



OFFICE OF  
**Coastal Protection  
and Restoration**  
ENGINEERING AND OPERATIONS DIVISION



**BID PACKAGE**  
**FOR**  
**LA-08: BIOENGINEERED OYSTER REEF DEMONSTRATION**  
**PROJECT**

**CAMERON PARISH, LOUISIANA**

**JANUARY 2011**

**PREPARED BY**



**COAST & HARBOR ENGINEERING, INC.**  
**3410 FAR WEST BLVD, SUITE 210**  
**AUSTIN, TEXAS 78731**  
**CHE JOB #0843.A**

**FOR BID**

THIS DOCUMENT IS RELEASED UNDER THE  
AUTHORITY OF HUGO E. BERMUDEZ AND IS  
INTENDED TO BE USED FOR BIDDING AND  
CONSTRUCTION PURPOSES.

ENGINEER: Hugo E. Bermudez  
LICENSE NO.: 30107  
DATE: 1/31/2011



*HB*  
*1/31/11*

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## SCHEDULE OF BID ITEMS

### BIOENGINEERED OYSTER REEF DEMONSTRATION PROJECT (LA-08)

Mail To:  
 Office of State Purchasing  
 Division of Administration  
 State of Louisiana  
 Attn: Hilary Stephenson  
 P.O. Box 94095  
 Baton Rouge, LA 70804-9095

ITEM No.	ITEM	UNIT	QUANTITY <sup>1</sup>	UNIT PRICE <sup>2</sup>		EXTENDED PRICE <sup>2</sup>
				USING WORDS	USING NUMBERS	USING NUMBERS
<b>1. BASE BID (Breakwater A from STA 0+90 to 3+05 and Breakwater B from STA 4+45 to 6+60)</b>						
1	Mobilization and Demobilization <sup>(3)</sup>	Lump Sum	1	_____ Dollars	\$ _____ . ____	\$ _____ . ____
				_____ Cents		
2	Construction Surveys	Lump Sum	1	_____ Dollars	\$ _____ . ____	\$ _____ . ____
				_____ Cents		
3	Oysterbreak Armor Units (Oysterkrete) - Fabricate	Each	621	_____ Dollars	\$ _____ . ____	\$ _____ . ____
				_____ Cents		
4	Oysterbreak Armor Units (Normal Weight Concrete) - Fabricate <sup>(4)</sup>	Each	621	_____ Dollars	\$ _____ . ____	\$ _____ . ____
				_____ Cents		
5	Oysterbreak Armor Units - Deliver and Install	Each	1,242	_____ Dollars	\$ _____ . ____	\$ _____ . ____
				_____ Cents		
6	Marine Mattress	Square Feet	18,060	_____ Dollars	\$ _____ . ____	\$ _____ . ____
				_____ Cents		
7	Navigation Aids	Each	4	_____ Dollars	\$ _____ . ____	\$ _____ . ____
				_____ Cents		
<b>Total Amount of Base Bid:</b>				_____ Dollars	_____ Cents	

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ITEM No.	ITEM	UNIT	QUANTITY <sup>1</sup>	UNIT PRICE <sup>2</sup>		EXTENDED PRICE <sup>2</sup>
				USING WORDS	USING NUMBERS	USING NUMBERS
<b>1. ADDITIVE BID #1 (Additional Breakwater added to Base Bid Breakwater: Breakwater A add STA 0+60 to 0+90 and Breakwater B add STA 6+60 to 6+90)</b>						
1	Construction Surveys	Lump Sum	1	_____ Dollars _____ Cents	\$ _____ . ____	\$ _____ . ____
2	Oysterbreak Armor Units (Oysterkrete) - Fabricate	Each	90	_____ Dollars _____ Cents	\$ _____ . ____	\$ _____ . ____
3	Oysterbreak Armor Units (Normal Weight Concrete) - Fabricate <sup>(4)</sup>	Each	90	_____ Dollars _____ Cents	\$ _____ . ____	\$ _____ . ____
4	Oysterbreak Armor Units - Deliver and Install	Each	180	_____ Dollars _____ Cents	\$ _____ . ____	\$ _____ . ____
5	Marine Mattress	Each	2,520	_____ Dollars _____ Cents	\$ _____ . ____	\$ _____ . ____
<b>Total Amount of Additive Bid #1:</b> _____ Dollars _____ Cents						

ITEM No.	ITEM	UNIT	QUANTITY <sup>1</sup>	UNIT PRICE <sup>2</sup>		EXTENDED PRICE <sup>2</sup>
				USING WORDS	USING NUMBERS	USING NUMBERS
<b>1. ADDITIVE BID #2 (Additional Breakwater added to Base Bid Plus Additive Bid #1 Breakwater: Breakwater A add STA 0+30 to 0+60 and Breakwater B add STA 6+90 to 7+20)</b>						
1	Construction Surveys	Lump Sum	1	_____ Dollars _____ Cents	\$ _____ . ____	\$ _____ . ____
2	Oysterbreak Armor Units (Oysterkrete) - Fabricate	Each	105	_____ Dollars _____ Cents	\$ _____ . ____	\$ _____ . ____
3	Oysterbreak Armor Units (Normal Weight Concrete) - Fabricate <sup>(4)</sup>	Each	105	_____ Dollars _____ Cents	\$ _____ . ____	\$ _____ . ____
4	Oysterbreak Armor Units - Deliver and Install	Each	210	_____ Dollars _____ Cents	\$ _____ . ____	\$ _____ . ____
5	Marine Mattress	Each	2,520	_____ Dollars _____ Cents	\$ _____ . ____	\$ _____ . ____
<b>Total Amount of Additive Bid #2:</b> _____ Dollars _____ Cents						

ITEM No.	ITEM	UNIT	QUANTITY <sup>1</sup>	UNIT PRICE <sup>2</sup>		EXTENDED PRICE <sup>2</sup>
				USING WORDS	USING NUMBERS	USING NUMBERS
<b>1. ADDITIVE BID #3 (Additional Breakwater added to Base Bid Plus Additive Bid #1 and #2 Breakwater: Breakwater A add STA 0+00 to 0+30 and Breakwater B add STA 7+20 to 7+50)</b>						
1	Construction Surveys	Lump Sum	1	_____ Dollars _____ Cents	\$ _____ . ____	\$ _____ . ____
2	Oysterbreak Armor Units (Oysterkrete) - Fabricate	Each	90	_____ Dollars _____ Cents	\$ _____ . ____	\$ _____ . ____
3	Oysterbreak Armor Units (Normal Weight Concrete) - Fabricate <sup>(4)</sup>	Each	90	_____ Dollars _____ Cents	\$ _____ . ____	\$ _____ . ____
4	Oysterbreak Armor Units - Deliver and Install	Each	180	_____ Dollars _____ Cents	\$ _____ . ____	\$ _____ . ____
5	Marine Mattress	Each	2,520	_____ Dollars _____ Cents	\$ _____ . ____	\$ _____ . ____
<b>Total Amount of Additive Bid #3:</b>				_____ Dollars	_____ Cents	

1. Where the quantity of Work with respect to any item is covered by a unit price, such quantities are estimated quantities to be used when comparing bids and the right is reserved by the Owner to increase/decrease such quantities as may be necessary to complete the Work and/or remain within the funding limits. In the event of material underruns/overruns, the unit costs will be used to determine payment to the Contractor.
2. Items must be completed by the bidder. The completed sheet must be attached to the bid submitted to the Office of State Purchasing in order for the bid to be considered. The low Bidder will be determined on the basis of the Base Bid and any Alternates accepted.
3. Mobilization and Demobilization shall include all appropriate costs associated with constructing all features listed in the Specifications and/or shown in the Plans.



**THE UNDERSIGNED BIDDER**, in compliance with the Invitation to Bid for the project listed above, having: a) examined the construction plans, specifications and related documents, b) not received, relied on, or based his bid on any verbal instructions contrary to the Contract Documents or any addenda, c) inspected the site and being familiar with all of the conditions surrounding the fulfillment of the contract, hereby proposes to furnish all labor, materials, tools and equipment necessary to complete the project within the time set forth and for the total amount of the accepted bid based on the sum of the extension of unit prices and estimated quantities contained in the Schedule of Bid Items.

**Also, the Bidder acknowledges receipt of the following ADDENDA (ATTACH COPIES):**

No. \_\_\_\_ Dated: \_\_\_\_\_

No. \_\_\_\_ Dated: \_\_\_\_\_

No. \_\_\_\_ Dated: \_\_\_\_\_

No. \_\_\_\_ Dated: \_\_\_\_\_

**NAME OF BIDDER:** \_\_\_\_\_

**LOUISIANA CONTRACTORS LICENSE NUMBER:** \_\_\_\_\_

**SIGNATURE:** \_\_\_\_\_

**TYPED or PRINTED NAME:** \_\_\_\_\_

**TITLE:** \_\_\_\_\_

**ADDRESS:** \_\_\_\_\_

\_\_\_\_\_

**PHONE:** ( \_\_\_\_ ) \_\_\_\_\_

**FAX:** ( \_\_\_\_ ) \_\_\_\_\_

**VENDOR NUMBER:** \_\_\_\_\_

**DATED:** \_\_\_\_\_

## **PART I            GENERAL PROVISIONS**

### **GP-1    DEFINITION OF TERMS**

Whenever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to the singular or plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs and the titles of other documents or forms.

Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

- 1.1 Acceptance: A written approval from the Engineer which certifies that specific items of work in the Contract have been completed and/or obligations have been fulfilled by the Contractor.
- 1.2 Addenda: Those written or graphic documents which are issued prior to opening of Bids in accordance with the Bidding Requirements and clarify or change the bidding requirements or the proposed Contract Documents.
- 1.3 Agreement: The written and signed agreement between the Owner and Contractor specifying the Work to be performed and includes the Contract Documents, all addenda pertaining to the Bid, Notice of Award, Bonds, Plans, General Provisions, Special Provisions, and Technical Specifications.
- 1.4 Application of Payment: That form which is used by the Contractor to request partial and final payment and is deemed acceptable to the Owner. It shall be accompanied by any supporting documentation required by the Contract Documents.
- 1.5 A.S.T.M.: American Society for Testing and Materials.
- 1.6 Bid: An offer or proposal submitted on the prescribed form setting forth the prices for the Work.
- 1.7 Bidder: The person, association of persons, firm, or corporation submitting a proposal for the Work.
- 1.8 Bidding Requirements: The Advertisement or Invitation to Bid, Instruction to Bidders, Form of Bid Security, if any, and Bid Form with any supplements.
- 1.9 Change Order: A written order which is submitted to the Contractor, signed by the Owner, and authorizes an addition, deletion, or revision in the Work, or an adjustment in the contract price or the contract time issued after the effective date of the Agreement.

- 1.10 Claim: A written demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both or other relief with respect to the terms of the Contract.
- 1.11 Contract: The written Agreement between the Owner and the Contractor which defines the work to be completed and shall be understood to include the Plans, Specifications, Information for Bidders, Agreement, Advertisement For Bidders, Affidavit, Bid Form, Bid Bond, Contract Bond, Notice of Award, Notice to Proceed, and Change Orders, and Claims.
- 1.12 Contract Bond: The approved form of security furnished by the Contractor and Surety for the faithful performance of the Work, and the payment for all labor, materials, and/or obligations incurred by the Contractor in the prosecution thereof.
- 1.13 Contract Documents: The Agreement, all addenda which pertains to the Contract Documents, Bid Documents and specified Attachments accompanying the Bid and any post-bid documentation submitted prior to the Notice of Award, Contractor's Bid when attached as an exhibit to the Agreement, the Bonds (Bid and Performance/Payment), General Provisions, Special Provisions, Technical Specifications, Plans, and all Field or Change Orders issued after the execution of the Agreement. Shop Drawings and other submittals by the Contractor are not Contract Documents.
- 1.14 Contract Price: The moneys payable by the Owner to the Contractor for the Work in accordance with the Contract Documents as stated in the Agreement.
- 1.15 Contract Time: The number of calendar days specified in the Agreement for completion of the Work, together with any extensions authorized through change orders.
- 1.16 Contractor: The person, association of persons, firm, or corporation entering into the duly awarded Contract.
- 1.17 Contracting Agency: The Louisiana Office of Coastal Protection and Restoration (OCPR) acting through the Division of Administration.
- 1.18 Day: When any period of time is referred to in the Contract Documents using days, it will be computed to exclude the first day and include the last day of such period. If the last day of any such period falls on a Saturday, Sunday, or a legal holiday, that day will be omitted from the computation. A calendar day is measured as twenty-four (24) hour period starting at midnight and ending the following midnight.
- 1.19 Design Report: A written report by the Engineer which provides the design methodology for the Work.
- 1.20 Effective Date of the Agreement: The date indicated in the Agreement on which it becomes effective.

- 1.21 Engineer: The Louisiana Department of Natural Resources, Coastal Engineering Division, or its designee.
- 1.22 Equipment: All machinery, implements, and power-tools, in conjunction with the necessary supplies for the operation, upkeep, maintenance, and all other tools and apparatuses necessary for the proper construction and acceptable completion of the Work.
- 1.23 Extension of Contract: Any extension of time for completion of Work beyond the Contract Time which is granted by the Owner, recommended by the Engineer and approved by the Office of State Purchasing in the form of a Change Order.
- 1.24 Federal Sponsor: The federal agency which has been tasked to manage the implementation of the project.
- 1.25 Field Order: A written order issued by the Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or Contract Time.
- 1.26 Resident Project Representative: An authorized representative of the Engineer who is responsible to inspect the Work and materials furnished by the Contractor.
- 1.27 Laboratory: The firm, company, or corporation which is used to test materials and is approved for use by the Engineer.
- 1.28 Laws and Regulations; Laws or Regulations: Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
- 1.29 Materials: Any substance used in the Work to build structures, but does not include material used in false work or other temporary structures not incorporated in the Work.
- 1.30 Milestone: A principal event specified in the Contract Documents relating to an intermediated completion date or time prior to the Contract Times.
- 1.31 Notice of Award: A written notice to the successful Bidder stating that the Bid has been accepted by the Owner and that the successful Bidder is required to execute the Contract and furnish the Contract Performance Bond.
- 1.32 Notice to Proceed: The written notice to the Contractor by the Owner which provides the starting date for the Contract Time.
- 1.33 Owner: The Owner is the State of Louisiana (State) which acts through the Contracting Agency.
- 1.34 Plans: That part of the Contract Documents prepared or approved by the Engineer which graphically shows the scope, intent, and character of the Work to be completed by the Contractor.

- 1.35 Project Site: The location where the Work is to be performed as stated in the Agreement.
- 1.36 Right-of-way: That entire area reserved for constructing, maintaining, and protecting the proposed improvement, structures, and appurtenances of the Work.
- 1.37 Samples: Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portions of the Work will be judged.
- 1.38 Shop Drawings: All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for the Contractor and submitted by the Contractor to illustrate some portion of the Work to be performed.
- 1.39 Specifications: That part of the Contract Documents consisting of written technical descriptions of materials, equipment, systems, standards, and workmanship as applied to the work to be performed and certain administrative details applicable thereto.
- 1.40 State: The State of Louisiana.
- 1.41 Structures: Bridges, plugs, weirs, bulkheads, berms, dams, levees, and other miscellaneous construction encountered during the Work and not otherwise classified herein.
- 1.42 Subcontractor: Any person, association of persons, firm, or corporation who contracts with the Contractor to perform any part of the project covered by the Contract.
- 1.43 Submittals: Certificates, samples, shop drawings, and all other project data which are submitted to the Engineer in order to verify that the correct products will be installed on the project.
- 1.44 Successful Bidder: The lowest responsible Bidder whom the Owner makes an award.
- 1.45 Special Provisions: That part of the Contract Documents which amends or supplements these General Provisions.
- 1.46 Surety: The corporate body, licensed to do business in Louisiana, bound with and for the Contractor's primary liability, and engages to be responsible for payment of all obligations pertaining to acceptable performance of the Work contracted.
- 1.47 Temporary Structures: Any non-permanent structure required while engaged in the prosecution of the Contract.
- 1.48 Work: All work specified herein or indicated on the Plans.

- 1.49 Work Plan: A written plan by the Contractor that details how the Work will be provided including layout drawings, projected schedule (Initial Progress Schedule), and a list of labor hours, materials, and equipment.

## GP-2 BID REQUIREMENTS

The Contract and Bonds which govern the Work shall be performed in accordance with the Plans, Specifications, and the Louisiana Standard Specifications for Roads and Bridges, 2000 edition. The Bidder understands that all quantities for performing the Work have been estimated by the Engineer, and that the Bid shall be the sum of the quantities multiplied by their respective unit rates. The Contract shall be awarded by the Owner through a comparison of all bids. It is the responsibility of each Bidder before submitting a Bid to:

- 2.1. Examine the Bidding Documents including the Plans and Specifications and any Addenda or related data identified in the Bidding Documents;
- 2.2. Visit the Project Site to become familiar with the local conditions if they are believed to affect cost, progress, or the completion of the Work;
- 2.3. Become familiar and satisfied with all federal, state, and local Laws and Regulations that may affect cost, progress, or the completion of the Work;
- 2.4. Study and correlate all information known to the Bidder including observations obtained from Bidder's visits, if any, to the Project Site, with the Bidding Documents;
- 2.5. Submit a written notice to the Engineer within three (3) days regarding any conflicts, errors, ambiguities, or discrepancies discovered in the Bidding Documents and confirm that the written resolution thereof by the Engineer is acceptable to the Bidder; and
- 2.6. Determine that the Bidding Documents are generally sufficient to convey an understanding of all terms and conditions for completing the required Work.

The submission of a Bid will constitute an incontrovertible representation that the Bidder has complied with every requirement of these Specifications. The Bidder shall comply with all other requirements specified in the Notice to Bidders.

## GP-3 AVAILABILITY OF PLANS AND SPECIFICATIONS

One (1) set of Plans and Specifications shall be furnished to each Bidder. Three (3) sets of the Plans and Specifications shall be furnished to the Contractor upon award of the Contract. Additional sets may be furnished to the Contractor upon request from the Engineering Division of the Office of Coastal Protection and Restoration, 450 Laurel Street, 11th Floor, Baton Rouge, Louisiana 70801.

## GP-4 LAWS, REGULATIONS, STANDARDS, SPECIFICATIONS, AND CODES

Bidders are required to become familiar and remain in compliance with all Federal, State, and local laws, ordinances, and regulations which may affect all employees and

execution of the Work. The filing of a bid will be presumptive evidence that the Bidder has complied with this requirement. The Owner will not be responsible for any inaccurate interpretations or conclusions drawn by the Contractor from information and documentation provided by the Owner.

References to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws and Regulations, whether such reference be specific or by implication, may not be in effect at the time of opening the Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents. No provision of any such standard, specification, manual, or code, or any instruction of a supplier shall be effective to change the duties or responsibilities of the Owner or Engineer, or any of their Subcontractors, consultants, agents, or employees from those set forth in the Bid Documents. No such provision shall be effective to assign to the Owner or Engineer, or any of their consultants, agents, or employees any duty or authority to supervise or direct the performance of the Contractor's obligations or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

The Contractor shall indemnify the Owner and its representatives against any claim or liability arising from all violations of any laws, bylaws, ordinances, codes, regulations, orders, or decrees. The obligations imposed by these specifications are in addition to and are not to be construed in any way as a limitation of any rights available to the Engineer or Owner which are otherwise imposed by any laws or regulations or other provisions within the Contract Documents.

The Contractor shall abide by laws set forth in the Davis-Bacon Act of 1931 which states that all laborers and mechanics employed by recipients, the recipient's contractors, or subcontractors on this project shall be paid wages at rates no less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of chapter 31 of Title 40 United States Code. Additionally, with respect to the labor standards specified in this section, the Secretary of Labor shall have the authority and functions set forth in Reorganization Plan Numbered 14 of 1950 (64 Stat. 1267; 5 U.S.C. App.) and Section 3145 of Title 40 (40 U.S.C. § 3145).

Should the Contractor at any time become aware that a particular skill or trade not reflected on the Prevailing Wage Schedule will be or is being employed in the Work, whether by the Contractor or by a subcontractor, the Contractor shall promptly inform the Owner and contact the United States Department of Labor directly to request clarification on wage rates for trades or skills not specifically identified the Prevailing Wage Schedule, however in any event the Contractor shall not pay less than the wage indicated for Laborers.

The Contractor may US Department of Labor Form WH-347 to submit their certified payroll information (see <http://www.dol.gov/whd/forms/wh347instr.htm> for Form WH-347 and instructions). While the use and completion of Form WH-347 is optional, it is mandatory for covered contractors and subcontractors performing work on Federally financed or assisted construction contracts to respond to the information collection contained in 29 C.F.R. §§ 3.3, 5.5(a). The Copeland Act (40

U.S.C. § 3145) contractors and subcontractors performing work on Federally financed or assisted construction contracts to "furnish weekly a statement with respect to the wages paid each employee during the preceding week." U.S. Department of Labor (DOL) regulations at 29 C.F.R. § 5.5(a)(3)(ii) require contractors to submit weekly a copy of all payrolls to the Federal agency contracting for or financing the construction project, accompanied by a signed "Statement of Compliance" indicating that the payrolls are correct and complete and that each laborer or mechanic has been paid not less than the proper Davis-Bacon prevailing wage rate for the work performed. DOL and federal contracting agencies receiving this information review the information to determine that employees have received legally required wages and fringe benefits.

Prevailing wage rates as determined by the U.S. Department of Labor as of 1/3/2011 are provided in Appendix E.

#### GP-5 PRE-BID CONFERENCE AND SITE VISIT

A Pre-Bid conference will be held at the location and on the date provided in the Bid Solicitation. A site visit may also be held at the Project Site as specified in the Bid Solicitation or at the Pre-Bid conference. Bidders will be required to furnish their own transportation to the Project Site. Representatives of the Owner and Engineer will attend the Pre-Bid conference and site visit, if held, to discuss the Work. **Bidders are required to attend the Pre-Bid conference and site visit, if held.** Failure to attend will result in a null or void Bid.

All questions shall be in writing and faxed to the Office of State Purchasing (OSP) after the Pre-Bid conference and by the due date announced at the Pre-Bid conference. No additional questions shall be received after the specified pre-bid conference submittal deadline. Oral statements will not be binding or legally effective. The Office of State Purchasing will submit addenda in response to all questions arising at the Pre-Bid Conference and site visit to all prospective Bidders on record. All prospective Bidders on record may contact the Office of State Purchasing for any additional information.

#### GP-6 NOTICE OF AWARD

The Owner shall provide written notice to the Successful Bidder stating that the Owner will sign and deliver the Agreement upon compliance with the conditions enumerated therein and within the time specified.

#### GP-7 NOTICE TO PROCEED AND CONTRACT TIME

The Contractor shall start the Work and begin the Contract Time on the dates provided in the Notice to Proceed. The Work shall be conducted using sufficient labor, materials, and equipment as necessary to ensure completion within the Contract Time. The Contract Time for completion of the Base Bid for the Work is provided in Special Provisions, unless an extension is granted to the Contract Time as specified in GP-44.



## GP-8 WORK PLAN

The Contractor shall develop a written Work Plan which accounts for all of the construction activities required by the Contract Documents. The Work Plan shall include a list of the individual construction tasks to be completed and the estimated dates for beginning and completing the tasks. It shall also include all other items which are applicable to completing the Work such as, but not limited to, the following:

- 8.1 Typical report form for the Bi-Weekly Progress Meeting;
- 8.2 Typical form for Daily Progress Report;
- 8.3 Hurricane and Severe Storm Plan;
- 8.4 Site-specific Health and Safety Plan;
- 8.5 The delivery method and source(s) of all construction materials (company or producer name, mailing and physical address, phone number, and name of contact person).
- 8.6 The personnel, material, subcontractors, fabricators, suppliers, types of equipment, and equipment staging areas the Contractor proposes to use for construction;
- 8.7 Shop drawings, test results, and sample submittals;
- 8.8 Survey layout and stakeout;
- 8.9 All supplemental items specified in Special Provisions.

The Work Plan shall be submitted to the Engineer prior to the Pre-Construction Conference by the date provided in Special Provisions. The Engineer shall review the Work Plan and have the Contractor make any necessary revisions prior to acceptance of the plan. **No payment for mobilization will be made until the Work Plan has been accepted by the Engineer.**

## GP-9 PROGRESS SCHEDULE

The Contractor shall develop a written Progress Schedule which provides for an orderly progression of the Work, submittals, tests, and deliveries in order to complete the Work within the specified Milestones and Contract Time. All of the items listed in the Work Plan shall be integrated into the Progress Schedule. The format of the schedule shall be composed using Microsoft Project®, or any other software deemed acceptable by the Engineer. It shall be updated weekly by the Contractor, at a minimum. The Progress Schedule shall also include, but not be limited to the following:

- 9.1 All of the elements in the Work Plan, including updates;

- 9.2 A work order issued from Louisiana One Call ordering all their subscribers in the project area to mark their utilities;
- 9.3 A telephone log verifying that all property owners and utilities have been contacted. This log should list the time, date, and names of the personnel representing the property owners, utilities, and Contractor;

The following table defines the monthly anticipated adverse weather days that are expected to occur during the Contract Time and will constitute the baseline monthly weather time for evaluations. The schedule is based upon National Oceanic and Atmospheric Administration (NOAA) or similar data for the regional geographic area.

Monthly Anticipated Adverse Weather Calendar Days											
Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
5	5	4	4	4	5	7	7	5	3	3	4

The Progress schedule must reflect these anticipated adverse weather delays on all weather dependent activities. Adverse weather days must prevent Work for fifty percent (50%) or more of the work day and delay work critical to the timely completion of the project. The number of actual adverse weather days shall be calculated chronologically from the first to the last day of each month.

The Progress Schedule shall be submitted to the Engineer prior to the Pre-Construction Conference by the date provided in Special Provisions. The Engineer shall perform a review and have the Contractor make any necessary revisions prior to acceptance of the schedule. Acceptance will not impose responsibility on the Owner or Engineer for the sequencing, scheduling, or progression of the Work. The Contractor is fully responsible for progression of the Work in order to maintain the compliance with the Progress Schedule.

**GP-10 DAILY PROGRESS REPORTS**

The Contractor shall record the following daily information on Daily Progress Reports:

- 10.1 Date and signature of the author of the report;
- 10.2 Dollar amount of all bid items that are fabricated, installed, backfilled, pumped, constructed, damaged, replaced, etc. The amount of material shall be expressed in the units stated in the bid;
- 10.3 Field notes of all surveys;
- 10.4 Notes on all inspections;
- 10.5 Details of Health and Safety meetings;
- 10.6 A brief description of any Change Orders, Field Orders, Claims, Clarifications, or Amendments;

- 10.7 Condition of all navigation aides (I.E., warning signs, lighted marker buoys) and any repairs performed on them;
- 10.8 Weather conditions (adverse weather day, wind speed and direction, temperature, wave height, precipitation, etc.);
- 10.9 The amount of time lost to severe weather or personnel injury, etc;
- 10.10 Notes regarding compliance with the Progress Schedule;
- 10.11 Visitor log (Instructions for format will be furnished by the Field Engineer).

The daily progress reports shall be submitted to the Engineer at the Bi-Weekly Progress Meetings specified in GP-13 in both hard copy and digital format (Adobe Acrobat® Format, or approved equal). The typical form for Daily Progress Reports shall be developed by the Contractor and incorporated into the Work Plan.

#### GP-11 HURRICANE AND SEVERE STORM PLAN

The Contractor shall develop and maintain a written Hurricane and Severe Storm Plan. The Plan shall include, but not be limited to, the following:

- 11.1 What type of actions will be taken before storm strikes at the Project Site. The plan should specify what weather conditions or wave heights will require shutdown of the Work and removal of equipment, personnel, etc.
- 11.2 Notes from continuous monitoring of NOAA marine weather broadcasts and other local commercial weather forecasts.
- 11.3 Equipment list with details on their ability to handle adverse weather and wave conditions.
- 11.4 List of safe harbors or ports and the distance and travel time required to transfer equipment from the Project Site.
- 11.5 Hard copies of any written approvals or operations schedules associated with the use of the safe harbors or ports.
- 11.6 Method of securing equipment at the safe harbors or ports.
- 11.7 List of tug boats and work boats and their respective length, horsepower, etc. which will adequately transfer the equipment to safe harbor or port under adverse weather conditions.
- 11.8 Methods which will be used to secure equipment left onsite during adverse weather conditions.
- 11.9 Evacuation or immediate reaction plans to be taken by personnel for sudden storm occurrences.

11.10 Operations procedures which will be used to secure critical dredging equipment such as spuds, swing wires, anchor wires, or tugs during adverse weather conditions.

11.11 Communications protocol with local law enforcement and fire and rescue agencies.

The Contractor shall incorporate the Hurricane and Severe Storm Plan into the Work Plan. The Owner and Engineer are not responsible for the adequacy of this plan.

## GP-12 HEALTH AND SAFETY PLAN AND INSPECTIONS

The Contractor shall develop and maintain a written Health and Safety Plan which allows the Work to be performed in compliance with all applicable laws, ordinances, rules, and regulations of any government agency having jurisdiction over the safety of personnel or property. This includes maintaining compliance with the Code of Federal Regulations, Title 29, Occupational Safety and Health Administration (OSHA) and all applicable Health and Safety Provisions of the State of Louisiana.

The Contractor shall institute a daily inspection program to assure that the requirements of the Health and Safety Plan are being fulfilled. Inspections shall include the nature of deficiencies observed, corrective action taken or to be taken, location of inspection, date, and signature of the person responsible for its contents. The results of the inspections shall be recorded on Daily Progress Reports and kept at the Project Site during the Work.

The Contractor shall incorporate the Health and Safety Plan into the Work Plan. The Owner and Engineer are not responsible for the adequacy of this plan.

## GP-13 PROGRESS MEETINGS AND REPORTS

The Engineer shall schedule meetings to review the progress of the Work, coordinate future efforts, discuss compliance with the Progress Schedule and resolve miscellaneous problems. The Engineer or Resident Project Representative, Contractor, and all Subcontractors actively working at the Project Site shall attend each meeting. Representatives of suppliers, manufacturers, and other Subcontractors may also attend at the discretion of the Contractor. The Contractor shall record the details of each meeting in a Progress Report. The format of this report shall be developed by the Contractor, approved by the Engineer, and included in the Work Plan. The progress meetings and reports shall be scheduled according to the Special Provisions.

## GP-14 PRE-CONSTRUCTION CONFERENCE

A Pre-Construction Conference shall be held by the Contractor, Owner, Engineer, local stakeholders, and other appropriate personnel prior to starting construction on the date specified in the Special Provisions. This conference shall serve to establish a mutual understanding of the Work to be performed, the elements of the Progress Schedule and Work Plan, expectations for bi-weekly progress meetings, the Plans and Specifications, processing Applications for Payment, and any other items of

concern. If any subcontractors are not present, another pre-construction conference will be required.

#### GP-15 CONTRACT INTENT

The Bid Documents are complementary; what is called for by one is as binding as if called for by all. Clarifications and interpretations or notifications of minor variations and deviations of the Contract Documents will be issued by Engineer as provided in these Specifications. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Bid Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided at no additional cost to the Owner.

#### GP-16 ENGINEER AND AUTHORITY OF ENGINEER

The Engineer will be the designated representative of the Owner, the initial interpreter of the Contract Documents and the judge over acceptability of all the Work. Claims, disputes, and other matters relating to the acceptability of the Work, performance by the Contractor or the interpretation of the requirements of the Contract Documents must be submitted to the Engineer in writing. Upon written request from the Contractor, the Engineer shall issue written clarifications or interpretations which are consistent with the overall intent of the Contract Documents. Such written clarifications and interpretations will be binding on the Owner and the Contractor. Either the Owner or the Contractor may make a Claim if a written clarification or interpretation justifies an adjustment in the Contract Price or Contract Times.

The Engineer has the authority to suspend the Work in whole or in part due to failure of the Contractor to correct conditions unsafe for workmen or the general public, carry out provisions of the Contract, perform conformance work, or to carry out orders. The Engineer shall submit a written order to the Contractor for work which must be suspended or resumed. Nothing in this provision shall be construed as establishing responsibility on the part of the Engineer for safety which is the responsibility of the Contractor.

The Engineer or Resident Project Representative shall keep a daily record of weather and flood conditions and may suspend the Work as deemed necessary due to periods of unsuitable weather, conditions considered unsuitable for execution of the Work, or for any other condition or reason deemed to be in the public interest.

#### GP-17 CONFORMITY WITH PLANS AND SPECIFICATIONS

All work and materials involved with the Work shall conform with the lines, grades, cross sections, dimensions, and other requirements shown on the Plans or indicated in these Specifications unless otherwise approved by the Engineer.

#### GP-18 CLARIFICATIONS AND AMENDMENTS TO CONTRACT DOCUMENTS

The Contract Documents may be clarified or amended by the Engineer to account for additions, deletions, and revisions to the Work after the Effective Date of the

Agreement. The clarifications and amendments shall be addressed by either a Change Order or a written clarification by the Engineer. The Contractor shall not proceed with the Work until the Change Order or clarification has been issued by the Engineer. The Contractor shall not be liable to the Owner or Engineer for failure to report any such discrepancy unless the Contractor had reasonable knowledge.

The Contractor may request a clarification or amendment for the following:

- 18.1 Any conflict, error, ambiguity, or discrepancy within the Contract Documents;  
or
- 18.2 Any conflict, error, ambiguity, or discrepancy between the Bid Documents and the provision of any Law or Regulation applicable to the performance of the Bid; or
- 18.3 Any standard, specification, manual, or code (whether or not specifically incorporated by reference in the Bid Documents); or
- 18.4 Instructions by a supplier.

The official form for a written clarification is provided in Appendix F. This form shall be filled out appropriately by the Contractor and submitted to the Engineer. The Engineer shall clarify the issue in writing on either the clarification form or a Change Order and submit it to the Contractor.

#### GP-19 SUBCONTRACTS

The Contractor shall provide the names of all Subcontractors to the Engineer in writing before awarding any Subcontracts. The Contractor shall be responsible for the coordination of the trades and Subcontractors engaged in the Work. The Contractor is fully responsible to the Owner for the acts and omissions of all the Subcontractors. The Owner and Engineer will not settle any differences between the Contractor and Subcontractors or between Subcontractors. The Contractor shall have appropriate provisions in all Subcontracts to bind Subcontractors to the Contractor by the terms of the General Conditions and other Contract Documents, as applicable to the Work of Subcontractors. The provisions should provide the Contractor the same power regarding termination of Subcontracts that the Owner may exercise over the Contractor under any provisions of the Contract Documents.

#### GP-20 WORKERS, METHODS, AND EQUIPMENT

The Contractor shall provide competent, qualified, and trained personnel to perform the Work. The Contractor shall not employ any person found objectionable by the Engineer. Any person employed by the Contractor or any Subcontractor who, in the opinion of the Engineer, does not perform the Work in a proper, skillful, and orderly manner shall be immediately removed upon receiving a written order by the Engineer. The Engineer may also suspend the Work until the Contractor removes the employee or provides a suitable replacement. Such an employee shall not be re-employed in any portion of the Work without written approval from the Engineer.

The on-site superintendent for the Contractor shall be competent, English-speaking, and qualified to receive orders, supervise, and coordinate all Work for the Contractor and any Subcontractors. The qualifications of the superintendent must be established and approved by the Engineer prior to commencement of the Work. The superintendent shall be furnished by the Contractor regardless of how much Work may be sublet. In the performance of the Work under this Contract, the Contractor shall conduct operations to avoid interference with any other Contractors.

All equipment, products, and material incorporated into the Work shall be as specified, or if not specified, shall be new, of good quality, and protected, assembled, used, connected, applied, cleaned, and conditioned in accordance with the manufacturer's instructions, except as otherwise may be provided in the Bid Documents. All equipment shall be of sufficient size and mechanical condition to meet the requirements of the Work and produce a satisfactory quality of work. Equipment shall not damage adjacent property throughout the performance of the Work. The Plant and Equipment Schedule should be completed by the Contractor.

The Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures used to complete the Work in conformance with the Contract Documents.

The Contractor shall obtain permission from the Engineer if a method or type of equipment other than specified in the Contract is desired. The request shall be in writing and shall include a full description of the methods, equipment proposed, and reasons for the modification. A proposed item of material or equipment may be considered by the Engineer to be functionally equal to an item specified in the Contract if:

- 20.1 It is at least equal in quality, durability, appearance, strength, and design characteristics;
- 20.2 There is no increase in any cost including capital, installation, or operating to the Owner;
- 20.3 The proposed item will conform substantially, even with deviations, to the detailed requirements of the item named in the Bid Documents.

If, after trial use of the substituted methods or equipment, the Engineer determines that the Work produced does not meet Contract requirements, the Contractor shall discontinue use of the substituted methods or equipment and shall complete the Work with the specified methods and equipment. The Contractor shall remove the deficient Work and replace it with Work of specified quality or take other corrective action as directed. No change will be made in basis of payment for construction items involved or in Contract Time as a result of authorizing a change in methods or equipment.

## GP-21 ACCIDENT PREVENTION, INVESTIGATIONS, AND REPORTING

The Contractor shall be responsible to develop and maintain all safeguards and safety precautions necessary to prevent damage, injury, or loss throughout the performance of the Work. All accidents at the Project Site shall be investigated by the immediate

supervisor of employee(s) involved and reported to the Engineer or Resident Project Representative within one (1) working day. A complete and accurate written report of the accident including estimated lost time days shall be submitted to the Engineer within four (4) calendar days. A follow-up report shall be submitted to the Engineer if the estimated lost time days differ from the actual lost time days.

#### GP-22 PRESERVATION AND RESTORATION OF PROPERTY, MONUMENTS, ETC.

The Contractor shall comply with all applicable laws, ordinances, rules, and regulations of any government agency having jurisdiction over the preservation and protection of public and private property. The Contractor shall install and maintain suitable safeguards and safety precautions during the Work as necessary to prevent damage, injury, or loss to property. This responsibility shall remain with the Contractor until the Work has been completed and accepted. Any damage, injury, or loss to property which is caused by the Contractor or Subcontractors shall be repaired or replaced at the expense of the Contractor.

The Contractor shall protect all land monuments, State and United States bench marks, geodetic and geological survey monuments, and property markers from disturbance or damage until an authorized agent has witnessed or otherwise referenced their location. The Contractor shall also provide protection for all public and private property including trees, utilities, pipes, conduits, structures, etc. These items shall not be removed unless directed by the Engineer.

The Contractor shall be responsible to completely repair all damages to public or private property due to any act, omission, neglect, or misconduct in the execution of the Work unless it is due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God, public enemies, or governmental authorities. The damage must be repaired at the expense of the Contractor before final acceptance of the Work can be granted by the Engineer. If the Contractor fails to repair the damage within forty-eight (48) hours, the Owner may independently proceed with the repairs at the expense of the Contractor by deducting the cost from the Contract. If the Contractor cannot provide for the cost of repairs, the Surety of the Contractor shall be held until all damages, suits, or claims have been settled.

#### GP-23 PROTECTION OF THE WORK, MATERIALS, AND EQUIPMENT

It shall be the responsibility of the Contractor to protect the Work, materials, and equipment from damages or delays due to inflows, tidal rise, and storm water runoff which may occur at the Project Site. The Owner shall not be held liable or responsible for these types of delays or damages.

#### GP-24 LAND RIGHTS

The Owner has been granted all of the temporary easements, servitudes, and right-of-way agreements from public and private landowners in order to perform the Work. A land rights memorandum which lists all known responsible contacts and required stipulations is provided in Appendix C. The Contractor is responsible to notify all of the contacts and abide by stipulations listed in that memorandum.



## GP-25 UTILITIES

The Owner has been granted all of the temporary easements, servitudes, and right-of-way agreements from public and private utilities in order to perform the Work. The utilities include, but are not limited to telephone, telegraph, power poles or lines, water or fire hydrants, water or gas mains and pipelines, sewers, conduits, and other accessories or appurtenances of a similar nature which are fixed or controlled by a city, public utility company or corporation.

The Contractor shall conduct the Work in such a manner as to cooperate and minimize inconveniences with utilities. Prior to commencement of the Work, the Contractor is responsible to notify all of the utilities and abide by stipulations required by the utility company(s). The Contractor shall also call ALouisiana One Call@ at 1-800-272-3020 a minimum of 5 working days prior to construction to locate existing utilities at the Project Site.

Any damage to utilities that is caused by the Contractor within the Project Site shall be repaired at the expense of the Contractor. The Owner will not be responsible for any delay or damage incurred by the Contractor due to working around or joining the Work to utilities left in place or for making adjustments.

Any unidentified pipes or structures which may be discovered within the limits of the Project Site shall not be disturbed and shall be reported to the Engineer as soon as possible. Construction or excavation shall not be performed around unidentified utilities without prior approval from the Engineer.

## GP-26 PERMITS

Federal and State permits that are required to perform the Work, such as the Department of the Army Permit, Coastal Use Permit, LDEQ Clean Water Permit, LDWF Fill Material License, and LADOTD highway crossing permit have been secured by the Owner. Permit conditions (MVN-2008-0345-EFF) affecting the construction processes have been included in these Specifications. Copies of these permits will be provided to the Contractor at the pre-construction conference. These permits will not relieve the responsibility of the Contractor from obtaining any additional permits which may be needed to complete the Work. Copies of any special permits that are obtained by the Contractor must be submitted to the Owner. The Contractor shall conform to the requirements therein and display copies of the permits in a public setting at the Project Site at all times.

## GP-27 PROJECT SITE CLEAN-UP

The Contractor shall keep the Project Site free from accumulations of waste material or trash at all times. All trash and waste materials shall be removed by the Contractor and disposed off-site in an approved waste disposal facility. In addition, all equipment, tools, and non-conforming work shall also be removed prior to the Work being accepted. No materials shall be placed outside of the Project Site.

#### GP-28 OWNER INSPECTION

The Owner, Resident Project Representative, and Federal Sponsor shall have the right to perform reasonable inspections and testing of the Work at the Project Site. Access shall be granted to the entire Project Site including all materials intended for use in the Work. The Contractor shall allow reasonable time for these inspections and tests to be performed. The inspections shall not relieve the Contractor from any obligation in accordance with the requirements of the Contract.

The Owner shall notify the Contractor prior to all tests, inspections, and approvals of the Work which are to be conducted at the Project Site. The Owner shall also provide the Contractor with the written results of all inspections and tests. Inspections, tests, or Payments made by the Owner shall not constitute acceptance of non-conforming Work of prejudice the Owner's rights under the Contract.

#### GP-29 DUTIES OF RESIDENT PROJECT REPRESENTATIVE

A Resident Project Representative shall be assigned by the Engineer to the Project Site to observe the Contractor and monitor the progress and manner in which the Work is being performed. The Resident Project Representative will also report to the Engineer and Contractor whenever materials or Work fail to comply with the Contract. The Resident Project Representative is authorized to reject any materials or suspend work which does not comply with the Contract until the issue is resolved by the Engineer.

However, the Resident Project Representative is not authorized to revoke, alter, enlarge, relax, or release any requirements of the Contract, or to approve or accept any portion of the Work, or to issue instructions contrary to the Plans and Specifications. The Resident Project Representative shall not manage or perform duties for the Contractor.

#### GP-30 CONSTRUCTION STAKES, LINES, AND GRADES

The Engineer shall direct the Contractor to all control points necessary for setting stakes and establishing lines and grades as shown on the Plans. The Contractor shall be responsible for laying out all of the Work. All layouts shall be witnessed and verified by the Engineer or Resident Project Representative prior to beginning the Work. The Contractor shall be responsible for proper execution of the Work according to the layouts after receiving verification from the Engineer.

The Contractor shall be responsible for furnishing and maintaining stakes such that the Work can be verified for acceptance. The Engineer may suspend the Work at any time if it can not be adequately verified due to the number, quality, or condition of the stakes.

#### GP-31 CONTRACTOR'S RESPONSIBILITY FOR WORK

The Contractor shall execute all items covered by the Contract, and shall furnish, unless otherwise definitely provided in the Contract, all materials, implements, machinery, equipment, tools, supplies, transportation, and labor necessary to

complete the Work. The Contractor shall pay constant attention to the progress of the Work and shall cooperate with the Engineer in every way possible. The Contractor shall maintain a complete copy of the Contract at all times, including the Plans, Specifications, and any authorized modifications.

#### GP-32 CONTROL OF SILTATION AND WATER POLLUTION

The Contractor shall comply with all applicable Federal and State regulations and statutes relating to the prevention and abatement of pollution in the performance of the Contract. The Contractor shall conduct the Work in a manner that will not cause damaging concentrations of silt or pollution to water. The Contractor shall prevent fuels, oils, bituminous materials, chemicals, sewage, or other harmful contaminants from entering the land or water.

#### GP-33 SANITARY PROVISION

The Contractor shall provide and maintain sanitary accommodations for use by all employees and Subcontractors. Facilities shall comply with the requirements of the Louisiana State Board of Health and Hospitals and other authorities having jurisdiction. Committing public nuisance on the Project Site is prohibited.

#### GP-34 PAYMENT OF TAXES

The Contractor shall be responsible for all taxes and duties that maybe levied under existing State, Federal, and local laws during the completion of the Work. The Owner will presume that the amount of such taxes is included in the unit prices bid by the Contractor and will not provide additional reimbursement.

#### GP-35 RADIO AND TELEPHONES

The Contractor shall furnish and maintain radio and telephone equipment throughout the Contract Time which will allow communication between the Contractor and the Engineer or Resident Project Representative.

#### GP-36 NAVIGATION

All marine vessels shall comply with the following Federal Laws and Regulations:

36.1 The International Navigational Rules Act of 1977 (Public Law 95-75, 91 Stat. 308, or 33 U.S.C. 1601-1608); and

36.2 The Inland Navigation Rules Act of 1980 (Public Law 96-591, 94 Stat. 3415, 33 U.S.C. 2001-2038).

These rules can be found on the Internet at:

<http://www.navcen.uscg.gov/mwv/navrules/navrules.htm> . All marine vessels shall display the lights and day shapes required by Part C- Lights and Shapes of the Inland Navigation Rules. The location, type, color, and size of the lights and day shape shall be in accordance with Annex I - Positioning and Technical Details of Lights and Shapes. Any vessel engaged in dredging is considered a "Vessel restricted in her

ability to maneuver” and shall display all the lights and shapes required in Rule 27, “Vessel Not Under Control.”

#### GP-37 OBSTRUCTION TO NAVIGATION

The Contractor shall minimize all obstructions to navigation in compliance with pertinent U. S. Coast Guard regulations while conducting the Work. The Contractor shall promptly move any floating equipment or marine vessels which obstruct safe passage of other marine vessels. Upon completion of the Work, the Contractor shall remove all marine vessels and other floating equipment such as temporary ranges, buoys, piles, and other marks or objects that are not permanent features of the Work.

#### GP-38 MARINE VESSELS AND MARINE ACTIVITIES

All marine vessels operated by the Contractor shall possess a valid United State Coast Guard (USCG) inspection certificate and current American Bureau of Shipping (ABS) Classification. All officers and crew shall possess valid USCG licenses as required by USCG regulations. These certificates, classifications, and licenses shall be posted in a public area on board each vessel.

All marine vessels not subject to USCG certification or ABS Classification shall be inspected annually by a marine surveyor accredited by the National Association of Marine Surveyors (NAMS) or the Society of Accredited Marine Surveyors (SAMS). All inspections shall be documented using an appropriate report format. At a minimum, the inspections shall evaluate the structural integrity of the vessel and comply with the National Fire Protection Association Code No. 302- Pleasure and Commercial Motor Craft. The most recent inspection report shall be posted in a public area on board each vessel.

#### GP-39 RECORD KEEPING

The Contractor shall maintain orderly records of the Progress Schedule, Daily Progress Reports, Progress Meetings, correspondence, submittals, reproductions of original Contract Documents, Change Orders, Field Orders, certificates, additional drawings issued subsequent to the executed Contract, clarifications and interpretations of the Contract Documents by the Engineer, and other related documents at the Project Site until all of the Work is accepted by the Engineer.

#### GP-40 CERTIFICATES OF COMPLIANCE

Any certificates required for demonstrating proof of compliance of materials with specification requirements shall be executed in three (3) copies. Each certificate shall be certified by an authorized agent of the supplying company and shall contain the name and address of the Contractor, the project name and location, and the quantity and date of shipment. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the testing date. The Contractor shall also certify that all materials and test reports conform to the requirements of the Contract. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material if the material is tested and determined to be in nonconformance.

#### GP-41 SUBMITTALS

The Contractor shall review all Submittals for compliance with the requirements of the Contract prior to delivery to the Engineer. Each Submittal shall contain a signed statement by the Contractor that it complies with the Contract requirements with any exceptions explicitly listed. The Contractor shall comply with these requirements for Submittals from Subcontractors, manufacturers, and suppliers.

All Submittals shall include sufficient data to demonstrate that the requirements of the Contract are met or exceeded. All submittals shall be legible and marked with the project title and clearly identify the item submitted. Each submittal package shall include an itemized list of the items submitted.

All Submittals shall be reviewed within fourteen (14) days after being received by the Engineer. The Contractor shall allow the Engineer sufficient time for review, corrections, and resubmission of all Submittals prior to beginning the associated Work. The Contract Time shall not be extended based on incorrect or incomplete Submittals.

#### GP-42 MODIFICATIONS TO THE WORK

The Engineer may authorize modifications, additions, or deductions to the Work using Change Orders, Field Orders, or Written Amendments. The requirements and stipulations of these documents shall be binding on the Owner and Contractor throughout the remainder of the Contract.

#### GP-43 INCREASE IN CONTRACT PRICE

The Contractor is expected to complete the Work according to the Contract Price specified in the Bidding Documents. Under certain circumstances, the Contractor may request for a legitimate increase to the Contract Price using a Claim. The Claims shall justify the request for an increase in Contract Price by providing supporting data and calculations. The Claim must be submitted to the Engineer in writing within fourteen (14) days after the event occurs which necessitates the increase in Contract Price. If an increase in Contract Price involves an extension of Contract Time, both claims shall be submitted together. The Engineer reserves the right to accept, deny, or negotiate the Claim. If the Claim is accepted, the Engineer shall issue a Change Order. Where a change order is negotiated, the Contractor shall fully document and itemize costs, including material quantities, material costs, taxes, insurance, employee benefits, other related costs, profit, and overhead. The requirements and stipulations of the Change Order shall be binding on the Owner and Contractor throughout the remainder of the Contract.

The increase in Contract Price shall be determined by the following:

- 43.1 By application of the unit prices in the Contract to the quantities of the items involved; or
- 43.2 By mutual acceptance between the Owner and Contractor of a lump sum.

If the Contractor is prevented from completing the Work according to the Contract Price due to the Owner, the Contractor may be entitled to any reasonable and necessary addition of cost as determined by the Engineer. Neither the Owner nor the Contractor shall be entitled to any damages arising from events or occurrences which are beyond their control, including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God, acts of war, and other like matters. The provisions of this section exclude recovery for damages caused by the Contractor and compensation for additional professional services by either party.

#### GP-44 EXTENSION OF CONTRACT TIME

The Contractor is expected to complete the Work within the Contract Time specified in the Bidding Documents. A legitimate increase of the Contract time may be requested by the Contractor throughout the course of the Work. This Claim must be submitted to the Engineer in writing within fourteen (14) days of the event which caused the time delay to the Contractor. If an extension of Contract Time involves an increase in Contract Price, both claims shall be submitted together. The Contractor shall justify the increase of the Contract Time in the Claim using supporting data and calculations. The Engineer may deny the claim if there is insufficient information to make a determination. If the Claim is approved, the Engineer shall issue a Change Order within thirty (30) days of the Claim. The Contract Time shall be increased on a basis that is commensurate with the amount of additional or remaining Work. For example, the Contract Time can be increased where the number of actual adverse weather days exceeds the number of days estimated in the Contract.

#### GP-45 DEFAULT AND TERMINATION OF CONTRACT

The Owner shall submit a written notice to the Contractor and Surety which justifies placement of the Contractor in default if:

- 45.1 The Work is not begun within the time specified in the Notice to Proceed; or
- 45.2 The Work is performed with insufficient workmen, equipment, or materials to assure prompt completion; or
- 45.3 The Contractor performs unsuitable, neglected or rejected work, refuses to remove materials; or
- 45.4 The Work is discontinued; or
- 45.5 The Work is not completed within the Contract Time or time extension; or
- 45.6 Work is not resumed within a reasonable time after receiving a notice to continue; or
- 45.7 The Contractor becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency; or

45.8 The Contractor allows any final judgment to stand unsatisfied for a period of ten (10) days; or

45.9 The Contractor makes an assignment for the benefit of creditors; or

45.10 The Work is not performed in an acceptable manner.

If the Contractor or Surety does not remedy all conditions cited in the written notice within ten (10) days after receiving such a notice, the Contractor will be in default and the Owner shall remove the Contractor from the Work. If the Contractor is placed into default, the Owner may obtain the necessary labor, materials, and equipment or enter into a new Agreement and Contract in order to complete the Work. All costs incurred by the Owner for completing the Work under the new Contract will be deducted from the payment due the Contractor. If the expense exceeds the sum payable under the Contract, the Contractor and Surety shall be liable to pay the Owner the difference.

#### GP-46 TEMPORARY SUSPENSION OF WORK

The Engineer shall have the authority to temporarily suspend the Work in whole or in part. A Field Order shall be issued to the Contractor for any of the Work that is suspended for periods exceeding one (1) calendar day. The Field Order shall include the specific reasons and details for the suspension. The Contract Time shall not be extended if the Work is suspended due to failure by the Contractor to comply with a Field Order or with the Plans and Specifications. If the Work is suspended in the interest of the Owner, the Contractor shall make due allowances for the lost time.

#### GP-47 NON-CONFORMING AND UNAUTHORIZED WORK

Work not conforming to the Plans, Specifications, Field Orders, or Change Orders shall not be accepted for payment. Unacceptable or unauthorized work shall be removed and replaced in an acceptable manner at the expense of the Contractor in order to obtain final acceptance of the Work.

#### GP-48 CONTRACTOR'S RIGHT TO TERMINATE CONTRACT

The Contractor may terminate the Contract or Work and recover payment from the Owner for labor and materials if the Work is stopped through no act or fault of the Contractor for more than three (3) months. For example, such an occurrence could be caused by a court order or other public authority. In any case, the Contractor shall submit a written notice to the Engineer at the beginning of the occurrence, and a written Claim to the Owner at the end of the occurrence.

#### GP-49 BREACH OF CONTRACT

The Owner shall submit a written Claim to the Contractor regarding any breach of the Contract. The Contractor must provide a written response to the Owner regarding the breach of Contract within ten (10) days after the Claim. This response must provide either an admission to the Claim or a detailed denial based on relevant data

and calculations. The failure of the Contractor to provide a proper response within ten (10) days shall result in justification of the Claim by default.

#### GP-50 NO WAIVER OF LEGAL RIGHTS

The Owner shall not be prevented from recovering costs from the Contractor, Surety, or both due to failure of the Contractor to fulfill all of the obligations under the Contract. If a waiver is provided to the Contractor for a breach of Contract by the Owner, it shall not apply to any other breach of Contract. Final acceptance of the Work shall not prevent the Owner from correcting any measurement, estimate, or certificate. The Contractor shall be liable to the Owner without prejudice to the terms of the Contract or any warranty for latent defects, fraud, or gross negligence.

#### GP-51 LIABILITY FOR DAMAGES AND INJURIES

To the fullest extent permitted by Laws and Regulations, the Contractor shall indemnify and hold harmless the Owner, Engineer, and their affiliates from claims, costs, losses, demands, and judgments (including but not limited to fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) caused by negligence of the Contractor or the Contractor's affiliates under this Contract, provided that it results in bodily injury, sickness, disease, or death, or in injury to or destruction of tangible property including the loss of use resulting there from.

The indemnification obligations of the Contractor shall not extend to the liability of the Owner, Engineer, and their affiliates arising out of the preparation or approval of the Plans, Specifications, maps, opinions, reports, surveys, or Change Orders, or for providing directions or instructions which are the primary cause of the injury or damage.

Should the Owner or Contractor suffer from any injury or damage due to an error, omission, or act of the other party or their legally liable affiliates, a written Claim shall be submitted to the other party within ten (10) days. The Claim shall provide all details regarding the injury or damage, the results of any investigations, and the action to be taken to prevent any reoccurrence.

#### GP-52 LIABILITY FOR LOSSES BY ACTS OF THE GOVERNMENT

The Owner shall not be liable for any loss or damage suffered by the Contractor arising out of a cessation of Work under this Contract due to any act or order of any local, state, or federal government agency. If this cessation occurs, the Contractor may request an extension of the Contract Time according to the provisions in GP-44.



## GP-53 FINAL INSPECTION AND ACCEPTANCE

The Engineer, Owner, and Contractor shall perform a final inspection after receiving written notice from the Contractor that all of the Work is complete. If the Work is determined to be unsatisfactory, the Engineer shall notify the Contractor in writing of the deficiencies and recommended corrective actions.

Unfulfilled work or damages caused by the negligence of the Contractor or Subcontractors shall be repaired or corrected at the expense of the Contractor. All other damages to the Work which received previous acceptance by the Engineer shall be repaired at the expense of the Owner. Upon completion of the repairs or corrections, the Engineer, Owner, and Contractor shall perform another inspection. The Engineer shall submit a written notice of acceptance to the Owner after the Work has been determined to be satisfactorily completed according to the Contract.

## GP-54 AS-BUILT DRAWINGS

The Contractor shall submit all originals and copies of the As-Built Drawings to the Engineer for review and acceptance in accordance with the Special Provisions. The As-Built Drawings shall provide complete data for quantities, dimensions, specified performance and design criteria, and similar items which clearly represent the services, materials, and equipment the Contractor has provided. All revision sheets shall be clearly stamped with the words "As-Built".

## GP-55 COMPLETION OF CONTRACT

Completion of the Contract requires all of the Work to be complete, inspected by the Engineer, accepted by the Owner as recommended by the Engineer, and after, final payment is made. After the Contract is complete, the Contractor will then be released from further obligation except as set forth in the Contract Bond and Contractor's Guarantee.

## GP-56 CONTRACTOR'S GUARANTEE

The Contractor is obligated to provide a written guarantee to the Owner that all of the Work conforms to the Contract Documents. The Work shall be guaranteed to survive for a minimum period of 1 year after final acceptance, unless otherwise specified in the Technical Specifications.

56.1 The guarantee shall include:

- 56.1.1 A written warranty by the manufacturer for each piece of installed project equipment or apparatus furnished under the Contract.
- 56.1.2 Any necessary repair or replacement of the warranted equipment during the guarantee period at no cost to the Owner.
- 56.1.3 Satisfactory operation of installed equipment including, but not limited to, any mechanical and electrical systems furnished and constructed under the Contract during the guarantee period. The

Contractor shall repair all equipment which fails due to defective materials or faulty workmanship during the guarantee period. The Contractor shall also be liable for all other ancillary expenses incurred by the Owner due to the failure.

- 56.2 The guarantee shall exclude defects or damage caused by:
  - 56.2.1 Abuse or improper modification, maintenance, or operation by anyone other than the Contractor; or
  - 56.2.2 Wear and tear under normal usage.
- 56.3 This obligation by the Contractor shall be absolute. The following actions will not constitute acceptance of non-conformance Work or release the Contractor from obligation to furnish the Work in accordance with the Contract Documents:
  - 56.3.1 Observations by the Owner or Engineer; or
  - 56.3.2 Recommendations by the Engineer or payment by the Owner; or
  - 56.3.3 Use of the Work by the Owner; or
  - 56.3.4 Issuance of a notice of acceptance by the Owner pursuant to the provisions of GP-47, or failure to do so; or
  - 56.3.5 Any inspection, test, or approval by others; or
  - 56.3.6 Any correction to non-conforming work by the Owner.

## **PART II SPECIAL PROVISIONS**

### **SP-1 LOCATION OF WORK**

The Work site is located in the nearshore region adjacent to the shoreline of the Gulf of Mexico approximately 2.6 miles west of the mouth of Joseph's Harbor Bayou in the Rockefeller Refuge, Cameron Parish, LA. See Plans Sheet 1 for a vicinity map.

### **SP-2 WORK TO BE DONE**

The Contractor shall provide all labor, materials, and equipment necessary to perform the Work. The Work shall include, but not be limited to, manufacturing of Oysterbreak Armor Units, mobilization and demobilization at or to the Project Site, dredging of access channel (if required), surveying, assembling and placing marine mattresses, placing Oysterbreak Armor units, and installation of navigation aids. The Work shall be performed in accordance with these Specifications and in conformity to lines, grades, and elevations shown on the Plans or as directed by Engineer. Quantity calculations, layouts, shop drawings, and construction sequencing of these items shall be provided in the Work Plan. The major tasks associated with the Work are described as follows:

- 2.1 **Manufacture of Oysterbreak Armor Units** – Prior to on-site construction, the Oysterbreak Armor Units will be manufactured by Wayfarer Environmental Technologies (see Technical Specifications Section 10.5-A). Two types of Oysterbreak Armor Units are to be fabricated: with a normal weight concrete mix or with a proprietary pervious concrete (OysterKrete concrete) mix in accordance with these specifications and applicable drawings. The Oysterbreak Armor Units are to be accepted at the manufacturing site prior shipment to the project site.
- 2.2 **Surveying** – Prior to construction, the pre-construction survey will be performed to determine pre-construction bathymetry and topography. Prior to construction, the Contractor shall perform a magnetometer survey on the construction area and any areas to be excavated to verify pipeline or obstruction locations and ensure no unknown pipelines exist within the project area. The magnetometer survey shall be submitted to the Engineer prior to construction. During construction, breakwater surveys will be conducted for partial payment and quality control. After construction is complete, the Contractor shall perform a Post-Construction Survey, which shall be reviewed by the Engineer for acceptance of the Work. Monitoring surveys of the project area as defined on the Plans shall be performed by the Contractor prior to the start of construction and after project completion. The requirements of the Initial Monitoring Survey and Final Monitoring Surveys are detailed on the Plans and are independent of the other required surveys.
- 2.3 **Delivery of Oysterbreak Armor Units** - Oysterbreak Armor Units accepted by the Engineer shall be transported to the project site in accordance with these specifications and according to manufacturer's specifications. Temporary stockpiling is available for storage of the units near the Rockefeller Refuge Headquarters as identified in the design plans. Oysterbreak Armor Units shall be stockpiled in accordance with these and the manufacturer's specifications.

- 2.4 **Access Channel Dredging** - If required to access the breakwater construction area or for contractor's operations, access channels may be dredged according to the design plans and specifications.
- 2.5 **Assemble and Install Marine Mattresses** – Marine Mattresses shall be assembled according to the plans and specifications stated herein. The marine mattress shall be assembled and a geotextile fabric shall be attached to the bottom of the mattress. The mattresses shall be filled with stone fill of a gradation and quality specified in TS-11. The procedure used in placement of the units shall be in accordance with the recommendations of the system supplier and as approved by the Engineer.
- 2.6 **Installation of Oysterbreak Armor Units** - Oysterbreak Armor Units are to be placed to the lines and grades as shown on the design plans according to TS-10.
- 2.7 **Use of Equipment** – The equipment used for the Work shall be operated within the boundaries of the Project Construction Limits and away from existing vegetated wetlands or any other sensitive areas. The Contractor shall be responsible for returning all disturbed wetlands to pre-existing conditions at no expense to the Owner.

SP-3 BID ITEMS, CONTRACT DATES, AND DELIVERABLES

<b>Milestone</b>	<b>Location or Recipient</b>	<b>Date Due</b>
Bid Advertisement	Publications	As advertised
Mandatory Pre-Bid Conference and Site Visit	Provided in Notice to Bidders	Provided in Notice to Bidders
Questions on Bid Documents	Deliver to OSP	3 calendar days after Pre-Bid Conference
Effective Date of Agreement	Contractor and Owner	Stated in Notice of Award
Start of Contract Time	Contractor and Owner	As stated in Notice to Proceed
Work Plan	Submit to Engineer	At least 14 days prior to Pre-Construction Conference
Progress Schedule	Submit to Engineer	At least 14 days prior to starting construction, monthly thereafter
Pre-Construction Conference	Contractor and Engineer	As determined by the Engineer after the Notice to Proceed is issued
Progress Meetings and Reports	At Project Site	Bi-weekly or as determined at the Pre-Construction Conference (See GP-13, GP-39)
As-Built Drawings	Deliver to Engineer	Prior to Final Inspection as scheduled by the Engineer
End of Contract Time	At Project Site	<b>210</b> calendar days after Notice to Proceed

## SP-4 DELIVERABLES

### 4.1 Prior to Construction

4.1.1 The Contractor shall submit the following documents to the Engineer prior to the Pre-Construction Conference specified in GP-14:

4.1.1.1 Work Plan as specified in SP-6;

4.1.1.2 Progress Schedule as specified in GP-9;

4.1.1.3 Copy of typical Daily Progress Report as specified in GP-10.

4.1.1.4 Hurricane and Severe Storm Plan as specified in GP-11;

4.1.1.5 Health and Safety Plan as specified in GP-12.

4.1.1.6 List of name and qualifications of the person designated as project superintendent.

4.1.1.7 List of all subcontractors and major material/equipment suppliers that Contractor and Contractor's major subcontractors propose to use. This list shall include correct names, mailing addresses and phone numbers.

4.1.1.8 List of names and titles of Contractor's representatives authorized to sign contractual documents and payment requisitions.

4.1.1.9 Contractor shall submit manufacturer's information on all materials and equipment, regardless of whether substitutions are being requested. Substitution requests must be submitted early enough to allow time for evaluation by the Engineer and for resubmittal, if required. No materials shall be ordered or installed until submittals for such materials have been received and acted upon by the Engineer.

4.1.2 The Contractor shall provide the following information to the Engineer at the Pre-Construction Conference specified in GP-14:

4.1.2.1 Updates to all plans and schedules based on comments from the Engineer;

4.1.2.2 Potential construction corridors (if needed, other than from what is provided) which may be approved on an as needed basis.

## 4.2 During Construction

The Contractor shall deliver copies of the following documents upon request by the Engineer, or as specified in these provisions:

- 4.2.1 The results of all surveys and calculations as specified in TS-3;
- 4.2.2 Progress Schedule as specified in GP-9;
- 4.2.3 Daily Progress Reports as specified in GP-10;
- 4.2.4 Copies of all inspection reports;
- 4.2.5 All Change Orders, Field Orders, Claims, Clarifications, and Amendments;
- 4.2.6 Results of any materials testing.

## 4.3 Administrative Records

### 4.3.1 Notice of Intent to Dredge

At least 30 days prior to commencement of Work on this Contract, the Contractor shall notify the U.S. Coast Guard, Sector New Orleans Command Center, at the address below, of his intended operations to dredge and request that it be published in the Local Notice to Mariners. This notification must be given in sufficient time so that it appears in the Notice to Mariners at least seven (7) days prior to the commencement of this dredging operation. A copy of the Department of the Army Permit and drawings shall be provided to the U.S. Coast Guard. A copy of the notification shall be provided to the Owner and Engineer.

U.S. Coast Guard  
Sector New Orleans Command Center  
201 Hammond Hwy  
Metairie, LA 70005  
504-846-5923

### 4.3.2 Relocation of Navigational Aids

Temporary removal of any navigation aids located within or near the areas required to be dredged or filled and material stockpile areas shall be coordinated by Contractor with the U.S. Coast Guard prior to removal. The Contractor shall not otherwise remove, change the location of, obstruct, willfully damage, make fast to, or interfere with any aid to navigation. The Contractor shall notify the Eighth U.S. Coast Guard District, New Orleans, Louisiana, in writing, with a copy to the Owner and Engineer, seven (7) days in advance of the time he plans to dredge or Work adjacent to any aids which require relocation to facilitate the Work. The Contractor shall contact the U.S. Coast Guard for information concerning the position to which the aids will be relocated.

#### 4.3.3 Dredging Aids

The Contractor shall obtain approval for all dredging aids, including but not limited to temporary navigation aids, warning signs, buoys, and lights, he requires to conduct the Work specified in this Contract. The Contractor shall obtain a temporary permit from the U.S. Coast Guard for all buoys or dredging aid markers to be placed in the water prior to installation. The permit application shall state the position, color, and dates to be installed and removed for all dredging aid markers and be submitted to the U.S. Coast Guard. Dredging aid markers and lights shall not be colored or placed in a manner that they will obstruct or be confused with navigation aids. Copies of the application and permit shall be submitted to the Owner and Engineer seven (7) days prior to commencement of dredging operations.

#### 4.3.4 Notification of Discovery of Historical or Cultural Sites

If during construction activities the Contractor observes items that may have prehistoric, historical, archeological, or cultural value, the Contractor shall immediately cease all activities that may result in the destruction of these resources and shall prevent his employees from trespassing on, removing, or otherwise damaging such resources. Such observations shall be reported immediately to the Owner and Engineer so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special dispositions of the finds should be made. The Contractor shall report any observed unauthorized removal or destruction of such resources by any person to the Owner and Engineer so the appropriate State of Louisiana authorities can be notified. The Contractor shall not resume Work at the site in question until State authorities have rendered judgment concerning the artifacts of interest.

#### 4.4 Post Construction

The Contractor shall contact the Engineer by phone, a minimum of five (5) working days prior to the anticipated completion of the Work in order to schedule the final inspection and gain Acceptance by the Engineer. The following documents shall also be submitted to the Engineer:

4.4.1 Copies of all delivery slips, which shall include the source of construction materials, date of delivery, exact quantity, and size of materials delivered with each shipment to the Project Site;

4.4.2 As-Built Drawings as specified in SP-32.

#### 4.5 Summary of Project Submittals

The following table is a summary of submittals required of the Contractor as part of this section and other sections of these Specifications. Specific technical submittals are summarized in TS-5.

SPECIFICATION	DELIVERABLE	SUBMITTAL
GP-9	Progress/Work Schedule	Prior to Pre-construction conference
GP-19	Names of all Subcontractors	Prior to awarding subcontracts
GP-10	Daily Progress Reports	As directed by the Engineer
GP-53	Written Notice of Completion of Work	Upon completion of work

**SP-5 ADDRESSES FOR DOCUMENT DELIVERY**

Prior to Bid opening date, the Contractor shall send all Bid Documentation to the attention of **Hilary Stephenson** of the Office of State Purchasing. The address and contact information is as follows:

State Purchasing Officer  
Office of State Purchasing  
Post Office Box 94095  
Baton Rouge, LA 70804-9095  
Phone: 225-342-8022  
Fax: 225-342-8688

After award, the successful Contractor shall contact the Engineers concerning bid documentation or questions. The addresses and contact information for the Engineers are listed as follows:

Project Engineer  
Tye Fitzgerald  
450 Laurel St, 11th Floor  
Baton Rouge, LA 70804-7027  
Phone : 225-342-4496  
Fax:225-342-6801

Field Engineer  
Darrell Pontiff, P.E.  
635 Cajundome Blvd.  
Lafayette, LA 70506  
Phone: 337-482-0683  
Fax: 337-482-0685

The Owner and Engineer shall deliver all written Claims, Notices, Submittals, Plans, and other documents to the Contractor at the address indicated on the Bid.

**SP-6 WORK PLAN SUPPLEMENTAL**

The following items shall be included in the Work Plan in addition to those required by GP-8:

- 6.1 Layout, construction schedule and methods for marine mattresses construction and installation.
- 6.2 Transportation, stockpiling, layout, construction schedule and methods for OysterBreak Armor Units placement.
- 6.3 Layout and schedule for temporary access channels, if elected to use. See TS-2 Mobilization.
- 6.4 Equipment and material staging areas.



## 6.5 Surveying method and Schedule

### SP-7 FAILURE TO COMPLETE ON TIME

For each day the Work remains incomplete beyond the Contract Time, as specified in SP-3, or Extension of Contract Time, as specified in GP-44, the sum of one thousand five hundred dollars (\$1,500) per calendar day will be deducted from any money due to the Contractor as liquidated damages. The Contractor and Surety shall be liable for any liquidated damages that are in excess of the amount due the Contractor.

### SP-8 TRANSPORTATION

The Contractor shall provide a safe and reasonable means of transportation to and from the marine access structure, staging area, and Project Site for the Engineer and the Federal Sponsor throughout the Work. The schedule and pickup location shall be arranged by the Engineer and the Contractor prior to mobilization. Upon request, overnight room and board shall be provided to these personnel by the Contractor if adequate facilities are available. The Contractor shall provide a boat for the exclusive use of the Engineer and/or Resident Project Representative to tour the Project Site during the Work. The boat shall have the following features:

- 8.1 An enclosed cabin space;
- 8.2 Capable of maintaining 25 knots (29 mph);
- 8.3 Six (6) passenger capacity;
- 8.4 Coast Guard certified;
- 8.5 Operable marine radio;
- 8.6 All safety equipment required by the Coast Guard for the size and type of that boat;
- 8.7 Draft of two feet (2') or less.

The Contractor shall supply the fuel and maintain the boat. All mechanical malfunctions of the boat shall be repaired within twelve (12) hours. In the event that the Contractor refuses, neglects, or delays compliance with the requirements of this provision, the Owner may obtain and use other necessary boats at the expense of the Contractor. The costs associated with providing the boats shall be included in the lump sum price for Bid Item No. 1, "Mobilization and Demobilization".

### SP-9 OFFICE FOR OWNER

The Contractor shall provide an office for the Engineer and Resident Project Representative at the Project Site if requested by the Engineer. This office shall be for the sole use of the Engineer or Resident Project Representative, suitably sized, and provided with lighting, heat, and air conditioning. The office furnishings shall include a work table, drafting table, stool, and two chairs.

In the event that the Contractor refuses, neglects, or delays compliance with the requirements of this provision, the Owner may obtain and use another necessary office at the expense of the Contractor. The cost for providing and furnishing this office shall be included in the contract lump sum price for Bid Item No. 1, "Mobilization and Demobilization".

#### SP-10 LANDOWNER AND PIPELINE REQUIREMENTS

The Owner has obtained all temporary easement, servitude, and right-of-way agreements required for construction of the project. The agreements executed with landowners for the Work at the site contain special requirements pertaining to access routes and insurance. A land rights memorandum is included in Appendix B. The Contractor shall abide by the stipulations set forth by the respective landowners (Grantors):

- 10.1 All equipment and routes through the Rockefeller Refuge shall be pre-approved by Refuge and Engineer;
- 10.2 No activities will be allowed within 1,500 feet of nesting bird colonies unless approved by the Programs Manager at the Refuge;
- 10.3 No activities will be allowed during waterfowl over-wintering seasons unless approved by the Programs Manager at the Refuge.
- 10.4 Access to the Refuge boat launch and the contractor use area shown on plans, both located off Hwy 82, crosses private property. See TS-8 for contact information for access.

The Contractor shall add the landowners listed above as additional insured. It is also agreed and understood that the Contractor will at all times indemnify and hold harmless all landowners from and against any and all claims, demands, causes of action, judgments, liabilities, and expense of every nature, including attorney's fees, by reason of personal injury, death (including but not limited to injuries to and death of employees of the landowners and the Contractor's employees) or damage to property, (including environmental) which arises out of, results from, or is in any manner related to, directly or indirectly, any operations or acts hereunder, or to the exercise of your rights hereunder, or to your presence upon or use of the landowners' premises above referred to, or to the use or existence of your facilities on such premises. The indemnity provisions of this paragraph shall not apply if any such injury, death, damage, liability claim, or cause of action is caused by the negligence of the landowners, their employees, agents, or representatives.

The Contractor shall notify all pipeline companies at least seventy-two (72) hours in advance of any construction work. All pipelines located within one hundred fifty feet (150') of the project work limits shall be probed and their locations marked prior to any site work, for the duration of construction activities. No excavation shall be permitted within fifty feet (50') of any pipeline in the project work limits.

## SP-11 OYSTER LEASE RESTRICTIONS

There are no known existing oyster leases near or within the boundaries of the Project Site. Therefore, no oyster lease restrictions are provided for performing the Work within the boundaries of the Project Site.

## SP-12 INTENT OF CONTRACT DOCUMENTS

The intent of the Contract Documents is to include all of the work for the Contract price and within the Contract time. Contract Documents are to be considered as cooperative. All work not specified and/or not shown on the plans but which is necessary for the completion and/or functioning and operation of the project, shall be understood and implied as part of the Contract to be performed by the Contractor for the Contract price. The Contractor shall execute such work in the same manner and with the same character of material as other portions of the Contract without extra compensation.

It is the intention of the Contract Documents to call for finished work, tested, and ready for operation. Any apparatus, material or work described in the Contract Documents and any incidental accessories necessary to make the work complete in all respects and ready for operation (even though not particularly specified) shall be furnished, delivered, and installed by the Contractor without additional expense to the Owner. Minor details not usually shown or specified but necessary for proper installation and operation are included in the work just as if herein specified or shown.

The plans consist of all project drawings and any drawings issued by addenda. In all cases, measured dimensions taken at the site shall take precedence over scale dimensions.

## SP-13 ADDENDA

Any addenda issued in writing by the Owner/Engineer during the proposal period shall be included in the proposal and Respondent's receipt of addenda shall be acknowledged in the Contractor's Bid Form. Such addenda shall become a part of the Contract and shall modify the Contract Documents accordingly. Oral changes in the work made during the time of bidding will not be binding.

## SP-14 ADDITIVE / DEDUCTIVE BID ITEMS

15.1 Definition: Additive and Deductive Bid Items is a defined portion of Work that is priced separately to be included in the Work at the Owner's option.

15.2 Coordination: Description for each additive and deductive bid item is recognized to be abbreviated, but requires that each change shall be complete for scope of work affected. Contractor will be responsible for: (1) Coordinate related requirements among section of Specifications as required that relate to the additive and deductive bid items, (2) Include as part of each additive and deductive bid item; miscellaneous devices, appurtenances, materials and

similar items incidental to or necessary for complete installation, and (3) Coordinate additive bid item work with adjacent Work and modify or adjust as necessary to ensure all work is integrated.

#### SP-15 NOTICE TO PROCEED AND NOTICE TO MOBILIZE

The Notice to Proceed authorizes the Contractor to fabricate the OysterBreak Armor Units and conduct preconstruction bathymetric and magnetometer survey work. Mobilization at the project site shall not be conducted until the Contractor receives a written Notice to Mobilize from the Engineer. Notice to Mobilize will not be provided until OysterBreak Armor Units have been fabricated by the manufacturer and accepted by the Engineer at the location of manufacture. No work other than preconstruction surveys (bathymetric and magnetometer) and Initial Monitoring Surveys shall be conducted on site prior to the Notice to Mobilize.

The Contractor may elect to request intermediate inspections by the Engineer during the fabrication of the OysterBreak Armor Units. Up to two inspections and one final inspection (three total inspections) of the fabricated OysterBreak Armor Units will be conducted at the location of manufacturer. Contractor shall provide 7 days notice of request for inspection to the Engineer. A minimum of 600 or 33% of the number of total OysterBreak Armor Units to be manufactured are to be included in any intermediate inspection. After initial inspection and Acceptance of OysterBreak Armor Units (See TS-10), the Notice to Mobilize will be issued and accepted OysterBreak Armor Units may be delivered to and installed per TS-10 at the project site.

The project time for completion has been established to provide the Contractor the option of electing to wait for fabrication of all OysterBreak Armor Units prior to Acceptance of OysterBreak Armor Units and issuance of Notice to Mobilize. Delays in fabrication of OysterBreak Armor Units shall not alleviate the Contractor from completing the work within the specified project completion time.

#### SP-16 PERMITS AND LAWS

The Contractor shall comply with all federal, state and municipal laws, rules regulations, and ordinances applicable to the work of this Contract, and shall obtain and pay for all permits required in connection with the execution of the work. The Owner shall be furnished with certified copies of these permits if the Owner so requests. Refer to TS-9, Protection of Environment, for Owner-obtained permits

If such laws, rules, regulations or ordinances conflict with the Contract Documents, then such laws, rules, regulations, or ordinances shall govern instead of the Contract Documents, except in such cases where the Contract Documents exceed them in quality of materials or labor, then the Contract Documents shall be followed.

#### SP-17 SPECIAL INSURANCE REQUIREMENTS

Refer to GP-51, General Provisions. Insurance requirements are independent of all other obligations of the Contractor pursuant to these Contract Documents and apply whether or not required by any provision of the Contract documents. Contractor

shall cease work immediately upon the expiration of any insurance coverage required by the Contract Documents. Contractor shall provide the following additional insurance coverage when applicable to the scope of construction activities:

- 18.1 U.S. Longshore and Harbor Workers' Insurance – Statutory amount in compliance with the United States Longshore and Harbor Workers' Act.
- 18.2 Maritime Employers Liability Insurance – Any employees who may fall under the Death on High Seas Act, Jones Act, or any other federal or state acts relating to maritime employment must be covered by Maritime Employers Liability Insurance of not less than \$500,000.00. Such coverage will include but not be limited to transportation, wages, maintenance and cure, as well as any other liabilities arising under such maritime employment.

#### SP-18 QUALITY ASSURANCE

The Owner and Engineer will periodically observe the construction progress, procedures, and materials of the Contractor. The Contractor shall offer full cooperation to facilitate these observation activities, and shall be responsive to questions regarding methods, equipment, materials, and intentions in pursuing the work or any particular thereof. Such observation by the Owner and/or Engineer is for the express purpose of verifying compliance by the Contractor with the Contract Documents and shall not be construed as construction supervision nor indication of approval of the manner or location in which the work is being performed as being a safe practice or place. The safety of the workers on the site is the responsibility of the Contractor. By entering the site, the Contractor and its employees relieve the Owner and Engineer of any responsibility for their safety and accept complete responsibility for any unsafe acts or procedures that may cause them harm.

If the Owner or Engineer rejects work and/or materials incorporated into the work, Contractor shall bear all expenses associated with testing to prove compliance with the Contract Documents, including but not limited to engineering expenses associated with such testing. Any and all such expenses that are paid directly by Owner will be deducted or withheld from subsequent payment(s) to the Contractor.

#### Progress Schedule

- 19.1 The Contractor shall submit progress schedules as specified in GP-9 and SP-4.
- 19.2 The Owner allocates its resources to a contract based on the total time allowed in the contract. The Owner will accept a progress schedule indicating an early physical completion date but cannot guarantee the Owner's resources will be available to meet the accelerated schedule. No additional compensation will be allowed if the Contractor is not able to meet their accelerated schedule due to the unavailability of Owner's resources or for other reasons beyond the Owner's control.
- 19.3 The Contractor shall submit supplemental progress schedules when requested by the Engineer or as required by any provision of the contract. These supplemental schedules shall reflect any changes in the proposed order of the work, any construction delays, or other conditions that may affect the progress of the work. The Contractor shall provide the Engineer with the supplemental

progress schedules within ten (10) calendar days of receiving written notice of the request.

- 19.4 The original and all supplemental progress schedules shall not conflict with any time and order-of-work requirement in the contract.
- 19.5 If the Engineer deems the original or any necessary supplemental progress schedule does not provide the information required in this section, the Owner may withhold progress payments until a schedule containing the required information has been submitted by the Contractor and approved by the Engineer.
- 19.6 The Engineer's approval of any schedule shall not transfer any of the Contractor's responsibilities to the Owner. The Contractor alone shall remain responsible for adjusting forces, equipment, and work schedules to ensure completion of the work within the time(s) specified in the contract.

#### SP-19 CONTRACT CLOSE-OUT

Notification: The Contractor shall provide the Owner and Engineer 10 days' written notice requesting final inspection. Refer to GP-53, GP-54 and GP-55 of the General Provisions.

Final Submittals: At the time of the Contractor's request for final inspection, Contractor shall provide to Owner the following material which the Contractor shall have accumulated and retained during the course of the project:

- 20.1 One set of all project submittals and all equipment and material warranties/guarantees as provided by all appropriate suppliers or manufacturers.
- 20.2 One set of "record drawings" showing all revisions to the original Contract Documents. Drawings shall also show routing of underground outside utilities and conduits with actual dimensions from buildings or other known landmarks.
- 20.3 Post construction survey results in hard copy (11" x 17" or 22" x 36") and digital formats.
- 20.4 Any and all other documents, required by the specifications.

Clean-up: At completion of the job, the Contractor shall remove all waste products, dust, dirt, debris, packaging, trash, fingerprints, grease containers, and other deleterious materials and marks from the site. Refer to individual specification sections for special cleaning required by that section. Contractor is expected to leave the project in spotless, "like new" condition.

#### SP-20 CONSTRUCTION MATERIALS

Materials: All materials shall be new and of the quality specified. Materials shall be free from defects. Where manufacturer's names are mentioned in the specifications,

it has been done in order to establish a standard of quality and construction, not to preclude the use of equal or superior materials or products of other manufacturers. However, substitutions for products must have Engineer's prior approval. Substitutions for the OysterBreak Armor Units will not be accepted. Unless otherwise indicated in the specifications or plans, equipment and material shall be installed in accordance with the manufacturer's recommendations and shall include such tests as manufacturer recommends.

**Storage and Protection of Materials:** All materials shall be suitably stored to be protected from damage. Watertight storage facilities of suitable size with floors raised above the ground shall be provided for all materials subject to damage from exposure to the weather. Unless manufacturer recommendations differ, other materials shall be stored on blocks off the ground. Materials shall be stored to permit easy access for inspection and identification. Any material, which has deteriorated, become damaged or otherwise unfit for use shall not be used in the work (as judged by Engineer). Upon completion of all work, or when directed, the Contractor shall remove storage facilities from the site.

## SP-21 CONSTRUCTION SITE AND JOB CONDITIONS

**Supervision:** The Contractor's Superintendent shall be on site at all times that work is in progress. The Contractor shall not allow any unsafe or unsanitary conditions to develop as a result of Contractor's operations.

**Site Maintenance:** The Contractor shall not allow trash or debris to accumulate on the site. At the end of the Contract, Contractor shall clean the entire area of any litter resulting from Contractor's operations. The Contractor shall maintain the premises as clean and presentable as good construction practices will allow at all times. At the end of the Contract, the Contractor shall clean existing paved roadways of dust, dirt, concrete and other deleterious materials deposited as a result of the construction activities. This shall include using pressurized water and sweeper trucks to clean the roadways.

**Utilities:** Water and electrical power will not be furnished by the Owner. Any temporary connections or appurtenances shall be provided by the Contractor at no cost to the Owner and removed from the premises at the conclusion of the Contract.

**Employee Records:** The Contractor and each subcontractor shall keep, or cause to be kept, on the jobsite an accurate record showing names and occupations of all laborers, workmen and mechanics employed by Contractor in connection with the project and the sum per hour paid in dollars and cents. The Owner shall be allowed to inspect such records pursuant to V.T.C.A., Gov. Code, Section 2258.024.

**Temporary Toilets:** The Contractor shall provide and maintain in neat, sanitary condition toilets and other necessary accommodations for employees' use to comply with the regulations of the State Department of Health or other jurisdictions.

**Fire Protection:** The Contractor shall take stringent precautions against fire. Open fires are not allowed unless approved in writing by Owner.

**Work hours:** Construction activities may occur seven (7) days per week, except as otherwise specified herein or if required otherwise by a Contractor provided easement.

## SP-22 OCCUPATIONAL SAFETY AND HEALTH STANDARDS

The work and the Contractor's operational activities shall comply with the applicable provisions of the U. S. Department of Labor, Occupational Safety and Health Administration's safety and health regulations for construction and with applicable Occupational Safety and Health Standards.

## SP-23 PROTECTION OF PUBLIC

The Contractor shall be responsible for public safety at the construction site. All temporary fencing, barricades, warning lights, signs, and flagmen shall be provided and maintained by Contractor as needed. The Contractor shall maintain security of the construction site.

## SP-24 SITE PHYSICAL DATA

Information furnished below is for the Contractor's review. However, it is expressly understood that the Owner and Engineer are not responsible for any interpretation or conclusion drawn therefrom by the Contractor. The Owner and Engineer also are not responsible for any lack of information herein pertaining to physical conditions at the site. The Contractor shall make every effort possible to familiarize himself with and research the conditions to be expected at the site.

- 25.1 Tidal Conditions: Under ordinary conditions, the tidal range is about 2.0 ft. However, the height of tide is largely dependent on the force, direction, and duration of the wind. Strong southerly winds may raise the water surface by as much as, and in some cases more than, 2 feet. Strong northerly winds, especially those associated with cold fronts, can lower the water level by 2 feet or more.
- 25.2 Marine Conditions: In addition to tidal fluctuations and current velocities mentioned herein, the water at the project site may at times be rough as a result of wind waves. Again, the contractor should familiarize himself with the extreme conditions that might be expected throughout the duration of this project. In addition, tropical storms and hurricanes along the coast typically occur during the period June to October.
- 25.3 Groundwater: Subsurface groundwater conditions and elevations may change. Changes in groundwater elevations shall not be just cause for increased compensation.
- 25.4 Soil Condition: on-land and in water soils at the project site are extremely soft and weak. Contractor should familiarize himself with the properties of the soil conditions.



#### SP-25 PROTECTION OF SITE

The Contractor is notified that construction will occur adjacent to private property and environmentally sensitive areas. The Contractor is hereby notified that adverse working conditions may exist, and the necessary allowances and precautions shall be made to avoid damaging public and private property and sensitive vegetation. Unauthorized damage to any existing utilities, building facilities, structures, or plant life shall be repaired by the Contractor at no expense to the Owner.

Utility locations have not been field verified. It shall be the Contractor's responsibility to verify the condition of existing utilities and locations thereof prior to bidding. Pipeline locations are to be surveyed prior to mobilization as part of the Work. See Specification TS-7 Construction Surveying.

The Contractor shall protect all vegetation adjacent to and within the construction site. If Contractor's work will require removal of vegetation, the Contractor shall obtain approval of Owner prior to removal. The Contractor shall be held liable for removal of vegetation without Owner's prior approval. Refer to GP-22.

The plans show the locations of all known surface structures pertinent to the work. The locations of surface and subsurface features shown on the plans are not exact. In the case of underground or underwater obstructions such as existing water, sewer, storm sewer, gas, electrical lines, piling, debris, oil and natural gas pipelines, or partial structures that are not shown on the plans, their location is not guaranteed. The Owner assumes no responsibility for failure to show any or all these structures on the plans or to show them in their exact location. Failure to show these in the Contract Documents will not be considered sufficient basis for claims for additional compensation for extra work in any manner whatsoever, unless the obstruction encountered is such as to necessitate substantial changes in the lines or grades, or requires the building of special work for which no provision is made. It is assumed that as elsewhere provided the Contractor has thoroughly inspected the site, is informed as to the correct location of surface structures, has included the cost of such incidental work in the price bid, and has considered and allowed for all foreseeable incidental work due to variable subsurface conditions, whether such conditions and such work are fully and properly described on the plans or not. Minor changes and variations of the work specified and shown on the plans shall be expected by the Contractor and allowed for as incidental to the satisfactory completion of a whole and functioning work or improvement.

#### SP-26 MISPLACED MATERIAL

Should the Contractor, during the progress of the construction, lose, dump, throw overboard, sink, or misplace any material, plant, machinery or appliance, which in the opinion of the Engineer may be dangerous to or obstruct navigation, the Contractor shall recover and remove the same with the utmost dispatch. The Contractor shall give immediate notice, with description and location of such obstructions, until the same are removed. Should the Contractor refuse, neglect or delay compliance with the above requirements, such obstructions may be removed by the Owner, and the cost of such removal may be deducted from any money due or to become due to the Contractor, or may be recovered under his bond. The liability of the Contractor for the removal of a vessel wrecked or sunk without fault or

negligence shall be limited to that provided in Sections 15, 19, and 20 of the Rivers and Harbors Act of March 3, 1899 (33 U.S.C 410 et seq).

#### SP-27 LAYOUT OF WORK AND SURVEYS

The Contractor, at Contractor's expense, shall be responsible for establishing base lines, and bench marks if applicable, for the limits of the project. The Contractor shall also be responsible for all measurements that may be required for the execution of the work to the location and limit marks prescribed in the specifications or on the plans. It is Contractor's responsibility to maintain and preserve all stakes and other marks if Contractor destroys such marks through Contractor's negligence prior to their authorized removal.

#### SP-28 UNDERGROUND OBSTACLES

Pipelines and/or other existing underground installations and structures in the vicinity of the work may be present. The Contractor shall make every effort to locate all underground obstacles and/or pipelines by prospecting in advance of all trench excavation. Any damage to pipelines, including any resulting environmental contamination, caused by the construction activities shall be repaired/cleaned-up by the Contractor. Any delay or extra cost to the Contractor shall not constitute a claim for extra work, additional payment, or damages.

A magnetometer or similar survey shall be performed the project area prior to construction on site as part of the pre-construction surveys. See Specification Section TS-7.

#### SP-29 UTILITIES AND SIMILAR FACILITIES

The Contractor shall protect all private and public utilities from damage resulting from the work. Among others, these utilities include: communication and power lines; sewer and water lines; railroad tracks and equipment; and highway lighting and signing systems

The Contractor shall call the utilities underground location center for field location of utilities within the Project Site work area, barge offloading site, and any other material handling or contractor use areas. If no locator service is available for the area, notice shall be provided individually to those owners of utilities known to, or suspected of, having underground facilities within the area of the construction activities.

If the work requires removing or relocating a utility, and the work associated with removing or relocating the utility is the responsibility of the utility owner and if this work is not complete before the Contractor begins work, the Contractor shall immediately notify the Engineer in writing.

Any authorized agent of the Owner or utility owners may enter the project site to repair, rearrange, alter, or connect their equipment. The Contractor shall cooperate

with such efforts and shall avoid creating delays or hindrances to those doing the work. As needed, the Contractor shall arrange to coordinate work schedules.

To ease or streamline the work, the Contractor may desire to ask utility owners to move, remove, or alter their equipment in ways other than those listed in the plans or special provisions. The Contractor shall make the arrangements and pay all costs that arise from them.

All costs required to protect public and private utilities as provided in this section shall be at the Contractor's expense. When others delay the work through late removal or relocation of any utility or similar facility, the Contractor's loss of time will be adjusted by extending Contract time the equivalent length of time.

If the Contract provides notice that utilities will be adjusted, relocated, replaced, or constructed during the prosecution of the work, the Contractor shall carry out the work in a way that will minimize interference and delay for all forces involved. Any costs resulting from the coordination and prosecution of the work regarding utility adjustment, relocation, replacement, or construction shall be at the Contractor's expense as provided.

#### SP-30 CUTTING AND PATCHING

When this project requires cutting into existing construction for the performance of the work and requires subsequent fitting and patching to restore the existing work to original condition.

- 31.1 Utilities: Contractor shall not cut or patch utilities until all necessary approvals and coordination requirements are accomplished. Before cutting services that are to remain permanently or temporarily in service, Contractor shall provide by-pass system as necessary to maintain service. After by-pass and cutting, Contractor shall cap, valve or plug and tightly seal remaining portion of service piping or conduit to prevent entrance of moisture and foreign matter.
- 31.2 Structural Work: Contractor shall not cut or patch structural work in a manner that would result in a reduction of load-carrying capacity or of load-deflection ratio.
- 31.3 Removing and Replacing Pavement: Unless otherwise directed by the Engineer, the Contractor shall saw cut to remove pavement. The Contractor shall not cut or patch pavement in a manner that would result in a reduction of load-carrying capacity. The Contractor shall replace all pavements, driveways, sidewalks, and curb and gutters with like or better pavement sections.
- 31.4 Inspection: Before cutting, Contractor shall examine items to be cut and patched and the conditions under which the work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered, Contractor shall take corrective action before proceeding with the work. Contractor shall meet at the work site with all trades involved in cutting and patching.

Contractor shall review areas of potential interference and conflict between the various trades and shall coordinate layout of the work and resolve potential conflicts before proceeding with the work.

#### SP-31 AS-BUILT DRAWINGS

The Contractor shall maintain on a separate set of the Contract Documents, a record of all changes made during construction as specified in GP-54. The Contractor shall be responsible for keeping these records and neatly noting with colored pencil or ink all changes. Progress payments will not be made to the Contractor unless such records are maintained.

As-Built drawings shall be turned over to the Owner/Engineer at the completion of the project. Final payment will not be made until "As-Built Drawings" have been received and accepted by the Owner/Engineer.

#### SP-32 COOPERATION WITH OTHER CONTRACTORS

The Owner may perform other work at or near the designated project site work area, including any material site, with other forces than those of the Contractor. This work may be done with or without a contract. If such work takes place within or next to this project, the Contractor shall cooperate with all other contractors or forces. The Contractor shall carry out work under this project in a way that will minimize interference and delay for all forces involved. The Engineer will resolve any disagreements that may arise among the contractors or the Contractor and the Owner over the method or order of doing the work. The Engineer's decision in these matters shall be final.

The coordination of the work shall be taken into account by the Contractor as part of the site investigation and examination of plans, specifications, and site of work, and any resulting costs shall be incidental and included within the unit bid prices in the Contract.

#### SP-33 STANDBY TIME PROVISIONS

At any time during the Contract performance period, Owner may terminate the Contract for unforeseen causes. However, in lieu of terminating the contract, Owner may opt to issue a temporary stop work order (refer to paragraph GP-46, "Temporary Suspension of Work") and activate standby time provisions. If activated, standby time will be paid to Contractor based on actual rental rates of equipment and labor rates of personnel on site during that time. Regardless of rate schedules submitted, Owner reserves the right to negotiate fair and equitable standby prices. Owner reserves the right to activate, or not to activate, standby time provisions, as it deems appropriate. Activation must be in the form of a change order to the contract.

## **PART III TECHNICAL SPECIFICATIONS**

### TS-1 SUMMARY OF WORK

#### 1.1 Scope

The Bio-Engineered Oyster Reef Demonstration Project consists of constructing two new breakwaters as a demonstration project with the objective of reducing erosion along the shoreline of Rockefeller Refuge. Each breakwater is to be approximately 300 feet long and 34 feet wide and are to be constructed with precast OysterBreak Armor Units and a geogrid mattress underlayer. The work covered under these plans and specifications includes all labor, materials, tools, equipment, plant, supplies, superintendence, insurance, incidentals, and services necessary or required to fully complete the work for the "Bio-Engineered Oyster Reef Demonstration Project" in accordance with these Specifications and in conformity to the lines, grades and elevations shown on the Plans.

#### 1.2 Location of Work

The Bio-Engineered Oyster Reef Demonstration Project is located along the Gulf of Mexico Shoreline of Rockefeller Refuge in Cameron Parish, Louisiana west of Joseph's Harbor Bayou. The site is accessible by boat or airboat only. The nearest boat launch is at the Rockefeller Refuge. All work to be performed is located as indicated on the Plans.

#### 1.3 Construction Access

There is no upland access to the project site. Site access will be water routes only. Access to the project site is the responsibility of the Contractor.

#### 1.4 Project Site Conditions

- A It is the Contractor's responsibility to familiarize himself with the project site prior to bidding, and to verify to his satisfaction the accuracy of the information provided. The information depicted on the Plans represents the results of surveys made on the dates indicated on the plans and can only be considered as indicating the general conditions existing at that time. As a result of the dynamic conditions present at the project site, erosion, or accretion along the shoreline and adjacent in-water sub-tidal areas may have occurred since the date of the survey.
- B The method and rate of construction of breakwater material installation shall be performed in such a manner as to protect the structure from scour.

#### 1.5 Notice to Proceed and Notice to Mobilize

- A The Notice to Proceed authorizes the Contractor to fabricate the OysterBreak Armor Units and conduct preconstruction bathymetric and magnetometer survey work. Issuance of Notice to Mobilize by the Engineer is required before the Contractor shall mobilize on site. See SP-16.
- B The method and rate of construction of breakwater material installation shall be performed in

such a manner as to protect the structure from scour.

## 1.6 Correspondence

- A All mail pertinent to the Work shall be sent by express, unless delivery by regular mail can be accomplished within three days or by electronic/facsimile transmission followed by regular mail of the original copies. Receipt of such mail will be promptly acknowledged when acknowledgment is requested.
- B Mailing Address: Unless specified elsewhere, all requests for materials review shall be forwarded to Project Engineer. Contact names and addresses will be coordinated by the Project Engineer and distributed at the Pre-Construction Conference. The address for the Office of State Purchasing and the Engineer is provided in SP-5.
- C Project Number: The State Project Number (LA-08) must appear on all correspondence.

## 1.7 Measurement and Payment

No separate measurement or payment will be made for the Work in this Section; all the costs of such Work shall be included in the prices for the various items in the Contractor's Bid Form.

## TS-2 MOBILIZATION

### 2.1 Mobilization

This section covers the mobilization of personnel, equipment, materials, and supplies, and their transport to the job site. Also included is setting up the Contractor's complete construction plant and other construction facilities and access channel dredging as required for the Contractor's operation, all in adequate time for satisfactory performance of all Work under the Contract.

### 2.2 Demobilization

Demobilization shall include the removal of all construction plant, equipment and accessories, materials, supplies, appurtenances, construction debris and the like from the job site upon completion of the Work.

### 2.3 Related Documents

The provisions and intent of the Contract, including the General Provisions, Special Provisions and Technical Sections apply to this work as if specified in this section. Related Sections include the following:

- A Section TS-6 – Project Schedule
- B Section TS-10 OysterBreak Armor Units
- C Section TS-7 Construction Surveying

### 2.4 Schedule

The Notice to Proceed authorizes the Contractor to fabricate the OysterBreak Armor Units and conduct preconstruction bathymetric and magnetometer survey work. Issuance of Notice to Mobilize by the Engineer is required before the Contractor shall mobilize on site. See SP-16.

### 2.5 Permits

The Contractor shall obtain, and pay for, all required building permits and other state, parish, or local construction and road use permits, if necessary, and comply with applicable laws and regulations regarding mobilization, transport of equipment, personnel and supplies, and the construction and maintenance of temporary facilities including but not limited to: structures, storage sites, laydown areas, and construction utilities.

### 2.6 Upland Land Use and Easements

- A A Contractor use area has been provided off Hwy 82 near Grand Chenier. See Contract plans and TS-8 for additional information.
- B The Contractor is responsible for obtaining any additional easements or land use agreements for areas outside of the defined project area or defined Contractor Use Area, at no additional expense to the Owner.

## 2.7 Owner Obtained Permits

- A US Army Corps of Engineers Permit No: MVN-2010-0973-WLL; See TS-9 and Appendix C.
- B LDNR Coastal Use Permit No: P20100399; See Section TS-9 and Appendix C.
- C US Coast Guard

## 2.8 Clean up

Contractor shall at all times keep the area free from accumulations of waste material or rubbish caused by Contractor's employees or by the Work. At the completion of the Work, he shall remove all his trash, tools and surplus materials from the project site and dispose of properly.

## 2.9 Access Channel Dredging

- A The Contractor is allowed to mechanically excavate and/or dredge floatation access channels in limited areas as defined on the project plans. Contractor is responsible for constructing and maintaining all access channels at no additional cost to the Owner.
- B Excavated material from access channels entering from deeper water may be side cast and the top of placed excavated material shall not exceed 0 feet NAVD88 or at any time be emergent.
- C Excavated material from an access channel paralleling the breakwater structure may be side cast seaward of the channel and be emergent. Side cast materials not eroded at time of construction completion are to be backfilled into the access channel and smoothed to transition into adjacent bottom.

## 2.10 Measurement and Payment - Mobilization

- A Measurement: No measurement for Work of this Section will be made.
- B Payment: Payment for Mobilization Work of this Section will be made at the lump sum price for Bid Item No.1, "Mobilization and Demobilization", listed in the Contractor's Bid Form, which shall not exceed ten (10) percent of the Bid Subtotal.
- C Payment for Mobilization and Demobilization shall cover all preparatory work and operating, including the obtaining of all permits, insurance and bonds; movement of personnel, equipment, supplies and incidentals to the project site; access channel dredging, access channel backfilling, the establishment of temporary offices and other construction facilities necessary for work on this project; removal of temporary offices from site, and clean up to place temporary site in original condition, all as required for the proper performance and completion of the work. Payment for mobilization and demobilization shall also include any expenses incurred for fabrication inspections of OysterBreak Armor Units required beyond the three included OysterBreak Armor Unit specification.
- D Ratio of Mobilization and Demobilization Effort and Justification of Costs: Sixty percent



(60%) of the mobilization/demobilization lump sum price will be paid to the Contractor upon completion of his mobilization to the Project Site. The remaining forty percent (40%) will be paid to the Contractor upon final acceptance of the Work and removal of all equipment and unused materials.

In the event the unit cost does not bear a reasonable relation to the amount of work for mobilization and demobilization in the Contract, the Engineer may require the Contractor to produce cost data to justify the unit cost in the Bid. Failure to justify such cost to the satisfaction of the Engineer will result in payment of actual mobilization costs, as determined by the Engineer at the completion of mobilization, actual demobilization cost at the completion of the demobilization, and payment of the remainder of this item in the final payment under this contract. The determination of the Engineer is not subject to appeal.

### TS-3 CODES, STANDARDS AND SPECIFICATIONS

- 3.1 The standards under which the work is to be performed or tested are specified throughout the contract documents. Where such standards are specified, it shall be understood that the latest revision or edition at time of award shall apply.
- 3.2 In referring to standards the following abbreviations have been used:

<b>Name</b>	<b>Abbreviation</b>
<i>American Association of State Highway &amp; Transportation Officials</i> 444 North Capitol Washington, DC 20001	<i>AASHTO</i>
<i>American Concrete Institute</i> Box 19150, Redford Station Detroit, MI 48219	<i>ACI</i>
<i>American Institute of Steel Construction</i> 1221 Avenue of the Americas New York, NY 10020	<i>AISC</i>
<i>American Institute of Timber Construction</i> 333 W Hampden Avenue Englewood, CO 80110	<i>AITC</i>
<i>American Iron and Steel Institute</i> 1000 - 16th Street NW Washington, D.C. 20036	<i>AISI</i>
<i>American National Standards Institute</i> 1430 Broadway New York, NY 10018	<i>ANSI</i>
<i>American Petroleum Institute</i> 2100 "L" Street NW Washington, D.C. 20037	<i>API</i>
<i>American Plywood Association</i> P.O. Box 11700 Tacoma, WA 98411	<i>APA</i>
<i>American Public Works Association</i> 2345 Grand Boulevard suite 500 Kansas City MO 64105-2641	<i>APWA</i>
<i>American Society for Testing and Materials</i> 1916 Race Street Philadelphia, PA 19103	<i>ASTM</i>
<i>American Society of Civil Engineers</i> 345 East 47th Street New York, NY 10017	<i>ASCE</i>

<b>Name</b>	<b>Abbreviation</b>
<i>American Society of Mechanical Engineers</i> 345 East 47th Street New York, NY 10017	ASME
<i>American Water Works Association</i> 6666 West Quincy Avenue Denver, CO 80235	AWWA
<i>American Welding Society</i> 2501 NW 7th Street Miami, FL 33125	AWS
<i>American Wood Preservers Association</i> PO BOX 5690 Granbury TX 76049-0690	AWPA
<i>Associated General Contractors of America</i> 1957 East Street NW Washington, D.C. 20006	AGC
<i>Concrete Plant Manufacturers Bureau</i> 900 Spring Street Silver Springs, MD	CPMB
<i>Concrete Reinforcing Steel Institute</i> 933 Plum Grove Road Schaumburg, IL 60195	CRSI
<i>Federal Specification Board</i> c/o Superintendent of Documents U.S. Government Printing Office Washington, D.C. 20402	U.S. Fed. Spec. Mil. Spec.
<i>Institute of Electrical and Electronics Engineers, Inc.</i> 445 Hoes Lane, P.O. Box 1331 Piscataway, NJ 08855-1331	IEEE
<i>Insulated Power Cable Engineers' Association</i> 192 Washington Street Bellmount, MA 02178	ICEA
<i>International Electro Technical Commission</i> 1, Rue De Varembe Genève, Switzerland	IEC
<i>National Bureau of Standards</i> c/o Superintendent of Documents U.S. Government Printing Office Washington, D.C. 20402	NBS
<i>National Association of Corrosion Engineers</i> P.O. Box 1499 Houston, TX 77001	NACE
<i>National Electrical Manufacturers Association</i>	NEMA

<b>Name</b>	<b>Abbreviation</b>
2101 L Street NW Washington, D.C. 20037	
<i>National Fire Code</i>	<i>NFC</i>
<i>National Fire Protection Association</i> Batterymarch Park Quincy, MA 02269	<i>NFPA</i>
<i>National Forest Products Association</i> 1619 Massachusetts Avenue NW Washington, D.C. 20036	<i>NFPA</i>
<i>Occupational Safety and Health Administration US</i> <i>Department of Labor</i> Governmental Printing Office Washington, D.C. 20402	<i>OSHA</i>
<i>Society of Automotive Engineers</i> 485 Lexington Avenue New York, NY 10017	<i>SAE</i>
<i>Steel Structures Painting Council</i> 4400 Fifth Avenue Pittsburgh, PA 15213	<i>SSPC</i>
<i>Underwriters Laboratories</i> 333 Pfingsten Road Northbrook, IL 60062	<i>UL</i>
<i>Texas Department of Transportation</i> 1701 South Padre Island Drive Corpus Christi, TX 78469-9907	<i>TXDOT</i>
<i>Uniform Building Code</i>	<i>UBC</i>
<i>Uniform Mechanical Code</i>	<i>UMC</i>
<i>Uniform Plumbing Code</i>	<i>UPC</i>
<i>Western Wood Products Association</i> 1500 Yeon Bldg. Portland, OR 97204	<i>WWPA</i>

3.3 Additional abbreviations will be defined as they appear in the specifications.

### 3.4 Measurement and Payment

No separate measurement or payment will be made for the Work in this Section; all the costs of such Work shall be included in the prices for the various items in the Contractor's Bid Form.

## TS-4 DEFINITIONS AND STANDARDS

### 4.1 Description

- A This section specifies requirements for compliance with governing regulations, codes, and standards.
- B Requirements include obtaining permits, licenses, inspections, releases and similar documentation, as well as payments, statements and similar requirements associated with regulations, codes, and standards.

### 4.2 Definitions

Definitions contained in this section are not necessarily complete, but are general to the extent that they are not defined more explicitly elsewhere in the Contract Documents.

- A "Indicated" refers to graphic representations, notes or schedules on the drawings, or other paragraphs or schedules in specifications, and similar requirements in Contract Documents.
- B Terms such as "shown", "noted", and "specified" are used to help locate the reference; no limitation on location is intended except as specifically noted.
- C Terms such as "directed", "requested", "authorized", "selected", "approved", "required", and "permitted" mean "directed by the Engineer", "requested by the Engineer", and similar phrases. However, no implied meaning shall be interpreted to extend the Engineer's responsibility into the Contractor's area of construction supervision.
- D The term "approved", where used in conjunction with the Engineer's action on the Contractor's submittals, applications, and requests, is limited to the responsibilities and duties of the Engineer stated in the General and Special Provisions. Such approval shall not release the Contractor from responsibility to fulfill contract document requirements unless otherwise provided in the Contract Documents.
- E The term "Regulations" includes laws, statutes, ordinances and lawful orders issued by authorities having jurisdiction, as well as rules, conventions and agreements within the construction industry that control performance of the Work, whether they are lawfully imposed by authorities having jurisdiction or not.
- F The term "furnish" is used to mean "supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations."
- G The term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations".
- H The term "provide" means "to furnish and install, complete and ready for the intended use."
- I An "installer" is an entity engaged by the Contractor, either as an employee, subcontractor, or

sub-subcontractor, for performance of a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.

- J A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, either at the project site or elsewhere, and to report on and, if required, interpret results of those inspections or tests.

#### 4.3 Industry Standards

##### A Applicability of Standards:

- 1 Except where Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into Contract Documents. Such standards are made a part of the Contract Documents by reference. Individual sections indicate which codes and standards apply to that section. The Contractor shall purchase and maintain available at the project site one copy of all specified standards, codes, documents, or reports that have been referenced in the Contract Documents.
- 2 Referenced standards take precedence over standards that are not referenced but recognized in the construction industry as standard practice.

- B Publication Dates: Where compliance with an industry standard is required, comply with standard in effect as of date of Contract Documents.

##### C Conflicting Requirements:

- 1 Where compliance with two or more standards is specified, and they establish different or conflicting requirements for minimum quantities or quality levels, the most stringent requirement will be enforced unless the Contract Documents indicate otherwise. Refer requirements that are different but apparently equal and uncertainties as to which quality level is more stringent to the Engineer for a decision before proceeding.
- 2 In every instance, the quantity or quality level shown or specified shall be the minimum to be provided or performed. The actual installation may comply exactly, within specified tolerances, with the minimum quantity or quality specified, or it may exceed that minimum within reasonable limits. In complying with these requirements, indicated numeric values are minimum or maximum values as noted or appropriate for the context of the requirements. Refer instances of uncertainty to the Engineer for decision before proceeding.

- D Copies of Standards: Each entity engaged in construction on the project is required to be familiar with industry standards applicable to that entity's construction activity.

- E Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where acronyms or abbreviations are used in the specifications or other Contract Documents they mean the recognized name of the trade association, standards

generating organization, authority having jurisdiction or other entity applicable to the context of the text provision, as outlined in Section TS-3, Codes, Standards and Specifications.

- F Industry Standards: In addition to Federal, state and local ordinances, the latest edition of the following industry standards shall apply as referred to in the drawings and specifications.

#### 4.4 Measurement and Payment

No separate measurement or payment will be made for the Work in this Section; all the costs of such Work shall be included in the prices for the various items in the Contractor's Bid Form.

## TS-5 SUBMITTALS

### 5.1 Related documents

The provisions and intent of the Contract, including the General Provisions, Special Provisions and Technical Sections apply to this work as if specified in this section. Related sections include the following: Special Provisions.

### 5.2 Submittal Procedures

- A Materials furnished by the Contractor shall not be incorporated into the construction before review except as specified herein.
- B Materials shall be submitted for review in the manner specified herein and under the applicable specific technical provisions. The methods of review may include submission of samples, shop drawings (including stock prints), catalogs (including cuts and descriptive literature), schedules, certificates, or field inspection. All materials for which no specific method of review is specified shall be subject to field inspection and review.
- C The Contractor shall certify on all submittals that the material being proposed conforms to Contract requirements. The Contractor shall present all materials for each specification section at the same time as one submittal, titled with project title, the State Project Number, and contract number. Incomplete submittals and submittals with inadequate data will be rejected. Four (4) copies shall be provided to the Engineer, plus the number of additional copies that the contractor desires for his own use.
- D The following detailed instructions include various methods of material review that shall be followed in submitting requests for review. The Engineer will review and return the desired number of copies of the submittal, appropriately stamped and signed, to the Contractor. Items returned stamped "Reviewed" or "Furnish as Corrected" shall be considered as adequate to incorporate into the construction. Items returned stamped "Rejected" or "Revise and Resubmit" shall be considered not adequate to incorporate into the construction and shall have the appropriate modifications and corrections made by the contractor and then re-submitted for review. Items stamped "Submit Specified Item" require additional information before Engineer review can be completed. Should the Contractor desire the return of more than one copy, the additional number desired will be returned, up to three copies.
- E Review Time: All requests for material review shall be submitted in sufficient time so as not to delay the progress of the work, allowing three (3) days after receipt by the Engineer for review.
- F Mailing Address: Unless specified elsewhere, all requests for materials review shall be forwarded to Project Engineer. Contact names and addresses will be coordinated by the Project Engineer and distributed at the Pre-Construction Conference.
- G Requests shall be accompanied by a transmittal letter from the Contractor stating that the items of material submitted are the Contractor's selection for construction under the Contract and requesting review. Additionally, the Contractor shall forward to the Engineer one copy of the transmittal letter and one copy of the submittal data.



### 5.3 Proposed Products

- A In those instances where the specific technical provisions cite a brand name product, submittal of the material for review is not required unless required by the specific technical provisions. However, the Contractor shall advise the Engineer in writing that the specified brand name product will be used.
- B Materials that are specified by reference to an industry standard or specification that is also stamped or otherwise shown on the material itself and are readily identified in the field do not require submittal of the material for review.

### 5.4 Product Substitution Procedures

- A Brand name(s): Equivalent items are not acceptable unless specifically authorized in the Specifications by use of the term "approved substitute". Should the Contractor propose a substitute when "approved substitute" is specified, the Contractor shall include with the submittal, sufficient technical documentation to readily demonstrate the material proposed is, in fact, equal to the brand name(s) specified. Submittals will be rejected if the Contractor fails to submit such documentation or such documentation fails to demonstrate the equality of the item. Substitutions of OysterBreak Concrete Units will not be allowed.

### 5.5 Manufacturer Installation Instructions

- A When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, to the Engineer in quantities specified for product data.
- B Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

### 5.6 Manufacturer Certificates

Submit four copies of certificates covering conformity to requirements of referenced Specifications or standard test results as follows:

- A Certificates of conformity to referenced Specifications shall consist of a statement on the manufacturer's letterhead that the materials listed conform to the requirements of the referenced Specifications referred to by number.
- B Certificates of standard test results shall consist of statements on the test laboratory's letter head of the tests made and the tests results. The tests shall have been performed within one year of submittal of the reports for approval. Test reports shall be accompanied by certificates from the manufacturer certifying that the material and equipment proposed to be supplied is of the same type, quality, manufacture and make as that tested.

### 5.7 Work Plan Supplemental

The following items shall be included in the Work Plan in addition to those required by GP-8:

- A Layout, construction schedule and methods for marine mattresses construction and installation.
- B Transportation, stockpiling, layout, construction schedule and methods for OysterBreak Armor Units placement.
- C Layout and schedule for temporary access channels, if elected to use. See TS-2 Mobilization.
- D Equipment and material staging areas
- E Surveying method and Schedule
- F Temporary daybeacon details if the Contractor elects to dredge temporary access channels. See TS-8, Paragraph 8.14-C and the Plans.

## 5.8 Summary of Submittals

The following is a summary list of submittals required during the duration of the project. Detailed requirements shall be obtained from individual technical specifications sections.

Section	Submittal	Time Requirement
<b>TS-7 Construction Surveying</b>		
7.3-A	Surveyor Qualifications	14 days prior to survey work
7.3-B	Survey Work Plan	14 days prior to survey work
7.5-C	Pre-construction Surveys	14 days prior to construction
7.5-C	Magnetometer Survey	14 days prior to construction
7.5-D	Construction surveys	3 days after completion of daily surveys
7.5-E	Post Construction Survey	5 days after substantial completion
<b>TS-10 Oyster Break Armor Units</b>		
10.4-A.1	Product Data	10 days after NTP
10.4-A.2	Design Mixes	10 days after NTP
10.4-A-3	Concrete Mix Design Test Results	10 days after NTP
10.4-A.4	Material Test Reports	10 days after NTP
10.4-A.5	Material Certificates	10 days after NTP
10.4-A.6	Work Plan	10 days after NTP
<b>TS-11 Marine Mattress</b>		
11.4-A	Name of Proposed Manufacturer	With bid submittal
11.4-B	Material samples	10 days after NTP
11.4-C	Shop drawings	10 days after NTP
11.4-D	Product data and installation instructions	10 days after NTP
11.4-E	Geotextile and Geogrid Test reports	10 days after NTP
11.4-F	Seam details	10 days after NTP
11.4-G	Stone Fill product data	10 days after NTP
<b>TS-12 Steel Pipe Piles</b>		
12.5-A	Pile Fabricator/Manufacturer Info	7 days prior to order of material
12.5-B	Certificates of treatment of materials	7 days prior to order of material
12.5-C	List of Pile Installation Equipment	7 days prior to start of onsite construction work
12.5-D	Pile Driving Records	1 day after completion of each pile installation
<b>TS-14 Miscellaneous Metals</b>		
14.6-A	Shop Drawings of pile, navigation aids and attachments	15 days after NTP
14.6-A	Work plan for navigation aid installation	15 days after NTP
<b>TS-15 Coatings</b>		
15.5-A	Coating Product and Manufacture's Info	10 days before start of coating work
15.5-B	MSDS and CIS Sheets	10 after NTP
15.5-C	Coating Subcontractor Coating Info	10 days before start of coating work

Note: Submittal list is provided as a summary of required submittals. Requirements of individual specification sections take precedence over the information in this table.

## 5.9 Measurement and Payment

- A No separate measurement or payment will be made for the Work in this Section; all the costs of such Work shall be included in the prices for the various items in the Contractor's Bid Form.

## TS-6 PROJECT SCHEDULE

### 6.1 Description

This section covers the construction project schedule requirements, submittals of project schedule, and required completion date.

### 6.2 Time for Commencement and Completion

- A Manufacturing of OysterBreak Armor Units must be completed within ninety (90) calendar days of the effective date of the Notice to Proceed.
- B Contractor cannot commence Work at the site under the Contract until OysterBreak Armor Units have been manufactured and inspected by the Engineer and a Notice to Mobilize has been issued, see SP-16. All Work at the site under the Contract must be completed within two hundred and ten (210) calendar days from the effective date of the Notice to Proceed. He shall conduct the Work in such a manner and with sufficient materials, equipment and labor as is considered necessary to insure its completion within the time limits specified.
- C All Contract Work shall be completed within the time period outlined in the Notice to Proceed and as provided for in SP-33.
- D The Contractor is responsible for scheduling and completing the work within the prescribed completion time. Additional requirements for timing of work activity locations apply to the contract.
- E The Contractor may not have exclusive use of the project site during the execution of the work. See SP 33.

### 6.3 Construction Schedule

- A Within seven (7) days after issuance of the Notice to Proceed, the Contractor shall submit a Construction Schedule for review by the Engineer. Progress schedules shall be submitted to the Engineer when requested by the Engineer or as required by any provision of the contract. See SP-19.

### 6.4 Measurement and Payment

- A No separate measurement or payment will be made for the Work in this Section; all the costs of such Work shall be included in the prices for the various items in the Contractor's Bid Form.

## TS-7 CONSTRUCTION SURVEYING

### 7.1 Construction Surveys

- A This section includes all surveying requirements, including preconstruction surveys, quality control surveys during construction and post construction surveys.
- B Preconstruction surveys consist of a full bathymetric and magnetometer survey of the work area. Results are to be submitted to and reviewed by the Engineer prior to mobilization at the project site.
- C The Contractor will establish and maintain quality control for all work performed and all Products supplied to assure compliance with the Specifications.
- D The Contractor will maintain written records of his quality control tests, inspections, construction surveys, or other measures. The Contractor will maintain written records of corrective action required and taken to assure these Specifications are followed.
- E At the Engineer's request, the Contractor will provide copies of any quality control records requested.
- F Scope: Work covered by this section consists of furnishing all labor, materials, plant, and equipment for performing the construction surveying work.

### 7.2 References

- A US Army Corps of Engineers
  - 1 EM 1110-2-1003 (Jan 2002) Hydrographic Survey Manual
  - 2 EM 1110-1-1005 (Aug 1994) Topographic Surveying Manual
  - 3 EM 1110-1-1802 (Aug 1995) Geophysical Explorations for Engineering and Environmental Investigations

### 7.3 Submittals

- A Contractor shall submit qualifications of the surveyor conducting the survey work. Surveyor shall be a licensed surveyor in the State of Louisiana and shall have a minimum of 2 years experience in hydrographic data collection and familiar with US Army Corps of Engineer Hydrographic Survey Standards. Surveyor shall also have a minimum of 2 years experience in magnetometer surveying. Surveyor qualifications shall be submitted to the Engineer for review a minimum of 14 days prior to the preconstruction survey work.
- B The pre-construction surveys, including the bathymetric and magnetometer surveys, shall be submitted to the Engineer a minimum of 14 days prior to the start of onsite construction activities.

- C Contractor shall submit to the Engineer the results of construction survey work within 3 days after completion of each day's data collection.
- D Post construction survey shall be submitted to the Engineer a maximum of 5 days after substantial completion.

#### 7.4 Survey Control

- A Horizontal survey control has not been established at the site. Prior to mobilization at the site, Contractor will establish horizontal survey control.
- B Any monuments not referenced by the Plans that are disturbed by construction operations shall be reset at the Contractor's sole expense by a licensed Land Surveyor. Property corners, fences or any other indications of property lines shall be referenced by the Contractor prior to construction and reset after completion of construction in accordance with recognized Engineering and surveying practice.
- C Checking: All working control established by the Contractor may be checked by the Engineer. Prior to establishing the working control, the Contractor shall provide, at the Engineer's request, sufficient copies of an illustration of the working control relative to pertinent construction. When the Contractor has established the working control, Engineer shall be notified for a survey check 24 hours before any construction Work is started. All checking by the Engineer will be independent. The responsibility for correctness and adequacy of control shall be borne solely by the Contractor. All original field notes, computations and other records taken by the Contractor for the purpose of quantity and conformance survey shall be furnished promptly to the Engineer and Owner. Quantity surveys, unless waived in each specific case, shall be made with the Engineer present.

#### 7.5 Construction Surveys

Construction surveys include all survey bathymetric and topographic work during the construction phase of the work including preconstruction surveys, intermediate surveys, post-construction surveys, monitoring surveys, as well as project staking.

##### A General

- 1 Surveys performed during construction shall be done at no additional expense to the Owner.
- 2 The Contractor shall perform all construction surveys, using electronic surveying equipment, required to layout and set any construction stakes and marks which are needed to establish the lines, grade, slopes, and cross sections. A baseline offset from the work area shall be established, utilizing benchmarks and monuments provided on the drawings, at a location that shall not be disturbed by construction activities and located close to the work so that it provides alignment and location reference. In addition, the Contractor shall perform surveys during construction to ensure that the new products are being placed within the tolerance specified. The Engineer shall be allowed to review the surveys prior to the start of materials placement.

- 3 The intent of the Construction staking is to mark the extent of the breakwater project baseline and the structure toe. All construction staking shall utilize materials suitable for the project site conditions.
- 4 Contractor shall verify any survey control data provided by the Owner prior to performing construction staking work.
- 5 The electronic surveying method must be approved, in writing, by the Engineer, prior to beginning placement of Products on the Project.
- 6 Surveys will be of sufficient frequency and accuracy during construction so that the Engineer can determine that the new Products are being placed on the structure within the tolerances of the Specifications.
- 7 The results of all construction surveys shall be submitted to the Engineer within three (3) working days after completion. The data shall be submitted to the Engineer on an electronic media (PC compatible, ASCII format) in delimited files of easting, northing, and elevation (x,y,z), where elevation is indicated as negative for depths recorded below NAVD88 Datum 0.0 elevation. In addition, the data file shall list the project name, surveyor's name, area surveyed, date of survey, and the vertical (NAVD88) and horizontal (Louisiana State Plane South Zone, NAD83) datums.
- 8 The location of each cross section profile surveyed shall be referenced to the stationing shown on the project site plan. The Contractor shall plot the cross sections and profiles on a scale agreeable to both the Contractor and the Engineer, and submit two (2) hard copies to the Engineer for review.
- 9 All construction survey data submitted to the Engineer shall be referenced to the NAVD88 vertical datum and Louisiana State Plane South Zone, NAD83 horizontal datum.
- 10 All construction surveys (topographic and bathymetric) shall be performed to the nearest 0.1-foot at the survey points. The survey equipment specifications and the surveyor's statement of qualifications shall be submitted to the Engineer for approval.
- 11 Construction surveys shall be conducted utilizing surveying procedures and methodology that meet or exceed accuracy tolerances of 0.05 +/- feet in vertical and 0.1 +/- feet horizontal.

#### B Pre-Construction Survey

- 1 Pre-Construction surveys shall meet the requirements outlined in paragraph A
- 2 The Pre-Construction surveys, including the bathymetric and magnetometer surveys, shall be submitted to the Engineer a minimum of 14 days prior to the start of onsite construction activities, and shall be conducted no more than 45 days prior to start of onsite construction activities. Engineer reserves the right to modify the location of breakwater construction pending the results and review of submitted pre-construction survey data.
- 3 Pre-Construction survey shall include a bathymetric survey of the project site, as shown on the Plans. Survey lines shall be no more than 100 feet apart and extending 400 feet offshore (Gulf Side) from the breakwaters to 0' NAVD elevation on the shore side of the new breakwaters. The survey is to extend from 200 feet west of Breakwater "A" to 200 feet east of Breakwater "B". Bathymetric survey is to be

conducted in accordance with the US Army Corps of Engineers Class 1 standards for hydrographic surveys.

- 4 All survey data shall be referenced to the project horizontal and vertical datums detailed in the Plans.
- 5 After completion of the pre-construction survey, Contractor shall field mark or stake the location of the project baseline and the location of the waterward and shoreward corners of the marine mattress units. The field layout and staking of the breakwater work shall be reviewed by the Engineer prior to construction. If changes to the breakwater alignment or cross section are provided as part of the Engineer review, these changes shall be delineated with revised staking of the project baseline and marine mattress corner locations.

#### C Magnetometer Survey

- 1 Magnetometer Survey shall be conducted by the Contractor a minimum of 14 days prior to the start of onsite construction activities. The Contractor shall not begin construction activities until the Engineer has reviewed and approved the magnetometer survey. Engineer reserves the right to modify the location of breakwater construction pending the results and review of submitted magnetometer survey data.
- 2 The Contractor shall perform a magnetometer survey for the entire limits of project site. All pipelines within the project area shall be probed and marked throughout construction. The magnetometer drawing shall show all track lines, coordinates, amplitudes, signature types, and signature widths of all hits. The results of pipeline probing, including coordinates, top of the pipe elevations, and cover over the pipe shall also be represented. Survey shall be of sufficient detail to resolve the location of all pipelines present throughout the project site. Surveyor conducting magnetometer survey shall provide an interpretive report detailing the results and conclusions of the magnetometer survey.

#### D Breakwater Construction Survey

- 1 Breakwater structure surveys shall be performed as specified herein and as specified for general surveys in Paragraph A.
- 2 The electronic surveying method and survey results shall be reviewed by the Engineer prior to beginning placement of breakwater construction materials.
- 3 Contractor shall perform breakwater construction surveys during the construction of the project to ensure the proper placement of the materials.
- 4 Cross-section profiles will be surveyed at 25-foot intervals along the breakwater alignments as successive intervals of the project are completed. Survey points of the OysterBreak Armor Units along each profile shall be taken on each concrete ring along the survey profile line as shown on the Plans.
- 5 Survey points of the marine mattress along each cross section profile will be not farther than three (3) feet apart within the limits of the specified work and shall occur at each major change in the slope, grade, and transitions.



- 6 The Contractor shall submit on electronic copy of the survey data and a printout of the survey data from the original data for each construction survey performed.
- 7 Quality control surveys for the breakwater structures shall be conducted at the following stages of construction to ensure the specified lines and grades are being achieved:
  - After completion of installation of the marine mattresses for each breakwater.
  - After completion of installation of second course of OysterBreak Armor Units for each breakwater

#### E Post-Construction Survey

- 1 A final post-construction survey shall be performed by the Contractor upon completion of the breakwater structure work. The survey shall be completed within five (5) days after substantial completion and shall include survey points for the top elevation, alignment, adjacent ground elevation, navigation aids, locations of changes or breaks in slope, and locations of change in alignment for all breakwater structure components. Data shall be submitted to the Engineer in electronic ASCII and hard copy formats; two (2) copies of each. Post construction survey shall be conducted at the frequency specified for the cross section profile surveys.
- 2 Breakwater structure surveys shall be performed as specified herein and as specified for general surveys in Paragraph A
- 3 Cross-section profiles will be surveyed at 25-foot intervals along the breakwater alignments as successive intervals of the project are completed. Survey points of the OysterBreak Armor Units along each profile shall be taken on each concrete ring along the survey profile line as shown on the Plans.
- 4 Survey points of the marine mattress along each cross section profile line will consist of a minimum of two points on the landward side of the breakwater outside the footprint of the Concrete Armor Units and a minimum of three points on the seaward side of the breakwater outside the footprint of the Concrete Armor Units. Survey points will not be farther than three (3) feet apart and shall occur at each major change in the slope, grade, and transitions. No survey points of the mattress underneath the Concrete Armor Units are required.
- 5 Survey points along cross-section profiles are to extend waterward and landward from the breakwater toe a minimum of 25'.

#### F Monitoring Surveys

- 1 Monitoring surveys of the project area as defined on the Plans shall be performed by the Contractor prior to the start of construction and after project completion. The requirements of the Initial Monitoring Survey and Final Monitoring Surveys are detailed on the Plans and are independent of the other surveys required in this specification.
- 2 Initial monitoring survey shall be submitted to the Engineer a minimum of fourteen (14) days prior to the start of onsite construction activities, and shall be conducted no more than forty-five (45) days prior to start of onsite construction activities.
- 3 Final monitoring survey shall be completed within five (5) days after substantial completion

- 4 Monitoring surveys shall be performed as specified herein and as specified for general surveys in Paragraph A
- 5 Topographic survey points (above 0' NAVD) for the monitoring surveys along each transect line as defined in the Plans will be not farther than ten (10) feet apart and with points taken at each major change in the slope, grade, and transitions. Bathymetric survey data (below 0' NAVD88) is to be conducted in accordance with the US Army Corps of Engineers Class 1 standards for hydrographic surveys.

## 7.6 Measurement and Payment – Construction Surveys

- A Measurement: No measurement for payment of the Construction Surveys work as specified in this Section will be made.
- B Payment: Payment for the Construction Surveys will be made at the lump sum price for the appropriate “Construction Surveys” items, listed in the Contractor’s bid (including Base Bid and all Additive Bids). This price shall include all materials and labor required to perform the pre, post and construction surveys, monitoring surveys and magnetometer survey work as described in this section. The payment shall also cover all staking, intermediate survey and post construction survey work.

## TS-8 CONSTRUCTION FACILITIES

### 8.1 Description

This section covers the following:

- Construction Facilities
- Construction Aids and Safety Precautions
- Special Controls
- Sanitary Facilities and Domestic Water Supply
- Traffic Control at Project Site
- Telephone Services and Communications Systems
- Parking and Office Areas
- Temporary Power
- Temporary Buildings
- Use of Project Site
- Protection of Property
- Navigation
- Signal Lights
- Access to Work Area
- Owner Access to Project Site

### 8.2 Construction Facilities

- A. Contractor Use Areas provided by the Owner as shown in Contract Drawings. The Contractor will be responsible for obtaining any additional approvals, agreements, or easements for upland construction facilities and Contractor Use Areas.
- B. A minimum of 14 days prior to mobilization, the Contractor shall contact the Rockefeller Wildlife Refuge to notify the staff and coordinate on-site activities. The contact at the refuge is Guthrie Perry at (337) 538-2276.
- C. Contractor should be aware that access to the boat launch off Hwy 82 and the Optional Contractor Use Area will cross private property. Location of boat ramp and Optional Contractor Use Area is shown on Plans. Contractor should contact Mr. Richard Sturlese, 219 Ducharme Lane, Lafayette, La. 70503, to discuss requirements for access. Mr. Sturlese can be reached at 337/993-0962, cell 337/278-0119

### 8.3 Contractor Use Area

- A. A potential contractor use area has been provided off Hwy 82 near Grand Chenier. See Contract plans for exact location and work area limits of upland land use area.
- B. Access to the Optional Contractor Use Area crosses private property. Contractor is to contact and coordinate with the private land owner for access. Contact information for the private land owner is provided in Section 8.2 of this specification.
- C. The Contractor is responsible for obtaining any additional easements or land use agreements for areas outside of the defined project area or defined contractor use area, at no additional expense to the Owner.

- D. The Contractor is responsible for performing his own evaluation to determine the feasibility of the Contractor Use Area prior to bidding. The Contractor may select other sites if he acquires all of the appropriate site use agreements and easements.
- E. If the Contractor elects to use the Contractor Use Area, the Contractor shall notify the Engineer in writing within 10 days after of the bid.
- F. The Contractor will also be responsible for all site preparation work at the contractor use area, including but not limited to, clearing, grading, installation of rock surfacing for haul road and offsite disposal of cleared materials, and restoration of the site to its original conditions.
- G. Contractor is responsible for verifying water depths in the access route from the project site to the use area.
- H. The Contractor shall not conduct dredging work at the contractor use area or within Joseph's Harbor Bayou unless the Contractor secures their own permit for dredging work.
- I. Contractor is responsible for acquiring any required road use agreements and road restriction requirements for any haul roads used to deliver materials
- J. The Contractor will be responsible for repairing roads damaged as a result of the project Construction Activities.

#### 8.4 Construction Aids and Safety Precautions

- A The Contractor shall comply with applicable laws, ordinances, rules, regulations and orders pertaining to personnel, construction machinery and equipment, hoists, cranes, staging, materials handling facilities, tools, appliances and other construction aids. The Contractor shall provide first aid facilities where required.
- B The Contractor shall provide barriers and shall post "No Trespassing" and other construction safety signs as necessary to protect the public. Appropriate barriers should be erected around all open excavations.

#### 8.5 Special Controls

- A Archeological and Historic Preservation Control: Notification of Discovery of Historical or Cultural Sites: If during construction activities the Contractor observes items that may have prehistoric, historical, archeological, or cultural value, the Contractor shall immediately cease all activities that may result in the destruction of these resources and shall prevent his/her employees from trespassing on, removing, or otherwise damaging such resources. Such observations shall be reported immediately to the Owner and Engineer so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special dispositions of the finds should be made. The Contractor shall report any observed unauthorized removal or destruction of such resources by any person to the Owner and Engineer so the appropriate State of Louisiana authorities can be notified. The Contractor shall not resume Work at the site in question until State authorities have rendered

judgment concerning the artifacts of interest. The Contractor will be entitled to time extensions equal to the time the Work is suspended, but will not be entitled to additional compensation.

#### 8.6 Sanitary Facilities and Domestic Water Supply

The Contractor shall provide sanitary and drinking water facilities to accommodate his employees and the Engineer in compliance with the applicable requirements and regulations.

#### 8.7 Traffic Control at the Site

All required and necessary traffic control throughout the work area including all signs, barricades, signals, and flaggers shall be provided.

#### 8.8 Telephone Services and Communication Systems

Telephone service is not available at the site. The Contractor will be responsible for making their own arrangements for telephone service.

#### 8.9 Parking and Office Areas

No upland parking or office areas are provided by the Owner. The Contractor will be responsible for providing their own parking and office space areas.

#### 8.10 Temporary Power

The Contractor will be responsible for providing their own temporary power. Upon completion of the Work, temporary power shall be removed from the site.

#### 8.11 Temporary Buildings

- A General: Upland work or staging areas provided by the Owner are shown in Contract Drawings as Contractor Use Areas. The Contractor will be responsible for obtaining any necessary agreements and/or easements to construct temporary buildings on any uplands.
- B Camp: Camp for employees at the project will not be allowed except for facilities for night and weekend security personnel. The Contractor and its employees shall make their own arrangements for lodging.

#### 8.12 Use of Project Site

- A The Contractor shall perform all work within the project area limits defined on the plans. If other areas are required for construction, the Contractor shall secure any necessary agreement or construction easement documentation with the private landowners at no additional expense to the Owner. The actual selected location shall be coordinated with and approved by the Owner.

- B Work will be conducted within the contract designated project site limits during the duration of the contract. See Special Provisions and TS-6 Project Schedule for additional information on specific schedule and timing requirements.
- C The Owner assumes no responsibility for the condition or maintenance of any road or structure thereon that may be used by the Contractor in performing the work under these specifications or in traveling to and from the site of the work. The Contractor is responsible for constructing, maintaining, and removing any additional access that they deem necessary to the site of the work. No payment will be made to the Contractor by the Owner for any work done in improving, repairing, or maintaining any road or structure thereon for use in the performance of the work under these specifications.

### 8.13 Protection of Property

- A The Contractor shall not enter upon private property for any purpose without first obtaining permission from the private property Owner or his duly authorized representative, and shall be responsible for the preservation of all public and private property along and adjacent to work completed under the contract, and shall use every precaution necessary to prevent damage or injury thereto. He shall exercise due care in preventing, and shall be responsible for, damages to structures of all kinds and shall protect from disturbance or damage all land monuments until they have been properly referenced by the Engineer.
- B The Contractor is also responsible for the protection of and repair of any damages to the existing roadways and Contractor Use Areas at no additional expense to the Owner.
- C The Contractor shall protect private or public property on or in the vicinity of the work site. The Contractor shall ensure that it is not removed, damaged, destroyed, or prevented from being used unless the contract so specifies. Property includes land, utilities, trees, landscaping, improvements legally on the right-of-way, markers, monuments, building, structures, pipe, conduit, sewer or water lines, signs, and other property of all description whether shown on the plans or not.
- D If the Owner requests in writing, or if otherwise necessary, the Contractor shall install protection, acceptable to the Owner, for property such as that listed in the previous paragraph. The Contractor is responsible for locating all property that is subject to damage by the construction operation.
- E If the Contractor (or agents/employees of the Contractor) damage, destroy, or interfere with the use of such property, the Contractor shall restore it to original condition. The Contractor shall also halt any interference with the property's use. If the Contractor refuses or does not respond immediately, the Owner may have such property restored by other means and subtract the cost from money that will be or is due the Contractor.

### 8.14 Navigation

- A The project area and other nearby navigation channels are used by commercial vessel traffic and pleasure craft. Vessel traffic through these channels and near the project site will occur throughout the duration of the project. The Contractor shall remove any equipment and operations, which may prevent vessel traffic from passing the project site.

- B Obstruction of Waterways: The Owner shall not be responsible for keeping channels or waterways free from vessels or other obstructions. The Contractor shall conduct the work in such a manner as not to endanger commercial and recreational navigation. The Contractor will be required to conduct the Work in such a manner as to preclude any obstruction to navigation. In case the Contractor's equipment so obstructs the channel or waterway as to make difficult or endanger the passage of vessels, the Contractor shall notify the Coast Guard and the said equipment shall be promptly moved on the approach of any vessel to such extent as may be necessary to afford a practicable passage. Upon completion of the Work, the Contractor shall promptly remove his equipment, including ranges, buoys, piles, and other marks placed by him under the contract in navigable waters or on shore.
- C If the Contractor elects to conduct access channel dredging, locations of all disposal areas receiving dredged material shall be marked with warning daybeacons. All daybeacons shall meet the requirements of the U.S. Coast Guard and those shown on the plans. The Contractor shall submit the details of the temporary daybeacons including method of signage (buoy or pile) and proposed locations to the Engineer as part of the Contractor Work Plan to be submitted to the Engineer within 10 days of the issuance of the Notice to Proceed.

### 8.15 Signal Lights

- A The Contractor shall display signal lights and conduct his operation in accordance with the General Regulations of the Department of the Army and of the Coast Guard governing lights and day signals to be displayed by towing vessels with tows on which no signal can be displayed; vessels working on, dredges, and vessels engaged in laying cables or pipe or in submarine or bank protection operations, lights to be displayed on dredge pipe lines, and day signals to be displayed by vessels of more than 65 feet in length moored or anchored in a fairway or channel, and the passing by other vessels of floating plant working in navigable channels, as set forth in Commandant U.S. Coast Guard Instruction MI6672.2 Navigation Rules: International Inland (Comdtinst M16672.2) or 33 C.F.R. 81 Appendix A (International) and 33 C.F.R. 84 and 33 C.F.R. 84 through 89 (Inland) as applicable.

### 8.16 Access to Work Area

- A The Work is assumed to be conducted by the Contractor using floating marine equipment. No permissions or easements for access through marsh are provided. Storage of equipment and access from uplands to the navigable waters is solely the responsibility of the Contractor.
- B Access to the Project Site and Contractor Use Area as shown on the plans shall be conducted with equipment types and sizes appropriate for the existing depths available at the project site and the access channel dredging areas as shown on the Plans. Additional dredging beyond what is shown in the Plans to increase depth for equipment access to the Project Site and the Contractor Use Area will be allowed, but the Contractor must secure the necessary permits from all regulatory agencies and provide documentation thereof prior to the start of construction
- C Access to the project work area for small, trailerable boats may be available via boat from the public ramp off Hwy 82, see Section 8.2. The Contractor is responsible for coordinating and obtaining all necessary agreements and easements for access to the project site, lay down areas, vessel moorage, and boat launching facilities at no additional expense to the Owner. Access for marine construction equipment to the project site and adjacent work areas are the responsibility of the Contractor.

## 8.17 Owner Access to Project Site

- A The Contractor shall supply a boat (minimum 18 foot length with 25hp outboard and vee hull) and skipper to provide daily access from the refuge boat ramp for the Owner and Engineer to the project site work areas, and to review the progress of the work.
- B The Contractor shall provide a safe and reasonable means of transportation to and from the refuge boat ramp, staging area and Project Site for Inspector, Engineer, and personnel from OCP, NOAA, and their representative(s) during working hours. The schedule and pickup location shall be arranged by the Engineer, OCP, and the Contractor prior to mobilization. Upon request, overnight room and board shall be provided to these personnel by the Contractor if adequate facilities are available.
- C The Contractor shall provide a boat for the exclusive use of the Engineer and/or Inspector to tour the Project Site during the Work. The boat shall have the following features:
  - 1 An enclosed cabin space;
  - 2 Capable of maintaining 25 knots (29 mph);
  - 3 Six (6) passenger capacity;
  - 4 Coast Guard certified;
  - 5 Operable marine radio;
  - 6 All safety equipment required by the Coast Guard for the size and type of that boat;
  - 7 Draft of two feet (2') or less.
  - 8 Vee hull
- D The Contractor shall supply the fuel and maintain the boat. All mechanical malfunctions of the boat shall be repaired within twelve (12) hours. In the event that the Contractor refuses, neglects, or delays compliance with the requirements of this provision, the Owner may obtain and use other necessary boats at the expense of the Contractor. The costs associated with providing the boats shall be included in the lump sum price for Bid Item No. 1, "Mobilization and Demobilization."

## 8.18 Workspace for Engineer

- A The Contractor shall provide a workspace for the Engineer at the Project Site. This workspace shall be for the sole use of the Engineer, suitably sized, provided with lighting, heat, and air conditioning. The workspace furnishings shall include a work table, drafting table, stool, and two chairs.
- B In the event that the Contractor refuses, neglects, or delays compliance with the requirements of this provision, the Owner may obtain and use another necessary office for the Engineer at the expense of the Contractor. The cost for providing and furnishing office shall be included in the contract lump sum price for Bid Item No. 1, "Mobilization and Demobilization."

## 8.19 Measurement and Payment

No separate measurement or payment will be made for the Work in this Section; all the costs of such Work shall be included in the prices for the various items in the Contractor's Bid Form.



## TS-9 PROTECTION OF ENVIRONMENT

### 9.1 Description

This section covers the protection of the environment and compliance with environmental permits. The Contractor shall perform all work necessary to comply with the requirements of Owner and Contractor-furnished permits and all applicable Federal, State, and local laws governing this Work.

### 9.2 Owner Obtained Permits

The Owner has obtained authorizations from the U.S. Army Corps of Engineer (Corps), Louisiana Department of Natural Resources (LDNR), and the Louisiana Department of Environmental Quality for this project in the form of a Section 10/404 Permit, a Louisiana Department of Natural Resources/Coastal Management Division (LDNR/CMD) Coastal Use Permit, and a Water Quality Certification attached in Appendix C. Three permits exist for the construction of this project; the Contractor is responsible for conducting work in accordance with all the permit conditions, including the following conditions:

- A The permits, or copies thereof, must be available for inspection on the site of work at all times during operations.
- B Contractor must allow Corps, OCPD, LDEQ, LDNR/CMD and NOAA fisheries representatives to inspect the construction activity at any time deemed necessary to ensure that construction is being or has been accomplished in accordance with the terms and conditions of the permits.
- C All logs and stumps unearthed during the construction activities shall be removed to a disposal site on land.
- D Contractor must comply with all applicable state laws regarding the need to contact the Louisiana One Call (LOC) system (1-800-272-3020) to locate any buried cables and pipelines within 5 days of construction activities.

### 9.3 Environmental Protection Requirements

Provide and maintain, during the life of the contract, environmental protection as defined. Plan for and provide environmental protective measures to control pollution that develops during normal construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Comply with Federal, State, and local regulations pertaining to the environment, including water, air, solid waste, hazardous waste and substances, oily substances, and noise pollution. Contractor shall comply with the environmental protection measures shown in the drawings and in these specifications.

### 9.4 General

The Contractor is responsible for the selection and adequacy of all materials and equipment used for environmental protection and shall be approved by the Engineer prior to the start of construction.

- A All work operations shall be conducted in a manner that causes little or no adverse environmental impact to adjacent areas. If at any time, as a result of project activities, water quality problems develop (including equipment leaks or spills), operations shall cease and the Engineer shall be contacted immediately.
- B All debris or deleterious material and vehicle sediment tracking resulting from construction shall be removed from the work area and prevented from entering waters of the state.
- C The project is within and adjacent to environmentally sensitive areas. The Contractor shall coordinate with the Rockefeller Wildlife Refuge to avoid/minimize impacts to these areas during the course of this work.

## 9.5 Equipment Maintenance

The Contractor's equipment used in any construction operations shall be inspected, cleaned, and maintained to prevent loss of petroleum products.

## 9.6 Measurement and Payment

No separate measurement or payment will be made for the Work in this Section; all the costs of such Work shall be included in the prices for the various items in the Contractor's Bid Form..

## TS-10 OYSTERBREAK ARMOR UNITS

### 10.1 Description

The work of this section consists of furnishing all plant, equipment, labor, and materials and performing all operations in connection with the fabrication, delivery and installation of 58" diameter, 20" tall interlocking OysterBreak Armor Units each unit is to be fabricated with either a normal weight concrete mix or a proprietary pervious concrete (OysterKrete concrete) mix in accordance with these specifications and applicable drawings. OysterBreak Armor Units are to be placed on the breakwater structure as detailed in this section and on the plans. All OysterBreak Armor Units - made with either normal weight concrete or OysterKrete concrete - must be procured from Wayfarer Environmental Technologies (see 10.5-A).

### 10.2 Related Documents

- A The provisions and intent of the Contract, including the General Provisions, Special Provisions and Technical Sections apply to this work as if specified in this section. Related Sections include the following:
  - 1 Section TS-5 – Submittals
  - 2 Section TS-7 – Construction Surveying

### 10.3 Definitions

- A Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.
- B OysterBreak<sup>®</sup> Armor Units: Proprietary concrete armor unit to be used to construct the break water work as described in these specifications and shown on the Plans.
- C OysterKrete<sup>®</sup>: Proprietary, high void content, honeycomb textured concrete manufactured by Wayfarer Environmental Technologies.
- D Design Strength: ( $f'c$ ) is the specified compressive strength of concrete to meet structural design criteria.

### 10.4 Submittals

- A The following items shall be submitted to the Engineer for review in accordance with Section TS-5– Submittals:
  - 1 Qualifications and Certifications of facility, personnel, and material testing as required these specification.
  - 2 Detailed description of the OysterBreak Armor Unit manufacturing facilities and processes to be employed as part of the manufacturing work.

- 3 Manufacturer Quality Assurance and Quality Control Plan.
- 4 Product Data and Manufacturer's Instructions for Installation: For each type of OysterBreak Armor Unit indicated.
- 5 Design Mixes: For each concrete mix provide a materials list naming manufacturer of cement and admixture proposed to be used, mix proportions, and percentages incorporated into the mix. List to provide manufacturer's data for joint filler, backer rod, sealant, and accessory items. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
- 6 Concrete mix design with compressive strength, slump, air content, and concrete temperature testing/evaluation at 7, 14 and 28 days shall be submitted by the Contractor with the bid.
- 7 Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of specified requirements, based on comprehensive testing of current materials in accordance with these Specifications including Field Quality Control testing requirements.
- 8 Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
  - A. Cementitious materials and aggregates.
  - B. Form materials and form-release agents.
  - C. Air entrainment
  - D. Admixtures.
  - E. Curing materials.
  - F. Bonding agents.
  - G. Adhesives.
  - H. Sealer materials.
  - I. Repair materials.
- 9 Reinforcing Steel Shop Drawings: Manufacturer shall submit shop drawings for all reinforcing steel. Shop drawings shall conform to ACI and CRSI standards.
- 10 Mill Certifications: Manufacturer shall submit certified mill test reports for reinforcing steel.
- 11 Work Plan: Contractor shall submit a work plan to the Engineer that provides details on the following:
  - A. Location of fabrication facility.
  - B. Fabrication schedule
  - C. Handling, lifting, stacking and storage procedures
  - D. Placement plan

Information provided in the Work Plan is to be in accordance with the Manufacturer's written instructions.

## 10.5 Quality Assurance

- A Manufacturer Qualifications: Manufacturer shall be Wayfarer Environmental Technology (WET). WET's contact information:

Mr. Mike Turley  
Wayfarer Environmental Technologies, LLC  
2118 Old Spanish Trail, Apt. O2  
New Iberia, LA 70560  
Phone: (410) 917-7098  
mike@wayfarertech.com  
<http://www.wayfarertech.com/>

- B Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C1077 and ASTM E329 to conduct the testing indicated, as documented according to ASTM E548.

- 1 Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

- C Evaluation of Concrete

- 1 Compressive Strength: Compressive strength specimens (6 by 12 inch cylinders) shall be fabricated by the Contractor and cured in accordance with ASTM C 31 and tested in accordance with ASTM C 39. The strength of the concrete will be considered satisfactory so long as the average of all sets of three consecutive test results equals or exceeds the specified compressive strength  $f'_c$  and no individual test result falls below the specified strength  $f'_c$  by more than 500 psi. A "test" is defined as the average of two companion cylinders, or if only one cylinder is tested, the results of the single cylinder test.
- 2 Tensile Strength: Two (2) split tensile strength specimens for the first and last concrete production batches (sample at the beginning and at the conclusion of total OysterKrete unit production) shall be fabricated by the Contractor and cured and tested in accordance with ASTM C496. Testing results shall be used to determine a relationship between the sampled concrete tensile capacity and to establish a relationship between the compressive and split tensile strengths. A "test" is defined as the average of two companion cylinders, or if only one cylinder is tested, the results of the single cylinder test.
- 3 Slump: Slump tests shall be performed as per ASTM C143.
- 4 Unit Weight: Unit Weight tests shall be performed as per ASTM C1688.
- 5 Air Content: The air content of the concrete mix shall be evaluated as per ASTM C231 or ASTM C138.
- 6 Concrete Temperature: Concrete temperature shall be evaluated as per ASTM C1064.
- 7 Additional analysis or testing, including load tests may be required at the Contractor's expense when the strength of the concrete in the structure is considered potentially deficient

- D Testing/Evaluation Frequency: The concrete batches developed by the Manufacturer shall be tested/evaluated for the entire duration of the concrete rings manufacturing process, so as to

develop testing results that are representative of the concrete rings from the first to the last ring manufactured. Concrete testing methodology and frequency shall be performed as follows:

- 1 Test cylinders shall be conducted for every 25 cubic yards of concrete poured.
  - 2 Sufficient sample cylinders for each test to fulfill the 7/14/21/28 day testing requirements per ASTM C39 for compression strengths.
  - 3 Concrete Cylinders: For each test required Eight (8) sample cylinders shall be prepared for the ASTM C39 testing requirements. Of the eight cylinders prepared for each ASTM test, OysterKrete concrete tests shall be non-rodded and normal weight concrete tests shall be rodded
  - 4 Samples shall be clearly marked to identify the date, the type of mix, whether it is rodded or non-rodded, and the type of test for which each sample is intended to be used.
- E Testing Results: Test results shall be reported in writing to the Owner's Representative, Engineer, Concrete Manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-and 28-day tests.
- F Additional Tests: Testing and inspecting agency shall perform additional tests of concrete when test results indicate that compressive strengths or other requirements have not been met, as directed by the Engineer. Backup concrete cylinders shall be used to perform concrete strength tests should primary cylinder testing fail to meet minimum strength values. If backup cylinder tests fail to meet minimum strength requirements, core samples can be taken from Units (manufactured from the deficient concrete test cylinders) for testing. The quantity and selection of Unit core sampling, testing, and acceptance of individual or entire representative Units manufactured from the deficient concrete batches shall be at the Engineer's discretion. Additional testing required to evaluate acceptance of Concrete Armor Units manufactured from deficient concrete batches shall be performed by the Contractor at no additional cost to the Owner.
- G Unit Replacement: OysterBreak Armor Units that are deemed as unacceptable due to damage, failure to meet minimum strength or other requirements by the Engineer shall be replaced by the Contractor at no additional cost to the Owner.
- H Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.
- I ACI Publications: Comply with the following, unless more stringent provisions are indicated:
- 1 ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
  - 2 ACI 302, "Concrete Floor and Slab Construction."
  - 3 ACI 305, "Hot Weather Concreting."
  - 4 ACI 306, "Cold Weather Concreting."
  - 5 ACI 308, "Standard Practice for Curing Concrete."

## 10.6 OysterBreak Armor Unit

- A General. OysterBreak Armor Unit product shall be 20" tall and have a 58" outside diameter, the units shall consist a single concrete mix. Armor units are to be fabricated, as detailed in the Plans 1) OysterBreak Armor Unit - Top Unit (with pegs) and 2) OysterBreak Armor Unit - Bottom Unit (without pegs). Units are to be fabricated either from Normal Weight Concrete or OysterKrete concrete as detailed in the Plans and the approved base and additive bid schedules. The units shall have reinforcement as detailed in the Plans.
- B Performance Requirement. The OysterBreak Armor Units shall meet the minimum performance criteria listed below. Contractor to submit calculations prior to Unit fabrication and Unit testing results for review by the Engineer as required in this and the Submittal sections verifying the capacity of the proposed OysterBreak Armor Unit to meet the following performance criteria.
- 1 Ring Compression: 140,000 lbs min.
  - 2 Ring Tension: 14,000 lbs min.
  - 3 Peg Shear: 1,800 lbs (horizontally) min. for each peg
  - 4 Weight: 2,000 lbs min. for each unit
  - 5 Surface Finish: The armor unit OysterKrete surface shall have a porous finish so as to promote and maximize the potential for oyster growth development upon final unit installation.
  - 6 Handling: Each unit shall be able to be hoisted by rigging gear such as hooks, pins, and/or straps that can be easily installed/removed in the field.
- With the exception of performance criteria item no. 5 (surface finish), performance criteria are independent of concrete type (Oysterkrete or normal weight concrete) used to manufacture Oysterbreak Armor Unit.
- C Substitutions. Substitutions of OysterBreak Armor Units will not be allowed.
- D OysterBreak Armor Units shall be cast in a casting yard under closely controlled mixing, placing and curing conditions. The armor units shall be furnished with dimensions, capacities, and finish as shown in the Plans.

## 10.7 Concrete and Materials

- A Concrete mix shall be designed by the Manufacturer as required to meet the minimum armor unit performance requirements and for proper operation of the production equipment. The concrete shall have a minimum compressive strength as follows:
- 1 Normal Weight Concrete,  $f'c = 3,000$  psi (min.) at twenty-eight (28) days.
  - 2 OysterKrete Concrete,  $f'c = 3,000$  psi (min.) at twenty eight (28) days.
- B Portland Cement: Shall be Type II conforming to ASTM C150, Type II.

- C Pozzolan: Shall be Type GGBFS 120 compliant with ASTM C989.
- D Fine Aggregates: Shall be natural sand compliant with ASTM C33.
- E Coarse Aggregate: Shall be washed, crushed limestone in compliance with ASTM C33.
- F Water: Potable and complying with ASTM C94. Water shall be clean and free from injurious amounts of oil, acid, salt, alkali, organic matter or other deleterious substances.
- G Reinforcing Steel: Reinforcing steel shall conform to ASTM 615, Grade 60.

## 10.8 Admixtures

- A General: Admixtures certified by admixture manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.
- B Use only one brand of admixtures.
- C Air Entraining Agent: Shall be Daravair AT60, manufactured by WR Grace/Admixtures, or equivalent as approved by the Engineer, complying with ASTM C-260.
- D Water Reducing Agent: Adva 140 manufactured by WR Grace/Admixtures, or equivalent as approved by the Engineer, complying with ASTM C-494
- E Structural fibers: Structural fibers used in the concrete mix shall comply with ASTM C 1018-97 requirements and the fiber type and manufacturer shall be submitted to the Engineer for approval.
- F Oyster Growth Agent: Proprietary additive to be added based on total volume of concrete mixed as provided by Wayfarer Environmental Technology in sealed containers. Containers are to be in 3 cubic yard increments. Use of proprietary admixtures does not alleviate the Contractor from meeting the minimum testing requirements of the finished concrete.

## 10.9 Concrete Mix

- A Normal Weight Concrete mix design as determined by laboratory trial mix or field testing shall meet the following requirements.
  - 1 Compressive Strength (@ 28 days): 3,000 psi (min)
  - 2 Air Content: 6% (max.)
  - 3 Slump: 5" (max.)
  - 4 Max. W-C Ratio: 0.45
- B OysterKrete Concrete mix design as determined by laboratory trial mix or field testing shall meet the following requirements.



- 1 Compressive Strength (@ 28 days): 3,000 psi
  - 2 Air Content: 12% (max.)
  - 3 Max. W-C Ratio: per OysterKrete Manufacturer requirements
- C Concrete mix design shall be developed as per ACI guidelines as applicable.
- D Concrete mix designs shall be submitted to the Engineer for review and approval.

#### 10.10 Concrete Finish

- A OysterKrete Concrete surface shall have a finish as follows;
- 1 OysterBreak Armor Units shall have a non-smooth porous finish.
  - 2 Surface porosity: Shall be an open exposed aggregate exposing 40-50% of exterior stone with consistent 2mm pocketing throughout surface and colored in a manner that is of a dark gray tone.

#### 10.11 OysterBreak Armor Unit Curing

- A OysterBreak Armor Units require a minimum of 2 hours curing prior to mold stripping and the concrete has attained sufficient strength as determined by the Manufacturer.
- B Units cannot be moved after pouring and mold stripping until a minimum of 4 hours of curing has elapsed and the concrete has attained sufficient strength as determined by the Manufacturer.
- C The timeline after curing and method of stacking OysterBreak Armor Units shall be according to the manufacturers written guidelines and shall be submitted as part of the Work Plan.

#### 10.12 Repair Materials

- A Broken OysterBreak Armor Units shall not be repaired in the field and shall be replaced with a new Unit. A unit shall be considered as broken based on any of the following observations:
- 1 Vertical cracking extending the entire height of the armor unit.
  - 2 Horizontal cracking extending the entire width of any one peg.
  - 3 Fabrication defects, such as excessive surface porosity openings, and honeycombing or aggregate segregation on the pegs.
  - 4 Any other reasonable defect or damage that cannot be satisfactorily field repaired and thus impede the intended design performance of the armor unit.
- B Repairs discussed in this section shall apply only to minor defects and/or damage caused to the OysterBreak Armor Units. Repairs that alter the overall surface finish, overall look, and performance capability (such as but not limited to interlocking) of the OysterBreak Armor Units as determined by the Engineer or Owner will not be accepted. Units that are damaged as described in 10.12-A, or have other fractures or defects that alter performance capability

as determined by the engineer prior to final Acceptance will be considered defective and will be removed and replaced at no cost to the Owner and shall not be repaired.

- C Materials. Cement-based, polymer-modified, self-leveling, and epoxy sealer/bonding products shall be specified by Manufacturer for field use by the contractor to perform minor chipping and crack repairs to the OysterBreak Armor Units. Contractor shall follow all manufacturer recommendations for OysterBreak Armor Unit repair and shall submit the details of the repair work including, but not limited to, the composition of repair materials and application instructions. Repair submittal information shall be submitted to the Engineer for review and approval prior to unit field delivery.
- D The Manufacturer shall provide the all identified repair product information including composition and detailed application instructions to the Engineer for review and approval prior to unit field delivery. A copy of the approved products technical information shall be provided to the Contractor by the armor unit Manufacturer.
- E Disposal of any defective OysterBreak Armor Units is the responsibility of the Contractor.

### 10.13 Other Materials

- A All other materials not specifically described but required for a complete and proper installation of the work of this section shall be as selected by the Contractor subject to the approval of the and Engineer.

### 10.14 General

- A A representative from the OysterBreak Armor Unit manufacturer will be onsite for the duration of OysterBreak Armor Unit placement, unless otherwise instructed by the Engineer.
- B Contractor shall inspect all OysterBreak Armor Units prior to installation and verify that they comply with Contract Documents.
- C Tolerances: OysterBreak Armor Units shall comply with the following dimensional tolerances.
  - 1 Length:  $\pm 1.5$  in.
  - 2 Width:  $\pm 1.5$  in.
  - 3 Depth:  $\pm 1.5$  in.
  - 4 Rebar ring:  $\pm 2.0$  in
  - 5 Lift openings:  $\pm 0.5$  in
  - 6 Minimum cover of concrete over rebar: 1.5 in

### 10.15 Handling

- A The Contractor shall exercise extreme caution in the loading, unloading, transportation, and placement of OysterBreak Armor Units. The name and qualifications of this representative shall be provided with the Work Plan.
- B OysterBreak Armor Units that are damaged as described in 10.12-A, or have other fractures

or defects that alter performance capability as determined by the engineer at any time during handling, transporting, or placement, prior to final Acceptance will be considered defective and will be removed and replaced at no cost to the Owner.

- C OysterBreak Armor Units shall be handled and transported in accordance with manufacturers written guidelines. In general, OysterBreak Armor Units are to be handled with equipment and methods designed to prevent damage to units. Contractor is responsible for condition of OysterBreak Armor Units placed into breakwater structure. No broken or fractured units will be accepted. If, upon inspection, fractured or otherwise damaged units are observed in the breakwater structure, Contractor will the fractured or damaged unit and replace with new Armor Concrete Unit(s) at no additional expense to the Owner.
- D Handling and transportation of the OysterBreak Armor Units shall be done in accordance with the Manufacturer's written recommendations. Contractor shall propose handling and transportation methods in Work Plan, which shall be submitted to the Engineer before construction.
- E Lifting devices used for OysterBreak Armor Units shall be verified for capacity and shall have an adequate factor of safety for lifting and handling products taking into account the various forces acting on the device including form release suction, impact and various positions of the product during handling. The capacity of the commercial lifting devices shall be marked on the devices or posted in production areas.
- F Lifting apparatus such as slings, lift bars, chains, hooks, etc shall be verified for capacity and shall have an adequate factor of safety for lifting and handling products.
- G If lifting OysterBreak Armor Units by crane or boom, a spreader bar with adequate chain size will be used. The chain shall be crimped to prevent OysterBreak Armor Units from spinning freely.
- H OysterBreak Armor Units shall be lowered to rest before being released. Dropping OysterBreak Armor Units will not be permitted. OysterBreak Armor Units shall not be swung into another object a distance of greater than 2 feet. If OysterBreak Armor Units are dropped or swung greater than two feet into another object, the unit shall be removed from the breakwater structure and set aside for inspection by the Engineer. Upon inspection, damaged units will be rejected and replaced at no expense to the Owner.

#### 10.16 Shipping and Transportation

- A Shipping of OysterBreak Armor Units to the project site shall be conducted in a manner to prevent damage to the units. During transport to the site, units shall be secured to avoid rocking and unit to unit contact. Shipping of the OysterBreak Armor Units shall be done in accordance with the Manufacturer's written recommendations. Method of shipping and precautions to prevent damage to OysterBreak Armor Units shall be detailed in the Work Plan submitted to the Engineer.
- B OysterBreak Armor Units shall not be loaded for shipping until achieving its designed 28 day compressive strength as based on tested concrete cylinders.
- C Products shall be stored in a manner that will minimize damage caused by uneven bearing,

improperly located dunnage blocks, stacking products too high or difficulty in handling. OysterBreak Armor Units shall be stacked to a maximum of 2 units high with proper dunnage at all contact points and a pallet underneath.

- D Trucks and other conveyances used to transport OysterBreak Armor Units from the manufacturing facility to the project site shall be equipped and maintained to deliver those products without damaging the units.
- E Tractor trailers shall be air-ride equipped and capable of transporting 18 OysterBreak Armor Units without exceeding roadway weight limits. OysterBreak Armor Units shall be stacked as per the Manufacturers written guidelines as provided in the Work Plan.

#### 10.17 Jobsite Inspection and Storage

- A Jobsite Inspection: Prior to delivery of the OysterBreak Armor Units, the Contractor shall examine the project site and verify that conditions are satisfactory for the proper installation of the Units. Any unsatisfactory conditions shall be noted in writing and reported to the Engineer. Installation shall not proceed until any unsatisfactory conditions have been corrected in a manner acceptable to the Engineer.
- B Jobsite Storage: If temporary jobsite storage is required, OysterBreak Armor Units shall be handled and stored in accordance with the Manufacturer's written recommendations. OysterBreak Armor Units shall be stored in manner to avoid cracking, distortion, staining or other physical damage.

#### 10.18 Placement of OysterBreak Armor Units

- A The first 50 feet of OysterBreak Armor Unit placement shall be conducted in the presence of the Engineer and the Manufacturer as a Test Section. Contractor shall provide a minimum of 7 days written notice to the Engineer as to the start of the Test Section.
- B The method and sequence of placement shall be the responsibility of the Contractor. The Contractor shall lift, handle, and place OysterBreak Armor Units in accordance with the Manufacturer's written instructions and approved Work Plan.
- C Contractor shall not install OysterBreak Armor Units until units have been inspected and approved by the Engineer at the project site, unless otherwise instructed by the Engineer.
- D OysterBreak Armor Units shall be placed on the structure as shown in Plans and as specified herein. Units shall be placed such that the OysterBreak Armor Unit is in direct contact with all adjacent rings. Bottom unit armor unit shall be placed to allow for insertion of top armor unit pegs into bottom armor unit ring interior areas. Improperly placed units shall be relocated, at no additional expense to the Owner.
- F OysterBreak Armor Units fabricated with Normal Weight Concrete shall be placed on the structure as shown in the Plan, between approximate Sta 2+50 and Sta 3+00 of Breakwater A. Exact location of the start of the Normal Weight Concrete units shall be based on the number of Normal Weight Concrete units manufactured so that the up-station end of

Breakwater A is completed with OysterBreak Armor Units fabricated with Normal Weight Concrete.

- E OysterBreak Armor Units shall not be placed until Marine Mattress has been properly installed, surveyed and installation and survey approved by Engineer. Contractor shall verify that Marine Mattress surface is smooth and uniform to ensure that intimate contact is achieved between the mattress and the entire bottom surface of the OysterBreak Armor Units.
- F OysterBreak Armor Units will be accepted by the Owner based on the in-place condition. It is the responsibility of the Contractor to deliver and install the OysterBreak Armor Units in an undamaged state.

#### 10.19 Measurement and Payment: OysterBreak Armor Units - Fabricate

- A Acceptance Inspections - OysterBreak Concrete Units will be accepted at the point of manufacture for payment of 'OysterBreak Armor Units (Oysterkrete) – Fabricate' and 'OysterBreak Armor Units (Normal Weight Concrete) – Fabricate'. All OysterBreak Armor Units are to be inspected and approved for payment prior to shipping. Approval for payment for each unit shall require both an acceptance based on visual inspection for each unit and review of concrete strength testing demonstrating that each unit (corresponding concrete batch test) meets or exceeds the required design concrete strength. Concrete testing shall be accepted only upon receipt and review by the Engineer of concrete laboratory tests demonstrating that the units meet or exceed the required design strength. Up to three (3) acceptance inspections may be requested by the Contractor. Payments for OysterBreak Armor Units that have not been inspected by the Engineer will not be authorized. Contractor will provide a minimum of 10 days notice to the Engineer prior to date of acceptance inspection. Expenses incurred for any inspections required beyond the included three (3) of this section will be deducted from the Contractor's Mobilization and Demobilization Bid Item.
- B Measurement: Measurement for the OysterBreak Armor Units – Fabricate work applies to the bid items: "Oysterbreak Armor Units (Oysterkrete) – Fabricate" and "Oysterbreak Armor Units (Normal Weight Concrete) – Fabricate. Measurement of "Oysterbreak Armor Units (Oysterkrete) – Fabricate" shall be based on the number of each (EA) Oysterbreak Concrete Armor Units fabricated with Oysterkrete concrete at the location provided in these Contract Documents. Measurement of "Oysterbreak Armor Units (Normal Weight Concrete) – Fabricate" shall be based on the number of each (EA) Oysterbreak Concrete Armor Units fabricated with Normal Weight Concrete at the location provided in these Contract Documents.
- C Payment: Payment for the OysterBreak Armor Units – Fabricate work will be made at the unit price for Bid Items: "OysterBreak Armor Units (Oysterkrete) – Fabricate" and Oysterbreak Armor Units (Normal Weight Concrete) – Fabricate" in the Contractor's bid (including Base Bid and all Additive Bids) for Oysterbreak Armor Units constructed from Oysterkrete and Normal Weight Concrete, respectively. The bid prices include all items incidental to fabricating, furnishing and testing the OysterBreak Armor Units. This bid item does not include delivery or installation of OysterBreak Armor Units.

#### 10.20 Measurement and Payment: OysterBreak Armor Units – Deliver and Install

- A Measurement: Measurement for the OysterBreak Armor Units – Deliver and Install work as specified in this section will be made based on the number of each (EA) OysterBreak Armor Units delivered and installed at the project site to the lines and grades provided in these Contract Documents. Measurement for the Oysterbreak Armor Units includes both the Oysterbreak Armor Units fabricated with Oysterkrete concrete and Normal Weight Concrete.
  
- B Payment: Payment for the OysterBreak Armor Units – Deliver and Install work will be made at the unit price for Bid Item: “OysterBreak Armor Units – Deliver and Install” in the Contractor’s bid (including Base Bid and all Additive Bids). The price includes all items incidental to delivery to and installation of the units at the project site.

## TS-11 MARINE MATTRESS

### 11.1 Summary

A Section includes: Marine Mattress system with structural geogrid, braid, mechanical connection elements, geotextile fabric and stone fill. Design details including mattress thickness shall be as shown on the Contract Plans, on the Shop Drawings and as directed by the Engineer. Work consists of:

- 1 Attendance of system supplier representative for pre-construction conference with the Contractor and the Engineer.
- 2 Furnishing geogrids, braid, mechanical connection elements and stone fill materials as specified herein and shown on the Contract Plans. Geogrid material shall include sufficient quantities to form lifting hoops for the units.
- 3 Fabricating, filling and placing Marine Mattress units in accordance with this Section and in close conformity with the lines, grades and dimensions shown on the Contract Plans or established by the Engineer. Some pre-fabrication of the units may be accomplished prior to delivery to the site.

B Related Sections:

- 1 Section SP - Special Provisions
- 2 Section TS-10– OysterBreak Armor Units

C Substitutions:

- 1 Metallic materials will not be considered as an alternate to materials for the Marine Mattress system.
- 2 Geogrid specifications shall be submitted to the Engineer a maximum of 7 days after Notice to Proceed. The Engineer shall have absolute authority to reject or accept materials based on the requirements of this Section and the Engineer's judgment. Certain material properties of the structural geogrid are critical to the fabrication, lifting and placement, and serviceability of this application. The structural geogrid must satisfy the requirements of this Section, regardless of any previous approval of the geogrid by the Owner or Engineer for other types of applications. Coated geogrids and geogrids composed of small diameter filaments shall not be allowed for constructing Marine Mattress units. In order to be considered, submittal packages for geogrid materials must include:
  - a. A list of 5 comparable projects, in terms of size and applications, in the United States, where the results of using the specific alternate geogrid material can be verified after a minimum of 3 years of service life.
  - b. A sample of the alternate geogrid material and certified specification sheets.
  - c. Recommended fabrication and installation instructions.

- d. Additional information as required at the discretion of the Engineer.

## 11.2 References

### A American Association of State Highway and Transportation Officials (AASHTO)

- 1 Standard Specification for Highway Bridges (1997 Interim).

### B American Society for Testing and Materials (ASTM):

- 1 D 1388 Standard Test Method for Stiffness Of Fabrics (Option A).
- 2 D 3786 Standard Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics - Diaphragm Bursting Strength Tester Method
- 3 D 4354 Standard Practice for Sampling Geosynthetics for Testing
- 4 D 4533 Standard Test Method for Trapezoidal Tearing Strength of Geotextiles
- 5 D 4355 Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon-Arc Type Apparatus.
- 6 D 4439 Standard Terminology for Geosynthetics
- 7 D 4759 Standard Practice for Determining the Specification Conformance of Geosynthetics.
- 8 D 4595 Standard Test Method for Tensile Properties of Geotextiles by Wide-Width Strip Method
- 9 D 4632 Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
- 10 D 4751 Standard Test Method for Determining Apparent Opening Size of a Geotextile
- 11 D 4833 Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
- 12 D 4884 Standard Test Method for Seam Strength of Sewn Geotextiles
- 13 D 5261 Standard Test Method for Measuring Mass per Unit Area of Geotextiles
- 14 D 5732 Standard Test Method for Stiffness of Nonwoven Fabrics Using the Cantilever Test
- 15 D 5818 Standard Practice for Exposure and Retrieval of Samples to Evaluate installation Damage of Geosynthetics.
- 16 D 6637 Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Tensile Method

### C Geosynthetic Institute:

- 1 GG2-87 Standard Test Method for Individual Geogrid Junction Strength.

### D U. S. Environmental Protection Agency

- 1 EPA9090 Compatibility Test for Wastes and Membrane Liners.



### 11.3 Definitions

- A Marine Mattress - A non-metallic compartmental structure filled tightly with stone prior to installation. Filling is achieved while each unit is positioned on edge prior to installation. Units are comprised of structural geogrid, braid, and mechanical connection elements fabricated to allow placement and provide containment of aggregate fill.
  
- B Geogrid – An integrally formed grid structure manufactured of a stress resistant, copolymer of high density polyethylene (HDPE) and polypropylene (PP) possessing molecular weight and morphological characteristics that impart high resistance to:
  - 1 Loss of load capacity or structural integrity when the geogrid is subjected to mechanical stress in installation,
  - 2 Deformation when the geogrid is subjected to applied force in use, and
  - 3 Loss of load capacity or structural integrity when the geogrid is subjected to long-term environmental stress.
  
- C Minimum Average Roll Value (MARV) – Value based on testing and determined in accordance with ASTM D 4759 and defined within D 4439.
  
- D Tensile Modulus in Use – The ratio of tensile strength to corresponding strain (e.g. 1%). The tensile strength is measured via D 6637 as modified by AASHTO Standard Specification for Highway Bridges, 1997 Interim, using a single rib having the greater of 3 junctions or 8 inches and tested at a strain rate of 10 percent of the average specimen gauge length per minute without deforming the test materials under load before measuring such resistance or employing “secant” or “offset” tangent methods of measurement so as to overstate tensile properties. Values shown are MARV.
  
- E Junction Strength – Breaking tensile strength of junctions when tested in accordance with GRI GG2 as modified by AASHTO Standard Specification for Highway Bridges, 1997 Interim, using a single rib having the greater of 3 junctions or 8 inches and tested at a strain rate of 10 percent of the average specimen gauge length per minute. Values shown are MARV.
  
- F Flexural Stiffness (also known as Flexural Rigidity) - Resistance to a bending force measured in accordance with ASTM D 5732. Specimens are two ribs wide, with transverse ribs cut flush with exterior edges of the longitudinal ribs (i.e., a “ladder” configuration) to a length sufficiently long to enable measurement of the overhang dimension. The overall Flexural Rigidity is calculated as the square root of the product of the machine direction and cross machine direction Flexural Rigidity values. Values shown are MARV.
  
- G Resistance to Installation Damage – Resistance to loss of load capacity or structural integrity when subjected to mechanical stress in installation measured in accordance with ASTM D 5818 with a crushed stone classified as a poorly graded gravel with a maximum 2 inch particle size (GP). Values shown are MARV.
  
- H Resistance to Long Term Degradation – Resistance to loss of load capacity or structural integrity when subjected to chemically aggressive environments measured via EPA 9090 immersion testing. Values shown are typical values.

- I Ultraviolet Stability – The ratio of tensile strength after exposure to the tensile strength prior to exposure, with exposure per ASTM D 4355 and tensile strengths measured in accordance with D 6637 as discussed above for “Tensile Modulus in Use.”

#### 11.4 Submittals

- A Contractor shall submit the name and contact information of the proposed Marine Mattress manufacturer with the bid.
- B A maximum of 10 days after Notice to Proceed, the Contractor shall submit product samples of:
  - 1 Geotextile Fabric
  - 2 Geogrid
  - 3 Geogrid mechanical connection elements (Braid, HDPE bodkin rod and metal fasteners).
- C Shop Drawings – Submit details of the typical sections and connections.
- D Manufacturer’s product data and installation instructions for geotextile fabric and marine mattress.
- E Certified test reports for geotextile fabric and geogrid
- F Geotextile fabric sewn seam details and laboratory test reports
- G Stone fill product data including stone quality, gradation and unit weight requirements specified below.

#### 11.5 Quality Assurance

- A Marine Mattress Fabrication and Installation Pre-Construction Conference – Prior to the installation of the units, the Contractor shall arrange a meeting at the site with the system supplier and, where applicable, the system installer. The Owner and the Engineer shall be notified at least 3 days in advance of the time of the meeting.

#### 11.6 Delivery, Storage, and Handling

- A Materials delivered to the site shall be inspected for damage, unloaded and stored with the minimum of handling. Materials shall not be stored directly on the ground without a fabric or plastic liner beneath and shall be kept free of dirt and debris.
- B Contractor shall prevent excessive mud, wet concrete, epoxy, or other deleterious materials from coming in contact with and affixing to mattress materials.

- C Store at temperatures above -20 °F (-29 °C).
- D Rolled materials may be laid flat or stood on end.

### 11.7 Acceptable Products

- A Mattress shall be 21’ long x 5’ wide x 12” thick Type Triton™ Gabion Mats as manufactured by Tensar Earth Technologies or an Engineer approved equal. Nominal weight of filled mattress is approximately 5,250 lbs.
- B Geotextile fabric shall be Tencate Mirafi S1600 nonwoven geotextile or an Engineer approved equal.
- C Geotextile Physical Properties The geotextile shall be pervious, non-woven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. The material shall be a geotextile consisting only of long chain synthetic polymeric fibers or yarns formed into a stable network such that the fibers or yarns retain their position relative to each other during handling, placement, and design service life. At least 95 percent by weight of the material shall be polyolefins or polyesters and shall meet or exceed the requirements of AASHTO M288-92. The material shall be free from defects or tears. Geotextile material shall be inert to chemicals commonly found in natural water, the soils conditions encountered at the site, and UV stabilized. The edges of the geotextile shall be finished to prevent the outer fiber from pulling away from the geotextile. The geotextile fiber shall contain stabilizers or inhibitors added to the base material if necessary to make filaments resistant to deterioration due to ultraviolet and heat exposure. The geotextile shall also be free of any treatment or coating which might adversely alter its hydraulic or physical properties after installation. Geotextile shall be sampled and tested in accordance with ASTM D4354. The geotextile fabric shall meet the following physical property requirements:

Fabric Property	Property Value
Trapezoidal Tear Strength (ASTM D-4533)	≥ 145 lbs/in
Weight (ASTM D5261)	16.0 oz/yd <sup>2</sup>
Thickness (ASTM D5199)	175 mils
Puncture Strength (ASTM D-4833)	≥ 240 lbs
Apparent Opening size AOS (ASTM D-4751)	< 0.150 mm (#100 sieve)
Permittivity (ASTM D-4491)	0.70 sec -1
Grab Tensile Strength (ASTM D-4632)	≥ 425 lbs, in machine direction

- D Listing of specific manufacturer’s products shall not be construed as product approval without certified tests. Actual physical properties of the products furnished must conform to the minimum physical properties specified. In addition to the minimum physical properties listed, other properties (such as fabric weight and weave type) shall be considered by the manufacturer in providing a product that is appropriate for the native material, method of installation, and method of GRR placement for the proper functioning of the geotextile materials.

E Structural Geogrid:

- 1 Unless otherwise called out on the Plans or Shop Drawings or directed by the Engineer, the structural geogrid type shall be:
  - a. Type 1 for the internal diaphragms of the units.
  - b. Type 2 for the top, bottom and sides of the units.
- 2 The structural geogrid shall be produced from virgin, copolymer resin of high density polyethylene (HDPE) and polypropylene (PP) and shall possess complete continuity of all properties throughout its structure.
- 3 The structural geogrid shall accept applied force in use by positive mechanical interlock (i.e. direct mechanical keying) with:
  - a. Compacted soil or construction fill materials,
  - b. Contiguous sections of itself when overlapped and embedded in compacted soil or construction fill materials, and
  - c. Rigid mechanical connection elements such as bodkins, pins or hooks.
- 4 The structural geogrid shall have the following characteristics:

PROPERTY	UNITS	TYPE 1	TYPE 2	TEST METHOD
Tensile Modulus in Use (MD) @ 1% Strain	kN/m (lb/ft)	750 (51,400)	1,650 (113,090)	ASTM D6637
Junction Strength (MD)	kN/m (lb/ft)	48.6 (3,330)	100.8 (6,908)	GRI-GG2-87
Flexural Stiffness	mg-cm	500,000	6,500,000	ASTM D1388
Resistance to Installation Damage	%GP	85	85	ASTN D5818
Resistance to Long Term Degradation	%	100	100	EPA 9090
Ultraviolet Stability (Retained Strength @ 500 hours)	%	98	98	-----
Nominal Aperture Size MD/XMD	mm (in)	147 (5.8)/ 15 (0.6)	142 (5.6)/ 15 (0.6)	-----

F Mechanical Connection Elements:

- 1 The mechanical connection elements shall be as shown on the Plans and Shop Drawings and shall be composed of a copolymer of high density polyethylene (HDPE) and polypropylene (PP), unless otherwise approved by the Engineer.
- 2 The mechanical connection used shall be bodkin type, unless otherwise approved by the Engineer.

G UV Stabilized Braid:

- 1 The braid used for tying and lacing in the fabrication of the units shall be 8-strand hollow-core braid composed of high density polyethylene (HDPE). Each strand shall consist of a monofilament bundle of HDPE.

- 2 The braid shall have a nominal diameter of not less than 3/16 inch and a breaking strength of not less than 400 lbs on a test specimen 36 inches in length.
- 3 The braid shall be UV stabilized with a minimum carbon black content of 2.0% by weight.

H Stone Fill Materials:

- 1 Quality: All Stone Fill proposed for use in the project is subject to approval by the Engineer. The Engineer may reject stone at any time prior to final Acceptance and may require disassemble of the structure in order to replace unacceptable stone with acceptable stone. All structure disassembly and reworking is required to comply with the Plans and Specifications shall be conducted at the expense of the Contractor. All stone shall be sound, hard dense, nonfriable, and be free from cracks, seams, drill holes, laminations, weak cleavages, and similar defects. All Stone Fill material shall meet the following requirements:

Test	Required Value	Test Method
Specific Gravity	>2.6	ASTM C127
Water Adsorption	<2.0%	ASTM C127
Sodium Sulfate	<10% loss	ASTM C88
Soundness	(after 5 cycles)	
L.A. Abrasion	<28% loss (after 500 revolutions)	ASTM C535
Freeze and Thaw	<5% (after 20 cycles)	CRD C144
Expansive Breakdown in Ethylene Glycol*	<6% loss in 15 days	CRD C148*
Unconfined Compressive Strength*	>10,000 psi	ASTM D2938

\* Testing for this requirement to be determined by the Engineer upon review of the other test results. If other test results indicate the need, these tests will be performed.

- 2 Unit Weight: The stone shall be rough angular, not rounded in shape. Stone Fill shall consist of 100% stone that will not disintegrate upon exposure to the elements or be easily broken from handling, and shall be reasonable free from earth and other foreign materials. When tested in accordance with AASHTO Designation: T85, the solid weight of stone shall be at least one hundred and fifty (150) pounds per cubic foot (based on bulk specific gravity). The least dimension of an individual stone shall be at least one third (1/3) its maximum dimension and each shipment of stone shall be reasonable well graded within the specific limits.
- 3 Gradation: Control of gradation will be by visual inspection either at the source or project site or both, at the Engineer's option. Any difference in opinion between the Engineer and Contractor shall be resolved by checking the gradation of two uniform size random samples. Equipment, labor and sorting site shall be furnished by the Contractor at his expense.
- 4 The Stone Fill shall be angular in shape and sized as follows:

Sieve Size	% of Stone Smaller Than
4-inch	100
3-1/2 inch	90 - 100
2-1/2 inch	25 - 60
1-1/2 inch	0 - 10
3/4-inch	0 - 5

- 5 Material Sources: Stone Fill meeting the specified quality requirements and produced by others will also be accepted must be approved by the Engineer. The Contractor may not use more than one quarry without prior approval from the Engineer. The Engineer may require additional tests, at no expense to the Owner, if additional quarries are requested.

I Geotextile Fabric

- 6 Physical Properties: The geotextile shall be pervious, non-woven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. The material shall be a geotextile consisting only of long chain synthetic polymeric fibers or yarns formed into a stable network such that the fibers or yarns retain their position relative to each other during handling, placement, and design service life. At least 95 percent by weight of the material shall be polyolefins or polyesters and shall meet or exceed the requirements of AASHTO M288-92. The material shall be free from defects or tears. Geotextile material shall be inert to chemicals commonly found in natural water, the soils conditions encountered at the site, and UV stabilized. The edges of the geotextile shall be finished to prevent the outer fiber from pulling away from the geotextile. The geotextile fiber shall contain stabilizers or inhibitors added to the base material if necessary to make filaments resistant to deterioration due to ultraviolet and heat exposure. The geotextile shall also be free of any treatment or coating which might adversely alter its hydraulic or physical properties after installation. Geotextile shall be sampled and tested in accordance with ASTM D4354. The geotextile fabric shall meet the following physical property requirements:

Geotextile Fabric			
Physical Property	Unit	Test Method	Measure
Fabric Type	---	---	Non-woven
Apparent Opening Size (min.)	U.S. Sieve	ASTM D 4751	#100
Grab Tensile Strength (min.)	lb	ASTM D 4632	380
Tensile Elongation (max.)	%	ASTM D 4632	60 (max.)
Burst Strength (Mullen) (min.)	psi	ASTM D 3786	740
Puncture Strength (min.)	lb	ASTM D 4833	235
Trapezoid Tear Strength (min.)	lb	ASTM D 4533	140
Ultraviolet Resistance (500 Hours) (min.)	%	ASTM D 4355	70

- 7 Certified Test Reports: Submit manufacturers certified test results to Engineer showing actual test values of the geotextile fabric properties.

## 11.8 Examination

The Contractor shall check the geotextile fabric, geogrid, braid and mechanical connection elements upon delivery to verify that the proper material has been received. These materials shall be inspected by the Contractor to be free of flaws or damage occurring during manufacturing, shipping, or handling.

## 11.9 Marine Mattress Final Fabrication and Filling

- A Contractor shall fabricate marine mattress per the approved Shop Drawings and approved manufacturer's fabrication and filling instructions.
- B Mechanical Connections - The joints where the ends and baffles of each unit join the top or bottom of the unit shall be made with a mechanical connection between geogrid elements as shown on the Construction Plans and Shop Drawings.
- C Seaming - Unless otherwise shown on the Construction Plans or approved by the Engineer:
  - 1 All cut ends of braid material shall be knotted within 1 inch to 2 inch of the end to prevent raveling of the braid material. The braid material shall be securely knotted to the geogrid at all ends of all stitched seams, and at a spacing not to exceed 6 feet along any stitched seam. Pieces of braid material may be spliced end to end by securely knotting.
  - 2 The stitches along each seam shall be sufficiently tight to close the gap between the adjacent pieces of geogrid. The braid material shall be stitched through each pair of apertures along each seam at least once. The spacing of stitches shall be reasonably uniform at approximately 6 (minimum) stitches per foot along the entire length of each seam.
  - 3 Seaming to connect adjacent units is not required.
- D Filling - Unless otherwise shown on the Plans or approved by the Engineer:
  - 1. Each unit shall be filled and the fill shall be packed while the unit is supported in an upright position resting on its side with the open side facing upward and the long direction of the compartments running vertical. Each compartment shall be filled in lifts and each lift shall be tightly packed, except the final lift. The typical lift height shall not exceed 3 feet (loose) or 2.5 feet (packed). The final lift height shall not exceed 9 inches in height and should overfill each compartment by approximately 2 inches.
  - 2 Packing of the Stone Fill material and complete filling of each compartment shall be accomplished by rodding and / or vibration. The degree of filling and packing shall be adequate to achieve complete filling as evidenced by tightly confined stone particles, tensioned interior diaphragms, snug bodkin connections, slight bulging of each compartment, and no evidence of air space between compartments during lifting. Excessive bulging of the unit or displacement on the interior diaphragms, such as caused by overpacking or inadequate support, shall not be allowed.
  - 3 Lifting hoops shall be formed by joining the top and bottom layers of grid from each unit by means of approved mechanical connections.

- 4 When filling and fabrication of a unit are complete, the unit shall be rotated to a horizontal position resting on its bottom in order to facilitate subsequent lifting.
- 5 Filling shall be accomplished in a manner that does not cause excessive damage to the geogrid, mechanical connection elements or the braid.

## 11.10 Preparation

A Subgrade - If necessary, subgrade bottom beneath mattress shall be graded to a smooth surface to ensure that intimate contact is achieved between the bottom and the underside of the marine mattress and between the marine mattress and the entire bottom surface of the OysterBreak Armor Units. All slope deformities and obstructions which project normal to the bottom surface must be regraded or removed prior to marine mattress placement. Due to soft soil conditions, Contractor shall minimize disturbance of the existing bottom. Minor variations in the bottom grade will be tolerated.

B Geotextile Underlayer:

- 1 Geotextile shall be kept dry and wrapped such that it is protected from the elements during shipping and storage. At no time shall the geotextile be exposed to ultraviolet (sun) light for a period exceeding seven days. The geotextile shall be labeled as per ASTM D-4873.
- 2 The area to receive the geotextile shall be cleared of any debris or obstructions which may damage the geotextile.
- 3 The installed geotextile shall have no tears or punctures.
- 4 Should the geotextile be torn or punctured, the damaged area shall be repaired by the Contractor. The repair shall consist of a patch of the same type of geotextile which replaced the ruptured area. All geotextile within 2 feet of the ruptured area shall be removed from the geotextile by cutting the geotextile using a method which produces a smooth geotextile edge and does not cause geotextile ripping or tearing. The patch shall be sewn onto the geotextile using a double sewn "Flat" seam, one inch from the edge, Type Ssn-2, may be used for the repair. The stitch density shall be six stitches per inch. High strength polypropylene, polyester, or kevlar thread shall be used.
- 5 Geotextile shall be attached to underside of the marine mattress and the mattress's grid extension as indicated on the Project Plans.
- 6 The geotextile fabric shall be unrolled and attached to the marine mattress without excessive wrinkles. The Contractor may elect to sew fabric seams. A double sewn "J" seam, Type Ssn-2, with parallel stitching spaced approximately 0.5 inches apart, shall be used for both factory and field sewn seams. The seams shall be sewn in such a manner that the Engineer can inspect the seam readily. High strength polypropylene, polyester, of Kevlar thread shall be used. If a patch of fabric is to be placed on damaged fabric for the purpose of repairing the fabric, then a double sewn "flat" or "prayer" seam, 1 inch from the edge of the fabric, Type Ssa-2, may be used for this repair. Stitch density shall be 6 stitches per inch
- 7 The 2-foot geogrid extension shall be attached to the marine mattresses as indicated on the Plans.
- 8 Geotextile shall be attached to a portion of the underside of the mattress and the geogrid extensions utilizing fasteners spaced a maximum of 12



inches apart on center along the perimeter and 24 inches apart on center across the bottom of the mattress. The geotextile shall be one continuous piece. The geotextile shall be attached to the required portion of the underside of the mattress and the mattress's extension by the manufacturer at the location of the manufacture of the mattresses.

- 9 At the time of installation, the geotextile shall be rejected if it has defects, rips, holes, flaws, deterioration or damage incurred during manufacture, transportation or storage. The geotextile shall be protected at all times during construction to insure that the geotextiles original chemical and physical properties are not changed.

### 11.11 Installation

- A Position - The units shall be placed at the location, elevation, alignment and orientation as shown on the Plans or as directed by the Engineer.
- B Placement Procedures:
  - 1 The procedure used in placement of the units shall be in accordance with the recommendations of the system supplier and as approved by the Engineer.
  - 2 For lifting of each unit, a spreader beam and / or spreader bars shall be used in a manner that the unit is not subjected to severe bending or distortion and that the top and bottom layers of geogrid are tensioned uniformly across their width. Units should generally be lifted from a horizontal position.
  - 3 Personnel shall stay clear of the area beneath units and rigging during lifting. Tag lines and / or divers may be required to facilitate proper placement of the units.
  - 4 Mattresses shall be placed in a continuous manner starting from one corner of the breakwater structure and progressing along the length and width of the breakwater with newly placed mattresses places on the geogrid extensions of the previously placed mattresses.
- C Splicing and Anchoring - Where applicable, splicing and / or anchoring of the units shall be accomplished as shown on the Construction Plans, the Shop Drawings or as directed by the Engineer.
- D After installation of mattresses is complete, Marine Mattresses are to be surveyed per TS-7 Construction Surveying prior to placing OysterBreak Armor Units.
- E Marine mattresses are to be placed to form a completed breakwater structure along with placement of OysterBreak Armor Units. Contractor shall not leave placed marine mattresses exposed without OysterBreak Armor Units for extended periods of time. Maximum exposed length of marine mattresses prior to placement of OysterBreak Armor Units is 50'.
- F Installed mattresses are to have a uniform smooth surface to ensure that intimate contact is achieved between the mattress and the entire bottom surface of the OysterBreak Armor Units.

### 11.12 Repair

Any units damaged during fabrication, filling, or installation shall be repaired in a manner approved by the Engineer or shall be replaced by the Contractor. Any such measures required shall be at no

additional cost to the Owner.

### 11.13 Measurement and Payment: Marine Mattresses

- A Measurement: Measurement for the Marine Mattresses as specified in this section will be made based on the number of square feet (sf) of Marine Mattress installed at the locations and elevations shown on the Plans. Measurement for payment for Marine Mattresses does not include the geogrid extensions
  
- B Payment: Payment for the Marine Mattress work will be made at the unit price for the appropriate "Marine Mattress" items listed in the Contractor's bid (including Base Bid and all Additive Bids). The price includes all items incidental to furnishing and installing the Marine Mattresses including furnishing and installing geogrid, geotextile fabric, geogrid extensions, stone fill, constructing and filling of mattresses and placement of mattresses.

## TS-12 STEEL PIPE PILES

### 12.1 Scope

The work of this section consists of furnishing all plant, Equipment, labor, and materials and performing all operations in connection with the installation of steel pipe piles in accordance with these specifications and applicable drawings.

### 12.2 Description of Work

The extent and location of the "Steel Pipe Pile" Work is indicated on the drawings. The work includes the requirements for furnishing, installing, or driving steel pipe piles for Navigation Aids. It also includes the requirements for cutting off or building up of these piles as necessary, all in accordance with these specifications, the reference standards, and the applicable provisions of pertinent codes.

### 12.3 Related Documents

The provisions and intent of the Contract, including the General Provisions, Special Provisions and Technical Sections apply to this work as if specified in this section. Work related to this section is described in:

- A Section TS-14 – Miscellaneous Metals
- B Section TS-13 – Navigation Aids
- C Section TS-15 – Pile Coatings

### 12.4 Quality Assurance

- A The Contractor shall assist in keeping a complete record of each bearing pile driven, noting the rate, type, time, location and driving record with blow counts for every foot or fraction of a foot driven. Data shall be recorded on a "Pile Driving Record Sheet."
- B The pile records shall be current, and the location shall be noted on the Record Drawings.

### 12.5 Submittals

Submit the following information:

- A Manufacturer or fabricator of piling (7 days prior to ordering materials).
- B Certificates of treatment or quality of materials (7 days prior to ordering materials) from pile manufacturer in accordance with specified requirements.
- C List of equipment intended to be utilized in the driving, noting hammer sizes, lead lengths and crane capacities (7 days prior to start of onsite construction work).

- 1 Hammer: The following hammer information shall be submitted:
  - Manufacturer
  - Model
  - Type
  - Serial No.
  - Rated Energy
  - Modifications
- 2 Capblock (Hammer Cushion): The following capblock information shall be provided:
  - Material
  - Thickness
  - Area
  - Modulus of Elasticity
  - Coefficient of Restitution
- 3 Pile Cap: The weight of the helmet, bonnet, anvil block, and drive head shall be provided.
- 4 Pile Cushion: The following pile cushion information shall be provided:
  - Material
  - Thickness
  - Area
  - Modulus of Elasticity
  - Coefficient of Restitution
- 5 Power Plant and Leads: A description of the power plant and leads shall be provided.

- D Pile driving records including description of pile dimensions and location, description of hammer used, rate of hammer operation, length of bounce pressure hose, number of blows required for each foot of penetration throughout the entire length of each pile and for each inch of penetration in the last foot of penetration, total driving time in minutes and seconds for each pile, and other pertinent information as required or requested by the Owner and Engineer (within 1 day after completion of each driven pile).

## 12.6 Product Handling

- A Protection: Use all means necessary to protect the materials of this section before, during, and after installation and to protect the installed work and materials of all other trades.
- B Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer at no additional cost to the Owner.

## 12.7 Steel Pipe Piling

- A Pipe Piling shall be new, and have a minimum diameter and wall thickness as indicated on the plans. Steel pipe pile shall conform to the requirements of ASTM A252 GR 2 or stronger (35 KSI) for straight seam butt-welded, seamless, or spiral seam butt-welded Steel Pipe Piles. Material for bearing collars, end plates, and shall meet the requirements of the base pipe pile materials. Work shall conform to the details indicated on the plans, or equivalent details approved by the Engineer. Pile lengths shall be minimum 12-inches longer than the length indicated between the tip and cutoff elevation.

- B Pile fabrication: Fabricate full length pipe pile in accordance with AISC and AWS D1.1 requirements and shall be conducted by an AISC certified fabrication shop. Mark piling with lines of high visibility paint or ink on one-foot intervals from bottom to top. Number every five feet. Markings shall be clearly visible and legible to the naked eye at a distance of 75 feet. Paint markings on coated pile sections shall be of material approved by the coating manufacturer. Piles not properly marked will be readjusted.
- C Pile dimensional tolerances shall be as follows: Overall length  $\pm 3$  inches; deviation from a straight line shall not exceed length/1,000 along the entire length of pile.
- D Steel pipe piles shall be coated in accordance with requirements of TS-15 and as outlined on the Plans. Steel piles shall be prepared and shop coated in accordance with the coating manufacturers written instructions.
- E Welding shall conform to the requirements of the applicable provisions of A.W.S. D1.1, Structural Welding Code and to the appropriate Building Code.
- F Navigation aids mounted on steel piles shall be installed to meet the drawings and technical specification TS-13 Navigation Aids requirements.

## 12.8 Equipment

Pile driving hammers shall be of the impact or vibratory type. Selection of the hammer necessary to drive the piles to the required tip elevation is the responsibility of the Contractor. The hammer used shall have a delivered energy suitable for the total weight of the pile, the character of subsurface material to be encountered, the design length, and the pile batter. The selected hammer shall be such that it does not damage the piles.

## 12.9 General

Use fixed lead pile drivers when driving all piles with impact hammers. The use of hanging or swinging leads will not be allowed unless they are so constructed that they can be held in a fixed position during the driving operations. Leads shall be of sufficient length so that the use of a follower will not be necessary.

## 12.10 Steel Pipe Piling

- A Handling: Move steel piling by the use of “bridles,” “strong backs,” or other appropriate rigging which will prohibit the occurrence of permanent deformations.
- B Driving: Drive Steel Pipe Piles as accurately as possible in true line and position. Prior to driving steel pipe piling, submit to the Engineer, for his approval, complete details of driving equipment and falsework and bracing to be used in placing pipe piling. Falsework and bracing must be of such a nature as to offer complete assurance of plumbness and alignment. Crooked alignment to avoid interference from obstructions will not be permitted; and such obstructions, when encountered, must be removed before proceeding with driving.
- C Coating: Paint steel pipe piling on all sides in accordance with the requirements of specified on the plans and as specified in TS-15.

- D Preparation: Inspect piles when delivered and when in the leads immediately before driving. Handle pile so as to protect the pile coating. Repair damages or defects in pile coating as specified. Mark the piles in one-foot increments with lengths numbered in five-foot increments starting at the tip.
- E Pile Driving Equipment. Use a pile hammer having a delivered force or energy suitable for the total weight of the pile and the character of subsurface material to be encountered. Operate hammer at the rate(s) recommended by the manufacturer throughout the entire driving period. Repair damage to piling caused by use of pile hammer with excess delivered force or energy.
- F Pile Driving: Piles shall be driven to the minimum tip elevation indicated on the plans. The Engineer reserves the option, based on the results of pile driving, to modify either, or both, final driving resistance or tip penetration. Piles shall be driven to the specified design tip elevation. Pipe piles shall be driven with an open toe. Jetting may not be used. When driving must be interrupted, the continued driving after such intermission shall be performed for at least one minute.
- G Misdriven or Damaged Piles: Piles damaged, mislocated, driven out of alignment, driven below the design cutoff, or outside of the tolerance shall be replaced with new or be pulled and re-driven as directed by the Engineer. Additional work required due to improper location or installation is the Contractor's responsibility.
- H Obstruction: Where obstruction is encountered that results in sudden, unexpected change in penetration resistance and deviation from specified tolerances, the Contractor may be required to perform one or all of the following:
- 1 - Removal of obstruction.
  - 2 - Extraction, repositioning, and re-driving.
- I Field Treatment: Coat or paint exposed cutoff steel piling with an approved rust inhibitor.
- J Records: Keep a complete and accurate record of each pile driven. Indicate pile location, diameter, original length, mudline elevation, tip elevation, cutoff elevation, penetration in blows per foot for entire length of penetration for the pile (if driven with impact hammer), penetration for the pile, hammer data including rate of operation, make, and size, unusual pile behavior, or circumstances experienced during driving such as re-driving, heaving, weaving, obstructions and unanticipated interruption. Make the pile driving records available to the Engineer within 24 hours of completion of pile driving. Submit complete record of the installed piles to the Engineer within 7 calendar days after completing pile-driving work.

## 12.11 Measurement and Payment

No separate measurement of payment will be made for the Work in this Section; all the costs of such Work shall be included in the prices bid for the various items listed in the Contractor's bid.

## TS-13 NAVIGATION AIDS

### 13.1 Description

This section covers the supply and construction of navigation aids for marking the breakwater structures. It includes the supply and installation of the steel pipe piles, dayboard and marine light supply, and dayboard and marine light installation.

### 13.2 Related documents

The provisions and intent of the Contract, including the General Provisions, Special Provisions and Technical Sections apply to this work as if specified in this section. Work related to this section is described in:

- A Section TS-12 – Steel Pipe Piles
- B Section TS-14 – Miscellaneous Metals
- C Section TS-15 - Coatings

### 13.3 Submittals

- A Submit manufacturer's certificates of compliance for specified dayboard, platform, marine light, and steel piles. Submit shop drawings for all fabricated items per TS-14 submittals.
- B Contractor is to submit the details of installing the new navigation aid dayboards for review and approval by the Engineer per TS-14 submittals.
- C Submit shop drawings for the fabricated marine light stand for review and approval by the Engineer per TS-14 submittals.

### 13.4 Dayboard

- D Dayboard. Complete navigation aid assembly consisting of dayboard plate, reflector, paint, angle bracket support, bolts, nuts, washers
- E The dayboard shall be supplied and fabricated in accordance with the standard U.S. Coast Guard marking system for navigation channels. Dayboard shall be in accordance with U.S. Coast Guard requirements for no lateral significance warning marks and as shown on the Plans.
- F Dayboard backing shall be constructed of commercial grade (5052), 3/16" thick, aluminum sheeting.
- G The surface of the dayboard shall be covered with a colored vinyl film and retro-reflective tape, and contain the letters shown on the Plans.

### 13.5 Marine Lights

A Marine Light shall meet the following requirements:

- |   |                                   |                           |
|---|-----------------------------------|---------------------------|
| 1 | Power Source:                     | Solar                     |
| 2 | Light Type:                       | LED                       |
| 3 | Light Color:                      | White                     |
| 4 | Light Range:                      | 1 Nautical Mile (minimum) |
| 5 | Flash Frequency:                  | 2.5 seconds               |
| 6 | Watertight self contained casing. |                           |

B Marine Light shall be Tideland Signal Corporation “Solar Powered Marine Light, Model L-120” or approved equal.

C Marine light stand shall be fabricated and installed as shown on the Plans.

D The bottom of the marine light stand (pile cap plate) shall be located at or above EL +15.0’, and is to be above the top of the dayboard.

### 13.6 Steel Pipe Piles

The steel piles shall be supplied as specified in TS-12, Steel Pipe Piles.

### 13.7 Miscellaneous Metals

Miscellaneous metals required for the Navigation Aid Structure shall be supplied as specified in technical specification Section TS-14 - Miscellaneous Metals.

### 13.8 Navigation Aids

A General

Navigation Aid Structures shall be installed at the locations shown on the Plans. Each Navigation Aid includes the steel pipe pile, dayboard, dayboard hardware, marine light, and marine light stand. Locations of Navigation Aid installation shown on the drawings are approximate and are to be field verified by the Engineer prior to construction.

B Dayboards

Dayboards shall be installed on the steel pipe pile using prefabricated metal structure using fastening systems shown on the Plans.

C Steel Piles

The Steel Pipe Piles shall be installed as specified in Section TS-12, Steel Pipe Piles.

D Marine Light

Marine light stand is to be a prefabricated metal structure to support the marine light and mount to the top of the steel pipe pile. Fabricated marine light stands are to be installed on



the top of the steel piles after pile installation.

Marine light stand is to be installed on the top of the steel pipe pile as shown on the Plans. The bottom of the marine light stand (pile cap plate) shall be located at or above EL +15.0', and is to be above the top of the dayboard.

The marine light is to be installed on top of the marine light stand as shown on the Plans.

E Miscellaneous Metals

Miscellaneous metals required for the installation of the dayboard and marine light stand shall be installed as specified in technical specification Section TS-14 - Miscellaneous Metals.

F Dayboard hardware. The Contractor shall furnish all fasteners required to mount the dayboard in accordance with the contract drawing.

### 13.9 Measurement and Payment: Navigation Aids

A Measurement: Measurement for the Navigation Aids work as specified in this section will be made based on the number of each (EA) Navigation Aid installed at the locations and elevations shown on the plans.

B Payment: Payment for the Navigation Aid work will be made at the unit price for the appropriate "Navigation Aids" items in the Contractor's bid. The price includes all items incidental to furnishing and installing the Navigation Aid including furnishing and installing steel pile, pile coatings, installation of dayboards, dayboard steel fastening systems, marine light and marine light stand fabrication and installation.

## TS-14 MISCELLANEOUS METALS

### 14.1 Description

This section covers the detailing, supply, fabrication, connectors and installation of the navigation aid components, including:

- A Miscellaneous structural steel
- B Structural Aluminum Components
- C Aluminum plate
- D Bolts, nuts and threaded rod
- E Miscellaneous fabricated metal items

### 14.2 Related Documents

The provisions and intent of the Contract, including the General Provisions, Special Provisions and Technical Sections apply to this work as if specified in this section. Related Sections include the following:

- A TS-5 – Submittals
- B TS-12 – Steel Pipe Piles
- C TS-13 – Navigation Aids
- D TS-15 – Coating

### 14.3 Applicable Publications:

The publications listed below form a part of this specification to the extent referenced. Latest editions apply.

- A American Welding Society (AWS):
  - 1. D1.1-86 Structural Welding Code – Steel
  - 2. D1.2-83 Structural Welding Code – Aluminum
- B American Society of Testing and Materials (ASTM)
  - 1 A36 Structural Steel
  - 2 A123 Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strip

- 3 A153 Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- 4 A307-90 Carbon Steel Externally Threaded Standard Fasteners
- 5 A325 Specification for Structural Bolts, Steel, Heat Treated
- 6 A563 Carbon and Alloy Steel Nuts
- 7 A780 Standard Practice for Repair of Damaged Hot-Dip Galvanized Coating
- 8 F593 Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs
- 9 F594 Standard Specification for Stainless Steel Nuts

#### 14.4 Quality Assurance

##### A Field Measurements

Contractor is responsible for performing all necessary field measurements prior to ordering and fabrication of the miscellaneous metals.

##### B Welding

Welding shall be done in accordance with AWS D1.1, including procedures for repair of defective welds.

##### C Qualification of Welders and Welding Operators

Welders and welding operators shall be qualified for shop and field welding in accordance with AWS D1.1, Section 5, Parts C and D for steel and AWS D1.2 for aluminum.

#### 14.5 Material Tests

Miscellaneous metals and appurtenant materials shall be tested and certified by the manufacturer to meet the specified chemical, mechanical, and section property requirements prior to delivery to the site. Testing of miscellaneous metals for mechanical properties shall be performed after the completion of all rolling and forming operations. Testing of miscellaneous metals shall meet the requirement of ASTM A6.

#### 14.6 Submittals

##### A The following items shall be submitted to the Engineer for review per technical specification TS-5, Submittals:

- 1 Shop Drawings, including complete bills of material for fabricated piles, frame connection fabrication, and attachments to steel piles.
- 2 Placement drawings, showing location in the Project of all fabrications, cross-referenced to the shop drawings.
- 3 Work plan for installation of navigation aids and piles including proposed schedule and procedures shall be submitted to the Engineer within fifteen (15) business days after Notice to Proceed.
- 4 Manufacturer's literature and data for products used that demonstrates compliance with the applicable materials specifications.

- 5 Items 14.6, 1-4 shall be submitted to the Engineer within fifteen (15) business days after Notice to Proceed.

## 14.7 Metal Materials

- A The Contractor shall supply miscellaneous metal connectors, and other metal items required to install the navigation aid structures. Miscellaneous structural steel materials shall be new, free from defects and imperfections, and shall unless otherwise indicated, conform to the following:
- 1 Navigation Aid platform structure
    - Steel Plate: ASTM A36. Hot dip galvanize after fabrication IAW ASTM123.
    - Steel Shapes: ASTM 36. Hot dip galvanize after fabrication IAW ASTM123.
    - Aluminum Shapes: 6061-T6
    - Bolts, Anchor Bolts, washers and Nuts (Steel Base Metal): Regular hot-dip galvanized hexagon head type, ASTM A325. Hardened washers conforming to ASTM F436 shall be provided under all nuts and bolt heads. Nuts shall conform to ASTM A563.
    - All threaded rod, bolts, nuts and washers shall be stainless steel, type 316 conforming to ASTM F594 and ASTM F593. All nuts shall be lock nuts with nylon inserts. Washers shall be bevel type with 6:1 slope for one (1) inch diameter threaded rod.
  - 2 Navigation Aid
    - Bolts, Anchor Bolts, washers and Nuts (Aluminum Base Metal): ASTM F594 and ASTM F593, Type 316 stainless steel. Provide lock nuts and with nylon washers.
    - Navigation Aid Dayboard: Marine Grade 5052 Aluminum.
  - 3 Piling: See TS-12 for steel pipe pile.
- B Welding materials shall conform to AWS D1.1 for steel and AWS D1.2 for aluminum.
- C Steel and aluminum plate, bar and shapes shall be true to line and free from warp or twist. Steel with laminations discovered during welding or at any other time shall be rejected unless approval for repair is obtained from the Engineer.

## 14.8 Metals Fabrication

### A General

- 1 Items shall be shop fabricated to the extent practicable for transportation and handling. Splices shall be designed and detailed by the fabricator and submitted to the Engineer for review.
- 2 Parts shall be match-marked to ensure accurate field installation.

- 3 Fabrication of structural steel parts shall conform to the applicable provisions of the AISC - Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
- 4 Aluminum items shall be fabricated in accordance with Aluminum Association's specifications for aluminum structures and AWS 1.2 thru 1.3, Structural Welding Code Aluminum

B Tolerances

- 1 Items shall be fabricated to the tolerances indicated herein or on the Plans, or if not specified, to accepted industry standards.

#### 14.9 Steel Fabrication Surface Preparation

A General

- 1 After the equipment has been fabricated and inspected, the Contractor shall apply protective coatings to all surfaces unless otherwise noted. Weld spatter, burns, and other objectionable irregularities shall be carefully removed or repaired per SSPC-SP3. All oil, grease, and dirt shall be removed from the surfaces by the use of suitable solvents and clean wiping materials, per SSPC-SP1.

B Grit Blasting

- 1 All steel surfaces to be coated shall, prior to coating, be grit blasted in accordance with the requirements of SSPC-SP10, Steel Structures Painting Council), see technical specification Section TS-15 - Coatings.

#### 14.10 Steel Fabrication Metal Galvanizing

A Fabricated steel specified to be galvanized steel shall be galvanized in accordance with ASTM A123.

B Galvanizing for all steel bolts, washers, and nuts shall be performed in accordance with ASTM-A385 and ASTM-A153. Coating shall be a minimum of two ounces per square foot of surface.

C Repair of Zinc-Coated Surfaces

- 1 Repair damaged surfaces with field coating system specified in technical specification Section TS-15 – Coatings.
- 2 Galvanizing Repair Paint: High zinc dust content paint for regalvanizing welds in galvanized steel, complying with the Mil. Spec. MIL-P-21035 (Ships).

#### 14.11 Fabrication Marking

A Marking the Weight: Mark the weight on sub-assemblies and individual members weighing over 200 pounds.

- B Marking Piece Marks and Directional Arrows: Mark piece marks and directional arrows on all members and sub-assemblies to be assembled at the job site. Use the piece marks assigned on the shop detail drawings or erection drawings.
- C Method of Marking: Make all markings plainly visible with waterproof paint after shop painting.
- D Marking Materials to be Galvanized: Stamp piece marks or match marks in material to be galvanized with metal dies so that the marks are clearly legible after galvanizing.
- E Fabrications: All fabrications shall be marked to correspond to the fabricators placing drawings.

#### 14.12 Miscellaneous Metals

Miscellaneous metals required for the fabrication and installation of the navigation aid shall conform to this section including plates, bolts, and welding.

#### 14.13 General Metal Fabrication and Installation

##### A Materials Delivery and Storage

Materials delivered to the site shall be new and undamaged and shall be accompanied by certified test reports. The manufacturer's logo and mill identification mark shall be provided on the sheet piling as required by the referenced specifications. Sheet piling shall be stored and handled in the manner recommended by the manufacturer to prevent permanent deflection, distortion, or damage. Storage of piling should also facilitate required inspection activities.

##### B Field Measurements

The Contractor shall obtain all field measurements required for proper and adequate fabrication and installation of the work. Exact field measurements are the Contractor's responsibility

##### C Fabrication

- 1 Structural Fabrication: Materials must be straight before being laid off or worked. If straightening is necessary, it shall be done by methods that will not impair the metal. Sharp kinks or bends shall be cause for rejection of the material. Material with welds will not be accepted except where welding is definitely specified, indicated, or otherwise approved. Bends shall be made by approved dies, press brakes or bending rolls. Where heating is required, precautions shall be taken to avoid overheating the metal and it shall be allowed to cool in a manner that will not impair the original properties of the metal. Proposed flame cutting of material other than structural steel shall be subject to approval and shall be indicated on detail drawings. Shearing shall be accurate and all portions of the work shall be neatly finished. Corners shall be square and true unless otherwise shown. Re-entrant cuts shall be

filleted to a minimum radius of 3/4 inch unless otherwise approved. Edges and corners shall be chamfered to a 3/4" radius. Finished members shall be free of twists, bends, and open joints. Bolts, nuts, and screws shall be tight.

- 2 Metal Fabrication: Metal may be cut by mechanically guided or hand-guided torches, provided an accurate profile with a surface that is smooth and free from cracks and notches is obtained. Surfaces and edges to be welded shall be prepared in accordance with AWS. Where structural steel is not to be welded, chipping or grinding will not be required except as necessary to remove slag and sharp edges of mechanically guided or hand-guided cuts not exposed to view. Hand-guided cuts that are to be exposed or visible shall be chipped, ground, or machined to sound metal.
- 3 Shop Assembly: Structural unit furnished shall be assembled in the shop to determine the correctness of the fabrication and matching of the component parts unless otherwise specified. Tolerances shall not exceed those shown. Each unit assembled shall be closely checked to ensure that all necessary clearances have been provided. Assembly in the shop shall be in the same position as final installation in the field unless otherwise specified. Errors or defects disclosed shall be immediately remedied by the Contractor without cost to the Owner. Before disassembly for shipment, each piece of a structural unit shall be match-marked to facilitate erection in the field. The location of match-marks shall be indicated by circling with a ring of white paint after the shop coat of paint has been applied or as otherwise directed.
- 4 Metal fabrications shall be placed accurately in location, alignment, and elevation, plumb, level, true and free of rack, measured from established lines and levels.
- 5 Fit exposed connections accurately together to form tight hairline joints. Weld connections, which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind exposed joints smooth and touch-up shop paint coat. Do not weld, cut or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.

#### D Welding

- 1 STEEL WELDING: Steel welding shall be performed by welders certified as being qualified in accordance with AWS D1.1 for full penetration groove welding in all positions, using the procedures, materials, and equipment of the type required for the work. All welding shall conform to AWS D1.1.
- 2 ALUMINUM WELDING: Aluminum welding shall be performed by welders certified as being qualified in accordance with AWS D1.2 for full penetration groove welding in all positions, using the procedures, materials, and equipment of the type required for the work. All welding shall conform to AWS D1.2.

### 14.14 Miscellaneous Metals Installation

#### A General

All parts to be installed shall be thoroughly cleaned. Packing compounds, rust, dirt, grit, and other foreign matter shall be removed. Holes and grooves for lubrication shall be cleaned.

Enclosed chambers or passages shall be examined to make sure that they are free from damaging materials. Where units or items are shipped as assemblies, they will be inspected prior to installation. Disassembly, cleaning, and lubrication will not be required except where necessary to place the assembly in a clean and properly lubricated condition. Pipe wrenches, cold chisels, or other tools likely to cause damage to the surfaces of rods, nuts, or other parts shall not be used for assembling and tightening parts. Bolts and screws shall be tightened firmly and uniformly but care shall be taken not to overstress the threads. When a half nut is used for locking a full nut the half nut shall be placed first and followed by the full nut. Threads of all bolts, rods, nuts, and screws shall be lubricated with an approved lubricant before assembly. Threads of corrosion-resisting steel bolts and nuts shall be coated with an approved anti-galling compound. Driving and drifting bolts or keys will not be permitted.

**B Alignment and Settings**

Each structural unit shall be accurately aligned by the use of steel shims or other approved methods so that no binding in any moving parts or distortion of any member occurs before it is fastened in place. The alignment of all parts with respect to each other shall be true within the respective tolerances required.

**C Electrical Isolation**

Proper insulation shall be provided between different metal types to prevent galvanic corrosion.

#### 14.15 Anchorage, Fastenings, and Connections

- A** Provide anchorage where necessary for fastening miscellaneous metal items securely in place. Include for anchorage not otherwise specified or indicated slotted inserts, expansion shields, and powder-driven fasteners, when approved for concrete; machine and carriage bolts for steel; through bolts, and screws for wood. Provide non-ferrous attachments for non-ferrous metal. Make exposed fastenings of compatible materials, generally matching in color and finish, to which fastenings are applied. Conceal fastenings where practicable.
- B** All bolts shall be installed at the proper location and set straight and square with connecting members. Bolt installation shall conform to the requirements of AISC specification for structural joints using ASTM A325 Bolts for steel and A276 for stainless steel.
- C** Boltholes shall be provided where required or specified and at the proper location or position. Holes in metal members shall be shop punched or drilled. Field cutting or drilling of holes will be allowed where field variations of bolt location may be expected. Field cut boltholes shall be drilled or torched undersized and shall be reamed to the proper size. Burrs and ridges around the holes shall be removed flush to the surface. Unless otherwise indicated or specified, all holes for items that are to be inserted through metal members shall be standard size and not more than 1/16 inch larger than the diameter of the item being installed.

#### 14.16 Measurement and Payment

No separate measurement of payment will be made for the Work in this Section; all the costs of such Work shall be included in the prices bid for the various items listed in the Contractor's bid.



## TS-15 COATINGS

### 15.1 Description

The work covered by this section of the specifications consists of furnishing all plants, labor, equipment, appliances, and materials, and performing all operations in connection with preparation of surfaces and application of paint and other specified materials. This work shall be accomplished in complete and strict accordance with the specifications.

### 15.2 Related Documents

The provisions and intent of the Contract, including the General Provisions, Special Provisions and Technical Sections apply to this work as if specified in this section. Related Sections include the following:

- A Section TS-5– Submittals
- B Section TS-12 – Steel Pipe Piling
- C Section TS-14 – Miscellaneous Metals

### 15.3 Applicable Publications

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

#### **American Conference of Governmental Industrial Hygienists (ACGIH)**

ACGIH 0100            2001-2002. Threshold Limit (for Chemical Substances and Physical Agents) and Biological Exposure Indices

#### **Code of Federal Regulations (CFR)**

29 CFR 1910            Occupational Safety and Health Standards  
29 CFR 1926            Safety and Health Regulations for Construction

#### **Steel Structures Painting Council (SSPC) Specifications**

SSPC SP 10.2000        Near White Blast Cleaning  
SSPC SP 1.2000        Solvent Cleaning  
SSPC Paint 16            Coal Tar Epoxy-Polyimide Black Paint Sept 2000

#### **U.S. Army Corps of Engineers**

EM 385-1-1. 1996        Safety and Health Requirements Manual

## 15.4 Definitions

- A Coating sub-Contractor: Company specializing in the application of coating (paint) systems with at least 2 years experience with State of Louisiana and U.S. Federal government contracts performing coating work. Coating sub-Contractor is a company contracted with the pipe pile supplier to apply coating to the pipe piling. Coating sub-Contractor shall be approved by the Engineer prior to the start of coating application.
- B Paint: The term “paint” as used herein includes emulsions, enamels, paints, stains, varnishes, sealers, and other coatings, organic or inorganic, whether they be used as prime, intermediate, or finish coats. This definition does not include troweled or sprayed-metal coating.
- C Shop painting: The term “shop painting” as referred to herein covers surface preparation and painting operations conducted in a shop, mill, or plant, before shipment of paint-receiving items to the project site.

## 15.5 Submittals

- A The Contractor shall submit the proposed coating product data and information providing the coating manufacturer’s name, address, and phone number and the coating manufacturer’s recommended application procedures to the Engineer for review, ten (10) days prior to the start of any coating work.
- B Certificates: Contractor to provide a copy of the Materials Safety Data Sheets (MSDS) and Consumer Information Safety (CIS) sheets to the Engineer with ten (10) days after the notice to proceed.
- C The Contractor shall submit the proposed coating sub-Contractors’ name, address, contact name, phone number and company information, verifying that the company is in compliance with the specifications, to the Engineer for review ten (10) days prior to the start of any coating work.

## 15.6 Safety and Health Provisions

The coating sub-Contractor shall comply with all Federal, state, and local safety and health provisions governing the specified coatings. The coating sub-Contractor shall follow all required safety and health plans and procedures consistent with current Federal regulations as described in 29 CFR 1910, Occupational Safety and Health Standards; 29 CFR 1926, Safety and Health Regulations for Construction; EM385-1-1, US Army Corps of Engineers Safety and Health Requirements Manual; the permissible exposure limits (PEL’s) contained in the latest edition of ACGIH 0022, Threshold Limit Values (for Chemical Substances and Physical Agents) and Biological Exposure Indices.

## 15.7 Coating Products

Materials for coating steel pipe piling and miscellaneous metals fabrications shall conform to the following:

- A Coal Tar Epoxy

- 1 Coal Tar Epoxy coating shall be in accordance with U.S. Army Corps of Engineers Formula C-200a, Coal Tar Epoxy (Black) Paint and shall conform to SSPC Paint 16, (Sept. 200), Coal Tar Epoxy-Polyamide (Black) Paint manufactured with Type 1 pitch. The Coal Tar Epoxy shall be used to coat steel surfaces as specified herein. The minimum dry film thickness of the applied coal tar epoxy shall be 16 mils.

## 15.8 Coatings

- A All structure steel components (round pile sections, fabricated plates, structural shapes and bolts) shall be coated as specified in this technical specification, and in accordance with the specified coating manufacturer's instructions.
- B Shop Coating Application
  - 1 All steel pipe piling to be shop coated per paragraph 15.10.
  - 2 Steel products and fabrication surfaces to be coated as follows: Round Piling: Round piling shall be shop coated over their entire exposed length. Any coating damaged or base metal exposed during transportation or construction shall have the coating repaired per the field touch-up coating paragraph of this specification
- C Field Touch-Up Coating: All field welds, bolts, and areas containing coating damages shall be field coated per paragraph 15.11.

## 15.9 Cleaning and Preparation of Surfaces to be Painted

- A All steel materials to be coated shall be cleaned and prepared in strict accordance with the coating manufacturers written recommendations and instructions.
- B Surfaces to be painted shall be clean and free of oil, grease, dust, weld splatter (including existing weld splatter), steel slivers, and other contaminants before applying paint or surface treatments. Cleaning of surfaces to be painted shall be conducted in strict accordance with the coating manufacturer's recommendations. The removal of oil and grease shall, in general, be accomplished in accordance with SSPC SP 1. Cleaning and painting shall be so programmed that dust or other contaminants from the cleaning process do not fall on wet, newly painted surfaces. Surfaces not intended to be painted, such as side seals, stainless steel, and wearing surfaces shall be suitably protected from the effects of cleaning and painting operations. Welding of, or in the vicinity of, previously painted surfaces shall be conducted in a manner event weld spatter from striking the paint and to otherwise reduce coating damage to a minimum. Paint damaged by welding operations shall be restored to the specified condition. All edges of items to be painted shall be rounded or chamfered a minimum of 1/16 of an inch.
- C All steel materials to be coated shall be grit blasted to a grade near-white metal grade, which shall be in strict accordance with SSPC SP-10 and shall profile after blasting. Remove residual dust from blasted surface by blowing with dry, oil-free air, vacuuming, or sweeping.

## 15.10 Shop Coating Application

A Shop Application of Coating to Steel Materials shall be in accordance with the following:

- 1 Application of coating shall be conducted in strict accordance with coating manufacturer's recommendations and as specified by the U.S. Army Corps of Engineers for coating system Number 6 and as specified below:

SURFACE PREPERATION	1 <sup>ST</sup> COAT	2 <sup>ND</sup> COAT	3 <sup>RD</sup> COAT
Near White metal blast cleaning, in accordance with SSPC-SP10	Coal tar-epoxy C-200a (black)	Coal tar-epoxy C-200a (black)	Coal tar-epoxy C-200a (black) – if needed to attain required thickness

- 2 All surfaces of the round piles and fabrications shall be coated with the coating system specified herein.
- B Application of coating system shall be conducted in strict accordance with coating manufacturer's recommendations. The finished coating shall be within the specified limits for holidays, pinholes, bubbles, runs, drops, ridges, waves, laps, unnecessary brush marks, and variations in color, texture, and gloss. All paint coats shall be applied in such manner as to produce an even, continuous film of uniform thickness. Edges, corners, crevices, seams, joints, welds, rivets, bolts, and other surface irregularities shall receive special attention to ensure that they receive the specified thickness of paint by hand stripping with a stiff bristled brush. All bolt heads and ends shall also be hand stripped with the polyurethane paint. Spray equipment shall be equipped with traps and separators and where appropriate, mechanical agitators, pressure gages, pressure regulators, and screens or filters. Air caps, nozzles, and needles shall be as recommended by the spray equipment manufacturer for the material being applied.
- C Coating application shall be conducted in accordance with coating manufacturer's recommendations for atmospheric conditions, method, and time of coat applications, drying time, mixing, safety, and all other manufacturer application recommendations for conformance with manufacturer's warranty. Unless otherwise specified by the coating manufacturer's recommendations, do not allow drying time between coats to exceed 72 hours.
- D Paint shall be spray or brush applied with a minimum of two coats to provide a minimum total thickness, at any point, of 16 mils. The specified film thickness shall be attained in any event, and any additional (beyond two) coats needed to attain specified thickness shall be applied at no additional cost to the Owner. Thickness shall be measured in accordance with ASTM 01186 and ASTM E376.
- E Coating shall be allowed to cure prior to handling, transportation, salt-water immersion, and installation. Curing time shall in be accordance with the coast manufacturers written recommendations.
- F Painter and Quality Control Personnel Certification

- 1 Painters: Painters shall be versed in the application of paint systems similar to or equal to that specified to be applied. Certification of all painters is required for each type of paint and each type of spray gun application that will be used.

G Repair of Defects:

Repair detected holidays, thin areas, and exposed areas damaged prior to or during installation by surface treatment and application of additional coating or by manufacturer's recommendations. Allow a period of at least 72 hours to pass following final coat before placing in immersion service.

### 15.11 Field Touch-up Coating Application

- A Field Application of Coating: Field welded joints and field repairs to shop painted coatings shall receive field touch up coating.
- B Surface Preparation: Surface preparation for field touch-up coating shall be in accordance with the coating manufacturer's recommendations and with SSPC-SP-11.
- C Where a field-applied coating is used which is different than the shop applied coating, the area to be coated shall be masked off so that a neat appearance can be obtained. When practicable, and when not in conflict with the following specifications, tough up shall be applied with the same paint system applied in the shop.
- D The proposed field-coating product shall be compatible with the proposed shop coating product.
- E All field coatings shall match the color of the shop applied coating system. All coatings applied in the field shall be applied using a brush or roller. Spray paint is not allowed in the field. Field application of coatings shall be applied to the following thickness for the selected coating system:
  - 1 Coating Manufacturer Recommended product  
(8 mil DFT each at 2 coats total)
  - 2 Wasser Technologies High Tech Coatings "MC-Tar"  
(8 mil DFT each at 2 coats total)
  - 3 Engineer Approved Substitute

### 15.12 Measurement and Payment

No separate measurement of payment will be made for the Work in this Section; all the costs of such Work shall be included in the prices bid for the various items listed in the Contractor's bid.

## **APPENDIX A**

### **GEOTECHNICAL INVESTIGATION DATA**

Owner and Engineer disclaim any responsibility for the accuracy, true location, and extent of the geotechnical investigation that has been prepared by others. They further disclaim responsibility for interpretation of that data by bidders. Report of the geotechnical investigation is bound in this project manual for the bidders' convenience only and **IS NOT AND SHALL NOT CONSTITUTE PART OF THE BIDDING AND CONTRACT DOCUMENTS.**

**GEOTECHNICAL STUDY (PART I OF II)  
GULF SHORELINE STABILIZATION PROJECT  
ROCKEFELLER REFUGE  
CAMERON PARISH, LOUISIANA**

SHINER MOSELEY AND ASSOCIATES, INC.  
CORPUS CHRISTI, TEXAS

Report No. 0602-1316  
Part I of II  
August 13, 2002

**Shiner Moseley and Associates, Inc.**

555 N. Carancahua, Suite 1650  
Corpus Christi, Texas 78478

Attention: Mr. Dan Heilman, P.E.

**Geotechnical Study (Part I of II)  
Gulf Shoreline Stabilization Project  
Rockefeller Refuge  
Cameron Parish, Louisiana**

**Introduction**

Fugro South, Inc. is pleased to present this first report of our geotechnical study for the above-referenced project. Mr. Dan Heilman, P.E., with Shiner Moseley and Associates, Inc. (SMA), requested this study during a telephone conversation with Mr. David W. Duhon of Fugro South, Inc., on March 20, 2002. Mr. Neil McLellan, P.E., with SMA, authorized this study verbally and via memorandum e-mailed to Mr. Duhon on May 29, 2002. We performed this study in general accordance with our Proposal No. 0602-1316, dated March 25, 2002.

This first report is being issued at the request of the client to aid with the conceptual designs of various shoreline stabilization structures. The major design concept included and discussed in this report is allowable soil bearing capacity, followed by construction considerations. Upon determination by others of the stabilization concepts deemed most likely feasible, we will be supplied with the selected design alternatives in order to perform our consolidation and settlement analyses. The results of our analyses will then be presented in a subsequent report.

**Project Description.** We understand that due to extensive coastal erosion over the past several years, the Louisiana Department of Natural Resources, along with the Rockefeller Wildlife Refuge, is planning to construct a shoreline stabilization structure from Joseph's Bayou westward about 10 miles to the west boundary of the Rockefeller Refuge along the existing shoreline. The project site is essentially located in the southeast corner of Cameron Parish, Louisiana, which is bordered to the south by the Gulf of Mexico. A *Site Vicinity Map* is provided on Plate 1 of this report. The stabilization project may consist of, but not be limited to, constructing a rock breakwater or installing Geotubes. SMA has requested that Fugro South, Inc. provide geotechnical recommendations to aid in the beach stabilization project.



**Purposes and Scope of Work.** The purposes of our geotechnical study were to: 1) explore subsurface soil conditions along the shoreline, as well as, sample soils along the seafloor; and 2) provide geotechnical recommendations to guide others in the design and construction of potential stabilization structures. Our scope of work included the following:

- drilling and sampling twenty soil borings to explore subsurface soil conditions along the shoreline and obtain soil samples for laboratory testing;
- performing laboratory tests on select soil samples obtained in the field to assess pertinent geotechnical engineering properties;
- obtaining grab (surface) samples across the seafloor profile at the same shoreline locations as the borings. At each borehole location, 5 samples were obtained. The samples were collected at distances of about 0-, 250-, 500-, 1250-, and 2000-ft seaward from the shoreline. All samples have been analyzed for grain-size distribution;
- analyzing the field and laboratory data to develop recommendations to guide others in the design and construction of the potential stabilization structures along the project site shoreline; and
- preparing a two part geotechnical report summarizing our findings (the main aspect of Part I to be bearing capacity and the main aspect of Part II to be settlement).

Environmental assessment, compliance with State and Federal Regulatory requirements, assessment of potential migration, hydrology studies, and/or environmental analyses were beyond the scope of this study. A geological fault study was also beyond the scope of this study.

**Applicability of Report.** The explorations and analyses for this study, as well as the conclusions and recommendations contained in this report, were selected or developed based on our understanding of the project as described previously and in later sections of this report. If there are differences in location or design features as we understand them, or if the locations or design features change, we should be authorized to review the changes and, if necessary, to modify our conclusions and recommendations. The observations, conclusions, and recommendations presented in this report may not apply to locations not explored by our borings or areas outside the project boundaries.

We have prepared this part I report exclusively for Shiner Moseley and Associates, Inc. to guide in the conceptual design of the shoreline protection alternatives associated with this project. We have conducted this study using the standard level of care and diligence normally practiced by recognized engineering firms now performing similar services under similar circumstances. We intend for this report, including all illustrations, to be used in its entirety. This report should be

made available to prospective contractors for information only and not as a warranty of subsurface conditions.

**Field Exploration**

Our field activities are discussed in this section. We have included discussions relative to drilling & sampling methods for borings, sampling methods for seafloor grab samples, water depth observations, and borehole sealing.

**General.** Fugro South, Inc. explored subsurface soil conditions at the project site between the dates of June 17, 2002 and July 11, 2002 by drilling and sampling 20 exploratory soil borings and obtaining 100 seafloor samples. The locations of the borings and grab samples are shown on the *Plan of Borings* on Plate 2 of this report. Borings B-1, B-4, B-6, B-8, B-10, B-12, B-14, B-16, and B-19 were drilled to a penetration of approximately 50 ft below existing shoreline grade. Borings B-2, B-5, B-7, B-9, B-11, B-13, B-15, B-17, and B-20 were drilled to a penetration of approximately 25 ft below shoreline grade. Borings B-3 and B-18 were drilled to a depth of about 100 ft below shoreline grade. It should be noted that the spacing between borings is approximately 2,500 ft. Representatives of John E. Chance Land Surveyors staked the borehole locations requested by SMA prior to our arrival onsite. Locations that could not be accessed were offset and the final boring coordinates and elevations are provided in the following table. The coordinates and water-depth readings at the time of sampling for the seafloor grab-samples are provided on Plate 2 at the end of this report. The vertical datum is NAVD88.

BORING NO.	TRANSECT	LATITUDE	LONGITUDE	ELEVATION, FT
B-1	50+00	29°41'16.36193"	92°54'00.78323"	0.35
B-2	75+00	29°41'05.12261"	92°53'35.46969"	1.25
B-3	100+00	29°40'54.78499"	92°53'09.82675"	-0.20
B-4	125+00	29°40'43.45767"	92°52'44.56051"	-0.30
B-5	150+00	29°40'33.10483"	92°52'18.88296"	3.18
B-6	175+00	29°40'20.99154"	92°51'54.00504"	0.58
B-7	200+00	29°40'10.50906"	92°51'28.44306"	0.73
B-8	225+00	29°40'00.83905"	92°51'02.16568"	0.48
B-9	250+00	29°39'53.23203"	92°50'35.10695"	3.82
B-10	275+00	29°39'41.91963"	92°50'09.58169"	-0.43

BORING NO.	TRANSECT	LATITUDE	LONGITUDE	ELEVATION, FT
B-11	300+00	29°39'31.33668"	92°49'44.22550"	3.42
B-12	325+00	29°39'20.26543"	92°49'18.93079"	1.45
B-13	350+00	29°39'08.22383"	92°48'53.97874"	3.91
B-14	375+00	29°38'56.34158"	92°48'29.19304"	-1.09
B-15	400+00	29°38'46.34746"	92°48'03.09055"	3.93
B-16	425+00	29°38'37.40932"	92°47'36.70858"	0.22
B-17	450+00	29°38'24.67592"	92°47'12.24649"	4.60
B-18	475+00	29°38'12.94223"	92°46'47.22920"	1.47
B-19	500+00	29°38'01.91021"	92°46'22.05040"	0.50
B-20	525+00	29°37'57.77359"	92°45'52.68994"	1.97

**Borehole Drilling & Sampling Methods.** Due to the nature of the marshy surface conditions along the coast, the borings were drilled with a buggy-mounted drill rig using wet-rotary drilling techniques. We generally sampled the soil at about 2-ft intervals in the upper 16 ft and at 5-ft intervals thereafter to the completion depths of the boreholes. Detailed descriptions of the soils encountered in the borings drilled for this study are presented on the boring logs on Plates 3 through 22. A key identifying the terms and symbols used on the boring logs is presented on Plates 23a and 23b.

Undisturbed samples of the cohesive soils within about the upper 16 ft were generally taken using a liner sampler. The liner samples were advanced a distance of about 24 inches using the weight of the drill string. Undisturbed samples of the cohesive soils below a depth of approximately 16 ft were obtained by hydraulically pushing a 3-inch diameter, thin-walled tube sampler a distance of about 24 inches. Our field procedure for cohesive soil sampling was conducted in general accordance with the *Standard Practice for Thin-Walled Tube Sampling of Soils* (ASTM D 1587). We obtained field estimates of the undrained shear strength of the recovered cohesive soil samples using either a Torvane or pocket penetrometer. Where applicable, the field estimates from the hand penetrometer were modified for stiff to very stiff, overconsolidated, natural, cohesive soils (Pleistocene), as described on Plate 23b. Portions of each recovered soil sample were placed into plastic bags or rigid plastic tubes for transportation to our laboratory for further testing.

Granular soil samples were obtained in general accordance with the *Standard Method for Penetration Test and Split-Barrel Sampling of Soils* (ASTM D 1586). Granular soil samples were

obtained using the Standard Penetration Test (SPT) as described on Plate 23b. Our geotechnical technician recorded the hammer blows for each sampling interval. The SPT N-value described on Plate 23b is recorded on the boring logs. The soil samples obtained from the split-barrel sampler were visually classified and placed in plastic bags for transportation to our laboratory.

**Seafloor Grab Sampling.** At each borehole location along the beach, 5 seafloor grab samples were obtained in a perpendicular direction seaward from the shoreline. The samples were collected at distances of about 0-, 250-, 500-, 1250-, and 2000-ft. Each sample was analyzed for grain-size distribution. The coordinates and water-depth readings at the time of sampling for the seafloor grab-samples are provided on Plate 2 at the end of this report.

**Water Depth Observations.** As stated earlier, borings along the shoreline were drilled with a buggy-mounted drill rig using wet-rotary drilling methods. Due to the low surface elevation of the coastline and the fact that wet-rotary drilling methods had to be utilized for sampling, water depth readings within the exploratory boreholes could not be obtained. However, we were able to measure the water depth at each seafloor grab-sample location. The water level was measured from the water surface to the existing mudline. We have provided a discussion relating to the water depths measured during our sampling operations later in the *General Site Conditions* section of this report.

**Borehole Sealing.** Each boring was sealed with cement-bentonite grout from the bottom up using a tremie pipe upon completion. When the grout returned to the surface, we removed the tremie pipe and topped off the boreholes by pouring grout from the surface. Our field procedure for borehole completion was conducted in general accordance with the regulations of the Louisiana Department of Transportation and Development (LADOTD), the Office of Public Works (OPW), and the Department of Environmental Quality (DEQ).

## **Laboratory Testing**

The laboratory-testing program for this study was directed primarily toward evaluating the classification properties and undrained shear strength of the coastal subsurface soils along the area of Louisiana shoreline previously discussed. We also measured the compressibility characteristics of the subsurface soils by performing eleven (11) incrementally-loaded consolidation tests on selected samples. Particle size analyses or grain size curves developed from our sieve analyses on select samples of fine material recovered during our drilling activities are presented on Plates A-1 through A-10 in Appendix A of this report. Grain size curves developed from our sieve analyses performed on each seafloor grab-sample are presented on Plates B-1 through B-20 in Appendix B of this report (five (5) grain size distribution curves are presented on each plate). Our laboratory tests were performed in general accordance with the appropriate standards as tabulated at the end of this section.

**Classification Tests.** The classification tests included tests for natural moisture content, liquid and plastic limits (collectively termed Atterberg Limits), material finer than the No. 200 sieve, grain size distribution for material finer than the No. 200 sieve, and unit weight (dry density). These tests aid in classifying the soils, and are used to correlate the results of other tests performed on samples taken from different borings and/or different depths. The results of these classification tests are presented on the boring logs on Plates 3 through 22.

**Undrained Shear Strength Tests.** We measured the undrained shear strength of select undisturbed samples of cohesive soils by performing either miniature vane shear tests or unconsolidated-undrained triaxial compression strength tests. Natural moisture contents were determined as a routine portion of the miniature vane and compressive strength tests. Unit weights (dry densities) were determined by procedures outlined in the unconfined compression strength test method. The results of the undrained shear strength tests are presented on the boring logs on Plates 3 through 22.

**Compressibility Characteristics.** We measured the compressibility characteristics of the subsurface soils by performing eleven (11) incrementally-loaded consolidation tests. Due to the very soft consistency of the upper clays, we were unable to perform any consolidation tests on materials representative of the upper 20 ft at this site. We performed each test with a rebound-reload cycle near the samples estimated preconsolidation pressure. Natural moisture contents, Atterberg Limits, and dry unit weights were determined as routine portions of the consolidation tests. Consolidation test results will be presented as plots of effective vertical pressure versus strain in the second part of this study. Furthermore, the consolidation test results will be utilized for our settlement analyses to be presented in the second part of this study.

**Summary of Laboratory Tests.** The following table gives the types and number of laboratory tests as well as the standard test methods performed for this study.

<u>Type of Test</u>	<u>Number of Tests</u>	<u>Test Designation</u>
Moisture Content	63	ASTM D 2216
Atterberg Limits	31	ASTM D 4318
Material Finer than No. 200 Sieve	7	ASTM D 1140
Particle Size Analysis (Hydrometer)	110	ASTM D 422
Unit Weight (Dry Density)	32	ASTM D 2166
Unconsolidated-Undrained Triaxial Compression	12	ASTM D 2850
Miniature Vane Shear Test	43	ASTM D 4648

<u>Type of Test</u>	<u>Number of Tests</u>	<u>Test Designation</u>
Incremental Consolidation Test	11	ASTM D 2435

**General Site Conditions**

The interpreted site and subsurface conditions based upon our field exploration and laboratory testing are discussed in this section. This section also includes a discussion of the water depth conditions encountered along the shoreline during our field exploration activities.

**Site Description.** The project site is generally composed of the southern portion of Rockefeller Refuge located in Cameron Parish, Louisiana from Joseph’s Bayou westward along the beach approximately 10 miles to the western boundary of the refuge. Surface conditions along the coast essentially consist of very soft, highly organic topsoil and easily erodible shell fragments, which compose the beach and grassy marshland. See Plate 2 for an aerial view of the project site.

**General Subsurface Conditions.** We evaluated subsurface conditions along the shoreline by reviewing the logs of our soil borings and evaluating the results of laboratory tests presented on the boring logs. Generally, the subsurface soil conditions encountered in our soil borings consist of approximately 0 to 5 ft of shell and shell fragments composing the surface of the beach underlain by 35 to 40 ft of Recent clay deposits overlying natural clay of Pleistocene age encountered to a depth of at least 100 ft below the existing shoreline, the maximum depth explored for this study. A *Generalized Subsurface Profile* is provided on Plate 24. The following table provides a general summary of the subsurface conditions encountered during this study.

<u>Stratum</u>	<u>Soil Description</u>	<u>Average Depth</u>
I	Shell with Shell Fragments	Beach Surface, 0 to 5 ft
II	CLAY (Recent)	5 ft to about 40 ft
III	CLAY with Silt and Sand (Pleistocene)	40 ft to at least 100 ft

Stratum I consists of shell and fragmented shell that was observed in the borings performed on the beach from the beach surface to an average depth of about 5 ft below grade. Tests performed on selected samples indicate materials finer than the No. 200 sieve range from about 1 to 6 percent. The measured blow counts (N-values) from the Standard Penetration Test range from 5 to 13 blows per foot in this stratum. These blow counts indicate a loose to medium-dense consistency. Borings that were offset off the beach surface do not show the Stratum I material.

The measured undrained shear strength of the Stratum II Recent cohesive soils typically ranges from approximately 80 psf (very soft) to 450 psf (soft). Undrained shear strengths as low as 60 psf

were measured on several samples. Furthermore, it should be noted that relatively high values of water content and Atterberg Limits (Liquid Limit, Plastic Limit, and Plasticity Index) indicated in the Stratum II soils to a penetration of about 35 ft below shoreline grade are likely a result of organics within the recovered soil samples. The water content of the upper clay soils is very close to its Liquid Limit, which means that the upper clays have a consistency of a thick drilling mud.

The measured undrained shear strength in the Stratum III Pleistocene cohesive soils generally ranges from approximately 1000 psf (stiff) to 2,000 psf (very stiff). Appreciable amounts of silt and sand were encountered throughout Stratum III intermixed with the predominantly clay material.

It should be noted that we have reviewed existing soil data from previous Fugro South, Inc. reports 0600-1340 (Northwest Route Access Road, Pecos Prospect, Pecan Island Field) and 0600-1373 (Well and Bridge Locations, Pecos Uplift Project, Pecan Island, Louisiana), which were in the same general area of this project in South Louisiana to the east in Vermilion Parish. Subsurface conditions are such that the approximate depth, classification, and consistency of the upper clay soils are similar to the conditions discovered for this project. Additional information relating to the subsurface conditions encountered in the borings drilled for this project is presented on the boring logs on Plates 3 through 22 at the end of this report. A key identifying the terms and symbols used on the boring logs is presented on Plates 23a and 23b.

**Approximate Seafloor Water Depth.** As previously indicated, we measured the water depth from the water surface to the mudline at each of our seafloor grab-sample locations. The water depth observations indicated that the water level at or near the shoreline, corresponding to the first seafloor sample obtained nearest the coast at each boring location, was approximately 5 ft at the time of sampling. This is due to the fact that there is not a gradual slope starting at grade and progressing to a lower depth into the gulf. At the shoreline along the beach, there is a vertical drop of about 5 ft starting at the coast then gradually deepening with distance away from the shore. Generally, progressing in a southerly direction the recorded water depths increase to an approximate depth of 11 ft at the final grab-sample locations, which are located about 2000 ft seaward of the shore. The depth readings corresponding to each grab-sample location are presented on the *Plan of Borings* on Plate 2. It should be noted that the reported water levels are approximate and do not consider any variations in depth associated with tidal fluctuations and/or the variability of the mudline (seafloor) across the site.

**Variations in Subsurface Conditions.** Our interpretations of soil and water depth conditions, as described in this report, are based on data obtained from our field observations, seafloor sampling, soil borings, and laboratory tests. ***It is possible that undisclosed variations in soil or water depth conditions, the lateral extent and depth of the various strata, especially the Stratum I shell, and the position of the mudline exist across the site.*** Please note that the borings were spread about 2,500 ft apart, therefore, localized variations between boring locations are likely. We recommend careful observations be performed during any construction to verify our

interpretations. The information regarding subsurface conditions presented in this report should be made available to prospective contractors for information only, and not as a warranty of subsurface and/or water depth conditions.

### **Shoreline Protection**

We understand the stabilization project may consist of, but not be limited to, constructing a rock breakwater or installing Geotubes to help protect the beach (coastline) from erosion. If alternate methods are to be considered, we will provide our construction recommendations for those alternates in the second part of this study. The following subsections are provided to aid SMA with their conceptual designs.

**Rock Breakwater.** We understand that a rock breakwater may be considered to protect the coastline from erosion due to wave action. As explained, we have not been provided with the anticipated configuration or size and type of rock to be used for the structure. However, we have assumed that the material will have a minimum nominal size of 6 to 8 inches. The material should be angular and not rounded to allow for interlocking of the material. We expect the rock will be placed using a crane and barge. A detailed slope stability analysis was beyond our scope of work for this project. Once a preliminary design of the desired structure is available, slope as well as base stability of the breakwater, if selected, should be analyzed. Due to the presence of very soft clays to a depth of about 30 ft to 40 ft, base failure will likely govern the height of the structure. Hydraulic stability of the breakwater must be analyzed.

An effective unit weight of 60 to 70 pcf should be used for any portion of the rock breakwater below the waterline. The total unit weight of the rock should be used for the portion of the breakwater above the water surface or on the existing shoreline. A total unit weight of 135 pcf is typical for rock fill. In addition, the weight of the rock would cause the aggregate to “push” into the soft clays encountered in our borings, causing a loss of material. Because of these considerations, it may be necessary to place a geofabric such as Mirafi 500X, or equivalent, below the base of any rock breakwater to act as a separator between the soft clays and the rock aggregate. Also, a geogrid, such as Tensar BX 1100, should be considered between the geofabric and the rock breakwater to promote lateral load transfer and uniform stress distribution thereby reducing the potential for localized bearing capacity failures along the base of the structure. We recommend that the geotextile manufacturer be consulted for specifications on the type of material and placement techniques to be used for this particular application. The breakwater structure should be sized or configured to limit applied pressures at the soft clay mudline to less than the allowable bearing capacity discussed in the *Allowable Bearing Pressure* section.

A proper monitoring and maintenance schedule should be prepared to insure that the rock breakwater maintains its design configuration, and is providing the erosion protection for which it was originally intended.



**Geotubes.** Geotubes are relatively large diameter cylindrical synthetic tubes that can be filled with dredge materials. The geotubes will act as a stable shoreline protection system protecting the shoreline from erosion.

The geotubes should be sized or configured to limit applied pressures at the soft clay mudline to less than the allowable bearing capacity discussed in the following section.

**Allowable Bearing Pressure.** The allowable bearing capacity depends primarily on the undrained shear strength of the foundation soils. We recommend an average allowable bearing pressure of **250 psf** be utilized for the design of shoreline protection structures placed on land that bear in the upper Recent natural, clay soil deposits encountered in our exploratory borings. The allowable bearing pressure reported above includes a factor of safety of 2 with respect to shear failure of the foundation soils. However, for this application, and due to the fact that a localized failure of the protection structures on the shore may not be considered catastrophic, a lower value (1.5) may be acceptable for design. Due to the fact that mudline soils in the Gulf may possess lower localized values of undrained shear strength, the allowable bearing capacity utilized for the design of structures placed in the water should be verified through further exploration. We anticipate that at localized areas along the shore and along the seafloor, the allowable bearing capacity may be 30 percent lower than the average value reported above.

**Settlement.** Estimation of settlement for the very soft clays encountered at this site will be difficult. In addition, consolidation tests could not be performed on the very soft clay samples generally representative of the upper 20 ft of material. Therefore, our settlement estimates will be based on judgment, past experience, and the consolidation settlement analyses. Results of these analyses will be presented in the second part of this study once we have been provided with the size and configuration of the breakwater. Due to the presence of very soft clays to a considerable depth, very large consolidation and creep settlement over a long period of time should be expected at this site. Differential settlement along and across the breakwater is also likely due to variations in the strength and compressibility of the upper clays.

### **Construction Considerations**

The following sections provide additional comments relative to lateral soil displacement due to material placement, construction equipment, construction sequence, a field test section, and construction monitoring.

**Lateral Soil Displacement.** The upper soils encountered in the exploratory borings consisted primarily of very soft clays. These clays extend from the existing shoreline (mudline) to a depth of about 40 ft. It is possible that a lateral soil displacement (mudwave) could be created in these upper soils when soil or rock is dropped on them. It is difficult to determine the magnitude of a lateral soil displacement. The lateral extent of the displacement will depend on the height from which the construction material is dropped. *Reducing the height from which the materials are dropped into the water will help to reduce the extent of lateral displacement.* In our opinion, it

would be prudent to gently place the rock on the prepared subgrade (after the geofabric and geogrid are installed) as opposed to dropping the rock.

**Construction Equipment.** Any construction equipment used on the beach should be carefully selected and should impart very low bearing pressure on the subgrade soils. Remolding of the soils and continued operation of the construction equipment may further reduce the bearing capacity of the soils. Construction equipment may sink in the very soft clays at this site unless it is supported by mats or other properly prepared subgrade. It should be noted that the allowable bearing capacity given in this report is an average across the site and localized areas have as much as 30 percent lower bearing capacity.

**Construction Sequence.** We recommend that the sequence of the breakwater construction be such that the entire breakwater is constructed in relatively uniform lifts. Significant (more than about 0.5 ft) differences in height during construction should be avoided to reduce the potential for slope/base failures.

**Field Test Section.** We strongly recommend that consideration be given to constructing a field test section. The very soft clays at this site are prone to create a mudwave, which will be very difficult to contain or remediate. Construction of a test section will give valuable information on whether the breakwater can be constructed to its intended height, settlement and creep of the soils, and will aid in developing construction sequence and techniques.

**Construction Monitoring.** We recommend that a geotechnical engineer, or qualified representative, be present on-site to observe the construction of shoreline protection structures. On-site observations may aid in recognizing and reconciling any unanticipated soil or groundwater condition and to check that design recommendations are appropriate and properly implemented during construction. During the construction phases, we can provide construction surveillance to: (1) observe compliance with the design concepts, specifications, and recommendations; and (2) observe subsurface conditions during construction.

\* \* \*

The following illustrations and appendices are attached and complete this report:

	<u>Plate</u>
Site Vicinity Map .....	1
Plan of Borings .....	2
Logs of Borings .....	3 thru 22
Terms and Symbols Used on Logs.....	23a and 23b
Generalized Subsurface Profile .....	24
Appendix A	
Grain Size Curves (Boring Samples) .....	A-1 thru A-10
Appendix B	
Grain Size Curves (Seafloor Samples) .....	B-1 thru B-20

**Closing**

We appreciate the opportunity to be of continued service to Shiner Moseley and Associates, Inc, and look forward to working with you again in the near future. Please call us if you have any questions or comments concerning this part of the study or when we may be of further assistance.

Sincerely,  
**FUGRO SOUTH, INC.**

Don Dugas, III, P.E.  
Project Engineer

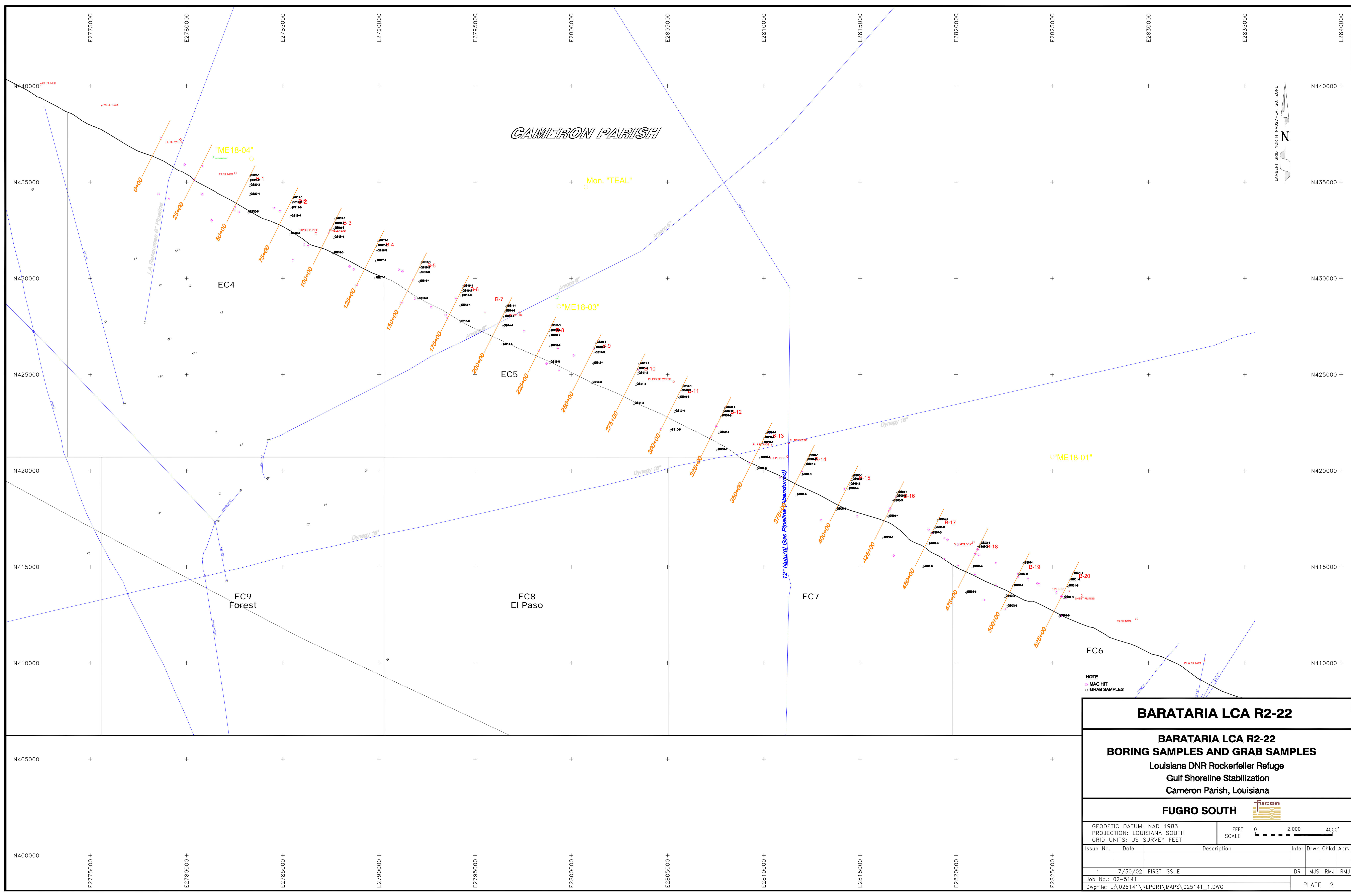
G. Rai Mehdiratta, Ph.D., P.E.  
Vice President

Copies Submitted: Addressee (5)



Reference: Louisiana Atlas & Gazetteer, 1<sup>st</sup> Edition, DeLorme, 1998.

**SITE VICINITY MAP**  
Not-to-Scale



NOTE  
 ○ MAG HIT  
 ○ GRAB SAMPLES

<b>BARATARIA LCA R2-22</b>			
<b>BARATARIA LCA R2-22 BORING SAMPLES AND GRAB SAMPLES</b>			
Louisiana DNR Rockefeller Refuge Gulf Shoreline Stabilization Cameron Parish, Louisiana			
<b>FUGRO SOUTH</b>			
GEODETIC DATUM: NAD 1983 PROJECTION: LOUISIANA SOUTH GRID UNITS: US SURVEY FEET		FEET SCALE 0      2,000      4000'	
Issue No.	Date	Description	Inter Drwn Chkd Aprv
1	7/30/02	FIRST ISSUE	DR   MJS   RMJ   RMJ
Job No.: 02-5141			PLATE 2
Dwgfile: L:\025141\REPORT\MAPS\025141_1.DWG			













DEPTH, FT	WATER LEVEL SYMBOL SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2 COORDINATES: 29deg 40' 33.10483"N 92deg 52' 18.88296"W SURFACE EL.: 3.18'	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH									
			STRATUM DESCRIPTION		UNIT DRY WT, PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT								
		8	SHELL, loose, light brown			2													
		7	CLAY, very soft to soft, gray - organics 0' to 4'	4.0	86		136												
10							87	99	30	69									
20																			
25.0				25.0															
30																			
40																			
50																			
<b>NOTES:</b> 1. Terms and symbols defined on Plate 23a and 23b.					DATE: June 21, 2002 TOTAL DEPTH: 25.0' CAVED DEPTH: Not Applicable DRY AUGER: Not Applicable WET ROTARY: 0' to 25' BACKFILL: Cement-Bentonite Grout LOGGER: J. PHIPPS														

C:\ACBURN-1\LAKECH-10602-1316.GPJ FUGRO\_SO (LAB DATA) 8/13/2002

**LOG OF BORING NO. B-5**  
**GULF SHORELINE STABILIZATION PROJECT**  
**ROCKEFELLER REFUGE**  
**CAMERON PARISH, LOUISIANA**

DEPTH, FT	WATER LEVEL SYMBOL SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2 COORDINATES: 29deg 40' 20.99154"N 92deg 51' 54.00504"W SURFACE EL.: .58'	STRATUM DEPTH, FT	CLASSIFICATION						SHEAR STRENGTH						
					UNIT DRY WT, PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT						
STRATUM DESCRIPTION																	
0			CLAY, very soft to soft, gray - organics 0' to 10'				114	109	42	67							
10				37		148											
20																	
30			- stiff, greenish-gray and brown below 32' - slickensided and sand partings 33' to 35'														
40			- brown and gray below 38' - calcareous nodules 38' to 40'	119		33											
50			- shell below 43'	50.0		34	57	26	31								

C:\ACBURN-1\LAKECH-10602-1316.GPJ FUGRO\_SO (LAB DATA) 8/13/2002

**NOTES:**

1. Terms and symbols defined on Plate 23a and 23b.

DATE: June 21, 2002  
 TOTAL DEPTH: 50.0'  
 CAVED DEPTH: Not Applicable  
 DRY AUGER: Not Applicable  
 WET ROTARY: 0' to 50'  
 BACKFILL: Cement-Bentonite Grout  
 LOGGER: J. PHIPPS

**LOG OF BORING NO. B-6**  
**GULF SHORELINE STABILIZATION PROJECT**  
**ROCKEFELLER REFUGE**  
**CAMERON PARISH, LOUISIANA**







DEPTH, FT	WATER LEVEL	SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2 COORDINATES: 29deg 39' 41.91963"N 92deg 50' 09.58169"W SURFACE EL.: -.43'	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH									
							UNIT DRY WT, PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT								
STRATUM DESCRIPTION																					
0					CLAY, very soft to soft, gray - shell fragments 0' to 2' - organics 0' to 8'																
10						32		102													
20								84	93	63	30										
30																					
40					- shell fragments 38' to 40'																
42.0					SANDY CLAY, stiff, greenish-gray	42.0															
50					- gray and brown below 48' - sand pockets below 48'	50.0	101	22													

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**NOTES:**

1. Terms and symbols defined on Plate 23a and 23b.

DATE: June 22, 2002  
 TOTAL DEPTH: 50.0'  
 CAVED DEPTH: Not Applicable  
 DRY AUGER: Not Applicable  
 WET ROTARY: 0' to 50'  
 BACKFILL: Cement-Bentonite Grout  
 LOGGER: J. PHIPPS

**LOG OF BORING NO. B-10**  
**GULF SHORELINE STABILIZATION PROJECT**  
**ROCKEFELLER REFUGE**  
**CAMERON PARISH, LOUISIANA**









DEPTH, FT	WATER LEVEL SYMBOL SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2 COORDINATES: 29deg 38' 56.34158"N 92deg 48' 29.19304"W SURFACE EL.: -1.09'	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH										
					UNIT DRY WT, PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT									
			STRATUM DESCRIPTION																	
0			CLAY, very soft to soft, gray - organics 0' to 8'				103	108	46	62										
10																				
20																				
30																				
40			- stiff, brown and gray below 42' - ferrous nodules below 43'				93	108	46	62										
50			- sand pockets below 48'	50.0	102		23													

C:\ACDBURN-1\LAKECH-10602-1316.GPJ FUGRO\_SO (LAB DATA) 8/13/2002

**NOTES:**

1. Terms and symbols defined on Plate 23a and 23b.

DATE: June 24, 2002  
 TOTAL DEPTH: 50.0'  
 CAVED DEPTH: Not Applicable  
 DRY AUGER: Not Applicable  
 WET ROTARY: 0' to 50'  
 BACKFILL: Cement-Bentonite Grout  
 LOGGER: J. PHIPPS

**LOG OF BORING NO. B-14**  
**GULF SHORELINE STABILIZATION PROJECT**  
**ROCKEFELLER REFUGE**  
**CAMERON PARISH, LOUISIANA**



DEPTH, FT	WATER LEVEL	SYMBOL	SAMPLES	BLOWS PER FOOT	LOCATION: See Plate 2 COORDINATES: 29deg 38' 37.40932"N 92deg 47' 36.70858"W SURFACE EL.: .22'	STRATUM DEPTH, FT	CLASSIFICATION					SHEAR STRENGTH								
							UNIT DRY WT, PCF	PASSING NO. 200 SIEVE, %	WATER CONTENT, %	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX (PI)	KIPS PER SQ FT							
STRATUM DESCRIPTION																				
0					CLAY, very soft to soft, gray - organics 0' to 10'															
10																				
20																				
30																				
40																				
42						42			100											
43																				
44																				
45					- stiff to very stiff, brownish-yellow and gray below 42' - slickensided and ferrous nodules 43' to 45'															
46																				
47																				
48																				
49																				
50					- shell fragments below 48'	50.0			100											

C:\ACBURN-1\LAKECH-10602-1316.GPJ FUGRO\_SO (LAB DATA) 8/13/2002

**NOTES:**

1. Terms and symbols defined on Plate 23a and 23b.

DATE: June 24, 2002  
 TOTAL DEPTH: 50.0'  
 CAVED DEPTH: Not Applicable  
 DRY AUGER: Not Applicable  
 WET ROTARY: 0' to 50'  
 BACKFILL: Cement-Bentonite Grout  
 LOGGER: J. PHIPPS

**LOG OF BORING NO. B-16**  
**GULF SHORELINE STABILIZATION PROJECT**  
**ROCKEFELLER REFUGE**  
**CAMERON PARISH, LOUISIANA**





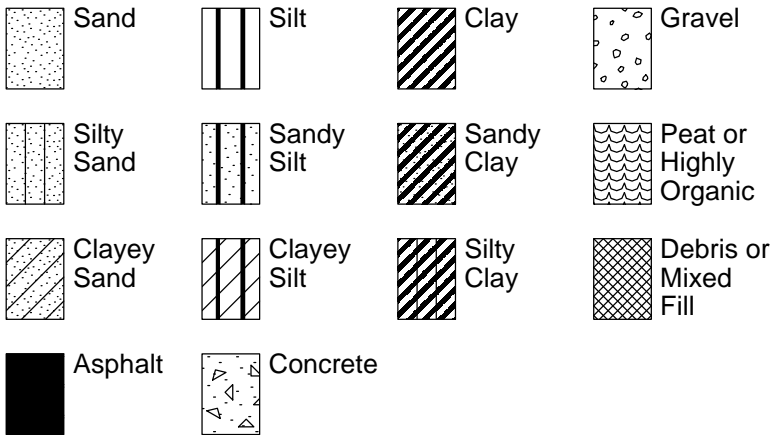




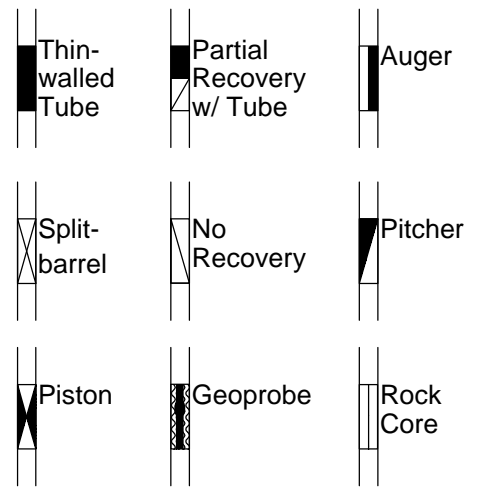




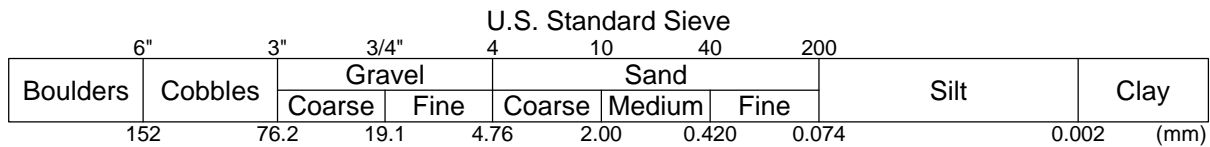
**SOIL TYPES**



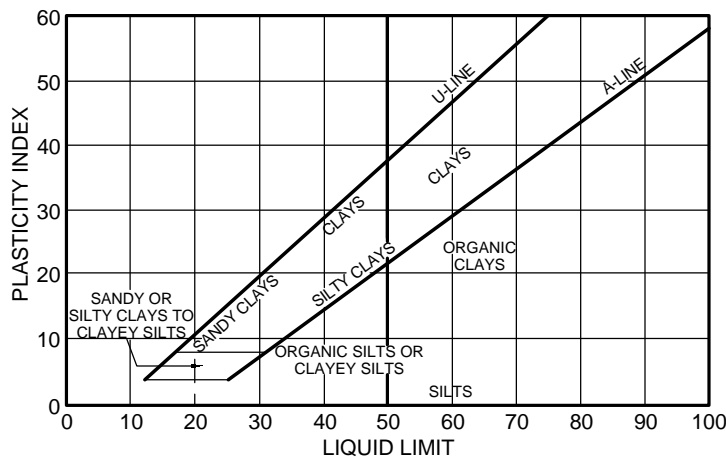
**SAMPLER TYPES**



**SOIL GRAIN SIZE**



**PLASTICITY CHART**



**SOIL STRUCTURE**

- Slickensided ..... Having planes of weakness that appear slick and glossy.
- Fissured ..... Containing shrinkage or relief cracks, often filled with fine sand or silt; usually more or less vertical.
- Pocket ..... Inclusion of material of different texture that is smaller than the diameter of the sample.
- Parting ..... Inclusion less than 1/8 inch thick extending through the sample.
- Seam ..... Inclusion 1/8 inch to 3 inches thick extending through the sample.
- Layer ..... Inclusion greater than 3 inches thick extending through the sample.
- Laminated ..... Soil sample composed of alternating partings or seams of different soil type.
- Interlayered ..... Soil sample composed of alternating layers of different soil type.
- Intermixed ..... Soil sample composed of pockets of different soil type and layered or laminated structure is not evident.
- Calcareous ..... Having appreciable quantities of carbonate.
- Carbonate ..... Having more than 50% carbonate content.

**TERMS AND SYMBOLS USED ON BORING LOGS**

**SOIL CLASSIFICATION (1 of 2)**

**STANDARD PENETRATION TEST (SPT)**

A 2-in.-OD, 1-3/8-ID split spoon sampler is driven 1.5 ft into undisturbed soil with a 140-pound hammer free falling 30 in. After the sampler is seated 6 in. into undisturbed soil, the number of blows required to drive the sampler the last 12 in. is the Standard Penetration Resistance or "N" value, which is recorded as blows per foot as described below.

**SPLIT-BARREL SAMPLER DRIVING RECORD**

Blows Per Foot	Description
25	25 blows drove sampler 12 inches, after initial 6 inches of seating.
50/7"	50 blows drove sampler 7 inches, after initial 6 inches of seating.
Ref/3"	50 blows drove sampler 3 inches during initial 6-inch seating interval.

**NOTE:** To avoid damage to sampling tools, driving is limited to 50 blows during or after seating interval.

**DENSITY OF GRANULAR SOILS**

Descriptive Term	*Relative Density, %	**Blows Per Foot (SPT)
Very Loose	< 15	0 to 4
Loose	15 to 35	5 to 10
Medium Dense	35 to 65	11 to 30
Dense	65 to 85	31 to 50
Very Dense	> 85	> 50

\*Estimated from sampler driving record.

\*\*Requires correction for depth, groundwater level, and grain size.

**STRENGTH OF COHESIVE SOILS**

Term	Undrained Shear Strength, ksf	Blows Per Foot (SPT) (approximate)
Very Soft	< 0.25	0 to 2
Soft	0.25 to 0.50	2 to 4
Firm	0.50 to 1.00	4 to 8
Stiff	1.00 to 2.00	8 to 16
Very Stiff	2.00 to 4.00	16 to 32
Hard	> 4.00	> 32

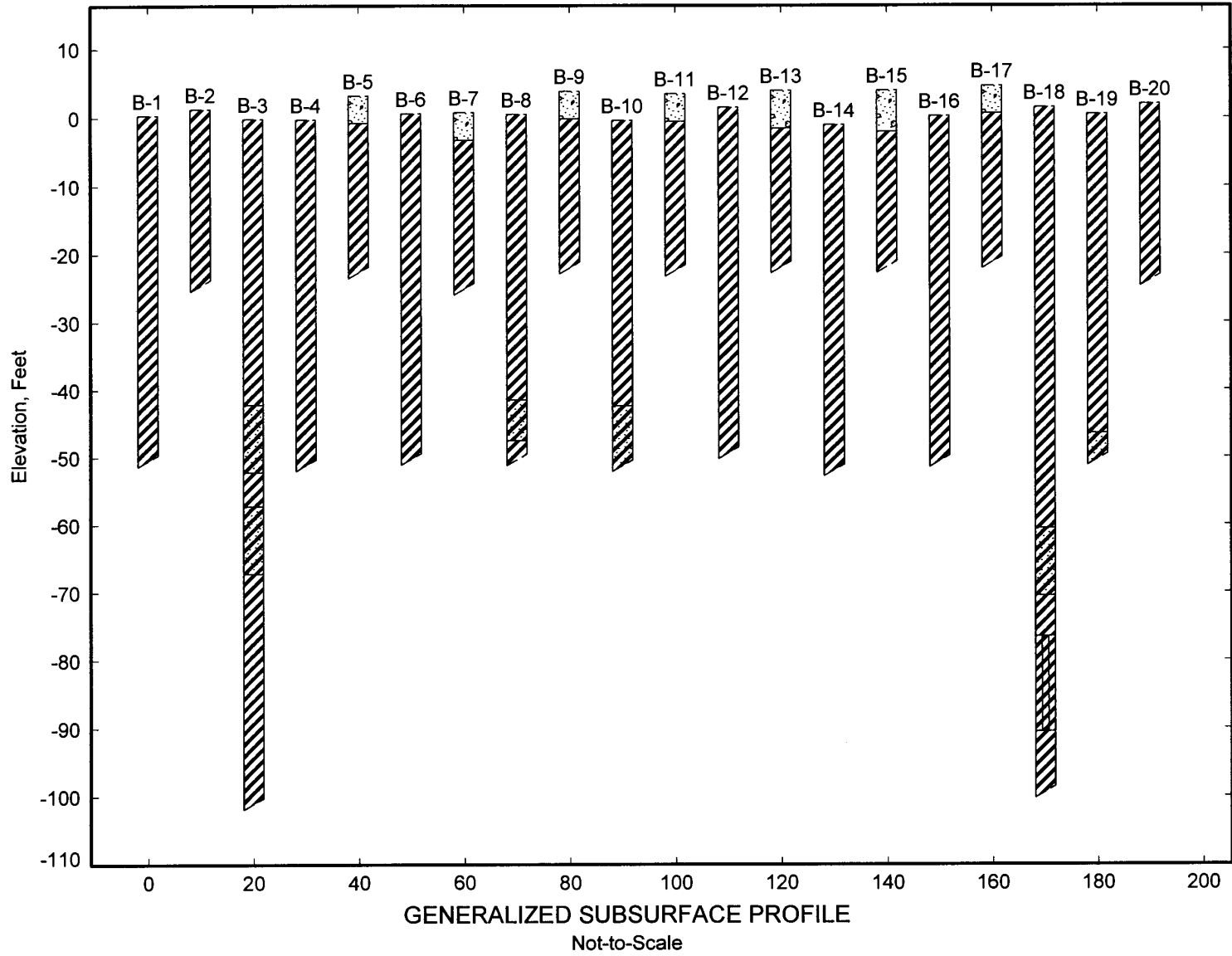
**SHEAR STRENGTH TEST METHOD**

U - Unconfined    Q = Unconsolidated - Undrained Triaxial  
 P = Pocket Penetrometer    T = Torvane    V = Miniature Vane    F = Field Vane

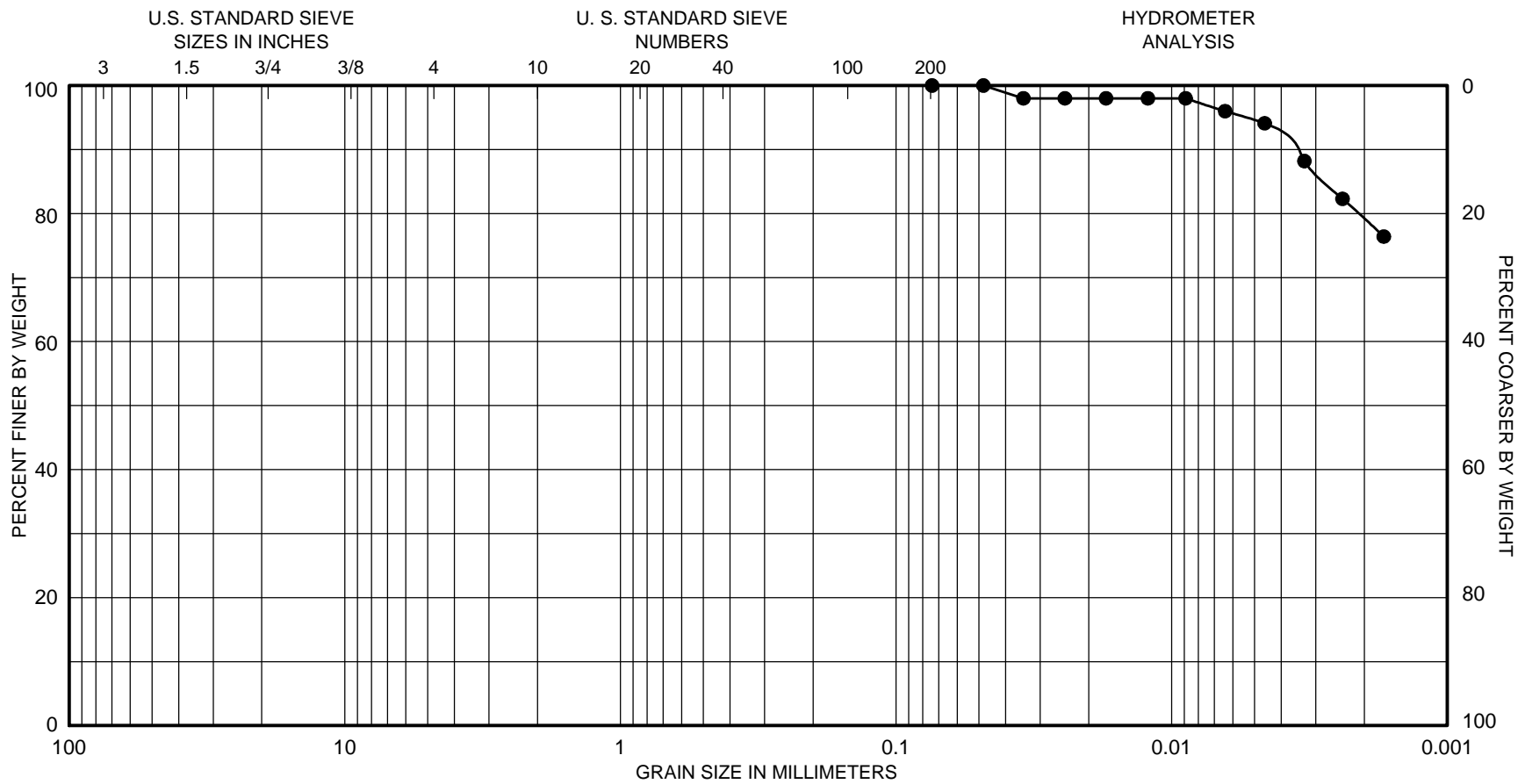
**HAND PENETROMETER CORRECTION**

Our experience has shown that the hand penetrometer generally overestimates the in-situ undrained shear strength of over consolidated Pleistocene Gulf Coast clays. These strengths are partially controlled by the presence of macroscopic soil defects such as slickensides, which generally do not influence smaller scale tests like the hand penetrometer. Based on our experience, we have adjusted these field estimates of the undrained shear strength of natural, overconsolidated Pleistocene Gulf Coast soils by multiplying the measured penetrometer reading by a factor of 0.6. These adjusted strength estimates are recorded in the "Shear Strength" column on the boring logs. Except as described in the text, we have not adjusted estimates of the undrained shear strength for projects located outside of the Pleistocene Gulf Coast formations.

Information on each boring log is a compilation of subsurface conditions and soil or rock classifications obtained from the field as well as from laboratory testing of samples. Strata have been interpreted by commonly accepted procedures. The stratum lines on the logs may be transitional and approximate in nature. Water level measurements refer only to those observed at the time and places indicated, and can vary with time, geologic condition, or construction activity.



## **APPENDIX A**



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

SYMBOL



BORING

B-3

DEPTH, FT

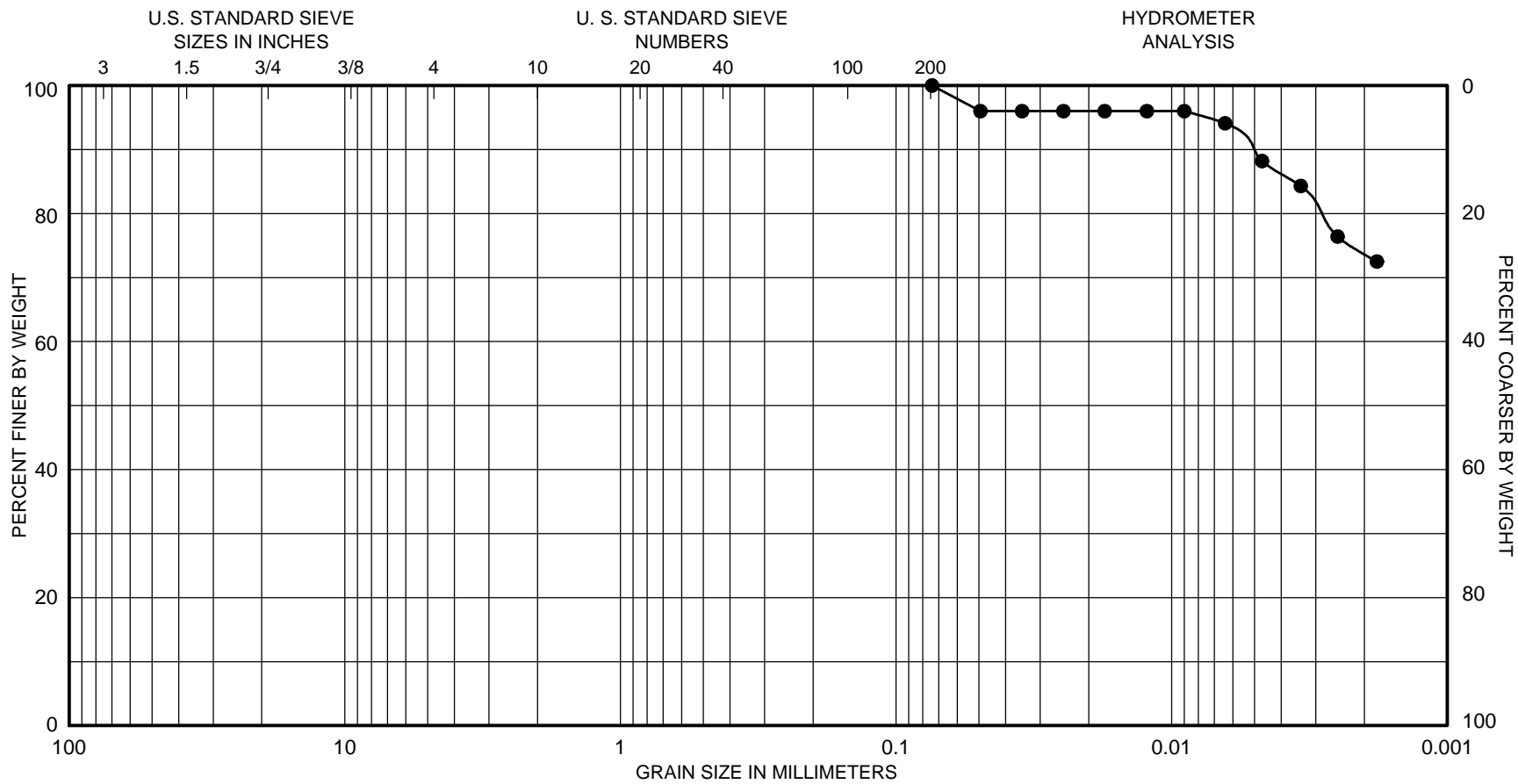
29.0

CLASSIFICATION

CLAY

**GRAIN SIZE CURVE**





GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

SYMBOL



BORING

B-4

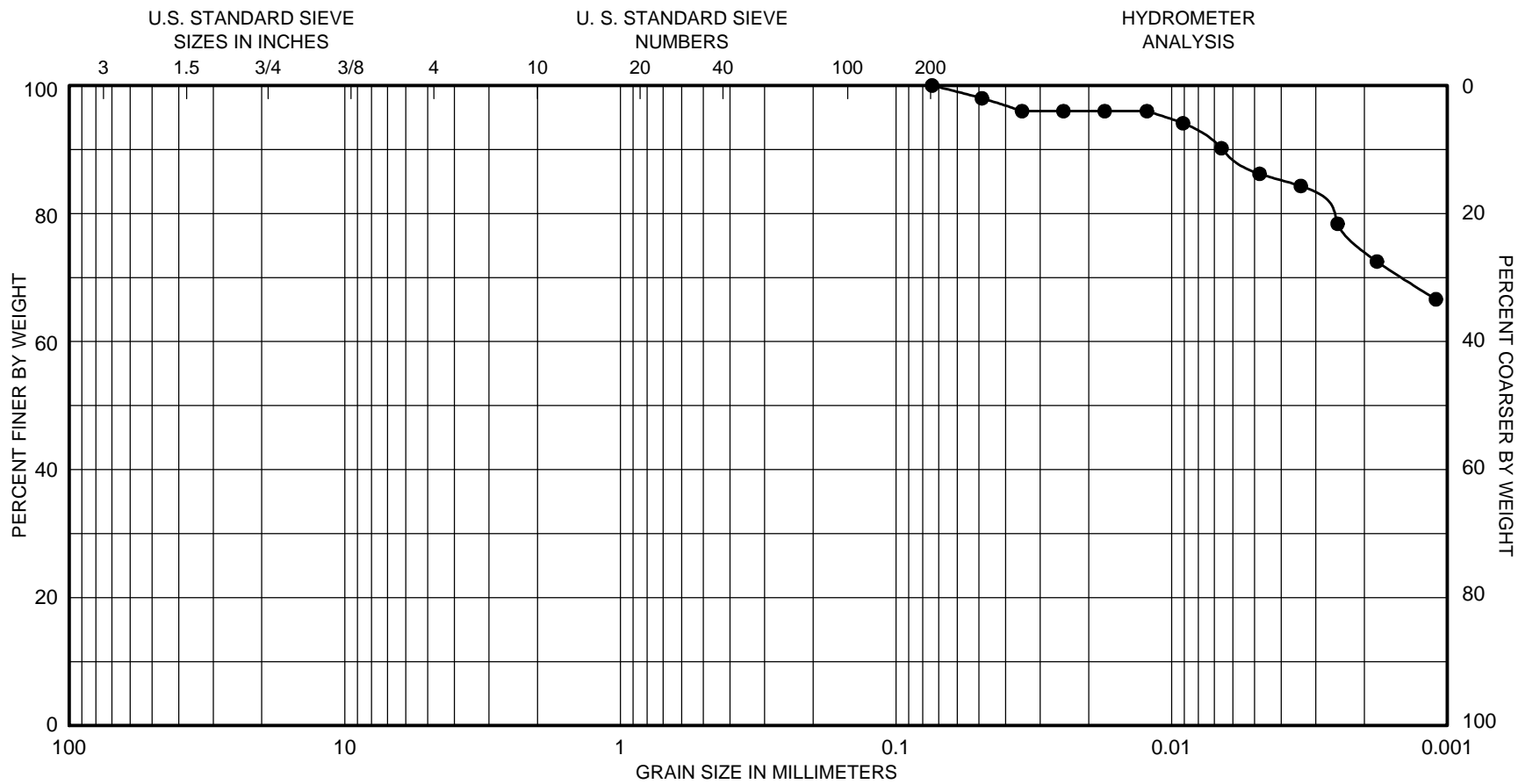
DEPTH, FT

8.0

CLASSIFICATION

CLAY

**GRAIN SIZE CURVE**



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

SYMBOL



BORING

B-6

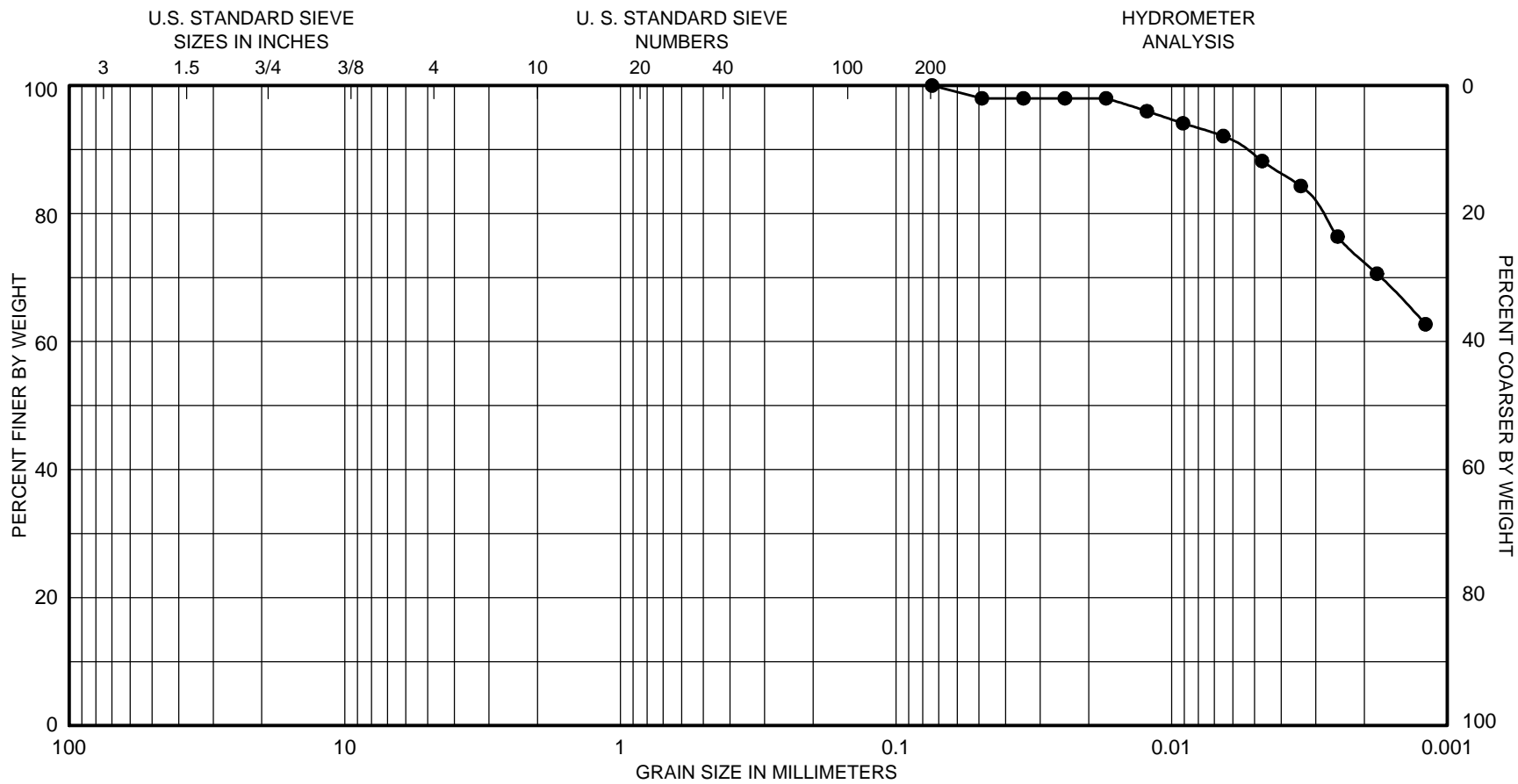
DEPTH, FT

14.0

CLASSIFICATION

CLAY

**GRAIN SIZE CURVE**



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

SYMBOL

●

BORING

B-8

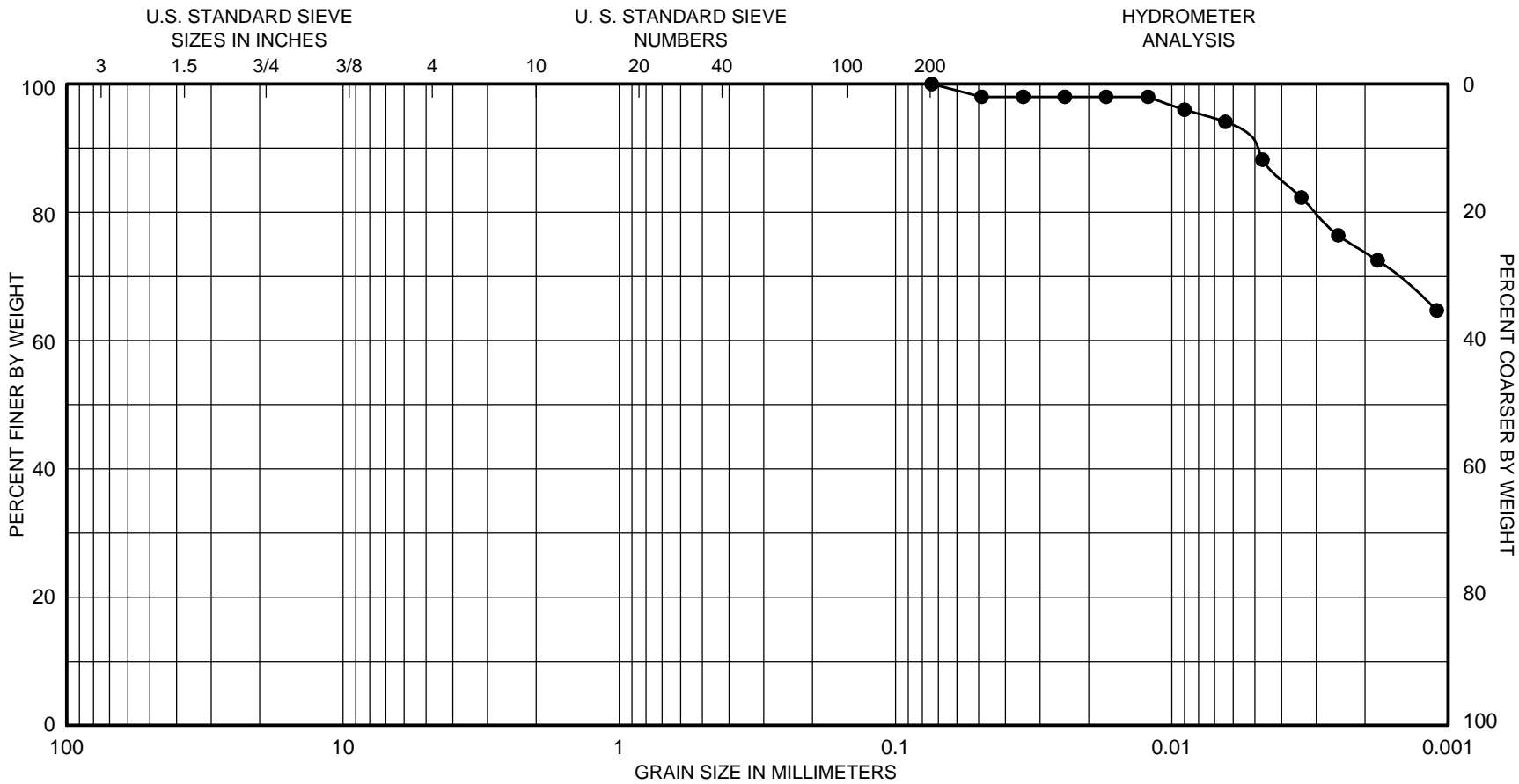
DEPTH, FT

13.0

CLASSIFICATION

CLAY

**GRAIN SIZE CURVE**



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

SYMBOL



BORING

B-10

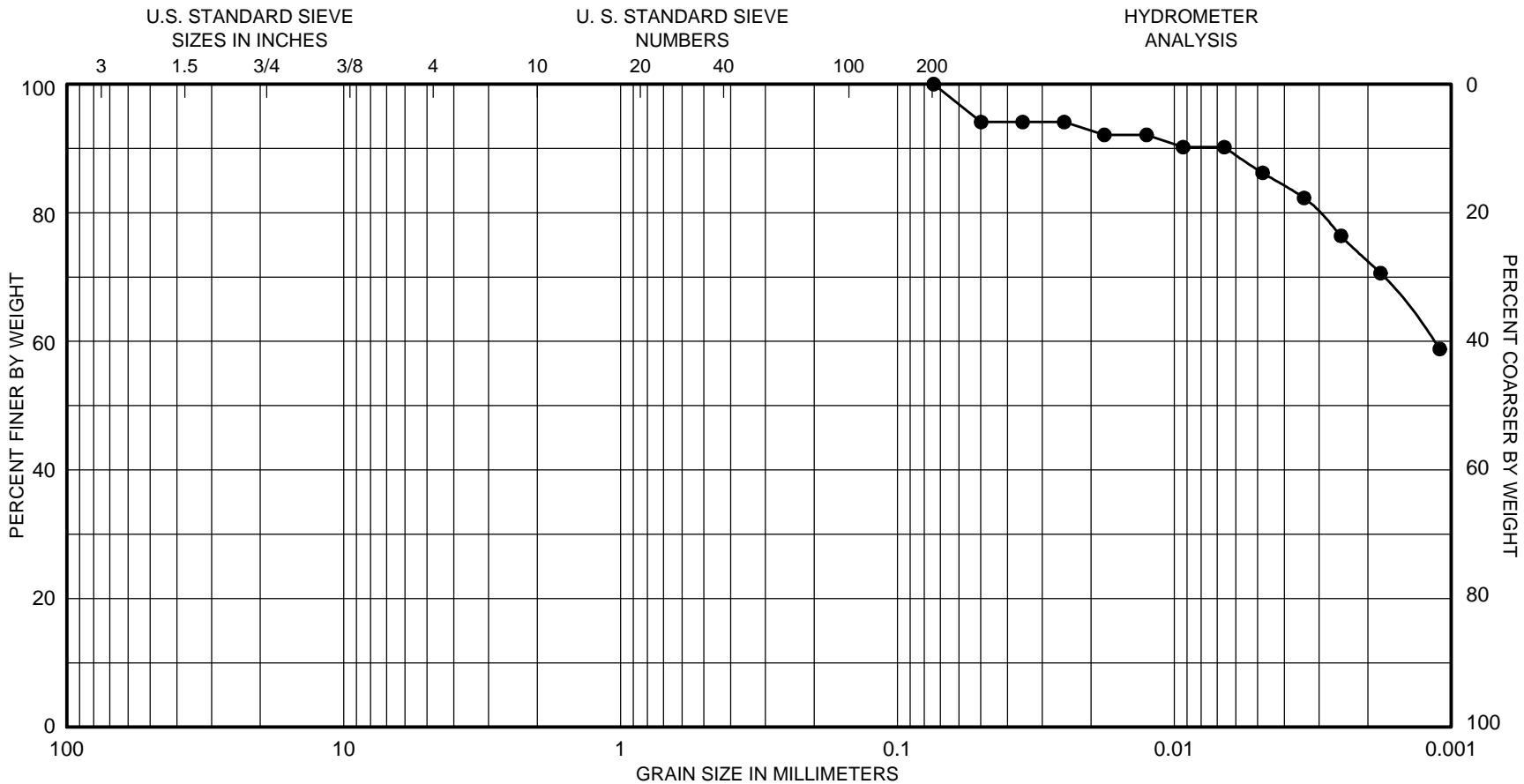
DEPTH, FT

14.0

CLASSIFICATION

CLAY

**GRAIN SIZE CURVE**



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

SYMBOL



BORING

B-12

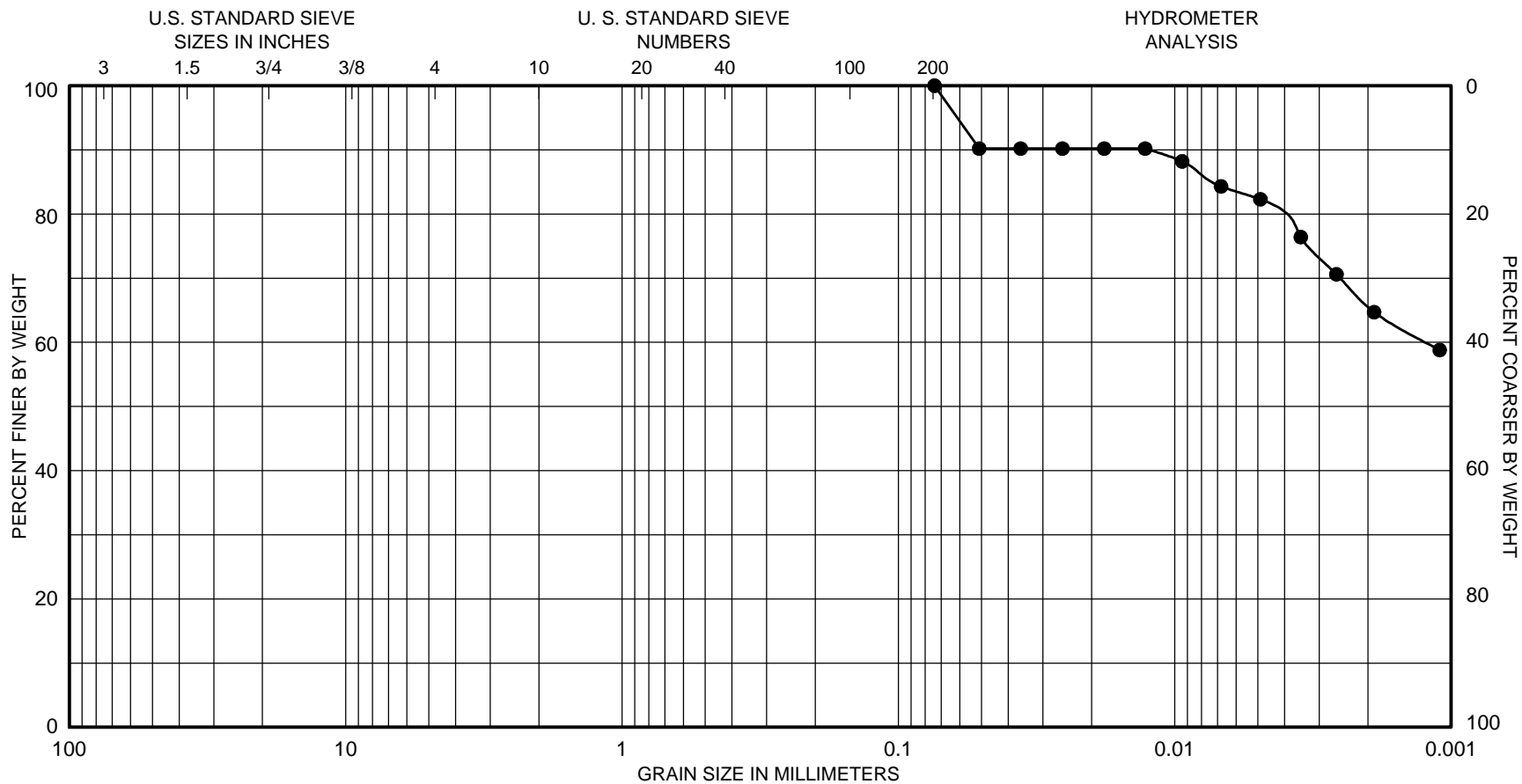
DEPTH, FT

14.0

CLASSIFICATION

CLAY

**GRAIN SIZE CURVE**



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

SYMBOL



BORING

B-14

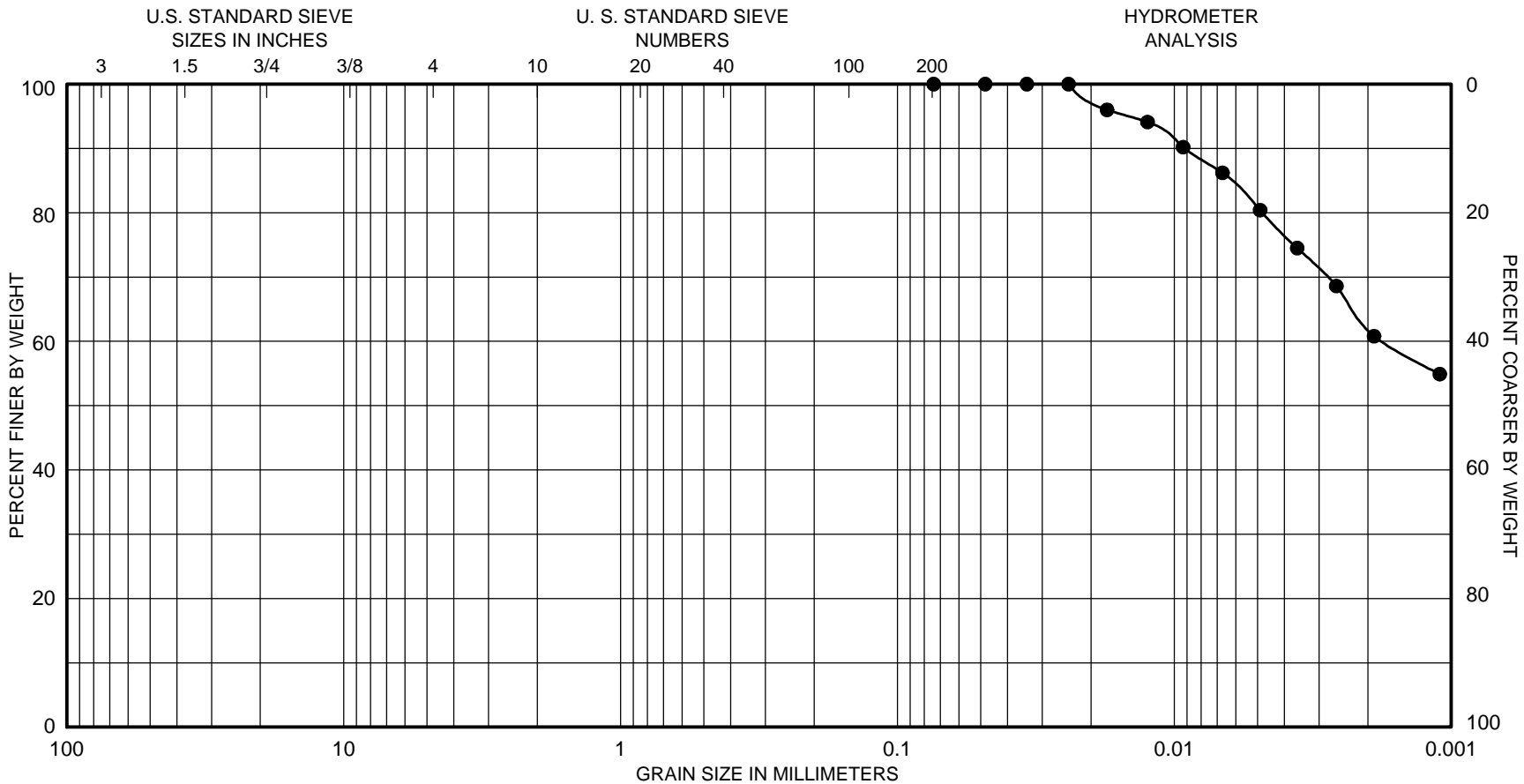
DEPTH, FT

10.0

CLASSIFICATION

CLAY

**GRAIN SIZE CURVE**



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

SYMBOL

●

BORING

B-16

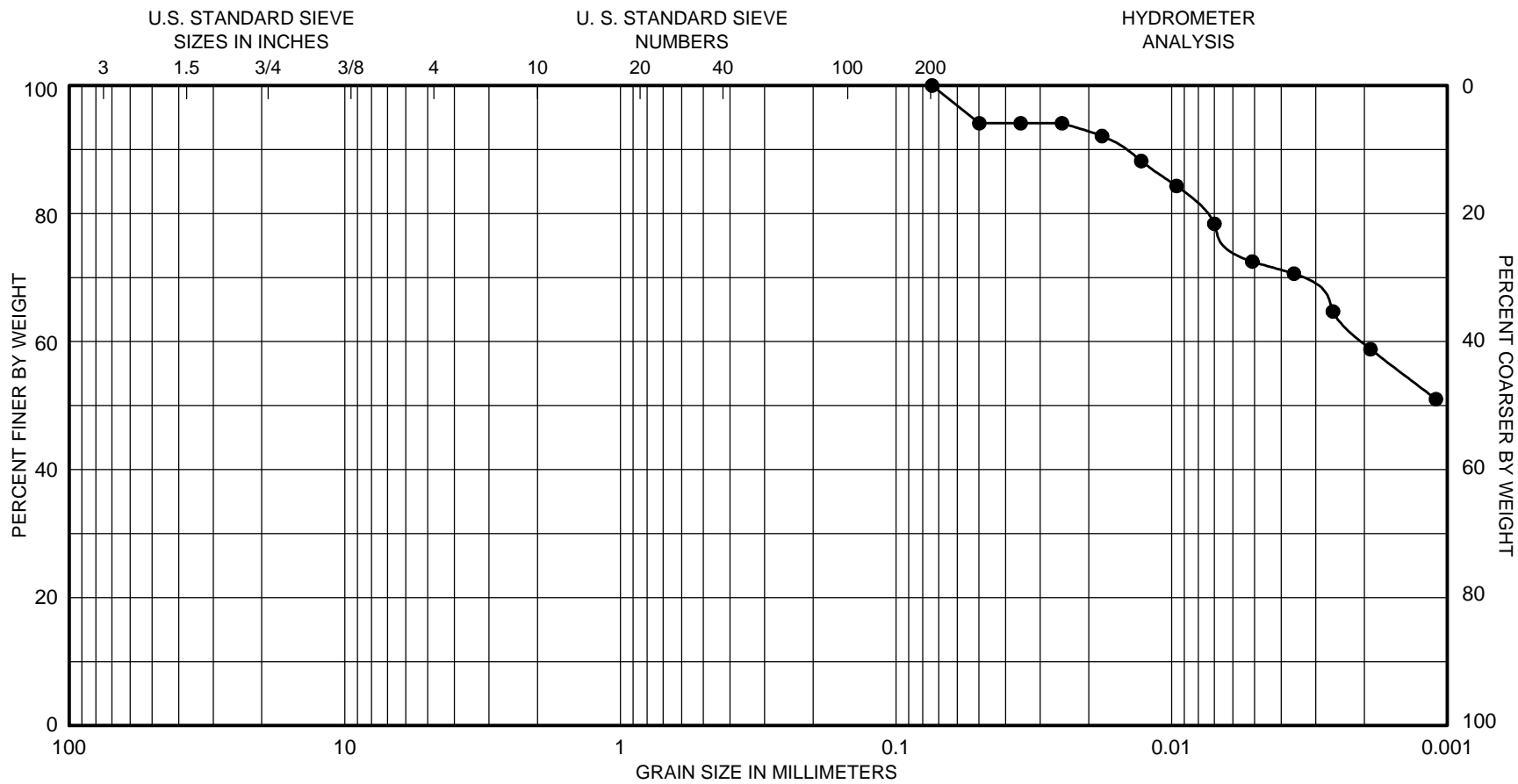
DEPTH, FT

16.0

CLASSIFICATION

CLAY

**GRAIN SIZE CURVE**



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

SYMBOL



BORING

B-17

DEPTH, FT

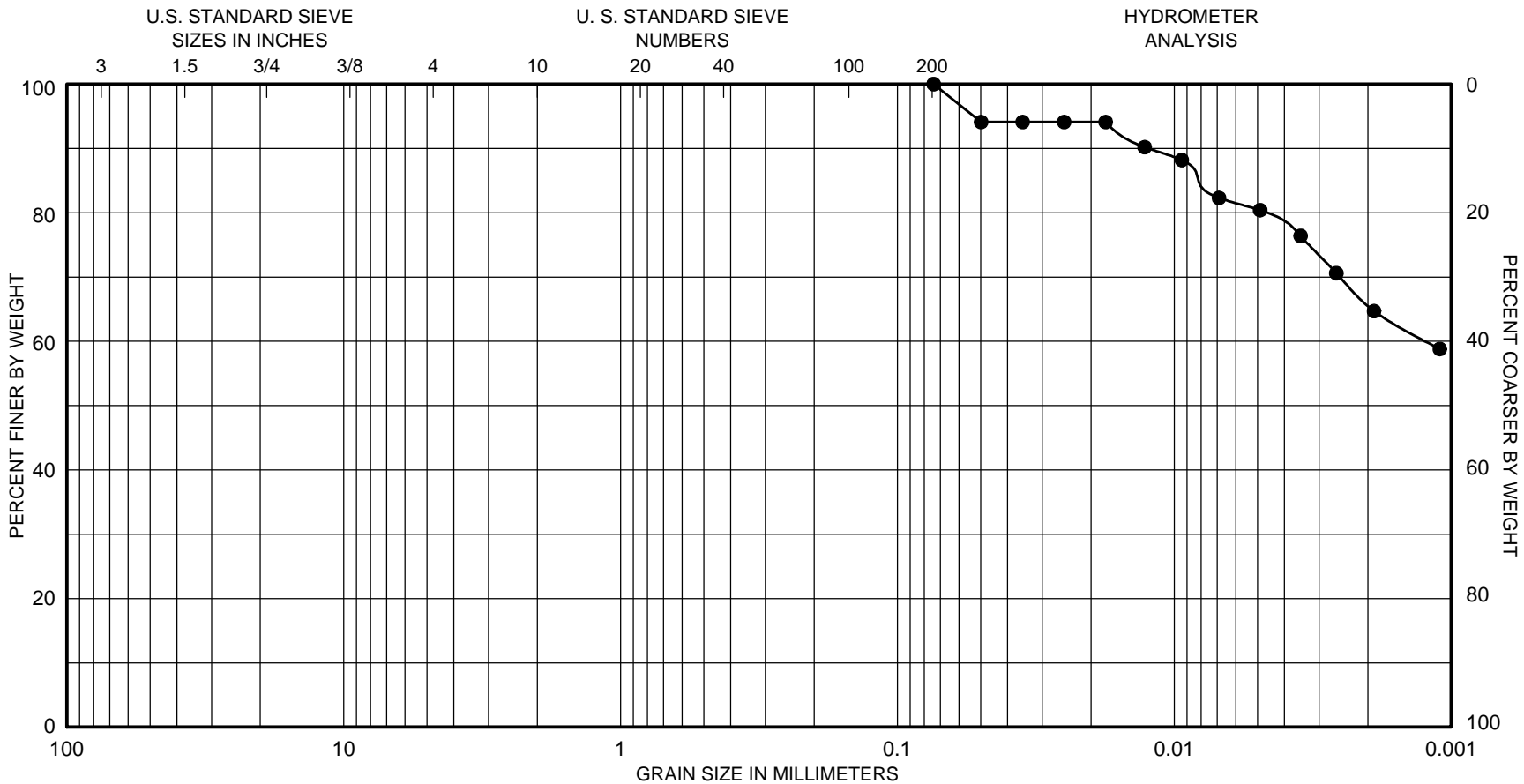
12.0

CLASSIFICATION

CLAY

**GRAIN SIZE CURVE**





GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

SYMBOL



BORING

B-20

DEPTH, FT

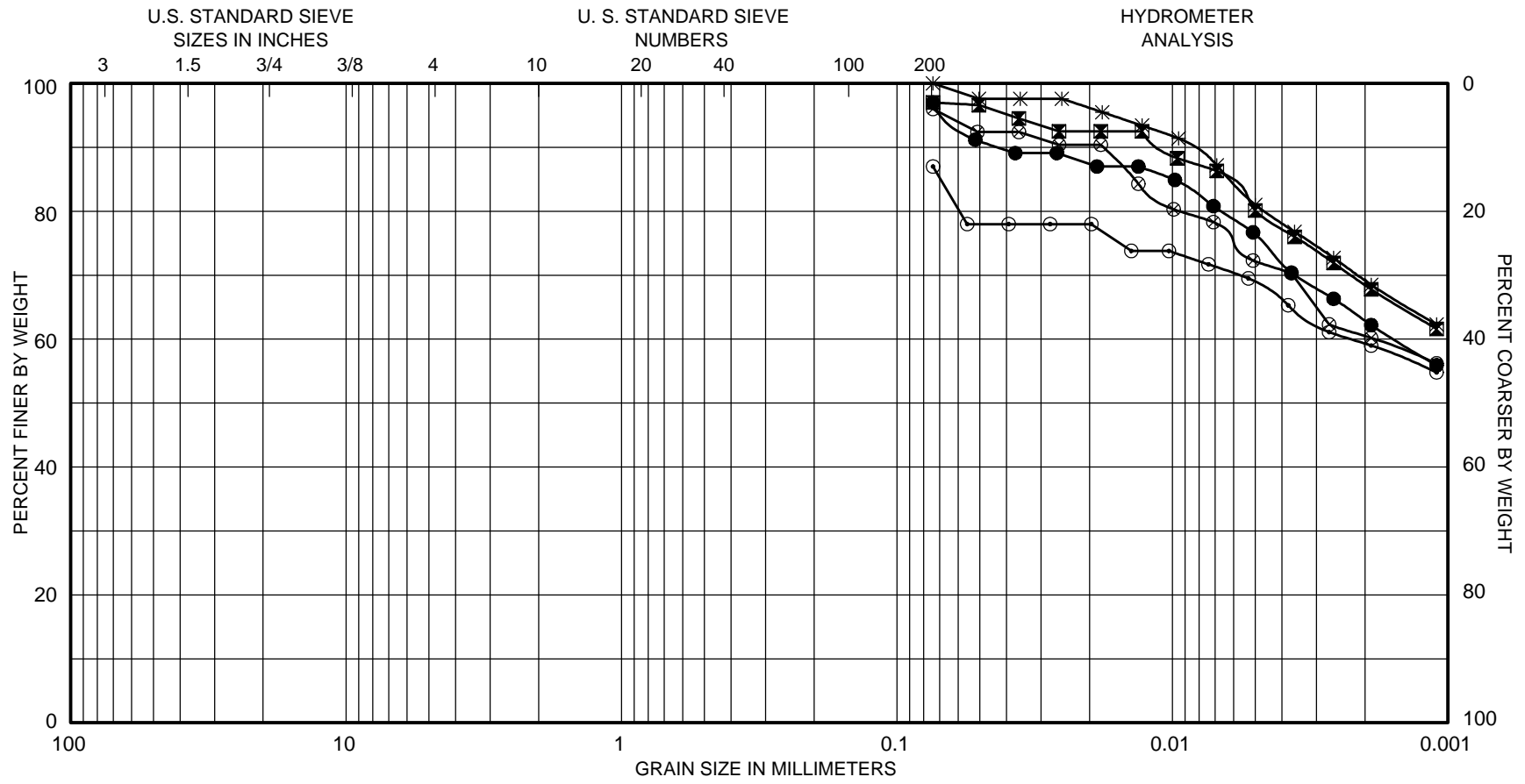
10.0

CLASSIFICATION

CLAY

**GRAIN SIZE CURVE**

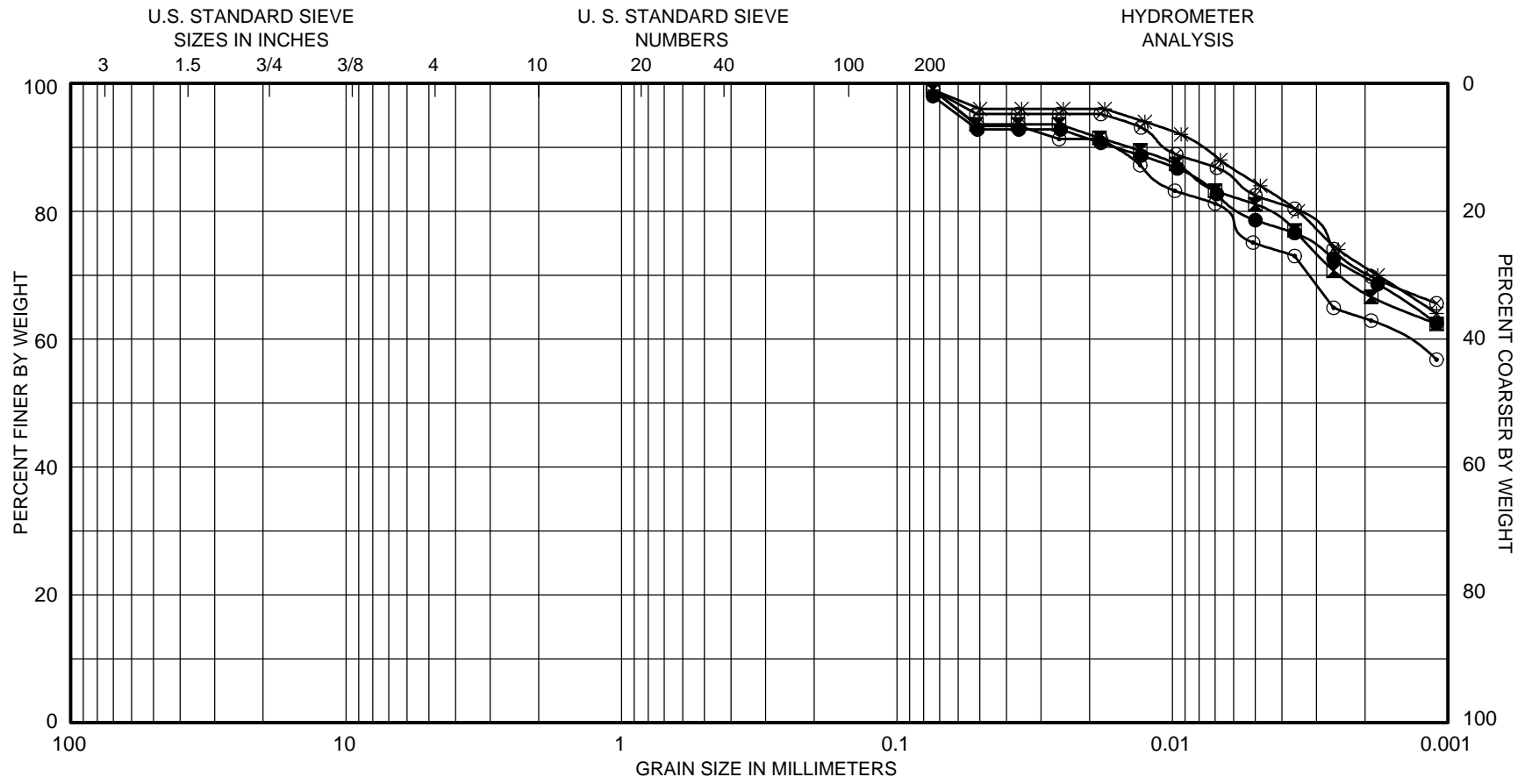
## **APPENDIX B**



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

SYMBOL	LOCATION	SAMPLE NO.	CLASSIFICATION
●	B-1	1.0	CLAY
⊠	B-1	2.0	CLAY
✱	B-1	3.0	CLAY
⊗	B-1	4.0	CLAY
⊙	B-1	5.0	CLAY

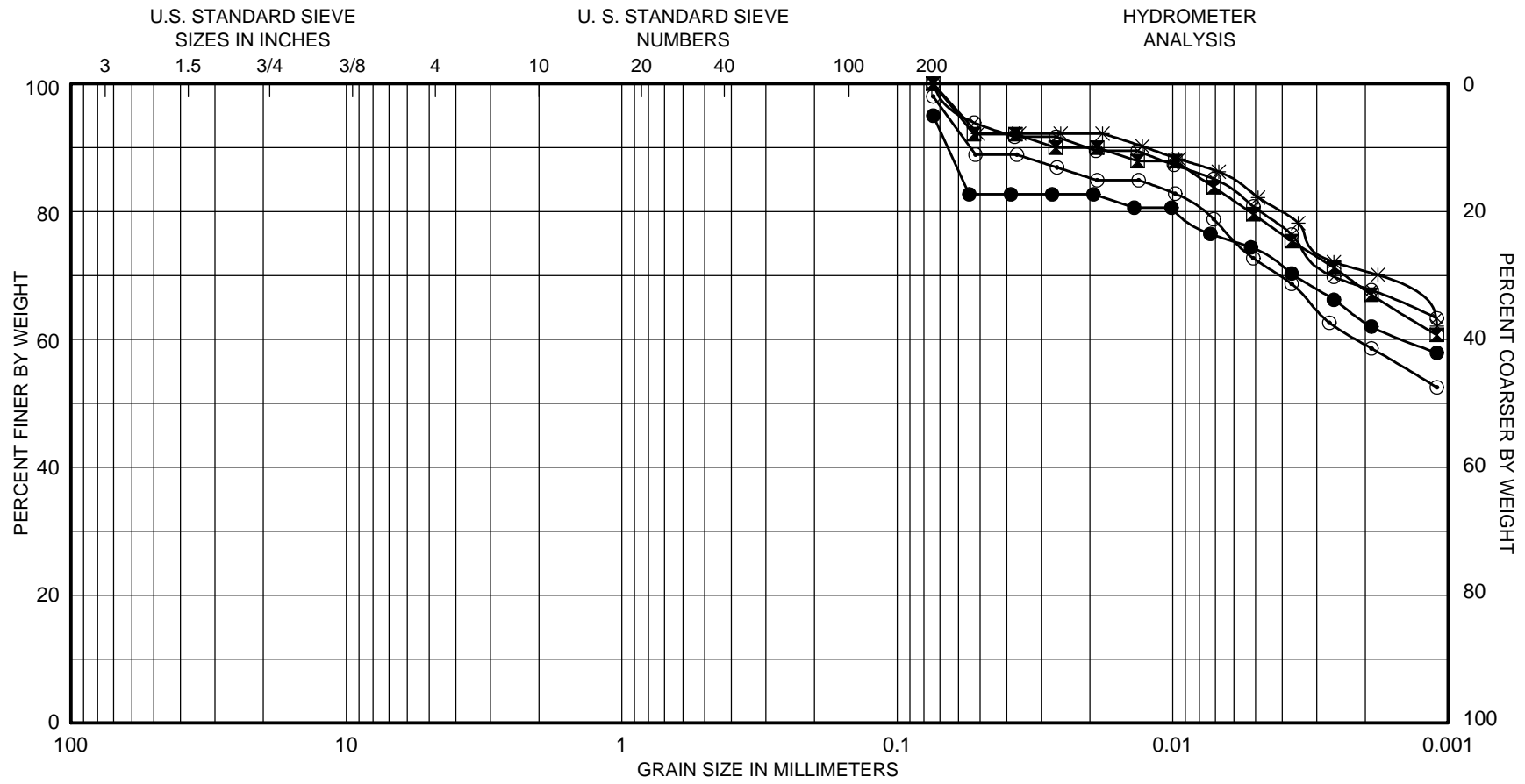
GRAIN SIZE CURVES



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

SYMBOL	LOCATION	SAMPLE NO.	CLASSIFICATION
●	B-2	1.0	CLAY
■	B-2	2.0	CLAY
*	B-2	3.0	CLAY
⊗	B-2	4.0	CLAY
⊙	B-2	5.0	CLAY

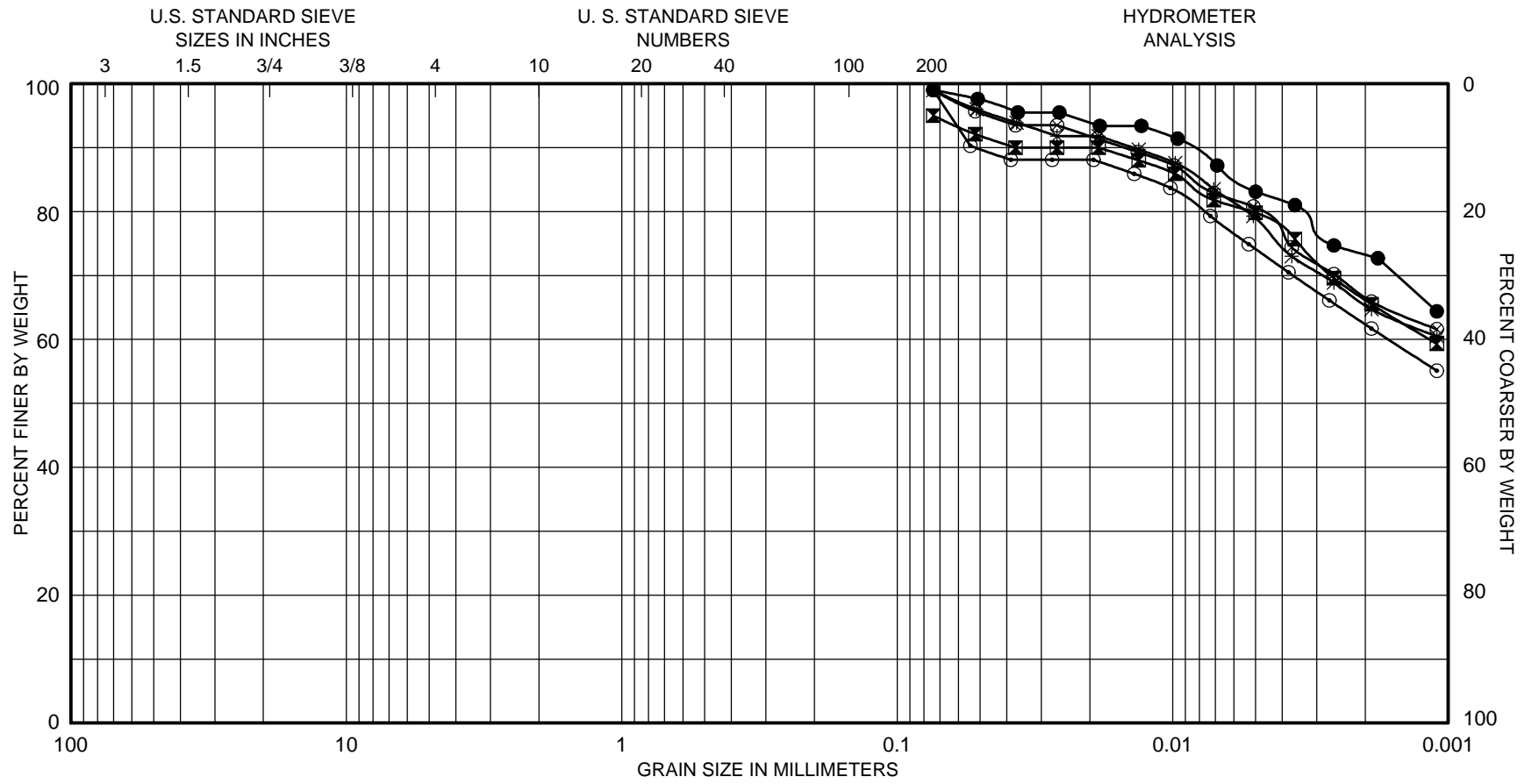
GRAIN SIZE CURVES



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

<u>SYMBOL</u>	<u>LOCATION</u>	<u>SAMPLE NO.</u>	<u>CLASSIFICATION</u>
●	B-3	1.0	CLAY
■	B-3	2.0	CLAY
*	B-3	3.0	CLAY
⊗	B-3	4.0	CLAY
⊙	B-3	5.0	CLAY

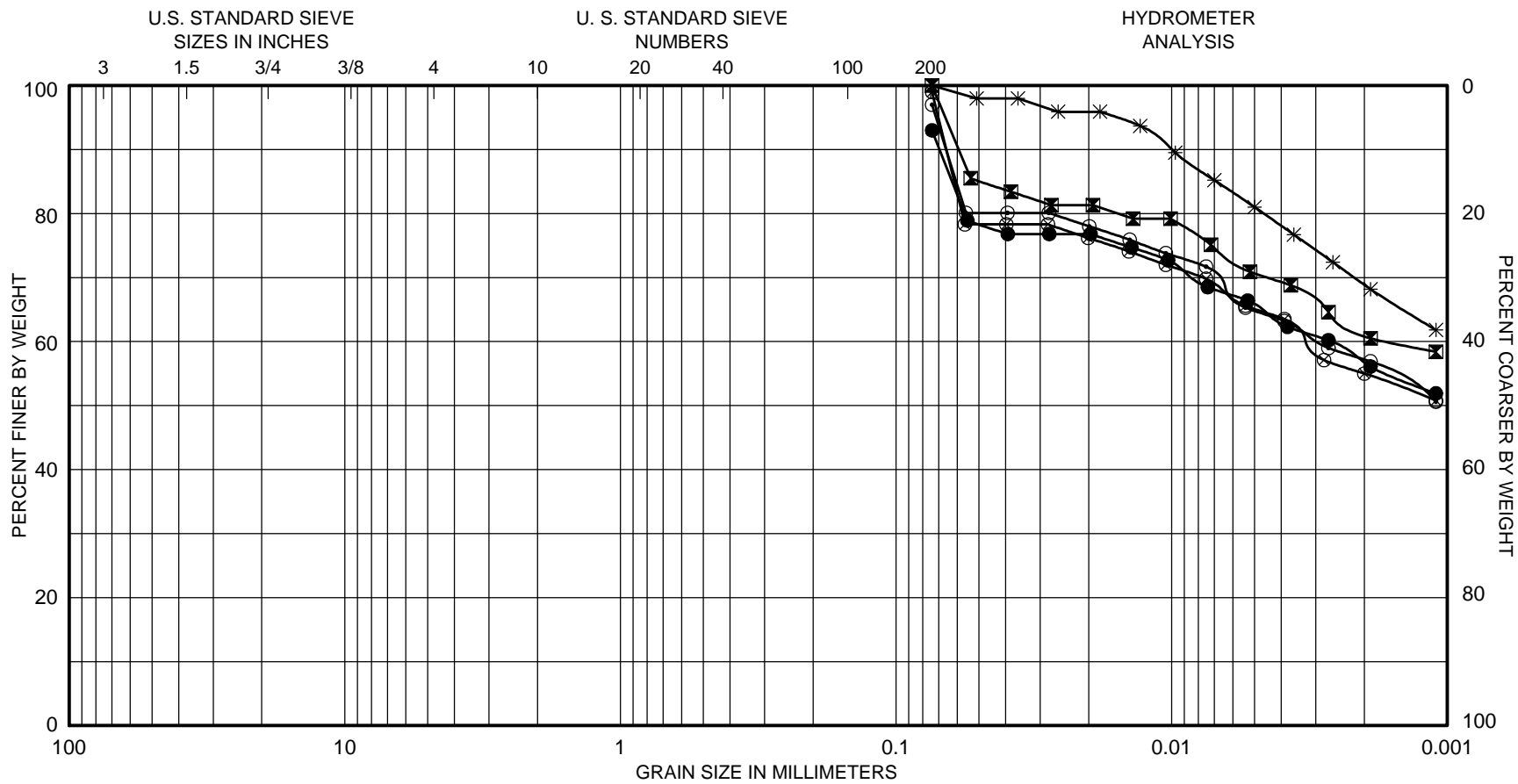
**GRAIN SIZE CURVE**



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

<u>SYMBOL</u>	<u>LOCATION</u>	<u>SAMPLE NO.</u>	<u>CLASSIFICATION</u>
●	B-4	1.0	CLAY
⊠	B-4	2.0	CLAY
*	B-4	3.0	CLAY
⊗	B-4	4.0	CLAY
⊙	B-4	5.0	CLAY

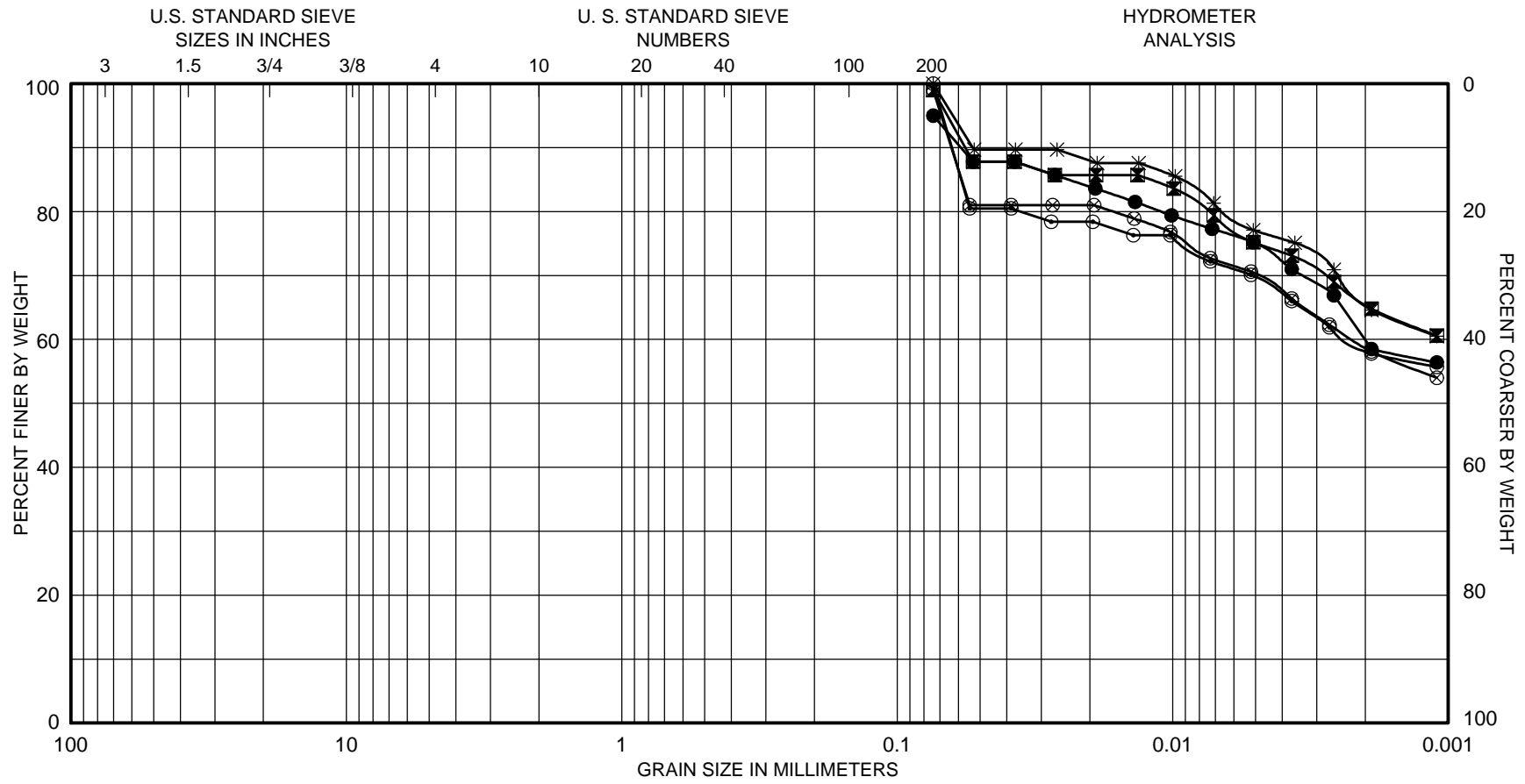
**GRAIN SIZE CURVE**



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

<u>SYMBOL</u>	<u>LOCATION</u>	<u>SAMPLE NO.</u>	<u>CLASSIFICATION</u>
●	B-5	1.0	CLAY
■	B-5	2.0	CLAY
*	B-5	3.0	CLAY
⊗	B-5	4.0	CLAY
⊙	B-5	5.0	CLAY

**GRAIN SIZE CURVE**

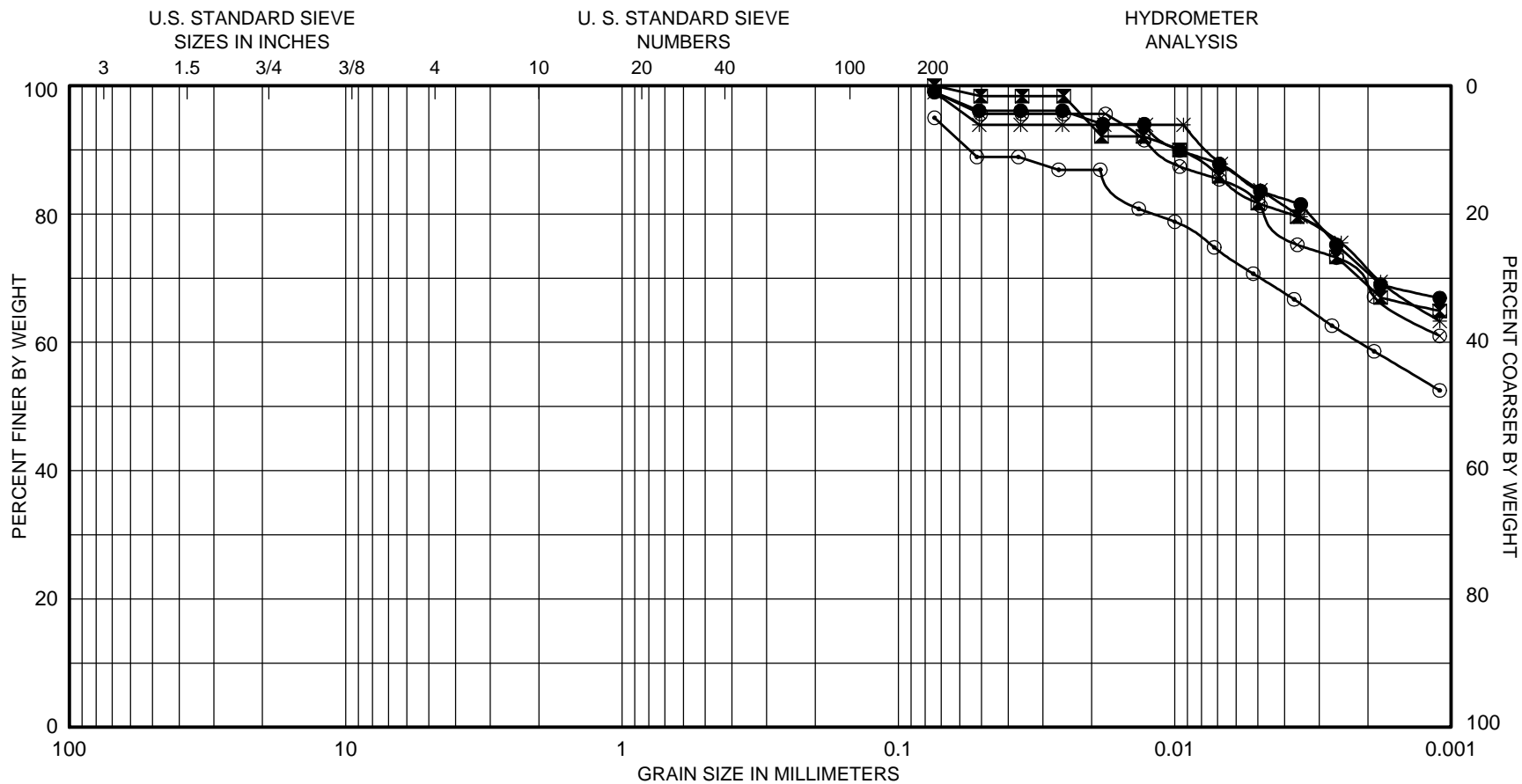


GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

<u>SYMBOL</u>	<u>LOCATION</u>	<u>SAMPLE NO.</u>	<u>CLASSIFICATION</u>
●	B-6	1.0	CLAY
■	B-6	2.0	CLAY
*	B-6	3.0	CLAY
⊗	B-6	4.0	CLAY
⊙	B-6	5.0	CLAY

**GRAIN SIZE CURVE**

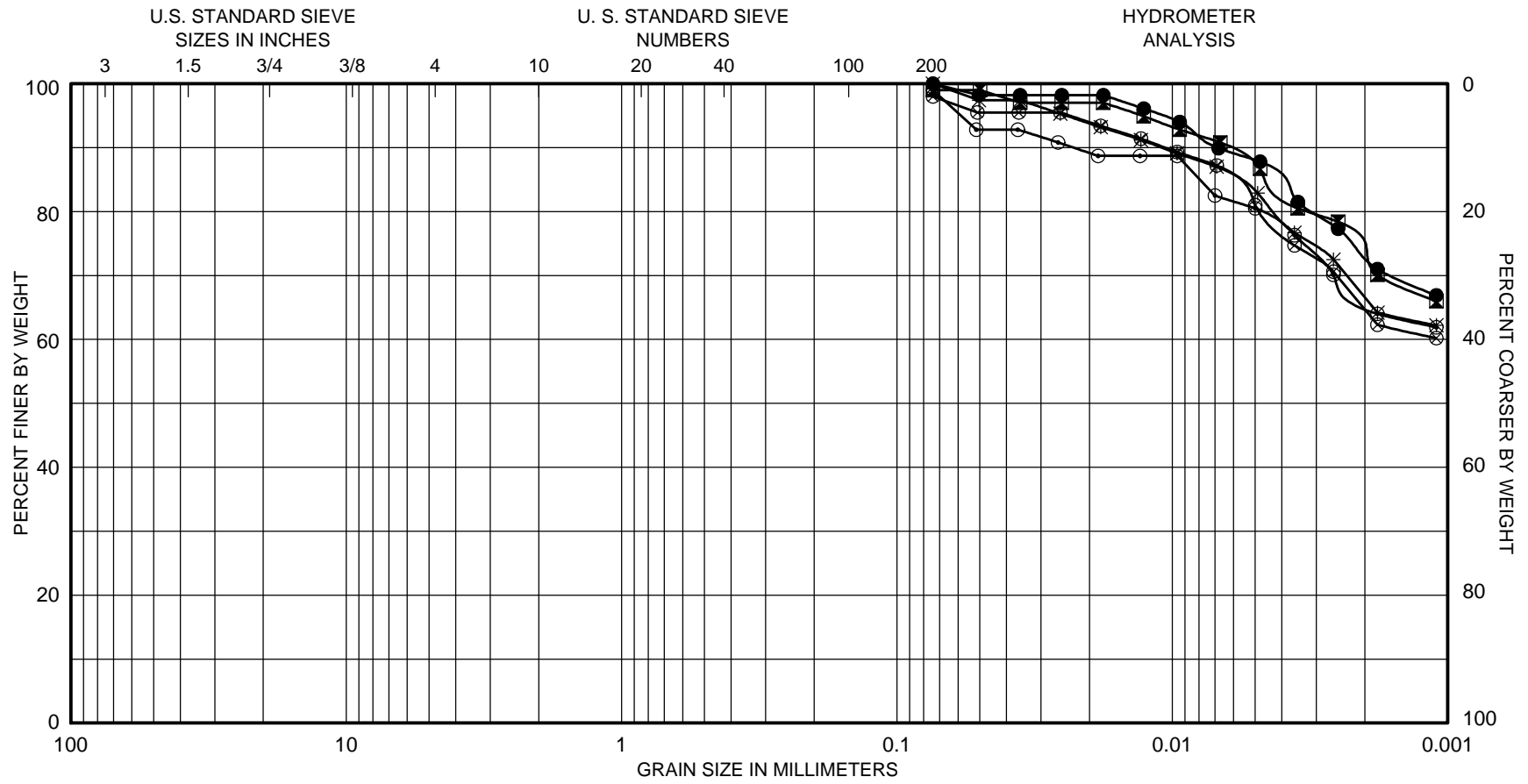




GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

<u>SYMBOL</u>	<u>LOCATION</u>	<u>SAMPLE NO.</u>	<u>CLASSIFICATION</u>
●	B-7	1.0	CLAY
■	B-7	2.0	CLAY
*	B-7	3.0	CLAY
⊗	B-7	4.0	CLAY
⊙	B-7	5.0	CLAY

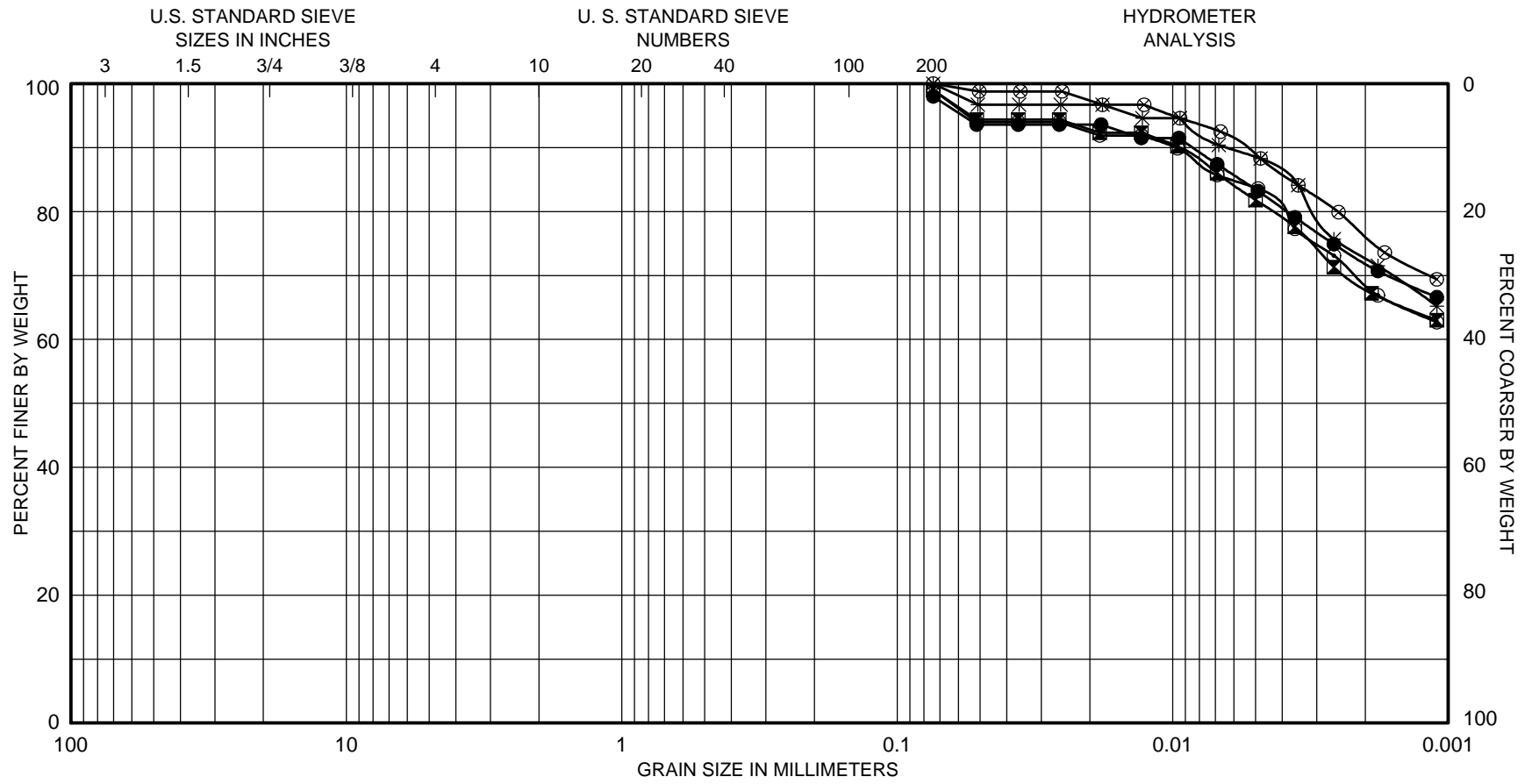
**GRAIN SIZE CURVE**



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

<u>SYMBOL</u>	<u>LOCATION</u>	<u>SAMPLE NO.</u>	<u>CLASSIFICATION</u>
●	B-8	1.0	CLAY
■	B-8	2.0	CLAY
*	B-8	3.0	CLAY
⊗	B-8	4.0	CLAY
⊙	B-8	5.0	CLAY

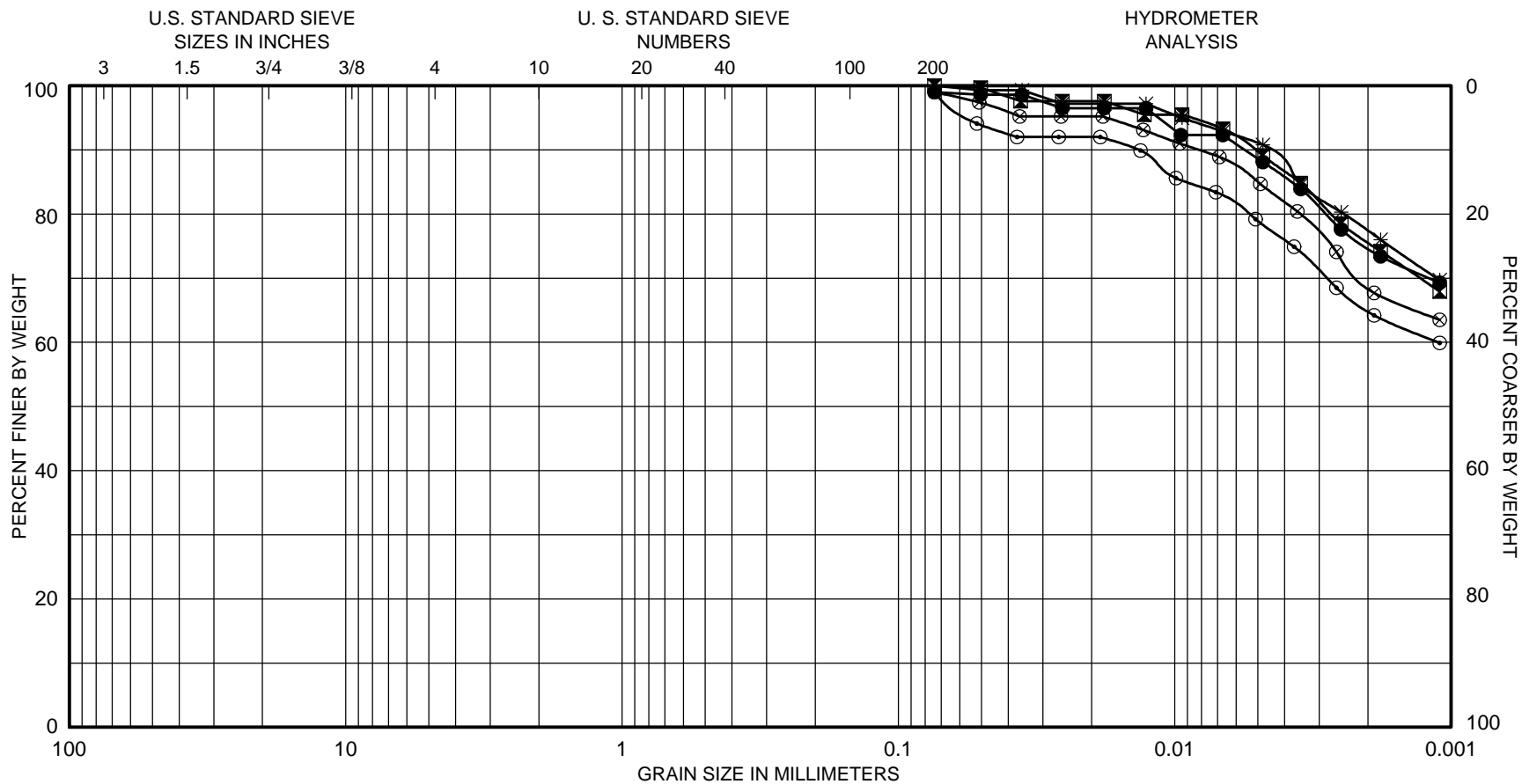
**GRAIN SIZE CURVE**



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

<u>SYMBOL</u>	<u>LOCATION</u>	<u>SAMPLE NO.</u>	<u>CLASSIFICATION</u>
●	B-9	1.0	CLAY
⊠	B-9	2.0	CLAY
*	B-9	3.0	CLAY
⊗	B-9	4.0	CLAY
⊙	B-9	5.0	CLAY

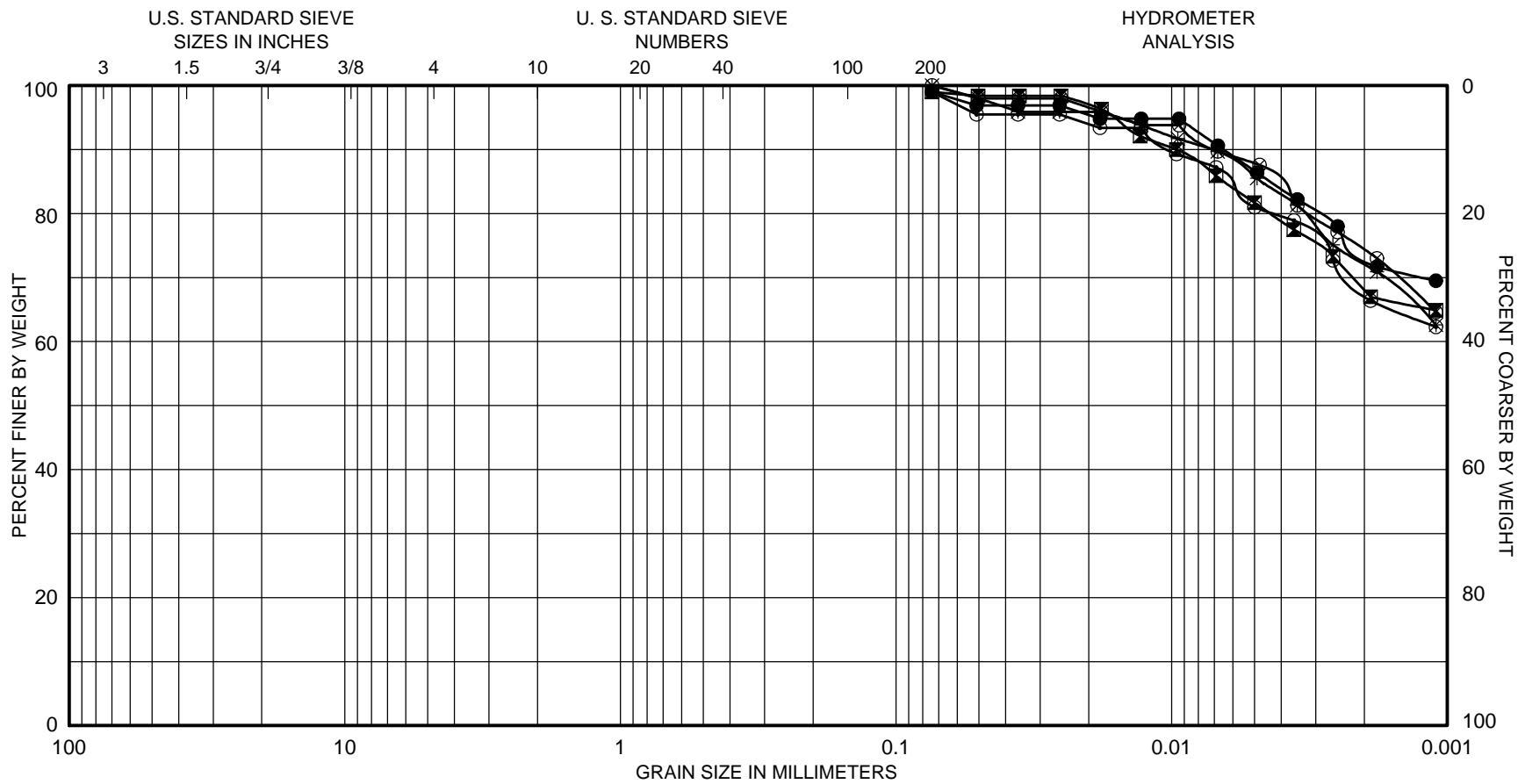
**GRAIN SIZE CURVE**



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

<u>SYMBOL</u>	<u>LOCATION</u>	<u>SAMPLE NO.</u>	<u>CLASSIFICATION</u>
●	B-10	1.0	CLAY
■	B-10	2.0	CLAY
*	B-10	3.0	CLAY
⊗	B-10	4.0	CLAY
⊙	B-10	5.0	CLAY

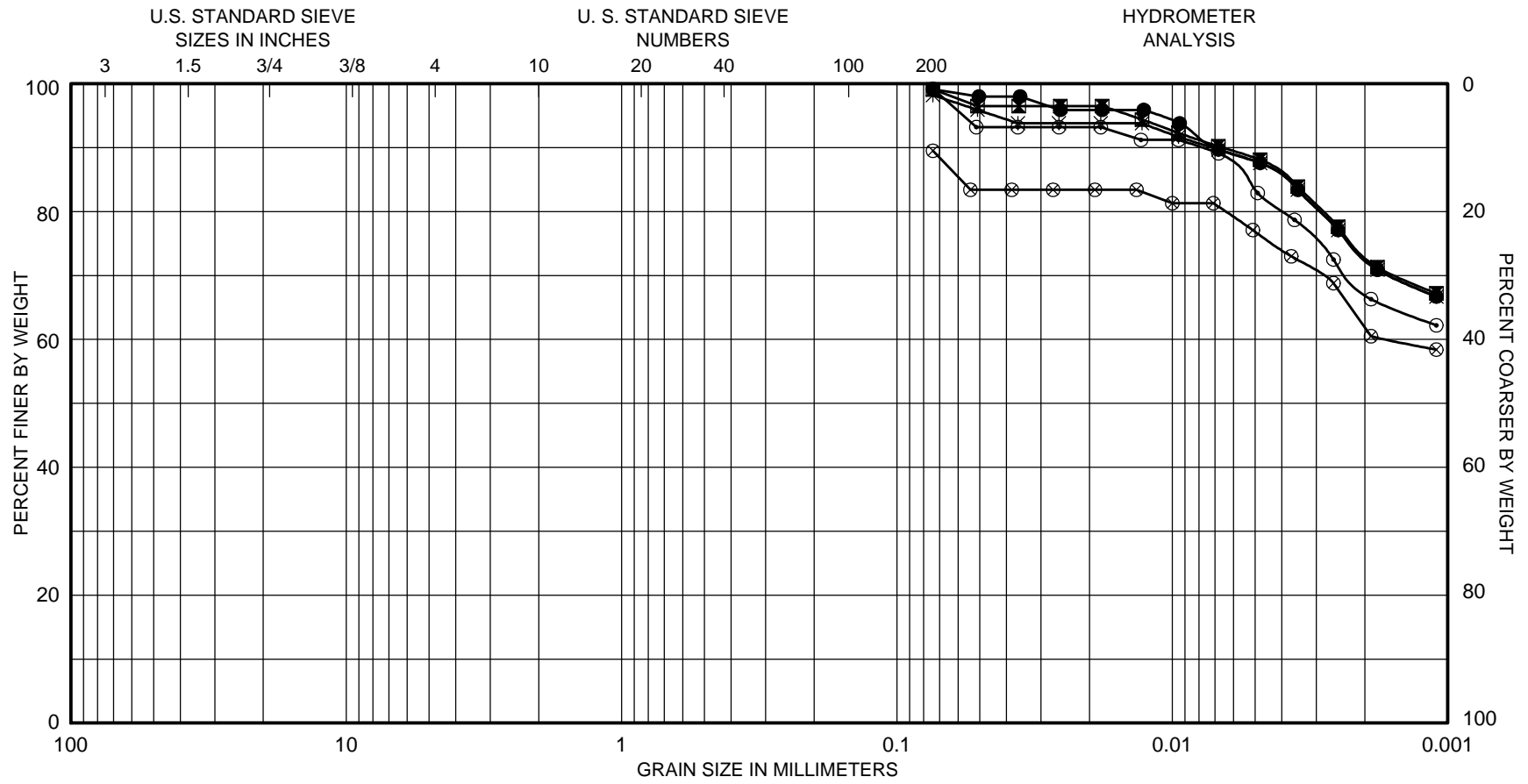
**GRAIN SIZE CURVE**



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

<u>SYMBOL</u>	<u>LOCATION</u>	<u>SAMPLE NO.</u>	<u>CLASSIFICATION</u>
●	B-11	1.0	CLAY
◤	B-11	2.0	CLAY
✱	B-11	3.0	CLAY
⊗	B-11	4.0	CLAY
⊙	B-11	5.0	CLAY

**GRAIN SIZE CURVE**

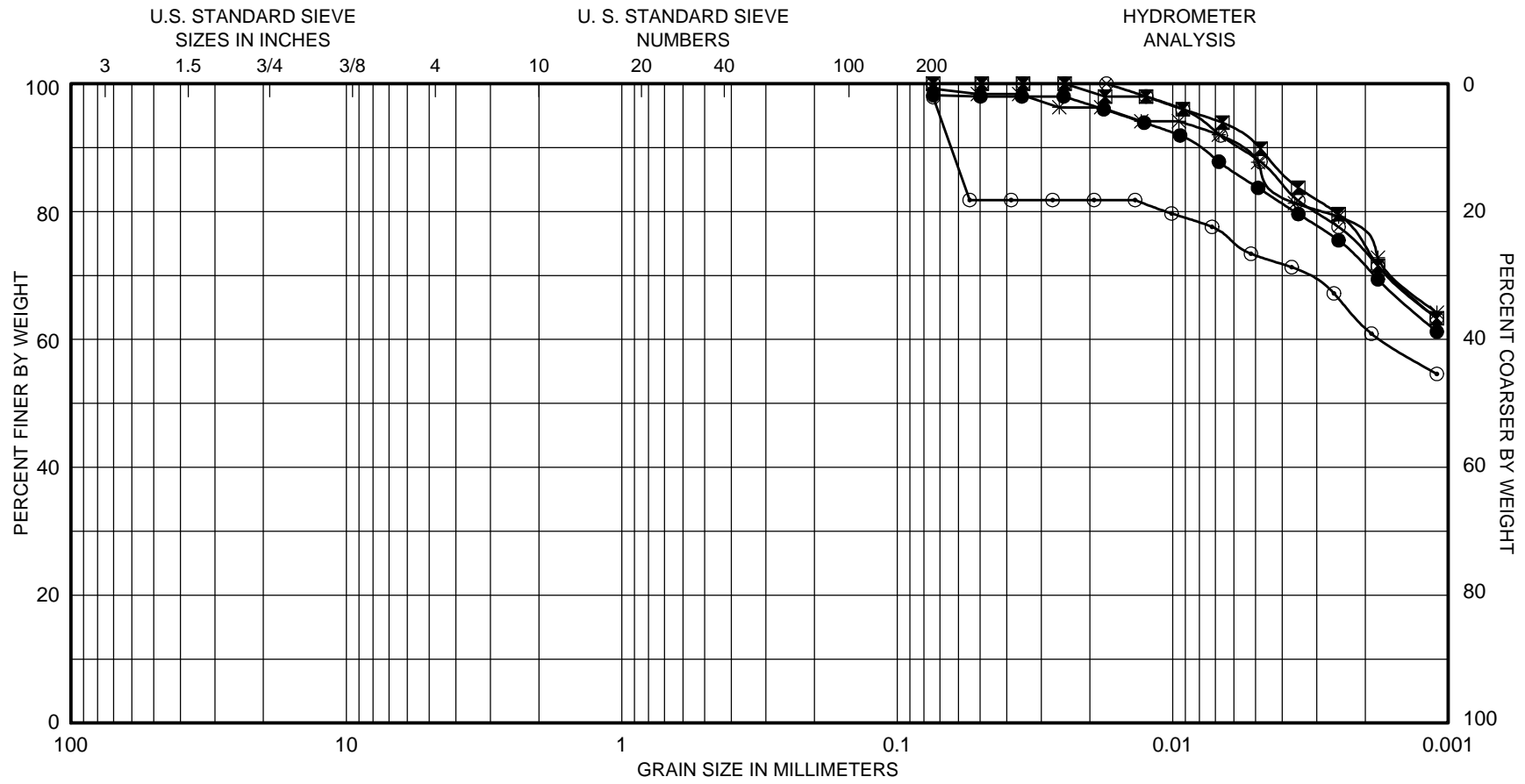


GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

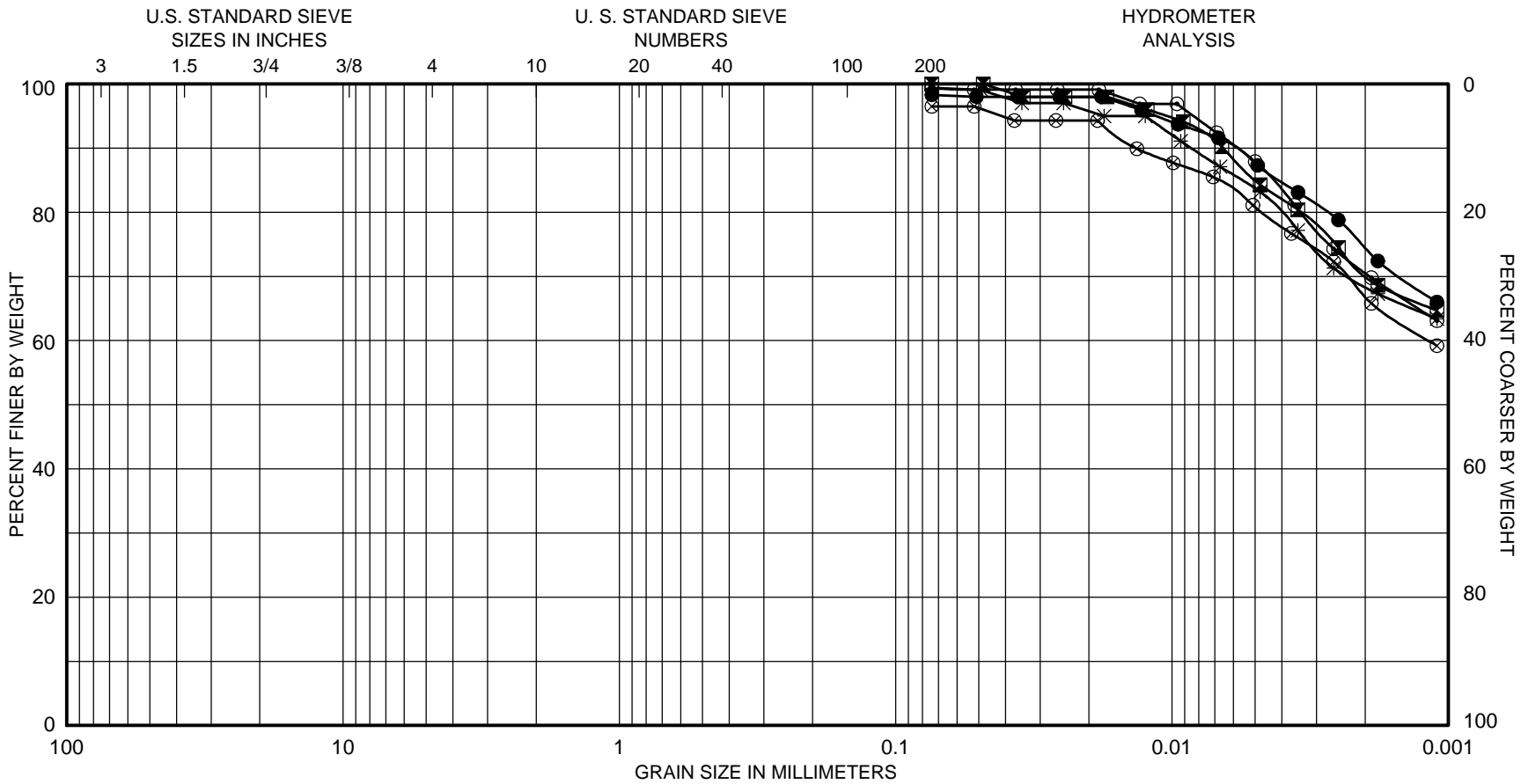
<u>SYMBOL</u>	<u>LOCATION</u>	<u>SAMPLE NO.</u>	<u>CLASSIFICATION</u>
●	B-12	1.0	CLAY
■	B-12	2.0	CLAY
*	B-12	3.0	CLAY
⊗	B-12	4.0	CLAY
⊙	B-12	5.0	CLAY

**GRAIN SIZE CURVE**





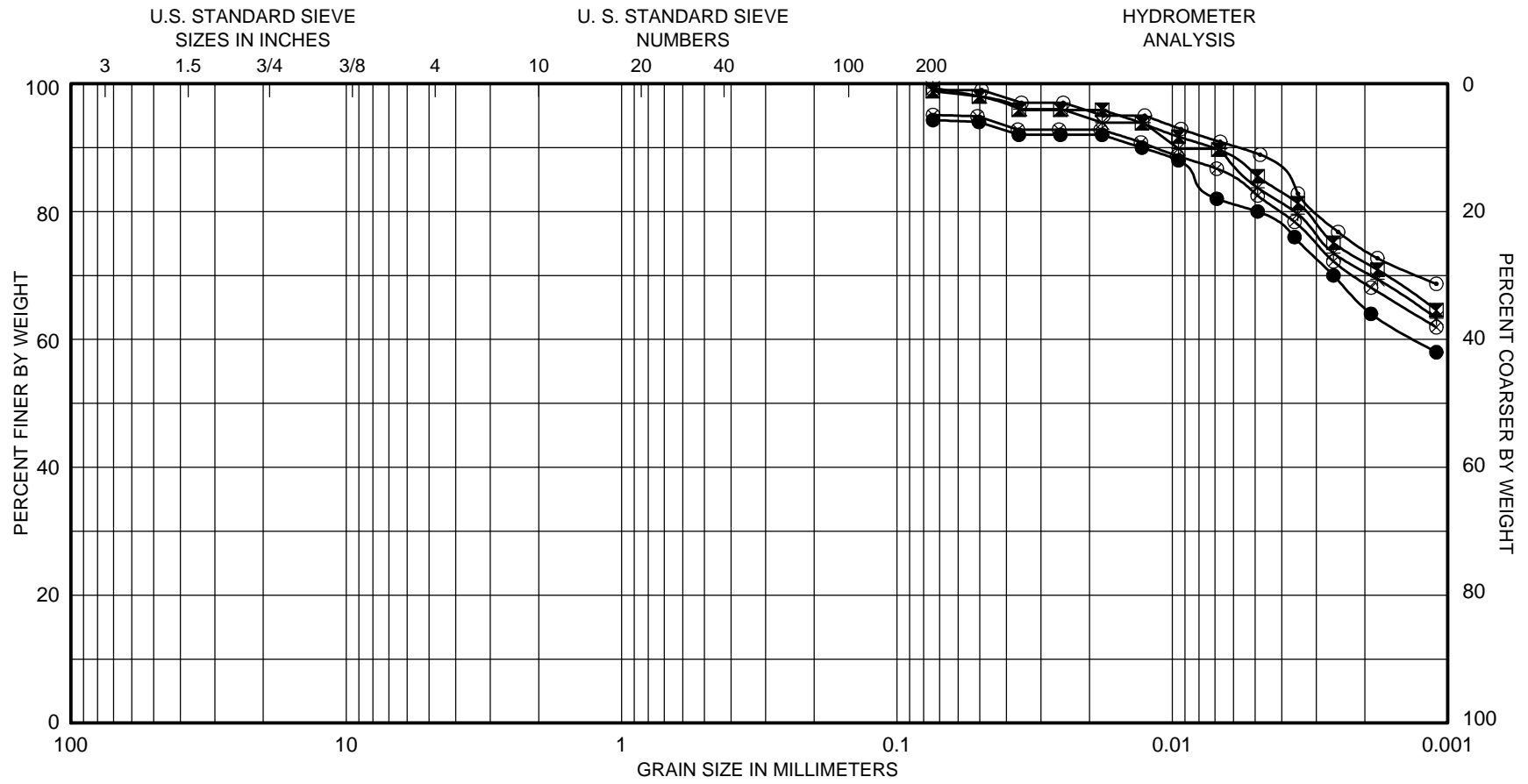




GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

<u>SYMBOL</u>	<u>LOCATION</u>	<u>SAMPLE NO.</u>	<u>CLASSIFICATION</u>
●	B-15	1.0	CLAY
■	B-15	2.0	CLAY
*	B-15	3.0	CLAY
⊗	B-15	4.0	CLAY
⊙	B-15	5.0	CLAY

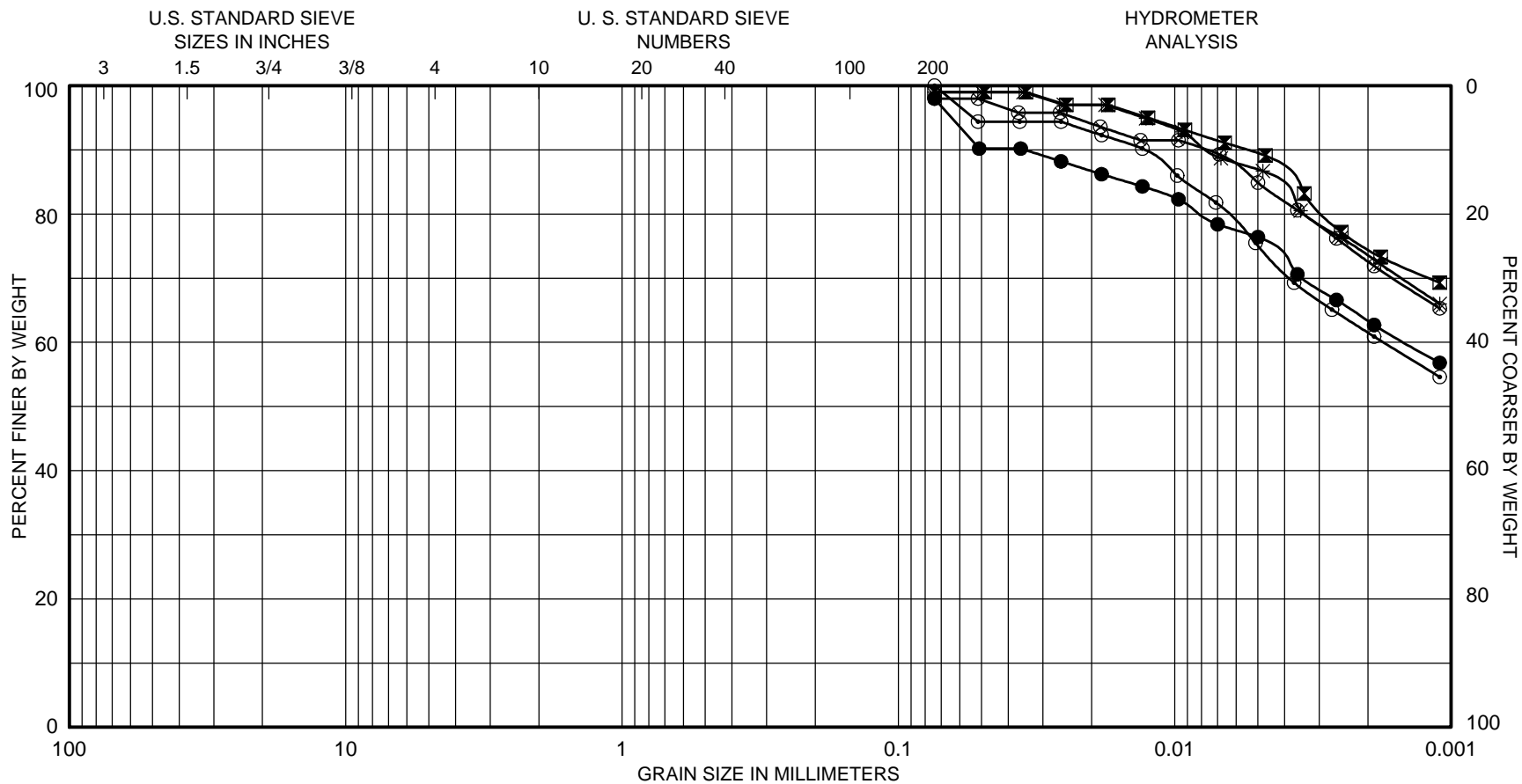
**GRAIN SIZE CURVE**



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

<u>SYMBOL</u>	<u>LOCATION</u>	<u>SAMPLE NO.</u>	<u>CLASSIFICATION</u>
●	B-16	1.0	CLAY
⊠	B-16	2.0	CLAY
*	B-16	3.0	CLAY
⊗	B-16	4.0	CLAY
⊙	B-16	5.0	CLAY

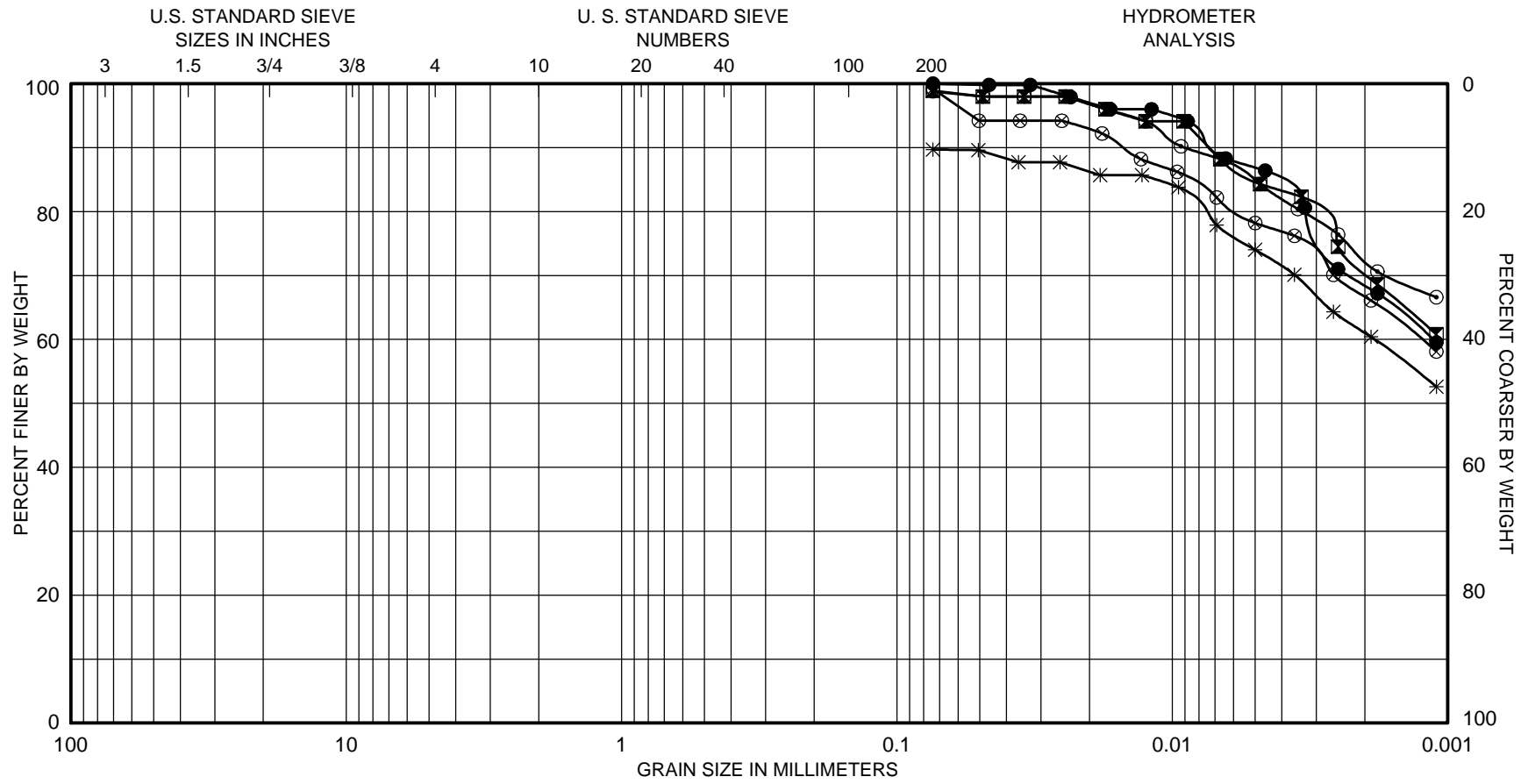
**GRAIN SIZE CURVE**



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

<u>SYMBOL</u>	<u>LOCATION</u>	<u>SAMPLE NO.</u>	<u>CLASSIFICATION</u>
●	B-17	1.0	CLAY
■	B-17	2.0	CLAY
*	B-17	3.0	CLAY
⊗	B-17	4.0	CLAY
⊙	B-17	5.0	CLAY

**GRAIN SIZE CURVE**

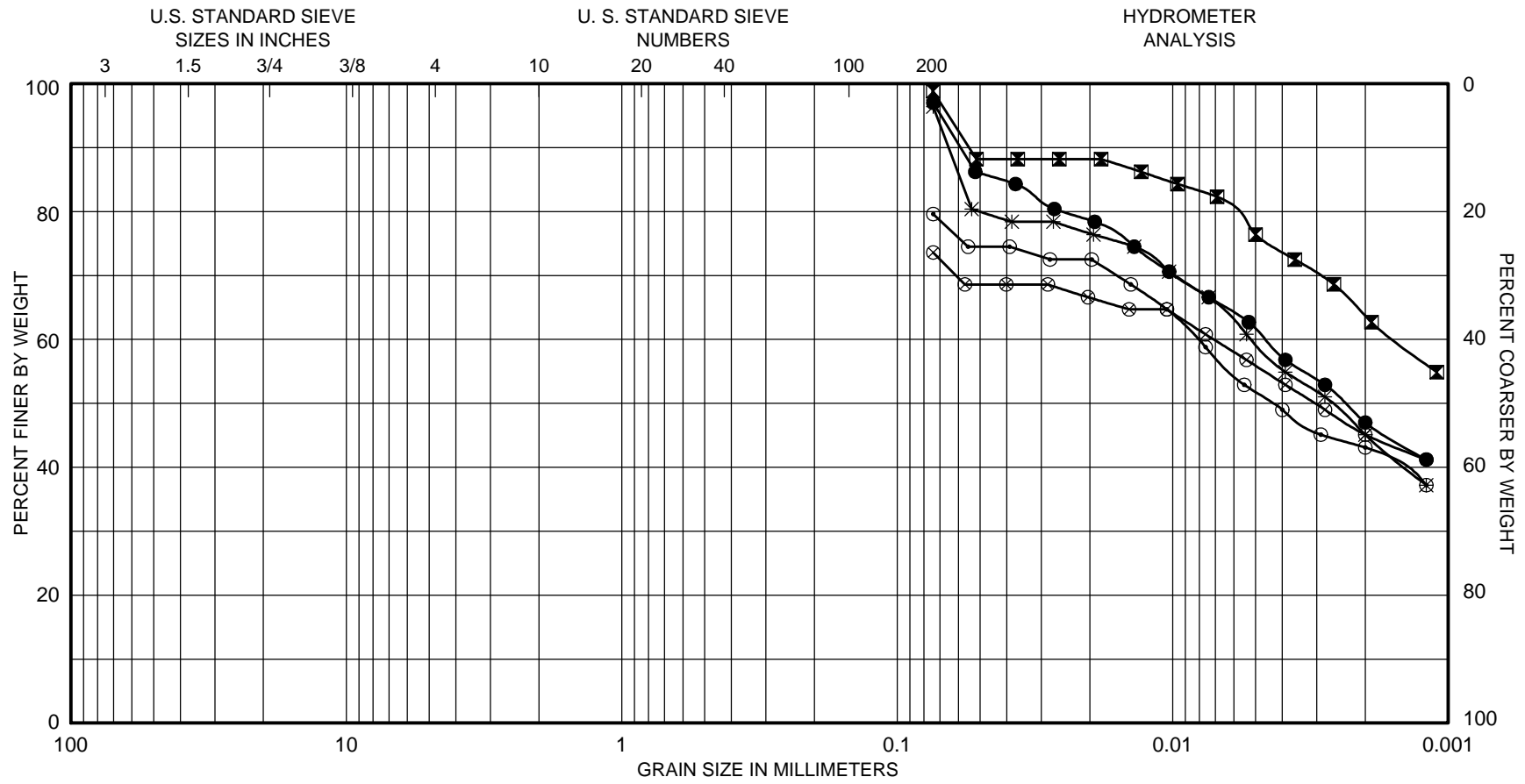


GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

<u>SYMBOL</u>	<u>LOCATION</u>	<u>SAMPLE NO.</u>	<u>CLASSIFICATION</u>
●	B-18	1.0	CLAY
■	B-18	2.0	CLAY
*	B-18	3.0	CLAY
⊗	B-18	4.0	CLAY
⊙	B-18	5.0	CLAY

**GRAIN SIZE CURVE**





GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Coarse	Medium	Fine	

<u>SYMBOL</u>	<u>LOCATION</u>	<u>SAMPLE NO.</u>	<u>CLASSIFICATION</u>
●	B-20	1.0	CLAY
■	B-20	2.0	CLAY
*	B-20	3.0	CLAY
⊗	B-20	4.0	CLAY
⊙	B-20	5.0	CLAY

**GRAIN SIZE CURVE**

## **APPENDIX B**

### **LAND RIGHTS MEMORANDUM** *(To be Provided by OCPR)*

Contractor shall comply with all provisions contained in the attached determinations. Where dimensions or configurations conflict between the construction plans and the permit drawings, the dimensions or configurations shown on the construction plans shall govern.

## **APPENDIX C**

### **PERMITS SECURED BY OWNER**

Contractor shall comply with all provisions contained in the attached permits. Where dimensions or configurations conflict between the construction plans and the permit drawings, the dimensions or configurations shown on the construction plans shall govern.





# DEPARTMENT OF THE ARMY

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS

P.O. BOX 60267

NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO  
ATTENTION OF

JUN 07 2010

Operations Division  
Western Evaluation Section

SUBJECT: MVN-2010-0973-WLL

Office of Coastal Protection and Restoration  
ATTN: Kristi Cantu  
P.O. Box 44027  
Baton Rouge, LA 70804

Gentlemen,

The proposed work, to excavate 4030 cubic yards of waterbottom sediment and place onsite, 950 cubic yards of aggregate material and 2520 cubic yards of cement oysterbreak armor units along the shoreline of the Gulf of Mexico west of Joseph's Harbor Canal in Cameron Parish, Louisiana for the purpose of implementing an oyster reef demonstration project is authorized under a **Category II Programmatic General Permit** provided that all conditions of the permit are met.

Prior to commencing work on your project, you must obtain approvals from state and local agencies as required by law and by the terms of this permit. These approvals include, but are not limited to, a permit or waiver from the Coastal Management Division of the Louisiana Department of Natural Resources and a water quality certification from the Louisiana Department of Environmental Quality, Office of Water Resources.

Prior to any work on the refuge, the permittee shall coordinate all activities with the Rockefeller Refuge Manager.

If the work is initiated within two (2) years of the date of this letter, the authorization remains valid for a total of five (5) years from the date of this letter. If the work is not initiated within two (2) years, this authorization becomes null and void.

The New Orleans District Regulatory Branch is committed to providing quality and timely service to our customers. In an effort to improve customer service, please take a moment to complete the attached Customer Service Survey and return it in the envelope provided or go to the survey found on our web site at <http://per2.nwp.usace.army.mil/survey.html>.

Should you have any further questions concerning this matter, please contact Mike Herrmann of this office at (504) 862-1954.

Sincerely,

*fy* Pete J. Serio  
Chief, Regulatory Branch

Enclosures

1. Activities authorized under this general permit shall not be used for piecemeal work and shall be applied to single and complete projects. All components of a single and complete project shall be treated together as constituting one single and complete project. All planned phases of multi-phased projects shall be treated together as constituting one single and complete project. This general permit shall not be used for any activity that is part of an overall project for which an individual permit is required.

2. No activity is authorized under this general permit which may adversely affect significant cultural resources listed or eligible for listing in the National Register of Historic Places until the requirements for Section 106 of the National Historic Preservation Act are met. Upon discovery of the presence of previously unknown historic and/or prehistoric cultural resources, all work must cease and the permittee must notify the State Historic Preservation Office and the Corps of Engineers. The authorization is suspended until it is determined whether or not the activity will have an adverse effect on cultural resources. The authorization may be reactivated or modified through specific conditions if necessary, if it is determined that the activity will have no adverse effect on cultural resources. The NOD-PGP authorization will be revoked if it is determined that cultural resources would be adversely affected, and an individual permit may be necessary.

3. The Chitimacha Tribe of Louisiana has stated that the project area is part of the aboriginal Chitimacha homelands. If during the course of work at the site, prehistoric and/or historic aboriginal cultural materials are discovered, the applicant will contact the Chitimacha Tribe of Louisiana at P.O. Box 661, Charenton, LA 70523, and the Army Corps of Engineers, New Orleans District (NOD) Regulatory Branch. NOD will initiate the required Federal, State, and Tribal coordination to determine the significance of the cultural materials and the need, if applicable, for additional cultural resource investigations.

4. There shall be no unreasonable interference with navigation by the existence or use of the activity authorized herein. The permittee will, at his or her expense, install and maintain any safety lights, signals, and signs prescribed by the United States Coast Guard, through regulations or otherwise, on authorized facilities or on equipment used in performing work under the authorization.

5. No activity may substantially disrupt the movement of those species of aquatic life indigenous to the waterbody, including those species which normally migrate through the area, unless the activity's primary purpose is to block or impound water.

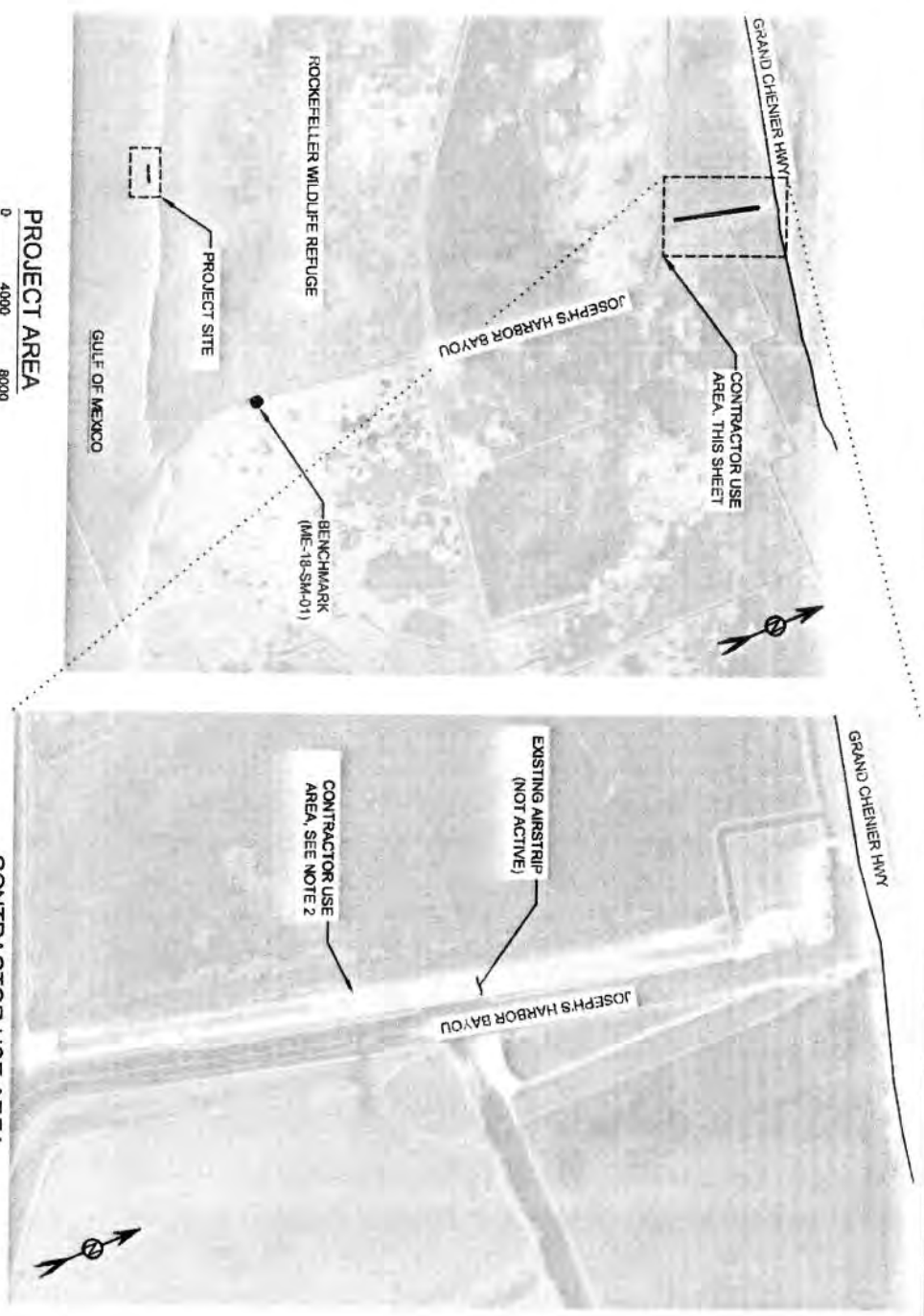
6. If the proposed activity involves the installation of aerial transmission lines, submerged cable, or submerged pipelines across navigable waters of the United States the following is applicable:

The National Ocean Service (NOS) has been notified of this authorization. You must notify NOS and this office in writing, at least two weeks before you begin work and upon completion of the activity authorized by this permit. Your notification of completion must include a drawing which certifies the location and configuration of the completed activity (a certified permit drawing may be used). Notification to NOS will be sent to the following address: National Ocean Service, Office of Coast Survey, N/CS261, 1315 East West Highway, Silver Springs, Maryland 20910-3282.

7. For pipelines under an anchorage or a designated fairway in the Gulf of Mexico the following is applicable: The National Ocean Service has been notified of this authorization. You must notify NOS and this office in writing, at least two weeks before you begin work and upon completion of the activity authorized by this permit. Within 30 days of completion of the pipeline, 'as built' drawings certified by a professional engineer registered in Louisiana or by a registered surveyor shall be furnished to this office, the U.S. Coast Guard, Sector New Orleans Command Center, 201 Hammond Highway, Metairie, Louisiana 70005, and to the Director, National Ocean Service, Office of Coast Survey, N/CS261, 1315 East West Highway, Silver Springs, Maryland 20910-3282. The plans must include the location, configuration and actual burial depth of the completed pipeline project.

8. If the proposed project, or future maintenance work, involves the use of floating construction equipment (barge mounted cranes, barge mounted pile driving equipment, floating dredge equipment, dredge discharge pipelines, etc.) in a federally maintained waterway, you are advised to notify the Eighth Coast Guard District so that a Notice to Mariners, if required, may be prepared. Notification with a copy of your permit approval and drawings should be mailed to the US Coast Guard, Sector New Orleans Command Center, 201 Hammond Highway, Metairie, Louisiana 70005, about 1 month before you plan to start work. Telephone inquiries can be directed to (504) 846-5923.
9. All activities authorized herein shall, if they involve, during their construction or operation, any discharge of pollutants into waters of the United States, be at all times consistent with applicable water quality standards, effluent limitations and standards of performance, prohibitions, pretreatment standards and management practices established pursuant to the Clean Water Act (PL 92-500: 86 Stat 816), or pursuant to applicable state and local laws.
10. Substantive changes to the Louisiana Coastal Resources Program may require immediate suspension and revocation of this permit in accordance with 33 CFR 325.7.
11. Irrespective of whether a project meets the other conditions of this permit, the Corps of Engineers retains discretionary authority to require an individual Department of the Army permit when circumstances of the proposal warrant this requirement.
12. Any individual authorization granted under this permit may be either modified, suspended, or revoked in whole or in part if the Secretary of the Army or his authorized representative determines that there has been a violation of any of the terms or conditions of this permit or that such action would otherwise be in the public interest.
13. The Corps of Engineers may suspend, modify, or revoke this general permit if it is found in the public interest to do so.
14. Activities proposed for authorization under the PGP must comply with all other necessary federal, state, and/or local permits, licenses, or approvals. Failure to do so would result in a violation of the terms and conditions of NOD-PGP.
15. The permittee shall permit the District Engineers or his authorized representative(s) or designee(s) to make periodic inspections of the project site(s) and disposal site(s) if different from the project site(s) at any time deemed necessary in order to assure that the activity being performed under authority of this permit is in accordance with the terms and conditions prescribed herein.
16. This general permit does not convey any property rights, either in real estate or material, or any exclusive privileges; and it does not authorize any injury to property or invasion of rights or any infringement of federal, state, or local laws or regulations nor does it obviate the requirements to obtain state or local assent required by law for the activity authorized herein.
17. In issuing authorizations under this permit, the federal government will rely upon information and data supplied by the applicant. If, subsequent to the issuance of an authorization, such information and data prove to be false, incomplete, or inaccurate, the authorization may be modified, suspended, or revoked, in whole or in part.
18. For activities resulting in sewage generation at the project site, such sewage shall be processed through a municipal sewage treatment system or, in areas where tie-in to a municipal system is not practical, the on-site sewerage system must be approved by the local parish sanitarian before construction.
19. Any modification, suspension, or revocation of this permit or any individual authorization granted under this permit will not be the basis for any claim for damages against the United States.
20. Additional conditions deemed necessary to protect the public interest may be added to the general permit by the District Engineer at any time. If additional conditions are added, the public will be advised by public notice. Individual authorizations under this PGP may include special conditions deemed necessary to ensure minimal impact and compliance with this PGP.

21. A review of cumulative losses under the general permit will be accomplished yearly in or around the month of October. A report of losses will be furnished to the Environmental Protection Agency, the US Fish and Wildlife Service, the National Marine Fisheries Service, and the Louisiana Department of Wildlife and Fisheries. Comments from reviewing agencies will be considered in determination as to whether modifications to the general permit are needed. Should the District Engineer make a determination not to incorporate a change proposed by a reviewing agency, after normal negotiations between the respective agencies, the District Engineer will explain in writing to the reviewing agency the basis and rationale for his decision.
22. The New Orleans District will periodically review NOD-PGP and its terms, conditions, and processing procedures and will decide to either modify, reissue, or revoke the permit. If the PGP is not modified or reissued within 5 years of its effective date, it automatically expires and becomes null and void. Activities which have commenced or are under contract to commence in reliance upon prior authorization of NOD-PGP will remain authorized provided the activity is completed within 12 months of the date of NOD-PGP expiration, modification, or revocation, unless the Corps of Engineers has determined that the specific activity does not qualify for authorization under NOD-PGP and exercises Corps authority to modify, suspend, or revoke the authorization in accordance with DOA regulations at 33 CFR 325.7.
23. Activities which qualify as non reporting nationwide permits and which commenced or were under contract to commence prior to June 1, 1998, are valid for a period of two years from the commencement/contract date. Those activities which have received authorization under the nationwide and regional general permit programs expire as indicated on the permit authorization. Requests received on or after June 1, 1998, will be evaluated for compliance under NOD-PGP.
24. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.
25. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
26. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
27. If you sell the property associated with this permit, you must provide this office with a copy of the permit and a letter noting your agreement to transfer the permit to the new owner and the new owners agreement to accept the permit and abide by all conditions of the permit. This letter must be signed by both parties.
28. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit.
29. Many local governing bodies have instituted laws and/or ordinances in order to regulate dredge and/or fill activities in floodplains to assure maintenance of floodwater storage capacity and avoid disruption of drainage patterns that may affect surrounding properties. Your project involves dredging and/or placement of fill, therefore, you must contact the local municipal and/or parish governing body regarding potential impacts to floodplains and compliance of your proposed activities with local floodplain ordinances, regulations or permits.



# PERMIT PLANS

**TIDAL VERTICAL DATUMS (NAVD88)**

MEAN HIGHER HIGH WATER (MHHW)	1.24'
MEAN SEA LEVEL (MSL)	0.48'
NAVD88	0.00'
MEAN LOWER LOW WATER (MLLW)	-0.74'

**HORIZONTAL/VERTICAL BENCHMARK (BM)**

NAME	NORTHING	EASTING	ELEVATION (NAVD88)
ME-18-SM-01	420,724.78	2,824,955.19	6.05

**OFFICE OF COASTAL PROTECTION AND RESTORATION**  
 APPLICANT:  
 460 LAUREL STREET, 12TH FLOOR  
 BATON ROUGE, LOUISIANA 70801

**COAST & HARBOR ENGINEERING**  
 343 3RD STREET, SUITE 308  
 BATON ROUGE, LA 70801  
 PH 512-342-9705  
 FAX 512-342-9708

**BIO-ENGINEERED OYSTER REEF DEMONSTRATION PROJECT**  
 STATE PROJECT NUMBER: LA-08

**PROJECT AREA AND CONTRACTOR USE AREA**  
 DATE: 4/20/2010

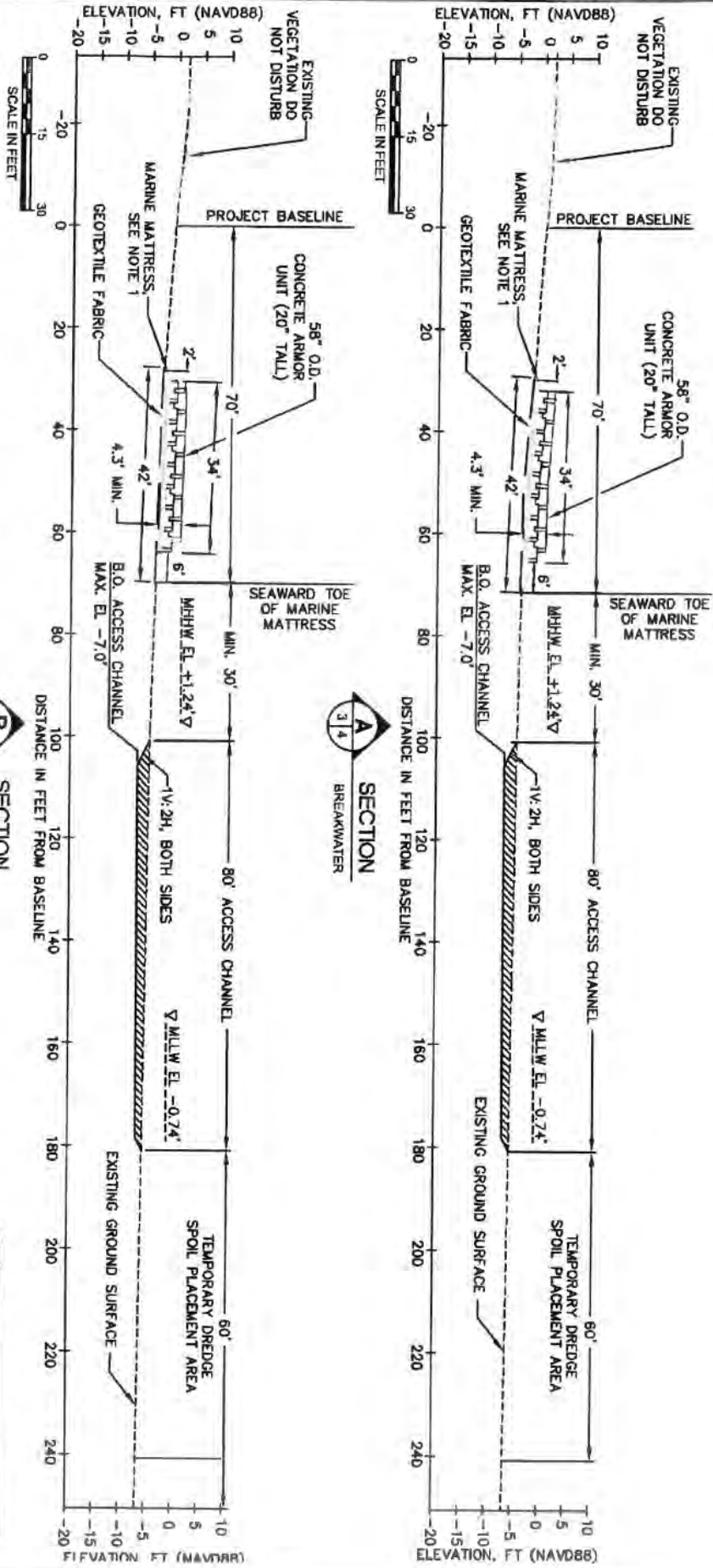
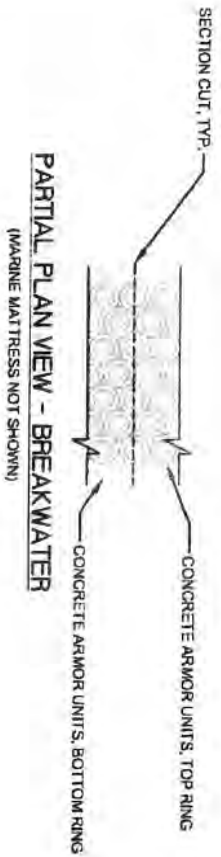
DRAWN BY: I. MORRISON      DESIGNED BY: S. HICKS      APPROVED BY: WHITNEY THOMPSON      FEDERAL PROJECT NUMBER: LA-08      SHEET 2 OF 8

- NOTES:**
1. AERIAL PHOTOGRAPH DOQQ FROM THE LOUISIANA STATEWIDE GIS, DATED 2006.
  2. CONTRACTOR USE AREA LOCATED OFF JOSEPH'S HARBOR BAYOU IN ROCKEFELLER REFUGE. UPLAND CONTRACTOR USE AREA ACCESS IS AVAILABLE VIA GRAND CHERNIER HWY. WATER ACCESS IS AVAILABLE VIA JOSEPH'S HARBOR BAYOU.
  3. THERE IS NO UPLAND ACCESS TO THE PROJECT SITE. CONTRACTOR SHALL ACCESS PROJECT SITE FROM A NAVIGABLE WATER BODY.

**STANDARD ABBREVIATIONS:**

- EL. = ELEVATION
- DIA. = DIAMETER
- T.O. = TOP OF
- B.O. = BOTTOM OF
- MHHW = MEAN HIGHER HIGH WATER
- MLLW = MEAN LOWER LOW WATER
- EA. = EACH
- TYP. = TYPICAL
- O.C. = ON CENTER
- O.C. = OUTSIDE DIAMETER
- APPROX = APPROXIMATE
- BM = BENCH MARK
- PL = PLATE
- FT = FEET
- MIN = MINIMUM
- MAX = MAXIMUM
- U.N.O. = UNLESS NOTED OTHERWISE
- N.T.S. = NOT TO SCALE
- W.P. = WORKING POINT
- ' = MINUTES OR FEET
- " = SECONDS OR INCHES





- NOTES:**
- ELEVATION OF TOP OF BREAKWATER AND BOTTOM TOE OF BREAKWATER VARIES.
  - MARINE MATRESSES TO EXTEND 6.0' BEYOND SEAWARD EDGE OF CONCRETE ARMOR UNIT BREAKWATER, MARINE MATRESSES TO EXTEND 20' BEYOND LANDWARD AND 2.5' PAST SIDE EDGES OF CONCRETE ARMOR UNIT BREAKWATER.

**OFFICE OF COASTAL PROTECTION AND RESTORATION**  
 450 LAUREL STREET, 12TH FLOOR  
 BATON ROUGE, LOUISIANA 70801

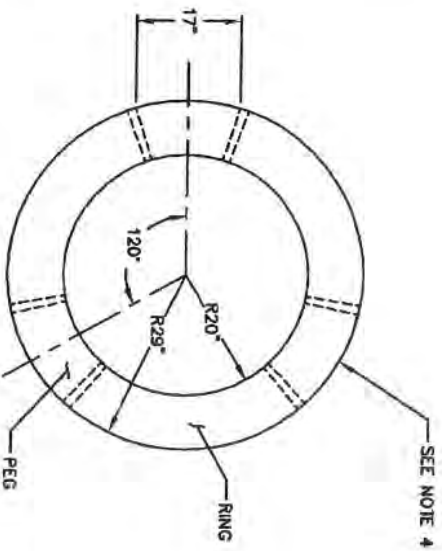
APPLICANT:  
**COAST & HARBOR ENGINEERING**  
 343 3RD STREET, SUITE 308  
 BATON ROUGE, LA 70801  
 PH. 512-342-9705  
 FAX 512-342-9708

STATE PROJECT NUMBER: LA-08  
 FEDERAL PROJECT NUMBER: LA-08

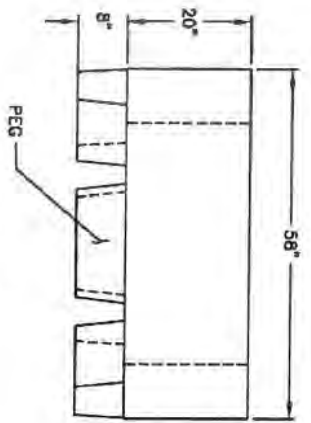
BIO-ENGINEERED OYSTER REEF  
 DEMONSTRATION PROJECT

DATE: 4/20/2010  
 SHEET 4 OF 6

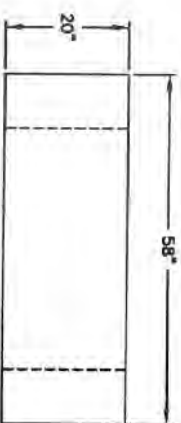
**PERMIT PLANS**



**DETAIL 1**  
**CONCRETE ARMOR UNIT**  
 TOP RING SHOWN (BOTTOM RING SIMILAR)  
 SCALE IN INCHES



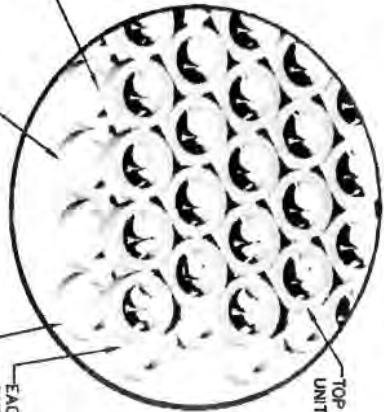
**DETAIL 2**  
**CONCRETE ARMOR UNIT - TOP UNIT**  
 SIDE  
 SCALE IN INCHES



**DETAIL 3**  
**CONCRETE ARMOR UNIT - BOTTOM UNIT**  
 SIDE  
 SCALE IN INCHES

EACH PEG OF TOP RING TO BE INSERTED INTO SUPPORTING BOTTOM UNITS

EACH TOP RING TO BE SUPPORTED BY 3 BOTTOM UNITS



**DETAIL 4**  
**REEF CONFIGURATION**  
 (PERSPECTIVE VIEW)  
 BOTTOM CONCRETE ARMOR UNIT LAYER

- NOTES:**
1. UNITS SHALL BE PLACED IN A STAGGERED PATTERN, WHERE ONE ROW OF UNIT CENTERS ARE PERPENDICULAR TO SPACES BETWEEN UNITS OF THE NEXT ROW (SEE DETAIL 4, REEF CONFIGURATION).
  2. THE CENTER OF TOP LAYER CONCRETE ARMOR UNITS SHALL BE PLACED ON TOP OF THREE (3) BOTTOM LAYER UNITS, WHERE TOP LAYER PEGS ARE INSERTED INTO BOTTOM LAYER HOLES.
  3. TOP UNITS IN STRUCTURE TO HAVE PEGS ON BOTTOM OF UNIT, BOTTOM UNITS IN STRUCTURE TO BE FABRICATED WITHOUT PEGS.
  4. DIMENSIONS OF CONCRETE ARMOR UNITS ARE APPROXIMATE AND MAY BE MODIFIED AT TIME OF CONSTRUCTION.

**PERMIT PLANS**

**OFFICE OF COASTAL PROTECTION AND RESTORATION**  
 450 LAUREL STREET, 12TH FLOOR  
 BATON ROUGE, LOUISIANA 70801



**COAST & HARBOR ENGINEERING**  
 343 3RD STREET, SUITE 308  
 BATON ROUGE, LA 70801  
 PH 512-342-9705  
 FAX 512-342-9708

**BIO-ENGINEERED OYSTER REEF DEMONSTRATION PROJECT**

**CONCRETE ARMOR UNIT DETAILS**

DRAWN BY: T. MORRISON

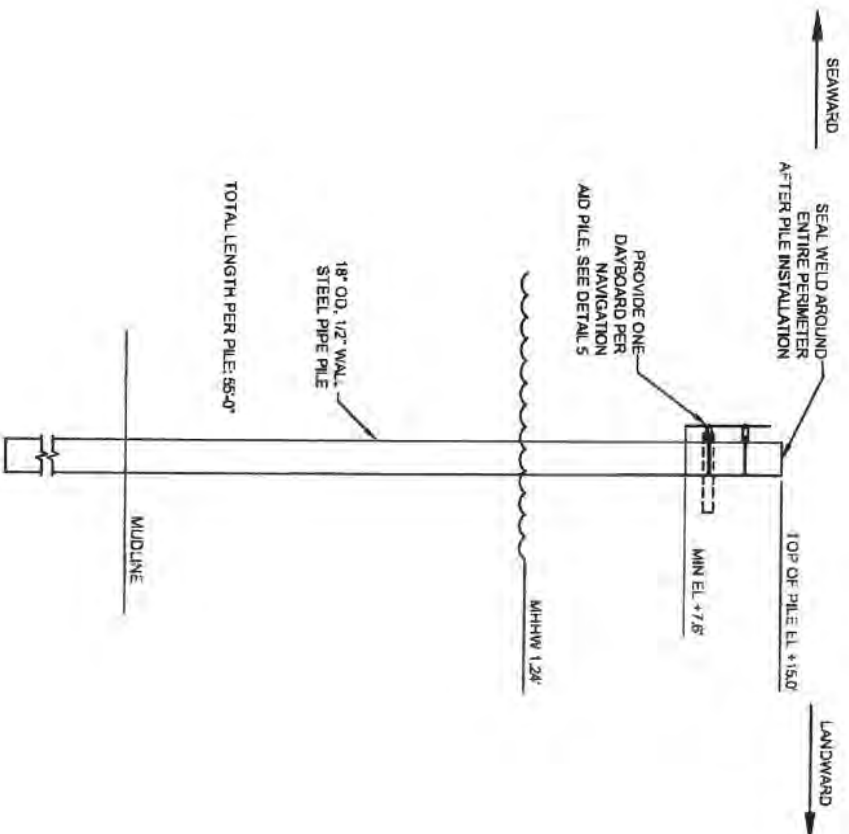
DESIGNED BY: S. HICKS

APPROVED BY: WHITNEY THOMPSON

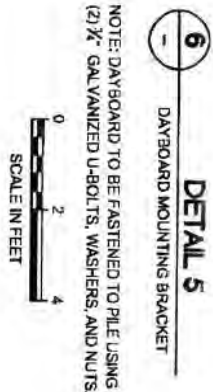
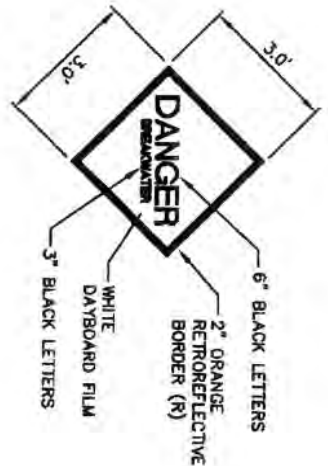
STATE PROJECT NUMBER: LA-08  
 FEDERAL PROJECT NUMBER: LA-08

DATE: 4/20/2010  
 SHEET 5 OF 6





TOTAL LENGTH PER PILE: 85'-0"



# PERMIT PLANS

- NOTES:**
1. ALL DIMENSIONS AND DETAILS ARE APPROXIMATE AND MAY BE MODIFIED AT TIME OF CONSTRUCTION.
  2. DAYBOARD TO BE INSTALLED FACING SOUTH
  3. ALL ELEVATIONS REFERENCE NAVD88 FT.
  4. NAVIGATION AID TO MEET USCG REQUIREMENTS.



**COAST & HARBOR ENGINEERING**  
 343 3RD STREET, SUITE 308  
 BATON ROUGE, LA 70801  
 PH: 512-342-9705  
 FAX: 512-342-9708

**OFFICE OF COASTAL PROTECTION AND RESTORATION**  
 450 LAUREL STREET, 12TH FLOOR  
 BATON ROUGE, LOUISIANA 70801

**BIO-ENGINEERED OYSTER REEF DEMONSTRATION PROJECT**

**NAVIGATION AID**

POINT	NORTHING *	EASTING *	DIRECTION
N-1	420624	2812969	S
N-2	420388	2813665	S

\* APPROXIMATE LOCATION, FINAL LOCATION TO BE FIELD LOCATED BY THE ENGINEER.

DRAWN BY: I. MORRISON	DESIGNED BY: S. HICKS	APPROVED BY: W. THOMPSON	STATE PROJECT NUMBER: LA-98	DATE: 4/20/2010
			FEDERAL PROJECT NUMBER: LA-98	SHEET 6 OF 6



**DEPARTMENT OF NATURAL RESOURCES  
OFFICE OF COASTAL MANAGEMENT**

P.O. BOX 44487  
BATON ROUGE, LOUISIANA 70804-4487  
(225)342-7591  
1-800-267-4019

**COASTAL USE PERMIT/CONSISTENCY DETERMINATION**

**C.U.P. No.:** P20100399

**C.O.E. No.:** MVN- 2010- 0973- WLL

**NAME:** OFFICE OF COASTAL PROTECTION AND RESTORATION  
P.O. BOX 44027  
BATON ROUGE, LA 70804  
Attn: Kristi Cantu

**LOCATION:** Cameron Parish, LA  
Lat 29° 38' 50"N / Long 92° 48' 09"W; Section 17 T16S R4W; Gulf of Mexico, Grand Chenier , La.

**DESCRIPTION:** Proposed installation of two 42' x 305' breakwaters for the Bio-Engineered Oyster Reef Demonstration Project (LA-08). Access excavations of an approximately 40' x 350' area and 80' x 750' area are required. Approximately 4,030 cubic yards of native material will be excavated and backfilled, 950 cubic yards of crushed stone or gravel will be used as fill and 2,520 cubic yards of Oysterbreak armor units will be used as fill. No other dredge or fill required.

In accordance with the rules and regulations of the Louisiana Coastal Resources Program and Louisiana R.S. 49, Sections 214.21 to 214.41, the State and Local Coastal Resources Management Act of 1978, as amended, the permittee agrees to:

1. Carry out, perform, and/or operate the use in accordance with the permit conditions, plans and specifications approved by the Department of Natural Resources.
2. Comply with any permit conditions imposed by the Department of Natural Resources.
3. Adjust, alter or remove any structure or other physical evidence of the permitted use if, in the opinion of the Department of Natural Resources, it proves to be beyond the scope of the use as approved or is abandoned.
4. Provide, if required by the Department of Natural Resources, an acceptable surety bond in an appropriate amount to ensure adjustment, alteration, or removal should the Department of Natural Resources determine it necessary.
5. Hold and save the State of Louisiana, the local government, the department, and their officers and employees harmless from any damage to persons or property which might result from the use, including the work, activity, or structure permitted.
6. Certify that the use has been completed in an acceptable and satisfactory manner and in accordance with the plans and specifications approved by the Department of Natural Resources. The Department of Natural Resources may, when appropriate, require such certification to be given by a registered professional engineer.
7. All terms of the permit shall be subject to all applicable federal and state laws and regulations.
8. This permit, or a copy thereof, shall be available for inspection at the site of work at all times during operations.
9. The applicant will notify the Office of Coastal Management of the date on which initiation of the permitted activity described under the "Coastal Use Description" began. The applicant shall notify the Office of Coastal Management by mailing the enclosed green initiation card on the date of initiation of the coastal use.
10. Unless specified elsewhere in this permit, this permit authorizes the initiation of the coastal use described under "Coastal Use Description" for two years from the date of the signature of the Secretary or his designee. If the coastal use is not initiated within this two year period, then this permit will expire and the applicant will be required to submit a new application. Initiation of the coastal use, for the purposes of this permit, means the actual physical beginning of the use of activity for which the permit is required. Initiation does not include preparatory activities, such as movement of equipment onto the coastal use site, expenditure of funds, contracting out of work, or performing activities which by themselves do not require a permit. In addition, the permittee must, in good faith, and with due diligence, reasonably progress toward completion of the project once the coastal use has been initiated.
11. The following special conditions must also be met in order for the use to meet the guidelines of the Coastal Resources Program:
  - a. All logs, stumps and other debris unearthed during dredging shall be removed to an approved disposal site on land.
  - b. That permittee shall insure that all sanitary sewage and/or related domestic wastes generated during the subject project activity and at the site, thereafter, as may become necessary shall receive the equivalent of secondary treatment (30 mg/l BOD5) with disinfection prior to discharge into any of the streams or adjacent waters of the area or, in the case of total containment, shall be disposed of in approved sewerage and sewage treatment facilities, as is required by the State Sanitary Code. Such opinion as may be served by those comments offered herein shall not be construed to suffice as any more formal approval(s) which may be required of possible sanitary details (i.e. provisions)



scheduled to be associated with the subject activity. Such shall generally require that appropriate plans and specifications be submitted to the Department of Health and Hospitals for purpose of review and approval prior to any utilization of such provisions.

- c. As-built drawings shall be submitted within 30 days of completion of this project to the Louisiana Department of Natural Resources, Office of Coastal Management, PO Box 44487, Baton Rouge, LA 70804-4487.
- d. Structures must be marked/lighted in accordance with U. S. Coast Guard regulations.
- e. That should changes in the location or the section of the existing waterways, or in the generally prevailing conditions in the vicinity be required in the future, in the public interest, Permittee shall make such changes in the project concerned or in the arrangement thereof as may be necessary to satisfactorily meet the situation and shall bear the cost thereof. This condition does not preclude the necessity for revising the current permit or obtaining a separate Coastal Use Permit, should one be required, for project modifications.
- f. All structures built under the authorization and conditions of this permit shall be removed from the site within 120 days of abandonment of the facilities for the herein permitted use, are displaced, or when these structures fall into a state of disrepair such that they can no longer function as intended. This condition does not preclude the necessity for revising the current permit or obtaining a separate Coastal Use Permit, should one be required, for such removal activities.
- g. Prior to any activities on the Rockefeller Refuge (Refuge), the Office of Coastal Protection and Restoration (OCPR) shall notify Vaughan McDonald, in writing their intent to begin the project and give a brief outline of the project schedule. Upon receipt of this notification, the Louisiana Department of Wildlife and Fisheries (LDWF) may request a pre-project meeting with the applicant to coordinate project details.  
  
Prior to any activities on the Refuge, OCPR and their assigns shall coordinate all activities with Mr. Guthrie Perry, Refuge Manager or his assigns. Mr. Perry may require a pre-project meeting if deemed necessary. Mr. Perry can be reached at 337-538-2276.
- h. If this authorization must be revised, amended, or extended, the permittee shall submit a valid Letter of Clearance from LDWF, if the proposed activity will occur on the Refuge.
- i. This project has been reviewed for potential impacts to resources of concern to the Louisiana Natural Heritage Program. One species (*Charadrius melodus* - Piping Plover) of concern has been identified as potentially being within the area surrounding this project.

The Piping Plover (*Charadrius melodus*) may occur within the project area. This species is federally listed as threatened with its critical habitat designated along the Louisiana coast. Piping Plovers winter in Louisiana feeding at intertidal beaches, mudflats, and sand flats with sparse emergent vegetation. Primary threats to this species are destruction and degradation of winter habitat, habitat alteration through shoreline erosion, woody species encroachment of lake shorelines and riverbanks, and human disturbance of foraging birds. For more information on Piping Plover critical habitat, visit the U.S. Fish and Wildlife website: <http://endangered.fws.gov>.

The Louisiana Natural Heritage Program (LNHP) has compiled data on rare, endangered, or otherwise significant plant and animal species, plant communities, and other natural features throughout the State of Louisiana. LNHP reports summarize the existing information known at the time of the request regarding the location in question. LNHP reports should not be considered final statements on the biological elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. If at any time LNHP tracked species are encountered within the project area, please contact the Louisiana Department of Wildlife and Fisheries biologist at 225-765-2643.



- j. Spoil shall be marked in accordance with USGC regulations for marking temporary spoil mounds.
- k. This permit does not convey any property rights, mineral rights, or exclusive privileges; nor does it authorize injury to property.
- l. All fill material shall be clean and free of contaminants and shall not contain hazardous materials such as asbestos or asbestos residue, shingles, tires, oil/grease residue, exposed rebar, protruding objects, etc.)
- m. Permittee is subject to all applicable state laws related to damages which are demonstrated to have been caused by this action.
- n. Permittee shall allow representatives of the Office of Coastal Management or authorized agents to make periodic, unannounced inspections to assure the activity being performed is in accordance with the conditions of this permit.
- o. Permittee shall comply with all applicable state laws regarding the need to contact the Louisiana One Call (LOC) system (1-800-272-3020) to locate any buried cables and pipelines.
- p. This permit authorizes the initiation of the Coastal Use described under "Coastal Use Description" for two (2) years from the date of the signature of the Secretary or his designee. Initiation of the Coastal Use, for purposes of this permit, means the actual physical beginning of the use or activity for which the permit is required. Initiation does not include preparatory activities, such as movement of equipment onto the Coastal Use site, expenditure of funds, contracting out of work, or performing activities which by themselves do not require a permit. In addition, Permittee must, in good faith and with due diligence, reasonably progress toward completion of the project once the Coastal Use has been initiated. If the Coastal Use is not initiated within this two (2) year period, an extension may be granted pursuant to the requirements contained in the Rules and Procedures for Coastal Use Permits (Title 43:1.723.D.). Please note that a request for permit extension MUST be made no sooner than one hundred eighty (180) days and no later than sixty (60) days prior to the expiration of the permit.

The expiration date of this permit is five (5) years from the date of the signature of the Secretary or his designee.

Upon expiration of this permit, a new Coastal Use Permit will be required for completion of any unfinished or uncommenced work items and for any maintenance activities involving dredging or fill that may become necessary. Other types of maintenance activities may also require a new Coastal Use Permit.

\*\*\*\*\* End of Conditions \*\*\*\*\*

Page: 4 of 5  
C.U.P. No.: P20100399  
C.O.E. No.: MVN- 2010- 0973- WLL



By accepting this permit the applicant agrees to its terms and conditions.  
I affix my signature and issue this permit this 25th day of August, 2010.

THE DEPARTMENT OF NATURAL RESOURCES

Karl L. Morgan, Acting Administrator  
Office of Coastal Management

This agreement becomes binding when signed by Administrator of  
the Office of Coastal Management Permits/Mitigation Division, Department of Natural Resources.

Attachments

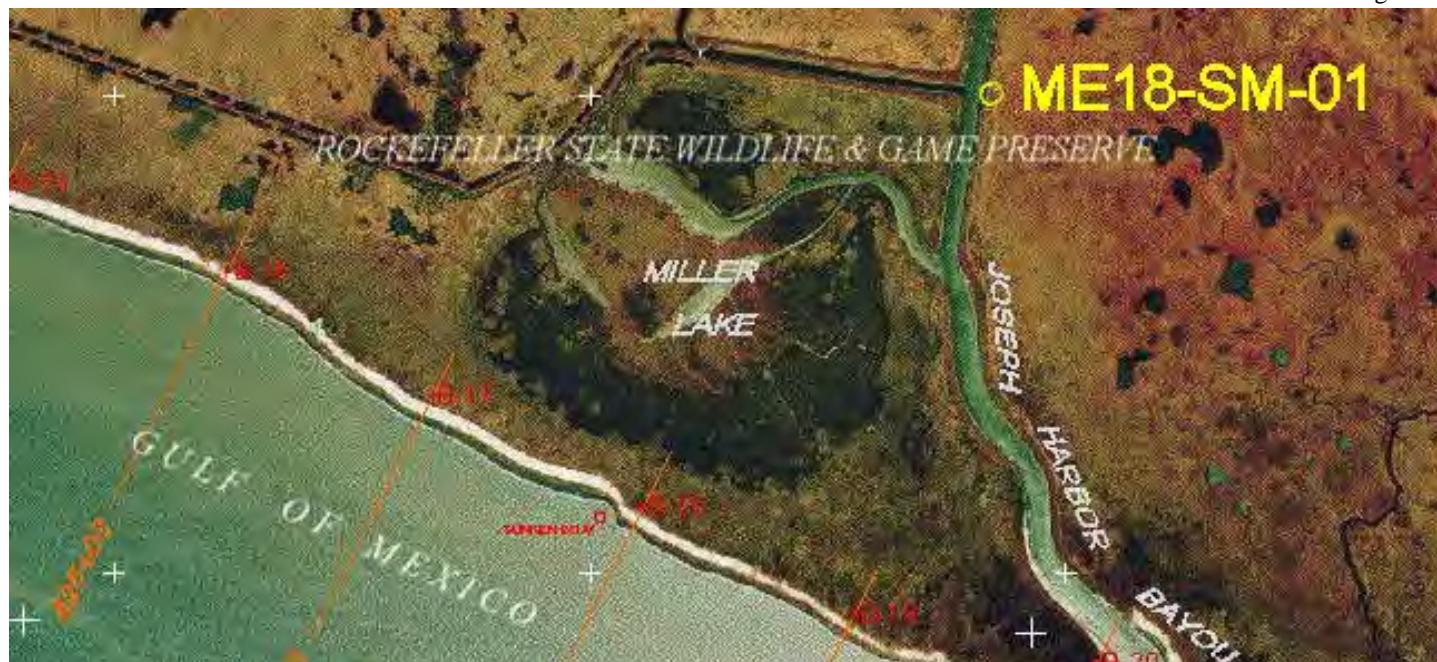


**Final Plats:**

1) P20100399 Final Plats 06/21/2010

cc: Pete Serio, COE w/attachments  
Dave Butler, LDWF w/attachments  
Lynn Hohensee, WCalCP w/attachments  
Ernest Broussard, WCamPC w/attachments  
Channing Hayden, Jr., PortLC w/attachments  
Stephen Broussard, LED w/attachments  
Peggy Rooney, OCM w/attachments  
Kaili Mills, OCM/FI w/attachments  
Cameron Parish w/attachments

**APPENDIX D**  
**SURVEY DATA SHEET**



**VICINITY MAP** Scale: 1" = 2000'

Photo Reproduced from DOQQ "COW ISLAND" Quadrangle

**Station Name: "ME18-SM-01"**

**Monument Location:** From the Rockefeller State Wildlife Refuge Headquarters near Grand Chenier, La., proceed easterly on State Hwy. 82 for 3.2 miles to a public boat launch on the right at Joseph Harbor Bayou. Then by boat, proceed southerly in Joseph Harbor Bayou for approximately 5.0 miles to a canal heading westerly and the monument on the east spoil bank of the canal intersection.

**Monument Description:** NGS Style Floating Sleeve Monument; datum point set on 9/16" stainless steel rods driven 56 feet to refusal, set in sand filled 6" PVC pipe with access cover and set in concrete flush with ground.

**Stamping: "ME 18-01"**

**Date:** June 2002

**Monument Established By:** John Chance Land Surveys, Inc

**For:** Louisiana Department of Natural Resources, CRD

**Adjusted NAD 83 Geodetic Position (1992)**

Lat. 29° 38' 56.597733" N

Long. 92° 46' 06.777093" W

**Adjusted NAD 83 Datum LSZ (1702) Ft**

N= 420,724.78

E= 2,824,955.19

**Adjusted NAVD88 Elevation**

6.44 feet / 1.963 mtrs.

Ellipsoid Height: -23.931 mtrs.

Geoid99 Height: -25.894 mtrs.



*Adjusted Position Established by John Chance Land Surveys, Inc. for Louisiana Department of Natural Resources, CRD*



## The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

DATABASE = ,PROGRAM = datasheet, VERSION = 7.85

```

1      National Geodetic Survey,   Retrieval Date = FEBRUARY 14, 2011
AV0295 *****
AV0295 HT_MOD      -   This is a Louisiana Height Modernization Survey Station.
AV0295 FBN        -   This is a Federal Base Network Control Station.
AV0295 DESIGNATION -   DOLAND AZ MK
AV0295 PID        -   AV0295
AV0295 STATE/COUNTY-   LA/CAMERON
AV0295 USGS QUAD   -   DEEP LAKE (1979)
AV0295
AV0295                      *CURRENT SURVEY CONTROL
AV0295
AV0295* NAD 83(2007)- 29 43 07.16439(N)    092 43 54.77302(W)    ADJUSTED
AV0295* NAVD 88      -      0.65 (meters)      2.1 (feet) GPS OBS(2006.81)
AV0295 **This station is located in a suspected subsidence area (see below).
AV0295 **This station is included in the VTDP model (see below).
AV0295
AV0295 EPOCH DATE   -      2002.00
AV0295 X           -      -264,228.215 (meters)          COMP
AV0295 Y           -      -5,537,461.228 (meters)          COMP
AV0295 Z           -      3,143,314.304 (meters)          COMP
AV0295 LAPLACE CORR-      0.39 (seconds)                DEFLEC09
AV0295 ELLIP HEIGHT-      -25.401 (meters)                (03/12/08) ADJUSTED
AV0295 GEOID HEIGHT-      -26.05 (meters)                GEOID09
AV0295
AV0295 ----- Accuracy Estimates (at 95% Confidence Level in cm) -----
AV0295 Type      PID      Designation                North  East  Ellip
AV0295 -----
AV0295 NETWORK AV0295 DOLAND AZ MK                0.53  0.49  1.74
AV0295 -----
AV0295 ELLP ORDER -   THIRD      CLASS I
AV0295
AV0295.The horizontal coordinates were established by GPS observations
AV0295.and adjusted by the National Geodetic Survey in February 2007.
AV0295
AV0295.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
AV0295.See National Readjustment for more information.
AV0295.The horizontal coordinates are valid at the epoch date displayed above.
AV0295.The epoch date for horizontal control is a decimal equivalence
AV0295.of Year/Month/Day.
AV0295
AV0295 ** Due to the variability of land subsidence, the orthometric, ellipsoid,
AV0295 ** and geoid heights are valid at the date of observation. These heights
AV0295 ** must always be validated when used as control.
AV0295 ** The orthometric height was determined with a Vertical Time-dependent
AV0295 ** Positioning (VTDP) model and has been validated through GPS observations
AV0295 ** for the epoch indicated (see www.ngs.noaa.gov/heightmod/VTDP.shtml).
AV0295 ** The geoid height was determined by a new realization of GEOID03 for the
AV0295 ** epoch indicated which incorporates improved geoid heights for the
AV0295 ** Southern Louisiana Subsidence area
AV0295 ** (see www.ngs.noaa.gov/PC\_PROD/GEOID03).
AV0295
AV0295.Photographs are available for this station.

```

AV0295

AV0295.The X, Y, and Z were computed from the position and the ellipsoidal ht.

AV0295

AV0295.The Laplace correction was computed from DEFLEC09 derived deflections.

AV0295

AV0295.The ellipsoidal height was determined by GPS observations

AV0295.and is referenced to NAD 83.

AV0295

AV0295.The geoid height was determined by GEOID09.

AV0295

AV0295;		North	East	Units	Scale	Factor	Converg.
AV0295;SPC LA S	-	135,907.408	864,692.071	MT	0.99993780	-0 41	57.5
AV0295;SPC LA S	-	445,889.55	2,836,910.57	sFT	0.99993780	-0 41	57.5
AV0295;UTM 15	-	3,287,640.989	525,932.098	MT	0.99960830	+0 07	58.5
AV0295!	-	Elev Factor	x	Scale Factor	=	Combined Factor	
AV0295!SPC LA S	-	1.00000399	x	0.99993780	=	0.99994179	
AV0295!UTM 15	-	1.00000399	x	0.99960830	=	0.99961229	

AV0295

## SUPERSEDED SURVEY CONTROL

AV0295

AV0295	ELLIP H (02/10/07)	-25.392 (m)			GP( )	
AV0295	NAD 83(1992)-	29 43 07.16449(N)	092 43 54.77307(W)	AD(2004.65)	B	
AV0295	ELLIP H (06/22/05)	-25.410 (m)			GP(2004.65)	4 1
AV0295	ELLIP H (06/20/00)	-25.389 (m)			GP( )	3 1
AV0295	NAD 83(1992)-	29 43 07.18450(N)	092 43 54.76171(W)	AD( )	1	
AV0295	NAD 83(1992)-	29 43 07.16395(N)	092 43 54.77196(W)	AD( )	B	
AV0295	ELLIP H (09/10/92)	-25.338 (m)			GP( )	4 1
AV0295	NGVD 29 (??/??/??)	0.894 (m)	2.93 (f)	ADJUSTED		1 2

AV0295

AV0295.Superseded values are not recommended for survey control.

AV0295.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.

AV0295.[See file dsdata.txt](#) to determine how the superseded data were derived.

AV0295

AV0295\_U.S. NATIONAL GRID SPATIAL ADDRESS: 15RWN2593287640(NAD 83)

AV0295\_MARKER: DZ = AZIMUTH MARK DISK

AV0295\_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT

AV0295\_SP\_SET: CONCRETE POST

AV0295\_STAMPING: DOLAND 1955

AV0295\_MARK LOGO: CGS

AV0295\_PROJECTION: RECESSED 50 CENTIMETERS

AV0295\_MAGNETIC: N = NO MAGNETIC MATERIAL

AV0295\_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO

AV0295+STABILITY: SURFACE MOTION

AV0295\_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

AV0295+SATELLITE: SATELLITE OBSERVATIONS - April 23, 2006

AV0295

AV0295	HISTORY	- Date	Condition	Report By
AV0295	HISTORY	- 1955	MONUMENTED	CGS
AV0295	HISTORY	- 1965	GOOD	CGS
AV0295	HISTORY	- 1986	GOOD	NGS
AV0295	HISTORY	- 19910912	GOOD	LADTD
AV0295	HISTORY	- 19920227	GOOD	
AV0295	HISTORY	- 19980302	GOOD	NGS
AV0295	HISTORY	- 20040601	GOOD	NGS
AV0295	HISTORY	- 20051014	GOOD	NGS
AV0295	HISTORY	- 20051017	GOOD	NGS
AV0295	HISTORY	- 20060423	GOOD	NGS

AV0295

## STATION DESCRIPTION

AV0295

AV0295'DESCRIBED BY COAST AND GEODETIC SURVEY 1965

AV0295'15.15 MI E FROM GRAND CHENIERE.

AV0295'ABOUT 14.65 MILES EAST ALONG STATE HIGHWAY 82 FROM THE POST OFFICE AT  
AV0295'GRAND CHENIERE, THENCE 0.5 MILE NORTH ALONG A PAVED ROAD LEADING TO  
AV0295'NORTH ISLAND, IN S 24, T 15 S, R 4 W, ABOUT 0.1 MILE SOUTH OF THE  
AV0295'OFFICE FOR THE PAN-AMERICAN PETROLEUM CORPORATION, 12 FEET EAST OF THE  
AV0295'CENTER LINE OF THE ROAD, 87 FEET SOUTHWEST OF THE SOUTHWEST LEG OF A  
AV0295'SMALL RADIO TOWER, 4 FEET SOUTHWEST OF THE WEST GATE POST FOR A METAL  
AV0295'GATE, 1 1/2 FEET NORTHEAST OF THE SOUTHEAST CORNER OF A CATTLE GUARD,  
AV0295'1 FOOT EAST OF THE EAST EDGE OF THE CONCRETE FOUNDATION FOR THE CATTLE  
AV0295'GUARD, ABOUT 1 FOOT BELOW THE LEVEL OF THE ROAD, AND SET IN THE TOP OF  
AV0295'A CONCRETE POST ABOUT 1 FOOT BELOW THE LEVEL OF THE GROUND.

AV0295

AV0295

STATION RECOVERY (1986)

AV0295

AV0295'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1986

AV0295'RECOVERED IN GOOD CONDITION.

AV0295

AV0295

STATION RECOVERY (1991)

AV0295

AV0295'RECOVERY NOTE BY LA TRANSP AND DEV 1991

AV0295'THE STATION IS LOCATED ABOUT 15.0 MI (24.1 KM) EAST OF GRAND CHENIER,  
AV0295'7.1 MI (11.4 KM) WEST OF THE CAMERON-VERMILION PARISH LINE AND 6.5 MI  
AV0295'(10.5 KM) NORTH OF THE GULF OF MEXICO COAST LINE.

AV0295'OWNERSHIP--UNKNOWN.

AV0295'TO REACH THE STATION FROM THE POST OFFICE IN GRAND CHENIER, GO EAST  
AV0295'FOR 15.0 MI (24.1 KM) ON STATE HIGHWAY 82 TO A SIDE ROAD LEFT JUST  
AV0295'EAST OF A OIL COMPANY PUMPING STATION, TURN LEFT AND GO NORTH FOR 0.4  
AV0295'MI (0.6 KM) TO A CATTLE GUARD AND THE STATION SET ON THE RIGHT.

AV0295'THE STATION IS 12.0 FT (3.7 M) SOUTHEAST FROM THE CENTER OF THE ROAD,  
AV0295'11.0 FT (3.4 M) NORTHEAST FROM THE CENTER OF A DRIVE, 4.0 FT (1.2 M)  
AV0295'WEST FROM A METAL WITNESS SIGN ATTACHED TO A WOODEN CORNER POST FOR A  
AV0295'METAL GATE, 3.5 FT (1.1 M) SOUTHWEST FROM A FIBERGLASS WITNESS POST,  
AV0295'1.5 FT (0.5 M) SOUTHEAST FROM THE SOUTHEAST EDGE OF A METAL CATTLE  
AV0295'GAP, 0.5 FT (15.2 CM) SOUTHEAST FROM THE CONCRETE FOUNDATION FOR THE  
AV0295'CATTLE GAP, RECESSED 1.5 FT (0.5 M) BELOW THE GROUND SURFACE AND  
AV0295'ABOUT 1.5 FT (0.5 M) BELOW THE LEVEL OF THE ROAD.

AV0295

AV0295

STATION RECOVERY (1992)

AV0295

AV0295'RECOVERED 1992

AV0295'RECOVERED IN GOOD CONDITION.

AV0295

AV0295

STATION RECOVERY (1998)

AV0295

AV0295'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1998 (CSM)

AV0295'THE STATION IS LOCATED ABOUT 15 MI (24.1 KM) EAST OF GRAND CHENIER, 7  
AV0295'MI (11.3 KM) WEST OF THE CAMERON-VERMILION COUNTY LINE AND 6.5 MI  
AV0295'(10.5 KM) NORTH OF THE GULF OF MEXICO COASTLINE. OWNERSHIP--UNKNOWN.  
AV0295'TO REACH THE STATION FROM THE POST OFFICE IN GRAND CHENIER, GO EAST  
AV0295'FOR 15.0 MI (24.1 KM) ON STATE HIGHWAY 82 TO A SIDE ROAD LEFT, JUST  
AV0295'EAST OF AN OIL COMPANY PUMPING STATION. TURN LEFT AND GO NORTH FOR  
AV0295'0.4 MI (0.6 KM) ON COUNTY ROAD 47 (NORTH ISLAND ROAD) TO A CATTLE  
AV0295'GUARD AND THE STATION ON RIGHT. LOCATED 12.0 FT (3.7 M) SOUTHEAST  
AV0295'FROM THE CENTER OF THE ROAD, 11.0 FT (3.4 M) NORTHEAST FROM THE CENTER  
AV0295'OF A DRIVE, 4.0 FT (1.2 M) WEST FROM A WOODEN CORNER POST FOR A METAL  
AV0295'GATE, 3.5 FT (1.1 M) SOUTHWEST FROM A FIBERGLASS WITNESS POST, 1.5 FT  
AV0295'(0.5 M) SOUTHEAST FROM THE SOUTHEAST EDGE OF A METAL CATTLE GUARD, 0.5  
AV0295'FT (15.2 CM) SOUTHEAST FROM THE CONCRETE FOUNDATION FOR THE CATTLE

AV0295'GUARD, RECESSED 50 CM BELOW GROUND AND ABOUT 1.5 FT (0.5 M) LOWER THAN  
AV0295'THE ROAD LEVEL.

AV0295

AV0295 STATION RECOVERY (2004)

AV0295

AV0295'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2004 (KLF)

AV0295'RECOVERED AS DESCRIBED.

AV0295

AV0295 STATION RECOVERY (2005)

AV0295

AV0295'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2005 (DB)

AV0295'RECOVERED AS DESCRIBED WITH THE FOLLOWING ADDITION. 1.2 M WEST OF

AV0295'DOLAND LOGO CAP ROD MARK.

AV0295

AV0295 STATION RECOVERY (2005)

AV0295

AV0295'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2005 (JBW)

AV0295'RECOVERED IN GOOD CONDITION.

AV0295

AV0295 STATION RECOVERY (2006)

AV0295

AV0295'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2006 (RLT)

AV0295'RECOVERED IN GOOD CONDITION AS DESCRIBED.

\*\*\* retrieval complete.

Elapsed Time = 00:00:01

## **APPENDIX E**

### **PREVAILING WAGE RATES**

The prevailing wage rates enclosed are representative of the wage rates as of 1/07/2011. The contractor is responsible for utilizing the correct wage rates throughout the project.

GENERAL DECISION: LA20100002 09/10/2010 LA2

Date: September 10, 2010

General Decision Number: LA20100002 09/10/2010

Superseded General Decision Number: LA20080002

State: Louisiana

Construction Type: Heavy

Counties: Acadia, Ascension, Bossier, Caddo, Calcasieu, East Baton Rouge, Lafayette, Lafourche, Livingston, Ouachita, Rapides, St Landry, St Martin, Terrebonne, Webster and West Baton Rouge Counties in Louisiana.

HEAVY CONSTRUCTION PROJECTS (includes flood control, water & sewer lines, and water wells; excludes elevated storage tanks, industrial construction-chemical processing, power plants, and refineries)

Modification Number	Publication Date
0	03/12/2010
1	03/19/2010
2	09/03/2010
3	09/10/2010

CARP0764-003 07/01/2006

BOSSIER, CADDO, OUACHITA, RAPIDES, AND WEBSTER PARISHES

	Rates	Fringes
CARPENTER (formbuilding/formsetting).....	\$ 17.25	5.02

CARP1075-004 07/01/2009

CALCASIEU PARISH

	Rates	Fringes
CARPENTER (formbuilding/formsetting).....	\$ 20.21	4.88

CARP1075-009 07/01/2009

ACADIA, LAFAYETTE, ST. LANDRY, AND ST. MARTIN PARISHES

	Rates	Fringes
CARPENTER (formbuilding/formsetting).....	\$ 18.75	4.60

CARP1098-004 01/01/2010

ASCENSION, EAST BATON ROUGE, LIVINGSTON, AND WEST BATON ROUGE PARISHES

	Rates	Fringes
CARPENTER (formbuilding/formsetting).....	\$ 24.25	7.29

\* CARP1846-008 07/01/2010

LAFOURCHE and TERREBONNE PARISHES

	Rates	Fringes
CARPENTER (formbuilding/formsetting).....	\$ 21.56	6.85

ELEC0130-009 12/01/2009

LAFOURCHE AND TERREBONNE PARISHES

	Rates	Fringes
ELECTRICIAN.....	\$ 25.75	8.86

-----

ELEC0194-007 03/04/2010

BOSSIER, CADDO, and WEBSTER PARISHES

	Rates	Fringes
ELECTRICIAN		
Lineman and Heavy		
Equipment Operator.....	\$ 24.50	8.74

-----

ELEC0446-007 09/01/2010

OUACHITA PARISH

	Rates	Fringes
ELECTRICIAN.....	\$ 21.05	8.23

-----

ELEC0576-006 09/01/2010

RAPIDES PARISH

	Rates	Fringes
ELECTRICIAN.....	\$ 23.00	5.68

-----

ELEC0861-006 09/01/2009

ACADIA, CALCASIEU, LAFAYETTE, AND ST. MARTIN PARISHES

	Rates	Fringes
ELECTRICIAN.....	\$ 24.22	9.20

-----

ELEC0995-006 01/01/2010

ASCENSION, EAST BATON ROUGE, LIVINGSTON, ST. LANDRY, AND WEST BATON ROUGE PARISHES

	Rates	Fringes
ELECTRICIAN.....	\$ 22.78	7.82

-----

SULA2004-006 04/29/2004

	Rates	Fringes
CARPENTER (all other work).....	\$ 12.81	0.00
Cement Mason/Concrete Finisher...	\$ 13.77	0.00
Laborers		
Common.....	\$ 8.20	0.00
Pipelayer.....	\$ 9.45	0.00
Power Equipment Operators		
Backhoe/Excavator.....	\$ 13.01	0.00
Bulldozer.....	\$ 13.83	0.00
Crane.....	\$ 16.62	3.28
Dragline.....	\$ 15.16	0.00
Front End Loader.....	\$ 11.50	0.00
Motor Grader/Blade.....	\$ 11.75	0.00
Oiler.....	\$ 8.59	2.50
Trackhoe.....	\$ 12.64	0.00
Water Well Driller.....	\$ 11.91	2.44
Winch.....	\$ 11.38	0.00
Truck Driver, Dump.....	\$ 10.25	0.00

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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

=====

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

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In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

-----  
WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations  
Wage and Hour Division  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

=====  
END OF GENERAL DECISION



GENERAL DECISION: LA20100004 12/03/2010 LA4

Date: December 3, 2010

General Decision Number: LA20100004 12/03/2010

Superseded General Decision Number: LA20080004

State: Louisiana

Construction Type: Building

Counties: Acadia, Ascension, Calcasieu, East Baton Rouge, Lafayette, Lafourche, Livingston, St Landry, St Martin, Terrebonne and West Baton Rouge Counties in Louisiana.

BUILDING CONSTRUCTION PROJECTS (does not include residential construction consisting of single family homes and apartments up to and including 4 stories)

Modification Number	Publication Date
0	03/12/2010
1	03/19/2010
2	06/04/2010
3	06/18/2010
4	07/23/2010
5	07/30/2010
6	09/10/2010
7	11/12/2010
8	12/03/2010

CARP1075-005 07/01/2009

CALCASIEU PARISH

	Rates	Fringes
CARPENTER (includes acoustical, drywall and metal stud installation, and all other work; excludes formwork)...	\$ 20.21	4.88

CARP1075-008 07/01/2009

ACADIA, LAFAYETTE, ST. LANDRY, AND ST. MARTIN PARISHES

	Rates	Fringes
CARPENTER (includes acoustical, drywall and metal stud installation, and all other work; excludes formwork)...	\$ 18.75	4.60

CARP1098-003 01/01/2010

ASCENSION, EAST BATON ROUGE, LIVINGSTON, AND WEST BATON ROUGE PARISHES

	Rates	Fringes
CARPENTER (includes acoustical, drywall and metal stud installation, and all other work; excludes formwork)...	\$ 20.50	7.50

CARP1846-007 07/01/2010

LAFOURCHE and TERREBONNE PARISHES

	Rates	Fringes
CARPENTER (includes acoustical, drywall and metal stud installation, and all other work; excludes formwork)...	\$ 21.56	6.85

ELEC0130-008 12/01/2009

LAFOURCHE, ST. MARTIN (Southern Portion), AND TERREBONNE PARISHES

	Rates	Fringes
ELECTRICIAN (includes low voltage wiring and installation of fire alarms, security systems, telephones, computers, and temperature controls).....	\$ 25.75	8.86
-----		
ELEC0861-012 09/01/2009		

ACADIA, CALCASIEU, LAFAYETTE, AND ST. MARTIN (Northern Portion) PARISHES

	Rates	Fringes
ELECTRICIAN (includes low voltage wiring and installation of fire alarms, security systems, telephones, computers, and temperature controls).....	\$ 24.22	9.20
-----		
ELEC0995-005 01/01/2010		

ASCENSION, EAST BATON ROUGE, LIVINGSTON, ST. LANDRY, AND WEST BATON ROUGE PARISHES

	Rates	Fringes
ELECTRICIAN (includes low voltage wiring and installation of fire alarms, security systems, telephones, computers, and temperature controls).....	\$ 22.78	7.82
-----		
IRON0058-010 06/01/2010		

LAFOURCHE and TERREBONNE PARISHES

	Rates	Fringes
IRONWORKER, REINFORCING.....	\$ 19.85	7.67
-----		
IRON0623-006 06/10/2010		

ASCENSION, EAST BATON ROUGE, LAFAYETTE (Eastern Portion), LIVINGSTON, ST. MARTIN, ST. LANDRY (Eastern Portion), and WEST BATON ROUGE PARISHES

	Rates	Fringes
IRONWORKER, REINFORCING.....	\$ 19.91	7.32
-----		
IRON0623-012 06/01/2010		

ACADIA, CALCASIEU, LAFAYETTE (Western Portion), AND ST. LANDRY (Western Portion) PARISHES

	Rates	Fringes
IRONWORKER, REINFORCING.....	\$ 19.91	7.32
-----		
* PLUM0060-006 12/01/2010		

LAFOURCHE AND TERREBONNE (City of Houma Only) PARISHES

	Rates	Fringes
PLUMBER (includes HVAC pipe).....	\$ 25.77	9.78
-----		
PLUM0106-008 06/01/2009		

ACADIA, CALCASIEU, LAFAYETTE, ST. LANDRY, and ST. MARTIN (Western Portion) PARISHES

	Rates	Fringes
PLUMBER (includes HVAC pipe).....	\$ 22.50	11.09
-----		

\* PLUM0198-006 07/01/2010

ASCENSION, EAST BATON ROUGE, LIVINGSTON, ST. MARTIN (Eastern Portion), TERREBONNE, AND WEST BATON ROUGE PARISHES

	Rates	Fringes
PLUMBER (includes HVAC pipe).....	\$ 24.09	9.68

-----  
SFLA0669-004 04/01/2010

	Rates	Fringes
SPRINKLER FITTER.....	\$ 25.27	13.10

-----  
SHEE0214-002 07/01/2009

Lafourche and Terrebonne Parishes

	Rates	Fringes
SHEET METAL WORKER (includes HVAC Duct).....	\$ 24.54	9.65

-----  
SHEE0214-006 02/01/2009

Acadia, Ascension, Calcasieu, East Baton Rouge, Lafayette, Livingston, St. Landry, St. Martin, and West Baton Rouge Parishes

	Rates	Fringes
SHEET METAL WORKER (includes HVAC Duct).....	\$ 24.37	9.205

-----  
SULA2004-002 03/24/2004

	Rates	Fringes
CARPENTER (formbuilding & formsetting).....	\$ 13.11	1.53
Cement Mason/Concrete Finisher...	\$ 12.88	0.00
Laborer, common.....	\$ 8.95	1.57
Power Equipment Operator		
Backhoe.....	\$ 12.45	0.00
Bulldozer.....	\$ 14.32	1.55
Crane.....	\$ 15.96	3.16
ROOFER, Including Built Up, Composition and Single Ply Roofs.....	\$ 12.97	0.96
TRUCK DRIVER		
Flatbed.....	\$ 10.00	0.00
Pickup.....	\$ 8.80	0.00

-----  
WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.  
=====

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

-----  
In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.  
-----

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

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Branch of Construction Wage Determinations  
 Wage and Hour Division  
 U.S. Department of Labor  
 200 Constitution Avenue, N.W.  
 Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

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 U.S. Department of Labor  
 200 Constitution Avenue, N.W.  
 Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
 U.S. Department of Labor  
 200 Constitution Avenue, N.W.  
 Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

=====

END OF GENERAL DECISION

GENERAL DECISION: LA20100007 03/12/2010 LA7

Date: March 12, 2010

General Decision Number: LA20100007 03/12/2010

Superseded General Decision Number: LA20080007

State: Louisiana

Construction Types: Highway

Counties: Acadia, Ascension, Calcasieu, East Baton Rouge, Lafayette, Lafourche, Livingston, St Landry, St Martin, Terrebonne and West Baton Rouge Counties in Louisiana.

HIGHWAY CONSTRUCTION PROJECTS (does not include building structures in rest area projects)

Modification Number      Publication Date  
 0                              03/12/2010

\* SULA2004-015 08/03/2004

	Rates	Fringes
Carpenter (including formbuilding/formsetting).....	\$ 11.88	
Cement Mason/Concrete Finisher.\$	12.58	
Electrician (including traffic signal wiring and installation).....	\$ 12.36	
Ironworker, Reinforcing .....	\$ 12.33	
Laborers		
Asphalt Raker.....	\$ 8.95	
General including landscape/erosion.....	\$ 8.48	
Guardrail.....	\$ 8.21	1.80
Jack Hammer/Vibrator.....	\$ 8.92	
Mason Tender.....	\$ 8.63	
Pipelayer.....	\$ 9.71	1.12
Striping/Pavement Marker including paint striping and attachment of reflector buttons.....	\$ 7.93	
Traffic Control including flagger, sign placement, barricades, and cones.....	\$ 8.15	
Painter, Brush, Spray and Roller.....	\$ 13.40	2.55
Piledriverman.....	\$ 13.97	
Power Equipment Operators		
Air Compressor.....	\$ 9.04	
Asphalt Distributor.....	\$ 9.11	
Asphalt Paving Machine.....	\$ 13.30	0.18
Asphalt Screed.....	\$ 11.86	
Asphalt/Aggregate Spreader..\$	10.49	
Backhoe/Excavator.....	\$ 11.31	
Bobcat/Skid Loader.....	\$ 10.00	
Broom/Sweeper.....	\$ 9.30	
Bulldozer.....	\$ 12.00	
Concrete Saw.....	\$ 9.00	
Crane.....	\$ 14.82	
Front End Loader.....	\$ 9.60	
Mechanic.....	\$ 11.97	
Milling/Cold Planing Machine\$	13.08	
Motor Grade/Blade.....	\$ 11.68	
MTV/Shuttlebuggy.....	\$ 10.43	
Post Drive including guardrails.....	\$ 10.96	
Roller.....	\$ 9.97	
Stabilizer.....	\$ 9.44	
Trackhoe.....	\$ 12.59	
Tractor.....	\$ 11.90	
Trenching/Boring Machine....\$	8.50	
Truck drivers		
Dump (all types).....	\$ 10.19	
Flatbed.....	\$ 9.46	
Lowboy.....	\$ 12.48	
Pickup including paint truck\$	9.90	
Tack.....	\$ 9.28	

Water.....\$ 10.60

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

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WAGE DETERMINATION APPEALS PROCESS

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- \* an existing published wage determination
- \* a survey underlying a wage determination
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- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

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Branch of Construction Wage Determinations  
Wage and Hour Division  
U.S. Department of Labor  
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U.S. Department of Labor  
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Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

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U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

GENERAL DECISION: LA20100011 12/03/2010 LA11

Date: December 3, 2010

General Decision Number: LA20100011 12/03/2010

Superseded General Decision Number: LA20080011

State: Louisiana

Construction Type: Heavy Elevated Storage Tank

Counties: Acadia, Allen, Ascension, Assumption, Avoyelles, Beauregard, Bienville, Bossier, Caddo, Calcasieu, Caldwell, Cameron, Catahoula, Claiborne, Concordia, De Soto, East Baton Rouge, East Carroll, East Feliciana, Evangeline, Franklin, Grant, Iberia, Iberville, Jackson, Jefferson Davis, La Salle, Lafayette, Lafourche, Lincoln, Livingston, Madison, Morehouse, Natchitoches, Ouachita, Plaquemines, Pointe Coupee, Rapides, Red River, Richland, Sabine, St Helena, St James, St Landry, St Martin, St Mary, Tangipahoa, Tensas, Terrebonne, Union, Vermilion, Vernon, Washington, Webster, West Baton Rouge, West Carroll, West Feliciana and Winn Counties in Louisiana.

ELEVATED STORAGE TANKS (Does not include JEFFERSON, ORLEANS, ST. BERNARD, ST. CHARLES, ST. JOHN THE BAPTIST, AND ST. TAMMANY PARISHES)

Modification Number	Publication Date
0	03/12/2010
1	03/19/2010
2	05/21/2010
3	06/04/2010
4	07/02/2010
5	07/23/2010
6	08/13/2010
7	08/27/2010
8	09/03/2010
9	09/10/2010
10	11/12/2010
11	12/03/2010

BOIL0037-002 01/01/2009

Acadia, Allen, Assumption, Beauregard, Bienville, Bossier, Caddo, Calcasieu, Cameron, Claiborne, De Soto, Evangeline, Grant, Iberia, Jackson, Jefferson, Jefferson Davis, Lafayette, Lafourche, Lincoln, Natchitoches, Orleans, Plaquemines, Rapides, Red River, Sabine, St Bernard, St Charles, St James, St John the Baptist, St Landry, St Martin, St Mary, St Tammany, Tangipahoa, Terrebonne, Union, Vermilion, Washington, Webster, and Winn Parishes

	Rates	Fringes
BOILERMAKER.....	\$ 27.63	13.96

BOIL0582-002 01/01/2009

ASCENSION, AVOYELLES, CALDWELL, CATAHOULA, CONCORDIA, EAST BATON ROUGE, EAST CARROLL, EAST FELICIANA, FRANKLIN, IBERVILLE, LA SALLE, LIVINGSTON, MADISON, MOREHOUSE, OUACHITA, POINTE COUPEE, RICHLAND, ST. HELENA, TENSAS, WEST BATON ROUGE, WEST CARROLL, AND WEST FELICIANA PARISHES

	Rates	Fringes
BOILERMAKER.....	\$ 27.63	13.96

BRLA0001-003 06/01/2005

	Rates	Fringes
Bricklayer, Stonemason		
AREA 2.....	\$ 20.55	5.75
AREA 3.....	\$ 19.95	6.35
AREA 4.....	\$ 20.25	6.05

AREA DEFINITIONS:

AREA 1 - Lake Charles Chapter Parishes: Acadia, Allen,

Avoyelles, Beauregard, Calcasieu, Cameron, Catahoula, Concordia, Evangeline, Grant, Jefferson Davis, La Salle, Natchitoches, Pointe Coupee, Rapides, Sabine, St. Landry, Vernon, and Winn

AREA 2 - Baton Rouge Chapter Parishes: Ascension, Assumption, East Baton Rouge, East Feliciana, Iberia, Iberville, Lafayette, Livingston, St. Helena, St. Martin, St. Mary, Tangipahoa, Vermilion, Washington, West Baton Rouge, and West Feliciana

AREA 3 - Shreveport Chapter Parishes: Bienville, Bossier, Caddo, Caldwell, Claiborne, De Soto, East Carroll, Franklin, Jackson, Lincoln, Madison, Morehouse, Ouachita, Red River, Richland, Tensas, Union, Webster, and West Carroll

AREA 4 - New Orleans Chapter Parishes: Lafourche, Plaquemines, St. James, and Terrebonne

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BRLA0001-009 06/01/2005

	Rates	Fringes
Pointer, caulker and cleaner		
AREA 1.....	\$ 19.50	5.10
AREA 2.....	\$ 20.55	5.75
AREA 3.....	\$ 19.95	6.35
AREA 4.....	\$ 20.25	6.05

AREA DEFINITIONS:

AREA 1 - Lake Charles Chapter Parishes: Acadia, Allen, Avoyelles, Beauregard, Calcasieu, Cameron, Catahoula, Concordia, Evangeline, Grant, Jefferson Davis, La Salle, Natchitoches, Pointe Coupee, Rapides, Sabine, St. Landry, Vernon, and Winn

AREA 2 - Baton Rouge Chapter Parishes: Ascension, Assumption, East Baton Rouge, East Feliciana, Iberia, Iberville, Lafayette, Livingston, St. Helena, St. Martin, St. Mary, Tangipahoa, Vermilion, Washington, West Baton Rouge, and West Feliciana

AREA 3 - Shreveport Chapter Parishes: Bienville, Bossier, Caddo, Caldwell, Claiborne, De Soto, East Carroll, Franklin, Jackson, Lincoln, Madison, Morehouse, Ouachita, Red River, Richland, Tensas, Union, Webster, and West Carroll

AREA 4 - New Orleans Chapter Parishes: Lafourche, Plaquemines, St. James, and Terrebonne

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CARP0720-002 07/01/2006

ASCENSION, ASSUMPTION, AVOYELLES, EAST BATON ROUGE, EAST FELICIANA, IBERIA, IBERVILLE, LIVINGSTON, POINTE COUPEE, ST. HELENA, ST. JAMES (North of the Mississippi River), TANGIPAHOA, WEST BATON ROUGE, AND WEST FELICIANA PARISHES

	Rates	Fringes
MILLWRIGHT.....	\$ 27.39	3.21

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CARP0764-002 07/01/2006

BIENVILLE, BOSSIER, CADDO, CATAHOULA, CALDWELL, CLAIBORNE, CONCORDIA, DE SOTO, EAST CARROLL, FRANKLIN, GRANT, JACKSON, LASALLE, LINCOLN, MADISON, MOREHOUSE, NATCHITOCHEs, OUACHITA, RAPIDES, RED RIVER, RICHLAND, SABINE, TENSAS, UNION, WEBSTER, WEST CARROLL, AND WINN PARISHES

	Rates	Fringes
CARPENTER.....	\$ 17.25	5.02
MILLWRIGHT.....	\$ 20.50	5.02
PILEDRIVERMAN.....	\$ 20.00	5.02

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CARP1075-003 07/01/2009

ALLEN, BEAUREGARD, CALCASIEU, CAMERON, JEFFERSON DAVIS, AND



VERNON PARISHES

	Rates	Fringes
Carpenter & Piledrivermen.....	\$ 22.26	4.88
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CARP1075-007 07/01/2009		

ACADIA, EVANGELINE, LAFAYETTE, ST. LANDRY, ST. MARTIN, ST. MARY, AND VERMILION PARISHES

	Rates	Fringes
Carpenter & Piledrivermen.....	\$ 22.26	4.40
-----		
CARP1098-002 01/01/2010		

ASCENSION, ASSUMPTION, AVOUELLES, EAST BATON ROUGE, EAST FELICIANA, IBERIA, IBERVILLE, LIVINGSTON, POINT COUPEE, ST. HELENA, TANGIPAHOA, WEST BATON ROUGE, AND WEST FELICIANA PARISHES

	Rates	Fringes
CARPENTER.....	\$ 2425.00	7.29
-----		
CARP1846-004 07/01/2010		

LAFOURCHE, PLAQUEMINES, ST. JAMES (South of the Mississippi River), TERREBONNE, and WASHINGTON PARISHES

	Rates	Fringes
Carpenter; Millwright; Piledrivermen.....	\$ 21.56	6.85
-----		
ELEC0130-002 12/01/2009		

ASSUMPTION, LAFOURCHE, PLAQUEMINES, ST. JAMES, ST. MARTIN (Southern Segment Only), ST. MARY (Northeast of the Atchafalaya River), AND TERREBONNE PARISHES

	Rates	Fringes
Electrician & Cable Splicer.....	\$ 25.75	8.86
-----		
ELEC0194-003 09/03/2009		

BIENVILLE, BOSSIER, CADDO, CLAIBORNE, DE SOTO, NATCHITOCHE (Northeast of the Red River), RED RIVER, and WEBSTER PARISHES

	Rates	Fringes
ELECTRICIAN Lineman and Heavy Equipment Operator.....	\$ 24.15	8.73
-----		
ELEC0446-003 09/01/2010		

CALDWELL, EAST CARROLL, FRANKLIN, JACKSON, LINCOLN, MADISON, MOREHOUSE, OUACHITA, RICHLAND, TENSAS, UNION, AND WEST CARROLL PARISHES

	Rates	Fringes
ELECTRICIAN.....	\$ 21.05	8.23
-----		
ELEC0576-004 09/01/2010		

AVOUELLES, CATAHOULA, CONCORDIA, EVANGELINE, GRANT, LA SALLE, NATCHITOCHE (Southwest of Red River), RAPIDES, SABINE, VERNON, AND WINN PARISHES

	Rates	Fringes
ELECTRICIAN.....	\$ 23.00	5.68
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ELEC0861-005 09/01/2009		

ACADIA, ALLEN, BEAUREGARD, CALCASIEU, CAMERON, IBERIA, JEFFERSON DAVIS, LAFAYETTE, ST. MARTIN (Northern Segment Only),

ST. MARY (Southwest of Atchafalaya River), AND VERMILION PARISHES

	Rates	Fringes
ELECTRICIAN.....	\$ 24.22	9.20
-----		
ELEC0995-004 01/01/2010		

ASCENSION, EAST BATON ROUGE, EAST FELICIANA, IBERVILLE, LIVINGSTON, POINTE COUPEE, ST. HELENA, ST. LANDRY, WEST BATON ROUGE, AND WEST FELICIANA PARISHES

	Rates	Fringes
ELECTRICIAN.....	\$ 22.78	7.82
-----		
ELEC1077-001 09/01/2010		

TANGIPAHOA and WASHINGTON PARISHES

	Rates	Fringes
ELECTRICIAN (includes low voltage wiring).....	\$ 21.50	6.74
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ENGI0406-006 07/01/2010		

ACADIA, ALLEN, AVOYELLES, BEAUREGARD, BIENVILLE, BOSSIER, CADDO, CALCASIEU, CALDWELL, CAMERON, CATAHOULA, CLAIBORNE, CONCORDIA, DESOTO, EAST CARROLL, EVANGELINE, FRANKLIN, GRANT, JACKSON, JEFFERSON DAVIS, LASALLE, LINCOLN, MADISON, MOREHOUSE, NATICHTOCHES, OUACHITA, RAPIDES, RED RIVER, RICHLAND, SABINE, ST. LANDRY, TENSAS, UNION, VERNON, WEBSTER, WEST CARROLL, and WINN PARISHES

	Rates	Fringes
Power Equipment Operators		
Heavy Equipment Operator....	\$ 24.90	7.95
Light Equipment Operator....	\$ 21.36	7.95
Oiler.....	\$ 16.78	7.95
Unit Operator.....	\$ 17.25	6.95

POWER EQUIPMENT OPERATOR CLASSIFICATIONS:

Heavy Equipment Operator - crane, all types; derricks; deck winches (2); hi-ho and similar type equipment; three drum or more stabilizers; pulls, all types; concrete mixer on yard and over; all pavers; ditching or trenching machines (track type); mechanics and equipment welders; well point systems; hoist, two drums or more; hoist, one drum forty vertical feet or more; scrapers; bulldozers, rubber-tired or track, other than farm-type; scoopmobiles; motor patrol; gradall; rollers on hot mix; asphalt paving machines; front-end loaders other than farm-type; one cubic yard or over; shovels and backhoes, all types and equivalent equipment; piledriver; and side-boom cats.

Light Equipment Operator - single and two drum stabilizers; front-end loaders under one cubic yard; a-frame truck when handling steel or pipe; finishing machines (concrete); power subgrades; two tractors (crawler-type); one drum hoist under forty vertical feet; fireman; concrete spreader; pugmill; bituminous distributor on surface treatment and equivalent equipment; bull floats and equivalent equipment; job greaseman; unit operator; work boats not requiring licensed operators; inboard and outboard motored crew boats; concrete mixer under one yard; spray curing machines; rollers on subgrade; one air compressor over 125 cubic feet; form graders; asphalt finisher screedman; pump over four inches; scale operators; crusher; concrete jointing machines; concrete saw; tack machines and equivalent equipment; pump crete; electric elevator (inside); oiler drivers; farm-type, rubber-tired tractors with attachments except backhoes; kolum buff and similar equipment; forklifts, 10-ton capacity and under; mechanic helper; batch plant operator; oiler on crane using air to drive piles; and fireman operating steam valve.

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ENGI0406-008 07/01/2010		

ASCENSION, EAST BATON ROUGE, EAST FELICIANA, IBERIA, IBERVILLE, LAFAYETTE, LIVINGSTON, POINTE COUPEE, ST. HELENA, ST. MARTIN, TANGIPAHOA, VERMILION, WASHINGTON, WEST BATON ROUGE, and WEST FELICIANA PARISHES

	Rates	Fringes
Power Equipment Operators		
Heavy Equipment Operator....\$ 23.00		6.95
Light Equipment Operator....\$ 20.53		6.95
Oiler.....\$ 17.36		6.95

POWER EQUIPMENT OPERATOR CLASSIFICATIONS:

Heavy Equipment Operator - crane, all types; derricks; deck winches (2); hi-ho and similar type equipment; three drum or more stabilizers; pulls, all types; concrete mixer on yard and over; all pavers; ditching or trenching machines (track type); mechanics and equipment welders; well point systems; hoist, two drums or more; hoist, one drum forty vertical feet or more; scrapers; bulldozers, rubber-tired or track, other than farm-type; scoomobiles; motor patrol; gradall; rollers on hot mix; asphalt paving machines; front-end loaders other than farm-type; one cubic yard or over; shovels and backhoes, all types and equivalent equipment; piledriver; and side-boom cats.

Light Equipment Operator - single and two drum stabilizers; front-end loaders under one cubic yard; a-frame truck when handling steel or pipe; finishing machines (concrete); power subgrades; two tractors (crawler-type); one drum hoist under forty vertical feet; fireman; concrete spreader; pugmill; bituminous distributor on surface treatment and equivalent equipment; bull floats and equivalent equipment; job greaseman; unit operator; work boats not requiring licensed operators; inboard and outboard motored crew boats; concrete mixer under one yard; spray curing machines; rollers on subgrade; one air compressor over 125 cubic feet; form graders; asphalt finisher screedman; pump over four inches; scale operators; crusher; concrete jointing machines; concrete saw; tack machines and equivalent equipment; pump crete; electric elevator (inside); oiler drivers; farm-type, rubber-tired tractors with attachments except backhoes; kolum buff and similar equipment; forklifts, 10-ton capacity and under; mechanic helper; batch plant operator; oiler on crane using air to drive piles; and fireman operating steam valve.

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ENGI0406-009 07/01/2010

ASCENSION, LAFOURCHE, PLAQUEMINES, ST. JAMES, ST. MARY, and TERREBONNE PARISHES

	Rates	Fringes
Power Equipment Operators		
Heavy Equipment Operator....\$ 21.76		6.95
Light Equipment Operator....\$ 17.14		6.95
Oiler.....\$ 13.99		6.95
Unit Operator.....\$ 17.25		6.95

POWER EQUIPMENT OPERATOR CLASSIFICATIONS:

Heavy Equipment Operator - crane, all types; derricks; deck winches (2); hi-ho and similar type equipment; three drum or more stabilizers; pulls, all types; concrete mixer on yard and over; all pavers; ditching or trenching machines (track type); mechanics and equipment welders; well point systems; hoist, two drums or more; hoist, one drum forty vertical feet or more; scrapers; bulldozers, rubber-tired or track, other than farm-type; scoomobiles; motor patrol; gradall; rollers on hot mix; asphalt paving machines; front-end loaders other than farm-type; one cubic yard or over; shovels and backhoes, all types and equivalent equipment; piledriver; and side-boom cats.

Light Equipment Operator - single and two drum stabilizers; front-end loaders under one cubic yard; a-frame truck when handling steel or pipe; finishing machines (concrete); power subgrades; two tractors (crawler-type); one drum

hoist under forty vertical feet; fireman; concrete spreader; pugmill; bituminous distributor on surface treatment and equivalent equipment; bull floats and equivalent equipment; job greaseman; unit operator; work boats not requiring licensed operators; inboard and outboard motored crew boats; concrete mixer under one yard; spray curing machines; rollers on subgrade; one air compressor over 125 cubic feet; form graders; asphalt finisher screedman; pump over four inches; scale operators; crusher; concrete jointing machines; concrete saw; tack machines and equivalent equipment; pump crete; electric elevator (inside); oiler drivers; farm-type, rubber-tired tractors with attachments except backhoes; kolum buff and similar equipment; forklifts, 10-ton capacity and under; mechanic helper; batch plant operator; oiler on crane using air to drive piles; and fireman operating steam valve.

Unit Operator - minor equipment such as pumps, air compressors, welding machines, light plants, well point systems, etc.

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IRON0058-002 06/01/2010

PLAQUEMINES PARISH, LAFOURCHE, LIVINGSTON, ST. JAMES, TANGIPAHOA, TERREBONNE, and WASHINGTON PARISHES (West of a straight line drawn from the Louisiana-Mississippi border, east of the city limits of Warrenton, Louisiana, southwest through Hammond, Louisiana to the Gulf of Mexico)

	Rates	Fringes
IRONWORKER.....	\$ 19.85	7.67

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IRON0623-002 06/01/2010

ASCENSION, ASSUMPTION, AVOYELLES, EAST BATON ROUGE, EAST FELICIANA, IBERIA, IBERVILLE, POINTE COUPEE, ST. HELENA, ST. MARTIN, ST. MARY, WEST BATON ROUGE, AND WEST FELICIANA PARISHES;

ACADIA, EVANGELINE, LAFAYETTE, ST. LANDRY, AND VERMILION PARISHES (East of a line drawn from the meeting point of the boundaries of the Parishes of Avoyelles, Evangeline and Rapides, southeast along the western city limits of Abbeville to the Gulf of Mexico);

CATAHOULA, CONCORDIA, AND LA SALLE PARISHES (South of a line drawn from Natchez through the city of Cottonport to the Rapides Parish line, then west along the southern border of Rapides Parish);

LAFOURCHE, TANGIPAHOA, TERREBONNE, AND WASHINGTON PARISHES (West of a straight line drawn from the Louisiana-Mississippi border, west of the city limits of Warrenton, southwest through Hammond to the Gulf of Mexico);

LIVINGSTON AND ST. JAMES PARISHES (West of a straight line drawn from the Louisiana-Mississippi border, west of the city limits of Warrenton, southwest through Hammond to the Gulf of Mexico):

	Rates	Fringes
IRONWORKER.....	\$ 19.91	7.32

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IRON0623-008 06/01/2010

BOSSIER, CADDO, DE SOTO, RED RIVER, & WEBSTER PARISHES AND BIENVILLE, CLAIBORNE, NATCHITOCHEs, & WINN PARISHES (West of a line drawn directly south from the Arkansas-Louisiana border through the cities of Arcadia and Cloutierville); SABINE PARISH (North of a line drawn from the Natchitoches Parish boundary west through the city of Peason to the Texas-Louisiana border):

	Rates	Fringes
IRONWORKER.....	\$ 19.91	7.32

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IRON0623-011 06/01/2010

ALLEN, BEAUREGARD, CALCASIEU, CALDWELL, CAMERON, EAST CARROLL, FRANKLIN, GRANT, JACKSON, JEFFERSON DAVIS, LINCOLN, MOREHOUSE,

OUACHITA, RAPIDES, RICHLAND, TENSAS, UNION, VERNON, AND WEST CARROLL PARISHES; ACADIA, EVANGELINE, LAFAYETTE, ST. LANDRY, AND VERMILION PARISHES (Southwest of Rapides Parish & west of a line south of the westernmost border between Rapides & Evangeline); BIENVILLE, CLAIBORNE, NATCHITOCHEs, AND WINN PARISHES (East of a line drawn directly south from the Arkansas-Louisiana border through the cities of Arcadia & Cloutierville); CATAHOULA, CONCORDIA, AND LA SALLE PARISHES (North of a line drawn from Natchez through the city of Cottonport to the Rapides Parish line); and MADISON PARISH (Except the cities of Mound, Delta & adjacent areas)

	Rates	Fringes
IRONWORKER.....	\$ 19.91	7.32

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IRON0623-014 06/01/2010

MADISON PARISH (Cities of Mound & Delta & Adjacent Areas)

	Rates	Fringes
IRONWORKER, STRUCTURAL.....	\$ 19.80	7.43

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LABO0207-003 07/01/2006

ALLEN, BEAUREGARD, CALCASIEU, CAMERON, JEFFERSON DAVIS, AND VERNON PARISHES

	Rates	Fringes
LABORER.....	\$ 12.79	1.73

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LABO0689-001 07/01/2006

LAFOURCHE, PLAQUEMINES, ST. JAMES, TERREBONNE, AND WASHINGTON PARISHES

	Rates	Fringes
LABORER		
Lafourche and Plaquemines		
Parishes.....	\$ 11.19	1.73
St. James and Washington		
Parishes.....	\$ 10.00	1.73
Terrebonne Parish.....	\$ 12.79	1.73

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LABO0692-002 05/01/2005

BIENVILLE, BOSSIER, CADDO, CLAIBORNE, DE SOTO, RED RIVER, SABINE, AND WEBSTER PARISHES

	Rates	Fringes
LABORER.....	\$ 12.00	2.10

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LABO0762-002 01/01/2005

ACADIA, AVOYELLES, CALDWELL, CATAHOULA, CONCORDIA, EAST CARROLL, EVANGELINE, GRANT, IBERIA, JACKSON, LA SALLE, LAFAYETTE, LINCOLN, MADISON, MOREHOUSE, NATCHITOCHEs, OUACHITA, RAPIDES, RICHLAND, ST. LANDRY, ST. MARTIN, ST. MARY, TENSAS, UNION, VERMILION, WEST CARROLL, AND WINN PARISHES

	Rates	Fringes
LABORER.....	\$ 11.00	3.50

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LABO1177-002 09/01/2005

ASCENSION, EAST BATON ROUGE, EAST FELICIANA, IBERVILLE, LIVINGSTON, POINTE COUPEE, ST. HELENA, WEST BATON ROUGE and WEST FELICIANA PARISHES; ASSUMPTION PARISH (North of a line drawn from the southern limits of the town of St. James in St. James Parish to the northern limits of the town of Napoleonville in Assumption Parish and then directly west to the parish line); ST. JAMES PARISH (Excluding portion on the west bank to and including the town of Vacherie); TANGIPAHOA PARISH (South and west of a line running from the western parish line to a point directly east, which touches the northern limits of the town of Independence, then directly

south to Lake Pontchartrain):

	Rates	Fringes
LABORER.....	\$ 15.00	2.77

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PAIN1244-007 04/01/2005

NEW ORLEANS AREA - ASCENSION, ASSUMPTION, CONCORDIA, EAST BATON ROUGE, EAST FELICIANA, IBERIA, IBERVILLE, LAFAYETTE, LAFOURCHE, LIVINGSTON, PLAQUEMINES, POINTE COUPEE, ST. HELENA, ST. JAMES, ST. LANDRY, ST. MARTIN, ST. MARY, TANGIPAOHA, TERREBONNE, VERMILION, WASHINGTON, WEST BATON ROUGE, AND WEST FELICIANA PARISHES

	Rates	Fringes
PAINTER.....	\$ 15.88	4.32

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PAIN1244-008 09/01/2003

LAKE CHARLES AREA - ACADIA, ALLEN, BEAUREGARD, CALCASIEU, CAMERON, EVANGELINE, AND JEFFERSON DAVIS PARISHES

	Rates	Fringes
PAINTER.....	\$ 15.00	3.17

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PAIN1244-009 02/01/2004

SHREVEPORT AREA - AVOUELLES, BIENVILLE, BOSSIER, CADDO, CALDWELL, CATAHOULA, CLAIBORNE, DE SOTO, EAST CARROLL, FRANKLIN, GRANT, JACKSON, LA SALLE, LINCOLN, MADISON, MOREHOUSE, NATCHITOCHES, OUACHITA, RAPIDES, RED RIVER, RICHLAND, SABINE, TENSAS, UNION, VERNON, WEBSTER, WEST CARROLL, AND WINN PARISHES

	Rates	Fringes
PAINTER.....	\$ 13.50	2.65

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PLAS0487-003 04/01/2004

ALLEN, AVOUELLES, BEAUREGARD, BIENVILLE, BOSSIER, CADDO, CALCASIEU, CALDWELL, CAMERON, CATAHOULA, CLAIBORNE, CONCORDIA, DE SOTO, EAST CARROLL, EVANGELINE, FRANKLIN, GRANT, JACKSON, JEFFERSON DAVIS, LA SALLE, LINCOLN, MADISON, MOREHOUSE, NATCHITOCHES, OUACHITA, RAPIDES, RED RIVER, RICHLAND, SABINE, TENSAS, UNION, VERNON, WEBSTER, WEST CARROLL, AND WINN PARISHES

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 13.42	0.00

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PLAS0812-002 06/01/2004

ACADIA, ASCENSION, ASSUMPTION, EAST BATON ROUGE, EAST FELICIANA, IBERIA, IBERVILLE, LAFAYETTE, LAFOURCHE, LIVINGSTON, PLAQUEMINES, POINTE COUPEE, ST. HELENA, ST. JAMES, ST. LANDRY, ST. MARTIN, ST. MARY, TANGIPAOHA, TERREBONNE, VERMILION, WASHINGTON, WEST BATON ROUGE, AND WEST FELICIANA PARISHES

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 21.85	0.00

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\* PLUM0060-004 12/01/2010

LAFOURCHE, PLAQUEMINES, ST. JAMES (Southeastern Portion), TANGIPAOHA (Cities of Robert, Hammond, Ponchatoula, Tickfaw, Baptist & Pumpkin Center) TERREBONNE, and WASHINGTON PARISHES

	Rates	Fringes
Plumber, Pipefitter, Steamfitter.....	\$ 25.77	9.78

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PLUM0106-004 06/01/2009

ACADIA, ALLEN, BEAUREGARD, CALCASIEU, CAMERON, IBERIA (West of Hwy 31 and Hwy 83), JEFFERSON DAVIS, LAFAYETTE, ST. LANDRY, ST.

MARTIN (West of Hwy #31 and Hwy 83), and VERMILION PARISHES

	Rates	Fringes
Plumber and Steamfitter.....	\$ 22.50	11.09
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PLUM0141-002 08/01/2010		

BIENVILLE, BOSSIER, CADDO, CLAIBORNE, DE SOTO, RED RIVER, SABINE & WEBSTER PARISHES; NATCHITOCHES, and VERNON PARISHES (Northwest of a line drawn from Natchitoches to Anacoco through Bellwood & north of Hwy #111 between Anacoco & Haddens); and WINN PARISH (West of a line drawn from Winnfield to the junction of the Parish boundaries of Winn, Bienville & Jackson)

	Rates	Fringes
Plumber and Steamfitter.....	\$ 24.52	10.43
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* PLUM0198-003 07/01/2010		

ASCENSION, ASSUMPTION, EAST BATON ROUGE, EAST FELICIANA, IBERIA (East of Hwy 31 & Hwy 83), IBERVILLE, LIVINGSTON, POINTE COUPEE, ST. HELENA, ST. JAMES (Northwestern Portion), ST. MARTIN (East of Hwy 31 & Hwy 83), ST. MARY, TANGIPAHOA (Excluding Cities of Robert, Hammond, Ponchatoula, Tickfaw, Baptist & Pumpkin Center), WEST BATON ROUGE, and WEST FELICIANA PARISHES

	Rates	Fringes
Plumber and Steamfitter.....	\$ 24.09	9.68
-----		
PLUM0247-002 11/01/2010		

AVOYELLES, CATAHOULA, CONCORDIA, GRANT, LA SALLE, NATCHITOCHES (City limits of Natchitoches, Hwy #6 to Hagedwood & Hwy #117), RAPIDES, and VERNON (Ft. Polk & Hwy #117, south to Leesville) PARISHES

	Rates	Fringes
Plumber and Steamfitter.....	\$ 23.80	8.08
-----		
PLUM0659-001 07/01/2010		

CALDWELL, EAST CARROLL, FRANKLIN, JACKSON, LINCOLN, MADISON, MOREHOUSE, OUACHITA, RICHLAND, TENSAS, UNION, WEST CARROLL, AND WINN (North of Hwy #84) PARISHES

	Rates	Fringes
Plumber, Pipefitter, Steamfitter.....	\$ 22.35	7.85
-----		
ROOF0123-002 10/01/2006		

ALLEN, ASSUMPTION, BEAUREGARD, BIENVILLE, BOSSIER, CADDO, CALCASIEU, CALDWELL, CAMERON, CATAHOULA, CLAIBORNE, CONCORDIA, DE SOTO, EAST CARROLL, EVANGELINE, FRANKLIN, GRANT, JACKSON, JEFFERSON DAVIS, LAFOURCHE, LASALLE, LINCOLN, MADISON, MOREHOUSE, NATCHITOCHES, OUACHITA, PLAQUEMINES, RAPIDES, RED RIVER, RICHLAND, SABINE, ST. JAMES, ST. MARTIN (Southern Portion), ST. MARY, TENSAS, TERREBONNE, UNION, VERMILION, VERNON, WASHINGTON, WEBSTER, WEST CARROLL, AND WINN PARISHES

	Rates	Fringes
ROOFER, Including Built Up, Composition and Single Ply Roofs.....	\$ 17.72	5.31
-----		
ROOF0317-002 10/01/2009		

ACADIA, ASCENSION, AVOYELLES, EAST BATON ROUGE, EAST FELICIANA, IBERIA, IBERVILLE, LAFAYETTE, LIVINGSTON, POINTE COUPEE, ST. HELENA, ST. LANDRY, ST. MARTIN (Northern Portion), TANGIPAHOA, WEST BATON ROUGE, AND WEST FELICIANA PARISHES

	Rates	Fringes
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ROOFER, Including Built Up,  
Composition and Single Ply  
Roofs.....\$ 19.43                   5.07

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TEAM0005-002 10/01/2003

ACADIA, ASCENSION, ASSUMPTION, EAST BATON ROUGE, EAST  
FELICIANA, EVANGELINE, IBERIA, IBERVILLE, LAFAYETTE,  
LIVINGSTON, POINTE COUPEE, ST. HELENA, ST. JAMES, ST. LANDRY,  
ST. MARTIN, ST. MARY, TANGIPAHOA, VERMILION, WASHINGTON, WEST  
BATON ROUGE, AND WEST FELICIANA PARISHES

Rates                   Fringes

TRUCK DRIVER

3 Tons; up to but not  
including 5 tons.....\$ 11.35  
5 Tons & over; including  
but not limited to Winch,  
Dempsey, Dumpster, Lowboy,  
Semi-Trailer, Euclid,  
Tournapull & Similar  
Equipment Used for  
Transporting Material.....\$ 11.52  
Fuel.....\$ 11.35  
Larger trucks to carry  
capacity of rear axles  
50,000 lbs. & over.....\$ 11.65  
Over 1 ton; up to but not  
including 3 tons.....\$ 11.23  
Pickup.....\$ 10.98  
Winch with "A" frame when  
used for transporting  
material.....\$ 11.48

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TEAM0270-001 11/01/2003

LAFOURCHE, PLAQUEMINES, AND TERREBONNE PARISHES

Rates                   Fringes

TRUCK DRIVER

1 1/2 Tons up to but not  
including 3 tons.....\$ 12.70  
3 Tons up to but not  
including 5 tons.....\$ 12.75  
5 Tons & over.....\$ 13.01  
Up to 1 1/2 tons.....\$ 12.59

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TEAM0568-002 11/01/2003

ALLEN, AVOYELLES, BEAUREGARD, BIENVILLE, BOSSIER, CADDO,  
CALCASIEU, CALDWELL, CAMERON, CATAHOULA, CLAIBORNE, CONCORDIA,  
DE SOTO, EAST CARROLL, FRANKLIN, GRANT, JACKSON, JEFFERSON  
DAVIS, LA SALLE, LINCOLN, MADISON, MOREHOUSE, NATCHITOCHES,  
OUACHITA, RAPIDES, RED RIVER, RICHLAND, SABINE, TENSAS, UNION,  
VERNON, WEBSTER, WEST CARROLL, AND WINN PARISHES

Rates                   Fringes

TRUCK DRIVER

GROUP 1.....\$ 9.87  
GROUP 2.....\$ 9.95  
GROUP 3.....\$ 10.20  
GROUP 4.....\$ 10.35  
GROUP 5.....\$ 10.50  
GROUP 6.....\$ 10.70  
GROUP 7.....\$ 11.05

TRUCK DRIVER CLASSIFICATIONS:

GROUP 1 - Pickup; Spotter & Dumper of Dirt, Gravel, etc.

GROUP 2 - Stake Body; Flatbed

GROUP 3 - Single Axle Dump & Water Truck; Transit Mix, up to  
& including 3 yds.

GROUP 4 - Tandem Axle Dump, Batch & Water Truck over 3 tons;  
Pickup with Trailer



GROUP 5 - Miss. Wagon, Float, Tractor Trailer; Rubber Tired Tractor & Wobble Wheels

GROUP 6 - Euclid; Lowboy; Dempsey Dumpster; Koehring Dump; 5 Axle Truck; Transit Mix Over 3 yds.

GROUP 7 - Forklift

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

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Branch of Construction Wage Determinations  
Wage and Hour Division  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

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U.S. Department of Labor  
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U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

=====

END OF GENERAL DECISION

GENERAL DECISION: LA20100015 03/12/2010 LA15

Date: March 12, 2010

General Decision Number: LA20100015 03/12/2010

Superseded General Decision Number: LA20080015

State: Louisiana

Construction Type: Heavy Dredging

Counties: Louisiana Statewide.

DREDGING PROJECTS ALONG THE GULF COAST AREA INCLUDING THE MISSISSIPPI RIVER AND ITS TRIBUTARIES TO THE OHIO RIVER

Modification Number 0 Publication Date 03/12/2010

\* SULA1994-001 04/01/1994

	Rates	Fringes
Derrick Operator.....	\$ 7.25	
Dozer Operator.....	\$ 7.25	
Dredge 16" and Over		
Deckhand.....	\$ 7.25	
Dredge tender operator.....	\$ 7.25	
Fireman.....	\$ 7.25	
First assistant engineer....	\$ 7.25	
Leverman.....	\$ 7.25	
Oiler.....	\$ 7.25	
Second assistant engineer..	\$ 7.25	
Shoreman.....	\$ 7.25	
Third assistant engineer....	\$ 7.25	
Truck driver.....	\$ 7.25	
Welder.....	\$ 7.25	
Dredge Under 16"		
Deckhand.....	\$ 7.25	
Dredge tender operator.....	\$ 7.25	
Leverman.....	\$ 7.25	
Oiler.....	\$ 7.25	
Welder.....	\$ 7.25	
Hydraulic Dredging		
First cook.....	\$ 7.25	
Handyman.....	\$ 7.25	
Janitor, cabin person.....	\$ 7.25	
Second cook.....	\$ 7.25	
Marsh Buggy Dragline, Oiler.....	\$ 7.25	
Marsh Buggy Dragline, Operator...	\$ 7.25	
Self-Propelled Hopper Dredge, Drag Tender.....	\$ 9.70	3.45+a

FOOTNOTE: Fourteen paid vacation days and eight paid holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day & Christmas Day provided the employee has one year of service.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively

bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

-----

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

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 Wage and Hour Division  
 U.S. Department of Labor  
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 Washington, DC 20210

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Wage and Hour Administrator  
 U.S. Department of Labor  
 200 Constitution Avenue, N.W.  
 Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
 U.S. Department of Labor  
 200 Constitution Avenue, N.W.  
 Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

=====

END OF GENERAL DECISION

GENERAL DECISION: LA20100016 12/03/2010 LA16

Date: December 3, 2010  
General Decision Number: LA20100016 12/03/2010

Superseded General Decision Number: LA20080016

State: Louisiana

Construction Type: Heavy Industrial

Counties: Acadia, Ascension, Bossier, Caddo, Calcasieu, East Baton Rouge, Jefferson, Lafayette, Lafourche, Livingston, Orleans, Ouachita, Plaquemines, Rapides, St Bernard, St Charles, St James, St John the Baptist, St Landry, St Martin, St Tammany, Terrebonne and Webster Counties in Louisiana.

HEAVY CONSTRUCTION PROJECTS (Industrial, Processing Plants, and Refineries)

Modification Number	Publication Date
0	03/12/2010
1	03/19/2010
2	05/21/2010
3	06/04/2010
4	07/02/2010
5	07/23/2010
6	08/13/2010
7	08/27/2010
8	09/03/2010
9	09/10/2010
10	11/12/2010
11	12/03/2010

BOIL0037-001 01/01/2009

Acadia, Bossier, Caddo, Calcasieu, Jefferson, Lafayette, Lafourche, Orleans, Plaquemines, Rapides, St Bernard, St Charles, St James, St John the Baptist, St Landry, St Martin, St Tammany, Terrebonne, and Webster Parishes

	Rates	Fringes
BOILERMAKER.....	\$ 27.63	13.96

BOIL0582-001 01/01/2009

ASCENSION, EAST BATON ROUGE, LIVINGSTON, AND OUACHITA PARISHES

	Rates	Fringes
BOILERMAKER.....	\$ 27.63	13.96

CARP0720-001 07/01/2006

ASCENSION, EAST BATON ROUGE, LIVINGSTON, AND ST. JAMES (North of the Mississippi River) PARISHES

	Rates	Fringes
MILLWRIGHT.....	\$ 27.39	3.21

CARP0764-001 07/01/2006

BOSSIER, CADDO, OUACHITA, WEBSTER, AND RAPIDES PARISHES

	Rates	Fringes
CARPENTER (including drywall hanging/framing, metal studs, and formsetting/Formbuilding)....	\$ 17.25	5.02
MILLWRIGHT.....	\$ 20.50	5.02

CARP1075-001 07/01/2009

CALCASIEU PARISH

	Rates	Fringes
CARPENTER (including drywall		

hanging/framing, metal studs,  
and formsetting/formbuilding)....\$ 22.26 4.88

-----  
CARP1075-006 07/01/2009

ACADIA, LAFAYETTE, ST. LANDRY, AND ST. MARTIN PARISHES

Rates Fringes

CARPENTER (including drywall  
hanging/framing, metal studs,  
and formsetting/formbuilding)....\$ 22.26 4.60

-----  
CARP1098-001 01/01/2010

ASCENSION, EAST BATON ROUGE, LIVINGSTON, AND ST. JAMES (North  
of the Mississippi River) PARISHES

Rates Fringes

CARPENTER (including drywall  
hanging/framing, metal studs,  
and formsetting/formbuilding)....\$ 24.25 7.29

-----  
CARP1846-003 07/01/2010

JEFFERSON, LAFOURCHE, ORLEANS, PLAQUEMINES, ST. BERNARD, ST.  
CHARLES, ST. JAMES (South of the Mississippi River), ST. JOHN  
THE BAPTIST, ST. TAMMANY, and TERREBONNE PARISHES

Rates Fringes

CARPENTER (including drywall  
hanging/framing, metal studs,  
and formsetting/Formbuilding)....\$ 21.56 6.85  
MILLWRIGHT.....\$ 21.56 6.85

-----  
ELEC0130-004 12/01/2009

JEFFERSON, LAFOURCHE, ORLEANS, PLAQUEMINES, ST. BERNARD, ST.  
CHARLES, ST. JAMES, ST. JOHN THE BAPTIST, ST. MARTIN (Southern  
Portion), AND TERREBONNE PARISHES

Rates Fringes

ELECTRICIAN (including low  
voltage wiring).....\$ 25.75 8.86

-----  
ELEC0194-008 03/04/2010

BOSSIER, CADDO, and WEBSTER PARISHES

Rates Fringes

ELECTRICIAN (including low  
voltage wiring)  
Lineman and Heavy  
Equipment Operator.....\$ 24.50 8.74

-----  
ELEC0446-005 09/01/2010

OUACHITA PARISH

Rates Fringes

ELECTRICIAN (including low  
voltage wiring).....\$ 21.05 8.23

-----  
ELEC0576-007 09/01/2010

RAPIDES PARISH

Rates Fringes

ELECTRICIAN (including low  
voltage wiring).....\$ 23.00 5.68

-----  
ELEC0861-007 09/01/2009

ACADIA, CALCASIEU, LAFAYETTE, AND ST. MARTIN (Northern Portion)  
PARISHES

	Rates	Fringes
ELECTRICIAN (including low voltage wiring).....	\$ 24.22	9.20
-----		
ELEC0995-007 01/01/2010		

ASCENSION, EAST BATON ROUGE, LIVINGSTON, AND ST. LANDRY PARISHES

	Rates	Fringes
ELECTRICIAN (including low voltage wiring).....	\$ 22.78	7.82
-----		
ELEC1077-004 09/01/2010		

ST. TAMMANY PARISH

	Rates	Fringes
ELECTRICIAN (including low voltage wiring).....	\$ 21.50	6.74
-----		
ENGI0406-016 07/01/2010		

	Rates	Fringes
Power equipment operators: (Acadia, Bossier, Caddo, Calcasieu, Lafayette, Ouachita, Rapides, St. Landry, St. Martin, and Webster Parishes)		
Crane, 50 to 150 tons.....	\$ 25.15	7.95
Crane, below 50 tons.....	\$ 24.90	7.95
Crane, over 150 tons.....	\$ 25.40	7.95
Power equipment operators: (Ascension, Livingston, and St. James Parishes)		
Crane, 50 to 150 tons.....	\$ 25.15	7.95
Crane, below 50 tons.....	\$ 24.65	7.95
Crane, over 150 tons.....	\$ 26.15	7.95
Power equipment operators: (Lafourche, St. Bernard, St. Charles, St. John the Baptist, St. Tammany, and Terrebonne Parishes)		
Crane, 50 to 150 tons.....	\$ 25.15	7.95
Crane, below 50 tons.....	\$ 24.65	7.95
Crane, over 150 tons.....	\$ 26.15	7.95
Power Equipment Operators (East and West Baton Rouge)		
Crane, 50 to 150 tons.....	\$ 25.15	7.95
Crane, below 50 tons.....	\$ 24.65	7.95
Crane, over 150 tons.....	\$ 26.15	7.95
Power equipment operators: (Orleans, Jefferson, Plaquemines)		
Crane, 50 to 150 tons.....	\$ 25.15	7.95
Crane, below 50 tons.....	\$ 24.65	7.95
Crane, over 150 tons.....	\$ 26.15	7.95
-----		
IRON0058-005 06/01/2010		

JEFFERSON, LAFOURCHE, ORLEANS, PLAQUEMINES, ST. BERNARD, ST. CHARLES, ST. JAMES (Southeastern Portion), ST. JOHN THE BAPTIST, ST. TAMMANY, and TERREBONNE PARISHES

	Rates	Fringes
Ironworker, reinforcing and structural.....	\$ 19.85	7.67
-----		
IRON0623-004 06/01/2010		

ASCENSION, EAST BATON ROUGE, LAFAYETTE (Eastern Portion), LIVINGSTON, ST. JAMES (Northwestern Portion), ST. LANDRY, and ST. MARTIN PARISH

	Rates	Fringes
--	-------	---------

IRONWORKER, REINFORCING AND  
STRUCTURAL.....\$ 19.91 7.32

IRON0623-009 06/01/2010

BOSSIER, CADDO, AND WEBSTER PARISHES

Rates Fringes  
Ironworker, reinforcing and  
structural.....\$ 19.91 7.32

IRON0623-013 06/01/2010

ACADIA, CALCASIEU, LAFAYETTE (Western Portion), OUACHITA, AND  
RAPIDES PARISHES

Rates Fringes  
Ironworker, reinforcing and  
structural.....\$ 19.91 7.32

LABO0207-004 07/01/2006

CALCASIEU PARISH

Rates Fringes  
Laborer, common.....\$ 12.79 1.73

LABO0689-002 07/01/2006

JEFFERSON, LAFOURCHE, ORLEANS, PLAQUEMINES, ST. BERNARD, ST.  
CHARLES, ST. JAMES, ST. JOHN THE BAPTIST, ST. TAMMANY, AND  
TERREBONNE PARISHES

Rates Fringes  
Laborer, common  
Jefferson, Orleans, St.  
Bernard, and Terrebonne  
Parishes.....\$ 12.79 1.73  
Lafourche, Plaquemines,  
St. Charles, and St. John  
the Baptist Parishes.....\$ 11.19 1.73  
St. James and St. Tammany  
Parishes.....\$ 10.00 1.73

LABO0692-001 05/01/2005

BOSSIER, CADDO, AND WEBSTER PARISHES

Rates Fringes  
Laborer, common.....\$ 12.00 2.10

LABO0762-001 01/01/2005

ACADIA, LAFAYETTE, OUACHITA, RAPIDES, ST. LANDRY, AND ST.  
MARTIN PARISHES

Rates Fringes  
Laborer, common.....\$ 11.00 3.50

LABO1177-001 09/01/2005

ASCENSION, EAST BATON ROUGE, AND LIVINGSTON PARISHES

Rates Fringes  
Laborer, common.....\$ 15.00 2.77

PAIN1244-003 04/01/2005

NEW ORLEANS AREA - ASCENSION, EAST BATON ROUGE, JEFFERSON,  
LAFAYETTE, LAFOURCHE, LIVINGSTON, ORLEANS, PLAQUEMINES, ST.  
BERNARD, ST. CHARLES, ST. JAMES, ST. JOHN THE BAPTIST, ST.  
LANDRY, ST. MARTIN, ST. TAMMANY, AND TERREBONNE PARISHES



	Rates	Fringes
PAINTER (brush, roller, spray, and sandblaster).....	\$ 15.88	4.32
-----		
PAIN1244-004 09/01/2003		

LAKE CHARLES AREA - ACADIA AND CALCASIEU PARISHES

	Rates	Fringes
PAINTER (brush, roller, spray, and sandblaster).....	\$ 15.00	3.17
-----		
PAIN1244-005 02/01/2004		

SHREVEPORT AREA - BOSSIER, CADDO, OUACHITA, RAPIDES, AND WEBSTER PARISHES

	Rates	Fringes
PAINTER (brush, roller, spray, and sandblaster).....	\$ 13.50	2.65
-----		
* PLUM0060-001 12/01/2010		

JEFFERSON, LAFOURCHE, ORLEANS, PLAQUEMINES, ST. BERNARD, ST. CHARLES, ST. JAMES (Southeastern Portion), ST. JOHN THE BAPTIST, ST. TAMMANY, AND TERREBONNE PARISHES

	Rates	Fringes
PIPEFITTER (excluding HVAC pipe).....	\$ 25.77	9.78
PLUMBER (including HVAC pipe and setting system).....	\$ 25.77	9.78
-----		
PLUM0106-001 06/01/2009		

ACADIA, CALCASIEU, LAFAYETTE, ST. LANDRY, and ST. MARTIN (Western Portion) PARISHES

	Rates	Fringes
PLUMBER/PIPEFITTER (including HVAC pipe and setting system)....	\$ 22.50	11.09
-----		
PLUM0141-001 08/01/2010		

BOSSIER, CADDO, and WEBSTER PARISHES

	Rates	Fringes
PLUMBER/PIPEFITTER (including HVAC pipe and setting system)....	\$ 24.52	10.43
-----		
* PLUM0198-001 07/01/2010		

ASCENSION, EAST BATON ROUGE, LIVINGSTON, ST. JAMES (Northwestern Portion), AND ST. MARTIN (Eastern Portion) PARISHES

	Rates	Fringes
PLUMBER/PIPEFITTER (including HVAC pipe and setting system)....	\$ 24.09	9.68
-----		
PLUM0247-001 11/01/2010		

RAPIDES PARISH

	Rates	Fringes
PLUMBER/PIPEFITTER (including HVAC pipe and setting system)....	\$ 23.80	8.08
-----		
PLUM0659-003 07/01/2010		

OUACHITA PARISH

	Rates	Fringes
--	-------	---------

PLUMBER/PIPEFITTER (including  
HVAC pipe and setting system)...\$ 22.35 7.85

-----  
SULA2004-005 05/19/2004

	Rates	Fringes
Cement Mason/Concrete Finisher...	\$ 16.89	2.45
Power Equipment Operator Oiler.....	\$ 11.16	3.09

-----

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.  
=====

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END OF GENERAL DECISION

**APPENDIX F**  
**INTERPRETATION OR CLARIFICATION**  
**BY ENGINEER FORM**

Bio-Engineered Oyster Reef Demonstration (LA-08)  
Interpretation or Clarification by Engineer  
Number ( \_\_\_\_ )

DATE:

SUBJECT:

SUMMARY OF MATTER BY CONTRACTOR

---

INTERPRETATION OR CLARIFICATION OF MATTER BY ENGINEER

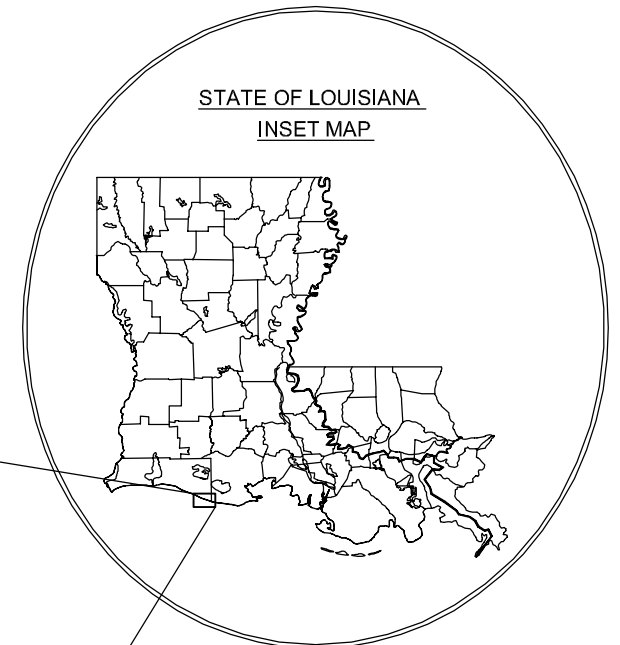
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## **DRAWINGS**

STATE OF LOUISIANA  
 OFFICE OF COASTAL PROTECTION & RESTORATION  
 RESTORATION ENGINEERING DIVISION

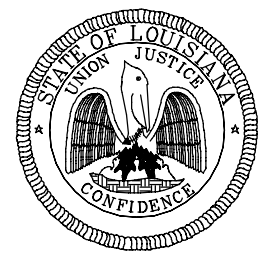
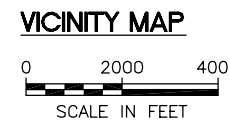
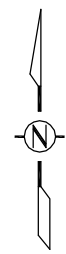
BIO-ENGINEERED OYSTER REEF  
 DEMONSTRATION PROJECT

STATE PROJECT NUMBER LA-08  
 CAMERON PARISH, LOUISIANA



INDEX TO SHEETS

SHEET NO.	DESCRIPTION
1.	TITLE SHEET
2.	GENERAL NOTES
3.	PROJECT AREA AND CONTRACTOR USE AREA
4.	SITE PLAN
5.	TYPICAL SECTIONS
6.	OYSTERBREAK ARMOR UNITS
7.	MARINE MATTRESS DETAILS
8.	MARINE MATTRESS DETAILS
9.	NAVIGATION AID
10.	INITIAL MONITORING SURVEY PLAN
11.	POST-CONSTRUCTION MONITORING SURVEY PLAN
12.	EXISTING BATHYMETRIC SECTIONS



\_\_\_\_\_  
 OCPR CHIEF OF RESTORATION ENGINEERING DIVISION

\_\_\_\_\_  
 OCPR ENGINEER MANAGER

\_\_\_\_\_  
 OCPR PROJECT ENGINEER

\_\_\_\_\_  
 COAST & HARBOR ENGINEERING



TYPE OF CONSTRUCTION  
 CLASSIFICATION III (Heavy Construction)

**COAST & HARBOR ENGINEERING**  
 3410 FAR WEST BLVD., SUITE 210  
 AUSTIN, TX 78731  
 PH 512-342-9705  
 FAX 512-342-9708

SUBMITTED UNDER THE AUTHORITY OF  
 HUGO E. BERMUDEZ, P.E. 30107  
 FOR BIDDING AND CONSTRUCTION.

REV.	DATE	DESCRIPTION	BY
A	2/15/2011	FOR BID	SH

LOUISIANA OFFICE OF COASTAL  
 PROTECTION AND RESTORATION  
 RESTORATION ENGINEERING DIVISION  
 450 LAUREL ST.  
 NORTH CHASE TOWER, SUITE 1150-6  
 BATON ROUGE, LOUISIANA 70804

DRAWN BY: TM      DESIGNED BY: SH

BIO-ENGINEERED OYSTER REEF  
 DEMONSTRATION PROJECT

STATE PROJECT NUMBER: LA-08

FEDERAL PROJECT NUMBER: LA-08

APPROVED BY: RUSS JOFFRION, P.E.

TITLE SHEET

DATE: 2/15/2011

SHEET 1 OF 12

**SURVEY NOTES:**

1. TOPOGRAPHIC AND HYDROGRAPHIC SURVEY POINTS WERE COLLECTED BY NAISMITH MARINE SERVICES IN MAY 2008. (361) 945-0248.
2. ALL ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) IN U.S. SURVEY FEET.
3. ALL HORIZONTAL COORDINATES ARE REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83) LOUISIANA STATE PLANE, SOUTH ZONE, FEET.
4. SURVEY MONUMENT ME-18-SM-01 HAS BEEN ESTABLISHED NEAR THE PROJECT SITE. REFER TO SHEET 3 FOR SURVEY CONTROL LOCATIONS. CONTRACTOR SHALL BE RESPONSIBLE TO ESTABLISH AND MAINTAIN TEMPORARY BENCHMARKS DURING CONSTRUCTION AS NEEDED, SEE APPENDIX D FOR SURVEY DATA SHEET.
5. CONDITION AND ACCURACY OF SURVEY MONUMENT IS NOT GUARANTEED. CONTRACTOR SHALL VERIFY THE ACCURACY OF SURVEY CONTROL MONUMENTS PRIOR TO CONSTRUCTION. IMMEDIATELY REPORT ANY DISCREPANCIES TO ENGINEER.
6. AERIAL PHOTOGRAPH DOQQ FROM THE LOUISIANA STATEWIDE GIS, DATED 2005.

**GENERAL NOTES:**

1. PRIOR TO COMMENCEMENT OF THE WORK, THE CONTRACTOR SHALL CALL LOUISIANA ONE CALL AT 1-800-272-3020 A MINIMUM OF 5 DAYS PRIOR TO CONSTRUCTION TO LOCATE EXISTING UTILITIES IN THE PROJECT SITE. THE CONTRACTOR SHALL CONDUCT THE WORK IN SUCH A MANNER AS TO COOPERATE AND MINIMIZE INCONVENIENCES WITH UTILITIES. ANY UNIDENTIFIED PIPES OR STRUCTURES WHICH MAY BE DISCOVERED WITHIN THE LIMITS OF THE PROJECT SITE SHALL NOT BE DISTURBED. CONSTRUCTION OR EXCAVATION SHALL NOT BE PERFORMED AT THESE LOCATIONS WITHOUT APPROVAL FROM THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING PIPELINE AND UTILITY OPERATORS AT LEAST 72 HOURS IN ADVANCE OF WORK.
2. THE CONTRACTOR SHALL PERFORM A MAGNETOMETER SURVEY WITHIN THE PROJECT WORK LIMITS (AS SHOWN ON SHEET 4) AND LOCATE ALL UTILITIES AND OBSTRUCTIONS PRIOR TO COMMENCING WORK. ALL PIPELINES AND UNDERGROUND UTILITIES SHALL BE MARKED WITH BUOYS BY CONTRACTOR. CONTRACTOR SHALL MAINTAIN BUOYS DURING CONSTRUCTION. CONTRACTOR SHALL NOT ANCHOR SPUD OR EXCAVATE WITHIN 100 FEET OF ANY PIPELINE. RESULTS OF THE MAGNETOMETER SURVEY SHALL INCLUDE: DRAWINGS SHOWING ALL TRACK LINES, COORDINATES, AMPLITUDES, SIGNATURE TYPES, AND SIGNATURE WIDTHS OF ALL HITS SHALL BE SUBMITTED TO THE ENGINEER A MINIMUM OF 14 DAYS PRIOR TO THE START OF CONSTRUCTION, SEE SPECIFICATIONS, TS-7.
3. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES CAUSED BY THE CONTRACTOR'S NEGLIGENCE. THE DAMAGE SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE.
4. LOCATION OF UTILITIES, INCLUDING PIPELINES, INDICATED ON THE DRAWINGS ARE FOR INFORMATIONAL PURPOSES ONLY AND ARE BASED IN PART ON INFORMATION PROVIDED BY THE RESPECTIVE UTILITY COMPANIES. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY ALL EXISTING UTILITY LOCATIONS PRIOR TO CONSTRUCTION.
5. CONTACT INFORMATION FOR THE KNOWN PIPELINES IN THE PROJECT AREA IS PROVIDED BELOW. CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND CONTACTING ANY OTHER PIPELINE OR UTILITY OWNERS WITHIN THE PROJECT AREA:  
DYNEGY (TARGA RESOURCES, INC.)  
CONTACT: DARRELL REDD  
PHONE: 713-574-1000
6. THE CONTRACTOR SHALL VISIT THE SITE OF WORK TO BECOME FAMILIAR WITH THE LOCAL CONDITIONS AND WHAT EFFECTS THE CONDITIONS MAY HAVE ON ACCESS AND CONSTRUCTION. PLANS AND SPECIFICATIONS ARE COMPLEMENTARY; WHAT IS REQUIRED BY ONE IS BINDING AS IF REQUIRED BY ALL. CLARIFICATIONS AND INTERPRETATIONS OF, OR NOTIFICATIONS OF MINOR VARIATIONS AND DEVIATIONS IN THE CONTRACT DOCUMENTS, WILL BE ISSUED BY THE ENGINEER.
7. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, EXISTING ELEVATIONS AND CONDITIONS SHOWN ON THE DRAWINGS PRIOR TO ORDERING MATERIAL, COMMENCEMENT OF CONSTRUCTION, AND PREPARATION OF SHOP DRAWINGS. THE ENGINEER SHALL BE NOTIFIED OF ALL DISCREPANCIES.



**GENERAL NOTES (CON'T):**

8. LOCATIONS OF ALL STRUCTURES SHOWN ON THE DRAWINGS ARE APPROXIMATE. THE CONTRACTOR SHALL PROVIDE ALL SURVEY PERSONNEL AND EQUIPMENT NECESSARY TO LAYOUT THE STRUCTURES AT THE BEGINNING OF CONSTRUCTION, PER TS-7.
9. THE CONTRACTOR SHALL ACCESS THE PROJECT SITE FROM A NAVIGABLE WATER BODY. DREDGING FOR SITE ACCESS SHALL ONLY BE PERFORMED WITHIN THE LIMITS SHOWN FOR TEMPORARY ACCESS CHANNELS (REFER TO SHEET 4, SITE PLAN). NO UPLAND ACCESS IS AVAILABLE.
10. THE PROJECT IS WITHIN AND ADJACENT TO ENVIRONMENTALLY SENSITIVE AREAS. THE CONTRACTOR SHALL COORDINATE WITH REFUGE TO AVOID/MINIMIZE IMPACTS TO THESE AREAS DURING THE COURSE OF THE WORK.
11. THE CONTRACTOR SHALL BE FAMILIAR WITH EXISTING SOFT SOIL CONDITIONS AT THE WORK SITE. GEOTECHNICAL INFORMATION IS PROVIDED IN APPENDIX A OF THE SPECIFICATIONS. THE SOIL BORING LOCATIONS ARE SHOWN ON SHEET 3.
12. SUBSTANTIAL CHANGES TO THE TOPOGRAPHY AND BATHYMETRY OF THE PROJECT SITE MAY HAVE OCCURRED SINCE THE SURVEYS SHOWN ON THESE DRAWINGS. ACTUAL LOCATION OF CONSTRUCTION BASELINE AND OFFSETS TO PROPOSED WORK WILL BE DETERMINED BY ENGINEER PRIOR TO CONSTRUCTION BASED ON RESULTS OF CONTRACTORS PRECONSTRUCTION SURVEY.
13. TIDAL DATUMS IN THE TABLE ON THIS SHEET ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY. THE TIDAL DATUMS SHOWN REPRESENT CONDITIONS AT A TIDE STATION AND DO NOT NECESSARILY REPRESENT CONDITIONS AT THE PROJECT SITE. TIDAL DATUM DATA IS BASED ON NOAA CALCASIEU STATION (8768094).

**STANDARD ABBREVIATIONS:**

ADD = ADDITIVE	FT = FEET
BW = BREAKWATER	GALV = GALVANIZED
EL = ELEVATION	MAX = MAXIMUM
EST = ESTIMATED	MIN = MINIMUM
DIA. = DIAMETER	NWC = NORMAL WEIGHT CONCRETE
T.O. = TOP OF	PTS = POINTS
B.O. = BOTTOM OF	SPA = SPACING
MHHW = MEAN HIGHER HIGH WATER	SS = STAINLESS STEEL
MLLW = MEAN LOWER LOW WATER	TEMP = TEMPORARY
EA. = EACH	TYP. = TYPICAL
TYP. = TYPICAL	t = THICK
O.C. = ON CENTER	U.N.O. = UNLESS NOTED OTHERWISE
O.D. = OUTSIDE DIAMETER	N.T.S. = NOT TO SCALE
O.H.W. = ORDINARY HIGH WATER	W.P. = WORKING POINT
APPROX = APPROXIMATE	' = MINUTES OR FEET
BM = BENCHMARK	" = SECONDS OR INCHES
PL = PLATE	

**VERTICAL TIDAL DATUMS (NAVD88)**

MEAN HIGHER HIGH WATER (MHHW)	1.24'
MEAN SEA LEVEL (MSL)	0.48'
NAVD88	0.00'
MEAN LOWER LOW WATER (MLLW)	-0.74'

**HORIZONTAL/VERTICAL SURVEY MONUMENT CONTROL TABLE**

NAME	NORTHING	EASTING	ELEVATION (NAVD88)
ME-18-SM-01	420,724.78	2,824,955.19	6.05

**SUMMARY OF ESTIMATED QUANTITIES**

BASE BID			
BW-A STA 0+90 TO 3+05		BW-B STA 4+45 TO 6+60	
ITEM NO.	DESCRIPTION	UNIT	QUANTITY
1	MOBILIZATION AND DEMOBILIZATION	LUMP SUM	1
2	CONSTRUCTION SURVEYS	LUMP SUM	1
3	OYSTERBREAK ARMOR UNITS (OYSTERKRETE) - FABRICATE	EACH	621
4	OYSTERBREAK ARMOR UNITS (NORMAL WEIGHT CONCRETE) - FABRICATE	EACH	621
5	OYSTERBREAK ARMOR UNITS - DELIVER AND INSTALL	EACH	1,242
6	MARINE MATTRESS	SQUARE FEET	18,060
7	NAVIGATION AIDS	EACH	4
ADDITIVE BID #1			
BW-A STA 0+60 TO 0+90		BW-B STA 6+60 TO 6+90	
ITEM NO.	DESCRIPTION	UNIT	QUANTITY
1	CONSTRUCTION SURVEYS	LUMP SUM	1
2	OYSTERBREAK ARMOR UNITS (OYSTERKRETE) - FABRICATE	EACH	90
3	OYSTERBREAK ARMOR UNITS (NORMAL WEIGHT CONCRETE) - FABRICATE	EACH	90
4	OYSTERBREAK ARMOR UNITS - DELIVER AND INSTALL	EACH	180
5	MARINE MATTRESS	SQUARE FEET	2,520
ADDITIVE BID #2			
BW-A STA 0+30 TO 0+60		BW-B STA 6+90 TO 7+20	
ITEM NO.	DESCRIPTION	UNIT	QUANTITY
1	CONSTRUCTION SURVEYS	LUMP SUM	1
2	OYSTERBREAK ARMOR UNITS (OYSTERKRETE) - FABRICATE	EACH	105
3	OYSTERBREAK ARMOR UNITS (NORMAL WEIGHT CONCRETE) - FABRICATE	EACH	105
4	OYSTERBREAK ARMOR UNITS - DELIVER AND INSTALL	EACH	210
5	MARINE MATTRESS	SQUARE FEET	2,520
ADDITIVE BID #3			
BW-A STA 0+00 TO 0+30		BW-B STA 7+20 TO 7+50	
ITEM NO.	DESCRIPTION	UNIT	QUANTITY
1	CONSTRUCTION SURVEYS	LUMP SUM	1
2	OYSTERBREAK ARMOR UNITS (OYSTERKRETE) - FABRICATE	EACH	90
3	OYSTERBREAK ARMOR UNITS (NORMAL WEIGHT CONCRETE) - FABRICATE	EACH	90
4	OYSTERBREAK ARMOR UNITS - DELIVER AND INSTALL	EACH	180
5	MARINE MATTRESS	SQUARE FEET	2,520

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SUBMITTED UNDER THE AUTHORITY OF  
HUGO E. BERMUDEZ, P.E. 30107  
FOR BIDDING AND CONSTRUCTION.

REV.	DATE	DESCRIPTION	BY
A	2/15/2011	FOR BID	SH

**LOUISIANA OFFICE OF COASTAL PROTECTION AND RESTORATION**  
RESTORATION ENGINEERING DIVISION  
450 LAUREL ST.  
NORTH CHASE TOWER, SUITE 1150-6  
BATON ROUGE, LOUISIANA 70804

DRAWN BY: TM  
DESIGNED BY: SH

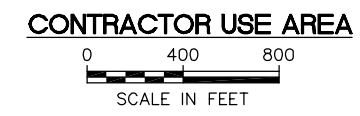
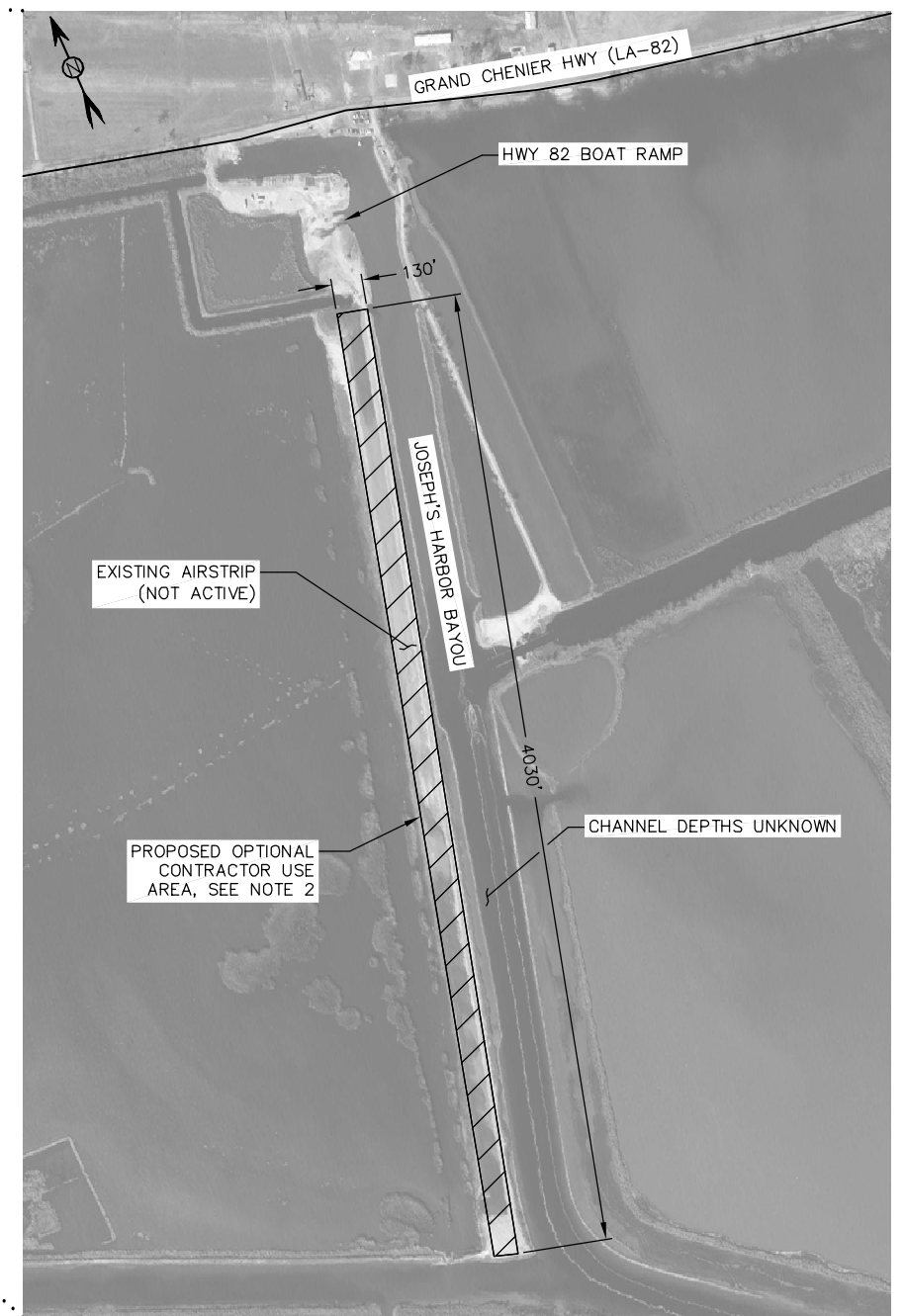
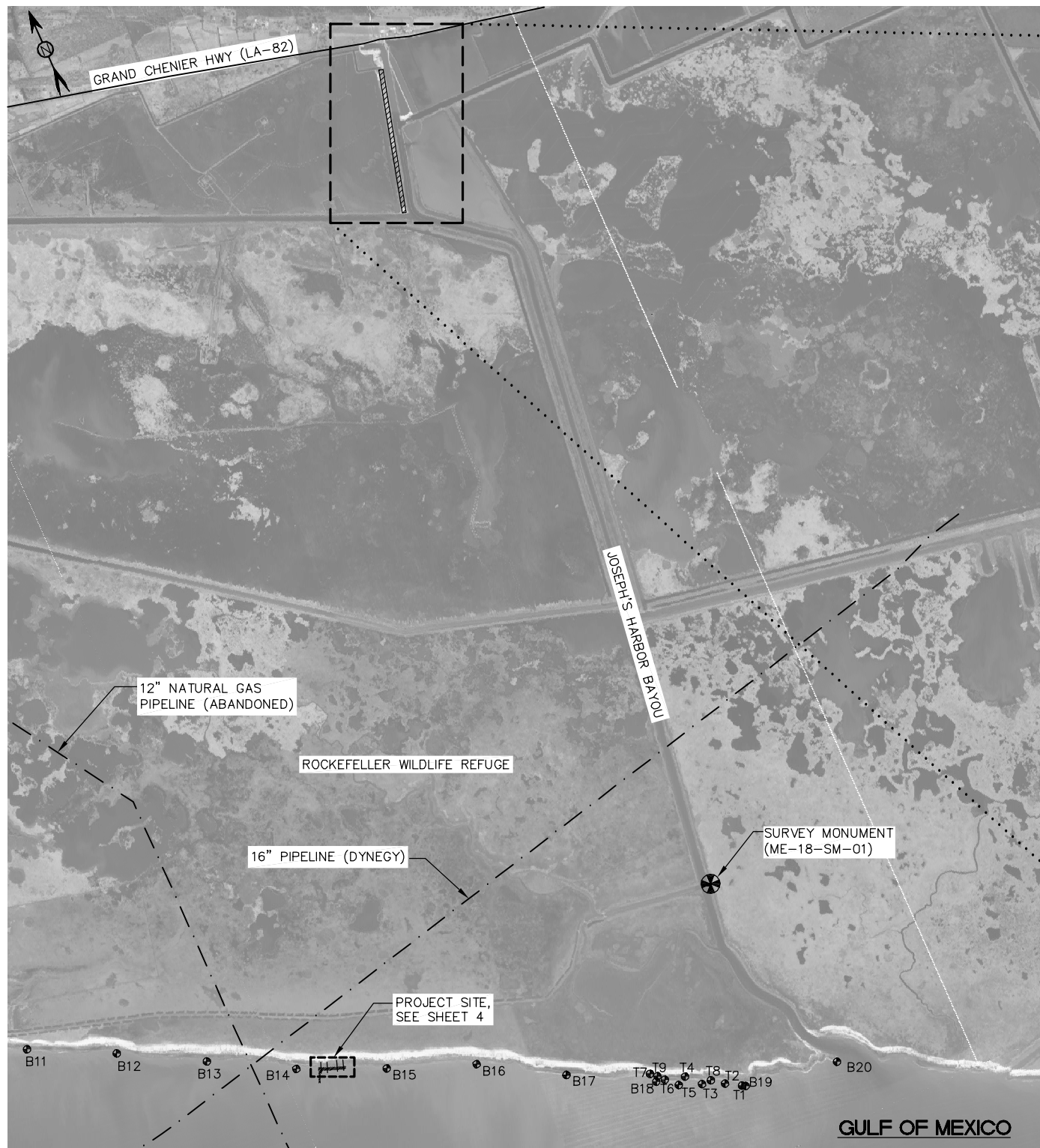
**BIO-ENGINEERED OYSTER REEF DEMONSTRATION PROJECT**

STATE PROJECT NUMBER: LA-08  
FEDERAL PROJECT NUMBER: LA-08  
APPROVED BY: RUSS JOFFRION, P.E.

**GENERAL NOTES**

DATE: 2/15/2011  
SHEET 2 OF 12





- LEGEND**
- SOIL BORING
  - ⊗ SURVEY MONUMENT
  - PIPELINES
  - ▨ CONTRACTOR USE AREA

**NOTES:**

1. AERIAL PHOTOGRAPH DOQQ FROM THE LOUISIANA STATEWIDE GIS, DATED 2005.
2. THE CONTRACTOR USE AREA LOCATED OFF JOSEPH'S HARBOR BAYOU IN ROCKEFELLER REFUGE. UPLAND CONTRACTOR USE AREA ACCESS IS AVAILABLE VIA GRAND CHENIER HWY. WATER ACCESS IS AVAILABLE VIA JOSEPH'S HARBOR BAYOU; HOWEVER, CONTRACTOR IS RESPONSIBLE FOR VERIFYING WATER DEPTHS IN THE ACCESS ROUTE FROM THE PROJECT SITE TO THE USE AREA AND FOR OBTAINING A PERMIT FOR ANY ACCESS CHANNEL DREDGING. ACCESS TO THE HWY 82 BOAT RAMP AND THE CONTRACTOR USE AREA CROSSES PRIVATE PROPERTY AND REQUIRES PERMISSION OF LANDOWNER. COORDINATE WITH ROCKEFELLER WILDLIFE REFUGE AND LANDOWNER FOR ACCESS. SEE SPECIFICATIONS FOR CONTACT INFORMATION.
3. LOCATIONS OF PIPELINES ARE APPROXIMATE AND MAY NOT BE REPRESENTATIVE OF ALL PIPELINES THAT EXIST WITHIN THE PROJECT SITE.
4. THE CONTRACTOR SHALL PERFORM A MAGNETOMETER SURVEY OF PROJECT WORK LIMITS AND LOCATE ALL UTILITIES AND OBSTRUCTIONS PRIOR TO COMMENCING WORK. REFER TO SPECIFICATIONS TS-7, CONSTRUCTION SURVEYING.
5. THERE IS NO UPLAND ACCESS TO THE PROJECT SITE. CONTRACTOR SHALL ACCESS PROJECT SITE FROM A NAVIGABLE WATER BODY.

**HORIZONTAL/VERTICAL SURVEY MONUMENT CONTROL TABLE**

NAME	NORTHING	EASTING	ELVATION (NAVD88)
ME-18-SM-01	420,724.78	2,824,955.19	6.05
*DOLAND AZ	445,889.55	2,836,910.57	2.2

\*NOT VISIBLE ON PLAN SHEETS; SEE APPENDIX D OF TECHNICAL SPECIFICATIONS



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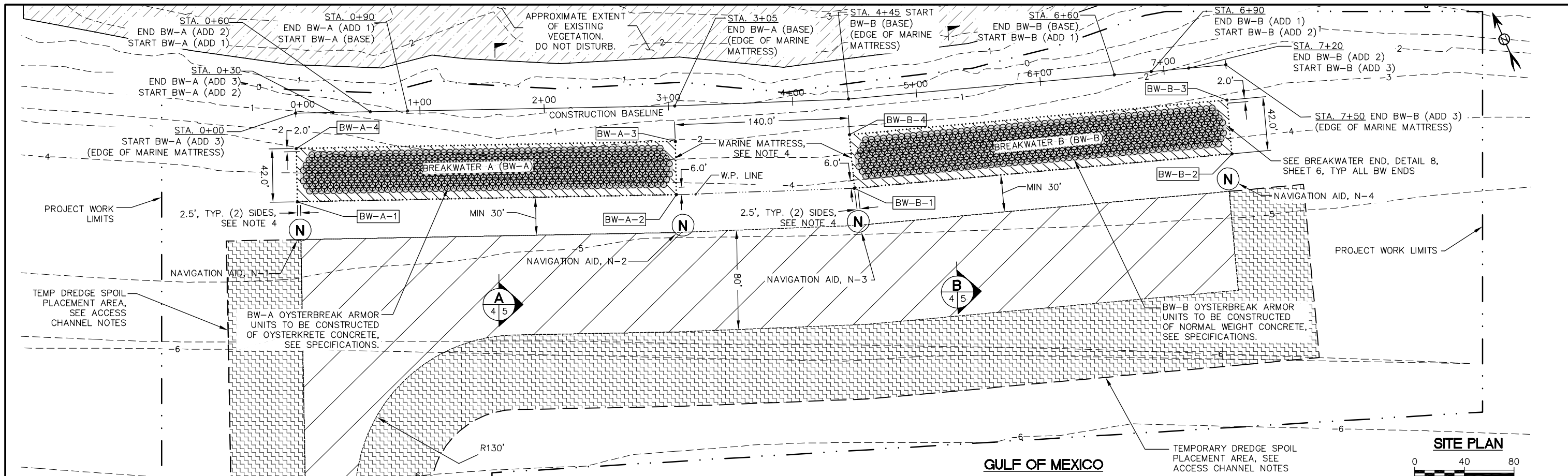
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 BATON ROUGE, LOUISIANA 70804

DRAWN BY: TM      DESIGNED BY: SH

BIO-ENGINEERED OYSTER REEF DEMONSTRATION PROJECT		PROJECT AREA AND CONTRACTOR USE AREA
STATE PROJECT NUMBER: LA-08		DATE: 2/15/2011
FEDERAL PROJECT NUMBER: LA-08		SHEET 3 OF 12
APPROVED BY: RUSS JOFFRION, P.E.		



**NOTES:**

- UNITS SHALL BE PLACED IN A STAGGERED PATTERN, WHERE ONE ROW OF UNIT CENTERS ARE PERPENDICULAR TO SPACES BETWEEN UNITS OF THE NEXT ROW (DETAILS 7 AND 8, SHEET 6).
- THE CENTER OF TOP LAYER OYSTERBREAK ARMOR UNITS SHALL BE PLACED ON TOP OF THREE (3) BOTTOM LAYER OYSTERBREAK UNITS, WHERE TOP LAYER PEGS ARE INSERTED INTO BOTTOM LAYER UNIT.
- TOP UNIT IN STRUCTURE TO HAVE PEGS ON BOTTOM OF UNIT. BOTTOM UNIT IN STRUCTURE TO BE FABRICATED WITHOUT PEGS
- MARINE MATTRESSES TO EXTEND 6' BEYOND SEAWARD EDGE OF OYSTERBREAK ARMOR UNIT BREAKWATER AND MARINE MATTRESSES TO EXTEND 2.0' BEYOND LANDWARD EDGE. MATTRESS TO EXTEND APPROXIMATELY 2.5' BEYOND EAST AND WEST EDGES OF OYSTERBREAK ARMOR UNIT BREAKWATER. CONTRACTOR IS TO FIELD VERIFY DIMENSIONS FROM EDGE OF ARMOR UNITS TO EDGE OF MATTRESS AND SUBMIT TO ENGINEER FOR REVIEW PRIOR TO PLACING OYSTERBREAK ARMOR UNITS, SEE DETAIL 8, SHEET 6.
- WORKING POINT (W.P.) LINE IS DEFINED AS THE SEAWARD EDGE OF THE MARINE MATTRESS. CONSTRUCTION BASELINE IS OFFSET FROM THE W.P. LINE BY 70' LANDWARD.
- LOCATION OF THE OUTER EDGES OF THE MARINE MATTRESS SHALL BE FIELD STAKED AND REVIEWED BY THE ENGINEER PRIOR TO CONSTRUCTION.
- LOCATIONS OF NEW NAVIGATION AIDS ARE APPROXIMATE. SEE NAVIGATION AID STRUCTURE LOCATIONS TABLE, SHEET 9. CONTRACTOR IS TO FIELD LOCATE NAVIGATION AID LOCATIONS. FINAL LOCATION TO BE FIELD VERIFIED BY THE ENGINEER.
- MARINE MATTRESSES SHALL BE PLACED IN A CONTINUOUS MANNER STARTING FROM ONE CORNER OF THE BREAKWATER STRUCTURE AND PROGRESSING ALONG THE LENGTH AND WIDTH OF THE BREAKWATER WITH NEWLY PLACED MATTRESSES PLACED ON THE GEOGRID EXTENSIONS OF PREVIOUSLY PLACED MATTRESSES, SEE SHEET 7.
- THE CONTRACTOR SHALL NOT DISTURB ANY UPLAND VEGETATION IN PROJECT WORK LIMITS.
- WIDTH OF BREAKWATER A AND B IS 300', MEASURED ALONG BOTTOM UNITS. GAP BETWEEN BREAKWATERS IS 145', MEASURED BETWEEN OYSTERBREAK UNITS.
- BREAKWATER CORNER POINTS DEFINED AS THE CORNERS OF THE MARINE MATTRESS LAYER.
- SUBSTANTIAL CHANGES TO THE TOPOGRAPHY AND BATHYMETRY OF THE PROJECT SITE MAY HAVE OCCURRED SINCE THE SURVEYS SHOWN ON THESE DRAWINGS. ACTUAL LOCATION OF CONSTRUCTION BASELINE AND OFFSETS TO PROPOSED WORK WILL BE DETERMINED BY ENGINEER PRIOR TO CONSTRUCTION BASED ON RESULTS OF CONTRACTORS PRECONSTRUCTION SURVEY, SEE SPECIFICATIONS.
- ALL BASE BID AND ADDITIVE BID LOCATION POINTS REPRESENT THE EDGE OF THE MARINE MATTRESS.
- MAXIMUM EXPOSED LENGTH OF PLACED MARINE MATTRESS PRIOR TO PLACEMENT OF ARMOR UNITS IS 50'. SEE SPECIFICATIONS.
- ARMOR UNITS IN BREAKWATER A SHALL BE FABRICATED FROM OYSTERKRETE CONCRETE. ARMOR UNITS IN BREAKWATER B SHALL BE FABRICATED FROM NORMAL WEIGHT CONCRETE, SEE SPECIFICATIONS.

**ACCESS CHANNEL NOTES:**

- THE CONTRACTOR MAY MECHANICALLY EXCAVATE FLOATATION ACCESS CHANNELS IN LIMITED AREAS. EXCAVATED MATERIALS FROM AN ACCESS CHANNEL ENTERING DEEP WATER MAY BE SIDE CAST INTO TEMPORARY DREDGE SPOIL AREA. THE TOP OF PLACED EXCAVATED MATERIAL SHALL NOT EXCEED 0.0 FT NAVD88 NOR AT ANY TIME BE EMERGENT.
- EXCAVATED MATERIAL FROM AN ACCESS CHANNEL PARALLELING THE TOE OF BREAKWATER MAY BE SIDE CAST SEAWARD OF THE CHANNEL INTO TEMPORARY DREDGE SPOIL AREA AND BE EMERGENT. MATERIALS NOT ERODED AT TIME OF CONSTRUCTION COMPLETION ARE TO BE BACKFILLED INTO THE ACCESS CHANNEL AND SMOOTHED TO TRANSITION INTO ADJACENT BOTTOM.
- ACCESS CHANNELS MAY BE DREDGED TO A MAXIMUM DEPTH OF -7.0' NAVD88.
- IF THE CONTRACTOR ELECTS TO CONDUCT ACCESS CHANNEL DREDGING, LOCATIONS OF ALL DISPOSAL AREAS RECEIVING DREDGED MATERIAL SHALL BE MARKED WITH WARNING DAYBEACONS. ALL DAYBEACONS SHALL MEET THE REQUIREMENTS OF THE US COAST GUARD. THE CONTRACTOR SHALL SUBMIT THE DETAILS OF THE DAYBEACON INCLUDING METHOD OF SIGNAGE (BUOY OR PILE) AND PROPOSED LOCATIONS TO THE ENGINEER AS PART OF THE CONTRACTOR WORK PLAN, SEE DETAIL 15, SHEET 9.

**CONSTRUCTION SEQUENCE:**

- PRECONSTRUCTION SURVEYS (BATHYMETRY AND MAGNETOMETER SURVEY).
- BREAKWATER STRUCTURE LAYOUT SURVEY, SEE TS-7
- CONDUCT ACCESS CHANNEL DREDGING, IF REQUIRED.
- ASSEMBLE, FILL AND PLACE MARINE MATTRESSES AND PLACE OYSTERBREAK ARMOR UNITS.
- BREAKWATER A SHALL BE CONSTRUCTED FIRST. BREAKWATER B SHALL BE CONSTRUCTED SECOND. ALL WORK SHALL BE CONDUCTED WORKING FROM LOWER TO UPPER STATIONS.
- THE FIRST 50' OF OYSTERBREAK ARMOR UNIT PLACEMENT SHALL BE CONDUCTED IN THE PRESENCE OF THE ENGINEER AND THE MANUFACTURER AS A TEST SECTION. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF 7 DAYS WRITTEN NOTICE TO THE ENGINEER AS TO THE START OF THE TEST SECTION. PLACEMENT OF TEST SECTION SHALL BE FOR FULL WIDTH OF BREAKWATER.
- INSTALL NAVIGATION AIDS.

**LEGEND**

- NAVIGATION AID
- MARINE MATTRESS
- OYSTERBREAK ARMOR UNIT BREAKWATER
- ACCESS CHANNEL
- EXISTING VEGETATION
- TEMP DREDGE SPOIL PLACEMENT AREA
- PROJECT WORK LIMITS
- W.P. LINE
- TEMP DREDGE SPOIL PLACEMENT AREA BOUNDARY

**TABLE 1 - CONSTRUCTION BASELINE POINTS #**

STATION	NORTHING	EASTING	DESCRIPTION
0+00	420729.50	2813005.40	START BW-A (ADD 3)
0+30	420717.49	2813032.89	END BW-A (ADD 3) START BW-A (ADD 2)
0+60	420705.48	2813060.38	END BW-A (ADD 2) START BW-A (ADD 1)
0+90	420693.46	2813087.87	END BW-A (ADD 1) START BW-A (BASE)
3+05	420607.33	2813285.00	END BW-A
4+45	420554.06	2813414.33	START BW-B (BASE)
6+60	420482.45	2813617.05	END BW-B (BASE) START BW-B (ADD 1)
6+90	420472.42	2813645.35	END BW-B (ADD 1) START BW-B (ADD 2)
7+20	420462.43	2813673.61	END BW-B (ADD 2) START BW-B (ADD 3)
7+50	420452.44	2813701.90	END BW-B (ADD 3)

**TABLE 2  
BREAKWATER CORNERS** BW-A-#  
(SEE NOTE 11)

POINT	NORTHING	EASTING
BW-A-1	420664.06	2812976.76
BW-A-2	420541.61	2813256.39
BW-A-3	420581.17	2813273.57
BW-A-4	420703.36	2812993.94
BW-B-1	420486.76	2813388.72
BW-B-2	420385.22	2813676.49
BW-B-3	420426.04	2813690.91
BW-B-4	420527.60	2813403.13

HUGO E. BERMUDEZ  
License No. 30107  
PROFESSIONAL ENGINEER  
IN  
CIVIL ENGINEERING

*H.B. 2/15/11*

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
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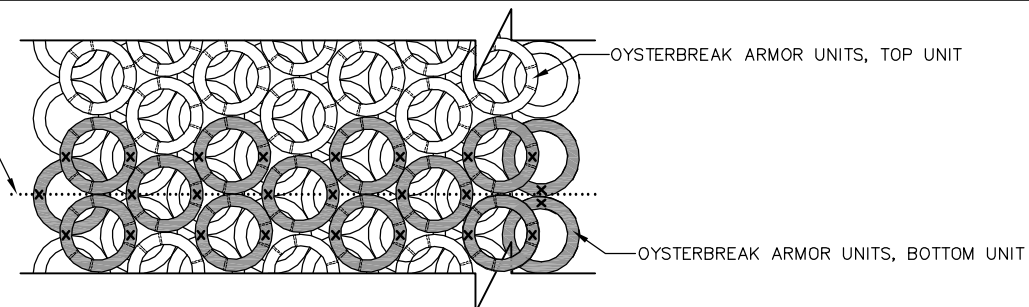
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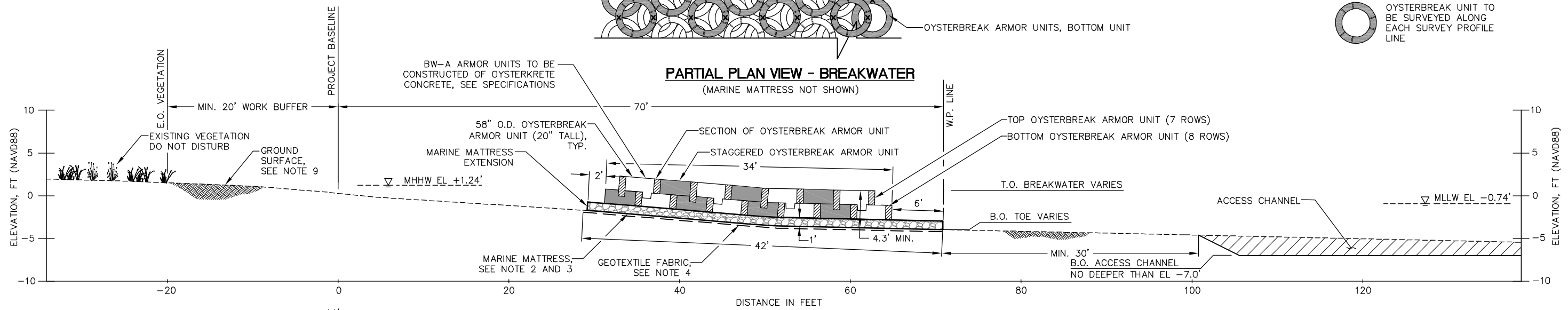
SITE PLAN  
DATE: 2/15/2011  
SHEET 4 OF 12

**LEGEND**  
(PLAN VIEW ONLY)

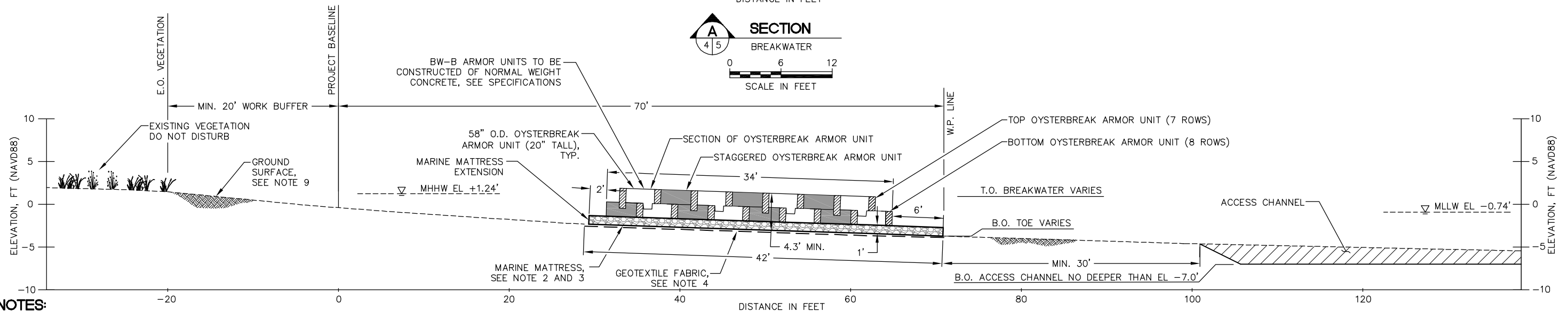
- ..... EXAMPLE SURVEY PROFILE LINE
- x SURVEY POINT ON EACH UNIT
-  OYSTERBREAK UNIT TO BE SURVEYED ALONG EACH SURVEY PROFILE LINE



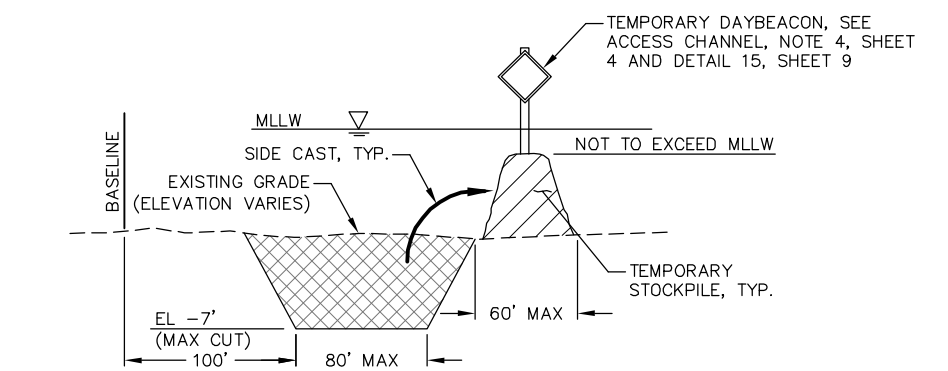
**PARTIAL PLAN VIEW - BREAKWATER**  
(MARINE MATTRESS NOT SHOWN)



**SECTION A**  
BREAKWATER  
SCALE IN FEET



**SECTION B**  
BREAKWATER  
SCALE IN FEET



**TYPICAL SECTION - ACCESS AND FLOATATION CHANNEL**  
N.T.S.

**NOTES:**

1. W.P. LINE DEFINED AS THE WATERWARD EDGE OF THE MARINE MATTRESS.
2. MARINE MATTRESS CONSISTS OF GEOGRID GABION WITH CRUSHED AGGREGATE FILL. SEE SPECIFICATIONS AND SHEET 7.
3. MARINE MATTRESS SHALL BE PLACED IN A MANNER TO ESTABLISH A SUITABLE BASE FOR OYSTERBREAK ARMOR UNIT PLACEMENT IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS. MAXIMUM ALLOWABLE ANGLE BETWEEN ARMOR UNITS IS 10 DEGREES.
4. GEOTEXTILE TO BE ATTACHED TO BOTTOM OF MARINE MATTRESS PRIOR TO PLACEMENT, SEE SHEET 7.
5. EXISTING BOTTOM CONSISTS OF EXTREMELY SOFT SOILS. SOIL DISPLACEMENT MAY OCCUR UPON PLACEMENT OF MARINE MATTRESS OR OYSTERBREAK ARMOR UNITS. CONTRACTOR SHALL EMPLOY PLACEMENT TECHNIQUES TO HELP MINIMIZE SOIL DISPLACEMENT AND DAMAGE TO UNDERLYING MATERIALS.
6. IF NECESSARY, BOTTOM SHALL BE GRADED TO A SMOOTH SURFACE TO ENSURE THAT INTIMATE CONTACT IS ACHIEVED BETWEEN THE BOTTOM AND THE UNDERSIDE OF THE MARINE MATTRESS AND BETWEEN THE MARINE MATTRESS AND THE ENTIRE BOTTOM SURFACE OF THE OYSTERBREAK ARMOR UNITS. ALL SLOPE DEFORMITIES AND OBSTRUCTIONS WHICH PROJECT NORMAL TO THE BOTTOM SURFACE MUST BE REGRADED OR REMOVED. DUE TO SOFT SOIL CONDITIONS, CONTRACTOR SHALL MINIMIZE DISTURBANCE OF THE EXISTING BOTTOM.
7. SUBSTANTIAL CHANGES TO THE TOPOGRAPHY AND BATHYMETRY OF THE PROJECT SITE MAY HAVE OCCURRED SINCE THE SURVEYS SHOWN ON THESE DRAWINGS. ACTUAL LOCATION OF CONSTRUCTION BASELINE AND OFFSETS TO PROPOSED WORK WILL BE DETERMINED BY ENGINEER PRIOR TO CONSTRUCTION BASED ON RESULTS OF CONTRACTORS PRECONSTRUCTION SURVEY.
8. ARMOR UNITS IN BREAKWATER A SHALL BE FABRICATED FROM OYSTERKRETE CONCRETE. ARMOR UNITS IN BREAKWATER B SHALL BE FABRICATED FROM NORMAL WEIGHT CONCRETE, SEE SPECIFICATIONS.
9. CROSS SECTION GROUND SURFACE IS REPRESENTATIVE OF THE MAY 2008 TOPOGRAPHIC AND HYDROGRAPHIC SURVEY.



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DRAWN BY: TM  
DESIGNED BY: SH

**BIO-ENGINEERED OYSTER REEF DEMONSTRATION PROJECT**

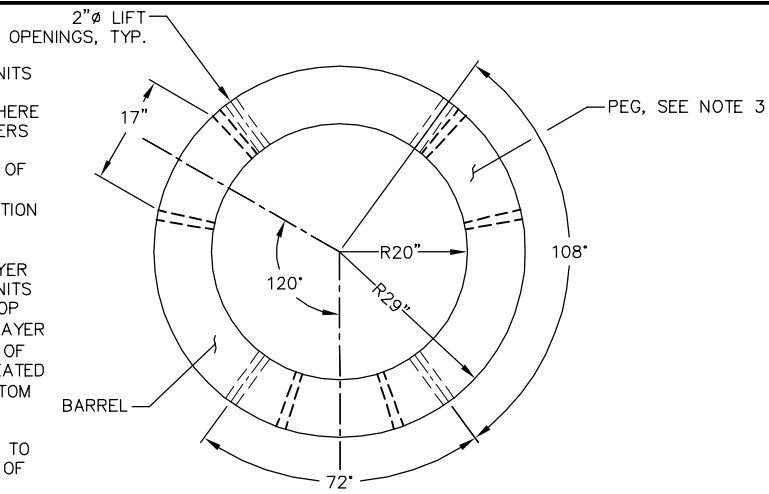
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FEDERAL PROJECT NUMBER: LA-08  
APPROVED BY: RUSS JOFFRION, P.E.

**TYPICAL SECTIONS**

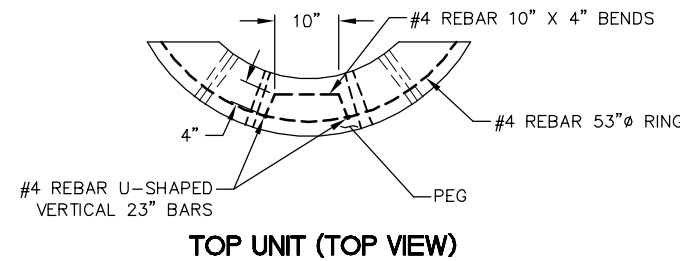
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SHEET 5 OF 12

**NOTES:**

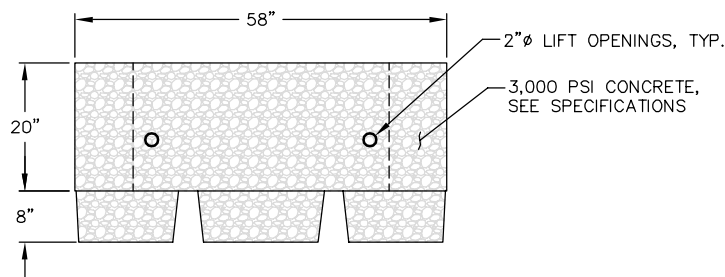
- OYSTERBREAK ARMOR UNITS SHALL BE PLACED IN A STAGGERED PATTERN, WHERE ONE ROW OF UNIT CENTERS ARE PERPENDICULAR TO SPACES BETWEEN UNITS OF THE NEXT ROW (SEE BREAKWATER CONFIGURATION DETAIL, THIS SHEET).
- THE CENTER OF TOP LAYER OYSTERBREAK ARMOR UNITS SHALL BE PLACED ON TOP OF THREE (3) BOTTOM LAYER UNITS, WHERE (3) PEGS OF TOP UNIT ARE TO BE SEATED INTO (3) SEPARATE BOTTOM LAYER UNITS.
- TOP UNIT IN STRUCTURE TO HAVE PEGS ON BOTTOM OF UNIT. BOTTOM UNIT IN STRUCTURE TO BE FABRICATED WITHOUT PEGS.
- DETAIL 7 IS SHOWN TO ILLUSTRATE TYPICAL UNIT PLACEMENT ONLY AND DOES NOT REPRESENT A SPECIFIC PORTION OF THE STRUCTURE.



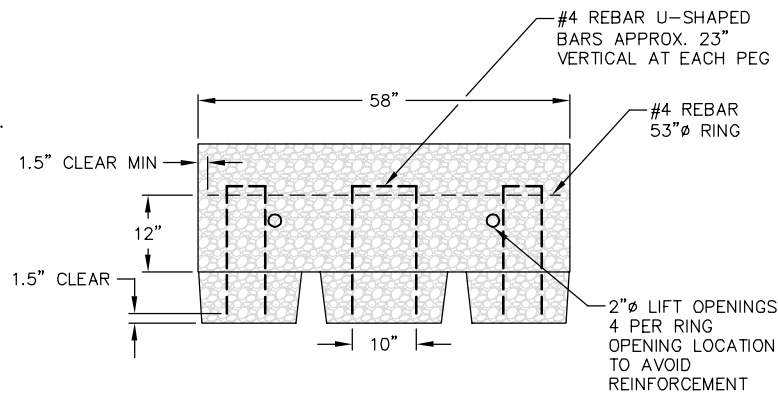
**DETAIL 1**  
**OYSTERBREAK ARMOR UNIT**  
TOP UNIT SHOWN (BOTTOM UNIT SIMILAR)  
SCALE IN INCHES



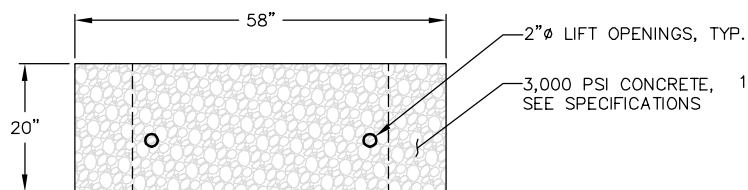
**DETAIL 4**  
**OYSTERBREAK ARMOR UNITS - REINFORCEMENT**  
SCALE IN INCHES



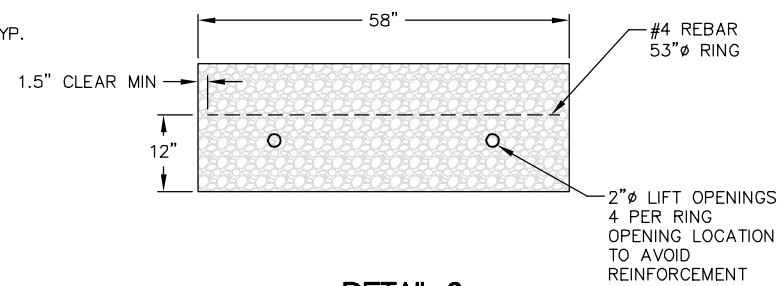
**DETAIL 2**  
**OYSTERBREAK ARMOR UNIT - TOP UNIT**  
SCALE IN INCHES



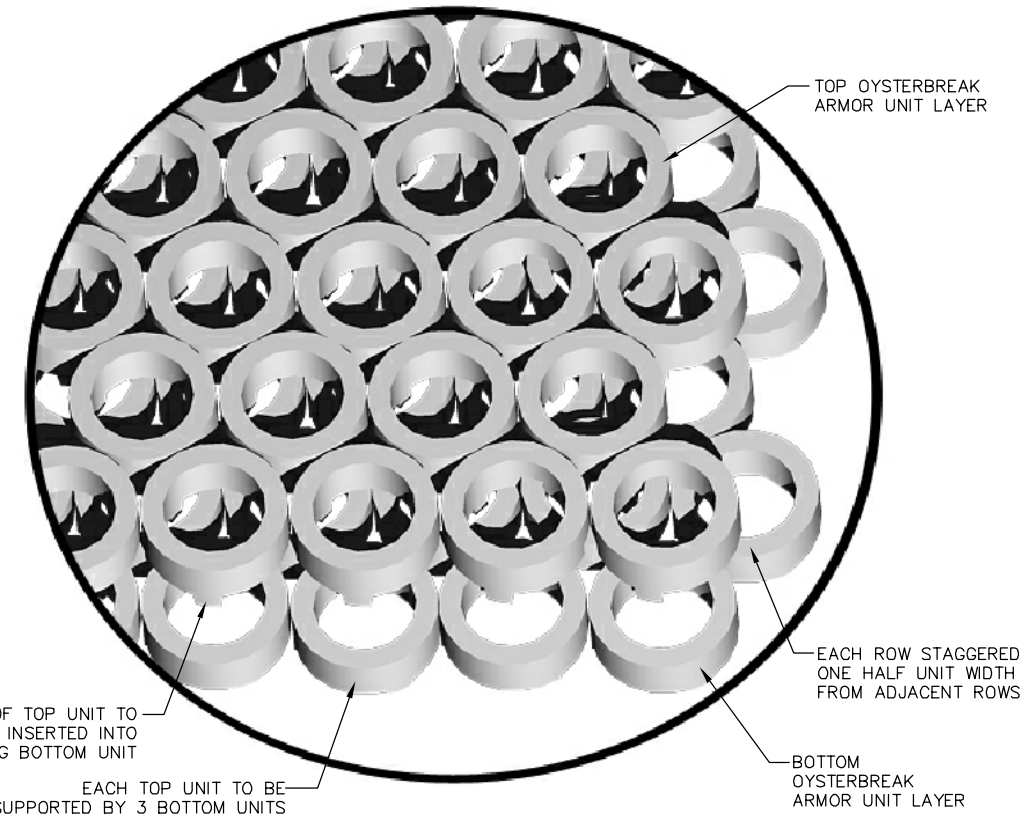
**DETAIL 5**  
**OYSTERBREAK ARMOR UNIT - TOP UNIT REINFORCEMENT**  
SCALE IN INCHES



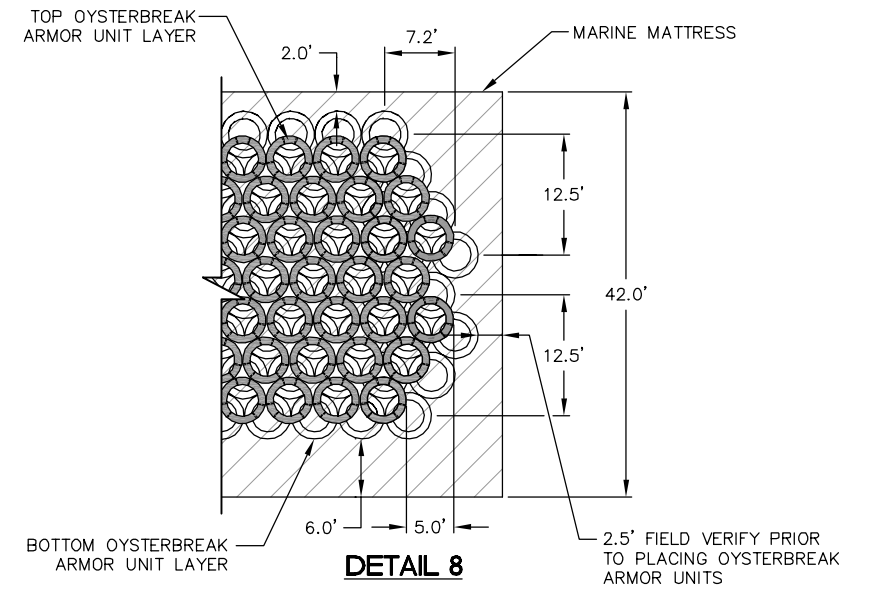
**DETAIL 3**  
**OYSTERBREAK ARMOR UNIT - BOTTOM UNIT**  
SCALE IN INCHES



**DETAIL 6**  
**OYSTERBREAK ARMOR UNIT - BOTTOM UNIT REINFORCEMENT**  
SCALE IN INCHES



**DETAIL 7**  
**OYSTERBREAK BREAKWATER CONFIGURATION**  
(PERSPECTIVE VIEW, SEE NOTE 4)



**DETAIL 8**  
**OYSTERBREAK BREAKWATER END**  
SCALE IN INCHES



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HUGO E. BERMUDEZ, P.E. 30107  
FOR BIDDING AND CONSTRUCTION.

REV.	DATE	DESCRIPTION	BY
A	2/15/2011	FOR BID	SH

**LOUISIANA OFFICE OF COASTAL PROTECTION AND RESTORATION**  
RESTORATION ENGINEERING DIVISION  
450 LAUREL ST.  
NORTH CHASE TOWER, SUITE 1150-6  
BATON ROUGE, LOUISIANA 70804

DRAWN BY: TM

DESIGNED BY: SH

**BIO-ENGINEERED OYSTER REEF DEMONSTRATION PROJECT**

STATE PROJECT NUMBER: LA-08

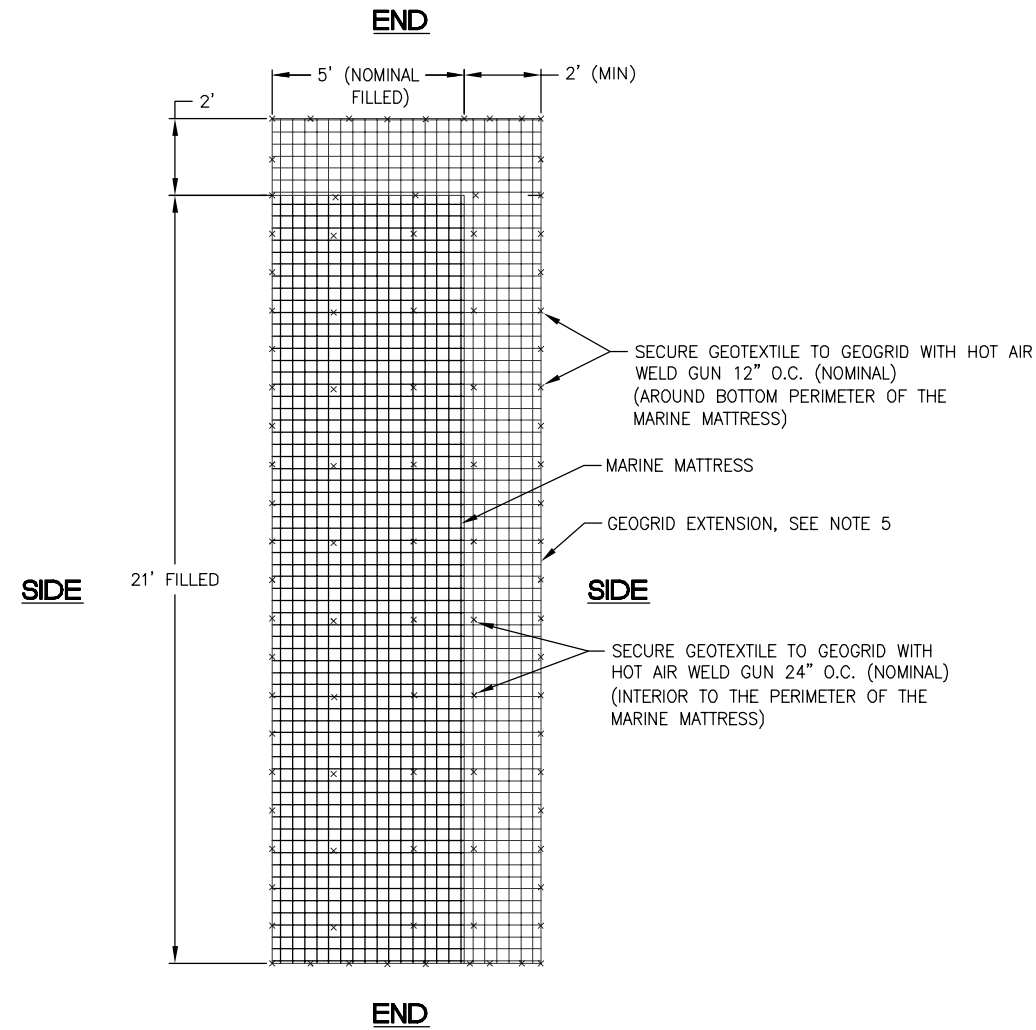
FEDERAL PROJECT NUMBER: LA-08

APPROVED BY: RUSS JOFFRION, P.E.

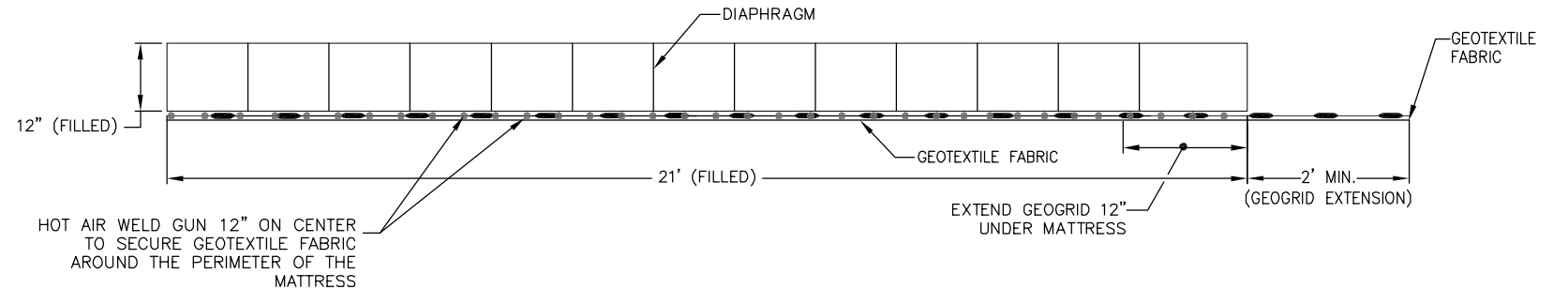
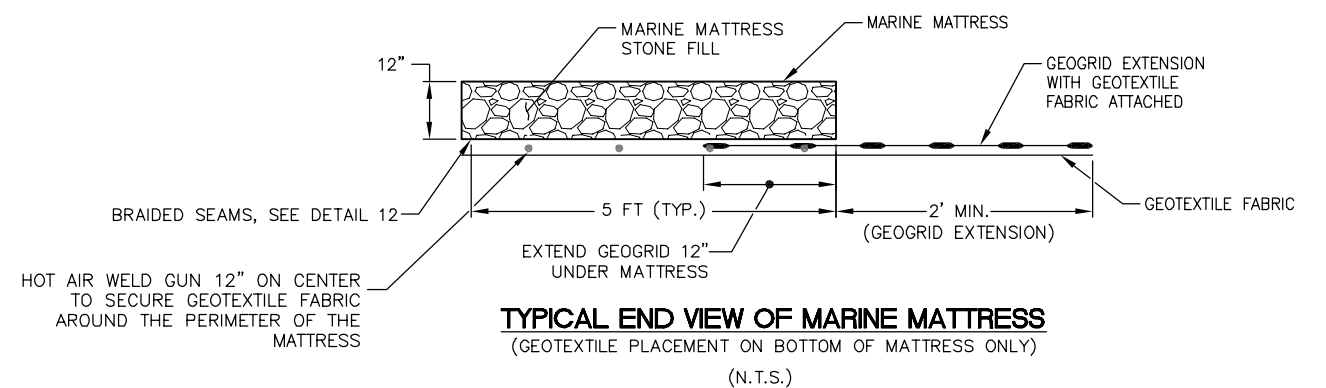
**OYSTERBREAK ARMOR UNITS**

DATE: 2/15/2011

SHEET 6 OF 12



**TYPICAL PLAN VIEW OF MARINE MATTRESS**  
(N.T.S.)

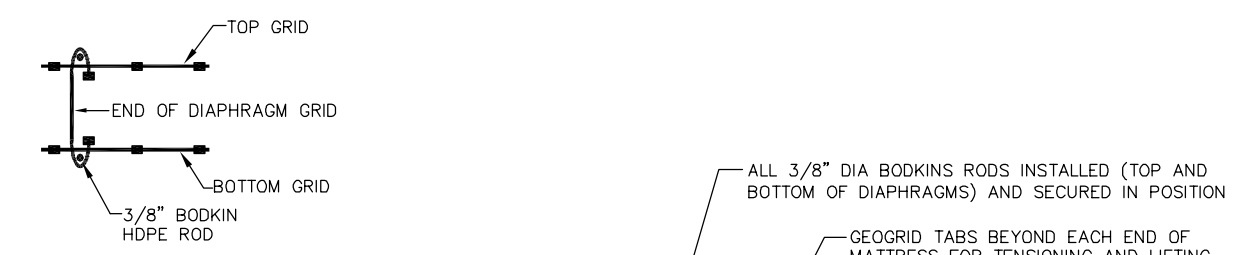


**NOTES:**

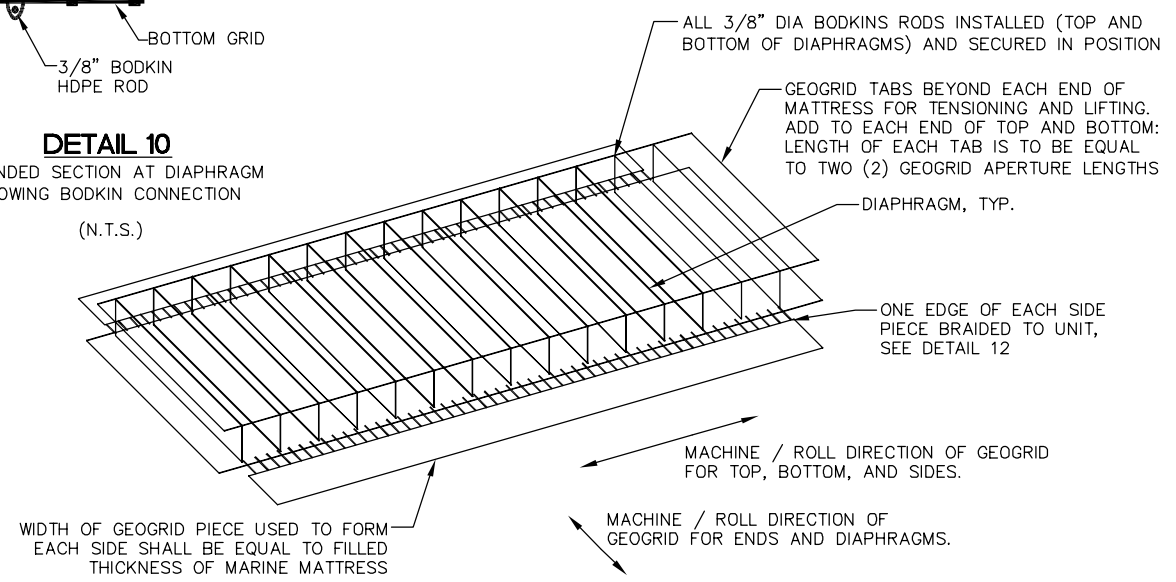
- MARINE MATTRESS SHALL BE 21' LONG X 5' WIDE X 12" THICK TYPE TRITON GABION MATTRESS AS MANUFACTURED BY TENSAR EARTH TECHNOLOGIES OR ENGINEER APPROVED EQUAL.
- GEOTEXTILE FABRIC SHALL BE SECURELY ATTACHED TO THE BOTTOM OF EACH GEOGRID MATTRESS USING HOT AIR WELD GUN ON 12" ON CENTER INTERVALS AROUND THE PERIMETER OF THE MARINE MATTRESS AND 24" ON CENTER ACROSS CENTER ACROSS BOTTOM OF MATTRESS. ALTERNATE METHODS OF SECURING GEOTEXTILE TO GEOGRID MATTRESS SHALL BE APPROVED BY THE ENGINEER.
- GEOTEXTILE FABRIC SHALL COVER THE BOTTOM OF THE MARINE MATTRESS AND THE 2' GEOGRID EXTENSION.
- ANY SEAMS IN THE FABRIC SHALL BE OVERLAPPED BY 9" MINIMUM AND THERMALLY WELDED TO FORM A SECURE BOND BETWEEN THE ADJOINED PIECES.
- GEOGRID EXTENSIONS WITH GEOTEXTILE FABRIC EXTEND ACROSS WIDTH OF MARINE MATTRESS AT ONE END AND ONE SIDE OF MATTRESS TO ALLOW FOR END-TO-END AND SIDE-TO-SIDE OVERLAP BETWEEN ADJACENT MATTRESS. LAST MATTRESS IN PLACEMENT SERIES AT END AND SIDE STRUCTURE DOES NOT REQUIRE EXTENSION.
- NOMINAL FILLED MARINE MATTRESS WEIGHT IS APPROXIMATELY 5,250 LBS.



<b>COAST &amp; HARBOR ENGINEERING</b> 3410 FAR WEST BLVD., SUITE 210 AUSTIN, TX 78731 PH 512-342-9705 FAX 512-342-9708					<b>LOUISIANA OFFICE OF COASTAL PROTECTION AND RESTORATION</b> RESTORATION ENGINEERING DIVISION 450 LAUREL ST. NORTH CHASE TOWER, SUITE 1150-6 BATON ROUGE, LOUISIANA 70804	<b>BIO-ENGINEERED OYSTER REEF DEMONSTRATION PROJECT</b>	<b>MARINE MATTRESS DETAILS</b>
	SUBMITTED UNDER THE AUTHORITY OF HUGO E. BERMUDEZ, P.E. 30107 FOR BIDDING AND CONSTRUCTION.	A 2/15/2011	FOR BID	SH		STATE PROJECT NUMBER: LA-08 FEDERAL PROJECT NUMBER: LA-08	
	REV. DATE DESCRIPTION BY				DRAWN BY: TM DESIGNED BY: SH	APPROVED BY: RUSS JOFFRION, P.E.	SHEET 7 OF 12



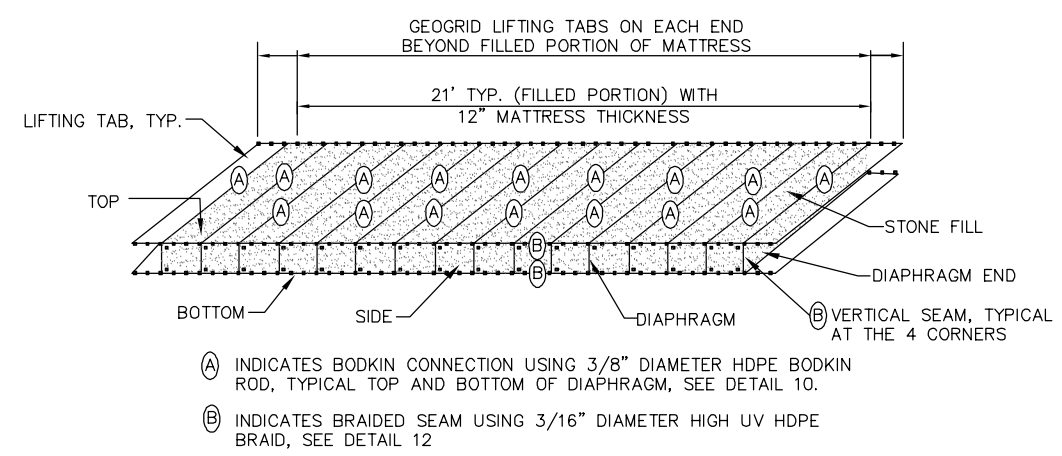
**DETAIL 10**  
EXPANDED SECTION AT DIAPHRAGM  
SHOWING BODKIN CONNECTION  
(N.T.S.)



**DETAIL 9**  
TYPICAL CONFIGURATION OF  
FABRICATED MARINE MATTRESS  
(N.T.S.)

**FABRICATION NOTES:**

1. TYPICAL SPACING OF DIAPHRAGMS IS EVERY THREE APERTURE LENGTHS IN THE GEOGRID MATERIAL. A SHORTER SPACING MAY BE USED IN ORDER TO MATCH THE REQUIRED MATTRESS LENGTH. LENGTH OF END PIECES AND INTERNAL DIAPHRAGM PIECES ARE 2 GEOGRID APERTURES LONG.
2. SEE DETAIL 11, TYPICAL CONFIGURATION OF FILLED MATTRESS FOR ADDITIONAL DIMENSIONS AND MATERIAL TYPES.
3. GEOGRID/GEOTEXTILE EXTENSIONS NOT SHOWN.

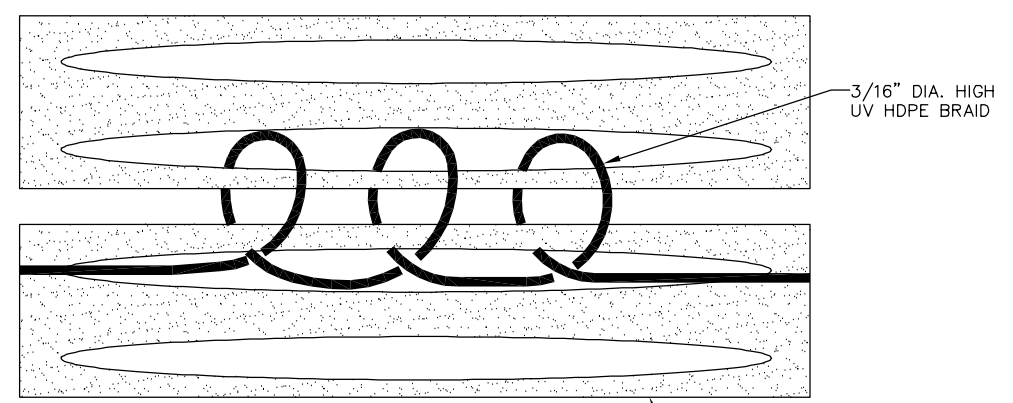


- (A) INDICATES BODKIN CONNECTION USING 3/8" DIAMETER HDPE BODKIN ROD, TYPICAL TOP AND BOTTOM OF DIAPHRAGM, SEE DETAIL 10.
- (B) INDICATES BRAIDED SEAM USING 3/16" DIAMETER HIGH UV HDPE BRAID, SEE DETAIL 12

**DETAIL 11**  
TYPICAL CONFIGURATION OF FILLED MARINE MATTRESS UNITS  
(N.T.S.)

**CONSTRUCTION NOTES:**

1. ENDS, TOP, BOTTOM, SIDES AND ANY EXTRA LENGTH USED FOR LIFTING OR ANCHORING PURPOSES SHALL BE COMPOSED OF TYPE 2 GEOGRID, PLASTIC CABLE TIES MAY BE USED TO SECURE BODKIN CONNECTORS IN POSITION PRIOR TO TENSIONING OR FILLING OF MAT UNITS.
2. INTERNAL DIAPHRAGMS SHALL BE COMPOSED OF TYPE 1 GEOGRID.
3. MARINE MATTRESS SHALL BE FILLED WITH ASTM CLASS #1 STONE OR ENGINEER APPROVED EQUIVALENT, SEE SPECIFICATIONS
4. NOMINAL WIDTH: 5 FT (FILLED)
5. NOMINAL THICKNESS: 1 FT (FILLED)
6. NOMINAL LENGTH: 21 FT (FILLED)
7. GEOGRID/GEOTEXTILE EXTENSIONS NOT SHOWN



**DETAIL 12**  
TYPICAL BRAIDED SEAM  
(N.T.S.)



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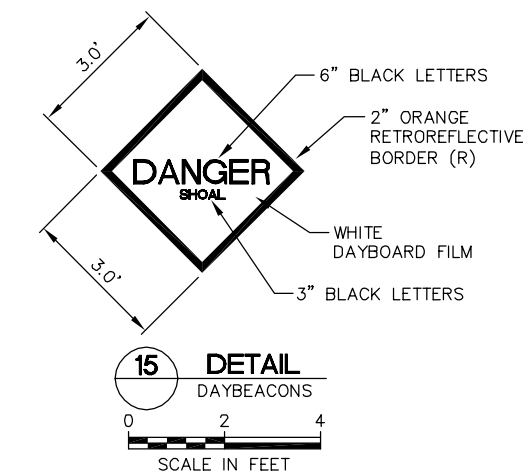
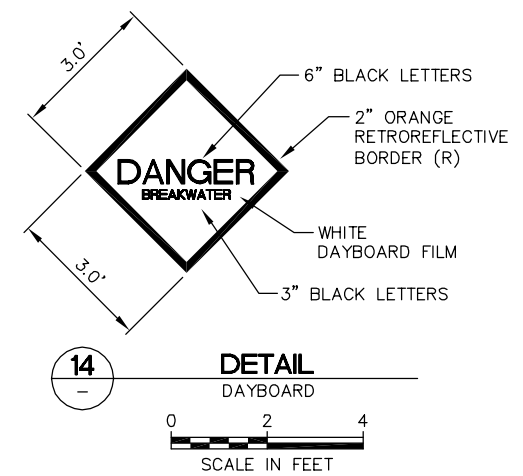
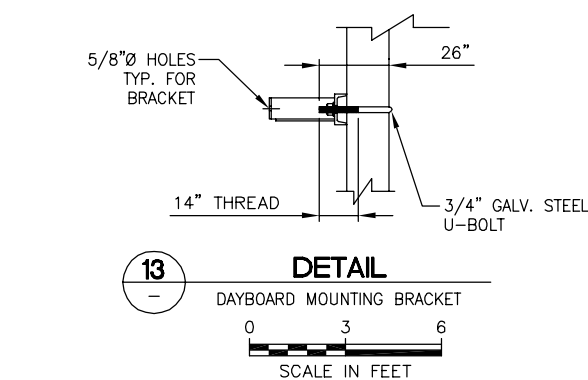
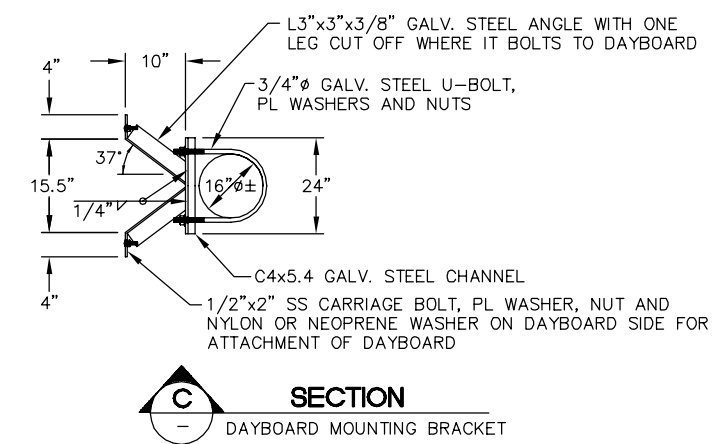
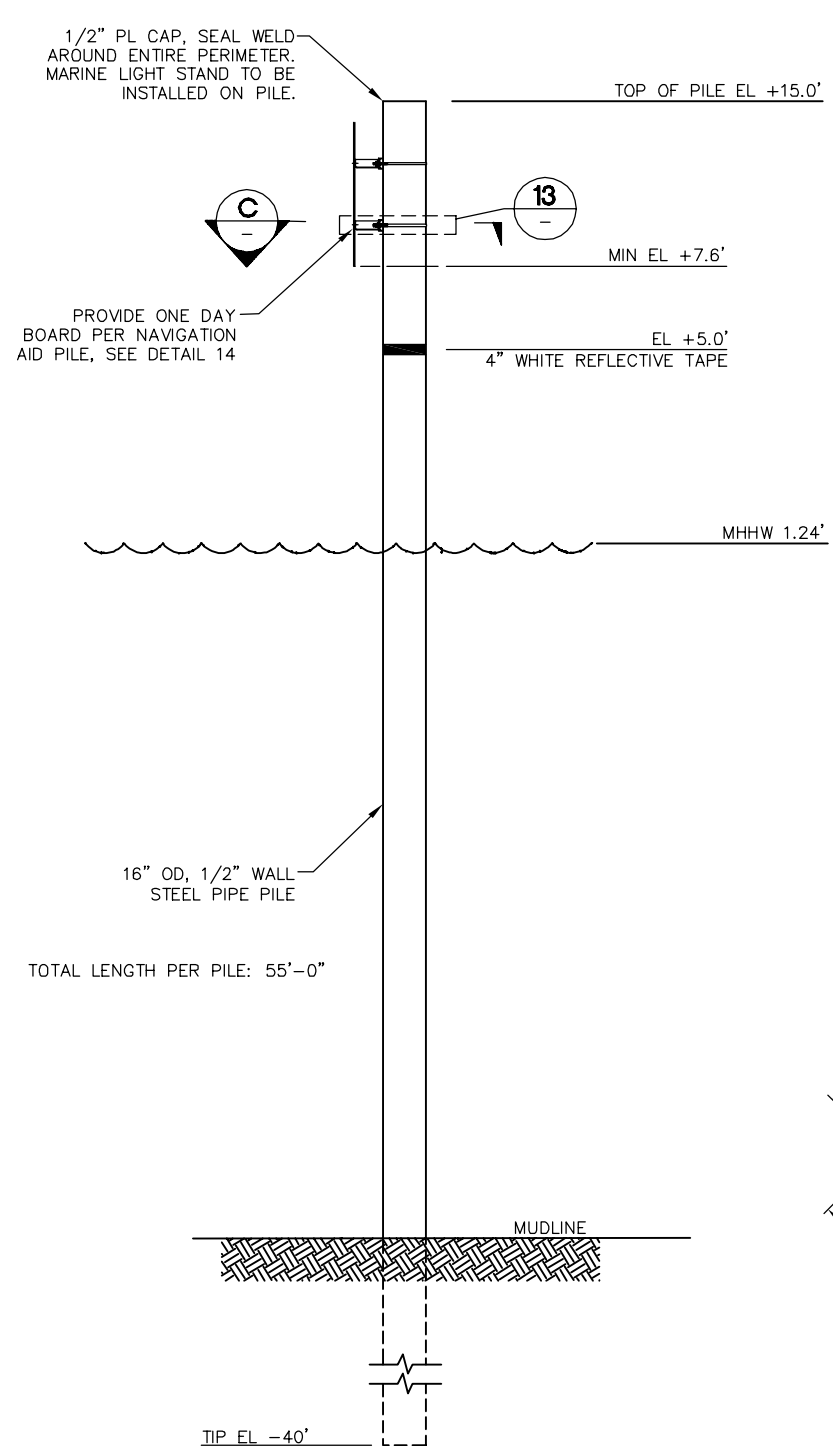
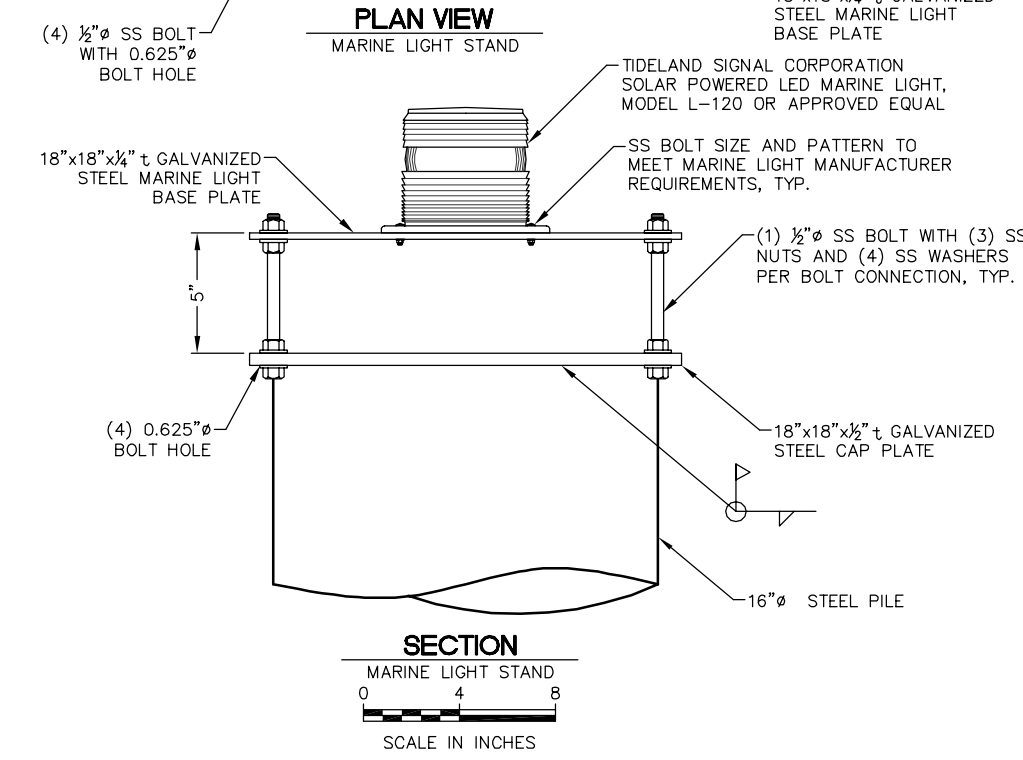
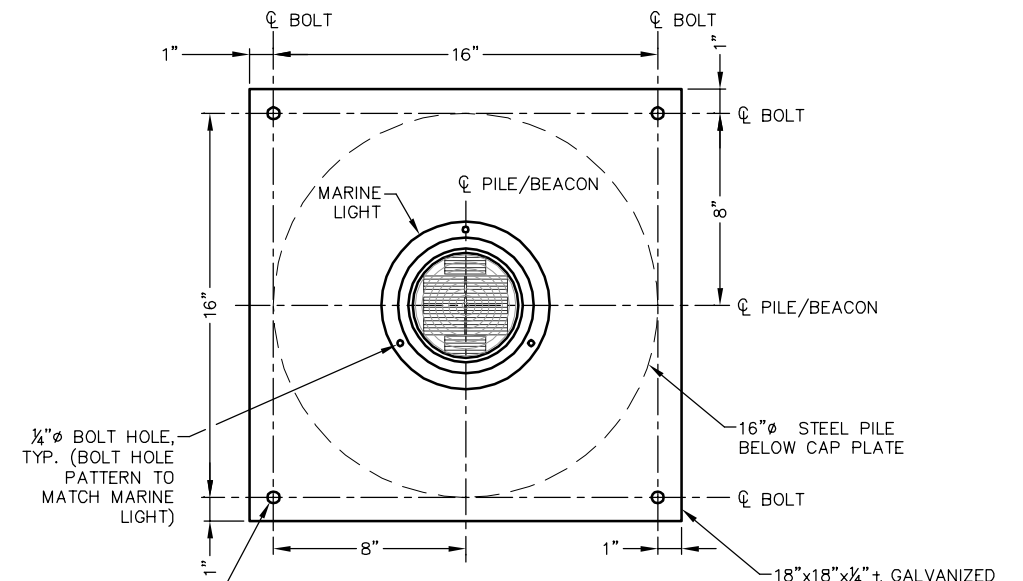
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**BIO-ENGINEERED OYSTER REEF DEMONSTRATION PROJECT**

STATE PROJECT NUMBER: LA-08  
FEDERAL PROJECT NUMBER: LA-08  
APPROVED BY: RUSS JOFFRION, P.E.

**MARINE MATTRESS DETAILS**

DATE: 2/15/2011  
SHEET 8 OF 12



**NOTES:**

1. NAVIGATION AID AND MOUNT FABRICATION SHALL BE FABRICATED FROM A36 STEEL, UNLESS NOTED OTHERWISE.
2. HOT DIP GALVANIZED STEEL COMPONENTS AFTER FABRICATION IN ACCORDANCE WITH ASTM A123.
3. ALL HARDWARE (NUTS, BOLT AND WASHERS) FOR NAVIGATION AIDS SHALL BE STAINLESS STEEL TYPE 316. ALL NUTS SHALL BE LOCK NUTS WITH NYLON INSERTS.
4. ALL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWS D1.1 (STRUCTURAL WELDING CODE - STEEL).
5. DAYBOARD SHALL BE FABRICATED WITH MARINE GRADE 5052 ALUMINUM, SEE TECHNICAL SPECIFICATIONS.
6. PROPER INSULATION SHALL BE PROVIDED BETWEEN DIFFERENT METAL TYPES TO PREVENT GALVANIC CORROSION.
7. DAYBOARD TO BE INSTALLED FACING THE SHORELINE NORMAL DIRECTION (APPROXIMATELY SSW)



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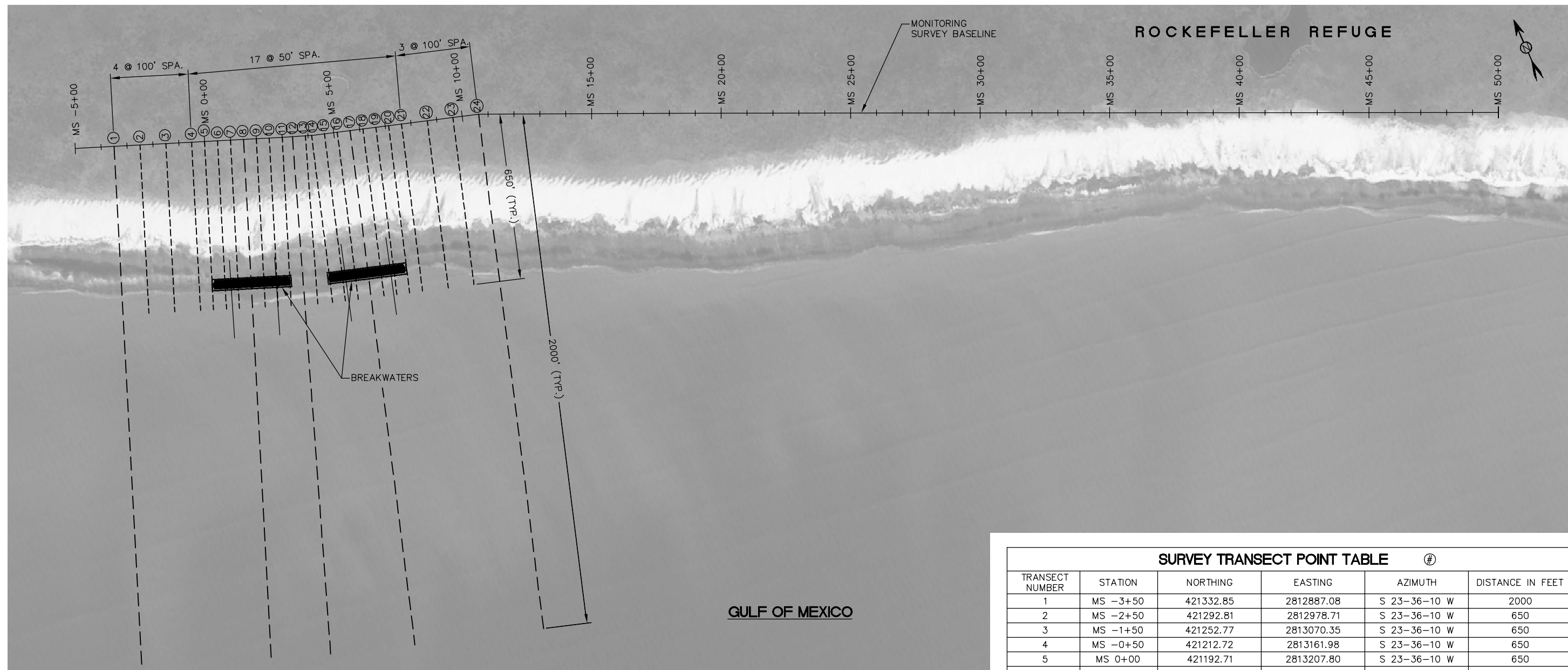
**NAVIGATION AID**

DATE: 2/15/2011  
 SHEET 9 OF 12

**NAVIGATION AID STRUCTURE LOCATION**

POINT	NORTHING *	EASTING *	DIRECTION
N-1	420642.56	2812968.94	SSW
N-2	420517.39	2813251.01	SSW
N-3	420461.27	2813380.46	SSW
N-4	420368.08	2813665.28	SSW

\* APPROXIMATE LOCATION. FINAL LOCATION TO BE FIELD LOCATED BY THE ENGINEER.

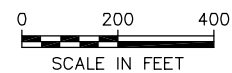


**NOTES:**

1. AERIAL PHOTOGRAPH DOQQ FROM THE LOUISIANA STATEWIDE GIS, DATED 2005.
2. REFER TO CONTROL TABLE AND NOTES ON SHEETS 2 AND 3.
3. PROPOSED BREAKWATERS SHOWN FOR REFERENCE PURPOSES AND WILL NOT EXIST AT TIME OF SURVEY.
4. THE MONITORING SURVEY BASELINE SHOWN ON SHEET 10 AND 11 ARE TO BE USED FOR ESTABLISHING THE MONITORING SURVEY SECTIONS. LAYOUT AND CONSTRUCTION OF THE BREAKWATER STRUCTURES ARE TO BE BASED ON THE CONSTRUCTION BASELINE SHOWN ON SHEET 4.

GULF OF MEXICO

**SURVEY PLAN**



SURVEY TRANSECT POINT TABLE #					
TRANSECT NUMBER	STATION	NORTHING	EASTING	AZIMUTH	DISTANCE IN FEET
1	MS -3+50	421332.85	2812887.08	S 23-36-10 W	2000
2	MS -2+50	421292.81	2812978.71	S 23-36-10 W	650
3	MS -1+50	421252.77	2813070.35	S 23-36-10 W	650
4	MS -0+50	421212.72	2813161.98	S 23-36-10 W	650
5	MS 0+00	421192.71	2813207.80	S 23-36-10 W	650
6	MS 0+50	421172.69	2813253.62	S 23-36-10 W	650
7	MS 1+00	421152.67	2813299.43	S 23-36-10 W	650
8	MS 1+50	421132.65	2813345.25	S 23-36-10 W	2000
9	MS 2+00	421112.63	2813391.07	S 23-36-10 W	650
10	MS 2+50	421092.61	2813436.89	S 23-36-10 W	650
11	MS 3+00	421072.62	2813482.63	S 23-36-10 W	650
12	MS 3+40	421057.48	2813519.32	S 22-25-28 W	2000
13	MS 3+90	421038.41	2813565.54	S 22-25-28 W	650
14	MS 4+13	421029.31	2813587.58	S 19-27-45 W	650
15	MS 4+63	421012.34	2813634.62	S 19-27-45 W	650
16	MS 5+13	420995.69	2813681.76	S 19-27-45 W	650
17	MS 5+63	420979.03	2813728.90	S 19-27-45 W	2000
18	MS 6+13	420962.37	2813776.05	S 19-27-45 W	650
19	MS 6+63	420945.71	2813823.19	S 19-27-45 W	650
20	MS 7+13	420929.05	2813870.33	S 19-27-45 W	650
21	MS 7+63	420912.39	2813917.47	S 19-27-45 W	650
22	MS 8+63	420879.07	2814011.76	S 19-27-45 W	650
23	MS 9+63	420845.75	2814106.05	S 19-27-45 W	650
24	MS 10+63	420812.43	2814200.33	S 19-27-45 W	2000



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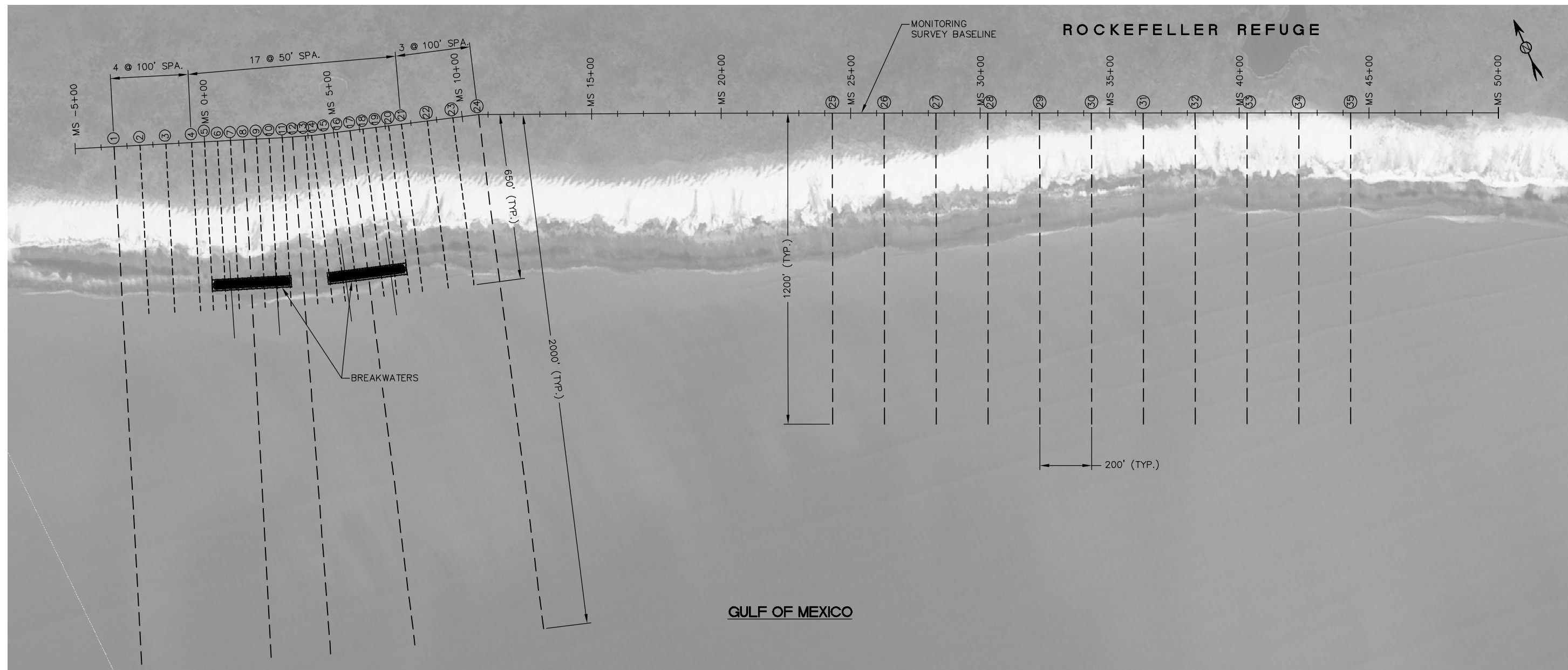
**BIO-ENGINEERED OYSTER REEF DEMONSTRATION PROJECT**

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**INITIAL MONITORING SURVEY PLAN**

DATE: 2/15/2011  
 SHEET 10 OF 12

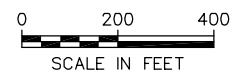




**NOTES:**

1. AERIAL PHOTOGRAPH DOQQ FROM THE LOUISIANA STATEWIDE GIS, DATED 2005.
2. REFER TO CONTROL TABLE AND NOTES ON SHEETS 2 AND 3.
3. FINAL SURVEY TRANSECTS 1 THROUGH 24 ARE TO BE INCLUDED IN THE FINAL MONITORING SURVEY AND ARE IN SAME LOCATION AS INITIAL SURVEY TRANSECTS. SEE SHEET 10 TRANSECT POINT TABLE FOR LOCATION.
4. THE MONITORING SURVEY BASELINE SHOWN ON SHEET 10 AND 11 ARE TO BE USED FOR ESTABLISHING THE MONITORING SURVEY SECTIONS. LAYOUT AND CONSTRUCTION OF THE BREAKWATER STRUCTURES ARE TO BE BASED ON THE CONSTRUCTION BASELINE SHOWN ON SHEET 4.

**FINAL MONITORING SURVEY PLAN**



**ADDITIONAL SURVEY TRANSECT POINTS FOR FINAL MONITORING SURVEY #**

TRANSECT NUMBER	STATION	NORTHING	EASTING	AZIMUTH	DISTANCE IN FEET
25	MS 24+30	420203.90	2815423.23	S 26-37-15 W	1200
26	MS 26+30	420114.29	2815602.03	S 26-37-15 W	1200
27	MS 28+30	420024.67	2815780.83	S 26-37-15 W	1200
28	MS 30+30	419935.05	2815959.62	S 26-37-15 W	1200
29	MS 32+30	419845.44	2816138.42	S 26-37-15 W	1200
30	MS 34+30	419755.82	2816317.22	S 26-37-15 W	1200
31	MS 36+30	419666.20	2816496.02	S 26-37-15 W	1200
32	MS 38+30	419576.59	2816674.82	S 26-37-15 W	1200
33	MS 40+30	419486.97	2816853.62	S 26-37-15 W	1200
34	MS 42+30	419397.35	2817032.41	S 26-37-15 W	1200
35	MS 44+30	419307.74	2817211.21	S 26-37-15 W	1200



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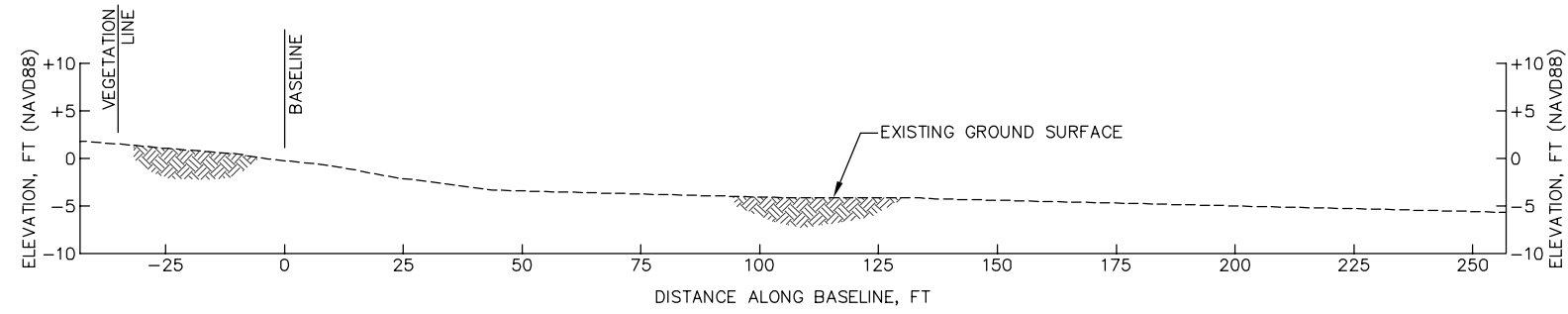
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**BIO-ENGINEERED OYSTER REEF DEMONSTRATION PROJECT**

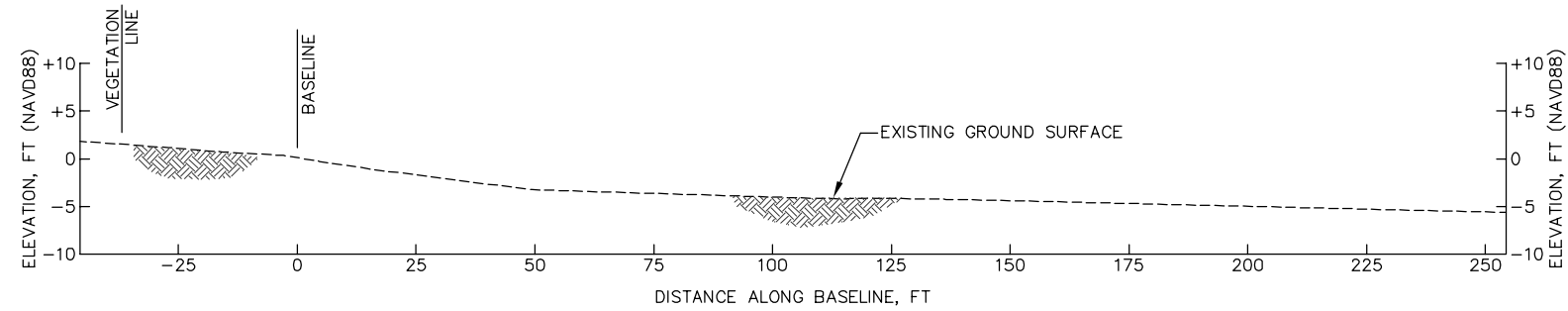
STATE PROJECT NUMBER: LA-08  
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**POST-CONSTRUCTION MONITORING SURVEY PLAN**

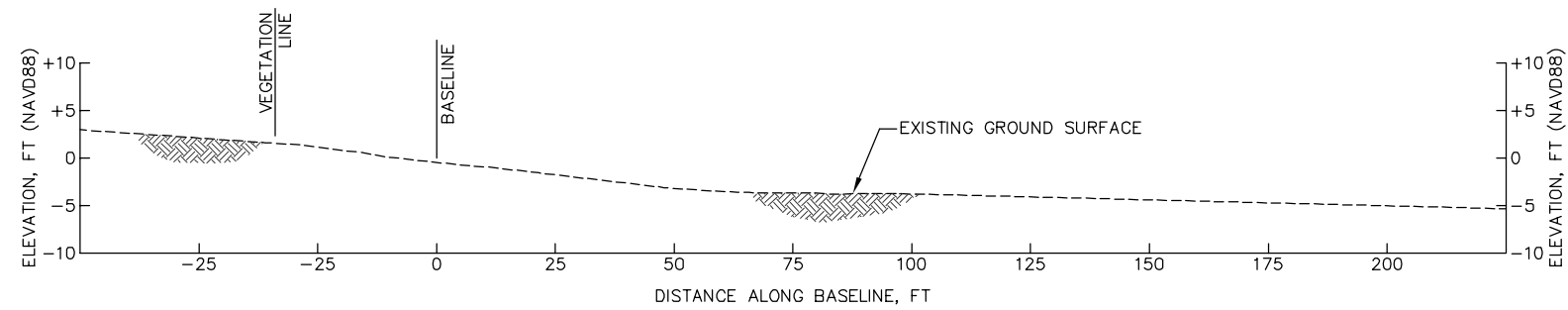
DATE: 2/15/2011  
 SHEET 11 OF 12



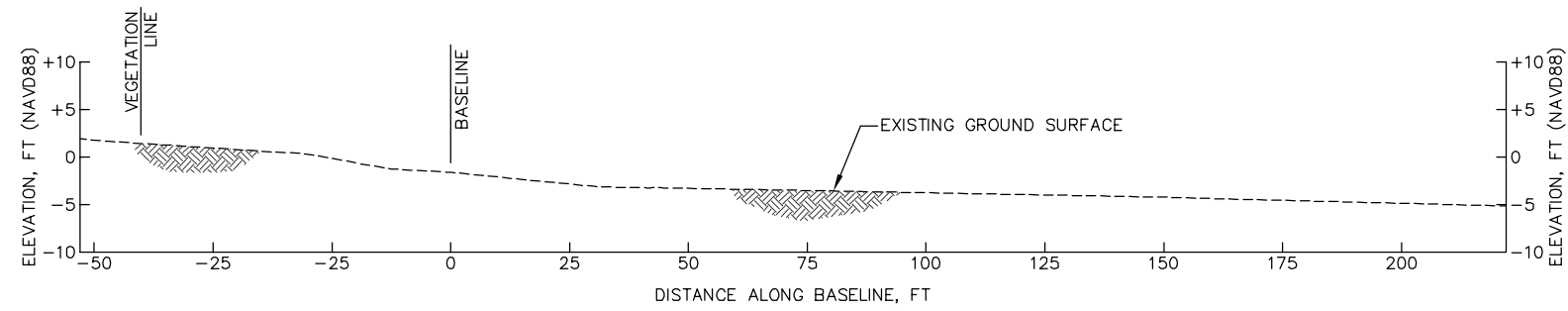
**TYPICAL SECTION**  
EXISTING STA 0+72



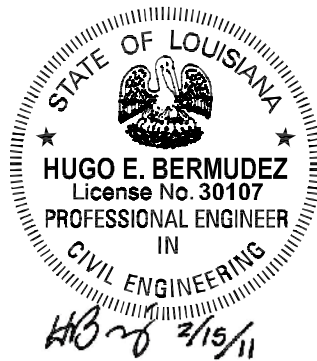
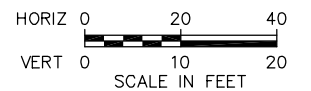
**TYPICAL SECTION**  
EXISTING STA 2+47



**TYPICAL SECTION**  
EXISTING STA 5+11



**TYPICAL SECTION**  
EXISTING STA 6+85



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FEDERAL PROJECT NUMBER: LA-08  
APPROVED BY: RUSS JOFFRION, P.E.

**EXISTING BATHYMETRIC SECTIONS**

DATE: 2/15/2011  
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