

SECTION 07100

UNDERSLAB WATERPROOFING BARRIER 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 waterproofing barrier membrane where indicated in the drawings.
- 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 03300 - Cast-In-Place Concrete
 - 2 Section 07260 - Under Slab Vapor Retarders

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.
- C Texas A & M Method - Resistance to penetration by termites.

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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Polyguard has been ISO 9000 certified since 1996. Current certifications are:
- American Natl. Standards Institute
- Dutch Council for Certification
- Deutscher Akkreditierungs Rat

- D Radon Reduction Technology Laboratory:
 - 1 Resistance to Permeance by Radioactive Radon Gas
 - 2 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 Fabric Tape and Accessories
- 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 Barrier System must be manufactured by a company with a minimum of 10 years experience in the production and sales of 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. Membrane should only be installed when temperature is 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. 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 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 Underslab™ Waterproofing Barrier System as manufactured by Polyguard Products, Inc., Ennis, Texas 75120-0755, phone: 800-541-4994.

2.02 PRODUCTS

- A High Strength Waterproofing: Shall be Polyguard Underseal™ Underslab Waterproofing Barrier Membrane, a 95 mil rubberized asphalt membrane consisting of a strong sheet membrane with a facing of extremely high strength polyethylene backing laminated to a thick layer of proprietary stress absorbing / waterproofing formulation, with a top layer of nonwoven geotextile fabric:

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 D1434
4.	Resistance to Permeance by Radioactive Radon Gas	2.1×10^{-14}	Radon Reduction Technology Laboratory Method
5.	Resistance to Diffusion by Radioactive Radon Gas	5.08×10^{-8}	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.	>310	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	.095	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.	Pliability - 180° bend over 1" mandrel at -25°F (-32° C)	No effect	ASTM D-146
18.	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 Fabric Tape: Shall be Polyguard Underseal™ Fabric Tape
- 2 Surface Primer: Shall be Polyguard 650 LT Liquid Adhesive or California Sealant
- 3 Liquid Membrane: Shall be Polyguard LM95

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. Remove debris or any other foreign materials which may damage the membrane system. Use repair materials that are acceptable by the sheet membrane manufacturer.
- B Soil Condition
 - 1 Level, tamp or roll aggregate, sand or earth base.

3.03 INSTALLATION:

- A Installation shall be in accordance with manufacturer's instructions and ASTM E 1634-98.
- B Membrane Installation - Horizontal Surfaces:
 - 1 Unroll waterproofing barrier membrane with longest dimension parallel with direction of pour.
 - 2 Place extremely high strength backing to the soil and fabric to the concrete.
 - 3 Lap waterproofing barrier membrane over footings and seal to foundation walls.
 - 4 Overlap side seams using the 4" edge trim seal. Clean polyethylene backing of waterproofing barrier membrane prior to application on the 4" edge seal with 30% Isopropyl Alcohol.
 - 5 End laps should be overlapped a minimum of 6" and addressed by applying a coat of liquid adhesive approximately 150-200 sq. ft. per gallon to fabric side of waterproofing barrier membrane and placing adjacent sheet on top. Roll to assure full adhesion.
 - 6 After application of end lap use liquid adhesive to prime seam and apply a 12" piece of fabric tape centered over seam to seal.
 - 7 If annular space of pipe through opening is $\frac{1}{2}$ " or less apply liquid adhesive to fabric side of membrane. Apply a $\frac{3}{4}$ " cant/fillet around pipe penetration extending onto fabric side of waterproofing barrier membrane and pipe a minimum of 3".
 - 8 If annular space of pipe through opening exceeds $\frac{1}{2}$ " then a patch of fabric seal tape is required. Apply a heavy coat approximately 150 - 200 sq. ft. per gallon liquid adhesive onto the fabric side of the waterproofing barrier membrane extending 6" beyond pipe. Apply a patch 6" larger than pipe diameter. Press or roll patch firmly to obtain full adhesion to waterproofing barrier membrane. Apply another coat of liquid adhesive to the fabric side of the fabric tape patch and apply liquid membrane.
 - 9 Steel reinforcements will be applied directly over the waterproofing barrier membrane. It is utmost important that reinforcement (rebar) chairs that are used are compatible with the system. Steel chairs and bolster be plastic dipped or have plastic caps.
 - 10 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 150-200 sq. ft. per gallon to fabric side of waterproofing barrier membrane and apply a patch of fabric tape.
 - 11 Prior to slab pour all standing water must be removed from the membrane.

END OF SECTION