

The following changes in the bid documents are effective immediately. This addendum will form part of the contract documents.

Revisions:

List of Contents:

- .1 Refer to Division 35 – Waterway and Marine Construction
 - .1 **ADD** 35 49 25 Turbidity Curtain

ADD:

Section 35 49 25 - Turbidity Curtain

- .1 As specified in attached document.

PART 1 - GENERAL

1.1 RELATED WORK

- .1 Section 01 35 43 - Environmental Procedures.
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM A123M-09, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM D4491-99a(2009), Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
 - .3 ASTM D4595-09, Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method
 - .4 ASTM D4716-08, Standard Test Method for Determining the (In-Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
 - .5 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, Textile Test Methods.
 - .1 CAN/CGSB-148.1, Methods of Testing Geosynthetics.
 - .1 No.2-M85, Mass per Unit Area.
 - .2 No.3-M85, Thickness of Geotextiles.
 - .3 No.6.1-93, Bursting Strength of Geotextiles Under No Compressive Load.
 - .4 No.7.3-92, Grab Tensile Test for Geotextiles.
- .3 Canadian Standards Association (CSA)
 - .1 CAN/CSA-G40.20-04 (R2009)/G40.21-04 (R2009), General Requirements for Rolled or Welded Structural Quality Steel.
- .4 Ontario Provincial Standard Drawings (OPSD)
 - .1 OPSD 219.260 November 2015, Turbidity Curtain.
 - .2 OPSD 219.261 November 2015, Turbidity Curtain, Seam Detail.
- .5 Ontario Provincial Standard Specification (OPSS)
 - .1 OPSS 805, Construction Specification for Temporary Erosion and Sediment Control Measures.

- 1.3 SUBMITTALS
- .1 Submit details of the temporary silt curtain system to the Departmental representative prior to the start of the Work.
 - .2 Submit to Departmental representative details of geotextile material and seam at least 2 weeks prior to commencing work.
- 1.4 DELIVERY AND STORAGE
- .1 During delivery and storage, protect geotextiles from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and rodents.
 - .2 A minimum 100 metre long spare length of turbidity curtain shall be stored onsite so as to minimize any delays in the event causing damage to the installed curtain.
- 1.5 MEASUREMENT PROCEDURES
- .1 Supply and installation of silt curtain for environmental protection for all in-water work, maintenance of turbidity curtain during work, and removal of turbidity curtain after all in-water work is completed will be considered as part of the lump sum arrangement and shall include all labour, materials and equipment to do the work.

PART 2 - PRODUCTS

- 2.1 MATERIAL
- .1 Geotextile: woven synthetic fibre fabric, supplied in rolls.
 - .1 Composed of: minimum 85% by mass of polypropylene polyester with inhibitors added to base plastic to resist deterioration by ultraviolet and heat exposure for a minimum of 60 days.
 - .2 Physical properties:
 - .1 Thickness: to CAN/CGSB-148.1, No. 3, minimum 0.8 mm.
 - .2 Mass per unit area: to CAN/CGSB-148.1, No.2, minimum 220 g/m².
 - .3 Tensile strength and elongation (in any principal direction): to ASTM D4595.
 - .1 Tensile strength: minimum 1350 N, wet condition.
 - .2 Elongation at break: minimum maximum 25%.
 - .3 Seam strength: minimum 1350 N equal to or greater than tensile strength of fabric.
 - .4 Mullen burst strength: to CAN/CGSB-4.2, method 11.2, minimum 4000 N, equal to or greater than tensile strength of fabric.
 - .3 Hydraulic properties:
 - .1 Apparent opening size (AOS): to ASTM D4751.

- .4 Securing pins and washers: to CAN/CSA-G40.20/
G40.21, Grade 300W, minimum 30% recycled content,
hot-dipped galvanized with minimum zinc coating of
600 g/m² to ASTM A123M Coating Grade 85.
- .5 Seams: sewn in accordance with manufacturer's
recommendations.
- .6 Thread for sewn seams: equal or better resistance
to chemical and biological degradation than
geotextile.
- .7 Curtain height: to suit water depth and be bottom-
weighted to maintain its vertical position.

PART 3 - EXECUTION

3.1 GENERAL

- .1 Supply, install, maintain and remove silt curtains
when instructed by the Departmental representative.
- .2 Monitoring of water turbidity outside the turbidity
curtain will be done by the Departmental
Representative. Turbidity shall not exceed 25 mg/l
total suspended solids.

3.2 INSTALLATION

- .1 Turbidity curtains shall consist of turbidity
curtain geosynthetic, load line, flotation,
ballast, anchors, mooring buoys, mooring lines,
adjustment lines, and tie-downs.
- .2 Design to conform to Ontario Provincial Standard
Specification, OPSS 805 and Ontario Provincial
Standard Drawings: OPSD 219.260 and OPSD 219.261 as
a minimum.
- .3 Turbidity curtains shall be constructed as follows:
 - .1 The flotation shall provide support along
the length of the turbidity curtain.
 - .2 A sleeve shall be formed and heat-sealed or
sewn along the entire bottom edge of the turbidity
curtain geosynthetic, to contain the ballast in the
sleeve. Breaks may be made in the sleeve to
facilitate pulling, provided they are a minimum 100
mm in size and spaced at minimum 3 m intervals.
 - .3 Where turbidity curtain geosynthetic is
joined to provide a continuous run, the sections
shall be connected to provide a continuous seal and
prevent the escape of turbid water between the
sections.
 - .4 The turbidity curtain, as prepared for
installation, shall be of sufficient width to
account for water depth and wave action.
 - .5 Adjustment lines shall be placed at maximum

intervals of 10 m, and are to encircle the turbidity curtain from top to bottom.

.6 The turbidity curtain shall be prepared for installation by furling and tying with furling ties every 1.5 m for the entire length of the curtain.

.7 Turbidity curtain shall be of sufficient length to permit work inside the area enclosed by the curtain without restricting equipment operations, and personnel from working.

.8 Anchor locations shall be established as is necessary to maintain the turbidity curtain in place and functioning.

3.1 OPERATION AND MAINTENANCE

- .1 Turbidity curtains shall be installed to prevent sediment passage, from the area enclosed by the curtain, to the remaining water body. Turbidity curtains shall be installed and maintained in a manner that avoids entry of equipment, other than hand-held equipment or boats, to the remaining water body.
- .2 Equipment is permitted in the work area enclosed by the turbidity curtain.
- .3 Turbidity curtains shall be operated and maintained in the specified location, with the entire top edge above the water surface.
- .4 The curtain shall be free of tears and gaps, and the bottom edge of the curtain is to be continuously in contact with the water course bed so that sediment passage from the area enclosed is prevented.
- .5 Any folds in the turbidity curtain which form next to the floatation collar shall be regularly monitored and freed of collected sediment.
- .6 Monitor and maintain the silt curtains booms both during and outside normal working shifts as required. Provide all personnel, materials and equipment necessary to maintain, repair or relocate the silt curtain system.
- .7 Carry out construction operations to minimize impact on fish habitat from both disturbed sediments and fill materials.
- .8 Replace damaged or deteriorated geotextile to approval of Departmental representative.
- .9 Remove silt curtain when authorized by the Departmental representative after completion of the work.