

SECTION 33 46 19.16 (MF 04)
(Formerly 2628 MF 95)

GEOCOMPOSITE UNDERSLAB DRAINAGE

Date: 22MAY07

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes: Subdrainage system material for underslab drainage as complete designed working drainage system channeling liquid water to foundation drainage piping system specified elsewhere.

SPEC NOTE: MAKE SELECTIONS OF RELATED SECTIONS: DELETE OTHERS: ADD RELATED SECTIONS FOR COVER MATERIAL.

SPEC NOTE: DELETE 01 25 13 IF NO SUBSTITUTIONS ARE ALLOWED OR YOU HAVE COORDINATED FRONT END DOCUMENTS THAT NEED NO ACTUAL REFERENCE TO DIVISION 01

B. Related sections:

1. 01 25 13 Product Substitution Procedures.
2. 03 30 00 Cast-in-Place Concrete.
3. 31 20 00 Earth Moving.
4. 31 23 10 Building Excavation and Fill.

1.02 REFERENCES

A. Standards of the following as referenced:

1. American Society for Testing and Materials (ASTM).
2. Underwriters Laboratories (UL) Class A

1.03 DEFINITIONS

A. Terms 1 through 4 taken from ASTM D4439:

1. Geotextile: Any permeable textile used with foundation, soil, rock, earth, or any other geotechnical material, as an integral part of man-made product, structure, or system.
2. Normal direction: Direction perpendicular to the plane of a geotextile.
3. Permittivity: Volumetric flow rate of water per unit cross sectional area per unit head under laminar flow conditions, in the normal direction through a geotextile.
4. Permeability: Rate of flow of a liquid under a differential pressure through a material.

5. Transmissivity: Flow or amount of liquid water per foot of material width passing through composite system at certain maximum soil pressure against geotextile at defined hydraulic gradient.

1.04 SYSTEM DESCRIPTION

SPEC NOTE: UV RESISTANCE REQUIREMENTS NECESSARY TO ALLOW BACKFILL OR COVER MATERIAL IS IN PLACE 60 DAYS MAXIMUM FROM INSTALLATION, ALTHOUGH NOT IMMEDIATELY REQUIRED IF WEATHER AND CONSTRUCTION SEQUENCING DO NOT PERMIT.

- A. Performance requirements:
 1. Geotextile:
 - a. UV resistance: 70% or more when tested in accord with ASTM D4355-02.
 - b. Permittivity: 150 gal/min/ft² (6105 l/min/m²) when tested in accord with ASTM D4491-99a.
 2. Core material, compressive strength: Specified in PART 2 - PRODUCTS Article below for selected materials.
 3. Transmissivity or Flow Q with hydraulic gradient of 1 with confining stress indicated in MANUFACTURED UNITS Article in accord with ASTM D4716-01.

1.05 SUBMITTALS

- A. Product data: Manufacturer's product data; indicate products supplied. Provide complete installation instructions proposed for use.
- B. Samples:
 1. Subdrainage system material: 4" by 4".

1.06 QUALITY ASSURANCE

- A. Preinstallation conferences: Coordinate with conference scheduled for waterproofing materials. Follow requirements indicated in waterproofing materials section.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Packing and shipping: Provide materials in original unopened containers with manufacturer's labels intact and legible.
- B. Acceptance at site:
 1. Unload materials: check for damage.
 2. Damaged materials determined by visual inspection will not be accepted.
 3. Remove rejected materials from site immediately.
- C. Storage and protection:
 1. Store materials in dry area in manufacturer's protective packaging in original containers with labels and installation instructions intact.
 2. Store materials under cover, off ground; protect from sunlight.
 3. Do not expose to aromatic hydrocarbons.

PART 2 - PRODUCTS

2.01 MANUFACTURED UNITS

A. Basis of Design:

1. Products specified as standard of quality are manufactured by:

JDR Enterprises, Inc.
 292 South Main Street Suite 200
 Alpharetta, Georgia 30004
 Telephone: 800.843.7569 or 770.442.1461. Fax: 770.664.7951.
 Website: www.j-drain.com

2. Products of other manufacturers similar in type and quality are acceptable, subject to compliance with specified **

** requirements.

** requirements and submission of required data indicated in Product Substitution Procedures Section.

SPEC NOTE:

PRODUCT SELECTION GUIDE			
Application	Selection	Application	Selection
Foundation walls >20 ft.	300, 400, or 420*, 400XL, 420XL	Foundation walls <20 ft.	200 or 220*
Retaining walls >20 ft.	300, 302 or 400, 400XL	Retaining walls < 20 ft.	200
Retaining/Foundation Walls	Modular Drainage System		
Underslab (On grade)	400, 400 XL	Under slab (On grade)	302 (Heavy Duty)
Plaza decks (Regular)	400, 420*, 400XL, 420XL, 700, or 720*	Plaza decks (Vehicular)	300 or 1000*
Crib walls	302 or 400	Crib walls <20 ft.	200
Roof membrane assembly	400 or 420*	Roof gardens & planters	400, 420*, 700, or GRS
Split slab (Regular)	400, 420*, 400XL, 420XL, 700, or 720*	Split slab (H.D. vehicular)	302, 1000*
Edge drains	SWD-6 or SWD-12	Trench drains	SWD-12, SWD-18, 302
Lagging walls	400, 400XL or 302		
(*) Compatible with waterproofing membranes WITHOUT protection layer - Visit web site at http://www.j-drain.com			

B. GEONET DRAINAGE SYSTEM material, characteristics:

1. Type: **JDR Enterprises, Inc.; J-DRain 302 Series**; extra heavy duty core, double sided nonwoven fabric (providing drainage and filtration from both sides).

2. **CORE:**

- a. Material: Extruded HDPE; High Density Polyethylene Polymer, 0.945 density.
- b. Thickness: 0.25" (0.635 cm), nominal, normal duty.
- c. Compressive strength: 40,000 PSF (1915 kN/m²).

3. **GEOTEXTILE:**
 - a. Material: Nonwoven needle punch polypropylene.
 - b. Weight: 4.0 oz. per square yard (136 g/m²), minimum.
 - c. Treat fabric for UV stability to meet requirements in SYSTEM DESCRIPTION Article above.
 - d. Permittivity: Meet requirements in SYSTEM DESCRIPTION Article above.
4. Bonding core material to geotextile: Manufacturer's standard heat lancing.
5. Flow Q of Polyethylene Core when tested in accord with ASTM D4716-01 with hydraulic gradient of 1 with confining stress of 3600 PSF: **302 Series:** 8.5 gallons/min/ft. (106.0 lpm/m) width in accord with ASTM D4716-01.

SPEC NOTE: 400 SERIES IS DIMPLED CORE PRODUCT WITH LESS COMPRESSIVE STRENGTH THAN 300 SERIES - SIMILAR TO COMPETITIVE DIMPLED PRODUCTS FOR COMPRESSIVE STRENGTH.

SPEC NOTE: 400 SERIES IS SIMILAR TO 300 SERIES BUT DIMPLED CORE.

C. DIMPLE CORE DRAINAGE SYSTEM material, characteristics:

1. Type: **JDR Enterprises, Inc.; J-DRain 400 Series**; heavy duty core, single sided nonwoven fabric.
2. **CORE:**
 - a. Material: High Impact Polypropylene.
 - b. Type: Formed dimpled core.
 - c. Compressive strength: 15,000 PSF (718 kN/m²).
3. **GEOTEXTILE:**
 - a. Material: Nonwoven needle punch polypropylene.
 - b. Weight: 4.0 oz. per square yard (136 g/m²), minimum.
 - c. Treat fabric for UV stability to meet requirements in SYSTEM DESCRIPTION Article above.
 - d. Permittivity: Meet requirements in SYSTEM DESCRIPTION Article above.
4. Adhesive bonding core material to geotextile: Pressure sensitive applied to core, manufacturer's standard.
5. Flow Q of Polypropylene Core when tested in accord with ASTM D4716-01 with hydraulic gradient of 1 with confining stress of 3600 PSF: **400 Series:** 21.0 gallons/min/ft. (261 lpm/m) width in accord with ASTM D4716-01.

D. DIMPLE CORE SITE WATER DRAINAGE (SWD) SYSTEM, for collection in lieu of pipe collection system, characteristics:

1. Type: **JDR Enterprises, Inc.; J-DRain SWD-6 Modular Drainage System.**
2. Size: 6" high by 1" thickness by 165' rolls.
3. **CORE:**
 - a. Material: Extruded HDPE; High Density Polyethylene Polymer, 0.945 density.
 - b. Type: Formed dimpled core.
 - c. Compressive strength: 8500 – 11000 PSF (407 – 527 kN/m²).

4. **GEOTEXTILE:**
 - a. Material: Nonwoven needle punch polypropylene.
 - b. Weight: 4.0 oz. per square yard (136 g/m²), minimum.
 - c. Treat fabric for UV stability to meet requirements in SYSTEM DESCRIPTION Article above.
 - d. Permittivity: Meet requirements in SYSTEM DESCRIPTION Article above.
5. Adhesive bonding core material to geotextile: Pressure sensitive applied to core, manufacturer's standard.
6. Flow Q of Polyethylene Core when tested in accord with ASTM D4716-01 with hydraulic gradient of .1 with confining stress of 3600 PSF: 30.0 gallons/min/ft. (372 lpm/m).
7. Furnish system manufacturer's standard polypropylene 6X6 corner fittings and 6X4 end-out, 6X4 side-out, and 6X4 corner-out fittings with 4" dia. female connector for connection to 4" dia corrugated plastic piping system specified elsewhere.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verification of conditions:
 1. Verify 1% slope to underslab collection pipes or site water drainage system at underslab drainage system location substrate.
 2. Examine conditions and substrates where products specified in this section are installed; submit written notification of unacceptable conditions or substrates.
 3. Submit copy of installer's report to Architect within 72 hours of report receipt.
 4. Proceeding with construction activities of this section:
 - a. Indicates acceptance of conditions or substrates.
 - b. Additional work in this section due to pre-existing conditions not noted will not be paid as extra.

3.02 INSTALLATION

- A. Underslab drainage installation, general:
 1. Install collection pipes or site water drainage system in trenches as indicated for positive drainage from subdrainage system to collection system and vent to daylight or sump in accord with manufacturer's reviewed installation instructions.
 2. Roll out subdrainage system material to cover entire subbase surface in accord with manufacturer's reviewed installation instructions with core material facing protection board.
 3. Butt adjacent panels; lap geotextile fabric and use adhesive to bond adjacent fabric panels in accord with manufacturer's installation instructions.
 4. Direct UV/sunlight can damage J-DRain products and can cause deterioration. To alleviate UV/sunlight damage, the engineered soil should be installed to cover J-DRain products within 10 – 14 days.

END OF SECTION 33 46 19.16