

## SECTION 07 27 13

### SELF-ADHERED NON PERMEABLE AIR BARRIER MEMBRANE

#### PART 1 - GENERAL

##### 1.01 GENERAL REQUIREMENTS

- A. General Conditions, Supplementary Conditions, Instructions to Bidders and Division One General Requirements shall be read in conjunction with and govern this section.
- B. This Specification shall be read as a whole by all parties concerned. Each Section may contain more or less than the complete Work of any trade. The Contractor is solely responsible to make clear to the Subcontractors the extent of their Work.

##### 1.02 DESCRIPTION

- A. Supply labor, materials and equipment to complete the Work as shown on the Drawings and as specified herein to bridge and seal the following air leakage pathways and gaps:
  - 1. Connections of the walls to the roof air barrier.
  - 2. Connections of the walls to the foundations.
  - 3. Seismic and expansion joints.
  - 4. Openings and penetrations of window and door frames, store front, curtain wall.
  - 5. Piping, conduit, duct and similar penetrations.
  - 6. Masonry ties, screws, bolts and similar penetrations.
  - 7. All other air leakage pathways in the building envelope
- B. Materials and installation methods of the primary air/vapor barrier membrane system and accessories.
- C. Materials and installation methods of through-wall flashing membranes.

##### 1.03 REFERENCES

- A. The following standards are applicable to this section:
  - 1. ASTM E2357: Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.
  - 2. ASTM E2178: Standard Test Method for Air Permeance of Building Materials.
  - 3. ASTM E283: Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
  - 4. E1677 Specification for Air Retarder (AR) Material or System for Low-Rise Framed Building Walls
  - 5. ASTM E330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
  - 6. ASTM E331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
  - 7. ASTM E96: Water Vapor Transmission of Materials.

8. CGSB 37-GP-56M: Membrane, Modified, Bituminous, Prefabricated, and Reinforced.

#### 1.04 SUBMITTALS

- A. Submit documentation from an approved independent testing laboratory certifying the air leakage and vapor permeance rates of the air barrier membranes, including primary membrane and transition sheets, exceed the requirements of the Massachusetts Energy Code and in accordance with ASTM E2178.
  1. Test report submittals shall include test results on porous substrate and include sustained wind load and gust load air leakage results.
- B. Submit copies of manufacturers' current ISO certification.
- C. Submit manufacturers' current product data sheets for the air barrier membrane system

#### 1.05 QUALITY ASSURANCE

- A. Submit document stating the applicator of the primary air/vapor barrier membranes specified in this section is qualified by the manufacturer as suitable for the execution of the Work.
- B. Perform Work in accordance with manufacturer's written instructions and this specification.
- C. Maintain one copy of manufacturer's written instructions on site.
- D. Allow access to Work site by the air barrier membrane manufacturer's representative.
- E. Components used shall be sourced from one manufacturer, including sheet membrane, air barrier sealants, primers, mastics, and adhesives.
- F. Single-Source Responsibility:
  1. Obtain air barrier materials from a single manufacturer regularly engaged in manufacturing the product.
  2. Provide products which comply with all state and local regulations controlling use of volatile organic compounds (VOCs).

#### 1.06 DELIVERY, STORAGE AND HANDLING

- A. Refer to current Product MSDS for proper storage and handling.
- B. Deliver materials to the job site in undamaged and original packaging indicating the name of the manufacturer and product.
- C. Store role materials on end in original packaging. Protect rolls from direct sunlight until ready for use.
- D. Store air barrier membranes, adhesives and primers at temperatures of 40 degrees F and rising.

- E. Keep solvent away from open flame or excessive heat.
- F. Wasted Management and Disposal
  - 1. Separate and recycle waste materials.

#### 1.10 COORDINATION

- A. Ensure continuity of the air seal throughout the scope of this section.

#### 1.11 ALTERNATES

- A. Submit requests for alternates a minimum of ten (10) working days prior to bid date.
- B. Alternate submission to include:
  - 1. Evidence that alternate materials meet or exceed performance characteristics of Product requirements as well as documentation from an approved independent testing laboratory certifying the air leakage rates and vapor permeance rates of the air barrier membranes, including primary membrane and transition sheets, exceed the requirements of the Massachusetts Energy Code and in accordance with ASTM E2178.
  - 2. Copies of the manufacturer's current ISO certification
  - 3. Ten (10) references clearly indicating the membrane manufacturer has successfully completed projects of similar scope and nature for a minimum of ten (10) years
  - 4. Manufacturer's complete set of details for air barrier membrane system showing a continuous plane of air tightness throughout the building envelope.
- C. Acceptable alternates will be confirmed by addendum. Substitute materials not approved in writing prior to bid date shall not be permitted for use on this project.

#### 1.12 WARRANTY

- A. Provide manufacturer's standard 10-year material warranty.

### PART 2 – PRODUCTS

#### 2.01 MATERIALS

- A. Air/vapor barrier membrane components and accessories must be obtained as a single-source from the membrane manufacturer to ensure total system compatibility and integrity.
  - 1. Acceptable Manufacturer: Henry Company
  - 2. Approved equal / substitute.

#### 2.02 MEMBRANES (Basis-of-Design)

- A. Primary sheet air/vapor barrier membrane shall be Blueskin® SA manufactured by Henry; an SBS modified bitumen, self-adhering sheet membrane complete with a blue engineered thermoplastic film. For application temperatures down to 10 degrees F use Blueskin® SA LT. Membrane shall have the following physical properties:
  - 1. ASTM E2357: Standard Test Method for Determining Air Leakage of Air Barrier Assemblies,

2. Air leakage: <0.0001 CFM/ft<sup>2</sup> @1.6 lbs/ft<sup>2</sup> to ASTM E2178 and ASTM E283 and have no increased air leakage when subjected to a sustained wind load of 10.5 lbs/ft<sup>2</sup> for 1 hour and gust wind load pressure of 62.8 lbs/ft<sup>2</sup> for 10 seconds when tested at 1.6 lbs/ft<sup>2</sup> to ASTM E331,
  3. Vapor permeance: 0.03 perms to ASTM E96 (Desiccant Method),
  4. Vapor permeance: 0.08 perms to ASTM E96 (Wet Cup Method),
  5. Membrane Thickness: 0.0394 inches (40 mils),
  6. Low temperature flexibility: -22 degrees F to CGSB 37-GP-56M,
  7. Elongation: 200% to ASTM D412-modified,
  8. Meets CAN/CGSB-51-33 Type I Water Vapor Permeance requirements
- B. Alternate self-adhering membrane for all window and window sill flashings, door openings, inside and outside corners and other transitions shall be HE200 AM Metal Clad manufactured by Henry; a SBS modified bitumen, self-adhering sheet membrane complete with surface layer of metallic aluminum film that many sealants adhere well to. Membrane shall have the following physical:
1. Peel Adhesion to Primed Steel 15.0 to ASTM D 1000,
  2. Vapor Permeance: < 0.014 perms to ASTM E 96,
  3. Membrane Thickness: 0.0443 inches (45 mils),
  4. Low temperature flexibility: -15 degrees F to ASTM D146 min,
  5. Elongation: 40% to ASTM D412-modified min
- C. Liquid-applied flashing alternate to self-adhered flashing membranes for all window, door, MEP penetrations, inside/outside and dissimilar material connections shall be Air-Bloc LF manufactured by Henry; a moisture-curing single component STPe liquid-applied flashing compatible with a variety of substrates and all Henry liquid and self-adhered air barrier membranes. Liquid-flashing shall have the following physical properties:
1. Elongation: minimum 250% minimum to ASTM D412,
  2. Tensile Strength: 132% psi minimum to ASTM D412,
  3. Nail Sealability: Pass to AAMA 711,
  4. VOC Content: 25 g/L max,
  5. Solids Content by Volume: 95%,
  6. Moisture Absorption: .1% to ASTM D570
- D. Through-wall flashing membrane (Self-Adhering) shall be Blueskin® TWF manufactured by Henry; an SBS modified bitumen, self-adhering sheet membrane complete with a yellow engineered thermoplastic film. Membrane shall have the following physical properties:
1. Membrane Thickness: 0.0394 inches (40 mils),
  2. Film Thickness: 4.0 mils,
  3. Flow (ASTM D5147): Pass @ 212 degrees F,
  4. Puncture Resistance: 134 lbf to ASTM E 154,
  5. Tensile Strength (film): 5000 psi minimum ASTM D 882,
  6. Tear Resistance: 45lbs.-MD, 17lbs.-CD to ASTM D1004,
  7. Low temperature flexibility: -22 degrees F to CGSB 37-GP-56M

## 2.05 PRIMER

- A. Primer for self-adhering membranes at temperatures above 25 degrees F shall be Aquatac™ Primer manufactured by Henry; a polymer emulsion based adhesive, quick setting. Primer shall have the following physical properties:
1. Color: Aqua,
  2. Weight: 8.7 lbs/gal,
  3. Solids by weight: 53%,
  4. Water based, no solvent odors,
  5. Drying time (initial set): 30 minutes at 50% RH and 70 degrees F
- B. Adhesive for self-adhering membranes at all temperatures shall be Blueskin® Adhesive manufactured by Henry, a synthetic rubber based adhesive, quick setting, having the following physical properties:
1. Color: Blue,
  2. Weight: 6 lbs/gal,
  3. Solids by weight: 35%,
  4. Drying time (initial set): 30 minutes
- C. Adhesive with low VOC content for self-adhering membranes at all temperatures shall be Blueskin® LVC Adhesive manufactured by Henry, a synthetic rubber based adhesive, quick setting, having the following physical properties:
1. Color: Blue,
  2. VOC: <240 g/L,
  3. Solids by weight: 40%,
  4. Drying time (initial set): 30 minutes

## 2.06 PENETRATION AND TERMINATION SEALANT

- A. Termination Sealant shall be HE925 BES Sealant manufactured by Henry; a moisture cure, medium modulus polymer modified sealing compound having the following physical properties:
1. Compatible with sheet air barrier, roofing and waterproofing membranes and substrate,
  2. Complies with Fed. Spec. TT-S-00230C, Type II, Class A,
  3. Complies with ASTM C 920, Type S, Grade NS, Class 25,
  4. Elongation: 450 – 550%,
  5. Remains flexible with aging,
  6. Seals construction joints up to 1 inch wide.
  - 7.

## 2.05 INSULATION ADHESIVE

- A. Insulation adhesive shall be Air-Bloc 21 Insulation Adhesive manufactured by Henry; a synthetic, trowel applied, rubber-based adhesive, having the following physical properties:
1. Compatibility: With air barrier membrane, substrate and insulation,
  2. Air leakage: 0.0026 CFM/ft<sup>2</sup> @ 2.1 lbs/ft<sup>2</sup> to ASTM E283,
  3. Water vapor permeance: 0.03 perms to ASTM E96,
  4. Long term flexibility: CGSB 71-GP-24M

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify that surfaces and conditions are ready to accept the Work of this section. Notify [engineer] [architect] [consultant] in writing of any discrepancies. Commencement of the work or any parts thereof shall mean acceptance of the prepared substrates.
- B. All surfaces must be sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants. Fill spalled areas in substrate to provide an even plane. Strike masonry joints flush.
- C. Where curing compounds are used they must be clear resin based without oil, wax or pigments.
- D. Do not proceed with application of air barrier membrane when rain is expected within 24 hours.
- F. Condition materials to room temperature prior to application to facilitate handling.

### 3.02 SURFACE PREPARATION

- A. Surfaces must be sound, clean and free of oil, grease, dirt, excess mortar or other contaminants. Fill spalled areas in substrate to provide an even plane.
- B. New concrete should be cured for a minimum of 14 days and must be dry before air/vapor barrier membranes are applied.
- C. Ensure all preparatory Work is complete prior to applying primary air/vapor barrier membrane.
- D. Mechanical fasteners used to secure sheathing boards or penetrate sheathing boards shall be set flush with sheathing and fastened into solid backing.
- E. Apply primer at rate recommended by manufacturer to all areas to receive self-adhering sheet air/vapor barrier membrane and or through-wall flashing membrane as indicated on drawings by roller or spray and allow minimum 30 minute open time. Primed surfaces not covered by self-adhering membrane or self-adhering through-wall flashing membrane during the same working day must be re-primed.

### 3.03 INSTALLTION OF AIR BARRIER SYSTEM

- A. **INSIDE AND OUTSIDE CORNERS**
  - 1. Seal inside and outside corners of sheathing boards with a strip of self-adhering air/vapor barrier membrane extending a minimum of 3 inches on either side of the corner detail.
    - a. Prime surfaces as per manufacturers' instructions and allow to dry.
    - b. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inches overlap at all end and side laps of membrane.
    - c. Roll all laps and membrane with a counter top roller to ensure seal.

B. TRANSITION AREAS

1. Tie-in to structural beams, columns, floor slabs and intermittent floors, parapet curbs, foundation walls, roofing systems and at the interface of dissimilar materials as indicated in drawings with self-adhering air/vapor barrier membrane.
  - a. Prime surfaces as per manufacturers' instructions and allow to dry.
  - b. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Provide minimum 3 inch lap to all substrates.
  - c. Ensure minimum 2 inch overlap at all end and side laps of membrane.
  - d. Roll all laps and membrane with a counter top roller to ensure seal.

C. WINDOWS AND ROUGH OPENINGS

1. Wrap rough openings with self-adhered air/vapor barrier membrane as detailed.
  - a. Prime surfaces as per manufacturers' instructions and allow to dry.
  - b. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inch overlap at all end and side laps of membrane.
  - c. Roll all laps and membrane with a counter top roller to ensure seal.

D. LIQUID-APPLIED FLASHING OPTION

1. Use for door and window openings, MEP penetrations and dissimilar material connections.
  - a. Apply liquid flashing to all material joints and tool smooth.
  - b. Apply liquid flashing in a serpentine fashion to the entire window opening and tool smooth to a minimum 25 mils wet film thickness. Spread material to cover the inside of rough openings and extend 4 inches onto adjacent surfaces. Create a slight positive slope towards the exterior of sill conditions by applying more material to the interior side of sills to create a taper towards the exterior while maintaining a minimum 25 mils wet film thickness.
  - c. Apply liquid flashing to MEP penetrations with a maximum of ½ inch annular space. Extend liquid flashing a minimum 4 inches onto penetrating item and surrounding surfaces to a minimum of 25 mils dry film thickness.
  - d. Apply liquid flashing to inside/outside corners and dissimilar material connections. Extend a minimum 4 inches onto adjacent surfaces a minimum of 4 inches and a minimum wet film thickness of 25 mils dry film thickness.
  - e. Apply fluid-applied membrane air barrier onto liquid flashing a minimum of 2 inches.

E. THROUGH-WALL FLASHING MEMBRANE

1. Apply through-wall flashing membrane along the base of masonry veneer walls and over shelf angles as detailed.
  - a. Prime surfaces and allow to dry, press membrane firmly into place, overlap minimum 2 inches at all end and side laps. Promptly roll all laps and membrane to ensure the seal.
  - b. Applications shall form a continuous flashing membrane and shall extend up a minimum of 8 inches up the back-up wall.

- c. Seal the top edge of the membrane where it meets the substrate using termination sealant. Trowel-apply a feathered edge to seal termination to shed water.
- d. Install through-wall flashing membrane and extend 1/2 inch from outside edge of veneer. Provide end dam flashing as detailed.

F. PRIMARY AIR BARRIER

- 1. Apply self-adhering air/vapor barrier membrane complete and continuous to prepared and primed substrate in an overlapping shingle fashion and in accordance with manufacturer's recommendations and written instructions. Stagger all vertical joints.
  - a. Prime surfaces as per manufacturers' instructions and allow to dry.
  - b. Align and position self-adhering air/vapor barrier membrane, remove protective film and press firmly into place. Ensure minimum 2 inch overlap at all end and side laps of membrane.
  - c. Roll all laps and membrane with a counter top roller to ensure seal.
  - d. At the end of each days work seal the top edge of the membrane where it meets the substrate with termination sealant. Trowel apply a feathered edge to seal termination and shed water.

3.04 FIELD QUALITY CONTROL

- A. Make notification when sections of Work are complete to allow review prior to covering air/vapor barrier system.

3.05 PROTECTION

- A. Damp substrates must not be inhibited from drying out. Do not expose the backside of the substrate to moisture or rain.
- B. Cap and protect exposed back-up walls against wet weather conditions during and after application of membrane.
- C. Air/vapor barrier membrane is not designed for permanent exposure. Good practice calls for covering as soon as possible.

END OF SECTION