

## **PART 1 - GENERAL**

### **1.1 SECTION INCLUDES**

- .1 This section specifies requirements for supply and installation of a floating silt curtain which is to:
  - .1 Enclose the work area and prevent any particulate materials from leaving the immediate area of construction.

### **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 32 11 16 - Granular Sub-Base.
- .6 Section 32 11 23 - Aggregate Base Courses.

### **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.
  - .5 ASTM A123/A123M-09, zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- .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.

**1.4 SUBMITTALS**

- .1 Provide shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

**1.5 REGULATORY REQUIREMENTS**

- .1 There are strict environmental procedures that must be followed during the Work. (Refer to attached documents listed in the Appendices).
- .2 Comply with municipal, provincial and national codes and regulations relating to project.

**1.6 DELIVERY AND STORAGE**

- .1 During delivery and storage, protect materials 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 Contaminated sediments must be disposed of as required by Authorities having jurisdiction.

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**1.8 INTERFERENCE TO NAVIGATION**

- .1 Be familiar with vessel movements and fishery activities in area affected by construction activities. Plan and execute Work in a manner that will not interfere with fishing operations, marine operations and construction activities at wharf site, or access to the wharves by land or water.
- .2 Departmental Representative will not be responsible for loss of time, equipment, material or any other cost related to interference with moored vessels in harbour or due to other Contractor's operations.
- .3 Keep the Marine Communications and Traffic Services' Centre, Fisheries and Oceans Canada, informed of during construction activities in order that necessary Notices to Mariners will be issued.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- .1 Floating boom:
  - .1 Closed cell polyethylene floatation log enclosed in a UV stabilized reinforced polyethylene pocket.
  - .2 Floating boom to be easily identifiable as an obstruction to mariners..
- .2 Silt curtain:
  - .1 Woven geotextile to be impermeable to the passage of silt particles and capable to resist all imposed forces. Properties listed below are shown for minimum requirement only, Contractor shall make their own assessment of the site conditions, including wave, wind, current, ice, soil, etc..., to determine type of geotextile required.
    - .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 D 4595.
    - .4 Tensile strength: minimum 1800 N, wet condition.
    - .5 Elongation at break: 50 to 100 percent.
    - .6 Seam strength: equal to or greater than tensile strength of fabric.
    - .7 Mullen burst strength: to CAN/CGSB-4.2, method 11.1, minimum 3100 kPa.
    - .8 Apparent opening size (AOS): to ASTM D 4751, 50 to 150 micrometers.
    - .9 Permittivity: to ASTM D 4491, 0.7 per second.
    - .10 Permeability: to ASTM D 4491, 0.03 cm per second

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**(CONT'D)**

**1.3 MATERIALS**  
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- .3 Bottom polyethylene pocket to contain 10 mm diameter galvanized chain weight ballast complete with polypropylene rope.
- .4 Securing bolts, nuts, and washers: to CAN/CSA-G40.21, Grade 300W, hot-dipped, galvanized with minimum zinc coating of 600 g/m<sup>2</sup> to ASTM A123/A123M-09.

**PART 3 - EXECUTION**

**3.1 GENERAL**

- .1 The floating silt curtain shall be installed at the commencement of construction activities. No work shall be carried out in any area unless the floating silt curtain is in place and performing to the satisfaction of the Departmental Representative.
- .2 The floating silt curtain shall be maintained and kept in place by the Contractor until all work has been completed, or until the Departmental Representative advises that it can be removed.
- .3 The Contractor shall comply with the requirements of all permits regarding floating silt curtains.
- .4 On completion of the work, the Contractor shall remove the floating silt curtain, and dispose of off site.
- .5 The silt curtain shall be extended from the floating boom and extend down to the seabed.
- .6 The Contractor shall ensure all seems are securely fastened and joined to prevent any loss of silt at the connections.
- .7 The contractor shall install yellow buoys to clearly mark the position of the floating silt curtain in the water. A minimum of five yellow buoys shall be required to mark the floating silt curtain. The Contractor shall be required to maintain these buoys on the floating boom until the work has been completed and the silt curtain has been removed from the site of work.
- .8 The floating silt curtain shall be anchored in place to resist all forces due to wind, wave, current, ice, etc... If the silt curtain is damaged or breaks away from its

**PART 3 - EXECUTION**  
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**3.1 INSTALLATION**  
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- .8 mooring and the work area is exposed to the waterway, then the Contractor shall be required to install temporary flashing yellow lights until the silt curtain is repositioned to enclose the work area, and construction shall cease until the silt curtain is completely restored. Also, if the floating silt curtain does not perform to the satisfaction of Environment Canada, the Departmental Representative or any other body having jurisdiction, the Contractor shall suspend operations until all issues have been restored satisfactorily.

**3.2 CLEANING**

- .1 Remove construction debris from Project site and dispose of debris in an environmentally responsible and legal manner.