

SECTION 07 13 26

SELF-ADHERING SHEET WATERPROOFING (650 MEMBRANE 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 sheet membranes. Polyguard® 650 Membrane is a strong, pliable, self-adhesive sheet consisting of a 4-mil, cross-laminated, high-density, polyethylene (HDPE) backing bonded to 56 mils of rubberized asphalt waterproofing compound. 650 Membrane is used for temperatures 40° F (5° C) and rising. 650 Membrane is used on concrete foundation walls, split slabs, sills and spandrel beams, tunnels, plaza decks, parking garages and related applications where waterproofing is critical. Polyguard 650 Membrane may also be used on wood, concrete masonry (CMU) structures and Insulated Concrete Forms (ICF). When 650 Membrane is used for balcony applications over conditioned space, Polyguard's Dual Core System is required. See the 650 Membrane Balcony Detail for assembly requirements. Standard roll size is 48" x 50' and 36" x 66.7'.

Edit entire master document to suit project requirements. Modify or add items as necessary. Delete items which are not applicable. Words and sentences may contain choices 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 self-adhering membrane system.

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 04 20 00 – Unit Masonry
- C. Section 07 11 00 – Dampproofing
- D. Section 07 60 00 – Flashing and Sheet Metal
- E. Section 07 92 00 – Joint Sealants
- F. Section 07 95 00 – Expansion Control
- G. Section 33 46 00 – Subdrainage

1.03 REFERENCES

- A. ASTM C 836 – 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 882 – Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
- F. ASTM D 903 – Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
- G. ASTM D 1000 – Standard Test Methods for Pressure-Sensitive, Adhesive-Coated Tapes used for Electrical and Electronic Applications.
- H. ASTM D 1876 – Standard Test Method for Peel Resistance of Adhesives.
- I. ASTM D 1970 – Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection – Section 7.6 Low Temperature Flexibility.
- J. ASTM D 5385 – Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes.
- K. ASTM E 96 (Method B) – Standard Test Methods for Water Vapor Transmission of Materials.
- L. ASTM E 154 – Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
- M. General Services Administration, Public Building Service: GSA-PBS-07115 Guide Specification for Elastomeric Waterproofing.
- N. ICC-ES ESR-5580: Evaluation Report for Polyguard Products, Inc. below-grade waterproofing membranes.
- O. ICC-ES AC527 – Acceptance Criteria for Below-Grade Exterior Waterproofing Membranes.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, installation instructions, use limitations and recommendations.
- B. Samples: Submit representative samples of the following for approval:
 - 1. Sheet Membrane
 - 2. Protection Board
 - 3. Prefabricated Drainage Composite
 - 4. Perimeter Drainage Composite

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Sheet Membrane 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. Keep away from sparks and flames.
- F. Completely cover when stored outside. Protect from rain.
- G. Protect materials during handling and application to prevent damage or contamination.
- H. 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 membrane if the temperature is below 25° F (-4° C) or to a damp, frost covered, or otherwise contaminated surface.
- B. Proceed with installation only when substrate construction and preparation work is complete. If necessary, 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
Email: info@polyguard.com

2.02 SYSTEM MATERIALS

- A. Self-adhesive Membrane Waterproofing: Shall be Polyguard® 650 Membrane, a 60-mil rubberized-asphalt membrane consisting of a high-density polyethylene film bonded to a layer of rubberized-asphalt meeting or exceeding the following requirements:

PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TYPICAL VALUE
FILM COLOR		Blue/White
MEMBRANE THICKNESS	ASTM D 1000	60 mils
TENSILE STRENGTH, MEMBRANE	ASTM D 412 Modified Die C	M-805 PSI T-846 PSI
ELONGATION - ULTIMATE FAILURE OF RUBBERIZED ASPHALT	ASTM D 412	M-323% T-503%
TENSILE STRENGTH, FILM	ASTM D 882	7294 PSI
PERMEANCE	ASTM E 96 Method B	0.022 Perms
CRACK CYCLING	ASTM C 836 Tested @-15° F (-26° C)	No effect
PEEL ADHESION (TO CONCRETE)	ASTM D 903	17 lbs./in. width
PEEL ADHESION (LAPS – MEMBRANE TO MEMBRANE)	ASTM D 903	19 lbs./in. width
LAP PEEL ADHESION	ASTM D 1876	8.0 lbs./in. width
LOW TEMPERATURE FLEXIBILITY (-20° F)	ASTM D 1970 Modified	Pass
PLIABILITY	ASTM D 146 180° bend over 1" mandrel at -25° F (-32° C)	No effect
PUNCTURE RESISTANCE, MEMBRANE	ASTM E 154	69 lbs.
RESISTANCE TO HYDROSTATIC HEAD	ASTM D 5385	231 ft.
EXPOSURE TO FUNGI IN SOIL	GSA-PBS 07115 (16 weeks)	No effect
WATER ABSORPTION	ASTM D 570	0.1%

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® 650 WB Liquid Adhesive: A water-based, rubber-based adhesive which is specifically formulated to provide excellent adhesion.
3. 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.

- B. Detail Tape:

1. Polyguard® Detail Tape: Rubberized-asphalt waterproofing membrane laminated to polypropylene 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.

- C. Liquid Membranes:

1. Polyguard® LM-95 Liquid Membrane: A two-component, asphalt-modified, urethane.

D. 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 also a low VOC / HAPS-free, cold-applied, self-adhesive, elastomeric sealant.

E. Drainage Composite:

1. Polyguard® BD Drainage Mat: A sheet molded drainage for balcony decks with less than 3-inches of concrete and foot traffic only. It is manufactured with a geocomposite of a formed impermeable polymeric core covered on one side with a non-woven filter fabric that allows water to flow to designated drainage exits.
2. Polyguard® Polyflow® 15 Drainage Mat: Two-part, prefabricated, geocomposite drain consisting of a formed polymeric core covered on one side with polymeric 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® 18 Drainage Mat: Two-part, prefabricated, geocomposite drain consisting of a formed polymeric 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.
4. 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.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine surfaces to receive self-adhering membrane. Notify the 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. Concrete should be dry, frost free and cured a minimum of seven days prior to application of Polyguard membrane and Liquid Adhesive on vertical substrates. On horizontal structural concrete surfaces the cure time is 21 to 28 days with no additional rain or moisture. Fill all form tie holes. Finish flush with the surrounding surface.
 2. Fill and repair cracks, single bug holes of 1/2-inch or greater, or cavities in concrete with a Portland cement grout or concrete. Single bug holes can also be filled with Polyguard Detail Sealant PW™ or LM-95 Liquid Membrane. Finish flush with the surrounding surface.

3. All cracks over 1/16-inch in width, and any moving cracks under 1/16-inch, shall be routed out to a minimum of 1/4-inch width and sealed using a high-performance polyurethane sealant. Allow adequate curing time per the manufacturer's directions. Upon cure install an 8-inch-wide strip of Polyguard® 650 Membrane over the crack.

G. Masonry Surfaces:

1. Striking off joints flush with surface is also required. Concrete masonry walls or brick with deeply recessed mortar joints require a well-adhered parge coat before application of membrane.

3.03 APPLICATION

A. Priming:

1. Apply primer to a cleaned, dust free surface. Apply by roller or spray. Apply Polyguard® 650 LT Liquid Adhesive or Polyguard® California Sealant at a rate of 250-300 sq. ft. per gallon or Polyguard® 650 WB Liquid Adhesive at a rate of 350-400 sq. ft. per gallon. Allow to dry per manufacturer's directions. Do not prime underneath Polyguard® Detail Sealant PW™ or Polyguard® LM-95 Liquid Membrane.

B. Membrane Installation - Vertical Surfaces:

1. All inside and outside corners shall be treated either with a 12-inch-wide strip of Detail Tape centered along the vertical axis, or by applying a 90-mil thick application of Polyguard® Detail Sealant PW™ or Polyguard® LM-95 Liquid Membrane.
2. Install a 3/4-inch, 45-degree angle cant (fillet) of Polyguard® Detail Sealant PW™ or Polyguard® LM-95 Liquid Membrane at all changes in plane including inside corners to 6" vertically and horizontally beyond the cant (fillet). Do not use wood or fiber cant strips.
3. Waterproofing membrane should be applied vertically in sections of 8 feet in length or less. When vertical walls sections of more than 8-feet are to be waterproofed, apply 650 Membrane in sections no longer than 8-feet, starting from the lower foundation base and rising to the top with the 6-inches overlap, shingling down on each ply of membrane.
4. Side laps should be 2-1/2 inches minimum and staggered end laps should be 6 inches minimum.
5. Use a hard roller or firmly press in the material as it is placed on the vertical surface.
6. At penetrations, posts, or projections, seal with Polyguard® Detail Sealant PW™ or Polyguard® LM-95 Liquid Membrane 6 inches onto concrete and 3 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.
7. Pipes which are wired together and touching, cannot properly be waterproofed. Ensure all pipes have proper spacing. Recommended spacing for pipe penetrations is 2-inches. The minimum allowed is 1-inch.
8. All terminations of the membrane should receive a troweled bead of Polyguard® Detail Sealant PW™, LM-95 Liquid Membrane to a flat surface approximately 1/8-inch thick by 3/4-inch wide.
9. 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.
10. Fishmouths and/or severe wrinkles should be slit, flaps overlapped, and repaired.

C. Membrane Installation – Horizontal Surfaces:

1. All inside and outside corners shall be treated either with 12-inch strips of membrane or a 12-inch wide by 90-mil thick application of Polyguard® Detail Sealant PW™ or Polyguard® LM-95 Liquid Membrane. 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 Liquid Membrane or latex modified cement mortar.
2. Apply waterproofing membrane 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 ensure excellent adhesion and minimize air pockets between the substrate and membrane.
5. At penetrations, posts, or projections, seal with Polyguard® Detail Sealant PW™ or Polyguard® LM-95 Liquid Membrane 6-inches onto concrete and 3-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 sheet membrane a minimum of 6 inches. Seal all permanently exposed cut edge terminations with Polyguard® Detail Sealant PW™ or Polyguard® LM-95 Liquid Membrane.
7. Membrane 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. Apply protection board and/or drainage composite and perimeter drainage composite in accordance with manufacturer's written directions.

END OF SECTION