

SECTION 072726

VAPOR IMPERMEABLE AIR BARRIER LIQUID MEMBRANE

(AT ADLER CENTER & G-WING)

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.

1.2 SECTION INCLUDES

- A. Work of this Section includes all labor, materials, equipment, and services necessary to complete the vapor impermeable air barrier liquid membrane as shown on the drawings and/or specified herein, including, but not necessarily limited to, the following:

- 1. Vapor retarder/air barrier applied at exterior.
- 2. Materials and installation to bridge and seal the following air leakage pathways and gaps:
 - a. Connections of the walls to the roof.
 - b. Connections of the walls to the foundations.
 - c. Seismic and expansion joints.
 - d. Openings and penetrations of window frames, storefront, curtain wall.
 - e. Door frames.
 - f. Piping, conduit, duct and similar penetrations.
 - g. Masonry ties, screws, bolts and similar penetrations.
 - h. All other air leakage pathways in the building envelope.

1.3 RELATED SECTIONS

- A. Unit masonry - Section 042000.
- B. Cold formed metal framing - Section 054000.
- C. Sheet metal work – Section 076200.

1.4 SUBMITTALS

- A. Quality Assurance Program: Submit evidence of current accreditation and certification under the Air Barrier Association of America's (ABAA) Quality Assurance Program. Submit accreditation number of manufacturer and certification number of installers.
- B. Product Data: Submit manufacturer's product data, installation instructions, and manufacturer's printed instructions for evaluating, preparing, and treating substrate, temperature and other limitations of installation conditions, technical data, and tested physical and performance properties.

1. Submit letter from primary materials manufacturer indicating approval of products not manufactured by primary manufacturer.
 2. Include statement that materials are compatible with adjacent materials proposed for use.
 3. Submit reports indicating that field peel-adhesion test on all materials to which sealants are adhered have been performed and the changes made, if required, to other approved materials, in order to achieve successful adhesion.
- C. Samples: Submit clearly labeled samples, 3 by 4 inch (75 mm by 100 mm) minimum size of each material specified.
- D. Shop Drawings of Mock-Up: Submit shop drawings of proposed mock-ups showing plans, elevations, isometric details, installation sequence, and connections to the test apparatus.
- ~~E. Field Test Results of Mock-Up: Submit test results of air leakage test and water leakage test of mock up in accordance with specified standards, including retesting if initial results are not satisfactory.~~
- F. Shop Drawings: Submit shop drawings showing locations and extent of air and vapor barrier assemblies and details of all typical conditions, intersections with other envelope assemblies and materials, membrane counter-flashings, and details showing how gaps in the construction will be bridged, how inside and outside corners are negotiated, how materials that cover the air and vapor barrier are secured with air-tight condition maintained, and how miscellaneous penetrations such as conduits, pipes, steel, electric boxes and similar items are sealed.
1. Include VOC content of each material, and applicable legal limit in the jurisdiction of the project.
 2. Include statement that materials are compatible with adjacent materials proposed for use.
 3. Include recommended values for field adhesion test on each substrate.
- G. Compatibility: Submit letter from manufacturer stating that materials proposed for use are permanently chemically compatible and adhesively compatible with adjacent materials proposed for use. Submit letter from manufacturer stating that cleaning materials used during installation are chemically compatible with each of the adjacent materials proposed for use. Test results of assembly in accordance with ASTM E 2357.

1.5 PERFORMANCE REQUIREMENTS

- A. Material Performance: Provide materials which have an air permeance not to exceed 0.004 cubic feet per minute per square foot under a pressure differential of 0.3 in. water (1.57 psf) (0.02 L/m² @ 75 Pa.) when tested according to ASTM E 2178.
- B. Assembly Performance: Provide a continuous air and vapor barrier assembly that has an air leakage not to exceed 0.040 cubic feet per square foot per minute under a pressure differential of 0.3 in. water (1.57 psf) (0.20 L/ m² @ 75 Pa.) when tested in accordance with ASTM E 2357, and a vapor permeance of 1 perm (57 mg) or less when

tested in accordance with ASTM E 96 using the desiccant method. Assembly shall perform as a liquid drainage plane flashed to discharge condensation or water penetration to the exterior. Assembly shall accommodate movements of building materials by providing expansion and control joints as required, with accessory air and vapor seal materials at such locations, changes in substrate and perimeter conditions.

- C. Assembly shall be capable of withstanding combined positive and negative design wind, fan and stack pressures on the envelope without damage or displacement, and shall transfer the load to the structure.
- D. Assembly shall not displace adjacent materials under full load.
- E. Assembly shall be joined in an airtight and flexible manner to the air barrier material of adjacent assemblies, allowing for the relative movement of assemblies due to thermal and moisture variations and creep, and anticipated seismic movement.
- F. Connections to Adjacent Materials: Provide connections to prevent air leakage and vapor migration at the following locations:
 - 1. Foundation and walls, including penetrations, ties and anchors.
 - 2. Walls, windows, curtain walls, storefronts, louvers or doors.
 - 3. Different wall assemblies, and fixed openings within those assemblies.
 - 4. Wall and roof connections and penetrations.
 - 5. Floors over unconditioned space.
 - 6. Walls, floor and roof across construction, control and expansion joints.
 - 7. Walls, floors and roof to utility, pipe and duct penetrations.
 - 8. Seismic and expansion joints.
 - 9. All other leakage pathways in the building envelope.

1.6 QUALITY ASSURANCE

- A. Membrane herein shall be compatible and part of system in conjunction with the thru wall flashing system specified in Section 042000.
- B. Air Barrier Installer Qualifications: Currently accredited by the Air Barrier Association of America (ABAA) whose applicators are certified in accordance with the ABAA Quality Assurance Program.
- C. Manufacturer: Obtain primary materials from a single manufacturer regularly engaged in manufacturing air and vapor barrier membranes. Obtain secondary materials from a source acceptable to the primary materials manufacturer.
- D. Accredited Laboratory Testing for Materials: Laboratory accredited by International Accreditation Service Inc. (IAS), American Association for Laboratory Accreditation (A2LA), or the Standards Council of Canada (SCC).

- E. VOC Regulations: Provide products which comply with applicable regulations controlling the use of volatile organic compounds for the specific authority having jurisdiction.
- F. Preconstruction Meeting: Convene a minimum of two weeks prior to commencing Work of this Section. Agenda shall include, at a minimum, construction and testing of mock-up, sequence of construction, coordination with substrate preparation, materials approved for use, compatibility of materials, coordination with installation of adjacent and covering materials, and details of construction. Attendance is required by representatives of related trades including covering materials, substrate materials and adjacent materials.
- ~~G. Field Quality Assurance: Implement the ABAA Quality Assurance Program requirements. Cooperate with ABAA inspectors and independent testing and inspection agencies engaged by the Owner. Do not cover air and vapor barrier until it has been inspected, tested and accepted.~~
- H. Mock-Ups: Build mock-up representative of primary exterior wall assemblies and glazing assemblies including backup wall and typical penetrations as acceptable to the Architect. Mock-up shall be **incorporated into Adler Center exterior visual corner mockup** ~~approximately 8 feet long by 8 feet high~~ and include the materials proposed for use in the exterior wall assembly **for review by owner**. ~~Mock-up shall be suitable for testing as specified in the following paragraph.~~
- ~~I. Mock Up Tests for Air and Water Infiltration: Test mock up for air and water infiltration in accordance with ASTM E 1186 (air leakage location) or ASTM E 783 (air leakage quantification), and ASTM E 1105 (water penetration). Use smoke tracer to locate sources of air leakage. If deficiencies are found, repair or modify mock-up and retest until satisfactory results are obtained. Deficiencies include air leakage beyond values specified, uncontrolled water leakage, unsatisfactory workmanship.~~
 - ~~1. Perform the air leakage tests and water penetration test of mock up prior to installation of cladding and trim but after installation of all fasteners for cladding and trim and after installation of other penetrating elements. For fasteners which would normally only be installed with cladding, install representative fasteners without cladding; intent is to perform testing with all types of penetrations in place.~~
- J. Mock-Up Tests for Adhesion: Test mock-up of fluid-applied and sheet applied materials for adhesion in accordance with ASTM D 4541 using a Type 1 pull tester except that the disk used shall be 100mm in diameter and the membrane shall be cut through to separate the material attached to the disk from the surrounding material. Perform test after curing period recommended by the manufacturer. Record mode of failure and area which failed in accordance with ASTM D 4541. When the air barrier material manufacturer has established a minimum adhesion level for the product on the particular substrate, the inspection report shall indicate whether this requirement has been met. Where the manufacturer has not declared a minimum adhesion value for their product/substrate combination, then the inspector shall simply record the value.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original packages with seals unbroken, labeled with manufacturer's name, product, date of manufacture, and directions for storage.
- B. Store materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by air/vapor barrier manufacturer. Protect stored materials from direct sunlight.
- C. Avoid spillage. Immediately notify Owner, Architect if spillage occurs and start clean up procedures.
- D. Clean spills and leave area as it was prior to spill.

1.8 WARRANTY

- A. Material Warranty: Provide manufacturer's standard product warranty, for a minimum 3 years from date of Substantial Completion.
- B. Installation Warranty: Provide air barrier subcontractor's 2 year warranty from date of Substantial Completion, including all components of the air and vapor barrier assembly, against failures including loss of air tight seal, loss of watertight seal, loss of adhesion, loss of cohesion, failure to cure properly.

PART 2 - PRODUCTS

2.1 VAPOR BARRIER

- A. Provide product listed below manufactured by Henry or Carlisle Fire Resist Barritech or Cat 5 by Prosoco or approved equal.
 - 1. Fluid-Applied Air and Vapor Barrier, Low VOC: "Air Bloc 21FR," 120 mils thick (wet).
 - 2. Transition Membrane: "Blueskin SA" and "Blueskin SA LT" for low-temperature applications.
 - 3. Water-Based Primer for Transition Membrane: "Aquatac Primer."
 - 4. Solvent-Based Primer for Transition Membrane: "Blueskin Adhesive."
 - 5. Solvent-Based Aerosol Primer for Transition Membrane: "Blueskin Spray Prep."
 - 6. Masonry Through-Wall Flashing: Stainless steel complying with Section 076200.
 - 7. Mastics, Adhesives and Tapes: Henry "570-05 Polybitume."
 - 8. Website: www.henry.com

2.2 AUXILIARY MATERIALS

- A. Membrane at Transitions in Substrate and Connections to Adjacent Elements: Neoprene, ASTM D 2000 Designation 2BC415 to 3BC620, 50 to 65 mils (1.3 mm to

1.6 mm) thick with non-corrosive termination bars and fasteners. Adhesive and lap sealant as recommended by manufacturer.

- B. Sealant at Transitions in Substrate and Connections to Adjacent Elements: Low-modulus pre-cured silicone extrusion and sealant for bonding extrusions to substrates; Tremco Silicone Extruded Sheet by Tremco, Proglaze ETA by Tremco, or Bondaflex Silbridge 300 by May National Associates.
- C. Transition Membrane Between Air and Vapor Barrier Membrane and Roofing and Other Adjacent Materials: Comply with both air and vapor barrier manufacturer's recommendations and roofing material manufacturer's recommendations.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine substrates, areas, and conditions under which air and vapor barrier assemblies will be applied, with Installer present, for compliance with requirements.
- B. Treat all joint and fasteners heads in sheathing in accordance with manufacturers guidelines.
- C. Verify that surfaces and conditions are suitable prior to commencing work of this section. Do not proceed with installation until unsatisfactory conditions have been corrected.
- D. Do not proceed with installation until after minimum concrete curing period recommended by air and vapor barrier manufacturer.
- E. Ensure that the following conditions are met:
 - 1. Surfaces are sound, dry, even, and free of oil, grease, dirt, excess mortar or other contaminants
 - 2. Concrete surfaces are cured and dry, smooth without large voids, spalled areas or sharp protrusions.
 - 3. Masonry joints are flush and completely filled with mortar, and all excess mortar sitting on masonry ties has been removed.
- F. Verify substrate is surface dry. Test for capillary moisture by plastic sheet method according to ASTM D 4263 and take suitable measures until substrate passes moisture test. Surface dry is an acceptable substrate condition if acceptable to the manufacturer.
- G. Verify sealants used in sheathing are compatible with membrane proposed for use. Perform field peel-adhesion test on materials to which sealants are adhered.
- H. Notify Architect in writing of anticipated problems using air and vapor barrier over substrate prior to proceeding.

3.2 SURFACE PREPARATION

- A. Clean, prepare, and treat substrate according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for air and vapor barrier application. Mask off adjoining surfaces to prevent overspray and spillage
- B. Prime substrate for application of sheet membrane transition strips as recommended by manufacturer and as follows:
- C. Prime masonry, concrete substrates with conditioning primer.
- D. Prime glass-fiber surfaced gypsum sheathing an adequate number of coats to achieve required bond, with adequate drying time between coats.
- E. Prime wood, metal, and painted substrates with primer.
- F. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through air and vapor barrier and at protrusions.
- G. Prime substrate for application of fluid-applied air and vapor barrier if recommended by manufacturer based on project conditions and as follows.

3.3 INSTALLATION

- A. Air and Vapor Barrier Installation: Install transition strip materials and fluid-applied air and vapor barrier to provide continuity throughout the building envelope. Install materials in accordance with manufacturer's recommendations and as follows, unless manufacturer recommends other procedures in writing based on project conditions or particular requirements of their recommended materials:
- B. Apply primer for transition strips at rate recommended by manufacturer. Allow primer to dry completely before transition strip application. Apply as many coats as necessary for proper adhesion.
- C. Apply primer for fluid-applied air and vapor barrier as recommended by fluid-applied air and vapor barrier manufacturer. Based on manufacturer's recommendation, no primer may be required for the fluid-applied materials.
- D. Apply fluid-applied air and vapor barrier using equipment and methods recommended by manufacturer, to achieve a dry film thickness as recommended by the manufacturer.
- E. Apply fluid-applied air and vapor barrier and transition strips to shed water naturally without interception by a sheet edge, unless that edge is sealed with permanently flexible termination mastic.
- F. Position subsequent sheets of transition strips applied above so that membrane overlaps the membrane sheet below by a minimum of 2 inches (50 mm), unless greater overlap is recommended by manufacturer. Roll into place with roller.
- G. Overlap horizontally adjacent pieces of transition strips a minimum of 2 inches (50 mm), unless greater overlap is recommended by manufacturer. Roll seams with roller.

- H. Seal around all penetrations with termination mastic, extruded silicone sealant, membrane counterflashing or other procedure in accordance with manufacturer's recommendations.
- I. Connect air and vapor barrier in exterior wall assembly continuously to the air barrier of the roof, to concrete below-grade structures, to windows, curtain wall, storefront, louvers, exterior doors and other intersection conditions and perform sealing of penetrations, using accessory materials and in accordance with the manufacturer's recommendations.
- J. At changes in substrate plane, provide transition material (bead of sealant, mastic, extruded silicone sealant, membrane counterflashing or other material recommended by manufacturer) under membrane to eliminate all sharp 90 degree inside corners and to make a smooth transition from one plane to another.
- K. Provide mechanically fastened non-corrosive metal sheet to span gaps in substrate plane and to make a smooth transition from one plane to the other. Membrane shall be continuously supported by substrate or as recommended by the manufacturer.
- L. At through-wall flashings, provide an additional 6 inch wide strip of manufacturer's recommended membrane counterflashing to seal top of through-wall flashing to membrane or as recommended by manufacturer. Seal exposed top edge of strip with bead of mastic or as recommended by manufacturer.
- M. At deflection and control joints, provide backup for the membrane to accommodate anticipated movement.
- N. At expansion and seismic joints provide transition to the joint assemblies.
- O. Apply a bead or trowel coat of mastic along membrane seams at reverse lapped seams, rough cuts, and as recommended by the manufacturer.
- P. At end of each working day, seal top edge of the self-adhered membrane to substrate with termination mastic.
- Q. Do not allow materials to come in contact with chemically incompatible materials.
- R. Do not expose membrane to sunlight longer than as recommended by the manufacturer.
- S. Inspect installation prior to enclosing assembly and repair punctures, damaged areas and inadequately lapped seams with a patch of membrane lapped as recommended by manufacturer.

3.4 FIELD QUALITY CONTROL

- A. Owner's Inspection and Testing/ABAA Audits: Cooperate with Owner's testing agency and ABAA auditors. Allow access to work areas and staging. Notify Owner's testing agency/ABAA auditor in writing of schedule for Work of this Section to allow sufficient time for testing and inspection. Daily inspection and testing may be required. Do not cover Work of this Section until testing and inspection is accepted.

3.5 PROTECTING AND CLEANING

- A. Protect air and vapor barrier assemblies from damage during application and remainder of construction period, according to manufacturer's written instructions.
- B. Coordinate with installation of materials which cover air and vapor membrane, to ensure exposure period does not exceed that recommended by the air and vapor barrier manufacturer.
- C. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction and acceptable to the primary material manufacturer.

END OF SECTION