

SECTION 07 27 26

FLUID-APPLIED MEMBRANE AIR BARRIERS

SPECIFIER NOTE: THIS SYSTEM GUIDE SPECIFICATION IS INTENDED FOR NEW CONSTRUCTION BUILDING ENVELOPE INSTALLATIONS INCLUDING FLUID-APPLIED WEATHER AND AIR BARRIERS, ROUGH OPENINGS, VOID FILLING SEAMS, GAPS, THROUGH PENETRATIONS IN CONJUNCTION WITH WINDOW AND DOOR FLASHINGS, JOINT SEALANTS AND ACCESSORIES.

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

TIPS:

To view non-printing **Editor's Notes** that provide guidance for editing, click on the Show/Hide button or Word 2010 offers a convenient keyboard shortcut; press the Ctrl+* keystroke to toggle on/off. (Press the Ctrl key, Shift key, and the number 8 simultaneously).

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Window and door flashing, air and water-resistive barrier membrane system, and accessory materials for application to exterior building envelope substrates as indicated on the drawings.
- B. Related Requirements:
 - 1. Section 01 33 00- Submittal Procedures.
 - 2. Section 01 45 80- Testing Laboratory Services.
 - 3. Section 01 60 00- Product Requirements.
 - 4. Section [0X XX XX- Section Title].

1.2 REFERENCES

- A. The date of the standard is that in effect as the date of receipt of bids for the project.
- B. Living Building Challenge (LBC).
- C. ASTM International (ASTM):

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Meeting: Convene before the start of installation of air and water-resistive barrier system.
 - 1. Require attendance of parties directly affecting work of this Section, including the Owner's Representative, Contractor, Architect, installing subcontractor, membrane system manufacturer's representative, roofing and foundation waterproofing subcontractors, and all subcontractors who have materials penetrating membrane system or finishes covering membrane system.
 - 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. Review the following:

- 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. Inspection procedures.
- h. Protection and repair procedures.
- i. Review and approval of all glazing applications.

1.4 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, air and water-resistive barrier to control air leakage, avoid condensation in the interior wall assembly and prevent water intrusion.
 - 2. Joints, penetrations and paths of water and air infiltration shall be made watertight and airtight.
 - 3. System shall be capable of withstanding positive and negative combined wind, stack and HVAC 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.

1.5 SUBMITTALS

- A. Product data:
 - 1. Submit manufacturer's product data and installation guidelines, including membrane and accessory material types, technical and test data, composition, descriptions and properties, installation instructions and substrate preparation requirements.
- B. Certificates:
 - 1. Certificates by manufacturer stating that manufacturer and installer meet qualifications as herein specified.
- C. VOC Certification: Submit certification that products furnished comply with regulations controlling use of volatile organic compounds (VOC).

1.6 QUALITY ASSURANCE

- A. Applicable standards, as referenced herein: ASTM International (ASTM).
- B. Manufacturer's qualifications: Air and water-resistive barrier systems shall be manufactured and marketed by a company with a minimum of five (5) years' experience in the production and sales of air and water-resistive 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 the installer completed SWR Institute's Validated Air Barrier Training and is approved to perform work as herein specified by air and water-resistive barrier system manufacturer.
 - 2. List of at least three (3) projects completed of similar scope and complexity to this project carried out by the firm and site supervisor.

- 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 within the scope of this specification from a single manufacturer.
- F. Regulations: Provide products which comply with all state and local regulations controlling use of volatile organic compounds (VOC).
- G. Mock-up:
 - 1. 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 installation.
 - a. 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.
 - b. Allow 72 hours for inspection and testing of mock-up before proceeding with weather and air barrier work.
 - c. Coordinate construction of mockups to permit inspection by [Architect] [Owner's Representative] of air barrier before beginning installation.
 - d. Approved, undamaged mock-up must remain as part of the work.

1.7 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 accordance with applicable regulations.
- B. Protect air and water-resistive barrier components from freezing and extreme heat.
- C. Sequence deliveries to avoid delays, and to minimize on-site storage.

1.8 FIELD CONDITIONS

- A. Environmental limitations:
 - 1. Comply with manufacturer's written instructions for substrate temperature and moisture content and other conditions affecting performance requirements.
- B. Weather conditions:
 - 1. Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials used.
- C. Proceed with installation only when the substrate construction and preparation work are complete and in condition to receive the membrane system.
- D. Do not apply to frozen substrate. Allow adequate time for substrate to thaw, if freezing conditions exist before application.

1.9 WARRANTY

- A. Manufacturer's warranty requirements:
 - 1. Submit manufacturer's 5 year limited warranty stating:
 - a. The products have been tested in accordance with national standards for air and water-resistive barriers and passed those tests with effectiveness and durability indicating their suitability for performance as an air and water-resistive barrier system when properly applied.

- b. The products shall be free from defects in material for a period of [five] years after the substantial completion of the material application.
- c. That the products will not disintegrate and will maintain their integrity over the life of the warranty.

B. Warranty period: Five (5) years from Date of Substantial Completion.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Substitutions: [No Substitutions] [In accordance with Section 01 25 00 – Substitution Procedures].

2.2 MATERIALS

- A. Fluid applied air and water-resistive barrier that stops air and water leakage in cavity wall, masonry veneer construction, as well as in stucco, EIFS and most other building wall assemblies.
 - 1. Product: PROSOCO R-GUARD Spray Wrap MVP, manufactured by PROSOCO, Inc., Lawrence, KS, (800) 255-4255, www.prosoco.com.
- B. Subject to compliance with the following physical and performance requirements:
 - 1. ICC-ES AC 212 Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers Over Exterior Sheathing.
 - 2. ABAA: Air Barrier Association of America Acceptance Criteria for Liquid Applied Membranes.
 - 3. Comply with national, state and district AIM VOC regulations and be 30 g/L or less.
 - 4. Water vapor transmission: 34 perms when tested in accordance with ASTM E96 (Wet Cup).
 - 5. Tensile bond: Minimum 15 psi or exceeds strength of substrate when tested in accordance with ASTM C297.
 - 6. Surface burning characteristics: Class A Building Material, when tested in accordance with ASTM E84. Flame Spread: Less than or equal to 25, Smoke Developed: Less than or equal to 450.
 - 7. Total solids: 65 to 75- percent by volume, ASTM-D-2369.
- A. Fluid applied air and water-resistive barrier that combines silicone and polyurethane properties. Single component, Silyl-Terminated-Poly-Ether (STPE) that is roller applied to produce a highly durable, seamless, elastomeric weatherproofing membrane on exterior sheathing, CMU back-up walls, and pre-cast concrete. Prevents water and air penetration of the building envelope in weather up to 155 mph winds of a Category 5 hurricane.
 - 1. Product: PROSOCO R-GUARD Cat 5, manufactured by PROSOCO, Inc., Lawrence, KS, (800) 255-4255, www.prosoco.com.
- B. Subject to compliance with the following physical and performance requirements:
 - 1. Living Building Challenge 2.0/2.1 Red List.
 - 2. ICC-ES AC 212 Acceptance Criteria for Water-Resistive Coatings Used as Water Resistive Barriers Over Exterior Sheathing.
 - 3. ABAA: Air Barrier Association of America Acceptance Criteria for Liquid Applied Membranes.
 - 4. Comply with national, state and district AIM VOC: less than 30 grams per Liter.
 - 5. Air Leakage of Air Barrier Assemblies: Less than or equal to 0.04 cfm per square foot at 1.57 psf (less than or equal to 0.2 liters s-sq.m. at 75 Pa) when tested in accordance with ASTM E2357.
 - 6. Air Permeance: Less than or equal to 0.004 cfm per square foot (Less than or equal to 0.02 L/s/sq m) when tested in accordance with ASTM E2178.
 - 7. Water vapor transmission: 18 perms when tested in accordance with ASTM E96.
 - 8. Total solids: 99 percent.

- A. Fluid-applied air and water-resistive vapor barrier that stops air and water leakage in cavity wall, masonry veneer construction, as well as in stucco, EIFS, and most other building wall assemblies.
 - 1. Product: PROSOCO R-GUARD VB, manufactured by PROSOCO, Inc., Lawrence, KS, (800) 255-4255, www.prosoco.com.
- B. Subject to compliance with the following physical and performance requirements:
 - 1. Comply with national, state and district AIM VOC: less than 50 grams per Liter
 - 2. Air Leakage of Air Barrier Assemblies: Less than or equal to 0.04 cfm per square foot at 1.57 psf (less than or equal to 0.2 liters s-sq.m. at 75 Pa) when tested in accordance with ASTM E2357.
 - 3. Air permeance: Less than or equal to 0.004 cfm per square foot (Less than or equal to 0.02 L/s/sq m) when tested in accordance with ASTM E2178.
 - 4. Water vapor transmission: 0.063 perms when tested in accordance with ASTM E96 (Dry Cup).
 - 5. Surface Burning Characteristics: Class A Building Material, when tested in accordance with ASTM E84. Flame Spread: Equal or less than 25, Smoke Developed: Equal or less than 450.
 - 6. Water resistance: No water infiltration after exposure to 55 cm head of water for 5 (five) hours when tested in accordance with ICC-ES AC 212 AATCC 127.
 - 7. Fastener sealability: No water infiltration when tested in accordance with ASTM D1970.
 - 8. Total solids: 62.5 percent.

2.3 WATER BASED PRIMER FOR RAW GYPSUM BOARD EDGES

- A. Primer to seal the cut edges of gypsum wall boards where they are exposed in rough openings for windows and doors. The sealed edge makes a compatible surface for easy application of liquid applied fiber-reinforced fill coat and seam treatment for through-wall components.
 - 1. Product: PROSOCO R-GUARD GypPrime, manufactured by PROSOCO, Inc., Lawrence, KS, (800) 255-4255, www.prosoco.com.
- B. Subject to compliance with the following physical and performance requirements:
 - 1. Breathable liquid primer.
 - 2. Comply with national, state and district AIM VOC regulations and be 100 g/L or less.
 - 3. Total solids: 16 percent.

2.4 LIQUID APPLIED FILL COAT AND SEAM FILLER

- A. High modulus, gun-grade, crack and joint filler, adhesive and detailing compound that combines the best silicone and polyurethane properties. The single-component, Silyl-Terminated-Poly-Ether (STPE) prepares open joints, seams and cracks before installing primary water and air barrier system to prevent the movement of water and air through building envelopes.
 - 1. Product: PROSOCO R-GUARD Joint & Seam Filler, manufactured by PROSOCO, Inc., Lawrence, KS, (800) 255-4255, www.prosoco.com.
- B. Subject to compliance with the following physical and performance requirements:
 - 1. Living Building Challenge 2.0/2.1 Red List.
 - 2. Comply with national, state and district AIM VOC regulations and be 30 g/L or less.
 - 3. Water vapor transmission: Minimum 19 perms at 20 mils when tested in accordance with ASTM E-96.
 - 4. Tensile strength: 70 psi when tested in accordance with ASTM D412.
 - 5. Elongation at break: 180 percent when tested in accordance with ASTM D412.
 - 6. Peel strength: Greater than 25 pli when tested in accordance with ASTM D1781.
 - 7. Total solids: 99 percent.
 - 1. Product: PROSOCO R-GUARD FastFlash manufactured by PROSOCO, Inc., Lawrence, KS, (800) 255-4255, www.prosoco.com.

- B. Subject to compliance with the following physical and performance requirements:
1. Living Building Challenge 2.0/2.1 Red List.
 2. AAMA 714-12 Voluntary Specification for Liquid-Applied Flashing Used to Create a Water-Resistive Seal Around Exterior Wall Openings in Buildings.
 3. ICC-ES AC 212 Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers Over Exterior Sheathing.
 4. Comply with national, state and district AIM VOC regulations and be 30 g/L or less.
 5. Water vapor transmission: 21 perms when tested in accordance with ASTM E96.
 6. Tensile strength: Greater than 150 psi when tested in accordance with ASTM D412.
 7. Elongation at break: Greater than 350 percent when tested in accordance with ASTM D412.
 8. Total Solids: 99 percent.

2.5 LIQUID-APPLIED FLASHING AND DETAILING MEMBRANE

- A. Gun-grade waterproofing, adhesive and detailing compound that combines the best of silicone and polyurethane properties. The single component, Silyl-Terminated-Poly-Ether (STPE) produces a highly durable, seamless, elastomeric should treat joints, seams, cracks and provide the flashing membrane in rough openings of structural walls and to counter-flash waterproofing and air barrier components.
1. Product: PROSOCO R-GUARD FastFlash manufactured by PROSOCO, Inc., Lawrence, KS, (800) 255-4255, www.prosoco.com.
- B. Subject to compliance with the following physical and performance requirements:
1. Living Building Challenge 2.0/2.1 Red List.
 2. AAMA 714-12 Voluntary Specification for Liquid-Applied Flashing Used to Create a Water-Resistive Seal Around Exterior Wall Openings in Buildings.
 3. ICC-ES AC 212 Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers Over Exterior Sheathing.
 4. Comply with national, state and district AIM VOC regulations and be 30 g/L or less.
 5. Water vapor transmission: 21 perms when tested in accordance with ASTM E96.
 6. Tensile strength: Greater than 150 psi when tested in accordance with ASTM D412.
 7. Elongation at break: Greater than 350 percent when tested in accordance with ASTM D412.
 8. Total Solids: 99 percent.

2.6 INTERIOR SEALANT FOR WINDOWS AND DOORS

- A. High performance, gun-grade waterproofing sealant that combines the silicone and polyurethane properties. Single component, Silyl-Terminated-Poly-Ether (STPE) that is that is durable, and stops the movement of moist air through cracks surrounding windows and doors.
1. Product: PROSOCO R-GUARD AirDam, manufactured by PROSOCO, Inc., Lawrence, KS, (800) 255-4255, www.prosoco.com.
- B. Subject to compliance with the following physical and performance requirements:
1. Living Building Challenge 2.0/2.1 Red List.
 2. Health Product Declaration v1.0 Standard.
 3. Comply with national, state and district AIM VOC: less than 30 grams per Liter.
 4. Sealant Validation from Sealant Waterproofing & Restoration Institute (SWRI).
 5. Elongation at break: 1000% when tested in accordance with ASTM D412.
 6. Peel strength: 25 pli when tested in accordance with ASTM C794
 7. Total solids: 98 percent.
- C. Backer rod: In deep joints, control sealant depth by installing closed cell backer rod. Diameter of the soft-backer rod should be 25 percent greater than the joint width. Do not puncture backer rod.

2.7 PREFORMED SILICONE SEALANT EXTRUSION

- A. Manufacturer's standard system consisting of pre-cured low modulus elastomeric extrusion that provides a continuous transition and bridges [windows and doors frames at curtain wall] [storefront] [expansion joints] [skylights] [roof] to air barrier materials. Provide continuous Preformed Silicone Sealant Extrusion System that is flexible, durable, designed for high dynamic and thermal movement which is resistant to ultraviolet exposure and weathering.
 - 1. Product: PROSOCO SureSpan EX, manufactured by PROSOCO Inc., Lawrence, KS, (800) 255-4255, www.prosoco.com.
- B. Subject to compliance with the following physical and performance requirements:
 - 1. Elongation: Minimum 400 percent when tested in accordance to ASTM D412.
 - 2. Joint Movement Capacity: Minimum 200 percent elongation and minimum 75% compression per ASTM C1518 (ASTM C1523).
 - 3. Tensile Strength: Minimum 700 psi when tested in accordance with ASTM D412.
 - 4. Tear Strength: Minimum 200 lb/in when tested in accordance with ASTM D624.
 - 5. Tear Propagation: Pass testing requirements of ASTM C1518 (ASTM C1523). Movement Class shall exceed 200 percent Elongation and a Tear Class of PT (Knotty Tear).
 - 6. Shore Hardness A: 50 to 65 when tested in accordance with ASTM D2240.
 - 7. UV Resistance: No degradation of material when exposed to UV.

PART 3 - EXECUTION

3.1 EXAMINATION AND SURFACE PREPARATION

- A. Examine conditions for compliance with system manufacturer's requirements for installation, and other specific conditions affecting performance of 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- inch. Fill voids and gaps measuring one- inch or less with liquid applied fill coat and seam filler as necessary to ensure continuity.
 - 1. Surfaces to receive primary fluid applied air and water barrier must be dry or damp, unless approved by air barrier manufacturer. Surfaces to receive (STPE) fluid applied accessories must be dry, damp or wet to the touch. Brush away any standing water present before application. STPE products will tolerate rain immediately after application.
- C. Refer to manufacturer's product data sheets for requirements for condition of and preparation of substrates.
 - 1. Surfaces shall be sound and free of voids, spalled areas, loose aggregate and sharp protrusions.
 - 2. Remove contaminants such as grease, oil and wax from exposed surfaces.
 - 3. Remove dust, dirt, loose stone and debris.
 - 4. Use repair materials and methods that are acceptable to manufacturer of the air and water-resistive barrier system.
 - 5. Refer to manufacturer's product data sheets and manufacturer's installation guidelines for additional information on preparing structural walls to receive the primary air and water resistive barrier.
- D. Exterior sheathing:
 - 1. Ensure that sheathing is properly installed with ends, corners and edges properly fastened. Remove and replace damaged sheathing.
 - 2. Mechanical fasteners used to secure sheathing boards or penetrate sheathing boards shall be set flush with sheathing, and spot overdriven fasteners with liquid applied fill coat and seam filler.
 - 3. Seal the cut edges of gypsum wall boards exposed in rough openings for windows and doors at corners, as recommended by manufacturer.
- E. Masonry and concrete substrates:
 - 1. Masonry head and bed joints should be fully filled and tooled.

2. Mechanically remove loose mortar fins, mortar accumulations and protrusions, and debris.
3. Fill cracks, joints and gaps with liquid applied fill coat and seam filler as herein specified.

3.2 FIBER REINFORCED FILL COAT AND SEAM FILLER

- A. General: Comply with weather and air barrier manufacturer's installation instructions, temperature limitations, product data and shop drawings.
- B. Apply liquid applied fill coat and seam filler for seams, joints, cracks, gaps, primed rough gypsum edges at sheathing, rough openings per manufacturer's written instructions.

3.3 LIQUID APPLIED 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. Apply liquid flashing membrane over surfaces to seal and waterproof rough openings per manufacturer's written instructions. Spread the wet product to create an opaque, monolithic flashing membrane which surrounds the rough opening and extends 4 to 6 inches over the face of the structural wall. Apply additional coats as needed to achieve void- and pinhole-free surface.

3.4 FLUID-APPLIED 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. Apply air and water-resistive barrier to a clean, dry substrate within temperature and weather limitations per manufacturer's written instructions.
 1. Apply to recommended thickness.
 2. Allow product to cure and dry.
 3. Inspect membrane before covering. Repair any punctures or damaged areas by applying additional material.
 4. Back roll as necessary to ensure there are no pinholes, voids or gaps in the membrane. Apply fluid applied air and water-resistive barrier per manufacturer's recommendations.
 5. Apply additional coats per manufacturer's written instructions.

3.5 FLUID-APPLIED FLASHING TRANSITIONS

- A. General: Comply with weather and air barrier manufacturer's installation instructions, temperature limitations, product data and shop drawings.
- B. Apply fiber reinforced fill coat and seam filler and liquid flashing membrane as a liquid flashing membrane to waterproof the transitions in rough opening and between dissimilar materials per manufacturer's written instructions.
 1. Fill any voids between the top of the flashing leg and the vertical wall with fiber reinforced fill coat and seam filler.
 2. Spread the wet liquid flashing membrane to create a monolithic "cap-flash" flashing membrane per manufacturer's written instructions.
 3. Apply additional coats as needed to achieve void- and pinhole-free surface.
 4. Allow treated surfaces to skin before installing other wall assembly, waterproofing or air barrier components.
- B. Apply preformed silicone sealant extrusion to provide a continuous airtight and water-tight seal between material frame and substrate per manufacturer's written instructions.
 1. Embed material in bead of liquid flashing membrane per manufacturer's written instructions.

3.6 INTERIOR SEALANT FOR WINDOWS AND DOORS INSTALLATION

- A. General: Comply with weather and air barrier manufacturer's installation instructions, temperature limitations, product data and shop drawings.
- B. Apply interior waterproofing sealant per manufacturer's written instructions.
 - 1. Install Backer rod: Compressible, closed cell rod stock as recommended by manufacturer for compatibility with sealant. Install Backer Rod as necessary per manufacturer's written instructions.
 - 2. Apply interior waterproofing sealant in continuous beads without gaps or air pockets.

END OF SECTION