

Guidelines for Design and Field for Geotextiles Used On Top of Subgrades

6/12/2020

Background: In many cases type 5 geotextiles per 3733 are not the optimal option for pavements. They have low permittivity and provide little or no filtration or reinforcement. This guideline is for field and design staff for use of geotextiles at the top of the subgrade, or at the bottom of reclamation material in lieu of type 5 geotextiles.

This guideline was created by a committee made up of MRR Laboratory staff, and was reviewed by the Materials Engineers. Direct questions to the Grading and Base Engineer or the Foundations unit.

Follow the Table below for geotextile selection for the given soil type.

Geotextile	Soil Description	R-value	CBR (USACE, 1992)	DPI (DCP) mm	Recommended Geotextile
<i>Category 1</i>	good dry medium strong soils	Greater than 20	Greater than 6	Less than 20	Non-Woven MnDOT Type 7
<i>Category 2</i>	weak dry/damp soils	10 – 20	3 - 6	20 - 60	MnDOT Type 9
<i>Category 3*</i>	very weak and/or wet soils	Less than 10	Less than 3	Greater than 60	* As a minimum use: MnDOT Type 10

* Contact the Foundations, Grading and Base, and/or District Materials (for field personnel) to discuss project, as alternate geotextiles or designs may be better suited for the site conditions.

See the special provisions below for the 2018 spec book.

S-1 (2105) GEOTEXTILE FABRIC SPECIAL (MnDOT Type XXX)

Designer Note: This Special Provision is for 2018 Standard Specifications. Use with Special Provision 3733 Geotextile Fabric Special (MnDOT Type XX).

Comply with 2105.2C, 2105.3K, 2105.4C, and 2105.5B, and the following.

Add the following to 2105.5: The Geotextile Fabric Special will be paid for by using the pay item 2105.604 Geotextile Fabric Special (SQ YD).

S-2 (3733) GEOTEXTILE FABRIC SPECIAL (MnDOT Type 9)

Comply with 3733 and the following.

Add the following to 3733.2, "Requirements".

Provide a woven geotextile with the following attributes:

Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Tensile Strength at Ultimate	ASTM D4595	lbs/ft	3500	3200
Properties	Test Method	Unit	Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve	30	
Properties	Test Method	Unit	Minimum Roll Value	
Permittivity	ASTM D4491	Sec ⁻¹	0.8	
Flow Rate	ASTM D4491	Gal/min/ft ²	60	
Properties	Test Method	Unit	Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% Strength Retained	70	

Comply with the seam breaking strength requirement for type 5 in spec 3733.

S-3 (3733) GEOTEXTILE FABRIC SPECIAL (MnDOT Type 10, AASHTO Class 1A)

Comply with 3733 and the following.

Add the following to 3733.2, "Requirements".

Provide woven geotextile that meets the properties required in AASHTO M288 for Class 1A Enhanced Woven Geotextiles.