

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 - Submittal Procedures.
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .3 Section 31 23 10 - Excavating, Trenching and Backfilling.
- .4 Section 31 23 25 - Rock and Gravel Fill.
- .5 Section 31 53 13 - Timber Cribwork.

1.3 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
  - .1 ASTM D4491-99a(2004)e1, Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
  - .2 ASTM D4595-05, Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
  - .3 ASTM D4716-04, 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 D4751-04, 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.
    - .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 - Submittal Procedures.
  - .2 Submit to Departmental Representative the following samples at least 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 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 21 - 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 No measurement for payment to be made under this section. Include costs in items of work which geotextile is required.

### 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 400 g/m<sup>2</sup>.
  - .3 Tensile strength and elongation (in any principal direction): to ASTM D4595.
    - .1 Tensile strength: minimum 1200 N, wet condition.
    - .2 Elongation at break: 50 to 100 percent.

- .3 Seam strength: equal to or greater than tensile strength of fabric.
- .4 Mullen burst strength: to CAN/CGSB-4.2, method 11.1, minimum 3100 kPa.
- .3 Hydraulic properties:
  - .1 Apparent opening size (AOS): to ASTM D4751, 50 to 150 micrometres.
  - .2 Permittivity: to ASTM D4491, 0.25 cm per second.
- .4 Securing pins and washers: to CAN/CSA-G40.21, Grade 300W, hot-dipped galvanized with minimum zinc coating of 600 g/m<sup>2</sup> to CAN/CSA G164.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- .1 Place one (1) layer of geotextile material from base elevation of crib to top of crib and retain in position with securing pins and washers.
- .2 Place geotextile material by unrolling onto graded surface in orientation, manner and locations indicated and retain in position with securing pins and washers.
- .3 Place geotextile material on sloping surfaces in one continuous length from toe of slope to upper extent of geotextile.
- .4 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.
- .5 Overlap each successive strip of geotextile 600 mm over previously laid strip.
- .6 Join successive strips of geotextile by sewing.

- .7 Pin successive strips of geotextile with securing pins at midpoint of lap as directed.
- .8 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.
- .9 After installation, cover with overlying layer within 4 hours of placement.
- .10 Replace damaged or deteriorated geotextile to approval of Departmental Representative.
- .11 Place and compact soil layers in accordance with Section 31 23 10 - Excavating Trenching and Backfilling.

### 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.