

ADDENDUM TWO

Walb Student Union Partial Roof Replacement - 2026
 Purdue University
 Union Circle Dr.
 Fort Wayne, IN 46815

MARTINRILEY architects/engineers
 221 West Baker Street
 Fort Wayne, Indiana 46802
 260-422-7994

Commission No.: F26039

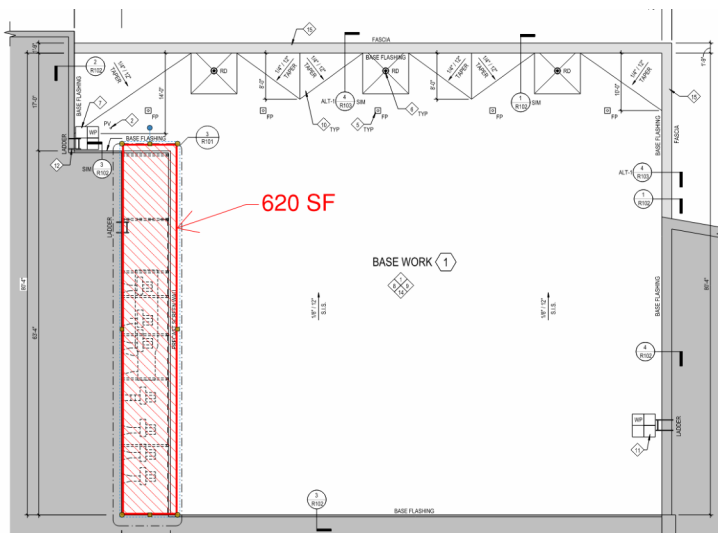
Addendum Date: 03 August 2026

Conditions: The following clarifications, amendments, additions, deletions, revisions and modifications are a part of the contract documents and change the original documents only in the manner and to the extent stated.

Copies of the Addendum shall be bound with all contract sets of drawings and specifications.

CLARIFICATIONS:

ALTERNATE No. 2 - Replacement of the existing roof within the equipment screen area is to be included as Alternate No. 2. The alternate shall extend approximately 12 inches beyond the exterior perimeter of the equipment screen wall post penetration flashing details, and include approximately 620 SF of roof replacement within the equipment screen area, as indicated on roof plan:



If Alternate No.2 is not accepted, the Contractor shall provide a manufacturer-approved permanent tie-in detail between the existing roof system and the new roof system.

If Alternate No. 2 is accepted, the existing exhaust equipment serving that area may only be shut down for a maximum period of one work week plus two weekends (i.e., nine consecutive calendar days). Coordination with the Owner will be required to establish the shutdown period, which may occur at any time during the project duration. The Project Completion Date should remain unchanged.

CHANGES TO THE SPECIFICATIONS:

Section Bid Form Insert (E-1), **REPLACE** Bid Form Insert (E-1) with attached revised Bid Form Insert.

Section Alternate Proposals (H-1), **REPLACE** Alternate Proposals (H-1) with the attached revised Alternate Proposals Form.

Section 075200 Modified Bituminous Membrane Roofing, **MODIFY** Paragraph P2-2.02-A-1-b-1 to state:

- “1. Siplast; 1 ply “Paradiene 20” set in cold adhesive and 1 ply “**Paradiene 30**” set in cold adhesive...”

Section 075200 Modified Bituminous Membrane Roofing, **MODIFY** Paragraph P2-2.02-A-1-b-3 to state:

- “3. Johns Manville; 1 ply “DynaBase” set in cold adhesive and 1 ply “**Dynalastic 250 FR**” set in cold adhesive. (2 ply flashing system of “DynaBase” and “**Dynalastic 250 FR**” both set in cold...”

Section 075200 Modified Bituminous Membrane Roofing, **MODIFY** Paragraph P2-2.03-B-1-b-1 to state:

- “1. Siplast; “**Parafor 30**”

Section 075200 Modified Bituminous Membrane Roofing, **MODIFY** Paragraph P2-2.03-B-1-b-3 to state:

- “3. Johns Manville; “**Dynalastic 250 FR**”

CHANGES TO DRAWINGS:

None.

ATTACHMENTS (PDF):

E-1 Bid Form Insert.pdf

H-1 Alternate Proposals.pdf

075200 Modified Bituminous Membrane Roofing.pdf

END OF ADDENDUM NUMBER TWO

BID FORM INSERT

Walb Student Union Partial Roof Replacement - 2026

Purdue University, Fort Wayne, Indiana

Following notices given and having carefully examined the Contract Documents as well as the premises and conditions affecting the work, the undersigned proposes to furnish all labor and materials, necessary tools, expendable equipment, and all utility and transportation services and to perform all work required by and in strict accordance with the above named documents, prepared by Martin Riley, now on file in the office of the Vice President for Physical Facilities, Purdue University, West Lafayette, Indiana, and Martin Riley as stated below.

BID PROPOSALS

Bidder agrees to perform all items of work as shown on the Drawings and/or described in the Specifications or Addenda, for the amounts shown as follows:

(Amount for Bids shall be shown in both words and figures. In case of discrepancy, the amount shown in words will govern).

BASE BID: The complete construction as required by the Contract Documents for the sum of

_____ Dollars (\$ _____)

ALTERNATE PROPOSALS

Submit Alternate Bids on the respective Alternates as applicable to the Base Bid submitted. Use the space provided under the respective Alternates accordingly.

ALTERNATE NO. 1: Include EPDM wall covering and prefinished metal fascia along parapet wall.

(Add to/deduct from) the Base Bid the sum of: _____

_____ Dollars (\$ _____)

ALTERNATE NO. 2: Replacement of the existing roof within the equipment screen area. The alternate shall extend approximately 12 inches beyond the exterior perimeter of the equipment screen wall post penetration flashing details, and include approximately 620 SF of roof replacement within the equipment screen area.

(Add to/deduct from) the Base Bid the sum of: _____

_____ Dollars (\$ _____)

ADDENDA

The Bidder acknowledges receipt of the following Addenda:

ADDENDUM # _____ DATED _____

ADDENDUM # _____ DATED _____

ALTERNATE PROPOSALS

The base bid shall be submitted in strict accordance with the plans and specifications.

The deduction from, or addition to, the base bid for each numbered alternate shall include the cost of any changes in, additions to, or omissions from adjacent construction and materials necessary to properly install and complete the work even though such changes, additions to, or omissions are not specifically noted in the description of the alternate. No extra will be allowed for any such changes, additions, or omissions.

Each bidder shall state in his proposal the amount to be deducted from or added to his base bid for each and every alternate hereinafter described. If his base bid is not affected by any particular alternate proposal, he shall enter the amount of \$0.00 in the proper place on the Supplemental Bid Form.

BASE BID

State the amount required to complete all work shown on the drawings, herein specified and necessary to design and construct the removal and placement of 2-ply MBR on Roof Area <1> with new 2-ply MBR.

ALTERNATE NO. 1

Add to (or deduct from) the Base Bid the cost to include EPDM wall covering and prefinished metal fascia along the parapet wall at Roof Area <1>.

ALTERNATE NO. 2

Replacement of the existing roof within the equipment screen area. The alternate shall extend approximately 12 inches beyond the exterior perimeter of the equipment screen wall post penetration flashing details, and include approximately 620 SF of roof replacement within the equipment screen area.

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**SECTION 075200
MODIFIED BITUMINOUS MEMBRANE ROOFING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Modified bituminous roofing membrane, conventional application.
- B. SBS Modified bituminous roofing membrane, cold adhesive with heat welded seams application.
- C. APP Modified bituminous roofing membrane, cold adhesive with heat welded seams application.
- D. Rigid roof insulation, tapered and flat
- E. Cover boards.
- F. Base flashings

1.02 RELATED REQUIREMENTS

- A. Section 061000 - Rough Carpentry: Wood nailers, curbs, cant strips, and items installed on roof.
- B. Section 071010 - General Roofing Consideration.
- C. Section 076200 - Sheet Metal Flashing and Trim: Counterflashings, reglets.
- D. Section 079005 - Joint Sealants

1.03 REFERENCE STANDARDS

- A. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2024.
- B. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2025.
- C. ASTM D41/D41M - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing; 2011 (Reapproved 2023).
- D. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2025.
- E. ASTM D312/D312M - Standard Specification for Asphalt Used in Roofing; 2016a (Reapproved 2023).
- F. ASTM D 1668 - Standard Specification for Glass Fabrics (Woven and Treated) for Roofing and Waterproofing; 1997a (Reapproved 2006).
- G. ASTM D 2523 - Standard Practice for Testing Load-Strain Properties of Roofing Membranes; 2000.
- H. ASTM D 4479 - Standard Specification for Asphalt Roof Coatings - Asbestos-Free; 2007.
- I. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement; 2025.
- J. ASTM D4601/D4601M - Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing; 2004 (Reapproved 2020).
- K. ASTM D6162/D6162M - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements; 2021.
- L. ASTM D6163/D6163M - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements; 2021.
- M. ASTM D6164/D6164M - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements; 2021.

- N. ASTM D6222/D6222M - Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using Polyester Reinforcements; 2016 (Reapproved 2023).
- O. ASTM D6223/D6223M - Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements; 2021.
- P. ASTM D6298/D6298M - Standard Specification for Fiberglass Reinforced Styrene Butadiene Styrene (SBS) Modified Bituminous Sheets with a Factory Applied Metal Surface; 2016.
- Q. ASTM D5849 - 07 Standard Test Method for Evaluating Resistance of Modified Bituminous Roofing Membrane to Cyclic Fatigue (Joint Displacement)
- R. FM (AG) - FM Approval Guide; Current Edition.
- S. NRCA (RM) - The NRCA Roofing Manual; 2026.

1.04 PRE-INSTALLATION MEETING

- A. See Section 071010 General Roofing Consideration
- B. Convene one week before starting work of this section.
- C. Review preparation and installation procedures and coordinating and scheduling required with related work.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. See Section 071010 - General Roof Considerations for additional submittals and data.
- C. Product Data: Provide manufacturer's catalog data for membrane and bitumen materials, base flashing materials and insulation.
- D. Provide manufacturer's technical product data for each type of product specified substantiating that materials comply with requirements.
- E. Certificate of Analysis: Manufacturer shall submit a Certificate of Analysis from the manufacturing facility laboratory, listing the physical properties for each production lot shipped to project site.
- F. Manufacturer qualification: Manufacturer shall submit on manufacturer letterhead from the manufacturing facility laboratory, stating that the product shipped to the project site meets or exceeds the same physical properties as specified herein. Manufacturer also states that they understand the penalties as outlined below in the Quality Assurance of this specification section, if that product does not meet specified physical properties.
- G. Installer's qualification: Contractor shall be experienced to perform work in this section and who has specialized in installing roofing similar to that required for this Project; who is approved, authorized, or licensed by the roofing system manufacturer to install manufacturer's product; and who is eligible to receive the standard roofing manufacturer's warranty.
- H. Manufacturer's Installation Instructions: Indicate special procedures.
- I. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- J. Manufacturer's Field Reports: Indicate procedures followed.
- K. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Obtain primary products, including each type of membrane sheet, from a single manufacturer. Provide secondary products as recommended by manufacturer of primary products for use with roofing system specified.
- B. Sampling and Testing: Random samples may be taken from each different production lot that is shipped to job site for independent third party testing to insure that product shipped to the job site meets the specified physical properties as identified in this specification section. MRae will

provide the contractor with a six foot sample from each roll sampled for testing. MRae will tag and store the remaining portion at their facility. Cost associated with material testing will be paid by the owner unless the material fails to meet the specified physical properties. Any Modified Bituminous Roofing material that does not meet the specified physical properties will be replaced with new material that meets the specified physical properties at no cost to the owner including labor cost to remove material that may have already been installed.

- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- D. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience, and approved by manufacturer.
- E. Installer Qualifications: Installer should have a minimum of five (5) years experience in installing modified bitumen roofing, who is approved, authorized, or licensed by the specified roof system manufacturer to install manufacturer's roof system and who is eligible to receive specified roofing manufacturer's basic roofing guarantee.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact unless otherwise indicated.
- B. Coordinate the storage of insulation, base sheets, and modified bitumen roofing sheets so that materials are not exposed to precipitation or night air. All materials shall be completely protected while in storage and during application to keep dry at all times.
 - 1. When stored outdoors, roofing materials shall be stacked on pallets or dunnage at least 4 inches above ground level or existing roof membrane level. Roofing materials shall be covered with tarpaulins or other approved covering. Plastic shrink wrap used for transit of palletized materials will not be allowed as an approved covering.
- C. Do not leave unused roll goods and other sheet materials or insulation on the roof overnight or when roofing work is not in progress unless protected from weather or other moisture sources.
- D. Handle and store materials or equipment in a manner to avoid significant or permanent deflection of deck.
- E. Store materials in weather protected environment, clear of ground and moisture; ballast materials may be stored outdoors.
- F. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.
- G. Protect foam insulation from direct exposure to sunlight.

1.08 FIELD CONDITIONS

- A. Do not apply roofing membrane when environmental conditions are outside the ranges recommended by manufacturer.
- B. Do not apply roofing membrane during unsuitable weather.
- C. Do not apply roofing membrane when ambient temperature is below 40 degrees F (5 degrees C).
- D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.
- F. Schedule applications so that no partially completed sections of roof are left exposed at end of workday.

1.09 WARRANTY

- A. Roofing Contractor's Warranty: Provide roofing contractor's "Roofing Warranty" typical in form and content indicated by Midwest Roofing Contractors Association, Inc. approved guarantee form No. 2007B, for 2-years as indicated on form.
- B. Manufacturer's Warranty: Provide modified bitumen roofing manufacturer's standard unlimited product and contractor workmanship liability "Roofing Manufacturer's Basic Roofing Guarantee" from date of Substantial Completion against leaks caused by defective materials or workmanship and against normal wear and tear for the following period of time with respect to the following system designations
 - 1. 2 ply ICSG-MBR 20 Years "NDL"
 - 2. 2 ply ICAG-MBR 20 Years "NDL"

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Modified Bituminous Membrane Roofing:
 - 1. Siplast, Inc: www.siplast.com.
 - 2. Derbigum Roof Systems, Inc.: www.derbigum.com
 - 3. Soprema Inc, www.soprema.us
 - 4. Johns Manville, [www.https://www.jm.com/#sle](https://www.jm.com/#sle)
 - 5. Substitutions: See Section 016000 - Product Requirements.

2.02 ROOFING - CONVENTIONAL APPLICATION

- A. Modified Bituminous Roofing:
 - 1. SYSTEM: System designation explained in Section 07 1010. Provide one of the following systems:
 - a. 2 ply ICAG - MBR (insulated substratem 1 ply APP smooth surfaced modified bitumen base ply set in cold adhesive and 1 ply APP granule surfaced modified bitumen sheet membrane set in cold adhesive): Seams to be heat welded.
 - 1) Derbigum; 1ply "Derbibase Ultra" set in cold adhesive with laps heat welded and 1 ply "Derbicolor GP FR" set in cold adhesive with laps heat welded. (2 ply base flashing system of "Derbibase Ultra" and "Derbicolor GP FR" both set in cold adhesive.) Note: Flashings onto combustible substrates must be set in cold adhesive.
 - 2) Johns Manville; 1 ply "APP Base Plus" set in cold adhesive with laps heat welded and 1 ply "Bicor M FR" set in cold adhesive with laps heat welded. (2 ply base flashing system of "APP Base Pluse" and "Bicor M FR" both set in cold adhesive.) Note: Flashing onto combustible substrates must be set in cold adhesive.
 - b. 2 ply ICSG (insulated substrate, 1 ply SBS smooth surfaced modified bitumen base ply set in cold adhesive and 1 ply SBS granule surfaced modified bitumen sheet membrane set in cold adhesive): Testing shall be in accordance with the parameters published in ASTM D 5174.
 - 1) Siplast; 1 ply "Paradiene 20" set in cold adhesive and 1 ply "Paradiene 30" set in cold adhesive. (2 ply base flashing system of "Paradiene 20" and "Parafor 30" both set in cold adhesive. All seams to be heat welded.) 2
 - 2) Soprema; 1 ply "Elastophene Sanded 3.0" set in cold adhesive and 1 ply "Elastophene HR FR GR" set in cold adhesive. (2 ply base flashing system of "Elastophene Sanded 3.0" and "Elastophene HR FR GR" both set in cold adhesive). All seams to be heat welded.
 - 3) John Manville; 1 ply "DynaBase" set in cold adhesive and 1 ply "Dynalastic 250 FR" set in cold adhesive. (2 ply base flashing system of "DynaBase" and "Dynalastic 250 FR" both set in cold adhesive). All seams to be heat welded. 2
- B. Roofing Assembly Requirements:

1. The roof system shall pass ASTM D 5849 - 07 Standard Test Method for Evaluating Resistance of Modified Bituminous Roofing Membrane to Cyclic Fatigue (Joint Displacement)
 2. Underwriters Laboratories, Inc. (UL)
 - a. Exterior Fire-Test Exposure: Class A or B; UL 790 for application and roof slopes indicated.
 - b. Internal Fire Spread Below Deck: UL 1256 for application and roof slopes indicated
 3. Factory Mutual Research Corp. (Resistance)
 - a. Resistance to Fire, Wind, Hail, Leakage, Corrosion, Ultraviolet Weathering and Foot Traffic when tested in accordance with Approval Standard 4470: Class 1 for application and roof slopes indicated.
 - b. Resistance to Wind: Minimum 90 pounds per square foot uplift pressure resistance when tested in accordance with Approval Standard 4470.
- C. Modified Bituminous Sheet Physical Properties Requirements: Testing shall be in accordance with the parameters published in ASTM D 5147. Minimum or Maximum values indicated in both machine direction (MD) and cross machine direction (Resistance).
1. Modified Bitumen Base Membrane, Flashing and Stripping Ply
 - a. Thickness (min): 90 mils (2.9 mm)
 - b. Low temperature flexibility @ -10° F (-23.3°C) - SBS PASS; @ 0° F (-17.8°C) - APP PASS
 - c. Tensile Strength/Peak load (avg) @ 0°F (-18°C): 100 lbf/inch (17.6 kN/m)
 - d. Tear Strength (lbf): 80 lbf (36.3 kgf)
 - e. Dimensional Stability (max): 0.2%
 - f. Compound Stability (min): 250°F (121°C)
 2. Modified Bitumen Membrane and Flashing/Stripping Cap Ply
 - a. Thickness (min): 130 mils (3.0 mm)
 - b. Low temperature flexibility @ -10° F (-23.3°C) - SBS PASS; @ 0° F (-17.8°C) - APP PASS
 - c. Tensile Strength/Peak load (avg) @ 0°F (-18°C): 100 lbf/inch (17.6 kN/m)
 - d. Tear Strength (lbf): 100lbf (45.4 kgf)
 - e. Dimensional Stability (max): 0.2%
 - f. Compound Stability (min): 250°F (121°C)
 - g. Granule Embedment (max. avg. loss): 1.5 grams per sample

2.03 MEMBRANE AND SHEET MATERIALS

- A. Membrane: Modified Bituminous Roofing (MBR) Polymer modified asphalt, reinforced with non-woven fabric; granule surfaced; with the following characteristics:
 1. Styrene-Butadiene-Styrene (SBS) Modified: Smooth surfaced, or granule coated, cold adhesive applied SBS modified bitumen membrane, with a fiberglass or non-woven polyester mat reinforced core. Sheet to meet NBS 55 criteria for tensile strength and comply with ASTM D2523 at 0 degrees F. Subject to compliance with requirements.
 - a. Granule coating: A continuous layer of slate chips factory applied to exposed surface. Color: Manufacturer's standard white.
 2. Atactic Polypropylene (APP) Modified: Smooth surfaced or granule coated, set in cold adhesive APP modified bitumen membrane, non-woven polyester mat (with or without) additional fiberglass mat and web) reinforced core. Sheet to meet NBS 55 criteria for tensile strength and comply with ASTM D2523 at 0 degrees F. Subject to compliance with requirements:
 - a. Granule coating: A continuous layer of slate chips factory applied to exposed surface. Color: Manufacturer's standard white.
- B. Modified Bituminous Flashing Material: 2-Ply flashing same material as membrane or as follows:
 1. SBS Flashing:
 - a. Base Ply:

- 1) Siplast; "Paradiene 20"
 - 2) Soprema; "Elastophene Sanded 3.0"
 - 3) Johns Manville; "DynaBase"
 - b. Cap Ply:
 - 1) Siplast; "Parafor 30"
 - 2) Soprema; "Elastophene HR FR GR"
 - 3) Johns Manville; "Dynalastic 250 FR"
 - c. Liquid Applied Flashing:
 - 1) Siplast; "Parapro 123"
 - 2) Soprema; "Alson"
 - 3) Johns Manville; "JM PMMA"
2. APP Flashing:
- a. Base Ply: Derbigum; "Derbibase Ultra"
 - 1) Derbigum; "Derbibase Ultra"
 - 2)
 - b. Cap Ply: Derbigum; "Derbicolor GP FR"
 - 1) Derbigum; "Derbicolor GP FR"
 - 2) Johns Manville; "Bicor M FR"
 - c. Liquid Applied Flashing:
 - 1) Derbigum; "Derbi-Flash"
 - 2) Johns Manville; "JM PMMA"
- C. Base Sheet: ASTM D4601/D4601M Type I; asphalt-coated glass fiber; unperforated.
- D. Modified Base Sheet: Modified bitumen sheet with glass-fiber reinforcing mat.
- E. Flexible Flashing Material: Same material as membrane.

2.04 BITUMINOUS MATERIALS

- A. No. 15 Roofing Felt (for night cutoff s): Asphalt-saturated unperforated organic roofing felt, complying with ASTM D226, Type I, 36 inch wide, approximate weight 18lb/square.
- B. Bitumen: Asphalt, ASTM D312/D312M Type IV; for adhering insulation, use Type III.
- C. Asphalt Primer: ASTM D41/D41M, asphalt type.
- D. Asphalt Roof Cement: ASTM D4586/D4586M, Type II, asbestos-free.
- E. Cold Adhesive (for membrane application): Provide special high-flash, quick drying solvent adhesive, complying with ASTM D 4479, Type II.
 1. Products: subject to compliance with requirements, provide one of the following:
 - a. "PA-311M Adhesive"; Siplast.
 - b. "Permastic"; Performance Roof Systems.
 - c. "FM Adhesive Squeegee grade"; Soprema.
 - d. "MBR Cold Application Adhesive", Johns Manville
- F. Cold Adhesive (for flashing application): Provide special high-flash, quick drying solvent adhesive, complying with ASTM D 4479, Type II.
 1. Products: subject to compliance with requirements, provide one of the following:
 - a. "PA-828"; Siplast.
 - b. "Perflash"; Derbigum.
 - c. "FM Adhesive Flashing Cement"; Soprema
 - d. "MBR Cold Application Adhesive", Johns Manville
- G. Cold Adhesive (for insulation application): Single-components, non-flammable, spray dispensed, moisture curing low rise polyurethane foam adhesive.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. "Insta-stik"; Insta-foam Products, Inc"
 - b. "Para-Stick"; Siplast.
 - c. "Olybond"; OMG

- d. "Derbibond LR" Derbigum
- e. "High Velocity Insulation Adhesive" Soprema
- f. "MBR Cold Application Adhesive", Johns Manville

2.05 COVER BOARDS

- A. Cover Boards: Glass-mat faced gypsum panels complying with ASTM C1177/C1177M.
 - 1. Thickness: 1/4 inch (6.4 mm), fire-resistant.
 - 2. Sheet Size: 48"x48"
 - 3. Manufacturers:
 - a. Georgia-Pacific; DensDeck Prime with EONIC Technology: www.densdeck.com/#sle
 - b. Substitutions: See Section 01 6000 - Product Requirements

2.06 INSULATION

- A. Rigid insulation boards and air/vapor retarder filler foams shall not be produced with, or contain, any of the United States Environmental Protection Agency (USEPA) regulated chlorofluorocarbon (CFC) compounds listed in the Montreal Protocol of the United Nations Environmental Program.
- B. Polyisocyanurate Board Insulation: Rigid closed cellular polyisocyanurate foam core board, complying with ASTM C 1289, Type II, Class 1, cellulose felt or glass fiber mat both faces; Grade 1, for Class A Construction with the following characteristics:
 - 1. Board Size: 48 x 96 inch. (Flatstock) and 48 x 48 inches (Tapered)
 - 2. Board Thickness: 2.0 inch (Flatstock) and Varies (Tapered)
 - 3. Thermal Resistance: R-Value of 5.41/inch
 - 4. Board Edges: Square
 - 5. Compressive Strength: 20 psi

2.07 ACCESSORIES

- A. Air/Vapor Retarder Filler Foam: Single-component, non-flammable, spray dispensed, adhesive polyurethane foam used as a filler around obstructions and penetrations to mitigate both air and vapor infiltration from both interior and exterior origin.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to the following:
 - a. Hilti Construction Chemicals, Inc: "Hilti CF 124".
- B. Cant and Edge Strips: Asphalt-impregnated wood fiberboard, compatible with roofing materials ; cants formed to 45 degree angle.
- C. Self Adhering Waterproofing Underlayment: Laminated sheet of polymer rubberized asphalt and elastomeric 5-mil polymer film with release paper to self adhere to substrate.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include the following:
 - a. Ice and Water Shield; W.R. Grace Corp.
 - b. Winterguard; CertainTeed Corporation.
 - c. Weather Watch; GAF Building Materials Corporation.
- D. Insulation Fasteners For Steel, Concrete, and Wood Deck: Fluoropolymer-coated steel, or nonferrous metal screw with metal or plastic plates recommended by manufacturer for material to be fastened and substrate and complying with requirements of governing authorities and listing agencies.
 - 1. Length as required for thickness of insulation material and penetration of deck substrate.
 - a. Metal Deck: 3/4-inch minimum penetration of top flute in deck.
 - b. Structural Concrete: 1-inch minimum embedment.
 - c. Wood Deck: 1-inch minimum embedment.
- E. Preformed Edge Strips: Rigid insulation units matching roof insulation, or asphalt-impregnated organic fiber insulation units, molded to form 3 1/2-inch by 3 1/2-inch by 45 degree cant strips

and 1 5/8-inch by 18 inch tapered edge strips to receive roofing ply sheet courses and lift edges above main roofing surface.

- F. Roofing Nails: Galvanized, hot-dipped type, size and configuration as required to suit application.
- G. Glass Fiber Fabric: Type I, minimum 1.5 pound sheet of woven glass fiber, impregnated with asphalt; complying with ASTM D 1668.
- H. Roofing Cement: Asphaltic cement, asbestos-free; ASTM D 4586.
- I. Sheet Metal Accessory Materials: Provide materials as specified in Sections 076200.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is supported and secure.
- C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
- D. Verify deck surfaces are dry and free of moisture and dew.
- E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.
- F. Coordinate the storage and protection of insulation, base sheets, modified bitumen roofing sheets so that materials are not exposed to precipitation or night air. All materials shall be completely protected while in storage and during application to keep it dry at all times.
 - 1. When stored outdoors, roofing materials shall be stacked on pallets or dunnage at least 4-inches above ground level or existing roof membrane level. Roofing materials shall be covered with tarpaulins or other approved covering. Plastic shrink wrap used for transit of palletized materials will not be allowed as an approved covering.
- G. Examine Substrate surface to receive modified bituminous roofing system and associated work and conditions under which roofing will be installed. Do not proceed with roofing work until unsatisfactory conditions have been corrected in a manner acceptable to the Manufacturer and Architect.
 - 1. Verify substrate moisture - do not install roofing on wet insulation or other moist substrates. Do not install insulation to deck that is wet or has standing water in the flutes. Remove moisture and verify that the deck and/or insulation is dry.
- H. Substrate Joint Penetrations: Prevent bitumen from penetrating substrate joints, entering building and drains, or damaging roofing system components or adjacent building construction.
- I. Cutoffs: at end of each day's roofing installation, protect exposed edge of incomplete work, including ply sheets and insulation. Provide temporary covering with single ply Modified Bitumen roofing sheet set in cold adhesive; remove at beginning of next day's work.

3.02 PREPARATION - WOOD DECK

- A. Verify flatness and tightness of joints in wood decking; fill knot holes with latex filler.
- B. Observe deck for damage or deterioration and report conditions to roof consultant.

3.03 PREPARATION - METAL DECK

- A. Clean flutes of deck free of all debris during tear-off.
- B. Observe deck for damage or deterioration (rust) and report conditions to roof consultant.

3.04 INSTALLATION - INSULATION, CONVENTIONAL

- A. Attachment of Insulation: Comply with insulation manufacturer's instructions and recommendations for handling, installing, and bonding or anchorage of insulation substrate.
 - 1. Secure insulation to metal deck using mechanical fasteners specifically designed and sized for attachment of specified recovery board type insulation and existing base

insulation to deck type shown. Fasten insulation over entire area of roofing at spacing as required by FM or Windstorm Resistance Classification 1-90. Run long joints for insulation in continuous straight lines perpendicular to the roof slope with end joints staggered between rows.

2. Two-layer Installation: Where indicated, install required thickness in two layers with joints of second layer staggered from joints of first layer a minimum of 12 inches each direction. Install second layer in cold adhesive.
 3. Nailers: Where insulation substrates slope 3/4 inch per foot or more, install wood nailers minimum 2 inches wide and as same thickness as base layer of insulation, set nailers between insulation boards. Anchor nailers to substrate and run nailers perpendicular to slope of roof. Install nailers at the following spacing:
 - a. 3/4 inch to 3 inch per foot slope; 96 inches face to face of nailer.
 - b. 3 inches or more; 48 inches face to face of nailer.
 4. Install tapered insulation for crickets and saddles between the first and second layers of insulation.
 5. Trim surface of insulation where necessary at roof drains so completed surface is flush with drain ring.
- B. Cover Boards: Mechanically fasten cover boards in accordance with roofing manufacturer's instructions and FM (AG) Factory Mutual requirements.
- C. Lay subsequent layers of insulation with joints staggered minimum 6 inches (152 mm) from joints of preceding layer.
- D. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- E. Do not apply more insulation than can be covered with membrane in same day.

3.05 INSTALLATION - MEMBRANE

- A. Install modified bituminous membrane roofing system in accordance with manufacturer's recommendations and NRCA (RM) applicable requirements.
- B. Install membrane; lap and seal edges and ends permanently waterproof.
- C. Install smooth, free from air pockets, wrinkles, fish-mouths, or tears. Ensure full bond of membrane to substrate.
- D. Prime substrate when torching membranes or flashing direct to surfaces with 1.0 gal. per square of asphalt cut back primer, ASTM D41.
- E. At end of day's operation, install waterproof cut-off. Remove cut-off before resuming roofing.
- F. Roof Membrane and Flashing Installation (complete tear-off): Install membrane with modified bitumen sheets lapped and shingled uniformly to achieve required number of membrane piles throughout. Shingle in proper direction to shed water.
1. Apply 2-courses stripping of glass-fiber fabric and roofing cement at obstructions and penetrations.
 2. Cant Strips/Tapered Edge Strips: Install preformed 45-degree insulation cant strips set in roof cement at junctures of modified bitumen roofing system membrane with vertical surface. Provide preformed, tapered edge strips at perimeter of roof that do not terminate flush with vertical surfaces.
 3. Extend first ply of modified field sheet in cold adhesive to top edge of cant strip and terminate.
 4. Install first ply of APP/SBS modified base flashing sheet set in cold adhesive a minimum 4 inches onto roof beyond cant and turn sheet up above cant to finish flashing height.
 5. Provide second ply of APP/SBS modified field sheet set in cold adhesive to top edge of cant and terminate.
 6. Install second ply of APP/SBS modified base flashing set in cold adhesive a minimum 8 inches onto roof beyond cant strip and turn sheet up above cant to finish flashing height.

Nail top of flashing a minimum 6 inches o.c. or provide other form of mechanical attachment.

7. Nail edges of roofing membrane to wood blocking at perimeter edges of roof prior to installing fascias. Space nails at a minimum of 6 inches o.c.
 8. Liquid Flashing Installation: Apply flashing in accordance with manufacturer's instructions.
- G. Roof Sumps (Drains): Cut-out insulation around roof drains and provide new taper insulation sump to drain. Fill clamping ring base with a heavy coating of roofing cement. Provide a primed minimum 30 inch square, 2 1/2 to 4 lb. lead flashing sheet in a bed of roofing cement sandwiched between base and cap plies of modified bituminous roofing plies. Lead flashing sheet is not to extend beyond edge of sump created by tapered insulation.
- H. At intersections with vertical surfaces:
1. Extend membrane over cant strips and up a minimum of 8 inches (203 mm) onto vertical surfaces.
 2. Apply flexible flashing over membrane.
- I. Around roof penetrations, mop in and seal flanges and flashings with flexible flashing.
- J. Coordinate installation of roof drains and sumps and related flashings.
- K. Insulation of Roof Accessories: Miscellaneous sheet metal accessory items and major items of roof accessories (if any) to be coordinated with modified bituminous sheet roofing system work, are specified in other sections of these specifications.

3.06 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements for additional requirements.
- B. Provide monthly on-site attendance of roofing and insulation manufacturer's representative during installation of this work.

3.07 CLEANING

- A. Remove bituminous markings from finished surfaces.
- B. Repair or replace defaced or damaged finishes caused by work of this section.

3.08 PROTECTION

- A. Protect installed roofing and flashings from construction operations.
- B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION