



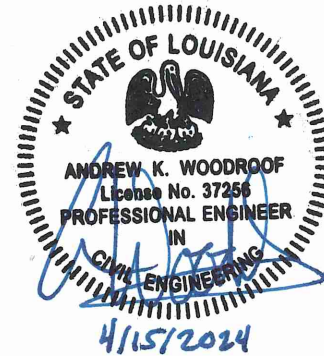
## ST. TAMMANY PARISH

MICHAEL B. COOPER  
PARISH PRESIDENT

April 15, 2024

Please find the following addendum to the below mentioned BID.

Addendum No.: 1  
Bid#: 24-5-2  
Project Name: Tchefuncte Habitat Restoration  
Bid Due Date: Thursday, April 18, 2024



### GENERAL INFORMATION:

---

- The following addenda shall be part of the Contract Documents.
- The following items are issued to add to, modify, and clarify the Contract Documents. These items shall have full force and effect as the Contract Documents, and the cost involved shall be included in the proposal prices.
- Acknowledge receipt of the addendum by inserting its number and date on the Bid Form of the Contract Documents. Failure to do so may subject the proposer to disqualification.
- This Addendum No. 1 consists of 17 pages including the title sheet and all attachments.

### Addendum No. 1 Revised Items

#### Technical Specifications

1. Revise SECTION 01350 VIBRATION MONITORING, Section 3.02 MONITORING A.1 to the following:
  - A) The project engineer shall:
    - 1) *Direct the vibration monitoring process. The Contractor is to submit the Vibration Monitoring Plan to the Engineer.*
2. Add the following to SECTION 01350 VIBRATION MONITORING, Section 3.03 EXCEEDING PERFORMANCE ALLOWANCE to A.5:

*Repairs made must meet the Secretary of the Interior's Standard for Rehabilitation.*



## ST. TAMMANY PARISH

MICHAEL B. COOPER  
PARISH PRESIDENT

3. Revise SECTION 02315 FLOTATION CHANNEL, Section 1.7 MEASUREMENT AND PAYMENT, second paragraph to the following:

*The Turbidity Curtain installation and maintenance shall be incidental to the "Flotation Channel" bid item. Length required shall be Contractor's means and method to confine sedimentation within the Contractor's dredging area. Price and payment shall constitute full compensation for all materials, labor, supplies, and equipment required for placement of the turbidity curtain and maintaining the curtain for the duration of the construction until the flotation channel has been returned to pre-construction conditions. This operation is considered complete when the turbidity curtain and all associated materials, supplies, and equipment have been removed from the construction area.*

### Plans

4. Revise plans to remove "Type 3" references from Plan Sheet 13.

### Bid Form

5. Revise Bid Form to remove "Turbidity Curtain" pay item.

## QUESTIONS & ANSWERS:

---

**Note: No questions were received in writing. The questions below were received verbally during the pre-bid conference and are the engineer's interpretation of questions as stated by those in attendance at the pre-bid conference.**

Question 1: Are there any weight restrictions on the vehicular bridges in the vicinity of the project area?

**Answer 1: Posted weight limit for bridge at Black Bayou: 3 tons. This bridge will be completely replaced by November 2024.**

**Posted weight limit for bridge at Main St. (south of Black Bayou): No posted weight limit according to DOTD.**

Question 2: What is the required depth and length of the turbidity curtain?



## ST. TAMMANY PARISH

MICHAEL B. COOPER  
PARISH PRESIDENT

**Answer 2:** Turbidity curtain shall be used for dredging operations in 2' of depth or greater per Section 02315, and curtain shall be of sufficient depth to maintain bottom contact.

Length of turbidity curtain shall be Contractor's means and methods to confine sedimentation within the Contractor's dredging area, as per specification revision of Section 02315.

**Question 3:** What is the required geotextile material for the turbidity curtain? Is it necessary for the geotextile to be Type 3, or will Type 2 be allowable?

**Answer 3:** The geotextile used must conform to all requirements stated in specification Section 02315.

**Question 4:** Define the required maintenance on the turbidity curtain.

**Answer 4:** Maintaining shall include keeping a tight alignment around the work area or shoreline as stated in specification Section 02315.

**Question 5:** Is the project fully funded? Are Davis-Bacon wage rates required?

**Answer 5:** Yes, the project is fully funded for construction with GOMESA funds, Davis-Bacon Act prevailing wages are required.

### **ATTACHMENTS:**

---

1. Pre-Bid Sign-in Sheet
2. Pre-Bid Minutes
3. Re-issued Bid Form
4. Re-issued specification Section 01350 VIBRATION MONITORING
5. Re-issued specification Section 02315 FLOTATION CHANNEL

**<< End of Addendum 1 >>**

# MANDATORY: PRE-BID MEETING

## ST. TAMMANY PARISH TCHEFUNCTE HABITAT RESTORATION PROJECT NO. DV2000135 MEETING MINUTES

**Meeting Date & Time:** 04/02/2024 @ 2:00 PM  
**Location:** 21454 Koop Dr., Mandeville, LA 70471  
Building B, 3<sup>rd</sup> Floor  
**Bid Submittal Deadline:** 04/18/2024 @ 2:00 PM  
**Submittal Location:** 21454 Koop Dr., Mandeville, LA 70471  
Building B, Procurement Office or electronically on  
[www.bidexpress.com](http://www.bidexpress.com)

\*Please sign the Sign-in sheet\*  
Bidders must stay at the meeting from start to finish.

### Project Overview

The work of this contract includes the construction of a pier of 300' in length, construction of a rock breakwater approximately 400' in length, and construction of a vinyl sheet pile bulkhead around the existing peninsula of the Tchefuncte River Lighthouse.

### Bidding Coordination

- All questions must be submitted in writing to ~~Andrew Woodroof~~ **Alana Johnson** ([procurement@stpgov.org](mailto:procurement@stpgov.org)) and **C.C. Andrew Woodroof** ([awoodroof@deii.net](mailto:awoodroof@deii.net)).
- Final Addendum Issued by 04/15/2024 @ 2:00 PM
- Submit questions by 04/09/2024 @ 2:00 PM

### Bid Delivery Requirements

Sealed Bids shall be delivered to St. Tammany Parish Government at the office of **St. Tammany Parish Government, Department of Procurement, 21454 Koop Drive, Suite 2-F, Mandeville, LA 70471**, and a receipt given, until the time and date denoted in Notice to Bidders, at which time and place the Bids shall be publicly opened and read aloud to those present. In accordance with LSA-R.S. 38:2212(H), the designer's final estimated cost of construction shall be read aloud upon opening bids. Sealed Bids may also be mailed by certified mail to **St. Tammany Parish Government, Department of Procurement, 21454 Koop Drive, Suite 2-F, Mandeville, LA 70471**, and must be received before the bid opening. Bids may also be submitted electronically. Information concerning links for electronic bidding is contained in the Notice to Bidders. It is the responsibility of the bidders to ensure that bids are delivered in a timely fashion. **Late bids, regardless of reason, will not be considered, and will be returned to bidder.**

The sealed bids will be publicly opened and read aloud at 2:00 P.M. Local Time April 18, 2024.

# MANDATORY: PRE-BID MEETING

## ST. TAMMANY PARISH TCHEFUNCTE HABITAT RESTORATION PROJECT NO. DV2000135 MEETING MINUTES

Contractors should note that a Louisiana Contractors License in Heavy Construction: Dredging is required for this project.

### Discussion

- Site Access
- Permits – Appendix A
- Other Federal Requirements/ Certifications – Section 15
- Vibration Monitoring Spec – Spec Section 01350
- Construction Items
- Contract Days: 180 Calendar Days, Liquidated Damages \$1,500 per calendar day

### Questions

- Reminder – submit all questions you want answered in writing to Procurement Department
- Will take general questions today but answers will be general; any specific questions about measurement, payment, acceptable means and methods, etc. that may impact bids will be deferred and should be submitted in writing
- **Are there any weight restrictions on bridges?**
- **What is the required depth and length of the turbidity curtain?**
- **What is the required geotextile material for the turbidity curtain? Is it necessary for the geotextile to be Type 3, or will Type 2 be allowable?**
- **Define the required maintenance on the turbidity curtain.**
- **Is the project fully funded? Are Davis-Bacon wage rates required?**

Building B, 3rd Floor  
Conference Room

Pre-Bid Sign-In Sheet  
TCHEFUNCTE HABITAT RESTORATION

	Name	Company	Email	Phone	Time In	Time Out
1	Andrew Woodroof	Digital Engineering	awoodroof@deii.net	(504) 468-6129	1:52	
2	Thelma Nagy	STPGOV			1:54	
3	Randy Pansini	"				
4	Ashleigh Mayfield	STP GOV	armayfield@stpgov.org			
5	John Price	Spartan Building Corporation	brice@spartanbuilding.com	988-6-2555	1:59	2:16
6	Clint Kelly	Baker Pile Driving Site Work, LLC	clint@bakerpiledriving.com	662-706-3974	2:00	2:16
7	Paul Clearman	Otwell Trucking	paul@otwellservices.com	334-546-0681	2:00	2:16
8	Brenden Cappy	C+O Marine	Brenden@scarpelli.construction.com	985-285-9907	2:00	2:16
9	Douglas Kunkle	Ampol	DKUNKLE@AMPOL.NET	2254001248	2:00	2:16
10	Kerry Stafford	Grillot Construction	kerry@grillotllc.com	903-316-2072	1:45	2:16
11	DANNY GRILLOT	GRILLOT CONSTRUCTION	DANNY@GRILLOTLLC.COM	504-416-4258	1:45	2:16
12	Trent Greco	Cycle Construction	estimating@cycleconstruction.com	504-275-1344	1:50	2:16

# LOUISIANA UNIFORM PUBLIC WORK BID FORM

## UNIT PRICE FORM

TO:

St. Tammany Parish Government  
 21454 Koop Drive, Suite 2F  
 Mandeville, LA. 70471  
(OWNER TO PROVIDE NAME AND ADDRESS OF OWNER)

Revised Per Addendum No. 1 (4.15.24)

BID FOR:

Tchefuncte Habitat Restoration  
 Project No. DV20000135  
 BID No. 24-5-2  
(OWNER TO PROVIDE PROJECT NAME & OTHER IDENTIFYING INFO)

**UNIT PRICES: This form shall be used for any & all work required by the Bidding Documents & described as unit prices. Amounts shall be stated in figures & only in figures.**

REF NO.:	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
<b>Description:</b> <input checked="" type="checkbox"/> BASE BID OR <input type="checkbox"/> ALT # MOBILIZATION & DEMOBILIZATION				
1	1	LUMP SUM		
<b>Description:</b> <input checked="" type="checkbox"/> BASE BID OR <input type="checkbox"/> ALT # RIP-RAP R1500				
REF NO.:	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
2	2600	TON		
<b>Description:</b> <input checked="" type="checkbox"/> BASE BID OR <input type="checkbox"/> ALT # RIP-RAP R650				
REF NO.:	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
3	2600	TON		
<b>Description:</b> <input checked="" type="checkbox"/> BASE BID OR <input type="checkbox"/> ALT # RIP-RAP R200				
REF NO.:	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
4	500	TON		

**Wording for "description" is to be provided by the Owner. All Quantities Estimated. The Contractor will be paid based upon actual quantities as verified by the Owner.**

**UNIT PRICES:** This form shall be used for any & all work required by the Bidding Documents & described as unit prices. Amounts shall be stated in figures & only in figures.

<b>Description:</b> <input checked="" type="checkbox"/> BASE BID OR <input type="checkbox"/> ALT # GEOGRID				
<b>REF NO.:</b>	<b>QUANTITY</b>	<b>UNIT OF MEASURE</b>	<b>UNIT PRICE</b>	<b>UNIT PRICE EXTENSION (Quantity times unit price)</b>
5	2600	SQUARE YARD		
<b>Description:</b> <input checked="" type="checkbox"/> BASE BID OR <input type="checkbox"/> ALT # #57 STONE (NET SECTION)				
<b>REF NO.:</b>	<b>QUANTITY</b>	<b>UNIT OF MEASURE</b>	<b>UNIT PRICE</b>	<b>UNIT PRICE EXTENSION (Quantity times unit price)</b>
6	1750	TON		
<b>Description:</b> <input checked="" type="checkbox"/> BASE BID OR <input type="checkbox"/> ALT # FLOTATION CHANNEL				
<b>REF NO.:</b>	<b>QUANTITY</b>	<b>UNIT OF MEASURE</b>	<b>UNIT PRICE</b>	<b>UNIT PRICE EXTENSION (Quantity times unit price)</b>
7	820	CUBIC YARD		
<b>Description:</b> <input checked="" type="checkbox"/> BASE BID OR <input type="checkbox"/> ALT # GEOTEXTILE				
<b>REF NO.:</b>	<b>QUANTITY</b>	<b>UNIT OF MEASURE</b>	<b>UNIT PRICE</b>	<b>UNIT PRICE EXTENSION (Quantity times unit price)</b>
8	2600	SQUARE YARD		
<b>Description:</b> <input checked="" type="checkbox"/> BASE BID OR <input type="checkbox"/> ALT # MARINE HAZARD MARKERS				
<b>REF NO.:</b>	<b>QUANTITY</b>	<b>UNIT OF MEASURE</b>	<b>UNIT PRICE</b>	<b>UNIT PRICE EXTENSION (Quantity times unit price)</b>
9	3	EACH		

Wording for "description" is to be provided by the Owner. All Quantities Estimated. The Contractor will be paid based upon actual quantities as verified by the Owner.



**UNIT PRICES:** This form shall be used for any & all work required by the Bidding Documents & described as unit prices. Amounts shall be stated in figures & only in figures.

<b>Description:</b> <input checked="" type="checkbox"/> BASE BID OR <input type="checkbox"/> ALT # VINYL SHEETPILE WITH CONCRETE CAP				
<b>REF NO.:</b>	<b>QUANTITY</b>	<b>UNIT OF MEASURE</b>	<b>UNIT PRICE</b>	<b>UNIT PRICE EXTENSION (Quantity times unit price)</b>
10	6250	SQUARE FEET		
<b>Description:</b> <input checked="" type="checkbox"/> BASE BID OR <input type="checkbox"/> ALT # WOODEN PIER WITH COMPOSITE DECK				
<b>REF NO.:</b>	<b>QUANTITY</b>	<b>UNIT OF MEASURE</b>	<b>UNIT PRICE</b>	<b>UNIT PRICE EXTENSION (Quantity times unit price)</b>
11	310	LINEAR FEET		
<b>Description:</b> <input checked="" type="checkbox"/> BASE BID OR <input type="checkbox"/> ALT # PIER LANDING STAIRS WITH CONCRETE PAD				
<b>REF NO.:</b>	<b>QUANTITY</b>	<b>UNIT OF MEASURE</b>	<b>UNIT PRICE</b>	<b>UNIT PRICE EXTENSION (Quantity times unit price)</b>
12	1	LUMP SUM		
<b>Description:</b> <input checked="" type="checkbox"/> BASE BID OR <input type="checkbox"/> ALT # WOODEN PILE				
<b>REF NO.:</b>	<b>QUANTITY</b>	<b>UNIT OF MEASURE</b>	<b>UNIT PRICE</b>	<b>UNIT PRICE EXTENSION (Quantity times unit price)</b>
13	51	EACH		
<b>Description:</b> <input checked="" type="checkbox"/> BASE BID OR <input type="checkbox"/> ALT # PILE REMOVAL				
<b>REF NO.:</b>	<b>QUANTITY</b>	<b>UNIT OF MEASURE</b>	<b>UNIT PRICE</b>	<b>UNIT PRICE EXTENSION (Quantity times unit price)</b>
14	50	EACH		

Wording for "description" is to be provided by the Owner. All Quantities Estimated. The Contractor will be paid based upon actual quantities as verified by the Owner.

## SECTION 01350

### VIBRATION MONITORING

#### PART 1 – GENERAL

##### 1.01 SUMMARY

- A. This section shall include supplying materials, services, and labor necessary to provide vibration monitoring as required.
- B. The Tchefuncte River Lighthouse is a national historic structure and subject to the requirements of Section 106 of the National Historic Preservation Act (NHPA), as amended (54 U.S.C. § 300101 et seq.), requires federal agencies to “take into account” the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings.
- C. The applicant, St. Tammany Parish Government, has procured Permit MVN-2016-00731-EPP, issued by U.S. Army Corps of Engineers, in regards to vibration monitoring. The permit is incorporated into the specifications. The Contractor must meet all requirements of the permit.

##### 1.02 RELATED WORK

- A. Section 06200 – Driven Piles
- B. Section 06500 – Sheet Piles
- C. Section 02270 – Rip Rap

##### 1.03 REFERENCES

- A. National Historic Preservation Act (NCHRP), Section 106
- B. NCHRP 25-25 – Guidelines for Vibration Monitoring
- C. Jefferson Parish Special Provisions
- D. DOTD 2016 Standard Specifications for Roads and Bridges

##### 1.04 SUBMITTALS

- A. Prior to beginning vibration monitoring operations, the Contractor shall submit, in writing to the Engineer, his Vibration Monitoring Plan to comply with the requirements of this section.
  - 1) The submitted plan shall be designed and stamped by a Louisiana Registered Civil or Structural Engineer.
  - 2) The submittal shall also include but is not limited to information on all vibration monitoring devices being used (accelerometers, seismometers, and/or inclinometers), including manufacturer’s specifications and documentation of all components.

- 3) No vibrative work shall be allowed to commence until the Contractor has fulfilled this requirement and received written approval to proceed from the Engineer.
  - 4) Documentation of the condition of the historic structure prior to commencement of adjacent work, including a detailed photo survey of existing damage.
  - 5) Regular condition surveys and reviews during construction to identify damage to evaluate the efficacy of protective measures already in place, and to identify and implement additional corrective steps.
  - 6) Comprehensive report for each structure and feature monitored. Include in each report a discussion of the following:
    - (a) Site conditions and descriptions, including a site map drawn to scale showing the location of the structures and/or sensitive features and the location of the construction activity.
    - (b) Field procedures and equipment used, including seismograph manufacturer, model, and unit serial number.
    - (c) Location where seismograph equipment will be located.
    - (d) The name of the seismograph operator.
    - (e) A digital and a hard copy of all ground vibration time histories, in units of velocity.
    - (f) A record summary of the maximum value of ground vibration in any of the three directions measured (longitudinal, transverse, or vertical), the frequency associated with the maximum value in hertz, and the measured distance between the seismograph and the construction activity.
    - (g) Construction activities including construction equipment used, environmental conditions such as temperature and relative humidity ranges during construction, and other activities that are not construction related (such as flooding).
    - (h) Analysis of results with conclusions and recommendations.
    - (i) Any additional inclusions to the report(s) requested by the Project Engineer.
- B. Acceptance of the work will be contingent on acceptance of the Vibration Monitoring Report.

## 1.05 PERFORMANCE REQUIREMENTS

- A. Contractor's work must not cause accelerating limits greater than 0.125 in/sec in any direction.
- B. Monitoring Equipment must be capable of measuring and recording vibrations within acceptable limits.
- C. Vibration monitoring system shall include all sensors, data loggers and software for real-time monitoring and data analysis.
- D. See NCHRP 25-25 for other performance requirements.

## 1.06 MEASUREMENT AND PAYMENT

- A. There will be no separate payment for vibration monitoring. Payment for vibration monitoring services will be the responsibility of the Contractor and shall be included in his cost to perform related work.

## PART 2 – PRODUCTS – NOT USED

## PART 3 – EXECUTION

### 3.01 PRE-INSTALLATION

- A. Conduct a pre-installation site inspection with engineer, owner, and stakeholders.
- B. Review and finalize location of vibration monitoring equipment and establishment of no work areas.

### 3.02 MONITORING

- A. The project engineer shall:
  - 1) Direct the vibration monitoring process. The Contractor is to submit the Vibration Monitoring Plan to the Engineer.
  - 2) Direct the number and placement of monitors to be used for each activity or condition.
- B. Monitoring equipment shall:
  - 1) Directly measure particle velocity (rate of ground movement) in three mutually perpendicular directions (longitudinal, transverse, and vertical) and
  - 2) Be capable of recording vector sum of these three measurements to an accuracy of 0.01 inches per second.

- 3) Be capable of producing a continuous written record of all measurements taken.
- C. A daily report will be furnished to the Engineer including, at a minimum:
- 1) A monitoring location plan,
  - 2) All recorded data, and
  - 3) A narrative of construction activities which is referenced to the recorded data.
- D. The Contractor shall:
- 1) Report to the Engineer's field representative at least twenty-four (24) hours in advance of starting any new construction related activity (or if site conditions change),
  - 2) Request that proper vibration monitoring be provided for this activity and/or condition, and
  - 3) Maintain records of all monitoring data for submission to relevant authorities if required.
- E. Agency staff and consultants who interact with the public and building owners in particular should:
- 1) Be aware of potential human reaction to vibration.
  - 2) Be prepared to explain in terms that can be understood by the average person that just because a person can feel vibration does not automatically mean that damage is occurring.
  - 3) Be prepared to explain that even though older buildings tend to be more susceptible to vibration, adequate measures can be implemented to protect against damage.

### 3.03 EXCEEDING PERFORMANCE ALLOWANCE

- A. In the occasion that the Performance Requirements in Section 1.06 are exceeded in any direction, the following are to be implemented:
- 1) The laboratory technician shall notify the Contractor and the Owner's field representative immediately.
  - 2) The offending construction activity shall be suspended immediately.
  - 3) Protected structures shall be inspected for additional potential damages.

- 4) The Contractor shall propose to the Engineer corrective measures for the affecting construction activity to ensure that vibration-monitoring limits will not be exceeded.
- 5) Repair of any damage caused by the vibrations above safe limits as specified herein shall be the full responsibility of the Contractor. Repairs made must meet the Secretary of the Interior's Standard for Rehabilitation.

END OF SECTION

SECTION 02315

FLOTATION CHANNEL

1.1 SCOPE

Dredging shall consist of removing and satisfactorily disposing all material required to construct the flotation channel. The limits of dredge work shall conform to the lines and grades shown on the project plans. Tolerances veering from these requirements must be approved by the ENGINEER.

1.2 METHOD

No method of dredging will be specified. The CONTRACTOR will use any environmentally acceptable method that will complete the work in accordance to that shown on the drawings. However, the CONTRACTOR shall submit to the ENGINEER the method and equipment intended to be used to complete dredging of flotation channels.

1.3 DISPOSAL

Dredged material shall be deposited in areas as shown on the drawings or as directed by the ENGINEER. Any material that is deposited elsewhere than as indicated on the plans or as authorized by the ENGINEER shall be required to be removed and deposited in approved areas at the CONTRACTOR's expense. Additionally, the CONTRACTOR will be responsible for restoring unauthorized disposal areas to pre-project conditions at his own expense.

1.4 CONSTRUCTION

Side slopes of the channels shall be cut true to the proper cross sections as indicated on the drawings. The channels shall be maintained to transport equipment and materials to the project area for the duration of the construction.

- 1.4.1 Dredging of flotation channels will not be allowed within 45 feet of any structure or adjacent bankline unless approved by Engineer.

1.5 TURBIDITY CURTAIN (DEEP)

1.5.1 Description

This work shall consist of furnishing and placing a geosynthetic barrier totally enclosing construction within watercourses to confine sedimentation within the construction area. The CONTRACTOR shall provide a floating Turbidity Curtain, not silt fence, in depths equal to or greater than 2 feet. The Turbidity Curtain shall be a pre-assembled system, including the geotextile/geomembrane, connection and securing mechanisms, flotation devices, stakes, and ballast chain. The CONTRACTOR shall provide a system of

adequate capability, appropriate for the site conditions such as depth (shown on plans), current, and wind/waves. The Turbidity Curtain shall be constructed according to this specification, and the details shown on the plans.

## 1.5.2 Materials

### 1.5.2.1 Geosynthetic

The geosynthetic shall meet the minimum physical requirements for Stabilization Geotextile, except the permittivity (ASTM D 4491) requirement shall be  $0.06 \text{ sec}^{-1}$  maximum. Geosynthetics may be polymer impregnated to negate permittivity and opening size requirements. Hemmed pockets shall be sewn or heat bonded for flotation devices and bottom weights. Panel ends shall have metal grommets placed through a reinforced hem. Connections between panels shall be tightly tied with synthetic or wire rope to prevent flow through the joint.

### 1.5.2.2 Flotation

Flotation devices shall be closed-cell polystyrene. The buoyancy (volume) required will depend upon site conditions; however, sufficient freeboard shall be provided to prevent overtopping.

### 1.5.2.3 Stakes

Stakes, when used to assist in maintaining alignment of the curtain, shall be hardwood or steel with sufficient length and cross-section to support the curtain. External supports may be used; however, embedment depth shall not be less than 1.5 feet.

### 1.5.2.4 Hardware

All hardware such as stakes, ballast chain, connection bolts, reinforcement plates, and tension cables shall be galvanized, stainless steel, aluminum, or otherwise corrosion resistant. The ballast chain shall have sufficient mass to maintain the geosynthetic in a vertical position, but shall not be less than 0.7 lb/ft.

## 1.5.3 Construction Methods

The Turbidity Curtain shall be placed according to locations and depths shown on the plans, details, and according to the manufacturer's published installation guidelines or as directed by the ENGINEER. The Turbidity Curtain system shall be designed to handle site specific drainage or flow appurtenances. The CONTRACTOR shall be responsible to provide and maintain sufficient anchors, tie-downs, or other mechanisms to insure proper position and performance of the Turbidity Curtain. The Turbidity Curtain shall include a redirectional barrier on the upstream end such as a concrete barrier or wood planking. Any visible plume of cloudy water outside the protected construction area shall constitute



inadequate performance of the Turbidity Curtain. The CONTRACTOR shall immediately modify, adjust, or repair any portion of Turbidity Curtain to correct inadequate performance.

The floating curtains shall maintain bottom contact. Excess curtain shall lay without wrinkles on the bottom, away from construction activity.

The CONTRACTOR shall maintain the Turbidity Curtain until the construction activity within the watercourse is complete and the turbidity is reduced to acceptable levels as approved by the ENGINEER. Maintaining shall include keeping a tight alignment around the work area or shoreline.

## 1.6 NAVIGATION

The CONTRACTOR shall mark the channels with buoys and lights in accordance with the rules and regulations of the U.S. Coast Guard and the U.S. Army Corps of ENGINEERS.

## 1.7 MEASUREMENT AND PAYMENT

Dredging will be paid for at the contract unit prices for “Flotation Channel” per cubic yard. Price and payment shall constitute full compensation for all materials, labor, supplies, and equipment required for dredging the channels and maintaining the dredged channels to the required elevation for the duration of the construction. This operation will be completed in two phases. The first phase will be considered complete when the 58 cubic yards of spoil material are placed on the peninsula per the lines and grades shown on the plans. The second and last phase will be considered complete when the remaining disposal material is placed back into the flotation channel and the bottom depth of the temporary disposal area is back to pre-construction conditions and/elevations.

The Turbidity Curtain installation and maintenance shall be incidental to the “Flotation Channel” bid item. Length required shall be Contractor’s means and method to confine sedimentation within the Contractor’s dredging area. Price and payment shall constitute full compensation for all materials, labor, supplies, and equipment required for placement of the turbidity curtain and maintaining the curtain for the duration of the construction until the flotation channel has been returned to pre-construction conditions. This operation is considered complete when the turbidity curtain and all associated materials, supplies, and equipment have been removed from the construction area.

END OF SECTION