SECTION 07 13 26

SELF-ADHERING SHEET WATERPROOFING (PRM™SYSTEM)

****
*This guide specification has been prepared by Polyguard Products Inc., in printed and electronic media, as an aid to specifiers in preparing written construction documents for self-adhering waterproofing membrane system. Underseal® PRM™(**P**uncture **R**esistant **M**embrane)is applied to the exterior sides of concrete foundation walls, tunnels, plaza decks, parking garages, and related applications where waterproofing is critical. PRM is a strong, self-adhering sheet membrane consisting of a double-thick, high-strength, cross-laminated polyethylene backing laminated to a thick rubberized-asphalt compound. Total Membrane thickness is factory controlled at 65 mils. PRM is produced in both summer- and winter-grade formulations; use PRM summer-grade for ambient and substrate surface temperatures of 40°F (5°C) and rising, and use PRM winter-grade for ambient and substrate surface temperatures of 25°F (-4° C) to 65°F (18° C).*

Edit entire master document to suit project requirements. Modify or add items as necessary. Delete items which are not applicable. Words and sentences mat contain a choice to be made regarding inclusion or exclusion of a particular item or statement. This section may include performance-, proprietary-, and/or descriptive-type specifications. Edit to avoid conflicting requirements. Editor notes to guide the specifier are included between lines of asterisks to assist in choices. Remove these editor notes before final printing of specification.

This guide specification is written around the Construction Specifications Institute (CSI) Section Format standards.

For specification assistance on specific product applications, please contact our offices or any of our local product representatives throughout the country.

Polyguard Products Inc. reserves the right to modify these guide specifications at any time. Updates for this guide specification will be posted on the manufacturer's web site and/or in printed media as they occur. Manufacturer makes no expressed or implied warranties regarding content, errors, or omissions in the information presented.
****

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Application of rolled, self-adhering waterproofing membrane system.

C. Accessory Products

1.02 RELATED SECTIONS

****
Specifier Notes: Edit the list of related sections as required for the project. List other sections dealing with work directly related to this section.
****

A. Section 03 30 00 - Cast-in-Place Concrete.

B. Section 07 21 00 - Thermal Insulation.

C. Section 07 60 00 - Flashing and Sheet Metal.

D. Section 07 92 00 - Joint Sealants.

E. Section 07 95 13 - Expansion Joint Cover Assemblies.

F. Section 33 46 00 - Subdrainage.

1.03 REFERENCES

A. ASTM C 836 (06) - Standard Specification for High Solids Content, Cold Liquid-Applied, Elastomeric Waterproofing Membrane for Use with Separate Wearing Course.

B. ASTM D 146 - Standard Test Methods for Sampling and Testing Bitumen-Saturated Felts and Fabrics Used in Roofing and Waterproofing.

C. ASTM D 412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.

D. ASTM D 570 - Standard Test Method for Water Absorption of Plastics.

E. ASTM D 903 (98) - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.

F. ASTM D 1000 - Standard Test Methods for Pressure-Sensitive, Adhesive-Coated Tapes used for Electrical and Electronic Applications.

G. ASTM D 1434 - Test Method for Determining Gas Permeability Characteristics of Plastic Film and Sheeting.

H. ASTM D 1876 - Standard Test Method for Peel Resistance of Adhesives (T Peel Test).

I. ASTM D 5385 - 93(06) - Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes.

J. ASTM E 96 (Method B) - Standard Test Methods for Water Vapor Transmission of Materials.

K. ASTM E 154 - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.

L. General Services Administration, Public Building Service: GSA-PBS-07115 Guide Specification for Elastomeric Waterproofing.

M. Radon Reduction Technology Laboratory - Resistance to Permeance by Radioactive Radon Gas; Resistance to Diffusion by Radioactive Radon Gas.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's product data, installation instructions, use limitations and recommendations. Include certification of data indicating VOC (Volatile Organic Compound) content of all components of waterproofing system.

B. Samples: Submit representative samples of the following for approval:

1. Sheet membrane
2. Protection Board
3. Detailing Strips and Accessories.
4. Prefabricated Drainage Composite
5. Perimeter Drainage Composite

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Sheet Membrane Waterproofing Barrier System must be manufactured by a company with a minimum of ten (10) years of experience in the production and sales of membrane waterproofing materials.

B. Applicator Qualifications: A firm having at least three (3) years of experience in applying these types of specified materials and specifically accepted in writing by the membrane system manufacturer.

C. Materials: For each type of material required to complete the work of this section, provide primary materials which are the products of a single manufacturer.

D. Pre-Application Conference: A pre-application conference shall be held to establish procedures and to review conditions, installation procedures and coordination with other related work. Meeting agenda shall include review of special details and flashing.

E. Manufacturer's Representative: Arrange to have trained representative of the manufacturer on site periodically to review installation procedures.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Store materials in a clean, dry area in accordance with manufacturer's instructions.

C. Store adhesives at temperatures of 40° F (5° C) and above to facilitate handling.

D. Store membrane cartons on pallets.

E. Do not store at temperatures above 90° F (32° C) for extended periods.

F. Keep away from sparks and flames.

G. Completely cover when stored outside. Protect from rain.

H. Protect materials during handling and application to prevent damage or contamination.

I. Avoid use of products which contain tars, solvents, pitches, polysulfide polymers, or PVC materials that may come into contact with waterproofing membrane system.

1.07 PROJECT CONDITIONS

A. Perform work only when existing and forecasted weather conditions are within the limits established by the membrane manufacturer. Do not apply PRM if the ambient and/or surface temperature is below 25ºF (-4°C); or if the application surface (substrate) is damp, frost covered, or otherwise contaminated.

B. Proceed with installation only when substrate construction and preparation work is complete. Ensure that subsoil is approved by architect or geotechnical firm.

C. Warn personnel against breathing of vapors and contact with skin and eyes; wear appropriate protective clothing and respiratory equipment.

D. Keep flammable products away from spark or flame. Post “No Smoking” signs. Do not allow use of spark-producing equipment during application and until all vapors have dissipated.

E. Maintain work area in a neat and workmanlike condition. Remove empty cartons and rubbish from the site daily.

1.08 WARRANTY

A. Manufacturer warrants only that this product is free of defects, since many factors which affect the results obtained from this product are beyond our control; such as weather, workmanship, equipment utilized and prior condition of the substrate. We will replace, at no charge, proven defective product within twelve (12) months of purchase, provided it has been applied in accordance with our written directions for uses we recommended as suitable for this product. Proof of purchase must be provided. A five (5) year material or system warranty may be available upon request. Contact Polyguard Products, Inc. for further details.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Polyguard Products Inc. P.O. Box 755 Ennis, TX 75120-0755; Phone: (214) 515-5000 Fax: (972) 875-9425 Email: info@polyguard.com

2.02 SYSTEM MATERIALS

A. Self-adhesive Membrane Waterproofing: Shall be Polyguard® Underseal® PRM™ (**P**uncture **R**esistant **M**embrane), a strong, 65-mil self-adhering sheet membrane consisting of a double-thick, high-strength, cross-laminated, polyethylene backing laminated to a thick layer of rubberized asphalt compound meeting or exceeding the following requirements:

PHYSICAL PROPERTIES

PROPERTY	**TEST METHOD**	**TYPICAL VALUE**
FILM COLOR		White
MEMBRANE THICKNESS	ASTM D 1000	65 mils
LOW TEMPERATURE FLEXIBILITY	ASTM D 146 180° bend over 1" mandrel at -25°F	No effect
RESISTANCE TO HYDROSTATIC HEAD (MINIMUM)	ASTM D 5385	231 ft.
ELONGATION - ULTIMATE FAILURE OF RUBBERIZED ASPHALT	ASTM D 412	>850%
TENSILE STRENGTH OF 1" WIDTH	ASTM D 412 Modified Die C	5000 PSI
CRACK CYCLING	ASTM C 836 Tested @-15°F	No effect
PUNCTURE RESISTANCE, MINIMUM	ASTM E 154 Membrane using 1" (24mm) Rod	127 lbs.
PEEL ADHESION TO CONCRETE	ASTM D 903	17 lb/in..
LAP PEEL ADHESION	ASTM D 1876 Modified[1]	8.0 lb/in width
PERMEANCE TO WATER VAPOR TRANSMISSION	ASTM E 96 Method B	0.01 US grains/ft^2/in HGF
WATER ABSORPTION (MINIMUM)	ASTM D 570	0.1%
RESISTANCE TO PERMEANCE BY METHANE GAS	ASTM D 1434 Tested using 99.99% purity methane	6.3 x 10 $^{-7}$ ft^3/(ft^3 •hr • psi)
RESISTANCE TO RADIOACTIVE RADON GAS	Radon Reduction Technology Laboratory % reduction in radon gas diffusion	97.10%
RESISTANCE TO FUNGI IN SOIL	GSA-PBS 07115 (16 weeks)	No effect

[1] Test is done using smaller sample than standard and at room temperature.

2.03 SYSTEM ACCESSORIES

A. Surface Primer Roller Grade Adhesive:

1. Polyguard® 650 LT Liquid Adhesive: A rubber-based, tacky adhesive which is specifically formulated to provide excellent adhesion.

2. Polyguard® California Sealant: A rubber-based sealant which is specifically formulated to provide excellent adhesion. The VOC (Volatile Organic Compound) content meets the South Coast Air Quality Management District regulations established under the February 1, 1991 version of Rule 1168 ©) (2) Adhesion and Sealant Applications. California Sealant is classified as an Architectural Sealant Primer Porous with VOC of 527 g/L. Current SCAQMD regulations for this type sealant primer are 775 g/L.

3. Polyguard® Shur-Tac Liquid Adhesive: Roller-grade, polymer emulsion based adhesive.

B. Surface Primer Spray Adhesive:

1. Quick Grip Adhesive: A low-rise spray foam adhesive.

C. Detail Tape:

1. Polyguard® Underseal® Detail Tape: Rubberized-asphalt waterproofing membrane laminated to polypropylene fabric backing. The membrane is wound onto a disposable silicone treated release sheet to prevent the membrane from sticking onto itself while in the roll. Use Detail Tape for applications (1) inside/outside corners and penetrating items (2) for patching damaged areas.

D. Liquid Membranes:

1. Polyguard® LM-85 SSL (Semi-Self-Leveling): A two-component, semi-self-leveling, asphalt-modified, urethane material.

2. Polyguard® LM-95: A two-component, asphalt-modified, urethane material.

E. Detail Sealant:

1. Polyguard® Detail Sealant PW™: A single-component, STPE, 100% solid moisture-cured, elastomeric sealant. It is an environmentally friendly, non-isocyanate product that replaces silicone and urethane sealants. It is a low VOC/HAPS free, cold-applied, self-adhesive, elastomeric sealant.

F. Drainage Composite:

1. Polyguard® Lowflow™ Protection and Drainage System: High-strength, multi-layer fabric composite in a 4' x 200' roll. Its purpose is to protect underlying waterproofing membranes and is suitable for most clay soil conditions.

2. Polyguard® Polyflow® 10 Vertical Drainage Mat: Two-part, prefabricated, geocomposite drain consisting of a formed polystyrene core covered on one side with polypropylene filter fabric. The fabric allows water to pass into the drain core while restricting the movement of soil particles which might clog the core. The core allows water to flow to designated drainage exits.

3. Polyguard® Polyflow® 10P Vertical Drainage Mat: Three-part, prefabricated geocomposite drain consisting of a formed polystyrene core covered on one side with polypropylene filter fabric with a built-in Polymeric film protection layer for use as required by the manufacturer of some waterproofing materials in order to be a compatible protection layer.

4. Polyguard® Polyflow® 15 Vertical Drainage Mat: Two-part prefabricated geocomposite drain consisting of a formed polystyrene core covered on one side with polypropylene filter fabric. The fabric allows water to pass into the drain core while restricting the movement of soil particles which might clog the core. The core allows the water to flow to designated drainage exits. Polyflow 15 is designed for vertical applications.

5. Polyguard® Polyflow® 15P Vertical Drainage Mat: Three-part, prefabricated, geocomposite drain consisting of a formed polystyrene core covered on one side with polypropylene filter fabric. The fabric allows water to pass into the drain core while restricting the movement of soil particles which might clog the core. The core allows the water to flow to designated drainage exits.

6. Polyguard® Polyflow® 18 Horizontal Drainage Mat: Two-part, prefabricated, geocomposite drain consisting of a formed polystyrene core covered on one side with woven mono-filament filter fabric. The fabric allows water to pass into the drain core while restricting the movement of soil particles which might clog the core. The core allows the water to flow to designated drainage exits.

7. Polyguard® Totalflow™: Totalflow is a combination of our Polyguard sheet drain products with our unique Totalflow™ product. In the Totalflow™ system, the sheet drain performs its normal function of water collection, while the Totalflow™ section provides both water collection and a high-profile section allowing for high-capacity water flow to designated drainage exits.

G. Universal Fittings:

1. Totalflow™ Tee Outlet: A formed polystyrene connection fitting to aid the collected water into a pipe drainage system.

2. Totalflow™ End Outlet: A formed polystyrene connection fitting to aid the collected water into a pipe drainage system.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine surfaces to receive self-adhering membrane. Notify General Contractor if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.

3.02 SURFACE PREPARATION

A. Protect adjacent surfaces not designated to receive waterproofing.

B. Clean surfaces to receive waterproofing in accordance with manufacturer's instructions.

C. Do not apply waterproofing to surfaces unacceptable to manufacturer.

D. Concrete surfaces must be clean, smooth, and free of standing water.

E. Patch all holes and voids and smooth out any surface misalignments.

F. Cast-In-Place Concrete:

1. Normal weight structural concrete must be allowed to cure a minimum of seven (7) days. For lightweight structural concrete, the minimum cure time is fourteen (14) days. All concrete surfaces must be dry to the touch before proceeding with the installation of the waterproofing system.

2. Fill all form tie holes. Finish flush with the surrounding surface.

3. Fill and repair bug holes in concrete. Finish flush with the surrounding surface.

4. All cracks over 1/16-inch wide, and moving cracks under 1/16-inch wide, shall be grouted-out to a minimum of 1/4-inch width and sealed using a high-performance polyurethane sealant. Allow adequate curing time per manufacturer’s directions. Upon cure, install an 8-inch wide strip of Polyguard® PRM™ over the crack.

G. Masonry Surfaces:

1. Apply waterproofing membrane over brick or CMU that has been parged using a cementitious parge coat to level surface and reduce porosity. Striking off joints flush with surface is also required.

3.03 APPLICATION

A. Priming:

1. Apply primer by roller or spray to a cleaned, dust free surface to provide a tacky adhesive surface. Tack or cure for these primer products is totally dependent on relative humidity, ambient temperature, and substrate surface temperature. Apply Polyguard® 650 LT Liquid Adhesive, Polyguard® California Sealant, or Shur-Tac Liquid Adhesive at the rate of 250-300 sq. ft. per gallon. Allow to dry per manufacturer’s directions. Re-prime the substrate if PRM is not applied to the Liquid Adhesive within the same working day. Do not prime underneath Polyguard® Detail Sealant PW™ or Polyguard® LM-95 Liquid Membrane.

B. Membrane Installation - Vertical Surfaces:

1. Waterproofing membrane should be applied vertically in sections of 8 feet in length or less. On walls higher than 8 feet, apply two or more sections with the upper section overlapping the lower.

2. Provide minimum 2-1/2 inch side laps and minimum 6 inch end laps.

3. Use a hard hand-held roller to firmly adhere the PRM™ material as it is placed on the vertical surface.

4. All terminations of the membrane should receive a bead of Polyguard® Detail Sealant PW™ or LM-95 Liquid Membrane to a flat surface of 1/8-inch thick by 3/4-inch wide.

5. Inadequately lapped seams and damaged areas should be patched with Polyguard® Detail Tape. Patched areas should extend at least 6-inches in each direction beyond the defect.

6. Fishmouths and severe wrinkles should be slit, flaps overlapped and repaired.
7. A termination (term) bar is required with the PRM™. Apply Detail Sealant PW™ or LM-95 Liquid Membrane to all terminations.

C. Membrane Installation – Horizontal Surfaces:

1 All inside and outside corners shall be treated either with 12-inch strips of PRM™ or a 12-inch wide by 90-mil thick application of Polyguard® Detail Sealant PW™ or Polyguard® LM-95. The field membrane should be centered over the corner. All inside corners shall have a minimum 3/4-inch fillet of Polyguard® Detail Sealant PW™ or Polyguard® LM-95 or latex modified cement mortar.

2. Apply PRM™ to the primed surface starting at the low point and working to the high point in a shingling technique for maximum drainage.

3. Side laps should be 2-1/2 inches minimum and staggered end laps should be 6 inches minimum. Refer to Polyguard slope and/or zero-slope applications for Balconies and proper lap adhesion requirements.

4. Firmly roll the entire membrane with a minimum 75 lb. linoleum roller immediately after application. This will insure excellent adhesion and minimize air pockets between the substrate and membrane. Give special attention with the roller to membrane overlaps and ‘T-Joints.’

5. At penetrations, posts, or projections, seal with Polyguard® Detail Sealant PW™ or Polyguard® LM-95 Liquid Membrane 4-to-6 inches onto concrete and 4-to-6 inches onto penetrating item; then apply a second flashing sheet over the penetration extending a minimum of 6 inches from the detail. The seal the cut edges of all terminations must be sealed with Polyguard® Detail Sealant PW™ or Polyguard® LM-95 Liquid Membrane.

6. At drains, apply Polyguard® Detail Sealant PW™ or Polyguard® LM-95 Liquid Membrane around the inside edge of the drain out onto substrate at least 6-inches then overlap with PRM™ a minimum of 6-inches. Seal all permanently-exposed PRM™ cut edge terminations with Polyguard® Detail Sealant PW™ or Polyguard® LM-95 Liquid Membrane.

7. PRM™ turned up on walls shall be terminated. Firmly press the terminated edge with a hand roller, and protect with a troweled bead of Detail Sealant PW™ or LM-95 Liquid Membrane.

8. Inadequately lapped seams and damaged areas should be patched with additional membrane. Extend patch at least 6 inches beyond the defect.

9. Slit all "fishmouths," overlap the pieces, place patch over area and roll in place. Air blisters are typically caused by exposure and heat; this condition will subside as the sun no longer heats the membrane. This condition does not need attention unless blisters are large or excessive, softball size, and do not dissipate. Puncture large air blisters, expel the air, prime and cover with patch. Extend the patch material at a minimum of 6-inches in all directions beyond the repair area, then seal the patch edges with Detail Sealant PW or LM-95 Liquid Membrane.

10. Upon completion of horizontal membrane application, Polyguard recommends a flood test or appropriate leak detection method be completed on the surface with 2-inches of water for 24 hours. Check with the structural engineer to make sure the deck structure will withstand the weight of the flood test. Mark any leak areas found during flood test and make repairs.

D. Protection and Drainage Course:

1. Protection board is not required but an optional drainage board can be applied over membrane to expedite water dispersion prior to backfilling. Apply drainage composite in accordance with manufacturer's written directions.

END OF SECTION