

SECTION 07 27 27

FLUID-APPLIED WEATHER AND AIR BARRIER SYSTEM FOR VENTILATED CAVITY

SPECIFIER NOTE: THIS SECTION IS INTENDED FOR A COMPLETE BUILDING ENVELOPE BARRIER APPLICATION, INCLUDING VENTILLATED CAVITY RAIN SCREEN FLUID-APPLIED WEATHER AND AIR BARRIER SYSTEM IN CONJUNCTION WITH WINDOW AND DOOR FLASHING, JOINT SEALANTS AND ACCESSORIES. IT ALSO INCLUDES THE OPTION OF A STUCCO PRIMER AT WINDOW AND DOOR OPENINGS, FOR DIRECT-APPLIED STUCCO. EDIT ACCORDINGLY.

SPECIFIER NOTE: THIS SPECIFICATION INCLUDES SOME OPTIONS AND CHOICES WITHIN THE TEXT. EDIT ACCORDINGLY.

PART 1 - GENERAL

1.1 SUMMARY:

- A. Work of this section includes window and door flashing, vapor-permeable weather and air barrier membrane system, and accessory materials for application to exterior building envelope substrates as indicated on the drawings.

SPECIFIER NOTE: ADD TO OR DELETE FROM BELOW PER PROJECT REQUIREMENTS.

- B. Related work:
 - 1. Concrete.
 - 2. Masonry.
 - 3. Sheathing.
 - 4. Exterior wall finish materials.
 - 5. Flexible through-wall flashing.
 - 6. Joint sealants.
 - 7. Doors and frames.
 - 8. Storefronts.
 - 9. Curtain walls.
 - 10. Windows.
 - 11. Stucco.

1.2 PERFORMANCE REQUIREMENTS:

- A. Performance requirements: Comply with the specified performance requirements and characteristics as herein specified.
- B. Performance description:
 - 1. The building envelope shall be constructed with a continuous, weather and air barrier to control moisture and air leakage into, and out of the conditioned space.
 - 2. Joints, penetrations and paths of moisture and air infiltration shall be made watertight and airtight.
 - 3. System shall be capable of withstanding positive and negative combined wind and stack pressures on the envelope without damage or displacement.

4. System shall be installed in an airtight and flexible manner, allowing for the relative movement of systems due to thermal and moisture variations.

SPECIFIER NOTE: BELOW ONLY FOR WEATHER AND AIR BARRIER WHEN USED IN INTERIOR APPLICATIONS.

5. System shall provide an air barrier for interior partitions between conditioned space and space designed to maintain temperature or humidity levels which differ from those in the conditioned space.

1.3 SUBMITTALS:

- A. Product data: Submit manufacturer-s product data including membrane and accessory material types, technical and test data, composition, descriptions and properties, installation instructions and substrate preparation requirements.
- B. Test reports: Submit test reports indicating compliance with specified performance characteristics and requirements.
- C. Shop drawings: Indicate locations and extent of weather and air barrier system.
 1. Include details of conditions specific to this project, including joints, cracks, intersections with other building envelope systems and materials, corners, terminations, counterflashings and details showing bridging of envelope at substrate changes.
 2. Include details of sealing penetrations, and detailed flashing around windows and doors.
- D. Samples: Provide one 1'-0" by 1'-0" square or 1'-0" length of manufacturer-s representative samples of the following:
 1. Window and door flashing.
 2. Weather and air barrier.
 3. Joint and seam treatment.
 4. Penetration and termination sealant.
 5. Stucco primer.
- E. Sample warranty: Submit a sample warranty identifying the terms and conditions of the warranty as herein specified.
- F. Qualifications: Submit letters of verification that manufacturer and installer meet qualifications as herein specified.

SPECIFIER NOTE: INCLUDE PARAGRAPH BELOW IF MATERIALS ARE REQUIRED TO MEET LEED VOC REQUIREMENTS FOR CREDITS EQ 4.1 AND EQ 4.2.

- G. LEED submittal: Product Data for Credit EQ 4.1 and 4.2: For weather and air barrier, flashing materials, joint and transition products, submit printed statement of VOC content and compliance with LEED requirements

1.4 QUALITY ASSURANCE:

- A. Applicable standards, as referenced herein: ASTM International (ASTM).
- B. Manufacturer-s qualifications: Weather and air barrier systems shall be manufactured and marketed by a firm with a minimum of five (5) years experience in the production and sales of weather and air barrier system. Manufacturers proposed for use, but not named in these specifications shall submit evidence of ability to meet all requirements specified, and include a list of projects of similar design and complexity completed within the past five years.
- C. Installer-s qualifications: The installer shall demonstrate qualifications to perform the work of this section by submitting the following:
 - 1. Verification that installer has been trained by and is approved to perform work as herein specified by weather and air barrier system manufacturer.
 - 2. List of at least three (3) projects completed within the past three (3) years of similar scope and complexity to this project carried out by the firm and site supervisor.
 - 3. Evidence of proper equipment and trained field personnel to successfully complete the project.
- D. Inspection and testing: Cooperate and coordinate with the Owner-s inspection and testing agency. Do not cover installed products or assemblies until they have been inspected, tested and approved.
- E. Sole source: Obtain materials from a single manufacturer.
- F. Regulations: Provide products which comply with all state and local regulations controlling use of volatile organic compounds (VOC-s).
- G. Pre-installation conference: Prior to beginning installation of weather and air barrier system, hold a pre-installation conference to review work to be accomplished.
 - 1. Contractor, Architect, installing subcontractor, membrane system manufacturer's representative, and all subcontractors who have materials penetrating membrane system or finishes covering membrane system shall be present.
 - 2. Contractor shall notify Architect at least seven days prior to time for conference.
 - 3. Contractor shall record minutes of meeting and distribute to attending parties.
 - 4. Agenda: As a minimum discuss:
 - a. Surface preparation.
 - b. Substrate condition and pretreatment.
 - c. Minimum curing period.
 - d. Special details and sheet flashing.
 - e. Sequence of construction, responsibilities, and schedule for subsequent operations.
 - f. Installation procedures.
 - g. Testing and inspection procedures.
 - h. Protection and repair procedures.
 - i. Review and approval of all glazing applications.

1.5 DELIVERY, STORAGE, AND HANDLING:

- A. Deliver materials and products in labeled packages. Store and handle in strict compliance with manufacturer-s instructions and recommendations. Protect from damage, weather, excessive temperatures and construction operations. Remove damaged material from site and dispose of in accord with applicable regulations.
- B. Protect weather and air barrier components from freezing and extreme heat. Store materials at temperatures of 40 degrees F. to 100 degrees F.
- C. Sequence deliveries to avoid delays, and to minimize on-site storage.

1.6 PROJECT CONDITIONS:

- A. Weather conditions: Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials used.
 - 1. Do not apply at surface temperatures below 40 degrees F. or over 150 degrees F. on the substrate.
 - 2. Proceed with installation only when the substrate construction and preparation work is complete and in condition to receive the membrane system.
 - 3. Exposure limitations: Schedule work to ensure that weather and air barrier system is covered and protected from UV exposure within 180 days of installation. If weather and air barrier membrane system cannot be covered within 180 days after installation, apply temporary UV protection as recommended by membrane manufacturer.

1.7 WARRANTY:

- A. Manufacturer's warranty requirements: Submit manufacturer-s written warranty stating that installed weather and air barrier materials are watertight, free from defects in material and workmanship, and agreeing to replace defective materials and components.
- B. Warranty period: Five years from Date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURER:

- A. PROSOCO, Inc, 3741 Greenway Circle, Lawrence, KS 66046. Phone (800) 255-4255; Fax: (785) 830 9797. E-mail: CustomerCare@prosoco.com

2.2 R-GUARD FastFlash® Liquid-Applied Flashing Membrane

- A. Acceptable product: PROSOCO R-GUARD® FastFlash® liquid-applied penetration membrane flexible flashing:
- B. Description: 99% solids, roll/trowel/brush-applied, elastomeric liquid flashing material. Flashing shall be applied to clean, dry or damp substrates, with temperature and weather limitations as required by manufacturer. Do not apply to wet substrates.
- C. Characteristics:
 - 1. Thickness: Minimum 12 mils.
 - 2. Water vapor permeability: Minimum 25 perms when tested in accord with ASTM E96.
 - 3. Water penetration (cyclical static air pressure difference): No uncontrolled water penetration when tested in accord with ASTM E547.
 - 4. Hardness: Shore A, 40-45 when tested in accord with ASTM C661.
 - 5. Tensile strength: 180 psi when tested in accord with ASTM D412.
 - 6. Elongation at break: 400% when tested in accord with ASTM D412.
 - 7. Peel strength: 25 pli when tested in accord with ASTM D1781.
 - 8. Volatile organic content (VOC): 27 g/L.
 - 9. Color: Red.

2.3 R-GUARD Joint & Seam Filler Fiber Reinforced Fill Coat and Seam Filler:

- A. Acceptable product: PROSOCO R-GUARD® Joint & Seam Filler.
- B. Description: Waterproof, high modulus, single-component fiber reinforced joint and seam treatment and filler for application to joints, gaps and seams of sheathing and fenestration substrates. Joint and seam treatment shall be applied to clean, dry or damp substrates, with temperature and weather limitations as required by manufacturer.
- C. Characteristics:
 - 1. Hardness: Shore A, 45-50 when tested in accord with ASTM C661.
 - 2. Tensile strength: 225 psi when tested in accord with ASTM D412.
 - 3. Lap shear strength: 275 psi when tested in accord with ASTM D1002.
 - 4. Elongation at break: 275% when tested in accord with ASTM D412.
 - 5. Peel strength: 30 pli when tested in accord with ASTM D1781.
 - 6. Volatile organic content (VOC): 15 g/L.
 - 7. Shrinkage: None.
 - 8. Color: Pale Red.
- D. Backer rod: Compressible, closed cell rod stock as recommended by manufacturer for compatibility with sealant. Provide size and shape of rod to control joint depth.

2.4 R-GUARD Cat 5® EXTREME Weather Air and Weather-Resistive Barrier (Waterproof):

- A. Acceptable product: PROSOCO R-GUARD® Cat 5® EXTREME weather air and water-resistive barrier.
- B. Description: Seamless, 98% solids, vapor-permeable, elastomeric, silyl-terminated polyether membrane designed for application to exterior above-grade walls to seal assemblies and prevent moisture and air infiltration. Weather and air barrier shall be applied to clean, dry or damp substrates, with temperature and weather limitations as required by manufacturer.
- C. Characteristics:
 - 1. Thickness: Minimum 12 mils.
 - 2. Air infiltration: Less than 0.004 cfm per square foot (0.02 L/s/sq m) when tested in accord with ASTM E2178 or ASTM E283.
 - 3. Water vapor permeability: Minimum 23 perms when tested in accord with ASTM E96.
 - 4. Structural performance: Weather and air barrier system shall withstand positive and negative wind pressure loading when tested in accord with ASTM E330.
 - 5. Water penetration (static pressure): No uncontrolled water penetration when tested in accord with ASTM E331, with differential static pressure not less than 6.24 psf.
 - 6. Water penetration (cyclical static air pressure difference): No uncontrolled water penetration when tested in accord with ASTM D547.
 - 7. Hardness: Shore A, 20-25 when tested in accord with ASTM C661.
 - 8. Tensile strength: 110 psi when tested in accord with ASTM D412.
 - 9. Elongation at break: 300% when tested in accord with ASTM D412.
 - 10. Peel strength: 30 pli when tested in accord with ASTM D1781 or C794.
 - 11. Volatile organic content (VOC): 15 g/L.
 - 12. Shrinkage: None.
 - 13. Color: Burnt Orange.

SPECIFIER NOTE: INCLUDE BELOW ONLY IF STUCCO IS INTENDED TO BE BONDED DIRECTLY TO MASONRY OR CONCRETE SUBSTRATES THAT HAVE BEEN PREVIOUSLY COATED WITH R-GUARD® FASTFLASH® WINDOW AND DOOR FLASHING OR CAT 5® COATING.

2.5 R-GUARD StuccoPrime Flexible Primer Interface for Direct-Applied Stucco Applications:

- A. Acceptable product: PROSOCO R-GUARD® StuccoPrime.
- B. Description: 100% solids, elastomeric coating roller-applied stucco primer applied over fluid-applied weather and air barrier materials, which allow the direct application of traditional stucco systems to masonry and concrete backup substrates. Stucco primer shall be applied over previously-installed R-GUARD FastFlash® and/or R-GUARD Cat 5® coatings.
- C. Characteristics:
 - 1. Thickness: 6 to 8 mils.
 - 2. Hardness: Shore A, 20-25 when tested in accord with ASTM C661.
 - 3. Tensile strength: 110 psi when tested in accord with ASTM D412.
 - 4. Elongation at break: 300% when tested in accord with ASTM D412.
 - 5. Peel strength: 30 pli when tested in accord with ASTM D1781.
 - 6. Volatile organic content (VOC): 15 g/L.
 - 7. Shrinkage: None.
 - 8. Color: Green.

2.6 R-GUARD AirDam® Air and Weather Barrier Sealant for windows and doors:

- A. Acceptable product: PROSOCO R-GUARD® AirDam® Sealant for window and doors
- B. Description: 98% solids, one-component, low-modulus, elastomeric, paintable, silyl-terminated polyether sealant. Penetration and termination sealant shall be applied to clean, dry or damp substrates, with temperature and weather limitations as required by manufacturer.
- C. Characteristics:
 - 1. Hardness: Shore A, 20-25 when tested in accord with ASTM C661.
 - 2. Tensile strength: 110 psi when tested in accord with ASTM D412.
 - 3. Elongation at break: 1300% when tested in accord with ASTM D412.
 - 4. Peel strength: 30 pli when tested in accord with ASTM D1781.
 - 5. Type: Type S, Grade NS, Class 50 when tested in accord with ASTM C920.
 - 6. Volatile organic content (VOC): 15 g/L.
 - 7. Shrinkage: None.
 - 8. Color: White.
- D. Backer rod: Compressible, closed cell rod stock as recommended by manufacturer for compatibility with sealant. Provide size and shape of rod to control joint depth.

PART 3 - EXECUTION

3.1 MOCK-UP:

- A. Prior to installation of the weather and air barrier system a field-constructed mock-up shall be applied to verify details and tie-ins, to demonstrate the required quality of materials and installation.
 - 1. Construct a typical exterior wall section, 8 feet long and 8 feet wide, incorporating back-up wall, cladding, window, door frame, sill, penetrations, insulation, flashing and any other critical junction.
 - 2. Allow 72 hours for inspection and testing of mock-up before proceeding with weather and air barrier work.
 - 3. Approved, undamaged mock-up may remain as part of the work.

3.2 EXAMINATION AND SUBSTRATE PREPARATION:

- A. Examine conditions for compliance with system manufacturer's requirements for installation, tolerances and other specific conditions affecting performance of weather and air barrier system.
- B. All surfaces must be sound, clean and free of grease, dirt, excess mortar or other contaminants. Fill or bridge damaged surfaces, voids or gaps larger than one-half (1/2) inch with mortar, wood, metal, sheathing or other suitable material.
 - 1. Surfaces to receive R-GUARD StuccoPrime may be dry or damp. Do not apply to surfaces which are sufficiently wet to transfer water to the skin when touched. Surfaces must be protected from rain for 2 hours following application.
 - 2. Surfaces to receive R-GUARD Cat 5[®], FastFlash[®], Joint & Seam Filler and AirDam[®] may be dry, damp or wet to the touch. Brush away any standing water which may be present before application. The products will tolerate rain immediately after application.
- C. R-GUARD Joint & Seam Filler for seams, joints, cracks and gaps at sheathing and building face:
 - 1. Joint and seam treatment shall be applied to clean, dry, damp or wet to the touch substrates, with temperature and weather limitations as required by manufacturer. Brush away any standing water present before application. The product can be exposed to rain immediately after application.
 - 2. Fill sheathing and building face seams, joints, cracks and gaps with R-GUARD Joint & Seam Filler as herein specified.
 - 3. Fill voids and gaps measuring one-half (1/2) inch or less with R-GUARD Joint & Seam Filler as herein specified to ensure continuity.
 - 4. For joints 3/8 inch wide and larger, install backer rod prior to installation of joint and seam treatment materials. Place backer rod to maintain sealant manufacturer-s recommended sealant thickness, depth and profile.
 - 5. Apply R-GUARD Joint & Seam Filler treatment using trowel, broad-knife or spatula to fill seams and gaps.
 - 6. Coat 1" beyond each side of seam or gap.
 - 7. Minimum thickness shall be 35 mils.
- D. Exterior sheathing:
 - 1. Ensure that sheathing is properly installed with ends, corners and edges properly fastened.
 - 2. Fill sheathing end and edge joints with R-GUARD Joint & Seam Filler as herein specified.
- E. Masonry and concrete substrates:
 - 1. Masonry shall have smooth trowel-cut mortar joints.
 - 2. Rub to remove loose mortar and debris.
 - 3. Fill cracks, joints and gaps with R-GUARD Joint & Seam Filler as herein specified.

3.3 R-GUARD FASTFLASH[®] FLASHING AT WINDOWS, DOORS, OPENINGS AND PENETRATIONS:

- A. General: Comply with weather and air barrier manufacturer-s installation instructions, temperature limitations, product data and shop drawings.
- B. R-Guard FastFlash[®] flashing; preparation of sills:
 - 1. Flashing shall be applied to clean, dry, damp or wet to the touch substrates, with temperature and weather limitations as required by manufacturer. Brush away any standing water present before application. The product can be exposed to rain immediately after application.
 - 2. Apply liquid-applied flexible flashing R-GUARD FastFlash[®] to perimeters, sills and adjacent sheathing and building face, using broad knives, rollers, brushes or trowels, in accord with manufacturer-s product data and installation instructions.

3. At sills, extend flexible flashing on building face a minimum of 6" beyond and 3" above sill-jamb intersection.

SPECIFIER NOTE: R-GUARD CAT 5[®] HAS INDEFINITE UV STABILITY FOR APPLICATION IN VENTILATED CAVITY RAINSCREEN APPLICATIONS.

3.4 R-GUARD Cat 5[®] EXTREME WEATHER AIR & WATER-RESISTIVE BARRIER INSTALLATION:

- A. General: Comply with weather and air barrier manufacturer-s installation instructions, temperature limitations, product data and shop drawings.
- B. Substrates: Do not apply weather and air barrier materials until installation of joint and seam treatment, flexible flashing, counter-flashing and accessory materials are complete and acceptable to system manufacturer.
- C. R-GUARD Cat 5[®] EXTREME weather air & water-resistive membrane:
 1. R-GUARD Cat 5[®] EXTREME Weather and air barrier shall be applied to clean, dry damp or wet substrates, with temperature and weather limitations as required by manufacturer. Brush away any standing water present before application. The product can be exposed to rain immediately after application.
 2. Apply a continuous uniform application of fluid-applied weather and air barrier at minimum 12 mils film thickness using multiple, overlapping passes. Coverage rate shall be minimum 120 sq. ft. /gallon at 12 mil thickness on substrates i.e. plywood, OSB, Densglass or other silicone-treated gypsum boards. CMU applications may allow membrane to be absorbed into matrix of the block due to porosity. When this occurs test wall with a rilm tube for any evidence of absorption. If absorption of the block is observed apply additional membrane until watertightness during the rilm tube testing is achieved.
 3. Use application methods and equipment as recommended by weather and air barrier manufacturer-s product data and installation instructions.
 4. Seal masonry ties and other penetrations as work progresses with R-GUARD Joint & Seam Filler.
 5. Inspect weather and air membrane before covering, and repair any punctures, deficient areas and damaged areas with specified membrane system, extending repair material a minimum of 6" beyond the puncture, deficiency area or damage.
 6. Installation shall provide a continuous building envelope barrier in conjunction with manufacturer-s sealants, flashing, counter-flashing and accessory materials.

SPECIFIER NOTE: INCLUDE BELOW ONLY IF STUCCO IS INTENDED TO BE BONDED DIRECTLY TO MASONRY OR CONCRETE SUBSTRATES THAT HAVE BEEN PREVIOUSLY COATED WITH R-GUARD[®] FASTFLASH[®] and/or CAT 5[®] AIR/MOISTURE BARRIER COATINGS.

3.5 R-GUARD StuccoPrime:

- A. Preparation: Verify that R-GUARD FastFlash[®] and Cat 5[®] have been applied to all substrates intended to receive R-GUARD StuccoPrime in accord with system manufacturer-s product data, and have been inspected and approved for stucco primer installation.
- B. R-GUARD StuccoPrime application:
 1. Stir membrane well in container. Use low speed drill and paddle to blend making sure not to whip air into membrane

2. Roller-apply R-GUARD StuccoPrime with a 9 inch roller cover and a 3/8 inch nap to a thickness of 6-8 mils immediately before applying stucco scratch coat.
3. Apply the stucco scratch coat while R-GUARD StuccoPrime is still wet. Do not allow R-GUARD StuccoPrime to cure which is defined as when the membrane is touched, no evidence of wet coating is transferred onto hand.
4. If R-GUARD StuccoPrime is allowed to dry, re-apply immediately before installing stucco scratch coat. Inspect surface prior to reapplication of StuccoPrime and clean as necessary to remove any dust, dirt or foreign material.

SPECIFIER NOTE: COORDINATE THE TIME LIMITATION BELOW WITH STUCCO SPECIFICATION.

- C. Application of R-GUARD StuccoPrime shall occur immediately before the application of the stucco scratch coat is installed.

3.6 R-GUARD AirDam[®] Air and Weather Barrier Sealant for windows and doors:

- A. At the time of window, storefront, curtain wall, and door frame installations, install penetration and termination sealant in accord with manufacturer-s product data, installation instructions and shop drawings.
- B. Penetration and termination sealant shall be applied to clean, dry or damp substrates, with temperature and weather limitations as required by manufacturer. Do not apply to wet substrates.
- C. Prior to installation of penetration and termination sealant, install backer rod to maintain sealant manufacturer-s recommended sealant thickness, depth and profile.
- D. Install sealant to provide uniform, continuous ribbons without gaps or air pockets, with complete wetting of joint bond surfaces.
- E. Tool joints to concave profile and smooth, uniform surface, flush with edges of substrate. Maintain sealant depth-to-width ratio in accord with manufacturer's product data.
- F. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form slight cove so that joint will not trap moisture and debris.
- G. Do not allow materials to overflow onto adjacent surfaces. Prevent staining of adjacent surfaces.
- H. Remove excess and misplaced materials as work progresses. Clean the adjoining surfaces to remove misplaced materials, without damage to adjacent surfaces or finishes.
- I. Cure sealant in accord with manufacturer's product data to obtain high early bond strength, internal cohesive strength and surface durability. Protect uncured surfaces from contamination and physical damage.

End of Section