

SECTION 072707

VAPOR PERMEABLE FLEXIBLE SHEET WATER-RESISTIVE BARRIERS INTENDED FOR MECHANICAL ATTACHMENT

1. GENERAL
   * + 1. SECTION INCLUDES
          1. This section includes the following:

Vapor permeable flexible sheet water-resistive barriers intended for mechanical attachment located in the non-accessible part of the exterior wall.

Materials to bridge and seal the following water-leakage pathways and gaps:

Terminations at top of wall.

Terminations at the foundations.

Openings and penetrations of window frames, storefront, curtain wall.

Door frames.

Piping, conduit, duct and similar penetrations.

All other water leakage pathways in the exterior wall.

SPEC NOTE: COORDINATE RELATED WORK REQUIREMENTS WITH CONTENTS OF REFERENCED SPECIFICATION SECTIONS.

B. Related Work in other Sections includes the following:

1. Section 014000 - Quality Requirements; coordination with Owner’s independent testing and inspection agency.
2. Section 015000 - 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.
3. Section 033000 – Cast-In-Place Concrete; requirement that backup concrete be smooth without protrusions.
4. Section 042000 – 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.
5. Section 061600 – Sheathing; requirement that backup sheathing has been installed.
   * + 1. PERFORMANCE REQUIREMENTS
          1. Water-Resistive Barrier: Vapor permeable flexible sheet water-resistive barriers intended for mechanical attachment are materials that are intended to perform as secondary weather barriers installed behind exterior claddings to provide a secondary line of defense to protect the exterior wall from bulk water that penetrates the exterior cladding. The water-resistive barrier is a drainage plane that assists in the management of bulk water. As a secondary function, flexible sheet water-resistive barriers can perform as air retarders for low-rise residential applications if designed and installed in that fashion.
          2. The water vapor permeance shall be determined in accordance with ASTM E96 and shall be declared by the manufacturer.

SPEC NOTE: THE WATER VAPOR PERMEANCE IS DECLARED BY THE MANUFACTURER AND INCLUDED IN THIS DOCUMENT SO THAT THE DESIGN PROFESSIONAL HAS THIS INFORMATION readily available.

* + - * 1. Connections to Adjacent Materials: Provide connections to prevent water penetration at the following locations:

Foundation and walls, including penetrations, ties and anchors.

Walls, windows, curtain walls, storefronts, louvers and doors.

Different wall assemblies and fixed openings within those assemblies.

Top of wall.

Construction, control and expansion joints.

Utility, pipe and duct penetrations.

All other potential water leakage pathways in the wall assemblies.

* + - 1. SUBMITTALS
         1. Submittals: Submit in accordance with Division 1 requirements.
         2. Quality Assurance Program: Submit evidence of current Contractor accreditation and Installer certification under the Air Barrier Association of America’s (ABAA) Quality Assurance Program. Submit accreditation number of the Contractor and certification number(s) of the ABAA Certified Installer(s).
         3. Product Data: Submit manufacturer’s product data, manufacturer's instructions for evaluating, preparing, and treating substrate, temperature and other limitations of installation conditions, technical data, and tested physical and performance properties.

Submit documentation from primary materials manufacturer indicating approval of products not manufactured by primary materials manufacturer.

Include statement that materials are compatible with adjacent materials proposed for use.

Submit letter from the sealant manufacturer indicating sealant adhesion to the water-resistant material meet the requirements of the project.

* + - * 1. Samples: Submit clearly labeled samples, three (3) inch by four (4) inch (75 mm by 100 mm) minimum size of each material specified.
        2. Compatibility: Submit letter from manufacturer stating that materials proposed for use are permanently chemically compatible and adhesively compatible with adjacent materials proposed for use. Submit letter from Manufacturer stating that cleaning materials used during installation are chemically compatible with adjacent materials proposed for use.
        3. Water-Resistive Barrier Subcontractor Qualifications: Water-Resistive Barrier Subcontractor(s) shall be accredited at time of bidding and during the complete installation period by the Air Barrier Association of America (ABAA) whose Installer(s) are certified in accordance with the site Quality Assurance Program used by ABAA.

Water-Resistive Barrier Installer Qualifications: Water-Resistive Barrier Installers shall be certified by BPQI (Building Performance Quality Institute) for the ABAA Quality Assurance Program in accordance with the requirements outlined in the QAP program used by ABAA. Installers shall have their photo identification water-resistive barrier certification cards in their possession and available on the project site, for inspection upon request.

* + - * 1. Manufacturer: Obtain primary ABAA listed materials from a single ABAA Evaluated Manufacturer regularly engaged in manufacturing specified vapor permeable flexible sheet water-resistive barriers intended for mechanical attachment. Obtain secondary materials from a source acceptable to the primary materials manufacturer.
        2. Accredited Laboratory Testing for Materials: Laboratory accredited by International Accreditation Service Inc. (IAS), American Association for Laboratory Accreditation (A2LA), or the Standards Council of Canada (SCC).
        3. VOC Regulations: Provide products which comply with applicable regulations controlling the use of volatile organic compounds.
        4. Preconstruction Meeting: Convene a minimum of two weeks prior to commencing Work of this Section. Agenda shall include, at a minimum, sequence of construction, coordination with wall preparation, water-resistive barrier materials approved for use, compatibility of materials, coordination with installation of adjacent and covering materials, and details of construction. Attendance is required by representatives of related trades including covering materials, substrate materials and adjacent materials.
        5. Field Quality Assurance: Implement the site Quality Assurance Program requirements used by ABAA. Cooperate with ABAA Auditors and any independent testing and inspection agencies engaged by the Owner. Do not cover the water-resistive barrier material until it has been inspected, tested and accepted.
      1. DELIVERY, STORAGE, AND HANDLING
         1. Deliver materials to Project site in original packages with seals unbroken, labeled with manufacturer's name, product, date of manufacture, and directions for storage.
         2. Store materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by water-resistive barrier manufacturer. Protect stored materials from direct sunlight.
         3. Handle materials in accordance with Manufacturer’s requirements.
      2. PROJECT CONDITIONS
         1. Temperature: Install vapor permeable flexible sheet water-resistive barrier within range of ambient and substrate temperatures recommended by the manufacturer. Do not apply material to a damp or wet substrate.
         2. Field Conditions: Do not install water-resistive barrier in snow, rain, fog, or mist or when the temperature of substrate surfaces and surrounding air temperatures are below those recommended by the manufacturer.
         3. Sequencing. Do not install water-resistive barrier before the roof assembly has been sufficiently installed to prevent a buildup of water in the interior of the building.
         4. Compatibility. Do not allow water-resistive barrier to come in contact with chemically incompatible materials.
         5. Ultra-violet exposure. Do not expose the water-resistive barrier material to sunlight and other sources of ultra-violet light longer than recommended by the Manufacturer.
      3. WARRANTY

SPEC NOTE: VERIFY WARRANTY LENGTH WITH MANUFACTURERs specified.

* + - * 1. Material Warranty: Provide Manufacturer’s standard product warranty, for a minimum three (3) years from date of Substantial Completion.
        2. Subcontractor (approved by ABAA and Manufacturer) Installation Warranty: Provide a two (2) year installation warranty from date of Substantial Completion, including all accessories of the Water-Resistive Barrier, against failures including loss of water-tight seal and loss of attachment.

1. MATERIALS
   * + 1. FLEXIBLE SHEET WATER-RESISTIVE MATERIALS INTENDED FOR MECHANICAL ATTACHMENT
          1. Water-Resistive Barriers: Vapor Permeable Flexible Sheet Water-Resistive Barriers Intended for Mechanical Attachment. Subject to compliance with requirements, provide one of the following:

Material: DELTA®-MAXX by Cosella-Dörken Products Inc.[www.cosella-dorken.com](http://www.cosella-dorken.com)

WATER-RESISTIVE BARRIER MATERIAL PROPERTIES:

1. Water vapor permeance for this material has been tested and reported as being 801 nanograms of water vapor passing through each square meter of area per second for each Pascal of vapor pressure differential (801 ng/(Pa·s·m2)  [14.0 US perms] when tested in accordance with ASTM E96 (desiccant method - unmodified).

WATER-RESISTIVE BARRIER ACCESSORY MATERIALS:

1. Seam Tape: DELTA®-MULTI BAND
2. Fasteners: Steel Frame Construction: 1 ¼” (32 mm) or 2” (50 mm) self-tapping screws with gasketed metal washers.
3. Fasteners: Wood Frame Construction: #4 nails with 1” (25 mm) plastic cap
4. Flashing: DELTA®-FLASHING 4”, DELTA®-FLASHING 9” and DELTA®-FLEXX BAND
5. Flashing Primer: No primer required.
6. Caulks and Sealants: DELTA®-THAN permanently elastic, special rubber compound adhesive.
7. Additional accessories: DELTA®-FAS CORNER flexible plastic corner for sealing the window and doors in air-and water-tight construction.

Material: DELTA®-VENT S by Cosella-Dörken Products Inc.[www.cosella-dorken.com](http://www.cosella-dorken.com)

WATER-RESISTIVE BARRIER MATERIAL PROPERTIES:

1. Water vapor permeance for this material has been tested and reported as being 3941 nanograms of water vapor passing through each square meter of area per second for each Pascal of vapor pressure differential 3941 ng/(Pa·s·m2)  [68.9 US perms] when tested in accordance with ASTM E96 (desiccant method - unmodified).

WATER-RESISTIVE BARRIER ACCESSORY MATERIALS:

1. Seam Tape: DELTA®-MULTI BAND
2. Fasteners: Steel Frame Construction: 1 ¼” (32 mm) or 2” (50 mm) self-tapping screws with gasketed metal washers.
3. Fasteners: Wood Frame Construction: #4 nails with 1” (25 mm) plastic cap
4. Flashing: DELTA®-FLASHING 4”, DELTA®-FLASHING 9” and DELTA®-FLEXX BAND
5. Flashing Primer: No primer required.
6. Caulks and Sealants: DELTA®-THAN permanently elastic, special rubber compound adhesive.
7. Additional accessories: DELTA®-FAS CORNER flexible plastic corner for sealing the window and doors in air-and water-tight construction.

Material: HydroGap Drainable Housewrap by Benjamin Obdyke [www.benjaminobdyke.com](http://www.benjaminobdyke.com)

WATER-RESISTIVE BARRIER MATERIAL PROPERTIES

i. Water vapor permeance for this material has been tested and reported as being 921 nanograms of water vapor passing through each square meter of area per second for each Pascal of vapor pressure differential 921 ng/(Pa•s•m2) [14.13 US perms] when tested in accordance with ASTM E96 (desiccant method - unmodified).

b. WATER-RESISTIVE BARRIER ACCESSORY MATERIALS

1. Seam Tape: Benjamin Obdyke Hydro Tape®, Benjamin Obdyke Hydroflash®
2. Fasteners: Wood Frame Construction: Nails, Staples, or cap fasteners
3. Flashing: Benjamin Obdyke HydroFlash®
4. Caulks and Sealants: Refer to Benjamin Obdyke’s approved products list
5. Additional accessories: Benjman Obdyke HydroCorner

Material: DuPont Commercial Wrap D by DuPont Weatherization Systems. [www.tyvek.com](http://www.tyvek.com)

WATER-RESISTIVE BARRIER MATERIAL PROPERTIES:

1. Water vapor permeance for this material has been tested and reported as being 2437 nanograms of water vapor passing through each square meter of area per second for each Pascal of vapor pressure differential (2437 ng/(Pa·s·m2)  [42.65 US perms] when tested in accordance with ASTM E96 (desiccant method - unmodified).
2. Water vapor permeance for this material has been tested and reported as being 2427 nanograms of water vapor passing through each square meter of area per second for each Pascal of vapor pressure differential (2437 ng/(Pa·s·m2)  [42.48 US perms] when tested in accordance with ASTM E96 (water method - unmodified).

WATER-RESISTIVE BARRIER ACCESSORY MATERIALS:

1. Sealing Tape: DuPont™ Tyvek® Tape
2. Fasteners: Steel Frame Construction: 2" DuPont™ Tyvek® Wrap Cap Screws, 1-1/4" metal gasketed washers, 2" metal gasketed washers with screws
3. Fasteners: Wood Frame Construction: DuPont™ Tyvek® Wrap Caps, #4 nails with 1" plastic cap, 1" plastic cap staple with leg length sufficient to achieve 5/8" penetration
4. Fasteners: For Masonry Construction Tapcon® fasteners with 2’’ plastic caps
5. Flashing: DuPont™ FlexWrap™, DuPont™ FlexWrap™ NF, DuPont™ StraightFlash™, DuPont™ StraightFlash™ VF, Thru-Wall Flashing
6. Caulks and Sealants: DuPont™ Commercial Sealant or DuPont recommended sealant, DuPont™ Window and Door Foam

Material: DuPont Commercial Wrap by DuPont Weatherization Systems. [www.tyvek.com](http://www.tyvek.com)

WATER-RESISTIVE BARRIER MATERIAL PROPERTIES:

1. Water vapor permeance for this material has been tested and reported as being 1446 nanograms of water vapor passing through each square meter of area per second for each Pascal of vapor pressure differential (1446 ng/(Pa·s·m2)  [25.31 US perms] when tested in accordance with ASTM E96 (desiccant method - unmodified).
2. Water vapor permeance for this material has been tested and reported as being 1867 nanograms of water vapor passing through each square meter of area per second for each Pascal of vapor pressure differential (1867 ng/(Pa·s·m2)  [32.68 US perms] when tested in accordance with ASTM E96 (water method - unmodified).

WATER-RESISTIVE BARRIER ACCESSORY MATERIALS:

1. Sealing Tape: DuPont™ Tyvek® Tape
2. Fasteners: Steel Frame Construction: 2" DuPont™ Tyvek® Wrap Cap Screws, 1-1/4" metal gasketed washers, 2" metal gasketed washers with screws
3. Fasteners: Wood Frame Construction: DuPont™ Tyvek® Wrap Caps, #4 nails with 1" plastic cap, 1" plastic cap staple with leg length sufficient to achieve 5/8" penetration
4. Fasteners: For Masonry Construction: Tapcon® fasteners with 2’’ plastic caps
5. Flashing: DuPont™ FlexWrap™, DuPont™ FlexWrap™ NF, DuPont™ StraightFlash™, DuPont™ StraightFlash™ VF, Thru-Wall Flashing
6. Caulks and Sealants: DuPont™ Commercial Sealant or DuPont recommended sealant, DuPont™ Window and Door Foam

Material: GreenGuard MAX Building Wrap by Pactiv Building Products.[www.green-guard.com](http://www.green-guard.com)

WATER-RESISTIVE BARRIER MATERIAL PROPERTIES:

1. Water vapor permeance for this material has been tested and reported as being 773 nanograms of water vapor passing through each square meter of area per second for each Pascal of vapor pressure differential (773 ng/(Pa·s·m2)  [13.52 US perms] when tested in accordance with ASTM E96 (desiccant method - unmodified).

WATER-RESISTIVE BARRIER ACCESSORY MATERIALS:

1. Fasteners: Common galvanized roofing nails, plastic cap nails or staples with a 1-inch (25 mm) crown. If smaller crown staples are used, then more fasteners will be needed to secure the water-resistive barrier. Fasteners must penetrate the underlying structural sheathing or framing a minimum of ½ inch (13 mm).
2. Seam Tape: 1 7/8 in. (47 mm) or 3 in. (75 mm) GreenGuard® Contractor Tape or equivalent seam tape approved by Pactiv.
3. Self-Adhering Flashing: GreenGuard® Flashing in widths of 4 in. (102 mm), 6 in. (152 mm), 9 in. (229 mm), 12 in. (3.5 mm) or equivalent self-adhering flashing approved by Pactiv.
4. Sealant: GreenGuard® Air Barrier Sealant in 10.1 oz. cartridges.

Material: GreenGuard C500 Building Wrap by Pactiv Building Products. [www.green-guard.com](http://www.green-guard.com)

WATER-RESISTIVE BARRIER MATERIAL PROPERTIES:

1. Water vapor permeance for this material has been tested and reported as being 629 nanograms of water vapor passing through each square meter of area per second for each Pascal of vapor pressure differential (629 ng/(Pa·s·m2)  [11.0 US perms] when tested in accordance with ASTM E96 (desiccant method - unmodified).

WATER-RESISTIVE BARRIER ACCESSORY MATERIALS:

1. Fasteners: Common galvanized roofing nails, plastic cap nails or staples with a 1-inch (25 mm) crown. If smaller crown staples are used, then more fasteners will be needed to secure the water-resistive barrier. Fasteners must penetrate the underlying structural sheathing or framing a minimum of ½ inch (13 mm).
2. Seam Tape: 1 7/8 in. (47 mm) or 3 in. (75 mm) GreenGuard® Contractor Tape or equivalent seam tape approved by Pactiv.
3. Self-Adhering Flashing: GreenGuard® Flashing in widths of 4 in. (102 mm), 6 in. (152 mm), 9 in. (229 mm), 12 in. (3.5 mm) or equivalent self-adhering flashing approved by Pactiv.
4. Sealant: GreenGuard® Air Barrier Sealant in 10.1 oz. cartridges.

Material: GreenGuard C2000 Building Wrap by Pactiv Building Products. [www.green-guard.com](http://www.green-guard.com)

WATER-RESISTIVE BARRIER MATERIAL PROPERTIES:

1. Water vapor permeance for this material has been tested and reported as being 5377 nanograms of water vapor passing through each square meter of area per second for each Pascal of vapor pressure differential (5377 ng/(Pa·s·m2)  [94.0 US perms] when tested in accordance with ASTM E96 (desiccant method - unmodified).

WATER-RESISTIVE BARRIER ACCESSORY MATERIALS:

1. Fasteners: Common galvanized roofing nails, plastic cap nails or staples with a 1-inch (25 mm) crown. If smaller crown staples are used, then more fasteners will be needed to secure the water-resistive barrier. Fasteners must penetrate the underlying structural sheathing or framing a minimum of ½ inch (13 mm).
2. Seam Tape: 1 7/8 in. (47 mm) or 3 in. (75 mm) GreenGuard® Contractor Tape or equivalent seam tape approved by Pactiv.
3. Self-Adhering Flashing: GreenGuard® Flashing in widths of 4 in. (102 mm), 6 in. (152 mm), 9 in. (229 mm), 12 in. (3.5 mm) or equivalent self-adhering flashing approved by Pactiv.
4. Sealant: GreenGuard® Air Barrier Sealant in 10.1 oz. cartridges.

Material: Greenguard Ultra Wrap by Pactiv Building Products. [www.green-guard.com](http://www.green-guard.com)

WATER-RESISTIVE BARRIER MATERIAL PROPERTIES:

1. Water vapor permeance for this material has been tested and reported as being 2600 nanograms of water vapor passing through each square meter of area per second for each Pascal of vapor pressure differential (2600 ng/(Pa·s·m2)  [45.45 US perms] when tested in accordance with ASTM E96 (desiccant method - unmodified).

WATER-RESISTIVE BARRIER ACCESSORY MATERIALS:

1. Fasteners: Common galvanized roofing nails, plastic cap nails or staples with a 1-inch (25 mm) crown. If smaller crown staples are used, then more fasteners will be needed to secure the water-resistive barrier. Fasteners must penetrate the underlying structural sheathing or framing a minimum of ½ inch (13 mm).
2. Seam Tape: 1 7/8 in. (47 mm) or 3 in. (75 mm) GreenGuard® Contractor Tape or equivalent seam tape approved by Pactiv.
3. Self-Adhering Flashing: GreenGuard® Flashing in widths of 4 in. (102 mm), 6 in. (152 mm), 9 in. (229 mm), 12 in. (3.5 mm) or equivalent self-adhering flashing approved by Pactiv.
4. Sealant: GreenGuard® Air Barrier Sealant in 10.1 oz. cartridges.

Material: GreenGuard RainDrop Building Wrap by Pactiv Building Products. [www.green-guard.com](http://www.green-guard.com)

WATER-RESISTIVE BARRIER MATERIAL PROPERTIES:

1. Water vapor permeance for this material has been tested and reported as being 705 nanograms of water vapor passing through each square meter of area per second for each Pascal of vapor pressure differential (705 ng/(Pa·s·m2)  [12.33 US perms] when tested in accordance with ASTM E96 (desiccant method - unmodified).

WATER-RESISTIVE BARRIER ACCESSORY MATERIALS.

1. Fasteners: Common galvanized roofing nails, plastic cap nails or staples with a 1-inch (25 mm) crown. If smaller crown staples are used, then more fasteners will be needed to secure the water-resistive barrier. Fasteners must penetrate the underlying structural sheathing or framing a minimum of ½ inch (13 mm).
2. Seam Tape: 1 7/8 in. (47 mm) or 3 in. (75 mm) GreenGuard® Contractor Tape or equivalent seam tape approved by Pactiv.
3. Self-Adhering Flashing: GreenGuard® Flashing in widths of 4 in. (102 mm), 6 in. (152 mm), 9 in. (229 mm), 12 in. (3.5 mm) or equivalent self-adhering flashing approved by Pactiv.
4. Sealant: GreenGuard® Air Barrier Sealant in 10.1 oz. cartridges.

Material: GreenGuard Value Wrap by Pactiv Building Products. [www.green-guard.com](http://www.green-guard.com)

WATER-RESISTIVE BARRIER MATERIAL PROPERTIES:

1. Water vapor permeance for this material has been tested and reported as being 692 nanograms of water vapor passing through each square meter of area per second for each Pascal of vapor pressure differential (692 ng/(Pa·s·m2)  [12.1 US perms] when tested in accordance with ASTM E96 (desiccant method - unmodified).

WATER-RESISTIVE BARRIER ACCESSORY MATERIALS:

1. Fasteners: Common galvanized roofing nails, plastic cap nails or staples with a 1-inch (25 mm) crown. If smaller crown staples are used, then more fasteners will be needed to secure the water-resistive barrier. Fasteners must penetrate the underlying structural sheathing or framing a minimum of ½ inch (13 mm).
2. Seam Tape: 1 7/8 in. (47 mm) or 3 in. (75 mm) GreenGuard® Contractor Tape or equivalent seam tape approved by Pactiv.
3. Self-Adhering Flashing: GreenGuard® Flashing in widths of 4 in. (102 mm), 6 in. (152 mm), 9 in. (229 mm), 12 in. (3.5 mm) or equivalent self-adhering flashing approved by Pactiv.
4. Sealant: GreenGuard® Air Barrier Sealant in 10.1 oz. cartridges.

Material: GreenGuard Classic Wrap by Pactiv Building Products. [www.green-guard.com](http://www.green-guard.com)

WATER-RESISTIVE BARRIER MATERIAL PROPERTIES:

1. Water vapor permeance for this material has been tested and reported as being 669 nanograms of water vapor passing through each square meter of area per second for each Pascal of vapor pressure differential (669 ng/(Pa·s·m2)  [11.7 US perms] when tested in accordance with ASTM E96 (desiccant method - unmodified).

WATER-RESISTIVE BARRIER ACCESSORY MATERIALS:

1. Fasteners: Common galvanized roofing nails, plastic cap nails or staples with a 1-inch (25 mm) crown. If smaller crown staples are used, then more fasteners will be needed to secure the water-resistive barrier. Fasteners must penetrate the underlying structural sheathing or framing a minimum of ½ inch (13 mm).
2. Seam Tape: 1 7/8 in. (47 mm) or 3 in. (75 mm) GreenGuard® Contractor Tape or equivalent seam tape approved by Pactiv.
3. Self-Adhering Flashing: GreenGuard® Flashing in widths of 4 in. (102 mm), 6 in. (152 mm), 9 in. (229 mm), 12 in. (3.5 mm) or equivalent self-adhering flashing approved by Pactiv.
4. Sealant: GreenGuard® Air Barrier Sealant in 10.1 oz. cartridges.
5. EXECUTION
   * + 1. EXAMINATION
          1. Examine substrates, areas, and conditions under which the water-resistive barrier will be installed, with ABAA Certified Installer(s) present, for compliance with requirements.

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.

Verify substrate is visibly dry.

Ensure that the following conditions are met:

Surfaces are sound, dry, even, and free of excess mortar or other contaminants

Inspect concrete surfaces to be smooth without large voids or sharp protrusions. Inform General Contractor if substrates are not acceptable and need to be repaired by the concrete sub-trade.

Inspect masonry joints to be reasonably flush and completely filled and ensure all excess mortar sitting on masonry ties has been removed. Inform General Contractor if masonry joints are not acceptable and need to be repaired by the mason sub-trade.

Notify Architect in writing of anticipated problems using Vapor Permeable Flexible Sheet Water-Resistive Barriers Intended for Mechanical Attachment over substrate prior to proceeding.

* + - 1. INSTALLATION
         1. Vapor Permeable Flexible Sheet Water-Resistive Barriers Intended for Mechanical Attachment: Install water-resistive barrier to provide continuity throughout the exterior wall. Install materials in accordance with Manufacturer's requirements and the following (unless manufacturer recommends other procedures in writing based on project conditions or particular requirements of their recommended materials):

Install Water-Resistive Barrier over structural/non-structural sheathing board, non-structural insulative sheathing, cast-in-place concrete, unit masonry or directly to framing members. Do not use as roofing paper or vapor retarder.

Begin by aligning the bottom edge of the roll approximately 2 inches (50 mm) below the base of the wall, approximately 24 inches (600 mm) from a corner, with the print side facing out. Fold greater than 6 inches (150 mm) of material under itself and fasten securely to the substrate.

Ensure Water-Resistive Barrier is plumb and level with foundation, and unroll, extending over window and door openings. Ensure Water-Resistive Barrier material is applied over back edge of weep screed for proper water drainage.

When installing Water-Resistive Barrier over structural sheathing, the fasteners must penetrate the sheathing a minimum of 1/2 inch (13 mm). When installing Water-Resistive Barrier directly to framing members or through non-structural sheathings, fasteners must extend into the underlying wood framing members a minimum of 1/2 inch (13 mm). The most common fasteners for attaching Water-Resistive Barriers are plastic cap nails with a 1 inch (25 mm) diameter cap, common roofing nails or staples with a minimum 1 inch (25 mm) crown. If smaller crown staples are used, then more fasteners may be needed to adequately attach the Water-Resistive Barrier. When attaching to steel studs, the most common fastener type is a metal screw with a 1 inch (25 mm) diameter steel plate long enough to penetrate the steel stud by 1/2 inch (13mm).

Install with drainage plane surface pattern in vertical position for proper draining. Install lower level Water-Resistive Barrier material prior to upper layers of Water-Resistive Barrier material to ensure proper shingling of layers.

Overlap at all corners of building by a minimum of 6 inches (150 mm).

Water-Resistive Barrier fasteners are typically spaced 6 -18 inches (150 – 450 mm) apart vertically and 16 – 24 inches (400 – 600 mm) apart horizontally. Refer to the Water-Resistive Barrier Manufacturer’s installation requirements for recommended fastener types and fastening frequency.

When the end of a roll is reached, fold the edge of the Water-Resistive Barrier under itself and attach to the structural sheathing or through the non-structural sheathing to the nearest framing member. Horizontal joints must be overlapped a minimum of 2 inches (50 mm) with upper courses overlapping lower courses in water-shedding fashion. Vertical seams must be overlapped a minimum of 6 inches (150 mm). All vertical and horizontal seams can be taped using an adhesive tape recommended by the Water-Resistive Barrier Manufacturer. Although taping of Water-Resistive Barriers seams is not required to achieve code compliance, it can provide additional protection against air and moisture intrusion.

Tape all horizontal and vertical seams with manufacturer approved construction tape.

Seal all tears and cuts with manufacturer approved construction tape.

Prepare each window and door rough opening as recommended by the Water-Resistive Barrier Manufacturer or prepare by cutting a modified “I” pattern and wrap excess material to the inside of the rough opening and fasten securely to a framing member. At the window header, make a 6 to 8 inch (150 – 200 mm) diagonal cut at the corners of the Water-Resistive Barrier and fold the material up above the rough opening, exposing the underlying sheathing. This will allow for installation of the head flashing material, which will then be covered by the Water-Resistive Barrier material when it is folded down and the diagonal cuts are taped. If windows are already in place when installing Water-Resistive Barriers, trim as close to them as possible and tape all edges. Use of window flashing materials is required as described in the International Residential Code. Check local building codes to determine whether window flashing is a local requirement.

* 1. FIELD QUALITY CONTROL
     + - 1. Owner’s Inspection and Testing: Cooperate with Owner’s testing agency. Allow access to work areas and staging. Notify Owner’s testing agency in writing of schedule for Work of this Section to allow sufficient time for testing and inspection. Do not cover Work of this Section until testing and inspection is accepted.
         2. Air Barrier Association of America Installer Audits: Cooperate with ABAA’s testing agency. Allow access to work areas and staging. Notify ABAA in writing of schedule for Work of this Section to allow sufficient time for testing and inspection. Do not cover Work of this Section until testing and inspection is accepted. Arrange and pay for site audits by ABAA to verify conformance with the manufacturer’s instructions, the site Quality Assurance Program used by ABAA, and this section of the project specification.

If the inspections reveal any defects, promptly remove and replace defective work at no additional cost to the Owner.

* 1. PROTECTING AND CLEANING
     + - 1. Protect water-resistive barriers from damage during installation and the remainder of the construction period, according to manufacturer's written instructions.

Coordinate with installation of materials which cover water-resistive barrier, to ensure exposure period does not exceed that recommended by the water-resistive barrier manufacturer.

* + - * 1. 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