

SECTION 02629

HORIZONTAL SUBDRAINAGE SYSTEMS

Date: 05/28/98

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes: Subdrainage system material at horizontal waterproofed plaza slabs ** or ** planters ** as complete designed working drainage system channeling liquid water to drainage piping system specified elsewhere.

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

DELETE 01630 IF NO SUBSTITUTIONS ARE ALLOWED OR YOU HAVE COORDINATED FRONT END DOCUMENTS THAT NEED NO ACTUAL REFERENCE TO DIVISION 01.

- B. Related sections:
1. Section 01630: Product Substitution Procedures.
 2. Section 03300: Cast-in-Place Concrete.
 3. Section 07125: Waterproofing.
 4. Section 07130: Membrane Waterproofing.
 5. Section 07140: Fluid Applied Waterproofing.
 6. Section 07170: Bentonite Waterproofing.

1.02 REFERENCES

- A. Standards of the following as referenced:
1. American Society for Testing and Materials (ASTM).

1.03 DEFINITIONS

- A. Terms; 1 through 4 taken from ASTM D4439-85:
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

UV RESISTANCE NECESSARY TO ALLOW BACKFILL OR COVER MATERIAL 60 DAYS MAXIMUM FROM INSTALLATION, NOT IMMEDIATELY, 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 D4355-84.
 - b. Permittivity: 140 gal/min/ft² (5698 l/min/m²) when tested in accord with ASTM D4491-85.
 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 D4716-95.

1.05 SUBMITTALS

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

1.06 QUALITY ASSURANCE

- A. Pre-installation 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.

1.08 SEQUENCING AND SCHEDULING

DELETE PROTECTION BOARD FOR 1000 SERIES.
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- A. Schedule subdrainage material installation on horizontal surfaces after waterproofing installation and curing ** and protection board placement ** and just prior to installation of cover material.

PART 2 - PRODUCTS

2.01 MANUFACTURED UNITS

- A. Acceptable manufacturers:
 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.
 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.

PRODUCT SELECTION GUIDE			
Application	Selection	Application	Selection
Foundation walls > 20ft.	300, 400, or 420*	Foundation walls < 20 ft.	200 or 220*
Retaining walls > 20 ft.	300 or 400	Retaining walls < 20 ft.	200
Retaining/Foundation walls	Modular Drainage System SWD-6, SWD-12		
Underslab (On grade)	400	Under slab (ongrade)	302 (Heavy Duty)
Plaza decks (Regular)	400, 420*, 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*, or 700, 720*, GRS
Split slab (Regular)	400, 420*, 700, or 720*	Split slab (H.D. vehicular)	1000*
Edge drains	SWD-6 or SWD-12	Trench drains	SWD-12, SWD-18, 302
Lagging Walls	400 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®; 300; heavy duty core, single sided fabric.
 - ** J-DRain®; 302; heavy duty core, double sided fabric.
 - ** J-DRain®; 1000; heavy duty core, double sided fabric with protective sheet.
2. Core:
 - a. Material: Extruded HDPE; High Density Polyethylene Polymer, 0.945 density.
 - b. Thickness: **
 - ** 0.22" (0.56 cm), nominal, normal duty.
 - ** 0.25" (0.63 cm), nominal, heavy duty.
 - c. Compressive strength: 30,000 PSF (1438 kN/m²).
3. Geotextile:
 - a. Material: Non-woven needle punched polypropylene.
 - b. Weight: 4.0 oz. per square yard (94.8 g/m²), minimum.
 - b. Weight: 4.0 oz. per square yard (94.8 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.

SEVERAL GEOTEXTILE FABRICATION TECHNIQUES ARE AVAILABLE FOR PROVIDING FLOW THROUGH FABRIC: NON-WOVEN AND WOVEN FABRICS.

NON-WOVEN FABRICS CAN BE NEEDLE PUNCHED, SPUN BONDED OR CHEMIIALLY TREATED (SELDOM USED ANYMORE).

TWO FABRICATION TECHNIQUES BOND GEOTECTILE TO CORE, PRESSURE SENSITIVE ADHESIVE AND HEAT LANCING.

USING PRESSURE SENSITIVE ADHESIVE ALLOWS EASIER INSTALLATION AT CUTS BY PULLING FABRIC OFF CORE AND REAPPLYING. HEAT LANCING ACTUALLY MELTS CORE MATERIAL TO FABRIC.

4. Bonding core material to geotextile: Manufacturer's standard heat lancing.

SELECT SAME SERIES AS SPECIFIED ABOVE FOR FLOW Q.

5. Transmissivity or Flow Q of composite construction, geotextile bonded to core when tested in accord with ASTM D4716-95 with hydraulic gradient of 1 with confining stress of **
300: ** 3600 PSF: 7.0 gallons/min/ft. (86.93 lpm/m) width in accord with ASTM D4716-95.
302: ** 3600 PSF: 5.5 gallons/min/ft. (68.30 lpm/m) width in accord with ASTM D4716-95.
1000: ** 6000 PSF: 7.0 gallons/min/ft. (86.92 lpm/m) width in accord with ASTM D4716-95.

JDRAIN 200/220, and 400/420, and 700/720 SERIES ARE Dimpled Core PRODUCTS with LESS COMPRESSIVE STRENGTH THAN JDRAIN 300 and 1000 – SIMILAR TO COMPETITIVE Dimpled Products OR COMPRESSIVE STRENGTH – NOT PREFERRED FOR HORIZONTAL APPLICATION WITH EXTREMELY HEAVY LOADS or VEHICULAR TRAFFIC.

220, 420, and 720 HAVE PROTECTIVE SHEET TO PREVENT INTRUSION OF WATERPROOFING MEMBRANE INTO DIMPLED CORE.

C. Dimple core drainage system material, characteristics:

1. Type: JDR Enterprises, Inc.; **
 - ** J-Drain®; 200; light duty core, single sided fabric.
 - ** J-Drain®; 220; light duty core, single sided fabric with protective sheet on dimpled core.
 - ** J-Drain®; 400; normal duty core, single sided fabric.
 - ** J-Drain®; 420; normal duty core, single sided fabric with protective sheet on dimpled core.
 - ** J-Drain®; 700; heavy duty core, single sided fabric.
 - ** J-Drain®; 720; heavy duty core, single sided fabric with protective sheet on dimpled core.
2. Core:
 - a. Material: High Impact Polystyrene.
 - b. Type: Formed dimpled core.
 - c. Compressive strength: **
 - 200 Series:** ** 11,000 PSF (528 kN/m²).
 - 400 Series:** ** 15,000 PSF (719 kN/m²).
 - 700 Series:** ** 21,000 PSF (1005 kN/m²).
3. Geotextile:
 - a. Material: Non-woven needle punched polypropylene.
 - b. Weight: 4.0 oz. per square yard (94.8 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.

SELECT SAME SERIES AS SPECIFIED ABOVE FOR FLOW Q.

5. Transmissivity or Flow Q of composite construction, geotextile bonded to core when tested in accord with ASTM D4716-95 with hydraulic gradient of 1 with confining stress of 3600 PSF: **
 - 200 Series:** ** 11.5 gallons/min/ft. (141 lpm/m) width in accord with ASTM D4716-95.
 - 400 Series:** ** 18.0 gallons/min/ft. (226 lpm/m) width in accord with ASTM D4716-95.
 - 700 Series:** ** 21.0 gallons/min/ft. (260 lpm/m) width in accord with ASTM D4716-95.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verification of conditions:
1. Examine conditions and substrates where products specified in this section are installed; submit written notification of unacceptable conditions or substrates.
 2. Submit copy of installer's report to Architect within 72 hours of report receipt.
 3. 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. Horizontal plaza slab and planter installation, general:
1. Roll out subdrainage system material to cover entire deck surface in accord with manufacturer's reviewed installation instructions with core material facing deck surface.
 2. Butt adjacent panels; lap geotextile fabric and use adhesive to bond adjacent fabric panels in accord with manufacturer's installation instructions.
 3. Make cuts at deck drains in accord with subdrainage system material manufacturer's reviewed details to allow water flow to deck drains.

END OF SECTION 02629



Specifications prepared for:

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Alpharetta GA 30004-1950
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