

SECTION 202

ENGINEERING FABRIC

202.1 DESCRIPTION

A. General:

This work shall consist of placement of engineering fabric material under drainage structures and storm sewer culverts, sub-grade stabilization under paving sections, in modular block retaining walls and other uses.

B. Related Work:

Section 14	Embankment
Section 64	Under-drains
Section 68	Bank and Channel Protection Rock Filled Wire Baskets
Section 69	Bank Protection Gabions
Section 109	Riprap and Slope Materials
Section 117	Aggregates for Granular Bases and Surfacing

202.2 MATERIALS

A. Engineering Geogrid Fabric Material:

Engineering fabric materials used as structural geogrid shall be integrally formed structural polypropylene geogrid or approved equal. The fabric shall be free of kinks, tears and excessive worn or abraded areas. The fabric shall be inert to commonly encountered chemicals and shall meet the following test requirements:

<u>TEST</u>	<u>TEST VALUE</u>
Polypropylene (ASTM D 4101)	98% Group 1, Class I, Grade 2
Dynamic Load Capacity at 2% Strain (GRI GG1)	300 LBS/FT MIN (Main Dimension) 445 LBS/FT MIN (Cross Dimension)
Mass Per Unit Area	6.4 oz/sy
Maximum Aperture Size	1.0 in. (MD) – 1.3 in. (XD)

B. Drainage Fabric Material:

Drainage fabric materials shall be a woven or non-woven fabric consisting of long chain polymeric filaments or yarns, such as polypropylene, polyethylene, polyester, polyamide, or polyvinyl chloride. The fabric shall be formed into a stable network

insuring that the filaments or yarns retain their relative position to each other. The fabric shall be inert to commonly encountered chemicals, shall be relatively inert to ultraviolet light, and shall meet the following test requirements:

<u>TEST</u>	<u>TEST VALUE</u>
Grab Tensile Strength (ASTM D 4632)	200 lbs.
Elongation (ASTM D 4632)	50 %
Mullen Burst Strength (ASTM D 3786)	350 PSI
Puncture Strength (ASTM D 3787)	90 lbs.
Equivalent Opening Size (EOS) (ASTM D 4751)	70 to 140 U.S. Std. Sieve

C. Certification:

Certification that the engineering fabric meets specification requirements shall be furnished to the Engineer prior to installation.

202.3 CONSTRUCTION REQUIREMENTS

- A. Installation of engineering geogrid fabric material shall be to the limits shown on the plans or as directed by the Engineer and shall be in general compliance with the manufacturer's recommendations for the type of usage required.

The bed for the placement of the fabric shall be prepared by smoothing the surface of the sub-grade to minimize ruts, ridges and depressions. The Engineer may elect to waive sub-grade compaction specifications, dependent upon the condition of the sub-grade at the time of placement.

The fabric shall be placed upon the prepared bed as directed by the Engineer. The fabric roll shall be unrolled oriented along the long axis. Additional rolls necessary to make the required width shall overlap preceding rolls. Overlap shall be a minimum of 1 foot. The Engineer may require additional overlap up to 3 feet, dependent upon the condition of the sub-grade prior to installation.

The fabric shall be placed so that subsequent cover material does not shove, wrinkle or distort the in place fabric. Overlapping sections of fabric shall be oriented accordingly. Fabric may be held in place with small, hand placed piles of cover material or by staples or stakes to keep the fabric in place. Care shall be taken to prevent damage to the unprotected fabric before, during and after installation. No vehicle traffic will be allowed on the unprotected fabric.

Cover material shall be limestone ledge-rock aggregate base course as specified in Section 117 herein, unless otherwise specified in the plans or as called for by the Engineer. Cover material shall be placed by back dumping on to the fabric from the truck, and dozing or pushing the cover material from covered area to uncovered areas, or by loader dumping from covered area on to uncovered areas. Minimum depth of cover placement shall be 6 inches or as directed by the Engineer, dependent upon sub-grade stability at time of placement. When cover material has reached sufficient depth to prevent excessive kneading of the underlying fabric by the gravel processing equipment, the gravel base course shall be smoothed and, at the direction of the Engineer, watered, processed and compacted.

- B. Installation of drainage fabric material shall be as shown on the plans or as directed by the Engineer and shall comply with the manufacturer's recommendations for the type of usage required.
- C. Repairs to fabric damaged by failure to take adequate care during construction shall be at the cost of the responsible party. Repair of damaged drainage fabric material shall require removal of damaged material to the limits of the damage and removal of any existing backfill atop the fabric to a minimum of 1 foot outside of the limits of damaged material. A patch of similar material shall be placed over the undamaged material to a minimum of 1 foot outside the damaged material and properly backfilled.

202.4 METHOD OF MEASUREMENT

- A. Measurement of engineering fabric and drainage fabric shall be to the nearest whole square yard of material placed, not counting overlap of successive courses of material.
- B. Measurement of and payment for cover material shall be in accordance with Section 117 herein, except where special cover material is called for. Measurement and payment of special cover material will be as specified in the Detailed Specifications.

202.5 BASIS OF PAYMENT

- A. Engineering geogrid fabric material will be paid for at the Contract unit price per square yard. This price will be full compensation for preparation of the fabric bed, placing the fabric, and for labor, tools, equipment, fabric material, and incidentals necessary to complete the work as shown on the plans and as directed by the Engineer.
- B. Drainage fabric will be paid for at the contract unit price per square yard. This price will be full compensation for preparation of the fabric bed and for labor, tools, equipment, fabric material and incidentals necessary to complete the work as shown on the plans and as directed by the Engineer. If there is no bid item for drainage fabric, payment will be considered incidental work.

- C. Repairs to fabric damaged by failure to take adequate care during construction shall be at the cost of the responsible party.

END OF SECTION