PROJECT MANUAL

SAM AND ALFREDA MALOOF FOUNDATION FOR ARTS AND CRAFTS
ROOF REPLACEMENT

5131 CARNELIAN STREET

RANCHO CUCAMONGA, CALIFORNIA

WJE No. 2020.3805

ISSUED FOR BID

November 10, 2023

Architect/Engineer
WISS, JANNEY, ELSTNER ASSOCIATES, INC.
225 S. Lake Avenue, Suite 500
Pasadena, California 91101
(626) 696-4650

SECTION 00 01 10

TABLE OF CONTENTS

END OF SECTION

SECTION 00 01 15

LIST OF DRAWING SHEETS

Sheet Number	Title
A-0.0	Title Sheet
A-1.0	Site Plan
A-1.1	Main House (East) Roof Plan
A-1.2	Main House (West) Roof Plan
A-1.3	Workshop 1 Roof Plan
A-1.4	Workshop 2 Roof Plan
A-1.5	Visitor Center Roof Plan
A-2.0	Built-Up Roofing Details
A-2.1	Built-Up Roofing Details
A-2.2	PVC Roofing Details
A-2.3	Traffic Coating Details
S-1.0	South Balcony Framing Plan
S-2.0	South Balcony Elevation
S-3.0	Details

END OF SECTION

SECTION 00 11 16

INVITATION TO BID

PROJECT: Roof Replacement
Sam and Alfreda Maloof Foundation for Arts and Crafts
5131 Carnelian Street
Rancho Cucamonga, California

OWNER: Jim Rawitsch
Executive Director
Sam and Alfreda Maloof Foundation for Arts and Crafts
5131 Carnelian Street
P.O. Box 8397
Rancho Cucamonga, California
323-216-1285 Telephone
rawitsch@malooffoundation.org

ARCHITECT/ENGINEER: Michelle Sandoval Marcinek, Senior Associate
Wiss, Janney, Elstner Associates, Inc.
225 South Lake Avenue, Suite 500
Pasadena, California 91101
626-696-4650
msandoval@wje.com

PRE-BID MEETING: Time/date established by Maloof Foundation

BID DUE: Time/date established by Maloof Foundation
Deliver bids to Mr. Jim Rawitsch and Ms. Michelle Sandoval Marcinek

SUMMARY OF THE WORK: In general, the work on this project consists of replacement of the built-up roofing systems, replacement of select metal panel roofing systems with PVC single ply roofing, replacement of localized structural roof deck panels, and miscellaneous carpentry work at roof deck sheathing, base of rising walls, and clerestory window perimeters. Additionally, the project will include repair or isolated replacement of wood framing members at the South Balcony.

END OF SECTION

SECTION 00 41 14

BID FORM

PROJECT: Roof Replacement
Sam and Alfreda Maloof Foundation for Arts and Crafts
5131 Carnelian Street
Rancho Cucamonga, California

SUBMITTED BY:

Bidder:_____

Contact:_____

Phone:_____

Email:_____

1. THE UNDERSIGNED:

1.1. Acknowledges Receipt of:

A. Project Manual: Roof Replacement
Sam and Alfreda Maloof Foundation for Arts and Crafts
5131 Carnelian Street
Rancho Cucamonga, California

B. Drawings: Sheets A-0.0 through S-3.0

C. Addenda: No._____; Dated ___, 2023.

No._____; Dated ___, 2023.

No._____; Dated ___, 2023.

1.2. Has examined the site and all Bidding Documents.

1.3. Agrees:

A. To hold the Bid open until 60 calendar days after the Bid Opening.

B. To execute a satisfactory Agreement between Owner and Contractor and to provide proof of insurance coverage to the Owner for the entire Work in accordance with the Contract Documents within 15 days after notice of award.

C. To accept the provisions of the Bidding Instructions.

1.4. Proposes to accomplish all Work in accordance with the Contract Documents for the bid prices as outlined in the following sections.

2. BASE BID (see Section 01 11 00 for detailed description of all work items).

2.1. The Contractor, having examined the specifications, drawings and related documents for the above project and being familiar with all the conditions affecting the proposed project, including the availability of material and labor, hereby proposes to furnish all labor, materials and supplies in accordance with the Bid Documents at the price stated below. These prices are to cover all expenses incurred in performing the work required under the Contract, of which this proposal is a part.

Prices quoted shall include all charges for packing, transportation and delivery to site.

Repair Item No	Type of Work	Total Bid
1	*Built-Up Roof Replacement:* Remove the existing built-up roof system down to the existing wood plank deck or structural roof panel deck. Install new roof assembly consisting of: red rosin paper, mechanically fastened base sheet, hot-applied four-ply built-up roofing system, and flood coat of asphalt with pea gravel surfacing. Include fluid-applied flashing where indicated on drawings.	$_____
2	*Metal Panel Roof Replacement:* Remove the existing metal panel roof system down to the existing wood deck. Install new roof assembly consisting of: vapor retarder/temporary roof membrane, polyisocyanurate insulation, cover board, and adhered PVC roof membrane.	$_____
3	*Structural Roof Panel Deck Replacement:* Replace the existing 2-inch-thick structural roof deck panels at the Main House (West) roof area.	$_____
4	*Isolated Wood Roof Deck Replacement:* Replace isolated individual damaged wood planks or plywood/OSB in kind. Provide the following allowances for replacement:	
4a	266 individual 6 ft./8 ft. long deck boards (2-inch-thick)	$_____
4b	172 individual 10 ft./12 ft. long deck boards (2-inch-thick)	$_____
4c	10 individual 4 ft. x 8 ft. plywood or OSB sheet (5/8-inch-thick)	$_____
5	*Isolated Fascia Board Replacement:* Replace damaged fascia boards in kind. Assume 2x10 replacement boards unless noted otherwise (assume 153’-0” linear feet).	$_____
6	*Rafter Tail Repair:* Repair damaged section of existing rafter tails. Assume a repair allowance of 100 linear feet.	$_____
7	*Miscellaneous Carpentry Work:* Modify existing wood trim/siding	$_____

	as necessary to install new roof base flashings and counterflashings.	
8	*Metal Work:* Install new counterflashings, edge flashings, gutters, downspouts, and any other miscellaneous sheet metal and/or flashing work as indicated in the Drawings.	$_____
9	*Skylight Replacement:* Replace the existing skylights in kind, acrylic domed (eight total).	$_____
10	*Chimney Coating:* At the chimney located at the Main House (West) roof, install architectural grade coating at the chimney faces and pedestrian grade traffic coating at the top surface of the chimney.	$_____
11	*South Balcony Framing Repairs.* Repair or perform isolated replacement of wood framing members at the South Balcony. Perform stabilization repairs and/or temporarily shore balcony as needed during the work. Replace pedestrian grade traffic membrane. Remove and reinstall perimeter flashings and counterflashings as needed to install new membrane.	$_____
12	*Scaffolding, Cranes, Canopies, and Mobilization.* Contractor to provide all necessary scaffolding, cranes, canopies, and equipment to perform the work as outlined in the Drawings. Contractor to allow for access by the Owner and A/E throughout the work. All interior building areas are to remain occupied and in use through the duration of the project.	$_____

SUMMARY OF BASE BID

Repair Items 1 through 12 = $_____

(in words) _____

_____DOLLARS

3 BUILDING PERMIT

3.1 Undersigned agrees to secure and pay for any required building permits.

4 ALTERNATES (For optional modification to the work scope. Refer to Section 01 11 00.)

4.1 Alternate Repair Items shall include the following work items in addition to the Base Bid.

Repair Item No	Type of Work	Total Bid
1	*Alternate No. 1 – Additional Metal Roof Replacement:* Perform same scope of work as Base Bid No. 2 at five additional roof areas at the Main House where designated in the Drawings. Provide itemized cost per roof area below.	
1a	*Alternate No 1a - Main House Bedroom/Gallery Replacement*	$_____

1b	*Alternate No 1b - Main House North Gallery 1 Replacement*	$_____
1c	*Alternate No 1c - Main House North Gallery 2 Replacement*	$_____
1d	*Alternate No 1d - Main House South Gallery Replacement*	$_____
1e	*Alternate No 1e - Main House Kitchen Nook Replacement*	$_____
1f	*Alternate No. 1f – Isolated Wood Roof Deck Replacement:* Replace isolated individual damaged wood planks or plywood/OSB in kind. Provide the following allowances for replacement: 11 individual 10 ft./12 ft. long deck boards, and 30 individual 4 ft. x 8 ft. plywood or OSB sheet.	$_____
1g	*Alternate No. 1g - Fascia Board Replacement:* Replace damaged fascia boards in kind. Assume 2x10 replacement boards unless noted otherwise (assume 147'-0" linear feet).	$_____
1h	*Alternate No. 1h – Rafter Tail Repair:* Repair damaged rafter tails. Assume an allowance of 30 linear feet.	$_____
2	*Alternate No. 2 - Alternate Flat Roof Replacement Material:* Perform same scope of work as Base Bid No. 1, except new roof assembly is to consist of: two-ply granular surfaced modified bitumen roof membrane in lieu of four-ply built-up roofing system. This line item should be total cost of alternate roof system so that this Alternate line item, if approved, would completely replace Base Bid Item.	$_____
3	*Alternate No. 3 – Exposed Fastener Replacement:* Replace screw fasteners and neoprene washers at metal panel roofs to remain.	$_____
4	*Alternate No. 4 – Sheet Metal Flashing Alternate Materials:* Provide bonderized sheet metal flashing in lieu of prefinished aluminum.	$_____

5 UNIT PRICES

5.1 Unit Price list:

Unit Price	Type of Work	Unit	Add	Deduct
1.	Replace individual wood plank deck board (6 ft. board)	Per board	$_____	N/A
2.	Replace individual wood plank deck board (12 ft. board)	Per board	$_____	N/A
3.	Replace individual 5/8" thick plywood sheet	Per sheet	$_____	N/A
4.	Replace individual 5/8" thick OSB sheet	Per sheet	$_____	N/A
5.	Replacement/new vertical wood cladding (per 10 ft. board)	Per board	$_____	N/A
6.	Replacement/new horizontal wood cladding (per 10 ft. board)	Per board	$_____	N/A

7.	Replacement fascia board (2x10)	Per board	$_____	N/A
8.	Rafter tail repair	Per LF	$_____	N/A

5.2 Undersigned agrees, that within forty-eight (48) hours after Owner's request and prior to actual award of Contract, Contractor will produce a list of additional unit prices required by Owner, which shall be fully and realistically completed and submitted to Owner. List of additional unit prices will be arranged in accordance with trade specification sections. List will have provisions for "Add" and "Deduct" unit prices.

6 MARK-UP COSTS FOR ADDITIONAL WORK

6.1 In the event that additional work is to be performed on a time and material basis, or if work is to be performed in addition to those outlined in the unit prices, the Contractor is to be entitled to the following:

Markup for subcontractors costs ____%
Markup for work performed at hourly rates ____%

Contractor is to provide a schedule of hourly rates for additional work for review by the Owner.

7 CONSTRUCTION TIME

7.1 Bids are to be received by the Sam and Alfreda Maloof Foundation for Arts and Crafts, Attention: Mr. Jim Rawitsch. Bids may be emailed to rawitsch@ malooffoundation.org with a hard copy to follow.

7.2 Contractor is to submit a brief schedule and sequencing plan with bid outlining the milestone dates for the project, including start date and estimated completion date for each phase.

8 PROPOSED VOLUNTARY ALTERNATES

8.1 The lump sum and unit price portions of the Bid are understood to include only those products and processes which are specified in the Project Manual. The following is a list of voluntary alternates which the Bidder proposes to furnish on this project, with the difference in price being added to or deducted from the Total Bid Amount. The Bidder understands that acceptance of any voluntary alternate is at the Owner's option. Approval or rejection of any substitutions listed below will be indicated prior to executing the Contract.

Voluntary Alternate Description	Cost Adjustment (Add or Deduct)
_____	_____
_____	_____

(Attach additional sheets, if necessary)

8.2 The Bidder's proposal shall include a written description of proposed substitution(s) and method(s) in which voluntary alternate would be installed. Include complete manufacturer's literature for all proposed voluntary alternates.

9 SUBCONTRACTORS

9.1 The Contractor agrees, if notified of the acceptance of this Proposal, that he will utilize the following subcontractors for the following noted types of work and that all other work not listed below will be handled directly by the Undersigned. No substitutions shall be made in the employment of subcontractors without written approval having first been obtained through the Owner. Bidder may be disqualified if left blank.

Subcontractor (Name, Address, Telephone Number)	Type of Work
_____	_____
_____	_____
_____	_____

(Use additional page if necessary)

10 WORK TO BE DONE DIRECTLY

10.1 The Contractor hereby states that work of the following major trades will be self-performed directly without employment of subcontractors:

_____

_____

(Use additional page if necessary)

11 BIDDER'S ENDORSEMENT

11.1 The undersigned certifies that this proposal has been prepared under his personal supervision with his full knowledge.

Date_____

Firm Name_____ (SEAL)

By_____
(Printed name of Corporate Officer, Partner or sole Owner signing Proposal)

_____ (SEAL)
(Signature) (Title)

Business Address _____

Telephone _____

END OF SECTION

SECTION 00 50 00

AGREEMENT BETWEEN OWNER AND CONTRACTOR

PART 1 - GENERAL

1.1 The Agreement between the Owner and the Contractor shall be executed using AIA Document A101 - Standard Form of Agreement between Owner and Contractor. The Contract Documents referenced in this Agreement will include:

A. Project Manual for *Roof Replacement*, Sam and Alfreda Maloof Foundation for Arts and Crafts, 5131 Carnelian Street, Rancho Cucamonga, California, WJE No. 2020.3805, November 10, 2023
B. Sam and Alfreda Maloof Foundation for Arts and Crafts *Roof Replacement* Drawings, A-0.0 through S-3.0, WJE No. 2020.3805, November 10, 2023

END OF SECTION

SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Description of existing conditions and Work scope, and Contractor duties and use of premises.

1.2 CONTRACTOR DUTIES

A. Except as specifically noted, provide and pay for:
   1. Labor, materials, and equipment.
   2. Tools, construction equipment, and machinery.
   3. Permits, government fees, and licenses as necessary for proper execution and completion of Work and as applicable at time of receipt of bids.

B. Comply with codes, ordinances, rules, regulations, orders, and other legal requirements of public authorities having jurisdiction, which bear on performance of Work.
   1. Take necessary safety precautions to prevent injury to construction personnel, non-construction personnel, Owner's property, and adjacent facilities.
   2. Give required notices.
   3. Products shall comply with local regulations, including environmental restrictions.
   4. Promptly submit written notice to Architect/Engineer of observed variance of Contract Documents from legal requirements. It is not the Contractor's responsibility to make certain that Drawings and Specifications comply with codes and regulations.
      a. Propose appropriate modifications to Contract Documents for necessary changes.
      b. Assume responsibility for Work known to be contrary to such requirements, which is performed without notice.

C. Enforce strict discipline and good order among employees. Do not employ unfit persons or persons not skilled in their assigned tasks.

D. Provide 24-hour emergency contact information for Contractor and major subcontractors, including names and telephone numbers.

1.3 WORK SCOPE

A. Work includes the following activities:
   1. *Built-Up Roof Replacement:* Remove the existing built-up roof system down to the existing wood plank deck or structural roof panel deck. Install new roof assembly consisting of: red rosin paper, mechanically fastened base sheet, hot-applied 4-ply built-up roofing system, and flood coat of asphalt with pea gravel surfacing.
   2. *Metal Panel Roof Replacement:* Remove the existing metal panel roof system down to the existing wood deck. Install new roof assembly consisting of: vapor retarder/temporary roof membrane, polyisocyanurate insulation, cover board, and adhered PVC roof membrane.
   3. *Structural Roof Panel Deck Replacement:* Replace the existing 2-inch thick structural roof deck panels at the Main House (West) roof area.

4. *Isolated Wood Roof Deck Replacement:* Replace isolated individual damaged wood planks or plywood/OSB in kind.
5. *Isolated Fascia Board Replacement:* Replace fascia boards in kind where designated in the Drawings.
6. *Rafter Tail Repair:* Repair damaged rafter tail per splice detail as indicated in the Drawings.
7. *Miscellaneous Carpentry Work:* Modify existing wood trim/siding as necessary to install new roof base flashings and counterflashings.
8. *Metal Work:* Install new counterflashings, edge flashings, gutters, downspouts, and any other miscellaneous sheet metal and/or flashing work as indicated in the Drawings.
9. *Skylight Replacement:* Replace the existing skylights in kind, acrylic domed (eight total).
10. *Chimney Coating:* At the chimney located at the Main House (West) roof, install architectural grade coating at the chimney faces and pedestrian grade traffic coating at the top surface of the chimney.
11. *South Balcony Framing Repairs.* Repair or perform isolated replacement of wood framing members at the South Balcony. Perform stabilization repairs and/or temporarily shore balcony as needed during the work. Replace pedestrian grade traffic membrane. Remove and reinstall perimeter flashings and counterflashings as needed to install new membrane.
12. *Scaffolding, Cranes, Canopies, and Mobilization.* Contractor to provide all necessary scaffolding, cranes, canopies, and equipment to perform the work as outlined in the Drawings. Contractor to allow for access by the Owner and A/E throughout the work. All interior building areas are to remain occupied and in use through the duration of the project.

B. The following alternate Work activities will be performed at discretion of Owner:
1. *Alternate No. 1 – Additional Metal Roof Replacement:* Perform same scope of work as Base Bid No. 2 at five additional roof areas at the Main House where designated in the Drawings.
2. *Alternate No. 2 - Alternate Flat Roof Replacement Material:* Perform same scope of work as Base Bid No. 1, except new roof assembly is to consist of: two-ply granular surfaced modified bitumen roof membrane in lieu of 4-ply built-up roofing system.
3. *Alternate No. 3 – Exposed Fastener Replacement:* Replace screw fasteners and neoprene washers at metal panel roofs to remain.
1. *Alternate No. 4 – Sheet Metal Flashing Alternate Materials:* Provide bonderized sheet metal flashing in lieu of prefinished aluminum.

1.4 CONTRACTOR USE OF PREMISES

A. Confine operations at Site to areas permitted by law, ordinance, permits, and Contract Documents.

B. Owner will occupy premises outside of Work area during construction period.
1. Cooperate with Owner to minimize conflicts and facilitate Owner usage.
2. Perform Work to avoid interference with Owner's day-to-day operations. Notify Owner's Representative at least 72 hours in advance of activities that will affect Owner's operations.
   a. Maintain utilities serving areas occupied by Owner or others. Do not interrupt utilities unless approved in writing in advance by Owner's Representative. Notify Owner's Representative at least 72 hours in advance of interruption. Provide temporary utility services if required.
3. Maintain vehicular, pedestrian, and emergency access to portions of facility that are in use. Keep entrances and exits clear of stored materials and construction equipment.
   a. Short interruptions in access may be permitted if approved in advance in writing by the Owner's Representative.
   b. Schedule deliveries to minimize interruptions.

4. Do not disturb Site outside of Work area.
5. Minimize damage to building weatherproofing system during construction period, and promptly repair damage caused by construction operations. Protect building and occupants in Work area.
6. Notify the Owner's Representative at least one week in advance of when portions of Work area will be removed from use or returned to use.

C. Minimize interference with adjacent streets and walkways and adjacent facilities.

D. Contractor shall have no additional storage or operational area outside of Work area, either inside or outside of building, except as approved in advance by Owner's Representative.
1. Construction equipment, tools, etc., shall not be stored in areas of Owner's continued use.
2. Do not unreasonably encumber Site with materials or equipment.
3. Do not load Project structure with weight that will endanger Project structure.
4. Assume full responsibility for Site security and protection and safekeeping of products stored at Site.
5. Obtain and pay for additional storage areas needed for operations.

E. Perform Site Work on Monday through Friday, at work established by Owner.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 01 20 10

CONTRACT MODIFICATION AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for preparing, handling, and processing Contract modifications and Applications for Payment, including allowances, unit price Work, alternates, and product substitutions.

1.2 ALLOWANCES

A. Description of Allowances:

The basis for selection of allowance repairs is to be established by A/E during initial site visits and mock-up repairs. The allowances included in the bid form are reproduced below for clarity.

1. *Base Bid Allowances - Replace isolated individual damaged wood planks or plywood/OSB and fascia boards in kind.*
   a. 266 individual 6 ft./8 ft. long deck boards
   b. 172 individual 10 ft./12 ft. long deck boards
   c. 10 individual 4 ft. x 8 ft. plywood or OSB sheet, assume 5/8 inch thick
   d. 300 linear feet of 2 inch x 10 inch boards
2. *Alternate Bid Allowances - Replace isolated individual damaged wood planks or plywood/OSB in kind.*
   a. 0 individual 6 ft./8 ft. long deck boards
   b. 11 individual 10 ft./12 ft. long deck boards
   c. 30 individual 4 ft. x 8 ft. plywood or OSB sheet

B. Allowance adjustment:
   1. As Work covered by an allowance becomes known, submit a cost proposal to Architect/Engineer for Allowance Work. See Contract Modification Procedures Article below.
      a. Provide cost proposals from more than one source upon request.
      b. Provide a breakdown of the cost proposal upon request.
      c. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins. Prepare an explanation and documentation to substantiate the distribution of overhead costs and other margins claimed, upon request.
      d. Include installation costs in the purchase amount only where indicated as part of allowance.
      e. Include recommendations that are relevant to performing Work.
   2. Owner will execute a Change Order to authorize Allowance Work.
      a. Advise Architect/Engineer of date when Allowance Work must be authorized to avoid delaying Work.
   3. Submit invoices and delivery slips to show the actual quantities of materials delivered to the Site for Allowance Work.

4. Coordinate materials and their installation for Allowance Work with related materials and installations to ensure that Allowance Work is integrated and interfaced with related work. Furnish templates as required to coordinate installation.
5. At Project closeout, credit unused Allowance amounts to Owner.

1.3 UNIT PRICE WORK

A. Definition: Unit price, stated on the Bid Form, is the price per unit of measurement for materials and services for a specific Work activity. The Contract Sum may be increased or decreased by Unit Price adjustment, based on the difference between the estimated bid quantity and the actual Work quantity.

B. Measurement Procedures:
   1. Measure Work performed on a unit price basis and maintain a record of the location and unit price quantity of each repair installed. Unless stated otherwise by the Architect/Engineer, document unit price quantities with plan view or elevation drawings, or both, and tables with required data, cross-referenced to drawings. Submit recorded information to Architect/Engineer on a weekly basis.
   2. Architect/Engineer will verify the accuracy of measurements and approve final quantities. Notify Architect/Engineer at least two days before Work will be performed that might make this verification difficult or impossible.
   3. Notify Owner's Representative and Architect/Engineer at once in writing of unit price work that deviates materially from the Unit Price basis for payment and for which an adjustment in Unit Price is desired.
      a. Measure and quantify all such deviations, and allow Architect/Engineer to verify the accuracy of measurements, prior to performing Work that might make verification difficult or impossible.
      b. Adjustments will be considered only if all repairs of given type have been measured and all deviations, both plus and minus, have been included in the determination of the average deviation from the Unit Price basis for payment.

C. Payment Procedures:
   1. As part of Project closeout, the Contract Sum will be modified by the unit price times the variation in the actual Work quantity from the estimated quantity included in the Bid Form, based on quantities measured by the Contractor and approved by the Architect/Engineer.

1.4 ALTERNATES

A. Description of Alternates:
   1. *Alternate No. 1 – Additional Metal Roof Replacement:* Perform same scope of work as Base Bid No. 2 at five additional roof areas at the Main House where designated in the Drawings.
   2. *Alternate No. 2 - Alternate Flat Roof Replacement Material:* Perform same scope of work as Base Bid No. 1, except new roof assembly is to consist of: two-ply granular surfaced modified bitumen roof membrane in lieu of 4-ply built-up roofing system.
   3. *Alternate No. 3 – Exposed Fastener Replacement:* Replace screw fasteners and neoprene washers at metal panel roofs to remain.
   4. *Alternate No. 4 – Sheet Metal Flashing Alternate Materials:* Provide bonderized sheet metal flashing in lieu of prefinished aluminum.

B. Procedures:

1. Upon notification of alternates selected by the Owner, inform subcontractors of selected alternates and of changes in the Work due to selection or rejection of alternates.
2. Execute accepted alternates under the same conditions as other work of the Contract.
3. Modify or adjust affected adjacent Work as necessary to completely integrate the Work of an alternate into Project.

1.5 SUBSTITUTION PROCEDURES

A. Definitions:
   1. Substitutions: Changes proposed by Contractor in products, materials, equipment, or methods of construction from those required by Contract Documents.
      a. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
      b. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

B. Submittals:
   1. Substitution Requests: Submit three copies of request for consideration. Use CSI Form 13.1A or similar form. Identify product or fabrication or installation method to be replaced. Include Specification section and Drawing numbers and titles.
      a. Provide the following information. If the following information is not provided, Architect/Engineer may return requests without action, except to record noncompliance with these requirements.
         1) Statement indicating why specified product, fabrication, or installation cannot be provided, if applicable.
         2) Product Data, including drawings and descriptions of products, and fabrication and installation procedures. Where applicable or requested, include:
            a) Samples.
            b) Certificates and qualification data.
         3) Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
            a) Research reports evidencing compliance with the building code in effect for Project.
            b) Necessary approvals of public authorities having jurisdiction.
         4) A detailed comparison of significant qualities of proposed substitution with those of specified Work. Include an annotated copy of applicable Specification section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from specified Work.
         5) List of similar installations for completed projects with project names and addresses and names and addresses of architect/engineers and owners.
         6) Coordination information, including a list of changes or modifications needed to other portions of Work that will be necessary to accommodate proposed substitution.
         7) Cost information and a detailed comparison of Contractor's construction schedule using proposed substitution compared to specified product, including the effect on overall Contract Time. Include proposal of change, if any, in Contract Sum or Contract Time.

8) Contractor's certification that proposed substitution complies with requirements in Contract Documents, including specified warranty, except as indicated in substitution request; is compatible with other portions of Work and other products; and is appropriate for applications indicated and will produce indicated results.
   a) Investigate and document compatibility of proposed substitution with related products and materials. Engage qualified testing agency to perform compatibility tests recommended by manufacturer.
9) Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of the proposed substitution to produce the indicated results.

b. In addition, for substitutions of convenience, requested substitution must:
   1) Offer Owner substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect/Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
   2) Not require extensive revisions to Contract Documents.
c. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not less than 14 days prior to time required for preparation and review of related submittals.
d. Substitutions for Convenience: Not allowed**.**

2. Architect/Engineer's Action: If necessary, Architect/Engineer will request additional information or documentation for evaluation within seven days of receipt of substitution request. Architect/Engineer will notify Contractor of acceptance or rejection of proposed substitution within 14 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
   a. Acceptance or rejection of proposed substitutions shall be at the sole discretion of Architect/Engineer, whose decision is final.
   b. Accepted substitution will be incorporated into the Contract by Change Order, Construction Change Directive, or Architect/Engineer's Supplemental Instructions for minor changes in Work.

C. Modify or adjust Work as necessary to integrate work of approved substitutions.

1.6 CONTRACT MODIFICATION PROCEDURES

A. Minor Changes in Work: Architect/Engineer will issue supplemental instructions authorizing minor changes in Work, not involving adjustment to Contract Sum or Contract Time, on AIA Document G710, Architect’s Supplemental Instructions**.**

B. Proposal Requests:
   1. Owner-Initiated Proposal Requests: Architect/Engineer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or Contract Time. The description may include supplemental or revised Drawings and Specifications.
      a. Proposal Requests issued by the Architect/Engineer are for information only and are not instructions to either stop Work or execute the proposed change.
      b. Within seven calendar days after receipt of the Proposal Request, submit adjustments to the Contract Sum and Contract Time necessary to execute change.

2. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, propose changes by submitting a request for change to the Architect/Engineer.
    a. Include a statement outlining reasons for the change and provide a complete description of the proposed change.
    b. Submit adjustments to the Contract Sum and Contract Time necessary to execute the change within 21 days of becoming aware of latent or unforeseen condition. Owner will reject claims submitted later than 21 days after latent or unforeseen condition becomes known.
3. Indicate the effect of the proposed change on the Work, and adjustments to the Contract Sum and Contract Time necessary to execute the change.
    a. Include quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Do not include Contractor's or subcontractor's indirect expense unless it is clearly shown that the nature or extent of Work has changed from that which could have been foreseen from information in the Contract Documents. No change to Contractor's indirect expense is permitted for the selection of higher- or lower-priced materials, or systems of the same scope and nature as originally indicated.
    e. Include an updated Construction Schedule that indicates the effect of the change, including changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of Contract Time.
    f. Comply with requirements in Section 01 60 00 if proposed change requires substitution of one product or system for product or system specified.
4. Use AIA Document G709, Work Changes Proposal Request, for Proposal Requests.

C. Construction Change Directives:
1. Architect/Engineer may issue a Construction Change Directive on AIA Document G714, Construction Change Directive, instructing Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
    a. A Construction Change Directive contains a complete description of the change in Work, including a method to determine changes in the Contract Sum and Contract Time.
2. Maintain detailed records on time and material basis of Work required by Construction Change Directive.
    a. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

D. Change Order Procedures:
1. Owner will authorize a change in the Contract by executing AIA Document G701, Change Order.
2. Allowance Adjustment: Change Orders for allowance items will decrease allowance amounts, and have no effect on Contract Amount, until the allowance amount has been depleted.
    a. If requested, prepare an explanation and documentation to substantiate distribution of overhead costs and other margins claimed.

1.7 PAYMENT PROCEDURES

A. Schedule of Values:
   1. Format and Content:
      a. Include the following Project identification.
         1) Project name and location.
         2) Name of Architect/Engineer.
         3) Contractor's name and address.
         4) Date of submittal.
      b. Provide a breakdown of the Contract Sum in sufficient detail to facilitate an evaluation of the Applications for Payment.
         1) Coordinate with Project Manual Table of Contents.
         2) Provide separate line items for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of Work.
         3) Provide separate line item for each part of Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
         4) Where Work is phased, include effects of phasing in Schedule of Values.
         5) Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
         6) Show temporary facilities and other major cost items that are not a direct cost of actual Work-in-place, as either separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
         7) Round amounts to nearest whole dollar; total shall equal Contract Sum.
   2. Coordinate the Schedule of Values with other administrative forms and schedules, including the Construction Schedule, submittal schedule, and application for payment forms.
   3. Submit the Schedule of Values to Architect/Engineer at least two weeks before submittal of the initial Application for Payment.
   4. Update and resubmit the Schedule of Values before the next Application for Payment when a Change Order results in a change in the Contract Sum.

B. Applications for Payment:
   1. Payment Application Form: Use AIA Document G702 and AIA Document G703 Continuation Sheets as the form for Applications for Payment.
   2. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect/Engineer and paid by Owner.
   3. Application Preparation: Complete every entry on form. Notarize and execute by person authorized to sign legal documents on behalf of Contractor. Architect/Engineer will return incomplete applications without action.
      a. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedule if revisions were made.
      b. Include amounts of Change Orders and Construction Change Directives issued before the last day of the construction period covered by the application.
   4. Submittal: Submit three signed and notarized original copies of each Application for Payment to Architect/Engineer by method ensuring receipt. One copy shall include waivers of lien and similar attachments if required. Send the submittal with a transmittal form listing attachments and recording appropriate information about the application.

5. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from every entity who is lawfully entitled to file mechanic's lien arising out of the Contract and related to the Work covered by payment.
   a. Submit partial waivers on each item for the amount requested in the application, after deduction for retainage on each item.
   b. When the application shows completion of an item, submit final or full waiver.
   c. Execute waiver forms in a manner acceptable to Owner.
   d. Owner reserves the right to designate which entities involved in Work must submit waivers.
6. Application for Payment at Substantial Completion: After issuing a Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of Work claimed as substantially complete.
   a. Include documentation supporting claim that Work is substantially complete and statement showing accounting of changes to Contract Sum.
   b. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of Work.
7. Final Payment Application: Submit a final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
   a. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
   b. Updated final statement, accounting for final changes to the Contract Sum.
   c. AIA Document G706, Contractor's Affidavit of Payment of Debts and Claims.
   d. AIA Document G706A, Contractor's Affidavit of Release of Liens.
   e. AIA Document G707, Consent of Surety to Final Payment.
   f. Evidence that claims have been settled.
   g. Final meter readings for utilities, measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of Work.
   h. Final liquidated damages settlement statement.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Project coordination and supervision, meetings, schedules, and photographic documentation.

1.2 COORDINATION

A. Project has special requirements for coordinating Work because of the following conditions.
   1. Complex nature and phasing of Work activities.
   2. Partial occupancy of facility by Owner during construction period.
   3. Residential nature of neighborhood.
   4. Hazardous nature of Work.

B. Provide supervision, planning, scheduling, and control to perform Work and meet requirements of Contract Documents.
   1. Schedule and coordinate construction operations in sequence required to obtain best results where installation of one part of Work depends on installation of other components, before or after its own installation.
   2. Notify affected parties in writing, as necessary, of special procedures required for coordination.
   3. Coordinate scheduling and timing of required administrative procedures to ensure orderly progress of Work. Such administrative activities include the following:
      a. Preparation of a construction schedule and Schedule of Values.
      b. Installation and removal of temporary facilities and controls.
      c. Delivery and processing of submittals.
      d. Progress and pre-installation meetings.
      e. Project closeout activities.

C. Notify the Owner's Representative in writing 48 hours in advance of time when construction areas will be returned to the Owner for use or when new Work areas are required.

D. Submit a building access plan to Owner's Representative for review and written approval at least ten working days prior to its implementation. Include locations of temporary enclosures and storage.

1.3 SUPERVISION

A. Provide a project superintendent at the Site a minimum of eight hours per day during the progress of the Work. The superintendent shall be literate and fluent in English.

1.4 MEETINGS

A. General:
   1. Schedule and conduct meetings at the Site, unless otherwise indicated.

2. Notify participants, others involved, and individuals whose presence is required, of the date and time of the meeting. Notify the Owner and Architect/Engineer of scheduled meeting dates and times.
3. Agenda: Prepare a meeting agenda and distribute agenda to invited attendees.
4. Minutes: Record significant discussions, agreements, and disagreements, and distribute the meeting minutes to concerned parties, including the Owner and Architect/Engineer, within three days of the meeting.

B. Pre-Construction Meeting:
1. Conduct a pre-construction meeting before Work begins. The Owner's Representative, Architect/Engineer, and responsible representatives from major subcontractors and other concerned parties shall be present. Participants shall be familiar with the Project and authorized to conclude matters relating to the Work.
2. Describe in detail when each portion of the Work is to be performed, based on the construction schedule. Discuss phasing and critical work sequencing. Subcontractors shall participate in discussion.
3. Discuss the following:
    a. Subcontractors, including responsibilities and personnel assignments.
    b. Key personnel, including contact information, and their duties.
    c. Procedures for requests for interpretations, field decisions, and change orders.
    d. Submittal procedures.
    e. Procedures for processing Applications for Payment.
    f. Use of premises, including office and storage areas, parking availability, and Owner's requirements.
    g. Work hours and restrictions.
    h. Deliveries and priorities.
    i. Temporary facilities and controls.
    j. Testing and inspecting requirements.
    k. Housekeeping procedures, including progress cleaning and construction waste management and recycling.
    l. Preparation of record documents.
4. Discuss questions that Contractor or subcontractors may have about Work or construction schedule.
5. The Architect/Engineer will interpret the Contract Documents.
6. The Owner's Representative will discuss partial occupancy and use of the facility during the construction and other Owner concerns.

C. Progress Meetings: Conduct biweekly progress meetings.
1. The Owner's Representative, Architect/Engineer, and representatives of each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be present. Participants shall be familiar with the Project and authorized to conclude matters relating to the Work.
2. Review and correct or approve the minutes of the previous progress meeting. Review items of significance that could affect the progress of the Work. Include topics for discussion as appropriate to the status of the Project.
3. Construction Schedule: Review the progress of the Work since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to the construction schedule. Determine how construction behind schedule will be expedited, and secure commitments from the parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

a. Review the schedule for the next period.

4. Review present and future needs of each entity present, including the following:
   a. Sequence of operations, interface requirements, and coordination of the Work.
   b. Status of submittals, deliveries, and off-site fabrication.
   c. Field observations, problems, and decisions.
   d. Quality and work standards, and status of corrective measures for deficient items.
   e. Status of payment requests, requests for interpretations, proposal requests, pending changes, Change Orders, and pending claims and disputes.
5. If Work is proceeding according to the construction schedule, the Architect/Engineer may cancel the next meeting.

1.5 SCHEDULES

A. Prepare a construction schedule for the entire Work, including a complete sequence of construction by activity. The schedule shall be in the form of a horizontal bar chart, with a separate horizontal bar for each construction activity and the first workday of each week identified.
   1. Provide beginning and completion dates for each construction activity and phase.
      a. Indicate the completion percentage for each activity on the first day of each month.
      b. Indicate time periods when portions of the Site will not be available for Owner use and when stairs and elevators will be used for construction activities.
      c. Indicate periods of interruption of utility services.
   2. Provide submittal dates and dates when reviewed submittals will be required.
   3. Provide product procurement and delivery dates.
   4. Provide dates for the selection of finishes.
   5. Provide separate sub-schedules as necessary to provide more detail for critical portions of the schedule.

B. Submit the construction schedule to the Owner's Representative and Architect/Engineer within one week after the date of the Notice to Proceed.

C. Update the schedule on a monthly basis or when actual construction progress deviates significantly from that shown on the current schedule.
   1. Show all changes that have occurred since the previous schedule was prepared, including the progress of each activity, current completion dates, and major changes in scope.
   2. Provide a narrative report that discusses the following items and their effects on the schedule.
      a. Progress of each activity and current completion date, compared to the previous schedule.
      b. Description of changes.
      c. Problem areas, including current and anticipated delay factors.
      d. Corrective actions taken or proposed.
   3. Resubmit to the Owner's Representative and Architect/Engineer.

D. Distribute the current schedule to the job-site file, subcontractors, and other affected parties. Instruct parties to report any inability to comply and to provide a detailed explanation with suggested remedies.

1.6 PHOTOGRAPHIC DOCUMENTATION

A. Photograph existing conditions that are important to the construction or that deviate substantially from the Contract Documents; significant conditions that will be concealed by the

Work; finish surfaces that might be misconstrued as damage caused by removal or other Work operations; and immediate follow-up when on-site events result in construction damage or loss.

1. Photographs shall be in focus and shall clearly show the condition.
2. Maintain a complete set of photographs at the Site, with an image log including:
    a. Name of Project.
    b. Unique sequential identifier.
    c. Date and time photograph was taken.
    d. Description of vantage point, indicating location, direction by compass point, and elevation or story of construction or key plan with photograph locations, or both.

B. Within two days of taking photographs, submit the complete digital-image electronic file with image log to the Architect/Engineer and Owner's Representative. Submit digital images exactly as originally recorded in the camera, without alteration, manipulation, editing, or modification.
    1. Submit photographs of pre-existing damage prior to beginning Work in area.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for submitting shop drawings, product data, samples, and other submittals.

1.2 SUBMITTALS

A. General:
   1. Format:
      a. PDF Submittals: Prepare submittals as a PDF package, incorporating complete information into one PDF file for each product or material. Name each PDF file with submittal number
   2. Submittal Identification: Include the following information in each submittal.
      a. Project name.
      b. Date.
      c. Names of Architect/Engineer, Contractor, subcontractor, manufacturer, supplier, and firm or entity that prepared submittal, as appropriate.
      d. Identification information, such as the number and title of the appropriate Specification section, Drawing number and detail references, location(s) where product is to be installed, or other necessary information.
      e. Label each submittal with the six digit Specification section number followed by a decimal point and then sequential number (e.g., 042000.01). On resubmittals, include alphabetic suffix after another decimal point (e.g., 042000.01.A).
      f. Provide space approximately 4 in. by 6 in. on or beside the label or title block for the Contractor's approval stamp and the action stamp of the Architect/Engineer.
   3. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not use reproductions of the Contract Documents or standard printed data.
   1. Preparation: Fully illustrate requirements outlined in the Contract Documents. Include the following information, as applicable:
      a. Dimensions, including notation of those established by field measurement.
      b. Identification of products.
      c. Fabrication and installation drawings.
      d. Roughing-in and setting diagrams.
      e. Shopwork manufacturing instructions.
      f. Schedules.
      g. Notation of coordination requirements.
      h. Relationship to adjoining construction clearly indicated.
      i. Seal and signature of professional Engineer if specified.

C. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
   1. Clearly mark each copy of the submittal to show which products and options are applicable. Delete information which is not applicable. Supplement standard information with project-specific information.
   2. Include the following information, as applicable:
      a. Manufacturer's catalog cuts, product specifications, schematic drawings, installation instructions, and written recommendations.
      b. Compliance with referenced standards.
      c. Testing by recognized testing agency.
   3. Submit the number of copies required by the Contractor plus two that will be retained by the Architect/Engineer, or digital file. Mark up and retain one returned copy as a Project Record Document.

D. Samples: Submit physical samples to illustrate functional and aesthetic characteristics of the product, for review of materials and workmanship, for compatibility with other elements, and for comparison with the actual installed elements.
   1. Samples shall be of sufficient size to show the general visual effect.
   2. Include sets of at least three samples that show the full range of color, pattern, texture, graining, and finish.
   3. Transmit samples that contain multiple, related components, such as accessories, together in one submittal package.
   4. Identification: Attach a label on an unexposed side of each sample that includes the following:
      a. Generic description of sample.
      b. Product name, name of manufacturer, and sample source.
      c. Number and title of appropriate Specification section.
   5. Samples for Initial Selection: Submit two full sets of units or sections of units from the supplier's product line, showing the full range of colors, textures, and patterns available. Architect/Engineer will retain one set and return one set with the options selected.
   6. Samples for Verification: Submit full-size units or samples of the size indicated, prepared from the same material to be used for the Work, cured and finished in the manner specified, and physically identical with material or product proposed for use, and that show the full range of color and texture variations expected.
      a. Submit the number of samples required by the Contractor plus one that will be retained by the Architect/Engineer. Mark up and retain one returned sample as a Project Record Document.
   7. Maintain approved samples at the Site, available for quality-control comparisons during construction. Samples may be used to determine final acceptance of construction associated with the sample.

1.3 SUBMITTAL PROCEDURE

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

B. Coordinate the preparation and processing of submittals with performance of construction activities.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, submittals requiring concurrent review, and related activities that require sequential activity.

2. Allow sufficient time for submittal and resubmittal review. Failure to provide sufficient time for submittal and resubmittal reviews will not be a basis for extension of the Contract Time.

C. Review Time:
   1. Allow ten days for the review of each submittal and resubmittal.
   2. Allow additional time if coordination with subsequent submittals is required. The Architect/Engineer will advise the Contractor when the submittal being processed must be delayed for coordination.
   3. Time for review shall commence when the Architect/Engineer receives the submittal.

D. Contractor Review:
   1. Review each submittal, coordinate with other Work, and check for compliance with the Contract Documents. Verify field dimensions and conditions. Identify variations from the Contract Documents and product or system limitations that may be detrimental to the successful performance of completed Work. Note corrections.
   2. Before submitting to the Architect/Engineer, stamp or electronically mark-up, with a uniform approval stamp, including the reviewer's name; the date of Contractor's approval; and a statement certifying that the submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
   3. Submittal Log: Maintain submittal log that lists submitted items per specification section. Record dates submitted, dates returned, and disposition of each item based on Architect/Engineer's review. Submit final log showing approved materials at Substantial Completion.

E. Architect/Engineer Action:
   1. Architect/Engineer will not review submittals that are received from sources other than the Contractor or that do not bear the Contractor's approval stamp, and will return them without action to the Contractor.
   2. Architect/Engineer will review each submittal for conformance with the design concept of the Project and compliance with the Contract Documents. Architect/Engineer will make marks to indicate corrections or modifications required, and stamp or electronically mark-up with an action stamp. The action stamp will include the reviewer's name, date of review, and required Contractor action. Contractor actions may include making corrections or modifications to the submittal or resubmitting the submittal, or both.

F. Resubmittals: Make resubmittals in the same form and number of copies as the initial submittal.
   1. Note the date and content of previous submittal.
   2. Note the date and content of the revision in the label or title block and clearly indicate the extent of the revision and changes made.
   3. Resubmit until the Architect/Engineer indicates that no resubmittal is required.

G. Distribution: Furnish final copies (paper or digital) to the Site file, record documents file, manufacturers, subcontractors, suppliers, fabricators, installers, public authorities having jurisdiction, and others as necessary for performance of construction activities. Show the distribution on the transmittal forms.

H. For construction, use only the final submittals with the Architect/Engineer's action stamp.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 01 35 91

HISTORIC TREATMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes general protection and treatment procedures for designated historic spaces, areas, rooms, and surfaces in entire Project and the following specific work:
   1. Temporary protection of historic materials.
   2. Protection during use of heat generating materials.
   3. Historic Preservation treatment procedures.

1.3 DEFINITIONS

A. Consolidate: To strengthen loose or deteriorated materials in place.

B. Dismantle: To disassemble and detach items by hand from existing construction to the limits indicated, using small hand tools and small one-hand power tools, so as to protect nearby historic surfaces; and legally dispose of dismantled items off-site, unless indicated to be salvaged or reinstalled.

C. Existing to Remain: Existing items that are not to be removed or dismantled.

D. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by Architect.

E. Reconstruct: To remove existing item, replicate damaged or missing components, and reinstall in original position.

F. Refinish: To remove existing finishes to base material and apply new finish to match original, or as otherwise indicated.

G. Reinstall: To protect removed or dismantled item, repair and clean it as indicated for reuse, and reinstall it in original position, or where indicated.

H. Remove: Specifically for historic spaces, areas, rooms, and surfaces, the term means to detach an item from existing construction to the limits indicated, using hand tools and hand-operated power equipment, and legally dispose of it off-site, unless indicated to be salvaged or reinstalled.

I. Repair: To correct damage and defects, retaining existing materials, features, and finishes while employing as little new material as possible. Includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials.

J. Replace: To remove, duplicate, and reinstall entire item with new material. The original item is the pattern for creating duplicates unless otherwise indicated.

K. Replicate: To reproduce in exact detail, materials, and finish unless otherwise indicated.

L. Reproduce: To fabricate a new item, accurate in detail to the original, and in either the same or a similar material as the original, unless otherwise indicated.

M. Restore: To consolidate, replicate, reproduce, repair, and refinish as required to achieve the indicated results.

N. Retain: To keep existing items that are not to be removed or dismantled.

O. Reversible: New construction work, treatments, or processes that can be removed or undone in the future without damaging historic materials unless otherwise indicated.

P. Salvage: To protect removed or dismantled items and deliver them to Owner ready for reuse.

Q. Stabilize: To provide structural reinforcement of unsafe or deteriorated items while maintaining the essential form as it exists at present; also, to reestablish a weather-resistant enclosure.

R. Strip: To remove existing finish down to base material unless otherwise indicated.

1.4 MATERIALS OWNERSHIP

A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during removal and dismantling work remain Owner's property. Carefully dismantle and salvage each item or object.

1.5 INFORMATIONAL SUBMITTALS

A. Construction Schedule for Historic Treatments: Indicate for entire Project the following for each activity to be performed in historic spaces, areas, and rooms, and on historic surfaces:
   1. Detailed sequence of historic treatment work, with starting and ending dates, coordinated with Owner's continuing operations and other known work in progress.
   2. Utility Services: Indicate how long utility services will be interrupted. Coordinate shutoff, capping, and continuation of utility services.
   3. Coordination of Owner's partial occupancy of completed Work.
   4. Equipment Data: List gross loaded weight, axle-load distribution, and wheel-base dimension data for mobile and heavy equipment proposed for use. Do not use such equipment without Contractor's professional engineer's certification that the structure can support the imposed loadings without damage.

B. Qualification Data: See specific specification sections for requirements of individual subcontractor requirements.

C. Preconstruction Documentation: Show preexisting conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by Contractor's historic treatment operations.

D. Historic Treatment Program: Submit before work begins.

E. Inventory of Salvaged Items: After removal or dismantling work is complete, submit a list of items that have been salvaged.

F. Fire-Prevention Plan: Prepare a written plan for preventing fires during the Work, including placement of fire extinguishers, fire blankets, rag buckets, and other fire-prevention devices during each phase or process. Coordinate plan with Owner's fire-protection equipment and requirements. Include each fire watch's training, duties, and authority to enforce fire safety.

G. Regulatory Requirements: Comply with notification regulations of authorities having jurisdiction before beginning removal and dismantling work. Comply with hauling and disposal regulations of authorities having jurisdiction.

H. Standards: Comply with ANSI/ASSE A10.6.

I. Historic Treatment Preconstruction Conference: Conduct conference at Project site.

1.6 STORAGE AND PROTECTION OF HISTORIC MATERIALS

A. Salvaged Historic Materials:
1. Clean only loose debris from salvaged historic items unless more extensive cleaning is indicated.
2. Pack or crate items after cleaning; cushion against damage during handling. Label contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

B. Historic Materials for Reinstallation:
1. Repair and clean historic items as indicated and to functional condition for reuse.
2. Pack or crate items after cleaning and repairing; cushion against damage during handling. Label contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment unless otherwise indicated. Provide connections, supports, and miscellaneous materials to make item functional for use indicated.

C. Existing Historic Materials to Remain: Protect construction indicated to remain against damage and soiling from construction work. Where permitted by Architect, items may be dismantled and taken to a suitable, protected storage location during construction work and reinstalled in their original locations after historic treatment and construction work in the vicinity is complete.

D. Storage and Protection: When taken from their existing locations, catalog and store historic items within a weathertight enclosure where they are protected from wetting by rain, condensation, and ground water.

1. Identify each item with a nonpermanent mark to document its original location. Indicate original locations on plans elevations, sections, or photographs by annotating the identifying marks.
2. Secure stored materials to protect from theft.

1.7 PROJECT CONDITIONS

A. General Size Limitation in Historic Spaces: Materials, products, and equipment used for performing the Work and for transporting debris, materials, and products shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, including temporary protection, by 12 inches (300 mm) or more.

B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with removal and dismantling work.

C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work. If the Contractor believes hazardous materials are present, the Owner must be notified immediately.

1.8 COORDINATION

A. Coordinate historic treatment procedures in this Section with public circulation patterns at Project site. Some work is near public circulation patterns. Public circulation patterns cannot be closed off entirely, and in places can be only temporarily redirected around small areas of work. Plan and execute the Work accordingly.

PART 2 - PRODUCTS - (Not used)

PART 3 - EXECUTION

3.1 PROTECTION, GENERAL

A. Comply with temporary barrier requirements in Division 01 Section 01 50 00 "Temporary Facilities and Controls."

B. Ensure that supervisory personnel are on-site and on duty when historic treatment work begins and during its progress.

C. Protect persons, motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm resulting from historic treatment procedures.
1. Use only proven protection methods, appropriate to each area and surface being protected.
2. Provide barricades, barriers, and temporary directional signage to exclude public from areas where historic treatment work is being performed.
3. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of historic treatment work.
4. Contain dust and debris generated by removal and dismantling work and prevent it from reaching the public or adjacent surfaces.
5. Provide shoring, bracing, and supports as necessary. Do not overload structural elements.
6. Protect floors and other surfaces along haul routes from damage, wear, and staining.

7. Provide supplemental sound-control treatment to isolate removal and dismantling work from other areas of the building.

D. Temporary Protection of Historic Materials:
   1. Protect existing historic materials with temporary protections and construction. Do not deface or remove existing materials.
   2. Do not attach temporary protection to historic surfaces except as indicated as part of the historic treatment program and approved by Architect.

E. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.

F. Utility and Communications Services:
   1. Notify Owner, Architect, authorities having jurisdiction, and entities owning or controlling wires, conduits, pipes, and other services affected by the historic treatment work before commencing operations.
   2. Disconnect and cap pipes and services as required by authorities having jurisdiction, as required for the historic treatment work.

3.2 PROTECTION FROM FIRE

A. General: Follow fire-prevention plan and the following.
   1. Comply with NFPA 241 requirements unless otherwise indicated. Perform duties entitled "Owner's Responsibility for Fire Protection."
   2. Remove and keep area free of combustibles including, rubbish, paper, waste, and chemicals, except to the degree necessary for the immediate work.
      a. If combustible material cannot be removed, provide fire blankets to cover such materials.
   3. Prohibit smoking by all persons within Project work and staging areas except where specifically designated for smoking.

B. Heat-Generating Equipment and Combustible Materials: Comply with the following procedures while performing work with heat-generating equipment or highly combustible materials, including welding, torch-cutting, soldering, brazing, paint removal with heat, or other operations where open flames or implements utilizing high heat or combustible solvents and chemicals are anticipated:
   1. As far as practical, restrict heat-generating equipment to shop areas or outside the building.
   2. Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.
   3. Use fireproof baffles to prevent flames, sparks, hot gases, or other high-temperature material from reaching surrounding combustible material.
   4. Prevent the spread of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings.
   5. Fire Watch: Before working with heat-generating equipment or highly combustible materials, station personnel to serve as a fire watch at each location where such work is performed. Fire-watch personnel shall have the authority to enforce fire safety. Station fire watch according to NFPA 51B, NFPA 241.

C. Fire Extinguishers, Fire Blankets, and Rag Buckets: Maintain fire extinguishers, fire blankets,

and rag buckets for disposal of rags with combustible liquids. Maintain each as suitable for the type of fire risk in each work area. Ensure that nearby personnel and the fire watch personnel are trained in fire-extinguisher and blanket operation.

3.3 GENERAL HISTORIC TREATMENT

A. Ensure that supervisory personnel are present when historic treatment work begins and during its progress.

B. Halt the process of deterioration and stabilize conditions unless otherwise indicated. Perform work as indicated on Drawings. Follow the procedures in subparagraphs below and procedures approved in historic treatment program:
   1. Retain as much existing material as possible; repair and consolidate rather than replace.
   2. Use additional material or structure to reinforce, strengthen, prop, tie, and support existing material or structure.
   3. Use reversible processes wherever possible.
   4. Use historically accurate repair and replacement materials and techniques unless otherwise indicated.

C. Notify Architect of visible changes in the integrity of material or components whether due to environmental causes including biological attack, UV degradation, freezing, or thawing; or due to structural defects including cracks, movement, or distortion.
   1. Do not proceed with the work in question until directed by Architect.

D. Where missing features are indicated to be repaired or replaced, provide features whose designs are based on accurate duplications rather than on conjectural designs, subject to approval of Architect.

E. Where Work requires existing features to be removed or dismantled and reinstalled, perform these operations without damage to the material itself, to adjacent materials, or to the substrate.

F. Identify new and replacement materials and features with permanent marks hidden in the completed work to distinguish them from original materials. Record a legend of identification marks and the locations of the items on record Drawings.

END OF SECTION

SECTION 01 43 39

MOCK-UPS

GENERAL

1.1 SUMMARY

A. This Section includes mock-ups for the various building enclosure repair types. Specific mock-ups are listed in this Section and refer to Related Sections for material specific mock-ups defined in each specification section.

B. Related Sections:
   1. Section 07 51 13 – Built-Up Asphalt Roofing
   2. Section 07 54 19 – Thermoplastic Membrane Roofing
   3. Section 07 62 00 - Sheet Metal and Membrane Flashing
   4. Section 07 92 00 - Joint Sealants

1.2 DESCRIPTION

A. Furnish all labor, materials, tools, and equipment and perform all Work necessary for and incidental to constructing the field mock-ups of the Work. The mock-ups are to be on the building and, when approved, will be part of work. This is to include:
   1. General In-Place Mockup Repairs: At the start of each of the following work types, Contractor is to perform in-place mockups for review by the A/E prior to performing full scale repairs. Installation of all various roof assembly component types. Installation of transition flashings between the roof system and surrounding building systems.
      a. Do not commence work outlined in Specifications or Drawings until related mock-up is completed and approved by Architect/Engineer and the Owner.
      b. The purpose of the mock-up is to provide the Contractor, Owner, and Architect/Engineer with a unified understanding of the type and quality of Work that will be necessary to satisfy the requirements of the entire project.
      c. Installation and field testing shall be performed in accordance with this Project Manual. All Work must be performed with tools similar to those that will be used on the remainder of the Project.
      d. If Architect/Engineer determines mockup does not comply with requirements, modify mock-up or construct new mockup until mockup is approved.
      e. Notify Owner and Architect/Engineer seven days in advance of date when mock-ups will be constructed.

1.3 CONTRACTORS RESPONSIBILITIES

A. Secure and deliver adequate quantities of representational samples of materials proposed to be used and which require testing.

B. Furnish copies of products test reports as required.

C. Furnish incidental labor and facilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Include all materials specified for this project in the related specification sections.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Field mock-up shall be representative of the finished work in every respect and shall be judged by the Owner for aesthetic acceptability. Unsatisfactory work shall be replaced as directed.

B. If in the course of erecting, and inspecting the mock-up, changes are required to satisfy the project requirements or existing conditions, substitutions shall be made in accordance with the contract.

C. All concealed portions of the mock-up shall be inspected by the A/E and, if approved, photographed for future reference prior to the finish material being installed.

D. When completed, and accepted by the Architect/Engineer and Owner, the mock-up shall become the standard of quality for the remainder of the project. The completed mock-ups may become part of the finished repair of the building.

E. Mock-up locations to be selected by Architect/Engineer and are as shown in the Drawings.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Requirements for installation, maintenance, and removal of temporary utilities, facilities, controls, and construction aids needed for the Work, as well as cleaning requirements.
   2. Preconstruction Condition Survey of project site and adjacent areas affected by the Work to document pre-existing damage. Submit documentation of pre-existing damage, if any, to Architect/Engineer prior to commencing Work.

1.2 QUALITY ASSURANCE

A. Comply with applicable federal, state, and local laws, regulations, and ordinances.

B. Conduct periodic inspections to ensure that construction facilities and temporary controls conform to pertinent requirements.

C. Do not allow accumulation of waste, debris, construction water, rubbish, etc. that can create hazardous conditions.

D. Maintain temporary facilities and controls in proper and safe condition throughout progress of the Work.

1.3 PROJECT SITE CONDITIONS

A. Fire Protection:
   1. Regulations: Comply with applicable federal, state, and local laws, regulations, and ordinances.
   2. Fires: Do not permit lighting of fires about premises. Use due diligence to see that such prohibition is enforced. Promptly remove debris and waste materials from construction site to prevent accumulation of combustibles on site.
   3. Smoking: Restrict smoking to designated smoking break areas. Furnish and post “NO SMOKING" signs at appropriate locations throughout job site where operations are conducted.
   4. Flammables: Store gasoline and other fuels in safety cans meeting OSHA, NFPA, and Factory Mutual standards. Store flammables away from hazardous work areas.

B. Security
   1. The Contractor shall provide for the security of materials and equipment stored at the site.

C. Limit of Contractor's Operations:
   1. Work Areas: Confine work areas to limits of construction areas. General schedule of operations and use project site shall be subject to approval of the Owner or Architect/Engineer.

2. Access: Uncontrolled or unrestricted access for materials, debris or equipment will not be permitted. Control access routes and methods so as to minimize disruption of Owner's operations. Access to the Work shall be from the exterior.
3. Cooperate with the Owner's Agent in the scheduling and execution of the Work and use of the site. Notify and obtain authorization prior to commencement of any work which would interfere with normal occupant use of the stadium and site.
4. Parking: Contractor parking is only to be allowed in areas preapproved by Owner.

PART 2 PRODUCTS

2.1 UTILITIES

A. Electric Power:
1. The Owner's Agent shall provide the existing power at existing locations and capacities. Supplemental power, if necessary, shall be provided by the Contractor.
2. All supplemental equipment and wiring for power shall be in accordance with the applicable provisions of the governing codes. All temporary wiring shall be maintained in a safe manner and utilized so as not to constitute a hazard to persons or property.
3. If parts of the permanent electrical systems are to be used, the Contractor must: (1) obtain approval of the Owner's Agent; (2) assume full responsibility for systems used, including cleaning and restoration, and (3) remove all temporary facilities upon completion.
4. All electrical cords used by Contractor shall contain ground fault circuit interrupters.

A. Water:
1. The Owner's Agent shall permit access to water at existing locations and capacities for the Contractor. The Contractor shall provide whatever temporary valves, fittings, and lines as necessary to distribute water.
2. If parts of the permanent water systems are to be used, the Contractor must: (1) obtain approval of the Owner's Agent; (2) assume full responsibility for systems used, including cleaning and restoration, and (3) remove all temporary facilities upon completion.

2.2 MECHANICAL, ELECTRICAL, AND PLUMBING

A. Provide temporary heating, cooling, ventilating, lighting, fire protection, and plumbing as required for proper execution of the Work.

2.3 SANITARY FACILITIES

A. Contractor may use bathroom facilities at the building where designated by the Owner's Agent. Maintain facilities in a sanitary condition at all times.

2.4 STORAGE AND STAGING AREAS

A. Owner will allocate limited space on property for storage of materials and equipment.

B. Locate construction equipment, material storage and temporary facilities within the permitted areas.

C. When storing materials, do not exceed live load capacity of supporting framing.

2.5 ENCLOSURES

A. Provide and maintain for duration of the Work all scaffolds, tarpaulins, dust and debris enclosures, canopies, warning signs, steps, platforms, bridges, and other temporary construction necessary for proper completion of the Work in compliance with pertinent safety and other regulations.

B. Maintain open or relocate public sidewalks in a condition accessible to foot traffic and in conformance with applicable codes and ordinances.

C. Provide protective overhead canopies as required by authorities having jurisdiction, when work is occurring overhead or adjacent to those areas. Provide overhead protection in compliance with applicable codes and ordinances with respect to installation and maintenance of sidewalk protection and public safety. Overhead canopies shall include, at a minimum, a 4-ft high protective screen fence along the outside edge of the top of the canopy to prevent debris from bouncing off of the top of the canopy. Canopies shall be constructed of standard heavy-duty pipe scaffolding members. All elements of the canopy shall be secured to prevent damage or uplift during high wind conditions.

D. All pipe or systems type scaffolding must be fully enclosed with debris netting/mesh or other approved enclosure. For security purposes, Contractor must install plywood or other hard surface enclosure on the lower 16 ft. (height) of any fixed scaffolding. All scaffolding enclosures are to be approved in advance by the Owner.

E. The Contractor shall be fully responsible for any and all injuries and property damage that occurs due to objects or debris falling from the building or the scaffolding work platforms during the entire course of the project.

F. Maintain means of egress required by governing building codes for continual use of affected buildings.

G. Construction Warning Signs: Provide and maintain suitable signs and barricades to warn public and building occupants of Work in progress.

2.6 SCAFFOLDS AND LADDERS

A. Scaffolds and Ladders: Furnish, erect, maintain, and move scaffolds and ladders required for the Work. Construct and maintain scaffolds in accordance with applicable federal, state, and local laws, regulations, and ordinances.

2.7 CLEANING MATERIALS

A. Limit materials and equipment to those that are compatible with surfaces being cleaned.

B. Limit materials and equipment to those that are approved by manufacturer of material to be cleaned.

C. Verify compatibility of cleaning materials at a small area prior to widespread use.

2.8 PROJECT SIGNS

A. Signs, bills, posters and other advertisements for any goods, services, or organizations will not be allowed on or about the site, unless specifically approved by the Owner's Agent in writing.

PART 3 EXECUTION

3.1 GENERAL

A. Maintain temporary facilities and controls as long as necessary for safe and proper completion of the Work.

B. Maintain drains and sewers clean and free of construction debris during all phases of Work.

C. Remove temporary facilities and controls as rapidly as progress of the Work will safely permit.

3.2 PROTECTION

A. Site Security: Provide daily inspection of project site and adjacent building areas while the Work is in progress and take necessary measures to secure these areas from theft, vandalism, and unlawful entry related to Contractor's activities on site.

B. Provide protection barricades, fencing, etc., required by applicable federal, state, and local laws, regulations, and ordinances.

C. Protect building components, roofing system, walks, drives, parking areas, vehicles, utilities, fire protection systems, landscaping, automatic sprinklers, and property, etc. adjacent to Work areas from damage. Remediate damage to above items as Work progresses in a manner satisfactory to Owner and at no cost to Owner.

D. The Contractor shall provide temporary first-aid facilities on the site.

E. The Contractor shall post emergency first aid, ambulance, and fire department information at the Project site in an unobstructed location.

3.3 HAZARD, NOISE, DUST, ODOR, AND VAPOR CONTROL

A. Hazards Control:
   1. Store propane, fuel oil, kerosene and other volatile or flammable materials or waste in covered metal containers and at locations as required by Federal, state, county, and City legal requirements, and as approved by the Owner's Agent.
   2. Prevent the accumulation of wastes that create hazardous conditions.
   3. Provide adequate ventilation during the use of volatile or noxious substances.

B. Noise control: The Contractor shall confine its hours of operations to those required by State, County and City laws and ordinances. Noise levels shall be held to a minimum considering the nature of the work.

C. Dust control: The Contractor shall take the necessary steps to keep dust within the levels established by the City and the Environmental Protection Agency.

D. Odor control: Take necessary precautions to prevent offensive odors related to primers, coatings, and other construction materials from entering the office space.

E. Vapor control: The Contractor shall restrict use of and vent all objectionable or noxious vapors produced during the work such that normal building operations are not disrupted. The Contractor shall assume full responsibility for any and all health damage claims caused by noxious vapors produced during work operations.

3.4 CLEANING

A. Remove demolition material, debris, construction water, and related rubbish on a daily basis.

B. Legally dispose of waste, debris, and rubbish at dump areas off Owner's property.

C. Properly dissipate construction water so that water does not accumulate or pond on drives, sidewalks, parking areas, or landscaped areas adjacent to or on property.

D. Maintain paved areas, including walks and parking areas in a broom-clean condition during the Work.

E. Maintain grass and landscaped areas in a rake-clean condition during the Work.

F. Do not allow items to be dropped or thrown from work areas above grade.

G. Schedule cleaning operations so that newly placed work is not damaged.

H. Remove and clean material spills as the Work progresses.

END OF SECTION

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. Closeout submittals.
   2. Final cleaning.

1.2 SUBMITTALS

A. Closeout submittals include, but are not necessarily limited to:
   1. Product List: Provide list of all propriety products used in the Work including product name, where used, and Manufacturer's product literature, if such was not previously submitted.
   2. Operation and maintenance manuals for items so listed in pertinent Sections of these Specifications.
   3. Warranties (Section 01 78 36, Section 07 51 13, 07 54 19, and Section 07 92 00).
   4. Evidence of compliance with the requirements of governmental agencies having jurisdiction, including but not necessarily limited to Certificates of Inspection
   5. Required insurance and bond documents.

1.3 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for certification of final completion and final payment, submit the following to the Architect/Engineer:
   1. Final payment request with releases and supporting documentation not previously submitted and accepted.
   2. Updated final statement, accounting for final changes to Contract Sum.
   3. Written declaration that all aspects of the Contract Documents have been complied with.
   4. Consent of Surety.
   5. Evidence of final, continuing insurance coverage complying with insurance requirements.
   6. Proof that fees and similar obligations have been paid.
   7. Written declaration that any remaining temporary facilities, surplus materials, rubbish, and similar elements have been removed.
   8. Warranties, maintenance manuals, record documents, and outstanding submittals.
   9. Written confirmation that paid extra stock materials, if required, have been delivered to Owner's Agent.

PART 2 PRODUCTS

2.1 NOT USED

PART 3 EXECUTION

3.1 FINAL CLEANING

A. In preparation for final inspection, ensure that completed Work and affected adjacent areas and surfaces have been cleaned of construction-generated dust, dirt, material spills, debris, rubbish, and other construction-generated items that are not part of the completed Work.

B. Surfaces to be cleaned include, but may be not limited to, roof, windows, doors, walls, signage, equipment, architectural finishes, etc. Cleaning methods and materials shall be appropriate for the task and not result in damage to the item being cleaned. Restore damaged items to a condition consistent with that existing prior to construction.

C. Repair, patch, or touch up any marred surfaces to match finish and quality of adjacent undamaged areas, in a manner satisfactory to the Owner.

D. Leave paved areas in a broom-clean condition.

END OF SECTION

SECTION 01 78 36

CONTRACTOR WARRANTIES

PART 1 - GENERAL

1.1 GENERAL

A. Furnish Owner with written warranty for period of two (2) years from date of Substantial Completion that all work is in accord with the Contract Documents, where applicable is watertight, and without defects in labor or materials. If repairs or changes are required in connection with the warranted Work within the warranty period, the Contractor shall, promptly upon receipt of notice from the Owner, and without expense to the Owner, comply with the following:
   1. Place in satisfactory condition in every particular, all of such warranted Work and correct all defects therein.
   2. Make good all damage to the building or site, which is the result of the condition needing said repairs and changes.
   3. Make good any Work disturbed or new work created in fulfilling any such warranty.

B. If repairs are required in connection with warranted Work within warranty period and notice thereof is given within such period, the warranty shall continue as to Work requiring repair until the repairs required are completed, and the termination of the warranty period shall not apply thereto.

C. Corrections of defects, imperfections, and faults shall not relieve the Contractor from his responsibility for additional corrective work during the remaining time period of the warranty.

D. No provision in the Contract Documents nor any special or general warranty shall be held to limit, as to time or scope of liability, the Contractor's liability for defects, or the liability of his sureties, to less than the legal limit of liability under laws having jurisdiction.

E. The Contractor will not be held responsible for defects due to misuse, negligence, willful damage, improper maintenance, or accident caused by others.

F. The delivery of any warranties shall not relieve the Contractor from any obligation assumed under any other provision of the Contract Documents.

G. The obligations of the Contractor, under this Section, shall survive termination of the Contract.

1.2 FORM OF WARRANTIES

A. Warranties shall be in the form set forth below, shall be typed on the Contractor's own letterhead, and shall be submitted by the Contractor to the Owner prior to final payment.

WARRANTY FOR ROOF REPLACEMENT AT THE SAM AND ALFREDA MALOOF FOUNDATION FOR ARTS AND CRAFTS – 5131 CARNELIAN STREET, RANCHO CUCAMONGA, CALIFORNIA.

We hereby warrant the materials and workmanship pertaining to roof replacement and miscellaneous repairs at the buildings located at 5131 Carnelian Street in Rancho Cucamonga, California have been provided in accordance with the Contract Documents and that the Work as installed will fulfill the requirements of the warranties included in the Project Manual. We agree to repair or replace any or all of our Work that may prove to be defective in its workmanship or materials within a period of two (2) years from date of Substantial Completion, without any expense to the Sam and Alfreda Maloof Foundation for Arts and Crafts, excluding unusual abuse or neglect. We also agree to repair or replace to the satisfaction of the Owner any other work or items which may be displaced or damaged as a consequence of the defective Work.

Date of Substantial Completion, Sam and Alfreda Maloof Foundation for Arts and Craft Roof Replacement, at 5131 Carnelian Street, Rancho Cucamonga, California: _____

Signature: _____
(Contractor)

Typed name and title of Company official signing above and issuing this Warranty:

Name:_____ Title:_____

Date of Signature:_____

END OF SECTION

SECTION 02 40 00

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following Demolition and removal of selected portions of building or structure, including roofing, roof decking, wood trim, wood framing, and other miscellaneous materials. Refer to the Drawings and related sections below for scope and details.

B. Related sections include:
1. Section 01 11 00 - Summary of Work
2. Section 01 35 91 - Historic Treatment Procedures
3. Section 07 51 13 - Built-Up Asphalt Roofing
4. Section 07 54 19 - Thermoplastic Membrane Roofing
5. Section 07 62 00 - Sheet Metal and Membrane Flashing
6. Section 07 90 00 - Joint Sealants

1.2 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

C. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

D. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

E. Salvage: To protect removed or dismantled items and deliver them to Owner ready for reuse.

1.3 MATERIAL OWNERSHIP

A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.

1.4 SUBMITTALS

A. Schedule of Selective Demolition Activities: Indicate the following
1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.

3. Coordination for shutoff, capping, and continuation of utility services.
4. Locations of proposed dust- and noise-control temporary partitions and means of egress, including for other tenants affected by selective demolition operations.
5. Coordination of Owner's continuing occupancy of portions of existing buildings and of Owner's partial occupancy of completed Work.
6. Means of protection for items to remain and items in path of waste removal from building.

B. Use Pre-demolition Photographs or Videotapes: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations.

C. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.5 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

C. Hazardous Materials: Some roofing materials are suspected to contain ACMs (Asbestos Containing Materials), such as structural roof deck panels. If Contractor encounters other materials they believe to be hazardous, testing shall be performed as appropriate. Hazardous materials shall be left undisturbed or shall be remediated in accordance with governing standards.

D. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect/Engineer and Owner.

E. Contact Architect/Engineer to survey condition of building if Contractor suspects that removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.

F. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.
   1. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

G. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES

A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.

B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
   1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
   2. Arrange to shut off indicated utilities with utility companies.
   3. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
   4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, building areas, and other adjacent occupied and used facilities.

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
   1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
   2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
   3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
   4. Cover and protect furniture, furnishings, and equipment that have not been removed.
   5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 1 Section "Temporary Facilities and Controls."

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

3.4 SELECTIVE DEMOLITON, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Comply with all requirements of owners for facility usage as states in other section.
   2. Proceed with selective demolition systematically, from higher to lower level.
   3. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
   4. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
   5. Do not use cutting torches, grinders or tools that could generate sparks
   6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
   7. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
   8. Dispose of demolished items and materials promptly.

B. Removed and Reinstalled Items:
   1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
   2. Pack or crate items after cleaning and repairing. Identify contents of containers.
   3. Protect items from damage during transport and storage.
   4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect/Engineer and/or Owner, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Roofing: Remove no more existing roofing than can be covered in one day by new (or temporary) roofing and so that building interior remains watertight and weathertight. Refer to Division 7 - Section 07 51 13 and 07 54 19 for new roofing requirements.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
   1. Do not allow demolished materials to accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
   3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

SECTION 02 80 50

SITE RESTORATION

PART 1 - GENERAL

1.1 SUMMARY

A. Repair and/or replace areas of the site damaged during demolition and construction operations including, but not limited to, utilities, landscaping, sidewalks, curbs, pavements and site furnishings immediately after completion of all operations in that area. Repairs must, as a minimum standard, be equal to or exceed the condition, which existed prior to the start of Work under this contract.

1.2 SUBMITTALS

A. The Contractor shall submit to the Owner and Architect/Engineer for approval three (3) copies of a statement detailing the restoration Work required.

B. The statement shall as a minimum contain the following:
   1. Description of Work
   2. Location and quantity of Work
   3. Materials and standard for workmanship
   4. Schedule of operations

C. Approval of this statement by the Owner and/or Architect/Engineer shall not constitute approval of methods or materials. Such approval shall not be granted until the Work is installed and fully cured.

1.3 WARRANTY

A. The Contractor shall guarantee the Work against defects in materials and workmanship in accordance with the General Conditions, except that the guarantee period for landscaping shall be a minimum of one (1)-planting season beyond the date of installation.
   1. This guarantee shall include furnishing new plants as well as labor and materials for installation of replacements. All replacement plants shall be guaranteed and maintained for the period of one (1) season. Guarantee is limited to one replacement per plant.
   2. Contractor will not be held responsible for damages to or loss of plants caused by fire, flood, lightning storms, freezing rain, winds over 60 miles per hour, or vandalism.
   3. Inspection of the planting will be made jointly by the Contractor and Architect/Engineer at the Completion of planting. All plants not in a healthy, growing condition shall be removed and replaced with plants of like kind, size and quality as originally specified before the close of the next planting season.

PART 2 PRODUCTS

2.1 UTILITIES

A. All restoration of utility service shall be in full compliance with the requirements of the utility service provider.

2.2 LANDSCAPING

A. Plant materials shall be replaced with the same species and size as plant being replaced.

2.3 PAVING AND SURFACING

A. Replacement of all damaged paving, walks, curbs, and other surfacing on the site shall match the adjacent material to remain in color, shape and texture.

2.4 SITE FURNISHINGS

A. All site furnishings damaged during construction operations shall be replaced in kind.

PART 3 EXECUTION

3.1 LANDSCAPING

A. Plantings shall be set in appropriate pits, back-filled, mulched, guyed, staked or otherwise protected.

3.2 PAVING AND SURFACING

A. Means and methods for the installation of replacement pavings, walks, curbs and other surfacing shall be in accordance with local construction standards.

END OF SECTION

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 DESCRIPTION

A. Furnish all labor, materials, tools, and equipment and perform all Work necessary for and incidental to providing rough carpentry as shown on the Drawings and specified herein; in accordance with the provisions of the Contract Requirements - Division 0, General Requirements - Division 1 and completely coordinated with the Work of all other trades.

B. Work included: The following is a list of principal items of work to be furnished. This list shall not be construed to necessarily be inclusive.
   1. South Balcony framing repairs
   2. Isolated plywood deck replacement
   3. Isolated tongue and groove wood plank roof deck replacement
   4. Fascia board replacement
   5. Miscellaneous wood trim and siding replacement (as needed)
   6. Miscellaneous wood blocking

C. Related Sections:
   1. Section 07 51 13 - Built-Up Asphalt Roofing
   2. Section 07 54 19 - Thermoplastic Membrane Roofing
   3. Section 07 62 00 - Sheet Metal and Membrane Flashing

1.2 QUALITY ASSURANCE

A. Grading Rules:
   1. Lumber grading rules and wood species shall conform with Voluntary Product Standards PS 20-70. Grading rules of the following associations shall also apply to materials produced under their supervision:
      a. Southern Pine Inspection Bureau (SPIB).

B. Grade Marks: Identify all lumber by official grade mark.
   1. Lumber: Grade stamp to contain symbol of grading agency, mill number or name, grade of lumber, species or species grouping or combination designation, rules under which graded, where applicable and condition of seasoning at time of manufacture.

1.3 SUBMITTALS

A. Submit the following in accordance with Section 01 30 00:
   1. Certification:
      a. Submit certification by treating plant stating chemicals and process used, net amount of salts retained, and conformance with applicable standards.
      b. Preservation Treated Wood: Submit certification for water-borne preservative that moisture content was reduced to 18 percent maximum, after treatment.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Immediately upon delivery to job site, place materials in area protected from weather.

B. Store materials a minimum of 6 in. (150 mm) above ground on framework or blocking and cover with protective waterproof covering, providing adequate air circulation or ventilation.

C. Materials shall not be stored in wet or damp areas.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Lumber and sheathing:
   1. Dimension:
      a. Indicated lumber and decking sizes that are not followed by size increments (inches) are nominal.
         1) Actual sizes for such lumber shall conform to industry standards established by the American Lumber Standards Committee and the rules writing agencies.
      b. Indicated lumber sizes that are followed by size increments (inches) are actual.
   2. All lumber to replace miscellaneous exterior exposed wood framing/trim is to match existing wood species, size, and grade unless noted otherwise.
   3. All miscellaneous concealed lumber shall be Douglas Fir No. 2 or better and sheathing shall be exterior grade 5/8 inch thick CDX plywood unless noted otherwise. Surfacing: Surface four sides (S4S), unless otherwise shown, or specified.

B. Anchorage, Rough Hardware
   1. Nails, bolts, screws, nuts, inserts, and other devices required but not specifically indicated for installation of wood blocking, nailers, furring, and other rough in purposes shall be hot-dipped galvanized steel.

PART 3 - EXECUTION

3.1 PREPARATION

A. Verify all measurements in the field.

B. Provide other trades with information necessary for proper completion of related work.

3.2 INSTALLATION

A. Install wood members to a close fit, set accurately to required lines and levels and secure rigidly in place in accordance with the Drawings. Cut and fit furring, blocking, etc., to accommodate other work.

3.3 CLEAN UP

A. At the conclusion of carpentry work, remove equipment used in the Work, clean up all debris and surplus material and remove same from the premises.

END OF SECTION

SECTION 07 18 00

TRAFFIC COATING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Surface preparation, supply, and application of traffic coating for the top of the Main House chimney and for the South Balcony deck

B. Products Installed But Not Supplied Under This Section:
   1. Sheet-metal flashings and pans.

C. Related Sections:
   1. Section 07 62 00 - Sheet Metal and Membrane Flashing
   2. Section 07 92 00 - Joint Sealants: Crack and joint sealant.

1.2 REFERENCES

A. Reference Standards: Latest edition as of Specification date.
   1. ASTM International:
      a. D4258: Standard Practice for Surface Cleaning Concrete for Coatings.
      b. D4259: Standard Practice for Abrading Concrete.
      c. D4263: Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
   2. International Concrete Repair Institute (ICRI):
      a. Guide for Selecting and Specifying Concrete Surface Preparation

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordinate Work to ensure that adjacent areas are not adversely affected. Coordinate:
   1. With Owner's Representative.
   2. With other trades:
      a. To ensure that work done by other trades is complete and ready for traffic-coating Work.
      b. To avoid or minimize work on, or in immediate vicinity of, traffic-coating Work in progress.
      c. To ensure that subsequent work will not adversely affect quality of completed traffic coating.

B. Pre-application Meeting:
   1. Conduct meeting at Site.
   2. Time, date, location, and attendee notification to be facilitated by Contractor.
   3. Review requirements for traffic coating, including:
      a. Construction schedule.
      b. Availability of materials, Applicator's personnel, equipment, and facilities needed to make progress and avoid delays.
      c. Site use, access, staging, and set-up location limitations.
      d. Approved mockup procedures.

e. Impact of forecast weather conditions.
f. Ventilation requirements.
g. Surface preparation and substrate condition.
h. Application procedures.
i. Special details and sheet flashings.
j. Minimum curing period.
k. Testing and inspection requirements.
l. Governing regulations.

4. Contractor's Site superintendent, traffic-coating manufacturer's technical representative, Applicator's foreman, Owner's Representative, and Architect/Engineer shall attend.

1.4 SUBMITTALS

A. Product Data: Traffic-coating manufacturer's literature including written instructions for evaluating, preparing, and treating substrate; technical data including tested physical and performance properties; and application instructions. Include VOC content of components.
   1. Include traffic-coating manufacturer's color chart.

B. Samples: For each type of traffic coating required, stepped samples on rigid backing large enough to illustrate build-up of traffic coatings, of same thickness and material indicated for Work.

C. Applicator Qualifications:
   1. Certification signed by traffic-coating manufacturer, certifying that Applicator complies with manufacturer's requirements to install specified, warranted, traffic coating.
   2. Evidence that Applicator's *existing company* has minimum five years of continuous experience in similar traffic-coating work; list of at least five representative, successfully-completed projects of similar scope and size, including:
      a. Project name.
      b. Owner's name.
      c. Owner's Representative name, address, and telephone number.
      d. Description of work.
      e. Traffic-coating materials used.
      f. Project supervisor.
      g. Total cost of traffic-coating work and total cost of project.
      h. Completion date.

D. Sample Warranties: Copies of traffic-coating manufacturer's warranty and Applicator's warranty, both stating obligations, remedies, limitations, and exclusions. Submitted with bid.

E. Following completion of the Work:
   1. Traffic-coating manufacturer's warranty inspection reports.
   2. Completed warranty from traffic-coating manufacturer.
   3. Completed warranty from Applicator.

1.5 QUALITY ASSURANCE

A. Applicator Qualifications: Experienced firm that has successfully completed traffic-coating work similar in material, design, and extent to that indicated for Project; that is approved, authorized, or licensed by traffic-coating manufacturer to apply traffic coating; and that is eligible to receive traffic-coating manufacturer's warranty. Must have successful installations of specified materials in local area in use for minimum of five years.

1. Employ foreman trained by traffic-coating manufacturer and with minimum five years of experience as foreman on similar projects, who is fluent in English, to be on Site during Work. Do not change foremen during course of Project except for reasons beyond control of Installer; inform Architect/Engineer in advance of any changes.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Site in original containers and packaging with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, lot number, directions for storing, and complete manufacturer's written instructions.

B. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, or installation. Reject and remove from Site new materials which have been exposed to moisture to their detriment.

C. Store and handle materials in accordance with manufacturer's written instructions, safety requirements, and all applicable laws and regulations. Remove from Site, and replace at no cost to Owner, any materials that are damaged or otherwise negatively affected by not being stored or handled in accordance with manufacturer's written instructions.

D. Store materials in original, undamaged containers and packaging in clean, dry, location on raised platforms and protected from weather, within temperature range required by manufacturer. Protect stored materials from direct sunlight and sources of ignition. Manufacturer's standard packaging and covering alone is ***not*** considered adequate weather protection.

E. Locate materials in a secure location approved by Owner's Representative

F. Conspicuously mark damaged or opened containers, containers with contaminated materials, damaged materials, and materials that cannot be used within stated shelf life and remove from Site as soon as possible. Replace discarded materials in a timely manner at no cost to Owner.

G. Limit stored materials on structures so as to preclude damage to materials and structures.

H. Maintain copies of all applicable Safety Data Sheets (SDS) with materials in storage area, such that they are available for ready reference on Site.

1.7 PROJECT CONDITIONS

A. Verify existing dimensions and details prior to start of traffic-coating Work. Notify Architect/Engineer of conditions found to be different than those indicated in the Contract Documents. Architect/Engineer will review situation and inform Contractor and Applicator how to proceed.

B. Comply with Owner's limitations and restrictions for Site use and accessibility.

C. Ensure that drains are operational at the end of each workday or if precipitation is forecast.

D. Environmental Limitations: Apply traffic coating when existing and forecast weather conditions permit traffic coating to be installed according to traffic-coating manufacturer's written instructions and warranty requirements. Do not apply traffic coating under the following conditions, unless otherwise recommended by traffic-coating manufacturer and approved by Architect/Engineer.

1. Apply only when substrate temperature is above 50 degrees F or more than 5 degrees F above dew point, or within range recommended by traffic-coating manufacturer.
2. Apply only when ambient temperature is above 40 degrees F or within range recommended by traffic-coating manufacturer.
3. Do not apply to damp or wet substrate; when relative humidity exceeds 85 percent; in snow, rain, fog, or mist; or when snow, rain, fog, or mist is forecast during application or curing period. Apply only to frost-free substrate.

E. Handle and install materials in strict accordance with safety requirements required by traffic-coating manufacturer; Safety Data Sheets; and local, state, and federal rules and regulations.

F. Maintain adequate ventilation during preparation and application of traffic-coating materials. Notify Owner's Representative at least one week in advance of Work with materials with noxious vapors. Review application schedule and venting precautions with Owner's Representative prior to beginning application.

1.8 CHANGES IN WORK

A. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with the Contract Documents. Such conditions may interfere with the Work and may consist of damage or deterioration of the substrate or surrounding materials that could jeopardize the integrity or performance of the Work.
   1. Notify Architect/Engineer of conditions that may interfere with the proper execution of the Work or jeopardize the performance of the Work prior to proceeding with the Work.

1.9 WARRANTIES

A. Manufacturer's Warranty:
   1. Written warranty, signed by traffic-coating manufacturer, including:
      a. Repair or replace traffic coating that does not comply with requirements; that does not remain watertight; that fails in adhesion, cohesion, or general durability; that experiences abrasion or tearing failure not due to misuse; that experiences surface crazing, fading or chalking; or that deteriorates in a manner not clearly specified by submitted traffic-coating manufacturer's data as an inherent quality of the material for the application indicated. Warranty does not include deterioration or failure of traffic coating due to failure of substrate prepared according to requirements, formation of new substrate cracks exceeding 1/16 inch in width, fire, vandalism, or snowplow abuse.
      b. Provide access to warranty repair and replacement areas.
   2. Warranty Period: Five years after Substantial Completion date.

B. Applicator's Warranty:
   1. Written warranty on warranty form at the end of the Section, signed by Applicator, including:
      a. Repair or replace traffic coating that does not comply with requirements; that does not remain watertight; that fails in adhesion, cohesion, or general durability; that experiences abrasion or tearing failure not due to misuse; that experiences surface crazing, fading, or chalking; or that deteriorates in a manner not clearly specified by submitted traffic-coating manufacturer's data as an inherent quality of the material for the application indicated. Warranty does not include deterioration or failure of traffic coating due to failure of substrate prepared according to requirements, formation of

new substrate cracks exceeding 1/16 inch in width, fire, vandalism, or snowplow damage.
b. Provide access to warranty repair and replacement areas.
c. Repair or replacement, to satisfaction of Owner, of other work or items which may have been displaced or damaged as consequence of defective Work.
d. Make immediate emergency repairs within 48 hours of notice of leakage.

2. Warranty Period: Five years after Substantial Completion date.

PART 2 - PRODUCTS

2.1 TRAFFIC COATING

A. Source Limitations: Obtain materials through one source from single traffic-coating manufacturer. Provide materials not available from traffic-coating manufacturer from sources approved by traffic-coating manufacturer. Provide new materials.

B. VOC Content: Provide materials that comply with local VOC limits.

C. Use one of the following traffic coatings, or approved equal:
1. System for concrete substrate (top of chimney):
a. Peda-Gard Pedestrian Traffic Coating by Neogard, consisting of 18 dry mils of base coat, 14 dry mils of wearing surface coat, and 10 pounds of aggregate per 100 square feet.

2. Pedestrian system for wood decks:
a. Pecora-Deck 8313 System by Pecora Corporation, consisting of 25 dry mils of base coat, 12 dry mils of intermediate coat with 25 pounds of aggregate per 100 square feet, and 10 dry mils of top coat.
b. Pacific Polymers Elasto-deck 5000 X2 by ER Systems, consisting of 25 dry mils of base coat, 25 dry mils of intermediate coat, two coats of top coat with aggregate.
c. Approved equal.

D. Primer: Traffic-coating manufacturer’s standard, factory-formulated primer recommended for substrate under conditions of service and application.

E. Joint Reinforcement: Traffic-coating manufacturer’s standard reinforcement.

F. Aggregate: Clean silica sand, uniform in gradation, and approved by traffic-coating manufacturer.

G. Top Coat Color: Approved in advance in writing by Owner’s Representative.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions with Applicator and traffic-coating manufacturer’s representative for compliance with requirements and other conditions affecting performance of traffic coating.
1. Ensure that work done by other trades is complete and ready for traffic-coating Work.
2. Verify compatibility with and suitability of substrates.

3. Verify that areas and conditions under which traffic-coating Work is to be performed permit proper and timely completion of Work.
4. Notify Architect/Engineer in writing of conditions which may adversely affect application or performance of traffic coating and recommend corrections.
5. Do not proceed with traffic-coating Work until adverse conditions have been corrected and reviewed by Architect/Engineer.
6. Commencing traffic-coating Work constitutes acceptance of Work surfaces and conditions.

3.2 PROTECTION

A. Comply with traffic coating manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products.

B. Cover adjacent surfaces with materials that are proven to resist traffic coating.

C. Take precautions to ensure safety of people (including building users, passers-by, and workers) and protection of property (including adjacent building elements, landscaping, and motor vehicles).

D. Erect temporary protective canopies and walls, as necessary, at walkways and at points of pedestrian and vehicular access that must remain in service during Work.

E. Take precautions to protect against air-borne materials and run-off.

F. Protect paving, sidewalk, and adjacent building areas from mechanical damage due to equipment.

G. Prevent dust, debris, coating overspray/spatter, and other construction materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

H. Limit access to Work areas.

I. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Owner.

J. Protect from damage, all elements of completed work and original construction to remain.

3.3 SURFACE PREPARATION

A. Equipment:
   1. Concrete cleaning equipment such as Blastrac Concrete Cleaning System manufactured by Wheelabrator-Frye, Inc., or equal.
   2. Abrasive blasting equipment capable of removing contaminants and laitance from concrete surface.
   3. Compressed air equipment capable of removing dust and dirt from concrete surface.

B. Clean and prepare concrete substrate according to traffic-coating manufacturer's written instructions. Provide clean, dust-free, and dry substrate.
   1. Verify that concrete has cured and aged for minimum time period recommended by traffic-coating manufacturer.
   2. Verify that substrate is sound and is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D4263.

3. Verify that substrate is sound and visibly dry and free of moisture. Test for moisture vapor emission by applying the base coat of traffic coating on one-foot-square test areas and monitoring for pinholes, blisters, and bubbles until the traffic coating has set; the number and locations of test areas shall be determined by Architect/Engineer based on project conditions. If pin-holing, blistering, or bubbling occurs, delay Work until later test areas are free of pinholes, blisters, and bubbles.
4. Verify that concrete curbs, expansion joints, and transitions from one surface plane to another (inside and outside corners) are cleanly formed and free of broken edges and excess concrete.
5. Remove concrete fins and projections, concrete splatter, and other irregularities which would prevent monolithic, continuous application of traffic coating.
6. Properly repair substrate defects such as delaminations, spalls, voids, form tie holes, honeycombing, and cracks, with latex-modified concrete or another material acceptable to traffic-coating manufacturer and Architect/Engineer.
7. Remove grease, oil, asphalt solids, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
8. Shotblast or scarify concrete to provide clean surface, free of laitance, dirt, and other loose or foreign material. Use care to avoid pockmarking concrete surface.
9. Uniformly clean concrete surfaces by abrasive blast, according to ASTM D4259, to expose top surface of fine aggregate and provide sound surface, free of laitance, dirt, and other loose or foreign material. Use self-contained, recirculating, blast-cleaning apparatus. Remove remaining loose material and clean surfaces according to ASTM D4258. Produce surface texture equal to CSP 3 or 4 from ICRI Guide for Selecting and Specifying Concrete Surface Preparation.
10. Level areas of surface scaling or rough, uneven areas where surface roughness is unacceptable for traffic-coating application, as determined by Architect/Engineer, with skim coat of epoxy or other material compatible with traffic coating and recommended by traffic-coating manufacturer.
11. Rout cracks and joints designated by traffic-coating manufacturer's representative and verified by Architect/Engineer, remove existing sealant, and install new sealant.
12. Abrasive blast clean curb, column, and wall surfaces that will receive traffic coating.
13. Thoroughly sweep substrate and clean with oil-free compressed air.

C. Clean and prepare plywood substrate according to traffic-coating manufacturer's written instructions. Provide clean, dust-free, and dry substrate for traffic-coating application. Sweep and vacuum joints clean.
   1. Verify plywood is DOC PS 1, exterior grade, A/C or better (with A side up), minimum 3/4-inch thick, and fully blocked. Replace non-conforming plywood.
   2. Sand joints flush.
   3. Remove grease, oil, paint, and other contaminants from plywood. If washing plywood is necessary to remove contaminants, allow plywood to thoroughly dry before applying traffic coating.
   4. Verify that plywood is fastened with screws. If not, supplement existing fastening with new corrosion-resistant screws.
   5. Recess sheet-metal flashings and pans flush with plywood surface. Nail with 1-1/2-inch-long, galvanized, ring-shank nails, 2 inches on center staggered. Prime sheet metal as recommended by traffic-coating manufacturer.
   6. Fill joints and gaps in plywood over 1/16-inch wide with sealant and tool flush.

D. Mask adjoining surfaces not receiving traffic coating to prevent spillage and overspray affecting other construction.

E. Close off deck drains and other deck penetrations to prevent spillage and migration of traffic-coating fluids.

F. Applicator and traffic-coating manufacturer's representative shall examine substrate to ensure that it is properly prepared and ready to receive traffic coating. Traffic-coating manufacturer's representative shall report in writing to Applicator and Architect/Engineer conditions which will adversely affect traffic-coating system application or performance. Do not proceed with traffic-coating application until these conditions have been corrected and reviewed by Architect/Engineer.

G. Proceed with application only after unsatisfactory conditions have been corrected. Commencing application constitutes acceptance of Work surface preparation and conditions.

3.4 APPLICATION

A. Provide and maintain barricades for vehicular and pedestrian traffic at traffic-coating areas during application and curing period.

B. Allow sealant, concrete replacement materials, and skim coats to fully cure prior to installing traffic coating.

C. Apply traffic coating material according to traffic-coating manufacturer's written recommendations.
   1. Start traffic-coating application in presence of traffic-coating manufacturer's representative.
   2. Install joint reinforcement, centered on joints and horizontal edges of sheet-metal flashing and pans, in detail coat.
   3. Install sealant cant at intersections of horizontal and vertical surfaces.
   4. Batch and thoroughly mix components as recommended by the traffic-coating manufacturer.
   5. Apply detail coat at intersections of horizontal and vertical surfaces, at drains and other deck penetrations, and at cracks and joints.
   6. Apply traffic-coating system.
      a. Wipe detail coat to remove dust and contamination.
      b. Apply each coat in one uniform application, broadcast aggregate if required, and backroll for even coverage. Allow each coat to cure before apply next coat. Sweep or vacuum off excess aggregate.
      c. Apply at least 4 inches up sides of columns, walls, and other vertical surfaces, and up curb faces and across top curb surfaces.
      d. At exterior edges of balconies and decks, extend to outer edge of sheet-metal flashing.
      e. Omit aggregate on vertical surfaces.
      f. If pinholes occur in base coat, apply additional base coat material using flat squeegee or other tool approved by traffic-coating manufacturer, to fill holes before proceeding with subsequent coats.
      g. Prevent contamination or damage during application and curing.
      h. Verify that wet film thickness of each component coat complies with requirements.

3.5 FIELD QUALITY CONTROL

A. Architect/Engineer will measure dry film thickness
   1. Dry film thickness is satisfactory if not less than minimum thickness specified by traffic-coating manufacture or this Section, whichever is greater.

2. If dry film thickness is too thin, apply additional material at no cost to Owner, or perform other remedial action recommended by traffic-coating manufacturer or Architect/Engineer.
3. Patch sample areas with traffic-coating system.

B. Chain drag traffic-coating areas at conclusion of Work to locate debonded areas. Remove and replace debonded areas.

3.6 CLEANING

A. At the end of each workday, clean Site and Work areas and place all items to be discarded in appropriate containers.

B. After completing traffic coating Work:
1. Clean all materials resulting from Work that are not intended to be part of the finished Work using appropriate cleaning agents and procedures. Exercise care to avoid damaging surfaces.
2. Repair at no cost to Owner all items damaged during the Work.
3. Remove and legally dispose of debris and surplus materials from Site.

END OF SECTION

SECTION 07 19 17

SILANE/SILOXANE-BLEND WATER REPELLENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Surface preparation, supply, and application of silane/siloxane-blend water repellent for concrete masonry unit surfaces, for the Main House chimney.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Coordinate Work to ensure that adjacent areas are not adversely affected. Coordinate:
   1. With Owner's Representative.
   2. With other trades:
      a. To ensure that work done by other trades is complete and ready for water-repellent Work.
      b. To avoid or minimize work on, or in immediate vicinity of, water-repellent Work in progress.
      c. To ensure that subsequent work will not adversely affect quality of installed water repellent.

A. Pre-application Meeting:
   1. Conduct meeting at Site.
   2. Time, date, location, and attendee notification to be facilitated by Contractor.
   3. Review requirements for water-repellent application, including:
      a. Construction schedule.
      b. Availability of materials, Applicator's personnel, equipment, and facilities needed to make progress and avoid delays.
      c. Site use, access, staging, and set-up location limitations.
      d. Approved mockup procedures.
      e. Forecast weather conditions and impact on Work.
      f. Surface preparation and substrate condition.
      g. Application procedures.
      h. Minimum curing period.
      i. Testing and inspection requirements.
      j. Governing regulations, including environmental regulations.
   4. Contractor's Site superintendent, water-repellent manufacturer's technical representative, water-repellent Applicator's foreman, Owner's Representative, and Architect/Engineer shall attend.

1.3 SUBMITTALS

A. Product Data: Water-repellent manufacturer's literature including product description and written instructions for storage, handling, substrate preparation, protection of surrounding areas not to receive water-repellent, application, and final cleaning. Include VOC content.

B. Environmental Certification:

1. Environmental regulations applicable to Site.
2. Certification, signed by water-repellent manufacturer, that water repellent complies with environmental regulations applicable to Site.

C. Test Reports: Written results of field testing performed by water-repellent manufacturer or Applicator.

D. Applicator Qualifications:
   1. Certification signed by water-repellent manufacturer, certifying that Applicator complies with manufacturer's requirements to install specified water repellent.
   2. Evidence that Applicator's *existing company* has minimum three years of continuous experience in similar water-repellent work; list of at least five representative, successfully-completed projects of similar scope and size, including:
      a. Project name.
      b. Owner's name.
      c. Owner's Representative name, address, and telephone number.
      d. Description of work.
      e. Water repellents used.
      f. Project supervisor.
      g. Total cost of water-repellent work and total cost of project.
      h. Completion date.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: Experienced firm that has successfully completed water-repellent work similar in material, design, and extent to that indicated for Project; and that is approved, authorized, or licensed by water-repellent manufacturer to install water repellent. Must have successful installations of specified materials in local area in use for minimum of three years.
   1. Employ foreman trained by water-repellent manufacturer and with minimum three years of experience as foreman on similar projects, who is fluent in English, to be on Site at all times during Work. Do not change foremen during the course of the Project except for reasons beyond the control of Installer; inform Architect/Engineer in advance of any changes.

B. Manufacturer Certifications: Water-repellent manufacturer shall certify that product to be used complies with VOC regulations at Site.

C. Site Tests: Water-repellent manufacturer and Applicator shall determine the need for and shall perform as necessary the following tests.
   1. Test surfaces not to be treated that are subject to possible contact with water repellent, to determine if protection is required.
   2. Verify application sequence, including surface preparation, installation of sealant in cracks and joints, and application of water repellent. Verify sealant adhesion and compatibility with water repellent.

D. Mockups: Prior to the start of Work or purchase of material, in presence of Architect/Engineer and water-repellent manufacturer's representative, apply water repellent to at least 25 square feet of each substrate, at locations determined by the Architect/Engineer, to demonstrate surface preparation, application, finished appearance, and standard of workmanship.
   1. After 48 hours or when mockups are thoroughly dry, Architect/Engineer and Owner's Representative will evaluate finished appearance.

2. If Architect/Engineer determines mockup does not comply with requirements, construct new mockup until mockup is approved.
3. Approved mockups will be standard for judging completed Work.
4. Approved mockups may become part of completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Site in original containers and packaging with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, lot number, directions for storing, and complete manufacturer's written instructions.

B. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, or installation. Reject and remove from Site new materials which have been exposed to moisture to their detriment.

C. Store and handle materials in accordance with manufacturer's written instructions, safety requirements, and all applicable laws and regulations. Remove from Site, and replace at no cost to Owner, any materials that are damaged or otherwise negatively affected by not being stored or handled in accordance with manufacturer's written instructions.

D. Store materials in original, undamaged containers and packaging in clean, dry, location on raised platforms and protected from weather, within temperature range required by manufacturer. Protect stored materials from direct sunlight and sources of ignition. Manufacturer's standard packaging and covering alone is ***not*** considered adequate weather protection.

E. Locate materials in a secure location approved by Owner's Representative.

F. Conspiculously mark damaged or opened containers, containers with contaminated materials, damaged materials, and materials that cannot be used within stated shelf life and remove from Site as soon as possible. Replace discarded materials in a timely manner at no cost to Owner.

G. Limit stored materials on structures so as to preclude damage to materials and structures.

H. Maintain copies of all applicable Safety Data Sheets (SDS) with materials in storage area, such that they are available for ready reference on Site

1.6 PROJECT CONDITIONS

A. Verify existing dimensions and details prior to the start of water-repellent Work. Notify Architect/Engineer of conditions found to be different than those indicated in the Contract Documents. Architect/Engineer will review situation and inform Contractor and Applicator how to proceed.

B. Comply with Owner's limitations and restrictions for Site use and accessibility.

C. Environmental Limitations: Apply water repellent within range of ambient and substrate temperatures recommended by water-repellent manufacturer. Do not apply water repellent under the following conditions, unless otherwise recommended by water-repellent manufacturer and approved by Architect/Engineer.
   1. To substrates that are damp or wet, or that have dew, frost, snow, or ice on them.

2. To substrates below 40 degrees F or less than 5 degrees F above dew point, or above 90 degrees F.
3. When ambient temperature is below 40 degrees F, or is predicted to fall below 40 degrees F within eight hours after application, or is above 90 degrees F.
4. When rain, snow, fog, or mist is predicted within 24 hours.
5. When wind speeds are at or above 15 miles per hour, or if windy conditions exist that may cause water repellent to be blown onto vegetation or surfaces not intended to be treated.
6. On new concrete or brick masonry exterior walls for at least 30 days following building close-in.

D. Handle and install materials in strict accordance with safety requirements required by water-repellent manufacturer; Material Safety Data (SDS) Sheets; and local, state, and federal rules and regulations.

E. Maintain adequate ventilation during preparation and application of water-repellent materials. Notify Owner's Representative at least one week in advance of Work with materials with noxious vapors. Review application schedule and venting precautions with Owner's Representative prior to beginning application.

1.7 CHANGES IN WORK

A. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with the Contract Documents. Such conditions may interfere with the Work and may consist of damage or deterioration of the substrate or surrounding materials that could jeopardize the integrity or performance of the Work.
   1. Notify Architect/Engineer prior to proceeding with the Work of conditions that may interfere with, preclude proper execution of, or jeopardize the performance of the Work.

PART 2 - PRODUCTS

2.1 PENETRATING WATER REPELLENT

A. Silane/Siloxane-Blend: Clear blend of silane and siloxane. Use one of the following or approved equal:
   1. KlereSeal 910-W/920-W by Pecora Corporation. For concrete block.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions with Applicator and water-repellent manufacturer's representative for compliance with requirements and other conditions affecting application or performance of water repellent.
   1. Ensure that work done by other trades is complete and ready for water-repellent Work.
   2. Verify that areas and conditions under which water-repellent Work is to be performed permit proper and timely completion of Work.
   3. Notify Architect/Engineer in writing of conditions which may adversely affect application or performance of water repellent and recommend corrections.
   4. Do not proceed with water-repellent Work until adverse conditions have been corrected and reviewed by Architect/Engineer.

5. Commencing water-repellent Work constitutes acceptance of Work surfaces and conditions.

3.2 PROTECTION

A. Take precautions to ensure safety of people (including building users, passers-by, and workers) and protection of property (including adjacent building elements, landscaping, and motor vehicles).
   1. Erect temporary protective canopies and walls, as necessary, at walkways and at points of pedestrian and vehicular access that must remain in service during Work.

B. Cover adjacent surfaces with materials that are proven to resist water repellent.

C. Protect paving and sidewalks, and adjacent building areas from mechanical damage due to scaffolding and other equipment.

D. Prevent dust, debris, coating overspray/spatter, and other construction materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

E. Limit access to Work areas.

F. Comply with water-repellent manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products.

G. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Owner.

H. Protect from damage, all elements of completed work and original construction to remain.

3.3 SURFACE PREPARATION

A. Equipment:
   1. Sandblasting or shot blasting equipment capable of removing laitance, dirt, loose or foreign material, and surface contaminants.
   2. Water-blasting equipment capable of removing laitance, dirt, loose or foreign material, and surface contaminants from exposed concrete surfaces.
   3. Compressed air equipment capable of removing dust, dirt, and water.

B. Clean and prepare concrete masonry according to water-repellent manufacturer's written instructions. Provide clean, dust-free, and dry substrate. Prepare surfaces using procedure demonstrated in mockup and approved by Architect/Engineer and Owner's Representative. Verify that mortar has cured and aged for minimum time period recommended by water-repellent manufacturer.

C. Proceed with application only after unsatisfactory conditions have been corrected. Commencing application constitutes acceptance of Work surfaces and conditions.

3.4 APPLICATION

A. Equipment:
   1. Low-pressure (15 to 25 pounds per square inch), airless spray equipment.

2. Low-pressure (15 to 25 pounds per square inch), positive-displacement, garden-type spray equipment, fitted with fan-spray nozzle
3. Brushes and rollers.
4. Brooms and squeegees.

B. Before beginning application:
1. Provide and maintain traffic barricades and control measures, well outside limits of wind-drifting, during application and drying of water repellent to protect vehicular and pedestrian traffic from contact with water repellent. Enclose Work area to contain wind-blown overspray.
2. Provide adequate ventilation during and after application of water repellent.
3. Provide dry-chemical fire extinguishers and clearly post "NO SMOKING" signs in Work area.

C. Apply water repellent at coverage rate demonstrated in mockup, in a uniform manner, using low-pressure spray equipment, brushes, and rollers. Use brooms and squeegees to achieve even distribution. Do not alter or dilute material. Comply with manufacturer's written instructions for using airless spraying procedure.
1. Prior to use, thoroughly clean spray equipment, tanks, and hoses, and make free of water, foreign matter, and oily residues. Flush with anhydrous alcohol or small amounts of silane.
2. On vertical surfaces, apply from bottom up, with controlled run-down of about 8 inches, with hand-spray unit, brushes, and rollers.
3. At cracks, construction joints, and concrete replacement perimeters not sealed with sealant or epoxy, adjust nozzle of hand-spray unit to produce concentrated stream of water repellent to saturate cracks and joints.
4. Use brushes and rollers at edges of application area to avoid overspray on adjacent surfaces.
5. If water-repellent application is not completed at one time, clearly mark location where application is terminated.

3.5 FIELD QUALITY CONTROL

A. Architect/Engineer will observe water-repellent application and verify that minimum coverage rates are maintained. If minimum coverage rates are not maintained, apply another coat of water repellent at no cost to Owner.

3.6 CLEANING

A. Immediately clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

B. At the end of each workday, broom-clean Site and Work areas and place all items to be discarded in appropriate containers.

C. After completing Work:
1. Clean all materials resulting from Work that are not intended to be part of the finished Work using appropriate cleaning agents and procedures. Exercise care to avoid damaging surfaces.
2. Repair at no cost to Owner all items damaged during the Work.
3. Remove and legally dispose of debris and surplus materials from Site.

END OF SECTION

SECTION 07 51 13

BUILT-UP ASPHALT ROOFING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Surface preparation, supply, and installation of four-ply, built-up, asphalt roofing system.

B. Related Sections:
1. Section 02 40 00 – Selective Demolition
2. Section 06 10 00 – Rough Carpentry
3. Section 07 62 00 – Sheet Metal and Membrane Flashing
4. Section 07 92 00 – Joint Sealants

1.2 REFERENCES

A. Definitions:
1. Square: 100 square feet.
2. Hot Roofing Asphalt: Roofing asphalt heated to its equiviscous temperature, temperature at which its viscosity is 125 centipoise for mopping application and 75 centipoise for mechanical application, within range of +/-25 degrees F, measured at mop cart or mechanical spreader immediately before application.

B. Reference Standards: Latest edition as of Specification date.
1. American National Standards Institute (ANSI)/Single Ply Roofing Industry (SPRI):
   a. ANSI/SPRI FX-1: Standard Field Test Procedure for Determining the Withdrawal Resistance of Roofing Fasteners.
2. ASTM International:
   a. C728: Standard Specification for Perlite Thermal Insulation Board
   b. D41/D41M: Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
   c. D312: Standard Specification for Asphalt Used in Roofing.
   d. D1668: Standard Specification for Glass Fabrics (Woven and Treated) for Roofing and Waterproofing.
   e. D1863/D1863M: Standard Specification for Mineral Aggregate Used on Built-up Roofs.
   f. D2178: Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
   g. D3617: Standard Practice for Sampling and Analysis of Built-up Roof Systems During Application.
   h. D3909: Standard Specification for Asphalt Roll Roofing (Glass Felt) Surfaced With Mineral Granules.
   i. D4586: Standard Specification for Asphalt Roof Cement, Asbestos-Free.
   j. D4601: Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing.
   k. D6164: Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.

l. E108: Standard Test Methods for Fire Tests of Roof Coverings.

3. FM Global:
   a. Class Number 4470: Approval Standard for Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction.
   b. Approval Guide (online resource).
4. National Roofing Contractors Association (NRCA)/Asphalt Roofing Manufacturers Association (ARMA):
   a. Quality Control Guidelines for the Application of Built-up Roofing (Quality Control Guidelines).

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordinate Work to ensure that new roofing materials and building interior are kept continuously dry; that continuous, watertight, new roofing system is provided; and that adjacent areas are not adversely affected. Coordinate:
   1. With Owner's Representative.
   2. With other trades:
      a. To ensure that work done by other trades is complete and ready for roofing Work.
      b. To avoid or minimize work on, or in immediate vicinity of, roofing Work in progress and completed new roofing.
      c. To ensure that subsequent work will not adversely affect quality of completed roofing.

B. Pre-installation Meeting:
   1. Conduct meeting at Site.
   2. Review requirements for roofing system, including:
      a. Construction schedule.
      b. Availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
      c. Site use, access, staging, and set-up location limitations.
      d. Forecast weather conditions.
      e. Surface preparation and substrate condition and pretreatment.
      f. Installation procedures.
      g. Base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
      h. Testing and inspection requirements.
      i. Temporary protection and repair of roofing system.
      j. Structural loading limitations of roof deck.
      k. Governing regulations and requirements for insurance and certificates.
   3. Contractor's Site superintendent, roofing-system manufacturer's technical representative, roofing Installer's foreman, Owner's Representative, Architect/Engineer, and testing agency representative shall attend.

1.4 SUBMITTALS

A. Product Data: Roofing-system manufacturer's literature including written instructions for evaluating, preparing, and treating substrate; technical data including tested physical and performance properties; and application instructions.
   1. For roofing membrane and base flashing materials, and roofing cement, primer, mastic sealant, and surface coating.

2. Include temperature ranges for storage and application of materials, and special cold-weather application requirements or limitations.
3. Include Safety Data Sheets (SDS) for information only; safety restrictions are sole responsibility of Contractor.

B. Aggregate Surfacing Certificate: Signed by quarry, certifying aggregate type and size.

C. Fastener Pull-out Tests:
1. If required by roofing manufacturer, perform fastener pull-out testing
2. Submit results of fastener pull-out tests performed on wood decks to Architect/ Engineer.

D. Bulk Asphalt Test Reports: Based on evaluation of comprehensive tests performed by roofing-system manufacturer and witnessed by qualified testing agency, for components of roofing system.
1. Indicate that bulk roofing asphalt materials delivered to Project comply with requirements. Include quantity and statistical and descriptive data for each product. Submit certificate with each load before it is used.
2. Include continuous log showing time and temperature for each load of bulk asphalt, indicating date obtained from roofing-system manufacturer, where held, and how transported before final heating and application on roof.

E. Sample Warranty: Copy of roofing-system manufacturer's warranty, stating obligations, remedies, limitations, and exclusions. Submitted with bid.

F. Following completion of the Work:
1. Roofing-system manufacturer's inspection report of completed roofing installation.
2. Completed warranty from roofing-system manufacturer.
3. Completed warranty from Installer.
4. Maintenance program recommended for roofing system.

1.5 QUALITY ASSURANCE

A. Installer Qualifications:
1. Certification from roofing-system manufacturer, certifying that Installer complies with manufacturer's requirements to install specified, warranted, roofing system.
2. Evidence that Installer's *existing company* has minimum five years of continuous experience in similar roofing work; list of at least five representative, successfully completed projects of similar scope and size, including:
   a. Project name.
   b. Owner's name.
   c. Owner's Representative name, address, and telephone number.
   d. Description of work.
   e. Built-up asphalt materials used.
   f. Project supervisor.
   g. Total cost of roofing work and total cost of project.
   h. Completion date.

B. Testing Agency Qualifications: Independent testing agency with experience and capability to conduct testing indicated, as documented according to ASTM E548.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle materials according to manufacturer's recommendations and in such a manner as to prevent damage to materials or structure.

B. Deliver materials to Site in original containers and packaging with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, lot number, and directions for storing and mixing with other components.

C. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, or installation. Reject and remove from Site new materials which exhibit evidence of moisture during application, which have been exposed to moisture, or which have moisture content more than ten per cent greater than Equilibrium Moisture Content (EMC) for material at 90 percent relative humidity.

D. Store materials in original, undamaged containers in clean, dry, protected location on raised platforms with weather-protective coverings, within temperature range required by manufacturer. Use canvas tarps for protection of moisture-sensitive roofing materials. Protect stored materials from direct sunlight. Manufacturer's standard packaging and covering is not considered adequate weather protection.

E. Store rolled materials on ends only, unless otherwise required by manufacturer's written instructions. Discard rolls that have been flattened, creased, or otherwise damaged.

F. Do not store materials at locations where new roofing materials have been installed.

G. Limit stored materials on structures to safe loading capacity of structure at time materials are stored, and to avoid permanent deck deflection.

H. Conspicuously mark damaged or open containers, containers with contaminated materials, and wet or damaged materials, and remove from Site as soon as possible.

I. Remove and replace materials that cannot be applied within stated shelf life.

1.7 PROJECT CONDITIONS

A. Verify existing dimensions and details prior to start of roofing Work. Notify Architect/Engineer of conditions found to be different than those indicated in the Contract Documents. Architect/Engineer will review situation and inform Contractor and Installer of changes.

B. Comply with Owner's limitations and restrictions for Site use and accessibility.

C. Protect existing roofing from damage from construction activities. Repair damage to existing roofing from construction activities that result in leakage.

D. Ensure that drains are operational at the end of each workday or if precipitation is forecast.

E. Environmental Limitations: Install roofing when existing and forecast weather conditions permit roofing system to be installed according to roofing-system manufacturer's written instructions and warranty requirements.
   1. Apply roofing when substrate temperature is falling, and when substrate and ambient temperatures are within range recommended by roofing-system manufacturer.

2. Do not proceed with installation during inclement weather except for temporary work necessary to protect building interior and installed materials. Remove temporary work and Work that becomes moisture damaged.

F. Handle and install materials in strict accordance with safety requirements required by roofing-system manufacturer; Safety Data Sheets (SDS); and local, state, and federal rules and regulations. Maintain Safety Data Sheets (SDS) with materials in storage area and available for ready reference at Site.

G. Maintain adequate ventilation during preparation and application of roofing materials.

1.8 CHANGES IN WORK

A. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with the Contract Documents. Such conditions may interfere with the Work and may consist of damage or deterioration of the substrate or surrounding materials that could jeopardize the integrity or performance of the Work.
   1. Notify Architect/Engineer of conditions that may interfere with the proper execution of the Work or jeopardize the performance of the Work prior to proceeding with the Work.

1.9 WARRANTY

A. Manufacturer's Warranty:
   1. Written warranty, signed by roofing-system manufacturer, including:
      a. Repair or replace components of roofing system that do not comply with requirements; that do not remain watertight; that fail in adhesion, cohesion, or general durability; or that deteriorate in a manner not clearly specified by submitted roofing-system manufacturer's data as an inherent quality of the material for the application indicated.
      b. Removal and replacement of roof-deck board, base sheet, temporary roof/vapor retarder, insulation, and walkway products. Warranty includes replacing materials as necessary.
      c. Labor and materials to perform warranty Work.
   2. Warranty Period: 20 years from date of completion of roofing system.

B. Roofing Installer's Warranty:
   1. Completed warranty form at the end of the Section, signed by Installer, including:
      a. Repair or replace components of roofing system that do not comply with requirements; that do not remain watertight; that fail in adhesion, cohesion, or general durability; or that deteriorate in a manner not clearly specified by submitted roofing-system manufacturer's data as an inherent quality of the material for the application indicated. Warranty includes defects such as blisters, ridging, and excessive surfacing loss.
      b. Removal and replacement of roof-deck board, base sheet, temporary roof/vapor retarder, insulation, and walkway products. Warranty includes replacing materials as necessary.
      c. Labor and materials to perform warranty Work.
   2. Warranty Period: Two years from date of completion of roofing system.

PART 2 PRODUCTS

2.1 BUILT-UP ASPHALT ROOFING

A. General:
   1. FM Global Listing: Provide roofing membrane, base flashings, and component materials that comply with requirements in FM Global Class Numbers 4450 and 4470 as part of roofing system and that are listed in FM Global Approval Guide for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
      a. Fire/Windstorm Classification: ASTM E108, Class 1A- 90 for application and roof slopes indicated, based on testing by Underwriters Laboratory.
      b. Hail Resistance: SH.
   2. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing-system manufacturer based on testing and field experience.
   3. Source Limitations: Obtain components for roofing system from or approved by roofing-system manufacturer.

B. Design Standard Manufacturer:
   1. This design has been based upon materials manufactured by Johns Manville, Denver, CO. A four-ply asphalt built-up roofing system with fiberglass felts is included as described below. Proposed material substitution will be considered but will require Architect/Engineer approval.

2.2 MEMBRANE AND FLASHING SYSTEM

A. Roofing Plies: ASTM D2178, Type VI, asphalt-impregnated, glass-fiber felt.
   1. GlasPly Premier as manufactured by Johns Manville

B. Base Sheets:
   1. Sheathing Paper: Red-rosin type, minimum 3 pounds per square.
   2. Base Sheets: ASTM D4601, Type II, non-perforated, asphalt-impregnated and -coated, glass-fiber sheet, dusted with fine mineral surfacing on both sides. Mechanically fastened.
      a. GlasBase Plus as manufactured by Johns Manville

C. Base Flashing Materials:
   1. Flashing Backing Plies: ASTM D6163, Grade S, Type I, glass-fiber reinforced SBS-modified asphalt sheet; smooth surfaced
      a. DynaBase as manufactured by Johns Manville
   2. Flashing Cap Sheets: ASTM D6221, Grade G, Type I, composite polyester- and glass-fiber-reinforced SBS-modified asphalt sheet; granular surfaced
      a. DynaFlex as manufactured by Johns Manville

2.3 AUXILIARY MATERIALS

A. General: Auxiliary materials recommended by roofing-system manufacturer for intended use and compatible with built-up roofing.

B. Roofing Asphalt: ASTM D312, Type III or IV, as recommended by roofing system manufacturer for application.

C. Asphalt Primer: ASTM D41/D41M.

D. Asphalt Roofing Cement: ASTM D4586, asbestos free, of consistency required by roofing-system manufacturer for application.

E. Mastic Sealant: Polyisobutylene, plain or modified bitumen, non-hardening, non-migrating, non-skinning, and non-drying as required by roofing-system manufacturer.

F. Termination Bars: Roofing-system manufacturer's standard; Type-304-stainless-steel or aluminum bars, approximately 1-inch wide by 1/8-inch thick; with predrilled holes 8 inches on center.

G. Fasteners, General: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FM Global Class Number 4470 and acceptable to roofing-system manufacturer.
   1. Designed for fastening roofing components to substrate and tested by roofing-system manufacturer for required pullout strength.

H. Base Sheet Fasteners:
   1. Annular threaded roofing nails with 1 inch round or square capped head.

I. Fasteners for Base Flashings:
   1. Wood and Plywood Substrates: 1-inch-minimum long, capped, galvanized-steel nails with ribbed shank of sufficient length to provide 1-inch-minimum embedment or pass through bottom side of wood or plywood. Use Square-Cap Nails-Steel Head with STORMGUARD double hot-dipped zinc coating, manufactured by Maze Nails, or approved equal.
   2. Masonry Substrate: Stainless steel with hex washer head.
      a. 410 Stainless Steel Tapcon Anchors manufactured by ITW Red Head, Inc.
      b. 304 Stainless Steel Tapper, 1/4-inch diameter with hex washer head, manufactured by Powers Fasteners.
      c. 1 3/4 inch minimum length, or as noted on details.
   3. Metal substrate: No. 12 x 1 1/2 inch, 410 stainless steel, self-drilling screws with 1-inch, stainless steel washers.

J. Aggregate Surfacing: ASTM D1863/D1863M, No. 6 or No. 67, clean, dry, opaque, water-worn gravel or crushed stone, free of sharp edges. Provide aggregate surfacing that will withstand weather exposure without significant deterioration and will not contribute to roofing-membrane degradation.

K. Liquid-Applied Roof Flashings: PermaFlash system as manufactured by Johns Manville.

L. Structural Roof Deck Panel: Easy-Ply Roof Deck (2 inch thick) as manufactured by Homasote or approved equal.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions with Installer and roofing-system manufacturer's representative for compliance with requirements and for other conditions affecting performance of roofing system.
   1. If required by roofing manufacturer, perform testing according to ANSI/SPRI FX-1 to verify that fastener pull-out values meet or exceed those required by FM Global standards.

2. Ensure that work done by other trades is complete and ready for roofing Work, including:
   a. Roof openings and penetrations are in place and set and braced, and roof drains are securely clamped in place.
   b. Wood cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and nailers match thicknesses of insulation.
   c. Wood or plywood deck is securely fastened with no projecting fasteners and with no adjacent units in excess of 1/16 inch out of plane relative to adjoining deck.
3. Verify that areas and conditions under which roofing Work is to be performed permit proper and timely completion of Work.
4. Notify Architect/Engineer in writing of conditions which may adversely affect installation or performance of roofing system and recommend corrections.
5. Do not proceed with roofing Work until adverse conditions have been corrected and reviewed by Architect/Engineer.
6. Commencing roofing Work constitutes acceptance of Work surfaces and conditions.

3.2 PROTECTION

A. Take precautions to ensure safety of people, including building users, passers-by, and workmen, and animals, and protection of property, including adjacent building elements, landscaping, and motor vehicles.

B. Prevent construction debris and other materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

C. Protect paving and sidewalks, and adjacent building areas from mechanical damage due to scaffolding and other equipment.

D. Limit access to Work areas.

E. Erect temporary protective canopies, as necessary, over walkways and at points of pedestrian and vehicular access that must remain in service during Work.

F. Comply with roofing-system manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products.

G. Cover adjacent surfaces with materials that are proven to resist roofing materials.

H. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Owner.

3.3 SURFACE PREPARATION

A. Remove existing roofing system and other materials to expose substrate.
   1. Remove only as much of existing roofing as can be prepared and new temporary roof/vapor retarder or new roofing membrane installed in one day, unless provisions are implemented to maintain watertightness in interim or larger removal areas are approved by Owner's Representative.
   2. Provide temporary protection as needed if watertightness is compromised.
   3. Do not begin removal of existing roofing system when weather conditions are not conducive to maintaining watertightness or for application of new construction.

B. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation, according to roofing-system manufacturer's written instructions. Remove sharp projections.

C. Repair or replace deteriorated sections of substrate.

D. Clean and prepare wood or Homasote substrate according to roofing-system manufacturer's written instructions. Provide clean, dust-free, and dry substrate for roofing application.
   1. Remove and replace decking that is damaged, that cannot easily be cleaned, or that does not meet requirements of roofing-system manufacturer. Use exterior-grade plywood that conforms to APA standards.
   2. Verify that decking is fastened with non-projecting screws. If not, supplement existing fastening with new corrosion-resistant screws.

E. Mask adjoining surfaces not receiving roofing system to prevent spillage or migration affecting other construction.

F. Close off penetrations to prevent materials from entering and clogging drains and conductors, and from spilling or migrating onto adjacent surfaces. Remove roof-drain plugs when no work is taking place or when rain is forecast.

G. Installer and roofing-system manufacturer's representative shall examine substrate to ensure that it is properly prepared and ready to receive roofing system. Roofing-system manufacturer's representative shall report in writing to Installer and Architect/Engineer conditions which will adversely affect roofing-system installation or performance. Do not proceed with roofing-system installation until these conditions have been corrected and reviewed by Architect/Engineer.

H. Proceed with installation only after unsatisfactory conditions have been corrected. Commencing installation constitutes acceptance of Work surfaces and conditions.

3.4 ROOFING-SYSTEM INSTALLATION, GENERAL

A. Install built-up roofing membrane and base flashings according to roofing-system manufacturer's written instructions and applicable recommendations of NRCA/ARMA Quality Control Guidelines.

B. Install materials in strict accordance with safety requirements required by roofing-system manufacturer; Safety Data Sheets (SDS); and local, state, and federal rules and regulations.
   1. Follow safety procedures of OSHA and other applicable governing agencies. Assume responsibility for Work area safety at all times.
   2. Provide fully charged fire extinguishers, appropriately sized and rated, and water within 50 feet of hot-asphalt kettles

C. Asphalt Heating: Heat roofing asphalt and apply within +/-25 degrees F of equiviscous temperature, unless otherwise required by roofing-system manufacturer.
   1. Do not raise roofing asphalt temperature above equiviscous temperature more than one hour before time of application.
   2. Do not exceed roofing-system manufacturer's recommended temperature limits during heating, or heat roofing asphalt within 25 degrees F of flash point.
   3. Discard roofing asphalt maintained at temperature exceeding finished blowing temperature for more than four hours.
   4. Use kettles of optimum size to help prevent roofing asphalt from overheating. Circulate roofing asphalt while heating.

5. Do not allow roofing asphalt to stand in luggers for long periods or to cool below minimum recommended application temperature. Insulate hot-roofing-asphalt transfer lines where necessary to maintain adequate roofing asphalt temperatures for particular material and weather.
6. Heat roofing asphalt in enclosed tanker, or kettle fitted with after-burner device or air filtration device to control release of fumes. Make every effort to minimize release of fumes and odors from heating of bitumen and roofing-system application.

D. Maintain adequate ventilation during installation of roofing materials. Notify Owner's Representative at least one week in advance of Work with materials with noxious vapors. Review application schedule and venting precautions with Owner's Representative prior to beginning application.

E. Substrate-Joint Penetrations: Prevent roofing asphalt from penetrating substrate joints, entering building, or damaging roofing-system components or adjacent building construction.

F. Coordinate installing roofing-system components so insulation and roofing membrane sheets are not exposed to precipitation or left exposed at the end of the workday or when rain is forecast.
1. Provide tie-offs at the end of each day's Work to cover exposed roofing membrane sheets and insulation with course of coated felt set in roofing cement or hot roofing asphalt with joints and edges sealed.
2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.
3. Remove and discard temporary seals before beginning Work on adjoining roofing.

G. Prohibit foot traffic and equipment movement over roofing system while roofing asphalt is hot and fluid.

H. Cooperate with Architect/Engineer in performing inspections and testing of roofing system.

3.5 INSTALLATION OF BASE SHEET

A. Wood and Plywood Substrates:
1. Loosely lay one course of sheathing paper, lapping edges a minimum of 2 inches and ends a minimum of 6 inches.
2. Install one lapped course of base sheets, extending sheet over and terminating beyond cants. Mechanically fasten to substrate.
a. Fasten 8 inches o.c. in sidelaps and 16 inches o.c. in two staggered intermediate rows.

3.6 ROOFING MEMBRANE INSTALLATION

A. Start installation of built-up roofing membrane in presence of roofing-system manufacturer's technical personnel.

B. Install four-ply sheets, starting at low point of roofing system. Accurately align ply sheets without stretching. Start at low point of roof deck and shingle side laps uniformly in direction to shed water. Maintain required number of plies throughout field of roofing membrane. Extend ply sheets over and terminate about 1 inch above top of cants.
1. Embed each ply sheet in continuous mopping of hot roofing asphalt, applied at rate required by roofing-system manufacturer and at temperature not less than 425 degrees F, and adhere to substrate to form uniform membrane without ply sheets touching.

2. Broom each ply immediately to firmly embed into hot roofing asphalt, free of wrinkles, creases, fishmouths, or air pockets.
3. Cut out wrinkles and fishmouths, and repair with same number of plies removed.
4. Install all plies at one time.

3.7 BASE FLASHING AND STRIPPING INSTALLATION

A. Base Flashing: Install base flashing over cant strips and other sloping and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrates according to roofing-system manufacturer's written instructions.
   1. Accurately align flashing sheets without stretching and maintain uniform side and end laps required by roofing-system manufacturer for selvage and non-selvage laps.
      a. Start wall and curb base flashing at low point of roof deck and shingle with slope of deck.
      b. Extend base flashing plies to top of curbs, to within 1 inch of counterflashing reglets, at least 8 inches above finished surface of roofing system, and 4 inches onto field of roofing membrane. At locations where height of wall exceeds height acceptable to roofing-system manufacturer, comply with recommendations of roofing-system manufacturer for flashing high walls. Recommendations may include flashing in two stages: bottom half to recommended maximum height preceded by top half over remainder of wall.
   2. Mechanically fasten flashing backing plies to walls and parapets. Adhere flashing backing plies over roofing membrane at cants.
   3. Prime concrete, masonry, and steel substrates with asphalt primer. Allow primer to dry before installing base flashing.
   4. Adhere one flashing backing ply to substrate in solid mopping of hot roofing asphalt.
      a. Install each ply separately, staggering end joints 6 inches minimum, and extending second ply onto roof membrane 2 inches beyond edge of first ply.
      b. Press plies firmly into place while hot asphalt is fluid, to ensure continuous adhesion to substrate with no voids, wrinkles, or unadhered base flashing.
      c. Bond and seal laps, leaving no voids. Repair wrinkles and voids in laps and lapped seams. Prepare and prime non-selvage laps as recommended by roofing-system manufacturer.
      d. Install at least one ply of base flashing membrane same day that roofing membrane is installed to provide temporary watertight seal.
   5. Cut flashing cap sheet from end of roll to allow use of selvage edge. If edges are lapped without selvage edge, coat lap area with asphalt primer and allow to dry. Do not exceed 5-feet length of flashing cap sheet.
   6. Adhere flashing cap sheet to substrate in solid mopping of hot roofing asphalt, applied at not less than 425 degrees F. Apply hot roofing asphalt to substrate and back of flashing cap sheet. Press flashing cap sheet into asphalt while it is fluid to help ensure continuous adhesion.
   7. Mechanically fasten upper edge of base flashing securely at terminations and perimeter of roofing, using termination bar and fasteners spaced 8 inches on center and within 2 inches of end termination in base flashing. Install elastomeric sealant along top edge of termination bar.
   8. Install sheet metal flashing or counterflashing at top termination of base flashing.

B. Stripping: Install stripping according to roofing-system manufacturer's written instructions, where metal flanges and edgings are set on built-up roofing.

1. Install stripping of not less than two, roofing-membrane, ply sheets. Set each ply sheet in continuous coating of asphalt roofing cement, extending onto roofing membrane 4 inches; or in solid mopping of hot roofing asphalt, extending onto roofing membrane 6 inches.

3.8 AGGREGATE SURFACING INSTALLATION

A. Promptly after installing and inspecting roofing membrane, base flashing, and stripping for irregularities, flood-coat roof surface with 60 pounds per square of hot roofing asphalt. While flood coat is hot and fluid, cast 400 pounds of aggregate per square in uniform course.
   1. Embed at least 50 percent of aggregate in asphalt. Broom away loose aggregate and apply second coat of asphalt and aggregate where embedment is found to be less than 50 percent.
   2. If aggregate installation is to be delayed beyond roofing-system manufacturer's limitations, promptly apply glaze coat of hot roofing asphalt at rate of 10 pounds per square.

3.9 FIELD QUALITY CONTROL

A. Architect/Engineer will inspect roofing system at various stages of construction and at completion prior to installation of aggregate surfacing.

B. If indicated by inspections, test cuts may be made prior to installation of aggregate surfacing, to evaluate observed problems with roofing system.
   1. Approximate quantities of components within roofing membrane will be determined according to ASTM D3617.
   2. Test specimens will be examined for interply voids according to ASTM D3617, and to comply with criteria established in Appendix 3 of NRCA/ARMA Quality Control Guidelines.

C. Site Visits by Roofing-System Manufacturer's Technical Representative: Arrange for roofing-system manufacturer's technical representative to inspect roofing installation for every 200 squares of application and on completion and submit reports to Architect/Engineer. Notify Architect/Engineer and Owner's Representative 48 hours in advance of date and time of inspections.

D. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, and describe nature and extent of deterioration and damage in written report, with copies to Architect/Engineer and Owner's Representative.

E. Repair or remove and replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.

F. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional Work with specified requirements.

3.10 CLEANING

A. At the end of each workday, clean Site and Work areas and place rubbish, empty cans, rags, and other discarded materials in appropriate containers.

B. After completing roofing Work:
   1. Clean spillage and soiling from adjacent surfaces using cleaning agents and procedures recommended by manufacturer of affected surface. Exercise care to avoid scratching or damage to surfaces.

2. Repair surfaces stained, marred, or otherwise damaged during roofing Work.
3. Clean up debris and surplus materials and remove from Site.

C. Waste Management:
1. Collect surplus roofing materials that cannot be reused and deliver to recycling or disposal facility.
2. Treat materials that cannot be reused as hazardous waste and dispose of in an appropriate manner.

3.11 PROTECTION

A. Protect roofing system from damage and wear during remainder of construction period.

END OF SECTION

ROOFING INSTALLER'S WARRANTY

WHEREAS **<Insert name>** of **<Insert address>**, herein called ***Roofing Installer***, has performed roofing and associated work, designated ***Work***, on the following project:

1. Owner: **<Insert name of Owner.>**
2. Address: **<Insert address.>**
3. Building Name/Type: **<Insert information.>**
4. Address: **<Insert address.>**
5. Area of Work: **<Insert information.>**
6. Acceptance Date: **<Insert date.>**
7. Warranty Period: Two years.
8. Expiration Date: **<Insert date.>**

AND WHEREAS Roofing Installer has contracted, either directly with Owner or indirectly as subcontractor, to warrant said Work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period it will, at its own cost and expense, make or cause to be made such repairs to or replacement of said Work as are necessary to correct faulty and defective Work and as are necessary to maintain said Work in watertight condition, and warrants against the following.

1. Components of roofing system that do not comply with requirements; that do not remain watertight; that fail in adhesion, cohesion, or general durability; or that deteriorate in a manner not clearly specified by submitted roofing-system manufacturer's data as an inherent quality of the material for the application indicated, regardless of whether the Work was previously accepted by Owner. Warranty includes defects such as blisters, ridging, and excessive surfacing loss.
2. Damage by exposure to foreseeable weather; damage from leaks in roof system or related components; and damage by intrusion of foreseeable wind-borne moisture. Damage is understood to include accumulation of subsurface roof system moisture (i.e., wet insulation board), even if no other visible interior damage or moisture exists.

Warranty is made subject to the following terms and conditions:

1. Specifically excluded from Warranty are damages to Work and other parts of the building, and to building contents, caused by:
   a. lightning;
   b. peak gust wind speed exceeding **54** miles per hour;
   c. fire;
   d. failure of roof structure;
   e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of Work;
   f. activity on roofing by others, including construction contractors and maintenance personnel, whether authorized or unauthorized by Owner's Representative.
2. When Work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Roofing Installer is responsible for damage to Work covered by Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of Work.
4. During Warranty Period, if Owner allows alteration of Work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment

of other work, and positioning of anything on roof, Warranty shall become null and void on date of said alterations, but only to extent said alterations affect Work covered by Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said Work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate Work, thereby reasonably justifying limitation or termination of Warranty.

5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, Warranty shall become null and void on date of said change, but only to extent said change affects Work covered by Warranty.
6. Owner will promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and will afford reasonable opportunity for Roofing Installer to inspect Work and to examine evidence of such leaks, defects, or deterioration. Roofing Installer shall inspect leak, defect, or deterioration within 24 hours of notification.
7. If permanent repair or replacement of warranted condition cannot be made immediately, due to weather conditions, availability of appropriate labor or materials, building occupancy, etc., Roofing Installer must make, or cause to be made, immediate temporary repairs to prevent any further damage, deterioration, or unsafe conditions. Permanent repair or replacement of warranted condition shall be scheduled as soon thereafter as practical, and with Owner's consent and approval.
8. If Owner notifies Roofing Installer of warranted condition that requires immediate attention to prevent potential injury or damage, and Roofing Installer cannot or does not promptly inspect and repair same, either permanently or temporarily, then Owner may make, or cause to be made, such temporary repairs as may be essential, and Roofing Installer will reimburse Owner for cost of such repairs. Such action will not relieve Roofing Installer of its obligation to perform any necessary permanent repairs, and Warranty shall remain in full force and effect for remaining portion of its original term.
9. Roofing Installer shall provide equipment, labor, and material required to remedy warranted conditions, including repair or replacement of damage to other Work resulting therefrom, and removal and replacement of other Work required to access warranted condition. Additional required Work will be at Roofing Installer’s sole expense for full term of Warranty. Warranty includes removal and replacement of roof-deck boards, base sheets, temporary roof/vapor retarder, insulation, cover boards, walkway products, and Work that conceals defect, for all components of roofing system.
10. Roofing Installer shall perform a thorough inspection of roof system and other Work, within 30 day period preceding first and second anniversaries of start of Warranty period, in presence of roofing-system manufacturer's representative and Owner's Representative. Roofing Installer shall make, or cause to be made, necessary repairs or replacement to remedy conditions noted during inspections, under the terms of this Warranty. Repairs to be made within 30 days of inspection date or as otherwise agreed by Owner, even if such time extends beyond Warranty period.
11. Warranty is recognized to be only Warranty of Roofing Installer on said Work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original Work according to requirements of Contract Documents, regardless of whether Contract was directly with Owner or with Owner’s General Contractor.

IN WITNESS THEREOF, and intending to be legally bound hereby, Roofing Installer has caused this document to be executed by undersigned, duly-authorized officer.

_____ Corporate Seal:

(Roofing Installer)

By: _____
(Signature)

_____
(Name)

_____
(Date)

Subscribed and sworn to before me this _____day of _____, 20__

_____
Notary Public
My commission expires _____

SECTION 07 52 16

SBS-MODIFIED BITUMEN MEMBRANE ROOFING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Surface preparation, supply, and installation of granule-surfaced, SBS-modified-bitumen membrane roofing (Alternate 2).

B. Related Sections:
1. Section 02 40 00 – Selective Demolition
2. Section 06 10 00 - Rough Carpentry
3. Section 07 62 00 - Sheet Metal Flashing and Trim
4. Section 07 92 00 - Joint Sealants

1.2 REFERENCES

A. Definitions:
1. Square: 100 square feet.

B. Reference Standards: Latest edition as of Specification date.
1. American National Standards Institute (ANSI)/Single Ply Roofing Industry (SPRI):
   a. ANSI/SPRI FX-1: Standard Field Test Procedure for Determining the Withdrawal Resistance of Roofing Fasteners.
2. American Society of Civil Engineers (ASCE)/Structural Engineering Institute (SEI):
   a. ASCE/SEI 7: Minimum Design Loads for Buildings and Other Structures.
3. ASTM International:
   a. D41/D41M: Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
   b. D312: Standard Specification for Asphalt Used in Roofing,
   c. D1668: Standard Specification for Glass Fabrics (Woven and Treated) for Roofing and Waterproofing.
   d. D2178: Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
   e. D3617: Standard Practice for Sampling and Analysis of Built-up Roof Systems During Application.
   f. D4586: Standard Specification for Asphalt Roof Cement, Asbestos-Free.
   g. D4601: Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing.
   h. D4897/D4897M: Standard Specification for Asphalt-Coated Glass-Fiber Venting Base Sheet Used in Roofing.
   i. E108: Standard Test Methods for Fire Tests of Roof Coverings.
4. FM Global:
   a. Class Number 4470: Approval Standard for Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction.
   b. Approval Guide (online resource).

5. National Roofing Contractors Association (NRCA)/ Asphalt Roofing Manufacturers Association (ARMA):
    a. Quality Control Guidelines for Application of Polymer Modified Bitumen Roofing (Quality Control Guidelines).

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordinate Work to ensure that new roofing materials and building interior are kept continuously dry; that continuous, watertight, new roofing system is provided; and that adjacent areas are not adversely affected. Coordinate:
    1. With Owner's Representative.
    2. With other trades:
        a. To ensure that work done by other trades is complete and ready for roofing Work.
        b. To avoid or minimize work on, or in immediate vicinity of, roofing Work in progress and completed new roofing.
        c. To ensure that subsequent work will not adversely affect completed roofing.

B. Pre-installation Meeting:
    1. Conduct meeting at Site.
    2. Review requirements for roofing system, including:
        a. Construction schedule.
        b. Availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
        c. Site use, access, staging, and set-up location limitations.
        d. Forecast weather conditions.
        e. Surface preparation and roof-deck condition and pretreatment.
        f. Installation procedures.
        g. Base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
        h. Testing and inspection requirements.
        i. Temporary protection and repair of roofing system.
        j. Structural loading limitations of roof deck.
        k. Governing regulations and requirements for insurance and certificates.
    3. Contractor's Site superintendent, roofing-system manufacturer's technical representative, roofing Installer's foreman, Owner's Representative, Architect/Engineer, and testing agency representative shall attend.

1.4 SUBMITTALS

A. Product Data: Roofing-system manufacturer's literature, including written instructions for evaluating, preparing, and treating substrate; technical data including tested physical and performance properties; and application instructions.
    1. For membrane and base flashing materials, and roofing cement, primer, mastic sealant, and fasteners.
    2. Include temperature ranges for storage and application of materials, and special cold-weather application requirements or limitations.
    3. Include Safety Data Sheets (SDS) for information only; safety restrictions are sole responsibility of Contractor.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work; for details and fabrications not shown on Drawings.
    1. Membrane terminations and base flashings. Draw to scale.

2. Tapered insulation, including slopes.
3. Crickets, saddles, and tapered edge strips, including slopes.
4. Insulation fastening patterns.
5. Proposed temporary, watertight, tie-off details for each substrate type.

C. Manufacturer Certificate: Signed by roofing-system manufacturer, certifying that roofing system complies with specified requirements.
1. Written approval by roofing-system manufacturer for use and performance of membrane over specified board insulation, including that materials supplied for Project comply with requirements of cited ASTM standards. Approval should also indicate materials are suitable for ASTM E108, Class 1A roof and meet specified wind uplift classification.
2. Evidence of meeting performance requirements.
3. Certify that materials are free of asbestos.

D. Installer Qualifications:
1. Certification from roofing-system manufacturer, certifying that Installer complies with manufacturer's requirements to install specified, warranted, roofing system.
2. Evidence that Installer's *existing company* has minimum five years of continuous experience in similar roofing work; list of at least five representative, successfully completed projects of similar scope and size, including:
a. Project name.
b. Owner's name.
c. Owner's Representative name, address, and telephone number.
d. Description of work.
e. SBS-modified-bitumen materials used.
f. Project supervisor.
g. Total cost of roofing work and total cost of project.
h. Completion date.

E. Sample Warranty: Copy of roofing-system manufacturer's warranty, stating obligations, remedies, limitations, and exclusions. Submitted with bid.

F. Following completion of the Work:
1. Roofing-system manufacturer's inspection report of completed roofing installation.
2. Completed warranty from roofing-system manufacturer.
3. Completed warranty from Installer.
4. Maintenance program recommended for roofing system.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Experienced firm that has successfully completed roofing work similar in material, design, and extent to that indicated for Project; that is approved, authorized, or licensed by roofing-system manufacturer to install roofing-system products; and that is eligible to receive roofing-system warranty. Must have successful installations of specified materials in local area in use for minimum of five years.
1. Employ foreman with minimum five years of experience as foreman on similar projects, who is fluent in English, to be on Site at all times during Work. Do not change foremen during the course of the Project except for reasons beyond the control of the Installer; inform Architect/Engineer in advance of any changes.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle materials according to manufacturer's recommendations and in such a manner as to prevent damage to materials or structure.

B. Deliver materials to Site in original containers and packaging with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, lot number, and directions for storing and mixing with other components.

C. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, or installation. Reject and remove from Site new materials which exhibit evidence of moisture during application or which have been exposed to moisture.

D. Store materials in original, undamaged containers in clean, dry, protected location on raised platforms with weather-protective coverings, within temperature range required by manufacturer. Use canvas tarps for protection of moisture-sensitive roofing materials. Protect stored materials from direct sunlight. Manufacturer's standard packaging and covering is not considered adequate weather protection.

E. Store rolled materials on ends only, unless otherwise required by manufacturer's written instructions. Discard rolls that have been flattened, creased, or otherwise damaged.

F. Do not store materials at locations where new roofing materials have been installed.

G. Limit stored materials on structures to safe loading capacity of structure at time materials are stored, and to avoid permanent deflection of deck.

H. Conspicuously mark wet or damaged materials and promptly remove from Site.

I. Remove and replace materials that cannot be applied within stated shelf life

1.7 PROJECT CONDITIONS

A. Verify existing dimensions and details prior to start of roofing Work. Notify Architect/Engineer of conditions found to be different than those indicated in the Contract Documents. Architect/Engineer will review situation and inform Contractor and Installer of changes.

B. Comply with Owner's limitations and restrictions for Site use and accessibility.

C. Protect existing roofing from damage from construction activities. Repair damage to existing roofing from construction activities that result in leakage.

D. Ensure that drains are operational at the end of each workday or if precipitation is forecast.

E. Environmental Limitations: Install roofing when existing and forecast weather conditions permit roofing system to be installed according to roofing-system manufacturer's written instructions and warranty requirements.
   1. Apply roofing when substrate temperature is falling, and when substrate and ambient temperatures are within range recommended by roofing-system manufacturer.
   2. Do not proceed with installation during inclement weather except for temporary work necessary to protect building interior and installed materials. Remove temporary work and Work that becomes moisture damaged.

F. Handle and install materials in strict accordance with safety requirements required by roofing-system manufacturer; Safety Data Sheets (SDS); and local, state, and federal rules and regulations. Maintain Safety Data Sheets (SDS) with materials in storage area and available for ready reference at Site.

G. Maintain adequate ventilation during preparation and application of roofing materials.

1.8 CHANGES IN WORK

A. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with the Contract Documents. Such conditions may interfere with the Work and may consist of damage or deterioration of the substrate or surrounding materials that could jeopardize the integrity or performance of the Work.
   1. Notify Architect/Engineer of conditions that may interfere with the proper execution of the Work or jeopardize the performance of the Work prior to proceeding with the Work.

1.9 WARRANTIES

A. Manufacturer's Warranty:
   1. Written warranty signed by roofing-system manufacturer, including:
      a. Repair or replace components of roofing system that do not comply with requirements; that do not remain watertight; that fail in adhesion, cohesion, or general durability; or that deteriorate in a manner not clearly specified by submitted roofing-system manufacturer's data as an inherent quality of the material for the application indicated.
      b. Removal and replacement of roof-deck boards, base sheet, temporary roof/vapor retarder, insulation, cover boards, walkway products, and other components of roofing system.
      c. Labor and materials to perform warranty Work.
   2. Warranty Period: Twenty (20) years from date of completion of roofing system.

B. Roofing Installer's Warranty:
   1. Completed warranty form at the end of the Section, signed by Installer, including:
      a. Repair or replace components of roofing system that do not comply with requirements; that do not remain watertight; that fail in adhesion, cohesion, or general durability; or that deteriorate in a manner not clearly specified by submitted roofing-system manufacturer's data as an inherent quality of the material for the application indicated. Warranty includes defects such as blisters, ridging, and excessive surfacing loss.
      b. Removal and replacement of roof-deck boards, base sheets, temporary roof/vapor retarder, insulation, cover boards, walkway products, and other components of roofing system. Warranty includes replacing materials as necessary.
      c. Labor and materials to perform warranty Work.
   2. Warranty Period: Two years from date of completion of roofing system.

PART 2 PRODUCTS

2.1 SBS-MODIFIED-BITUMEN MEMBRANE ROOFING SYSTEM

A. General:

1. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing-system manufacturer based on testing and field experience.
2. Asbestos-Containing Materials: Install only asbestos-free materials. Immediately remove asbestos-containing materials inadvertently installed, in accordance with applicable regulations.
3. Source Limitations: Obtain components for roofing system from or approved by roofing-system manufacturer.

B. SBS-Modified-Bitumen Membrane Roof Assemblies (cold-adhered, heat-welded laps):
1. Johns Manville Roofing Systems:
   a. Bottom Ply: DynaBase
   b. Cap Sheet: DynaKap FR T1
2. Or approved equal.
3. Cap Sheet to be coated with granules. Granule color to be selected by Owner.

C. Base Flashing Systems:
1. Johns Manville Roofing Systems:
   a. Backer Sheet: DynaBase
   b. Flashing Sheet: DynaFlex
2. Or approved equal.
3. Flashing sheet to be coated with granules. Granule color to match color of roofing membrane granules.
4. Glass-Fiber Fabric: ASTM D1668, Type I, woven glass-fiber cloth treated with asphalt.

D. Asphalt Materials:
1. Asphalt Primer: ASTM D41/D41M.
2. Roofing Asphalt: ASTM D312, Type III or IV, as recommended by roofing-system manufacturer for application.

2.2 OTHER ROOFING-SYSTEM MATERIALS

A. Base Sheets:
1. Sheathing Paper: Red-rosin type, minimum 3 pounds per square.
2. Base Sheets: ASTM D4601, Type II, non-perforated, asphalt-impregnated and -coated, glass-fiber sheet, dusted with fine mineral surfacing on both sides. Mechanically fastened.
   a. GlasBase Plus as manufactured by Johns Manville

2.3 AUXILIARY MATERIALS

A. General: Auxiliary materials recommended by roofing-system manufacturer for intended use and compatible with roofing membrane.

B. Asphalt Roofing Cement: ASTM D4586, asbestos free, of consistency required by roofing-system manufacturer for application. Do not use unless specifically approved by roofing-system manufacturer. Do not use for sealing laps in membrane or base flashing, surface or stripping flashing at equipment penetrations and drains, or repairs to membrane or flashing.

C. Mastic Sealant: Polyisobutylene, plain or modified bitumen, non-hardening, non-migrating, non-skinning, and non-drying.

D. Termination Bars: Roofing-system manufacturer's standard; Type-304-stainless-steel or aluminum bars, approximately 1-inch wide by 1/8-inch thick; with predrilled holes 8 inches on center.

E. Fasteners, General: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FM Global Class Number 4470 and acceptable to roofing-system manufacturer.
   1. Designed for fastening roofing membrane components to substrate and tested by roofing-system manufacturer for required pullout strength.

F. Fasteners for Base Flashings:
   1. Wood and Plywood Substrates: 1-inch-minimum long, capped, galvanized-steel nails with ribbed shank of sufficient length to provide 1-inch-minimum embedment or pass through bottom side of wood or plywood. Use Square-Cap Nails-Steel Head with STORMGUARD double hot-dipped zinc coating manufactured by Maze Nails, or approved equal.
   2. Masonry Substrate: Stainless steel with hex washer head.
      a. 410 Stainless Steel Tapcon manufactured by ITW Red Head, Inc.
      b. 304 Stainless Steel Tapper, 1/4-inch diameter with hex washer head, manufactured by Powers Fasteners.
      c. 1 3/4 inch minimum length, or as noted on details.
   3. Metal substrate: No. 12 x 1 1/2 inch, 410 stainless steel, self-drilling screws with 1-inch, stainless steel washers.

G. Roofing Granules: Ceramic-coated roofing granules provided by roofing-system manufacturer, color to match roofing membrane.

H. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing-system manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer and roofing-system manufacturer's representative for compliance with requirements and for other conditions affecting installation or performance of roofing system.
   1. Perform testing according to ANSI/SPRI FX-1 to verify that fastener pull-out values meet or exceed those required by FM Global standards.
   2. Ensure that work done by other trades is complete and ready for roofing Work, including:
      a. Roof openings and penetrations are in place and set and braced, and roof drains are securely clamped in place.
      b. Wood cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and nailers match thicknesses of insulation.
      c. Wood or plywood deck is securely fastened with no projecting fasteners and with no adjacent units in excess of 1/16 inch out of plane relative to adjoining deck.
   3. Verify that areas and conditions under which roofing Work is to be performed permit proper and timely completion of Work.
   4. Notify Architect/Engineer in writing of conditions which may adversely affect installation or performance of roofing Work and recommend corrections.
   5. Do not proceed with roofing Work until adverse conditions have been corrected and reviewed by Architect/Engineer.

6. Commencing roofing Work constitutes acceptance of Work surfaces and conditions.

3.2 PROTECTION

A. Take precautions to ensure safety of people, including building users, passers-by, and workmen, and animals, and protection of property, including adjacent building elements, landscaping, and motor vehicles.

B. Prevent construction debris and other materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

C. Protect paving and sidewalks, and adjacent building areas from mechanical damage due to scaffolding and other equipment.

D. Limit access to Work areas.

E. Erect temporary protective canopies, as necessary, over walkways and at points of pedestrian and vehicular access that must remain in service during Work.

F. Comply with roofing-system manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products.

G. Cover adjacent surfaces with materials that are proven to resist roofing materials.

H. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Owner.

3.3 SURFACE PREPARATION

A. Remove existing roofing system and other materials to expose substrate.
   1. Remove only as much of existing roofing as can be prepared and new temporary roof/vapor retarder or new roofing system installed in one day, unless provisions are implemented to maintain watertightness in interim or larger removal areas are approved by Owner's Representative.
   2. Provide temporary protection as needed if watertightness is compromised.
   3. Do not begin removal of existing roofing system when weather conditions are not conducive to maintaining watertightness or for application of new construction.

B. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation, according to roofing-system manufacturer's written instructions. Remove sharp projections.

C. Repair or replace deteriorated sections of substrate.

D. Clean and prepare wood substrate according to roofing-system manufacturer's written instructions. Provide clean, dust-free, and dry substrate for roofing application.
   1. Remove and replace wood that is damaged, that cannot easily be cleaned, or that does not meet the requirements of roofing-system manufacturer.
   2. Verify that wood is fastened with non-projecting screws. If not, supplement existing fastening with new corrosion-resistant screws.

E. Mask adjoining surfaces not receiving roofing system to prevent spillage or migration affecting other construction.

F. Close off roof drains and other penetrations to prevent materials from entering and clogging drains and conductors, and from spilling or migrating onto adjacent surfaces. Remove roof-drain plugs when no work is taking place or when rain is forecast.

G. Installer and roofing-system manufacturer's representative shall examine substrate to ensure that it is properly prepared and ready to receive roofing system. Roofing-system manufacturer's representative shall report in writing to Installer and Architect/Engineer conditions which will adversely affect roofing-system installation or performance. Do not proceed with roofing-system installation until these conditions have been corrected and reviewed by Architect/Engineer.

H. Proceed with installation only after unsatisfactory conditions have been corrected. Commencing installation constitutes acceptance of Work surfaces and conditions.

3.4 ROOFING-SYSTEM INSTALLATION, GENERAL

A. Install roofing membrane and base flashings according to roofing-system manufacturer's written instructions and applicable recommendations of NRCA/ARMA Quality Control Guidelines for Application of Polymer Modified Bitumen Roofing.

B. Install materials in strict accordance with safety requirements required by roofing-system manufacturer; Safety Data Sheets (SDS); and local, state, and federal rules and regulations.
   1. Follow safety procedures of OSHA and other applicable governing agencies. Assume responsibility for Work area safety at all times.
   2. Provide fully charged fire extinguishers, appropriately sized and rated, and water within 50 feet of hot-asphalt kettles.
   3. Torch Safety for areas where torches are approved for use by Owner' Representative and Architect/Engineer.
      a. Do not use wood-fiber cant strips or insulation.
      b. Install continuous, glass-fiber, base sheet over combustible substrates.
      c. Install metal flashings at penetrations or protect with tight-fitting felt collar before torching.
      d. Torches to have safety lever (pilot only or self-igniting). Do not use full-time torches.
      e. Maintain fully charged fire extinguishers, appropriately sized and rated, within 50 feet of torch work locations.
      f. Walk job every day at least one hour after torches are out for fire watch.

C. Maintain adequate ventilation during installation of roofing materials. Notify Owner's Representative at least one week in advance of Work with materials with noxious vapors. Review application schedule and venting precautions with Owner's Representative prior to beginning application.

D. Substrate-Joint Penetrations: Prevent roofing asphalt from penetrating substrate joints, entering building, or damaging roofing-system components or adjacent building construction.

E. Coordinate installing roofing-system components so insulation and roofing membrane sheets are not exposed to precipitation or left exposed at the end of workday or when rain is forecast.
   1. Provide tie-offs at the end of each day's Work to cover exposed roofing membrane sheets and insulation with course of coated felt set in roofing cement or hot roofing asphalt with joints and edges sealed.
   2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.

3. Remove and discard temporary seals before beginning Work on adjoining roofing.

F. Prohibit foot traffic and equipment movement over roofing system until adhesive has cured**.** Minimize foot traffic and equipment movement over base plies prior to installation of membrane top ply/cap sheet.

G. Cooperate with Architect/Engineer in performing inspections and testing of roofing system.

3.5 INSTALLATION OF BASE SHEET

A. Wood and Plywood Substrates:
1. Loosely lay one course of sheathing paper, lapping edges a minimum of 2 inches and ends a minimum of 6 inches.
2. Install one lapped course of base sheets, extending sheet over and terminating beyond cants. Mechanically fasten to substrate.

3.6 ROOFING MEMBRANE INSTALLATION

A. SBS-Modified-Bitumen Membrane Installation: Install roofing membrane base plies and cap sheet.
1. Unroll sheets and allow to relax before installing.
2. Cut out factory splices in top ply. Alternately, cover splice with full-width section of top-ply membrane that extends at least 6 inches beyond sides of splice.
3. Accurately align sheets without stretching and maintain uniform side and end laps of minimum dimensions required by roofing-system manufacturer for selvage and non-selvage laps.
   a. Start at low point of roof deck and shingle side laps with slope of deck where possible.
   b. Stagger end laps at least 3 feet.
   c. Extend sheets over and terminate about 1 inch above top of cants.
4. .
5. Cut out wrinkles and fishmouths, and repair with same number of plies removed.
6. Laps:
   a. Prepare and prime non-selvage laps as recommended by roofing-system manufacturer.
   b. Continuously bond and seal laps, leaving no voids.
   c. Repair wrinkles and voids in lapped seams.
7. On granular or foil-surfaced roofs, embed loose granules or metallic powder in asphalt bleed out at side and end laps which exceeds 1/4 inch in width and at minor asphalt, primer, or adhesive spillage on finished membrane surfaces.
8. At locations where asphalt, primer, or adhesive spillage on finished membrane surfaces exceeds 1 square foot, install additional top ply of membrane.

3.7 BASE FLASHING AND STRIPPING INSTALLATION

A. General: Install base flashing over cant strips and other sloping and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrate according to roofing-system manufacturer’s written instructions.
1. Accurately align base flashing sheets without stretching and maintain uniform side and end laps required by roofing-system manufacturer for selvage and non-selvage laps.
   a. Start wall and curb base flashing at low point of roof deck and shingle with slope of deck.

b. Extend base flashing plies to top of curbs, to within 1 inch of counterflashing reglets, at least 8 inches above finished surface of roofing system, and 4 inches onto field of roofing membrane. At locations where height of wall exceeds height acceptable to roofing-system manufacturer, comply with recommendations of roofing-system manufacturer for flashing high walls. Recommendations may include flashing in two stages: bottom half to recommended maximum height preceded by top half over remainder of wall.
c. Bond and seal laps, leaving no voids. Repair wrinkles and voids in laps and lapped seams. Prepare and prime non-selvage laps as recommended by roofing-system manufacturer.

2. Install at least one ply of base flashing membrane same day that roofing membrane is installed to provide temporary watertight seal.

B. Application of Bottom Plies:
1. Mechanically fasten bottom ply to wood or plywood substrates with 1-inch capped nails at least 9 inches on center in both directions.
a. Cut out and repair wrinkles or loose areas of bottom ply to ensure that ply is continuously tight to substrate.
b. Adhere bottom ply over roofing membrane at cants in solid mopping of hot roofing asphalt.

C. Backer Sheet Application: Adhere SBS-modified-bitumen backer sheet to substrate in solid mopping of hot roofing asphalt, applied at not less than 425 degrees F. Press sheet firmly into place while hot roofing asphalt is fluid, to ensure continuous adhesion to substrate with no voids, wrinkles, or unadhered base flashing.

D. Flashing Sheet Application: Cold-applied.
1. Cut sheets off end of roll and install vertically, working to selvage edge.
2. For sheets without selvage edges or where selvage edge cannot be provided, limit length of sheets to 5 feet maximum. Prepare and prime non-selvage edges as recommended by roofing-system manufacturer.
3. Stagger end lap seams in top ply at least 6 inches from lap seams in bottom plies.

E. Mechanically fasten upper edge of base flashing securely at terminations and perimeter of roofing, using termination bars and fasteners spaced 8 inches on center and within 2 inches of end termination in base flashing.

F. Install sheet metal flashing or counterflashing at top termination of base flashing, per Section 07 62 00.

G. Equipment Penetrations: Flash per Drawing details or per roofing-system manufacturer's recommendations.
1. Prime flange of sheet-metal flashing, allow to dry, and set in modified-bitumen mastic.
2. Apply sealant at base flashing termination on sheet metal flashing.

H. At Perimeters:
1. Prime both sides of metal edging, gravel stop, and gutter flanges, and allow to dry.
2. Set in modified mastic over membrane as recommended by roofing-system manufacturer.
3. Mechanically fasten flanges 3 inches on center, staggered, and strip over with additional layer of base flashing, as recommended by roofing-system manufacturer.
4. Apply sealant along edge of base flashing at base of raised gravel stop dam to fill gap between base flashing and dam.

I. Install roofing-membrane, cap-sheet stripping where metal flanges and edgings are set on membrane roofing, according to roofing-system manufacturer's written instructions.

3.8 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage qualified, independent testing and inspecting agency to perform roof inspections and tests, and to prepare reports.

B. Architect/Engineer will inspect roofing system at various stages of construction and at completion.

C. If indicated by inspections, test cuts may be made to evaluate observed problems with roofing system.
   1. Approximate quantities of components within roofing membrane will be determined according to ASTM D3617.
   2. Test specimens will be examined for interply voids according to ASTM D3617 and to comply with criteria established in Appendix 3 of NRCA/ARMA Quality Control Guidelines for Application of Polymer Modified Bitumen Roofing.

D. Final Roof Inspection: Arrange for roofing-system manufacturer's technical representative to inspect roofing installation on completion and submit report to Architect/Engineer. Notify Architect/Engineer and Owner's Representative 48 hours in advance of date and time of inspection.

E. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, and describe nature and extent of deterioration and damage in written report, with copies to Architect/Engineer and Owner's Representative.

F. Repair or remove and replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.

G. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional Work with specified requirements.

3.9 CLEANING

A. At the end of each workday, clean Site and Work areas and place rubbish, empty cans, rags, and other discarded materials in appropriate containers.

B. After completing roofing Work:
   1. Clean spillage and soiling from adjacent surfaces using cleaning agents and procedures recommended by manufacturer of affected surface. Exercise care to avoid scratching or damage to surfaces.
   2. Repair surfaces stained, marred, or otherwise damaged during roofing Work.
   3. Clean up debris and surplus materials and remove from Site.

C. Waste Management:
   1. Collect surplus roofing materials that cannot be reused and deliver to recycling or disposal facility.
   2. Treat materials that cannot be reused as hazardous waste and dispose of in an appropriate manner.

3.10 PROTECTION

A. Protect roofing system from damage and wear during remainder of construction period.

END OF SECTION

ROOFING INSTALLER'S WARRANTY

WHEREAS **<Insert name>** of **<Insert address>**, herein called ***Roofing Installer***, has performed roofing and associated work, designated ***Work***, on the following project:

Owner: **<Insert name of Owner.>**
Address: **<Insert address.>**
Building Name/Type: **<Insert information.>**
Address: **<Insert address.>**
Area of Work: **<Insert information.>**
Acceptance Date: **<Insert date.>**
Warranty Period: Two years.
Expiration Date: **<Insert date.>**

AND WHEREAS Roofing Installer has contracted, either directly with Owner or indirectly as subcontractor, to warrant said Work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period it will, at its own cost and expense, make or cause to be made such repairs to or replacement of said Work as necessary to correct faulty and defective Work and as are necessary to maintain said Work in watertight condition and warrants against the following:

1. Components of roofing system that do not comply with requirements; that do not remain watertight; that fail in adhesion, cohesion, or general durability; or that deteriorate in a manner not clearly specified by submitted roofing-system manufacturer's data as an inherent quality of the material for the application indicated, regardless of whether the Work was previously accepted by Owner. Warranty includes defects such as blisters, ridging, and excessive surfacing loss.
2. Damage by exposure to foreseeable weather; damage from leaks in roof system or related components; and damage by intrusion of foreseeable wind-borne moisture. Damage is understood to include accumulation of subsurface roof system moisture (i.e., wet insulation board), even if no other visible interior damage or moisture exists.

Warranty is made subject to the following terms and conditions:

1. Specifically excluded from Warranty are damages to Work and other parts of building, and to building contents, caused by:
   a. lightning;
   b. peak gust wind speed exceeding **54** miles per hour;
   c. fire;
   d. failure of roof structure;
   e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of Work;
   f. activity on roofing by others, including construction contractors and maintenance personnel, whether authorized or unauthorized by Owner.
2. When Work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Roofing Installer is responsible for damage to Work covered by Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of Work.
4. During Warranty Period, if Owner allows alteration of Work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, Warranty will become null and void on date of

said alterations, but only to extent said alterations affect Work covered by Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate Work, thereby reasonably justifying limitation or termination of Warranty.

5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, Warranty will become null and void on date of said change, but only to extent said change affects Work covered by Warranty.
6. Owner will promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and will afford reasonable opportunity for Roofing Installer to inspect Work and to examine evidence of such leaks, defects, or deterioration. Roofing Installer shall inspect leak, defect, or deterioration within 24 hours of notification.
7. If permanent repair or replacement of warranted condition cannot be made immediately, due to weather conditions, availability of appropriate labor or materials, building occupancy, etc., Roofing Installer must make, or cause to be made, immediate temporary repairs to prevent any further damage, deterioration, or unsafe conditions. Permanent repair or replacement of warranted condition shall be scheduled as soon thereafter as practical, and with Owner's consent and approval.
8. If Owner notifies Roofing Installer of warranted condition that requires immediate attention to prevent potential injury or damage, and Roofing Installer cannot or does not promptly inspect and repair same, either permanently or temporarily, then Owner may make, or cause to be made, such temporary repairs as may be essential, and Roofing Installer will reimburse Owner for cost of such repairs. Such action will not relieve Roofing Installer of its obligation to perform any necessary permanent repairs, and Warranty shall remain in full force and effect for remaining portion of its original term.
9. Roofing Installer shall provide equipment, labor, and material required to remedy warranted conditions, including repair or replacement of damage to other work resulting therefrom, and removal and replacement of other work required to access warranted condition. Additional required work will be at Roofing Installer’s sole expense for full term of Warranty. Warranty includes removal and replacement of roof-deck boards, base sheets, temporary roof/vapor retarder, insulation, cover boards, walkway products, and work that conceals defect, for all components of roofing system.
10. Roofing Installer shall perform a thorough inspection of roof system and other Work, within 30 day period preceding first and second anniversaries of start of Warranty period, in presence of roofing-system manufacturer's representative and Owner's Representative. Roofing Installer shall make, or cause to be made, necessary repairs or replacement to remedy conditions noted during inspections, under the terms of this Warranty. Repairs to be made within 30 days of inspection date or as otherwise agreed by Owner, even if such time extends beyond Warranty period.
11. Warranty is recognized to be only Warranty of Roofing Installer on said Work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original Work according to requirements of Contract Documents, regardless of whether Contract was directly with Owner or with Owner’s General Contractor.

IN WITNESS THEREOF, and intending to be legally bound hereby, Roofing Installer has caused this document to be executed by undersigned, duly-authorized officer.

_____ Corporate Seal:
(Roofing Installer)

By: _____

(Signature)

_____
(Name)

_____
(Date)

Subscribed and sworn to before me this _____day of _____, 20__

_____
Notary Public
My commission expires _____

SECTION 07 54 19

THERMOPLASTIC MEMBRANE ROOFING

PART 1 GENERAL

1.1 WORK INCLUDES

A. PVC adhered membrane roofing on all low-slope roof areas.

B. Related Work:
1. Section 02 40 00 - Selective Demolition
2. Section 06 10 00 - Rough Carpentry
3. Section 07 62 00 - Sheet Metal Flashing and Trim
4. Section 07 92 00 - Joint Sealants

1.2 REFERENCES

A. Reference Standards:
1. American Society for Testing and Materials (ASTM)
   a. C 578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
   b. D 570 - Standard Test Method for Water Absorption of Plastics.
   c. D 638 - Standard Test Method for Tensile Properties of Plastics.
   d. D 1079 - Standard Terminology Relating to Roofing, Waterproofing, and Bituminous Materials.
   e. D 1204 - Standard Test Method for Linear Dimensional Changes of Non-rigid Thermoplastic Sheeting or Film at Elevated Temperature.
   f. D 1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics.

B. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA)
1. Architectural Sheet Metal Manual, latest edition

C. Underwriters Laboratories (UL)
1. Roofing Materials and Systems Directory

1.3 SUBMITTALS

A. Product Data: Membrane manufacturer’s literature including written instructions for evaluating, preparing, and treating substrate; technical data including tested physical and performance properties; and application instructions. Include VOC content of components.

B. Installer Qualifications:
1. Certification signed by roofing system manufacturer, certifying that Installer complies with manufacturer’s requirements to install specified, warrant-ed, adhered roofing system.
2. Submit evidence that Installer’s existing company has minimum of 5 years of continuous experience in application of specified materials. Submit list of at least three completed projects involving the specified roofing system, including:
   a. Project name.

b. Owner's name.
c. Owner's Representative name, address, and telephone number.
d. Description of work.
e. Thermoplastic sheet materials used.
f. Project supervisor.
g. Total cost of waterproofing work and total cost of project.
h. Completion date.

C. Sample Warranties: Copies of waterproofing manufacturer's warranty and Installer's warranty, both stating obligations, remedies, limitations, and exclusions. Submitted with bid.

D. Prior to installation of roofing system, submit to roofing manufacturer's technical services department for review and approval:
1. Manufacturer's Project Registration Form, with information filled out completely and accurately, including deviations from Specification.
2. Complete set of drawings of roofing system installation showing substrate limits, outline, dimensions, transitions, and types and locations of penetrations.
3. Atypical or special condition details that are to be used.

E. Following completion of Work, submit waterproofing manufacturer's warranty inspection report(s) and completed warranty; submit completed Installer's warranty.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Provide primary roofing products produced by a single manufacturer. Manufacturer shall have UL listing and FMG approval for roofing system identical to that used for this project. Provide secondary products only as recommended by manufacturer of primary products.
1. Provide primary products, including type of roof membrane, flashings, miscellaneous flashing materials, and sheet metal components from a single manufacturer who has produced that type of product successfully for not less than three (3) years. Provide secondary products (insulation, mechanical fasteners, lumber, etc.) only as recommended by manufacturer of primary products for use with roofing system specified.
2. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing system manufacturer based on testing and field performance data.

B. Installer Qualifications:
1. The Roofing Contractor shall have applied similar roofing systems on five or more projects that have been completed for at least five years.
2. Field Supervision: Maintain a full-time supervisor/foreman who is on the job site during times that the work of this Section is in progress and who is experienced in installing roofing systems similar to the type and scope required for this project. The supervisor's duties shall include maintaining as-built drawings and approved submittals.

C. Mock-ups: Contractor to provide mockups of typical interface and termination conditions for A/E review. Mockups may remain in place assuming that work is determined to have been installed in accordance with the Contract Documents.

D. Where not addressed in the selected roofing material manufacturer's installation requirements, perform work in accordance with generally accepted roofing practices as set forth in the current edition of the NRCA Roofing and Waterproofing Manual.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original packages with seals unbroken, labeled with membrane manufacturer's name, product brand name and type, date of manufacture, lot number, and directions for storing and mixing with other components.

B. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, and installation. Reject and remove from site any and all new materials that exhibit evidence of moisture during application or have been exposed to moisture.

C. Store materials in original, undamaged containers in clean, dry, protected location on raised platforms with weather-protective coverings, within temperature range required by membrane manufacturer. Protect stored materials from direct sunlight. Membrane manufacturer's standard packaging and covering is not considered adequate weather protection.

D. Store rolled goods on ends only, unless otherwise required by membrane manufacturer's written instructions. Discard rolls that have been flattened, creased, or otherwise damaged.

E. Limit stored materials on structures to safe loading of structure at time materials are stored, and to avoid permanent deflection of the acoustic metal deck.

F. Handle materials to avoid damage.

G. Conspicuously mark damaged or opened containers or containers with contaminated materials, and remove from site as soon as possible.

H. Remove and replace materials that cannot be applied within stated shelf life.

1.6 PROJECT CONDITIONS

A. Verify existing dimensions and details prior to installation of materials. Notify A/E of conditions found to be different than those indicated in Contract Documents. A/E will review situation and inform Contractor and Installer of changes.

B. Comply with Owner's limitations and restrictions for site use and accessibility.

C. Environmental Limitations: Apply roofing when existing and forecast weather conditions permit roofing to be installed according to roofing manufacturer's written instructions and warranty requirements.
   1. Apply only when substrate and ambient temperatures are above 40 degrees F, or within range recommended by roofing manufacturer.
   2. Do not apply to damp or wet substrates.

D. Handle and install materials in strict accordance with safety requirements required by roofing manufacturer, Material Safety Data Sheets, and local, state, and federal rules and regulations.

E. Maintain adequate ventilation during preparation and application of roofing materials.

F. Only as much of the new roofing as can be made weathertight each day, including all flashing and detail work, shall be installed. All seams shall be heat welded before leaving the job site that day.

G. All work shall be scheduled and executed without exposing the interior building areas to the effects of inclement weather. The existing building and its contents shall be protected against all risks.

H. All new and temporary construction, including equipment and accessories, shall be secured in such a manner as to preclude wind blow-off and subsequent roofing or equipment damage.

I. Uninterrupted waterstops shall be installed at the end of each day's work and shall be completely removed before proceeding with the next day's work. Waterstops shall not emit dangerous or unsafe fumes and shall not remain in contact with the finished roof as the installation progresses. Contaminated membrane shall be replaced at no cost to the Owner.

J. Prior to and during application, all dirt, debris and dust shall be removed from surfaces by vacuuming, sweeping, blowing with compressed air or similar methods.

K. Precautions shall be taken when using adhesives at or near rooftop vents or air intakes. Adhesive odors could enter the building. Coordinate the operation of vents and air intakes in such a manner as to avoid the intake of adhesive odor while ventilating the building. Keep lids on unused cans at all times.

1.7 CHANGES IN WORK

A. During rehabilitation work, existing conditions may be encountered that are not known or are at variance with drawings and specifications. Such conditions may interfere with Work and may consist of damage or deterioration of substrate or surrounding materials or components that could jeopardize integrity or performance of new roofing.

B. Notify Architect/Engineer of conditions that may interfere with proper execution of Work or jeopardize integrity of new roofing prior to proceeding with Work.

1.8 WARRANTY

A. Manufacturer’s Warranty:
   1. Written no dollar limit (NDL) warranty, signed by roofing manufacturer and Installer, including
      a. Repair or replace roofing or sheet flashings that do not comply with requirements; that do not remain watertight; that fail in adhesion, cohesion, or general durability; or that deteriorate in manner not clearly specified by submitted roofing manufacturer’s data as inherent quality of material for application indicated.
      b. Warranty includes replacing materials as necessary.
      c. Provide most comprehensive warranty offered by manufacturer.
   2. Warranty Period: 20 year manufacturers no dollar limit (NDL) system warranty (after Substantial Completion date) in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within the 20 year period.

B. Installer’s Warranty:
   1. Written warranty, jointly signed by Installer and Contractor, including:

a. Repair or replace roofing and or sheet flashings that do not comply with requirements; that do not remain watertight; that fail in adhesion, cohesion, or general durability; or that deteriorate in manner not clearly specified by submitted roofing manufacturer's data as inherent quality of material for application indicated.
b. Repair or replacement, to satisfaction of Owner, of other work or items that may have been displaced or damaged as consequence of defective work.
c. Make immediate emergency repairs within 48 hours of notice of leakage.

2. Installers Warranty Period: 3 years after Substantial Completion date.

C. Roofing membrane manufacturer's written endorsement of the Installer.

PART 2 PRODUCTS

2.1 THERMOPLASTIC MEMBRANE

A. Source Limitations: Obtain materials through one source from single roofing manufacturer.

B. Membrane shall conform to ASTM D 4434, "Standard for Polyvinyl Chloride Sheet Roofing." Classification: Type II, Grade I,
1. Basis of Design:
a. Sika Sarnafil G410-72 Roof Membrane, 72 mil, thermoplastic membrane with fiberglass reinforcement.

C. Color of Membrane: To be selected by Owner.

D. Typical Physical Properties:
1. Tensile Strength: ASTM D638 - 1600 pounds per square inch minimum.
2. Elongation at Break: ASTM D638 - 240 percent minimum, machine direction.
3. Seam Strength: ASTM D638 - 90 percent minimum of tensile strength.
4. Retention of Properties after Heat Aging: ASTM D638, D 3045 - 95 percent minimum retention of tensile strength and elongation after 168 hours at 194 degrees F.
5. Tear Resistance: ASTM D 1004 - 21 pounds minimum.
6. Low-Temperature Bend: ASTM D 2136 - Pass at -40 degrees F.
7. Linear Dimension Change: ASTM D1204 - 0.1 percent maximum after 6 hours at 176 degrees F.
8. Water Absorption: ASTM D570 - 2 percent maximum weight gain after 168 hours immersion at 158 degrees F.

2.2 FLASHING MATERIALS

A. Wall and Curb Base Flashing:
1. Sarnafil G410 Membrane, 72 mil

B. Miscellaneous Metal Flashings:
1. See Section 07 62 00

C. Accessories:
1. Provide proprietary accessories as supplied or recommended by manufacturer.

2.3 INSULATION

A. Rigid polyisocyanurate foam insulation meeting ASTM C 1289-13e1.
   1. Sarnatherm CG (coated glass facers) - 20 psi compressive strength, by Sika Sarnafil.
   2. Board thickness: One board layer with a thickness of 2 inches, or as noted in the Drawings. All insulation boards shall have coated glass facers on both sides.
   3. The insulation package shall be clearly labeled to indicate the R- value and fire hazard classification 25/50. The insulation shall be marked with R- value and TIMA "P.E.B. 202" identifications.
   4. Insulation is to be secured using low rise foam adhesive.

B. Cover Board: Sarnatherm Roof Board CG by Sika Sarnafil, or approved equal. Boards are to be 1/2 inch thick high-density polyisocyanurate roof board with coated glass facers.
   1. Boards are to be secured using low rise foam adhesive.

2.4 VAPOR RETARDER / TEMPORARY ROOF

A. Self-adhering vapor retarder that is suitable for application of wood roof decks:
   1. Vapor Retarder SA 31 and primer (as necessary and recommended by manufacturer), by Sika.
   2. Approved equal.

2.5 ATTACHMENT COMPONENTS

A. Membrane Adhesive:
   1. To attach membrane to substrate: Sarnacol 2121 Adhesive, by Sika Sarnafil.
   2. Approved equal.

B. Insulation and Cover Board Adhesive:
   1. Sarnacol AD Board Adhesive by Sika Sarnafil. Apply adhesive in ribbon patterns as required by Sika Sarnafil and wind uplift loads specified on drawings. Boards are to be weighted down with a minimum of six 5 gallon sized buckets (filled with water) per board, and held in place for approximately 10 minutes after placing insulation (or alternate method as approved by A/E and roofing manufacturer).
   2. Approved equal.

C. Other products as supplied or recommended by the manufacturer for total systems warranty.

2.6 PRIMERS

A. Use primer as recommended by the manufacturer.

2.7 MISCELLANEOUS ACCESSORIES

A. Provide tape as supplied or recommended by membrane manufacturer.

B. Draw Bands: Stainless steel draw band as recommended by membrane manufacturer to terminate around pipe penetrations.

C. Hot-Air Welding Machine: As recommended by membrane manufacturer to seal membrane seams.

2.8 MISCELLANEOUS FASTENERS AND ANCHORS

A. All fasteners, anchors, nails, straps, bars, etc. shall be corrosion resistant.

B. Mixing metal types and methods of contact shall be assembled in such a manner as to avoid galvanic corrosion.

C. All miscellaneous wood fasteners and anchors used for flashings shall have a minimum embedment of 1 inch and shall be approved for such use by the fastener manufacturer.

D. For fastening into sheet metal substrates: No. 8-18, made of corrosion-resistant materials or coated for corrosion resistance. Fastener length shall be sufficient to provide the required pull-out capacity.

2.9 RELATED MATERIALS

A. Wood Nailer/Blocking:
   1. "Wolmanized" pressure treated dimensional lumber, No. 2 or better, secured to concrete deck with 1/4 inch diameter self-tapping type 300 series stainless steel screws such as Aggre-Gator bi-metal fasteners (TrimFit countersunk) by Elco.
   2. All wood shall have a maximum moisture content of 19 percent by weight on a dry-weight basis.
   3. Thickness of nailers must match the insulation thickness to achieve a smooth transition where applicable.
   4. Install wood nailer and blocking prior to the installation of the roof membrane.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions with Installer and roofing manufacturer’s representative for compliance with requirements and other conditions affecting performance of roofing.

B. Verify the substrate is ready for roofing installation.

C. All roof surfaces shall be free of water, ice and snow.

D. Notify Engineer in writing of conditions that may adversely affect roofing system installation or performance. Do not proceed with roofing installation until these conditions have been corrected and reviewed by Engineer.

3.2 WOOD NAILER INSTALLATION

A. Install continuous wood nailers at the perimeter of the entire roof to elevate the edge detail and around roof projections and penetrations as shown on the Drawings.

B. Anchor nailers to resist a minimum force of 300 pounds per lineal foot in any direction. Individual nailer lengths shall not be less than 3 feet long. Nailer fastener spacing shall be at 12 inches on center or 16 inches on center if necessary to match the structural framing. Fasteners shall be staggered 1/3 the nailer width and installed within 6 inches of each end. Two fasteners shall be installed at ends of nailer lengths.

C. Thickness shall be as required to match substrate and insulation height to allow a smooth transition.

3.3 THERMAL INSULATION AND COVER BOARD INSTALLATION

A. Do not install more insulation than can be covered by the end of the work day.

B. Stagger joints a minimum of 12 inches between layers.

C. Extend board insulation in thickness indicated to cover entire roof.

D. Adhere or mechanically fasten insulation with approved foam adhesive or approved fasteners and plates at a rate according to the insulation manufacturer's and membrane manufacturer's recommendations for adhering boards or securing with fasteners at designated patterns. The quantity and locations of the adhesive or fasteners and plates shall also cause the insulation boards to rest evenly on the substrate so that there are no significant and avoidable air spaces between the boards and the substrate. Each insulation board shall be installed tightly against the adjacent boards on all sides. For adhesive application, insulation boards shall be weighed down with a minimum of six full five gallon containers per 4ft by 8 ft. board for a sufficient enough time for adhesive to completely set up.

3.4 INSTALLATION OF ROOFING MEMBRANE

A. Adhesive Installation:
   1. Apply adhesive over the properly installed and prepared substrate surface per the manufacturer's recommendations and requirements. Apply adhesive in smooth, even coats with no gaps, globs, puddles or similar inconsistencies. Only an area that can be completely covered in the same day's operations shall be coated with adhesive. Allow first layer of adhesive to dry completely prior to installing a second layer of adhesive and the membrane.
   2. Install roof membrane into adhesive per manufacturer's requirements.

3.5 HOT-AIR WELDING OF SEAM OVERLAPS

A. General
   1. Hot-air weld all seams. Seam overlaps should be 3 inches wide when automatic machine-welding and 4 inches wide when hand-welding, unless manufacturer recommends otherwise for certain applications.
   2. All membrane to be welded shall be clean and dry.
   3. Perform all welding in conformance with membrane manufacturer's recommendations.

B. Hand-Welding
   1. Complete Hand-welded seams in two stages. Weld the back edge of the seam with a narrow but continuous weld to prevent loss of hot air during the final welding.
   2. Insert nozzle into the seam at a 45 degree angle to the edge of the membrane. Once the proper welding temperature has been reached and the membrane begins to "flow", position hand roller perpendicular to the nozzle and rolled lightly. For straight seams, use 1-1/2 inch wide nozzle. For corners and compound connections, use 3/4 inch wide nozzle.

C. Machine Welding

1. Use automatic welding equipment provided by roofing membrane manufacturer, following manufacturer’s instructions and observing local codes for electric supply, grounding and over current protection. Dedicated circuit house power or a dedicated portable generator is recommended. No other equipment shall be operated simultaneously off the generator.
2. Metal tracks may be used over the deck membrane and under the machine welder to minimize or eliminate wrinkles.

3.6 MEMBRANE FLASHINGS

A. Install all flashings in accordance with the manufacturer’s standard details, unless specified otherwise in the Drawings.

B. All flashings shall be installed concurrently with the roof membrane as the job progresses. No temporary flashings shall be allowed without the prior written approval of the Owner's Representative and membrane manufacturer. Approval shall only be for specific locations on specific dates. If any water is allowed to enter under the newly completed roofing, the affected area shall be removed and replaced at the Applicator's expense. Flashing shall be adhered to compatible, dry, smooth, and solvent-resistant surfaces. Use caution to ensure adhesive fumes are not drawn into the building.

C. Adhesive for Membrane Flashings
   1. Apply adhesive over the properly installed and prepared flashing substrate in accordance with manufacturer’s recommendations. Apply adhesive in smooth, even coats with no gaps, globs or similar inconsistencies. Only an area that can be completely covered in the same day's operations shall be flashed. Press bonded sheet firmly in place with a hand roller.
   2. No adhesive shall be applied in seam areas that are to be welded. All panels of membrane shall be applied in the same manner, overlapping the edges of the panels as required by welding techniques.

D. Install termination bars according to the Drawings and the membrane manufacturer’s recommendations with approved fasteners into the structural deck at the base of parapets, walls and curbs. Install termination bars as required by the membrane manufacturer at the base of all tapered edge strips and at transitions, peaks, and valleys according to manufacturer’s standard details.

E. All flashings shall extend a minimum of 8 inches above roofing level unless indicated on drawings. All flashing membranes shall be consistently adhered to substrates. All interior and exterior corners and miters shall be cut and hot-air welded into place.

F. All flashing membranes shall be mechanically fastened along the counter-flashed top edge per the manufacturer’s recommendations at 6 to 8 inches on center.

G. Terminate flashings in accordance with membrane manufacturer’s recommended details.

3.7 TEMPORARY CUT-OFF

A. All flashings shall be installed concurrently with the roof membrane in order to maintain a watertight condition as the work progresses. All temporary water stops shall be constructed to provide a watertight seal. The stagger of the insulation joints shall be made even by installing partial panels of insulation. The new membrane shall be carried into the water stop. Water

stop shall be sealed to the deck or substrate so that water will not be allowed to travel under the new or existing roofing. The edge of the membrane shall be sealed in a continuous heavy application of sealant. When work resumes, the contaminated membrane shall be cut out. All sealant, contaminated membrane, insulation fillers, etc. shall be removed from the work area and properly disposed of offsite. None of these materials shall be used in the new work.

B. If inclement weather occurs while a temporary water stop is in place, the Contractor shall provide the labor necessary to monitor the situation to maintain a watertight condition.

C. If any water is allowed to enter under the newly completed roofing, the affected area shall be completely removed and replaced at the Applicator's expense.

3.8 FIELD QUALITY CONTROL

A. Site Visits by Roofing Membrane Manufacturer's Representative: Roofing membrane manufacturer's representative shall visit site at following times.
   1. At beginning of membrane installation to establish standard of quality to be used for remainder of roofing work.
   2. Periodically during Work at critical times and as required to meet provisions of waterproofing manufacturer's warranty.
   3. Submit written report with observations, field decisions, and request for design changes to Engineer for each site visit.
   4. Coordinate site visits with A/E.

B. Seam Weld Evaluation: Evaluate seam welds daily. Provide Owner's Representative, Engineer, and waterproofing manufacturer with copy of evaluations.
   1. After cooling, check outside edge of welded seam for continuity with blunt metal probe, and verify that laps are flat and free of voids, fish mouths, or wrinkles.
   2. At least 3 times each day, make 1-inch-wide cut perpendicular to seam and peel waterproofing strip. Seam weld is acceptable if waterproofing is damaged prior to seam peel and if seam width is continuous and at least 1-inch wide.
   3. Obtain cross-section samples through welded seams at least 3 times each day, at locations designated by the Engineer or waterproofing manufacturer's representative. Number and date samples and retain for inspection. Record sample locations on Drawing. Patch sample locations at no cost to Owner. Sample machine-welded seams at beginning of day to verify proper working condition and operating temperature of welding machine.
   4. Leave welded seams exposed until inspected and accepted by waterproofing manufacturer's representative.
   5. Repair defects. If cause of seam failure cannot be located, hand-weld 8-inch-wide strip over seam.

3.9 CLEANING

A. At end of each workday, clean site and work areas and place rubbish, empty cans, rags, and other discarded materials in appropriate containers.

B. Carefully inspect all completed work and correct all defects.

C. Prevent movement or storage of materials or equipment on the completed roof.

D. After completing Work, clean spillage and soiling from adjacent surfaces using cleaning agents and procedures recommended by manufacturer of affected surface. Exercise care to avoid scratching or damage to surfaces. Repair surfaces stained, marred, or otherwise damaged during waterproofing Work.

E. At conclusion of Work, clean up debris and surplus materials and remove from site.

F. Waste Management:
   1. Collect surplus materials that cannot be reused and deliver to recycling or disposal facility.
   2. Treat materials that cannot be reused as hazardous waste and dispose of in appropriate manner.

3.10 PROTECTION

A. Protect roofing membrane from damage and wear during remainder of construction period.
   1. Do not allow waste products (petroleum, grease, oil, solvents, vegetable oil, mineral oil, animal fat, etc.) to come into contact with roofing. Exposure to foreign materials or chemical discharges must be presented to waterproofing manufacturer for evaluation to determine impact on waterproofing performance.

END OF SECTION

SECTION 07 62 00

SHEET METAL AND MEMBRANE FLASHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Sheet metal counterflashing, roof edge flashing, gutter, downspout, and other miscellaneous sheet metal.

B. Related Sections
   1. Section 06 10 00 - Rough Carpentry
   2. Section 07 51 13 – Built-Up Asphalt Roofing
   3. Section 07 54 19 - Thermoplastic Membrane Roofing
   4. Section 07 92 00 - Joint Sealants

1.2 REFERENCES

A. Reference Standards: Latest edition as of Specification date.
   1. ASTM International:
      a. A240/A240M: Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
      b. B32: Standard Specification for Solder Metal.
      c. C920: Standard Specification for Elastomeric Joint Sealants.
   2. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA).
      a. Architectural Sheet Metal Manual, latest edition.

1.3 SUBMITTALS

A. Product Data: For each product specified.

B. Samples: For each type of sheet metal flashing and trim. Construct an 8 inch wide typical lap splice or seam for mechanically-jointed systems using pre-tinned metal and solder the applicable lap or seam condition for field-solderable systems. Submit soldered samples to WJE for review.

C. Installer Qualifications: Submit evidence that Installer's existing company has minimum of 5-years continuous experience in fabrication and application of architectural sheet metal and 5-years continuous experience in application of membrane flashings.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Must have installations of specified materials in local area in use for minimum of five years.
   1. Employ foreman with minimum of 5 years of experience as foreman on similar projects, who is fluent in English, to be on site at all times during Work.

B. Mockups: Build mockups to demonstrate aesthetic effects and set quality standards for fabrication and installation.
   1. Required mockups:

a. Wall base flashings.
b. Roof edge flashings.
c. Gutters and downspouts.

2. Approved mockups may become part of completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Sheet Metal Members: Deliver, store, and handle to avoid damage.

B. Sealants, Membranes, and Miscellaneous Materials:
1. Deliver materials to Project site in original packages with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, lot number, and directions for storing.
2. Store materials in original, undamaged containers in clean, dry, protected location on raised platforms with weather-protective coverings, within temperature range required by manufacturer. Protect stored materials from direct sunlight. Waterproofing manufacturer's standard packaging and covering is not considered adequate weather protection.
3. Handle materials to avoid damage.
4. Conspicuously mark damaged or opened containers or containers with contaminated materials and remove from site as soon as possible.
5. Remove and replace materials that cannot be applied within stated shelf life.

C. Limit stored materials on structures to safe loading of structure at time materials are stored, and to avoid permanent deck deflection.

1.6 PROJECT CONDITIONS

A. Verify existing dimensions and details prior to installation of materials. Notify Architect/Engineer of conditions found to be different than those indicated in Contract Documents. Architect/Engineer will review situation and inform Contractor and Installer of changes.

B. Comply with Owner's limitations and restrictions for site use and accessibility.

C. Environmental Limitations: Apply sheet metal members when existing and forecast weather conditions permit sealants, coatings, and miscellaneous materials to be installed according to sealant, coating, or miscellaneous material manufacturer's written instructions and warranty requirements.

D. Handle and install materials in strict accordance with safety requirements required by waterproofing manufacturer, Material Safety Data Sheets, and local, state, and federal rules and regulations.

1.7 CHANGES IN WORK

A. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with drawings and specifications. Such conditions may interfere with Work and may consist of damage or deterioration of substrate or surrounding materials or components that could jeopardize integrity or performance of new sheet metal installation.

B. Notify Architect/Engineer of conditions that may interfere with proper execution of Work or jeopardize integrity of new sheet metal installation prior to proceeding with Work.

1.8 WARRANTY

A. Contractor's Warranty:
   1. Written warranty, signed by Contractor, including
      a. Replace sheet metal and membrane flashing work that does not comply with requirements; that has corroded surface, surface defects or imperfections; does not have adequate bond to substrate, contains punctures or tears, has excessive wrinkles or fish mouths. or that deteriorates in manner not clearly specified by material supplier's data as inherent quality of material for application indicated.
      b. Remove and replace sealant that has failed cohesively or adhesively; or that deteriorates in manner not clearly specified by sealant manufacturer's data as inherent quality of material for application indicated.
      c. Repair or replacement, to satisfaction of Owner, of other work or items which may have been displaced or damaged as consequence of defective work.
      d. Warranty does not include deterioration or damage from changes in sheet metal and membrane environment from that reasonably anticipated at Substantial Completion, or physical damage from adjacent activities.
   2. Warranty Period: 2 years after Substantial Completion date.

PART 2 - PRODUCTS

2.1 FLASHING MATERIALS

A. Sheet Metal Flashing:
   1. Prefinished (both sides) aluminum flashing, 0.040 in. thick (unless noted otherwise). Prefinishing is to be shop applied and is to be "Kynar 500" or "Hylar 5000" based paint. Color to be selected by Owner.

B. Miscellaneous PVC Clad Metal Flashings for integration with roofing membrane:
   1. 24 gauge PVC clad galvanized steel, PVC color to match roof membrane.

C. Miscellaneous flashings for integration with rooftop appurtenances: Stainless steel sheet, ASTM A167, Type 304; No. 2D mill rolled finish; 26 gauge.

D. Base flashing for traffic coating application at the South Balcony.

2.2 AUXILIARY MATERIALS

A. Fasteners:
   1. New or existing sheet metal to wood: "TruGrip" stainless steel wood fasteners with HWH with "Maxiseal" integral head and EPDM sealing washer as manufactured by ITW Buildex. Size shall be sufficient to engage wood at existing holes.

B. Separator Sheet: Continuous 6 mil polyethylene or approved equal. To be used in all locations as necessary to prevent contact between dissimilar metals.

C. Self-Adhering Flashing Membrane: Perm-a-Barrier as manufactured by GCP Technologies, or approved equal.

D. Fasteners: Use only high quality fasteners as recommended or approved by the roof system manufacturer.
   1. Screws: Self-drilling screws shall be min. #12 diameter. Self-tapping screws shall be min. #14 diameter.
      a. Exposed self-drilling and self-tapping screws shall have a zinc die-cast head with neoprene washer or be 300 series stainless steel with neoprene washer. All exposed fasteners shall be painted to match panel color.
      b. Concealed screws shall be 300 series stainless steel.

2.3 FABRICATION

A. Custom fabricate to comply with recommendations in SMACNA's Architectural Sheet Metal Manual, that apply to design, dimensions, metal, and other characteristics of item indicated. Conform to dimensions and profiles shown in SMACNA's Architectural Sheet Metal Manual, unless requirements that are more stringent are indicated.
   1. Obtain field measurements for accurate fit before fabrication.
   2. Shop fabricate items where practical.

B. Fabricate without excessive oil canning, buckling, or tool marks, and true to line and levels indicated, with exposed edges folded back to form hems.

C. Sealed Joints: Form non-expansion but movable joints in metal to accommodate elastomeric sealant and in compliance with recommendations in SMACNA's Architectural Sheet Metal Manual.

D. Expansion Provisions: Provide splice lap covers over adjoining sections of metal flashing. Splice covers to be fabricated to fully nest within profile of flashing profile. Maintain 1/4 in. movement gap between adjacent sections of base flashing metals. Splice covers to provide 6 in. minimum overlaps and be sealed with five rows of transverse butyl sealant. Crimp hemmed edges.

E. Conceal fasteners and expansion provisions, where possible, on exposed-to-view sheet metal flashing and trim, unless otherwise indicated.

F. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, non-corrosive metal, and in thickness not less than that of metal being secured.

G. Fabricate in minimum in largest possible lengths, but not exceeding 10-foot-long, sections. Provide laps and splices as indicated on Drawings. Miter corners, seal, and solder watertight using pre-tinned joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions with Installer for compliance with requirements and other conditions affecting performance of sheet metal flashings and trim.
   1. Ensure that Work done by other trades is complete and ready to receive sheet metal flashings and trim.
   2. Verify that areas and conditions under which Work is to be performed permit proper and timely completion of Work.
   3. Notify Architect/Engineer in writing of conditions which may adversely affect installation or performance of sheet metal flashings and trim. Do not proceed with installation of sheet

metal flashings and trim until these conditions have been corrected and reviewed by Architect/Engineer.

3.2 INSTALLATION

A. General: Install sheet metal flashings and trim according to recommendations in SMACNA's Architectural Sheet Metal Manual (latest edition) and as indicated.

B. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
   1. Install true to line and levels indicated.
   2. Where exposed, install without excessive oil canning, buckling, or tool marks.
   3. Provide uniform, neat seams with minimum exposure of solder, welds, or sealant.
   4. Do not torch cut sheet metal.

C. Provide for thermal expansion of exposed flashing and trim.
   1. Space movement joints no more than 10 feet apart, with no joint within 24 inches of corner or intersection.

D. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by fabricator or manufacturers of dissimilar metals.

E. Anchor sheet metal flashing and trim and other components of Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required.
   1. Space cleats not more than 12 inches apart. Anchor each cleat with two fasteners. Bend tabs over fasteners

F. Seal metal to metal joints with non-skinning butyl sealant as required for watertight construction.

G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter.

H. Aluminum Sheet Metal Joinery: Pop rivet and seal (with silicone sealant) all joints.

3.3 CLEANING

A. At end of each workday, clean site and work areas and place rubbish, empty cans, rags, and other discarded materials in appropriate containers.

B. After completing sheet metal Work, clean spillage and soiling from adjacent surfaces using cleaning agents and procedures recommended by manufacturer of affected surface. Exercise care to avoid scratching or damage to surfaces. Repair surfaces stained, marred, or otherwise damaged during roofing Work.

C. At conclusion of Work, clean up debris and surplus materials and remove from site.

3.4 PROTECTION

A. Protect sheet metal and membrane flashings from damage and wear during remainder of construction period.

END OF SECTION

SECTION 07 92 00

JOINT SEALANTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Surface preparation and installation of sealant in joints.

B. Related Sections:
1. Section 06 10 00 - Rough Carpentry
2. Section 07 51 13 - Built-Up Asphalt Roofing
3. Section 07 54 19 - Thermoplastic Membrane Roofing
4. Section 07 62 00 - Sheet Metal and Membrane Flashing

1.2 REFERENCES

A. Reference Standards: Latest edition as of Specification date.
1. ASTM International:
a. C920: Standard Specification for Elastomeric Joint Sealants.
b. C1193: Standard Guide for Use of Joint Sealants
c. C1248: Standard Test Method for Staining of Porous Substrate by Joint Sealants.
d. C1521: Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordinate Work to ensure that adjacent areas are not adversely affected; that new materials and building interior are kept continuously dry; and that continuous, watertight, new sealant installation is provided. Coordinate:
1. With Owner's Representative.
2. With other trades:
a. To ensure that work done by other trades is complete and ready for sealant Work.
b. To avoid or minimize work on, or in immediate vicinity of, sealant Work in progress.
c. To ensure that subsequent work will not adversely affect completed sealant Work.

1.4 SUBMITTALS

A. Product Data: Sealant manufacturer's literature including written instructions for evaluating, preparing, and treating substrate; technical data including tested physical and performance properties; and installation instructions.
1. Include temperature ranges for storage and application of materials, and special cold-weather application requirements or limitations.
2. SpecData sheet for substrate cleaner and substrate primer recommended by sealant manufacturer for specific substrate surface and conditions.
3. Include Safety Data Sheets (SDS) for information only; safety restrictions are sole responsibility of Contractor.

B. Manufacturer's Reports and Certifications:

1. Prior to sealant installation, report from sealant manufacturer with results of sealant compatibility, sealant and substrate staining, and mockup adhesion tests. Report shall:
    a. State that materials which come into contact with or in close proximity to sealant have been tested.
    b. Include sealant manufacturer's interpretation of test results relative to material performance, potential staining of sealant and substrates, dirt accumulation of sealant, and dirt runoff from sealant.
    c. Include sealant manufacturer's recommendations for substrate preparation and primer needed to obtain durable adhesion, and installation procedures successfully used in mockups and field tests.

C. Installer Qualifications:
1. Certificate signed by sealant manufacturer, certifying that Installer complies with requirements.
2. Evidence that Installer's *existing company* has minimum five years of continuous experience in similar sealant work; list of at least five representative, successfully completed projects of similar scope and size, including:
    a. Project name.
    b. Owner's name.
    c. Owner's Representative name, address, and telephone number.
    d. Description of work.
    e. Sealant used.
    f. Project supervisor.
    g. Total cost of sealant work and total cost of project.
    h. Completion date.

D. Sample Warranty: Copy of sealant manufacturer's warranty, stating obligations, remedies, limitations, and exclusions. Submitted with bid.

E. Following completion of the Work:
1. Sealant manufacturer's inspection report of completed sealant installation.
2. Completed warranty from sealant manufacturer.
3. Completed warranty from Installer.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Experienced firm that has successfully completed sealant work similar in material, design, and extent to that indicated for Project; that is approved, authorized, or licensed by sealant manufacturer to install sealant; and that is eligible to receive sealant manufacturer's warranty. Must have successful installations of specified materials in local area in use for minimum of five years.
1. Employ foreman with minimum five years of experience as foreman on similar projects, to be on Site at all times during Work. Do not change foremen during the course of the Project except for reasons beyond the control of the Installer; inform Architect/Engineer in advance of any changes.

B. Compatibility Tests: Include sealant and sealers or coatings that may come into contact with sealant following sealant installation.
1. Field-Adhesion Testing: After sealants have cured, perform field-adhesion tests according to ASTM C1521.
    a. Conduct tests for each type of sealant and joint substrate, with and without primer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle materials according to manufacturer's recommendations and in such a manner as to prevent damage to materials or structure.

B. Deliver materials to Site in original packages with seals unbroken, labeled with manufacturer's name, product brand name and type, date of manufacture, lot number, and directions for storing and mixing with other components.

C. Keep materials dry and do not allow materials to be exposed to moisture during transportation, storage, handling, or installation. Reject and remove from Site new materials which exhibit evidence of moisture during application or which have been exposed to moisture.

D. Store materials in original, undamaged containers and packaging in clean, dry, protected location on raised platforms with weather-protective coverings, within temperature range required by manufacturer. Protect stored materials from direct sunlight. Manufacturer's standard packaging and covering is ***not*** considered adequate weather protection.

E. Limit stored materials on structures to safe loading capacity of structure at time materials are stored, and to avoid permanent deck deflection.

F. Conspicuously mark wet or damaged materials and remove from Site as soon as possible.

G. Remove and replace materials that cannot be applied within stated shelf life.

1.7 PROJECT CONDITIONS

A. Verify existing dimensions and details prior to start of sealant Work. Notify Architect/Engineer of conditions found to be different than those indicated in the Contract Documents. Architect/Engineer will review situation and inform Contractor and Installer of changes.

B. Comply with Owner's limitations and restrictions for Site use and accessibility.

C. Environmental Limitations: Install sealant when existing and forecast weather conditions permit sealant to be installed according to sealant manufacturer's written instructions and warranty requirements.
   1. Do not install sealant when ambient or substrate temperatures are below 40 degrees F or are expected to fall below 40 degrees F in next 12 hours.
   2. Do not proceed with installation during inclement weather except for temporary work necessary to protect building interior and installed materials. Remove temporary work and Work that becomes moisture damaged.

D. Handle and install materials in strict accordance with safety requirements required by sealant manufacturer; Safety Data Sheets (SDS); and local, state, and federal rules and regulations. Maintain Safety Data Sheets (SDS) with materials in storage area and available for ready reference on Site.

1.8 CHANGES IN WORK

A. During rehabilitation work, existing conditions may be encountered which are not known or are at variance with the Contract Documents. Such conditions may interfere with the Work and may consist of damage or deterioration of the substrate or surrounding materials that could jeopardize the integrity or performance of the Work.

1. Notify Architect/Engineer of conditions that may interfere with the proper execution of the Work or jeopardize the performance of the Work prior to proceeding with the Work.

1.9 WARRANTY

A. Manufacturer's Warranty:
   1. Written warranty, signed by sealant manufacturer, including:
      a. Repair or replace sealant that does not comply with requirements; that does not remain watertight; that fails in adhesion, cohesion, or general durability; or that deteriorates in a manner not clearly specified by submitted sealant manufacturer's data as an inherent quality of the material for the application indicated.
      b. Removal and replacement with new bond breaker materials.
      c. Labor and materials to perform warranty Work.
      d. Warranty does not include sealant deterioration or failure due to the following.
         1) Excessive joint movement caused by structural settlement or errors attributable to design or construction, resulting in stresses in sealant exceeding sealant manufacturer's written specifications for sealant elongation or compression.
         2) Deterioration or failure of sealant due to failure of substrate prepared according to requirements.
         3) Mechanical damage caused by individuals, tools, or other outside agents.
         4) Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.
   2. Warranty Period: 10 years from date of Substantial Completion.

B. Installer's Warranty:
   1. Completed warranty form at the end of the Section, signed by sealant Installer, including:
      a. Repair or replace sealant that does not comply with requirements; that does not remain watertight; that fails in adhesion, cohesion, or general durability; or that deteriorates in a manner not clearly specified by submitted sealant manufacturer's data as an inherent quality of the material for the application indicated.
      b. Removal and replacement with new bond breaker materials.
      c. Labor and materials to perform warranty Work.
      d. Warranty does not include sealant deterioration or failure due to the following.
         1) Excessive joint movement caused by structural settlement or errors attributable to design or construction, resulting in stresses in sealant exceeding sealant manufacturer's written specifications for sealant elongation or compression.
         2) Deterioration or failure of sealant due to failure of substrate prepared according to requirements.
         3) Mechanical damage caused by individuals, tools, or other outside agents.
         4) Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.
   2. Warranty Period: 5 years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 ELASTOMERIC JOINT SEALANTS

A. General:
   1. Comply with ASTM C920 and other requirements indicated.

2. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing on similar projects, mockups and preconstruction testing for Project, and field experience.
3. Select products based on mockups, preconstruction testing, and sealant manufacturer's previous testing and experience.
4. Source Limitations: Obtain each type of joint sealant through one source from single manufacturer.
5. Colors of Exposed Joint Sealants: Selected and approved in writing by Owner's Representative, from sealant manufacturer's full range.

B. Single-Component, Low-Modulus, High Movement, Paintable Hybrid Sealant:
1. MasterSeal NP 100 manufactured by Master Builders Solutions.
2. Approved Equal.

2.2 AUXILIARY MATERIALS

A. General: Sealant-backer materials, primers, surface cleaners, masking tape, and other materials recommended by sealant manufacturer, that are non-staining and compatible with substrates; based on mockups, preconstruction testing, and sealant manufacturer's previous testing and experience.
1. Non-gassing bi-celluar Backer Rod: Sof Rod
2. Bond-Breaker Tape

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions with Installer and sealant manufacturer's representative for compliance with requirements and for other conditions affecting installation or performance of sealant.
1. Verify dimensions of sealant joints at Site by field measurement so that proper sealant profiles will be accurately maintained.
2. Ensure that work done by other trades is complete and ready for sealant Work.
3. Verify that areas and conditions under which sealant Work is to be performed permit proper and timely completion of Work.
4. Notify Architect/Engineer in writing of conditions which may adversely affect installation or performance of sealant, including joints with widths less than those allowed by sealant manufacturer for applications indicated, and recommend corrections.
5. Do not proceed with sealant Work until adverse conditions have been corrected and reviewed by Architect/Engineer.
6. Commencing sealant Work constitutes acceptance of Work surfaces and conditions.

3.2 PROTECTION

A. Take precautions to ensure safety of people, including building users, passers-by, and workmen, and animals, and protection of property, including adjacent building elements, landscaping, and motor vehicles.

B. Prevent construction debris and other materials from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

C. Protect paving and sidewalks, and adjacent building areas from mechanical damage due to scaffolding and other equipment.

D. Limit access to Work areas.

E. Erect temporary protective canopies, as necessary, over walkways and at points of pedestrian and vehicular access that must remain in service during Work.

F. Comply with sealant manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products.

G. Cover adjacent surfaces with materials that are proven to resist sealant.

H. Assume responsibility for injury to persons or damage to property due to Work, and remedy at no cost to Owner.

3.3 SURFACE PREPARATION

A. Remove existing sealant and other foreign material from joints.

B. Repair damaged or deteriorated substrate surfaces according to sealant manufacturer's written instructions and as approved by Architect/Engineer.

C. Clean joint substrates immediately before installing sealant, to comply with sealant manufacturer's written instructions based on mockups and preconstruction testing.
   1. Remove from substrate foreign material that could interfere with adhesion of sealant, including dirt, dust, existing sealant, oil, grease, and surface coatings.
   2. Provide dry substrate; prevent wetting of substrate prior to sealant installation.
   3. Clean porous substrates, such as concrete, masonry, stone, wood, by brushing, grinding, blast-cleaning, mechanical-abrading, or combination of methods to produce clean, sound substrate capable of developing optimum bond with sealant. Remove laitance and form-release agents from concrete. Remove loose particles remaining after cleaning operations by vacuuming or blowing out joints with oil-free, compressed air.
   4. Clean nonporous surfaces, such as metal, with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of sealant.
   5. Joints with silicone sealant and preformed sealant seals should generally be masked as subsequent cleanup of spillage and smears may be very difficult.

3.4 INSTALLATION OF SEALANT

A. General: Comply with sealant manufacturer's written installation instructions for products and applications indicated, based on mockups and preconstruction testing.

B. Joint Priming: Prime joint substrates where recommended in writing by sealant manufacturer, based on mockups and preconstruction testing. Apply primer to comply with sealant manufacturer's written instructions.
   1. Confine primer to areas of sealant bond; do not allow spillage or migration onto adjoining surfaces.
   2. Limit priming to areas that will be covered with sealant in same day. Unless recommended otherwise by sealant manufacturer, reprime areas exposed for more than 24 hours.

C. Install sealant backer and position to produce cross-sectional shape and proper depth of installed sealant.
   1. Use properly-sized backer. Do not use multiple-backer units or braided-backer units to accommodate wide joints.
   2. Install backer with device that will provide consistent depth between substrate surface and outer surface of backer.
   3. Do not leave gaps between ends of sealant backers.
   4. Do not stretch, twist, puncture, or tear sealant backers.
   5. Remove wet backers and replace with dry materials.

D. Install sealant immediately after installing backer material; to produce uniform, cross-sectional shape and depth; to directly contact and fully wet joint sides and backer material; and to completely fill recesses in joint configuration.
   1. Install sealant flush with surface.
   2. Immediately after sealant application and before skinning or curing begins, tool joint with slightly concave surface, compressing sealant into joint to form smooth, uniform sealant bead; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint. Do not use tooling agent.
   3. Remove excess sealant from surfaces adjacent to joints.

3.5 FIELD QUALITY CONTROL

A. At completion of Project, observe installed sealant for damage or deterioration. If damage or deterioration occurs, neatly cut out and remove damaged or deteriorated sealant, prepare and prime surfaces, and install new sealant. Replace sealant immediately so new sealant is indistinguishable from original Work.

B. Field-Adhesion Testing: Architect/Engineer will perform non-destructive and destructive field adhesion tests on sealant in accordance with ASTM C1521.
   1. Non-destructive testing:
      a. Depress center of sealant bead with probing tool to depth of 50 percent of bead width, or depress sealant bead near substrate bond-line until it appears visually that sealant is about to fail in cohesion.
      b. Record if sealant failed and, if so, if failure was adhesive or cohesive and maximum surface depression as percent of joint width.
      c. Perform test every 12 inches for first 10 linear feet of joint; if no test failure is observed, test every 24 inches thereafter.
   2. Destructive testing:
      a. Cut 6-inch-long tail of sealant loose from substrate.
      b. Mark tail 1 inch from adhesive bond.
      c. Grasp tail 1 inch from adhesive bond and pull until tail extends to 2x the published movement capability of sealant. If sealant has not failed, continue pulling to failure.
      d. Record elongation at failure and if failure was adhesive or cohesive.
      e. Observe sealant for complete filling of joint with absence of voids, and for joint configuration in compliance with requirements. Record observations and sealant dimensions
      f. Perform test every 100 feet for first 1,000 linear feet of joint; if no test failure at 2x the movement capability occurs, test every 1,000 feet thereafter or approximately once per floor per elevation, whichever is more frequent.
   3. Test reports shall include date when sealant was installed, name of person who installed sealant, test date, test location, and whether primer was used.

4. Immediately after testing, Contractor shall replace failed sealant in test areas. Neatly cut out and remove failed sealant, prepare and prime surfaces, and install new sealant. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
5. Sealant not evidencing adhesive failure from testing or noncompliance with requirements will be considered satisfactory.
6. Where Architect/Engineer determines that sealant has failed adhesively from testing or does not comply with requirements, additional testing will be performed to determine extent of non-conforming sealant. Neatly cut out and remove non-conforming sealant, prepare and prime surfaces, and install new sealant. Perform field adhesion tests on new sealant. Additional testing and replacement of non-conforming sealant shall be at Contractor's expense.

3.6 CLEANING

A. As sealant Work progresses, clean off excess sealant or sealant smears by methods and with cleaning materials approved in writing by sealant manufacturer and manufacturers of products in which joints occur. Exercise care to avoid scratching or damage to surfaces.

B. At the end of each workday, clean Site and Work areas and place rubbish, empty cans, rags, and other discarded materials in appropriate containers.

C. After completing sealant Work:
   1. Repair surfaces stained, marred, or otherwise damaged during sealant Work.
   2. Clean up debris and surplus materials and remove from Site.

3.7 PROTECTION

A. Protect sealant during and after curing period from contact with contaminating substances and from damage, so sealants are without deterioration or damage at time of Substantial Completion.

END OF SECTION

SEALANT INSTALLER'S WARRANTY

WHEREAS <**Insert name**> of <**Insert address**>, herein called ***Sealant Installer***, has performed sealant and associated work, designated ***Work***, on the following project:

Owner: <**Insert name of Owner.**>
Address: <**Insert address**.>
Building Name/Type: <**Insert information.**>
Address: <**Insert address**.>
Area of Work: <**Insert information**.>
Acceptance Date: <**Insert date.**>
Warranty Period: <**Insert warranty period.**>
Expiration Date: <**Insert date.**>

AND WHEREAS Sealant Installer has contracted, either directly with Owner or indirectly as subcontractor, to warrant said Work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

NOW THEREFORE Sealant Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period it will, at its own cost and expense, make or cause to be made such repairs to or replacement of said Work as are necessary to correct faulty and defective Work and as are necessary to maintain said Work in watertight condition, and warrants against the following.

1. Components of sealant system that do not comply with requirements; that do not remain watertight; that fail in adhesion, cohesion, or general durability; or that deteriorate in a manner not clearly specified by submitted sealant manufacturer's data as an inherent quality of the material for the application indicated, regardless of whether the Work was previously accepted by Owner.
2. Damage by exposure to foreseeable weather; and damage by intrusion of foreseeable wind-borne moisture.

Warranty is made subject to the following terms and conditions:

1. Specifically excluded from Warranty are damages to Work and other parts of the building, and to building contents, caused by:
    a. lightning;
    b. peak gust wind speed exceeding <**Insert wind speed**> miles per hour;
    c. fire;
    d. failure of sealant substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
    e. activity adjacent to sealant Work by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner's Representative.
2. When Work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Sealant Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Sealant Installer is responsible for damage to Work covered by Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of Work.
4. During Warranty Period, if Owner allows alteration of Work by anyone other than Sealant Installer, including cutting, patching, and maintenance, Warranty shall become null and void on date of said alterations, but only to extent said alterations affect Work covered by Warranty. If Owner engages Sealant Installer to perform said alterations, Warranty shall not become null and void unless Sealant Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause

for claim, that said alterations would likely damage or deteriorate Work, thereby reasonably justifying limitation or termination of Warranty.

5. Owner will promptly notify Sealant Installer of observed, known, or suspected leaks, defects, or deterioration and will afford reasonable opportunity for Sealant Installer to inspect Work and to examine evidence of such leaks, defects, or deterioration. Sealant Installer shall inspect leak, defect, or deterioration within 24 hours of notification.
6. If permanent repair or replacement of warranted condition cannot be made immediately, due to weather conditions, availability of appropriate labor or materials, building occupancy, etc., Sealant Installer must make, or cause to be made, immediate temporary repairs to prevent any further damage, deterioration, or unsafe conditions. Permanent repair or replacement of warranted condition shall be scheduled as soon thereafter as practical, and with Owner's consent and approval.
7. If Owner notifies Sealant Installer of warranted condition that requires immediate attention to prevent potential injury or damage, and Sealant Installer cannot or does not promptly inspect and repair same, either permanently or temporarily, then Owner may make, or cause to be made, such temporary repairs as may be essential, and Sealant Installer will reimburse Owner for cost of such repairs. Such action will not relieve Sealant Installer of its obligation to perform any necessary permanent repairs, and Warranty shall remain in full force and effect for remaining portion of its original term.
9. Sealant Installer shall provide equipment, labor, and material required to remedy warranted conditions, including repair or replacement of damage to other work resulting therefrom, and removal and replacement of other work required to access warranted condition. Additional required work will be at Sealant Installer’s sole expense for full term of Warranty. Warranty includes removal and replacement of sealant-backer material and sealant.
10. Warranty is recognized to be only Warranty of Sealant Installer on said Work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of sealant failure. Specifically, Warranty shall not operate to relieve Sealant Installer of responsibility for performance of original Work according to requirements of Contract Documents, regardless of whether Contract was directly with Owner or with Owner’s General Contractor.

IN WITNESS THEREOF, and intending to be legally bound hereby, Sealant Installer has caused this document to be executed by undersigned, duly-authorized officer.

_____ Corporate Seal:
(Sealant Installer)

By: _____
(Signature)

_____
(Name)

_____
(Date)

Subscribed and sworn to before me this ____day of _____, 20__

Notary Public _____

My commission expires _____