PROJECT MANUAL

FOR

ROOF REPLACEMENT & MISCELLANEOUS MASONRY REPAIRS

AT

Freeman Athletic Center

AT

WESLEYAN UNIVERSITY

MIDDLETOWN, CT

WJE NO. 2010.4838

7 March, 2011

Prepared by

WISS, JANNEY, ELSTNER ASSOCIATES, INC.
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Shelton, CT 06484

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END OF SECTION
SECTION 00020

INVITATION TO BID

Ms. Roseann Sillasen
Associate Director of Construction Services
Wesleyan University
170 Long Lane
Middletown, CT 06459

will receive bids for:

Roof Replacement & Miscellaneous Masonry Repairs
Freeman Athletic Center
Wesleyan University
Middletown, Connecticut

until: 12:00 p.m. local time April 6th, 2011.

Providing all labor, materials, equipment and other items necessary to:

1. Remove existing gravel surfaced coal tar pitch, insulation board, roofing and fluid applied waterproofing systems and all appurtenances not scheduled to remain in all areas clouded in the Limits of Work on the Drawings, including, but not limited to the main level roof system and the rectangular area below the entrance ladder.

2. Install new fastened Soprafix roof assembly, 18 psi polyisocyanurate insulation 2” thick and Densdeck on top of the steel deck to all roofs discussed in Item 1. Base ply is to be mechanically fastened along with the insulation, while the top ply is to be torch applied. Install additional fasteners and torched strips on perimeter and corner areas, as required to meet FM Global Standards. Existing curbs are to remain in place.

3. Remove bottom courses of brick along with the existing thru-wall flashings on both sides of each arched window on all four sides of the rectangular cupola. Install new flashing at the sill of the windows of the rectangular cupola with properly constructed end dams per the specifications and Details.

4. Install new wetseal around each of the arched and rectangular windows around the square cupola per the Specifications and Details.

Alternate A - In lieu of installing 2” thick flat insulation board, install tapered insulation per the Soprema tapered insulation layout on the Drawings.

Alternate B - Remove existing metal and roofing materials and install new Soprafix roofing system to the four elevated areas around the square cupola, marked on the Limits of Work in Drawings.

Alternate C - Install new skylights instead of lifting and resetting the existing skylight curbs.
**Alternate D** - Repoint brick masonry at each of the four elevations of the rectangular cupola per repointing procedure outlined in the Details and Specifications. Area to be repointed extends from the base flashing to the top of each wall. All repointing work is to be done per the Details and Specification Sections.

**Alternate E** - Remove existing roofing and fire retardant treated plywood sheathing. Install GAF Marquis WeatherMax shingles and underlayment.

**Project Schedule:** Due to the operation of the facility with summer classes, all work must be completed by August 5th. The entire project, including punchlist must be completed prior to August 5th.

Copies of the Bid Documents are available for review and may be obtained from the Architect/Engineer's office of Wiss, Janney, Elstner Associates, Inc., Two Trap Falls Road, Suite 502, Shelton, Connecticut 06484 (203) 944-9424.

Bidders must submit their bids in accordance with Instruction to Bidders.

The Owner will privately open and review the bids after the specified closing time. The Owner reserves the right to waive any irregularities and reject any or all bids.

There will be a bid walk at 9:30 am on Thursday, March 24, 2011 that is mandatory for any parties interested in submitting bids. We will meet at 170 Long Lane in Middletown, CT, and proceed to the Freeman Athletic Center from there. Please respond to Roseann Sillasen of Wesleyan University, as well as Remo Capolino and Paul Cianci of Wiss, Janney, Elstner Associates, Inc. on whether or not you plan to bid on this project.

END OF SECTION
SECTION 00100

INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

1.01 BID DOCUMENTS

A. Bid Documents are available to Bidders for review and may be obtained from the Architect/Engineer's office:

WISS, JANNEY, ELSTNER ASSOCIATES, INC.
Two Trap Falls Road, Suite 502
Shelton, Connecticut 06484

B. Bid Documents will not be available for distribution to sub-bidders.

1.02 EXAMINATION OF DOCUMENTS, SITE AND LOCAL CONDITIONS

A. The Bidders shall carefully examine and familiarize themselves with the Bid Documents. No extra compensation will be paid at a later date for lack of knowledge or neglect on the contractor's part.

B. The Bidders shall visit the site and fully acquaint themselves with conditions as they exist.

C. Bidders shall immediately report to the Architect/Engineer any errors, inconsistencies or ambiguities discovered.

1.03 INTERPRETATIONS OR CORRECTION OF BID DOCUMENTS DURING BIDDING

A. Bidders requiring clarification or interpretation of the Bidding Documents shall make a written request to the Architect/Engineer. No inquiry received within five (5) days of the date fixed for opening of the bids will be given consideration.

B. Any interpretation, correction or change of the Bidding Documents, if such is issued, will be sent as promptly as is practicable to all persons to whom the Drawings and Specifications have been issued. All such addenda shall become part of the Contract Documents. Failure of the Architect/Engineer to send or any Bidder to receive any such interpretation shall not relieve any Bidder from any obligation under his Bid as submitted.

C. Interpretations, corrections or changes of the Bidding Documents made in a manner other than an addendum will not be binding, and Bidders shall not rely upon such interpretations, corrections or changes.

1.04 TIME OF COMPLETION

A. Time of completion of the project is of extreme importance to the Owner and will be considered in the award of a contract. The Bidder shall state on the Bid Form the number of calendar days
he/she will require to substantially complete the project. Failure of the Contractor to substantially complete the project in the number of days indicated on his Bid Form, plus any adjustments authorized by the Owner in writing, will be considered a substantial violation of the Contract.

1.05 PREPARATION OF BIDS

A. Each Bid must be submitted on the form indicated in Section 00300. The Bid Form may be obtained from the Architect/Engineer. Do not use the sample form bound in the Specifications.

B. The Bid Form and qualification statement shall be submitted in a sealed envelope addressed as indicated below. Also, the outside of the envelope shall bear the designations, "BID PROPOSAL, the name of the project, and the name of the Bidder and the Bidder's address. In the event the Bid is forwarded by mail or messenger, the sealed envelope containing the Bid shall be enclosed in another envelope addressed to the Bid recipient at the designated location for opening of the Bid.

C. Bids shall be addressed to:

Ms. Roseann Sillasen  
Associate Director - Construction Services  
Wesleyan University  
170 Long Lane  
Middletown, CT 06459

D. Bids must be received by the above-noted addressee prior to the specified closing time. Bids received after this time may be returned unopened.

1.06 CONSIDERATION OF BIDS

A. The Owner will privately open and review the Bids after the specified closing time.

B. The Owner reserves the right to waive any irregularities and reject any or all Bids.

C. The Bidder shall also submit a properly executed Bid Form. All proposed subcontractors shall also be included.

D. A Pre-Bid Conference will be held at the building. Bidders will be notified of a time and specific location. Your company representative must be present and should be familiar with the project and any bid documents received and have any questions or comments ready for review at this time. Subcontractors with questions pertaining to interpretation or clarification of the bidding documents are invited to attend. The Owner and the Architect/Engineer will be represented. The Pre-Bid Conference is mandatory. Bidders not attending Pre-Bid Conference subject their bid to disqualification.

1.07 PERFORMANCE BOND AND MATERIAL PAYMENT BOND
A. Each Bidder shall qualify for a Performance Bond and Material Payment Bond each equaling 100 percent of the Bid. The costs associated in providing these bonds shall be indicated in the appropriate area of the Bid Form.

B. The Performance Bond must be in a standard form, such as AIA Document A312, from a satisfactory Surety made payable to the Owner.

C. The Payment Bond must be in a standard form, such as AIA Document A312, from a satisfactory Surety made payable to the Owner.

1.08 AWARD OF CONTRACT

A. A Contract shall be deemed as having been awarded when a formal notice of award has been duly served.

B. The Bidder to whom the Contact is awarded shall execute a Contract, AIA Document A101, "Standard Form of Agreement between Owner and Contractor," 1997 Edition, within 10 days after the date of notice to award.
SECTION 00300

BID FORM

BID TO: Freeman Athletic Center
Wesleyan University
c/o Roseann Silasen
170 Long Lane
Middletown, CT 06459

BID FORM: ____________________________________________

(Bidder’s Name)

_____________________________________________________

(Bidder's Address)

DATE: __________________________________________________

THE UNDERSIGNED

1. Acknowledges receipt of:
   
   A. Project Manual for:
   
      Roof Replacement & Miscellaneous Masonry Repairs at:
      Freeman Athletic Center
      Wesleyan University
      110 Church Street
      Middletown, CT 06459
   
      Dated: 7 March, 2011
   
   B. Drawings: Cover, A-01 through A-12
   
   C. Addenda: No. _______ Dated: __________
      
      No. _______ Dated: __________
      
      No. _______ Dated: __________

2. Has visited and examined the site of Work and has examined the Bidding Documents for the Work.
3. Agrees:

   A. To hold the Bid Proposal open for not less than 45 days after the scheduled Bid Opening Date.

   B. To execute an Agreement, Performance Bond and Payment Bond (if required), and provide proof of insurance coverage with the Owner for the entire Work in accordance with the Contract Documents within seven (7) days after notice of award.

4. General Condition Costs

   A. Costs on the project, such as permit fees, mobilization, demobilization, scaffolding costs, fixed cost rentals, or fixed costs shall be considered General Condition Costs, and shall be included in all unit and lump sum prices.

5. Changes in the Work

   A. To address changes in the work, either an addition or deletion, not indicated under unit costs by the Contract Documents and Specifications, and upon written instructions of the Owner, the following prices shall prevail in accordance with the General Conditions.

      1. Labor - including all profit and overhead. All trades at their prevailing hourly rate plus ________________________________ percent (___ %) for profit and overhead.

      2. Material costs at cost plus ____FIVE_______ percent (___5___%) for profit and overhead.

6. Taxes

   A. The undersigned agrees that the Grand Total price includes all taxes applicable to the work of whatever character or description, which are levied by federal, state or municipal governments.

7. Rights Reserved

   A. In submitting this Proposal, the undersigned understands that the Owner reserves the right to reject any or all proposals submitted, in whole or in part, to waive any information therein, and to accept any proposal, as the Owner may consider to be in his/her interests.

8. Base Bid

   A. For all Work required to complete the project in its entirety, the contractor bids:

      **GRAND TOTAL IN WORDS_____________________________ Dollars ($__________________)**

      This bid includes all labor, materials, services and equipment necessary for completion of the Work specified.

   B. The contractor estimates he/she substantially complete the project in _____ days from award of contract.
C. The contractor shall provide the following roof membrane manufacturer and system specified in Section 07503.

9. Alternates

A. In lieu of installing 2" thick flat insulation board, install tapered insulation per the Soprema tapered insulation layout on the Drawings.

(Add/Deduct) ________________ Dollars (__________)

B. Remove existing metal and roofing materials and install new Soprafix roofing system to the four elevated areas around the square cupola, marked on the Limits of Work on the Drawings.

(Add/Deduct) ________________ Dollars (__________)

C. Install new skylights instead of lifting and resetting the existing skylight curbs.

(Add/Deduct) ________________ Dollars (__________)

D. Repoint brick masonry at each of the four elevations of the rectangular cupola per repointing procedure outlined in Specification Section 04520. Area to be repointed extends from the base flashing all the way to the top of each wall. All repointing work is to be done per the Details and Specifications.

Add ________________ Dollars (__________)

E. Remove and replace existing roofing and fire retardant treated plywood sheathing. Install GAF Marquis WeatherMax shingles and underlayment.

Add ________________ Dollars (__________)

10. UNIT PRICES

The unit prices included in the following schedule will be used for adjustments to the scope of work indicated on the drawings. The unit prices shall include labor and material costs and costs associated with required access.
UNIT PRICE SCHEDULE

<table>
<thead>
<tr>
<th>WORK ITEM</th>
<th>DESCRIPTION</th>
<th>UNIT</th>
<th>ADD/DEDUCT UNIT PRICE</th>
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<tr>
<td>1</td>
<td>Painting Deck</td>
<td>100 sq. ft.</td>
<td></td>
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<tr>
<td>2</td>
<td>Replace Deck</td>
<td>50 sq. ft.</td>
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</table>

11. If the Owner exercises his/her right to require Bonds and Certificates as stipulated in the Contract Documents, add the following amount to the Base Bid:

_________________________________________ Dollars (__________)

12. Agrees to the following conditions:

A. Expedite all submittals and obtain any and all permits required to perform this Work.

B. Work at least five full working days per week, when weather permits.

C. Work hours to be as allowed by local ordinance.

D. Due to the operation of the facility with summer classes, the entire project including punchlist must be completed prior to August 5th.

13. Bidder's Subcontractors:

The Contractor submits for consideration the following subcontractors as appropriate, who are incorporated into the Bid Proposal and are intended to be used to complete this project

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<tr>
<td>Masonry</td>
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<tr>
<td>Demo</td>
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14. Signature of Bidder

A. Firm Name: ________________________________

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B. Address: ____________________________________________

C. Signatory: ____________________________________________

D. Title: ____________________________________________

E. Date: ____________________________________________

F. Witness: ____________________________________________

15. Bidders Resume

A. Provide the following information for at least three projects completed within the last five (5) years which are similar in scope and size as this project. Use additional sheets as/if required:

1. Client: ____________________________________________
   Structure: ____________________________________________
   Year Completed: ____________________________________________
   Address: ____________________________________________
   Contact and Phone: ____________________________________________

2. Client: ____________________________________________
   Structure: ____________________________________________
   Year Completed: ____________________________________________
   Address: ____________________________________________
   Contract and Phone: ____________________________________________

3. Client: ____________________________________________
   Structure: ____________________________________________
   Year Completed: ____________________________________________
   Address: ____________________________________________
   Contact and Phone: ____________________________________________
16. Contract

A. If Undersigned is notified of acceptance of this Bid within 90 calendar days after due date of this Bid, he agrees to execute a standard AIA Document A101 (1997 Edition) – Standard Form of Agreement Between Owner and Contractor for the above work for the stated compensation.

END OF SECTION
SECTION 00400

CONTRACT FORM

PART 1 - GENERAL

1.01 AGREEMENT


PART 2 - NOT USED

PART 3 - NOT USED

END OF SECTION
SECTION 00800

INDEX OF DRAWINGS

The following is the list of Drawings dated 7 March 2011, which are to be part of the Contract Documents.

Cover Sheet
A-01  Limits of Work
A-02  Roof Plan
A-03  Tapered Insulation Layout- Alternate A
A-04  Roof Elevations and Window Flashing Details (Alternate B included)
A-05  Roof Vent Pipe and Drain Details
A-06  Penetration and curb flashing details (Alternate C included)
A-07  Wall Base Flashing Details
A-08  Wall Base Flashing Details
A-09  Roof Transition Flashing Details
A-10  Window Wetseal Details
A-11  Repointing Details - Alternate D
A-12  Sloped Roof Details - Alternate E

END OF SECTION
SECTION 01010
SUMMARY OF WORK

PART 1 - GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of this project consists of

1. Remove existing gravel surfaced coal tar pitch, insulation board, roofing and fluid applied waterproofing systems and all appurtenances not scheduled to remain in all areas clouded in the Limits of Work on the Drawings, including, but not limited to the main level roof system and the rectangular area below the entrance ladder.

2. Install new fastened Soprafix roof assembly, 18 psi polyisocyanurate insulation 2" thick and Densdeck on top of the steel deck to all roofs discussed in Item 1. Base ply is to be mechanically fastened along with the insulation, while the top ply is to be torch applied. Install additional fasteners and torched strips on perimeter and corner areas, as required to meet FM Global Standards. Existing curbs are to remain in place.

3. Remove bottom courses of brick along with the existing thru-wall flashings on both sides of each arched window on all four sides of the rectangular cupola. Install new flashing at the sill of the windows of the rectangular cupola with properly constructed end dams per the Details and Specifications.

4. Install new wetseal around each of the arched and rectangular windows around the square cupola per the Details and Specifications.

5. Alternate A
   a. In lieu of installing 2" thick flat insulation board, install tapered insulation per the Soprema tapered insulation layout on Drawings.

6. Alternate B
   a. Remove existing metal and roofing materials and install new Soprafix roofing system to the four elevated areas around the square cupola, marked on the Limits of Work on the Drawings.

7. Alternate C
   a. Install new skylights instead of lifting and resetting the existing skylight curbs.

8. Alternate D
   a. Repoint brick masonry at each of the four elevations of the rectangular cupola per repointing procedure outlined in Specification Section 04520. Area to be repointed extends from the base flashing all the way to the top of each wall. All repointing work is to be done per the Details and Specifications.

9. Alternate E
a. Remove existing roofing and fire retardant treated plywood sheathing. Install FAG Marquis WeatherMax shingles and underlayment.

B. Contractor's Duties:

1. Except as specifically noted, provide and pay for:
   a. Labor, materials and equipment
   b. Tools, construction equipment and machinery
   c. Heat and utilities required for construction
   d. Other facilities and services necessary for proper execution and completion of the Work.

2. Secure and pay for, as necessary, for proper execution and completion of work, and as applicable at time of receipt of bids:
   a. Permits
   b. Government fees
   c. Licenses.

3. Give required notices.
4. Comply with local codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which bear on performance of Work.
5. 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, without notice.

6. Enforce strict discipline and good order among employees. Do not employ on Work:
   a. Unfit persons.
   b. Persons not skilled in assigned task.

1.02 CONTRACTS

A. This project will be constructed under a single contract under the direction of a single Contractor.

B. There shall be complete cooperation between Contractor and subcontractors to ensure satisfactory progress and performance of the Work.

C. The Owner reserves the right to award other contracts for additional work in connection with this project as required to install improvements, furnish, or equip the building.

1.03 WORK BY OTHERS

A. None anticipated.
1.04 WORK SCHEDULE AND SEQUENCE

A. The schedule of work hours at the jobsite shall be at the discretion of the Contractor to complete the Work within the time for substantial completion allowed in the Contract and within hours allowed by the Owner.

B. During the Work, the Contractor shall take all necessary precautions to avoid damaging the exterior paving, sidewalks, roofing, landscaping, walls and glass, as well as any personal property of the Owner. Any damage shall be promptly repaired by the Contractor at his/her own expense.

C. The Contractor shall restrict placement of equipment and storage of materials to those areas designated on the drawings, or as otherwise directed by the Owner.

1.05 OWNER-FURNISHED ITEMS

A. For construction purposes only, water and electricity may be taken from the existing building at locations designated by the Owner. All extensions or modifications required to provide water and electricity are to be done by the Contractor by licensed contractors, at no expense to the Owner.

1.06 ABBREVIATIONS

A. Reference to a technical society, institution, association, or governmental authority is made in the Specifications in accordance with the following abbreviations:

- AIA  American Institute of Architects
- APA  Engineered Wood Association
- ASLC American Lumber Standard Committee
- ASTM ASTM International
- AWPA American Wood Preservers Association
- BIA  Brick Industry Association
- FM   Factory Mutual
- FS   Federal Standard
- NFPA National Forest Products Association
- NRCA National Roofing Contractor's Association
- SFPA Southern Forest Products Association
- SMACNA Sheet Metal and Air Conditioning Contractor's National Association
- UL   Underwriters Laboratories

END OF SECTION
SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDE

A. Prime Contractor (Contractor):

1. Attend specified meetings
2. Ensure attendance of subcontractors and suppliers when specified or directed.

1.02 PRECONSTRUCTION MEETING

A. The Contractor will schedule a preconstruction meeting within ten (10) business days after Notice of Award and a roofing kick-off meeting five (5) business days prior to application of roofing materials

B. Attendance: Contractor, subcontractors, other contractors, manufacturer's representatives and Owners Representative.

C. Agenda:

1. Designation of responsible personnel
2. Emergency procedures, contact people and telephone numbers
3. Relation and coordination of contractors
4. Discuss list of contractors
5. Tentative construction schedule
6. Critical work sequencing
7. Submittals, shop drawings, project data and sampling
8. Use of Premises:

   a. Office and storage areas
   b. Owner's requirements
   c. Staging areas.

9. Major equipment deliveries and priorities
10. Processing of field decisions and Change Orders.
11. Security procedures
12. Housekeeping procedures
13. Schedule of progress and coordination meetings, if necessary.

1.03 PROGRESS AND COORDINATION MEETINGS

A. Hold weekly meetings as progress of work dictates.
B. Location of Meetings: At the offices of the Owner's representative at the job site, or as otherwise designated.

C. Attendance: Contractor, subcontractor, other contractors, suppliers, manufacturer's representatives and other parties as required or requested by the building owner.

D. Minimum Agenda:

1. Review work progress since last meeting; review schedule
2. Review applications for payment.
3. Note field observations, problems and decision.
4. Identify problems which impede planned progress
5. Review status of submittals
6. Develop corrective measures and procedures, if necessary
7. Coordinate projected progress with other contractors.

END OF SECTION
SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work includes submission of submittals to the Architect/Engineer as required by the Specifications and specified therein.

1.02 DEFINITIONS

A. Shop Drawings: Shop drawings are original drawings prepared by Contractor, Subcontractor, Sub-subcontractor, supplier or distributor, which illustrate some portion of the Work; showing fabrication, layout, setting or erection details.

1. Prepared by qualified detailer
2. Identify details by reference to sheet and detail numbers shown on Contract Drawings.
3. Minimum sheet size 8 1/2 in. by 11 in.

B. Project Data:

1. Manufacturer's standard schematic drawings:
   a. Modify to delete information which is not applicable to project
   b. Supplement standard information to provide additional information to project.

2. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data.
   a. Clearly mark each copy to identify pertinent materials, products or models
   b. Show dimensions and clearances required
   c. Shop performance characteristics and capacities.

C. Samples: Physical samples to illustrate materials, equipment or workmanship, and to establish standards by which complete work is judged.

1. Office Samples: Of sufficient size to clearly illustrate:
   a. Functional characteristics of product of materials, with integrally related parts and attachment devices
   b. Full range of color samples
   c. After review, samples may be used for construction of the project.

D. List of Manufacturers

1. Tabulate list of each Specification Section
2. For products specified under reference standards, include with listing of each product:
a. Name and address of manufacturer  
b. Trade name  
c. Model or catalog designation  
d. Manufacturer's data.  

1) Performance and tests data.  

3. Reference standards  

1.03 SUBMITTAL REQUIREMENTS  

A. At time specified, submit all required submittals to Architect/Engineer with a copy of the transmittal letter to the Owner.  

B. Submit the quantity of documents required for return plus two (2) copies; one copy will be retained by the Architect/Engineer, one copy will be forwarded to the Owner.  

C. Accompany submittals with transmittal letter, in duplicate, containing:  

1. Date  
2. Project title and number  
3. Contractor's name and address  
4. The number of each shop drawing, product data and sample submitted  
5. Notification of deviations from Contract  
6. Other pertinent data including lead time and impact on project schedule.  

D. Submittals shall include:  

1. Date and revision dates  
2. Project title and number  
3. Identification of product or material  
4. Field dimensions, clearly identified as such  
5. Specification Section and page number  
6. Applicable Standards, such as ASTM number or Federal Specification  
7. A blank space 3 in. x 3 in., for Architect/Engineer's stamp  
8. Identification of deviation(s) from the Contract Documents  
9. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of field conditions and measurements, and compliance with Contract.  

E. The Architect/Engineer will check and review, with reasonable promptness, submittals only for conformance with the design concept of the project and compliance with the information given in the Contract Documents. The revised copies will be returned to the Contractor and any further distribution required will be the responsibility of the Contractor.  

F. Samples shall be sufficient size to show general visual effect. When samples must show range of color, texture, finish, graining, or other properties, submit in sets of three showing the full scope of this range. Each sample shall bear identifying labels stating project name, material, manufacturer, and location on project. Each sample or set of samples shall be accompanied by a transmittal.
G. Samples will be reviewed for conformance with only the design intent and specified approvals. Conformance to all requirements of the Contract Documents remains the responsibility of the Contractor.

H. Samples will be reviewed and the Contractor notified in writing if the sample conforms to the design concept and requirements of the Contract Documents.

I. Samples will be retained by the Architect/Engineer and will serve as the standard by which all material delivered to the job will be judged.

J. Certain samples may be incorporated into the Work when approved by the Architect/Engineer or may be retrieved by the Contractor at the completion of the Work where so stated in the Specifications.

1.04 RESUBMISSION REQUIREMENTS

A. Shop Drawings:

1. Revise initial drawings as required and resubmit as specified for initial submittal.
2. Indicate on drawings all changes which have been made other than those requested by Architect/Engineer.
3. In the event the submittal is returned stamped "Amend and Resubmit or Rejected," a revised submittal of the shop drawings shall be resubmitted to the Architect/Engineer for review as above.
4. Drawings received by the Architect/Engineer which do not bear the Contractor's stamp of approval or contain numerous errors indicating a superficial check on the part of the Contractor will be returned for resubmission and will not be reviewed by the Architect/Engineer. The Architect/Engineer's review of drawings or schedules shall not relieve the Contractor of the responsibility for deviations from the Contract Documents, unless he/she has in writing called the Architect/Engineer's attention to such deviations at the time of submission and secured his written approval, nor shall it relieve him/her of responsibility for errors of any kind.
5. Shop drawings bearing the stamp "No Exceptions Taken" or "Make Corrections Indicated" and bearing the Architect/Engineer's signature shall be kept at the jobsite, and the Architect/Engineer will order the removal of any not so noted.

B. Product Data and Samples: Submit new data and samples as required for initial submittal.

C. Make resubmittal so as not to delay work. No extension of contract will be allowed for delays due to improper submittals.

1.05 DISTRIBUTION OF SUBMITTALS AFTER REVIEW

A. The Architect/Engineer will distribute copies of submittals to the Owner.

B. The contractor shall distribute copies of submittals which carry the Architect/Engineer's stamp to:

1. Contractor's file
2. Jobsite file
3. Record documents file
4. Other Contractors
5. Subcontractors
6. Suppliers
7. Fabricators.

1.06 CONTRACTOR RESPONSIBILITIES

A. Review shop drawings, product data and samples prior to submission.

B. Verify:
   1. Field dimensions
   2. Field construction criteria
   3. Catalog numbers and similar data.

C. Coordinate each submittal with requirements of:
   1. The Work
   2. The Contract Documents
   3. The Work of other contractors.

D. Contractor's responsibility for errors and omissions in submittals is not relieved by Architect/Engineer's review of submittals.

E. Notify Architect/Engineer, in writing at time of submissions, of deviations in submittals from Contract requirements, and adverse impact on the project schedule.

F. Contractor's responsibility for deviations in submittals from Contract Documents requirements is not relieved by Architect/Engineer's review of submittals.

G. Do not begin any work which requires submittals without having Architect/Engineer's stamp and initials or signature indicating approval.

H. After Architect/Engineer's review, make response required by the Architect/Engineer's stamp and distribute copies.

1.07 ARCHITECT/ENGINEER'S DUTIES

A. Review submittals with reasonable promptness (approximately 14 calendar days).

B. Review for:
   1. Design concept of Project
   2. Information given in Contract Documents.

C. Review of separate item does not constitute review of an assembly in which item functions.

D. Affix stamp, date and initials or signature certifying to review of submittal, and with instructions for Contractor response.
E. Return submittals to Contractor for response of distribution.

F. The Architect/Engineer will distribute copies of submittals to the Owner.

END OF SECTION
PART 1 - GENERAL

1.01 REQUIREMENTS

A. All Bids shall be based upon providing all products exactly as specified.

B. Where, in the specifications, the materials, products or equipment of a certain manufacturer are indicated, it is done for the purpose of establishing a standard or required function, dimension, appearance and quality and is not intended to limit competition. Where "(or approved equal)" is stated, the Architect/Engineer shall be the approving party.

C. For products specified only by reference or performance standards, select any product which meets or exceeds standards, by any manufacturer, subject to the Architect/Engineer's approval.

1.02 SUBSTITUTIONS, BIDDER/CONTRACTOR OPTIONS

A. PRIOR TO BID OPENING: The Architect/Engineer will consider written requests to amend the Bidding Document to add products not specified provided such requests are received at least 7 calendar days prior to bid opening date. Requests received after that time will not be considered. When a request is approved, the Architect/Engineer will issue an appropriate addendum not less than five calendar days prior to bid opening date.

B. AFTER AWARD OF CONTRACT: No substitutions will be considered after Notice of Award except under one or more of the following conditions:

1. Unavailability of specified products, through no fault of Contractor
2. Subsequent information discloses inability of specified product to perform properly or to fit in designated space
3. Manufacturer/fabricator refusal to certify or guarantee performance of specified product as specified
4. When a substitution would be substantially to Owner's best interests.

1.03 SUBSTITUTION REQUIREMENTS

A. Submit the quantity of documents required for return plus three (3) copies. Include in request:

1. Complete data substantiating compliance of proposed substitution with Contract Documents
2. For products:
   a. Product identification, including manufacturer's name and address.
   b. Manufacturer's literature:
      1) Product description
      2) Performance and test data
      3) Reference standards.
c. Samples
d. Name and address of similar projects on which product was used and date of installation.

2. For construction methods:
   a. Detailed description of proposed method
   b. Name and address of similar projects on which product was used and date of installation.

2. Itemized comparison of proposed substitution with product or method specified
3. Data relating to changes in construction schedule
4. Identify:
   a. Other contracts affected
   b. Changes or coordination required.

5. Accurate cost data on proposed substitution in comparison with product or method specified.

B. In making request for substitution, Bidder/Contractor represents:

1. He/she has personally investigated the proposed product or method and determined that it is equal or superior in all respects to that specified
2. He/she will provide the same guarantee for substitution as for product or method specified
3. He/she will coordinate installation of accepted substitutions into work, making all changes for work to be complete in all respects
4. Cost data is complete and includes all related costs under his/her contract, but excludes:
   a. Costs under separate contracts
   b. Architect/Engineer's redesign
   c. Administrative costs of Architect/Engineer.

5. Bidder/Contractor will assume full responsibility for all additional costs and expenses for Owner, Architect/Engineer, and other contractors.

C. Substitutions will not be considered when:

1. They are indicated or implied on shop drawings or product data submittals without formal request submitted in accordance with Paragraph 1.03.
2. Acceptance will require substantial revision of Contract Documents.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used
SECTION 01740
WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Preparation and submittal.

B. Time and schedule of submittals.

1.02 RELATED SECTIONS

A. Contract for Construction: Performance bond and labor and material payment bonds, warranty, and correction of work, if requested.

B. Individual Specification Sections: Warranties required for specific Products or Work.

1.03 FORM OF SUBMITTALS

A. Bind in commercial quality 8-1/2 x 11 in. three D side ring binders with durable plastic covers.

B. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor; and name of responsible company principal.

C. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of Product or work item.

D. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

1.04 PREPARATION OF SUBMITTALS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

1.05 TIME OF SUBMITTALS

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Warranties and Bonds
A. Make submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.

B. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty period.

1.06 SCHEDULE OF SUBMITTALS

A. Performance and Payment Bond - Section 00100, Section 00300 and Section 00400 (if requested by the Owner).

B. Contractor’s Guarantee - Section 07503.

C. Manufacturer’s Guarantee - Section 07503.

D. All other applicable Contractor’s and Manufacturer’s guarantees.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION
SECTION 02050

DEMOLITION, CUTTING AND PATCHING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. This work consists of providing the necessary labor, materials, equipment and supervision for
the removal of concrete pavers, existing roof system, sealants and other building appurtenances.

B. Execute cutting, filling or patching of Work, required to:

1. Complete work indicated in the drawings and Specifications
2. Uncover work to provide for installation of ill-timed work
3. Remove and replace defective work
4. Remove and replace work not conforming to contract requirements
5. Remove samples of installed work as specified for testing, if requested
6. Install specified work in existing construction.

C. In addition to Contract requirements, upon written instructions of Architect/Engineer.

1. Uncover work to provide for observation of covered work
2. Remove samples of installed materials for testing, if requested
3. Remove work to provide for alteration of existing work.

D. Do not endanger work by cutting or altering work or any part of it.

E. Do not cut or alter work of another Contractor without written consent of Architect/Engineer.

1.02 ENVIRONMENTAL REQUIREMENTS

A. The Contractor shall comply with all federal, state, and local regulations.

B. The Contractor shall design, provide, and maintain a containment system to collect all of the dust
and debris generated during the course of the work. This containment system shall prevent any
dust or other fine particles from entering the building interior, the surrounding air or coming in
contact with pedestrians and vehicles.

1.03 SUBMITTALS

A. Prior to cutting which affects structural safety of Project, or work of another contractor, submit
written notice to Architect/Engineer requesting consent to proceed with cutting, including:

1. Project identification
2. Description of affected work
3. Necessity for cutting
4. Effect on other work, on structural integrity of Project
5. Description of proposed work. Designate:
a. Scope of cutting and patching
b. Contractor and trades to execute the work
c. Products proposed to be used
d. Extent of refinishing.

B. Prior to cutting and patching done on instruction of Architect/Engineer, submit a cost estimate.

C. Should conditions of work, or schedule, indicate change of materials or methods, submit recommendation to Architect/Engineer including:
   1. Condition indicating change
   2. Recommendation for alternative materials or methods

1.04 PAYMENT FOR COSTS

A. Costs caused by ill-timed or defective work, or work not conforming to Contract Documents, including costs for additional services of Architect/Engineer, shall be paid by the General Contractor.

B. Work done on instructions of Architect/Engineer (by Change Order), other than defective or nonconforming work shall be paid by the Owner.

1.05 WORK SEQUENCE

A. Do not remove existing roofing or flashing when precipitation is imminent.

B. Do not remove more existing material than can be replaced with new material and made watertight by the end of the work day.

C. Coordinate demolition and removal operations with new installation specified in Section 07503 - Modified Bitumen Roofing and Flashings and Section 07520 - Sheet Metal and Flashing.

D. Conduct demolition and removal operations in a manner to minimize traffic over newly installed areas.

PART 2 - PRODUCTS

2.01 MATERIALS

A. For replacement of work removed, comply with specifications for type of work to be performed.

B. For replacement of work removed not covered under this Specification, match existing material to be replaced.
PART 3 - EXECUTION

3.01 INSPECTION

A. Inspect existing conditions of work including elements subject to movement or damage during:

1. Cutting and patching

B. After uncovering work, inspect conditions affecting installation of new products.

3.02 PREPARATION

A. Prior to cutting:

1. Provide shoring, bracing and support as required to maintain structural integrity of project
2. Provide protection for other portions of the project
3. Provide protection from elements.

3.03 PERFORMANCE

A. Execute fitting and adjustment of products to provide finished installation to comply with specified tolerances, finishes.

B. Execute cutting by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs and new work.

C. Restore work which has been cut or removed; install new products to provide completed work in accord with Contract requirements.

D. Refinish entire surfaces as necessary to provide an even finish.

1. Continuous Surfaces: To nearest intersection(s)

3.04 SHORING AND TEMPORARY PROTECTION

A. The Contractor shall be solely responsible for shoring any portion of the structure, as required, during the course of the work.

B. The Contractor shall protect all appurtenances.

3.05 COORDINATION

A. Coordinate demolition and removal operations with new installation specified in Section 07503 - Modified Bitumen Roofing and Flashings.

B. Do not remove more flashing or sheet metal roofing than can be replaced with new material and made watertight by the end of the work day.
3.06 OPERATIONS

A. All demolition operations shall be performed during times approved by Owner.

B. Locate the dumpster(s) in an area approved by the Owner.

C. Stockpiling debris on the roof is not permitted.

D. At the end of the work day, all partially filled dumpsters shall be securely covered or removed from the jobsite.

3.07 DEMOLITION

A. Remove existing insulation, roofing coal tar pitch, protection board underlayment and metal flashings from all areas as indicated on drawings.

B. Clean the substrate of projections and substances detrimental to the work. Deck shall be cleared of water, snow and ice.

C. Remove debris and dirt, leaving the surface dust free.

3.08 CLEAN-UP

A. The Contractor shall be responsible for the safe removal of all demolished materials and for proper and legal disposal off site.

B. All areas of the site shall be left broom-clean at the end of each working day.

END OF SECTION
SECTION 02110
SITE RESTORATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Repair and/or replace areas of the site damaged during construction operations including, but not limited to canopies, landscaping, sidewalks, plaza, curbs, pavements, site furnishing, lighting fixtures, existing roofing, windows, etc., 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, in accordance with the requirements of General Conditions of the Contract and completely coordinated with the work of all other trades.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. Contractor shall employ subcontractors and/or tradesmen with a minimum of two (2) years experience in performing the work required.

1.03 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. No work shall proceed until the Owner and/or Architect/Engineer has approved the statement.

PART 2 - PRODUCTS

2.01 PAVING AND SURFACING

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

A. The Contractor shall guarantee the landscaping work against defects in materials and workmanship in accordance with the General Conditions, except that the guarantee period shall be one (1) planting season beyond the date of substantial completion.

1. This guarantee includes furnishing new plants as well as labor and materials for installation of replacements. All replacement plants shall be guaranteed and maintained for a period of one (1) year. Replacement stock must meet specifications and quality of original stock.
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.
4. At the end of the guarantee period, the Contractor shall remove all guying, staking, wrapping, saucers and mulch from the site.

B. Plant materials shall be replaced with the same species and size.

2.03 ROOFING

A. Replacement and/or repair of existing roofing shall be performed by a manufacturer approved applicator and shall include any such repair and/or replacements determined necessary to bring the roof to its original state. This may also include removal and replacement of wet or moist insulation. These repairs will be determined by the Architect/Engineer and the roof membrane manufacturer.

PART 3 - EXECUTION

3.01 PAVING AND SURFACING

A. Means and methods for the installation of replacement pavings, plaza, walks, curbs and other surfacing shall be in accordance with manufacturer's instructions, the project specifications and local construction standards for the type of work performed and shall be subject to the approval of the Owner and Architect/Engineer prior to the start of work.

3.02 LANDSCAPING

A. Plantings shall be set in appropriate pits, backfilled, mulched, guyed, staked or otherwise protected and installed in accordance with local construction standards for the type of plantings and subject to the approval of the Owner and Architect/Engineer prior to the start of Work.

3.03 ROOFING

A. Prior to commencing roof repairs, the contractor shall prepare a scope of work including details and specifications to the roof membrane manufacturer and Architect/Engineer for review.
B. The contractor’s work shall comply with the roof membrane manufacturer’s instructions and installation details. If such information is not available, the contractor shall comply with NRCA and SMACNA instructions and installation details.

END OF SECTION
SECTION 04500
MASONRY RESTORATION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Work of this section includes, but is not limited to, the following.

1. Replacement of brick masonry at locations where new through wall flashing is to be installed on each of the four sides of the square cupola.

1.02 RELATED WORK

A. Carefully examine all of the Contract Documents for requirements which effect the work of this section.

B. Other specifications sections which directly relate to the work of this section include, but are not limited to the following:

1. Section 04520 - Masonry Repointing
2. Section 07520 - Sheet Metal Flashing
3. Section 07900 - Joint Sealants

1.03 REFERENCES

B. ASTM C216, Facing Brick.
C. ASTM C150, Portland Cement.
D. BIA Technical Note #1, Cold Weather Construction.
E. ASTM C270, Mortar for Unit Masonry.
F. ASTM C144, Aggregate for Masonry Mortar.
G. ANSI A41.1, Building Code Requirements for Masonry.
H. ACI 530/ASCE 5, Building Code Requirements for Masonry Structures (current edition)
I. ASTM C476 - Mortar and Grout for Reinforced Masonry
J. ASTM C902 - Pedestrian and Light Traffic Paving Bricks
1.04 SUBMITTALS

A. Samples

1. Submit five full-size samples of each brick showing extreme variations in color and texture
2. Submit two samples of each type of anchorage and joint reinforcement of type to be used
3. Certified test reports showing compliance with specifications for: face brick, backup brick, mortar materials and grout. Perform additional tests of brick for initial rate of absorption and efflorescence as specified in ASTM C 67.
4. Submit manufacturer's product literature for ties, anchors, weep vent, foam pads, steel primer and paint materials.

B. Certification: Provide manufacturer's certificates stating compliance with specifications.

C. Product Literature: Submit product literature for all items used.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle materials in strict compliance with manufacturer's instructions and recommendations. Protect from all possible damage. Sequence deliveries to avoid delays, but minimize on-site storage.

1.06 QUALITY ASSURANCE

A. Source: For each type of material required for the work of this section, provide the products of one manufacturer.

B. Mock-ups: Before beginning primary work of this section, at locations acceptable to the Architect/Engineer provide mock-ups and obtain Architect/Engineer's acceptance for:

1. New Brick Masonry: Construct 4 sq. ft. free-standing mock-up
2. New Mortar: Provide a minimum of 10 different color and texture samples for owners review

1.07 ENVIRONMENTAL REQUIREMENTS

A. Hot Weather Protection: Use mortar within 1 1/2 hours after mixing. Discard all mortar over 1 1/2 hours old and all mortar that has stiffened due to hydration (setting). Do not retemper colored mortar.


1.08 PROJECT CONDITIONS

A. Protection: Cover work at the end of each day and whenever work is not in progress. Extend cover down both sides of walls at least 24 in. and hold securely in place.
B. Staining: Prevent mortar from staining face of masonry that is to be left exposed. Clean exposed masonry immediately (at least each day) using soft brushes and water only. Protect sills, ledges and projections from mortar droppings.

1.09 STRUCTURAL INSPECTION

A. Architect/Engineer shall be given the opportunity to visually inspect the masonry substrates at each area exposed after removal of brickwork. Contractor shall inform the Architect/Engineer of areas to be exposed 24 hours in advance.

PART 2 - PRODUCTS

2.01 BRICK MASONRY

A. Face Brick: All brick shall comply with ASTM C216-00, Type FBS, grade SW. Manufacturer to be approved by Architect/Engineer. Waiver of the saturation coefficient requirements shall be at the discretion of the A/E

1. Size: Match existing as approved by Architect/Engineer
2. Grade: Provide grade SW for all work
3. Color/Finish/Texture: Match existing brick as approved by Architect/Engineer.

2.02 MORTAR MATERIALS

A. Portland Cement: ASTM C150, Normal Type I, free from water soluble salts and alkalies. Provide cement that exhibits no efflorescence when tested in accordance with standard efflorescence test ASTM C67, modified to use 2 in. x 7 in. x 2 1/2 in. mortar samples, consisting of 1 part troy weight of cement under test and 2 parts of sand mixed to a flow of 100 percent with water. **NOTE: Use of masonry cement is not permitted.**

Contractors option: Pre-blended portland cement-lime mortar may be used in lieu of site batched mortar. An acceptable pre-blended mortar is Glen-Gery Color Mortar Blend. Color as selected by Architect/Engineer

1. Cement Color: Provide inorganic cement color as necessary to provide mortar color as determined by the Architect/Engineer (to match pointing mortar).

B. Lime: ASTM C 207, hydrated, Type S, non-air entrained

C. Mortar Aggregate: Complying with ASTM C144, well graded.

D. Water: Clean and potable.

E. Grout Aggregate: Comply with ASTM C 404.

F. Pigment: Natural and synthetic oxides of iron and chrome, compounded for use in mortar. Use only inorganic pigments with proven record of satisfactory performance. Mortar colors are to be selected by the Architect/Engineer.
2.03 MORTAR MIXES

A. Mortar: Provide mortar complying with ASTM C 270 by proportion only. Masonry cement will not be permitted.
   1. Type: Provide Type N mortar at all locations. Measure and batch ingredients using a known, precise measure; do not batch by shovelful. Mix consistently and uniformly.
   2. Color: Color mortar to match existing, as approved by the Architect/Engineer. Do not exceed pigment to mortar ratio of 1:10. Do not re-temper mortar containing color pigments.

B. Admixtures: None permitted.

C. Contractor's Option: In lieu of a site batched mortar, a pre-blended portland cement-lime mortar equal to Glen-Gery Color Mortar Blend may be used. Color as selected by Architect/Engineer.

D. Grout: Provide grout complying with ASTM C 476 with consistency appropriate to conditions so that grout will completely fill all spaces intended to receive grout. Grout mixes containing gypsum shall not be permitted.

2.04 ACCESSORIES

A. Weep Vents: Polypropylene cell vent as manufactured by Dur-O-Wal. Install within head joists at 24 in. center above flashings

B. Neoprene Foam Pad: Size as required.

PART 3 - EXECUTION

3.01 INSTALLATION - GENERAL

A. Strictly comply with industry standards and recommendations of Brick Industry Association, except where more restrictive requirements are specified in this section. Beginning work means installer accepts substrates and conditions.

B. Lay face brick in bond pattern to match original construction
   1. Brick shall be plumb, true to line, with level courses accurately spaced and joints aligned vertically. Drifting of joints shall be cause for rejection of work.
   2. Match existing coursing and bond.

C. Tool joints slightly concave as work proceeds. Compress mortar to form a dense, smooth weather-tight surface. Rake out mortar where sealants are to be installed.

D. Lay masonry plumb and level with full bed and head joints, fully buttered and shoved into place. Do not slush joints. Do not allow mortar to block weep tubes.

E. Remove, clean and reset with fresh mortar all masonry units that are disturbed after laying.
F. Cut masonry units with power saw designed for cutting masonry with sharp, unchipped edges. Cut masonry to form special shapes as indicated.

G. Install work with random color variations with no groups of lighter or darker units. Take masonry units from stacks randomly to avoid noticeable color variations.

H. Layout walls in advance for accurate spacing, uniform joint widths, and accurate bond pattern. Avoid the use of less-than-half size units. Continue existing cladding expansion joints through new masonry.

I. Tooth new brickwork into existing adjacent brickwork.

J. Wet brick masonry before installation if results of initial rate of absorption tests are greater than 20 g/min.

3.02 FLASHING INSTALLATION AND COORDINATION

A. Flashings are specified in Section 07503 - Coordinate the installation of flashings with the masonry work.

B. Prepare masonry surfaces to receive flashings smooth and free of projections. Install mortar as required to provide sound substrate with positive drainage towards weep holes.

3.03 TOLERANCES

A. Match existing adjacent construction for plumb and level coursing and bond.

3.04 CLEANING

A. Remove excess mortar at the end of each day.

B. Point or replace defective mortar. Match adjacent work.

C. Clean soiled surfaces using a non-acidic solution which will not harm masonry or adjacent materials (glass, window frames, skylights, etc.). Consult masonry manufacturer and Architect/Engineer for acceptable cleaners. Use non-metallic tools in cleaning operations. Chemical cleaners shall not be permitted unless approved by the Architect/Engineer. If approved, manufacturer’s written instructions (for application, protection, dilution, etc.) shall be followed.

END OF SECTION
SECTION 04520

MASONRY REPOINTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Furnish all materials, labor, tools, and equipment necessary to perform the Work, as shown on the Drawings and specified herein, in accordance with the provisions of the "Instructions to Bidders" and "General Conditions".

B. The Work of this section includes repointing mortar joints in brick masonry where indicated to match the color, texture and tooling of acceptable original work. Repointing work is intended to seal mortar joints.

1.02 QUALITY ASSURANCE

A. Subcontractor: A firm which has at least five years experience in work of the type required by this section and which employs skilled and experienced personnel.

B. Source: For each type of material required for the work of this section, provide primary materials which are the products of one manufacturer to ensure uniformity of final color and cleaning.

C. Mock-Ups: Before beginning primary work of this section, provide mock-ups for each color and type of joint at locations acceptable to the Architect/Engineer and obtain Architect/Engineer's acceptance of visual qualities. Protect and maintain acceptable mock-ups throughout the work of this section to serve as criteria for acceptance of future work.

1. Repointing: Provide the following mock-ups to demonstrate Contractor's methods and workmanship in removing mortar from joints and one mock-up to demonstrate quality of materials and workmanship to be expected in pointing of mortar joints of each of the following:

   a. Brick Masonry: 10 sq ft

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's product data, installation instructions, use limitations, and recommendations for each material used.

B. Samples: Submit representative samples of each material that is to be used in the finished work, showing the full range of color and finish variations expected. Provide samples of pointing mortar in 4 in. long and 1/2 in. wide aluminum channels.

C. Test Reports: Submit certified reports showing compliance with the Specification for each material used.
1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver materials and products in unopened factory labeled packages. Store and handle in strict compliance with manufacturers' instructions and recommendations. Protect from damage. Do not allow materials including sand to become wet.

1.05 PROJECT CONDITIONS

A. Weather: Perform exterior repointing work only when existing temperature is between 40º F and 90º F. Weather conditions shall also be within the limits established by manufacturers of the materials and products used. Protect newly finished work from direct rainfall.

B. Protection: Protect persons, property, motor vehicles, masonry surfaces, and site from injury or damage due to Contractor's operations.

C. Dust: Comply with all applicable laws and regulations applicable to dust and debris containment. Vacuum systems, water misting systems, or work enclosures shall be used as required to minimize and contain dust generated from repointing work.

D. Staining: Prevent mortar from staining face of masonry that is to be left exposed. Clean exposed masonry immediately (at least each day) using soft brushes and water only. Protect base of walls from splashed mud and other stains. Protect sills, ledges and projections from mortar droppings.

1.06 SEQUENCING AND SCHEDULING

A. Conference: Convene a pre-installation conference to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

B. Perform work on this section and other sections in the optimum sequence to avoid damaging new work and to avoid damaging repointed joints.

PART 2 - PRODUCTS

2.01 MORTAR MATERIALS

A. Portland cement: ASTM C150, Type 1. Masonry cements will not be permitted.

   1. Cement Color: Provide cement color as necessary to provide mortar color as determined by Architect/Engineer.

B. Sand: ASTM C144

C. Lime: ASTM C207, hydrated, Type S (non-air entrained).

D. Water: Clean and potable.
E. Pigment: Natural and synthetic oxides of iron and chrome, compounded for use in mortar. Use only inorganic pigments with proven record of satisfactory performance. Mortar colors are to be selected by Architect/Engineer.

F. Admixtures: None permitted.

G. Preblended Color Mortar: As an option, the Contractor may use an approved portland cement/lime preblended/colored mortar. Glen Gery Color Mortar Blend or approved equal.

2.02 REPOINTING MORTAR MIXES

A. Measure and batch ingredients using a known, precise measure; do not batch by shovelful. Mix consistently and uniformly. Mortar proportions shall conform with ASTM C270, Type N.

B. Color: Provide mortar with color as determined by Architect/Engineer. Do not exceed pigment to mortar ratio of 1:10 to prevent color variation, do not re-temper mortar containing color pigments.

PART 3 - EXECUTION

3.01 INSPECTION

A. Installer shall examine substrates, supports, and conditions under which this work is to be performed and notify Contractor, in writing, of conditions detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are corrected. Beginning work means installer accepts substrates and conditions.

3.02 INSTALLATION/EXECUTION

A. Repointing Preparation: Rake-out joints to a depth of at least 3/4 in. or to sound mortar deeper than 3/4 in. Carefully remove mortar; do not damage brick in any way. Do not enlarge joint widths. All joints shall have square edges. Saw may be used for horizontal joints and portions of vertical joints. Remainder (ends, corners) shall be done using hand tools.

1. Reset loose masonry units in full mortar bead and head joints using repointing mortar.

B. Joint Cleaning: Brush joints, then flush with water to remove all loose material and dust. Joint surfaces shall be damp, but free of standing water at time of repointing.

C. Repointing: Carefully insert pointing mortar into joints. Point joints up to 3/4 in. deep at one time in a minimum of three thin, tightly packed layers. Do not spread mortar over brick faces and do not feather-edge mortar.

D. Tooling: Tool and compress joints to form dense, thumb print hard, weathertight surfaces. Size, tooling and appearance of finished work shall match original work in good condition and approved mock-ups.

E. Cure Mortar in a damp condition for not less than 72 hours.
3.03 FIELD QUALITY CONTROL

A. Contractor shall establish and maintain throughout the work of this section, an effective quality control program to ensure that work is performed as required by the Contract Documents. Establish specific procedures to prevent damage to brick and edges during raking and feathering of mortar during repointing.

3.04 CLEANING AND PROTECTION

A. Repair minor damage to eliminate all evidence of repair. Remove and replace work which cannot be satisfactorily repaired.

B. Clean wall surfaces after repointing, using city pressure water and brush methods recommended by Brick Industry Association. If not adequate, re-clean using ProSoCo Mortar and Grout remover in accordance with manufacturer’s written instructions. Protect all adjacent areas, including but not limited to glass, window frames, storefronts, etc., from runoff. Cleaner concentration shall be based on an Architect/Engineer approved sample application. Remove and replace work that cannot be successfully cleaned.

END OF SECTION
PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Furnish necessary labor, materials and equipment to install new treated wood consisting of blocking, curbing and sheathing as indicated on the construction documents.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 07503 - Modified Bitumen Roofing and Flashings

B. Section 07520 - Sheet Metal and Flashing

C. Section 07900 - Joint Sealants

1.03 REFERENCES

A. ALSC - American Lumber Standard Committee: Softwood Lumber Standards

B. APA - Engineered Wood Association: Grades and Standards

C. FS TT-W-571 - Wood Preservation: Treating Practices

D. NFPA - National Forest Products Association

E. AWPA - American Wood Preservers' Association: Book of Standards

F. SFPA - Southern Forest Products Association

1.04 QUALITY ASSURANCE

A. Lumber Grading Agency: Certified by ALSC

B. Plywood Grading Agency: Certified by APA

1.05 SUBMITTALS

A. Provide technical data on wood preservative materials and application instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Lumber Grading Rules: APA, NFPA, SFPA
B. Softwood Lumber: Southern Yellow Pine species, two grade, 19% maximum moisture content.

C. Plywood: APA Grade C-D, with waterproof glue, sanded

D. Fasteners: ElectroHot-dipped galvanized steel for exterior and treated locations; size and type to suite condition.

E. Anchors: Electro hot-dipped galvanized expansion shield and lag bolt type for anchorage to solid masonry or concrete.

F. Electro hot dipped galvanized self-tapping screws or power activated fasteners for anchorage to metal.

2.02 WOOD TREATMENT

A. Wood Preservative (Pressure Treatment): FS TT-W-571 AWPA Treatment CF2 using waterborne preservative with 0.30 percent retainage.

B. All wood specified in this section shall be pressure treated.

PART 3 - EXECUTION

3.01 WOOD BLOCKING AND CURBING

A. Curb areas as shown on the drawings. Form corners by lapping side members alternatively.

B. Provide blocking and nailers where indicated or otherwise required to attach roofing membrane where indicated.

C. Install all wood blocking and curbing to resist a minimum lateral force of 200 lb per lin ft or greater if required by the roof membrane manufacturer.

D. Total wood nailer height shall match the total thickness of insulation being used and shall be installed with a 1/8-in. gap between each length and at each change in direction.

3.02 SHEATHING

A. Secure sheathing to existing construction with countersunk anchors spaced 16-in. (minimum) at all board edges and at one per sq ft within board edges.

END OF SECTION
PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Furnish all labor, materials and equipment to install a soprafix, multi-layer SBS modified bitumen membranes, insulation board, densdeck, and sheet metal flashings.

B. Description of Systems: Roofing shall consist of two (2) plies of prefabricated soprafix SBS modified bitumen membrane (cap ply granule surfaced, sopralene flam 250 FR GR base ply smooth surfaced sopralene flam 180) over a prepared substrate.

1.02 REFERENCES

A. Membrane: Membrane manufacturer and specific products referenced shall be the only approved products for use.

1.03 SUBMITTALS

A. Specimen copy of Manufacturer’s roofing and waterproofing system warranty proposed for the Work. Submit prior to commencement of the Work.

1. Fully executed warranty, which shall be issued upon Manufacturer’s approval of the installation. In no event shall the effective date of the warranty predate the completion and acceptance by Owner of the roof membrane system and all associated work.

B. Product Data: Submit product data and general recommendations from roofing and waterproofing materials manufacturer, for types of roofing required. Submit manufacturers' instructions for use of all materials including sheet roofing, flashing material, and accessories. Provide for membrane materials, base flashings, and associated adhesives, cements, primers, sealants, water cut-off mastics, prefabricated accessories, cover strips, fasteners, anchor bars, and other related items.

C. For details not addressed by the project drawings, submit shop drawings for approval by the Owner and Architect/Engineer prior to start of work. Shop drawings shall include: Outline of roof and roof size, location and type of penetrations, perimeter and penetration details, special details and list of materials.

D. A letter from the material manufacturer specifically referencing this project and stating their intention to provide the specified warranty.

E. The current published product and installation literature of the materials manufacturer shall be considered part of this specification. Any revisions to the published literature, prior to the date of installation of the product shall also be considered part of this specification.
F.  Samples (minimum 6 inch by 6 inch) of each type of sheet roofing shall be submitted.

G.  Prior to start of work, submit proposed detail for temporary watertight night cutoffs for review and approval, clearly indicating tie-in of new modified roofing to existing substrates at temporary daily terminations during the progress of the work.

1.04 QUALITY ASSURANCE

A.  Contractor Requirements

1.  Contractor shall be approved by the manufacturer of the roofing materials and authorized to install the specified warranty system.
2.  Portions of these specifications may exceed the minimum requirements of the membrane material manufacturer.  In no event shall less quality, less weight or a lesser number of plies or any other lesser requirements be acceptable than at least the minimum of such required by this Specification Section and those of the manufacturer.
3.  Maintain one copy of project documents on site at all times during work activities.
4.  Membrane Manufacturer: Soprema.
5.  Acceptable Applicator:  Contractor shall be approved by the roofing materials manufacturer with a minimum of three (3) years experience installing the specified product. The Contractor shall submit written evidence, from the membrane manufacturer that they are an Approved Applicator and have been for three (3) years (minimum) and that they are eligible to install the specified system as necessary to qualify for the specified warranty. A copy of the guarantee proposal shall be submitted with the Bid.
6.  Technical Assistance: The contractor shall arrange for all required manufacturer support required to maintain eligibility for specified manufacturer’s warranty.

B.  Regulatory Requirements:

1.  Materials and application shall be such that the finished assembly, insulation and roofing membrane shall meet the requirements for FM Class I.
2.  Anchorage of roofing insulation and membrane system shall meet FM 1-75 wind uplift requirements.

1.05 DELIVERY, STORAGE AND HANDLING

A.  Deliver materials in original unopened containers.

B.  Inspect materials delivered to the site for evidence of contact with moisture.  Reject delivery of materials with stained or wet wrappers, or torn covers. Packaging labels must be readable, identify the material, and indicate conformance with the reference standard applicable to the material.  Additionally, for roofing membrane sheet, adhesives/cements and sealant materials, labels shall indicate the date of manufacture and lot number.
C. Store all materials, including membrane, between 40 degrees F and 80 degrees F. If exposed to lower temperature, restore to proper temperature before using. No roofing membrane or flashing membrane shall be installed unless the outdoor temperature is 40 degrees F and rising.

D. Store all materials in dry area and protect from moisture and physical damage. Damaged materials shall be removed from site and replaced at no additional cost to the Owner.

E. Materials shall be handled, transported and stored in a manner enabling undamaged material to be installed. Rolls or material displaying a flattened appearance shall be considered damaged and shall not be installed.

F. Materials requiring fire resistance classification shall be delivered to the job with labels from an appropriate independent laboratory attached and packaged as required by the labeling service.

G. Deliver materials in sufficient quantity to assure continuity of work. Handle rolled goods in a manner to prevent damage to edges or ends. Select and utilize handling equipment so as to avoid damage to materials handled, to applied roofing or to other construction.

H. Store rolled goods on ends. Protect materials from damage by construction traffic or other work. Roll goods which have been damaged by dropping, flattening or other mishandling, or have ends with embedded, foreign material shall not be incorporated into the work. Any such installations shall be removed and replaced at no additional cost to the Owner.

I. Do not overload the roof beyond the design loads with products or equipment.

J. Protect the existing roofing from damage due to traffic and material loading.

K. Use all materials within the time limits prescribed by the manufacturers.

1.06 PROJECT/SITE CONDITIONS

A. Do not install roofing during inclement weather, below the minimum ambient or surface temperatures recommended by the membrane manufacturer, or when relative humidity or wind speed is not within the range acceptable to the membrane manufacturer.

B. Contractor shall not proceed with or install roofing during inclement weather, except for temporary work necessary during inclement weather to protect materials that are already installed. Remove all temporary work before installing permanent materials.

C. Surfaces on which the insulation or membrane is to be applied shall be clean, smooth, dry, and free of projections or contaminants that would prevent proper installation.

D. Waste products (petroleum, grease, oil and solvents - vegetable or mineral oil and animal fat - direct contact with steam venting) shall not be allowed to come in contact with the roof membrane system.

E. All membrane and substrate surfaces must be clean and dry.
F. Daily Seal: Care shall be exercised to ensure that moisture does not penetrate beneath any completed sections of the roofing by temporarily sealing the loose edge of the membrane at the end of each work day and prior to the arrival of inclement weather. The manufacturer's requirements shall be followed closely. Contractor shall inspect existing components for moisture intrusion along the tie-in after opening the daily seal on the next work day.

1.07 WARRANTY

A. Manufacturer's Warranty: The Contractor shall provide a twenty (20) year No Dollar Limit System Written Transferable Warranty from the date of acceptance of this work for the new low slope roof and waterproofing systems from the membrane manufacturer, or other approved entity as approved by the Owner, agreeing to replace/repair defective materials and workmanship at no additional cost to the Owner. Warranty shall include responsibility for removal and replacement of other work which conceals defective work or materials. Warranty shall cover Workmanship for the full twenty (20) years and all membrane materials also for the full twenty (20) years. Included in the 20 year warranty shall be the roofing membrane, flashing and insulation. Should the membrane manufacturer require materials not shown on the drawings or included in the specifications or flashing details that differ from those shown on the drawings to qualify for the specified warranty, the contractor shall comply with the requirements of the manufacturer at no additional cost to the owner.

B. Contractor Guaranty: Provide written (notarized) guaranty agreeing to replace/repair defective materials and workmanship at no additional cost to the Owner for a period of two (2) years after substantial completion. The guaranty includes responsibility for removal and replacement of other work which conceals roofing membranes. This guaranty shall include all work installed under this contract including membranes, flashings, drainage systems, metal work, insulation, fasteners and miscellaneous items.

PART 2 - PRODUCTS

2.01 GENERAL

A. If insulation is provided by other than the membrane manufacturer, Contractor shall submit a letter of acceptance from the membrane manufacturer for approval of insulation proposed for use and verification that insulation shall be included in the system warranty.

B. All materials to be used in the work, including temporary cut-offs and tie-ins, shall be certified by the manufacturer to be free of asbestos.

C. Any asbestos containing material inadvertently installed under this contract by the Contractor, or their subcontractors, shall be removed and replaced with asbestos-free products at no additional cost to the Owner.

D. Top ply of modified bitumen roofing membrane shall be coated with ceramic granules. Granule color shall be selected by owner. Consult owner concerning preferred color prior to ordering.

E. Approved flashing system shall also be utilized for stripping over of sheet metal flanges except as may be otherwise noted on the drawings.
2.02 APPROVED ROOF MEMBRANE ASSEMBLY

A. For all low slope roof areas:

Manufacturer:

1.) Soprema
2.) JM

Bottom Ply Membrane & Flashings (with properties equal to or greater than those specified):
1.) Sopralene Flam 180
2.) JM: DynaLastic 180 S

1. Description: Flashing membrane shall have a non-woven polyester reinforcement and thermofusible elastomeric asphalt. Both sides shall have a thermofusible plastic film. This membrane is to be applied by torching only.

2. Components: Reinforcement shall be 3.68 lbs/sq. non-woven polyester. Elastomeric asphalt shall be a mix of selected bitumen and SBS thermoplastic polymer.

3. Physical Properties:
   a. Tensile strength:
      Longitudinal - 119 lbs./in.
      Transversal - 88 lbs./in.
   b. Ultimate elongation,
      Longitudinal, 58%
      Transversal, 64%
   c. Static puncture strength - 67 lbs.
   d. Low temperature flexibility, no cracking at -22 degrees F.
   e. SBS elongation - 1500%
   f. Load strain product:
      Longitudinal - 6902
      Transversal - 5632
   g. Approximate roll weight - 79 lbs (35.8 kgs)
   h. Approximate thickness - 120 mils (3 mm)

Top Ply Membrane & Flashings (with properties equal to or greater than those specified):
1.) Sopralene Flam 250 granule
2.) JM: DynaLastic 250 FR
1. Description: Waterproofing membrane shall have a non-woven polyester reinforcement and thermofusible elastomeric asphalt, with a fire retardant agent added. The top side shall be self-protected with colored granules. The underside shall be protected by a thermofusible plastic film. This membrane is to be applied by torching only.
   a. Color to be white.

2. Components: Reinforcement shall be 5.12 lbs/sq non-woven polyester. Elastomeric asphalt shall be a mix of selected bitumen and SBS thermoplastic polymer.

3. Physical properties:
   a. Tensile strength:
      Longitudinal - 163 lbs./in.
      Transversal - 122 lbs./in.
   b. Ultimate elongation:
      Longitudinal - 60%
      Transversal - 69%
   c. Static puncture strength - 55 lbs.
   d. Low temperature flexibility, no cracking at -22 degrees F.
   e. SBS elongation - 1500%
   f. Load strain product:
      Longitudinal - 9780
      Transversal - 8418
   g. Approximate roll weight - 84 lbs (38.1 kgs)
   h. Approximate thickness - 160 mils (4 mm)

Alsan Base Flashing:

1. Description: Polyurethane/bitumen resin, single component moisture cured compound with PolyFleece flexible reinforcing scrim. Final surfacing shall be white granules.

2. Components: PolyFleece reinforcement and single component polyurethane/bitumen resin.

2.03 BASE PLY

A. Modified bitumen cements, adhesives, mastics, primers, ceramic granules, sealants, prefabricated accessories, fasteners, anchor bars, and other related items are to be furnished or recommended by the membrane material manufacturer unless otherwise indicated.
2.04 CAP PLY
A. Modified bitumen cements, adhesives, mastics, primers, ceramic granules, sealants, prefabricated accessories, fasteners, anchor bars, and other related items are to be furnished or recommended by the membrane material manufacturer unless otherwise indicated.

2.05 RELATED MODIFIED BITUMEN MATERIALS
A. Modified bitumen cements, adhesives, mastics, primers, ceramic granules, sealants, prefabricated accessories, fasteners, anchor bars, and other related items are to be furnished or recommended by the membrane material manufacturer unless otherwise indicated.

2.06 INSULATION, DENSDECK AND TAPERED EDGE STRIPS
A. Insulation for roof areas:
   1. Polyisocyanurate, 18 psi, insulation board, 2.0 inch thick.

C. Tapered Edge strips for roofing system:
   1. Perlite tapered edge strip where required to provide flush transitions and as noted on drawings.

D. Densdeck
   1. 48” x 96” x 1/8” densdeck.

2.07 SHEET METAL
A. Copper: ASTM B370, 16 ounce per square foot for fascias and flashings, 20 ounce per square foot for cleats.

B. Stainless Steel: Type 304 stainless steel.

C. Solder: Composition of 50% tin and 50% lead for use with copper and stainless steel.

D. Flux: Muriatic acid killed with zinc or approved brand of liquid soldering flux. Acid shall be thoroughly neutralized and washed off after soldering.

E. Aluminum: 0.050 inch thick for fascias and flashings, 0.063 inch thick for cleats, 0.040 inch thick for metal wall panels, 0.40 inch thick for metal wall panel transition flashings. Baked on fluoropolymer coating system based on Kynar 500 resin. Color to be non-standard custom color, as selected by the Architect/Engineer
2.08 SEALANTS

A. For masonry to masonry and masonry to metal - DowCorning 790 (or approved equal). Color to be selected by Architect/Engineer from standard color chart.

B. For metal to metal - Dow Corning 795 (or approved equal). Color to be selected by Architect/Engineer from standard color chart.

2.09 FASTENERS AND ACCESSORIES

A. Termination bar - Tru-Fast TB-100 aluminum termination bar (0.1 inch thick by 1 inch wide with pre drilled holes 8 inches on center), 800-443-9602.


D. Masonry fasteners - 410 Stainless Steel Tapcon with hex washer head by ITW Buildex or Type 304 Stainless Steel Tapper by Powers Fasteners, 1/4 inch diameter with hex washer head and length as noted on details (2-3/4 inches minimum).

2.10 LUMBER

A. All wood nailers and blocking:

1. Species and Grade for nailers and blocking: Douglas Fir or Southern Yellow Pine; WWPA Structural Joist and Plank Class, No. 2 Grade.

2. Preservative treatment: Treatment conforming with AWPB (American Wood Preservers Bureau) Specification LP-2 Standard for lumber and timber. This treatment is commonly referred to as pressure treated or “Wolmanized”.

3. Each piece of treated lumber delivered to the site must bear the stamp of the AWPI (American Wood Preservers Institute), Quality Mark, indicating compliance with the requirements of the AWPI Quality Control Program.

4. Each piece of treated lumber must bear a stamp that it is kiln dried before the delivery of product, and indicating conformance with AWPB Specifications, Section 3.1.2.

5. Treated lumber shall be dried by supplier after treatment. Provide documentation from treatment supplier that the lumber has been air dried after treatment, back to 19% or less moisture content by weight.

6. Dimensions: As required by conditions encountered and as shown on project details.

B. Plywood

1. Standards: Comply with PS 1/ANSI A199.1 for plywood panels. All panels shall be 5-ply (min). For products not manufactured under PS 1 provisions, comply with American Plywood Association “Performance Standard and Policies for Structural-Use Panels”, Form E445.

2. Trademark: Factory-mark each construction panel with APA trademark evidencing
compliance with grade requirements and AWPI trademark evidencing compliance with treatment requirements.

3. Preservative treated with waterborne preservative with minimum 0.25 lb/ft.³ retention. Treated plywood shall be air dried by supplier after treatment. Provide documentation by treated plywood supplier that plywood dried back to 18% or less moisture content by weight.

4. Grades:

a. Plywood shall be thickness as noted on the drawings for any parapet wall sheathing, and for installation on top of any indicated parapet walls and APA (American Plywood Association) Rated Sheathing Exterior Exposure (C-C Exterior). Note: “CDX” and Exposure 1 plywood do not comply with this specification and are not approved for use on low slope roofing details where treated plywood noted. For steep sloped roof sheathing, Exposure 1 plywood shall be used. Additional plywood thicknesses as may be noted on the drawings.

PART 3 - EXECUTION

3.01 INSPECTION

A. The installer shall examine the areas and conditions under which the roofing is to be installed, and notify the Owner, in writing, of conditions detrimental to the proper and timely completion of this phase of the work. Contractor shall not begin work until the substrates have been prepared as specified and as necessary, and are ready and acceptable to have materials installed. By beginning work, the Contractor acknowledges that the substrates are satisfactory.

B. Prior to the start of work, the substrate shall be relatively smooth and free of debris, sharp edges and other surface irregularities, as determined by Architect/Engineer that will be detrimental to or prevent the proper installation of the system.

C. All codes having jurisdiction shall be observed strictly in the construction of the project, including all applicable state, city, and county building, zoning, electrical, mechanical, plumbing and fire codes. Contractor shall verify all code requirements before commencement of construction and bring any noted discrepancies between code requirements and the construction documents to the attention of the Architect/Engineer in writing.

D. Details and sections on the drawings are shown at specific locations and are intended to show general requirements throughout. Details noted “typical” imply all conditions treated similarly. Modifications shall be made by Contractor to accommodate minor variations.

E. All areas, dimensions, and conditions shown and indicated are approximate. Contractor shall verify existing conditions prior to the start of work. Additional compensation shall not be granted for conditions encountered after the start of work that are different from those listed.

F. All drawings and conditions shall be fully coordinated by Contractor to verify all dimensions, conditions, slopes, drains, outlets, recesses, reglets, bolt settings, sleeves, etc.
G. Contractor shall bring errors and omissions noted by the Contractor which may occur in Contract Documents to the attention of the Architect/Engineer in writing and written instructions shall be obtained before proceeding with the affected work.

H. Verify that all drains, sleeves, curbs or other roof penetrations are rigidly secured.

I. The Contractor shall verify all dimensions and job conditions at the job site sufficiently in advance of work to be performed to assure the orderly progress of the work.

3.02 PREPARATION OF SUBSTRATE

A. Protect adjacent surfaces not designated to receive roofing.

B. The Contractor shall provide and install all curbing, expansion joints, and wood nailers at all edges, projections and openings, as indicated on the Drawings, and where metal flanges or flashing are to be installed.

C. Before installation of roofing or insulation materials, all deck surfaces shall be dry, sound, clean (broom swept), smooth, primed, and free of debris, loose material or defects which would have an adverse affect on the roofing or insulation or their performance, and provide substrate acceptable to the roof membrane manufacturer.

D. Adjust accessory items to proper height to be compatible with finished height of new insulation and roofing system.

E. Apply primer over all masonry and sheet metal substrates to receive new membrane materials in accordance with the recommendations of the membrane manufacturer.

3.03 INSTALLATION

A. General:

1. Comply with manufacturer's instructions for handling and installation of roofing materials except where more stringent requirements are indicated in the specifications and drawings. Any changes to these specifications, based on recommendations by the material manufacturer, shall be approved in writing by the Architect/Engineer prior to the start of work.

2. Schedule installation to minimize period of exposure of substrates.

3. The Contractor shall not phase in the installation of the base ply and top ply roof membranes.

4. Contractor shall not use the existing or new roofs as work or storage platforms, without adequate protection.

5. Daily Seal: Provide temporary watertight cut-offs and tie-ins prior to arrival of inclement weather and at the end of each work day, as necessary to prevent moisture intrusion below the new and existing membrane and into the new roof and/or building. Remove all temporary work at the beginning of the next work day and verify that water has not breached the permanent work.
6. Should conditions be uncovered or created which would be detrimental to the proper conduct of specified work, immediately notify the Owner Representative of these conditions for resolution.

7. Extend roofing membranes and flashings as shown to provide complete membrane over area(s) indicated to be roofed. Seal to all equipment projections through membrane and seal all membrane and flashing seams. Ensure complete bonding to vertical surfaces and, where shown or recommended by material manufacturer, to horizontal surfaces.

   a. Contractor shall perform all testing and other examination of deck surface as recommended by the roofing materials manufacturer and as recommended by manufacturer of the roof deck materials. Responsibility for determination of moisture content of deck being suitable for application of roofing materials shall be the sole responsibility of the Contractor. The proposed roof membrane manufacturer shall inspect the concrete deck condition and water content and state in writing it is acceptable to install new roof membrane materials.

   b. Contractor shall follow manufacturer's recommendations for unrolling the membrane to allow to “relax” and flatten at application temperatures to assure that the top and bottom plies have stabilized and are ready for incorporation into the roof.

   c. Except as otherwise required by unusual circumstances or as otherwise may be indicated in these specifications, begin installation of the roof membrane system at the low point of the roof and proceed upslope. Install membrane plies shingle style, perpendicular to the slope.

3.04 ROOFING MEMBRANE

A. General:

1. Install the roofing membrane in accordance with the latest printed application requirements of the roofing membrane manufacturer except where the requirements of these project specifications are more stringent as determined by the Architect/Engineer. In such instances, the more-stringent requirement shall apply.

2. Traffic: Keep foot traffic and equipment movement to the absolute minimum during application of the roof membrane while the bitumen is hot and fluid. In addition, minimize traffic over new roofing prior to application of the final top ply.

3. At locations where drawings indicate that membrane or flashings shall be turned down the outside face of walls, the portion turned down the walls shall be installed “dry” (without asphalt, mastic, or adhesive).

B. Roofing Construction Safety Precautions

1. Torch Safety Precautions

   a. General: All torch-applied membranes shall be installed in accordance with recommendations provided in Factory Mutual Property Loss Prevention Data Sheet 1-33, "Safeguarding Torch Applied Roof Installations" and shall comply with all Federal, State, and Local Fire Prevention Codes.

   b. Installation Safeguards

      1) Torches used to secure membranes should be used in accordance with
manufacturer's recommendations. The flame from a hand-held torch should be constantly moved from side to side. To prevent smoldering or ignition of membranes, they should not be overheated.

2) Caution should be used when working around openings, penetrations or flashings. Wood nailers, cant strips and metal flashing should not come in direct contact with the flame of the torch. Small torches should be used to heat the underside of the membrane away from these areas before securement. The torch should not be used in areas where the flame impingement cannot be fully viewed. Open flames should not be left unattended. Roof openings/vents should be covered with a stable noncombustible cover to prevent ignition of building components or contents.

   a) Extreme caution should be used near penetrations such as exhaust vents to prevent ignition of accumulated flammable discharges. Such accumulations should be cleaned/removed before roofing work begins.

   b) Air conditioning units and ventilating fans should be shut down before torch work is done in surrounding areas.

   c) Expansion joints should be filled with mineral wool or ceramic fiber with a steel cover plate below.

3) A torch stand should be used to direct the flame upward when momentarily not in use. The cylinder valve should be closed to burn off propane in the line before shutting off the torch head. The gas supply should be shut off whenever a propane odor is detected.

4) Installations should be coordinated with concerned parties, and close supervision should be provided.

5) Torches should not be used near gas lines, electrical wires or flammable liquids during roof construction.

6) The torch flame should not be applied to a combustible substrate when installing the membrane. All combustible substrates and materials in the vicinity of heat welded membranes shall be covered with a glass fiber base sheet before the torch applied membrane is installed. Torch flames should not come in contact with exposed plastic roofing cement or other combustible materials.

7) The operator of the torch shall remain on the premises to perform a fire watch for a minimum of one (1) hour after the torch is utilized. All roof areas worked on should be checked for "hot spots" and signs of smoldering. The inside of the building should also be inspected for signs of fire or smoke. All "hot spots" or fires shall be extinguished and reported to the Architect/Engineer.

c. Equipment Safeguards

1) Proper equipment should be used to heat roofing membranes. Torches should be equipped with a pilot adjustment, flame height adjustment, 25 to 50 feet of approved or listed hose, pressure gauge and regulator. A spark ignitor should be used.
a) Safety caps should be tied to all propane cylinders and installed on the valve whenever cylinders are not in use. Carts used to transport propane cylinders should be stable. Tall, narrow, standing cylinders should be chained against walls or in proper carts.

2) The propane cylinder should be adequately sized for the torch used. If frost buildup occurs on the propane cylinders and the rate of vapor withdrawal is no longer adequate for operating conditions, the cylinder should not be placed on its side or heated with the torch flame. The hose should be disconnected and a larger cylinder used. Liquid propane cylinders may be of either the vapor withdrawal or liquid withdrawal type.

a) Liquid withdrawal cylinders are preferred due to frost buildup associated with vapor withdrawal cylinders. However, when vapor withdrawal cylinders are used, or if temperatures are below 20 degrees F, 40 or 100 lb. Cylinders should be used with larger torches (such as those used on the field of the roof).

3) Equipment should be thoroughly inspected and repaired as needed. Propane cylinders should be inspected for dents. If dents larger than 1" in diameter are found, the cylinder should be replaced. Torch and cylinder connectors should be visually inspected and checked for leaks with a soap and water solution. An open flame should not be used to test for leaks.

a) Leaky equipment should not be used. Regulator adjustments and pressure gauges should be checked to assure they are operable. The vent on the regulator should be checked to ensure it is not blocked. If an unstable flame occurs (one which roars loudly and tends to blow itself out), the equipment should be repaired or replaced immediately.

4) A fire watch of all equipment utilized for the torching application should be conducted for at least one (1) hour after torch work has been completed.

d. Fire Extinguishing Equipment

1) The Contractor shall provide, on the roof, at least one (1) portable fire extinguisher with a minimum 4-A rating, two (2) portable fire extinguishers with a minimum 2-A rating each, or a water hose connected to a water supply at the building where the torching is being done. In addition, there should be at least one 10-lb. multipurpose dry chemical portable extinguisher within 20 feet horizontal travel distance of torch-applied roofing equipment.

e. Fuel Handling Safeguards

1) Fuel containers, burners and related appurtenances of roofing equipment in which liquefied petroleum gas is used for heating should comply with Factory Mutual Data Sheet 7-50; "Compressed Gases in Cylinders" and NFPA 58; "Standard for the Storage and Handling of Liquefied Petroleum Gases".
a) All fuel containers should be located at least 10 feet from the burner flame or at least 2 feet away when properly insulated from heat or flame.

b) Storage of LPG cylinders or containers on rooftops is prohibited. All LPG cylinders or containers shall be removed from the rooftop and placed in a secure area, protected against tampering, at the end of each work shift.

c) Propane cylinders shall not be hoisted by their valves. Straps placed around the cylinders should be utilized.

C. Safety Considerations

1. The Contractor shall follow all established safety procedures as defined by OSHA or other governing agencies.
2. It is the Contractor's responsibility to insure safety at the project work area at all times.

3.05 SUBSTRATE BOARD

A. N/A

3.06 VAPOR RETARDER/BARRIER

A. N/A

3.07 ROOF INSULATION AND DENSDECK

A. Install first layer of polyisocyanurate over steel deck. Closely butt insulation boards and fill in all gaps between insulation boards, 1/4 inch or wider, with additional insulation.
B. Install densdeck directly on top of insulation and stagger all joints accordingly.

3.08 APPLICATION OF MODIFIED BITUMEN ROOFING MEMBRANE – HEAT WELDING

A. Base Ply

1. Starting at the low point of the roof, install 2 plies of approved bottom ply membrane perpendicular (at right angle) to the slope.
2. Fully bond the bottom plies to the prepared substrate, applying each sheet directly behind the heat applicator.
3. Provide 3 inch minimum side and end laps and stagger end laps a minimum of 3 feet.
4. At end laps, cut “dog ear” angles from underlying sheet at the finish edge and the overlapping selvage edges. Using a clean trowel, apply top pressure to top seal t-laps immediately following sheet application.
5. Do not apply heat directly to deck.

B. Cap Ply

1. Fully bond top ply parallel to the base ply, applying sheet directly behind the heat applicator.
2. Provide 3 inch minimum side and end laps and stagger end laps a minimum of 3 feet.
3. At end laps, cut “dog ear” angles from underlying sheet at the finish edge and the overlapping selvage edges. Using a clean trowel, apply top pressure to top seal t-laps immediately following sheet application.
4. Stagger side lap seams between top ply 12 to 18 inches from the side lap seams of the bottom ply.

3.09 ROOFING FLASHINGS

A. Walls and Curbs:
   1. Neatly flash vertical walls and curbs in strict compliance with the roofing membrane manufacturer's specifications and as noted in the project details and these specifications. The wall and curb flashings shall extend a minimum of 8-inches above the roof surface and 4-inches out onto the field of the roof past the base of cants and tapered edge strips.
   2. Begin all wall and curb flashing installations at the low point of the wall or curb and proceed up slope to avoid back water seams which buck water.
   3. Extend flashing to the top of all curbs and to within one inch of reglets where existing reglet secured counterflashing are indicated as remaining or new for incorporation into new roof system. Unless otherwise indicated or not possible due to existing conditions encountered, flashing height shall be 8 inches (minimum) above the finished roofing surface.

B. Equipment Penetrations
   1. Flash all penetrations (pipes, conduits, etc.) passing through the membrane as detailed. Where not detailed, install in strict accordance with the manufacturer's ALSAN details and recommendations.
   2. Where recommended by roof membrane manufacturer, apply approved sealant along base of equipment penetration to seal equipment to edge of flashing membrane.

3.10 QUALITY CONTROL

A. The roof membrane and flashing systems after installation shall be free of the following defects:
   1. Factory splices in the top ply shall be cut out before the roll is applied. As an alternate, the splice may be covered with a full width section of top ply membrane which extends a minimum of 6-inches beyond both sides of the splice.
   2. Contractor shall ensure that the top ply is continuously welded and fully bonded to the bottom ply without air pockets, wrinkles, fishmouths or tears.
   3. Contractor shall evaluate all lap seams in the top and bottom plies to identify any deficient conditions which require repair to ensure continuous bonding of the laps.
   4. Contractor shall keep foot traffic and equipment movement over newly installed roof membrane top and bottom plies to the absolute minimum during application of the roof membrane while the bitumen is hot and fluid.
   5. All vertical end terminations in wall base flashings shall be covered with metal flashing or counterflashing and secured in accordance with the project documents.
   6. All roof drains shall be cleaned out and free of roofing debris and tested for watertightness and free flowing operation prior to acceptance of roof.
7. Owner shall reject any work not found to be in conformance with good roofing practice or these specifications.

8. Roof cement, unless specifically approved by the roof membrane manufacturer, shall not be incorporated into the roof membrane or flashing. Use of roof cement will not be permitted at the following conditions:
   a. Sealing of laps in membrane or flashing.
   b. Surface or stripping flashing at equipment penetrations or drains.
   c. Repairs of the membrane or flashing.

9. All roof cement found on the exposed roof shall be removed and area repaired at no additional cost to the Owner.

10. Loose granules shall be embedded in asphalt bleed out at side and end laps which exceeds one quarter (1/4) inch in width and at asphalt spillage, drippage, marring, etc. on finished membrane surfaces.

3.11 SHEET METAL - GENERAL

A. The Contractor shall examine the areas and conditions under which the flashing and sheet metal is to be installed, and notify the Owner in writing of conditions detrimental to the proper and timely completion of this phase of the work. Do not proceed with this phase until the unsatisfactory conditions have been corrected. Commencement of work shall be construed as acceptance of the conditions.

B. Workmanship shall conform to the best trade standards. Soldering shall be performed slowly with heavy well heated soldering coppers of blunt design, properly tinned before use. Tin edges of each item to be soldered, 1-1/2 inches on both sides, with rosin as flux.

C. Extend counterflashings 4 inches (minimum) over base flashings or as noted on drawings if more stringent requirements noted.

D. Installation of items not shown in detail or not covered by specifications shall meet the applicable requirements of the latest edition of the Architectural Sheet Metal Manual of the Sheet Metal and Air Conditioning Contractors National Association, Inc. and/or the requirements of the material or equipment manufacturer.

E. Apply modified plastic cement compound, approved for use by roof membrane manufacturer, between embedded metal flashings and bituminous membrane flashings.

F. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

G. Surfaces of new metal flashing which will come into contact with dissimilar metal shall receive a heavy protective coating per the metal producer's or supplier's recommendations to provide protection against galvanic corrosion.

3.12 SHEET METAL INSTALLATION
A. General:

1. Installation shall comply with the drawings.
2. Where not specifically indicated on the drawings, installation shall comply with the recommendations of the SMACNA Manual or with the manufacturer's requirements for premanufactured flashings.
3. The flashing and sheet metal work shall be permanently watertight and shall not deteriorate in excess of published limitations of the manufacturer.

B. Thermal expansion shall be provided for in all exposed sheet metal work exceeding 15 feet in running length, except where otherwise indicated:

1. On flashing and trim, expansion capability shall be provided every 10 feet maximum and located 18 inches from corners and intersections.

C. Fasteners and expansion provisions shall be concealed wherever possible.

D. Provide continuous weathertight sheet metal closures and/or end dams at all end terminations, end joints, windows and corners in wall and curb sheet metal counterflashings.

E. The following shall apply to all termination bar installations:

1. In addition to fastener pattern noted on drawings, secure bar within 2 inches of each end of the bars.
2. Provide 1/8 to 1/4 inch gap between adjacent sections of the bar.
3. Use only continuous straight sections of bar – do not wrap around corners.

3.13 SHEET METAL CLEANING AND PROTECTION

A. Clean exposed metal surfaces, removing substances which might cause corrosion of metal or deterioration of finishes.

B. Protection: Contractor shall protect flashings and sheet metal work during construction, to ensure that work will be without damage or deterioration, other than natural weathering, at time of substantial completion.

C. Neutralize corrosive soldered joint flux materials immediately upon completion of the work at each soldered joint or seam.

3.14 CLEANING AND PROTECTION

A. Daily clean up, and removal from the site, of all wrapping, empty containers, loose particles and other debris resulting from these operations is required. Remove any loose pieces from the drain areas and protect the drains from blockage by debris. Remove drain protection at the end of each work day and prior to arrival of inclement weather to ensure that all drain lines are open.

B. Schedule sequence of work so that traffic over new membrane is minimized. Institute required procedures for protection of completed membrane during installation of work over membrane
and throughout remainder of construction period. Contractor shall not allow excessive or concentrated traffic over unprotected membrane.

END OF SECTION
PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Furnish all material, labor, tools, and equipment necessary to perform the Work, as shown on the Drawings and specified herein.

B. Related work specified elsewhere:

1. Section 06114 - Wood Blocking, Curbing and Sheathing
2. Section 07503 - Modified Bitumen Roofing and Flashings
3. Section 07900 - Joint Sealants

C. Work included but not limited to:

1. Thru-Wall flashings

1.02 QUALITY ASSURANCE

A. Contractor's Qualifications: Have installations of the specified materials in the local area for a minimum period of five (5) years.

B. Reference Standards: Except as modified by the Drawings and Specifications, the following documents, or applicable portions thereof, govern the work:


1.03 WORK SEQUENCE

A. Conduct all work under temperature and climate conditions as recommended by standard practice. Do not install new sheet metal and flashings when rain or inclement weather is imminent.

B. Upon removal of existing sheet metal and flashings, make all openings watertight until final installation is complete.

C. Installation of new sheet metal and flashings shall be coordinated with new membrane installation defined in Specification Section 07503 – Modified Bitumen Roofing and Flashings.
1.04 SUBMITTALS

A. Required prior to the commencement of work:

1. Detailed shop drawings or full-sized mockups, 12 in. wide minimum, of all new sheet metal. Shop drawings shall include details of all erection and connection methods, expansion joint location and detail, and accessories for all new items required under this Specification.
2. 12” x 12” samples of all materials specified in this section shall be provided for approval.
3. Approval of shop drawings will be for details, and arrangements of the various parts. Verification of job dimensions shall be the sole responsibility of the Contractor.

B. Required after the completion of work:

1. Contractor's guarantee per paragraph 1.05.

1.05 GUARANTEE

A. Contractor's Guarantee:

1. By the sheet metal contractor
2. Time Period: Two (2) years after the date of completion and acceptance by the Owner.
3. Terms: All materials, labor, tools and equipment necessary for repair, restoration, or replacement of all new work damaged as a result of:

   a. Defects, imperfections, or faults in:
      1) Materials
      2) Workmanship

   b. The Contractor's correcting defects, imperfections, or faults in materials and/or workmanship.

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

PART 2 - PRODUCTS

2.01 MATERIALS

A. Metal Flashing

1. New Thru-Wall Flashing with removable cap flashing: Interlocking 0.018-in stainless steel dovetail flashing as manufactured by Cheney Flashing Corporation. Shop fabricate metal flashing and similar items to comply with profiles and sizes shown, and to comply with standard industry details as shown by SMACNA in the "Architectural Sheet Metal Manual." All terminations are to be sealed watertight by means of soldered end dams. Except as otherwise indicated, provide soldered seams. Except as otherwise indicated, fabricate new work from 0.018-in. thick, Type 304 stainless steel.
2. Window, Door, and Curtainwall Sub-Sill Flashings: Stainless steel, Type 304. All joints to be soldered and terminations provided with soldered end dams.
3. Provide miscellaneous roofing accessories fabricated from sheet metal in the location indicated and of the sizes and profiles indicated (or to match existing construction).
4. Fabricate with soldered seams for waterproof construction, and provide flanges for integration with roofing, flashing or other work as indicated.

B. Flexible Wall Flashings

1. Perm-a-Barrier wall flashing by W.R. Grace or approved equal

PART 3 - EXECUTION

3.01 PREPARATION OF SUBSTRATE

A. Examine the surface condition of the substrate on which sheet metal is to be installed. Do not proceed with new installation until unsatisfactory conditions have been corrected in a manner approved by the Architect/Engineer.

B. Clean the substrate of obstructions and substances detrimental to the work.

C. Proceeding with the work shall signify the Contractor's acceptance of the substrate being covered by the new sheet metal installation.

3.02 SHEET METAL FABRICATION AND INSTALLATION

A. Remove existing expansion joint cover and sheet metal counterflashing as required to perform work.

B. Field document the required configuration and measurements of all new flashings prior to fabrication.

C. Shop fabricate new sheet metal shapes in 20 ft long sections, or as long as practical to adequately provide for expansion and contraction. Provide expansion joints as shown on the drawings. Finish water and weathertight throughout. Lines, rises and angles shall be sharp and true. Plain surfaces shall be free of waves or buckles.

D. Install new sheet metal fabrications and accessories as shown on the Drawings.

3.03 CLEANUP

A. Remove trash, debris, and equipment from the job site.

B. Repair damage and remove stains caused by the work.

END OF SECTION
SECTION 07560

FLUID-APPLIED ROOFING AND FLASHING

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Preparation of Substrate to Receive Roofing Materials
B. PMMA Roof Membrane Application
C. PMMA Roof Flashing Application

1.02 RELATED SECTIONS

A. Section 01300 - Submittals
B. Section 07900 - Joint Sealants

1.03 REFERENCE STANDARDS

A. References in these specifications to standards, test methods and codes, are implied to mean the latest edition of each such standard adopted. The following is an abbreviated list of associations, institutions, and societies which may be used as references throughout these specifications.

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ASTM</td>
<td>American Society for Testing and Materials Philadelphia, PA</td>
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<tr>
<td>FM</td>
<td>Factory Mutual Engineering and Research Norwood, MA</td>
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<tr>
<td>NRCA</td>
<td>National Roofing Contractors Association Rosemont, IL</td>
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<tr>
<td>CERTA</td>
<td>Certified Roofing Torch Applicator Program National Roofing Contractors Association Rosemont, IL Midwest Roofing Contractors Association Laurence, KS</td>
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<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration Washington, DC</td>
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<td>UL</td>
<td>Underwriters Laboratories Northbrook, IL</td>
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1.04 SUBMITTALS

A. Submittals Prior to Contract Award:

1. Letter from the proposed primary roofing manufacturer confirming that the bidder is an acceptable Contractor authorized to install the proposed system.

2. Letter from the primary roofing manufacturer stating that the proposed application will comply with the Manufacturer's requirements in order to qualify the project for the specified guarantee.

1.05 QUALITY ASSURANCE

A. Acceptable Contractor: Contractor shall be certified in writing by the waterproofing materials manufacturer to install the primary waterproofing products.

B. Product Quality Assurance Program: Primary roofing materials shall be manufactured under a quality management system that is monitored regularly by a third party auditor under the ISO 9001:2000 audit process.

B. Agency Approvals: The proposed roof system shall conform to the following requirements. No other testing agency approvals will be accepted.

1. Underwriters Laboratories Class I-75 acceptance of the proposed roofing system based upon testing performed in accordance with ASTM E 108 protocol.

C. Project Acceptance: Submit a completed manufacturer's application for roof guarantee form along with shop drawings of the roofs showing all dimensions, penetrations, and details. The form shall contain all the technical information applicable to the project including deck types, roof slopes, base sheet and/or insulation assemblies proposed for installation. The form shall also contain accurate and complete information requested including proper names, addresses, zip codes and telephone numbers. The project must receive approval by the membrane manufacturer, through this process, prior to shipment of materials to the project site.

D. Scope of Work: The work to be performed under this specification shall include but is not limited to the following: Attend necessary job meetings and furnish competent and full time supervision, experienced roof mechanics, all materials, tools, and equipment necessary to complete, in an acceptable manner, the roof membrane/flashings installation in accordance with this specification. Comply with the latest written application instructions of the manufacturer of the primary roofing products.

E. Local Regulations: Conform to regulations of public agencies, including any specific requirements of the city and/or state of jurisdiction.
F. Manufacturer Requirements: The membrane/flashing system manufacturer shall provide direct trained company personnel to attend necessary job meetings, perform periodic inspections as necessary, and conduct a final inspection upon successful completion of the project.

1.06 GUARANTEE/WARRANTY

A. Roof Membrane Guarantee: Upon successful completion of the project, and after all post installation procedures have been completed, furnish the Owner with the manufacturer's twenty (20) year labor and materials membrane guarantee. The guarantee shall be a term type, without deductibles or limitations on coverage amount, and shall be issued at no additional cost to the Owner. This guarantee shall not exclude random areas of ponding from coverage.

1. Soprema twenty (20) year Roof Membrane Guarantee

B. Contractor Guaranty: Provide written (notarized) guaranty agreeing to replace/repair defective materials and workmanship at no additional cost to the Owner for a period of two (2) years after substantial completion. The guaranty includes responsibility for removal and replacement of other work which conceals roofing membranes. This guaranty shall include all work installed under this contract including membranes, flashings, drainage systems, metal work, insulation, fasteners and miscellaneous items.

1.07 PRODUCT DELIVERY STORAGE AND HANDLING

A. Delivery: Deliver materials in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.

B. Storage: Store closed containers in a cool, dry area away from heat, direct sunlight, oxidizing agents, strong acids, and strong alkalis. Do not store resins at temperatures below 32°F (0°C) or above 85°F (29°C). Keep away from open fire, flame or any ignition source. Store in a well ventilated area. Resin products may autopolymerize at temperatures greater than 140°F.

C. Handling: Handle all materials in such a manner as to preclude damage and contamination with moisture or foreign matter. Keep away from open fire, flame, or any ignition source. Vapors may form explosive mixtures with air. Avoid skin and eye contact with this material. Avoid breathing fumes when above the Threshold Limit Value (TLV). Do not eat, drink, or smoke in the application area.

D. Damaged Material: Any materials that are found to be damaged or stored in any manner other than stated above shall be automatically rejected, removed and replaced at the Contractor's expense.

1.08 PROJECT/SITE CONDITIONS

A. Requirements Prior to Job Start
1. Notification: Give a minimum of 5 days notice to the Owner and manufacturer prior to commencing any work and notify both parties on a daily basis of any change in work schedule.

2. Permits: Obtain all permits required by local agencies and pay all fees which may be required for the performance of the work.

3. Safety: Familiarize every member of the application crew with all fire and safety regulations recommended by OSHA, NIOSH, NRCA and other industry or local governmental groups. Workers shall wear a long sleeve shirt with long pants and work boots. Workers shall use only butyl rubber or nitrile gloves when mixing or applying PMMA products. Safety glasses with side shields are required for eye protection. Use local exhaust ventilation to maintain worker exposure below the published Threshold Limit Value (TLV). If the airborne concentration poses a health hazard, becomes irritating or exceeds recommended limits, use a NIOSH approved respirator in accordance with OSHA Respirator Protection requirements published under 29 CFR 1910.134. The specific type of respirator will depend on the airborne concentration. A filtering face piece or dust mask is not appropriate for use with this product if TLV filtering levels have been exceeded.
   a. safety at the site is the sole responsibility of the contractor.

B. Environmental Requirements

1. Precipitation: Do not apply roofing materials during precipitation or in the event there is a probability of precipitation during application. Take adequate precautions to ensure that materials, applied roofing, and building interiors are protected from possible moisture damage or contamination.

2. Temperature Restrictions – Preparation Paste: Do not apply preparation paste if there is a threat of inclement weather. Apply the preparation paste while air temperature is between 32°F (0°C) and 95°F (35°C), and while the substrate temperature is between 32°F (0°C) and 122°F (50°C). Do not apply resin materials when ambient or substrate temperatures exceed that indicted above.

3. Temperature Restrictions – Primer Resins: Do not apply primer resin if there is a threat of inclement weather. Apply the primer resin while air temperature is between 32°F (0°C) and 104°F (40°C), and while the substrate temperature is between 32°F (0°C) and 122°F (50°C). Do not apply resin materials when ambient or substrate temperatures exceed that indicted above.

4. Temperature Restrictions – Summer Grade Roofing Resins: Do not apply roofing resins if there is a threat of inclement weather. Apply membrane resin while air temperature is between 59°F (15°C) and 104°F (40°C), and while the substrate temperature is between 50°F (10°C) and 122°F (50°C). Do not apply materials when ambient or substrate temperatures exceed that indicted above.

5. Temperature Restrictions – Winter Grade Roofing Resins: Do not apply roofing resins if there is a threat of inclement weather. Apply membrane resin while air temperature is between 23°F (-5°C) and 68°F (20°C), and while the substrate temperature is between 23°F (-5°C) and 77°F (25°C). Do not apply materials when ambient or substrate temperatures exceed that indicted above.
C. Protection Requirements

1. Membrane Protection: Provide protection against staining and mechanical damage for newly applied roofing and adjacent surfaces.

PART 2 PRODUCTS

2.01 MATERIALS

A. Cleaner/Solvent: A clear solvent used to prepare metal and plastic surfaces prior to application of the catalyzed resin flashing membranes and to reactivate transition areas of in-place catalyzed resin flashing membranes at tie-ins and between staged coats of resin.

1. Pro Prep by Siplast; Irving, TX

B. PMMA Primers

1. PMMA Primer for Concrete/Masonry/Wood/Plywood Substrates: A two-component, PMMA-based primer for use over concrete, concrete repair materials, masonry substrates and wood/plywood substrates.

   a. Pro Primer W by Siplast; Irving, TX

C. Preparation Paste: A multi-component, PMMA based paste used for remediation of depressions in substrate surfaces or other irregularities as well as building up ledges to provide positive slope.

1. Pro Paste Resin by Siplast; Irving, TX

D. Tape: A white, flexible, coated cotton cloth tape designed for treatment of horizontal/vertical transitions.

1. Pro Tape by Siplast; Irving, TX

E. Reinforced PMMA Membrane/Flashing System Components

1. Catalyst: A reactive agent used to induce curing of polymethylmethacrylate (PMMA) resins.

   a. Pro Catalyst by Siplast; Irving, TX


   a. Parapro 123 Flashing Resin by Siplast; Irving, TX
   a. Parapro Roof Resin by Siplast; Irving, TX

4. Fleece for Membrane and Flashing Reinforcement: A non-woven, 110 g/m², needle-punched polyester fabric reinforcement as supplied by the membrane system manufacturer.
   a. Pro Fleece by Siplast; Irving, TX

5. Color Finish Resin: A pigmented, multi-component, flexible, polymethylmethacrylate (PMMA) based resin for use as a wearing coat over the field of the finished roof membrane to provide a desired color finish.
   a. Pro Color Finish by Siplast; Irving, TX

6. Thixotropic Agent: A liquid additive used to increase the viscosity of the PMMA resin products, allowing the resins to be applied over sloped areas.
   a. Pro Thixo by Siplast; Irving, TX

F. Anti-Skid Surfacing

1. Natural Quartz: A natural-colored, kiln-dried, silica aggregate suitable for broadcast into the PMMA based wearing layer.
   a. Pro Natural Quartz by Siplast; Irving, TX

2. Colored Quartz: A pigment-coated, kiln-dried, silica aggregate suitable for broadcast into the PMMA based wearing layer.
   a. Pro Colored Quartz by Siplast; Irving, TX

3. Ceramic Granules: No. 11 grade specification ceramic granules suitable for broadcast into the PMMA based wearing layer.
   a. No. 11 Granules by Siplast; Irving, TX

PART 3- EXECUTION

3.01 SUBSTRATE EXAMINATION/PREPARATION

A. General: Ensure that substrates are free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, bituminous products, release agents, laitance, paint, loose particles/friable matter, rust or any other material that would be detrimental to adhesion of the catalyzed primer and/or resin to the substrate. Some surfaces may require scarifying, sandblasting, or grinding to achieve a suitable substrate. Wipe surfaces with a clean
cloth saturated with the specified preparation liquid to remove grease, oils or dust that may affect adhesion and to cured PMMA surfaces to receive a subsequent coat of resin.

B. Moisture Evaluation: Evaluate the level of moisture in the substrate to determine that moisture levels are acceptable for application of specified roofing system. Concrete substrates to receive an application of the specified PMMA roofing system shall have a maximum moisture content of 6% and be prepared as required to provide acceptable adhesion of the membrane.

C. Preparation of Existing Concrete/Masonry Substrates: Existing concrete substrates shall have a minimum hardness of 3,500 psi (24 N/mm²). Scarify, shot-blast or grind concrete to provide an open surface free from laitance and residue from bitumen, coal tar, primer, coatings, adhesives, sealer or any material that may inhibit adhesion. Repair spalls and voids on vertical or horizontal surfaces using the specified primer and preparation paste.

D. Static Crack and Cold Joint Preparation: Prime cracks and joints with the specified PMMA primer and fill cracks and joints using the specified preparation paste prior to membrane/flashing application. Commence membrane and flashing application immediately following catalyzation of the preparation paste.

E. Acceptable Contractor: Contractor shall be certified in writing by the waterproofing materials manufacturer to install the primary waterproofing products.

F. Preparation of Steel/Aluminum Substrates: Grind to generate a near white-metal surface. Extend preparation a minimum of 1/2-inch (13 mm) beyond the termination of the roofing/flashing system. Notch steel surfaces to provide a rust-stop where detailed.

G. Rigid Plastic Flashing Substrates: Clean plastic substrates using the specified cleaning solution/solvent and allow to dry. Lightly abrade the surface to receive the flashing system. Do not used cleaning solution/solvent after abrading. Extend the preparation area a minimum of 1/2 inch (13 mm) beyond the termination of the flashing system.

3.02 MIXING OF RESIN PRODUCTS

A. Preparation/Mixing/Catalyzing Resin Products: Pour the desired quantity of resin into a clean container and using a spiral mixer or mixing paddle, stir the liquid for the time period specified by the resin manufacturer. Calculate the amount of catalyst powder needed using the manufacturers’ guidelines and add the pre-measured catalyst to the primer. Mix again for the time period specified by the resin manufacturer, ensuring that the product is free from swirls and bubbles. Ensure that air is not entrained into the product during the mixing process. To avoid aeration, do not use a spiral mixer unless the spiral section of the mixer can be fully contained in the liquid during the mixing process. Mix only enough product to ensure that it can be applied before expiration of resin pot life.

3.03 PREPARATION PASTE AND PRIMER MIXING/APPLICATION

A. Primer Application: Apply primer resin using a roller or brush at the minimum rate of 3.7 kg/sq (0.4 kg/m²) over poured reinforced concrete substrates. Do not let resin pool or pond.
Do not over-apply primers as this may interfere with proper primer catalyzation. Make allowances for saturation of roller covers and application equipment.

B. Paste Application: Allow the primer to set and apply catalyzed preparation paste using a trowel. Build up paste to provide positive slope.

3.04 FLASHING AND FIELD MEMBRANE APPLICATION

A. Base Flashing Application

1. Using masking tape, mask the perimeter of the area to receive the flashing system. Apply resin primer to substrates requiring additional preparation and allow primer to set.

2. Pre-cut fleece to ensure a proper fit at transitions and corners prior to membrane application.

3. Apply an even, generous base coat of flashing resin using a roller at the rate of 19 kg/sq (2.0 kg/m²) to prepared surfaces requiring flashing coverage. Work the fleece into the wet, catalyzed resin using a brush or roller to fully embed the fleece in the resin and remove trapped air. Lap fleece layers a minimum of 2 inch (5 cm) and apply an additional coat of catalyzed resin between layers of overlapping fleece. Again using a roller, apply an even top coat of catalyzed resin at the rate of 12 kg/sq (1.3 kg/m²) immediately following embedment of the fleece, ensuring full saturation of the fleece. Ensure that the flashing resin is applied to extend a 0.25 inch (6 mm) beyond the fleece. Remove the tape before the catalyzed resin sets. Make allowances for saturation of roller covers and application equipment.

4. Should work be interrupted for more than 12 hours or the surface of the catalyzed resin becomes dirty or contaminated by the elements, wipe the surface to be lapped with new flashing resin using the specified cleaner/solvent. Allow the surface to dry for a minimum 20 minutes and a maximum 60 minutes before continuing work.

B. Field Membrane Application

1. Using the specified cleaner/solvent, wipe flashing membrane surfaces to be lapped with field membrane. Allow the surface to dry for a minimum 20 minutes before continuing work.

2. Apply an even, generous base coat of field membrane resin using a roller at the rate of 19 kg/sq (2.0 kg/m²) to prepared surfaces. Work the fleece into the wet, catalyzed resin using a roller to fully embed the fleece in the resin and remove trapped air. Lap fleece layers a minimum of 2 inch (5 cm) and apply an additional coat of catalyzed resin between layers of overlapping fleece. Again using a roller, apply an even top coat of catalyzed resin at the rate of 12 kg/sq (1.3 kg/m²) immediately following embedment of the fleece, ensuring full saturation of the fleece. Make allowances for saturation of roller covers and application equipment. Allow 2 hours cure time prior to exposing the membrane to foot traffic.

C. Color Finish Application

1. Apply the color finish over the installed field membrane after the membrane is set, dry and has been in place for a minimum 2 hours.
2. Using the specified cleaner/solvent, wipe field membrane surfaces to receive the color finish layer. Allow the surface to dry for a minimum 20 minutes before continuing work.

3. Apply an even top coat of catalyzed color finish resin at the rate of 6 kg/sq (0.65 kg/m²). Allow 2 hours cure time prior to exposing the membrane to foot traffic.

3.05 SKID RESISTANT SURFACING

A. Quartz/Granule Anti-Skid Application: Utilize masking tape to outline the areas to receive the anti-skid system. Apply an additional top coat of the catalyzed roof resin at the minimum consumption rate of 9.3 kg/sq (1.0 kg/m²); and broadcast quartz/granules before the resin sets. Remove tape before the resin sets.

B. All areas of waterproofing material are to receive Skid Resistant Surfacing

3.06 FIELD QUALITY CONTROL AND INSPECTIONS

A. Site Condition: Leave all areas around job site free of debris, roofing materials, equipment and related items after completion of job.

B. Notification Of Completion: Notify the manufacturer by means of manufacturer's printed Notification of Completion form of job completion in order to schedule a final inspection date.

C. Final Inspection

1. Post-Installation Meeting: Hold a meeting at the completion of the project, attended by all parties that were present at the pre-job conference. A punch list of items required for completion shall be compiled by the Contractor and the manufacturer's representative. Complete, sign, and mail the punch list form to the manufacturer's headquarters.

D. Issuance Of The Guarantee: Complete all post installation procedures and meet the manufacturer's final endorsement for issuance of the specified guarantee.

END OF SECTION
SECTION 07650
FLEXIBLE FLASHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Self-adhering flexible flashing, including bonding cement, primers, and other components; at through-wall flashings.

B. Related Sections:
   1. Section 02050 - Demolition, Cutting and Patching.
   2. Section 04500 - Masonry Restoration.
   3. Section 07520 - Sheet Metal and Flashing.
   4. Section 07900 - Joint Sealants.

1.2 REFERENCES

   1. FM Global:
      a. Class Number 4470 - Approval Standard for Class 1 Roof Covers.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordinate Work to ensure that new flexible flashing materials and building interior are kept continuously dry and that continuous, watertight, new flexible flashing system is provided. Coordinate:
   1. With Owner’s Representative.
   2. With other trades to ensure that Work done by other trades is complete and ready to receive flexible flashings.
   3. With other trades to avoid or minimize work on, or in immediate vicinity of, installation Work in progress and completed new flexible flashings.

B. Pre-installation Meeting:
   1. Conduct meeting at Project site.
   2. Review requirements for roofing system, including:
      a. Site use, access, staging, and set-up location limitations.
      b. Forecast weather conditions.
      c. Approved mockup procedures.
      d. Surface preparation and substrate condition and pretreatment.
      e. Installation procedures, including minimum cure period.
      f. Special details and waterproofing/membrane interfaces.
      g. Testing and inspection requirements.
      h. Temporary protection and repair of flashing system.
   3. Contractor’s site superintendent, flashing system Installer, Owner’s Representative, and Architect/Engineer shall attend.
1.4 SUBMITTALS

A. Product Data: Flexible flashing manufacturer’s literature including written instructions for evaluating, preparing, and treating substrate; technical data including tested physical and performance properties; and installation instructions.
   1. Provide for flashing material, roofing cement, primer, and mastic sealant.
   2. Include temperature ranges for storage and application of materials, and special cold-weather application requirements or limitations.

B. Shop Drawings: Include sections, details, and attachments to other Work; for details and fabrications not shown on Drawings.
   1. Termination and tie-in conditions.
   2. Substrate joints and cracks.
   3. Inside and outside corners.

C. Samples: 3-inch-by-4-inch section of flexible flashing.

D. Manufacturer’s Certificates:
   1. Signed by flexible flashing manufacturer, certifying that flexible flashing is appropriate for intended use and is compatible with substrates and adjacent materials, including joint sealant.
   2. Signed by joint sealant manufacturer, certifying that joint sealant is appropriate for intended use and is compatible with substrates and adjacent materials.
   3. Signed by flexible flashing manufacturer, certifying that completed installation complies with manufacturer’s requirements and recommendations.

E. Installer Qualifications:
   1. Certificate signed by flexible flashing manufacturer, certifying that Installer complies with manufacturer’s requirements to install specified products.
   2. Submit evidence that Installer’s existing company has minimum of 5 years continuous experience in application of specified materials. Submit list of at least five 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. Flexible-flashing materials used.
      f. Project supervisor.
      g. Total cost of flexible flashing work and total cost of project.
      h. Completion date

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Experienced firm that is approved, authorized, or licensed by flexible flashing manufacturer to install flexible flashing. Must have installations of specified materials in local area in use for minimum of five years.
   1. Employ foreman with minimum of 5-years experience as foreman on similar projects, who is fluent in English, to be on site at all times during Work.

B. Mockups: Install at least one end dam assembly mockup, as indicated on Drawings, to demonstrate surface preparation and execution quality. Architect/Engineer may observe mockup during or immediately after installation.
1. After flexible flashing pieces have fully cured, cut along sides of loose tails of flexible flashing pieces down to substrate, and pull tails until they lift up to demonstrate adhesion of flexible flashing to substrate.
2. If Architect/Engineer determines mockup does not comply with requirements, modify mockup or construct new mockup until mockup is approved.
3. Approved mockups may become part of completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original packages with seals unbroken, labeled with flexible flashing 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, or installation. Reject and remove from Site new materials which exhibit evidence of moisture during application or which 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 flexible flashing manufacturer. Protect stored materials from direct sunlight. Flexible flashing manufacturer’s standard packaging and covering is not considered adequate weather protection.

D. Store rolled materials on ends only, unless otherwise required by flexible flashing 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 deck deflection.

F. Handle materials to avoid damage.

G. Conspicuously mark wet or damaged materials and remove from site as soon as possible.

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

1.7 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. Protect adjacent areas from damage from construction activities. Repair damage to adjacent areas from construction activities.

D. Environmental Limitations: Install flexible flashing when existing and forecast weather conditions permit flashing system to be installed according to flexible flashing manufacturer’s written instructions.
1. Observe cold-weather precautions and guidelines recommended by flexible flashing manufacturer when applying flashing materials below 40 degrees F.
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.

1.8 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 waterproofing.

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

PART 2 - PRODUCTS

2.1 FLEXIBLE FLASHINGS

A. Self-adhering, rubberized-asphalt, flexible flashing: Use one of following products or approved equal.
   2. CCW-705-TWF, manufactured by Carlisle Coatings & Waterproofing Inc.
   3. Ice & Water Shield Strips, manufactured by W. R. Grace & Co.

2.2 AUXILIARY MATERIALS

A. General: Furnish auxiliary materials recommended by flexible flashing manufacturer for intended use and compatible with flexible flashing.
   1. Furnish liquid-type auxiliary materials that comply with VOC limits of authorities having jurisdiction.

B. Primer: Liquid waterborne primer recommended for substrate.

C. Surface Conditioner: Liquid, waterborne, surface conditioner recommended for substrate.

D. Sheet Strips: Self-adhering, rubberized-asphalt composite sheet strips of same material and thickness as flexible flashing.

E. Liquid Membrane: Elastomeric, two-component, cold-fluid-applied, trowel-grade or low-viscosity as recommended for substrate.

F. Substrate Patching Membrane: Low-viscosity, two-component, asphalt-modified coating.

G. Mastic, Adhesives, and Tape: Liquid mastic and adhesives, and adhesive tapes.

H. Metal Termination Bar: Manufacturer’s standard; Type-304-stainless-steel or aluminum; approximately 1-inch wide by 1/8-inch thick; with predrilled holes 6 to 8 inches on center.
I. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FM GLOBAL 4470 and acceptable to flexible flashing manufacturer.  
1. Designed for fastening flexible flashing components to substrate.  
2. 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.  
   a. Square-Cap Nails-Steel Head with “Storm Guard” double-hot-dipped-zinc coating, manufactured by Maze Nails.  
   a. 410 Stainless Steel Tapcon, manufactured by ITW Buildex.  
   b. Type 304 Stainless Steel Tapper, 1/4-inch diameter with hex washer head, manufactured by Rawl.  
   c. 1-3/4-inch-minimum length, or as noted on details.  
4. Metal substrate: No. 12 x 1 1/2 inch, 410 stainless steel, self-drilling screws with 1-inch, stainless steel washers.  

PART 3 -EXECUTION  
3.1 EXAMINATION  
A. Examine substrates and conditions, with Installer and flexible flashing manufacturer’s representative for compliance with requirements and for other conditions affecting performance of flexible flashing system.  
1. Ensure that Work done by other trades is complete and ready to receive flexible flashing system.  
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 flexible flashing system installation or performance. Do not proceed with flexible flashing system installation until these conditions have been corrected and reviewed by Architect/Engineer.  

3.2 SURFACE PREPARATION  
A. Remove existing masonry and other materials to expose substrate.  
1. Remove only as much of existing flashing as can be prepared and new flexible flashing 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 flashing system when weather conditions are not conducive to maintaining watertightness or for application of new construction.  

B. Clean, prepare, and treat substrates according to flexible flashing manufacturer’s written instructions. Provide clean, sound, dust-free, and dry substrate.  
1. Repair or replace deteriorated sections of substrate.  
2. Fill divots, chips, spalls, and other irregularities in substrate. Fill in or cover gaps, joints, and cracks to provide continuous substrate for flexible flashing. Remove sharp projections.  
3. Remove grease, oil, and other surface contaminants and foreign materials.
C. Mask adjoining surfaces not receiving flexible flashing system to prevent spillage or migration affecting other construction.

D. 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.

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

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

3.3 FLEXIBLE FLASHING INSTALLATION

A. General:
   1. Install flashing system according to flexible flashing manufacturer’s written instructions.
   2. Install materials in strict accordance with safety requirements required by flexible flashing manufacturer, Material Safety Data Sheets, and local, state, and federal rules and regulations.
      a. Follow safety procedures of OSHA and other applicable governing agencies. Assume responsibility for Work area safety at all times.
      b. Provide dry-chemical or CO₂ fire extinguishers in Work area.
      c. Do not permit smoking in Work area.
      d. Store solvents in safety cans. Do not permit open solvent containers.
      e. Store cleaning rags and waste materials in metal containers with tight covers, or remove from Site each night.
   3. Maintain adequate ventilation during installation of flexible flashing materials. Notify Owner’s Representative at least 1 week in advance of Work with materials with noxious vapors. Review application schedule and venting precautions with Owner’s Representative prior to beginning application.

B. Installation of Through-Wall Flashings:
   1. Supply and install sheet metal flashings.
   2. Prime surfaces by brush or roller, with primer at rate recommended by flexible flashing manufacturer. Allow primer to dry one hour or until tack free. Reprime surfaces not covered within 36 hours.
   3. Fully adhere flexible flashing to substrate.
      a. Apply adhesive to entire bond area.
      b. Carefully position and install sheets over top of sheet metal flashing and extend in shingle-like manner from lower points to high points, with 3-inch minimum laps between sheets. Roll sheets, including lapped seams.
   4. At flashing terminations, turn up ends at least 2 inches and make careful folds to form end dam, with seams sealed.
   5. Tie flexible flashing into adjacent waterproofing.
   6. Apply bead or trowel coat of mastic at top edge, seams, cuts, and penetrations.
   7. Install termination bar at upper edge of flexible flashing and mechanically fasten 6 to 8 inches on center and within 2 inches of end of bar.
8. Inspect each layer of flexible flashing, with manufacturer’s representative if required by flexible flashing manufacturer, for tears, holes, debonding, and misaligned- or inadequately-lapped seams.

9. Repair or remove and replace flexible flashing that does not comply with requirements. Patch holes in flexible flashing with minimum overlap of 6 inches, in accordance with flexible flashing manufacturer's instructions.

10. Exercise care to prevent damage to flexible flashing.

11. Cover newly-installed flexible flashing immediately to prevent exposure to UV degradation longer than indicated by flexible flashing manufacturer.

3.4 FIELD QUALITY CONTROL

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

B. Architect/Engineer will inspect flashing installation at various stages of construction.

C. Arrange for flexible flashing manufacturer’s technical representative to periodically inspect flexible flashing installation and submit reports to Architect/Engineer.

D. Repair or remove and replace flexible flashing where test results or inspections indicate that it does not comply with specified requirements.

E. Additional testing and inspecting, at Contractor’s expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.5 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 flexible flashing 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 flexible flashing Work, clean up debris and surplus materials and remove from site.

END OF SECTION
SECTION 07720
ROOF ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Supply and installation of roof curbs, skylights, and access ladders.

B. Related Sections:
   1. Section 07503 - SBS Modified Bitumen Membrane and Flashings
   2. Section 07520 - Sheet Metal and Flashings.
   3. Section 07900 - Joint Sealants

1.2 REFERENCES

   1. ASTM International:
   2. National Fire Protection Association (NFPA):
      a. 204 - Standard for Smoke and Heat Venting.

1.3 COORDINATION

A. Coordinate layout and installation of roof accessories with installation of roofing membrane, and base flashing and with adjacent construction to provide weathertight, secure, and non-corrosive installation, and to avoid or minimize adverse effects on completed new roofing.

1.4 SUBMITTALS

A. Product Data: Roof accessory manufacturer’s literature, including material descriptions, dimensions of individual components and profiles, finishes, and installation details.

B. Manufacturer Compliance Letter: Signed by roof accessory manufacturer, stating that materials and units supplied comply with requirements.

C. Maintenance information for roof accessories.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Pack, handle, and ship roof accessories properly labeled in heavy-duty packaging to prevent damage.

B. Deliver accessories to Project site in original packages with seals unbroken, labeled with roof accessory manufacturer’s name, product brand name and type, date of manufacture, and directions for storing.

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Roof Accessories
C. Store accessories in original, undamaged containers in clean, dry, protected location on raised platforms with weather-protective coverings, within temperature range required by roofing system manufacturer. Protect UV-sensitive accessories from direct sunlight.

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

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

F. Handle accessories to avoid damage.

G. Conspicuously mark damaged accessories and remove from site as soon as possible.

1.6 PROJECT CONDITIONS

A. Verify existing dimensions and details prior to fabrication and installation of accessories. Notify Architect/Engineer of conditions found to be different than those indicated in Contract Documents. Architect/Engineer will review situation and inform Contractor and roof accessory manufacturer 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, which results in leakage.

D. Environmental Limitations: Install roof accessories when existing and forecast weather conditions permit roof accessories to be installed according to roof accessory manufacturer’s written instructions and warranty requirements.
   1. 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.

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 roof accessories.

B. Notify Architect/Engineer of conditions that may interfere with proper execution of Work or jeopardize performance of roof accessories prior to proceeding with Work.

PART 2 PRODUCTS

2.1 PRODUCTS

2.2 AUXILIARY MATERIALS

A. General: Auxiliary materials recommended by roof accessory manufacturer for intended use and compatible with roof accessory.
B.  Fasteners: Same metal as metals being fastened; or non-magnetic, stainless steel; or other non-corrosive metal recommended by roof accessory manufacturer. Match finish of exposed fasteners with finish of material being fastened. Provide non-removable fastener heads to exterior, exposed fasteners. Install neoprene or EPDM washers at exposed fasteners.

C.  Drawbands: ASTM A167, Type 304 or 316; adjustable, stainless-steel drawbands.

D.  Clamps: ASTM A167, Type 304, stainless-steel clamps; or galvanized clamps; to secure pipes and conduits to wood blocking.

PART 3 EXECUTION

3.1  EXAMINATION

A.  Examine substrates and conditions with Installer and roof accessory manufacturer’s representative for compliance with requirements and for other conditions affecting performance of roofing accessories.
   1.  Ensure that Work done by other trades is complete and ready to receive roof accessories, including:
      a.  Actual locations, dimensions, and other conditions affecting installation and performance of roof accessories.
      b.  Roof openings and penetrations are in place and set and braced.
      c.  Substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored, and is ready to receive roof accessories.
   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 roof accessory installation or performance. Do not proceed with roof accessory installation until these conditions have been corrected and reviewed by Architect/Engineer.
   4.  Installation of roof accessories indicates acceptance of surfaces and conditions.

3.2  INSTALLATION

A.  General: Install roof accessories according to roof accessory manufacturer’s written instructions, to resist exposure to weather without failing, rattling, leaking, and fastener disengagement.
   1.  Install level, plumb, true to line and elevation, and without warping, jogs in alignment, excessive oil canning, buckling, or tool marks.
   2.  Fit to substrate and anchor securely in place. Use fasteners, separators, sealants, and other miscellaneous items as required.
   3.  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 recommended by roof accessory manufacturer.
      a.  Coat concealed side of uncoated aluminum roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
      b.  Where installing exposed-to-view components of roof accessories directly on cementitious or wood substrates, install felt underlayment covered with slip sheet, or install polyethylene underlayment.
      c.  Bed flanges in thick coat of asphalt roofing cement where required by roof accessory manufacturer for waterproof performance.
4. Seal joints in roof accessories with sealant recommended in writing by roof accessory manufacturer.
5. Flash into roofing system as recommended by roofing system manufacturer’s written instructions.
6. When remaining construction will not affect or endanger roof accessories, inspect roof accessories 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.
7. Repair or remove and replace roof accessories that do not comply with requirements, to condition free of damage and deterioration at time of Substantial Completion.

B. Heat and Smoke Vent Installation: Locate, install, and test according to NFPA 204.
   1. Check for proper operation. Adjust operating mechanism as required.

C. Preformed Flashing Installation:
   1. Fit flashing over or around pipe, conduit, or davit roof penetration with top cut to fit tightly.
   2. Secure to pipe, conduit, or davit with drawband or other means, and seal top edge against pipe, conduit, or davit.

3.3 CLEANING
   A. Clean exposed surfaces according to roof accessory manufacturer’s written instructions.

3.4 PROTECTION
   A. Protect roof accessories from damage and wear during remainder of construction period.

END OF SECTION
PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish all labor, materials, tools and equipment and perform all work necessary for and incidental to the replacement of all joint sealants described in the scope of work on the exterior facade of the square cupola. This includes all glass-to-glass, glass-to-metal, metal-to-metal, metal-to-brick, and brick-to-brick joints whether shown on the drawings or not. As part of this work, all weep tubes encountered shall also be replaced.

1.02 QUALITY ASSURANCE

A. Qualifications- Contractor must have a minimum of five (5) years experience in installation of similar sealants, and jobs of similar size.

B. Special Warranty - The Contractor shall warrant the workmanship portion of the sealant installation to be free of faults and defects in accordance with the General Conditions, except that the warranty shall be for four years. The warranty shall state that in the case of water leakage relating to faults or defects in this work, the Contractor will provide at no expense to the Owner all labor and materials necessary to correct any faults or defects in the work. This shall include providing access to the work area and associated sidewalk protection.

C. The manufacturer of the sealant (Dow Corning) shall provide a Twenty Year Weatherseal Limited Warranty. The Contractor shall arrange for Dow Corning’s authorized representative to visit the site in order to verify substrate conditions and perform adhesion tests as required to obtain this weatherseal warranty.

D. Pre-Construction Inspection - The Contractor shall meet with the Sealant Manufacturer’s qualified representatives, prior to commencing with the work, to assure that all applications are in conformance with the Manufacturer's recommendations. The Manufacturer's qualified representatives shall periodically visit the job site during the course of the work to verify the proper installation of the sealant compounds. All such site visits and meetings shall be documented in writing to the Engineer.

E. Field Adhesion Tests - The contractor shall perform field adhesion tests to fully cured sealant in accordance with manufacturer’s written instructions. A minimum of five tests shall be performed for the first 1,000 linear feet of new sealant installed and one test per 1,000 linear feet thereafter. Contractor shall use a field adhesion testing log indicating date applied, applicator, date tested, test location, primer lot number, sealant lot number, acceptable joint fill (yes/no), acceptable adhesion (yes/no) and percent elongation. Contractor shall promptly forward written test results to the sealant manufacturer and Architect/Engineer upon the completion of each test.
1.03 SUBMITTALS

A. Submit the following:

1. Manufacturer's Literature: Materials description and installation instructions (including surface preparation) for each sealant, joint filler, and accessory.
2. Samples: Samples of each sealant, joint filler, and accessory.

1.04 PRODUCT DELIVERY, HANDLING AND STORAGE

A. All materials shall be delivered to the job site in manufacturer's sealed packaging and stored in an enclosed shelter providing protection from damage and exposure to the elements. Store in accordance with manufacturer’s written instructions. Damaged or deteriorated materials shall be removed from the premises.

PART 2 - PRODUCTS

2.01 GENERAL

A. All materials used in combination, i.e., sealants with backer rods, or sealants with primers shall be in conformance with Sealant manufacturer printed instructions. Sealant Manufacturer must be consulted prior to application.

2.02 MATERIALS

A. Metal/Metal and Metal/Glass Joint Sealant: Silicone, Grade NS, Type S, Class 50 (±50% movement), conforming to ASTM C920. Dow 795 manufactured by Dow Corning Corp., Midland, MI. Color selected by A/E.

B. Masonry-to-Masonry/Metal Window Frame-to-Masonry Joint Sealant. Premium-grade, high-performance, moisture-cured, 1-component, polyurethane-based, non-sag elastomeric sealant meeting Federal Specification TT-S-00230C, Type II, Class A and ASTM C-920, Type S, Grade NS, Class 25; Sikaflex-1a, Sonneborn NP-1 or approved equal. Color shall be selected by the Architect/Engineer in the field.

C. Preformed Silicone Sealant: Dow Corning 123 with Dow Corning 791 silicone bedding sealant manufactured by Dow Corning Corp., Midland, MI. Color as selected by the owner.

D. Metal/Metal Butyl Sealant: Non-drying butyl conforming to AAMA 809.2. Pecora BR-96 manufactured by Pecora, Harleysville, PA (or approved equal).

E. Joint Filler approved by sealant manufacturer. Closed-cell Expanded Polyethylene (Rod); Ethafoam (Dow Chemical Co.); Expanded-O-Foam (Williams Products, Inc.); Sonofoam Backer-Rod (Sonneborn-Contech).

F. Joint Cleaner and Primer. Type recommended by the manufacturer of the sealing or caulking compound for the specific joint surface and conditions.

G. Bond breaker approved by sealant manufacturer. Polyethylene tape.
PART 3 - EXECUTION

3.01 SURFACE PREPARATION

A. All surfaces to receive the joint sealants shall be examined by the Contractor. Any surfaces which are found to be unsuitable for installation of the joint sealants shall be brought to the attention of the Architect/Engineer for resolution. Application or installation of the material constitutes acceptance of the surface of the substrate.

B. Remove all existing sealants, sealant residue, laitance and joint fillers from the areas to be resealed. It is anticipated that abrasion cleaning involving grinding, saw cutting, mechanical abrading or a combination of these methods will be required to remove all sealant residue and provide a sound, clean, dry surface for sealant application. Remaining dust and loose particles, etc., should be blown out of joints with oil-free compressed air, or vacuum cleaned. Care shall be used in the removal of sealants and sealant residue so as not to damage existing construction intended to remain.

C. All surfaces to receive sealants shall be clean, dry, free of any loose materials, dirt, dust, laitance, rust, oil, frost, and other contaminants.

D. Metal surfaces (i.e. - aluminum window frames) which will be in contact with new joint sealants shall be cleaned with new methylethyl ketone (MEK) or other cleaning solution approved by the manufacturer. Small areas shall be washed and then dried with clean cloth before the solvent evaporates. This final cleaning shall be done after other necessary preparations have been completed. Care shall be taken not to allow the MEK cleaner to come in contact with adjacent masonry surfaces at the metal-to-masonry joints which are to be sealed.

E. If recommended by the manufacturer after adhesion tests, use a primer on surfaces to receive joint sealants. Use primer in accordance with the recommendations of the sealant manufacturer. Initial adhesion testing performed by Dow Corning indicated that no primer is required for the precast substrates. Dow Corning recommended 1200 Prime Coat for metal substrates. Allow primer to dry until all solvent evaporates. This typically takes 5 to 30 minutes depending on temperature and humidity. Install primer prior to installing backer rod.

F. Test applications shall be made at the beginning of the joint sealant work, in all types of prepared joints, by the Contractor, to determine if preparation steps have been adequate for optimum sealant adhesion. These test applications shall be approved by the Engineer prior to the start of work.

3.02 APPLICATION

A. Joint Design - Unless otherwise detailed (with dimensions) on the drawings or recommended by the sealant manufacturer, install sealants with width to depth ratios of two (2) to one (1). Joint width should not be less than 1/4 inch. Joints less than 1/4 inch shall be brought to the attention of the Architect/Engineer. The joint depth should allow a sealant depth of 1/8 in. to a maximum of 3/8 in. while maintaining the 2:1 ratio. All fillet type seals shall have a minimum 1/4 inch bond surface along each side and shall be installed so as to prevent three-sided adhesion using bond breaker tape as required.

B. Install all materials in accordance with the manufacturer's printed instructions, as well as the following.
1. Joint surfaces should be clean and dry.

2. Apply masking tape to the surfaces next to the joint to keep excess primer and sealant off areas where they are not intended.

2. Install primer as required by the manufacturer. Install in accordance with manufacturer’s written instructions. Allow primer to dry until all solvent evaporates. This typically takes 5 to 30 minutes depending on temperature and humidity. Sealant must be applied to primed surfaces during the same day.

3. Install bond breakers and backer rods where shown on the drawings and in locations and of the type recommended by the sealant manufacturer to prevent bond of sealant to surfaces where such bond might impair the performance of the sealant.

4. Application of joint sealant materials shall be made by cartridge-type caulking guns.

4. Compounds shall not be installed below surface and ambient temperatures of 40 degrees F (or below the minimum installation temperature recommended by the manufacturer whichever is higher), unless specifically approved by the Engineer. Compounds also shall not be installed above surface and ambient temperatures of 100 degrees F.

5. Run the sealant beads sufficiently slow enough to be certain that the entire cavity is filled from the bottom up. Air pockets or voids along the edges are not acceptable.

6. Tool sealant surfaces to the shapes shown, or if none is shown, to flush or slightly concave surface. Tooling of silicone sealants with soap, detergent, or alcohol is not allowed.

7. Remove masking tape before sealant skins over.

3.03 SURFACE PROTECTION

A. All surfaces adjacent to sealants shall be protected, unless otherwise approved by the Engineer. Use pressure sensitive tape to prevent staining of adjacent surfaces, or spillage and migration of sealant out of the joints.

3.04 CLEAN UP

A. As work progresses, remove excess compound and clean adjoining surfaces as may be required to eliminate any indication or soiling or migration. Remove all masking and other protection and clean up any remaining defacement caused by the work.

B. At the conclusion of sealing and caulking work clean up all debris, refuse, and surplus material and remove same from the premises.

END OF SECTION