GUIDE SPECIFICATION

SECTION 07 14 00

DUAL CORE HORIZONTAL WATERPROOFING
(Stretch Flex with 650 Membrane or PRM™ System)

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*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 Dual Core Horizontal Waterproofing system. 650 Membrane is used for ambient and substrate surface temperatures of 25° F (-4° C) and rising. Underseal® PRM™ (**P**uncture **R**esistant **M**embrane) is applied to the exterior sides of concrete foundation walls, tunnels, plaza decks, parking garages, and related applications where waterproofing is critical. PRM is a strong, self-adhesive waterproofing sheet membrane consisting of a double-thick, high-strength, cross-laminated polyethylene backing laminated to a thick rubberized-asphalt compound. Total Membrane thickness is factory controlled at 65 mils. PRM is used for ambient and substrate surface temperatures of 25° F (-4° C) and rising). Polyguard® Stretch Flex is a patented, cold-applied, elastomeric, thermoplastic rubber coating and mastic membrane, waterproofing concrete sealer; designed for use in positive-side hydrostatic pressure applications. It dries to a tough, flexible film that stops water passage through a substrate and maintains protection over substrate shrinkage cracks that develop up to 1/16-inch.*

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.

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PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Application of semi-self-leveling liquid waterproofing.

C. Application of self-adhering membrane system.

1.02 RELATED SECTIONS

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Specifier Notes: Edit the list of related sections as required for the project. List other sections dealing with work directly related to this section.

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

B. Section 07 13 00 – Sheet Waterproofing

C. Section 07 14 00 – Fluid-Applied Waterproofing

D. Section 07 60 00 – Flashing and Sheet Metal

E. Section 07 92 00 – Joint Sealants

F. Section 07 95 00 – Expansion Control

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 C 1306 (08) - Standard Test Method for Hydrostatic Pressure Resistance of a Liquid Applied Waterproofing Membrane.

C. ASTM D 146 – Standard Test Methods for Sampling and Testing Bitumen-Saturated Felts and Fabrics Used in Roofing and Waterproofing.

D. ASTM D 412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.

E. ASTM D 570 – Standard Test Method for Water Absorption of Plastics.

F. ASTM D 882 – Standard Test Method for Tensile Properties of Thin Plastic Sheeting.

G. ASTM D 903 – Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.

H. ASTM D 1000 – Standard Test Methods for Pressure-Sensitive, Adhesive-Coated Tapes used for Electrical and Electronic Applications.

I. ASTM D 1876 – Standard Test Method for Peel Resistance of Adhesives.

J. 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.

K. ASTM D 2240 - Standard Test Method for Rubber Property—Durometer Hardness

L. ASTM D 2939 - Standard Test Methods for Emulsified Bitumens Used as Protective Coatings.

M. ASTM D 4541 - Standard Test Method for Pull-off Strength of Coatings Using Portable Adhesion Testers

N. ASTM D 5385 – Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes.

O. ASTM E 96 (Method B) – Standard Test Methods for Water Vapor Transmission of Materials.

P. ASTM E 154 – Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.

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

R. ICC ES Report AC 29 - Cold, Liquid-applied, Below-grade, Exterior Dampproofing and Waterproofing Materials

S. Radon Reduction Technology Laboratory - Resistance to Permeance by Radioactive Radon Gas; Resistance to Diffusion by Radioactive Radon Gas.

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 all substrate surfaces are approved by architect.

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

2.01 SYSTEM MATERIALS

A. Polyguard® Stretch Flex waterproofing: single-component; elastomeric; thermoplastic rubber; liquid; cold-applied via spray, roller, or brush.

PHYSICAL PROPERTIES

PROPERTY	**TEST METHOD**	**TYPICAL VALUE**
COLOR		Gray
SERVICE TEMPERATURE RANGE		-25°F to 185°F
PERMEANCE TO WATER VAPOR TRANSMISSION	ASTM E 96	0.058 Perms
MEMBRANE HYDROSTATIC PRESSURE RESISTANCE	ASTM D 5385	231 ft.
PEEL ADHESION	ASTM D 903 Modified	7.05 lb/in.
TENSILE STRENGTH	ASTM D 412 Modified Die C	378 PSI
ELONGATION	ASTM D 412 Modified Die C	515%
HARDNESS, SHORE A	ASTM D 2240	60
ADHESION	ASTM D 4541	135+ PSI Average
HYDROSTATIC PRESSURE OVER CRACKS, POURED CEMENT AND POURED MASONRY	ASTM C 1306	11 PSI
LOW-TEMPERATURE FLEXIBILITY AND CRACK BRIDGING	ASTM C 836 Section 6.7	Pass
REMAINS IN PLACE DURING APPLICATION, POURED CEMENT AND MASONRY	ASTM C 836 Section 6.9	Pass
ADHESION STRENGTH TO POURED CONCRETE	ASTM C 836 Section 6.10	7.551 lbf/in.
EXTENSIBILITY AFTER HEAT AGING	ASTM C 836 Section 6.12	No Cracking or tearing of membrane
RESISTANCE TO WATER	ASTM D 2939 Section 15	No Blistering or Re-emulsification
COLD, LIQUID-APPLIED, BELOW-GRADE, EXTERIOR DAMPPROOFING AND WATERPROOFING MATERIALS	ICC-ES AC 29	Pass
CATEGORY 1 40 C.F.R.§59.401 “WATERPROOFING SEALERS AND TREATMENTS”		525 g/l VOC

B. 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 compound meeting or exceeding the following requirements:

PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TYPICAL VALUE
FILM COLOR		Black/White
MEMBRANE THICKNESS	ASTM D 1000	60 mils
TENSILE STRENGTH - MEMBRANE	ASTM D 412 Modified Die C	370 PSI
ELONGATION - ULTIMATE FAILURE OF RUBBERIZED ASPHALT	ASTM D 412	600%
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 (-15°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%

C. Self-adhesive Membrane Waterproofing: Shall be Polyguard® Underseal® PRM™ (**P**uncture **R**esistant **M**embrane), a strong, 65-mil self-adhering sheet membrane consisting of a double-thick, high-strength, cross-laminated, polyethylene backing laminated to a thick layer of rubberized-asphalt compound meeting or exceeding the following requirements:

PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TYPICAL VALUE
FILM COLOR		White
MEMBRANE THICKNESS	ASTM D 1000	65 mils
LOW TEMPERATURE FLEXIBILITY	ASTM D 146 180° bend over 1" mandrel at -25°F	No effect
RESISTANCE TO HYDROSTATIC HEAD (MINIMUM)	ASTM D 5385	231 ft.
ELONGATION - ULTIMATE FAILURE OF RUBBERIZED ASPHALT	ASTM D 412	>850%
TENSILE STRENGTH OF 1" WIDTH	ASTM D 412 Modified Die C	5000 PSI
CRACK CYCLING	ASTM C 836 Tested @-15°F	No effect
PUNCTURE RESISTANCE, MINIMUM	ASTM E 154 Membrane using 1" (24mm) Rod	127 lbs.
PEEL ADHESION TO CONCRETE	ASTM D 903	17 lb/in..
LAP PEEL ADHESION	ASTM D 1876 Modified[1]	8.0 lb/in width
PERMEANCE TO WATER VAPOR TRANSMISSION	ASTM E 96 Method B	0.01 US grains/ft^2/in HGF
WATER ABSORPTION (MINIMUM)	ASTM D 570	0.1%
RESISTANCE TO PERMEANCE BY METHANE GAS	ASTM D 1434 Tested using 99.99% purity methane	6.3 x 10^{-7} ft^3/(ft^3 •hr • psi)
RESISTANCE TO RADIOACTIVE RADON GAS	Radon Reduction Technology Laboratory % reduction in radon gas diffusion	97.10%
RESISTANCE TO FUNGI IN SOIL	GSA-PBS 07115 (16 weeks)	No effect

[1] Test is done using smaller sample than standard and at room temperature.

2.02 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. 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. 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.

D. 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® 18 Drainage Mat: Two-part, prefabricated, geo-composite 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.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine surfaces to receive fluid-applied and self-adhering membranes. 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. Substrate surfaces must be clean, smooth, and dry.

E. Cast-In-Place Concrete:

1. Structural concrete must be allowed to cure a minimum of seven (7) days. For lightweight structural concrete, the minimum cure time is fourteen (14) days. All concrete surfaces must be dry to the touch before proceeding with the installation of the waterproofing system.

2. Fill and repair 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 Detail Sealant PW. 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 Polyguard® Detail Sealant PW™. Allow adequate curing time per the manufacturer's directions. Upon cure install two (2) coats of Polyguard® Stretch Flex at a rate of 27 sq. ft. per gallon to achieve a 60-mil application over the crack.

4. Horizontal to Vertical concrete transitions, install 1/2-inch tooled cove-bead using Polyguard® Detail Sealant PW™.

F. Wood Decking:

1. Wood Decks consisting of plywood (CDX – C-side up) or OSB (smooth side up).

2. Fasteners - Approved fasteners that meet the design criteria must be inspected and flush with surface. Recessed fasteners can be addressed with Detail Sealant PW™ prior to the application of fluid-applied membrane.

3. Treat all seams, gaps, voids, and plane transitions with Detail Sealant PW prior to application of fluid-applied membrane.

3.03 APPLICATION

A. Liquid Base Coat :

1. Apply Polyguard® Stretch Flex to a cleaned, dust free surface. Apply by spray or roll. Apply two (2) 60 mils wet coats of Stretch Flex at a rate of 27 sq. ft. per gallon per coat to achieve a 60-mil dry application in the field. Apply Stretch Flex on vertical surfaces to the height of the designed flashing (minimum of 6-inches and two (2) 60-mil wet applications to achieve 60 mils dry total on vertical surfaces). Allow each coat to dry per manufacturer's directions, up to 2 to 4 hours between applications, depending on temperature and humidity.

B. Membrane Installation :

1. Transition membrane from horizontal to vertical shall be treated with a minimum 12-inch strip (6-inches onto horizontal surface and 6-inches onto vertical surface) of Polyguard® Detail Tape, 650 Membrane, PRM™. If metal flashing is utilized in the system, apply membrane over the metal flashing extending 2-inches beyond the flashing onto the substrate, both horizontally and vertically. (Perimeter detailing and flashing can be installed prior to or after field membrane, relative to the sequencing of the project).

2. If the field sheet membrane is applied within a 24-hour period of the Stretch Flex, and the Stretch Flex surface has remained dry and free of jobsite dust, then priming is not required over the Stretch Flex.

   When a Stretch Flex surface becomes contaminated with water or jobsite dust, or if the Stretch Flex is exposed to the elements greater than 24 hours prior to the field sheet membrane application, then apply a primer coat of Polyguard® 650 LT Liquid Adhesive or California Sealant at a rate of 400–500 SF/gallon and allow the Adhesive / Sealant to dry before covering with the field sheet membrane. Apply field sheet 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 for sloped decks should be 2-1/2 inches minimum and staggered end laps should be 6-inches minimum, with all cut edges receiving a minimum 30-mil tooled bead of Detail Sealant PW. Side laps for zero-sloped decks should be 9-inces minimum and staggered end laps should be 9-in minimum with all end laps receiving a minimum 30-mil tooled bead of Detail Sealant PW.

4. Firmly roll the entire field sheet membrane with a minimum 75 lb. linoleum roller immediately after application. This will ensure proper adhesion and minimize air pockets between the substrate and membrane.

5. Any penetrations, posts, or projections added after installation of the Stretch Flex and field sheet membrane shall be sealed with a minimum 90 mils of Polyguard® Detail Sealant PW™ 6-inches onto the field sheet membrane and 3 inches onto penetrating item.

6. At drains seal joint between drain body and substrate with Polyguard Detail Sealant PW.

7. Membrane turned up on walls shall be terminated. Firmly press the terminated edge with a hand roller and protect the edge with a minimum 30-mil tooled bead of Detail Sealant PW.

8. Inadequately lapped seams and damaged areas shall be patched with additional sheet membrane. Extend patch at least 6 inches in all directions beyond the defect, then seal all patch edges with a minimum 30-mil tooled bead of Detail Sealant PW.

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 a minimum 30-mil tooled bead of Detail Sealant PW.

10. Upon completion of Dual Core Horizontal Waterproofing Membrane system 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. Electro-Field Vector Mapping (EFVM) is an acceptable alternative to flood testing.

11. Protect the Polyguard® Stretch Flex, field sheet membrane surfaces, and sealant applications from damage until the protection board and/or Polyflow® BD or Polyflow® 18 layer has been installed. Isolate completed work areas from construction, foot, and equipment traffic. Restrict foot and equipment traffic onto completed work with temporary walkways of protection material, Polyflow BD, or Polyflow 18.

C. Protection and Drainage Course:

1. Apply protection board and/or Polyguard® Polyflow® drainage composite in accordance with manufacturer's written directions and recommendations.

    a. Polyflow® BD: For balcony decks with less than 3-inches of concrete and foot traffic only.

    b. Polyflow® 18: For structural concrete topping slabs for podium and plaza decks where the surface is trafficable by both pedestrian and vehicular live loads.

2. Cover the field sheet membrane within thirty (30) days to prevent impaired performance due to prolonged exposure to sunlight.

END OF SECTION