GEOSYNTHETICS

Geosynthetics are polymeric materials used in combination with soil and rock as an integral component of a construction project, structure, or system. Geotextiles and geogrids are two specific types of geosynthetic. Most are made from polypropylene, polyester, and polyethylene.

GEOTEXTILES – NON-WOVEN/WOVEN

Geotextiles are fabrics manufactured either from individual fibers (monofilaments), or from yarns which comprise many fibers (multifilaments). The round filament may be long (a continuous monofilament) or short (a stable fiber). Some continuous monofilaments are produced as tape (a slit-film monofilament).

Nonwoven geotextiles consist of continuous monofilaments or staple fibers. Needle-punched nonwoven geotextiles are composed of random fibers that are physically entangled by punching with needles. Heat-bonded nonwovens comprise random fibers that are pressed and melted together at the contact points.

Woven geotextiles consist of continuous monofilaments, staple fibers, multifilament yarns, or slit films that are woven into a fabric.

GEOTEXTILE FOR MATERIAL SEPERATIONS AND FILTRATION

Geotextile for material separation and filtration is used to prevent mixing of a subgrade soil and an aggregate cover material but allow water to flow through.
Any product that meets the requirements of Alberta Transportation Standard Specifications for Highway Construction, Section 5.31.4.1 Separation and Filtration Geotextile Applications qualifies under this section.

GEOTEXTILE FOR STABILIZATION

Geotextile for stabilization is used in wet, saturated conditions to provide the coincident functions of separation, filtration, confinement, and reinforcement of embankment.
Any product that meets the requirements of Alberta Transportation Standard Specifications for Highway Construction, Section 5.31.4.2 Stabilization Geotextile Applications qualifies under this section.

GEOTEXTILE FOR SUBSURFACE DRAINAGE

Geotextile for subsurface drainage is used in an application in which a geosynthetic is placed against a soil to allow long-term passage of water into a subsurface drain system while retaining the in-situ soil. The primary function of the geotextile is to provide filtration.
Any product that meets the requirements of Alberta Transportation Standard Specification for Highway Construction, Specification 5.31.4.3 Subsurface Drainage Geotextile Applications qualifies under this section.

GEOTEXTILE FOR EROSION AND SEDIMENT CONTROL

Geotextile for erosion and sediment control is used in an application in which a geotextile is placed between an energy absorbing hard-armour system (e.g., rip/rap or cable concrete mattress) and the in-situ soil to prevent soil loss (scour) and to prevent hydraulic uplift pressures causing instability of the permanent erosion control system.
Any product that meets the requirements of Alberta Transportation Standard Specifications for Highway Construction, Section 5.31.4.4 Erosion Control Geotextile Applications or Alberta Transportation Specifications for Bridge Construction, Section 10 Heavy Rock Riprap qualifies under this section qualifies under this section.

Filter Material (for Perforated Pipe Subdrains)

Filter material shall be composed of hard, durable mineral particles free from organic matter, clay balls, soft particles and other deleterious materials.

PROVEN PRODUCTS	TRIAL PRODUCTS	POTENTAIL PRODUCTS
Designation 8 Class 25		

GEOGRIDS

Geogrids consist of a regular network of tensile elements (longitudinal and transverse ribs) and open apertures. Uniaxial geogrids exhibit rectangular apertures. Biaxial geogrids exhibit approximately square apertures. TriAx geogrids consist of 3 principal directions of elements as well as open apertures which may be triangular or with the combination of other shapes.

- **Extruded geogrids** are made from extrusion and drawing of perforated sheet, yielding a relatively inflexible grid with rigid junctions.
- **Woven and knitted geogrids** are made from interweaving the junctions of oriented fibres or yarns, which are then coated, yielding a relatively flexible grid with deformable junctions.
- All geogrid applications must be properly designed by a Professional Engineer (registration with APEGGA). The use of extensible reinforcement in MSE Bridge abutments and wingwall applications shall conform to requirements of Alberta Transportation *Standard Specifications for Bridge Construction*, Section 25, Mechanically Stabilized Earth Wall.

PAVEMENT APPLICATION

Unpaved design – the design must be based on the Giroud-Han Method. Proper calibration and in-situ validation testing must be performed for the geogrid reinforcement utilized in the mechanically Stabilized Layer.

Paved Design – The design must be based on the AASHTO 1993 Pavement Design Guide and utilizes modified layer coefficients that have been properly calibrated, tested in-situ and validated for the geogrid reinforcement utilized in the Mechanically Stabilized Layer.

REVIEWED PROPRIETARY PRODUCTS - UNI-AXIAL GEOGRID

Reviewed		
Tensar Uni-axial Series UX1100, UX1400, UX1500, UX1600, UX1700 (Re-review Date: Dec. 2035)	Maccaferri; WG Series (WG06,WG8, WG09, WG11, WG15 & WG20) (Re-review Date: Dec. 2035)	Hockgrid Geogrids (HKGX 300/30, HKGX 800/50, HKGX 800/100, HKGX 1200/100) (Re-review Date: Dec. 2035)
Layfield Geogrid Uni-Axial (Pet) T-Series (LP 120T) (Re-review Date: Dec. 2035)	Maccaferri ParaLink Series (Re-review Date: Dec. 2035)	Strata Grid (SGU) Series (Re-review Date: Dec. 2035)
Layfield E'grid Uni-Axial HDPE Series (170R) (Re-review Date: Dec. 2035)	Maccaferri ParaGrid Series (Re-review Date: Dec. 2035)	Synteen SF Series Uniaxial Geogrids (Re-review Date: Dec. 2035)

Miragrid XT-Series (Re-review Date: Dec. 2035)	Titan Pyramid Grid (100, 120, 150) (Re-review Date: Dec. 2035)	

REVIEWED PROPRIETARY PRODUCTS - BI-AXIAL GEOGRIDS

Reviewed		
Tensar Biaxial Series (Type 1, Type 2) (Re-review Date: Dec. 2035)	Alliance Geo BX type 2 Geogrids (Re-review Date: Dec. 2035)	Tensar Amerigrid BX11 and BX12 Bi-Axial Geogrids (Re-review Date: Dec. 2035)
Terrafix Biaxial Geogrids TBX1500 (Re-review Date: Dec. 2035)	MacGrid Geogrids EG Series (Re-review Date: Dec. 2035)	Layfield E'Grid 2020 and 2030 (Re-review Date: Dec. 2035)
Terrafix Biaxial Geogrids TBX2000 (Re-review Date: Dec. 2035)	BOSTD SX1515, SX2020, SX3030 Geogrids (Re-review Date: Dec. 2035)	Layfield RX Series Geogrid PP (Re-review Date: Dec. 2035)
Terrafix Biaxial Geogrids TBX2500 (Re-review Date: Dec. 2035)	Tensar Amerigrid BX3030 (Re-review Date: Dec. 2035)	Terrafix Biaxial Geogrids TBX11 (Re-review Date: Dec. 2035)
Terrafix Biaxial Geogrids TBX3000 (Re-review Date: Dec. 2035)	CCIS -1515 and CCIS - 2525 (Re-review Date: Dec. 2035)	Terrafix Biaxial Geogrids TBX12 (Re-review Date: Dec. 2035)
Titan Earth Grids 16, 24, 25, 30 (Re-review Date: Dec. 2035)	Mirafi BXG110 and BXG120 (Re-review Date: Dec. 2035)	Alliance Geo BX type 1 Geogrids (Re-review Date: Dec. 2035)

REVIEWED PROPRIETARY PRODUCTS - TRI-AXIAL GEOGRIDS

Reviewed		
Tensar TriAx Geogrids TX5, TX7, TX160 (Re-review Date: Dec. 2035)	Tensar Multiaxial Geogrids Inter Ax Series (Re-review Date: Dec. 2035)	Tensar Multiaxial Geogrids H-Series (Re-review Date: Dec. 2035)
Terrafix Triangular Geogrid TTX – 7, TTX130 & TTX160 (Re-review Date: Dec. 2035)		

REVIEWED PROPRIETARY PRODUCTS - GEOGRID AND GEOTEXTILE COMPOSITE GEOSYNTHETICS

Reviewed		
Naue Combigrid 30/30 (Re-review Date: Dec. 2035)	Titan Swamp Grids 20 and 30) (Re-review Date: Dec. 2035)	QuikGrid 30 -150, QuikGrid30 - 200 and QuikGrid 40 (Re-review Date: Dec. 2035)
MacGrid CG 20, 30 and 40 (Re-review Date: Dec. 2035)	CCIS - 3131 (Re-review Date: Dec. 2035)	Terrafix TGC Composite Geogrid (3030-4, 3030-6, 4040-6) (Re-review Date: Dec. 2035)
		Terrafix TTXG-160 (Re-review Date: Dec. 2035)

GEONET / GEOCOMPOSITE / WICK DRAIN

Geocomposite — A manufactured material using geotextiles, geogrids, geonets, and/or geomembranes in laminated or composite form.

Geonet — A geosynthetic consisting of integrally connected parallel sets of ribs overlying similar sets at various angles for planar drainage of liquids or gases.

Wick Drain — Consists of a central plastic core, which functions as a free-draining water channel, surrounded by a thin geosynthetic filter jacket. It is used to create an artificial drainage path. It is also called prefabricated vertical drain or band drain.

PROVEN PRODUCTS	TRIAL PRODUCTS	POTENTIAL PRODUCTS
Multi-Flow Report (Re-review Date: Dec. 2035)		
Wick Drain (Re-review Date: Dec. 2035)		Maccaferri ParaDrain Series (Expiry Date: Aug. 2025)
Tencate Mirafi H2Ri (Re-review Date: Dec. 2035)		TerraTex DriBase Wicking Geotextile (Expiry Date: Jan. 2028)

GEOSYNTHETIC CLAY LINER (GCL)

A geocomposite product of processed clay (typically bentonite) either bonded to a geomembrane or fixed between sheets of geotextile.

PROVEN PRODUCTS	TRIAL PRODUCTS	POTENTIAL PRODUCTS

GEOMEMBRANE

A continuous sheet of material, whether prefabricated as a flexible polymeric sheeting or sprayed or coated in the field, such as a sprayed-on asphalt.

CANAL LINER

PROVEN PRODUCTS	TRIAL PRODUCTS	POTENTIAL PRODUCTS
Coletanche ES (Re-review Date: Dec. 2035)		
Reinforced Polyethylene Liner RPE11BB (Re-review Date: Dec. 2035)		
Siplast Teranap Geomembrane **REPORT** (Re-review Date: Dec. 2035)		

GEOSYNTHETIC CELLULAR CONFINEMENT SYSTEMS

See Cellular Confinement Systems category in STABILIZATION (Soil) for soil stabilization purpose or Cellular Confinement Systems category in EROSION AND SEDIMENT CONTROL SYSTEMS for erosion and sediment control purpose.