

**TERREBONNE BAY SHORE PROTECTION  
DEMONSTRATION PROJECT  
CWPPRA/STATE PROJECT NO. TE-45**

**PROJECT COMPLETION REPORT**



**April 16, 2008**

**Prepared for:  
Louisiana Department of Natural Resources**

**Prepared By:**

**T. Baker Smith, Inc.  
412 South Van Avenue  
Houma, LA 70363**



**T. BAKER SMITH**  
CONSTRUCTION SINCE 1941

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# PROJECT COMPLETION REPORT

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## PROJECT COMPLETION REPORT

**PROJECT NAME: Terrebonne Bay Shore Protection Demonstration Project**  
**CWPPRA/STATE PROJECT NO. TE-45**

**Report Date:** April 2008 **By:** T. Baker Smith, Inc.

### 1. Project Managers/Contracting Officer:

DNR Construction Project Manager	Daniel Dearmond, P.E.	Telephone	985-449-5103
DNR Monitoring Manager	Glen Curole	Telephone	985-447-0995
Federal Sponsor (USFWS) Project Manager	Robert Dubois	Telephone	337-291-3100
Construction Administrator/Inspection	Barry J. Kennedy, P.E.	Telephone	985-868-1050

### 2. Location and Description of Projects as Approved for Construction by Task Force.

The Terrebonne Bay Shore Protection Project (TE-45) is an 8-year demonstration project located north of Terrebonne Bay and east of Bayou Terrebonne along the shoreline of Lake Barre in Terrebonne Parish. The Terrebonne Bay Shore Protection Demonstration Project (TE-45) has been approved for construction under the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA).

The purpose of the project is to demonstrate, evaluate, and document the effectiveness of three shoreline/foreshore protection techniques designed to reduce shoreline erosion and promote oyster reef building at the head of a bay or coastal lake. Three shoreline sites, Reaches A, B, and E, were selected from five potential sites as most suitable to demonstrate the shoreline protection techniques. Each reach is approximately 3000 feet in length. Reaches A and B are located on Burlington Resources, Inc. property, and Reach E is located on Castex-LaTerre, Inc. property. Each of the following three treatments (300' lengths) will be installed at the three shoreline reaches:

Triton™ Gabion Mats Filled with Rock  
A-Jacks™ Concrete Armor Units  
ReefBlks™ Steel Rebar Triangular Units with Oyster Shell Bags

### 3. Final, As-Built Features, Boundaries and Resulting Acreage (use attachments if necessary).

The project was constructed as described above. For additional information see Appendix C, As-Built Drawings and Survey Report, As-Built / Transect Profiles.

#### 4. Key Project Cost Elements\*\*

	<b>CWPPRA Project Report Estimates Data</b>	<b>Cost Incurred as of April 20, 2008**</b>
Construction	1,549,856.00	1,742,440.86
E & D	409,115.00	333,951.05
Land rights	154,800.00	94,370.03
Monitoring	548,320.00	23,969.45
O & M	60,875.00	0.00
Total	2,722,966.00	2,194,731.39

\*\*Cost Incurred does not include Federal Sponsor Administrative costs.



## 5. Items of Work

Item No.	Work	Estimated Quantity	Unit	Estimated Unit Price	Schedule of Items		Bid Unit Price	Bid Amount	As-Built Quantity	As-Built Amount
					Estimated Amount	Bid Quantity				
Base Bid										
1	Mobilization and Demobilization	1	LS	\$75,000.00	\$75,000.00	1	\$74,520.00	\$74,520.00	1	\$74,520.00
2	Surveying	1	LS	\$50,000.00	\$50,000.00	1	\$58,320.00	\$58,320.00	1	\$58,320.00
3	Onshore Armor Units	900	LN FT	\$225.00	\$202,500.00	900	\$311.00	\$279,900.00	900	\$279,900.00
4	Onshore Gabion Mat Units	900	LN FT	\$335.00	\$301,500.00	900	\$480.00	\$432,000.00	900	\$432,000.00
5	Foreshore Triangular Units	900	LN FT	\$220.00	\$198,000.00	900	\$250.00	\$225,000.00	900	\$225,000.00
6	Tie-Down Anchor System	186	EACH	\$632.00	\$117,552.00	186	\$637.00	\$118,482.00	186	\$118,482.00
7	Foundation Base Geogrid	2200	SQ YD	\$7.00	\$15,400.00	2200	\$14.00	\$30,800.00	2200	\$30,800.00
8	Foundation Base Crushed Stone	500	TON	\$55.00	\$27,500.00	500	\$143.00	\$71,500.00	645	\$92,235.00
9	Tie-In Units	790	LN FT	\$305.00	\$240,950.00	790	\$410.00	\$323,900.00	790	\$323,900.00
10	Permanent Warning Signs	6	EACH	\$2,000.00	\$12,000.00	6	\$3,024.00	\$18,144.00	6	\$18,144.00
DNR Estimated Amount: \$1,240,402.00						Original Base Bid Amount: \$1,632,566.00		As-Built Amount \$1,653,301.00		

## 6. Construction and Construction Oversight

Prime Construction Contractor	Larry Dorion Inc.
Subcontractor	JAG Construction Services
Original Construction Contract	\$1,632,566.00
Change Orders	\$20,735.00
Final Construction Contract	\$1,653,301.00

**Construction Oversight Contractor: T. Baker Smith, Inc.**

**Construction Oversight Amount: \$73,957.45**

## 7. Major Equipment Used

Koehring 440 Crane

Cat 910 Front-End Loader

Cat 325 Excavator

3 Outboards

Tug Madison Marie

2 Deck Barges

Cat 322 Marsh Buggy

## 8. Discuss Construction Sequences and Activities, Problems Encountered, Solutions to Problems, etc.

- September 6, 2007: Sub-Contractor, JAG Construction Services begins mobilization and installation of treatments.
- September 29, 2007: Sub-Contractor, JAG Construction Services completes installation of Gabion Mat units for all reaches.
- October 8, 2007: Field Order No. 1 is issued by T. Baker Smith for the changes in contract documents.
- October 9, 2007: Sub-Contractor, JAG Construction Services begins installation of A-JACKS units.
- October 18, 2007: Field Order No. 2 is issued by T. Baker Smith for the changes for the changes in contract.
- October 23, 2007: Sub-Contractor, JAG Construction Services begins installation of tie-in units.

- October 26, 2007: Sub-Contractor, JAG Construction Services completes installation of A-JACKS units on all reaches.
- November 13, 2007: Sub-Contractor, JAG Construction Services begins filling Triangular Units with oyster shells.
- December 6, 2007: Change Order No. 1 is issued by T. Baker Smith for the addition of 145 tons of Foundation Base Crushed Stone.
- December 11, 2007: Sub-Contractor, JAG Construction Services begins demobilization.
- December 12, 2007: Sub-Contractor, JAG Construction Services completes installation of tie-in units, thus completes all construction on all reaches.
- December 13, 2007: Sub-Contractor, JAG Construction Services completes demobilization.
- December 19, 2007: Final Inspection is held.
- February 14, 2008: T. Baker Smith arrives to begin as-built survey.
- February 20, 2008: T. Baker Smith completes as-built survey for all reaches.

## 9. Construction Change Orders and Field Changes.

### Change Order No. 1 (December 6, 2007):

The final quantity for bid item No. 8, Foundation Base Crushed Stone, exceeded the original contract quantity by 145 tons due to underestimation of settlement values. The final quantity of Foundation Base Crushed Stone, as verified by the TBS project representative, was 645 tons. The contract time was not affected.

ITEM NO.	ITEM	UNIT	ORIGINAL QUANTITY	UNIT COST	ORIGINAL BID AMOUNT	ADDITIONAL QUANTITY	ADDITIONAL AMOUNT	BID ITEM TOTAL \$ AMOUNT
8	Foundation Base Crushed Stone	TON	500	\$143.00	\$71,500.00	145	\$20,735.00	\$92,235.00
<b>TOTAL:</b>							<b>\$20,735.00</b>	

### Field Order No. 1 (October 8, 2007):

Plan Sheets 6 of 25 and 7 of 25 were revised and were replaced with the revised sheets showing the updated alignment and coordinates for reaches A, B, and E for locations of the Onshore Armor Units and Foreshore Triangular Units.

Field Order No. 2 (October 18, 2007):

Plan Sheet 5 of 25 was revised to show the changes to the Typical Anchor Detail. The location of the threaded eye was changed so that it was installed above the layer of crushed stone for both the Armor Unit and Triangular Unit installations.

**10. Pipeline and Other Utility Crossings.**

	<u>Structure</u>	<u>Owner</u>	<u>Rep. To Contact</u>
1.	Natural Gas pipeline	Chevron Texaco	Shannon Montgomery (985)758-0230
2.			
3.			

**11. Safety and Accidents.**

There were no accidents reported during the Terrebonne Bay Shore Protection Demonstration Project.

**12. Additional Comments Pertaining to Construction, Completed Projects, Lessons Learned, etc.**

**13. Significant Construction Dates: To be filled out by DNR Construction Project Manager or Contracting Officer for construction for Agency responsible for construction.**

ACTION	Date
Bid Opening	June 14, 2007
Construction Contract Award	August 8, 2007
Preconstruction Conference	August 20, 2007
Notice to Proceed	August 22, 2007
Mobilization	September 6, 2007
Construction Start	September 6, 2007
Construction Completion	December 12, 2007
Final Acceptance	December 19, 2007

**If different bids are taken, repeat this table to individually reflect each bid and attach tables.**  
**Other significant Project Dates**

	<u>Date</u>
Project Implementation closeout**	
Start of Preconstruction Monitoring***	
Preconstruction Aerial Photography Acquisition***	
Monitoring Plan Completion***	

\*\* Final implementation closeout is made by either the DNR Project Manager or the Federal Agency Contracting Officer depending on which organization had lead role for construction of project.

\*\*\* To be completed by DNR Project Manager.

**APPENDIX A**

**FIELD ORDERS AND CHANGE ORDERS**

FIELD ORDER NO. ONE (1)

PROJECT:  
Terrebonne Bay Shore Protection Demonstration

DATE OF ISSUANCE:  
October 8, 2007

OWNER:  
Louisiana Department of Natural Resources  
1440 Tiger Drive Suite B  
Thibodaux, LA 70301

OWNER'S PROJECT NO.  
TE-45

CONTRACTOR:  
Larry Doiron, Inc.  
P.O. Box 1640  
Morgan City, LA 70380

ENGINEER:  
T. Baker Smith, Inc.  
412 S. Van Avenue  
Houma, LA 70361

CONTRACT FOR:  
Terrebonne Bay Shore Protection Demonstration

ENGINEER'S PROJECT NO.  
2007.1628

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You are directed to make the following changes in the Contract Documents.

Description:

Plan Sheet 6 of 25 and 7 of 25 have been revised and shall be replaced with the attached drawings. The revised sheets show the updated alignment and coordinates for reaches A, B and E for locations of the Onshore Armor Units and Foreshore Triangular Units.

Attachments:

1. Plan Sheet 6 of 25
2. Plan Sheet 7 of 25

This Field Order does not constitute a change in Contract Time and/or Contract Cost.

RECOMMENDED:

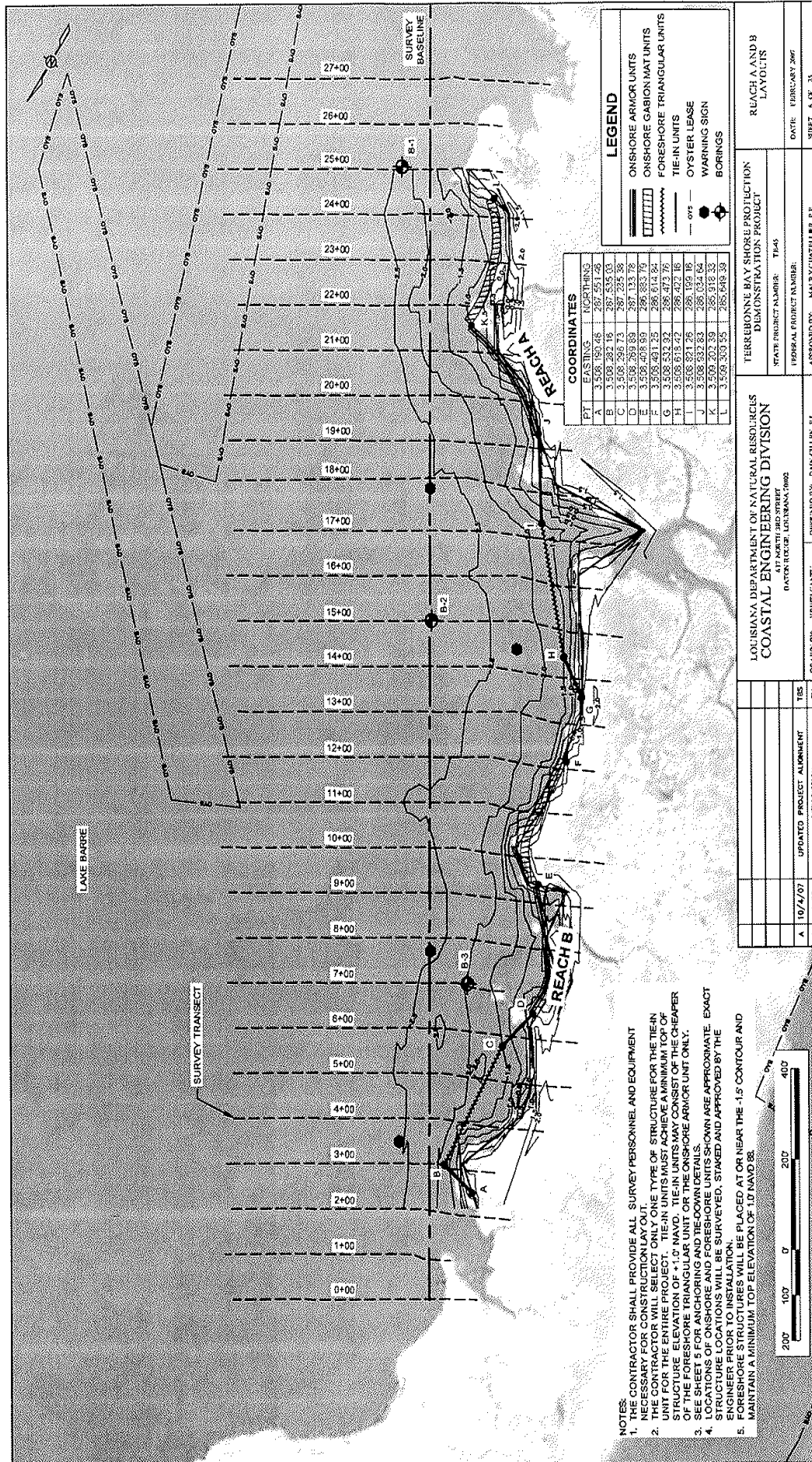
By: Barry J. Kennedy  
Date: 10/9/07

APPROVED:

By: Daniel D. Harmon  
Date: 12/14/07

ACCEPTED:

By: Larry Doiron  
Date: 12/10/07



- LEGEND**
- ONSHORE ARMOR UNITS
  - ONSHORE GABION MAT UNITS
  - FORESHORE TRIANGULAR UNITS
  - TIE-IN UNITS
  - OYSTER LEASE
  - WARNING SIGN
  - BORINGS

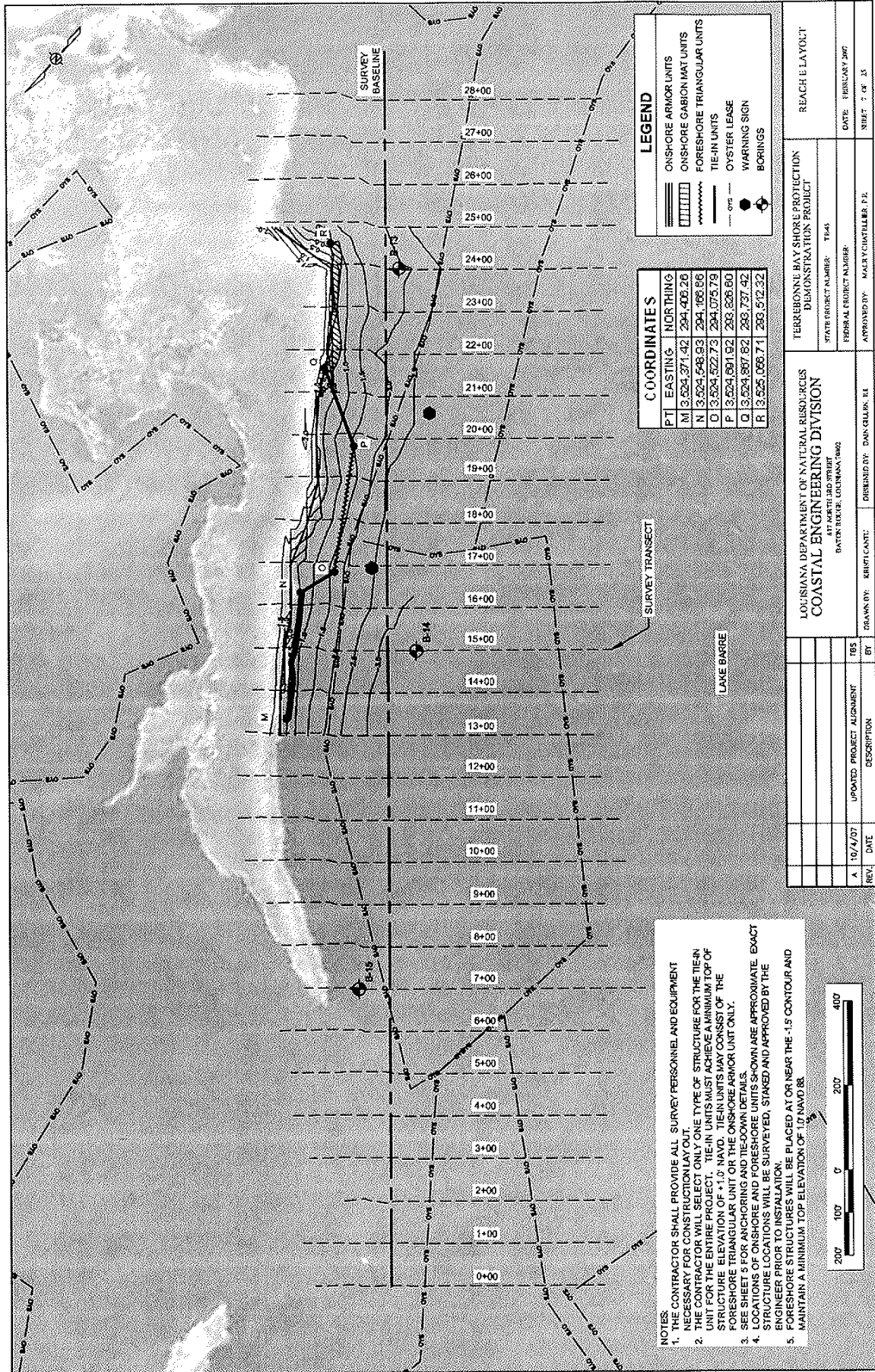
**COORDINATES**

PT	EASTING	NORTHING
A	3,508,190.46	287,551.48
B	3,508,232.16	287,535.03
C	3,508,295.73	287,725.88
D	3,508,293.89	287,733.78
E	3,508,461.39	288,013.64
F	3,508,461.39	288,013.64
G	3,508,332.93	288,473.76
H	3,508,332.93	288,473.76
I	3,508,321.26	288,159.16
J	3,508,322.83	288,034.64
K	3,509,202.39	285,918.33
L	3,509,303.55	285,649.38

- NOTES:**
- THE CONTRACTOR SHALL PROVIDE ALL SURVEY PERSONNEL AND EQUIPMENT NECESSARY FOR CONSTRUCTION OF THE TYPE OF STRUCTURE FOR THE TIE-IN UNITS FOR THE ENTIRE PROJECT. TIE-IN UNITS MUST ACHIEVE A MINIMUM TOP OF STRUCTURE ELEVATION OF +1.0' NAVD. TIE-IN UNITS MAY CONSIST OF THE CHEAPER OF THE FORESHORE TRIANGULAR UNIT OR THE ONSHORE ARMOR UNIT ONLY.
  - SEE SHEET 5 FOR ANCHORING AND TIE-DOWN DETAILS.
  - LOCATIONS OF ONSHORE AND FORESHORE UNITS SHOWN ARE APPROXIMATE. EXACT STRUCTURE LOCATIONS WILL BE SURVEYED, STAKED AND APPROVED BY THE ENGINEER.
  - FORESHORE STRUCTURES WILL BE PLACED AT OR NEAR THE -1.5' CONTOUR AND MAINTAIN A MINIMUM TOP ELEVATION OF 1.0' NAVD 88.

LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION		TERREBONNE BAY SHORE PROTECTION DEMONSTRATION PROJECT		REACH A AND B LAYOUTS	
DATE: 10/4/07		STATE PROJECT NUMBER: T-45		DATE: FEBRUARY 2007	
BY: [Signature]		FEDERAL PROJECT NUMBER:		DRAWN BY: DAN GILLUM, III	
REV: [Signature]		DATE: 10/4/07		APPROVED BY: NALY CHATELIER, P.E.	
DESCRIPTION:		PROJECT NAME:		SHEET: 4 OF 13	





C. COORDINATES	
PT	EASTING
M	3,524,371.42
N	3,524,371.42
O	3,524,371.42
P	3,524,371.42
R	3,524,371.42

LEGEND	
ONSHORE ARMOR UNITS	ONSHORE GABION MAT UNITS
FORESHORE TRIANGULAR UNITS	TIE-IN UNITS
OYSTER LEASE	WARNING SIGN
BORINGS	

REACH E LAYOUT	
DATE	10/14/07
STATE PROJECT NUMBER	TEAS
FEDERAL PROJECT NUMBER	
APPROVED BY	DAVID GILLES, III

LOUISIANA DEPARTMENT OF NATURAL RESOURCES	
COASTAL ENGINEERING DIVISION	
DATE	10/14/07
DESIGNED BY	DAVID GILLES, III
DRAWN BY	DAVID GILLES, III
CHECKED BY	DAVID GILLES, III
APPROVED BY	DAVID GILLES, III

NOTES	
1.	THE CONTRACTOR SHALL PROVIDE ALL SURVEY PERSONNEL AND EQUIPMENT NECESSARY FOR CONSTRUCTION LAYOUT.
2.	THE CONTRACTOR SHALL PROVIDE THE TYPE OF STRUCTURE FOR THE TIE-IN UNITS. THE CONTRACTOR SHALL PROVIDE THE TYPE OF STRUCTURE FOR THE TIE-IN UNITS. THE CONTRACTOR SHALL PROVIDE THE TYPE OF STRUCTURE FOR THE TIE-IN UNITS.
3.	SEE SHEET 5 FOR ANCHORING AND TIE-DOWN DETAILS.
4.	LOCATIONS OF ONSHORE AND FORESHORE UNITS SHOWN ARE APPROXIMATE. EXACT STRUCTURE LOCATIONS WILL BE SURVEYED, STAKED AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
5.	FORESHORE STRUCTURES WILL BE PLACED AT OR NEAR THE -1.5' CONTOUR AND MAINTAIN A MINIMUM TOP ELEVATION OF 1.0' NAVD 83.

REACH E LAYOUT	
DATE	10/14/07
STATE PROJECT NUMBER	TEAS
FEDERAL PROJECT NUMBER	
APPROVED BY	DAVID GILLES, III

LOUISIANA DEPARTMENT OF NATURAL RESOURCES	
COASTAL ENGINEERING DIVISION	
DATE	10/14/07
DESIGNED BY	DAVID GILLES, III
DRAWN BY	DAVID GILLES, III
CHECKED BY	DAVID GILLES, III
APPROVED BY	DAVID GILLES, III

FIELD ORDER NO. TWO (2)

**PROJECT:**

Terrebonne Bay Shore Protection Demonstration

**DATE OF ISSUANCE:**

October 18, 2007

**OWNER:**

Louisiana Department of Natural Resources  
1440 Tiger Drive Suite B  
Thibodaux, LA 70301

**OWNER'S PROJECT NO.**

TE-45

**CONTRACTOR:**

Larry Doiron, Inc.  
P.O. Box 1640  
Morgan City, LA 70380

**ENGINEER:**

T. Baker Smith, Inc.  
412 S. Van Avenue  
Houma, LA 70361

**CONTRACT FOR:**

Terrebonne Bay Shore Protection Demonstration

**ENGINEER'S PROJECT NO.**

2007.1628

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**You are directed to make the following changes in the Contract Documents.**

**Description:**

TYPICAL ANCHOR DETAIL, as shown on plan sheet 5 of 25, is hereby revised to show. The location of the threaded eye is to be installed so ~~the~~ the eye is to be located above layer of crushed stone for both the ARMOR UNIT and TRIANGULAR UNIT installations.

Attachments: N/A

**This Field Order does not constitute a change in Contract Time and/or Contract Cost.**

**RECOMMENDED:**

By: Barry J. Kimerly  
Date: 12/10/07

**APPROVED:**

By: Daniel Pearson  
Date: 12/14/07

**ACCEPTED:**

By: Larry Doiron  
Date: 12/10/07

# CHANGE ORDER NO. ONE (1)

**PROJECT:**  
Terrebonne Bay Shore Protection Demonstration

**DATE OF ISSUANCE:**  
December 6, 2007

**OWNER:**  
Louisiana Department of Natural Resources  
1440 Tiger Drive STE B  
Thibodaux, LA 70301

**OWNER'S PROJECT NO.**  
TE-45

**CONTRACTOR:**  
Larry Doiron, Inc.  
P.O. Box 1640  
Morgan City, LA 70380

**ENGINEER:**  
T. Baker Smith, Inc.  
412 S. Van Ave.  
Houma, LA 70363

**CONTRACT FOR:**  
Terrebonne Bay Shore Protection Demonstration

**ENGINEER'S PROJECT NO.**  
2007.1628

**You are directed to make the following changes in the Contract Documents.**

**Description:**  
Add additional quantity of Foundation Base Crushed Stone in the amount of 145 tons for an adjusted contract total of 645 tons.

This change order increases the contract quantity of Foundation Base Crushed Stone for a total increase in Contract Price of \$20,735.00.

RECEIVED

DEC 17 2007

CCP

CHANGE IN CONTRACT PRICE:	CHANGE IN CONTRACT TIME:
Original Contract Price \$ 1,632,566.00	Original Contract Time 240 Calendar Days days or date
Previous Change Orders \$ 0.00	Net Change from previous Change Orders 0 Calendar Days days or date
Contract Price Prior to This Change Order \$ 1,632,566.00	Contract Time Prior to this Change Order 240 Calendar Days days or date
Net Increase of this Change Order \$ 20,735.00	Net Increase of this Change Order 0 Calendar Days days or date
Contract Price with all approved Change Orders \$ 1,653,301.00	Contract Time with all approved Change Orders 240 Calendar Days days or date

**RECOMMENDED:**

By: Randy A. Kennedy  
Engineer

Date: 12/19/07

**APPROVED:**

By: David Dearmot  
Logist

Date: 12/17/07

**APPROVED:**

By: [Signature]  
Contractor

Date: 12/13/07

Louisiana Department of Natural Resources  
Terrebonne Bay Shore Protection Demonstration Project (TE-45)

File No. O 26640 DL  
Purchase Order No. 3208625

**Change Order No. 1 Summary**

Change Order No. 1 will increase the Contract Price from \$1,632,566.00 to \$1,653,301.00 with no increase in Contract Time.

The following Bid Items will be modified:

Item No.	Item	Unit	Original Quantity	Unit Price	Original Bid \$ Amount	Additional Quantity	Additional Bid \$ Amount	Total Quantity	Bid Item Total \$ Amount
8	Foundation Base Crushed Stone	TON	500	\$143.00	\$71,500.00	145	\$20,735.00	645	\$92,235.00
TOTAL:							\$20,735.00		

Bid Item No. 8:

An additional 145 tons of rock are required to complete the project. The original quantity of 500 tons was an estimate based on field conditions at the time of survey and assumed settlement values.

## **APPENDIX B**

### **PRE-CONSTRUCTION CONFERENCE REPORT**

## PRE-CONSTRUCTION CONFERENCE REPORT

DATE: September 20, 2006

TIME: 9:00 a.m.

PROJECT NAME: TERREBONNE BAY SHORE PROTECTION DEMONSTRATION PROJECT

LDNR PROJECT NO. TE-45

TBS PROJECT NO. 2007.1628

### 1. INTRODUCTION

#### A. Attendees (Introduction)

Philip Chauvin, Jr. - T. Baker Smith, Inc.  
Jason Kennedy - T. Baker Smith  
Dale Pellegrin - T. Baker Smith  
Larry Doiron - Larry Doiron, Inc.  
Rickie Taylor - Larry Doiron, Inc.  
Gary Duhon - Jag Construcion Services

Gary Curole - LDNR  
Robert Dubois - USFWS  
Ralph Liberat - LDNR/CED  
Daniel Dearmond - LDNR/CED/Thibodaux  
Dain Gillen - LDNR/CED/BTR

#### B. Brief description of "Scope of Project"

The Purpose of this project is to demonstrate, evaluate, and document the effectiveness of three shoreline/foreshore protection techniques designed to reduce shoreline erosion and promote oyster reef building at the head of a bay or coastal lake. Three shoreline sites, Reaches A, B, and E, were selected from five potential sites as most suitable to demonstrate the shoreline protection techniques. Each reach is approximately 3000 feet in length. Reaches A and B are located on Burlington Resources, Inc. property, and Reach E is located on Castex-LaTerre, Inc. property. Each of the following three treatments (300' lengths) will be installed at each of the three shoreline reaches:

- 1) Triton - Gabion Mats filled with Rock
- 2) A-Jacks - Concrete Armor Units
- 3) ReefBlks - Steel Rebar Triangular Units with Oyster Shell Bags

#### C. Contact Personnel for the project:

### 2. OWNER Louisiana Department of Natural Resources

	NAME	PHONE #	EMERGENCY #
PROJECT MANAGER	<u>Daniel Dearmond</u>	<u>(985) 449-5103</u>	<u>(985) 446-5722</u>
FIELD REP.	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

### 3. ENGINEER T. BAKER SMITH, INC

	NAME	PHONE #	CELL #
PROJECT MANAGER	<u>Jason Kennedy</u>	<u>(985) 223-9272</u>	<u>(985) 852-0232</u>
CONSTRUCTION MGT.	<u>Philip Chauvin</u>	<u>(985) 223-9228</u>	<u>(985) 790-0587</u>
PROJECT REP.	<u>Dale Pellegrin</u>	<u>(985) 868-1050</u>	<u>(985) 790-0741</u>
PROJECT REP.	<u>Mike Kay</u>	<u>(985) 868-1050</u>	<u>(985) 852-7084</u>

### 4. CONTRACTOR: Larry Doiron, Inc.

	NAME	PHONE #	EMERGENCY #
PRIME CONTACTOR	<u>Larry Doiron</u>	<u>(985) 384-3351</u>	
SUB CONTRACTOR	<u>Gary Duhon</u>	<u>(985) 876-1593</u>	<u>(985) 637-2892</u>
FIELD SUPERINTENDENT	<u>Jimmy Duhon</u>	<u>(985) 876-1593</u>	<u>(985) 397-2370</u>
SURVEY SUB CONTRACTOR	<u>David Waitz</u>	<u>(985) 447-4017</u>	<u>(985) 804-0221</u>
FOUNDATION CRUSHED STONE	<u>Martin Marrietta Aggregate</u>	<u>(985) 879-3588</u>	
GEOTEXTILE GEOGRID	<u>Industrial Fabrics</u>	<u>(225) 273-9600</u>	
ONSHORE GEOGRID	<u>Tensar Internation Corp.</u>	<u>(404) 250-1290</u>	
FOREHORE TRIANGLE UNITS	<u>Coastal Environmental, Inc.</u>	<u>(225) 383-7455</u>	
TIE DOWN ANCHORS	<u>A B Manufacturing, Inc.</u>	<u>(504) 367-7449</u>	
PERMANENT SIGNS	<u>Construction Materials</u>	<u>(225) 751-4000</u>	

## 5. CONSTRUCTION AGREEMENT

A. Executed and Recorded	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
B. Copies Distributed	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
C. Payment and Performance Bonds	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

## 6. INSURANCE

A. Contractual Liability - Certificate Received	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
B. Builder's Risk - Certificate Received	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
C. Owner's/Engineer's Protective Liability - Certificate Received	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

Remarks: Received by DNR with signed contract documents

## 7. SUBCONTRACTORS

A. Subcontractors List Received	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
B. List Approved	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
C. Contracts Received	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

Remarks: Larry Doiron, Inc. to provide sub contractor list, TBS to review and respond,  
DNR to forward executed contract to contractor

## 8. PAYROLLS AND LABOR STANDARDS

A. Certifications Reviewed	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
B. Wage Rates and Rosters Distributed	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
C. Payrolls to be submitted to: <u>N/A</u>		
Name _____		
D. Will job interviews be required	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

Remarks: N/A

## 9. PROGRESS SCHEDULES

A. Time of Complete Project. <u>240 Calendar Days</u>		
B. Amount of liquidated damages. <u>\$900.00 per calendar day</u>		
C. Bar Chart received.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
D. Does Contractor expect any unavoidable delays in completing the project on time?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
If yes, explain:		

Remarks: Progress Schedule to be submitted by Jag at pre-construction meeting

## 10. SHOP DRAWINGS

A. Schedule of submittal received	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
If not, date due: <u>Larry Doiron to submit on</u>		

B. Distribution of copies: Contractor will submit three (3) copies for review. Approved submittals will be distributed as follows:

Owner	<u>1</u>	(# of Copies)
USFWS	<u>-</u>	(# of Copies)
Engineer	<u>1</u>	(# of Copies)
Contractor	<u>1</u>	(# of Copies)

C. Has contractor been informed he must certify submittals before submission: Failure to comply will result in rejection of submittal.

<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
---	-----------------------------

Remarks: All submittals routed through TBS

#### 11. QUALITY CONTROL

A. System Manager

Alter. System Manager

System Inspector

System Inspector

System Inspector

Name: \_\_\_\_\_

Phone #: \_\_\_\_\_

Name: \_\_\_\_\_

Phone #: \_\_\_\_\_

Name: \_\_\_\_\_

Phone #: \_\_\_\_\_

Name: \_\_\_\_\_

Phone #: \_\_\_\_\_

Name: \_\_\_\_\_

Phone #: \_\_\_\_\_

B. Authorized to Execute Change Orders  
and Modifications:

Name: Gary Duhon

C. Contractors informed that they will be responsible for  
record drawings:

☒ Yes ☐ No

D. Daily Quality Control Form and Report reviewed:

☒ Yes ☐ No

Remarks: Larry Doiron to submit on

#### 12. ENVIRONMENTAL PROTECTION PLAN

(Burning, Dust Control, Sanitary Facilities, etc.)

Received ☐ Yes ☒ No

If not, date due:

Remarks: Larry Doiron to Submit

#### 13. PROJECT SIGN

A. Required ☐ Yes ☒ No

B. Location N/A

Remarks: N/A

#### 14. NOTICE TO PROCEED

A. Issued at Meeting ☐ Yes ☒ No

B. Date August 22, 2007

C. Construction Start Date August 25, 2007

D. Construction Completion Date April 18, 2008

Remarks: NTP previously issued to Larry Doiron

#### 15. MONTHLY PAYMENT REQUESTS

A. Has Schedule of Values been Submitted? ☐ Yes ☒ No

If not, due date: Larry Doiron to submit on

B. Has Schedule of Values been Approved? ☐ Yes ☒ No

C. Pay request ending date will be: monthly (end of month)  
(Day of Month)

D. Time anticipated for review:

A. Engineer 1 week

B. Owner 1 week



**APPENDIX C**  
**AS-BUILT DRAWINGS**

## INDEX TO SHEETS

TERREBONNE BAY SHORE PROTECTION  
DEMONSTRATION PROJECT  
TE-45  
TERREBONNE PARISH, LOUISIANA



CED PROJECT ENGINEER

	4/18/08	AS-BUILT DETAILS ADDED	TBS
REV.	DATE	DESCRIPTION	BY

SHEET 1 OF 25

GENERAL NOTES

1. ALL ELEVATIONS ARE GIVEN IN THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). ALL HORIZONTAL COORDINATES ARE GIVEN IN THE NORTH AMERICAN DATUM OF 1983 (NAD 83).

2. BENCHMARK TE-45-SM-01 HAS BEEN ESTABLISHED AT THE SITE BY THE OWNER. SEE SHEET 3 FOR BENCHMARK LOCATION. THE CONTRACTOR SHALL BE RESPONSIBLE TO ESTABLISH AND MAINTAIN TEMPORARY BENCHMARKS DURING CONSTRUCTION AS NEEDED.

3. ELEVATIONS SHOWN ON PLANS ARE BASED ON SURVEYS PERFORMED BETWEEN JUNE 23, 2002 AND JULY 6, 2002 BY MORRIS P. HERBERT, INC.

4. 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.

5. 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. ENGINEER SHALL BE NOTIFIED OF ALL DISCREPANCIES.

6. THE CONTRACTOR SHALL MAKE HIS OWN INTERPRETATION OF THE CHARACTER AND CONDITION OF THE MATERIALS WHICH WILL BE ENCOUNTERED BETWEEN THE BORING LOCATIONS. THE CONTRACTOR, AT HIS OWN EXPENSE, MAY MAKE ADDITIONAL SURVEYS AND INVESTIGATIONS AS HE DEEMS NECESSARY TO DETERMINE CONDITIONS WHICH WILL AFFECT PERFORMANCE OF THE WORK.

7. THE LOCATIONS OF THE STRUCTURES SHOWN ON THE DRAWINGS ARE APPROXIMATE. THE CONTRACTOR SHALL PROVIDE ALL SURVEY PERSONNEL AND EQUIPMENT NECESSARY TO LAY OUT THE STRUCTURES AT THE BEGINNING OF CONSTRUCTION.

8. LOCATION OF UTILITIES 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 CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING UTILITY LOCATIONS PRIOR TO CONSTRUCTION.

9. 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.
10. FORTY-EIGHT (48) HOURS PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL CALL LOUISIANA ONE CALL AT 1-800-272-3020 TO LOCATE ANY UTILITY OR PIPELINES IN THE AREA WHICH MAY BE UNKNOWN TO THE OWNER. ADDITIONALLY, THE CONTRACTOR SHALL PERFORM A MAGNETOMETER SURVEY WITHIN THE CONSTRUCTION AREA AND WHERE THE STRUCTURES ARE TO BE LOCATED. FURTHERMORE, CONTRACTOR SHALL NOTIFY CHEVRONTEXACO A MINIMUM OF 14 DAYS PRIOR TO ACCESSING THE SITE AT (985) 758-0230 OR (504) 247-3383, ATTENTION SHANNON MONTGOMERY, TO HAVE THE PIPELINE IN THE PROJECT AREA PROPERLY MARKED PRIOR TO MOBILIZATION.

11. ALL PIPELINES WITHIN THE PROJECT AREA SHALL BE CLEARLY MARKED WITH BUOYS BY THE CONTRACTOR. THE CONTRACTOR SHALL MAINTAIN BUOYS DURING CONSTRUCTION OR HAVE ADEQUATE NAVIGATIONAL EQUIPMENT ON THE DREDGE TO AVOID DREDGING IN RESTRICTED AREAS. THE CONTRACTOR SHALL NOT ANCHOR OR EXCAVATE WITHIN 100 FEET OF ANY PIPELINE.

12. ALL STRUCTURAL STEEL SHALL BE ASTM A-36, UNLESS OTHERWISE NOTED.

13. ALL WELDING SHALL BE ELECTRIC WELDING. WORKMANSHIP AND TECHNIQUE, WHERE APPLICABLE, SHALL CONFORM TO THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE.

14. WELDING SYMBOLS SHOWN ARE THOSE ADOPTED BY THE AMERICAN WELDING SOCIETY AND INDICATE ONLY SIZE AND TYPE OF WELDS REQUIRED. DETAILED INFORMATION SHALL BE SHOWN ON THE SHOP DRAWINGS AND SUBMITTED BY THE CONTRACTOR FOR APPROVAL.

15. STRUCTURAL STEEL FABRICATION AND ERECTION SHALL CONFORM TO THE A.I.S.C. MANUAL OF STEEL CONSTRUCTION LATEST EDITION UNLESS NOTED OTHERWISE.

16. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI UNLESS OTHERWISE SPECIFIED.

17. TIE-IN UNITS CONNECT THE ONSHORE UNITS WITH THE FORESHORE UNITS. TIE-IN UNITS MAY CONSIST OF THE FORESHORE TRIANGULAR UNIT OR ONSHORE ARMOR UNIT WITH A GEOGRID AND CRUSHED STONE FOUNDATION BASE. ALL TIE-IN STRUCTURES SHALL BE OF THE SAME TYPE FOR THE ENTIRE PROJECT. THE TOP OF ALL TIE-IN UNITS MUST BE AT ELEVATION +1.0' NAVD 88.

18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MOBILIZING, COMPLETING THE REQUIRED CONSTRUCTION ACTIVITIES, AND DEMOBILIZING WITHOUT CROSSING OR OTHERWISE IMPACTING UNACQUIRED OYSTER LEASES SHOWN ON SHEET 3.

SUMMARY OF ESTIMATED QUANTITIES

ITEM No.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	AS-BUILT QUANTITY
1	MOBILIZATION AND DEMOBILIZATION	LUMP SUM	1	1
2	SURVEYING	LUMP SUM	1	1
3	ONSHORE ARMOR UNIT	LINEAR FOOT	900	900
4	ONSHORE GABION MAT UNIT	LINEAR FOOT	900	900
5	FORESHORE TRIANGULAR UNIT	LINEAR FOOT	900	900
6	TIE-DOWN ANCHOR	EACH	186	186
7	FOUNDATION BASE GEOTEXTILE GEOGRID	SQ. YARD	2200	2200
8	FOUNDATION BASE CRUSHED STONE	TON	500	645
9	TIE-IN UNIT*	LINEAR FOOT	790	790
10	PERMANENT WARNING SIGN	EACH	6	6

- NOTES:
1. APPROXIMATELY 180 GABION MAT UNITS, 1470 ARMOR UNITS WITH 93 ANCHORS, AND 180 TRIANGULAR UNITS WITH 93 ANCHORS WILL BE PLACED.

2. THE TIE-IN UNITS WILL REQUIRE APPROXIMATELY 85 ANCHORS. THE AMOUNT OF GEOTEXTILE GEOGRID AND CRUSHED STONE REQUIRED FOR THE TIE-IN UNITS WILL VARY DEPENDING ON WHAT TYPE OF TIE-IN UNIT IS CHOSEN.

\*3. TIE-IN UNITS SHALL CONSIST OF THE CHOSEN TYPE OF STRUCTURE, FOUNDATION BASE GEOTEXTILE GEOGRID, FOUNDATION BASE CRUSHED STONE, AND ANCHOR SYSTEM. BIDS PLACED ON TIE-IN UNITS SHALL INCLUDE THE ASSOCIATED COST FOR ALL OF THE ABOVE MATERIALS.

- AS- BUILT NOTES:
1. ONSHORE ARMOR UNITS WAS SELECTED AND USED BY THE CONTRACTOR AS THE TIE-IN UNIT.

AS-BUILT

				LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	TERREBONNE BAY SHORE PROTECTION DEMONSTRATION PROJECT		GENERAL NOTES
					STATE PROJECT NUMBER: TE-45		
					FEDERAL PROJECT NUMBER:		
	4/18/08	AS-BUILT DETAILS ADDED	TBS				DATE: FEBRUARY 2007
REV.	DATE	DESCRIPTION	BY	DRAWN BY: KRISTI CANTU	DESIGNED BY: DAIN GILLEN, E.I.	APPROVED BY: MAURY CHATELLIER, P.E.	SHEET 2 OF 25

PROPOSED ACCESS ROUTE		
PT.	EASTING	NORTHING
1	3,525,417.00	282,847.00
2	3,519,781.00	286,266.00
3	3,515,417.47	284,890.84
4	3,510,963.49	285,698.91
5	3,509,757.60	287,689.42
6	3,520,415.46	287,799.08
7	3,520,965.95	293,976.39
8	3,523,120.64	293,724.29
9	3,523,236.51	295,046.15

TE-45-SM-01  
N 297,516.43  
E 3,510,866.28  
ELEV. 4.009'

BAYOU COURANT

24" TENNESSEE GAS PIPELINE

BAYOU TERREBONNE

PROPOSED  
ACCESS  
ROUTE

LAKE BARRE

BAYOU  
BARRE

REACH E

31661

33135

REACH B

REACH A

PLACID PIPELINE

4" TEXACO PIPELINE

- NOTES:
1. DNR HAS ACQUIRED ALL OR PORTIONS OF TWO OYSTER LEASES IN REACH E THAT WILL BE IMPACTED BY CONSTRUCTION AS PRESENTED BELOW:  
LEASE NO. 33135 - 7 ACRES ACQUIRED BY DNR FROM G.I. JOE, INC., EMPIRE LA  
LEASE NO. 31661 - 14 ACRES ACQUIRED BY DNR
  2. THERE ARE NO OYSTER LEASES THAT WILL BE IMPACTED IN REACH A.
  3. ALL BARGES SHALL BE LIGHT LOADED FOR TRANSPORTATION OF EQUIPMENT AND MATERIALS. NO PROP WASHING OR DREDGING SHALL BE ALLOWED.
  4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MOBILIZING, COMPLETING THE REQUIRED CONSTRUCTION ACTIVITIES, AND DEMOBILIZING WITHOUT CROSSING OR OTHERWISE IMPACTING UNACQUIRED OYSTER LEASES SHOWN ON SHEET 3.
  5. THE AERIAL PHOTOGRAPHY WAS TAKEN IN THE FALL OF 2005.

LEGEND

- REACH
- PL PIPELINE
- OYS OYSTER LEASE
- BENCHMARK
- PROPOSED ACCESS ROUTE

AS-BUILT



LOUISIANA DEPARTMENT OF NATURAL RESOURCES  
COASTAL ENGINEERING DIVISION

617 NORTH 3RD STREET  
BATON ROUGE, LOUISIANA 70802

TERREBONNE BAY SHORE PROTECTION  
DEMONSTRATION PROJECT

PLAN VIEW

STATE PROJECT NUMBER: TE45

FEDERAL PROJECT NUMBER:

DATE: FEBRUARY 2007

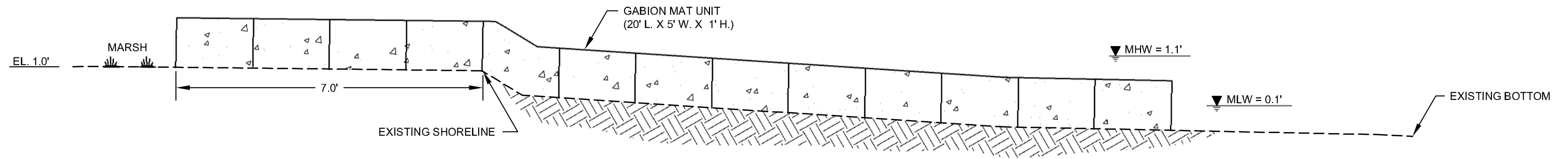
APPROVED BY: MAURY CHATELIER, P.E.

SHEET 3 OF 25

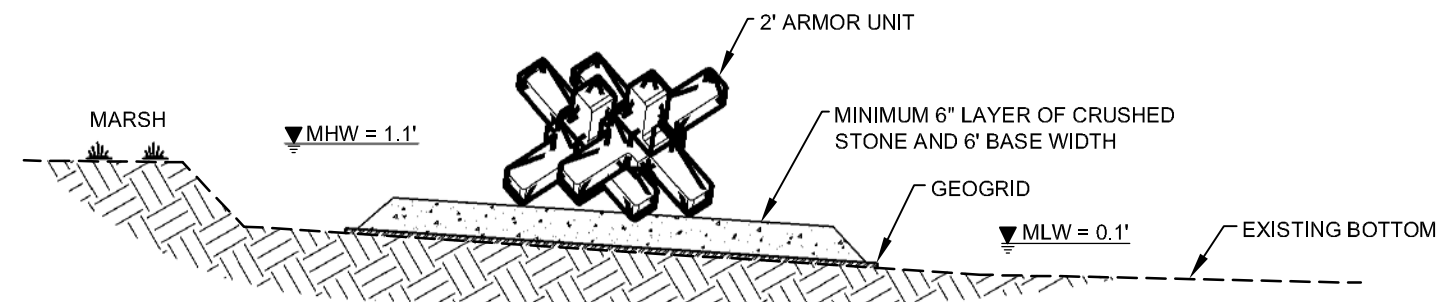
REV.	DATE	DESCRIPTION	BY
	4/18/08	AS-BUILT DETAILS ADDED	TBS

DRAWN BY: KRISTI CANTU

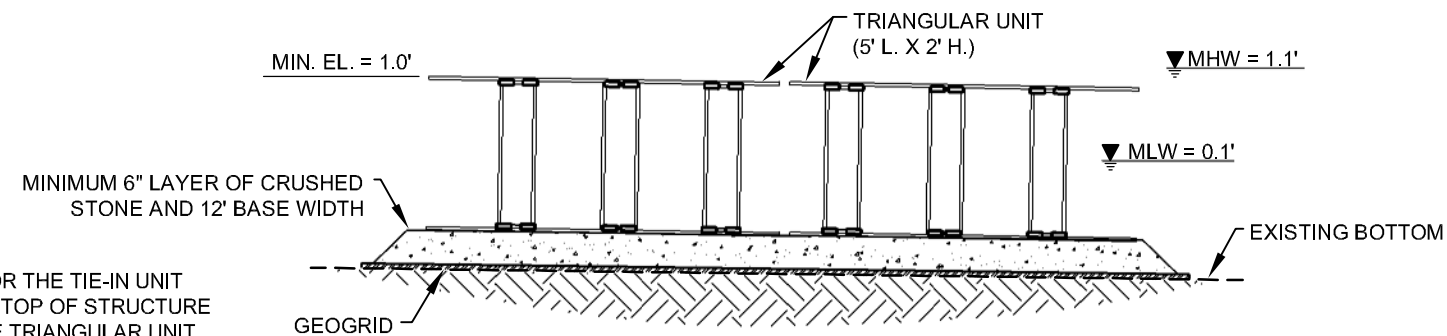
DESIGNED BY: DAIN GILLEN, E.I.



**TYPICAL ONSHORE GABION MAT UNIT**  
NOT TO SCALE



**TYPICAL ONSHORE ARMOR UNIT**  
NOT TO SCALE



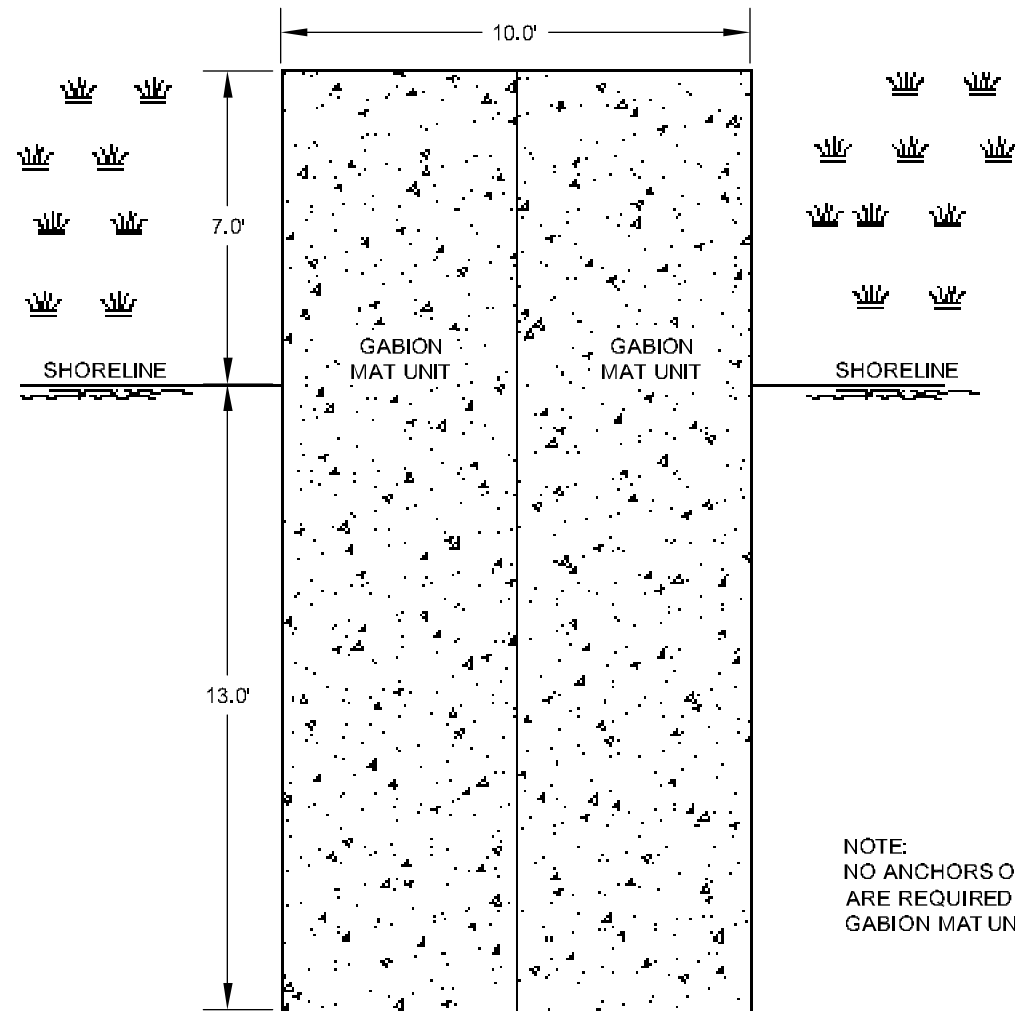
**TYPICAL FORESHORE TRIANGULAR UNIT**  
NOT TO SCALE

- NOTES:
1. THE CONTRACTOR WILL SELECT ONLY ONE TYPE OF STRUCTURE FOR THE TIE-IN UNIT FOR THE ENTIRE PROJECT. TIE-IN UNITS MUST ACHIEVE A MINIMUM TOP OF STRUCTURE ELEVATION OF +1.0'. TIE-IN UNITS MAY CONSIST OF THE FORESHORE TRIANGULAR UNIT OR THE ONSHORE ARMOR UNIT WITH A GEOGRID AND CRUSHED STONE FOUNDATION BASE. GABION MAT UNITS WILL NOT BE ALLOWED AS TIE-IN UNITS.
  2. SEE SHEET 5 FOR ANCHORING AND TIE-DOWN DETAILS.

AS-BUILT NOTES:  
1. THE ONSHORE ARMOR UNIT WAS SELECTED AND USED BY CONTRACTOR AS THE TIE-IN UNIT.

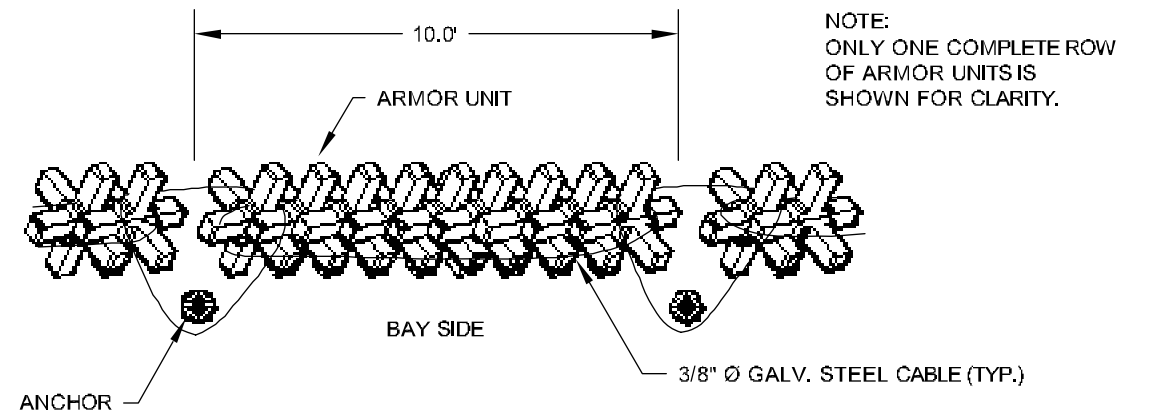
AS-BUILT

				LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	TERREBONNE BAY SHORE PROTECTION DEMONSTRATION PROJECT	TYPICAL UNIT PROFILES	
					STATE PROJECT NUMBER:   TE-45		
					FEDERAL PROJECT NUMBER:	DATE:   FEBRUARY 2007	
	4/18/08	AS—BUILT DETAILS ADDED	TBS				
REV.	DATE	DESCRIPTION	BY		DRAWN BY:   KRISTI CANTU	DESIGNED BY:   DAIN GILLEN, E.I.	APPROVED BY:   MAURY CHATELLIER, P.E.

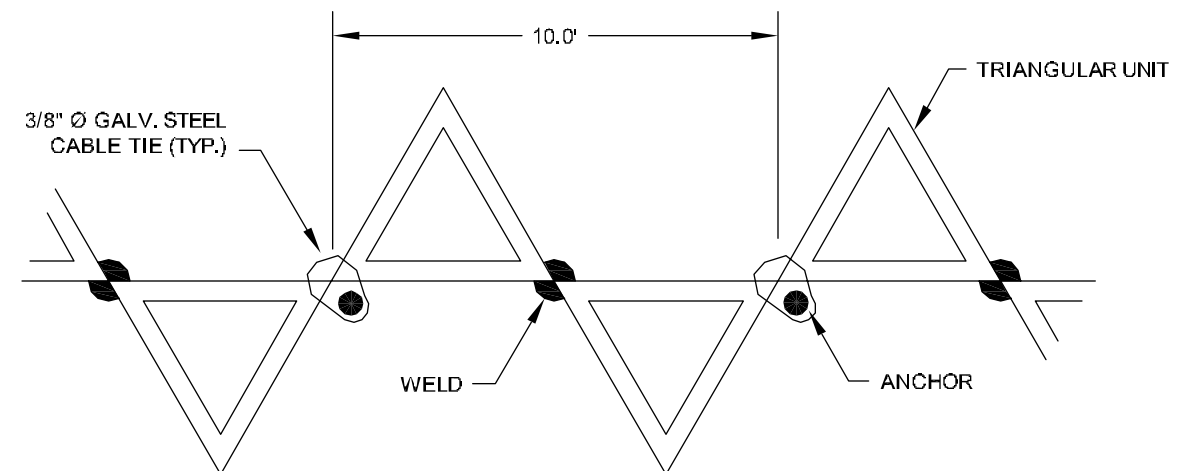


**GABION UNIT DETAIL**  
NOT TO SCALE

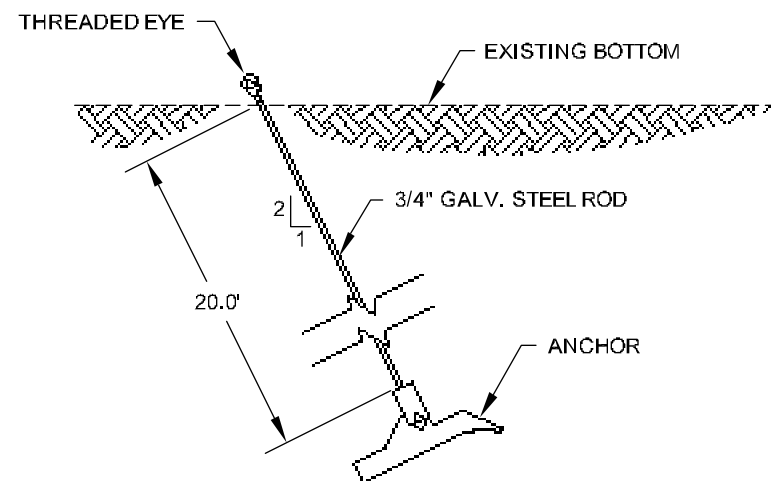
NOTE:  
NO ANCHORS OR TIES  
ARE REQUIRED FOR  
GABION MAT UNITS



**ARMOR UNIT DETAIL**  
NOT TO SCALE



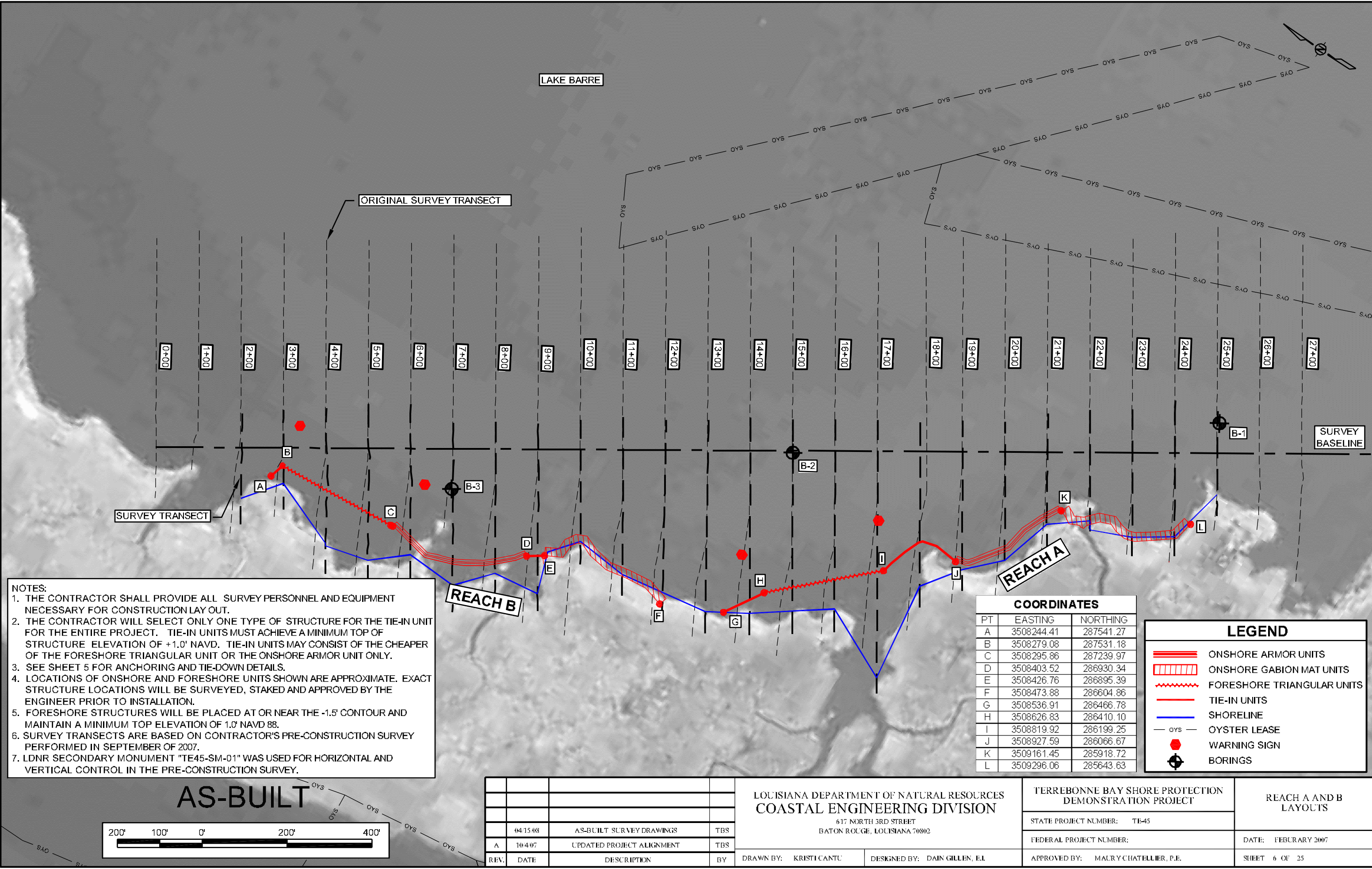
**TRIANGULAR UNIT DETAIL**  
NOT TO SCALE



**AS-BUILT TYPICAL ANCHOR DETAIL**  
NOT TO SCALE

				LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	TERREBONNE BAY SHORE PROTECTION DEMONSTRATION PROJECT	ANCHORING AND TIE-DOWN DETAILS
					STATE PROJECT NUMBER: TB-45	
					FEDERAL PROJECT NUMBER:	DATE: FEBRUARY 2007
					APPROVED BY: MAURY CHATELIER, P.E.	SHEET 5 OF 25
REV.	DATE	DESCRIPTION	BY	DRAWN BY: KRISTI CANTU	DESIGNED BY: DAIN GILLEN, E.I.	
	4/18/08	AS-BUILT DETAILS ADDED	TBS			



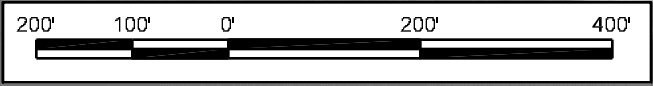


- NOTES:
1. THE CONTRACTOR SHALL PROVIDE ALL SURVEY PERSONNEL AND EQUIPMENT NECESSARY FOR CONSTRUCTION LAY OUT.
  2. THE CONTRACTOR WILL SELECT ONLY ONE TYPE OF STRUCTURE FOR THE TIE-IN UNIT FOR THE ENTIRE PROJECT. TIE-IN UNITS MUST ACHIEVE A MINIMUM TOP OF STRUCTURE ELEVATION OF +1.0' NAVD. TIE-IN UNITS MAY CONSIST OF THE CHEAPER OF THE FORESHORE TRIANGULAR UNIT OR THE ONSHORE ARMOR UNIT ONLY.
  3. SEE SHEET 5 FOR ANCHORING AND TIE-DOWN DETAILS.
  4. LOCATIONS OF ONSHORE AND FORESHORE UNITS SHOWN ARE APPROXIMATE. EXACT STRUCTURE LOCATIONS WILL BE SURVEYED, STAKED AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
  5. FORESHORE STRUCTURES WILL BE PLACED AT OR NEAR THE -1.5' CONTOUR AND MAINTAIN A MINIMUM TOP ELEVATION OF 1.0' NAVD 88.
  6. SURVEY TRANSECTS ARE BASED ON CONTRACTOR'S PRE-CONSTRUCTION SURVEY PERFORMED IN SEPTEMBER OF 2007.
  7. LDNR SECONDARY MONUMENT "TE45-SM-01" WAS USED FOR HORIZONTAL AND VERTICAL CONTROL IN THE PRE-CONSTRUCTION SURVEY.

COORDINATES		
PT	EASTING	NORTHING
A	3508244.41	287541.27
B	3508279.08	287531.18
C	3508295.86	287239.97
D	3508403.52	286930.34
E	3508426.76	286895.39
F	3508473.88	286604.86
G	3508536.91	286466.78
H	3508626.83	286410.10
I	3508819.92	286199.25
J	3508927.59	286066.67
K	3509161.45	285918.72
L	3509296.06	285643.63

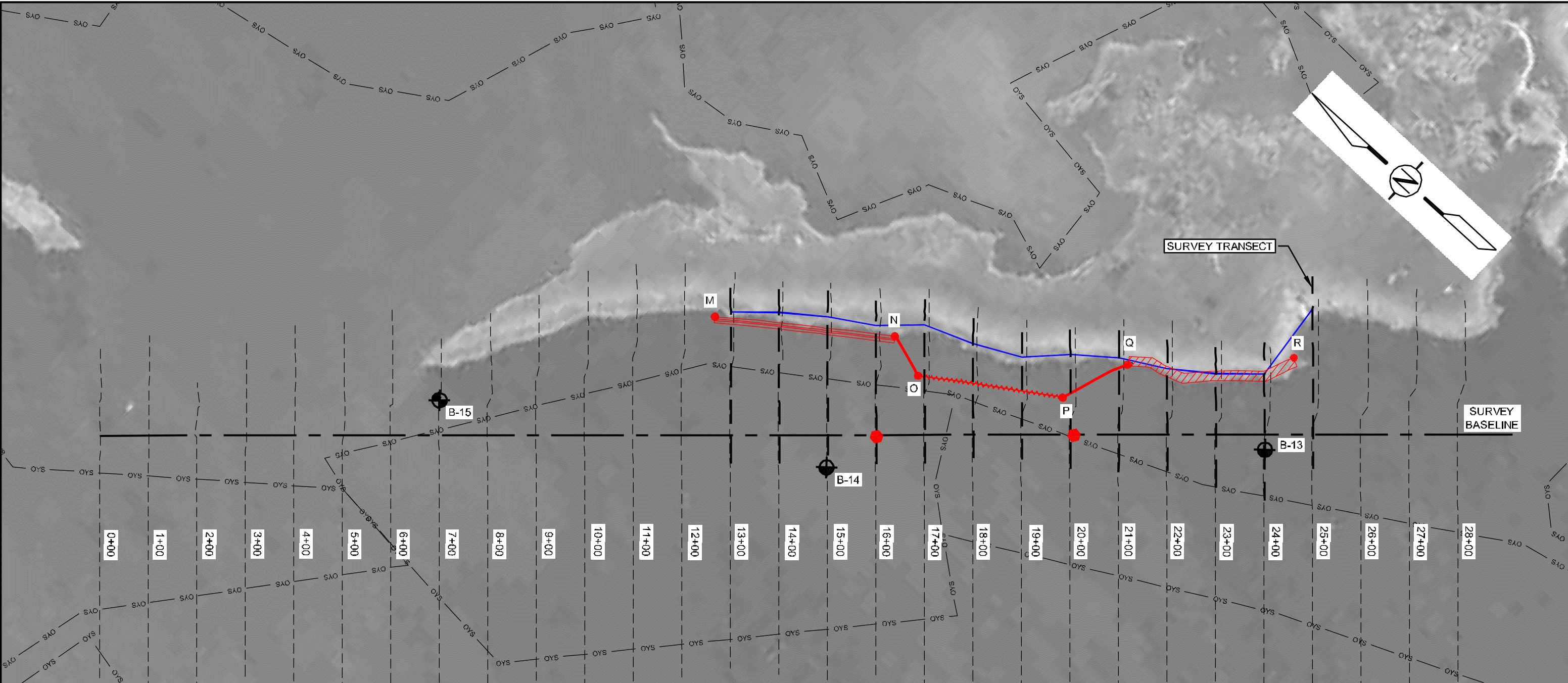
LEGEND	
	ONSHORE ARMOR UNITS
	ONSHORE GABION MAT UNITS
	FORESHORE TRIANGULAR UNITS
	TIE-IN UNITS
	SHORELINE
	OYSTER LEASE
	WARNING SIGN
	BORINGS

AS-BUILT



REV.	DATE	DESCRIPTION	BY
	04/15/08	AS-BUILT SURVEY DRAWINGS	TBS
A	10/4/07	UPDATED PROJECT ALIGNMENT	TBS

LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	TERREBONNE BAY SHORE PROTECTION DEMONSTRATION PROJECT		REACH A AND B LAYOUTS
DRAWN BY: KRISTI CANTU		DESIGNED BY: DAIN GILLEN, E.I.	APPROVED BY: MAURY CHATELIER, P.E.
STATE PROJECT NUMBER: TE-45		FEDERAL PROJECT NUMBER:	DATE: FEBRUARY 2007
			SHEET 6 OF 25



- NOTES:
1. THE CONTRACTOR SHALL PROVIDE ALL SURVEY PERSONNEL AND EQUIPMENT NECESSARY FOR CONSTRUCTION LAY OUT.
  2. THE CONTRACTOR WILL SELECT ONLY ONE TYPE OF STRUCTURE FOR THE TIE-IN UNIT FOR THE ENTIRE PROJECT. TIE-IN UNITS MUST ACHIEVE A MINIMUM TOP OF STRUCTURE ELEVATION OF +1.0' NAVD. TIE-IN UNITS MAY CONSIST OF THE FORESHORE TRIANGULAR UNIT OR THE ONSHORE ARMOR UNIT ONLY.
  3. SEE SHEET 5 FOR ANCHORING AND TIE-DOWN DETAILS.
  4. LOCATIONS OF ONSHORE AND FORESHORE UNITS SHOWN ARE APPROXIMATE. EXACT STRUCTURE LOCATIONS WILL BE SURVEYED, STAKED AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
  5. FORESHORE STRUCTURES WILL BE PLACED AT OR NEAR THE -1.5' CONTOUR AND MAINTAIN A MINIMUM TOP ELEVATION OF 1.0' NAVD 88.
  6. SURVEY TRANSECTS ARE BASED ON CONTRACTOR'S PRE-CONSTRUCTION SURVEY PERFORMED IN SEPTEMBER OF 2007.
  7. LDNR SECONDARY MONUMENT "TE45-SM-01" WAS USED FOR HORIZONTAL AND VERTICAL CONTROL IN THE PRE-CONSTRUCTION SURVEY.



AS-BUILT

LAKE BARRE

ORIGINAL SURVEY TRANSECT

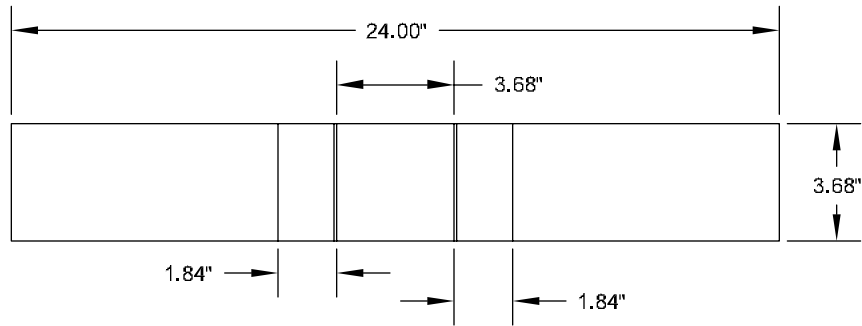
COORDINATES		
PT	EASTING	NORTHING
M	3524328.07	294463.64
N	3524551.18	294164.68
O	3524524.21	294074.49
P	3524694.70	293825.40
Q	3524860.02	293772.90
R	3525079.67	293583.19

LEGEND	
	ONSHORE ARMOR UNITS
	ONSHORE GABION MAT UNITS
	FORESHORE TRIANGULAR UNITS
	TIE-IN UNITS
	SHORELINE
	OYSTER LEASE
	WARNING SIGN
	BORINGS

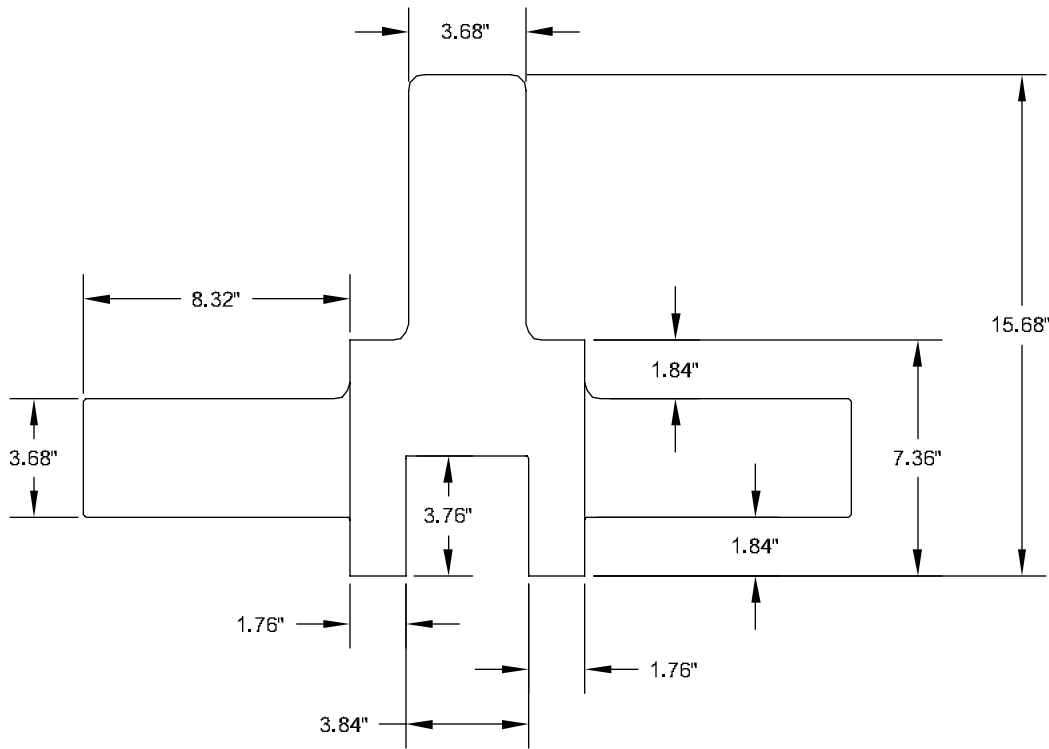
	4/15/08	AS-BUILT SURVEY DRAWINGS	TBS
A	10/4/07	UPDATED PROJECT ALIGNMENT	TBS
REV.	DATE	DESCRIPTION	BY

LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION  617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802		TERREBONNE BAY SHORE PROTECTION DEMONSTRATION PROJECT		REACH E LAYOUT
		STATE PROJECT NUMBER:   TE-45		
				FEDERAL PROJECT NUMBER:
DRAWN BY:   KRISTI CANTU	DESIGNED BY:   DAIN GILLEN, E.I.	APPROVED BY:   MAURY CHATELIER, P.E.		SHEET   7 OF   25

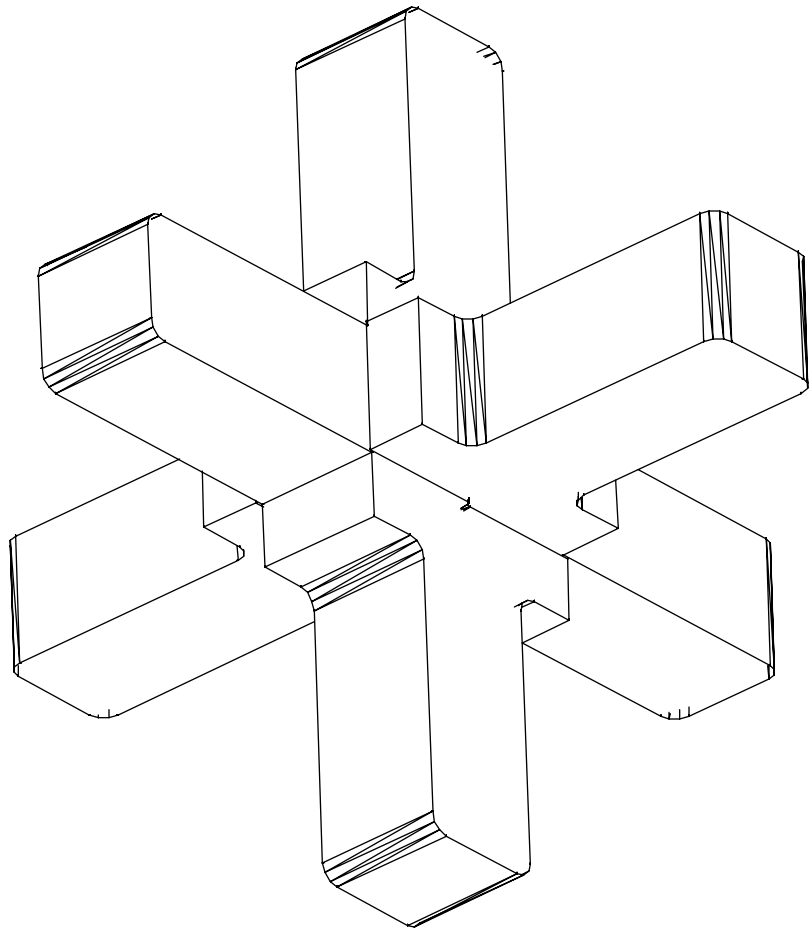




**TOP**  
SCALE: 1" = 6"



**FRONT**  
SCALE: 1" = 6"

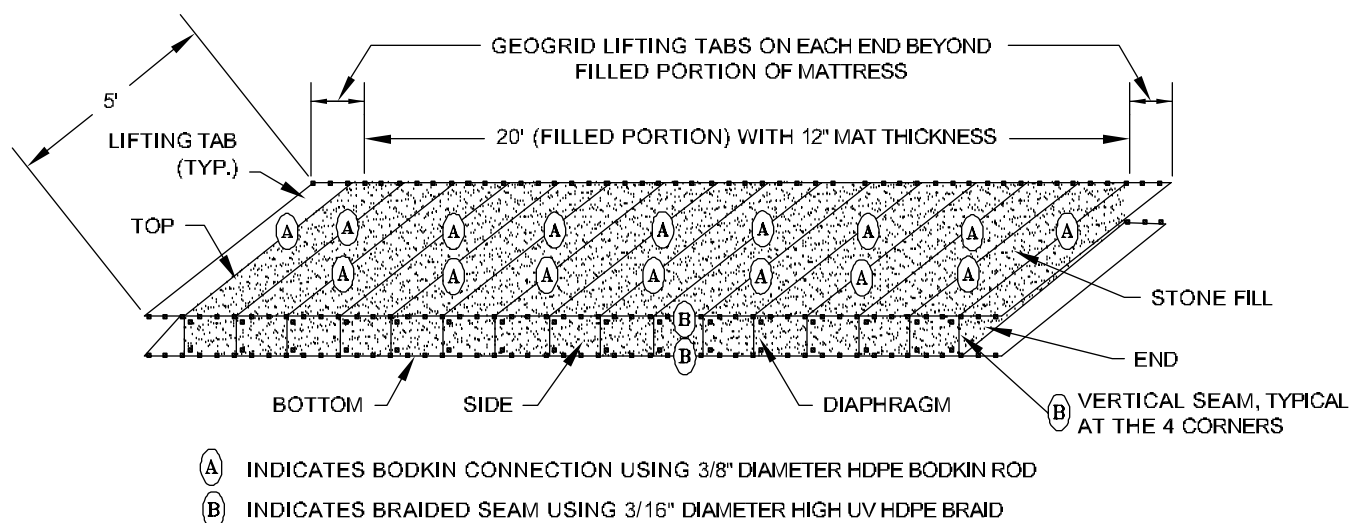


**ARMOR UNIT**  
NOT TO SCALE

- NOTES:
- 1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI.
  - 2. ADHESIVE SHALL BE USED TO JOIN ALL HALVES TO FORM A SINGLE UNIT.
  - 3. IF CONTRACTOR SELECTS ARMOR UNIT AS HIS TIE-IN UNIT, THE TOP OF THE ARMOR UNIT MUST BE AT A MINIMUM ELEVATION OF +1.0' NAVD.
  - 4. SEE SHEET 5 FOR ANCHORING AND TIE-DOWN DETAILS.

AS-BUILT

				LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802		TERREBONNE BAY SHORE PROTECTION DEMONSTRATION PROJECT		ONSHORE ARMOR UNIT DETAILS
						STATE PROJECT NUMBER:   TE-45		
						FEDERAL PROJECT NUMBER:		
	4/18/08	AS-BUILT DETAILS ADDED	TBS			APPROVED BY:   MAURY CHATELLIER, P.E.		DATE:   FEBRUARY 2007
REV.	DATE	DESCRIPTION	BY	DRAWN BY:   KRISTI CANTU		DESIGNED BY:   DAIN GILLEN, E.I.		SHEET   8 OF   25



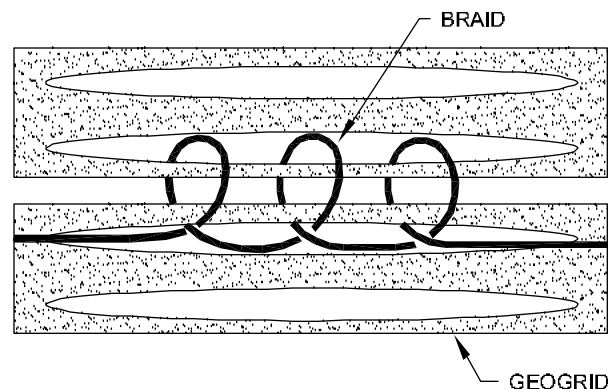
**TYPICAL CONFIGURATION OF FILLED GABION MAT UNITS**  
SCALE: NOT TO SCALE

**CONSTRUCTION NOTES:**

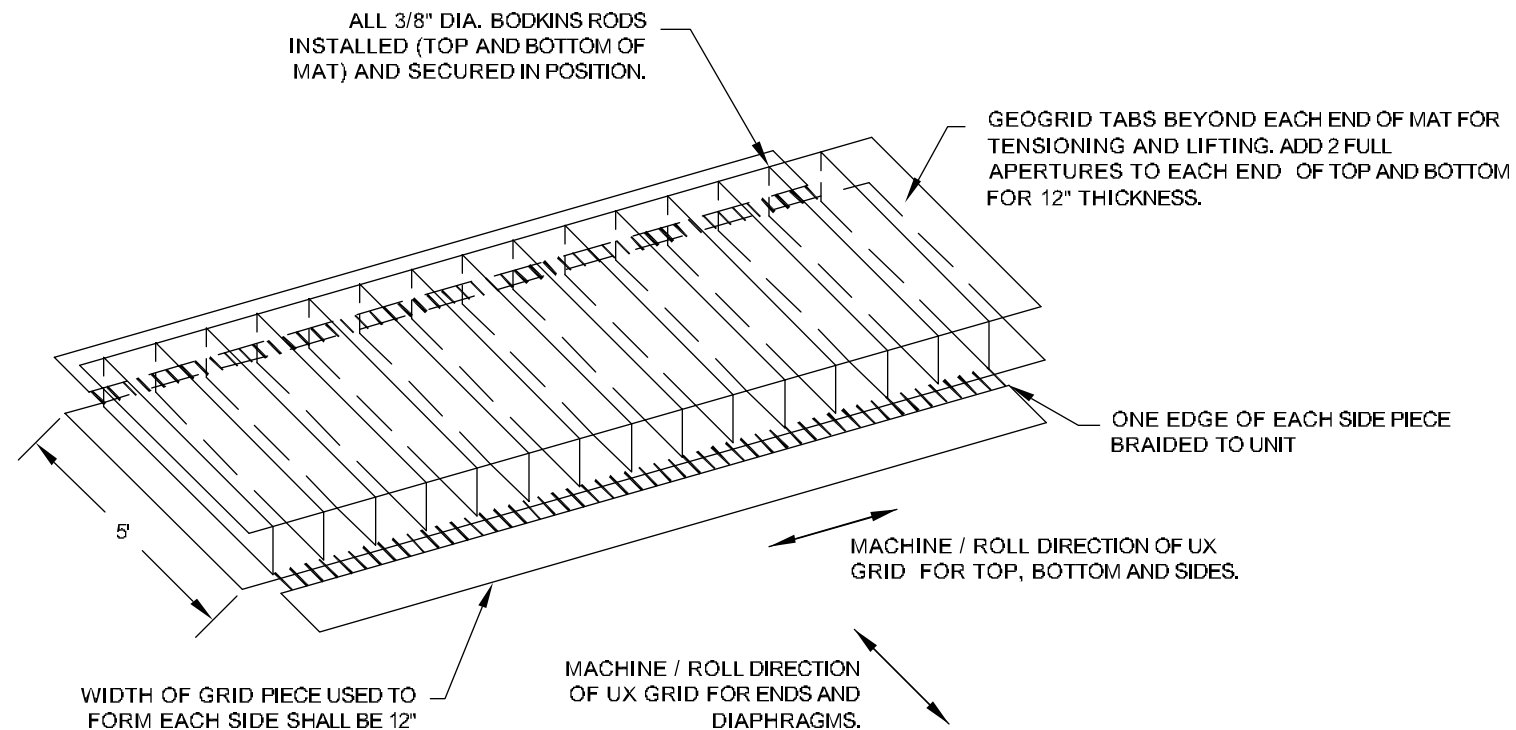
1. ENDS, TOP, BOTTOM, SIDES AND ANY EXTRA LENGTH USED FOR LIFTING OR ANCHORING PURPOSES SHALL BE COMPOSED OF TENSAR UXTRITON200 GEOGRID, PLASTIC CABLES TIES MAY BE USED TO SECURE BODKIN CONNECTORS IN POSITION PRIOR TO TENSIONING OR FILLING OF MAT UNITS.
2. INTERNAL DIAPHRAGMS SHALL BE COMPOSED OF TENSAR UXTRITON100 GEOGRID.
3. GABION MAT SHALL BE FILLED WITH ASTM CLASS #1 STONE, OR ENGINEER APPROVED EQUIVALENT.
4. NOMINAL WIDTH: 5 FT. (FILLED)
5. NOMINAL THICKNESS: 12 IN. (FILLED)
6. NOMINAL WEIGHT: 9000 LBS. (20' X 5' X 12")

**SEAM NOTES:**

1. ALL CUT ENDS OF BRAID MATERIAL SHALL BE KNOTTED WITHIN 1/2" TO 2" OF THE END TO PREVENT RAVELING OF BRAID.
2. THE BRAID SHALL BE SECURELY KNOTTED TO THE GEOGRID AT ALL ENDS OF ALL BRAIDED SEAMS. THE BRAID SHALL BE KNOTTED WHEN SPLICING TO THE NEXT PIECE OF BRAID, OR WHEN SECURING IT TO THE GEOGRID. AT ALL ENDS, EACH BRAIDED SEAM SHALL BE CONTINUOUS, WITH SECURELY KNOTTED SPLICES ALLOWED. THE BRAID SHALL BE SECURELY KNOTTED TO THE GEOGRID AT A SPACING NOT TO EXCEED 6 FT ALONG ANY SEAM.
3. THE BRAID SHALL BE STITCHED THROUGH EACH PAIR OF APERTURES ALONG THE SEAM AT LEAST ONCE, AND THE MINIMUM NUMBER OF STITCHES PER FOOT ALONG THE SEAM SHALL BE SIX (6). THE SPACING OF STITCHES ALONG EACH SEAM SHALL BE REASONABLY UNIFORM.
4. ALL KNOTS SHALL BE TIED IN A MANNER TO PREVENT SLIPPING AND CINCHING. THE WRAPS ALONG THE SEAM SHALL BE SUFFICIENTLY TIGHT TO CLOSE THE GAP BETWEEN THE ADJACENT PIECES OF GEOGRID, BUT SHALL NOT BE OVER-TIGHTENED SUCH THAT THE GEOGRID BINDS ALONG THE SEAM.



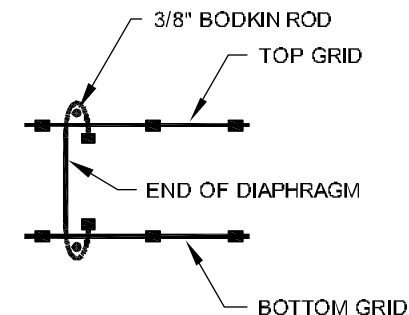
**TYPICAL STITCHED SEAM DETAILS**  
SCALE: NOT TO SCALE



**TYPICAL CONFIGURATION OF FABRICATED GABION MAT**  
SCALE: NOT TO SCALE

**FABRICATION NOTES:**

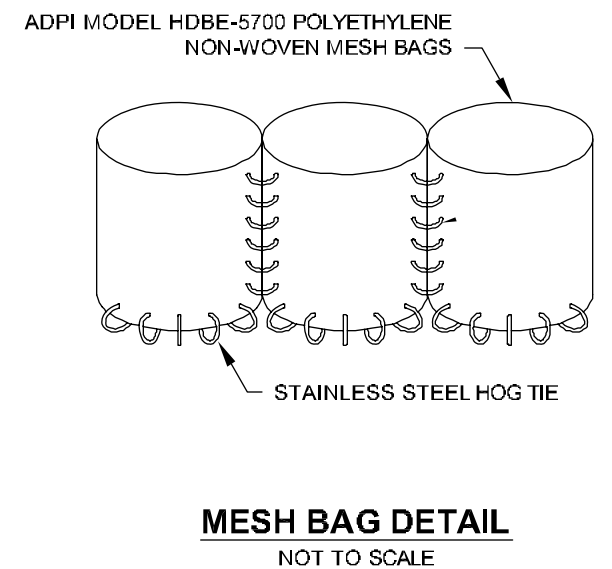
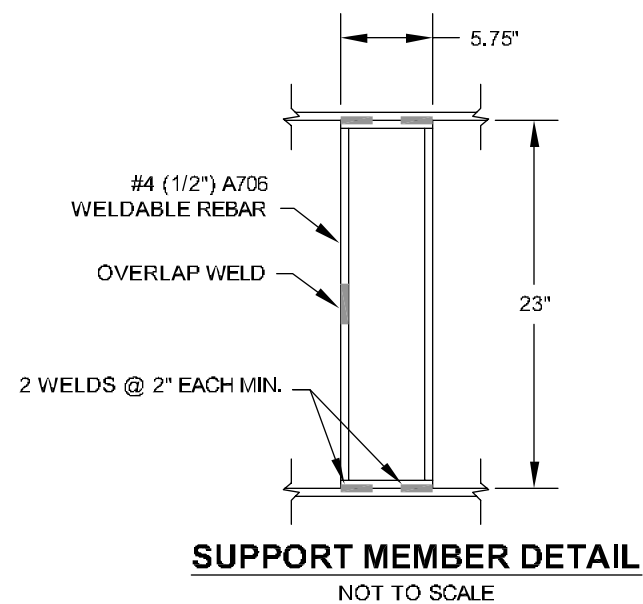
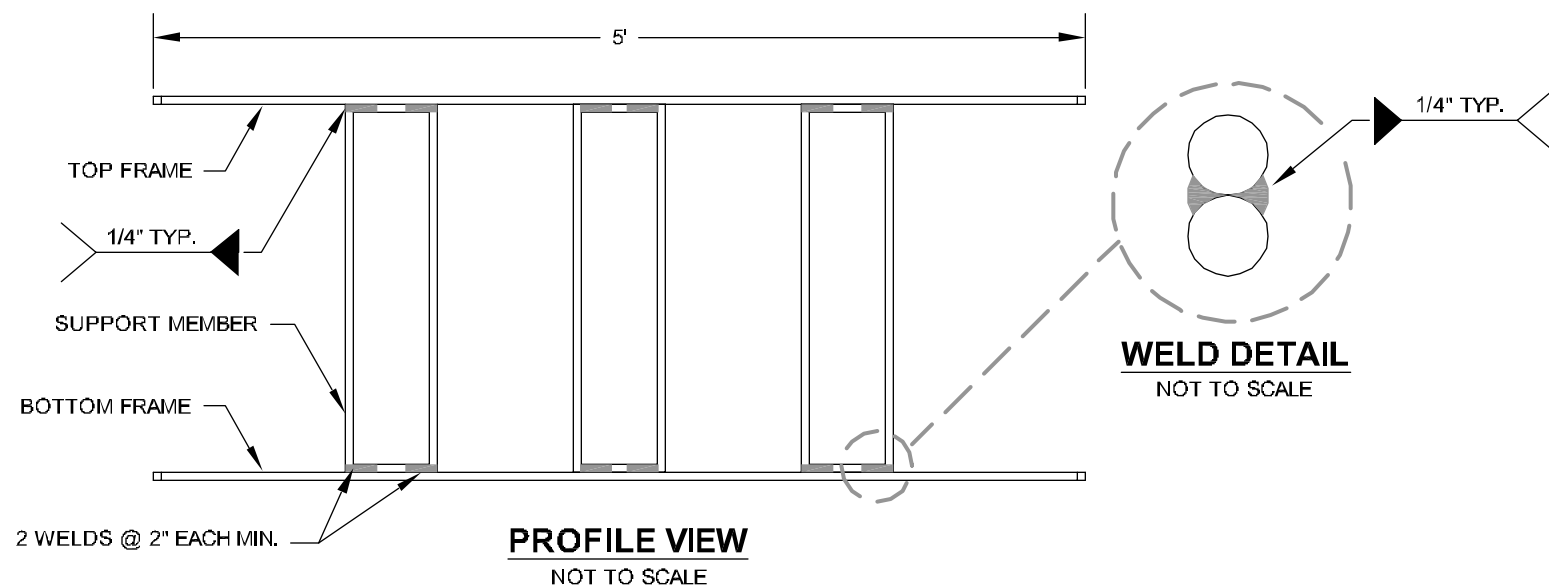
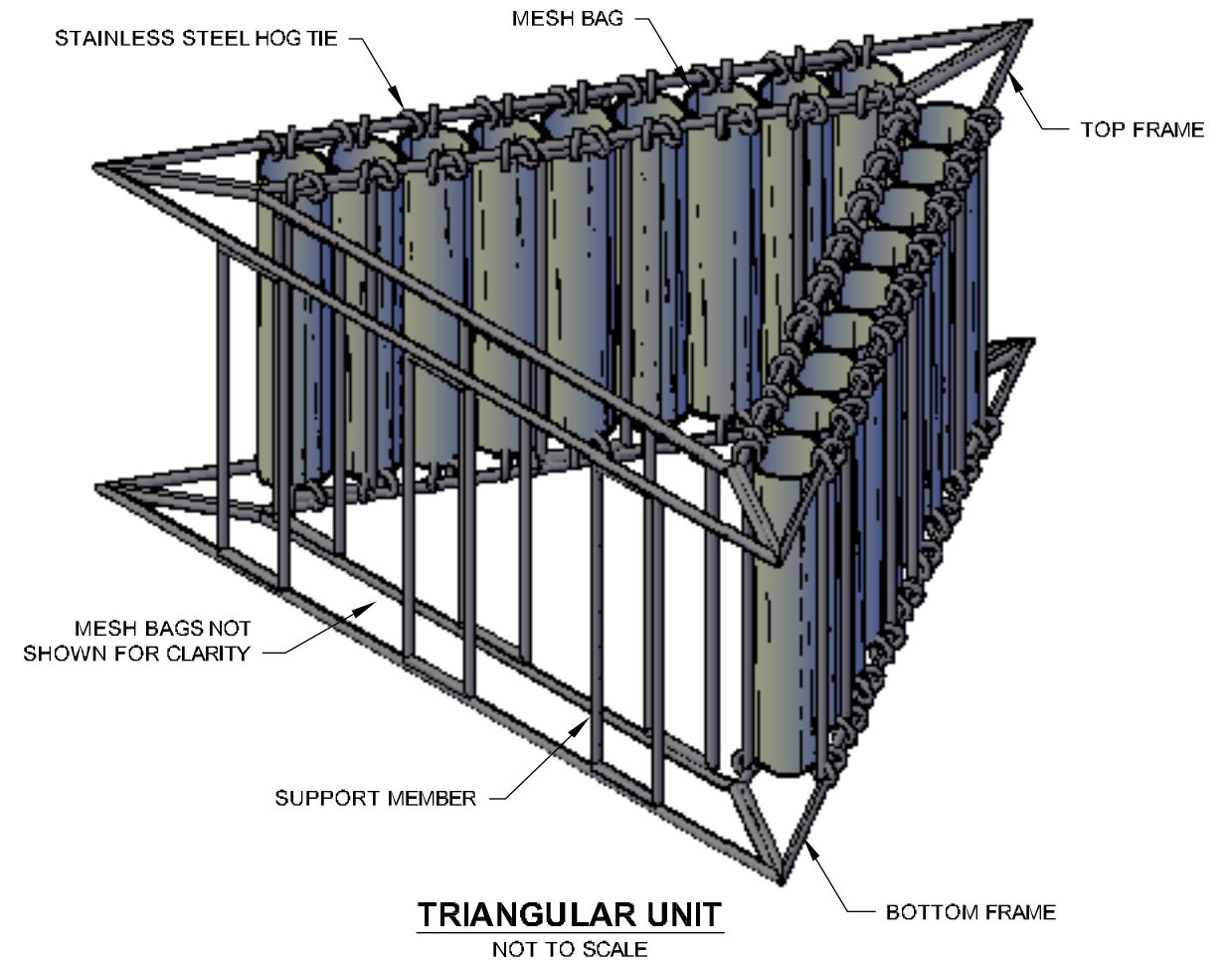
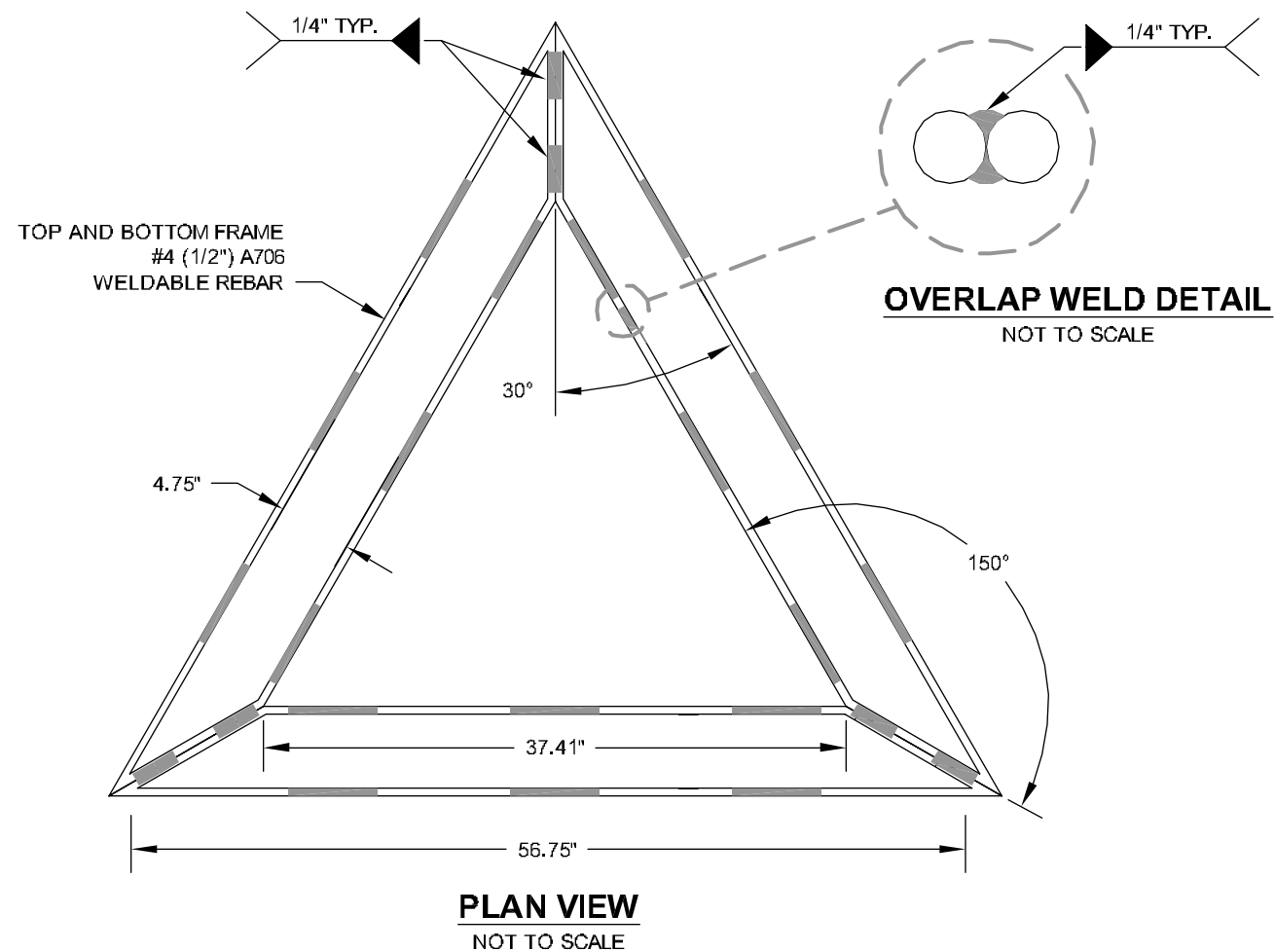
1. TYPICAL SPACING OF DIAPHRAGMS IS EVERY THREE APERTURE LENGTHS. A SHORTER SPACING MAY BE USED IN ORDER TO MATCH THE REQUIRED MAT LENGTH. LENGTH OF END PIECES AND INTERNAL DIAPHRAGMS PIECES ARE 2 GRID APERTURES LONG.
2. DUE TO THE ENVIRONMENTALLY SENSITIVE NATURE OF THE PROJECT AND POSSIBLE LIFT RESTRICTIONS OF THE CONTRACTOR'S EQUIPMENT, GABION MATS MAY BE SPLIT INTO TWO EQUAL 10' LONG MATS IN ACCORDANCE WITH THE MANUFACTURER SPECIFICATIONS.



**EXPANDED SECTION AT DIAPHRAGM**  
SCALE: NOT TO SCALE

AS-BUILT

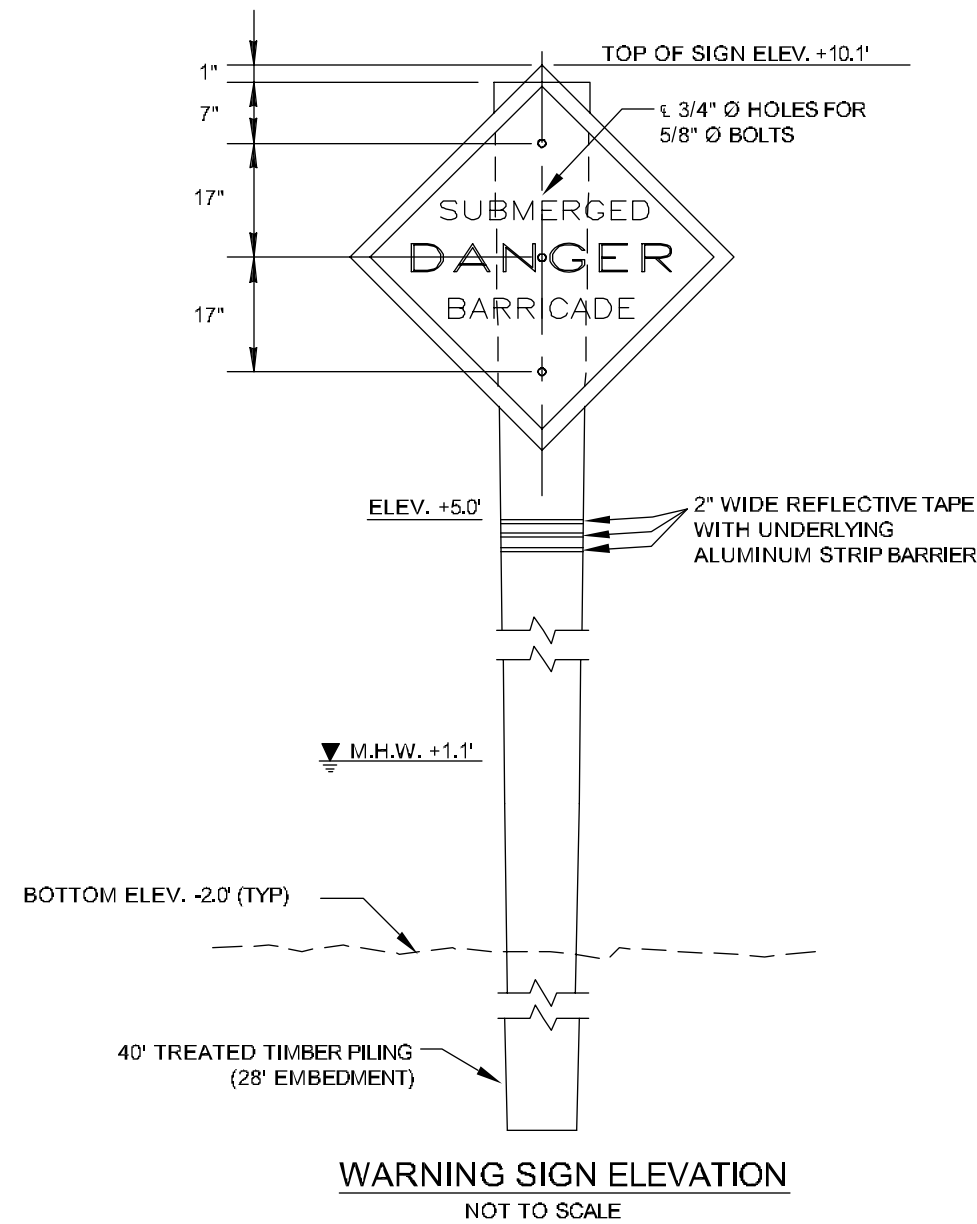
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						STATE PROJECT NUMBER:   TE-45		
						FEDERAL PROJECT NUMBER:		
	4/18/08	AS-BUILT DETAIL ADDED	TBS			DATE:   FEBRUARY 2007		
REV.	DATE	DESCRIPTION	BY	DRAWN BY:   KRISTI CANTU	DESIGNED BY:   DAIN GILLEN, E.I.	APPROVED BY:   MAURY CHATELIER, P.E.		SHEET   9 OF   25



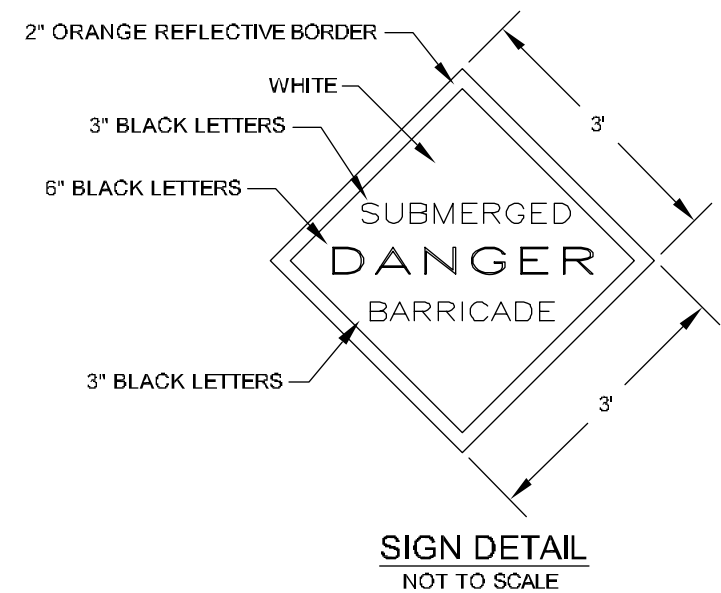
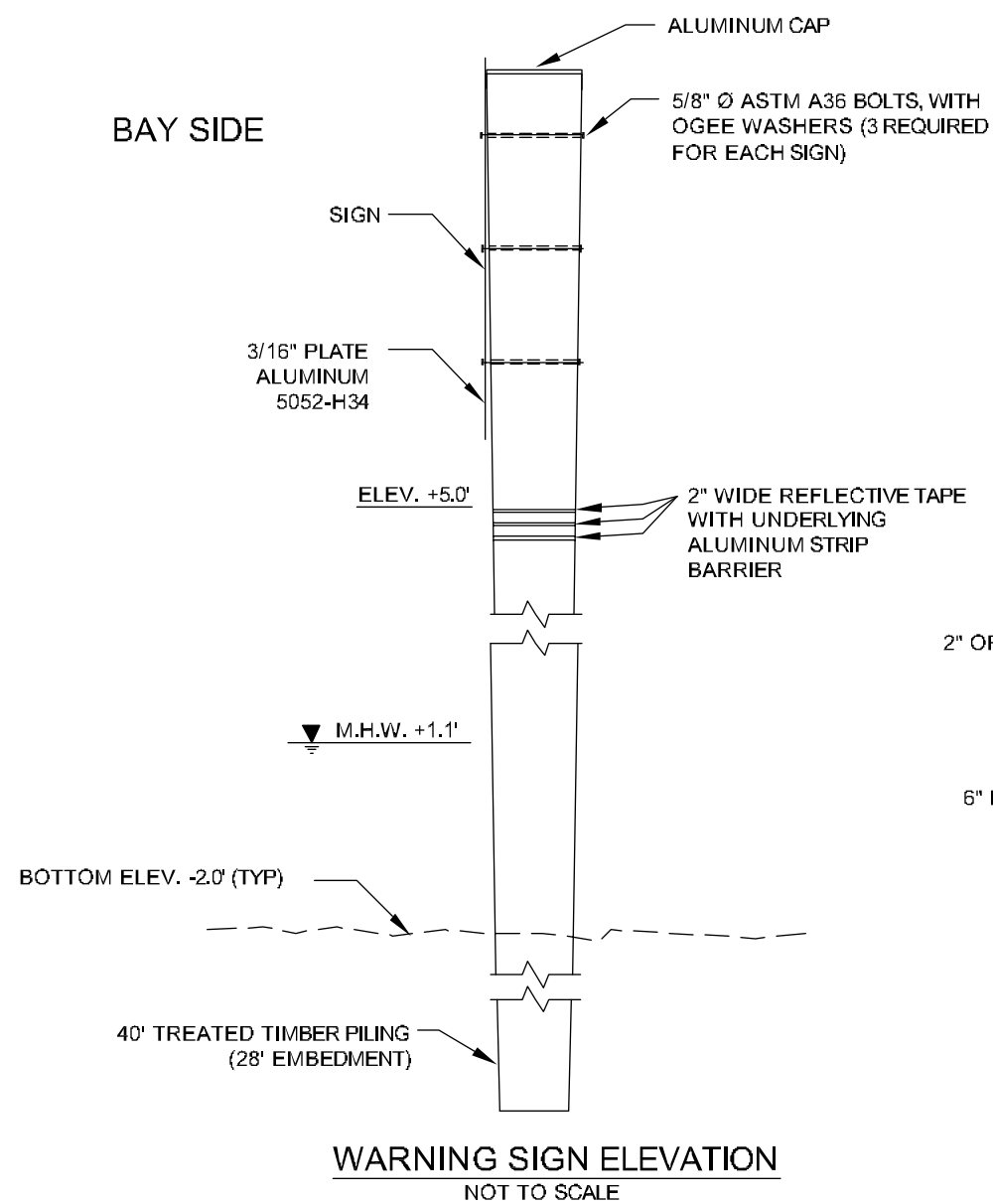
- NOTES:
1. ALL STRUCTURAL STEEL SHALL BE ASTM A-706 WELDABLE NO. 4(1/2 INCH) REBAR.
  2. SEE SHEET 5 FOR ANCHORING AND TIE-DOWN DETAILS.

AS-BUILT

				LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802		TERREBONNE BAY SHORE PROTECTION DEMONSTRATION PROJECT		FORESHORE TRIANGULAR UNIT DETAILS
						STATE PROJECT NUMBER:   TE-45		
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REV.	DATE	DESCRIPTION	BY	DRAWN BY: KRISTI CANTU	DESIGNED BY: DAIN GILLEN, E.I.	APPROVED BY: MAURY CHATELLIER, P.E.		SHEET 10 OF 25



BAY SIDE

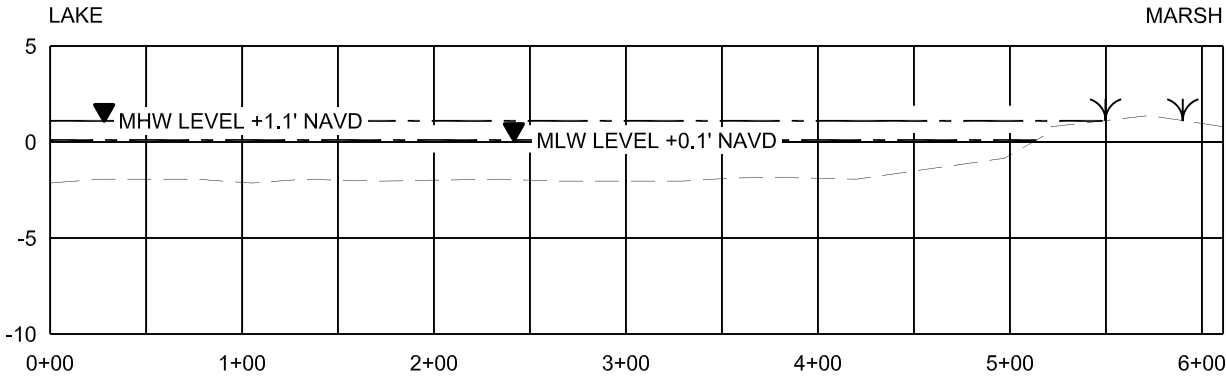


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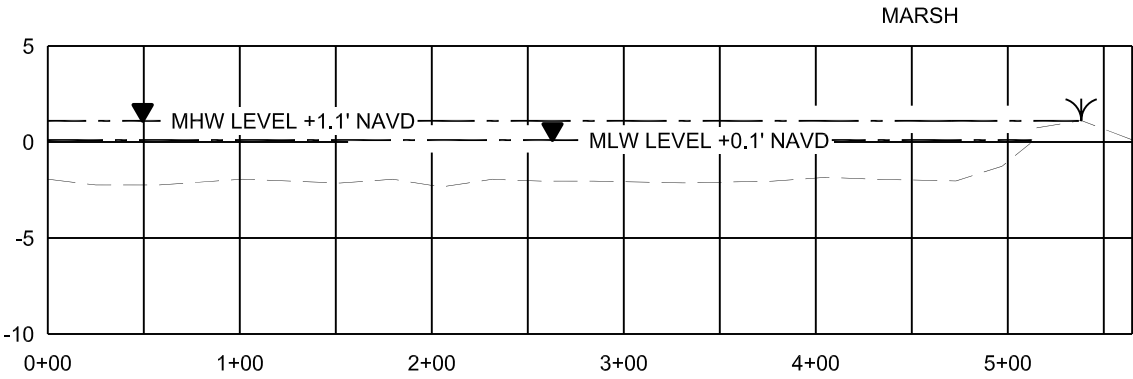
1. REFERENCES HEREIN TO THE "STANDARD SPECIFICATIONS" REFER TO THE "LA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES", LATEST EDITION, INCLUDING AMENDMENTS, BY THE DEPT. OF TRANSPORTATION AND DEVELOPMENT. MEASUREMENT AND PAYMENT WILL BE MADE AS DESCRIBED THEREIN, EXCEPT WHERE STATED OTHERWISE.
2. TWO WARNING SIGNS SHALL BE INSTALLED WITHIN EACH REACH (6 TOTAL) AS SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE PROJECT ENGINEER. APPROXIMATE LOCATIONS OF THE WARNING SIGNS ARE SHOWN ON SHEETS 6 AND 7. ACTUAL LOCATIONS WILL BE DETERMINED IN THE FIELD.
3. THE 2" BORDER ON THE WARNING SIGN WILL BE A REFLECTIVE MATERIAL OF ORANGE COLOR. THE LETTERING FIELD WILL BE A REFLECTIVE MATERIAL OF WHITE COLOR. THE LETTERING FOR THE WARNING SIGNS WILL BE BLACK. ALL SIGNS MUST MEET U.S. COAST GUARD STANDARDS; IN ACCORDANCE WITH 33 CFR 330.4 (a) (1).
4. NEOPRENE WASHERS SHALL BE PLACED BETWEEN THE SIGN AND THE PILING AT ALL POINTS OF CONTACT.
5. HARDWARE FOR TIMBER CONNECTIONS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH SECTION 811.15 OF THE LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, AS PUBLISHED BY THE LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT, LATEST EDITION.
6. TIMBER PILES SHALL CONFORM TO SECTIONS 804 AND 1014 OF THE LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, AS PUBLISHED BY THE LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT, LATEST EDITION. PILES SHALL BE TREATED WITH A CREOSOTE SOLUTION CONFORMING TO AWPA P2 TO A MINIMUM RETENTION OF 16 PCF.
7. TIMBER PILING SHALL BE 40-FEET IN LENGTH WITH A 12-INCH DIAMETER BUTT AND 7-INCH DIAMETER AT THE TIP.
8. EXPOSED BOLT THREADS SHALL BE EITHER TACK WELDED TO NUTS, STRIPPED, OR DAMAGED BY OTHER APPROVED METHOD TO PREVENT EASY REMOVAL.

AS-BUILT

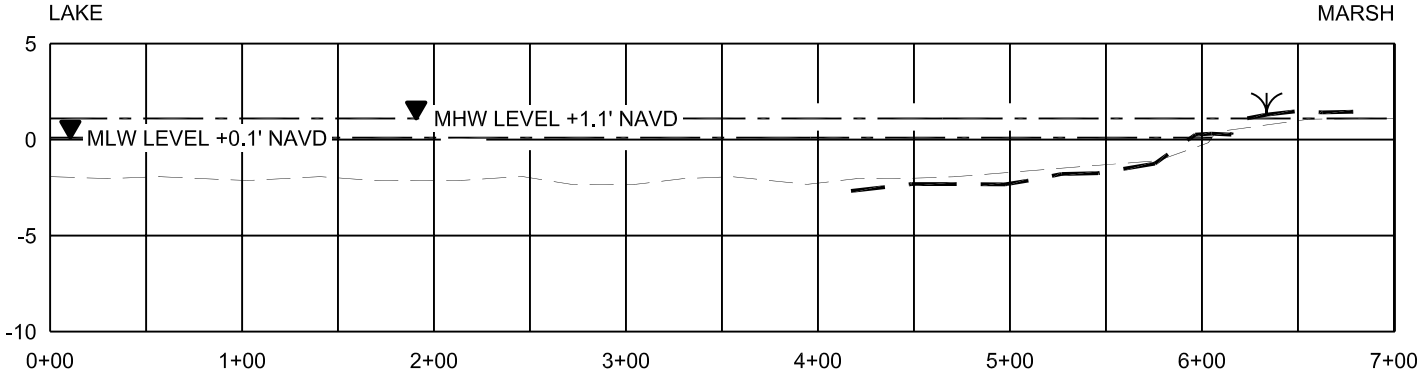
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						STATE PROJECT NUMBER:   TE-45		
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	4/18/08	AS-BUILT DETAIL ADDED	TBS			APPROVED BY:   MAURY CHATELIER, P.E.		DATE:   FEBRUARY 2007
REV.	DATE	DESCRIPTION	BY	DRAWN BY:   KRISTI CANTU	DESIGNED BY:   DAIN GILLEN, E.I.	APPROVED BY:   MAURY CHATELIER, P.E.		SHEET 11 OF 25



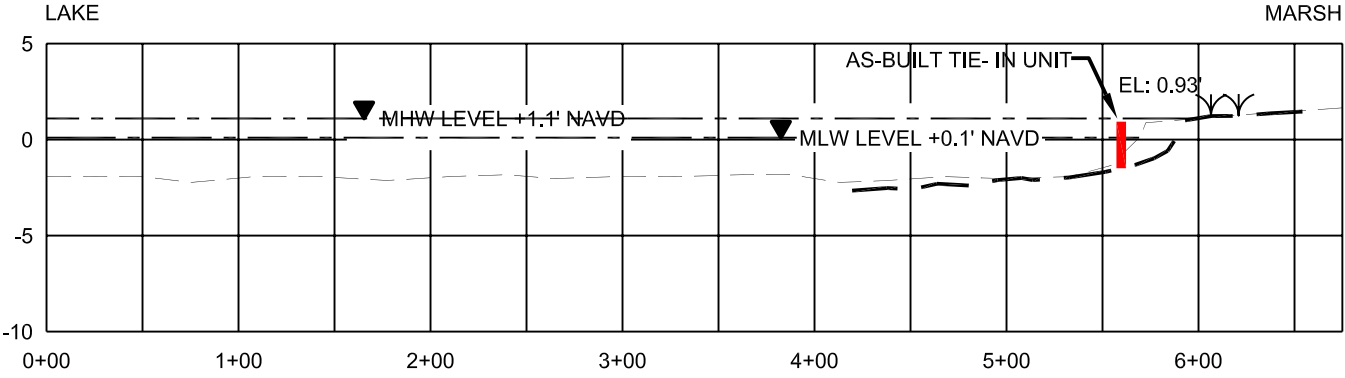
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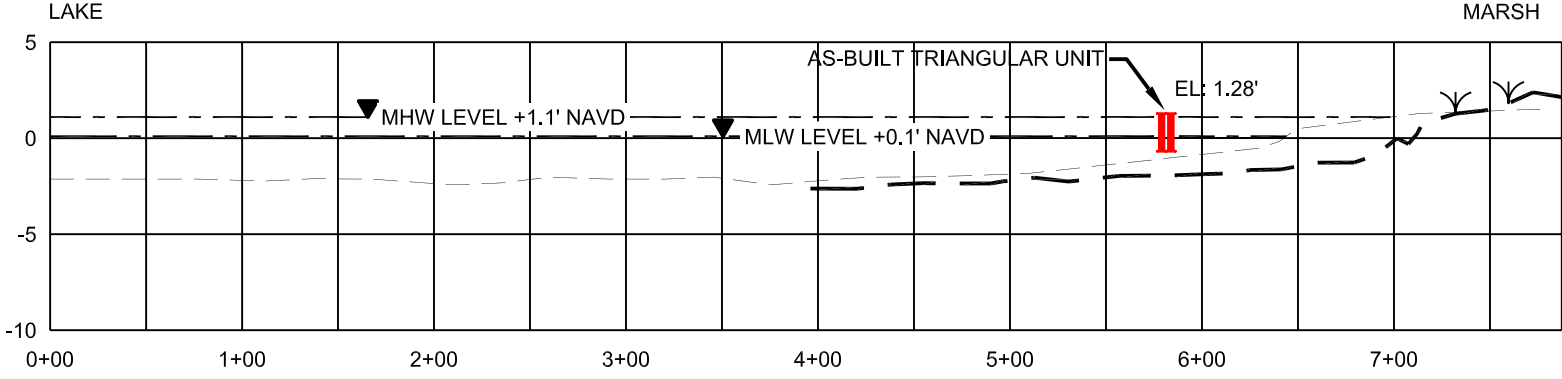
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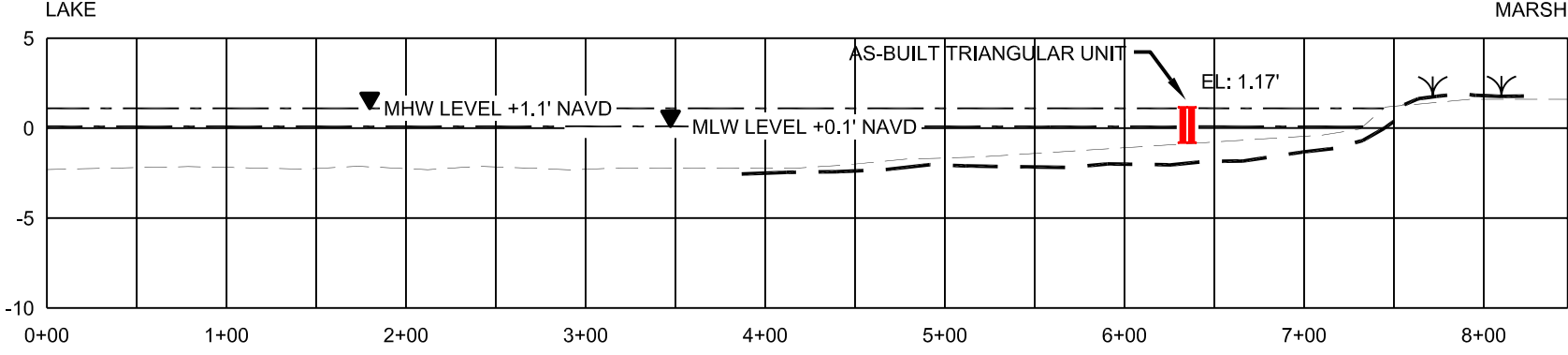
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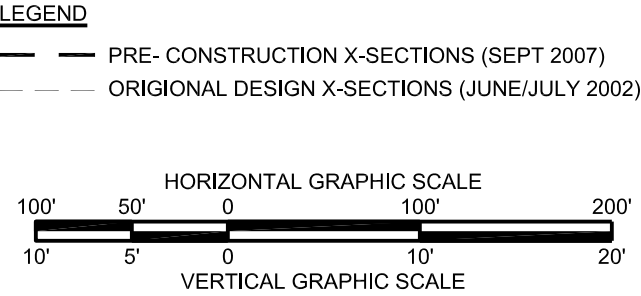


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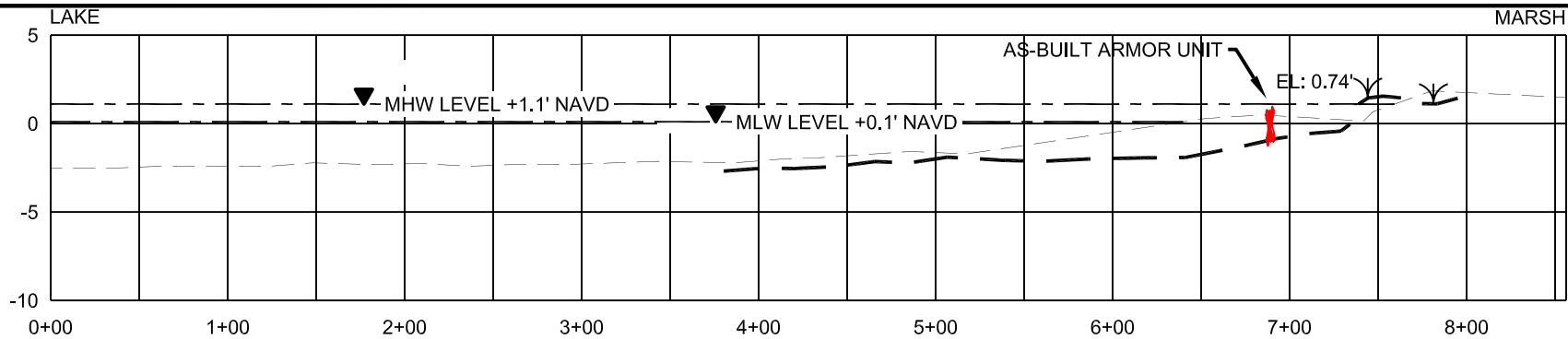
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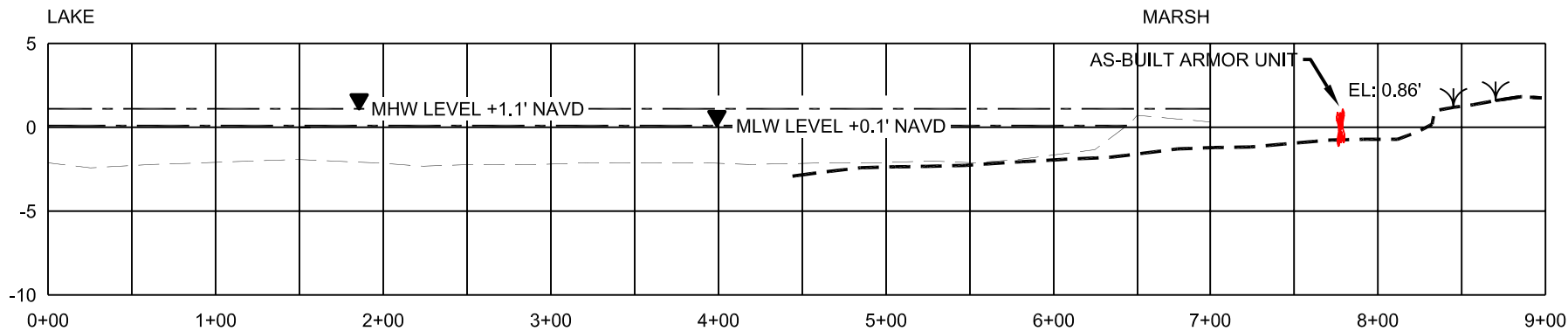


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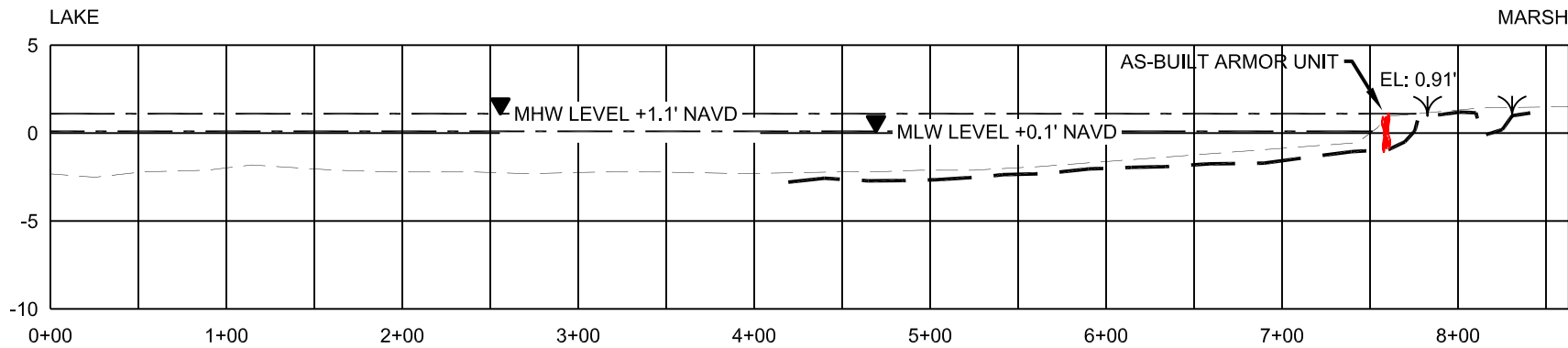
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	4/18/08	AS-BUILT DETAIL ADDED	TBS					



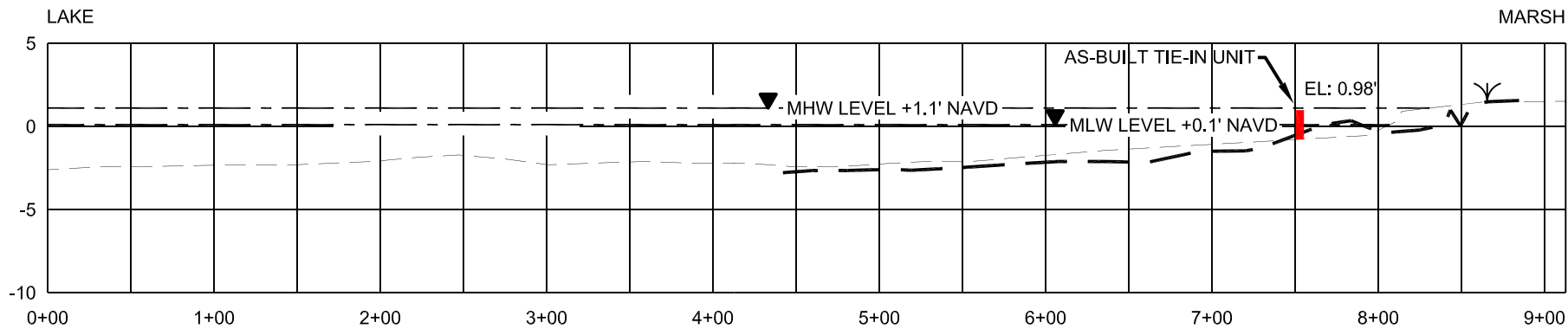
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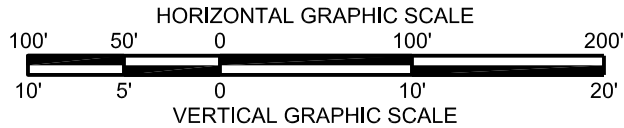
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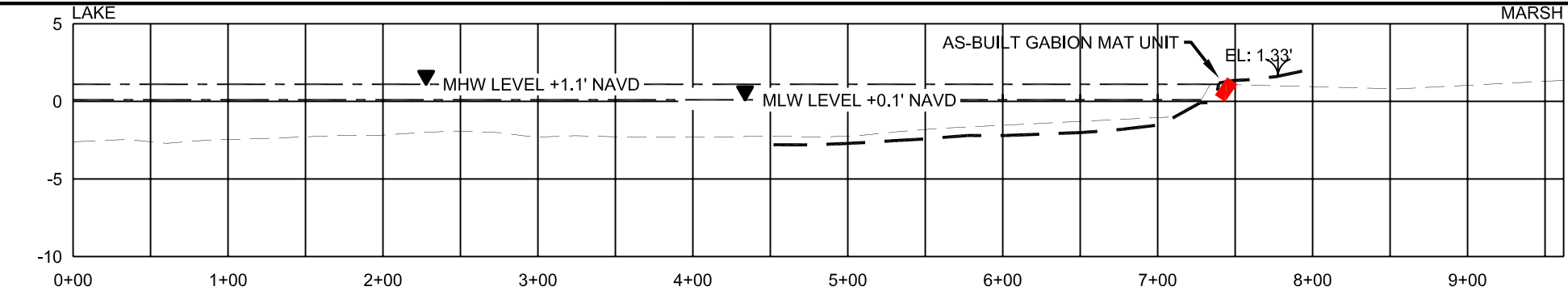
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  - - - ORIGINAL DESIGN X-SECTIONS (JUNE/JULY 2002)

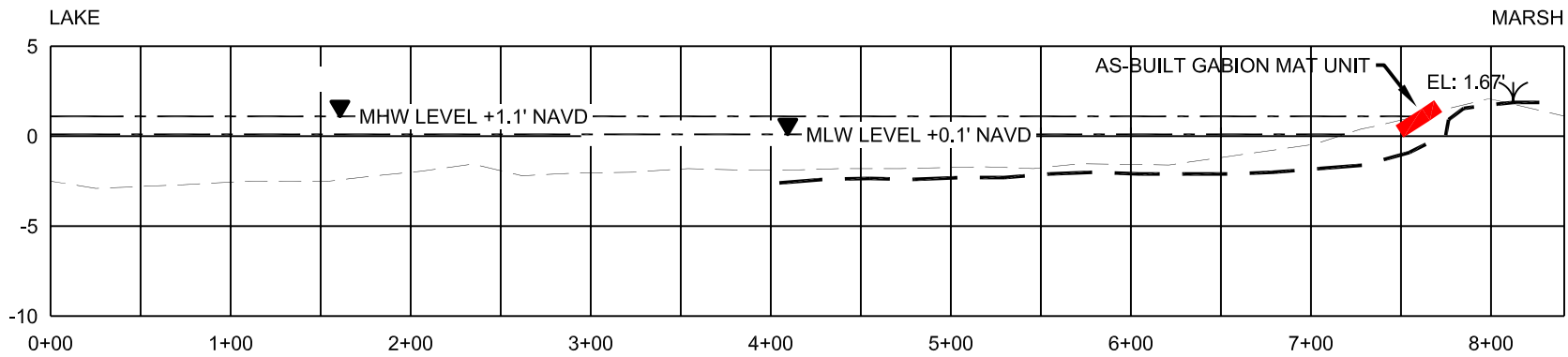


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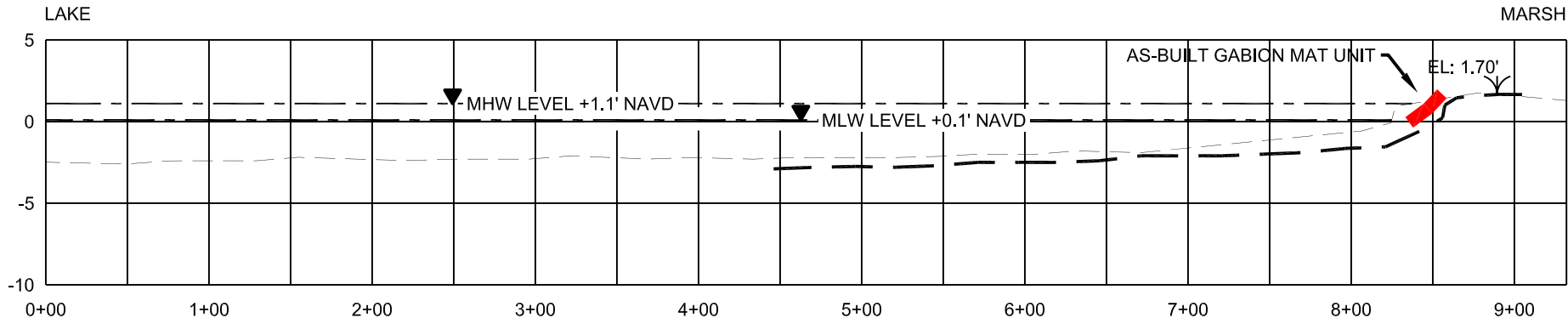
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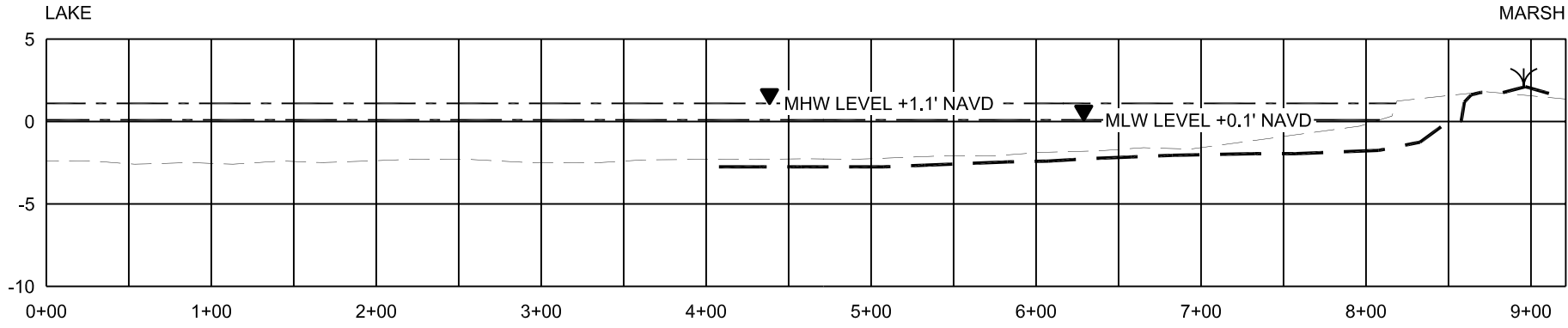
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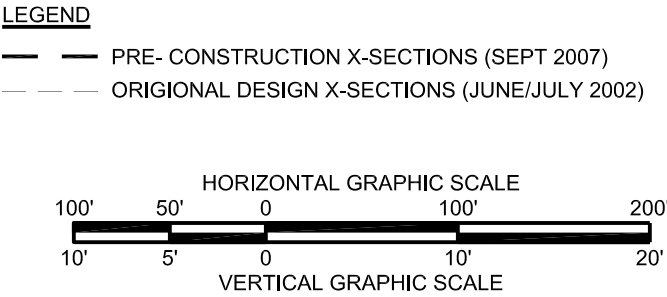


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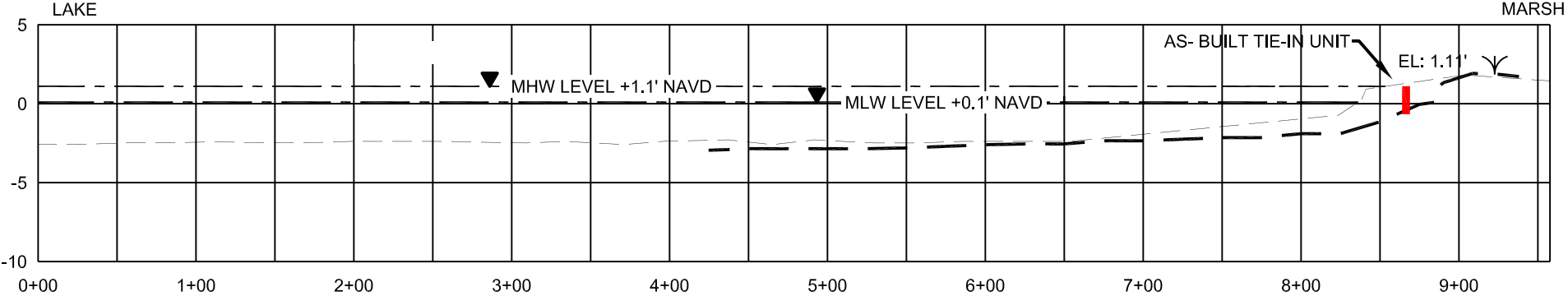
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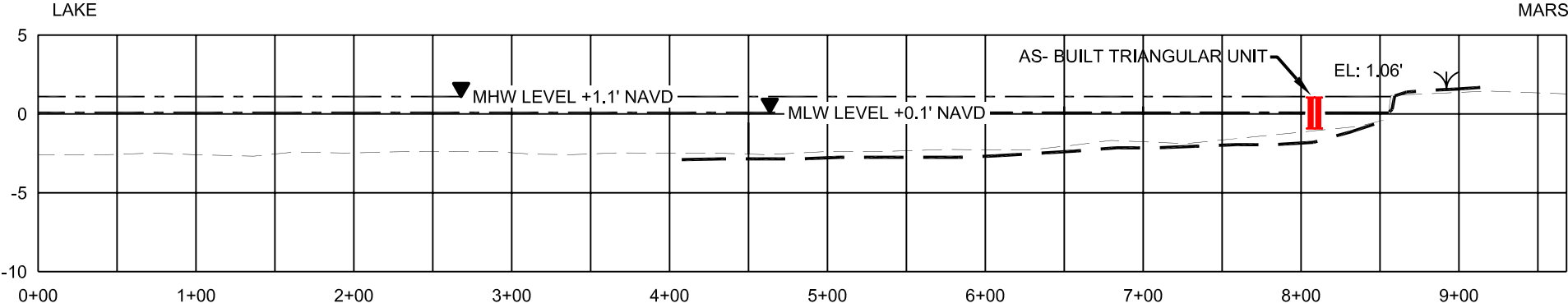


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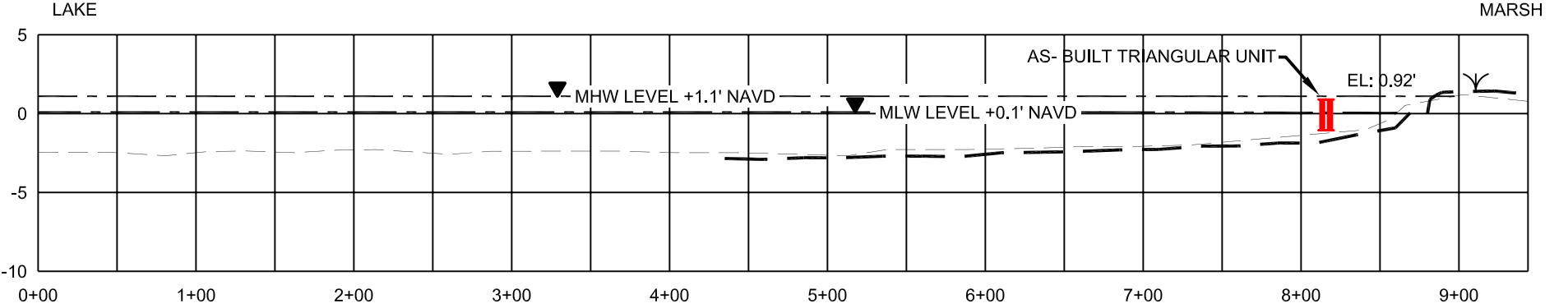
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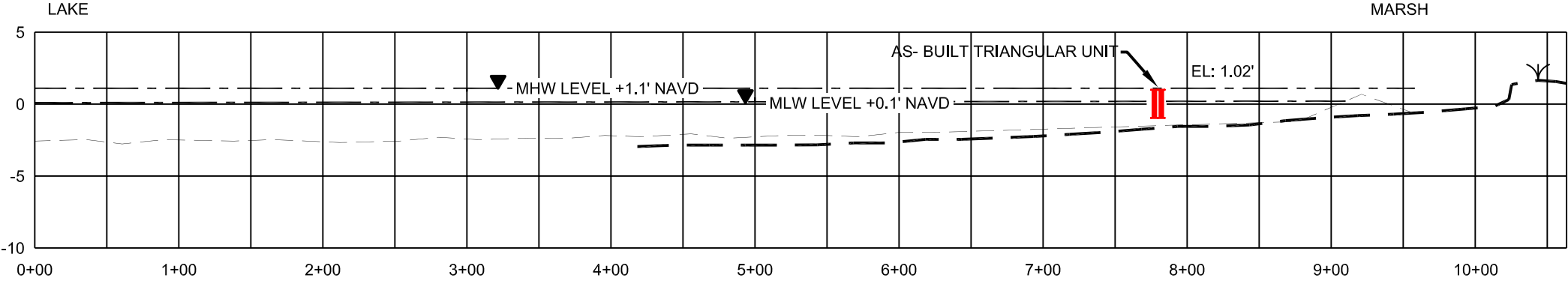
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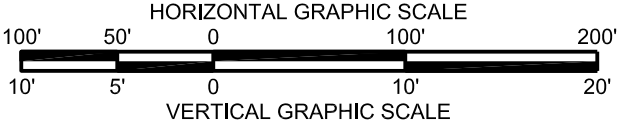
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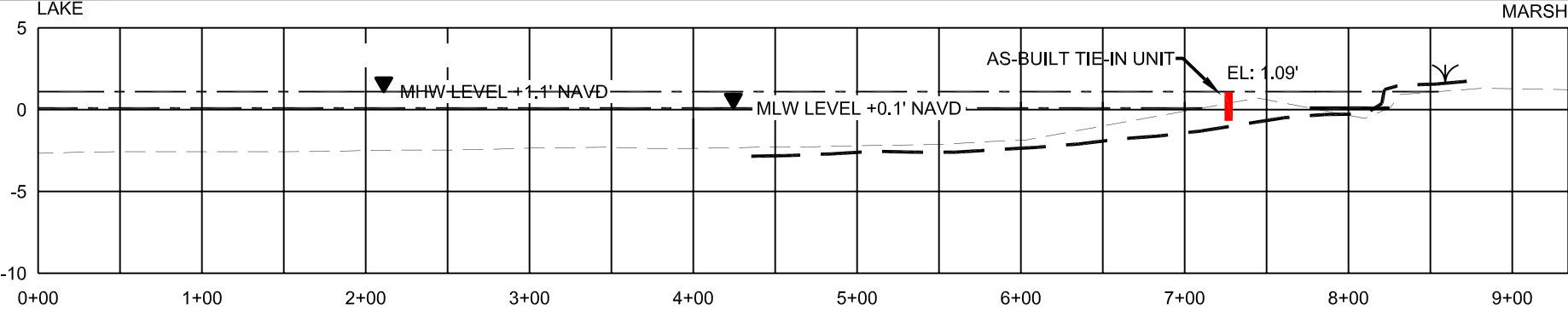
- LEGEND
- PRE- CONSTRUCTION X-SECTIONS (SEPT 2007)
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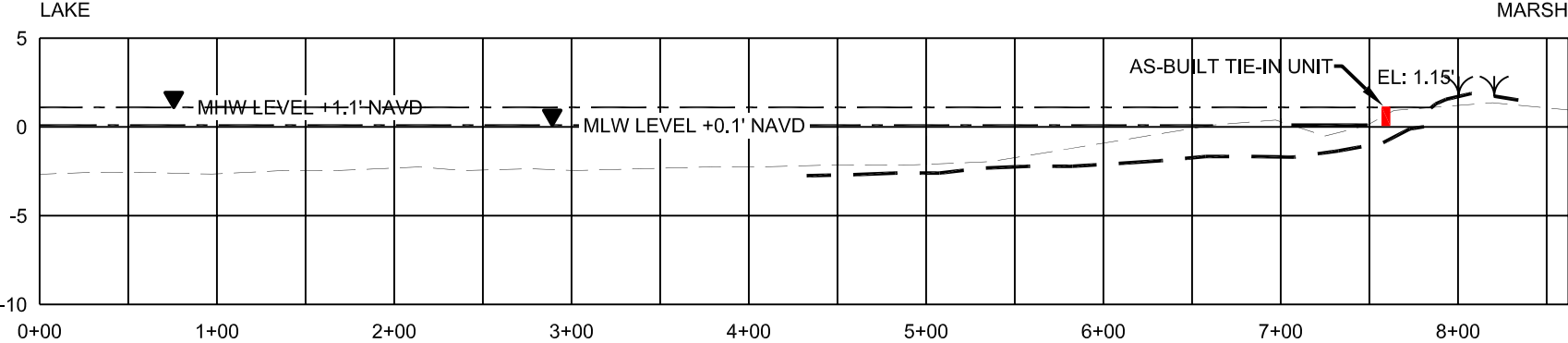
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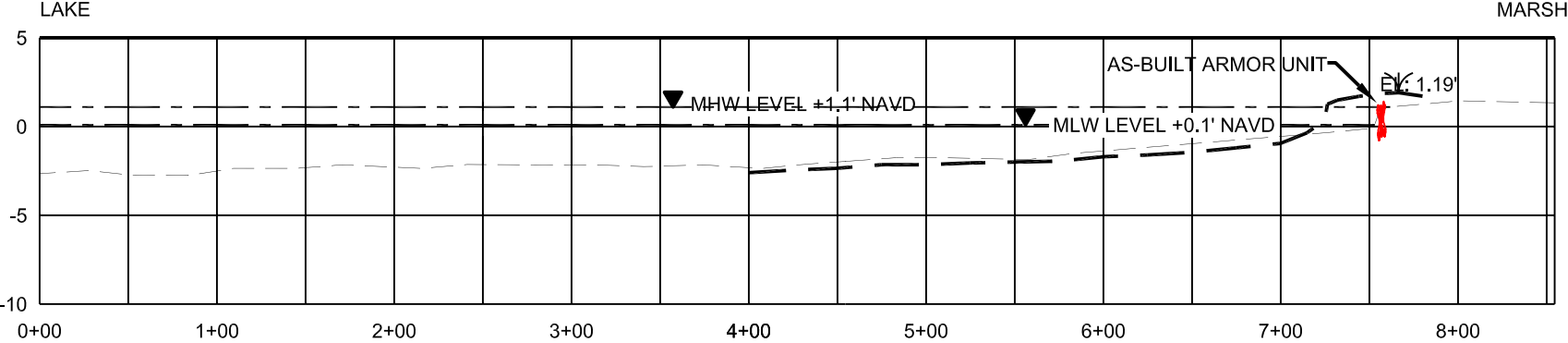




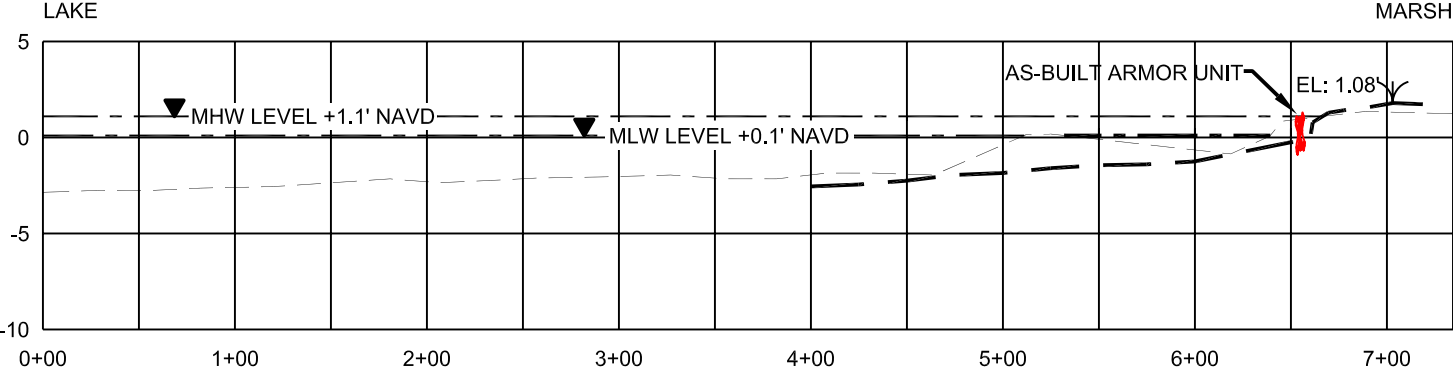
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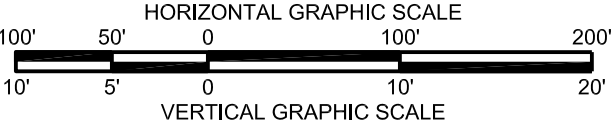
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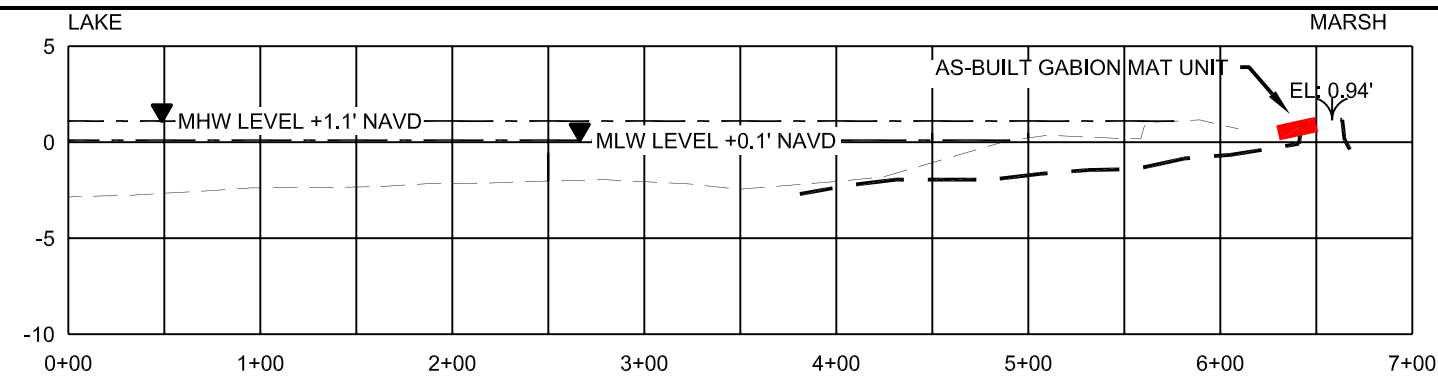
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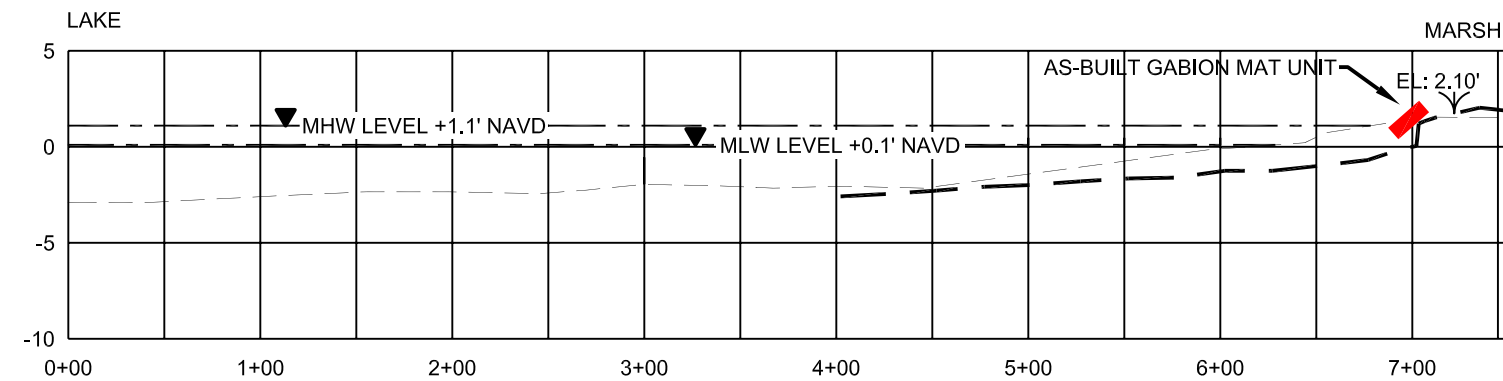


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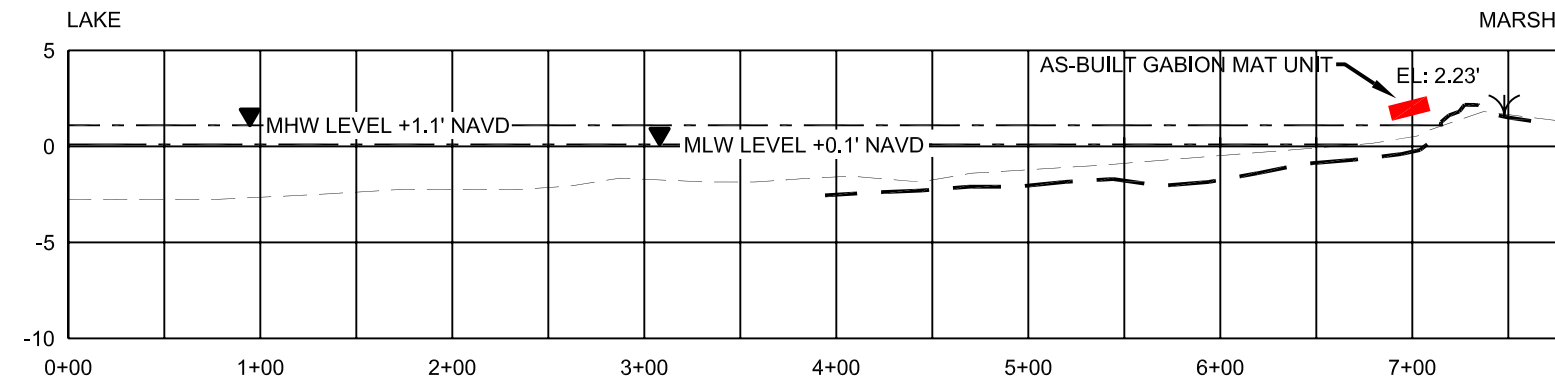
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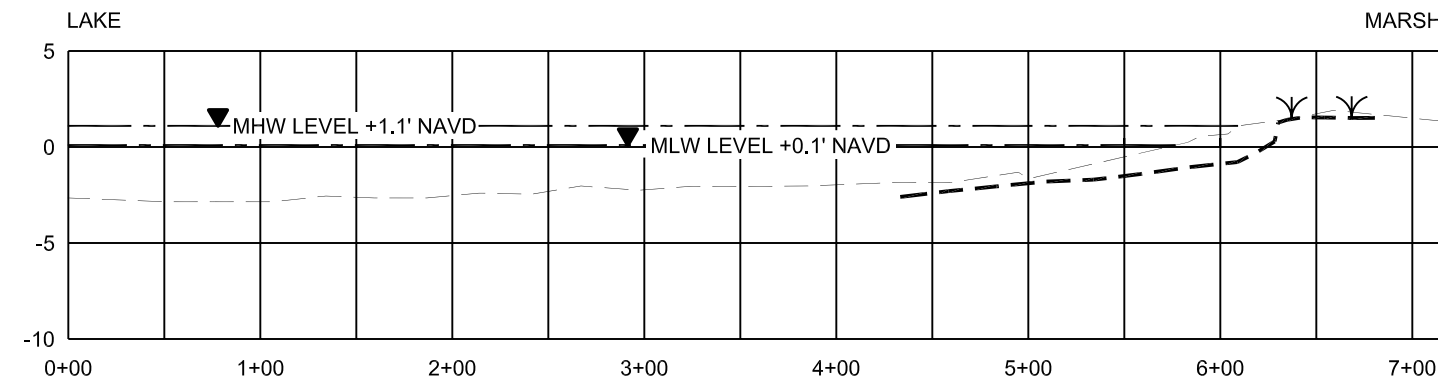
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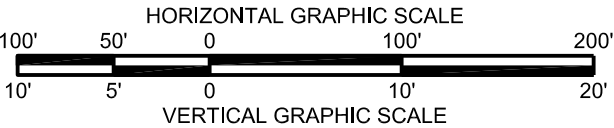
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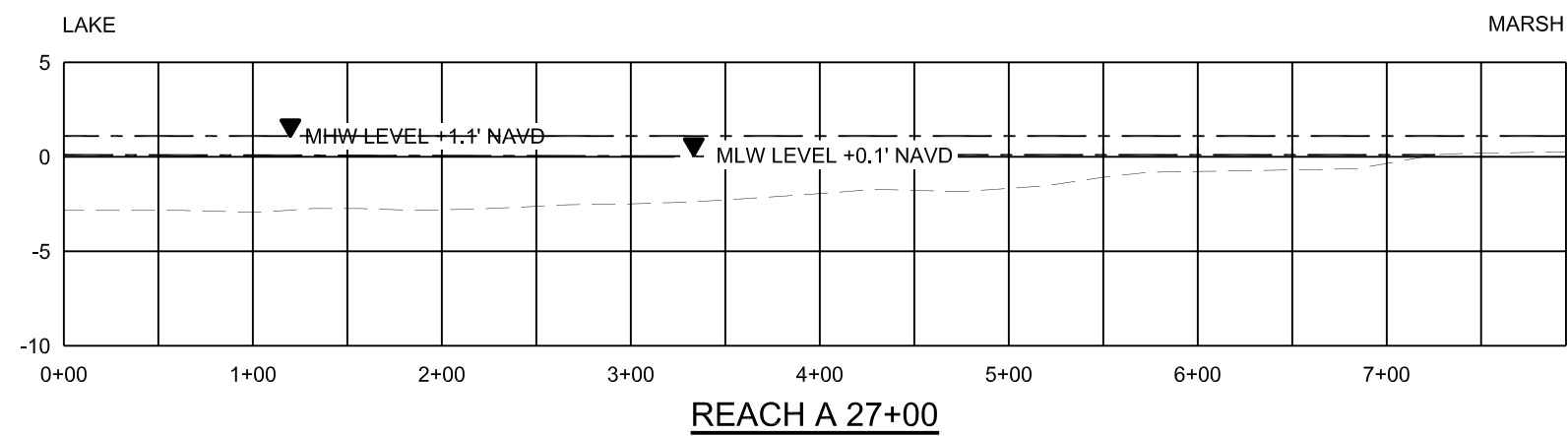
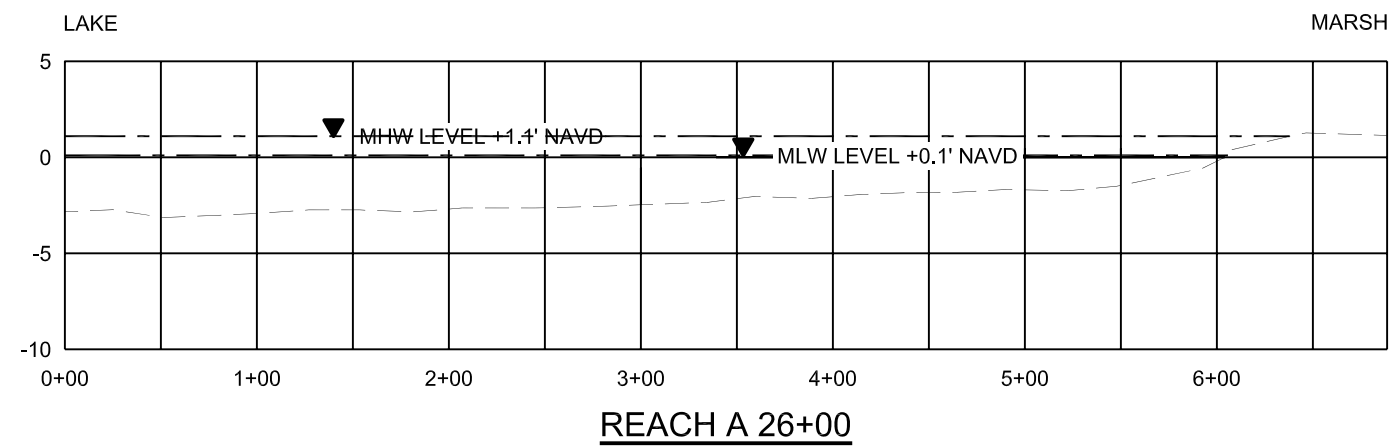
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- LEGEND
- PRE- CONSTRUCTION X-SECTIONS (SEPT 2007)
  - - - ORIGNAL DESIGN X-SECTIONS (JUNE/JULY 2002)

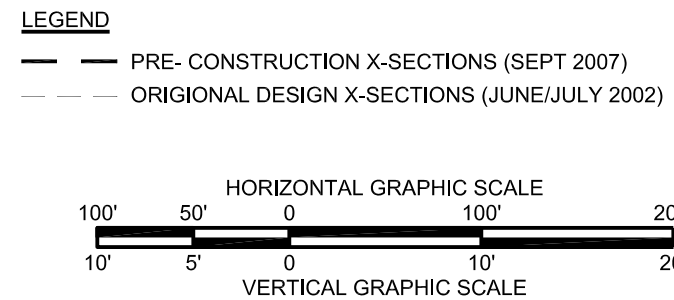


AS-BUILT

				LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802		TERREBONNE BAY SHORE PROTECTION DEMONSTRATION PROJECT		REACH A AND B PROFILES
						STATE PROJECT NUMBER:   TE-45		
						FEDERAL PROJECT NUMBER:		
REV.	DATE	DESCRIPTION	BY			DRAWN BY:   KRISTI CANTU	DESIGNED BY:   DAIN GILLEN, E.I.	APPROVED BY:   MAURY CHATELLIER, P.E.
	4/18/08	AS-BUILT DETAIL ADDED	TBS					

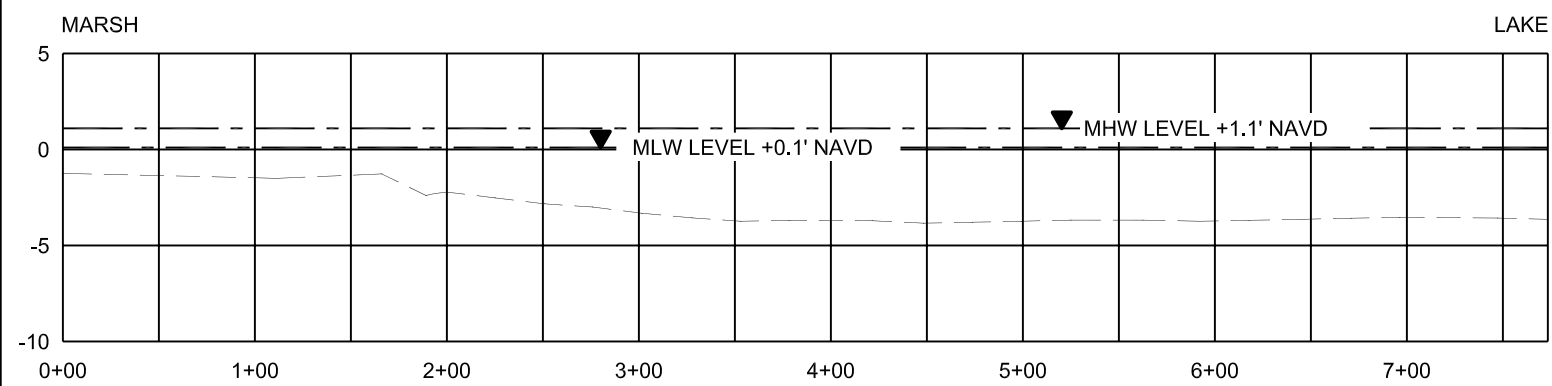
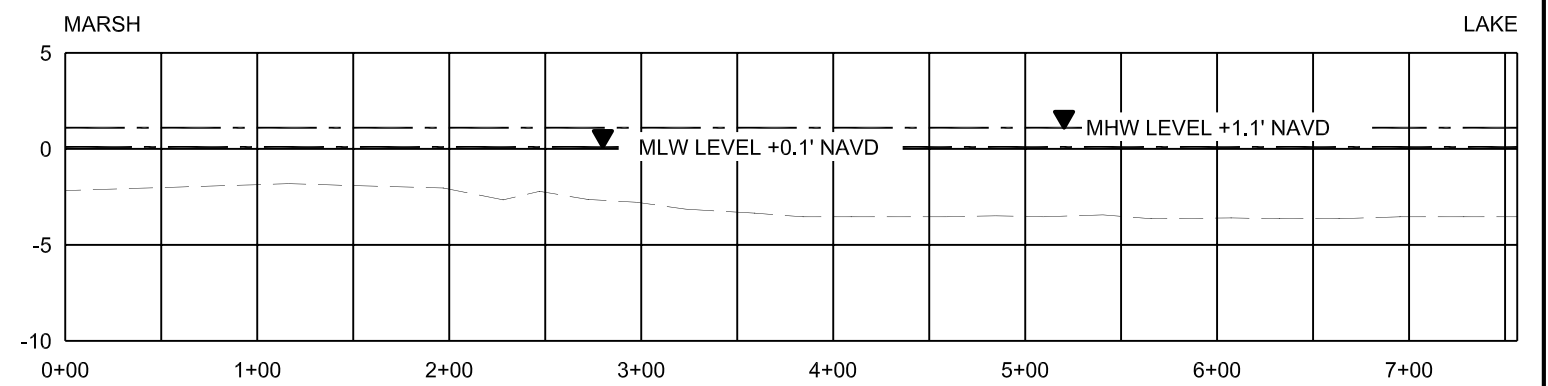
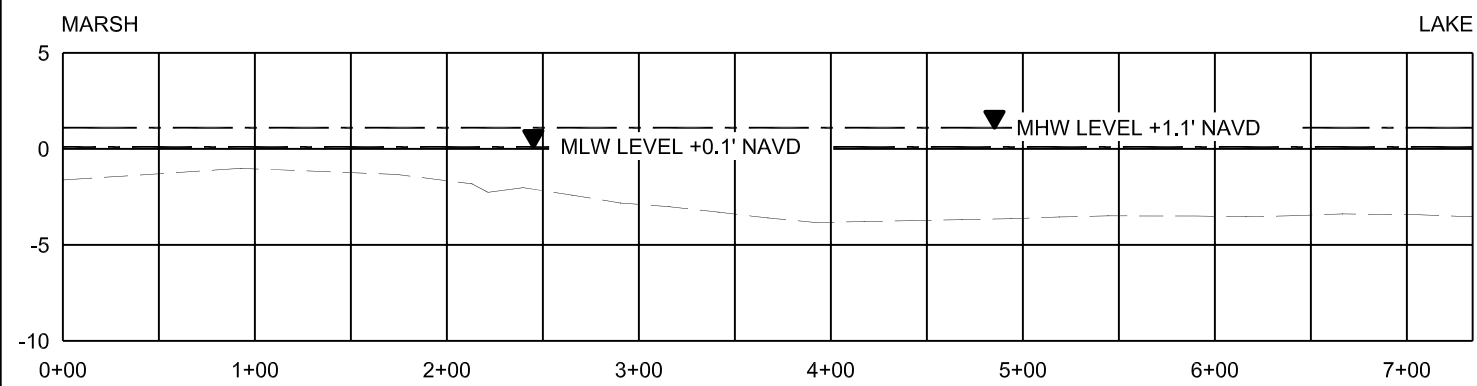
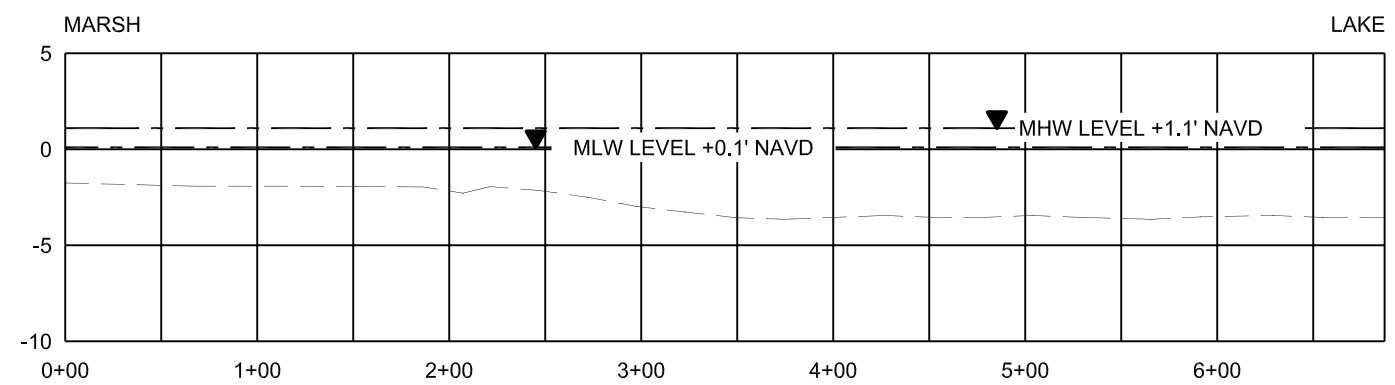
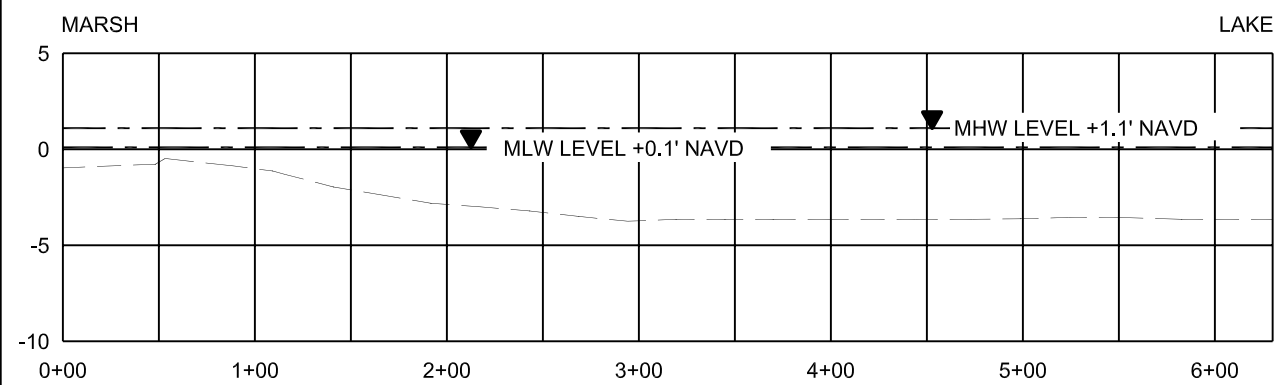
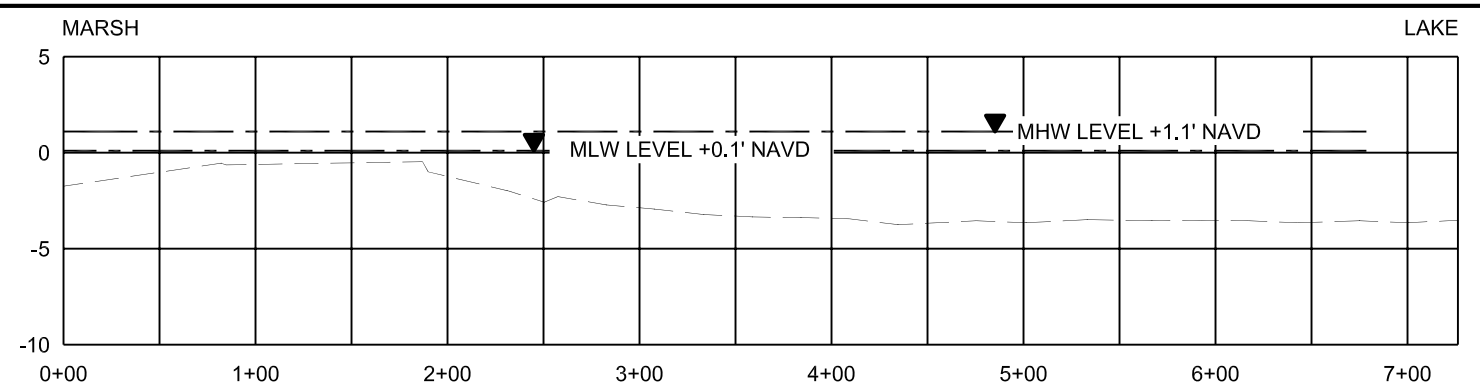
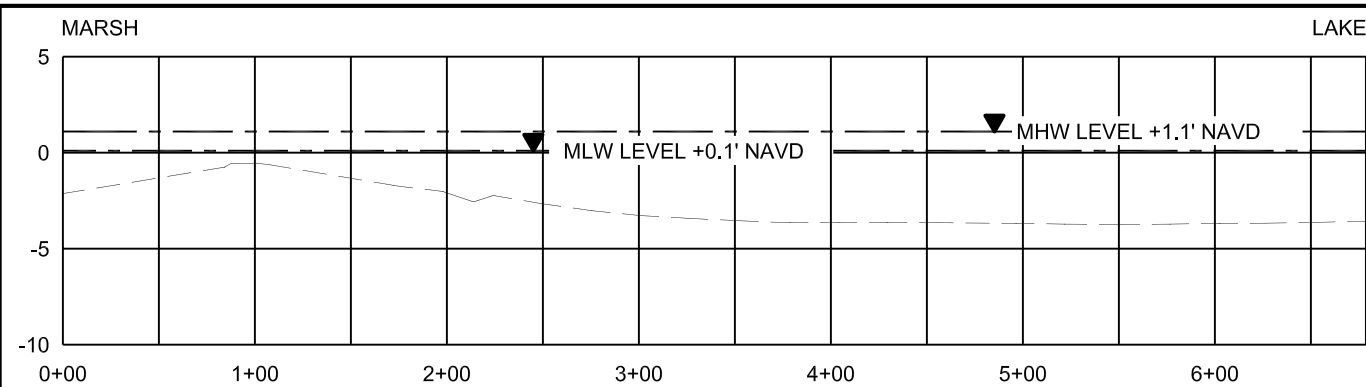


- NOTES:
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AS-BUILT

				LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802		TERREBONNE BAY SHORE PROTECTION DEMONSTRATION PROJECT	REACH A AND B PROFILES
						STATE PROJECT NUMBER: TE-45	
						FEDERAL PROJECT NUMBER:	
	4/18/08	AS-BUILT DETAIL ADDED	TBS			APPROVED BY: MAURY CHATELLIER, P.E.	DATE: FEBRUARY 2007
REV.	DATE	DESCRIPTION	BY	DRAWN BY: KRISTI CANTU	DESIGNED BY: DAIN GILLEN, E.I.	APPROVED BY: MAURY CHATELLIER, P.E.	SHEET 18 OF 25



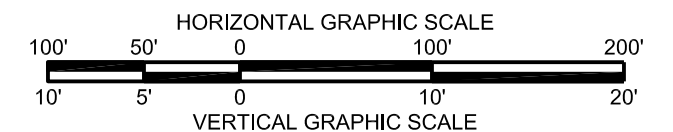
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LEGEND

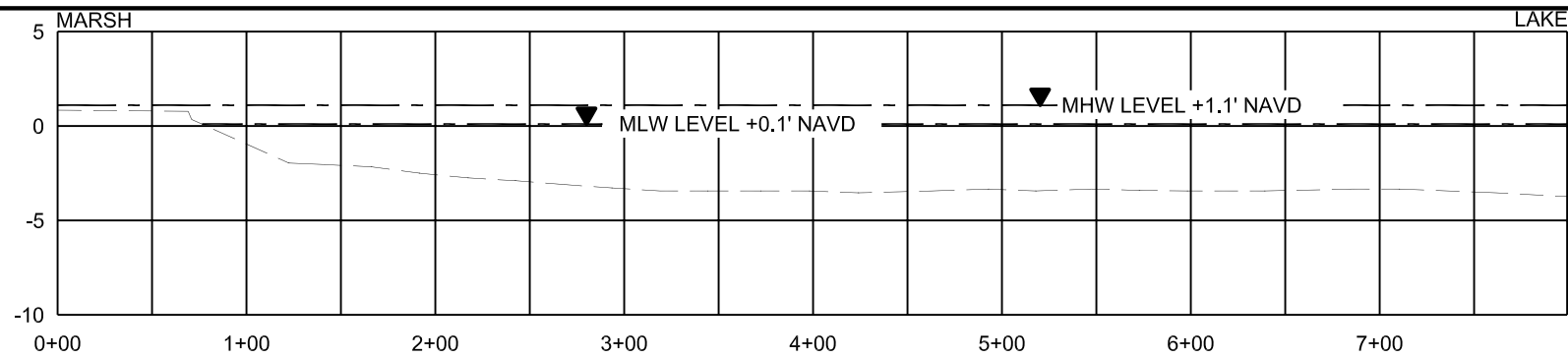
— — PRE-CONSTRUCTION X-SECTIONS (SEPT 2007)

— — — ORIGINAL DESIGN X-SECTIONS (JUNE/JULY 2002)

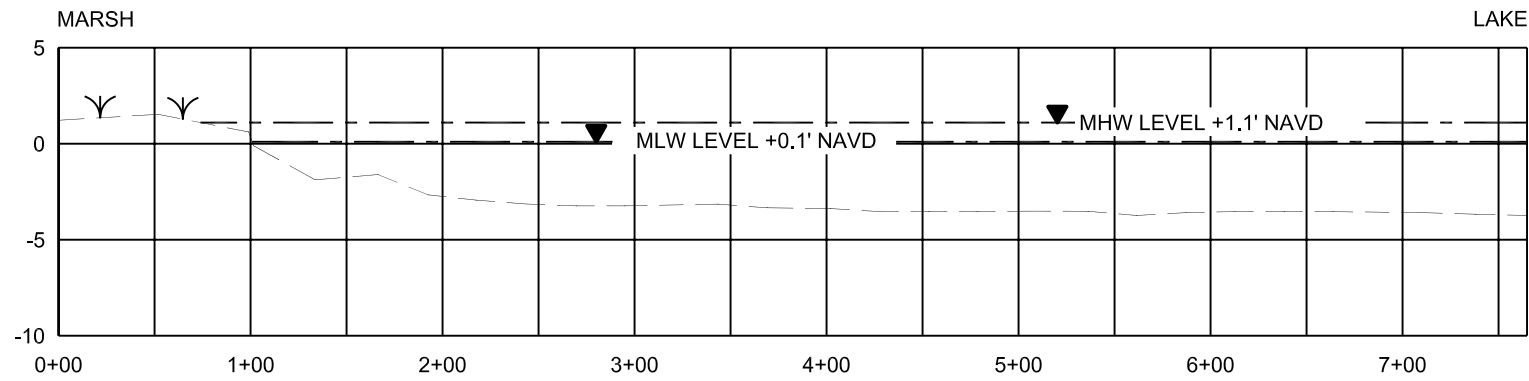


## AS-BUILT

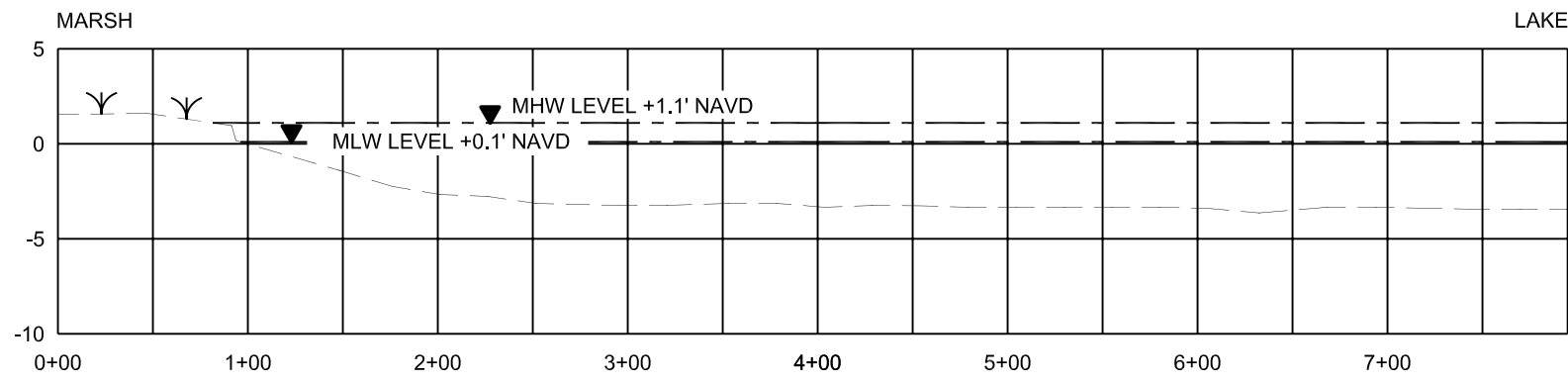
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					STATE PROJECT NUMBER: TE-45		
					FEDERAL PROJECT NUMBER:		
	4/18/08	AS-BUILT DETAIL ADDED	TBS			DATE: FEBRUARY 2007	
REV.	DATE	DESCRIPTION	BY	DRAWN BY: KRISTI CANTU	DESIGNED BY: DAIN GILLEN, E.I.	APPROVED BY: MAURY CHATELLIER, P.E.	SHEET 19 OF 25



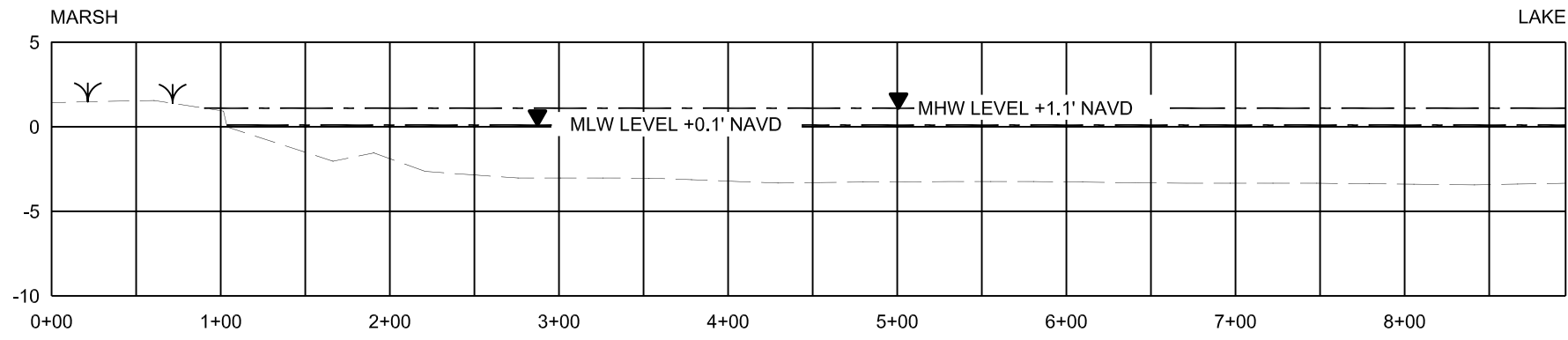
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REACH E 8+00

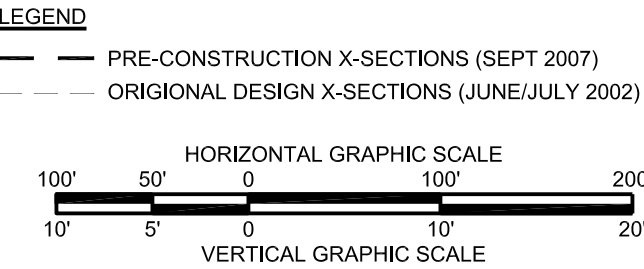


REACH E 9+00



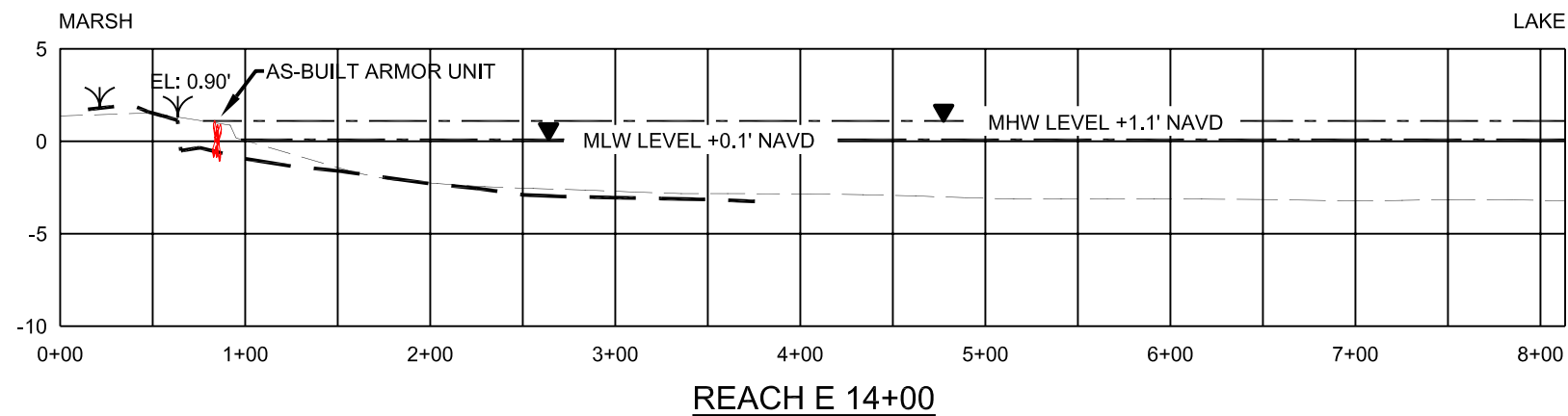
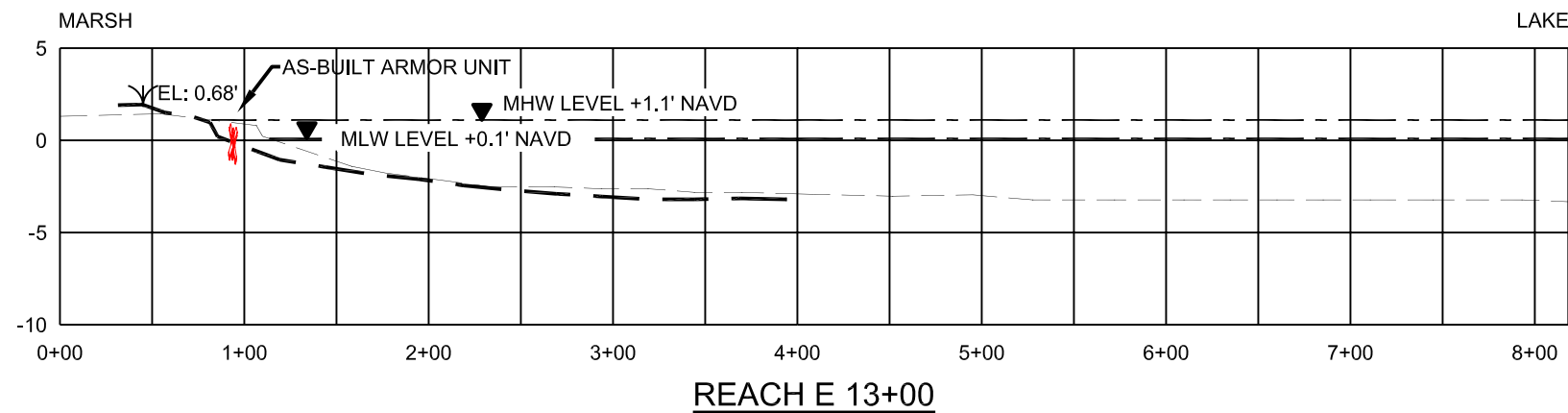
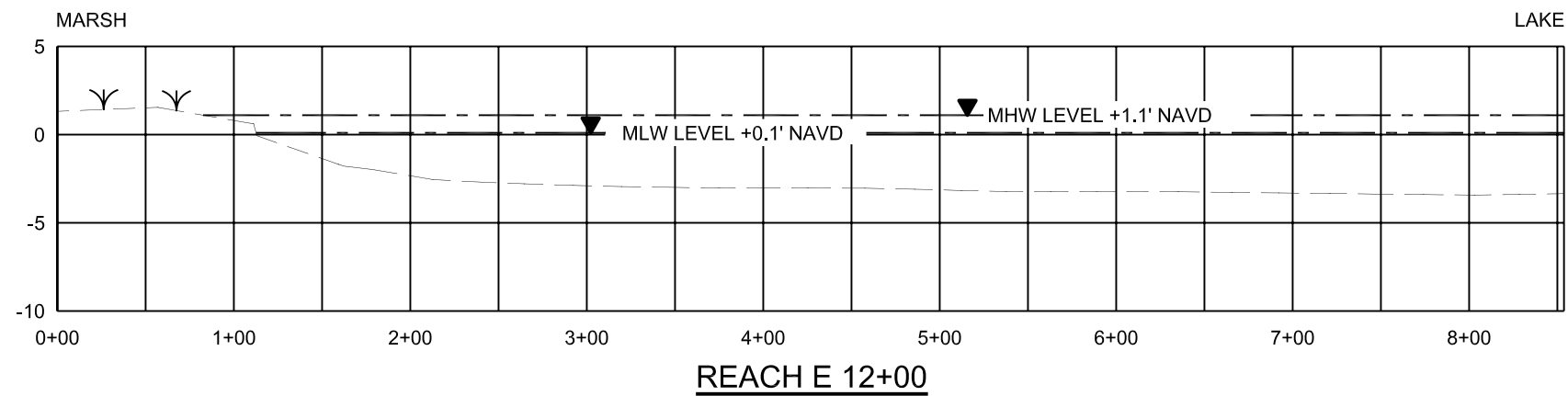
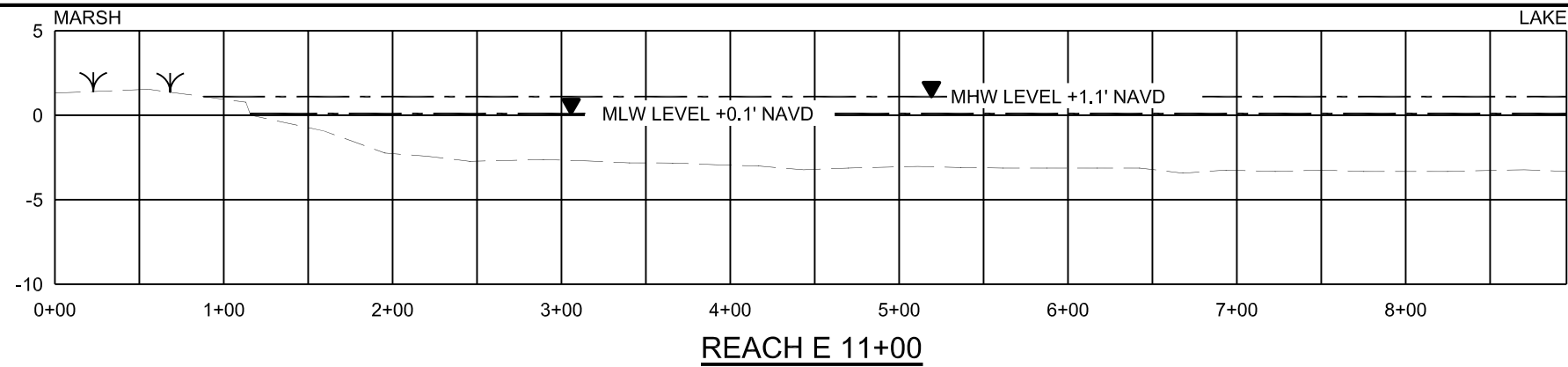
REACH E 10+00

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AS-BUILT

				LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	TERREBONNE BAY SHORE PROTECTION DEMONSTRATION PROJECT	REACH E PROFILES
					STATE PROJECT NUMBER: TE-45	
					FEDERAL PROJECT NUMBER:	
	4/18/08	AS-BUILT DETAIL ADDED	TBS		APPROVED BY: MAURY CHATELLIER, P.E.	DATE: FEBRUARY 2007
REV.	DATE	DESCRIPTION	BY	DRAWN BY: KRISTI CANTU	DESIGNED BY: DAIN GILLEN, E.I.	SHEET 20 OF 25

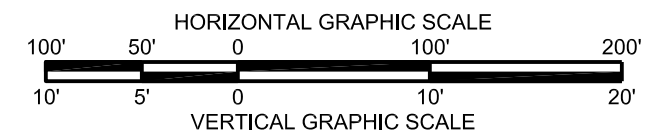


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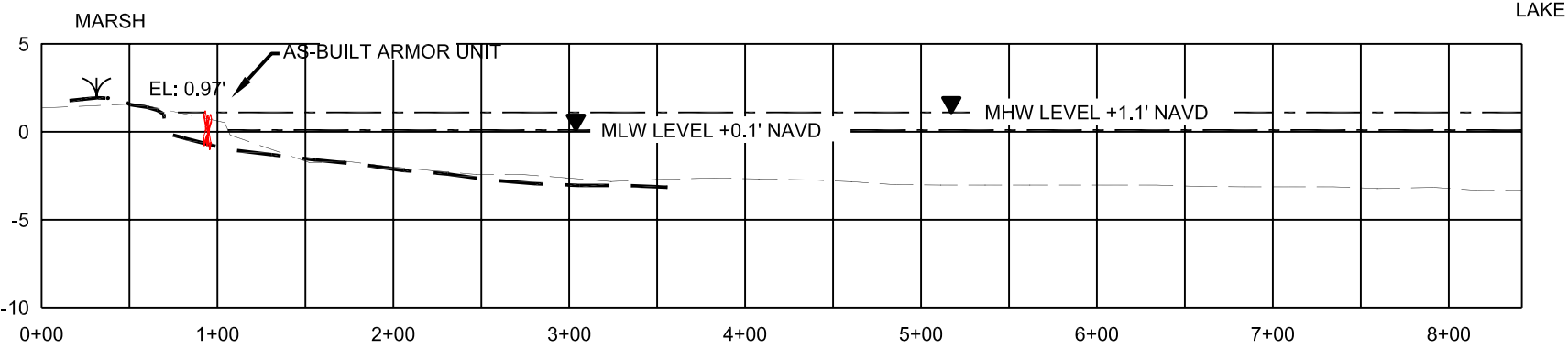
**LEGEND**

- — PRE-CONSTRUCTION X-SECTIONS (SEPT 2007)
- - - ORIGINAL DESIGN X-SECTIONS (JUNE/JULY 2002)

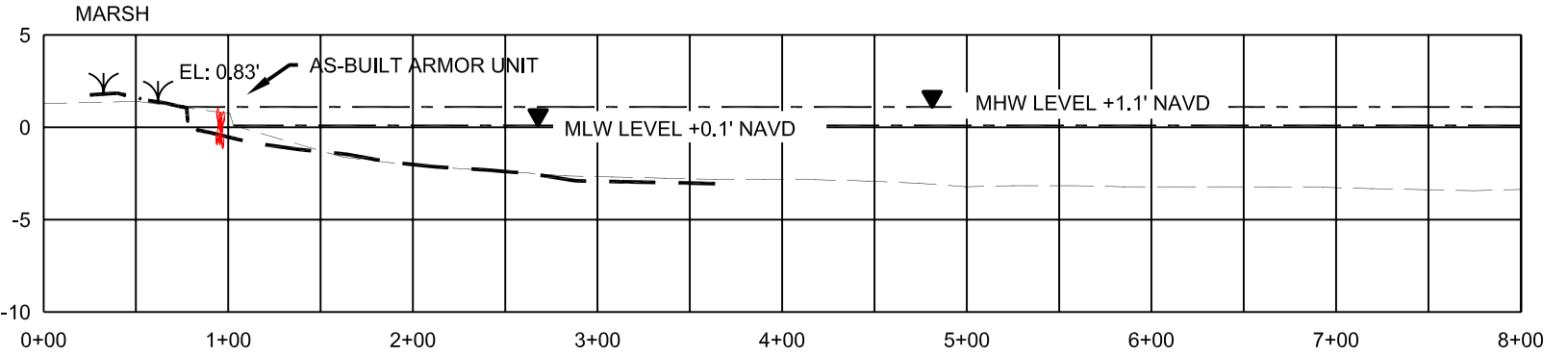


AS-BUILT

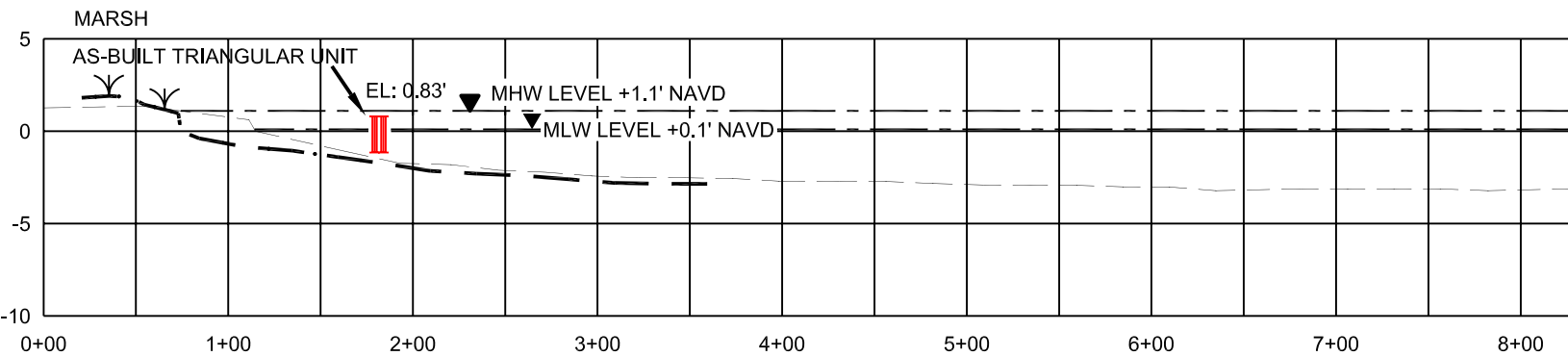
				LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802		TERREBONNE BAY SHORE PROTECTION DEMONSTRATION PROJECT		REACH E PROFILES
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REV.	DATE	DESCRIPTION	BY	DRAWN BY: KRISTI CANTU	DESIGNED BY: DAIN GILLEN, E.I.	APPROVED BY: MAURY CHATELLIER, P.E.		SHEET 21 OF 25



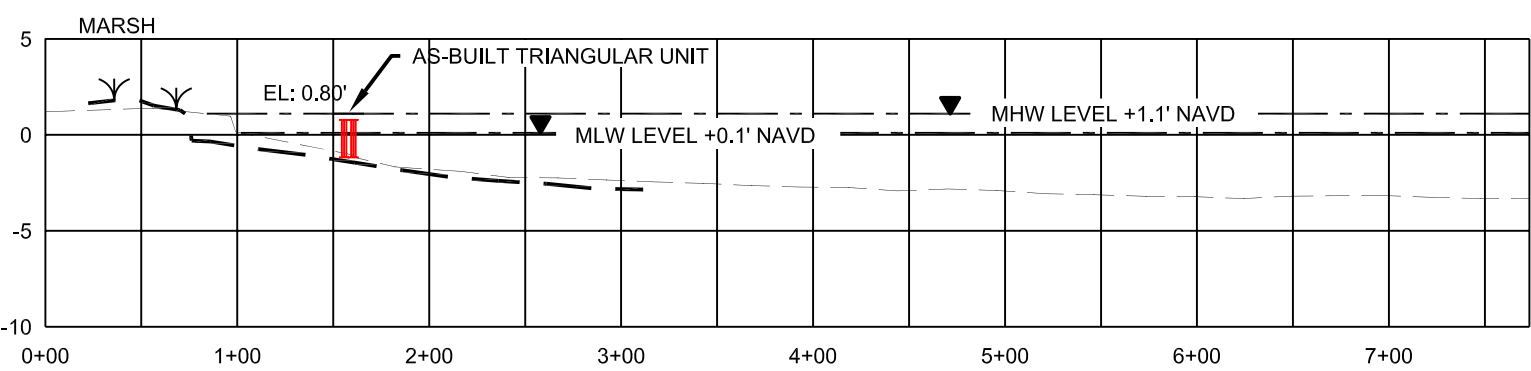
REACH E 15+00



REACH E 16+00



REACH E 17+00



REACH E 18+00

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LEGEND

— — PRE-CONSTRUCTION X-SECTIONS (SEPT 2007)

- - - ORIGINAL DESIGN X-SECTIONS (JUNE/JULY 2002)

HORIZONTAL GRAPHIC SCALE

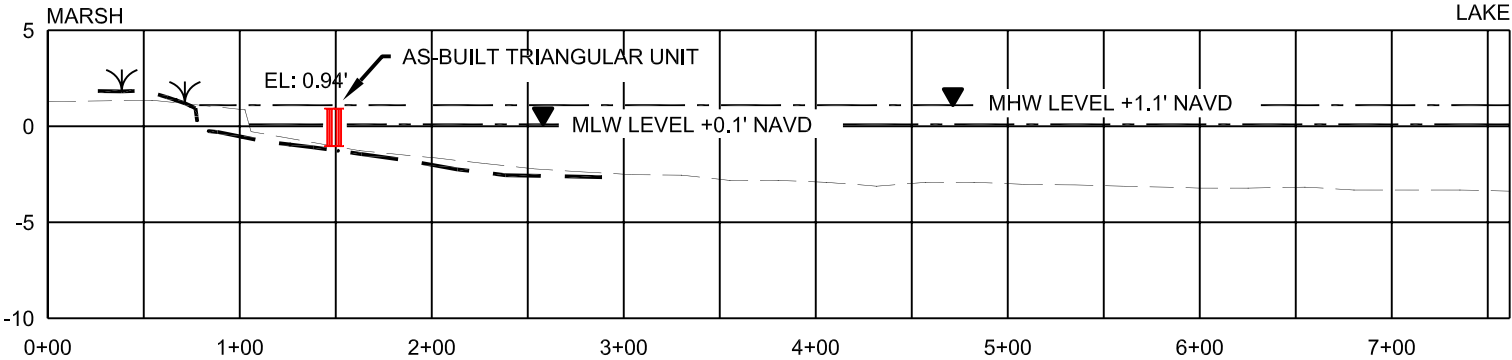
100' 50' 0 100' 200'

10' 5' 0 10' 20'

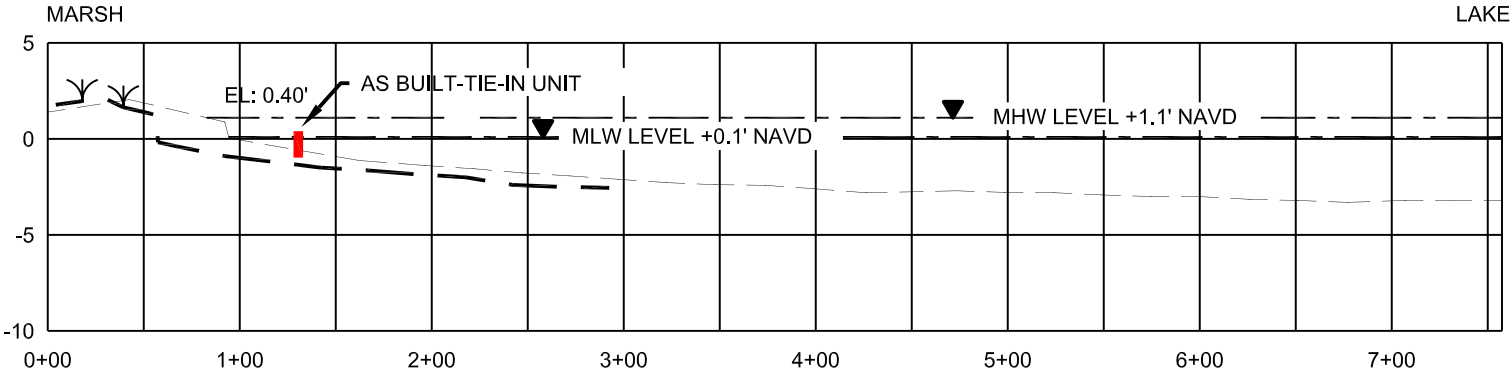
VERTICAL GRAPHIC SCALE

AS-BUILT

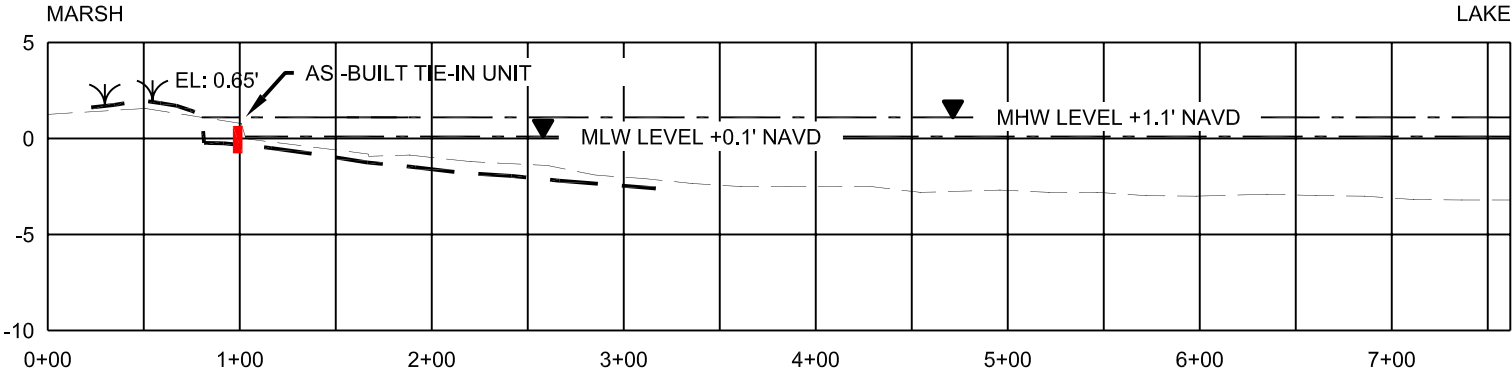
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						STATE PROJECT NUMBER: TE-45		
						FEDERAL PROJECT NUMBER:		
	4/18/08	AS-BUILT DETAIL ADDED	TBS			APPROVED BY: MAURY CHATELLIER, P.E.		DATE: FEBRUARY 2007
REV.	DATE	DESCRIPTION	BY	DRAWN BY: KRISTI CANTU		DESIGNED BY: DAIN GILLEN, E.I.		SHEET 22 OF 25



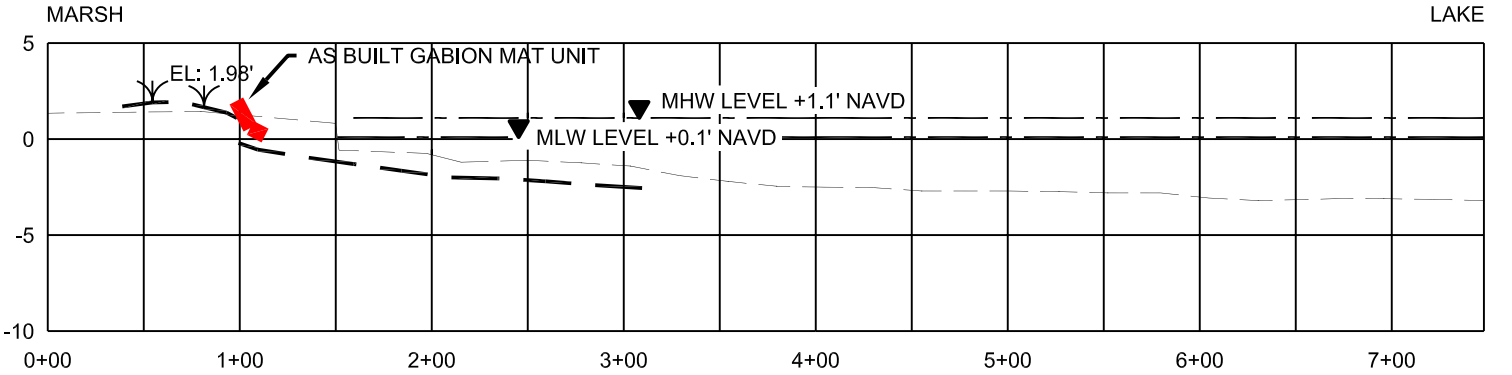
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REACH E 20+00

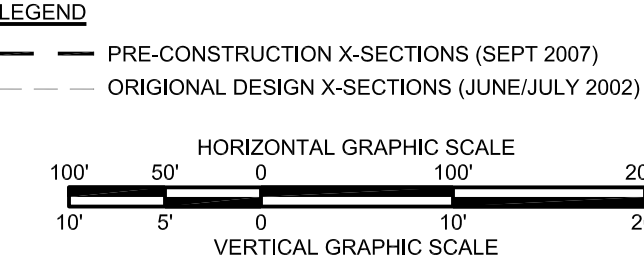


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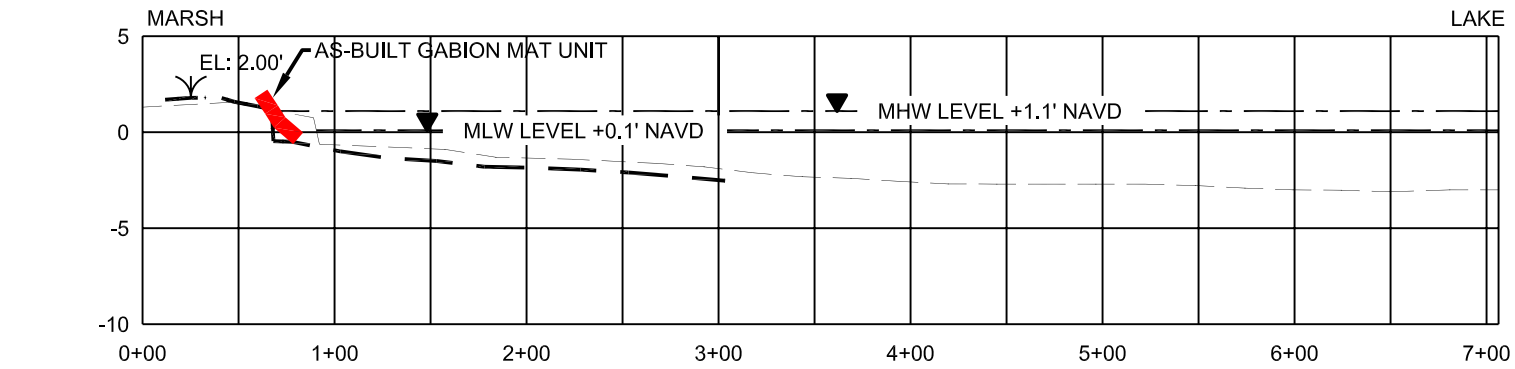
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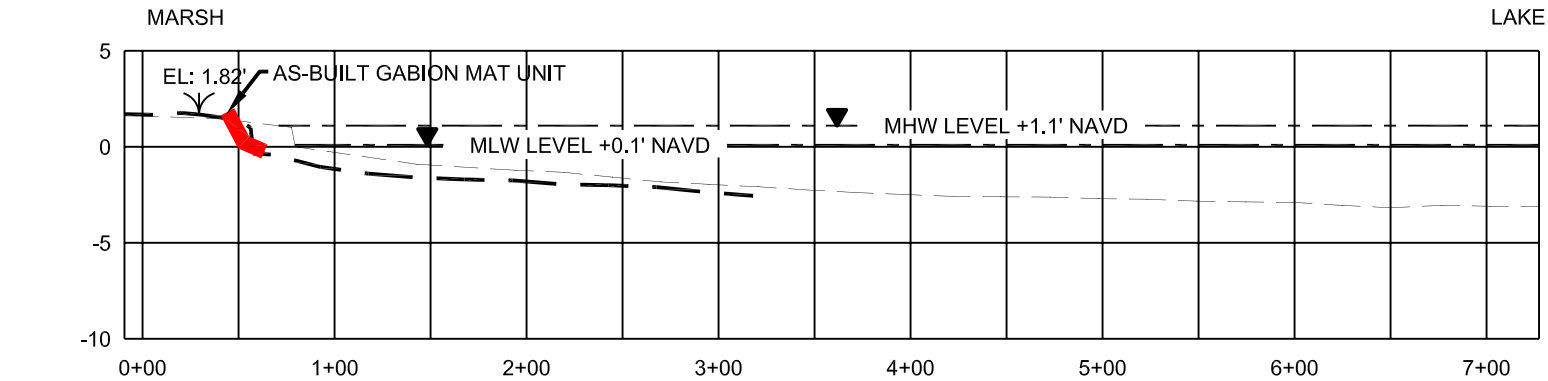
AS-BUILT

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						STATE PROJECT NUMBER: TE-45		
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	4/18/08	AS-BUILT DETAIL ADDED	TBS			APPROVED BY: MAURY CHATELLIER, P.E.		DATE: FEBRUARY 2007
REV.	DATE	DESCRIPTION	BY	DRAWN BY: KRISTI CANTU	DESIGNED BY: DAIN GILLEN, E.I.	APPROVED BY: MAURY CHATELLIER, P.E.		SHEET 23 OF 25

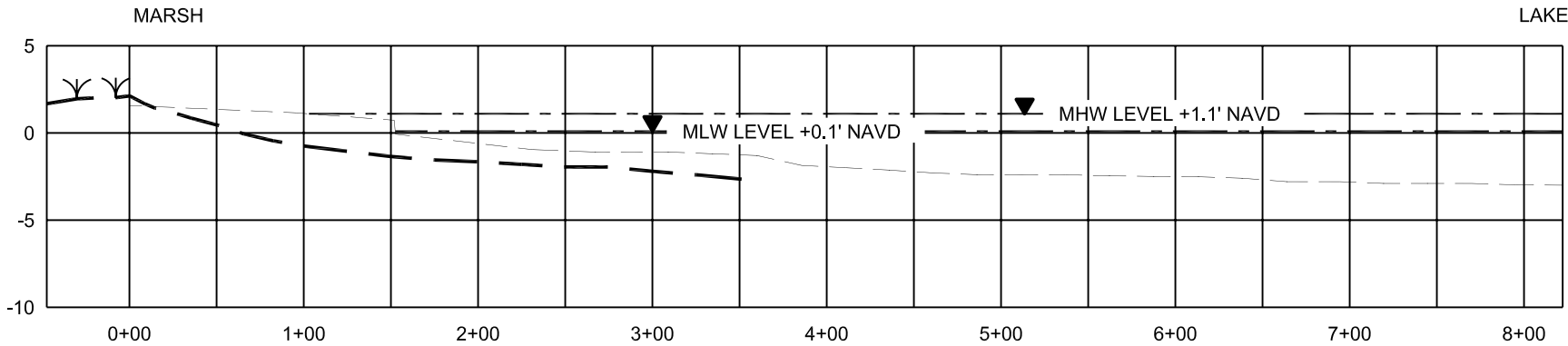




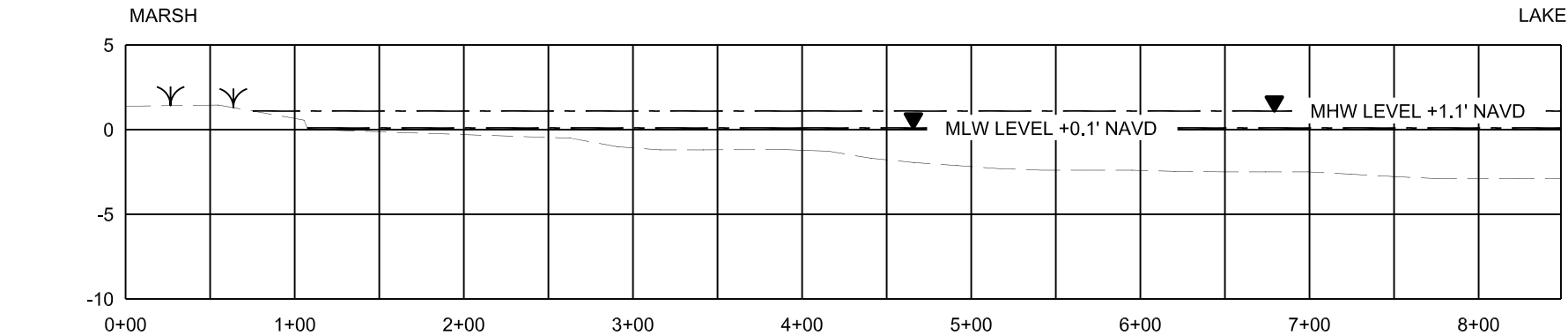
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REACH E 24+00



REACH E 25+00

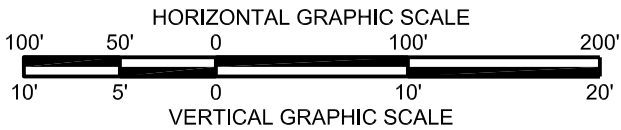


REACH E 26+00

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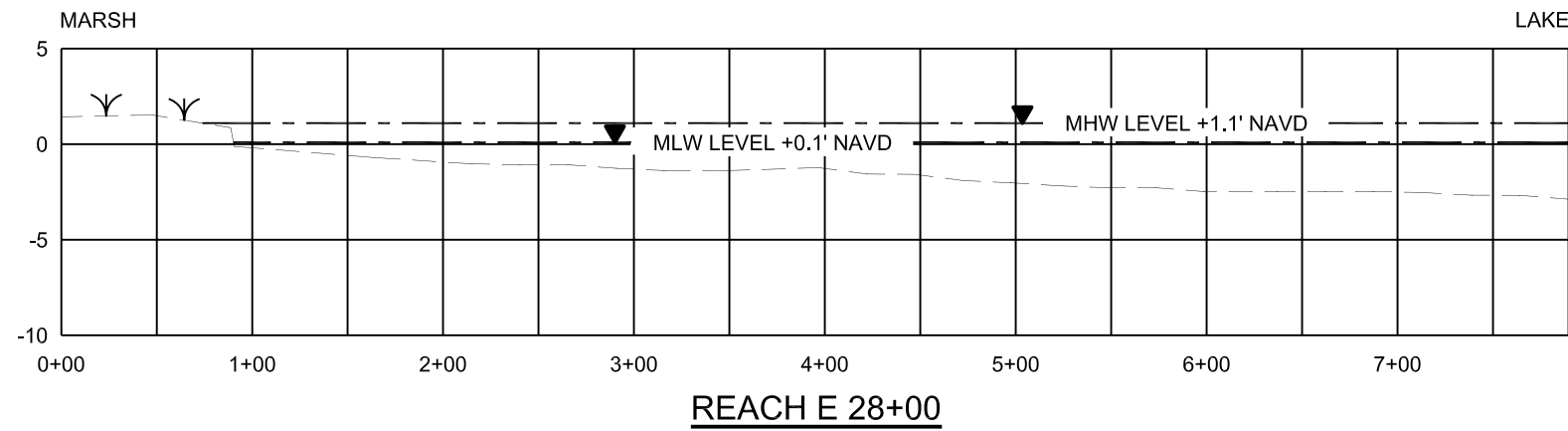
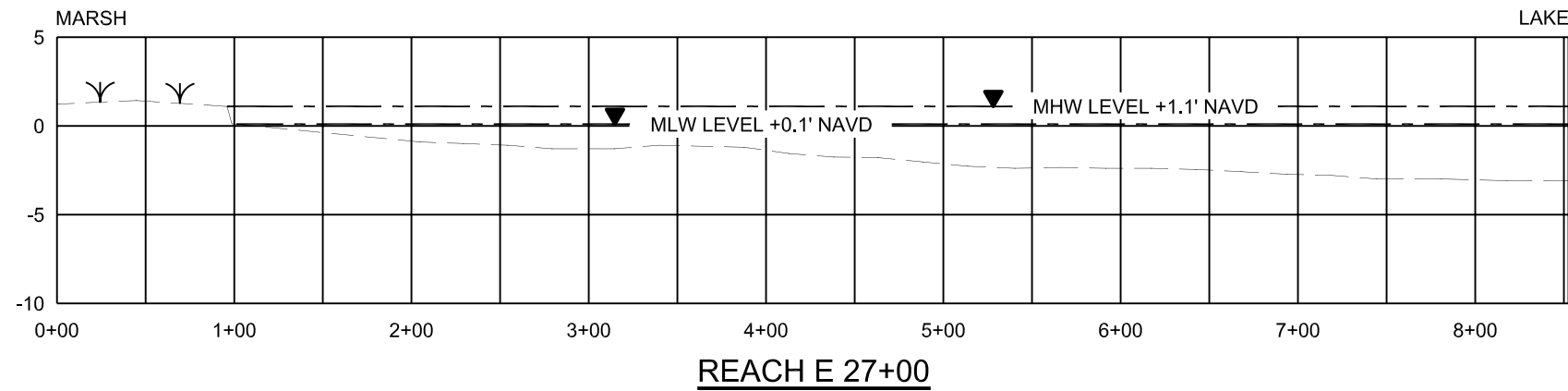
LEGEND

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- - - ORIGINAL DESIGN X-SECTIONS (JUNE/JULY 2002)

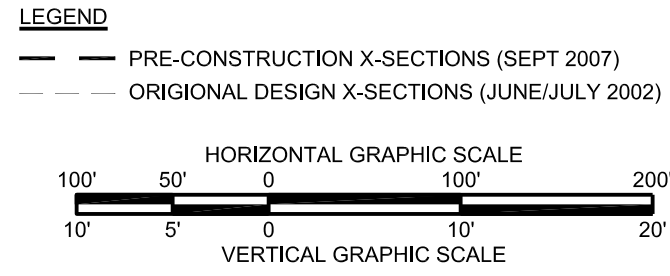


AS-BUILT

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						STATE PROJECT NUMBER: TE-45		
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	4/18/08	AS-BUILT DETAIL ADDED	TBS			APPROVED BY: MAURY CHATELLIER, P.E.		DATE: FEBRUARY 2007
REV.	DATE	DESCRIPTION	BY	DRAWN BY: KRISTI CANTU	DESIGNED BY: DAIN GILLEN, E.I.	APPROVED BY: MAURY CHATELLIER, P.E.		SHEET 24 OF 25



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	4/18/08	AS-BUILT DETAIL ADDED	TBS			APPROVED BY: MAURY CHATELLIER, P.E.		DATE: FEBRUARY 2007
REV.	DATE	DESCRIPTION	BY	DRAWN BY: KRISTI CANTU	DESIGNED BY: DAIN GILLEN, E.I.	APPROVED BY: MAURY CHATELLIER, P.E.		SHEET 25 OF 25