03060 Geotextiles and Geogrids

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***Bold text denotes a change in this version (February 2022)**

03060-1 Description

Work under these specifications shall include the supplying and installation of geotextile and geogrid material that meets all requirements shown for each classification.

03060-2 Materials

2.1 Geotextiles

The use of Geotextile may be needed to act as a platform to place the granular material on the roadway. This material will be placed on the subgrade and covered with a minimum of 300mm of granular material.

The woven Geotextile shall have a minimum grab tensile strength of 1.4kN and a minimum puncture resistance of 0.7kN.

Measurement and payment for the Geotextile will be on a unit price basis per square metre of finished horizontal placement area and include all material, labour, equipment and superintendence to supply and place as per the manufacturer's recommendations

Geotextiles come in a variety of structures and polymer compositions. The main functions of geotextiles are; separation, reinforcement, filtration, drainage, and protection. There are two types of geotextiles which the contractor will be permitted to use; Woven and Non-Woven (Needle Punched) fabrics.

2.1.1 Woven Geotextiles

Physical properties for woven geotextiles shall meet the following requirements:

Table 1: Physical Property Requirements for Woven Geotextiles

Properties	**Test Method**	**Units**	**Woven Geotextile Specification**
Grab Tensile Strength	ASTM-D 4632	kN	1.4
Trapezoid Tearing Strength	ASTM-D 4533	kN	0.5
CBR Puncture	ASTM-D 6241	kN	6.0
Permittivity	ASTM-D 4491	sec^{-1}	0.7

2.1.2 Non-Woven Geotextiles

Physical properties for non-woven geotextiles shall meet the following requirements:

Table 2: Physical Property Requirements for Non-Woven Geotextiles

Properties	**Test Method**	**Units**	**Non-Woven Geotextile Specification**
Grab Tensile Strength	ASTM-D 4632	kN	0.80
Trapezoid Tearing Strength	ASTM-D 4533	kN	0.35
CBR Puncture	ASTM-D 6241	kN	2.2
Permittivity	ASTM-D 4491	sec^{-1}	1.5

All non-woven geotextiles shall be a needle punched fabric.

2.2 Geogrids

Geogrids come in a range of polymer type and cross-sectional dimensions and are to be used when specified by the engineer for reinforcement. When the geogrid has been installed apertures (openings) between the longitudinal and transverse elements allow soil particles on either side to come into direct contact thus increasing the interaction between the geogrid and the soils above and below.

Physical properties for geogrids shall meet the following requirements:

Table 3: Physical Property Requirements for Geogrids

Properties	**Test Method**	**Units**	**Geogrid Specification**
Aperture Size	Measured	mm	25-40
Tensile Strength @ 5% Strain	ASTM-D 6637	kN/m	11 (in weakest direction)
Ultimate Tensile Strength	ASTM-D 6637	kN/m	17 (in weakest direction)
Junction Efficiency	GRI-GG2-05	%	90

All geogrids shall be a bi-oriented geogrid.

2.3 Biaxial Geogrid with Integrated Non-woven Geotextile

Where specified, Biaxial Geogrid shall be provided meeting the following properties:

- Polypropylene extruded monolithic flat structured bars

- Integrated non-woven geotextile
- Square shaped apertures
- Welded rigid junctions

Table 4: Biaxial Geogrid Specification

Properties	**Test Method**	**Units**	**Geogrid Specification**
Aperture Size	EN ISO 10319	mm	31x31
Tensile Strength @ 5% Strain	EN ISO 10319	kN/m	32
Ultimate Tensile Strength	EN ISO 10319	kN/m	40

Table 5: Non-Woven Geotextile Specification

Properties	**Test Method**	**Units**	**Geotextile Specification**
Mass per unit area	EN ISO 9864	g/m²	≥150
Grab Tensile Strength	EN ISO 10319	kN/m	7.5
Puncture Force	EN ISO 12236	N	1670

03060-3 Construction

The contractor will supply and install, when directed to do so by the engineer, a geotextile (woven or non-woven) or geogrid between the specified structural material (sub-grade, sub-base, base).

The geotextile or geogrid after placement will lie flat and free of wrinkles, and the contractor will ensure that it remains flat during placement of the overlying material. The geotextile or geogrid will be overlapped by 300mm along the seams.

03060-4 Measurement

Measurement will be based upon surface area (m^2) covered by the geotextile or geogrid.

03060-5 Payment

Payment will be full compensation for labour, materials and equipment required to supply and install the geotextile or geogrid material and shall be at the contract unit price per square metre (m^2) as specified on the tender form.

End of Specification 03060

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