

SECTION 02279

FILTER FABRIC

1. PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Filter Fabric for Groundwater Infiltration Applications.
- B. Filter Fabric for Cobblestone Applications.
- C. Filter Fabric for Plain Riprap Applications and Concrete Box Culvert Joints.
- D. Filter Fabric for Heavy Riprap Applications.
- E. Filter Fabric for Articulated Concrete Mat Applications.

1.2 RELATED SECTIONS

- A. Section 02178 – Steel Sheet Pile Boring and Jacking Pits/Cofferdams.
- B. Section 02211 – Rough Grading.
- C. Section 02271 – Riprap Slope Protection.
- D. Section 02272 – Bag Riprap Headwalls.
- E. Section 02277 – Articulated Concrete Blocks.
- F. Section 02710 – Subdrainage Systems.
- G. Section 02715 – Lateral Tile Drains.
- H. Section 02722 – Storm Sewerage System.
- I. Section 02732 – Sanitary Sewerage System.

1.3 REFERENCES

- A. ASTM D-4632 - Test method for Tensile Strength and Elongation.
- B. ASTM D-3786 - Test method for Mullen Burst.
- C. ASTM D-4533 - Test method for Trapezoidal Tear Strength.
- D. ASTM D-3787 - Test method for Puncture Strength.
- E. ASTM D-4751 - Test method for Apparent Opening Size.
- F. ASTM D-4491 - Test method for Coefficient of Permeability.

1.4 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Filter Fabric:

1. Basis of Measurement: Included in unit price for plain riprap, plain riprap spillway, cobblestone streambed protection, field tile outlets, surface outlet tubes, drain crossings, cobblestone splash pad, check dams, sedimentation basins, storm sewer systems, or other Work item being accomplished, whichever applies.
2. Basis of Payment: Includes material, labor, and equipment for installation according to plans, specifications, and manufacturers instructions.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300 - Submittals.
- B. Submit shop drawings and product data for all items to be installed and/or constructed within this Section.
- C. Submit manufacturer's instructions for all product data.
- D. Submit manufacturer's certificate, which shall show actual test values obtained for the physical properties as tested for compliance with the specifications, for all product data.

2. PART 2 PRODUCTS

2.1 MATERIALS

- A. Mechanically bonded, non-woven, long-chain polymeric fibers or yarns. The edges of the fabric shall be finished to prevent the outer fiber from pulling away from the fabric.

1. Filter fabric for groundwater infiltration applications (french drains, trench drains, pipe joint wrap, etc.) and Division VI embankment filter fabric is to have, at minimum, the following properties:

Tensile Strength	100 lbs
Tensile Elongation (max)	100 %
Mullen Burst	210 psi
Trapezoidal Tear Strength	40 lbs
Puncture Strength	65 lbs
Apparent Opening Size (max)	70 sieve
Flow Rate	140 gal/min/ft ²

2. Filter fabric for cobblestone applications (cobblestone streambed protection, splash pads, etc.) to have, at minimum, the following properties:

Tensile Strength	120 lbs
Tensile Elongation (max)	100 %
Mullen Burst	230 psi
Trapezoidal Tear Strength	45 lbs
Puncture Strength	70 lbs
Apparent Opening Size (max)	70 sieve
Flow Rate	135 gal/min/ft ²

3. Filter fabric for plain riprap applications (riprap, riprap spillways, etc.) and concrete box culvert joints are to have, at minimum, the following properties:

Tensile Strength	155 lbs
Tensile Elongation (max)	100 %
Mullen Burst	315 psi
Trapezoidal Tear Strength	65 lbs
Puncture Strength	95 lbs
Apparent Opening Size (max)	70 sieve
Flow Rate	110 gal/min/ft
Open Area	

4. Filter fabric for heavy riprap applications is to have, at minimum, the following properties:

Tensile Strength	200 lbs
Tensile Elongation (max)	100 %
Mullen Burst	350 psi
Trapezoidal Tear Strength	75 lbs
Puncture Strength	100 lbs
Apparent Opening Size (max)	80 sieve
Flow Rate	95 gal/min/ft ²
Open Area	

5. Filter fabric for Jack and Bore Pits shall be ProPex 4535 or Engineer approved equal.

6. Filter fabric for Articulated Concrete Mat to have, at minimum, the following properties: (Consultation with the Articulated Concrete Mat Supplier is Recommended)

Grab Tensile Strength	200 lbs
Breaking Elongation (max)	30 %
Burst Strength	400 psi
Puncture Strength	115 lbs
A.O.S., U.S. Std. Sieve	See Block Supplier Design Manual
Percent Open Area	5 %
Permittivity	0.5 sec ⁻¹

- a. The filter fiber shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of propylene, ethylene, ester, or amide, and shall contain stabilizers and/or inhibitors added to the base plastic, if necessary, to make the filaments resistant to deterioration due to ultraviolet and heat exposure.
- b. Final acceptance of the filter fabric by the Engineer shall be dependent upon the geotextile performance when tested in accordance with ASTM D5105, Standard Test Method for Measuring the Soil-Geotextile System Clogging by the Gradient Ratio test or the Hydraulic Conductivity Ratio test.

3. PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify the correct fabric is specified for the specific use.
- B. At the time of installation, the filter fabric may be rejected at the discretion of the Engineer if it has been removed from its protective cover for over 72 hours or has defects, tears, punctures, flow deterioration, or damage incurred during manufacture, transportation or storage.
- C. No torn, punctured, or otherwise damaged fabric shall be installed.

3.2 PREPARATION

- A. Remove large stones or other debris, which could damage the filter fabric.

3.3 STORAGE

- A. During all periods of shipment and storage, the filter fabric shall be protected from abrasion, direct sunlight, ultraviolet rays, and temperatures greater than 140 degrees Fahrenheit (or as directed by the manufacturer). To the extent possible, the fabric shall be maintained wrapped in its protective covering.

3.4 INSTALLATION

- A. All joints/overlaps in material shall be a minimum of 2 feet.
- B. Any damaged material shall be repaired by placing a piece of fabric that is sufficiently large to cover the damaged area plus 2 feet of adjacent undamaged geotextile in all directions.
- C. Finish according to specific use requirements.
- D. Edges of filter fabric shall be toed in 12 inches unless specified otherwise. Work will not pass inspection if filter fabric is not "toed in."

END OF SECTION