

PART 1 - GENERAL

- 1.1 Section Includes .1 Materials and installation of polymeric geotextiles used in revetments, breakwaters, retaining wall structures, filtration, drainage structures, roadbeds and railroad beds 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 31 23 10 - Excavating, Trenching and Backfilling.
- .2 Section 31 37 00 - Rip Rap.
- 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 4595-09, 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(2004), Textile Test Methods - Bursting Strength - Ball Burst Test (Reaffirmation of September 1989).
 - .2 CAN/CGSB-148.1, 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.
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- .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 CAN/CSA-G40.20/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 following samples at least 4 weeks prior to beginning Work.
 - .1 Minimum length of 2 m of roll width of geotextile.
- .3 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.

PART 2 - PRODUCTS

2.1 Material

- .1 Geotextile: non-woven synthetic fibre fabric, supplied in rolls.
 - .1 Width: 2m minimum.
 - .2 Composed of: minimum 85% by mass of polypropylene or polyester with inhibitors added to base plastic to resist deterioration by ultra-violet and heat exposure.
 - .2 Physical properties:
 - .1 Mass per unit area: to CAN/CGSB-148.1, No. 2, minimum 136 g/m2.
 - .2 Grab tensile strength and elongation: to CAN/CGSB-148.1, No. 7.3.
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- .1 Breaking force: minimum 445 N, wet condition.
 - .2 Elongation: minimum 50%.
 - .3 Bursting strength: to CAN/CGSB-148.1, No. 6.1 minimum 1481 kPa, wet condition.
- .3 Hydraulic properties:
 - .1 Apparent opening size (AOS): to ASTM D 4751, 0.212mm.
 - .2 Permittivity: to ASTM D 4491, 2.0 per second.
- .4 Securing pins and washers: to CSA G40.21, Grade 300W, hot-dipped galvanized with minimum zinc coating of 600 g/m2 to ASTM A 123M.
- .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 and retain in position with.
 - .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 in accordance with manufacturer's instructions.
 - .5 Join successive strips of geotextile by sewing in accordance with manufacturer's instructions.
 - .6 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.
 - .7 After installations, cover with overlying layer within 4 h of placement.
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- .8 Replace damaged or deteriorated geotextile to approval of Departmental Representative.
- .9 Place and compact soil layers in accordance with Section 31 23 33.01 - Excavating Trenching and Backfilling and Section 31 24 13 - Roadway Embankments.

3.2 Cleaning

- .1 Remove construction debris from Project site and dispose of debris in an environmentally responsible and legal manner in accordance with applicable federal, municipal and provincial regulations.

3.3 Protection

- .1 Vehicular traffic not permitted directly on geotextile.