

SECTION 07 27 26

FLUID-APPLIED MEMBRANE AIR AND VAPOR BARRIERS

PART 1 - GENERAL

1.1 SUMMARY:

- A. Section includes a water-resistant fluid-applied air and vapor barrier in exterior wall assemblies.

RETAIN SUBPARAGRAPHS BELOW WHICH REFERENCE
RELATED WORK SPECIFIED ELSEWHERE.

- B. Related Work specified elsewhere:
1. Section 01 40 00 - Quality Requirements; coordination with Owner's independent testing and inspection agency.
 2. Section 01 43 39 - Mockups; exterior wall mock-ups.
 3. Section 01 50 00 - Temporary Facilities and Controls; requirement to schedule work to prevent sunlight and weather exposure of materials beyond limits established by manufacturer; requirement to protect materials from damage after installation and prior to installation of enclosing work.
 4. Section 03 30 00 – Cast-In-Place Concrete; requirement that backup concrete be free of fins, protrusions and large holes.
 5. Section 04 01 20.52 - Masonry cleaners.
 6. Section 04 05 19.13 - Joint reinforcing.
 7. Section 04 05 19.16 - Anchors.
 8. Section 04 05 23.16 - Flashing materials, drip edges, corners and end dams, and termination bars.
 9. Section 04 05 23.19 - Cavity drainage and weep holes.
 10. Section 04 20 00 – Concrete Unit Masonry; requirement that backup masonry joints are flush and completely filled with mortar, and that excess mortar on brick ties will be removed; requirement for gap at deflection joints and fillers; coordination with sequencing of through-wall flashing.
 11. Section 06 16 43 – Gypsum Sheathing; requirement that backup gypsum sheathing has been installed with damaged corners repaired, joints filled and surface flush with compatible material as acceptable to the fluid-applied air ** and vapor ** barrier manufacturer; requirement for gap at deflection joints and fillers.
 12. Section 07 27 13 - Modified Bituminous Sheet Air Barriers.
 13. Section 07 27 16 - Sheet Metal Membrane Air Barriers.
 14. Section 07 27 19 - Sheet Plastic Air Barriers.
 15. Section 07 27 23 - Board Product Air Barriers.
 16. Section 07 50 00 - Membrane Roofing; requirement for coordination with sequencing of membrane roofing; requirement to seal roof membrane to wall air and vapor barrier.

1.2 PREINSTALLATION MEETINGS:

RETAIN PARAGRAPH BELOW IF WORK OF THIS SECTION IS EXTENSIVE OR COMPLEX ENOUGH TO JUSTIFY A CONFERENCE.

- A. Preinstallation Conference:
1. Conduct conference at ** Project site. ** _____.
 2. Review air-barrier requirements and installation, special details, mockups, air-leakage and bond testing, air-barrier protection, and work scheduling that covers air barriers.

1.3 ACTION SUBMITTALS:

- A. Product data: For each type of product, submit manufacturer's product data including membrane and accessory material types, composition, descriptions and properties, installation instructions, substrate preparation instructions, and detail sheets. Mark product data for application to this project.
- B. Shop Drawings: For air and vapor barrier assemblies.
1. Show locations and extent of air barrier. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
 2. Include details of interfaces with other materials that form part of air barrier.
- C. 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.

1.4 INFORMATIONAL SUBMITTALS:

- A. Quality Assurance Program: Submit evidence of current certification under the Air Barrier Association of America's (ABAA) Quality Assurance Program. Submit certification number of installers.
- B. Field Test Results of Mock-Up: Submit test results of air leakage test and water leakage test of mock-up in accord with specified standards, including retesting if initial results are not satisfactory.
- C. Compatibility:
1. Submit letter from manufacturer stating that materials proposed for use are permanently chemically compatible and adhesively compatible with adjacent materials proposed for use.
 2. Submit letter from manufacturer stating that cleaning materials used during installation are chemically compatible with each of the adjacent materials proposed for use.

D. LEED Submittals:

SUBPARAGRAPH BELOW APPLIES TO LEED-NC AND LEED- CS.

1. Product Data for Credit IEQ 4.2: For air-barrier products, documentation including printed statement of VOC content.

SUBPARAGRAPH BELOW APPLIES TO LEED FOR SCHOOLS.

2. Laboratory Test Reports for Credit IEQ 4: For air barriers, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

1.5 QUALITY ASSURANCE:

A. Installer Qualifications:

1. An entity that employs installers and supervisors who are trained and approved by manufacturer.

RETAIN IF ABAA QUALITY ASSURANCE PROGRAM REQUIRED.

2. Currently accredited by the Air Barrier Association of America (ABAA) and whose applicators are certified in accord with the ABAA Quality Assurance Program.

B. 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.

C. 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 ** 8 feet long by 8 feet high ** and shall include the materials proposed for use in the exterior wall assembly. Mock-up shall be suitable for testing as specified in the following paragraph.

RETAIN BELOW IF AIR AND WATER INFILTRATION TESTING OF MOCK-UP WILL BE REQUIRED.

D. Mock-Up Tests for Air and Water Infiltration: Test mock-up for air and water infiltration in accord with ASTM E1186 (air leakage location) or ASTM E783 (air leakage quantification), and ASTM E1105 (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.

RETAIN BELOW IF ADHESION TESTING OF MOCK-UP WILL
BE REQUIRED.

- E. Mock-Up Tests for Adhesion: Test mock-up of fluid-applied and sheet applied materials for adhesion in accord with ASTM D4541 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's product data. Record mode of failure and area which failed in accord with ASTM D4541. 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.

1.6 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 and vapor barrier membrane manufacturer. Protect stored materials from direct sunlight.
- C. Handle materials in accord with manufacturer's product data.

1.7 PROJECT CONDITIONS:

- A. Temperature: Install air and vapor barrier within range of ambient and substrate temperatures recommended by air and vapor barrier manufacturer's product data.
- B. Field Conditions:
 1. Do not install air and vapor barrier in snow, rain, fog, or mist without temporary protection and supplemental heat as required.
 2. Do not install air and vapor barrier when the temperature of substrate surfaces and surrounding air temperatures are below those recommended by the manufacturer's product data.
 3. Apply membrane to a surface dry substrate, or in accord with manufacturer's product data.

1.8 WARRANTY:

- A. Material Warranty: Provide manufacturers product warranty for a minimum 3 years from date of Substantial Completion.

WARRANTY BELOW REQUIRES THAT ALL AIR/VAPOR BARRIER, MATERIALS, ACCESSORY MATERIALS AND FLASHING MATERIALS BE PROVIDED BY HOHMANN AND BARNARD.

- B. System Warranty: Provide manufacturer's warranty that when at least one component from each of the categories of components constituting manufacturer's system (see schedule below for current category component listing) is applied to an above-grade concrete block or poured concrete or to a published product performance specifications to prevent air and water vapor from penetrating the building walls and entering the interior of the building for a period of ten (10) years beginning on the date of Substantial Completion.

EDIT THE FOLLOWING LISTS TO COMPLY WITH PROJECT REQUIREMENTS. CONFIRM THAT THE RETAINED PRODUCTS ARE SPECIFIED IN THE RELATED SECTIONS.

1. The following products, specified in related sections shall be included in the system warranty coverage:

SEISMIC CONFIGURATIONS ARE INCLUDED IN JOINT REINFORCENT.

- a. Joint Reinforcement: 04 05 19.13.
- 1) #170/270.
 - 2) #165/265.
 - 3) #180/280
 - 4) #195/295.

SEISMIC CONFIGURATIONS ARE INCLUDED IN VENEER ANCHORS.

- b. Veneer Anchors: 04 05 19.16.
- 1) HB-200/DA-213.
 - 2) DW-10HS.
 - 3) X-Seal.
 - 4) 2-Seal Tie.
 - 5) 2-Seal Tie (Wing Nut).
 - 6) BL-407.
 - 7) Veneer anchor screws, including washers:
 - a) Finish: Polymer or Type 304 Stainless Steel.
 - b) Dimensions:
 - (1) 10" x 1-1/2".
 - (2) 12" x 2".
 - (3) 12" x 3".
 - (4) 12" x 4".
 - (5) 12" x 5".

FLASHING SYSTEMS MUST INCLUDE H&B PRIMER AND MASTIC.

- c. Thru-Wall Flashing; 04 05 23.16:
 - 1) Textroflash.
 - 2) Flex-Flash.
 - 3) Copper-Tuff & Copper-Tuff SA.
 - 4) Copper-Flex & Copper-Flex SA.
 - 5) Mighty Flash & Mighty Flash SA
 - 6) Stainless Steel Type 304 Pre-Bent Flashing Soldered.
 - 7) Copper (16 oz., Pre-Bent).
- d. Drip Edges: 04 05 23.16.
 - 1) Stainless Steel Drip Edge.
 - 2) Copper Drip Edge.
- e. Termination Bars: 04 05 23.16.
 - 1) T1 & T2 St/Steel.
 - 2) T1 & T2 Aluminum.
- f. Preformed Soldered Corners and End Dams: 04 05 23.16.
 - 1) Stainless Steel corners.
 - 2) Copper Corners.
- g. Weep and Vents: 04 05 23.19.
 - 1) Quadro-Vent.
- h. Mortar Collection Devices: 04 05 23.19.
 - 1) Mortar Net.
 - 2) Mortar Trap.
 - 3) Mortar Web.
- i. Masonry Cleaners: 04 01 20.52.
 - 1) Diedrich Technologies.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

- A. Acceptable manufacturer: Hohmann and Barnard, Inc., 30 Rasons Court, Hauppauge, New York 11788, Tel: 8-0645-0616, Fax: 631-234-0683, email weanchor@h-b.com.

2.2 MATERIALS, GENERAL:

- A. Source Limitations: Obtain primary air and vapor barrier materials and accessories from single source from single manufacturer.

RETAIN "VOC CONTENT" PARAGRAPH BELOW IF REQUIRED FOR LEED-NC AND LEED-CS CREDIT IEQ 4.2, WHICH LIMITS VOC CONTENT TO 250 G/L FOR MATERIALS USED INSIDE THE WEATHERPROOFING SYSTEM. RETAIN BELOW ALSO AS DEFAULT REQUIREMENT OF AUTHORITIES HAVING JURISDICTION.

- B. VOC Content: ** 250 ** g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and complying with VOC content limits of authorities having jurisdiction.

RETAIN PARAGRAPH BELOW FOR MATERIALS USED INSIDE THE WEATHERPROOFING SYSTEM IF REQUIRED FOR LEED FOR SCHOOLS CREDIT IEQ 4.

- C. Low-Emitting Materials: Air barriers shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.3 AIR AND VAPOR BARRIER:

RETAIN THE FOLLOWING TWO PARAGRAPHS FOR AIR AND VAPOR BARRIER.

- A. Fluid-Applied Air and Vapor Barrier: Fluid-applied proprietary materials as specified. Use regular or low-temperature formulation depending on site conditions, within temperature ranges specified by manufacturer. Provide related accessories including primer, seam tape, mastic, fluid and sealant recommended by manufacturer.
1. Acceptable product: Hohmann and Barnard, Inc., Enviro-Barrier.
- B. Physical and performance characteristics:
1. Color: Light blue curing to dark blue.
 2. Solids by weight: 65%.
 3. Weight per gallon: 10.2 lbs.
 4. UV resistance: up to 120 days.
 5. Application temperature: 40 degrees F to 120 degrees F.
 6. Recycled content by wt.: 30%.
 7. Drying time:
 - a. 24-48 hours to full cure.
 - b. 2-4 hours to tack free.
 8. Air permeance: 0.00008 cfm/ft² when tested in accord with ASTM E2178:
 9. Water vapor transmission: 0.050 perms when tested in accord with ASTM E96 (method B).
 10. Air leakage of air barrier assembly: 0.0008 cfm/ft² (75 Pa) when tested in accord with ASTM E2357.

2.4 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 E2178.

TYPICALLY DELETE THE FOLLOWING PARAGRAPH UNLESS VERIFIED THAT MANUFACTURER IS REQUIRED TO PERFORM ASTM E2357 LABORATORY TEST.

- 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 accord with ASTM E2357 **, and a vapor permeance of 1 perm (57 mg) or less when tested in accord with ASTM E96 using the water 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 barrier seal materials at such locations, changes in substrate and perimeter conditions.

1. 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.
2. Assembly shall not displace adjacent materials under full load.
3. Join assembly 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.

C. Connections to Adjacent Materials: Provide connections to prevent air leakage 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.

2.5 AUXILIARY MATERIALS:

A. Primer:

1. Self-adhesive primer: A water based, modified polymer primer.
2. Acceptable product: Hohmann & Barnard Self-Adhesive Flashing Primer.

B. Mastic:

1. Mastic: A water based, modified polymer trowel/gun grade mastic
2. Acceptable product: Hohmann & Barnard, Enviro-Barrier Mastic.

C. Transition Membrane:

1. Membrane: 25 mil thick composite membrane containing reinforced polyolefin base, laminated to a polypropylene layer; adhesive-backed with removable release liner.
 - a. Width: 4"-72", other widths available upon request.
 - b. Length: 50' long roll.
 - c. Recycled content: Manufacture from 45% post-industrial and/or post-consumer recycled material.
2. Acceptable product: Hohmann & Barnard, X-Seal Transition Membrane.

D. Stretchable Transition Membrane:

1. Membrane: A stretchable composite membrane containing a 7 layer coextrusion base, adhesive-backed with removable release liner.
2. Acceptable product: Hohmann & Barnard, Stretch-X-Seal.

- E. Flexible flashing:
 - 1. Flashing: 40 mil thick composite membrane containing reinforced polyolefin base; laminated to a polypropylene layer: adhesive-backed with removable release liner.
 - 2. Basis of design: Hohmann & Barnard, Textroflash.

PART 3 - EXECUTION

3.1 EXAMINATION:

- A. Examine substrates, areas, and conditions under which air and vapor barrier assemblies will be applied, with Installer present, for compliance with requirements.
 - 1. 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.
 - 2. Do not proceed with installation until after minimum concrete curing period recommended by air and vapor barrier manufacturer's product data.
 - 3. Ensure that the following conditions are met:
 - a. Surfaces are sound, dry, even, and free of oil, grease, dirt, excess mortar or other contaminants.
 - b. Concrete surfaces are cured and dry, smooth without large voids, spalled areas or sharp protrusions.
 - c. Masonry joints are flush and completely filled with mortar, and all excess mortar sitting on masonry ties has been removed.
 - 4. Verify substrate is surface dry. Test for capillary moisture by plastic sheet method according to ASTM D4263 and take suitable measures until substrate passes moisture test. Surface dry is an acceptable substrate condition if acceptable to the manufacturer in writing.
 - 5. Verify sealants used in sheathing are compatible with membrane air and vapor barrier proposed for use. Perform field peel-adhesion test on materials to which sealants are adhered.
 - 6. Correct 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 product data. Provide clean, dust-free, and dry substrate for membrane air and vapor barrier application. Mask off adjoining surfaces to prevent overspray and spillage.
- B. Substrate Preparation: All surfaces to receive air and vapor barrier shall be clean, smooth and free from projections, oil, grease and other contaminants.
 - 1. CMU applications: Strike mortar joints flush and full to face of CMU. Fill voids and holes, particularly at mortar joints.
 - 2. New concrete: Cure for a minimum of 48 hours before application and surface shall be free of large voids and spalled areas.
 - 3. Exterior sheathing applications: Treat joints with mastic/reinforced mesh or self-adhesive tape depending on size of gap. (Refer to manufacturer's data sheet). Fill larger voids with mortar and allow to cure.

- C. Detailing: Perform detailing prior to application of membrane air and vapor barrier in accord with manufacturer's product data.
 - 1. Make transitions to beams, columns, window and door frames with a strip of transition membrane over primer.
 - 2. Seal gaps around penetrations with mastic prior to detail taping. For specific applications, refer to manufacturers product data.
 - 3. Install through-wall flashing at window and door heads and sills, shelf Angles and at bottom of walls as indicated on the drawings and in accord with membrane manufacturer's product data.

3.3 APPLICATION:

- A. General: Comply with air and vapor barrier manufacturer's product data regarding sequence of application of air and vapor barrier, transition membranes and flashings.
- B. Apply membrane air and vapor barrier by brush, heavy-duty airless spray or trowel in a single or dual coat application. Apply in continuous, monolithic application without sags, runs or voids.
 - 1. Both surface and ambient temperatures shall be above 40 degrees F.
 - 2. Perform spray applications in both a vertical and horizontal method to ensure a uniform coating around projections.

RETAIN BEOW FOR AIR AND VAPOR BARRIER.

- C. Coverage and thickness control: Apply membrane air and vapor barrier at a Minimum thickness of 60 mils wet to dry to 40 mil thick film. Theoretical coverage rate at 60 mils is about 25 sq ft per gallon. Coverage rates may be reduced over rough and uneven substrates. Control application thickness by marking the area and spot checking wet film with a film thickness gauge.

3.4 CLEAN UP:

- A. Use waterless hand cleaner for skin.
- B. Flush out spray equipment with water.
- C. Use citrus based cleaners to remove dried material.

RETAIN ARTICLE BELOW IF THIRD PARTY TESTING AND INSPECTION IS REQUIRED.

3.5 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.

3.6 PROTECTING AND CLEANING:

- A. Protect adjacent areas and nearby property from overspray.
- B. Protect air ** and vapor ** barrier assemblies from damage during application and remainder of construction period, in accord with manufacturer's product data.
- C. 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's product data.
- D. 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