

SECTION 02205 – GEOTEXTILE AND FILTER FABRIC

PART 1 – GENERAL

1.1 DESCRIPTION:

- A. This section covers filter fabric to be used at various locations within the project area. Items include, but are not necessarily limited to:
 - 1. Procurement, storage and protection of all filter fabric.
 - 2. Preparation of fabric sub-grade.
 - 3. Installation, anchoring, and covering filter fabric.

1.2 RELATED WORK IN OTHER SECTIONS:

- A. Excavating, Filling and Grading: Section 02200
- B. Riprap for Rock Chutes: Section 02840
- C. Vegetated Geogrid: Section 02935
- D. Rock Structures for Stabilization: Section 03162

1.3 REFERENCES:

- A. The publications listed below form a part of this specification to the extent referenced. The latest revision of the following standards shall apply to work hereunder:
 - 1. ASTM D 1117: Standard Test Method for Water Absorption
 - 2. ASTM D 3786: Standard Test Method for Bursting Strength of Textile Materials
 - 3. ASTM D 4355: Standard Test Method for Deterioration of Geotextiles for Exposure to Ultraviolet Light and Water
 - 4. ASTM D 4632: Standard Test Method for Breaking Force and Elongation of Textile Fabrics
 - 5. ASTM D 4751: Standard Test Method for Apparent Opening Size
 - 6. ASTM D 4833: Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
 - 7. ASTM D 5035: Standard Test Method for Breaking Force and Elongation of Textile Fabrics
 - 8. ASTM D 5199: Standard Test Method Standard Test Method for Measuring the Nominal Thickness of Geosynthetics

- 9. ASTM D 5262: Standard Test Method for Plastics: Dynamic Mechanical Properties
- 10. ASTM D 6475: Standard Test Method for Measuring Mass Per Unit Area of Erosion Control Blankets
- 11. ASTM D 6637: Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Tensile Method

1.4 LINES AND GRADES:

- A. All placement of filter fabric shall conform to the lines and grades shown on the Drawings or on the plans.

PART 2 – PRODUCTS

2.1 FILTER FABRIC:

- A. Geotextiles shall be manufactured from randomly oriented synthetic long chain or continuous polymeric filaments or yarns (such as polypropylene, polyethylene, polyester, polyamide or polyvinylidene-chloride) bonded together by the needle-punched process. In addition, one side may be slightly heat-bonded. The geotextile shall be formed into a stable network of filaments or yarns that retain their relative position to each other; are inert to commonly encountered chemicals; and are resistant to ultraviolet light, heat, hydrocarbons, mildew, rodents and insects. The geotextile shall be free of any chemical treatment or coating that might significantly reduce its permeability and shall have no flaws or defects that significantly alter its physical properties.
- B. The filter fabric shall be Mifafi 160N or equivalent and meet the following minimum requirements:

PROPERTY	Test Method	Minimum Value
Tensile Strength	ASTM D 4632	160 lbs
Bursting Strength	ASTM D 3786	305 psi
Elongation	ASTM D 4632	> 50%
Puncture	ASTM D 4833	95 lbs
UV Resistance @ 150 hours	ASTM D 4355	70%
Apparent Opening Size	ASTM D 4751	#70 (max)

- C. Geogrid shall be manufactured from high molecular weight, high tenacity polyester multifilament yarns which are woven in tension and finished with a PVC coating. The geogrid shall be formed into a stable network of filaments or yarns that retain their relative position to each other; are inert to commonly encountered chemicals; and are resistant to ultraviolet light, heat, hydrocarbons, mildew, rodents and insects. The geogrid shall be free flaws or defects that significantly alter its physical properties.
- D. The geogrid material shall be Mirafi 3XT or equivalent and meet the following minimum requirements:

PROPERTY	Test Method	Minimum Value
Tensile Strength	ASTM D 6637	3500 lbs/ft.
Tensile Strength @ 5% Strain	ASTM D 6637	1056 lbs/ft.
Creep Reduced Strength	ASTM D 5262	2215 lbs/ft.
Grid Aperture Size	-	0.875 in
Grid Aperture Size – Cross	-	1.0 in.
Roll Width	-	12 ft.

E. Erosion Control Blanket (ECM) shall be N. American Green C125 or equivalent and manufactured from 100% coconut fiber matrix and have a functional longevity of approximately 36 months. The coconut fiber shall be evenly distributed over the entire area of the mat. The blanket shall be covered on top and bottom with heavy weight polypropylene netting having ultraviolet additives to delay breakdown. The ECB shall be free flaws or defects that significantly alter its physical properties.

F. The Erosion Control Blanket shall meet the following minimum requirements:

PROPERTY	Test Method	Minimum Value
MD Tensile Strength	ASTM D 5035	213.6 lbs/ft.
TD Tensile Strength	ASTM D 5035	208.80 lbs/ft.
TD Elongation	ASTM D 5035	25.50 %
Weight	ASTM D 6475	8.0 oz/yd ² .
Thickness	ASTM D 5199/ECTC	0.35 in.
Water Absorption	ASTM D 1117/ECTC	110%

G. The geotextile shall be shipped in rolls wrapped with a protective covering to keep out mud, dirt, dust, debris and direct sunlight. Each roll of geotextile shall be clearly marked to identify the brand, type and the individual production run.

2.2 STAPLES AND FASTENERS:

A. The Contractor shall provide staples, fasteners, pins, etc. that are biodegradable resin, polyethylene, or metal. Fasteners shall be a minimum of 3/16 of an inch in diameter and 12 inches in length. A flat washer shall be used with metal pins, and shall be a minimum of 1-1/2 inches in diameter.

PART 3 – INSTALLATION

3.1 GEOTEXTILE AND FILTER FABRIC:

A. The Contractor shall install materials as shown on the Drawings. ECB shall be installed in a directional manner as recommended by the manufacturer.

B. The Contractor shall assume a 20% scrap factor above that specified in the bid quantities (overlap and burial loss) for filter fabric. Material will be trenched at the top and bottom of the slopes and shall be installed to match the final graded contour of the riprap. A minimum lap of 24 inches is required if the fabric is installed in more than one piece or for splicing of

new rolls. The Contractor shall account for all scrap and trench-secured quantities in his/her quotation. Such quantities are considered incidental and non-payable for the project.

- C. Place filter fabric over entire bedding material as shown on the Drawings. The filter fabric shall be loosely laid (not stretched) such that it will conform to any minor surface irregularities. No cuts or punctures in the fabric will be permitted.
- D. The filter fabric shall be anchored to a minimum depth of 12 inches into the trench.
- E. The filter fabric shall not be left exposed for more than 48 hours.

3.2 STAPLES AND FASTENERS:

- A. Staples, fasteners, pins, etc. shall be installed as per the recommendations of the manufacturer.

3.3 FIELD QUALITY CONTROL:

- A. Notification: The Contractor shall notify the Engineer 24 hours prior to installation of any portion of the work to allow the Engineer sufficient time to inspect the work and shall obtain approval of all material prior to commencing construction. Any portion of the work installed without inspection may be removed to uncover sufficient portions of the work to allow inspection.

PART 4 – MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT:

- A. Work will be measured by square yards of material placed.

4.2 BASIS OF PAYMENT:

- A. The amount of work completed and approved, as stated above, shall be paid for subsidiary to the rock chute, vegetated geogrid, or other structure requiring geotextile or filter fabric.

END OF SECTION 02205