

SPEC WRITERS NOTE: This specification includes materials and installation procedures for **PanelShield™ SA**, a Self-Adhered Water-Resistive Vapor Permeable Air Barrier Sheet Membrane meeting ASTM E2357 for air barrier assemblies. **PanelShield™ SA** sheet membrane is used behind Rainscreen wall cladding assemblies such as ventilated Rainscreen cladding systems incorporating composite and metal materials, masonry and stone veneers, stucco, and mechanically attached EIFS. With a vapor permeance rating of greater than 24 perms **PanelShield™ SA** Self-Adhered Water-Resistive Vapor Permeable Air Barrier Sheet membrane prevents air leakage and allows the wall assembly to 'dry-out' as necessary to meet the conditions of seasonal changes for each climate zone. This guide specification should be adapted to suit the requirements of individual projects. It is prepared in CSI Master Format and should be included as a separate section under Division 7 - Thermal and Moisture Protection.

SECTION 07 27 27.01

SELF-ADHERING WATER-RESISTIVE AIR BARRIER MEMBRANE

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 General Requirements, apply to the work of this section.
- B. Examine all Drawings and all Sections of the Specifications for requirements and provisions affecting the work of this Section.

1.2 DESCRIPTION OF WORK

- A. The work of this Section includes furnishing and installation of a fully self-adhered water-resistive vapor-permeable air barrier membrane at exterior wall assemblies, at locations indicated on Drawings and elsewhere as noted and as required by code.
- B. The work of this Section also includes furnishing and installing flashing membranes to bridge gaps, for transition areas around windows, curtain walls, louvers, roof-to-wall interfaces, and elsewhere as indicated or required by code, to provide a continuous air barrier assembly. Locations include, but are not limited to, the following:
 - 1. Connection of the walls to the roof membrane
 - 2. Connections of the walls to the foundations
 - 3. Seismic and expansion joints
 - 4. Openings and penetrations of window and door frames, storefront, and 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
- C. Provide the material and work of this Section required to complete mock-up panel(s). Refer to exterior elevations for the extent of mock-up panels.

1.3 RELATED WORK SPECIFIED ELSEWHERE

- A. Carefully examine all of the Contract Documents for requirements that affect the work of this section.
- B. Other specifications sections which directly relate to the work of this section include, but are not limited to, the following:

PROJECT NAME
PROJECT LOCATION

ARCHITECTS/ENGINEERS FIRM NAME
DATE OF SUBMISSION

1. Section 042000 - Unit Masonry: Masonry units used as non-load-bearing walls or partitions, veneer, and cavity unit masonry construction, including related accessories.
2. Section 061600 - Sheathing
3. Section 072100 - Building Insulation and Vapor Barriers
4. Section 074263 - Composite Metal Panels
5. Section 075300 - Thermoplastic Membrane Roofing System
6. Section 078100 - Spray Applied and Board Fireproofing
7. Section 078400 - Firestopping
8. Section 079200 - Joint Sealants
9. Section 082630 - Aluminum-Clad Sliding Doors
10. Section 084100 - Aluminum Entrances and Storefront System.
11. Section 089116 - Louvers and Grilles
12. Section 092116 - Gypsum Board Assemblies

1.4 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 C920 - Standard Specification for Elastomeric Joint Sealants.
 2. ASTM D5034 - Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test).
 3. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
 4. ASTM E96 - Test Methods for Water Vapor Transmission of Materials.
 5. 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.
 6. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.
 7. ASTM E398 - Standard Test Method for Water Vapor Transmission Rate of Sheet Materials Using Dynamic Relative Humidity Measurement.
 8. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials.
 9. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.
 10. ASTM F1249 - Standard Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor
- D. International Code Council Evaluation Service, Inc. (ICC-ES): ICC-ES AC38 - Acceptance Criteria for Water-Resistive Barriers.
- E. CDPH/EHLB Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers Version 1.2

1.5 SUBMITTALS

- A. Submit manufacturers' current product data sheets, details, and installation instructions for the water-resistive vapor-permeable air barrier membrane components and accessories.
 1. Manufacturer's sample warranty.

PROJECT NUMBER

VAPOR PERMEABLE WATER-RESISTIVE AIR BARRIER
SECTION 07 27 27.01 - 2

2. Environmental Product Declaration (EPD) third-party verified. ISO 21930 and ISO 14025 North American compliant.
- B. Submit samples of the following:
1. Manufacturer's sample warranty.
 2. Water-resistive vapor-permeable air barrier sheet, minimum 8 by 10 inches (203 by 254 mm).
 3. Accessory components.
 4. Membrane flashing products.
 5. Cladding and window system flashing components that interface with the air barrier system (i.e., rigid metal head flashing above windows), minimum 10" length.
 6. Fasteners, clips, strapping, cladding attachment fasteners, and masonry ties.
 7. Sealants (included by others) required to provide a complete air barrier membrane system.

Delete C if not pursuing LEED certification.

- C. LEED Submittals:
1. Integrative process [IP] has a 1 pt. potential. VaproShield encourages this through preconstruction planning for 'building envelope attributes'.
 2. Energy and Atmosphere [EA].
 - a. Minimum Energy requirement prerequisite and performance points – by providing a complete air barrier system: up to 18 pts.
 - b. Commissioning (i.e., BECx): Energy load reductions, Indoor Environmental Quality, and longevity of building components, which are required to satisfy the prerequisite if commissioning/verification for building envelope is chosen as a path before DD. Envelope Commissioning may qualify for an additional 2 pts, on top of the 4 pts via building energy simulation (enhanced commissioning), or complying with the prescriptive paths in ASHRAE 90.1-2010
 3. Indoor Environmental Quality [IEQ/EQ].
 - a. As part of the IAQ Management plan for the construction phase, which protects the building from moisture infiltration, PanelShield SA can help provide an additional 1 pt.
 - b. Low-emitting Material Credits: up to 3 pts. PanelShield SA complies with exterior product (emission req. exempt) requirements and VOC limits per SCAQMD Rule #1168 (as published Sept. 2017).
 - 1) All window sealant and flashing materials to interior pass CDPH/EHLB/Standard Method V1.2 (Sect. 01350) for VOCs after 14 days of cure time.
 4. Awareness and Education [AE] and/or Innovation [IN/ID]
 - a. Applies to projects that offer both a case study and an educational outreach program, which use the project as an example. 1 pt. available.

1.6 QUALITY ASSURANCE

- A. Single Source: Obtain self-adhered water-resistive vapor-permeable air barrier membrane components and accessories from a single-source membrane system manufacturer to ensure total system compatibility and integrity.
- B. Manufacturer Qualifications:
1. Company specializing in manufacturing and supply of highly vapor permeable

- water resistive air barrier products specified in this Section with a minimum [10] ten years' experience and successful installations in similar project applications.
2. Provide the manufacturer's experienced in-house technical and field observation personnel qualified to provide technical support.

C. Applicator:

1. Company specializing in performing Work of this Section with a minimum [3] three years' experience.

1.7 MOCK-UP

- A. Construct mock-up in accordance with Section 01 43 39 - Mock-up, or as specified under General Requirements Section 01 10 00.
- B. Provide mock-up of specified water-resistive vapor-permeable air barrier materials under provisions of Section 01 33 23 - Shop Drawings, Product Data, and Samples.

Generally, retain the first subparagraph below if requiring preconstruction testing.

1. Coordinate the construction of mockups to permit inspection and testing of the air barrier and drainage plane along with interfacing window, flashing, and cladding system components, before external insulation and cladding are installed.

1.8 PRE-INSTALLATION CONFERENCE

- A. Provide a pre-installation conference [two] weeks before commencing work of this section, under provisions of Section 01 31 19 - Project Meetings or as specified under General Requirements Section 01 10 00.
- B. Ensure all contractors responsible for creating a continuous plane of water and air tightness are present.
- C. Agenda includes the following:
 1. Review of approved submittals.
 2. Review of mock-ups.
 3. Coordination with the sequence of installation with adjacent materials.
 4. Schedule for subsequent work covering the air barrier.
 5. Procedures for quality assurance.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Refer to the current Product Data Sheet, Installation Instructions, and Safety Data Sheets (SDS) at www.vaproshield.com 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 roll materials on end in original packaging. Protect rolls from direct sunlight and inclement weather until ready for use.
- D. Waste Management and Disposal
 1. Separate and repurpose or recycle waste materials in accordance with Section [01 74 19 Construction Waste Management and Disposal], and with the Waste Reduction Work Plan.

1.10 COORDINATION

- A. Ensure shingled lapping and continuity of the fully self-adhered water-resistive vapor-permeable air barrier system throughout the scope of this section.
1. Provide a permeable air barrier membrane that includes self-adhered air barrier, transition membranes, flashing, and sealants at penetrations. Provide PanelFlashing SA™ Self-Adhered flashing, which includes VaproLiqui-Flash™ by VaproShield, a liquid-applied vapor-permeable air barrier flashing material.
 2. At locations indicated, provide an unimpeded vertical drainage plane that includes a ventilated drainage cavity, water resistive barrier, and flashings to the exterior.
 3. Coordinate for optimal sequencing with all related or interfaced building components and trades to facilitate best practices, including: shingle fashion, drainage, water-tightness, and air barrier continuity.

1.11 WARRANTY

- A. Provide manufacturer's standard material warranty in which the manufacturer agrees to provide replacement material for the fully self-adhered water-resistive vapor-permeable air barrier sheets installed in accordance with the manufacturer's instructions that fail due to material defects within [20] Twenty years from the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Provide a fully self-adhered water-resistive vapor-permeable air barrier membrane components and accessories obtained from a single-source manufacturer to ensure total system compatibility and integrity.
- B. Water-Resistive Vapor Permeable Self-Adhered Air Barrier Materials.
1. Basis-of-Design Product: Subject to compliance with requirements, provide fully self- adhered air barrier sheet membrane PanelShield SA® Self-Adhered Water-Resistive Vapor Permeable Air Barrier Sheet as manufactured by VaproShield, a zero VOC fully self- adhered vapor permeable air barrier sheet membrane consisting of multiple layers of spun-bonded polypropylene with vapor-permeable adhesive. Provide sheet membrane tested in accordance with ICC-ES AC 38 criteria to meet IBC and IRC requirements for weather- resistive barriers having the following properties:
 - a. Color: Black with yellow print, allowable UV exposure for 365 days, before coverage.
 - b. Dry breaking strength to ASTM D5034: 126 lbf (560 N), machine direction; 85 lbf (378 N), cross-machine direction.
 - c. Elongation to ASTM D5034: 119 lbf (529 N), machine direction; 96 lbf (427 N), cross-machine direction.
 - d. Water Vapor Permeance tested to ASTM E96 water method, procedure B @ 23°C 50-100 %RH: minimum of 24 perms (1373 ng/Pa•s•m²).
 - e. Material Air Leakage: 0.0017 L/s•m² @ 75 Pa (<0.000335 cfm/ft² @ 1.57 psf) when tested in accordance with ASTM E2178 and 0.0398 L/s•m² @ 75 Pa (<0.0078 cfm/ft² @ 1.57 psf) when tested in accordance with ASTM E2357. Meets Air Barrier Association of America (ABAA) requirements for "Adhesive Backed Commercial Building Wraps".

- f. Water Resistance tested to AATCC 127, 550 mm hydrostatic head for 5 hours: No leakage
- g. Application Temperature: Ambient temperature must be above 20 °F (- 6 °C).
- h. Surface Burning Characteristics tested to ASTM E84: Class A, Flame-spread index of less than 0, Smoke-developed index of less than 0.
- i. Physical Dimensions: 0.014 inches (0.36 mm) thick and 59 inches (1.5 m) wide and 0.904 oz/yd² (275.7 g/m²).

C. Water-Resistive Vapor Permeable Transition and Flashing Membrane

- 1. Provide self-adhered air barrier transition and flashing membrane for all window jambs, headers, door openings, inside and outside corners, and other transitions. Provide pre-cut PanelFlashing SA Self-Adhered flashing by VaproShield. PanelFlashing SA™ Self-Adhered flashing is a zero VOC, fully self-adhered water-resistive, vapor-permeable sheet membrane having the following properties:
 - a. Same material and properties as PanelShield SA Self-Adhered Water-Resistive Vapor Permeable Air Barrier Sheet, factory slit to flashing sizes. (See 2.1.B.1 above).
 - b. Physical Dimensions: PanelFlashing SA™ Self-Adhered flashing Black in color: 4, 6, and 11¾ inches (10, 15, 30 cm) wide x 102 feet (31 m) long.

SPEC WRITERS NOTE: Acceptable substrates for PanelFlashing SA Self-Adhered Water-Resistive Vapor Permeable Air Barrier Sheet include exterior grade gypsum board, plywood, precast concrete, cast-in-place concrete, concrete block, steel, aluminium, and galvanized metal. Best practice guidelines for the application of PanelFlashing SA Self-Adhered on clean, dry surfaces of sheathing surfaces. Applications of PanelFlashing SA Self-Adhered on sheathing surfaces clean of oil, dust, bulk water, or other contaminants should be followed by two-handed roller pressure to ensure good adhesion, immediately after installation of the material.

The rough opening flashing system includes two components. PanelFlashing SA™ Self-Adhered flashing and VaproLiqui-Flash™ or, as alternates, VaproBond™ Flashing or Vapro-SS Flashing™, BlockFlashing™, VaproFlashing SA.

- D. VaproLiqui-Flash™ Vapor Permeable Water Resistive Flashing For Rough Openings
 - 1. Window and door pre-cut PanelFlashing SA™ Self-Adhered flashing includes VaproLiqui-Flash™ by VaproShield, a liquid-applied vapor permeable air barrier flashing material with vapor permeance and resistance to air leakage properties compatible with the primary air barrier membrane.
 - a. Pass: CDPH/EHLB/Standard Method V1.2 (Sect. 01350) VOC test.

SPEC WRITERS NOTE: Best construction practice for wood frame construction is to protect the jamb of rough openings with the two-part system of PanelFlashing SA™ Self-Adhered flashing and vapor permeable VaproLiqui-Flash™ to reduce the risk of wood deterioration. Alternatively, for steel stud frame construction with gypsum sheathing surfaces, VaproBond™ Flashing, Vapro-SS Flashing™, BlockFlashing™, or VaproFlashing SA™ may be used to protect the head, jamb, and sill of rough openings.

E. Alternate Flashing Products

- 1. VaproBond™ flashing: water impermeable, low vapor permeance flashing for rough openings.
 - a. Include VaproBond™ Flashing by VaproShield, a modified silicon sealant,

at window and door locations.

- 1) VaproBond™ Flashing: 20-ounce (592 ml) sausage.
 - 2) Elongation: 1,500 % when tested in accordance with ASTM D412.
 2. VaproFlashing SA air, water, and vapor barrier flashing with an aggressive pressure-sensitive adhesive, white: 4, 6, 12 inches (10.3, 15.2, 30.5 cm) wide x 100 feet (30.48 m) long.
 3. Vapro-SS Flashing™ water and vapor impermeable flashing for rough openings.
 - a. Include Vapro-SS Flashing™ by VaproShield, a flexible 10.2 mil (0.05 mm) stainless steel sheet with an 8 mil (0.20 mm) butyl adhesive backing at window and door locations.
 - b. Vapro-SS Flashing™: 6, 12, or 18 inches (15.2, 30.5, 45.7 cm) x 50 feet (15.24 m) long
 - 1) Tensile Strength/Puncture: 100,000 psi when tested in accordance with ASTM D882 and 2,500 psi when tested in accordance with ASTM E154.
 4. BlockFlashing™ water and vapor barrier flashing for rough openings.
 - a. Include BlockShield™ Flashing by VaproShield, a flexible 2 mil (0.26 mm) polypropylene sheet with an acrylic adhesive backing at window and door locations.
- F. Through Wall Flashing
1. Thru-wall flashing includes Vapro-SS Flashing™ by VaproShield, a flexible 2 mil (0.05 mm) stainless steel sheet with an 8 mil (0.20 mm) butyl adhesive backing, which includes a VaproTermination Bar™ when the top section of the Vapro-SS Flashing™ is exposed.
 - a. Vapro-SS Flashing™: 6, 12, or 18 inches (15.2, 30.5, 45.7 cm) x 50 feet (15.24 m) long.
 - b. Tensile Strength/Puncture: 100,000 psi when tested in accordance with ASTM D882 and 2,500 psi when tested in accordance with ASTM E154
 - c. VaproTermination Bar™: 8 feet (2.4 m) long x 1 inch (25 mm) wide x 1/8 inch (3 mm) thickness, UV-resistant rigid thermoplastic extrusion, prepunched with elongated nail/screw penetrations on 1-inch centers as required for installation.
- G. Transition Flashing
1. Transition flashing includes VaproSilicone Transition™ Sheet by VaproShield, a flexible 80 mil (2 mm) extruded silicone sheet.
 - a. VaproSilicone Transition™ Sheet: 4, 6, or 9 inches (10.2, 15, 23 cm) x 50 feet (15.24 m) long
 - b. Dynamic Movement Capability: +200 / -50 % when tested in accordance with ASTM C1523.
 - c. Elongation: 400 % when tested in accordance with ASTM D412.
 - d. Tensile Strength: 295 psi (2.03 MPa) when tested in accordance with ASTM D412.
 - e. Tear Strength: 20 ppi (3.5 N/mm) when tested in accordance to ASTM D624.

SPEC WRITERS NOTE: With Rainscreen wall cladding systems such as composite wall panels and metal siding, unimpeded vertical drainage, shingle flashing, air circulation, and cavity ventilation are critical in allowing moisture to escape. The VaproShim SA™ Self-Adhered, VaproMat™, and VaproBattens™ with VaproVent™ Strips to facilitate drainage and drying throughout the cavity for the life of the building. Include 2.1.H. for Water-Resistive Weather

Barrier Batten and Ventilation Accessories.

- H. Provide a Rainscreen cavity using; VaproShim SA™ Self-Adhered, VaproMat™ and VaproBattens™ with VaproVent™ Strips Accessories Options
1. VaproShim SA™ Self-Adhered, Neoprene/EPDM accessory used under horizontal or vertical cladding attachment components to create a vertical Rainscreen screen drainage plane for cladding, while sealing fastener penetrations.
 2. VaproMat™ Lightweight, hydrophobic filter fabric with a 3 mm or 7 mm polypropylene drainage matrix attached, designed to keep the drainage cavity clean and unobstructed during the lath and plaster or adhesive mortar installation, promoting rapid draining and drying of the Rainscreen cavity.
 3. Batten and ventilation accessories, as manufactured by VaproShield comprised of black PVC material.
 - a. VaproBatten™ Black vinyl extrusion with pre-formed moisture drainage channels configured to create a ventilated airspace between wall cladding and weather- resistive barrier, bull nose edges prevent membrane tearing. Fasteners are installed directly through VaproBatten™ into the structural elements regardless of weather conditions.
 - b. VaproVent™ Strips are available in two types: VaproVent™ L Strip and VaproVent™ Hook Strip.
 - 1) VaproVent™ Gray vinyl L Strips are attached to the top and bottom of VaproBattens™. They prevent insect invasion and provide maximum ventilation.
 - 2) VaproVent™ Gray vinyl Hook Strips are used with VaproBattens as a starter strip for vinyl and beveled siding applications, in place of the VaproVent™ L Strip at the bottom of the assembly.

2.2 PENETRATION SEALANT

A. Provide sealant for penetrations as recommended by the manufacturer and as specified under Division 07 Section: Sealants. Appropriate sealants shall be VaproBond™ or VaproLiqui-Flash™.

SPEC WRITERS NOTE: VaproShield's self-adhered membranes incorporate a pressure-sensitive adhesive (PSA) that requires pressure rolling to activate the adhesion onto the substrate.

2.3 WALL ROLLER

- A. Provide VaproRoller, an extendible roller tool designed to provide optimal leverage for a roller-based self- adhered membrane. VaproRoller is a heavy-duty design die-cast second handle for additional leverage and two-handed operation to firmly secure the adhesive to the substrate. A compact and lightweight roller with a 7.5-inch (19 cm) wide design.

PART 3 - EXECUTION

3.1 GENERAL

- A. Verify that surfaces and conditions are ready to accept the work of this section. Notify [Envelope Consultant] [Engineer] [Architect] [Construction Manager] 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 dry, sound, clean, free of oil, grease, dirt, excess mortar, or other contaminants detrimental to the adhesion of the water-resistive air barrier membrane and flashings. Fill voids and gaps in the substrate greater than 7/8 inch (22 mm) in width to provide an even surface. Strike masonry joints full-flush. Tool sheathing joints filled with sealant materials so that no sealant is spread onto the exterior surface of the sheathing. Remove any sealant products from the sheathing surface prior to installation of the air barrier membrane.
- C. Minimum application temperature of fully self-adhered membrane and flashings to be above 20 °F (minus 6.0 °C). Frost or water on the substrate is unacceptable.
- D. Ensure all preparatory work is complete before applying the primary fully self-adhered vapor-permeable air barrier sheet membrane.
- E. Set flush with sheathing, any mechanical fasteners used to secure sheathing surfaces or that penetrate sheathing surfaces. Provide fasteners secured into a solid backing and covered with the upper overlapping membrane. If exposed fasteners are present on the surface of the membrane, cover and seal with VaproLiqui-Flash™ or VaproBond™.
- F. If exposed fasteners are required, use VaproCaps™ with the appropriate fastener into structural members to ensure a water/air-tight seal.

3.2 COORDINATION OF SELF-ADHERED VAPOR PERMEABLE AIR BARRIER MEMBRANE INSTALLATION

- A. Download Installation Instructions at <http://vaprosshield.com/public-documents/installation-instructions>.
- B. Installation Summary:
 - 1. Self-adhered vapor-permeable air barrier sheets may be installed vertically or horizontally over the outside wall face of exterior sheathing board or other approved substrates. [Not to be used on any horizontal surfaces for water holdout.]
 - 2. Complete detail work at wall openings, building transitions, and penetrations before field applications, allowing for shingle laps with release film temporarily left in place as needed.
 - 3. Install fully self-adhered vapor-permeable air barrier sheet over the outside face of exterior sheathing board or substrate, measure and pre-cut into manageable-sized sheets to suit the application conditions.
 - 4. Install a fully self-adhered vapor-permeable air barrier sheet complete and continuous to the substrate in a sequential minimal 3-inch (76 mm) overlapping weatherboard format to shed water.
 - 5. Stagger all end lap seams.
 - 6. Roll the installed membrane with a two-handed roller to ensure positive contact and adhesion with the substrate immediately.

3.3 BUILDING TRANSITION CONDITIONS

- A. Tie-in to structural beams, columns, floor slabs and intermittent floors, parapet curbs, foundation walls, roofing systems, and at the interface of dissimilar materials with self-adhering air barrier transition and flashing membrane.
- B. Align and position fully self-adhered air barrier transition and flashing membrane,

- remove protective film, and press firmly into place. Provide a minimum 3-inch (76 mm) lap onto substrates.
- C. Ensure a minimum 3-inch (76 mm) overlap at side and end laps of membrane and 6-inch (152.4 mm) at inside and outside corners, if joints occur at corner locations.
 - D. Roll the membrane and lap seams with a roller to ensure positive contact and adhesion immediately.

3.4 MECHANICAL EQUIPMENT PENETRATIONS

- A. Mechanical pipe, electrical conduit, and/or duct work must be secured solidly into position before installation of a fully self-adhered vapor-permeable air barrier membrane.
- B. Electrical services penetrating the wall assembly and a fully self-adhered vapor-permeable air barrier membrane must be placed in an appropriate conduit and secured solidly into position.
- C. Install manufactured flanged penetration sleeves as recommended by the sleeve manufacturer.
- D. For straight-sided penetrations, cut and fit a fully self-adhered vapor-permeable air barrier to accommodate the sleeve, install VaproLiqui-Flash™ or VaproBond™ to seal the air barrier membrane to ductwork or preformed flange sleeve.
- E. For pipe penetrations, refer to the manufacturer's standard details.

3.5 WINDOW, DOOR AND OTHER WALL OPENINGS

SPEC WRITERS NOTE: Vapor-permeable rough opening flashing system includes two components. PanelFlashing SA[®] Self-Adhered and VaproLiqui-Flash™ or, as an alternate, VaproBond™. A vapor impermeable rough opening system includes VaproFlashing, BlockFlashing, or Vapro-SS Flashing™.

- A. Two-part vapor-permeable flashing system; PanelFlashing SA™ Self-Adhered flashing and VaproLiqui-Flash™, flashing around window or wall rough openings, subject to the opening size and installation of window, door, or louver type.
 - 1. PanelFlashing SA™ Self-Adhered flashing transition and flashing membrane installed 2 ¾ inch (70 mm) into rough wall openings for the sill, jambs, and head.
 - 2. Remove release film, align flashing membrane, and apply pressure to ensure positive contact. Roll lap seams to ensure adhesion. For the sill installation, leave the release film on the section that will overlap the field membrane. Overlap seams in weatherboard format to shed water.
 - 3. VaproLiqui-Flash Vapor Permeable Water Resistive Flashing For Rough Openings:
 - a. Liquid-applied window and door flashing shall be VaproLiqui-Flash™ by VaproShield, a liquid-applied vapor-permeable air barrier flashing material with resistance to moisture and air leakage properties compatible with the primary weather-resistant air barrier membrane.
 - b. Apply a 12-15 wet mil (0.030-0.038 mm) coating onto the installed PanelFlashing SA™ Self-Adhered flashing, 1-inch (25.4 mm) onto the face, continuing into the rough opening, covering the 2 ¾ inch (70 mm) PanelFlashing SA™ Self-Adhered flashing and the exposed rough opening surface.
- B. Optional VaproBond™ flashing, water impermeable, low vapor permeance flashing for

rough openings.

1. Fluid-applied membrane for window and door flashing shall be VaproBond™ Flashing by VaproShield, a low-vapor-permeable, impermeable air and water barrier flashing material, replacing VaproLiqui-Flash™. (Not recommended for wood framing.)
 2. Apply VaproBond™ Flashing, 30-50 wet mil (0.76 - 1.27 mm) coating, 1-inch (25 mm) onto the face, continuing into the rough opening, covering the 2 ¾ inch (70 mm) PanelFlashing SA™ Self-Adhered flashing and the exposed rough opening surface.
- C. Optional Vapor Impermeable Flashings for rough openings. VaproFlashing SA™ Self-Adhered flashing or, as an alternative, BlockFlashing™, or Vapro-SS Flashing™.
1. VaproFlashing SA™ Self-Adhered flashing or, as an alternative, BlockFlashing™, or Vapro-SS Flashing™ Self-adhered membrane for window and door flashing by VaproShield, impermeable air and water barrier flashing material, replacing the VaproLiqui-Flash PanelShield SA™ system. Not recommended for wood framing.
 2. Apply VaproFlashing SA™ Self-Adhered flashing or, as an alternative, BlockFlashing™, or Vapro-SS Flashing™, 1-inch (25 mm) onto the face, continuing into the rough opening, covering the rough opening to the interior of the fenestration of the exposed sill, legs, and header of the rough opening surface.
 3. Remove the release film, align the flashing membrane, and apply pressure to ensure positive contact. Firmly roll lap seams to ensure adhesion. For the sill installation, leave the release film on the section that will overlap the PanelShield SA™ field membrane. Overlap seams in weatherboard format to shed water.

3.6 VERTICAL APPLICATIONS SUMMARY

- A. For vertical applications, align sheets with an 'inside' or 'outside' corner to avoid wrinkles and misalignment of subsequent applications
- B. Measure and pre-cut into manageable-sized fully self-adhered sheets to suit the application conditions.
- C. Allow for excess material at the bottom of the wall to accommodate tie-ins and connections to adjacent surfaces.
- D. Roll up pre-cut material lengths with release paper facing OUTWARD.
- E. Starting at a corner of the roll, peel back approximately. 6 inches (152.4 mm) of release film from across the width of the pre-cut material roll.
- F. Using hand pressure, lightly apply the exposed adhesive surface to the substrate.
- G. Allow the rolled-up material to drop down the wall, with the remainder of the release film still attached (facing the wall), and extend down to the lowest point of the wall, checking for proper alignment, repositioning as necessary.
- H. Allow for excess material at the bottom of the wall to accommodate tie-ins and connections to adjacent surfaces.
- I. Align and position the fully self-adhered membrane, remove the release film, and press firmly into place. Provide a minimum 3-inch (76 mm) overlap at the side and end laps of the membrane.
- J. Continue to remove release film and apply pressure to ensure positive contact onto

the wall substrate.

- K. Refer to <http://vaprosshield.com/installation/instructions> for the most current and complete installation instructions.

3.7 HORIZONTAL APPLICATIONS

- A. For horizontal applications, align sheets and begin installation of the water-resistive weather barrier at the bottom or lowest point of the wall.
- B. To avoid wrinkles and misalignment of subsequent applications, it is recommended to pre-mark or "Snap" a level line to work from.
- C. Measure and pre-cut into manageable-sized sheets to suit the application conditions.
- D. Allow for excess material at the bottom of the wall to accommodate tie-ins and connections to adjacent surfaces.
- E. Align and position the fully self-adhered membrane, remove the release film, and press firmly into place. Provide a minimum 3-inch (76 mm) overlap at all sides and end laps of membrane. Roll the membrane and lapped seams with a two-handed roller to ensure contact and adhesion.
- F. Continue to remove release film and apply pressure to ensure positive contact onto the wall substrate.
- G. Install subsequent sheets of fully self-adhered vapor-permeable air barrier sheets in overlapping weatherboard format. Ensure sheets lie smoothly and flat on surfaces. Roll the membrane and lapped seams with a two-handed VaproRoller to ensure contact and adhesion.
- H. Refer to <http://vaprosshield.com/installation/instructions> for the most current and complete installation instructions.

3.8 BATTENS VENTILATION STRIPS, SHIMS OR MAT FOR RAINSCREEN CLADDING SYSTEMS

- A. Provide and install specified battens and ventilation strips under cladding systems.
- B. Install horizontal starter strip or vent strip at base of wall, vertical battens, and top vent strip, secure into solid backing, ready for installation of cladding system.
- C. Coordinate spacing of battens and vent strips to accommodate the cladding system.
- D. Coordinate spacing of VaproShim SA™ Self-Adhered to accommodate cladding system attachments.
- E. Coordinate attachment of VaproMat™ to accommodate cladding system attachments.

3.9 FASTENING CLIPS AND MASONRY TIES

- A. Install clips and masonry ties over the primary self-adhered vapor-permeable air barrier membrane.
- B. Secure clips and masonry ties with corrosion-resistant or stainless-steel screws with gasketed fasteners.
- C. Consult VaproShield Technical Services for recommendations on fastener treatments for Rainscreen screen cladding attachment components by others.

3.10 FIELD QUALITY CONTROL

PROJECT NAME
PROJECT LOCATION

ARCHITECTS/ENGINEERS FIRM NAME
DATE OF SUBMISSION

- A. Make notification when sections of work are complete to allow review before covering the fully self-adhered water-resistive vapor-permeable air barrier system.
- B. Owner to engage an independent consultant to observe substrate and membrane installation before placement of cladding system(s) and provide written documentation of observations.

3.11 PROTECTION

- A. Protect wall areas covered with self-adhered water-resistive vapor-permeable air barrier from damage due to construction activities, high wind conditions, and extended exposure to inclement weather.
- B. Review the condition of the fully self-adhered water-resistive vapor-permeable air barrier before installation of cladding. Repair, or remove and replace damaged sections with new membrane.
- C. Recommend to cap and protect exposed back-up walls against wet weather conditions during and after application of the membrane, including wall openings and construction activity above completed fully self-adhered water-resistive vapor permeable air barrier installations.
- D. Remove and replace water-resistive weather barrier membrane affected by chemical spills or surfactants.

END OF SECTION