired deck surface.

END OF SECTION

**SECTION 07 25 00
WEATHER BARRIERS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Air Barriers: Materials to stop passage of air and water through exterior walls, joints between exterior walls and roof, and joints around frames of openings in exterior walls.

1.02 RELATED REQUIREMENTS

- A. Section 07 46 46 - Fiber Cement Siding: Water-resistive barrier under fiber-cement siding.
- B. Section 07 62 00 - Sheet Metal Flashing and Trim: Metal flashings installed in conjunction with weather barriers.
- C. Section 07 92 00 - Joint Sealants: Sealing building expansion joints.

1.03 DEFINITIONS

- A. Weather Barrier: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.
- B. Air Barrier: Air tight barrier made of material that is relatively air impermeable but water vapor permeable, both to the degree specified, with sealed seams and with sealed joints to adjacent surfaces. Note: For the purposes of this specification, vapor impermeable air barriers are classified as vapor retarders.

1.04 REFERENCE STANDARDS

- A. AATCC Test Method 127 - Test Method for Water Resistance: Hydrostatic Pressure 2018, with Editorial Revision (2019).
- B. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection 2021.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.
- D. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials 2021.
- E. ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials 2021a.
- F. ICC-ES AC308 - Acceptance Criteria for Water-Resistive Barriers 2016, with Editorial Revision (2019).
- G. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components 2019.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on material characteristics.

- C. Shop Drawings: Provide drawings of special joint conditions.
- D. Manufacturer's Installation Instructions: Indicate preparation, installation methods, and storage and handling criteria.

1.06 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by the materials manufacturers before, during and after installation.

PART 2 PRODUCTS

2.01 WEATHER BARRIER ASSEMBLIES

- A. Air Barrier:
 - 1. On outside surface of sheathing of exterior walls use air barrier sheet, mechanically fastened type, including manufacturer's recommended seam tape at all exposed joints.

2.02 AIR BARRIER MATERIALS (WATER VAPOR PERMEABLE AND WATER-RESISTIVE)

- 1. Air Permeance: 0.004 cfm/sq ft, maximum, when tested in accordance with ASTM E2178.
- 2. Water Vapor Permeance: 5 perms, minimum, when tested in accordance with ASTM E96/E96M Procedure A (Desiccant Method) at 73.4 degrees F.
- 3. Water Penetration Resistance: Withstand a water head of 21 inches, minimum, for minimum of 5 hours, when tested in accordance with AATCC Test Method 127.
- 4. Ultraviolet (UV) and Weathering Resistance: Approved in writing by manufacturer for up to 180 days of weather exposure.
- 5. Surface Burning Characteristics: Flame spread index of 25 or less, and smoke developed index of 50 or less, when tested in accordance with ASTM E84.
- 6. Complies with NFPA 285 wall assembly requirements.
- 7. Water Resistance: Comply with applicable water-resistive requirements of ICC-ES AC38.
- 8. Seam and Perimeter Tape: Polyethylene self adhering type, mesh reinforced, 2 inches wide, compatible with sheet material; unless otherwise specified.
- 9. Manufacturers:
 - a. DuPont Building Innovations; Tyvek Commercial Wrap with StraightFlash, Tyvek Wrap Caps, and Tyvek Tape: www.dupont.com.
 - b. National Shelter Products, Inc; Dryline LP with Dryline 300 flashing tape, wrap caps and tape for field laps: www.drylinewrap.com.
 - c. Substitutions: Not permitted.

2.03 ACCESSORIES

- A. Flexible Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M, except slip resistance requirement is waived if not installed on a roof.
 - 1. Composition: Butyl rubber sheet laminated to elasticized polyethylene sheet.
 - 2. Thickness: 30 mil, 0.030 inch, nominal; exception from ASTM D1970/D1970M.
 - 3. Manufacturers:
 - a. DuPont Building Innovations; StraightFlash: www.dupont.com.
 - b. National Shelter Products, Inc; Dryline 300 Flashing Tape: www.drylinewrap.com.
 - c. Substitutions: Not permitted.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and conditions are ready to accept the work of this section.

3.02 PREPARATION

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.
- B. Clean and prime substrate surfaces to receive adhesives in accordance with manufacturer's instructions.

3.03 INSTALLATION

- A. Install materials in accordance with manufacturer's instructions.
- B. Air Barriers: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
- C. Mechanically Fastened Sheets - On Exterior:
 - 1. Install sheets shingle-fashion to shed water, with seams generally horizontal.
 - 2. Overlap seams as recommended by manufacturer but at least 6 inches.
 - 3. Overlap at outside and inside corners as recommended by manufacturer but at least 12 inches.
 - 4. Attach to framed construction with fasteners extending through sheathing into framing. Space fasteners at 12 to 18 inches on center along each framing member supporting sheathing.
 - 5. For applications specified to be air tight, seal seams, laps, penetrations, tears, and cuts with self-adhesive tape; use only large-headed, gasketed fasteners recommended by the manufacturer.
 - 6. Where stud framing rests on concrete or masonry, extend lower edge of sheet at least 1 inches below bottom of framing and seal to foundation with sealant.
 - 7. Install water-resistive barrier over jamb flashings.
 - 8. Install air barrier and vapor retarder underneath the jamb flashings.
 - 9. Install head flashings under weather barrier.
 - 10. At openings to be filled with frames having nailing flanges, wrap excess sheet into opening; at head, seal sheet over flange and flashing.
- D. Openings and Penetrations in Exterior Weather Barriers:
 - 1. Install flashing over sills, covering entire sill frame member, extending at least 5 inches onto weather barrier and at least 6 inches up jambs; mechanically fasten stretched edges.
 - 2. At openings to be filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches wide; do not seal sill flange.
 - 3. At openings to be filled with non-flanged frames, seal weather barrier to each side of opening framing, using flashing at least 9 inches wide, covering entire depth of framing.
 - 4. At head of openings, install flashing under weather barrier extending at least 2 inches beyond face of jambs; seal weather barrier to flashing.
 - 5. At interior face of openings, seal gap between window/door frame and rough framing, using joint sealant over backer rod.

6. Service and Other Penetrations: Form flashing around penetrating item and seal to weather barrier surface.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Coordination of ABAA Tests and Inspections:
 1. Provide testing and inspection required by ABAA QAP.
 2. Notify ABAA in writing of schedule for air barrier work, and allow adequate time for testing and inspection.
 3. Cooperate with ABAA testing agency.
 4. Allow access to air barrier work areas and staging.
 5. Do not cover air barrier work until tested, inspected, and accepted.
- C. Do not cover installed weather barriers until required inspections have been completed.
- D. Obtain approval of installation procedures by the weather barrier manufacturer based on a mock-up installed in place, prior to proceeding with remainder of installation.
- E. Take digital photographs of each portion of the installation prior to covering up.

3.05 PROTECTION

- A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

**SECTION 07 31 13
ASPHALT SHINGLES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Asphalt shingle roofing.
- B. Flexible sheet membranes for eave protection, underlayment, and valley protection.
- C. Associated metal flashings and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Roof sheathing.
- B. Section 07 62 00 - Sheet Metal Flashing and Trim: Edge, rake, gutter apron, copings, gravel stops and cap flashings.
- C. Section 07 71 23 - Manufactured Gutters and Downspouts.

1.03 REFERENCE STANDARDS

- A. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing 2017.
- B. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection 2021.
- C. ASTM D3161/D3161M - Standard Test Method for Wind-Resistance of Steep Slope Roofing Products (Fan-Induced Method) 2020.
- D. ASTM D3462/D3462M - Standard Specification for Asphalt Shingles Made From Glass Felt and Surfaced with Mineral Granules 2019.
- E. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free 2007 (Reapproved 2018).
- F. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings 2020a.
- G. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples 2021.
- H. NRCA (RM) - The NRCA Roofing Manual 2022.
- I. SMACNA (ASMM) - Architectural Sheet Metal Manual 2012.
- J. UL (DIR) - Online Certifications Directory Current Edition.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating material characteristics.
- C. Samples: Submit two samples of each shingle color indicating color range and finish texture/pattern ; for color selection.
- D. Manufacturer's Installation Instructions: Indicate installation criteria and procedures.

- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Shingles: 40 sq ft of each type and color.

1.05 QUALITY ASSURANCE

- A. Products are Required to Comply with Fire Resistance Criteria: UL (DIR) listed and labeled.

1.06 MOCK-UP

- A. Provide mock-up of 100 sq ft, including underlayment.
- B. Locate where directed.
- C. Mock-up may remain as part of the Work.

1.07 FIELD CONDITIONS

- A. Do not install shingles or eave protection membrane when surface temperatures are below 45 degrees F.

1.08 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide fifteen year manufacturer's warranty for coverage against black streaks caused by algae.
- D. Provide five year manufacturer's warranty for wind damage.
- E. Provide manufacturer's standard Lifetime shingle warranty for shingle products.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Algae Resistant Asphalt Shingles:
 - 1. GAF; Timberline HDZ: www.gaf.com/#sle. (Basis of Design Product).
 - 2. Certaineed Corporation; Product Landmark (AR): www.certainteed.com.
 - 3. Owens Corning Corp; Duration: www.owenscorning.com/#sle.
 - 4. Substitutions: Not permitted.

2.02 ASPHALT SHINGLES

- A. Asphalt Shingles: Asphalt-coated glass felt, mineral granule surfaced, complying with ASTM D3462/D3462M.
 - 1. Fire Resistance: Class A, complying with ASTM E108.
 - 2. Wind Resistance: Class A, when tested in accordance with ASTM D3161/D3161M.
 - 3. Warranted Wind Speed: Not greater than 90 mph.

4. Algae Resistant.
5. Weight: 235 lb/100 sq ft.
6. Self-sealing type.
7. Style: Laminated overlay.
8. Color: As selected from Manufacturer's complete color line.

2.03 SHEET MATERIALS

- A. Eave Protection Membrane: Self-adhering polymer-modified asphalt sheet complying with ASTM D1970/D1970M; 40 mil total thickness; with strippable treated release paper and mineral granule top surface.
- B. Underlayment: Asphalt-saturated organic roofing felt, unperforated, complying with ASTM D226/D226M, Type II ("No.30").

2.04 ACCESSORIES

- A. Roofing Nails: Standard round wire shingle type, galvanized steel, stainless steel, aluminum roofing nails, or copper roofing nails, minimum 3/8 inch head diameter, 12 gauge, 0.109 inch nail shank diameter, 1-1/2 inch long and complying with ASTM F1667.
- B. Plastic Cement: ASTM D4586/D4586M, asphalt roof cement.
- C. Plastic Strip Vents: Manufacturer: Cor-A-Vent Inc.; Product S-400 Strip Vent. 1" x 1.5" x 4' sections. Color: White. 10 sq. in NFVA per lineal foot. Self cleaning.

2.05 METAL FLASHINGS

- A. Metal Flashings: Manufacturer: Quality Edge; www.qualityedge.com. Provide sheet metal eave edge, gable edge, dormer flashing, and gutter apron.
 1. Form flashings to profiles indicated on drawings.
 - a. Pre-notched Drip and Gable Edge shall be Quality Edge; 1" T-Style Aluminum; TruFIT .016 inch, Q800 TuffTech finish; Model 1.0TTPGAL.
 - b. Gutter apron: Quality Edge: 1.5" Gutter Apron: TruPerformanceAluminum Gutter Apron .016 inch, Q800 TuffTech finish; Model: TP016.
 - c. Baby Tin Step Flashing: Quality Edge: Step Flashing: TruPerformanceAluminum .016 inch, Q800 TuffTech finish; 6 inch horizontal and vertical legs.
 2. Form sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance.
 3. Hem exposed edges of flashings minimum 1/4 inch on underside.
 4. Coat concealed surfaces of flashings with bituminous paint.
- B. Aluminum Sheet Metal: Prefinished aluminum, 0.019 inch minimum thickness; PVC coating, color as selected from manufacturers complete color line..

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions prior to beginning work.
- B. Verify that roof deck is of sufficient thickness to accept fasteners.

- C. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surface.
- D. Verify roof openings are correctly framed.
- E. Verify deck surfaces are dry, free of ridges, warps, or voids.

3.02 PREPARATION

- A. Seal roof deck joints wider than 1/16 inch as recommended by shingle manufacturer.
- B. At areas where eave protection membrane is to be adhered to substrate, fill knot holes and surface cracks with latex filler.
- C. Broom clean deck surfaces before installing underlayment or eave protection.
- D. Install eave edge flashings tight with fascia boards, weather lap joints 2 inches and seal with plastic cement, and secure flange with nails spaced 12 inches on center.

3.03 INSTALLATION - EAVE PROTECTION MEMBRANE

- A. Install eave protection membrane from eave edge to minimum 4 ft up-slope 2 feet beyond interior face of exterior wall.
- B. Install eave protection membrane in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.

3.04 INSTALLATION - UNDERLAYMENT

- A. Underlayment At Roof Slopes Up to 4:12: Install two layers of underlayment over area not protected by eave protection, with ends and edges weather lapped minimum 4 inches, stagger end laps of each consecutive layer, and nail in place.
- B. Underlayment At Roof Slopes Greater Than 4:12: Install underlayment perpendicular to slope of roof, with ends and edges weather lapped minimum 4 inches, stagger end laps of each consecutive layer, nail in place, and weather lap minimum 4 inches over eave protection.
- C. Weather lap and seal watertight with plastic cement any items projecting through or mounted on roof.

3.05 INSTALLATION - VALLEY PROTECTION

- A. Install one ply of flexible flashing, minimum 18 inches wide, centered over valleys.
- B. Install flexible flashing in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.
- C. Weather lap joints minimum 2 inches.
- D. Nail in place minimum 18 inches on center, 1 inch from edges.

3.06 INSTALLATION - METAL FLASHING AND ACCESSORIES

- A. Install flashings in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.
- B. Weather lap joints minimum 2 inches and seal weather tight with plastic cement.

- C. Secure in place with nails at 12 inches on center, and conceal fastenings.
- D. Items Projecting Through or Mounted on Roofing: Flash and seal weather tight with plastic cement.

3.07 INSTALLATION - SHINGLES

- A. Install shingles in accordance with manufacturer's instructions manufacturer's instructions and NRCA (RM) applicable requirements.
 - 1. Fasten individual shingles using two nails per shingle, or as required by manufacturer and local building code, whichever is greater.
 - 2. Fasten strip shingles using four nails per strip, or as required by manufacturer and local building code, whichever is greater.
- B. Place shingles in straight coursing pattern with 5 inch weather exposure to produce double thickness over full roof area, and provide double course of shingles at eaves.
- C. Project first course of shingles 3/4 inch beyond fascia boards.
- D. Extend shingles 1/2 inch beyond face of gable edge fascia boards.
- E. Extend shingles on one slope across valley and fasten, trim shingles from other slope 2 inches from valley center line to achieve closed cut valley, and concealing valley protection.
- F. Cap hips and ridges with individual shingles, maintaining 5 inch weather exposure. Place to avoid exposed nails. Install ridge shingles to continuous ridge vents.
- G. After installation, place one daub of plastic cement, 1-inch diameter under each individual shingle tab exposed to weather, to prevent lifting.
- H. Coordinate installation of roof mounted components or work projecting through roof with weather tight placement of counterflashings.
- I. Complete installation to provide weather tight service.

3.08 PROTECTION

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

END OF SECTION

**SECTION 07 46 46
FIBER-CEMENT SIDING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wood-fiber cement siding and trim.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Siding substrate.
- B. Section 07 25 00 - Weather Barriers: Weather barrier under siding.
- C. Section 07 92 00 - Joint Sealants: Sealing joints between siding and adjacent construction and fixtures.
- D. Section 09 91 13 - Exterior Painting: Field painting.

1.03 REFERENCE STANDARDS

- A. ASTM C1186 - Standard Specification for Flat Fiber-Cement Sheets 2008 (Reapproved 2016).

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Manufacturer's requirements for related materials to be installed by others.
 - 2. Preparation instructions and recommendations.
 - 3. Storage and handling requirements and recommendations.
 - 4. Installation methods, including nail patterns.
- C. Warranty: Submit copy of manufacturer's warranty, made out in Owner's name, showing that it has been registered with manufacturer.

1.05 QUALITY ASSURANCE

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products under waterproof cover and elevated above grade, on a flat surface.

PART 2 PRODUCTS

2.01 SIDING

- A. Vertical Panel Siding & Vertical Battens: Vertically oriented panels made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186 Type A Grade II; with machined edges, for nail attachment and applied battens at 24 inches on center.
 - 1. Texture: Simulated cedar grain.
 - 2. Length (Height): 96 inches, nominal.
 - 3. Width: 48 inches.
 - 4. Thickness: 5/16 inch, nominal.
 - 5. Finish: Factory applied topcoat.
 - 6. Color: Basis of Design: James Hardie: Mountain Sage (Color FC1).

7. Warranty: 50 year limited; transferable.
 8. Panel Siding Manufacturers:
 - a. CertainTeed Corporation : www.certainteed.com.
 - b. James Hardie Building Products, Inc: www.jameshardie.com/#sle.
 - c. Nichiha USA, Inc: www.nichiha.com/#sle.
 - d. Substitutions: Not permitted.
- B. Soffit Panels: Perforated & solid panels made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186 Type A Grade II; with machined edges, for nail attachment.
1. Texture: Simulated cedar grain.
 2. Length: 96 inches, nominal.
 3. Width: 24 inches per vented or solid section x soffit width.
 4. Thickness: 5/16 inch, nominal.
 5. Finish: Factory applied topcoat.
 6. Color: Basis of Design: James Hardie; Timber Bark (Color FC2)
 7. Manufacturer: Same as siding.
 8. Venting: Factory drilled holes.

2.02 ACCESSORIES

- A. Casings, battens, jamb extensions and trim: 3/4 board - textured finish. Color: Basis of Design: James Hardie, Color: Timber Bark. (Color FC2).
- B. Fasteners: Galvanized or corrosion resistant; length as required to penetrate minimum 1-1/4 inch.
- C. Fiber Cement Siding & Trim Metal Flashing: Prefinished Aluminum coil stock; fabricated to profiles indicated on the drawings.
 1. Manufacturer: Quality Edge Building Products; www.qualityedge.com.
 2. Product: NoMar Q800 TuffTech Finish.
 3. Color: As selected from Manufacturer's complete color line.
 4. Substitutions: Not permitted.
- D. Joint Sealants: As specified in Section 07 92 00.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrate and clean and repair existing plywoodsheathing as required to eliminate conditions that would be detrimental to proper installation.
- B. Verify that weather barrier has been installed over substrate completely and correctly.
- C. Do not begin until unacceptable conditions have been corrected.
- D. If substrate preparation is the responsibility of another installer, notify Architect/Engineer of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Install sheet metal flashing:
 1. Above door and window trim and casings.
 2. Above horizontal trim in field of siding.

3. Above siding to masonry watercourse sill transitions
4. At other locations as indicated on the drawings.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions and recommendations.
 1. Read warranty and comply with all terms necessary to maintain warranty coverage.
 2. Install in accordance with conditions stated in model code evaluation report applicable to location of project.
 3. Use standard trim installation details or custom trim details as indicated on drawings.
 4. Touch up all field cut edges before installing.
 5. Pre-drill nail holes if necessary to prevent breakage.
- B. Over Wood and Wood-Composite Sheathing: Fasten siding through sheathing into studs.
- C. Allow space for thermal movement between both ends of siding panels that butt against trim; seal joint between panel and trim with specified sealant.
- D. Joints in Vertical Siding: Install pre-finished Z-flashing in horizontal joints between successive courses of vertical siding.
- E. Do not install siding less than 6 inches from surface of ground nor closer than 1 inch to roofs, patios, porches, and other surfaces where water may collect.
- F. Exterior Soffit Vents: Install according to manufacturer's written instructions and in locations indicated on drawings. Provide vent area continuous.
- G. After installation, seal all joints except lap joints of lap siding. Seal around all penetrations. Paint all exposed cut edges.
- H. Finish Painting: Specified in Section 09 91 13.

3.04 PROTECTION

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

END OF SECTION

**SECTION 07 53 00
ELASTOMERIC MEMBRANE ROOFING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Elastomeric roofing membrane, adhered conventional application.
- B. Insulation, flat and tapered.
- C. Vapor retarder.
- D. Flashings.
- E. Roofing cant strips and stack boots.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Wood nailers, curbs and sheathing.
- B. Section 06 10 00 - Rough Carpentry: Wood cant strips.
- C. Section 07 62 00 - Sheet Metal Flashing and Trim: Flashings and counterflashings.

1.03 REFERENCE STANDARDS

- A. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing 2017.
- B. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-- Tension 2016 (Reapproved 2021).
- C. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers 2000 (Reapproved 2020).
- D. ASTM D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact 2020.
- E. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials 2021.
- F. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces 2011 (Reapproved 2019).
- G. FM (AG) - FM Approval Guide current edition.
- H. FM DS 1-28 - Wind Design 2016.
- I. NRCA (WM) - The NRCA Waterproofing Manual 2005.
- J. FM DS 1-29 - Property Loss Prevention Data Sheet - Roof Deck Securement and Above-Deck Roof Components, February 2007 edition.
- K. UL (DIR) - Online Certifications Directory Current Edition.
- L. UL (FRD) - Fire Resistance Directory Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with installation of associated counterflashings installed under other sections.
- B. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all affected installers; review preparation and installation procedures and coordination and scheduling necessary for related work.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating membrane materials, flashing materials, insulation, vapor retarder, and fasteners.
- C. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, setting plan for tapered insulation, mechanical fastener layout, and paver layout.
- D. Calculations: Demonstrating compliance with specified area-weighted overall R-Value for insulation setting plan.
- E. Manufacturer's Installation Instructions: Indicate membrane seaming precautions, special procedures, and perimeter conditions requiring special attention.
- F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- G. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, wind velocity during application, and supplementary instructions given.
- H. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

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

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact.
- B. Store products in weather protected environment, clear of ground and moisture.
- C. Protect foam insulation from direct exposure to sunlight.

1.08 FIELD CONDITIONS

- A. Do not apply roofing membrane during unsuitable weather.
- B. Do not apply roofing membrane when ambient temperature is below 40 degrees F or above 95 degrees F.

- C. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

1.09 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a two year period after Date of Substantial Completion.
- C. Provide manufacturer's extended fifteen (15) year "total roof system" material and labor warranty to cover failure to prevent penetration of water. Include entire roof system, from top of roof decking to top of roofing membrane, including associated metal flashings and counterflashings.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. EPDM Membrane Materials:
 - 1. Carlisle Roofing Systems, Inc; Sure-Seal EPDM: www.carlisle-syntec.com.
 - 2. Firestone Building Products, LLC; Black EPDM: www.firestonebpco.com.
 - 3. Versico, a division of Carlisle Construction Materials Inc; VersiGard EPDM: www.versico.com/sle.
 - 4. Substitutions: Not permitted.
- B. Insulation:
 - 1. Same manufacturer as Membrane Materials for inclusion in total system warranty.
- C. Elastomeric Membrane Roofing: One ply membrane, fully adhered, over vapor retarder and insulation.
- D. Roofing Assembly Requirements:
 - 1. Roof Covering External Fire Resistance Classification: UL (DIR) certified Class A.
 - 2. Factory Mutual Classification: Class 1 and windstorm resistance of 1-90, in accordance with FM DS 1-28.
 - 3. Securement of Roofing Components: As prescribed in FM DS 1-29.
 - 4. Insulation Thermal Value (R), nominal: R-30 Min.; provide total insulation thickness to achieve the specified R-Value as an area-weighted average across the entire roof surface, considering the areas of tapered insulation.
- E. Acceptable Insulation Types- Constant Thickness Application:
 - 1. Minimum 2 layers of polyisocyanurate board.
- F. Acceptable Insulation Types- Tapered Application:
 - 1. Tapered polyisocyanurate board.

2.02 ROOFING MEMBRANE AND ASSOCIATED MATERIALS

- A. Membrane: Ethylene-propylene-diene-terpolymer (EPDM); non-reinforced; complying with minimum properties of ASTM D4637/D4637M.
 - 1. Thickness: 0.060 inch (60 mil).

2. Sheet Width: 200 inch, minimum; factory-fabricate into largest sheets possible.
 3. Color: Black.
 4. Tensile Strength: 1,300 psi, measured in accordance with ASTM D412.
 5. Ultimate Elongation: 300 percent, measured in accordance with ASTM D412.
 6. Hardness: 65 +/-10, measured in accordance with ASTM D2240, using Type A durometer.
 7. Tear Strength: 150 lbf/inch, measured in accordance with ASTM D624.
 8. Water Vapor Permeability: 2.0 perm inch, measured in accordance with ASTM E96/E96M.
 9. Brittleness Temperature: -49 degrees F, measured in accordance with ASTM D746.
- B. Seaming Materials: As recommended by membrane manufacturer.
- C. Vapor Retarder: 40 mil composite complying with requirements of fire rating classification; compatible with roofing and insulation materials.
1. Self-adhesive type.
 2. Vapor permeability: Not more than 0.015 perms, measured in accordance with ASTM D1970.
 3. Products:
 - a. VapAir Seal 725TR manufactured by Carlisle.
 - b. V-Force Vapor Barrier Membrane manufactured by Firestone.
- D. Flexible Flashing Material: Same material as membrane.

2.03 INSULATION

- A. Polyisocyanurate Board Insulation: Rigid cellular foam, complying with ASTM C1289, Type II, Class 1, cellulose felt or glass fiber mat both faces; Grade 2 and with the following characteristics:
1. Compressive Strength: 20 psi
 2. Board Size: 48 by 96 inches (fully adhered application).
 3. Board Thickness: Base Insulation: (2) Layers; 2.5" thick over 3 inches thick layer; Total 5.5 inches thick. (Tapered boards are in addition to the base insulation thickness).
 4. Maximum Board Thickness: 3 inches per layer.
 5. Tapered Board: Slope as indicated; minimum thickness 1/2 inch; fabricate of fewest layers possible.
 6. Long-Term Thermal Resistance: R-value of 5.7 (min.) per inch thickness.
 7. Board Edges: Square.

2.04 ACCESSORIES

- A. Roofing Expansion Joint Flashing: Same material as membrane.
- B. Stack Boots: Prefabricated flexible boot and collar for pipe stacks through membrane; same material as membrane.
- C. Insulation Adhesive: (Wood deck application): Low-rise polyurethane foam type; approved by insulation manufacturer.
- D. Membrane Adhesive: As recommended by membrane manufacturer.
- E. Surface Conditioner for Adhesives: Compatible with membrane and adhesives.
- F. Thinners and Cleaners: As recommended by adhesive manufacturer, compatible with membrane.
- G. Insulation Adhesive: As recommended by insulation manufacturer.
- H. Sealants: As recommended by membrane manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is supported and secure.
- C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
- D. Verify deck surfaces are dry and free of snow or ice.
- E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.

3.02 WOOD DECK PREPARATION

- A. Verify flatness and tightness of joints of wood decking. Fill knot holes with latex filler.
- B. Confirm dry deck by moisture meter with 12 percent moisture maximum.

3.03 VAPOR RETARDER AND INSULATION - UNDER MEMBRANE

- A. Apply vapor retarder to deck surface with adhesive in accordance with manufacturer's instructions.
 - 1. Extend vapor retarder under perimeter blocking, past deck edge, up backside face of parapets and under new parapet top blocking.
 - 2. Extend vapor retarder up outside faces of roof curbs to level of top of new insulation and seal top edge of vapor retarder to faces of roof curbs.
 - 3. Seal vapor retarder to roof drain bodies and other roof deck penetrations.
- B. Attachment of Insulation:
 - 1. Embed first layer of insulation in full bed of adhesive in accordance with roofing and insulation manufacturers' instructions.
 - 2. Adhesive fasten each subsequent layer of insulation to deck in accordance with roofing manufacturer's instructions and FM (AG) Factory Mutual requirements.
- C. Lay subsequent layers of insulation with joints staggered minimum 6 inch from joints of preceding layer.
- D. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.
- E. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- F. Tape joints of insulation in accordance with roofing and insulation manufacturers' instructions.
- G. Do not apply more insulation than can be covered with membrane in same day.

3.04 MEMBRANE APPLICATION

- A. Apply elastomeric membrane roofing system in accordance with manufacturer's recommendations and NRCA (WM) applicable requirements.
- B. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.

- C. Shingle joints on sloped substrate in direction of drainage.
- D. Fully Adhered Application: Apply adhesive to substrate. Fully embed membrane in adhesive except in areas directly over or within 3 inches of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.
- E. Overlap edges and ends and seal seams by contact adhesive, minimum 3 inches. Seal permanently waterproof. Apply uniform bead of sealant to joint edge.
- F. At intersections with vertical surfaces:
 - 1. Secure flexible flashing attachment strip to nailing strips at 4 inches on center.
 - 2. Extend membrane over flexible flashing and nailing strips and up a minimum of 12 inches onto vertical surfaces. Continue membrane past tops of parapets and lip membrane over tops of parapets so that membrane extends a minimum of 1 inch down past bottom of roof blocking on exterior faces of parapets.
 - 3. Fully adhere membrane to flexible flashing nailing strips.
 - 4. Install in accordance with NRCA Detail Plate TS-1.
- G. At gravel stops and roof edge flashings, extend membrane under gravel stop and onto the outside face of the wall, then strip in gravel stop or roof edge flashing with flexible flashing.
 - 1. Install in accordance with NRCA Detail Plate TS-3 or TS-3A.
- H. Coordinate installation of associated counterflashings installed under other sections.

3.05 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for field quality control and inspection.
- B. Require site attendance of roofing material manufacturer at mobilization and upon completion of the Work.

3.06 CLEANING

- A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.
- B. Remove bituminous markings from finished surfaces.
- C. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.
- D. Repair or replace defaced or damaged finishes caused by work of this section.

3.07 PROTECTION

- A. Protect installed roofing and flashings from construction operations.
- B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION

SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fabricated sheet metal items, including flashings, counterflashings, exterior penetrations, and other items indicated in Schedule.
- B. Sealants for joints within sheet metal fabrications.
- C. Precast concrete splash pads.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Wood nailers for sheet metal work.
- B. Section 07 31 13 - Asphalt Shingles: Metal flashings associated with shingle roofing.
- C. Section 07 71 23 - Manufactured Gutters and Downspouts.
- D. Section 07 92 00 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.

1.03 REFERENCE STANDARDS

- A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2020.
- B. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2014.
- C. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric) 2014.
- D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.
- E. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free 2007 (Reapproved 2018).
- F. CDA A4050 - Copper in Architecture - Handbook current edition.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- C. Manufacturer's standard limited warranty on painted finishes.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- B. Prevent contact with materials that could cause discoloration or staining.

1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a two year period after Date of Substantial Completion.
- C. Provide manufacturer's standard twenty (20) year limited finish warranty against cracking, crazing, chipping, peeling, excessive chalking and excessive fading/color change.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Sheet Metal Flashing and Trim Manufacturers:
 - 1. ATAS International, Inc.; www.atas.com.
 - 2. Petersen Aluminum Corporation: www.pac-clad.com.
 - 3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 SHEET MATERIALS

- A. Pre-Finished Aluminum: ASTM B209 (ASTM B209M); 20 gage, (0.032 inch) thick unless scheduled otherwise; plain finish shop pre-coated with PVDF coating.
 - 1. Color: As selected by Architect/Engineer from manufacturer's full colors.

2.03 FABRICATION

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Fabricate cleats of same material as sheet, minimum 3 inches wide, interlocking with sheet.
- C. Form pieces in longest possible lengths.
- D. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- E. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- F. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.
- G. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.
- H. Fabricate flashings to allow toe to extend 2 inches over roofing gravel. Return and brake edges.

2.04 ACCESSORIES

- A. Fasteners: Galvanized steel, with soft neoprene washers.
- B. Primer: Zinc chromate type.
- C. Protective Backing Paint: Zinc molybdate alkyd.

- D. Concealed Sealants: Non-curing butyl sealant.
- E. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.
- F. Plastic Cement: ASTM D4586/D4586M, Type I.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

- A. Install starter and edge strips, and cleats before starting installation.
- B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

3.03 INSTALLATION

- A. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted..
- B. Apply plastic cement compound between metal flashings and felt flashings.
- C. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- D. Seal metal joints watertight.

3.04 SCHEDULE

- A. Fascia and Cornices:
 - 1. Material: Pre-Finished Aluminum.
 - 2. Thickness: 0.032 inch.
 - 3. Finish: PVDF coating.
- B. Coping, Cap, Parapet, Sill and Ledge Flashings:
 - 1. Material: Pre-Finished Aluminum.
 - 2. Thickness: 0.040 inch.
 - 3. Finish: PVDF coating.
- C. Counterflashings at Roofing Terminations (over roofing base flashings):
 - 1. Material: Pre-Finished Aluminum.
 - 2. Thickness: 0.040 inch.
 - 3. Finish: PVDF coating.
 - 4. Provide unitized inside and outside corners.
- D. Cleats: Continuous; provide 6" o.c. fasteners of type appropriate for substrates:

END OF SECTION

**SECTION 07 71 23
MANUFACTURED GUTTERS AND DOWNSPOUTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pre-finished aluminum gutters and downspouts.
- B. PVC splash pads.
- C. Gutter guards.

1.02 RELATED REQUIREMENTS

- A. Section 07 31 13 - Asphalt Shingles
- B. Section 07 62 00 - Sheet Metal Flashing and Trim.

1.03 REFERENCE STANDARDS

- A. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2014.
- B. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric) 2014.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Comply with applicable code for size and method of rain water discharge.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on prefabricated components.
- C. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.
- D. Samples: Submit two samples, 12 inch long illustrating component design, finish, color, and configuration.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Stack material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope to drain.
- B. Prevent contact with materials that could cause discoloration, staining, or damage.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Gutters and Downspouts:
 - 1. Quality Edge; www.qualityedge.com.
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 MATERIALS

- A. Pre-Finished Aluminum Sheet: ASTM B209 (ASTM B209M); 0.032 inch thick for extruded, seamless Ogee profile gutters and 0.024 inch thick for ribbed downspouts.
 - 1. Finish: Plain, shop pre-coated with PVDF (polyvinylidene fluoride) coating.
 - 2. Color: As selected from manufacturer's standard colors.

2.03 COMPONENTS

- A. Gutters: Profile as indicated. Style K - OGEE; size 6 inch.
- B. Downspouts: Ribbed Rectangular profile. Size 3 inches x 4 inches.
- C. Anchors and Supports: Profiled to suit gutters and downspouts.
 - 1. Anchoring Devices: In accordance with SMACNA requirements.
 - 2. Gutter Supports: Concealed Brackets.
 - 3. Downspout Supports: Concealed Brackets.
- D. Fasteners: Galvanized steel , with soft neoprene washers.

2.04 ACCESSORIES

- A. Gutter Guards:
 - 1. Manufacturer: LeafFilter, Inc.; www.leafilter.com.
 - a. Product: uPvc Frame with stainless steel micromesh suitable for asphalt shingle roofs.
 - 2. Substitutions: Not permitted.
 - 3. Color: As selected from manufacturers complete color range to match selected gutter color.
- B. Splash Pads: Polyvinyl Chloride (PVC); size; 24 inch, Black color with landscape spike.
 - 1. Manufacturer: Amerimax Home Products (Home Depot) or approved equal.
 - 2. Locations: Provide at all downspout discharge points.

2.05 FABRICATION

- A. Form gutters and downspouts of profiles and size indicated.
- B. Fabricate with required connection pieces.
- C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.
- D. Hem exposed edges of metal.
- E. Fabricate gutter and downspout accessories; seal watertight.

2.06 FINISHES

- A. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system; color as indicated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.

B. Verify that surfaces are ready to receive work.

3.02 PREPARATION

A. Paint concealed metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to a minimum dry film thickness of 15 mil.

3.03 INSTALLATION

A. Install gutters, downspouts, and leaf filter accessories in accordance with manufacturer's instructions.

B. Sheet Metal: Join lengths with formed seams sealed watertight. Flash and seal gutters to downspouts and accessories.

C. Slope gutters 1/16 inch per foot 0.5 percent minimum.

D. Set splash pads under all downspout discharge points. Secure in place with spike .

END OF SECTION

SECTION 07 84 00 FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Firestopping systems.
- B. Firestopping of joints and penetrations in fire-resistance-rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.
- C. Smoke-stopping of all penetrations of and joints in horizontal and vertical assemblies designed to resist the passage of smoke and hot gasses, whether indicated on drawings or not, and other openings indicated.

1.02 REFERENCE STANDARDS

- A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials 2020.
- B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems 2013a (Reapproved 2017).
- C. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi 2015, with Editorial Revision (2021).
- D. ITS (DIR) - Directory of Listed Products current edition.
- E. FM 4991 - Firestop Contractors 2013.
- F. FM (AG) - FM Approval Guide current edition.
- G. SCAQMD 1168 - Adhesive and Sealant Applications 1989 (Amended 2017).
- H. UL 1479 - Standard for Fire Tests of Penetration Firestops Current Edition, Including All Revisions.
- I. UL (FRD) - Fire Resistance Directory Current Edition.

1.03 DEFINITIONS

- A. Assembly: Particular arrangement of materials specific to given type of construction described or detailed in referenced documents.
- B. Barriers: Time rated fire walls, smoke barrier walls, time rated ceiling/floor assemblies and structural floors.
- C. Firestopping: Methods and materials applied as a system around penetrations and in unprotected openings to limit spread of heat, fire gasses and smoke.
- D. Penetration: Opening or foreign material passing through or into barrier or structural floor such that full thickness of rated materials is not obtained.
- E. Joint: Interruption to a fire-rated assembly occurring at interface between 1) adjacent sections of wall, 2) intersecting walls, 3) top of wall and ceiling, structural floor or roof deck, 4) wall and edge of structural floor, 5) adjacent sections of structural floor.

- F. System: Specific products and applications, classified and numbered by Underwriters Laboratories, Inc. to close specific barrier penetrations and joints.
- G. Sleeve: Metal fabrication or pipe section extending through thickness of barrier and used to permanently guard penetration. Sleeves are described as part of penetrating system in other sections and may or may not be required.

1.04 SYSTEM DESCRIPTION

- A. Design Requirements:
 - 1. Fire-rated construction: Maintain barrier and structural floor fire resistance ratings including resistance to cold smoke at all penetrations, connections with other surfaces or types of construction, at separations required to permit building movement and sound or vibration absorption, and at other construction gaps.
 - 2. Smoke barrier construction: Maintain barrier and structural floor resistance to cold smoke at all penetrations, connections with other surfaces and types of construction and at all separations required to permit building movement and sound or vibration absorption, and at other construction gaps.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.
 - 1. Provide manufacturer's qualified engineering judgements for non-standard applications.
- C. Product Data: Provide data on product characteristics, performance ratings, and limitations.
- D. Sustainable Design Submittal: Submit VOC content documentation for nonpreformed materials.
- E. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- G. Manufacturer's qualification statement.
- H. Installer's qualification statement.

1.06 QUALITY ASSURANCE

- A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
 - 1. Listing in UL (FRD), 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. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section and:

1. Approved by Factory Mutual Research Corporation under FM 4991, or meeting any two of the following requirements:
2. Verification of minimum three years documented experience installing work of this type.
3. Verification of at least five satisfactorily completed projects of comparable size and type.
4. Licensed by local authorities having jurisdiction (AHJ).

1.07 MOCK-UP

- A. Install one firestopping assembly representative of each fire rating design required on project.
 1. Where one design may be used for different penetrating items or in different wall constructions, install one assembly for each different combination.
 2. Where firestopping is intended to fill a linear opening, install minimum of 1 linear ft.
- B. Obtain approval of authorities having jurisdiction (AHJ) before proceeding.
- C. If accepted, mock-up will represent minimum standard for this work.
- D. If accepted, mock-up may remain as part of this work. Remove and replace mock-ups not accepted.

1.08 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in original, unopened packaging with legible manufacturer's identification.
- B. Coordinate delivery with scheduled installation date to minimize storage time at site.
- C. Store materials in a clean, dry, ventilated location. Protect materials from freezing if required by manufacturer.

1.09 FIELD CONDITIONS

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Firestopping Manufacturers:
 1. 3M Fire Protection Products: www.3m.com/firestop.
 2. A/D Fire Protection Systems Inc: www.adfire.com.
 3. Hilti, Inc: www.us.hilti.com.
 4. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com.

2.02 MATERIALS

- A. Firestopping Materials: Any materials meeting requirements.
- B. Volatile Organic Compound (VOC) Content: Provide products having VOC content lower than that required by SCAQMD 1168.
- C. Mold and Mildew Resistance: Provide firestopping materials with mold and mildew resistance rating of zero(0) in accordance with ASTM G21.

- D. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.
- E. Fire Ratings: Refer to drawings for required systems and ratings.

2.03 FIRESTOPPING SYSTEMS

- A. Firestopping: Any material meeting requirements.
 - 1. Fire Ratings: Use system that is listed by FM (AG), ITS (DIR), or UL (FRD) and tested in accordance with ASTM E814, ASTM E119, or UL 1479 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.
- B. Acceptable Manufacturers: As listed in UL (FRD) for specific UL Design Number.
- C. Fill, Void or Cavity Materials: Conform to UL (FRD) - XHHW.
- D. Firestop Devices: Conform to UL (FRD) - XHJI.
- E. Forming Materials: Conform to UL (FRD) - XHKU.
- F. Mechanical Joint Assemblies: Conform to UL (FRD) - XHLP.
- G. Packing Material: As required by specific UL Design Number for joint system or through-penetration firestop system.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify openings are ready to receive the work of this section.
 - 1. Verify barrier joints and penetrations are properly sized and in suitable condition for application of materials.

3.02 PREPARATION

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

3.03 INSTALLATION

- A. Install materials in manner described in UL (FRD) or 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.

3.04 CLEANING

- A. Clean adjacent surfaces of firestopping materials.

3.05 PROTECTION

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

B. Patch or replace firestopping damaged by work of other sections.

END OF SECTION

SECTION 07 92 00 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 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Additional requirements for sealants and primers.
- B. Section 07 25 00 - Weather Barriers: Sealants required in conjunction with air barriers and vapor retarders.
- C. Section 07 84 00 - Firestopping: Firestopping sealants.

1.03 REFERENCE STANDARDS

- A. ASTM C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants 2018.
- B. ASTM C834 - Standard Specification for Latex Sealants 2017.
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.
- D. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems 2016.
- E. ASTM C1193 - Standard Guide for Use of Joint Sealants 2016.
- F. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants 2018.
- G. ASTM C1311 - Standard Specification for Solvent Release Sealants 2014.
- H. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants 2018.
- I. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints 2019 (Reapproved 2020).
- J. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness 2015 (Reapproved 2021).
- K. SCAQMD 1168 - Adhesive and Sealant Applications 1989 (Amended 2017).
- L. SWRI (VAL) - SWR Institute Validated Products Directory Current Edition.

1.04 SUBMITTALS

- A. See Section 01 30 00 - 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.
 5. Substrates for which use of primer is required.
 6. Substrates for which laboratory adhesion and/or compatibility testing is required.
 7. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
 8. Sample product warranty.
 9. Certification by manufacturer indicating that product complies with specification requirements.
 10. SWRI Validation: Provide currently available sealant product validations as listed by SWRI (VAL) for specified sealants.
- 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/Engineer and submit at least two physical samples for verification of color of each required sealant.
- F. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.
- G. Preinstallation Field Adhesion Test Plan: Submit at least two weeks prior to start of installation.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.
- C. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
1. Adhesion Testing: In accordance with ASTM C794.
 2. Compatibility Testing: In accordance with ASTM C1087.
 3. Allow sufficient time for testing to avoid delaying the work.
 4. Deliver to manufacturer sufficient samples for testing.
 5. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
 6. Testing is not required if sealant manufacturer provides data showing previous testing, not older than 24 months, that shows satisfactory adhesion, lack of staining, and compatibility.
- D. Preinstallation Field Adhesion Test Plan: Include destructive field adhesion testing of one sample of each combination of sealant type and substrate, except interior acrylic latex sealants, and include the following for each tested sample.
1. Identification of testing agency.

2. Preinstallation Field Adhesion Test Log Form: Include the following data fields, with known information filled out.
 - a. Test date.
 - b. Copy of test method documents.
 - c. Age of sealant upon date of testing.
 - d. Test results, modeled after the sample form in the test method document.
 - e. Indicate use of photographic record of test.
- E. Field Adhesion Test Procedures:
 1. Allow sealants to fully cure as recommended by manufacturer before testing.
 2. Have a copy of the test method document available during tests.
 3. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.
 4. When performing destructive tests, also inspect the opened joint for proper installation characteristics recommended by manufacturer, and report any deficiencies.
 5. Deliver the samples removed during destructive tests in separate sealed plastic bags, identified with project, location, test date, and test results, to Owner.
 6. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Architect/Engineer.
- F. Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Destructive Tail Procedure.
 1. Sample: At least 18 inches long.
 2. Minimum Elongation Without Adhesive Failure: Consider the tail at rest, not under any elongation stress; multiply the stated movement capability of the sealant in percent by two; then multiply 1 inch by that percentage; if adhesion failure occurs before the "1 inch mark" is that distance from the substrate, the test has failed.
 3. If either adhesive or cohesive failure occurs prior to minimum elongation, take necessary measures to correct conditions and re-test; record each modification to products or installation procedures.

1.06 WARRANTY

- A. See Section 01 78 00 - 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. Non-Sag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
 1. Dow Corning Corporation: www.dowcorning.com/construction.
 2. Hilti, Inc: www.us.hilti.com.
 3. Master Builders Solutions by BASF: www.master-builders-solutions.basf.us/en-us.
 4. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com.
 5. Pecora Corporation: www.pecora.com.
 6. Sika Corporation: www.usa-sika.com.

7. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com.
 8. W.R. Meadows, Inc: www.wrmeadows.com.
- B. Self-leveling Sealants: Pourable or self-leveling sealant that has sufficient flow to form a smooth, level surface when applied in a horizontal joint.
1. Dayton Superior Corporation: www.daytonsuperior.com.
 2. Dow Corning Corporation: www.dowcorning.com/construction.
 3. Master Builders Solutions by BASF: www.master-builders-solutions.basf.us/en-us.
 4. Pecora Corporation: www.pecora.com.
 5. Sika Corporation: www.usa-sika.com.
 6. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com.
 7. W.R. Meadows, Inc: www.wrmeadows.com.

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 fiber cement siding and trim.
 - d. Joints between different exposed materials.
 - e. Openings below ledge angles in masonry.
 - f. Lap joints in sheet metal flashing.
 - g. Other joints indicated below.
 2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
 - a. Joints between door, window, and other frames and adjacent construction.
 - b. Joints between countertop back and side splashes and adjacent wall construction.
 - c. Joints between window sills and adjacent window and wall construction.
 - d. Joints between plumbing fixtures and adjacent construction.
 - e. Other joints indicated below.
 3. Do not seal the following types of joints.
 - a. Intentional weep holes in masonry.
 - b. Weep holes in curtain wall, storefront and window systems.
 - c. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
 - d. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
 - e. Joints where installation of sealant is specified in another section.
 - f. Joints between suspended panel ceilings/grid and walls.
- B. Exterior Joints: Use non-sag non-staining silicone sealant, unless otherwise indicated.
1. Lap Joints in Sheet Metal Fabrications: Butyl rubber, non-curing.
 2. Lap Joints between Manufactured Metal Panels: Butyl rubber, non-curing.
 3. Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane "traffic-grade" sealant.
 4. Fiber cement siding and trim: Use color matched, non-staining silicone sealant.
- C. Interior Joints: Use non-sag acrylic-urethane sealant, unless otherwise indicated.

1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant.
 2. Wall and Ceiling Joints in Wet Areas: Non-sag polyurethane sealant for continuous liquid immersion.
 3. Floor Joints in Wet Areas: Non-sag polyurethane "non-traffic-grade" sealant suitable for continuous liquid immersion.
 4. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; clear.
 5. Narrow Control Joints in Interior Concrete Slabs: Self-leveling epoxy sealant.
 6. Other Floor Joints: Self-leveling polyurethane "traffic-grade" sealant.
- D. Interior Wet Areas: Bathrooms, restrooms, and kitchens; fixtures in wet areas include plumbing fixtures and countertops. Clear Silicone sealant.

2.03 JOINT SEALANTS - GENERAL

- A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

2.04 NONSAG JOINT SEALANTS

1. Color: To be selected by Architect/Engineer from manufacturer's standard range.
 2. Cure Type: Single-component, neutral moisture curing.
 3. Manufacturers:
 - a. Dow Chemical Company; DOWSIL 790 Silicone Building Sealant: consumer.dow.com/en-us/industry/ind-building-construction.html.
 - b. Sika Corporation; Sikasil WS-290: www.usa-sika.com.
 - c. Sika Corporation; Sikasil 728NS: www.usa-sika.com.
 - d. Tremco Commercial Sealants & Waterproofing; Spectrem 1: www.tremcosealants.com.
 - e. Tremco Commercial Sealants & Waterproofing; Tremsil 200: www.tremcosealants.com.
 - f. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
1. Color: As selected by Architect to color match to adjacent surface..
- C. Polyurethane Sealant for Continuous Water Immersion: ASTM C920, Grade NS, Uses M and A; single or multi-component; explicitly approved by manufacturer for continuous water immersion; suitable for traffic exposure when recessed below traffic surface.
1. Movement Capability: Plus and minus 50 percent, minimum.
 2. Manufacturers:
 - a. Sika Corporation; Sikaflex-2c NS: www.usa-sika.com.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Acrylic-Urethane Sealant: ASTM C920, Grade NS, Uses M and A; single component; paintable; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 35 percent, minimum.
 2. Color: White.
 3. Manufacturers:
 - a. Sherwin-Williams Company; Shermax Urethanized Elastomeric Sealant: www.sherwin-williams.com.
 - b. Top Gun, a brand of PPG Architectural Coatings; Top Gun 400: www.ppgpaints.com.

- c. Substitutions: See Section 01 60 00 - Product Requirements.
- E. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
 - 1. Color: To be selected by Architect/Engineer from manufacturer's standard range.
 - 2. Manufacturers:
 - a. Pecora Corporation; AC-20 +Silicone: www.pecora.com/#sle.
- F. Non-Curing Butyl Sealant: Solvent-based, single component, non-sag, non-skinning, non-hardening, non-bleeding; non-vapor-permeable; intended for fully concealed applications.

2.05 SELF-LEVELING SEALANTS

- 1. Color: Gray.
- 2. Manufacturers:
 - a. Sherwin-Williams Company; Stampede 2SL Polyurethane Sealant: www.sherwin-williams.com.
 - b. Sika Corporation; Sikaflex-2c SL: www.usa-sika.com.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.
- 3. Manufacturers:
 - a. Sika Corporation; Sikaflex-2c SL: www.usa-sika.com.
 - b. W. R. MEADOWS, Inc; POURTHANE SL: www.wrmeadows.com.
 - c. Substitutions: See Section 01 60 00 - 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 O - Open Cell Polyurethane.
 - 2. Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type B - Bi-Cellular Polyethylene.
 - 3. Open Cell: 40 to 50 percent larger in diameter than joint width.
 - 4. 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.
- D. Preinstallation Adhesion Testing: Install a sample for each test location indicated in the test plan.
 - 1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
 - 2. Notify Architect/Engineer of date and time that tests will be performed, at least seven days in advance.
 - 3. Record each test on Preinstallation Adhesion Test Log as indicated.
 - 4. If any sample fails, review products and installation procedures, consult manufacturer, or take whatever other measures are necessary to ensure adhesion; re-test in a different location; if unable to obtain satisfactory adhesion, report to Architect/Engineer.
 - 5. After completion of tests, remove remaining sample material and prepare joint for new sealant installation.

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.
- E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in inconspicuous area to verify that it does not stain or discolor slab.

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 the following:
 - 1. Width/depth ratio of 2:1.
 - 2. Neck dimension no greater than 1/3 of the joint width.
 - 3. Surface bond area on each side not less than 75 percent of joint width.
- 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.

3.04 POST-OCCUPANCY

- A. Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width; i.e. at low temperature in thermal cycle. Report failures immediately and repair.

END OF SECTION

**SECTION 08 14 33
STILE AND RAIL WOOD DOORS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wood doors, stile and rail design; non-fire rated.
- B. Panels of wood and glass.

1.02 RELATED REQUIREMENTS

- A. Section 06 20 00 - Finish Carpentry: Wood door frames.
- B. Section 08 71 00 - Door Hardware.
- C. Section 08 80 00 - Glazing.

1.03 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials Current Edition.
- B. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass 2018.
- C. ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights 2019c.
- D. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).
- E. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards 2021, with Errata.
- F. ICC (IBC) - International Building Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 1784 - Standard for Air Leakage Tests of Door Assemblies Current Edition, Including All Revisions.
- H. WDMA I.S. 6A - Interior Architectural Wood Stile and Rail Doors 2013.
- I. WI (CCP) - Certified Compliance Program (CCP) Current Edition.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Indicate stile and rail core materials and construction; veneer species, type and characteristics.
- C. Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, and factory machining criteria.
- D. Samples: Submit two samples of door construction, 8 by 10 inches in size cut from top corner of door.
- E. Samples: Submit two samples of door veneer, 8 by 10 inches in size illustrating wood grain, stain color, and sheen.

- F. Certificate: Submit labels and certificates required by quality assurance and quality control programs.
- G. Manufacturer's Installation Instructions: Indicate special installation instructions.
- H. Manufacturer's qualification statement.
- I. Installer's qualification statement.
- J. Warranty, executed in Owner's name.

1.05 QUALITY ASSURANCE

- A. Maintain one copy of specified door quality standard on site for review during installation and finishing.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section, with not less than three years of documented experience.
 - 1. Accredited participant in specified certification program prior to commencement of fabrication and throughout duration of project.
- C. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience.
- D. Quality Certification:
 - 1. Provide labels or certificates indicating that installed work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
 - 2. Provide designated labels on shop drawings as required by certification program.
 - 3. Provide designated labels on installed products as required by certification program.
 - 4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

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

1.07 WARRANTY

- A. See Section 01 78 00 - 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. Stile and Rail (8 Panel) Wood Doors:

1. Karona, Inc: www.karonadoor.com.
2. Masonite Architectural; Aspiro Authentic Stile & Rail Doors:
www.architectural.masonite.com/#sle.
3. VT Industries, Inc: www.vtindustries.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 DOORS

- A. Quality Standard: Premium Grade, Heavy Duty performance, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless otherwise indicated.
- B. Exterior Doors: 1-3/4 inches thick unless otherwise indicated; solid lumber construction; mortise and tenon joints; water repellent treated. Transparent finish to match existing.
- C. Interior Doors: 1-3/4 inches thick unless otherwise indicated; solid lumber construction; mortise and tenon joints. Transparent finish to match existing.
- D. Design Style/Pattern: as indicated on the drawings.

2.03 DOOR AND PANEL FACINGS

- A. Exterior Doors: Wood veneer, Walnut species, plain sliced, with book matched grain, for transparent finish.
- B. Interior Doors: Wood veneer, Clear Pine species, plain sliced, with book matched grain, for transparent finish.
- C. Adhesive: Type I - Waterproof.

2.04 DOOR CONSTRUCTION

- A. Vertical Exposed Edge of Stiles: Of same species as veneer facing.
- B. Fit door edge trim to edge of stiles after applying veneer facing.
- C. Bond edge banding to cores.
- D. Panels: Raised, solid wood.
- E. At exterior doors, provide aluminum flashing at the top and bottom rail for full thickness and width of door.
- F. Factory machine doors for finish hardware in accordance with hardware requirements and dimensions. Do not machine for surface hardware.
- G. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
 1. Exception: Doors to be field finished.
- H. Glazed Openings: Wood stops; sizes and configurations to match existing profiles.
- I. Factory install glazing in doors in compliance with quality standards specified, using manufacturer's standard elastomeric glazing sealant.

2.05 FINISHES

- 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 - 2, Lacquer, Precatalyzed.
 - b. Stain: As selected by Architect/Engineer to match existing.
 - c. Sheen: Semi-Gloss to match existing.
- B. Factory finish doors in accordance with approved sample.
- C. Seal door top edge with color sealer to match door facing.

2.06 ACCESSORIES

- A. Wood Door Frames: See Section 06 20 00.
- B. Glazed Openings:
 - 1. Heat-Strengthened and Fully Tempered Glass: ASTM C1048. (Type FG1 - Interior Openings as Scheduled).
 - 2. Glazing: Sealed insulated glazing units with 3/4 inch overall thickness, and consisting of two 1/4 inch thick panes of glass (Type SG1 - Exterior Openings as Scheduled).
 - 3. Tint: Clear.
- C. Panel or Glass Retention Molding: Wood of same species as door facing, molded stop applied one-side, with mitered corners; prepared for countersink style nails.
- D. Door Hardware: See Section 08 71 00.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Do not install doors in frame openings that are not plumb or are out of tolerance for size or alignment.

3.02 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions and specified quality standards.
 - 1. Install exterior doors in accordance with ASTM E2112.
- B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.
- C. Field-Finished Doors: Trimming to fit is acceptable.
- D. Adjust width of non-rated doors by cutting equally on both jamb edges.
- E. Trim door height by cutting bottom edges to a maximum of 3/4 inch.
- F. Machine cut for hardware.
- G. Coordinate installation of doors with installation of frames and hardware.

H. Coordinate installation of glazing.

3.03 TOLERANCES

A. Comply with specified quality standard for fit, clearance, and joinery tolerances.

B. Maximum Width Distortion (Cup): 1/8 inch measured with straight edge or taut string, edge to edge, over an imaginary 36 by 84 inch surface area.

3.04 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

3.05 SCHEDULE - See Drawings

END OF SECTION

**SECTION 08 52 00
CLAD WOOD WINDOWS & DOORS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Factory fabricated metal clad wood windows.
- B. Factory fabricated metal clad wood commercial entry door assemblies, including frames and hardware.
- C. Glazing.
- D. Operating hardware.
- E. Insect screens.
- F. Wood trim for interior finishing.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Rough opening blocking.
- B. Section 06 20 00 - Finish Carpentry: Interior jamb extensions and casings.
- C. Section 07 25 00 - Weather Barriers: Sealing frames to water-resistive barrier installed on adjacent construction.
- D. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.
- E. Section 08 71 00 - Door Hardware: Levers, exit devices, protection plates and push/pulls.
- F. Section 09 91 23 - Interior Painting: Site finishing wood surfaces.
- G. Section 09 93 00 - Staining and Transparent Finishing: Site finishing wood surfaces.

1.03 REFERENCE STANDARDS

- A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights 2017.
- B. AAMA 502 - Voluntary Specification for Field Testing of Newly Installed Fenestration Products 2021.
- C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures Most Recent Edition Cited by Referring Code or Reference Standard.
- D. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference 2015.
- E. ASTM E1332 - Standard Classification for Rating Outdoor-Indoor Sound Attenuation 2016.
- F. ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights 2019c.
- G. ASTM D 3656 - Standard Specification for Insect Screening and Louver Cloth Woven from Vinyl-Coated Glass Yarns; 2007.

- H. ASTM E 547 - Water Penetration of Exterior Windows, Curtain Walls and Doors by Cyclic Static Air Pressure Differential; 2009.
- I. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).
- J. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards 2021, with Errata.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week before starting work of this section.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Show component dimensions.
- C. Shop Drawings: Indicate opening dimensions.
- D. Manufacturer's Certificate: Certify that products furnished meet or exceed specified requirements.
- E. Grade Substantiation: Prior to submitting shop drawings or starting fabrication, submit one of the following showing compliance with specified grade:
 - 1. Evidence of AAMA Certification; label or other documentation.
 - 2. Evidence of WDMA Certification.
 - 3. Evidence of CSA Certification.
 - 4. Test report(s) by independent testing agency itemizing compliance and acceptable to authorities having jurisdiction.
- F. Manufacturer's qualification statement.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Protect factory finished surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond when exposed to sunlight or weather.

1.08 FIELD CONDITIONS

- A. Do not install sealants when ambient temperature is less than 40 degrees F.
- B. Maintain this minimum temperature during and after installation of sealants.

1.09 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.

- C. Manufacturer Warranty: Provide 5-year manufacturer warranty for insulated glass units against seal failure, interpane dusting or misting, and replacement of same. Complete forms in Owner's name and register with manufacturer.
- D. Manufacturer Warranty: Provide 2-year manufacturer warranty against defects listed. Complete forms in Owner's name and register with manufacturer or warrantor.
 - 1. Degradation of color finish.
 - 2. Delamination or separation of finish cladding from window member.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design:
 - 1. Marvin Windows & Doors; Product Ultimate Collection: Double Hung G2, Ultimate Commercial Swinging Entry Door; Aluminum-Clad Wood Windows & Doors: www.marvin.com.
- B. Aluminum Clad Wood Windows & Doors:
 - 1. Andersen Windows Corp; Product A-Series; Clad Wood Windows; Double Hung & Commercial Swinging Entry Door; Aluminum-Clad Wood Windows and Doors: www.andersenwindows.com.
 - 2. Pella Corp; Product Architect Series; Aluminum Clad Wood Windows & Doors; Double Hung & Commercial Swinging Entry Doors: www.pella.com.
 - 3. Substitutions: Not permitted.

2.02 WINDOWS

- A. General: Wood frames and sashes; factory fabricated and assembled.
 - 1. Exterior Units: Metal clad exterior unfinished for transparent wood interior finish.
 - 2. Interior Units: All wood construction.
- B. Exterior Finish: Metal Cladding; prefinished.
- C. Interior Finish (interior side of exterior units, and both sides of interior units): Unfinished, for transparent finish.
- D. Color: As selected by Architect/Engineer from manufacturer's full range.
- E. Configuration: Double hung.
- F. Glazing: Factory glazed; wet-dry glazing method.
- G. Wood Species: Clear pine, preservative treated using treatment type suitable for required finish.
- H. Frame and Sash Members: Mortise and tenon joints. Glue and steel pin joints to hairline fit, weather tight.
- I. Metal Cladding: Formed aluminum, factory finished, factory fit to profile of wood members.
- J. Muntins: Grilles-between-the-glass (GBG). Configuration as indicated on drawings.
- K. Transparent Finish: Finger joints not permitted in units intended for transparent finish.
- L. Weather Stop Flange: Continuous at perimeter of unit.

- M. Clearances and Shim Spacing: Minimum required for installation and dynamic movement of perimeter seal.
- N. Fasteners: Concealed from view.
- O. Internal Drainage of Glazing Spaces to Exterior: Weep holes.
- P. Insect Screen: Locate on outside of windows.
 - 1. Full window opening height.
- Q. Operable Units: Double weatherstripped.

2.03 MATCHING COMMERCIAL ENTRY DOORS - CLAD

- A. Commercial Entry Doors: See drawings for locations and additional requirements.
 - 1. Quality Standard; Grade: Premium Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
 - 2. Configuration: As indicated on drawings.
 - 3. Door Style: As indicated on drawings.
 - 4. Thickness: 1-3/4 inches, unless otherwise indicated.
 - 5. Frame Depth: 4-9/16 inch, minimum.
 - 6. Interior Wood Finish: Unfinished, for transparent field finish.
 - 7. Exterior Finish: See Drawings for finish type on each door.
 - a. Metal Cladding: Formed aluminum, factory finished, factory fit to profile of wood members.
 - 1) Color: As selected by Architect from manufacturer's standard colors.
 - 8. Door Stops: Clear preservative treated wood, finished to match frame.
 - 9. Door Sill: Extruded 6063-T5 aluminum, 1/2 inch low profile threshold with compressible bulb weatherstripping and attached to frame jambs.
 - a. Color: Mill finish.
 - 10. Hinges: Heavy duty ball bearing type, 4-1/2 inch, with non-removable pin and set screw.
 - a. Finish: Oil rubbed bronze.
 - 11. Other Door Hardware: As specified in Section 08 71 00.

2.04 COMPONENTS

- A. Glazing: Double glazed, clear, Low-E coated, argon filled, with glass thicknesses as recommended by manufacturer for specified wind conditions.
- B. Frames: 1-3/16 inch wide x 3-1/4 inch deep profile or as indicated on the drawings; flush extruded PVC glass stops to match cladding of screw fastened type, sloped for wash.
- C. Window Sash Thickness: 1 5/8 inches.
- D. Jamb Extensions: Wood to match wood window species, factory mounted. Depths as indicated on drawings.
- E. Sills: Extruded aluminum, with 1/8 inch nominal thickness; sloped for positive drainage; fits under sash and projects at least 1/2 inch beyond exterior face of wall; single piece full width of opening.
- F. Insect Screens: Extruded aluminum frame with mitered and reinforced corners; screen mesh taut and secure to frame; secured to window with adjustable supports allowing screen removal without use of tools.

1. Supports: Spring-loaded steel pins; four per screen unit.
 2. Screen Mesh: Vinyl-coated fiberglass, window manufacturer's highest-transparency mesh.
 3. Frame Finish: Baked enamel, color to match window exterior color.
- G. Operable Sash Weatherstripping: Resilient PVC; permanently resilient, profiled to effect weather seal.
- H. Fasteners: Stainless steel.
- I. Sealant and Backing Materials: See Section 07 92 00 of types as indicated.
1. Sealant Used Within System (Not Used for Glazing): Appropriate for application.
- J. Flashing: Provide related flashings, with necessary anchors and attachment devices.
- K. Sealant for Setting Sills, Stools, Aprons, and Sill Flashing: Non-curing butyl type.

2.05 PERFORMANCE REQUIREMENTS

- A. Comply with AAMA/WDMA/CSA 101/I.S.2/A440 requirements for the specific window type in accordance with the following:
1. Performance Class (PC): CW.
 2. Performance Grade (PG): 30, with minimum design pressure (DP) of 30.08 psf.
- B. Overall U-value, Including Glazing: 0.35, maximum, measured on the window size required for this project.
- C. Solar Heat Gain (SHGC): 0.44, measured on the window size required for this project.
- D. Condensation Resistance (CR): 55
- E. Visual Transmittance (VT): 0.50

2.06 HARDWARE

- A. Double Hung Windows:
1. Double Hung Sash: Counterbalances, each sash, each jamb.
 2. Sash lock: Lever handle with cam lock.
 3. Sash Lift: Manufacturer's standard. Provide two (2) per window.
 4. Lock and Sash Lift Finish: Brown finish.
- B. Doors:
1. Hinges: Manufacturer's commercial grade hinges.
 - a. Finish: Oil Rubbed Bronze - Commercial Grade.
 2. Thresholds (exterior units): Extruded aluminum, ADA-compliant.
 - a. Finish: Dark Bronze.
 3. Weatherstripping (exterior units): Manufacturer's standard.
 4. Refer to Section 08 71 00 - Door Hardware for other required hardware components including panic devices, door operators, exterior trim, cylinders and keys.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify wall openings and adjoining water-resistive barrier materials are ready to receive wood windows; see Section 07 25 00.

3.02 INSTALLATION

- A. Install windows in accordance with manufacturer's instructions.
- B. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.
- C. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.
- D. Install sills and jamb extensions & casings in accordance with finish carpentry Section 06 20 00.
- E. Install operating hardware.
- F. Coordinate attachment and seal of perimeter air and vapor barrier materials.
- G. Provide thermal isolation where components penetrate or disrupt building insulation. Inject minimal-expansion foam insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
 - 1. Install minimal-expansion foam insulation in strict accordance with minimal-expansion foam insulation manufacturer's instructions. Only partially fill shim spaces at window perimeter, to allow for expansion of foam without bowing frames.
 - 2. After installation of minimal-expansion foam, and before installation of exterior wall cladding and window trim, verify every window and door unit opens and closes fully, smoothly and correctly without binding or sticking as a result of perimeter foam insulation installation.
 - a. Prior to installation of exterior wall cladding and window trim, remove window and door units that do not operate properly; reinstall and re-insulate units until all operate fully, smoothly and correctly.
- H. Install operating hardware.
- I. Finish interior surfaces with transparent materials as specified in Section 09 91 23.

3.03 TOLERANCES

- A. Maximum Variation from Level or Plumb: 1/16 inch per 3 ft non-cumulative or 1/8 inch per 10 ft, whichever is less.

3.04 ADJUSTING

- A. Adjust hardware for smooth operation and secure weathertight closure.

3.05 CLEANING

- A. Refer to Section 01 74 19 - Construction Waste Management and Disposal for additional requirements.
- B. Remove protective material from factory finished surfaces.
- C. Wash surfaces by method recommended and acceptable to window manufacturer; rinse and wipe surfaces clean.

D. Remove excess glazing sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

END OF SECTION

SECTION 08 71 00 DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Hardware for wood doors.
- B. Lock cylinders for door hardware specified in other sections.
- C. Thresholds.
- D. Weatherstripping, seals and door gaskets.
- E. Key management system and key cabinet.
- F. Fire department lock box.

1.02 RELATED REQUIREMENTS

- A. Section 06 20 00 - Finish Carpentry; Wood Door Frames.
- B. Section 08 52 00 - Clad Wood Windows & Doors: Hinges, thresholds and weatherstripping for factory assembled, clad wood doors.

1.03 REFERENCE STANDARDS

- A. BHMA A156.1 - American National Standard for Butts and Hinges; 2016.
- B. BHMA A156.2 - American National Standard for Bored and Preassembled Locks & Latches; 2017.
- C. BHMA A156.3 - American National Standard for Exit Devices; 2014.
- D. BHMA A156.4 - American National Standard for Door Controls - Closers; 2013.
- E. BHMA A156.5 - American National Standard for Cylinders and Input Devices for Locks; 2014.
- F. BHMA A156.6 - American National Standard for Architectural Door Trim; 2015.
- G. BHMA A156.7 - American National Standard for Template Hinge Dimensions; 2016.
- H. BHMA A156.8 - American National Standard for Door Controls - Overhead Stops and Holders; 2015.
- I. BHMA A156.16 - American National Standard for Auxiliary Hardware; 2018.
- J. BHMA A156.18 - American National Standard for Materials and Finishes; 2016.
- K. BHMA A156.21 - American National Standard for Thresholds; 2014.
- L. BHMA A156.22 - American National Standard for Door Gasketing and Edge Seal Systems Sponsor; 2017.
- M. BHMA A156.115W - American National Standard for Hardware Preparation in Wood Doors with Wood or Steel Frames; 2006.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the manufacture, fabrication, and installation of products that door hardware will be installed upon.
- B. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.
- C. Convey Owner's keying requirements to manufacturers.
- D. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; require attendance by all affected installers.
 - 1. Review with supplier, installers and related trades: Materials, rough-in and installation procedures, sequence of operation for each opening and coordination of related Work.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project. Include catalog cuts, installation details, material descriptions, dimensions of individual components and profiles, and finishes.
- C. Submittal Sequence:
 - 1. Door hardware supplier to visit site for a keying meeting with Owner prior to submitting schedules for review. Coordinate keying with shop drawings submittal.
 - 2. Submit hardware schedule at earliest possible date, so as not to delay fabrication of other work. Note long lead items that may be of particular concern.
- D. Final Hardware Schedule: Detailed listing of each item of hardware to be installed on each door. Use door numbering scheme as included in the Contract Documents. Identify electrically operated items and include power requirements. Coordinate with doors, frames and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Format: Comply with scheduling sequence and vertical format in DHI SEQF.
 - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening.
 - 3. Content: Schedules without the following will not be acceptable:
 - a. Location, type, style, function, size, fire rating, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Cross reference of specification set number to schedule item number.
 - d. Cross reference manufacturer's product numbers of each type of Hardware specified to the specified hardware included in schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
- E. Keying Schedule: Submit for approval of Owner.
- F. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.
- G. Keys: Deliver with identifying tags to Owner by security shipment direct from hardware supplier.

- H. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- I. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- B. Hardware Supplier Qualifications: Company specializing in supplying the type of products specified in this section with at least three years documented experience.
- C. Hardware Supplier Personnel: Employ an Architectural Hardware Consultant (AHC), certified by DHI, to prepare hardware schedules, perform Post Installation Inspection, and otherwise assist in the work of this section.
- D. Hardware Installer: Factory-authorized personnel certified for installation of the Products of this Section.

1.07 KEYING MEETING

- A. Arrange meeting with door hardware supplier and Owner. Submit keying schedule for Architect's review after this meeting.
- B. Review with supplier, installers and related trades: Materials, rough-in and installation procedures, sequence of operation for each opening and coordination of related Work.

1.08 DELIVERY, STORAGE, AND HANDLING

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

1.09 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide manufacturer's five year warranty for door closers and three year warranty on locksets.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Allegion Brands, Ives, LCN, Schlage, Steelcraft, or Von Duprin: www.allegion.com/us.
- B. Assa Abloy Brands, Corbin Russwin, Curries, McKinney, Norton, or Sargent: www.assaabloydss.com.
- C. DORMA USA, Inc: www.dorma.com.
- D. Hager Companies: www.hagerco.com.
- E. Hiawatha, Inc, division of Activar Construction Products Group, Inc: www.activarcpg.com/hiawatha.
- F. Trimco Hardware: www.trimcohardware.com.

2.02 GENERAL REQUIREMENTS

- A. Provide door hardware specified, or as required to make doors fully functional, compliant with applicable codes, and secure to the extent indicated.
- B. Provide items of a single type of the same model by the same manufacturer.
- C. Provide products that comply with the following:
 - 1. Applicable provisions of federal, state, and local codes.
 - 2. Fire-Rated Doors: NFPA 80.
 - 3. Hardware on Fire-Rated Doors, Except Hinges: Listed and classified by UL (DIR) as suitable for the purpose specified and indicated.
 - 4. Auxiliary Hardware: BHMA A156.16.
 - 5. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
- D. Function: Lock and latch function descriptions as shown in Hardware Sets.
- E. Finishes: Provide door hardware of the same finish unless otherwise indicated.
 - 1. Primary Finish: Oil Rubbed Bronze: ANSI 613 (US10B).
 - 2. Finish Definitions: BHMA A156.18.
 - 3. Exceptions:
 - a. Where base metal is specified to be different, provide finish that is an appearance equivalent according to BHMA A156.18.
- F. Fasteners:
 - 1. Mineral Core Wood Doors: Sex bolts.

2.03 LOCKS AND LATCHES - GENERAL

- A. Locks: Provide a lock for every door, unless specifically indicated as not requiring locking.
 - 1. Hardware Sets indicate locking functions required for each door.
 - 2. Trim: Provide lever handle or pull trim on outside of all locks unless specifically stated to have no outside trim.
 - 3. Lock Cylinders: Provide key access on outside of all locks unless specifically stated to have no locking or no outside trim.
- B. Lock Cylinders: Manufacturer's standard tumbler type, six-pin standard core.
 - 1. Provide cams and/or tailpieces as required for locking devices required.
- C. Latches: Provide a latch for every door that is not required to lock, unless specifically indicated "push/pull" or "not required to latch".

2.04 CYLINDERS, KEYS AND KEYING

- A. Lock Cylinders: Tumbler type core.
 - 1. Comply with BHMA A156.5 and BHMA A156.13.
 - 2. Manufacturer:
 - a. Schlage Lock Company: www.schalge.com; Match existing.
 - b. Substitutions: Not permitted.
 - 3. Provide cams and/or tailpieces as required for locking devices required.
 - 4. Finish: For each opening, match finish of lockset, exit device or other hardware component into which cylinder is inserted.

- B. Keying System: Master keyed.
 - 1. Key to Owner's existing Schlage building keying system.
 - 2. Supply keys in the following quantities:
 - a. 4 master keys.
 - b. 3 keys for each keyed alike group.
 - c. 4 change keys for each lock.
 - 3. Properly tag cylinders and keys to indicate their intended location and to enable Owner, with minimum effort, to establish his key control system.
 - 4. When providing keying information, comply with DHI Handbook "Keying systems and nomenclature".

2.05 BUTT HINGES

- A. Comply with BHMA A156.1 and BHMA A156.7 requirements.
- B. General: Provide hinges on every swinging door.
 - 1. Provide concealed five-knuckle, anti-friction bearing, button tip, full mortise butt hinges with square corners and non-rising loose pins unless otherwise indicated.
 - 2. Provide anti-friction bearing hinges at all doors having closers.
 - 3. Provide hinges in the quantities indicated.
- C. Quantity of Hinges Per Door:
 - 1. Doors up to 60 inches High: Two hinges.
 - 2. Doors From 60 inches High up to 90 inches High: Three hinges.
- D. Manufacturers - Hinges:
 - 1. Assa Abloy Brands; McKinney: www.assaabloydss.com.
 - 2. Bommer Industries, Inc: www.bommer.com.
 - 3. Hager Companies: www.hagerco.com.
 - 4. Ives, an Allegion brand: www.allegion.com/us.
 - 5. Stanley Black & Decker: www.stanleyblackanddecker.com.
 - 6. Substitutions: See Section 01 60 00 - Product Requirements.
- E. Imported or So-Called "Economical" Hinges: Not acceptable.
- F. Material:
 - 1. Interior Door Leafs Up To 36 Inches Wide: Wrought, standard weight (0.134 inch).
 - 2. Vestibule Doors, Exterior Doors, and Door Leafs Over 36 Inches Wide: Solid bronze, heavy weight (0.180 or 0.190 inch).
- G. Size: Sufficient to clear trim and allow doors, otherwise free of obstruction, to open 180 degrees.
 - 1. 4½ x 4 ½ inch: For door leafs up to 36 inches wide and 1¾ inches thick.
 - 2. 5 x 5 inch: For door leafs over 36 inches wide and/or over 1¾ inches thick.
- H. Finish: For each opening, match finish of other hardware components.

2.06 PUSH/PULLS

- A. General:
 - 1. Provide push and pull on doors not specified to have lockset, latchset, exit device, or auxiliary lock.
 - 2. On solid doors, provide matching push plate and pull plate on opposite faces.

B. Push/Pull Trim:

1. Push Plates: 6 inches by 16 inches unless otherwise indicated. Where width of door stile prevents use of 6 inch wide plate, provide push plate one inch less than width of stile but not less than 4 inches wide.
2. Pulls: 1" dia. round solid stainless steel bar, 10 inches center-to-center, with concealed mounting and 6 inch by 16 inch escutcheon plate. At exterior entry doors provide offset pulls. At interior toilet rooms provide straight pulls.
3. Mount Push and Pull plates back to back.

C. Manufacturers:

1. Assa Abloy Brands, McKinney: www.assaabloydss.com.
2. C. R. Laurence Co., Inc: www.crl-arch.com.
3. Hager Companies: www.hagerco.com.
4. Hiawatha, Inc, division of Activar Construction Products Group, Inc: www.activarcpg.com/hiawatha.
5. Ives, an Allegion brand: www.allegion.com/us.
6. Rockwood Manufacturing Company: www.rockwood.com.
7. Trimco Hardware: www.trimcohardware.com.
8. Substitutions: See Section 01 60 00 - Product Requirements.

D. Finish: Same as other hardware, ANSI 613 (US10B) - Oil Rubbed Bronze.

2.07 CYLINDRICAL LOCKS AND LATCHES

A. Comply with BHMA A156.2, Series 4000, Grade 1 requirements, except as noted below.

B. Locking Functions: As defined in BHMA A156.2, and as follows:

1. Office/Entry: F82 Grade 1, key not required to lock; pushbutton, thumbturn to lock, door unlocks upon exit with single action operation.

C. Manufacturers:

1. Assa Abloy Brands, Corbin Russwin, Sargent, or Yale: www.assaabloydss.com.
2. Best Access Systems, division of Stanley Security Solutions: www.bestaccess.com.
3. DORMA USA, Inc.: www.dorma.com.
4. Schlage, an Allegion brand: www.allegion.com/us.
5. Substitutions: See Section 01 60 00 - Product Requirements.

D. Single Source Responsibility: Provide locksets, latchsets, electrified locksets, and trim of one manufacturer as listed above for continuity of design and consideration of warranty.

E. Heavy Duty Cylindrical Locksets and Latchsets:

1. Mechanical Locks:

a. Model:

- 1) Best 9K Series.
- 2) Corbin Russwin CL3300 Series.
- 3) DORMA C800 Series.
- 4) Sargent 10 Line.
- 5) Schlage ND Series.
- 6) Yale 5400LN Series.

2. Function: As scheduled in the individual hardware sets.

3. Construction: Comply with ICC A117.1 accessibility requirements.
 - a. Lock Body: Corrosion resistant wrought steel.
 - 1) Provide non-ferrous lock bodies and internal parts in corrosive environment areas and wet areas.
 - b. Handing: Easily field reversible without disassembly of lock body case.
- F. Trim: Comply with ICC A117.1 accessibility requirements, and with BHMA A156.6 requirements for a minimum of 1,000 inch pounds of pressure without allowing access.
 1. Construction: Cast zinc with wrought roses of heavy cold-forged material; welded thru-posts bolted through the door and lock body.
 2. Lever and Rose Style:
 - a. Best - 16H.
 - b. Dorma - LGB.
 - c. Sargent - BL.
 - d. Schlage - Rhodes.
 - e. Yale - Jefferson.
- G. Strikes: Curved lip with proper lip length to protect trim of the frame; match function of lock; straight strikes are acceptable for pairs of doors and deadbolt locks.
- H. Finish: BHMA 613 - Oil Rubbed Bronze (US10B)..

2.08 EXIT DEVICES

- A. Comply with BHMA A156.3, Grade 1 requirements; comply with performance requirements of NFPA 80 and NFPA 101.
- B. Manufacturers:
 1. DORMA USA, Inc.: www.dorma.com.
 2. Von Duprin, an Allegion brand: www.allegion.com/us.
 3. Sargent Manufacturing Company.
 4. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Single Source Responsibility: Provide exit devices and trim, including electrified items, of one manufacturer as listed above for continuity of design and consideration of warranty.
- D. Models : Use for all doors except narrow stile doors.
 1. DORMA 9000 Series - Narrowline.
 2. Von Duprin 99 Series - Narrowline.
 3. Sargent: 8500 Series - Narrowline.
- E. Performance: Provide units rated and successfully tested as follows:
 1. Rim Devices: 13,000,000 cycles.
- F. Function: As listed in the individual hardware sets.
 1. Keying: Exterior key cylinder on one door leaf as specified in the Hardware Sets and Keyed Dogging for all interior panic devices including paired (double door opening) units.
- G. Construction:
 1. Heavy duty, chassis mounted design, with one piece removable covers, eliminating necessity of removing the device from the door for standard maintenance and keying requirements. Plastic parts are not acceptable.

2. Rail Assemblies: Solid stainless steel, aluminum, brass or bronze base material, plated, painted or anodized to standard architectural finish specified.
 3. End Caps: Heavy weight; impact resistant; of same metal and finish as the rail assemblies.
 4. Handing: Furnish devices non-handed and capable of direct field conversion for all available trim functions
- H. Push Pads: Comply with NFPA 101 means of egress requirements.
1. Dogging: Keyed cylinder; to hold push pad in depressed position and latchbolt in retracted position; provide on all exit devices except for those installed on fire rated doors.
- I. Latches: Stainless steel; Pullman type; deadlocking.
1. Exterior Doors: Provide devices that exceed ANSI/BHMA pull test to 1000 lb., and have latch with 3/4 inch throw and slide action positive deadlocking.
 2. Strikes: Roller type suitable for Rim Pannic device application. BHMA 613 - Oil Rubbed Bronze (US10B) finish.
- J. Outside Trim: Heavy duty forged brass, fastened by means of concealed welded lugs and through-bolts from the inside.
1. Pulls: 3/4" diameter offset pull type.
 2. Outside Trim Finish: BHMA 613 - Oil Rubbed Bronze (US10B).
- K. Interior Panic Device Finish: BHMA 613 - Oil Rubbed Bronze (US10B).
- L. Mullions: Provide keyed removable mullions for openings scheduled to have mullions.
1. Manufacturer: Same as manufacturer of exit devices.
 2. Finish: Dark Bronze Sprayed Finish.
 3. Roller Strikes: Provide to match exit device finish.

2.09 CLOSERS

- A. Comply with BHMA A156.4, Grade 1 requirements; comply with ICC A117.1 accessibility requirements for opening force and delayed action closing.
- B. General:
1. Provide surface-mounted, door-mounted closers unless otherwise indicated.
 2. Provide a door closer on all exterior doors as scheduled.
 3. At outswinging exterior doors, mount closer in inside of door.
 4. Provide appropriate arm assemblies, installation accessories, and special templating for each closer so that closer body and arm are mounted on non-public side of door opening and on the interior side of exterior openings, except where required otherwise in the hardware sets.
 5. Provide inspection after installation by a factory representative to ensure proper adjustment and operation. File report with the architect after said visit has been made.
- C. Manufacturers:
1. DORMA USA, Inc.: www.dorma.com.
 2. LCN, an Allegion brand: www.allegion.com/us.
 3. Norton - Assa Abloy.
 4. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Single Source Responsibility: All door closers to be of one manufacturer as listed above to provide for proper installation and servicing after installation.

- E. Models:
 - 1. DORMA 8900 Series.
 - 2. LCN 4040 / 4040SE.
 - 3. Norton-Assa Abloy: 7500 Series.
- F. Optional Functions: Provide as indicated in hardware sets.
- G. Materials:
 - 1. Cylinders: High strength cast iron, with one-piece forged steel piston.
 - 2. Hydraulic Fluid: Temperature stable fluid capable of withstanding temperature ranges of 120 degrees F. to -30F without requiring seasonal adjustment of closer speed to properly close the door.
 - 3. Arms: Forged steel with 1-9/16" x 1/2" steel stud shoulder bolts.
 - 4. Parallel Arms: Forged steel with bronze bushings.
 - 5. Covers: Metal, with installation and adjusting information on inside of cover.
- H. Sizing: Double arm closers shall have non-sized cylinders adjustable over a range of at least 5 closing power sizes. Size closers in accordance with manufacturer's recommendations, depending upon size of door, exposure to weather, compliance with ADA requirements for operating force and anticipated frequency of use.
- I. Operation: Fully hydraulic, rack and pinion action with adjustable back-check to provide a cushioning effect toward the end of the closing cycle for double-arm closers; low friction track and roller combination for single arm closers. Provide back-check positioning valve and separate, non-critical valves for adjusting sweep and latch speeds.
- J. Finish: BHMA-695: Dark bronze finish to match panic device.

2.10 STOPS AND HOLDERS

- A. Comply with BHMA A156.8 requirements.
- B. General:
 - 1. Provide a stop for every swinging door unless a stop is scheduled in the door closer arm.
 - 2. Provide wall stops, unless otherwise indicated.
 - 3. If wall stops are not practical, due to configuration of room or furnishings, provide overhead stop.
 - 4. Locate stops in such a position that they permit maximum door swing, but do not present a hazard or obstruction. Provide floor strikes for floor holders of proper height to engage holders of doors.
 - 5. Stop is not required if stop function is specified for door closer.
- C. Manufacturers - Wall and Floor Stops/Holders:
 - 1. C. R. Laurence Company, Inc: www.crl-arch.com.
 - 2. Hager Companies: www.hagerco.com.
 - 3. Hiawatha, Inc, division of Activar Construction Products Group, Inc: www.activarcpg.com/hiawatha.
 - 4. Ives, an Allegion brand: www.allegion.com/us.
 - 5. Trimco Hardware: www.trimcohardware.com.
 - 6. Substitutions: See Section 01 60 00 - Product Requirements.

- D. Models:
 - 1. Wall and Floor Stops/holders:
 - a. Hager #232W, 252F.
 - b. Ives #WS401/402, FS441.
 - c. Trimco #1270.
- E. Finish: BHMA 613 - Oil Rubbed Bronze - (US10B).

2.11 GASKETING AND THRESHOLDS

- A. Gaskets: Comply with BHMA A156.22 requirements.
 - 1. On each exterior door, provide weatherstripping gaskets, unless otherwise indicated; top, sides, and meeting stiles and mullions of pairs.
 - 2. On each exterior door, provide door bottom sweep, unless otherwise indicated.
- B. Thermal Break Thresholds: Comply with BHMA A156.21 requirements.
 - 1. At each exterior door, provide a threshold unless specifically detailed otherwise in the Drawings.
 - 2. Field cut threshold to frame for tight fit.
 - 3. Height: Maximum 1/2" high; ADA accessible at all openings.
- C. Fasteners At Exterior Locations: Non-corroding.
- D. Manufacturers - Gasketing and Thresholds:
 - 1. Hager Companies: www.hagerco.com.
 - 2. National Guard Products, Inc: www.ngpinc.com.
 - 3. Pemko Manufacturing Co: www.pemko.com.
 - 4. Reese Enterprises, Inc.: www.reeseusa.com. (Basis of Design Model: S471)
 - 5. Zero International, Inc: www.zerointernational.com.
- E. Finish: BHMA 613 - Oil Rubbed Bronze - (US10B); Gaskets & Dark Bronze Anodized - Thresholds.

2.12 PROTECTION PLATES AND ARCHITECTURAL TRIM

- A. Comply with BHMA A156.6 requirements.
- B. Protection Plates:
 - 1. Kickplate: At locations as schedule in the Hardware Sets.
 - 2. Mop Plates: Provide on door sides facing areas with hard surface floor finishes, unless kickplate or armor plate are specified.
 - 3. Width:
 - a. Pull side: 1 inch less than door width (LDW).
 - b. Push (Stop) Side: 2 inches less than door width (LDW).
 - 4. Height:
 - a. Kickplates: 6 inches.
 - b. Mop Plates: 6 inches.
 - c. Doors with louvers or narrow bottom rails: 1 inch less than dimension from the bottom of the door to the bottom of the louver or lite, or to the top of the bottom rail.
- C. Manufacturers:
 - 1. Rockwood Manufacturing Company, an Assa Abloy brand: www.rockwoodmfg.com.
 - 2. C. R. Laurence Co., Inc: www.crl-arch.com.

3. Hager Companies: www.hagerco.com.
4. Hiawatha, Inc, division of Activar Construction Products Group, Inc:
www.activarcpg.com/hiawatha.
5. Ives, an Allegion brand: www.allegion.com/us.
6. Rockwood Manufacturing Company: www.rockwood.com.
7. Trimco Hardware: www.trimcohardware.com.
8. Substitutions: See Section 01 60 00 - Product Requirements.

D. Finish: BHMA 613 - Oil Rubbed Bronze - (US10B).

2.13 FIRE DEPARTMENT LOCK BOX

- A. Fire Department Lock Box: Heavy-duty, fully recessed mounted, solid stainless-steel box with dark brown hinged door and interior gasket seal; single drill resistant lock with dust covers.
1. Capacity: Holds 2 keys.
 2. Finish: Manufacturer's standard Brown/Bronze door color.
 3. Product:
 - a. Knox Company; Knox-Box Rapid Entry System: www.knoxbox.com.
 - b. Substitutions: Not permitted.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that doors and frames are ready to receive work; labeled, fire-rated doors and frames are present and properly installed, and dimensions are as indicated on shop drawings.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Use templates provided by hardware item manufacturer.
- C. Do not install surface mounted items until finishes applied to substrate are complete.
- D. Mounting heights for hardware from finished floor to center line of hardware item. As indicated in the following list; unless noted otherwise in Door Hardware Sets Schedule or on the drawings.
1. For Wood Doors: Comply with DHI WDHS.3 "Recommended Locations for Architectural Hardware for Flush Wood Doors".
- E. Set exterior door thresholds with full-width bead of elastomeric sealant on each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.
- F. Install key cabinet in a secure building location as directed by Owner.
- G. Install fire department knox box on building exterior in location acceptable to Authority Having Jurisdiction and Architect/Engineer.

3.03 FIELD QUALITY CONTROL

- A. Post Installation Inspection: Provide an Architectural Hardware Consultant to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.
1. Submit report to Architect/Engineer after inspection has been made.

3.04 ADJUSTING

- A. Adjust work under provisions of Section 01 70 00.
- B. Adjust hardware for smooth operation.
- C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.05 CLEANING

- A. Clean adjacent surfaces soiled by hardware installation. Clean finished hardware per manufacturer's instructions after final adjustments has been made. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.06 PROTECTION

- A. Protect finished Work under provisions of Section 01 70 00.
- B. Do not permit adjacent work to damage hardware or finish.

3.07 SCHEDULE - AS INDICATED ON THE DRAWINGS

END OF SECTION

**SECTION 08 80 00
GLAZING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Glass.
- B. Sealed, insulated glass.
- C. Glazing compounds and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 20 00 - Finish Carpentry: Glazed lites in wood door frames & sidelights.
- B. Section 07 92 00 - Joint Sealants: Sealants for other than glazing purposes.
- C. Section 08 14 23 - Clad Wood Doors: Glazed lites in doors and borrowed lites.

1.03 REFERENCE STANDARDS

- A. 16 CFR 1201 <<http://www.ecfr.gov>> - Safety Standard for Architectural Glazing Materials; current edition.
- B. ASTM C1036 <http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM C1036> - Standard Specification for Flat Glass; 2011.
- C. ASTM C1048 <http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM C1048> - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.
- D. ASTM C1193 <http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM C1193> - Standard Guide for Use of Joint Sealants; 2013.
- E. ASTM E2190
<https://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM%20E2190> - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2010.
- F. GANA (GM) <<http://www.glasswebsite.com/publications/default.asp>> - GANA Glazing Manual; 2009.
- G. GANA (SM) <<http://www.glasswebsite.com/publications/default.asp>> - GANA Sealant Manual; 2008.
- H. ICC (IBC)
<https://global.ihs.com/doc_detail.cfm?rid=Z06&mid=5280&item_s_key=00410247&item_key_date=841231&origin=ICC1> - International Building Code; 2015.

1.04 SUBMITTALS

- A. See Section 01 33 00 - Submittals.
- B. Product Data on Glass Types: Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.

- C. Product Data on Glazing Compounds: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.
- D. Samples: Submit two samples 12 x 12 inch in size of glass units.
- E. Manufacturer's Certificate: Certify that sealed insulated glass meets or exceeds specified requirements.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with GANA Glazing Manual and GANA Sealant Manual for glazing installation methods.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to specified destination in manufacturer's or distributor's packaging, undamaged, complete with installation instructions.
- B. Store off ground, under cover, protected from weather and construction activities.
- C. Do not expose the non-PVB side of glass to UV light.
- D. Store sheets of glass vertically. DO NOT lean.
- E. Do not expose fire-rated glass materials to temperatures greater than 120 degrees or less than minimum 40 degrees F during storage and transportation.

1.07 FIELD CONDITIONS

- A. Do not install glazing when ambient temperature is less than 40 degrees F, unless manufacturer of glazing materials specifically recommends application of his materials above a lower temperature.
- B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.08 WARRANTY

- A. Sealed Insulating Glass Units: Provide a ten (10) year warranty to include coverage for seal failure, interpane dusting or misting, including replacement of failed units.

PART 2 PRODUCTS

2.01 INSULATING GLASS UNITS

- A. Type SG1 - Sealed Insulating Glass Units: Tinted vision glass, double glazed.
 - 1. Application: All exterior glazing unless otherwise indicated.
 - 2. Outboard Lite: Fully tempered float glass, 1/4 inch thick, PPG Optigray.
 - a. Tint: Gray.
 - 3. Inboard Lite: Fully tempered float glass, 1/4 inch thick, PPG Solarban 60 on Clear Low-E #3.
 - a. Tint: Clear.
 - b. Coating: Low-E (passive type), on #3 surface.
 - 4. Total Thickness: 1 inch.

5. 1/2" Cavity: 90% Argon Fill.
6. Thermal Resistance (U-Value): 0.24, nominal.
7. Glazing Method: Gasket glazing.

2.02 GLAZING UNITS

- A. Type FG1 - Vision Safety Glazing:
1. Application: All interior glazing unless otherwise indicated.
 2. Material Type: Fully tempered Float Glass.
 3. Tint: Clear.
 4. Thickness: 1/4 inch.
 5. Glazing Method: Interior dry method, tape and tape.

2.03 GLASS MATERIALS

- A. Float Glass: All glazing is to be float glass unless otherwise indicated.
1. Annealed Type: ASTM C1036
<http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM C1036>, Type I, transparent flat, Class 1 clear, Quality Q3 (glazing select).
 2. Heat-Strengthened and Fully Tempered Types: ASTM C1048
<http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ASTM C1048>.
 3. Tinted Types: Color and performance characteristics as indicated.
 4. Thicknesses: As indicated; for exterior glazing comply with specified requirements for wind load and horizontal rialing loads design regardless of specified thickness.
 5. Manufacturers:
 - a. AGC Flat Glass North America, Inc: www.afgglass.com.
 - b. Guardian Industries Corp: www.sunguardglass.com.
 - c. Pilkington North America Inc: www.pilkington.com.
 - d. PPG Industries, Inc: www.ppg.com.
 - e. Zeledyne: www.versaluxglass.com.
 - f. Substitutions: Refer to Section 01 60 00 - Product Requirements.

2.04 GLAZING COMPOUNDS

- A. Manufacturers:
1. Bostik Inc: www.bostik-us.com.
 2. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com.
 3. Pecora Corporation: www.pecora.com.
 4. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
 5. Substitutions: Refer to Section 01 60 00 - Product Requirements.

2.05 GLAZING ACCESSORIES

- A. Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.
- B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch long x one half the height of the glazing stop x thickness to suit application, self adhesive on one face.

- C. Glazing Gaskets: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; black color.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that openings for glazing are correctly sized and within tolerance.
- B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.

3.02 PREPARATION

- A. Clean contact surfaces with solvent and wipe dry.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant.
- D. Install sealants in accordance with ASTM C1193.
- E. Install sealants in accordance with manufacturer's instructions.

3.03 INSTALLATION - EXTERIOR/INTERIOR DRY METHOD (GASKET GLAZING)

- A. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- B. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
- C. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.04 INSTALLATION - INTERIOR DRY METHOD (TAPE AND TAPE)

- A. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch above sight line.
- B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- C. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.
- D. Place glazing tape on free perimeter of glazing in same manner described above.
- E. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
- F. Knife trim protruding tape.

3.05 CLEANING

- A. Remove glazing materials from finish surfaces.
- B. Remove labels after Work is complete.
- C. Clean glass and adjacent surfaces.

3.06 PROTECTION

- A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

END OF SECTION

**SECTION 08 83 00
MIRRORS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Glass mirrors.
 - 1. Tempered safety glass.

1.02 REFERENCE STANDARDS

- A. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- B. ASTM C1036 - Standard Specification for Flat Glass; 2016.
- C. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.
- D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- E. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2018.
- F. GANA (GM) - GANA Glazing Manual; 2008.
- G. GANA (SM) - GANA Sealant Manual; 2008.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data on Mirror Types: Submit structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
- C. Product Data on Glazing Compounds: Submit chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.
- D. Manufacturer's Certificate: Certify that mirrors, meets or exceeds specified requirements.
- E. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

- A. Perform Work in accordance with GANA (GM) and GANA (SM) for glazing installation methods.
- B. Fabricate, store, transport, receive, install, and clean mirrors in accordance with manufacturer's recommendations.

1.05 FIELD CONDITIONS

- A. Do not install mirrors when ambient temperature is less than 50 degrees F.
- B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

- B. Provide five year manufacturer warranty for reflective coating on mirrors and replacement of same.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Mirrors:
 - 1. Binswanger Mirror/ACI Distribution: www.binswangerglass.com.
 - 2. Lenoir Mirror Co: www.lenoirmirror.com.
 - 3. Trulite Glass and Aluminum Solutions: www.trulite.com.
 - 4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 MATERIALS

- A. Mirror Design Criteria: Select materials and/or provide supports as required to limit mirror material deflection to 1/200, or to the flexure limit of glass, with full recovery of glazing materials, whichever is less.
- B. Mirror Glass; Type MG1: ASTM C1036, Type 1 - Transparent Flat, Class 1 - Clear, Quality - Q1 (high-quality mirrors); silvering, protective coating, and quality requirements in compliance with ASTM C1503.
 - 1. Type: Annealed.
 - 2. Thickness: 1/4 inch.
 - 3. Size: As indicated on drawings.
 - 4. Edges: Square and polished.

2.03 GLAZING COMPOUNDS

- A. Silicone Sealant: ASTM C920, Type S, Grade NS, Class 25, Uses M and A; single component; chemical or solvent curing; non-bleeding, non-staining, cured Shore A hardness of 15 to 25; clear color.

2.04 ACCESSORIES

- A. Mirror Adhesive: Silicone pre-polymer based, chemically compatible with mirror coating and wall substrate.
 - 1. Manufacturers:
 - a. Liquid Nails, a brand of PPG Architectural Coatings: www.liquidnails.com/#sle.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Channel Frame: Extruded aluminum, 0.060 inch thickness, one piece, channel frame, 110 natural buffed brite finish manufactured by Stylmark, Inc., 1/2 inch by 1/2 inch by 3/8 inch deep with 90 degree mitered corners. (Installed at bottom edge of mirror only).

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that openings for mirrored glazing are correctly sized and within tolerance.
- B. Verify that surfaces of mirror frames or recesses are clean, free of obstructions, and ready for installation of mirrors.

3.02 PREPARATION

- A. Clean contact surfaces with solvent and wipe dry.
- B. Seal porous mirror frames or recesses with substrate compatible primer or sealer. Prime surfaces scheduled to receive sealant.
- C. Prepare installation in accordance with ASTM C1193 for solvent release sealants, and install sealant in accordance with manufacturer's instructions.

3.03 INSTALLATION

- A. Install mirrors in accordance with manufacturer's recommendations.
- B. Set mirrors plumb and level, and free of optical distortion.
- C. Set mirrors with edge clearance free of surrounding construction including countertops or backsplashes.
- D. Frameless Mirrors: Position and secure edge molding and channel trim to support the weight of the mirror. Set mirrors in proper place with adhesive, applied in accordance with adhesive manufacturer's instructions.

3.04 CLEANING

- A. Remove labels after work is complete.
- B. Clean mirrors and adjacent surfaces.

END OF SECTION

**SECTION 09 05 61
COMMON WORK RESULTS FOR FLOORING PREPARATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This section applies to all floors identified in the contract documents as to receive the following types of floor coverings:
 - 1. Resilient tile and sheet.
 - 2. Carpet tile.
 - 3. Thin-set ceramic tile and stone tile.
- 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. Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency's report and is due to a condition not under Contractor's control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.
- F. Patching compound.
- G. Remedial floor coatings.
- H. Preparation of new and existing wood-based floors and subfloors for installation of new floor coverings.

1.02 RELATED REQUIREMENTS

- A. Section 01 40 00 - Quality Requirements: Additional requirements relating to testing agencies and testing.

1.03 REFERENCES

- A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50 mm] Cube Specimens) 2021.
- B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete 2020.
- C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring 2021.
- D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride 2016a.
- E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes 2019a.
- F. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings 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. Visual Observation Report: For existing floor coverings to be removed.
- B. 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.
- C. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.
 - 1. Manufacturer's statement of compatibility with types of flooring applied over remedial product.
 - 2. Manufacturer's installation instructions.
- 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 to Architect/Engineer.
 - 7. Submit report not more than two business days after conclusion of testing.
- E. Adhesive Bond and Compatibility Test Report.
- F. Copy of RFCI (RWP).

1.06 QUALITY ASSURANCE

- A. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by Contractor.
- B. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
 - 1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.
- C. Contractor's Responsibility Relating to Independent Agency Testing:
 - 1. Provide access for and cooperate with testing agency.
 - 2. Confirm date of start of testing at least 10 days prior to actual start.
 - 3. Allow at least 4 business days on site for testing agency activities.
 - 4. Achieve and maintain specified ambient conditions.
 - 5. Notify Architect/Engineer when specified ambient conditions have been achieved and when testing will start.

1.07 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 ULTRA with ARDEX FEATHERFINISH: www.ardexamericas.com/#sle.
 - b. Custom Building Products; TechMVC Moisture Vapor and Alkalinity Barrier: www.custombuildingproducts.com/#sle.
 - c. Floor Seal Technology, Inc; MES 100 with Floor Seal FloorCem SLU: www.floorseal.com/#sle.
 - d. Koster American Corporation; Koster VAP I 2000 with Koster SL Premium overlay: www.kosterusa.com/#sle.
 - e. LATICRETE International, Inc; LATICRETE DRYTEK Moisture Vapor Barrier with LATICRETE DRYTEK Premium Skimcoat Patch Underlayment: www.laticrete.com/#sle.
 - f. LATICRETE International, Inc; LATICRETE NXT Vapor Reduction Coating with LATICRETE NXT Level Plus: www.laticrete.com/#sle.
 - g. LATICRETE International, Inc; LATICRETE SUPERCAP Moisture Vapor Control with LATICRETE SUPERCAP Underlayment: www.laticrete.com/#sle.
 - h. Proflex Products, Inc; Moisture Barrier 25 with DPU - Deep Pour Underlayment: www.proflex.us/#sle.
 - i. ProSpec, an Oldcastle brand; Moisture Guard Max: www.prospec.com.
 - j. Sika Corporation; Sikafloor Moisture Tolerance Epoxy Primer and Sikafloor Self-Leveling Moisture Tolerant Resurfacer: www.sikafloorusa.com/#sle.

- k. Stauf USA, LLC; ERP-270 Perma-Seal: www.staufusa.com/#sle.
- l. UZIN, a division of UFLOOR Systems Inc; UZIN PE 460 with UZIN PE 280 and UZIN NC 170 LevelStar: www.ufloorsystems.com/#sle.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION (BASE BID)

- A. Follow recommendations of testing agency.
- B. Perform following operations in the order indicated:
 - 1. Existing concrete slabs (on-grade and elevated) with existing floor coverings:
 - a. Visual observation of existing floor covering, for adhesion, water damage, alkaline deposits, and other defects.
 - b. Removal of existing floor covering.
 - 2. Preliminary cleaning.
 - 3. 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.
 - 4. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
 - 5. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
 - 6. Specified remediation, if required.
 - 7. Patching, smoothing, and leveling, as required.
 - 8. Other preparation specified.
 - 9. Adhesive bond and compatibility test.
 - 10. Protection.
- 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 (BASE BID)

- 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 (BASE BID)

- 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 (BASE BID)

- 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 (BASE BID)

- 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 (BASE BID)

- 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 (BASE BID)

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

3.08 ADHESIVE BOND AND COMPATIBILITY TESTING (BASE BID)

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

3.09 APPLICATION OF REMEDIAL FLOOR COATING (CHANGE ORDER WORK)

- A. Comply with requirements and recommendations of coating manufacturer.

3.10 PROTECTION (BASE BID)

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

END OF SECTION

**SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Acoustic insulation.
- B. Cementitious tile backing and underlayment board.
- C. Gypsum wallboard.
- D. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Building stud framing.

1.03 REFERENCE STANDARDS

- A. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units 1999 (Reaffirmed 2016).
- B. ANSI A108.11> ANSI A108/A118/A136.1 - American National Standard for Interior of Cementitious Backer Units 2010 (Revised).
- C. ANSI A118.9>ANSI A108/A118/A136.1 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units 1999 (Reaffirmed 2010).
- D. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board 2017.
- E. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing 2017.
- F. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board 2020.
- G. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base 2019.
- H. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units 2021.
- I. ASTM C1396/C1396M - Standard Specification for Gypsum Board 2017.
- J. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber 2016.
- K. GA-216 - Application and Finishing of Gypsum Panel Products 2016, with Errata.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on gypsum board, accessories, and joint finishing system.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing gypsum board installation and finishing, with minimum 5 years of experience.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.

2.02 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
 - 1. CertainTeed Corporation: www.certainteed.com.
 - 2. Georgia-Pacific Gypsum: www.gpgypsum.com.
 - 3. Lafarge North America Inc: www.lafargenorthamerica.com.
 - 4. National Gypsum Company: www.nationalgypsum.com.
 - 5. USG Corporation: www.usg.com.
 - 6. Substitutions: Not permitted.
- 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. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - a. Mold resistant board is required at all locations.
 - 3. Thickness:
 - a. Ceilings: 5/8 inch.
 - 4. Mold Resistant Paper Faced Products:
 - a. American Gypsum Company; M-Bloc Type X: www.americangypsum.com/#sle.
 - b. Continental Building Products; Mold Defense Type X: www.continental-bp.com/#sle.
 - c. Georgia-Pacific Gypsum; ToughRock Fireguard X Mold-Guard: www.gpgypsum.com/#sle.
 - d. National Gypsum Company; Gold Bond XP Gypsum Board: www.nationalgypsum.com/#sle.
 - e. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Backing Board For Vertical Tiled Surfaces:
 - 1. Application: Surfaces behind tile in wet and non-wet areas, including, but not limited to, restroom walls.
 - 2. Application: Horizontal surfaces behind tile in wet areas including floors.
 - 3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - 4. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
 - a. Thickness: 1/2 inch, minimum.
 - b. Products:
 - 1) Custom Building Products: www.custombuildingproducts.com.
 - 2) National Gypsum Company; PermaBase Cement Board: www.nationalgypsum.com/#sle.
 - 3) USG Corporation: www.usg.com.
 - 4) Substitutions: See Section 01 60 00 - Product Requirements.

- D. Ceiling Board: Special sag resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Ceilings, unless otherwise indicated.
 2. Thickness: 5/8 inch.
 3. Edges: Tapered.
 4. Products:
 - a. CertainTeed Corporation; Interior Ceiling Drywall: www.certainteed.com/#sle.
 - b. Continental Building Products; Sagcheck: www.continental-bp.com/#sle.
 - c. Georgia-Pacific Gypsum; ToughRock Span 24 Ceiling Board: www.gpgypsum.com/#sle.
 - d. USG Corporation; 1/2 Inch Sheetrock Brand UltraLight Panels: www.usg.com/#sle.
 - e. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 Gypsum Wallboard ACCESSORIES

- A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Thickness: 3 inch.
- B. Finishing Accessories: ASTM C1047, galvanized steel, rolled zinc, or rigid plastic, suitable to the application; unless noted otherwise.
1. Types: As detailed or required for finished appearance.
 2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.
- C. Beads, Joint Accessories, and Other Trim: ASTM C1047, rigid plastic, galvanized steel, or rolled zinc, unless noted otherwise.
1. Corner Beads: Low profile, for 90 degree outside corners.
 - a. Products:
 - 1) CertainTeed Corporation; No-Coat Drywall Corner: www.certainteed.com/#sle.
 - 2) ClarkDietrich; Strait-Flex Big-Stick: www.clarkdietrich.com/#sle.
 - 3) Phillips Manufacturing Co; Everlast Corner Bead: www.phillipsmfg.com/#sle.
 - 4) Substitutions: See Section 01 60 00 - Product Requirements.
 2. L-Trim with Tear-Away Strip: Sized to fit 1/2 inch thick gypsum wallboard.
 - a. Products:
 - 1) Phillips Manufacturing Co; gripSTIK L-Tear: www.phillipsmfg.com/#sle.
 - 2) Substitutions: See Section 01 60 00 - Product Requirements.
 3. Expansion Joints:
 - a. Type: V-shaped metal with factory-installed protective tape.
 - b. Products:
 - 1) Phillips Manufacturing Co; 093 Expansion Control Joint: www.phillipsmfg.com/#sle.
 - 2) Substitutions: See Section 01 60 00 - Product Requirements.
- D. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
1. Paper Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 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.
- B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
 - 1. Place one bead continuously on substrate before installation of perimeter framing members.
 - 2. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.

3.03 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. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
 - 1. Exception: Tapered edges to receive joint treatment at right angles to framing.
- C. Fire-Resistance-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
- D. Cementitious Backing Board: Install over wood framing members and plywood substrate where indicated, in accordance with ANSI A108/A118/A136.1 and manufacturer's instructions.
- E. Installation on Wood Framing: For rated assemblies, comply with requirements of listing authority. For nonrated assemblies, install as follows:
 - 1. Single-Layer Applications: Screw attachment.

3.04 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
 - 1. Not more than 30 feet apart on walls and ceilings over 50 feet long.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.05 JOINT TREATMENT

- A. Paper Faced Gypsum Board: Use paper joint tape, embed with setting type joint compound and finish with drying type joint compound.
- B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 - 1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
 - 2. Level 3: Walls to receive textured wall finish.
 - 3. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
 - 4. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.

- C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 - 1. Feather coats of joint compound so that camber is maximum 1/32 inch.
 - 2. Taping, filling, and sanding are not required at base layer of double-layer applications.
- D. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.06 TOLERANCES

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

END OF SECTION

**SECTION 09 30 00
TILING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Tile for floor applications.
- B. Tile for wall applications.
- C. Non-ceramic trim.

1.02 RELATED REQUIREMENTS

- A. Section 07 92 00 - Joint Sealants: Sealing joints between tile work and adjacent construction and fixtures.
- B. Section 09 21 16 - Gypsum Board Assemblies: Tile backer and underlayment board.

1.03 REFERENCE STANDARDS

- A. ANSI A108/A118/A136 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2019.
 - 1. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2017.
 - 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; 2017.
 - 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 2016).
 - 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; 2017.
 - 10. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2018.
 - 11. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
 - 12. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2016).

13. ANSI A108.19 - American National Standard Specifications for Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar; 2017.
 14. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive; 2013 (Revised).
 15. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2012 (Revised).
 16. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation; 2010 (Reaffirmed 2016).
 17. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes For Thin-Set Ceramic Tile And Dimension Stone Installation; 2014.
- B. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2014.
 - C. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2012.
 - D. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2019.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by affected installers.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements.
- B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- C. Samples for Selection: Manufacturer's color line sample boards/books.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 2. Extra Tile: 10 square feet of each size, color, and surface finish combination.

1.06 MOCK-UP

- A. Construct tile mock-up where directed by Architect, incorporating all components specified for the location.
 1. Minimum size of mock-up is 8 feet by 8 feet for floors and walls.
 2. Approved mock-up may remain as part of the Work.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.08 FIELD CONDITIONS

- A. Do not install solvent-based products in an unventilated environment.
- B. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Porcelain Tile:
 - 1. Crossville Ceramics.
 - 2. Substitutions: Not permitted.

2.02 MATERIALS

- A. Porcelain Tile: Type TF1 & TW1: Toilet Room Floors and Walls:
 - 1. Moisture Absorption: 0 to 0.5 percent.
 - 2. Size and Shape: 12x12 and 12x24 inch.
 - a. Floors: (TF1): 12x12; Stack Bond Pattern.
 - b. Walls: (TW1): 12x24 Horizontal 1/2 Running Bond Pattern.
 - c. Base: Non-Ceramic; Metal coved base as specified.
 - d. Pattern Layout: As indicated on drawings.
 - 3. Edges: Square.
 - 4. Surface Finish: Unglazed.
 - 5. Products:
 - a. Crossville, Inc. - Structure Porcelain Stone.
 - 1) Colors:
 - a) Floors: (TF1): AV224 - Timber.
 - b) Walls: (TW1): AV221 - Gypsum.
 - b. Substitutions: Not permitted.

2.03 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. Manufacturer:
 - a. Schluter-Systems: www.schluter.com.
 - b. Substitutions: Not permitted.
 - 2. Applications and Products:
 - a. Open Edges of Wall Tile: Straight; Schiene.
 - b. Open Edges of Floor Tile at Transitions: (Straight or sloped depending on material transition; Schiene or Reno-U).
 - c. Outside Wall Corners or Wainscot top: Bullnose; Rondec.
 - d. Transition Between Floor Finishes of Different Heights: Straight or sloped depending on material transition; Schiene or Reno-U.
 - e. Thresholds at Door Openings: Straight or sloped depending on material transition; Schiene or Reno-U.
 - f. Floor To Wall Joints: Coved; Dilex-AHK.
 - g. Inside Wall Corners: Coved; Dilex-AHK.

h. Borders and other trim as indicated on drawings: Straight; Schiene.

2.04 SETTING MATERIALS

A. Manufacturers:

1. ARDEX Engineered Cements: www.ardexamericas.com/#sle.
2. Custom Building Products: www.custombuildingproducts.com/#sle.
3. Substitutions: See Section 01 60 00 - Product Requirements.

B. 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; ARDEX N 23 MICROTEC: www.ardexamericas.com/#sle.
 - b. Custom Building Products; ProLite Premium Rapid Setting Large Format Tile Mortar, with Multi-Surface Bonding Primer: www.custombuildingproducts.com/#sle.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.

2.05 ADHESIVE MATERIALS

A. Manufacturers:

1. Bostik Inc: www.bostik-us.com.
2. Mapei Corporation: www.mapei.com.
3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Organic Adhesive: ANSI A136.1, thinset bond type; use Type I in areas subject to prolonged moisture exposure.

2.06 MORTAR MATERIALS

A. Manufacturers:

1. Bostik Inc: www.bostik-us.com.
2. Mapei Corporation: www.mapei.com.
3. Substitutions: See Section 01 60 00 - Product Requirements.

2.07 GROUTS

A. Manufacturers:

1. LATICRETE International, Inc: www.laticrete.com/#sle.
2. Substitutions: Not permitted.

B. Polymer Modified Grout: ANSI A118.3 water based urethane grout.

1. Applications: Wall tile.
2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
3. Products:
 - a. LATICRETE International, Inc; LATICRETE PERMACOLOR Grout: www.laticrete.com/#sle.
 - 1) Color: (Grout-A): #39 - Mushroom.
 - b. Substitutions: Not permitted.

C. Epoxy Grout: ANSI A118.3 chemical resistant and water-cleanable epoxy grout.

1. Applications: Floor tile.
2. Products:

- a. LATICRETE International, Inc; LATICRETE SPECTRALOCK PRO Premium Grout:
www.laticrete.com/#sle.
 - 1) Color: (Grout-B): #35 - Mocha.
- b. Substitutions: Not permitted.

2.08 ACCESSORY MATERIALS

- A. Concrete and Wood Floor Slab Crack Isolation Membrane: Material complying with ANSI A118.12; not intended as waterproofing.
 - 1. Crack Resistance: No failure at 3/8 inch gap, minimum.
 - 2. Fluid or Trowel Applied Type:
 - a. Material: Synthetic rubber or Acrylic.
 - b. Thickness: 20 mils, maximum.
 - c. Products:
 - 1) LATICRETE International, Inc; LATICRETE Blue 92 Anti-Fracture Membrane:
www.laticrete.com/#sle.
 - 2) Merkrete, by Parex USA, Inc; Merkrete Fracture Guard: www.merkrete.com/#sle.
 - 3) TEC, an H.B. Fuller Construction Products Brand; TEC HydraFlex Waterproofing Crack Isolation Membrane: www.tecspecialty.com/#sle.
 - 4) Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive 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 subfloor surfaces are dust free and free of substances that could impair bonding of setting materials to subfloor surfaces.
- D. 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 and underlayment board throughout areas to receive tile 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.
- E. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

3.03 INSTALLATION - GENERAL

- A. Install tile and thresholds and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.19 , 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. Align floor, base, and wall joints.
- 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 floor to wall transitions with metal cove trim and external angles bullnose with metal trim.
- F. Install ceramic accessories rigidly in prepared openings.
- G. Install non-ceramic trim in accordance with manufacturer's instructions.
- H. Install thresholds where indicated.
- I. Sound tile after setting. Replace hollow sounding units.
- J. Keep control and expansion joints free of mortar, grout, and adhesive.
- K. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
- L. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.
- M. 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.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS

- A. Over interior cement board underlayment substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.
 - 1. Install crack isolation membrane at all floor underlayment joints.
- B. Install tile-to-tile floor movement joints in accordance with TCNA (HB) Method EJ171F.
- C. Install specified non-ceramic trim at transition points and changes of plane.

3.05 INSTALLATION - WALL TILE

- A. Over cementitious backer units on studs in other than shower alcoves, install in accordance with TCNA (HB) Method W244C; optional membrane is not required.

3.06 CLEANING

- A. Clean tile and grout surfaces.

3.07 PROTECTION

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

3.08 SCHEDULE

A. As indicated on the drawings.

END OF SECTION

**SECTION 09 51 00
ACOUSTICAL CEILINGS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Suspended metal grid ceiling system.
- B. Acoustical units.

1.02 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 26 51 00 - Interior Luminaires: Light fixtures in ceiling system.
- C. Section 28 46 00 - Fire Detection and Alarm: Fire alarm components in ceiling system.

1.03 REFERENCE STANDARDS

- A. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings 2017.
- B. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels 2019.
- C. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions 2020.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Do not install acoustical units until after interior wet work is dry.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on suspension system components and acoustical units.
- C. Samples: Submit two samples 4 by 4 inch in size illustrating material and finish of acoustical units.
- D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

1.06 FIELD CONDITIONS

- A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acoustic Panels (Basis of Design):
 - 1. Type (ACT-A): Armstrong World Industries, Inc; Ultima, Beveled Tegular #1911: www.armstrong.com.
- B. Other acceptable Manufacturers:
 - 1. CertainTeed Corporation: www.certainteed.com/#sle.
 - 2. USG Corporation: www.usg.com/ceilings
 - 3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ACOUSTICAL UNITS

- A. Acoustical Units - General: ASTM E1264, Class A.

2.03 SUSPENSION SYSTEM(S)

- A. Armstrong World Industries, Inc: www.armstrong.com.
- B. Chicago Metallic Corporation: www.chicagometallic.com.
- C. USG: www.usg.com.
- D. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.
- E. Exposed Suspension System, Type SS1: Hot-dipped galvanized steel grid with aluminum cap.
 - 1. Structural Classification: Intermediate-duty, when tested in accordance with ASTM C635/C635M.
 - 2. Profile: Tee; 15/16 inch face width.
 - 3. Finish: Baked enamel.
 - 4. Color: White.

2.04 ACCESSORIES

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- B. Hanger Wire: 12 gauge, 0.08 inch galvanized steel wire.
- C. Perimeter Moldings: Same metal and finish as grid.
 - 1. Angle Molding: L-shaped, for mounting at same elevation as face of grid.
- D. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

3.02 INSTALLATION - SUSPENSION SYSTEM

- A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, ASTM C636/C636M, ASTM E580/E580M, ASTM C636/C636M, and ASTM E580/E580M and as supplemented in this section.
- B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- C. Locate system on room axis according to reflected plan.
- D. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
 - 1. Use longest practical lengths.
 - 2. Overlap and rivet corners.
- E. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- H. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
- I. Do not eccentrically load system or induce rotation of runners.

3.03 INSTALLATION - ACOUSTICAL UNITS

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- E. Cutting Acoustical Units:
 - 1. Cut to fit irregular grid and perimeter edge trim.
 - 2. Make field cut edges of same profile as factory edges. Cut border tile not cut to a reveal edge will not be acceptable.
 - 3. Double cut and field paint exposed reveal edges.
- F. Where round obstructions occur, provide preformed closures to match perimeter molding.
- G. Install hold-down clips on panels within 20 ft of an exterior door.

3.04 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION

**SECTION 09 65 00
RESILIENT FLOORING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Resilient tile flooring.
- B. Resilient base.
- C. Installation accessories.

1.02 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 09 05 61 - Common Work Results for Flooring Preparation: Floor moisture and alkalinity testing and remediation procedures.

1.03 REFERENCE STANDARDS

- A. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2017.
- B. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2019.
- C. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile; 2004 (Reapproved 2018).
- D. ASTM F1700 - Standard Specification for Solid Vinyl Floor Tile; 2018a.
- E. ASTM F1861 - Standard Specification for Resilient Wall Base; 2016.
- F. ASTM F2169 - Standard Specification for Resilient Stair Treads; 2015, with Editorial Revision (2016).
- G. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2019.
- H. NSF 332 - Sustainability Assessment for Resilient Floor Coverings; 2015.
- I. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2011.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- C. Shop Drawings: Indicate seaming plans and floor patterns.
- D. Selection Samples: Submit manufacturer's complete set of color samples for Architect/Engineer's initial selection.
- E. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.
- F. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Flooring Material: 100 square feet of each type and color.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in installing specified flooring with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
- B. Store all materials off of the floor in an acclimatized, weather-tight space.
- C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.
- D. Protect roll materials from damage by storing on end.
- E. Do not double stack pallets.

1.07 FIELD CONDITIONS

- A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.
- B. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.01 TILE FLOORING

- A. Luxury Vinyl Tile (LVT-A): Printed film type, with transparent or translucent wear layer, wood grain pattern - glue down type.
 - 1. Minimum Requirements: Comply with ASTM F1700, of Class corresponding to type specified.
 - 2. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
 - 3. Size: 9 x 48 inch.
 - 4. Wear Layer Thickness: 0.20 inch.
 - 5. Total Thickness: 0.118 inch. - (3.0 mm).
 - 6. Pattern: Linear - wood grain.
 - 7. Product:
 - a. J & J Flooring Group; Classics Collection.
 - 1) Style: Classics V5000 Modular.
 - 2) Color: (LVT-A): #1008 - Paradigm.
 - b. Substitutions: Not permitted.
 - 8. Warranty: Commercial Limited 10 Year Warranty.

2.02 RESILIENT BASE

- A. Resilient Vinyl Base Type (VB-A): ASTM F1861, Type TV, vinyl, thermoplastic; top set Style B, Cove.
 - 1. Manufacturers:
 - a. Johnsonite, a Tarkett Company: www.johnsonite.com.
 - 1) Color: (VB-A): #47 - Brown.
 - b. Substitutions: Not permitted.
 - 2. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648 or NFPA 253.
 - 3. Height: 4 inch.
 - 4. Thickness: 0.125 inch.
 - 5. Finish: Satin.
 - 6. Length: 4 foot sections.

2.03 ACCESSORIES

- A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
- B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.
- C. Moldings, Transition and Edge Strips: Same material as flooring.
- D. Filler for Coved Base: Plastic.
- E. Sealer and Wax: Types recommended by flooring manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.
- C. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
 - 1. Test in accordance with Section 09 05 61.
 - 2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.
- D. Verify that concrete sub-floor surfaces are dry enough and ready for resilient flooring installation by testing for moisture emission rate and alkalinity in accordance with ASTM F710; obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.
- E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Prepare floor substrates for installation of flooring in accordance with Section 09 05 61.

3.03 INSTALLATION - GENERAL

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install in accordance with manufacturer's written instructions.
- C. Adhesive-Applied Installation:
 - 1. Spread only enough adhesive to permit installation of materials before initial set.
- D. Fit joints and butt seams tightly.
- E. Set flooring in place, press with heavy roller to attain full adhesion.
- F. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.
- G. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
 - 1. Metal Strips: Attach to substrate before installation of flooring using stainless steel screws.
 - 2. Resilient Strips: Attach to substrate using adhesive.
- H. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.
- I. Install flooring in recessed floor access covers, maintaining floor pattern.

3.04 Installation - Tile Flooring

- A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.
- B. Lay flooring with joints and seams parallel to building lines to produce symmetrical pattern.
- C. Install plank tile with a random offset of at least 6 inches from adjacent rows.

3.05 Installation - Resilient Base

- A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.
- B. Miter internal corners. At external corners, "V" cut back of base strip to 2/3 of its thickness and fold. At exposed ends, use premolded units.
- C. Install base on solid backing. Bond tightly to wall and floor surfaces.
- D. Scribe and fit to door frames and other interruptions.

3.06 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's written instructions.

3.07 PROTECTION

- A. Prohibit traffic on resilient flooring for 48 hours after installation.

3.08 SCHEDULE

A. As indicated on drawings.

END OF SECTION

**SECTION 09 91 13
EXTERIOR PAINTING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints.
- C. Materials for backpriming woodwork.
- D. Scope: Finish exterior surfaces exposed to view, and unless otherwise indicated, including the following:
 - 1. Exposed surfaces of steel lintels and ledge angles.
 - 2. Cedar scheduled to remain and new Fiber Cement siding & trim. Note: All exterior Cedar and Fiber Cement siding, soffits, casings and trim, although factory finished, shall receive one full coat of paint after installation.
 - 3. Existing Metal Clad window and door sashes, jambs and trim scheduled to remain. New door and frame (metal clad) units do not receive field painted finish. The exteriors of these units are to be factory finished.
 - 4. Existing Garage Doors and frames.
 - 5. Mechanical & Electrical:
 - a. On the roof and outdoors, paint exposed plumbing vent, exhaust fans, electrical piping and all fittings that are exposed to weather or to view.
- E. Do Not Paint or Finish the Following Items:
 - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished. Note: All exterior Fiber Cement and Cellular PVC siding, soffits and trim, although factory finished, shall receive top-coats of paint after installation.
 - 2. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
 - 5. Non-metallic roofing and flashing.
 - 6. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, zinc, and lead.
 - 7. Floors, unless specifically indicated.
 - 8. Ceramic and other types of tiles.
 - 9. Brick, glass unit masonry, architectural concrete, cast stone, stone veneer.
 - 10. Glass.
 - 11. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 09 91 23 - Interior Painting.

1.03 DEFINITIONS

- A. Comply with 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 2019.
- C. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials 2020.
- D. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board 2019.
- E. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association Current Edition.
- F. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual Current Edition.
- G. SCAQMD 1113 - Architectural Coatings 1977 (Amended 2016).
- H. SSPC-SP 1 - Solvent Cleaning 2015, with Editorial Revision (2016).
- I. SSPC-SP 6 - Commercial Blast Cleaning 2007.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
 - 2. 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.
- 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. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as masonry, have been approved.
- D. Certification: By manufacturer that paints and finishes comply with VOC limits specified.
- E. Manufacturer's Instructions: Indicate special surface preparation procedures.
- F. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - 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.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five years experience and approved by manufacturer.

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 paint product manufacturer's temperature ranges.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
- D. Minimum Application Temperatures for Latex Paints: 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
 1. If a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect/Engineer is obtained using the specified procedures for substitutions.
 2. Substitution of other products by the same manufacturer is preferred over substitution of products by a different manufacturer.
 3. Substitution of a different paint system using MPI-approved products by the same manufacturer will be considered.
- B. Paints:
 1. Behr Process Corporation: www.behr.com.
 2. PPG Paints: www.ppgpaints.com.
 3. Sherwin-Williams Company: www.sherwin-williams.com.
- C. Primer Sealers: Same manufacturer as top coats.

D. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless required to be a field-catalyzed paint.

1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.
2. 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.
3. 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.
4. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
5. Supply each paint material in quantity required to complete entire project's work from a single production run.
6. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is described explicitly in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content:

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.
 - b. SCAQMD 1113 Rule.
 - c. CARB (SCM).
 - d. Ozone Transport Commission (OTC) Model Rule, Architectural, Industrial, and Maintenance Coatings; www.otcair.org; specifically:
 - 1) Opaque, Flat: 50 g/L, maximum.
 - 2) Opaque, Nonflat: 150 g/L, maximum.
 - 3) Opaque, High Gloss: 250 g/L, maximum.
 - e. Architectural coatings VOC limits of the State in which the Project is located.
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.

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect/Engineer from the manufacturer's full line.

E. Colors: As indicated in Color Schedule.

1. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Owner.
2. Extend colors to surface edges; colors may change at any edge as directed by Architect/Engineer.

2.03 PAINT SYSTEMS - EXTERIOR

- A. Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including fiber cement siding, primed wood, primed metal, and Cellular PVC siding and trim.
1. One top coat
 - a. Applications:
 - 1) Siding & Trim: Finish and sheen to match: Satin Finish.
 - 2) Steel Lintels, Doors and Frames: Semi-Gloss Finish.
 2. Top Coat(s): Exterior Latex.
 - a. Products:
 - 1) Behr Marquee Exterior Satin Enamel [No. 9450]. (MPI #15)
 - 2) Behr Marquee Exterior Semi-Gloss Enamel [No. 5450]. (MPI #11)
 - 3) PPG Paints Speedhide Exterior Latex Satin, 6-2045XI Series. (MPI #15)
 - 4) PPG Paints Speedhide Exterior Latex Semi-Gloss, 6-900XI Series. (MPI #11)
 - 5) Sherwin-Williams Loxon Self-Cleaning Acrylic Exterior, Satin.
 - 6) Sherwin-Williams Solo Series, Semi-Gloss. (MPI #11)
 - 7) Substitutions: Not permitted.
 3. Top Coat(s): Exterior Alkyd Enamel; MPI #94 or 96.
 - a. Products:
 - 1) Behr Alkyd Interior/Exterior Semi-Gloss Enamel [No. 3900].
 - 2) PPG Paints Fast Dry 35 Quick Drying Enamel, Gloss, 95-9000 Series, Gloss. (MPI #96)
 - 3) Substitutions: Section 01 60 00 - Product Requirements.

2.04 PRIMERS

- A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
1. Alkali Resistant Water Based Primer; MPI #3.
 2. Interior/Exterior Quick Dry Alkyd Primer for Metal; MPI #76.
 3. Rust-Inhibitive Water Based Primer; MPI #107.
 - a. Products:
 - 1) Behr Premium Plus Interior/Exterior Multi-Surface Primer and Sealer [No. 436]. (MPI #107)
 - 2) PPG Paints Pitt-Tech Plus DTM Industrial Primer, 4020 PF Series.
 - 3) Substitutions: Section 01 60 00 - Product Requirements.

2.05 ACCESSORY MATERIALS

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

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin application of paints and finishes until substrates have been properly prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- D. If substrate preparation is the responsibility of another installer, notify Architect/Engineer of unsatisfactory preparation before proceeding.
- E. Test shop-applied primer for compatibility with subsequent cover materials.
- F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 1. Fiber Cement Siding: 12 percent.
 - 2. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- F. Fiber Cement Siding: Remove dirt, dust and other foreign matter with a stiff fiber brush. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
- G. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
- H. Galvanized Surfaces:
 - 1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
- I. Ferrous Metal:
 - 1. Solvent clean according to SSPC-SP 1.
 - 2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
 - 3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.
- J. Exterior Wood Surfaces to Receive Opaque Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied. Back prime concealed surfaces before installation.
- K. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Exterior Wood to Receive Opaque Finish: If final painting must be delayed more than 2 weeks after installation of woodwork, apply primer within 2 weeks and final coating within 4 weeks.
- C. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- D. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.
- E. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- F. Apply each coat to uniform appearance.
- G. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply additional coats until complete hide is achieved.
- H. Sand wood and metal surfaces lightly between coats to achieve required finish.
- I. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- J. 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

**SECTION 09 91 23
INTERIOR PAINTING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints.
- C. Materials for backpriming woodwork.
- D. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
 - 1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
 - 2. Mechanical and Electrical:
 - a. In areas where walls and/or overhead surfaces are scheduled to receive painted finishes, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
 - b. In all areas, paint shop-primed items.
 - c. Paint interior surfaces of air ducts and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint to visible surfaces.
- E. Do Not Paint or Finish the Following Items:
 - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
 - 2. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
 - 5. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, and lead items.
 - 6. Floors, unless specifically indicated.
 - 7. Brick, architectural concrete, cast stone, integrally colored plaster and stucco.
 - 8. Glass.
 - 9. Acoustical materials, unless specifically indicated.
 - 10. Pipes, ducts, and conduits concealed behind wall or ceiling finishes

1.02 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 09 91 13 - Exterior Painting.

1.03 DEFINITIONS

- A. Comply with ASTM D16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS

- A. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications 2019.

- B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials 2020.
- C. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association Current Edition.
- D. SSPC V1 (PM1) - Good Painting Practice: Painting Manual Volume 1 2016.
- E. SSPC V2 (PM2) - Systems and Specifications: Steel Structures Painting Manual Volume 2 2021.
- F. SSPC-SP 1 - Solvent Cleaning 2015, with Editorial Revision (2016).
- G. SSPC-SP 2 - Hand Tool Cleaning 2018.
- H. SSPC-SP 3 - Power Tool Cleaning 2018.
- I. SSPC-SP 6 - Commercial Blast Cleaning 2007.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
 - 2. 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.
- 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. Allow 30 days for approval process, after receipt of complete samples by Architect/Engineer.
 - 3. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as factory finished metals and wood doors, have been approved.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Paint and Finish Materials: 2 gallons of each color; from the same product run, store where directed.
 - 3. Label each container with color in addition to the manufacturer's label.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five years 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. Do not apply materials when relative humidity exceeds 85 percent, at temperatures less than 5 degrees F above the dew point, or to damp or wet surfaces.
- D. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.
- B. Paints:
 - 1. Behr Process Corporation: www.behr.com/#sle.
 - 2. PPG Paints: www.ppgpaints.com/#sle.
 - 3. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
- C. Substitutions: Not permitted.

2.02 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
 - 1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - 2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
 - 3. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
 - 4. Supply each paint material in quantity required to complete entire project's work from a single production run.
 - 5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
- B. Volatile Organic Compound (VOC) Content: Comply with Section 01 61 16.

- C. Flammability: Comply with applicable code for surface burning characteristics.
- D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect/Engineer from the manufacturer's full line.
- E. Colors: As indicated on drawings.
 - 1. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Owner.
 - 2. Extend colors to surface edges; colors may change at any edge as directed by Architect/Engineer.
 - 3. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.
 - 4. In utility areas, finish equipment, piping, conduit, and exposed duct work in colors according to the wall color scheduled.

2.03 PAINT SYSTEMS - INTERIOR

- A. Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board, wood, and shop primed steel.
- B. Application:
 - 1. Gypsum board walls: Eggshell Finish.
 - 2. Gypsum board ceilings & soffits: Flat Finish.
 - 3. Shop Primed Hollow Metal Doors, frames, handrials & guardrails and lintels: Satin Finish.
 - 4. Interior Wood trim and Casings: Satin Finish.
 - 5. Two top coats and one coat primer.
 - 6. Top Coat(s): Institutional Low Odor/VOC Interior Latex.
 - a. Products:
 - 1) Behr Premium Plus Interior Eggshell Enamel [No. 2050].
 - 2) Behr Premium Plus Interior Flat [No. 1050].
 - 3) Behr Premium Plus Interior Satin Enamel [No. 7050].
 - 4) Behr Premium Plus Interior Semi-Gloss Enamel [No. 3050].
 - 5) PPG Paints Speedhide Zero Interior Latex, 6-4110XI Series, Flat. (MPI #143)
 - 6) PPG Paints Speedhide Zero Interior Latex, 6-4310XI Series, Eggshell.
 - 7) PPG Paints Speedhide Zero Interior Latex, 6-4410XI Series, Satin.
 - 8) PPG Paints Speedhide Zero Interior Latex, 6-4510XI Series, Semi-Gloss. (MPI #147)
 - 9) Sherwin-Williams ProMar 200 HP Series, Eg-Shel.
 - 10) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Flat.
 - 11) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Low Sheen.
 - 12) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Semi-Gloss.
 - 13) Substitutions: Section 01 60 00 - Product Requirements.
 - 7. Primer: As recommended by top coat manufacturer for specific substrate.

2.04 PRIMERS

- A. Primers: Provide primer products as recommended by manufacturer of top coats for surface application.

2.05 ACCESSORY MATERIALS

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

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin application of paints and finishes until substrates have been properly prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- D. If substrate preparation is the responsibility of another installer, notify Architect/Engineer 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.
 - 2. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
 - 3. Concrete Floors and Traffic Surfaces: 8 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 repair existing paints or finishes that exhibit surface defects.
- D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- E. Seal surfaces that might cause bleed through or staining of topcoat.
- F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- G. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
- H. Galvanized Surfaces:
 - 1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
 - 2. Prepare surface according to SSPC-SP 2.
 - 3. Solvent clean according to SSPC-SP 1.
 - 4. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6

"Commercial Blast Cleaning". Protect from corrosion until coated.

- I. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.
- J. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with tinted primer.

3.03 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- C. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.
- D. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- E. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- F. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.
- G. Sand wood and metal surfaces lightly between coats to achieve required finish.
- H. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- I. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection.
- B. Owner will provide field inspection.

3.05 CLEANING

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

3.06 PROTECTION

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

3.07 COLOR SCHEDULE - AS INDICATED ON THE DRAWINGS

END OF SECTION

SECTION 09 93 00
STAINING AND TRANSPARENT FINISHING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of stains and transparent finishes.

1.02 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 09 91 13 - Exterior Painting: Stains and transparent finishes for concrete substrates.
- C. Section 09 91 23 - Interior Painting: Stains and transparent finishes for concrete substrates.

1.03 DEFINITIONS

- A. Comply with ASTM D16 for interpretation of terms used in this section.

1.04 SUBMITTALS

- A. 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.
 - 2. MPI product number (e.g. MPI #33).
 - 3. Manufacturer's installation instructions.
- B. Samples: Submit two samples, illustrating selected colors and sheens for each system with specified coats cascaded. Submit on actual wood substrate to be finished, 8 by 10 inch in size.
- C. Certification: By manufacturer that stains and transparent finishes comply with VOC limits specified.
- D. Manufacturer's Instructions: Indicate special surface preparation procedures.
- E. Applicator's Qualification Statement.
- F. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, safety data sheets (SDS), care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Stain and Transparent Finish Materials: 1 gallon of each color and type; from the same product run, store where directed.
 - 3. Label each container with color and type in addition to the manufacturer's label.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five years experience and approved by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of stain or transparent finish, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Stain and Transparent Finish 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.

1.07 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by manufacturer of stains and transparent finishes.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Do not apply materials when relative humidity exceeds 85 percent; at temperatures less than 5 degrees F above the dew point; or to damp or wet surfaces.
- D. Minimum Application Temperature: 50 degrees F unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Transparent Finishes:
 - 1. Behr Process Corporation: www.behr.com.
 - 2. PPG Paints Deft Interior Clears/Polyurethanes: www.ppgpaints.com.
 - 3. Sherwin-Williams Company: www.sherwin-williams.com.
- B. Stains:
 - 1. Behr Process Corporation: www.behr.com.
 - 2. PPG Paints Deft Interior Stains: www.ppgpaints.com.
 - 3. Sherwin-Williams Company: www.sherwin-williams.com.

2.02 Stains and Transparent FINISHES - GENERAL

- A. Finishes:
 - 1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.
 - 2. Provide finishes 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.
 - 3. 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.
 - 4. Supply each finish material in quantity required to complete entire project's work from a single production run.

5. Do not reduce, thin, or dilute finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
- B. Flammability: Comply with applicable code for surface burning characteristics.
- C. Colors: To match existing.
1. Selection to be made by Architect/Engineer after award of contract.

2.03 Exterior STAIN AND TRANSPARENT FINISH SYSTEMS

- A. Finish on Wood- exposed cedar rafters and roof decking:
1. 2 coat(s) stain.
 2. Stain: Exterior Solid Stain for Wood, Water Based; MPI #16.
 - a. Products:
 - 1) Behr Premium Solid Color Waterproofing Stain No. 5013 Deep Base.
 - 2) Sherwin-Williams WoodScapes Acrylic Solid Color Stain. (MPI #16)
 - 3) Substitutions: Section 01 60 00 - Product Requirements.

2.04 Interior STAIN AND TRANSPARENT FINISH SYSTEMS

- A. Finish on Wood - Vertical Surfaces:
1. 2 coat(s) stain.
 2. 1 coat(s) sealer.
 3. 2 coat(s) varnish.
 4. Stain: Semi-Transparent Stain for Wood, Solvent Based; MPI #90.
 - a. Products:
 - 1) PPG Paints Deft Interior Oil-Based Fast Dry Stain, DFT570 Series. (MPI #90)
 - 2) Substitutions: Section 01 60 00 - Product Requirements.
 5. Sealer: Alkyd, Sanding Sealer, Clear; MPI #102.
 - a. Products:
 - 1) PPG Paints Deft Interior Oil-Based Sanding Sealer, DFT60 (Not for use with oil based polyurethanes). (MPI #102)
 - 2) Substitutions: Section 01 60 00 - Product Requirements.
 6. Top Coat(s): Polyurethane Varnish, Oil Modified; MPI #56 or 57.
 - a. Products:
 - 1) PPG Paints Deft Interior Polyurethane Oil-Based 350 VOC, DFT129, Satin.
 - 2) Substitutions: Section 01 60 00 - Product Requirements.
 7. Top Coat Sheen:
 - a. Satin: MPI gloss level 4; use this sheen at all locations.

2.05 ACCESSORY MATERIALS

- A. Accessory Materials: Cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of finished 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 stains 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/Engineer of unsatisfactory preparation before proceeding.
- E. 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. Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or repair existing finishes that exhibit surface defects.
- D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- E. Seal surfaces that might cause bleed through or staining of topcoat.
- F. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.
- G. Wood Surfaces to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.
- H. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with clear sealer.

3.03 APPLICATION

- A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- C. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- D. Sand wood surfaces lightly between coats to achieve required finish.

- E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- F. Wood to Receive Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- G. Reinstall items 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

**SECTION 10 14 00
SIGNAGE**

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Interior Building Signage: Surface mounted.

1.02 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures:
1. Product Data: Include manufacturer's construction details relating to materials, dimensions of individual components, profiles and finishes for each type of sign system.
 2. Shop Drawings: provide shop drawings for fabrication and erection of signs. Include plans, elevations and large-scale sections of typical members and other components. Show anchors, grounds, reinforcement, accessories, layout and installation details.
 - a. Provide message list for each sign including large-scale details of wording and layout of lettering.
 - b. For signs supported by or anchored to permanent construction, provide setting drawings, templates and directions for installation of anchor bolts and other anchors to be installed as a unit of work in other sections.
 3. Samples: Provide the following samples of each sign component for initial selection of color, pattern and surface texture as required and for verification of compliance with requirements indicated.
 - a. Samples for initial selection of color, pattern texture, and construction. Include color charts for manufacturer's full range of colors.

1.03 QUALITY ASSURANCE

- A. Qualifications:
1. Single Source Responsibility: For each separate type of sign required, obtain signs from a single manufacturer.

1.04 PROJECT CONDITIONS

- A. Field Measurements:
1. Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting.

PART 2 PRODUCTS

2.01 INTERIOR BUILDNG SIGNAGE

- A. Panel Signs: Fabricate frames to 6 by 9 inch profile.
1. Model: ASI - 390 Series.
 2. Sign Face Material: Injection molded ABS plastic.
 3. Corner Condition: Square.
 4. Graphic Content and Style:
 - a. Room Name: (Men)
 - b. Braille: Room name.
 - c. Lettering Style: Helvetica bold; upper case.
 - d. Universal symbols for handicapped accessibility.

5. Raised Copy:
 - a. Machine cut copy characters from matte finish opaque acrylic sheet and chemically weld onto the acrylic sheet forming sign panel face. Produce precisely formed characters with square cut edges free from burrs and cut marks.
 - 1) Pane material: Matte finished clear acrylic with opaque color coating subsurface applied.
 - 2) Raised Copy Thickness: Not less than 1/32 inch.
6. Applied Copy: Die cut characters from vinyl film with pressure sensitive adhesive backing. Apply copy to the exposed face of the sign panel.
 - a. Panel Material: Matte finished clear acrylic sheet with opaque color coating subsurface applied.
7. Backer Panel: Provide ABS plastic backer panels to match sign panel color at locations where signs are glass mounted.

PART 3 EXECUTION

3.01 INSTALLATION

- A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
 1. Install signs level, plumb and at the height indicated, with sign surfaces free from distortion or other defects in appearance.
- B. Wall Mounted Panel Signs: Attach panel signs to wall surfaces using the methods indicated below:
 1. Adhesive fasten securely to wall with double sided tape.
- C. Chain Mounted Panel Signs: Attach to plastic chain and to each stairway newel post

3.02 CLEANING AND PROTECTION

- A. At completion of the installation, clean soiled sign surfaces in accordance with the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

3.03 SCHEDULE

- A. Interior Building Signage:
 1. Locate interior room signage at two new toilet rooms at first floor. One sign "MEN" and one sign "WOMEN" with handicapped accessibility symbols.
 2. Locate interior room signage and plastic chain system anchored to each newel post at the foot of the existing open staircase at the first floor. One sign "NO PUBLIC ACCESS".

END OF SECTION

**SECTION 10 21 13.13
METAL TOILET COMPARTMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Metal toilet compartments.
- B. Urinal and Vestibule screens.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Blocking and supports.
- B. Section 10 28 00 - Toilet, Bath, and Laundry Accessories.

1.03 REFERENCE STANDARDS

- A. ASTM A424/A424M - Standard Specification for Steel, Sheet, for Porcelain Enameling 2018.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the work with placement of support framing and anchors in walls and ceilings.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall supports, door swings.
- C. Product Data: Provide data on panel construction, hardware, and accessories.
- D. Manufacturer's Installation Instructions: Indicate special procedures.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Metal Toilet Compartments: Powder Coated Steel.
 - 1. All American Metal Corp - AAMCO: www.allamericanmetal.com/#sle.
 - 2. ASI Accurate Partitions: www.asi-accuratepartitions.com/#sle.
 - 3. ASI Global Partitions: www.asi-globalpartitions.com/#sle.
 - 4. General Partitions Mfg. Corp: www.generalpartitions.com/#sle.
 - 5. Metpar Corp: www.metpar.com/#sle.
 - 6. Substitutions: Section 01 60 00 - Product Requirements.

2.02 MATERIALS

- A. Steel Sheet: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

2.03 COMPONENTS

- A. Toilet Compartments: Powder coated steel, floor-mounted headrail-braced.
- B. Doors, Panels, and Pilasters: Sheet steel faces, pressure bonded to sound deadening core, formed and closed edges; corners made with corner clips or mitered, welded, and ground smooth.
 - 1. Panel Faces: 20 gauge, 0.0359 inch.
 - 2. Door Faces: 22 gauge, 0.0299 inch.
 - 3. Pilaster Faces: 20 gauge, 0.0359 inch.
 - 4. Reinforcement: 12 gauge, 0.1046 inch.
 - 5. Internal Reinforcement: Provide in areas of attached hardware and fittings. Mark locations of reinforcement for partition mounted washroom accessories.
- C. Door and Panel Dimensions:
 - 1. Thickness: 1 inch.
 - 2. Door Width: 24 inch.
 - 3. Door Width for Handicapped Use: 36 inch , out-swinging.
 - 4. Height: 58 inch.
- D. Pilasters: 1-1/4 inch thick, of sizes required to suit compartment width and spacing.
- E. Urinal Screens: Wall mounted with two panel brackets, and floor-to-ceiling vertical upright consisting of pilaster anchored to floor and ceiling.

2.04 ACCESSORIES

- A. Pilaster Shoes: Formed chromed steel with satin finish, 3 inch high, concealing floor fastenings.
 - 1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.
- B. Head Rails: Hollow stainless steel tube, 1 by 1-5/8 inch size, with anti-grip strips and cast socket wall brackets.
- C. Brackets: Satin chrome-plated non-ferrous cast metal.
- D. Attachments, Screws, and Bolts: Stainless steel , tamper proof type.
 - 1. For attaching panels and pilasters to brackets: Through-bolts and nuts ; tamper proof.
- E. Hardware: Satin chrome plated non-ferrous cast metal:
 - 1. Pivot hinges, gravity type, adjustable for door close positioning; two per door.
 - 2. Thumb turn or sliding door latch with exterior emergency access feature.
 - 3. Door strike and keeper with rubber bumper; mounted on pilaster in alignment with door latch.
 - 4. Coat hook with rubber bumper; one per compartment, mounted on door.
 - 5. Provide door pull for outswinging doors.

2.05 FINISHING

- A. Powder Coated Steel Compartments: Clean, degrease, and neutralize. Follow immediately with a phosphatizing treatment, prime coat and two finish coats powder coat enamel.
- B. Color: Single color as selected.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that field measurements are as indicated.
- C. Verify correct spacing of and between plumbing fixtures.
- D. Verify correct location of built-in framing, anchorage, and bracing.

3.02 INSTALLATION

- A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.
- B. Maintain 3/8 to 1/2 inch space between wall and panels and between wall and end pilasters.
- C. Attach panel brackets securely to walls using anchor devices.
- D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.
- E. Field touch-up of scratches or damaged enamel finish will not be permitted. Replace damaged or scratched materials with new materials.

3.03 TOLERANCES

- A. Maximum Variation From True Position: 1/4 inch.
- B. Maximum Variation From Plumb: 1/8 inch.

3.04 ADJUSTING

- A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.
- B. Adjust hinges to position doors in partial opening position when unlatched. Return out swinging doors to closed position.
- C. Adjust adjacent components for consistency of line or plane.

END OF SECTION

**SECTION 10 28 00
TOILET, BATH, AND LAUNDRY ACCESSORIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Commercial toilet accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Concealed supports for accessories, including in wall framing and plates.
- B. Section 08 83 00 - Mirrors: Other mirrors.
- C. Section 10 21 13.13 - Metal Toilet Compartments.

1.03 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- B. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service 2015a (Reapproved 2019).
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.
- D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2015.
- E. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium 2017.

1.04 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.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Products listed on the Drawings are made by American Specialties, Inc.:
www.americanspecialties.com.
- B. Other Acceptable Manufacturers:
 - 1. Bradley Corporation; www.bradleycorp.com/#sle.
 - 2. Bobrick Washroom Equipment Inc.: www.bobrick.com.
 - 3. Gamco USA, Inc.: www.gamcousa.com.
 - 4. Substitutions: Section 01 60 00 - Product Requirements.

C. All items to be made by the same 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.
 - 1. Grind welded joints smooth.
 - 2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.
- B. Keys: Provide 2 keys for each accessory to Owner; master key lockable accessories.
- C. Stainless Steel Sheet: ASTM A666, Type 304.
- D. Stainless Steel Tubing: ASTM A269/A269M, Type 304 or 316.
- E. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.
- F. Adhesive: Two component epoxy type, waterproof.
- G. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.
- H. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.03 FINISHES

- A. Stainless Steel: No. 4 Brushed finish, unless otherwise noted.
- B. Chrome/Nickel Plating: ASTM B456, SC 2, satin finish, unless otherwise noted.
- C. Baked Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats epoxy baked enamel.
- D. Galvanizing for Items Other than Sheet: Comply with ASTM A123/A123M; galvanize ferrous metal and fastening devices.
- E. Shop Primed Ferrous Metals: Pretreat and clean, spray apply one coat primer and bake.
- F. Back paint components where contact is made with building finishes to prevent electrolysis.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify exact location of accessories for installation.
- C. See Section 06 10 00 for installation of blocking, reinforcing plates, and concealed anchors in walls and ceilings.

3.02 PREPARATION

- A. Deliver inserts and rough-in frames to site for timely installation.
- B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

- A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.
 - 1. Grab Bars: As indicated on the drawings.
 - 2. Mirrors: 40 inch, measured to bottom of mirrored surface.
- D. Mounting Heights and Locations: As required by accessibility regulations and as indicated on drawings.

3.04 PROTECTION

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

3.05 SCHEDULE

- A. Refer to Enlarged Plan drawings for schedule of toilet accessories.

END OF SECTION

**SECTION 10 44 00
FIRE PROTECTION SPECIALTIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fire extinguishers.
- B. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.
- B. Section 09 21 16 - Gypsum Board Assemblies: Roughed-in wall openings.

1.03 REFERENCE STANDARDS

- A. NFPA 10 - Standard for Portable Fire Extinguishers 2022.
- B. UL (DIR) - Online Certifications Directory Current Edition.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate cabinet physical dimensions and rough-in measurements for recessed cabinets.
- C. Product Data: Provide extinguisher operational features, color and finish, and anchorage details.
- D. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.05 FIELD CONDITIONS

- A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Fire Extinguishers, Cabinets and Accessories:
 - 1. Ansul, a Tyco Business: www.ansul.com/#sle.
 - 2. JL Industries, Inc: www.jlindustries.com.
 - 3. Larsen's Manufacturing Co: www.larsensmfg.com/#sle.
 - 4. Potter-Roemer: www.potterroemer.com/#sle.
 - 5. Pyro-Chem, a Tyco Business: www.pyrochem.com/#sle.
 - 6. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 FIRE EXTINGUISHERS

- A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
 - 1. Provide extinguishers labeled by UL for the purpose specified and indicated.
- B. Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gage.
 - 1. Class: A:B:C.
 - 2. Size: 10 pound.
 - 3. Finish: Baked polyester powder coat red color.

2.03 ACCESSORIES

- A. Extinguisher Brackets: Formed steel, chrome-plated.
- B. Graphic Identification: Provide supplementary identification signage acceptable to authority having jurisdiction above cabinet that is visible above extinguisher locations. Product: www.compliancesigns.com; Fire Extinguisher Sign NHE-27897Proj (2D Projection Mount). Aluminum Sign: 9x7 inch; Tri-Fire Safety/Equipment. Mechanically fastened to wall surface. Typical at all new fire extinguisher locations. Mounting height per Authority Having Jurisdiction.
- C. Inspection/Certification Tags: Acceptable to the authority having jurisdiction.
 - 1. Expiration Date: Not less than 12 months after date of Substantial Completion.
 - 2. Provide (1) for each fire extinguisher.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install extinguishers plumb and level , 54 inches from finished floor to top of extinguisher.
- C. Install graphic signage above fire extinguishers and cabinets.
- D. Secure rigidly in place.
- E. Place extinguishers and accessories on wall brackets.
- F. Attach Inspection/Certification tags to extinguishers.

END OF SECTION

**SECTION 12 36 00
COUNTERTOPS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Countertops for architectural cabinet work.
- B. Wall-hung counters and vanity tops.
- C. Sinks molded into countertops.

1.02 RELATED REQUIREMENTS

- A. Section 06 41 00 - Custom Casework.

1.03 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.
- B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).
- C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards 2021, with Errata.
- D. IAPMO Z124 - Plastic Plumbing Fixtures 2017, with Errata.
- E. ISFA 2-01 - Classification and Standards for Solid Surfacing Material 2013.
- F. NEMA LD 3 - High-Pressure Decorative Laminates 2005.
- G. PS 1 - Structural Plywood 2009 (Revised 2019).

1.04 SUBMITTALS

- A. See Section 01 30 00 - 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. Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, and patterns.
- F. Test Reports: Chemical resistance testing, showing compliance with specified requirements.
- G. Installation Instructions: Manufacturer's installation instructions and recommendations.
- H. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than five years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. See Section 06 41 00 - Custom Casework.

1.07 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. Quality Standard: See Section 06 41 00.
- B. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate.
 - 1. Flat Sheet Thickness: 1/2 inch, minimum.
 - 2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or 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: www.wilsonart.com/#sle.
 - a) Color: (SS-A): Wilsonart: Mystique; 9200CS.
 - 2) Substitutions: Not permitted.
 - b. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
 - c. NSF approved for food contact.
 - d. Finish on Exposed Surfaces: Semi-gloss, gloss rating of 25 to 50.
 - 3. Solid Surface Sinks and Bowls: Integral castings; minimum 3/4 inch wall thickness; comply with IAPMO Z124.
 - a. Product: Wilsonart Solid Surface: www.wilsonart.com.
 - 1) L1: Oval ADA Vanity Bowl: AV1512
 - a) Size: Overall 17-1/4"L x 14-3/8" W x 5-11/16" D.
 - b) Color: Designer White.
 - 2) SK-1: Single ADA Kitchen Sink: AK2716
 - a) Size: Overall 28-1/2" L x 17-5/8" W x 6-3/8" D.
 - b) Color: Designer White.
 - 3) SK-2: Single, Square Deep Utility Sink: AK1818
 - a) Size: Overall 19-1/2" L x 19-1/2" W x 13" D.
 - b) Color: Designer White.
 - b. Substitutions: Not permitted.

- c. Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.
- 4. Other Components Thickness: 1/2 inch, minimum.
- 5. Exposed Edge Treatment: Built up to minimum 1-1/4 inch thick; square edge; use marine edge at sinks.
- 6. Back and End Splashes: Same sheet material, square top; minimum 4 inches high x 1/2 inches thick.
- 7. Fabricate in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 11 - Countertops, Premium Grade.

2.02 MATERIALS

- A. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch thick; join lengths using metal splines.
- B. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.
- C. Joint Sealant: Mildew-resistant silicone sealant, clear.
- D. Support Brackets: 2 x 2 1/4 inch thick painted steel construction.
 - 1. Manufacturers:
 - a. A&M Hardware, Inc.: www.aandmhardware.com.
 - b. Rakks/Rangine Corporation: www.rakks.com.
 - 2. Products:
 - a. Counters 19 To 24 Inches Deep:
 - 1) A&M #C-18.
 - 2) Rakks #EH-1818.
 - 3. Use A&M brackets or Rakks "Flush Mount" configuration (vertical leg concealed in wall) at drywall locations and where indicated on Drawings.

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 and wall panels up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.
 - 1. Integral sinks: Shop-mount securely to countertop with adhesives, using flush configuration, as per manufacturer's instructions, and as detailed on drawings.
- D. Wall-Mounted Counters: Provide skirts, aprons, and brackets as indicated on the Drawings.

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/Engineer 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. Install vanities in accordance with manufacturer's instructions and approved shop drawings
- B. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.
- C. Seal joint between back/end splashes and vertical surfaces.

3.04 CLEANING

- A. Clean countertop surfaces thoroughly.

3.05 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

**SECTION 22 05 19
METERS AND GAUGES FOR PLUMBING PIPING**

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Thermometers and thermometer wells.

1.02 REFERENCE STANDARDS

A. ASME B40.100 - Pressure Gauges and Gauge Attachments 2013.

B. ASTM E1 - Standard Specification for ASTM Liquid-in-Glass Thermometers 2014 (Reapproved 2020).

1.03 FIELD CONDITIONS

A. Do not install instrumentation when areas are under construction, except for required rough-in, taps, supports and test plugs.

PART 2 PRODUCTS

2.01 STEM TYPE THERMOMETERS

A. Manufacturers:

1. H.O. Trerice.
2. Weiss Instruments, Inc.
3. Dwyer Instruments, Inc.
4. Miljoco.

B. Thermometers - Adjustable Angle: Red- or blue-appearing non-toxic liquid in glass; ASTM E1; lens front tube, cast aluminum case with enamel finish, cast aluminum adjustable joint with positive locking device; adjustable 360 degrees in horizontal plane, 180 degrees in vertical plane.

1. Size: 9 inch scale.
2. Stem: 3/4 inch NPT brass.
3. Accuracy: 2 percent per ASTM E77.
4. Calibration: Degrees F.

2.02 THERMOMETER SUPPORTS

A. Socket: Brass separable sockets for thermometer stems with or without extensions as required, and with cap and chain.

B. Flange: 3 inch outside diameter reversible flange, designed to fasten to sheet metal air ducts, with brass perforated stem.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inch for installation of thermometer sockets. Ensure sockets allow clearance from insulation.

- C. Provide instruments with scale ranges selected according to service with largest appropriate scale.
- D. Install gauges and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.
- E. Adjust gauges and thermometers to final angle, clean windows and lenses, and calibrate to zero.

END OF SECTION

**SECTION 22 05 53
IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT**

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe markers.

1.02 REFERENCE STANDARDS

A. ASME A13.1 - Scheme for the Identification of Piping Systems 2020.

1.03 SUBMITTALS

A. Chart and Schedule: Submit valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.

B. Project Record Documents: Record actual locations of tagged valves.

PART 2 PRODUCTS

2.01 IDENTIFICATION APPLICATIONS

A. Piping: Pipe markers.

2.02 PIPE MARKERS

A. Manufacturers:

1. Brimar Industries, Inc.
2. Kolbi Pipe Marker Co..
3. Seton Identification Products.
4. Craftmark Identification Systems.

B. Comply with ASME A13.1.

C. Plastic Pipe Markers: Factory fabricated, flexible, semi- rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.

D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

E. Underground Plastic Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

F. Color code as follows:

1. Potable, Cooling, Boiler, Feed, Other Water: Green with white letters.

PART 3 EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

3.02 INSTALLATION

A. Install plastic pipe markers in accordance with manufacturer's instructions.

- B. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.
- C. Identify pipe markers indicating service, flow direction, and pressure.
- D. Install pipe markers in clear view and align with axis of piping.
- E. Location of pipe identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and Tee, at each side of penetration of structure or enclosure, and at each obstruction.

END OF SECTION

**SECTION 22 07 19
PLUMBING PIPING INSULATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

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

1.02 RELATED REQUIREMENTS

- A. Section 22 10 05 - Plumbing Piping: Placement of hangers and hanger inserts.

1.03 REFERENCE STANDARDS

- A. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus 2019.
- B. ASTM C195 - Standard Specification for Mineral Fiber Thermal Insulating Cement 2007 (Reapproved 2019).
- C. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation 2019.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.
- E. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials 2021.
- F. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials Current Edition, Including All Revisions.

1.04 SUBMITTALS

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

1.05 QUALITY ASSURANCE

- A. Applicator Qualifications: Company specializing in performing the type of work specified in this section with minimum three years of experience.
- B. Comply with the Midwest Insulation Contractors Association "National Commercial and Industrial Insulation Standards".

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, UL 723, ASTM E84, or UL 723.

2.02 GLASS FIBER

A. Manufacturers:

1. CertainTeed Corporation.
2. Johns Manville Corporation.
3. Knauf Insulation.
4. Owens Corning Corporation.

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. Vapor Barrier Lap Adhesive: Compatible with insulation.

F. Insulating Cement/Mastic: ASTM C195; hydraulic setting on mineral wool.

2.03 JACKETS

A. PVC Plastic.

1. 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.
2. 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, and expansion joints. All hangers, supports, anchors and other projections that are in contact to cold surfaces shall be insulated and vapor sealed to prevent condensation.
- 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. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
 - 2. Insert Location: Between support shield and piping and under the finish jacket.
 - 3. Insert Configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.
 - 4. 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 84 00.
- K. Apply insulation at pipe hangers and supports according to National Commercial and Industrial Standards Plate Numbers 5, 6 and 7.

3.03 SCHEDULES

- A. Plumbing Systems:
 - 1. Domestic Hot Water Supply:
 - a. Glass Fiber Insulation:
 - 1) Pipe Size Range: Up to and including 2 inch.

- a) Thickness: 1 inch.
- 2. Domestic Hot Water Recirculation:
 - a. Glass Fiber Insulation:
 - 1) Pipe Size Range: All sizes.
 - a) Thickness: 1 inch.
- 3. Domestic Cold Water:
 - a. Glass Fiber Insulation:
 - 1) Pipe Size Range: All sizes.
 - a) Thickness: 1 inch.

END OF SECTION

**SECTION 22 10 05
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. Ball valves.
 - 4. Flow controls.

1.02 RELATED REQUIREMENTS

- A. Section 22 05 53 - Identification for Plumbing Piping and Equipment.
- B. Section 22 07 19 - Plumbing Piping Insulation.
- C. Section 31 23 16 - Excavation.

1.03 REFERENCE STANDARDS

- A. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings 2018.
- B. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings 2018.
- C. ASME B16.23 - Cast Copper Alloy Solder Joint Drainage Fittings: DWV 2016.
- D. ASME B16.29 - Wrought Copper and Wrought Copper Alloy Solder-Joint Drainage Fittings - DWV 2017.
- E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- F. ASTM B32 - Standard Specification for Solder Metal 2020.
- G. ASTM B88 - Standard Specification for Seamless Copper Water Tube 2020.
- H. ASTM B306 - Standard Specification for Copper Drainage Tube (DWV) 2020.
- I. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube 2016.
- J. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings 2016.
- K. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems 2020.
- L. ASTM D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings 2020.
- M. ASTM D2855 - Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets 2020.

- N. AWWA C651 - Disinfecting Water Mains 2014, with Addendum (2020).
- O. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications 2018.
- P. 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 2018.
- Q. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation 2018, with Amendment (2019).
- R. MSS SP-80 - Bronze Gate, Globe, Angle, and Check Valves 2019.
- S. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends 2010, with Errata .
- T. NSF 61 - Drinking Water System Components - Health Effects 2020.
- U. NSF 372 - Drinking Water System Components - Lead Content 2020.
- V. Safe Drinking Water Act, Section 1417 - Lead Free: Refers to the wetted surface of pipe, fittings and fixtures in potable water systems that have a weighted average lead content $\leq 0.25\%$, Amended January 4, 2011.

1.04 SUBMITTALS

- A. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.
- B. Project Record Documents: Record actual locations of valves.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with applicable codes.
- B. Valves: Manufacturer's name and pressure rating marked on valve body. Manufacturers lead free marking on valve body.
- C. Perform Work in accordance with City plumbing ordinances.

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.

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.

2.02 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.
- B. Copper Tube: ASTM B306, DWV.
 - 1. Fittings: ASME B16.29, wrought copper, or ASME B16.23, solvent.
 - 2. Joints: ASTM B32, alloy Sn50 solder.
- C. PVC Pipe: ASTM D2665.
 - 1. Fittings: PVC.
 - 2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.03 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.
 - 3. Mechanical Press Sealed Fittings: Double pressed type, NSF 61 approved or certified, utilizing EPDM, non toxic synthetic rubber sealing elements. Sealing elements shall be factory installed by fitting manufacturer. Press ends shall have means to indicate non-pressed fitting during pressure testing.
 - a. Manufacturers:
 - 1) Viega LLC.
 - 2) Nibco.

2.04 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. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.05 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.
 5. Floor Supports: Concrete pier or steel pedestal with floor flange; fixture attachment.
 6. Rooftop Supports for Low-Slope Roofs: Steel pedestals with bases that rest on top of roofing membrane, not requiring any attachment to the roof structure and not penetrating the roofing assembly, with support fixtures as specified; and as follows:
 - a. Bases: High-density polypropylene.
 - b. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
 - c. Steel Components: Stainless steel or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.
 - d. Attachment/Support Fixtures: As recommended by manufacturer, same type as indicated for equivalent indoor hangers and supports; corrosion-resistant material.
 - e. Height: Provide minimum clearance of 6 inches under pipe to top of roofing.
- B. Plumbing Piping - Drain, Waste, and Vent:
1. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Malleable iron, adjustable swivel, split ring.
 2. Hangers for Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
 3. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
 4. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 5. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
- C. Plumbing Piping - Water:
1. Hangers for Pipe Sizes 1/2 Inch to 1-1/2 Inches: Malleable iron, adjustable swivel, split ring.
 2. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 3. Floor Support for Hot Pipe Sizes to 4 Inches: Cast iron adjustable pipe saddle, locknut, nipple, floor flange, and concrete pier or steel support.
 4. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
 5. Strut mounted pipe shall have clamps with insert for pipe support to allow for continuous insulation at clamp. Manufacturer; Klo-Shure insulation couplings

2.06 BALL VALVES

- A. Manufacturers:
1. Nibco, Inc; T/S-585-66-LF.
 2. Watts.
 3. Milwaukee Valve Company.
- B. Construction, 4 Inches and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze body, 304 stainless steel ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, solder, threaded, or grooved ends.

2.07 PIPING SPECIALTIES

- A. Flow Controls:
1. Manufacturers:
 - a. ThermOmegaTech; Circuit Solver, Model CS-1/2-115

- b. Substitutions: See Section 01 60 00 - Product Requirements.
- 2. Flow control assembly with self-acting thermostatic recirculation valve which automatically and continuously maintains potable hot water supply at the specified water temperature. As the water temperature increases the valve shall proportionally close dynamically adjusting flow regardless of system operating pressure.
- 3. Construction: Major components constructed of type 303 SS, all lead free components, thermal actuator shall be spring loaded and self-cleaning. Rated to 200 psig maximum working pressure and 250 degrees F maximum working temperature.
- 4. Components: Assembly consisting of thermal actuator, check valve, and isolation ball valves on both ends.

2.08 SWING CHECK VALVES

- A. Manufacturers:
 - 1. Milwaukee Valve Company.
 - 2. Nibco, Inc; S-413-Y-LF.
 - 3. Watts.
- B. Up to 2 Inches:
 - 1. MSS SP-139, 300 CWP, silicon bronze (ASTM Listed and corrosion resistant) body and cap designed for horizontal or vertical (flow in upward direction) flow, PTFE or TFE swing disc with rubber seat, solder ends.

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

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- C. Plastic pipe to non-plastic pipe joints shall be made with; Caulked lead joints with caulked adapters, No-hub soil pipe shielded couplings with approved adaptor having a raised bead, Compression type joints for hub and spigot cast iron pipe, or Threaded adapters.
- D. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- E. Install piping to maintain headroom, conserve space, and not interfere with use of space.
- F. Group piping whenever practical at common elevations.

- G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- H. Provide access where valves and fittings are not exposed.
- I. Install valves with stems upright or horizontal, not inverted.
- J. 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.
- K. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.
- L. Sleeve pipes passing through partitions, walls, and floors.
- M. Pipe Hangers and Supports:
 1. Support horizontal piping as indicated.
 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 or butterfly valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- E. Install globe, ball, or butterfly valves for throttling, bypass, or manual flow control services.
- F. 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 1/8 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. Prior to starting work, verify system is complete, flushed, and clean.

- B. 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).
- C. Inject disinfectant, free chlorine in liquid, powder, tablet, or gas form throughout system to obtain 50 to 80 mg/L residual.
- D. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.
- E. Maintain disinfectant in system for 24 hours.
- F. If final disinfectant residual tests less than 25 mg/L, repeat treatment.
- G. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.
- H. 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 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.
 - 2. Plastic Piping:
 - a. All Sizes:
 - 1) Maximum Hanger Spacing: 6 ft.
 - 2) Hanger Rod Diameter: 3/8 inch.

END OF SECTION

**SECTION 22 10 06
PLUMBING PIPING SPECIALTIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drains.
- B. Cleanouts.
- C. Hose bibbs.
- D. Hydrants.
- E. Water hammer arrestors.
- F. Mixing valves.
- G. Air vents.
- H. Vacuum relief valves.

1.02 RELATED REQUIREMENTS

- A. Section 22 10 05 - Plumbing Piping.
- B. Section 22 40 00 - Plumbing Fixtures.

1.03 REFERENCE STANDARDS

- A. ASME A112.6.3 - Floor and Trench Drains 2019.
- B. ASSE 1012 - Performance Requirements for Backflow Preventers with an Intermediate Atmospheric Vent 2021.
- C. ASSE 1013 - Performance Requirements for Reduced Pressure Principle Backflow Prevention Assemblies 2021.
- D. ASSE 1019 - Performance Requirements for Wall Hydrant with Backflow Protection and Freeze Resistance 2011 (Reaffirmed 2016).
- E. NSF 61 - Drinking Water System Components - Health Effects 2020.
- F. NSF 372 - Drinking Water System Components - Lead Content 2020.
- G. PDI-WH 201 - Water Hammer Arresters 2017.

1.04 SUBMITTALS

- A. Product Data: Provide component sizes, rough-in requirements, service sizes, and finishes.
- B. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.
- C. Project Record Documents: Record actual locations of equipment, cleanouts, backflow preventers, water hammer arrestors.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Extra Loose Keys for Outside Hose Bibbs: One.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Accept specialties on site in original factory packaging. Inspect for damage.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Specialties in Potable Water Supply Systems: Provide products that comply with NSF 61 and NSF 372 for maximum lead content.

2.02 DRAINS

- A. Manufacturers:
 - 1. Jay R. Smith Manufacturing Company.
 - 2. Josam Company.
 - 3. Zurn Industries, Inc.
 - 4. MIFAB.
- B. Floor Drain (FD-1):
 - 1. ASME A112.6.3; lacquered cast iron two piece body with double drainage flange, weep holes, reversible clamping collar, and 6 inch round, adjustable stainless steel strainer.
 - 2. Zurn; Model ZS415-6BS.

2.03 CLEANOUTS

- A. Manufacturers:
 - 1. Jay R. Smith Manufacturing Company.
 - 2. Josam Company.
 - 3. Zurn Industries, Inc.
 - 4. MIFAB.
- B. Cleanouts at Interior Finished Wall Areas:
 - 1. Line type with lacquered cast iron body and round epoxy coated gasketed cover, and round stainless steel access cover secured with machine screw.
 - 2. Zurn; Model Z1446.

2.04 HYDRANTS

- A. Manufacturers:
 - 1. Jay R. Smith Manufacturing Company.
 - 2. Zurn Industries, Inc.
 - 3. Woodford.
- B. Wall Hydrants (H-1):
 - 1. ASSE 1019; freeze resistant, self-draining type with stainless steel wall plate wall plate, enclosed in a flush mounted wall box hose thread spout, lockshield and removable key, and integral vacuum breaker.
 - 2. Zurn; Model Z1320.

2.05 WATER HAMMER ARRESTORS

- A. Manufacturers:

1. Jay R. Smith Manufacturing Company.
 2. Zurn Industries, Inc.
 3. MIFAB.
- B. Water Hammer Arrestors:
1. Stainless steel construction, bellows type sized in accordance with PDI-WH 201, precharged suitable for operation in temperature range minus 100 to 300 degrees F and maximum 250 psi working pressure.
 2. Zurn; Model Z1700.

2.06 AIR VENTS

- A. Manufacturers:
1. Armstrong International, Inc.
 2. ITT Bell & Gossett.
 3. Taco, Inc.
- B. Manual Type: Short vertical sections of 2 inch diameter pipe to form air chamber, with 1/8 inch brass needle valve at top of chamber.
- C. Float Type:
1. Brass or semi-steel body, copper, polypropylene, or solid non-metallic float, stainless steel valve and valve seat; suitable for system operating temperature and pressure; with isolating valve.
 2. Cast iron body and cover, float, bronze pilot valve mechanism suitable for system operating temperature and pressure; with isolating valve.

2.07 VACUUM RELIEF VALVES

- A. Manufacturers:
1. Watts Regulator Co.; Model Series N36.
 2. ITT Bell & Gossett.
 3. Taco, Inc.
- B. Automatically vents a closed system if vacuum occurs. Tested and rated under ANSI Z21.22 - Relief Valves for Hot Water Supply Systems. Opens at less than 1/2 inch vacuum with venting capacity of 15 cubic feet per minute.

2.08 MIXING VALVES

- A. Thermostatic Mixing Valve (TMV-1):
1. Manufacturers:
 - a. Powers; Model 431.
 - b. Leonard Valve Company.
 - c. Lawler.
 - d. Symmons.
 - e. Holby
 2. Valve: ASSE 1017; Chrome plated cast brass body, thermal actuator, integral temperature adjustment.
 3. Capacity: 16 gpm at 20 psi differential.
 4. Accessories:
 - a. Check valve on inlets.

- b. Stem thermometer on outlet.
- c. Strainer stop checks on inlets.
- 5. Cabinet: 16 gage enameled steel, for surface mounting with keyed lock.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system.
- C. Install water hammer arrestors complete with accessible isolation valve on hot and cold water supply piping to plumbing fixtures.

END OF SECTION

**SECTION 22 30 00
PLUMBING EQUIPMENT**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Water Heaters:
 - 1. Commercial electric.
- B. Diaphragm-type compression tanks.
- C. In-line circulator pumps.

1.02 RELATED REQUIREMENTS

- A. Section 26 05 83 - Wiring Connections: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

- A. ASME BPVC-VIII-1 - Boiler and Pressure Vessel Code, Section VIII, Division 1: Rules for Construction of Pressure Vessels 2021.

1.04 SUBMITTALS

- A. Product Data:
 - 1. Provide dimension drawings of water heaters indicating components and connections to other equipment and piping.
 - 2. Indicate pump type, capacity, power requirements.
 - 3. Provide certified pump curves showing pump performance characteristics with pump and system operating point plotted. Include NPSH curve when applicable.
 - 4. Provide electrical characteristics and connection requirements.
- B. Operation and Maintenance Data: Include operation, maintenance, and inspection data, replacement part numbers and availability, and service depot location and telephone number.
- C. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.
- B. Performance: Ensure pumps operate at specified system fluid temperatures without vapor binding and cavitation, are non-overloading in parallel or individual operation, operate within 25 percent of midpoint of published maximum efficiency curve.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Provide temporary inlet and outlet caps. Maintain caps in place until installation.

1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year manufacturer warranty for domestic water heaters.

PART 2 PRODUCTS

2.01 COMMERCIAL ELECTRIC WATER HEATERS

- A. Type: Factory-assembled and wired, electric, vertical storage.
- B. Performance:
 - 1. Storage capacity: Scheduled gal.
 - 2. Heating element size: Scheduled kW.
- C. Electrical Characteristics:
 - 1. 240 volts, single phase, 60 Hz.
- D. Tank: Glass lined welded steel; thermally insulated with minimum 2 inches gall fiber encased in corrosion-resistant steel jacket backed-on enamel finish.
- E. Controls: Automatic immersion water thermostat; externally adjustable temperature range from 60 to 180 degrees F, flanged or screw-in nichrome elements, high temperature limit thermostat.
- F. Accessories: Provide:
 - 1. Water connections: Brass.
 - 2. Dip Tube.
 - 3. Drain Valve.
 - 4. Anode: Magnesium.
 - 5. Temperature and Pressure Relief Valve: ASME labelled.
- G. Heating Elements: Flange-mounted immersion elements; individual elements sheathed with Incoloy corrosion-resistant metal alloy, rated less than 75 Watts per square inch.

2.02 DIAPHRAGM-TYPE COMPRESSION TANKS

- A. Manufacturers:
 - 1. Amtrol Inc; Model ST-5
 - 2. ITT Bell & Gossett.
 - 3. Watts.
- B. Construction: Welded steel, tested; supplied with National Board Form U-1, rated for working pressure of 125 psig.
- C. Accessories: Pressure gauge and air-charging fitting, tank drain; precharge to 50 psig.
- D. Size: 8 inches diameter, 13 inches overall length, 0.9 gal acceptance capacity.

2.03 IN-LINE CIRCULATOR PUMPS (HWRP-1)

- A. Manufacturers:
 - 1. Armstrong Pumps Inc.
 - 2. ITT Bell & Gossett; Model e3.
 - 3. Taco, Inc.
- B. Casing: Bronze, rated for 125 psig working pressure.
- C. Impeller: Non-metallic.

- D. Shaft: Ceramic.
- E. Drive: Close coupled.
- F. Shaftless spherical motor with permanent magnet technology ECM motor.
- G. Performance:
 - 1. As scheduled on the Drawings.
- H. Accessories: UL approved automatic timer kit to provide automatic ON-OFF control at minimum 15 minute intervals.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install plumbing equipment in accordance with manufacturer's instructions, as required by code, and complying with conditions of certification, if any.
- B. Coordinate with plumbing piping and related electrical work to achieve operating system.
- C. Pumps:
 - 1. Ensure pumps operate at specified system fluid temperatures without vapor binding and cavitation, are non-overloading in parallel or individual operation, and operate within 25 percent of midpoint of published maximum efficiency curve.

END OF SECTION

**SECTION 22 40 00
PLUMBING FIXTURES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Water closets.
- B. Urinals.
- C. Lavatories.
- D. Electric water coolers.

1.02 RELATED REQUIREMENTS

- A. Section 22 10 05 - Plumbing Piping.
- B. Section 26 05 83 - Wiring Connections: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

- A. ASME A112.6.1M - Floor-Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use 1997 (Reaffirmed 2017).
- B. ASME A112.19.2 - Ceramic Plumbing Fixtures 2018, with Errata.
- C. NSF 61 - Drinking Water System Components - Health Effects 2020.
- D. NSF 372 - Drinking Water System Components - Lead Content 2020.

1.04 SUBMITTALS

- A. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.
- B. Maintenance Data: Include fixture trim exploded view and replacement parts lists.
- C. 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 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.

1.07 WARRANTY

- A. Provide five year manufacturer warranty for electric water cooler.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- 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.
- B. Water Efficiency: EPA WaterSense label is required for all water closets, urinals, lavatory faucets, and showerheads.

2.02 REGULATORY REQUIREMENTS

- A. Comply with applicable codes for installation of plumbing systems.

2.03 TANK TYPE WATER CLOSETS (WC-1/WC-2) ADAAG COMPLIANT

- A. Water Closets: Vitreous china, ASME A112.19.2, elongated rim, wall hung.
 - 1. Flush Volume: 1.28 gallon, maximum.
 - 2. Flush Operation: Side-mounted chrome trip lever.
 - 3. Outlet Size: Nominal 4 inches.
 - 4. Color: White.
 - 5. Manufacturers:
 - a. American Standard Inc: Model 2882107
 - b. Sloan Valve Company
 - c. Zurn Industries.
- B. Bowl: ASME A112.19.2; wall hung, vitreous china, reverse trap, whirlpool action close-coupled closet combination with regular rim, insulated vitreous china closet tank with fittings and lever flushing valve, chrome plated bolt caps.
- C. Seats:
 - 1. Bemis Manufacturing Company; Model 2155SSC
 - 2. Church Seat Company.
 - 3. Olsonite.
- D. Solid antimicrobial white plastic, open front, extended back, self-sustaining hinge, brass bolts, without cover.
- E. Water Closet Carrier:
 - 1. Manufacturers:
 - a. Jay R. Smith MFG. Co.
 - b. Zurn Industries, Inc
 - c. MIFAB.
 - 2. ASME A112.6.1M; adjustable cast iron frame, integral drain hub and vent, adjustable spud, lugs for floor and wall attachment, threaded fixture studs with nuts and washers.

2.04 TANK TYPE WATER CLOSETS (WC-3)

- A. Water Closets: Vitreous china, ASME A112.19.2, elongated rim, wall hung.
 - 1. Flush Volume: 1.28 gallon, maximum.
 - 2. Flush Operation: Side-mounted chrome trip lever.
 - 3. Outlet Size: Nominal 4 inches.
 - 4. Color: White.

5. Manufacturers:
 - a. American Standard Inc: Model 2882107
 - b. Sloan Valve Company
 - c. Zurn Industries.
- B. Bowl: ASME A112.19.2; wall hung, vitreous china, reverse trap, whirlpool action close-coupled closet combination with regular rim, insulated vitreous china closet tank with fittings and lever flushing valve, chrome plated bolt caps.
- C. Seats:
 1. Bemis Manufacturing Company; Model 2155SSC.
 2. Church Seat Company.
 3. Olsonite.
- D. Solid antimicrobial white plastic, open front, extended back, self-sustaining hinge, brass bolts, without cover.
- E. Water Closet Carrier:
 1. Manufacturers:
 - a. Jay R. Smith MFG. Co.
 - b. Zurn Industries, Inc
 - c. MIFAB.
 2. ASME A112.6.1M; adjustable cast iron frame, integral drain hub and vent, adjustable spud, lugs for floor and wall attachment, threaded fixture studs with nuts and washers.

2.05 WALL HUNG URINALS (UR-1), ADAAG COMPLIANT

- A. Wall Hung Urinal Manufacturers:
 1. American Standard, Inc; Model 6590.
 2. Sloan Valve Company.
 3. Zurn Industries, Inc.
- B. Urinals: Vitreous china, ASME A112.19.2, wall hung with side shields and concealed carrier.
 1. Flush Volume: 1.0 gallons, maximum.
 2. Flush Style: Washout.
 3. Flush Valve: Exposed (top spud).
 4. Removable stainless steel strainer.
 5. Supply Size: 3/4 inch.
 6. Outlet Size: 2 inches.
- C. Flush Valves: ASME A112.18.1, diaphragm type, complete with vacuum breaker stops and accessories.
 1. Exposed Type: Chrome plated, escutcheon, integral screwdriver stop.
- D. Manufacturers:
 1. Sloan Valve Company; Model 186.
 2. Zurn Industries, Inc.
 3. Substitutions: See Section 01 60 00 - Product Requirements.
- E. Carriers:
 1. Manufacturers:

2. ASME A112.6.1M; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded fixture studs for fixture hanger, bearing studs.

2.06 LAVATORY (L-1), ADAAG COMPLIANT

- A. Lavatory Basin provided in Division 12.
- B. Supply Faucet Manufacturers:
 1. Sloan Valve Company; EBF-650
 2. Zurn Industries, Inc.
- C. Sensor Operated Faucet: Cast brass, chrome plated, deck mounted with sensor located on neck of spout.
 1. Spout Style: Standard.
 2. Power Supply: Battery, easily replaceable, alkaline or lithium, minimum 200,000 cycles.
 3. Water Supply: 3/8 inch compression connections.
 4. Aerator: Vandal resistant, 0.5 GPM, laminar flow device.
 5. Sensor range: Factory set at a minimum of 3 inch adjustable up to 24 inch.
 6. Finish: Polished chrome.
- 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. Thermostatic mixing valve. ASSE 1070 listed, stainless steel screen strainers, and check valves. Watts Series LFUSG-B.
 4. Screwdriver stops.
 5. Rigid supplies.
 6. Lavatory pipe insulation:
 - a. Manufacturer:
 - 1) Plumberex.
 - 2) Brocar.
 - 3) Truebro.
 - 4) Dearborn
 - b. Insulation: Fully molded closed cell vinyl, fit to lavatory P-trap, tailpiece and angle valve stop assemblies. Vinyl shall be antimicrobial with UV inhibitors and utilize reusable fasteners.

2.07 SINK (SK-1), ADAAG COMPLIANT

- A. Integral bowl provided in Division 12.
- B. Supply Faucet:
 1. Manufacturers:
 - a. Moen; Model 7864EVSRS
 2. ASME A112.18.1; spot resistant, stainless brass supply with 8 inch high rise rotating spout, water economy aerator with maximum 1.5 gpm flow, single lever handle and pulldown spray with 68" braided hose. Hands free or manual operation.
- C. Accessories:
 1. Chrome plated 17 gage brass P-trap and arm with escutcheon.
 2. Screwdriver stops.
 - a. Manufacturers:

- 1) McGuire Model H2167CC.
- 2) Brasscraft.
3. Rigid supplies.

2.08 SINK (SK-2)

- A. Integral bowl provided in Division 12.
- B. Supply Faucet:
 1. Manufacturers:
 - a. Moen; Model 7864EVSRS
 2. ASME A112.18.1; spot resistant, stainless brass supply with 8 inchhigh rise rotating spout, water economy aerator with maximum 1.5 gpm flow, single lever handle and pulldown spray with 68" braided hose. Hands free or manual operation.
- C. Accessories:
 1. Chrome plated 17 gage brass P-trap and arm with escutcheon.
 2. Screwdriver stops.
 - a. Manufacturers:
 - 1) McGuire Model H2167CC.
 - 2) Brasscraft.
 3. Rigid supplies.

2.09 ELECTRIC WATER COOLER (EWC-1), ADAAG COMPLIANT

- A. Manufacturers:
 1. Elkay Manufacturing Company; Model EZTL8WSLK.
 2. Haws Corporation.
 3. Oasis Corporation.
- B. Water Cooler with bottle filling unit: BI-level, electric, mechanically refrigerated; surface handicapped mounted; stainless steel top, vinyl on steel body, elevated anti-squirt bubbler with stream guard, automatic stream regulator, push button, mounting bracket; integral air cooled condenser . Provide with apron.
 1. Capacity: 8.0 gph of 50 degree F water with inlet at 80 degree F and room temperature of 90 degree F, when tested in accordance with ASHRAE Std 18.
 2. Electrical: Maximum 1/5 hp compressor, 6 foot cord and plug for connection to electric wiring system .
- C. Bottle Filling Unit: Unit shall mount on water cooler and include a bottle counter. Unit shall meet ADA Guidelines for parallel approach; include an electronic sensor for no-touch activation with an automatic 20-second shut-off time. Fill rate shall be 1.0 - 1.5 gpm laminar flow.

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. Install and secure fixtures in place with wall supports and bolts.

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.

END OF SECTION

SECTION 23 05 93
TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Testing, adjustment, and balancing of air systems.
- B. Measurement of final operating condition of HVAC systems.

1.02 REFERENCE STANDARDS

- A. AABC (NSTSB) - AABC National Standards for Total System Balance, 7th Edition 2016.
- B. ASHRAE Std 110 - Methods of Testing Performance of Laboratory Fume Hoods 2016.
- C. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems 2008, with Errata (2019).
- D. NEBB (TAB) - Procedural Standards for Testing Adjusting and Balancing of Environmental Systems 2015, with Errata (2017).
- E. SMACNA (TAB) - HVAC Systems Testing, Adjusting and Balancing 2002.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
 - 1. Revise TAB plan to reflect actual procedures and submit as part of final report.
 - 2. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Architect/Engineer and for inclusion in operating and maintenance manuals.
 - 3. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
 - 4. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
 - 5. Units of Measure: Report data in both I-P (inch-pound) and SI (metric) units.
 - 6. Include the following on the title page of each report:
 - a. Name of Testing, Adjusting, and Balancing Agency.
 - b. Address of Testing, Adjusting, and Balancing Agency.
 - c. Telephone number of Testing, Adjusting, and Balancing Agency.
 - d. Project name.
 - e. Project location.
 - f. Project Architect/Engineer.
 - g. Project Contractor.
 - h. Report date.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Perform total system balance in accordance with one of the following:

1. AABC (NSTSB), AABC National Standards for Total System Balance.
 2. ASHRAE Std 111, Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning, and Refrigeration Systems.
 3. NEBB Procedural Standards for Testing Adjusting Balancing of Environmental Systems.
 4. SMACNA (TAB).
- B. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.
- C. Where HVAC systems and/or components interface with life safety systems, including fire and smoke detection, alarm, and control, coordinate scheduling and testing and inspection procedures with the authorities having jurisdiction.
- D. TAB Agency Qualifications:
1. Company specializing in the testing, adjusting, and balancing of systems specified in this section.
 2. Having minimum of three years documented experience.
 3. Certified by one of the following:
 - a. AABC, Associated Air Balance Council: www.aabc.com/#sle; upon completion submit AABC National Performance Guaranty.
 - b. NEBB, National Environmental Balancing Bureau: www.nebb.org/#sle.
 - c. TABB, The Testing, Adjusting, and Balancing Bureau of National Energy Management Institute: www.tabbcertified.org/#sle.
- E. TAB Supervisor and Technician Qualifications: Certified by same organization as TAB agency.

3.02 EXAMINATION

- A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
1. Systems are started and operating in a safe and normal condition.
 2. Temperature control systems are installed complete and operable.
 3. Proper thermal overload protection is in place for electrical equipment.
 4. Final filters are clean and in place. If required, install temporary media in addition to final filters.
 5. Duct systems are clean of debris.
 6. Fans are rotating correctly.
 7. Fire and volume dampers are in place and open.
 8. Air coil fins are cleaned and combed.
 9. Access doors are closed and duct end caps are in place.
 10. Air outlets are installed and connected.
 11. Duct system leakage is minimized.
- B. Submit field reports. Report defects and deficiencies that will or could prevent proper system balance.
- C. Beginning of work means acceptance of existing conditions.

3.03 ADJUSTMENT TOLERANCES

- A. Air Handling Systems: Adjust to within plus or minus 5 percent of design for supply systems and plus or minus 10 percent of design for return and exhaust systems.

- B. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

3.04 RECORDING AND ADJUSTING

- A. Field Logs: Maintain written logs including:
 - 1. Running log of events and issues.
 - 2. Discrepancies, deficient or uncompleted work by others.
 - 3. Contract interpretation requests.
 - 4. Lists of completed tests.
- B. Ensure recorded data represents actual measured or observed conditions.
- C. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.
- D. Mark on drawings the locations where traverse and other critical measurements were taken and cross reference the location in the final report.
- E. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
- F. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

3.05 AIR SYSTEM PROCEDURE

- A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities at site altitude.
- B. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.
- C. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.
- D. Use volume control devices to regulate air quantities only to extend that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.
- E. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across the fan. Make allowances for 50 percent loading of filters.
- F. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.
- G. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.

3.06 SCOPE

- A. Test, adjust, and balance the following:
 - 1. Plumbing Pumps.
 - 2. Packaged Roof Top Heating/Cooling Units.

3. Fans.

END OF SECTION

**SECTION 23 07 13
DUCT INSULATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Duct insulation.

1.02 RELATED REQUIREMENTS

- A. Section 07 84 00 - Firestopping.

1.03 REFERENCE STANDARDS

- A. ASTM C411 - Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation.
- B. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus 2021.
- C. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications 2013 (Reapproved 2019).
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.
- E. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 30 00 - 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 necessary to ensure acceptable workmanship and that installation standards will be achieved.

1.05 QUALITY ASSURANCE

- A. Applicator Qualifications: Company specializing in performing the type of work specified in this section, with minimum three years of experience and approved by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labelled with manufacturer's identification, including product density and thickness.
- B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.07 FIELD CONDITIONS

- A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.

- B. Maintain temperature during and after installation for minimum period 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, UL 723, ASTM E84, or UL 723.
- B. Insulation minimum thickness shall meet or exceed requirements as listed in International Energy Conservation Code, 2018.

2.02 GLASS FIBER, FLEXIBLE

- A. Manufacturers:
 - 1. CertainTeed Corporation.
 - 2. Johns Manville Corporation.
 - 3. Knauf Insulation.
 - 4. Owens Corning Corp.
- B. Insulation: ASTM C553; flexible, noncombustible blanket.
 - 1. K value: 0.25 at 75 degrees F, when tested in accordance with ASTM C518.
 - 2. Maximum Service Temperature: 450 degrees F.
 - 3. Maximum Water Vapor Absorption: 5.0 percent by weight.
- C. Vapor Barrier Jacket:
 - 1. Kraft paper with glass fiber yarn and bonded to aluminized film.
 - 2. Moisture Vapor Permeability: 0.04 perm inch 0.04 perm inch, when tested in accordance with ASTM E96/E96M.
 - 3. Secure with pressure sensitive tape.
- D. Vapor Barrier Tape:
 - 1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.
- E. Tie Wire: Annealed steel, 16 gauge, 0.0508 inch diameter.

2.03 FLEXIBLE ELASTOMERIC CELLULAR INSULATION POLYMER FOAM

- A. Manufacturer:
 - 1. Armacell; Model ArmaTuff.
 - 2. K-Flex; Model K-Flex Clad AL.
 - 3. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1, in sheet form.
 - 1. Minimum Service Temperature: Minus 40 degrees F.
 - 2. Maximum Service Temperature: 180 degrees F.
 - 3. 'K' value: 0.25 at 75 degrees F, when tested in accordance with ASTM C177.
 - 4. Moisture vapor permeability; 0.05 perm-in., ASTM E96.
 - 5. Water absorption; 0.2% by volume, ASTM C1763
 - 6. Connection: Waterproof vapor barrier adhesive.

- C. Jacket: 17.5 mils metal cladding attached to insulation.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Test ductwork for design pressure prior to applying insulation materials.
- B. Verify that surfaces are clean, foreign material removed, and dry.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with NAIMA National Insulation Standards.
- C. Insulated Ducts Conveying Air Below Ambient Temperature:
 - 1. Provide insulation with vapor barrier jackets.
 - 2. Finish with tape and vapor barrier jacket.
 - 3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
 - 4. Insulate entire system, including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.
- D. Insulated Ducts Conveying Air Above Ambient Temperature:
 - 1. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.
- E. Exterior Applications: Provide insulation with vapor barrier jacket. Cover with with calked aluminum jacket with seams located on bottom side of horizontal duct section.
- F. Slope exterior ductwork to shed water.
- G. External Duct Insulation Application:
 - 1. Secure insulation with vapor barrier with wires and seal jacket joints with vapor barrier adhesive or tape to match jacket.
 - 2. Secure insulation without vapor barrier with staples, tape, or wires.
 - 3. Install without sag on underside of duct. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift duct off trapeze hangers and insert spacers.
 - 4. Seal vapor barrier penetrations by mechanical fasteners with vapor barrier adhesive.
 - 5. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.

3.03 SCHEDULES

- A. Exhaust Ducts Within 10 ft of Exterior Openings:
 - 1. Flexible Glass Fiber Duct Insulation: 2 inches thick.
- B. Ducts Exposed to Outdoors:
 - 1. Flexible Elastomeric Cellular Polymer Foam Insulation: 3-inches thick (minimum R-12).

END OF SECTION

**SECTION 23 31 00
HVAC DUCTS AND CASINGS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Metal ductwork.

1.02 RELATED REQUIREMENTS

- A. Section 23 07 13 - Duct Insulation: External insulation and duct liner.

1.03 REFERENCE STANDARDS

- A. ASHRAE (FUND) - ASHRAE Handbook - Fundamentals Most Recent Edition Cited by Referring Code or Reference Standard.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.
- E. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems 2021.
- F. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible 2020.
- G. UL 181 - Standard for Factory-Made Air Ducts and Air Connectors current edition, including all revisions.

1.04 REGULATORY REQUIREMENTS

- A. Construct ductwork to NFPA 90A standards.

1.05 FIELD CONDITIONS

- A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.
- B. Maintain temperatures within acceptable range during and after installation of duct sealants.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Galvanized Steel for Ducts: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G90/Z275 coating.
- B. Joint Sealers and Sealants: Non-hardening, water resistant, mildew and mold resistant.
 - 1. Type: Heavy mastic or liquid used alone or with tape, suitable for joint configuration and compatible with substrates, and recommended by manufacturer for pressure class of ducts.
 - 2. VOC Content: Not more than 250 g/L, excluding water.
 - 3. Surface Burning Characteristics: Flame spread index of zero and smoke developed index of zero, when tested in accordance with ASTM E84.

- C. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.
- D. Ducts: Galvanized steel, unless otherwise indicated.
- E. Low Pressure Supply (System with Cooling Coils): 2 inch w.g. pressure class, galvanized steel.
- F. Medium and High Pressure Supply: 4 inch w.g. pressure class, galvanized steel.
- G. Return and Relief: 1 inch w.g. pressure class, galvanized steel.
- H. General Exhaust: 1 inch w.g. pressure class, galvanized steel.
- I. Ductmate or WDCI duct connection systems are acceptable. Ductwork constructed using these systems shall refer to manufacturer's recommendations for sheet metal gage intermediate and joint reinforcement.
- J. Interior gaskets for flanged connections shall be Ductmate 440 butyl rubber.

2.02 DUCTWORK FABRICATION

- A. Fabricate and support in accordance with SMACNA (DCS) and as indicated.
- B. No variation of duct configuration or size permitted except by written permission. Size round duct installed in place of rectangular ducts in accordance with ASHRAE (FUND) Handbook - Fundamentals.
- C. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- D. Construct T's, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows must be used, provide air foil turning vanes of perforated metal with glass fiber insulation.
- E. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- F. Fabricate continuously welded round and oval duct fittings in accordance with SMACNA (DCS).
- G. Where ducts are connected to exterior wall louvers and duct outlet is smaller than louver frame, provide blank-out panels sealing louver area around duct. Use same material as duct, painted black on exterior side; seal to louver frame and duct.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install, support, and seal ducts in accordance with SMACNA (DCS).
- B. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
- C. Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes inside lining.
- D. Duct sizes indicated shall be of sizes indicated. However, necessary changes in shape offsets or crossovers to clear piping, lighting, building construction obstructions, etc. shall be made without additional cost.

- E. Provide openings in ductwork where required to accommodate thermometers and controllers.
Provide pilot tube openings where required for testing of systems, complete with metal can with spring device or screw to ensure against air leakage. Where openings are provided in insulated ductwork, install insulation material inside a metal ring.
- F. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

END OF SECTION

**SECTION 23 33 00
AIR DUCT ACCESSORIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Air turning devices/extractors.
- B. Duct test holes.
- C. Flexible duct connectors.

1.02 RELATED REQUIREMENTS

- A. Section 23 31 00 - HVAC Ducts and Casings.

1.03 REFERENCE STANDARDS

- A. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems 2021.
- B. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible 2020.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Protect dampers from damage to operating linkages and blades.

PART 2 PRODUCTS

2.01 AIR TURNING DEVICES/EXTRACTORS

- A. Multi-blade device with blades aligned in short dimension; steel construction; with individually adjustable blades, mounting straps.

2.02 DUCT TEST HOLES

- A. Temporary Test Holes: Cut or drill in ducts as required. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps.
- B. Permanent Test Holes: Factory fabricated, air tight flanged fittings with screw cap. Provide extended neck fittings to clear insulation.

2.03 FLEXIBLE DUCT CONNECTORS

- A. Fabricate in accordance with SMACNA (DCS) and as indicated.
- B. Flexible Duct Connections: Fabric crimped into metal edging strip.
 - 1. Fabric: UL listed fire-retardant neoprene coated woven glass fiber fabric to NFPA 90A, minimum density 30 oz per sq yd.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA (DCS). Refer to Section 23 31 00 for duct construction and pressure class.
- B. Provide duct test holes where indicated and required for testing and balancing purposes.

- C. At fans and motorized equipment associated with ducts, provide flexible duct connections immediately adjacent to the equipment.
- D. At equipment supported by vibration isolators, provide flexible duct connections immediately adjacent to the equipment.

END OF SECTION

SECTION 23 34 23
HVAC POWER VENTILATORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Ceiling exhaust fans.

1.02 RELATED REQUIREMENTS

- A. Section 26 05 83 - Wiring Connections: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

- A. AMCA 99 - Standards Handbook 2016.

1.04 SUBMITTALS

- A. Product Data: Provide data on fans and accessories including fan curves with specified operating point clearly plotted, power, RPM, sound power levels at rated capacity, and electrical characteristics and connection requirements.
- B. Maintenance Data: Include instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Greenheck.
- B. Loren Cook Company.
- C. Twin City Fan & Blower.

2.02 POWER VENTILATORS - GENERAL

- A. Static and Dynamically Balanced: AMCA 204 - Balance Quality and Vibration Levels for Fans.
- B. Sound Ratings: AMCA 301, tested to AMCA 300 and bearing AMCA Certified Sound Rating Seal.
- C. Fabrication: Comply with AMCA 99.
- D. Electrical Components: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

2.03 CEILING EXHAUST FANS

- A. Centrifugal Fan Unit: direct driven with galvanized steel housing lined with acoustic insulation, resilient mounted motor, gravity backdraft damper in discharge.
- B. Disconnect Switch: Cord and plug in housing for thermal overload protected motor and wall mounted switch.
- C. Grille: Aluminum with baked white enamel finish.

D. Discharge Accessory: Model WS-10x3 hooded wall cap, steel construction with black enamel finish for outside wall applications, built-in birdscreen and damper.

E. Accessories:

1. Solid State Speed Control: Mounted and wired internally.
2. Round Duct Connection.
3. Vibration Isolators.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Hung Cabinet Fans:

1. Install fans with resilient mountings and flexible electrical leads.

END OF SECTION

SECTION 23 74 13
PACKAGED OUTDOOR CENTRAL-STATION AIR-HANDLING UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Packaged heat pump roof top unit.
- B. Thermostats
- C. Roof mounting curb and base.

1.02 RELATED REQUIREMENTS

- A. Section 26 05 83 - Wiring Connections: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

- A. AHRI 210/240 - Performance Rating of Unitary Air-Conditioning and Air-Source Heat Pump Equipment 2023.
- B. AHRI 270 - Sound Performance Rating of Outdoor Unitary Equipment 2015, with Addendum.
- C. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems 2021.

1.04 SUBMITTALS

- A. Product Data: Provide capacity and dimensions of manufactured products and assemblies required for this project. Indicate electrical service with electrical characteristics and connection requirements, and duct connections.
- B. Shop Drawings: Indicate capacity and dimensions of manufactured products and assemblies required for this project. Indicate electrical service with electrical characteristics and connection requirements, and duct connections.
- C. Manufacturer's Instructions: Indicate assembly, support details, connection requirements, and include start-up instructions.
- D. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, installation instructions, maintenance and repair data, and parts listing.
- E. Factory start-up forms.
- F. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Filters: One set for each unit.

1.05 QUALITY ASSURANCE

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

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect units from physical damage by storing off site until roof mounting curbs are in place, ready for immediate installation of units.

1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide a five year warranty to include coverage for refrigeration compressors.

PART 2 PRODUCTS

2.01 PACKAGED HEAT PUMP ROOF TOP UNIT

- A. Manufacturers:
 - 1. Trane.
 - 2. Carrier.
 - 3. York.
- B. General
 - 1. The units shall be horizontal airflow as shipped and convertible to downflow. All units shall be factory assembled, piped, internally wired and fully charged with refrigerant. Units shall be certified to UL Standard 1995. All units shall be factory run tested to check cooling operation, fan and blower rotation and control or TXV sequence. Units shall be designed to operate at ambient temperatures between 115°F and 55°F in cooling as manufactured. Cooling performance shall be rated in accordance with AHRI standards
- C. Unit Casing:
 - 1. All components shall be mounted in a weather- resistant steel cabinet with an enamel finish. Access panels shall be provided for unit controls and indoor coil and fans. Indoor air section compartment shall be completely insulated with fireproof, permanent, odorless fiber material. Knockouts shall be provided for utility and control connections. Drain connections shall be provided to accommodate indoor water runoff.
- D. Compressor:
 - 1. The compressor shall be hermetically sealed, high efficiency scroll compressors. Internal overcurrent and over temperature protection, internal pressure relief shall be standard. Other features include centrifugal oil pump, low vibration and noise.
- E. Refrigeration System:
 - 1. All units shall have refrigerant control. Service pressure tap ports and a refrigerant line filter shall be standard.
- F. Evaporator Coil:
 - 1. Internally enhanced 3/8" OS seamless copper tubing mechanical bonded to aluminum fins, factory pressure and leak tested at 480 —650 psig. All units have TXV to control refrigerant flow.
- G. Condenser Coil:
 - 1. The Spine Fin™ condenser coil shall be continuously wrapped, corrosion resistant all aluminum with minimum brazed joints. This coil is 3/8" OD seamless aluminum tubing glued to a continuous aluminum fin. Coils are lab tested to withstand 2.000 pounds of pressure per

square inch. The outdoor coil provides low airflow resistance and efficient heat transfer. The coil is protected on all four sides by louvered panels

H. Indoor Air Fan:

1. Constant Torque, forward-curved, centrifugal wheel in a Composite Vortica ® Blower housing. Motor shall have thermal overload protection and permanently lubricated motor bearings. Motor/blower assembly isolated from unit with rubber mounts.

I. Outdoor Fan:

1. One direct-drive, statically and dynamically balanced propeller fan shall be used in a draw-through vertical discharge configuration. Permanently lubricated weather proof motor shall have built-in thermal overload protection.

J. System Controls:

1. System controls include condenser fan, evaporator fan and compressor contactors.

K. Accessories Roof Curb

1. The roof curb shall be designed to mate with the unit and provide support and complete weathertight installation when properly installed. Adhesive back polyurethane sealing strips shall be provided to ensure an airtight seal between supply and return openings of the curb and unit. The roof curb design allows field fabricated ductwork to be connected directly to the curb. Curb ships knocked down for field assembly, and includes factory installed wood nailer strips.

L. Electric Heaters:

1. Each heater assembly shall include power supply fusing if over 48 amps, automatic resetting limit switches and heat limiters for thermal protection. Heaters shall be provided with polarized plugs for quick connection to unit low voltage wiring. Electric heat modules shall be UL listed.

M. Single Source Power Entry:

1. This accessory shall allow single source power connection to unit and heater combination. Single source power entry kits shall have specific matching heater(s). Kit shall include high voltage terminal blocks, fuse blocks and fuses, cut-to-length interconnecting wiring, and junction box (if required) to provide power sources with fuse protection as required for both the unit and accessory heater. Kit components shall install within the heater cabinet in the heater access section. Single source branch power circuit shall be protected and wired in accordance with local codes.

N. Optional Equipment:

1. Hinged filter rack.

2.02 THERMOSTAT:

A. Manufacturer:

1. Carrier
2. Trane
3. Honeywell

B. Room thermostat shall incorporate:

1. Ability to control 4 stages of heat and 2 stages of cooling.
2. Touchscreen programmable control.
3. Wifi enabled for remote monitoring.
4. Automatic switching from heating to cooling.

5. Ability to control heat pump for both heating and cooling as well as supplementary electric heat.
6. Preferential rate control to minimize overshoot and deviation from set point.
7. Instant override of set point for continuous or timed period from one hour to 31 days.
8. Short cycle protection.
9. Programming based on weekdays, Saturday and Sunday.
10. Switch selection features including imperial or metric display, 12 or 24 hour clock, keyboard
11. disable, remote sensor, fan on-auto.

C. Room Thermostat Display:

1. Time of Day
2. Actual room temperature.
3. Programmed temperature.
4. Day of week.
5. System model indication: heating, cooling, auto, off, fan auto, fan on.
6. Stage (heating or cooling) operation.

2.03 CURBS

- A. Curbs to be fully gasketed between the curb top and unit bottom with the curb providing full perimeter support, cross structure support and air seal for the unit. Curb gasket shall be furnished within the control compartment of the rooftop unit to be mounted on the curb immediately before mounting of the rooftop unit.
- B. Knockdown curbs (with duct support rails) shall be factory furnished for field assembly.
- C. Solid bottom curb shall be factory assembled and fully lined with 1 inch neoprene coated fiberglass insulation and include a wood nailer strip.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Mount units on factory built roof mounting curb providing watertight enclosure to protect ductwork and utility services. Install roof mounting curb level.
- C. Provide p-trap on condensate drain outlets and pipe to nearest roof drain.

3.03 ENVIRONMENTAL REQUIREMENTS

- A. Do not operate units for any purpose, temporary or permanent, until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.

3.04 SYSTEM STARTUP

- A. Prepare and start equipment. Adjust for proper operation.

3.05 CLOSEOUT ACTIVITIES

A. Demonstrate operation to Owner's maintenance personnel.

END OF SECTION

SECTION 26 05 00
BASIC ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SECTION INCLUDES

- A. Basic Electrical Requirements and materials specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements. Section includes:
 - 1. Electrical Identification.
 - 2. Conductors and Devices.
 - 3. Raceways and Boxes.
 - 4. Supporting Devices.

1.03 REGULATORY REQUIREMENTS

- A. Conform to NFPA 70 - National Electrical Code, latest edition with amendments as adopted by the City of Yorkville, IL.
- B. Install electrical Work in accordance with the NECA Standard of Installation.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Store and protect all materials as specified under the provisions of Section 01 60 00 and as specified herein.
- B. Deliver products to the project properly identified with names, model numbers, types, grades, compliance labels, and other information needed for identification.
- C. Ship products to the job site in their original packaging. Receive and store products in a suitable manner to prevent damage or deterioration. Keep equipment upright at all times.
- D. Investigate the spaces through which equipment must pass to reach its final destination. Coordinate with the manufacturer to arrange delivery at the proper stage of construction and to provide shipping splits where necessary.

1.05 PROJECT/SITE CONDITIONS

- A. Install work in locations shown on Drawings, unless prevented by Project conditions. Drawings have omitted certain branch circuitry in areas for ease of reading. All branch circuitry is to be provided by Contractor.
- B. Prepare drawings showing proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission from Architect/Engineer before proceeding as specified under modification procedures.

1.06 QUALITY ASSURANCE

- A. Provide Work as required for a complete and operational electrical installation.

- B. All products shall be designed, manufactured, and tested in accordance with industry standards. Standards, organizations, and their abbreviations as used hereafter, include the following:
 - 1. American National Standards Institute, Inc (ANSI).
 - 2. American Society for Testing and Materials (ASTM).
 - 3. National Electrical Manufacturers Association (NEMA).
 - 4. Underwriters Laboratories, Inc. (UL).
- C. Install all Work in accordance with the NECA Standard of Installation.

1.07 SUBMITTALS

- A. Submit all requested items in Division 26 Sections under provisions of Section 01 30 00.

1.08 SUBSTITUTIONS

- A. Substitutions will be considered only as allowed within the provisions of Section 01 60 00.

1.09 PROJECT RECORD DOCUMENTS

- A. Cooperate and assist in the preparation of project record documents under the provisions of Section 01 78 00.

1.10 TRENCHING, FILL AND COMPACTION

- A. Provide trenching, fill and compaction for all work indicated on Drawings and specified in Division 26 sections.

1.11 TEMPORARY UTILITIES

- A. Arrange with utility company and provide temporary lighting and power necessary for building construction and temporary structures. Perform work in accordance with Section 01 51 00 requirements.

1.12 PROJECT MANAGEMENT AND COORDINATION

- A. Proper project management and coordination is critical for a successful project. Manage and coordinate the Work with all other trades in accordance with Section 01 30 00 requirements. Reliance on the Drawings and Specifications only for exact project requirements is insufficient for proper coordination.

PART 2 PRODUCTS

2.01 WIRING METHODS

- A. All locations: Building wire in raceway.
- B. Use no wire smaller than 12 AWG for power and lighting circuits, and no smaller than 14 AWG for control wiring.
 - 1. Use 10 AWG conductor for 20 ampere, 120 volt branch circuit home runs longer than 100 feet. Use minimum #10 AWG conductor wire in all the following locations:
 - a. All programmable panel branch circuits (larger where indicated).
 - b. All emergency lighting and exit branch circuits.

2.02 WIRE AND CABLE

- A. Manufacturers:

1. Okonite.
 2. Southwire.
 3. Collyer.
- B. Building Wire:
1. Feeders and Branch Circuits Larger Than 6 AWG: Copper, stranded conductor, 600 volt insulation.
 2. Feeders and Branch Circuits 6 AWG and Smaller: Copper conductor, 600 volt insulation. 6 and 8 AWG, stranded conductor; smaller than 8 AWG, stranded conductor (solid for device terminations).
 3. Control Circuits: Copper, stranded conductor, 600 volt insulation.
 4. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.
 5. Use 10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 200 feet.
 6. Use conductor not smaller than 12 AWG for power and lighting circuits.
 7. Use conductor not smaller than 16 AWG for control circuits.
- C. Locations:
1. Concealed Dry Interior Locations: Use only building wire with Type THHN insulation in raceway.
 2. Exposed Dry Interior Locations: Use only building wire with Type THHN insulation in raceway.
 3. Above Accessible Ceilings: Use only building wire with Type THHN insulation in raceway.
 4. Wet or Damp Interior Locations: Use only building wire with Type THWN insulation in raceway.
 5. Exterior Locations: Use only building wire with Type XHHW insulation in raceway.
 6. Underground Installations: Use only building wire with Type XHHW insulation in raceway.

2.03 WIRING DEVICES AND WALL PLATES

- A. Single Pole Switch: Specification grade.
1. Hubbell Model 1121.
 2. P & S Model 521.
 3. Leviton Model 1121.
 4. Color: Ivory.
- B. Three-way Switch: Specification grade.
1. Hubbell Model 1123.
 2. P & S Model 523.
 3. Leviton Model 1123.
 4. Color: Ivory.
- C. Four-way Switch: Specification grade.
1. Hubbell Model 1124.
 2. P & S Model 524.
 3. Leviton Model 1124.
 4. Color: Ivory.
- D. Duplex Convenience Receptacle: Nema 5-20R, duplex, specification grade.
1. Hubbell.
 2. Bryant.
 3. Leviton.
 4. Color: Ivory.

E. GFCI Receptacle: Nema 5-20R, duplex, GFCI, specification grade.

1. Hubbell Model GF-5362.
2. Slater Model SIR-20-F.
3. Eagle Model 647.
4. Color: Ivory.

F. Decorative Cover Plate:

1. Hubbell.
2. Bryant.
3. Leviton.
4. Description: Ivory, metal.

G. Weatherproof die cast cover.

1. Intermatic Model WP1030MC (Two-Gang).
2. Approved Equal.

2.04 RACEWAY REQUIREMENTS

A. Use only specified raceway in the following locations:

1. Branch Circuits and Feeders:
 - a. Concealed Dry Interior Locations: Electrical metallic tubing.
 - b. Exposed Dry Interior Finished Locations: Electrical metallic tubing.
 - c. Exposed Dry Interior Unfinished Locations: Electrical metallic tubing.
 - d. Utility Primary and Site Lighting: Sch 40 PVC, concrete encased under road ways and parking lots.
 - e. All other locations: Galvanized Rigid Metallic Conduit.

B. Size raceways for conductor type installed.

1. Minimum Size Conduit Homerun to Panelboard: 3/4-inch.

2.05 METALLIC CONDUIT AND FITTINGS

A. Conduit:

1. Rigid Steel Conduit: ANSI C80.1.
2. Electrical metallic tubing: ANSI C80.3.
3. Flexible Conduit: UL 1, zinc-coated steel.
 - a. Liquidtight Flexible Conduit: UL360. Fittings shall be specifically approved for use with this raceway.

B. Conduit Fittings:

1. Metal Fittings and Conduit Bodies: NEMA FB 1.
 - a. EMT fittings: Use set-screw indentor-type fittings.

2.06 NONMETALLIC TUBING

A. Manufacturers:

1. Carlon Co.
2. LCP National Plastics, Inc.
3. Pacific Western Extruded Plastics Co.

B. Description: UL651A "Type EB and A PVC Conduit and HDPE Conduit."

1. Conduit: Schedule 40. Suitable for exposure to sunlight and direct burial.

2.07 CONDUIT HANGERS

- A. Manufacturers:
 - 1. Minerrallac Electric Company.
 - 2. Substitutions: Or Approved Equal.
- B. Description:
 - 1. Standard conduit hanger, zinc-plated steel with bolts.
 - 2. Threaded rod and hardware: Plated finish, size and length as required for loading and conditions.

2.08 BEAM CLAMPS

- A. Manufacturers:
 - 1. Appleton.
 - 2. Midwest.
 - 3. Raco.
- B. Description: Malleable beam clamp, zinc plated steel.

2.09 ELECTRICAL BOXES

- A. Manufacturers:
 - 1. Raco.
 - 2. Steel City.
 - 3. Appleton.
 - 4. Substitutions: Or Approved Equal.
- B. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1, galvanized steel, suitable for installation in masonry:
- C. Equipment Support Boxes: Rated for weight of equipment supported; include 2 inch male fixture studs where required.
- D. Wet Location Outlet Boxes: Cast aluminum: Cast alloy, deep type, gasket cover, threaded hubs.

2.10 ELECTRICAL CEILING BOXES.

- A. Manufacturers:
 - 1. Panduit.
 - 2. Leviton.
 - 3. Walker.
- B. Description: Two gang, separated power/data surface metallic box. Combination duplex receptacle with two port data faceplate, compatible with data jacks. Ivory.

2.11 PENETRATION SEALANTS

- A. Fire-rated assemblies: Provide firestopping of all penetrations made by Work under this Contract in accordance with provisions of Section 07 84 00 requirements.
- B. Thermal and Moisture Protection: Provide thermal and moisture protection made by Work under this Contract of all exterior wall, floor and roof penetrations in accordance with Division 7 requirements.

2.12 TWO CELL LOW PROFILE SURFACE METALLIC RACEWAY

- A. Manufacturer:
 - 1. Wiremold 2400 Series or equal.
- B. Description: UL-5, 2 inches wide by 1 inch height, two channel galvanized steel, combination power/data.
- C. Finish: Painted, ANSI 61 Color Selected by architect.
- D. Accessories: Transition fittings, divider plates, device mounting straps, couplings, combination power/data cover plates, end plates and all other accessories necessary for a complete system in locations indicated on Drawings.

2.13 HAND HOLES

- A. Manufacturers:
 - 1. Quazite.
 - 2. Approved Equal
- B. Description: Precast polymer concrete or precast concrete, Non-conductive, non-flammable with open bottom. Flanged, non-conductive, gasketed cover enclosure with stainless-steel cover screws.
 - 1. Load Rating: UL listed Tier 22 as suitable for driveway, parking lot and off-roadway applications subject to occasional non-deliberate heavy vehicular traffic.
 - 2. Cover inscribed with "FIELD LIGHTING" or "ELECTRIC" or other suitable description.

2.14 MOTION SENSORS

- A. Manufacturers:
 - 1. Leviton
 - 2. Hubbell
 - 3. Approved Equal
- B. Combination Wall Switch/Occupancy Sensor
 - 1. Dual technology (passive infrared and ultrasonic), 277V sensor with 180degree field-of-view and maximum coverage of 2400 square feet.
 - 2. Manual push button for ON/OFF light switching.
 - 3. Time delay settings: 30 seconds, 10, 20 or 30 minutes).
 - 4. Adjustable Integral blinders.
 - 5. Sensor shall continuously monitor space to identify usage patterns. Unit shall automatically adjust time delay and sensitivity settings for optimal performance and energy efficiency.
- C. Ceiling Mounted.
 - 1. Dual technology (passive infrared and ultrasonic), 24VDC sensor with unobtrusive appearance and 360 degrees of coverage.
 - a. Provide type/quantity of motion sensors to meet square foot coverage requirements.
 - 2. Provide power pack for 24VDC controls and switching of 120/277V circuits. Minimum quantity of sensors per power pack: 2.
 - 3. Sensor shall continuously monitor space to identify usage patterns. Unit shall automatically adjust time delay and sensitivity settings for optimal performance and energy efficiency.
 - 4. Time delay settings: Auto, fixed (5,10,15,20 or 30 minutes).

5. Sensitivity settings: Auto, reduced sensitivity (passive infrared) variable (ultrasonic).
6. (1) N/O and (1) N/C output.

2.15 NAMEPLATES AND LABELS

- A. Nameplates: Engraved three-layer laminated plastic, black letters on white background.
- B. Locations:
 1. Each electrical distribution and control equipment enclosure.
- C. Letter Size:
 1. Use 1/8 inch letters for identifying individual equipment and loads.
 2. Use 1/4 inch letters for identifying grouped equipment and loads.
- D. Labels: Embossed adhesive tape, with 3/16 inch white letters on a black background. Use only for identification of individual wall switches and receptacles and control device stations.

2.16 WIRE AND CABLE MARKERS

- A. Manufacturers:
 1. Brady Model PCPS.
 2. Panduit Model PCM.
 3. T & B Model WM.
- B. Description: Cloth type wire markers.
- C. Locations: Each conductor at panelboard gutters, pull boxes, and each load connection.
- D. Legend:
 1. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings.

2.17 CONDUIT MARKERS

- A. Location: Furnish markers for each conduit longer than 6 feet.
- B. Spacing: 20 feet on center.
- C. Color:
 1. 480 Volt System: Orange
 2. 208 Volt System: Black
 3. Fire Alarm System: Red.

2.18 UNDERGROUND WARNING TAPE

- A. Description: 4 inch wide plastic tape, detectable type, colored red with suitable warning legend describing buried electrical lines.

PART 3 EXECUTION

3.01 EXAMINATION AND PREPARATION

- A. Beginning of demolition means installer accepts existing conditions.
- B. Verify that supporting surfaces are ready to receive work.
- C. Electrical boxes are shown on Drawings, in approximate locations, unless dimensioned.
 1. Obtain verification from Architect/Engineer for locations of outlets throughout prior to rough-in.

- D. Degrease and clean surfaces to receive wire markers.
- E. Verify that interior of building is physically protected from weather.
- F. Verify that mechanical work which is likely to injure conductors has been completed.
- G. Completely and thoroughly swab raceway system before installing conductors.

3.02 APPLICATION

- A. Install nameplate and label parallel to equipment lines.
- B. Secure nameplate to equipment front using screws.
- C. Secure nameplates to inside surface of door on panelboard that is recessed in finished locations.
- D. Identify underground conduits using underground warning tape. Install one tape per trench at 3 inches below finished grade.
- E. Neatly train and secure wiring inside boxes, equipment, and panelboards.
- F. Use wire pulling lubricant for pulling 4 AWG and larger wires.
- G. Route wire and cable as required to meet project conditions.
 - 1. Wire and cable routing indicated is approximate unless dimensioned.
 - 2. Where wire and cable destination is indicated and routing is not shown, determine exact routing and lengths required.
- H. Pull all conductors into raceway at same time.
- I. Protect exposed cable from damage.
- J. Neatly train and lace wiring inside boxes, equipment and panelboards.
- K. Support cables above accessible ceilings to keep them from resting on ceiling tiles.
- L. Make splices, taps, and terminations to carry full ampacity of conductors without perceptible temperature rise.
- M. Use split bolt connectors for copper conductor splices and taps, 6 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.
- N. Provide anchors, fasteners, and supports in accordance with NECA "Standard of Installation".
- O. Do not fasten supports to pipes, ducts, mechanical equipment, and conduit.
- P. Do not use powder-actuated anchors.
- Q. Do not drill or cut structural members.
- R. Fabricate supports from structural steel or steel channel. Rigidly weld members or use hexagon head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
- S. Install surface-mounted cabinets and panelboards with minimum of four anchors.

- T. In wet and damp locations use steel channel supports to stand cabinets and panelboards one inch off wall.
- U. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.
- V. Terminate spare conductors with electrical tape.
- W. Do not share neutral conductor on load side of dimmers.
- X. Install wiring devices in accordance with manufacturer's instructions.
 - 1. Install wall switches at height shown on drawings, OFF position down.
 - 2. Install convenience receptacles at height shown on drawings grounding pole on bottom.
 - 3. Install specific purpose receptacles at heights shown on Drawings.
- Y. Install wall plates flush and level.
 - 1. Install decorative plates on switch, receptacle, and blank outlets in finished areas.
 - 2. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface-mounted outlets.

END OF SECTION

**SECTION 26 05 05
SELECTIVE DEMOLITION FOR ELECTRICAL**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical demolition.

1.02 RELATED REQUIREMENTS

- A. Section 01 70 00 - Execution and Closeout Requirements: Additional requirements for alterations work.

1.03 SUMMARY

- A. Section Includes:
 - 1. Electrical demolition: Remove electrical systems shown on drawings.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that abandoned wiring and equipment serve only abandoned facilities.
- B. Report discrepancies to Architect/Engineer before disturbing existing installation.
- C. Beginning of demolition means installer accepts existing conditions.
- D. Demolition Drawings are based on casual field observation and are intended to identify the limits of the construction site. Remove all electrical systems in their entirety in proper sequence with the Work.

3.02 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
- B. Coordinate utility service outages with utility company.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.
- D. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outage duration.
- E. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Obtain permission from Owner and Architect at least 24 hours before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to

work area.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Remove, relocate, and extend existing installations to accommodate new construction.
- B. Remove abandoned wiring to source of supply.
- C. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- D. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.
- E. Disconnect and remove abandoned panelboards and distribution equipment.
- F. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
- G. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.
- H. Repair adjacent construction and finishes damaged during demolition and extension work.
- I. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.
- J. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.
- K. Properly dispose of all ballast to approved ballast recycler. Do not land fill ballasts.

3.04 CLEANING AND REPAIR

- A. See Section 01 74 19 - Construction Waste Management and Disposal for additional requirements.
- B. Clean and repair existing materials and equipment that remain or that are to be reused.
- C. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.
- D. Luminaires: Remove existing luminaires for cleaning. Use mild detergent to clean all exterior and interior surfaces; rinse with clean water and wipe dry. Replace lamps, ballasts and broken electrical parts.

END OF SECTION

**SECTION 26 05 83
WIRING CONNECTIONS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical connections to equipment and devices not and integral part of the electrical distribution system.

1.02 REFERENCE STANDARDS

- A. NEMA WD 1 - General Color Requirements for Wiring Devices 1999 (Reaffirmed 2020).
- B. NEMA WD 6 - Wiring Devices - Dimensional Specifications 2016.
- C. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Provide conduit rough-in and electrical connection to powered equipment and devices identified in the Project Manual and on the Drawings. Refer specifically, but not limited to, these Specification Sections for further information:
 - 1. Section 22 30 00 - Plumbing Equipment.
 - 2. Section 23 34 23 - HVAC Power Ventilators.
 - 3. Section 23 74 13 - Packaged Outdoor Central-Station Air-Handling Units.
 - 4. Section 28 46 00 - Fire Detection and Alarm.
- B. Coordination: Determine connection locations and requirements for furniture, equipment and devices furnished or provided under other sections.
 - 1. Do not rely solely on the Drawings and Project Manual for execution of the Work of this Section.
 - 2. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions.
 - 3. Include necessary field evaluation time to inspect connection requirements.
 - 4. Coordinate with other trades to determine exact rough-in requirements.
- C. Sequencing:
 - 1. Install rough-in of electrical connections before installation of furniture and equipment is required.
 - 2. Make electrical connections before required start-up of equipment.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide wiring device manufacturer's catalog information showing dimensions, configurations, and construction.
- C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Products: Listed, classified, and labeled as suitable for the purpose intended.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Cords and Caps: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
 - 1. Colors: Comply with NEMA WD 1.
 - 2. Cord Construction: NFPA 70, Type SO, multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
 - 3. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.
 - 4. Product: Carol.
 - 5. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that equipment is ready for electrical connection, wiring, and energization.

3.02 ELECTRICAL CONNECTIONS

- A. Make electrical connections in accordance with equipment manufacturer's instructions.
- B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.
- C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
- D. Provide receptacle outlet to accommodate connection with attachment plug.
- E. Provide cord and cap where field-supplied attachment plug is required.
- F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
- G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
- H. Install terminal block jumpers to complete equipment wiring requirements.
- I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

END OF SECTION

SECTION 26 24 13 SWITCHBOARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Low-voltage (600 V and less) switchboards and associated accessories for service and distribution applications.
- B. Overcurrent protective devices for switchboards.

1.02 REFERENCE STANDARDS

- A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service 2013e (Amended 2017).
- B. IEEE C57.13 - IEEE Standard Requirements for Instrument Transformers 2016.
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- D. NECA 400 - Standard for Installing and Maintaining Switchboards 2007.
- E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum) 2020.
- F. NEMA PB 2 - Deadfront Distribution Switchboards 2011.
- G. NEMA PB 2.1 - General Instructions for Proper Handling, Installation, Operation, and Maintenance of Deadfront Distribution Switchboards Rated 600 Volts or Less 2013.
- H. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems 2017.
- I. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- J. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures Current Edition, Including All Revisions.
- K. UL 891 - Switchboards Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances required by NFPA 70.
 - 2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
 - 3. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
 - 4. Coordinate with manufacturer to provide shipping splits suitable for the dimensional constraints of the installation.
 - 5. Notify Architect/Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for switchboards, enclosures, overcurrent protective devices, and other installed components and accessories.
- C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- D. Project Record Documents: Record actual installed locations of switchboards and final equipment settings.

1.05 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store switchboards in accordance with manufacturer's instructions, NECA 400, and NEMA PB 2.1.
- B. Store in a clean, dry space having a uniform temperature to prevent condensation (including outdoor switchboards, which are not weatherproof until completely and properly installed). Where necessary, provide temporary enclosure space heaters or temporary power for permanent factory-installed space heaters.
- C. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- D. Handle carefully to avoid damage to switchboard internal components, enclosure, and finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Switchboards:
 - 1. ABB/GE: www.electrification.us.abb.com/#sle.
 - 2. Eaton Corporation: www.eaton.com/#sle.
 - 3. Schneider Electric; Square D Products: www.schneider-electric.us/#sle.
 - 4. Siemens Industry, Inc: www.usa.siemens.com/#sle.
- B. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Products other than basis of design are subject to compliance with specified requirements and prior approval of Engineer. By using products other than basis of design, Contractor accepts responsibility for costs associated with any necessary modifications to related work, including any design fees.
- D. Source Limitations: Furnish switchboards and associated components produced by the same manufacturer as the other electrical distribution equipment used for this project and obtained from a single supplier.

2.02 SWITCHBOARDS

- A. Provide switchboards consisting of all required components, control power transformers, instrumentation and control wiring, accessories, etc. as necessary for a complete operating

system.

- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Description: Dead-front switchboard assemblies complying with NEMA PB 2, and listed and labeled as complying with UL 891; ratings, configurations and features as indicated on the drawings.
- D. Service Conditions:
 - 1. Provide switchboards and associated components suitable for operation under the following service conditions without derating:
 - a. Altitude: Less than 6,600 feet.
 - b. Ambient Temperature:
 - 1) Switchboards Containing Molded Case or Insulated Case Circuit Breakers: Between 23 degrees F and 104 degrees F.
 - 2. Provide switchboards and associated components suitable for operation at indicated ratings under the service conditions at the installed location.
- E. Short Circuit Current Rating:
 - 1. Provide switchboards with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings.
- F. Main Devices: Configure for top or bottom incoming feed as indicated or as required for the installation. Provide separate pull section and/or top-mounted pullbox as indicated or as required to facilitate installation of incoming feed.
- G. Bussing: Sized in accordance with UL 891 temperature rise requirements.
 - 1. Through bus (horizontal cross bus) to be fully rated through full length of switchboard (non-tapered). Tapered bus is not permitted.
 - 2. Provide solidly bonded equipment ground bus through full length of switchboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
 - 3. Phase and Neutral Bus Material: Copper.
 - 4. Ground Bus Material: Copper.
- H. Conductor Terminations: Suitable for use with the conductors to be installed.
 - 1. Line Conductor Terminations:
 - a. Main and Neutral Lug Material: Copper, suitable for terminating copper conductors only.
 - b. Main and Neutral Lug Type: Mechanical.
 - 2. Load Conductor Terminations:
 - a. Lug Material: Copper, suitable for terminating copper conductors only.
 - b. Lug Type:
- I. Enclosures:
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - 2. Finish: Manufacturer's standard unless otherwise indicated.
- J. Future Provisions:
 - 1. Prepare designated spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.

- K. Instrument Transformers:
 - 1. Comply with IEEE C57.13.
 - 2. Select suitable ratio, burden, and accuracy as required for connected devices.
 - 3. Current Transformers: Connect secondaries to shorting terminal blocks.
 - 4. Potential Transformers: Include primary and secondary fuses with disconnecting means.

2.03 OVERCURRENT PROTECTIVE DEVICES

- A. Circuit Breakers:
 - 1. Interrupting Capacity:
 - a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than specified minimum requirements.
 - b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
 - 2. Molded Case Circuit Breakers:
 - a. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers; listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
 - b. Minimum Interrupting Capacity:
 - 1) 10,000 rms symmetrical amperes at 240 VAC or 208 VAC.
 - c. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that the ratings and configurations of the switchboards and associated components are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive switchboards.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install switchboards in accordance with NECA 1 (general workmanship), NECA 400, and NEMA PB 2.1.
- C. Arrange equipment to provide required clearances and maintenance access, including accommodations for any drawout devices.
- D. Where switchboard is indicated to be mounted with inaccessible side against wall, provide minimum clearance of 1/2 inch between switchboard and wall.
- E. Install switchboards plumb and level.
- F. Unless otherwise indicated, mount switchboards on properly sized 4 inch high concrete pad constructed in accordance with Section 03 30 00.

- G. Install all field-installed devices, components, and accessories.
- H. Where accessories are not self-powered, provide control power source as indicated or as required to complete installation.
- I. Provide filler plates to cover unused spaces in switchboards.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Before energizing switchboard, perform insulation resistance testing in accordance with NECA 400 and NEMA PB 2.1.
- C. Inspect and test in accordance with NETA ATS, except Section 4.
- D. Perform inspections and tests listed in NETA ATS, Section 7.1.
- E. Molded Case and Insulated Case Circuit Breakers: Perform inspections and tests listed in NETA ATS, Section 7.6.1.1 for all main circuit breakers. Tests listed as optional are not required.
- F. Instrument Transformers: Perform inspections and tests listed in NETA ATS, Section 7.10. The dielectric withstand tests on primary windings with secondary windings connected to ground listed as optional are not required.
- G. Correct deficiencies and replace damaged or defective switchboards or associated components.

3.04 ADJUSTING

- A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.
- B. Adjust alignment of switchboard covers and doors.

3.05 CLEANING

- A. Clean dirt and debris from switchboard enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred surfaces to match original factory finish.

3.06 CLOSEOUT ACTIVITIES

3.07 PROTECTION

- A. Protect installed switchboards from subsequent construction operations.

END OF SECTION

SECTION 26 41 13
LIGHTNING PROTECTION FOR STRUCTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Strike (air) terminals and interconnecting conductors.
- B. Grounding and bonding for lightning protection.

1.02 REFERENCE STANDARDS

- A. NFPA 780 - Standard for the Installation of Lightning Protection Systems 2020.
- B. UL 96 - Lightning Protection Components Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination with Roofing Work: Ensure adequate attachment of strike terminals and conductors without damage to roofing.
- B. Preinstallation Meeting: Convene a meeting at least at least two weeks prior to commencement of any work affected by lightning protection system requirements to discuss prerequisites and coordination required by other installers; require attendance by representatives of installers whose work will be affected.

1.04 QUALITY ASSURANCE

- A. Maintain one copy of each referenced system design standard on site.
- B. Designer Qualifications: Person or entity, employed by installer, who specializes in lightning protection system design with minimum three years documented experience.
- C. Installer Qualifications: Capable of providing the specified certification of the installed system.
- D. Field Quality Control Testing Agency Qualifications: Firm capable of and experienced in grounding and bonding testing with documented experience and minimum of three project references.

PART 2 PRODUCTS

2.01 LIGHTNING PROTECTION SYSTEM

- A. Lightning Protection System: Provide complete system complying with NFPA 780, including air terminals, bonding, interconnecting conductors and grounding electrodes.
 - 1. Provide system that protects:
 - a. The entire structure.
 - 2. Coordinate with other grounding and bonding systems specified.
 - 3. Determine ground resistance by field measurement.
 - 4. Provide copper, bronze, or stainless steel components, as applicable; no aluminum.
 - 5. Provide system certified by Underwriters Laboratories or the Lightning Protection Institute.

2.02 COMPONENTS

- A. All Components: Complying with applicable requirements of UL 96.
- B. Grounding Rods: Solid copper.

- C. Ground Plate: Copper.
- D. Conductors: Copper cable.
- E. Connectors and Splicers: Bronze.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated on shop drawings.
- B. Coordinate work with installation of roofing and exterior and interior finishes.

3.02 INSTALLATION

- A. Install in accordance with referenced system standards and as required for specified certification.
- B. Connect conductors using mechanical connectors or exothermic welding process; protect adjacent construction elements and finishes from damage.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Perform visual inspection as specified in NFPA 780 as if this were a periodic follow-up inspection.
- C. Perform continuity testing as specified in NFPA 780 as if this were testing for periodic maintenance.
- D. Obtain the services of the specified certification agency to provide inspection and certification of the lightning protection system, including performance of any other testing required by that agency.

END OF SECTION

**SECTION 26 51 00
INTERIOR LUMINAIRES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Emergency lighting units.
- B. Lamps.
- C. LED retrofit luminaire conversion kits.
- D. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 26 56 00 - Exterior Lighting.

1.03 REFERENCE STANDARDS

- A. 47 CFR 15 - Radio Frequency Devices current edition.
- B. IESNA LM-63 - ANSI Approved Standard File Format for Electronic Transfer of Photometric Data and Related Information 2002 (Reaffirmed 2008).
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- D. NECA/IESNA 500 - Standard for Installing Indoor Lighting Systems 2006.
- E. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems 2006.
- F. NEMA LE 4 - Recessed Luminaires, Ceiling Compatibility 2012 (Reaffirmed 2018).
- G. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. NFPA 101 - Life Safety Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- I. UL 924 - Emergency Lighting and Power Equipment Current Edition, Including All Revisions.
- J. UL 1598 - Luminaires Current Edition, Including All Revisions.
- K. UL 1598C - Light-Emitting Diode (LED) Retrofit Luminaire Conversion Kits Current Edition, Including All Revisions.
- L. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.

2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
3. Coordinate the placement of exit signs with furniture, equipment, signage or other potential obstructions to visibility installed under other sections or by others.
4. Notify Architect/Engineer of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
 1. Provide photometric calculations where luminaires are proposed for substitution upon request.
 2. Indicate construction, installation and mounting details for products.
 3. Wiring Diagrams: Submit wiring diagrams for all exit sign, night light, self-contained back-up battery lighting, battery ballasts and associated circuit breakers, programmable circuit breakers and/or emergency circuit breakers.
- C. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.
 1. Ballasts: Include wiring diagrams and list of compatible lamp configurations.
 2. Lamps: Include rated life, color temperature, color rendering index (CRI), and initial and mean lumen output.
 3. Wiring diagrams: Provide wiring diagrams for dimmable ballasts and dimmable switches.
- D. Certificates for Dimming Ballasts: Manufacturer's documentation of compatibility with dimming controls to be installed.
- E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- F. Operation and Maintenance Data: Instructions for each product including information on replacement parts.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 1. See Section 01 60 00 - Product Requirements, for additional provisions.
- H. Project Record Documents: Record actual connections and locations of luminaires and any associated remote components.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 502 (industrial lighting), and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.08 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 LUMINAIRE TYPES

- A. Furnish products as indicated in luminaire schedule included on the drawings.
- B. Substitutions: See Section 01 60 00 - Product Requirements except where individual luminaire types are designated with substitutions not permitted.

2.02 EMERGENCY LIGHTING UNITS

- A. Description: Emergency lighting units complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924.
- B. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.
- C. Battery:
 - 1. Sealed maintenance-free lead calcium unless otherwise indicated.
 - 2. Size battery to supply all connected lamps, including emergency remote heads where indicated.
- D. Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.
- E. Provide low-voltage disconnect to prevent battery damage from deep discharge.
- F. Accessories:
 - 1. Provide compatible accessory mounting brackets where indicated or required to complete installation.
 - 2. Provide compatible accessory high impact polycarbonate vandal shields where indicated.
 - 3. Provide compatible accessory wire guards where indicated.
 - 4. Where indicated, provide emergency remote heads that are compatible with the emergency lighting unit they are connected to and suitable for the installed location.

2.03 LAMPS

- A. Manufacturers:

1. General Electric Company/GE Lighting: www.gelighting.com/#sle.
2. Osram Sylvania: www.sylvania.com/#sle.
3. Philips Lighting North America Corporation; www.usa.lighting.philips.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.
5. Manufacturer Limitations: Where possible, provide lamps produced by a single manufacturer.

B. Lamps - General Requirements:

1. Unless explicitly excluded, provide new, compatible, operable lamps in each luminaire.
2. Verify compatibility of specified lamps with luminaires to be installed. Where lamps are not specified, provide lamps per luminaire manufacturer's recommendations.
3. Minimum Efficiency: Provide lamps complying with all current applicable federal and state lamp efficiency standards.
4. Color Temperature Consistency: Unless otherwise indicated, for each type of lamp furnish products which are consistent in perceived color temperature. Replace lamps that are determined by the Architect/Engineer to be inconsistent in perceived color temperature.

2.04 LED RETROFIT LUMINAIRE CONVERSION KITS

- A. Description: Light-emitting diode (LED) retrofit luminaire conversion kits, including but not limited to LED lamps and arrays, control modules, drivers, power supplies, wiring, lampholders, brackets, wire connectors, reflectors, and diffusers, intended for replacement of existing light sources in existing luminaires; listed as complying with UL 1598C; suitable for installation in luminaire to be converted.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.
- F. Examine substrate and supporting grids for luminaires.
- G. Examine each fixture to determine suitability for lamps specified.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Perform work in accordance with NECA 1 (general workmanship).
- B. Install products in accordance with manufacturer's instructions.

- C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).
- D. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- E. Locate recessed ceiling luminaires as indicated on reflected ceiling plan.
- F. Install wall mounted luminaires, emergency units and exit signs at height as indicated on Drawings and directed in the field by Architect. Obtain final approval from Architect prior to commencement of this portion of work.
- G. Install accessories furnished with each luminaire.
- H. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.
- I. Recessed Luminaires:
 - 1. Install trims tight to mounting surface with no visible light leakage.
 - 2. Install recessed luminaires to permit removal from below.
 - 3. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating.
 - 4. Install clips to secure recessed grid-supported luminaires in place.
- J. Install accessories furnished with each luminaire.
- K. Bond products and metal accessories to branch circuit equipment grounding conductor.
- L. Emergency Lighting Units:
 - 1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.
- M. Install lamps in each luminaire.
- N. Lamp Burn-In: Operate lamps at full output for prescribed period per manufacturer's recommendations prior to use with any dimming controls. Replace lamps that fail prematurely due to improper lamp burn-in.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Inspect each product for damage and defects.
- C. Operate each luminaire after installation and connection to verify proper operation.
- D. Test self-powered exit signs, emergency lighting units, and fluorescent emergency power supply units to verify proper operation upon loss of normal power supply.
- E. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect/Engineer.
- F. Energy Code Commissioning: The electrical contractor shall program, test, calibrate and confirm the proper operation and placement of all lighting controls in accordance with the International Energy Code, 2012 Edition Paragraph C408.3 "Lighting system functional testing".

3.05 ADJUSTING

- A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect/Engineer. Secure locking fittings in place.
- B. Aim and position adjustable emergency lighting unit lamps to achieve optimum illumination of egress path as required or as directed by Architect/Engineer or authority having jurisdiction.
- C. Exit Signs with Field-Selectable Directional Arrows: Set as indicated or as required to properly designate egress path as directed by Architect/Engineer or authority having jurisdiction.
- D. Relamp luminaires which have failed lamps at completion of work.

3.06 CLEANING

- A. Clean surfaces according to NECA 500 (commercial lighting), NECA 502 (industrial lighting), and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.07 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.
- B. Demonstration: Demonstrate proper operation of luminaires to Architect/Engineer, and correct deficiencies or make adjustments as directed.
- C. Just prior to Substantial Completion, replace all lamps that have failed.
- D. Project record documents: Accurately record location of each luminaire.

3.08 PROTECTION

- A. Protect installed luminaires from subsequent construction operations.

END OF SECTION

**SECTION 26 56 00
EXTERIOR LIGHTING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Exterior luminaires.
- B. Lamps.

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Materials and installation requirements for concrete bases for poles.
- B. Section 26 51 00 - Interior Luminaires.

1.03 REFERENCE STANDARDS

- A. ANSI C82.4 - American National Standard for Lamp Ballasts - Ballasts for High-Intensity-Discharge and Low-Pressure Sodium Lamps 2017.
- B. IEEE C2 - National Electrical Safety Code 2017.
- C. IESNA LM-5 - Photometric Measurements of Area and Sports Lighting Installations 2004 (Reaffirmed 2007).
- D. IES LM-79 - Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products 2019.
- E. IESNA LM-64 - Photometric Measurements of Parking Areas; 2001 (Reaffirmed 2007).
- F. IES LM-80 - Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays, and Modules 2019.
- G. IES RP-8 - Recommended Practice for Design and Maintenance of Roadway and Parking Facility Lighting 2018, with Errata (2020).
- H. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- I. NECA/IESNA 501 - Standard for Installing Exterior Lighting Systems 2006.
- J. NEMA LE 4 - Recessed Luminaires, Ceiling Compatibility 2012 (Reaffirmed 2018).
- K. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- L. UL 1598 - Luminaires Current Edition, Including All Revisions.
- M. UL 1598C - Light-Emitting Diode (LED) Retrofit Luminaire Conversion Kits Current Edition, Including All Revisions.
- N. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate placement of poles and associated foundations with utilities, curbs, sidewalks, trees, walls, fences, striping, etc. installed under other sections or by others. Coordinate elevation to obtain specified foundation height.
 - 2. Notify Architect/Engineer of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
 - 1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
 - 2. Provide photometric calculations where luminaires are proposed for substitution upon request.
- C. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, weight, effective projected area (EPA), and installed accessories; include model number nomenclature clearly marked with all proposed features.
 - 1. LED Luminaires:
 - a. Include estimated useful life, calculated based on IES LM-80 test data.
 - 2. Lamps: Include rated life and initial and mean lumen output.
 - 3. Poles: Include information on maximum supported effective projected area (EPA) and weight for the design wind speed.
- D. Certificates for Poles and Accessories: Manufacturer's documentation that products are suitable for the luminaires to be installed and comply with designated structural design criteria.
- E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.
- F. Operation and Maintenance Data: Instructions for each product including information on replacement parts.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, handle, and store products according to NECA/IESNA 501 and manufacturer's written instructions.

- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.
- C. Receive, handle, and store wood poles in accordance with ANSI O5.1.

PART 2 PRODUCTS

2.01 LUMINAIRE TYPES

- A. Furnish products as indicated in luminaire schedule included on the drawings.

2.02 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Provide products complying with Federal Energy Management Program (FEMP) requirements.
- E. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- F. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, poles, foundations, supports, trims, accessories, etc. as necessary for a complete operating system.
- G. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
- H. Provide luminaires listed and labeled as suitable for wet locations unless otherwise indicated.
- I. Recessed Luminaires:
 - 1. Ceiling Compatibility: Comply with NEMA LE 4.
 - 2. Luminaires Recessed in Insulated Ceilings: Listed and labeled as IC-rated, suitable for direct contact with insulation and combustible materials.
 - 3. Luminaires Recessed in Sloped Ceilings: Provide suitable sloped ceiling adapters.
- J. LED Luminaires:
 - 1. Components: UL 8750 recognized or listed as applicable.
 - 2. Tested in accordance with IES LM-79 and IES LM-80.
 - 3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

2.03 LAMPS

- A. Manufacturers:
 - 1. General Electric Company/GE Lighting: www.gelighting.com/#sle.
 - 2. Osram Sylvania: www.sylvania.com/#sle.
 - 3. Philips Lighting North America Corporation; www.usa.lighting.philips.com/#sle.
 - 4. Substitutions: See Section 01 60 00 - Product Requirements.
 - 5. Manufacturer Limitations: Where possible, provide lamps produced by a single manufacturer.

6. Where a specific manufacturer or model is indicated elsewhere in the luminaire schedule or on the drawings, substitutions are not permitted unless explicitly indicated.

B. Lamps - General Requirements:

1. Unless explicitly excluded, provide new, compatible, operable lamps in each luminaire.
2. Verify compatibility of specified lamps with luminaires to be installed. Where lamps are not specified, provide lamps per luminaire manufacturer's recommendations.
3. Minimum Efficiency: Provide lamps complying with all current applicable federal and state lamp efficiency standards.
4. Color Temperature Consistency: Unless otherwise indicated, for each type of lamp furnish products which are consistent in perceived color temperature. Replace lamps that are determined by the Architect/Engineer to be inconsistent in perceived color temperature.

2.04 LED RETROFIT LUMINAIRE CONVERSION KITS

A. Description: Light-emitting diode (LED) retrofit luminaire conversion kits, including but not limited to LED lamps and arrays, control modules, drivers, power supplies, wiring, lampholders, brackets, wire connectors, reflectors, and diffusers, intended for replacement of existing light sources in existing luminaires; listed as complying with UL 1598C; suitable for installation in luminaire to be converted.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install luminaires in accordance with NECA/IESNA 501.
- C. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- D. Recessed Luminaires:
 1. Install trims tight to mounting surface with no visible light leakage.
 2. Non-IC Rated Luminaires: Maintain required separation from insulation and combustible materials according to listing.

- 3. Luminaires Recessed in Fire-Rated Ceilings: Install using accessories and firestopping materials to meet regulatory requirements for fire rating.
- E. Wall-Mounted Luminaires: Unless otherwise indicated, specified mounting heights are to center of luminaire.
- F. Pole-Mounted Luminaires:
 - 1. Foundation-Mounted Poles:
 - a. Provide cast-in-place concrete foundations for poles as indicated, in accordance with Section 03 30 00.
 - 1) Install anchor bolts plumb per template furnished by pole manufacturer.
 - 2) Position conduits to enter pole shaft.
 - b. Install foundations plumb.
 - c. Install poles plumb, using leveling nuts or shims as required to adjust to plumb.
 - d. Tighten anchor bolt nuts to manufacturer's recommended torque.
 - 2. Grounding:
 - a. Bond luminaires, metal accessories, metal poles, and foundation reinforcement to branch circuit equipment grounding conductor.
 - 3. Install separate service conductors, 12 AWG copper, from each luminaire down to handhole for connection to branch circuit conductors.
 - 4. Electrical Contractor shall provide conduits, fuse holder and fuses for each phase.
- G. Install accessories furnished with each luminaire.
- H. Bond products and metal accessories to branch circuit equipment grounding conductor.
- I. Install lamps in each luminaire.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Inspect each product for damage and defects.
- C. Operate each luminaire after installation and connection to verify proper operation.
- D. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect/Engineer.

3.05 ADJUSTING

- A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect/Engineer. Secure locking fittings in place.

3.06 CLEANING

- A. Clean surfaces according to NECA/IESNA 501 and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.07 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.
- B. Just prior to Substantial Completion, replace all lamps that have failed.

3.08 PROTECTION

A. Protect installed luminaires from subsequent construction operations.

END OF SECTION

**SECTION 28 46 00
FIRE DETECTION AND ALARM**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fire alarm system design and installation, including all components, wiring, and conduit.
- B. Transmitters for communication with supervising station.
- C. Maintenance of fire alarm system under contract for specified warranty period.

1.02 REFERENCE STANDARDS

- A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines current edition.
- B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.
- C. IEEE C62.41.2 - IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and less) AC Power Circuits 2002 (Corrigendum 2012).
- D. Provide all materials and labor in conformance with the following codes and standards:
 - 1. City of Yorkville- Code of Ordinances.
 - 2. ANSI/NFPA 70 - National Electrical Code 2017 Edition as adopted and Amended by the City of Yorkville, IL.
 - 3. IBC International Building Code, 2018 Edition, with local amendments.
 - 4. IECC International Energy Conservation Code, 2018 Edition with local amendments.
 - 5. International Fire Code, First Edition, 2018, with local amendments.
 - 6. NFPA 72 - National Fire Alarm Code ; 2016.
 - 7. Code for Safety to Life from Fire in Buildings and Structures (Life Safety Code, NFPA 101, 2016 edition).
 - 8. Automatic Fire Detectors, 2005 Edition (NFPA 72E).
 - 9. ADA-AG - American with Disabilities Act - Accessibility Guidelines.
 - 10. Illinois Accessibility Code, 1997 Edition (Illinois Administrative Code, Title 71, Chapter I, Subchapter b, Part 400).
 - 11. Underwriter's Laboratory.
 - 12. IEEE C62.41 - IEEE Recommended Practice on Surge Voltages in Low-Voltage Power Circuits; 1991 (R1995).

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Evidence of designer qualifications.
- C. Shop Drawings: Submit all information required for plan review and permitting by authorities having jurisdiction, including but not limited to floor plans, riser diagrams, and description of operation:
 - 1. Shop drawing submitted to Architect/Engineer shall be approved and signed by the authority having jurisdiction.
 - 2. Submit point-to-point and single line wiring diagrams showing the point of connection and terminals used for all field connections.

3. Submit diagrams showing all connections from field devices to control panel.
 - a. Include a detailed description of the control panel as it shall operate for this specific installation.
 4. Submit field wiring color-coding legend.
 5. Submit control panel interior wiring diagram.
 6. Indicate existing wiring arrangements and locations of devices and wiring routing.
 7. Copy (if any) of list of data required by authority having jurisdiction.
 8. NFPA 72 "Record of Completion", filled out to the extent known at the time.
 9. Clear and concise description of operation, with input/output matrix similar to that shown in NFPA 72 Appendix A-7-5-2.2(9), and complete listing of software required.
 10. System zone boundaries and interfaces to fire safety systems.
 11. Location of all components, circuits, and raceways; mark components with identifiers used in control unit programming.
 12. Circuit layouts; number, size, and type of raceways and conductors; conduit fill calculations; spare capacity calculations; notification appliance circuit voltage drop calculations.
 13. List of all devices on each signaling line circuit, with spare capacity indicated.
 14. Manufacturer's detailed data sheet for each component, including wiring diagrams, installation instructions, circuit length limitations, dimensions, ratings, layouts and complete catalog numbers.
 - a. Submit UL listings with cross-listing substantiation for each system component clearly marked.
 15. Description of power supplies; if secondary power is by battery include calculations demonstrating adequate battery power.
 16. Certification by either the manufacturer of the control unit or by the manufacturer of each other component that the components are compatible with the control unit.
 17. Certification by the manufacturer of the control unit that the system design complies with Contract Documents.
 18. Certification by Contractor that the system design complies with Contract Documents.
- D. Evidence of installer qualifications.
- E. Evidence of instructor qualifications; training lesson plan outline.
- F. Evidence of maintenance contractor qualifications, if different from installer.
- G. Inspection and Test Reports:
1. Submit inspection and test plan prior to closeout demonstration.
 2. Submit documentation of satisfactory inspections and tests.
 3. Submit NFPA 72 "Inspection and Test Form," filled out.
- H. Operating and Maintenance Data: See Section 01 78 00 for additional requirements; revise and resubmit until acceptable; have one set available during closeout demonstration:
1. Complete set of specified design documents, as approved by authority having jurisdiction.
 2. Additional printed set of project record documents and closeout documents, bound or filed in same manuals.
 3. Contact information for firm that will be providing contract maintenance and trouble call-back service.
 4. List of recommended spare parts, tools, and instruments for testing.
 5. Replacement parts list with current prices, and source of supply.
 6. Detailed troubleshooting guide and large scale input/output matrix.

7. Preventive maintenance, inspection, and testing schedule complying with NFPA 72; provide printed copy and computer format acceptable to Owner.
 8. Detailed but easy to read explanation of procedures to be taken by non-technical administrative personnel in the event of system trouble, when routine testing is being conducted, for fire drills, and when entering into contracts for remodeling.
- I. Project Record Documents: See Section 01 78 00 for additional requirements; have one set available during closeout demonstration:
1. Complete set of floor plans showing actual installed locations of components, conduit, and zones.
 2. "As installed" wiring and schematic diagrams, with final terminal identifications.
 3. "As programmed" operating sequences, including control events by device, updated input/output chart, and voice messages by event.
- J. Closeout Documents:
1. Certification by manufacturer that the system has been installed in compliance with manufacturer's installation requirements, is complete, and is in satisfactory operating condition.
 2. NFPA 72 "Record of Completion", filled out completely and signed by installer and authorized representative of authority having jurisdiction.
 3. Final shop drawings approved and signed by the local authority having jurisdiction.
 4. Submit record of 100 percent acceptance test.
 5. Submit written statement by installing contractor that the system has been installed and tested in accordance with approved plans, specifications and NFPA requirements.
 6. Include actual field conditions including location of end-of-line resistors, cable outing, color coding, terminations, devices and equipment.
 7. Include written sequence of operation.
 8. Maintenance contract.
- K. Maintenance Materials, Tools, and Software: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 60 00 - Product Requirements, for additional provisions.
 2. Furnish spare parts of same manufacturer and model as those installed; deliver in original packaging, labeled in same manner as in operating and maintenance data and place in spare parts cabinet.
 3. In addition to the items in quantities indicated in PART 2, furnish the following:
 - a. All tools, software, and documentation necessary to modify the fire alarm system using Owner's personnel; minimum modification capability to include addition and deletion of devices, circuits, and zones, and changes to system description, operation, and evacuation and instructional messages.
 - b. One copy, on CD-ROM, of all software not resident in read-only-memory.

1.04 QUALITY ASSURANCE

- A. Designer: Qualified employee of fire alarm control panel manufacturer, Contractor, or installer, with experience designing fire alarm systems in the jurisdictional area of the authorities having jurisdiction.
1. Delegated Engineering Responsibility: Provide design services necessary to modify initiating device circuits, notification circuits and affected control panels and power supplies. Provide all necessary drawings and specification to local authority having jurisdiction for approval to modify this existing system as intended.

- B. Manufacturer: Qualified company specializing in smoke detection and fire alarm systems with five years documented experience.
- C. Installer: Qualified firm with minimum 5 years documented experience installing fire alarm systems of the specified type and providing contract maintenance service as a regular part of their business.
 - 1. Authorized representative of control unit manufacturer; submit manufacturer's certification that installer is authorized; include name and title of manufacturer's representative making certification.
 - 2. Installer Personnel: At least 2 years of experience installing fire alarm systems.
 - 3. Supervisor: NICET level III or IV (3 or 4) certified fire alarm technician; furnish name and address.
- D. Maintenance Contractor: Same entity as installer or different entity with specified qualifications.
- E. Instructor Qualifications: Experienced in technical instruction, understanding fire alarm theory, and able to provide the required training; trained by fire alarm control unit manufacturer.
- F. Qualified personnel includes those persons that are:
 - 1. Factory trained and certified; OR
 - 2. NICET Level III or IV (3 or 4) Fire Alarm certified; OR
 - 3. International Municipal Signal Association Fire Alarm certified; OR
 - 4. Certified by state (Illinois Department of Professional Regulation); OR
 - 5. Trained, qualified, and employed by an organization listed by a national testing laboratory.
- G. Preconstruction Conference: Conduct a preconstruction conference as Specified Under the Provisions of Section 01 30 00.

1.05 WARRANTY

- A. Provide control panel manufacturer's warranty that system components other than wire and conduit are free from defects and will remain so for 1 year after date of Substantial Completion.
- B. Provide installer's warranty that the installation is free from defects and will remain so for 1 year after date of Substantial Completion.
- C. Contractor shall, as condition precedent to final payment, execute a written guaranty to the Owner. Materials and equipment furnished by him under this Contract shall remain in satisfactory operating condition for a period of one year from the date of the final acceptance of the Work by the Owner. The guaranty shall also include prompt emergency service. All defects or damages due to faulty materials or workmanship shall be repaired or replaced without delay to the Owner's satisfaction and at the Contractor's expense.

1.06 MAINTENANCE

- A. Submit Under Provisions of Section 01 78 00.
- B. Include operating instructions, and maintenance and repair procedures.
- C. Provide a one year full maintenance and inspection service from date of Final Acceptance. Conform to maintenance and inspection service requirements of NFPA 72.
- D. Provide a one year supervising station monitoring service from date of Final Acceptance.

- E. Extra materials: Provide spare parts under the provisions of Section 01 78 00. Deliver the following materials:
1. Provide two keys of each type.
 2. Provide five automatic fire detectors of each type.
 3. Provide two addressable pull stations, addressable monitor module and addressable control relay.
 4. Provide three horn/strobes.
 5. Provide three strobes.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Fire Alarm Control Units and Accessories:
1. Honeywell Security & Fire Solutions/Notifier: www.notifier.com/#sle.
 2. Siemens Building Technologies, Inc: www.usa.siemens.com/#sle.
 3. Simplex, a brand of Johnson Controls: www.simplex-fire.com/#sle.
 4. Provide control units made by the same manufacturer.
 5. Design to meet NFPA and BOCA requirements for a fully Underwriter's Laboratory listed local, central station and remote station automatic fire alarm system and smoke detection.
- B. Initiating Devices and Notification Appliances:
1. Same manufacturer as control units.
 2. Provide initiating devices and notification appliances made by the same manufacturer, where possible.
- C. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 FIRE ALARM SYSTEM

- A. Fire Alarm System: Provide a new automatic fire detection and alarm system:
1. Provide all components necessary, regardless of whether shown in Contract Documents or not.
 2. Protected Premises: Entire building shown on drawings.
 3. Comply with the following; where requirements conflict, order of precedence of requirements is as listed:
 - a. ADA Standards.
 - b. The requirements of the local authority having jurisdiction which is City of Yorkville.
 - c. Applicable local codes.
 - d. Contract Documents (drawings and specifications).
 - e. NFPA 72; where the word "should" is used consider that provision mandatory; where conflicts between requirements require deviation from NFPA 72, identify deviations clearly on design documents.
 4. Evacuation Alarm: Single smoke zone; general evacuation of entire premises.
 5. Zoning: Point addressable system with initiating devices being individually zoned.
 6. Remote Annunciators: Flush, wall-mounted 80-character back-lit alpha-numeric liquid crystal display. Compatible with control unit. Unit shall indicate stored events, status of all analog addressable monitor and control points and provides diagnostic fault codes/messages.
 - a. Main Entrance Annunciator: Suitable for use as a fire alarm remote annunciator with control features at main entrance or as directed by local AHJ. Lockable cover

- B. Supervising Stations and Fire Department Connections:
 - 1. Public Fire Department Notification: By remote supervising station.
 - 2. Remote Supervising Station: UL-listed central station under contract to facility.
- C. Circuits:
 - 1. Initiating Device Circuits (IDC): Class B, Style A.
 - 2. Signaling Line Circuits (SLC): Class B, Style 0.5.
 - 3. Notification Appliance Circuits (NAC): Class B, Style W.
 - 4. All cabling shall be plenum rated.
- D. Spare Capacity:
 - 1. Initiating Device Circuits: Minimum 25 percent spare capacity.
 - 2. Notification Appliance Circuits: Minimum 25 percent spare capacity.
 - 3. Fire Alarm Control Units: Capable of handling all circuits utilized to capacity without requiring additional components other than plug-in control modules.
- E. Power Sources:
 - 1. Primary: Dedicated branch circuits of the facility power distribution system.
 - 2. Secondary: Storage batteries.
 - 3. Capacity: Sufficient to operate entire system for period specified by NFPA 72.
 - 4. Each Computer System: Provide uninterruptible power supply (UPS).

2.03 COMPONENTS

- A. General:
 - 1. Provide flush mounted units where installed in finish areas; in unfinished areas, surface mounted unit are acceptable.
 - 2. Provide legible, permanent labels for each control device, using identification used in operation and maintenance data.
- B. Fire Alarm Power Supplies, Initiating Devices, and Notification Appliances: Analog, addressable type; listed by Underwriters Laboratories as suitable for the purpose intended.
- C. Initiating Devices:
 - 1. Addressable Systems:
 - a. Addressable Devices: Individually identifiable by addressable fire alarm control unit.
 - b. Provide suitable addressable interface modules as indicated or as required for connection to conventional (non-addressable) devices and other components that provide a dry closure output.
 - 2. Manual Pull Stations: Double action station, red finish. Addressable/Analog.
 - a. Provide 1 extra.
 - 3. Smoke Detectors: Addressable photoelectric smoke detector compatible with control panel. Each sensor shall be capable of being set at four sensitivity settings.
 - a. Automatic and manual functional sensitivity and performance tests shall be possible without the need for generating smoke.
 - b. Sensor shall have two LED visual indicators providing local 360 degree visibility of operating status and alarm indication. The LED shall pulse periodically indicating the sensor is receiving power and communication is being supplied.
 - c. Each sensor shall allow for the setting of two different sensitivity levels. These two levels shall be capable of being programmed with different sensitivities for occupied and

- unoccupied mode. This feature shall also incorporate programmable weekend days, where the sensor remain at an unoccupied sensitivity level all day.
- d. Each sensor screen and cover shall be easily removable for field cleaning. Wire connections shall be made by clamping plate and screw.
 - e. Detector shall be a two-piece head and base unit.
 - f. Provide 1 extra.
4. Heat Detectors: Addressable, pure white finish housing suitable for finished spaces, sensor type as indicated on Drawings.
- a. Sensor shall have two LED visual indicators providing local 360 degree visibility of operating status and alarm indication. The LED shall pulse periodically indicating the sensor is receiving power and communication is being supplied.
- D. Notification Appliances:
1. Speaker: Low profile, Compatible with control unit. UL 1481 and UL1971 listed devices
 - a. Voltage 25 or 70.7 Volts rms.
 - b. Power Rating: 2 watt maximum, with 1/8, 1/4, 1/2, 1 and 2 watt tap selections.
 - c. Mounting: Provide trim ring for semi-flush mounting.
 - d. Finish: Color as required by authority having jurisdiction.
 - e. Labeling: Provide "FIRE", "ALERT" or other lettering as required by the authority having jurisdiction.
 2. Horn/Strobes: NFPA 72 and UL 1971; electronic horn rated 90 dBA average at 10 feet. Provide integral 110 candela strobe lamp and flasher. Provide red trim ring for semi-flush mounting. Synchronize strobes within site of each other. Compatible with control panel.
 3. Strobes: NFPA 72 and UL 1971; Provide integral 110 candela strobe lamp and flasher. Provide red trim ring for semi-flush mounting. Synchronize strobes within site of each other. Compatible with control panel.
- E. Zone Module Interface:
1. Single zone interface module shall provide an addressable input interface to the control panel for monitoring normally open contact devices. Mount inside NEMA 1 enclosure within 10 feet of first monitored device of zone. Compatible with control panel.
- F. Control Relay Module:
1. Programmable control relay shall be located within 10' of device to be controlled. Temporal sound pattern. Audio shall be synchronized.
- G. Circuit Conductors: Copper or optical fiber; provide 200 feet extra; color code and label.
- H. Surge Protection: In accordance with IEEE C62.41.2 category B combination waveform and NFPA 70; except for optical fiber conductors.
1. Signaling Line Circuits: Provide surge protection at each point where circuit exits or enters a building, rated to protect applicable equipment.
- I. Locks and Keys: Deliver keys to Owner.

2.04 SYSTEM DESIGN

- A. Operation: System shall be complete supervised for fire alarm circuits, general evacuation, zoned fire alarm systems. System shall be activated into the fire alarm mode by actuation of any verified fire alarm initiating device. System shall remain in the alarm mode until initiating device(s) are reset and the fire alarm control panel is manually reset and restored to normal. Upon system reset.

- B. Operational Features: The system shall have the following:
1. Class B supervision of fire alarm initiating circuits and alarm indicating circuits.
 2. Electrical supervision of the primary power (AC) supply, presence of the battery voltage, within the control panel.
 3. Trouble buzzer and trouble light to activate upon a single-break or open condition, or ground fault on a fire alarm initiating circuit which prevents the required operation of the system. The trouble signal shall also operate upon loss of primary power (AC) supply, absence of a battery supply, low battery voltage, removal of alarm zone modules. Provide a trouble alarm silence switch which will silence the trouble buzzer but will not extinguish the trouble indicator light. After the system returns to normal operating conditions, the trouble buzzer shall again sound until the silencing switch returns to normal position, unless automatic trouble reset is provided.
 4. Any FACP trouble and supervisory condition shall signal a trouble or supervisory condition to supervising station.
 5. Drift Compensation - Smoke Detectors: System software shall automatically adjust each analog smoke sensor approximately once each week for changes in sensitivity due to the effects of component aging or environment (i.e. dust). Each smoke detector shall maintain its actual sensitivity under adverse conditions to respond to actual alarm conditions while ignoring the factors which generally contribute to nuisance alarms.
 - a. Elevator Lobby/shaft/Control Room Smoke Detectors: Suitable for releasing duty, interface with elevator controller locally.
 6. Alarm Verification: Smoke detector alarm verification shall be a standard option on all zones while identifying any dry contact devices as an immediate alarm. Alarm verification procedure shall be in accordance with NFPA 72 requirements.
 7. Addressable Smoke Detector Test: System software shall automatically test each addressable smoke sensor a minimum of three times per day. The test shall be a recognized functional test of each photocell as required annually by NFPA 72. Failure of an addressable smoke sensor shall activate the system trouble circuitry, display a "Test Failed" indication and identify the individual sensor.
 8. Dual-Mode Walk Test: The control unit shall provide a Dual-Mode Zoned Walk Test Program which shall enable a single individual to test the Alarm/Supervision status of each initiating device. During the walk test, the control unit shall automatically reset after an alarm condition enabling the testing technician to continue testing the system without requiring a return to the control unit.
 - a. During an audible walk test, the act of placing a device in alarm will cause four pulses on the notification appliance circuits, operation of a supervisory switch will cause three pulses, while removal or disconnection on an initiating device will cause two pulses. All tests will be recorded to a printer for historical reference.
 - b. A silent walk test will record all tests to a printer for historical reference while not activating the notification appliance circuits.
 9. Final sequence of events shall satisfy the AHJ.
- C. Alarm Functions: An alarm condition from manual pull station, verified smoke or automatic detector, fire suppression initiating device shall automatically initiate the following functions:
1. Visual indication of the zone operated on the fire remote annunciator panel and control panel.
 2. Continuous sounding alarm indicating speaker/horn/strobe devices.
 3. Shut down building heating/ventilating system fans.
 4. De-energize door hold devices.

5. Transmit alarm to supervisory station via fire alarm control panel transmitter.
- D. Supervisory Alarm: A supervisory alarm shall automatically initiate the following functions:
1. Visual and audible indication of the device operated at the fire alarm panel annunciator for associated zone.
 2. Transmit supervisory alarm to supervisory station via fire alarm control panel transmitter.
 3. Audible indication of device throughout protected premises with distinctly different tone from alarm.
- E. Primary Power: Power shall be 120 volts from a dedicated AC service circuit. Transfer from normal to emergency power or restoration from emergency to normal power shall be fully automatic and shall not cause transmission of a false alarm.
- F. Emergency Power: Provide lead calcium, rechargeable, sealed type storage battery. The emergency power shall operate in the event of the loss of primary power.
- G. Wiring: Wiring shall be solid copper and installed in electrical metallic tubing conduit throughout all exposed areas. Flexible metallic conduit may be used for the drops to devices from accessible junction boxes where it must be "fished" inside wall.
1. Conductors for low voltage DC initiating circuits shall be solid No. 18 AWG minimum. Conductors for alarm indicating horn/strobe circuits shall be No. 14 AWG minimum. Conductors for 120 V circuit shall be No. 12 AWG minimum, 600 VAC rated.
 2. Wire for 120V circuits shall not be in the same conduit as low voltage DC circuits. Identify circuit conductors within each enclosure where a tap, splice or termination is made.
 3. Conductor identification shall be by plastic coated self-sticking printed markers or by heat-shrink type sleeves. Attach markers in a manner that will not permit accidental detachment. Identify, control circuit terminations.
 - a. All conductors shall be color coded and 300 volt rated (minimum).
 - b. Conductors used for the same functions shall be distinctively color coded.
 - c. Use two different color codes for each alarm circuit; one for each loop.
 4. Interconnect batteries, fire alarm control panel and battery charger by not greater than 10 foot of No. 12 AWG conductor.
 5. Pigtail or T-tap connections to alarm initiating and alarm indicating circuits are unacceptable.
 6. Conductors shall be plenum rated.
- H. Splicing for any fire alarm circuits is prohibited except by means of terminal strips or blocks, utilizing screw type terminals located in properly sized junction, pull boxes or within the fire alarm control panel.
- I. Circuit Connections: Connect all circuit conductors entering or leaving the panel to screw-type terminals with each terminal marked for identification. Locate end-of-line resistors, diodes and relays, if any, in the fire alarm control panel.
- J. Storage Batteries: Provide batteries with proper ampere-hour rating to operate the system including space capacity under supervisory conditions for 60 hours and following this period of operation capable of operating all alarm indicating devices under alarm conditions for 5 minutes. Batteries shall have lead bolt-on or wing-nut type terminals.
1. Batteries with fast-tab terminals are unacceptable. Provide reliable separation between cells to prevent contact between terminals of adjacent cells and between battery terminals and other metal parts.

2. Locate each set of system batteries in a steel cabinet with non-corrosive base, and cylinder lock and key feature, finished on the inside with corrosion resistant paint and outside with enamel.
3. Locate cabinets to allow convenient viewing and servicing of the batteries. Each cabinet shall have twice the volume of the batteries it will contain.

PART 3 EXECUTION

3.01 EXAMINATION AND PREPARATION

- A. Field inspect existing fire alarm system installation to determine all required interface components necessary for fire alarm system replacement and relocation.
- B. Perform repair work on existing system to eliminate trouble conditions.

3.02 INSTALLATION

- A. Install in accordance with applicable codes, NFPA 72, NFPA 70, and Contract Documents.
- B. Install fire alarm system in accordance with manufacturer's instructions.
 1. Mount end-of-line device in separate box adjacent to sprinkler flow switch.
 2. Make conduit and wiring connections to fire suppression system at fire sprinkler riser and elevator tamper switches and duct smoke detectors.
 3. Install manual station with operating handle 4 feet above floor. Install horn strobe units 7.5 feet above floor.
- C. Conceal all wiring, conduit, boxes, and supports where installed in finished areas.
- D. Obtain Owner's approval of locations of devices, before installation.
- E. Install instruction cards and labels.

3.03 INSPECTION AND TESTING FOR COMPLETION

- A. Perform field inspection and testing of fire alarm system in accordance with Section 01 78 00.
- B. Notify Owner 7 days prior to beginning completion inspections and tests.
- C. Notify authorities having jurisdiction and comply with their requirements for scheduling inspections and tests and for observation by their personnel.
- D. Provide the services of the installer's supervisor or person with equivalent qualifications to supervise inspection and testing, correction, and adjustments.
- E. Prepare for testing by ensuring that all work is complete and correct; perform preliminary tests as required.
- F. Provide all tools, software, and supplies required to accomplish inspection and testing.
- G. Perform inspection and testing in accordance with NFPA 72 and requirements of local authorities; document each inspection and test.
 1. Include description of testing and results in test report.
 2. Perform 100 percent acceptance test to NFPA 72 standards on system.
- H. Correct defective work, adjust for proper operation, and retest until entire system complies with Contract Documents.

3.04 MANUFACTURER'S FIELD SERVICES

- A. Include services of technician to supervise installation, adjustments, final connections, and system testing.

3.05 PERSONNEL INSTRUCTION

- A. Demonstration
 - 1. At system start-up, arrange for the factory trained representative to train the owner's personnel. The trainer shall instruct the owner's personnel with the following:
 - a. System review of hardware components and their function.
 - b. Hands-on training including programming of control unit.
 - c. Walk through of instructional materials.
- B. Provide the following instruction to designated Owner personnel:
 - 1. Hands-On Instruction: On-site, using operational system.
 - 2. Classroom Instruction: Owner furnished classroom, on-site or at other local facility.
- C. Administrative: One-hour session(s) covering issues necessary for non-technical administrative staff; classroom:
 - 1. Initial Training: 1 session pre-closeout.
- D. Basic Operation: One-hour sessions for attendant personnel, security officers, and engineering staff; combination of classroom and hands-on:
 - 1. Initial Training: 1 session pre-closeout.
- E. Furnish the services of instructors and teaching aids; have copies of operation and maintenance data available during instruction.
- F. Factory Support: Factory internet/telephone support shall be provided free of charge during normal business hours to answer programming and application questions during the warranty period.

3.06 CLOSEOUT

- A. Closeout Demonstration: Demonstrate proper operation of all functions to Owner.
 - 1. Be prepared to conduct any of the required tests.
 - 2. Have at least one copy of operation and maintenance data, preliminary copy of project record drawings, input/output matrix, and operator instruction chart(s) available during demonstration.
 - 3. Have authorized technical representative of control unit manufacturer present during demonstration.
 - 4. Demonstration may be combined with inspection and testing required by authority having jurisdiction; notify authority having jurisdiction in time to schedule demonstration.
 - 5. Repeat demonstration until successful.
- B. Substantial Completion of the project cannot be achieved until inspection and testing is successful and:
 - 1. Approved operating and maintenance data has been delivered.
 - 2. Spare parts, extra materials, and tools have been delivered.
 - 3. All aspects of operation have been demonstrated to Owner.
 - 4. Final acceptance of the fire alarm system has been given by authorities having jurisdiction.
 - 5. Specified pre-closeout instruction is complete.

C. Perform post-occupancy instruction within 3 months after Substantial Completion.

3.07 MAINTENANCE

- A. See Section 01 70 00 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.
- B. Provide to Owner, at no extra cost, a written maintenance contract for entire manufacturer's warranty period, to include the work described below.
- C. Perform routine inspection, testing, and preventive maintenance required by NFPA 72, including:
 - 1. Maintenance of fire safety interface and supervisory devices connected to fire alarm system.
 - 2. Repairs required, unless due to improper use, accidents, or negligence beyond the control of the maintenance contractor.
 - 3. Record keeping required by NFPA 72 and authorities having jurisdiction.
- D. Provide trouble call-back service upon notification by Owner:
 - 1. Provide on-site response within 2 hours of notification.
 - 2. Include allowance for call-back service during normal working hours at no extra cost to Owner.
 - 3. Owner will pay for call-back service outside of normal working hours on an hourly basis, based on actual time spent at site and not including travel time; include hourly rate and definition of normal working hours in maintenance contract.
- E. Provide a complete description of preventive maintenance, systematic examination, adjustment, cleaning, inspection, and testing, with a detailed schedule.
- F. Maintain a log at each fire alarm control unit, listing the date and time of each inspection and call-back visit, the condition of the system, nature of the trouble, correction performed, and parts replaced. Submit duplicate of each log entry to Owner's representative upon completion of site visit.
- G. Comply with Owner's requirements for access to facility and security.

END OF SECTION

**SECTION 31 10 00
SITE CLEARING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Clearing and protection of vegetation.
- B. Removal of existing debris.

1.02 RELATED REQUIREMENTS

- A. Section 01 50 00 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- B. Section 01 57 13 - Temporary Erosion and Sediment Control.
- C. Section 01 70 00 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products.
- D. Section 31 23 23 - Fill: Filling holes, pits, and excavations generated as a result of removal operations.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SITE CLEARING

- A. Comply with other requirements specified in Section 01 70 00.
- B. Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

3.02 EXISTING UTILITIES AND BUILT ELEMENTS

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Protect existing structures and other elements that are not to be removed.

3.03 VEGETATION

- A. Scope: Remove trees, shrubs, brush, and stumps in areas to be covered by building structure, paving, playing fields, lawns, and planting beds, and in areas required for access to site and execution of the Work.
- B. Vegetation Removed: Do not burn, bury, landfill, or leave on site, except as indicated.
 - 1. Chip, grind, crush, or shred vegetation for mulching, composting, or other purposes; preference should be given to on-site uses.

- 2. Sod: Re-use on site if possible; otherwise sell if marketable, and if not, treat as specified for other vegetation removed.
- C. Dead Wood: Remove all dead trees (standing or down), limbs, and dry brush on entire site; treat as specified for vegetation removed.
- D. Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to Owner.

3.04 DEBRIS

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

**SECTION 31 22 00
GRADING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Removal of topsoil.
- B. Rough grading the site for site structures.
- C. Finish grading.

1.02 RELATED REQUIREMENTS

- A. Section 32 92 19 - Seeding: Finish ground cover.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Topsoil: Topsoil excavated on-site.
 - 1. Graded.
 - 2. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.
- B. Verify the absence of standing or ponding water.
- C. Verify limits of work areas.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
 - 1. Contact Joint Utility Locating Information for Excavators (JULIE 800-892-0123) before start of excavating work to ensure that existing utilities on the property are located and properly protected.
- C. Locate, identify, and protect from damage above- and below-grade utilities to remain.
- D. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.
- E. Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.
- F. Protect plants, lawns, rock outcroppings, and other features to remain as a portion of final landscaping.

3.03 ROUGH GRADING

- A. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.
- B. Do not remove topsoil when wet.
- C. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.
- D. Do not remove wet subsoil , unless it is subsequently processed to obtain optimum moisture content.
- E. When excavating through roots, perform work by hand and cut roots with sharp axe.
- F. See Section 31 23 23 for compaction and filling procedures.
- G. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.
- H. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.

3.04 SOIL REMOVAL and STOCKPILING

- A. Stockpile topsoil to be re-used on site; remove remainder from site.
- B. Remove excavated subsoil from site.
- C. Stockpiles: Use areas designated on site; pile depth not to exceed 2 feet; protect from erosion.

3.05 FINISH GRADING

- A. Before Finish Grading:
 - 1. Verify building and trench backfilling have been inspected.
 - 2. Verify subgrade has been contoured and compacted.
- B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove soil contaminated with petroleum products.
- C. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches.
- D. Place topsoil in areas where seeding are indicated.
- E. Place topsoil where required to level finish grade.
- F. Place topsoil to the following compacted thicknesses:
 - 1. Areas to be Seede: 4 inches.
- G. Place topsoil during dry weather.
- H. Remove roots, weeds, rocks, and foreign material while spreading.
- I. Near plants spread topsoil manually to prevent damage.
- J. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
- K. Lightly compact placed topsoil.

- L. Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

3.06 REPAIR AND RESTORATION

- A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.
- B. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

3.07 FIELD QUALITY CONTROL

- A. See Section 31 23 23 for compaction density testing.

3.08 CLEANING

- A. Remove unused stockpiled topsoil and subsoil. Grade stockpile area to prevent standing water.
- B. Leave site clean and raked, ready to receive landscaping.

END OF SECTION

**SECTION 31 23 16
EXCAVATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Excavating for building volume below grade, footings, pile caps, slabs-on-grade, paving, site structures, and utilities within the building.

1.02 RELATED REQUIREMENTS

- A. Civil Engineering Drawings: Site clearing, topsoil stripping, stockpiling and respreading, grading requirements, trenching requirements for utilities outside the building envelope, and fill requirements for areas outside the building envelope.
- B. Section 01 70 00 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring. General requirements for dewatering of excavations and water control.
- C. Section 31 22 00 - Grading: Soil removal from surface of site.
- D. Section 31 22 00 - Grading: Grading.

1.03 SEQUENCING AND SCHEDULING

- A. Schedule, sequence and coordinate the work of this section, and prior and subsequent portions of the work, in accordance with the requirements of Section 01 4000 - Quality Requirements.

PART 2 PRODUCTS

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the work are as indicated.

3.02 EXCAVATING

- A. Excavate to accommodate new structures and construction operations.
- B. Notify Architect/Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- C. Do not interfere with 45 degree bearing splay of foundations.
- D. Provide temporary means and methods, as required, to remove all water from excavations until directed by Architect/Engineer. Remove and replace soils deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection and testing.

- B. Provide for visual inspection of load-bearing excavated surfaces by Architect/Engineer before placement of foundations.

3.04 PROTECTION

- A. Divert surface flow from rains or water discharges from the excavation.
- B. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.
- C. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition.
- D. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
- E. Keep excavations free of standing water and completely free of water during concrete placement.

END OF SECTION

**SECTION 31 23 16.13
TRENCHING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Trenching, backfilling and compacting for utilities outside the building to utility main connections.

1.02 RELATED REQUIREMENTS

- A. Section 31 22 00 - Grading: Site grading.

1.03 DEFINITIONS

- A. Finish Grade Elevations: Indicated on drawings.
- B. Subgrade Elevations: 6 inches below finish grade elevations indicated on drawings, unless otherwise indicated.

1.04 REFERENCE STANDARDS

- A. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)) 2012 (Reapproved 2021).
- B. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)) 2012 (Reapproved 2021).
- C. SSRBC - Standard Specifications for Road and Bridge Construction, adopted by the Illinois Department of Transportation on January 1, 2012, including applicable current Supplemental Specifications and Special Provisions.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Compaction Density Test Reports.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. Easements for existing utilities, both public and private, and utilities within public rights-of-way are shown on the drawings according to available records. If existing utility lines are encountered which conflict in location with new construction, notify Architect/Engineer.

1.07 SEQUENCING AND SCHEDULING

- A. Schedule, sequence and coordinate the work of this section, and prior and subsequent portions of the work, in accordance with the requirements of Section 01 40 00 - Quality Requirements.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. General Fill: See Section 31 23 23 - Fill.

- B. Granular Fill: Conforming to SSRBC Article 1004.04; CA-6, except crushed concrete or blast furnace slag is not permitted.
- C. Fine Granular Fill: Conforming to SSRBC Article 1003.04.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the work are as indicated.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. Grade top perimeter of trenching area to prevent surface water from draining into trench. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by the Architect/Engineer.

3.03 TRENCHING

- A. Notify Architect/Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- B. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.
- C. Do not interfere with 45 degree bearing splay of foundations.
- D. Cut trenches wide enough to allow inspection of installed utilities.
- E. Hand trim excavations. Remove loose matter.
- F. Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.
- G. Remove excavated material that is unsuitable for re-use from site.
- H. Remove excess excavated material from site.
- I. Provide temporary means and methods, as required, to remove all water from trenching until directed by the Architect/Engineer. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.
- J. Determine the prevailing groundwater level prior to trenching. If the proposed trench extends less than 1 foot into the prevailing groundwater, control groundwater intrusion with perimeter drains routed to sump pumps, or as directed by the Architect/Engineer.
- K. Pump out accumulated water in excavated trenches.
- L. Obtain, erect, maintain and remove signs, covers, barricades, flagmen and other control devices necessary for the purpose of diverting, regulating, warning or guiding pedestrian and vehicular traffic at open excavations.
 - 1. Placement and Maintenance of Traffic Control Devices: In accordance with SSRBC Article 107.14 and with applicable parts of SSRBC Division 700.

3.04 PREPARATION FOR UTILITY PLACEMENT

- A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.
- B. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- C. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

3.05 BACKFILLING

- A. Backfill to contours and elevations indicated using unfrozen materials.
- B. Employ a placement method that does not disturb or damage other work.
- C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- D. Maintain optimum moisture content of fill materials to attain required compaction density.
- E. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.
- F. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- G. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- H. Correct areas that are over-excavated.
 - 1. Thrust bearing surfaces: Fill with concrete.
 - 2. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.
- I. Compaction Density Unless Otherwise Specified or Indicated:
 - 1. Under paving, slabs-on-grade, and similar construction: 98 percent of maximum dry density.
 - 2. At other locations: 95 percent of maximum dry density.
- J. Reshape and re-compact fills subjected to vehicular traffic.

3.06 BEDDING AND FILL AT SPECIFIC LOCATIONS

- A. Use general fill unless otherwise specified or indicated.
- B. Utility Piping, Conduits, and Sanitary Components.
 - 1. Bedding: Use fine granular fill.
 - 2. Cover with general fill for lawn or planted areas.
 - 3. Cover with granular fill for paved areas.
 - 4. Fill up to subgrade elevation.
 - 5. Compact in maximum 8 inch lifts to 95 percent of maximum dry density under lawn or planted areas.
 - 6. Compact in maximum 6 inch lifts to 98 percent of maximum dry density under paved areas.

3.07 TOLERANCES

- A. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

B. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch from required elevations.

3.08 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection and testing.

B. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D1557 ("modified Proctor"), AASHTO T 180, or ASTM D698 ("standard Proctor").

C. If tests indicate work does not meet specified requirements, See Section 01 40 00 for procedures.

3.09 CLEANING

A. Leave unused materials in a neat, compact stockpile.

B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION

SECTION 31 23 23
FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Filling, backfilling, and compacting for footings, slabs-on-grade, paving, site structures, and utilities within the building.
- B. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.

1.02 RELATED REQUIREMENTS

- A. Civil Engineering Drawings: Backfilling and compacting for utilities outside the building, additional requirements for removal and handling of soil to be re-used, and site grading.
- B. Section 31 22 00 - Grading: Removal and handling of soil to be re-used.
- C. Section 31 22 00 - Grading: Site grading.
- D. Section 31 23 16 - Excavation: Removal and handling of soil to be re-used.
- E. Section 31 23 16.13 - Trenching: Excavating for utility trenches outside the building to utility main connections.

1.03 DEFINITIONS

- A. Finish Grade Elevations: Indicated on drawings.
- B. Subgrade Elevations: 6 inches below finish grade elevations indicated on drawings, unless otherwise indicated.

1.04 REFERENCE STANDARDS

- A. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)) 2012 (Reapproved 2021).
- B. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method 2015, with Editorial Revision (2016).
- C. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)) 2012 (Reapproved 2021).
- D. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method 2015.
- E. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth) 2017a, with Editorial Revision.
- F. SSRBC - Standard Specifications for Road and Bridge Construction, adopted by the Illinois Department of Transportation on January 1, 2002, including applicable current Supplemental Specifications and Special Provisions.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Compaction Density Test Reports.

1.06 DELIVERY, STORAGE, AND HANDLING

A. When necessary, store materials on site in advance of need.

B. When fill materials need to be stored on site, locate stockpiles where indicated.

1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
2. Prevent contamination.
3. Protect stockpiles from erosion and deterioration of materials.

1.07 SEQUENCING AND SCHEDULING

A. Schedule, sequence and coordinate the work of this section, and prior and subsequent portions of the work, in accordance with the requirements of Section 01 40 00 - Quality Requirements.

PART 2 PRODUCTS

2.01 FILL MATERIALS

A. General Fill: Subsoil excavated on-site.

1. Graded.
2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris, waste, frozen materials, vegetable and other deleterious matter.

B. Structural Fill: Subsoil excavated on-site.

1. Graded.
2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris, waste frozen materials, vegetable and other deleterious matter.

C. Granular Fill: Crushed stone conforming to SSRBC; CA-6.

D. Sand: Natural river or bank sand; free of silt, clay, loam, friable or soluble materials, and organic matter.

E. Topsoil: Topsoil excavated on-site.

1. Graded.
2. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.
3. Acidity range (pH) of 5.5 to 7.5.
4. Containing a minimum of 4 percent and a maximum of 25 percent inorganic matter.

2.02 SOURCE QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for testing and analysis of soil material.

B. If tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench marks and intended elevations for the Work are as indicated.

B. Identify required lines, levels, contours, and datum locations.

- C. See Section 31 22 00 for additional requirements.
- D. Verify structural ability of unsupported walls to support imposed loads by the fill.
- E. Verify areas to be filled are not compromised with surface or ground water.

3.02 PREPARATION

- A. Scarify and proof roll subgrade surface to a depth of 6 inches to identify soft spots.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.
- C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 FILLING

- A. Fill to contours and elevations indicated using unfrozen materials.
- B. Fill up to subgrade elevations unless otherwise indicated.
- C. Employ a placement method that does not disturb or damage other work.
- D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.
- G. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- H. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- I. Correct areas that are over-excavated.
 - 1. Load-bearing foundation surfaces: Use structural fill, flush to required elevation, compacted to 98 percent of maximum dry density.
 - 2. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.
- J. Compaction Density Unless Otherwise Specified or Indicated:
 - 1. Under paving, slabs-on-grade, and similar construction: 95 percent of maximum dry density.
 - 2. At areas under building foundations: 98 percent of maximum dry density.
 - 3. At other locations: 90 percent of maximum dry density.
- K. Reshape and re-compact fills subjected to vehicular traffic.
- L. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Architect/Engineer. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.04 FILL AT SPECIFIC LOCATIONS

- A. Use general fill unless otherwise specified or indicated.
- B. Under Interior Slabs-On-Grade:
 - 1. Use granular fill.
 - 2. Depth: 4 inches deep.
 - 3. Compact to 95 percent of maximum dry density.
- C. At Foundation Walls, Footings, and Stack Stone Garden wall bases:
 - 1. Use Granular fill.
 - 2. Fill up to subgrade elevation.
 - 3. Compact each lift to 90 percent of maximum dry density.
 - 4. Do not backfill against unsupported foundation walls.
- D. Over Buried Utility Piping and Conduits in Trenches:
 - 1. Bedding: Use sand.
 - 2. Cover with general fill.
 - 3. Fill up to subgrade elevation.
 - 4. Compact in maximum 8 inch lifts to 95 percent of maximum dry density.
- E. Around and Over Underground Tanks:
 - 1. Use initial fill of sand.
 - a. 12 inches deep.
 - b. Compact to 95 percent of maximum dry density.
 - 2. Complete with general fill.
 - a. Depth: Up to subgrade elevation.
 - b. Compact to 95 percent of maximum dry density.
- F. At Lawn Areas:
 - 1. Use general fill.
 - 2. Fill up to 6 inches below finish grade elevations.
 - 3. Fill up to subgrade elevations.
 - 4. Compact to 90 percent of maximum dry density.
 - 5. See Section 31 22 00 for topsoil placement.
- G. At Planting Areas Other Than Lawns :
 - 1. Use general fill.
 - 2. Fill up to 12 inches below finish grade elevations.
 - 3. Fill up to subgrade elevations.
 - 4. Compact to 90 percent of maximum dry density.
 - 5. See Section 31 22 00 for topsoil placement.
- H. Under Pavers Set on Sand Leveling Bed:
 - 1. Use granular fill.
 - 2. Fill up to bottom of sand leveling bed.
 - 3. Compact to 95 percent of maximum dry density.
 - 4. See unit pavers section for leveling bed placement.
- I. Under Monolithic Paving :

1. Compact subsoil to 95 percent of its maximum dry density before placing fill.
2. Use general fill.
3. Fill up to 13 inches below finish paving elevation, unless indicated otherwise on the Drawings.
4. Fill up to subgrade elevation.
5. Compact to 95 percent of maximum dry density.
6. See Section 31 23 2 for aggregate base course placed over fill.

3.05 TOLERANCES

- A. Top Surface of General Filling: Plus or minus 1 inch from required elevations.
- B. Top Surface of Filling Under Paved Areas: Plus or minus 1 inch from required elevations.

3.06 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection and testing.
- B. Soil Fill Materials:
- C. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.
- D. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with AASHTO T 180, ASTM D1557 ("modified Proctor"), ASTM D698 ("standard Proctor"), AASHTO T 180, ASTM D1557 ("modified Proctor"), ASTM D698 ("standard Proctor"), ASTM D1557 ("modified Proctor"), ASTM D698 ("standard Proctor"), or AASHTO T 180.
- E. If tests indicate work does not meet specified requirements, See Section 01 40 00 for procedures.
- F. Frequency of Tests: Test compaction of existing, graded and placed materials no more than seven (7) days prior to placement of the next portion of the Work, and only when no rain is expected between the time of the test and the placement of the next portion of the Work. Proceed with the subsequent portions of the Work only after satisfactory results have been verified in writing.
- G. Proof roll compacted fill at surfaces that will be under slabs-on-grade, pavers, and paving.

3.07 CLEANING

- A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.
- B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

END OF SECTION

**SECTION 32 13 13
CONCRETE PAVING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete sidewalks.

1.02 RELATED REQUIREMENTS

- A. Section 31 23 23 - Fill: Compacted subbase for paving.

1.03 REFERENCE STANDARDS

- A. ACI 301 - Specifications for Concrete Construction 2020.
- B. ACI 305R - Guide to Hot Weather Concreting 2020.
- C. ACI 306R - Guide to Cold Weather Concreting 2016.
- D. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2020.
- E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2018a.
- F. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens 2021.
- G. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2021b.
- H. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method 2016.
- I. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete 2019.
- J. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types) 2018.
- K. ASTM D1752 - Standard Specification for Preformed Sponge Rubber, Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction 2018.
- L. SSRBC - Standard Specifications for Road and Bridge Construction, adopted by the Illinois Department of Transportation on January 1, 2002, including applicable current Supplemental Specifications and Special Provisions.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Design Data: Indicate pavement thickness, designed concrete strength, reinforcement, and typical details.

1.05 SEQUENCING AND SCHEDULING

- A. Schedule, sequence and coordinate the work of this section, and prior portions of the work, in accordance with the requirements of Section 01 40 00 - Quality Requirements.

PART 2 PRODUCTS

2.01 PAVING ASSEMBLIES

- A. Comply with applicable requirements of ACI 301.
- B. Design paving for light duty commercial vehicles.
- C. Concrete Sidewalks: 4,000 psi 28 day concrete, 4 inches thick, natural grey color Portland cement broom finish.

2.02 FORM MATERIALS

- A. Wood form material, profiled to suit conditions.
- B. Joint Filler: Preformed; non-extruding bituminous type (ASTM D1751) or sponge rubber or cork (ASTM D1752).
 - 1. Thickness: 1/2 inch.

2.03 REINFORCEMENT

- A. Steel Welded Wire Reinforcement: Plain type, ASTM A1064/A1064M; in flat sheets; unfinished.
- B. Dowels: ASTM A615/A615M, Grade 40 - 40,000 psi yield strength; deformed billet steel bars; unfinished finish.

2.04 CONCRETE MATERIALS

- A. Obtain cementitious materials from same source throughout.
- B. Concrete Materials: Provide in accordance with State of Illinois Highways standard - SSRBC.

2.05 ACCESSORIES

- A. Curing Compound: ASTM C309, Type 1, Class A.
- B. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
 - 1. Material: ASTM D1751, cellulose fiber.

2.06 CONCRETE MIX DESIGN

- A. Concrete Properties:
 - 1. Compressive strength, when tested in accordance with ASTM C39/C39M at 28 days; 4,000 psi.
 - 2. Cement Content: Minimum 6 (min.) sacks/cubic yard.
 - 3. Water-Cement Ratio: Maximum 55 percent by weight.
 - 4. Total Air Content: 4 percent, determined in accordance with ASTM C173/C173M.
 - 5. Maximum Slump: 2 to 4 inches.

2.07 MIXING

- A. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

3.02 SUBBASE

- A. See Section 31 23 23 for construction of base course for work of this Section.

3.03 PREPARATION

- A. Moisten base to minimize absorption of water from fresh concrete.

3.04 FORMING

- A. Place and secure forms to correct location, dimension, profile, and gradient.
- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.05 REINFORCEMENT

- A. Place reinforcement at midheight of slabs-on-grade.
- B. Interrupt reinforcement at contraction joints.
- C. Provide doveled joints 18 inch on center at interruptions of concrete.

3.06 COLD AND HOT WEATHER CONCRETING

- A. Follow recommendations of ACI 305R when concreting during hot weather.
- B. Follow recommendations of ACI 306R when concreting during cold weather.
- C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

3.07 PLACING CONCRETE

- A. Place concrete in accordance with State of Illinois Highways standards.
- B. Do not place concrete when base surface is wet.
- C. Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.
- D. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.
- E. Place concrete to pattern indicated.

3.08 JOINTS

- A. Align sidewalk joints.

- B. Place 3/8 inch wide expansion joints at 20 foot intervals and to separate paving from vertical surfaces and other components and in pattern indicated.
 - 1. Form joints with joint filler extending from bottom of pavement to within 1/2 inch of finished surface.
- C. Provide scored joints.
 - 1. At 5 feet intervals.
 - 2. Between sidewalks and curbs.
 - 3. Between curbs and pavement.
- D. Provide keyed joints as indicated.

3.09 FINISHING

- A. Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge 1/4 inch radius.
- B. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

3.10 TOLERANCES

- A. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.
- B. Maximum Variation From True Position: 1/4 inch.

3.11 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.
 - 1. Provide free access to concrete operations at project site and cooperate with appointed firm.
 - 2. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
 - 3. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.
- B. Compressive Strength Tests: ASTM C39/C39M; for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.
 - 1. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

3.12 PROTECTION

- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.
- B. Do not permit pedestrian traffic over pavement for 7 days minimum after finishing.

END OF SECTION

**SECTION 32 14 13
PRECAST CONCRETE UNIT PAVING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Non-interlocking concrete paver units.
- B. Interlocking garden wall base, wall and cap units.
- C. Prefabricated concrete paver fireplace units.
- D. Sand setting bed.
- E. Polymeric sand joint filler.
- F. Aggregate fill.
- G. Topsoil filler.
- H. Edge restraints.

1.02 RELATED REQUIREMENTS

- A. Section 31 22 00 - Grading: Preparation of subsoil for pavers.
- B. Section 31 23 23 - Fill: Compacted granular fill for pavers and garden walls.

1.03 REFERENCE STANDARDS

- A. ASTM C33/C33M - Standard Specification for Concrete Aggregates 2018.
- B. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar 2018.
- C. ASTM C936/C936M - Standard Specification for Solid Concrete Interlocking Paving Units 2021b.
- D. ASTM C1319 - Standard Specification for Concrete Grid Paving Units 2021.
- E. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness 2015 (Reapproved 2021).
- F. ASTM D5268 - Standard Specification for Topsoil Used for Landscaping and Construction Purposes 2019, with Editorial Revision (2020).

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide characteristics of paver unit, dimensions, and special shapes.
- C. Product Data: Provide characteristics of polymeric sand, including base material, additive(s), compressive strength, and color.
- D. Manufacturer's Installation Instructions: Indicate substrate requirements and installation methods.
- E. Maintenance Materials: Provide the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Pavers: 10 of each type and size.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Non-interlocking Concrete Pavers, Garden Walls and Coping Caps: The design is based on the following product: Unilock: Beacon Hill Flagstone Pavers, Estate Wall Coping, Olde Quarry Garden Wall and Tuscany Fireplace units . Also acceptable, subject to compliance with specified requirements:
1. Oldcastle; Belgard Products: www.oldcastle.com/#sle.
 2. Techo-Bloc: www.techo-bloc.com..
 3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 MATERIALS

- A. Non-interlocking Pavers (Pavers): Precast concrete; Product below based on Unilock, Inc.
1. Product: Unilock: Beacon Hill Flagstone.
 2. Compressive Strength: Minimum of 7200 pounds per square inch.
 3. Absorption: 5 percent average, with maximum of 7 percent.
 4. Air Entrainment: 5 to 7 percent.
 5. Paver Size: 40% Large Rectangle, 40% Square, 20% Small Rectangle; 60 mm thickness.
 6. Pattern: Random.
 7. Color: Bavarian Blend.
- B. Interlocking Dimensional Stone (Seat Wall, Wall Caps & Universal Base): Precast concrete; Product based on Unilock, Inc.
1. Product: Unilock: Olde Quarry (Seat Wall & Base) & Estate Wall (Coping); Three piece wall system.
 2. Compressive Strength: Minimum of 7200 pounds per square inch.
 3. Absorption: 5 percent average, with maximum of 7 percent.
 4. Air Entrainment: 5 to 7 percent.
 5. Seat Wall Stone Size: 12 x 4 x 8 inches; Running bond pattern.
 6. Wall Cap Size: 12-1/2 x 3 x 12 inches; Running bond pattern; Split face edge texture, smooth top face.
 7. Universal Base Unit Size: 19 x 4 x 2 inches.
 8. Color: Seat Wall: Sandstone & Coping: Sandstone.
- C. Fireplace Unit (Premanufactured): Precast concrete; Product based on Unilock, Inc.
1. Product: Unilock: Tuscany Fireplace (Radiused Hearth, Lower Unit, Upper unit, Chimney Extension and flue liner to height as indicated on the contract documents and left and right wood box unit set).
 2. Compressive Strength: Minimum of 6000 pounds per square inch.
 3. Absorption: 5 percent average, with maximum of 7 percent.
 4. Air Entrainment: 5 to 7 percent.
 5. Radiused Hearth: 60 x 24 x 16 inches; Model: RS-ELE016-1.
 6. Fireplace Bottom: 60 x 35.5 x 54.75 inches; Model: RS-ELE028-1.
 7. Fireplace Top: 52 x 28 x 57.5 inches; Model: RS-ELE074-1.
 8. Chimney Extension: Brussels Blocks; Color Sandstone to extend chimney up to height as indicated on the contract documents with manufacturer's standard chimney cap detail and

structural reinforcing and anchorage of chimney units as designed by fireplace Manufacturer.

9. Fireplace Wood Box Unit Set: 40 x 27.5 x 38.75 inches: Model: RS-ELE028-1.

10. Color: Sandstone with Copthorne (3 Color Blend).

D. Sand for Setting Bed: Clean washed natural sand or crushed stone complying with gradation requirements of ASTM C33/C33M for fine aggregates.

E. Polymeric Sand: Fine sand complying with ASTM C144 combined with polymer binders for creating semi-solid joints between pavers.

1. Color: Beige.

F. Topsoil Fill: For filling voids and joints, provide topsoil complying with ASTM D5268.

G. Edging: Formed galvanized steel with steel stakes.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate is level or to correct gradient, smooth, capable of supporting pavers and imposed loads, and ready to receive work of this Section.

B. Verify gradients and elevations of substrate are correct.

C. Verify dry weather forecast without rain for a minimum of 24 hours with temperatures above 55 degrees Fahrenheit.

D. Verify that pavers are completely dry prior to polymeric sand installation.

3.02 PREPARATION

A. Treat soil with herbicide to retard plant growth.

B. Wear clothing and equipment to protect from excessive exposure to polymeric sand.

C. See Section 31 22 00 for subsoil preparation.

D. See Section 31 23 23 for fill compaction requirements and aggregate subbase.

3.03 INSTALLATION OF SOLID PAVER UNITS

A. Spread sand bedding evenly over prepared substrate surface to a maximum thickness of 1-1/2 inch.

B. Dampen and roller compact sand to level and even surface.

C. Screed and scarify top 1 inch to 1 1/2 inch of sand.

D. Place paver units in Random pattern creating staggered joints, from straight reference edge.

E. Cut paver units at edges with masonry saw.

F. Place half units at edge and interruptions. Maintain tight joints.

G. Spread polymeric sand uniformly over surface. Use a push broom to fill joints and remove excess while not sweeping long distances. Sweep all excess with a fine bristle brush and remove residues with a leaf blower.

- H. Tamp and level paver units with mechanical vibrator until units are firmly bedded, level, and to correct elevation and gradients. Do not tamp unrestrained edges.
- I. Using a sprayer set to shower, apply water on specific areas between 100 square feet and 500 square feet to a depth of 1 1/2 inches. Complete one section at a time and avoid flooding the pavers.

3.04 CLEANING

- A. Do not clean pavers until pavers and mortar are dry.
- B. Clean soiled surfaces using cleaning solution. Do not harm pavers, joint materials, or adjacent surfaces.
- C. Use non-metallic tools in cleaning operations.
- D. Rinse surfaces with clean water.
- E. Broom clean paving surfaces. Dispose of excess sand.

3.05 PROTECTION

- A. Do not permit traffic over unprotected paver surface.
- B. Protect paver surface with sheets of plywood.
- C. Do not permit traffic for 48 hours after pavement placement.

END OF SECTION

**SECTION 32 92 19
SEEDING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preparation of subsoil.
- B. Placing topsoil.
- C. Seeding, mulching and fertilizer.

1.02 RELATED REQUIREMENTS

- A. Section 31 22 00 - Grading: Topsoil material.
- B. Section 31 22 00 - Grading: Preparation of subsoil and placement of topsoil in preparation for the work of this section.
- C. Section 31 23 23 - Fill: Topsoil material.

1.03 DEFINITIONS

- A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer .

PART 2 PRODUCTS

2.01 SEED MIXTURE

- A. Seed Mixture:
 - 1. Kentucky Blue Grass: 80 percent.
 - 2. Perrennial Ryegrass: 20 percent.

2.02 SOIL MATERIALS

- A. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots; pH value of minimum 5.4 and maximum 7.0.

2.03 ACCESSORIES

- A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.
- B. Fertilizer: Recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil, to the following

proportions:

- C. Water: Clean, fresh and free of substances or matter that could inhibit vigorous growth of grass.
- D. String: Inorganic fiber.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that prepared soil base is ready to receive the work of this Section.

3.02 PREPARATION

- A. Prepare subgrade in accordance with Section 31 22 00.
- B. Place topsoil in accordance with Section 31 22 00.

3.03 FERTILIZING

- A. Apply fertilizer in accordance with manufacturer's instructions.
- B. Apply after smooth raking of topsoil and prior to roller compaction.
- C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.
- D. Mix thoroughly into upper 2 inches of topsoil.
- E. Lightly water to aid the dissipation of fertilizer.

3.04 SEEDING

- A. Apply seed at a rate of 6 lbs per 1000 sq ft evenly in two intersecting directions. Rake in lightly.
- B. Do not seed areas in excess of that which can be mulched on same day.
- C. Do not sow immediately following rain, when ground is too dry, or during windy periods.
- D. Roll seeded area with roller not exceeding 112 lbs.
- E. Immediately following seeding and compacting, apply mulch to a thickness of 1/8 inches. Maintain clear of shrubs and trees.
- F. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.
- G. Following germination, immediately re-seed areas without germinated seeds that are larger than 4 by 4 inches.

3.05 PROTECTION

- A. Identify seeded areas with stakes and string around area periphery. Set string height to 30 inches. Space stakes at 48 inches.

3.06 MAINTENANCE

- A. Maintain seeded areas immediately after placement until grass is well established and exhibits a vigorous growing condition.

END OF SECTION