



<b>To:</b> <p style="text-align: center;"><b>SUPERSEDED BY</b>  <b>EI 08-007</b>  <b>EFFECTIVE 9/4/08</b></p>		<p style="text-align: center;"><i>New York State  Department of  Transportation</i>  <b>ENGINEERING  INSTRUCTION</b></p>	<p style="text-align: center;"><b>EI</b>  <b>05-023</b></p>
<b>Title: SPECIAL SPECIFICATION FOR TURBIDITY CURTAINS</b>			
<b>Distribution:</b> <input checked="" type="checkbox"/> Manufacturers (18) <input type="checkbox"/> Surveyors (33) <input checked="" type="checkbox"/> Local Govt. (31) <input checked="" type="checkbox"/> Consultants (34) <input checked="" type="checkbox"/> Agencies (32) <input checked="" type="checkbox"/> Contractors (39)		<b>Approved:</b>  Philip J. Clark, PE, Deputy Chief Engineer, <u>06/06/05</u> Design Division      Date	

**ADMINISTRATIVE INFORMATION:**

- This Engineering Instruction (EI) is effective beginning with projects submitted for the letting of January 12, 2006.
- This EI does not supersede any previous EIs.
- The information provided in this EI will eventually reside in the Standard Specifications.

**PURPOSE:** To issue a special specification for Turbidity Curtains.

**TECHNICAL INFORMATION:**

- This special specification replaces the portions of *Section 209 SOIL EROSION AND SEDIMENT CONTROL* of the Standard Specifications which dealt with Turbidity Curtains.
- An additional cost is anticipated with the implementation of this EI, however when looking at the overall program it will be relatively insignificant.
- This issuance is issued in conjunction with EI 05-021 and EI 05-022.

**IMPLEMENTATION:**

- New Special Specification 209.1501--24 Turbidity Curtains

**TRANSMITTED MATERIALS:**

- Special specification for Turbidity Curtains.

**BACKGROUND:**

At the present time, NYSDOT uses only a single turbidity curtain. Refer to Standard Sheet M209-8 showing deployment of a turbidity curtain.

Commercially available products provide much better performance than barriers allowed by our current specifications. Properly selected and installed, turbidity curtains should meet our "water quality assurance" needs for a much greater range of depths and flow velocities than we now employ.

**CONTACT:**

Direct questions regarding this EI to George Long (Structures Division) 518/457-9730 (e-mail: [glong@dot.state.ny.us](mailto:glong@dot.state.ny.us)), or Gary Glath (Landscape Architecture Bureau) at (518) 457-4460, (e-mail: [gglath@dot.state.ny.us](mailto:gglath@dot.state.ny.us)).

**DESCRIPTION**

This work shall consist of furnishing, installing, repairing, maintaining, and removing turbidity curtains in accordance with the contract documents and as directed by the Engineer.

**MATERIALS**

The turbidity curtain shall be a commercially available, preassembled system, including a geotextile, flotation system, bottom weight, and anchoring and securing mechanism. If assembled in panels, it shall include a secure mechanism for joining panels together.

Geotextiles shall be selected from the Departmental Approved List for Geosynthetics for Highway Construction in the turbidity curtain application.

Hemmed pockets shall be sewn or heat bonded to contain flotation material, bottom weights, and for anchor lines. The flotation material shall maintain buoyancy if punctured or cut. The bottom weight shall be sufficient to hold the curtain in a vertical position. For sites not subject to tidal or heavy wave action, the curtain shall be capable of molding to conform to bottom contours so that suspended sediment is prevented from escaping underneath the curtain.

Anchorage lines shall be provided of sufficient strength and number to support the curtain and maintain it in position under normally expected conditions. End anchors shall be provided, with intermediate anchor points (for stakes or anchors) such that unanchored spans do not exceed 30 m, sufficient to maintain the turbidity curtain in place. Where the turbidity curtain is constructed in panels, anchor-line and shackle connections securing the panels together shall be sufficient for normally expected current, wind, or wave conditions.

**CONSTRUCTION DETAILS****A. Systems Requirements.**

1. Perform all work in accordance with Section 209 except as modified herein.
2. For sites not subject to tidal or heavy wave action the curtain height shall provide sufficient slack to allow the top of the curtain to rise to the maximum expected high-water level (including waves) while the bottom maintains continuous contact with the bottom of the water body. The bottom edge of the curtain shall have a weight system capable of holding the bottom of the curtain down and conforming to the bottom of the water body, so as to prohibit escape of turbid water under the curtain.
3. For sites subject to tidal or heavy wave action, the curtain height shall provide sufficient slack to allow the top of the curtain to rise to the maximum expected high-water level (including waves) while the bottom remains 300 mm above the bottom. The weight system shall hold the lower edge of the curtain in place so as to allow 300 mm of clearance above the bottom at mean low water, so that the curtain does not stir up sediment by repeatedly striking the bottom.
4. If constructed in panels, panels shall be connected in such a manner as to prevent suspended particles passing through joints. Load lines shall be connected so as to develop the full strength of the line across the joint.
5. Flotation material shall be arranged so as to be flexible and to provide continuous support.
6. The flotation and curtain top shall be such as to provide a minimum of 100 mm of freeboard along the entire length of the curtain, to prohibit escape of turbid water over the top.

**B. Installation**

1. The turbidity curtain shall be installed as shown in the contract documents in accordance with the manufacturer's instructions. It shall be placed as close to the site of disturbance as possible without interfering with construction activity.
2. Turbidity curtain shall be installed and maintained in a manner that precludes entry of equipment, other than hand-held equipment or boats, to the water body outside the protected area.
3. The fully assembled turbidity curtain shall be prepared for installation by being furled and tied at intervals of 1.5 m for the length of the curtain. It shall be placed and secured in the furled condition, then released to allow the bottom edge to sink.
4. At sites subject to tidal or heavy wave action, adjustment lines may be used to achieve the required height of the curtain.
5. At sites not subject to tidal or heavy wave action, excess curtain material shall lay on the bottom, away from construction activity.
6. Turbidity curtain shall be placed as nearly as possible parallel to current flow. It shall not be deployed across a flowing water course.
7. The ends of the installation shall be anchored securely well up the bank. Intermediate anchors of a type and number sufficient to hold the curtain in place under expected conditions shall be placed, and firmly fastened to the top of the curtain assembly. Maximum spacing between anchorage points shall not exceed 30 m.
8. In situations with flow velocities that exceed 1.5m/sec use a redirection barrier. The redirection barrier shall be installed prior to installation of the turbidity curtain wherever possible, and care should be exercised in order to minimize disturbance of the bottom of the water body during installation of the redirection barrier.

**C. Maintenance**

1. The turbidity curtain shall be inspected daily, with additional monitoring of performance during storms or significant flow events.
2. Any visible plume of cloudy water passing beyond the curtain from the enclosed construction area shall constitute inadequate performance of the turbidity curtain. The Contractor shall immediately modify, adjust, or repair any portion of the turbidity curtain to correct inadequate performance.
3. The turbidity curtain shall remain in place until the protected construction activities have ceased and the turbidity of the water enclosed is reduced to acceptable levels. The curtain shall be removed within 72 hours of this condition being met.

**D. Removal**

1. The turbidity curtain shall be removed in such a way as to minimize release of sediment.
2. Sediment behind the curtain shall be removed before removal of the curtain, if directed by the Engineer. If so, any resulting turbidity shall be allowed to settle before removal proceeds.

**METHOD OF MEASUREMENT**

This work will be measured in meters, measured to the nearest whole meter, for turbidity curtain satisfactorily installed, or reinstalled.

**BASIS OF PAYMENT**

The unit price bid shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work, including redirection barrier and the cost of removal associated with the removal of accumulated sediment.

Progress payments of fifty percent of the price bid will be paid after installation, and the remaining percentage will be paid when the turbidity curtain is removed.

Payment will not be made for work which is attributed to the Contractor's negligence, carelessness or failure to install temporary or permanent controls in accordance with the contract documents.