

SPEC WRITERS NOTE: This specification includes materials and installation. Examine all Drawings and all Sections of the Specifications for requirements and provisions affecting the work of this Section.

Procedures for use of **SlopeShield® Plus** Self-Adhered (SA) Vapor Permeable Roofing Underlayment Air Barrier Material or Water-Resistive Vapor Permeable Air Barrier Sheet Membrane. **SlopeShield® Plus** Self-Adhered sheet membrane/roofing underlayment is used on sloped roof wood substrates, flat or sloped mass timber flooring/decking/roofing without the need of a primer. With a water vapor permeance rating of 30 perms (1716 ng/Pa.s.m²) as per the ASTM E96 water method, **SlopeShield® Plus** Self Adhered sheet membrane prevents air leakage and allows the roof/deck/floor assembly to breathe or 'dry-out' as necessary to meet the conditions of seasonal changes for each climate zone. This specification also includes vapor permeable air barrier products associated with mass timber columns, beams and mass timber wall panel weather protection during construction. 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 06 - WOOD, PLASTICS, AND COMPOSITES.

SECTION 060584

PERMEABLE AIR - WATER BARRIER PROTECTION FOR MASS TIMBER CONSTRUCTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Work of this Section includes requirements for developing a Mass Timber Protection Program, describing the Contractor's temporary facilities, controls and enclosures required to protect mass timber components from wetting and facilitate drying during construction until the permanent building enclosure, and heating and ventilating systems are complete. Section includes, but is not limited to protecting the following:
1. Mass Timber flooring, decking, and wood substrates roofing weather protection during construction provide self-adhering highly permeable membrane system.
 2. Mass Timber Columns and Beams weather protection, provide a temporary removable mechanically attached water resistive barrier membrane system.
 3. Mass Timber Wall Panels weather protection, provide water-resistive vapor permeable self-adhered air barrier material.
 4. Methods for mitigating the mass timber end grains' exposure to water should be considered, based on the project site and scheduling restraints. A combination of approaches may be necessary, such as applying a water repellent or coating to panel edges. Draping membrane protection over the edge of mass timber ends is the preferred method of protecting end grains. This will vary from project to project.
 - a. The work of this Section, also includes furnishing and installation of flashing membranes to bridge gaps, for transition areas of floor-to-wall interface and elsewhere as indicated or required by code to provide a continuous air barrier assembly at the floor, deck or roof. Taping of joints in deck/floor/roof construction is required to provide sealing of panels.

6. Flashing membrane locations include, but are not limited to, the following:
 - a. Connection of the floors, decks or roof to the wall system.
 - b. Connections of column and beam to floor or roof systems.
 - c. Connection of exterior mass timber wall panels to floor or roof systems.
 - d. Penetrations of floor, decking and roof system for mechanical equipment, elevator shafts, mechanical shafts and roof skylights.
 - e. All other air leakage pathways between the floor assembly and building envelope.
 - f. Provide material and work of this Section required to complete mock-up panel(s). Refer to exterior floor plans for extent of mock-up panels.

1.2 RELATED REQUIREMENTS:

- A. Section 011100 - Summary of Work; for work restrictions and limitations on material applications.
- B. Section 015010 - Temporary Permeable Air-Water Barrier for Mass Timber Construction.
- C. Section 018316 - Exterior Enclosure Performance Requirements; Coordinate installation of water-resistive vapor permeable, air barrier floor and roof underlayment membrane specified in this Section concurrently with installation of permanent building enclosure components specified for the Project.
- C. Section 150000 - Temporary Facilities and Controls; for temporary facilities during construction.
- D. Section 061113 - Engineered Wood Products.
- E. Section 061300 - Heavy Timber Construction.
- F. Section 061700 - Shop Fabricated Structural Wood.
- G. Section 061713 - Laminated Veneer Lumber.
- H. Section 061721 - Dowel-Laminated Timber.
- I. Section 061726 – Nail Laminated Timber
- J. Section 061753 - Shop Fabricated Wood Trusses.
- K. Section 061800 - Glued-Laminated Construction.

1.3 DEFINITIONS

- A. Mass Timber: Structural wood construction comprised of cross-sectional area timbers having minimum dimension of 3.8-inches (96 mm's) and that are solid wood, laminated wood or composite wood panels and components used as the primary building structural framework and supporting systems. Mass timber products are thick, compressed layers of wood, creating strong, structural load-bearing elements that can be constructed into panelized components. They are typically formed through lamination, fasteners, or adhesives.

1.4 CODES AND REGULATIONS

- A. State and local code requirements.
1. Fire Regulations: Comply with state and local requirements to maintain ASTM-E84 rating on all components of the system.
 2. Safety Regulations: Comply with requirements of all applicable Federal, State and local safety rules and regulations. Contractor is responsible for jobsite safety.
 3. Barricades and Barriers: As required by governing authorities having jurisdiction, provide substantial barriers, guardrails and enclosures around Work areas.

1.5 PROTECTION OF EXISTING construction

- A. Protection of Adjacent Facilities: Restrict Work to limits shown on Drawings and specified in Section 011100 - Summary or Work or as specified herein. Protect existing adjacent facilities from damage, including soiling, debris accumulation, dust and airborne contamination caused by construction activities.

1.6 SUBMITTALS

- A. Provide manufacturers product data for all materials required for the weather protection of mass timber flooring or roofing during construction or temporary weather protection of wood or engineered wood flooring substrates during construction.
- B. Submit samples of the following:
1. Manufacturer's sample warranty.
 2. 3 each **SlopeShield Plus** water-resistive vapor permeable air barrier sheets specified herein, minimum 8 by 10 inches (203 by 254 mm).
 3. 3 each **WallShield IT®** Integrated Tape water-resistive vapor permeable sheets specified herein, minimum 8 by 10 inches (203 by 254 mm).
 4. Accessory component:
 - a. VaproTape 4"W (10.2 cm) x 50' (15 m)
 - b. VaproLiqui-Flash™, 1 sausage
 - c. VaproBond™, 1 sausage

- d. 3 each VaproShim SA™ Self-Adhered 3 mm (1/8 in.), 1 in. x 4 in. (2.5 cm x 10.1 cm)
 - e. 3 each VaproShim SA™ Self-Adhered 7 mm (1/4 in.), 1 in. x 4 in. (2.5 cm x 10.1 cm)
 - f. 3 each VaproShim SA™ Self-Adhered 3 mm (1/8 in.), 3 in. x 4 in. (7.6 cm x 10.2 cm)
5. Membrane flashing products:
- a. 3 each SlopeFlashing™ Samples, 12 in. x 12 in. (30.5 cm x 30.5 cm)
6. Sealants (included by others) required to provide a complete air barrier membrane system.
- C. Shop Drawings: Provide shop drawings indicating locations of VaproShield Plus SA on Mass Timber floor/deck/roof substrates. Also provide locations of for weather protection of Mass Timber Columns and Beams with a removable mechanically attached water resistive barrier membrane system. In addition, provide shop drawings locating weather protection of Mass Timber Wall Panels with water-resistive vapor permeable self-adhered air barrier material, including flashing.

Delete section C. "LEED Submittals" 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 prior to DD. Envelope Commissioning may qualify for 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 IAQ Management plan for construction phase which protects building from moisture infiltration, SlopeShield Plus SA can help provide an additional 1 pt.
 - b. Low-emitting Material Credits: up to 3 pts. SlopeShield Plus SA complies with exterior product (emission req. exempt) requirements and VOC limits per SCAQMD Rule #1168 (as published Sept. 2017).
 - c. All roof or deck sealant and flashing materials to interior pass CDPH/EHLB/Standard Method V1.2 (Sect. 01350) for VOCs after 14 days cure time.

4. Awareness and Education [AE] and/or Innovation [IN/ID]
 - a. Applies to projects which offer both a case study and educational outreach program, which use the project as an example. 1 pt. available.

1.7 QUALITY ASSURANCE

- A. Single Source: Obtain self-adhered water-resistive vapor permeable air barrier sheet 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 minimum [10] ten years' experience and successful installations in similar project applications.
 2. Provide manufacturer's experienced in-house technical and field observation personal qualified to provide technical support.
- C. Installer Qualifications:
 1. Company specializing in performing Work of this Section with minimum [10] ten years' experience and written approved by the material manufacturer.
- D. Fire Performance Characteristics: Provide water-resistive barrier meeting the following fire-test characteristics.
 1. Surface-Burning Characteristics: ASTM E84
 - a. Flame spread index: 5 or less
 - b. Smoke developed index: 45 or less

1.8 REFERENCE STANDARDS

- A. Comply with the requirements of the Authorities Having Jurisdiction for the project, safety regulations, barricades and barriers.
- B. Canadian Standards Association (CSA Group):
 1. CSA S478:19, Durability in Buildings
- C. Underwriters Laboratories of Canada (ULC):
 1. ULC S146-19, Standard Method of Test for the Evaluation of Encapsulation Materials and Assemblies of Materials for the Protection of Structural Timber Element.

1.9 MOCK-UPS

- A. Construct mock-up in accordance with Section 014339 - Mock-up, or as specified under General Requirements Section 011000 - Summary.
- B. Provide mock-up of specified water-resistive vapor permeable air barrier materials under provisions of Section 013323 - Shop Drawings, Product Data and Samples and as specified below:

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

- 1. Coordinate construction of mock-ups to permit inspection and testing of air barrier along with interfacing flashing and components.
- 2. Prior to installation of specified water-resistive vapor permeable air barrier materials on the mass timber related flooring/deck/roof, columns, beams, and wall panels. Construct a 100 square foot mock-up of typical existing mass timber-floor/deck/roof assembly, including connection between wall and roof, wall and floor to indicate relationship of materials with air barrier and quality of workmanship. Provide one mass timber column and 10-foot section mass timber beam to indicate relationship of materials with air barrier and quality of workmanship. Provide 100 square foot mock-up of exterior wall panel assembly, including connection between wall and floor or wall and roof. Provide mock-ups using actual air barrier membrane for floor/deck/roof construction, beam and column and wall panels to subsequent construction. Provide several mock-ups if necessary to include the various conditions. Acceptable mock-ups, undamaged at time of Substantial Completion, may be incorporated into the finish work. Rebuild mock-ups which are not approved at no additional cost to the Owner.
- 3. Construct mock-up in accordance with details of mock-up indicated on the Drawings when applicable.

1.10 PRE-INSTALLATION CONFERENCE

- A. Conduct a pre-installation conference [two] <Insert> weeks prior to commencing work of this section, under provisions of Section 013119 - Project Meetings or as specified under General Requirements Section 011100.
- B. Owner, Architect, Consultant and trades responsible for creating a continuous plane of water and air tightness are required to attend. Ensure all contractors responsible for creating a continuous plane of water and air tightness are present.

1.11 DELIVERY, STORAGE AND HANDLING

- A. Refer to current Product Data Sheet, Installation Instructions and Safety Data Sheets (SDS) at www.vaproshield.com for proper storage and handling.
- B. Comply with manufacturer's written instructions for delivery, storage and handling.
- C. Deliver materials to the job site in undamaged and original packaging indicating the name of the manufacturer and product.

- D. Store roll materials on end in original packaging. Protect rolls from direct sunlight and inclement weather until ready for use.
- E. Waste Management and Disposal
 - 1. Separate and repurpose or recycle waste materials in accordance with Section [017419 Construction Waste Management and Disposal], and with the Waste Reduction Work Plan. Refer to air barrier manufacturers guidelines for disposal of air barrier components.

1.12 COORDINATION

- A. Ensure shingled lapping and continuity of the fully self-adhered water-resistive water vapor permeable air barrier system throughout the scope of this section.
 - 1. Provide highly permeable air barrier membrane that includes self-adhered air barrier, transition membranes, flashing and sealants at penetrations and intersections. Provide SlopeShield Plus SA Self-Adhered flashing which includes VaproLiqui-Flash by VaproShield, a liquid-applied water vapor permeable air barrier flashing material or VaproBond™ a single component modified silicone sealant used to bind layers of VaproShield membranes to each other or typical construction material surfaces.
 - 2. At floor, deck and roof mass timber locations indicated, provide unimpeded, water resistive barrier underlayment and flashings to the exterior.
 - 3. Provide WallShield IT Integrated Tape highly permeable mechanically attached and removeable water-resistive barrier membrane at mass timber beam and column locations including associated transition products.
 - 4. At Mass Timber wall locations provide self-adhered highly permeable air barrier membrane including associated transition products.

1.13 WARRANTY

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

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Provide SlopeShield Plus Self-Adhered spun-bond polyester fabric with proprietary coatings on the top and underside. The top coating is slip resistant and UV-stable. The underside is a fully self-adhered adhesive protected by a siliconized release film. Combined they provide a Water-Resistive Highly Vapor Permeable Self-Adhered Air Barrier Material.

- B. Basis-of-Design Product: Subject to compliance with requirements, provide fully self-adhered highly permeable air barrier sheet membrane SlopeShield Plus 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 polyester with vapor-permeable adhesive. Provide sheet membrane tested in accordance with ICC-ES AC 48 and AC 188 criteria to meet IBC and IRC requirements for criteria for self-adhered roof underlayments weather resistive barriers having the following properties:
1. Color: Black with allowable UV exposure for 180 days, prior to coverage.
 2. Thickness: ASTM D5147 Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Material 0.51 mm (20 mil)
 3. Weight: ASTM D5147 Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Material. In house: 447 g/m² (1.46 oz/ft²)
 4. Roll Weight: 50.6 lbs. (23.0 kg) (1.56 oz/ft²)
 5. Boxed Roll Weight: 54 lbs. (24.6 kg)
 6. Roll Length & Width: 1.5 m x 31.1 m (59" x 102')
 7. Roll Coverage: 500 ft² (46.6 m²) gross
 8. Warranty: 20 years
 9. Ultra Violet Light Exposure: 180 days (6 months) prior to covering
 10. Service Temperature: Minus 40°F (-40°C) - 250°F (121°C)
 11. Installation Temperature: Minimum 20°F (-6°C)
 12. Composition: Spun-bond polyester fabric with proprietary coatings
 13. Primer: No Primer Required
- C. Tensile Strength (surface tension): ASTM D2523 Standard Practice for Testing Load-Strain Properties of Roofing Membranes. MD – 2.8 N/mm (16 lbf/in.), XMD – 1.4 N/mm (8 lbf/in.).
- D. Percent Elongation: ASTM D2523 Standard Practice for Testing Load-Strain Properties of Roofing Membranes. MD – 36 %, XMD – 40 %.
- E. Tear Resistance (Tongue Tear): ASTM D4073 Standard Test Method for Tensile-Tear Strength of Bituminous Roofing Membranes. MD - 427 N (96.1 lbf), XMD - 273 N (61.3 lbf).
- F. Dry Breaking Force (Grab method) Percent Elongation: ASTM D5034 Standard Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test). MD – 31%, XMD – 40%.
- G. Dry Breaking Force (Grab method) MD ≥40 XMD ≥35: ASTM D5034 Standard Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test). MD – 23.6 N/mm (135 lbf/in.), XMD – 19.8 N/mm (113 lbf/in.).

- H. ASTM D5147 Standard Test Method for Tensile-Tear Strength of Bituminous Roofing Membranes. MD – PASS, XMD - PASS.
- I. Tear Resistance (Tongue Tear): ASTM D5601 Standard Test Method for Tearing Resistance of Roofing and Waterproofing Materials and Membranes. MD – 70.3 N (15.8 lbf), XMD – 64.5 N (14.5 lbf).
- J. Static Puncture Resistance: ASTM D5602 Standard Test Method for Static Puncture Resistance of Roofing Membrane Specimens. PASS Concrete 445 N (100 lbf) PASS, Insul-foam IX 222 N (50 lbf).
- K. Puncture Resistance: ASTM E154 Standard Practice for Testing Load-Strain Properties of Roofing Membranes. Puncture Strength 636 N (143 lbf), Peak Deflection 43.4 mm (1.71 in).
- L. Water Vapor Transmission:
 - 1. ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials. Water Method Procedure B. 22.8°C (73°F) 50%RH, 30 Perm (grain/h•ft²•inchHg), 1716 ng/Pa•s•m².
 - 2. ASTM E398 Standard Test Method for Water Vapor Transmission Rate of Sheet Materials Using Dynamic Relative Humidity Measurement. 23°C (73.4°F) 50%RH, 30 Perm (grain/h•ft²•inchHg), 1716 ng/Pa•s•m².
 - 3. ASTM F1249 Standard Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor. (23°C, 0-50 %RH), 9.2 Perm (grain/h•ft²•inchHg) 526 ng/Pa•s•m².

SPEC WRITERS NOTE: Acceptable substrates for SlopeShield SA Self-Adhered Water-Resistive Vapor Permeable Air Barrier Sheet include; plywood, and mass timber. Best practice guidelines for the application of SlopeShield SA Self-Adhered is on clean, dry surfaces of mass timber or sheathing surfaces without the use of adhesive-primers. Applications of SlopeShield SA Self-Adhered on mass timber or sheathing surfaces clean of oil, dust, bulk water or other contaminants including primers, should be followed by two handed roller pressure to insure good adhesion, immediately after installation of material. Rough opening flashing system includes several components. VaproLiqui-Flash or as alternates, VaproBond™ Flashing or Vapro-SS Flashing™.

- M. Adhesion Testing
 - 1. Peel Adhesion: ASTM D903 Standard Test Method for Peel or Stripping Strength of Adhesive Bonds:
 - a. Concrete 438 N/m (2.5 pli)
 - b. Plywood 876 N/m (5.0 pli)
 - 2. Lap Adhesion: ASTM D1876 Standard Test Method for Peel Resistance of Adhesives (T-Peel Test): 437 N/m (2.5 pli).
 - 3. Delamination (Tear-drop): FM 4470, C.2 Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1

and Noncombustible Roof Deck Construction. Appendix H Test Procedure for Small Scale QC and Physical Properties of Roof System Assemblies:

- a. Concrete - 24 N (5.4 lbf)
 - b. Plywood - 28 N (6.4 lbf)
 - c. Securock® Gypsum-FiberRoof Board – 35 N (7.8 lbf)
4. Tensile Adhesion: Testing Application Standard (TAS) No. 114-95, Test Procedures for Roof System Assemblies, in the High Velocity Hurricane Zone Jurisdiction:
- a. INSTA STICK™ - 2848 N (640.3 lbf)
 - b. OlyBond500™ - 2580 N (580 lbf)
 - c. Millennium One Step™ - 3821 N (858.9 lbf)
 - d. Millennium PG-1 Pump Grade - 4355 N (979 lbf)
 - e. CR-20 - 3354 N (754 lbf)
- N. Air Resistance Testing: Air Permeance:
1. ASTM E2178 @75 Pa Standard Test Method for Air Permeance of Building Materials: 0.00437 l/ (s x m²) @ 75 Pa (0.00086 cfm/ft² @ 1.57 psf).
- O. Water Resistance Testing: Nail Sealability: ASTM D1970/ section 7.9 Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection. Refencing, ASTM D7349 Standard Test Method for Determining the Capability of Roofing and Waterproofing Materials to Seal around Fasteners: Pass.
- P. Fire Testing:
1. Flame Spread Smoke Developed: ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials: Flame Spread 5, Smoke Developed 45.
 2. Cone Calorimeter Testing Data: ASTM E1354 Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter:
 - a. Time to ignition: 23 sec
 - b. Flame Duration: 51 sec
 - c. Ave. Effective Heat of Combustion: 0.0066 MJ/kg (6.6 kJ/kg)
 - d. Ave. HRR at 60 sec: 89 kW/m²
 - e. Ave. HRR at 180 sec: 14 kW/m²
 - f. Peak HRR: 156 kW/m²
 - g. Time of Peak: 49 sec

h. Total HRR/A: 7.4 MJ/m²

Q. Water-Resistive Vapor Permeable Transition and Flashing Membrane

1. Provide self-adhered air barrier transition and flashing membrane for all transitions. Provide pre-cut SlopeFlashing™ Self-Adhered flashing by VaproShield. SlopeFlashing™ Self-Adhered flashing is a zero VOC fully self-adhered water-resistive vapor permeable sheet membrane having the following properties:
2. Permeable Air Barrier Sheet, factory slit to flashing sizes. (See 2.1.B.1 above).
 - a. Same material and properties as SlopeFlashing™ Self-Adhered Water-Resistive Vapor
 - b. Physical Dimensions: SlopeFlashing SA™ Self-Adhered flashing: 19 2/3 inches (31.1 cm) wide x 102 feet (31.1 m) long.

2.2 AIR BARRIER AT MASS TIMBER WALL LOCATIONS

A. Provide PanelShield Self-Adhered Water-Resistive Vapor Permeable Air Barrier Sheet as manufactured by VaproShield, consisting of a proprietary polyacrylic coating on spun-bond polyester fabric with a specially formulated adhesive. Provide sheet membrane tested in accordance with ICC-ES AC 38 criteria to meet IBC and IRC requirements for water resistive barriers having the following properties.

1. Color: Black/Yellow with allowable UV exposure for 12 months, prior to coverage.
2. Breaking strength and Elongation to ASTM D5034: 119 lbf (529vN), machine direction; 96 lbf (427 N), cross-machine direction.
3. Water Vapor Permeance tested to ASTM E398: minimum of 26.02 perms (1489 ng/Pa.s.m²).
4. Water Vapor Permeance tested to ASTM E96 water method, procedure B: minimum of 16.75 perms (958 ng/Pa.s.m²).
5. Water Vapor Permeance tested to ASTM E398: minimum of 26.02 perms (1489 ng/Pa.s.m²).
6. Air Leakage: 0.0001 L/s.m² @ 75 Pa (0.0000 cfm/ft² @ 1.57 psf).
7. Water Resistance tested to AATCC 127, 550 mm hydrostatic head for 5 hours: No leakage
8. Application Temperature: Ambient temperature must be above 20 °F (minus 6 °C).
9. Surface Burning Characteristics tested to ASTM E84: Class A, Flame-Spread index of less than 0, Smoke-Developed index of less than 20.
10. Physical Dimensions: PanelShield SA: 18 mil (0.45 mm) thick, 59 inches (1.5 m) wide, 102' (31.1 m). 407.699 g/m² (1.336 oz/ft² or 12.025 oz/yd²) membrane weight.

2.3 AIR BARRIER AT MASS TIMBER BEAM AND COLUMN STRUCTURAL ELEMENTS

- A. Primary mechanically attached sheet membrane shall be WallShield IT® Integrated Tape water-resistive vapor permeable sheet membrane by VaproShield, a zero VOC vapor permeable sheet membrane consisting of multiple layers of spun-bonded polypropylene tested in accordance with ICC-ES AC 38 criteria to meet IBC and IRC requirements for the water-resistive barrier having the following properties:
1. Color: Green facer with allowable UV exposure for 180 days, prior to coverage.
 2. Breaking strength and Elongation to ASTM D 5034: 102.9 lbf (457.7 N), machine direction; 108.4 lbf (482.2 N), cross-machine direction.
 3. Water Vapor Permeance tested to ASTM E 96 Method A: minimum of 87 perms (602 g/24hr•m²)
 4. Water Vapor Permeance tested to ASTM E 96 Method B: minimum of 90 perms (617 g/24hr•m²)
 5. Water Vapor Permeance tested to ASTM E 398: minimum of 142.56 perms (986.62 g/24hr•m²)
 6. Water Resistance tested to AATCC 127, 550 mm hydrostatic head for 5 hours: No leakage
 7. Application Temperature: No minimum temperature.
 8. Surface Burning Characteristics tested to ASTM E 84: Class A, Flame-spread index of 0, Smoke-developed index of less than 65.
 9. Physical Dimensions: 0.0232 inches (0.589 mm) thick and 59 inches (1.5 m) wide and 5.088 oz/yd² (172.5 g/m²).

2.4 ROOF/FLOOR ROLLER

- A. Roof/floor roller tool: Provide roller incorporating weighted rollers of heavy-duty design die-cast type to firmly secure the membrane adhesive to the substrate.

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

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Existing Conditions: Existing conditions must be review prior to installation. Ensure that all adjacent mass timber walls, floors, decking, roofing are properly installed, structurally sound and ready to accept temporary weather/air barrier products/system. Also ensure that all mass timber columns, beams and mass timber wall panel are ready to accept weather barrier products/systems.

- B. Prior to any Work, the contractor is responsible to perform, with the Owner or Owner's agent, a preconstruction checklist or ICRA, as directed by the Owner.
 - C. Mass Timber Flooring/Deck/Roof, Column, Beam and Wall Panel Protection: Protect mass timber flooring/decking/roofing, column, beam and mass timber wall systems against water intrusion damage during construction period. Protection methods indicated are recommended by air barrier manufacturer and the Architectural/Engineering disciplines.
 - D. Apply temporary containment floor/deck/roof barrier in strict accordance with manufacturer written instructions.
 - E. Protection of Installed Work General:
 - 1. Provide temporary weather protection for installed products. Control traffic in immediate area to minimize damage to Water Barrier installed products.
 - 2. Protective Coverings: Provide protective coverings at mass timber floor/roof locations as necessary to prevent damage from moisture and construction activities.
 - F. Removal of Temporary Barriers and Enclosures
 - 1. Only the WallShield® IT Integrated Tape water-resistive vapor permeable sheet membrane by VaproShield is removeable. The SlopeShield Plus Air and Water barrier vapor permeable membrane is intended to remain in place.
 - G. Cleaning and Repairs: Clean and repair damage, caused by installation or use of temporary barriers and enclosures.
 - H. Manufacturer's Installation Guidelines: VaproShield Air Barrier installation parameters.
- 3.2 MECHANICALLY ATTACHED VAPOR PERMEABLE WATER RESISTIVE, AIR BARRIER MEMBRANE INSTALLATION
- A. Download Installation Instructions at <http://vaproshield.com/public-documents/installation-instructions>.
 - B. Installation Summary:
 - 1. Mechanically attached water-resistive vapor permeable sheet membrane should be installed horizontally over the outside face of both interior and exterior mass timber column and beam location surfaces.
 - 2. Complete detail work at; wall openings, building transitions and penetrations prior to field applications.
 - 3. Install mechanically attached water-resistive vapor permeable sheet membrane over the outside face of exterior mass timber column and beam surfaces or substrate, measure and pre-cut into manageable sized sheets to suit the application conditions.

4. Install mechanically attached water-resistive vapor permeable sheet membrane complete and continuous to substrate in a sequential minimal 6 inch (76 mm) horizontal overlapping weatherboard.
5. Stagger all vertical end lap seams and overlap a minimum of 12 inch (305 mm).

3.3 SELF-ADHERED VAPOR PERMEABLE AIR BARRIER MMBRANE INSTALLATION FOR MASS TIMBER WALL SYSTEMS

- 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 mass timber walls 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 prior to field to 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 mass timber board or substrate, measure and pre-cut into manageable sized sheets to suit the application conditions.

END OF SECTION