SECTION 07 13 00

SELF-ADHERING SHEET WATERPROOFING

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\*\* NOTE TO SPECIFIER \*\* MAPEI Americas and MAPEI Inc. Canada; self-adhering sheet waterproofing.
This section is based on the products of MAPEI Americas, which is located at:
1144 E. Newport Center Rd.
Deerfield Beach, FL 33442
Toll Free Tel: 888-365-0614
Email: CRS@mapei.com
Web: [www.mapei.com/us/en-us/home-page](https://www.mapei.com/us/en-us/home-page)
This section is based on the products of MAPEI Inc. Canada, which is located at:
2900 Francis-Hughes
Laval, PQ, Canada H7L3J5
Tel: 450-662-1212
Fax: 450-662-0444
Email: hhays@mapei.com
Web: [www.mapei.com/CA-EN](https://www.mapei.com/CA-EN)
MAPEI Americas; Self-adhering sheet waterproofing can be used on both vertical and horizontal structural foundation walls and decks. Applicable for below-grade foundation walls, tunnels, balconies, split slabs, plaza decks, parking decks and bridges. Do not use when membrane exposed to continuous sunlight. Not recommended for pond and tank liner applications except for between slab applications. Good for interior applications such as bathrooms, kitchens, mechanical, rooms and laboratories.

1. GENERAL
	1. SECTION INCLUDES
		1. Waterproofing system including:
			1. Verification of waterstop in construction joints.
			2. Substrate preparation repair mortars, cants/fillet, crack filler and joint treatment.
			3. Primer for self-adhering membrane.
			4. Self-adhering sheet membrane consisting of rubberized asphalt laminated to cross-laminated polyethylene film suitable for ambient and substrate temperatures above 40 to 120 degrees F (4 to 49 degrees C).
			5. Self-adhering sheet membrane consisting of rubberized asphalt laminated to cross-laminated polyethylene film suitable for ambient and substrate temperatures between 25 to 60 degrees F (minus 4 to 16 degrees C).
			6. Accessory components primer adhesives, sealants, mastics, termination bar.

\*\* NOTE TO SPECIFIER \*\*Delete protection board if prefabricated protection and drainage composite sheet is used.

* + - 1. Protection board.
			2. Prefabricated protection and drainage composite sheet.
			3. Prefabricated drainage base.
			4. Drainage accessories.
			5. Rigid insulation board.
			6. Testing and Inspection.
	1. RELATED SECTIONS

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

* + 1. Section 02 30 00 - Subsurface Investigation.
		2. Section 31 23 23.13 - Backfill.
		3. Section 31 20 00 - Earth Moving.
		4. Section 03 30 00 - Cast-in-Place Concrete.
		5. Section 04 20 00 - Unit Masonry.
		6. Section 07 10 00 - Dampproofing and Waterproofing.
		7. Section 07 60 00 - Flashing and Sheet Metal.
		8. Section - .
	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 International (ASTM):
			1. ASTM C578 - Specification for Preformed, Cellular Polystyrene Thermal Insulation.
			2. ASTM C836 - Standard Specification for High Solids Content, Cold Liquid Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course.
			3. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.
			4. ASTM D570 - Standard Test Method for Water Absorption of Plastics.
			5. ASTM D882 - Standard Test Methods for Tensile Properties of Thin Plastic Sheeting.
			6. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
			7. ASTM D1876 - Standard Test Method for Peel Release of Adhesives (T-Peel).
			8. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
			9. ASTM D3767 - Standard Practice for Rubber - Measurement of Dimensions.
			10. ASTM D4263 - Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
			11. ASTM D4491 - Test Methods for Water Permeability of Geotextiles by Permittivity.
			12. ASTM D4716 - Test Method for Constant Head Hydraulic Transmissivity (In-Place Flow) of Geotextiles and Geotextile Related Products.
			13. ASTM D4833 - Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.
			14. ASTM D5385 - Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes.
			15. ASTM D5957 - Guide for Flood Testing Horizontal Waterproofing Installations.
			16. ASTM E96 - Standard Test Method for Water Vapor Transmission of Materials.
			17. ASTM E154 - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
		2. GSA-PBS 07121 Test for Decay from Soil Burial.
		3. UL 790 Tests for Fire Resistance of Roof Covering Materials.
	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. Preparation instructions and recommendations.
			2. Storage and handling requirements and recommendations.
			3. Installation methods.
		3. Samples: Representative samples of the following:
			1. Self-Adhered Waterproofing Sheet Membrane: 2 x 3 inches (5.1 x 7.6 cm).
			2. Waterstop for Concrete Joints: 3 inches (7.6 cm).
			3. Protection Board: 2 x 3 inches (5.1 x 7.6 cm).
			4. Drainage Composite Sheet: 4 x 4 inches (10.1 x 10.1 cm).
			5. Drainage Composite Base Drain: 6 inches (15.2 cm).
		4. Waterproofing Manufacturer's Sample Warranty

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Sustainability Submittals:
			1. Provide VOC content of all components.
			2. LEED Submittal: Documentation of materials, recycled content, and location of manufacturer.
		2. Material Certificates: Certification that waterproofing system and components, drainage and protection materials comply with specified performance characteristics and physical requirements and are supplied by single-source manufacturer.
		3. Contractor Certificate: Approved Applicator status with waterproofing material Manufacturer.
		4. Site Condition Reports: Indicate ambient and substrate surface temperatures, relative humidity and dew point, wind velocity and precipitation during application.
	1. QUALITY ASSURANCE
		1. Installer Qualifications:
			1. Have minimum three years of experience in type of work required by this section.
			2. Comply with manufacturer's warranty requirements.
			3. Be approved applicator as determined by waterproofing/drainage system manufacturer.
			4. Attend necessary job meetings. Provide competent and full time supervision, experienced mechanics, all materials, tools, and equipment necessary to complete, in acceptable manner, the drainage composite installation.
		2. Manufacturer Qualifications:
			1. Capable to supply all components of complete prefabricated drainage composite system.
			2. Minimum of five years of experience in manufacturing of prefabricated drainage composite systems.
			3. Capable of providing product and technical support representation during construction, approving an acceptable applicator and suggesting appropriate installation methods.
			4. ISO 9001-2000 Certified Organization.
			5. ISO 14001-2004 Certified Environmental Management Organization.

\*\* 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.

* + 1. Mock-up:
			1. Area designated by Architect will be considered mock-up.
			2. Prepare and clean a minimum 4 x 4 ft (1.2 x 1.2 m) area of each substrate material type and project condition.
			3. Demonstrate methods, products, and tools to prepare acceptable substrate meeting membrane manufacturer's installation instructions.
			4. Install primer, waterproof sheet, lap joint seam, protection board or drainage composite and accessories.
		2. Independent Inspection: Owner provided independent inspection service to monitor waterproofing material installation. Inspection to include:
			1. Compliance with project contract documents.
			2. Compliance with manufacturer's published literature and site specific details.
			3. Produce reports and digital photographs documenting each inspection. Make reports available in timely manner to Contractor, Waterproofing Installer, Waterproofing Material Manufacturer and Architect.
			4. Substrate examination at beginning of waterproofing installation, at periodic intervals during waterproofing installation and at final inspection.
			5. Flood testing where applicable.
			6. Electric field vector mapping where applicable.
			7. Authorization to proceed prior to concrete or backfill placement against the waterproofing.
	1. PRE-INSTALLATION MEETINGS
		1. Pre-Installation Conference:
			1. Establish procedures to maintain required working conditions.
			2. Coordinate this work with related and adjacent work and trades.
			3. Verify plumbing floor drains are two-stage drains with 3 inches (7.6 cm) flange and clamping ring to receive waterproof membrane.
			4. Review special project details.
			5. Verify with Architect and Contractor that waterproofing and waterstop details comply with waterproofing manufacturer's current installation requirements and recommendations.
			6. Attendees shall include representatives for Owner, Architect, Quality Assurance, General Contractor, Waterproofing Contractor, Waterproofing Manufacturer, Concrete Contractor, Excavating/backfill Contractor, and MEP contractors if MEP work penetrates waterproofing.
			7. Give minimum five day notice to Owner, General Contractor, and Manufacturer prior to commencing work. Immediately notify parties of changes in work schedule.
	2. DELIVERY, STORAGE, AND HANDLING
		1. Delivery: Deliver materials in factory sealed and labeled packaging. Sequence material deliveries to avoid work delays and minimize on-site storage. Follow manufacturer's instructions, recommendations and safety data sheets for material handling and storage.
		2. Storage: Do not double-stack pallets during shipping or storage. Protect prefabricated drainage composite materials from moisture, excessive temperatures, and sources of ignition. Cover material top and all sides while stored on-site, allowing for adequate ventilation. Protect material from construction operation, weather, excessive temperatures, and prolonged sunlight.
		3. Store and manage hazardous materials in accordance with Contract Requirements and Division 1. Remove damaged material from site and dispose of in accordance with applicable regulations.
	3. PROJECT CONDITIONS
		1. Substrate Condition: Proceed with work only when substrate construction and preparation work is complete and is acceptable for waterproofing application. All structural, plumbing, electrical, and mechanical work to be under or penetrating through the waterproofing to be completely secured in proper position prior to waterproofing system installation. Substrate preparation to comply with waterproofing manufacturer's guidelines.
		2. Submit written report to General Contractor of substrate surface defects and work prepared by other Trades which adversely affect quality or dimensions of waterproofing work.
		3. Weather Conditions: Perform work only when existing and forecasted weather conditions are within Manufacturer's guidelines including but not limited to:
			1. Do not apply waterproofing materials in areas of standing or active water; or over snow, ice, or frost.
			2. Timely remove standing water caused by precipitation or ground water seepage to maintain acceptable site conditions.
		4. Schedule work so membrane will not be exposed for longer than recommended by Manufacturer.
	4. SEQUENCING
		1. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
	5. WARRANTY
		1. Waterproofing System Warranty: Waterproofing Manufacturer to provide sample of warranty, including waterproofing system requirements. Issuance of Manufacturer's Waterproofing Warranty requires the following:

\*\* NOTE TO SPECIFIER \*\* Delete warranty period not required.

* + - 1. Warranty Period: Five years.
			2. Warranty Period: Ten years.
			3. Warranty Period: Fifteen years.
			4. Waterproofing System products and drainage composite products provided by single manufacturer.
			5. Installation of waterproofing products, prefabricated drainage composite and all appropriate system accessories are installed by a Manufacturer's Approved Applicator in full accordance with manufacturer's recommendations, installation instructions, specifications, and details.
			6. Concrete Accessories Waterstop installed in concrete cold construction joints, formed construction joints, isolation joints and penetrations is required by Sheet Membrane Waterstop Warranty.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: MAPEI, which is located at: USA 1144 E. Newport Ctr. Dr., Deerfield Beach, FL 33442; Toll Free Tel: 888-365-0614; Email: CRS@mapei.com; Web: https://www.mapei.com/us/en-us/home-page.
		2. Acceptable Manufacturer: MAPEI Inc. Canada, 2900 Francis-Hughes, Laval, PQ, Canada H7L3J5; ASD. Tel: 450-662-1212; Fax: 450-662-0444; Email: hhayes@mapei.com; Web: https://www.mapei.com/ca/en-ca/home.
		3. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

\*\* NOTE TO SPECIFIER \*\* Delete paragraph above or below; coordinate with Division 1 requirements.

* + 1. Substitutions: Not permitted.
	1. SELF-ADHERING SHEET WATERPROOFING MEMBRANE

 \*\* NOTE TO SPECIFIER \*\* Delete membrane type not required.

* + 1. MAPEI Planiseal Membrane SA: A 63-mil, self-adhering sheet membrane consisting of 61 mils of rubberized asphalt laminated to a 2-mil PET film. A durable, high-performance waterproofing membrane suitable for installations where the ambient and substrate temperatures are above 40 degrees F (4 degrees C).
	1. SHEET MEMBRANE
		1. Performance Properties:
			1. Color: Black.
			2. Thickness per ASTM D3767: 63 mils.
			3. Tensile Strength of Membrane per ASTM D412: 425 psi (2.93 MPa).
			4. Tensile Strength, Film per ASTM D882: 15,000 psi (103 MPa).
			5. Elongation per ASTM D412: Greater than 300 percent.
			6. Permeance per ASTM E96: Less than 0.05 perms.
			7. Low-Temperature Flexibility per ASTM D1970: Unaffected at minus 25 degrees F (minus 32 degrees C).
			8. Peel Strength per ASTM D903: 9 lbs per inch (1.0168 N/m).
			9. Lap Adhesion per ASTM D1876: 9 lbs per inch (1.0168 N/m).
			10. Puncture Resistance per ASTM E154: 60 lbs (27.2 kg) minimum.
			11. Water Absorption per ASTM D570: 0.1 percent maximum.
			12. Hydrostatic head per ASTM D5385: 231 ft (70.4 m) of water.
	2. WATERPROOFING ACCESSORIES

 \*\* NOTE TO SPECIFIER \*\* Typically retain all accessories as they are based on field conditions which cannot be determined until the project is under construction.

* + 1. Concrete Repair Mortars and Coating:
			1. MAPEI Planitop X or XS for vertical repair: One-component, fast-setting, vertical and overhead repair mortar to be shrinkage-compensated, fiber-reinforced, polymer-modified and containing a corrosion inhibitor. Mix with MAPEI Planicrete AC Acrylic Latex Admixture diluted with water.
			2. MAPEI Planiseal 88 for surface preparation: One-component, polymer-modified, cementitious coating.
			3. MAPEI Mapecem Quickpatch mixed with MAPEI Planicrete UA additive for horizontal repair.

\*\* NOTE TO SPECIFIER \*\* Mapebond 700 is a quick-drying, solvent-based, high-tack contact adhesive. Mapebond 710 is a low-VOC, quick-drying, solvent-based, high-tack contact adhesive. Mapebond 740 Contact Adhesive is a quick-drying, low-VOC, high-tack aerosol contact adhesive in a portable spray system. Mapebond 710 and 740 are compliant with most state and local VOC requirements for contact adhesives. 700, 710, 740 have temperature application windows, down to 25 degrees F (-4 degrees C). Mapebond 720 is a quick-drying, water-based, high-tack contact adhesive, with applications limited to substrate and ambient temperatures of 40 degrees F (4 degrees C) and above.
All of these adhesives are compatible with Mapethene membranes, so allowing the installing Contractor to select an option based on preference or site conditions may be prudent.

* + 1. Surface Primer/ Contact Adhesive: MAPEI Mapebond 700, 710, 720, or 740.
		2. Mastic: MAPEI Mapethene Mastic. Low viscosity solvent-based, rubberized-asphalt mastic.
		3. Sealants: MAPEI Mapeflex P1. One-component, elastomeric, moisture cured, polyurethane sealant and adhesive.

\*\* NOTE TO SPECIFIER \*\* Coordinate with 07920 Joint Sealants

* + 1. Backer Rod: Closed-cell polyethylene foam rod.
		2. Flexible Waterproofing Tape for Movement Joints: MAPEI Mapeband TPE 170 and 325. Highly durable and flexible band tape used to waterproof expansion and other dynamic joints subject to movement of up to 2 inches (5.1 cm) for Mapeband TPE 170 and up to 4 inches (10.2 cm) for Mapeband TPE 325. Anchor with MAPEI Planibond AE high-strength, two-part, non-sag, epoxy anchoring gel.
		3. Exposed Waterproofing: MAPEI Planiseal 88 a one-component, polymer-modified, cementitious damp-proofing coating. Mix with MAPEI Planicrete AC diluted with water.
		4. Termination Bar: Min. 1/8 inch (3 mm) thick by 1 inch (2.5 cm) wide stainless steel or aluminum termination bar with pre-punched holes punched 6 inches (15.2 cm) on center for fastening.

\*\* NOTE TO SPECIFIER \*\* Coordinate with Section 07 60 00 - Flashing and Sheet Metal

* + 1. Fasteners: Provide fasteners for termination bar which is compatible with the substrate.
		2. Waterstop: MAPEI Idrostop 25 hydrophilic expandable, pre-formed, flexible rubber strip for watertight construction.

\*\* NOTE TO SPECIFIER \*\* Coordinate with Section 03 15 00 - Concrete Accessories

* + 1. Waterstop Adhesive: an MS-Polymer-Based Adhesive supplied in cartridges used for the attachment of MAPEI Idrostop 25 to the substrate.

\*\* NOTE TO SPECIFIER \*\* Mapecover 810 is a rigid, lightweight, extruded polystyrene (XPS), fanfold protection board designed to protect MAPEI waterproofing membranes on vertical below-grade foundations. Delete if Protection and drainage composite sheet is used.

* 1. PROTECTION BOARD
		1. Protection Course: MAPEI Mapecover 810.

 \*\* NOTE TO SPECIFIER \*\* Delete if only protection board is required.

* 1. PROTECTION AND DRAINAGE COMPOSITE SHEET- PREFABRICATED
		1. General: MAPEI Mapedrain Prefabricated Drainage Composite Sheet to promote positive drainage. High-Strength, High-Flow, Prefabricated Drainage Composite with Filter Fabric. Three-dimensional polypropylene drainage core with geotextile adhered to one side to allow water passage while restricting soil particles.

\*\* NOTE TO SPECIFIER \*\* Select appropriate drain for the application. Delete others.

* + 1. MAPEI Mapedrain 30 for horizontal applications with high compressive strength and flow rates.
			1. Woven filter fabric allows concrete to be poured directly on top of the drainage composite.
			2. Compressive Strength per ASTM D1621: 21,000 psf (1005 kN per sq m).
			3. Flow Rate per ASTM D4491: 60 gal per min per sq ft (2460 L per min per sq m).
			4. Flow (hydraulic gradient equals 1) per ASTM D4716: 23 gal per min per ft (286 L per min per m).
			5. Core Thickness: 0.40 inch (10.16 mm).
		2. MAPEI Mapedrain 50 for horizontal applications with ultimate compressive strength and flow rates.
			1. Woven filter fabric allows concrete to be poured directly on top of the drainage composite.
			2. Compressive Strength: ASTM D1621 - 33,000 psf (1580 kN per sq m).
			3. Flow Rate per ASTM D4491: 60 gal per min per sq ft (2460 L per min per sq m).
			4. Flow (hydraulic gradient equals 1) per ASTM D4716: 24 gal per min per ft (298 L per min per m).
			5. Core Thickness: 0.40 inch (10.2 mm).
		3. MAPEI Mapedrain 10 for vertical applications with moderate compressive strength and flow rates. For depths, no exceeding 10 ft. (3.05 m).
			1. Geotextile fabric non-woven.
			2. Compressive strength 11,000 psf (527 kN per sq m).
			3. Flow Rate per ASTM D4491: 140 gal per min per sq ft (5704 L per min per sq m).
			4. Flow (hydraulic gradient equals 1) per ASTM D4716: 18 gal per min per ft (223 L per min per m).
			5. Core Thickness: 0.40 inch (10.2 mm).
		4. MAPEI Mapedrain 20 for vertical applications with high compressive strength and flow rates.
			1. Geotextile fabric non-woven.
			2. Compressive strength 15,000 psf (718 kN per sq m).
			3. Flow Rate per ASTM D4491: 140 gal per min per sq ft (5704 L per min per sq m).
			4. Flow (hydraulic gradient equals 1) per ASTM D4716: 21 gal per min per ft (260 L per min per m).
			5. Core Thickness: 0.40 inch (10.2 mm).
		5. MAPEI Mapedrain 25 for vertical applications with high compressive strength and flow rates. Has backer film to prevent potential "die cutting" of a waterproofing membrane installed behind drainage composite.
			1. Geotextile fabric non-woven.
			2. Compressive strength 15,000 psf (718 kN per sq m).
			3. Flow Rate per ASTM D4491: 140 gal per min per sq ft (5704 L per min per sq m).
			4. Flow (hydraulic gradient equals 1) per ASTM D4716: 21 gal per min per ft (260 L per min per m).
			5. Core Thickness: 0.40 inch (10.2 mm).
		6. MAPEI Mapedrain 40 for vertical and horizontal applications with high compressive strength and flow rates.
			1. Geotextile fabric non-woven.
			2. Compressive strength 21,000 psf (1005 kN per sq m).
			3. Flow Rate per ASTM D4491: 95 gal per min per sq ft (3870 L per min per sq m).
			4. Flow (hydraulic gradient equals 1) per ASTM D4716: 23 gal per min per ft (286 L per min per m).
			5. Core Thickness: 0.40 inch (10.2 mm).

 \*\* NOTE TO SPECIFIER \*\* Delete if only protection board is specified.

* 1. DRAINAGE COMPOSITE BASE DRAIN - PREFABRICATED
		1. MAPEI Mapedrain TD drainage composite to promote positive drainage.
		2. Mapedrain TD: 1 inch (2.5 cm) thick x 12 inches (30 cm) by 165 feet-0 inch (50.3 m) roll base drain composite designed to collect water from sheet composite drainage and then discharge the water to proper sump system or gravity to daylight.
		3. Compressive Strength: 9,500 psf (455 kN per sq m).
		4. Water Flow Rate, 47 gpm per ft (639 L per min per m).
		5. Thickness, 1 inch (2.5 cm).
		6. MAPEI Base drain accessory connectors and outlets as required.

\*\* NOTE TO SPECIFIER \*\* Insulation board can be used in conjunction with protection and drainage sheet. Delete if not required.

* 1. BOARD INSULATION
		1. Extruded-polystyrene board insulation complying with ASTM C578. Type IV, 25 psi (173 kPa) minimum compressive strength.

\*\* NOTE TO SPECIFIER \*\* EXECUTION contains work sections pertaining to multiple substrates with vertical and horizontal construction. Therefore, PART 3 should be edited to only include work sections specific to the job site conditions required on the project.

1. EXECUTION
	1. SUBSTRATE INSPECTION AND CONDITIONS
		1. Examine conditions of substrates and other conditions affecting work of this section with waterproofing Installer, General Contractor, and Owner's Independent Inspector present. Notify General Contractor, in writing, of defects in substrate preventing installation of waterproofing. Do not proceed with work until defects in substrate are corrected and acceptable for waterproofing installation and comply with manufacturer's recommendations.
		2. Substrates to receive waterproofing shall be clean, dry, and free of voids, protrusions, and surface irregularities.
		3. Related work: Verify Waterstop is installed in vertical and horizontal concrete construction cold pour joints and around penetrations, structural members, and tie-rod form holes that extend through the wall.
		4. Chemical additives: Verify ready mix additives are compatible with waterproofing membrane adhesives.
		5. Curing compounds: Concrete shall be cured by the water-curing method. Curing compounds may adversely affect adhesive bond of self-adhered sheet waterproofing membrane. Verify that curing compounds of pure sodium silicate type or clear resin-based materials are without waxes, oils, or pigments, and compatible with sheet membrane waterproofing.
		6. Form release agents shall not transfer to concrete. Remove forms as soon as possible from below horizontal slabs to prevent moisture entrapment. Excess moisture shall result in blistering of Self-Adhered Sheet Waterproofing membrane.
		7. Mechanically remove curing compounds and form release agents from substrate that adversely affect adhesion of Self-Adhered Sheet Waterproofing membrane.
		8. Prepare substrate surfaces to accept waterproofing system per requirements of membrane Manufacturer and as directed by Architect.
		9. Test for capillary moisture by plastic sheet method according to ASTM D4263.
		10. Apply waterproof membrane only in dry weather, when ambient and substrate temperatures are above 40 degrees F (4 degrees C).
	2. PREPARATION
		1. Remove contaminants such as dirt, debris, oil, grease, wax, cement laitance, or other foreign matter which will impair or negatively affect performance of waterproofing and drainage system.
		2. Protect adjacent work areas and finish surfaces not receiving waterproofing from damage or contamination from waterproofing products spillage and overspray during installation operations.
		3. Protect membrane from direct sunlight immediately after installation.
	3. GENERAL INSTALLATION GUIDELINES
		1. Comply with contract documents and manufacturer's product data, including product application and installation instructions. Self-adhering waterproof membrane can be applied to concrete, metal, wood, insulated wall systems and masonry surfaces.
		2. Maintain adequate ventilation during preparation and application of waterproofing materials.
		3. Recoat primed areas not waterproofed same day. Re-prime if contaminated by dust or construction debris. Mask and protect adjoining exposed finish surfaces to protect those surfaces from excessive application of primer.
		4. On vertical surfaces, immediately hand-rub the membrane firmly, removing bubbles and wrinkles, then use roller with heavy pressure over complete surface to assure positive adhesion.
		5. Seal membrane installation edges at the end of each day with troweled bead of sealant or mastic.
		6. Apply protection board or drainage composite over work installed each day.
		7. Inspect membrane before covering with protection board or drainage composite. Repair, as necessary. Cover tears and inadequate overlaps with membrane. Seal edges of patches with pointing mastic or sealant.
		8. Protect membrane on vertical and horizontal applications with immediate application of drainage composite sheet or protection board.
		9. Warn personnel against breathing of vapors and contact with skin and eyes; wear appropriate protective clothing and respiratory equipment.
		10. If the contractor elects to use solvent based adhesives, keep flammable products away from spark and flame. Post "No Smoking" signs. Do not allow spark producing equipment to be used during application and until vapors have dissipated.
		11. Fish mouths and severe wrinkles shall be slit, flaps overlapped and repaired.
		12. Apply sheet membrane to prepared surface vertical applications starting at the low point and working to high point in overlapping shingling technique.
	4. PRIMING / CONTACT ADHESIVE
		1. Prepare concrete, metal, masonry, wood, and sheathing substrates with primer/contact adhesive. Apply primer/contact adhesive at rate recommended by Manufacturer.
		2. Decrease coverage rate (increase application thickness) and/or apply multiple coats to achieve adequate coverage and tack when sheet membranes and flashings are installed over porous and textured substrates such as CMUs, wood and gypsum sheathing with glass-mat facers.
		3. Allow primer/contact adhesives to dry completely before applying additional coats and installing membrane. Contact adhesive is dry when tacky and does not transfer.
		4. Adjust dry time for temperature and substrate.
		5. Perform multiple random adhesion tests to verify proper application of contact adhesive.
	5. CANT / FILLET / TRANSITIONS
		1. Prior to application of the membrane, create cant / fillet at vertical-to-horizontal transitions and all inside corners with sealant measuring 3/4 inch (1.9 cm) directly bonded to substrate. Allow sealant to cure a minimum of 16 hours before covering with membrane.
		2. Prime substrate near vertical-to-horizontal transition (footing and wall) and cant / fillet with appropriate contact adhesive and allow primer to dry.
		3. Install a minimum 9 inches (23 cm) wide strip of waterproofing membrane centered on inside and outside corners.
		4. Install field membrane extending over and completely covering corner strips and extend minimum 12 inches (30.5 cm) onto footing.
		5. Apply bead of sealant or mastic measuring 1 inch (2.5 cm) wide over membrane terminations and seams.
	6. CRACK PREPARATION
		1. Apply minimum 9 inches (23 cm) wide strip of waterproof membrane to:
			1. Slab and wall cracks less than 1/16 inch (1.5 mm) wide that are in-plane and static.
			2. Construction joints, cold joints, and control joints.
		2. Apply sealant to:
			1. Slab and wall cracks 1/16 inch to 1/4 inch (1.5 to 6.4 mm) wide that are in-plane and static.
			2. Prepare crack to receive sealant by saw-cutting to minimum 1/4 inch (6.4 mm) depth.
			3. Remove dust from saw cuts and fill with sealant.
		3. Apply Manufacturer's flexible band tape to bridge and cover isolation joints, expansion joints, discontinuous deck-to-wall and deck-to-deck joints and other dynamic joints. Install band tape with anchoring epoxy gel.
		4. Submit Request for Information when:
			1. Cracks are dynamic and are experiencing differential movement not in-plane.

 \*\* NOTE TO SPECIFIER \*\* Delete if no vertical concrete substrates.

* 1. CAST-IN-PLACE VERTICAL CONCRETE SUBSTRATES
		1. Allow concrete to properly dry (minimum 7 days for normal weight structural concrete and minimum 14 days for lightweight structural concrete)
		2. Cure concrete by water curing method. Verify compatibility of curing compounds that are pure sodium silicate type or clear resin-based materials without waxes, oils or pigments with waterproofing manufacturer.
		3. Form release agents shall not transfer to concrete. Remove forms as soon as possible from below horizontal slabs to prevent entrapment of excess moisture. Excess moisture may lead to blistering of the membrane.
		4. Repair voids, rock pockets, honeycombs, bug-holes, protrusions, rough spalled areas, loose aggregate, exposed course aggregate exceeding 1/4 inch (6.4 mm) in width and excessively rough surfaces with non-shrink repair mortar or cementitious coating and finish flush with surrounding surface. Grind as necessary to flatten.
		5. Fill form tie rod holes with repair mortar and finish flush with surrounding surface.
		6. Verify surfaces at cold joints are in-plane. Grind irregular construction joints to suitable flush surface.
		7. Remove concrete scaling and spalling down to sound, unaffected concrete, and repair exposed area.
		8. Break off protrusions. Grind down remaining protrusions and repair to smooth finish.
		9. Use exterior grade repair mortar to fill defects to make substrate smooth to receive waterproof membrane.

 \*\* NOTE TO SPECIFIER \*\* Delete if no horizontal concrete substrates.

* 1. CAST IN PLACE HORIZONTAL CONCRETE SUBSTRATES
		1. Start at the low point of the slab (establish a starting point with a chalk line if necessary) and work toward the high point in shingle fashion so that the laps shed water. Verify concrete is sloped for proper drainage. Correct slope with repair mortars to eliminate puddling.
		2. All drains shall be two-stage drains and have a minimum 3 inches (7.6 cm) flange and clamping ring. Install drain with the flange flush and level with the concrete surface. Install a single piece of waterproofing membrane centered over drain and cut the middle out to the size of the opening. Seal termination with sealant or mastic.
		3. Install self-adhered waterproof sheet membrane in a straight line, avoiding wrinkles and over-correcting.
		4. Install self-adhered waterproof sheet membrane with side laps overlapped at least 2-1/2 inches (6.35 cm) and end laps at least 5 inches (12.7 cm). Stagger all end laps. Roll the entire membrane firmly and completely as soon as possible to ensure excellent adhesion and minimize air pockets between the substrate and membrane. Roll the membrane with a linoleum roller or standard water-filled lawn roller that is less than 30 inches (7.6 cm) wide with a minimum weight of 75 lbs. (34.0 kg).
		5. Seal cut edges and terminations with sealant or mastic.
		6. Patch inadequately lapped seams and damaged areas with section of membrane. Extend patch area minimum 6 inches (15.2 cm) beyond defect.
		7. Fishmouths and severe wrinkles shall be slit, flaps overlapped and repaired.
		8. Upon completion of horizontal waterproofing application, flood test surface with 2 inches (5 cm) of water for 24 hours. Check with the structural engineer to make sure the deck structure will withstand weight of flood test. Mark leaks found during flood test and make repairs and retest. Repeat procedure until completely successful.

 \*\* NOTE TO SPECIFIER \*\* Delete if no masonry substrates.

* 1. MASONRY SUBSTRATES
		1. Verify concrete block and brick are smooth and have smooth flush trowel-cut mortar joints.
		2. Prepare rough, porous concrete block and brick and tooled mortar joints with parge coat of exterior grade repair mortar for a smooth surface. Allow parge coat to cure before priming and installing waterproofing membrane.
		3. Apply Primer/Contact Adhesive and then install self-adhered waterproof sheet membrane over smooth surface.

 \*\* NOTE TO SPECIFIER \*\* Delete if no wood substrates.

* 1. WOOD SUBSTRATES
		1. Verify wood substrates are solid and sound without rot and are secured.
		2. All joints and fasteners shall be flush to create a smooth surface.
		3. Prime with contact adhesive and install self-adhered waterproof sheet membrane.

 \*\* NOTE TO SPECIFIER \*\* Delete if no insulated concrete forms.

* 1. INSULATED CONCRETE FORMS (ICFS)
		1. Fill all voids and cracks with approved spray foam and allow it to dry.
		2. Apply water based primer/contact adhesive and then install self-adhered waterproof sheet membrane.
	2. TERMINATION
		1. Apply minimum 1/8 inch (3 mm) thick bead of sealant or mastic measuring 1 inch (2.5 cm) wide over termination edge.
		2. Terminate the membrane 4 to 6 inches (10.2 to 15.2 cm) below grade level.
		3. Apply a bead of mastic or sealant over edge of terminations. Ensure tight seal by installing rigid termination bar. Apply mastic on top surface and edges of sheet waterproofing membranes. Do not use mastic underneath waterproofing membrane.
		4. Apply waterproofing for exposed application above self-adhered waterproof sheet membrane termination when extending up to and above grade to complete waterproofing of wall.
	3. LAP JOINTS
		1. Overlap waterproofing membrane minimum 5 inches (12.7 cm) on end laps and 2-1/2 inches (6.35 cm) on side laps.
		2. Apply a bead of sealant or mastic measuring 1/8 inch (3 mm) thick and 1 inch (2.5 cm) wide over all terminations and seams within 12 inches (30.5 cm) of the corner.
		3. Apply mastic on top surface and edges of sheet waterproofing membranes. Do not use mastic underneath the waterproofing membrane.
	4. PENETRATIONS
		1. Cut self-adhered waterproofing sheet membrane to closely fit around penetrations.
		2. Install membrane over penetrations.
		3. Apply sealant or mastic with a 3/4 inch (1.9 cm) cant bead extending 3 inches (7.6 cm) onto the penetration and at least 3 inches (7.6 cm) onto the membrane.

 \*\* NOTE TO SPECIFIER \*\* Delete if protection board is not required.

* 1. INSTALLATION PROTECTION BOARD
		1. Apply protection board and other related materials in accordance with manufacturer's recommendations.

 \*\* NOTE TO SPECIFIER \*\* Delete if insulation drainage composite sheet is not required.

* 1. INSTALLATION DRAINAGE COMPOSITE SHEET - PREFABRICATED
		1. Apply prefabricated drainage composite sheet and other related materials in accordance with manufacturer's recommendations.
	2. PROTECTION

 \*\* NOTE TO SPECIFIER \*\* Delete if no horizontal applications.

* + 1. On horizontal applications, place 3/4 inch (1.9 cm) plywood runways over completed work to enable movement of construction material and other construction traffic.

 \*\* NOTE TO SPECIFIER \*\* Delete if no vertical applications.

* + 1. On vertical applications, install protection or drainage composite sheet as soon as possible to avoid damage from other trades, construction materials or backfill.

 \*\* NOTE TO SPECIFIER \*\* Delete if no mud slabs.

* + 1. For mud slabs or other horizontal applications where positive drainage is not required, use Mapecover 810. Adhere Mapecover 810 to membrane with Mapebond 740 spray contact adhesive. Install protection as soon as possible to avoid damage from other trades, construction materials or backfill.

 \*\* NOTE TO SPECIFIER \*\* Delete if no drainage composite board specified.

* + 1. When positive drainage is required, use drainage composite. Adhere drainage composite to waterproofing membrane using Mapebond 740 spray contact adhesive.
		2. Protect completed waterproofing assembly from subsequent construction activities.
	1. BACKFILL/OVER BURDEN
		1. Install backfill or overburden as soon as possible according to project requirements. Use care during backfill operation to avoid damage to waterproofing system. Follow generally accepted industry practices for backfilling and compaction. Backfill shall be added and compacted in lifts from 6 inches to 24 inches (15.2 to 61 cm). For areas that cannot be fully compacted, a termination bar is recommended across the top termination of the membrane. Install final overburden according to installation, vertical or horizontal.
	2. CLEAN UP
		1. In areas where adjacent finished surfaces or work are contaminated by waterproofing material, immediately notify General Contractor and trade responsible for area. Consult manufacturer of surfaces for cleaning advice and conform to their recommendations and instructions. Remove all tools, equipment, and remaining product on-site. Dispose of debris and damaged product in accordance with applicable regulations.
		2. Maintain work area in a neat and workmanlike condition. Remove empty cartons and rubbish from site daily.
		3. Repair or replace defaced or disfigured finishes caused by work of this section.

END OF SECTION