

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

**SURVEY REPORT**



**July 16, 2008**

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

**Prepared By:**

**T. Baker Smith, Inc.  
412 South Van Avenue  
Houma, LA 70364**



# **SURVEY METHODOLOGY REPORT**

## **Terrebonne Bay Shore Protection Demonstration Project (TE-45) Topographic and Bathymetric Survey Terrebonne Parish, Louisiana**

### **PROJECT DESCRIPTION**

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 scope of this project provides for an as-built survey of the project features as well as a bathymetric and topographic survey along transects. This project also provides establishment of elevation control at continuous recorders. The tasks outlined for this project consisted of collecting bathymetric and topographic transects as outlined in the given scope of services.

### **FIELD SURVEY PLANNING AND PROCEDURES**

Horizontal and vertical control for the as-built survey, bathymetric and topographic survey, and surveying of continuous recorders is based on DNR's secondary GPS network monument "TE45-SM-01". The Northing, Easting, and elevation for TE45-SM-01 are 297516.43, 3510866.28, and 4.01', respectively. The horizontal datum for the surveys is the Louisiana State Plane Coordinate System South Zone (NAD 83). The vertical datum for the surveys is the North American Vertical Datum (NAVD 88).

The general plan to accomplish the given scope of services was to establish elevation control at the continuous recorders, then perform the bathymetric and topographic survey first, and finally perform the as-built survey work from the feature to the marsh. A three man crew used a Trimble<sup>®</sup> 5700/R8 GPS RTK unit to accomplish the transect surveys. Survey information was stored digitally using a Trimble TSC-2 Data Collector. Additionally, the bathymetric data was collected using a Hydrotrac echosounder. The bathymetric survey crew also utilized HYPACK MAX survey navigation software in conjunction with the same Trimble RTK GPS unit, sub centimeter accuracy. All data was gathered with electronic field notes and has been included in the excel file accompanying this report. The written field notes show the point observations for all the RTK survey work. Bathymetric data between the feature and the shoreline was collected by hand soundings using a 25' Standard Stadia Rod with a 6" diameter bottom plate. The soundings were referenced to an RTK GPS observed tide reading for elevation reduction.

Bathymetry data was gathered using the survey vessel Ms. Lemerle utilizing the previously mentioned navigation and echo-based equipment. Real-time position data was output from the GPS receiver to the HYPACK software 10 times each second. Digital water depth data was also output from the depth sounder 20 times each second. The Hypack software is able to use the above information to display course corrections to help the surveyor navigate the predefined track line. The software is also able to compute a precise position of each sounding. In order to ensure accurate measurements were being recorded, equipment checks and calibrations were performed several times each day. The digital depthsounder was calibrated several times a day for sound velocity corrections. This is performed by lowering an acoustic target, with precisely measured marks, below the transducer to the desired survey depth. The depthsounder's sound velocity correction factor is then adjusted so that the depthsounder

reads the precise depth of the acoustic target. The measurements of the onboard GPS system were also checked by observing navigation checkpoints, or “Nav-checks”, set throughout the project area.

The survey time line is as follows:

- Surveying of continuous recorders performed on November 20,2007
- Bathymetry surveys commence on February 14, 2008
- Bathymetry surveys completed on February 15, 2008
- As-built survey and Topographic surveys commence on February 18, 2008
- As-built survey and Topographic surveys continue on February 19, 2008
- As-built survey and Topographic surveys are completed on February 20, 2008

### **DATA PROCESSING**

Bathymetric survey data was transferred from the onboard laptop computer to the office for processing. The processing was accomplished by using Hypack’s Single Beam Editor. The Hypack software allowed a profile-type review of the data, where any position or sounding outliers were manually removed. Once the data had been processed and gone through an internal QA/QC review, it was presorted and points spaced at 10’ intervals along the line were exported in X,Y,Z format. These X,Y,Z point files were then imported into AutoCAD – Civil 3D for grouping, management, and further QA/QC. Each XYZ point was assigned a point number and description then grouped into lines, and exported as an ASCII point file.

Topographic survey data was downloaded from the Trimble TSC-2 Data Collector into the Trimble Geomatics Office software for processing. This software allows for QA/QC of GPS data, and was used to check for instrument setup errors, antenna height errors, and other blunders. Once the topographic survey data was processed, it was exported to the AutoCAD – Civil 3D for final processing as previously mentioned.

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David L. Martinez, P.L.S.  
Survey Project Manager

**AS-BUILT / TRANSECT DRAWINGS**

P.I. COORDINATES			
P.I. NO.	STATION	NORTHING	EASTING
1	10+00.00	285044.95	3509729.01
2	17+38.81	285643.63	3509296.09
3	20+44.81	285918.78	3509162.19
4	23+22.07	286066.93	3508927.83
5	24+93.30	286199.66	3508819.64
6	27+78.23	286409.68	3508627.09
7	28+84.97	286466.78	3508536.91
8	30+36.75	286604.86	3508473.88
9	33+31.08	286895.39	3508426.76
10	33+73.05	286930.34	3508403.52
11	36+96.10	287235.03	3508296.17
12	39+92.75	287531.18	3508279.08
13	40+28.85	287541.27	3508244.41
14	47+68.00	288139.97	3507811.47

LEGEND	
	FORESHORE TRIANGULAR UNITS
	ONSHORE ARMOR UNITS
	ONSHORE CABIAN MAT UNITS
	TIE-IN UNITS

SHORELINE ELEVATIONS				
POINT #	STATION	NORTHING	EASTING	ELEVATION
2465	10+55.29	285015.94	3509594.53	1.03'
2459	11+29.85	285088.72	3509567.93	0.08'
2453	12+04.35	285158.66	3509537.52	1.10'
2447	18+07.42	285685.77	3509225.88	1.20'
2441	18+93.27	285761.85	3509186.04	1.05'
2431	19+68.83	285839.48	3509172.87	0.90'
2272	20+77.07	285921.21	3509125.56	1.04'
2281	21+50.44	285936.06	3509048.15	0.86'
2289	22+26.40	285975.40	3508983.15	0.87'
2298	25+71.74	286076.96	3508570.40	1.13'
2315	26+40.35	286259.48	3508667.29	0.53'
2323	27+18.59	286329.37	3508627.75	0.98'
2425	31+19.23	286689.24	3508478.98	1.02'
2419	31+93.94	286764.44	3508475.93	0.87'
2413	32+79.49	286852.54	3508484.82	0.48'
2336	33+77.56	286907.98	3508326.46	0.39'
2344	34+59.40	286988.99	3508310.14	0.32'
2356	35+41.49	287049.47	3508234.73	0.84'
2365	37+73.36	287303.78	3508146.37	0.76'
2374	38+47.79	287390.15	3508177.89	0.57'
2385	39+22.74	287455.66	3508185.55	0.57'
2392	43+68.56	287864.92	3508112.24	0.77'
2399	44+38.59	287972.34	3508141.39	0.88'
2406	45+72.73	288040.95	3508109.62	-0.02'

FEATURE ELEVATIONS				
POINT #	REACH	STRUCTURE	STATION	TOP ELEVATION
2003	A	CABIAN MAT	17+39.79	1.79'
2007	A	CABIAN MAT	18+08.08	1.99'
2010	A	CABIAN MAT	18+91.54	1.71'
2014	A	CABIAN MAT	19+65.46	1.60'
2018	A	CABIAN MAT	20+36.39	1.72'
2020	A	ARMOR UNIT	20+44.88	0.71'
2023	A	ARMOR UNIT	20+81.89	0.93'
2026	A	ARMOR UNIT	21+55.70	0.90'
2029	A	ARMOR UNIT	22+24.40	1.02'
2032	A	ARMOR UNIT	23+01.64	1.04'
2040	A	TRIANGULAR UNIT	24+93.34	1.17'
2043	A	TRIANGULAR UNIT	25+65.64	0.86'
2046	A	TRIANGULAR UNIT	26+43.37	0.79'
2049	A	TRIANGULAR UNIT	27+18.15	0.94'
2051	A	TRIANGULAR UNIT	27+90.10	1.11'
2060	B	CABIAN MAT	30+37.60	2.02'
2064	B	CABIAN MAT	31+18.30	1.58'
2068	B	CABIAN MAT	31+93.55	1.40'
2071	B	CABIAN MAT	32+78.54	1.43'
2075	B	CABIAN MAT	33+31.16	1.42'
2079	B	ARMOR UNIT	33+59.89	1.03'
2081	B	ARMOR UNIT	34+05.10	0.85'
2084	B	ARMOR UNIT	34+68.42	0.86'
2087	B	ARMOR UNIT	35+36.39	0.82'
2091	B	ARMOR UNIT	36+95.36	0.65'
2093	B	TRIANGULAR UNIT	36+96.42	1.20'
2095	B	TRIANGULAR UNIT	37+69.37	1.24'
2098	B	TRIANGULAR UNIT	38+46.17	1.30'
2101	B	TRIANGULAR UNIT	39+21.58	1.33'
2104	B	TRIANGULAR UNIT	39+92.32	1.52'



NOTES:  
 1). HORIZONTAL DATUM FOR THE SURVEY DATA PROVIDED IS NAD 83, (HARN) LOUISIANA STATE PLANE, SOUTH ZONE, IN U.S. SURVEY FEET.  
 2). VERTICAL DATUM FOR THIS SURVEY IS NAVD 88, IN U.S. SURVEY FEET.  
 3). AS-BUILT / TRANSECT SURVEY WAS PERFORMED FROM 2/19/08 TO 2/20/08.

DATE	REVISIONS	DRAWN BY	APPROVED BY



FILE NAME:	071628P1
TBS NO.:	2007.1628
DATE:	4/15/08
PLOT SCALE:	1"=200'
DRAWN BY:	ALH
APPROVED:	BJK
MAP NO.:	

REACH A & B SURVEY LAYOUT  
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 AS-BUILT / TRANSECT SURVEY  
 FOR  
 TERREBONNE BAY SHORELINE  
 DEMONSTRATION PROTECTION PROJECT

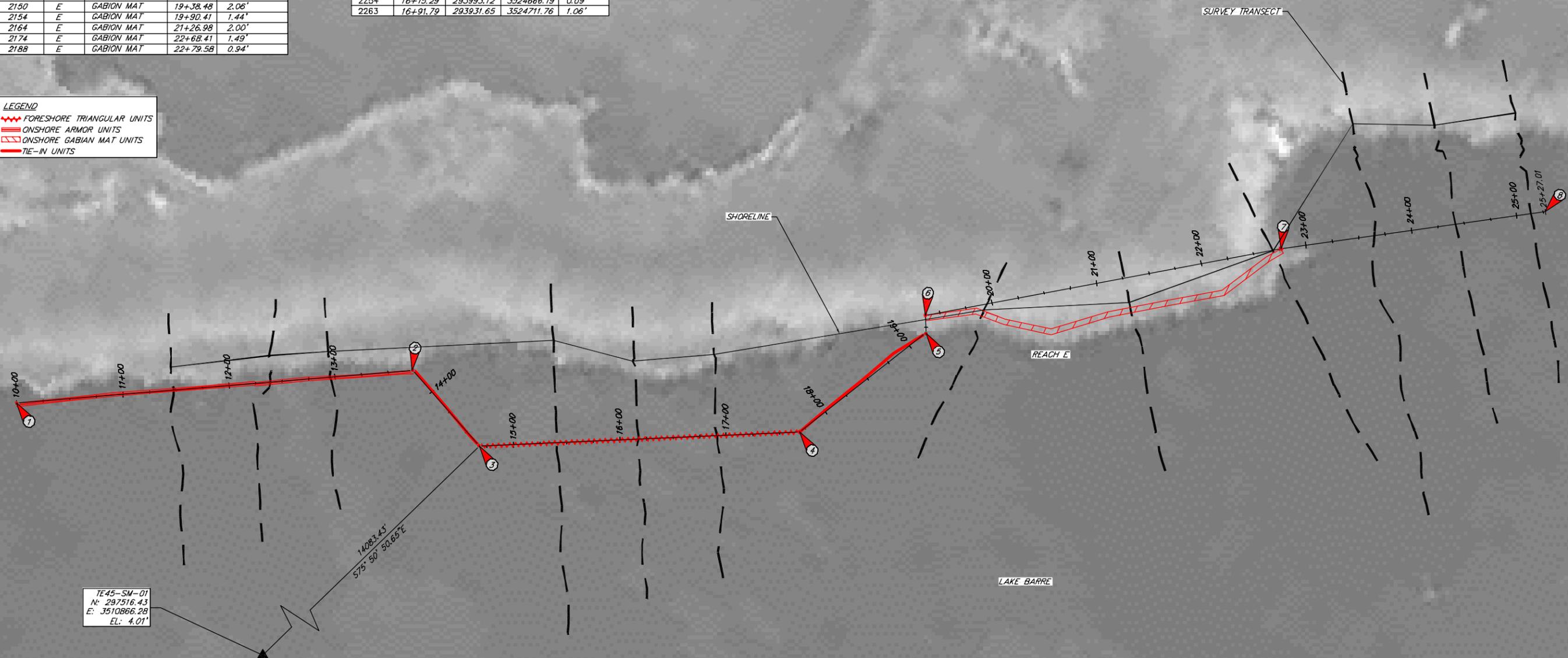
SHEET NO.  
 1  
 OF  
 14

FEATURE ELEVATIONS				
POINT #	REACH	STRUCTURE	STATION	TOP ELEVATION
2110	E	ARMOR UNIT	10+00.00	0.85'
2115	E	ARMOR UNIT	11+47.89	0.74'
2119	E	ARMOR UNIT	12+39.11	0.64'
2122	E	ARMOR UNIT	12+95.22	0.70'
2125	E	ARMOR UNIT	13+73.47	0.73'
2131	E	TRIANGULAR UNIT	14+67.27	0.64'
2133	E	TRIANGULAR UNIT	15+40.84	0.68'
2136	E	TRIANGULAR UNIT	16+17.76	0.72'
2139	E	TRIANGULAR UNIT	16+91.48	0.74'
2142	E	TRIANGULAR UNIT	17+68.68	0.84'
2150	E	GABION MAT	19+38.48	2.06'
2154	E	GABION MAT	19+90.41	1.44'
2164	E	GABION MAT	21+26.98	2.00'
2174	E	GABION MAT	22+68.41	1.49'
2188	E	GABION MAT	22+79.58	0.94'

SHORELINE ELEVATIONS				
POINT #	STATION	NORTHING	EASTING	ELEVATION
2155	19+91.12	293738.71	3524881.25	1.11'
2165	21+26.76	293626.62	3524959.72	1.16'
2175	22+68.54	293537.57	3525072.58	0.74'
2192	23+59.13	293536.95	3525212.94	0.93'
2201	24+34.89	293471.16	3525252.55	1.04'
2213	25+11.84	293412.69	3525302.37	1.17'
2221	11+46.91	294358.15	3524431.81	0.72'
2230	12+40.05	294285.31	3524489.73	0.80'
2239	12+95.97	294240.34	3524522.29	0.73'
2247	15+41.96	294066.31	3524643.21	0.49'
2254	16+15.29	293993.12	3524666.19	0.09'
2263	16+91.79	293931.65	3524711.76	1.06'

P.I. COORDINATES				
P.I. NO.	STATION	NORTHING	EASTING	
1	10+00.00	294462.90	3524326.32	
2	13+73.03	294163.94	3524549.43	
3	14+67.99	294072.96	3524522.25	
4	17+69.31	293824.66	3524692.96	
5	19+20.11	293773.30	3524834.75	
6	19+36.51	293782.57	3524848.28	
7	22+76.08	293532.44	352077.93	
8	25+27.01	293339.80	3525238.73	

LEGEND	
	FORESHORE TRIANGULAR UNITS
	ONSHORE ARMOR UNITS
	ONSHORE GABION MAT UNITS
	TIE-IN UNITS



NOTES:  
 1). HORIZONTAL DATUM FOR THE SURVEY DATA PROVIDED IS NAD 83, (HARN) LOUISIANA STATE PLANE, SOUTH ZONE, IN U.S. SURVEY FEET.  
 2). VERTICAL DATUM FOR THIS SURVEY IS NAVD 88, IN U.S. SURVEY FEET.  
 3). AS-BUILT / TRANSECT SURVEY WAS PERFORMED FROM 2/14/08 TO 2/20/08.

DATE	REVISIONS	DRAWN BY	APPROVED BY



FILE NAME:	D71628P2
TBS NO.:	2007.1628
DATE:	4/15/08
PLOT SCALE:	1"=50'
DRAWN BY:	ALH
APPROVED:	BJK
MAP NO.	

REACH E SURVEY LAYOUT  
 STA 10+00.00 TO STA 25+27.01  
 AS-BUILT / TRANSECT SURVEY  
 FOR  
 TERREBONNE BAY SHORELINE  
 DEMONSTRATION PROTECTION PROJECT

SHEET NO.  
 2  
 OF  
 14

☐ SURVEY BASELINE

SCALE: HORIZONTAL: 1"=40'  
VERTICAL: 1"=4'

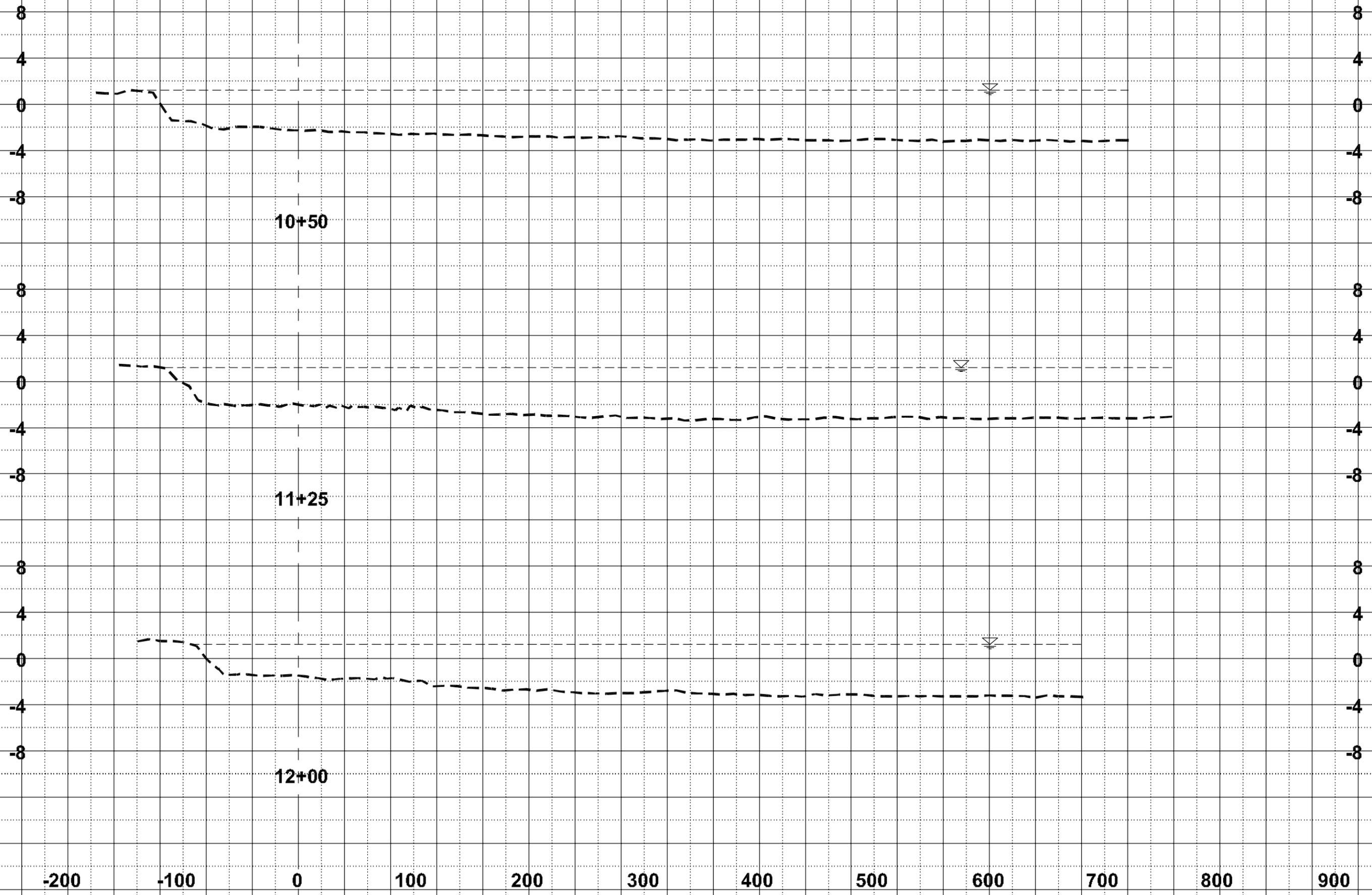
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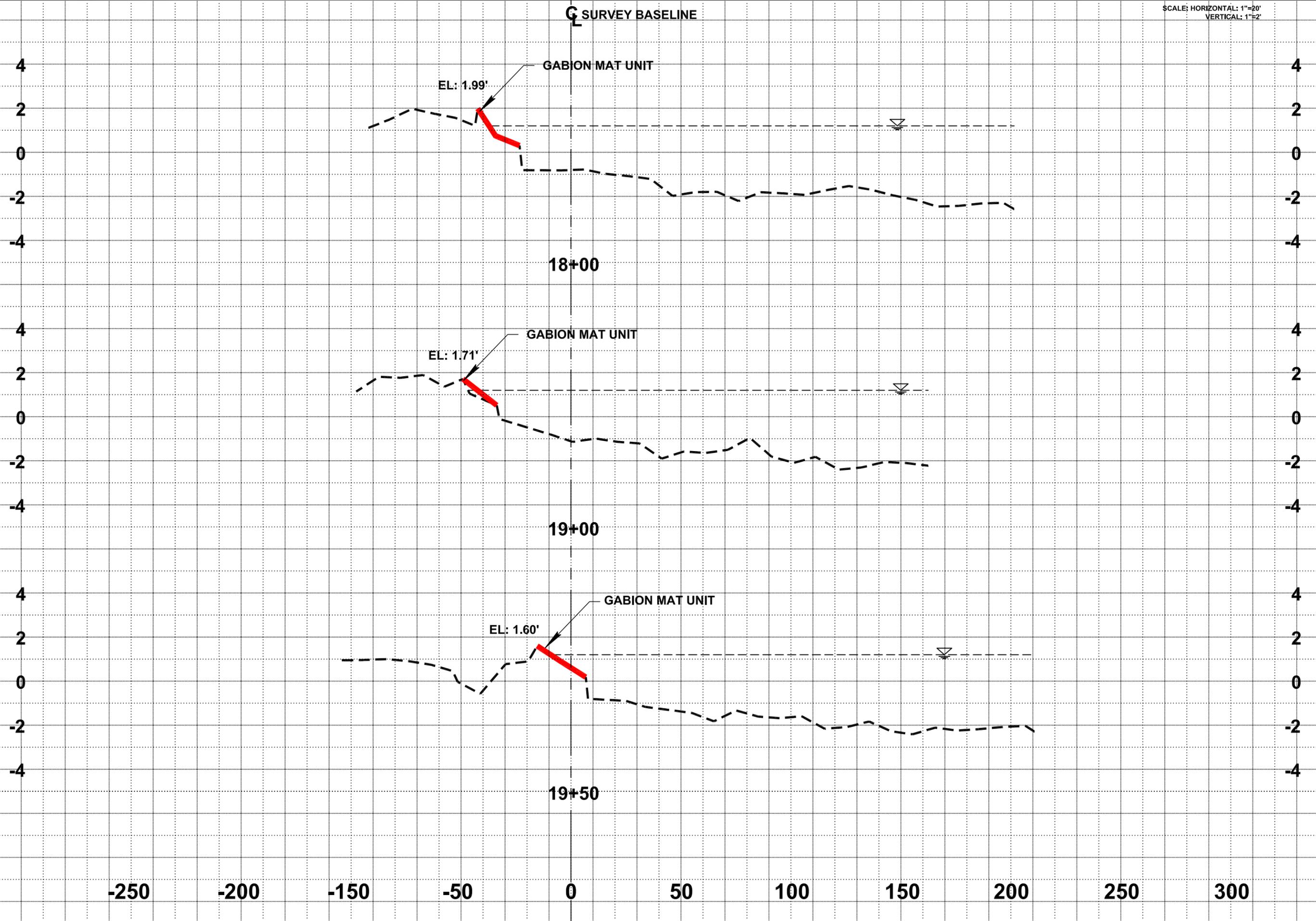
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FOR  
TERREBONNE BAY SHORELINE  
DEMONSTRATION PROTECTION PROJECT

FILE NAME: 071628K3  
TBS NO: 2007.1628  
DATE: 6/2/06  
PLOT SCALE: NOTED  
DRAWN BY: ALH  
APPROVED: BJK  
MAP NO.

NO.	DATE	REVISIONS	DRAWN BY	APPROVED BY

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REACH A PROFILES  
STA 18+00 TO STA 19+50  
AS-BUILT / TRANSECT SURVEY  
FOR  
TERREBONNE BAY SHORELINE  
DEMONSTRATION PROTECTION PROJECT

FILE NAME: 071628X4  
TBS NO.: 2007.1628  
DATE: 6/2/08  
PLOT SCALE: NOTED  
DRAWN BY: ALH  
APPROVED: BJK  
MAP NO.

DATE	REVISIONS	APPROVED BY

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SURVEY BASELINE

SCALE: HORIZONTAL: 1"=20'  
VERTICAL: 1"=2'

Sheet  
5 OF 14

REACH A PROFILES  
STA 21+00 TO STA 22+25  
AS-BUILT / TRANSECT SURVEY  
FOR  
TERREBONNE BAY SHORELINE  
DEMONSTRATION PROTECTION PROJECT

FILE NAME: 071628X3  
TBS NO: 2007.1628  
DATE: 6/2/08  
PLOT SCALE: NOTED  
DRAWN BY: ALH  
APPROVED: BJL  
MAP NO.

NO.	DATE	REVISIONS	DRAWN BY	APPROVED BY

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-2  
-4

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-2  
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21+00

21+50

22+25

ARMOR UNIT

ARMOR UNIT

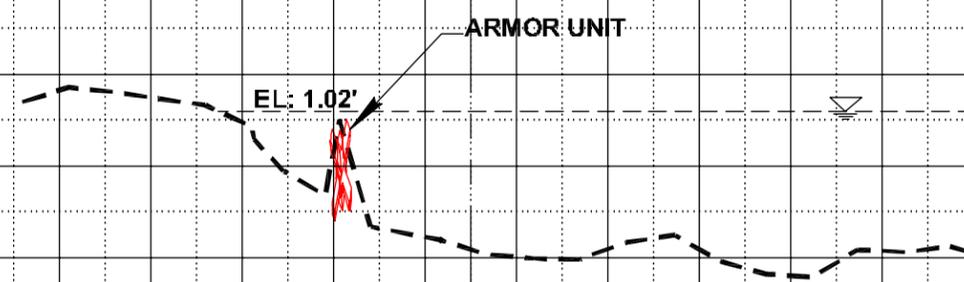
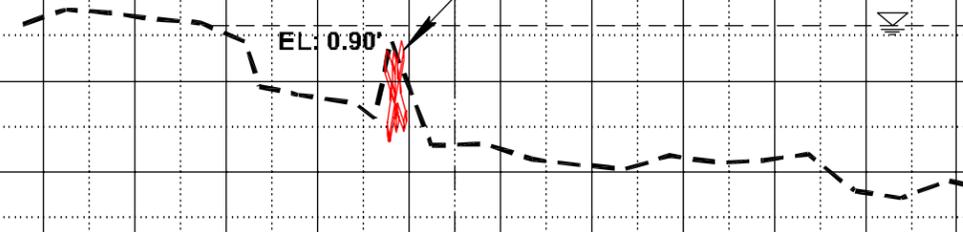
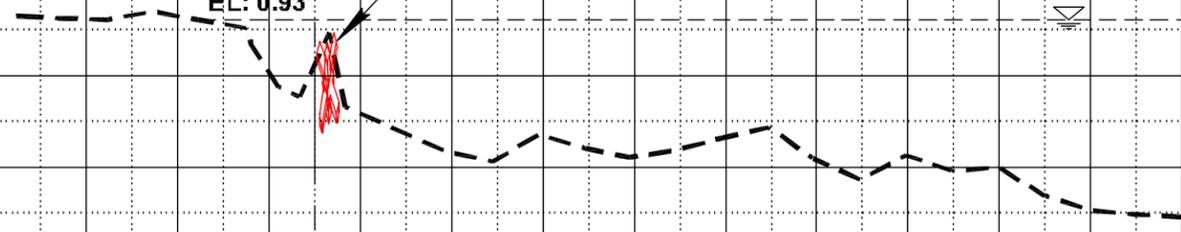
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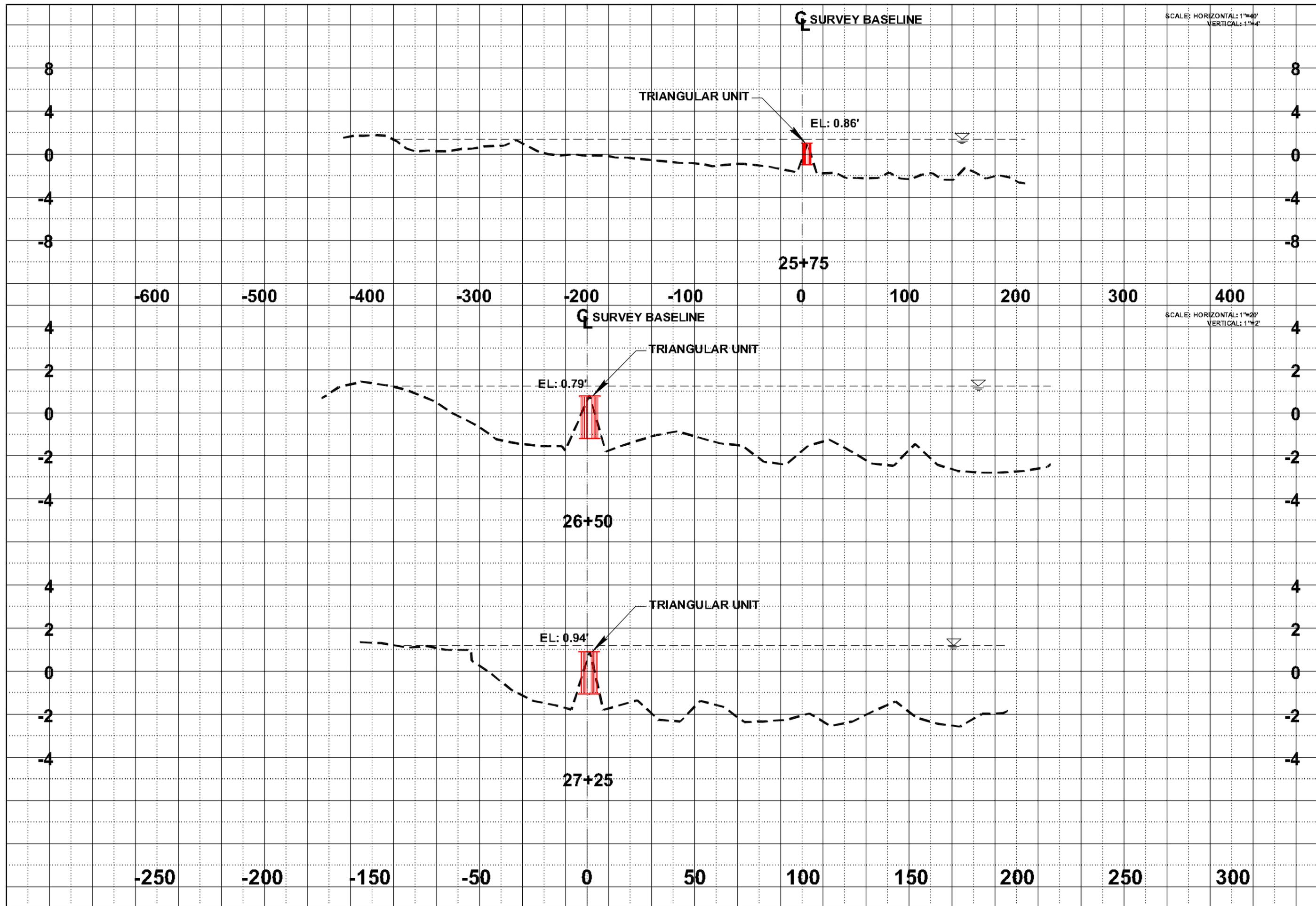
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EL: 1.02'

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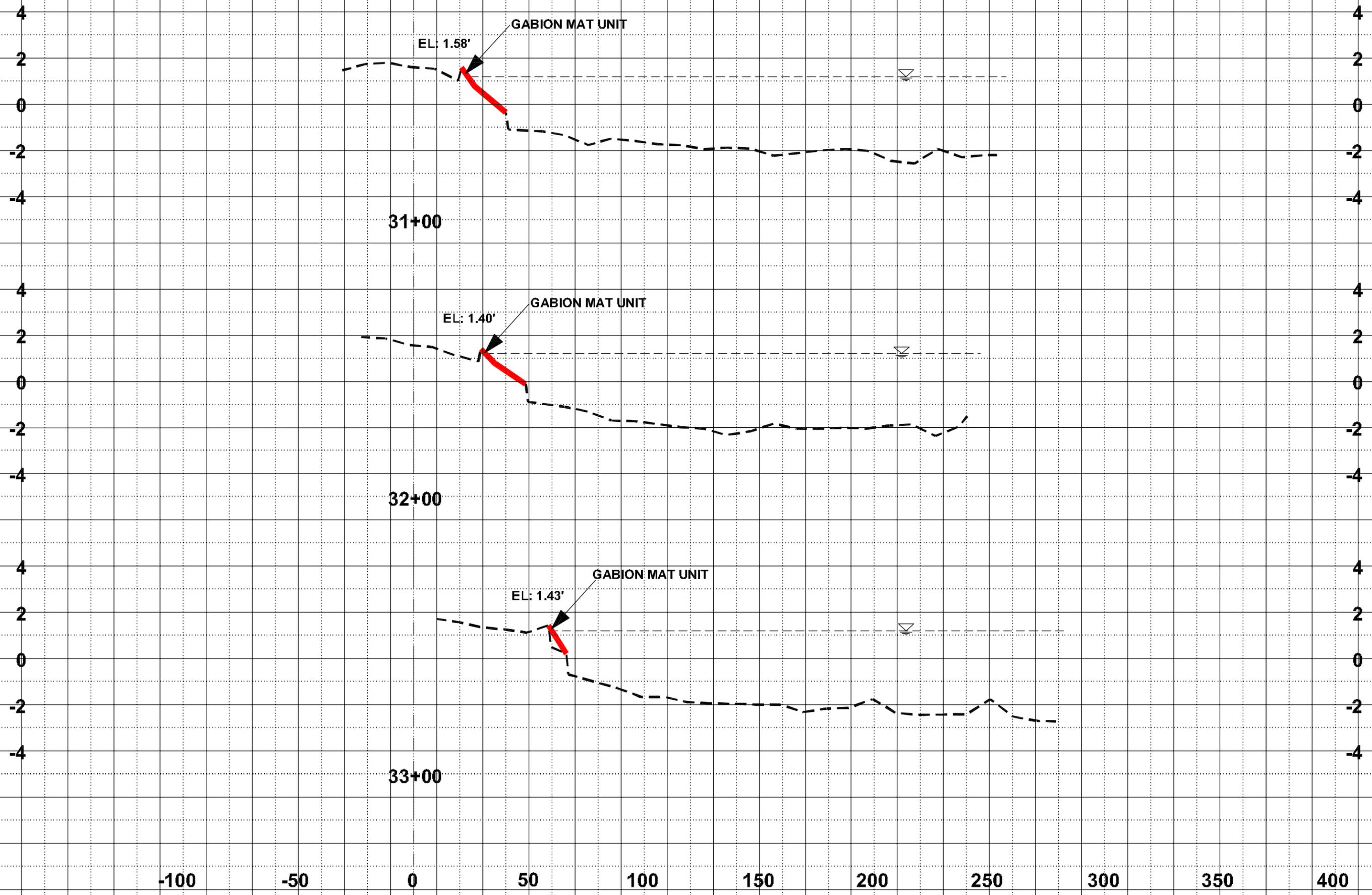
NO.	DATE	REVISIONS	DRAWN BY	APPROVED BY



Q SURVEY BASELINE

SCALE: HORIZONTAL: 1"=20'  
VERTICAL: 1"=2'

Sht:  
7 OF 14



REACH B PROFILES  
 STA 31+00 TO STA 33+00  
 AS-BUILT / TRANSECT SURVEY  
 FOR  
 TERREBONNE BAY SHORELINE  
 DEMONSTRATION PROTECTION PROJECT

FILE NAME:	071628X7
TBS NO.:	2007.1628
DATE:	6/2/08
PLOT SCALE:	NOTED
DRAWN BY:	ALH
APPROVED:	BJK
MAP NO.:	
DRAWN BY	APPROVED BY
REVISIONS	REVISIONS
DATE	

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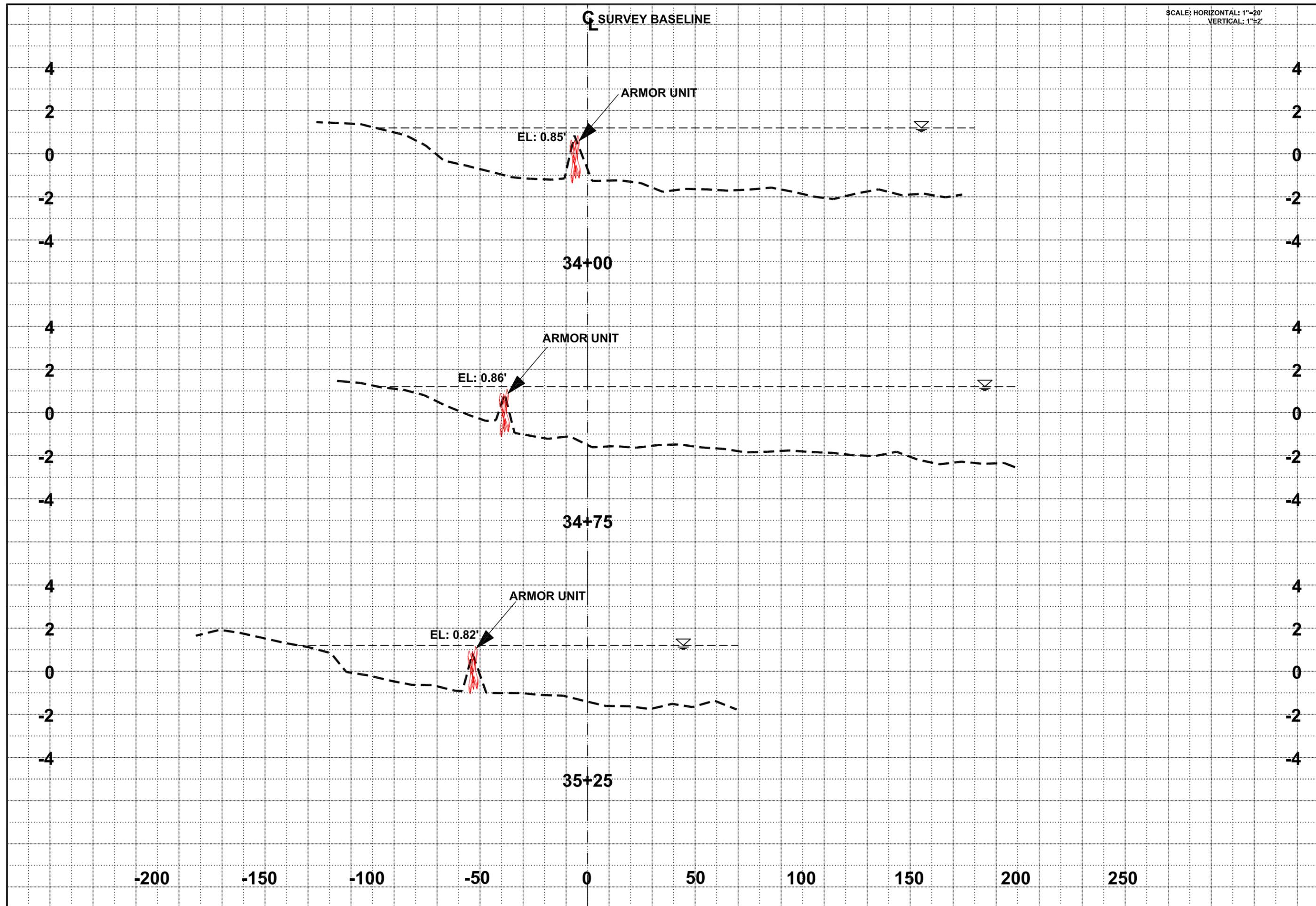


REACH B PROFILES  
STA 34+00 TO STA 35+25  
AS-BUILT / TRANSECT SURVEY  
FOR  
TERREBONNE BAY SHORELINE  
DEMONSTRATION PROTECTION PROJECT

FILE NAME: 071628X8  
TBS NO.: 2007.1628  
DATE: 6/2/08  
PLOT SCALE: NOTED  
DRAWN BY: ALH  
APPROVED: BJK  
MAP NO.

NO.	DATE	REVISIONS	APPROVED BY

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Q SURVEY BASELINE

SCALE: HORIZONTAL: 1"=40'  
VERTICAL: 1"=4'

Sht:  
10 OF 14

REACH B PROFILES  
STA 43+75 TO STA 45+25  
AS-BUILT / TRANSECT SURVEY  
FOR  
TERREBONNE BAY SHORELINE  
DEMONSTRATION PROTECTION PROJECT

FILE NAME: 071620X10  
TBS NO: 2007.1620  
DATE: 6/2/08  
PLOT SCALE: NOTED  
DRAWN BY: ALH  
APPROVED: BJK  
MAP NO.

DATE	REVISIONS	DRAWN BY	APPROVED BY

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8  
4  
0  
-4  
-8

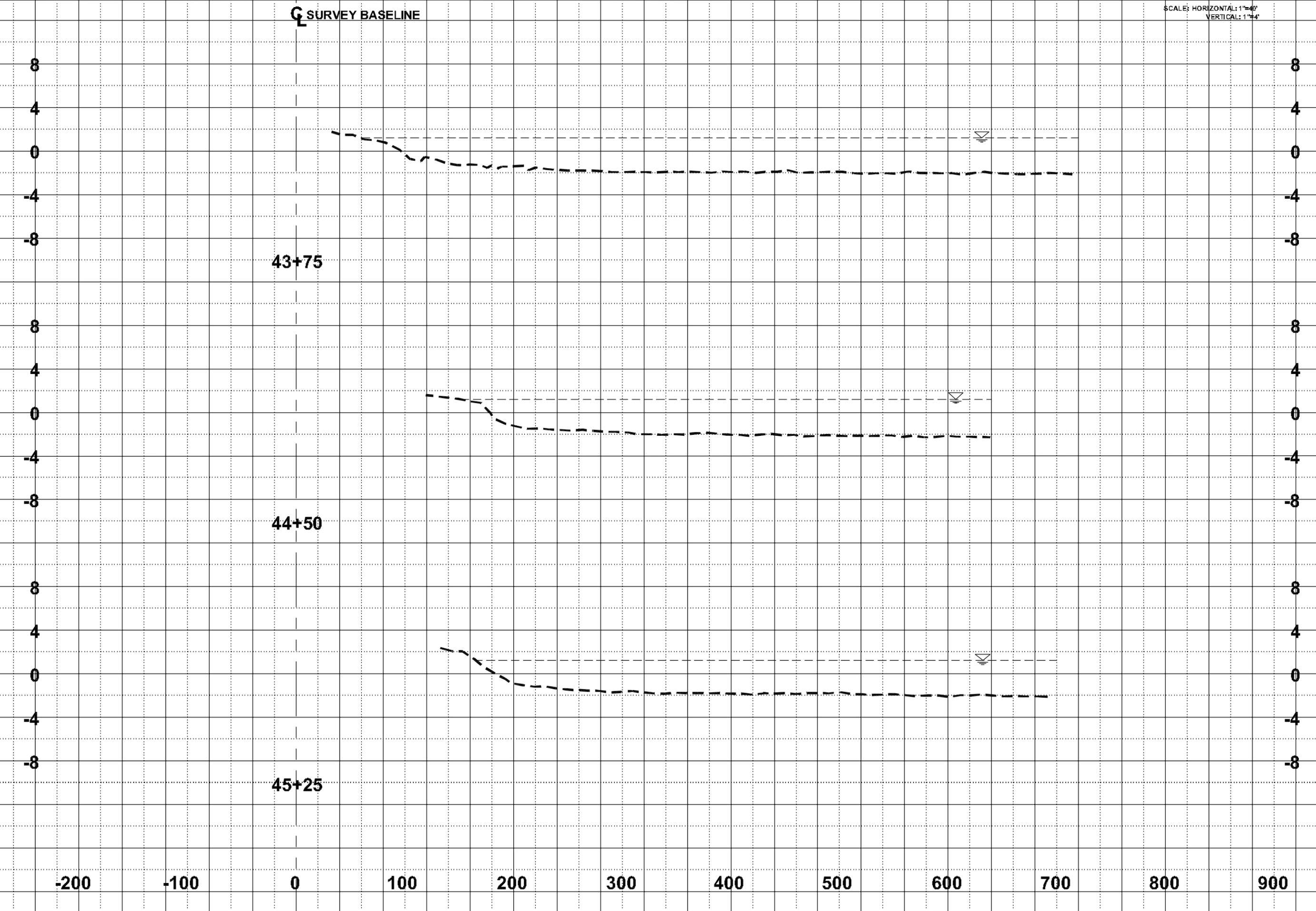
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43+75

44+50

45+25

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SCALE: HORIZONTAL: 1"=20'  
VERTICAL: 1"=2'

Sht:  
11 OF 14

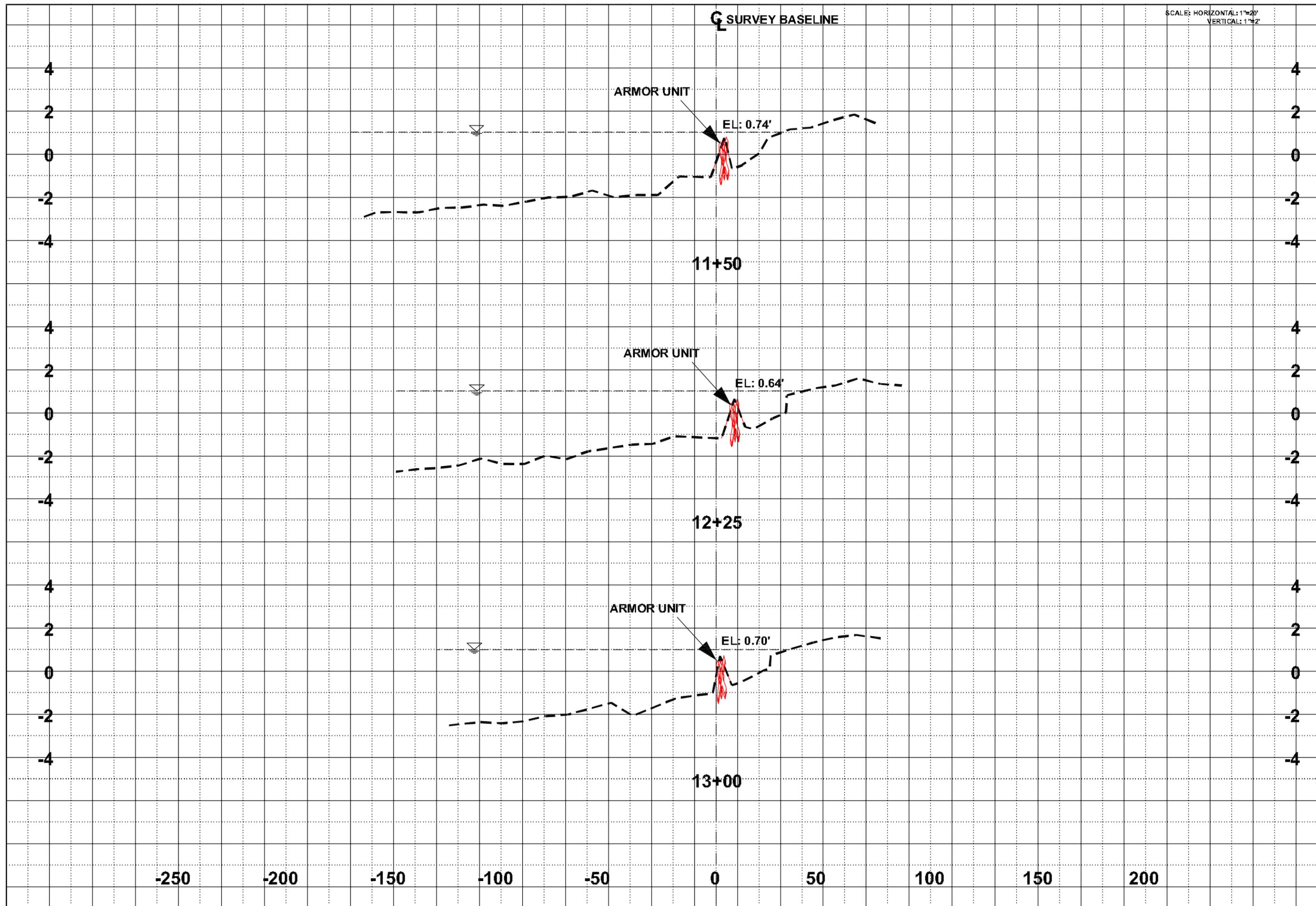
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STA 11+50 TO STA 13+00  
AS-BUILT / TRANSECT SURVEY  
FOR  
TERREBONNE BAY SHORELINE  
DEMONSTRATION PROTECTION PROJECT

FILE NAME: 071620X11  
TBS NO: 2007.0628  
DATE: 6/2/08  
PLOT SCALE: NOTED  
DRAWN BY: ALH  
APPROVED: BJK  
MAP NO.

DATE	REVISIONS	APPROVED BY	MAP NO.



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SCALE: HORIZONTAL: 1"=20'  
VERTICAL: 1"=2'

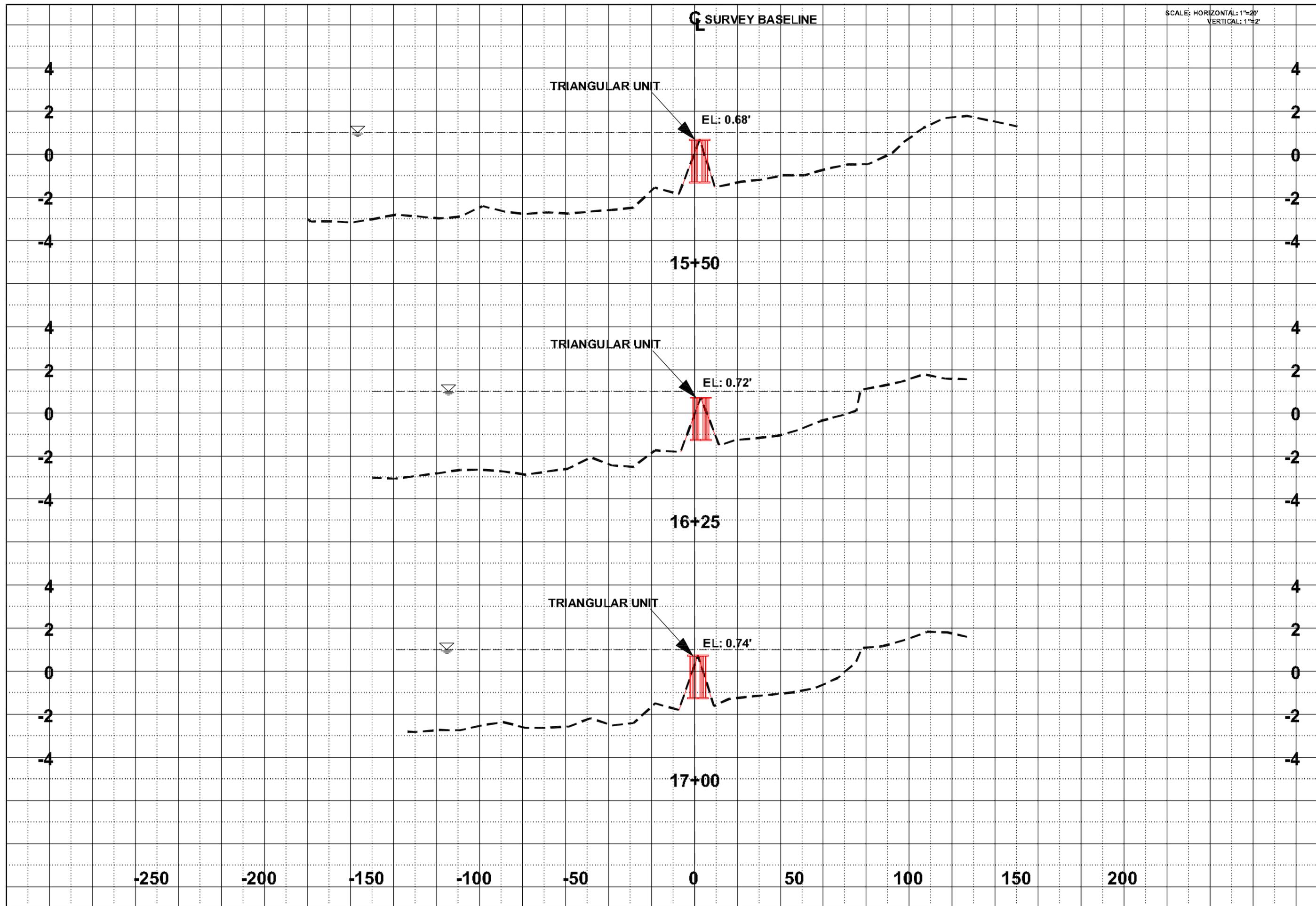
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12 OF 14

REACH E PROFILES  
STA 15+50 TO STA 17+00  
AS-BUILT / TRANSECT SURVEY  
FOR  
TERREBONNE BAY SHORELINE  
DEMONSTRATION PROTECTION PROJECT

FILE NAME: 071628X12  
TBS NO: 2007.1628  
DATE: 6/2/08  
PLOT SCALE: NOTED  
DRAWN BY: ALH  
APPROVED: BJK  
MAP NO.

NO.	DATE	REVISIONS	DRAWN BY	APPROVED BY

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Q SURVEY BASELINE

SCALE: HORIZONTAL: 1"=20'  
VERTICAL: 1"=2'

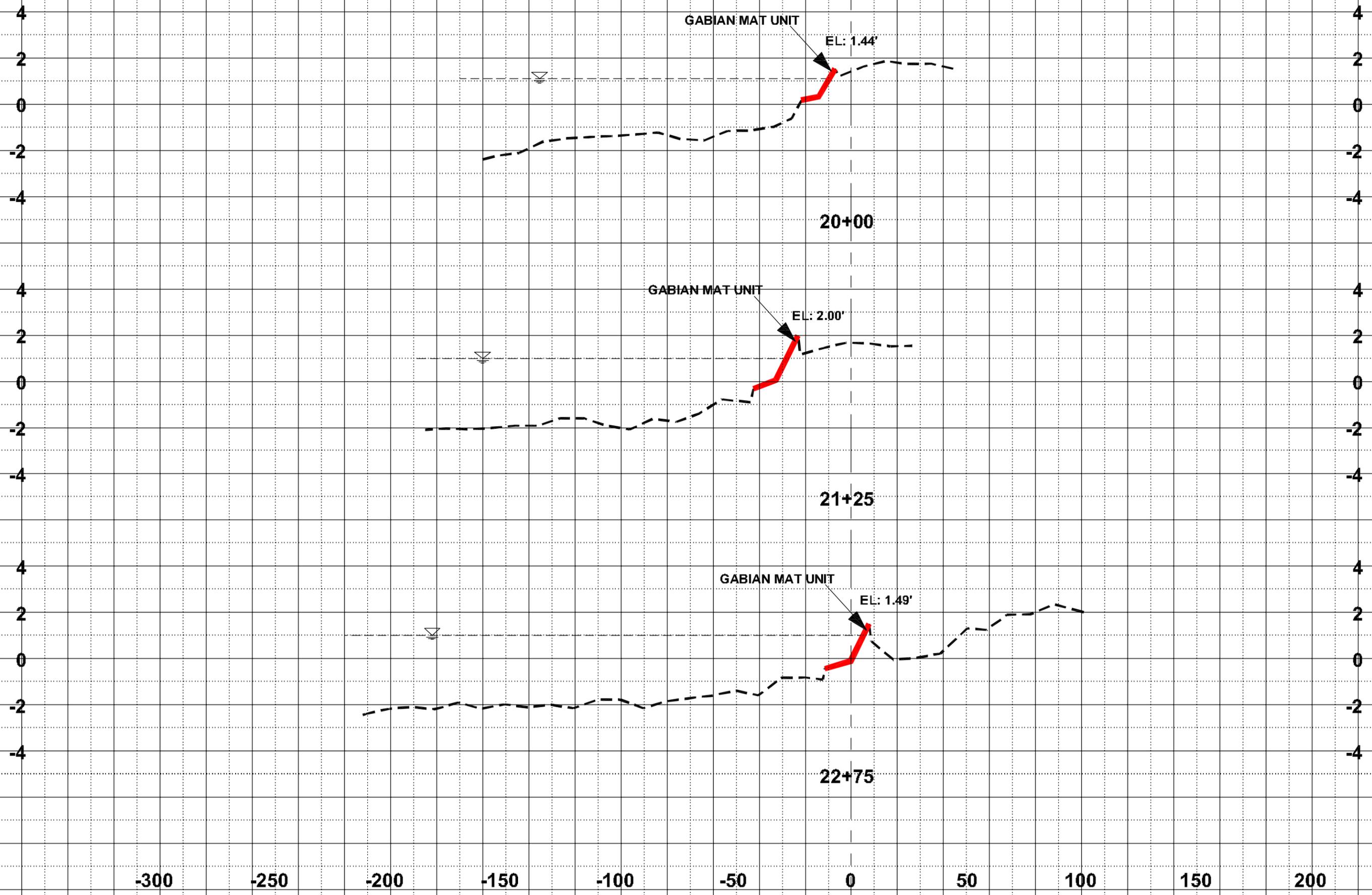
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13 OF 14

REACH E PROFILES  
STA 20+00 TO STA 23+00  
AS-BUILT / TRANSECT SURVEY  
FOR  
TERREBONNE BAY SHORELINE  
DEMONSTRATION PROTECTION PROJECT

FILE NAME: 071628X13  
TBS NO: 2007.1628  
DATE: 6/2/08  
PLOT SCALE: NOTED  
DRAWN BY: ALH  
APPROVED: BJK  
MAP NO.

DATE	REVISIONS	APPROVED BY	DRAWN BY

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**SURVEY BASELINE**

SCALE: HORIZONTAL: 1"=20'  
VERTICAL: 1"=2'

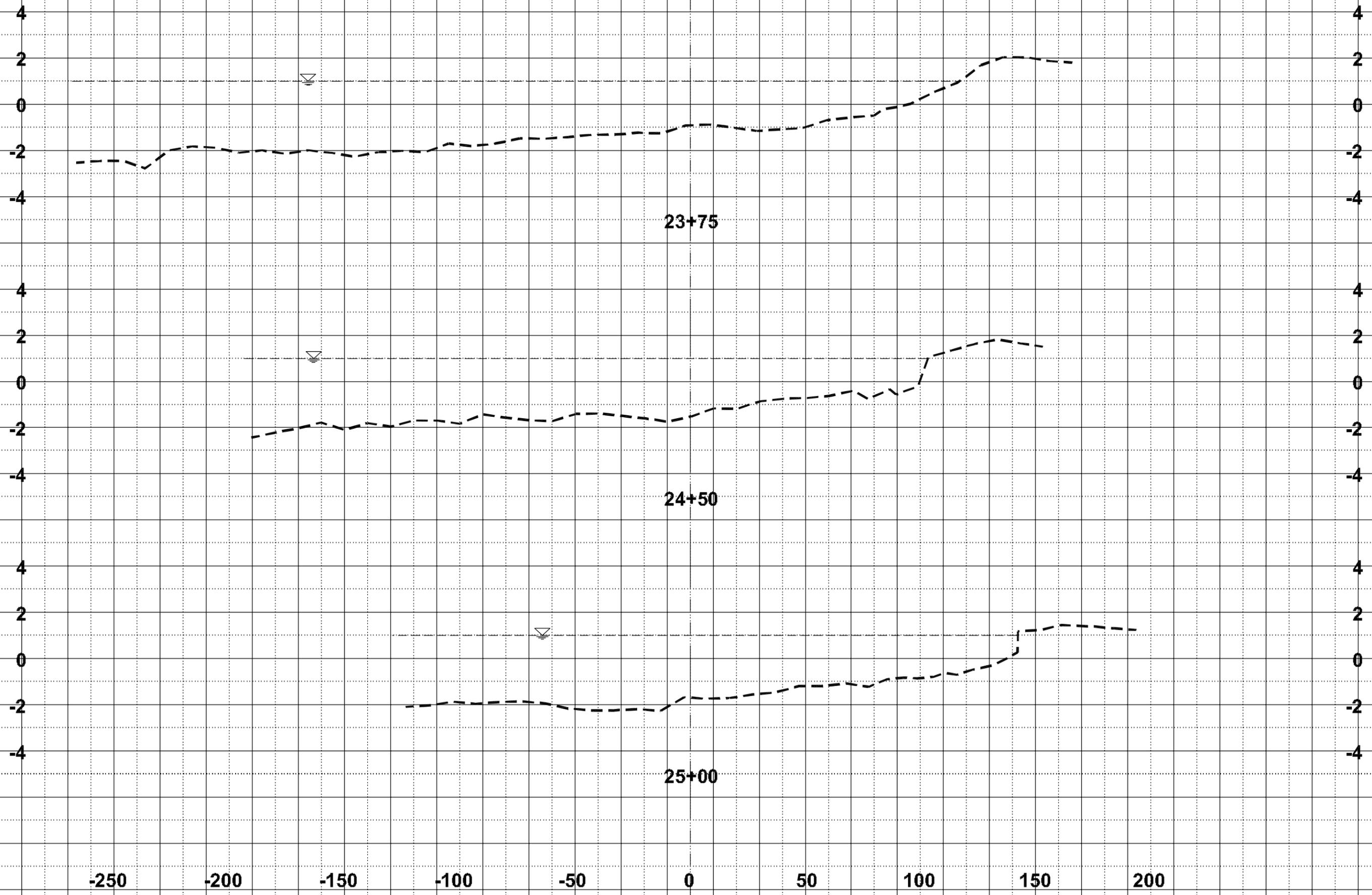
Sht:  
14 OF 14

REACH E PROFILES  
STA 23+75 TO STA 25+00  
AS-BUILT / TRANSECT SURVEY  
FOR  
TERREBONNE BAY SHORELINE  
DEMONSTRATION PROTECTION PROJECT

FILE NAME: 071628X14  
TBS NO: 2007.1628  
DATE: 6/2/08  
PLOT SCALE: NOTED  
DRAWN BY: ALH  
APPROVED: BJK  
MAP NO.

NO.	DATE	REVISIONS	DRAWN BY	APPROVED BY	MAP NO.

**T. BAKER SMITH**  
PROFESSIONAL ENGINEERS & SURVEYORS  
(800) 888-1665 www.tbasmith.com



**CONTINUOUS RECORDER**

**AND**

**STAFF GAUGE SURVEY**

**Continuous Recorder and Staff Gauge Survey Data Sheet**

Station		Date		<b>Continuous Recorder Gauge</b>		
				Top of Recorder Support Pole (4x4 Post, Cap of Pipe, etc.) (NAVD 88, Ft.)	Top of Support Pole to Nail or Top of 1/4" Hole (Ft.)	Nail or Hole Elevation (NAVD 88, Ft.)
<b>TE45-CR-H01</b>	<b>11/20/07</b>	<b>6.69</b>	<b>3.88</b>	<b>2.81</b>	<b>5.49</b>	<b>1.20</b>

**How to Obtain Readings for Each Continuous Recorder Gauge Column**

- Top of Recorder Support Pole:** Obtained by using department approved surveying methods.
- Top of Support Pole to Nail or 1/4" Hole:** Obtained by physically measuring the distance between the two points.
- Nail or Hole Elevation:** Obtained by using the formula subtracting the two previous columns.
- Top of Recorder Support Pole to Top of Water Distance:** Obtained by measuring the distance between the two points.
- Water Elevation:** Obtained by using the formula: Top of Recorder Support Pole – Top of Recorder Support Pole to Top of Water Distance.

Station		Date		<b>Staff Gauge</b>				Correction Factor
				Existing Staff Gauge Reading (Upon Arrival) (NAVD 88, Ft.)	Top of Staff Gauge Support Pole (Ft.)	Top of Staff Gauge Support Pole to Top of Water Distance (NAVD 88, Ft.)	Water Elevation (NAVD 88, Ft.)	
<b>TE45-SG-H01</b>	<b>11/20/07</b>	<b>6.75</b>	<b>5.55</b>	<b>1.20</b>	<b>1.20</b>	<b>0.00</b>		

**How to Obtain Readings for Each Staff Gauge Column**

- Existing Staff Gauge Reading:** If a staff gauge is present at this location, obtain a reading before any adjustments are made.
- Top of Staff Gauge Support Pole:** Obtained by using department approved surveying methods.
- Water Elevation:** Obtained by subtracting the two previous readings (Top of Staff Gauge )Support Pole and Top of Staff Gauge Support Pole to Top of Water Distance.
- Staff Gauge Reading:** Obtained by reading the staff gauge after it has been sent to the datum.
- Computed Difference:** Obtained by subtracting the two previous readings (after elevation and Staff Gage Reading)
- Correction Factor:** Obtained by subtracting the Existing Staff Gauge Reading and the Staff Gauge Reading. The correction factor is used to correct all previously data collected.

**Continuous Recorder and Staff Gauge Survey Data Sheet**

Station		Continuous Recorder Gauge				
		Top of Recorder Support Pole (4x4 Post, Cap of Pipe, etc.) (NAVD 88, Ft.)	Top of Support Pole to Nail or Top of 1/4" Hole (Ft.)	Nail or Hole Elevation (NAVD 88, Ft.)	Top of Recorder Support Pole to Top of Water Distance (Ft.)	Water Elevation (NAVD 88, Ft.)
	Date					
<b>TE45-CR-H02</b>	<b>11/20/07</b>	<b>6.50</b>	<b>3.65</b>	<b>2.85</b>	<b>5.32</b>	<b>1.18</b>

**How to Obtain Readings for Each Continuous Recorder Gauge Column**

- Top of Recorder Support Pole:** Obtained by using department approved surveying methods.
- Top of Support Pole to Nail or 1/4" Hole:** Obtained by physically measuring the distance between the two points.
- Nail or Hole Elevation:** Obtained by using the formula subtracting the two previous columns.
- Top of Recorder Support Pole to Top of Water Distance:** Obtained by measuring the distance between the two points.
- Water Elevation:** Obtained by using the formula: Top of Recorder Support Pole – Top of Recorder Support Pole to Top of Water Distance.

Station		Staff Gauge						
		Existing Staff Gauge Reading (Upon Arrival) (NAVD 88, Ft.)	Top of Staff Gauge Support Pole (Ft.)	Top of Staff Gauge Support Pole to Top of Water Distance (NAVD 88, Ft.)	Water Elevation (NAVD 88, Ft.)	Staff Gauge Reading (After Establishment or Adjustment) (NAVD 88, Ft.)	Computed Difference (Water Elevation vs. Staff Gauge)	Correction Factor
	Date							
<b>TE45-SG-H02</b>	<b>11/20/07</b>	<b>6.17</b>	<b>4.99</b>	<b>1.18</b>	<b>1.18</b>	<b>0.00</b>		

**How to Obtain Readings for Each Staff Gauge Column**

- Existing Staff Gauge Reading:** If a staff gauge is present at this location, obtain a reading before any adjustments are made.
- Top of Staff Gauge Support Pole:** Obtained by using department approved surveying methods.
- Water Elevation:** Obtained by subtracting the two previous readings (Top of Staff Gauge )Support Pole and Top of Staff Gauge Support Pole to Top of Water Distance.
- Staff Gauge Reading:** Obtained by reading the staff gauge after it has been sent to the datum.
- Computed Difference:** Obtained by subtracting the two previous readings (after elevation and Staff Gauge Reading)
- Correction Factor:** Obtained by subtracting the Existing Staff Gauge Reading and the Staff Gauge Reading. The correction factor is used to correct all previously data collected.



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

REPRODUCED FROM 2005 LAKE TAMBOUR SW DOQQ

## Station Name: TE45-CR-H01

**Location:** Approximately 2.39 miles southeast of the intersection of LA HWY 57 and LA HWY 56 on the west bank of Bay La Fleur in Terrebonne Parish, LA.

**Gauge Description:** The gauge is a continuous recorder gauge attached to a 4" x 4" treated wood post with reference nail driven horizontally into the wood post.

**Date Of Survey:** 11-20-07

## Continuous Recorder Gauge

### NAD 83 Geodetic Position:

Lat. 29°17'08.54"N  
Long. 90°37'03.28"W

### UTM, NAD 83, Meters (Zone 15) Coordinates

N= 3,241,994.610  
E= 731,441.805

### NAD 83 Datum LSZ (1702) Feet

N= 286,450.933  
E= 3,509,013.808

### Elevation at Top of 4" x 4" Post (NAVD 88)

6.69 feet

### Elevation at Top Shank of Nail (NAVD 88)

2.81 feet



*Position Determined by using Real-Time Kinematic (RTK) survey from Secondary GPS Monument "TE45-SM-01"  
Position established by T. Baker Smith, Inc. for the Louisiana Department of Natural Resources Coastal Restoration Division.*



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

REPRODUCED FROM 2005 LAKE TAMBOUR SW DOQQ

## Station Name: TE45-SG-H01

**Location:** Approximately 2.39 miles southeast of the intersection of LA HWY 57 and LA HWY 56 on the west bank of Bay La Fleur in Terrebonne Parish, LA.

**Gauge Description:** The gauge is a continuous recorder gauge attached to a 4" x 4" Treated Post.

**Date Of Survey:** 11-20-07

## Staff Gauge

### NAD 83 Geodetic Position:

Lat. 29°17'08.58"N

Long. 90°37'03.25"W

### UTM, NAD 83, Meters (Zone 15) Coordinates

N= 3,241,995.919

E= 731,422.495

### NAD 83 Datum LSZ (1702) Feet

N= 286,455.193

E= 3,509,016.133

### Elevation at Top of 4" x 4" Post (NAVD 88)

6.75 feet



*Position Determined by using Real-Time Kinematic (RTK) survey from Secondary GPS Monument "TE45-SM-01"  
Position established by T. Baker Smith, Inc. for the Louisiana Department of Natural Resources Coastal Restoration Division.*



TE45-CR-H02

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

REPRODUCED FROM 2005 LAKE TANBOUR SW DOQQ

## Station Name: TE45-CR-H02

**Location:** Approximately 4.74 miles east of the intersection of LA HWY 56 and LA HWY 57 and 0.7 miles south, southeast of the southern mouth of Bayou De Mangue in Terrebonne Parish, LA.

**Gauge Description:** The gauge is a continuous recorder gauge attached to a 4" x 4" treated wood post with reference nail driven horizontally into the wood post.

**Date Of Survey:** 11-20-07

## Continuous Recorder Gauge

### NAD 83 Geodetic Position:

Lat. 29°18'21.84"N  
Long. 90°34'10.07"W

### UTM, NAD 83, Meters (Zone 15) Coordinates

N= 3,244,347.728  
E= 736,070.513

### NAD 83 Datum LSZ (1702) Feet

N= 293,954.111  
E= 3,524,303.028

### Elevation at Top of 4" x 4" Post (NAVD 88)

6.50 feet

### Elevation at Top Shank of Nail (NAVD 88)

2.85 feet



*Position Determined by using Real-Time Kinematic (RTK) survey from Secondary GPS Monument "TE45-SM-01"  
Position established by T.Baker Smith, Inc. for the Louisiana Department of Natural Resources Coastal Restoration Division.*



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

REPRODUCED FROM 2005 LAKE TANBOUR SW DOQQ

## Station Name: TE45-SG-H02

**Location:** Approximately 4.74 miles east of the intersection of LA HWY 56 and LA HWY 57 and 0.7 miles south, southeast of the southern mouth of Bayou De Mangue in Terrebonne Parish, LA.

**Gauge Description:** The gauge is a continuous recorder gauge attached to a 4" x 4" Treated Post.

**Date Of Survey:** 11-20-07

### Staff Gauge

**NAD 83 Geodetic Position:**

Lat. 29°18'21.79"N  
Long. 90°34'10.02"W

**UTM, NAD 83, Meters (Zone 15) Coordinates**

N= 3,244,346.492  
E= 736,071.721

**NAD 83 Datum LSZ (1702) Feet**

N= 293,949.999  
E= 3,524,306.93

**Elevation at Top of 4" x 4" Post (NAVD 88)**

6.17 feet



*Position Determined by using Real-Time Kinematic (RTK) survey from Secondary GPS Monument "TE45-SM-01"  
Position established by T. Baker Smith, Inc. for the Louisiana Department of Natural Resources Coastal Restoration Division.*

## **FIELD NOTES**

LD NR

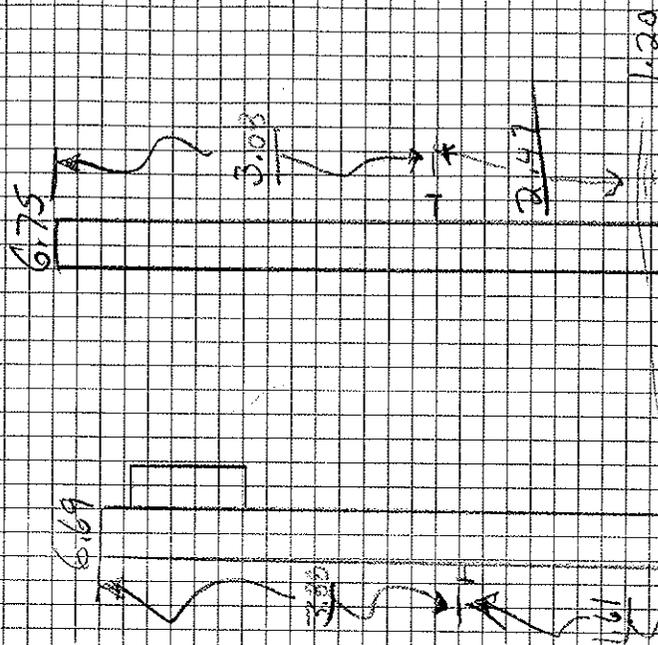
Terrebonne Bay Shoreline Protection Proj.  
Site 1 By Reach A + B

PT	N	E	Elev
10 (check)	297499.896	3510853.358	2.54
100 (Tide G)	286455.193	3509016.133	6.75
101 (Tide G)	286455.178	3509016.134	6.78
102 (Sound)	286450.933	3509013.808	6.69
103 (Sound)	286450.876	3509013.827	6.72

40

11-20-27

B.C.H.  
S.L. 6.1.20  
Shoreline



3572

LDNR

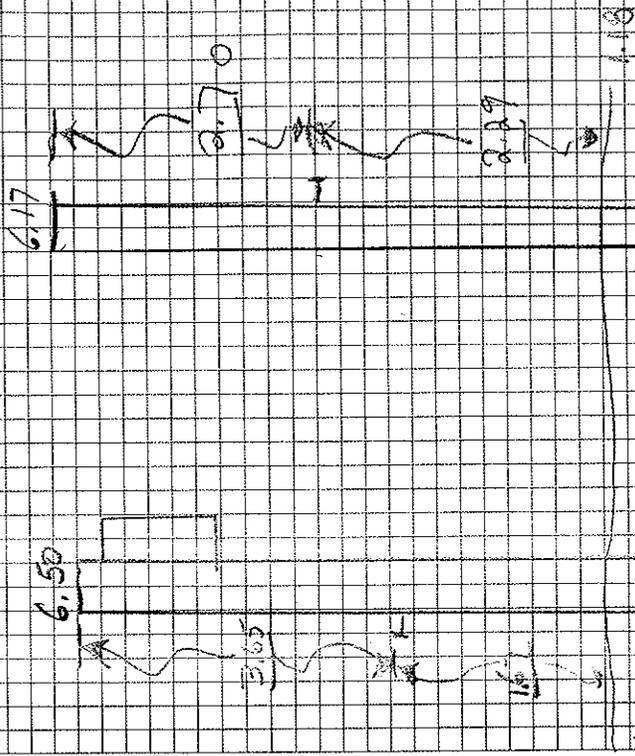
Terrabone Bay Shoreline Protection Project  
Site 2 By Reach E

PT	N	E	Elev
104 (Tide G)	293949.999	3524306.93	6.171
105 (Tide G)	293950.010	3524306.93	6.195
106 (Sonde)	293954.111	3524303.028	6.504
107 (Sonde)	293954.102	3524303.027	6.498
111 (stick)	297500.084	3570853.529	2.601

H

11-20-07

Little  
Lake  
Shore



11-0572

Terrebonne Bay

LDNR

PT	N	E	DESC / ELEV
Set	321306.383	3507818.104	NAY CHIK/3281

New/Check 321306.36 3507818.08

Tide Check Tide Value = 0.95

Recorded 0.94 OK

~~New/Check Set~~

Set

Base dead

New Check 321307.96 3507819.69

Void

32

2-14-08

B.L.Hk  
1-10-07

~~3226~~  
~~3227~~

3226  
2131  
195

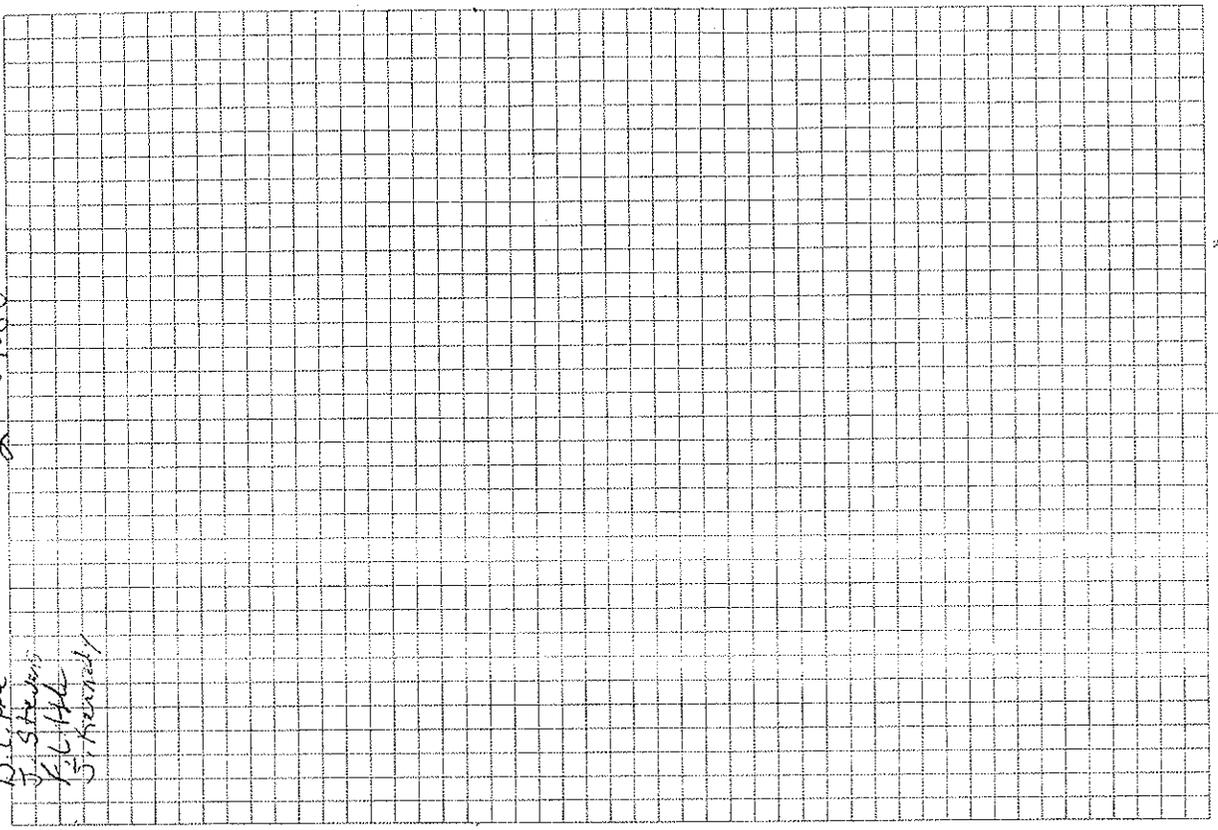
10-5417

Terrebonne Bay GNR  
LINE LOG 2/19/08

TIME	LINE	NOTES
15:47	25	MISSING START ON PAPER
15:51	26	
15:56	27	
16:02	28	
16:06	29	
16:10	30	
16:17	31	VOID
16:22	31A	PAPER CHART STOPPED DURING LINE
16:27	32	
16:31	33	
16:38	34	
16:43	35	
16:48	36	
16:52	36A	

B. L. He  
J. Steiner  
K. L. He  
S. Kennedy

2 - 14-08



CDNR

Terre Bonne Bay

PT	N	E	Elev	Desc
③	297485.624	3510822.020	2.676	Set NC
Nov 3	297485.65	3510821.98		NC

Tide Check Tide Value = .37  
 Tide Recorded = .35 OK

④ 297494.77 3510836.62 3.2  
 Nov 2 297494.77 3510836.62

Tide Check Tide Value = 1.08  
 Tide Recorded = 1.10

2-15-08

BLH  
065  
121

2.65  
 - 2.28  
 ---  
 .37

3.2  
 - 2.12  
 ---  
 1.08

Terrebonne Bay LDNR  
LINE LOG 2-15-08

B. Little  
D. Stephens  
H. Little

TIME	LINE	NOTES
11:59	1	
12:37	2	
12:44	3	
12:51	4	FATHOMETER ERRORS DUE TO LOW TIDE
12:55	5	VOID
12:57	5A	POSSIBLE BLANKING DUE TO LOW TIDE
13:03	6	VOID
13:05	6A	POSSIBLE BLANKING DUE TO LOW TIDE
13:09	7	VOID
13:13	7A	POSSIBLE BLANKING DUE TO SHALLOW WATER
13:16	8	POSSIBLE BLANKING DUE TO SHALLOW WATER
13:20	9	POSSIBLE BLANKING DUE TO SHALLOW WATER
13:24	10	
13:28	11	VOID
13:31	11A	
13:34	12	
13:37	13	
13:40	14	
13:43	15	
13:47	16	VOID
13:48	16A	VOID
13:51	16B	

36

B.L.H.  
J. S. Stevens  
Field Note

3417

Terrace base Bay LDR

LINE LOG 2-15-08

TIME	LINE	NOTES
13:55	17	
13:59	18	
14:01	19	
14:05	20	
14:07	21	VOID
14:09	21A	VOID
14:13	21B	
14:19	22	VOID
14:22	22A	VOID
14:26	22B	
14:37	23	VOID
14:40	23A	VOID
14:44	23B	
14:48	24	

Little  
Stations  
File

2-19-08

10

LDNR

Terrebonne Bay Reach C  
Line 28

STA	SND	TIDE	STA	SND
		0.325		
1+20	1.6		0+90	1.3
1+10	1.5		0+80	1.0
1+00	1.3		0+70	0.8

Line 29

STA	SND	TIDE	STA	SND
		0.325		
1+10	1.6		0+80	1.1
1+00	1.5		0+70	0.7
0+90	1.4			

Line 30

STA	SND	TIDE	STA	SND
		0.325		
1+10	1.6		0+80	1.3
1+00	1.5		0+70	1.1
0+90	1.4			

2-20-08

B.L. He  
S. S. Jones  
K.L. White

4-3417

LDNR

Terrebonne Bay

Reach A + B

Line 10

STA SND Tide STA SND

-0.067

3+30	1.6		2+20	0.8
3+20	1.4		2+10	0.7
3+10	1.2		2+00	0.6
3+00	1.1		1+90	0.5
2+90	1.0		1+80	0.4
2+80	1.0		1+70	0.4
2+70	1.1		1+60	0.2
2+60	1.2		1+50	0.2
2+50	1.0		1+40	0.2
2+40	0.9		1+30	0.1
2+30	0.9			

2-20-08

B. Little  
Systems  
for  
C. Little

LDNR

Terrebone Bay

Reach A + B

Line 11

STA SND Tide STA SND

-0.067

1+40	1.5	1+10	1.2
1+30	1.5	1+00	0.5
1+20	1.4		

Line 12

0+90	1.5	0+70	0.8
0+80	1.3		

Line 19

-0.005

1+20	1.7	1+70	1.5
1+30	1.5	1+80	1.2
1+40	1.7	1+90	1.2
1+50	1.6	2+00	1.2
1+60	1.5	2+10	0.9
		2+00	0.6

2-20-08

B. Little  
J. Stevens  
E. Little

LDNR

TERRE BONNE BAY

REACH A + B

LINE 22

<u>STA</u>	<u>SND</u>	<u>TDS</u>	<u>STA</u>	<u>SND</u>
		0.145		
5+30	0.1		4+20	1.9
5+20	1.1		4+10	1.9
5+10	1.4		4+00	2.1
5+00	1.5		3+90	2.0
4+90	1.5		3+80	2.0
4+80	1.6		3+70	2.3
4+70	1.6		3+60	2.2
4+60	1.7		3+50	2.3
4+50	1.7		3+40	2.3
4+40	1.7		3+30	2.3
4+30	1.9			

L DNR

Terrebonne Bay  
Reach A+B

Line 20

STA   SND   Tide   STA   SND

-0.005

1+40	1.8		1+00	1.4
1+30	1.8		0+90	1.3
1+20	1.6		0+80	1.3
1+10	1.5		0+70	1.2

Line 21

1+20	1.0		1+40	1.4
1+30	1.2			

H

2-20-08

B. LITTLE  
J. STEVENS  
FLITTE

1-5417

42

2-20-08

8 AM  
JUSTICE  
FLATZ

LDNR

TERREBONNE BAY

REACH A+B

LINE 23

<u>STA</u>	<u>SND</u>	<u>TIDE</u>	<u>STA</u>	<u>SND</u>
4+40	1.0		3+30	2.2
4+30	1.7		3+20	2.1
4+20	1.7		3+10	2.2
4+10	1.6		3+00	2.2
4+00	1.7		2+90	2.2
3+90	1.7		2+80	2.2
3+80	1.8		2+70	2.2
3+70	1.9		2+60	2.1
3+60	1.9		2+50	2.2
3+50	1.9		2+40	2.3
3+40	2.1			

0.145

W. 3417

2-20-08

B LITTLE  
CREEK  
PLUMS

LDNR

TERREBONNE BAY

REACH A + B

LINE 24

<u>STA</u>	<u>SND</u>	<u>TIDE</u>	<u>STA</u>	<u>SND</u>
		0.145		
4+30	0.9		3+20	2.0
4+20	1.2		3+10	1.9
4+10	1.4		3+00	1.9
4+00	1.5		2+90	2.0
3+90	1.5		2+80	2.0
3+80	1.6		2+70	2.1
3+70	1.8		2+60	2.1
3+60	1.8		2+50	2.2
3+50	1.8		2+40	2.1
3+40	1.9		2+30	2.1
3+30	2.0			

2-20-08

BLUMIE  
J. S. B. S.  
E. J. S.

1-3-17

L DNR

TERRE-BONNE BAY

REACH A+B

LINE 3

<u>STA</u>	<u>SAND</u>	<u>TIDE</u>	<u>STA</u>	<u>SAND</u>
		0.307		
7+40	0.2		6+30	2.1
7+30	1.2		6+20	2.0
7+20	1.7		6+10	2.0
7+10	1.6		6+00	2.1
7+00	1.6		5+90	1.9
6+90	1.8		5+80	2.0
6+80	1.7		5+70	2.2
6+70	2.0		5+60	2.3
6+60	1.9		5+50	2.5
6+50	2.0		5+40	2.7
6+40	1.9			

45

2-20-08

B. LITTLE  
J. S. ...  
F. ...

LDNR

TERREBONNE BAY

REACH A + B

LINE 2

<u>STA</u>	<u>SND</u>	<u>TIDE</u>	<u>STA</u>	<u>SND</u>
		0.307		
7+50	0.7		6+40	2.3
7+40	1.9		6+30	2.4
7+30	2.4		6+20	2.4
7+20	2.3		6+10	2.4
7+10	2.5		6+00	2.5
7+00	2.4		5+90	2.5
6+90	2.3		5+80	2.6
6+80	2.4		5+70	2.6
6+70	2.1		5+60	2.4
6+60	2.3		5+50	2.5
6+50	2.2			

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2-20-08

B LITTLE  
DISBURSE  
FLITTE

• 3417

LANR

TERRONNE BAY

REACH A+B

LINE 1

STA	SND	TIDE	STA	SND
7+70	0.7	0.307	6+60	2.7
7+60	1.8		6+50	2.7
7+50	1.9		6+40	2.8
7+40	2.0		6+30	2.7
7+30	2.5		6+20	2.7
7+20	2.2		6+10	2.8
7+10	2.3		6+00	2.8
7+00	2.4		5+90	2.8
6+90	2.5		5+80	2.8
6+80	2.5		5+70	2.9
6+70	2.5			