

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Materials and installation of polymeric geotextiles used in filtration, drainage structures and roadbeds, the 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 SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .3 Section 31 23 33.01 - Excavating, Trenching and Backfilling.

1.3 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM D 4491-99a(2009), Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
 - .2 ASTM D 4595-11, Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
 - .3 ASTM D 4716-08, 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 No. 11.2-M89, Textile Test Methods - Bursting Strength - Ball Burst Test (Extension of September 1989).
 - .2 CAN/CGSB-148.1-M03, Methods of Testing Geotextiles and Complete Geomembranes.
 - .1 No.2-M85, Methods of Testing Geosynthetics - Mass per Unit Area.
 - .2 No.3-M85, Methods of Testing Geosynthetics - Thickness of Geotextiles.
 - .3 No.6.1-93, Methods of Testing Geotextiles and Geomembranes - Bursting Strength of Geotextiles Under No Compressive Load.
 - .4 No.7.3-92, Methods of Testing Geotextiles and Geomembranes - Grab Tensile Test for Geotextiles.
-

- .5 No. 10-94, Methods of Testing Geosynthetics - Geotextiles - Filtration Opening Size.
- .3 Canadian Standards Association (CSA International)
 - .1 CSA G40.20-04/G40.21-04(R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

1.4 SUBMITTALS

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative copies of mill test data and certificate at least 4 weeks prior to start of Work, and in accordance with Section 01 33 00 - Submittal Procedures.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 During delivery and storage, protect geotextiles from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and rodents.

1.6 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 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: non-woven synthetic fibre fabric, supplied in rolls.
 - .1 Width: 4.57 m minimum.
 - .2 Length: 91.5 m minimum.
 - .3 Composed of: minimum 85% by mass of polypropylene polyester with inhibitors added to base plastic to resist deterioration by ultra-violet and

heat exposure for 60 days.

- .2 Physical properties:
 - .1 Thickness: to CAN/CGSB-148.1, No.3, minimum 2 mm.
 - .2 Mass per unit area: to CAN/CGSB-148.1, No.2, minimum 200 g/m².
 - .3 Tensile strength and elongation (in any principal direction): to ASTM D 4595.
 - .1 Tensile strength: minimum 1020 N, wet condition.
 - .2 Elongation at break: minimum 60%.
 - .3 Seam strength: equal to or greater than tensile strength of fabric.
 - .4 Grab tensile strength and elongation: to CAN/CGSB-148.1, No.7.3.
 - .5 Ball burst strength: to CAN/CGSB-4.2, No.11.2.
 - .6 Bursting strength: to CAN/CGSB-148.1, No.6.1 minimum 2685 kPa, wet condition.
- .3 Hydraulic properties:
 - .1 Apparent opening size (AOS): to ASTM D 4751, 0.150 mm.
 - .2 Filtration opening size (FOS): to CAN/CGSB-148.1 No.10 OPSS 1860.
 - .3 Transmissivity: to ASTM D 4716.
 - .4 Permittivity: to ASTM D 4491, 1.80 m²/s.
- .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.
- .5 Factory seams: sewn in accordance with manufacturer's recommendations.
- .6 Thread for sewn seams: equal or better resistance to chemical and biological degradation than geotextile.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Place geotextile material by unrolling onto graded surface in orientation, manner and locations indicated.
 - .2 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.
 - .3 Place geotextile material on sloping surfaces in one continuous length from toe of slope to upper extent of geotextile.
 - .4 Overlap each successive strip of geotextile 600 mm over previously laid strip.
 - .5 Join successive strips of geotextile by sewing.
-

- .6 Pin successive strips of geotextile with securing pins.
- .7 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.
- .8 After installation, cover with overlying layer within 4 h of placement.
- .9 Replace damaged or deteriorated geotextile to approval of Departmental Representative.
- .10 Place and compact soil layers in accordance with Section 31 23 33.01 - 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.