

SECTION 33 46 00

SUBDRAINAGE

(PROTECTION AND DRAINAGE 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 drainage systems. Polyguard® Polyflow® 10, 10P, 15, or 15P Protection and Drainage Systems are conventional "dimple board" drainage systems with a built-in protection layer for vertical applications.

Edit entire master to suit project requirements. Modify or add items as necessary. Delete items which are not applicable. Words and sentences may include 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 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 drainage systems.
- 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 04 05 23 - Masonry Accessories
- B. Section 07 05 00 - Common Work Results for Thermal and Moisture Protection
- C. Section 07 10 00 - Dampproofing and Waterproofing

1.03 REFERENCES

- A. ASTM D 1621 - Standard Test Method for Compressive Properties Of Rigid Cellular Plastics
- B. ASTM D 1777 - Standard Test Method for Thickness of Textile Materials
- C. ASTM D 4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity
- D. ASTM D 4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
- E. ASTM D 4716 - Standard Test Method for Determining the (In plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head
- F. ASTM D 4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile.
- G. ASTM D 6241 - Standard Test Method for Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, installation instructions, use limitations and recommendations. If necessary, include certification of data indicating VOC (Volatile Organic Compound) content of all components of waterproofing system.
- B. Sustainable Design Submittals:
 - 1. Submit invoices and documentation from manufacturer of the amounts of materials and content for products specified.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Protection and Drainage System must be manufactured by a company with a minimum of ten (10) years of experience in the production and sales of drainage system membrane.
- B. Applicator Qualifications: A firm having at least three (3) years of experience in applying these types of specified materials.
- 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.

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 drainage board rolls on pallets.
- D. Do not store at temperatures above 90°F (32°C) for extended periods.
- E. Completely cover when stored outside.
- F. Protect materials during handling and application to prevent damage or contamination.

1.07 PROJECT CONDITIONS

- A. Work should be performed only when existing and forecasted weather conditions are within the limits established.
- B. Proceed with installation only when substrate construction and preparation work is complete. Ensure that subsoil is approved by architect or geotechnical firm.
- C. Maintain work area in a neat and workmanlike condition.

1.08 WARRANTY

- A. Product will be replaced, at no charge, if proved to be defective within twelve (12) months of purchase, provided it has been applied in accordance with manufacturer written directions for uses 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

Specifier Notes: Drainage mat various types are available based on type of application, soil pressures and flow specifications. Select performance requirements from the chart below. Consult with manufacturer for assistance.

- A. Polyguard® Polyflow® Drainage and Protection System is a conventional "dimple board" drainage system with a built-in protection layer for both vertical and horizontal applications.
 - 1. Polyguard® Polyflow® 10 or 10P Drainage Mats: Vertical use. Two-part and three-part, prefabricated, geocomposite drains consisting of a formed impermeable polymeric core covered on one side with polymeric filter fabric. The three-part includes a built-in Polymeric film protection layer.

PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TYPICAL VALUE	
		POLYFLOW® 10	POLYFLOW® 10P
<u>DRAIN PROPERTIES</u>			
FLOW CAPACITY	D 4716	18 g/min/ft	18 g/min/ft
ROLL LENGTH	-	50 ft.	50 ft.
ROLL WIDTH	-	4 ft.	4 ft.
ROLL WEIGHT	-	38 lbs.	38 lbs.
<u>CORE PROPERTIES</u>			
MATERIAL	-	Polymeric	Polymeric
THICKNESS	D 1777	0.40 inch	0.40 inch
COMPRESSIVE STRENGTH	D 1621 Modified	11,000 lbs/ft ²	11,000 lbs/ft ²
POLYMERIC FILM LAYER	-	No	Yes
<u>FABRIC PROPERTIES</u>			
MATERIAL	-	Polymeric	Polymeric
GRAB TENSILE STRENGTH	D 4632	100 lbs.	100 lbs.
CBR PUNCTURE STRENGTH	D 6241	250 lbs.	250 lbs.
EOS (AOS)	D 4751	70 US Sieve	70 US Sieve
FLOW RATE	D 4491	140 g/min/ft ²	140 g/min/ft ²

- 2. Polyguard® Polyflow® 15 or 15P Drainage Mats: Vertical use. Two-part and three-part, prefabricated, geocomposite drains consisting of a formed polymeric core covered on one side with polymeric filter fabric. The three-part includes a built-in Polymeric film protection layer.

PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TYPICAL VALUE	
		POLYFLOW® 15	POLYFLOW® 15P
<u>DRAIN PROPERTIES</u>			
FLOW CAPACITY	D 4716	21 g/min/ft	21 g/min/ft
ROLL LENGTH	-	50 ft.	50 ft.
ROLL WIDTH	-	4 ft.	4 ft.
ROLL WEIGHT	-	39 lbs.	40.5 lbs.
<u>CORE PROPERTIES</u>			
MATERIAL	-	Polymeric	Polymeric
THICKNESS	D 1777	0.40 inch	0.40 inch
COMPRESSIVE STRENGTH	D 1621 Modified	15,000 lbs/ft ²	15,000 lbs/ft ²
POLYMERIC FILM LAYER	-	No	Yes
<u>FABRIC PROPERTIES</u>			
MATERIAL	-	Polymeric	Polymeric
GRAB TENSILE STRENGTH	D 4632	100 lbs.	100 lbs.
CBR PUNCTURE STRENGTH	D 6241	250 lbs.	250 lbs.
EOS (AOS)	D 4751	70 US Sieve	70 US Sieve
FLOW RATE, GPM/FT	D 4491	140 g/min/ft ²	140 g/min/ft ²

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.
3. Quick Grip Adhesive: A low-rise spray foam adhesive.

2.04 SYSTEM UPGRADE

A. Drainage Composite:

1. Polyguard® Totalflow™: Totalflow is a combination of our Polyguard Polyflow® Drainage and Protection System with our unique Totalflow™ product. In the Totalflow™ system, the Polyflow® 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.
 - a. Universal Fittings:
 - i. Totalflow™ Tee Outlet: A formed polymeric connection fitting to aid the collected water into a pipe drainage system.
 - ii. Totalflow™ End Outlet: A formed polymeric connection fitting to aid the collected water into a pipe drainage system.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine surfaces to receive drainage board. Notify General Contractor if surfaces are not acceptable. Do not begin surface preparation or installation until unacceptable conditions have been corrected.

3.02 SURFACE PREPARATION

- A. Protect adjacent surfaces not designated to receive drainage system.
- B. Clean and prepare surfaces to receive drainage board in accordance with manufacturer's instructions.
- C. Place Polyflow drainage board over earth retention systems (ERS), waterproofing membranes, or natural rock. Do not apply drainage board to surfaces unacceptable to manufacturer.

3.03 APPLICATION

A. Vertical Surfaces:

1. Measuring:
 - a. If using Totalflow™, measure perimeter of wall and place a two-foot high section of Totalflow™ around the perimeter. Measure wall height from top of Totalflow™, unroll the Polyflow® Drainage Mat, and cut to length.
 - b. If using perforated pipe, measure wall height or lift, adding sufficient material for overlapping pipe detail. Unroll Polyflow® Drainage Mat and cut to length.

- c. Peel back fabric from drainage core and remove 4" of core. Drain core should remain 6"-12" below backfill.
- d. If using drain tile, measure wall height, adding sufficient material so that there is enough fabric, when fabric is peeled back from drainage core, to wrap around the drainage tile.

2. Installing:

- a. Over post-applied fluid or sheet waterproofing, place the drainage so the fabric side will interface with the backfill material.
- b. Over earth retention systems (ERS) or natural rock, place the drainage so the fabric will interface with the ERS or natural rock.
- c. Hold the drainage in position over earth retention systems (ERS) or natural rock with minimum 1" diameter capped fasteners, suited to the substrate. Space fasteners so the drainage will remain in place during the covering activity of concrete placement or sheet waterproofing and concrete placement.
- d. Hold the drainage in place over post-applied sheet or fluid waterproofing with either 650 LT Liquid Adhesive, California Sealant, Quick Grip Adhesive or another low-rise spray adhesive that is compatible with the waterproofing membrane. Apply enough adhesive/ sealant/glue material to secure the drainage during backfilling activity.
- e. At the top termination, glue fabric to wall or, if using a furring strip or termination bar, tuck fabric under core. Furring strip / termination bar can be removed after backfill is completed.
- f. Glue or tape adjacent panels at the vertical joints, making sure the fabric overlaps to prevent soil intrusion during backfill.
- g. Tape relief cuts made during shaping of an outside corner with duct tape.
- h. Tie-in to the collection system can be done with a simple fabric overlap (if using the Totalflow™ system). If using perforated pipe, peel back fabric from Polyflow® Drainage Mat core and remove 4-inches of core.
- i. Drain core should remain 6"-12" below backfill.
- j. If using drain tile, wrap fabric which has been pulled away from the core completely around the drain tile. Tuck excess fabric back behind the core. Make sure the drain tile is in direct contact with the Polyflow® Drainage Mat core.
- k. Backfill soil or aggregate in a non-destructive manner as soon as possible after drain installation. Compact in maximum 12" lifts. For backfilling over drainage glued to a sheet or fluid waterproofing membrane, take care to keep the material on the soil side of the drainage; that is from between the drainage and waterproofing membrane. Polyflow® 10/10P has a backfill limit of 10-12 feet.

3. Termination Bar

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

END OF SECTION