



PROJECT MANUAL

Islamic Center of Winona Winona, Minnesota

Project Location

71 W 3rd Street
Winona, MN 55987

Owner

Ahmed El-Afandi
PO Box 1523
Winona, MN 55987

Architect:

AWH Architects

Structural Engineer:

NA

Civil Engineer:

NA

MEP Engineer:

NA

January 17, 2023
Bid Set

ARCHITECT

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I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the laws of the State of Minnesota.



Name

Alex Haecker, AIA

Reg. No. 48654

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1.1 SPECIFIED BUT NOT INCLUDED IN THE PROJECT MANUAL.

1.2 AGREEMENT AND CONDITIONS OF THE CONTRACT

- A. The Agreement form is AIA A105.
- B. The General Conditions are AIAA201.

1.3 FORMS

- A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in the Contract Documents.
- B. Post-Award Certificates and Other Forms:
 - 1. Submittal Transmittal Form: AIA G810 or Contractor's form that contains comparable information.
 - 2. Schedule of Values Form: AIA G703 or Contractor's form that contains comparable information.
 - 3. Application for Payment Form: AIA G702 and G703 or Contractor's forms that contain comparable information.
- C. Clarification and Modification Forms:
 - 1. Request for Interpretation Form: Contractor's form of their choosing.
 - 2. Substitution Request Form (During Construction): AWH's form bound in this Project Manual as Section 01 6023.
 - 3. Supplemental Instruction Form: AIA G710.
 - 4. Construction Change Directive Form: AIA G714.
 - 5. Change Order Form: AIA G701.
- D. Closeout Forms:
 - 1. Certificate of Substantial Completion Form: AIA G704.
 - 2. Affidavit of Payment of Debts and Claims Form: AIA G706.
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 - 4. Consent of Surety to Final Payment Form: AIA G707.

1.4 REFERENCE STANDARDS

- A. AIA A102 - Standard Form of Agreement Between Owner and Contractor where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price; 2007.
- B. AIA A201 - General Conditions of the Contract for Construction.
- C. AIA A312 - Performance Bond and Payment Bond.
- D. AIA G701 - Change Order.
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PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 00 73 00
SUPPLEMENTARY CONDITIONS FOR 2017 A201**

PART 1 GENERAL

1.1 SUMMARY

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

1.2 RELATED SECTIONS

- A. Section 00 50 00 - Contracting Forms and Supplements: Designation of General Conditions.
- B. Section 01 42 16 - Definitions.

1.3 MODIFICATIONS TO GENERAL CONDITIONS

A. ARTICLE 1 - GENERAL PROVISIONS

- 1. Add to Section 1.2.1: If there is an inconsistency in the quality or quantity of Work required by The Contract Documents, the better quality or greater quantity of Work shall be provided unless otherwise indicated by the Architect's interpretation. No change in the Contract Sum shall be allowed.
- 2. Add a new Section 1.6.1 to Section 1.6: Upon a fee payment of \$500, the Architect will make floor plan and/or reflected ceiling plan electronic format drawings available to the Contractor, subcontractors, manufacturer's, and material suppliers for use in building layout and preparing shop drawings or other required submittals; no electronic document release for other purposes shall be made. Each recipient shall sign the Architect's normal Electronic Media Release form and submit payment prior to release of the documents. A copy of the Release form is bound in immediately following this Section.
- 3. Add a new Section 1.6.2 to Section 1.6: The hard copy Contract Documents identified in accordance with Section 1.1.1 shall prevail in case of an inconsistency with subsequent versions made through manipulable electronic operations involving computers.
- 4. Add a new Section 1.6.3 to Section 1.6: The recipients of electronic format drawings shall not transfer or reuse Instruments of Service in electronic or machine readable form without the prior written consent of the Architect.
- 5. Add the following Section 1.7 to Article 1: Representatives of the Owner, Contractor, and Architect shall meet periodically at mutually agreed-upon intervals for the purpose of establishing procedures to facilitate cooperation, communication and timely responses among the participants. By participating in this arrangement, the parties do not intend to create additional contractual obligations or modify the legal relationships which may otherwise exist.

B. ARTICLE 3 - CONTRACTOR

- 1. Add to Section 3.2.2: No change in the Contract Sum will be allowed on account of minor differences between noted and actual dimensions.
- 2. Add a new Section 3.2.5 to Section 3.2: The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for evaluating and responding to the Contractor's requests for information that are not prepared in accordance with the Contract Documents or where the requested information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation.
- 3. Add to Section 3.4.1: No change in the Contract Sum will be allowed for work performed outside of regular working hours either as required by The Contract Documents or elected by the Contractor.

4. Add a new Section 3.4.2.1 to Section 3.4.2: After the Contract has been executed, the Owner and Architect will consider requests for the substitution of products in place of those specified only under the conditions set forth in the General Requirements (Division 1 of the Specifications). By making requests for substitutions, the Contractor:
 - .1 represents that it has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
 - .2 represents that it will provide the same warranty for the substitution as it would have provided for the products specified;
 - .3 certifies that the cost data presented is complete and includes all related costs for the substituted product and for Work that must be changed as a result of the substitution, except for the Architect's redesign costs, and waives all claims for additional costs related to the substitution that subsequently become apparent; and
 - .4 shall coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.
5. Add the following to Section 3.7.1: The Contractor shall obtain the Certificate of Occupancy for the project. The Contractor shall pay plan review fees and inspection fees. The Contractor shall arrange for installation of sewer, electrical, gas, water and other utilities required, except as otherwise indicated. The Owner shall pay sewer and water access charges (SAC and WAC) and park dedication fees, if any.
6. Delete the semicolon near the termination of Section 3.8.2.2 and add the following: , except that if installation is included as part of an allowance in the Specifications, the installation and labor cost for greater or lesser quantities of Work shall be determined in accordance with Section 7.3.7.
7. Add the following Section 3.10.1.1 to Section 3.10.1: The Owner may authorize construction activities to commence prior to completion of the Drawings and Specifications. If the Drawings and Specifications require further development at the time the initial construction schedule is prepared, the Contractor shall:
 - .1 allow time in the schedule for further development of the Drawings and Specifications by the Architect, including time for review by the Owner and Contractor and for the Contractor's coordination of Subcontractors' Work.
 - .2 furnish to the Owner in a timely manner information regarding anticipated market conditions and construction cost; availability of labor, materials and equipment; and proposed methods, sequences and time schedules for construction of the Work.
8. Add the following to Section 3.12.1: Refer to Supplementary Conditions modifications to Article 1 for availability of electronic format drawings for use in preparing shop drawings.

C. ARTICLE 4 - ARCHITECT

1. Add a new Section 4.1.4 to Section 4.1: Contract Document Completeness:
 - .1 Architect to the best of its knowledge prepared the Contract Documents in a complete and correct manner consistent with the concept of standard of care. Standard of care means Architect shall perform its services consistent with the professional skill and care ordinarily provide by architects practicing in the same or similar locality under the same or similar circumstances.
 - .2 Architect offers no warranty or guarantee as to 100 percent complete and correct Contract Documents. In the event of missing or conflicting information that results in a claim by Contractor, Owner is responsible for payment of such claim if judged legitimate by issuance of a Change Order by Architect. No responsibility for such claim that is necessary for the function and operation of Project or that adds value to Project shall be assigned to or borne by Architect.
2. Add a new Section 4.2.2.1 to Section 4.2.2: The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for site visits made necessary by the fault of the Contractor, by defects and deficiencies in the Work, and by request of the Contractor.

D. ARTICLE 5 - SUBCONTRACTORS

1. Add a new Section 5.2.5: Acceptance of any supplier or subcontractor shall not mean nor imply acceptance of any material or product not specified in The Contract Documents.
- E. ARTICLE 7 - CHANGES IN THE WORK
1. Add a new Section 7.1.4: Costs related to a change shall be direct costs. All indirect costs shall be included in the Contractor's overhead and profit. No allowance for overhead and profit shall be allowed if the change results in a net decrease in the Contract Sum The combined overhead and profit included in the total cost to the Owner of a change in the Work shall be based on the following schedule:
 - a. For the Contractor, for Work performed by the Contractor's own forces, 10 percent of the cost.
 - b. For the Contractor, for Work performed by the Contractor's Subcontractors, 10 percent of the amount due the Subcontractors.
 - c. For each Subcontractor involved, for Work performed by that Subcontractor's own forces, 10 percent of the cost.
 - d. For each Subcontractor involved, for Work performed by the Subcontractor's Sub-subcontractors, 10 percent of the amount due the Sub-subcontractor.
 - e. Cost to which overhead and profit is to be applied shall be determined in accordance with Section 7.3.7.
 - f. In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and Subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also.
- F. ARTICLE 9 - PAYMENTS AND COMPLETION
1. Add a new Section 9.3.1.3 to Section 9.3.1: Until Substantial Completion, the Owner shall pay 95 percent of the amount due the Contractor on account of progress payments.
 2. Add a new Section 9.8.3.2 to Section 9.8.3: The Architect is contracted to perform a specific number of inspections for each area to determine whether the Work or a designated portion thereof has attained Substantial Completion in accordance with the Contract Documents. The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for any additional inspections. Upon request, Contractor shall be provided details of this portion of the Owner/Architect Agreement.
 3. Delete the second sentence of Section 9.8.5 and substitute the following: Upon such acceptance and consent of surety, if any, the Owner shall make payment sufficient to increase the total payments to 98 percent of the Contract Sum, less such amounts as the Architect shall determine for incomplete Work and unsettled claims.
 4. Add the following Section 9.10.1.1 to Section 9.10.1: The Architect is contracted to perform a specific number of inspections for each area to determine whether the Work or a designated portion thereof has attained Final Completion in accordance with the Contract Documents. The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for any additional inspections. Upon request, Contractor shall be provided details of this portion of the Owner/Architect Agreement.
- G. ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY
1. Add a new Section 10.2.4.1 to Section 10.2.4: When the use or storage of explosives, or other hazardous materials, substances or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall give the Owner reasonable advance notice.
- H. ARTICLE 11 - INSURANCE AND BONDS
1. Add the following Sections 11.1.2.1 through 11.1.2.4 to Section 11.1.2:
 - a. 11.1.2.1 The limits for Workers Compensation and Employers' Liability insurance shall meet statutory limits mandated by State and Federal Laws. If (1) limits in excess of those required by statute are to be provided, (2) the employer is not statutorily

bound to obtain such insurance coverage, or (3) additional coverages are required, additional coverages and limits for such insurance shall be as follows:

\$300,000 each accident/disease.

\$500,000 aggregate.

- b. 11.1.2.2 The limits for Commercial General Liability insurance including coverage for Premises-Operations, Independent Contractors' Protective, Products-Completed Operations, Contractual Liability, Personal Injury and Broad Form Property Damage (including coverage for Explosion, Collapse and Underground hazards) shall be as follows:

\$1,000,000 Each Occurrence.

\$2,000,000 General Aggregate.

\$500,000 Personal and Advertising Injury

\$1,000,000 Products-Completed Operations Aggregate

.1 The policy shall be endorsed to have the General Aggregate apply to this Project only.

.2 The Contractual Liability Insurance shall include coverage sufficient to meet the obligations in AIA Document A201-2007 under Section 3.18.

.3 Products and Completed Operations insurance shall be maintained for a minimum period of at least 1 year after the expiration of the period for correction of Work.

- c. 11.1.2.3 Automobile Liability Insurance (owned, non-owned and hired vehicles) for bodily injury and property damage: \$500,000 Each Accident

1) The State of Minnesota has a no-fault automobile insurance requirement. The Contractor shall be certain coverage is provided which conforms to any specific stipulation in the law.

- d. 11.1.2.4 Umbrella or Excess Liability Coverage: \$2,000,000 Over Primary Insurance

2. Add the following sentence to Section 11.1.3: If this insurance is written on a Commercial General Liability policy form, the certificates shall be ACORD form 25-S, completed and supplemented in accordance with AIA Document G715-1991, Instruction Sheet and Supplemental Attachment for ACORD Certificate of Insurance 25-S.

3. Modify Section 11.1.4 to read: The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's Consultants as additional insureds, on a primary and noncontributory basis with full coverage for completed operations, for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured, on a primary and noncontributory basis with full coverage for completed operations, for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

4. Revise Section 11.2.1 to read: The Contractor shall purchase and maintain insurance covering the Owner's contingent liability for claims which may arise from operations under the Contract.

5. Modify Section 11.3.1 as follows:

a. Modify the first sentence as follows: Delete "Unless otherwise provided, the Owner" and substitute "The Contractor".

b. Modify the last sentence of the Section by adding the lenders to the list of those whose interests are insured.

c. Add the following sentence: If the Owner is damaged by the failure of the Contractor to purchase and maintain such insurance without so notifying the Owner in writing, then the Contractor shall bear all reasonable costs attributable thereto.

6. Delete Section 11.3.1.2.

7. Modify Section 11.3.1.3 by substituting "Contractor" for "Owner."

8. Modify Section 11.3.1.5 to require the Builder's Risk coverage to allow for partial occupancy before completion of the project.

9. Delete Section 11.3.4.
 10. Modify Section 11.3.6 by making the following substitutions: (1) in the first sentence, substitute "Contractor" for "Owner" and "Owner" for "Contractor," and (2) substitute "Owner" for "Contractor" at the end of the last sentence.
 11. Delete Section 11.4.6 and substitute the following:
 - a. 11.4.6 Before any exposure to loss may occur, the Contractor shall file with the Owner two certified copies of the policy or policies providing this Property Insurance coverage, each containing those endorsements specifically, related to the Project. Each policy shall contain a provision that the policy will not be cancelled nor allowed to expire until at least 30 days' prior written notice has been given to the Contractor.
 12. Modify Section 11.3.7 by substituting "Contractor" for "Owner" at the end of the first sentence.
 13. Modify Section 11.3.8 by substituting "Contractor" for "Owner" ; except that at the first reference to "Owner" in the first sentence, the word "this" should be substituted for "Owner's."
 14. Modify Section 11.3.9 by substituting "Contractor" for "Owner" each time the latter word appears except in the last sentence.
 15. Modify Section 11.3.10 by substituting "Contractor" for "Owner" each time the latter word appears.
 16. Add a new Section 11.5 ADDITIONAL INSURANCE to Article 11.
 17. Add a new Section 11.5.1 to 11.5: The insurance requirements set forth in this Document are minimum requirements only. Any additional coverage that may be necessary to further protect the Contractor is the sole responsibility of the Contractor.
- I. ARTICLE 12 - UNCOVERING AND CORRECTION OF WORK
1. Add the following Section 12.2.2.4 to Section 12.2.2: Upon request by the Owner and prior to the expiration of one year from the date of Substantial Completion, the Architect will conduct and the Contractor shall attend a meeting with the Owner to review the facility operations and performance.
- J. ARTICLE 15 - CLAIMS AND DISPUTES
1. Add the following to Section 15.1.5.2: Data substantiating abnormal weather conditions shall include, at a minimum, local US Weather Bureau climatological reports for the period involved plus a report indicating the average precipitation and temperature for the past 10 years from the nearest NOAA National Weather Service reporting station.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF DOCUMENT

SECTION 01 10 00
SUMMARY

PART 1 GENERAL

1.1 PROJECT

- A. Project Name: Islamic Center of Winona
- B. Owner's Name: Islamic Center of Winona
- C. Architect's Name: AWH Architects
- D. General Contractor: TBD
- E. The Project consists of the removal and replacement of membrane roofing, insulation and associated components, masonry restoration.

1.2 CONTRACT DESCRIPTION

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

1.3 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.

1.4 CONTRACTOR USE OF SITE

- A. Construction Operations: Limited to areas noted on Drawings.
- B. Provide access to and from site as required by law and by Owner:

1.5 SMOKING

- A. Do not permit smoking in the building.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES**

PART 1 GENERAL

1.1 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. Procedures for preparation and submittal of application for final payment.

1.2 RELATED REQUIREMENTS

- A. Document 00 73 00 - Supplementary Conditions for 2017 A201: Percentage allowances for Contractor's overhead and profit.
- B. Section 01 21 00 - Allowances: Payment procedures relating to allowances.
- C. Section 01 22 00 - Unit Prices: Payment and modification procedures relating to unit prices.

1.3 SCHEDULE OF VALUES

- A. Contractor's standard form or electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- B. Forms filled out by hand will not be accepted.
- C. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- D. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify site mobilization and bonds and insurance.
- E. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
- F. Revise schedule to list approved Change Orders, with each Application For Payment.

1.4 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Form to be used: AIA G702 Application and Certificate for Payment and AIA G703 - Continuation Sheet.
- C. Contractor's standard form or electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- D. Forms filled out by hand will not be accepted.
- E. Execute certification by signature of authorized officer.
- F. 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.
- G. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.
- H. Submit one copy of each Application for Payment.

- I. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.5 MODIFICATION PROCEDURES

- A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to the Contract Documents.
- B. For minor changes not involving an adjustment to the Contract Price or Contract Time, Architect will issue instructions directly to Contractor.
- C. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 2. Promptly execute the change.
- D. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 15 days.
- E. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 60 00.
- F. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
 1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
 2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
 3. For pre-determined unit prices and quantities, the amount will be based on the fixed unit prices.
 4. For change ordered by Architect without a quotation from Contractor, the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.
- G. Substantiation of Costs: Provide full information required for evaluation.
 1. On request, provide following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 2. Support each claim for additional costs with additional information:
 - a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
 3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

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

1.6 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. Remove temporary protection devices and facilities.
 - 3. Submit final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 - 4. Submit a copy of the Architect's final Punch-List of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance.
 - 5. Submit Consent of Surety Company to Final Payment. (AIA Document G707)
 - 6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 - 7. Submit final meter reading for utilities and similar data either as of the date of substantial completion or the date when the Owner took possession of and responsibility for corresponding elements of the Work.
 - 8. Submit assurance, satisfactory to Owner, that unsettled claims will be settled and that work not actually completed and accepted will be completed without undue delay.
 - 9. Submit proof, satisfactory to Owner, that taxes, fees and similar obligations of Contractor have been paid. (AIA Documents G706 and 706A)
 - 10. Change over door locks and other Contractor's access provisions to Owner's property.
 - 11. Submit lien waivers from Contractor, subcontractors and material suppliers in the full amount of the Contract.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 21 00
ALLOWANCES**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Cash allowances.

- B. Payment and modification procedures relating to allowances.

1.2 RELATED REQUIREMENTS

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

1.3 CASH ALLOWANCES

- A. Costs Included in Cash Allowances: Cost of product to Contractor or subcontractor, less applicable trade discounts.
- B. Costs Not Included in Cash Allowances: Product handling at the site, including unloading, uncrating, and storage; protection of products from elements and from damage; and labor for installation and finishing.
- C. Architect Responsibilities:
 - 1. Consult with Contractor for consideration and selection of products, suppliers, and installers.
 - 2. Select products in consultation with Owner and transmit decision to Contractor.
- D. Contractor Responsibilities:
 - 1. Assist Architect in selection of products, suppliers, and installers.
 - 2. Obtain proposals from suppliers and offer recommendations.
 - 3. On notification of which products have been selected, execute purchase agreement with designated supplier.
 - 4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
 - 5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.
- E. Differences in costs will be adjusted by Change Order.

1.4 ALLOWANCES SCHEDULE

- A. Refer to individual specification sections for stipulated sums of allowances, if any.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 22 00
UNIT PRICES**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Measurement and payment criteria applicable to Work performed under a unit price payment method.
- B. Defect assessment and non-payment for rejected work.

1.2 COSTS INCLUDED

- A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

1.3 MEASUREMENT OF QUANTITIES

- A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.
- B. Take all measurements and compute quantities. Measurements and quantities will be verified by Architect.
- C. Assist by providing necessary equipment, workers, and survey personnel as required.
- D. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
- E. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
- F. Measurement by Area: Measured by square dimension using mean length and width or radius.
- G. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.
- H. Stipulated Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

1.4 PAYMENT

- A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Architect, multiplied by the unit price.
- B. Payment will not be made for any of the following:
 - 1. Products wasted or disposed of in a manner that is not acceptable.
 - 2. Products determined as unacceptable before or after placement.
 - 3. Products not completely unloaded from the transporting vehicle.
 - 4. Products placed beyond the lines and levels of the required Work.
 - 5. Products remaining on hand after completion of the Work.
 - 6. Loading, hauling, and disposing of rejected Products.

1.5 DEFECT ASSESSMENT

- A. Replace Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct one of the following remedies:
 - 1. The defective Work may remain, but the unit price will be adjusted to a new unit price at the discretion of Architect.
 - 2. The defective Work will be partially repaired to the instructions of the Architect, and the unit price will be adjusted to a new unit price at the discretion of Architect.
- C. The individual specification sections may modify these options or may identify a specific formula or percentage price reduction.
- D. The authority of Architect to assess the defect and identify payment adjustment is final.

1.6 SCHEDULE OF UNIT PRICES

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UNIT PRICES

A. Refer to the individual specification sections for unit prices, if any.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Electronic document submittal service.
- B. Preconstruction & site mobilization meeting.
- C. Progress meetings.
- D. Construction progress schedule.
- E. Submittals for review, information, and project closeout.
- F. Number of copies of submittals.
- G. Submittal procedures.

1.2 RELATED REQUIREMENTS

- A. Document 00 73 00 - Supplementary Conditions: Article 1 modifications addressing availability of electronic documents for use in preparing shop drawings.
- B. Section 01 70 00 - Execution and Closeout Requirements: Additional coordination requirements.
- C. Section 01 78 00 - Closeout Submittals: Project record documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

- A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF) format and transmitted via an Internet-based submittal service that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email.
 - 1. Besides submittals for review, information, and closeout, this procedure applies to requests for information (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, and any other document any participant wishes to make part of the project record.
 - 2. Contractor and Architect are required to use this service.
 - 3. It is Contractor's responsibility to submit documents in PDF format.
 - 4. Subcontractors, suppliers, and Architect's consultants are to be permitted to use the service at no extra charge.
 - 5. Users of the service need an email address, Internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com), unless such software capability is provided by the service provider.
 - 6. Paper document transmittals will not be reviewed; emailed PDF documents will not be reviewed.
 - 7. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.
- B. Cost: The cost of the service is to be paid by Contractor; include the cost of the service in the contract sum.
- C. Project Closeout: Architect shall determine when to terminate the service for the project and is responsible for obtaining archive copies of files for Owner.

3.2 PRECONSTRUCTION & SITE MOBILIZATION MEETING

- A. Architect will schedule a meeting at the Project site prior to Contractor occupancy.
- B. Attendance Required:
 - 1. Contractor.

2. Owner.
 3. Architect.
 4. Structural Engineer
 5. Other Major Consultants.
 6. Contractor's Superintendent.
 7. Major Subcontractors.
- C. Agenda:
1. Submission of list of Subcontractors, schedule of values, progress schedule, and schedule of submittals.
 2. Designation of personnel representing the parties to Contract, and Architect.
 3. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 4. Use of premises by Owner and Contractor.
 5. Owner's requirements and occupancy prior to completion.
 6. Construction facilities and controls provided by Owner.
 7. Temporary utilities provided by Owner.
 8. Survey and building layout.
 9. Security and housekeeping procedures.
 10. Schedules.
 11. Application for payment procedures.
 12. Procedures for testing.
 13. Procedures for maintaining record documents.
 14. Requirements for start-up of equipment.
 15. Inspection and acceptance of equipment put into service during construction period.
- D. Record minutes and distribute copies within five days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.3 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Architect, as appropriate to agenda topics for each meeting.
- D. Agenda:
 1. Review minutes of previous meetings.
 2. Review of Work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems that impede, or will impede, planned progress.
 5. Review of submittals schedule and status of submittals.
 6. 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.
 12. Review status of project record documents.
 - a. Maintain current for each progress meeting.
- E. Record minutes and distribute copies within five days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

F. Legacy Grant Milestones

1. Grantee will submit the following to the Grants Office prior to purchasing materials or starting work to determine color, texture, strength, material composition, joint width, profile, and hardness of the historic mortar. 1) Mortar test results that show the color, texture, strength, material composition, joint width, profile, and hardness of the historic mortar, 2) Good quality contextual and detailed color photos at a small sample area of masonry that shows the historic and new mortar after repointing. New mortar must match historic mortar test results including in color, texture, strength, composition, joint width, and profile of historic. Masonry repointing must be executed in conformance with Preservation Brief 2: Repointing Mortar Joints in Masonry Buildings (online [<https://www.nps.gov/orgs/1739/index.htm>] at Technical Preservation Services (U.S. National Park Service). 3) Good-quality color photographs of the proposed replacement stone or masonry alongside the original stone or masonry must be submitted, reviewed, and approved by the Grants Office before proceeding with this work. Historic masonry shall be salvaged and reused whenever possible.
2. Grantee must conduct a site visit to review the project progress with the Grants Office when at least 50% of the work has been completed. To schedule a site visit, upload proposed dates and times at least 30 days prior to the proposed visit.

3.4 CONSTRUCTION PROGRESS SCHEDULE

- A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.
- B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
 1. Include written certification that mechanical and electrical contractors have reviewed and accepted proposed schedule.
- D. Within 10 days after joint review, submit complete schedule.
- E. Submit updated schedule with each Application for Payment.

3.5 SUBMITTALS FOR REVIEW

- A. Within 20 days after date of the Agreement, submit a Schedule of Submittals, that is coordinated with the Contractor's construction schedule and allows the specified Architect review period for each submittal.
 1. For large volume submittals, phase the submittal to allow review response from Architect within specified time limits.
 - a. For Example: Submit in stages, by floor or building area, shop drawings for precast concrete, structural steel, floor and/or roof trusses, etc.
- B. 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.
 5. Professional engineer certification.
 6. Calculations.
 7. Warranties.
- C. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- D. Samples will be reviewed only for aesthetic, color, or finish selection.
- E. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES

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article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

3.6 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
1. Design data.
 2. Certificates.
 3. Test reports.
 4. Inspection reports.
 5. Manufacturer's instructions.

6. Manufacturer's field reports.
 7. Other types indicated.
- B. Submit for Architect's knowledge as contract administrator or for Owner. No action will be taken.

3.7 SUBMITTALS FOR PROJECT CLOSEOUT

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

3.8 NUMBER OF COPIES OF SUBMITTALS

- A. Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
- B. Extra Copies at Project Closeout: See Section 01 78 00.
- C. Samples and Color Charts: Submit the number specified in individual specification sections; one of which will be retained by Architect.
1. Retained samples will not be returned to Contractor unless specifically so stated.

3.9 SUBMITTAL PROCEDURES

- A. Shop Drawing Procedures:
1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting the Contract Documents and coordinating related Work.
 2. Generic, non-project specific information submitted as shop drawings do not meet the requirements for shop drawings.
- B. Transmit each submittal with a copy of approved submittal form.
- C. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- D. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.
- E. 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.
- F. Deliver submittals to Architect at business address.
- G. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
- H. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
- I. Provide space for Contractor and Architect review stamps.
- J. When revised for resubmission, identify all changes made since previous submission.
- K. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- L. Submittals not requested will not be recognized or processed.
- M. Incomplete submittals shall include those that do not include all documents indicated in the Submittals article of each Specification Section; incomplete submittals will be Rejected by Architect and returned for resubmittal.

1. Pay particular attention to Submittal requirements that include calculations and/or Licensed Design Professional certification. Submission of shop drawings without specified calculations or certifications constitute incomplete submittals and are grounds for Rejection and Resubmittal action.

END OF SECTION

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. References and standards.

- B. Quality assurance submittals.
- C. Mock-ups.
- D. Control of installation.
- E. Tolerances.
- F. Testing and inspection services.
 - 1. Sound control testing.
- G. Manufacturers' field services.

1.2 RELATED REQUIREMENTS

- A. Document 00 31 00 - Available Project Information: Soil investigation data.
- B. Document 00 72 00 - General Conditions: Inspections and approvals required by public authorities.
- C. Section 01 30 00 - Administrative Requirements: Submittal procedures.
- D. Section 01 42 16 - Definitions.
- E. Section 01 60 00 - Product Requirements: Requirements for material and product quality.

1.3 REFERENCE STANDARDS

- A. ASTM C1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.
- B. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry.
- C. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- D. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.
- E. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing.

1.4 SUBMITTALS

- 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.
- B. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Owner's information.
- C. Test Reports: After each test/inspection, promptly submit copies of report to Architect, Structural Engineer, and to Contractor. Additionally, submit copies to Building Officials if directed.
 - 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. Conformance with Contract Documents.
 - k. When requested by Architect, provide interpretation of results.
- D. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
 - 1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 - E. 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.
 - F. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
 - 1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
 - G. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for Owner.
 - 1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

1.5 REFERENCES AND STANDARDS

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

1.6 TESTING AND INSPECTION AGENCIES

- A. Special Inspections:
 - 1. Contractor shall include a Special Inspections Budget for services of an independent testing agency to perform Special Inspections, as defined by the applicable Building Code.
 - 2. This Special Inspections Budget shall be separate from the Contract Amount.
 - 3. Contractor shall arrange for the independent testing agency to present a proposal directly to the Owner for a direct contract between the Owner and the independent testing agency.
 - 4. The Owner is the party responsible for paying for Special Inspections as defined by the applicable Building Code.
- B. Contractor shall employ and pay for services of an independent testing agency to perform other specified testing and inspection.
 - 1. Examples of specified testing and inspection for which Contractor is responsible include,

but are not limited to:

- a. Sound control testing.
 - b. Window performance testing.
- C. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- D. Contractor Employed Agency:
1. Testing agency: Comply with requirements of ASTM E 329, ASTM E 543, ASTM C 1077, ASTM C 1093, and ASTM D 3740.
 2. Laboratory: Authorized to operate in the State in which the Project is located.
 3. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
 4. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 CONTROL OF INSTALLATION

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

3.2 MOCK-UPS

- A. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.
- B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- C. Accepted mock-ups shall be a comparison standard for the remaining Work.
- D. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, remove mock-up and clear area when directed to do so.

3.3 TOLERANCES

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

3.4 TESTING AND INSPECTION

- A. See individual specification sections for testing and inspection required in addition to the testing

specified below:

1. Sound Control Testing:
 - a. Perform field testing in accordance with this Section.
 - b. Within dwelling units conduct field sound transmission classification tests (FSTC) of party and corridor walls and field sound transmission classification tests (FSTC) and field impact isolation classification tests (FIIC) of floor/ceiling assemblies to verify conformance to design and code requirements.
 - 1) Conduct separate floor/ceiling tests for each type of finish flooring used.
 - 2) Test as soon as practical during construction once two adjacent dwelling units have received gypsum board and been taped and the floor has received the cementitious topping.
 - c. For testing, install the permanent, or provide temporary, doors and hardware, provide temporary finish flooring, cover miscellaneous mechanical/electrical openings, and correct any deficiencies noted.
- B. Testing Agency Duties:
 1. Test samples of mixes submitted by Contractor.
 2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 3. Perform specified sampling and testing of products in accordance with specified standards.
 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 5. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
 6. Perform additional tests and inspections required by Architect.
 7. Submit reports of all tests/inspections specified:
 - a. Submit test reports within 7 days of the date of the test(s).
 - b. Submit inspection/observation reports periodically, but at least semi-monthly during inspection/observation period.
- C. Limits on Testing/Inspection Agency Authority:
 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 2. Agency may not approve or accept any portion of the Work.
 3. Agency may not assume any duties of Contractor.
 4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:
 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
 4. Notify Architect and laboratory 48 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.
- E. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect.
- F. Re-testing required because of non-conformance to specified requirements shall be paid for by

Contractor.

3.5 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 of 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.

3.6 DEFECT ASSESSMENT

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

END OF SECTION

SECTION 01 51 00
TEMPORARY UTILITIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary Utilities: Electricity, lighting, heat, ventilation, and water.

1.2 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.

1.3 TEMPORARY ELECTRICITY

- A. Cost: By Contractor.
- B. Provide power service required from utility source.
- C. Provide power outlets for construction operations, with branch wiring and distribution boxes located at each floor. Provide flexible power cords as required. Each subcontractor shall provide their own extension cords.
- D. Provide main service disconnect and over-current protection at convenient location and meter.
- E. Permanent convenience receptacles may be utilized during construction.
- F. Provide adequate distribution equipment, wiring, and outlets to provide single phase GFI-protected branch circuits for power and lighting.
 - 1. Provide 20 ampere duplex outlets, single phase circuits for power tools; space so that all parts of the building and the exterior side of exterior walls can be reached with a 100 foot maximum length extension cord.
 - 2. Provide 20 ampere, single phase branch circuits for lighting.

1.4 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain lighting for construction operations .
- B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtailed, and lamps as required.
- C. Maintain lighting and provide routine repairs.
- D. Permanent building lighting may be utilized during construction.

1.5 TEMPORARY HEATING

- A. Cost of Energy: By Contractor.
- B. Provide heating devices and heat as needed to maintain specified conditions for construction operations.
- C. Provide temporary heating units that have been tested and labeled by UL, FM, or other recognized trade association related to the fuel being consumed.
- D. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.
- E. Owner's new heat plant may be used.
 - 1. Exercise measures to conserve energy.
 - 2. Enclose building prior to activating temporary heat.
- F. 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.

- G. Use of the permanent heating equipment for construction purposes shall not alter nor shorten the Owner's warranty in anyway.

1.6 TEMPORARY COOLING

- A. Cost of Energy: By Contractor.
- 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 new cooling plant may not be used.

1.7 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Do not utilize permanent nor existing ventilation equipment. Provide temporary fan units to maintain clean air for construction operations.

1.8 TEMPORARY WATER SERVICE

- A. Cost of Water Used: By Contractor.
- B. Provide and maintain suitable quality water service for construction operations at time of project mobilization.
- C. Extend branch piping with outlets located so water is available by hoses with threaded connections. Provide temporary pipe insulation to prevent freezing.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 60 00
PRODUCT REQUIREMENTS**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. General product requirements.
- B. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Substitution limitations and procedures.
- E. Maintenance materials, including extra materials, spare parts, tools, and software.

1.2 RELATED REQUIREMENTS

- A. Section 01 40 00 - Quality Requirements: Product quality monitoring.

1.3 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code; National Fire Protection Association.

1.4 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

2.1 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by the Contract Documents.
- B. DO NOT USE products having any of the following characteristics:
 - 1. Made using or containing asbestos or PCB's.
- C. Where all other criteria are met, Contractor shall give preference to products that:
 - 1. Are extracted, harvested, and/or manufactured closer to the location of the project.
 - 2. Have longer documented life span under normal use.
 - 3. Result in less construction waste.
 - 4. Are made of vegetable materials that are rapidly renewable.
 - 5. Are made of recycled materials.
- D. Motors: Refer to Divisions 21 - 23 and 26, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.
- E. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Size terminal lugs to NFPA 70, include lugs for terminal box.
- F. Cord and Plug: Provide minimum 6 foot cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

2.2 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 with a Provision that No Substitutions Nor Equivalents Are Acceptable: 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 or without a Stated Provision for

Substitutions: Submit a request for substitution for any manufacturer not named.

2.3 MAINTENANCE MATERIALS

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

PART 3 EXECUTION

3.1 SUBSTITUTION PROCEDURES

- A. Architect will consider requests for substitutions only within 15 days after date of Agreement.
- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- C. A request for substitution constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Will provide the same warranty for the substitution as for the specified product.
 - 3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
- D. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- E. Substitution Submittal Procedure:
 - 1. Submit one copy of request for substitution for consideration. Limit each request to one proposed substitution.
 - a. Use AWH Request for Substitution Form that is bound in this Project Manual immediately following this Section.
 - 2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
 - 3. The Architect will notify Contractor in writing of decision to accept or reject request.

3.2 TRANSPORTATION AND HANDLING

- A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- B. Transport and handle products in accordance with manufacturer's instructions.
- C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- D. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
- F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.3 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. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- H. Prevent contact with material that may cause corrosion, discoloration, or staining.
- I. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- J. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 60 23

**AWH SUBSTITUTION REQUEST
FORM**

To: AWH Architects, LLC
12 E 25th St
Minneapolis, Minnesota 55408
612-558-5383

Attention : John Greene (for Products related to the Building)

From: . name of company

address

city, state, zip code

phone

e-mail address

fax

Please fully answer all of the information requested below. Failure to answer any of the items below may cause rejection of request for substitution. Please use one form for each product being requested. Only the first product listed will be considered on forms with more than one product listed.

Spec. Section Number:

Drawing Number:

Detail Number:

Specified Product

Proposed Substitute

Product or Part Number:

Color or Finish:

Pattern or Profile:

Weight or Service Rating:

Please answer the following questions. Attach an explanation sheet on your company's letterhead when required.

Does the proposed substitution affect dimensions indicated on Drawings? No Yes
(Explain how.)

Does the proposed substitution require changes in the drawings and/or design or installation changes?
No Yes (If yes, is the cost of these changes included in the proposed amount? No Yes)

Does the proposed substitution affect other trades?
No Yes (Explain who and how.)

If the proposed product does affect the work of other trades, has the cost impact on their work been included in the price of the proposed substitution? No Yes

Does the proposed product's guarantee differ from that of the specified product's? No Yes
(Explain how.)

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AWH SUBSTITUTION REQUEST

Why is this proposal for substitution being submitted? (List reasons below.)

Attach a listing of 3 projects using the proposed substitution that have been completed within the past 5 years in the geographic and climatic region of this project. One of the applications must have been in service for at least 3 years.

Attach product data/brochures for the substitute product:

The undersigned represents that it has examined the Construction Documents and is familiar with the specified products, that it understands the indicated application of those products and the design intent of the Architect, and that the proposed substitution complies with the Construction Documents and will perform at least equally to the specified product within the limitations stated above. Additionally, the undersigned accepts responsibility for coordinating application and installation of the proposed substitution and waives all claims for additional costs resulting from the incorporation of the proposed substitution into the Project or its subsequent failure to perform according to specified requirements.

Submitted by: _____
Type or print name Signature

Date: _____

The decision of the Architect regarding the acceptance or rejection of the proposed substitution will be based, at least in part, on the information supplied above and in the attached explanations and product data. Requests for substitution must be received by the Architect at least 10 days prior to the bid due date. A list of approved substitutions will be published, in the form of an addendum, at least 4 working days prior to the bid due date. No individual requests will be returned.

END OF FORM

**SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Pre-installation meetings.
- C. Cutting and patching.
- D. Surveying for laying out the work.
- E. Cleaning and protection.
- F. Starting of systems and equipment.
- G. Demonstration and instruction of Owner personnel.
- H. Closeout procedures, except payment procedures.
- I. General requirements for maintenance service.

1.2 RELATED REQUIREMENTS

- A. Document 00 73 00 - Supplementary Conditions: Article 1 modifications addressing availability of electronic documents for use in building layout.
- B. Section 01 30 00 - Administrative Requirements: Submittals procedures.
- C. Section 01 40 00 - Quality Requirements: Testing and inspection procedures.
- D. Section 01 50 00 - Temporary Facilities and Controls: Temporary exterior enclosures.
- E. Section 01 51 00 - Temporary Utilities: Temporary heating, cooling, and ventilating facilities.
- F. Section 01 78 00 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.
- G. Section 07 84 00 - Firestopping.

1.3 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate Contractor.

1.4 QUALIFICATIONS

- A. For survey work, employ a land surveyor registered in the State in which the Project is located and acceptable to Architect. Submit evidence of Surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate.
- B. For field engineering, employ a professional engineer of the discipline required for specific service on Project, licensed in the State in which the Project is located.

1.5 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. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- D. 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. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
2. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

- E. 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.

1.6 COORDINATION

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

PART 2 PRODUCTS

2.1 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.

PART 3 EXECUTION

3.1 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.

3.2 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.

3.3 PREINSTALLATION MEETINGS

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

3.4 LAYING OUT THE WORK

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Architect 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 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.
- H. Utilize recognized engineering survey practices.
- I. 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; and site structures.
 2. Grid or axis for structures.
 3. Building foundation, column locations, ground floor elevations.
- J. Periodically verify layouts by same means.
- K. Maintain a complete and accurate log of control and survey work as it progresses.

3.5 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for

replacement. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

- B. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- C. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- D. Make neat transitions between different surfaces, maintaining texture and appearance.

3.6 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. 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.
- C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing.
- D. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- F. Restore work with new products in accordance with requirements of Contract Documents.
- G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H. 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.
- I. 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.

3.7 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.

3.8 PROTECTION OF INSTALLED WORK

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- 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. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Prohibit traffic from completed landscaped areas.
- H. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.9 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- D. Verify that wiring and support components for equipment are complete and tested.
- E. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- F. 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.
- G. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.10 DEMONSTRATION AND INSTRUCTION

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

3.11 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.
- B. Testing, adjusting, and balancing HVAC systems: See Division 23.

3.12 FINAL CLEANING

- A. Execute final cleaning prior to Substantial Completion.
- 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, wash resilient flooring and finish in accordance with manufacturer's recommendations, leave concrete floors broom clean, 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. Replace filters of operating equipment.
- G. Clean debris from roofs, gutters, downspouts, 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.
- J. Replace burnt out lamps and bulbs.

3.13 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
- B. Notify Architect when work is considered ready for Substantial Completion.
- C. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's review.
- D. Correct items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Owner-occupied areas.
- E. Notify Architect when work is considered finally complete.
- F. Complete items of work determined by Architect's final inspection.

3.14 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 78 00
CLOSEOUT SUBMITTALS**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Project Record Documents.

- B. Operation and Maintenance Data.
- C. Warranties and bonds.

1.2 RELATED REQUIREMENTS

- A. Section 00 72 00 - General Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.
- B. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- C. Section 01 70 00 - Execution and Closeout Requirements: Contract closeout procedures.
- D. Individual Product Sections: Specific requirements for operation and maintenance data.
- E. Individual Product Sections: Warranties required for specific products or Work.

1.3 SUBMITTALS

- A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
- B. Operation and Maintenance Data:
 - 1. For all submittals, separate products and equipment installed in the public/common areas of the project, including the exterior, from those installed within dwelling units.
 - 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 electronic copy of completed documents through the electronic submittal service 15 days prior to final inspection. If Architect issues any comments, revise content as required prior to final submission.
- 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

3.1 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.
- 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. Field changes of dimension and detail.
 - 2. Details not on original Contract drawings.

3.2 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.

3.3 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.

3.4 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

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

- E. Provide servicing and lubrication schedule, and list of lubricants required.
- F. Include manufacturer's printed operation and maintenance instructions.
- G. Include sequence of operation by controls manufacturer.
- H. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- I. Provide control diagrams by controls manufacturer as installed.
- J. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- K. Include test and balancing reports.
- L. Additional Requirements: As specified in individual product specification sections.

3.5 SUBMISSION OF OPERATION AND MAINTENANCE MANUALS

- A. Submit all requirements for operation and maintenance manuals as one electronic copy through the electronic submittal service being used for the project.
- B. Clearly identify operation and maintenance information and other end of project information as project record documents.

3.6 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Submit original hard copies of warranties and bonds in a manual.
 - 1. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.
 - 2. 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.
 - 3. 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.
 - 4. 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.
- F. Include one electronic copy of each warranty and bond as part of the project record documents submitted to the project's electronic submittal service.

END OF SECTION

SECTION 02 41 00

DEMOLITION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Selective demolition of built site elements.
- B. Selective demolition of building elements for alteration purposes.

1.2 RELATED REQUIREMENTS

- A. Section 00 31 00 - Available Project Information: Existing building survey conducted by Owner; information about known hazardous materials.
- B. Section 01 10 00 - Summary: Limitations on Contractor's use of site and premises.
- C. Section 01 60 00 - Product Requirements: Handling and storage of items removed for salvage and relocation.
- D. 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.
- E. Section 31 23 23 - Building Foundation Fill: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

1.3 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. 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.
 - 2. Identify demolition firm and submit qualifications.
 - 3. Include a summary of safety procedures.
- C. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.4 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: Company specializing in the type of work required.
 - 1. Minimum of 5 years of experience.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Fill Material: As specified in Section 31 23 23 - Building Foundation Fill.

PART 3 EXECUTION

3.1 SCOPE

- A. Remove paving and curbs as required to accomplish new work.
- B. Remove concrete slabs on grade within site boundaries.
- C. Remove other items indicated, for salvage, relocation, and recycling.

- D. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as required so that required rough grade elevations do not subside within one year after completion.

3.2 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. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 - 4. Provide, erect, and maintain temporary barriers and security devices.
 - 5. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
 - 6. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 - 7. Do not close or obstruct roadways or sidewalks without permit.
 - 8. 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.
 - 9. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.
- C. Do not begin removal until receipt of notification to proceed from Owner.
- D. Protect existing structures and other elements that are not to be removed.
 - 1. Provide bracing and shoring.
 - 2. Prevent movement or settlement of adjacent structures.
 - 3. Stop work immediately if adjacent structures appear to be in danger.
- E. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- F. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
- G. 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.
- H. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

3.3 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.

3.4 SELECTIVE DEMOLITION FOR 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 shown.
 - 2. Report discrepancies to Architect 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. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
- C. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
- D. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): 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. Verify that abandoned services serve only abandoned facilities before removal.
 - 4. 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.
- E. 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.

3.5 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 04 01 00
MAINTENANCE OF MASONRY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Survey of existing exterior walls and reporting of conditions found.
- B. Water cleaning of exterior stone and brick surfaces.
- C. Replacement of damaged and/or missing brick and stone units.
- D. Repointing mortar joints, including those at the stone water tables, window sills, etc.
- E. Removal of existing sealant joints.

1.2 RELATED REQUIREMENTS

- A. Section 01 30 00 – MNHS Legacy Grant Milestones
- B. Section 04 05 11 - Masonry Mortaring and Grouting: Re-pointing mortar for restoration work.
- C. Section 04 20 00 - Unit Masonry: Block masonry units for new work.
- D. Section 04 20 00 - Unit Masonry: Mortar and grout for new work.
- E. Section 07 90 05 - Joint Sealers.

1.3 PRICE AND PAYMENT PROCEDURES

- A. Contract Documents for Masonry Restoration:
 - 1. Contract Documents for masonry restoration have been prepared based on initial observations of exterior walls, both exterior and interior surfaces, and related recommendations.
 - 2. Prior to start of restoration work, conduct a survey of existing conditions of exterior walls, both exterior and interior surfaces.
 - 3. Compare survey findings to Contract Documents. Where discrepancies exist, make recommendation to Architect of what should be done, including any proposed adjustment in cost.
- B. See any masonry restoration scope(s) of work that may be defined by Contractor for additional information and added work.
- C. If there is a discrepancy in scope of work between this Section and the Contractor's scope document conform to requirements of both.
- D. If confusion on scope of work still exists, request direction from Architect.

1.4 REFERENCE STANDARDS

- A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures and Related Commentaries; American Concrete Institute International.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week prior to commencing work of this section.
 - 1. Require attendance of parties directly affecting work of this section.
 - 2. Review conditions of installation, installation procedures, and coordination with related work.

1.6 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on stone repair mortars and cleaning products.

- C. Samples: Submit four samples of face brick units to illustrate matching color, texture and extremes of color range.
- D. Manufacturer's Instructions: For stone repair mortars and cleaning materials, indicate special procedures, conditions requiring special attention, and limitations of use.
- E. Survey: Submit survey results/report of observation of existing exterior walls.
- F. Restoration Program: Submit restoration program with procedures, details, and product data.

1.7 QUALITY ASSURANCE

- A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the contract documents.
- B. Restorer: Company specializing in masonry restoration with minimum 10 years of experience.

1.8 MOCK-UP

- A. Restore and repoint a masonry wall sized 8 feet long by 6 feet high, which includes brick replacement, mortar and stone repair.
 - 1. Demonstrate proficiency in both hand and tool removal of existing mortar.
 - 2. Conduct mock-up in 2 stages allowing observation after damaged mortar and damaged masonry unit removal have been performed, but before rebuilding or repointing. Allow second observation when the mock-up panel is fully restored.
- B. Clean a 10 ft by 10 ft panel of wall to determine extent of cleaning.
 - 1. Repeat, using different cleaning methods and/or products for up to three different panels.
- C. Clean a 12 sf, minimum wall area on the building's front face to demonstrate the removal of existing tar.
- D. Locate where directed.
- E. Acceptable panel and procedures employed will become the standard for work of this section.
- F. Mock-up may remain as part of the Work.

1.9 PRE-INSTALLATION MEETING

- A. Convene one week prior to commencing work of this section.
- B. Require attendance of parties directly affecting work of this section.
- C. Review conditions of installation, installation procedures, and coordination with related work.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver masonry neatly stacked and tied on pallets. Store clear of ground with adequate waterproof covering.
- B. Store restoration cleaner materials in manufacturer's packaging.

1.11 FIELD CONDITIONS

- A. Cold and Hot Weather Requirements: Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Restoration and Cleaning Chemicals; **Not to be used unless water cleaning proves to be ineffective:**
 - 1. PROSOCO; Product ENVIRO-KLEAN LIMESTONE RESTORER: www.prosoco.com.
 - a. For localized cleaning of heavy soiling use ProSoCo, Inc; Product 766 LIMESTONE & MASONRY PRE-WASH, followed by neutralization with LIMESTONE & MASONRY AFTERWASH.

- b. If mock up using specified product is not satisfactory, use ProSoCo, Inc; Product BIO-KLEAN, followed by neutralization with LIMESTONE & MASONRY AFTERWASH for additional mock-up panel.
 - 1) Note: BIO-KLEAN requires mixing water, cleaner, and activator to form cleaning solution.

B. Substitutions: See Section 01 60 00 - Product Requirements.

C. Confirm product selection by complying with Design Requirements specified in Part 1 of this Section.

2.2 MORTAR MATERIALS

A. Repointing Mortar Materials: Conform to requirements of Section 04 05 11.

2.3 ACCESSORY MATERIALS

A. Mechanical Anchors and Dowels: Stainless steel threaded rod, 3/16 inch diameter, bent and cut to lengths to achieve positive embedment and anchorage of stone repairs.

B. Slip dowels for new control joints at repaired cracks.

2.4 MASONRY MATERIALS

A. Brick for Exterior Restoration Work: Clay brick salvaged from other late-19th and early-20th century buildings and to match material, size, profile, texture, color, and appearance of existing brick that is to remain.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that surfaces to be cleaned and restored are ready for work of this section.

3.2 PREPARATION

A. Protect surrounding elements from damage due to restoration procedures.

B. Carefully remove and store removable items located in areas to be restored, including fixtures, fittings, finish hardware, and accessories; reinstall upon completion.

C. Separate areas to be protected from restoration areas using means adequate to prevent damage.

D. Cover existing landscaping with tarpaulins or similar covers.

E. Mask immediately adjacent surfaces with material that will withstand restoration procedures.

F. If roof top work is required, protect roof membrane and flashings from damage with 1/2 inch plywood laid on roof surfaces over full extent of work area and traffic route.

- G. When using cleaning methods that involve water or other liquids, install drainage devices to prevent runoff over adjacent surfaces unless those surfaces are impervious to damage from runoff.
- H. Do not allow cleaning runoff to drain into sanitary or storm sewers.

3.3 SEALANT REMOVAL

- A. Remove all existing sealant joints, including those between window, door, and louver frames and surrounding construction.
- B. For those joints included by Paragraph A, remove all existing sealant and backer material.
- C. Grind to remove remaining material and prep for replacement work.
- D. Sealant replacement work is specified in Section 07 90 05.

3.4 REBUILDING

- A. Some existing brick have been observed with severe cracks and/or significantly missing portions; all such units are considered damaged or deteriorated.
- B. Cut out the damaged and deteriorated portion of masonry with care in a manner to prevent damage to adjacent remaining materials.
- C. Cut out and replace all damaged or deteriorated brick units and cut out and replace all stone units with significantly missing portions.
- D. Clean and pre-wet contact surface in accordance with stone repair mortar manufacturer's recommendations.
- E. Replace the removed material with stone repair mortar; install in accordance with manufacturer's recommendations.
- F. Damp cure stone repair mortar in accordance with manufacturer's recommendations.
- G. Cut away loose or unsound adjoining masonry to provide firm and solid bearing for new work.
- H. Build in new units following procedures for new work specified in other section(s).
- I. Install built in masonry work to match and align with existing, with joints and coursing true and level, faces plumb and in line. Build in all openings, accessories and fittings.

3.5 REPOINTING

- A. Cut out cracked, loose or, disintegrated mortar in joints to minimum 1/2 inch depth and average depth of 3/4 inch or deeper until sound mortar is reached.
 - 1. Cut out and replace mortar joints when mortar cracks are 0.016 inch or greater in width.
 - 2. Cut out and replace mortar joints when mortar is recessed more than 1/4 inch deep from average face of joints on the building.
 - 3. Use power tools only after test cuts determine no damage to masonry units will result
 - 4. See requirements for Mock-Up specified in Part 1 of this Section.
- B. Do not damage masonry units.
- C. When cutting is complete, remove dust and loose material with air jet.
- D. Premoisten joint and after allowing stone to absorb surface water, apply mortar. Pack tightly in maximum 1/4 inch layers. Form a smooth, compact concave joint to match existing.

3.6 CLEANING EXISTING MASONRY

- A. Low Pressure Cold Water: Cold water wash with 100 psi, maximum pressure to brick and stone masonry surfaces, at all locations, providing uniform finish. Use non-abrasive scrubbers to facilitate cleaning.
 - 1. Do not remove the "ghost" signs on the building facade.

3.7 RESTORATION CLEANING

- A. **USE RESTORATION CLEANING ONLY IF WATER CLEANING IS JUDGED TO BE UNSATISFACTORY.**
- B. Clean surfaces and remove large particles with wood scrapers or non-ferrous wire brush.
- C. Prewet surface to which restoration cleaner is to be applied working from bottom of wall to top.
- D. Spray or brush coat all exterior stone and brick type masonry with restoration cleaner, mixed into solution in accordance with manufacturer's instructions.
- E. Provide a second application if required to match mock-up area.
- F. Allow sufficient time for solution to remain on masonry and agitate with soft fiber brush or sponge.
- G. When required by cleaner manufacturer, apply neutralizing solution in accordance with manufacturer's recommendations.
- H. Pressure rinse from the bottom up with potable water applied to flush all spent cleaner and dissolved soiling from the surface, surface pores, and adjacent non-masonry surfaces.
 - 1. Initially wash wall with pressure only from garden hose. If this is unsatisfactory, use low pressure spray, not exceeding 100 psi.
- I. To avoid streaking, keep wall surfaces immediately below area being cleaned running wet and free of cleaner rundown and residues.

3.8 PROGRESS AND FINAL CLEANING

- A. Immediately remove stains, efflorescence, or other excess resulting from the work of this section.
- B. Remove excess mortar, smears, and droppings as work proceeds and upon completion.
- C. Clean surrounding surfaces.

END OF SECTION

SECTION 04 05 11
MASONRY MORTARING AND GROUTING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Re-pointing mortar requirements for masonry restoration.

1.2 RELATED REQUIREMENTS

- A. Section 01 30 00 – MNHS Legacy Grant Milestones
- B. Section 04 01 00 - Maintenance of Masonry: Masonry repair mortar and installation of pointing mortar for masonry restoration work.
- C. Section 04 20 00 - Unit Masonry: Mortar and grout for new masonry work.

1.3 REFERENCE STANDARDS

- A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures and Related Commentaries; American Concrete Institute International.
- B. ASTM C5 - Standard Specification for Quicklime for Structural Purposes.
- C. ASTM C10/C10M - Standard Specification for Natural Cement.
- D. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.
- E. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes.
- F. ASTM C270 - Standard Specification for Mortar for Unit Masonry.
- G. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced UnitMasonry.
- H. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete.

1.4 DESIGN REQUIREMENTS

- A. Take samples of existing mortar; laboratory test to determine compressive strengths of each, cement and lime content, and fine aggregate composition.
 - 1. Determine if testing reported in Section 00 31 37 is adequate or whether additional testing is required for successful performance of the work of this section.
- B. Select mix design for repair and restoration mortar so that compressive strength of mortar does not exceed compressive strength of existing mortar and that replicates cement and lime content, and fine aggregate composition.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Include design mix and indicate whether the Proportion or Property specification of ASTM C270 is to be used. Also include required environmental conditions and admixture limitations.
- C. Samples: Submit two samples of mortar, illustrating mortar color and color range.

1.6 QUALITY ASSURANCE

- A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the contract documents.

1.7 DELIVERY, STORAGE, ANDHANDLING

- A. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.8 FIELD CONDITIONS

- A. Cold and Hot Weather Requirements: Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.1 MORTAR AND GROUT APPLICATIONS

- A. Field-mix all mortar and grout.
- B. Mortar Color: Required to match color of existing historic mortar.
- C. Mortar Mix Designs: ASTM C270, Property Specification.
 - 1. Type as required to conform to Design Requirements specified in Part 1 of this Section.

2.2 MATERIALS

- A. Natural Cement: ASTM C10/C10M.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Quicklime: ASTM C5, non-hydraulic type.
- D. Mortar Aggregate: ASTM C144.
- E. Pigments for Colored Mortar: Iron or chromium oxides with demonstrated stability and colorfastness.
 - 1. Color(s): As required to match existing mortar color.
- F. Water: Clean and potable.

2.3 MORTAR MIXING

- A. Thoroughly mix mortar ingredients in accordance with ASTM C270 and in quantities needed for immediate use.
 - 1. Re-Pointing Mortar: Type as required so that compressive strength of re-pointing mortar is similar to or lower than the existing mortar.
- B. Prehydrate mortar as follows:
 - 1. Thoroughly mix all dry ingredients together.
 - 2. Add only enough water to produce a damp consistency which will retain its shape when formed into a ball.
 - 3. Allow to sit for 1 to 1-1/2 hours before use.
 - 4. Just prior to use, add enough additional water to produce the consistency required for placement (i.e. somewhat drier than conventional mortar).
- C. Colored Mortar: Proportion selected pigments and other ingredients to match existing mortar, without exceeding manufacturer's recommended pigment-to-cement ratio; mix in accordance with manufacturer's instructions, uniform in coloration.
- D. Do not use anti-freeze compounds to lower the freezing point of mortar.
- E. Do not re-temper mortar.

2.4 PRECONSTRUCTION TESTING

- A. Provide pre-construction testing of mortar.
- B. Mortar Mixes: Test mortars prebatched by weight in accordance with ASTM C780 recommendations for preconstruction testing.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install mortar to requirements of section(s) in which masonry is specified.

3.2 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field tests, in accordance with provisions of Section 01 40 00 - Quality Requirements.
- B. Test and evaluate mortar in accordance with ASTM C780 procedures.
 - 1. Test Frequency: Test every 3 working days while restoration work is on-going.

END OF SECTION

SECTION 04 20 00
UNIT MASONRY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Clay Facing Brick.
- B. Mortar and Grout.
- C. Reinforcement and Anchorage.
- D. Flashings.
- E. Accessories.

1.2 RELATED REQUIREMENTS

- A. Section 01 30 00 – MNHS Legacy Grant Milestones
- B. Section 04 01 00 - Maintenance of Masonry.
- C. Section 04 05 11 - Masonry Mortaring and Grouting: Mortar for masonry restoration and repair work.
- D. Section 05 50 00 - Metal Fabrications: Loose steel lintels.
- E. Section 07 84 00 - Firestopping: Firestopping at penetrations of fire-rated masonry and at top of fire-rated walls.

1.3 REFERENCE STANDARDS

- A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures and Related Commentaries; American Concrete Institute International.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- C. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement.
- D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
- E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- F. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units.
- G. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.
- H. ASTM C150/C150M - Standard Specification for Portland Cement.
- I. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes.
- J. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale).
- K. ASTM C270 - Standard Specification for Mortar for Unit Masonry.
- L. ASTM C404 - Standard Specification for Aggregates for Masonry Grout.
- M. ASTM C476 - Standard Specification for Grout for Masonry.
- N. ASTM C 1314 - Standard Test Method for Compressive Strength of Masonry Prisms.
- O. ASTM D4637/D4637M - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane.
- P. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc..

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Submit for "bar" reinforcement; include bar schedules, shapes of bent bars, spacing of bars, and location of splices.
- C. Product Data: Provide data for flashing material, fabricated wire reinforcement and masonry accessories including, but not limited to, control joint inserts, weeps, strap anchors, wall ties, flexible anchors, cavity mortar diverter, and cleaning solution.
- D. Test Reports: Indicate preconstruction testing compliance with specified requirements for masonry mortar.
 - 1. Tests shall be current, project specific tests or may be previous tests, performed within 6 months prior to submission, of the same mix design as is proposed for the project.

1.6 QUALITY ASSURANCE

- A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the contract documents.
- B. Fire Rated Assemblies: Conform to applicable code for specific requirements for fire rated masonry construction.
- C. Provide mortar mixes that have been selected, manufactured, and mixed, to comply with ASTM C780.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 PRODUCTS

2.1 BRICK UNITS

- A. Facing Brick: ASTM C216, Type FBS, Grade SW.
 - 1. Color and texture: Match color and texture of adjacent existing brick to which new brick is installed.
 - 2. Nominal size: Modular.

2.2 MORTAR AND GROUT MATERIALS

- A. Mortar and Grout for Restoration Work: As specified in Section 04 05 11.
- B. Mortar and Grout for New Work: As specified below.
- C. Portland Cement: ASTM C150/C150M, Type I.
- D. Hydrated Lime: ASTM C207, Type S.
- E. Mortar Aggregate: ASTM C144.
- F. Grout Aggregate: ASTM C404.

G. Water: Clean and potable.

2.3 REINFORCEMENT AND ANCHORAGE

- A. Manufacturers of Joint Reinforcement and Anchors:
1. Heckmann Building Products, Inc: www.heckmannbuildingprods.com.
 2. Hohmann & Barnard, Inc (including Dur-O-Wal brand): www.h-b.com.
 3. WIRE-BOND: www.wirebond.com.
 4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Reinforcing Steel: ASTM A615/A615M, Grade 40 - 40,000 psi, deformed billet bars; galvanized.
- C. Single Wythe Joint Reinforcement: Truss type; cold drawn steel wire conforming to ASTM A1064/A1064M; 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.
1. Application: Use as specified above for interior applications; for exterior wall applications, hot dip galvanize after fabrication to ASTM A153/A153M, Class B.
- D. Multiple Wythe Joint Reinforcement: Truss type; ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to ASTM A153/153M, Class B; 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.
1. Application: Use for multiple wythe masonry walls without a cavity.
- E. Strap Anchors: Bent steel shapes configured as required for specific situations, 1-1/2 in width, 0.1875 in thick, lengths as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face, hot dip galvanized to ASTM A 153/A 153M, Class B.

2.4 FLASHINGS

- A. Provide either of the following types:
1. EPDM Flashing: ASTM D4637, Type I, 0.040 inch thick.
 - a. EPDM membrane flashings may be extended beyond wall face without sheet metal flashings, unless specifically indicated to have sheet metal flashing extensions.
 - b. Manufacturers:
 - 1) Carlisle Coatings & Waterproofing; Product PRE-KLEENED EPDM.
 - 2) Firestone Building Products Co; Product FLASHGUARD.
 - 3) Hohmann & Barnard, Inc; Epra-Max: www.h-b.com.
 - 4) Substitutions: See Section 01 60 00 - Product Requirements.
 2. Rubberized Asphalt Flashing: Self-adhering polymer-modified asphalt sheet; 40 mils (0.040 inch) minimum total thickness; with cross-linked polyethylene top and bottom surfaces.
 - a. Do not extend rubberized asphalt flashing flush with or beyond wall face; extend flashing beyond wall face with stainless steel flashing. Weather lap metal flashings under membrane flashings at concealed location, extend metal flashings through exterior face of masonry, and turn down to form drip.
 - b. Manufacturers:
 - 1) Advanced Building Products, Inc.; Strip-N-Flash: www.advancedbuildingproducts.com.
 - 2) Carlisle Coatings & Waterproofing; CCW-705-TWF.
 - 3) Substitutions: See Section 01 60 00 - Product Requirements.
- B. Stainless Steel Flashing: ASTM A666, Type 304, soft temper; 26 gage, 0.0187 inch thick; finish 2B to 2D.
- C. Flashing Sealant/Adhesives: Type compatible with type of flashing used.

2.5 ACCESSORIES

- A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints

- B. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; self expanding; 6 inch wide x by maximum lengths available.
- C. Weeps: Cotton rope, 36 inches long.
- D. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.6 MORTAR AND GROUT MIXES FOR NEW WORK

- A. Mortar for Unit Masonry: ASTM C270, using the Property Specification.
 - 1. Exterior, above grade masonry: Per testing of exg mortar, type N assumed.
- B. Use only pre-blended portland cement/lime/sand mortar.
- C. Grout: ASTM C476. Consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
- D. Mixing: Use mechanical batch mixer and comply with referenced standards.

2.7 SOURCE QUALITY CONTROL AND TESTS

- A. Provide pre-construction testing of mortar.
- B. Test samples in accordance with ASTM C780.

PART 3 EXECUTION

3.1 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.

3.2 PREPARATION

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

3.3 COLD AND HOT WEATHER REQUIREMENTS

- A. Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

3.4 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: Match existing condition.

3.5 PLACING AND BONDING

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Lay hollow masonry units with face shell bedding on head and bed joints, except lay first course above footings and slabs in full bed of mortar.

- C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- D. Remove excess mortar and mortar smears as work progresses.
- E. Interlock intersections and external corners, except for units laid in stack bond.
- F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- G. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- H. Cut mortar joints flush where sheet waterproofing is applied or wall tile is scheduled.
- I. Isolate masonry partitions from vertical structural framing members with a control joint .
- J. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

3.6 PROTECTION OF WORK

- A. Prevent grout mortar or soil from staining the face of masonry to be left exposed or painted. Remove immediately grout or mortar in contact with such masonry. Protect newly laid masonry from exposure to precipitation, excessive drying, freezing, soiling, backfill and other harmful elements.
- B. Protect base of walls from rain-splashed mud and mortar splatter by means of coverings spread on ground and over wall surface. Protect sills, ledges and projections from droppings or mortar.
- C. Keep air cavity spaces clear of mortar. Dry-brush masonry work at end of each day's work.
- D. During erection, cover top of walls with waterproof sheeting at end of each day's work. Cover partially completed structures when work is not in progress. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.

3.7 WEEPS

- A. Install weeps in veneer walls at 16 inches on center horizontally above through-wall flashing.
 1. Extend weeps projecting 1/2 inch beyond outside face of wall; extend remaining length through veneer to backup wall, offset horizontally 16 inches, and then vertically up backup wall; secure to backup wall to hold in position.

3.8 REINFORCEMENT AND ANCHORAGE - GENERAL

- 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. Reinforce non-"toothed" joint corners and intersections with strap anchors 16 inches on center.
- F. 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 36 inches horizontally and 24 inches vertically.
- G. Install masonry reinforcement, horizontal and vertical, as indicated on the drawings.

3.9 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER

- A. Masonry Back-Up: Embed individual cavity wall tie anchors in masonry back-up to bond veneer at maximum 1.77 sq ft of wall surface per anchor. If using adjustable multi-wythe horizontal joint reinforcement in back-up wall with projecting eyes for exterior wythe ties, place horizontal joint reinforcement at 16 inches oc, vertically. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

3.10 MASONRY FLASHINGS

- A. Install membrane flashings in accordance with manufacturer's instructions.
- B. 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, at least 8 inches upward vertically on back-up wall, at least 4 inches into adjacent masonry, and turn up at least 2 inches in head joint to form watertight pan.
 - 2. At corners and bends, turn flashing, fold, and seal watertight or use preformed corners.
 - 3. At discontinuous flashings, fold and turn up ends 2 inches minimum to form dams or use preformed ends; seal watertight.
 - 4. Extend flashing at opening heads to end of lintel angle or 4 inches minimum past jamb, whichever is more, and upturn in head joint to form dam as described above.
 - 5. Remove or cover protrusions or sharp edges that could puncture flashings.
 - 6. Lap end joints 4 inches minimum. Seal lapped ends and penetrations of flashing before covering with mortar.
- C. Extend metal flashings and EPDM flashings through exterior face of masonry and turn down to form drip. Install joint sealer below drip edge to prevent moisture migration under flashing.

3.11 LINTELS

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

3.12 CONTROL JOINTS

- A. Do not continue horizontal joint reinforcement through control joints.
- B. Form control joints in concrete masonry units using specially shaped "slotted end" units and preformed joint device. Form control joints in brick with open joint, free of mortar, 3/8 inch wide, full depth of brick wythe.
- 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 90 05 for sealant performance.
- E. Locate control joints:
 - 1. Where indicated.
 - 2. At exterior masonry, at 26 feet oc in walls which exceed 24 feet in length and within 2'-8" of one side of each building "outside" corner.
- F. When control joints are located in line with the jambs of door, glazed, or other openings, install lintels which bridge the control joints with Neoprene or Korolath bearing pads to permit movement.
 - 1. Keep bearing free of mortar for installation of sealant specified in Section 07 90 05.

3.13 BUILT-IN WORK

- A. As work progresses, install built-in metal door frames, glazed frames, wood nailing strips, 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.

3.14 TOLERANCES

- A. Maximum Variation from Alignment of Columns and Pilasters: 1/4 inch.
- B. Maximum Variation From Unit to Adjacent Unit: 1/16 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.

3.15 CUTTING AND FITTING

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

3.16 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00.
- B. Concrete and Clay Masonry Unit Tests: Test concrete and clay masonry in accordance with ASTM C 1314. Provide and test one set of prisms for each 5,000 sf of wall area for each type of masonry.
- C. Observe reinforcement placed for reinforced masonry construction.

3.17 CLEANING

- A. Remove excess mortar and mortar droppings.
- B. Replace defective mortar. Match adjacent work.
- C. Clean soiled surfaces with cleaning solution.
- D. Do not use high pressure water spray for cleaning masonry.
- E. Use non-metallic tools in cleaning operations.

END OF SECTION

SECTION 07 01 50.19
PREPARATION FOR RE-ROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Removal of existing roofing system in preparation for a new roof membrane system.

1.2 RELATED REQUIREMENTS

- A. Section 07 53 00 - Elastomeric Membrane Roofing: Replacement insulation and roofing system.

1.3 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.
- C. Schedule work to coincide with commencement of installation of new roofing system.

1.4 QUALITY ASSURANCE

- A. Materials Removal Firm Qualifications: Company specializing in performing the work of this section with minimum 5 years of experience.

1.5 FIELD CONDITIONS

- A. Do not remove existing roofing membrane when weather conditions threaten the integrity of the building contents or intended continued occupancy.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that existing roof surface is clear and ready for work of this section.

3.2 PREPARATION

- A. Sweep roof surface clean of loose matter.
- B. Remove loose refuse and dispose off site.

3.3 MATERIAL REMOVAL

- A. Remove only existing roofing materials that can be replaced with new materials the same day.
- B. Remove metal counter flashings, including those on roof side of parapet walls.
 - 1. Retain parapet wall terra-cotta cap for re-installation after replacement roofing is installed.
- C. Scrape roofing gravel from membrane surface .
- D. Remove roofing membrane, perimeter base flashings, flashings around roof protrusions, pitch pans and pockets.
- E. Remove insulation and fasteners, cant strips, blocking, and curbs unless indicated to remain.
- F. Repair existing sheathing or replace per drawings to provide smooth working surface for new roof system.

END OF SECTION

SECTION 07 13 00
SHEET WATERPROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Sheet membrane waterproofing for elevator pits.
- B. Protection boards.

1.2 RELATED REQUIREMENTS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for pre-installation meetings.
- B. Section 03 30 00 - Cast-in-Place Concrete: Concrete substrate.
- C. Section 07 13 03 - Waterproofing Contractor's Warranty: Sample form of required Contractor's warranty.
- D. Section 07 14 00 - Fluid-Applied Waterproofing: Waterproofing for existing foundation wall.
- E. Section 07 90 05 - Joint Sealers: Sealant for joints in substrates.

1.3 REFERENCE STANDARDS

- A. ASTM D6506 - Standard Specification for Asphalt Based Protection for Below-Grade Waterproofing.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for protection board, membrane, surface conditioner, and flexible flashings.
- C. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.
 - 1. If installer drawn shop drawings are included, indicate membrane manufacturer's approval of the drawings.
 - 2. When more than one type of waterproofing is specified for Project, include shop drawings indicating intersection details, including materials required, between systems.
- D. Manufacturer's Installation Instructions: Indicate special procedures.
- E. Warranty: Submit manufacturer and separate contractor warranties and ensure that both forms have been completed in Owner's name and registered with manufacturer.

1.5 QUALITY ASSURANCE

- A. Membrane Manufacturer Qualifications: Company specializing in waterproofing sheet membranes with 10 years experience.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years experience.
 - 1. When more than one type of waterproofing is specified for Project, the same installer shall install all types.
- C. Source: Obtain all waterproofing accessory materials from the bentonite waterproofing manufacturer or have manufacturer's written approval for substitution.

1.6 PRE-INSTALLATION MEETING

- A. Convene one week before starting work of this section, other than for the mock-up construction.

- B. Conduct pre-installation meeting at the completed mock-up and use the mock-up as the basis of discussion for the meeting.
- C. Provide membrane manufacturer's representative to conduct the pre-installation meeting.

1.7 FIELD CONDITIONS

- A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application and until liquid or mastic accessories have cured, except when manufacturer's low temperature products are used, then follow manufacturer's recommended low temperature environmental conditions.

1.8 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; provide five year Contractor's warranty using the form provided immediately following this Section.
- C. Provide five year manufacturer material warranty for waterproofing failing to resist penetration of water , except where such failures are the result of structural failures of building. Hairline cracking of concrete due to temperature change or shrinkage is not considered a structural failure.
- D. Provide five year Contractor's warranty for waterproofing failing to resist penetration of water under terms required in the sample warranty bound in this Project Manual immediately following this Section.

PART 2 PRODUCTS

2.1 WATERPROOFING APPLICATIONS

- A. Composite Bentonite Sheet Waterproofing: Use at elevator pit walls and floor slab/footing.
 - 1. Vertical Surfaces: Mechanically attached.
 - 2. Horizontal Surfaces: Loose-laid.
 - 3. Cover with protection board.

2.2 MEMBRANE MATERIALS

- A. Composite Bentonite Sheet Membranes:
 - 1. Membrane for Underslab Install: Comprised of uniform layer of sodium bentonite clay that is encapsulated between a non-woven and woven geotextile and then needle punched together with thousands of high-strength denier yarns. Thermally fuse the fibers to lock the sodium bentonite into place. Alternately, provide multilayer assembly of sodium bentonite clay, virgin high density polyethylene (HDPE), and non-woven polypropylene.
 - a. Sodium Bentonite Weight: 1 lbs/sf, minimum.
 - b. Sheet Width: 40 inch, minimum.
 - c. Manufacturers:
 - 1) CETCO; Product VOLTEX: www.cetco.com.
 - 2) TegraSeal Products, LLC; Product TEGRATITE-PLUS: www.tegraseal.com.
 - 3) Substitutions: See Section 01 60 00 - Product Requirements.
 - 2. Membrane for Vertical Wall Install: Comprised of layer of sodium bentonite clay that is bonded to geotextile membrane or high density polypropylene (HDPE) sheet.
 - a. Minimum Thickness: 0.080 inch (80 mil).
 - b. Sheet Width: 48 inch, minimum.
 - c. Manufacturers:
 - 1) CETCO; Product SWELLTITE: www.cetco.com.
 - 2) TegraSeal Products, LLC; Product TEGRATITE: www.tegraseal.com.
 - 3) Substitutions: See Section 01 60 00 - Product Requirements.

2.3 ATTACHMENT MATERIALS

- A. Termination Bar: Stainless steel bar, 3/4 inch nominal width x continuous; punch or drill 8 inch

oc for fasteners.

- B. Termination Bar Fasteners: Mechanical anchor of type suitable for substrate, stainless steel.
- C. Membrane Fasteners: Wafer-head mechanical fasteners.

2.4 ACCESSORIES

- A. Sealant for Substrate Surfaces: Butyl Type as specified in Section 07 90 05.
- B. Detailing Mastic: Trowel grade compound used as a detailing mastic for foundation wall applications.
- C. Hydrobar Tubes: 50 mm (2") diameter x 60 cm (2') long, water soluble tube container filled with granular sodium bentonite
- D. Granular Waterstop: 22.7 kg (50 lbs.) bags of active granular sodium bentonite.
- E. Formed Waterstop: Hydrophilic strip waterstop designed to stop water infiltration through cast-in-place concrete construction joints by expanding upon contact with water to form a positive seal against the concrete. Provide Cetco WATERSTOP-RX, TegraSeal Products TEGRASTOP, or equivalent.
- F. SeamTape: 50 mm (2") wide butyl rubber sealant tape.
- G. Liquid Flashing: Trowel grade high solids content, modified polyurethane waterproofing detailing mastic for plaza deck applications.
- H. Sealant: Single-component polyether general sealant and adhesive.
- I. Flashing Membrane: Self-adhering flashing membrane used for grade and thru-wall flashing
- J. Protection Board: Type capable of preventing damage to waterproofing due to backfilling and construction traffic.
 - 1. Use one of the following:
 - a. Polystyrene foam board, 1/4 inch thick, fan-fold type; provide DOW PROTECTION BOARD III manufactured by The Dow Chemical Co.
 - b. Multi-layer internally-reinforced asphaltic panels, 1/8 inch thick, nominal.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that underfloor utilities are installed and complete in area to receive underslab waterproof membrane.
- C. Verify substrate surfaces are durable; free of matter detrimental to adhesion or application of waterproofing system.
- D. Verify that items that penetrate surfaces to receive waterproofing are securely installed.
- E. Verify that soil that is to receive underslab membrane is smooth, properly compacted, and ready to receive membrane.

3.2 PREPARATION

- A. Protect adjacent surfaces not designated to receive waterproofing.
- B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions.
- C. Do not apply waterproofing to surfaces unacceptable to membrane manufacturer.
- D. Seal cracks and joints with sealant using depth to width ratio as recommended by sealant manufacturer.
- E. Install fillet of mastic at all vertical and horizontal inside corners; size as recommended by membrane manufacturer.
- F. Fill voids at base of walls, if any, with mastic.

- G. Surfaces for Adhesive Bonding: Apply surface conditioner at a rate recommended by manufacturer. Protect conditioner from rain or frost until dry.

3.3 GENERAL INSTALLATION GUIDELINES

- A. Remove clear siliconized release liner from back of membrane prior to membrane installation. After removing the clear release liner, install membrane with the sodium bentonite compound side directly against the substrate surface to be waterproofed (white geomembrane side up facing installer) for both horizontal and vertical applications.
- B. Prevent bentonite waterproofing products from hydrating before material is contained with overburden or backfill. When threat of rain is imminent, installed bentonite products not already contained by overburden or backfill shall have all seams sealed with seam tape. After rain, promptly remove any standing water off membrane installation.

3.4 INSTALLATION - MEMBRANE UNDER FLOOR SLABS

- A. Place membrane over the properly prepared substrate with the dark woven geotextile side up.
- B. Overlap all adjoining edges a minimum 4 inches and stagger sheet ends a minimum 12 inches. Staple or nail edges together as required to prevent any displacement before and during concrete placement.
- C. Cut membrane to closely fit around penetrations.
- D. Install granular water stop under cut membrane edge at detailing and then apply a minimum 3/4 inch thick fillet of detailing mastic to top of cut membrane edge at penetrations (including each piece of concrete reinforcement) and other detailing. Extend detailing mastic onto membrane and detail a minimum of 2 inches. Above the detailed membrane, install a thickness of formed waterstop wrapping around the penetrating item.
- E. Extend membrane beyond edge of elevator pit perimeter and beyond the (future) pit walls. Allow for connection of wall membrane to underslab membrane.

3.5 INSTALLATION - MEMBRANE ON WALLS

- A. Install membrane waterproofing in accordance with manufacturer's instructions.
- B. Prior to membrane, install a continuous 19 mm (3/4") cant of detailing mastic at footing/wall joint.
- C. Inside Corners: Install a 19 mm (3/4") thick continuous cant of detailing mastic at all vertical inside wall corners prior to installing membrane.
- D. Penetrations: For all pipe, rebar, structural and other penetrations install waterproofing system in accordance with manufacturer's detail for specific project condition(s).
- E. Composite Bentonite Sheet: Remove the clear release film from back of membrane before installation. Starting at the base of the wall, install the membrane horizontally oriented with the bottom edge extending over the detailing mastic cant, over the top of footing or floor slab projection and onto extension of underslab membrane a minimum of 150 mm (6"). Nail or staple the floor and wall membranes together to hold in position. Overlap all membrane edges a minimum of 50 mm (2"). Secure membrane edges with washer-head fasteners maximum 600 mm (24") on center or less as required to contour surface. Apply 50 mm (2") tape centered along fastened membrane edge on the footing. Stagger membrane roll end seams a minimum 300 mm (12"). After base membrane course, membrane may be installed horizontally or vertically oriented.
- F. Composite Bentonite Sheet: Seal all membrane overlap seam edges with tape.
- G. Composite Bentonite Sheet: Terminate membrane 300 mm (12") below finished grade elevation secured with washer-head fasteners maximum 300 mm (12") on center to exterior surface of concrete wall. Per manufacturer's detail for specific project condition(s), install grade flashing to primed concrete substrate with bottom edge overlapping top edge of membrane minimum 100 mm (4"). Overlap all roll ends a minimum 100 mm (4") to form a continuous

flashing. Height of flashing shall be per project details and specifications. Install a rigid termination bar along the top edge of grade flashing; fasten maximum 300 mm (12") on center. Complete grade termination detail with tooled bead of sealant along the top edge, at all penetrations through the flashing, and all exposed overlap seams.

- H. Inspect installation and repair any damaged materials.
- I. Weather lap joints on sloped substrate in direction of drainage. Seal joints and seams.
- J. Seal membrane and flashings to adjoining surfaces.
- K. Coordinate with contractor responsible for backfill work by informing them each time a waterproofed area is ready for backfill. Care should be used during backfill operation to avoid damage to the waterproofing system. If damage occurs, cease backfilling and report damage. Damaged waterproofing shall be repaired per manufacturer's guidelines.

3.6 INSTALLATION - PROTECTION BOARD

- A. Place protection board directly against membrane; butt joints. Scribe and cut boards around projections, penetrations, and interruptions.
- B. Cover entire surface of membrane with protection board.
- C. Adhere protection board to membrane with compatible adhesive.

3.7 FIELD QUALITY CONTROL

- A. Conduct field quality control services specified in this Article in accordance with Section 01 40 00 - Quality Requirements.
- B. Provide field quality control observation performed by the membrane manufacturer's authorized representative.
 - 1. Make a minimum of 2 observations: one to participate in the preinstallation meeting specified in this Section and the other when waterproofing work is approximately 50 percent complete and prior to any backfilling or other covering.
 - 2. Verify that materials delivered to the jobsite for installation or waterproofing are those approved by the Architect.
 - 3. Observe substrate to determine if it acceptable for installation of materials.
 - 4. Observe installation of waterproofing materials and detailing of waterproofing system over substrate.

3.8 SCHEDULE

- A. Elevator Pits: Apply sheet waterproofing to soil face of below grade walls of elevator pits and, in a blind-side application, to the underside of the pit slab. Apply protection board over sheet waterproofing at the elevator pit walls.

END OF SECTION

SECTION 07 13 03

SHEET MEMBRANE WATERPROOFING CONTRACTOR'S WARRANTY

OWNER	Islamic Center of Winona
ADDRESS	PO Box 1523, Winona, MN 55987
PROJECT	The Hillman Porter Buildings
PROJECT ADDRESS	71 W 3 rd Street, Winona, MN 55987
DATE OF SUBSTANTIAL COMPLETION	
WATERPROOFING CONTRACTOR	
ADDRESS	
PHONE NO.	

This warranty stipulates that the below-named contractors shall, during a period of five (5) years from the Date of Substantial Completion of the Work, maintain the waterproofing membrane and flashing systems in a watertight condition and repair all defects, which result from faulty workmanship or defective materials, without further cost to the Owner; including the removal, disposal, and replacement of finish materials, concrete, insulation, or other overburden materials. Contractor has option to epoxy or urethane inject leak(s) from interior as a means of repair, providing the leakage is stopped.

Excluded from this Warranty may be any and all damage to the building(s), or its contents from water leakage and/or by acts or omissions of the Owner; fire, lightning, hailstorms, or other unusual phenomenon of the elements; movements or failure of the supporting building structure that causes membrane or flashing failure.

Before expiration of the above Warranty period, the Waterproofing Contractor shall inspect the Project in the presence of the Owner's Representative and make the necessary correction of all deficiencies not considered normal. If installation is backfilled or otherwise covered, and visual inspection is not possible or practical, the owner will inform the Waterproofing Contractor of leaks or defects at least one month prior to the expiration of the Warranty period. The Warranty shall remain in force until the necessary repair work has been done.

WATERPROOFING CONTRACTOR	GENERAL CONTRACTOR
Signed	Signed
_____	_____
Title	Title
_____	_____
Date	Date
_____	_____

END OF WARRANTY

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SECTION 07 14 00
FLUID-APPLIED WATERPROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fluid applied membrane waterproofing for new foundation wall.
- B. Cant strips and other accessories.
- C. Drainage panels and Protection boards.

1.2 RELATED REQUIREMENTS

- A. Section 01 40 00 - Quality Requirements: Requirements for testing and inspection agencies.
- B. Section 01 70 00 - Execution Requirements: Requirements for pre-installation meetings.
- C. Section 03 30 00 - Cast-in-Place Concrete: Concrete substrate.
- D. Section 03 30 00 - Cast-In-Place Concrete: Waterstops.
- E. Section 07 13 00 - Sheet Waterproofing: Waterproofing for elevator pits.
- F. Section 07 21 00 - Thermal Insulation: Insulation used for protective cover.
- G. Section 07 62 00 - Sheet Metal Flashing and Trim: Metal counterflashings.
- H. Section 31 23 16 - Building Foundation Excavation: Excavation to expose existing west foundation wall.
- I. Section 31 23 23 - Building Foundation Fill: Back fill of west foundation wall after waterproofing is complete.

1.3 REFERENCE STANDARDS

- A. ASTM D 92 - Standard Test Method for Flash and Fire Points by Cleveland Open Cup.
- B. ASTM D896 - Standard Practice for Resistance of Adhesive Bonds to Chemical Reagents.
- C. ASTM D3407 - Standard Test Methods for Joint Sealants, Hot-Poured, for Concrete and Asphalt Pavements.
- D. ASTM E96/E96M - Standard Test Methods For Water Vapor Transmission of Materials.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for membrane.
- C. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.
 - 1. If installer drawn shop drawings are included, indicate membrane manufacturer's approval of the drawings.
 - 2. When more than one type of waterproofing is specified for Project, include shop drawings indicating intersection details, including materials required, between systems.
- D. Manufacturer's Installation Instructions: Indicate special procedures.
- E. Warranty:
 - 1. Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
 - 2. Submit installer's certification that installation complies with all warranty conditions for the waterproof membrane.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacture of fluid-applied waterproofing membranes with 10 years experience
- B. Installer Qualifications: Company specializing in installation of fluid-applied waterproofing with minimum 5 years experience.
 - 1. When more than one type of waterproofing is specified for Project, the same installer shall install all types.
- C. Mock-Up: Construct a mock-up consisting of 100 sq ft of horizontal waterproofed panel, including internal and external corners similar to those that will be present in the finished work.
 - 1. Locate where directed.
 - 2. Mock-up may remain as part of the work.

1.6 PRE-INSTALLATION MEETING

- A. Convene one week before starting work of this section, other than for the mock-up construction.
- B. Conduct pre-installation meeting at the completed mock-up and use the mock-up as the basis of discussion for the meeting.
- C. Provide membrane manufacturer's representative to conduct the pre-installation meeting.
- D. Require attendance of the third party agency that is specified in the Field Quality Control Article of this Section.

1.7 FIELD CONDITIONS

- A. Maintain ambient temperatures above 0 degrees F for 24 hours before and during application and until cured.
- B. Coordinate excavation and exposure of existing west foundation wall to allow access and working space for installation of fluid-applied waterproofing.

1.8 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide 10 year manufacturer warranty for waterproofing failing to resist penetration of water , except where such failures are the result of structural failures of building. Hairline cracking of concrete due to temperature change or shrinkage is not considered a structural failure.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Hot-Applied Rubberized Asphalt Waterproofing Manufacturers:
 - 1. American Hydrotech, Inc; Product MONOLITHIC MEMBRANE 6125: www.hydrotechusa.com.
 - 2. Barrett Company; Product RAM-TOUGH 250: www.barrettroofs.com.
 - 3. Carlisle Coatings & Waterproofing, Inc; Product CCW-500-R: www.carlisle-ccw.com.
 - 4. Henry Co.; Product 790-11: www.henry.com.
 - 5. Tremco Sealants and Waterproofing; Product TREMPROOF 6100: www.tremcosealants.com.
 - 6. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 MEMBRANE AND FLASHING MATERIALS

- A. Hot-Applied Rubberized Asphalt Waterproofing: Elasticized rubberized asphaltic compound, hot-applied and quick setting.
 - 1. Application: One coat, nonreinforced.
 - 2. Suitable for installation over concrete substrates.
 - 3. Solids Content: 100 percent.
 - 4. Flash Point: 500 degrees F minimum, measured in accordance with ASTM D 92.

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2023001
Bid Set

FLUID-APPLIED
WATERPROOFING

5. Water Vapor Permeance: 0.02 perms, maximum, measured in accordance with ASTM E96/E96M.
 6. Finished Coating Thickness: 215 mils (0.215 inch), minimum.
 7. Low Temperature Flexibility: Pass, measured in accordance with CGSB 37-GP-50M.
 8. Low Temperature Crack Bridging: Pass, measured in accordance with CGSB 37-GP-50M.
 9. Water Absorption: 0.35 g maximum, measured in accordance with CGSB 37-GP-50M.
 10. Heat Stability: No change in viscosity, penetration, flow, or low temperature flexibility, measured in accordance with CGSB 37-GP-50M.
 11. Resiliency: 40 percent minimum, measured in accordance with ASTM D 3407.
 12. Acid Resistance: Pass nitric acid and pass sulphuric acid, measured in accordance with ASTM D 896-84, Procedure 7.1, Note 8.
- B. Reinforcing Fabric: Spunbonded polyester fabric, conforming to membrane manufacturer's requirements.
- C. Flexible Flashings: 0.06 inches thick neoprene.

2.3 ACCESSORIES

- A. Surface Conditioner: Single component, solvent based type, VOC compliant, compatible with membrane compound; as recommended by membrane manufacturer.
- B. Sealant for Substrate Surfaces: As recommended by membrane manufacturer.
- C. Separation (Protection) Sheet: Fiberglass reinforced rubberized asphalt sheet, 90 mil thick.
- D. Protection Board: Type capable of preventing damage to waterproofing due to backfilling and construction traffic.
1. Use one of the following:
 - a. Polystyrene foam board, 1/4 inch thick, fan-fold type.
 2. Products:
 - a. The Dow Chemical Co; DOW PROTECTION BOARD III: www.building.dow.com.
- E. Drainage Panel: Drainage layer with geotextile filter fabric on earth side.
1. Composition: Dimpled polystyrene or polypropylene core; polypropylene filter fabric.
 2. Compressive Strength: 18,000 psf minimum
 3. Flow Rate: 8 gpm/sf minimum
 - a. Products:
 - 1) American HydroTech; HYDRO-DRAIN 300
 - 2) Carlisle Coatings and Waterproofing, Inc; CCW MiraDRAIN 9000.
 - 3) W.R. Meadows, Inc; Mel-Drain 7555: www.wrmeadows.com.
- F. Cant Strips: Form from substrate surface sealant.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify substrate surfaces are free of frozen matter, dampness, loose particles, cracks, pits, projections, penetrations, or foreign matter detrimental to adhesion or application of waterproofing system.
- C. Verify that substrate surfaces are smooth, free of honeycomb or pitting, and not detrimental to full contact bond of waterproofing materials.
- D. Do not begin work until concrete substrate has cured at least 28 days and moisture content is 7 percent or less; verify moisture content by test applying a small area of liquid membrane and confirming that no moisture outgassing pinholes occur.
- E. Verify that items that penetrate surfaces to receive waterproofing are securely installed.

3.2 PREPARATION

- A. Remove soil, organic, and other materials detrimental to waterproofing adhesion from existing foundation wall.
- B. Fill any holes or voids that are in excess of those allowed by waterproofing manufacturer; use cementitious filler containing no gypsum material
- C. Protect adjacent surfaces not designated to receive waterproofing.
- D. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions.
- E. Do not apply waterproofing to surfaces unacceptable to manufacturer.
- F. Seal cracks and joints with sealant using methods recommended by sealant manufacturer and membrane manufacturer.
- G. Install cant strips at angle changes and inside corners.

3.3 INSTALLATION

- A. Apply waterproofing in accordance with manufacturer's instructions to specified minimum thickness.
- B. Apply primer or surface conditioner at a rate recommended by manufacturer. Protect conditioner from rain or frost until dry.
- C. Detail cracks, corners, and joints in accordance with manufacturer's instructions.
- D. Vertical Surfaces: Apply waterproofing in accordance with manufacturer's instructions .
 - 1. Apply to a uniform thickness of 180 mils minimum in one coat.
- E. Extend membrane over cants and up intersecting surfaces at membrane perimeter.
 - 1. At perimeter walls whose top elevation is flush with the finish grade or whose top elevation is higher than the finish grade and remains exposed in the finish work, extend membrane to approximately 2 inches below finish grade/paving elevation and terminate concealed below the grade/paving.
- F. Apply extra thickness of waterproofing material at corners, intersections, and angles; reinforce with flexible flashing material.
- G. Install flexible flashings and seal into waterproofing material. Seal items penetrating through membrane with flexible flashings.
- H. Seal membrane and flashings to adjoining surfaces.

3.4 FIELD QUALITY CONTROL

- A. Conduct field quality control services in accordance with Section 01 40 00 - Quality Requirements.
- B. Retain qualified independent third party agency experienced in waterproofing work for field quality control services. The following agencies are pre-approved for use:
 - 1. Braun Intertec Corp:
 - a. Contact: Jack R. Rasmussen.
 - b. Phone: 952.393.5217.
 - c. Address: 11001 Hampshire Avenue South; Minneapolis, MN 55438.
 - d. Web Site: www.braunintertec.com.
 - 2. Howard R. Green Co:
 - a. Contact: Rick Froberg.
 - b. Phone: 651-644-4389.
 - c. Address: 2550 University Avenue West, Suite 400 N; St. Paul, MN 55114.
 - d. Website: www.hrgreen.com.
 - 3. Inspec:

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FLUID-APPLIED
WATERPROOFING

- a. Contact: Dave Campbell.
- b. Phone: 763-546-3434.
- c. Address: 5801 Duluth Street; Minneapolis, MN 55422.
- d. Website: www.inspec.com.
- 4. Product 7 Group:
 - a. Contact: Robert Zdenek.
 - b. Phone: 763-755-4777.
 - c. Address: 11462 Robinson Drive N.W., Suite 200; Coon Rapids, MN 55433.
- 5. Roof Spec, Inc:
 - a. Contact: Terry Thone.
 - b. Phone: 651-639-0644.
 - c. Address: 2400 Prior Avenue North; St. Paul, MN 55113.
 - d. Website: www.roofspec.com.
- 6. Substitutions: Submit qualifications to Architect for approval.
- C. Third Party Agency Responsibilities:
 - 1. Review submittal package prior to commencement of Work.
 - 2. Provide full-time observation when waterproofing Work is underway at project site.
 - 3. Verify that waterproofing and related materials delivered to project site are those approved by Architect.
 - 4. Observe substrate prior to covering and determine if it is acceptable for installation of materials.
 - 5. Observe mock-up panel and document observations.
 - 6. Observe material installation and detailing. Take photographs and document observations, including photographs, in a project manual.
- D. On completion of horizontal membrane installation, dam installation area in preparation for flood testing.
 - 1. Flood to minimum depth of 1 inch with clean water. After 48 hours, inspect for leaks.
 - 2. If leaking is found, remove water, repair leaking areas with new waterproofing materials as directed by Architect; repeat flood test. Repair damage to building.
 - 3. When area is proven watertight, drain water and remove dam.
 - 4. If additional penetrations are made or final covering materials are not immediately placed after flood testing, then repeat flood testing after all penetrations are in place and just prior to covering materials being placed.

3.5 PROTECTION

- A. Do not permit traffic over unprotected or uncovered membrane.
- B. If there is a delay in placement of final covering materials, take special measures to ensure protection of membrane from on-going construction activities.

END OF SECTION

SECTION 07 21 00
THERMAL INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Board insulation at perimeter foundation wall, over roof deck, and exterior wall behind various wall finishes.
- B. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

1.2 RELATED REQUIREMENTS

- A. Section 07 21 19 - Foamed-In-Place Insulation: Plastic foam insulation other than boards.
- B. Section 07 53 00 - Elastomeric Membrane Roofing: Insulation specified as part of roofing system.
- C. Section 07 84 00 - Firestopping: Insulation as part of fire-rated through-penetration assemblies.

1.3 REFERENCE STANDARDS

- A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
- B. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
- C. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- E. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

1.5 FIELD CONDITIONS

- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.1 APPLICATIONS

- A. Insulation at Perimeter of Foundation: Extruded polystyrene board.
- B. Insulation at Exterior Walls Behind Various Finishes: Fiber board insulation.
- C. Insulation in Stud-Framed Interior Walls: Batt insulation with no vapor retarder.
- D. Insulation in Framed Ceilings: Batt insulation with no vapor retarder.

2.2 FOAM BOARD INSULATION MATERIALS

- A. Extruded Polystyrene Board Insulation: Extruded polystyrene board; ASTM C578; with either natural skin or cut cell surfaces, and the following characteristics:
 - 1. Type: ASTM C578, Type IV.
 - 2. Flame Spread Index: 75 or less, when tested in accordance with ASTM E84.
 - 3. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
 - 4. R-value; 1 inch of material at 72 degrees F: 5, minimum.
 - 5. Board Edges: Square.

6. Water Absorption, Maximum: 0.3 percent, by volume
7. Manufacturers:
 - a. Diversifoam Products; CERTIFOAM 25 SE: www.diversifoam.com.
 - b. Dow Chemical Co; STYROFOAM Square Edge: www.building.dow.com.
 - c. Owens Corning Corporation; FOAMULAR 250: www.ocbuildingspec.com.
8. Substitutions: See Section 01 60 00 - Product Requirements.

2.3 FIBER BOARD INSULATION MATERIALS

- A. Mineral Fiber Board Insulation: Rigid or semi-rigid mineral fiber, ASTM C612 or C553; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E84.
 1. Smoke Developed Index: 0 (zero), when tested in accordance with ASTM E84.
 2. Board Thickness: 2 inches.
 3. Maximum Density: 8.0 lb/cu ft.
 4. Manufacturers:
 - a. Thermafiber, Inc; RainBarrier: www.thermafiber.com.
 - b. ROXUL, Inc; CavityRock MD: www.rspec.com.
 5. Substitutions: See Section 01 60 00 - Product Requirements.

2.4 BATT INSULATION MATERIALS

- A. Mineral Fiber Batt Insulation: Flexible or semi-rigid preformed batt or blanket, complying with ASTM C665; friction fit; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E84.
 1. Smoke Developed Index: 0 (zero), when tested in accordance with ASTM E84.
 2. Thickness: 7-1/4 and 2-1/2 inch.
 3. Manufacturers:
 - a. Thermafiber, Inc: www.thermafiber.com.
 - b. ROXUL, Inc; ComfortBatt: www.rspec.com.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.

2.5 ACCESSORIES

- A. Board Insulation Fastening System: ITW Ramset T3 INSULFAST system including gas powered "gun" and proprietary heat treated carbon steel pins within a high density polyethylene sleeve with integral washer.
- B. Spray Foam Insulation: Code compliant, low expansion type, compatible with materials being sealed.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation and adhesive.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.2 BOARD INSTALLATION AT FOUNDATION PERIMETER

- A. Apply adhesive to back of boards:
 - 1. Dabs in size and quantity sufficient to hold insulation in place until backfill is placed.
- B. Install boards horizontally on foundation perimeter.
 - 1. Place boards to maximize adhesive contact.
 - 2. Install in running bond pattern.
 - 3. Butt edges and ends tightly to adjacent boards and to protrusions.
- C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.3 BOARD INSTALLATION AT EXTERIOR WALLS OVER SOLID SUBSTRATE

- A. Install boards horizontally on walls.
 - 1. Secure with mechanical attachment to retain in position.
 - 2. Install in running bond pattern.
- B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.4 BOARD INSTALLATION OVER LOW SLOPE ROOF DECK

3.5 BATT INSTALLATION

- A. Install insulation in accordance with manufacturer's instructions.
- B. Install in interior wall and ceiling spaces without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids, including perimeter shim space of exterior windows and doors. If small gaps or voids exist in thermal barrier plane that are not conducive to filling with batt insulation, use spray foam insulation. Coordinate installation and material requirements with window and door manufacturers.
 - 1. Exception: When window and/or door manufacturer requires installation of exterior and interior sealant beads at perimeter shim space to form pressure equalization chamber, do not install insulation in shim space.
- D. Encase or wrap plumbing drain, waste and vent pipes located within finished space walls and floor/ceiling assemblies with batt insulation ensuring that insulation occurs on all sides of piping and is continuous along length of pipes.
- E. Coordinate placement of insulation in multiple stud spaces made inaccessible after erection.
- F. Coordinate work of this section with requirements for vapor retarder specified in Section 07 25 00.

3.6 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

**SECTION 07 25 00
WEATHER BARRIERS**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Air Barriers: Materials that form a system to stop passage of air through exterior walls, joints between exterior walls and roof, and joints around frames of openings in exterior walls.

1.2 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Vapor retarder under concrete slabs on grade.
- B. Section 07 53 00 - Elastomeric Membrane Roofing: Vapor retarder installed as part of roofing system.
- C. Section 07 62 00 - Sheet Metal Flashing and Trim: Metal flashings installed in conjunction with weather barriers.
- D. Section 07 90 05 - Joint Sealers: Sealant materials and installation techniques.

1.3 REFERENCE STANDARDS

- A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension.
- B. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.
- C. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials.

1.4 PERFORMANCE REQUIREMENTS

- A. Provide an air and water barrier system to perform as a continuous barrier to air infiltration/exfiltration and to act as a liquid water drainage plane flashed to discharge any incidental condensation or water penetration.
- B. All penetrations of the air barrier and paths of air infiltration/exfiltration shall be made airtight.
- C. Primary air and water barrier lines between all substrates shall directly interface.

1.5 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.

1.6 MOCK-UP

- A. Install air barrier materials in mock-up specified in Section 08 54 13.
- B. Provide air barrier mock-up, 8 feet wide by 8 feet high, illustrating air barrier application to substrate, treatment of joints in substrate, and termination details at a window opening including head, jamb, and sill terminations.
 - 1. For projects that have both windows and sliding glass doors, increase size of mock-up so that both one window opening and one sliding glass door opening are part of the air barrier mock-up.
- C. Locate where directed.
- D. Mock-up may remain as part of the Work.

1.7 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by the materials manufacturers before, during and after installation.
- B. Coordinate installation schedule and sequence of exterior weather barriers so that manufacturer's recommended maximum UV exposure time limit of such barriers is not exceeded prior to covering with finish materials.

C. PART 2 PRODUCTS

2.1 WEATHER BARRIERASSEMBLIES

- A. Air Barrier:

1. On outside surface of sheathing of exterior walls use air barrier coating.

2.2 AIR BARRIER MATERIALS (WATER VAPOR PERMEABLE AND WATER-RESISTIVE)

- A. Air Barrier Sheet, Mechanically Fastened:
 1. UV-Stable Air Barrier Sheet: Behind open joint rain-screen exterior cladding systems provide VaproShield REVEALSHIELD black, UV stable, water resistive vapor permeable air barrier membrane instead of the standard air barrier
 - a. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Air Barrier, Fluid Applied: Vapor permeable, elastomeric waterproofing.
 1. Air Barrier Coating:
 - a. Material: Acrylic.
 - b. Acceptable Substrates: Stated by manufacturer as suitable for installation on visibly damp surfaces and concrete that has hardened but is not fully cured ("green" concrete) without requiring a primer.
 - c. Adhesion to Paper and Glass Mat Faced Sheathing: Sufficient to ensure failure due to delamination of sheathing when tested in accordance with ASTM D 4541.
 - d. Air Permeance: 0.004 cubic feet per minute per square foot, maximum, when tested in accordance with ASTM E2178.
 - e. Water Vapor Permeance: 10 perms, minimum, when tested in accordance with ASTM E96/E96M.
 - f. Ultraviolet and Weathering Resistance: Approved in writing by manufacturer for minimum of 6 months weather exposure.
 - g. Elongation: 300 percent, minimum, when tested in accordance with ASTM D412.
 - h. VOC Content: 25 g per L or less.
 - i. Sealants, Tapes and Accessories: As recommended by coating manufacturer.
 - j. Products:
 - 1) BASF Corporation; ENERSHIELD-HP: www.enershield.basf.com.
 - 2) Grace Construction Products; Perm-A-Barrier VP: www.graceconstruction.com.
 - 3) Parex USA, Inc.; Parex USA WeatherSeal Spray & Roll-on: www.parexusa.com.
 - 4) Tremco Global Sealants; EXOAIR 220: www.tremcosealants.com.
 - 5) W.R. Meadows, Inc; Air-Shield LMP: www.wrmeadows.com.
 - 6) Substitutions: See Section 01 60 00 - Product Requirements.

2.3 SEALANTS

- A. Primers, Cleaners, and Other Sealant Materials: As recommended by sealant manufacturer, appropriate to application, and compatible with adjacent materials.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and conditions are ready to accept the work of this section.

3.2 PREPARATION

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.

3.3 INSTALLATION

- A. Install materials in accordance with manufacturer's instructions.
- B. Install air barriers as whole building envelope "wrap" prior to installation of glazing systems, doors, louvers, and exterior wall finishes.

- C. Air Barriers: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
- D. 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 4 inches below bottom of framing and seal to foundation with sealant.
 - 7. Install air barrier and vapor retarder UNDER jamb flashings.
 - 8. Install head flashings under weather barrier.
 - 9. At openings to be filled with frames having nailing flanges, wrap excess sheet into opening; at head, seal sheet over flange and flashing.
- E. Coatings:
 - 1. Prepare substrate in manner recommended by coating manufacturer; treat joints in substrate and between dissimilar materials as recommended by manufacturer.
 - 2. Use flashing to seal to adjacent construction and to bridge joints.
- F. 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 at least 4 inches wide; do not seal sill flange.
 - 3. At openings to be filled with non-flanged frames, seal weather barrier to all sides 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.

3.4 FIELD QUALITY CONTROL

- A. Do not cover installed weather barriers until required inspections have been completed.
- B. 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.

3.5 PROTECTION

- A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

**SECTION 07 53 00
ELASTOMERIC MEMBRANE ROOFING**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Elastomeric roofing membrane, adhered conventional application.
- B. Insulation, flat and tapered.
- C. Vapor retarder.
- D. Deck sheathing.
- E. Insulation cover board.
- F. Flashings.
- G. Roofing stack boots and walkway pads.

1.2 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Wood nailers and curbs.
- B. Section 07 01 50.19 - Preparation for Re-Roofing.
- C. Section 07 62 00 - Sheet Metal Flashing and Trim: Counterflashings, gravel stops, and copings.
- D. Division 22 - Plumbing: Roof drains, vents-through-roof, and other roof penetrations.
- E. Division 23 - Heating, Ventilating, and Air Conditioning (HVAC): HVAC equipment curbs and other roof penetrations.

1.3 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.
- B. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
- C. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
- D. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
- E. ASTM D4637/D4637M - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane.
- F. FM DS 1-28 - Wind Design; Factory Mutual Research Corporation.
- G. NRCA ML104 - The NRCA Roofing and Waterproofing Manual; National Roofing Contractors Association.
- H. UL (RMSD) - Roofing Materials and Systems Directory; Underwriters Laboratories Inc..

1.4 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.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating membrane materials, flashing materials, insulation, vapor retarder, surfacing, and fasteners.
- C. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, setting plan for tapered insulation, and paver layout.
 - 1. If installer drawn shop drawings are included other than for tapered insulation, indicate roofing system manufacturer's approval of the drawings.

- D. Wind Design Report: Submit the wind design analysis report. If any options are allowed by the recommendations, identify which one(s) will be utilized.
- E. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, wind velocity during application, and supplementary instructions given.
- F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.6 QUALITY ASSURANCE

- A. Perform work in accordance with NRCA Roofing and Waterproofing Manual and manufacturer's instructions.
- B. Source Responsibility: Obtain primary membrane roofing from a single manufacturer. Provide secondary materials only as recommended by manufacturer of primary materials.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 10 years of experience.
- D. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years experience, and approved by manufacturer.
- E. Wind Design: Perform wind design analysis in accordance with membrane manufacturer's and Single Ply Roofing Institute recommendations. Conform to resulting requirements, but not less than the requirements specified in this Section.

1.7 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.

1.8 FIELD CONDITIONS

- A. Do not apply roofing membrane during unsuitable weather.
- B. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- C. Proceed with roofing work only when existing and forecast weather conditions will permit work to be performed in accordance with manufacturer's recommendations and warranty requirements.
- D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

1.9 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide 10 year manufacturer's material and labor warranty to cover failure to prevent penetration of water.
 - 1. Warranty shall not be limited to the original installation cost.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. EPDM Membrane Materials:
 - 1. Carlisle Roofing Systems, Inc; Sure-Seal EPDM: www.carlisle-syntec.com.

2. Firestone Building Products, LLC: www.firestonebpco.com.
3. GenFlex Roofing Systems, LLC: www.genflex.com.
4. Johns Manville International, Inc: www.johnsmanville.com.
5. Versico, a division of Carlisle Construction Materials Inc; VersiGard EPDM: www.versico.com.
6. Substitutions: See Section 01 60 00 - Product Requirements.

- B. Insulation:
1. Acceptable to EPDM membrane manufacturer.

2.2 ROOFING - UNBALLASTED APPLICATIONS

- A. Elastomeric Membrane Roofing: One ply membrane, fully adhered, over vapor retarder and insulation.
- B. Roofing Assembly Requirements:
1. Roof Covering External Fire-Resistance Classification: UL Class B.
 2. Insulation Thermal Value (R), minimum average: 24; provide insulation of thickness required.

2.3 ROOFING MEMBRANE AND ASSOCIATED MATERIALS

- A. Membrane: Ethylene-propylene-diene-terpolymer (EPDM); internally reinforced with fabric or scrim; complying with minimum properties of ASTM D4637.
1. Thickness: 0.060 inch.
 2. Sheet Width: 120 inch, minimum; factory-fabricate into largest sheets possible.
 3. Color: Black.
- B. Seaming Materials: As recommended by membrane manufacturer.
- C. Vapor Retarder: Polyethylene, reinforced, 6 mils thick ; compatible with roofing and insulation materials.
- D. Flexible Flashing Material: Uncured EPDM sheet, except where recommended otherwise by membrane manufacturer; conforming to the following:
1. Thickness: 60 mil.
 2. Color: Black.
- E. Securement or Termination Strip: Reinforced EPDM strip, 6 or 9 inches wide, as recommended by membrane manufacturer.

2.4 ACCESSORIES

- A. Stack Boots: Prefabricated flexible boot and collar for pipe stacks through membrane; same material as membrane.
- B. Sheathing Joint Tape: Paper type, 8 inch wide, self adhering.
- C. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.
1. Length as required for thickness of insulation material and penetration of deck substrate, with metal washers.
- D. Membrane Adhesive: As recommended by membrane manufacturer.
- E. Thinners and Cleaners: As recommended by adhesive manufacturer, compatible with membrane.
- F. Roofing Nails: Galvanized, hot dipped type, size and configuration as required to suit application.
- G. Termination Bar: Extruded aluminum for securing and sealing compression type flashing terminations with top edge shape for ease of applying lap sealant; 1/8 x 1 inch size x 10 feet long; pre-punched holes 6 inches oc.
- H. Sealants: As recommended by membrane manufacturer.

- I. Walkway Pads: Suitable for maintenance traffic.
 - 1. Composition: Porous rubber with natural surface, slip resistant.
 - 2. Size: 30 x 30 inch.
 - 3. Surface Color: Black.

PART 3 EXECUTION

3.1 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 and nailing strips are in place.

3.2 GENERAL PREPARATION

- A. Prevent roofing material and debris from entering and clogging drains and conductors, and liquids from spilling or migrating onto surfaces of other work.

3.3 WOOD DECK PREPARATION

- A. Verify flatness and tightness of joints of wood decking.
- B. Confirm dry deck by moisture meter with 12 percent moisture maximum.

3.4 METAL DECK PREPARATION

- A. Install deck sheathing on metal deck:
 - 1. Lay with long side at right angle to flutes; stagger end joints; provide support at ends.
 - 2. Cut sheathing cleanly and accurately at roof breaks and protrusions to provide smooth surface.
 - 3. Tape joints.
- B. Mechanically fasten sheathing to roof deck, in accordance with roofing manufacturer's instructions.
 - 1. Over entire roof area, fasten sheathing using 6 fasteners with washers per sheathing board.

3.5 VAPOR RETARDER AND INSULATION - UNDERMEMBRANE

- A. Apply vapor retarder to deck surface in accordance with manufacturer's instructions.
- B. Ensure vapor retarder is clean and dry, continuous, and ready for application of insulation.
- C. Overlap vapor retarder seams 2 inches minimum and seal with water vapor resistant tape.
- D. Attachment of Insulation:
 - 1. Mechanically fasten insulation to deck in accordance with roofing manufacturer's instructions and Factory Mutual requirements.
- E. Lay subsequent layers of insulation with joints staggered minimum 6 inch from joints of preceding layer.
- F. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.
- G. On metal deck, place boards parallel to flutes with insulation board edges bearing on deck flutes.
- H. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- I. At roof drains, use factory-tapered boards to slope down to roof drains over a distance of 18 inches.
- J. Cover all insulation with cover board; install as required for insulation.
- K. Do not apply more insulation than can be covered with membrane in same day.

3.6 MEMBRANE APPLICATION

- A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.
- B. Shingle joints on sloped substrate in direction of drainage.
- C. Fully Adhered Application: Apply adhesive to substrate at rate recommended by membrane manufacturer. 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.
- D. Overlap edges and ends and seal seams by contact tape, minimum 2 inches. Seal permanently waterproof. Apply uniform bead of sealant to joint edge when recommended by

membrane manufacturer.

1. At intersections with vertical surfaces:
 2. Install membrane roofing system in accordance with manufacturer's recommendations for reinforcement strip termination details.
 3. Extend membrane over cant strips and blocking and up a minimum of 8 inches onto vertical surfaces.
 4. Fully adhere flexible flashing over membrane in accordance with membrane manufacturer's recommendations.
- E. At gravel stops, extend membrane under gravel stop to the outside face of the wall and turn down over outside face of wall.
- F. At existing vertical wall terminations, extend membrane under metal termination bar; mechanically fasten bar and seal to building wall with pressure and lap sealant.
- G. Around roof penetrations, seal flanges and flashings with flexible flashing.
- H. Coordinate installation of roof drains and sumps and related flashings.
- I. Coordinate installation of associated counterflashings installed under other sections.

3.7 ACCESSORIES INSTALLATION

- A. Install walkway pads around all sides of rooftop mechanical equipment and between the equipment and the roof access location.
1. Space pad joints to permit drainage.

3.8 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 manufacturers once during installation of the Work.

3.9 CLEANING

- A. Remove markings resulting from roofing work from finished surfaces.
- B. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their instructions.
- C. Repair or replace defaced or damaged finishes caused by work of this section.

3.10 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

1.1 SECTION INCLUDES

- A. Fabricated sheet metal items, including flashings, counterflashings, scuppers, and other items

1.2 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Wood nailers.
- B. Section 06 10 00 - Rough Carpentry: Field fabricated roof curbs.
- C. Section 07 01 50.19 - Preparation for Re-Roofing: Removal and retention of roof side of existing parapet walls existing counterflashing.
- D. Section 07 53 00 - Elastomeric Membrane Roofing: Roofing system.
- E. Section 07 90 05 - Joint Sealers.

1.3 REFERENCE STANDARDS

- A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week before starting work of this section.

1.5 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate manufactured products material finish characteristics, profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- C. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- D. Samples: Submit two samples 2 x 4 inch in size illustrating metal finish color.
- E. Fabricator's Certificate: Certify that low slope roof edge securement details comply with Code required design and testing.

1.6 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA 1793 requirements and standard details, except as otherwise indicated.
- B. Comply with International Building Code, 2006 Edition, Section 1504.5 requirements for edge securement of low slope roof systems. Use only edge metal details that comply with design and testing of this Code requirement.
- C. Fabricator and Installer Qualifications: Company specializing in sheet metal work with 5 years of experience.

1.7 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.

1.8 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide 2 year installer warranty that sheet metal flashings, including splice joints, shall be water-tight.
- C. Provide 20 year manufacturer warranty for degradation of factory applied finish, including color fading caused by exposure to weather.

PART 2 PRODUCTS

2.1 SHEET MATERIALS

- A. Galvanized Steel: ASTM A 653/A 653M, with G90/Z275 zinc coating; 0.0276 inch thick steel. Use for concealed work.
- B. Pre-Finished Galvanized Steel: ASTM A 653/A 653M, with G90/Z275 zinc coating; minimum 0.0276 inch thick base metal, shop pre-coated with PVDF coating. Use for exposed work.
 - 1. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
 - 2. Color: As selected by Architect from manufacturer's standard colors.

2.2 ACCESSORIES

- A. Fasteners: Same material and finish as flashing metal, with soft neoprene washers for exposed fasteners.
- B. Sealant: Single Component Silicone Type specified in Section 07 90 05.

2.3 FABRICATION

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Fabricate continuous concealed cleats of galvanized type sheet metal, 1 gage thicker than flashing to be secured, 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.

PART 3 EXECUTION

3.1 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.

3.2 PREPARATION

- A. Install starter and edge strips, and cleats before starting installation.

3.3 INSTALLATION

- A. Conform to drawing details and approved shop drawings.
- B. Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.
- C. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines

accurate to profiles

- D. Make joints in roof flashings by butting adjacent pieces, allowing expansion space; cover with 6 inch wide sheet metal covers of matching profile, material, and finish, center on joint.
- E. Seal metal joints watertight and to accommodate movement.
- F. Lap flashing splice joints 3 inches, minimum, and seal with 2 lines of butyl sealant.
 - 1. Sealant shall ooze out and tie into bed-seal where applicable and membrane flashing above.
- G. Allow for thermal movement in materials with relief joints not over 25 feet oc.
- H. Reinstall the roof side of existing parapet walls counterflashing that was removed during preparation for re-roofing.
 - 1. Reuse existing fastener holes to the extent possible. If not possible, seal unused holes watertight.
 - 2. Replace existing material that is damaged in removal or otherwise unsuitable for re-use. Provide galvanized sheet steel, 24 gage, minimum thickness.

3.4 SCHEDULE

- A. Fascia and Cornices :
- B. Scuppers:
- C. Coping, Cap, Parapet, Sill and Ledge Flashings:
- D. Counterflashings at Roofing Terminations (over roofing base flashings):
- E. Counterflashings at Curb-Mounted Roof Items:
- F. Roofing Penetration Flashings, for Pipes, Structural Steel, and Equipment Supports:

END OF SECTION

**SECTION 07 84 00
FIRESTOPPING**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Firestopping systems.

- B. Firestopping of all joints and penetrations in fire-resistance rated and smoke-resistant assemblies not included in scope of work for Mechanical and Electrical Work, whether indicated on drawings or not.
 - 1. Be aware that Section 712 of the 2006 International Building Code requires firestopping of through penetrations of fire resistive walls and fire resistive floor/ceiling and roof/ceiling assemblies. This project is Type I-A construction that requires fire resistive construction for many components of the construction including perimeter partitions of individual guest rooms. See the Code Analysis and Wall Types for additional information on required fire ratings.

1.2 RELATED REQUIREMENTS

- A. Section 07 81 00 - Applied Fireproofing.
- B. Section 09 21 16 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

1.3 REFERENCE STANDARDS

- A. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems.
- B. ASTM E1966 - Standard Test Method for Fire Resistive Joint Systems.
- C. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies.
- D. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc..
- E. FM P7825 - Approval Guide; Factory Mutual Research Corporation.
- F. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems; Underwriters Laboratories Inc..
- G. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc..

1.4 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.
- C. Product Data: Provide data on product characteristics.

1.5 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 the current-year classification or certification books of UL, FM, or ITS (Warnock Hersey) 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.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 10 years experience.

1.6 FIELD CONDITIONS

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation. Maintain minimum temperature before, during, and for 3 days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.1 FIRESTOPPING - GENERAL REQUIREMENTS

- A. Manufacturers:

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1. 3M Fire Protection Products: www.3m.com/firestop.
 2. Hilti, Inc: www.us.hilti.com.
 3. Nelson FireStop Products: www.nelsonfirestop.com.
 4. Specified Technologies, Inc: www.stifirestop.com.
 5. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Firestopping: Any material meeting requirements.
1. Putty Pads: Moldable firestop putty designed to help protect electrical outletboxes.
- C. Appearance: Use gray, white, or other neutral colored firestopping for firestop material that will remain exposed in the finished work; obtain approval of authority having jurisdiction before installing.
- D. Single Source Manufacturer: If required by authority having jurisdiction (AHJ), provide all firestopping products from a single manufacturer and/or use only one type of firestopping product for all penetrations.
- E. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Type required for tested assembly design.

2.2 FIRESTOPPING ASSEMBLY REQUIREMENTS

- A. Head-of-Wall Firestopping at Joints Between Non-Rated Floor and Fire-Rated Wall: Use any system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of floor or wall, whichever is greater.
- B. Floor-to-Floor, Wall-to-Wall, and Wall-to-Floor Joints, Except Perimeter, Where Both Are Fire-Rated: Use any system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
- C. Through Penetration Firestopping: Use any system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify openings are ready to receive the work of this section.
- B. Verify that opening size and shape, annular space around penetration, and the penetrant conform to requirements of listed assembly proposed for use at the penetration. If not conforming, correct conditions or obtain a different and "compliant to conditions" listed assembly before proceeding.

3.2 PREPARATION

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

3.3 INSTALLATION

- A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
- B. Do not cover installed firestopping until inspected by authority having jurisdiction.

- C. Install a putty pad to encase each electrical outlet box that is installed in a corridor or demising wall forming the perimeter of each guest room. Form pad around conduit and wire that feeds into the box. Leave only the room-side face of the box uncovered.

3.4 CLEANING

- A. Clean adjacent surfaces of firestopping materials.

3.5 PROTECTION

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

END OF SECTION

**SECTION 07 90 05
JOINT SEALERS**

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Sealants and joint backing.

1.2 RELATED REQUIREMENTS

- A. Section 07 13 00 - Sheet Waterproofing: Sealants required in conjunction with waterproofing.
- B. Section 07 25 00 - Weather Barriers: Sealants required in conjunction with air barriers and vapor retarders:
- C. Section 07 53 00 - Elastomeric Membrane Roofing: Sealants required in conjunction with roofing.
- D. Section 07 84 00 - Firestopping: Firestopping sealants.
- E. Section 08 80 00 - Glazing: Glazing sealants and accessories.
- F. Section 09 21 16 - Gypsum Board Assemblies: Acoustic sealant.

1.3 REFERENCE STANDARDS

- A. ASTM C834 - Standard Specification for Latex Sealants.
- B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
- C. ASTM C1193 - Standard Guide for Use of Joint Sealants.
- D. ASTM C1311 - Standard Specification for Solvent Release Sealants.
- E. ASTM C1311 - Standard Specification for Solvent Release Sealants.
- F. ASTM D1667 - Standard Specification for Flexible Cellular Materials--Poly(Vinyl Chloride) Foam (Closed-Cell).
- G. 21 CFR 177.2600: Code of Federal Regulations, Title 21--Food and Drugs, Part 177 -- Indirect Food Additives: Polymers.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with other sections referencing this section.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Meeting:
 - 1. Convene one week before starting work of this section.
 - 2. Review:
 - a. Schedule for applying sealants.
 - b. Installation of elements to be sealed and substrate preparation.
 - c. Application of curing agents, sealers, coatings, paint, and other materials to substrates and sealants.
 - d. Protection of installed items and finishes.
 - e. Approved samples and mock-up to be used as a measure of acceptance.
 - f. Weather conditions forecast.
 - g. Other items related to successful execution of work.

1.6 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data:
 - 1. Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, color availability, and application procedures.
 - 2. Provide data indicating physical properties of sealant backer rod and bond breaker tape.
- C. Samples:
 - 1. Selection Samples: Submit two samples, 3/8 x 2 inch in size illustrating sealant colors for selection.
 - 2. Verification Samples: Provide 3 in-place sealant color samples, 18 inches long each, for each installation condition, for Architect's final color verification/selection.
- D. Test Reports: Indicate description of pre-installation adhesion and compatibility testing, results, and recommended installation procedures to obtain proper adhesion.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum 10 years experience.
- B. Applicator Qualifications: Company specializing in performing the work of this section with minimum 5 years experience.
- C. Pre-Installation Adhesion Testing:
 - 1. Sealant sub-contractor in conjunction with sealant manufacturer's representative shall perform testing.
 - 2. Prior to application of sealants, test each application condition to ensure sealant satisfactorily adheres to substrate.
 - 3. Conduct test in field or by submission of representative substrate samples to manufacturer for factory test.
 - 4. Apply sealant to sample substrate and perform hand-pull tab test in accordance with ASTM C 1193, Method A.
 - 5. Determine if primer is required. If so, re-test using primer.
 - 6. See Submittals Article for required test result submittal.
- D. For the project, each type of sealant and related primer shall be products provided by a single manufacturer.
- E. Do not use sealants and primers after manufacturer's stated shelf life.
- F. Product Selection: When window seam sealant tape has been used to seal exterior wall openings, select sealant products at those locations that are approved by seam sealant tape manufacturer and/or take precautions to ensure no contact between sealant and seam sealing tape.

1.8 MOCK-UP

- A. See Submittals article above for on-site color verification samples.
- B. Provide mock-up of sealant joints in conjunction with window and wall under provisions of Section 01 40 00.
 - 1. Seal the perimeter of one window and seal 6 lineal feet minimum of one masonry control joint.
- C. Construct mock-up with specified sealant types and with other components noted.
- D. Locate where directed.
- E. Mock-up may remain as part of the Work.

1.9 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.
- B. Do not install sealants when temperature is 5 degrees F or more below dewpoint.
- C. Do not install sealants during inclement weather or when such conditions are expected. Allow wet surfaces to dry.

1.10 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a 2 year period after Date of Substantial Completion.

C. Warranty:

1. Provide 2 year installer's workmanship warranty for installed sealants and accessories which fail to achieve airtight seal and watertight seal, exhibit loss of adhesion or cohesion, or do not cure.
2. Provide 20 year manufacturer's material and weatherseal limited warranty for properly installed silicone sealants.

PART 2 PRODUCTS

2.1 SEALANTS

- A. General Purpose Exterior Sealant: Silicone; ASTM C 920, Type S, Grade NS, Class 50, Uses NT, M, G, A, and O; single component, pre-pigmented, medium-modulus, neutral cure for weatherproofing porous stone, metal panels, curtainwall framing, and other above-grade expansion and control joints for both new and remedial construction where staining and residue rundown streaking must be minimized.
1. Color: To be selected by Architect from manufacturer's standard range.
 2. Basis of Design Product: DOW CORNING 756 SMS Building Sealant manufactured by Dow Corning Corp.
 3. Applications: Use for:
 - a. Control, expansion, and soft joints in masonry.
 - b. Joints between concrete or masonry and other materials.
 - c. Joints between and within exterior finish materials and between exterior finish materials and adjacent dissimilar materials.
 - d. Joints between metal, wood, and plastic frames in exterior walls and other materials, except as modified by Paragraph B below.
 - e. Joints in exterior wood trim.
 - f. Joints around penetrations in exterior walls.
 - g. Lap joints in sheet metal components.
 - h. Other exterior joints required to provide a weather and water tight enclosure.
 - i. Other exterior joints for which no other sealant is indicated.
 4. Silicone Products; Other Approved Manufacturers:
 - a. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com.
 - b. Pecora Corporation: www.pecora.com.
 - c. Tremco Global Sealants: www.tremcosealants.com.
 - d. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Specific Purpose Exterior Sealant, Including at Interior Side of Exterior Wall Openings: Silicone; ASTM C 920, Type S, Grade NS, Class 25; single component, pre-pigmented, medium-modulus, neutral cure weather seal designed for adhering to low energy surfaces common in sheet or peel and stick weather resistant barriers.
1. Color: To be selected by Architect from manufacturer's standard range.
 2. Basis of Design Product: DOW CORNING 758 Silicone Weather Barrier Sealant manufactured by Dow Corning Corp.
 3. Applications: Use for:
 - a. Joints between window, storefront, door, and louver frames in exterior walls where sealant material is required to bond to a weather barrier material.
 4. Silicone Products; Other Approved Manufacturers:
 - a. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com.
 - b. Pecora Corporation: www.pecora.com.
 - c. Tremco Global Sealants: www.tremcosealants.com.
 - d. Substitutions: See Section 01 60 00 - Product Requirements.
 5. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, Type OP,

- Grade NF single component, paintable.
6. Applications: Use for:
 - a. Joints between interior door and glazed light frames and wall surfaces.
 - b. Joints in interior materials other than concrete and masonry.
 7. Products:
 - a. Pecora Corporation; AC-20 + Silicone Acrylic Latex Caulking Compound: www.pecora.com.
 - b. Momentive Performance Materials, Inc (formerly GE Silicones); Product RCS20 Siliconized Acrylic Sealant: www.momentive.com.
 - c. Sherwin-Williams Company; 950A Siliconized Acrylic Latex Caulk: www.sherwin-williams.com.
 - d. Tremco Global Sealants; TREMFLEX 834: www.tremcosealants.com.
 - e. Substitutions: See Section 01 60 00 - Product Requirements.
 - C. Substitutions: See Section 01 60 00 - Product Requirements.
 - D. Butyl Sealant: ASTM C1311; single component, solvent release, non-skinning, non-sagging.
 1. Color: To be selected by Architect from manufacturer's standard range.
 2. Applications: Use for:
 - a. Setting door thresholds.
 - b. Concealed locations of sheet metal flashing and trim.
 3. Products:
 - a. Pecora Corporation; BA-98 Non-Skinning Butyl Sealant: www.pecora.com.
 - b. Sherwin-Williams Company; Storm Blaster All Season Sealant: www.sherwin-williams.com.
 - c. Tremco Global Sealants; BUTYL SEALANT: www.tremcosealants.com.
 - d. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 ACCESSORIES

- A. Primer: Non-staining type, when recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Cleaning Cloths: Clean, soft, absorbent, lint-free cloths.
- D. Joint Backing: ASTM C1330, Type B round foam rod compatible with sealant with skin-like outer texture and resilient inner network of both open and closed cells that is non-gassing, non-exuding, chemically inert, and non-absorbing; oversized 30 to 50 percent larger than joint width.
 1. Products:
 - a. Industrial Thermo Polymers Ltd; SOFT TYPE Backer Rod: www.tundrafoam.com.
 - b. Namaco Engineered Foam Solutions; SOF ROD Bi-Cellular Backer Rod: www.nomacoefs.com.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.
- E. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate surfaces and joint openings are ready to receive work.
- B. Ensure surfaces are clean, dry, and free of frost, dust, dirt, grease, oil, curing compounds, form release agents, laitance, efflorescence, mildew, and existing sealant.
- C. Verify that joint backing and release tapes are compatible with sealant.

3.2 PREPARATION

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- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean and prime joints in accordance with manufacturer's instructions.
 - 1. Clean non-porous surfaces with 2-cloth wipe with solvent wipe in accordance with ASTM C 1193.
 - a. Pour cleaning solvent onto clean cloth. Wipe vigorously to remove contaminants.
 - b. Immediately wipe cleaned area with separate cloth before solvent has evaporated.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Protect elements surrounding the work of this section from damage or disfigurement.

3.3 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.
- D. Install joint backers without gaps, twisting, stretching, or puncturing. Use gage to ensure uniform depth to achieve correct profile, coverage, and performance.
- E. Install bond breaker where joint backing is not used.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Fill joint opening to full and proper configuration. Apply in continuous operation.
- H. Ensure sealant fills entire joint and firmly contacts all surfaces.
- I. Complete horizontal joints before vertical joints. Lap vertical sealant over horizontal joints.
- J. DO NOT seal joints between the top side of sheet metal drip flashings and the finish material/product above the flashing, except at both ends, form an end dam of sealant to prevent water from rolling off the end of the flashing.
- K. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- L. Tool joints concave with metal spatula before skinning or curing begins. Provide smooth, uniform, sealant finish. Tool joints with one continuous stroke.

3.4 FIELD QUALITY CONTROL

- A. Perform field testing in accordance with Section 01 40 00, except sealant sub-contractor in conjunction with sealant manufacturer's representative shall perform testing.
- B. Test for adhesion of sealants in accordance with manufacturer's instructions and ASTM C 1193, Method A, Field-Applied Sealant Joint Hand-Pull Tab.
 - 1. Perform 5 tests for first 1,000 linear feet of applied sealant and 1 test for each 1,000 linear feet seal thereafter or perform 1 test per floor per building elevation minimum.
 - 2. For sealant applied between dissimilar materials, test both sides of joint.
- C. Remove sealants failing adhesion test; clean substrate, re-install sealant, and re-test.
- D. Maintain test log and submit report to Architect indicating tests, locations, dates, results, and remedial actions.

3.5 CLEANING

- A. Clean adjacent soiled surfaces.

3.6 PROTECTION

- A. Protect sealants until cured.

END OF SECTION