

SECTION 075201
ASPHALTIC MEMBRANE ROOFING - MINOR ALTERATIONS (*AD-02)

PART 1 GENERAL

1.01 REFERENCE STANDARDS

- A. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
- B. ASTM D41/D41M - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
- C. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
- D. ASTM D6164/D6164M - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- F. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings.
- G. FM (AG) - FM Approval Guide.
- H. ITS (DIR) - Directory of Listed Products.
- I. NRCA (RM) - The NRCA Roofing Manual.
- J. UL (DIR) - Online Certifications Directory.
- K. UL (FRD) - Fire Resistance Directory.

1.02 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with installation of associated flashings and counterflashings installed by other sections.
- B. Preinstallation Meeting: Convene one week before starting work of this section.
 - 1. Review preparation and installation procedures and coordinating and scheduling required with related work.

1.03 SUBMITTALS

- A. Product Data: Provide manufacturer's catalog data for membrane and bitumen materials, base flashing materials, insulation, vapor retarder, and surfacing.
- B. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, setting plan for tapered insulation, and mechanical fastener layout.
 - 1. Include edge conditions showing details of roofing assembly connection to wall air barrier material to maintain a continuous air barrier system.
- C. Sustainability Submittals: Refer to Division 1 Section "Sustainable Design Requirements."
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
 - 1. Submit in the form of manufacturer's assembly letter, indicating each component of the roofing assembly as specified, and that assembly meets performance requirements and manufacturer's warranty conditions.
- E. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, wind velocity during application, and supplementary instructions given.
- F. Manufacturer's qualification statement.

- G. Installer's qualification statement.
- H. Warranties: Submit manufacturer and installer warranties and ensure forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacture of products specified, with UL-listed roof assemblies for roof systems indicated.
- B. Installer Qualifications: Company specializing in installation of roof systems indicated, and approved / certified by roofing manufacturer to install products
- C. Insulation Manufacturer Qualifications: Approved by roof membrane manufacturer, and approved and labeled under third party quality program as required by applicable building code.
 - 1. Insulation Labeling: All foam insulation shall bear the label of testing/inspection agency, and shall include manufacturer identification, product identification, performance characteristics, and other information as necessary to verify code compliance for intended end use.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact unless otherwise indicated.
- B. Store materials in weather protected environment, clear of ground and moisture; ballast materials may be stored outdoors.
- C. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.
- D. Protect foam insulation from direct exposure to sunlight.

1.06 FIELD CONDITIONS

- A. Do not apply roofing membrane during unsuitable weather, or when unsuitable weather is expected. Proceed only when field conditions are in accordance with roofing manufacturer's installation and warranty requirements.
- B. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.
- C. Schedule applications so that no partially completed sections of roof are left exposed at end of workday.

1.07 WARRANTY

- A. Existing Roof Warranty: The existing roof is currently not under warranty.
- B. Special Warranty - Installer: Installer shall sign and submit a workmanship warranty covering all components of roof repair and patching indicated.
 - 1. Installer's Warranty Period: 2 years, from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Modified Bituminous Membrane Roofing Material Manufacturers:
 - 1. Elevate.
 - 2. GAF.
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3. Johns Manville.
4. Polyglass USA, Inc.
5. Substitutions: See Section 016000 - Product Requirements.

2.02 ROOFING ASSEMBLY, GENERAL

- A. Existing Roofing: It is assumed the existing roof is a four ply built-up membrane roof, over insulation and structural roof deck, with gravel ballast.
- B. Roofing Assembly Requirements:
 1. General: Installed roofing components and all accessories and related materials shall remain secure and watertight and shall withstand weather exposure, wind uplift pressures specified, and thermal movements. Roofing manufacturer shall certify that all roofing assembly components are compatible with each other and with adjacent materials for applications indicated.
 2. External Fire Exposure Classification: ASTM E108 Class A, UL (FRD) listed.
 3. Assembly Resistance to Internal Fire: Manufacturer's assembly shall be tested to and satisfactorily pass NFPA 276 or UL 1256.
 4. Accelerated Weathering: 2,000 hours minimum exposure, when tested in accordance with ASTM G152, ASTM G154, or ASTM G155.
 5. Ponding Water: Ponding water shall not remain on the roof 24 hours after a rainfall event.

2.03 MEMBRANE AND SHEET MATERIALS

- A. Base Sheet: Polymer modified asphalt, reinforced with nonwoven fabric; smooth surfaced; with the following characteristics:
 1. Material: ASTM D6164/D6164M, Type I, Grade S; styrene-butadiene-styrene (SBS) modified, polyester reinforced.
 2. Thickness: Minimum 90 mils (2.3 mm).
 3. Color: Manufacturer's standard.
 4. Sheet Width: 39 inches minimum (1 meter).
- B. Ply/Cap Sheet: Polymer modified asphalt, reinforced with nonwoven fabric; granule surfaced; with the following characteristics:
 1. Material: ASTM D6164/D6164M, Type I or II, Grade G; styrene-butadiene-styrene (SBS) modified, polyester reinforced.
 2. Thickness: Minimum 155 mils (3.9 mm).
 3. Granule Color: White.
- C. Flashing, General: Flashing materials shall be manufactured by the primary roofing manufacturer and shall be approved in writing for use with and compatibility with modified bitumen roofing materials.
 1. Flexible Flashing Material: Same material as membrane.
 2. Fluid Applied Flashing Material: In lieu of flexible membrane flashing at Contractor's option fluid applied flashing may be used. Provide one component polyurethane or polyurethane/bitumen hybrid resin; formulated specifically for use with modified bitumen roofing systems.
 - a. Products:
 - 1) Polyglass; PolyFlash 1C.
 - 2) Elevate; UltraFlash.
 - 3) Johns Manville; PermaFlash.
 - 4) Substitutions: See Section 016000 - Product Requirements.

2.04 BITUMINOUS MATERIALS

- A. Asphalt Primer: ASTM D41/D41M, asphalt type.
- B. Asphalt Roof Cement: ASTM D4586/D4586M, Type II, asbestos-free.

2.05 INSULATION

- A. Surface Burning Characteristics: Foam plastic insulation shall have a maximum flame spread index of 75, and maximum smoke developed index of 450, when tested in accordance with ASTM E84 at maximum thickness intended for use.
- B. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, complying with ASTM C1289.
 - 1. Classifications:
 - a. Type II:
 - 1) Class 1 - Faced with glass fiber reinforced cellulosic felt facers on both major surfaces of core foam.
 - 2) Compressive Strength: Grade 2 - 20 psi, minimum.
 - 2. Tapered Board: Slope as indicated, but no lower than 1/4 inch per foot; minimum thickness 1/2 inch; fabricate of fewest layers possible.
 - 3. Preformed Shapes: Provide saddles crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated, but no less than 1/4 inch per 12 inches, and no less than 1/8 inch per 12 inches in valleys.

2.06 COVER BOARDS

- A. Cover Boards: Faced, and with high compressive strength polyisocyanurate (ISO) insulation complying with ASTM C1289, and the following:
 - 1. Classification: Type II, Class 4 - Faced with coated or uncoated glass fiber mat facers on both major surfaces of the core foam. This product is used at a maximum thickness of 1/2 inch (12.7 mm).
 - 2. Grade and Compressive Strength: Grade 1, 80 psi, minimum.
 - 3. Insulation Thermal Resistance, R-value: 2.5, nominal.

2.07 ACCESSORIES

- A. Cant and Edge Strips: Perlite or asphalt-impregnated fiberboard, compatible with roofing materials; cants formed to 45 degree angle.
- B. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.
 - 1. Length as required for thickness of insulation material and penetration of deck substrate, with metal washers.
- C. Insulation Adhesive: Type recommended by insulation manufacturer and approved by roofing membrane manufacturer.
- D. Membrane Adhesive: Manufacturer's recommended cold-applied, single component roof membrane adhesive.

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 snow or ice.

3.02 PREPARATION

- A. General: Remove only materials that can be fully replaced and weatherproofed with new materials on the same day.
- B. Remove gravel ballast from areas to receive roof work, taking care not to damage existing roofing or adjacent existing construction to remain.
- C. Sweep roof surface clean; prepare existing top membrane roof in accordance with roofing manufacturer's instructions.
- D. Coordinate with Division 6 "Rough Carpentry" for roof curb, blocking, and nailer construction as indicated.

3.03 INSTALLATION - INSULATION

- A. Attachment of Insulation:
 - 1. Mechanically fasten first layer of insulation to deck in accordance with roofing manufacturer's instructions.
 - 2. Embed subsequent layer(s) of insulation into either ribbons or full bed of adhesive as required to comply with performance or warranty requirements, and in accordance with roofing and insulation manufacturers' instructions.
 - 3. Place tapered insulation to the indicated slope pattern in accordance with manufacturer's instructions.
 - 4. Install a minimum of two layers of insulation, with total thickness to match existing roofing, followed by a cover board.
- B. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- C. Do not apply more insulation than can be covered with membrane in same day.

3.04 INSTALLATION - MEMBRANE

- A. Install modified bituminous membranes in accordance with manufacturer's recommendations and NRCA (RM) applicable requirements.
- B. Coordinate with roofing manufacturer's written instructions for lapping membrane and sealing to existing asphaltic roof membrane. Provide flashing strip or other tie-in accessory specifically approved by roofing manufacturer for compatibility to existing.
- C. Install base and cap membranes; lap and seal edges and ends permanently waterproof.
- D. Install smooth, free from air pockets, wrinkles, fish-mouths, or tears. Ensure full bond of membrane to substrate.
- E. At end of day's operation, install waterproof cut-off. Remove cut-off before resuming roofing.
- F. At intersections with vertical surfaces:
 - 1. Extend membrane over cant strips and up a minimum of 8 inches onto vertical surfaces.
 - 2. Apply flexible flashing over membrane.
- G. Around roof penetrations, mop in and seal flanges and flashings with flexible flashing.
- H. Coordinate installation of roof drains and sumps and related flashings.

3.05 CLEANING

- A. See Section 017000 - Execution and Closeout Requirements for additional requirements.
- B. Remove bituminous markings from finished surfaces.
- C. In areas where finished surfaces are soiled by bitumen or other source of soiling caused by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.
- D. Repair or replace defaced or damaged finishes caused by work of this section.

3.06 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 075201