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This specification utilizes the Construction Specifications Institute (CSI) Manual of Practice, including MasterFormat™, SectionFormat™ and PageFormat™. This is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets []; delete optional text in final copy of specification. Specifier Notes typically precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate symbols typically are used in Specifier Notes; symbols are not used in specification text. Metric conversion, where used, is soft metric conversion.

This specification specifies the *Marflex 5000 Fluid Applied Air and Vapor Barrier Membrane*. This product is manufactured by Marflex Building Solutions. Revise section number and title below to suit project requirements, specification practices and section content. Refer to CSI MasterFormat for other section numbers and titles.

PART 1 GENERAL

1.01 SUMMARY

- A. Materials and installation methods for a spray applied air/vapor barrier located in the non-accessible part of the wall.
- B. Related materials and installation to bridge and seal openings and penetrations of window frames, door frames, masonry tiers, piping conduit, and similar leakage paths in the building envelope.

SPEC NOTE: Limit the following listings to sections that have a DIRECT affect on this section.

1. Section (_____): Below grade (waterproofing) (dampproofing) membrane.

SPEC NOTE: Specify concrete surfaces to be smooth and without large voids, spalled areas or sharp protrusions.

2. Section (_____): Concrete wall construction.

SPEC NOTE: Specify masonry joints to be flush and completely filled with mortar, with all excess mortar on brick ties to be removed.

3. Section (_____): Masonry wall construction.
4. Section (_____): Steel stud wall construction.
5. Section (_____): Insulation.
6. Section (_____): Fire stopping materials.
7. Section (_____): Roofing membrane (and vapor retarder).
8. Section (_____): Gypsum sheathing.
9. Section (_____): Plywood sheathing.
10. Section (_____): Flashing.
11. Section (_____): Wall panels.
12. Section 07900 – Joint Sealers: Sealant materials and insulation techniques.

SPEC NOTE: Reference all wall appurtenances that penetrate air seal materials or assemblies; as follows:

13. Section (_____): Door frames.
14. Section (_____): Window frames.

1.02 REFERENCES – MATERIAL

- A. American Society for Testing and Materials International (ASTM):
 1. ASTM C-719 Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle).

2. ASTM C-836 Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course.
 3. ASTM D-2939 Standard Test Methods for Emulsified Bitumens Used as Protective Coatings.
 4. ASTM E-96 Standard Test Method for Water Vapor Transmission of Materials.
 5. ASTM D-466 Standard Test Method for Films Deposited from Bituminous Emulsions
 6. ASTM D-412 Standard Test Method for Vulcanized Rubber and Thermoplastic Elastomers-Tension
 7. ASTM D-3274 Standard Test Method for Emulsified Bitumens Used as Protective Coatings
 8. ASTM D-2196 Standard Test Method for Rheological Properties of Non-Newtonian Materials by Rotational (Brookfield type) Viscometer
- B. Federal Specifications
1. TT-C-555B Ability to Resist Hydrostatic Pressure Over Non-Structural Cracks.
- C. Connections to Adjacent Materials: Provide connections to prevent air leakage and vapor migration at the following locations:
1. Foundation and walls, including penetrations, ties and anchors
 2. Walls, windows, curtain walls, storefronts, louvers or doors
 3. Different wall assemblies, and fixed openings within those assemblies
 4. Wall and roof connections and penetrations
 5. Floors over unconditioned spaces
 6. Walls, floors and roof across construction, control and expansion joints
 7. Seismic and expansion joints
 8. All other leakage pathways in the building envelope

1.03 SUBMITTALS

- A. SUBMITTALS
1. Product Data: Submit manufacturer's product data sheets, application guidelines, performance characteristics, limitations, independent air leakage, sustained wind load and gust wind test data and detailed drawings.
- B. QUALIFICATIONS
1. Applicator: Company specializing in performing work of this section approved by air barrier membrane material manufacturer.
 2. Perform work in strict adherence to the manufacturer's instructions.
 3. Obtain Air/Vapor Barrier components from a single manufacturer if possible.
 4. Provide products which comply with all state and local regulations controlling the use of volatile organic compounds (VOC's).
- C. MOCK-UP

SPEC NOTE: Use 1 when specifying full sized erected assemblies required for review of construction, coordination of work of several sections, site testing, education of specific trades involved or observation of the installation.

1. Provide mock-up of air/vapor barrier materials under provisions of Section (01340).
 2. Construct typical exterior wall panel, (_____) feet long by (_____) feet wide, incorporating window, doorframe and sill, insulation, junction with roof membrane, illustrating materials interface and seals.
 3. Locate (where directed).
 4. Mock-up may (not) remain as part of the work.
 5. Allow (24) hours for inspection of mock-up by (Consultant) before proceeding with air/vapor barrier work.
- D. PRE-INSTALLATION CONFERENCE
1. Convene (one week) prior to commencing work of this section, under provisions of Section (01040).
- E. ENVIRONMENTAL REQUIREMENTS
1. Ensure application temperature and humidity recommended by material manufacturer is maintained before, during and after installation.
- F. SEQUENCING
1. Sequence work under provisions of Section (_____).
 2. Sequence work to permit installation of materials in conjunction with related materials and seals.

G. COORDINATION

1. Coordinate work of these sections assuring the continuity of the air-tightness throughout

1.04 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 1 Product Requirement Section
- B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer. Do not allow water-based materials to freeze.

1.05 PROJECT/SITE CONDITIONS

- A. Environmental Requirements: Comply with application temperature ranges of (0-150°F – Solvent Based) (20-130°F – Water-Based)

PART 2 PRODUCTS

2.01 MATERIALS

SPEC NOTE: Retain article below for proprietary method specification. Add product attributes performance characteristics, material standards and descriptions as applicable.

- A. Manufacturer: Marflex Building Solutions
 1. Contact: 6866 Chrisman Lane, Middletown, Oh 45042 (800) 498-1411, (513) 422-7285, Fax (513) 422-7282, technicalsupport@mar-flex.com
- B. Air/Vapor Barrier Membranes: Marflex 5000 Air/Vapor Barrier, liquid applied membrane. Manufactured by Marflex Building Solutions
 1. Marflex 5000 Membrane:
 - a. Material: Emulsion
 - b. Color: Black
 - c. Total Solids: 60-70%
 - d. Application Method: [Spray] [Brush] [Roll]
 - e. Coverage Rate: 5-gal/100 ft²
 - f. Film Thickness, Dry: 60 mil (1.5 mm) min.
 - g. Total Cure Time: 24 hours
 - h. Weight/Gallon: 7.6 lb (3.4 kg)
 - i. Elongation at 70°F (21°C) (ASTM D-412 Die C): 1725%
 - j. Tensile Strength (ASTM C-719): 48 psi (331 kPa)
 - k. Low Temperature Flexibility at -15°F (ASTM C 719): No cracking
 - l. Crack Bridging (ASTM C-836): 10 cycles without bond failure
 - m. Viscosity/Centipoise: (ASTM D-2196): 3600 centipoise
 - n. Resistance to Water Flow (ASTM D-466): Bond strength not affected
 - o. Water Solubility (ASTM D-2939): No blistering or re-emulsion
 - p. Resistance to Hydrostatic Pressure (Federal Spec TT-C-555B, Par.4.4.7.):
 - i. Water Leaks: None
 - ii. Weight Gain: None
 - Permeability: 0.23 perms (13 ng/(Pa × s × m²)).
 - q. Water Vapor (ASTM E-96):
 - i. Transmission: 0.11 grains/sf/h.
 - i. Permeability: 0.23 perms (13 ng/(Pa × s × m²)).

2.02 PRODUCT SUBSTITUTIONS

- A. No substitutions permitted

2.03 ACCESSORY MATERIALS

SPEC NOTE: Revise article below to suit project requirements and specifier's practice.

- A. Transition Strip: EcoFlash is a self adhering smooth surfaced modified bitumen membrane. Nominal 40 mil thickness, multiple widths are available. Manufactured by Marflex Building Solutions
- B. Transition Strip Primer: 1800 Primer for SB products or 1200 Primer for WB products. Both manufactured by Marflex Building Solutions
- C. Substrate Filler: 1800 Mastic for SB products or 1200 Mastic for WB products. Both manufactured by Marflex Building Solutions

PART 3 EXECUTION OF WORK

SPEC NOTE: Article below is an addition to the CSI SectionFormat . Revise article below to suit project requirements and specifier's practice.

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Comply with the most current written installation instructions and recommendations of the waterproofing manufacturer.

3.02 EXAMINATION

- A. Verify that surfaces and conditions are suitable prior to commencing work of this section.
- B. Ensure that:
 - 1. Surfaces are sound, dry, even and free of oil, grease, dirt, excess mortar or other contaminants.
 - 2. Concrete surfaces should be smooth without large voids, spalled areas or sharp protrusions.
 - 3. Masonry joints are flush and completely filled with mortar and all excess mortar on masonry ties has been removed.

3.03 PREPERATION

- A. Remove loose or foreign matter with manufacturer's instructions.
- B. Fill any voids with, 1800 Mastic when using the SB membrane or 1200 Mastic when using a WB membrane, substrate filler.
- C. Clean and prime substrate joint/connection surfaces to receive transition strip in accordance with manufacturer's instructions.

3.04 APPLICATION

- A. Install materials in accordance with manufacturer's instructions.

SPEC NOTE: Modify the following paragraphs as appropriate to drawing details. Ensure drawings utilize same terminology used in this section. Alternatively, schedule specific applications at the end of this section. Liquid air/vapor materials should be placed over firm backup to achieve structural support in order to accomplish an effective and permanent air/vapor seal.

- B. Transition joint primer: Apply 1800 (SB) or 1200 (WB) primer to all areas receiving the transition strip.
- C. Transition joints: Seal with EcoFlash transition strip at beams, columns, changes in substrate material and similar joints or connections to provide continuity of air/vapor barrier assembly. Generally, apply transition strip so that a minimum of 3" coverage is achieved over both substrates. Position strip over firm bearing.
- D. Window frame perimeter and door frames: Lap transition strip from wall substrate with a minimum of 3" of full contact over form bearing to window or door frame with 1" of full contact.
- E. Apply air/vapor barrier membrane within recommended application temperature ranges. Consult manufacturer when membrane cannot be applied within these temperature ranges.
- F. Using airless spray equipment with a minimum pressure of 3000 psi, apply first coat of air barrier membrane over exterior face of the inner cavity wall.
- G. Use alternating horizontal and vertical passes to ensure complete coverage of substrate and transition strips. Seal masonry anchors or other penetrations air tight.
- H. Check surface again and if necessary, fill any remaining gaps with mastic substrate filler prior to covering with membrane.
- I. Complete application of membrane at a coverage rate of 20-25 ft² /gal., to provide a seamless monolithic surface to a thickness of 40 mils.
- J. Inspect surface area with wet mil gauge to ensure proper thickness.
- K. Allow 12-24 hours for membrane to fully cure.

SPEC NOTE: Specify installation of board insulation in insulation section of specification or specify here as desired.

- L. Adhere insulation to air/vapor barrier membrane after initial set time of approximately 1 to 2 hours and while membrane is still tacky, to prevent convection currents occurring behind the insulation.

3.05 PROTECTION OF FINISHED WORK

- A. Protect finished work under provisions of Section (_____) – (_____).
- B. Do not permit adjacent work to damage work of this section.

3.06 CLEANING

- A. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.