SECTION 07 27 26.01
FLUID APPLIED VAPOR PERMEABLE AIR BARRIER MEMBRANE

SIKA SPECIFICATION NOTE: This guide specification includes test methods, materials and installation procedures for an air barrier assembly meeting ASTM E 2357 using **Sikagard® 520 Liquid Applied Asphalt Vapor Permeable Air Barrier Membrane System**. **Sikagard® 520 Liquid Applied Asphalt Vapor Permeable Air Barrier Membrane System** is a low VOC, fast setting spray applied liquid membrane appropriate for use behind rain screen and pressure equalized rain screen wall cladding systems such as composite panels, metal siding, masonry veneers, stucco and EIFS. This guide specification should be adapted to suit the appropriate design objectives to allow wall assemblies to breathe or 'dry-out' as necessary to meet the conditions of seasonal changes for each climate zone of individual projects. It is prepared in CSI Master Format and should be included as a separate section under Division 7 - Thermal and Moisture Protection.

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. General Conditions, Supplementary Conditions, Instructions to Bidders and Division One General Requirements shall be read in conjunction with and govern this section.

B. This Specification shall be read as a whole by all parties concerned. Each Section may contain more or less than the complete Work of any trade. The Contractor is solely responsible to make clear to the Subcontractors the extent of their Work.

1.02 DESCRIPTION

A. Supply labor, materials and equipment to complete the Work as shown on the Drawings and as specified herein to bridge and seal the following air leakage pathways and gaps:
   1. Connections of the walls to the roof air barrier.
   2. Connections of the walls to the foundations.
   3. Seismic and expansion joints.
   4. Openings and penetrations of window and door frames, store front, curtain wall.
   5. Piping, conduit, duct and similar penetrations.
   6. Masonry ties, screws, bolts and similar penetrations.
   7. All other air leakage pathways in the building envelope.

B. Materials and installation methods of the primary water-resistive vapor permeable air barrier membrane system and accessories.

1.03 PERFORMANCE REQUIREMENTS

A. Provide an asphalt base water-resistive vapor permeable air barrier membrane system constructed to perform as a continuous air barrier, and as a liquid water drainage plane flashed to discharge to the exterior any incidental condensation or water penetration. Membrane system shall accommodate movements of building materials by providing expansion and control joints as required, with accessory air sealant materials at such locations, changes in substrate, perimeter conditions and penetrations. Joints and seals shall be securely installed in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to resist positive and negative pressure from wind, stack effect and mechanical ventilation.

B. Water-resistive vapor permeable air barrier membrane system to be applied to the minimum uniform thickness specified and as utilized in the referenced Standard Test Methods.

1.04 RELATED SECTIONS

A.	Concrete:	Section 03 30 00
B.	Masonry:	Section 04 05 00
C.	Plywood Sheathing:	Section 06 10 00
D.	Insulation:	Section 07 21 00
E.	Roofing:	Section 07 50 00
F.	Sealants:	Section 07 90 00
G.	Flashing:	Section 07 60 00
H.	Openings:	Section 08 06 00
I.	Gypsum Sheathing:	Section 09 20 00

1.05 REFERENCES

A. The following standards are applicable to this section:
   1. ASTM E 2357: Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.
   2. ASTM E 2178: Standard Test Method for Air Permeance of Building Materials.
   3. ASTM E 283: Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
   4. ASTM E 96: Water Vapor Transmission of Materials.
   5. AATCC 127 Water Resistance Hydrostatic Pressure Test.
   6. ASTM D 1970: Sealability
   7. ICC-ES AC 212: Acceptance Criteria for Water Resistive Coatings.

1.06 SUBMITTALS

A. Submit documentation from an approved independent testing laboratory certifying the air leakage rates of the air barrier membranes assembly, including primary membrane, primer and sealants have been tested to meet ASTM E 2357.
B. Submit documentation from an approved independent testing laboratory certifying the air leakage and vapor permeance rates of the air barrier membranes, including primary membrane and transition sheets, exceed the requirements of the Massachusetts Energy Code and in accordance with ASTM E 2178.
   1. Test report submittals shall include test results on porous substrate and include sustained wind load and gust load air leakage results.
C. Submit manufacturers' current product data sheets for the air barrier membrane system.

1.07 QUALITY ASSURANCE

A. Submit document stating the applicator of the primary water-resistive vapor permeable air barrier membranes specified in this section is qualified by the manufacturer as suitable for the execution of the Work.
B. Perform Work in accordance with manufacturer's written instructions and this specification.
C. Maintain one copy of manufacturer's written instructions on site.
D. Allow access to Work site by the air barrier membrane manufacturer's representative.
E. Components used shall be sourced from one manufacturer, including sheet membrane, water-resistive vapor permeable air barrier sealants, primers, mastics, and adhesives.
F. Single-Source Responsibility:
   1. Obtain water-resistive vapor permeable air barrier materials from a single manufacturer regularly engaged in manufacturing the product.
   2. Provide products which comply with all federal, state and local regulations controlling use of volatile organic compounds (VOCs).

1.08 MOCK-UP

A. Construct mock-up in accordance with Section 01 43 39 – Mock-ups.
B. Provide mock-up of water-resistive vapor permeable air barrier materials under provisions of Section 01 33 23 - Shop Drawings, Product Data and Samples.
C. Where directed by [engineer] [architect] [consultant], construct typical exterior wall panel, 6 foot long by 6 foot wide, incorporating substrate, window frame, attachment of insulation and showing air barrier membrane application details.
D. Allow 48 hours for inspection of mock-up by [engineer] [architect] [consultant] before proceeding with air barrier work. Mock-up may remain as part of the Work.
E. Test mock-up for air and water infiltration to conform with Section 01400 - Quality Control, in accordance with ASTM E 783 and ASTM E 1105.

1.09 PRE-INSTALLATION CONFERENCE

A. Contractor shall convene [one] week prior to commencing Work of this section, under provisions of Section 01 31 19 – Project Meetings.
B. Ensure all contractors responsible for creating a continuous plane of air tightness are present.

1.10 DELIVERY, STORAGE AND HANDLING

A. Refer to current Product MSDS for proper storage and handling.
B. Deliver materials to the job site in undamaged and original packaging indicating the name of the manufacturer and product.
C. Store role materials on end in original packaging. Protect rolls from direct sunlight until ready for use.
D. Store water-resistive vapor permeable air barrier membranes, adhesives and primers at temperatures of 40 degrees F and rising.
E. Keep solvent away from open flame or excessive heat.
F. Wasted Management and Disposal
   1. Separate and recycle waste materials in accordance with Section [01355 - Waste Management and Disposal], and with the Waste Reduction Work Plan
G. Contractor to verify compliance for Volatile Organic Compounds (VOC) limitations of products to comply with all federal, state and local regulations controlling use of volatile organic compounds (VOCs).

1.11 CO-ORDINATION

A. Ensure continuity of the specified membranes throughout the scope of this section.
   1. Air barrier membrane to include liquid applied water-resistive vapor permeable air barrier, transition membranes and sealant at penetrations.
   2. Drainage plane to include water resistive barrier and flexible flashings to exterior.

1.12 ALTERNATES

A. Submit request for alternates in accordance with Section 01 25 00 – Substitution Procedures.
B. Submit requests for alternates a minimum of ten (10) working days prior to bid date
C. Alternate submission to include:
   1. Evidence that alternate materials meet or exceed performance characteristics of Product requirements as well as documentation from an approved independent testing laboratory certifying the air leakage rates and vapor permeance rates of the air barrier membranes, including primary membrane and transition sheets, meet the requirements of ASTM E 2357, the Massachusetts Energy Code and in accordance with ASTM E 2178.
   2. Manufacturer's complete set of details for air barrier membrane system showing a continuous plane of air tightness throughout the building envelope.
D. Acceptable alternates will be confirmed by addendum. Substitute materials not approved in writing prior to bid date shall not be permitted for use on this project.

SIKA SPECIFICATION NOTE: Standard manufacturer's warranty against defects of materials for durations greater than one (1) year is available upon request. It is recommended the contractor obtain warranty documentation prior to the start of Work. For best construction practices, it is recommended the contractor conduct compatibility tests prior to the start of Work. Contact Sika Technical Services for more information.

1.13 WARRANTY

A. Provide a written warranty from the manufacturer against defects of materials for a period of one (1) year, beginning with date of substantial completion of the project.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Air barrier membrane components and accessories must be obtained as a single-source to ensure total system compatibility and integrity.

1. Acceptable system by Sika Corp
   201 Polito Avenue
   Lyndhurst, NJ
   800 933 SIKA (7452)
   www.Sikausa.com

2.02 MEMBRANES (Basis-of-Design)

A. Primary vapor permeable air and rain barrier membrane for temperatures above 40 degrees F and rising shall be Sikagard® 520 Liquid Applied Asphalt Vapor Permeable Air Barrier by Sika Corp, a low VOC one component elastomeric asphalt membrane that may be trowel, brush, roller or spray applied. Membrane shall have the following physical properties:
   1. Air permeability: 0.0014 CFM/ft² @ 1.6 lbs/ft² to ASTM E 2178.
   2. Tested to ASTM E 2357 for Air Leakage of Air Barrier Assemblies
   3. Water vapor permeance (30 mil dry thickness): 12 perms to ASTM E 96 Method B
   4. Nominal wet film thickness: 60 mils
   5. VOC: <10g/l
   7. Fastener Sealability: Pass to ASTM D 1970
   8. Water Resistance: Pass to AATCC 127
   9. May be exposed for up to 6 months

B. Self-adhering membrane for all window jambs, headers, door openings, inside and outside corners, joint treatment and other transitions shall be SikaMultiSeal® 515 Self-Adhered Transition Seam Tape by Sika Corp, a self-adhering polyester-backed, synthetic butyl rubber based adhesive membrane for wall construction, specifically designed to be water resistant. Membrane shall have the following physical properties:
   1. Membrane Thickness: 0.0394 inches (40 mils)
   2. Low temperature flexibility: -30 degrees F
   3. Elongation: 500% to ASTM D 412-modifed

2.03 LIQUID SEAM AND PENETRATION SEALANT

A. Liquid seam sealant shall be Sikaflex® 110 Liquid Seam Sealant by Sika Corp, a moisture cure, medium modulus polyether sealing compound having the following physical properties:
   1. Compatible with sheet air barrier, roofing and waterproofing membranes and substrate,
   2. Set Time: 1 hour @ 72 degrees, 40% RH
   3. Solids: 100%
   4. Elongation: 200% to ASTM D412/C1135
   5. Joint Movement 12.5%+/- ASTM C719
   6. Seals construction joints

B. Penetration sealant shall be Sikasil WS 290 by Sika Corp, a one-part, neutral-curing, ultra low-modulus silicone sealant that cures to a durable, flexible building sealant and having the following physical properties:
   1. Compatible with air barrier, roofing and waterproofing membranes and substrate,
   2. Tensile Properties (ASTM D-412) at 21 days
   3. Tensile Stress: 165 psi (1.14 MPa)
   4. Elongation at Break: 1200%
   5. Modulus of Elasticity: 100% 42 psi (0.29 MPa)

SIKA SPECIFICATION NOTE FOR PRIMER AND SURFACE CONDITIONER: The placement of SikaMultiSeal® 515 Self-Adhered Transition Seam Tape around window openings, door openings, inside and outside corners, joint treatment and other transitions may be applied at ambient temperatures above 40 degrees F (4 degrees C) to unprimed surfaces as detailed on the Technical Data Sheet. Substrates shall be sound, clean, dry and free of frost, dirt, dust, loose concrete, grease, oil, contaminants or other foreign matter that may adversely affect membrane adhesion. Contractor is responsible to check adhesion and suitability of applications. For best results prime surfaces with Sikagard® 510 Transition Seam Tape Primer. Allow primer to fully dry prior to applications. Alternatively to improve adhesion at application temperatures above 40 degrees F apply Sikagard 520 Liquid Applied Air Barrier Membrane at a rate of 160 sq.ft/gallon to provide a uniform wet film thickness of 10 mils. Allow membrane to fully dry prior to application of the self-adhered transition seam tape. Roll membrane after application and check bond adhesion.

2.04 PRIMER AND SURFACE CONDITIONER

A. Primer for self-adhering transition and flashing membrane at all temperatures shall be Sikagard® 510 Transition Seam Tape Primer by Sika Corp, a high tack adhesive primer, quick setting, having the following physical properties:
   1. Color: White,
   2. Solids by weight: 37%,
   3. Drying time (initial set): 30 minutes.

B. Surface conditioner for self-adhering transition and flashing membrane at temperatures above 40 degrees F shall be Sikagard® 520 Liquid Air Barrier Membrane having the following physical properties:
   1. Color: black,
   2. Solids by weight: 59%,
   3. Application Rate: 160 sq.ft/gallon to a uniform wet film thickness of 10 mils.
   4. Drying time (initial set): 60 minutes.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and conditions are ready to accept the Work of this section. Notify [engineer] [architect] [consultant] in writing of any discrepancies. Commencement of the Work or any parts thereof shall mean acceptance of the prepared substrates.

B. All surfaces must be sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants. Fill voids, gaps and spalled areas in substrate to provide an even plane. Strike masonry joints flush.

C. Where curing compounds are used they must be clear resin based without oil, wax or pigments. New concrete should be cured for no less than 14 days prior to the application of primer and self-adhered transition seam tape.

D. Do not proceed with application of air barrier membrane when rain is expected within 24 hours.

E. Condition materials to room temperature prior to application to facilitate handling.

3.02 SURFACE PREPARATION

A. Ensure all preparatory Work is complete prior to applying primary air barrier membrane.

B. Mechanical fasteners used to secure sheathing boards or penetrate sheathing boards shall be set flush with sheathing and fastened into solid backing.

C. Mechanical penetrations [piping, conduit & vents] shall be secured solid and fastened into solid backing.

D. New concrete should be cured for no less than 7 prior to the application of primer and self-adhered transition seam tape.

E. Thoroughly mix primary vapor permeable air and rain barrier membrane prior to installation.

3.03 INSTALLTION OF AIR BARRIER SYSTEM

A. JOINT TREATMENT
   1. Seal joints ¼ inch and less between panels of exterior grade gypsum, DensGlass Gold, plywood, OSB or cementitious panels with liquid seam sealant.
      a. Fill joint between sheathing with approved liquid seam sealant ensuring contact with all edges of sheathing board.
   2. Seal gaps and voids or irregular joints greater than ¼ inch between panels of exterior grade gypsum, DensGlass Gold, plywood, OSB or cementitious panels with a strip of self-adhering transition membrane lapped a minimum of 3 inches on both sides of the joint.
      a. Prepare and/or prime surfaces as appropriate to achieve surface adhesion and allow to dry prior to placement of self-adhering transition membrane.
      b. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inches overlap at all end and side laps of membrane.
      c. Roll all laps and membrane with a counter top roller to ensure seal.

B. INSIDE AND OUTSIDE CORNERS

1. Seal inside and outside corners with a strip of self-adhering transition membrane extending a minimum of 3 inches on either side of the corner detail.
    a. Prepare and/or prime surfaces as appropriate to achieve surface adhesion and allow to dry prior to placement of self-adhering transition membrane.
    b. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inches overlap at all end and side laps of membrane.
    c. Roll all laps and membrane with a counter top roller to ensure seal.

C. CRACK TREATMENT – MASONRY AND CONCRETE
1. Seal cracks ¼ inch and less in masonry and concrete with liquid seam sealant applied over the crack.
    a. Fill joint between sheathing with approved liquid seam sealant ensuring contact with all edges of sheathing board.
2. Seal cracks and voids in masonry and concrete greater than ¼ inch with a strip of self-adhering transition membrane lapped a minimum of 3 inches on both sides of the joint.
    a. Prepare and/or prime surfaces as appropriate to achieve surface adhesion and allow to dry prior to placement of self-adhering transition membrane.
    b. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inches overlap at all end and side laps of membrane.
    c. Roll all laps and membrane with a counter top roller to ensure seal.

D. TRANSITON AREAS
1. Tie-in to structural beams, columns, floor slabs and intermittent floors, parapet curbs, foundation walls, roofing systems and at the interface of dissimilar materials as indicated in drawings with self-adhering transition membrane.
    a. Prepare and/or prime surfaces as appropriate to achieve surface adhesion and allow to dry prior to placement of self-adhering transition membrane.
    b. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Provide minimum 3 inch lap to all substrates.
    c. Ensure minimum 2 inch overlap at all end and side laps of membrane.
    d. Roll all laps and membrane with a counter top roller to ensure seal.

E. WINDOWS AND ROUGH OPENINGS
1. Wrap jamb of rough openings with specified self-adhering transition membrane as detailed.
2. Extend specified self-adhering transition membrane into rough window openings sufficient to provide a connection to interior vapor retarder.
    a. Prepare and/or prime surfaces as appropriate to achieve surface adhesion and allow to dry prior to placement of self-adhering transition membrane.
    b. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inches overlap at all side laps and minimum 3 inches overlap at all end laps of membrane.
    c. Roll all laps and membrane with a counter top roller to ensure seal.

F. PRIMARY AIR BARRIER
1. Apply by brush, roller or spray a complete and continuous unbroken film of liquid vapor permeable air and rain barrier membrane.
    a. For temperatures above 40 degrees F and rising, apply one component asphalt water-resistive vapor permeable air barrier membrane at a rate of 27 sq.ft/gallon to a uniform wet film thickness of 60 mils.
2. Spray apply or brush around all projections and penetrations ensuring a complete and continuous air barrier membrane.
3. Allow air barrier membrane to dry as per manufacturers recommendations prior to placement of cladding materials.
4. Subject to porosity of substrate, recommend to back roll spray applications.

3.04 APPLICATION OF PENETRATION SEALANT

A. Seal membrane terminations, heads of mechanical fasteners, masonry tie fasteners, around penetrations, duct work, electrical and other apparatus extending through the primary vapor permeable air and rain barrier membrane and around the perimeter edge of membrane terminations

at window and door frames with specified penetration sealant.

B. Seal the leading edge of membrane terminations and reverse laps.

3.05 FIELD QUALITY CONTROL

A. Make notification when sections of work are complete to allow review prior to covering water-resistive vapor permeable air barrier system.

B. Owner to engage independent consultant to observe substrate and membrane installation prior to placement of cladding systems and provide written documentation of observations.

3.06 INSTALLATION OF INSULATION

A. Co-ordinate with Cavity Wall Insulation Section 07 27 00 for insulating materials.

3.07 PROTECTION

A. Damp substrates must not be inhibited from drying out. Drying time vary depending on interior and exterior temperature, and interior and exterior relative humidity. Do not expose the backside of the substrate to moisture or rain.

B. Cap and protect exposed back-up walls against wet weather conditions during and after application of membrane. Protect uncured air barrier Work against wet weather conditions for a minimum of 24 hours. Protect air barrier membrane from damage and inclement weather during the construction phase.

C. Air barrier membranes are not designed for permanent exposure. Good practice calls for covering as soon as possible. Membrane exposure to UV not to exceed 6 months.

END OF SECTION