

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Materials and installation of polymeric geotextiles used in breakwaters, cribwork 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 25 - Rock and Gravel Fill.

1.3 REFERENCES

- .1 American Society for Testing and Materials (ASTM).
 - .1 ASTM D 4491-99a (2004) e1, Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
 - .2 ASTM D 4595-05, Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
 - .3 ASTM D 4716-04, 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 D 4751-04, 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.

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1.3 REFERENCES
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- .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 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 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.

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/m².
 - .3 Tensile strength and elongation (in any principal direction): to ASTM D 4595.
 - .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 D 4751, 50 to 150 micrometers.
 - .2 Permittivity: to ASTM D 4491, 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/m² to CAN/CSA G164.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Place one (1) layer of geotextile material, as detailed on the drawings.
- .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.

PART 3 - EXECUTION
(CONT'D)

3.1 **INSTALLATION**
(CONT'D)

- .6 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.
- .7 After installation, cover with overlying layer within four (4) hours of placement.
- .8 Replace damaged or deteriorated geotextile to approval of Departmental Representative.
- .9 Place and compact soil layers in accordance with Section 31 23 25 - Rock and Gravel Fill.

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.