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| 4 | BAYOU DUPRE - ALIGNMENT (ORIGINAL) |
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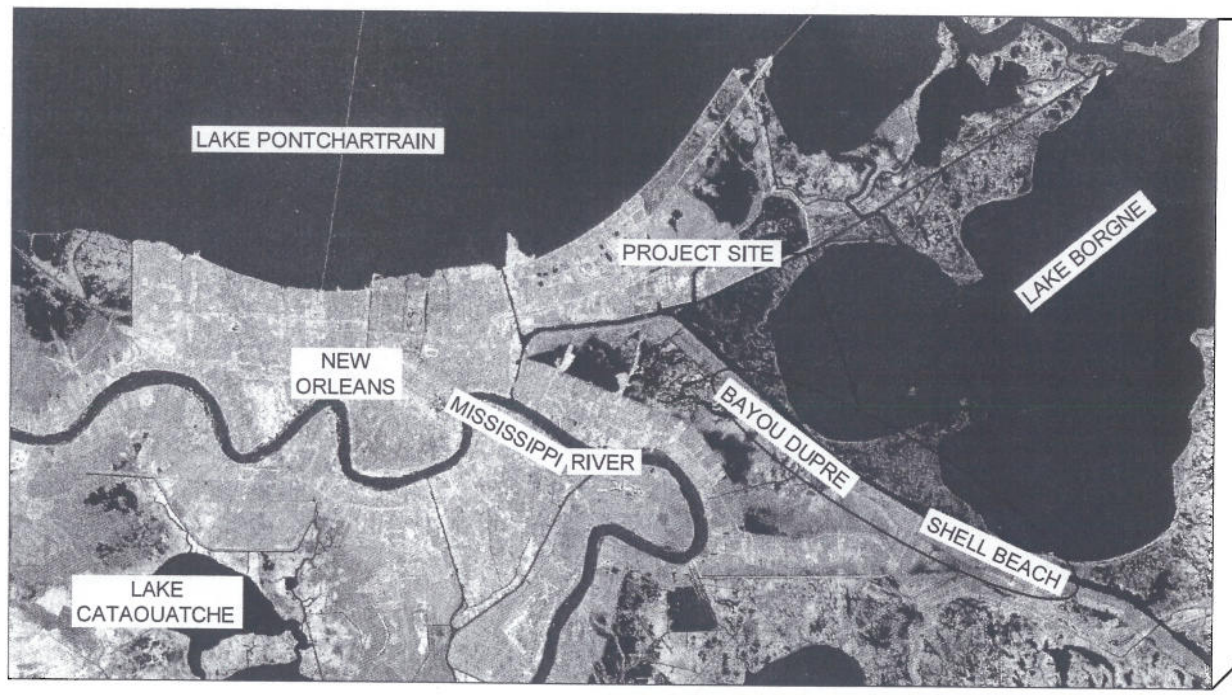
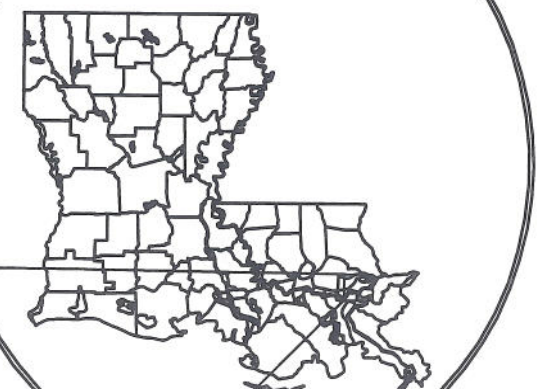
# STATE OF LOUISIANA
# DEPARTMENT OF NATURAL RESOURCES
# COASTAL ENGINEERING DIVISION

# LAKE BORGNE
# SHORELINE PROTECTION
## PO-30
## ST. BERNARD PARISH




STATE OF LOUISIANA
INSET MAP



FEDERAL PROJECT SPONSOR

STATE PROJECT SPONSOR

CED DIRECTOR

CED ENGINEER MANAGER

CED PROJECT ENGINEER

TYPE OF CONSTRUCTION

CLASSIFICATION III (HEAVY CONSTRUCTION)
SHORELINE PROTECTION

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

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

DRAWN BY: SHANE FAUST | DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

TITLE SHEET

DATE: MARCH 2009
SHEET 1 OF 51

## GENERAL NOTES

1. ALL ELEVATIONS ARE GIVEN IN THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) U.S. SURVEY FEET (FEET). ALL HORIZONTAL COORDINATES ARE GIVEN IN THE NORTH AMERICAN DATUM OF 1983 (NAD83, LOUISIANA STATE PLANE SOUTH ZONE U.S. FEET).
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NAVIGATING FROM A NAVIGABLE WATER BODY TO THE SITE. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR NAVIGATING WITHIN THE LIMITS OF THE PROJECT SITE AND DREDGING ONLY WITHIN THE LIMITS OF THE FLOTATION AND ACCESS CHANNELS. THE LDNR PROJECT ENGINEER OR INSPECTOR SHALL MONITOR EQUIPMENT OPERATIONS DURING CONSTRUCTION.
3. ALL EQUIPMENT SHALL BE FLOATING AT ALL TIMES DURING TRANSIT TO AND FROM THE PROJECT SITE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING ALL THE LANDOWNERS, UTILITIES AND PIPELINE COMPANIES IDENDIFIED IN THE SPECIFICATIONS AT LEAST 5 WORKING DAYS PRIOR TO MOBILIZATION. ALL UNDERGROUND PIPELINES AND UTILITIES SHALL BE MARKED WITH BUOYS BY THE CONTRACTOR. THE CONTRACTOR SHALL MAINTAIN BUOYS DURING CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN THE CLEARANCES FROM THE PIPELINES SET FORTH IN THE PLAN DRAWINGS OR IN THE BID DOCUMENTS. NO EXCAVATION IS ALLOWED WITHIN ANY AREA RESTRICTED BY THE PIPELINE COMPANIES AND SET FORTH ON THE PLANS. PIPELINE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATIONS. THE OWNER IS NOT LIABLE FOR EXACT LOCATIONS. THE CONTRACTOR MUST CALL LOUISIANA ONE CALL AT 1-800-272-3020 AT LEAST 5 WORKING DAYS PRIOR TO MOBILIZATION.
5. THE PLANS AND BID DOCUMENTS ARE COMPLEMENTARY; WHAT IS REQUIRED IN ONE IS AS BINDING AS IF REQUIRED BY ALL. CLARIFICATIONS, INTERPRETATIONS, OR NOTIFICATIONS OF MINOR VARIATIONS AND DEVIATIONS IN THE CONTRACT DOCUMENTS WILL BE ISSUED BY THE ENGINEER, IF NECESSARY.
6. THE ELEVATIONS SHOWN ON PLANS ARE BASED ON SURVEYS PERFORMED BETWEEN 1/27/03 AND 3/21/05 BY B.F.M. CORPORATION, L.L.C. AND SIGMA CONSULTING, INC., RESPECTIVELY, FOR LDNR.
7. THE ALIGNMENT FOR THE ROCK BREAKWATERS AND BACK-TO-BACK SHEET PILE STRUCTURE MAY BE REVISED BY THE ENGINEER BEFORE CONSTRUCTION TO REFLECT CHANGES IN FIELD CONDITIONS.
8. ANY DAMAGE TO EXISTING U.S. COAST GUARD NAVIGATION AIDS OR PRIVATE NAVIGATION AIDS SHALL BE REPAIRED BY THE CONTRACTOR TO U.S. COAST GUARD STANDARDS AT THE EXPENSE OF THE CONTRACTOR.
9. THE ESTIMATED ROCK QUANTITIES SHOWN IN THE SUMMARY OF ESTIMATED QUANTITIES ARE FOR BIDDING PURPOSES ONLY AND CALCULATED ACCORDING TO THE CONDITIONS SURVEYED FROM 1/27/03 TO 3/21/05. THE ROCK QUANTITIES WERE CALCULATED USING THE END AREA METHOD OF SECTIONS AT THE BEGINNING, END, AND EVERY SURVEY TRANSECT ALONG THE ROCK BREAKWATER ALIGNMENT. THE ROCK QUANTITIES ASSUMED VARYING RATES OF SETTLEMENT FOR THE BREAKWATERS AS SHOWN IN THE FINAL DESIGN REPORT. THE QUANTITIES REQUIRED FOR CAPPING OFF THE SHEET PILE STRUCTURE WERE CALCULATED ASSUMING AN UNIFORM 2.5' LAYER OF STONE OVER THE ENTIRE STRUCTURE. AN IN-PLACE UNIT WEIGHT OF 1.5 TONS/CU. YDS. WAS ASSUMED FOR THE ROCK. ACTUAL QUANTITIES WILL BE BASED ON BARGE DISPLACEMENT MEASUREMENTS. SEE THE TECHNICAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. THE OWNER RESERVES THE RIGHT TO ADJUST QUANTITIES HIGHER OR LOWER WITHOUT ADJUSTMENT OF THE UNIT PRICE.
10. MATERIAL STOCKPILED LAKEWARD OF FLOTATION AND ACCESS CHANNELS SHALL BE DEPOSITED IN THE AREAS SHOWN ON THE PLANS AND PLACED SUCH THAT IT IS READILY AVAILABLE TO BE BACKFILLED. ONLY MATERIAL DREDGED FROM FROM THE ACCESS AND FLOTATION CHANNELS SHALL BE BACKFILLED INTO THE CHANNELS.
11. MEAN HIGH WATER (MHW) AND MEAN LOW WATER (MLW) WERE CALCULATED FROM THE NOAA BUOY STATION 42007 LOCATED SOUTHEAST OF BILOXI USING 1993 TO 2002 DATA.
12. THE CONTRACTOR SHALL PERFORM A MAGNETOMETER SURVEY OF THE ACCESS CHANNELS, FLOTATION CHANNELS, AND SHEET PILE STRUCTURE. MAGNETOMETER LINES SHALL BE RUN ALONG THE ALIGNMENT OF THE ACCESS CHANNELS, FLOATATION CHANNELS, AND SHEET PILE STRUCTURE. ADDITIONAL MAGNETOMETER LINES SHALL BE RUN PERPENDICULAR TO THE ALIGNMENT OF THE ACCESS CHANNELS, FLOTATION CHANNELS, AND SHEET PILE STRUCTURE. THESE LINES SHALL EXTEND OUT 25.0' FROM THE EDGE OF THE TEMPORARY SPOIL PLACEMENT AND BE SPACED A MAXIMUM OF 500.0' APART. DRAWINGS SHOWING THE TRACK LINES, MAGNETOMETER HITS, COORDINATES, AMPLITUDE, SIGNATURE TYPE, AND SIGNATURE WIDTH OF ALL MAGNETOMETER HITS SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO MOBILIZATION. THE DRAWING SHALL BE STAMPED BY A REGISTERED PROFESSIONAL SURVEYOR LICENSED IN LOUISIANA. SEE SECTION "TECHNICAL SPECIFICATIONS" FOR ADDITIONAL REQUIREMENTS.
13. THE ROCK BREAKWATERS NEAR THE FORMER NAVAL FACILITY AT OLD SHELL BEACH SHALL BE CONSTRUCTED USING END-ON-CONSTRUCTION TECHNIQUES AS SPECIFIED IN THE END-ON-CONSTRUCTION DETAIL PROVIDED IN THESE PLANS.
14. ANY REFERENCES TO MAINTENANCE OF THE ROCK BREAKWATERS IN THESE PLANS ARE FOR INFORMATIONAL PURPOSES AND ARE NOT INCLUDED FOR CONSTRUCTION AT THIS TIME.
15. CONDITIONS TO AVOID IMPACTS TO MANATEES: ALL CONTRACT PERSONNEL ASSOCIATED WITH THE PROJECT WILL BE INFORMED OF THE POTENTIAL PRESENCE OF MANATEES AND THE NEED TO AVOID COLLISIONS WITH MANATEES, WHICH ARE PROTECTED UNDER THE MARINE MAMMAL PROTECTION ACT OF 1972 AND THE ENDANGERED SPECIES ACT OF 1973. ALL CONSTRUCTION PERSONNEL ARE RESPONSIBLE FOR OBSERVING WATER-RELATED ACTIVITIES FOR THE PRESENCE OF MANATEE(S). TEMPORARY SIGNS WILL BE POSTED PRIOR TO AND DURING ALL CONSTRUCTION/DREDGING ACTIVITIES TO REMIND PERSONNEL TO BE OBSERVANT FOR MANATEES DURING ACTIVE CONSTRUCTION/DREDGING OPERATIONS OR WITHIN VESSEL MOVEMENT ZONES (I.E. WORK AREA), AND AT LEAST ONE SIGN WILL BE PLACED WHERE IT IS VISIBLE TO THE VESSEL OPERATOR. SILTATION BARRIERS, IF USED, WILL BE MADE OF MATERIAL IN WHICH MANATEES COULD NOT BECOME ENTANGLED, AND WILL BE PROPERLY SECURED AND MONITORED. IF A MANATEE IS SIGHTED WITHIN 100 YARDS OF THE ACTIVE WORK ZONE, SPECIAL OPERATION CONDITIONS WILL BE IMPLEMENTED, INCLUDING: NO OPERATION OF MOVING EQUIPMENT WITHIN 50 FEET OF MANATEE; ALL VESSELS WILL OPERATE AT NO WAKE/IDLE SPEEDS WITHIN 100 YARDS OF THE WORK AREA; AND SILTATION BARRIERS, IF USED, WILL BE RE-SECURED AND MONITORED. ONCE THE MANATEE HAS LEFT THE 100-YARD BUFFER ZONE AROUND THE WORK AREA ON ITS OWN ACCORD, SPECIAL OPERATION CONDITIONS ARE NO LONGER NECESSARY, BUT CAREFUL OBSERVATIONS WOULD BE RESUMED. ANY MANATEE SIGHTING WILL BE IMMEDIATELY REPORTED TO THE U.S. FISH AND WILDLIFE SERVICE (337/291-3100) AND THE LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES, NATURE HERITAGE PROGRAM (225/765-2821).
16. CONDITIONS TO DISCOURAGE GULF STURGEON FROM ENTERING OR REMAINING IN THE WORK AREA (NO DEPTH LIMITATIONS ): PRIOR TO DREDGING, THE BUCKET WILL BE DROPPED INTO THE WATER AND RETRIEVED EMPTY. AFTER THE BUCKET IS RETRIEVED EMPTY, A ONE-MINUTE-LONG, NO-DREDGING PERIOD MUST BE OBSERVED. DURING THAT NO-DREDGING PERIOD, PERSONNEL SHOULD CAREFULLY OBSERVE THE WORK AREA IN AN EFFORT TO DETECT GULF STURGEON. IF STURGEON ARE SIGHTED, THE U.S. FISH AND WILDLIFE SERVICE (337-291-3100) AND THE LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES, NATURAL HERITAGE PROGRAM (225-765-2821) SHOULD BE NOTIFIED AND NO DREDGING SHOULD OCCUR UNTIL THE STURGEON HAVE LEFT THE WORK AREA ON THEIR OWN ACCORD. IF THE WATER TURBIDITY MAKES SUCH VISUAL OBSERVATIONS IMPOSSIBLE, DREDGING WORK WILL PROCEED AFTER THE ONE-MINUTE, NO-DREDGING PERIOD. IF MORE THAN FIFTEEN MINUTES ELAPSES WITH NO DREDGING, THEN THE ABOVE EMPTY BUCKET/RETRIEVAL PROCESS SHALL AGAIN BE CONDUCTED PRIOR TO DREDGING.
17. AVOID IMPACT TO EXISTING VEGETATION: FOR PROTECTION OF EXISTING VEGETATION, ACCESS TO OR MOVEMENTOUTSIDE OF THE DEFINED PROJECT SITE SHALL GENERALLY BE PROHIBITED WITHIN VEGETATED AREAS FOR ALL PERSONNEL OR MATERIAL ACCESS OR STORAGE.

## SUMMARY OF QUANTITIES
## BASE BID

| ITEM No. | DESCRIPTION | UNIT | ESTIMATED QUANTITY | ACTUAL QUANTITY |
|---|---|---|---|---|
| 1 | MOBILIZATION AND DEMOBILIZATION | LUMP SUM | 1 | 1 |
| 2 | SURVEYING | LUMP SUM | 1 | 1 |
| 3 | ACCESS AND FLOTATION CHANNELS | LUMP SUM | 1 | 1 |
| 4 | GEOGRID COMPOSITE | SQUARE YARDS | 80,261 | 96,707 |
| 5 | 250 LB CLASS ROCK | TON | 172,432 | 171,719 |
| 6 | SETTLEMENT PLATES | EACH | 30 | 30 |
| 7 | PERMANENT WARNING SIGNS | EACH | 31 | 43 |
| 8 | STEEL SHEET PILE | SQUARE FEET | 112,546 | 154,575 |
| 9 | GALVANIZED STEEL TUBE WALERS | LINEAR FEET | 3,242 | 3,992 |
| 10 | GALVANIZED STEEL WALER SPLICES | EACH | 203 | 165 |
| 11 | TIE ROD ASSEMBLIES | EACH | 203 | 234 |
| 12 | SAND FILL | CUBIC YARDS | 4,650 | 6,876 |

QUANTITIES SHOWN ARE FOR BID PURPOSES ONLY AND WERE CALCULATED ACCORDING TO CONDITIONS SURVEYED FROM 2/25/02 TO 3/21/05. THE OWNER RESERVES THE RIGHT TO ADJUST QUANTITIES HIGHER OR LOWER WITHOUT ADJUSTMENT OF THE UNIT PRICE.

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 5/01/07 | REVISED UNIT TYPE FOR ITEM NUMBER 9 | SF |
| B | 4/28/09 | AS-BUILT | JMB |

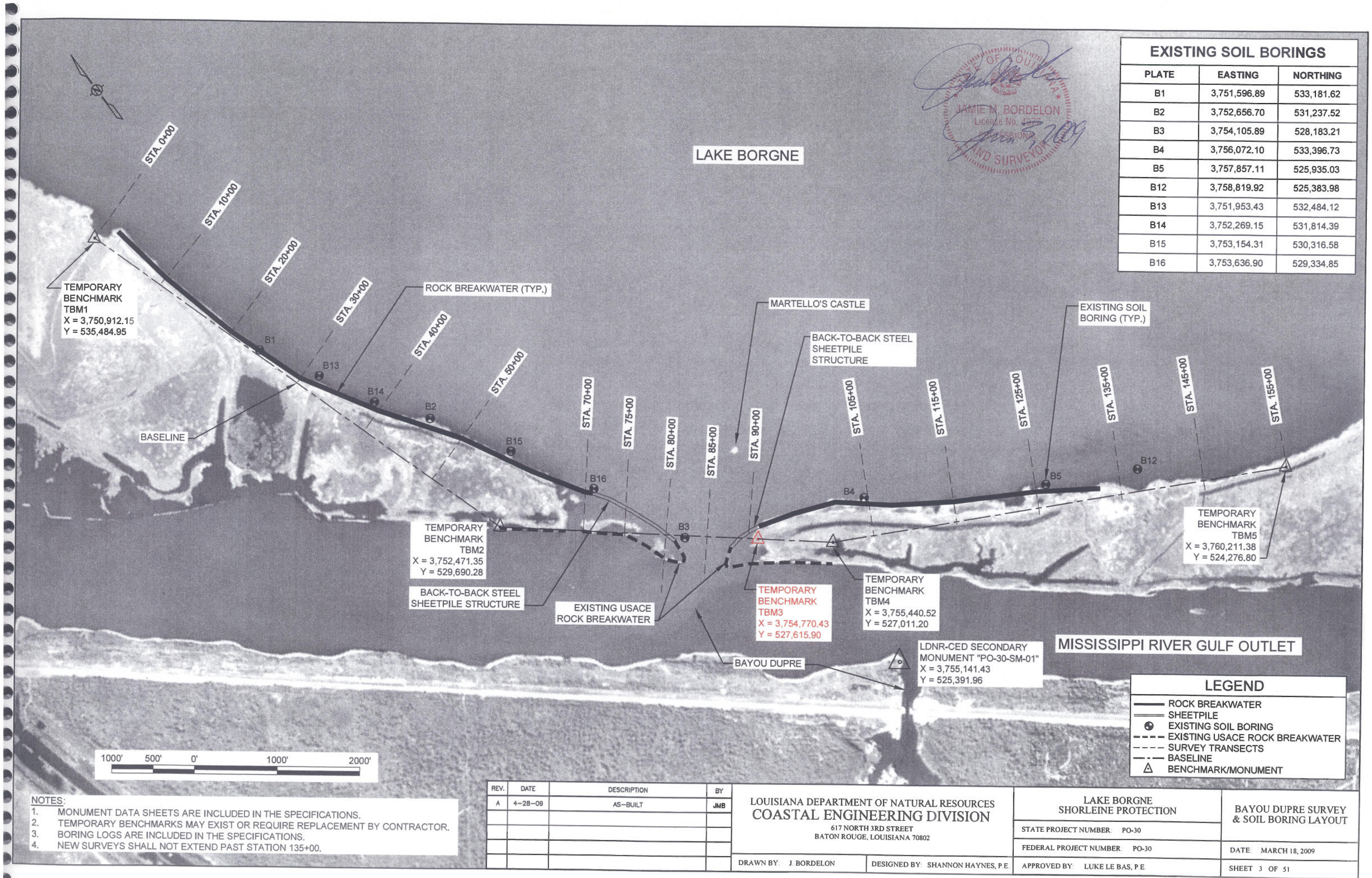
LOUISIANA DEPARTMENT OF NATURAL RESOURCES
COASTAL ENGINEERING DIVISION
617 NORTH 3RD STREET
BATON ROUGE, LOUISIANA 70802

DRAWN BY: SHANE FAUST | DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

GENERAL NOTES
DATE: MARCH 2009




## EXISTING SOIL BORINGS

| PLATE | EASTING | NORTHING |
|---|---|---|
| B1 | 3,751,596.89 | 533,181.62 |
| B2 | 3,752,656.70 | 531,237.52 |
| B3 | 3,754,105.89 | 528,183.21 |
| B4 | 3,756,072.10 | 533,396.73 |
| B5 | 3,757,857.11 | 525,935.03 |
| B12 | 3,758,819.92 | 525,383.98 |
| B13 | 3,751,953.43 | 532,484.12 |
| B14 | 3,752,269.15 | 531,814.39 |
| B15 | 3,753,154.31 | 530,316.58 |
| B16 | 3,753,636.90 | 529,334.85 |

STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 4375
PROFESSIONAL
LAND SURVEYOR
2009

## LEGEND

- ROCK BREAKWATER
- SHEETPILE
- EXISTING SOIL BORING
- EXISTING USACE ROCK BREAKWATER
- SURVEY TRANSECTS
- BASELINE
- BENCHMARK/MONUMENT

NOTES:
1. MONUMENT DATA SHEETS ARE INCLUDED IN THE SPECIFICATIONS.
2. TEMPORARY BENCHMARKS MAY EXIST OR REQUIRE REPLACEMENT BY CONTRACTOR.
3. BORING LOGS ARE INCLUDED IN THE SPECIFICATIONS.
4. NEW SURVEYS SHALL NOT EXTEND PAST STATION 135+00.

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |
| | | | |
| | | | |
| | | | |
| | | | |

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

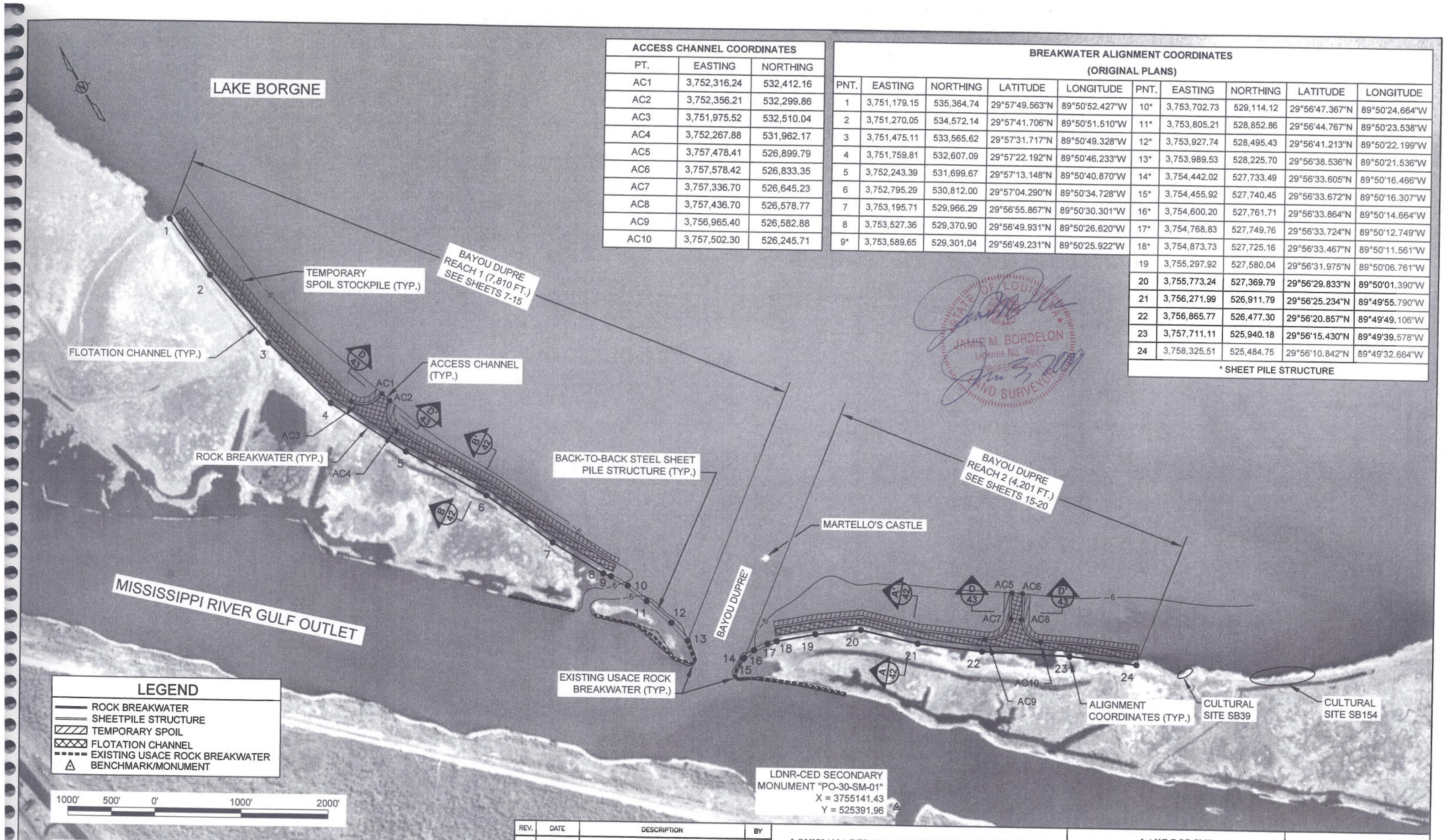
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE
SHORLEINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

BAYOU DUPRE SURVEY & SOIL BORING LAYOUT

DATE: MARCH 18, 2009
SHEET 3 OF 51




NOTE:
ROCK BREAKWATERS SHALL BE CONSTRUCTED ACCORDING TO THE ALIGNMENT COORDINATES LISTED ON THIS SHEET.

**ACCESS CHANNEL COORDINATES**

| PT. | EASTING | NORTHING |
|---|---|---|
| AC1 | 3,752,316.24 | 532,412.16 |
| AC2 | 3,752,356.21 | 532,299.86 |
| AC3 | 3,751,975.52 | 532,510.04 |
| AC4 | 3,752,267.88 | 531,962.17 |
| AC5 | 3,757,478.41 | 526,899.79 |
| AC6 | 3,757,578.42 | 526,833.35 |
| AC7 | 3,757,336.70 | 526,645.23 |
| AC8 | 3,757,436.70 | 526,578.77 |
| AC9 | 3,756,965.40 | 526,582.88 |
| AC10 | 3,757,502.30 | 526,245.71 |

**BREAKWATER ALIGNMENT COORDINATES (ORIGINAL PLANS)**

| PNT. | EASTING | NORTHING | LATITUDE | LONGITUDE | PNT. | EASTING | NORTHING | LATITUDE | LONGITUDE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3,751,179.15 | 535,364.74 | 29°57'49.563"N | 89°50'52.427"W | 10* | 3,753,702.73 | 529,114.12 | 29°56'47.367"N | 89°50'24.664"W |
| 2 | 3,751,270.05 | 534,572.14 | 29°57'41.706"N | 89°50'51.510"W | 11* | 3,753,805.21 | 528,852.86 | 29°56'44.767"N | 89°50'23.538"W |
| 3 | 3,751,475.11 | 533,565.62 | 29°57'31.717"N | 89°50'49.328"W | 12* | 3,753,927.74 | 528,495.43 | 29°56'41.213"N | 89°50'22.199"W |
| 4 | 3,751,759.81 | 532,607.09 | 29°57'22.192"N | 89°50'46.233"W | 13* | 3,753,989.53 | 528,225.70 | 29°56'38.536"N | 89°50'21.536"W |
| 5 | 3,752,243.39 | 531,699.67 | 29°57'13.148"N | 89°50'40.870"W | 14* | 3,754,442.02 | 527,733.49 | 29°56'33.605"N | 89°50'16.466"W |
| 6 | 3,752,795.29 | 530,812.00 | 29°57'04.290"N | 89°50'34.728"W | 15* | 3,754,455.92 | 527,740.45 | 29°56'33.672"N | 89°50'16.307"W |
| 7 | 3,753,195.71 | 529,966.29 | 29°56'55.867"N | 89°50'30.301"W | 16* | 3,754,600.20 | 527,761.71 | 29°56'33.864"N | 89°50'14.664"W |
| 8 | 3,753,527.36 | 529,370.90 | 29°56'49.931"N | 89°50'26.620"W | 17* | 3,754,768.83 | 527,749.76 | 29°56'33.724"N | 89°50'12.749"W |
| 9* | 3,753,589.65 | 529,301.04 | 29°56'49.231"N | 89°50'25.922"W | 18* | 3,754,873.73 | 527,725.16 | 29°56'33.467"N | 89°50'11.561"W |
| | | | | | 19 | 3,755,297.92 | 527,580.04 | 29°56'31.975"N | 89°50'06.761"W |
| | | | | | 20 | 3,755,773.24 | 527,369.79 | 29°56'29.833"N | 89°50'01.390"W |
| | | | | | 21 | 3,756,271.99 | 526,911.79 | 29°56'25.234"N | 89°49'55.790"W |
| | | | | | 22 | 3,756,865.77 | 526,477.30 | 29°56'20.857"N | 89°49'49.106"W |
| | | | | | 23 | 3,757,711.11 | 525,940.18 | 29°56'15.430"N | 89°49'39.578"W |
| | | | | | 24 | 3,758,325.51 | 525,484.75 | 29°56'10.842"N | 89°49'32.664"W |

* SHEET PILE STRUCTURE

STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 4977
PROFESSIONAL
LAND SURVEYOR

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

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

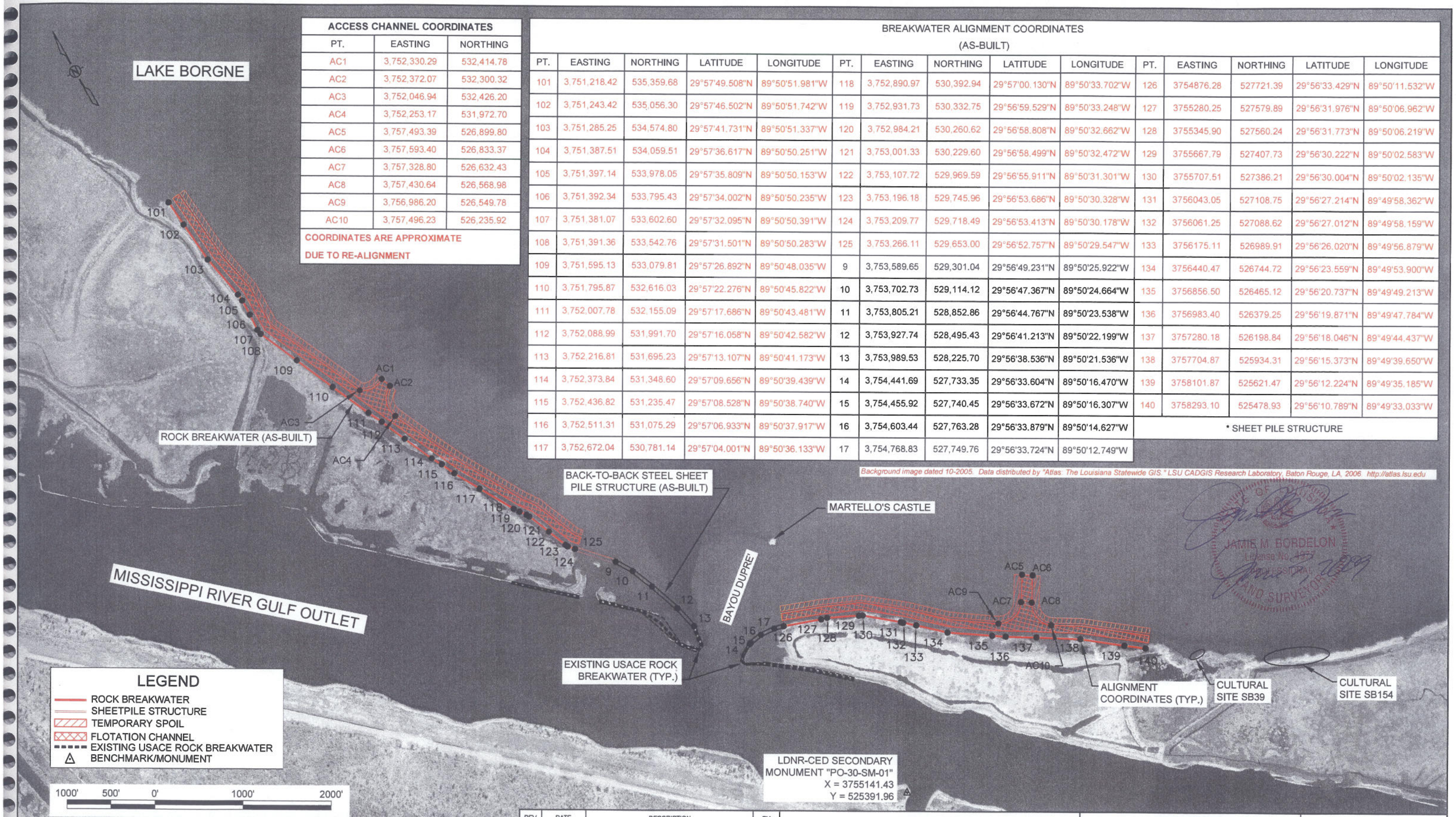
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

BAYOU DUPRE
ALIGNMENT (original)

DATE: MARCH 2009
SHEET 4 OF 51




**ACCESS CHANNEL COORDINATES**

| PT. | EASTING | NORTHING |
|---|---|---|
| AC1 | 3,752,330.29 | 532,414.78 |
| AC2 | 3,752,372.07 | 532,300.32 |
| AC3 | 3,752,046.94 | 532,426.20 |
| AC4 | 3,752,253.17 | 531,972.70 |
| AC5 | 3,757,493.39 | 526,899.80 |
| AC6 | 3,757,593.40 | 526,833.37 |
| AC7 | 3,757,328.80 | 526,632.43 |
| AC8 | 3,757,430.64 | 526,568.98 |
| AC9 | 3,756,986.20 | 526,549.78 |
| AC10 | 3,757,496.23 | 526,235.92 |

COORDINATES ARE APPROXIMATE DUE TO RE-ALIGNMENT

BREAKWATER ALIGNMENT COORDINATES (AS-BUILT)

| PT. | EASTING | NORTHING | LATITUDE | LONGITUDE | PT. | EASTING | NORTHING | LATITUDE | LONGITUDE | PT. | EASTING | NORTHING | LATITUDE | LONGITUDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | 3,751,218.42 | 535,359.68 | 29°57'49.508"N | 89°50'51.981"W | 118 | 3,752,890.97 | 530,392.94 | 29°57'00.130"N | 89°50'33.702"W | 126 | 3754876.28 | 527721.39 | 29°56'33.429"N | 89°50'11.532"W |
| 102 | 3,751,243.42 | 535,056.30 | 29°57'46.502"N | 89°50'51.742"W | 119 | 3,752,931.73 | 530,332.75 | 29°56'59.529"N | 89°50'33.248"W | 127 | 3755280.25 | 527579.89 | 29°56'31.976"N | 89°50'06.962"W |
| 103 | 3,751,285.25 | 534,574.80 | 29°57'41.731"N | 89°50'51.337"W | 120 | 3,752,984.21 | 530,260.62 | 29°56'58.808"N | 89°50'32.662"W | 128 | 3755345.90 | 527560.24 | 29°56'31.773"N | 89°50'06.219"W |
| 104 | 3,751,387.51 | 534,059.51 | 29°57'36.617"N | 89°50'50.251"W | 121 | 3,753,001.33 | 530,229.60 | 29°56'58.499"N | 89°50'32.472"W | 129 | 3755667.79 | 527407.73 | 29°56'30.222"N | 89°50'02.583"W |
| 105 | 3,751,397.14 | 533,978.05 | 29°57'35.809"N | 89°50'50.153"W | 122 | 3,753,107.72 | 529,969.59 | 29°56'55.911"N | 89°50'31.301"W | 130 | 3755707.51 | 527386.21 | 29°56'30.004"N | 89°50'02.135"W |
| 106 | 3,751,392.34 | 533,795.43 | 29°57'34.002"N | 89°50'50.235"W | 123 | 3,753,196.18 | 529,745.96 | 29°56'53.686"N | 89°50'30.328"W | 131 | 3756043.05 | 527108.75 | 29°56'27.214"N | 89°49'58.362"W |
| 107 | 3,751,381.07 | 533,602.60 | 29°57'32.095"N | 89°50'50.391"W | 124 | 3,753,209.77 | 529,718.49 | 29°56'53.413"N | 89°50'30.178"W | 132 | 3756061.25 | 527088.62 | 29°56'27.012"N | 89°49'58.159"W |
| 108 | 3,751,391.36 | 533,542.76 | 29°57'31.501"N | 89°50'50.283"W | 125 | 3,753,266.11 | 529,653.00 | 29°56'52.757"N | 89°50'29.547"W | 133 | 3756175.11 | 526989.91 | 29°56'26.020"N | 89°49'56.879"W |
| 109 | 3,751,595.13 | 533,079.81 | 29°57'26.892"N | 89°50'48.035"W | 9 | 3,753,589.65 | 529,301.04 | 29°56'49.231"N | 89°50'25.922"W | 134 | 3756440.47 | 526744.72 | 29°56'23.559"N | 89°49'53.900"W |
| 110 | 3,751,795.87 | 532,616.03 | 29°57'22.276"N | 89°50'45.822"W | 10 | 3,753,702.73 | 529,114.12 | 29°56'47.367"N | 89°50'24.664"W | 135 | 3756856.50 | 526465.12 | 29°56'20.737"N | 89°49'49.213"W |
| 111 | 3,752,007.78 | 532,155.09 | 29°57'17.686"N | 89°50'43.481"W | 11 | 3,753,805.21 | 528,852.86 | 29°56'44.767"N | 89°50'23.538"W | 136 | 3756983.40 | 526379.25 | 29°56'19.871"N | 89°49'47.784"W |
| 112 | 3,752,088.99 | 531,991.70 | 29°57'16.058"N | 89°50'42.582"W | 12 | 3,753,927.74 | 528,495.43 | 29°56'41.213"N | 89°50'22.199"W | 137 | 3757280.18 | 526198.84 | 29°56'18.046"N | 89°49'44.437"W |
| 113 | 3,752,216.81 | 531,695.23 | 29°57'13.107"N | 89°50'41.173"W | 13 | 3,753,989.53 | 528,225.70 | 29°56'38.536"N | 89°50'21.536"W | 138 | 3757704.87 | 525934.31 | 29°56'15.373"N | 89°49'39.650"W |
| 114 | 3,752,373.84 | 531,348.60 | 29°57'09.656"N | 89°50'39.439"W | 14 | 3,754,441.69 | 527,733.35 | 29°56'33.604"N | 89°50'16.470"W | 139 | 3758101.87 | 525621.47 | 29°56'12.224"N | 89°49'35.185"W |
| 115 | 3,752,436.82 | 531,235.47 | 29°57'08.528"N | 89°50'38.740"W | 15 | 3,754,455.92 | 527,740.45 | 29°56'33.672"N | 89°50'16.307"W | 140 | 3758293.10 | 525478.93 | 29°56'10.789"N | 89°49'33.033"W |
| 116 | 3,752,511.31 | 531,075.29 | 29°57'06.933"N | 89°50'37.917"W | 16 | 3,754,603.44 | 527,763.28 | 29°56'33.879"N | 89°50'14.627"W | * SHEET PILE STRUCTURE | | | | |
| 117 | 3,752,672.04 | 530,781.14 | 29°57'04.001"N | 89°50'36.133"W | 17 | 3,754,768.83 | 527,749.76 | 29°56'33.724"N | 89°50'12.749"W | | | | | |

Background image dated 10-2005. Data distributed by "Atlas: The Louisiana Statewide GIS." LSU CADGIS Research Laboratory, Baton Rouge, LA, 2006. http://atlas.lsu.edu

STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 4951
PROFESSIONAL LAND SURVEYOR
2009

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

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

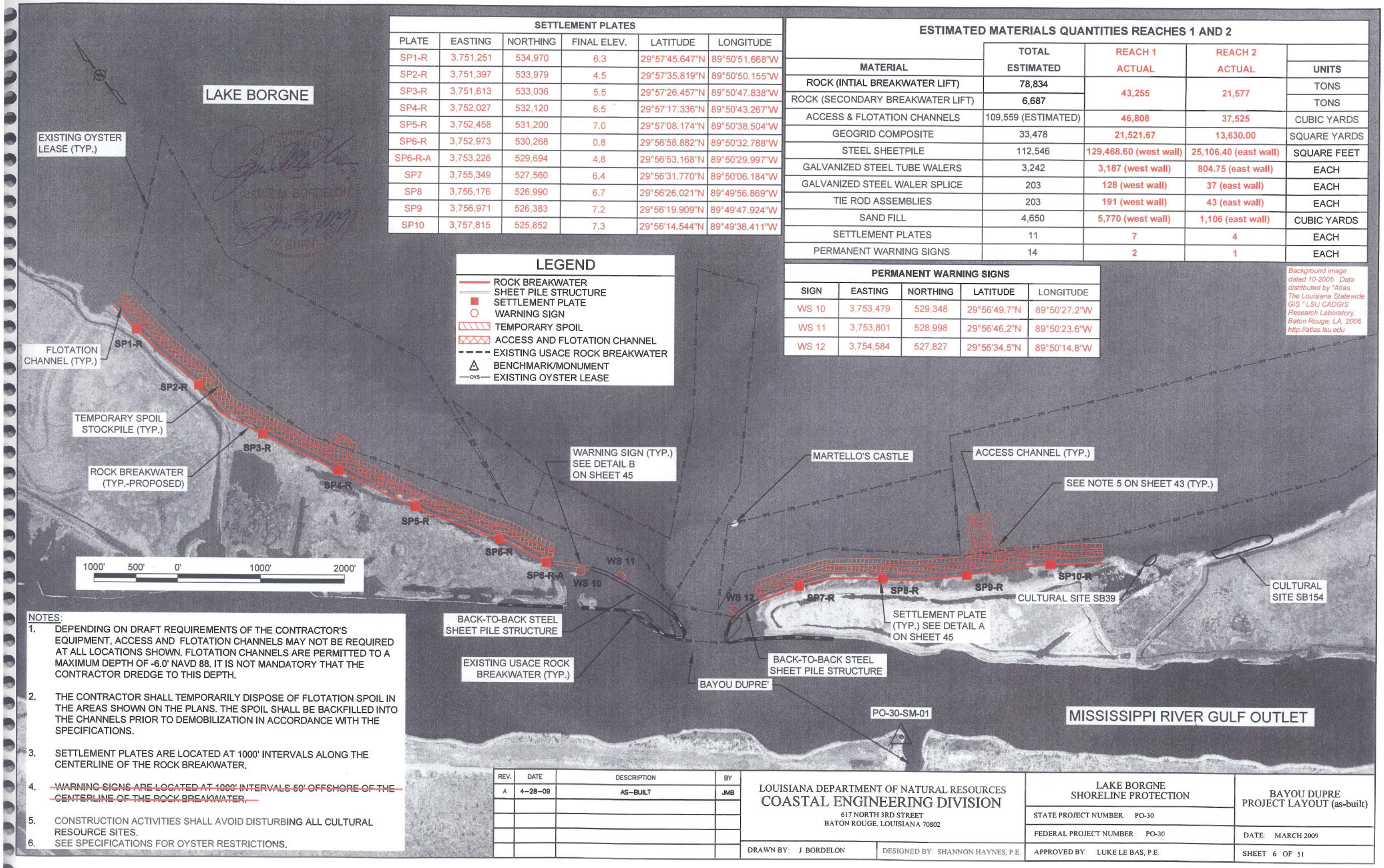
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

BAYOU DUPRE
ALIGNMENT (as-built)

DATE: MARCH 2009
SHEET 5 OF 51




**SETTLEMENT PLATES**

| PLATE | EASTING | NORTHING | FINAL ELEV. | LATITUDE | LONGITUDE |
|---|---|---|---|---|---|
| SP1-R | 3,751,251 | 534,970 | 6.3 | 29°57'45.647"N | 89°50'51.668"W |
| SP2-R | 3,751,397 | 533,979 | 4.5 | 29°57'35.819"N | 89°50'50.155"W |
| SP3-R | 3,751,613 | 533,036 | 5.5 | 29°57'26.457"N | 89°50'47.838"W |
| SP4-R | 3,752,027 | 532,120 | 6.5 | 29°57'17.336"N | 89°50'43.267"W |
| SP5-R | 3,752,458 | 531,200 | 7.0 | 29°57'08.174"N | 89°50'38.504"W |
| SP6-R | 3,752,973 | 530,268 | 0.8 | 29°56'58.882"N | 89°50'32.788"W |
| SP6-R-A | 3,753,226 | 529,694 | 4.8 | 29°56'53.168"N | 89°50'29.997"W |
| SP7 | 3,755,349 | 527,560 | 6.4 | 29°56'31.770"N | 89°50'06.184"W |
| SP8 | 3,756,176 | 526,990 | 6.7 | 29°56'26.021"N | 89°49'56.869"W |
| SP9 | 3,756,971 | 526,383 | 7.2 | 29°56'19.909"N | 89°49'47.924"W |
| SP10 | 3,757,815 | 525,852 | 7.3 | 29°56'14.544"N | 89°49'38.411"W |

**LEGEND**

- ROCK BREAKWATER
- SHEET PILE STRUCTURE
- SETTLEMENT PLATE
- WARNING SIGN
- TEMPORARY SPOIL
- ACCESS AND FLOTATION CHANNEL
- EXISTING USACE ROCK BREAKWATER
- BENCHMARK/MONUMENT
- —OYS— EXISTING OYSTER LEASE

**ESTIMATED MATERIALS QUANTITIES REACHES 1 AND 2**

| MATERIAL | TOTAL ESTIMATED | REACH 1 ACTUAL | REACH 2 ACTUAL | UNITS |
|---|---|---|---|---|
| ROCK (INTIAL BREAKWATER LIFT) | 78,834 | 43,255 | 21,577 | TONS |
| ROCK (SECONDARY BREAKWATER LIFT) | 6,687 | | | TONS |
| ACCESS & FLOTATION CHANNELS | 109,559 (ESTIMATED) | 46,808 | 37,525 | CUBIC YARDS |
| GEOGRID COMPOSITE | 33,478 | 21,521.67 | 13,630.00 | SQUARE YARDS |
| STEEL SHEETPILE | 112,546 | 129,468.60 (west wall) | 25,106.40 (east wall) | SQUARE FEET |
| GALVANIZED STEEL TUBE WALERS | 3,242 | 3,187 (west wall) | 804.75 (east wall) | EACH |
| GALVANIZED STEEL WALER SPLICE | 203 | 128 (west wall) | 37 (east wall) | EACH |
| TIE ROD ASSEMBLIES | 203 | 191 (west wall) | 43 (east wall) | EACH |
| SAND FILL | 4,650 | 5,770 (west wall) | 1,106 (east wall) | CUBIC YARDS |
| SETTLEMENT PLATES | 11 | 7 | 4 | EACH |
| PERMANENT WARNING SIGNS | 14 | 2 | 1 | EACH |

**PERMANENT WARNING SIGNS**

| SIGN | EASTING | NORTHING | LATITUDE | LONGITUDE |
|---|---|---|---|---|
| WS 10 | 3,753,479 | 529,348 | 29°56'49.7"N | 89°50'27.2"W |
| WS 11 | 3,753,801 | 528,998 | 29°56'46.2"N | 89°50'23.6"W |
| WS 12 | 3,754,584 | 527,827 | 29°56'34.5"N | 89°50'14.8"W |

*Background image dated 10-2005. Data distributed by "Atlas: The Louisiana Statewide GIS." LSU CADGIS Research Laboratory, Baton Rouge, LA, 2006. http://atlas.lsu.edu*

NOTES:

1. DEPENDING ON DRAFT REQUIREMENTS OF THE CONTRACTOR'S EQUIPMENT, ACCESS AND FLOTATION CHANNELS MAY NOT BE REQUIRED AT ALL LOCATIONS SHOWN. FLOTATION CHANNELS ARE PERMITTED TO A MAXIMUM DEPTH OF -6.0' NAVD 88. IT IS NOT MANDATORY THAT THE CONTRACTOR DREDGE TO THIS DEPTH.
2. THE CONTRACTOR SHALL TEMPORARILY DISPOSE OF FLOTATION SPOIL IN THE AREAS SHOWN ON THE PLANS. THE SPOIL SHALL BE BACKFILLED INTO THE CHANNELS PRIOR TO DEMOBILIZATION IN ACCORDANCE WITH THE SPECIFICATIONS.
3. SETTLEMENT PLATES ARE LOCATED AT 1000' INTERVALS ALONG THE CENTERLINE OF THE ROCK BREAKWATER.
4. ~~WARNING SIGNS ARE LOCATED AT 1000' INTERVALS 50' OFFSHORE OF THE CENTERLINE OF THE ROCK BREAKWATER.~~
5. CONSTRUCTION ACTIVITIES SHALL AVOID DISTURBING ALL CULTURAL RESOURCE SITES.
6. SEE SPECIFICATIONS FOR OYSTER RESTRICTIONS.

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |
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LOUISIANA DEPARTMENT OF NATURAL RESOURCES
COASTAL ENGINEERING DIVISION
617 NORTH 3RD STREET
BATON ROUGE, LOUISIANA 70802

DRAWN BY: J BORDELON | DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30

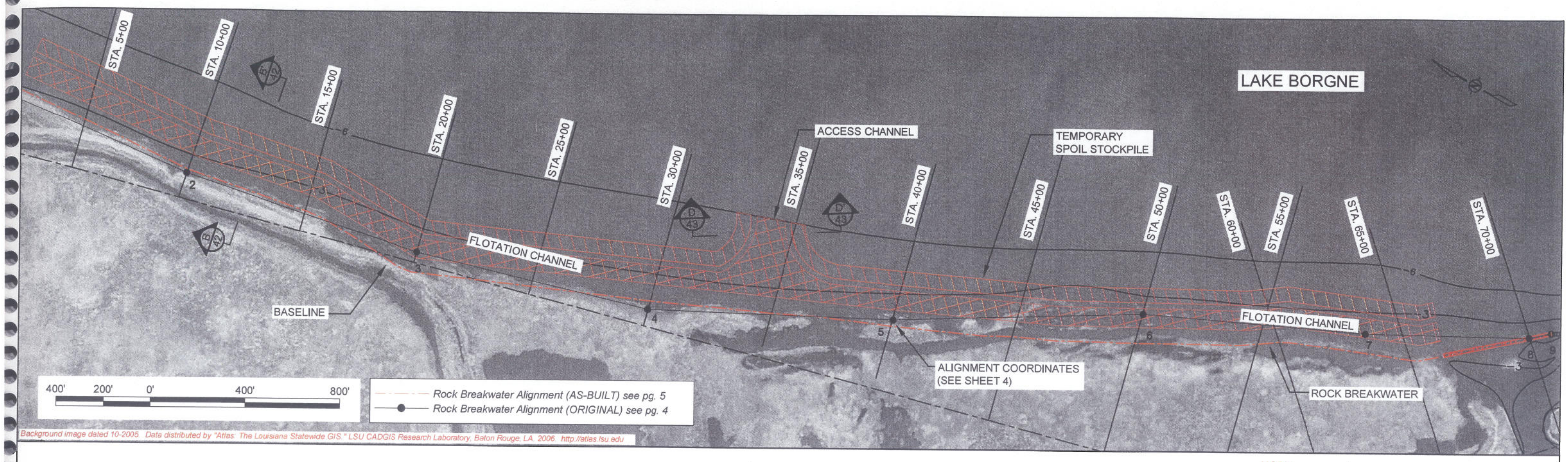
FEDERAL PROJECT NUMBER: PO-30

APPROVED BY: LUKE LE BAS, P.E.

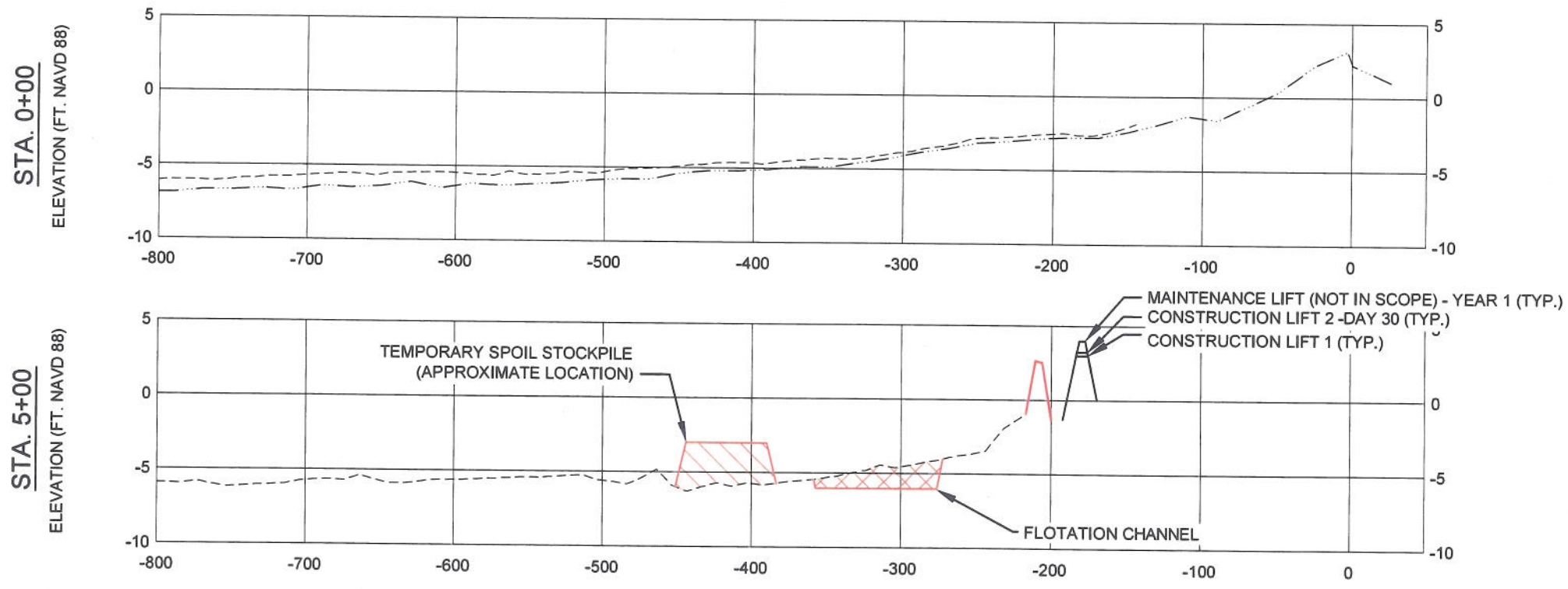
BAYOU DUPRE PROJECT LAYOUT (as-built)

DATE: MARCH 2009

SHEET 6 OF 51




NOTE:
ROCK BREAKWATER CROWN WIDENED 2 FEET FROM STATIONS 0+00 TO 14+25




JAMIE M. BORDELON
License No. 4977
STATE OF LOUISIANA
PROFESSIONAL ENGINEER AND SURVEYOR
June 3, 2009

## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- TEMPORARY SPOIL
- ACCESS AND FLOTATION CHANNEL

HORIZONTAL GRAPHIC SCALE
100' 50' 0 100' 200'

VERTICAL GRAPHIC SCALE
10' 5' 0 10' 20'

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

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

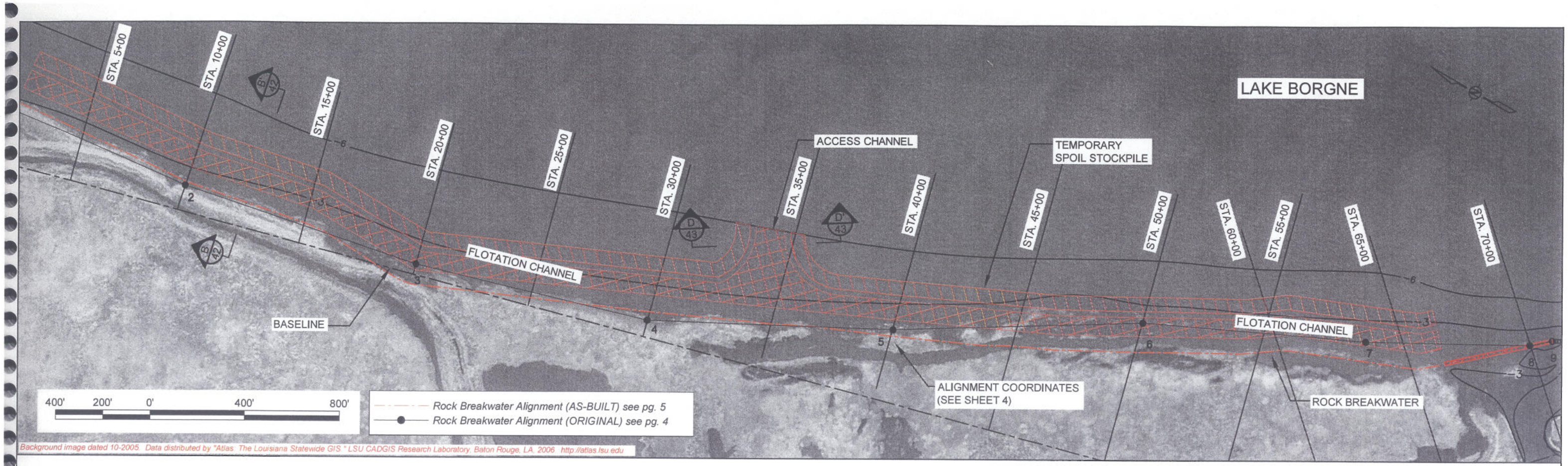
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

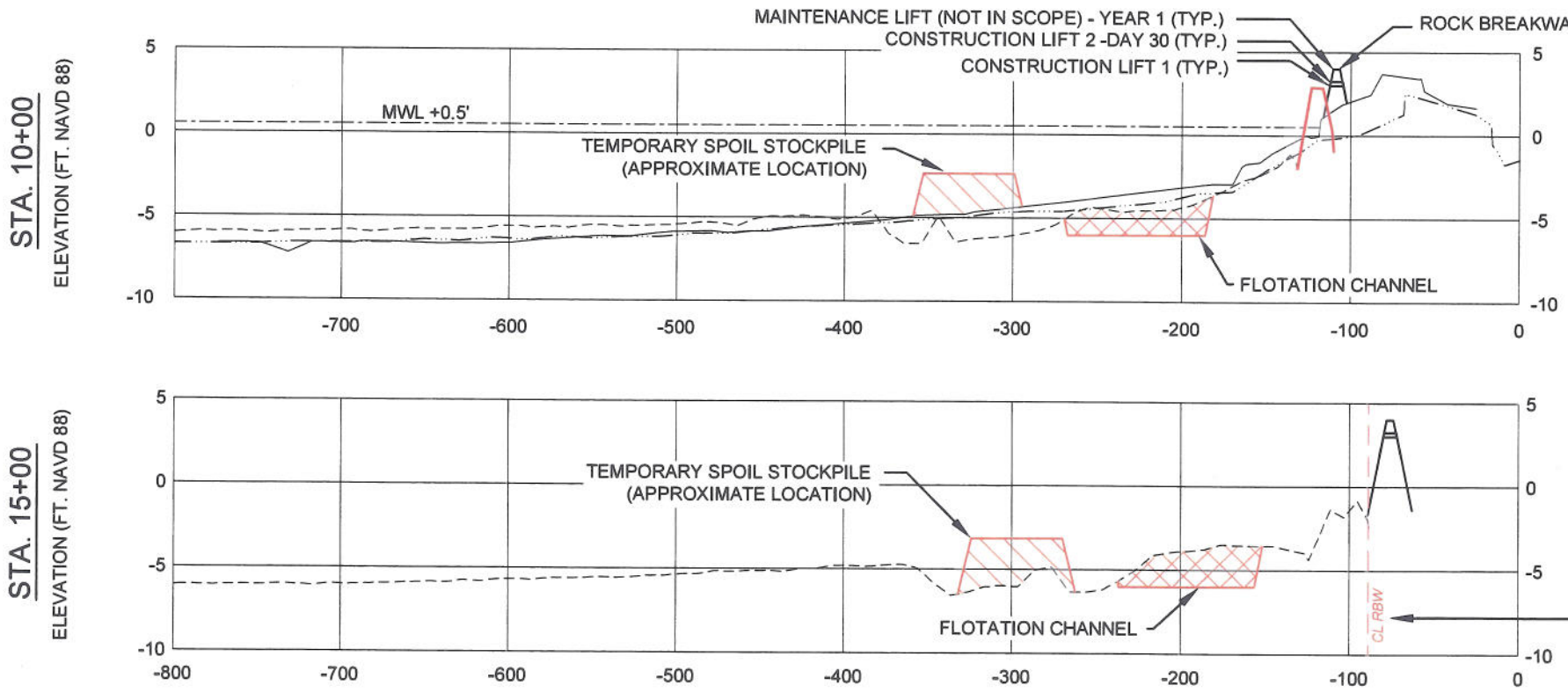
LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

BAYOU DUPRE - REACH 1
PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 7 OF 51







NOTE:
ROCK BREAKWATER CROWN WIDENED 2 FEET FROM STATIONS 0+00 TO 14+25

STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 27877
PROFESSIONAL ENGINEER AND SURVEYOR
3-2009

## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- TEMPORARY SPOIL
- ACCESS AND FLOTATION CHANNEL

HORIZONTAL GRAPHIC SCALE
100' 50' 0 100' 200'
10' 5' 0 10' 20'
VERTICAL GRAPHIC SCALE

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |
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| | | | |

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

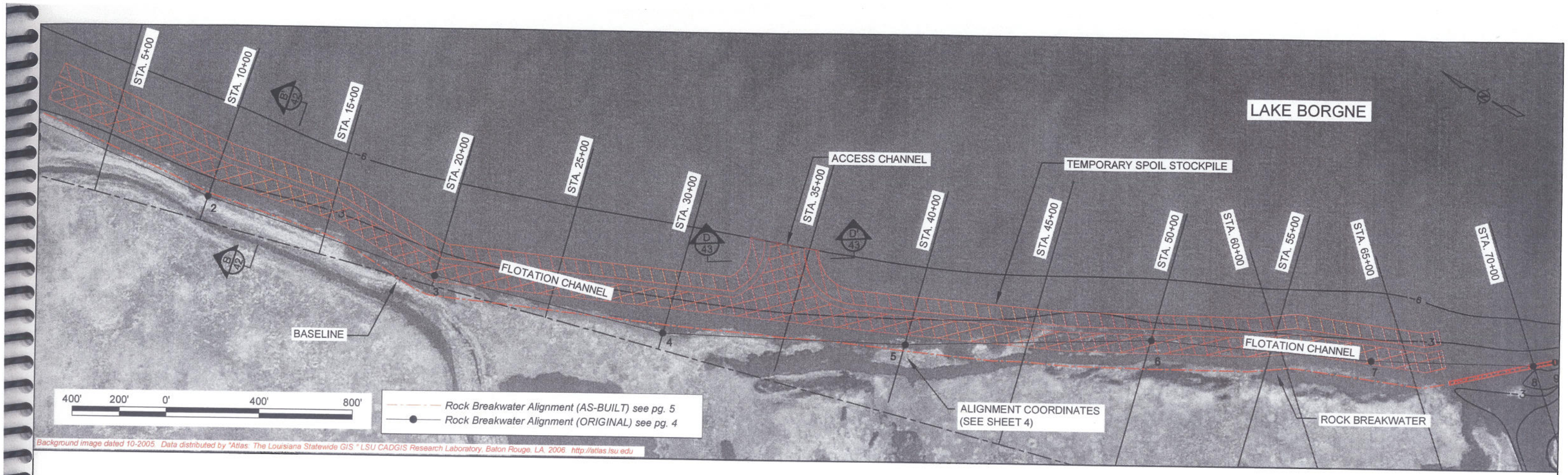
DRAWN BY: J. BORDELON | DESIGNED BY: SHANNON HAYNES, P.E.

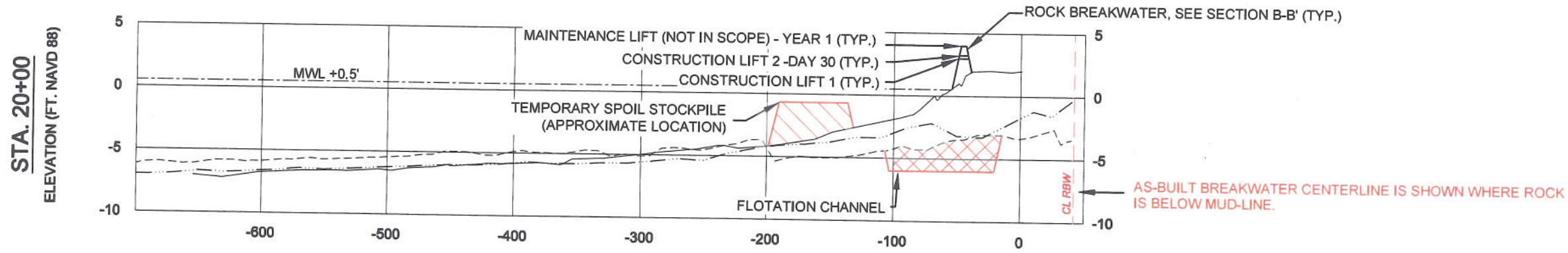
LAKE BORGNE
SHORELINE PROTECTION

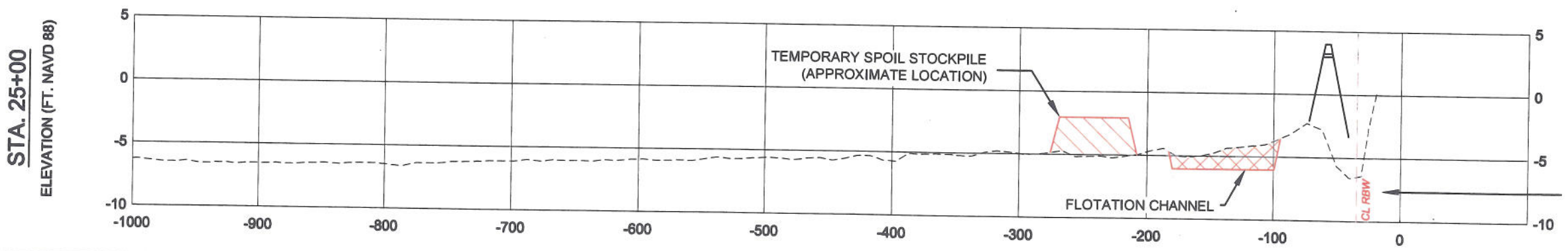
STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

BAYOU DUPRE - REACH 1
PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 8 OF 51




JAMIE M. BORDELON
License No. 4977
PROFESSIONAL
LAND SURVEYOR

## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- TEMPORARY SPOIL
- ACCESS AND FLOTATION CHANNEL

HORIZONTAL GRAPHIC SCALE
100' 50' 0 100' 200'
10' 5' 0 10' 20'
VERTICAL GRAPHIC SCALE

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

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

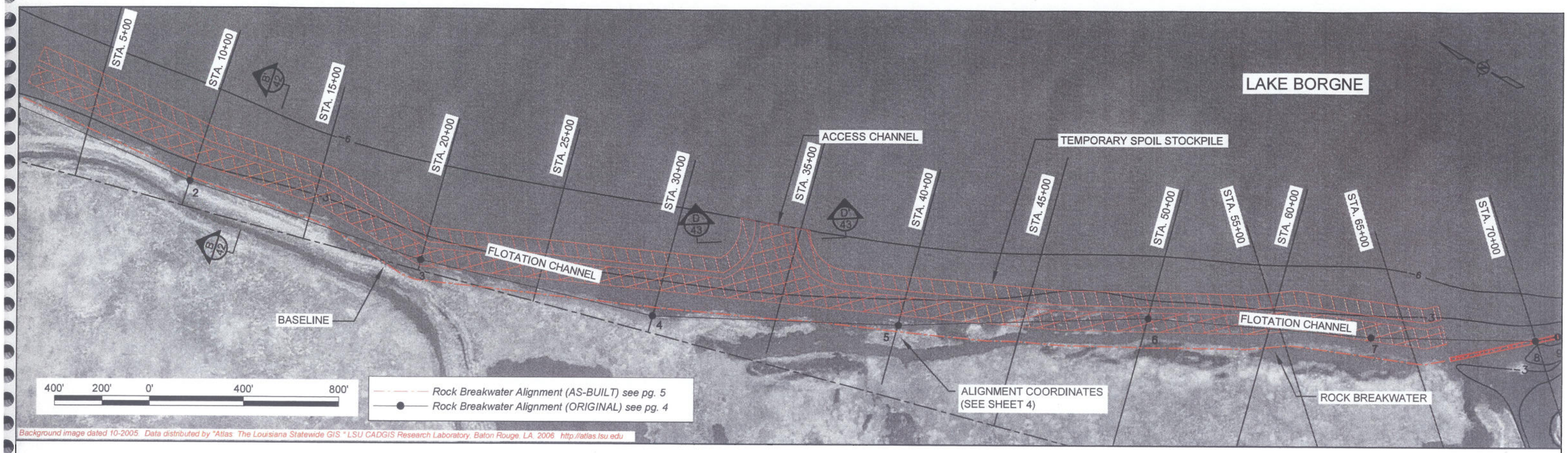
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

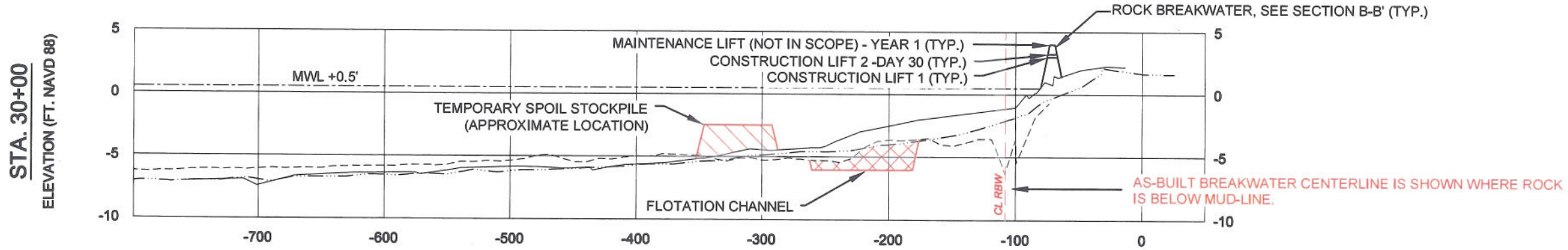
LAKE BORGNE
SHORELINE PROTECTION

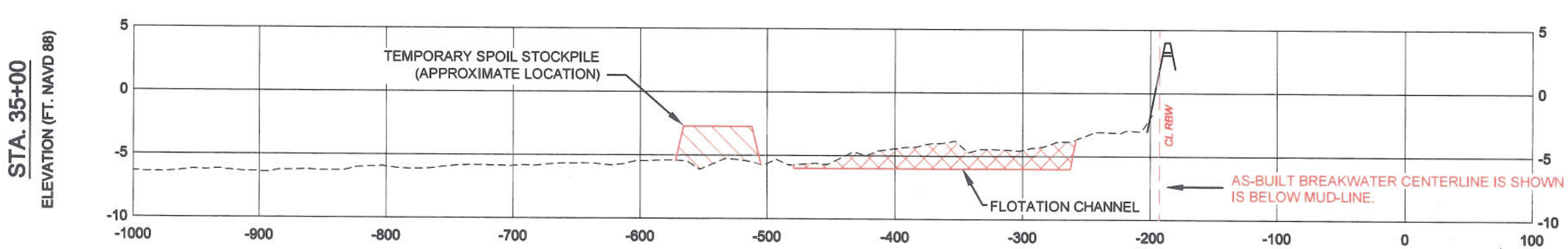
STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

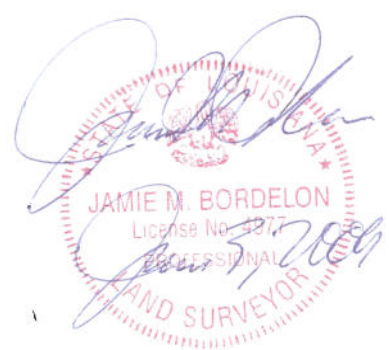
BAYOU DUPRE - REACH 1
PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 9 OF 51




## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- TEMPORARY SPOIL
- ACCESS AND FLOTATION CHANNEL

HORIZONTAL GRAPHIC SCALE
100' 50' 0 100' 200'
10' 5' 0 10' 20'
VERTICAL GRAPHIC SCALE

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

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

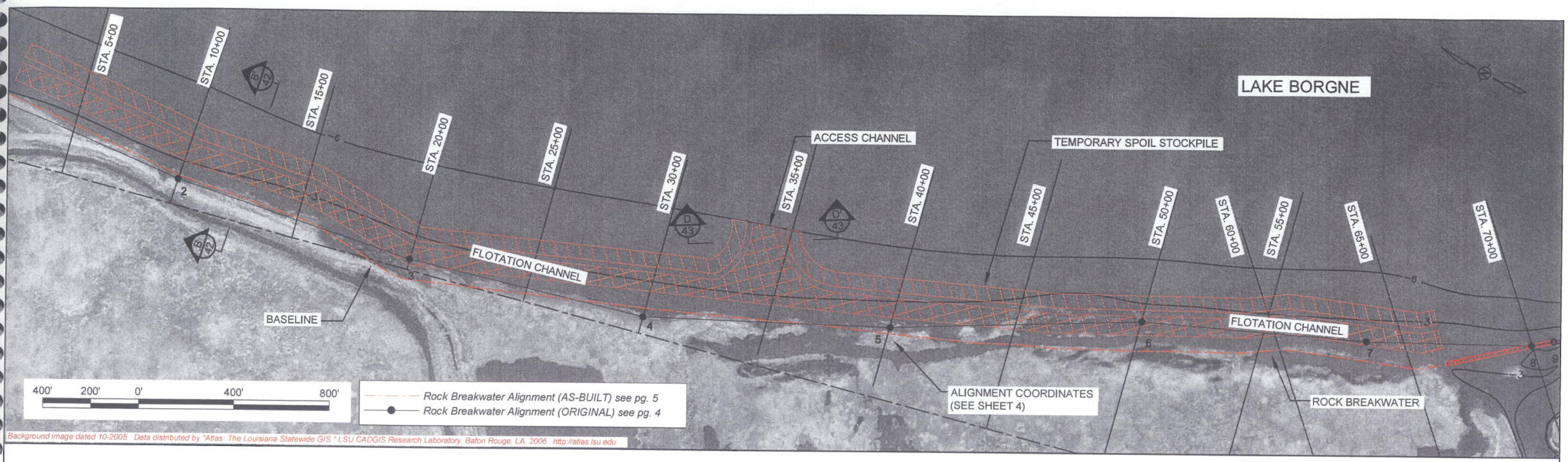
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

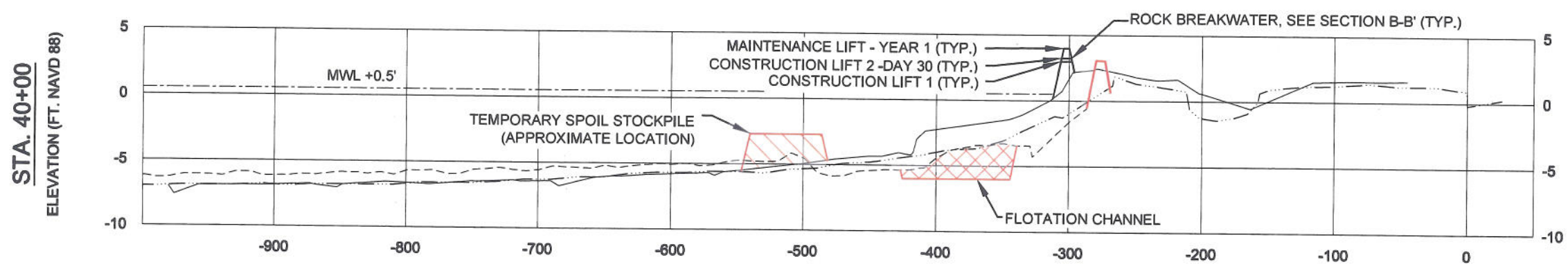
LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

BAYOU DUPRE - REACH 1
PLAN & SECTION VIEWS

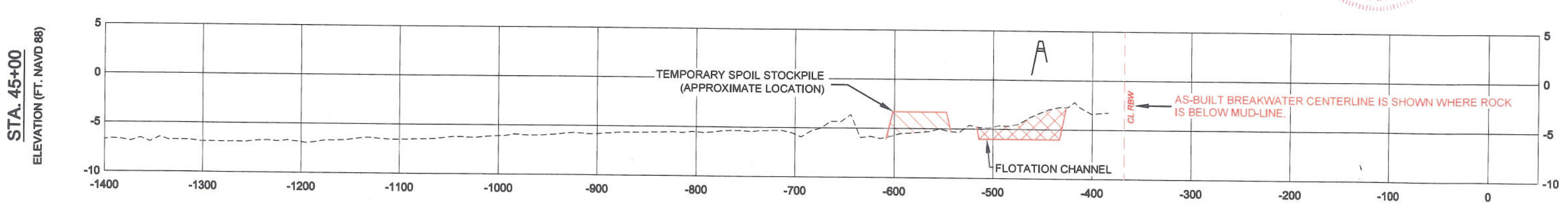
DATE: MARCH 2009
SHEET 10 OF 51




NOTE:
ADDITIONAL ROCK PLACED WITHIN THE FOLLOWING LIMITS:
STA 44+00 to STA 47+50 extending from CL up to 30' lakeside
STA 49+45 to STA 50+55 extending from CL up to 25' lakeside
STA 44+50 to STA 46+00 extending from CL up to 35' landside

STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 4977
PROFESSIONAL LAND SURVEYOR




## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- TEMPORARY SPOIL
- ACCESS AND FLOTATION CHANNEL

HORIZONTAL GRAPHIC SCALE: 100' 50' 0 100' 200'
VERTICAL GRAPHIC SCALE: 10' 5' 0 10' 20'

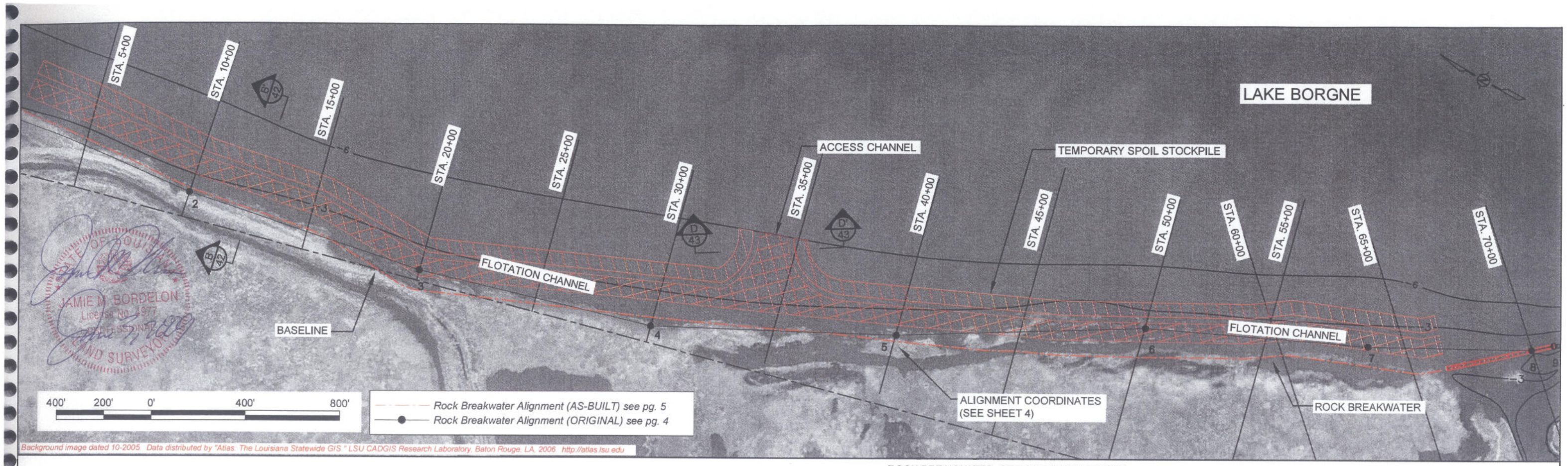
| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

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

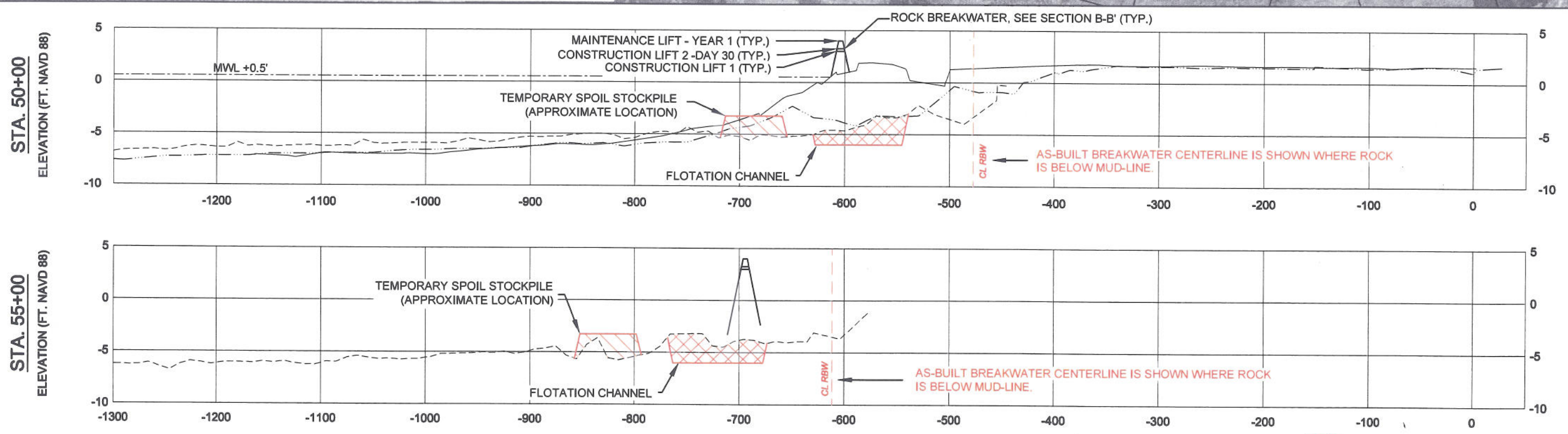
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE SHORELINE PROTECTION
STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

BAYOU DUPRE - REACH I
PLAN & SECTION VIEWS
DATE: MARCH 2009
SHEET 11 OF 51




STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 4977
PROFESSIONAL
LAND SURVEYOR




NOTE:
ROCK BREAKWATER CROWN WIDENED 2 FEET FROM STATIONS 0+00 TO 14+25

## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- TEMPORARY SPOIL
- ACCESS AND FLOTATION CHANNEL

HORIZONTAL GRAPHIC SCALE
100' 50' 0 100' 200'
10' 5' 0 10' 20'
VERTICAL GRAPHIC SCALE

| REV. | DATE | DESCRIPTION | BY |
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LOUISIANA DEPARTMENT OF NATURAL RESOURCES
COASTAL ENGINEERING DIVISION
617 NORTH 3RD STREET
BATON ROUGE, LOUISIANA 70802

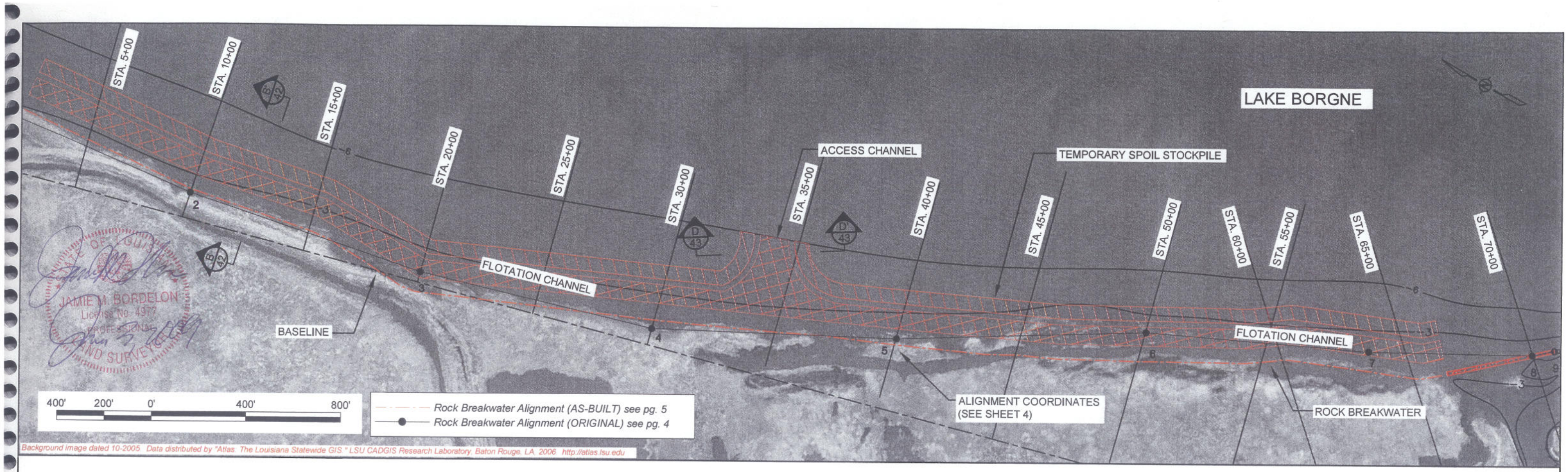
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.
APPROVED BY: LUKE LE BAS, P.E.

LAKE BORGNE
SHORELINE PROTECTION

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

BAYOU DUPRE - REACH 1
PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 12 OF 51




JAMIE M. BORDELON
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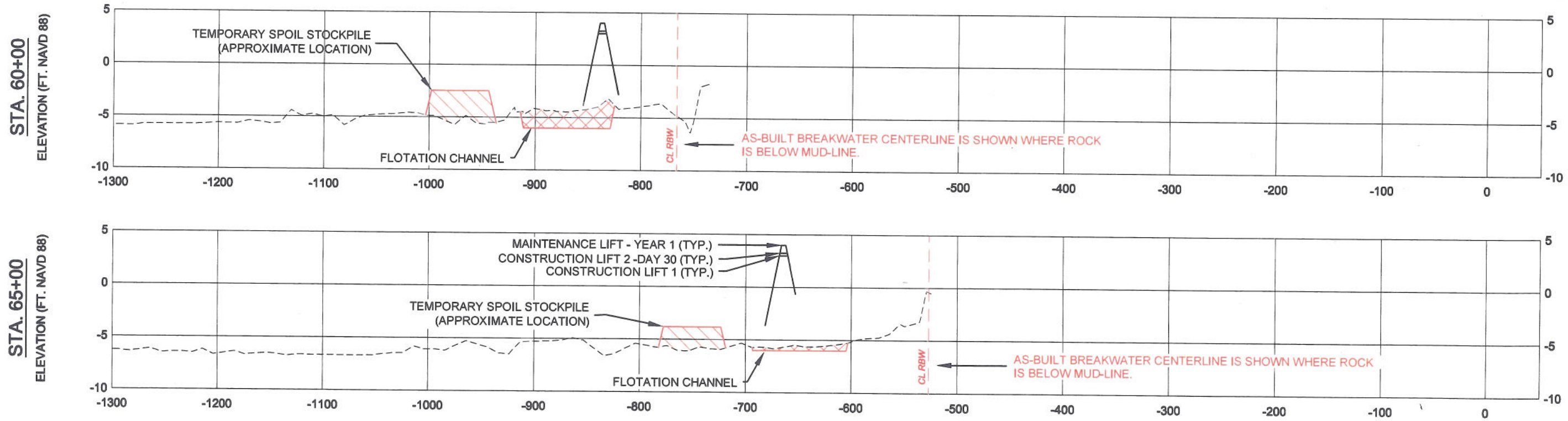
PROFESSIONAL LAND SURVEYOR
STATE OF LOUISIANA




NOTE:
ROCK BREAKWATER CROWN WIDENED 2 FEET FROM STATIONS 0+00 TO 14+25

## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- TEMPORARY SPOIL
- ACCESS AND FLOTATION CHANNEL

HORIZONTAL GRAPHIC SCALE
100' 50' 0 100' 200'
VERTICAL GRAPHIC SCALE
10' 5' 0 10' 20'

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |
| | | | |
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LOUISIANA DEPARTMENT OF NATURAL RESOURCES
COASTAL ENGINEERING DIVISION
617 NORTH 3RD STREET
BATON ROUGE, LOUISIANA 70802

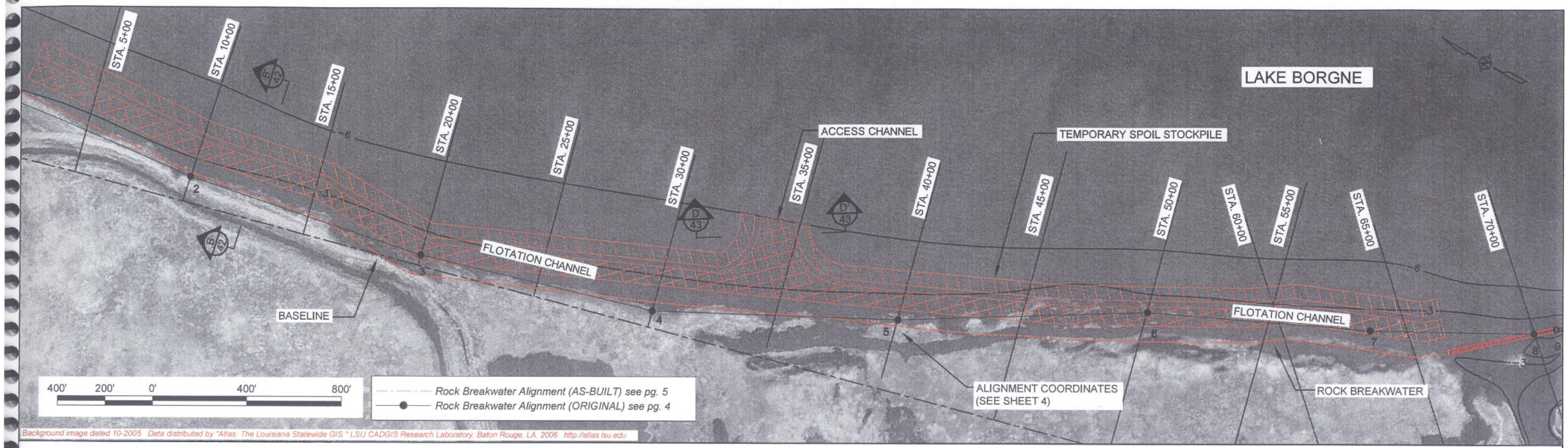
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

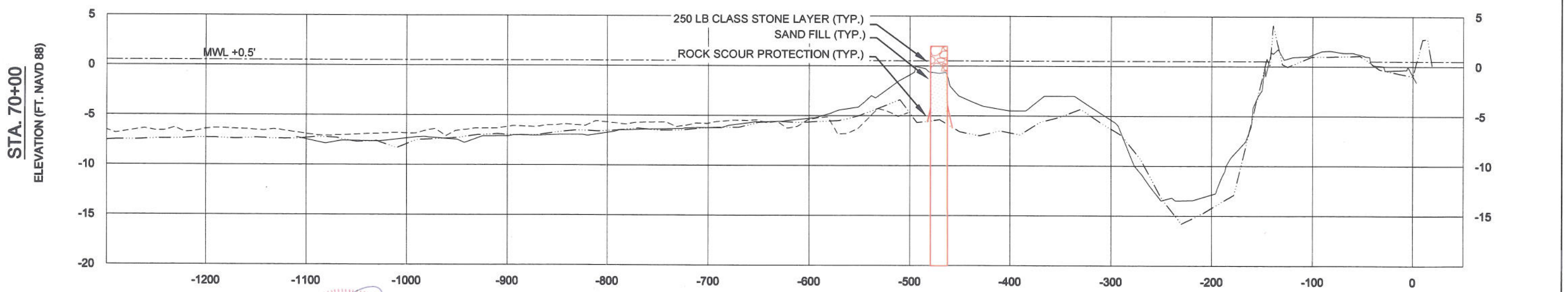
LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

BAYOU DUPRE - REACH 1
PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 13 OF 51




STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 4977
PROFESSIONAL
LAND SURVEYOR
3/9/09

## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- 250 LB CLASS STONE
- SAND FILL

HORIZONTAL GRAPHIC SCALE
100' 50' 0 100' 200'
VERTICAL GRAPHIC SCALE
10' 5' 0 10' 20'

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

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

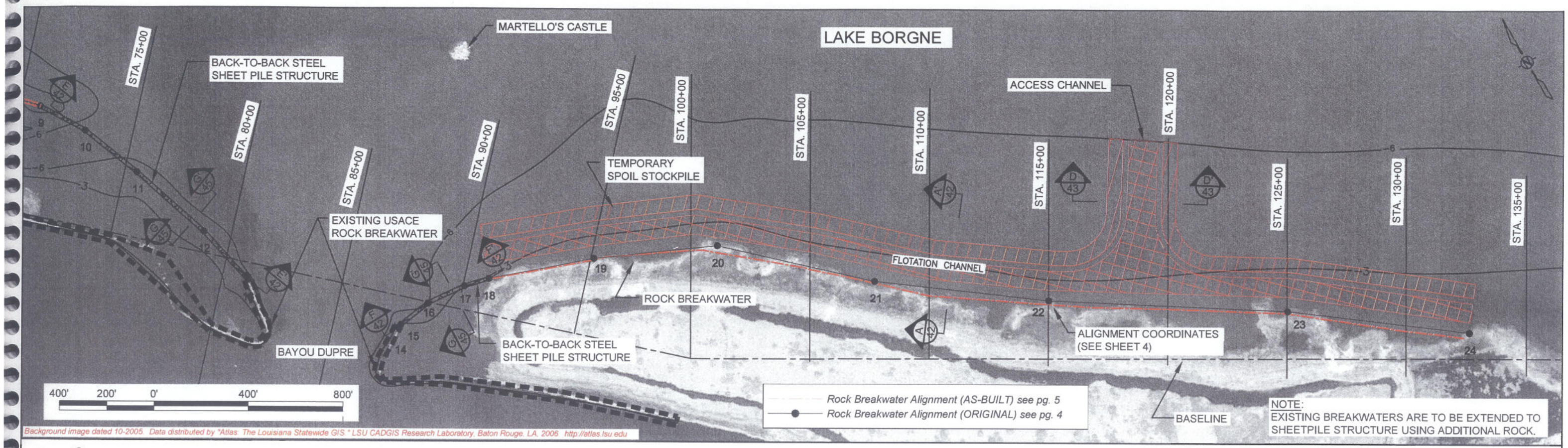
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

BAYOU DUPRE - REACH 1
PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 14 OF 51




STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 4977
PROFESSIONAL
LAND SURVEYOR

## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- 250 LB CLASS STONE
- SAND FILL

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

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

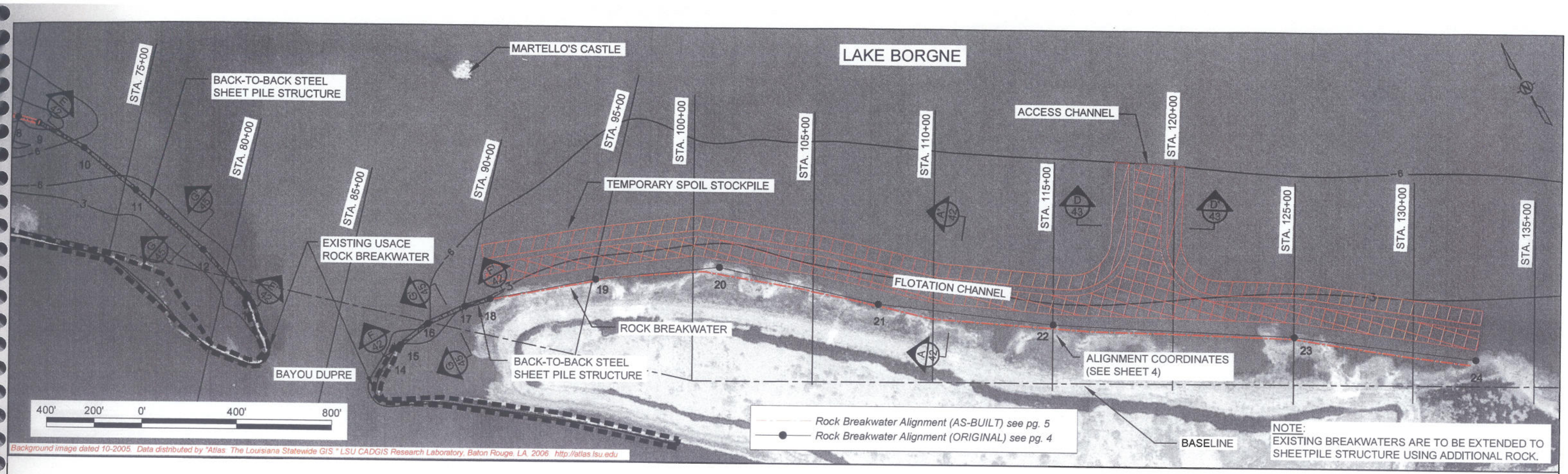
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

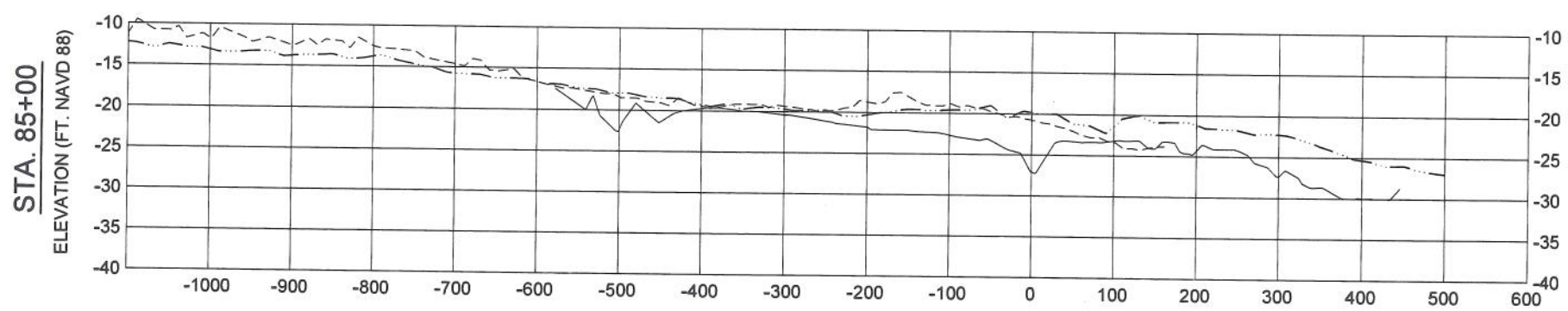
LAKE BORGNE SHORELINE PROTECTION

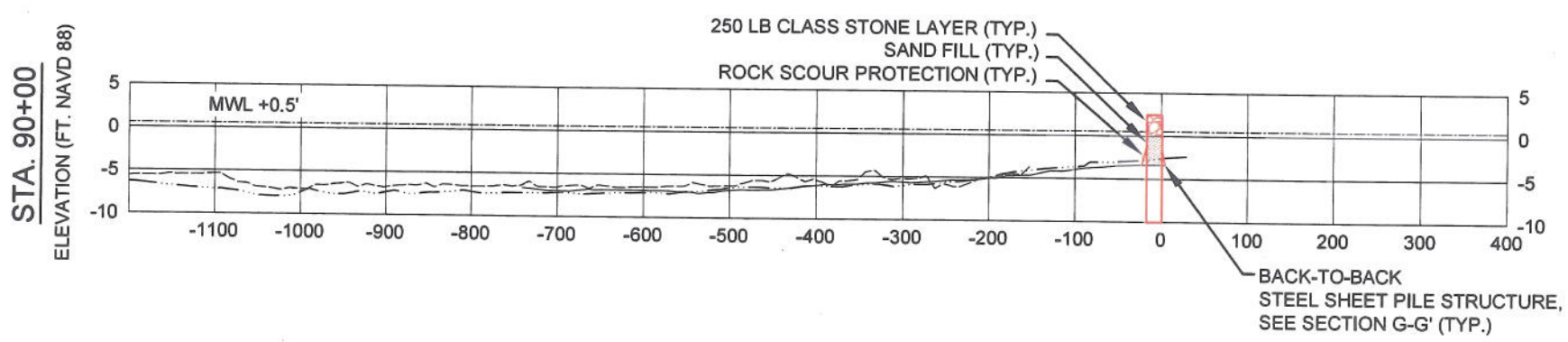
STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

BAYOU DUPRE PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 15 OF 51



## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- 250 LB CLASS STONE
- SAND FILL

HORIZONTAL GRAPHIC SCALE
200' 100' 0 200' 400'
20' 10' 0 20' 40'
VERTICAL GRAPHIC SCALE

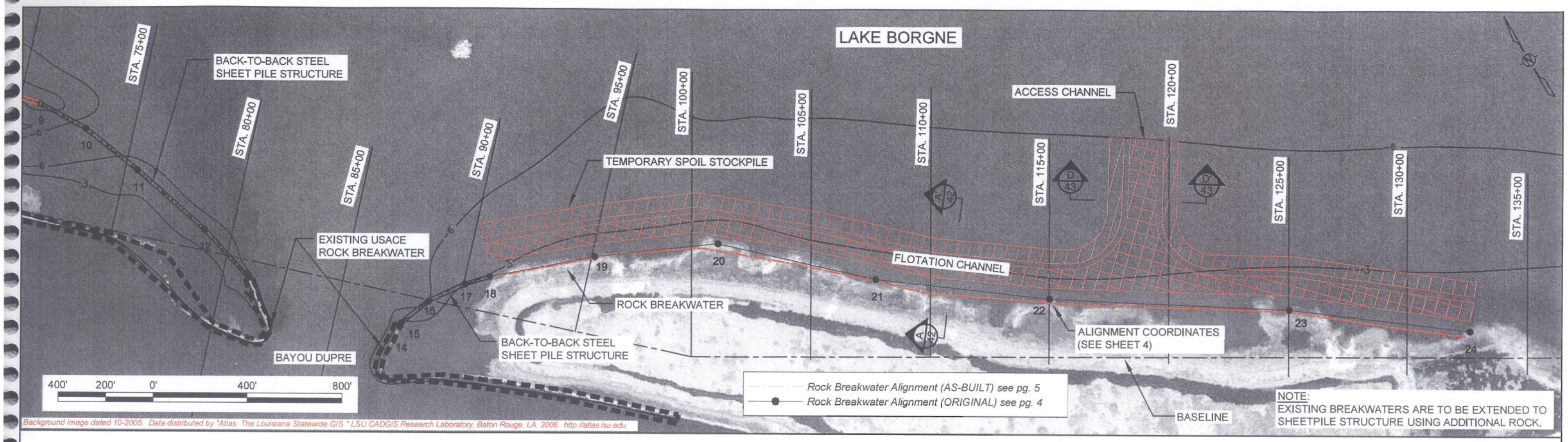
| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

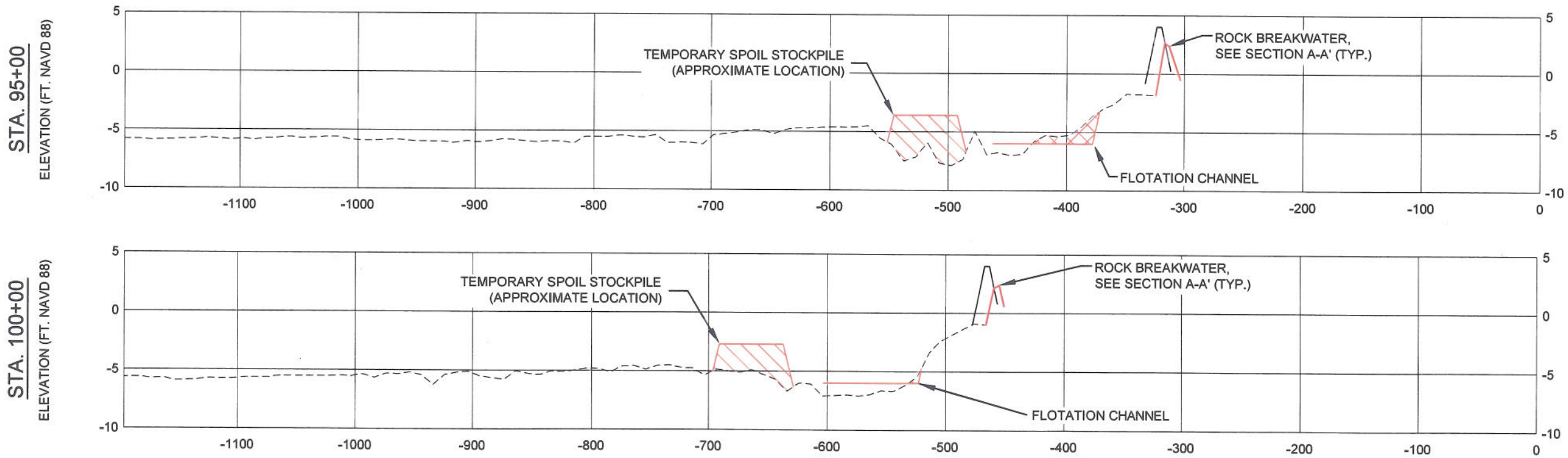
LOUISIANA DEPARTMENT OF NATURAL RESOURCES
COASTAL ENGINEERING DIVISION
617 NORTH 3RD STREET
BATON ROUGE, LOUISIANA 70802

DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE SHORELINE PROTECTION
STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

BAYOU DUPRE PLAN & SECTION VIEWS
DATE: MARCH 2009
SHEET 16 OF 51




STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 4977
PROFESSIONAL
LAND SURVEYOR

## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- TEMPORARY SPOIL
- ACCESS AND FLOTATION CHANNEL

HORIZONTAL GRAPHIC SCALE
100' 500' 0 100' 200'
10' 5' 0 10' 20'
VERTICAL GRAPHIC SCALE

| REV. | DATE | DESCRIPTION | BY |
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| A | 4-28-09 | AS-BUILT | JMB |

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

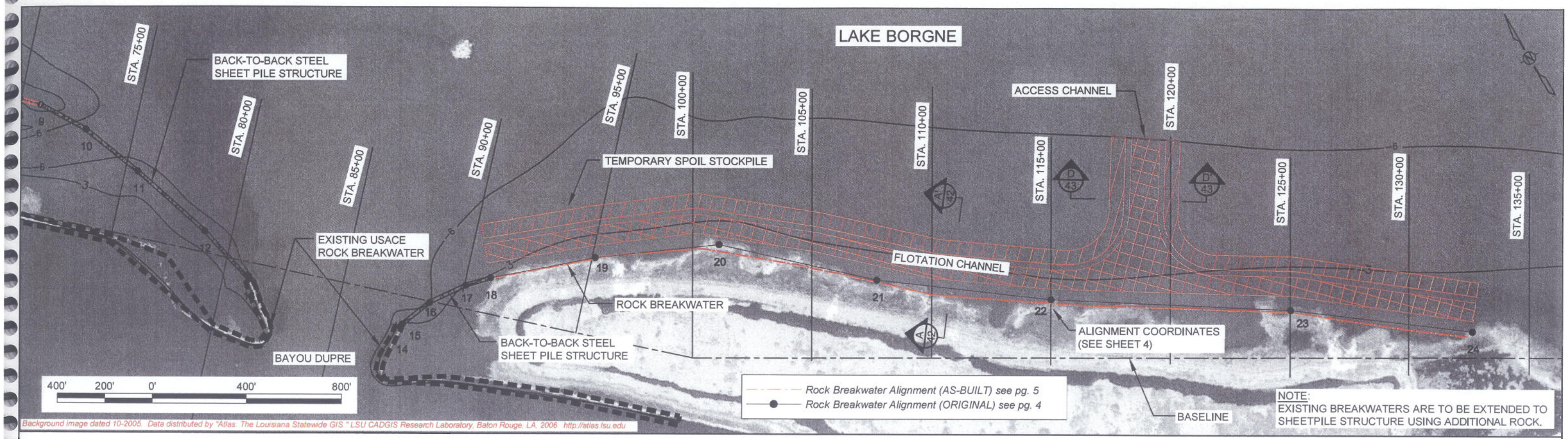
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

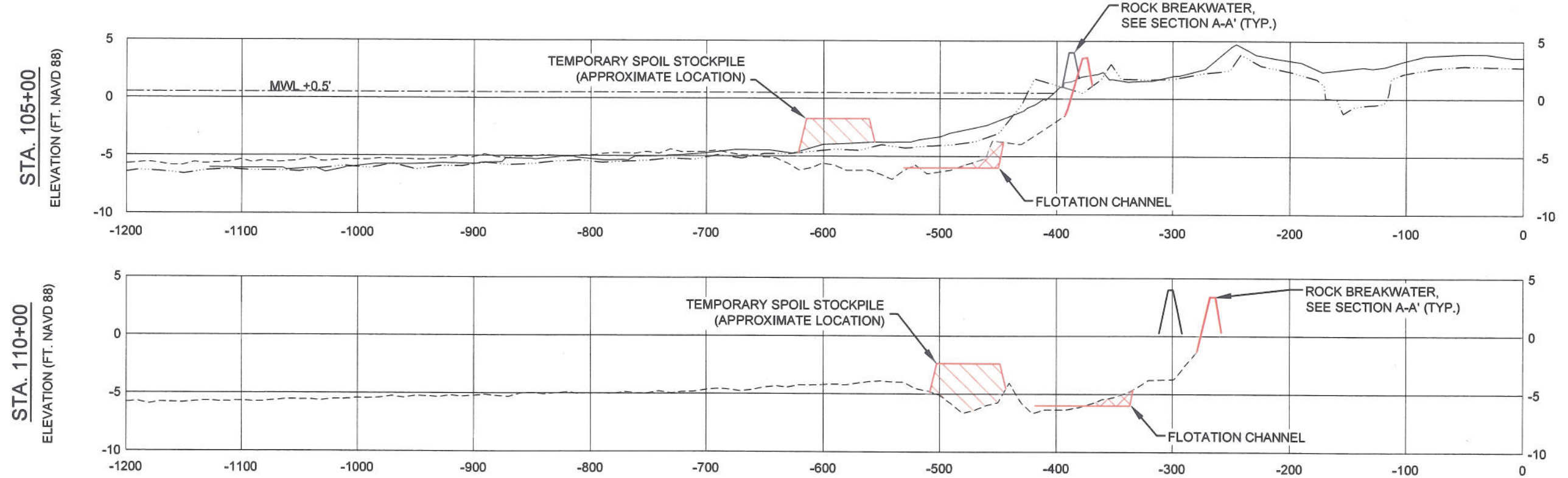
LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

BAYOU DUPRE - REACH 2
PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 17 OF 51




STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 4977
PROFESSIONAL LAND SURVEYOR
Jan 5 2009

## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- TEMPORARY SPOIL
- ACCESS AND FLOTATION CHANNEL

HORIZONTAL GRAPHIC SCALE
100' 500' 0 100' 200'
10' 5' 0 10' 20'
VERTICAL GRAPHIC SCALE

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

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

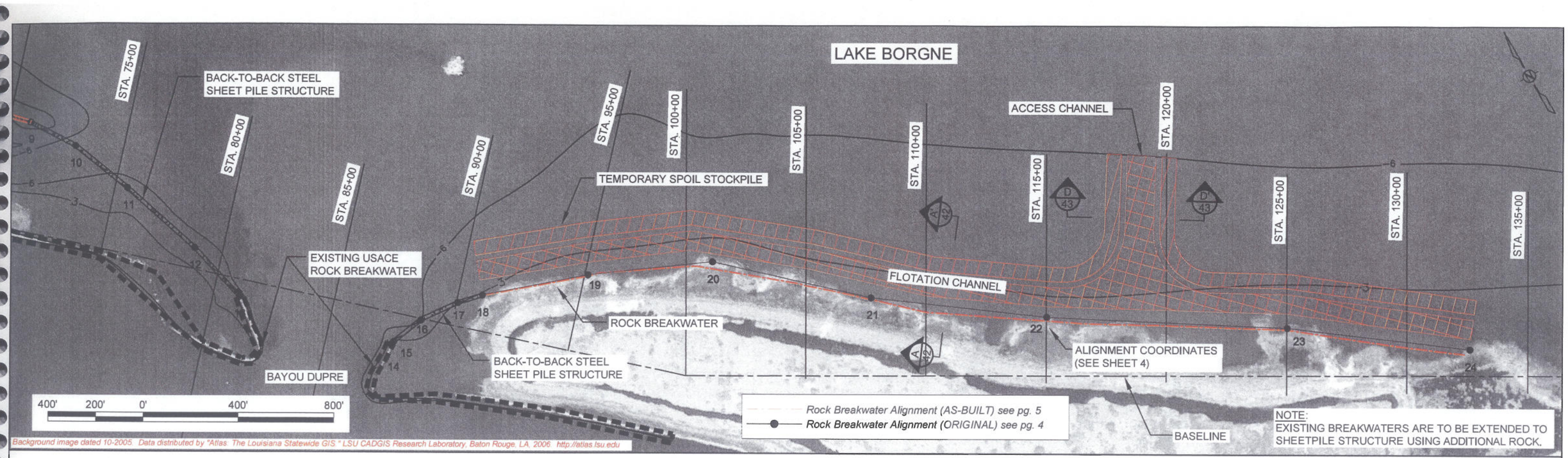
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

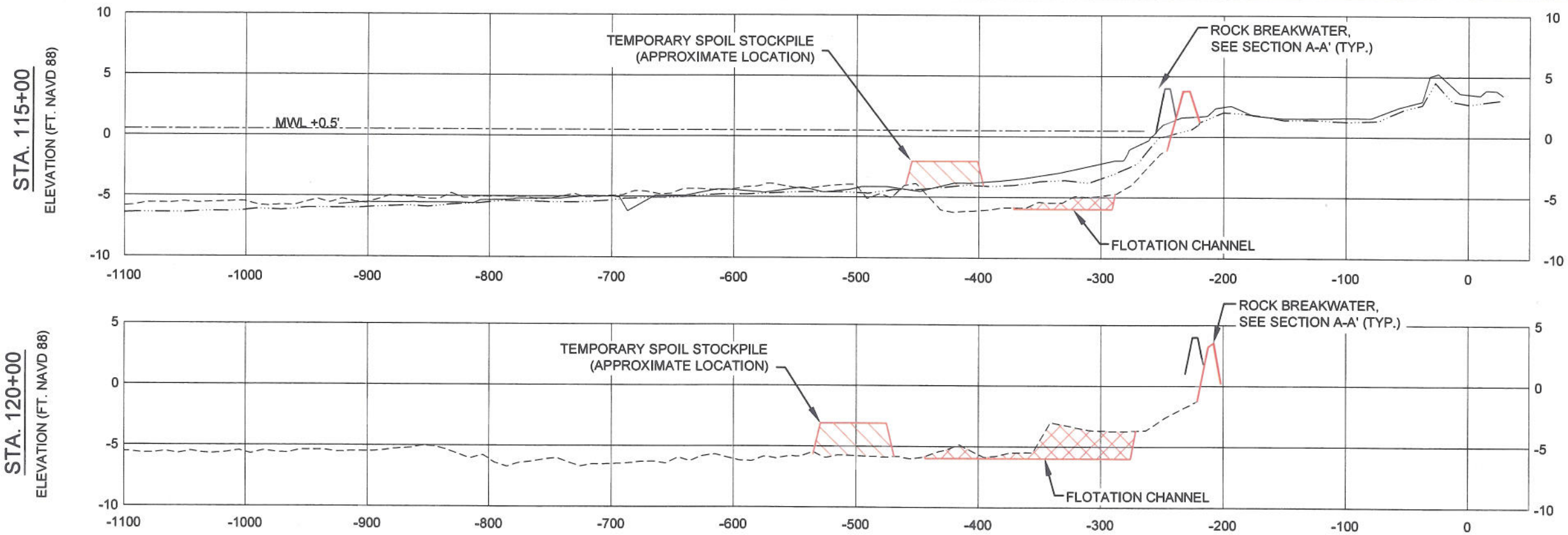
LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

BAYOU DUPRE - REACH 2
PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 18 OF 51



## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
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HORIZONTAL GRAPHIC SCALE
100' 500' 0 100' 200'
10' 5' 0 10' 20'
VERTICAL GRAPHIC SCALE

| REV. | DATE | DESCRIPTION | BY |
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| A | 4-28-09 | AS-BUILT | JMB |
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LOUISIANA DEPARTMENT OF NATURAL RESOURCES
COASTAL ENGINEERING DIVISION
617 NORTH 3RD STREET
BATON ROUGE, LOUISIANA 70802

DRAWN BY: J. BORDELON | DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30

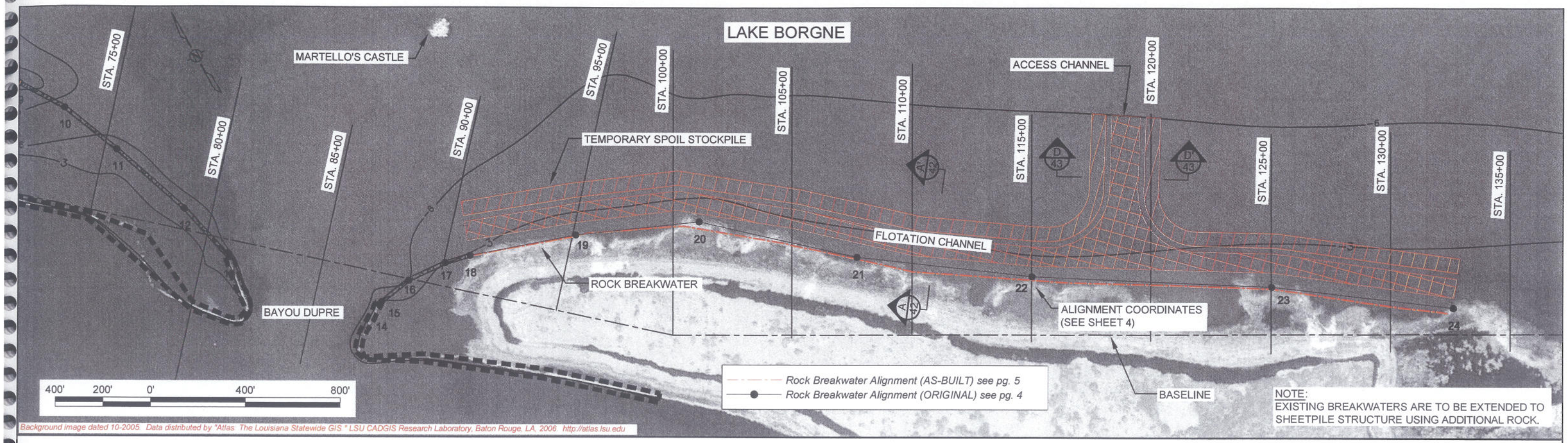
FEDERAL PROJECT NUMBER: PO-30

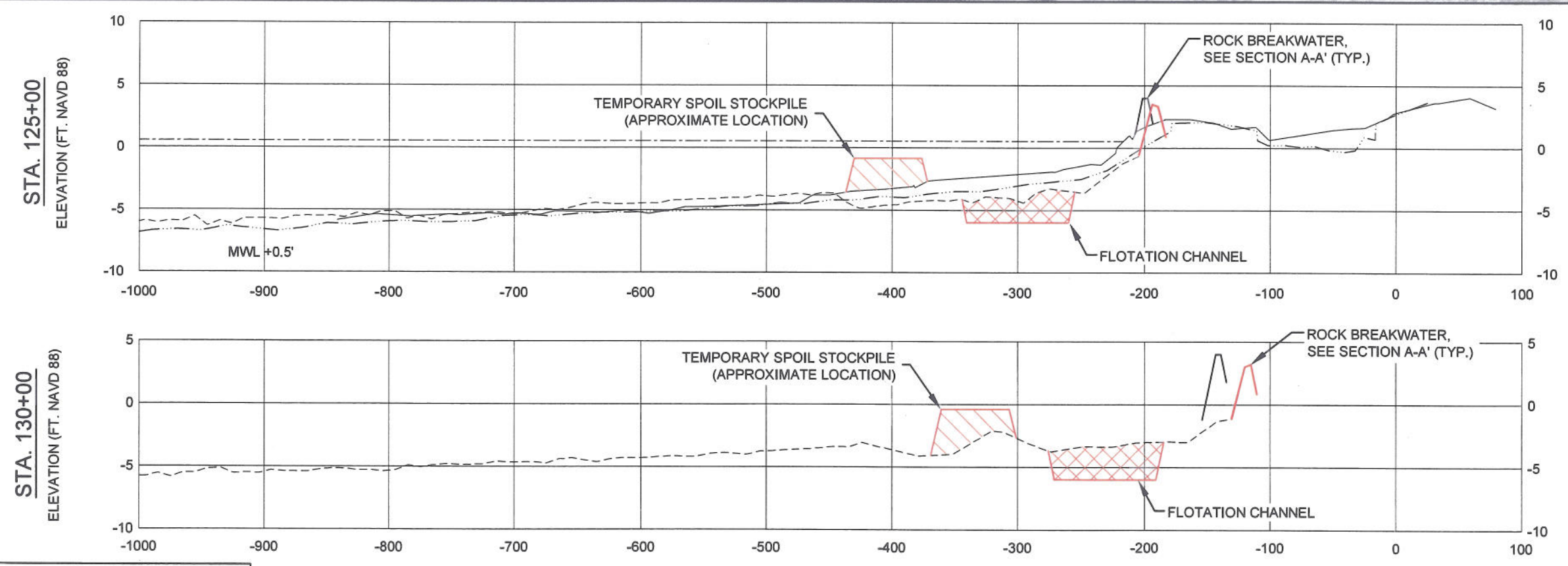
APPROVED BY: LUKE LE BAS, P.E.

BAYOU DUPRE - REACH 2
PLAN & SECTION VIEWS

DATE: MARCH 2009

SHEET 19 OF 51




JAMIE M. BORDELON
License No. 4577
PROFESSIONAL
LAND SURVEYOR
June 3, 2009

## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- TEMPORARY SPOIL
- ACCESS AND FLOTATION CHANNEL

HORIZONTAL GRAPHIC SCALE
100' 50' 0 100' 200'
10' 5' 0 10' 20'
VERTICAL GRAPHIC SCALE

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

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

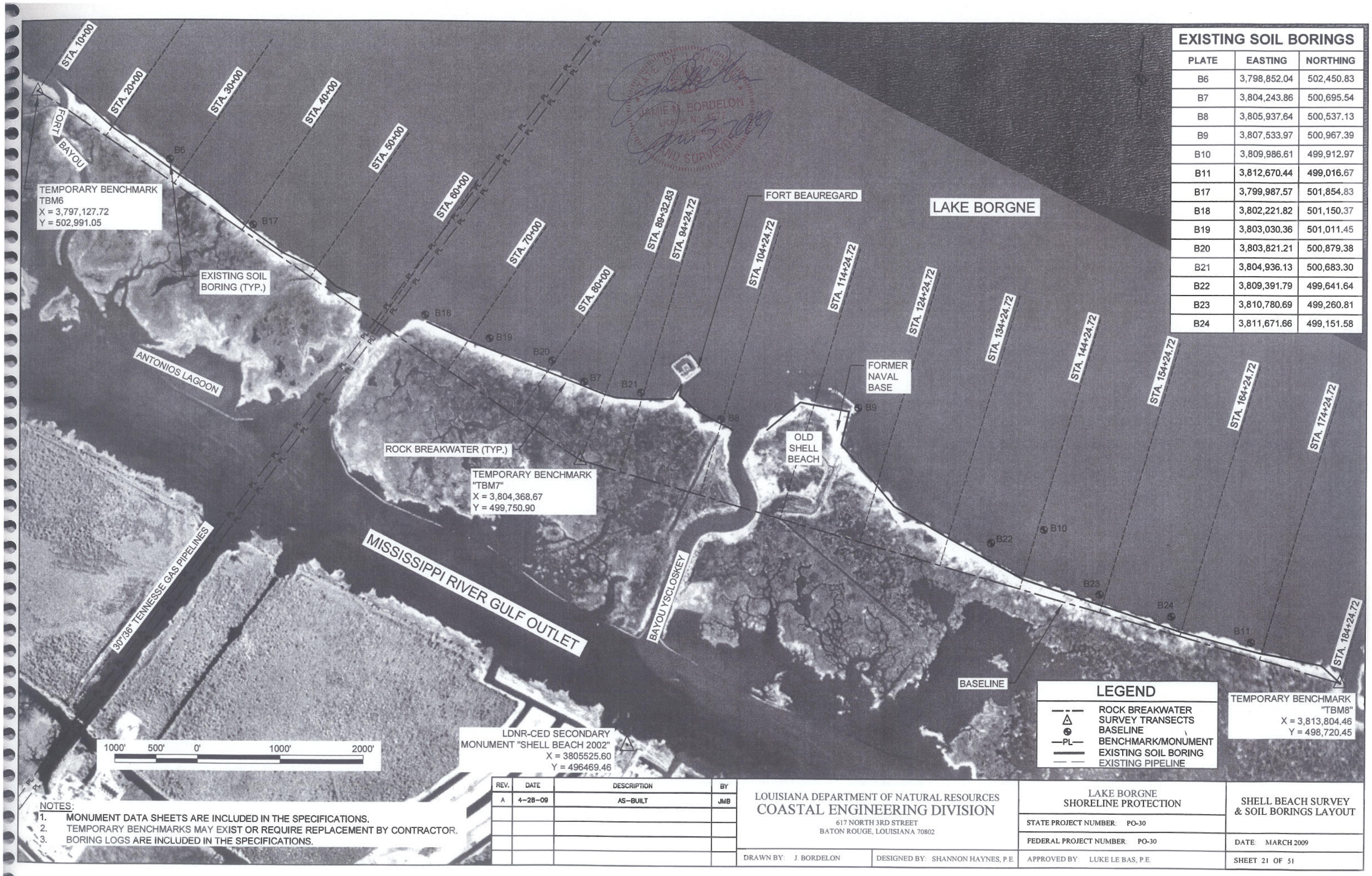
DRAWN BY: J. BORDELON | DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

BAYOU DUPRE - REACH 2
PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 20 OF 51




## EXISTING SOIL BORINGS

| PLATE | EASTING | NORTHING |
|---|---|---|
| B6 | 3,798,852.04 | 502,450.83 |
| B7 | 3,804,243.86 | 500,695.54 |
| B8 | 3,805,937.64 | 500,537.13 |
| B9 | 3,807,533.97 | 500,967.39 |
| B10 | 3,809,986.61 | 499,912.97 |
| B11 | 3,812,670.44 | 499,016.67 |
| B17 | 3,799,987.57 | 501,854.83 |
| B18 | 3,802,221.82 | 501,150.37 |
| B19 | 3,803,030.36 | 501,011.45 |
| B20 | 3,803,821.21 | 500,879.38 |
| B21 | 3,804,936.13 | 500,683.30 |
| B22 | 3,809,391.79 | 499,641.64 |
| B23 | 3,810,780.69 | 499,260.81 |
| B24 | 3,811,671.66 | 499,151.58 |

JAMIE M. BORDELON
License No. 4577
STATE OF LOUISIANA
REGISTERED
LAND SURVEYOR
JUNE 3, 2009

NOTES:
1. MONUMENT DATA SHEETS ARE INCLUDED IN THE SPECIFICATIONS.
2. TEMPORARY BENCHMARKS MAY EXIST OR REQUIRE REPLACEMENT BY CONTRACTOR.
3. BORING LOGS ARE INCLUDED IN THE SPECIFICATIONS.

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |
| | | | |
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LOUISIANA DEPARTMENT OF NATURAL RESOURCES
COASTAL ENGINEERING DIVISION
617 NORTH 3RD STREET
BATON ROUGE, LOUISIANA 70802

DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE
SHORELINE PROTECTION

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

SHELL BEACH SURVEY
& SOIL BORINGS LAYOUT

DATE: MARCH 2009
APPROVED BY: LUKE LE BAS, P.E.
SHEET 21 OF 51

LAKE BORGNE

SHELL BEACH
REACH 3 (8,640 FT.)
SEE SHEETS 25-34

FORT BAYOU

NO WORK ZONE

FORT BEAUREGARD

ANTONIOS LAGOON

30" TENNESSEE GAS PIPELINE

36" TENNESSEE GAS PIPELINE

ROCK BREAKWATER (TYP.)

OLD SHELL BEACH

TEMPORARY SPOIL STOCKPILE (TYP.)

SHELL BEACH
REACH 4 (8,330 FT.)
SEE SHEETS 35-41

ACCESS CHANNEL (TYP.)

FLOTATION CHANNEL (TYP.)

ALIGNMENT COORDINATES (TYP.)

MISSISSIPPI RIVER GULF OUTLET

BAYOU YSCLOSKEY

DOULLUT'S CANAL

LEGEND

- ROCK DIKE
- ACCESS AND FLOTATION CHANNEL
- PL EXISTING PIPELINE
- TEMPORARY SPOIL
- FLOTATION CHANNEL
- BENCHMARK/MONUMENT

1000' 500' 0' 1000' 2000'

LDNR-CED SECONDARY MONUMENT
"SHELL BEACH 2002"
X = 3805525.51
Y = 496469.38

NOTES:

1. ROCK BREAKWATERS SHALL BE CONSTRUCTED ACCORDING TO THE ALIGNMENT COORDAINATES LISTED ON THIS SHEET.
2. THE RIGHT-OF-WAY FOR THE TENNESSEE GAS PIPELINES IS DESIGNATED AS A NO WORK ZONE AND CONSTRUCTION IN THIS ZONE IS PROHIBITED.

**ACCESS CHANNEL COORDINATES**

| PT. | EASTING | NORTHING |
|---|---|---|
| AC11 | 3,799,271.12 | 502,526.85 |
| AC12 | 3,799,390.36 | 502,475.07 |
| AC13 | 3,799,005.59 | 502,441.91 |
| AC14 | 3,799,528.36 | 502,202.98 |
| AC15 | 3,803,365.43 | 501,147.09 |
| AC16 | 3,803,482.47 | 501,120.34 |
| AC17 | 3,803,130.55 | 501,009.57 |
| AC18 | 3,803,703.88 | 500,897.99 |
| AC19 | 3,810,609.97 | 499,780.57 |
| AC20 | 3,810,728.68 | 499,763.04 |
| AC21 | 3,810,592.85 | 499,563.05 |
| AC22 | 3,810,711.56 | 499,545.52 |
| AC23 | 3,810,309.01 | 499,352.25 |
| AC24 | 3,810,922.27 | 499,261.08 |

**ALIGNMENT COORDINATES (ORIGINAL PLANS)**

| PT. | EASTING | NORTHING | LATITUDE | LONGITUDE | PT. | EASTING | NORTHING | LATITUDE | LONGITUDE |
|---|---|---|---|---|---|---|---|---|---|
| 25 | 3,797,430.02 | 503,104.74 | 29°52'24.013"N | 89°42'11.865"W | 43 | 3,805,403.13 | 500,855.53 | 29°52'00.618"N | 89°40'41.678"W |
| 26 | 3,798,095.35 | 502,705.16 | 29°52'19.964"N | 89°42'04.373"W | 44 | 3,805,400.60 | 500,733.42 | 29°51'59.410"N | 89°40'41.727"W |
| 27 | 3,799,002.21 | 502,283.47 | 29°52'15.662"N | 89°41'54.142"W | 45 | 3,805,621.45 | 500,591.24 | 29°51'57.971"N | 89°40'39.242"W |
| 28 | 3,799,416.51 | 502,099.70 | 29°52'13.785"N | 89°41'49.466"W | 46 | 3,806,106.78 | 500,504.34 | 29°51'56.336"N | 89°40'33.756"W |
| 29 | 3,799,660.30 | 501,961.32 | 29°52'12.380"N | 89°41'46.720"W | 47* | 3,806,500.27 | 500,504.32 | 29°52'00.812"N | 89°40'41.700"W |
| 30 | 3,799,903.82 | 501,823.08 | 29°52'10.978"N | 89°41'43.976"W | 48* | 3,806,836.65 | 500,908.90 | 29°52'00.941"N | 89°40'25.389"W |
| 31 | 3,800,391.18 | 501,588.72 | 29°52'08.589"N | 89°41'38.479"W | 49* | 3,807,432.53 | 500,905.55 | 29°52'00.822"N | 89°40'18.622"W |
| 32 | 3,800,826.84 | 501,465.25 | 29°52'07.305"N | 89°41'33.552"W | 50* | 3,807,410.14 | 500,493.72 | 29°51'56.749"N | 89°40'18.944"W |
| 33 | 3,801,107.58 | 501,294.89 | 29°52'05.579"N | 89°41'30.391"W | 51 | 3,807,917.61 | 500,083.20 | 29°51'52.613"N | 89°40'13.249"W |
| 34 | 3,801,384.90 | 501,219.05 | 29°52'04.789"N | 89°41'27.254"W | 52 | 3,808,166.47 | 499,869.13 | 29°51'50.458"N | 89°40'10.458"W |
| 35 | 3,802,252.61 | 501,071.66 | 29°52'03.207"N | 89°41'17.423"W | 53 | 3,808,871.92 | 499,610.43 | 29°51'47.796"N | 89°40'02.489"W |
| 36 | 3,802,780.42 | 500,933.69 | 29°52'01.766"N | 89°41'11.451"W | 54 | 3,809,842.08 | 499,278.34 | 29°51'44.369"N | 89°39'51.526"W |
| 37 | 3,803,788.35 | 500,737.87 | 29°51'59.684"N | 89°41'00.036"W | 55 | 3,810,831.78 | 499,133.08 | 29°51'42.788"N | 89°39'40.311"W |
| 38 | 3,804,514.00 | 500,587.29 | 29°51'58.090"N | 89°40'51.820"W | 56 | 3,811,821.75 | 498,986.49 | 29°51'41.194"N | 89°39'29.093"W |
| 39 | 3,804,651.73 | 500,573.61 | 29°51'57.935"N | 89°40'50.258"W | 57 | 3,812,818.92 | 498,904.77 | 29°51'40.241"N | 89°39'17.782"W |
| 40 | 3,804,957.13 | 500,608.44 | 29°51'58.236"N | 89°40'46.784"W | 58 | 3,813,552.86 | 498,889.01 | 29°51'39.978"N | 89°39'09.450"W |
| 41 | 3,805,324.73 | 500,677.42 | 29°51'58.866"N | 89°40'42.598"W | 59 | 3,813,804.80 | 498,723.58 | 29°51'38.304"N | 89°39'06.617"W |
| 42 | 3,805,400.95 | 500,875.13 | 29°52'00.812"N | 89°40'41.700"W | | | | | |

*END-ON-CONSTRUCTION

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

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

DRAWN BY: J. BORDELON | DESIGNED BY: SHANNON HAYNES, P.E.

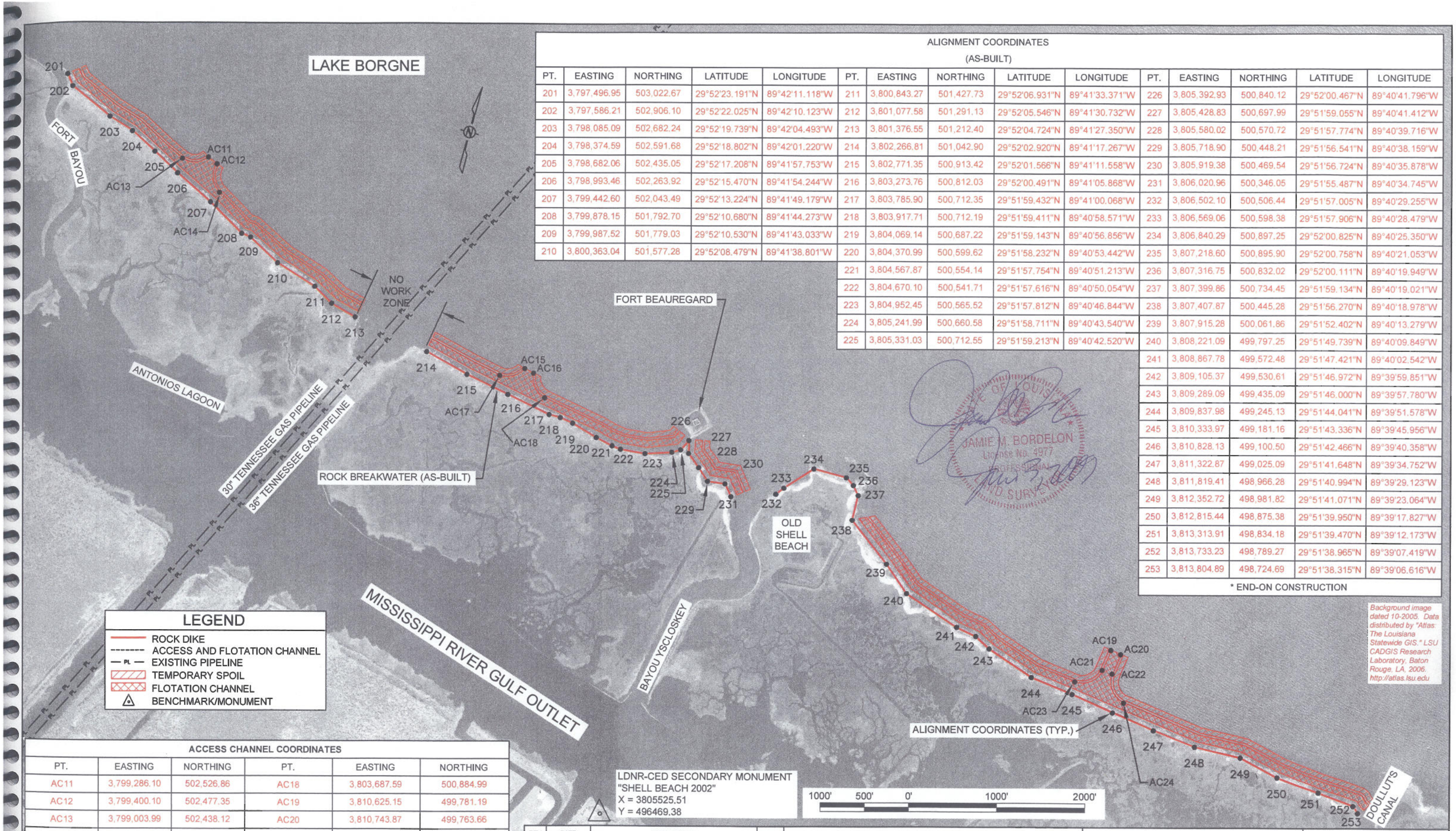
LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

SHELL BEACH
ALIGNMENT (proposed)

DATE: MARCH 2009
SHEET 22 OF 51

STATE OF LOUISIANA
JAMES M. BORDELON
License No. 4917
PROFESSIONAL LAND SURVEYOR




## LEGEND

- ROCK DIKE
- ACCESS AND FLOTATION CHANNEL
- PL — EXISTING PIPELINE
- TEMPORARY SPOIL
- FLOTATION CHANNEL
- BENCHMARK/MONUMENT

LDNR-CED SECONDARY MONUMENT
"SHELL BEACH 2002"
X = 3805525.51
Y = 496469.38

1000' 500' 0' 1000' 2000'

### ALIGNMENT COORDINATES (AS-BUILT)

| PT. | EASTING | NORTHING | LATITUDE | LONGITUDE |
|---|---|---|---|---|
| 201 | 3,797,496.95 | 503,022.67 | 29°52'23.191"N | 89°42'11.118"W |
| 202 | 3,797,586.21 | 502,906.10 | 29°52'22.025"N | 89°42'10.123"W |
| 203 | 3,798,085.09 | 502,682.24 | 29°52'19.739"N | 89°42'04.493"W |
| 204 | 3,798,374.59 | 502,591.68 | 29°52'18.802"N | 89°42'01.220"W |
| 205 | 3,798,682.06 | 502,435.05 | 29°52'17.208"N | 89°41'57.753"W |
| 206 | 3,798,993.46 | 502,263.92 | 29°52'15.470"N | 89°41'54.244"W |
| 207 | 3,799,442.60 | 502,043.49 | 29°52'13.224"N | 89°41'49.179"W |
| 208 | 3,799,878.15 | 501,792.70 | 29°52'10.680"N | 89°41'44.273"W |
| 209 | 3,799,987.52 | 501,779.03 | 29°52'10.530"N | 89°41'43.033"W |
| 210 | 3,800,363.04 | 501,577.28 | 29°52'08.479"N | 89°41'38.801"W |
| 211 | 3,800,843.27 | 501,427.73 | 29°52'06.931"N | 89°41'33.371"W |
| 212 | 3,801,077.58 | 501,291.13 | 29°52'05.546"N | 89°41'30.732"W |
| 213 | 3,801,376.55 | 501,212.40 | 29°52'04.724"N | 89°41'27.350"W |
| 214 | 3,802,266.81 | 501,042.90 | 29°52'02.920"N | 89°41'17.267"W |
| 215 | 3,802,771.35 | 500,913.42 | 29°52'01.566"N | 89°41'11.558"W |
| 216 | 3,803,273.76 | 500,812.03 | 29°52'00.491"N | 89°41'05.868"W |
| 217 | 3,803,785.90 | 500,712.35 | 29°51'59.432"N | 89°41'00.068"W |
| 218 | 3,803,917.71 | 500,712.19 | 29°51'59.411"N | 89°40'58.571"W |
| 219 | 3,804,069.14 | 500,687.22 | 29°51'59.143"N | 89°40'56.856"W |
| 220 | 3,804,370.99 | 500,599.62 | 29°51'58.232"N | 89°40'53.442"W |
| 221 | 3,804,567.87 | 500,554.14 | 29°51'57.754"N | 89°40'51.213"W |
| 222 | 3,804,670.10 | 500,541.71 | 29°51'57.616"N | 89°40'50.054"W |
| 223 | 3,804,952.45 | 500,565.52 | 29°51'57.812"N | 89°40'46.844"W |
| 224 | 3,805,241.99 | 500,660.58 | 29°51'58.711"N | 89°40'43.540"W |
| 225 | 3,805,331.03 | 500,712.55 | 29°51'59.213"N | 89°40'42.520"W |
| 226 | 3,805,392.93 | 500,840.12 | 29°52'00.467"N | 89°40'41.796"W |
| 227 | 3,805,428.83 | 500,697.99 | 29°51'59.055"N | 89°40'41.412"W |
| 228 | 3,805,580.02 | 500,570.72 | 29°51'57.774"N | 89°40'39.716"W |
| 229 | 3,805,718.90 | 500,448.21 | 29°51'56.541"N | 89°40'38.159"W |
| 230 | 3,805,919.38 | 500,469.54 | 29°51'56.724"N | 89°40'35.878"W |
| 231 | 3,806,020.96 | 500,346.05 | 29°51'55.487"N | 89°40'34.745"W |
| 232 | 3,806,502.10 | 500,506.44 | 29°51'57.005"N | 89°40'29.255"W |
| 233 | 3,806,569.06 | 500,598.38 | 29°51'57.906"N | 89°40'28.479"W |
| 234 | 3,806,840.29 | 500,897.25 | 29°52'00.825"N | 89°40'25.350"W |
| 235 | 3,807,218.60 | 500,895.90 | 29°52'00.758"N | 89°40'21.053"W |
| 236 | 3,807,316.75 | 500,832.02 | 29°52'00.111"N | 89°40'19.949"W |
| 237 | 3,807,399.86 | 500,734.45 | 29°51'59.134"N | 89°40'19.021"W |
| 238 | 3,807,407.87 | 500,445.28 | 29°51'56.270"N | 89°40'18.978"W |
| 239 | 3,807,915.28 | 500,061.86 | 29°51'52.402"N | 89°40'13.279"W |
| 240 | 3,808,221.09 | 499,797.25 | 29°51'49.739"N | 89°40'09.849"W |
| 241 | 3,808,867.78 | 499,572.48 | 29°51'47.421"N | 89°40'02.542"W |
| 242 | 3,809,105.37 | 499,530.61 | 29°51'46.972"N | 89°39'59.851"W |
| 243 | 3,809,289.09 | 499,435.09 | 29°51'46.000"N | 89°39'57.780"W |
| 244 | 3,809,837.98 | 499,245.13 | 29°51'44.041"N | 89°39'51.578"W |
| 245 | 3,810,333.97 | 499,181.16 | 29°51'43.336"N | 89°39'45.956"W |
| 246 | 3,810,828.13 | 499,100.50 | 29°51'42.466"N | 89°39'40.358"W |
| 247 | 3,811,322.87 | 499,025.09 | 29°51'41.648"N | 89°39'34.752"W |
| 248 | 3,811,819.41 | 498,966.28 | 29°51'40.994"N | 89°39'29.123"W |
| 249 | 3,812,352.72 | 498,981.82 | 29°51'41.071"N | 89°39'23.064"W |
| 250 | 3,812,815.44 | 498,875.38 | 29°51'39.950"N | 89°39'17.827"W |
| 251 | 3,813,313.91 | 498,834.18 | 29°51'39.470"N | 89°39'12.173"W |
| 252 | 3,813,733.23 | 498,789.27 | 29°51'38.965"N | 89°39'07.419"W |
| 253 | 3,813,804.89 | 498,724.69 | 29°51'38.315"N | 89°39'06.616"W |

* END-ON CONSTRUCTION

### ACCESS CHANNEL COORDINATES

| PT. | EASTING | NORTHING | PT. | EASTING | NORTHING |
|---|---|---|---|---|---|
| AC11 | 3,799,286.10 | 502,526.86 | AC18 | 3,803,687.59 | 500,884.99 |
| AC12 | 3,799,400.10 | 502,477.35 | AC19 | 3,810,625.15 | 499,781.19 |
| AC13 | 3,799,003.99 | 502,438.12 | AC20 | 3,810,743.87 | 499,763.66 |
| AC14 | 3,799,512.67 | 502,173.20 | AC21 | 3,810,589.21 | 499,537.94 |
| AC15 | 3,803,383.01 | 501,146.45 | AC22 | 3,810,708.68 | 499,525.35 |
| AC16 | 3,803,493.27 | 501,121.26 | AC23 | 3,810,326.27 | 499,330.37 |
| AC17 | 3,803,128.35 | 500,998.68 | AC24 | 3,810,919.40 | 499,240.92 |

COORDINATES ARE APPROXIMATE DUE TO RE-ALIGNMENT

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JAMIE M. BORDELON
License No. 4977
PROFESSIONAL LAND SURVEYOR
STATE OF LOUISIANA

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

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

DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

SHELL BEACH
ALIGNMENT (as-built)

DATE: MARCH 2009
SHEET 23 OF 51

## ESTIMATED MATERIALS QUANTITIES REACHES 3 AND 4

| MATERIAL | TOTAL ESTIMATED | REACH 3 ACTUAL | REACH 4 ACTUAL | UNITS |
|---|---|---|---|---|
| ROCK (INITIAL BREAKWATER LIFT) | 82,614 | 47,532 | 42,808 | TONS |
| ROCK (SECONDARY BREAKWATER LIFT) | 4,297 | | | TONS |
| FLOTATION ACCESS & CHANNELS | 171,902 (ESTIMATED) | 64,486 | 25,443 | CUBIC YARDS |
| GEOGRID COMPOSITE | 46,782 | 28,387.89 | 27,778.89 | SQUARE YARDS |
| SETTLEMENT PLATES | 19 | 10 | 9 | EACH |
| PERMANENT WARNING SIGNS | 17 | 0 | 0 | EACH |

## SETTLEMENT PLATES

| PLATE | EASTING | NORTHING | FINAL ELEV. | LATITUDE | LONGITUDE |
|---|---|---|---|---|---|
| SP12-R | 3,797,694 | 502,855 | 8.7 | 29°52'21.504"N | 89°42'08.907"W |
| SP13-R | 3,798,607 | 502,470 | 8.4 | 29°52'17.564"N | 89°41'58.600"W |
| SP14-R | 3,799,488 | 502,019 | 8.2 | 29°52'12.976"N | 89°41'48.667"W |
| SP15-R | 3,800,288 | 501,618 | 9.2 | 29°52'08.893"N | 89°41'39.646"W |
| SP16-R | 3,801,230 | 501,253 | 4.7 | 29°52'05.147"N | 89°41'29.007"W |
| SP17-R | 3,802,286 | 501,039 | 8.1 | 29°52'02.879"N | 89°41'17.049"W |
| SP18-R | 3,803,064 | 500,857 | 6.2 | 29°52'00.966"N | 89°41'08.243"W |
| SP19-R | 3,804,043 | 500,692 | 1.6 | 29°51'59.194"N | 89°40'57.152"W |
| SP20-R | 3,805,025 | 500,586 | 7.3 | 29°51'58.004"N | 89°40'46.017"W |
| SP21-R | 3,805,670 | 500,484 | 7.4 | 29°51'56.902"N | 89°40'38.708"W |
| SP22-R | 3,806,506 | 500,512 | 7.9 | 29°51'57.060"N | 89°40'29.209"W |
| SP23-R | 3,807,258 | 500,875 | 9.4 | 29°52'00.545"N | 89°40'20.609"W |
| SP24-R | 3,808,015 | 499,974 | 6.6 | 29°51'51.518"N | 89°40'12.161"W |
| SP25-R | 3,808,849 | 499,577 | 9.9 | 29°51'47.468"N | 89°40'02.755"W |
| SP26-R | 3,809,799 | 499,259 | 8.8 | 29°51'44.184"N | 89°39'52.019"W |
| SP27-R | 3,810,786 | 499,110 | 9.7 | 29°51'42.566"N | 89°39'40.835"W |
| SP28-R | 3,811,781 | 498,967 | 7.0 | 29°51'41.007"N | 89°39'29.559"W |
| SP29-R | 3,812,775 | 498,883 | 10.4 | 29°51'40.032"N | 89°39'18.285"W |
| SP30-R | 3,813,761 | 498,765 | 9.1 | 29°51'38.721"N | 89°39'07.107"W |

LAKE BORGNE

FORT BAYOU

ACCESS CHANNEL (TYP.)

SP12-R

SP13-R

SP14-R

SP15-R

SP16-R

SETTLEMENT PLATE (TYP.)
SEE DETAIL A ON SHEET 45

TEMPORARY SPOIL

FORT BEAUREGARD

SP17-R

SP18-R

SP19-R

SP20-R

SP21-R

ROCK BREAKWATER (TYP.)

ANTONIOS LAGOON

30"/36" TENNESSE GAS PIPELINES

MISSISSIPPI RIVER GULF OUTLET

BAYOU YSCLOSKEY

SP22-R

SP23-R

OLD SHELL BEACH

SP24-R

SP25-R

SP26-R

SP27-R

SP28-R

SP29-R

SP30-R

ACCESS CHANNEL (TYP.)

DOULUT'S CANAL

TEMPORARY SPOIL STOCKPILE (TYP.)

SHELL BEACH

2000' 1000' 0' 2000' 4000'

LDNR-CED SECONDARY MONUMENT
"SHELL BEACH 2002"
X = 3805525.51
Y = 496469.38

STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 4977
PROFESSIONAL
LAND SURVEYOR

NOTES:

1. DEPENDING ON DRAFT REQUIREMENTS OF THE CONTRACTOR'S EQUIPMENT, ACCESS AND FLOTATION CHANNELS MAY NOT BE REQUIRED AT ALL LOCATIONS SHOWN. FLOTATION CHANNELS ARE PERMITTED TO A MAXIMUM DEPTH OF -6.0' NAVD 88. IT IS NOT MANDATORY THAT THE CONTRACTOR DREDGE TO THIS DEPTH.
2. THE CONTRACTOR SHALL TEMPORARILY DISPOSE OF FLOTATION SPOIL IN THE AREAS SHOWN ON THE PLANS. THE SPOIL SHALL BE BACKFILLED INTO THE CHANNELS PRIOR TO DEMOBILIZATION IN ACCORDANCE WITH THE SPECIFICATIONS.
3. SETTLEMENT PLATES ARE LOCATED AT 1000' INTERVALS ALONG THE CENTERLINE OF THE ROCK BREAKWATER.
4. WARNING SIGNS ARE LOCATED AT 1000' INTERVALS 50' OFFSHORE OF THE CENTERLINE OF THE ROCK BREAKWATERS.
5. SEE SHEET 43 FOR DETAILS A AND B.
6. NO DREDGING SHALL OCCUR INSIDE OF THE RIGHT-OF-WAYS FOR THE TENNESSEE GAS PIPELINES.
7. SEE SPECIFICATIONS FOR OYSTER RESTRICTIONS.

## LEGEND

- ROCK BREAKWATER
- SETTLEMENT PLATE
- WARNING SIGN
- TEMPORARY SPOIL
- CHANNEL
- OYS — EXISTING OYSTER LEASE
- BENCHMARK/MONUMENT
- PL — EXISTING PIPELINE

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|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

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

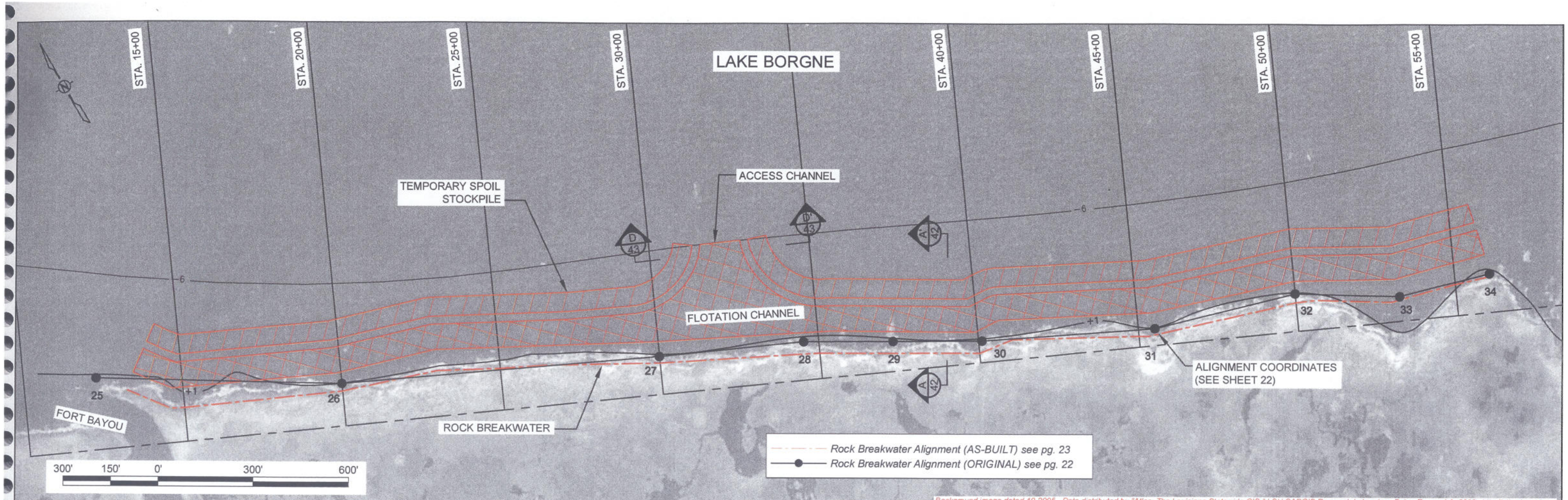
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

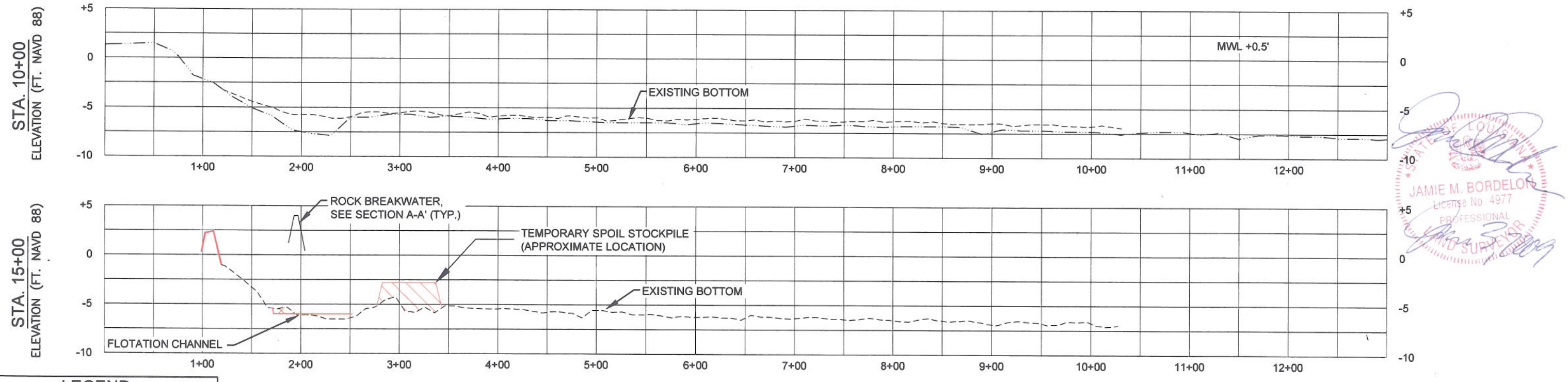
LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

SHELL BEACH
PROJECT LAYOUT

DATE: MARCH 2009
SHEET 24 OF 51




JAMIE M. BORDELON
License No. 4977
PROFESSIONAL
LAND SURVEYOR
2009

## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- TEMPORARY SPOIL
- ACCESS AND FLOTATION CHANNEL

HORIZONTAL GRAPHIC SCALE
100' 50' 0 100' 200'
10' 5' 0 10' 20'
VERTICAL GRAPHIC SCALE

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

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

DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

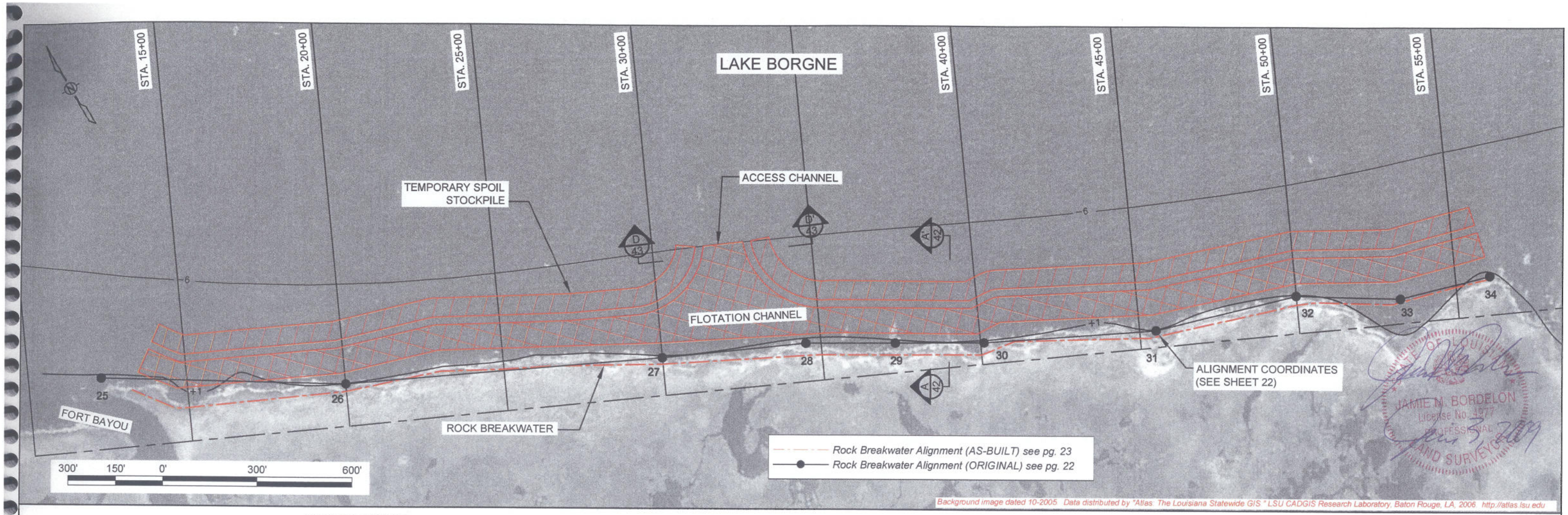
LAKE BORGNE
SHORELINE PROTECTION

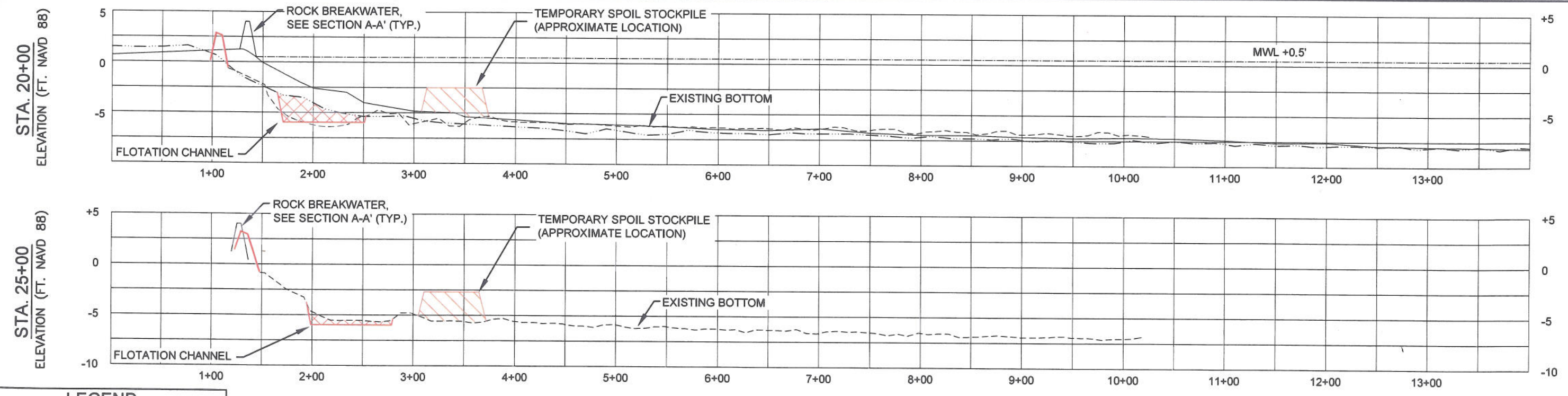
STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30

APPROVED BY: LUKE LE BAS, P.E.

SHELL BEACH - REACH 3
PLAN & SECTION VIEWS

DATE: MARCH 2009




## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- TEMPORARY SPOIL
- ACCESS AND FLOTATION CHANNEL

HORIZONTAL GRAPHIC SCALE
100' 50' 0 100' 200'
10' 5' 0 10' 20'
VERTICAL GRAPHIC SCALE

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

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

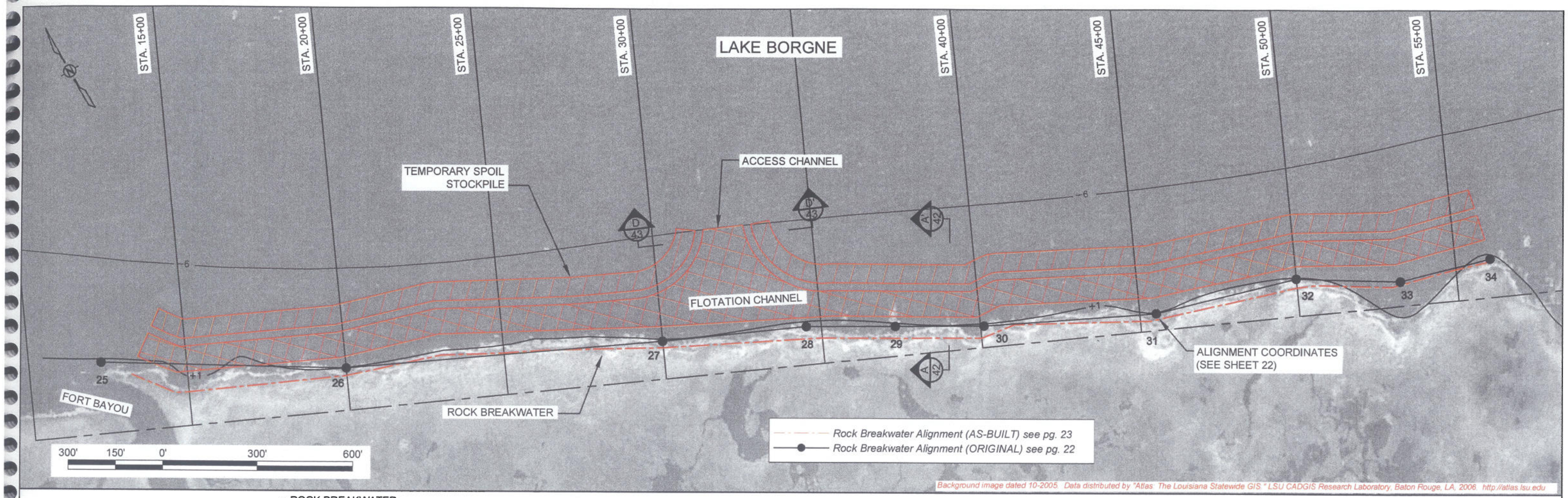
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE
SHORELINE PROTECTION

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

SHELL BEACH - REACH 3
PLAN & SECTION VIEWS

DATE: MARCH 2009
APPROVED BY: LUKE LE BAS, P.E.
SHEET 26 OF 51




STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 4977
PROFESSIONAL
LAND SURVEYOR
7-2-09

## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- TEMPORARY SPOIL
- ACCESS AND FLOTATION CHANNEL

HORIZONTAL GRAPHIC SCALE
100' 50' 0 100' 200'
10' 5' 0 10' 20'
VERTICAL GRAPHIC SCALE

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

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

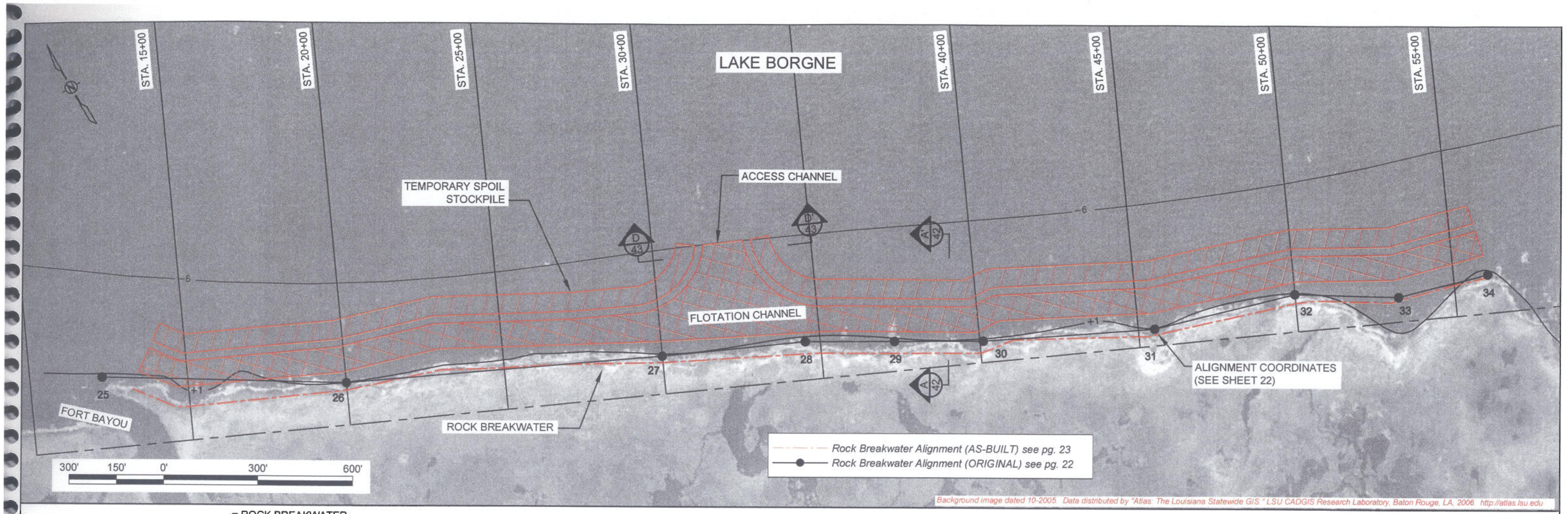
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

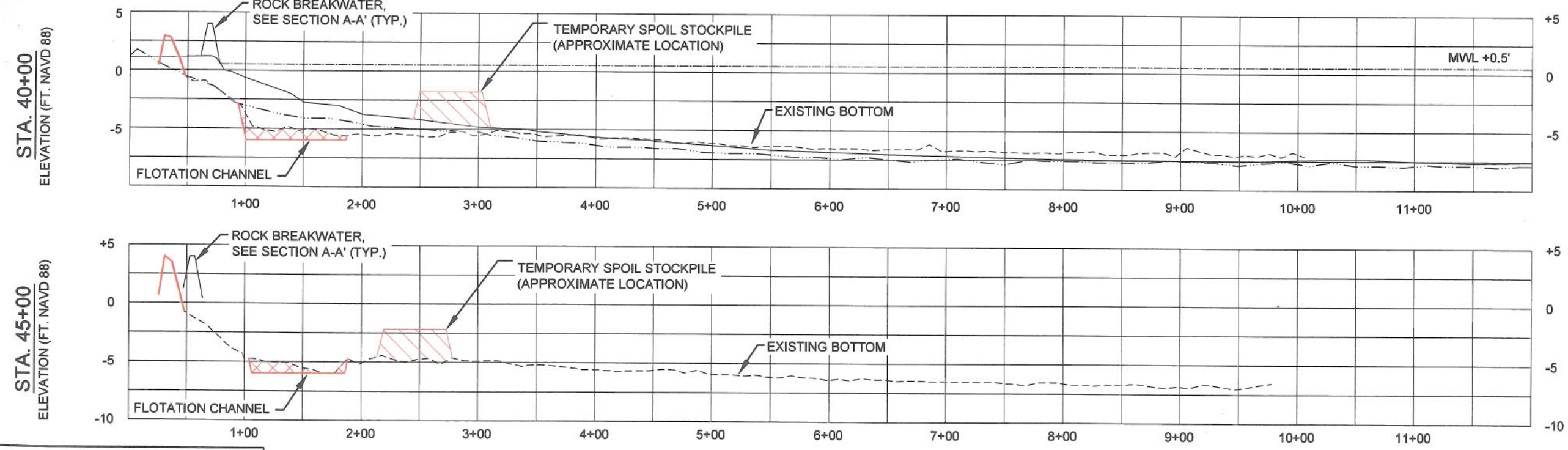
LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

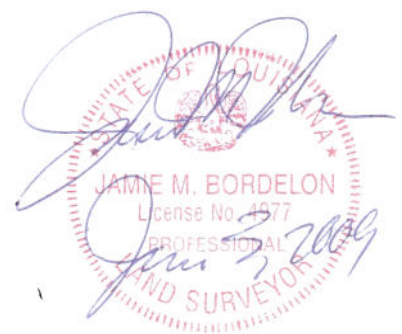
SHELL BEACH - REACH 3
PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 27 OF 51




NOTE:
ROCK BREAKWATER CROWN WIDENED 2 FEET FROM APPROXIMATE STATIONS 48+12 TO 56+05




## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- TEMPORARY SPOIL
- ACCESS AND FLOTATION CHANNEL

HORIZONTAL GRAPHIC SCALE
100' 50' 0 100' 200'
10' 5' 0 10' 20'
VERTICAL GRAPHIC SCALE

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LOUISIANA DEPARTMENT OF NATURAL RESOURCES
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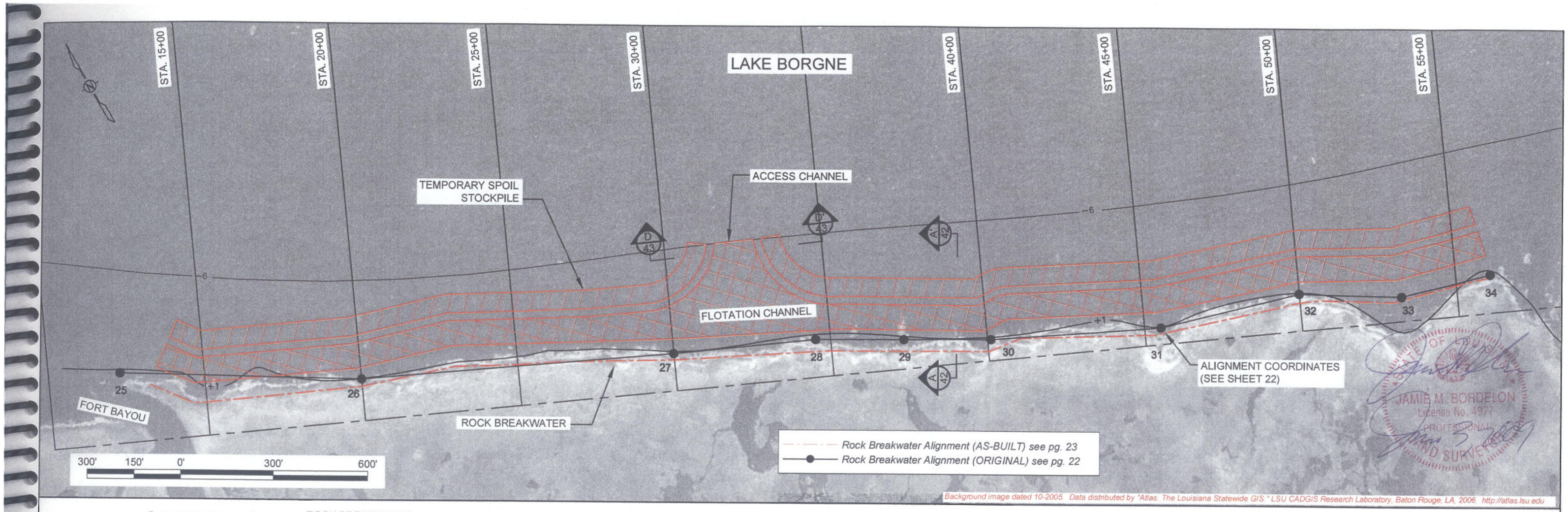
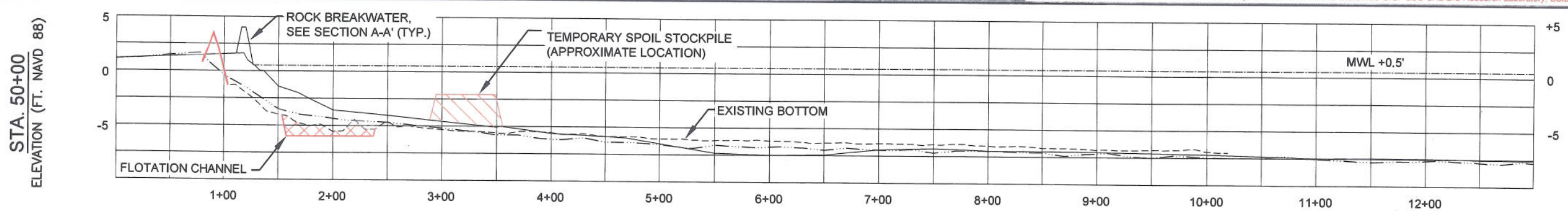
LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

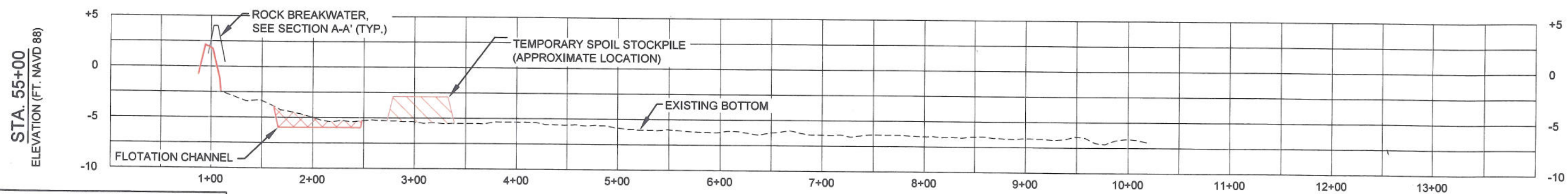
SHELL BEACH - REACH 3
PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 28 OF 51




NOTE:
ROCK BREAKWATER CROWN WIDENED 2 FEET FROM APPROXIMATE STATIONS 48+12 TO 56+05




## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- TEMPORARY SPOIL
- ACCESS AND FLOTATION CHANNEL

HORIZONTAL GRAPHIC SCALE
100' 50' 0 100' 200'
10' 5' 0 10' 20'
VERTICAL GRAPHIC SCALE

| REV. | DATE | DESCRIPTION | BY |
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LOUISIANA DEPARTMENT OF NATURAL RESOURCES
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LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
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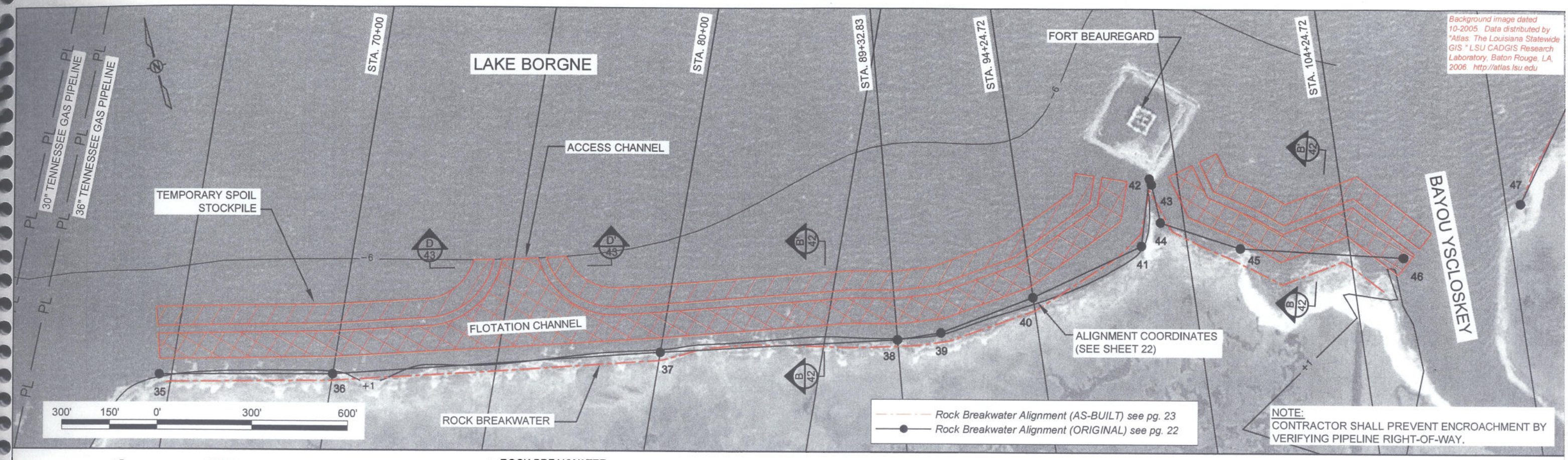
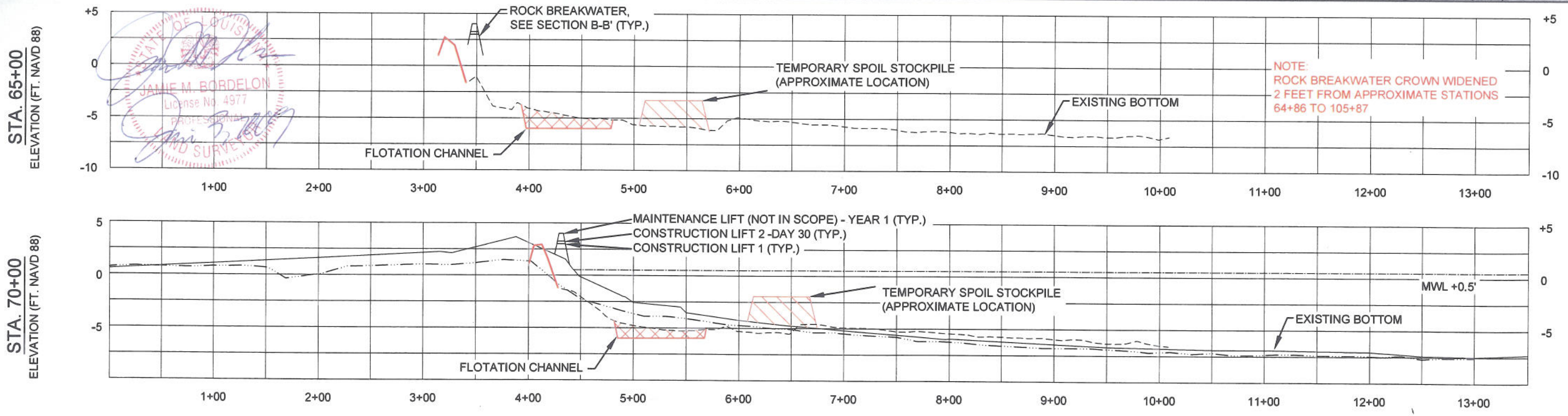
SHELL BEACH - REACH 3
PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 29 OF 51




STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 4977
PROFESSIONAL
LAND SURVEYOR

## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
- EXISTING BOTTOM (PRE-CON 2007)
- EXISTING BOTTOM (Original Plans)
- TEMPORARY SPOIL
- ACCESS AND FLOTATION CHANNEL

HORIZONTAL GRAPHIC SCALE
100' 50' 0 100' 200'
VERTICAL GRAPHIC SCALE
10' 5' 0 10' 20'

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |

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

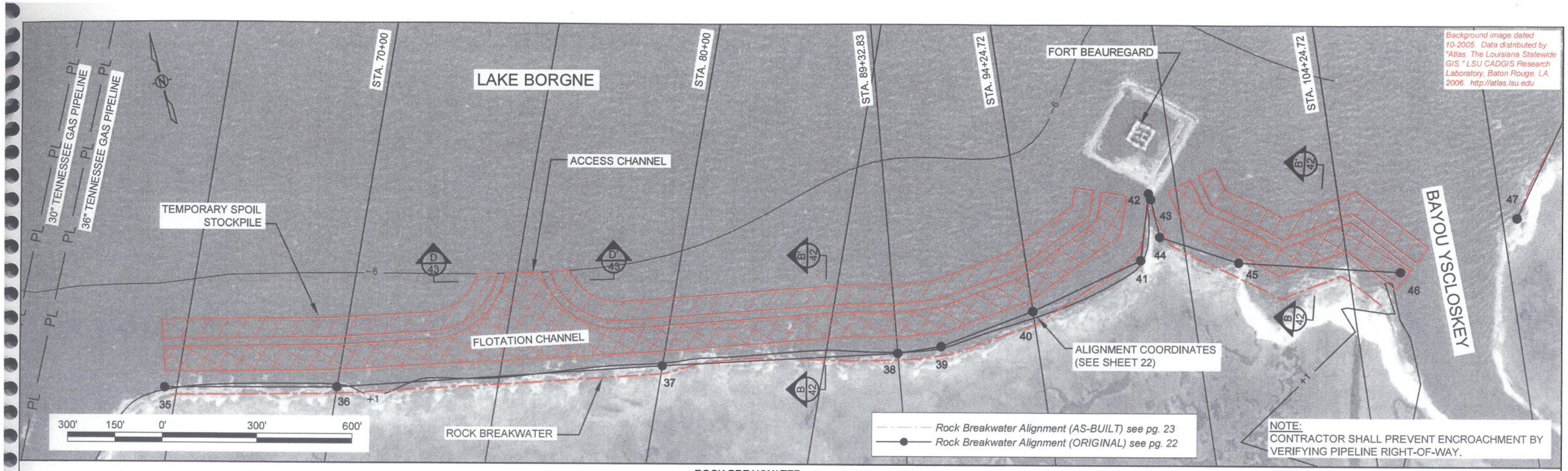
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.
APPROVED BY: LUKE LE BAS, P.E.

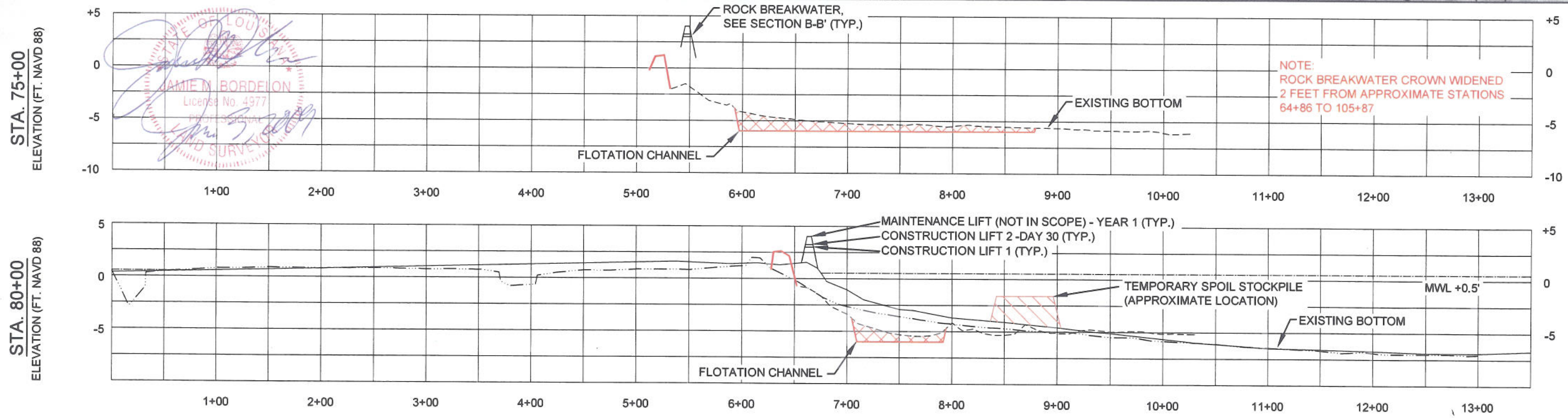
LAKE BORGNE
SHORELINE PROTECTION

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

SHELL BEACH - REACH 3
PLAN & SECTION VIEWS

DATE: MARCH 2009




STATE OF LOUISIANA
JAMIE M. BORDELON
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LOUISIANA DEPARTMENT OF NATURAL RESOURCES
COASTAL ENGINEERING DIVISION
617 NORTH 3RD STREET
BATON ROUGE, LOUISIANA 70802

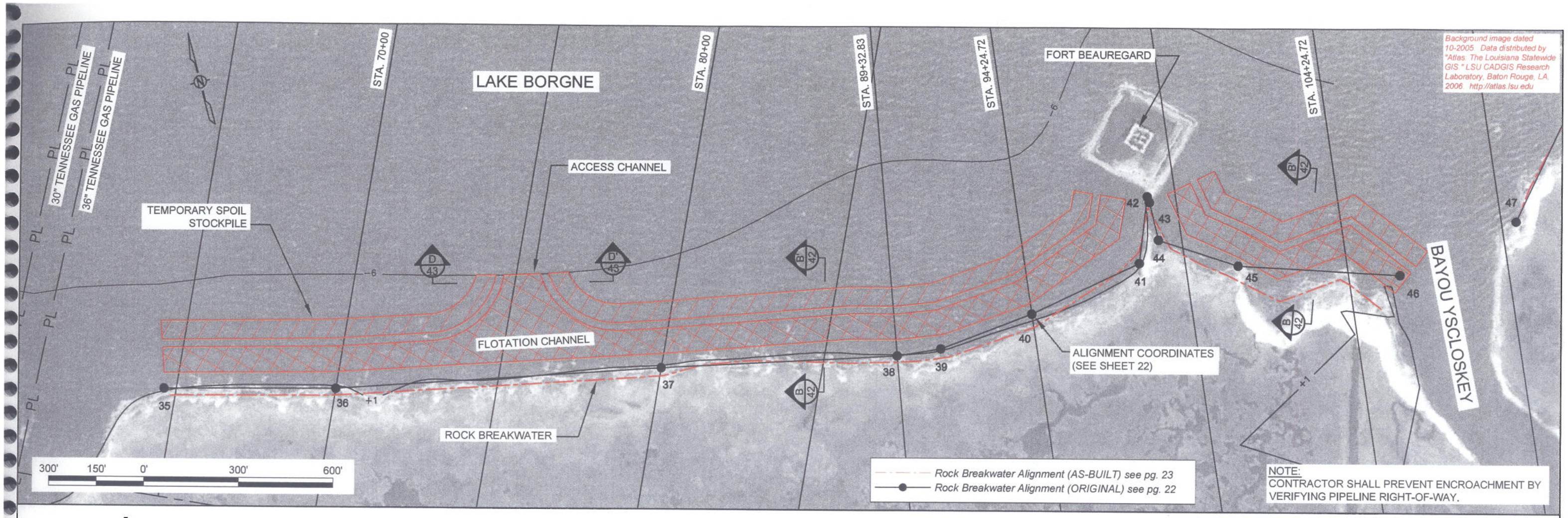
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

SHELL BEACH - REACH 3
PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 31 OF 51

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

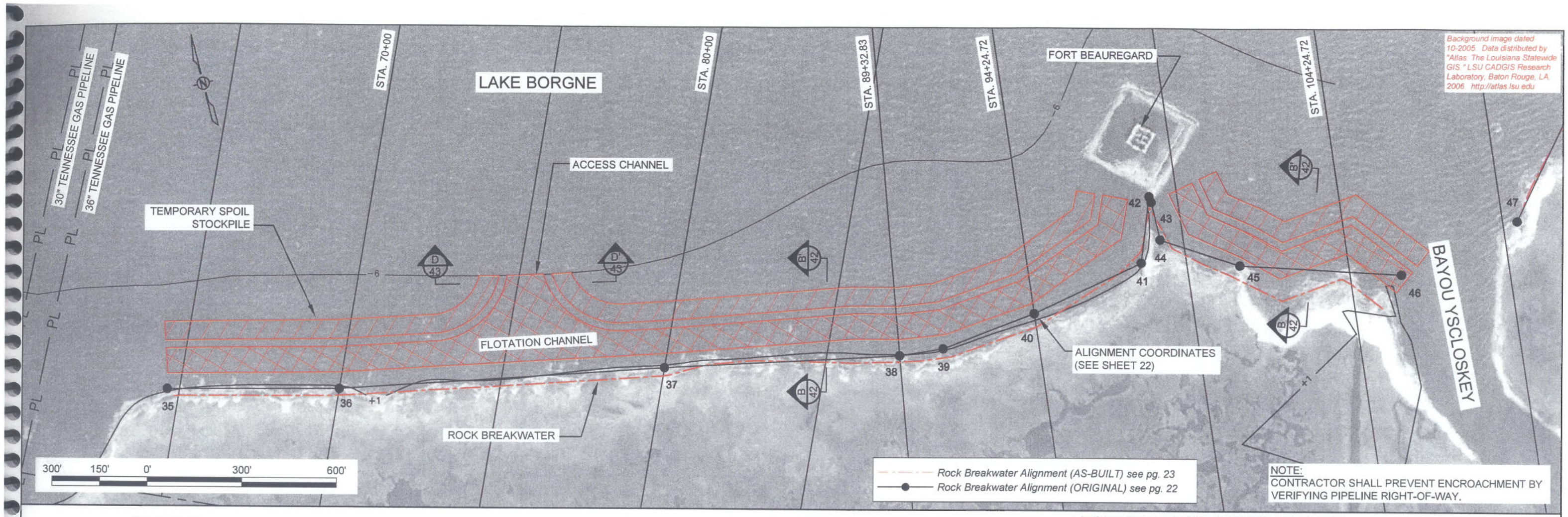
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

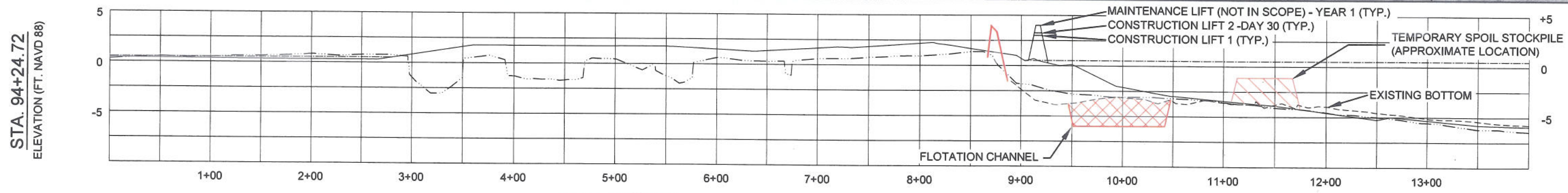
LAKE BORGNE SHORELINE PROTECTION

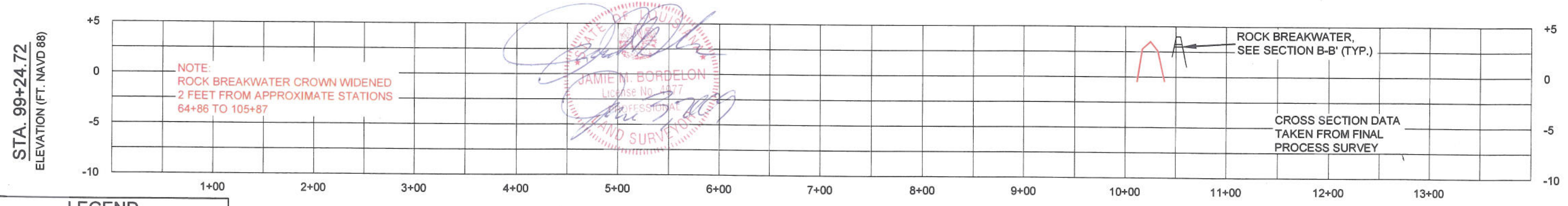
STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

SHELL BEACH - REACH 3
PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 32 OF 51




STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 4977
PROFESSIONAL
LAND SURVEYOR

## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
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VERTICAL GRAPHIC SCALE

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

DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE
SHORELINE PROTECTION

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

SHELL BEACH - REACH 3
PLAN & SECTION VIEWS

DATE: MARCH 2009
APPROVED BY: LUKE LE BAS, P.E.
SHEET 33 OF 51

LAKE BORGNE

FORT BEAUREGARD

BAYOU YSCLOSKEY

30" TENNESSEE GAS PIPELINE

36" TENNESSEE GAS PIPELINE

STA. 70+00

STA. 80+00

STA. 89+32.83

STA. 94+24.72

STA. 104+24.72

ACCESS CHANNEL

TEMPORARY SPOIL STOCKPILE

FLOTATION CHANNEL

ROCK BREAKWATER

ALIGNMENT COORDINATES (SEE SHEET 22)

Background image dated 10-2005. Data distributed by "Atlas: The Louisiana Statewide GIS." LSU CADGIS Research Laboratory, Baton Rouge, LA. 2006. http://atlas.lsu.edu

300' 150' 0' 300' 600'

*Rock Breakwater Alignment (AS-BUILT) see pg. 23*

*Rock Breakwater Alignment (ORIGINAL) see pg. 22*

NOTE:
CONTRACTOR SHALL PREVENT ENCROACHMENT BY VERIFYING PIPELINE RIGHT-OF-WAY.

STA. 104+24.72
ELEVATION (FT. NAVD 88)

NOTE:
ROCK BREAKWATER CROWN WIDENED
2 FEET FROM APPROXIMATE STATIONS
64+86 TO 105+87

MAINTENANCE LIFT (NOT IN SCOPE) - YEAR 1 (TYP.)
CONSTRUCTION LIFT 2 -DAY 30 (TYP.)
CONSTRUCTION LIFT 1 (TYP.)
MWL +0.5'
FLOTATION CHANNEL

114+24.72
ELEVATION (FT. NAVD 88)

ROCK BREAKWATER, SEE SECTION C-C' (TYP.)
MWL +0.5'
CROSS SECTION DATA TAKEN FROM FINAL PROCESS SURVEY
EXISTING BOTTOM

JAMES M. BORDELON
License No. 4977
PROFESSIONAL
LAND SURVEYOR

## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
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COASTAL ENGINEERING DIVISION
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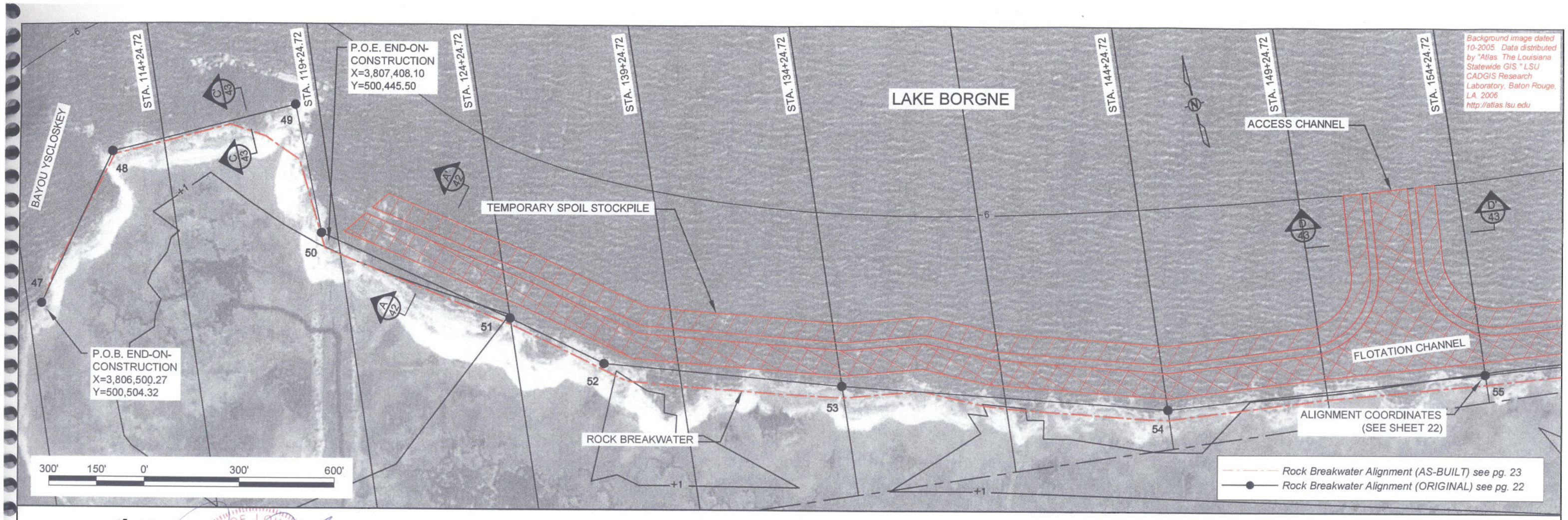
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

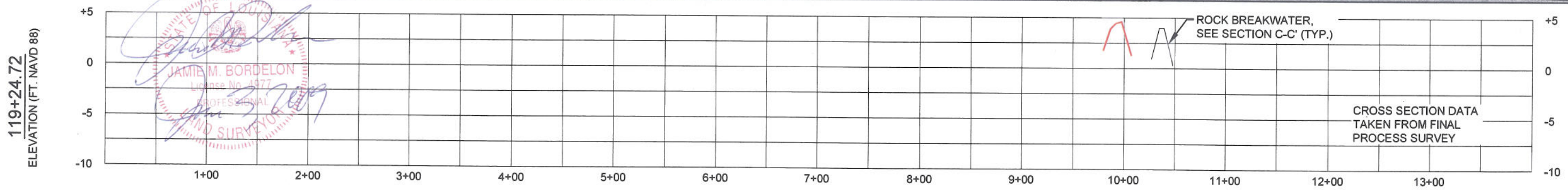
LAKE BORGNE
SHORELINE PROTECTION

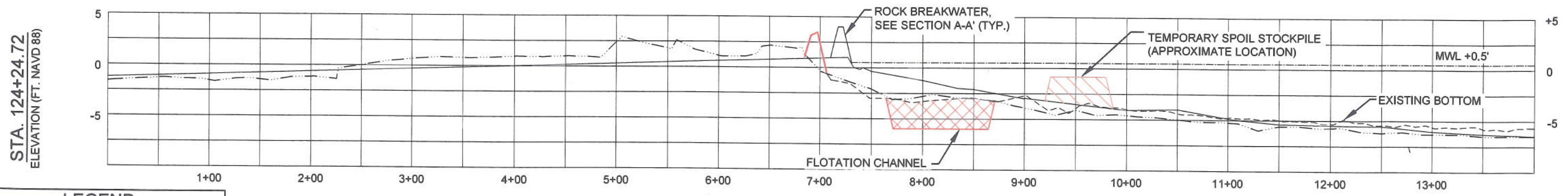
STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30

SHELL BEACH - REACH 3
PLAN & SECTION VIEWS

DATE: MARCH 2009
APPROVED BY: LUKE LE BAS, P.E.
SHEET 34 OF 51




JAMIE M. BORDELON
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PROFESSIONAL
LAND SURVEYOR

## LEGEND

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COASTAL ENGINEERING DIVISION
617 NORTH 3RD STREET
BATON ROUGE, LOUISIANA 70802

DRAWN BY: J. BORDELON | DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE
SHORELINE PROTECTION

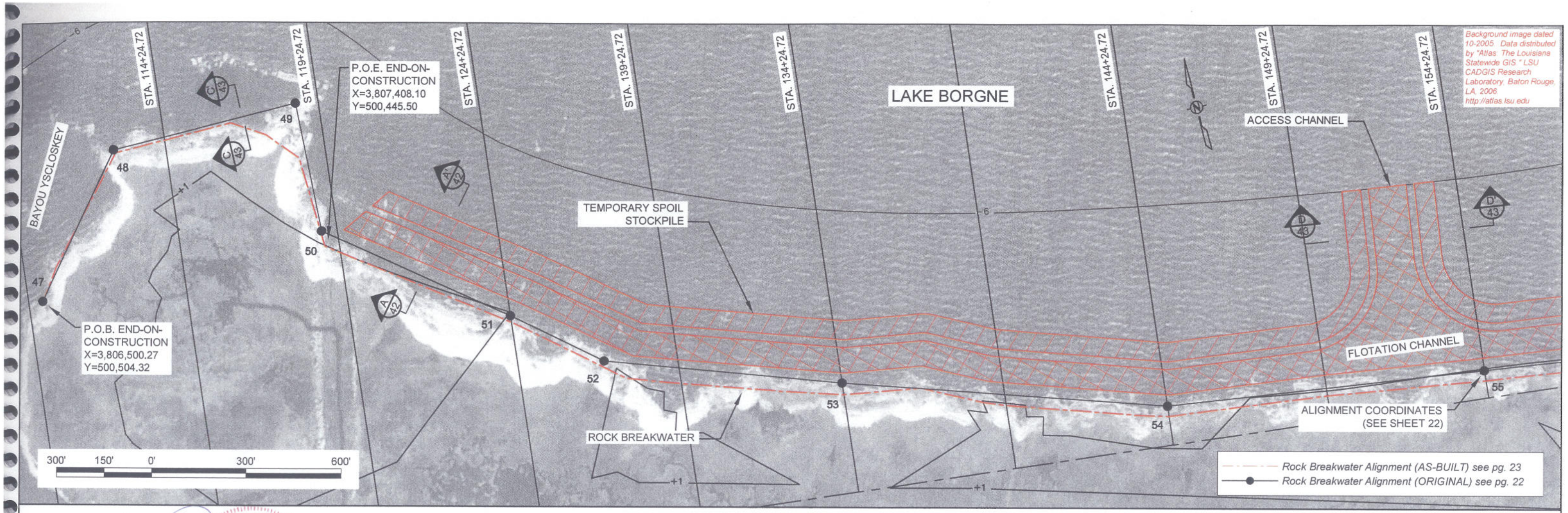
STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30

APPROVED BY: LUKE LE BAS, P.E.

SHELL BEACH - REACH 4
PLAN & SECTION VIEWS

DATE: MARCH 2009

SHEET 35 OF 51

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LAKE BORGNE SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
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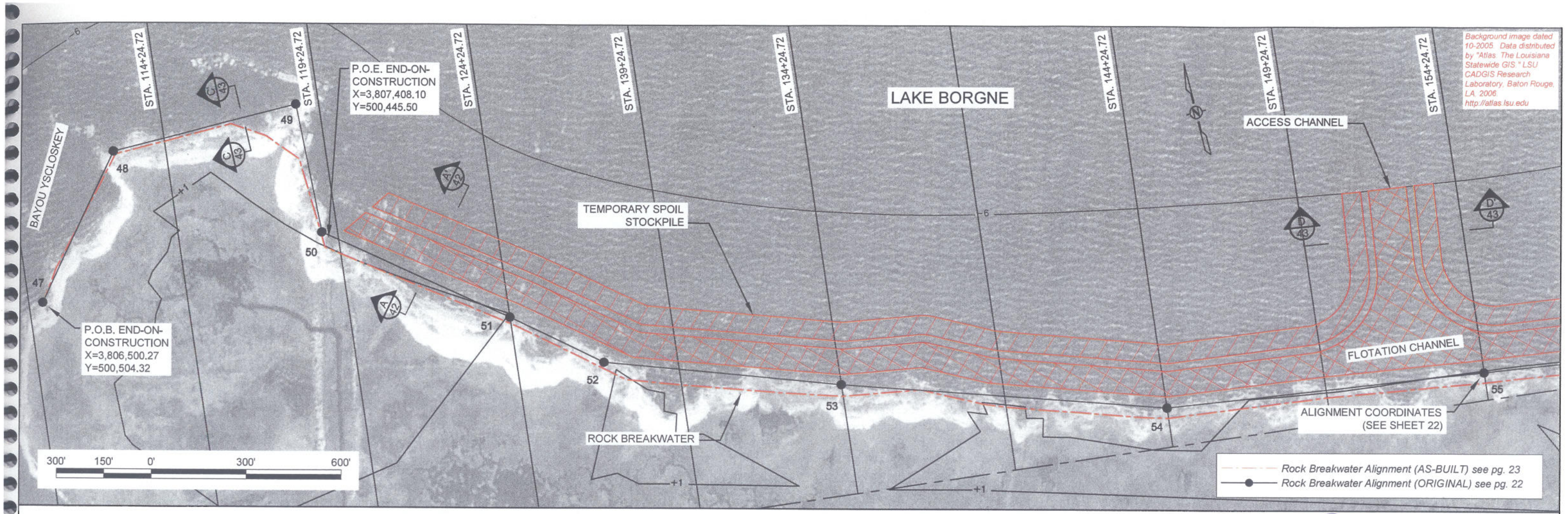
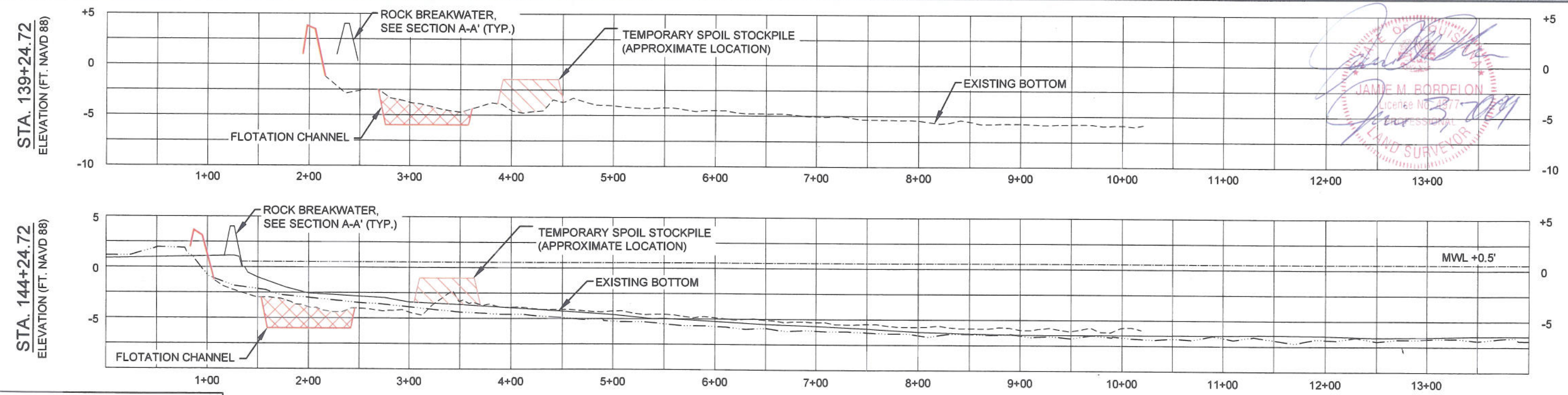
SHELL BEACH - REACH 4
PLAN & SECTION VIEWS

DATE: MARCH 2009

SHEET 36 OF 51

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COASTAL ENGINEERING DIVISION
617 NORTH 3RD STREET
BATON ROUGE, LOUISIANA 70802

DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

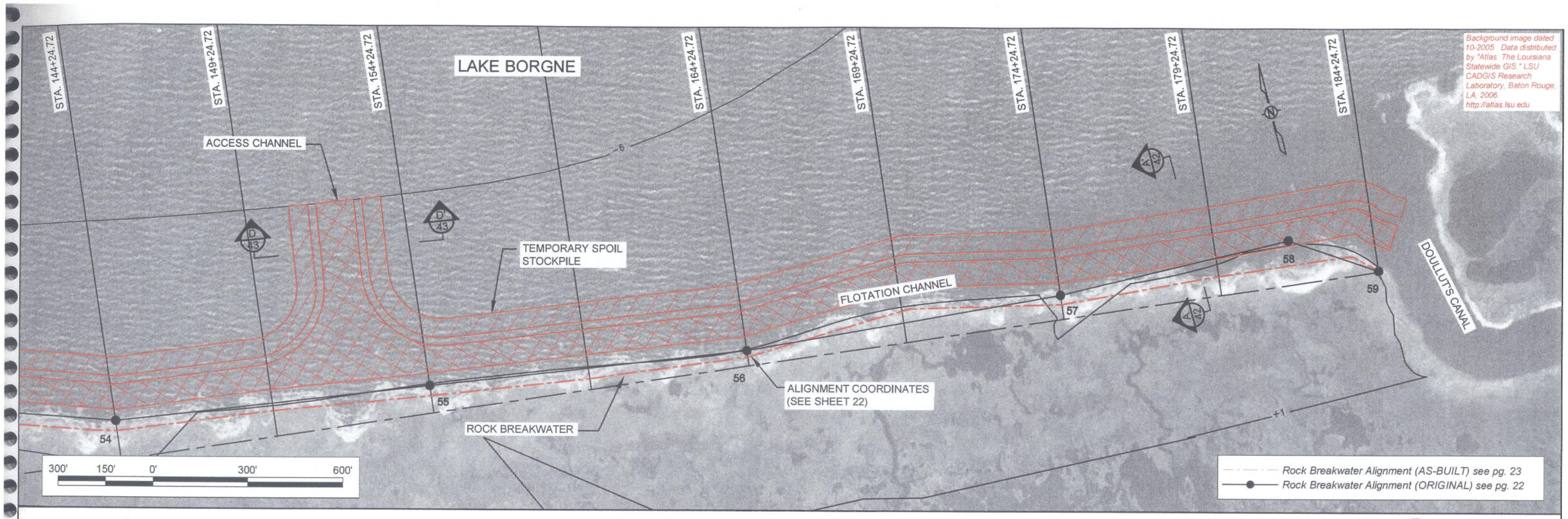
LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

SHELL BEACH - REACH 4
PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 37 OF 51

STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 28177
PROFESSIONAL
LAND SURVEYOR
3-7-09

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

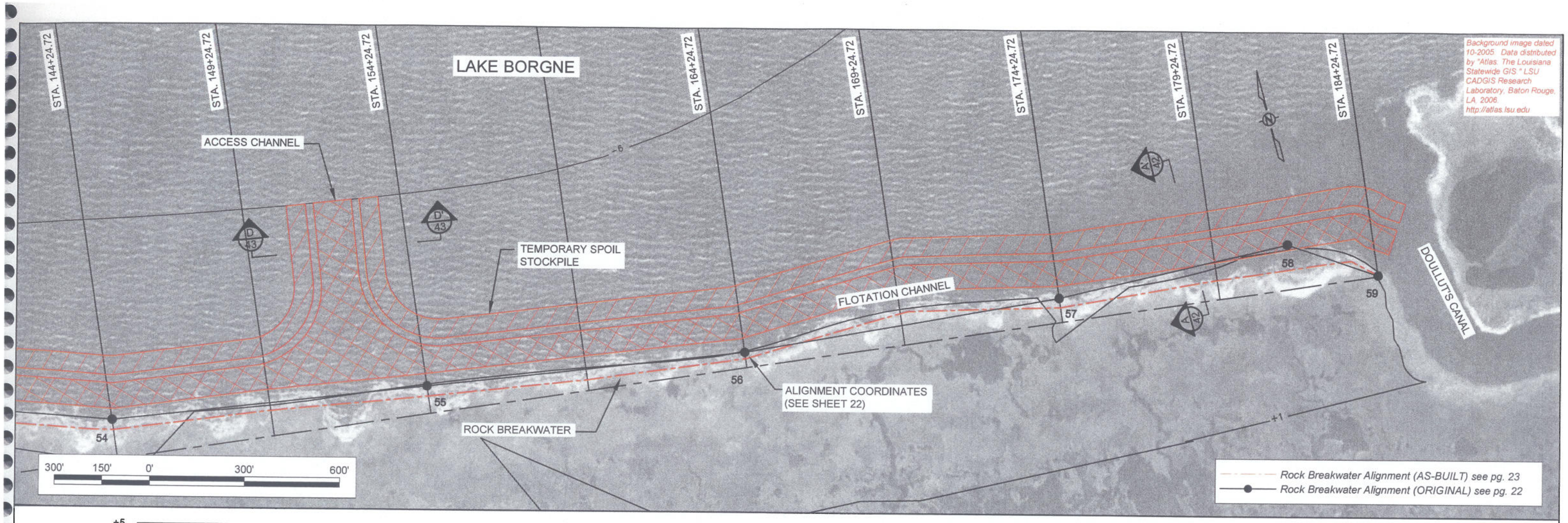
DRAWN BY: J. BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

SHELL BEACH - REACH 4
PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 38 OF 51

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SHELL BEACH - REACH 4
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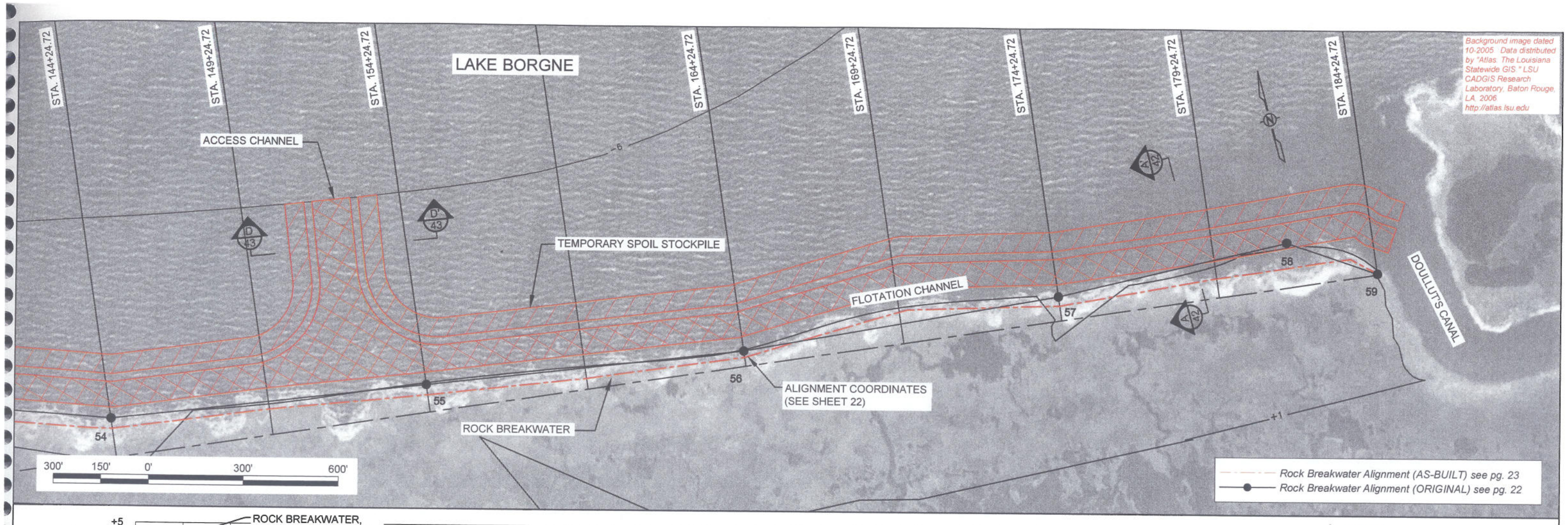
DATE: MARCH 2009
SHEET 39 OF 51

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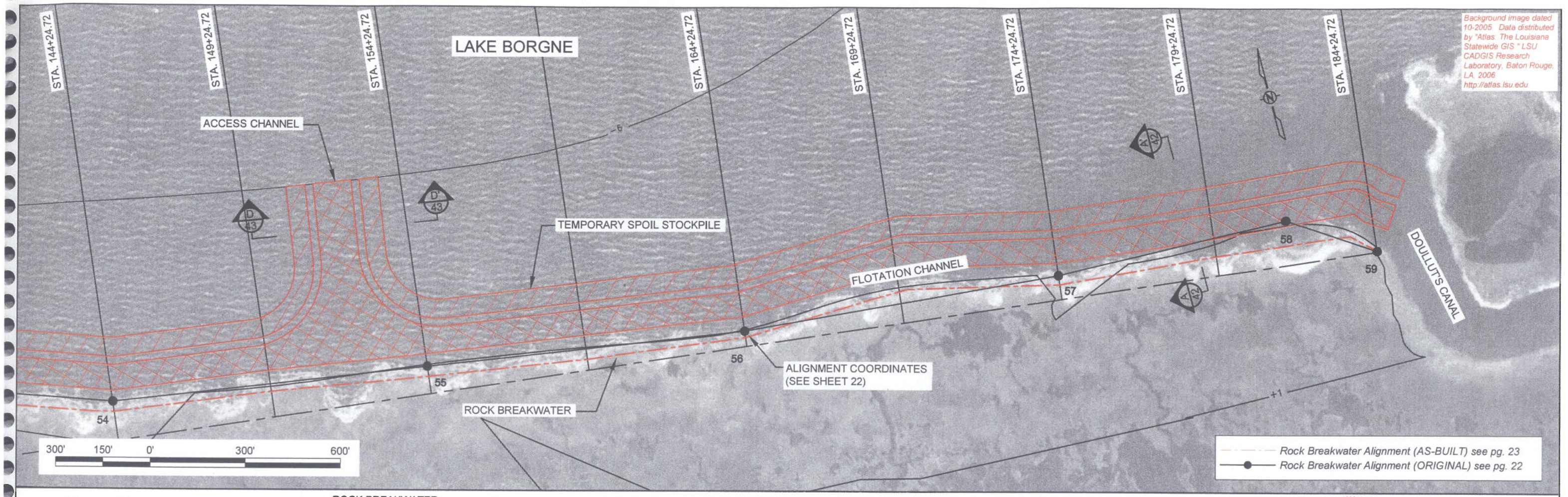
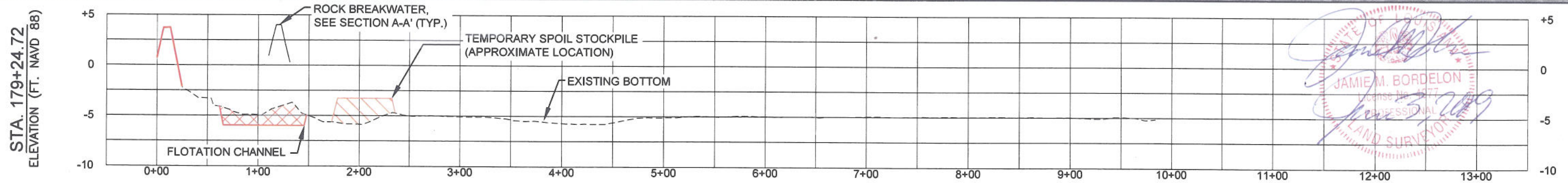
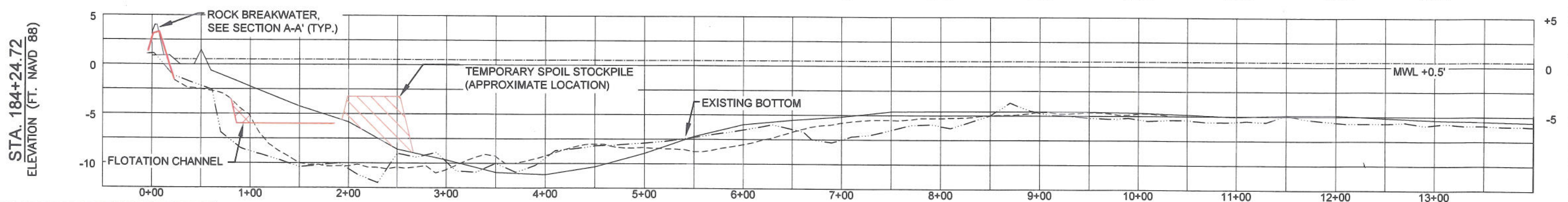
SHELL BEACH - REACH 4
PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 40 OF 51




JAMIE M. BORDELON
License No. 4777
PROFESSIONAL
June 5, 2009
LAND SURVEYOR

## LEGEND

- EXISTING BOTTOM (AS-BUILT 2009)
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DRAWN BY: J BORDELON
DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
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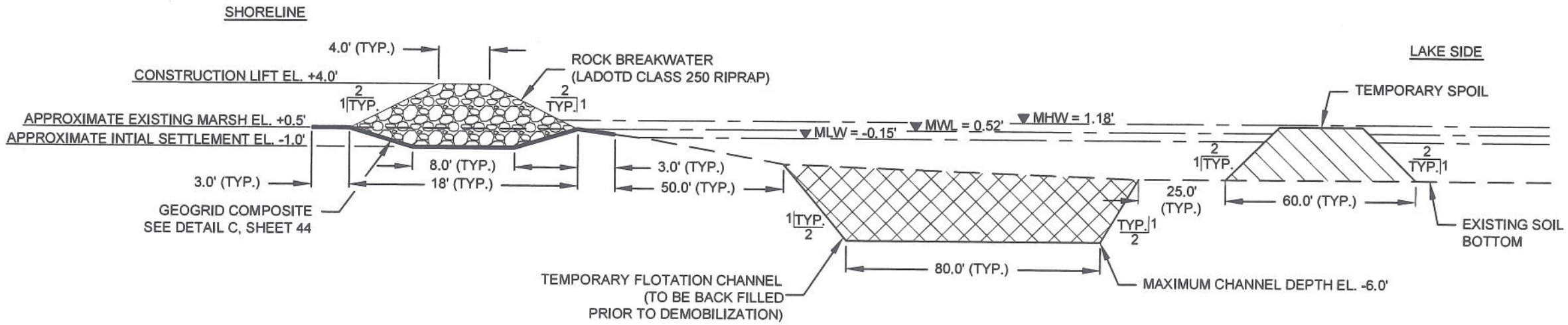
APPROVED BY: LUKE LE BAS, P.E.

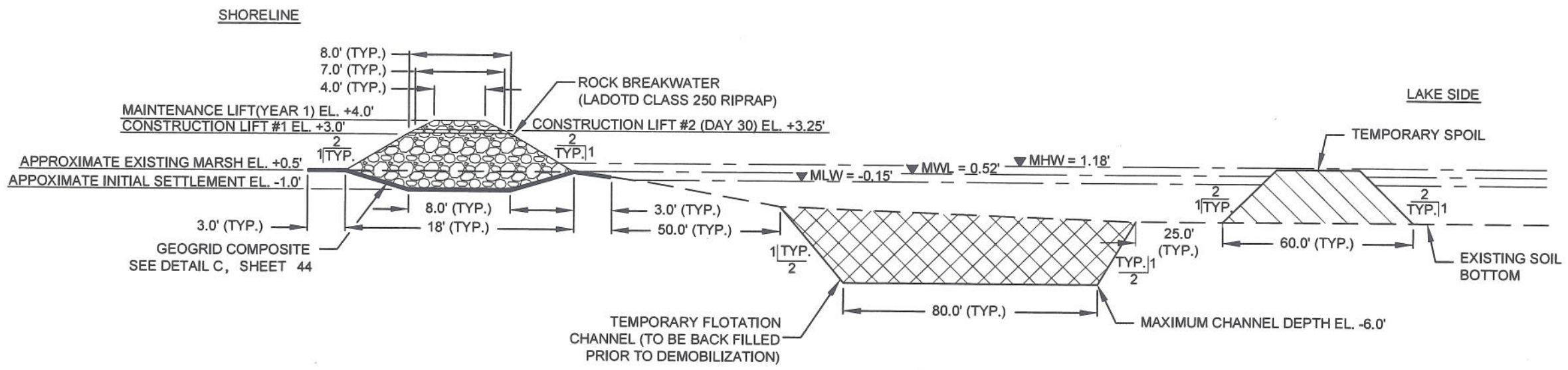
SHELL BEACH - REACH 4
PLAN & SECTION VIEWS

DATE: MARCH 2009
SHEET 41 OF 51




## TYPICAL SECTION A-A'

TYPICAL ROCK BREAKWATER FOR " **STRONG** " SOIL PROFILE
FOR ALIGNMENT COORDINATES 110-118 (REACH 2) AND
553-564 & 606-608 (PORTION OF 3) AND 535-548 & 635 (REACH 4)
NOT TO SCALE




## TYPICAL SECTION B-B'

TYPICAL ROCK BREAKWATER FOR " **WEAK** " SOIL PROFILE
FOR ALIGNMENT COORDINATES 100-109 & 274 (REACH 1)
AND 503-525, 550-552 & 622 (PORTION OF REACH 3)
NOT TO SCALE

NOTES:

1. ROCK 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 BY ENGINEER PRIOR TO PLACEMENT. THE ROCK PLACEMENT METHOD SHALL PRODUCE A REASONABLY WELL GRADED ROCK MASS WITH VOIDS MINIMIZED AND A VERTICAL TOLERANCE OF 6 INCHES ABOVE FINAL GRADE. ROCK SHALL BE PLACED TO FULL THICKNESS IN ONE LIFT WITH A MAXIMUM DROP OF 1 FOOT TO AVOID DAMAGING THE GEOGRID COMPOSITE. FOLLOWING THE INSPECTIONS AND SURVEYS ON DAYS 1 AND 30, ADDITIONS OF ROCK MAY BE REQUIRED FOR ISOLATED SECTIONS OF THE BREAKWATERS AS DIRECTED BY THE ENGINEER. FLOTATION CHANNELS SHALL NOT BE BACK FILLED UNTIL THE BREAKWATERS HAVE BEEN ACCEPTED BY THE ENGINEER.
2. ANY REFERENCES TO MAINTENANCE LIFTS ARE FOR INFORMATIONAL PURPOSES ONLY AND NOT IN THE CURRENT SCOPE.
3. THE CENTERLINE OF THE ROCK BREAKWATERS SHALL BE CONSTRUCTED ALONG THE ALIGNMENT SHOWN ON SHEETS 4 AND 14. THE ACTUAL ALIGNMENT MAY BE ADJUSTED BY THE ENGINEER PRIOR TO CONSTRUCTION IN ORDER TO MEET CHANGING FIELD CONDITIONS. IF ADDITIONAL QUANTITIES FOR ROCK AND GEOGRID COMPOSITE ARE NECESSARY, THEY WILL BE PAID FOR AT THE UNIT PRICE BID FOR THE ITEM.

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |

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

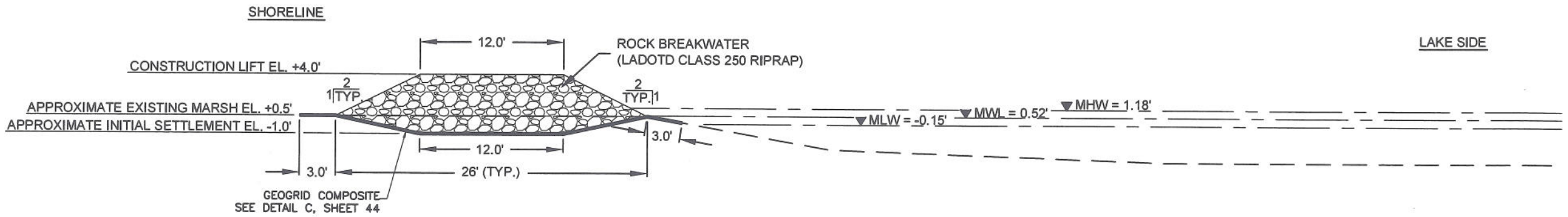
DRAWN BY: SHANE FAUST | DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

TYPICAL SECTIONS

DATE: MARCH 2009
SHEET 42 OF 51



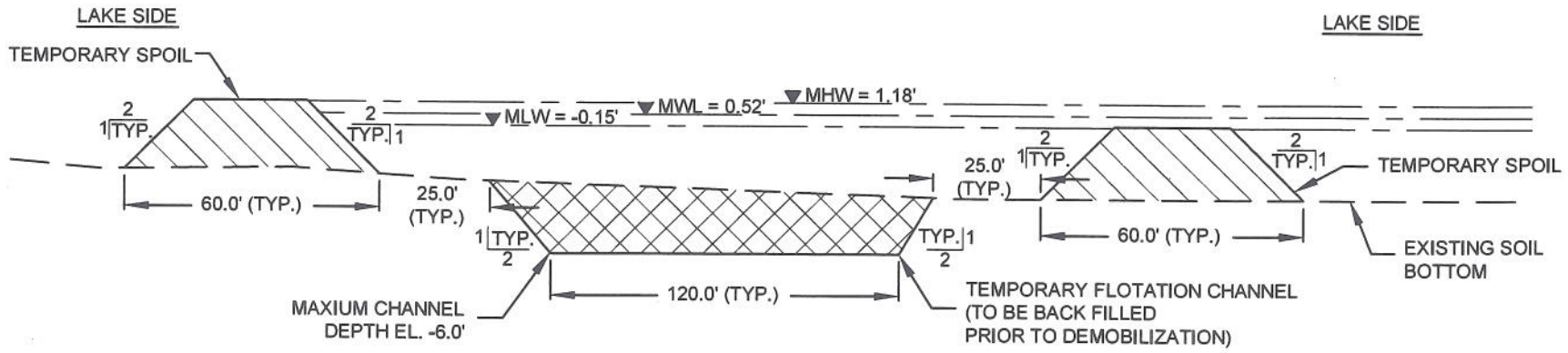

## TYPICAL SECTION C-C'

TYPICAL ROCK BREAKWATER BY END-ON-CONSTRUCTION
FOR ALIGNMENT COORDINATES 526-535 (REACH 3)
NOT TO SCALE

STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 27003
PROFESSIONAL
LAND SURVEYOR
April 3, 2009

NOTES:

1. ROCK 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 BY ENGINEER PRIOR TO PLACEMENT. THE ROCK PLACEMENT METHOD SHALL PRODUCE A REASONABLY WELL GRADED ROCK MASS WITH VOIDS MINIMIZED AND A VERTICAL TOLERANCE OF 6 INCHES ABOVE FINAL GRADE. ROCK SHALL BE PLACED TO FULL THICKNESS IN ONE LIFT WITH A MAXIMUM DROP OF 1 FOOT TO AVOID DAMAGING THE GEOGRID COMPOSITE. FOLLOWING THE INSPECTIONS AND SURVEYS ON DAYS 1 AND 30, ADDITIONS OF ROCK MAY BE REQUIRED FOR ISOLATED SECTIONS OF THE BREAKWATERS AS DIRECTED BY THE ENGINEER. FLOTATION CHANNELS SHALL NOT BE BACK FILLED UNTIL THE BREAKWATERS HAVE BEEN ACCEPTED BY THE ENGINEER.
2. ANY REFERENCES TO MAINTENANCE LIFTS ARE FOR INFORMATIONAL PURPOSES ONLY AND NOT IN THE CURRENT SCOPE.
3. THE CENTERLINE OF THE ROCK BREAKWATERS SHALL BE CONSTRUCTED ALONG THE ALIGNMENT SHOWN ON SHEETS 4 AND 14. THE ACTUAL ALIGNMENT MAY BE ADJUSTED BY THE ENGINEER PRIOR TO CONSTRUCTION IN ORDER TO MEET CHANGING FIELD CONDITIONS. IF ADDITIONAL QUANTITIES FOR ROCK AND GEOGRID COMPOSITE ARE NECESSARY, THEY WILL BE PAID FOR AT THE UNIT PRICE BID FOR THE ITEM.
4. DUE TO THE PRESENCE OF EXISTING STRUCTURES AND DEBRIS, THE ROCK BREAKWATERS NEAR THE FORMER NAVAL FACILITY AT OLD SHELL BEACH SHALL BE CONSTRUCTED USING THE END-ON-CONSTRUCTION TECHNIQUE. THIS TECHNIQUE SHALL EMPLOY LAND BASED EQUIPMENT (I.E. TRUCK, TRACK HOE, ETC.) TO CONSTRUCT THE BREAKWATER WHILE PROGRESSING ALONG THE ALIGNMENT. ACCESS TO THIS PORTION OF THE BREAKWATERS SHALL BE RESTRICTED TO THE ADJACENT FLOTATION CHANNELS AND ROCK BREAKWATERS. THE CREATION OF ADDITIONAL FLOTATION CHANNELS NOT INCLUDED IN THESE PLANS IS STRICTLY PROHIBITED. CONSTRUCTION ACTIVITIES SHALL BE RESTRICTED WITHIN THE WIDTH SPECIFIED IN THE END-ON-CONSTRUCTION DETAIL ON THIS SHEET.
5. THE MAXIMUM RADIUS ON ALL ACCESS CHANNELS COMING INTO THE FLOTATION CHANNELS ARE EQUAL TO 250.0'.




## TYPICAL SECTION D-D'

TYPICAL ACCESS CHANNEL
NOT TO SCALE

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |

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

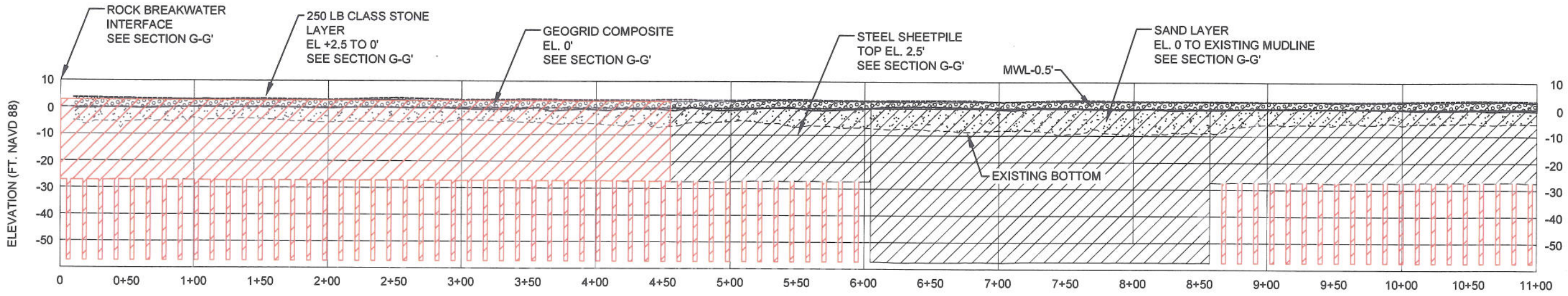
DRAWN BY: SHANE FAUST
DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE
SHORELINE PROTECTION

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

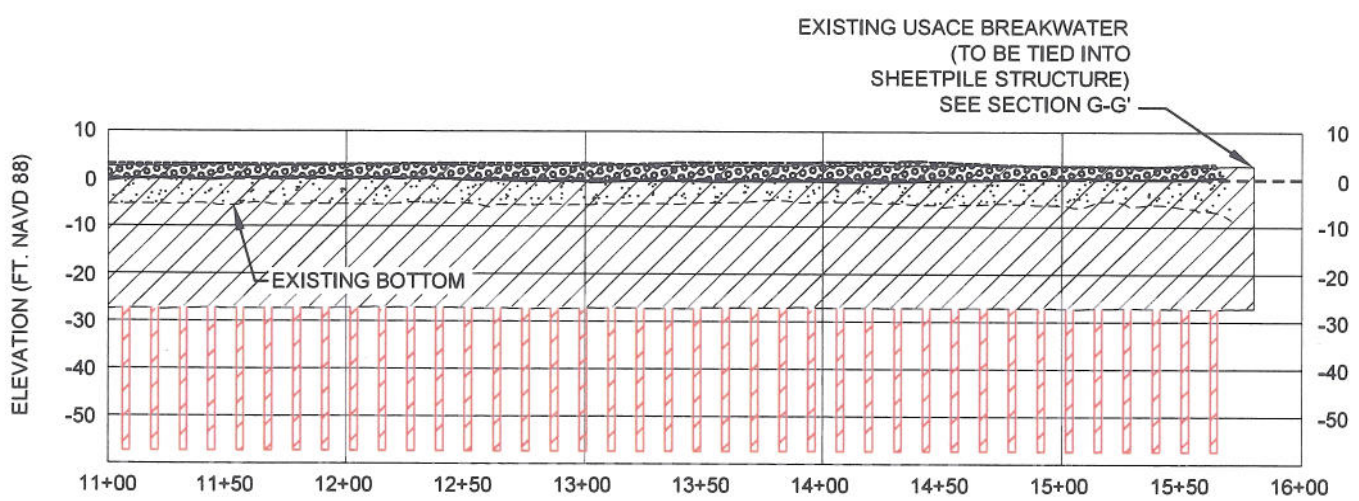
TYPICAL SECTIONS

DATE: MARCH 2009
APPROVED BY: LUKE LE BAS, P.E.
SHEET 43 OF 51



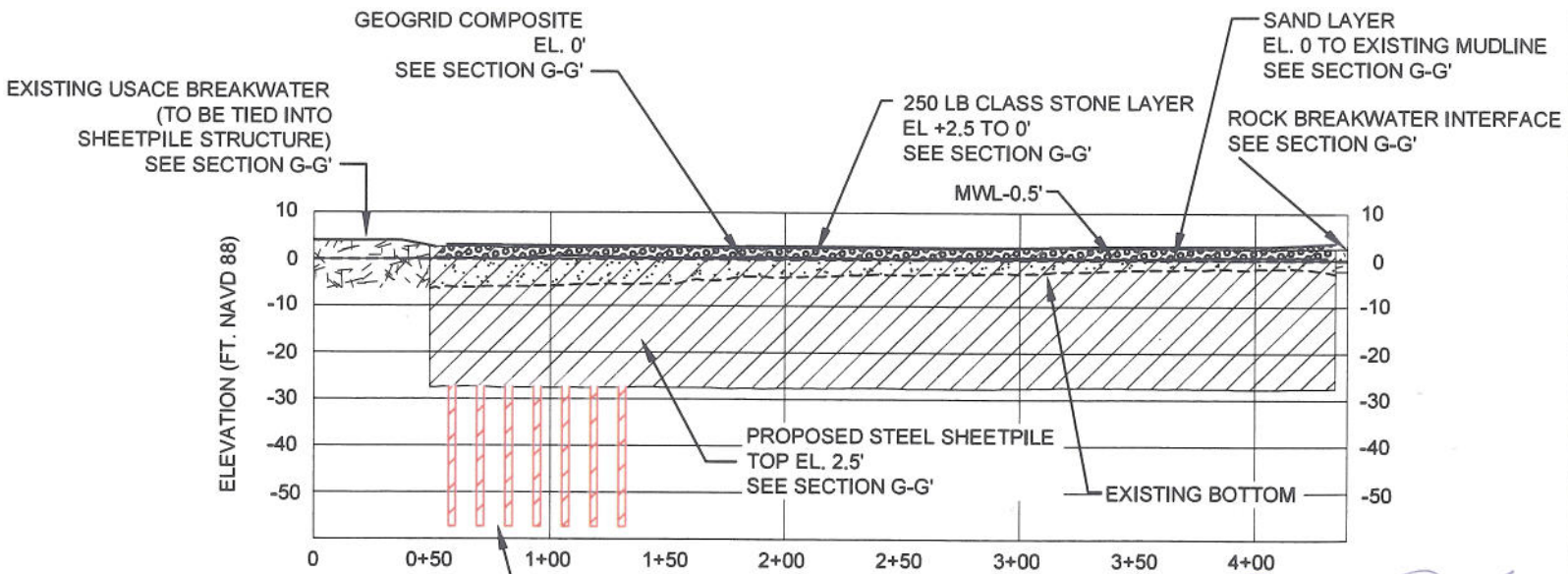

## SECTION E-E'

BACK-TO-BACK STEEL SHEETPILE STRUCTURE
STA 0+00 -11+00
FOR ALIGNMENT COORDINATES 274, 9-13 (REACH 1)
NOT TO SCALE




## SECTION E-E' (cont'd)

BACK-TO-BACK STEEL SHEETPILE STRUCTURE
STA 11+50 -15+80
FOR ALIGNMENT COORDINATES 274, 9-13 (REACH 1)
NOT TO SCALE
EVERY FOURTH PAIR OF 30' SHEETS (EXCEPT AT TIE-IN) WERE EXTENDED 30' TO 60' LONG




## SECTION F-F'

BACK-TO-BACK STEEL SHEETPILE STRUCTURE FOR ALIGNMENT COORDINATES 14- 17, 110 (REACH 2)
NOT TO SCALE

NOTE:
9 EXTENSIONS WERE ADDED TO THE CANAL SIDE OF THE WALL AND 5 EXTENSIONS WERE ADDED TO THE LAKE SIDE OF THE WALL FOR A TOTAL OF 15-30' EXTENSIONS.

STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 4977
PROFESSIONAL
LAND SURVEYOR
2009

### LEGEND

- STEEL SHEETPILE
- 250 LB CLASS STONE
- SAND FILL
- GEOGRID COMPOSITE

NOTE:
1. SEE SHEETS 44-46 FOR TYPICAL SECTION G-G'.

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | AS-BUILT | JMB |
| | | | |
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| | | | |
| | | | |

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

DRAWN BY: SHANE FAUST | DESIGNED BY: SHANNON HAYNES, P.E. | APPROVED BY: LUKE LE BAS, P.E.

LAKE BORGNE
SHORELINE PROTECTION

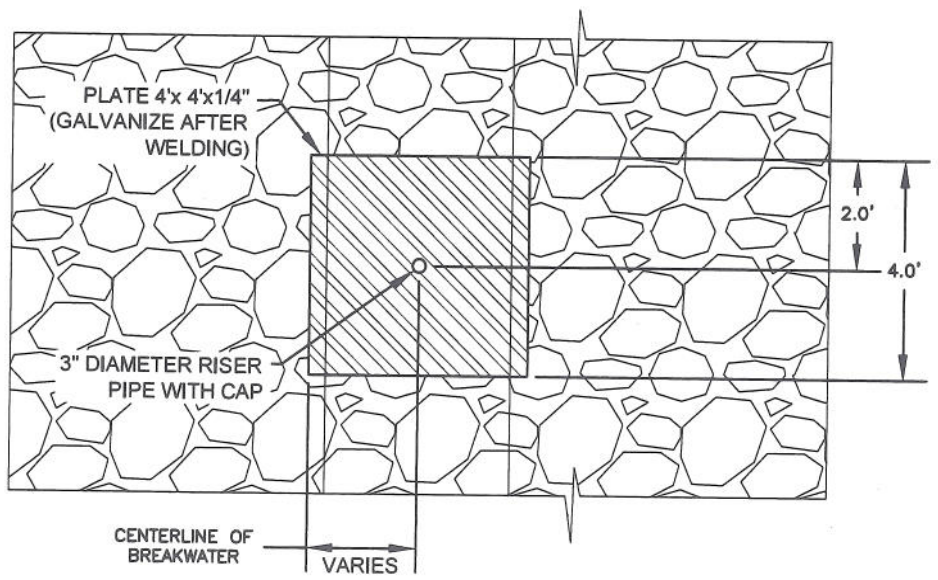
STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30

TYPICAL SECTIONS
SHEETPILE AS-BUILT

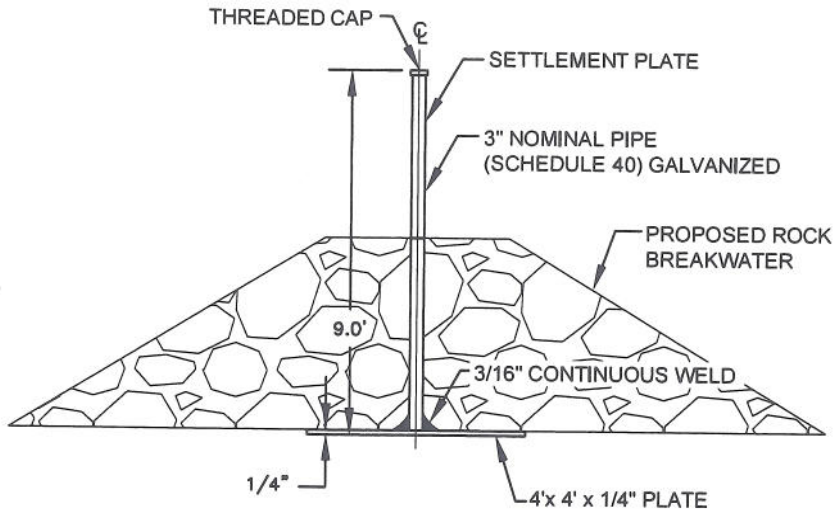
DATE: MARCH 2009

SHEET 44 OF 51

TOP VIEW




SIDE VIEW

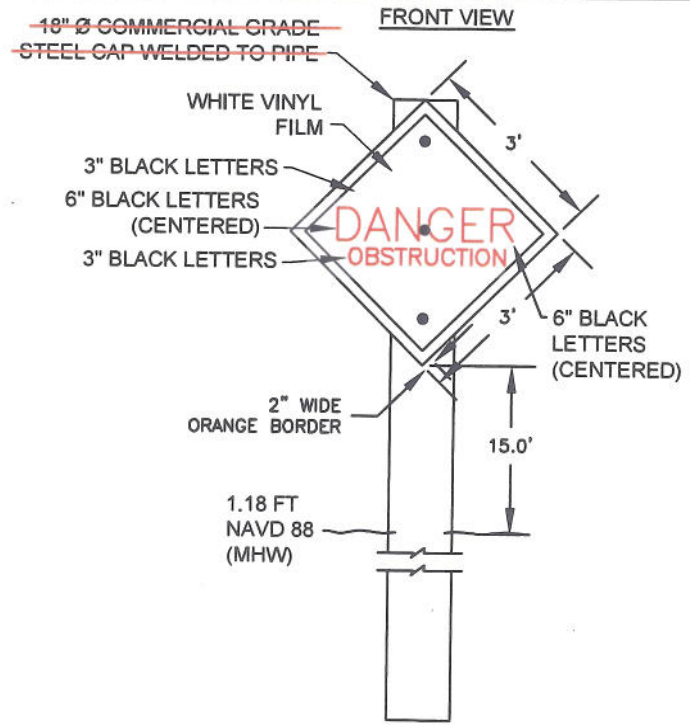



## DETAIL A
ROCK SETTLEMENT PLATE
NOT TO SCALE

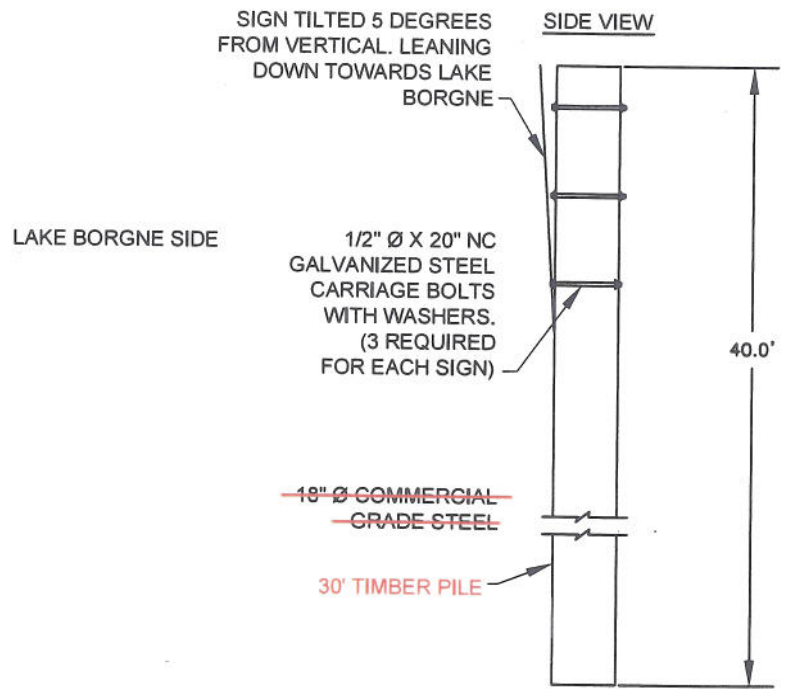
SETTLEMENT PLATE NOTES:

1. SETTLEMENT PLATES SHALL BE INSTALLED ALONG THE CENTERLINE OF THE BREAKWATER AT 1000' INTERVIALS.
2. THE TOP OF ALL SETTLEMENT PLATES SHALL BE SURVEYED DAILY BY THE CONTRACTOR AFTER INSTALLATION UNTIL ALL WORK IS COMPLETED.
3. SETTLEMENT PLATES SHALL BE FABRICATED USING ASTM A36 STEEL AND HOT-DIPPED GALVANIZED.
4. AS-BUILT LENGTH FOR SP-5R WAS 14.3' AFTER EXTENSION

FRONT VIEW



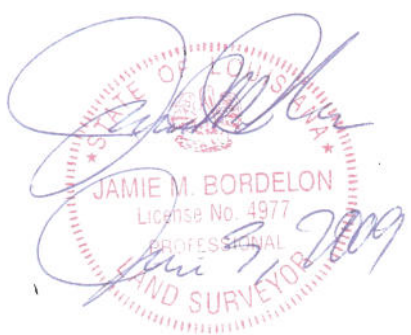

SIDE VIEW




## DETAIL B
WARNING SIGN
NOT TO SCALE

WARNING SIGN NOTES:

1. WARNING SIGNS SHALL BE INSTALLED AT 1000 FT. INTERVALS, 50 FT. OFFSHORE FROM THE CENTERLINE OF THE ROCK BREAKWATERS.
2. THE SIGNS SHALL CONFORM TO THE REGULATIONS IN THE UNITED STATES COAST GUARD (USCG) COMMANDANT DIRECTIVES MANUALS #16500.3 (SERIES), "AIDS TO NAVIGATION MANUAL - TECHNICAL" AND #10360-3 (SERIES), "COATINGS AND COLOR MANUAL."
3. ALL FILM, LETTERS AND BORDERS SHALL BE OBTAINED FROM A USCG QUALIFIED SUPPLIER.
4. ALL LETTERS AND BORDERS SHALL BE RETROREFLECTIVE.
5. NEOPRENE WASHERS SHALL BE PLACED BETWEEN THE SIGN AND THE PILING AT ALL POINTS OF CONTACT.
6. STEEL SUPPORT PIPE AND CAP SHALL BE GALVANIZED OR SAND BLASTED AND PAINTED WITH A MARINE GRADE EPOXY PRIMER AND POLYURETHANE TOPCOAT.




| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | CHANGED WARNING SIGN POLE LENTGH | JMB |
| | | CHANGED WARNING SIGN LETTERING | |
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| | | | |
| | | | |

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

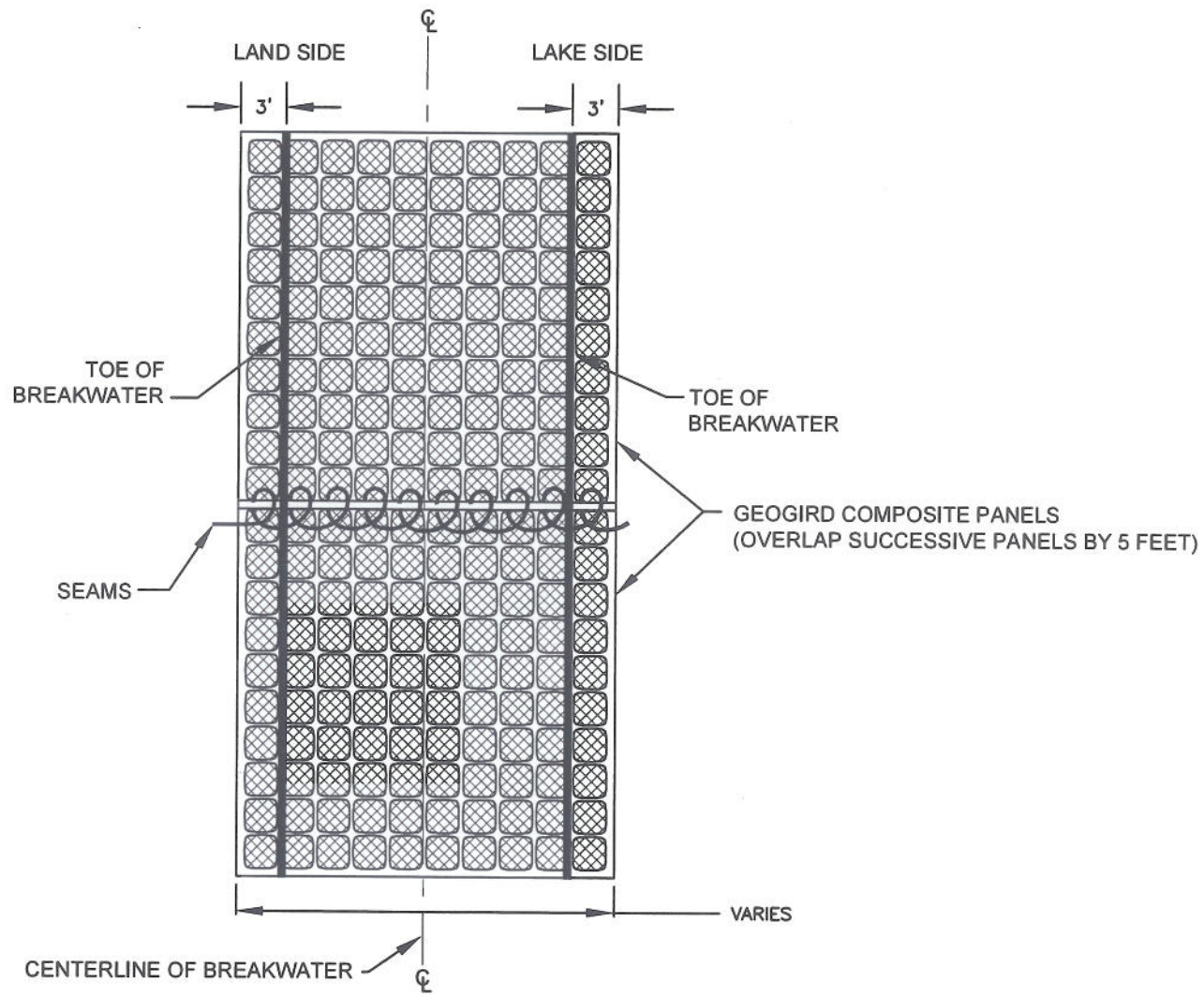
DRAWN BY: SHANE FAUST
DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE SHORELING PROTECTION

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

TYPICAL DETAILS

DATE: MARCH 2009
APPROVED BY: LUKE LE BAS, P.E.
SHEET 45 OF 51




## DETAIL C

GEOGRID COMPOSITE
NOT TO SCALE

NOTES:

1. THE GEOGRID COMPOSITE SHALL OVERLAP THE TOE OF THE BREAKWATER BY A MINIMUM OF 3' ON EACH SIDE. THE OVERLAP AT THE PANEL ENDS SHALL BE A MINIMUM OF FIVE (5) FEET WIDE AND PARALLEL TO THE BREAKWATER CENTERLINE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

2. EACH PANEL SHALL CONSISTS OF GEOTEXTILE STRIPS THAT ARE FASTENED BY KEVLAR THREADS (OR EQUIVALENT) AND OVERLAIN BY GEOGRID THAT IS MECHANICALLY CONNECTED BY DOUBLE STITCHED SEAMS. THE COLOR OF THE THREADS SHALL BE IN CONTRAST TO THE GEOGRID AND GEOTEXTILE.

3. EACH ROW OF STITCHING SHALL BE LOCATED A MINIMUM OF TWO (2) INCHES FROM THE GEOTEXTILE EDGE.

4. SEAMS IN GEOGRID WERE MADE IN THE FIELD USING ¾" DIAMETER POLYETHYLENE BODKIN BARS

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 4-28-09 | ADDED NOTE 4 | JMB |
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LOUISIANA DEPARTMENT OF NATURAL RESOURCES
COASTAL ENGINEERING DIVISION
617 NORTH 3RD STREET
BATON ROUGE, LOUISIANA 70802

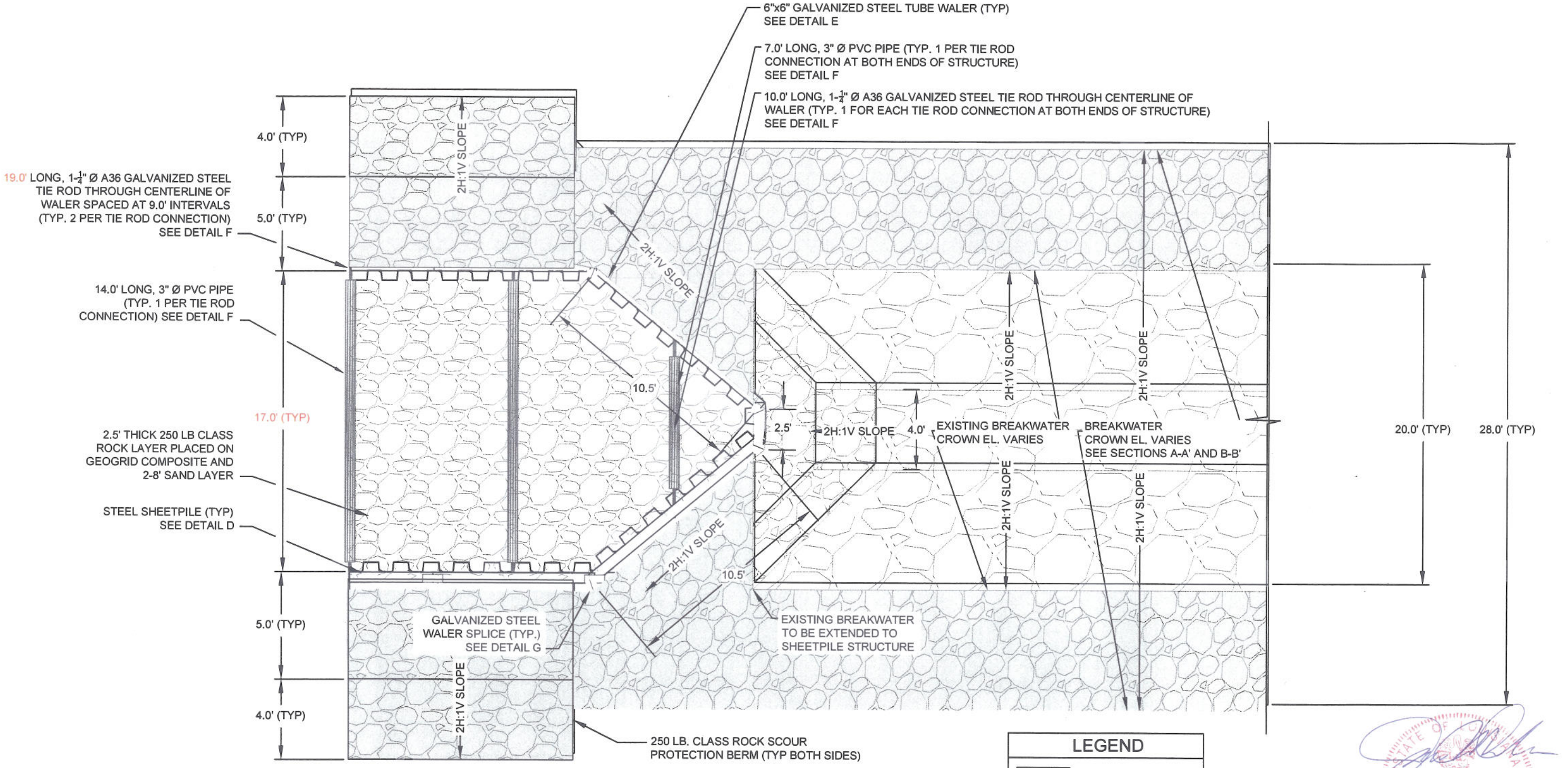
DRAWN BY: SHANE FAUST | DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE
SHORELING PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: PO-30
APPROVED BY: LUKE LE BAS, P.E.

TYPICAL DETAILS

DATE: MARCH 2009
SHEET 46 OF 51




## TYPICAL SECTION G-G'

## TOP VIEW

ROCK BREAKWATER AND SHEET PILE STRUCTURE INTERFACE
FOR ALIGNMENT COORDINATES 125, 9-17, & 126 (REACHES 1 AND 2)
NOT TO SCALE

| LEGEND |
|---|
| 250 LB CLASS STONE |
| EXISTING STONE |
| GEOGRID COMPOSITE |

NOTES:
1. SEE SHEET 42 FOR SECTIONS A-A' AND B-B'.
2. SEE SHEET 46 FOR DETAIL C.
3. SEE SHEET 51 FOR DETAILS D, E, F, G, AND H.
4. 2" WEEP HOLES SHALL BE DRILLED AT ELEVATION +0.5' NAVD88 SPACED ON 6' CENTERS. GEOGRID COMPOSITE LAYER SHALL OVERLAP EACH HOLE.
5. SEE TECHNICAL SPECIFICATIONS FOR SAND.
6. SAND LAYER SHALL BE MONITORED FOR SETTLEMENT AND BACKFILLED TO MAINTAIN ELEVATION 0' FOR A MINIMUM OF 30 DAYS PRIOR TO PLACEMENT OF GEOGRID COMPOSITE AND STONE LAYER.
7. EXISTING BREAKWATERS ARE TO BE EXTENDED TO SHEETPILE STRUCTURE USING ADDITIONAL ROCK.

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 5/01/07 | REVISED TIE RODS & WALERS | SF |

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

DRAWN BY: SHANE FAUST | DESIGNED BY: SHANNON HAYNES, P.E.

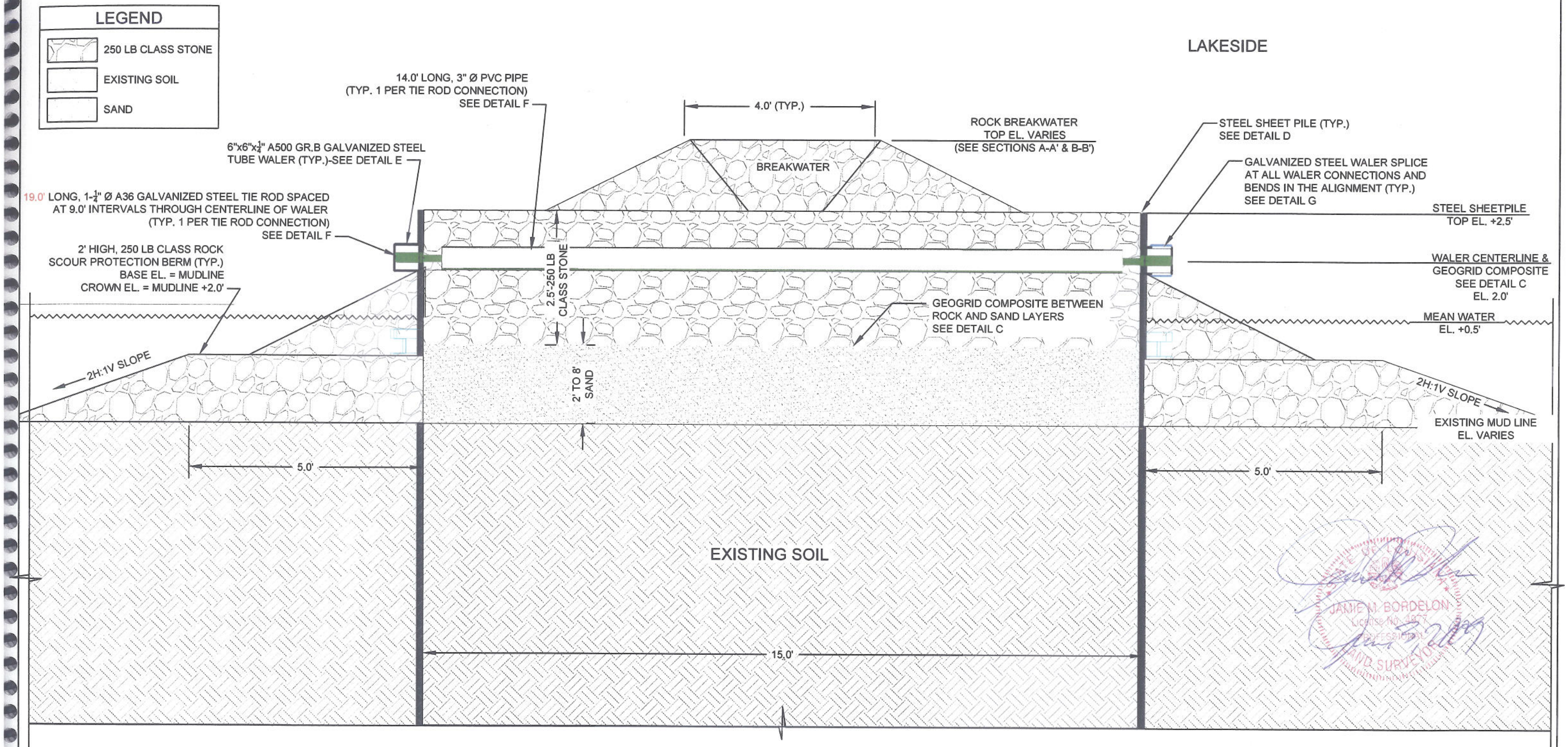
LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: N/A
APPROVED BY: LUKE LE BAS, P.E.

TYPICAL SHEET PILE STRUCTURE SECTIONS

DATE: MARCH 2009
SHEET 47 OF 51

STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 29877
PROFESSIONAL
LAND SURVEYOR
Jan 31, 2009




## TYPICAL SECTION G-G'
## FRONT VIEW

ROCK BREAKWATER AND SHEET PILE STRUCTURE INTERFACE
FOR ALIGNMENT COORDINATES 125, 9-17, & 126 (REACHES 1 AND 2)
NOT TO SCALE

NOTES:
1. SEE SHEET 42 FOR SECTIONS A-A' AND B-B'.
2. SEE SHEET 46 FOR DETAIL C.
3. SEE SHEET 51 FOR DETAILS D, E, F, G, AND H.
4. 2" WEEP HOLES SHALL BE DRILLED AT ELEVATION +0.5' NAVD88 SPACED ON 6' CENTERS. GEOGRID COMPOSITE LAYER SHALL OVERLAP EACH HOLE.
5. SEE TECHNICAL SPECIFICATIONS FOR SAND.
6. SAND LAYER SHALL BE MONITORED FOR SETTLEMENT AND BACKFILLED TO MAINTAIN ELEVATION 0' FOR A MINIMUM OF 30 DAYS PRIOR TO PLACEMENT OF GEOGRID COMPOSITE AND STONE LAYER.
7. EXISTING BREAKWATERS ARE TO BE EXTENDED TO SHEETPILE STRUCTURE USING ADDITIONAL ROCK.

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 5/01/07 | REVISED TIE RODS & WALERS | SF |

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

DRAWN BY: SHANE FAUST
DESIGNED BY: SHANNON HAYNES, P.E.

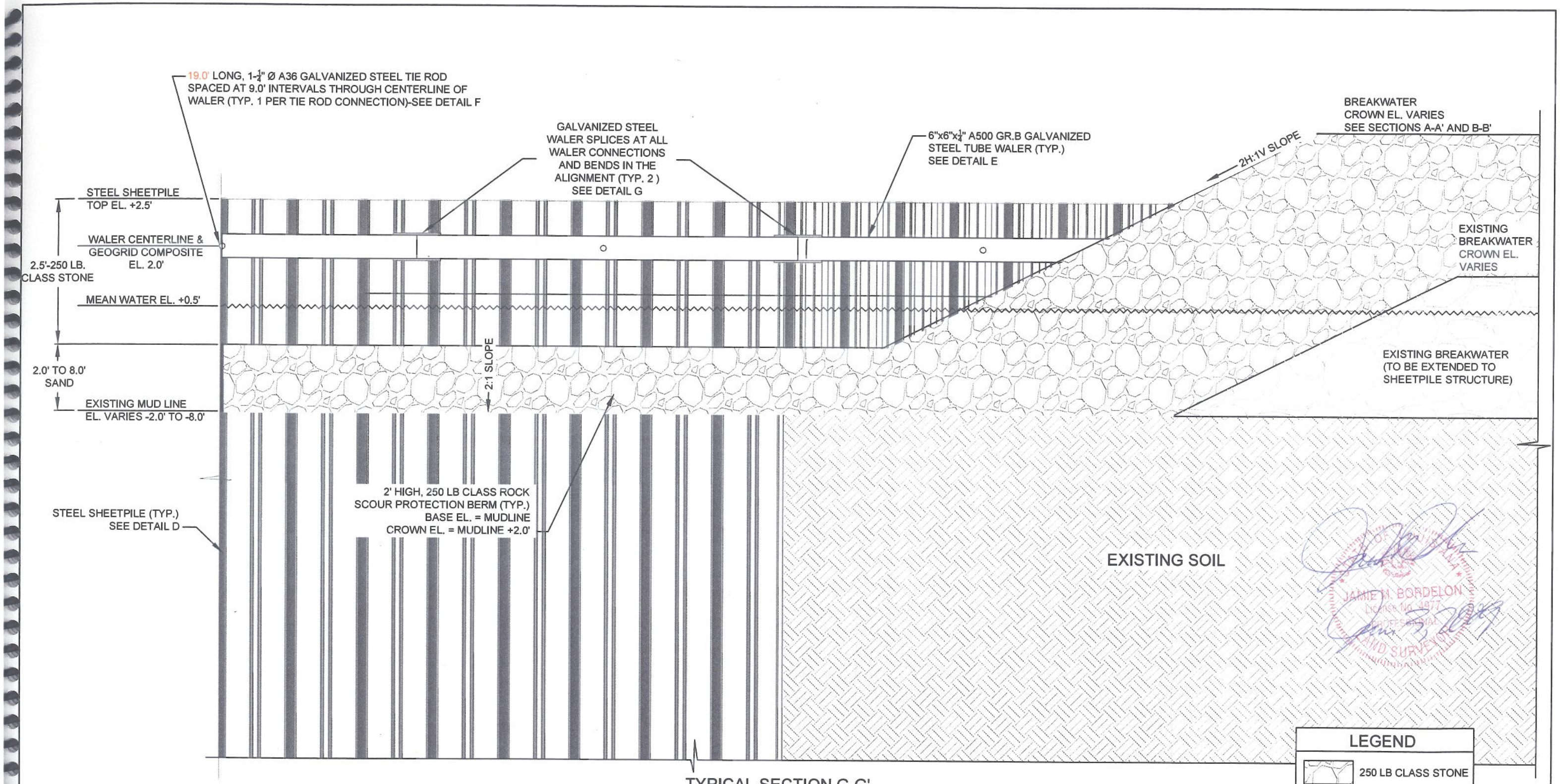
LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: N/A
APPROVED BY: LUKE LE BAS, P.E.

TYPICAL SHEET PILE
STRUCTURE SECTIONS

DATE: MARCH 2009
SHEET 48 OF 51

STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 4957
REGISTERED
LAND SURVEYOR




JAMIE M. BORDELON
License No. 4877
PROFESSIONAL
LAND SURVEYOR
June 3, 2009

## TYPICAL SECTION G-G'
## SIDE VIEW

ROCK BREAKWATER AND SHEET PILE STRUCTURE INTERFACE
FOR ALIGNMENT COORDINATES 125, 9-17, & 126 (REACHES 1 AND 2)
NOT TO SCALE

NOTES:
1. SEE SHEET 42 FOR SECTIONS A-A' AND B-B'.
2. SEE SHEET 46 FOR DETAIL C.
3. SEE SHEET 51 FOR DETAILS D, E, F, AND G.
4. 2" WEEP HOLES SHALL BE DRILLED AT ELEVATION +0.5' NAVD88 SPACED ON 6' CENTERS. GEOGRID COMPOSITE LAYER SHALL OVERLAP EACH HOLE.
4. SEE TECHNICAL SPECIFICATIONS FOR SAND.
5. SAND LAYER SHALL BE MONITORED FOR SETTLEMENT AND BACKFILLED TO MAINTAIN ELEVATION 0' FOR A MINIMUM OF 30 DAYS PRIOR TO PLACEMENT OF GEOGRID COMPOSITE AND STONE LAYER.
6. EXISTING BREAKWATERS ARE TO BE EXTENDED TO SHEETPILE STRUCTURE USING ADDITIONAL ROCK.

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 5/01/07 | REVISED TIE RODS & WALERS | SF |

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

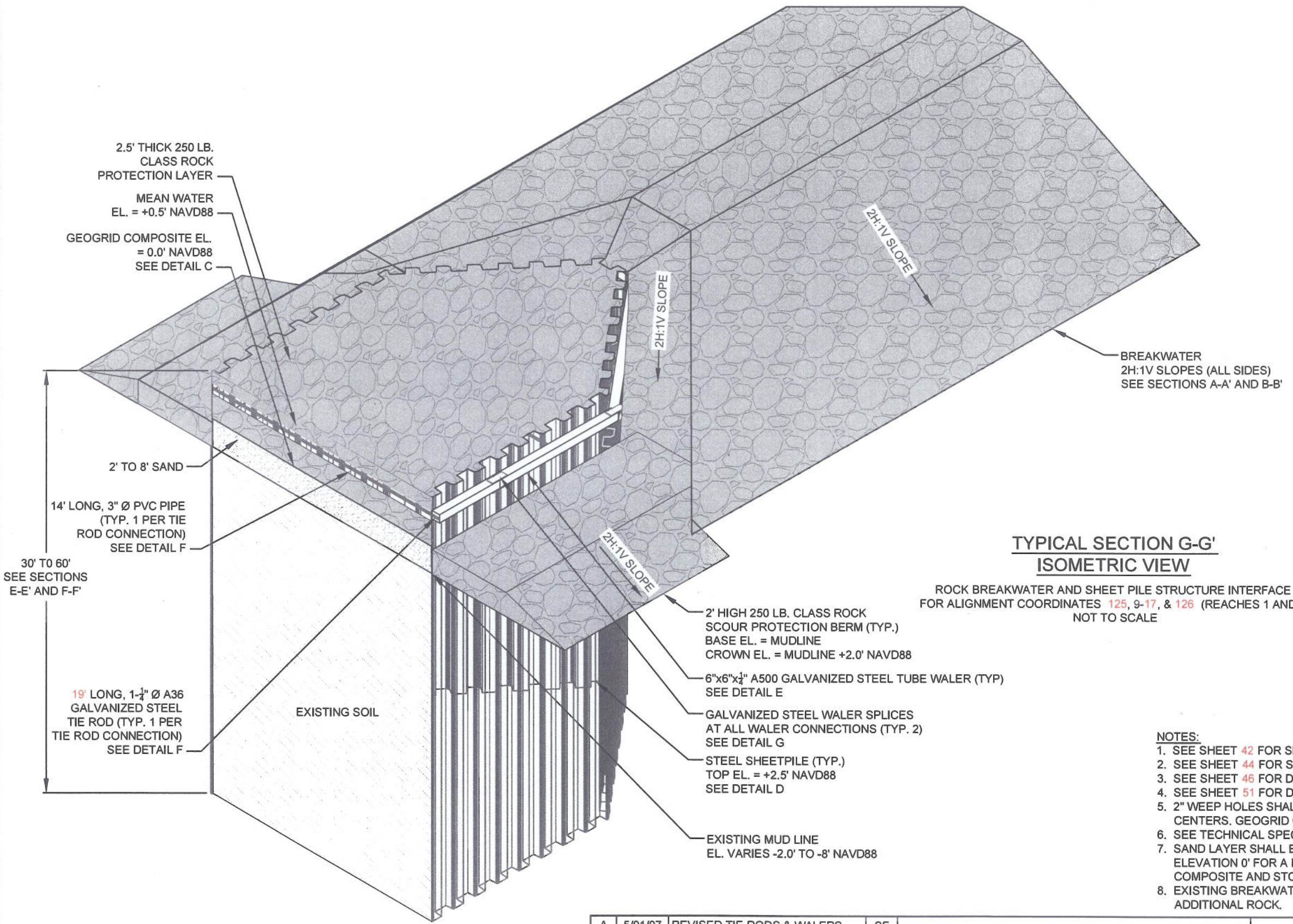
DRAWN BY: SHANE FAUST
DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE
SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30
FEDERAL PROJECT NUMBER: N/A
APPROVED BY: LUKE LE BAS, P.E.

TYPICAL SHEET PILE STRUCTURE SECTIONS

DATE: MARCH 2009
SHEET 49 OF 51




| LEGEND |
|---|
| 250 LB CLASS STONE |
| GEOGRID COMPOSITE |
| SAND |
| EXISTING SOIL |

## TYPICAL SECTION G-G'
## ISOMETRIC VIEW

ROCK BREAKWATER AND SHEET PILE STRUCTURE INTERFACE
FOR ALIGNMENT COORDINATES 125, 9-17, & 126 (REACHES 1 AND 2)
NOT TO SCALE

STATE OF LOUISIANA
JAMIE M. BORDELON
License No. 4977
PROFESSIONAL
LAND SURVEYOR
Jan 7, 2008

NOTES:
1. SEE SHEET 42 FOR SECTIONS A-A' AND B-B'.
2. SEE SHEET 44 FOR SECTIONS E-E' AND F-F'.
3. SEE SHEET 46 FOR DETAIL C.
4. SEE SHEET 51 FOR DETAILS D, E, F, AND G.
5. 2" WEEP HOLES SHALL BE DRILLED AT ELEVATION +0.5' NAVD88 SPACED ON 6' CENTERS. GEOGRID COMPOSITE LAYER SHALL OVERLAP EACH HOLE.
6. SEE TECHNICAL SPECIFICATIONS FOR SAND.
7. SAND LAYER SHALL BE MONITORED FOR SETTLEMENT AND BACKFILLED TO MAINTAIN ELEVATION 0' FOR A MINIMUM OF 30 DAYS PRIOR TO PLACEMENT OF GEOGRID COMPOSITE AND STONE LAYER.
8. EXISTING BREAKWATERS ARE TO BE EXTENDED TO SHEETPILE STRUCTURE USING ADDITIONAL ROCK.

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 5/01/07 | REVISED TIE RODS & WALERS | SF |

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

DRAWN BY: SHANE FAUST | DESIGNED BY: SHANNON HAYNES, P.E.

LAKE BORGNE SHORELINE PROTECTION

STATE PROJECT NUMBER: PO-30

FEDERAL PROJECT NUMBER: N/A

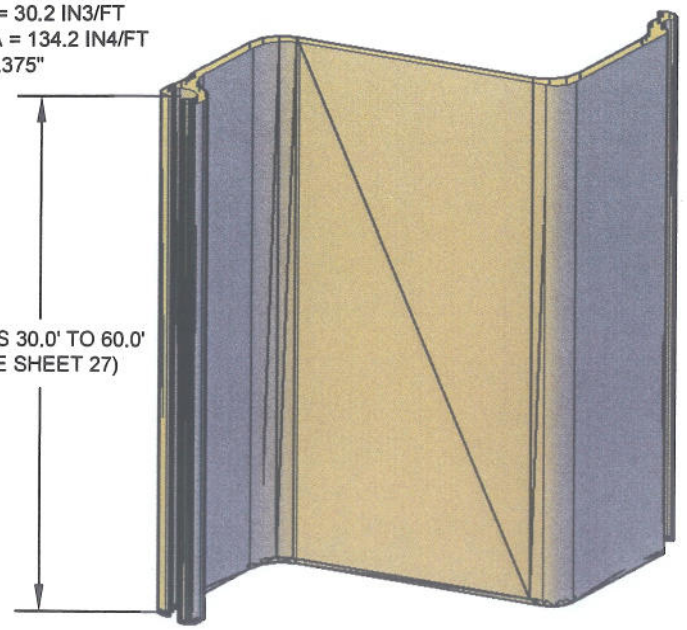
APPROVED BY: LUKE LE BAS, P.E.

TYPICAL SHEET PILE STRUCTURE SECTIONS

DATE: MARCH 2009

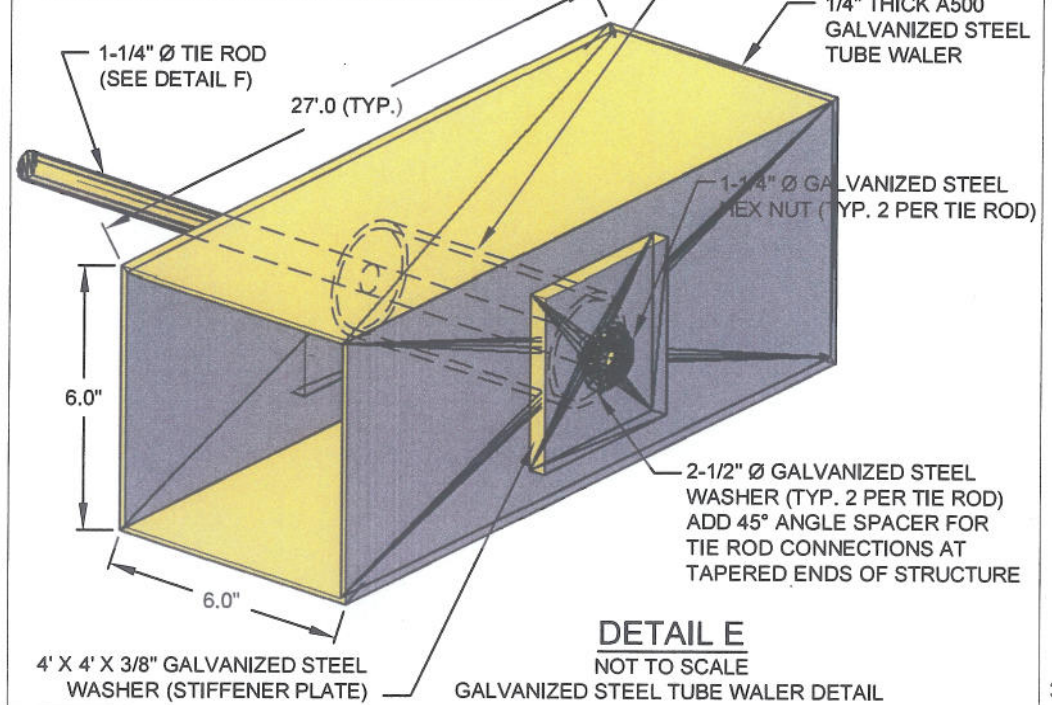
SHEET 50 OF 51

NOTES:
1. GALVANIZED COATING SHALL BE APPLIED AS PER PROJECT SPECIFICATIONS.
2. 2" DIAMETER WEEP HOLES SHALL BE DRILLED INTO SHEET PILES AT ELEVATION +0.5' NAVD88 USING 6' SPACING ON CENTERS.
3. 1-5/16" Ø TIE ROD HOLES SHALL BE DRILLED INTO SHEET PILES IN CONJUNCTION WITH TIE RODS AND WALERS.
4. STEEL SHEET PILE SHALL BE PZ-27 SECTIONS OR EQUIVALENT WITH THE FOLLOWING PROPERTIES:
   - SECTION MODULUS = 30.2 IN3/FT
   - MOMENT OF INERTIA = 134.2 IN4/FT
   - WEB THICKNESS = 0.375"



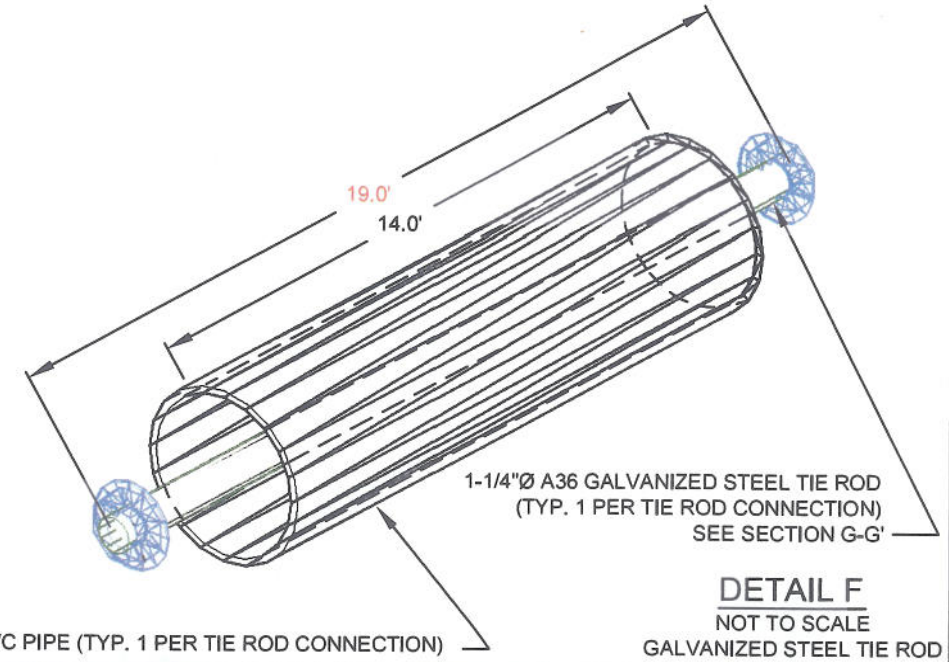

DETAIL D
NOT TO SCALE
STEEL SHEET PILE DETAIL

NOTES:
1. SUCCESSIVE TUBES TO BE JOINED USING SPLICE IN DETAIL H.
2. TUBES SHALL BE CUT TO PROPER ANGLE IN SHOP TO ACCOMODATE ALL ANGLES IN THE SHEET PILE ALIGNMENT.
3. ALL WALERS TO BE FULLY GALVANIZED AFTER FABRICATION AND PRIOR TO INSTALLATION.



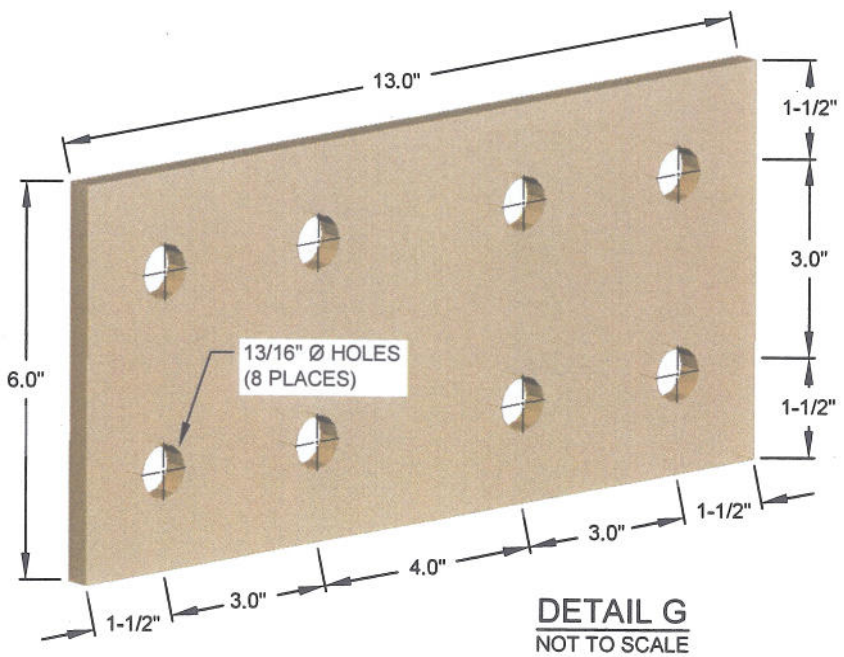

DETAIL E
NOT TO SCALE
GALVANIZED STEEL TUBE WALER DETAIL

NOTES:
1. TENSION SHALL BE APPLIED TO THE NUTS ON EITHER END OF THE TIE ROD.
2. 3" Ø PVC PIPES SHALL BE SLEEVED OVER TIE ROD PRIOR TO INSTALLATION OF TURNBUCKLE. PVC PIPE TO BE EVENLY DISTRIBUTED OVER TIE ROD AFTER TURNBUCKLE IS TENSIONED.
3. A THE ENDS OF THE STRUCTURE, THE (2) TIE RODS SHALL BE 1- 1/4" Ø x 5.0' FASTENED WITH (1) 1-1/4" Ø A36 GALVANIZED STEEL TURNBUCKLE AND SLEEVED WITH (1) 3" Ø PVC PIPES.

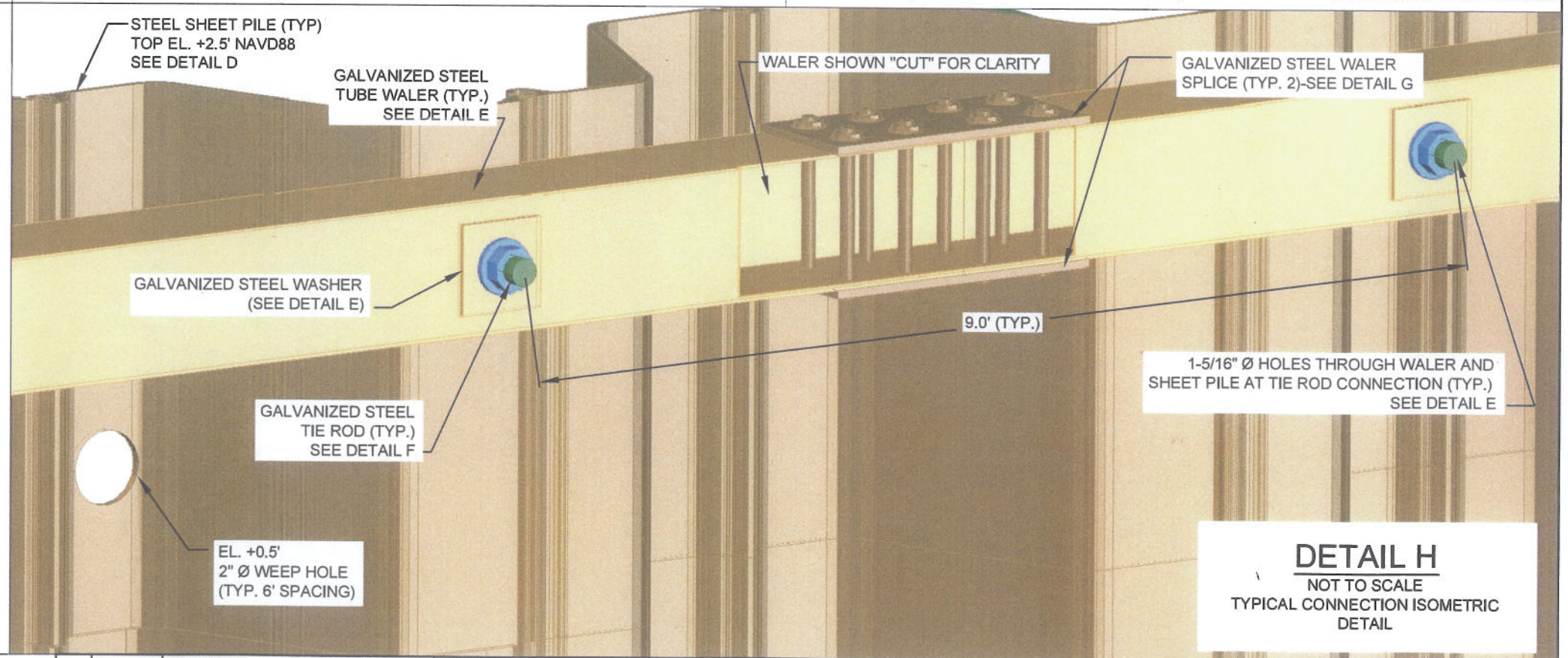



DETAIL F
NOT TO SCALE
GALVANIZED STEEL TIE ROD

NOTES:
1. FASTEN TO WALERS USING EIGHT (8) 3/4" Ø A307 GALVANIZED BOLTS, NUTS, AND WASHERS.
2. TIE RODS SHALL NOT PENETRATE SPLICES.
3. SUCCESSIVE WALER TUBES SHALL BE SECURED EVENLY BY BOLT PATTERN.
4. SPLICES SHALL BE INSTALLED MID SPAN OF TIE RODS.
5. WALER SPLICE IS 3/8" THICK GALVANIZED STEEL.




DETAIL G
NOT TO SCALE
GALVANIZED STEEL WALER SPLICE DETAIL




DETAIL H
NOT TO SCALE
TYPICAL CONNECTION ISOMETRIC DETAIL

| REV. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| A | 5/01/07 | REVISED TIE RODS & WALERS | SF |

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LAKE BORGNE SHORELINE PROTECTION

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

SHEET PILE DETAILS

DATE: MARCH 2009
SHEET 51 OF 51