

SECTION 07100

SPLIT SLAB WATERPROOFING MEMBRANE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A All of the Contract Documents, including General and Supplementary Conditions and Division I General Requirements apply to the work of this section.

1.02 SCOPE

- A The work of this section includes, but is not limited to, the following:

- 1 Installation of self-adhering sheet membrane waterproofing where indicated in the drawings.
- 2 Install Protection Board where required by heavy construction traffic.
- 3 Prefabricated Drainage Composites (optional).

- B) Related Sections: Other specification sections which directly relate to the work of this section include, but are not limited to, the following:

- 1 Section 02710 - Drainage
- 2 Section 03300 - Cast-In-Place Concrete
- 3 Section 05810 - Expansion Joint Cover Assemblies
- 4 Section 07600 - Flashing and Sheet Metal
- 5 Section 07900 - Joint Sealants
- 6 Section 15400 - Drains
- 7 Section 16000 - Electrical and Conduit

1.03 REFERENCE STANDARDS

- A American Society for Testing and Materials (ASTM):

D146	Sampling and Testing Bitumen Saturated Felts and Fabrics
D412	Tests for Rubber Properties in Tension
D570	Test Method for Water Absorption of Plastics
E96(b)	Tests for Water Vapor Transmission of Materials in Sheet Form
E154	Test for Puncture Resistance
F2130	Resistance to Penetration by Pesticides
D4833	Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products
D4533	Test Method for Trapezoid Tearing Strength of Geotextiles
D1434	Test Method for Determining Gas Permeability Characteristics of Plastic Film and Sheeting

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

Underseal™ is protected by U.S. Patent No. 7,488,523

Polyguard

This Information is based on our best knowledge, but POLYGUARD cannot guarantee the results to be obtained.

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- C Texas A & M Method - Resistance to penetration by termites.
- D Radon Reduction Technology Laboratory:
 - A) Resistance to Permeance by Radioactive Radon Gas
 - B) Resistance to Diffusion by Radioactive Radon Gas
- E Qualifies under LEED:
 - 1 IAQ Credit 5 - Indoor Chemical and Pollutant Source Control (below grade toxin barrier / reduced pesticide usage).
 - 2 SS 3 - Brownfield redevelopment (can be used for pesticide contaminated sites)
 - 3 Can be considered for ID 1 - Innovation in design.

1.05 SUBMITTALS

- A General: Submit in accordance with Section 01330.
- B Product Data: Submit manufacturer's product literature and installation instructions.
- C Samples: Submit representative samples of the following for approval:
 - 1 Sheet Membrane
 - 2 Detailing Strips and Accessories
 - 3 Protection Board (where required)
 - 4 Prefabricated Drainage Composite (optional)
- D Subcontractor's approval by Manufacturer: Submit document stating manufacturer's acceptance of subcontractor.
- E Warranty: Submit a sample of manufacturer's warranty identifying the terms and conditions stated in 1.09
- F Substitutions: To be accepted as an equal a product must have demonstrated in documented field trials over a minimum 5 year period the ability to reduce cracking and to maintain a seal even if the slab above it has cracked.

1.06 QUALITY ASSURANCE

- A Manufacturer Qualifications: Sheet Membrane Waterproofing Systems must be manufactured by a company with a minimum of 10 years experience in the production and sales of self-adhesive membrane waterproofing materials.
- B Applicator Qualifications: A firm having at least 3 years 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.

1.07 DELIVERY, STORAGE, HANDLING

- A Materials should be delivered to site in manufacturer's original, unopened containers with original labels attached and bearing the following information:
- 1 Name of material.
 - 2 Manufacturer's batch codes including date of manufacture.
 - 3 Materials Safety Data Sheets.
- B Membrane and accessories should be unloaded and stored carefully. Cartons and containers must be protected from weather, sparks, flames, excessive heat, cold and lack of ventilation. Do not stack membrane higher than 5 feet vertically, nor double stack cartons. Cartons should be stored on pallets and covered to protect from water damage. Any damaged material must be removed from the site and disposed of in accordance with applicable regulations.

1.08 PROJECT CONDITIONS

- A Work should be performed only when existing and forecasted weather conditions are within the limits established by the membrane manufacturer. Do not apply to damp, frost covered or otherwise contaminated surfaces. Membrane should only be installed when temperatures are 40°F (4.44°C) and rising. Consult manufacturer for information concerning cooler temperatures.
- B Proceed with installation only when substrate construction and preparation work is complete. Surfaces to receive waterproofing materials must be free of voids, spalls, loose aggregate and sharp protrusions. The concrete surface must resemble a troweled finish. Broom finish concrete is not acceptable.
- 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 spark producing equipment to be used 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.

1.09 WARRANTY

- A Provide a written 5 year material warranty from the manufacturer upon completion and acceptance of the installation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A Provide Polyguard Underseal™ Split Slab Waterproofing System as manufactured by Polyguard Products, Inc., Ennis, Texas 75120-0755, phone: 800-541-4994.

2.02 PRODUCTS

A Self-adhesive Membrane Waterproofing: Shall be Polyguard Underseal™ Split Slab Waterproofing Membrane, a 75 mil rubberized asphalt membrane consisting of a high strength polyethylene film bonded to a layer of rubberized asphalt meeting or exceeding the following requirements:

1.	Resistance to Penetration by Termites	0.0%	TEXAS A & M TESTING
2.	Resistance to Penetration by Pesticides	0.0%	ASTM F-2130
3.	Resistance to Permeance by Methane Gas	6.3×10^{-7}	ASTM D-1434
4.	Resistance to Permeance by Radioactive Radon Gas	1.95×10^{-15}	Radon Reduction Technology Laboratory Method
5.	Resistance to Diffusion by Radioactive Radon Gas	4.72×10^{-5}	Radon Reduction Technology Laboratory Method
6.	Resistance to Fungi in Soil 16 Weeks	No effect	GSA-PBS 07115
7.	Resistance to Permeance by Moisture US grains/sq.ft./in. HGF	.01	ASTM E-96-B
8.	Resistance to Puncture - Membrane using 1" (24mm) Rod Lb.	>120	ASTM E-154
9.	Resistance to Puncture - Membrane using .35" (8mm) Rod Lb.	>54	ASTM E-4833
10.	Resistance to Tearing - Membrane Lb.	78	ASTM D-4533
11.	Membrane Thickness inch	.075	ASTM D-1000
12.	Elongation - Ultimate Failure of Polyethylene Backing - % Elongation at Failure	>850%	ASTM D-412
13.	Elongation - Ultimate Failure of Adhesive Compound - % Elongation at Failure	>1000%	ASTM D-412
14.	Cycling Over Crack @ -15°	No effect	ASTM C-836
15.	Peel Adhesion - lb/in/ width	10.0	ASTM D-1000
16.	Overlap Bond - lb/in. width	8.0	ASTM D-1000
17.	Self Sealability - Water Vapor Transmission g/h ft ²	.01*	ASTM E-96*

* Test method used: ASTM E-96. Sample preparation for nail puncture: ASTM D-1970.

B Accessory Products

- 1 Detailing Membrane: Shall be Polyguard Underseal™ Seal Tape
- 2 Surface Primer: Shall be Polyguard 650 LT Liquid Adhesive, California Sealant or Polyguard Shur-Tac Waterbase Liquid Adhesive
- 3 Mastic: Shall be Polyguard 650 Mastic
- 4 Liquid Membrane: Shall be Polyguard LM-95

C Protection Course:

- 1 For horizontal where heavy equipment will be used: Shall be Polyguard Asphaltic Protection Board.

D Prefabricated Drainage Composite (Optional): Shall be Polyguard Drainage Mats Flow 18-H or 10 HV for horizontal applications. Polyguard Drainage Mats shall be designed to promote positive drainage.

PART 3 - EXECUTION

3.01 INSPECTION

- A Before starting any waterproofing work, the applicator shall thoroughly inspect all surfaces for any conditions detrimental to the proper completion of the work. Should any deficiencies exist, the General Contractor should be made aware of such in writing immediately. Do not proceed with application until all unsatisfactory conditions are corrected.

3.02 SURFACE PREPARATION:

- A Refer to manufacturer's product literature for surface preparation requirements. Surfaces should be structurally sound, free of voids, spalls, loose aggregate and sharp ridges. Remove dust, dirt, debris or any other foreign materials such as wax, oil, grease or form release agents. Use repair materials that are acceptable by the sheet membrane manufacturer.

B Cast-In-Place Concrete

- 1 Normal weight structural concrete must be allowed to cure a minimum of 7 days. For lightweight structural concrete, the minimum cure time is 14 days. All concrete surfaces must be dry to the touch before proceeding with the installation of the waterproofing system.
- 2 Concrete must be sloped to provide proper drainage.
- 3 Fill all form tie holes. Finish flush with the surrounding surface.
- 4 Fill and repair bug holes in concrete. Finish flush with the surrounding surface.
- 5 Are 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. Once cured, install an 8 inch wide strip of Polyguard 650 membrane over the crack.
- 6 Bi-level drains should be installed and have a minimum 3" flange. Drains should be installed with the flange flush and level with the surrounding concrete surface.

- C Masonry Surfaces: Contact manufacturer for application over CMU or brick blocks.

3.03 INSTALLATION:

- A Priming: Apply primer to a cleaned, dust free surface. Apply by roller or spray. Apply Polyguard 650 LT Liquid Adhesive, California Sealant or Shur-Tac Waterbase Liquid Adhesive at the rate of 250-300 sq. ft. per gallon. Allow to dry per manufacturer's directions.

B Membrane Installation - Horizontal Surfaces:

- 1 Waterproofing membrane should be applied to the primed surface starting at the low point and working to the high point in a shingling technique.
- 2 Side laps should be a minimum of 2 ½ inches and end laps a minimum of 6 inches.
- 3 The entire membrane should be firmly rolled with a linoleum roller weighing approximately 75 pounds. This will insure excellent adhesion and minimize air pockets between the substrate and membrane.

- 4 At posts or projections, if annular space of opening is ½" or less apply liquid membrane going out at least 6 inches in all directions. If annular space of post or projection opening exceeds ½" a backer rod must be used to fill opening, then apply a patch of membrane extending 4" beyond opening required.
- 5 At drains, the drains must be properly designed with mechanical clamping rings and weepholes at the membrane level. Waterproofing / vapor barrier membrane must be applied from low to high pitch for maximum drainage. Multi level drainage systems are recommended at both topping and membrane level. Use linoleum roller or water filled garden roller, covered with two plies of indoor-outdoor carpet to roll membrane immediately after application, with special attention at overlaps and "T-joints".
- 6 Membrane turned up on walls shall be terminated into a reglet or under a counter flashing. The membrane may also be pressed firmly to the wall, then sealed with a troweled bead of mastic.
- 7 Inadequately lapped seams and damaged areas should be patched with small section of seal tape. The patch area should extend a least 6 inches beyond the defect.
- 8 Fishmouth's and severe wrinkles should be slit, flaps overlapped and repaired as above.
- 9 All inside and outside corners shall be treated either with a 12 inch strip of seal tape. The field membrane should be applied first and then place the 12" strip over for a double ply corner. All inside corners shall have a minimum 1 inch fillet of liquid membrane or latex modified cement mortar.
- 10 All permanently exposed laps must be sealed with a ½" bead of mastic.
- 11 At completion of horizontal membrane application, flood test the surface with 2 inches of water for 24 hours. Check with the structural engineer to make sure the deck structure will withstand the flood test.
- 12 Mark any leak areas found during flood test and make repairs.
- 13 Prior to slab pour all standing water must be removed from the membrane.

3.04 PROTECTION AND DRAINAGE COURSE: Protection board is not required where light construction traffic is present. If heavy duty construction traffic is expected such as structural steel, heavy rebar or trucks on top of the membrane then protection board is required. Apply protection board and drainage composite in accordance with manufacturer's written directions.

END OF SECTION