SECTION 07131 (07 13 00)

UNDERSLAB SHEET WATERPROOFING WITH NON-PESTICIDE TERMITE BARRIER

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** NOTE TO SPECIFIER ** TERM Waterproofing and Termite Barriers; Waterproofing + Physical Termite Barriers.

This section is based on the products of TERM Waterproofing and Termite Barriers, which is located at:

4101 South Interstate 45 Highway
Ennis, TX 75119
Phone: 214-515-5000
Fax: 972-875-9425
Email: info@polyguardproducts.com
Web: http://www.polyguardproducts.com/term

[Click Here] for additional information.
Polyguard's history began with corrosion protective coatings in 1951, In 1970 structural waterproofing was added.

Now we add TERM non-chemical termite barrier which is integrated into waterproofing. This results from 20+ years of work with entomology scientists.

Water and termites “leak" into the structure through the building envelope. Around most of the envelope, both types of leaks can now be stopped.

Concrete floors and walls have joints; through which water and termites enter. Concrete slabs crack, creating new entry points. It cannot be predicted where cracks will appear in the slab, so full protection should include 100% underslab and foundation wall coverage with TERM® Barriers.

The objective is first to block water, and second to block termites trying to find gaps as small as 1/50th of an inch. Since keeping termites out means keeping virtually all other insects out, you will see a variety of health, comfort, and environmental benefits.

Above the slab, TERM Sill Barrier is installed and tied into flashing at the base of the exterior sheathing, providing protection from moisture, termite, and air leaks.

Several non-waterproofing TERM barriers, which protect against termites at points of drainage, ventilation, and exposed perimeters, are also part of the TERM System. These protect areas where TERM Barrier waterproofing cannot be installed.

PART 1 GENERAL

1.1 SECTION INCLUDES

** NOTE TO SPECIFIER ** Delete items below not required for project.

A. Surface preparation.

B. Application of underslab waterproofing | termite barrier system.

C. Accessory Products

1.2 RELATED SECTIONS

** NOTE TO SPECIFIER ** Delete any sections below not relevant to this project; add others as required.

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

B. Section 07 13 26 - Self-Adhering Sheet Waterproofing with Termite Barrier.

C. Section 07 21 00 – Thermal Insulation.

D. Section 07 92 00 – Joint Sealants.

E. Section 31 31 16 - Pest Control Barriers.

F. Section 33 46 00 - Sub drainage.

1.3 REFERENCES

** NOTE TO SPECIFIER ** Delete references from the list below that are not actually required by the text of the edited section.

A. International Code Council (ICC):
   1. AC 380 - Acceptance Criteria for Termite Physical Barriers – Evaluation Report demonstrating five year multi-site field trial against Formosan termites, with zero failures, plus other criteria.

B. ASTM International (ASTM)
   1. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
   2. ASTM D570 - Standard Test Method for Water Absorption of Plastics.
   3. ASTM E96 (Method B) - Standard Test Methods for Water Vapor Transmission of Materials.
   4. ASTM E154- Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
   5. ASTM D882 - 02 Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
   6. ASTM F2130 - 01 Standard Test Method for Measuring Repellency, Retention, and Penetration of Liquid Pesticide Formulation Through Protective Clothing Materials.
   7. ASTM D4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
   8. ASTM D1434 - Test Method for Determining Gas Permeability Characteristics of Plastic Film and Sheeting.
   9. ASTM D6574 - 00 Test Method for Determining the (In Plane) Hydraulic Transmissivity of a Geosynthetic by Radial Flow.
   10. ASTM D5385 - 93(2006) Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes.
   11. ASTM D903 - 98 Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
   12. ASTM C836 - 06 Standard Specification for High Solids Content, Cold Liquid Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course.

13. ASTM D1970 - 01 Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
14. ASTM D4716 - 01 Test Method for determining the (In plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
15. Radon Reduction Technology Laboratory - Resistance to Permeance by Radioactive Radon Gas; Resistance to Diffusion by Radioactive Radon Gas

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

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data:
1. Manufacturer's data sheets on each product to be used.
2. Preparation instructions and recommendations.
3. Storage and handling requirements and recommendations.
4. Typical installation methods.
5. Include certification of data indicating VOC (Volatile Organic Compound) content of all components of waterproofing system.

** NOTE TO SPECIFIER ** Delete if not applicable to product type.

C. Verification Samples: Two representative units of each type, size, pattern, and color.
1. Underslab Waterproofing and Termite Barrier
2. Barrier Tape and Accessories.

D. Shop Drawings: Include details of materials, construction and finish. Include relationship with adjacent construction.

E. Proof of long term termite resistance. Submit a copy of ICC ESR Evaluation Report showing compliance with AC 380 – International Code Council - Acceptance Criteria for Termite Physical Barriers demonstrating five year multi-site controlled field trial against Formosan termites with zero failures, plus other criteria.

Include the following for submission of sustainable design submittals

F. Sustainable Design Submittals: LEED v4:
1. EA perquisite and credit – Energy Performance:
   a. Indicate how this material can improve energy conservation.
2. MR credit - Regional Materials and Recycling content:
   a. Indicate percentage of materials recycled pre-consumer.
   b. Indicate percentage of materials recycled post-consumer.
   c. Indicate percentage of materials sourced within 100 miles of the manufacturing facility.
3. MR credit – Building Product Disclosure and Optimization:
   a. Indicate whether the building product(s) have published a complete Health Product Declaration (HPD) with full disclosure of known hazards to at least 0.1 percent (1000 ppm) in compliance with the Health Product Declaration open Standard addressing all components of the system.
4. EA perquisite and credit – Energy Performance:
   a. Indicate how this material can improve energy conservation.
5. MR credit: Construction and Demolition Waste Management:
   a. Indicate what portion of the building product is recyclable in areas where there is a facility to recycle.
   b. For each recyclable material listed in 5.a above, list its weight.

6. EQ credit – Low Emitting Materials:
    a. For each building product material used on the interior of the structure, and applied on site, list the VOC content and where the material is applied.
    b. For each building product material used on the exterior of the structure, and applied on site, list the VOC content and where the material is applied.
7. IN credit - Innovation – Interior Wellness and Comfort:
    a. Provide test results documenting ability of product to physically block termite access into structure, thus reducing the usage of pesticides.
    b. Provide details of why the product can increase long term comfort or interior wellness of the building occupants.
8. IN credit – Innovation - Indoor Integrated Pest Management:
    a. LEED v4 standards call out the implementation of IPM (Integrated Pest Management). Typical LEED wording in IPM guidelines is “Nonchemical pest preventive measures, either designed into the structure or implemented as part of pest management activities.” Describe the areas of the building envelope where this building product will provide protection against entry of insects.
9. LEED v4 for Homes – SS credit - Nontoxic Pest Control - Pest Control Alternatives:
    a. Provide documentation of the ability of product to physically block termite or other pest access into structure.
10. LEED v4 for Homes – EA credit – Air Infiltration:
    a. Provide details of how the building product will reduce air infiltration to the structure.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Barrier System must be manufactured by a company with a minimum of 10 years of experience in the production and sales of barrier materials.
    1. Manufacturer’s Representative:
        a. Arrange to have trained representative of the manufacturer on site periodically to review installation procedures.
        b. Will assist with construction of any mockups required by the Architect.
        c. Will represent the Manufacturer at the preconstruction conference.

B. Applicator Qualifications: A firm having at least 3 years of experience in applying these types of specified materials and specifically accepted in writing by the barrier 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.

** NOTE TO SPECIFIER ** Include mock-up if the project size or quality warrant the expense. The following is one example of how a mock-up on might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

D. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect’s review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
    1. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
    2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
    3. Retain mock-up during construction as a standard for comparison with completed work.
    4. Do not alter or remove mock-up until work is completed or removal is authorized.

1.6 PRE-INSTALLATION CONFERENCE

A. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Manufacturer’s Representative, Contractor, and trades involved. Agenda shall include schedule, responsibilities, critical path items,

approvals, and to establish procedures and to review conditions, installation procedures and coordination with other related work. Review the details and waterproofing specifications.

1.7 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 and barrier at temperatures of 40 degrees F (5 degrees C) and above to facilitate handling.

D. Store barrier cartons on pallets.

E. Do not store at temperatures above 90 degrees F (32 degrees 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 and insect barrier system.

1.8 PROJECT CONDITIONS

A. Work should be performed only when existing and forecasted weather conditions are within the limits established by the barrier manufacturer. Barrier should only be installed when temperature is 40 degrees F (4.44 degrees 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.

1.9 WARRANTY

A. Manufacturer’s standard 5 year limited material warranty upon completion and acceptance of the installation unless indicated otherwise. A five (5) year material or system warranty may be available upon request. Contact Polyguard Products, Inc. for further details.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: TERM Waterproofing and Termite Barriers, which is located at: 3801 South Interstate 45 Highway; Ennis, TX 75119South Interstate 45 Highway; Ennis, TX

75119; Phone: 214-515-5000; Fax: 972-875-9425; Email: info@polyguardproducts.com; Web: http://www.polyguardproducts.com/term.

** NOTE TO SPECIFIER ** Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 HIGH STRENGTH TERMITE AND INSECT BARRIER AND WATERPROOFING

A. Basis of Design: Polyguard TERM Underslab Water and Insect Barrier. A 95 mil rubberized asphalt membrane consisting of a strong sheet membrane with a high strength polyethylene backing topped with a 65-mil thick layer of proprietary barrier sealant integrated into a high strength nonwoven geotextile fabric.

1. On Fabric Side: A 4 inch (102 mm) wide lap of waterproofing adhesive sealant barrier is left exposed along one edge with a removable silicone coated plastic release sheet, which creates a 4 inch (102 mm) wide self-adhesive overlap seam.
2. Physical Properties of Underslab Barrier:
   a. Long Term Resistance to Termite Penetration per ICC AC 380 - Acceptance Criteria for Termite Physical Barriers. Furnish ICC ESR evaluation showing compliance with ICC AC 380 Standard.
   b. Tensile Strength of 1 inch (25 mm) width Polypropylene Geotextile layer per ASTM D4632: 80.0 lbs (36.3 kg).
   c. Resistance to Penetration by Pesticides per ASTM F2130: 0.0 percent.
   d. Resistance to Permeance by Methane Gas per ASTM D1434: 2.66 x 10 -7.
   e. Resistance to Fungi in Soil 16 Weeks per GSA-PBS 07115: No effect.
   f. Lap Peel Adhesion per ASTM D1876 (modified die C): 8.7 lbs per inch (983 N per mm) width.
   g. Puncture Resistance Minimum per ASTM E154 Using 1 inch (24 mm) Rod: 224 lbs (996 N).
   h. In Plane Hydraulic Transmissivity of a Geosynthetic by Radial Flow per ASTM D6574: No water flow.
   i. Peel Adhesion to Concrete per ASTM D903: 20 lbs per inch (2275 N per mm) width.
   j. Membrane Thickness per ASTM D1000: 0.095 inches (2.41 mm).
   k. Elongation, rubberized asphalt sealant/adhesive component per ASTM D412: 839 percent.
   l. Water absorption, maximum per ASTM D570: 0.1 percent.
   m. Cycling Over Crack at -10 degrees 100 cycles per ASTM C836 Tested at -15 degrees F: No effect.
   n. Low temperature flexibility per ASTM D1970 180 degree bend over 1 inch (25 mm) mandrel at -20 degrees F (-29 degrees C): No effect.
   o. Hydraulic Transmissivity of a Geosynthetic Using a Constant Head per ASTM D4716: No measurable flow.
   p. Self Sealability - Water Vapor Transmission, maximum per ASTM E96 – B US perms: 0.01 ng / (Pa x s x sq m
   q. Resistance to hydrostatic head, minimum per ASTM D5385: 231 ft (70 m).
   r. Breaking Strength, 1 inch (25 mm) Wide Sample Polyethylene Backing per ASTM D882: 5470 psi (37.72 N per sq mm).

2.3 SYSTEM ACCESSORIES

A. Surface Roller Grade Adhesive or Sealant:

1. Polyguard 650 LT Liquid Adhesive: A rubber based adhesive in solvent solution. Formulated to provide adhesion with Polyguard Membranes, to prepare TERM Underseal Barrier end laps, and areas around penetrations.
2. Polyguard California Sealant: A rubber based sealant in solvent solution. Formulated to provide adhesion with TERM Barrier Membrane.
    a. VOC (Volatile Organic Compound) Content: Meets South Coast Air Quality Management District regulations established under the February 1, 1991 version of Rule 1168 (2) Adhesion and Sealant Applications.
    b. Classified as an Architectural Sealant Primer Porous; with VOC of 521 g/L. Current SCAQMD regulations for this type sealant primer are 775 g/L.

B. Repairs and End Laps:
1. Polyguard Underseal Fabric Tape: Used for repairs and end laps.
2. Polyguard TERM 606 Double Sided Detailing Tape.

C. Detailing at Penetrations: Waterproofing and Termite Barrier.
1. Polyguard FastPitch Penetration Sealant Collar.
2. Polyguard LM 85 Semi Self Leveling Sealant.
3. Polyguard TERM Termite Sealant Barrier: Barrier used around pipe penetrations.

D. Corner Boots: 60-mil combination of rubberized asphalt bonded to polyethylene. Adhesive surface is covered with a release liner, removed prior to application.
1. Polyguard US Inside Corner Boot: Apply on inside corners to reinforce and seal corners of the Underslab Membrane.
2. Polyguard US Outside Corner Boot: Apply on outside corner to reinforce and seal corners of the Underslab Membrane.
3. Polyguard US Pit Top Corner Boot: Apply on corners to reinforce and seal corners of the Underslab Membrane.

E. Detailing at Repairs and Terminations:
1. Polyguard TERM Termite Sealant: Sealant barrier used for repair and terminations.

F. Drainage and Protection Board:
1. Polyguard Polyflow 18 Horizontal Drainage Mat: Designed for horizontal applications. Two-part prefabricated geo-composite drain. A formed polystyrene core covered on one side with woven mono-filament filter fabric.
    a. Filter Fabric: Allows water to pass into drain core while restricting movement of soil particles which might clog the core.
    b. Core allows water to flow to designated drainage exits.
2. Polyguard Totalflow System: A combination of our Polyguard sheet drain products with our unique Totalflow product. 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

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly constructed and prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.

3.2 SURFACE PREPARATION

A. Protect adjacent surfaces not designated to receive waterproofing and termite barrier.

B. Prepare surfaces to receive waterproofing and termite barrier in accordance with manufacturer's instructions.

C. Surface of base must be free of standing water.

3.3 APPLICATION

A. Horizontal Application: In accordance with manufacturer’s instructions.

B. Install Underslab Barrier Membrane when temperatures are 40 degrees F (4 degrees C) and rising.
   1. Unroll barrier membrane with longest dimension parallel with direction of pour.
   2. Place high strength polyethylene backing to the soil underneath and fabric on top.
   3. Apply required preformed inside and outside corner boots prior to application of membrane following manufacturer’s details and specifications.
   4. Lap waterproofing barrier membrane over footings and seal to foundation walls.
   5. Overlap Side Seams: Use the maximum 4 inch (102 mm) edge trim seal.
      a. If polyethylene backing has become dirty, clean its surface with 30 percent Isopropyl Alcohol prior to application on the 4 inch (102 mm) edge seal.
   6. End Laps: Overlap a minimum of 4 inches (102 mm).
      a. Address by applying a heavy coat of liquid adhesive sealant approximately 50 to 75 sq ft per gallon to fabric side of barrier membrane and placing adjacent sheet over the end lap.
   7. Side Laps: After end lap application use liquid adhesive or sealant to prepare seam and apply a 12 inch (305 mm) piece of underslab fabric tape centered over seam to seal. Extend out 6 inches (152 mm) past side laps.
   8. Roll side seams and end laps with a minimum 75 lbs steel roller with determined pressure to ensure full adhesion.
   9. Penetrations in Waterproofing:
      a. Apply a heavy coat of liquid adhesive; 50 to 75 sq ft per gallon a minimum of 4 inches (102 mm) out from penetrations.
      b. Install collar around penetration clusters, with a minimum of 4 inch (102 mm) between penetrations and the collar.
      c. Push up any sleeves on penetrations from the portion of the penetration from the level of the slab to a minimum of 3 inches (76 mm) above the slab.
      d. Penetrations should have a clean surface; wire brushed or sanded, before pourable sealant is applied.
      e. Apply semi self-leveling sealant at penetrations extending a minimum of 4 inches (102 mm) onto underslab waterproofing termite barrier membrane, and 2 inch (51 mm) in depth, completely filling the collar.
      f. Allow pourable sealant to cure until solid; 30 minutes to 2 hours depending on conditions.
   10. Penetrations in Termite Barrier: Apply minimum 1/2 inch(13 mm) width bead of termite sealant barrier around the neck of each penetration.
   11. Steel reinforcements (rebar) will be applied directly over the barrier membrane.
      a. It is important that reinforcement chairs used are compatible with the system.
      b. Blocks, pavers or dobies made of concrete or brick are clearly the best choice.
      c. Individual chairs are acceptable if they have a flat base or bolsters with rails.
      d. Contact Polyguard Technical Service for approval and written permission for other types of rebar chairs.
   12. Precaution should be taken to protect the barrier membrane during placement of reinforcing or concrete.
   13. Prior to Concrete Pour:
      a. Visually inspect 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 a heavy coat of liquid adhesive at a rate of 50 to 75 sq ft per

gallon to fabric side of waterproofing barrier membrane and apply a patch of fabric tape.

b. Prior to slab pour all standing water must be removed from the membrane

c. It is highly recommended to perform a smoke test under the underslab barrier just before the concrete pour, sealing any area where smoke appears.

14. When pouring concrete, the structural slab must be sound to avoid buckling.

a. Concrete is to be poured within 30 days of membrane installation.

b. Following proper ACI guidelines, concrete must be placed carefully and consolidated properly to avoid membrane damage.

1) Never use a sharp object to consolidate the concrete.

3.4 FIELD QUALITY CONTROL

A. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.

** NOTE TO SPECIFIER ** Include if manufacturer provides field quality control with onsite personnel for instruction or supervision of product installation, application, erection or construction. Delete if not required.

B. Manufacturer's Services: Coordinate manufacturer's services in accordance with appropriate sections in Division 01.

END OF SECTION