1.0 GENREAL

1.1 [REFERENCES]

.1 Provide soil erosion protection in accordance with the following standards (latest revision) except where specified otherwise.

.2 American Society for Testing and Materials (ASTM)

.1	ASTM D4355	Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus.
.2	ASTM D4533	Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
.3	ASTM D4595	Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
.4	ASTM D4632	Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
.5	ASTM D4751	Standard Test Method for Determining Apparent Opening Size of a Geotextile.
.6	ASTM D4833	Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products.

1.2 SUBMITTALS

.1 Provide the following submittals.

.2 Product data at least 30 days prior to delivering the materials to the Site.

.3 Manufacturer's written instructions for handling, storing and installing materials prior to performing the work.

1.3 DELIVERY, STORAGE, AND HANDLING

.1 Inspect each shipment of material and timely replace any damaged materials.

.2 Handle and store products in accordance with the manufacturer's written instructions and protect them from damage, contamination, or deterioration. Store all packaged or bundled products in their original packaging. Do not remove products from the packaging or bundling until required.

2.0 PRODUCTS

2.1 MATERIALS

.1 Provide materials in accordance with the following.

.2 Silt Fences:

.1 Silt fence consisting of a woven polypropylene fabric having the following physical properties:

Property	Requirement	Test Method
Mass Per Unit Area	[ ] g/m^2	
Grab Tensile (MD/CD)	[ ] N	[ASTM D4632]
Grab Elongation (MD/CD)	[ ] %	[ASTM D4632]
Trapezoidal Tear Strength	[ ] N	[ASTM D4533]
Puncture Strength	[ ] N	[ASTM D4833]
Apparent Opening Size	[ ] microns	[ASTM D4751]
Ultraviolet Resistance (min.)		[ASTM D4355]

OR

.2 Fence fabric consisting of a woven polypropylene fabric. Products and manufacturers include [ ].

.3 [50 mm by 50 mm] wooden stakes.

.4 [wire mesh] backing to support the fence fabric.

.3 Straw Crimping Material: Flexible oat straw free of weeds, and growth and germination inhibiting ingredients, in a form suitable for crimping.

.4 Hydro-Mulch and Tackfier:

.1 Hydro-Mulch: Wood or wood cellulose fibre mulch, 100% biodegradable, compatible with the environment, free of growth and germination inhibiting factors, free of weeds, and free of other deleterious matter.

.2 Tackifier: A polymer or resin tackifier, for use with the mulch, capable of joining the mulch particles together and securing the mulch to the ground.

.3 Provide hydro-mulch and tackifier that does not form an impervious seal which prevents moisture from reaching the underlying soil.

.4 Water: Free of impurities that would inhibit or adversely affect germination and growth.

.5 Application rate:

.1 Apply the hydro-mulch at the rate [of 1150 kg/hectare] [recommended by the manufacturer],

.2 Apply the tackifier at the rate recommended by the manufacturer.

.5 Natural Fibre Blankets:

.1 Blanket consisting of 100% agricultural straw layered with [2 photodegradable polypropylene nets, and having a minimum mass of [ ] g/m^2.] Products and manufacturers include [ ].

.2 Blanket consisting of 30% agricultural straw and 70% coconut fibre layered with [a photodegradable polypropylene top net and a UV stabilized bottom net, and having a minimum mass of [ ] g/m^2.] Products and manufacturers include [ ].

.3 Blanket consisting of 100% coconut fibre layered with [2 UV stabilized polypropylene nets, and having a minimum mass of [ ] g/m^2.] Products and manufacturers include [ ].

.6 Synthetic Fibre Blankets:

.1 Blanket consisting of 100% agricultural straw layered with 2 photodegradable polypropylene nets, and having a minimum mass of [ ] g/m^2. Products and manufacturers include [ ].

.7 Natural Fibre Mats:

.1 Mats consisting of biodegradable woven jute with an open area of [ ]% and a minimum mass of [ ] g/m^2. Products and manufacturers include [ ].

.8 Synthetic Fibre Mats:

.1 Turf reinforcement mat consisting of a 3 dimensional structure formed by mechanically securing 2 high strength and high modulus bi-axially oriented grid above and below a corrugated centre grid, and manufactured from UV stabilized polypropylene or polyolefin fibres.

.2 Turf reinforcement mat to have the following physical properties:

Property	**Requirement**	**Test Method**
Mass Per Unit Area	[ ] g/m^2	
Tensile Strength	[ ] kN/m	[ASTM D 4595]
Tensile Elongation	10% min., [ ]% max.	[ASTM D 4595]
UV Resistance @ 1000 hours	80%	[ASTM D 4355]
Ground Cover Factor	[ ]%	[Light Projection Analysis]

OR

.3 Products and manufacturers include [ ].

.9 Cellular Confinement System:

.1 [Perforated] [Non-perforated] honeycombed high density polyethylene cell confinement system fabricated from minimum [1.25] mm thick UV stabilized polyethylene sheet. Minimum density of polyethylene to be [0.96] g/cm^3. Cell size [mm by mm by mm deep] when expanded. Products and manufacturers include [ ].

.10 Anchors:

.1 Staples or other anchors as recommended by the [blankets] [mats] manufacturer.

.2 Mild steel J-pin anchors or rebar fitted with Atra clips for the honeycombed polyethylene cell confinement system.

.11 [ ].

3.0 EXECUTION

3.1 INSTALLATION - GENERAL

.1 Install soil erosion protection at the locations and areas, and to the lines, grades, slopes, and elevations specified in the Contract Documents.

.2 Install soil erosion protection materials in accordance with the manufacturer's written instructions.

.3 Prepare receiving surfaces in accordance [with the Contract Documents] [with the manufacturer's written instructions] and have them inspected by the Minister prior to installing soil erosion protection materials. Rectify defects.

.4 Do not allow any construction equipment or vehicles to travel on the soil erosion protection materials. Replace any materials that are damaged or displaced.

3.2 SILT FENCE

.1 Anchor the bottom of the fabric by excavating a 150 mm deep trench, placing the fabric, and backfilling as specified in the Contract Documents.

.2 Drive stakes into the ground as specified in the Contract Documents.

.3 Install [wire mesh backing and] the fabric.

.4 Inspect, maintain, remove and dispose silt fencing as specified in Section 01392 – Environmental Management.

3.3 CRIMPING

.1 Carry out straw crimping after Topsoil placement and seeding are completed.

.2 Use equipment fitted with notched coulter blades or other straw crimping equipment as authorized by the Minister.

.3 Spread oat straw at [2.0] tonnes/hectare on areas to be crimped.

.4 Push straw 50 mm into the ground to form rows [200] mm apart. Crimp evenly so that the straw is folded, not broken, and the ends are nearly vertical.

3.4 HYDRO-MULCH AND TACKIER

.1 Measure the quantities of materials by weight.

.2 Use hydraulic application equipment including slurry tank, agitation system, pumps, hoses, and nozzles.

.3 Apply the materials during calm weather.

.4 Add materials into the hydraulic applicator under agitation to produce a thoroughly mixed slurry.

.5 Apply the slurry uniformly, and at the optimum angle for adherence to surfaces.

3.5 FIBRE BLANKETS

.1 Install blankets after Topsoil placement and seeding are completed.

.2 Anchor the blanket at the top of the slope by excavating a trench, installing the blanket, and backfilling as specified in the Contract Documents. Unroll the blankets in a [downslope] [downstream] direction.

.3 Place blankets loosely and in full contact with the ground.

.4 Overlap the side edges of adjacent blankets so that they are shingled away from the [prevailing wind] [water flow] direction. Provide a minimum overlap of [150] mm.

.5 Overlap the bottom edge of the [upslope] [upstream] blanket on top of the top edge of the [lower] [downstream] blanket. Provide a minimum overlap of [300] mm.

.6 Staple or anchor edges in accordance with the manufacturer's written instructions.

3.6 FIBRE MATS

.1 Install mats after Topsoil placement and seeding are completed.

.2 After installation, fill the mat structure with 15 to 20 mm of Topsoil.

.3 Anchor the mat at the top of the slope by excavating a trench, installing the mat, and backfilling as specified in the Contract Documents. Unroll the mats in a [downslope] [downstream] direction.

.4 Place the mat loosely and in full contact with the ground.

.5 Overlap the side edges of adjacent mats so that they are shingled away from the [prevailing wind] [water flow] direction. Provide a minimum overlap of [150] mm.

.6 Overlap the bottom edge of the [upslope] [upstream] mat on top of the top edge of the [lower] [downstream] mat. Provide a minimum overlap of [300] mm.

.7 Staple or anchor edges in accordance with the manufacturer's written instructions.

3.7 POLYETHYLENE CELL

.1 Place the polyethylene cell on the subgrade and expand it in the downslope direction. Use anchors to correctly position, align, and uniformly expand the polyethylene cell to the required dimensions.

.2 Join adjacent cell panels using galvanized staples is accordance with the manufacturer's written instructions.

.3 Avoid displacement of the expanded cells by placing Topsoil starting from the top and working in a downslope direction.

.4 Limit the vertical drop of the Topsoil to a maximum of 500 mm.

.5 Overfill the cell slightly with Topsoil and lightly tamp or roll the Topsoil to leave it flush with the top edge of the cells.

3.8 [ ]

END OF SECTION