

PART 1 - General

- 1.1 Related Sections .1 Section 01 35 43 - Environmental Procedures.
- 1.2 Measurement For Payment .1 No measurement for payment to be made under this section. Include costs in unit prices for item which excavating, trenching, and backfilling is required.
- 1.3 References .1 American Society for Testing and Materials (ASTM)
.1 ASTM C 117-95, Standard Test Method for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
.2 ASTM C 136-96a, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
.3 ASTM D 422-98, Standard Test Method for Particle-Size Analysis of Soils.
.4 ASTM D 698-00a, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (2,400 ft-lbs/ft³) (600 kN-m/m³)
.5 ASTM D 4318-00, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
.2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.
- .3 Canadian Standards Association (CSA)
.1 CAN/CSA-A23.1-04, Concrete Materials and Methods of Concrete Construction.
- 1.4 Definitions .1 Excavation classes: two (2) classes of excavation will be recognized; common excavation and rock excavation.
-

1.4 Definitions
(Cont'd)

- .1 (Cont'd)
- .1 Rock: any solid material in excess of 0.25 m³ and which cannot be removed by means of heavy duty mechanical excavating equipment with 0.95 to 1.15 m³ bucket. Frozen material not classified as rock.
- .2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .2 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .3 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .4 Unsuitable materials:.
- .1 Weak and compressible materials under excavated areas.
- .2 Frost susceptible materials under excavated areas.
- .3 Frost susceptible materials:
- .1 Fine grained soils with plasticity index less than ten (10) when tested to ASTM D 4318, and gradation within limits specified when tested to ASTM D 422 and ASTM C 136: Sieve sizes to CAN/CGSB-8.1.
- .2 Table
- | Sieve Designation | % Passing |
|-------------------|-----------|
| 2.00 mm | 100 |
| 0.10 mm | 45 - 100 |
| 0.02 mm | 10 - 80 |
| 0.005 mm | 0 - 45 |
- .3 Coarse grained soils containing more than 20% by mass passing 0.075 mm sieve.
- .5 Unshrinkable fill: very weak mixture of Portland cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

PART 2 - Products NOT APPLICABLE

PART 3 - Execution

- 3.1 Site Preparation .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- 3.2 Excavation .1 Excavate to lines, grades, elevations and dimensions as indicated.
- .2 Remove all other obstructions encountered during excavation in accordance with Section 02 41 16 - Sitework, Demolition and Removal.
- .3 Excavation must not interfere with bearing capacity of adjacent foundations.
- .4 Dispose of surplus and unsuitable excavated material in approved location off site.
- .5 Do not obstruct flow of surface drainage.
- .6 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .7 Notify Departmental Representative when bottom of excavation is reached.
- .8 Obtain Departmental Representative's approval of completed excavation.
- 3.3 Fill Types And Compaction .1 Use beach gravel as backfill as indicated.
- 3.4 Backfilling .1 Do not proceed with backfilling operations until Departmental Representative has inspected and approved installations.

PART 1 - General

- 1.1 Section Includes .1 Materials and installation of polymeric geotextiles used in breakwaters, retaining wall structures, filtration, drainage structures and roadbeds, purpose of which is to:
- .1 Separate and prevent mixing of granular materials of different grading.
 - .2 Act as hydraulic filters permitting passage of water while retaining soil strength of granular structure.
- 1.2 Related Work .1 Section 01 33 00 - Shop Drawings and Other Submittal Procedures.
- .2 Section 01 74 19 - Construction/Demolition Waste Management And Disposal.
 - .3 Section 31 23 10 - Excavating, Trenching and Backfilling.
- 1.3 References .1 American Society for Testing and Materials (ASTM)
- .1 ASTM D 4491-99a, Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
 - .2 ASTM D 4595-86-94, Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
 - .3 ASTM D 4716-00, Standard Test Method for Determining the (In-Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
 - .4 ASTM D 4751-99a, Standard Test Method for Determining Apparent Opening Size of a Geotextile.
- .2 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-4.2-M88, Textile Test Methods.
-

-
- 1.3 References (Cont'd) .2 (Cont'd)
- .2 CAN/CGSB-148.1, Methods of Testing Geotextiles and Geomembranes.
 - .1 No.2-M85, Mass per Unit Area.
 - .2 No.3-M85, Thickness of Geotextiles.
 - .3 No.7.3-92, Grab Tensile Test for Geotextiles.
 - .4 No.6.1-93, Bursting Strength of Geotextiles Under No Compressive Load.
 - .3 Canadian Standards Association (CSA)
 - .1 CAN/CSA-G40.20-04/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel.
 - .2 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
- 1.4 Samples .1 Submit samples in accordance with Section 01 33 00 - Shop Drawing and other Submittal Procedures.
- .2 Submit to Departmental Representative the following samples at least two (2) weeks prior to commencing work.
 - .1 Minimum length of 1 m of roll width of geotextile.
- 1.5 Mill Certificates .1 Submit to Departmental Representative a copy of mill test data and certificate at least two (2) weeks prior to start of work.
- 1.6 Delivery And Storage .1 During delivery and storage, protect geotextiles from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and rodents.
-

-
- 1.7 Waste Management And Disposal
- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Construction/Demolition Waste Management And Disposal.
 - .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
 - .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, and packaging material, in appropriate on-site bins, for recycling in accordance with Waste Management Plan.
 - .4 Fold up metal banding, flatten and place in designated area for recycling.
- 1.8 Measurement For Payment
- .1 Payment for supply and installation of geotextile will be by the lump sum.

PART 2 - Products

- 2.1 Material
- .1 Geotextile: woven or non-woven synthetic fibre fabric, supplied in rolls.
 - .1 Width: 3.5 m minimum.
 - .2 Length: 50 m minimum.
 - .3 Composed of: minimum 85% by mass of polyester with inhibitors added to base plastic to resist deterioration by ultra-violet and heat exposure.
 - .2 Physical properties:
 - .1 Thickness: to CAN/CGSB-148.1, No.3, minimum 2.5 mm.
 - .2 Mass per unit area: to CAN/CGSB-148.1, No.2, minimum 250 to 270 g/m²
 - .3 Tensile strength and elongation (in any principal direction): to ASTM D 4595.
 - .1 Tensile strength: minimum 950 N, wet condition.
 - .2 Elongation at break: 70 to 100 percent.
 - .3 Seam strength: equal to or greater than tensile strength of fabric.
-

- 3.2 Cleaning .1 Remove construction debris from Project site and dispose of debris in an environmentally responsible and legal manner.
- 3.3 Protection .1 Vehicular traffic not permitted directly on geotextile.