Division of Finance and Business Operations

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October 12, 2017

Addendum #2 To
Request for Proposal
For Engineering Technology Roof Replacement: Project 167-304299

Dated October 2, 2017

Points of Clarifications during the Pre-proposal Meeting October 9, 2017:

The Addendum must be acknowledged on your lump sum bid.

IMPORTANT – PLEASE NOTE: Effective December 1, 2007, bid notices will be sent only to those Vendors registered to receive them via our Bid Opportunities Listserve service. To register, to **http://go.wayne.edu/bids**, and click on the "Join our Listserve" link at the top of the page. Instructions are at the top of the page, and the Construction Listserv service is under "Construction Bid Opportunities".

Question:
Following up on question at pre-bid. Are we able to schedule a time to verify the test core (existing conditions)

Answer:
The successful responsive Bidder will be allowed to take a core sample of the roof after bid acceptance. See sheet A-121 Demolition Note 1 for existing roof composition, per a core sample taken at a site visit for this roof replacement project.

Question:
Can the due date please be extended a few days? Maybe until Tuesday or Wednesday?

Answer:
The bid due date has been extended to Tuesday, October 17, 2017 at 2pm.

Question:
The existing door sill will likely be too low for any flashing after the new insulation and tapered insulation are installed. For bidding purposes are we to assume the door will be altered by WSU?

Answer:
The door is not being altered. Insulation tapering to be adjusted in field to achieve necessary flashing height.

Question:
It was discussed during pre-bid that the two large units do not require raising at this time. Please confirm

Answer:
This is correct. The flashing at these units may be closer than 8" from the finish roof surface. This will be addressed under a separate contract when the units are replaced.

A copy of this Addendum will be posted to the Purchasing web site at
http://go.wayne.edu/bids.

As a reminder, the bid due date is October 17, 2017, at 2:00 pm. If you have any further questions, please do not hesitate to email them to me at **rfpteam2@wayne.edu** and copy **leiann.day@wayne.edu**.

Thank you,

Valerie Kreher,
Senior Buyer

MODIFICATIONS DURING BIDDING

This Addendum describes revisions to the Bidding Documents issued 10/02/2017.

ACCOMPANYING DOCUMENTS: The following documents accompany this write-up and are a part of this Addendum:

- Project Manual Documents: Sections 012300 - Alternates; 075216 - Styrene-Butadiene-Styrene (SBS) Modified Bituminous Membrane Roofing; 075423 – Thermoplastic Polyolefin (TPO) Roofing.
- Whole Drawings: None
- Partial Drawings: None
- Additional Documentation: As issued by Wayne State University

REVISIONS TO PROJECT MANUAL:

ITEM NO. 1 Section 012300 – Alternates (Reissued).

a) Part 3, Article 3.1, Paragraph C.1: Correct typo – SBS to be TPO.
b) Part 3, Article 3.1, Paragraph C.2 :
   i. Correct typo – SBS to be TPO;
   ii. 55 Mil to be 50 Mil Extreme or 60 Mil.
c) Part 3, Article 3.1 Paragraph D: Add Alternate No. 4.

ITEM NO. 2 Section 075216 – Styrene-Butadiene-Styrene (SBS) Modified Bituminous Membrane Roofing (Reissued).

a) Add two, or three coat, water-based, high solids Elastomeric Sealant/Flashing System with top coat on top/sloped and inside vertical faces of existing parapets. (Alternate No. 4).

ITEM NO. 3 Section 075423 – Thermoplastic Polyolefin (TPO) Roofing (Reissued).

a) Parts 1, 2, and 3: Mechanical Fasteners to be Induction Fasteners (RhinoBond or equivalent).
b) Part 1, Article 1.11, Paragraph 1:
   i. Delete WellRoof Advantage;
   ii. Add NDL – No Dollar Limit.
c) Delete Part 1, Article 1.11, Paragraph 3.a.
d) Part 2, Article 2.1:
   i. Paragraph A.1.b: Correct typo – 55 Mil to be 50 Mil;
   ii. Paragraph 2: Add items a. and b – JM 60 and 80 Mil.
e) Part 2, Article 2.2, Paragraph C – Revise uplift to match Section 075216 – SBS Roofing.
f) Part 2, and 3: Delete Cover Board.
g) Delete Part 3, Article 3.7 – Walkway Installation.

REVISIONS TO DRAWINGS:

None.

END OF ADDENDUM WRITE-UP

Prepared by:

NSA Architects, Engineers, Planners

Ellen Moore

Ellen Moore, RA
Project Architect

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.

2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: New Roof - Refer to Specification Section 075216-Styrene-Butadine-Styrene (SBS) Modified Bituminous Membrane Roofing, and drawings.

1. SBS Base Bid: 2-ply Styrene-Butadiene-Styrene (SBS) Modified Bituminous Membrane Roofing, 2-inch Mineral Wool Roof Insulation (R-8), 3.8-inch Polyisocyanurate Roof Insulation (R-22), 2-ply vapor barrier (Approximately 6-1/4 inches).

2. Alternate Bid: 2-ply Styrene-Butadiene-Styrene (SBS) Modified Bituminous Membrane Roofing, 5/8-inch cover board, 2.6-inch Polyisocyanurate Roof Insulation (R15), Base layer of 2.6-inch Polyisocyanurate Roof Insulation (R15), 2-Ply Vapor Barrier (Approximately 6-1/8 inches).

B. Alternate No. 2: Increase SBS Roof Manufacturer's Warranty from 20 to 25 years - Refer to Specification Section 075216-Styrene-Butadiene-Styrene (SBS) Modified Bituminous Membrane Roofing, and drawings.

1. SBS Base Bid: One layer mopped-in base sheet.

2. SBS Alternate Bid: 2 layers base sheet, mopped-in individually.

C. Alternate No. 3: Increase TPO Roof Manufacturer's Warranty from 20 to 25 years. Refer to Specification Section 075423-Thermoplasitc Polyolefin (TPO) Roofing, and drawings

1. ~~SBS~~ TPO Base Bid: 50 Mil Minimum TPO with 20 year Warranty.

2. ~~SBS~~ TPO Alternate Bid: ~~55~~ 50 Mil Extreme or 60 Mil Minimum TPO with 25 year Warranty.

~~2.~~D. Alternate No. 4: Apply water based, high solids elastomeric sealant/flashing system with top coat on top/sloped and inside vertical faces of existing parapets.

END OF SECTION 012300

SECTION 075423 - THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Mechanically (Induction) fastened thermoplastic polyolefin (TPO) roofing system.
2. Roof insulation.

B. Section includes the installation of insulation strips in ribs of roof deck. Insulation strips are furnished under Section 053100 "Steel Decking."

C. Related Requirements:

1. Section 061053 "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking; and for wood-based, structural-use roof deck panels.
2. Section 061600 "Sheathing" for wood-based, structural-use roof deck panels.
3. Section 072100 "Thermal Insulation" for insulation beneath the roof deck.
4. Section 076200 "Sheet Metal Flashing and Trim" for metal roof flashings and counterflashings.
5. Section 079200 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.
6. Section 221423 "Storm Drainage Piping Specialties" for roof drains.

1.3 DEFINITIONS

A. Roofing Terminology: Definitions in ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

1.4 PREINSTALLATION MEETINGS

A. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.

2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review deck substrate requirements for conditions and finishes, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

B. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work, including:

1. Base flashings and membrane terminations.
2. Tapered insulation, including slopes.
3. Roof plan showing orientation of steel roof deck and orientation of roofing, fastening spacings, and patterns for mechanically fastened roofing.
4. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

C. Color Sample: Provide 8 inch by 8 inch sample of roof materials for color confirmation.

1.6 INFORMATIONAL SUBMITTALS

A. Sample Warranties: For manufacturer's special warranties.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in maintenance manuals.

1.8 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that isFM Global approved for roofing system identical to that used for this Project.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.10 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.11 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.

1. Provide Manufacturer's ~~WeatherStopper~~ Diamond Pledge ~~Guarantee with the WellRoof Advantage~~Warranty (NDL - No Dollar Limit) or equivalent.

   a. Provide single-source coverage and no monetary limitation, where the manufacturer agrees to repair or replace components of the Roofing System, which cause a leak due to failure in materials or workmanship.

2. Special warranty includes roofing, base flashings, roof insulation, fasteners, cover boards, roofing accessories, and other components of roofing system.

3. Base Bid Warranty Period: 20 years from date of Substantial Completion.

   ~~a. Provide optional coverage to the Owner that extends coverage by 25 percent of the original guarantee length, provided that the roof is inspected and maintained and maintained according to Manufacturer's requirements.~~

4. Alternate Bid Warranty Period: 25 years from date of Substantial Completion.

B. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of roofing system such as roofing, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, roof pavers, and walkway products, for the following warranty period:

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide products by one of the following (Provide same Manufacturer as SBS Modified Bit. Roof):

1. GAF TPO Membrane (Basis-of-Design);

   a. GAF EverGard Extreme TPO 50 Mil Membrane (Base Bid).

   b. GAF EverGard Extreme TPO ~~55~~ 50 Mil Membrane (Alternate Bid).

      1) Ricardo Aranguren – 810-844-0898.

2. Johns Manville.

   a. JM TPO 60 Mil (Base Bid).

   ~~2.~~b. JM TPO 80 Mil (Alternate Bid).

3. Tremco Incorporated.

B. Source Limitations: Obtain components including roof insulation fasteners for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General Performance: Installed roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and base flashings shall remain watertight.

1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.

B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.

C. Roofing System Design: Tested by a qualified testing agency to resist the following uplift pressures:

1. Corner Uplift Pressure: ~~65.9~~55 lbf/sq. ft.
2. Perimeter Uplift Pressure: ~~48.4~~35 lbf/sq. ft.
3. Field-of-Roof Uplift Pressure: ~~30.8~~20 lbf/sq. ft.

2.3 TPO ROOFING

A. Fabric-Reinforced TPO Sheet: ASTM D 6878, internally fabric- or scrim-reinforced, uniform, TPO sheet.

1. Thickness: 50 mils, nominal.
2. Exposed Face Color:
   a. Manufacturer's White.

2.4 INDUCTION FASTENING SYSTEM

A. Non-membrane penetrating fastening system for installing insulation and thermoplastic membrane roofing.

~~a.~~**1.** OMG RhinoBond Plates and Fasteners, or equivalent.

~~2.4~~2.5 AUXILIARY ROOFING MATERIALS

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

1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

B. Sheet Flashing: Manufacturer's standard unreinforced TPO sheet flashing, ~~55~~ 50 mils thick, minimum, of same color and thickness as TPO sheet.

C. Bonding Adhesive: Manufacturer's standard.

D. Slip Sheet: Manufacturer's standard, of thickness required for application.

E. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.

F. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roofing to substrate, and acceptable to roofing system manufacturer.

G. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

~~2.5~~2.6 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by TPO roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated and that produce FM Global-approved roof insulation.

B. Polyisocyanurate Board Insulation: ASTM C 1289,Type II, Class 1, Grade 3, kraft, felt, or glass-fiber mat facer on both major surfaces.

C. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches unless otherwise indicated.

D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

~~2.6~~2.7 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with roofing.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.

~~C. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/4 inch thick, factory primed.~~

~~1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:~~

~~a. CertainTeed Corporation.~~

~~b. Georgia Pacific Building Products.~~

~~c. National Gypsum Company.~~

~~d. Temple Inland Building Products by Georgia Pacific.~~

~~e. United States Gypsum Company.~~

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work:

1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 053100 "Steel Decking."
4. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
5. Verify that concrete substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
6. Verify that concrete-curing compounds that will impair adhesion of roofing components to roof deck have been removed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

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

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Install insulation strips according to acoustical roof deck manufacturer's written instructions.

3.3 ROOFING INSTALLATION, GENERAL

A. Install roofing system according to roofing system manufacturer's written instructions.

B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.4 INSULATION INSTALLATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Install tapered insulation under area of roofing to conform to slopes indicated.

D. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.

E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

F. Install 8 foot by 8 foot tapered sump area around each roof drain.

G. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.

1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

H. Mechanically Fastened and Adhered Insulation: Install each layer of insulation to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.

1. Fasten first layer of insulation according to requirements in FM Global's "RoofNav" for specified Windstorm Resistance Classification.

2. Fasten second layer of insulation to resist uplift pressure at corners, perimeter, and field of roof.

~~I. Install cover boards over insulation at each rooftop man door, and at all rooftop equipment service doors with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction. Loosely butt cover boards together and fasten to roof deck.~~

~~1. Fasten cover boards according to requirements in FM Global's "RoofNav" for specified Windstorm Resistance Classification.~~

~~2. Fasten cover boards to resist uplift pressure at corners, perimeter, and field of roof.~~

3.5 MECHANICALLY (INDUCTION) FASTENED ROOFING INSTALLATION

A. Mechanically fasten roofing over area to receive roofing according to roofing system and induction fastener manufacturer's written instructions. Unroll roofing and allow to relax before retaining.

1. For in-splice attachment, install roofing with long dimension perpendicular to steel roof deck flutes.

B. Start installation of roofing in presence of roofing system manufacturer's technical personnel.

C. Accurately align roofing, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Mechanically fasten or adhere roofing securely at terminations, penetrations, and perimeter of roofing.

E. Apply roofing with side laps shingled with slope of roof deck where possible.

F. In-Seam Attachment: Secure one edge of TPO sheet using fastening plates or metal battens centered within seam, and mechanically fasten TPO sheet to roof deck.

G. Seams: Clean seam areas, overlap roofing, and hot-air weld side and end laps of roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet.

2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.

3. Repair tears, voids, and lapped seams in roofing that do not comply with requirements.

H. Spread sealant bed over deck-drain flange at roof drains, and securely seal roofing in place with clamping ring.

3.6 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with factroy accessories.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars per manufacturer’s requirements.

~~3.7 WALKWAY INSTALLATION~~

~~A. Flexible Walkways: Install walkway products in locations indicated. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.~~

~~3.8~~3.7 FIELD QUALITY CONTROL

A. Periodic Inspections: Arrange for roofing system manufacturer’s technical personnel to inspect membrane application, flashings, protection, and drainage components, and to furnish reports to Architect.

B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

1. All application errors must be addressed and final punch list completed prior to substantial completion.

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

D. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

~~3.9~~3.8 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

~~3.10~~3.9 ROOFING INSTALLER'S SAMPLE WARRANTY

A. WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

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

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

C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

D. This Warranty is made subject to the following terms and conditions:

1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:

   a. lightning;

   b. peak gust wind speed exceeding 120 mph;

   c. fire;

   d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;

e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;

f. vapor condensation on bottom of roofing; and

g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.

2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.

3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.

4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.

5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.

6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.

7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, _____.

1. Authorized Signature: _____.

2. Name: _____.

3. Title: _____.

END OF SECTION 075423

SECTION 075216 - STYRENE-BUTADIENE-STYRENE (SBS) MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Styrene-butadiene-styrene (SBS) modified bituminous membrane roofing.

2. Roof insulation.

~~2.~~3. Elastomeric sealant/flashing with top coat at EIFS Parapet (Alternate No. 4).

1.2 DEFINITIONS

A. Roofing Terminology: See ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

B. Hot Roofing Asphalt: Roofing asphalt heated to its equiviscous temperature, the temperature at which its viscosity is 125 centipoise for mop-applied roofing asphalt and 75 centipoise for mechanical spreader-applied roofing asphalt, within a range of plus or minus 25 deg F, measured at the mop cart or mechanical spreader immediately before application.

1.3 PERFORMANCE REQUIREMENTS

A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.

B. Odor Control:

1. Use fume recovery systems on kettles for heating asphalt.

2. Close or cover intake louvers adjacent to roof areas receiving hot asphalt membrane system, or have intake diverted away from sources of asphalt fume odor.

C. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

D. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 7.

1. Corner Uplift Pressure: 55 lbf/sq. ft.

2. Perimeter Uplift Pressure: 35 lbf/sq. ft.

3. Field-of-Roof Uplift Pressure: 20 lbf/sq. ft.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.

1. Base flashings and membrane terminations.

2. Tapered insulation, including slopes.

3. Crickets, saddles, and tapered edge strips, including slopes.

4. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

C. Odor Control: For methods of controlling fume emissions and odor during application of asphalt roofing materials.

D. Maintenance Data: For roofing system to include in maintenance manuals.

E. Warranties: Sample of special warranties.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is UL listed for membrane roofing system identical to that used for this Project.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by membrane roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

C. Source Limitations: Obtain components including roof insulation and fasteners for membrane roofing system from same manufacturer as membrane roofing.

D. Fire-Resistance Ratings: Where indicated, provide fire-resistance-rated roof assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

E. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.

2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.

    a. Include methods of odor control.

3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.

5. Review structural loading limitations of roof deck during and after roofing.

6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.

7. Review governing regulations and requirements for insurance and certificates if applicable.

8. Review temporary protection requirements for roofing system during and after installation.

9. Review roof observation and repair procedures after roofing installation.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.7 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard or customized form, without monetary limitation (NDL), in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period, including Labor and Material.

1. Special warranty includes membrane roofing, base flashings, roof insulation, fasteners, and other components of membrane roofing system.
2. Include edge metal in duration of Manufacturer’s Warranty.
3. Base Bid: Warranty Period: 20 years from date of Substantial Completion.
4. Alternate Bid: Warranty Period: 25 years from date of Substantial Completion.

B. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering the Work of this Section, including all components of membrane roofing system such as membrane roofing, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, and walkway products, for the following warranty period:

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SBS-MODIFIED ASPHALT-SHEET MATERIALS

A. SBS-Modified Bituminous “Energy Star Rated” Membrane Roofing:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. GAF Materials Corporation (Basis-of-Design).
   b. Johns Manville.
   c. Tremco Incorporated.

2.2 CAP SHEET MATERIALS

A. Granule-Surface Roofing Membrane Cap Sheet: ASTM D 6163, Grade G, Type II, ASTM E903, ASTM C1549, SBS-modified asphalt sheet (reinforced with glass fibers); granular surfaced; suitable for application method specified, and as follows:

1. Granule Color: White, Energy Star Rated and Approved with minimum SRI of 0.87.
2. Basis-Of-Design Product: GAF Ruberoid EnergyCap SBS 30FREC, or equivalent

2.3 SBS BASE-PLY SHEET MATERIALS

A. Ruberoid SBS Modified Base: Meeting ASTM D6164, Type 1, Grade S Polyester Reinforced (80 lbs/3.0 mm thick, and 107.6 gross square feet).

1. Basis-Of-Design Product: GAF Ruberoid Mop Smooth (1 SQ. Roll), or equivalent.

2.4 BASE-SHEET MATERIALS (VAPOR BARRIER)

A. Base Sheet: Type VI Roofing Felt meeting ASTM D2178.

1. Base Bid Basis-Of-Design Product: GAF GAFGLAS Flexply 6, or equivalent.
2. Alternate Bid Basis-Of-Design Product: 2 layers GAF GAFGLAS Flexply 6, or equivalent, mopped-in individually.

2.5 BASE FLASHING SHEET MATERIALS

A. Backer sheet and surfaced flashing sheet as recommended by roofing system manufacturer for intended use and compatible with roofing membrane.

1. Surfaced Flashing Sheet Color: White Energy Star Rated Granulated.

B. Glass-Fiber Fabric: Woven glass-fiber cloth, treated with asphalt, complying with ASTM D 1668, Type I.

2.6 AUXILIARY ROOFING MEMBRANE MATERIALS

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

1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

B. Asphalt Primer: ASTM D 41.

1. Basis-Of-Design: GAF Premium Matrix 307 Asphaltic Primer, or equivalent.

C. Roofing Asphalt: ASTM D 312, Type III or IV as recommended by roofing system manufacturer for application.

D. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required by roofing system manufacturer for application.

1. Basis-Of-Design: GAF Matrix Premium 201 Flashing Cement, Trowel Grade, or equivalent.

E. Mastic Sealant: Polyisobutylene, plain or modified bitumen; nonhardening, nonmigrating, nonskinning, and nondrying.

F. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions, designed for fastening roofing membrane components to substrate; tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.

G. Liquid Flashing: Basis-of-Design: GAF Major Seal Liquid Flashing, or equivalent.

H. Miscellaneous Accessories: Provide those recommended by roofing system manufacturer.

2.7 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.

B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, 20 psi, felt or glass-fiber mat facer on both major surfaces.

1. Basis-Of-Design Product: GAF EnergyGuard PolyIso Insulation, or equivalent. Maximum Board Size (4’x4’).

C. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches unless otherwise indicated. Maximum board size (4’x4’).

D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.8 COVER BOARD

A. Gypsum Fiber Board: 5/8-inch thickness. Maximum board size (4’x4’).

1. Basis-Of-Design Product: US Gypsum “Securock”, or equivalent.

B. Mineral Wool Roof Insulation Board: With cover board, 2-inch thickness (R=7.6), ASTM C726. Maximum board size (4’x4’).

1. Basis-Of-Design Product: Roxul Toprock DD+, or equivalent.

2.9 INSULATION ACCESSORIES

A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.

B. Insulation Cant Strips: Provide one of the following:

1. ASTM C 728, perlite insulation board.

2. Mineral wool cant, coated with a bitumen coating and a lightly sanded surface.

a. Basis-Of-Design: Roxul, or equivalent.

2.10 WALKWAYS

A. Walkway Cap Sheet Strips: ASTM D 6164, Polyester reinforced SBS-modified granular surfaced Factory coated with acrylic coating suitable for application method specified and as follows:

1. Granule Color: “Energy Star Rated White” to match Field Membrane Cap Sheet.

2.11 ELASTOMERIC SEALANT/FLASHING (ALTERNATE NO. 4)

A. Two or three-coat water based, high solids elastomeric sealant/flashing system with top coat on top/sloped and inside vertical face of existing EIFS parapets.

1. Manufacturer’s standard color similar to existing building façade.

2. Use products manufactured by/for same manufacturer as SBS Roofing:

a. GAF/United Coatings (Basis-of-Design):

1) Roof Mate Butter Grade Flashing (minimum coverage one gallon per square);

2) Roof Mate Top Coat (minimum coverate one gallon per square.

b. Johns Manville PermaFlash System:

~~1.~~**1)** PermaFlash Primer, MBR Flashing Cement, and PermaFlash Scrim.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.

2. Verify that wood cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.

3. Verify that concrete substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

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

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Prime surface of concrete deck with asphalt primer at a rate of 3/4 gal./100 sq. ft. and allow primer to dry if deck is concrete.

3.3 INSULATION INSTALLATION

A. Comply with roofing system manufacturer's written instructions for installing roof insulation. Hot mop insulation board as recommended by insulation and roofing manufacturers.

B. Insulation Cant Strips: Install and secure preformed 45-degree insulation cant strips at junctures of roofing membrane system with vertical surfaces or angle changes more than 45 degrees.

C. Install tapered insulation under area of roofing to conform to slopes indicated.

D. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.

1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

E. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or more, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.

F. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

G. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.

H. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:

1. Prime surface of concrete deck with asphalt primer at a minimum rate of 3/4 gallon per 100 square feet and allow primer to dry.

2. Set each layer of insulation in a solid mopping of hot roofing asphalt applied at a minimum of 25 pounds of asphalt per square, per layer. Apply roofing asphalt within plus or minus 25 deg F of equiviscous temperature.

I. Base bid insulation/installation design:

1. Install 2-ply vapor barrier by hot mop application to the primed concrete deck.

2. Hot mop base layer of 3.8-inch PolyIso in place.

3. Hot mop final layer of 2.0-inch Miner Wool insulation in place. Stagger joints with base layer.

4. Install 2-ply SBS Roofing Membrane System.

J. Alternate bid insulation/installation design:

1. Install 2-ply vapor barrier by hot mop application to the primed concrete deck.

2. Hot mop base layer of 2.6-inch PolyIso in place.

3. Hot mop second layer of 2.6-inch PolyIso in place. Stagger joints with base layer.

4. Hot mop top layer of Gypsum Fiber Cover Board. Stagger joints with second layer.

5. Install 2-ply SBS Roofing Membrane System.

3.4 ROOFING MEMBRANE INSTALLATION, GENERAL

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

1. Install roofing system MBS- 4- I- M- M, according to roof assembly identification matrix and roof assembly layout illustrations in NRCA's "The NRCA Roofing and Waterproofing Manual" and to requirements in this Section.

2. Basis-of-Design System: GAF I-0-1-30FREC.

B. Start installation of roofing membrane in presence of roofing system manufacturer's technical personnel.

C. Coordinate installation of roofing system so insulation and other components of the roofing membrane system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.

1. At end of each day's work, provide tie-offs to cover exposed roofing membrane sheets and insulation with a course of coated felt set in roofing cement or hot roofing asphalt, with joints and edges sealed.

2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.

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

D. Asphalt Heating:

1. Traditional Roofing Asphalt: Do not raise roofing asphalt temperature above equiviscous temperature range more than one hour before time of application. Do not exceed roofing asphalt manufacturer's recommended temperature limits during roofing asphalt heating. Do not heat roofing asphalt within 25 deg F of flash point. Discard roofing asphalt maintained at a temperature exceeding finished blowing temperature for more than four hours.

2. SEBS-Modified Roofing Asphalt: Heat and apply SEBS-modified roofing asphalt according to roofing system manufacturer's written instructions.

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

3.5 BASE-SHEET INSTALLATION

A. Install 2 plies lapped base-sheet course, extending sheet over and terminating beyond cants. Attach base sheet as follows:

1. Prime concrete deck before mopping in place.

2. Adhere to substrate in a solid mopping of hot roofing asphalt.

3.6 BASE-PLY SHEET INSTALLATION

A. Install SBS Mop Smooth base-ply sheet according to roofing system manufacturer's written instructions starting at low point of roofing system. Align SBS base-ply sheet without stretching. Extend sheets over and terminate beyond cants.

1. Embed each SBS base-ply sheet in a continuous void-free mopping of hot roofing asphalt to form a uniform membrane.

3.7 SBS-MODIFIED BITUMINOUS MEMBRANE INSTALLATION

A. Install modified bituminous roofing membrane sheets and cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:

1. Adhere to substrate in a solid mopping of hot roofing asphalt applied at not less than 425 deg F.

2. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer.

B. Laps: Accurately align roofing membrane sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Completely bond and seal laps, leaving no voids.

1. Repair tears and voids in laps and lapped seams not completely sealed.

2. Apply roofing granules to cover exuded bead at laps while bead is hot.

C. Install roofing membrane sheets so side and end laps shed water.

3.8 FLASHING AND STRIPPING INSTALLATION

A. Install base flashing over cant strips and other sloped and vertical surfaces, at roof edges, and at penetrations through roof; secure to substrates according to roofing system manufacturer's written instructions, and as follows:

1. Prime substrates with asphalt primer if required by roofing system manufacturer.

2. Backer Sheet Application: Either of the following as recommended by roofing system manufacturer's written instructions:

a. Adhere backer sheet over roofing membrane at cants in a solid mopping of hot roofing asphalt.

b. Adhere backer sheet to substrate in a solid mopping of hot roofing asphalt.

3. Flashing Sheet Application: Either of the following as recommended by roofing system manufacturer's written instructions:

a. Adhere flashing sheet to substrate in a solid mopping of hot roofing asphalt applied at not less than 425 deg F. Apply hot roofing asphalt to back of flashing sheet if recommended by roofing system manufacturer.

b. Adhere flashing sheet to substrate in asphalt roofing cement at rate required by roofing system manufacturer.

B. Extend base flashing up walls or parapets a minimum of 8 inches above roofing membrane and 8 inches onto field of roofing membrane.

C. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.

1. Seal top termination of base flashing with a strip of glass-fiber fabric set in asphalt roofing cement.

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

E. Roof Drains: Set 30-by-30-inch- square metal flashing in bed of asphalt roofing cement on completed roofing membrane. Cover metal flashing with roofing membrane cap-sheet stripping and extend a minimum of 6 inches beyond edge of metal flashing onto field of roofing membrane. Clamp roofing membrane, metal flashing, and stripping into roof-drain clamping ring.

1. Install stripping according to roofing system manufacturer's written instructions.

3.9 WALKWAY INSTALLATION

A. Cap Sheet Strips: Install additional layer of roofing membrane cap sheet using application method described above set in trowel grade flashing cement per Manufacturer’s Recommendation.

3.10 ELASTOMERIC SEALANT/FLASHING INSTALLATION (ALTERNATE NO. 4)

A. Clean top and vertical inside face of EIFS parapet.

1. Remove moss and dirt per manufacturer’s recommendation. Allow to dry completely.

~~A.~~**B.** Install Elastomeric Sealant/Flashing according to manufacturer’s instructions.

~~3.10~~3.11 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections and to prepare test reports.

B. Test Cuts: Test specimens will be removed to evaluate problems observed during quality-assurance inspections of roofing membrane as follows:

1. Approximate quantities of components within roofing membrane will be determined according to ASTM D 3617.

2. Test specimens will be examined for interply voids according to ASTM D 3617 and to comply with criteria established in Appendix 3 in ARMA/NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing."

3. Repair areas where test cuts were made according to roofing system manufacturer's written instructions.

C. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

1. Notify Architect and Owner 48 hours in advance of date and time of inspection.

D. Roofing system will be considered defective if it does not pass tests and inspections.

1. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

~~3.11~~3.12 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

~~3.12~~3.13 ROOFING INSTALLER'S WARRANTY

A. WHEREAS <**Insert name**> of <**Insert address**>, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

1. Owner: Wayne State University.

2. Address: <**Insert address**>.

3. Area of Work: <**Insert information**>.

4. Acceptance Date: <**Insert date**>.

5. Warranty Period: <**Insert time**>.

6. Expiration Date: <**Insert date**>.

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

C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

D. This Warranty is made subject to the following terms and conditions:

1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:

a. Lightning;

b. Peak gust wind speed exceeding <**Insert wind speed**> mph;

c. Fire;

d. Failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;

e. Faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;

f. Vapor condensation on bottom of roofing; and

g. Activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.

2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.

3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.

4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.

5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.

6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.

7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this <**Insert day**> day of <**Insert month**>, <**Insert year**>.

1. Authorized Signature: <**Insert signature**>.

2. Name: <**Insert name**>.

3. Title: <**Insert title**>.

END OF SECTION 075216