

**DEPARTMENT OF ENVIRONMENTAL QUALITY**

KATHLEEN BABINEAUX BLANCO
GOVERNOR

MIKE D. McDANIEL, Ph.D.
SECRETARY

March 28, 2006

Louisiana Department of Natural Resources- Coastal Restoration Division
617 North Third Street, Suite 1078
Baton Rouge, LA 70802

Attention: Chris Williams, Agent for St. Bernard Parish

RE: Water Quality Certification (JP 060118-01/AI 105663/CER 20060001)
Corps of Engineers Permit (MVN-2005-4407-EBB)
St. Bernard Parish

Dear Mr. Williams:

The Department has reviewed your request to dredge waterbottoms and place spoil and fill material for erosion control/bank stabilization project in Lake Borgne near Shell Beach, Louisiana in St. Bernard Parish.

The requirements for Water Quality Certification have been met in accordance with LAC 33:IX.1507.A-E. Based on the information provided in your application, we have determined that the placement of the fill material will not violate the water quality standards of Louisiana provided for under LAC 33:IX.Chapter 11. Therefore, the Department has issued a Water Quality Certification.

Sincerely,

Thomas R. Griggs
Engineer Manager

TRG/jjp

c: Corps of Engineers- New Orleans District

ENVIRONMENTAL SERVICES

: PO BOX 4313, BATON ROUGE, LA 70821-4313

P:225-219-3181 F:225-219-3309

WWW.DEQ.LOUISIANA.GOV

Site Copy

DEPARTMENT OF THE ARMY PERMIT

Permittee: St. Bernard Parish

Permit No. MVN 2005-4407 EBB

Issuing Office: New Orleans District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: Dredge an access channel and install and maintain riprap and sheet pile and temporarily place spoil in open water, in accordance with drawings enclosed in thirty five sheets dated November 2005.

Project Location: The Shell Beach site is located at Latitude 29°22'10" North, Longitude 90°19'48" West, and the Bayou Dupree site is located at Latitude 29°25'34" North, Longitude 90°09'36" West, in St. Bernard Parish.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **DECEMBER 31, 2011**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least 1 month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.
6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions: Page 4.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:
 - (X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
 - (X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
 - () Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).
2. Limits of this authorization.
 - a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.
 - b. This permit does not grant any property rights or exclusive privileges.
 - c. This permit does not authorize any injury to the property or rights of others.
 - d. This permit does not authorize interference with any existing or proposed Federal project.
3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:
 - a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
 - b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
 - c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
 - d. Design or construction deficiencies associated with the permitted work.

- e. Damage claims associated with any future modification, suspension, or revocation of this permit.
4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.
5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:
- a. You fail to comply with the terms and conditions of this permit.
 - b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).
 - c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

X L. C. Witham
(PERMITTEE)

X 11/28/2006
(DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Ronald J. Ventola
Ronald J. Ventola, Chief Regulatory Branch

13 Dec 2006
(DATE)

for Richard P. Wagenaar, District Commander

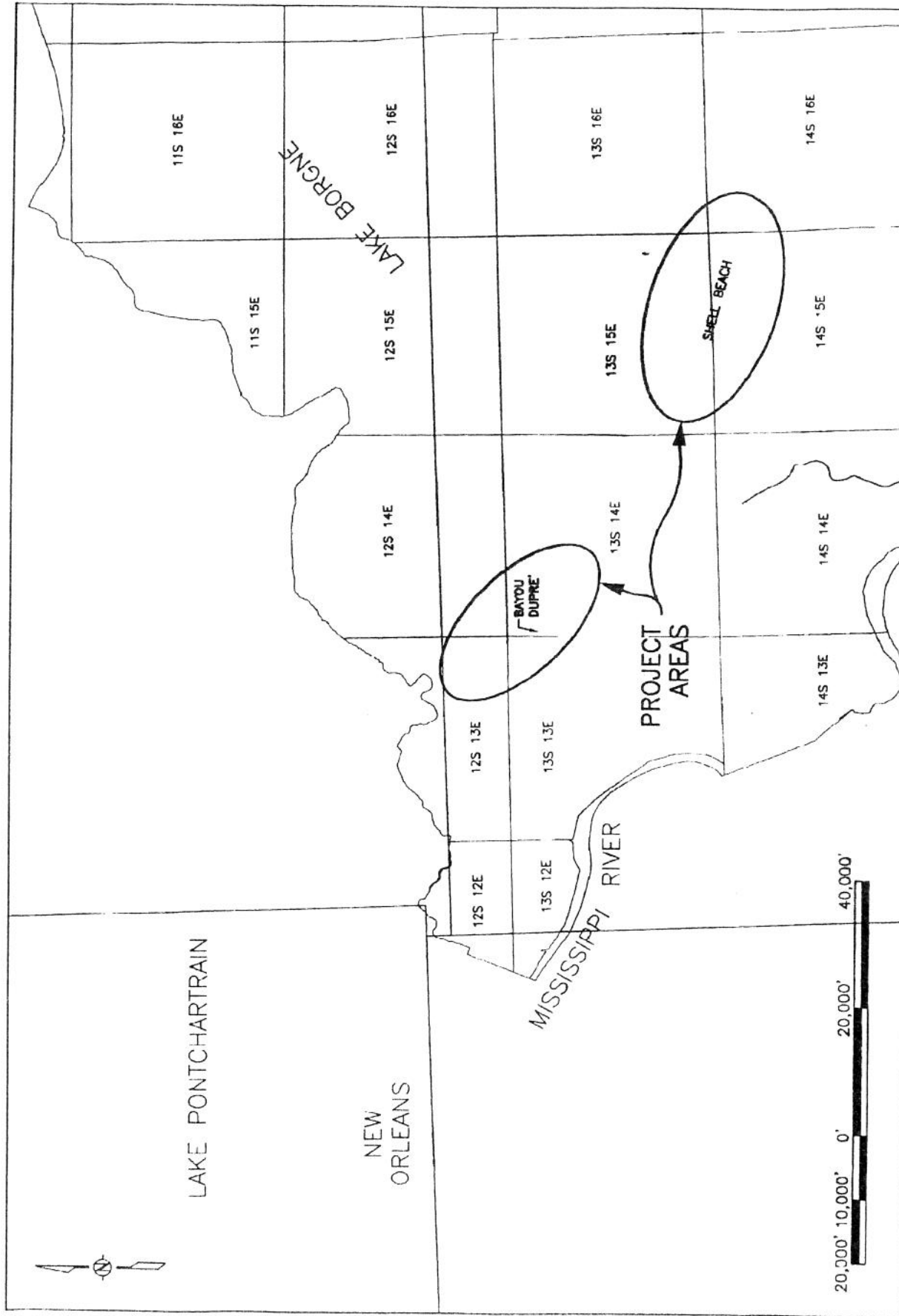
When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE)

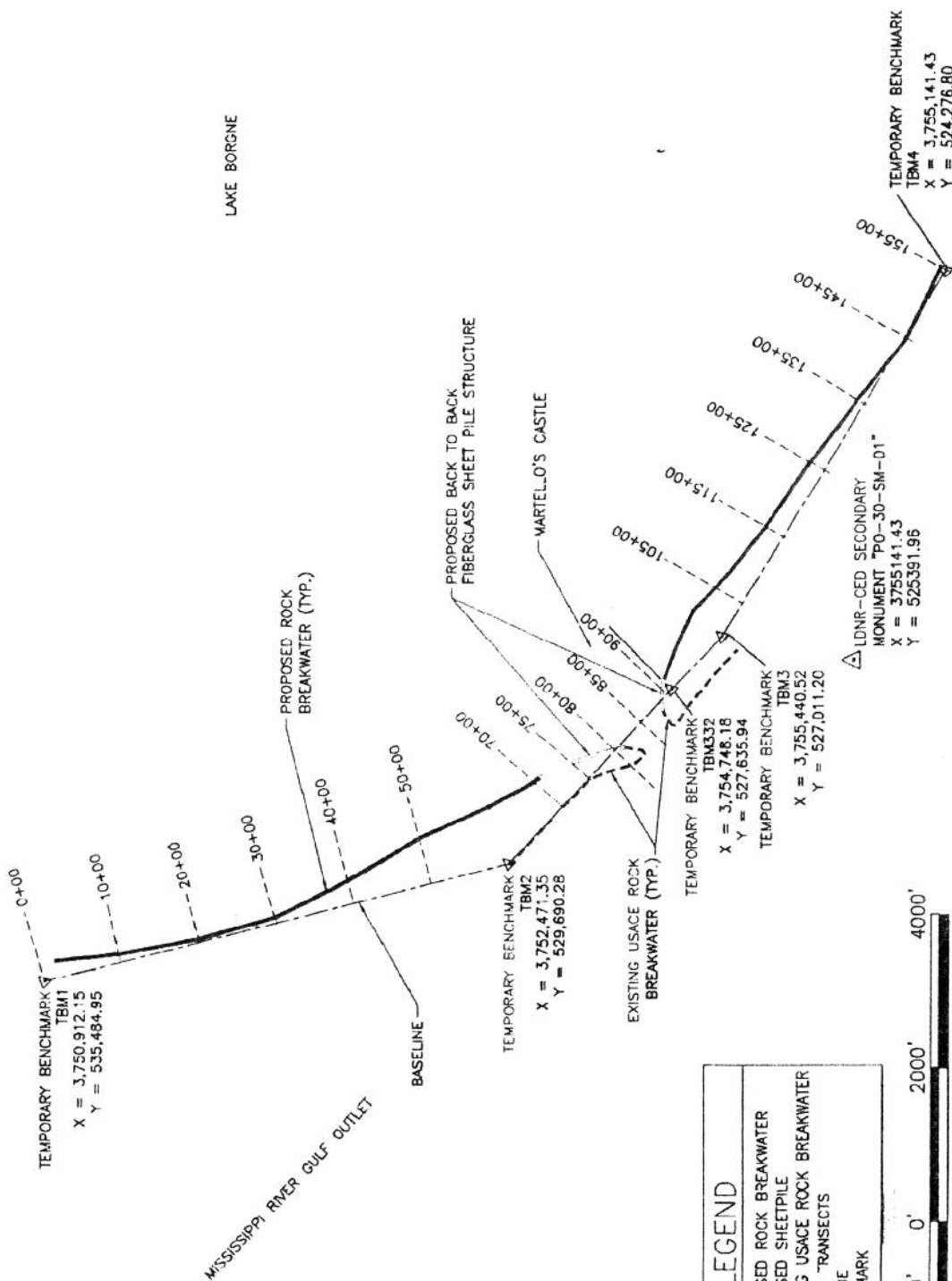
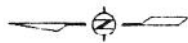
(DATE)

SPECIAL CONDITIONS: MVN 2005-4407 EBB

7. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.
8. You must install and maintain at your expense, any safety lights, signs, and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, on any equipment utilized in your authorized activity
9. Your use of the permitted activity must not interfere with the public's right to free navigation on all navigable waters of the United States.
10. If the proposed project, or future maintenance work, involves the use of floating construction equipment (barge mounted cranes, barge mounted pile driving equipment, floating dredge equipment, dredge discharge pipelines, etc.,) in the waterway, you are advised to notify the Eighth Coast Guard District so that a Notice to Mariners, if required, may be prepared. Notification, with a copy of your permit approval and drawings, should be mailed to the Commander (oan), Eighth Coast Guard District, ATTN: Marine Information Branch, 501 Magazine Street, New Orleans, Louisiana 70130-3396, about 1 month before you plan to start work. Telephone inquiries can be directed to (504) 589-6277.



APPLICATION BY: U.S. ENVIRONMENTAL PROTECTION AGENCY 1443 ROSS AVE DALLAS, TX 75202-2733	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	LAKE BORGNE SHORELINE PROTECTION	VICINITY MAP
DRAWN BY: KRISTI CAMTU	DESIGNED BY: SHANNON HAYNES, P.E. APPROVED BY: LUKE LEBAS, P.E.	STATE PROJECT NUMBER: PO-30 FEDERAL PROJECT NUMBER: PO-30	DATE: NOVEMBER 2005 SHEET 1 OF 35

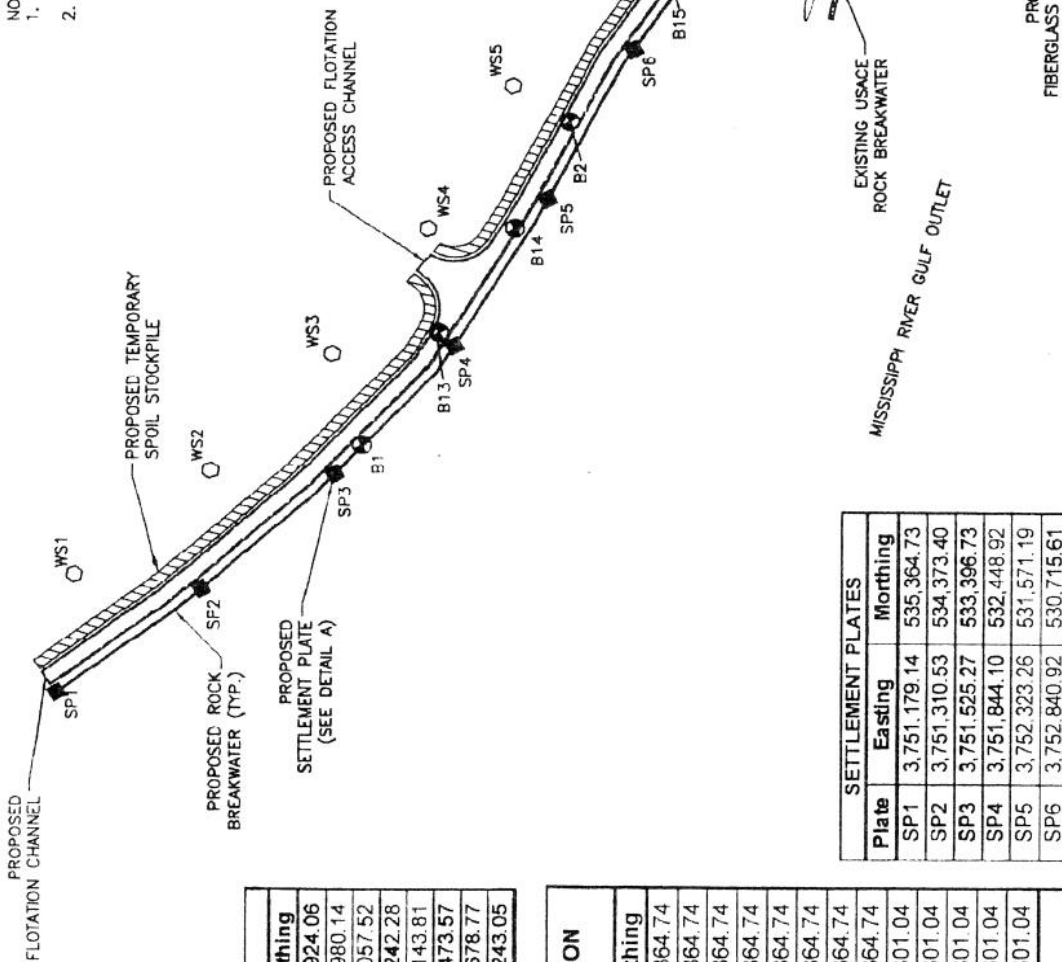


APPLICATION BY: U.S. ENVIRONMENTAL PROTECTION AGENCY 1445 ROSS AVE. DALLAS, TX 75202-2733	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802		LAKE BORGNE SHORELINE PROTECTION	SURVEY LAYOUT BAYOU DUPRE
	DESIGNED BY: SHANNON HAYNES, P.E.	APPROVED BY: LUKE LEBAS, P.E.	STATE PROJECT NUMBER: PO-30	DATE: NOVEMBER 2005
	DRAWN BY: KRISTI CANTU		FEDERAL PROJECT NUMBER: PO-30	SHEET 3 OF 35



- NOTES:
1. TEMPORARY SPOIL SHALL BE BACK FILLED PRIOR TO PROJECT COMPLETION
 2. SETTLEMENT PLATES AND WARNING SIGNS ARE LOCATED AT 1000' INTERVALS ALONG THE CENTERLINE OF THE ROCK BREAKWATER

LEGEND	
	EXISTING PIPELINE
	EXISTING BORING
	PROPOSED ROCK BREAKWATER
	PROPOSED FLOTATION CHANNEL
	PROPOSED TEMPORARY SPOIL
	PROPOSED SHEETPILE
	PROPOSED SETTLEMENT PLATE
	PROPOSED WARNING SIGN



WARNING SIGNS		
Sign	Easting	Northing
WS1	3,751,732.26	534,924.06
WS2	3,751,896.23	533,980.14
WS3	3,752,145.31	533,057.52
WS4	3,752,517.73	532,242.28
WS5	3,752,588.98	531,143.81
WS6	3,753,500.64	530,473.57
WS7	3,753,921.87	529,678.77
WS8	3,753,985.70	528,243.05

SHORELINE PROTECTION CENTERLINE		
Pt.	Easting	Northing
1	3,751,179.15	535,364.74
2	3,751,179.15	535,364.74
3	3,751,179.15	535,364.74
4	3,751,179.15	535,364.74
5	3,751,179.15	535,364.74
6	3,751,179.15	535,364.74
7	3,751,179.15	535,364.74
8	3,751,179.15	535,364.74
9*	3,753,589.65	529,301.04
10*	3,753,589.65	529,301.04
11*	3,753,589.65	529,301.04
12*	3,753,589.65	529,301.04
13*	3,753,589.65	529,301.04
* Fiberglass Sheetpile Structure		

SETTLEMENT PLATES		
Plate	Easting	Northing
SP1	3,751,179.14	535,364.73
SP2	3,751,310.53	534,373.40
SP3	3,751,525.27	533,396.73
SP4	3,751,844.10	532,448.92
SP5	3,752,323.26	531,571.19
SP6	3,752,840.92	530,715.61
SP7	3,753,279.04	529,816.69

APPLICATION BY:
U.S. ENVIRONMENTAL PROTECTION AGENCY
1445 ROSS AVE.
DALLAS, TX 75202-2733

DRAWN BY: KRISTI CAMITU

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
COASTAL ENGINEERING DIVISION
617 NORTH 3RD STREET
BATON ROUGE, LOUISIANA 70802

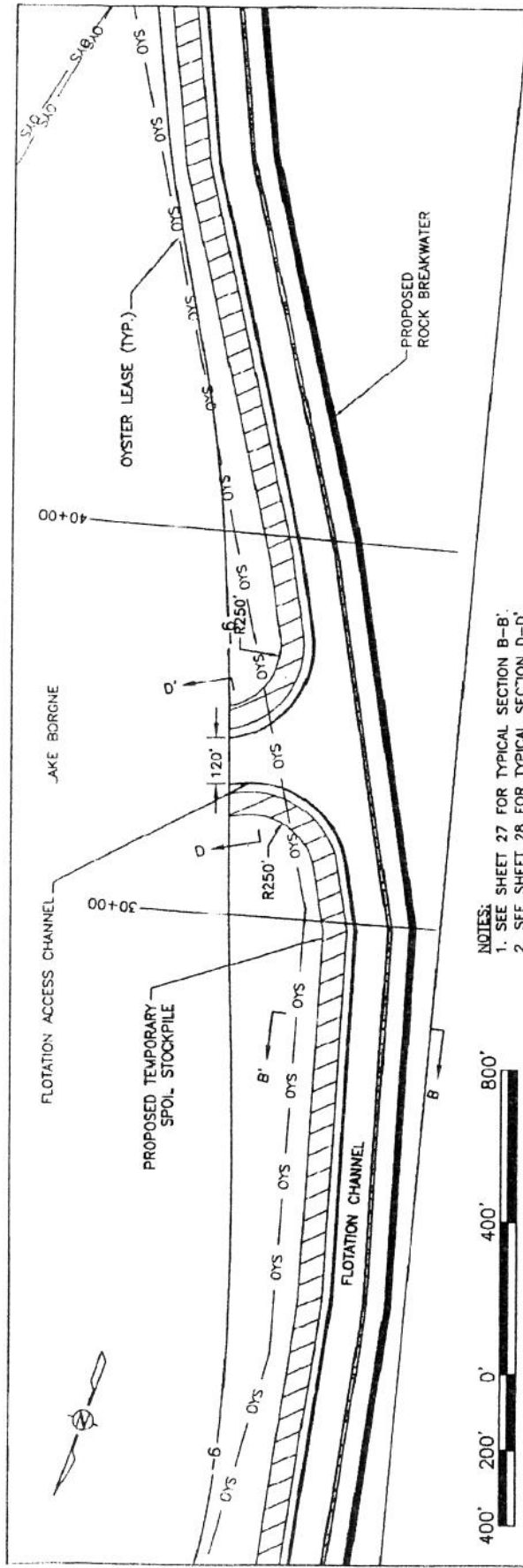
DESIGNED BY: SHANNON HAYNES, P.E.
APPROVED BY: LUKE LEBAS, P.E.

LAKE BORGNE SHORELINE PROTECTION

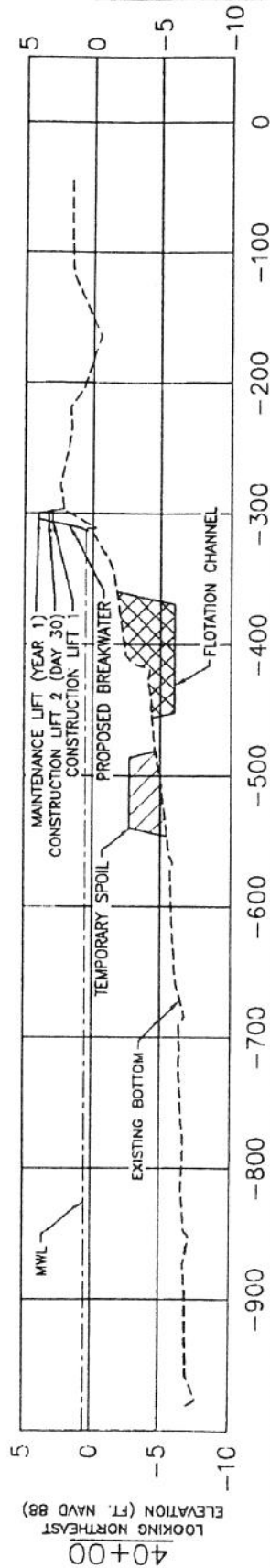
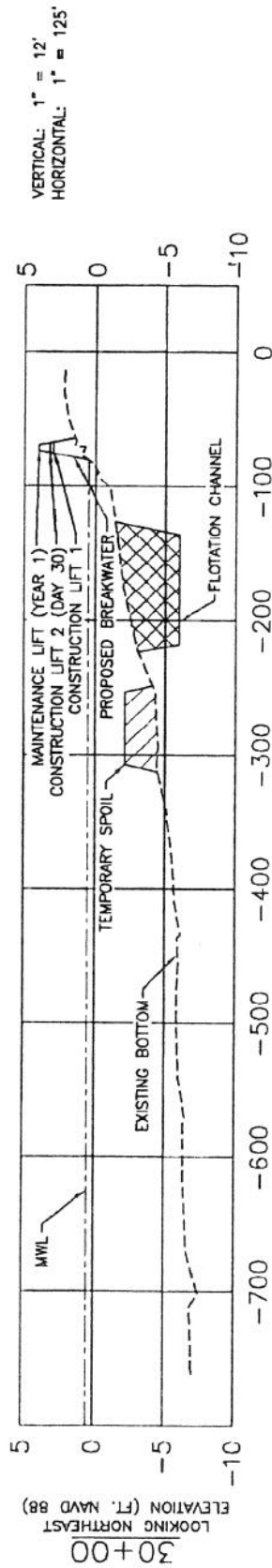
BREAKWATER ALIGNMENT
BAYOU DUPRE-REACH 1

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30

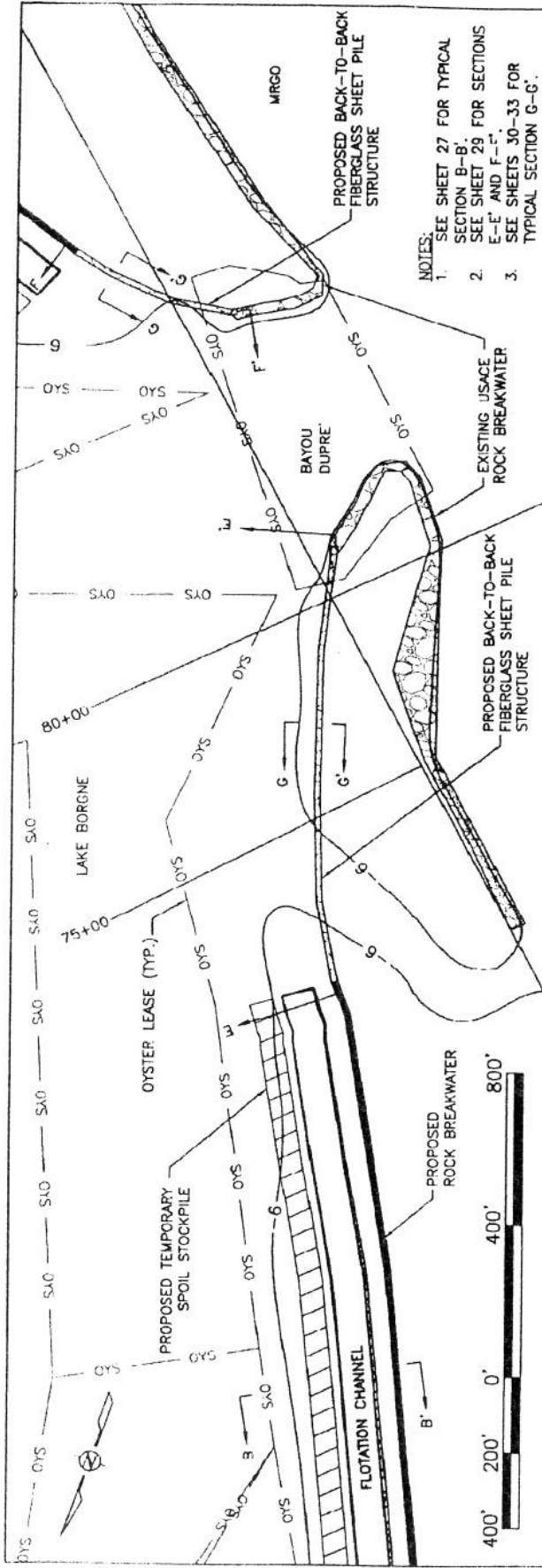
DATE: NOVEMBER 2005
SHEET 4 OF 35



- NOTES:
1. SEE SHEET 27 FOR TYPICAL SECTION B-B'.
 2. SEE SHEET 28 FOR TYPICAL SECTION D-D'.

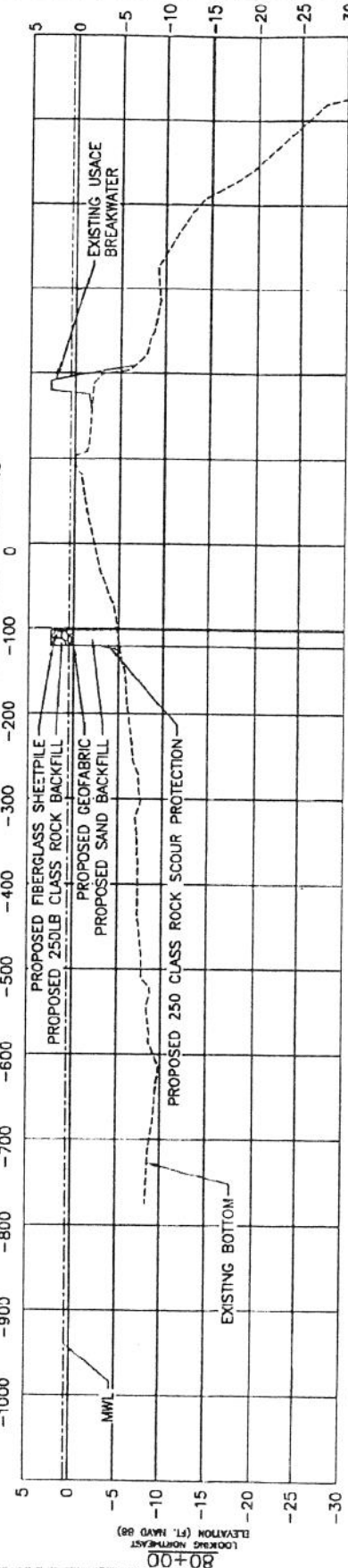
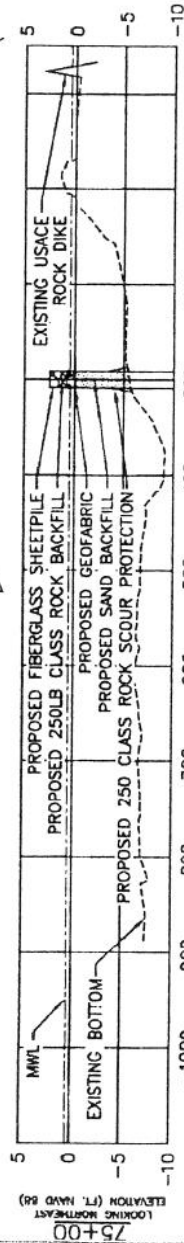


APPLICATION BY: U.S. ENVIRONMENTAL PROTECTION AGENCY 1445 ROSS AVE. DALLAS, TX 75202-2733	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	LAKE BORGNE SHORELINE PROTECTION	PLAN AND SECTION VIEWS BAYOU DUPRE--REACH 1
DRAWN BY: KRISTI CAMTU	DESIGNED BY: SHANNON HAYNES, P.E.	STATE PROJECT NUMBER: PO-30	DATE: NOVEMBER 2005
	APPROVED BY: LUKE LEBAS, P.E.	FEDERAL PROJECT NUMBER: PO-30	SHEET 7 OF 35



- NOTES:
1. SEE SHEET 27 FOR TYPICAL SECTION B-B'.
 2. SEE SHEET 29 FOR SECTIONS E-E' AND F-F'.
 3. SEE SHEETS 30-33 FOR TYPICAL SECTION G-G'.

VERTICAL: 1" = 18'
HORIZONTAL: 1" = 180'



APPLICATION BY:
U.S. ENVIRONMENTAL PROTECTION AGENCY
1445 RESERVE AVE.
DALLAS, TX. 75202-2733

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
COASTAL ENGINEERING DIVISION
617 NORTH 3RD STREET
BATON ROUGE, LOUISIANA 70802

LAKE BORGNE SHORELINE PROTECTION

PLAN AND SECTION VIEWS
BAYOU DUPRE-REACH 1

DRAWN BY: KRISTI CAMTU

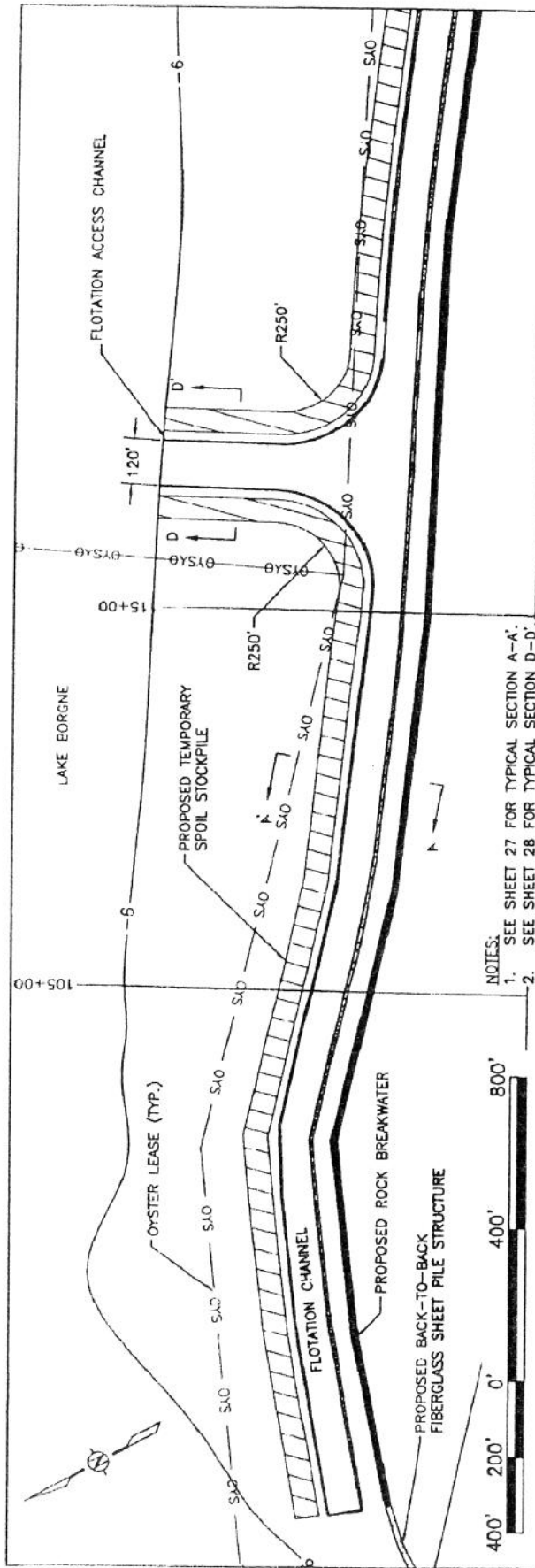
DESIGNED BY: SHANNON HAYNES, P.E.
APPROVED BY: LURE LEBAS, P.E.

STATE PROJECT NUMBER: PO-30

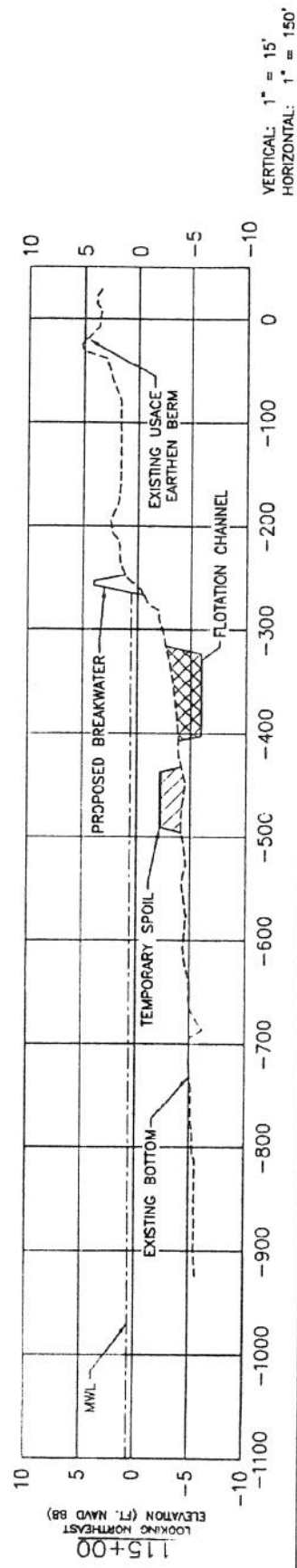
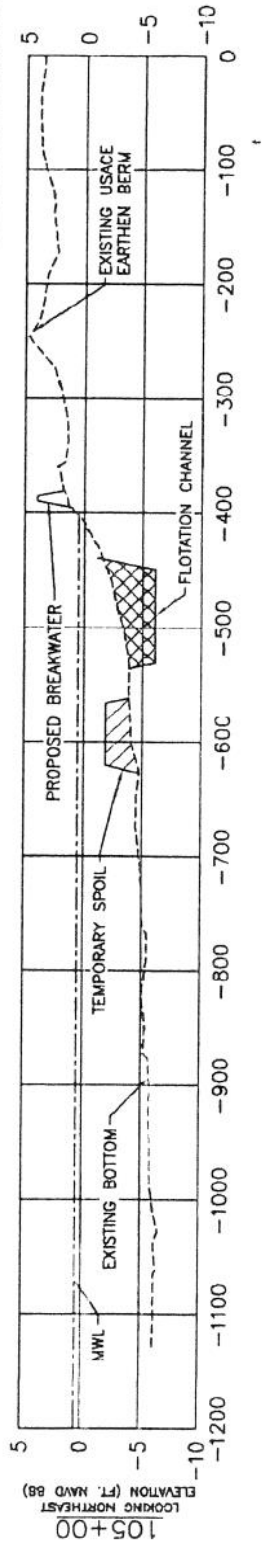
DATE: NOVEMBER 2006

FEDERAL PROJECT NUMBER: PO-30

SHEET 9 OF 35

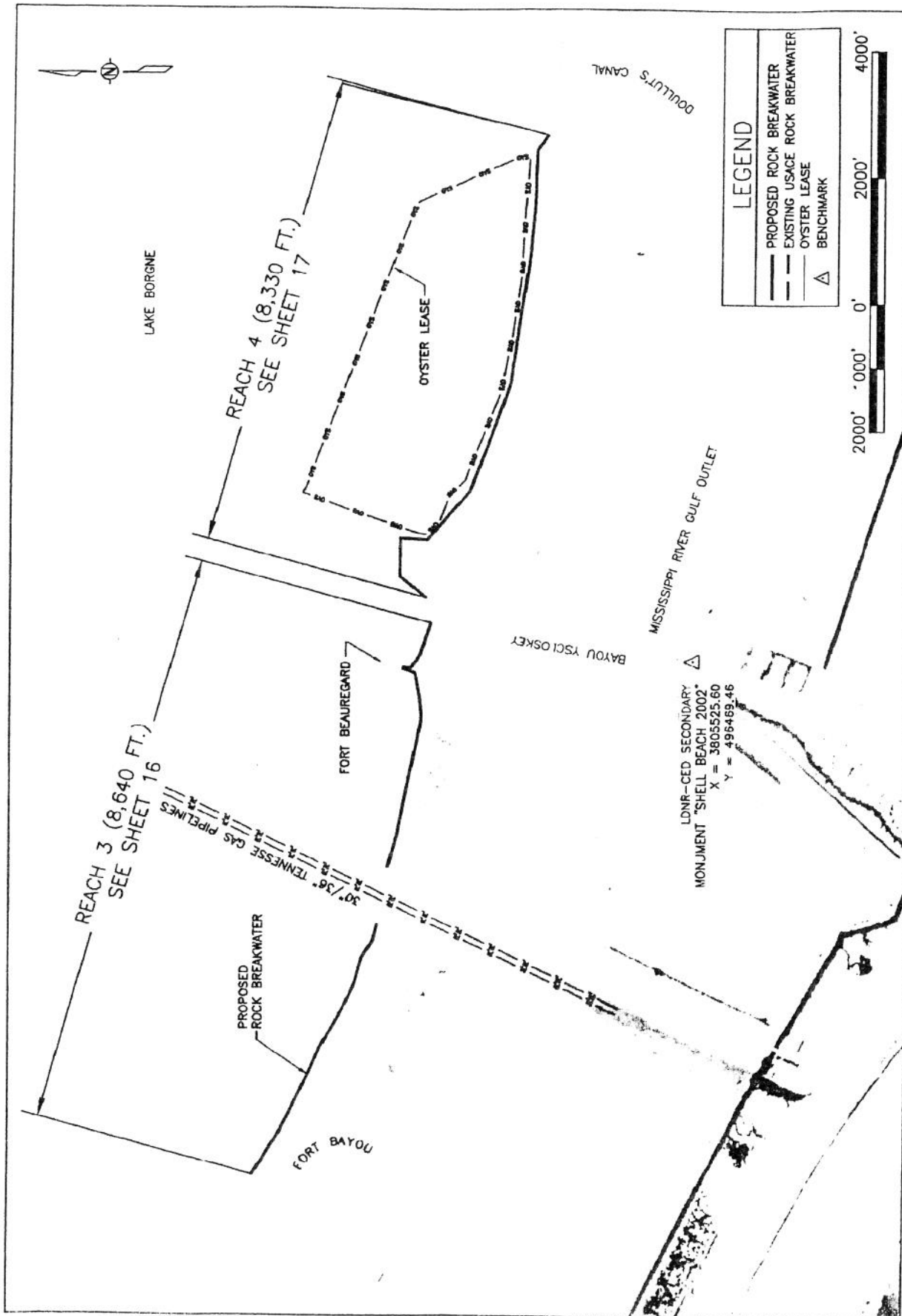


- NOTES:
1. SEE SHEET 27 FOR TYPICAL SECTION A-A'.
 2. SEE SHEET 28 FOR TYPICAL SECTION D-D'.



VERTICAL: 1" = 15'
HORIZONTAL: 1" = 150'

APPLICATION BY: U.S. ENVIRONMENTAL PROTECTION AGENCY 1449 ROSS AVENUE DALLAS, TX 75202-2733	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	LAKE BORGNE SHORELINE PROTECTION	PLAN AND SECTION VIEWS BAYOU DUPRE - REACH 2
DRAWN BY: KRISTI CANTU	DESIGNED BY: SHANNON HAYNES, P.E.	STATE PROJECT NUMBER: PO-30 FEDERAL PROJECT NUMBER: PO-30	DATE: NOVEMBER 2005 SHEET 11 OF 35

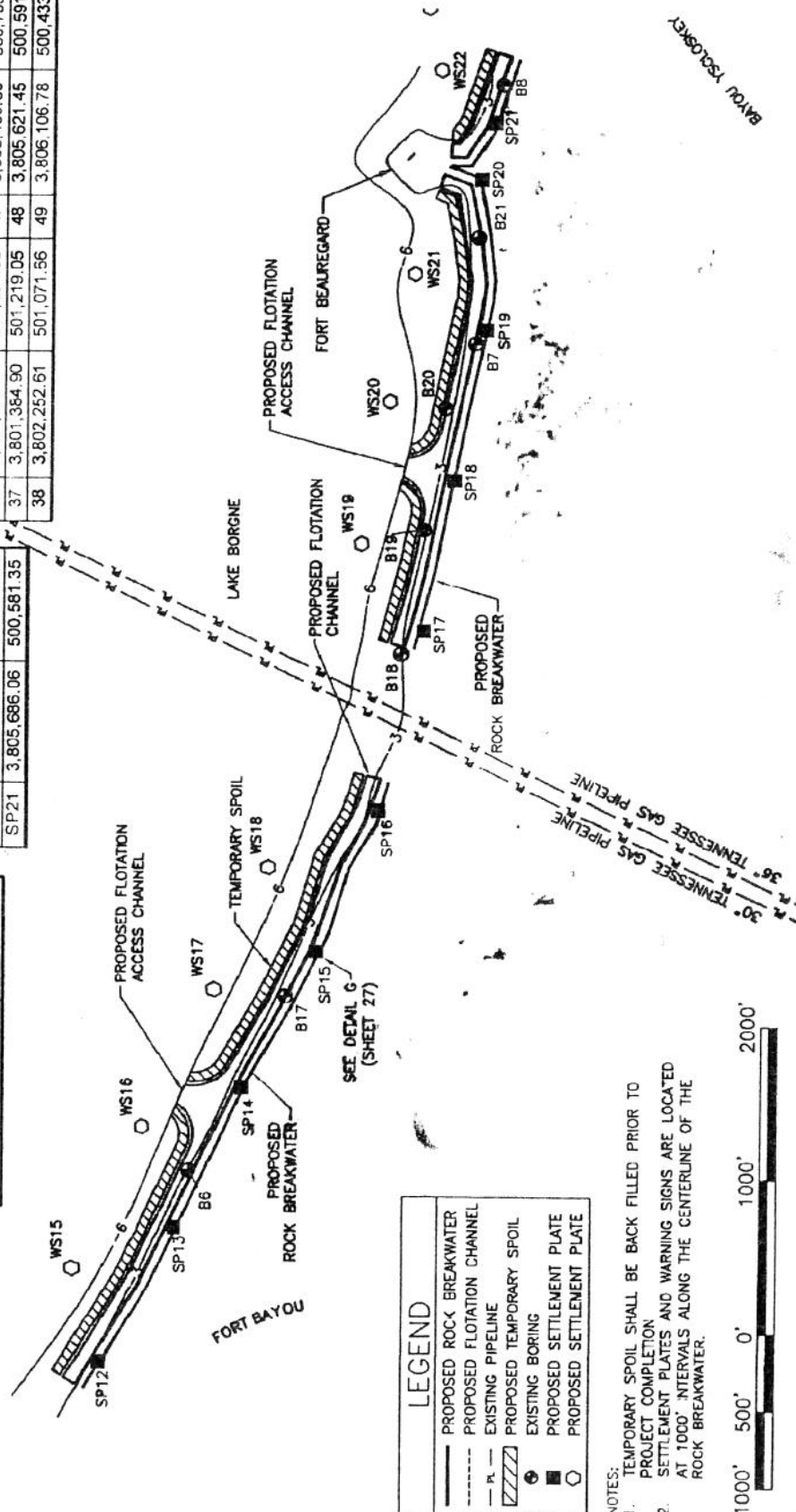


APPLICATION BY: U.S. ENVIRONMENTAL PROTECTION AGENCY 1445 ROSS AVE. DALLAS, TX 75202-2733	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	LAKE BORGNE SHORELINE PROTECTION	PROJECT LAYOUT SHELL BEACH
DRAWN BY: KRISTI CANTU	DESIGNED BY: SHANNON HAYNES, P.E. APPROVED BY: LUKE LEBAS, P.E.	STATE PROJECT NUMBER: PO-30 FEDERAL PROJECT NUMBER: PO-30	DATE: NOVEMBER 2005 SHEET 13 OF 35

WARNING SIGNS		
Sign	Easting	Northing
WS15	3,798,239.64	503,186.11
WS16	3,799,164.87	502,753.99
WS17	3,800,050.85	502,310.78
WS18	3,800,855.66	501,976.87
WS19	3,802,966.30	501,410.31
WS20	3,803,895.62	501,228.51
WS21	3,804,732.91	501,082.82
WS22	3,806,062.89	500,929.95

SETTLEMENT PLATES		
Plate	Easting	Northing
SP12	3,797,601.41	503,010.95
SP13	3,798,480.80	502,541.25
SP14	3,799,388.74	502,122.75
SP15	3,800,278.07	501,665.98
SP16	3,801,199.66	501,283.81
SP17	3,802,369.30	501,009.26
SP18	3,803,350.69	500,817.22
SP19	3,804,332.07	500,625.17
SP20	3,805,314.78	500,666.59
SP21	3,805,686.06	500,581.35

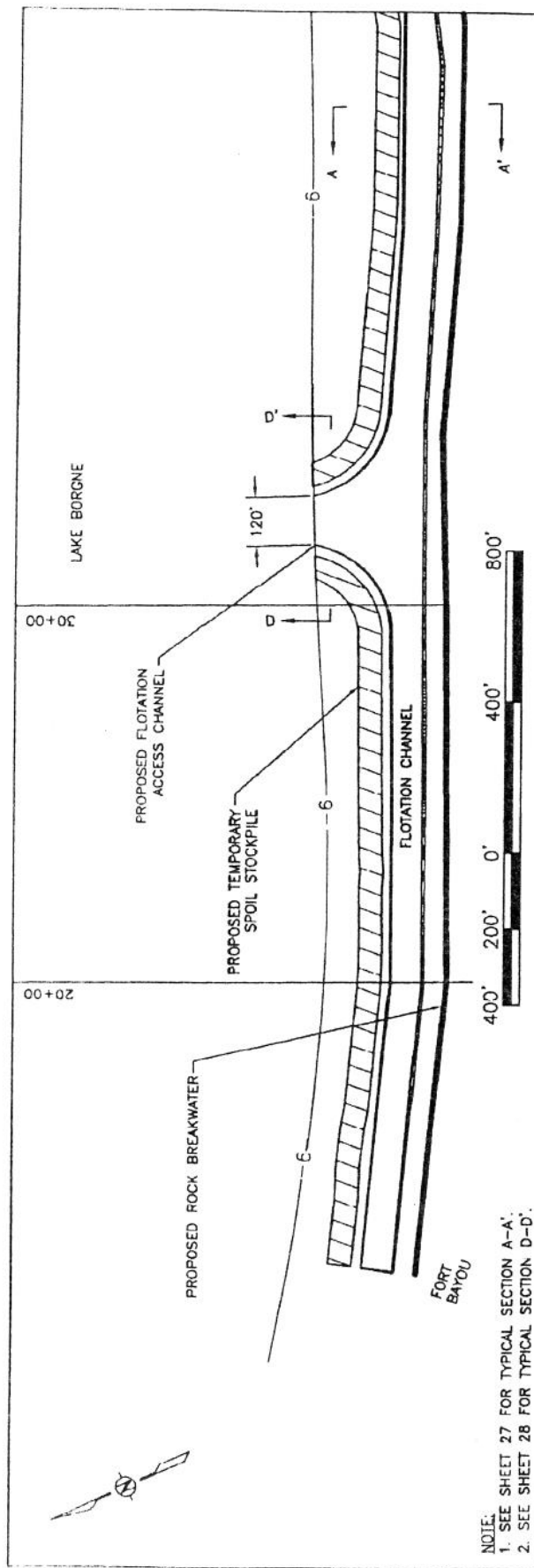
SHORELINE PROTECTION CENTERLINE				
Pt.	Easting	Northing	Pt.	Easting
28	3,797,430.02	503,104.74	39	3,802,780.42
29	3,798,095.35	502,705.16	40	3,803,788.35
30	3,799,002.21	502,283.47	41	3,804,514.00
31	3,799,416.51	502,099.70	42	3,804,651.73
32	3,799,660.30	501,961.32	43	3,804,957.13
33	3,799,903.82	501,823.08	44	3,805,324.73
34	3,800,391.18	501,588.72	45	3,805,400.95
35	3,800,826.84	501,465.25	46	3,805,403.13
36	3,801,107.58	501,294.89	47	3,805,400.60
37	3,801,364.90	501,219.05	48	3,805,621.45
38	3,802,252.61	501,071.56	49	3,806,106.78
				500,433.09



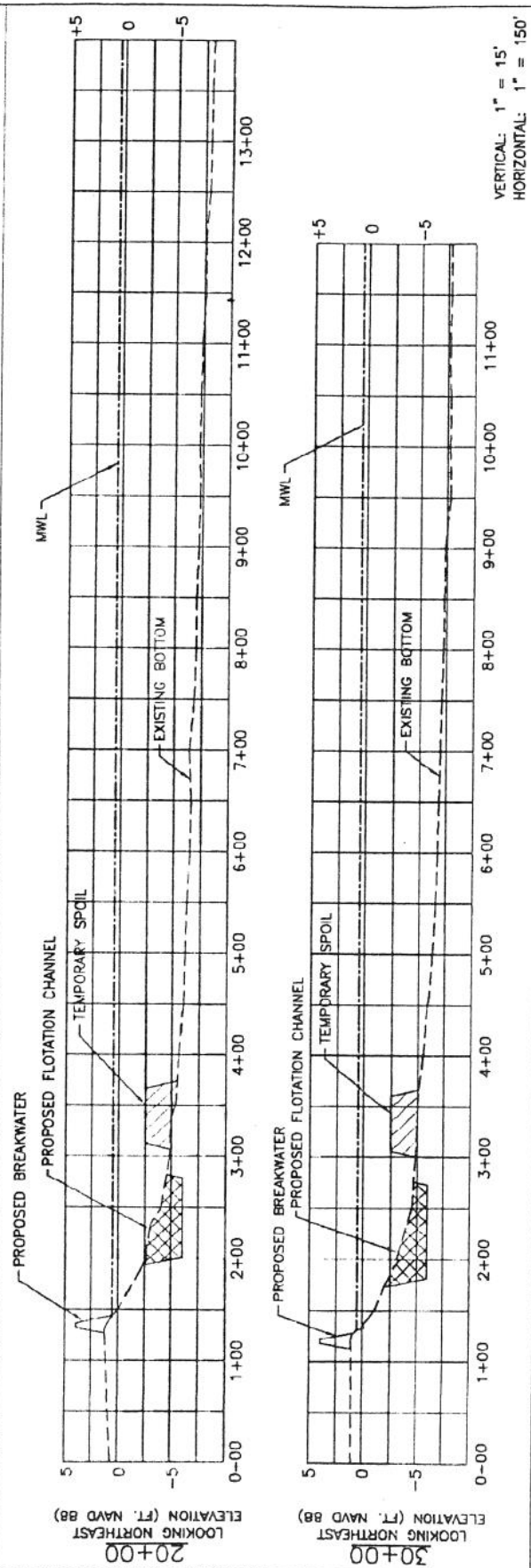
LEGEND	
—	PROPOSED ROCK BREAKWATER
- - -	PROPOSED FLOTATION CHANNEL
...	EXISTING PIPELINE
	PROPOSED TEMPORARY SPOIL
⊙	EXISTING BORING
⊙	PROPOSED SETTLEMENT PLATE
⊙	PROPOSED SETTLEMENT PLATE

NOTES:
 1. TEMPORARY SPOIL SHALL BE BACK FILLED PRIOR TO PROJECT COMPLETION.
 2. SETTLEMENT PLATES AND WARNING SIGNS ARE LOCATED AT 1000' INTERVALS ALONG THE CENTERLINE OF THE ROCK BREAKWATER.

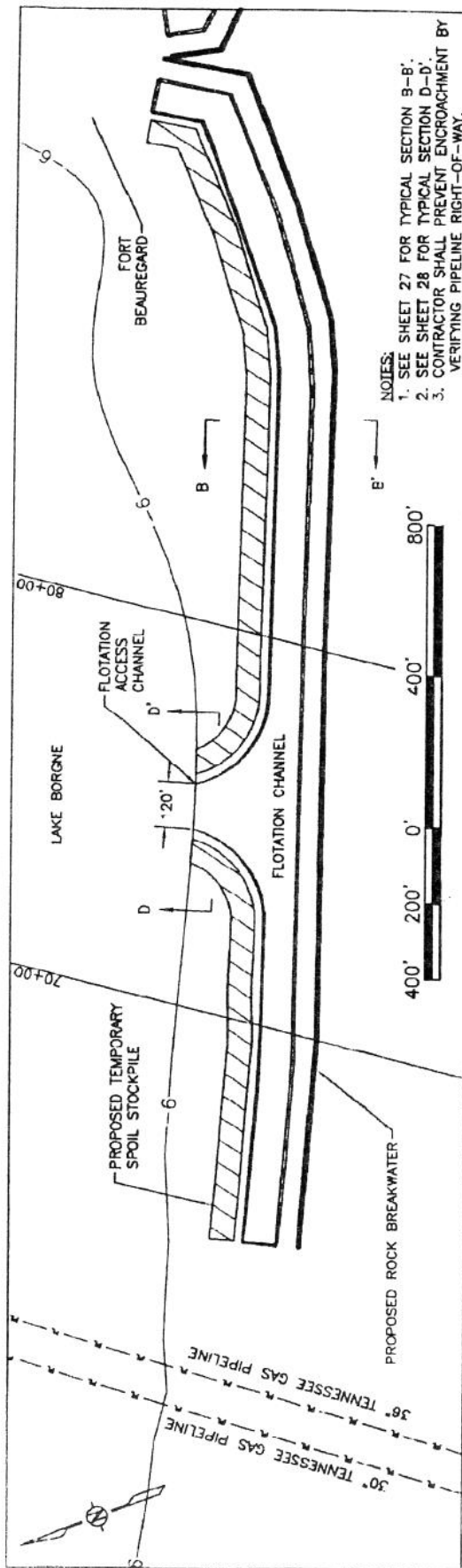
APPLICATION BY: U.S. ENVIRONMENTAL PROTECTION AGENCY 1445 ROSS AVE DALLAS, TX 75202-2733		LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802		BREAKWATER ALIGNMENT SHELL BEACH-REACH 3	
DRAWN BY: KRISTI CANTU		DESIGNED BY: SHAMON MAYNES, P.E.		STATE PROJECT NUMBER: PO-30 FEDERAL PROJECT NUMBER: PO-30	
DATE: NOVEMBER 2005		SHEET 15 OF 35			



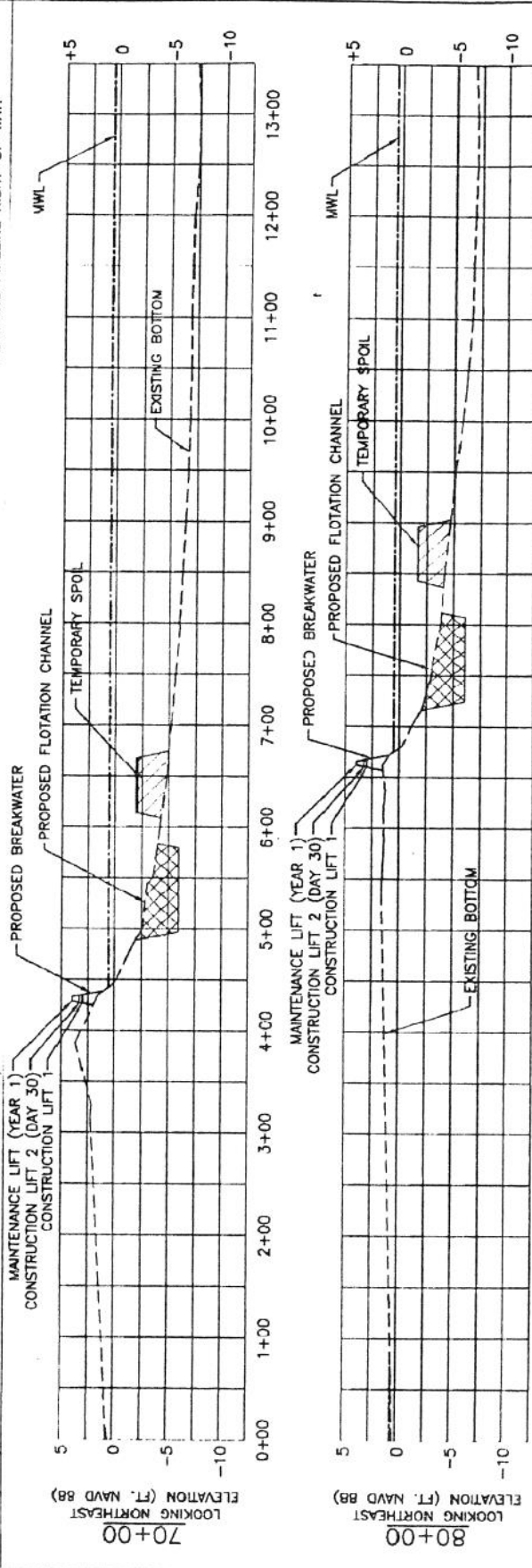
NOTE:
 1. SEE SHEET 27 FOR TYPICAL SECTION A-A'.
 2. SEE SHEET 28 FOR TYPICAL SECTION D-D'.



APPLICATION BY: U.S. ENVIRONMENTAL PROTECTION AGENCY 1445 CROSS WY. DALLAS, TX 75202-2733	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	LAKE BORGNE SHORELINE PROTECTION	PLAN AND SECTION VIEWS SHELL BEACH - REACH 3
DRAWN BY: KRISTI CANTU	DESIGNED BY: SHANNON HAYNES, P.E. APPROVED BY: LUKE LEBAS, P.E.	STATE PROJECT NUMBER: PO-30 FEDERAL PROJECT NUMBER: PO-30	DATE: NOVEMBER 2005 SHEET 17 OF 35



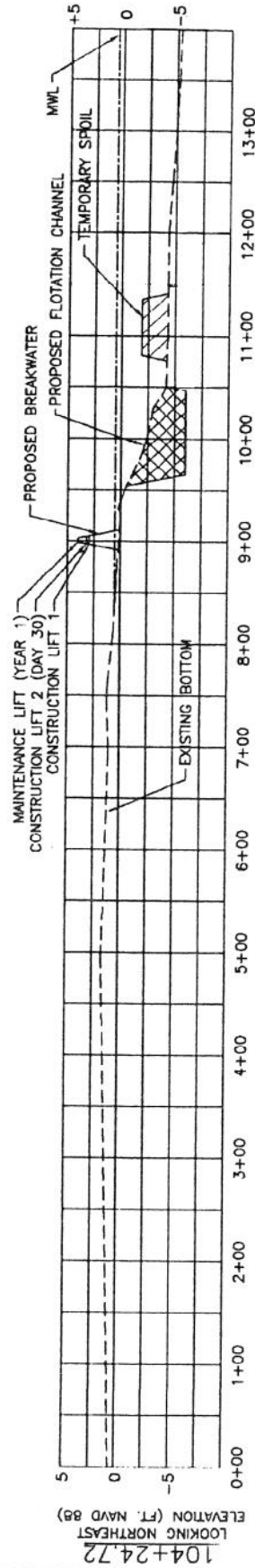
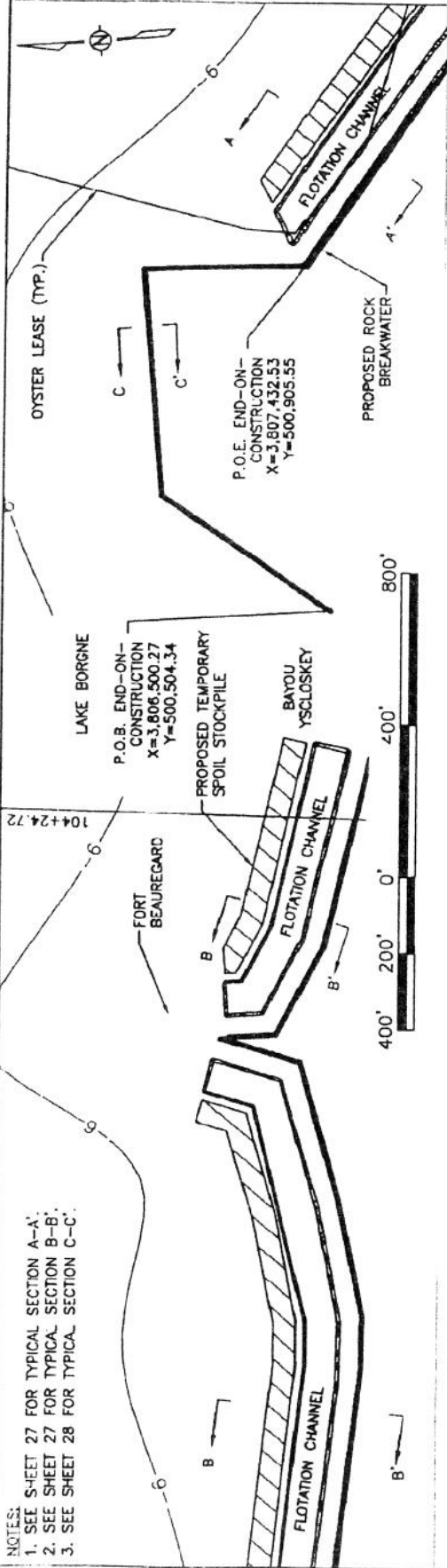
- NOTES:
1. SEE SHEET 27 FOR TYPICAL SECTION B-B'.
 2. SEE SHEET 28 FOR TYPICAL SECTION D-D'.
 3. CONTRACTOR SHALL PREVENT ENCROACHMENT BY VERIFYING PIPELINE RIGHT-OF-WAY.



VERTICAL: 1" = 15'
HORIZONTAL: 1" = 150'

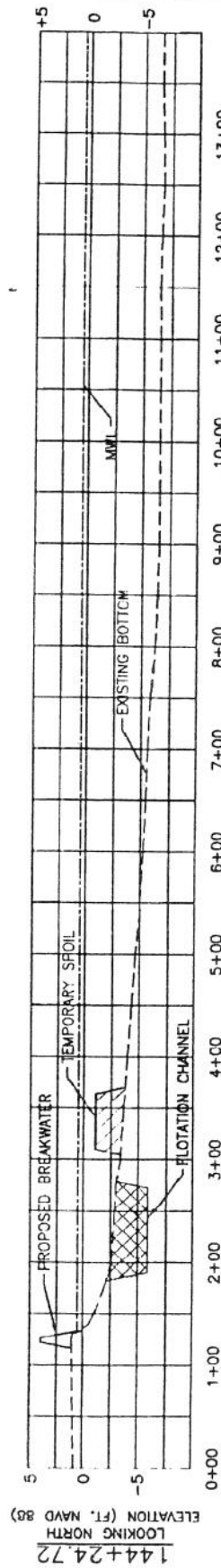
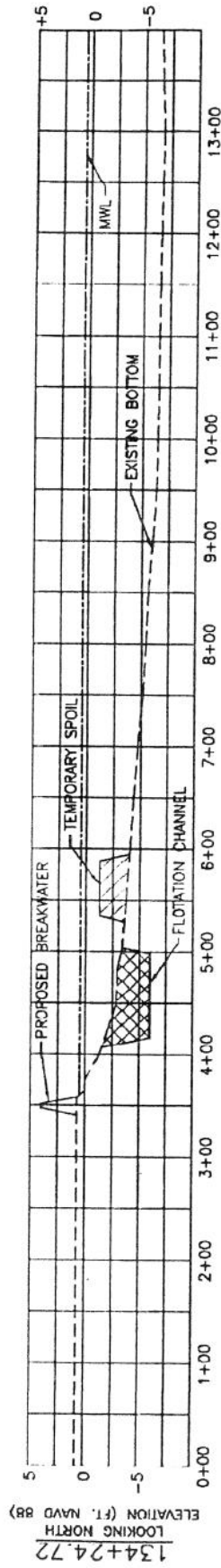
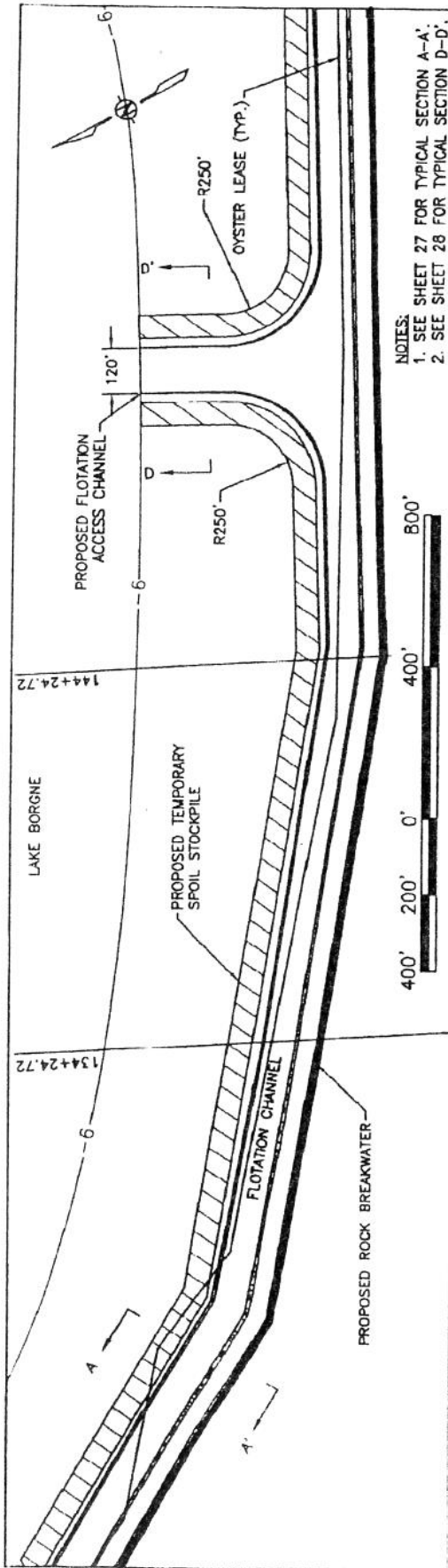
APPLICATION BY: U.S. ENVIRONMENTAL PROTECTION AGENCY 1435 GROSS AVE. DALLAS, TX 75202-2733	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	LAKE BORGNE SHORELINE PROTECTION	PLAN AND SECTION VIEWS SHELL BEACH - REACH 3
DRAWN BY: KRISTI CANTU	DESIGNED BY: SHANNON HAYNES, P.E. APPROVED BY: LUKE LEBAS, P.E.	STATE PROJECT NUMBER: PO-30 FEDERAL PROJECT NUMBER: PO-30	DATE: NOVEMBER 2005 SHEET 18 OF 35

- NOTES:
1. SEE SHEET 27 FOR TYPICAL SECTION A-A'.
 2. SEE SHEET 27 FOR TYPICAL SECTION B-B'.
 3. SEE SHEET 28 FOR TYPICAL SECTION C-C'.



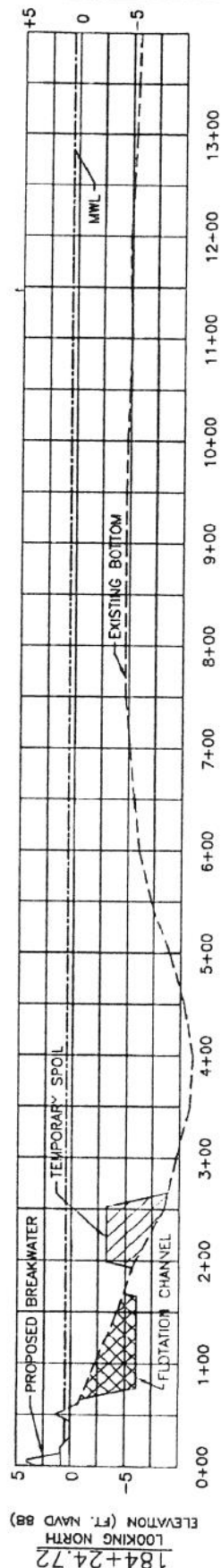
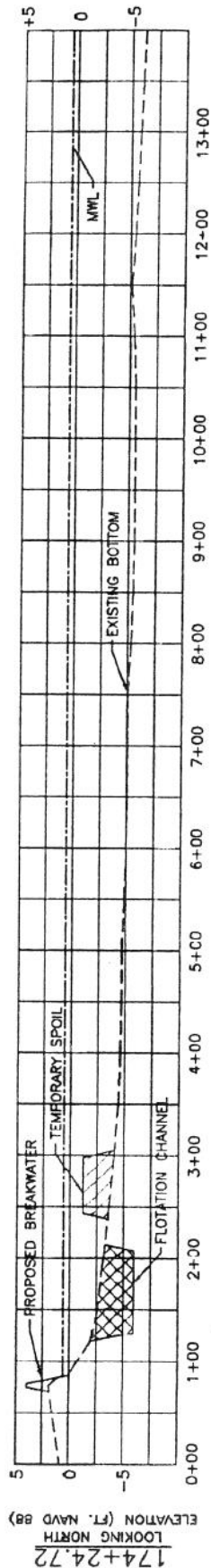
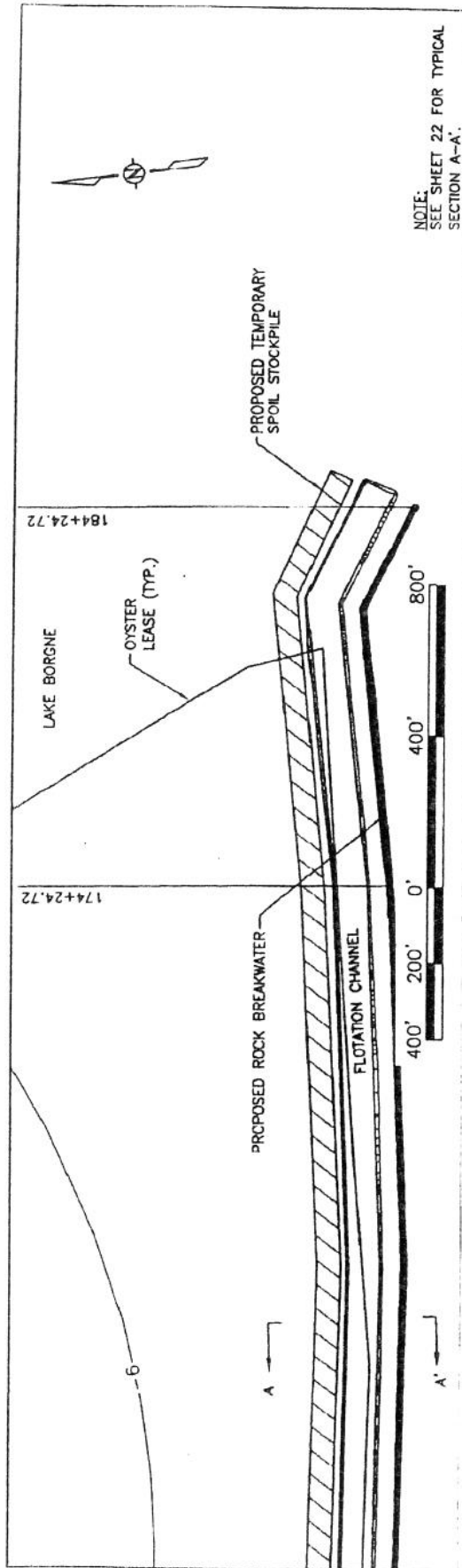
VERTICAL: 1" = 15'
HORIZONTAL: 1" = 150'

APPLICATION BY: U.S. ENVIRONMENTAL PROTECTION AGENCY 1445 ROSS AVE. DALLAS, TX 75202-2733	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	LAKE BORGNE SHORELINE PROTECTION	PLAN AND SECTION VIEWS SHELL BEACH - REACH 3
DRAWN BY: KRISTI CANTU	DESIGNED BY: SHANNON HAYNES, P.E. APPROVED BY: LUKE LEMAS, P.E.	STATE PROJECT NUMBER: PO-30 FEDERAL PROJECT NUMBER: PO-30	DATE: NOVEMBER 2005 SHEET 21 OF 35



VERTICAL: 1" = 15'
HORIZONTAL: 1" = 150'

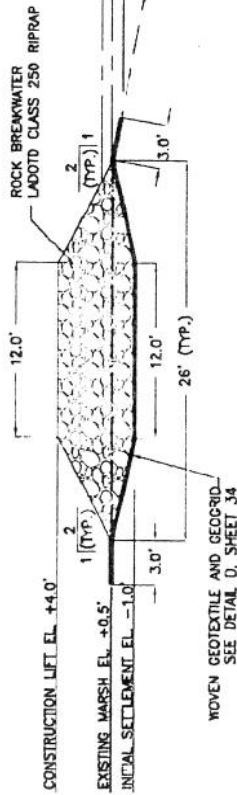
APPLICATION BY: U.S. ENVIRONMENTAL PROTECTION AGENCY 1445 ROSS AVE. DALLAS, TX 75202-2733	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	LAKE BORGNE SHORELINE PROTECTION	PLAN AND SECTION VIEWS SHELL BEACH - REACH 4
DRAWN BY: KRISTI CANTU	DESIGNED BY: SHANNON HAYNES, P.E. APPROVED BY: LUKE LEMAS, P.E.	STATE PROJECT NUMBER: PO-30 FEDERAL PROJECT NUMBER: PO-30	DATE: NOVEMBER 2005 SHEET 23 OF 35



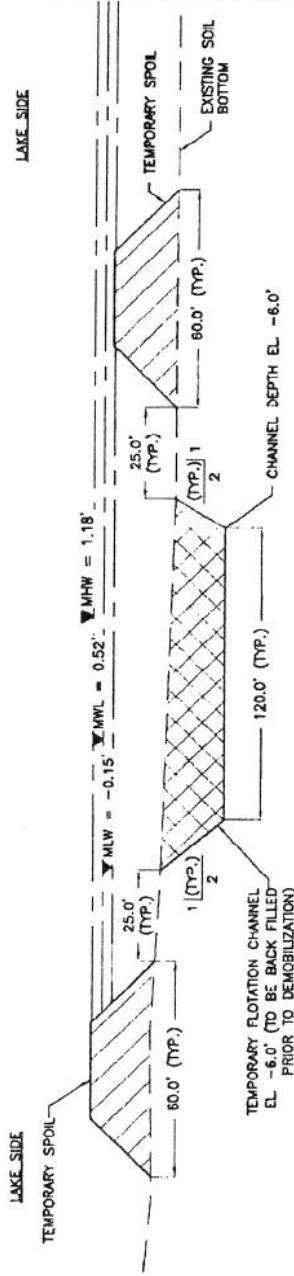
VERTICAL: 1" = 25'
HORIZONTAL: 1" = 225'

APPLICATION BY: U.S. ENVIRONMENTAL PROTECTION AGENCY 1445 ROSS AVE. DALLAS, TX 75202-2733	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	LAKE BORGNE SHORELINE PROTECTION	PLAN AND SECTION VIEWS SHELL BEACH - REACH 4
DRAWN BY: KRISTI CANTU	DESIGNED BY: SHANNON HAYNES, P.E. APPROVED BY: LUKE LEBAS, P.E.	STATE PROJECT NUMBER: PO-30 FEDERAL PROJECT NUMBER: PO-30	DATE: NOVEMBER 2005 SHEET 25 OF 35

SHORELINE



TYPICAL SECTION C-C'
TYPICAL ROCK DIKE AROUND FORMER
NAVAL STATION
(NOT TO SCALE)



TYPICAL SECTION D-D'
TYPICAL ACCESS CHANNEL
(NOT TO SCALE)

NOTES:

1. ARMOR STONE RIPRAP SHALL MEET LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT CLASS 250 POUND STONE, OR OWNER APPROVED EQUIVALENT. GRADATION TESTS OF REPRESENTATIVE STONE (15 TON MIN. SAMPLE SIZE) SHALL BE MADE AT THE QUARRY. CERTIFIED TEST RESULTS MUST BE SUBMITTED AND APPROVED PRIOR TO PLACEMENT ON THE PROJECT. THE STONE PLACEMENT METHOD SHALL PRODUCE A REASONABLY WELL GRADED ROCK MASS WITH Voids MINIMIZED AND A VERTICAL TOLERANCE OF 6 INCHES ABOVE FINAL GRADE. STONE SHALL BE PLACED TO FULL THICKNESS IN ONE LIFT WITH A MAXIMUM DROP OF 1 FOOT TO AVOID DAMAGING THE GEOTEXTILE FABRIC. FOLLOWING A PERIOD OF SETTLEMENT, A SECOND OPERATION SHALL BE MADE TO RESTORE THE ROCK DIKE TO THE REQUIRED SHAPE AND GRADE AS DIRECTED BY ENGINEER.
2. THE BREAKWATER SHALL BE CONSTRUCTED WITH THE CENTERLINE PLACED AT THE LOCATIONS SHOWN ON THE PLAN AND PROFILE SHEETS. ACTUAL ALIGNMENT MAY BE ADJUSTED BY PROJECT ENGINEER PRIOR TO CONSTRUCTION IN ORDER TO MEET CHANGING FIELD CONDITIONS. IF ADDITIONAL QUANTITIES FOR ARMOR STONE AND MOVEN GEOTEXTILE FABRIC ARE NECESSARY, THEY WILL BE PAID FOR AT THE UNIT PRICE BID FOR THE ITEM.
3. ROCK BREAKWATERS CREATED USING END-ON-CONSTRUCTION TECHNIQUES SHALL FOLLOW THE ALIGNMENT SHOWN IN THE PLAN AND PROFILE SHEETS. ALL CONSTRUCTION ACTIVITIES ARE RESTRICTED WITHIN THE WIDTH SHOWN IN SECTION C-C. ACCESS SHALL BE PROVIDED FROM THE ADJACENT ROCK BREAKWATERS AND FLotation CHANNELS ONLY.

APPLICATION BY:

U.S. ENVIRONMENTAL PROTECTION AGENCY
1445 ROSS AVE.
DALLAS, TX. 75202-2733

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
COASTAL ENGINEERING DIVISION
617 NORTH 3RD STREET
BATON ROUGE, LOUISIANA 70802

LAKE BORGNE SHORELINE PROTECTION

TYPICAL SECTIONS
C-C' AND D-D'

DRAWN BY: SHANNON HAYNES, P.E.

DESIGNED BY: SHANNON HAYNES, P.E.

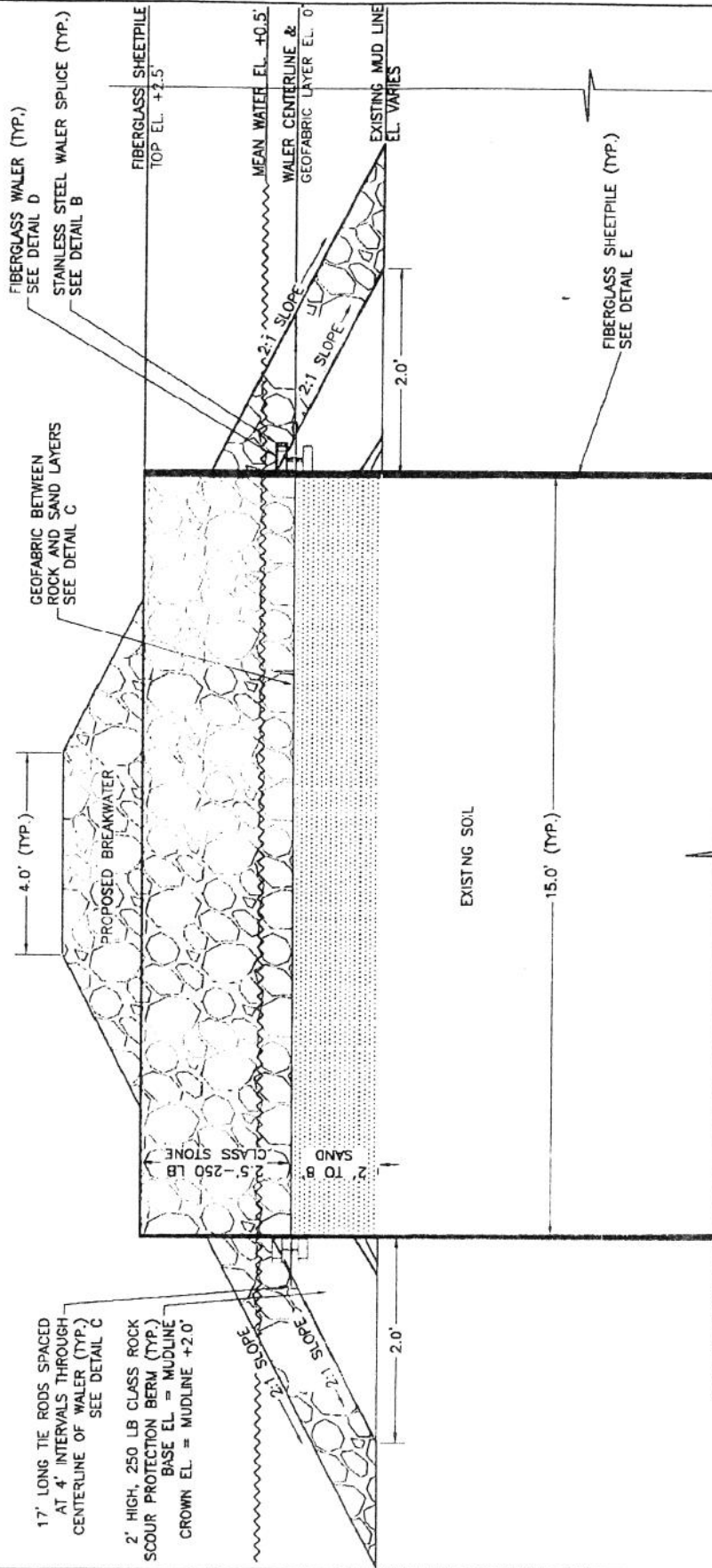
STATE PROJECT NUMBER: PO-30

DATE: NOVEMBER 2005

SHEET 27 OF 35

NOTES:

1. SEE SHEET 27 FOR SECTIONS A-A' AND B-B'.
2. SEE SHEET 35 FOR DETAIL C.
3. SEE SHEETS 36 FOR DETAILS E, F, G, H AND J.
4. 4" DEEP HOLES SHALL BE DRILLED INTO THE CENTERLINE OF EACH SHEET PILE AT ELEVATION -2'. GEOFABRIC LAYER SHALL OVERLAP EACH HOLE.
4. SAND LAYER DENSITY = 115 PCF
5. SAND LAYER SHALL BE MONITORED FOR SETTLEMENT AND BACKFILLED TO MAINTAIN ELEVATION 0' FOR A MINIMUM OF 30 DAYS PRIOR TO PLACEMENT OF GEOFABRIC AND STONE LAYER.



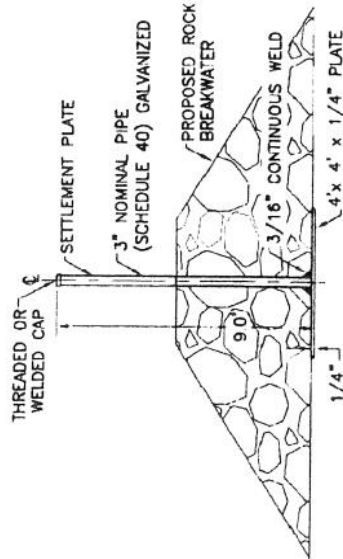
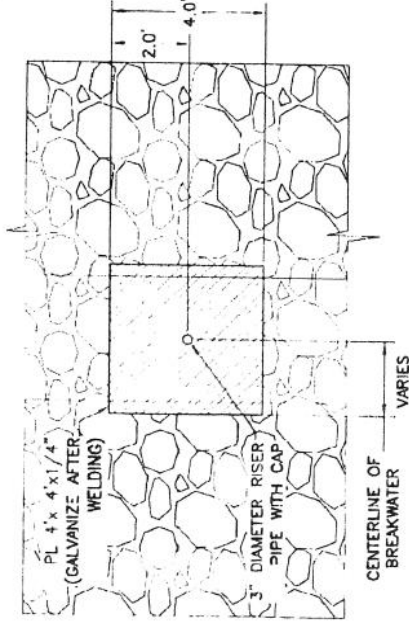
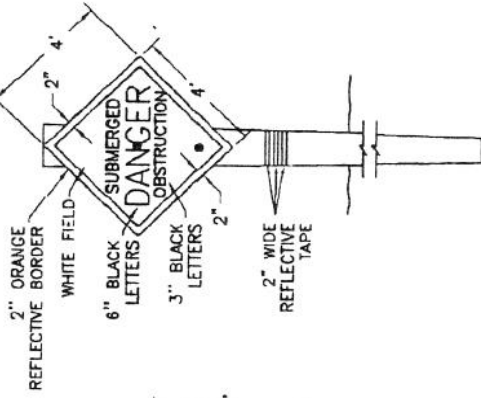
TYPICAL SECTION G-G'

FRONT VIEW
PROPOSED ROCK BREAKWATER
AND SHEET PILE INTERFACE
(NOT TO SCALE)

APPLICATION BY: U.S. ENVIRONMENTAL PROTECTION AGENCY 1445 ROSS AVENUE DALLAS, TX 75202-2733	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 617 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	LAKE BORGNE SHORELINE PROTECTION	ROCK BREAKWATER-SHEET PILE INTERFACE DETAIL
DRAWN BY: SHANNON HAYNES, P.E.	DESIGNED BY: SHANNON HAYNES, P.E.	STATE PROJECT NUMBER: PO-30 FEDERAL PROJECT NUMBER: PO-30	DATE: NOVEMBER 2005 SHEET 31 OF 35

GENERAL NOTES:

1. WARNING SIGNS SHALL BE INSTALLED AT 1000 FT. INTERVALS.
2. THE 2" BORDER ON THE WARNING SIGN WILL BE A REFLECTIVE MATERIAL OF ORANGE 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 (e) (1) WHICH CAN BE DOWNLOADED AT [HTTP://WWW.ECFR.GPOACCESS.GOV](http://www.ecfr.gpoaccess.gov)
3. NEOPRENE WASHERS SHALL BE PLACED BETWEEN THE SIGN AND THE PILING AT ALL POINTS OF CONTACT.
4. HARDWARE FOR TIMBER CONNECTIONS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH SECTION 811.5 OF THE LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, AS PUBLISHED BY THE LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT, LATEST EDITION.
5. 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 (LADOTD), LATEST EDITION. PILES SHALL BE TREATED WITH A CREOSOTE SOLUTION CONFORMING TO AWPA P2 TO A MINIMUM RETENTION OF 16 PCF AND CAPPED ACCORDING TO LADOTD SPECIFICATION 812.06.

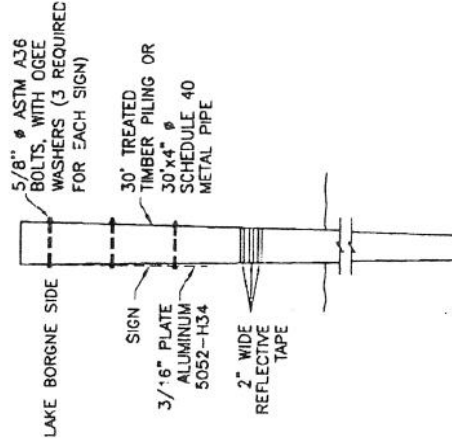


DETAIL A

ROCK DIKE SETTLEMENT PLATE
(NOT TO SCALE)

SETTLEMENT PLATE NOTES:

1. SETTLEMENT PLATES SHALL BE INSTALLED ALONG THE CENTERLINE OF THE BREAKWATER.
2. THE SETTLEMENT PLATES SHALL BE SURVEYED DAILY BY THE CONTRACTOR AND WITNESSED BY THE DNR INSPECTOR UNTIL THE ROCK IS ACCEPTED.
3. SETTLEMENT PLATES SHALL BE BUILT USING ASTM A36 STEEL AND HOT-DIPPED GALVANIZED AFTER FABRICATION.



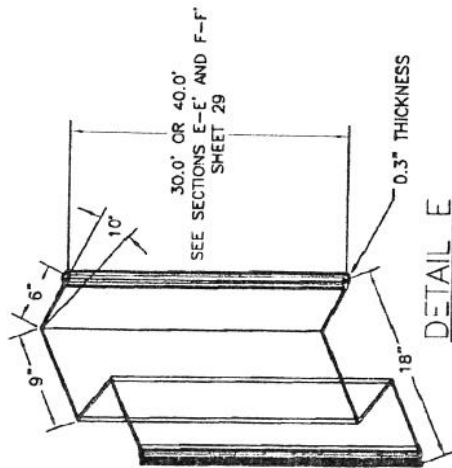
DETAIL B

WARNING SIGN SIDE DETAIL
(NOT TO SCALE)

APPLICATION BY: U.S. ENVIRONMENTAL PROTECTION AGENCY 1443 ROSS AVE. DALLAS, TX. 75202-2733	LOUISIANA DEPARTMENT OF NATURAL RESOURCES COASTAL ENGINEERING DIVISION 817 NORTH 3RD STREET BATON ROUGE, LOUISIANA 70802	LAKE BORGNE SHORELINE PROTECTION	TYPICAL DETAILS
DRAWN BY: SHANNON HAYNES, P.E.	DESIGNED BY: SHANNON HAYNES, P.E.	STATE PROJECT NUMBER: PO-30	DATE: NOVEMBER 2005
		FEDERAL PROJECT NUMBER: PO-30	SHEET 33 OF 35

NOTES:

1. ALLOWABLE BENDING MOMENT = 27,145 FT.-LBS./FT.
2. TYPICAL PILE MANUFACTURED LENGTH = 40' (TYP.)



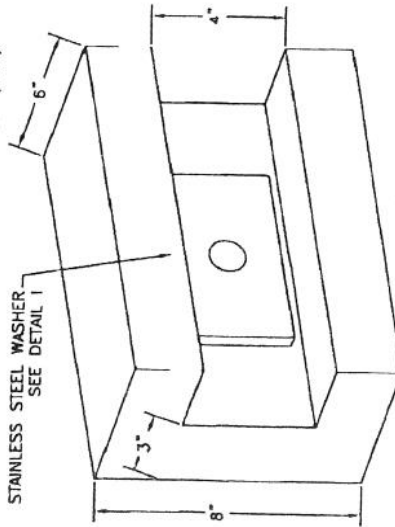
DETAIL E

NOT TO SCALE

FIBERGLASS SHEET PILE DETAIL

NOTES:

1. MINIMUM ALLOWABLE FLEXURE = 15,544 LBS./FT
2. MINIMUM ALLOWABLE SHEAR = 5,766 LBS./FT
3. TYPICAL WALKER MANUFACTURED LENGTH = 24' (TYP.)



DETAIL H

NOT TO SCALE

FIBERGLASS WALKER DETAIL

APPLICATION BY:

U.S. ENVIRONMENTAL PROTECTION AGENCY
1445 ROSS AVE.
DALLAS, TX 75202-2733

DRAWN BY: KRISTI CANTU

DESIGNED BY: SHANNON HAYNES, P.E.

G:\Users\Autocad\BASINS\PO\30 Lake Borgne\Permit Drawings\November 07\35 SheetPile Details.dwg

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
COASTAL ENGINEERING DIVISION
617 NORTH 3RD STREET
BATON ROUGE, LOUISIANA 70802

APPROVED BY: LUKE LEBAS, P.E.

LAKE BORGNE SHORELINE PROTECTION

TYPICAL DETAILS

STATE PROJECT NUMBER: PO-30

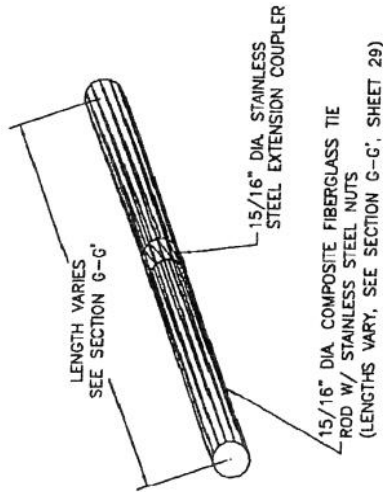
FEDERAL PROJECT NUMBER: PO-30

DATE: NOVEMBER 2005

SHEET 35 OF 35

NOTES:

1. MINIMUM ALLOWABLE LOAD = 11,000 LBS
2. TYPICAL MANUFACTURED TIE ROD LENGTH = 20' (TYP.)



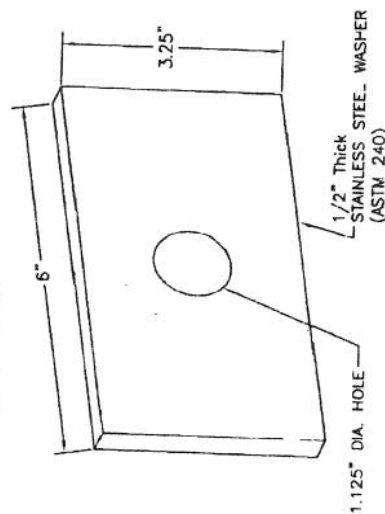
DETAIL G

NOT TO SCALE

FIBERGLASS TIE ROD WITH COUPLER

NOTES:

1. MINIMUM ALLOWABLE LOAD = 2750 LBS/FT
2. WASHERS TO BE LOCATED ON ALL SHEETPILES ALONG THE CENTERLINE OF THE WALKER.



DETAIL I

NOT TO SCALE

STAINLESS STEEL WASHER DETAIL

DETAIL J

NOT TO SCALE

STAINLESS STEEL CORNER CONNECTOR DETAIL

