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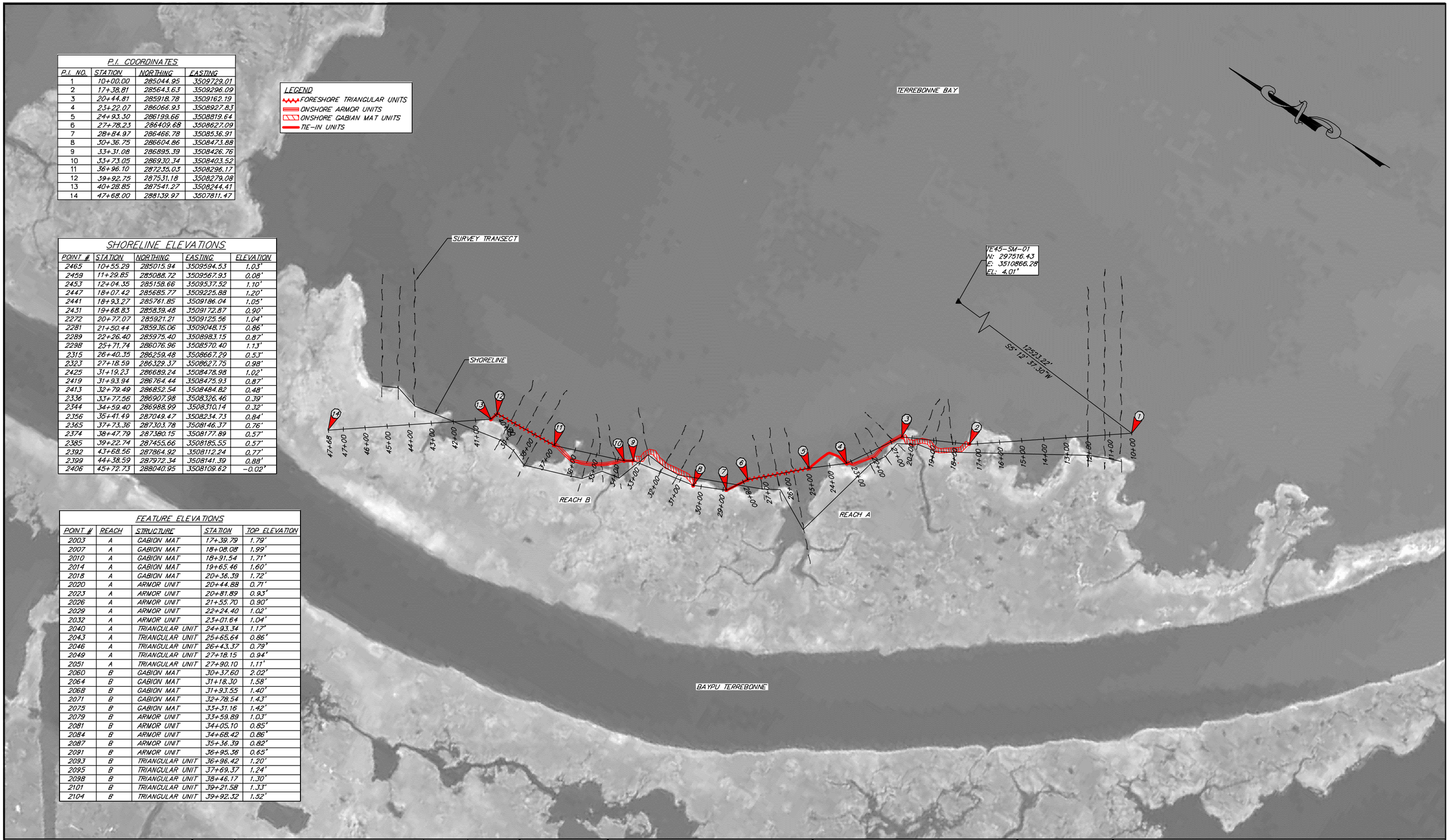
David L. Martinez, P.L.S.
Survey Project Manager

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

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	287380.15	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	GABION MAT	17+39.79	1.79'
2007	A	GABION MAT	18+08.08	1.99'
2010	A	GABION MAT	18+91.54	1.71'
2014	A	GABION MAT	19+65.46	1.60'
2018	A	GABION 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	GABION MAT	30+37.60	2.02'
2064	B	GABION MAT	31+18.30	1.58'
2068	B	GABION MAT	31+93.55	1.40'
2071	B	GABION MAT	32+78.54	1.43'
2075	B	GABION 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
	REVISIONS		

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PROFESSIONAL CONSULTANTS SINCE 1943
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SCALE IN FEET
200 100 0 200 400 600

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 SURYVEY LAYOUT
STA 10+00.00 TO STA 47+68.00

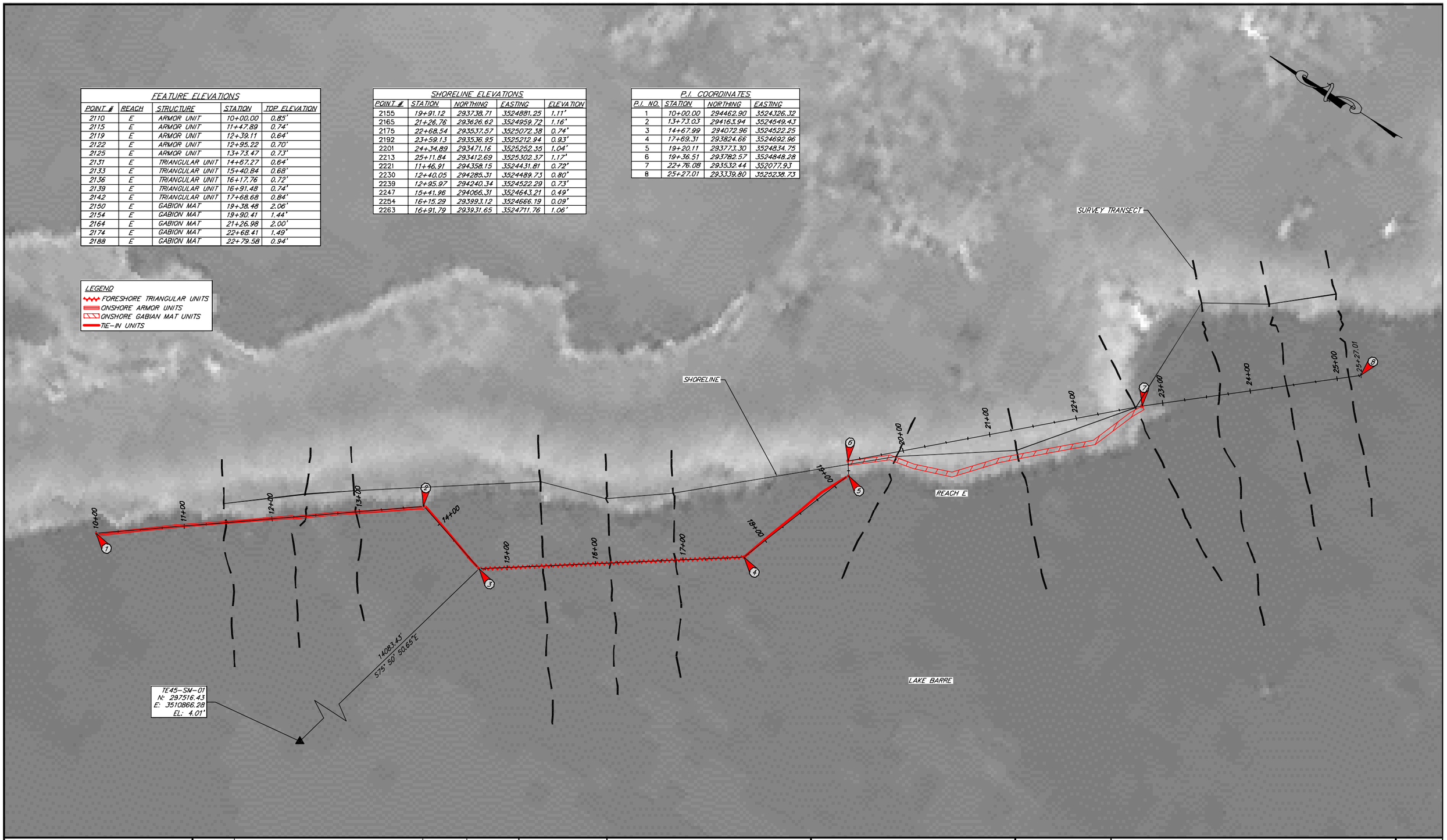
AS-BUILT / TRANSECT SURVEY
FOR
TERREBONNE BAY SHORELINE
DEMONSTRATION PROTECTION PROJECT

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	3525072.38	0.74'
2192	23+59.13	293536.95	3525212.94	0.93'
2201	24+34.89	293471.16	3525252.35	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	294286.31	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



NOTES:

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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

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SCALE IN FEET
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DRAWN BY:	ALH
APPROVED:	BJK
MAP NO.	

REACH E SURYVEY LAYOUT
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AS-BUILT / TRANSECT SURVEY
FOR
TERREBONNE BAY SHORELINE
DEMONSTRATION PROTECTION PROJECT

SHEET NO. 2 OF 14

Sht:
3 OF 14

REACH A PROFILES
STA 10+00 TO STA 12+00

AS-BUILT / TRANSECT SURVEY
FOR
TERREBONNE BAY SHORELINE
DEMONSTRATION PROTECTION PROJECT

FILE NAME:	07163003
TES NO:	2007.1628
DATE:	6/2/06
PLOT SCALE:	NOTED
DRAWN BY:	ALH
APPROVED:	BJK
MAP NO.	

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	REVISIONS		

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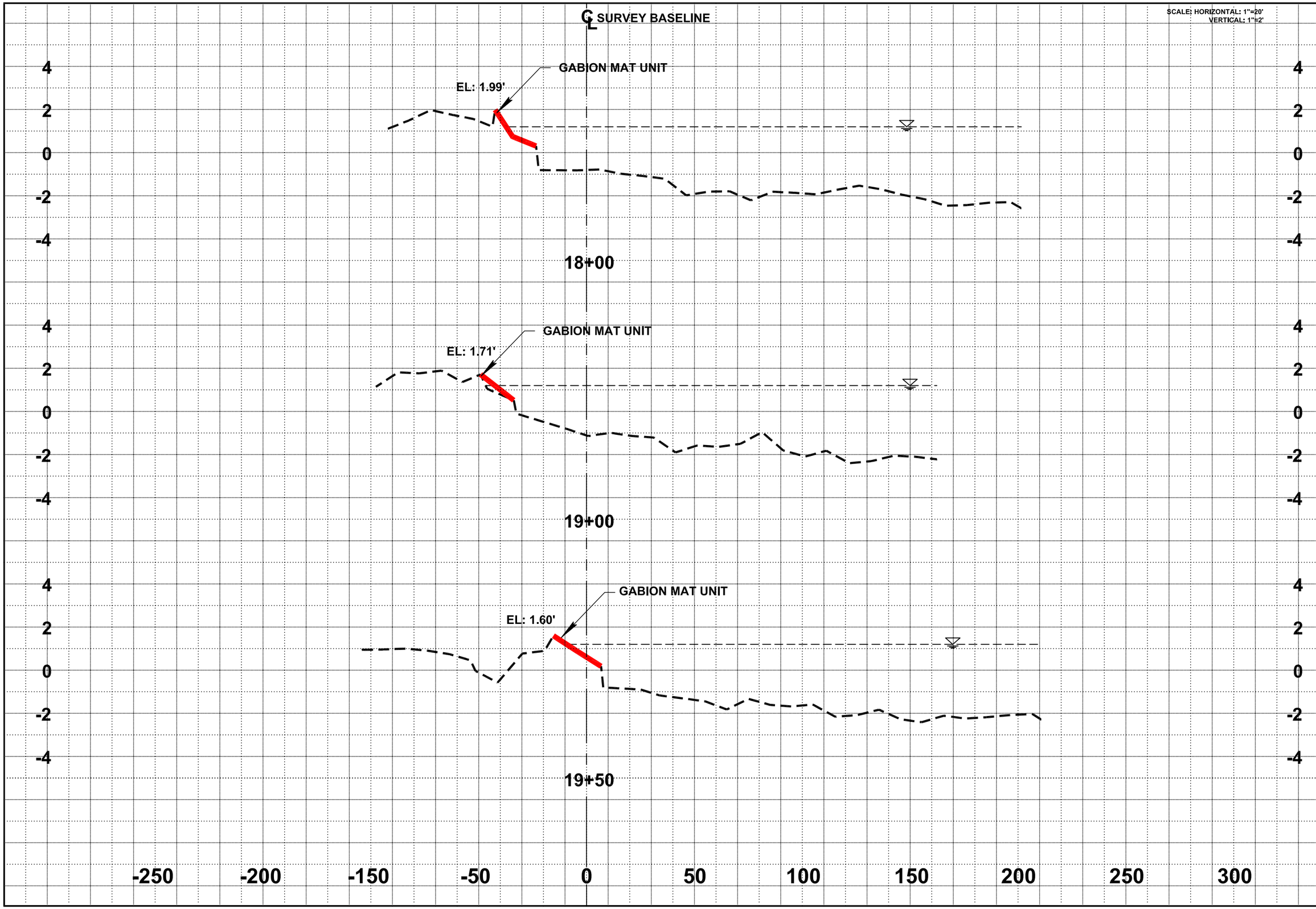

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4 OF 14

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

FILE NAME:	07162BX4
TBS NO.:	2007.1628
DATE:	6/2/08
PLOT SCALE:	NOTED
DRAWN BY:	ALH
APPROVED:	BJK
MAP NO.	

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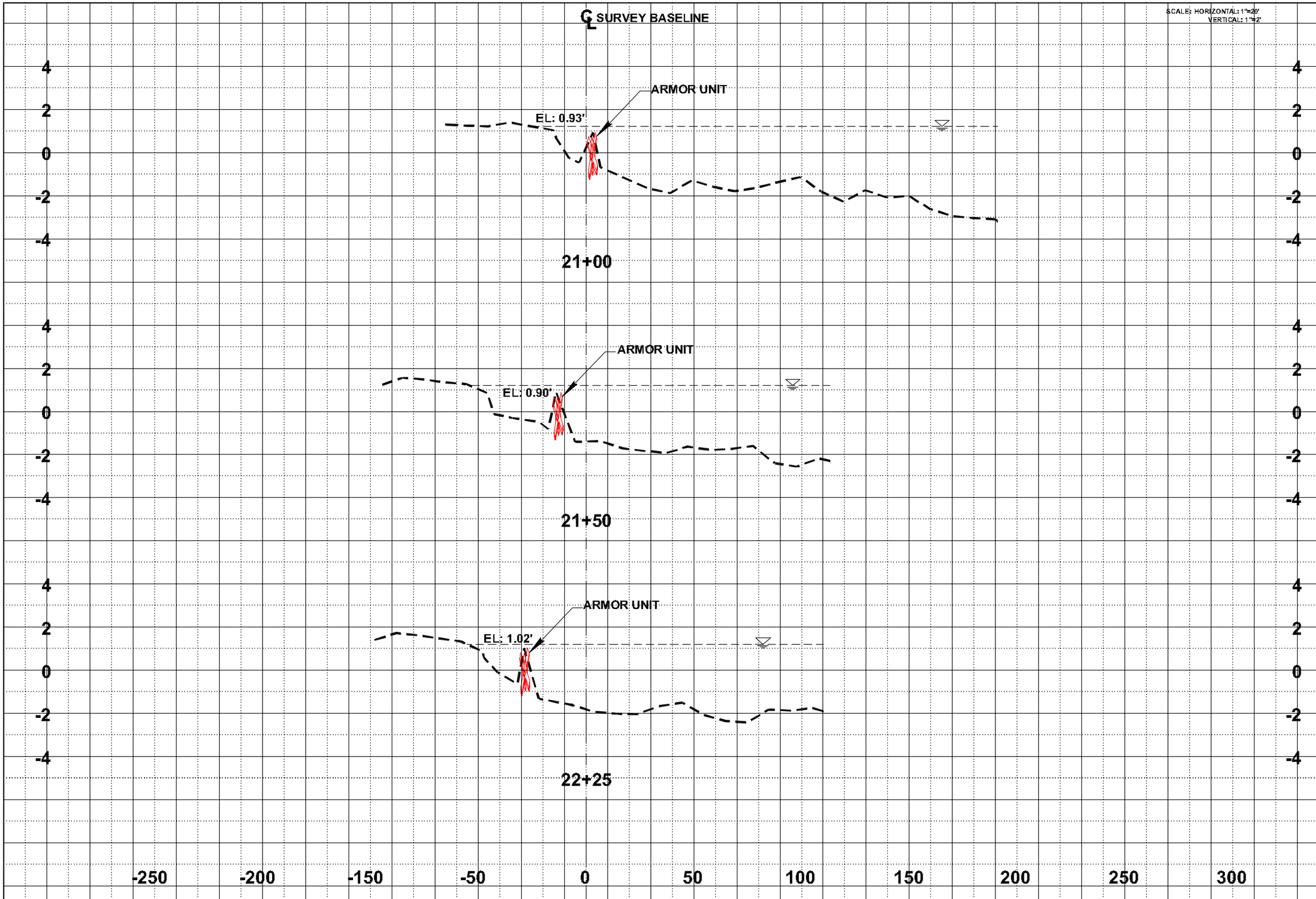

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5 OF 14

REACH A PROFILES
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AS-BUILT / TRANSECT SURVEY
FOR
TERREBONNE BAY SHORELINE
DEMONSTRATION PROTECTION PROJECT

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TES NO:	2007.1628
DATE:	6/2/06
PLOT SCALE:	NOTED
DRAWN BY:	ALH
APPROVED:	BJK
MAP NO.	

DATE	REVISIONS	REVISIONS	DRAWN BY	APPROVED BY

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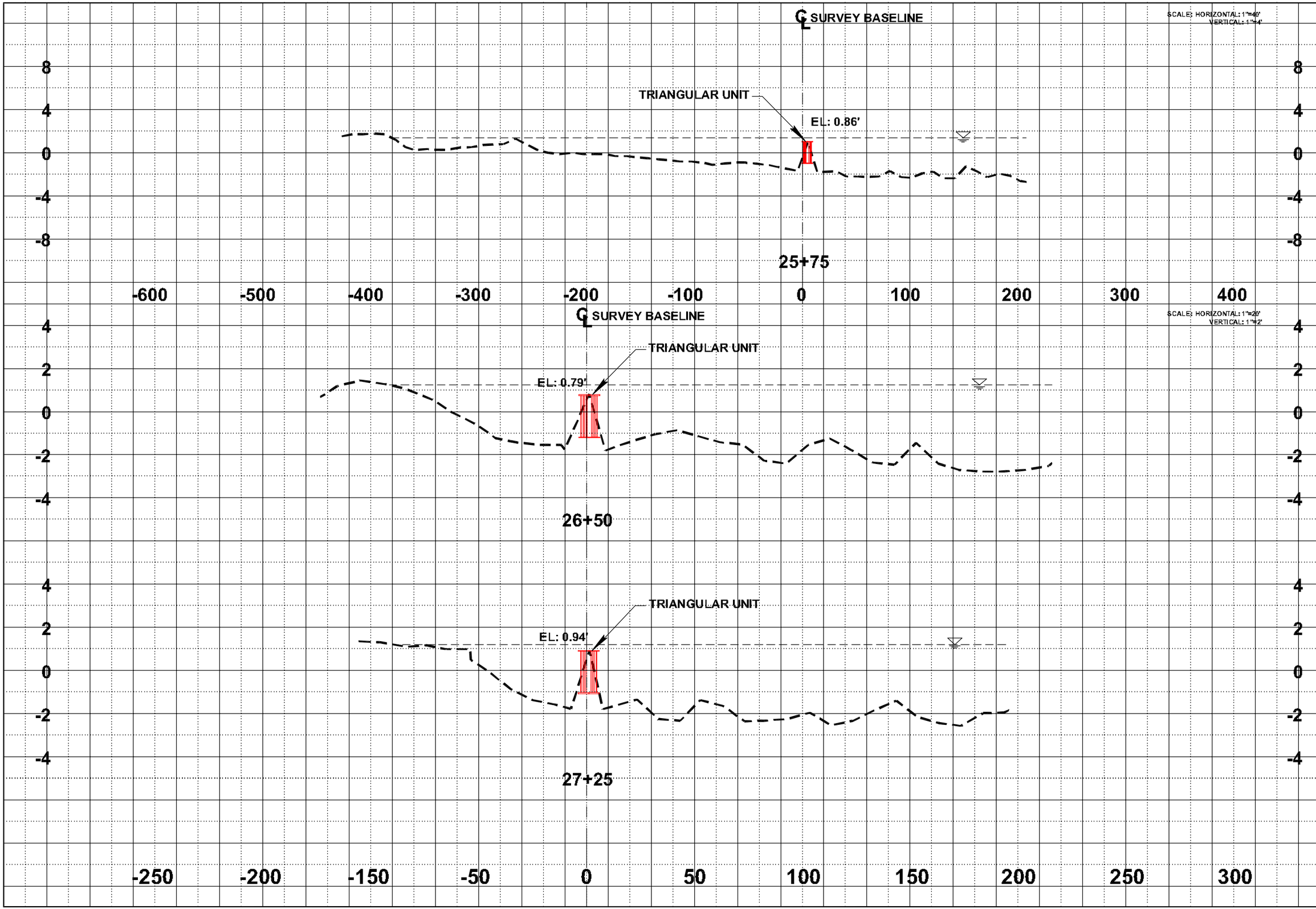

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6 OF 14

REACH A PROFILES
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AS-BUILT / TRANSECT SURVEY
FOR
TERREBONNE BAY SHORELINE
DEMONSTRATION PROTECTION PROJECT

FILE NAME:	07163036
TBS NO:	2007.1628
DATE:	6/2/06
PLOT SCALE:	NOTED
DRAWN BY:	ALH
APPROVED:	BJK
MAP NO.	

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	REVISIONS		

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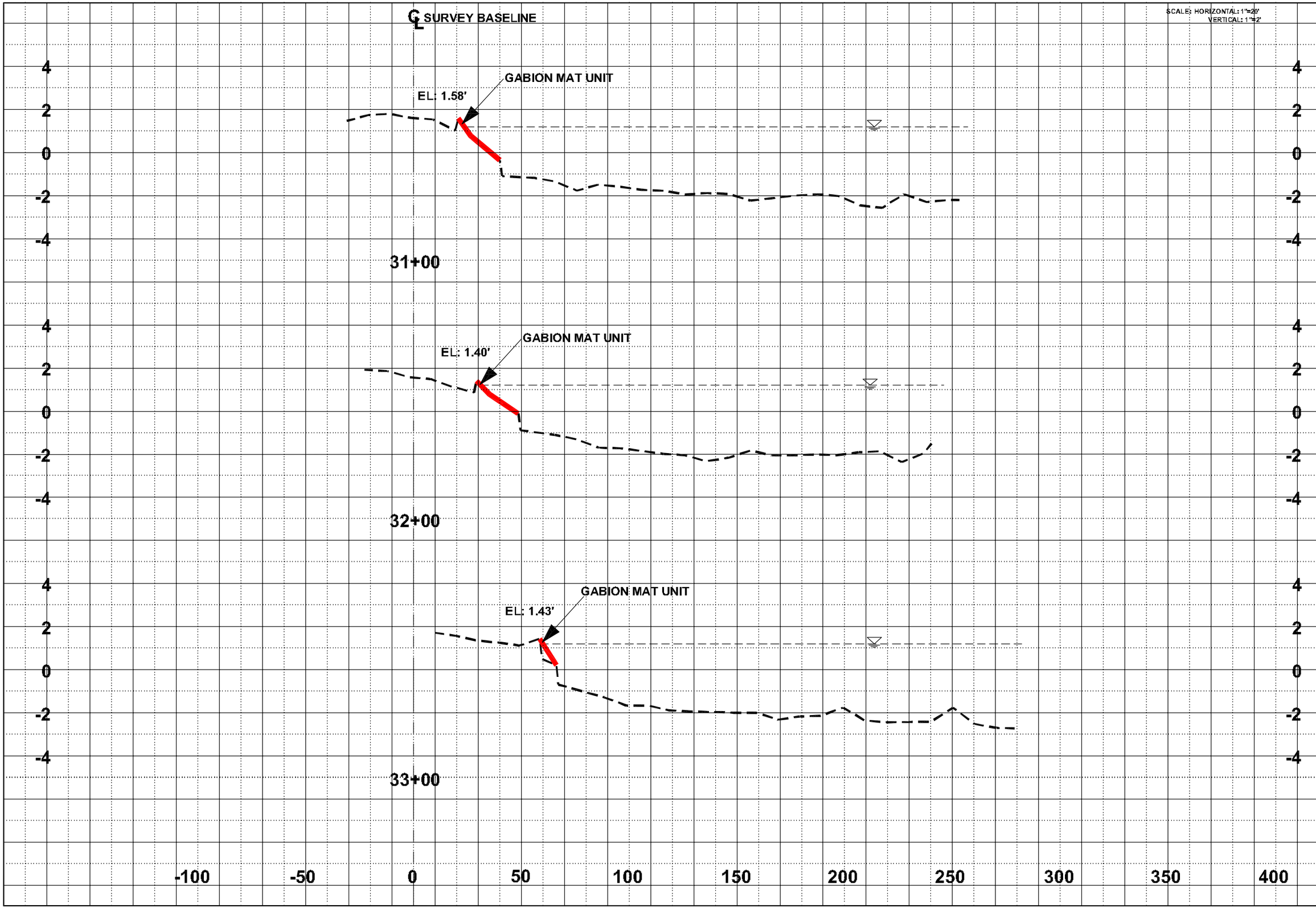

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7 OF 14

REACH B PROFILES
STA 31+00 TO STA 33+00

AS-BUILT / TRANSECT SURVEY
FOR
TERREBONNE BAY SHORELINE
DEMONSTRATION PROTECTION PROJECT

FILE NAME:	07163037
TES NO:	2007.1628
DATE:	6/2/06
PLOT SCALE:	NOTED
DRAWN BY:	ALH
APPROVED:	BJK
MAP NO.	

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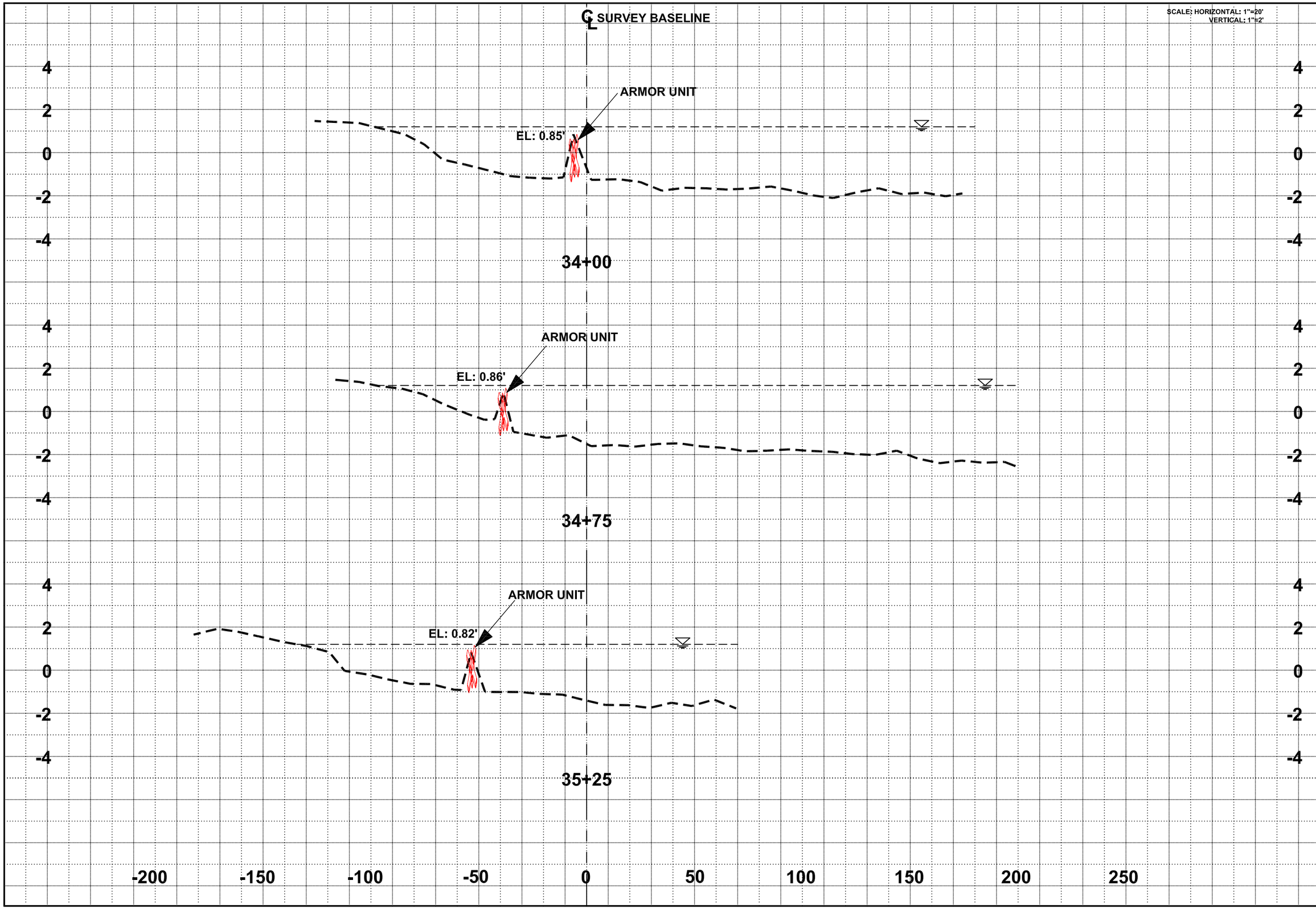

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8 OF 14

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

FILE NAME:	07162BX8
TBS NO.:	2007.1628
DATE:	6/2/08
PLOT SCALE:	NOTED
DRAWN BY:	ALH
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MAP NO.	

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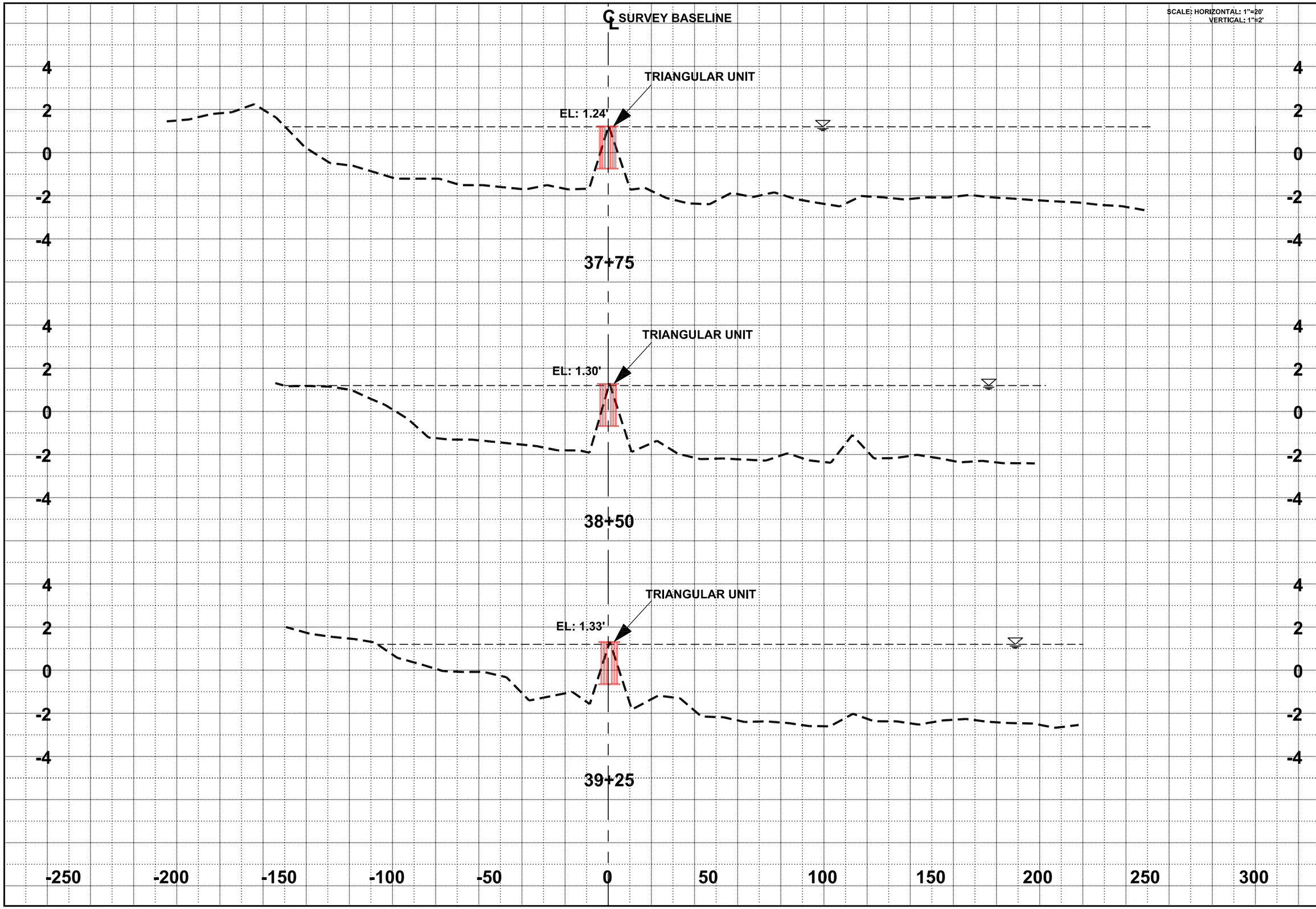

Sht:
9 OF 14

REACH B PROFILES
STA 37+75 TO STA 39+25
AS-BUILT / TRANSECT SURVEY
FOR
TERREBONNE BAY SHORELINE
DEMONSTRATION PROTECTION PROJECT

FILE NAME:	07162BX9
TBS NO.:	2007.1628
DATE:	6/2/08
PLOT SCALE:	NOTED
DRAWN BY:	ALH
APPROVED:	BJK
MAP NO.	

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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:	071630X10
TES NO:	2007.1628
DATE:	6/2/06
PLOT SCALE:	NOTED
DRAWN BY:	ALH
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MAP NO.	

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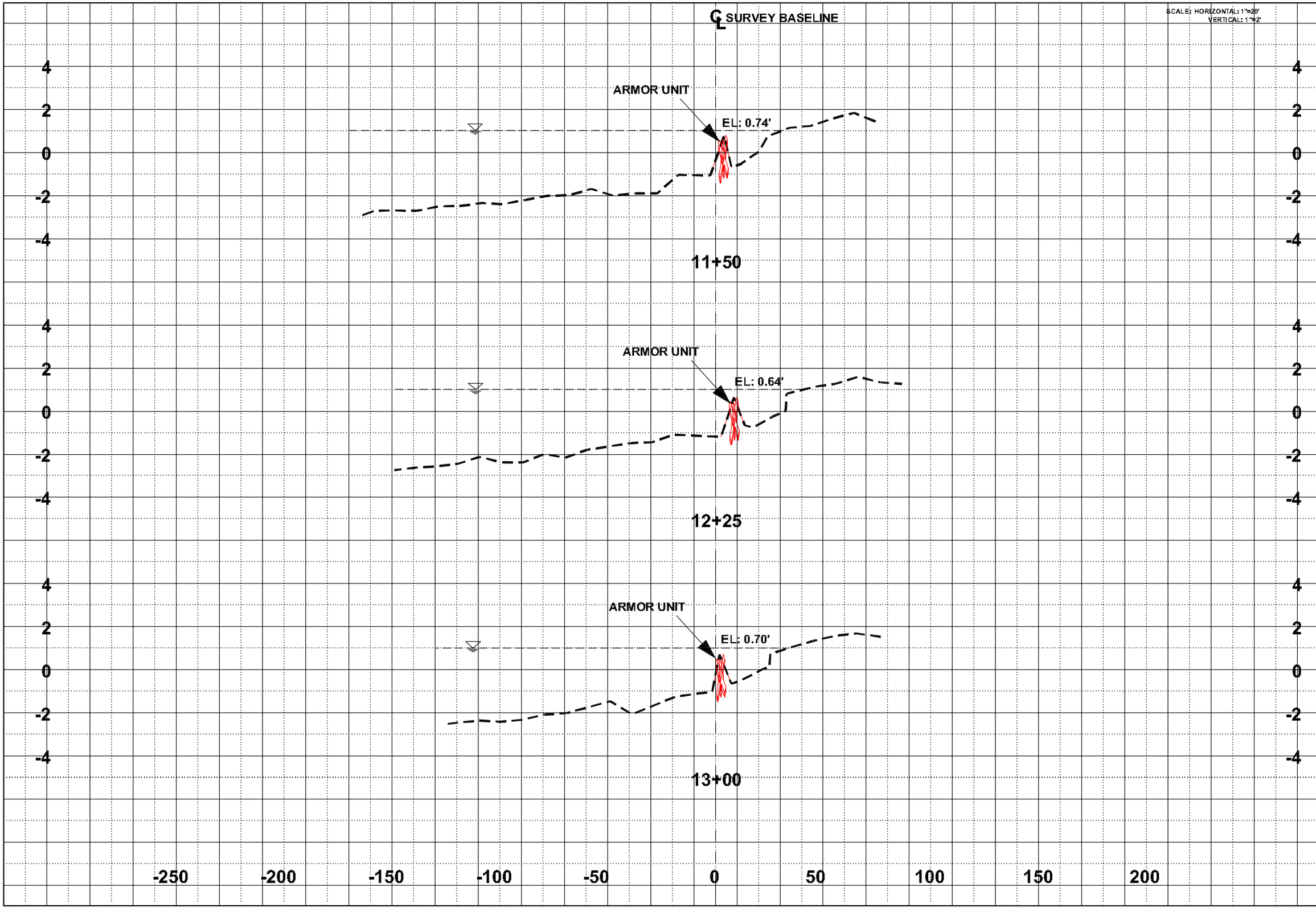

Sht:
11 OF 14

REACH E PROFILES
STA 11+50 TO STA 13+00

AS-BUILT / TRANSECT SURVEY
FOR
TERREBONNE BAY SHORELINE
DEMONSTRATION PROTECTION PROJECT

FILE NAME:	071630X11
TBS NO:	2007.1628
DATE:	6/2/06
PLOT SCALE:	NOTED
DRAWN BY:	ALH
APPROVED:	BJK
MAP NO.	

REVISIONS	DATE	DRAWN BY	APPROVED BY
REVISIONS			

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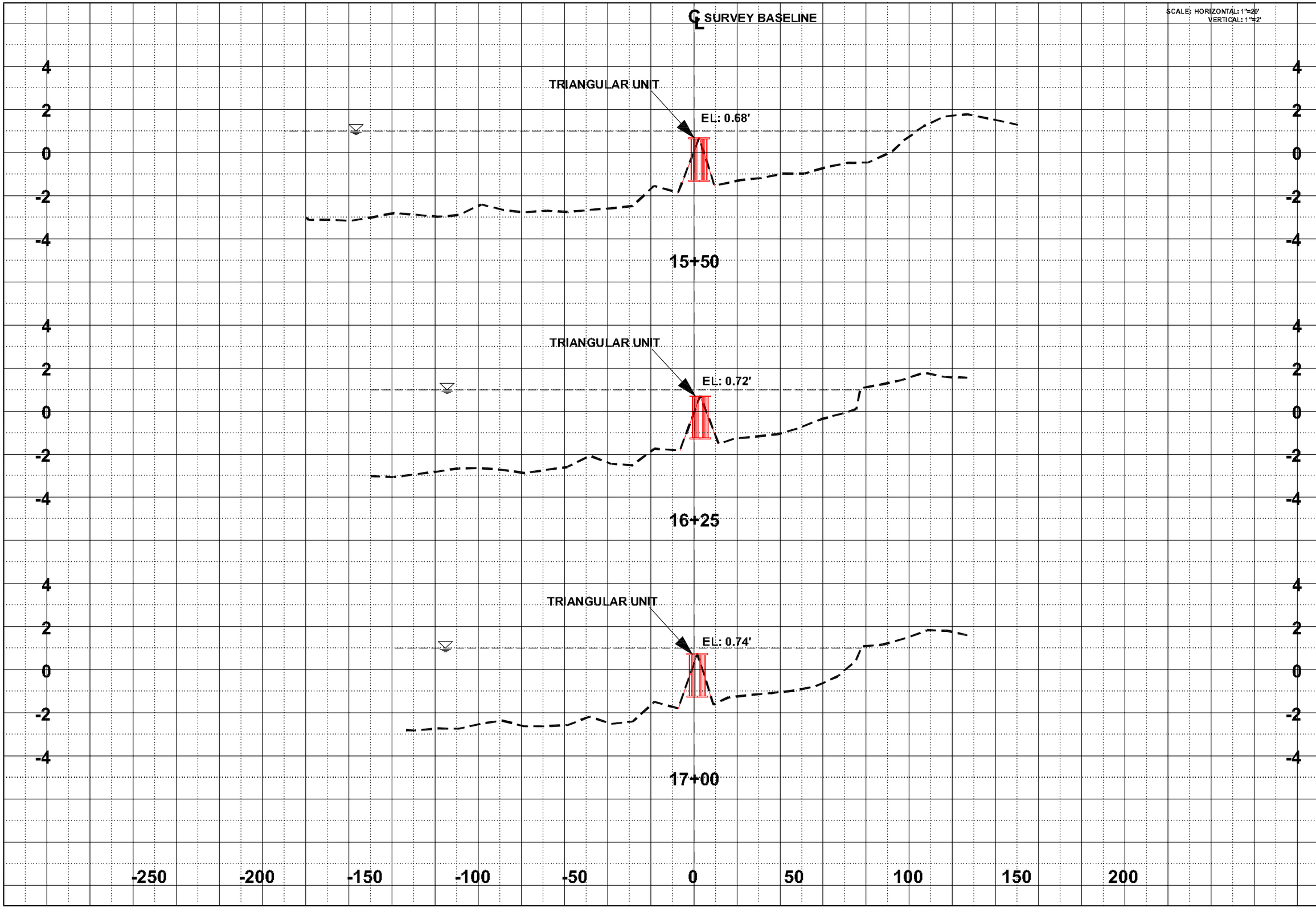

Sht:
12 OF 14

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.	

DATE	REVISIONS	DRAWN BY	APPROVED BY

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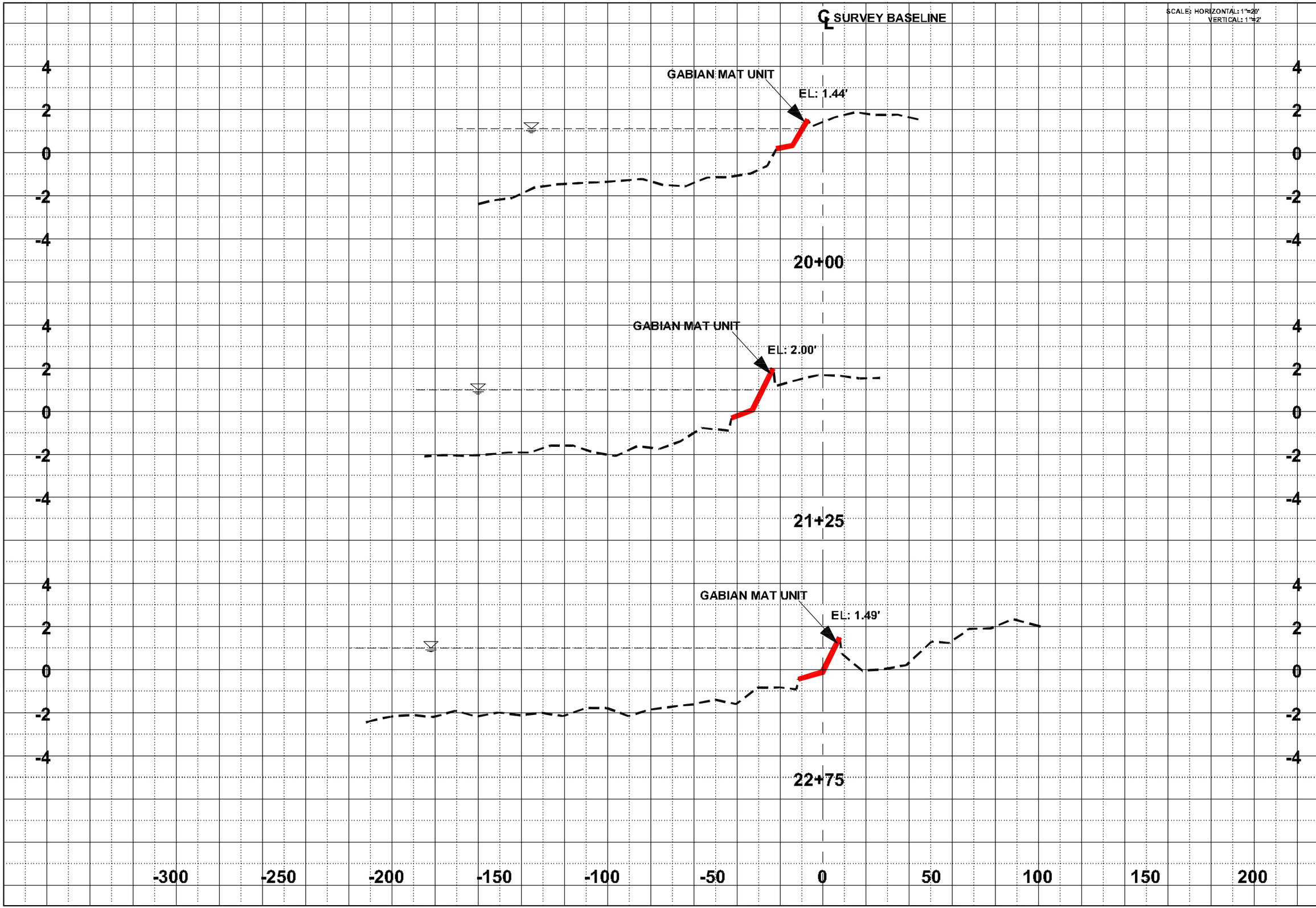

Sht:
13 OF 14

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

FILE NAME:	071630X13
TES NO:	2007.1628
DATE:	6/2/06
PLOT SCALE:	NOTED
DRAWN BY:	ALH
APPROVED:	BJK
MAP NO.	

REVISIONS	DATE	DRAWN BY	APPROVED BY
REVISIONS			

T. BAKER SMITH
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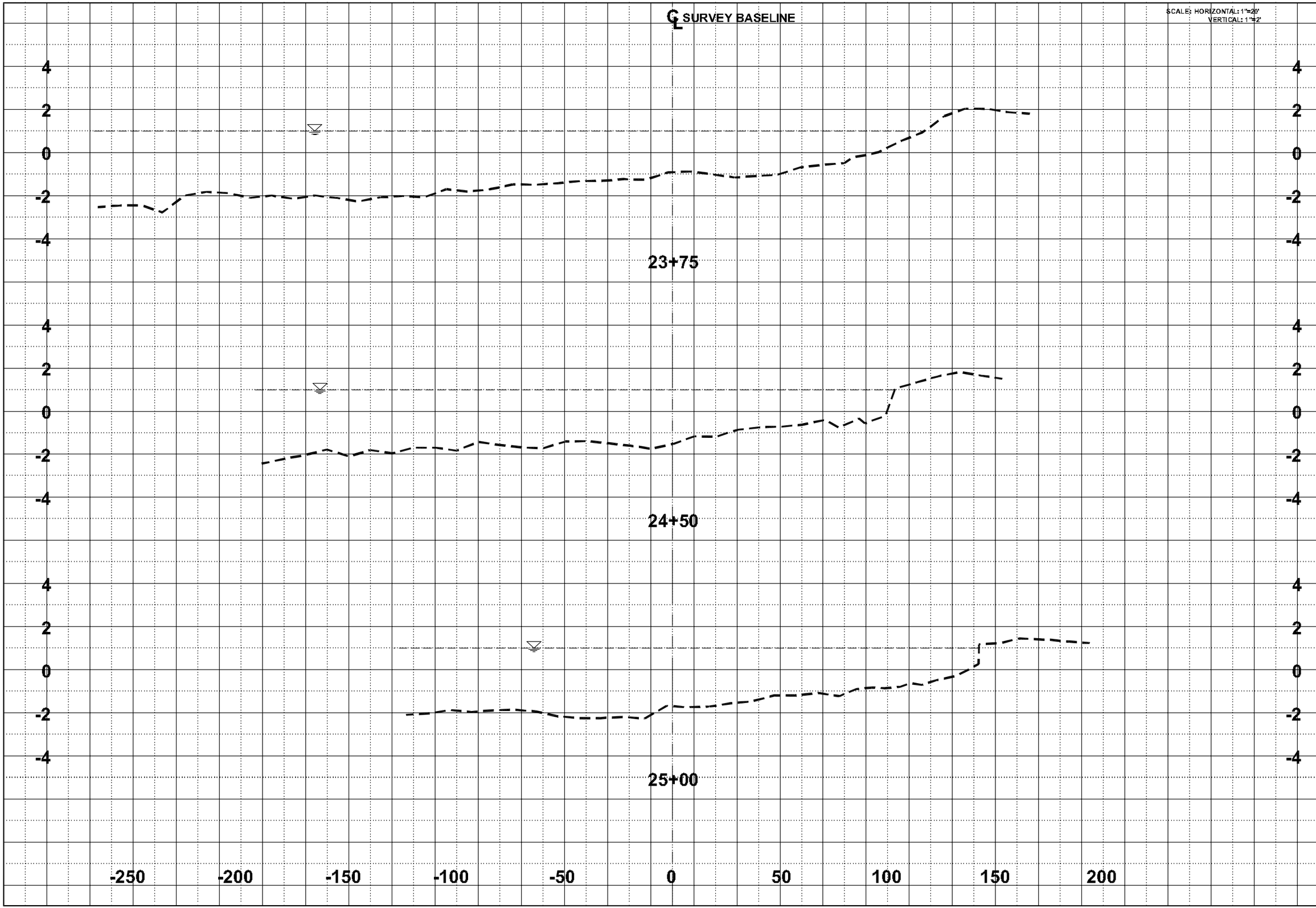


Sht:
14 OF 14

REACH E PROFILES
STA 23+75 TO STA 25+00

AS-BUILT / TRANSECT SURVEY
FOR
TERREBONNE BAY SHORELINE
DEMONSTRATION PROTECTION PROJECT

FILE NAME:	071630X14
TES NO:	2007.1628
DATE:	6/2/06
PLOT SCALE:	NOTED
DRAWN BY:	ALH
APPROVED:	BJK
MAP NO.	

DATE	REVISIONS	DRAWN BY	APPROVED BY
	REVISIONS		

T. BAKER SMITH
PROFESSIONAL CONSULTANTS SINCE 1946
(985) 868-1060
www.tbsmith.com

CONTINUOUS RECORDER

AND

STAFF GAUGE SURVEY

Continuous Recorder and Staff Gauge Survey Data Sheet

		Continuous Recorder Gauge				
Station	Date	Top of Recorder Support Pole (4x4 Post, Cap of Pipe, etc.)	Top of Support Pole to Nail or Top of ¼" Hole	Nail or Hole Elevation	Top of Recorder Support Pole to Top of Water Distance	Water Elevation
		(NAVD 88, FT.)	(Ft.)	(NAVD 88, Ft.)	(Ft.)	(NAVD 88, Ft.)
TE45-CR-H01	**11/20/07**	**6.69**	**3.88**	**2.81**	**5.49**	**1.20**

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 ¼" Hole: Obtained by physically measuring the distance between the two points.
Nail or Hole Elevation: Obtained by sing 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 Tope of Water Distance.

		Staff Gauge						
Station	Date	Existing Staff Gauge Reading (Upon Arrival)	Top of Staff Gauge Support Pole	Top of Staff Gauge Support Pole to Top of Water Distance	Water Elevation	Staff Gauge Reading (After Establishment or Adjustment)	Computed Difference (Water Elevation vs. Staff Gauge)	Correction Factor
			(NAVD 88, Ft.)	(Ft.)	(NAVD 88, Ft.)	(NAVD 88, Ft.)		
TE45-SG-H01	**11/20/07**		**6.75**	**5.55**	**1.20**	**1.20**	**0.00**	

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 Tope 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

		Continuous Recorder Gauge				
Station	Date	Top of Recorder Support Pole (4x4 Post, Cap of Pipe, etc.)	Top of Support Pole to Nail or Top of ¼" Hole	Nail or Hole Elevation	Top of Recorder Support Pole to Top of Water Distance	Water Elevation
		(NAVD 88, FT.)	(Ft.)	(NAVD 88, Ft.)	(Ft.)	(NAVD 88, Ft.)
TE45-CR-H02	**11/20/07**	**6.50**	**3.65**	**2.85**	**5.32**	**1.18**

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 ¼" Hole: Obtained by physically measuring the distance between the two points.
Nail or Hole Elevation: Obtained by sing 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 Tope of Water Distance.

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

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 Tope 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.

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

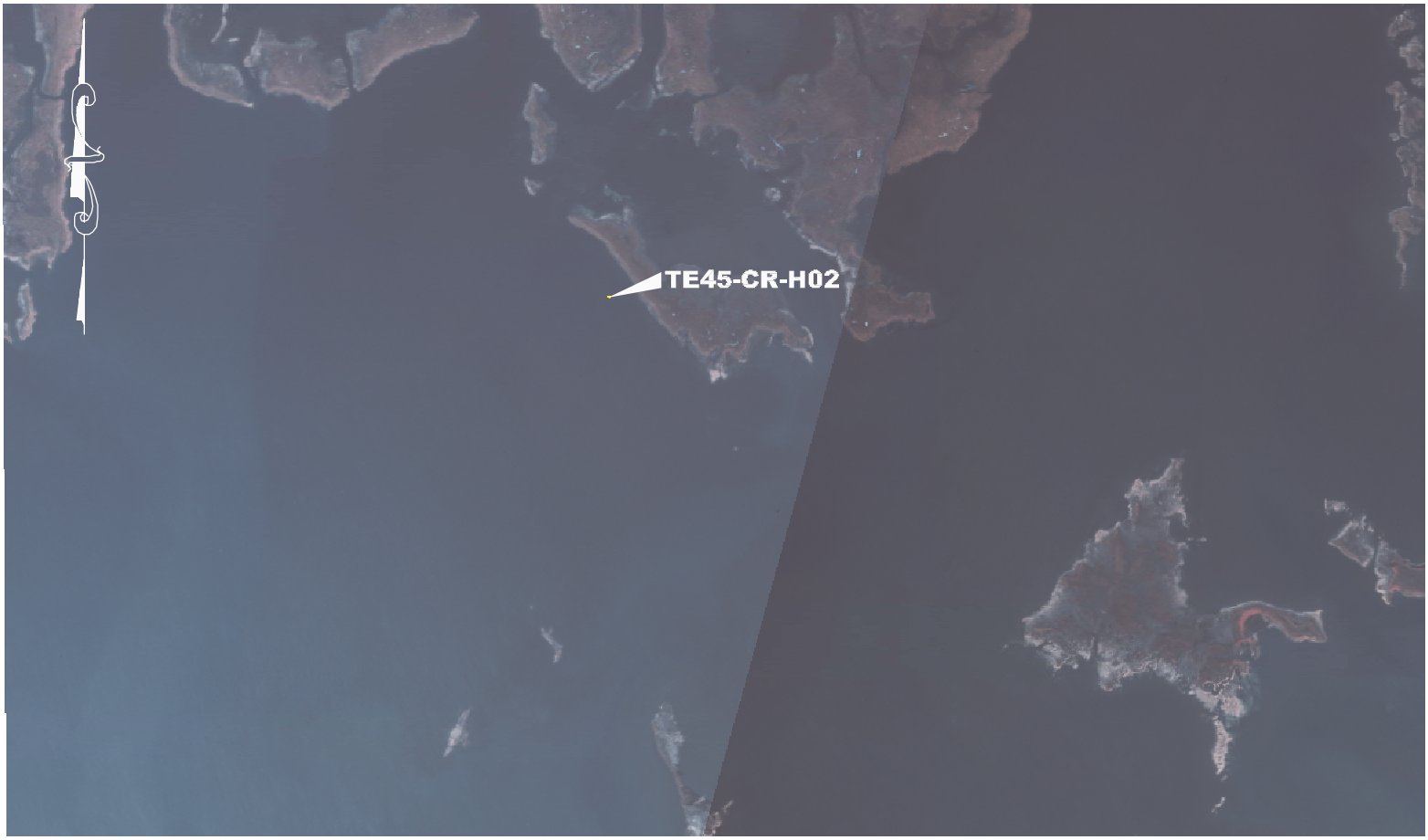
NAD 83 Geodetic Position:
Lat. 29°17'08.58"N
Long. 90°37'03.25"W

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.



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

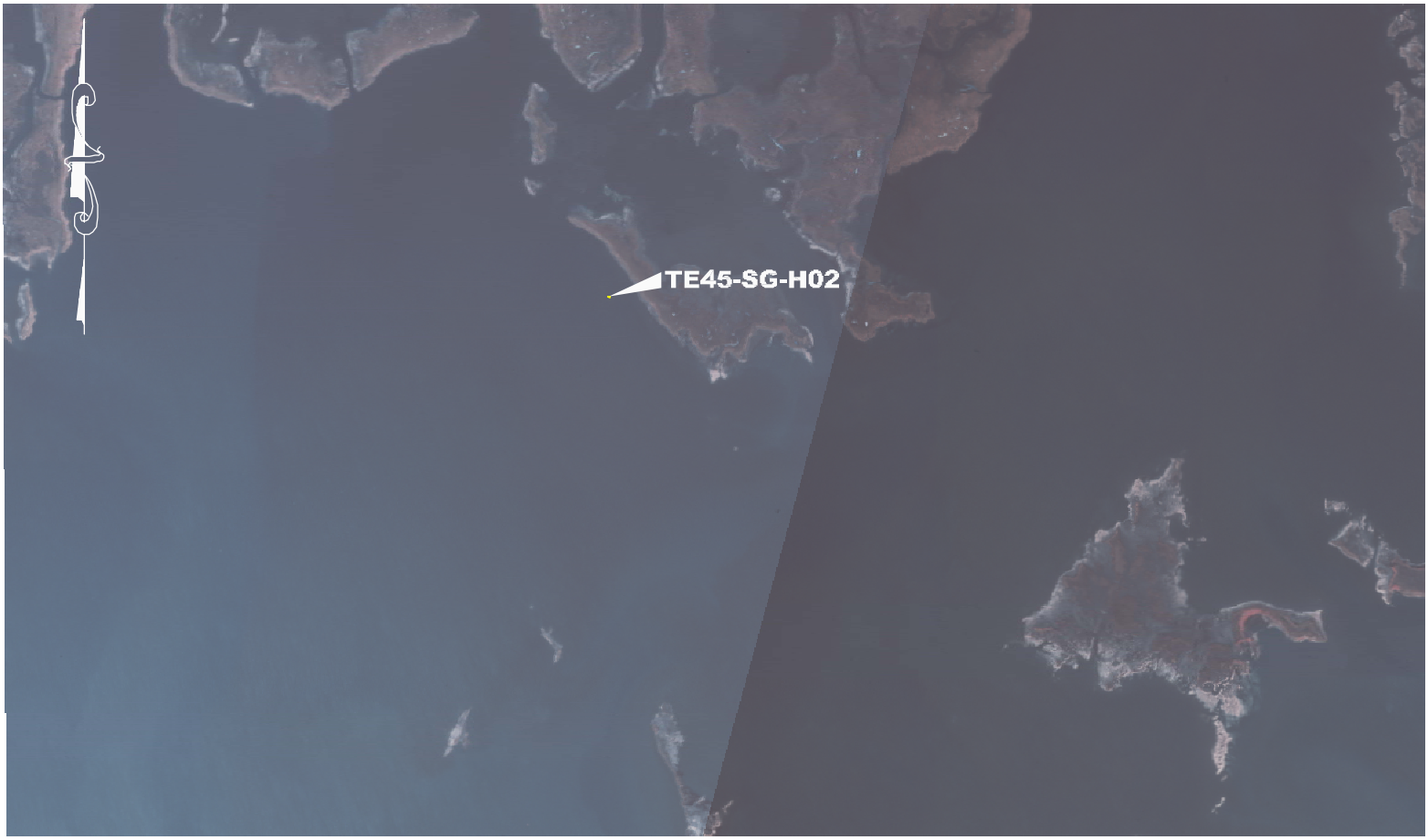
UTM, NAD 83, Meters (Zone 15) Coordinates
N= 3,244,347.728
E= 736,070.513

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

LDNR

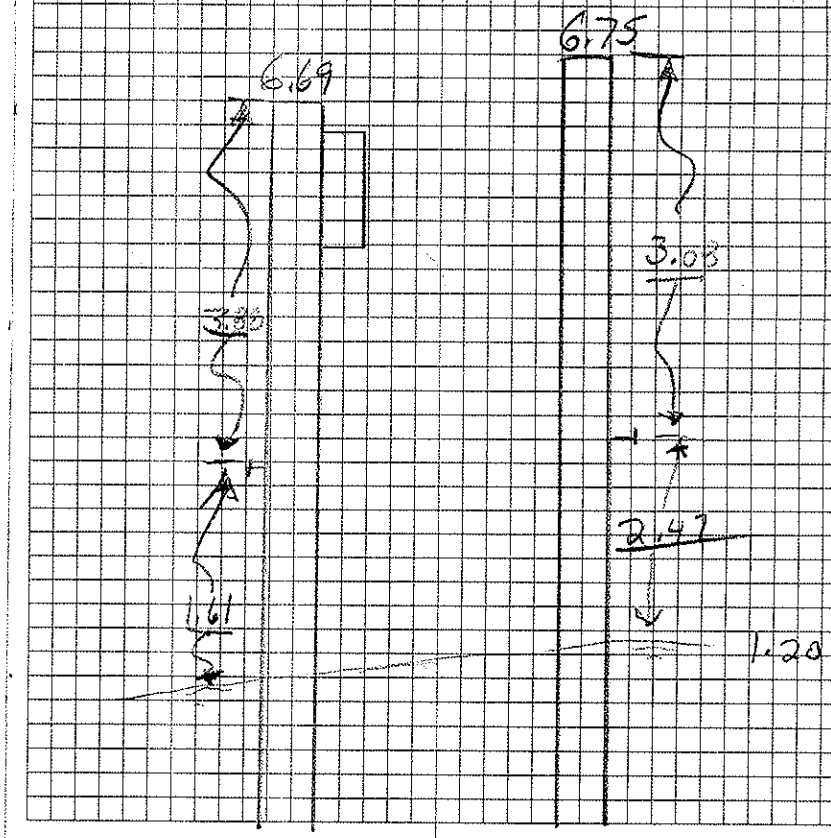
Terrebonne Bay Shoreline Protection Proj.
Site 1 By Reach A + B

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 (Sounde)	286450.933	3509013.808	6.69
103 (Sounde)	286450.876	3509013.827	6.72

B. L. H.
E. L. [illegible]
J. [illegible]

11-20-07

40



3572

LDNR

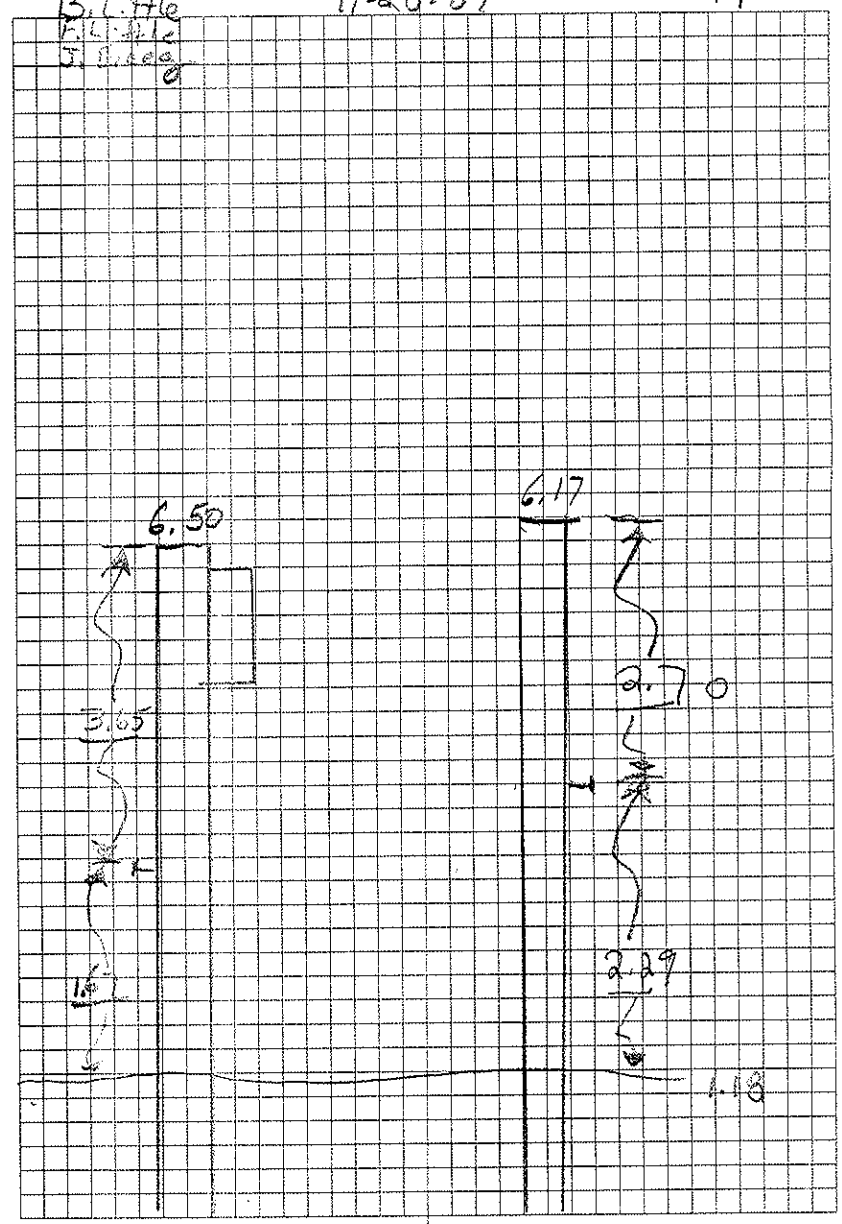
Terrebonne Bay Shoreline Protection Project
Site 2 By Reach E

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
11 (Check)	297500.084	3510853.522	2.601

B.L. Hle
F.L. Hle
J. [illegible]

11-20-07

4



Terrebonne Bay

LDNR

	PT	N	E	DESC / ELEV
Set	1	321306.383	3507818.104	NAV CHK / 3.259
Nav/Check		321306.36	3507818.08	

Tide Check Tide Value = 0.95

Recorded 0.94 OK

~~Nav/Check Set~~

Set

Base dead

void

Nav Check 321307.96 3507819.69

32

B.L. Hle
r pty

2-14-08

~~3.26~~
~~2.31~~

3.26
2.31
.95

Terrebonne Bay LDNR
LINE LOG 2/14/08

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. Little
J. Stevens
K. Little
S. Kennedy

2-14-08

LDNR

Terre Bonne Bay

PT	N	E	Elev	Desc
3	297485.624	3510822.020	2.646	Set NC
Nav3	297485.65	3510821.98		NC

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

4	297494.77	3510836.62	3.2	
Nav2	297494.77	3510836.62		

Tide Check Tide Value = 1.08
Tide Recorded = 1.10

B.L. Hk
J. Stevens
E.L. Hk

2-15-08

2.65
- 2.28
.37

3.2
- 2.12
1.08

Terrebonne Bay LDNR
LINE LOG 2-15-08

B. Little
J. Stevens
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	

Terrebonne Bay LDNR
LINE LOG 2-15-08

B. Little
J. Stevens
F. Little

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	

B. Little
D. Stamos
E. Little

2-19-08

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

LDNR

Terrebonne Bay

Reach A + B

Line 10

STA	SND	Tide -0.067	STA	SND
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	1.4		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			

B.L. Hle 2-20-08
J. Stevens
E.L. Hle

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+20	0.6

B. Little 2-20-08
J. Stevens
F. Little

LDNR

TERREBONNE BAY

REACH A + B

LINE 22

STA	SND	TIDE	STA	SND
		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			

B LITTLE
J STEVENS
E LITTLE

2-20-08

LDNR

Terrebonne Bay
Reach A+B

Line 20

STA	SND	Tide -0.005	STA	SND
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			

B LITTLE 2-20-08
J STEVENS
F LITTLE

LDNR

TERREBONNE BAY

REACH A + B

LINE 23

STA	SND	TIDE	STA	SND
		0.145		
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			

B LITTLE
J STEVENS
F LITTLE

2-20-08

LDNR

TERREBONNE BAY

REACH A + B

LINE 24

STA	SND	TIDE	STA	SND
		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			

B LITTLE
J SERGO
F LITTLE

2-20-08

LDNR

TERREBONNE BAY

REACH A + B

LINE 3

STA	SND	TIDE	STA	SND
		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			

2-20-08

B LITTLE
C STEVENS
F LITTLE

LDNR

TERREBONNE BAY

REACH A + B

LINE 2

STA	SND	TIDE	STA	SND
		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			

B LITTLE 2-20-08
J SCOTT
F LITTLE

LDNR

TERREBONNE BAY

REACH A + B

LINE 1

STA	SND	TIDE	STA	SND
		0.307		
7+70	0.7		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			

B LITTLE 2-20-08
J STEVENS
F LITTLE