SECTION 07 27 26

FLUID-APPLIED VAPOR PERMEABLE MEMBRANE AIR BARRIER SYSTEM

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\*\* NOTE TO SPECIFIER \*\* Kemper System America, Inc.; Liquid applied elastomeric roof repair and restoration products.
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This section is based on the products manufactured or supplied by Kemper System America, Inc., which is located at:
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[click Here] for additional information

Kemper System is the global leader in cold, liquid-applied, fully reinforced roofing and waterproofing, having invented the technology and holding the first patents.

Founded in 1957, Kemper System joined the IBG Group in 1986. The company maintains subsidiaries across North America, Europe, and Asia.

The versatility and adaptability of all Kemperol membranes, combined with the professional technical support, delivers a long term, built-to-last solution for any waterproofing challenge.

Kemper System products provide the best peace-of-mind solutions for a lifetime of protection for your most valuable assets, applications include: green, blue and white roofs, plazas, existing roof recoveries, balconies, terraces, historic restoration, gutterways, interior, industrial applications and below-grade waterproofing.

This specification includes Wall Guardian® FW-100-A AIR and WATER BARRIER, VAPOR RETARDER (breathable) product that can be sprayed or rolled onto the wall surface. This product is designed to use in cavity wall constructions, such as, steel stud construction, insulated (extruded polystyrene), CMU/ Brick veneer cavity wall construction and Insulated tilt-up construction. This product can be used for both commercial and residential construction.

1. GENERAL
	1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Fluid-Applied Vapor Permeable Membrane Air Barrier System.
	1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 03 30 00 - Cast-in-Place Concrete0 - Cast-in-Place Concrete.
		2. Section 04 21 13 - Brick Masonry.
		3. Section 04 22 23.29 - Split-Face Concrete Unit Masonry.
		4. Section 04 40 00 - Stone Assemblies.
		5. Section 04 70 00 - Manufactured Masonry.
		6. Section 04 40 00 - Stone Assemblies.
		7. Section 05 40 00 - Cold-Formed Metal Framing.
		8. Section 06 10 00 - Rough Carpentry.
		9. Section 06 15 00 - Wood Decking
		10. Section 06 16 36 - Wood Panel Product Sheathing
		11. Section 07 21 26 - Blown Insulation.
		12. Section 07 24 00 - Exterior Insulation and Finish Systems.
		13. Division 07 - Roofing.
		14. S Section 07 60 00 - Flashing and Sheet Metal.
		15. Section 07 65 26 - Self-Adhering Sheet Flashing
		16. Section 07 91 23 - Backer Rods.
		17. Section - 6 - Gypsum Board Assemblies.
	1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. ASTM E 84, Standard Test Method for Surface Burning
		2. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.
		3. ASTM E283 - Standard Test Methods of Determining Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
		4. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
		5. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials.
		6. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.
		7. ASTM D 412 - Tensile Strength Properties of Rubber and Elastomers.
		8. ASTM D 1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep slope roofing Underlayment for Ice Dam Protection.
		9. AATCC-127 - Water Resistance: Hydrostatic Pressure Test.
		10. ICC-ES AC212 - Freeze Thaw, Crack Bridging
		11. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components
		12. Listed as an evaluated assembly by Air Barrier Association of America at www.airbarriers.org
	1. PERFORMANCE REQUIREMENTS
		1. Provide a vapor permeable air and water barrier on construction surfaces such as gypsum board, OSB sheathing, plywood, CMU and other construction surfaces.

\*\* NOTE TO SPECIFIER \*\* Note: ASTM E 2357 is the only test method that gives the user any information on the performance of an installed air barrier assembly. Every building contains multiple air barrier materials. It is only when a material is selected and combined into an assembly does it actually perform the function of an air barrier. ASTM E 2357 determines the air leakage rate after being conditioned under real world loads which provides the user with a precise air leakage rate and confidence that it will provide this performance when installed.

* + 1. Air barrier system shall perform as a continuous elastic air barrier, and as a liquid water drainage plane flashed to discharge to the exterior any incidental condensation or water penetration. Membrane shall accommodate movements of building materials by providing expansion and control joints as required, with accessory air seal materials at such locations, changes in substrate and perimeter conditions.
			1. Air barrier shall have the following characteristics:
				1. Must be continuous, with all joints made airtight.
				2. Capable of withstanding positive and negative combined design wind, fan and stack pressures on the envelope without damage or displacement, and transfer the load to the structure. Barrier shall not displace adjacent materials under full load. Air barrier shall be joined in an airtight and flexible manner to the air barrier material of adjacent assembly, allowing for relative movement of assembly due to thermal and moisture variations and creep.
				3. Connection shall be made between:

Foundation and walls.

Walls and windows or doors.

Different wall assemblies.

Walls and roof over conditioned space.

Walls and roof over unconditioned space.

Walls, floor and roof across construction, control and expansion joints.

Walls, floors and roof to utility, pipe and duct penetrations.

Flashing to wall surface.

* + - * 1. All penetrations of air barrier and paths of air infiltration/exfiltration shall be made airtight.
			1. Performance Capabilities:
				1. Air Permeability: Maximum 0.04 cfm/sq.ft. @ 10.5 psf per ASTM E 283.
				2. Air Permeability: @ delta P of 0.3 inches water, 0.002 CFM/SF per ASTM E 2178
				3. Full Scale Wall Testing of the Air Barrier Assembly, ASTM E 2357:

System Air Leakage, Requirement - 0.0008 CFM/SF maximum

Penetration Check, Requirement - 0.00088 CFM/SF maximum

* + - * 1. Water Vapor Permeance ASTM E 96:10-20 Perms per Procedure B
				2. Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference, ASTM E 331: 10 psf for 2 hours.
				3. Elongation: Minimum 50 percent per ASTM D 412.
				4. Water Resistance AATC 127: Pass
				5. Self Sealability ASTM D 1970: Pass
				6. Freeze Thaw, Crack Bridging, ICC-ES AC212: Pass
				7. Fire Testing: Air Barrier, as a component of a wall assembly, shall have passed a NFPA 285 complete wall fire test.
				8. Fire Resistant, ASTM E 84: Class A
				9. Listed as an evaluated assembly by the Air Barrier Association at www.airbarriers.org
	1. SUBMITTALS
		1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
		2. Product Data: Manufacturer's data sheets on each product to be used, including:
			1. Product Literature for all system components including physical properties, performance criteria, compliance reports, material compatibility, product limitations, and recommendations.
			2. Preparation instructions and recommendations.
			3. Storage and handling requirements and recommendations.
			4. Installation methods.
			5. Safety Data Sheets (SDS) for all components.
		3. Shop Drawings: Show plans and details of liquid air barrier membrane system including membrane, transition membrane, penetration flashings, base flashings, connections of walls to roofing, foundations, widows and doors and all other leakage pathways, flashing details, and attachment.
		4. Manufacturer's Certificates: Certify products meet or exceed specified performance requirements and capabilities including:
			1. Evidence of independent Full Scale Wall Testing of the Air Barrier Assembly in accordance with ASTM E 2357 as tested on a steel stud frame wall with results based on Specimen 2 testing only.
			2. Evidence of listing as an evaluated assembly by the Air Barrier Association.
		5. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic checking and adjustment and periodic cleaning and maintenance of all components.
	2. PRE-INSTALLATION CONFERENCE
		1. Convene a pre-installation conference approximately two weeks before scheduled commencement of air barrier system installation and associated work.
		2. Require attendance of installers of substrate construction to receive air barrier and installers of work in and around air barrier which must precede or follow the work including backup and finish products, connections of walls to roofing and foundations, widows and doors and all other leakage pathways, and flashing. The Architect, Owner, and roofing system manufacturer's representative shall also attend.
		3. Objectives include:
			1. Review foreseeable methods and procedures related to roofing/waterproofing work, including set up and mobilization areas for stored material and work area.
			2. Tour representative areas of air barrier substrates, inspect and discuss condition of substrate, penetrations and other preparatory work.
			3. Inspect substrate for loss of flatness and for required attachment.
			4. Review air barrier system requirements, Drawings, Specifications and other Contract Documents.
			5. Review and finalize schedule related to the work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
			6. Review required inspection, testing, certifying procedures.
			7. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing.
			8. Record conference including decisions and agreements reached. Furnish a copy of records to each party attending.
	3. QUALITY ASSURANCE
		1. Manufacturer Qualifications: Provide primary products, including each component of the air barrier membrane system specified, which has been commercially available for a minimum of 3 years.
		2. Installer Qualifications: Company specializing in performing the work of this section with a minimum of 3 years documented experience and approved by the air barrier membrane system manufacturer.
		3. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work while roofing work is in progress
		4. Manufacturer's Field Service: Membrane manufacturer shall provide the services of a competent field representative on-site to provide the following inspections:
			1. Job start inspection at the beginning of each phase of the project, to review special detailing conditions and substrate preparation.
			2. Final punch-list inspection at the completion of each phase of the project.
			3. Warranty inspection to confirm completion of all punch list items.
		5. Source Limitations: Components used in this section shall be sourced from one manufacturer, liquid air barrier membrane, air barrier sealants, primers, mastics, tapes and adhesives as listed as an evaluated air barrier assembly by the Air Barrier Association of America.

\*\* NOTE TO SPECIFIER \*\* Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project. Edit wall and adjacent material descriptions to suit the project requirements.

* + 1. Mock-Up: Provide mock-up of air barrier materials.
			1. Mock-Ups: Build mock-up representative of primary air barrier assemblies and glazing assemblies including backup wall and typical penetrations as acceptable to the Architect. Mock-up shall be dimensioned no less than 8 feet long by 8 feet high (2.50 m long by 2.50 m high) and include the air barrier materials and air barrier accessories proposed for use in the exterior wall assembly.
			2. Do not proceed with remaining work until materials, and workmanship are approved by the manufacturer's representative and the Architect.
			3. Refinish mock-up area as required to produce acceptable work.
			4. Accepted mock-ups shall be used as a comparison standard for remaining Work
	1. DELIVERY, STORAGE, AND HANDLING
		1. Deliver and store products in manufacturer's unopened packaging with labels intact until ready for installation. All pail goods shall bear the ABAA Evaluated Air Barrier label.
		2. Store materials off the ground or on pallets, under cover and in a cool, dry location, out of direct sunlight, in accordance with manufacturer' s recommendations. Do not double stack pail goods.
		3. Store and maintain materials above 40 degrees F.
		4. Maintain copies of all current MSDS for all components on site. Provide personnel with appropriate safety data information and training as it relates to the specific chemical compounds to be utilized.
	2. SEQUENCING
		1. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
	3. PROJECT CONDITIONS
		1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
		2. Do not apply roofing/roofing/waterproofing membrane during or with the threat of inclement weather.
			1. Do not begin work if rain is expected within 24 hours of application.
			2. Do not apply if weather does not permit complete cure prior to rain, fog, or when temperatures are falling below 40 degrees F.
			3. Apply to a substrate with a surface temperature of 40 degrees F and rising. Do not allow product to freeze.
			4. All surfaces to be coated must not pond water. Water that evaporates within 48 hours is not considered ponding.
			5. All surfaces shall be clean, dry and structurally sound.
	4. WARRANTY
		1. Manufacturer's Material Warranty: Provide 5 year manufacturer's material only warranty.
1. PRODUCTS
	1. MANUFACTURERS

\*\* NOTE TO SPECIFIER \*\* Select one of the following two paragraphs as applicable.

* + 1. Acceptable Manufacturer: Kemper System America, Inc., which is located at: 1200 North America Drive; West Seneca, NY 14224; Toll Free Tel: 800-541-5455; Fax: 716-558-2978; Email: [request info (inquiry@kempersystem.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=Kemper+System+America,+Inc.&coid=44753&rep=&fax=716-558-2978&message=RE:%20Spec%20Question%20(07267kem):%20%20&mf=); Web: <http://www.kemper-system.com/us/eng>
		2. Acceptable Manufacturer: Kemper System Canada, Inc., which is located at: 6345 Netherhart Road, Unit 4 Mississauga, Ontario L5T 1B8 Tel: 905-624-5463. Fax: 905-624-2840. Email: inquiry@kempersystem.com. Web: www.kemper-system.com/us/eng/.

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.
	1. Membrane
		1. Liquid air barrier: One component elastomeric membrane, spray, roll or brush applied, that has passed all evaluations by the Air Barrier Association of America (ABAA) and meets the performance requirements specified.
			1. FW-100A Acrylic Air and Water Barrier, Vapor Retarder for Frame Wall Surfaces: Kemper System America Wall Guardian FW-100A is a fibered one-component acrylic based, liquid applied, elastomeric, air and water barrier, vapor permeable (breathable/retarder).
		2. Transition Membrane, Self-Adhering: Polymer-based, sheet membrane complete with polyester facing, that has or is capable of passing all evaluations by the Air Barrier Association of America (ABAA) and meets the performance requirements specified.
			1. UT-40 Universal Tape: Tape is a 40 mil thick polyester backed synthetic butyl rubber based adhesive membrane that can be applied to gypsum board, roofing membranes, steel, concrete, building paper, block wall, insulation board, plywood, metal, polystyrene and polyethylene surfaces to form a positive and immediate moisture and vapor barrier protection system.
			2. Other material as recommended by the manufacturer.
		3. Primer for Transition Membrane, Self-Adhering: Synthetic polymer-based adhesive type, quick setting, for use under UT-40 Universal Tape used in conjunction with Wall Guardian FW-100A Air & Water Barrier and having the following characteristics:
			1. Kemper System America AP-42 Primer is an acrylic, water-based bonding adhesive for use under UT-40 Universal Tape for single-ply roofing membranes, steel, dry concrete, OSB, plywood, exterior grade gypsum board, cementitious fiber board and other building envelope surfaces.
			2. Kemper System America BP-40 Primer is a butyl SBS rubber based primer for use under UT-40 Universal Tape for steel, dry concrete, and masonry.
			3. Acceptable material: As manufactured and/or recommended by the Air Barrier System manufacturer. Note: Primer shall be compatible with specified glass faced gypsum sheathing.
			4. Verify compatibility of self-adhering membranes with preservative treated wood products. Prime preservative treated materials as required using primer recommended by self-adhering membrane manufacturer.
		4. Kemper System America, Inc. GreatSeal LT-100 Liquid Tape and Great Seal PE-150 Joint Sealant:
			1. Great Seal LT-100 Liquid Tape for concealed applications only.
			2. Great Seal PE-150 for concealed and exposed applications.
			3. Sealants shall be compatible with air barrier assembly and shall be approved by the air barrier manufacturer.
			4. Primers: As recommended by manufacturer for surfaces to be sealed.
			5. Backer Rods: Closed cell polyethylene.
1. EXECUTION
	1. EXAMINATION
		1. Verify that surfaces and conditions are ready to accept the Work of this section. Commencement of the work or any parts thereof shall mean acceptance of the prepared substrate.
		2. Do not begin installation until substrates have been properly prepared.
		3. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
	2. PREPARATION
		1. All surfaces must be sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants. Fill spalled areas in substrates to provide an even plane.
		2. Mortar joints in concrete block and form tie holes/voids in poured concrete shall be filled flush and smooth and allowed to be cured for a minimum of 24 hours.
		3. All joints between gypsum sheathing, roof board, masonry and concrete and other substrates wider than 1/4 inch shall be treated with:
			1. Kemper System America, Inc. LT-100 Liquid Tape.
			2. Others as recommended by manufacturer
		4. All other joints between gypsum sheathing, roof board, masonry and concrete and other substrates greater than 1/4 inch shall be filled with backer rod and sealed with
			1. Kemper System America, Inc. UT-40 Universal Tape, overlapping each side of joint a minimum of 3 inches
			2. Others as recommended by manufacturer
		5. Install backer rod under UT-40 Universal Tape at the following joints
			1. All expansion/control/erection joints between concrete wall panels.
			2. All expansion/control joints in concrete block back-up.
			3. All joints between concrete wall panels and concrete block back-up.
		6. Irregular Joints
			1. Provide a secure solid substrate by means of expanding foam or other joint filler material.
			2. Kemper System America, Inc. UT-40 Universal Tape, overlapping each side of joint a minimum of 3 inches
	3. PRIMER FOR TRANSITION MEMBRANE (SELF-ADHERING TYPE ONLY)
		1. Install in accordance with manufacturer's instructions.
		2. Primer for Self Adhering Transition Membrane:
			1. Apply primer for self-adhering membranes at rate recommended by manufacturer.
			2. Apply primer to all areas to receive transition sheet membrane as indicated in Drawings by roller or spray and allow minimum 30 minute open time. Primed surfaces not covered by transition membrane during the same working day must be re-primed.
	4. TRANSITION MEMBRANE (SELF-ADHERING TYPE
		1. Self Adhering Transition Membrane:
			1. Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inch overlap at all end and side laps unless otherwise noted.
			2. Tie-in to roofing system and at the interface of dissimilar materials as indicated in Drawings.
			3. Promptly roll all laps and membrane with a counter top roller to affect seal.
			4. Ensure all preparatory work is complete prior to applying liquid membrane.
	5. PRIMARY AIR BARRIER
		1. Apply by spray or roller, a complete and continuous unbroken film at a minimum temperature of 40 degrees F and rising with less than a 30 percent chance of rain in the next 18 hours. Apply at the rate as listed in the Air Barrier Association of America evaluation.
		2. Exterior Gypsum Sheathing, Plywood or OSB
			1. Apply Wall Guardian FW-100A at a minimum of 2.5 gallons per 100 SF (40 SF/gallon) (40 wet mils).
			2. Spray around all penetrations and projections, including masonry veneer anchors, ensuring a complete and continuous air seal.
		3. Concrete Masonry Unit (CMU), Concrete
			1. Wall Guardian FW-100A at a minimum of 2.5 gallons per 100 SF (40 SF/gallon) (equal to 40 wet mils on a smooth surface)
			2. Spray around all penetrations and projections including masonry veneer anchors ensuring a complete and continuous air seal.
	6. INSPECTION
		1. Inspect completed application and correct any defects prior to notifying manufacturer's representative and Architect.
		2. Notify manufacturers representative and Architect when sections of work are complete so as to allow for review prior to installing any following portion of the wall assembly that would cover the completed Air Barrier.
		3. Manufacturer's representative shall perform a visual observation of the completed application and notify the Contractor of any defects in the application
	7. PROTECTION OF FINISHED WORK
		1. Cover the liquid membrane within the time frame recommended by the manufacturer, Track and verify the number of calendar days of exposure with the air barrier manufacturer:
			1. Cover the air barrier assembly within 180 calendar days after installation. Note that some surface weathering may become apparent during exposure. This is a surface effect only and does not impact air barrier system performance.
		2. Prepare, treat and seal vertical and horizontal surfaces at terminations and penetrations through the air barrier and at protrusions according to air barrier manufacturer's written instructions.
		3. Protect installed assembly until completion of project
		4. Touch-up, repair or replace damaged component before Substantial Completion
	8. CLEANING
		1. Clean Up: Site cleanup, including both interior and exterior building areas that have been affected by construction.
		2. Air barrier materials, components and accessories shall be removed from Site and taken to a legal dumping area authorized to receive such materials.

END OF SECTION