

SPECIFICATION RESOURCE FOR DIVISION 7 – *WRAPSHIELD™* Breathable Membrane

Division 7

07200 Thermal Protection

07270 Air Barriers

07276 – WrapShield® Breathable Underlayment

SPECIFIER NOTES	PART 1 - GENERAL
<p>Some Architects use a separate Rain Screen Specification Section which includes a wall mock-up, underlayment, preparation of penetrations, specialty items such as metal sill pans, and even installation of doors, windows and siding.</p> <p>Shop drawings may be the logical way for the owner (and contractor) to understand the relationship of the actual materials used on the project.</p> <p>NOTE: No project could have all of the components listed; DELETE THOSE ITEMS NOT REQUIRED.</p>	<p><b>1.1 SUMMARY</b></p> <p>A. This Section provides for the exterior wall, breathable membrane</p> <p>B. Related Sections include the following:</p> <ol style="list-style-type: none"> <li>1. Division 6 Section "Rough Carpentry" for exterior sheathing</li> <li>2. Division 7 Section "Metal Siding" for wall membrane</li> <li>3. Division 13 Section "Pre-Engineered Buildings" for metal siding and roofing</li> </ol> <p><b>1.2 REFERENCES</b></p> <p>A. American Association of Textile Chemists and Colorist [AATCC]</p> <p>B. American Society for Testing and Materials [ASTM]</p> <p>C. International Code Council Acceptance Criteria [ICC-ES-AC]</p> <p><b>1.3 SUBMITTALS</b></p> <p>A. Product Data: Include manufacturer's written instructions, technical data, and tested physical and performance properties of breathable membrane.</p> <p>B. Shop Drawings: Provide 1-1/2" scale drawings (or larger) showing relationship of membrane to:</p> <ol style="list-style-type: none"> <li>1. Framing or blocking members</li> <li>2. Girts</li> <li>3. Thermal Insulation</li> <li>4. Sheathing</li> <li>5. All exterior cladding and corner conditions</li> <li>6. Door or window frames               <ol style="list-style-type: none"> <li>a. Sill pans</li> <li>7. Through-Wall Metal Flashing</li> <li>8. Balcony and railing penetrations</li> <li>9. Structural Tie-Back Penetrations</li> <li>10. Rain Screen Battens / Cavity Design</li> <li>11. Pipe, Conduit and Duct penetrations</li> </ol> </li> </ol> <p>C. Samples:</p> <ol style="list-style-type: none"> <li>1. 8-1/2-x-11 inch square of breathable membrane sheet</li> <li>2. Tapes (Single &amp; Double-Sided)</li> <li>3. Factory fabricated window opening corners</li> <li>4. 12" long section of sill pan</li> <li>5. Sample of Batten 6" long x 1/2" depth</li> <li>6. Provide materials and fasteners for mock-up</li> </ol> <p>D. Manufacturer's Instructions: Provide manufacturer's instructions showing the recommended procedures and sequence of installation of breathable membrane in rain screen installation. Please see our website <a href="http://www.VaproShield.com">www.VaproShield.com</a> for downloadable installation instructions.</p>

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	<p>1.4 QUALITY ASSURANCE</p> <ul style="list-style-type: none"> <li>A. Membrane manufacturer shall have an on-going quality control program with inspections by a nationally recognized independent organization and shall be so labeled.</li> <li>B. Source Limitations: Obtain all breathable membrane through one source from a single manufacturer.</li> <li>C. Preinstallation Conference: Conduct conference at project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review requirements for membrane, including surface preparation specified under other Sections, substrate condition and pretreatment, temporary weather protection, forecasted weather conditions, special details and sheet flashings, installation procedures, testing and inspection procedures, and protection and repairs.</li> </ul> <p>1.5 DELIVERY, STORAGE, AND HANDLING</p> <ul style="list-style-type: none"> <li>A. Deliver materials to project site in original containers with seals unbroken, wrapped in a polythene sleeve, labeled with manufacturer's name, and product brand name.</li> <li>B. Store rolls under cover, on a clean, level surface, either flat or upright.</li> </ul>
<b>SPECIFIERS NOTES</b>	<b>PART 2 - PRODUCTS</b>
	<p>2.1 MANUFACTURERS</p> <ul style="list-style-type: none"> <li>A. Products: Subject to compliance with requirements, provide one of the following products:             <ul style="list-style-type: none"> <li>1. Spun Bonded Polypropylene: Membrane shall be furnished in standard rolls of 59" high (1-1/2 meters) and 164 feet (50 meters) long                 <ul style="list-style-type: none"> <li>a. WrapShield – Orange (or black for open joint rain screen applications), distributed by VaproShield LLC, Phone (866) 731-7663, <a href="http://www.vaproshield.com">www.vaproshield.com</a></li> <li>b. Others as may be approved by Addendum.</li> </ul> </li> </ul> <p>Note: The Architect is not aware of any other material that has the water resistance and high perm rating of the specified product.</p> </li> </ul> <p>2.2 UNDERLAYMENT PHYSICAL PROPERTIES</p> <ul style="list-style-type: none"> <li>A. Color: Exterior Orange to weather side, White on interior. (or Black exterior - See website for open joint rain screen application options <a href="http://www.VaproShield.com">www.VaproShield.com</a> )</li> <li>B. Thickness and Weight: 0.020 inches thick and 5.014 oz. / sq. yd.</li> <li>C. Tensile Strength: ASTM D882, Pass</li> <li>D. Dry Breaking Force: ASTM D5034, Pass</li> <li>E. Water Resistance (control and weathered specimens): AATCC 127, Pass</li> <li>F. Water Resistance (Ponding): ASTM D779, Pass</li> <li>G. Water Vapor Transmission: ASTM E96, Pass</li> <li>H. Low Temperature Bend: AC38, Pass</li> </ul>

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Accessories provided by VaproShield include a complete systems approach by offering prefabricated sill pans and a batten system, which can be utilized in a simple rain screen system

4" VaproTape (Single-Sided)  
35 mil, Black is available for open joint applications.

- I. Air Permeance of Building Materials: ASTM 2178, Pass
- J. Air Leakage through Wall Systems: ASTM E 283, Pass
- K. Air Retarder Materials & Systems: ASTM 1677, Pass
- L. Flamespread Index: ASTM E-84, Pass
- M. Smoke Development Index: ASTM E-84, Pass
- N. Water Resistance (UBC Flashing Requirements): ASTM 2112, Pass

2.3 BUILDING OFFICIAL APPROVALS

- A. ICC: International Code Council, ICC Certificate #ESR-1916 (Approved).

2.4 AUXILIARY MATERIALS , distributed by VaproShield LLC Phone (866) 731-7663

A. Membrane Flashing

- 1. Flashing Rolls: VaproFlashing<sup>™</sup> 11-3/4" and 14" widths x 164' long. Orange color (or black for exposed open joint rain screen applications)
- 2. Factory Formed Corners
  - a. VaproFlashing Factory Formed Corners<sup>™</sup> 18" x 18"
  - b. Others as may be approved by Addendum.

B. VaproSillSaver<sup>™</sup>

- 1. Window Sill Pan – VaproSillSaver
  - a. 1-5/8", 2", 2-3/8", 3-1/8" Sill Pan for flanged windows with end dams and spacers for field modification and installation
- 2. Sliding Door Sill Pan
  - a. 3-1/8" Sill Pan for flanged sliding doors with end dams and spacers for field modification and installation

C. VaproBatten<sup>™</sup> and VaproVent<sup>™</sup> Strips (Rain Screen Construction)

- 1. Battens for a breathable drainage cavity:
  - a. VaproBatten 1/2" PVC furring strips for installation by nail gun (see installation guidelines for proper fastening procedure)
  - b. VaproVent top and bottom venting protection strips
  - c. Others as may be approved by Addendum

D. Tape

- 1. Single-Sided Tape:
  - a. 3" VaproTape<sup>™</sup> (Single-Sided) 20 mil., for use to secure WrapShield to itself and to substrates
  - b. Others as may be approved by Addendum
- 2. Double-Sided Sealing Tape
  - a. 1" VaproTape<sup>™</sup> (Double-Sided) 30 mil., for use to seal WrapShield to itself and to substrates
  - b. One inch wide butyl rubber tape, subject to approval of the Architect.
  - c. Others as may be approved by Addendum.

E. Caulks and Sealant

- 1. As approved and recommended by membrane manufacturer.

F. Fasteners

- 1. Wood Sheathing/Exterior Gypsum Substrate Application:

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<p>Fasteners are dictated by the ICBO Their approval provides no minimum frequency for the fasteners. It states, “The underlayment shall be fastened only as necessary to hold in place, except in areas subject to basic (fastest mile) wind speeds in excess of 90 miles per hour (for UBC) or 3 second gust wind speeds in excess of 110 miles per hour (for IRC).” Since the underlayment will be held down by cladding, many specifiers do not mention detailed information about the fasteners</p>	<ul style="list-style-type: none"> <li>a. Minimum No. 12-gage [.0129-inch-shank-diameter (2.11mm)] corrosion-resistant steel or stainless steel nails having a minimum 3/8-inch diameter (9.5mm) head,</li> <li>OR</li> <li>b. No. 14 gage [.083-inch-shank-diameter (2.11mm)] corrosion-resistant galvanized steel or stainless steel nails having a 1-inch diameter (25.4mm) caps,</li> <li>OR</li> <li>c. Minimum No. 16 gage [.065-inch-leg-diameter (1.65mm)] stainless steel or galvanized staples having minimum 7/16-inch (11.1 mm) crowns</li> </ul> <ul style="list-style-type: none"> <li>2. Metal Girt Application: <ul style="list-style-type: none"> <li>a. VaproAdhesive™ sprayed at 2" wide and</li> <li>OR</li> <li>b. Pancake head self-drilling screw with gasket/washer</li> </ul> </li> <li>3. Concrete or Masonry Substrate Application: <ul style="list-style-type: none"> <li>a. Spot attach with VaproAdhesive 2" wide at 18" on center. Mechanically attach per cladding manufacturer's instructions.</li> </ul> </li> </ul>
<b>SPECIFIERS NOTES</b>	<b>PART 3 - EXECUTION</b>
	<ul style="list-style-type: none"> <li>3.1 EXAMINATION <ul style="list-style-type: none"> <li>A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements and other conditions affecting performance.</li> </ul> </li> <li>3.2 SURFACE PREPARATION <ul style="list-style-type: none"> <li>A. Clean and prepare substrate according to manufacturer's written recommendations. Provide clean and dry substrate for breathable membrane application.</li> </ul> </li> <li>3.3 PENETRATIONS <ul style="list-style-type: none"> <li>A. Pipes and Conduit: Install manufactured penetration sleeves sized for the penetration and installed as recommended by the manufacturer.</li> <li>B. Windows: <ul style="list-style-type: none"> <li>1. Secure prefabricated VaproFlashing and Factory Formed Corners at window sill ends.</li> <li>2. Next, lay strip of breathable membrane across sill. Secure with tape or mechanical fasteners so that the membrane used for the wall can be slipped underneath the corners and sill, allowing for a minimum lap of 6 inches.</li> <li>3. Wrap a strip of breathable membrane around jambs extending horizontally along walls a minimum of 9 inches.</li> <li>4. Secure VaproShield Factory Formed Corners at ends of window head.</li> <li>5. Next, lay strip of breathable membrane across the opening, extending horizontally beyond the corners a minimum of 6 inches. <ul style="list-style-type: none"> <li>a. Cut membrane along the leading edge of the header an inch or two beyond each jamb, so that the nailing flange of the window may side up behind the membrane.</li> </ul> </li> </ul> </li> <li>C. Doors: <ul style="list-style-type: none"> <li>1. Wrap a strip of breathable membrane around jambs, extending horizontally along walls a minimum of 9 inches. <ul style="list-style-type: none"> <li>a. Secure VaproShield Factory Formed Corners at ends of door head.</li> </ul> </li> </ul> </li> </ul> </li> </ul>

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<p>Paragraph 3.4 is considered a VaproShield “Best Practice”.</p>	<ul style="list-style-type: none"> <li>b. Next, lay strip of breathable membrane across the opening, extending horizontally beyond the corners a minimum of 6 inches.</li> <li>c. Cut membrane along the leading edge of the header, an inch or two beyond each jamb, so that the nailing flange of the door may slide up behind the membrane.</li> </ul>
	<p>3.4 BREATHABLE UNDERLAYMENT APPLICATION</p> <p>A. Install membranes in accordance with manufacturer’s instructions over <b>[exterior sheathing or metal purlins]</b>. Secure the membrane so that the subsurface is protected from weather until cladding can be installed.</p> <ul style="list-style-type: none"> <li>1. First, wrap penetrations as specified and detailed.</li> <li>2. Next, starting from the bottom, unroll the membrane, Orange side out (or black for open joint rain screen applications), mechanically fastening top and bottom, 2'-0" o.c.</li> <li>3. Seal against jambs of openings with 1" VaproTape (Double-Sided).</li> <li>4. Vertical laps shall be a minimum of 6" with taped joints or 12" without tape. Horizontal laps shall be a minimum of 6".</li> </ul>
<p>VaproShield Best Practice: Recommends header treatment that is part of a recommended rain screen system. Realizing that through-wall metal flashings at door headers are always a standard component. It should be noted that many metal door manufacturers will manufacture hollow metal door frames with “nailing flanges, which are not used for nailing, but are for providing a flange to “flash to”.</p>	<p>3.5 INSTALLATION INSTRUCTIONS:</p> <p>A. STEP 1 – BEGIN FLASHING PENETRATIONS</p> <ul style="list-style-type: none"> <li>1. Cut a piece of WrapShield to act as a “skirt” around counter flashed penetrations i.e. Ducts/housings or pipes. Distance from penetration to edge of barrier “skirt” minimum of 12”.</li> <li>2. Make four cuts to form a star shape and place over penetration snugly.</li> <li>3. Extend “ears” of material along vertical penetration and seal with VaproTape (Single-Sided).</li> <li>4. Tape top edge of “skirt” to wall using VaproTape (Single-Sided). Do not tape bottom edge.</li> </ul> <p>B. STEP 2 – ATTACH WATER RESISTIVE/AIR BARRIER</p> <ul style="list-style-type: none"> <li>1. Starting at base of wall, unroll WrapShield horizontally across wall. Best Practice: place a continuous bead of non-skinning butyl sealant or butyl tape on foundation wall and seal WrapShield to it.</li> <li>2. Extend 6” over starting corner.</li> <li>3. Fasten at top and bottom of roll at 2” from edge of WrapShield to center of fasteners.</li> <li>4. Fasten at maximum of 2’0” on center.</li> <li>5. Shingle next layers of WrapShield, ensuring minimum 6” horizontal and minimum 12” vertical laps. Ensure minimum 6” horizontal and minimum 6” vertical laps if taped with VaproTape (Single-Sided) at vertical laps. Do not place vertical laps above windows.</li> <li>6. For delayed installation of siding/masonry determine fasteners and reduced fastener spacing for wind exposure (i.e. cap nails).</li> </ul>
<p>It is recommended to include in the metal or vinyl door installation specification, that after installation double-sided tape is to be added and placed over the nailing flanges, so that the wall underlayment will be sealed tight against the flanges.</p>	<p>C. STEP 3 – FINISH FLASHING PENETRATIONS</p> <ul style="list-style-type: none"> <li>1. Ensure WrapShield is slipped under bottom edge of penetration “skirt” and shingled over taped top edge.</li> <li>2. Seal top and sides with VaproTape (Double-Sided).</li> <li>3. Ensure whole “skirt” assembly is flashed appropriately with metal.</li> </ul>
<p>The underlayment will be fastened again by the furring or support system needed to hold the cladding off the underlayment. Assuming reasonable temperature variations, WrapShield does not tend to fish mouth along the ends because of its thickness. Typically, attaching it two (2) feet on center along the top and bottom is adequate. Obviously, if harsh field conditions are expected then additional fasteners should be considered.</p>	<p>D. STEP 4– INSTALL SIDING/MASONRY</p> <ul style="list-style-type: none"> <li>1. Cladding boards – per cladding system installation requirements. For information on use of Black WrapShield in open joint applications refer to <a href="http://www.vaproshield.com">www.vaproshield.com</a>.</li> <li>2. Masonry - wall ties/mechanical fasteners/veneer anchors as per building code requirements.</li> </ul>

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<p>Informal tests have shown our membranes to resist weather very well for over a year.</p>	<p>E. AIR BARRIER APPLICATIONS</p> <ol style="list-style-type: none"> <li>1. Install WrapShield between sill plate and foundation gasket and seal to foundation wall with a bead of non-skinning butyl or butyl tape (VaproTape Double-Sided).</li> <li>2. Method A: Flash penetrations and install WrapShield according to water resistive barrier installation instructions.*</li> <li>3. Fasteners to be a maximum 6” on vertical and maximum 16” on horizontal centers. Increase fasteners where air barrier bridges openings in sheathing board.</li> <li>4. Method B: Install continuous furring strips vertically along stud lines, vertical fasteners at 12”. Best Practice: fasteners at maximum 6” on vertical and maximum 16” on horizontal.</li> <li>5. Tape all vertical and horizontal laps using VaproTape “AB” (air barrier) or VaproTape Single-Sided.</li> <li>6. Overlap WrapShield and ceiling air barrier and seal with VaproTape “AB” (air barrier) or use VaproTape (Single-Sided).</li> </ol> <p>F. HIGH RISE APPLICATIONS For installation instructions for high-rise applications, please contact VaproShield for recommendations.</p> <p>G. OPEN JOINT APPLICATIONS Requires double layer of membrane material at open joint, due to UV exposure. See <a href="http://www.vaproshield.com">www.vaproshield.com</a> for additional information and/or installation instructions or contact VaproShield at (866) 731-7663.</p> <p>3.6 FIELD QUALITY CONTROL</p> <p>A. <b>[Owner will engage] [Engage]</b> an independent inspector to observe substrate and installation. Inspector shall provide a written, sign-off log, on all penetrations before the membrane is placed against them. Form of log shall be approved by Architect before contract with inspection service is approved.</p> <p>3.7 PROTECTING AND CLEANING</p> <p>A. Protect installed breathable membrane from damage due to ultraviolet light, harmful weather exposures, physical abuse, and other causes. Manufacturer suggests a maximum of nine (9) months UV exposure.</p> <ol style="list-style-type: none"> <li>1. Repair torn breathable membrane as follows:             <ol style="list-style-type: none"> <li>a. Insert a full height piece of membrane extending 12 inches horizontally beyond the damage and extend up and under the membrane above. Mechanically attach membrane to substrate top and bottom.</li> </ol> </li> <li>B. Remove mud and similar marks with a water only scrub. If chemicals have been spilled on membrane, treat as a tear and repair as stated above.</li> </ol>
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END OF SECTION