

SECTION 07 13 26

SHEET WATERPROOFING MEMBRANE (BLINDSIDE 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 Blindside waterproofing membrane systems.

Polyguard® Blindside Membrane is used as a waterproofing membrane where vertical positive-side waterproofing is required but access to the positive side is impossible due to the soil retention system.

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 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 above 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. Installation of blindside vertical sheet membrane system and accessories.
- 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 10 00 – Concrete Forming.
- B. Section 03 15 00 – Concrete Accessories.
- C. Section 03 20 00 – Concrete Reinforcing.
- D. Section 03 30 00 - Cast-in-Place Concrete.
- E. Section 31 20 00 – Earth Moving.
- F. Section 31 62 00 – Driven Piles.
- G. Section 31 64 00 – Caissons.

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 412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
- C. ASTM D 570 – Standard Test Method for Water Absorption of Plastics.
- D. ASTM D 882 – Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
- E. ASTM D 903 – 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 1876 – Standard Test Method for Peel Resistance of Adhesives (T Peel Test).
- H. ASTM D 1970 – Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
- I. ASTM D 4716 – Test Method for Determining the (In plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
- J. ASTM D 5385 – Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes.
- K. ASTM D 6574 – Test Method for Determining the (In Plane) Hydraulic Transmissivity of a Geosynthetic by Radial Flow.
- L. ASTM E 96 (Method B) – Standard Test Methods for Water Vapor Transmission of Materials.
- M. ASTM E 154 – Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
- N. General Services Administration, Public Building Service: GSA-PBS-07115 Guide Specification for Elastomeric Waterproofing.

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. Fabric Tape and Accessories
 - 3. Prefabricated Drainage Composite
- C. Sustainable Design Submittals:
 - 1. Submit invoices and documentation from manufacturer of the amounts of materials and content for products specified.
 - 2. Submit invoices and documentation showing manufacturing locations and origins of materials for products manufactured and sourced within 500 miles of project site.
- D. LEED Submittal: Documentation of materials, recycled content and location of manufacturer.
 - 1. LEED Indoor Environmental Quality (IEQ) Credit 5 – Indoor Chemical and Pollutant Source Control: Design to minimize and control the entry of pollutants into buildings and later cross-contamination of regularly occupied areas.
 - 2. LEED Innovation in Design (ID) Credit 1 – The opportunity to achieve exceptional performance above the requirements set by the LEED Green Building Rating System and/or innovative performance in Green Building categories not specifically addressed by the LEED Green Building Rating System.

3. LEED Materials & Resources (MR) Credit 2 – Construction Waste Management: Provide documentation of reusable materials by weight and volume diverted back to manufacturing process or to appropriate sites.
4. LEED Materials & Resources (MR) Credit 5 – Regional Materials: Provide documentation for cost of materials or products that have been extracted, harvested, or recovered and also manufactured within 500 miles of project site.
 - a. If only a portion of the materials or products is extracted, harvested, or recovered and manufactured locally, then only provide percentage by weight for credit value.
5. LEED Sustainable Site (SS) Credit 3 – Brownfield Development: Provide documentation of materials that contribute to the redevelopment of a contaminated land site that has been defined as a Brownfield by a local, state or federal government agency.

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. Install Blindsided Membrane when temperature is 25°F (-4°C) and rising.
- 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; Email: info@polyguard.com

2.02 SYSTEM MATERIALS

- A. High Density Blind Side Waterproofing: Shall be Polyguard Blindsides Waterproofing Membrane, a strong sheet membrane with a thick, cross-laminated, high-density polyethylene (HDPE) backing, laminated to thick layer of proprietary waterproofing adhesive compound integrated into a nonwoven geotextile fabric. Total membrane thickness is factory controlled at 73 mils.

PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TYPICAL VALUE
FILM COLOR		Black/White
MEMBRANE THICKNESS	ASTM D 1000	73 mils
TENSILE STRENGTH, MEMBRANE	ASTM D 412 Modified Die C	M-624 PSI T-638 PSI
TENSILE STRENGTH, FILM	ASTM D 412 Modified Die C	4,250 psi
HYDRAULIC TRANSMISSIVITY OF A GEOSYNTHETIC USING A CONSTANT HEAD	ASTM D 4716	No measurable flow
(IN PLANE) HYDRAULIC TRANSMISSIVITY OF A GEOSYNTHETIC BY RADIAL FLOW	ASTM D 6574	No water flow
RESISTANCE TO FUNGI IN SOIL	GSA-PBS 07115 – 16 weeks	No effect
LAP PEEL ADHESION	ASTM D 1876	9.02 lb./in.
PUNCTURE RESISTANCE, MINIMUM	ASTM E 154	217 lb.
RESISTANCE TO HYDROSTATIC HEAD, MINIMUM	ASTM D 5385	231 ft.
PEEL ADHESION TO CONCRETE	ASTM D 903	14.9 lb./in.
ELONGATION – ULTIMATE FAILURE OF RUBBERIZED ASPHALT COMPOUND	ASTM D 412 Modified Die C	M-283% T-347%
WATER ABSORPTION, MAXIMUM	ASTM D 570	0.1%
CRACK CYCLING	ASTM C 836 Tested @-15° F	No effect
LOW TEMPERATURE FLEXIBILITY	ASTM D 1970 180° bend over 1” mandrel at -20° F (-29° C)	No effect
BREAKING STRENGTH OF 1” WIDTH SAMPLE POLYETHYLENE GEOMEMBRANE LAYER	ASTM D 882	6500 PSI
PERMEANCE TO WATER VAPOR TRANSMISSION, MAXIMUM	ASTM E 96 Method B	0.01 perms

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.

B. Fabric Tape:

1. Polyguard® Fabric Tape: A 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. Polyguard® Fabric Tape is used around pipe penetrations with an annular space of pipe through opening exceeding 1/2", end laps and for patching damaged areas.

C. Liquid Membrane:

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. Detail Adhesive Tape:

1. Polyguard® 606 Tape: High-strength, double-sided tape comprised of rubberized asphalt. The tape is supplied in rolls and utilizes both Kraft paper and plastic film release sheets which are removed prior to application.

F. Tie Back Cover:

1. Polyguard® Poly Cover: Pre-formed dome shape tie back cover made with heavy-duty, high impact ABS plastic. It is designed to cover protruding tie back bolts less than 6" in height in lagging and retention walls.

G. Corner Boots:

1. Polyguard® US Inside Corner Boot: 60-mil combination of rubberized asphalt bonded to polyethylene. The adhesive surface is covered with a release liner which will be removed prior to application on an inside corner to reinforce and seal corners of the Blindsight Membrane.
2. Polyguard® US Outside Corner Boot: 60-mil combination of rubberized asphalt bonded to polyethylene. The adhesive surface is covered with a release liner which will be removed prior to application on an outside corner to reinforce and seal corners of the Blindsight Membrane.
3. Polyguard® US Pit Top Corner Boot: 60-mil combination of rubberized asphalt bonded to polyethylene. The adhesive surface is covered with a release liner which will be removed prior to application on all corners to reinforce and seal corners of the Blindsight Membrane.

H. Drainage Mats:

1. Polyguard® Polyflow® 15 Vertical 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 the water to flow to designated drainage exits.
2. Polyguard® Polyflow® 15P Vertical Drainage Mat: Three-part, prefabricated geocomposite drain consisting of a formed polymeric core covered on one side with polymeric 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.
3. 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 sheet 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 CONSIDERATIONS

A. Wood Lagging With Steel Piles.

1. Make sure all lagging boards are installed flush and inline within 1/2-inch.
2. Repair damaged/missing lagging boards with concrete grout, treated wood, or both.
3. Fill or cover all gaps between lagging boards exceeding 2-inches using concrete grout or plywood.
4. If lagging boards are placed interior to the steel pile, then any gaps between the ends of the boards which exceed 2-inches should be covered with plywood, then secure or grout behind for stability.
5. In applications where the lagging wall will be excavated to expose the I-Beam for removal, a cement board must be placed over the I-Beam extending 1-foot on both sides of the I-Beam prior to the installation of the drainboard and Blindsided Membrane.

B. Steel Sheet Piling

1. If the membrane is to be in continuous contact with the profile of the sheet piling, all sharp protrusions must be first addressed or removed.
2. If waterproofing will span the sheet pilings, place 3/4-inch plywood across the void and mechanically anchor into place every 12-inches O.C. Fill void behind plywood with sand.

C. Caisson

1. Surface of augured piers should be relatively smooth to install directly against piers. However, the groove between each pier has to be filled with concrete grout and all sharp protrusions addressed or removed.

D. Shotcrete with Concrete and Chemically Stabilized Earth:

1. Remove all sharp protrusions and fill all voids with concrete grout. The concrete surface profile should be between CSP-3 and CSP-8.

E. Slurry Wall

1. Clean off all mud and dirt.
2. Remove all sharp protrusions and fill all voids with concrete grout.

3.03 SURFACE PREPARATION

- A. Complete the retention system per project specifications.
- B. Remove objects that could penetrate the membrane, such as nails and concrete fins. Also look for any gaps larger than 2-inches between timber lagging and any change in plane which would result in bridging.
- C. Never place the membrane in standing water.
- D. Provide a dry surface prior to application.

3.04 APPLICATION

A. Drainage Board Installation:

1. Drainage board should be applied vertically. Apply drainage board with fabric to lagging, caisson, shotcrete, slurry seal or steel piling walls. Bring drainage board over the top of the surface to be waterproofed and securely tack the drainage board to the top. On lagging walls cut holes in the drainboard where the lag bolts are extending out of the wood lagging into the drainage board.
2. Butt drainboard together at side and end seams.

B. Membrane Installation – Vertical Surfaces (Typical):

1. Apply waterproofing membrane with the high-density backing to the drainage board.
2. Install Blindside Membrane when temperatures are 25°F (-4°C) and rising.
3. Application up to 20 feet should be done by applying pins with washers every 12 inches across the top lagging thru the membrane and drainage board, allowing the membrane to hang down the wall.
4. For applications over 20 feet, contact the manufacturer for recommendations.
5. Provide vertical wall terminations to protect the sheet membrane for critical future tie-in to other products, or for protection from trade damage. Review Polyguard's published details for critical detailing procedures at all top terminations.
6. Side laps are furnished with edge trim of 4-foot. Apply powder-actuated fasteners every 16-to-24 inches and 1 inch in from the outside edge to secure membrane to wall. Prior to side lap application, remove any debris and dust on the polyethylene backing, clean the backing with 30% Isopropyl Alcohol, and then apply to the edge trim. Finish the seal by rolling with a laminate-type roller to obtain full adhesion.
7. Prime end laps, and on adjoining sheets, with a minimum 6-inch heavy coat of 650 LT Liquid Adhesive or California Sealant at a coverage rate of 50 – 75 square feet per gallon. Allow this adhesive to dry (until tacky) before membrane application. Install a reverse shingle lap with the Blindside Membrane on the vertical wall; at a maximum 4-inch and a minimum 3-inch overlap. Center and place a 12-inch wide piece of Fabric Tape over the primed seam area. Apply even pressure with a roller to obtain full adhesion.
8. If the annular gap between the rough opening and the pipe, bolt, or other penetration is 1/2-inch diameter or less, apply liquid adhesive to the fabric side of the surrounding field course of Blindside Membrane. Then apply a minimum 3/4-inch cant (fillet) of LM-95 Liquid Membrane, or Detail Sealant PW, around the pipe penetration extending a minimum of 3 inches onto both the prepared fabric side of the Blindside Membrane field course and the penetrating item. Allow the LM-95 Liquid Membrane or Detail Sealant PW to cure for 2 hours.

9. If the annular gap between the rough opening and the pipe, bolt, or penetration exceeds 1/2-inch diameter, apply a patch of Blindside Membrane tight around the penetrating item with a minimum distance of 6 inches onto the surrounding field course of Blindside Membrane. Then seal with LM-95 Liquid Membrane or Detail Sealant PW as a minimum 3/4-inch cant (fillet) extending onto the Blindside Membrane skirt and the penetrating item a minimum distance of 3 inches. Then apply a heavy coat (approximately 50 – 75 square feet per gallon) of Polyguard® 650 LT Liquid Adhesive or Polyguard® California Sealant onto the fabric side of the Blindside Membrane patch extending 6 inches onto the field coating of Blindside Membrane. Next apply a patch of Polyguard® Fabric Tape around the termination edges of the Blindside Membrane patch. Press or roll the patch firmly to obtain full adhesion to the field coating of Blindside Membrane. Apply another coat of Polyguard® 650 LT Liquid Adhesive or Polyguard® California Sealant to the Polyguard® Fabric Tape patch edges and apply liquid membrane at Fabric Tape edge terminations.
10. Visually inspect membrane prior to pouring of concrete for any punctures/damage.
11. Repair damaged Blindside Membrane areas by applying Polyguard® 650 LT Liquid Adhesive or Polyguard® California Sealant at a rate of 50 -75 square feet per gallon to the fabric side of the Blindside Membrane and apply LM-95 Liquid Membrane or Detail Sealant PW a minimum of 3 inches in each direction. Next, apply Polyguard® 650 LT Liquid Adhesive or Polyguard® California Sealant at a rate of 50 -75 square feet per gallon over the Liquid Membrane and the Blindside Membrane field course to a minimum 6 inches in all directions from the damaged area. Apply a Polyguard Fabric Tape patch a minimum 6 inches larger than damaged area in all directions.

C. Termination Bar

1. (Optional) Secure at top of wall fastening every 7" O.C.

D. Membrane Installation – Horizontal Surfaces:

Horizontal application shall be in accordance with manufacturer's instructions.

1. Install Blindside Membrane when temperatures are 25°F (-4°C) and rising.
2. Unroll waterproofing membrane with longest dimension parallel to direction of pour.
3. Place double-thick, high-strength, cross-laminated polyethylene backing to the soil and fabric to the concrete.
4. Apply the (required) preformed inside and outside corner boots prior to the application of the Blindside Membrane according to manufacturer's details and specifications.
5. Seal the Blindside Membrane to foundation walls or footers.
6. Overlap side seams using the four (4) inch edge trim seal. Clean polyethylene backing of waterproofing barrier membrane prior to application on the four (4) inch edge seal with 30% Isopropyl Alcohol.
7. End laps should be overlapped a minimum of three (3) inches, maximum of four (4) inches, and addressed by applying a coat of liquid adhesive approximately 50 - 75 square feet per gallon to fabric side of waterproofing barrier membrane and placing adjacent sheet on top. Roll to assure full adhesion.
8. After application of end lap use liquid adhesive to prime seam and apply a twelve (12) inch piece of Fabric Tape centered over seam to seal extend out six (6) inches past side laps – roll with laminate roller.
9. Pipe surface should be cleaned and roughened with sandpaper or a wire brush to ensure adequate adhesion.

10. If the annular space of pipe through an opening is 1/2-inch or less, apply 650 LT Liquid Adhesive or California Sealant to the fabric side of Blindside Membrane at a rate of 50 – 75 square feet per gallon. Apply a cant/fillet with a min. 3/4-inch face of LM-95 or Detail Sealant PW extending onto the fabric side of the Blindside Membrane and onto the pipe a minimum of 6-inch.

Note: If pipes or penetrations are in tight clusters and a more flowable detailing liquid is required LM-85 SSL should be used, refer to US 16 Detail.

11. If the annular space of pipe through an opening exceeds 1/2-inch, a patch of Blindside Membrane is required to close the gap. The size of the patch should extend a minimum 6-inch in all directions from the patch area onto surrounding membrane. Seal the edges of the patch to existing membrane with Fabric Tape installed over Blindside Membrane with 650 LT Liquid Adhesive or California Sealant at a rate of 50 – 75 square feet per gallon. While the 650 LT Liquid Adhesive or California Sealant is still tacky, seal the pipe with the LM-95 or Detail Sealant PW. Apply a cant/ fillet with a min. 3/4-inch face of LM-95 or Detail Sealant PW extending onto the fabric side of the Blindside Membrane and onto the pipe a minimum of 3-inch. Allow LM-95 or Detail Sealant PW a minimum of 2 hours to cure.

Note: If pipes or penetrations are in tight clusters and a more flowable detailing liquid is required LM-85 SSL should be used, refer to US 16 Detail.

12. 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.
13. Steel reinforcements may be applied directly over the waterproofing barrier membrane. It is important that reinforcement (rebar) chairs used are compatible with the system. Compatible (rebar) chairs will distribute the load of the steel reinforcement sufficiently to reduce the risk of the chair puncturing the waterproofing membrane when fully loaded with the weight of the reinforcement steel and other common auxiliary loads. Blocks, pavers or dobies made of concrete or brick are clearly the best choice. Individual chairs are acceptable as long as they have a flat base or bolsters with rails. Contact Polyguard Technical Service for approval and written permission for other types of rebar chairs.
14. Precaution should be taken to protect the waterproofing barrier membrane during placement of reinforcing or concrete. Visually inspect waterproofing barrier membrane prior to pouring of concrete for any punctures or damage to membrane which needs to be repaired. Patch any damaged areas by applying the liquid adhesive at a rate of 50 - 75 square feet per gallon to fabric side of waterproofing barrier membrane and liquid membrane provided by manufacturer, then apply a patch of Fabric Tape.
15. Prior to slab pour all standing water must be removed from the membrane.

END OF SECTION