SECTION 072700

SELF-ADHERING ROOF AIR-BARRIER MEMBRANE

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes self-adhered, permeable roof air-barrier membrane for use in roofing system at locations required by the contract documents.

1.2 REFERENCE STANDARDS

A. The American Association of Textile Chemists and Colorists (AATCC) - Test Method for Water Resistance: Hydrostatic Pressure Test.

B. American Society of Civil Engineers: ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

C. ASTM International (ASTM):

1. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension
2. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
3. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
4. ASTM D1876 - Standard Test Method for Peel Resistance of Adhesives (T-Peel Test).
5. ASTM D1970/ section 7.9 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice-Dam Protection.
6. ASTM D2240 - Standard Test Method for Rubber Property - Durometer Hardness
7. ASTM D2523 - Standard Practice for Testing Load-Strain Properties of Roofing Membranes.
8. ASTM D4073 - Standard Test Method for Tensile-Tear Strength of Bituminous Roofing Membranes.
9. ASTM D5034 - Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test).
10. ASTM D5147 - Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Material.
11. ASTM D5601 - Standard Test Method for Tearing Resistance of Roofing and Waterproofing Materials and Membranes.
12. ASTM D5602 - Standard Test Method for Static Puncture Resistance of Roofing Membrane Specimens.

13. ASTM D7349 - Standard Test Method for Determining the Capability of Roofing and Waterproofing Materials to Seal around Fastener.
14. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
15. ASTM E96 - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials.
16. ASTM E154 - Standard Practice for Testing Load-Strain Properties of Roofing Membranes.
17. ASTM E283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
18. ASTM E398 - Standard Test Method for Water Vapor Transmission Rate of Sheet Materials Using Dynamic Relative Humidity Measurement.
19. ASTM F1249 - Standard Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor
20. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials.

1.3 PREINSTALLATION CONFERENCE

A. Preinstallation Meeting: Schedule and conduct preinstallation meeting at Project site not less than two weeks before beginning installation.

1. Meeting attendees to include Contractor; Architect and their envelope consultant (if one); Installer; and representatives from all subcontractors and trades whose work must integrate with self-adhered roof air-barrier membrane materials.
2. Review approved submittals and requirements for Project mockups.
3. Review installation requirements, substrate requirements, special details, bond testing, and protection of installed air barrier membranes.

1.4 COORDINATION

A. Coordinate installation of self-adhered roof air-barrier membrane assemblies with other roofing work, including flashings and trim, and other adjoining work to provide a watertight and secure installation.

1.5 SUBMITTALS

A. Product Data: For self-adhered, permeable roof air-barrier membrane.

1. Environmental Product Declaration (EPD) third-party verified. ISO 21930 and ISO 14025 North American compliant.

B. Shop Drawings: For air-barrier.

1. Show locations and extent of roof air-barrier membrane. Include project-specific details of treatment of substrate joints, flashing conditions, penetrations, corner conditions, terminations, and tie-ins with adjacent construction.

2. Include details of interfaces with other materials that are part of the building's air-barrier assemblies.

C. Manufacturer's Installation Instructions: Include manufacturer's instructions for evaluating and preparing substrates; and installation instructions for roof air-barrier membrane and accessories.

D. Manufacturers' Sample Warranty

E. Field quality-control reports.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the Project site in the manufacturer's original, undamaged packaging, with intact labels indicating the contents.

B. Store materials on end in accordance with the manufacturer's written instructions. Protect materials from direct sunlight and weather until ready for use.

1.7 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions are within ranges recommended in writing by the manufacturer.

1. Protect substrates from conditions that affect the installation or performance of roof air-barrier membrane materials.
2. Do not install roof air-barrier membrane materials to damp or wet substrates or during snow, rain, fog, or mist.
3. The membrane may be exposed up to 180 days.

1.8 PERFORMANCE REQUIREMENTS

** NOTE TO SPECIFIER ** Delete design requirements from the list below that are not required by the text of the edited section.

A. Exterior Fire Test Exposure: Roof system shall achieve a FM or UL Class rating for roof slopes indicated as follows:

1. FM Approvals Class A Rating.
2. Underwriters Laboratory Class A Rating.

B. Wind Uplift Rating: Roof system shall have been tested in compliance with the following codes and test requirements:

1. Florida FBC (including use in Miami-Dade and Broward Counties for HVHZ designated assemblies):

a. Membrane Systems FL 46829

2. FM Approvals:

a. RoofNav Website: RoofNav Assembly #:

1) Note to Specifier: Reference Florida Building Code File #: or RoofNav database to identify wind uplift ratings

C. Test Method for Surface Burning Characteristics: The roof system shall have been tested in compliance with the following codes and test requirements:

1. Flame Spread Index: 5 or less
2. Smoke Developed Index: 45 or less

1.9 WARRANTY

A. Provide the manufacturer's standard warranty in which the manufacturer agrees to replace the roof air barrier membrane that exhibits failures in material within the specified warranty period.

1. Warranty Period: Twenty (20) years from the date of Substantial Completion.

PART 2 – PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain self-adhered, roof air-barrier membrane from a single manufacturer. Obtain accessory materials from the manufacturer of the roof air-barrier membrane or from manufacturers acceptable in writing to the roof air-barrier membrane manufacturer.

2.2 SELF-ADHERED ROOF AIR-BARRIER MEMBRANE

A. Roof air-barrier membrane: Permeable, self-adhered, roof air-barrier membrane fabricated from spun-bonded polyester fabric with proprietary coatings on both surfaces and pressure-sensitive adhesive with release film on the back side.

1. Basis-of-Design Product: Subject to compliance with requirements, provide the following:

a. VaproShield LLC; SlopeShield Plus SA.

2. Physical Properties:

a. Thickness: 20 mils (0.51 mm) nominal.
b. Color: Black.
c. UV Exposure Resistance: Can be exposed to sunlight for 180 days.

3. Performance Properties:

ASTM D1970: Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
ASTM D5147: Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Material

a. Air Permeance: Maximum 0.00437 l/(s x m²) @ 75 Pa (0.00086 cfm/ft² @ 1.57 psf); ASTM E2178.
b. Water Vapor Transmission: Maximum 30 perms (1716 ng/Pa x s x m²), 0-50% RH, 23°C (73.4°F); ASTM E396 water method.
c. Water Vapor Transmission: Maximum 30 perms (1716 ng/Pa x s x m²), 0-50% RH, 23°C (73.4°F); ASTM E398.
d. Water Vapor Transmission: Maximum 22 perms (526 ng/Pa x s x m²), 50-100% RH, 23°C (73.4°F); ASTM F1249.
e. Elongation:
** NOTE TO SPECIFIER ** - Select the appropriate test method and remove all others not applicable.

1) MD 36%, XMD 40%; ASTM D2523.
2) MD 51%, XMD 51%; ASTM D5147.

f. Tensile Strength:
** NOTE TO SPECIFIER ** - Select the appropriate test method and remove all others not applicable.

1) MD: 26.3N/mm (150 lbf/in.) XMD: 20.8 N/mm (119 lbf/in.); ASTM D5034.
2) MD - 45, XMD - 33; ASTM D5147.

g. Tear Strength:
** NOTE TO SPECIFIER ** - Select the appropriate test method and remove all others not applicable.

1) MD – 94 lbf, XMD – 65 lbf; ASTM D4073.
2) MD - 81, XMD - 64; ASTM D5147.

h. Nail Sealability: Pass; ASTM D1970 Section 7.9 D7349.

2.3 ACCESSORY MATERIALS

A. Transition and Flashing Membrane: Self-adhered transition and flashing membrane.

1. Basis-of-Design Product: Subject to compliance with the manufacturer's written requirements, provide the following:

a. VaproShield LLC; SlopeShield Plus SA.
b. VaproShield LLC; SlopeFlashing.

B. Liquid Flashing: Liquid-applied flashing.

1. Basis-of-Design Product: Subject to compliance with the manufacturer's written requirements, provide the following:

a. VaproShield LLC; VaproLiqui-Flash.

C. Liquid Flashing for Aberrant Penetrations: Liquid-applied, modified silicone sealant.

1. Basis-of-Design Product: Subject to compliance with the manufacturer's written requirements, provide the following:

a. VaproShield LLC; VaproBond.

D. Penetration Sealant: Liquid-applied sealant for penetrations.

1. Basis-of-Design Product: Subject to compliance with the manufacturer's written requirements, provide one of the following:

a. VaproShield LLC; VaproBond.
b. VaproShield LLC; VaproLiqui-Flash.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates and installation conditions, with the installer present, for compliance with the manufacturer's requirements and other conditions that could affect installation, tie in other air barrier systems, and/or performance of the roof air-barrier membrane.

1. Verify that substrates are clean, sound, and free of oil, grease, dirt, or other contaminants or materials that could be detrimental to adhesion.
2. Verify that substrates are visibly dry and free of moisture.
3. Verify that fasteners used to secure roof sheathing or other substrate materials are not projecting from the surface of substrates.
4. Verify that penetrating items are securely and firmly installed.
5. Verify adhesion of the self-adhered, roof air barrier membrane to the substrate is adequate and suitable for performance requirements.

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

3.2 PREPARATION

A. Treat and seal cracks and joints in the substrate in accordance with the manufacturer's written instructions and details.

B. At changes of plane of substrates, apply transition roof membranes, sealants, or other accessory materials in accordance with the manufacturer's written instructions and details.

C. Bridge isolation joints and discontinuous deck to wall or deck to deck joints with accessory materials that accommodate movement in accordance with the manufacturer's written instructions and details.

3.3 INSTALLATION OF ROOF AIR-BARRIER MEMBRANE

A. Install materials in accordance with the membrane manufacturer's written instructions and details to properly seal with adjacent construction and ensure continuity of air and water barrier.

B. Prepare, treat, and seal inside and outside corners, valleys, terminations, and penetrations in accordance with the manufacturer's written instructions and details.

C. Install self-adhered, roof air-barrier membrane.

1. Install the membrane flat, in full contact with substrates, and free from wrinkles or fish-mouths.
2. Lap sides and ends as recommended in writing by the manufacturer, but not less than 3 inches (76 mm) for side and end laps, and cover laps with the manufacturer's detailing tape.
3. Where joints occur at corner locations, lap inside and outside corners as recommended in writing by the manufacturer, but not less than 6 inches (152 mm).
4. Stagger end laps between courses at least 36 inches (914 mm).

D. Immediately after installation of the roof air-barrier membrane, fully roll the installed roof air-barrier membrane with min. 70 lbs weighted roller consistent with the manufacturer’s installation instructions to ensure positive contact and adhesion with the substrate.

E. Transition Conditions:

1. Treat or install tie-ins of roof air-barrier membrane to structural elements, parapets, curbs, roofing systems, and adjoining materials in accordance with the membrane manufacturer's written instructions and details.
2. Install transitions and flashings
3. Immediately after installation, roll self-adhering transitions and flashings in accordance with the manufacturer's written instructions to ensure positive contact and adhesion with the substrate.

F. Openings: Install flashing and transition membranes at roof curbs, roof hatches, skylights, and other penetrating items and openings in accordance with the manufacturer's written instructions and details. Install flashing membranes in shingled fashion and firmly roll membranes after installation to ensure proper adhesion.

G. Horizontal Applications: Installation of roof air-barrier membrane starting with the lowest point of the roof. Install with extra material sufficient for tie-ins and proper interfaces with adjoining materials. Install subsequent courses in shingle fashion to ensure proper drainage of water from the membrane surface.

3.4 PROTECTION

A. Protect installed roof air-barrier membranes in accordance with the manufacturer's written instructions during subsequent construction activities to protect membranes from damage due to construction activities, high wind conditions, and extended exposure to inclement weather. See the manufacturer's written instructions.

1. Inspect and repair all damaged areas of the roof air barrier membrane prior to installation of the finished roofing system.

END OF SECTION 072700