

**NATURAL RESOURCES CONSERVATION SERVICE  
MISSOURI CONSTRUCTION SPECIFICATION**

**GEOTEXTILE**

**CODE 753**

**GENERAL**

This item of work shall consist of furnishing and installing the specified geotextile as shown on the drawings.

**STORAGE**

Before use, the geotextile shall be stored in a clean, dry location out of direct sunlight, not subject to extremes of either hot or cold temperatures, and with the manufacturer's protective cover undisturbed.

**SITE PREPARATION**

The work area shall be cleared of all timber, roots, vegetation, trash, stones or other items that may perforate the geotextile or separate the geotextile from the subgrade. Finished subgrade shall be firm soil that is reasonably smooth prior to placing geotextile.

**MATERIALS**

Fibers used in the manufacture of the geotextile shall consist of synthetic long-chain polyolefins, polyesters, or polyamides. Geotextiles will be grouped into woven and non-woven types. Geotextile type shall be as specified on the drawings.

**Woven Geotextiles**

When a woven geotextile is specified on the drawings it shall be a fabric formed by the uniform and regular interweaving of the threads or yarns in two directions. The fabric shall meet or exceed the requirements of Table 1.

**Table 1:**

<b>Requirements for Woven Geotextiles</b>	
<b>Material Property</b> <sup>1</sup>	<b>Requirement</b>
Tensile strength, weakest direction (D4632)	180 lbs min.
Elongation at failure (D4632)	50% max.
Mullen bursting strength (D3786)	300 psi min.
Ultraviolet resistance (D4355) (tensile strength retained)	70% min. at 150 hours
Puncture (D4833)	90 lbs min.
AOS-Standard sieve opening (D4751)	#70 min. to #20 max. <sup>2</sup>
Permittivity (D4491)	0.05/sec min. <sup>3</sup>

<sup>1</sup> The ASTM (American Society for Testing and Materials) reference number is in parenthesis.

<sup>2</sup> The AOS (apparent opening size) shall be #70 (0.212 mm) to #20 (0.850 mm) sieve size unless otherwise shown on drawings.

<sup>3</sup> Minimum 0.05/sec is equivalent to 4 gpm/ft<sup>2</sup> (gallons per minute per square foot).

**Non-Woven Geotextiles**

When a non-woven geotextile is specified on the drawings it shall be a fabric formed by the random placement of threads in a mat that is bonded by heat-bonding, resin-bonding or needle punching. The fabric shall meet or exceed the requirements of Table 2. Non-woven geotextile fabric weight (ounces per square yard) shall be as shown in Table 3 unless otherwise shown on the drawings.

**Table 2:**

<b>Requirements for Non-Woven Geotextiles</b>	
<b>Material Property</b> <sup>1</sup>	<b>Requirement</b>
Tensile strength, weakest direction (D4632)	150 lbs min.
Elongation at failure (D4632)	50% min.
Mullen bursting strength (D3786)	280 psi min.
Ultraviolet resistance (D4355) (tensile strength retained)	70% min. at 150 hours
Puncture (D4833)	80 lbs min.
AOS-Standard sieve opening (D4751)	#100 min. to #40 max. <sup>2</sup>
Permittivity (D4491)	0.70/sec min. <sup>3</sup>

<sup>1</sup> The ASTM (American Society for Testing and Materials) reference number is in parenthesis.

<sup>2</sup> The AOS (apparent opening size) shall be #100 (0.150 mm) to #40 (0.425 mm) sieve size unless otherwise shown on drawings.

<sup>3</sup> Minimum 0.70/sec is equivalent to minimum 50 gpm/ft<sup>2</sup> (gallons per minute per square foot).

**Table 3:**

<b>Minimum Non-Woven Geotextile Fabric Weight</b>	
<b>Fabric Weight</b>	<b>Armor Stone or Drainfill Material</b>
≥ 6 oz./sq. yd.	Sand, gravel, cobbles, hand placed concrete blocks
≥ 9 oz./sq. yd.	Riprap, D50 = 6 inch to < 12 inch
≥ 14 oz./sq. yd.	Riprap, D50 = 12 inch or larger and for important installations

**INSTALLATION****Surface Installation**

When installed on a prepared subgrade surface, the geotextile fabric shall be unrolled along the placement area and loosely laid without stretching in such a manner that it will conform to the surface irregularities when materials are placed on or against it.

Joints shall be made by overlapping fabric 18 inches and securely fastened to the ground by pins. Pins shall be placed a minimum of 2 inches from edge of fabric at spacing not to exceed 12 feet unless otherwise directed by engineer. Damaged areas shall be repaired by an overlay patch of fabric that extends a minimum of 2 feet beyond edge of damaged area. The patch overlap shall be securely pinned to ground.

Geotextile placed on slopes steeper than 10:1 shall be anchored at the top of the slope in a header trench. Unless otherwise shown on the drawings, the header trench shall be a minimum of 1 foot deep and 6 inches wide as shown in Figure 1. Place geotextile in header trench and backfill to lock the geotextile in place.

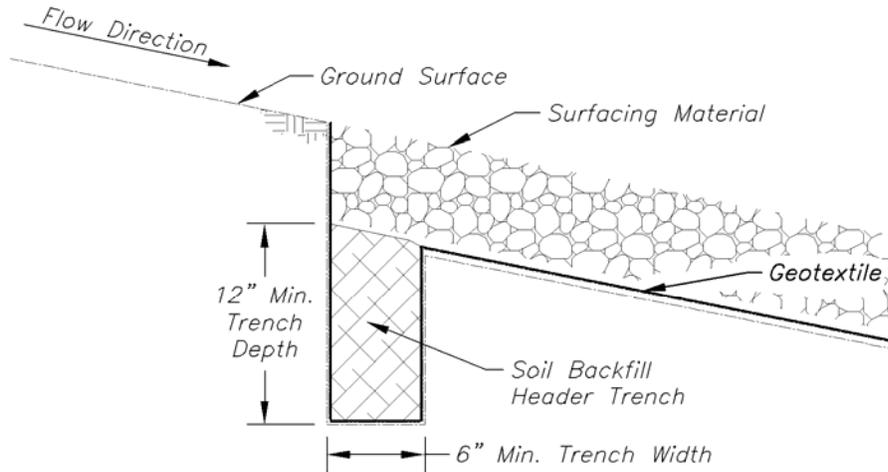
At lap joints going down the slope the uphill roll shall overlap the downhill roll a minimum of 18 inches and be securely pinned according to manufacturer's recommendations.

All geotextile unrolled shall be covered with the designated material the same working day.

Equipment shall not be operated on the fabric unless it has been covered to the final and finished depth with a surfacing material that is intended to support equipment loads.

Placement of rock shall be accomplished by equipment capable of controlling the drop. The maximum drop is three (3) feet. Rock shall not be pushed or rolled over the geotextile.

**Figure 1:**



*Typical Header Trench Detail*  
 (Unless otherwise shown on the drawings)

**Drain Trench or Envelope Installation**

When installed in a drainfill trench or as a drainfill filter envelope the fabric shall be placed, secured and joined as shown on the drawings.

The geotextile fabric shall not be placed until drainfill material can be used to provide cover within the same working day. Drainfill shall be placed in such a manner that prevents damage or excessive movement of the fabric from its planned location. In no case shall the drainfill material be dropped on to the fabric from a height greater than five (5) feet.

**Additional Details:** \_\_\_\_\_  
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