

Geogrid reinforcement material for roadway base applications shall be a bi-axial polymer grid structure, specifically fabricated for use as a base reinforcement. The geogrid shall be one of the following structure types:

- (A) A structure comprised of punched and drawn polypropylene or high density polyethylene sheet to form a grid.
- (B) A structure comprised of high density polyethylene or polypropylene extruded to form a grid.

The geogrid shall have high tensile strength and modulus in both principal directions, perpendicular to each other. The geogrid polymer materials shall contain stabilizers or inhibitors or shall be coated or encapsulated to prevent degradation of properties due to ultraviolet light exposure. The polymer shall also be inert to all naturally occurring alkaline and acidic soil conditions. The geogrid material shall additionally conform to the following physical requirements:

Property	Requirement	Test Method
Average Aperture Size: inch MD, Note (2) XD, Note (3)	0.8 - 2.0 0.8 - 2.0	I.D. Calipered, (1)
Open Area: %	70 min., (4)	COE Method, (5)
Weight: oz./yd.	5.5 min.	ASTM D 3776
Thickness: mils At Rib At Junction	30 min. 60 min.	ASTM D 1777
Wide Width Strip Tensile Strength: lb./ft. At 2% Strain At 5% Strain At 15% Strain or Ultimate	275 min. 550 min. 800 min.	ASTM D 4595
Flexural Rigidity: mg-cm	250,000 min.	ASTM D 1388
Junction Strength: %	80 min.	ASTM D 638 Mod,(6)

- (1) Maximum inside dimension in each principal direction measured by calipers.
- (2) MD-Machine direction which is along roll length.
- (3) XD-Cross machine direction which is across the roll width.
- (4) Minimum - Average value in weaker principal direction. All numerical values represent minimum average roll values, i.e., the average test result in the weaker principal direction shall meet or exceed minimum values listed when sampled according to ASTM D 4354 and tested according to the test method specified above.
- (5) Percent open area measured without magnification by the Corps of Engineers Method as specified in CW 02215, Civil Works Construction Guide, November 1977.
- (6) Junction strength is measured as a percent of ultimate single rib strength by tensile loading test ASTM D 638 modified to clamp the horizontal and

Property	Requirement	Test Method
vertical ribs of a "T" shaped specimen, with the grid junction forming the cross of the "T", and with a constant rate of extension of the specimen applied across the junction at a rate of two inches per minute at a temperature of 68 degrees F.		

The width of the geogrid shall normally be approximately 13 feet or as appropriate for the proposed construction. Longitudinal geogrid joints shall meet the same location requirements shown in Subsection 406-6 for pavement joints.

1014-4 Separation Geotextile Fabric:

Separation geotextile fabric shall be a non-woven or woven fabric consisting only of long chain polymeric filaments such as polypropylene or polyester formed or woven into a stable network such that the filaments retain their relative position to each other. The fabric shall be inert to commonly encountered chemicals, resistant to rot and mildew, and shall have no tears or defects which adversely affect or alter its physical properties. The physical requirements for the separation fabric will be determined by the survivability rating called out for the fabric in the Special Provisions or as shown on the project plans. Physical requirements for nonwoven or woven fabrics for each survivability rating are listed in Subsections 1014-4.01, 1014-4.02, 1014-4.03, and 1014-4.04.

1014-4.01 Low Survivability Fabric:

(A) Nonwoven:

Low survivability, nonwoven separation fabric shall meet the following minimum average roll values:

Property	Requirement	Test Method
Grab Tensile Strength: lbs.	90	ASTM D 4632
Grab Elongation at Break: %	45 min., 115 max.	ASTM D 4632
Puncture Strength: lbs.	30	ASTM D 4833
Burst Strength: psi	130	ASTM D 3786
Trapezoidal Tear: lbs.	30	ASTM D 4533
Permittivity: second ⁻¹	0.07	ARIZ 730
Apparent Opening Size: U.S. Standard sieve size	30 - 140	ASTM D 4751
Ultraviolet Stability: %	70	ASTM D 4355

Minimum average roll values represent the average test results for a lot in the weaker direction when sampled according to ASTM D 4354 and tested according to the test method specified above. If the average grab elongation of the fabric is greater than 115 percent at break, the elongation will be acceptable if the grab tensile strength requirement is met prior to or at 115 percent elongation.

(B) Woven: