

SECTION 02320 - GEOSYNTHETICS

(Follow all instructions. If there are no instructions above a subsection, paragraph, sentence, or bullet, then include them in the project but make necessary modifications to only include project specific specifications. Delete specifications that do not apply to the project.)

Comply with Section 02320 of the Standard Specifications modified as follows:

~~(Use the following subsection .10(a-1) when temporary MSE retaining walls are included in project.)~~

~~02320.10(a-1) Geotextiles - In the bullet that begins "Meet or exceed...", add "or Table 02320-2" to the end of the bullet.~~

(Use the following subsection .10(a-2) when geogrids are included in project.)

02320.10(a-2) Geogrids - Replace this subsection, except for the subsection number and title, with the following:

Furnish geogrid reinforcements approved as Type 1 MSEW Geogrid on the QPL.

(Use the following subsection .10(c-1) when geogrids are included in project.)

02320.10(c-1) Level A - Manufacturer's Test Certification - Replace this subsection, except for the subsection number and title, with the following:

Furnish test result certificates according to 00165.35 from the geosynthetic manufacturer and the following:

a. Geotextiles - For geotextiles, include the following:

- Minimum average roll values and average roll values for each of the specified properties from the same production run as the delivered material.
- Test results for factory seams.
- Production run number, production plant name and location.

b. Geogrids - For geogrids, include the following:

- Minimum average roll values and average roll values for each of the specified properties from the same production run as the delivered material.
- Production run number, production plant name, and location.
- Manufacturer's name and address.
- Full product name and information.
- QPL Product Category and the Standard Specification subsection number.
- Retaining wall location referencing the drawing name, detail, and structure number.
- Polymer types for geogrid and coating, if present.

- Primary resin type, class, grade, and category for HDPE (ASTM D 1248) and PP (ASTM D 4101).

If the geosynthetic material is modified, remanufactured, relabeled or sewn, furnish an additional certificate from the supplier making the changes that explain the altered properties, seam strength or relabeling.

(Use the following subsection .10(d-2) when geogrids are included in project.)

02320.10(d-2) Testing - Replace this subsection title with the title "**Geotextile Testing**".

(Use the following lead-in paragraph and subsection .10(d-3) when geogrids are included in project.)

Add the following subsection:

02320.10(d-3) Geogrid Testing - Provide laboratory test results that demonstrate the average roll value for each geogrid product is greater than or equal to the geogrid ultimate wide width tensile strength reported for the initial geogrid product evaluation and approval on the QPL. Determine the ultimate wide width tensile strength (T_{ult}) according to ASTM D 6637. If the average roll value for each geogrid reinforcement product is less than the geogrid ultimate wide width tensile strength identified on the QPL, the entire production run will be rejected.

02320.20 Geotextile Property Values - Replace Table 02320-1 with the following table:

Table 02320-1 Geotextile Property Values

Geotextile Property	Test Method	Units	Drainage Geotextile ^{1, 2}		Riprap Geotextile ^{1, 3}		Sediment Fence Geotextile			Subgrade Geotextile ⁴		Embankment Geotextile	Pavement Overlay Geotextile ¹
			Type 1	Type 2	Type 1	Type 2	Supported	Unsupported		Elongation ≥ 50% ⁵	Elongation < 50% ⁵		
							—	Elongation ≥ 50% ⁵	Elongation < 50% ⁵				
Grab Strength (minimum) Machine Direction Cross Machine Direction	ASTM D 4632	lb	110 110	180 180	200 200	315 315	90 90	120 100	120 100	180 180	250 250	260 260	80 80
Grab Failure Strain Machine and Cross Machine Directions	ASTM D 4632	%	≥ 50	< 50	≥ 50	< 50	—	—		≥ 50	< 50	—	≥ 50
Tear Strength ⁶ (minimum)	ASTM D 4533	lb	40	70	80	110	—	—		60	90	95	—
Puncture Strength (minimum)	ASTM D 6241	lb	225	370	435	620	—	—		310	500	530	—
Sewn Seam Strength (minimum)	ASTM D 4632	lb	100	160	180	285	—	—		165	225	235	—
Apparent Opening Size (AOS) (maximum) U.S. Standard Sieve	ASTM D 4751	—	No. 7050		No. 7050		No. 30	No. 30		No. 30		No. 30	—
Permittivity (minimum)	ASTM D 4491	sec ⁻¹	0.5		0.5		0.05	0.05		0.02		0.02	—
Ultraviolet Stability Retained Strength (minimum)	ASTM D 4355 At 500 hours	%	50		70		70	70		50		50	—
Asphalt Retention (minimum)	ODOT TM 817	oz/sq ft	—		—		—	—		—		—	2.8
Melting Point (minimum)	ASTM D 276	°F	—		—		—	—		—		—	300

Notes:

¹ Woven slit film geotextiles ([geotextiles](#) that are made from yarns of a flat, tape-like character) are not acceptable.

² Geotextile properties assume Class 3 (less severe) installation conditions (AASHTO M 288).

³ Geotextile properties assume Class 1 (harsh or severe) installation conditions (AASHTO M 288).

⁴ Geotextile properties assume Class 2 (moderate) installation conditions (AASHTO M 288).

⁵ Measured according to ASTM D 4632.

⁶ ~~Minimum required MARV strength for woven geotextiles is 60 pounds.~~

(Use the following lead-in paragraph and table when temporary MSE retaining walls are included in project.)

Add the following table after Table 02320-1:

Table 02320-2 Geotextile Property Values for Temporary MSE Wall Applications

Geotextile Property	Test Method	Units	Geotextile Property Requirements	
			Weaven	Nonweven
Grab Strength (minimum) — Machine and Cross — Machine Directions	ASTM D 4632	lb	200	160
Sewn Seam Strength (minimum)	ASTM D 4632	lb	180	140
Puncture Resistance (minimum)	ASTM D 6244	lb	370	220
Tear Strength (minimum)	ASTM D 4533	lb	70	50
Grab Failure Strain — Machine and Cross — Machine Directions	ASTM D 4632	%	<50	≥50
Apparent Opening Size (AOS) (maximum) U.S. Standard Sieve	ASTM D 4754	—	No. 20	No. 20
Permittivity (minimum)	ASTM D 4494	Sec ⁻¹	0.02	0.02
Ultraviolet Stability Retained Strength (minimum)	ASTM D 4355 At 500 hours	%	70	70