



(361) 987-2813 • Fax (361) 987-2189 • 2313 FM 1593 South • P.O. Box 397 • Point Comfort, Texas 77978
www.calhounport.com

PORT OF PORT LAVACA - POINT COMFORT

Providing Calhoun County Industries with Direct Deep-Draft Access to Global Markets

Bid Documents

BEAN TRACT WETLANDS CREATION PROJECT

BOARD OF COMMISSIONERS

Luis De La Garza – Chairman
Johnny J. Perez – Board Secretary
J. C. Melcher, Jr. – Commissioner
Jasper “Jay” Cuellar – Commissioner
Marty Strakos – Commissioner
Dan Krueger – Commissioner

STAFF

Charles R. Hausmann – Port Director
Forrest E. Hawes – Deputy Port Director
Felicia F. Harral, P.E. – Director of Engineering
Alan Sanders – Outside Special Counsel

AUGUST 2022

SCOPE OF WORK

Scope of Work

The Calhoun Port Authority (CPA) in accordance with United States Army Corps of Engineers Permit #SWG-2016-01066, is requesting proposals for the construction of a wetland mitigation site. The proposed site is on the Bean Tract in Lavaca Bay, Calhoun County, Texas.

The proposed mitigation area is approximately 14 acres in size, with one acre of circulation channels and 3 acres of levees.

The scope of work call for the removal of material 12 acres located from CPA disposal area at the Port. This material will be transported to the proposed site. At the site an access road will be constructed to facilitate the movement of material. Two temporary access roads will be constructed from the shoreline to the proposed mitigation area. The roads 70-ft in surface width, roads have been designed to avoid impacts to wetlands and other sensitive resources. These roads are to be removed upon completion of the construction and pre-construction contours restored.

Protection levees will be constructed with a minimum base of 45 feet wide and built up to an elevation of +10 ft NAVD 88 to accommodate equipment movement and material placement. Approximately 1,775 linear ft of articulated mat is to be installed to provide stabilization of the levee from wind and wave energy. The finished grade of the armored levee would be +5.0 ft NAVD 88. The finished grade of unarmored levee will be between +2.0 ft and +3.0 ft NAVD 88 to allow for tidal influence. Circulation channels will be lowered to -2.0 to -3.0 ft NAVD 88 with a 20-ft top width. All slopes to be a minimum of 3:1.

SCOPE OF WORK:

**PROPOSED LEVEE - BEAN TRACT
MITIGATION SITE
SEPTEMBER 2022,
LLOYD ENGINEERING**



PORT OF PORT LAVACA - POINT COMFORT
 Providing Calhoun County Industries with Direct Deep-Draft Access to Global Markets
 2313 FM 1593 SOUTH P.O. BOX 397 POINT COMFORT, TEXAS 77978
 (361) 987-2813 FAX (361) 987-2189 2313
 WWW.calhounport.com

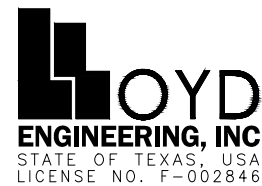
POINT COMFORT, TEXAS

CALHOUN PORT AUTHORITY

PROPOSED LEVEE - BEAN TRACT MITIGATION SITE

ISSUED FOR BIDDING

SEPTEMBER 2022



FILE NAME: I:\projects\port of calhoun county\bean tract wetland\G:\drawings\FE\0 COVER.dwg PLOTTED: 9/1/2022 10:01:19 AM USER: JESUS BENITEZ



VICINITY MAP



SITE PLAN

| DRAWING INDEX | |
|------------------------|--|
| SHEET NUMBER | SHEET TITLE |
| GENERAL | |
| G1.0 | GENERAL NOTES 1 OF 2 |
| G1.1 | GENERAL NOTES 2 OF 2 |
| G1.2 | EXISTING CONDITIONS |
| ROADWAY | |
| C1.0 | |
| C1.1 | PROPOSED ROADWAY SITE PLAN |
| C1.2 | TYPICAL ROAD DETAILS |
| C1.3 | STORM WATER POLLUTION PREVENTION PLAN |
| C1.4 | STORM WATER POLLUTION PREVENTION DETAILS |
| C1.5 | TRAFFIC CONTROL PLAN |
| PERMANENT LEVEE | |
| C2.0 | PERMANENT LEVEE SITE PLAN |
| C3.0 | PLACEMENT AREA SITE PLAN |
| C3.1 | TYPICAL OVERALL SECTION |
| C3.2 | TYPICAL CROSS SECTION DETAILS |
| C3.3 | BORROW AREA SITE PLAN |

GENERAL:

- ALL ELEVATIONS SHOWN REFERENCE NAVD 88.
- CONTRACTOR SHALL FIELD CHECK AND VERIFY ALL ELEVATIONS, COORDINATES, DIMENSIONS, EXISTING CONDITIONS, AND INFORMATION INDICATED ON THE CONTRACT DOCUMENTS PRIOR TO COMMENCEMENT OF SITE WORK. THE OWNER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES FOUND ON THE CONTRACT DOCUMENTS OR FOUND TO EXIST BETWEEN THE FIELD CONDITIONS AND THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL TAKE CORRECTIVE ACTION AS DIRECTED BY THE OWNER.
- CONTRACTOR SHALL SUBMIT STORM WATER POLLUTION PREVENTION PLAN (SW3P) TO THE OWNER. CONSTRUCTION ACTIVITY MAY NOT COMMENCE UNIT SW3P IS APPROVED BY THE OWNER.
- THE TEXAS ONE CALL SYSTEM SHALL BE NOTIFIED 48-HOURS PRIOR TO EXCAVATING. THIS ACTION HOWEVER, SHALL IN NO WAY BE INTERPRETED AS RELIEVING THE CONTRACTOR OF THE RESPONSIBILITY UNDER THE TERMS OF THE CONTRACT AS SET OUT IN THE PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY HIS OPERATIONS AT HIS OWN EXPENSE AND TO THE SATISFACTION OF THE UTILITY COMPANY INVOLVED.
- THE CONTRACTOR SHALL COMPLY WITH ALL PROVISIONS OF THE US ARMY CORPS OF ENGINEERS (USACE) PERMIT OBTAINED BY THE OWNER FOR THIS PROJECT. REFER TO US ARMY CORPS OF ENGINEERS PERMIT NO. SWG-2016-01066.
- CONTRACTOR SHALL CONDUCT HIS OPERATIONS SO AS TO NOT INTERFERE WITH, OR BE DETRIMENTAL TO VESSEL AND VEHICULAR TRAFFIC AND THE DAILY OPERATION OF THE OWNER DURING THE COURSE OF THE WORK.
- THE LOCATION AND DEPTH OF UTILITIES AND PIPELINES SHOWN ARE APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR BEFORE WORK COMMENCES. PRIOR TO BEGINNING ANY EXCAVATION WORK IN THE AREA OF EXISTING UTILITIES OR PIPELINES, THE CONTRACTOR SHALL CONTACT THE UTILITY OR PIPELINE COMPANIES OWNER FOR EXACT LOCATIONS AND DEPTHS TO PREVENT ANY DAMAGE OR INTERFERENCE WITH PRESENT FACILITIES.
- THE TEXAS ONE CALL SYSTEM SHALL BE NOTIFIED 48-HOURS PRIOR TO EXCAVATING. THIS ACTION HOWEVER, SHALL IN NO WAY BE INTERPRETED AS RELIEVING THE CONTRACTOR OF THE RESPONSIBILITY UNDER THE TERMS OF THE CONTRACT AS SET OUT IN THE PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY HIS OPERATIONS AT HIS OWN EXPENSE AND TO THE SATISFACTION OF THE UTILITY OR PIPELINE COMPANY INVOLVED.
- ALL EXISTING ROADWAYS AND OTHER FEATURES WHICH ARE DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
- WORKER SAFETY IN EXCAVATIONS AND TRENCHES SHALL BE PROVIDED BY THE CONTRACTOR IN ACCORDANCE WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS, 29 CFR 1926, SUBPART P – EXCAVATIONS, TRENCHING, AND SHORING. COMPLY WITH USACE-EM-385 FOR ALL ASPECTS OF CONSTRUCTION.

HORIZONTAL AND VERTICAL CONTROL:

- TOPOGRAPHIC SURVEY WAS PERFORMED BY CRA ASSOCIATES, DATED NOVEMBER 2019.
- HYDROGRAPHIC SURVEY WAS PERFORMED BY CRA ASSOCIATES, DATED NOVEMBER 2019.
- COORDINATES SHOWN ARE STATE PLANE GRID, TEXAS SOUTH CENTRAL ZONE, IN U.S. FEET.
- ALL ELEVATIONS SHOWN REFER TO US CORPS OF ENGINEERS MEAN LOWER LOW WATER (MLLW) DATUM.

LEVEE/TEMPORARY BERM CONSTRUCTION:

- SEMI-COMPACTED FILL SHALL BE PLACED WITH SUITABLE EQUIPMENT IN UNIFORM LAYERS WHICH, BEFORE COMPACTION, SHALL NOT EXCEED 12 TO 24 INCHES IN THICKNESS. EACH LAYER SHALL BE COMPACTIONED BY NOT LESS THAN THREE (3) COVERAGE OF A CRAWLER-TYPE TRACTOR D-5.
- GEOTEXTILE FABRIC TO BE MIRAFI 500X OR EQUAL.
- ARTICULATED CONCRETE MATTRESS TO BE ARMORFLEX CLASS 70 MAT OR EQUAL.
- CONTRACTOR SHALL ANTICIPATE SATURATED GROUND CONDITIONS AT THE SITE AND APPLY APPROPRIATE MEANS AND METHODS FOR CONSTRUCTING IN SOFT WET SOILS.
- USE RIPRAP PER TXDOT ITEM 432. SEE GRADATION BELOW:

| RIPRAP GRADATION NO. 1 | | | | | | | | |
|---------------------------|-------------------|-------------|---------------------|-------------|------------------------------|-------------|---------------------------|-------------|
| PERCENT LIGHTER BY WEIGHT | STONE WEIGHT LBS. | | VOLUME CUBIC FT (2) | | CUBICAL SHAPE FT (EACH SIDE) | | SPHERICAL SHAPE FT (DIA.) | |
| | LOWER LIMIT | UPPER LIMIT | LOWER LIMIT | UPPER LIMIT | LOWER LIMIT | UPPER LIMIT | LOWER LIMIT | UPPER LIMIT |
| | 100 | 180 | 265 | 1.20 | 1.77 | 1.06 | 1.21 | 1.31 |
| 50 | 80 | 110 | 0.53 | 0.73 | 0.81 | 0.90 | 1.01 | 1.12 |
| 15 | 40 | 60 | 0.27 | 0.40 | 0.64 | 0.74 | 0.80 | 0.91 |

EMBANKMENT:

- MATERIALS THAT ARE CLASSIFIED IN ACCORDANCE WITH ASTM D 2487 AS CL WITH LESS THAN 35 PERCENT SAND CONTENT ARE SUITABLE FOR USE AS EMBANKMENT FILL. MATERIALS CLASSIFIED AS CL-ML OR ML ARE NOT SUITABLE. SEE TABLE 1. ALL FILL MATERIALS SHALL BE FREE FROM MASSES OF ORGANIC MATTER, STICKS, BRANCHES, ROOTS, AND OTHER DEBRIS, INCLUDING HAZARDOUS AND REGULATED SOLID WASTES. LARGE CLAY CLODS SHALL BE PULVERIZED AND REDUCED TO LESS THAN 1/2 INCH IN DIAMETER. AS EARTH FROM THE DESIGNATED EXCAVATION AREAS MAY CONTAIN EXCESSIVE AMOUNTS OF WOOD, ISOLATED PIECES OF WOOD WILL NOT BE CONSIDERED OBJECTIONABLE IN THE EMBANKMENT PROVIDED THEIR SIZE DOES NOT EXCEED ONE INCH IN DIAMETER. NOT MORE THAN 1 PERCENT (BY VOLUME) OF OBJECTIONABLE MATERIAL SHALL BE CONTAINED IN THE EARTH MATERIAL PLACED IN EACH CUBIC YARD OF THE LEVEE SECTION. POCKETS AND/OR ZONES OF WOOD SHALL NOT BE PLACED IN THE EMBANKMENT.

- MATERIALS PLACED IN THE SECTION MUST HAVE A MINIMUM OF 60% PASSING THE NO. 200 SIEVE AS DETERMINED BY ASTM D422. ALSO, MATERIALS PLACED IN THIS SECTION SHALL BE AT OR BELOW ORGANIC CONTENT OF 9 PERCENT BY WEIGHT AS DETERMINED BY ASTM D 2974, METHOD C. MATERIALS PLACED IN THE SECTION MUST CONTAIN LESS THAN 35 PERCENT SAND CONTENT BY WEIGHT AS DETERMINED BY ASTM D 1140.

FILL MATERIAL:

- DO NOT CONDUCT PLACEMENT OPERATIONS DURING INCLEMENT WEATHER OR WHEN EXISTING GROUND OR FILL MATERIALS EXCEED 3 PERCENT OF OPTIMUM MOISTURE CONTENT. CONTRACTOR MAY MANIPULATE WET MATERIAL TO FACILITATE DRYING, BY DISKING OR WIND ROWING. EACH LAYER SHALL BE HOMOGENEOUS AND CONTAIN UNIFORM MOISTURE CONTENT BEFORE COMPACTION. MIX DISSIMILAR ABUTTING MATERIALS TO PREVENT ABRUPT CHANGES IN COMPOSITION OF FILL. LAYERS SHALL NOT EXCEED 12 INCHES OF COMPACTED THICKNESS.

 COMPACT TO MINIMUM DENSITY OF 90 PERCENT OF MAXIMUM DRY DENSITY AT MOISTURE CONTENT OF OPTIMUM TO 3 PERCENT ABOVE OPTIMUM AS DETERMINED BY ASTM D 698.
- UNSUITABLE MATERIAL: UNSUITABLE SOIL MATERIALS ARE THE FOLLOWING:
 - MATERIALS CLASSIFIED AS ML, CL-ML, MH, PT, OH, AND OL ACCORDING TO ASTM D 2487.
 - MATERIALS THAT CANNOT BE COMPACTIONED TO REQUIRED DENSITY DUE TO GRADATION, PLASTICITY, OR MOISTURE CONTENT.
 - MATERIALS THAT CONTAIN LARGE CLODS, AGGREGATES, STONES GREATER THAN 4 INCHES IN ANY DIMENSION, DEBRIS, VEGETATION, WASTE OR ANY OTHER DELETERIOUS MATERIALS.
 - MATERIALS THAT ARE CONTAMINATED WITH HYDROCARBONS OR OTHER CHEMICAL CONTAMINANTS.
- SUITABLE MATERIAL: INORGANIC FAT CLAYS (CH) MAY BE USED AS INORGANIC EMBANKMENT MATERIAL. WHEN REQUIRED DENSITY IS NOT ACHIEVED, REWORK, DRY OUT, USE LIME STABILIZATION OR OTHER APPROVED METHODS TO ACHIEVE COMPACTION REQUIREMENTS, OR USE DIFFERENT SUITABLE MATERIAL. MAXIMUM 9-INCH COMPACTED LIFT THICKNESS FOR CLAYEY SOILS AND MAXIMUM 12-INCH LIFT THICKNESS FOR GRANULAR SOILS. COMPACT TO MINIMUM OF 90 PERCENT OF MAXIMUM DRY DENSITY DETERMINED ACCORDING TO ASTM 698. THE LIQUID LIMIT SHALL BE 50 OR GREATER. GRADATION SHALL INCLUDE 50% OR GREATER PASSING SLEEVE 200.

CEMENT STABILIZED SAND:

- PLACE SAND-CEMENT MIXTURE IN MAXIMUM 12-INCH-THICK LOOSE LIFTS AND COMPACT TO 95% OF MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D558. TARGET MOISTURE CONTENT DURING COMPACTION IS ±3% OF OPTIMUM.
- DO NOT PLACE OR COMPACT SAND-CEMENT MIXTURE IN STANDING OR FREE WATER.
- USE SAND-CEMENT MIXTURE PRODUCING MINIMUM UNCONFINED COMPRESSIVE STRENGTH OF 150 POUND PER SQUARE INCH IN 48 HOURS.
- PROVIDE 1.5 SACK OF CEMENT PER TON OF DRY SAND. CEMENT SHALL BE TYPE 1 PORTLAND CEMENT CONFORMING TO ASTM C150.
- SAND SHALL BE CLEAN AND FREE OF ORGANICS WITH A PLASTICITY INDEX OF 4 OR LESS WHEN TESTED IN ACCORDANCE WITH ASTM D4318.

ROADWAY PREPARATION:

- FOLLOWING GRUBBING AND REMOVAL OF DELETERIOUS MATTER FROM THE EXISTING SURFACE AND AFTER CUT GRADES HAVE BEEN ESTABLISHED, THE EXPOSED SOIL SHOULD BE EXCAVATED TO AT LEAST TWO FEET BELOW DESIGN TOP-OF-SUBGRADE ELEVATION OR EXISTING GRADE, WHICHEVER IS DEEPER. THE OVER-EXCAVATION SHOULD EXTEND AT LEAST 3, AND PREFERABLY 5, FEET BEYOND THE LIMITS OF THE AREA TO RECEIVE SURFACE TREATMENT. IF POOR OR DELETERIOUS MATERIAL IS ENCOUNTERED AT THE BASE OF THE 2-FOOT OVER-EXCAVATION, ADDITIONAL OVER-EXCAVATION MAY BE REQUIRED AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER. THE OVER-EXCAVATION MAY BE TERMINATED IF COMPETENT NATURAL SOILS (I.E., MEDIUM DENSE SANDS OR STIFF COHESIVE SOILS) ARE ENCOUNTERED.
- OVER-EXCAVATED AREAS SHOULD BE BACKFILLED WITH PROPERLY PLACED AND COMPACTED STRUCTURAL (SELECT) FILL TO ATTAIN DESIGN TOP-OF-SUBGRADE ELEVATION. STRUCTURAL FILL MAY CONSIST OF LOW PLASTICITY COHESIVE SOILS OR SANDY SOILS. COHESIVE SOILS SHOULD HAVE A LIQUID LIMIT OF LESS THAN 40, A PLASTICITY INDEX BETWEEN 12 AND 30, AND A FINES CONTENT (I.E., PASSING THE NO. 200 SIEVE) BETWEEN 60 AND 85 PERCENT. STRUCTURAL FILL SHOULD BE FREE OF DELETERIOUS MATTER AND SHOULD HAVE AN EFFECTIVE CLOD DIAMETER LESS THAN 3 INCHES. STRUCTURAL FILL SHOULD BE PLACED IN MAXIMUM 8-INCH-THICK LOOSE LIFTS AND UNIFORMLY COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY. COHESIVE SOILS SHOULD BE PLACED AT A MOISTURE CONTENT OF 1 PERCENT "DRY" TO 3 PERCENT "WET" OF OPTIMUM AS DETERMINED BY ASTM D698 (STANDARD PROCTOR); THE MOISTURE CONTENT OF SANDY SOILS MAY BE WITHIN 3 PERCENT OF OPTIMUM. OVEREXCAVATED ONSITE SOILS MEETING THE REQUIREMENTS OF STRUCTURAL FILL MAY BE RE-USED.
- THE SUBGRADE PREPARATION SHOULD EXTEND Laterally AT LEAST 3, AND PREFERABLY 5, FEET BEYOND THE EDGES OF THE AREAS TO RECEIVE SURFACE COVER. PRIOR TO PLACEMENT OF STRUCTURAL FILL TO BRING OVER-EXCAVATED AREAS TO DESIGN TOP-OF-SUBGRADE, THE EXPOSED SOILS SHOULD BE PROOFROLLED TO IDENTIFY AREAS OF UNSUITABLE SOILS AS DISCUSSED BELOW.

PROOF-ROLLING:

- FOR LARGE AND EXPOSED AREAS, PROOF-ROLLING OF THE SUBGRADE SHOULD BE PERFORMED. WE RECOMMEND THAT PROOF-ROLLING BE PERFORMED USING A FULLY-LOADED DUMP TRUCK OR WATER TRUCK WITH A WEIGHT OF AT LEAST 20 TONS AND A TIRE PRESSURE OF AT LEAST 70 PSI. DO NOT RECOMMEND USE OF OFF-ROAD EARTH MOVING EQUIPMENT, COMPACTORS, OR TRACK-MOUNTED VEHICLES FOR PROOF-ROLLING. PROOF-ROLLING SHOULD EXTEND AT LEAST 3 FEET AND PREFERABLY 5 FEET (RIGHT-OF-WAY PERMITTING) BEYOND THE FOOTPRINT OF THE STUDY SITE.
- PROOF-ROLLING SPECIFICATIONS SHOULD PROVIDE FOR RUT DEPTHS LESS THAN 1 INCH AND NO VISUAL EVIDENCE OF PUMPING. AREAS OF SUBGRADE SOILS WHERE RUTTING IN EXCESS OF 1 INCH OR PUMPING ARE OBSERVED SHOULD BE REMOVED TO EXPOSE COMPETENT SOILS AND REPLACED WITH PROPERLY COMPACTED STRUCTURAL FILL.

- SCHEDULE PROOF-ROLLING ACTIVITIES DURING A RELATIVELY DRY PERIOD. DO NOT ALLOW PROOF-ROLLING ACTIVITIES TO BEGIN DURING OR IMMEDIATELY AFTER A SIGNIFICANT RAIN EVENT. THE GEOTECHNICAL ENGINEER-OF-RECORD (GER) SHOULD BE CONTACTED TO EVALUATE THE SITE CONDITIONS IF A LARGE RAINFALL EVENT OCCURS DURING SUBGRADE PREPARATION.

SUBGRADE TREATMENT:

- FOR SUBGRADE IMPROVEMENT, COHESIVE SOILS AND STRUCTURAL FILL SHOULD BE TREATED WITH LIME, WHILE COHESIONLESS (SANDY TO SILTY SOILS) SHOULD BE TREATED WITH LIME.

AGGREGATE-SURFACED AREA:

- THE AGGREGATE-SURFACED PARKING/STORAGE/LAYOUT AREA SHOULD BE DESIGNED IN ACCORDANCE WITH AASHTO GUIDE FOR DESIGN OF PAVEMENT STRUCTURE (1993 EDITION), AND FEDERAL HIGHWAY ADMINISTRATION (FHWA) GRAVEL ROADS CONSTRUCTION AND MAINTENANCE GUIDE MANUAL (AUGUST 2015).

| Sieve | Base Aggregate Layer | Surface Aggregate Layer |
|------------------|----------------------|-------------------------|
| | Percent Passing | Percent Passing |
| 1" | 100 | |
| 3/4" | 80 - 100 | 100 |
| 1/2" | 68 - 91 | |
| No. 4 | 46 - 70 | 50 - 78 |
| No. 8 | 34 - 54 | 37 - 67 |
| No. 40 | 13 - 35 | 13 - 35 |
| No. 200 | 3 - 12 | 4 - 15** |
| Plasticity Index | 0 - 6 | 4 - 12 |

LIME:

- THE OPTIMUM LIME CONTENT IS THE AMOUNT OF LIME NECESSARY TO ACHIEVE A PH OF 12.0, WHILE TRYING TO ACHIEVE PLASTICITY (PI) OF LESS THAN 2.0. FOR ESTIMATION PURPOSES, ABOUT 6-8% LIME, BY DRY WEIGHT MAY BE REQUIRED.
- TYPE A – HYDRATED LIME: DRY MATERIAL CONSISTING ESSENTIALLY OF CALCIUM HYDROXIDE OR MIXTURE OF CALCIUM HYDROXIDE AND AN ALLOWABLE PERCENTAGE OF CALCIUM OXIDE AS LISTED IN CHEMICAL COMPOSITION CHART.
- TYPE B – COMMERCIAL LIME SLURRY: LIQUID MIXTURE CONSISTING ESSENTIALLY OF LIME SOLIDS AND WATER IN SLURRY FORM. WATER OR LIQUID PORTION SHALL NOT CONTAIN DISSOLVED MATERIAL IN SUFFICIENT QUANTITY TO BE INJURIOUS OR OBJECTIONABLE FOR PURPOSE INTENDED.
- TYPE C – QUICKLIME: DRY MATERIAL CONSISTING ESSENTIALLY OF CALCIUM OXIDE: MATERIALS SHALL BE: FINELY-GRADED QUICKLIME FOR USE IN PREPARATION OF SLURRY FOR WET PLACING.
- CONFORM TO THE FOLLOWING REQUIREMENTS:

| CHEMICAL COMPOSITION | TYPE | | |
|---|--|-----------------------|----------------------|
| | A | B | C |
| Active lime content, % by weight Ca(OH) ₂ +CaO | 90.0 min ¹ | 87.0 min ² | - |
| Unhydrated lime content, % by weight CaO | 5.0 max | - | 87.0 min |
| Free water content, % by weight H ₂ O : | 5.0 max | - | - |
| SIZING | | | |
| Wet Sieve, as % by weight residue retained: | | | |
| No. 6 | 0.2 max | 0.2 max ² | 8.0 max ³ |
| No. 30 | 4.0 max | 4.0 max ² | - |
| Dry sieve, as % by weight residue retained: | | | |
| 1-inch | - | - | 0.0 |
| 1/2-inch | - | - | 10.0 max |
| Notes: | 1. Maximum 5.0% by weight CaO shall be allowed in determining total active lime content. 2. Maximum solids content of slurry. 3. Total active lime content, as CaO, in material retained on No. 6 sieve shall not exceed 2.0% by weight of original Type C lime. | | |

- LIME CONTAINING MAGNESIUM HYDROXIDE IS PROHIBITED.

| | | | | | | |
|--|------|----------|--------------------|----|------|--|
| THIS DOCUMENT IS RELEASED FOR BIDDING ONLY UNDER THE AUTHORITY OF ENGINEER: <u> P.O. PARKER </u> LICENSE NO.: <u> 103694 </u> DATE: <u> 09/01/2022 </u> | △ | | | | | PROJECT NO. SCALE: AS NOTED DWN. BY: JB CHK. BY: POP DATE: 04-22-2021 SHT. NO. G1.0 |
| | △ | | | | | |
| | △ | 09/01/22 | ISSUED FOR BIDDING | - | POP | |
| IT IS NOT TO BE USED FOR CONSTRUCTION, INTERIM REVIEW OR PERMIT PURPOSES. | REV. | DATE | DESCRIPTION | BY | CHK. | |

Texas Registered Engineering Firm F-02846
LOYD
ENGINEERING, INC.
 Construction Management Design Dredge Inspections
 Owner's Engineer Permitting Assistance
 6666 West Loop South Houston, Texas 77401 (832)426-4666

CALHOUN PORT AUTHORITY
 BEAN TRACT WETLAND
 GENERAL NOTES
 1 OF 2

PORT OF PORT LAVACA - POINT CONFORT
 Providing Calhoun County Residents with Direct and Efficient Access to Great Waters
 2015 FW 1584 SOUTH P.O. BOX 307 POINT CONFORT, TEXAS 77781
 (409) 243-6363 FAX (409) 242-2150
 www.portofport.com

CALHOUN
Port Authority
POINT CONFORT, TEXAS & USA

LIME SLURRY APPLICATION:

1. MINIMUM LIME CONTENT SHALL BE 5 PERCENT OF DRY UNIT WEIGHT OF SUBGRADE AS DETERMINED BY ASTM D 698.
2. CURE SOIL LIME MATERIAL FOR 24 TO 72 HOURS OR AS REQUIRED TO OBTAIN OPTIMUM HYDRATION. KEEP SUBGRADE MOIST DURING CURE.
3. MIX AND PULVERIZE UNTIL ALL MATERIAL PASSES 13/4-INCH SIEVE; MINIMUM OF 85 PERCENT, EXCLUDING NON-SLACKING FRACTIONS, PASSES 3/4-INCH SIEVE; AND MINIMUM OF 60 PERCENT EXCLUDING NON-SLACKING FRACTIONS PASSES NO. 4 SIEVE. TEST ACCORDING TO TXDOT TEX-101-E, PART III USING DRY METHOD.
4. DO NOT EXPOSE HYDRATED LIME TO OPEN AIR FOR 6 HOURS OR MORE DURING INTERVAL BETWEEN APPLICATION AND MIXING. AVOID EXCESSIVE HYDRATED LIME LOSS DUE TO WASHING OR BLOWING.

COMPACTION:

1. AERATE OR SPRINKLE TO ATTAIN OPTIMUM MOISTURE CONTENT TO 3 PERCENT ABOVE OPTIMUM, AS DETERMINED BY ASTM D 698 ON MATERIAL SAMPLE FROM ROADWAY AFTER FINAL MIX WITH LIME.
2. START COMPACTION IMMEDIATELY AFTER FINAL MIXING.
3. DO NOT ALLOW STABILIZED SUBGRADE TO MIX WITH UNDERLYING MATERIAL. CORRECT IRREGULARITIES OR WEAK SPOTS IMMEDIATELY BY REPLACING MATERIAL AND RECOMPACTING.
4. COMPACT SUBGRADE TO MINIMUM DENSITY OF 95 PERCENT OF MAXIMUM DRY DENSITY, ACCORDING TO ASTM D 698, AT MOISTURE CONTENT OF OPTIMUM TO 3 PERCENT ABOVE OPTIMUM, UNLESS OTHERWISE INDICATED ON DRAWINGS.
5. SEAL WITH APPROVED LIGHT PNEUMATIC TIRED ROLLERS. PREVENT SURFACE HAIR LINE CRACKING. REWORK AND RECOMPACT AT AREAS WHERE HAIRLINE CRACKING DEVELOP.

CURING:

1. MOIST CURE FOR MINIMUM OF 3 DAYS BEFORE PLACING BASE OR SURFACE COURSE, OR OPENING TO TRAFFIC. SUBGRADE MAY BE OPENED TO TRAFFIC AFTER 2 DAYS WHEN ADEQUATE STRENGTH HAS BEEN ATTAINED TO PREVENT DAMAGE. RESTRICT TRAFFIC TO LIGHT PNEUMATIC ROLLERS OR VEHICLES WEIGHING LESS THAN 10 TONS.
2. PLACE BASE OR SURFACE WITHIN 14 DAYS AFTER FINAL MIXING AND COMPACTION. RESTART COMPACTION AND MOISTURE CONTENT OF BASE MATERIAL WHEN TIME IS EXCEEDED.

Texas Registered Engineering Firm F-02846



Construction Management Design Dredge Inspections
 Owner's Engineer Permitting Assistance
 6665 West Loop South Houston, Texas 77401 (832)426-4666

CALHOUN PORT AUTHORITY
 BEAN TRACT WETLAND

GENERAL NOTES
 2 OF 2

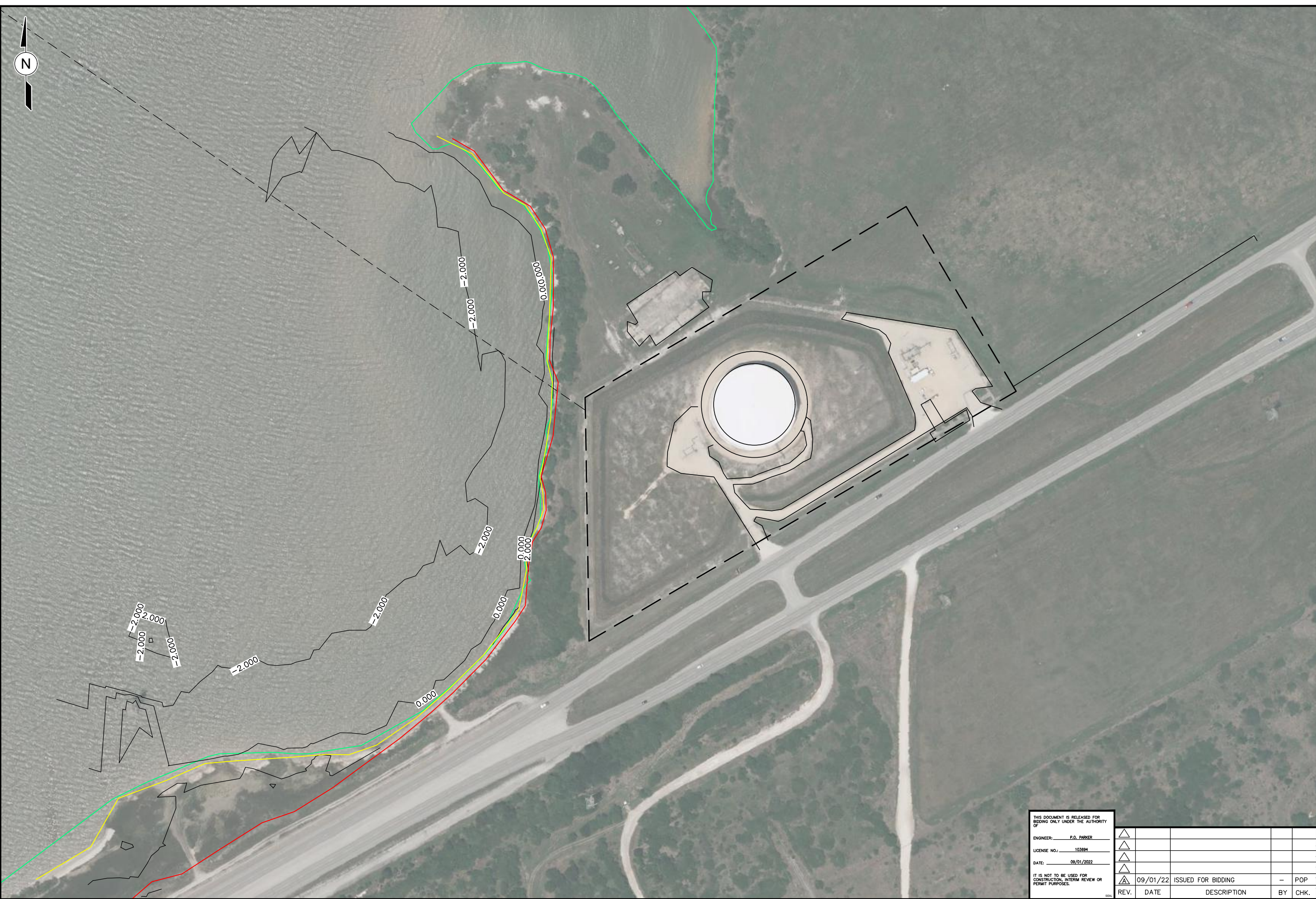


PORT OF PORT LAVACA - POINT COMFORT
 Providing Calhoun County Residents with Direct Deepwater Access to Great Lakes
 2315 FM 1583 SOUTH P.O. BOX 387 POINT COMFORT, TEXAS 77581
 (817) 982-6131 FAX (817) 982-2189 2313
 www.portofport.com

THIS DOCUMENT IS RELEASED FOR BIDDING ONLY UNDER THE AUTHORITY OF
 ENGINEER: P.O. PARKER
 LICENSE NO.: 103694
 DATE: 09/01/2022
 IT IS NOT TO BE USED FOR CONSTRUCTION, INTERIM REVIEW OR PERMIT PURPOSES.

| | | | | |
|------|----------|--------------------|----|------|
| △ | | | | |
| △ | | | | |
| △ | | | | |
| △ | 09/01/22 | ISSUED FOR BIDDING | - | POP |
| REV. | DATE | DESCRIPTION | BY | CHK. |

PROJECT NO.
 SCALE: AS NOTED
 DWN. BY: JB
 CHK. BY: POP
 DATE: 04-22-2021
 SHT. NO. G1.1



THIS DOCUMENT IS RELEASED FOR BIDDING ONLY UNDER THE AUTHORITY OF
 ENGINEER: P.O. PARKER
 LICENSE NO.: 103894
 DATE: 09/01/2022
 IT IS NOT TO BE USED FOR CONSTRUCTION, INTERIM REVIEW OR PERMIT PURPOSES.

| REV. | DATE | DESCRIPTION | BY | CHK. |
|------|----------|--------------------|----|------|
| △ | | | | |
| △ | | | | |
| △ | | | | |
| △ | 09/01/22 | ISSUED FOR BIDDING | - | POP |

| | |
|-------------|------------|
| PROJECT NO. | |
| SCALE: | AS NOTED |
| DWN. BY: | JB |
| CHK. BY: | POP |
| DATE: | 04-22-2021 |
| SHT. NO. | G1.2 |

CALHOUN
Port Authority
POINT COMFORT, TEXAS+USA

PORT OF PORT LAVACA, POINT COMFORT
 PROVIDES CALHOUN COUNTY MARINERS AND VISITORS WITH DIRECT ACCESS TO COASTAL MARINERS
 2115 FM 1585, BAYTOWN, TX 77520-9917, CALHOUN, TEXAS 77581
 (409) 887-2437 FAX (409) 887-4189-2111
 WWW.CALHOUNPORT.COM

CALHOUN PORT AUTHORITY
 BEAN TRACT WETLAND
 EXISTING CONDITIONS

LOYD
ENGINEERING, INC.

Texas Registered Engineering Firm F-02846

Construction Management Design Dredge Inspections
 Owner's Engineer Permitting Assistance

6565 West Loop South Houston, Texas 77401 (832) 426-4656



SURVEY NOTES:

1. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT. SURVEYOR DID NOT ABSTRACT TITLE AND DOES NOT CERTIFY TO EASEMENTS OR RESTRICTIONS NOT SHOWN. CHECK WITH YOUR LOCAL GOVERNING AGENCIES FOR ANY ADDITIONAL EASEMENTS, BUILDING LINES OR OTHER RESTRICTIONS NOT REFLECTED ON RECORDED PLAT.
2. THIS SURVEY IS FOR TOPOGRAPHIC PURPOSES ONLY. THIS SURVEY IS NOT A BOUNDARY SURVEY AND SHALL NOT BE CONSTRUED AS SUCH.
3. ACCORDING TO MAP NO. 48057C0065 OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAPS FOR HARRIS COUNTY, TEXAS, WITH REVISED DATE OF OCTOBER 16, 2014, THE SUBJECT PROPERTY IS SITUATED IN: ZONE AE, SHADED ZONE X, AND UNSHADED ZONE X, AREAS TO BE DETERMINED TO BE INSIDE THE 1% ANNUAL CHANCE FLOODPLAIN (APPROXIMATE ELEVATION OF 11.0'), INSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, AND OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
4. ALL ELEVATIONS SHOWN HEREON ARE BASED ON FEMA BENCHMARK AN0831, PUBLISHED ELEVATION OF XX.XX', NAVD 88, 2001 ADJ.
5. TBM A - BEING A SET 1/2" IRON ROD WITH CAP STAMPED "XXXX" LOCATED APPROXIMATELY FOR SUBJECT TRACT, AS SHOWN HEREON.
ELEVATION - XX.XX FEET, NAVD 88, 2001 ADJUSTMENT

CLEARING & GRUBBING NOTES:

1. CONTRACTOR TO REMOVE ALL TREES, SHRUBBERY INCLUDING ROOT BALLS, AND TOP 3" OF TOP SOIL FROM DESIGNATED AREA.
2. THE CONTRACTOR IS REQUIRED TO REMOVE FROM THE JOB SITE AND DISPOSE OF ALL TRASH, EXCESS MATERIALS, ETC., ACCUMULATED AS A RESULT OF AND DURING THIS WORK IN COMPLIANCE WITH CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.
3. AT SUCH TIME AS DIRECTED BY THE OWNER, THE CONTRACTOR SHALL REMOVE ANY DEBRIS, TRASH OR EXCESS MATERIAL OFF THE SITE. HE SHALL MAKE EVERY EFFORT TO KEEP THE SITE IN A NEAT, PRESENTABLE CONDITION, AT ALL TIMES. AFTER THE CONSTRUCTION WORK HAS BEEN COMPLETED, THE CONTRACTOR SHALL REMOVE ALL DEBRIS, TRASH, EXCESS MATERIALS, FORMS, STAKES, EMPTY SACKS ETC. FROM THE SITE AND LEAVE THE SITE WITH A NEAT APPEARANCE. ALL EXCESS EXCAVATED MATERIAL SHALL BE HAULED OFF THE SITE.

THIS DOCUMENT IS RELEASED FOR BIDDING ONLY UNDER THE AUTHORITY OF
 ENGINEER: P.O. PARKER
 LICENSE NO.: 103894
 DATE: 09/01/2022
 IT IS NOT TO BE USED FOR CONSTRUCTION, INTERIM REVIEW OR PERMIT PURPOSES.

| REV. | DATE | DESCRIPTION | BY | CHK. |
|------|----------|--------------------|----|------|
| △ | | | | |
| △ | | | | |
| △ | | | | |
| △ | 09/01/22 | ISSUED FOR BIDDING | - | POP |

Texas Registered Engineering Firm F-02846

LOYD ENGINEERING, INC.
 Construction Management Design Dredge Inspections
 Permitting Assistance
 6565 West Loop South Houston, Texas 77401 (832)426-4656

**CALHOUN PORT AUTHORITY
 BEAN TRACT WETLAND
 CLEARING AND GRUBBING
 SITE PLAN**

PORT OF PORT LAVACA, POINT CONROE
 Provides Calhoun County Residents with Direct Access to Coastal Markets
 201 FM 1583 Bayport, TX 77521 (409) 646-2000 (TXAS) 7758
 (409) 646-2001 FAX (409) 646-2011
 www.calhounport.com

CALHOUN Port Authority
 POINT CONROE, TEXAS-USA

PROJECT NO.
 SCALE: SITE PLAN
 DWN. BY: JB
 CHK. BY: POP
 DATE: 04-22-2021
 SHT. NO. C1.0



80.00'
TRUCK PULL
OFF AREA

PROP. ~2,605 LF
ROADWAY & SWALE

WASHDOWN
AREA

1
C1.2

LEASE PROPERTY

EXIST. PAVEMENT

ACCELERATION LANE

791.54'

EXIST. TANK

EXIST. ROADWAY

STATE HIGHWAY 35

DECELERATION LANE

1
C1.2

612.93'

NOTE:
1. SWALE AND ROADWAY FINAL DESIGN
PENDING TOPOGRAPHIC DATA.

THIS DOCUMENT IS RELEASED FOR
BIDDING ONLY UNDER THE AUTHORITY OF
ENGINEER: P.O. PARKER
LICENSE NO.: 103894
DATE: 09/01/2022
IT IS NOT TO BE USED FOR
CONSTRUCTION, INTERIM REVIEW OR
PERMIT PURPOSES.

| REV. | DATE | DESCRIPTION | BY | CHK. |
|------|----------|--------------------|----|------|
| △ | | | | |
| △ | | | | |
| △ | | | | |
| △ | 09/01/22 | ISSUED FOR BIDDING | - | POP |

Texas Registered Engineering Firm F-02846

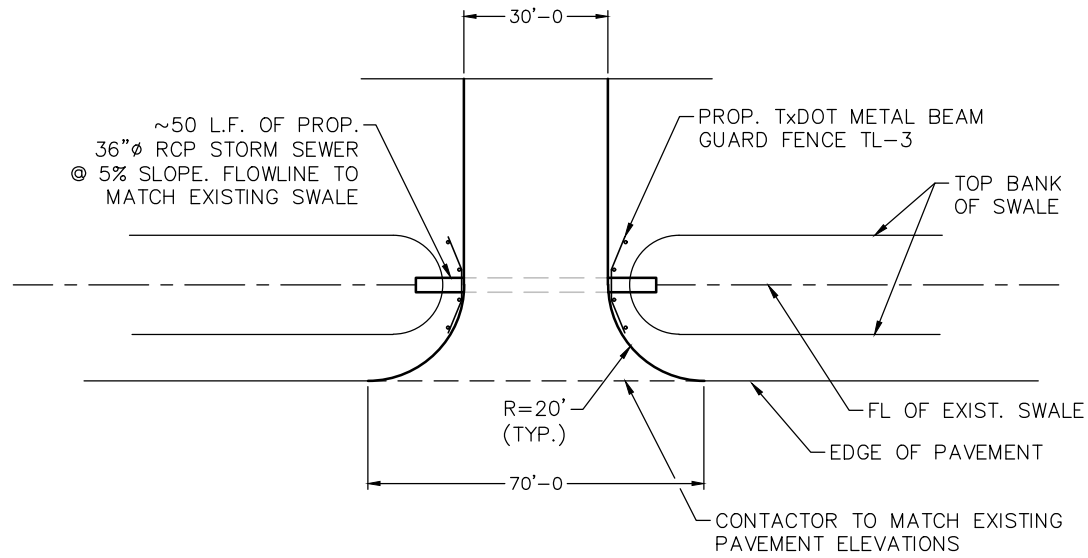
LOYD
ENGINEERING, INC.
Construction Management Design Dredge Inspections
Owner's Engineer Permitting Assistance
6565 West Loop South Houston, Texas 77401 (832)426-4656

CALHOUN PORT AUTHORITY
BEAN TRACT WETLAND
PROPOSED ROADWAY
SITE PLAN

POINT OF PORT LAVACA, POINT CONROFT
Providing Calhoun County Residents with Direct, Efficient Access to Coastal Markets
2115 FM 1581, Bayport, TX 77521 (409) 647-4200
(800) 847-8475 FAX (409) 647-4201
www.calhounport.com

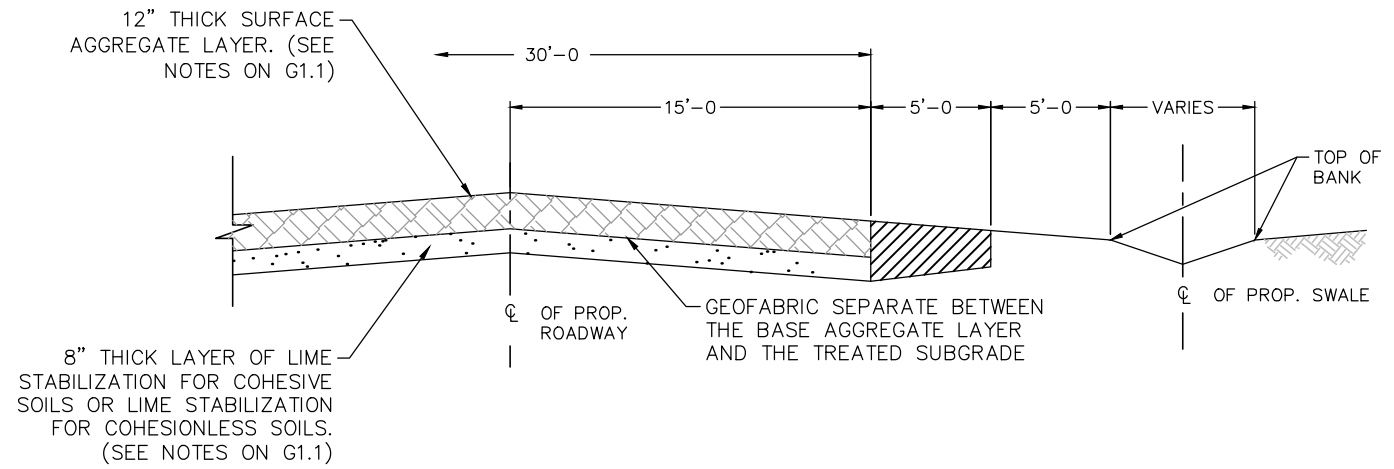


PROJECT NO. _____
SCALE: AS NOTED
DWN. BY: JB
CHK. BY: POP
DATE: 04-22-2021
SHT. NO. C1.1



1 TYPICAL DRIVEWAY PLAN
C1.1 SCALE= HORZ 1:20, VERT 1:2

NOTES:
 CONTRACTOR TO SUBMIT INSTALLATION PLAN OF CULVERT TO PORT FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
 CULVERT TO BE INSTALLED PER TxDOT STANDARDS.



TYPICAL ROADWAY SECTION
 N.T.S.

Texas Registered Engineering Firm F-02846
LOYD
 ENGINEERING, INC.
 Construction Management Design Dredge Inspections
 Permitting Assistance
 Owner's Engineer
 6565 West Loop South Houston, Texas 77401 (832)426-4656

CALHOUN PORT AUTHORITY
 BEAN TRACT WETLAND
 TYPICAL ROAD DETAILS

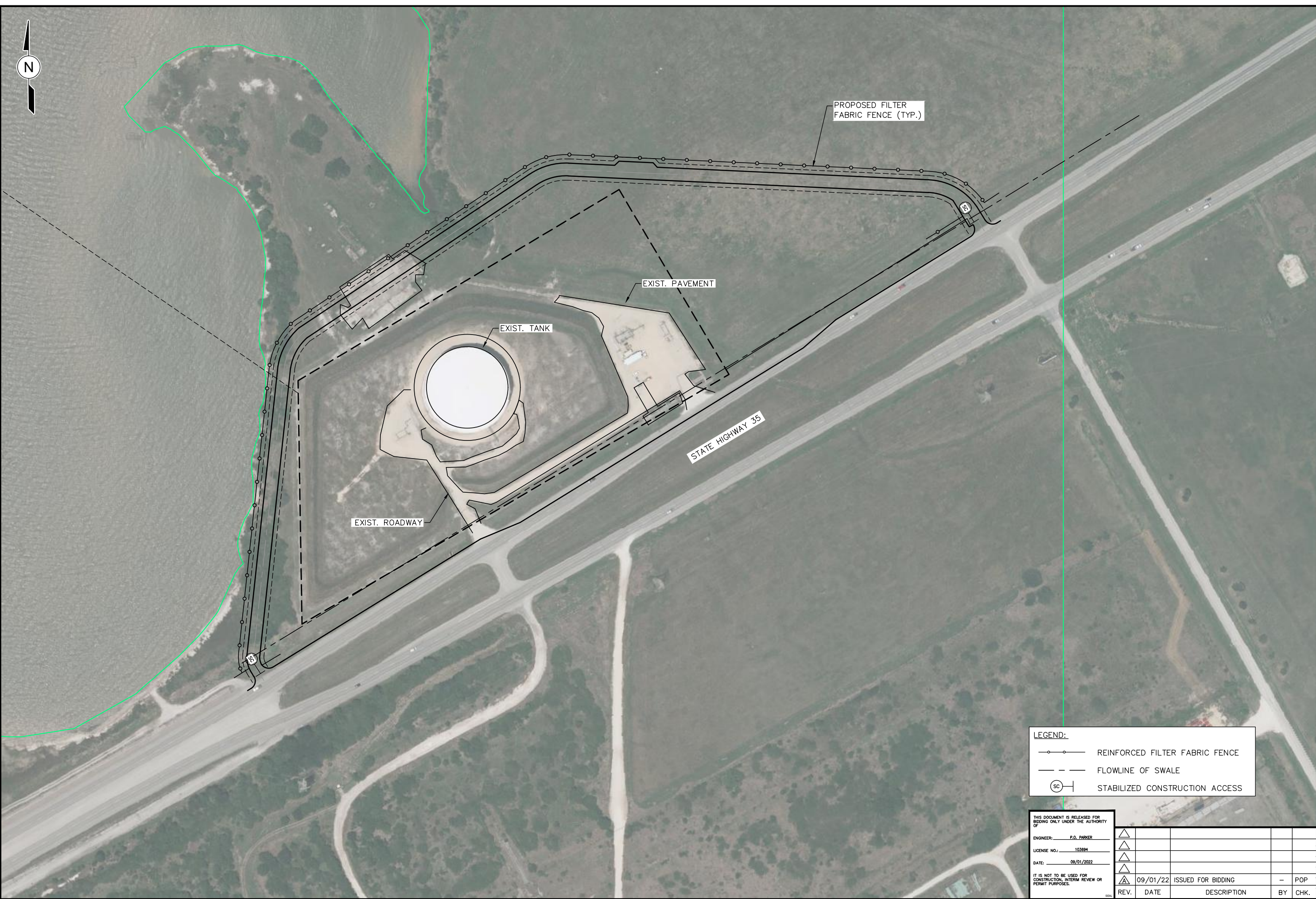
PORT OF PORT LAVACA, POINT CONROFT
 Provides Calhoun County Residents with the Best Water Services to Global Markets
 2101 FM 1583 Baytown, TX 77610-1501 (409) 641-4000 FAX (409) 641-4001
 (409) 641-4001 FAX (409) 641-4001
 WWW.PORTEXPORT.COM



THIS DOCUMENT IS RELEASED FOR BIDDING ONLY UNDER THE AUTHORITY OF
 ENGINEER: P.O. PARKER
 LICENSE NO.: 103894
 DATE: 09/01/2022
 IT IS NOT TO BE USED FOR CONSTRUCTION, INTERIM REVIEW OR PERMIT PURPOSES.

| REV. | DATE | DESCRIPTION | BY | CHK. |
|------|----------|--------------------|----|------|
| △ | | | | |
| △ | | | | |
| △ | | | | |
| △ | 09/01/22 | ISSUED FOR BIDDING | - | POP |

PROJECT NO.
 SCALE: AS NOTED
 DWN. BY: JB
 CHK. BY: POP
 DATE: 04-22-2021
 SHT. NO. C1.2



PROPOSED FILTER FABRIC FENCE (TYP.)

EXIST. PAVEMENT

EXIST. TANK

STATE HIGHWAY 35

EXIST. ROADWAY

LEGEND:

| | |
|--|--------------------------------|
| | REINFORCED FILTER FABRIC FENCE |
| | FLOWLINE OF SWALE |
| | STABILIZED CONSTRUCTION ACCESS |

THIS DOCUMENT IS RELEASED FOR BIDDING ONLY UNDER THE AUTHORITY OF
 ENGINEER: P.O. PARKER
 LICENSE NO.: 103894
 DATE: 09/01/2022
 IT IS NOT TO BE USED FOR CONSTRUCTION, INTERIM REVIEW OR PERMIT PURPOSES.

| △ | | | | | |
|------|----------|--------------------|----|------|--|
| △ | | | | | |
| △ | | | | | |
| △ | 09/01/22 | ISSUED FOR BIDDING | - | POP | |
| REV. | DATE | DESCRIPTION | BY | CHK. | |

CALHOUN PORT AUTHORITY
BEAN TRACT WETLAND
STORM WATER POLLUTION PREVENTION PLAN

TEXAS REGISTERED ENGINEERING FIRM F-02846

LOYD ENGINEERING, INC.

Construction Management Design Dredge Inspections
 Owner's Engineer Permitting Assistance

6565 West Loop South Houston, Texas 77401 (832)426-4656

PROJECT NO. _____

SCALE: AS NOTED

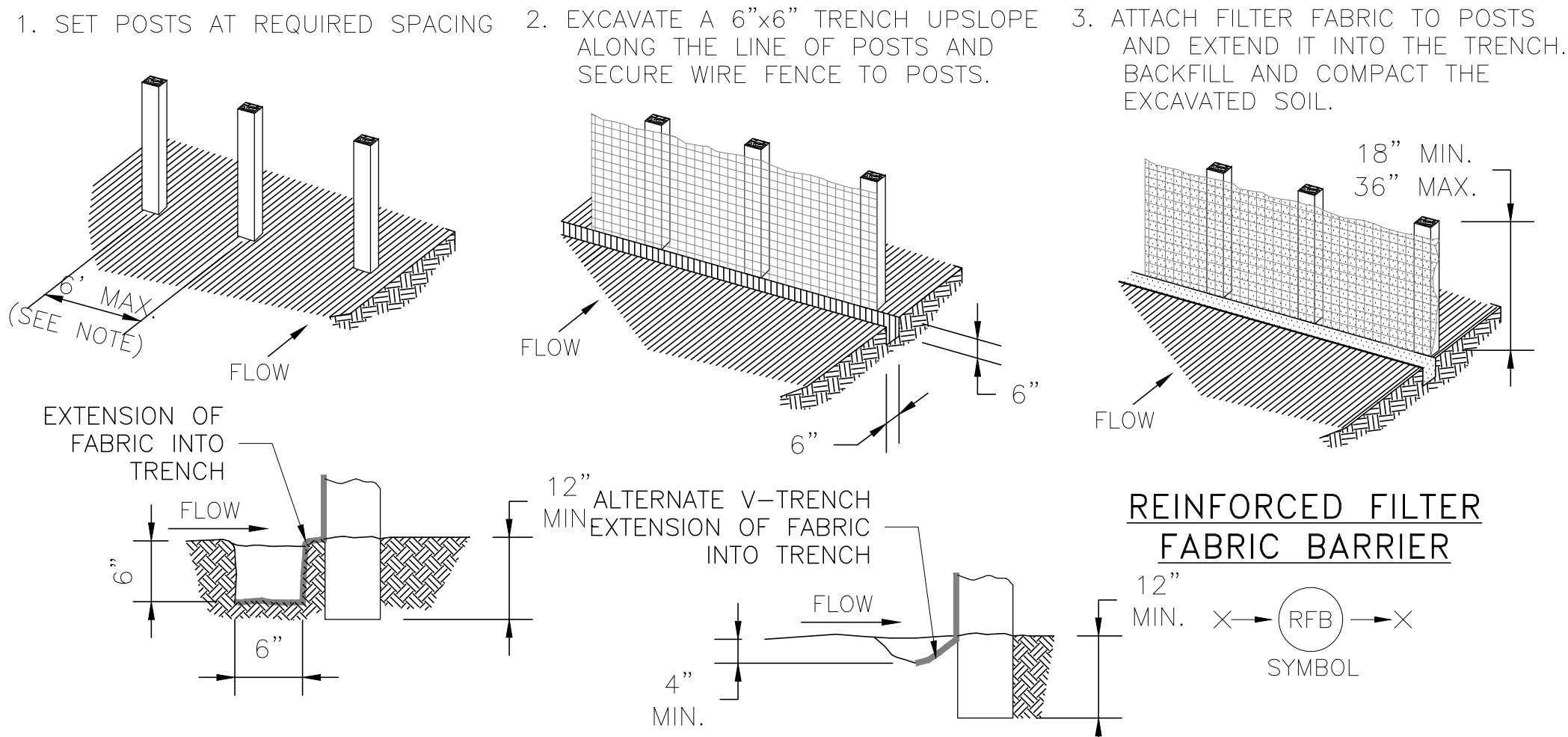
DWN. BY: JB

CHK. BY: POP

DATE: 04-22-2021

SHT. NO. C1.3

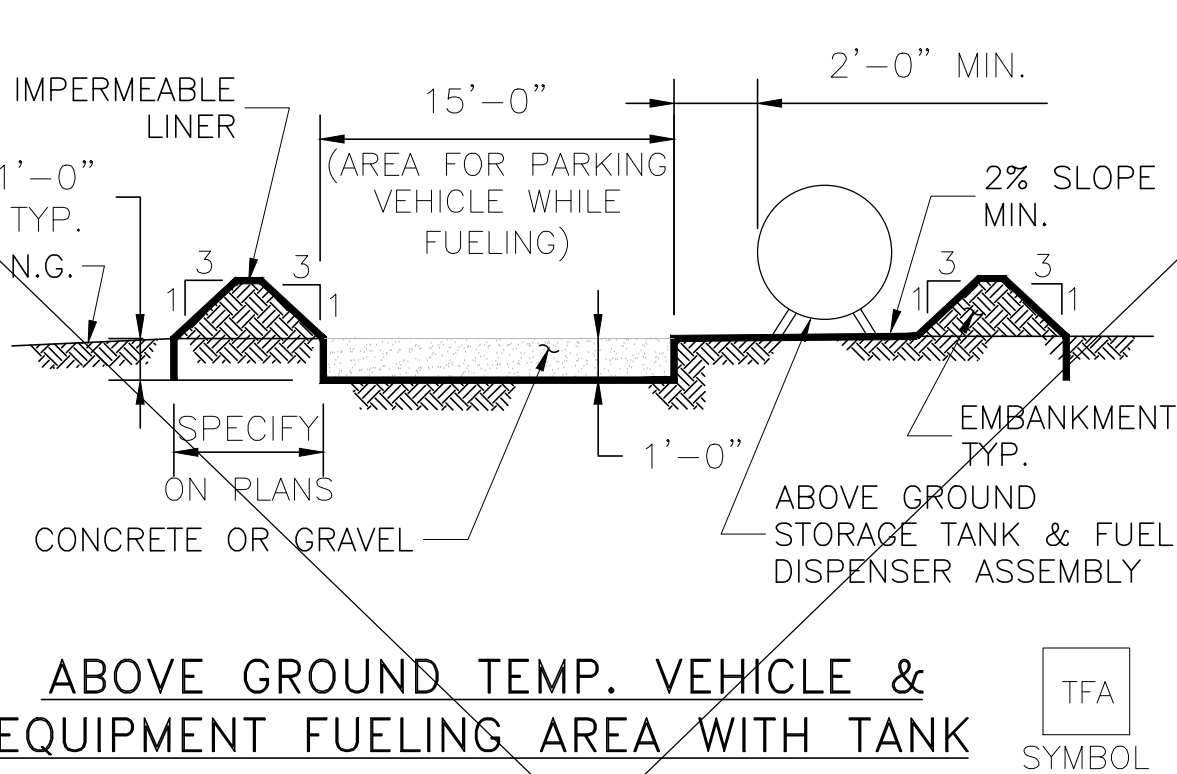
PORT OF PORT LAVACA, POINT COMFORT
 Provides Calhoun County Residents with Direct, Convenient Access to Coastal Markets
 2111 FM 1583, Bayport, TX 77521 (409) 647-2000 (TOLL FREE) TEXAS 77581
 (409) 647-2000 FAX (409) 647-4188 (409) 647-2000
 www.portofport.com



REINFORCED FILTER FABRIC BARRIER

GENERAL NOTES:

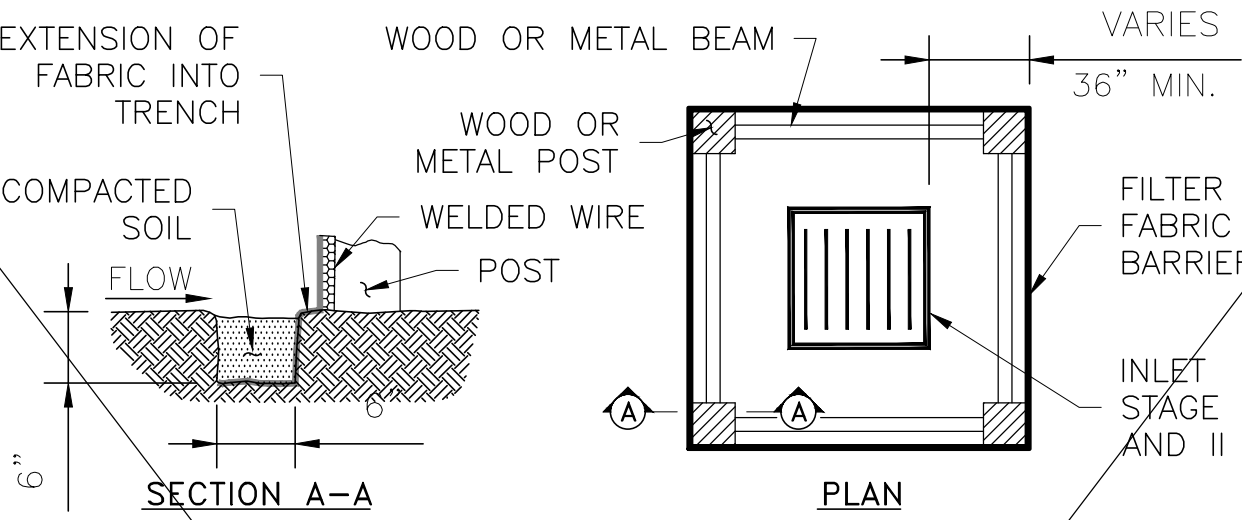
- SECURELY FASTEN MESH FENCING TO POSTS WITH STAPLES OR TIE WIRES.
- SECURELY FASTEN FILTER FABRIC TO MESH FENCING.
- WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, OVERLAP 6 INCHES AT A POST, FOLD TOGETHER, AND ATTACH TO A POST.
- REMOVE SEDIMENT DEPOSITS WHEN SILT REACHES ONE-THIRD OF THE HEIGHT OF THE FENCE IN DEPTH.



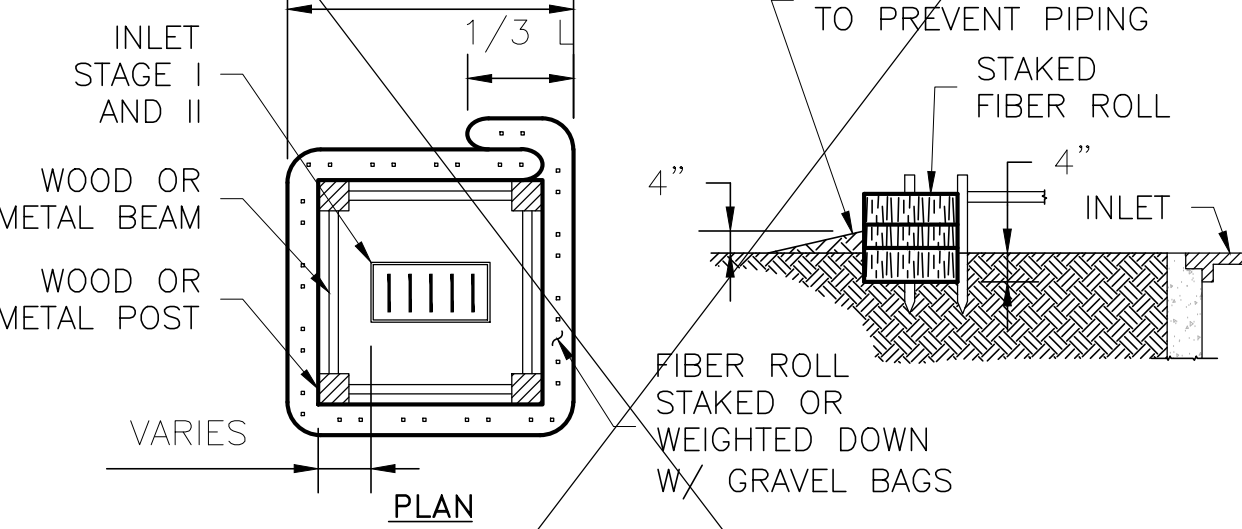
ABOVE GROUND TEMP. VEHICLE & EQUIPMENT FUELING AREA WITH TANK

GENERAL NOTES:

- THE SIZE OF TANK FOUNDATION AREA DEPENDS ON THE SIZE OF ABOVE GROUND STORAGE TANK AND DISPENSER ASSEMBLY.
- PROVIDE A MINIMUM SLOPE OF 2 % TOWARD THE SUMP PIT.
- INSTALL IMPERMEABLE LINER AS PER MANUFACTURER'S RECOMMENDATIONS.



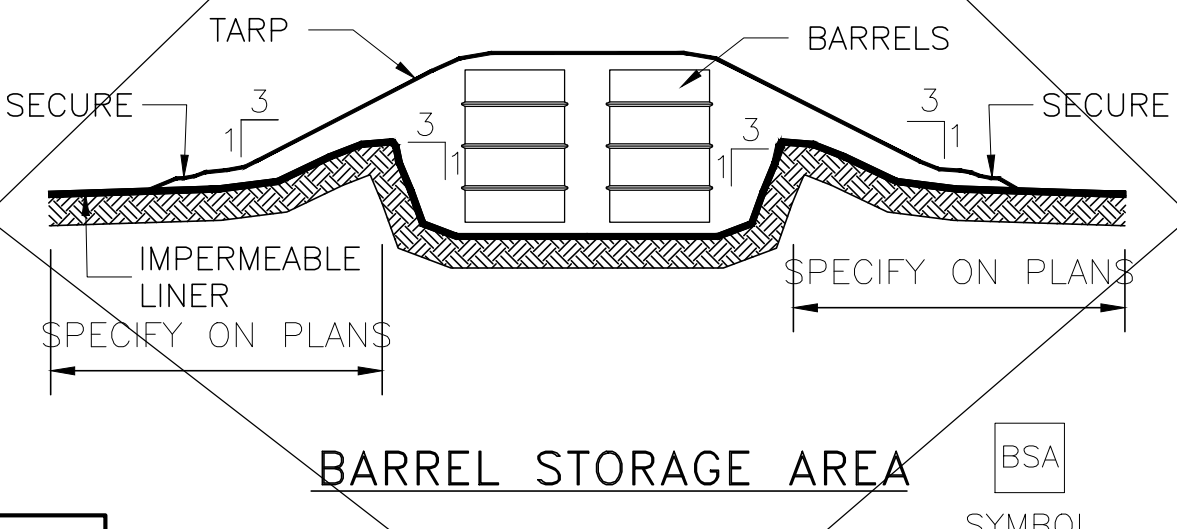
INLET PROTECTION BARRIER WITH REINFORCED FILTER FABRIC



INLET PROTECTION BARRIERS FOR STAGE I INLETS

GENERAL NOTES:

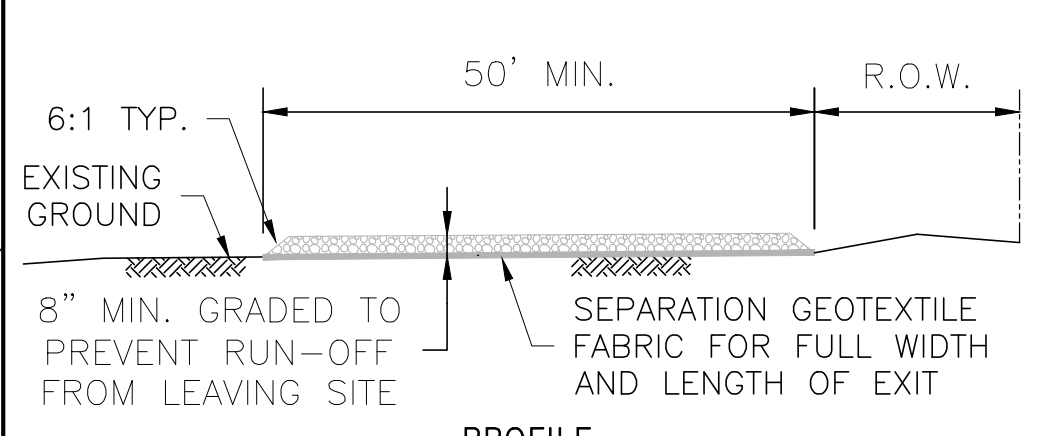
- FIBER ROLLS WILL BE UTILIZED ONLY WHEN SITE CONDITIONS DO NOT PERMIT THE USE OF FILTER FABRIC BARRIER, AND AS APPROVED BY THE ENGINEER.



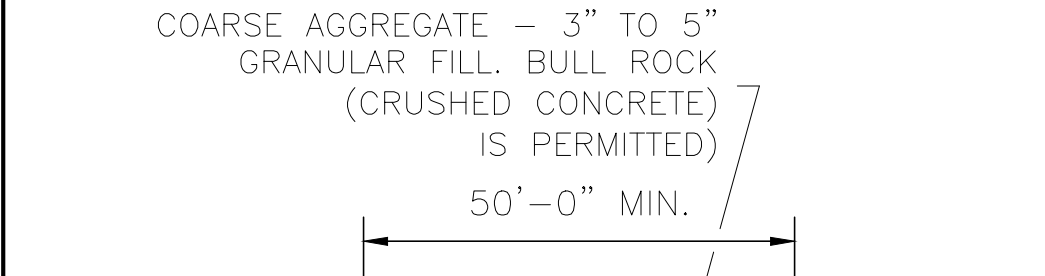
BARREL STORAGE AREA

GENERAL NOTES:

- ALTERNATIVELY, STORE BARRELS IN AN ENCLOSED BUILDING OR SHED.
- INSTALL IMPERMEABLE LINER AS PER MANUFACTURER'S RECOMMENDATIONS. 60 mil MINIMUM.
- CONSTRUCT BERMED AREA WITH VOLUME GREATER THAN OR EQUAL TO 110% VOLUME OF BARRELS.



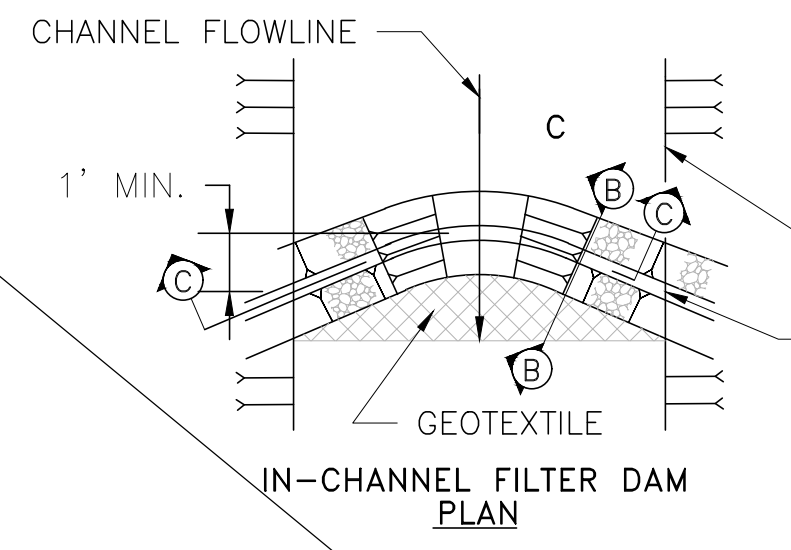
PROFILE



STABILIZED CONSTRUCTION ACCESS

GENERAL NOTES:

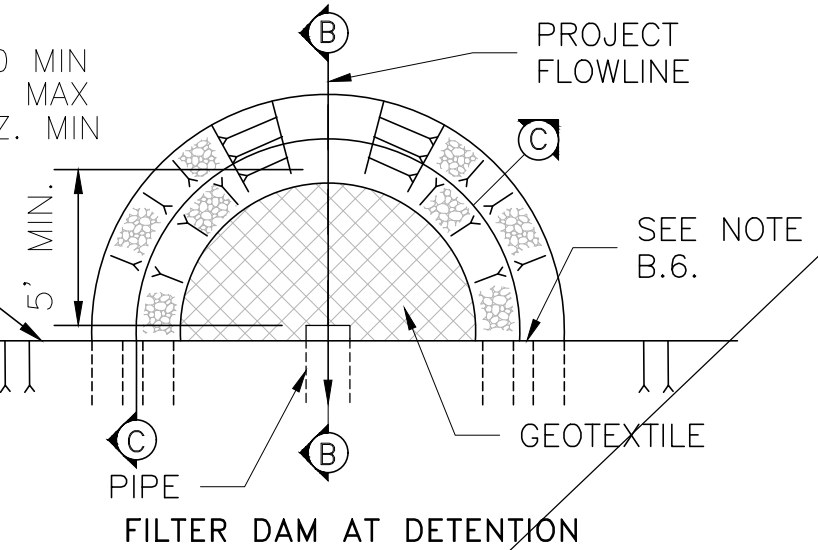
- MINIMUM LENGTH IS AS SHOWN ON CONSTRUCTION DRAWINGS OR 50 FEET, WHICHEVER IS MORE.
- CONSTRUCT AND MAINTAIN CONSTRUCTION EXIT WITH CONSTANT WIDTH ACROSS ITS LENGTH, INCLUDING ALL POINTS OF INGRESS OR EGRESS.
- UNLESS SHOWN ON THE CONSTRUCTION DRAWINGS, STABILIZATION FOR OTHER AREAS WILL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION EXIT.
- WHEN SHOWN ON THE CONSTRUCTION DRAWINGS, WIDEN OR LENGTHEN STABILIZED AREA TO ACCOMMODATE A TRUCK WASHING AREA. PROVIDE OUTLET SEDIMENT TRAP FOR THE TRUCK WASHING AREA.
- PROVIDE PERIODIC TOP DRESSING WITH ADDITIONAL COARSE AGGREGATE TO MAINTAIN THE REQUIRED DEPTH OR WHEN SURFACE BECOMES PACKED WITH MUD.
- PERIODICALLY TURN AGGREGATE TO EXPOSE A CLEAN DRIVING SURFACE.
- MINIMUM 14' WIDTH FOR ONE WAY TRAFFIC AND 20' WIDTH FOR TWO WAY TRAFFIC.



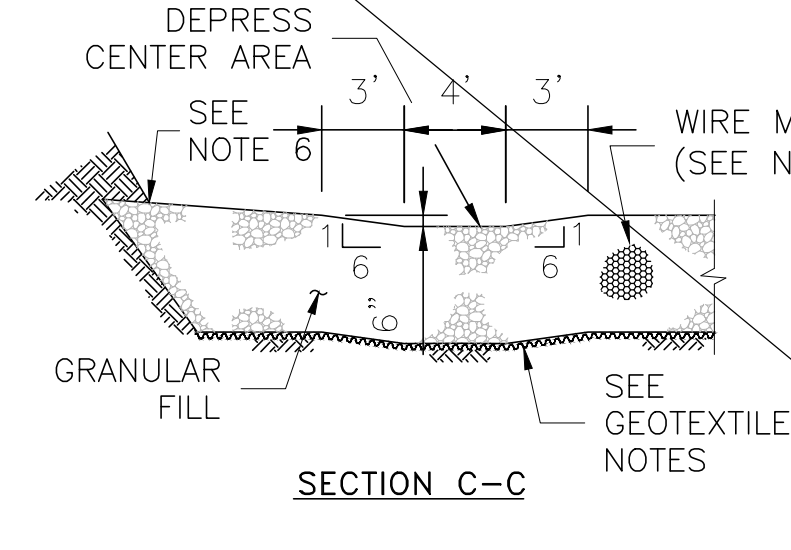
IN-CHANNEL FILTER DAM PLAN

GEOTEXTILE NOTES:

- MIN. AOS SIEVE NO. 120 MIN
 MAX. AOS SIEVE NO. 50 MAX
 WEIGHT OZ/SY 4 OZ. MIN



FILTER DAM AT DETENTION BASIN OUTFALL PIPE PLAN



SECTION C-C

FILTER DAM

RFD-TYPE

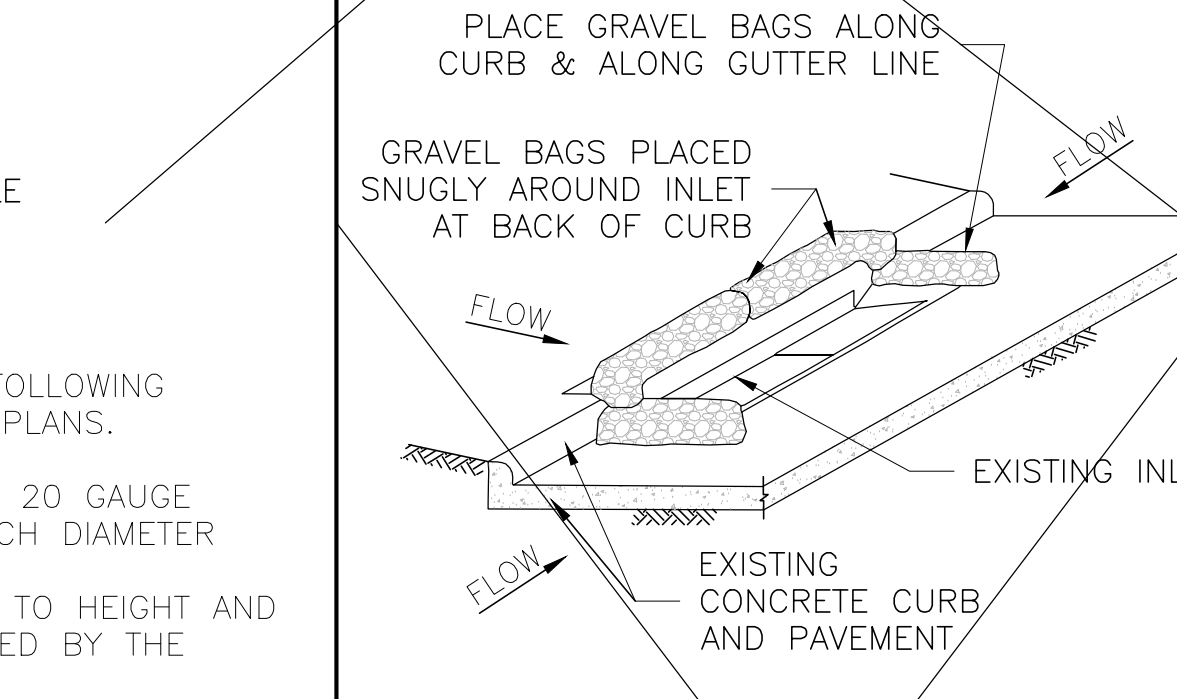
SECTION B-B

A. TYPES OF FILTER DAMS

- TYPE 1 (NON-REINFORCED)
 - HEIGHT - 18-24 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
 - TOP WIDTH - 2 FEET (MINIMUM)
 - SLOPES - 2:1 (MAXIMUM)
- TYPE 2 (REINFORCED)
 - HEIGHT - 18-36 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
 - TOP WIDTH - 2 FEET (MINIMUM)
 - SLOPES - 2:1 (MAXIMUM)
- TYPE 3 (REINFORCED)
 - HEIGHT - 36-48 INCHES. MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
 - TOP WIDTH - 2 FEET (MINIMUM)
 - SLOPES - 3:1 (MAXIMUM)
- TYPE 4 (GABION)
 - HEIGHT - 30 INCHES (MINIMUM). MEASURE VERTICALLY FROM EXISTING GROUND TO TOP OF FILTER DAM.
 - TOP WIDTH - 2 FEET (MINIMUM)
- TYPE 5. AS SHOWN ON THE PLANS.

B. CONSTRUCT FILTER DAMS ACCORDING TO THE FOLLOWING CRITERIA UNLESS SHOWN OTHERWISE ON THE PLANS.

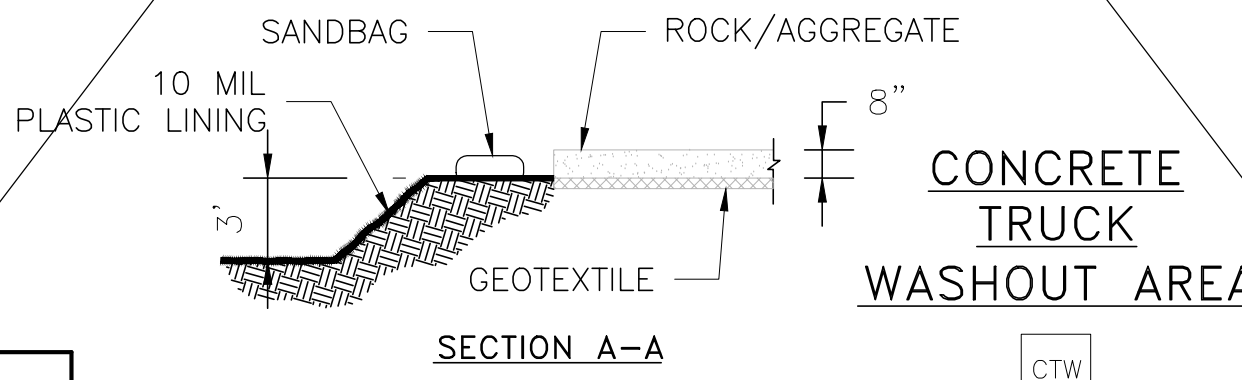
- TYPE 2 AND 3 FILTER DAMS: SECURE WITH 20 GAUGE GALVANIZED WOVEN WIRE MESH WITH 1 INCH DIAMETER HEXAGONAL OPENINGS.
- PLACE GRANULAR FILL ON THE WIRE MESH TO HEIGHT AND SLOPES SHOWN ON PLANS OR AS SPECIFIED BY THE ENGINEER.
 - 3-5 INCHES FOR ROCK FILTER DAM TYPES 1, 2 AND 4.
 - 4-8 INCHES FOR ROCK FILTER DAM TYPE REFER TO GRANULAR FILL IN SPECIFICATION SECTION No. 02378 RIPRAP AND GRANULAR FILL.
- FOLD WIRE MESH AT UPSTREAM SIDE OVER GRANULAR FILL AND TIGHTLY SECURED TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS.
- IN STREAMS: SECURE OR STAKE MESH TO STREAM BED PRIOR TO AGGREGATE PLACEMENT.
- SEE HCFCD SPECIFICATION SECTION No. 02364-FILTER DAMS.
- EMBED ONE FOOT MINIMUM INTO SLOPE AND RAISE ONE FOOT HIGHER THAN CENTER OF DEPRESSED AREA AT SLOPE.



INLET PROTECTION BARRIERS FOR STAGE II INLETS

GENERAL NOTES:

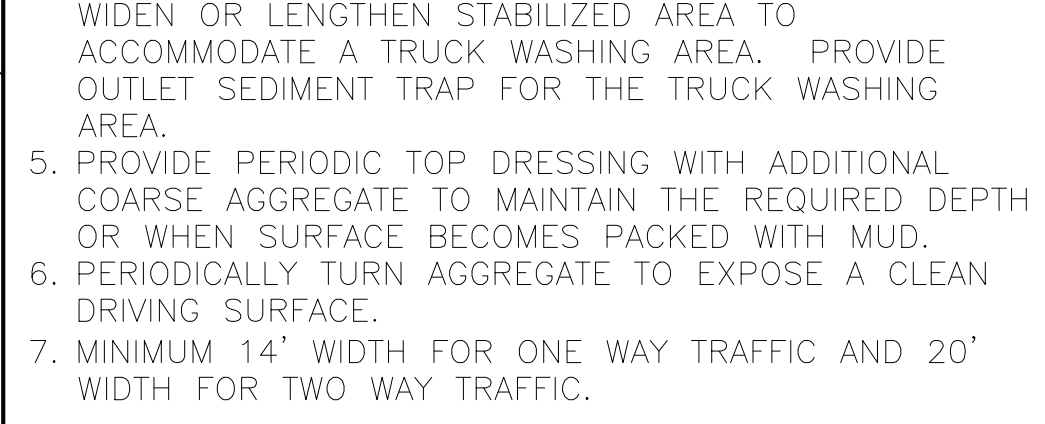
- REMOVE SEDIMENT DEPOSIT WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-THIRD THE HEIGHT OF THE BARRIER.
- GRAVEL BAGS SHALL NOT BLOCK THROAT OF INLET UNLESS DIRECTED BY ENGINEER.



CONCRETE TRUCK WASHOUT AREA

GENERAL NOTES:

- POST A SIGN READING "CONCRETE WASHOUT PIT" NEXT TO THE PIT.
- VERBALLY INSTRUCT THE CONCRETE TRUCK DRIVERS WHERE THE PIT IS AND TO WASHOUT THEIR TRUCKS IN THE PIT AND NOWHERE ELSE.
- UPON THE CONCRETE SETTING UP (CURING, DRYING OUT), THE CONCRETE WASTE SHALL BE REMOVED FROM THE PROJECT SITE AND DISPOSED OF PROPERLY BY THE CONTRACTOR. AFTER REMOVAL OF THE CONCRETE WASTE, THE WASHOUT PIT SHALL BE FILLED WITH CLEAN FILL MATERIAL AND COMPACTED TO IN-SITU CONDITIONS, OR AS DIRECTED BY THE PROJECT SPECIFICATIONS.
- CONCRETE WASHOUT PITS SHALL NOT BE LOCATED DIRECTLY ADJACENT TO, NOR AT ANY TIME DRAIN INTO THE STORM SEWER SYSTEM OR ANY OTHER SWALE, DITCH, OR WATERWAY.
- CONSTRUCT ENTRY ROAD AND BOTTOM OF WASHOUT AREA TO SUPPORT EXPECTED LOADINGS FROM TRUCKS EQUIPMENT.



CONCRETE WASHOUT PIT

GENERAL NOTES:

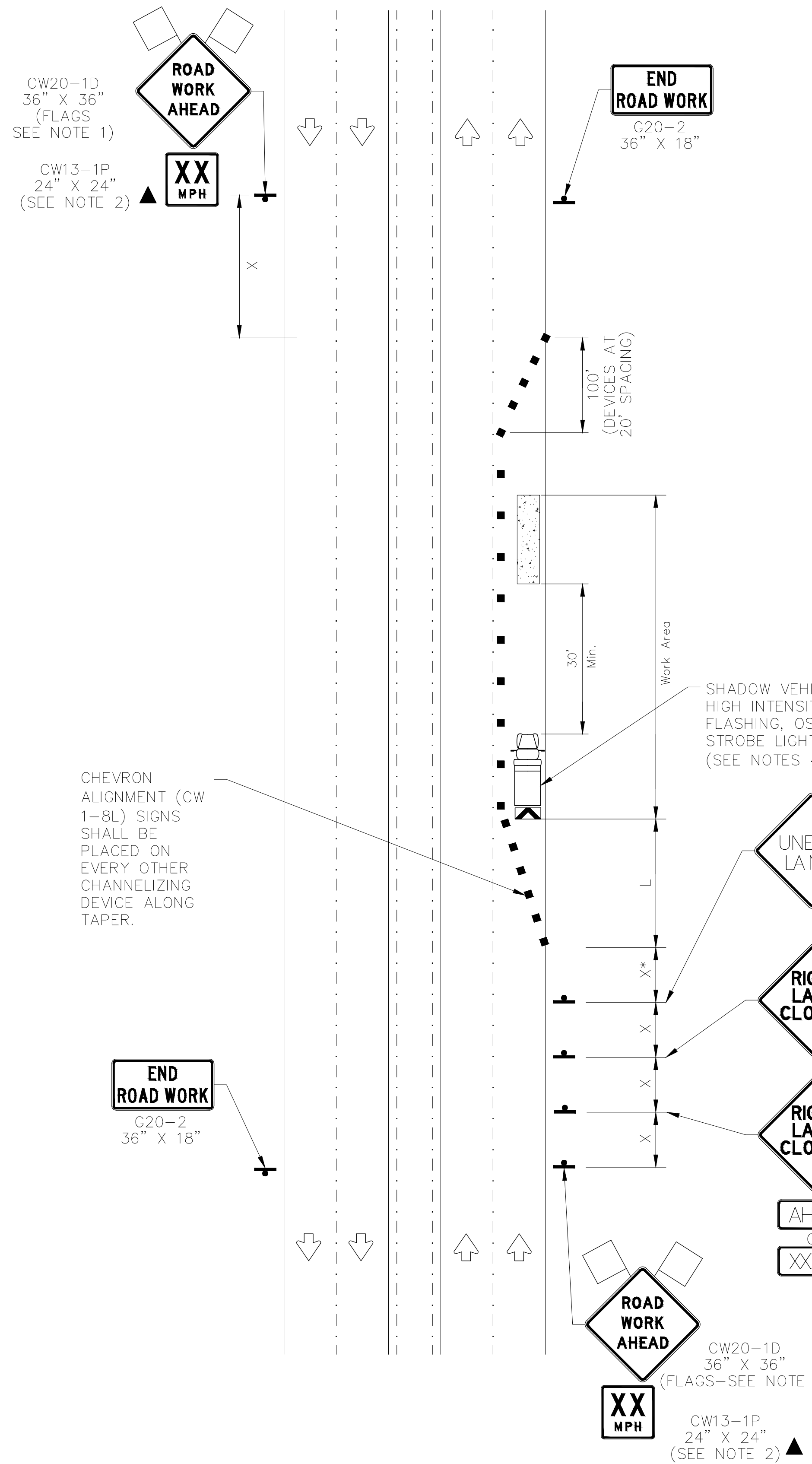
- POST A SIGN READING "CONCRETE WASHOUT PIT" NEXT TO THE PIT.
- VERBALLY INSTRUCT THE CONCRETE TRUCK DRIVERS WHERE THE PIT IS AND TO WASHOUT THEIR TRUCKS IN THE PIT AND NOWHERE ELSE.
- UPON THE CONCRETE SETTING UP (CURING, DRYING OUT), THE CONCRETE WASTE SHALL BE REMOVED FROM THE PROJECT SITE AND DISPOSED OF PROPERLY BY THE CONTRACTOR. AFTER REMOVAL OF THE CONCRETE WASTE, THE WASHOUT PIT SHALL BE FILLED WITH CLEAN FILL MATERIAL AND COMPACTED TO IN-SITU CONDITIONS, OR AS DIRECTED BY THE PROJECT SPECIFICATIONS.
- CONCRETE WASHOUT PITS SHALL NOT BE LOCATED DIRECTLY ADJACENT TO, NOR AT ANY TIME DRAIN INTO THE STORM SEWER SYSTEM OR ANY OTHER SWALE, DITCH, OR WATERWAY.
- CONSTRUCT ENTRY ROAD AND BOTTOM OF WASHOUT AREA TO SUPPORT EXPECTED LOADINGS FROM TRUCKS EQUIPMENT.

LOYD ENGINEERING, INC.
 Construction Management Design Dredge Inspections
 Owner's Engineer Permitting Assistance
 6565 West Loop South Houston, Texas 77401 (832)426-4666

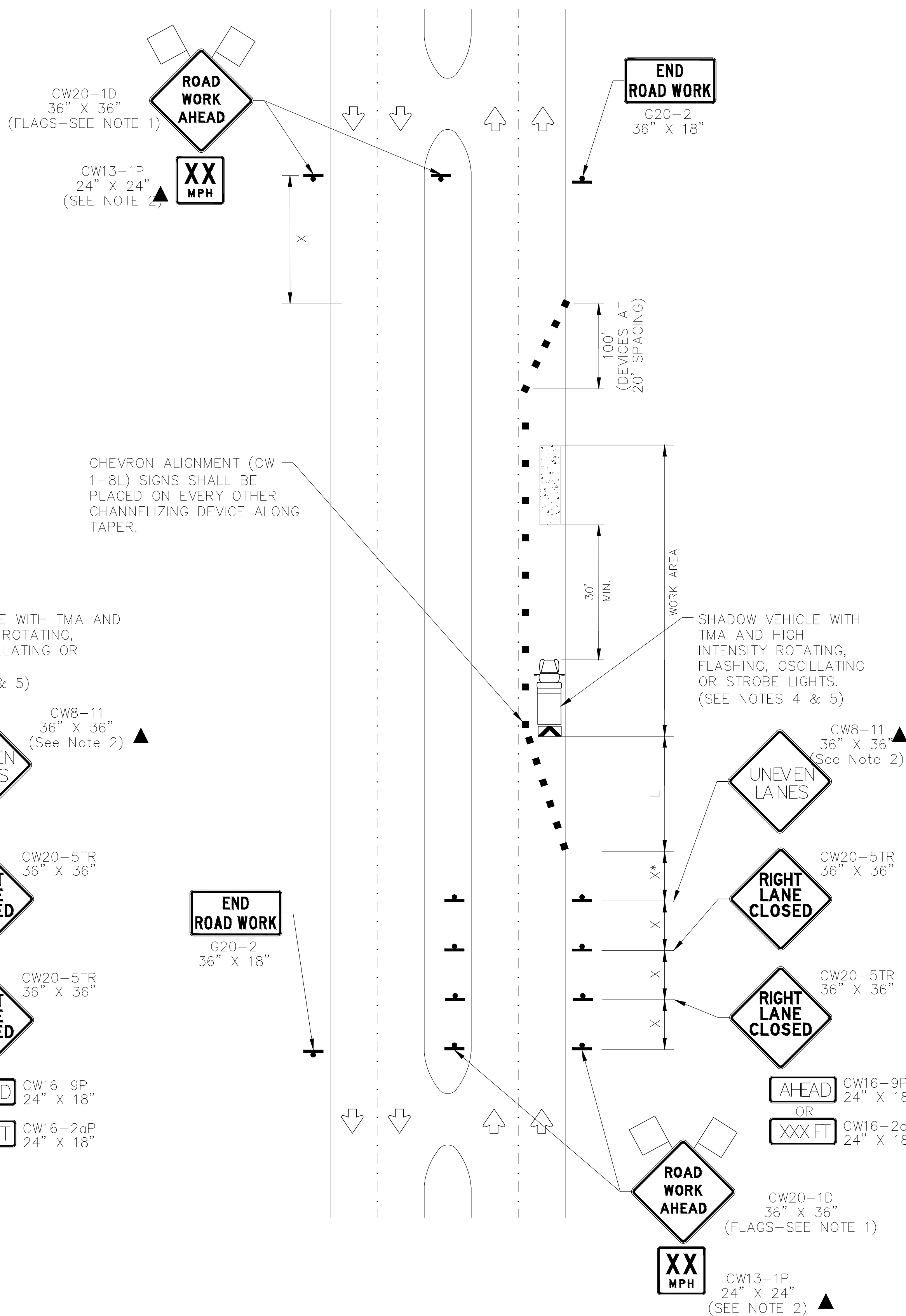
CALHOUN PORT AUTHORITY
 BEAN TRACT WETLAND
 STORM WATER POLLUTION PREVENTION DETAILS

CALHOUN Port Authority
 POINT COMFORT, TEXAS-K-USA
 PORT OF PORT LAVACA - POINT COMFORT
 Providing Calhoun County Residents with Deep-Sea Port Access to Global Markets
 2315th 155th SOUTH P.O. BOX 387 POINT COMFORT, TEXAS 77781
 (409) 362-2201 FAX (409) 362-2188 2313
 www.portauthority.com

| | |
|-------------------------------|------------------|
| ENGINEER: P.D. PARKER | PROJECT NO. |
| LICENSE NO.: 103694 | SCALE: AS NOTED |
| DATE: 09/01/2022 | DWN. BY: JB |
| REV. DATE DESCRIPTION BY CHK. | CHK. BY: POP |
| 09/01/22 ISSUED FOR BIDDING - | DATE: 04-22-2021 |
| | SHT. NO. C1.4 |



RIGHT LANE CLOSURE (5 LANE ROAD)



RIGHT LANE CLOSURE (4 LANE BOULEVARD ROAD)

| LEGEND | | | |
|--------|--------------------------------------|--|---|
| | BARRICADE | | CHANNELIZING DEVICES |
| | HEAVY WORK VEHICLE | | TRUCK MOUNTED ATTENUATOR (TMA) |
| | TRAILER MOUNTED FLASHING ARROW BOARD | | PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) |
| | SIGN | | TRAFFIC FLOW |
| | FLAG | | FLAGGER |

| POSTED SPEED * | FORMULA | MINIMUM DESIRABLE TAPER LENGTHS "L" | | | SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES | | MINIMUM SIGN SPACING "X" DISTANCE | SUGGESTED LONGITUDINAL BUFFER SPACE "B" |
|----------------|-----------|-------------------------------------|------------|------------|---|--------------|-----------------------------------|---|
| | | 10' OFFSET | 11' OFFSET | 12' OFFSET | ON A TAPER | ON A TANGENT | | |
| 30 | L = WS/60 | 150' | 165' | 180' | 30' | 60' | 120' | 90' |
| 35 | | 205' | 225' | 245' | 35' | 70' | 160' | 120' |
| 40 | | 265' | 295' | 320' | 40' | 80' | 240' | 155' |
| 45 | L = WS | 450' | 495' | 540' | 45' | 90' | 320' | 195' |
| 50 | | 500' | 550' | 600' | 50' | 100' | 400' | 240' |
| 55 | | 550' | 605' | 660' | 55' | 110' | 500' | 295' |
| 60 | | 600' | 660' | 720' | 60' | 120' | 600' | 350' |
| 65 | | 650' | 715' | 780' | 65' | 130' | 700' | 410' |
| 70 | 700' | 770' | 840' | 70' | 140' | 800' | 475' | |
| 75 | 750' | 825' | 900' | 75' | 150' | 900' | 540' | |

* CONVENTIONAL ROADS ONLY
 ** TAPER LENGTHS HAVE BEEN ROUNDED OFF.
 L=LENGTH OF TAPER(FT) W=WIDTH OF OFFSET(FT) S=POSTED SPEED(MPH)

GENERAL NOTES

1. FLAGS ATTACHED TO SIGNS WHERE SHOWN ARE OPTIONAL.
2. ALL TRAFFIC CONTROL DEVICES ILLUSTRATED ARE REQUIRED, EXCEPT THOSE DENOTED WITH THE TRIANGLE SYMBOL ARE OPTIONAL.
3. A SHADOW VEHICLE WITH A TMA SHOULD BE USED ANYTIME IT CAN BE POSITIONED 30 TO 100 FEET IN ADVANCE OF THE AREA OF CREW EXPOSURE WITHOUT ADVERSELY AFFECTING THE PERFORMANCE OR QUALITY OF THE WORK. IF WORKERS ARE NO LONGER PRESENT BUT ROAD OR WORK CONDITIONS REQUIRE THE TRAFFIC CONTROL TO REMAIN IN PLACE, BARRICADES OR OTHER CHANNELIZING DEVICES MAY BE SUBSTITUTED FOR THE SHADOW VEHICLE AND TMA.
4. ADDITIONAL SHADOW VEHICLES WITH TMAS MAY BE POSITIONED OFF THE PAVED SURFACE, NEXT TO THOSE SHOWN IN ORDER TO PROTECT WIDER WORK SPACES.
5. CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD - LATEST EDITION WITH REVISIONS) DURING CONSTRUCTION.
6. OFF DUTY POLICE OFFICERS/FLAGGERS ARE REQUIRED TO DIRECT TRAFFIC WHEN APPLICABLE.

THIS DOCUMENT IS RELEASED FOR BIDDING ONLY UNDER THE AUTHORITY OF
 ENGINEER: P.D. PARKER
 LICENSE NO.: 103694
 DATE: 09/01/2022
 IT IS NOT TO BE USED FOR CONSTRUCTION, INTERIM REVIEW OR PERMIT PURPOSES.

| | | | | |
|------|----------|--------------------|----|------|
| REV. | DATE | DESCRIPTION | BY | CHK. |
| △ | | | | |
| △ | | | | |
| △ | | | | |
| △ | 09/01/22 | ISSUED FOR BIDDING | - | POP |

Texas Registered Engineering Firm F-02846
LOYD ENGINEERING, INC.
 Construction Management Design Dredge Inspections
 Owner's Engineer Permitting Assistance
 6565 West Loop South Houston, Texas 77011 (832)426-4666

CALHOUN PORT AUTHORITY
 BEAN TRACT WETLAND
 TRAFFIC CONTROL PLAN

PORT OF PORT LAVACA - POINT COMFORT
 Providing Calhoun County Residents with Direct, Deep-Draft Access to Global Markets
 2313 FM 1553 SOUTH, P.O. BOX 387 POINT COMFORT, TEXAS 77378
 (817) 882-2810 FAX (817) 882-2188 2313
 www.portofport.com

CALHOUN Port Authority
 POINT COMFORT, TEXAS - U.S.A.

PROJECT NO.
 SCALE: AS NOTED
 DWN. BY: JB
 CHK. BY: POP
 DATE: 04-22-2021
 SHT. NO. C1.5



PROP. ARMORED LEVEE WITH
ARTICULATED CONCRETE MAT APPROX.
1,655 LINEAR FT +5.0 FT NAVD 88

PROP. ~2,500 LF
ROADWAY & SWALE

PROP. CIRCULATION CHANNELS
-2.0 TO -3.0 NAVD 88.
20-FT TOP WIDTH

CONTRACTOR TO PROVIDE
ACCESS FROM ROADWAY TO
BERM ACCESS. AT COMPLETION
OF CONSTRUCTION, RESTORE
AREA TO ORIGINAL CONDITION.

CONTRACTOR TO PROVIDE
ACCESS FROM ROADWAY TO
BERM ACCESS. AT COMPLETION
OF CONSTRUCTION, RESTORE
AREA TO ORIGINAL CONDITION.

PROP. LEVEE APPROX. 1,100 LINEAR FT
+2.0 FT TO +3.0 FT NAVD 88

VOLUMES:
LEVEE CUT 43,000 Cu. Yd.

THIS DOCUMENT IS RELEASED FOR
BIDDING ONLY UNDER THE AUTHORITY OF
THE ENGINEER.
ENGINEER: P.O. PARKER
LICENSE NO.: 103894
DATE: 09/01/2022
IT IS NOT TO BE USED FOR
CONSTRUCTION, INTERIM REVIEW OR
PERMIT PURPOSES.

| △ | | | | | |
|------|----------|--------------------|----|------|--|
| △ | | | | | |
| △ | | | | | |
| △ | 09/01/22 | ISSUED FOR BIDDING | - | POP | |
| REV. | DATE | DESCRIPTION | BY | CHK. | |

| | |
|-------------|------------|
| PROJECT NO. | |
| SCALE: | AS NOTED |
| DWN. BY: | JB |
| CHK. BY: | POP |
| DATE: | 04-22-2021 |
| SHT. NO. | C2.0 |

Texas Registered Engineering Firm F-02846
LOYD
ENGINEERING, INC.
Construction Management Design Dredge Inspections
Owner's Engineer Permitting Assistance
6565 West Loop South Houston, Texas 77401 (832)426-4656

CALHOUN PORT AUTHORITY
BEAN TRACT WETLAND
PERMANENT LEVEE
SITE PLAN

PORT OF PORT LAVACA, POINT COMFORT
Provides Calhoun County Residents with Direct Online Access to Critical Marine
2019 FM 1581 (08/01/19) & 2019 FM 1581 (08/01/19) COMBINED TEXAS 7799
(832) 487-3431 FAX (832) 487-4188-2011
www.portofport.com

CALHOUN
Port Authority
POINT COMFORT, TEXAS 77954



PROP. ARMORED LEVEE WITH
ARTICULATED CONCRETE MAT APPROX.
1,655 LINEAR FT +5.0 FT NAVD 88

PROP. ~2,605 LF
ROADWAY & SWALE

72485 SQ. F.T

5735 SQ. F.T

N: 13436057.57
E: 2747301.24

N: 13435996.57
E: 2747480.28

1835 SQ. F.T

N: 13435984.21
E: 2747408.34

PROP. CIRCULATION CHANNELS
-2.0 TO -3.0 NAVD 88.
20-FT TOP WIDTH

284786 SQ. F.T.

N: 13435882.51
E: 2747357.49

8158 SQ. F.T

66171 SQ. F.T.

N: 13435766.20
E: 2747317.53

4468 SQ. F.T

PROP. LEVEE APPROX. 1,100 LINEAR FT
+2.0 FT TO +3.0 FT NAVD 88

LEGEND:

- HIGH MARSH AREA EL. +2.00' TO +3.00'
- LOW MARSH AREA EL. +0.50' TO +1.65'
- LEVEE EL. +5.00'
- LEVEE EL. +3.00'

ESTIMATED APPROXIMATE NEATLINE VOLUMES:

| | |
|--------------------------------------|----------------------|
| HIGH MARSH AREA EL. +2.00' TO +3.00' | 10,000 Cu.Yd. |
| LOW MARSH AREA EL. +0.50' TO +1.65' | 60,000 Cu.Yd. |
| LEVEE EL. +5.00' | 12,000 Cu.Yd. |
| LEVEE EL. +3.00' | 6,500 Cu.Yd. |
| TOTAL = | 88,500 Cu.Yd. |

NOTE:
PER PROPOSAL REQUIREMENTS, CONTRACTOR TO PROVIDE DETERMINATION FOR MATERIAL NEEDED FOR CONSTRUCTION. THE VOLUMES PROVIDED ARE NEATLINE ESTIMATES ONLY AND ARE NOT TO BE USED AS A BASIS FOR BIDDING.

THIS DOCUMENT IS RELEASED FOR BIDDING ONLY UNDER THE AUTHORITY OF THE ENGINEER.
ENGINEER: P.O. PARKER
LICENSE NO.: 103894
DATE: 09/01/2022
IT IS NOT TO BE USED FOR CONSTRUCTION, INTERIM REVIEW OR PERMIT PURPOSES.

| | | | | |
|------|----------|--------------------|----|------|
| REV. | DATE | DESCRIPTION | BY | CHK. |
| △ | 09/01/22 | ISSUED FOR BIDDING | - | POP |

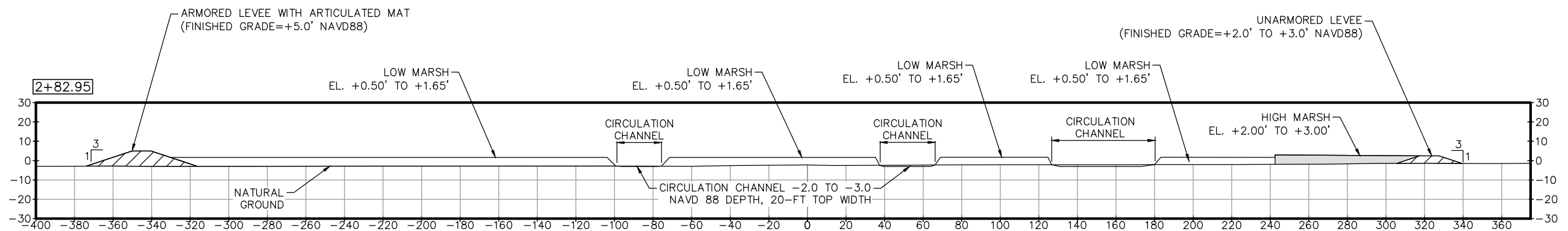
| | |
|-------------|------------|
| PROJECT NO. | |
| SCALE: | AS NOTED |
| DWN. BY: | JB |
| CHK. BY: | POP |
| DATE: | 04-22-2021 |
| SHT. NO. | C3.0 |

CALHOUN PORT AUTHORITY
BEAN TRACT WETLAND
PLACEMENT AREA
SITE PLAN

LOYD ENGINEERING, INC.
Texas Registered Engineering Firm F-02846
Construction Management Design Dredge Inspections
Permitting Assistance
Owner's Engineer
6565 West Loop South Houston, Texas 77401 (832)426-4656

PORT OF PORT LAVACA, POINT CONROE
Providing Calhoun County Residents with Direct Online Access to Critical Marine
2019 FM 1583 (800) 678-6788 • 800 699-5487 • 409-6805 • TEXAS 77581
(800) 873-8375 • FAX (800) 873-4882 • 2011
www.calhounport.com





A
C2.0 TYPICAL OVERALL CROSS SECTION

THIS DOCUMENT IS RELEASED FOR BIDDING ONLY UNDER THE AUTHORITY OF
 ENGINEER: P.O. PARKER
 LICENSE NO.: 103894
 DATE: 09/01/2022
 IT IS NOT TO BE USED FOR CONSTRUCTION, INTERIM REVIEW OR PERMIT PURPOSES.

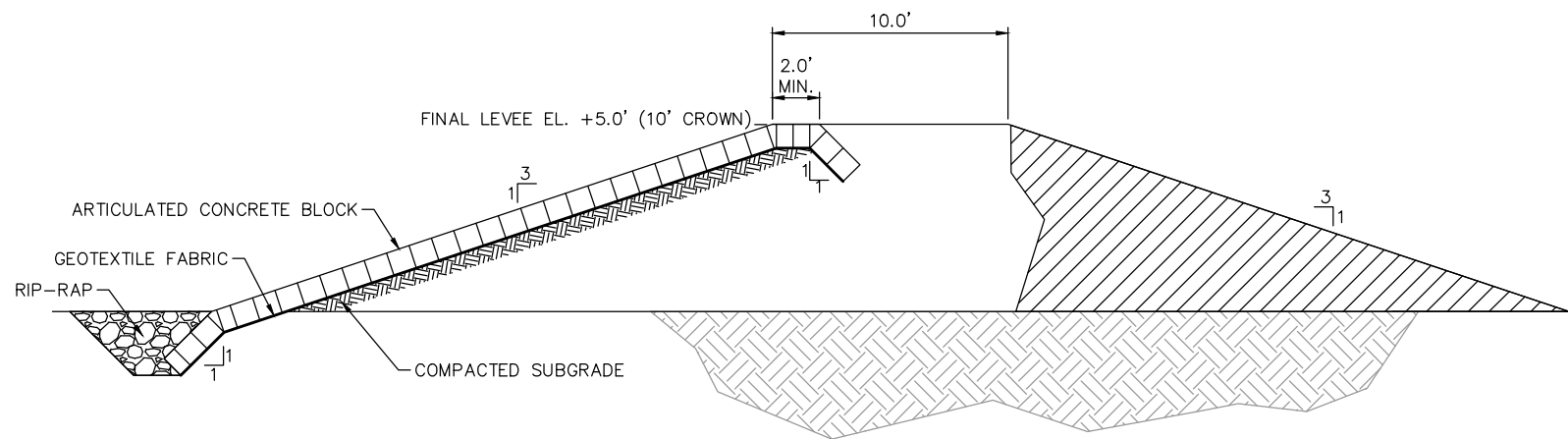
| REV. | DATE | DESCRIPTION | BY | CHK. |
|------|----------|--------------------|----|------|
| △ | | | | |
| △ | | | | |
| △ | | | | |
| △ | 09/01/22 | ISSUED FOR BIDDING | - | POP |

PROJECT NO.
 SCALE: AS NOTED
 DWN. BY: JB
 CHK. BY: POP
 DATE: 04-22-2021
 SH. NO. C3.1

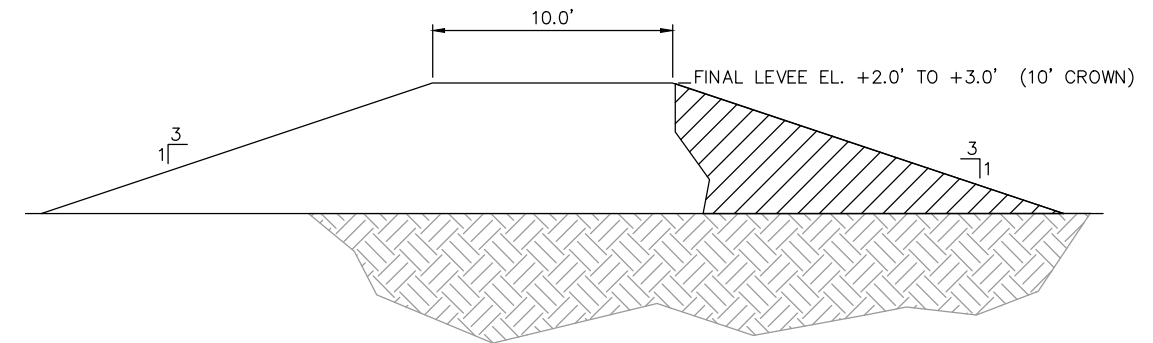
LOYD ENGINEERING, INC.
 Texas Registered Engineering Firm F-02846
 Construction Management Design Dredge Inspections
 Owner's Engineer Permitting Assistance
 6565 West Loop South Houston, Texas 77401 (832)26-4656

CALHOUN PORT AUTHORITY
 BEAN TRACT WETLAND
 TYPICAL OVERALL SECTION

PORT OF PORT LAVACA, POINT COMFORT
 PROVIDES CALHOUN COUNTY MARSHES AND TRACTS FOR BIDDING TO LOCAL MARSHES
 2101 FM 1585 BAYTOWN, TX 77520 (409) 847-4200 FAX (409) 847-4201
 WWW.PORTEXPORT.COM



A PERMANENT ARMORED LEVEE TYPICAL SECTION DETAIL
SCALE: 1:4



A PERMANENT UNARMORED LEVEE TYPICAL SECTION DETAIL
SCALE: 1:4

HORIZONTAL AND VERTICAL CONTROL:

- COORDINATES SHOWN ARE STATE PLANE GRID, TEXAS SOUTH ZONE, NAVD 1988 DATUM IN U.S. FEET.
- ALL ELEVATIONS SHOWN REFER TO MLLW, MEAN LOWER LOW WATER DATUM, UNLESS NOTED OTHERWISE.

GENERAL NOTES:

- REMOVE AND DISPOSAL OF ALL DEBRIS FROM THE SLOPE AREA PRIOR TO PLACING THE NEW STONE.
- CONTRACTOR TO SUBMIT CROSS SECTION AFTER THE WORK IS FINISHED TO ENGINEERS & OWNERS FOR APPROVAL.

THIS DOCUMENT IS RELEASED FOR BIDDING ONLY UNDER THE AUTHORITY OF
 ENGINEER: P.O. PARKER
 LICENSE NO.: 103894
 DATE: 09/01/2022
 IT IS NOT TO BE USED FOR CONSTRUCTION, INTERIM REVIEW OR PERMIT PURPOSES.

| △ | | | | | |
|------|----------|--------------------|----|------|--|
| △ | | | | | |
| △ | | | | | |
| △ | 09/01/22 | ISSUED FOR BIDDING | - | POP | |
| REV. | DATE | DESCRIPTION | BY | CHK. | |

Texas Registered Engineering Firm F-02846
LOYD ENGINEERING, INC.
 Construction Management Design Dredge Inspections
 Owner's Engineer Permitting Assistance
 6565 West Loop South Houston, Texas 77401 (832)426-4656

CALHOUN PORT AUTHORITY
 BEAN TRACT WETLAND
 TYPICAL CROSS SECTION
 DETAILS

PORT OF PORT LAVACA, POINT COMFORT
 PROVIDES CALHOUN COUNTY MARINERS AND FISHERMEN WITH FREE ACCESS TO LOCAL MARINERS
 2101 FM 1581 BAYTOWN, TX 77520 (409) 687-4800 FAX (409) 687-4805 TEXAS 7788
 (409) 687-4817 FAX (409) 687-4800
 WWW.CALHOUNPORT.COM



PROJECT NO.
 SCALE: AS NOTED
 DWN. BY: JB
 CHK. BY: POP
 DATE: 04-22-2021
 SHT. NO. C3.2



Texas Registered Engineering Firm F-02846

LOYD
ENGINEERING, INC.

Construction Management Design Dredge Inspections
Owner's Engineer Permitting Assistance

6565 West Loop South Houston, Texas 77401 (832)426-4656

CALHOUN PORT AUTHORITY
BEAN TRACT WETLAND
BORROW AREA
SITE LAYOUT

PORT OF PORT LAVACA, POINT CONROFT
Providing Calhoun County with water and port facilities to the Gulf of Mexico

2111 FM 1583, Bayport, TX 77521 (409) 647-4200 (TX) 409 647 4200
(409) 647 4200 FAX (409) 647 4201
www.portofport.com



THIS DOCUMENT IS RELEASED FOR BIDDING ONLY UNDER THE AUTHORITY OF

ENGINEER: P.O. PARKER
LICENSE NO.: 103894
DATE: 09/01/2022

IT IS NOT TO BE USED FOR CONSTRUCTION, INTERIM REVIEW OR PERMIT PURPOSES.

| REV. | DATE | DESCRIPTION | BY | CHK. |
|------|----------|--------------------|----|------|
| △ | | | | |
| △ | | | | |
| △ | | | | |
| △ | 09/01/22 | ISSUED FOR BIDDING | - | POP |

| | |
|-------------|------------|
| PROJECT NO. | |
| SCALE: | AS NOTED |
| DWN. BY: | JB |
| CHK. BY: | POP |
| DATE: | 04-22-2021 |
| SHT. NO. | C3.3 |

SCOPE OF WORK:

**GEOTECHNICAL SUBSURFACE
INVESTIGATION AND
RECOMMENDATIONS FOR THE
PROPOSED BENEFICIAL USE
MITIGATION**



- GEOTECHNICAL ENGINEERING
 - MATERIALS ENGINEERING & TESTING
 - SOILS • ASPHALT • CONCRETE
-

GEOTECHNICAL SUBSURFACE INVESTIGATION AND RECOMMENDATIONS
FOR THE PROPOSED
BENEFICIAL USE MITIGATION; PORT OF PORT LAVACA (SWG-2016-01066)
CALHOUN COUNTY, TEXAS

RETL REPORT NUMBER: G122209

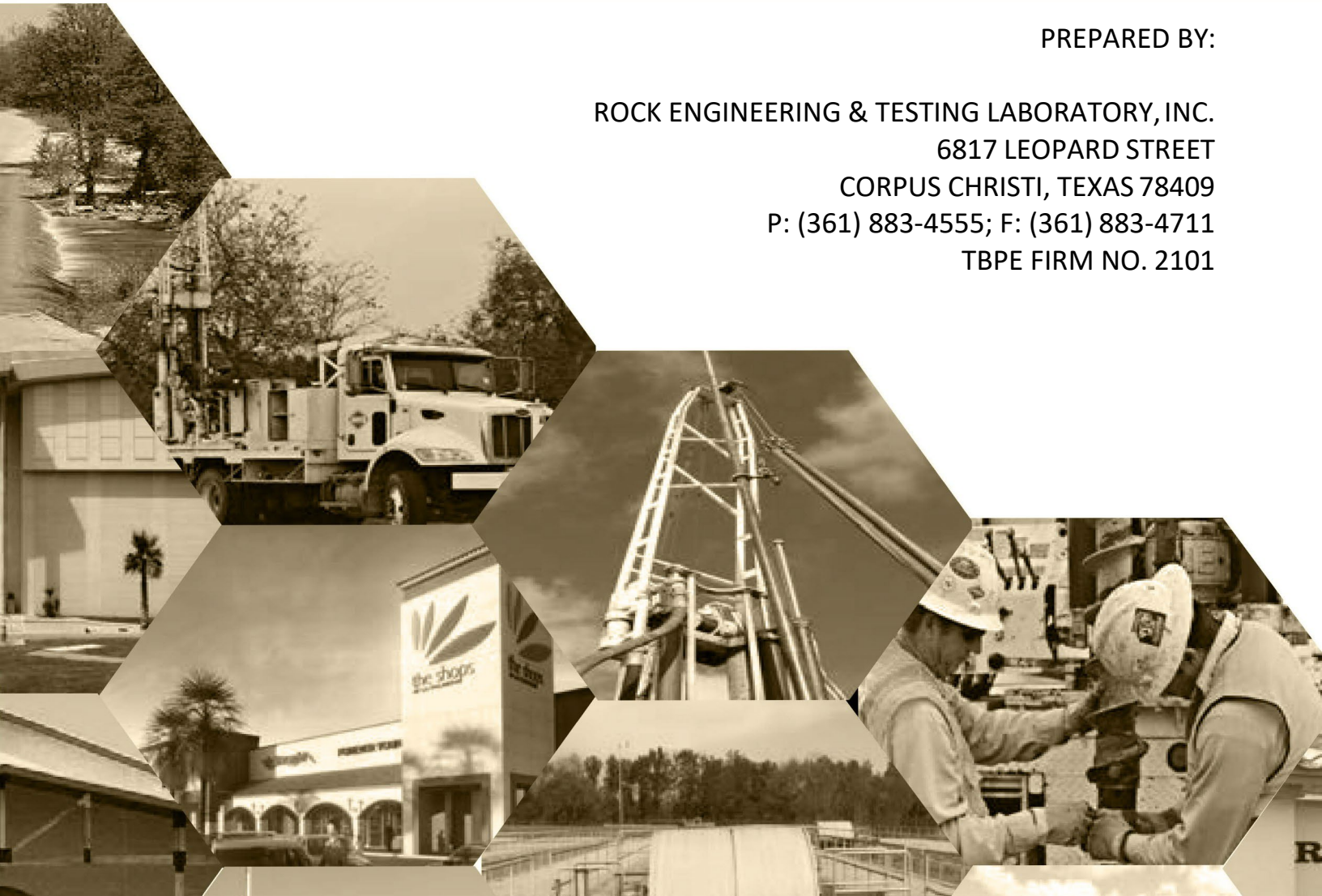
PREPARED FOR:

BELAIRE ENVIRONMENTAL, INC.
P.O. BOX 741
ROCKPORT, TEXAS 78381

MAY 31, 2022

PREPARED BY:

ROCK ENGINEERING & TESTING LABORATORY, INC.
6817 LEOPARD STREET
CORPUS CHRISTI, TEXAS 78409
P: (361) 883-4555; F: (361) 883-4711
TBPE FIRM NO. 2101





- GEOTECHNICAL ENGINEERING
- CONSTRUCTION MATERIALS ENGINEERING & TESTING
- SOILS • ASPHALT • CONCRETE

May 31, 2022

Belaire Environmental, Inc.
P.O. Box 741
Rockport, Texas 78381

Attention: Ms. Laura Fox

**SUBJECT: SUBSURFACE INVESTIGATION, LABORATORY TESTING PROGRAM,
AND GEOTECHNICAL RECOMMENDATIONS
FOR THE PROPOSED
BENEFICIAL USE MITIGATION; PORT OF PORT LAVACA
(SWG-2016-01066)
Calhoun County, Texas
RETL Job No. – G122209**

Dear Ms. Fox,

In accordance with our agreement, we have conducted a subsurface investigation, laboratory testing program, and geotechnical evaluation for the above referenced project. The results of this investigation, together with our recommendations, are to be found in the accompanying report, one electronic copy of which is being transmitted herewith for your records and distribution to the design team.

Often, because of design and construction details that occur on a project, questions arise concerning soil conditions and Rock Engineering and Testing Laboratory, Inc. (RETL) (TBPE Firm No. 2101), would be pleased to continue its role as the Geotechnical Engineer during project implementation.

RETL also has great interest in providing materials testing and observation services during the construction phase of this project. If you will advise us of the appropriate time to discuss these engineering services, we will be pleased to meet with you at your convenience.

Sincerely,

A handwritten signature in blue ink, appearing to read "Mark C. Rock".

Mark C. Rock, P.E.
Senior Consultant

ROCK ENGINEERING & TESTING LABORATORY, INC.

Corpus Christi

Office: 361.883.4555
Fax: 361.883.4711
6817 Leopard St.
Corpus Christi, TX 78409

San Antonio

Office: 210.495.8000
Fax: 210.495.8015
10856 Vandale
San Antonio, TX 78216

Round Rock

Office: 512.284.8022
Fax: 512.284.7764
7 Roundville Ln.
Round Rock, TX 78664

**SUBSURFACE INVESTIGATION, LABORATORY TESTING PROGRAM, AND
GEOTECHNICAL RECOMMENDATIONS
FOR THE PROPOSED
BENEFICIAL USE MITIGATION; PORT OF PORT LAVACA (SWG-2016-01066)
CALHOUN COUNTY, TEXAS
RETL PROPOSAL NUMBER: CGP031821A (REVISION 3)**

RETL REPORT NUMBER: G122209

PREPARED FOR:

**BELAIRE ENVIRONMENTAL, INC.
P.O. BOX 741
ROCKPORT, TEXAS 78381**

MAY 31, 2022

PREPARED BY:

**ROCK ENGINEERING AND TESTING LABORATORY, INC.
6817 LEOPARD STREET
CORPUS CHRISTI, TEXAS 78409
PHONE: (361) 883-4555; FAX: (361) 883-4711**

TEXAS PROFESSIONAL ENGINEERING FIRM NO. 2101



**James P. Bauer, P.E.
Corpus Christi Branch Manager**



**Francisco J. Arias, P.E.
Senior Project Engineer**



TABLE OF CONTENTS

| | <u>Page</u> |
|--|-------------|
| INTRODUCTION | 1 |
| Authorization..... | 1 |
| Purpose and Scope..... | 1 |
| General..... | 1 |
| SITE DESCRIPTION | 2 |
| FIELD EXPLORATION | 2 |
| Scope..... | 2 |
| Drilling and Sampling Procedures..... | 4 |
| Field Tests and Observations..... | 4 |
| LABORATORY TESTING PROGRAM | 4 |
| SUBSURFACE CONDITIONS | 5 |
| General..... | 5 |
| Soil Conditions..... | 5 |
| Water Depth Observations..... | 7 |
| OSHA Soil Type Classification..... | 7 |
| GEOTECHNICAL DISCUSSION AND RECOMMENDATIONS | 8 |
| Project Description..... | 8 |
| Construction Sequence..... | 9 |
| Soil Bearing Capacity..... | 11 |
| Slope Stability of the Levees..... | 11 |
| Settlement Calculations..... | 12 |
| Unsurfaced Aggregate Pavement Recommendations..... | 13 |
| Pavement Subgrade Preparation..... | 14 |
| Drainage and Maintenance of Pavement Systems..... | 15 |
| CONSTRUCTION CONSIDERATIONS | 15 |
| Site Preparation..... | 15 |
| Levee Construction..... | 15 |
| Earthwork and Acceptance..... | 16 |
| Dredge Fill Material..... | 16 |
| Select Fill..... | 17 |
| GENERAL COMMENTS | 17 |
| APPENDIX: | |
| Site Vicinity Map | |
| Boring and Test Pit Location Plan | |
| Boring Logs B-1 to B-9, TR-1 to TR-4 | |
| Test Pit logs TP-1 and TP-2 | |
| Key to Soil Classification and Symbols | |
| Levee Slope Stability Analysis Results | |
| Standard Proctor Test Results | |

INTRODUCTION

This report presents the results of the soil exploration, laboratory testing program, and geotechnical evaluation and recommendations for the proposed Beneficial Use Mitigation; Port of Port Lavaca (SWG-2016-01066) project, located in Calhoun County, Texas. The location of the project is shown on the Site Location Plan included in the Appendix.

The project will include the construction of a Beneficial Use Mitigation Area (BUMA) with a size on the order of approximately 14 acres. The perimeter area of the BUMA will be surrounded by armored and unarmored levees that will provide protection and containment to low and high marsh areas that will be constructed inside the levees under approximately 1 to 3 feet of water.

The levees and marsh areas are planned to be constructed with dredge material currently stockpiled at the Dredged Material Stockpile Area (DMSA). This dredge material will be hauled, dumped and spread by excavation type equipment. Temporary roads will be constructed with caliche base for hauling the dredge material from the DMSA to the BUMA.

The locations of the DMSA and BUMA are shown on the Site Vicinity Map included in the Appendix.

Authorization

The work for this project was performed in accordance with RETL proposal number CGP031821A (Revision 3) dated March 23, 2022. The scope of work and fee was approved by Mr. Charles E. Belaire, President of Belaire Environmental, Inc., by signing our proposal on March 29, 2022. The signed proposal was returned to RETL via e-mail transmission.

Purpose and Scope

The purpose of this exploration was to evaluate the soil and groundwater conditions at the site and to provide geotechnical recommendations for the proposed project. The scope of the exploration and analysis included the subsurface investigation, field and laboratory testing, engineering analysis and evaluation of the subsurface soils, provision of recommendations, and preparation of this report.

The scope of services did not include an environmental assessment. Any statements in this report or on the boring logs, regarding odors, colors, unusual or suspicious items or conditions are strictly for the information of the client.

General

The information submitted for the proposed project is based on details provided by Belaire Environmental, Inc. and the soil information obtained at the boring and test pit locations. If the designers require additional soil parameters to complete the design of the proposed structures for the project, and this information can be obtained from the soil data and laboratory tests performed within the scope of work included in our proposal for this project, RETL will provide the additional information requested as a supplement to this report.

The Geotechnical Engineer states that the findings contained herein have been presented after being prepared in a manner consistent with that level of care and skill ordinarily exercised by reputable members of the Geotechnical Engineer's profession practicing contemporaneously under similar conditions in the locality of the project. RETL operates in general accordance with "*Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction*", (ASTM D3740). No other representations are expressed or implied, and no warranty or guarantee is included or intended.

This report has been prepared for the exclusive use of Belaire Environmental, Inc. for the specific application for the proposed Beneficial Use Mitigation; Port of Port Lavaca (SWG-2016-01066), located in Calhoun County, Texas.

SITE DESCRIPTION

The project consists of two (2) locations:

1. The first location is situated northwest of the intersection of Highway I-35 (Lavaca Bay Causeway) and Dredge Island Road, approximately half a mile southwest of Point Comfort. The BUMA is planned to be constructed at this location.
2. The second location (DMSA) is situated approximately 0.3 miles southwest of the Calhoun Port Authority, in an area that has been backfilled with dredge spoils. Soil from this area will be borrowed and used for construction of the BUMA.

The locations of the BUMA and DMSA are shown on the Site Location plan included in the Appendix.

FIELD EXPLORATION

Scope

The field exploration to evaluate the engineering characteristics of the subgrade materials included reconnaissance of the project site, performing the test boring operations, obtaining relatively undisturbed Shelby tube samples from the borings, and collecting samples from test pits.

During the sample recovery operations the soils encountered were classified and recorded on the boring and test pit logs in accordance with "*Standard Guide for Field Logging of Subsurface Exploration of Soil and Rock*", (ASTM D5434).

Nine (9) borings, designated B-1 through B-9, were drilled at the BUMA to depths ranging from 15 to 50 feet, and four (4) borings, designated TR-1 through TR-4, were drilled to a depth of 5 feet along planned temporary roads for the purpose of providing geotechnical recommendations for the project.

In addition, two (2) test pits, designated TP-1 and TP-2, were excavated by others at the DMSA to depths of 10 and 8 feet, respectively, to obtain samples for soil classification and laboratory testing. The tables below provide the boring and test pit identifications, depths and approximate GPS coordinates.

| Summary of Boring Information – BUMA | | | |
|---|--------------------------|-----------------|------------------------------------|
| Boring Identification | Boring Depth (ft) | Location | Approximate GPS Coordinates |
| B-1 | 25 | South Levee | N 28.66954° W 96.57270° |
| B-2 | 50 | East Levee | N 28.66937° W 96.57126° |
| B-3 | 50 | West Levee | N 28.67029° W 96.57323° |
| B-4 | 15 | Marsh Area | N 28.67035° W 96.37206° |
| B-5 | 25 | East Levee | N 28.67036° W 96.57082° |
| B-6 | 15 | Marsh Area | N 28.67082° W 96.57172° |
| B-7 | 25 | West Levee | N 28.67160° W 96.57206° |
| B-8 | 50 | North Levee | N 28.67122° W 96.57095° |
| B-9 | 15 | Marsh Area | N 28.67045° W 96.57239° |

| Summary of Boring Information – Temporary Roads | | | |
|--|--------------------------|-----------------|------------------------------------|
| Boring Identification | Boring Depth (ft) | Location | Approximate GPS Coordinates |
| TR-1 | 5 | Temporary Road | N 28.67000 ° W 96.57021 ° |
| TR-2 | 5 | Temporary Road | N 28.67174 ° W 96.57006 ° |
| TR-3 | 5 | Temporary Road | N 28.67239 ° W 96.56753 ° |
| TR-4 | 5 | Temporary Road | N 28.67183 ° W 96.56582 ° |

| Summary of Test Pit Information – DMSA | | | |
|---|----------------------------|-----------------|------------------------------------|
| Boring Identification | Test Pit Depth (ft) | Location | Approximate GPS Coordinates |
| TP-1 | 10 | DMSA | N 28.64021 ° W 96.55541° |
| TP-2 | 8 | DMSA | N 28.63995 ° W 96.55766° |

The number, location and depth of the borings and test pits were defined jointly between RETL and Belaire Environmental, Inc. RETL drilled and logged the borings. The test pits were excavated by others and RETL did the logging and collected the soil samples.

The approximate GPS coordinates for the borings and test pits were obtained using a Garmin GPS model eTrex and are provided in this report and on the boring and test pit logs.

Upon completion of the drilling operations the borings drilled at the BUMA were allowed to collapse and close upon themselves, while the borings drilled for the temporary roads were backfilling with soil cuttings. Boring and Test Pit Location Plans are provided in the Appendix.

The borings performed for this project were used to determine the classification and strengths of the subgrade soils. The information provided on the boring logs includes boring location, boring depth, soil classification, soil strengths, and laboratory test results. The soil samples from the test pits were used to determine soil classification, plasticity and compaction characteristics.

Drilling and Sampling Procedures

The borings at the BUMA were drilled in a marine environment using a drilling rig mounted on a pontoon, while the land-based borings for the temporary roads were drilled with a buggy mounted drilling rig. The drill rigs were equipped with a rotary head turning hollow stem augers to advance the boreholes to the planned depths. Relatively undisturbed soil samples were obtained using thin-wall tube sampling procedures in general accordance with “*Thin Walled Tube Sampling of Soils*”, (ASTM D1587). The samples obtained by this procedure were extruded by a hydraulic ram in the field.

The samples were visually classified, placed in plastic bags, marked according to boring number, depth and any other pertinent field data, stored in special containers and delivered to the laboratory for testing.

The test pits were excavated with a backhoe and the soil samples recovered were placed in plastic buckets, sealed, marked according to test pit number, depth and any other pertinent field data, and delivered to the laboratory for testing.

Field Tests and Observations

Water Level Observations – The borings at the BUMA were drilled in a marine environment and the areas were inundated with seawater, while the borings for the temporary roads were land-based. Approximate depths to the mudline measured at the borings for the BUMA and groundwater depths observed at the borehole locations for the temporary roads are discussed in the “**Water Depth Observations**” section of this report.

Sea Floor and Ground Elevations – Elevations at the boring locations were not provided at the time of this report. Therefore, the depth of water observations in the marine borings are relative to the sea floor (mudline), while the depths noted in the land-based borings and test pits are referenced to the existing ground elevation at the time they were performed.

LABORATORY TESTING PROGRAM

In addition to the field investigation, a laboratory testing program was conducted to determine additional pertinent engineering characteristics of the subsurface materials necessary in analyzing the behavior of the foundation soils at the BUMA and temporary roads areas, and to obtain soil classification and compaction characteristics of the dredge material at the DMSA.

The laboratory testing program on boring samples included supplementary visual classification (ASTM D2487) and water content tests (ASTM D2216). In addition, selected boring samples were subjected to Atterberg limits tests (ASTM D4318) and percent material finer than the #200 sieve tests (ASTM D1140). The shear strengths of selected cohesive soil samples were evaluated from unconfined compressive strength tests (ASTM D2166). The estimated soil strengths were obtained using a hand penetrometer.

The test pit samples were subject to supplementary visual classification (ASTM D2487), water content tests (ASTM D2216), Atterberg limits tests (ASTM D4318) and percent material finer than the #200 sieve. In addition, as requested by the Designer (Lloyd Engineering), one (1) standard Proctor test (ASTM D698) was performed on soil from Test Pit TP-1.

The laboratory testing program was conducted in general accordance with applicable ASTM Specifications. The results of these tests are to be found on the accompanying boring and test pit logs and laboratory testing results provided in the Appendix.

SUBSURFACE CONDITIONS

General

The various types of soils encountered in the test borings and test pits have been visually classified and are described in detail on the boring and test pit logs. The results of the laboratory tests are presented on the boring and test pit logs and in the laboratory test results included in the Appendix. Representative samples of the soils were placed in polyethylene bags and sealed buckets and are now stored in the laboratory for further analysis, if desired. Unless notified to the contrary, the samples will be disposed of three months after issuance of this report.

The stratification of the soil, as shown on the boring and test pit logs, represents the soil conditions at the actual boring and test pit locations to the depths of investigation. Variations may occur and should be expected between and beyond the boring and test pit locations. Lines of demarcation represent the approximate boundary between different soil types, but the transition may be gradual or not clearly defined.

It should be noted that, whereas the borings and test pits were drilled, sampled and logged by experienced drillers, it is sometimes difficult to record changes in stratification within narrow limits. In the absence of foreign substances, it is also difficult to distinguish between discolored soils and clean soil fill.

Soil Conditions

The soils at the BUMA consist mainly of lean clay with some interbedded layers of fat clay, and a few isolated layers of clayey sand. The clayey soils have a firm consistency in the upper 2 feet, with average undrained shear strength (cohesion) on the order of 400 pounds per square foot (psf). The shear strength of the soil increases with depth to values ranging from 1,100 to 3,000 psf (stiff to very stiff consistency).

Along the proposed temporary roads, the soil conditions consist of lean and fat clay with average undrained shear strength is on the order of 2,100 psf.

Finally, the soils observed in the test pits excavated in the DMSA consist of high to very high plasticity fat clays with a soft consistency and sand content ranging from 1 to 19%. It should be noted that a thin (about 3-inch thick) upper crust of soil hardened by desiccation was observed at the top of the test pits. However, underlying this crust the soil is soft, as indicated above.

The tables below provide a summary of the soil properties including soil classification, plasticity limits, fines content and undrained shear strength.

| Soil Profile Table – BUMA | | | | | | | | |
|---------------------------|---|-------|-------|--------|----------------|----|----------------|----------|
| D | Generalized Soil Description | LL | PI | #200 | C _u | φ | γ _e | PP |
| 0-3 | CLAYEY Sand, Silty CLAYEY Sand, Fat CLAY with Sand, Sandy Fat CLAY | 23-57 | 10-41 | 33-85 | 400 | -- | 55 | 0.25-4.0 |
| 3-6 | Lean CLAY with Sand, Silty CLAYEY Sand, Fat CLAY with Sand, CLAYEY Sand | 25-44 | 7-26 | 33-81 | 1,100 | -- | 60 | 0.25-4.5 |
| 6-10 | Lean CLAY with Sand, Fat CLAY with Sand | -- | -- | 82 | 2,400 | -- | 60 | 2.0-4.5+ |
| 10-23 | Lean CLAY , Fat CLAY with Sand, Sandy Lean CLAY , Lean CLAY with Sand | 34-48 | 19-28 | 65-88 | 2,900 | -- | 60 | 4.0-4.5+ |
| 23-33 | Fat CLAY with Sand, Silty CLAYEY Sand, Sandy Lean CLAY , Lean CLAY with Sand, CLAYEY Sand | 23-54 | 5-33 | 22-85 | 2,000 | -- | 60 | 1.0-4.5+ |
| 33-37 | Fat CLAY , Sandy Lean CLAY , SILTY Sand | NP-60 | NP-43 | 34-88 | 1,500 | -- | 60 | 2.0-4.5+ |
| 37-50 | Lean CLAY , Sandy Lean CLAY , Fat CLAY with Sand, SILTY Sand, Lean CLAY with Sand, Fat CLAY | NP-67 | NP-43 | 34-100 | 3,000 | -- | 60 | 4.5-4.5+ |

| Soil Profile Table – Temporary Roads | | | | | | | | |
|--------------------------------------|--|-------|-------|-------|----------------|----|----------------|-----------|
| D | Generalized Soil Description | LL | PI | #200 | C _u | φ | γ _e | PP |
| 0-3 | Fat CLAY , Lean CLAY with Sand | 44-64 | 31-47 | 83-91 | 1,700 | -- | 120 | 2.5-4.5+ |
| 3-5 | Fat CLAY , Fat CLAY with Sand | -- | -- | -- | 2,500 | -- | 120 | 3.75-4.5+ |

| Soil Profile Table – Test Pits TP-1 and TP-2 | | | | | | | | |
|--|------------------------------|--------|-------|-------|----------------|----|----------------|-----|
| D | Generalized Soil Description | LL | PI | #200 | C _u | φ | γ _e | Qc |
| 0-10 | Fat CLAY | 55-111 | 38-81 | 81-99 | <250 | -- | 110 | 1-2 |

Where:

- | | |
|--|--|
| D = Depth in feet below existing grade | LL = Liquid limit (%) |
| PI = Plasticity index | C _u = Soil Cohesion, psf (undrained) |
| φ = Angle of Internal Friction, deg. (undrained) | γ _e = Effective soil unit weight, pcf |
| -#200 = Material passing #200 sieve, % | PP = Pocket penetrometer resistance (TSF) |
| NP = Non-plastic | Qc = Static cone penetrometer index (TSF) |

Exceptions to the above generalized and averaged soil profiles do exist and are shown on the boring and test pit logs included in the Appendix, which provide detailed descriptions of the soils encountered at each location.

Water Depth Observations

As indicated before, approximate water depths at the marine boring locations (B-1 to B-9) at the BUMA are shown in the corresponding boring logs. On the other hand, the borings drilled for the temporary roads (TR-1 to TR-4) and the test pits excavated at the DMSA (TP-1 and TP-2) did not encounter groundwater. However, based on the proximity of these borings and test pits to the shoreline, it is anticipated that groundwater at these locations may be found at depths near the sea water elevation at the adjacent bay.

OSHA Soil Type Classification

The table below provides a summary of the OSHA Soil Type Classification based on the average soil conditions encountered at the project locations.

| OSHA Soil Type Classification – BUMA | | |
|--------------------------------------|----------------|-------------------------------|
| Depth (Feet) | Description | OSHA Soil Type Classification |
| 0-20 | Submerged Soil | Type C |

| OSHA Soil Type Classification – Temporary Roads | | |
|---|---|-------------------------------|
| Depth (Feet) | Description | OSHA Soil Type Classification |
| 0-5 | Cohesive Soil with an Unconfined Compressive Strength Greater between 0.5 and 1.5 TSF | Type B |

| OSHA Soil Type Classification – DMSA | | |
|---|---|--------------------------------------|
| Depth (Feet) | Description | OSHA Soil Type Classification |
| 0-10 | Cohesive Soil with an Unconfined Compressive Strength less than 0.5 TSF | Type C |

It should be noted that the information in the tables above considers the average or predominate conditions observed at the corresponding project areas. Soil variations may occur and should be expected within and beyond these areas. The contractor’s “competent person” shall make the final determination of the OSHA Soil Type during excavation of the soils at the jobsite areas. If non-cohesive soil or soil from which water is freely seeping is encountered, soils shall be downgraded to Type C soil classification. Slope protection for excavations greater than 20 feet need to be designed and sealed by a Professional Engineer registered in the State of Texas. The maximum allowable slopes during construction for soil OSHA soil types are provided in the following table.

| Guidelines for Maximum Allowable Slopes | |
|--|--|
| Soil or Rock Type | Max. Allow. Slopes for Excavations < Than 20’ Deep |
| Type B | 1 Horizontal : 1 Vertical |
| Type C | 1½ Horizontal : 1 Vertical |

Recommendations for the excavations at the DMSA are beyond our scope of work for this project. The contractor is sole responsible for performing these excavations safely, complying with all applicable local and federal regulations, including OSHA.

GEOTECHNICAL DISCUSSION AND RECOMMENDATIONS

Project Description

As indicated before, the project includes the construction of a Beneficial Use Mitigation Area (BUMA) with a size on the order of approximately 14 acres. The perimeter area of the BUMA will be surrounded by armored and unarmored levees that will provide protection and containment to low and high marsh areas that will be constructed inside the levees under approximately 1 to 3 feet of water. Both levees will be initially constructed to elevation +10.0 feet NAVD 88 (maximum height of 13 feet above mudline) to provide enough free board for construction and to preload the subsoil.

After construction is concluded in the BUMA the levees will be excavated and regraded to lower elevations +5.0 and +2.0 feet NAVD 88, for the armored and unarmored levees, respectively (maximum height of the regraded levees would be 8 feet above mudline). The levees are planned to have 3(H):1 (V) side slopes.

Construction Sequence

The construction activities will start by building the temporary roads to access the BUMA, followed by the construction of the perimeter levees and additional temporary roads at the top of the levees. Once the levees are in place, the interior marsh areas will be constructed and the channels required for water circulation in the marsh areas will be excavated. When construction at the BUMA is concluded the levees will be excavated and regraded, and the temporary roads constructed earlier at the top of the levees will be removed.

The levees are planned to be constructed with dredge material from the DMSA, placed mechanically at the BUMA. Initially, the dredge material will be dumped below 5 to 6 feet of water. After reaching an elevation above sea water, it is recommended to place and compact the dredge material in layers. Additional placement and compaction recommendations for the construction of the levees are discussed in the "**Levee Construction**" section of the report.

The marsh areas in the BUMA are also planned to be constructed with dredge material from the DMSA. In this case, placement and compaction recommendations for the marsh areas should be provided by the Designer, as factors other than stability and strength (e.g. vegetation growth) will dictate the design of these areas. The final elevations for the low and high marsh areas are +0.5 to +1.65 feet and +2.0 to +3.0 feet NAVD 88, respectively. Considering these elevations, the fill thickness at the marsh areas ranges from 1.5 to 5.0 feet.

The geometry, elevations and dimensions of the structures described herein are shown in Figures 1 and 2 below.

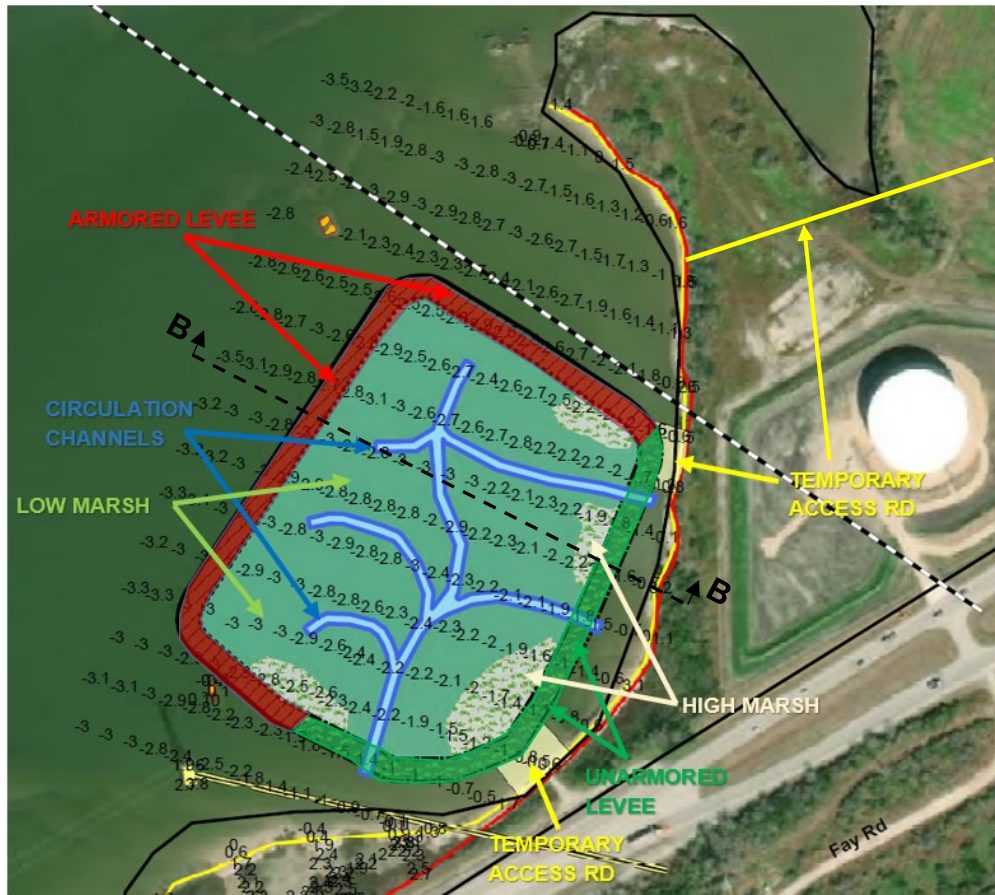


Figure 1. Detail of the BUMA.

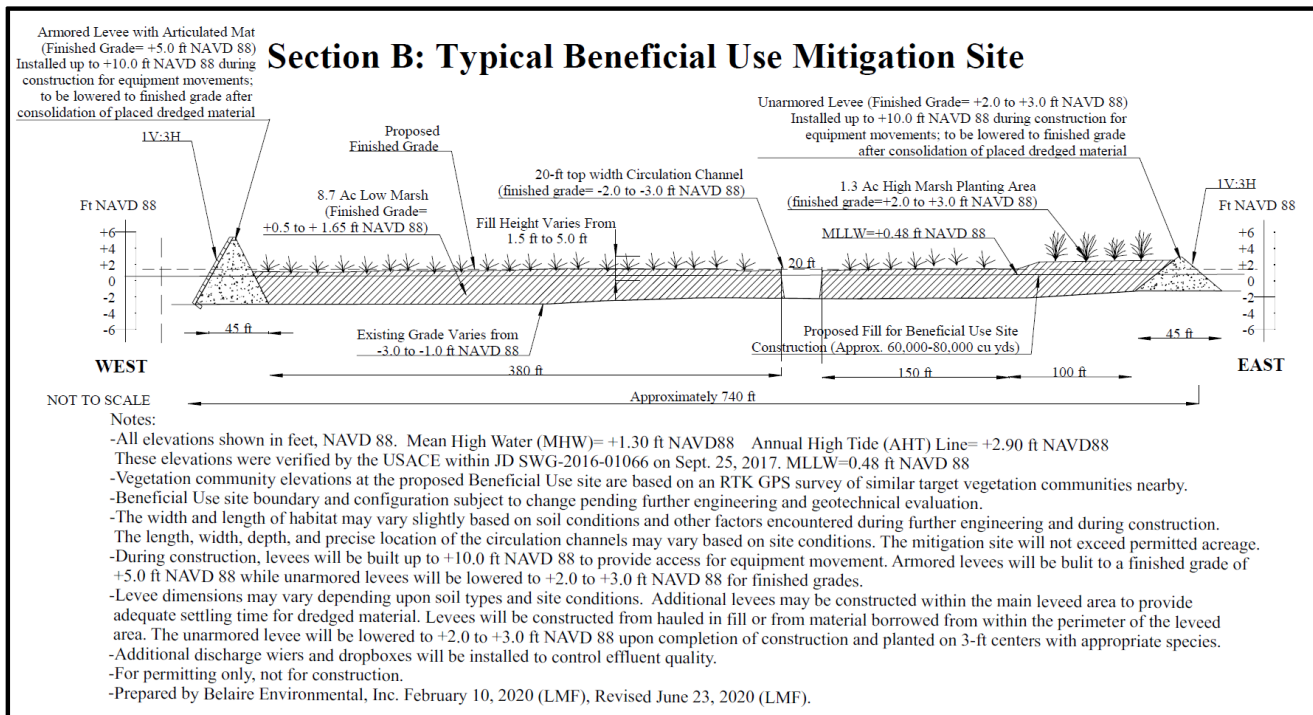


Figure 2. Cross Section Thru the BUMA.

Considering the type of earth structures and construction sequence planned for the project, the following aspects are addressed in this report:

1. Bearing capacity of the foundation soils for the levees and marsh areas.
2. Slope stability of the levees.
3. Expected settlement and rate of settlement of the levees and marsh areas.
4. Pavement analysis and recommendations for the temporary construction roads.
5. General construction recommendations.

These topics are further discussed in the following sections of the report.

Soil Bearing Capacity

The calculated ultimate bearing capacity of the foundation soil at the BUMA was estimated to be on the order of **2,000 psf**. Considering that the resulting contact pressure exerted by the levees after attaining its maximum height (13 feet) will be on the order of **1,200 psf**, the resulting Factor of Safety (FS) for bearing capacity will be about **1.7**. After the levees are excavated and regraded to their final heights the contact pressure will reduce to about **660 psf** and the resulting FS will be on the order of **3.0**.

In the marsh areas the maximum contact pressure at mudline elevation is expected to be on the order of 375 psf and the resulting FS for bearing capacity will be approximately **5.0**.

The bearing capacity FS listed above are deemed to be acceptable and hence the subsoil will provide adequate support for the levees and marsh areas at the BUMA.

Slope Stability of the Levees

Slope stability analysis for the levees were performed with the aid of the software SlopeW v. 8.12. SlopeW is a computer program that analyses the stability of slopes utilizing a limit equilibrium approach. The slope stability analysis indicates that the dredge fill material to be placed below water for the construction of the levees should be compacted in such a way to attain a minimum undrained shear strength of **300 psf**, to achieve a minimum FS for slope stability of **1.3** and **1.5**, for short-term and long-term conditions, respectively, which are deemed satisfactory for these structures. The slope stability analysis results are shown graphically in the Appendix.

It should be noted that the designer (Lloyd Engineering) indicated that the stability of the circulation channels is not relevant for the project and that they can be reshaped or reconstructed as necessary. In addition, the final geometry (slope and dimensions) of the channels was unknown at the time of this report. With these considerations, slope stability analysis for the channels was not performed.

Settlement Calculations

Settlement calculations of the subsoil below the levees and the marsh areas in the BUMA were performed with the aid of the software Settle3D v. 2.018. Settle3D is a computer program that calculates stress distribution, elastic (short-term) settlement and consolidation (long-term) settlement of soils subject to loads from foundations and embankments. In addition to the subsoil settlement, the dredge material to be used to construct the levees will also settle under its own weight.

The calculations summarized below are based on the assumption that the maximum height of the levees (13 feet) will be maintained at least for six (6) months to pre-load and consolidate the subsoil, and that the lifetime of this project is 25 years. Different pre-loading times and project lifetimes will result in different results than those summarized in the table below. RETL should be notified if additional analyses for different times are needed, so that we can update our recommendations.

| Settlement Analysis Summary | | | | | | |
|-----------------------------|--------------------|----------------------|-----------------------------|---------------------------|------------------|--|
| Structure | Fill Height (feet) | Time Analyzed | Subsoil Settlement (inches) | | | Fill (Dredge Material) Settlement (inches) |
| | | | Elastic (Short-Term) | Consolidation (Long-Term) | Total Settlement | |
| Levee Initial Construction | 13 | 0-6 months | 3.0 | 5½ | 8½ | 4¾ |
| Levee Regraded | 8 | 6 months to 25 years | ¼ | 1.0 | 1¼ | 1.0 |
| Marsh Area | 5 | 0-25 years | 1½ | ¾ | 5¼ | 1¾ |

The following conclusions can be derived from the table above:

1. The subsoil below the levees, when loaded with the maximum levee embankment height of 13 feet during the 6-month preloading period, will experience approximately 3.0 and 5½ inches of elastic and consolidation settlement, respectively, which in turn will produce a total settlement of the subsoil of about $3.0 + 5\frac{1}{2} = 8\frac{1}{2}$ inches. In addition, the body of the levees will experience a settlement on the order of 4¾ inches. Considering the settlement of the subsoil and the settlement of the levees, the anticipated settlement at the top of the levees would be on the order of $8\frac{1}{2} + 4\frac{3}{4} = 13\frac{1}{4}$ inches.
2. After the pre-loading period the levees are planned to be excavated and regraded to their final elevations. The additional total settlement of the subsoil after the levees are regraded is approximately 1¼ inches. In addition, the body of the levees will experience a settlement on the order of 1.0 inch. Considering the settlement of the subsoil and the settlement of the levees, the anticipated settlement at the top of the regraded levees would be on the order of $1\frac{1}{4} + 1.0 = 2\frac{1}{4}$ inches.

3. The subsoil below the marsh areas, when loaded with the maximum fill height of 5 feet, will experience approximately 1½ and 3¾ inches of elastic and consolidation settlement, respectively, which in turn will produce a total settlement of the subsoil of about 1½ + 3¾ = 5¼ inches. In addition, the body of the dredge fill material will experience a settlement on the order of 1¾ inches. Considering the settlement of the subsoil and the settlement of the fill, the anticipated settlement at the top of the marsh areas would be on the order of 5¼ + 1¾ = 7.0 inches.

The estimated settlements indicated above should be considered when planning the final elevations of the levees and marsh areas, and the amount of dredge material required for their construction. We also recommend that the contractor monitors settlement of the levees and marsh areas and that this settlement monitoring information is provided to RETL, so that we can adjust our recommendations, if required.

Unsurfaced Aggregate Pavement Recommendations

It is understood that temporary roads will be installed for heavy truck traffic allowing the transportation of material from the DMSA to the BUMA. The temporary roads are anticipated to be unsurfaced and constructed using a caliche base material. The location of the temporary roads is shown on the Figure 1 in the **“Geotechnical Discussion and Recommendations”** sections of the report.

In addition, similar roads will be constructed atop the levees to allow for construction of the levees and marsh areas. These temporary roads will be eventually removed when the levees are excavated and regraded to their final planned elevation.

Unsurfaced pavements with exposed aggregate (in this case caliche base material) are typically able to be and required to be bladed, graded, maintained and/or repaired throughout their life and are therefore typically not designed as structurally equivalent to flexible asphalt pavements carrying the same or similar traffic.

The recommended pavement sections are summarized in the table below:

| Unsurfaced Aggregate Pavement | Option 1 | Option 2 |
|--------------------------------------|-----------------|-----------------|
| Caliche Base Material | 24 inches | 24 inches |
| Tensar Geogrid TX-5 | Yes | ---- |
| Lime Stabilized Subgrade (6%) | ---- | 8 inches |
| Compacted Subgrade | 12 inches | ---- |

The pavement section recommended above is preliminary and should be confirmed after additional information regarding the expected traffic (type of vehicles, weight, frequency, ESALs, etc.) and regarding the proposed caliche base material (CBR, plasticity, fines content, etc.) is provided by the client and reviewed by RETL. This information should be transmitted to RETL as soon as it becomes available, so that we can review the pavement recommendations provided herein and revise it, if warranted.

The caliche base material to be used for the unsurfaced aggregate pavement should be placed in maximum 8-inch thick loose lifts and compacted to a minimum density of 98 percent of the maximum dry density as determined by the modified Proctor test (ASTM D1557) and within \pm 1.5 percent of the optimum moisture content.

Pavement Subgrade Preparation

In inland areas where the temporary road pavements will be constructed, after all surface organics and deleterious materials have been removed to the desired subgrade elevation, the subgrade shall be proofrolled using a heavy pneumatic roller. Any soft areas identified shall be removed to firm soils, reworked and recompacted in place to obtain a stable and non-yielding subgrade. If required, a "bridging layer" may be constructed at the bottom of the exposed subgrade by placing 8 inches of "#57 stone", compacted with several passes of heavy construction equipment weighting at least 20 tons to achieve "ordinary compaction", as defined by TxDOT Item 132 Standard Specification. This bridging layer should provide a more stable subgrade surface and will facilitate subsequent fill placement. A layer of filter fabric meeting TxDOT DMS-6200 Specification (Type 1 or 2) should be placed atop the #57 stone to separate this open-graded aggregate from the fill to be placed above.

Temporary inland pavements may be constructed using either Option 1 or Option 2 sections listed in the table above, while temporary levee pavements may be constructed using Option 1 section listed in the table.

Upon completion of the proofrolling, and if an Option 1 pavement section will be used, the subgrade soils should be scarified, moisture conditioned and compacted to the minimum specified depth of 12 inches. The subgrade should be compacted to a minimum of 95 percent of the maximum dry density, as determined by the standard Proctor (ASTM D698) at or above the optimum moisture content. After proper compaction of the subgrade, the specified geogrid shall be placed on the properly prepared raw subgrade in accordance with the manufacturer's recommendations.

Upon completion of the proofrolling, and if an Option 2 pavement section will be used, the lime stabilization operations shall be performed in accordance with TxDOT Item 260, "*Lime Treatment For Materials Used As Subgrade (Road Mixed)*." Based on the results of the Atterberg limits tests for the subgrade soils and associated curves provided in TxDOT Test Method 121-E, RETL recommends that the lime be mixed at the rate of 6 percent, based on the maximum dry unit weight of the raw subgrade soils as determined by the standard Proctor test (ASTM D698). The lime stabilized soils should be compacted to a minimum density of 98 percent of the maximum dry density, as determined by a standard Proctor test (ASTM D698), at or above the optimum moisture content.

Drainage and Maintenance of Pavement Systems

The pavement sections provided in this report are designed based on pavement sections constructed on similar subgrade soils and for facilities similar to those planned for construction at this site. Allowances for proper drainage and proper material selection of base materials are most important for performance of pavements. Ruts, birdbaths and poor site drainage allow for quick deterioration of the pavement primarily due to saturation of the base materials and/or subgrade soils.

Unsurfaced aggregate pavements generally require very dedicated and frequent maintenance as they are exposed directly to the elements with little to no confinement of the surficial aggregate. Without proper maintenance, moisture infiltration into the base material and subgrade will result in rapid deterioration of the pavement system. RETL recommends that the owner protect their investment by incorporating an aggressive maintenance program.

CONSTRUCTION CONSIDERATIONS

Site Preparation

In the inland areas where the temporary roads are planned, clearing and grubbing operations should be performed to excavate and remove organics, roots, rubble, deleterious matter, and any other unsuitable materials, to a minimum depth of six (6) inches, or deeper if needed for their complete removal. This excavation should extend laterally at least 3 feet beyond the footprint of the temporary road structures. The excavated material should not be used for construction.

Once the clearing and grubbing operations are concluded, the subgrade should be prepared as indicated in the “**Pavement Subgrade Preparation**” section of the report.

Levee Construction

As indicated before, the levees are planned to be constructed with dredge material borrowed from the DMSA. This material consists of fat clays with very high plasticity and limited sand contents varying from 1 to 19 percent. This material, when excavated and transported to the BUMA, is anticipated to arrive in a blocky shape. In other words, large pieces (chunks) of clay will be excavated from the DMSA and will arrive to the DMSA in a similar shape.

The initial construction of the levees will consist of dumping the dredge material under about 5 or 6 feet of water, to build the base of the levees. Placement of this material in layers and compacting it under water, considering the blocky shape of the clay indicated above, might be challenging. The contractor should adjust his construction procedures and utilize construction equipment capable of placing and compacting the dredge fill material in a controlled engineered fashion, to result in an undrained shear strength of the fill placed below water of at least 300 psf, to provide a stable fill embankment, as previously discussed in the “**Slope Stability of the Levees**” section of the report.

Once the levee sections are above water, we recommend performing cone penetrometer testing (CPT) to confirm that the fill placed below water is competent and reached the minimum undrained shear strength indicated above, before placing additional fill. RETL should be contacted to coordinate CPT testing.

Additional fill above water to build the levees should be placed in no greater than 8-inch thick loose lifts and then compacted to a minimum density of 95 percent of the maximum dry density, as determined by the standard Proctor test (ASTM D698), and at or above the optimum moisture content. Refer to the compaction test results included in the Appendix.

Earthwork and Acceptance

Exposure to the environment may weaken the soils at the pavement bearing level if the excavations remain open for long periods of time. Therefore, it is recommended that the pavement excavations be extended to final grade and that the pavements be constructed as soon as possible to minimize potential damage to the bearing soils.

The pavement bearing subgrade should be free of loose soil, ponded water or debris and should be observed prior to placing pavement constituents by the Geotechnical Engineer or his designated representative.

Pavement constituents should not be placed on soils that have been disturbed by rainfall or seepage. If the bearing soils are softened by surface water intrusion or by desiccation, the unsuitable soils must be removed from the pavement excavations and be replaced with properly compacted "**Select Fill**" prior to placement of pavement constituents per Engineer's direction.

The Geotechnical Engineer or his designated representative should monitor subgrade preparation and placement of fill. As a guideline, a minimum of one in-place density test shall be performed on the subgrade soils and each subsequent lift of fill for each 3,000 square feet, or a minimum of three in-place density tests per testing interval, whichever is greater. Any areas not meeting the required compaction should be recompact and retested until compliance is met.

Dredge Fill Material

Dredge fill material for the construction of the levees and marsh areas should be free of roots, organics, trash, debris, deleterious materials and otherwise unsuitable soil.

It should be noted that levees constructed with highly plastic soils are prone to experience swell and shrinkage movements related to moisture content variations caused by evaporation, rainfall, temporal humidity variations and change in water level, potentially resulting on differential settlement and fissures of the levee faces that should be promptly repaired.

Select Fill

Imported select fill for this project should be homogenous, free from organics and other deleterious materials and should have a maximum liquid limit of 40 percent and a plasticity index (PI) between 7 and 18. The select fill soils shall have a minimum of 35 percent passing the #200 sieve and no soil particles exceeding 1½ inches will be permitted. The select fill should be placed in no greater than 8-inch thick loose lifts and then compacted to a minimum density of 95 percent of the maximum dry density, as determined by the standard Proctor test (ASTM D698), and at or above the optimum moisture content.

GENERAL COMMENTS

If significant changes are made in the character or location of the proposed project, a consultation should be arranged to review any changes with respect to the prevailing soil conditions or the recommendations presented herewith. At that time, it may be necessary to submit supplementary recommendations.

It is recommended that the services of RETL be engaged to test and evaluate the soils in the pavement excavations prior to placement of pavement constituents in order to verify that the bearing soils are consistent with those encountered in the borings. RETL cannot accept any responsibility for any conditions that deviate from those described in this report, nor for the performance of the project if not engaged to also provide construction observation and testing. If it is required for RETL to accept any liability, then RETL must agree with the plans and perform such observation during construction as we recommend.

All dewatering, sheeting, shoring, and bracing of trenches and excavations should be made the responsibility of the contractor and should comply with all current and applicable local, state and federal safety codes, regulations and practices, including the Occupational Safety and Health Administration.

APPENDIX



- GEOTECHNICAL ENGINEERING
- CONSTRUCTION MATERIALS ENGINEERING & TESTING
- SOILS • ASPHALT • CONCRETE

SITE VICINITY MAP



May 31, 2022
Attn: Ms. Laura Fox
RETL Job Number G122209

BENEFICIAL USE MITIGATION (SWG-2016-01066)
Port of Port Lavaca
Calhoun County, Texas

ROCK ENGINEERING & TESTING LABORATORY, INC.

Corpus Christi
Office: 361.883.4555
Fax: 361.883.4711
6817 Leopard St.
Corpus Christi, TX 78409

San Antonio
Office: 210.495.8000
Fax: 210.495.8015
10856 Vandale
San Antonio, TX 78216
www.rocktesting.com

Round Rock
Office: 512.284.8022
Fax: 512.284.7764
7 Roundville Ln.
Round Rock, TX 78664



- GEOTECHNICAL ENGINEERING
- CONSTRUCTION MATERIALS ENGINEERING & TESTING
- SOILS • ASPHALT • CONCRETE

BORING LOCATION PLAN – MITIGATION AREA



May 31, 2022
 Attn: Ms. Laura Fox
 RETL Job Number G122209

BENEFICIAL USE MITIGATION (SWG-2016-01066)

Port of Port Lavaca
 Calhoun County, Texas

ROCK ENGINEERING & TESTING LABORATORY, INC.

Corpus Christi
 Office: 361.883.4555
 Fax: 361.883.4711
 6817 Leopard St.
 Corpus Christi, TX 78409

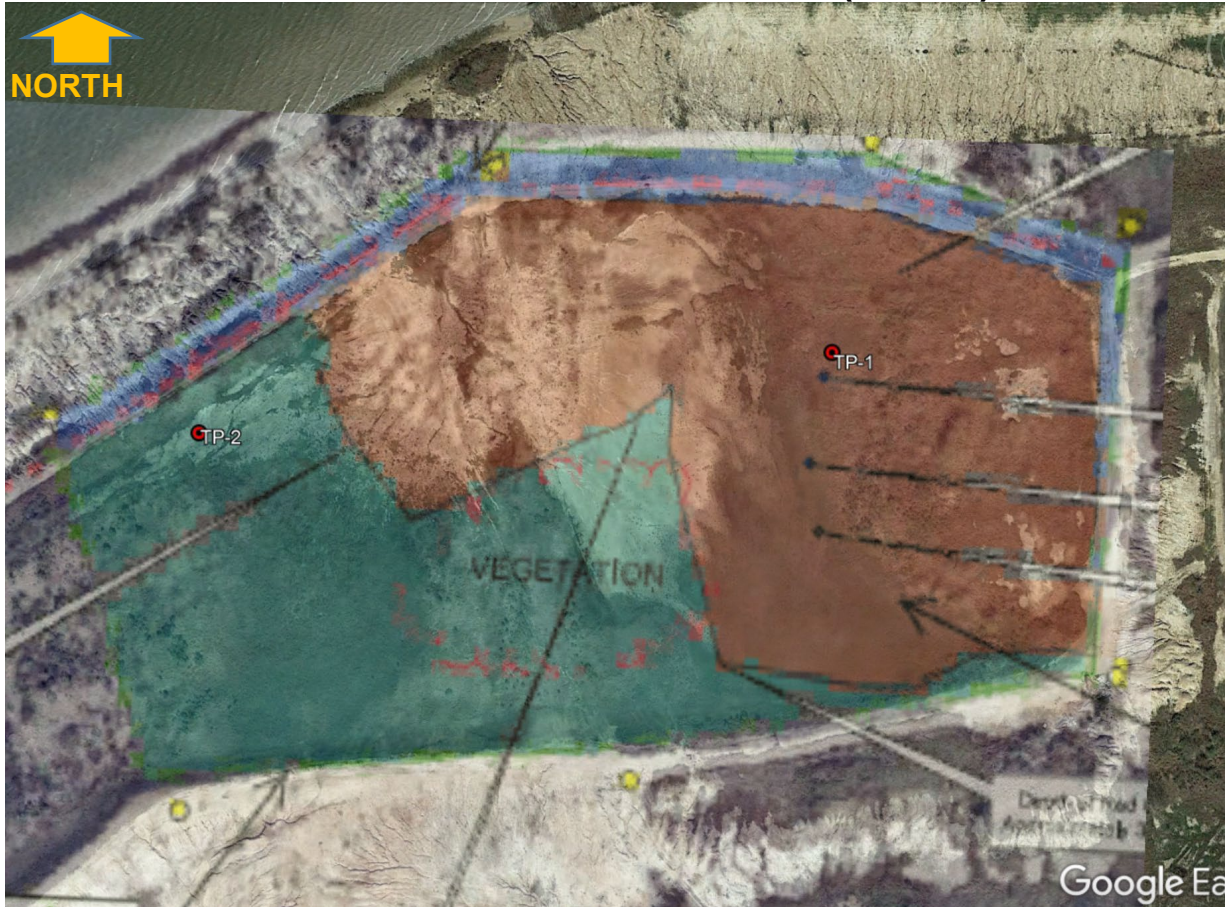
San Antonio
 Office: 210.495.8000
 Fax: 210.495.8015
 10856 Vandale
 San Antonio, TX 78216
www.rocktesting.com

Round Rock
 Office: 512.284.8022
 Fax: 512.284.7764
 7 Roundville Ln.
 Round Rock, TX 78664



- GEOTECHNICAL ENGINEERING
- CONSTRUCTION MATERIALS ENGINEERING & TESTING
- SOILS • ASPHALT • CONCRETE

TEST PIT LOCATION PLAN – (DMSA)



May 31, 2022
Attn: Ms. Laura Fox
RETL Job Number G122209

BENEFICIAL USE MITIGATION (SWG-2016-01066)

Port of Port Lavaca
Calhoun County, Texas

ROCK ENGINEERING & TESTING LABORATORY, INC.

Corpus Christi
Office: 361.883.4555
Fax: 361.883.4711
6817 Leopard St.
Corpus Christi, TX 78409

San Antonio
Office: 210.495.8000
Fax: 210.495.8015
10856 Vandale
San Antonio, TX 78216
www.rocktesting.com

Round Rock
Office: 512.284.8022
Fax: 512.284.7764
7 Roundville Ln.
Round Rock, TX 78664

APPENDIX

LOG OF BORING B-1



Rock Engineering & Testing Lab. Inc
 6817 Leopard Street
 Corpus Christi, Texas 78409
 Telephone: 361-883-4555
 Fax: 361-883-4711

CLIENT: Belaire Environmental, Inc.
 PROJECT: Port of Port Lavaca (SWG-2016-01066)
 LOCATION: Calhoun County, Texas
 NUMBER: G122209
 DATE(S) DRILLED: 4/21/2022

| FIELD DATA | | | | LABORATORY DATA | | | | | | | DRILLING METHOD(S): Hollow Stem Auger | |
|------------------------|------------|---------------|---------|---|----------------------|------------------|----|----|--------------------------|--|--|--|
| SOIL SYMBOL | DEPTH (FT) | SAMPLE NUMBER | SAMPLES | N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT | MOISTURE CONTENT (%) | ATTERBERG LIMITS | | | DRY DENSITY POUNDS/CU.FT | COMPRESSIVE STRENGTH (TONS/SQ FT) | MINUS NO. 200 SIEVE (%) | GROUNDWATER INFORMATION: Mudline was approximately 5 feet below water surface |
| | | | | | | LL | PL | PI | | | | SURFACE ELEVATION: N/A |
| DESCRIPTION OF STRATUM | | | | | | | | | | | | |
| SH S-1 | 5 | P= 0.25 | 25 | 23 | 13 | 10 | | | 33 | CLAYEY SAND , dark gray, moist, soft. (SC) (3% gravel sized particles) (65% sand particles) | | |
| SH S-2 | | P= 4.5 | 21 | 44 | 18 | 26 | | | 81 | LEAN CLAY WITH SAND , with aggregate, gray, moist, very stiff. (CL) Same as above, brown and gray. | | |
| SH S-3 | | P= 4.5+ | 14 | | | | | | | Same as above, gray. | | |
| SH S-4 | | P= 4.5+ | 17 | | | | | | | Same as above, gray. | | |
| SH S-5 | | P= 4.5+ | 14 | 34 | 15 | 19 | | | 88 | LEAN CLAY , gray, moist, very stiff. (CL) Same as above. | | |
| SH S-6 | | P= 4.5+ | 18 | | | | | | | Same as above. | | |
| SH S-7 | | P= 4.5+ | 24 | | | | | | | FAT CLAY WITH SAND , greenish gray, moist, very stiff. (CH) | | |
| SH S-8 | | P= 4.5+ | 25 | 54 | 21 | 33 | | | 85 | Same as above, gray and brown. (CH) | | |
| | | | | | | | | | | Boring was terminated at a depth of 25 feet. | | |

LOG_OF_BORING_G122209.GPJ ROCK_ETL_GDT_5/13/22

N - STANDARD PENETRATION TEST RESISTANCE
 Qc - STATIC CONE PENETROMETER TEST INDEX
 P - POCKET PENETROMETER RESISTANCE

REMARKS:
 Drilling operations were performed by Clean Harbor at GPS Coordinates
 N 28.669540° W 96.572700°

LOG OF BORING B-2



Rock Engineering & Testing Lab. Inc
6817 Leopard Street
Corpus Christi, Texas 78409
Telephone: 361-883-4555
Fax: 361-883-4711

CLIENT: Belaire Environmental, Inc.
PROJECT: Port of Port Lavaca (SWG-2016-01066)
LOCATION: Calhoun County, Texas
NUMBER: G122209
DATE(S) DRILLED: 4/19/2022

| FIELD DATA | | | | LABORATORY DATA | | | | | | | DRILLING METHOD(S): Hollow Stem Auger |
|--|------------|---------------|---------|----------------------|------------------|------------------|---------------------|--------------------------|-----------------------------------|-------------------------|--|
| SOIL SYMBOL | DEPTH (FT) | SAMPLE NUMBER | SAMPLES | MOISTURE CONTENT (%) | ATTERBERG LIMITS | | | DRY DENSITY POUNDS/CU.FT | COMPRESSIVE STRENGTH (TONS/SQ.FT) | MINUS NO. 200 SIEVE (%) | GROUNDWATER INFORMATION: Mudline was approximately 2 feet below water surface |
| | | | | | LIQUID LIMIT LL | PLASTIC LIMIT PL | PLASTICITY INDEX PI | | | | |
| | | | | | | | | | | | DESCRIPTION OF STRATUM |
| | | SH S-1 | P= 1.5 | 26 | | | | | | 38 | SILTY CLAYEY SAND , dark gray, moist, firm. |
| | 5 | SH S-2 | P= 0.25 | 26 | 25 | 18 | 7 | | | 45 | Same as above, gray, soft. (SC-SM) (55% sand particles) |
| | | SH S-3 | P= 2.0 | 23 | | | | 101 | 2.1 | 82 | LEAN CLAY WITH SAND , gray, moist, very stiff. |
| | 10 | SH S-4 | P= 4.5+ | 23 | | | | | | | Same as above. |
| | | SH S-5 | P= 4.0 | 22 | 48 | 20 | 28 | | | 88 | LEAN CLAY , brown and gray, moist, very stiff. (CL) |
| | 15 | SH S-6 | P= 4.5+ | 16 | | | | | | | Same as above. |
| | 20 | SH S-7 | P= 4.5+ | 22 | | | | | | | Same as above. |
| | 25 | SH S-8 | P= 1.0 | 23 | 23 | 18 | 5 | 113 | 0.8 | 22 | SILTY CLAYEY SAND , brown, moist, firm. (SC-SM) (78% sand particles) |
| | 30 | SH S-9 | P= 2.0 | 32 | | | | | | 82 | LEAN CLAY WITH SAND , brown and gray, moist, stiff. |
| | 35 | SH S-10 | P= 4.5 | 23 | 60 | 17 | 43 | | | 88 | FAT CLAY , brown and gray, moist, very stiff. (CH) |
| | 40 | SH S-11 | P= 4.5+ | 16 | | | | | | | LEAN CLAY , gray and brown, moist, very stiff. |
| | 45 | SH S-12 | P= 4.5+ | 24 | | | | | | | FAT CLAY WITH SAND , gray and brown, moist, very stiff. |
| | | | | | | | | | | | Boring was terminated at a depth of 45 feet. |
| <p>N - STANDARD PENETRATION TEST RESISTANCE Qc - STATIC CONE PENETROMETER TEST INDEX P - POCKET PENETROMETER RESISTANCE</p> | | | | | | | | | | | <p>REMARKS: Drilling operations were performed by On Point Geophysical at GPS Coordinates N 28.66937° W 96.57126°</p> |

LOG_OF_BORING_G122209.GPJ ROCK_ETL.GDT 5/13/22

LOG OF BORING B-3



Rock Engineering & Testing Lab. Inc
6817 Leopard Street
Corpus Christi, Texas 78409
Telephone: 361-883-4555
Fax: 361-883-4711

CLIENT: Belaire Environmental, Inc.
PROJECT: Port of Port Lavaca (SWG-2016-01066)
LOCATION: Calhoun County, Texas
NUMBER: G122209
DATE(S) DRILLED: 4/21/2022 - 4/22/2022

| FIELD DATA | | LABORATORY DATA | | | | | | | DRILLING METHOD(S): Hollow Stem Auger | | |
|---|------------|-----------------|---------|---|----------------------|------------------|----|----|--|--|-------------------------|
| SOIL SYMBOL | DEPTH (FT) | SAMPLE NUMBER | SAMPLES | N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT | MOISTURE CONTENT (%) | ATTERBERG LIMITS | | | DRY DENSITY POUNDS/CU.FT | COMPRESSIVE STRENGTH (TONS/SQ FT) | MINUS NO. 200 SIEVE (%) |
| | | | | | | LL | PL | PI | | | |
| GROUNDWATER INFORMATION: Mudline was approximately 5 feet below water surface | | | | | | | | | | | |
| SURFACE ELEVATION: N/A | | | | | | | | | | | |
| DESCRIPTION OF STRATUM | | | | | | | | | | | |
| SH S-1 | 5 | P= 0.25 | 42 | 41 | 11 | 30 | | | 44 | CLAYEY SAND , dark gray, moist, soft. (SC) (10% gravel sized particles) (45% sand particles) | |
| SH S-2 | | P= 4.0 | 23 | | | | | | | LEAN CLAY WITH SAND , gray, moist, very stiff. | |
| SH S-3 | | P= 4.5 | 20 | | | | | | | Same as above, brown and gray. | |
| SH S-4 | 10 | P= 4.5+ | 20 | | | | | | | Same as above. | |
| SH S-5 | | P= 4.5+ | 18 | | | | | | | Same as above. | |
| SH S-6 | 15 | P= 4.5+ | 15 | 39 | 16 | 23 | | | 65 | SANDY LEAN CLAY , brown, moist, very stiff. (CL) | |
| SH S-7 | 20 | P= 4.5+ | 16 | | | | | | | Same as above, gray and brown. | |
| SH S-8 | 25 | P= 4.5+ | 20 | | | | | | | Same as above. | |
| SH S-9 | 30 | P= 4.5 | 22 | | | | | | | Same as above. | |
| SH S-10 | 35 | P= 4.5+ | 15 | | | | | | | Same as above. | |
| SH S-11 | 40 | P= 4.5 | 20 | | | | | | | Same as above. | |
| SH S-12 | 45 | P= 0.25 | 24 | NP | NP | NP | | | 34 | SILTY SAND , brown, moist, soft. (SM) (66% sand particles) | |
| SH S-13 | 50 | P= 4.5 | 24 | 67 | 24 | 43 | | | 100 | FAT CLAY , brown and greenish gray, moist, very stiff. (CH) Boring was terminated at a depth of 50 feet. | |
| <p>N - STANDARD PENETRATION TEST RESISTANCE Qc - STATIC CONE PENETROMETER TEST INDEX P - POCKET PENETROMETER RESISTANCE</p> | | | | | | | | | | <p>REMARKS: Drilling operations were performed by Clean Harbor at GPS Coordinates N 28.670290° W 96.573231°</p> | |

LOG_OF_BORING_G122209.GPJ ROCK_ETL_GDT_5/13/22

LOG OF BORING B-4



Rock Engineering & Testing Lab. Inc
6817 Leopard Street
Corpus Christi, Texas 78409
Telephone: 361-883-4555
Fax: 361-883-4711

CLIENT: Belaire Environmental, Inc.
PROJECT: Port of Port Lavaca (SWG-2016-01066)
LOCATION: Calhoun County, Texas
NUMBER: G122209
DATE(S) DRILLED: 4/21/2022

| FIELD DATA | | LABORATORY DATA | | | | | | | | DRILLING METHOD(S): Hollow Stem Auger | |
|--|------------|-----------------|---------|---|----------------------|------------------|----|----|-----------------------------|---|-------------------------|
| SOIL SYMBOL | DEPTH (FT) | SAMPLE NUMBER | SAMPLES | N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT | MOISTURE CONTENT (%) | ATTERBERG LIMITS | | | DRY DENSITY POUNDS/CU.FT | COMPRESSIVE STRENGTH (TONS/SQ.FT) | MINUS NO. 200 SIEVE (%) |
| | | | | | | LL | PL | PI | | | |
| SH S-1 | 0.25 | 43 | 42 | 15 | 27 | | | | | | 46 |
| SH S-2 | 3.0 | 25 | | | | | | 99 | 0.6 | | |
| SH S-3 | 4.25 | 21 | | | | | | | | | |
| SH S-4 | 4.5 | 19 | | | | | | | | | |
| SH S-5 | 4.5 | 22 | | | | | | | | | |
| SH S-6 | 4.5+ | 18 | | | | | | | | | |
| GROUNDWATER INFORMATION: Mudline was approximately 5 feet below water surface | | | | | | | | | | | |
| SURFACE ELEVATION: N/A | | | | | | | | | | | |
| DESCRIPTION OF STRATUM | | | | | | | | | | | |
| <p>CLAYEY SAND, dark gray, moist, (SC) (2% gravel sized particles) (51% sand particles)</p> <p>LEAN CLAY WITH SAND, gray, moist, firm.</p> <p>Same as above, brown and gray.</p> <p>Same as above.</p> <p>Same as above.</p> <p>Same as above.</p> | | | | | | | | | | | |
| Boring was terminated at a depth of 15 feet. | | | | | | | | | | | |
| <p>N - STANDARD PENETRATION TEST RESISTANCE Qc - STATIC CONE PENETROMETER TEST INDEX P - POCKET PENETROMETER RESISTANCE</p> | | | | | | | | | | <p>REMARKS: Drilling operations were performed by Clean Harbor at GPS Coordinates N 28.670353° W 96.572067°</p> | |

LOG OF BORING B-5



Rock Engineering & Testing Lab. Inc
6817 Leopard Street
Corpus Christi, Texas 78409
Telephone: 361-883-4555
Fax: 361-883-4711

CLIENT: Belaire Environmental, Inc.
PROJECT: Port of Port Lavaca (SWG-2016-01066)
LOCATION: Calhoun County, Texas
NUMBER: G122209
DATE(S) DRILLED: 4/21/2022

| FIELD DATA | | | | LABORATORY DATA | | | | | | | DRILLING METHOD(S): Hollow Stem Auger | |
|--|------------|---------------|---------|---|----------------------|------------------|----|-----|-----------------------------|---|--|--|
| SOIL SYMBOL | DEPTH (FT) | SAMPLE NUMBER | SAMPLES | N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT | MOISTURE CONTENT (%) | ATTERBERG LIMITS | | | DRY DENSITY POUNDS/CU.FT | COMPRESSIVE STRENGTH (TONS/SQ FT) | MINUS NO. 200 SIEVE (%) | GROUNDWATER INFORMATION: Mudline was approximately 6 feet below water surface |
| | | | | | | LL | PL | PI | | | | SURFACE ELEVATION: N/A |
| DESCRIPTION OF STRATUM | | | | | | | | | | | | |
| SH | 5 | S-1 | P= 3.75 | 22 | 57 | 16 | 41 | 103 | 2.6 | 85 | FAT CLAY WITH SAND , brown and gray, moist, very stiff. (CH) | |
| SH | 5 | S-2 | P= 3.75 | 27 | | | | | | | Same as above, gray. | |
| SH | 5 | S-3 | P= 4.25 | 22 | | | | | | | Same as above. | |
| SH | 10 | S-4 | P= 3.75 | 24 | | | | 86 | 1.3 | | Same as above, stiff. | |
| SH | 15 | S-5 | P= 4.5+ | 13 | | | | | | | LEAN CLAY WITH SAND , gray and brown, moist, very stiff. | |
| SH | 15 | S-6 | P= 4.5+ | 18 | | | | | | | Same as above, gray and dark brown. | |
| SH | 20 | S-7 | P= 4.5+ | 21 | | | | | | | Same as above. | |
| SH | 25 | S-8 | P= 4.5+ | 24 | | | | | | | Same as above. | |
| Boring was terminated at a depth of 25 feet. | | | | | | | | | | | | |
| <p>N - STANDARD PENETRATION TEST RESISTANCE Qc - STATIC CONE PENETROMETER TEST INDEX P - POCKET PENETROMETER RESISTANCE</p> | | | | | | | | | | | <p>REMARKS: Drilling operations were performed by Clean Harbor at GPS Coordinates N 28.670359° W 96.570815°</p> | |

LOG OF BORING B-6



Rock Engineering & Testing Lab. Inc
6817 Leopard Street
Corpus Christi, Texas 78409
Telephone: 361-883-4555
Fax: 361-883-4711

CLIENT: Belaire Environmental, Inc.
PROJECT: Port of Port Lavaca (SWG-2016-01066)
LOCATION: Calhoun County, Texas
NUMBER: G122209
DATE(S) DRILLED: 4/21/2022

| FIELD DATA | | | | LABORATORY DATA | | | | | | | DRILLING METHOD(S): Hollow Stem Auger | |
|--|------------|---------------|---------|---|----------------------|------------------|----|-----|-----------------------------|---|--|--|
| SOIL SYMBOL | DEPTH (FT) | SAMPLE NUMBER | SAMPLES | N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT | MOISTURE CONTENT (%) | ATTERBERG LIMITS | | | DRY DENSITY POUNDS/CU.FT | COMPRESSIVE STRENGTH (TONS/SQ FT) | MINUS NO. 200 SIEVE (%) | GROUNDWATER INFORMATION: Mudline was approximately 5 feet below water surface |
| | | | | | | LL | PL | PI | | | | SURFACE ELEVATION: N/A |
| DESCRIPTION OF STRATUM | | | | | | | | | | | | |
| SH S-1 | 0 | | P= 0.25 | 34 | 38 | 11 | 27 | | | | 38 | CLAYEY SAND , dark gray, moist, very soft. (SC) (1% gravel sized particles) (61% sand particles) |
| SH S-2 | 5 | | P= 3.0 | 19 | | | | 110 | 1.9 | | | LEAN CLAY WITH SAND , gray, moist, stiff. |
| SH S-3 | 7 | | P= 4.5 | 17 | | | | | | | | Same as above, gray and brown, very stiff. |
| SH S-4 | 10 | | P= 4.25 | 23 | | | | | | | | Same as above. |
| SH S-5 | 12 | | P= 4.5 | 15 | | | | | | | | Same as above, dark brown and gray. |
| SH S-6 | 15 | | P= 4.5+ | 20 | | | | | | | | Same as above, brown and gray. |
| | | | | | | | | | | | | Boring was terminated at a depth of 15 feet. |
| <p>N - STANDARD PENETRATION TEST RESISTANCE Qc - STATIC CONE PENETROMETER TEST INDEX P - POCKET PENETROMETER RESISTANCE</p> | | | | | | | | | | | | <p>REMARKS: Drilling operations were performed by Clean Harbor at GPS Coordinates N 28.67082° W 96.57172°</p> |

LOG OF BORING B-7



Rock Engineering & Testing Lab. Inc
6817 Leopard Street
Corpus Christi, Texas 78409
Telephone: 361-883-4555
Fax: 361-883-4711

CLIENT: Belaire Environmental, Inc.
PROJECT: Port of Port Lavaca (SWG-2016-01066)
LOCATION: Calhoun County, Texas
NUMBER: G122209
DATE(S) DRILLED: 4/21/2022

| FIELD DATA | | | | LABORATORY DATA | | | | | | | DRILLING METHOD(S): Hollow Stem Auger | |
|--|------------|---------------|---------|---|----------------------|------------------|----|-----|-----------------------------|---|---|--|
| SOIL SYMBOL | DEPTH (FT) | SAMPLE NUMBER | SAMPLES | N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT | MOISTURE CONTENT (%) | ATTERBERG LIMITS | | | DRY DENSITY POUNDS/CU.FT | COMPRESSIVE STRENGTH (TONS/SQ FT) | MINUS NO. 200 SIEVE (%) | GROUNDWATER INFORMATION: Mudline was approximately 5 feet below water surface |
| | | | | | | LL | PL | PI | | | | SURFACE ELEVATION: N/A |
| DESCRIPTION OF STRATUM | | | | | | | | | | | | |
| | | SH S-1 | P= 2.75 | 23 | 55 | 17 | 38 | 101 | 0.8 | 65 | SANDY FAT CLAY , dark gray, moist, firm. (CH) | |
| | 5 | SH S-2 | P= 4.25 | 15 | | | | | | | LEAN CLAY WITH SAND , gray and brown, moist, very stiff. | |
| | | SH S-3 | P= 4.5 | 20 | | | | | | | Same as above. | |
| | 10 | SH S-4 | P= 4.5+ | 14 | | | | | | | Same as above. | |
| | | SH S-5 | P= 4.5+ | 24 | | | | | | | Same as above. | |
| | 15 | SH S-6 | P= 4.5+ | 17 | | | | | | | Same as above, dark brown. | |
| | | SH S-7 | P= 4.5+ | 18 | | | | | | | Same as above. | |
| | 20 | | | | | | | | | | | |
| | | SH S-8 | P= 4.5+ | 24 | | | | | | | Same as above, brown and gray. | |
| | 25 | | | | | | | | | | Boring was terminated at a depth of 25 feet. | |
| <p>REMARKS: Drilling operations were performed by Clean Harbor at GPS Coordinates N 28.671602° W 96.572060°</p> | | | | | | | | | | | | |

LOG_OF_BORING_G122209.GPJ ROCK_ETL_GDT_5/13/22

N - STANDARD PENETRATION TEST RESISTANCE
Qc - STATIC CONE PENETROMETER TEST INDEX
P - POCKET PENETROMETER RESISTANCE

LOG OF BORING B-8



Rock Engineering & Testing Lab. Inc
 6817 Leopard Street
 Corpus Christi, Texas 78409
 Telephone: 361-883-4555
 Fax: 361-883-4711

CLIENT: Belaire Environmental, Inc.
 PROJECT: Port of Port Lavaca (SWG-2016-01066)
 LOCATION: Calhoun County, Texas
 NUMBER: G122209
 DATE(S) DRILLED: 4/21/2022

| FIELD DATA | | | | LABORATORY DATA | | | | | | | DRILLING METHOD(S): Hollow Stem Auger | |
|------------------------|------------|---------------|---------|---|----------------------|------------------|----|-----|--------------------------|-----------------------------------|--|--|
| SOIL SYMBOL | DEPTH (FT) | SAMPLE NUMBER | SAMPLES | N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT | MOISTURE CONTENT (%) | ATTERBERG LIMITS | | | DRY DENSITY POUNDS/CU.FT | COMPRESSIVE STRENGTH (TONS/SQ FT) | MINUS NO. 200 SIEVE (%) | GROUNDWATER INFORMATION: Mudline was approximately 5 feet below water surface |
| | | | | | | LL | PL | PI | | | | SURFACE ELEVATION: N/A |
| DESCRIPTION OF STRATUM | | | | | | | | | | | | |
| | | SH S-1 | P= 4.0 | 25 | | | | | | | | FAT CLAY WITH SAND , gray and brown, moist, very stiff. |
| | 5 | SH S-2 | P= 3.5 | 22 | | | | 105 | 1.5 | | | LEAN CLAY WITH SAND , gray and brown, moist, very stiff. |
| | | SH S-3 | P= 4.5 | 20 | | | | | | | | Same as above. |
| | 10 | SH S-4 | P= 4.0 | 20 | | | | | | | | Same as above. |
| | | SH S-5 | P= 4.25 | 23 | | | | | | | | Same as above. |
| | 15 | SH S-6 | P= 4.5 | 21 | | | | | | | | Same as above, dark brown and gray. |
| | 20 | SH S-7 | P= 4.25 | 20 | | | | | | | | Same as above. |
| | 25 | SH S-8 | P= 3.5 | 21 | | | | | | | | CLAYEY SAND , brown and gray, moist, very stiff. |
| | 30 | SH S-9 | P= 4.5+ | 17 | | | | | | | | Same as above, gray. |
| | 35 | SH S-10 | P= 2.0 | 22 | NP | NP | NP | 94 | 0.6 | 34 | | SILTY SAND , gray and brown, moist, stiff. (SM) (66% sand particles) |
| | 40 | SH S-11 | P= 4.5 | 25 | | | | | | | | FAT CLAY WITH SAND , gray and brown, moist, very stiff. |
| | 45 | SH S-12 | P= 4.5 | 15 | | | | | | | | LEAN CLAY WITH SAND , gray and brown, moist very stiff. |
| | 50 | SH S-13 | P= 4.5 | 16 | | | | | | | | Same as above, gray. |
| | | | | | | | | | | | | Boring was terminated at a depth of 50 feet. |

LOG_OF_BORING_G122209.GPJ ROCK_ETL_GDT 5/13/22

N - STANDARD PENETRATION TEST RESISTANCE
 Qc - STATIC CONE PENETROMETER TEST INDEX
 P - POCKET PENETROMETER RESISTANCE

REMARKS:
 Drilling operations were performed by Clean Harbor at GPS Coordinates
 N 28.671224° W 96.570952°

LOG OF BORING B-9



Rock Engineering & Testing Lab. Inc
6817 Leopard Street
Corpus Christi, Texas 78409
Telephone: 361-883-4555
Fax: 361-883-4711

CLIENT: Belaire Environmental, Inc.
PROJECT: Port of Port Lavaca (SWG-2016-01066)
LOCATION: Calhoun County, Texas
NUMBER: G122209
DATE(S) DRILLED: 4/21/2022

| FIELD DATA | | | | LABORATORY DATA | | | | | | | DRILLING METHOD(S): Hollow Stem Auger | |
|--|------------|---------------|---------|---|----------------------|------------------|----|----|-----------------------------|---|--|--|
| SOIL SYMBOL | DEPTH (FT) | SAMPLE NUMBER | SAMPLES | N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT | MOISTURE CONTENT (%) | ATTERBERG LIMITS | | | DRY DENSITY POUNDS/CU.FT | COMPRESSIVE STRENGTH (TONS/SQ FT) | MINUS NO. 200 SIEVE (%) | GROUNDWATER INFORMATION: Mudline was approximately 5 feet below water surface |
| | | | | | | LL | PL | PI | | | | SURFACE ELEVATION: N/A |
| DESCRIPTION OF STRATUM | | | | | | | | | | | | |
| SH S-1 | 0.75 | 59 | 105 | 36 | 69 | | | | | | 70 | FAT CLAY WITH SAND , dark gray, moist, soft. (CH) (0.4% gravel sized particles) (30% sand particles) |
| SH S-2 | 0.25 | 25 | | | | | | | | | 33 | CLAYEY SAND , with shell, dark gray, moist, soft. |
| SH S-3 | 4.5+ | 21 | | | | | | | | | | LEAN CLAY WITH SAND , gray, moist, very stiff. |
| SH S-4 | 4.5+ | 17 | | | | | | | | | | Same as above, gray and brown. |
| SH S-5 | 4.5+ | 18 | | | | | | | | | | Same as above, gray and dark brown. |
| SH S-6 | 4.5+ | 21 | | | | | | | | | | Same as above. |
| | | | | | | | | | | | | Boring was terminated at a depth of 15 feet. |
| <p>N - STANDARD PENETRATION TEST RESISTANCE Qc - STATIC CONE PENETROMETER TEST INDEX P - POCKET PENETROMETER RESISTANCE</p> | | | | | | | | | | | | <p>REMARKS: Drilling operations were performed by Clean Harbor at GPS Coordinates N 28.670448° W 96.572391°</p> |

LOG OF BORING TR-1



Rock Engineering & Testing Lab. Inc
6817 Leopard Street
Corpus Christi, Texas 78409
Telephone: 361-883-4555
Fax: 361-883-4711

CLIENT: Belaire Environmental, Inc.
PROJECT: Port of Port Lavaca (SWG-2016-01066)
LOCATION: Calhoun County, Texas
NUMBER: G122209

DATE(S) DRILLED: 4/19/2022

| FIELD DATA | | | | LABORATORY DATA | | | | | | | DRILLING METHOD(S): Solid Stem Auger | |
|---|------------|---------------|---------|---|----------------------|------------------|----|---|-----------------------------|---|---|---|
| SOIL SYMBOL | DEPTH (FT) | SAMPLE NUMBER | SAMPLES | N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT | MOISTURE CONTENT (%) | ATTERBERG LIMITS | | | DRY DENSITY POUNDS/CU.FT | COMPRESSIVE STRENGTH (TONS/SQ FT) | MINUS NO. 200 SIEVE (%) | GROUNDWATER INFORMATION: Groundwater (GW) was not encountered during drilling. |
| | | | | | | LL | PL | PI | | | | SURFACE ELEVATION: N/A |
| DESCRIPTION OF STRATUM | | | | | | | | | | | | |
| SH S-1 | 1 | P= 4.5+ | 16 | 48 | 14 | 34 | 85 | LEAN CLAY WITH SAND , brown, moist, very stiff. (CL) | | | | |
| SH S-2 | 4 | P= 4.5 | 24 | | | | | | | | | FAT CLAY WITH SAND , dark brown, moist, very stiff. |
| Boring was terminated at a depth of 5 feet. | | | | | | | | | | | | |
| N - STANDARD PENETRATION TEST RESISTANCE Qc - STATIC CONE PENETROMETER TEST INDEX P - POCKET PENETROMETER RESISTANCE | | | | | | | | | | | REMARKS: Drilling operations were performed by On Point Geophysical at GPS Coordinates N 28.670003° W 96.570207° | |

LOG_OF_BORING G122209.GPJ ROCK_ETL.GDT 5/13/22

LOG OF BORING TR-2



Rock Engineering & Testing Lab. Inc
6817 Leopard Street
Corpus Christi, Texas 78409
Telephone: 361-883-4555
Fax: 361-883-4711

CLIENT: Belaire Environmental, Inc.
PROJECT: Port of Port Lavaca (SWG-2016-01066)
LOCATION: Calhoun County, Texas
NUMBER: G122209

DATE(S) DRILLED: 4/19/2022

| FIELD DATA | | | | LABORATORY DATA | | | | | | | DRILLING METHOD(S): |
|--|------------|---------------|---|----------------------|------------------|----|----|--------------------------|-----------------------------------|-------------------------|--|
| SOIL SYMBOL | DEPTH (FT) | SAMPLE NUMBER | SAMPLES | MOISTURE CONTENT (%) | ATTERBERG LIMITS | | | DRY DENSITY POUNDS/CU.FT | COMPRESSIVE STRENGTH (TONS/SQ.FT) | MINUS NO. 200 SIEVE (%) | Solid Stem Auger |
| | | | | | LL | PL | PI | | | | GROUNDWATER INFORMATION: |
| | | | N: BLOWS/FT P: TONS/SQ.FT T: TONS/SQ.FT Qc: TONS/SQ.FT | | | | | | | | Groundwater (GW) was not encountered during drilling. |
| | | | | | | | | | | | SURFACE ELEVATION: N/A |
| DESCRIPTION OF STRATUM | | | | | | | | | | | |
| SH S-1 | 1 | P= 2.5 | | 29 | 64 | 17 | 47 | | | 91 | FAT CLAY , dark gray, moist, stiff. (CH) |
| SH S-2 | 2 | P= 3.75 | | 29 | | | | | | | Same as above, dark brown, very stiff. |
| | 3 | | | | | | | | | | |
| | 4 | | | | | | | | | | |
| | 5 | | | | | | | | | | Boring was terminated at a depth of 5 feet. |
| <p>N - STANDARD PENETRATION TEST RESISTANCE Qc - STATIC CONE PENETROMETER TEST INDEX P - POCKET PENETROMETER RESISTANCE</p> | | | | | | | | | | | <p>REMARKS: Drilling operations were performed by On Point Geophysical at GPS Coordinates N 28.671742° W 96.570058°</p> |

LOG_OF_BORING G122209.GPJ ROCK_ETL_GDT 5/13/22

LOG OF BORING TR-3



Rock Engineering & Testing Lab. Inc
6817 Leopard Street
Corpus Christi, Texas 78409
Telephone: 361-883-4555
Fax: 361-883-4711

CLIENT: Belaire Environmental, Inc.
PROJECT: Port of Port Lavaca (SWG-2016-01066)
LOCATION: Calhoun County, Texas
NUMBER: G122209

DATE(S) DRILLED: 4/19/2022

| FIELD DATA | | | | LABORATORY DATA | | | | | | | DRILLING METHOD(S): Solid Stem Auger | |
|---|------------|---------------|---------|---|----------------------|------------------|----|----|-----------------------------|---|---|---|
| SOIL SYMBOL | DEPTH (FT) | SAMPLE NUMBER | SAMPLES | N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT | MOISTURE CONTENT (%) | ATTERBERG LIMITS | | | DRY DENSITY POUNDS/CU.FT | COMPRESSIVE STRENGTH (TONS/SQ FT) | MINUS NO. 200 SIEVE (%) | GROUNDWATER INFORMATION: Groundwater (GW) was not encountered during drilling. |
| | | | | | | LL | PL | PI | | | | SURFACE ELEVATION: N/A |
| DESCRIPTION OF STRATUM | | | | | | | | | | | | |
| SH S-1 | 1 | P= 3.25 | 24 | 61 | 14 | 47 | | | | 87 | FAT CLAY , dark gray, moist, very stiff. (CH) | |
| SH S-2 | 2 | P= 4.5+ | 21 | | | | | | | | Same as above, dark brown. | |
| | 3 | | | | | | | | | | | |
| | 4 | | | | | | | | | | | |
| | 5 | | | | | | | | | | | Boring was terminated at a depth of 5 feet. |
| <p>N - STANDARD PENETRATION TEST RESISTANCE Qc - STATIC CONE PENETROMETER TEST INDEX P - POCKET PENETROMETER RESISTANCE</p> | | | | | | | | | | | <p>REMARKS: Drilling operations were performed by On Point Geophysical at GPS Coordinates N 28.672393° W 96.567539°</p> | |

LOG OF BORING TR-4



Rock Engineering & Testing Lab. Inc
6817 Leopard Street
Corpus Christi, Texas 78409
Telephone: 361-883-4555
Fax: 361-883-4711

CLIENT: Belaire Environmental, Inc.
PROJECT: Port of Port Lavaca (SWG-2016-01066)
LOCATION: Calhoun County, Texas
NUMBER: G122209

DATE(S) DRILLED: 4/19/2022

| FIELD DATA | | | | LABORATORY DATA | | | | | | | DRILLING METHOD(S): |
|--|------------|---------------|---|----------------------|------------------|----|----|--------------------------|-----------------------------------|-------------------------|--|
| SOIL SYMBOL | DEPTH (FT) | SAMPLE NUMBER | SAMPLES | MOISTURE CONTENT (%) | ATTERBERG LIMITS | | | DRY DENSITY POUNDS/CU.FT | COMPRESSIVE STRENGTH (TONS/SQ.FT) | MINUS NO. 200 SIEVE (%) | Solid Stem Auger |
| | | | | | LL | PL | PI | | | | GROUNDWATER INFORMATION: |
| | | | N: BLOWS/FT P: TONS/SQ.FT T: TONS/SQ.FT Qc: TONS/SQ.FT | | | | | | | | Groundwater (GW) was not encountered during drilling. |
| | | | | | | | | | | | SURFACE ELEVATION: N/A |
| DESCRIPTION OF STRATUM | | | | | | | | | | | |
| SH S-1 | 1 | P= 2.5 | | 18 | 44 | 13 | 31 | | | 83 | LEAN CLAY WITH SAND , dark gray, moist, stiff. |
| SH S-2 | 2 | P= 3.75 | | 13 | | | | | | | Same as above, brown, very stiff. |
| | 3 | | | | | | | | | | |
| | 4 | | | | | | | | | | |
| | 5 | | | | | | | | | | Boring was terminated at a depth of 5 feet. |
| <p>N - STANDARD PENETRATION TEST RESISTANCE Qc - STATIC CONE PENETROMETER TEST INDEX P - POCKET PENETROMETER RESISTANCE</p> | | | | | | | | | | | <p>REMARKS: Drilling operations were performed by On Point Geophysical at GPS Coordinates N 28.671827° W 96.565817°</p> |

LOG_OF_BORING G122209.GPJ ROCK_ETL.GDT 5/13/22

LOG OF BORING TP-1



Rock Engineering & Testing Lab. Inc
6817 Leopard Street
Corpus Christi, Texas 78409
Telephone: 361-883-4555
Fax: 361-883-4711

CLIENT: Belaire Environmental, Inc.
PROJECT: Port of Port Lavaca (SWG-2016-01066)
LOCATION: Calhoun County, Texas
NUMBER: G122209
DATE(S) DRILLED: 4/18/2022

| FIELD DATA | | | | LABORATORY DATA | | | | | | | DRILLING METHOD(S): | | |
|---|------------|---------------|---------|---|----------------------|------------------|----|----|-----------------------------|---|---|---|--|
| SOIL SYMBOL | DEPTH (FT) | SAMPLE NUMBER | SAMPLES | N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT | MOISTURE CONTENT (%) | ATTERBERG LIMITS | | | DRY DENSITY POUNDS/CU.FT | COMPRESSIVE STRENGTH (TONS/SQ FT) | MINUS NO. 200 SIEVE (%) | GROUNDWATER INFORMATION: | |
| | | | | | | LL | PL | PI | | | | Groundwater (GW) was not encountered during drilling. | |
| | | | | | | | | | | | | SURFACE ELEVATION: N/A | |
| | | | | | | | | | | | | DESCRIPTION OF STRATUM | |
| | 1 | | | | | | | | | | | | |
| | 2 | | | | | | | | | | | | |
| | 3 | GRAB S-1 | | | 23 | 58 | 14 | 44 | | | 90 | FAT CLAY , brown, moist, soft. (CH) | |
| | 4 | | | Qc= 2 | | | | | | | | | |
| | 5 | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | |
| | 8 | GRAB S-2 | | | 51 | 71 | 16 | 55 | | | 90 | FAT CLAY , gray, moist, soft. (CH) | |
| | 9 | | | | | | | | | | | | |
| | 10 | | | Qc= 1 | | | | | | | | Boring was terminated at a depth of 10 feet. | |
| <p>N - STANDARD PENETRATION TEST RESISTANCE Qc - STATIC CONE PENETROMETER TEST INDEX P - POCKET PENETROMETER RESISTANCE</p> | | | | | | | | | | | <p>REMARKS: Drilling operations were performed by Port Authority at GPS Coordinates N 28.64007° W 96.55535°</p> | | |

LOG_OF_BORING_G122209.GPJ ROCK_ETL_GDT_5/13/22

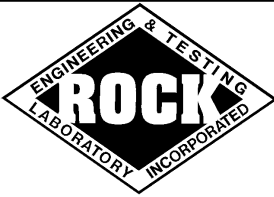
LOG OF BORING TP-2



Rock Engineering & Testing Lab. Inc
6817 Leopard Street
Corpus Christi, Texas 78409
Telephone: 361-883-4555
Fax: 361-883-4711

CLIENT: Belaire Environmental, Inc.
PROJECT: Port of Port Lavaca (SWG-2016-01066)
LOCATION: Calhoun County, Texas
NUMBER: G122209
DATE(S) DRILLED: 4/18/2022

| FIELD DATA | | | | LABORATORY DATA | | | | | | | DRILLING METHOD(S): | | |
|---|------------|---------------|---------|---|----------------------|------------------|----|----|-----------------------------|---|-------------------------|---|--|
| SOIL SYMBOL | DEPTH (FT) | SAMPLE NUMBER | SAMPLES | N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT Qc: TONS/SQ FT | MOISTURE CONTENT (%) | ATTERBERG LIMITS | | | DRY DENSITY POUNDS/CU.FT | COMPRESSIVE STRENGTH (TONS/SQ FT) | MINUS NO. 200 SIEVE (%) | GROUNDWATER INFORMATION: | |
| | | | | | | LL | PL | PI | | | | Groundwater (GW) was not encountered during drilling. | |
| | | | | | | | | | | | | SURFACE ELEVATION: N/A | |
| | | | | | | | | | | | | DESCRIPTION OF STRATUM | |
| | 1 | | | | | | | | | | | | |
| | 2 | | | | | | | | | | | | |
| | 3 | | | | | | | | | | | | |
| | 4 | GRAB S-1 | | | 59 | 111 | 30 | 81 | | | 99 | FAT CLAY , gray, moist, soft. (CH) | |
| | 5 | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | |
| | 8 | GRAB S-2 | | | 39 | 55 | 17 | 38 | | | 81 | Same as above, gray and brown. (CH) | |
| | | | | Qc=1 | | | | | | | | Boring was terminated at a depth of 8 feet. | |
| <p>N - STANDARD PENETRATION TEST RESISTANCE Qc - STATIC CONE PENETROMETER TEST INDEX P - POCKET PENETROMETER RESISTANCE</p> | | | | | | | | | | | | <p>REMARKS: Drilling operations were performed by Port Authority at GPS Coordinates N 28.63936° W 96.55729°</p> | |



Engineering & Testing
Laboratory, Inc.

Rock Engineering & Testing Laboratory
6817 Leopard Street
Corpus Christi, TX 78409-1703
Telephone: 361-883-4555
Fax: 361-883-4711

KEY TO SOIL CLASSIFICATION AND SYMBOLS

| UNIFIED SOIL CLASSIFICATION SYSTEM | | | TERMS CHARACTERIZING SOIL STRUCTURE | | |
|------------------------------------|---------------------------|-------------------------------------|---|---|---|
| MAJOR DIVISIONS | SYMBOL | NAME | | | |
| COARSE GRAINED SOILS | GRAVEL AND GRAVELLY SOILS | GW | Well Graded Gravels or Gravel-Sand mixtures, little or no fines | SLICKENSIDED - having inclined planes of weakness that are slick and glossy in appearance | |
| | | GP | Poorly Graded Gravels or Gravel-Sand mixtures, little or no fines | | |
| | | GM | Silty Gravels, Gravel-Sand-Silt mixtures | FISSURED - containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical | |
| | | GC | Clayey Gravels, Gravel-Sand-Clay Mixtures | | |
| | SAND AND SANDY SOILS | SW | Well Graded Sands or Gravelly Sands, little or no fines | LAMINATED (VARVED) - composed of thin layers of varying color and texture, usually grading from sand or silt at the bottom to clay at the top | |
| | | SP | Poorly Graded Sands or Gravelly Sands, little or no fines | | |
| | | SM | Silty Sands, Sand-Silt Mixtures | CRUMBLY - cohesive soils which break into small blocks or crumbs on drying | |
| | | SC | Clayey Sands, Sand-Clay mixtures | | |
| FINE GRAINED SOILS | SILTS AND CLAYS LL < 50 | ML | Inorganic Silts and very fine Sands, Rock Flour, Silty or Clayey fine Sands or Clayey Silts | WELL GRADED - having wide range in grain sizes and substantial amounts of all intermediate particle sizes | |
| | | CL | Inorganic Clays of low to medium plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays | | |
| | | OL | Organic Silts and Organic Silt-Clays of low plasticity | | |
| | SILTS AND CLAYS LL > 50 | MH | Inorganic Silts, Micaceous or Diatomaceous fine Sandy or Silty soils, Elastic Silts | | POORLY GRADED - predominantly of one grain size uniformly graded) or having a range of sizes with some intermediate size missing (gap or skip graded) |
| | | CH | Inorganic Clays of high plasticity, Fat Clays | | |
| | | OH | Organic Clays of medium to high plasticity, Organic Silts | | |
| HIGHLY ORGANIC SOILS | PT | Peat and other Highly Organic soils | | | |

SYMBOLS FOR TEST DATA

- Groundwater Level (Initial Reading)
- Groundwater Level (Final Reading)
- Shelby Tube Sample
- SPT Samples
- Auger Sample
- Rock Core

TERMS DESCRIBING CONSISTENCY OF SOIL

| COARSE GRAINED SOILS | | FINE GRAINED SOILS | | |
|----------------------|----------------------------------|--------------------|----------------------------------|---|
| DESCRIPTIVE TERM | NO. BLOWS/FT. STANDARD PEN. TEST | DESCRIPTIVE TERM | NO. BLOWS/FT. STANDARD PEN. TEST | UNCONFINED COMPRESSION TONS PER SQ. FT. |
| Very Loose | 0 - 4 | Very Soft | < 2 | < 0.25 |
| Loose | 4 - 10 | Soft | 2 - 4 | 0.25 - 0.50 |
| Medium | 10 - 30 | Firm | 4 - 8 | 0.50 - 1.00 |
| Dense | 30 - 50 | Stiff | 8 - 15 | 1.00 - 2.00 |
| Very Dense | over 50 | Very Stiff | 15 - 30 | 2.00 - 4.00 |
| | | Hard | over 30 | over 4.00 |

Field Classification for "Consistency" is determined with a 0.25" diameter penetrometer

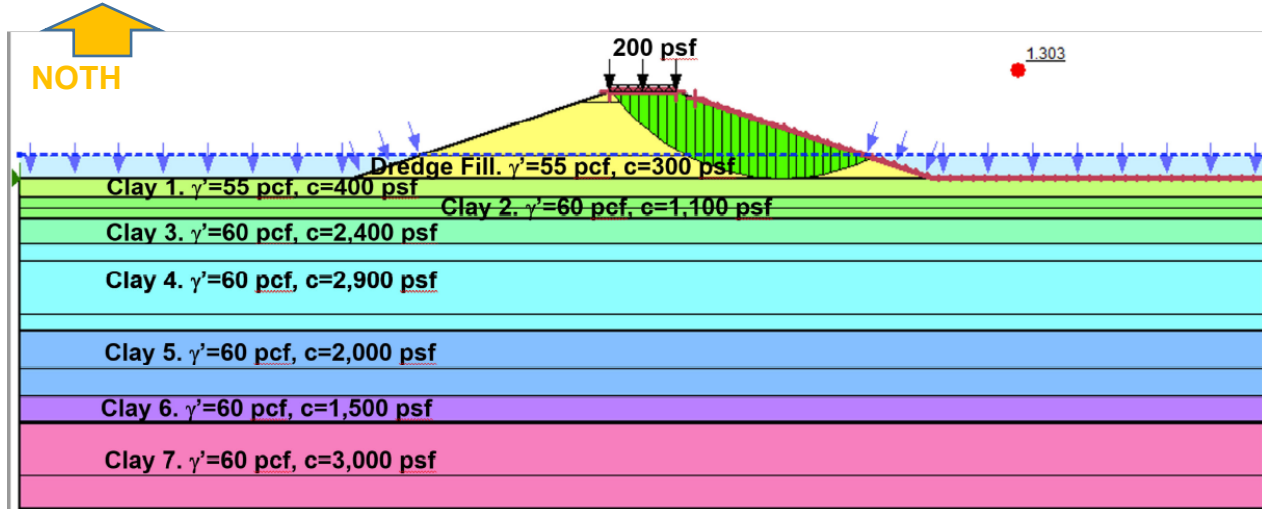
SLOPE STABILITY ANALYSIS RESULTS



- GEOTECHNICAL ENGINEERING
- CONSTRUCTION MATERIALS ENGINEERING & TESTING
- SOILS • ASPHALT • CONCRETE

Slope

**SLOPE STABILITY ANALYSIS
SHORT-TERM CONDITIONS**



May 31, 2022
 Attn: Ms. Laura Fox
 RETL Job Number G122209

BENEFICIAL USE MITIGATION (SWG-2016-01066)
 Port of Port Lavaca
 Calhoun County, Texas

ROCK ENGINEERING & TESTING LABORATORY, INC.

Corpus Christi
 Office: 361.883.4555
 Fax: 361.883.4711
 6817 Leopard St.
 Corpus Christi, TX 78409

San Antonio
 Office: 210.495.8000
 Fax: 210.495.8015
 10856 Vandale
 San Antonio, TX 78216

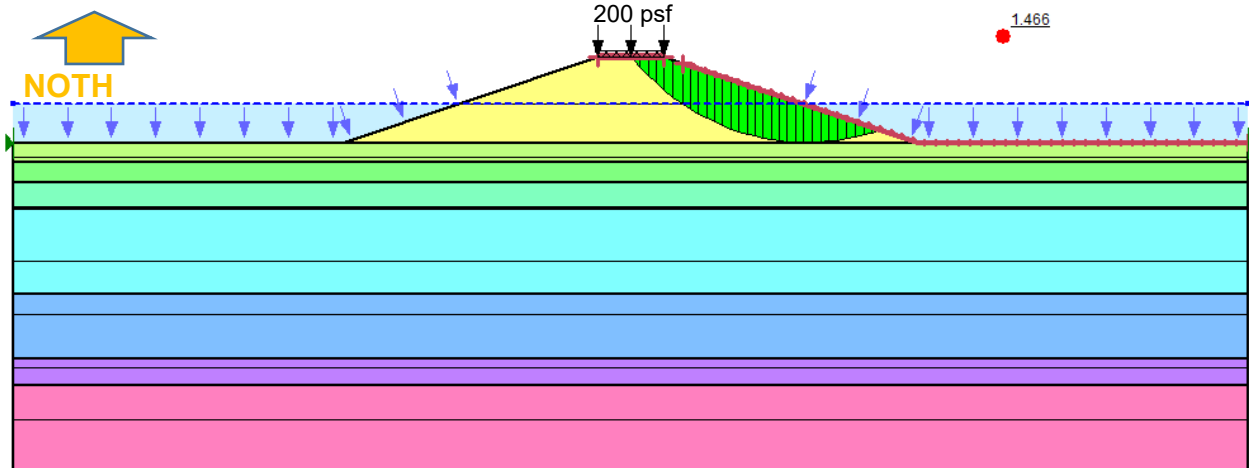
Round Rock
 Office: 512.284.8022
 Fax: 512.284.7764
 7 Roundville Ln.
 Round Rock, TX 78664

www.rocktesting.com



- GEOTECHNICAL ENGINEERING
- CONSTRUCTION MATERIALS ENGINEERING & TESTING
- SOILS • ASPHALT • CONCRETE

SLOPE STABILITY ANALYSIS LONG-TERM CONDITIONS



| | | | |
|--------------|----------------------|-------------------|-----------|
| Name: Berm | Unit Weight: 100 pcf | Cohesion: 30 psf | Phi: 25 ° |
| Name: Clay 1 | Unit Weight: 115 pcf | Cohesion: 40 psf | Phi: 28 ° |
| Name: Clay 2 | Unit Weight: 120 pcf | Cohesion: 110 psf | Phi: 29 ° |
| Name: Clay 3 | Unit Weight: 120 pcf | Cohesion: 240 psf | Phi: 28 ° |
| Name: Clay 4 | Unit Weight: 120 pcf | Cohesion: 290 psf | Phi: 29 ° |
| Name: Clay 5 | Unit Weight: 120 pcf | Cohesion: 200 psf | Phi: 28 ° |
| Name: Clay 6 | Unit Weight: 120 pcf | Cohesion: 150 psf | Phi: 27 ° |
| Name: Clay 7 | Unit Weight: 120 pcf | Cohesion: 300 psf | Phi: 26 ° |

May 31, 2022
 Attn: Ms. Laura Fox
 RETL Job Number G122209

BENEFICIAL USE MITIGATION (SWG-2016-01066)

Port of Port Lavaca
 Calhoun County, Texas

ROCK ENGINEERING & TESTING LABORATORY, INC.

Corpus Christi
 Office: 361.883.4555
 Fax: 361.883.4711
 6817 Leopard St.
 Corpus Christi, TX 78409

San Antonio
 Office: 210.495.8000
 Fax: 210.495.8015
 10856 Vandale
 San Antonio, TX 78216

Round Rock
 Office: 512.284.8022
 Fax: 512.284.7764
 7 Roundville Ln.
 Round Rock, TX 78664

www.rocktesting.com

COMPATION TEST RESULTS



Rock Engineering - Corpus Christi
 6817 Leopard St
 Corpus Christi, TX 78409
 Ph: 361-883-4555
 TXPE Firm Registration No. 2101

Proctor Report

Report No: PTR:CC22-W02360-S01

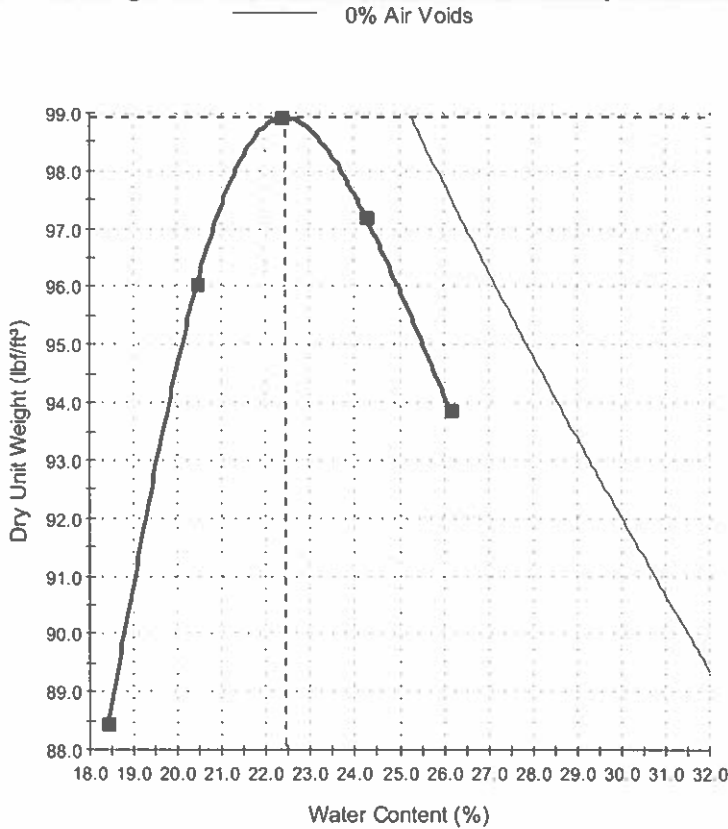
Client: Belaire Environmental, Inc.
 PO Box 741 Rockport Texas 78381
Project: Port of Port Lavaca (SWG-2016-01066)
 Calhoun County, Texas
 G122209

CC:

Sample Details

| | |
|--|---|
| Sample ID: CC22-W02360-S01 | Date Sampled: |
| Sampled By: | Sampling Method: Composite Grab Sample |
| Material: Reddish Brown & Light Gray Clay | |
| Sample Location: TP-1 Dredge | |
| Tested By: Christopher Rios | Date Tested: 5/7/2022 |

Dry Unit Weight - Water Content Relationship



Test Results

ASTM D 698

| | |
|--|------------------|
| Maximum Dry Unit Weight (lb/ft³): | 98.9 |
| Optimum Water Content (%): | 22.4 |
| Method: | A |
| Preparation Method: | |
| Specific Gravity (Fines): | 2.65 |
| Retained Sieve No 4 (4.75mm) (%): | 0 |
| Passing Sieve No 4 (4.75mm) (%): | 100 |
| Tested By: | Christopher Rios |
| Date Tested: | 5/7/2022 |

Comments

DRAFT
DMSA Borrow Area Overview:
Source Material for Mitigation Site Construction
CPA-Bean Tract Mitigation
Point Comfort, Calhoun County, Texas

Notes:

- Survey was conducted 3-31-2022.
- Basemap Source: ESRI ArcGIS Imagery..
- For planning purposes only, not for construction.
- Prepared by Belaire Environmental, Inc. 4-1-2022 (AP)

**Equip Access for
Current Dredging
LD#1**

Approximately 53,830 Cubic Yards of Red Clay
Placed on Top of Previous Dredge Material

Depth of Red Clay
Approximately 4.25 ft

Depth of Red Clay
Approximately 4.27 ft

Depth of Red Clay
Approximately 5.55 ft

**New Dredged
Material
Placement
Footprint**

Depth of Red Clay
Approximately 3.94 ft

Depth of Red Clay
Approximately 5.22 ft

Depth of Red Clay
Approximately 5.39 ft

**Perimeter of
Borrow Area for
Mitigation Site
Construction**

VEGETATION

Note:
Topo sample points recorded were within +/- 1 foot of the
previous topo points recorded. One point was significantly
higher, however, that sample point was outside of the
material placement boundary.

PHOTOS
CPA Mitigation
Borrow Area
BEI Field Investigation
3-30-2022

Vegetated area-
Existing Dredged Material
(targeted for Borrow Area)



Red clay road-
Newly Dredged
Material

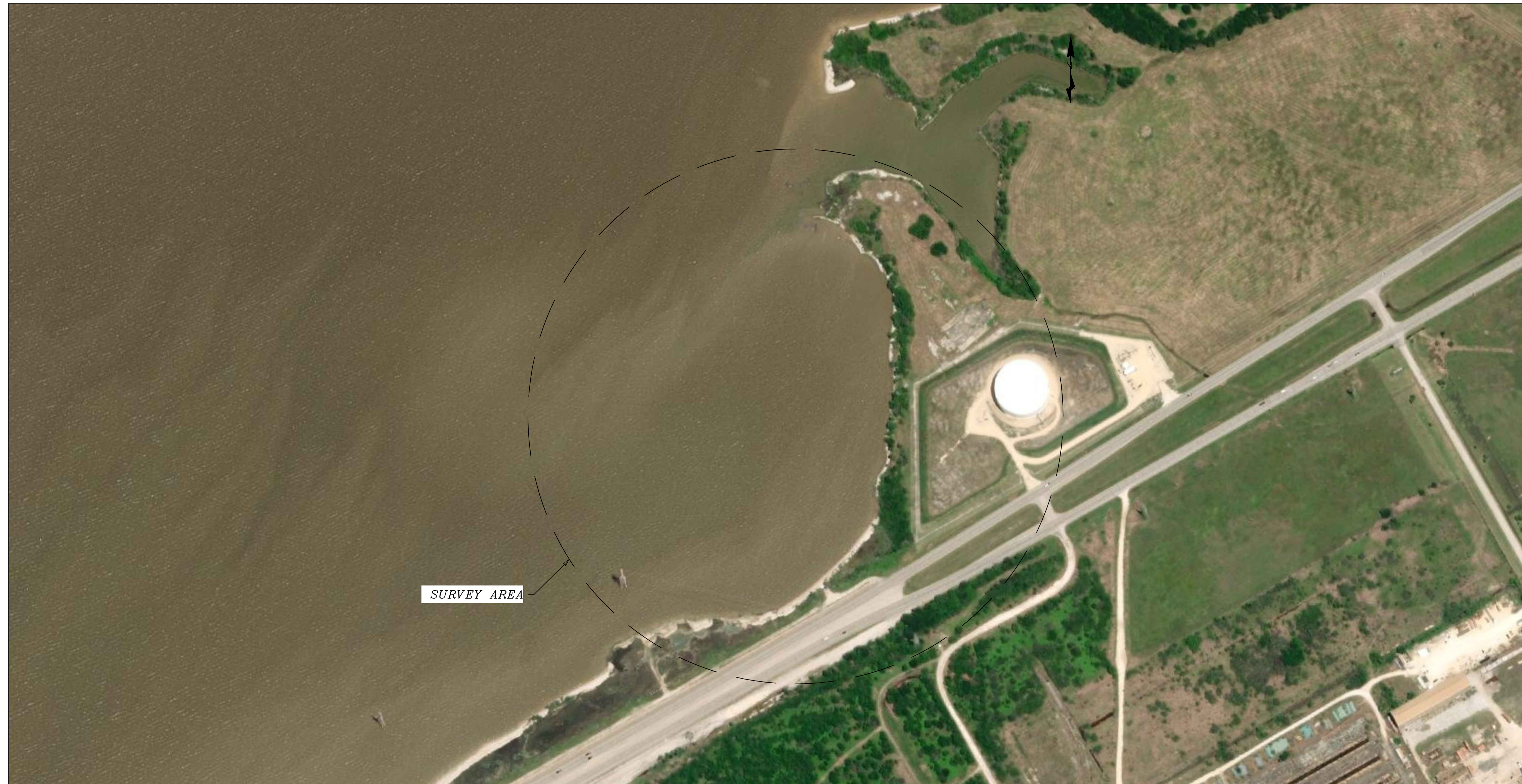


SCOPE OF WORK:

**SURVEY OF BELAIRE
ENVIRONMENTAL BEAN TRACT
MITIGATION SITE,
LAVACA BAY, TEXAS**



SURVEY OF
BELAIRE ENVIRONMENTAL
BEAN TRACT MITIGATION SITE
LAVACA BAY, TEXAS



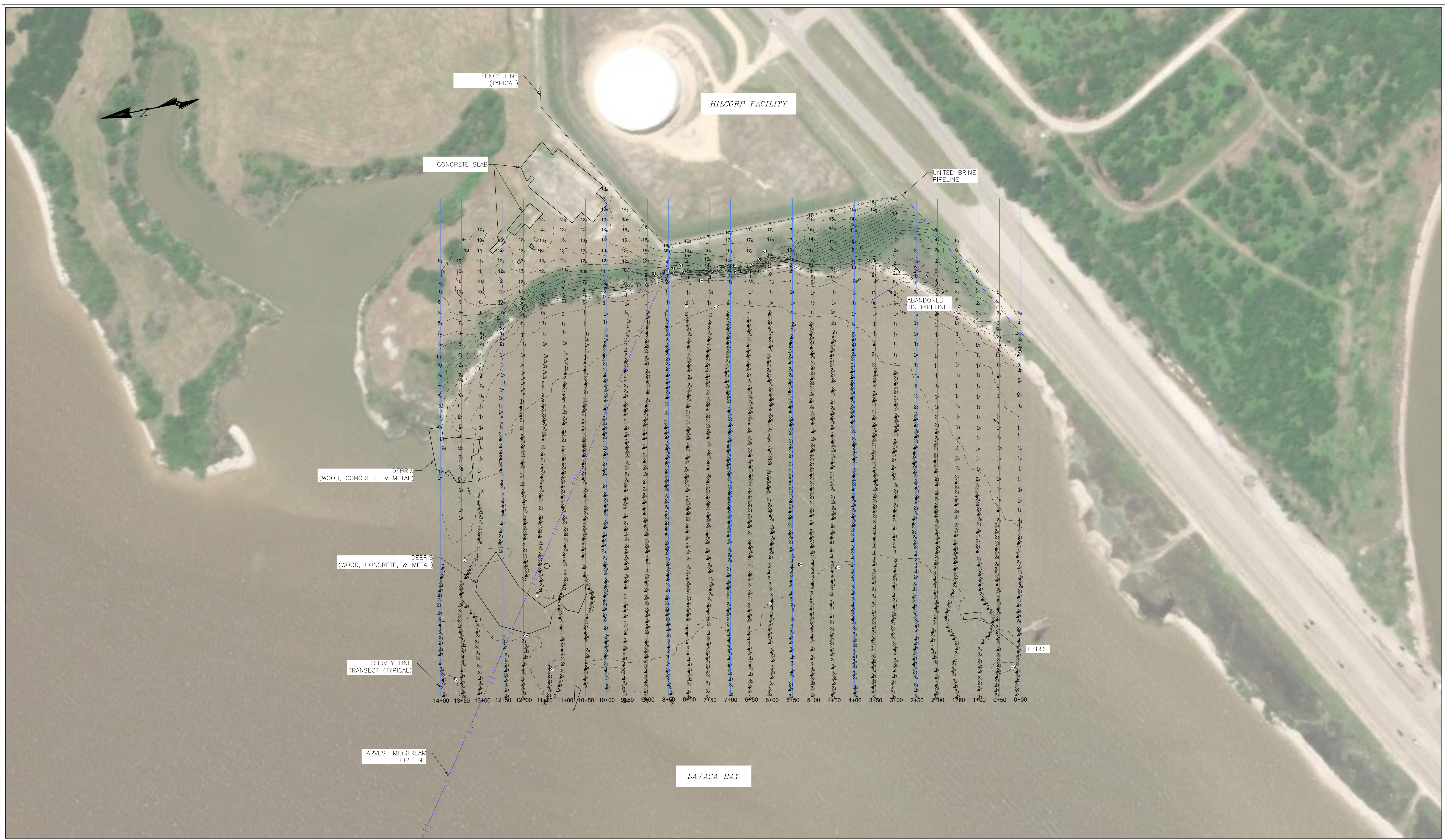
OVERALL PROJECT LOCATION
(NOT TO SCALE)

NOTES

- NOTES:
1. SURVEY IS BASED ON NAD '83 (2011 EPOCH), TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, US FEET.
TMI CONTROL POINT:
N: 13,435,506.24
E: 2,747,683.36
Z: 18.76'
2. SURVEY WAS CONDUCTED ON APRIL 7, 2022 AND REPRESENTS THE CONDITIONS AT THAT TIME.
3. SURVEY WAS CONDUCTED ON 50 FOOT TRANSECTS
4. THIS SURVEY WAS CONDUCTED USING A GEOMETRICS G-882 MAGNETOMETER, A 200KHz TRANSDUCER, AND RTK-GNSS.

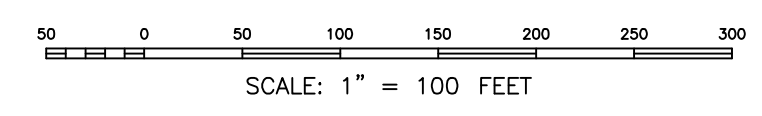
361.688.6785 WWW.TMISOLUTIONSLLC.COM
GEORGE WEST, TEXAS 78022

| | |
|--|---------------|
| PRE-CONSTRUCTION BATHYMETRIC SURVEY OF: <i>BEAN TRACT MITIGATION SITE</i> | |
| LOCATED IN LAVACA BAY, TEXAS | |
| DATE: 4/14/22 | DRAWN BY: CA |
| PROJECT No: 2589 | SHEET: 1 OF 8 |



NOTES

- NOTES:
 1. SURVEY IS BASED ON NAD '83 (2011 EPOCH), TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, US FEET.
 TMI CONTROL POINT:
 N: 13,435,506.24
 E: 2,747,683.36
 Z: 18.76'
 2. ELEVATIONS ARE SHOWN IN NAVD'88.
 3. SURVEY WAS CONDUCTED ON APRIL 7, 2022 AND REPRESENTS THE CONDITIONS AT THAT TIME.
 4. SURVEY WAS CONDUCTED ON 50 FOOT TRANSECTS
 5. THIS SURVEY WAS CONDUCTED USING A 200KHZ TRANSDUCER AND RTK-GNSS.

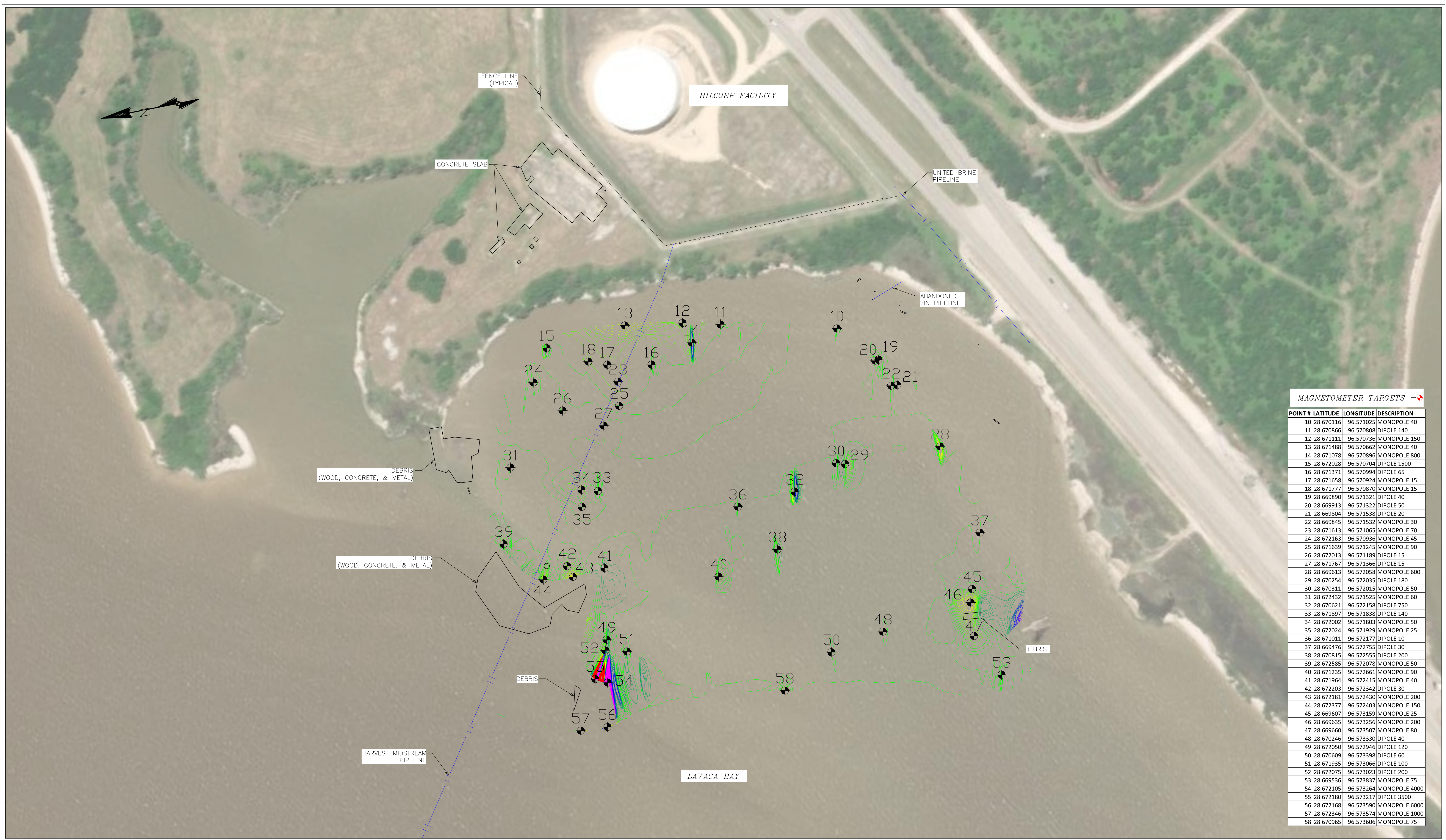


TMI SOLUTIONS LLC
 361.688.6785 WWW.TMISOLUTIONSLLC.COM
 GEORGE WEST, TEXAS 78022

PRE-CONSTRUCTION BATHYMETRIC SURVEY OF:
BEAN TRACT MITIGATION SITE

LOCATED IN LAVACA BAY, TEXAS

| | |
|------------------|---------------|
| DATE: 4/14/2022 | DRAWN BY: CA |
| PROJECT No: 2589 | SHEET: 2 OF 8 |

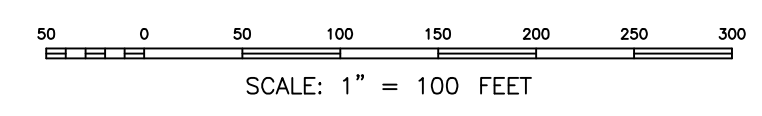


MAGNETOMETER TARGETS =

| POINT # | LATITUDE | LONGITUDE | DESCRIPTION |
|---------|-----------|-----------|---------------|
| 10 | 28.670116 | 96.571025 | MONOPOLE 40 |
| 11 | 28.670866 | 96.570808 | DIPOLE 140 |
| 12 | 28.671111 | 96.570736 | MONOPOLE 150 |
| 13 | 28.671488 | 96.570662 | MONOPOLE 40 |
| 14 | 28.671078 | 96.570896 | MONOPOLE 800 |
| 15 | 28.672028 | 96.570704 | DIPOLE 1500 |
| 16 | 28.671371 | 96.570994 | DIPOLE 65 |
| 17 | 28.671658 | 96.570924 | MONOPOLE 15 |
| 18 | 28.671777 | 96.570870 | MONOPOLE 15 |
| 19 | 28.669890 | 96.571321 | DIPOLE 40 |
| 20 | 28.669913 | 96.571322 | DIPOLE 50 |
| 21 | 28.669804 | 96.571538 | DIPOLE 20 |
| 22 | 28.669845 | 96.571532 | MONOPOLE 30 |
| 23 | 28.671613 | 96.571065 | MONOPOLE 70 |
| 24 | 28.672163 | 96.570936 | MONOPOLE 45 |
| 25 | 28.671639 | 96.571245 | MONOPOLE 90 |
| 26 | 28.672013 | 96.571189 | DIPOLE 15 |
| 27 | 28.671767 | 96.571366 | DIPOLE 15 |
| 28 | 28.669613 | 96.572058 | MONOPOLE 600 |
| 29 | 28.670254 | 96.572035 | DIPOLE 180 |
| 30 | 28.670311 | 96.572015 | MONOPOLE 50 |
| 31 | 28.672432 | 96.571525 | MONOPOLE 60 |
| 32 | 28.670621 | 96.572158 | DIPOLE 750 |
| 33 | 28.671897 | 96.571838 | DIPOLE 140 |
| 34 | 28.672002 | 96.571803 | MONOPOLE 50 |
| 35 | 28.672024 | 96.571929 | MONOPOLE 25 |
| 36 | 28.671011 | 96.572177 | DIPOLE 10 |
| 37 | 28.669476 | 96.572755 | DIPOLE 30 |
| 38 | 28.670815 | 96.572555 | DIPOLE 200 |
| 39 | 28.672585 | 96.572078 | MONOPOLE 50 |
| 40 | 28.671235 | 96.572661 | MONOPOLE 90 |
| 41 | 28.671964 | 96.572415 | MONOPOLE 40 |
| 42 | 28.672203 | 96.572342 | DIPOLE 30 |
| 43 | 28.672181 | 96.572430 | MONOPOLE 200 |
| 44 | 28.672377 | 96.572403 | MONOPOLE 150 |
| 45 | 28.669607 | 96.573159 | MONOPOLE 25 |
| 46 | 28.669635 | 96.573256 | MONOPOLE 200 |
| 47 | 28.669660 | 96.573507 | MONOPOLE 80 |
| 48 | 28.670246 | 96.573330 | DIPOLE 40 |
| 49 | 28.672050 | 96.572946 | DIPOLE 120 |
| 50 | 28.670609 | 96.573398 | DIPOLE 60 |
| 51 | 28.671935 | 96.573066 | DIPOLE 100 |
| 52 | 28.672075 | 96.573023 | DIPOLE 200 |
| 53 | 28.669536 | 96.573837 | MONOPOLE 75 |
| 54 | 28.672105 | 96.573264 | MONOPOLE 4000 |
| 55 | 28.672180 | 96.573217 | DIPOLE 3500 |
| 56 | 28.672168 | 96.573590 | MONOPOLE 6000 |
| 57 | 28.672346 | 96.573574 | MONOPOLE 1000 |
| 58 | 28.670965 | 96.573606 | MONOPOLE 75 |

NOTES

- NOTES:
1. SURVEY IS BASED ON NAD '83 (2011 EPOCH), TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, US FEET.
TMI CONTROL POINT:
N: 13,435,506.24
E: 2,747,683.36
Z: 18.76'
 2. SURVEY WAS CONDUCTED ON APRIL 8, 2022 AND REPRESENTS THE CONDITIONS AT THAT TIME.
 3. SURVEY WAS CONDUCTED ON 50 FOOT TRANSECTS
 4. THIS SURVEY WAS CONDUCTED USING A GEOMETRICS G-882 MAGNETOMETER AND RTK-GNSS.



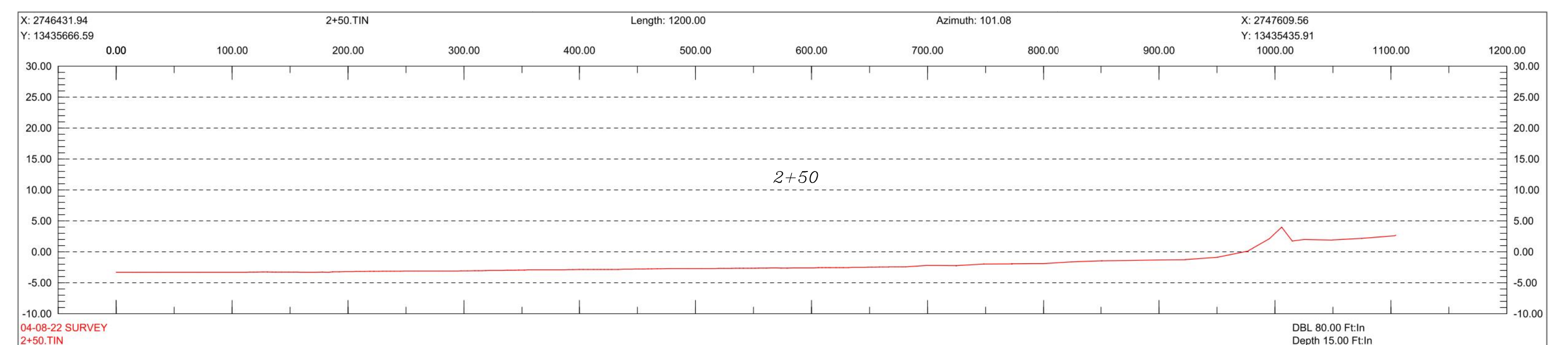
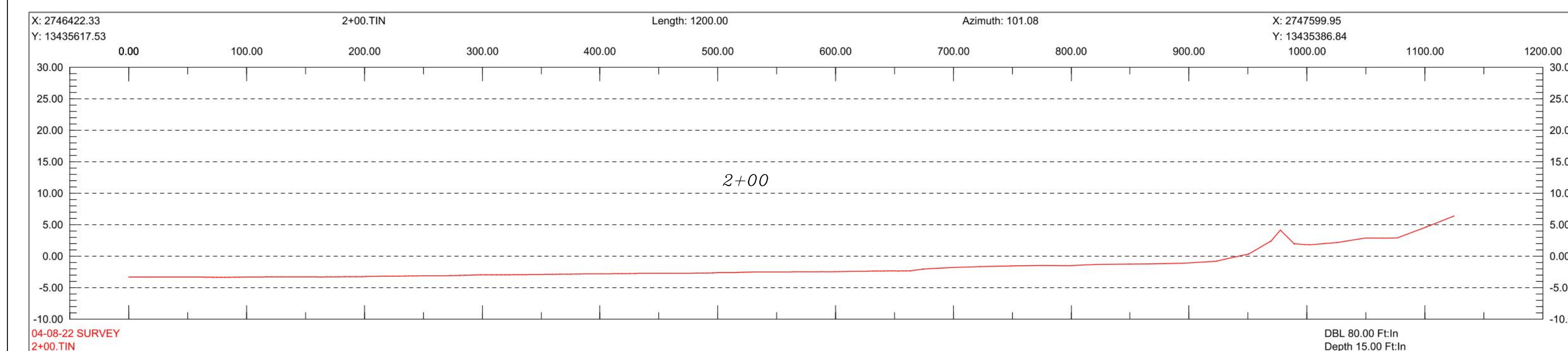
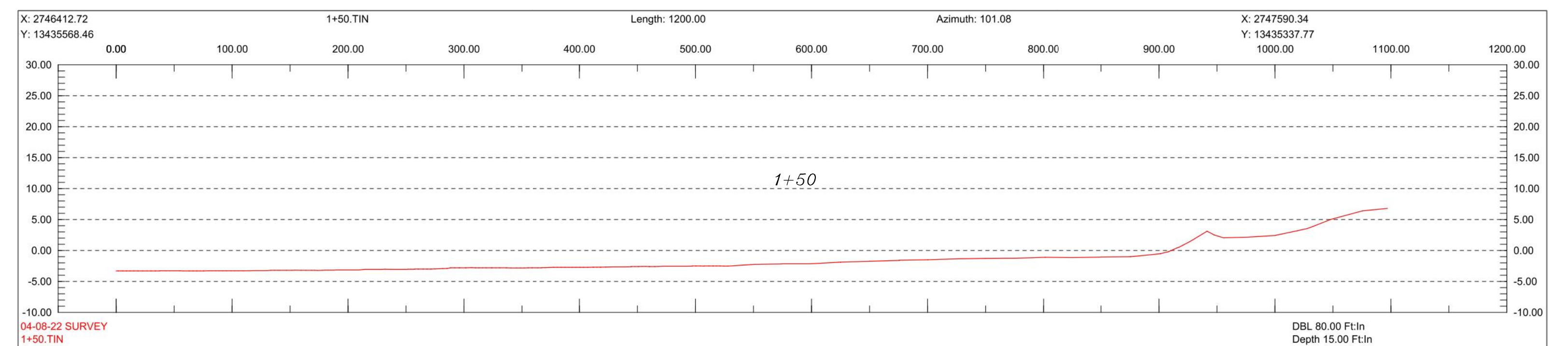
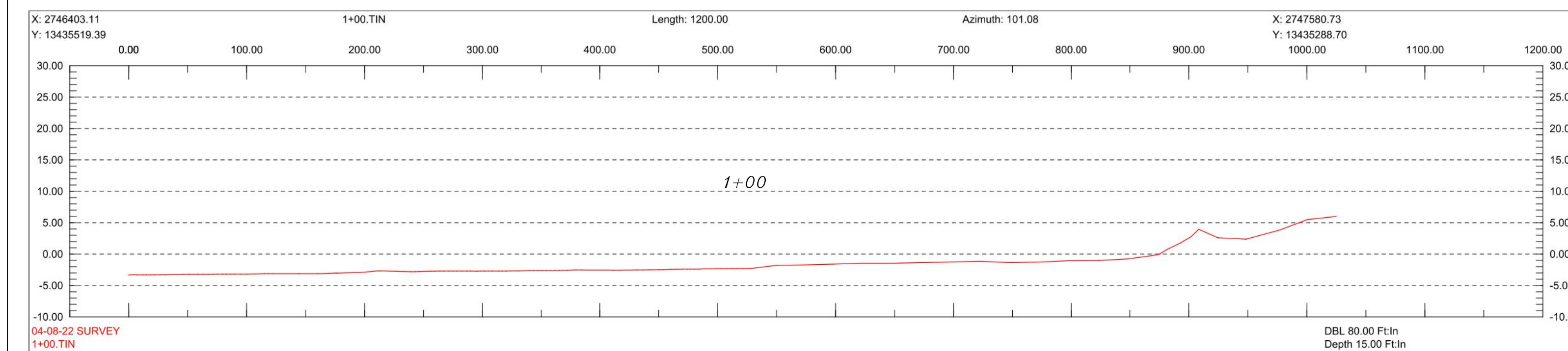
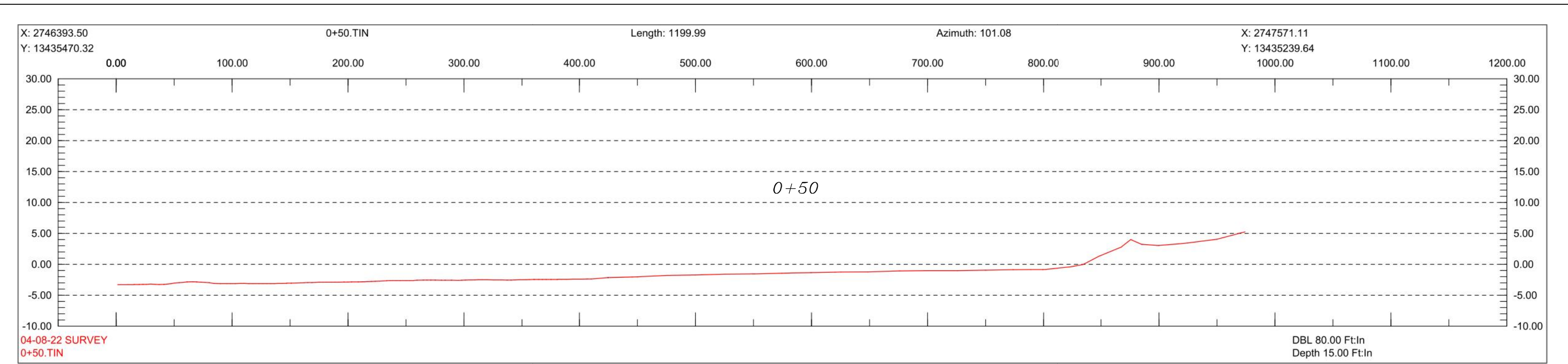
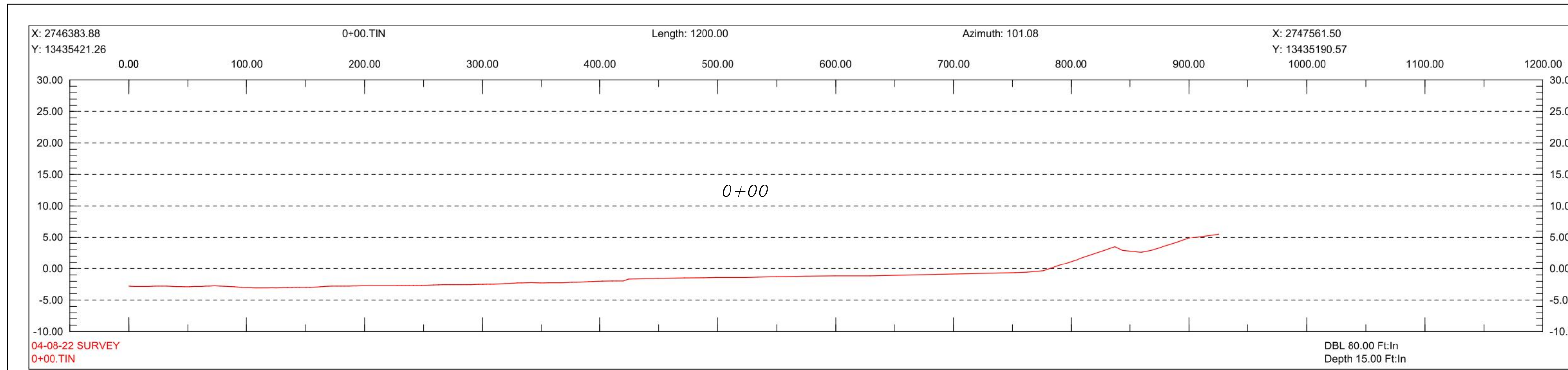
TMI SOLUTIONS LLC
361.688.6785 WWW.TMISOLUTIONSLLC.COM
GEORGE WEST, TEXAS 78022

PRE-CONSTRUCTION BATHYMETRIC SURVEY OF:
BEAN TRACT MITIGATION SITE

LOCATED IN LAVACA BAY, TEXAS

| | |
|------------------|---------------|
| DATE: 4/14/2022 | DRAWN BY: CA |
| PROJECT No: 2589 | SHEET: 3 OF 8 |

CROSS SECTIONS



NOTES

- NOTES:
1. SURVEY IS BASED ON NAD '83 (2011 EPOCH), TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, US FEET.
TMI CONTROL POINT:
N: 13,435,506.24
E: 2,747,683.36
Z: 18.76'
 2. ELEVATIONS ARE SHOWN IN NAVD'88.
 3. SURVEY WAS CONDUCTED ON APRIL 7, 2022 AND REPRESENTS THE CONDITIONS AT THAT TIME.
 4. SURVEY WAS CONDUCTED ON 50 FOOT TRANSECTS
 5. THIS SURVEY WAS CONDUCTED USING A 200KHZ TRANSDUCER AND RTK-GNSS.



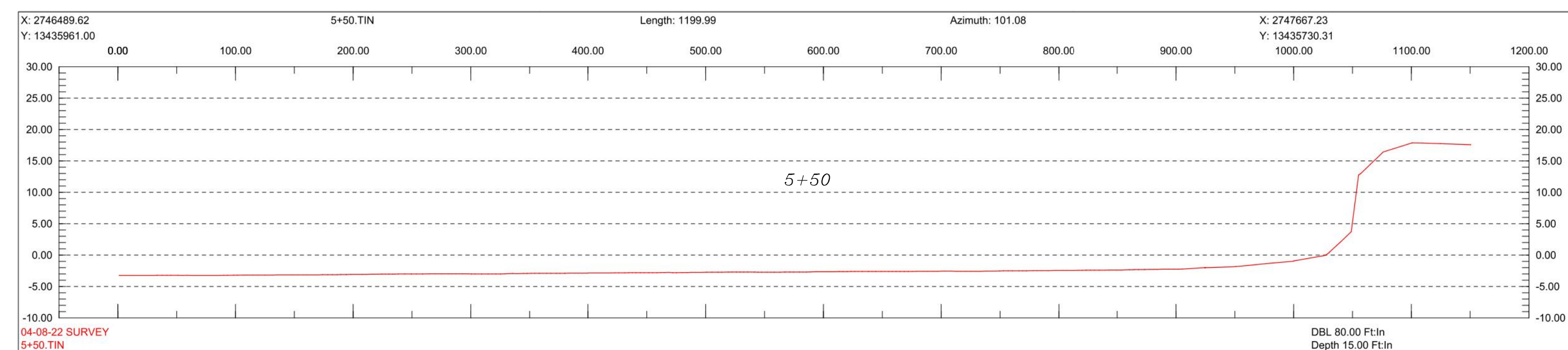
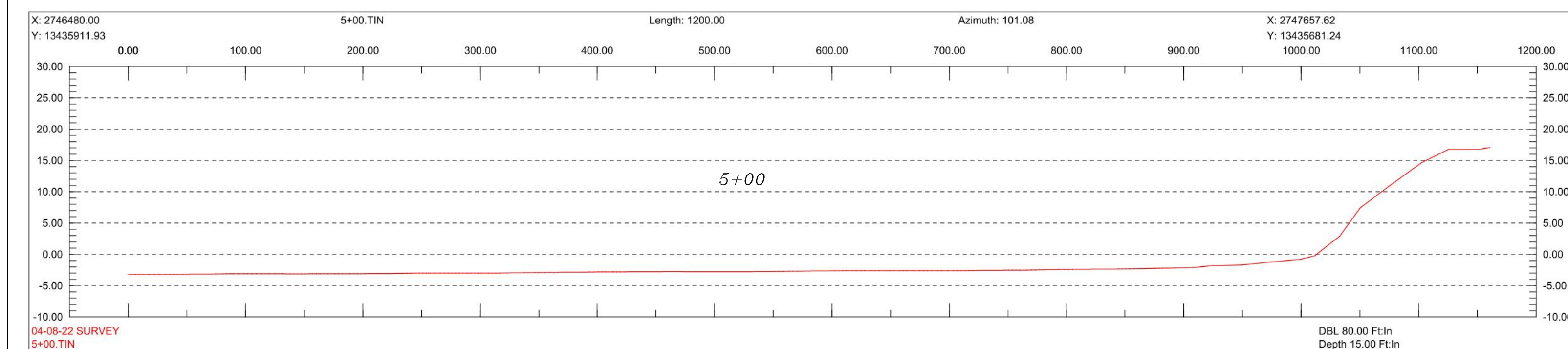
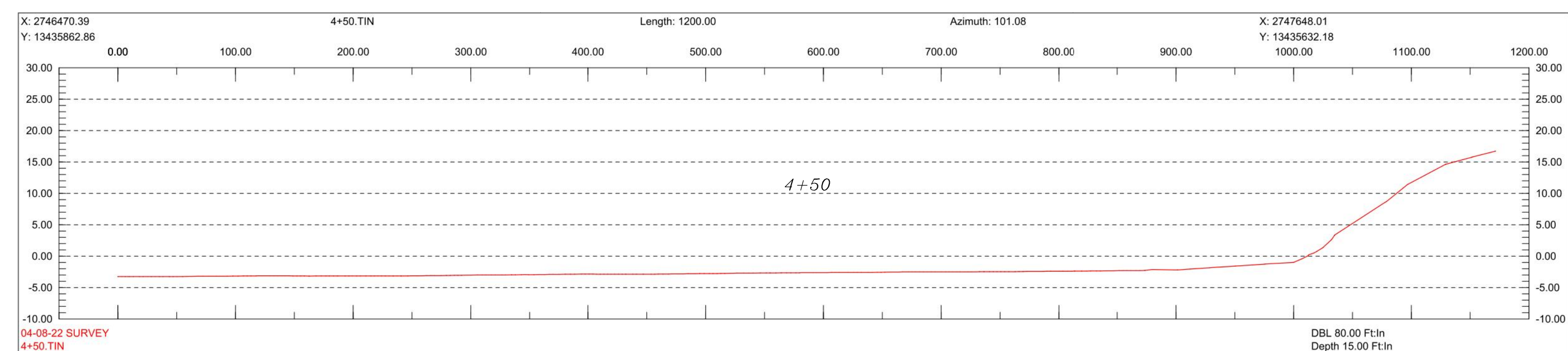
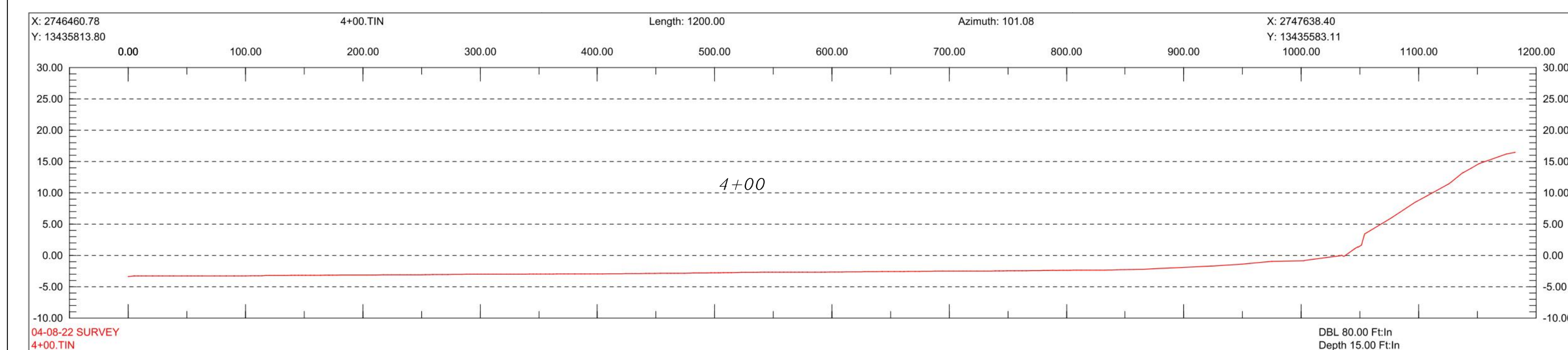
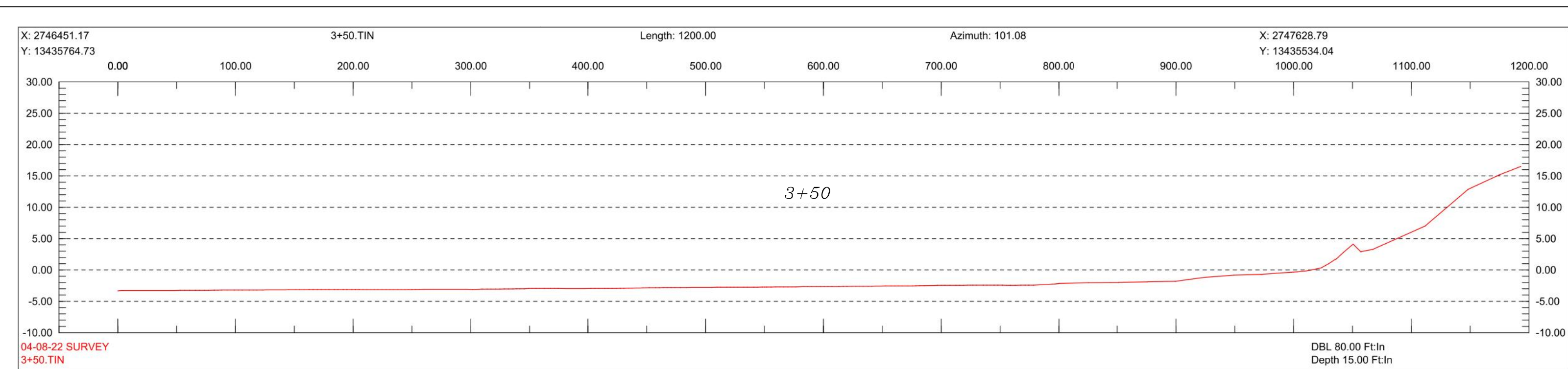
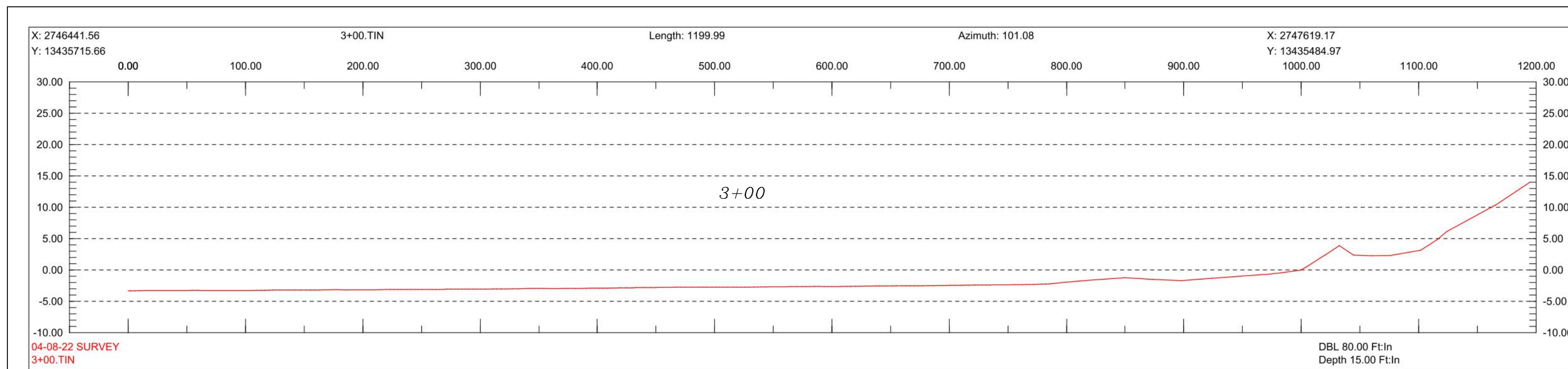
PRE-CONSTRUCTION BATHYMETRIC SURVEY OF:

BEAN TRACT MITIGATION SITE

LOCATED IN LAVACA BAY, TEXAS

| | |
|------------------|---------------|
| DATE: 4/14/2022 | DRAWN BY: CA |
| PROJECT No: 2589 | SHEET: 4 OF 8 |

CROSS SECTIONS



NOTES

- NOTES:
1. SURVEY IS BASED ON NAD '83 (2011 EPOCH), TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, US FEET.
TMI CONTROL POINT:
N: 13,435,506.24
E: 2,747,683.36
Z: 18.76'
 2. ELEVATIONS ARE SHOWN IN NAVD'88.
 3. SURVEY WAS CONDUCTED ON APRIL 7, 2022 AND REPRESENTS THE CONDITIONS AT THAT TIME.
 4. SURVEY WAS CONDUCTED ON 50 FOOT TRANSECTS
 5. THIS SURVEY WAS CONDUCTED USING A 200KHZ TRANSDUCER AND RTK-GNSS.



PRE-CONSTRUCTION BATHYMETRIC SURVEY OF:

BEAN TRACT MITIGATION SITE

LOCATED IN LAVACA BAY, TEXAS

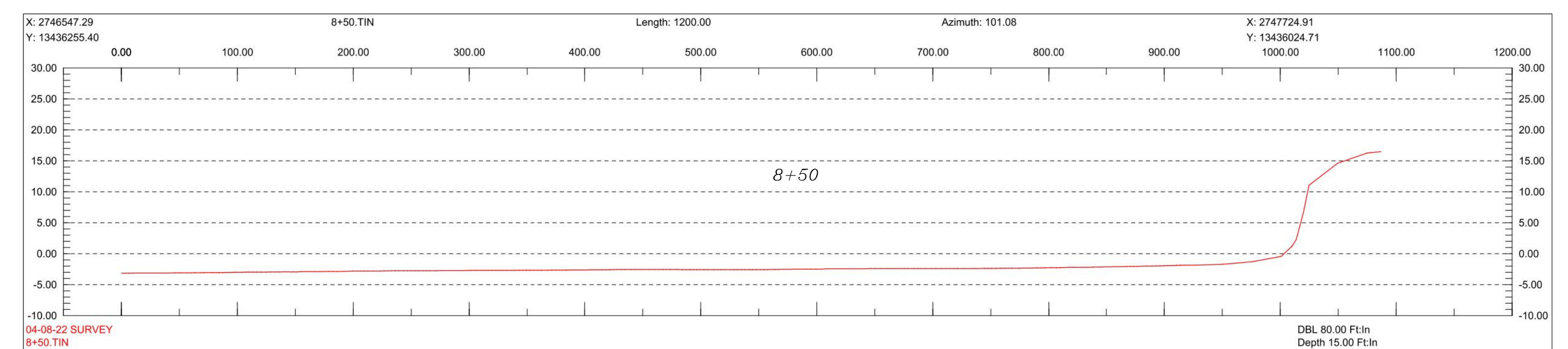
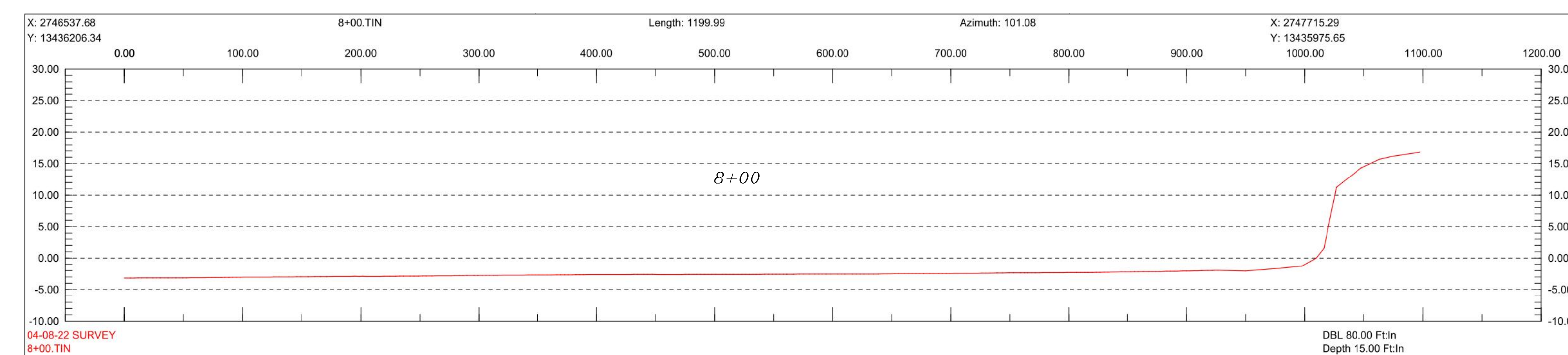
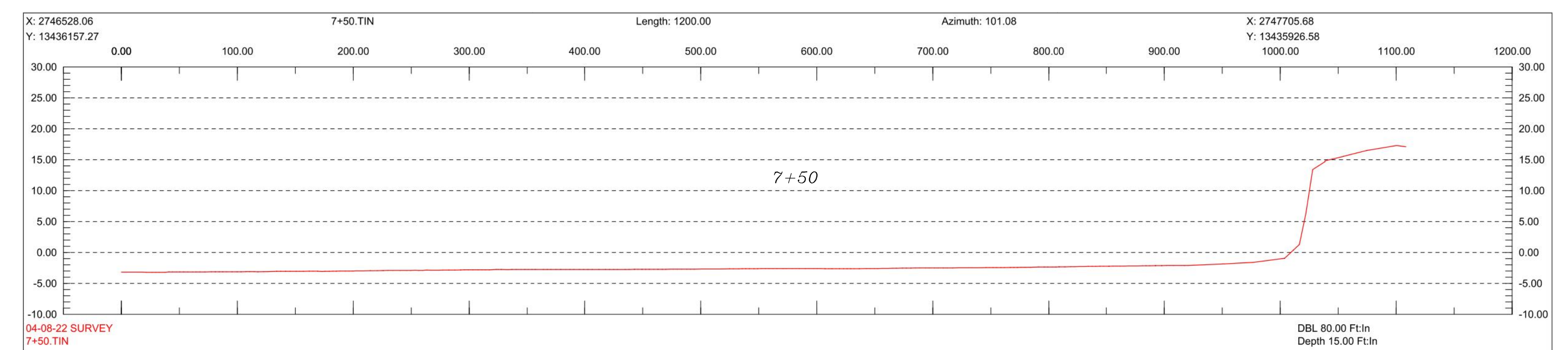
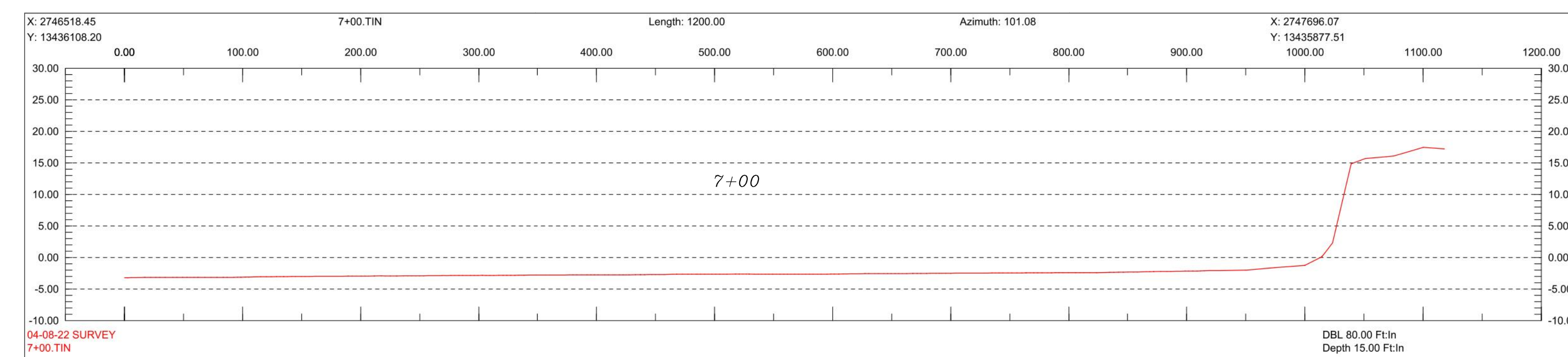
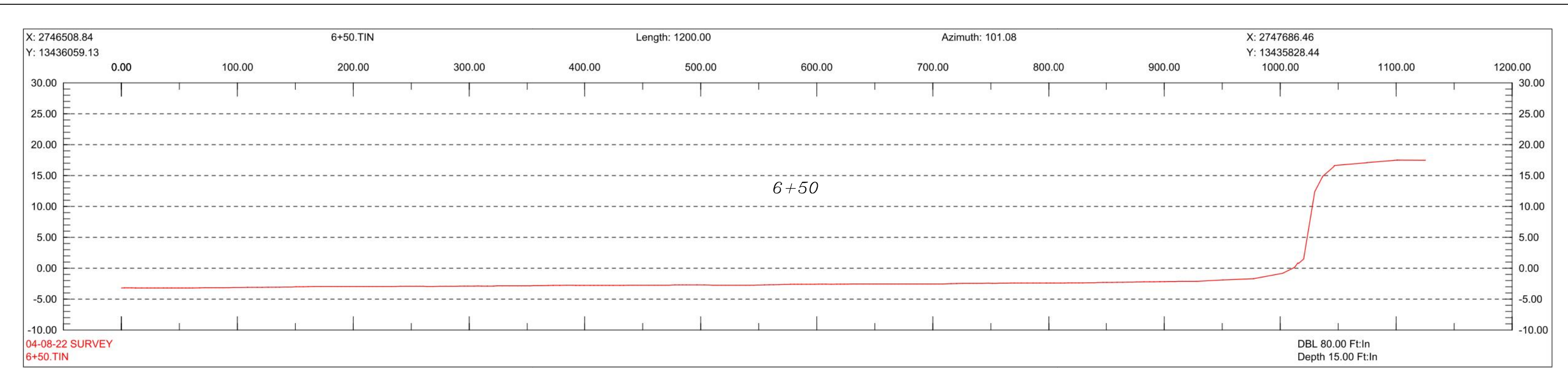
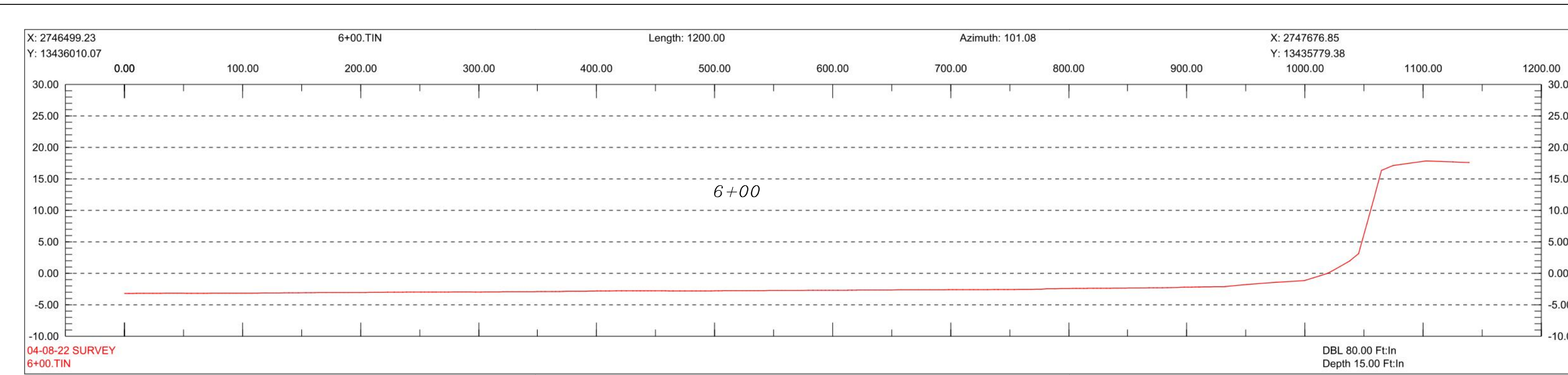
DATE: 4/14/2022

DRAWN BY: CA

PROJECT No: 2589

SHEET: 5 OF 8

CROSS SECTIONS



NOTES

- NOTES:
1. SURVEY IS BASED ON NAD '83 (2011 EPOCH), TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, US FEET.
TMI CONTROL POINT:
N: 13,435,506.24
E: 2,747,683.36
Z: 18.76'
 2. ELEVATIONS ARE SHOWN IN NAVD'88.
 3. SURVEY WAS CONDUCTED ON APRIL 7, 2022 AND REPRESENTS THE CONDITIONS AT THAT TIME.
 4. SURVEY WAS CONDUCTED ON 50 FOOT TRANSECTS
 5. THIS SURVEY WAS CONDUCTED USING A 200kHz TRANSDUCER AND RTK-GNSS.



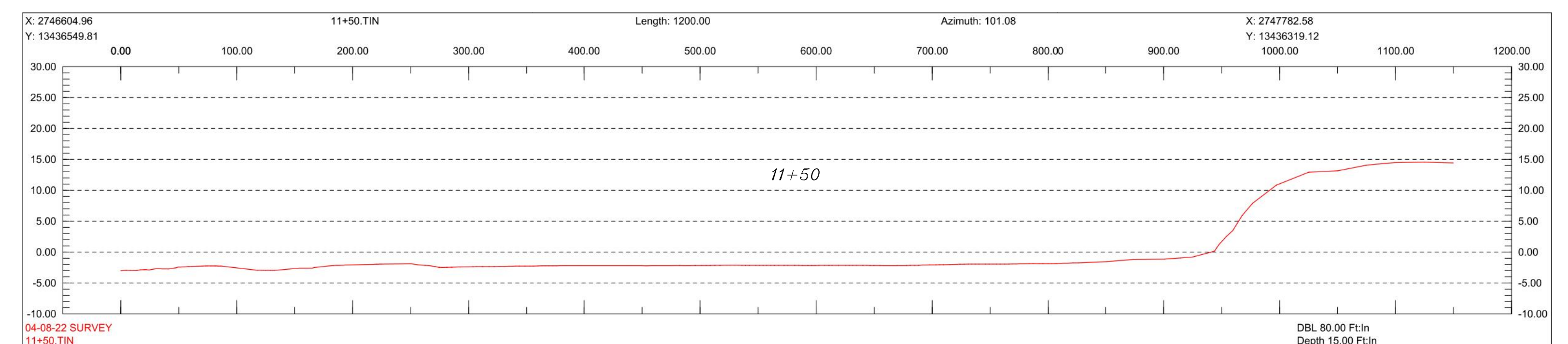
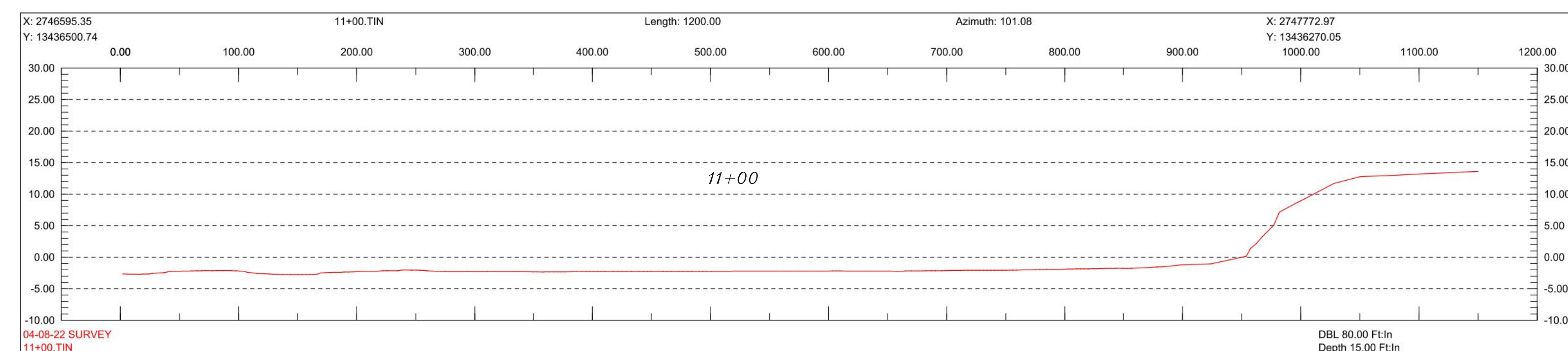
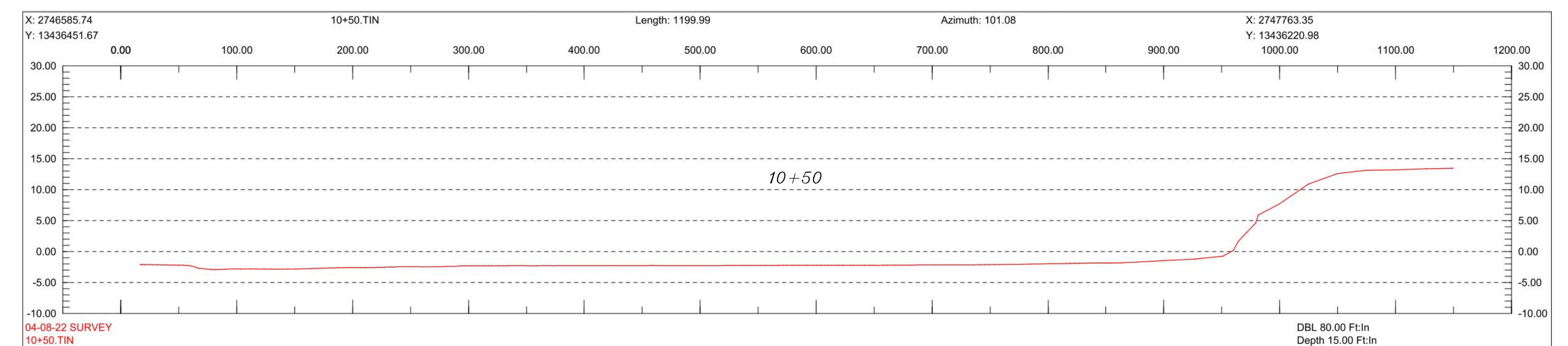
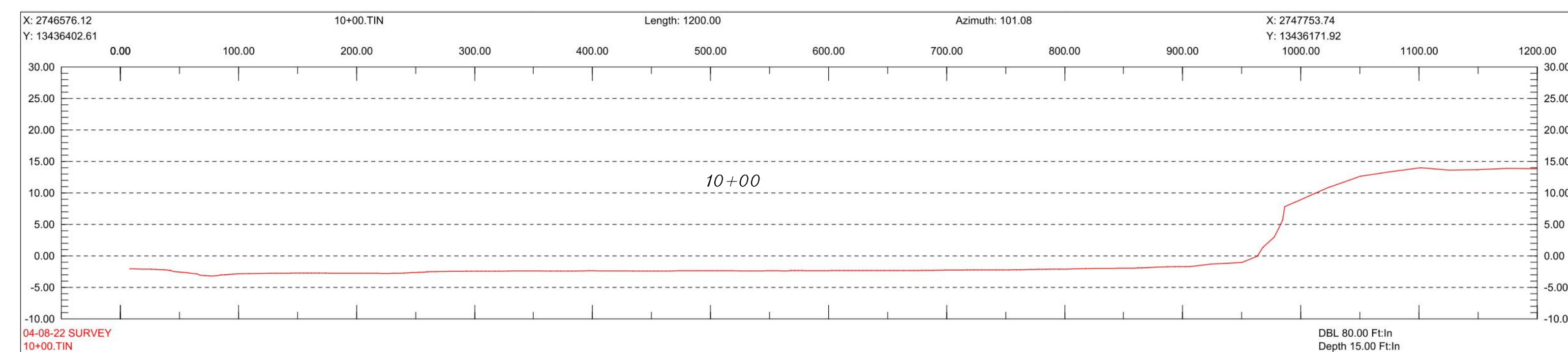
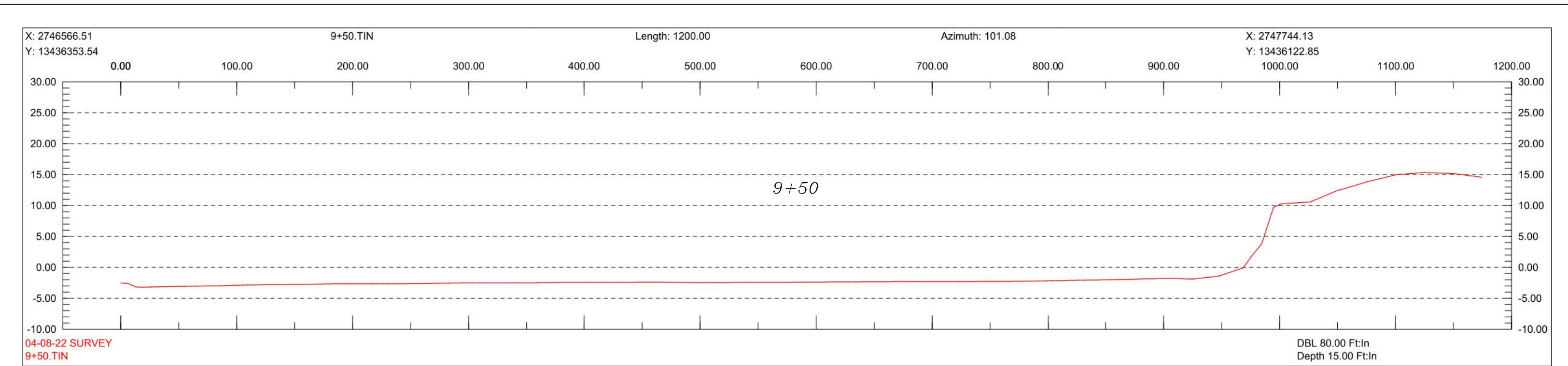
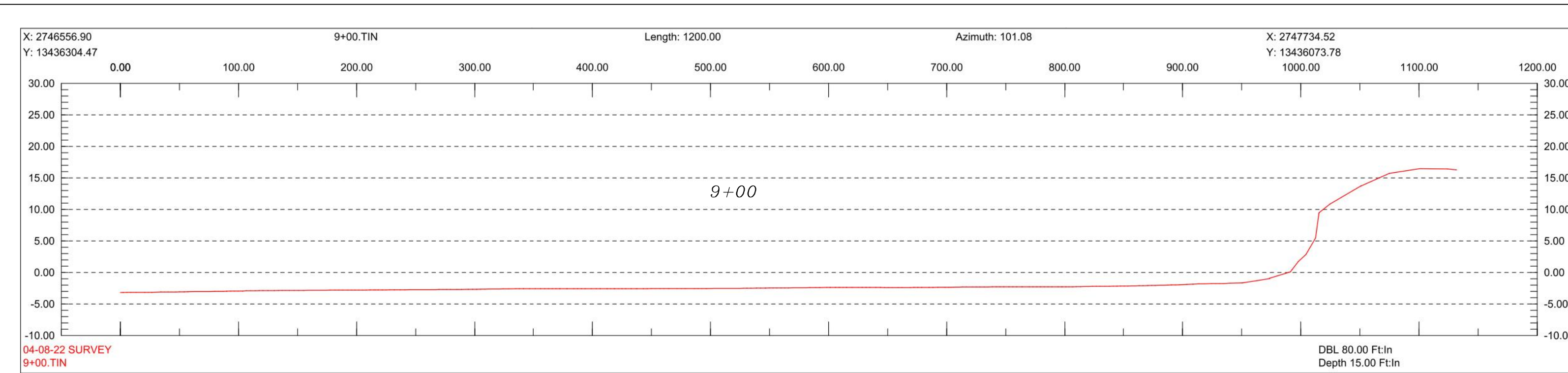
PRE-CONSTRUCTION BATHYMETRIC SURVEY OF:

BEAN TRACT MITIGATION SITE

LOCATED IN LAVACA BAY, TEXAS

| | |
|------------------|---------------|
| DATE: 4/14/2022 | DRAWN BY: CA |
| PROJECT No: 2589 | SHEET: 6 OF 8 |

CROSS SECTIONS



NOTES

- NOTES:
1. SURVEY IS BASED ON NAD '83 (2011 EPOCH), TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, US FEET.
TMI CONTROL POINT:
N: 13,435,506.24
E: 2,747,683.36
Z: 18.76'
 2. ELEVATIONS ARE SHOWN IN NAVD'88.
 3. SURVEY WAS CONDUCTED ON APRIL 7, 2022 AND REPRESENTS THE CONDITIONS AT THAT TIME.
 4. SURVEY WAS CONDUCTED ON 50 FOOT TRANSECTS
 5. THIS SURVEY WAS CONDUCTED USING A 200kHz TRANSDUCER AND RTK-GNSS.



PRE-CONSTRUCTION BATHYMETRIC SURVEY OF:

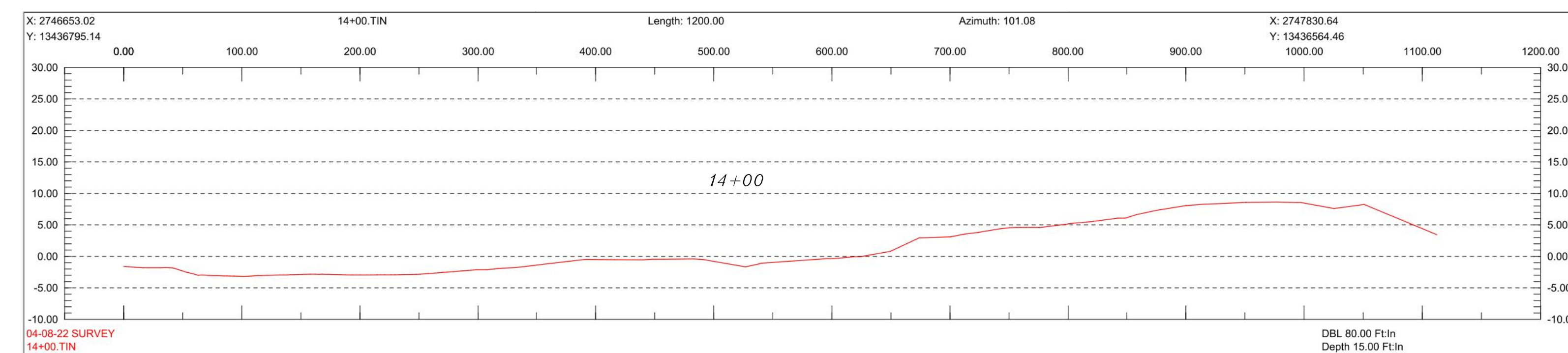
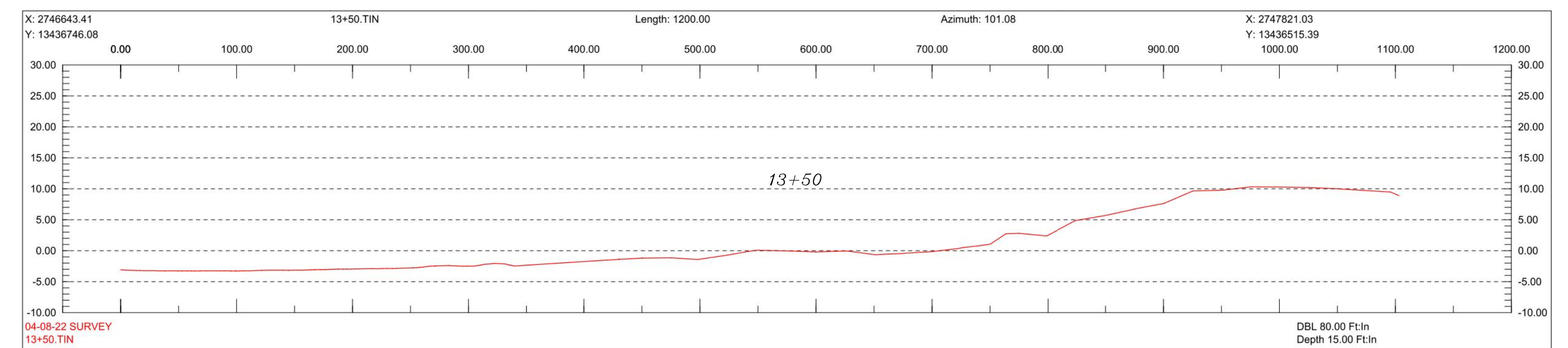
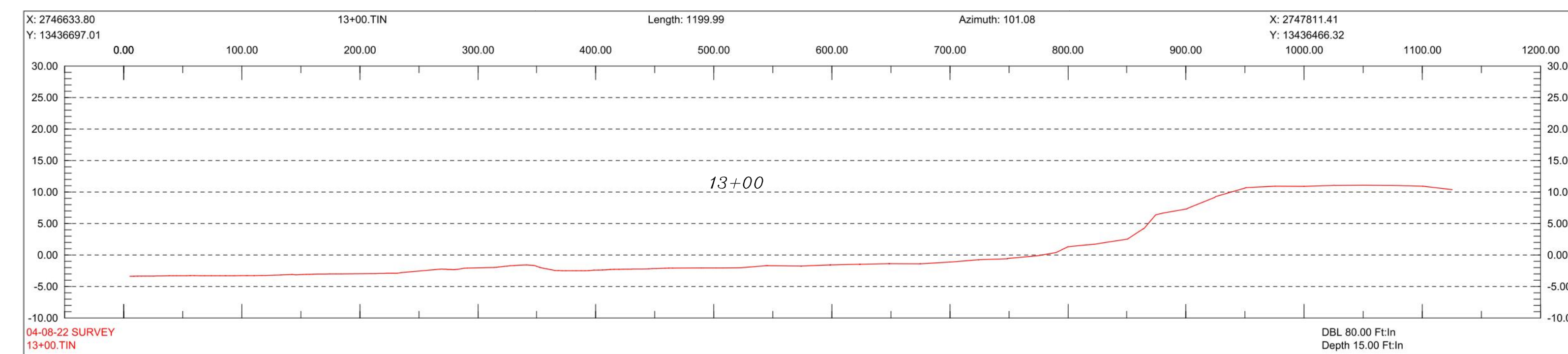
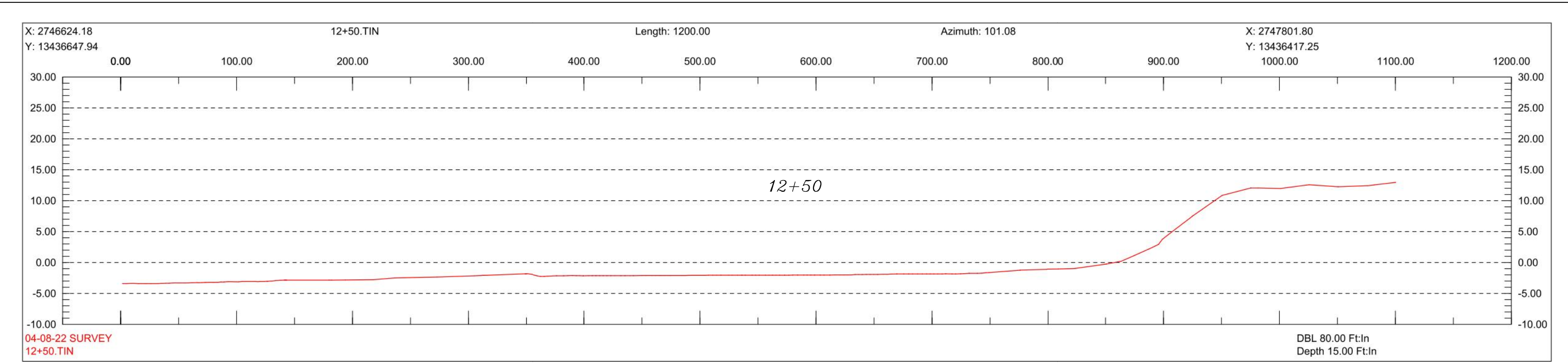
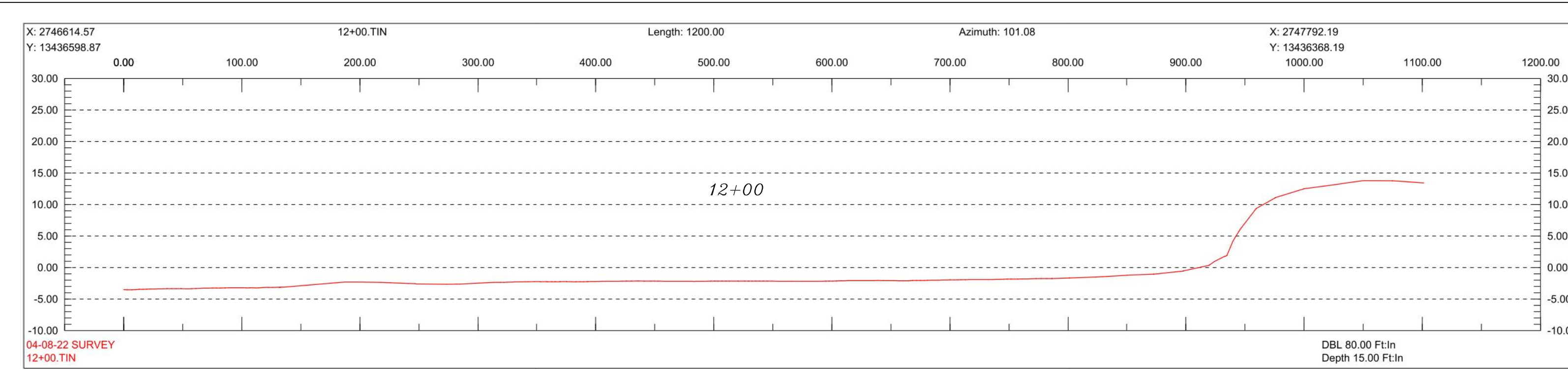
BEAN TRACT MITIGATION SITE

LOCATED IN LAVACA BAY, TEXAS

DATE: 4/14/2022 DRAWN BY: CA

PROJECT No: 2589 SHEET: 7 OF 8

CROSS SECTIONS



NOTES

- NOTES:
1. SURVEY IS BASED ON NAD '83 (2011 EPOCH), TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE, US FEET.
TMI CONTROL POINT:
N: 13,435,506.24
E: 2,747,683.36
Z: 18.76'
 2. ELEVATIONS ARE SHOWN IN NAVD'88.
 3. SURVEY WAS CONDUCTED ON APRIL 7, 2022 AND REPRESENTS THE CONDITIONS AT THAT TIME.
 4. SURVEY WAS CONDUCTED ON 50 FOOT TRANSECTS
 5. THIS SURVEY WAS CONDUCTED USING A 200kHz TRANSDUCER AND RTK-GNSS.



PRE-CONSTRUCTION BATHYMETRIC SURVEY OF:

BEAN TRACT MITIGATION SITE

LOCATED IN LAVACA BAY, TEXAS

| | |
|------------------|---------------|
| DATE: 4/14/2022 | DRAWN BY: CA |
| PROJECT No: 2589 | SHEET: 8 OF 8 |

SCOPE OF WORK:
DEPART OF THE ARMY PERMIT
SWG-2016-01066

DEPARTMENT OF THE ARMY PERMIT

Permittee Calhoun Port Authority

Permit No. SWG-2016-01066

Issuing Office Galveston District

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

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

Project Description: To dredge and discharge fill material into tidal waters of the United States (US) and adjacent wetlands associated with the construction of a new marine terminal. The terminal will consist of 3 deep-water liquid product docks, 6 shallow-draft liquid product barge docks, and related appurtenant shore facilities. The proposed work includes the following: 1) installation of approximately 3,430 linear feet of steel sheet pile bulkhead for stabilization and barge mooring; 2) mechanical dredging of approximately 2.615 million cubic yards (mcy) of material from the project site and the adjacent Matagorda Ship Channel to -47 feet mean lower low water (MLLW), plus an allowable 2-foot advanced maintenance dredge and 2-foot over-dredge for the deep-water docks, and -14 feet MLLW, plus an allowable 2-foot advanced maintenance dredge and 2-foot over-dredge for the barge docks; 3) construction of an approximately 61-acre (940-foot-wide by 2,800-foot-long) dredge material stockpile area (DMSA) for future Port expansion; 4) relocation and repair on the southern levee of the applicant's existing Dredge Material Placement Area (DMPA) 1, located approximately 2,700 feet west-northwest of the proposed new terminal, across the Matagorda Ship Channel. Project impacts include the following: dredging of approximately 40.75 acres of open waters of the US and 0.83 acre of adjacent estuarine emergent wetlands, and the permanent discharge of fill material within approximately 11.95 acres of adjacent estuarine emergent wetlands and approximately 21 acres of open waters of the US.

The project will be conducted in accordance with the attached plans, in 33 sheets.

Project Location: The project site is located in Lavaca and Matagorda Bays, and adjacent wetlands, at the Port of Port Lavaca-Point Comfort approximately 2.4 miles south-southwest of the intersection of the Texas State Highway 35 and Farm-to-Market (FM) Road 1593, in Point Comfort, Calhoun County, Texas.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on 31 December 2025. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

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

Special Conditions:

1. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.
2. When structures or work authorized by this permit are determined by the District Engineer to have become abandoned, obstructive to navigation or cease to be used for the purpose for which they were permitted, such structures or other work must be removed, the area cleared of all obstructions, and written notice given to the Corps of Engineers, Galveston District, Regulatory Division, within 30 days of completion.
3. The permittee must install and maintain, at the permittee's expense, any safety lights, signs and signals required by US Coast Guard, through regulations or otherwise, on the permittee's fixed structures. To receive a US Coast Guard Private Aids to Navigation marking determination, at no later than 30 days prior to installation of any fixed structures in navigable waters and/or prior to installation of any floating private aids to navigation, you are required to contact the Eighth Coast Guard District (dpw), 500 Poydras St., Suite 1230, New Orleans, LA 70130, (504) 671-2328 or via email to: D8oanPATON@uscg.mil. For general information related to Private Aids to Navigation please visit the Eighth Coast Guard District web site at: <https://www.atlanticarea.uscg.mil/District-8/District-Divisions/Waterways/PATON/>
4. All construction of mitigation must be started within 12 -18 months after start of construction within jurisdictional areas. The permittee will notify the Corps of Engineers, Galveston District (CESWG), Chief, Compliance Branch, Regulatory Division in writing when the work begins in jurisdictional areas. Performance standards, reporting, monitoring, and maintenance will proceed according to the compensatory mitigation plan.
5. Should mitigation be determined to be unsuccessful by CESWG personnel at the end of the monitoring period, the permittee will be required to take necessary correction measures, as approved by the CESWG. Once the corrective measures are completed, the permittee will notify the CESWG, Chief, Compliance Branch, Regulatory Division, in writing, and a determination will be made regarding success of the mitigation.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:
 - (X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
 - (X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
 - () Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).
2. Limits of this authorization.
 - a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
 - b. This permit does not grant any property rights or exclusive privileges.
 - c. This permit does not authorize any injury to the property or rights of others.
 - d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:
- a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
 - b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
 - c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
 - d. Design or construction deficiencies associated with the permitted work.
 - e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

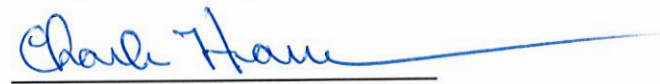
5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

- a. You fail to comply with the terms and conditions of this permit.
- b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).
- c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

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

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

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



 (PERMITTEE)
CALHOUN PORT AUTHORITY

9-9-20
 (DATE)

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

 (DISTRICT ENGINEER)
KRISTI N. MCMILLAN
LEADER, CENTRAL EVALUATION UNIT
FOR COLONEL TIMOTHY R. VAIL

 (DATE)

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

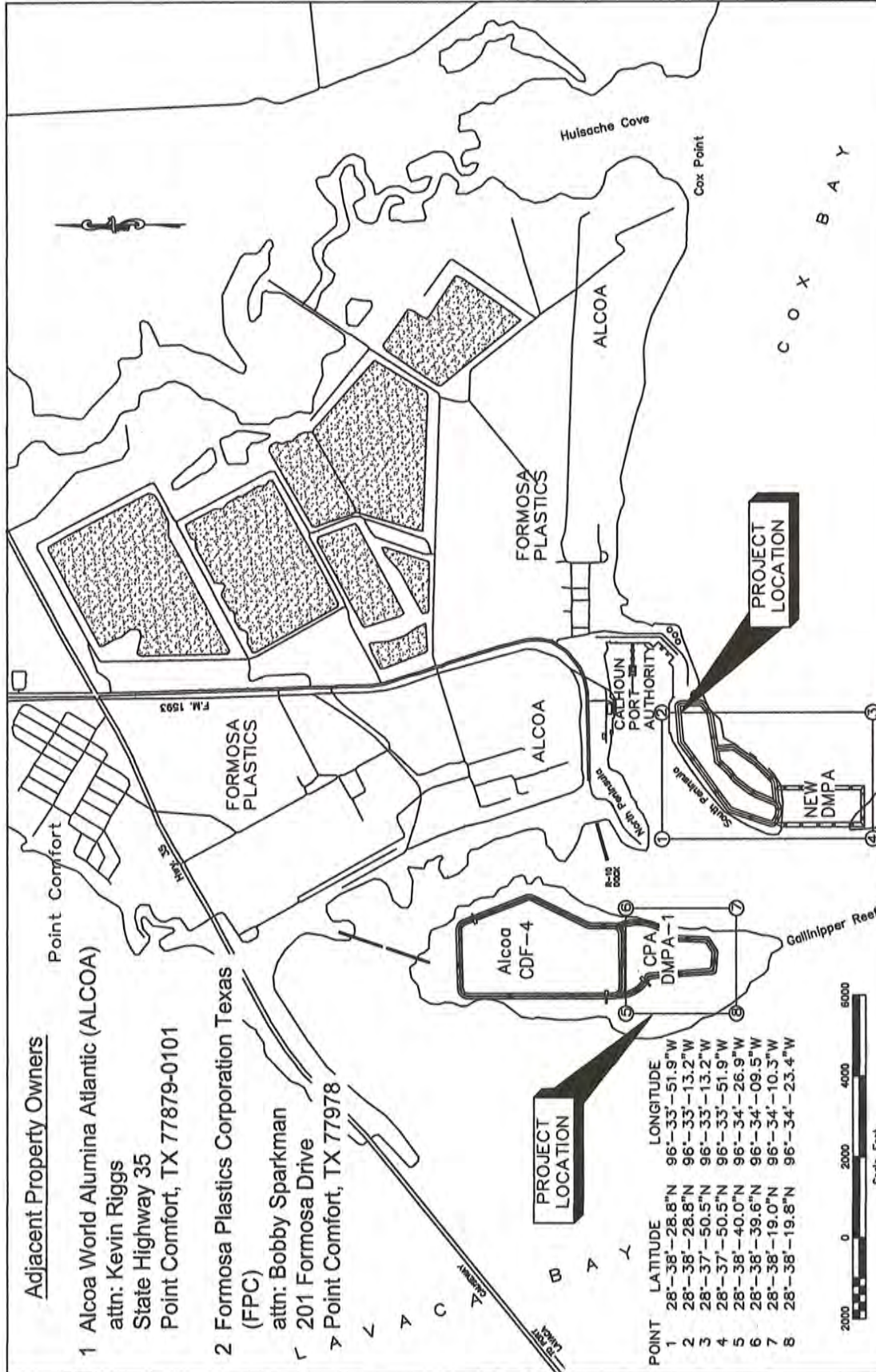
(TRANSFEEE – Typed/Printed Name)

(DATE)

(TRANSFEEE - Signature)

(Mailing Address)

PERMITTED PLANS



Adjacent Property Owners

1 Alcoa World Alumina Atlantic (ALCOA)

attn: Kevin Riggs
State Highway 35
Point Comfort, TX 77879-0101

2 Formosa Plastics Corporation Texas (FPC)

attn: Bobby Sparkman
201 Formosa Drive
Point Comfort, TX 77978



13811 98P-2813 • Fax (281) 987-2188 • 2313 FM 1593 South • P.O. Box 397 • Point Comfort, Texas 77978
www.calhounport.com

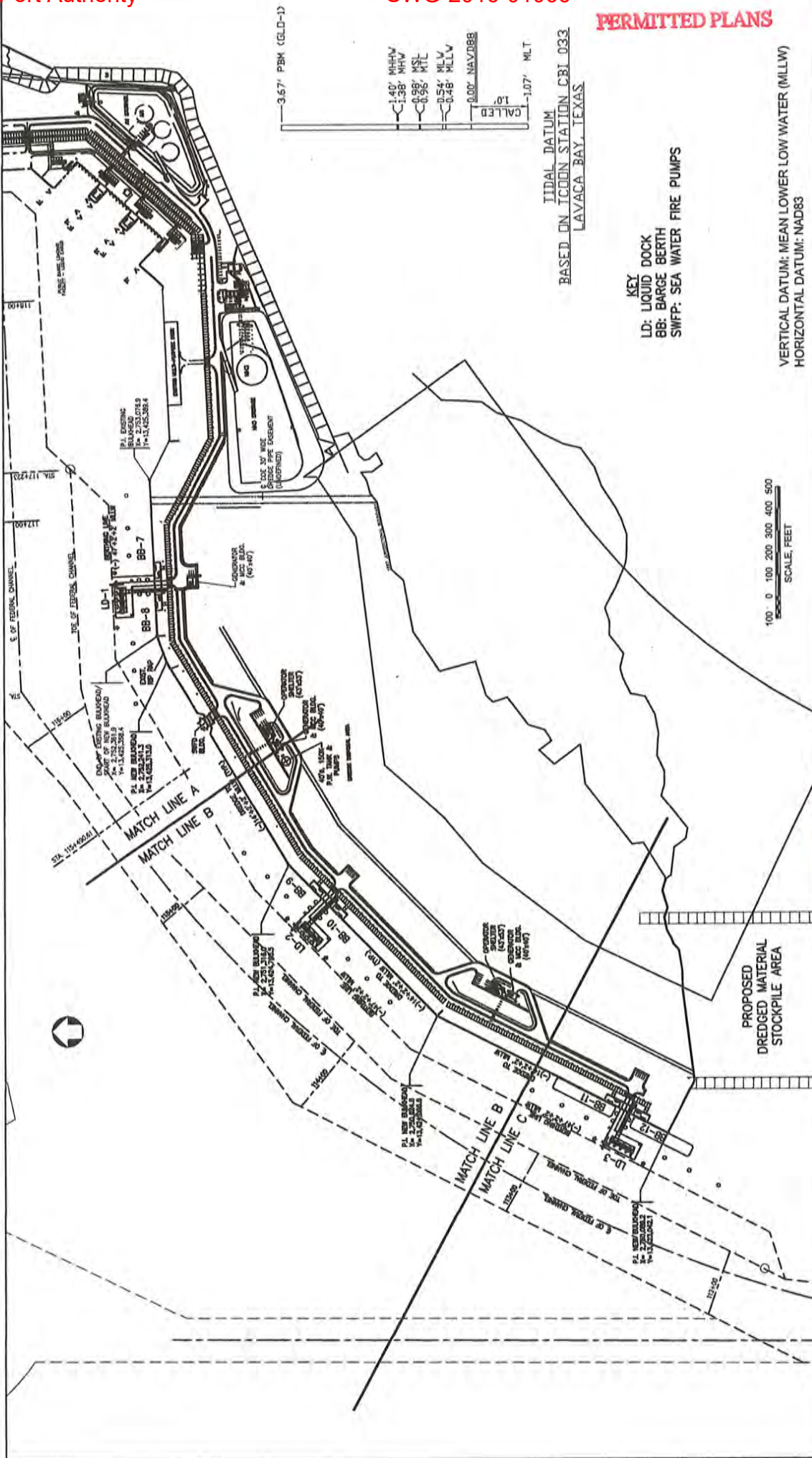
PORT OF PORT LAVACA - POINT COMFORT

Providing Calhoun County hydrants with Direct Open-Drift Access to Global Standards

SITE VICINITY MAP
SOUTH PENINSULA DEVELOPMENT PROJECT
CALHOUN COUNTY, TEXAS

PERMIT NO. _____
FIGURE 1 OF 15

THIS DOCUMENT IS RELEASED FOR PERMITTING ON FEBRUARY 1, 2018 UNDER AUTHORITY OF DAVID M. KNUCKEY, P.E. # 46822. IT IS NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



PERMITTED PLANS

KEY
 LD: LIQUID DOCK
 BB: BARGE BERTH
 SWFP: SEA WATER FIRE PUMPS

VERTICAL DATUM: MEAN LOWER LOW WATER (MLLW)
 HORIZONTAL DATUM: NAD83

SCALE, FEET
 100 0 100 200 300 400 500

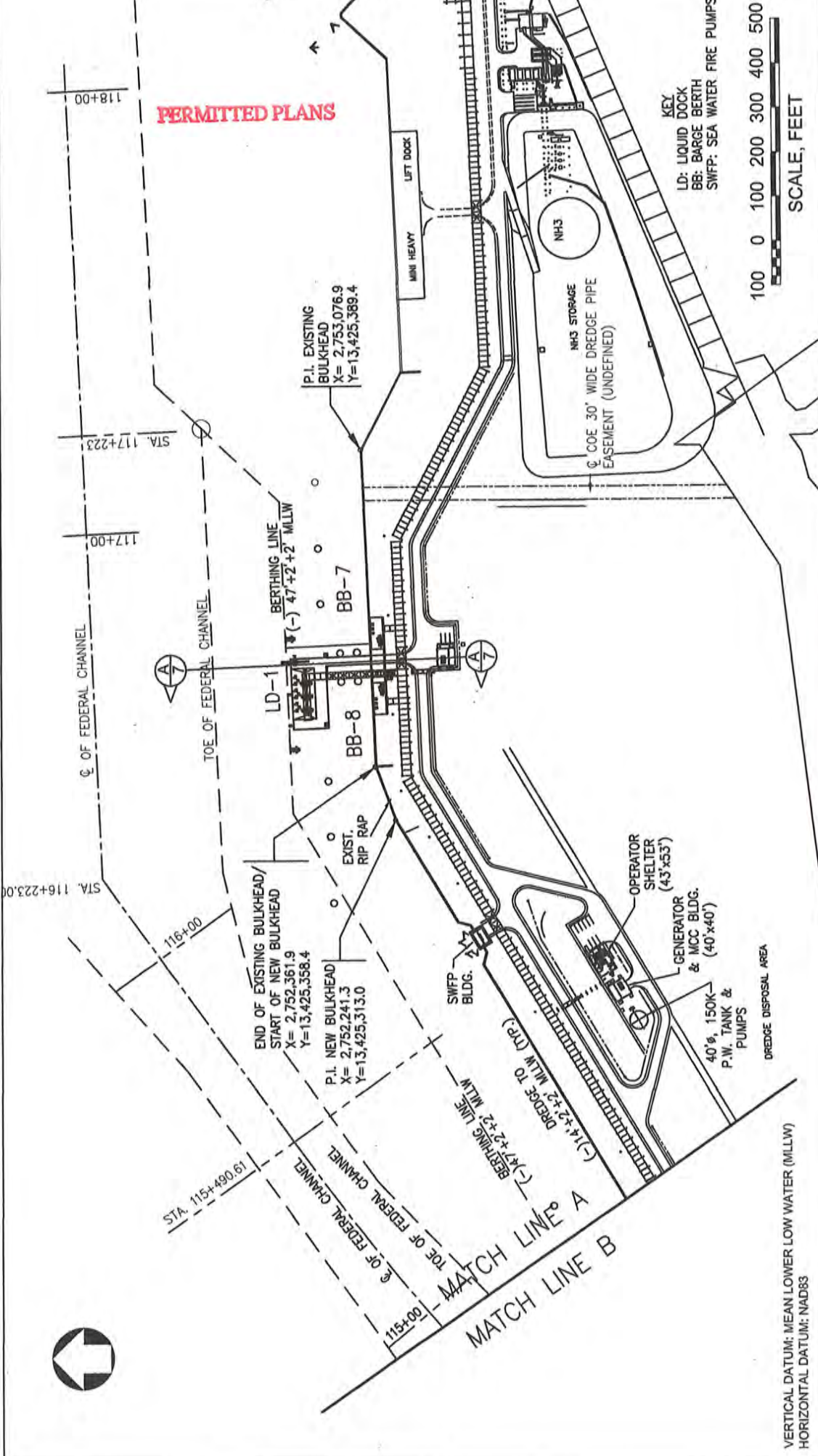
LIQUID DOCKS
OVERALL PLAN VIEW
 SOUTH PENINSULA DEVELOPMENT
 CALHOUN COUNTY, TEXAS

PERMIT NO. _____
 FIGURE 2 OF 15



THIS DOCUMENT IS RELEASED FOR PERMITTING ON FEBRUARY 1, 2018 UNDER AUTHORITY OF DAVID M. KNUCKEY, P.E. NO. 46822. IT IS NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

PORT OF PORT LAVACA - POINT COMFORT
 Providing Calhoun County Industries with Over 5000' Deep Drift Access to Global Markets
 (817) 987-2813 • Fax (817) 987-3188 • 2115 PM 1543 South F.D. Box 397 • Point Comfort, Texas 77978
 www.calhounport.com



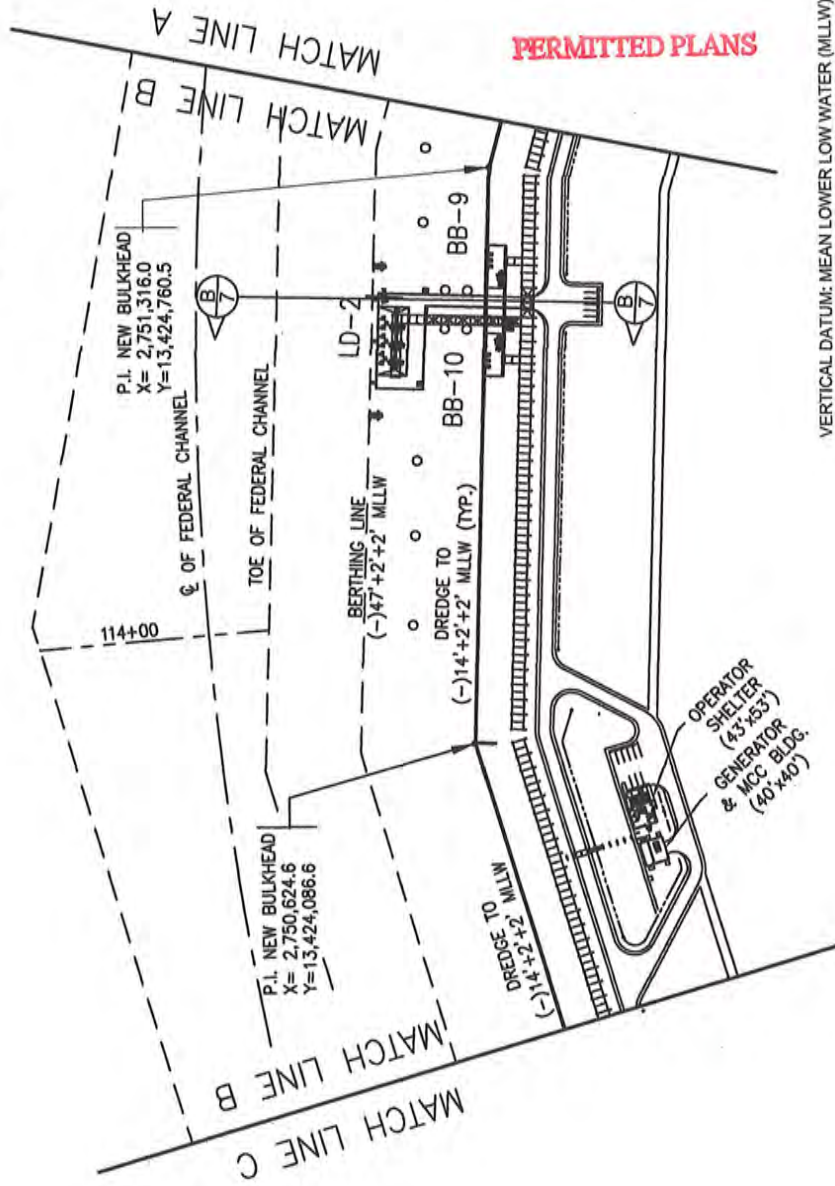
CALHOUN
Port Authority
POINT COMFORT, TEXAS USA

(817) 942-2813 • Fax (817) 942-2184 • 2113 PM 1593 South • P.O. Box 397 • Point Comfort, Texas 77378
www.calhounport.com

PORT OF PORT LAVACA - POINT COMFORT.
 Providing Calhoun County Industries with Direct Deep-Draft Access to Global Markets

LIQUID DOCKS
PLAN VIEW - A
 SOUTH PENINSULA DEVELOPMENT
 CALHOUN COUNTY, TEXAS
 PERMIT NO. _____
 FIGURE 3 OF 15

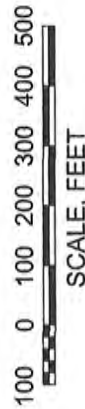
THIS DOCUMENT IS RELEASED FOR PERMITTING ON FEBRUARY 2, 2018 UNDER AUTHORITY OF DAVID M. KNUCKEY, P.E. NO. 46822. IT IS NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



PERMITTED PLANS

VERTICAL DATUM: MEAN LOWER LOW WATER (MLLW)
HORIZONTAL DATUM: NAD83

KEY
 LD: LIQUID DOCK
 BB: BARGE BERTH
 SWFP: SEA WATER FIRE PUMPS



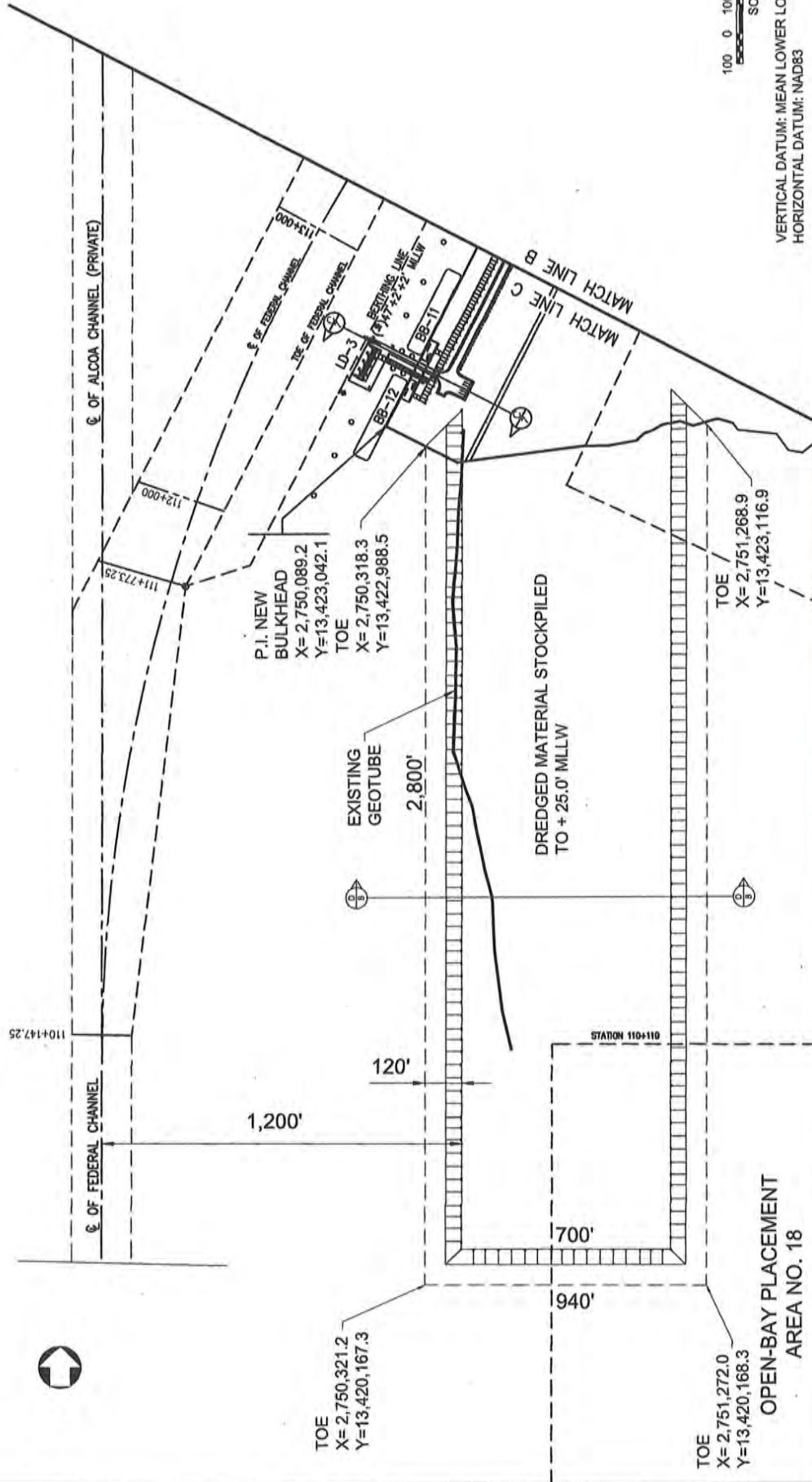
THIS DOCUMENT IS RELEASED FOR PERMITTING ON FEBRUARY 1, 2018 UNDER AUTHORITY OF DAVID M. KNUCKEY, P.E. NO. 46822. IT IS NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

LIQUID DOCKS,
 PLAN VIEW - B
 SOUTH PENINSULA DEVELOPMENT
 CALHOUN COUNTY, TEXAS
 PERMIT NO. _____
 FIGURE 4 OF 15

(561) 969-2813 • Fax (561) 969-2189 • 2313 SW 1553 South • Ft. Lauderdale, Florida 33309
 www.calhounport.com
 PORT OF PORT LAVACA - POINT COMFORT
 Providing Calhoun County Industries with Off-Port On-Shell Access to Global Markets



PERMITTED PLANS



LIQUID DOCKS, PLAN VIEW - C

SOUTH PENINSULA DEVELOPMENT
CALHOUN COUNTY, TEXAS

PERMIT NO. _____
FIGURE 5 OF 15

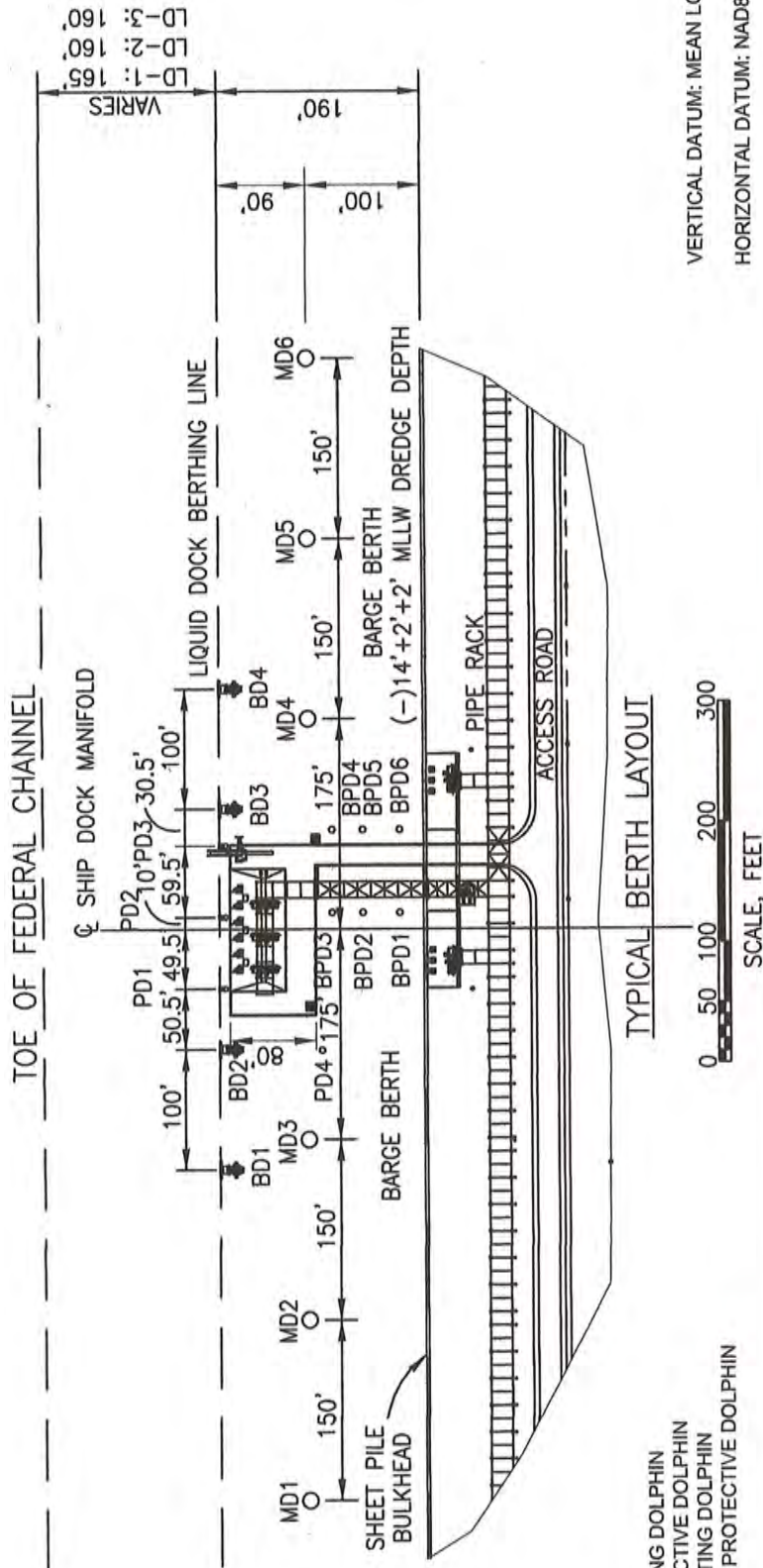


(817) 962-2813 • Fax (817) 967-2189 • 2113 SW 1593 Street • P.O. Box 357 • Point Comfort, Texas 77578
www.calhounport.com

PORT OF PORT LAVACA - POINT COMFORT
Providing Calhoun County Industries with Direct Deep-Draft Access to Global Markets

THIS DOCUMENT IS RELEASED FOR PERMITTING ON
FEBRUARY 1, 2018 UNDER AUTHORITY OF DAVID M.
KNUCKEY, P.E. NO. 46822. IT IS NOT TO BE USED FOR
CONSTRUCTION OR BIDDING PURPOSES.

PERMITTED PLANS



LEGEND:

- MD1 MOORING DOLPHIN
- PD1 PROTECTIVE DOLPHIN
- BD1 BARGING DOLPHIN
- BPD1 BARGE PROTECTIVE DOLPHIN

TYPICAL BERTH LAYOUT



THIS DOCUMENT IS RELEASED FOR PERMITTING ON FEBRUARY 1, 2018 UNDER AUTHORITY OF DAVID M. KNUCKEY, P.E. NO. 46822. IT IS NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



(817) 952-2813 • Fax (261) 987-2189 • 2113 PM 1503 South • P.O. Box 357 • Point Comfort, Texas 77578
www.calhounport.com

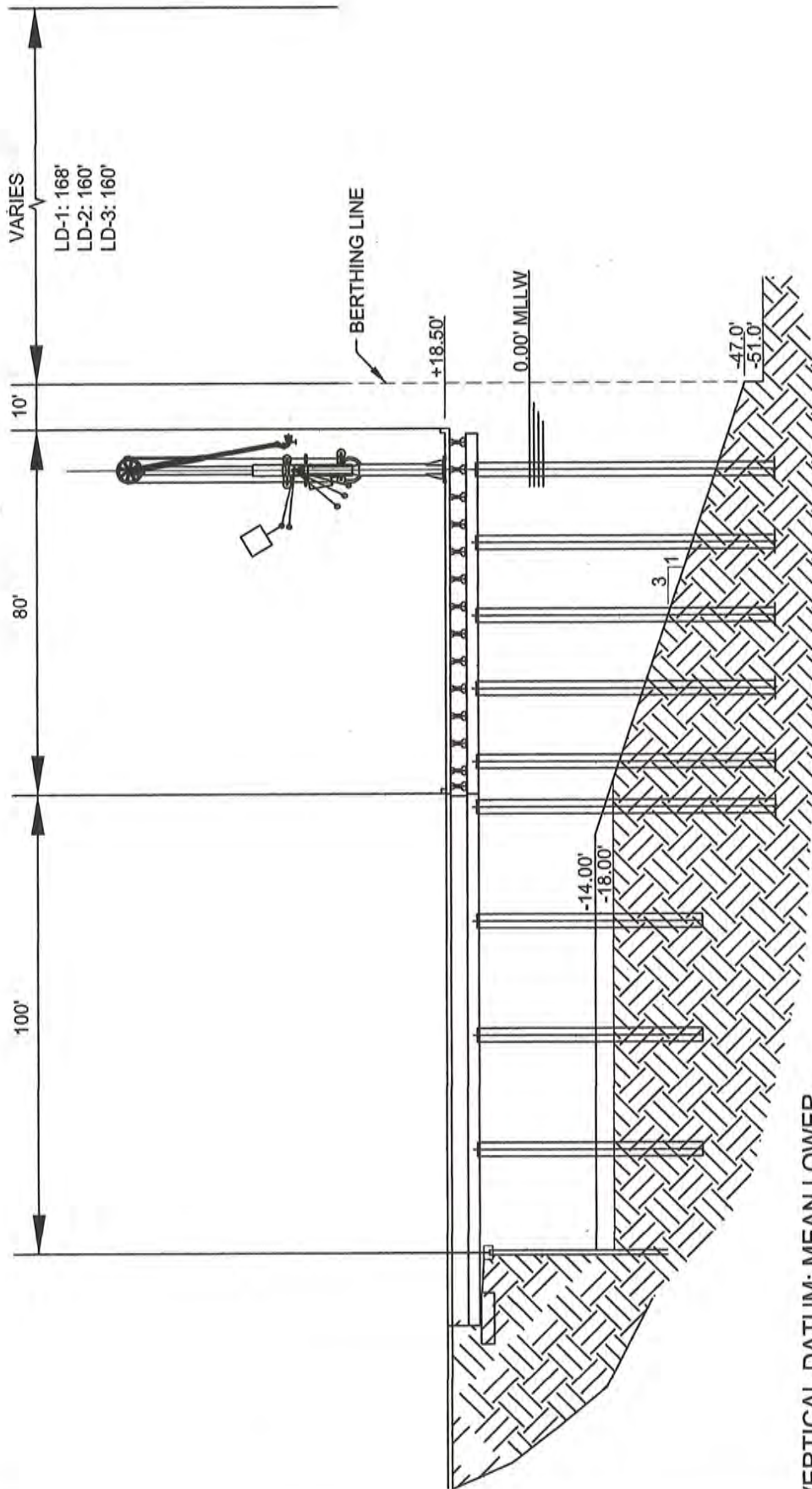
PORT OF PORT LAVACA - POINT COMFORT
Providing Calhoun County Industries with Direct Deep-Draft Access to Global Markets

TYPICAL DOCK LAYOUT

SOUTH PENINSULA DEVELOPMENT
CALHOUN COUNTY, TEXAS

PERMIT NO. _____
FIGURE 6 OF 15

PERMITTED PLANS



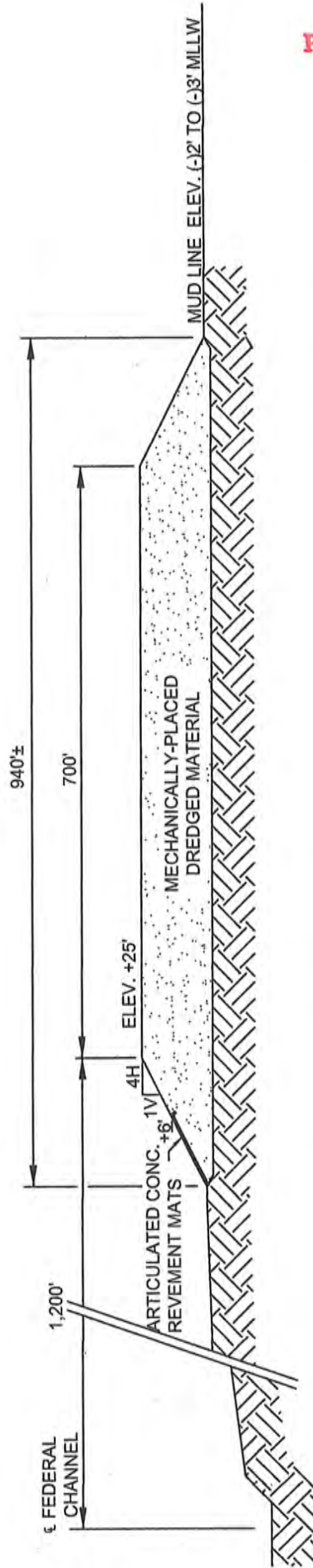
VERTICAL DATUM: MEAN LOWER
 LOW WATER (MLLW)
 HORIZONTAL DATUM: NAD83

SECTION A-A, B-B, C-C

PORT OF PORT LAVACA - POINT COMFORT
 Providing Calhoun County Industries with Direct Deep-Draft Access to Global Markets
 www.calhounport.com
 (361) 367-2813 • Fax: (361) 367-2188 • 2110 FM 1933 South • P.O. Box 297 • Point Comfort, Texas 77978

LIQUID DOCK CROSS
 SECTIONS A-A THROUGH C-C
 SOUTH PENINSULA DEVELOPMENT
 CALHOUN COUNTY, TEXAS
 PERMIT NO. _____
 FIGURE 7 OF 15

THIS DOCUMENT IS RELEASED FOR PERMITTING ON
 FEBRUARY 1, 2018 UNDER AUTHORITY OF DAVID M.
 KNUCKEY, P.E., REGISTRATION NO. 46822. IT IS NOT
 TO BE USED FOR BIDDING OR CONSTRUCTION
 PURPOSES.



PERMITTED PLANS

SECTION D-D THRU DREDGED MATERIAL STOCKPILE AREA
(NO SCALE)

VERTICAL DATUM: MEAN LOWER LOW WATER (MLLW)

DREDGED MATERIAL STOCKPILE AREA
TYPICAL CROSS SECTION
SOUTH PENINSULA DEVELOPMENT
CALHOUN COUNTY, TEXAS

PERMIT NO. _____
FIGURE 8 OF 15

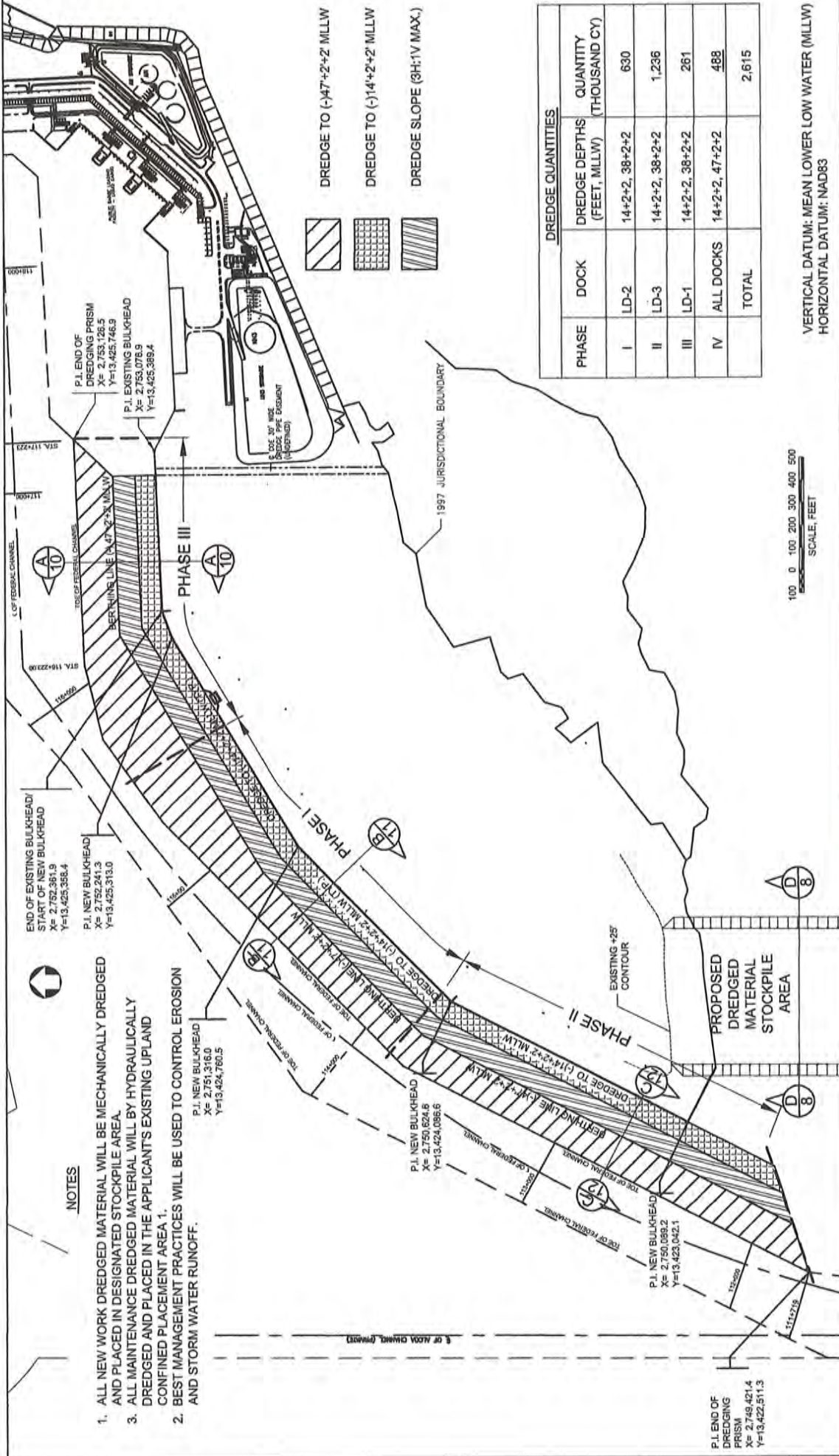
(361) 967-2613 • Fax (361) 967-2189 • 2113 DM 1503 South • P.O. Box 397 • Point Comfort, Texas 77878
www.calhounport.com

PORT OF PORT LAVACA - POINT COMFORT
Providing Calhoun County Industries with Direct Deep-Draft Access to Global Markets



THIS DOCUMENT IS RELEASED FOR PERMITTING ON FEBRUARY 1, 2018 UNDER AUTHORITY OF DAVID M. KNUCKEY, P.E. NO. 46822. IT IS NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

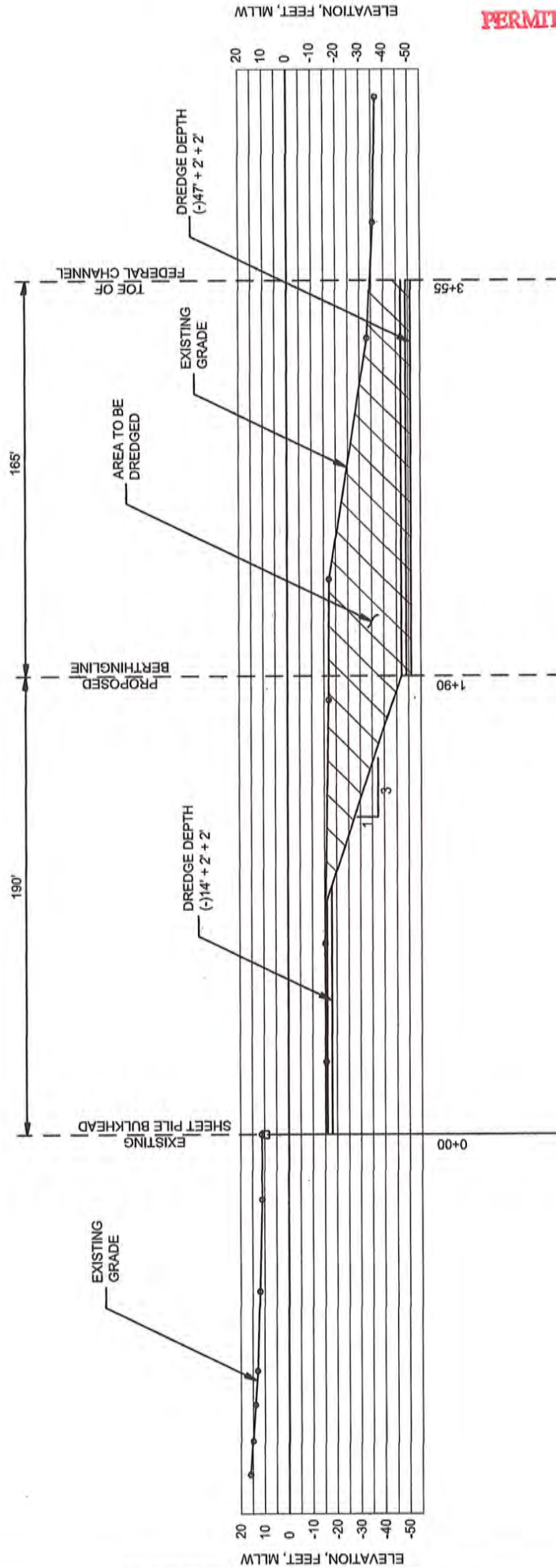
PERMITTED PLANS



THIS DOCUMENT IS RELEASED FOR PERMITTING ON FEBRUARY 1, 2018 UNDER AUTHORITY OF DAVID M. KNUCKEY, P.E. NO. 46822. IT IS NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

PORT OF PORT LAVACA - POINT COMFORT
Providing Calhoun County Industries with Direct In-River Access to Global Markets
www.calhounport.com
(361) 962-2613 • Fax (361) 962-2189 • 2313 EM 1593 South, P.O. Box 397 • Point Comfort, Texas 77578

DREDGING PLAN VIEW
SOUTH PENINSULA DEVELOPMENT
CALHOUN COUNTY, TEXAS
PERMIT NO. _____
FIGURE 9 OF 15



PERMITTED PLANS

CROSS SECTION A-A (LD-1)



13611982-2613-Fer (261) 762-2186 • 2313 EM 1593 South, P.O. Box 397 • Point Comfort, Texas 77978
www.calhounport.com

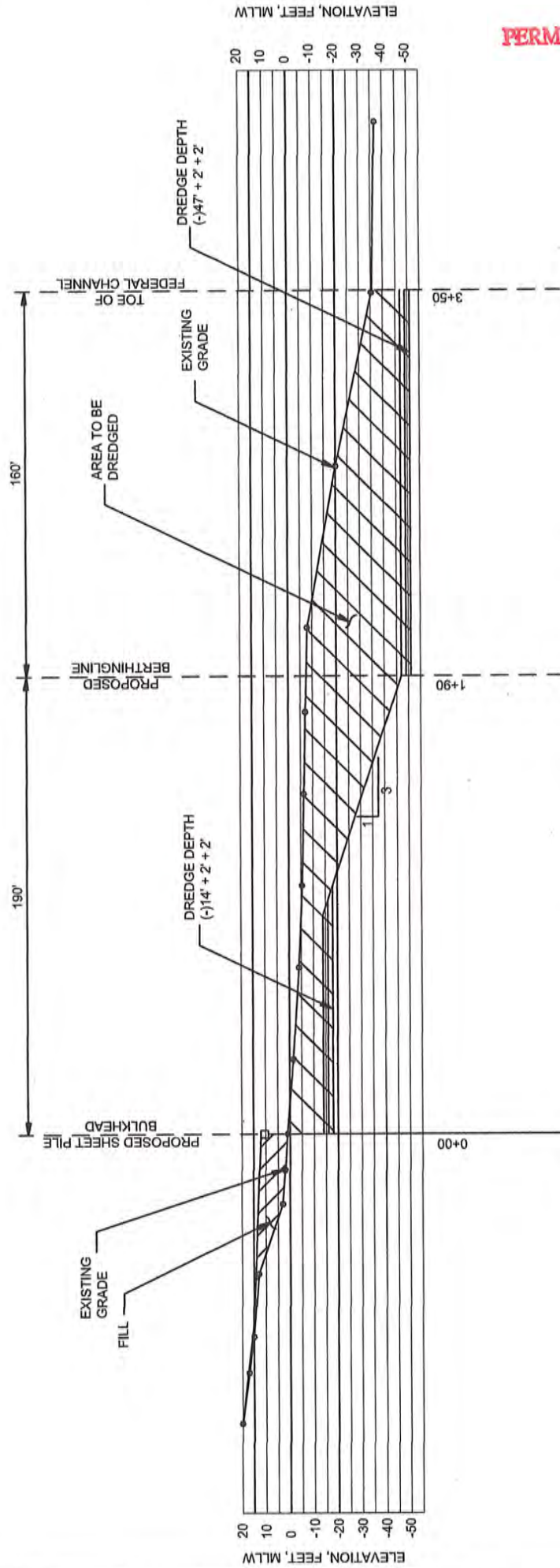
PORT OF PORT LAVACA - POINT COMFORT
Providing Calhoun County Industries with Direct Deep-Water Access to Global Markets

DREDGING CROSS SECTION A-A (LD-1)

SOUTH PENINSULA DEVELOPMENT
CALHOUN COUNTY, TEXAS

PERMIT NO. _____
FIGURE 10 OF 15

THIS DOCUMENT IS RELEASED FOR PERMITTING ON
FEBRUARY 1, 2018 UNDER AUTHORITY OF DAVID M.
KNUCKEY, P.E. NO. 46822. IT IS NOT TO BE USED FOR
CONSTRUCTION OR BIDDING PURPOSES.



PERMITTED PLANS

CROSS SECTION B-B (LD-2)

THIS DOCUMENT IS RELEASED FOR PERMITTING ON
 FEBRUARY 1, 2018 UNDER AUTHORITY OF DAVID M.
 KNUCKEY, P.E. NO. 46822. IT IS NOT TO BE USED FOR
 CONSTRUCTION OR BIDDING PURPOSES.

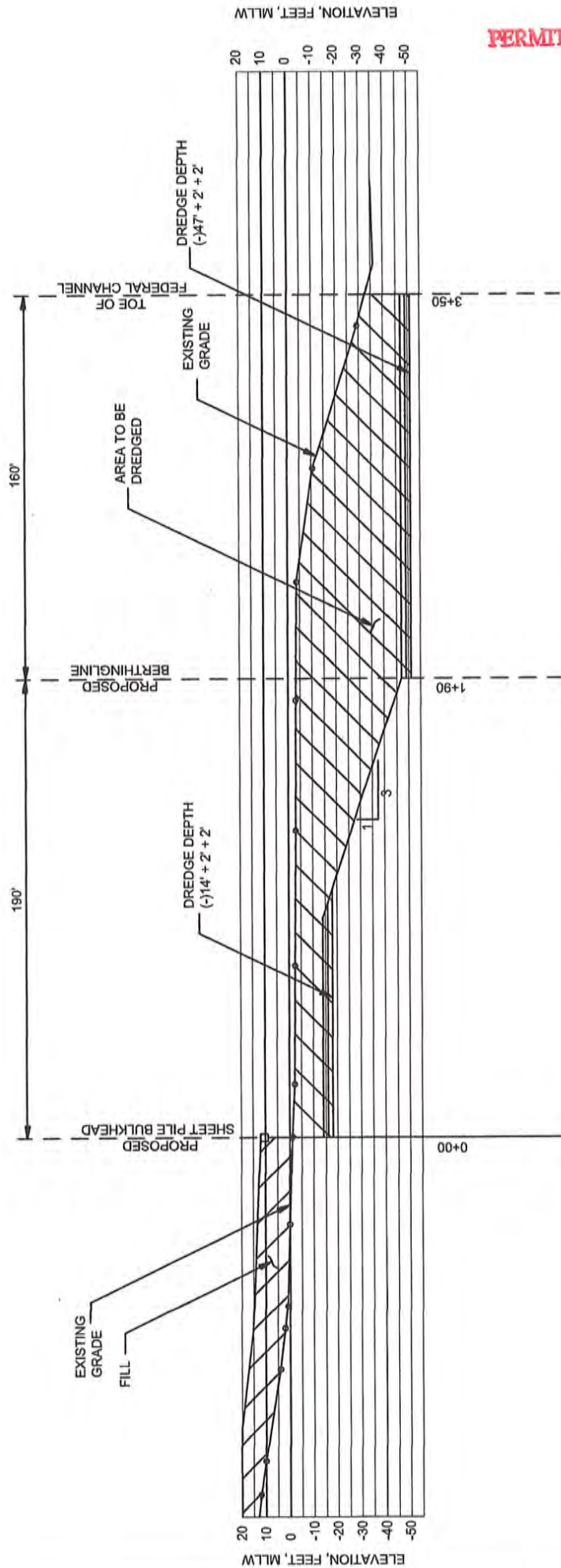


(817) 957-2613 • Fax (281) 867-2169 • 2113 DM 1508 South • P.O. Box 397 • Point Comfort, Texas 77578
 www.calhounport.com
PORT OF PORT LAVACA - POINT COMFORT
 Providing Calhoun County Industries with Direct Deep-Draft Access to Global Markets

DREDGING CROSS SECTION B-B (LD-2)

SOUTH PENINSULA DEVELOPMENT
CALHOUN COUNTY, TEXAS

PERMIT NO. _____
FIGURE 11 OF 15



PERMITTED PLANS

CROSS SECTION C-C (LD-3)

THIS DOCUMENT IS RELEASED FOR PERMITTING ON FEBRUARY 1, 2018 UNDER AUTHORITY OF DAVID M. KNUCKEY, P.E. NO. 46822. IT IS NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.



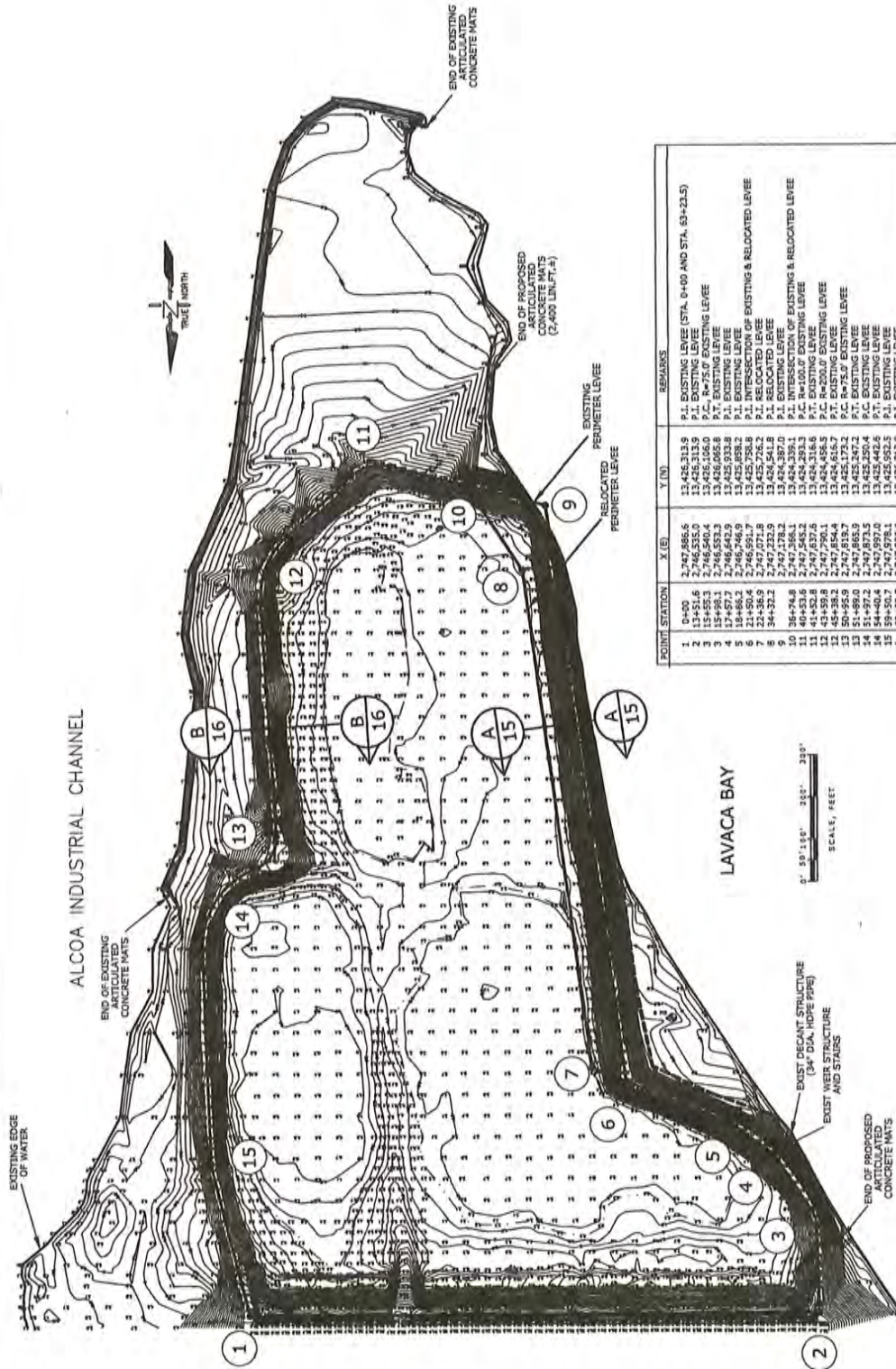
(817) 967-2613 • Fax: (817) 967-2189 • 2313 EM 1593 South, P.O. Box 397 • Point Comfort, Texas 77978
www.calhounport.com
PORT OF PORT LAVACA • POINT COMFORT
Providing Calhoun County Industries with Direct Deep-Water Access to Global Markets

DREDGING CROSS SECTION C-C (LD-3)

SOUTH PENINSULA DEVELOPMENT
CALHOUN COUNTY, TEXAS

PERMIT NO. _____
FIGURE 12 OF 15

PERMITTED PLANS



| POINT | STATION | X (E) | Y (N) | REMARKS |
|-------|---------|-------------|--------------|---|
| 1 | 0+00 | 2,747,886.6 | 13,426,313.9 | P.1. EXISTING LEV. (STA. 0+00 AND STA. 63+23.5) |
| 2 | 13+51.6 | 2,746,535.0 | 13,426,313.9 | P.1. EXISTING LEV. |
| 3 | 13+55.3 | 2,746,540.4 | 13,426,106.0 | P.C. R=75.0' EXISTING LEV. |
| 4 | 17+57.1 | 2,746,642.9 | 13,425,933.8 | P.1. EXISTING LEV. |
| 5 | 18+86.2 | 2,746,746.9 | 13,425,858.2 | P.1. EXISTING LEV. |
| 6 | 21+50.4 | 2,746,891.7 | 13,425,758.3 | P.1. INTERSECTION OF EXISTING & RELOCATED LEV. |
| 7 | 34+33.2 | 2,747,232.9 | 13,424,541.8 | P.1. EXISTING LEV. |
| 8 | 36+74.8 | 2,747,178.2 | 13,424,387.0 | P.1. EXISTING LEV. |
| 9 | 41+52.8 | 2,747,256.1 | 13,424,387.0 | P.1. INTERSECTION OF EXISTING & RELOCATED LEV. |
| 10 | 41+52.8 | 2,747,632.6 | 13,424,316.6 | P.1. EXISTING LEV. |
| 11 | 43+59.8 | 2,747,790.1 | 13,424,458.9 | P.C. R=200.0' EXISTING LEV. |
| 12 | 50+28.2 | 2,747,818.7 | 13,424,458.9 | P.C. R=75.0' EXISTING LEV. |
| 13 | 51+49.0 | 2,747,865.9 | 13,425,173.2 | P.C. R=75.0' EXISTING LEV. |
| 14 | 51+57.2 | 2,747,873.5 | 13,425,247.2 | P.1. EXISTING LEV. |
| 15 | 59+20.4 | 2,747,873.5 | 13,425,250.4 | P.C. EXISTING LEV. |
| 16 | 63+23.5 | 2,747,886.6 | 13,425,933.8 | P.1. EXISTING LEV. |

VERTICAL DATUM: MLLW
HORIZONTAL DATUM: NAD83

DMPA 1 PLAN VIEW
SOUTH PENINSULA DEVELOPMENT
CALHOUN COUNTY, TEXAS

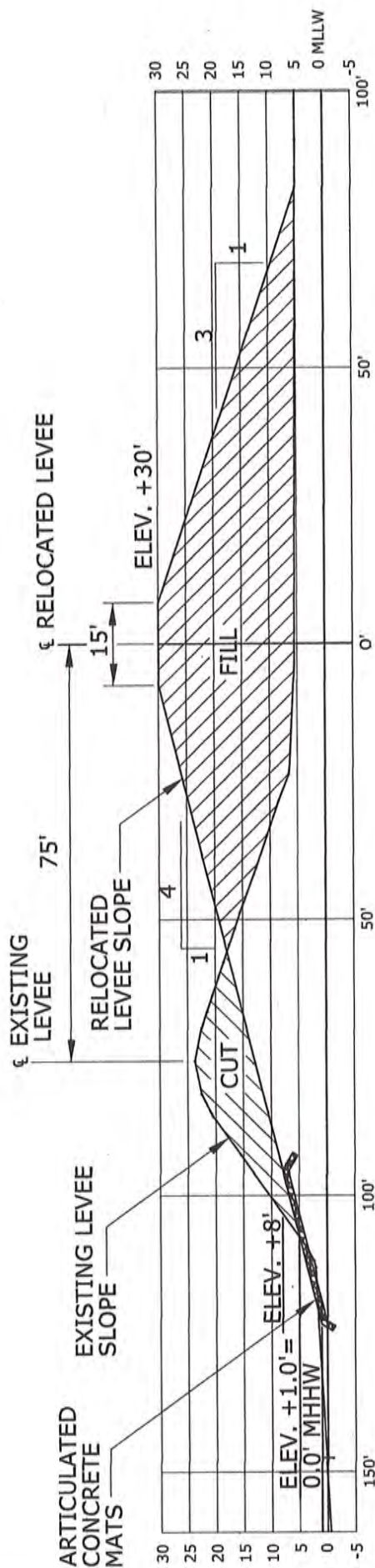
(841) 587-2871 • Fax (361) 587-2189 • 2313 PM 1993 South • Rd. Box 397 • Point Comfort, Texas 77504
www.calhounport.com
PORT OF PORT LAVACA - POINT COMFORT
Providing Calhoun County Industries with Direct Deep-Draft Access to Global Markets



THIS DOCUMENT IS RELEASED FOR PERMITTING ON FEBRUARY 1, 2018 UNDER AUTHORITY OF DAVID M. KNUCKEY, P.E. NO. 46822. IT IS NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

PERMIT NO. _____
FIGURE 13 OF 15

PERMITTED PLANS



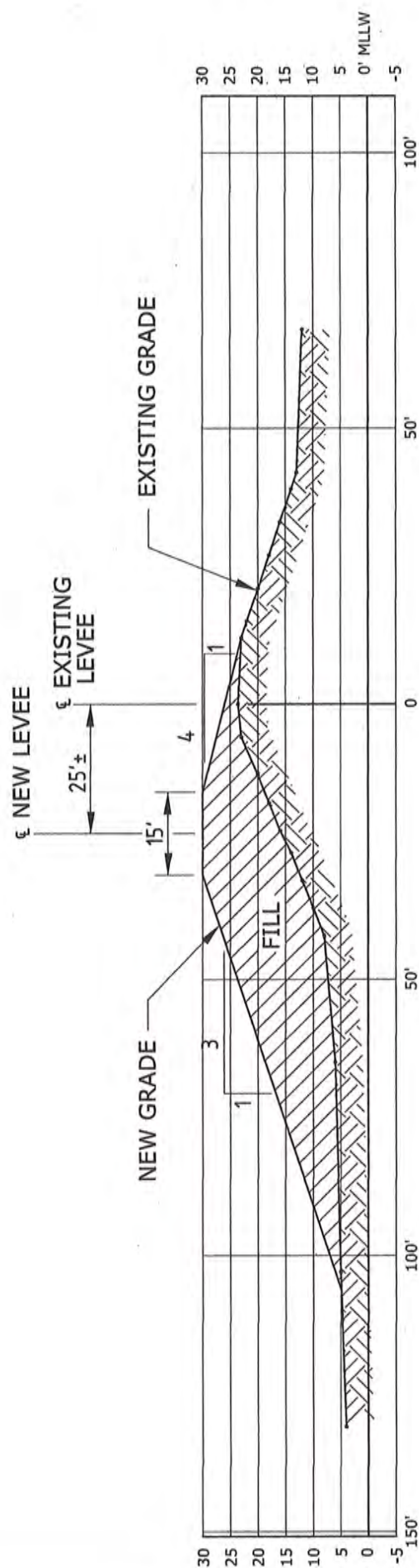
DMPA-1 CROSS SECTION A-A
(STA. 21+50.4 TO STA. 36+74.8)

DMPA-1 LEVEE RELOCATION
 CROSS SECTION A-A
 SOUTH PENINSULA DEVELOPMENT
 CALHOUN COUNTY, TEXAS
 PERMIT NO. _____
 FIGURE 14 OF 15



(941) 989-2813 • Fax (941) 987-2189 • 2317 FM 1593 South • PO Box 397 • Point Comfort, Texas 77978
 www.calhounport.com
PORT OF PORT LAVACA - POINT COMFORT
 Providing Calhoun County residents with direct Deep-Drift Access to Global Markets

THIS DOCUMENT IS RELEASED FOR PERMITTING ON
 FEBRUARY 1, 2018 UNDER AUTHORITY OF DAVID M.
 KNUCKEY, P.E. NO. 46822. IT IS NOT TO BE USED
 FOR CONSTRUCTION OR BIDDING PURPOSES.



PERMITTED PLANS

DMPA-1 PERIMETER LEVEE CROSS SECTION B-B

THIS DOCUMENT IS RELEASED FOR PERMITTING ON FEBRUARY 1, 2018 UNDER AUTHORITY OF DAVID M. KNUCKEY, P.E. NO. 46822. IT IS NOT TO BE USED FOR CONSTRUCTION OR BIDDING PURPOSES.

PORT OF PORT LAVACA - POINT COMFORT
Providing Calhoun County industries with River One-Stop Access to Global Markets

(941) 987-2813 • Fax (361) 867-2109 • 2113 PM 1503 South • P.O. Box 307 • Point Comfort, Texas 77578
www.calhounport.com

DMPA-1 PERIMETER LEVEE CROSS SECTION B-B
SOUTH PENINSULA DEVELOPMENT
CALHOUN COUNTY, TEXAS
PERMIT NO. _____
FIGURE 15 OF 15

Revised Proposed Impact Map
Proposed South Peninsula Development
Calhoun Port Authority
Calhoun County, Texas

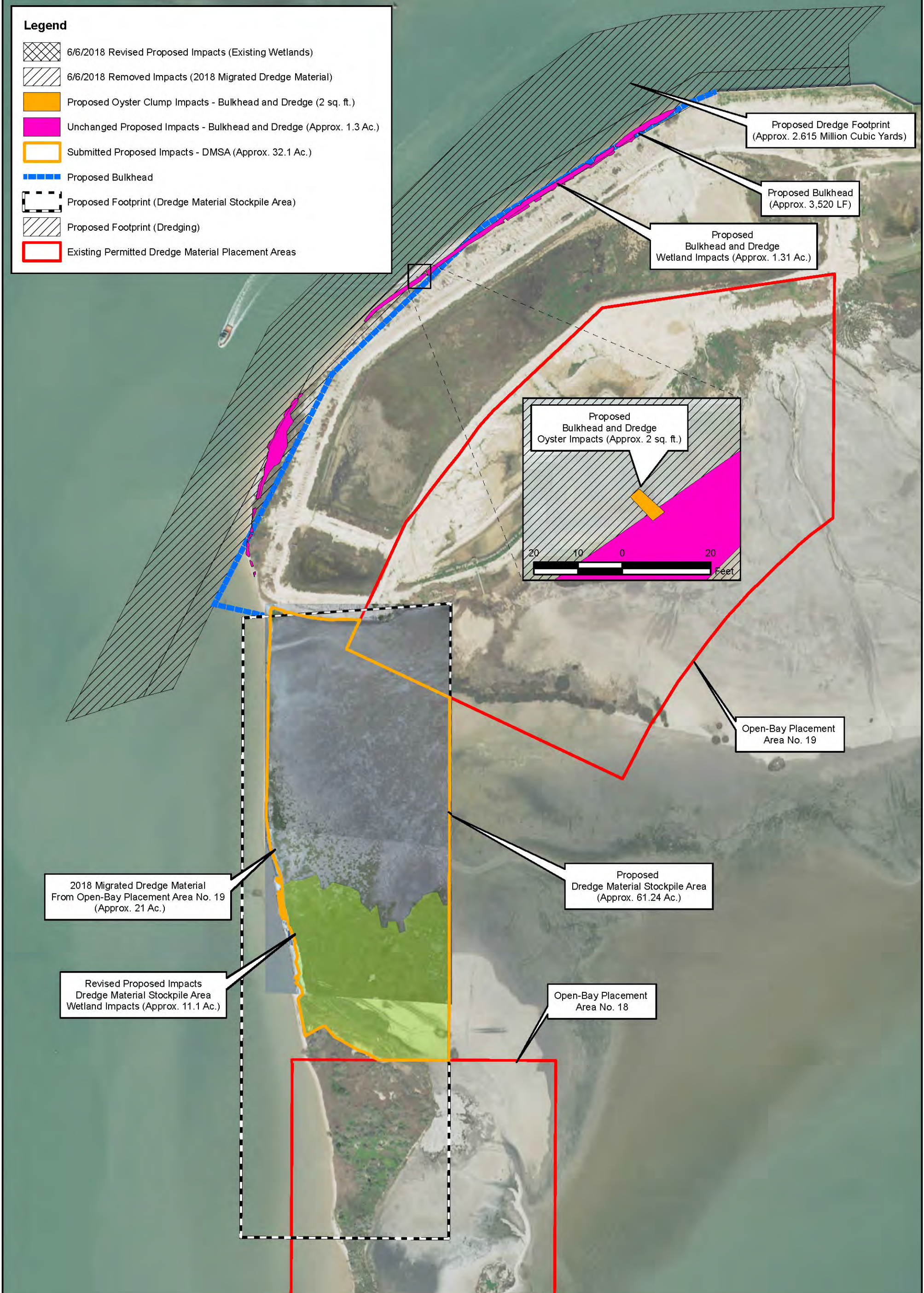
Notes:
 - Background image obtained from TNRIS online, Calhoun County 2015.
 - Prepared by Belaire Environmental, Inc., June 14, 2018 (RAM).
 - For planning purposes only. Not for construction or permitting.

400 200 0 400
 Feet

| Impact Footprint | Type | Area (Ac.) | Area (Sq. ft.) |
|-------------------------------|-------------------|-------------|----------------|
| Proposed Dredging | Estuarine Wetland | 0.83 | 36154.8 |
| Proposed Dredging | Oysters | n/a | 2 |
| Proposed Fill Behind Bulkhead | Estuarine Wetland | 0.47 | 20473.2 |
| Proposed Fill for DMSA | Estuarine Wetland | 11.1 | 483516 |
| Total | | 12.4 | 540146 |

Legend

- 6/6/2018 Revised Proposed Impacts (Existing Wetlands)
- 6/6/2018 Removed Impacts (2018 Migrated Dredge Material)
- Proposed Oyster Clump Impacts - Bulkhead and Dredge (2 sq. ft.)
- Unchanged Proposed Impacts - Bulkhead and Dredge (Approx. 1.3 Ac.)
- Submitted Proposed Impacts - DMSA (Approx. 32.1 Ac.)
- Proposed Bulkhead
- Proposed Footprint (Dredge Material Stockpile Area)
- Proposed Footprint (Dredging)
- Existing Permitted Dredge Material Placement Areas



Proposed Dredge Footprint
 (Approx. 2.615 Million Cubic Yards)

Proposed Bulkhead
 (Approx. 3,520 LF)

Proposed Bulkhead and Dredge
 Wetland Impacts (Approx. 1.31 Ac.)

Proposed Bulkhead and Dredge
 Oyster Impacts (Approx. 2 sq. ft.)



Open-Bay Placement
 Area No. 19

2018 Migrated Dredge Material
 From Open-Bay Placement Area No. 19
 (Approx. 21 Ac.)

Proposed Dredge Material Stockpile Area
 (Approx. 61.24 Ac.)

Revised Proposed Impacts
 Dredge Material Stockpile Area
 Wetland Impacts (Approx. 11.1 Ac.)

Open-Bay Placement
 Area No. 18

PERMITTED PLANS

MITIGATION PLAN AT BEAN TRACT
PERMIT NO. SWG-2016-01066
CALHOUN PORT AUTHORITY
LAVACA BAY, CALHOUN COUNTY, TEXAS

Prepared for:
Calhoun Port Authority
PO Box 397
Point Comfort, Texas 77978

Prepared by:
Belaire Environmental, Inc.
P.O. Box 741
Rockport, TX 78381

August 4, 2020



Mitigation Plan
SWG-2006-010166
Lavaca Bay near Point Comfort, Calhoun County, Texas
August 4, 2020

PERMITTED PLANS

The April 10, 2008 USACE/EPA Final Mitigation Rule (2008 Mitigation Rule) outlines 12 Fundamental Components to be uniformly addressed in all compensatory mitigation plans (33 CFR 332.4(c)(2) through (c)(14)) for the purposes of developing successful compensatory mitigation projects and facilitating effective compliance measures. According to the 2008 Mitigation Rule, “the level of detail of the mitigation plan should be commensurate with the scale and scope of the impacts.” The information below outlines the 12 Fundamental Components of Calhoun Port Authority’s (CPA) proposed compensatory mitigation plan.

I. Objective of the Compensatory Mitigation Plan

A. Method of Compensation

1. The proposed mitigation plan involves the creation of an approximately 14-acre marsh system in Lavaca Bay. The mitigation site would consist of approximately 10 acres of high and low marsh, approximately 1 acre of circulation channels, and 3.0 acres of levee protection. Approximately 1,775 linear feet of articulated matting would be placed on the bayward side of the mitigation area in order to protect the site from wave energy.
2. See Exhibit A for Plan and Cross-section drawings of the proposed mitigation site features. The proposed mitigation plan involves the beneficial use (BU) of approximately 60,000 to 80,000 cu yds of suitable (appropriate physical engineering and chemical properties) dredged material or use of other suitable clean fill material as approved by the USACE. The USACE permit will contain conditions requiring testing of material for use in mitigation site construction for both physical properties and for potential contaminants. CPA will test any material proposed to be used for mitigation site construction prior to conducting work. Testing will include both geotechnical testing for physical properties of the material, as well as contaminant testing in accordance with CPA’s Sampling Analysis Plan (SAP) to ensure that suitable material is used for mitigation site construction. The SAP will be approved in advance by the USACE.

CPA has identified three alternatives for sourcing the material for mitigation site construction. Each alternative involves testing as described above, and only material that is determined to be suitable based upon testing results will be used. Alternative 1 involves utilizing material dredged from CPA’s docks for the purpose of creating deep-water and shallow draft access to new docking areas to handle liquid petrochemicals. This dredged material would be pumped or mechanically placed into a confined leveed area at elevations suitable to create a network of intermixed low and high tidal marshes with circulation channels. The proposed dredge quantity involves approximately 2.615 million cubic yards, of which approximately 60,000 to 80,000 cubic yards is needed to construct the mitigation site. If Alternative 1 (utilizing project dredged material, after testing) does not identify suitable material, then CPA would pursue Alternative 2. Alternative 2 involves testing and using alternate material at an existing placement area within uplands at CPA facilities. In the event that material is found to be unsuitable then, for Alternative 3, CPA would identify a commercial source of clean fill material for constructing the mitigation site and test it as well prior to using it for mitigation site construction.

Mitigation Plan
SWG-2006-010166
Lavaca Bay near Point Comfort, Calhoun County, Texas
August 4, 2020

PERMITTED PLANS

The selected material, as approved by the USACE, would be placed into a confined leveed area at elevations suitable to create a network of intermixed low and high tidal marshes with circulation channels. Soil composition will largely dictate finished topographic features. An earthen levee will be constructed to contain the material. The portion of the levee exposed to wind and wave action would be armored with articulated concrete matting. This matting will also provide intertidal hard substrate for oyster and associated organisms to attach. The remainder of the levee will be lowered to elevations that support desirable wetland plant species. In the long-term, the breakwater will help protect the high and low marsh wetlands, as well as the currently eroding shoreline, from wave action and erosion.

Mitigation Habitat Creation (14 acres total)

- 1.3 acres of high marsh habitat (+2.0 to +3.0 ft NAVD 88)
- 8.7 acres of low marsh habitat (+0.5 ft to +1.65 ft NAVD 88)
- 1.0 acre of permanently inundated shallow water habitat (circulation channels). The circulation channels will be at elevations -2.0 to -3.0 feet NAVD 88 and would very rarely if ever be exposed.
- 3.0 acres of levee protection

B. Manner in which the resource functions of the mitigation will address the needs of the watershed or region

The site's present-day condition consists of unvegetated bay bottom littered with assorted debris including abandoned vessels, pipe, and other materials. The proposed mitigation will provide a greater overall habitat value by enhancing the existing habitat functions and by creating new high marsh, low marsh, and shallow water edge habitat. The created habitat will be protected with armored levee to assure long-term resilience.

II. Site Selection

The applicant considered numerous options for the mitigation site including land owned by the TPWD, Powderhorn Ranch, privately owned land, and port-owned property. The TPWD site was initially selected, however after extensive coordination and evaluation TPWD decided they needed more extensive internal evaluations before they commit to such a mitigation effort at this location. The applicant ultimately selected the currently proposed submerged port-owned property because it offered a potential opportunity for beneficial use of dredged material, is a site with many past disturbances, is port-owned property, was a low value unvegetated disturbed bay bottom, was near the proposed port development project, was of suitable substrate and elevation for marsh creation and establishment, was protected from prevailing south-east winds, provided barge and road access and has a high likelihood of successful estuarine habitat development. The implementation of the project will establish low and high marsh areas with circulation channels as well as construction of an approximately 1,775-ft hard substrate breakwater. The chosen mitigation site will preserve these benefits.

Mitigation Plan
SWG-2006-010166
Lavaca Bay near Point Comfort, Calhoun County, Texas
August 4, 2020

PERMITTED PLANS

III. Site Protection Instrument

Within 6-months of the start of construction in jurisdictional areas, the permittee will consummate and record with the County Clerk of Calhoun County, restrictive covenants for the compensatory mitigation site.

IV. Baseline Information (Impact and Compensation Site)

A. Ecological Characteristics of the Impacted Site

As noted in the Public Notice, the impacted site is largely undeveloped land comprised of a previously authorized upland placement area, and an area that was historically open water. A large portion of the area for the proposed fill area has been heavily impacted by past, present, and projected dredge placement in the adjacent OBPA's. As a result, much of the area that was historically open water has been filled with sediment to an elevation close to or above the annual high tide line. Continued disposal at 18-month intervals is expected to convert the entire site to uplands within the next five years. The approximate 11.95 acres of estuarine wetlands proposed to be impacted by the project have only recently developed during the last growing season. As previously stated, the adjacent unconfined disposal will continue until the impact area is converted to upland.

B. Ecological Characteristics of the Compensation Site

Belaire Environmental, Inc. (BEI) conducted an oyster, wetland, and seagrass survey at the proposed B.U. site (November 25, 2019). The proposed mitigation site is a highly disturbed unvegetated bay bottom. Abandoned vessels, barges, pipe and various other debris litter the surrounding bay bottom. The adjacent shoreline experiences significant wind-wave erosion. The site is low value subtidal habitat. No oysters, wetlands, seagrass beds, or other sensitive resources were found in the proposed B.U. area. Some shoreline wetlands were observed nearby the proposed mitigation site. These existing wetlands will not be impacted by mitigation construction activities and would be protected from wind-wave erosion by the proposed permanent armored levee with articulated matting.

V. Determination of Credits

CPA has demonstrated significant efforts in avoiding and minimizing impacts to jurisdictional areas. At the area of impacts, Calhoun Port Authority (CPA) proposes to construct three deep-water liquid product docks, six shallow draft liquid product barge docks for the handling of liquid petrochemicals, and an approximate 3,430 linear feet of steel sheet pile bulkhead for barge mooring. The permit application was originally submitted to the USACE on February 2, 2018 with wetland impacts totaling 37.62 acres (1.31 acres due to construction of the bulkhead and 36.31 acres due to construction of the proposed new development area (NDA) for future facilities expansion). Subsequently, the footprint was reduced, and impacts to estuarine wetlands were revised to 33.4 acres. The proposed NDA in the permit application is located near the vicinity of U.S. Army Corps of Engineers (USACE) Open Bay Placement Areas (OBPA) No. 18 and 19. The USACE typically utilizes this unconfined placement area every 18 months and over the past eight years has discharged over three million cubic yards of material, not including the most recent dredge event. As a result of unconfined disposal of dredged material, the material is free to migrate.

**Mitigation Plan
SWG-2006-010166
Lavaca Bay near Point Comfort, Calhoun County, Texas
August 4, 2020**

PERMITTED PLANS

During a June 6, 2018 site visit with Kevin Mannie of the USACE, significant changes were observed at the proposed impact area due to migration of unconfined dredge material placement into DMPA 19. BEI surveyed the site on June 13, 2018, and survey results found an average of 0.98 ft of recent dredge material coverage above the stem/root mass interface covering approximately 21 acres within the proposed NDA. The estuarine wetland impacts associated with the project were revised to reflect the survey findings, and impacts were further reduced from 33.4 acres to 11.95 acres (a reduction of approximately 21 acres of estuarine wetland impacts) of estuarine wetlands and 2 sq ft of oyster shell.

At the recommendation of the USACE representative Kevin Mannie during the USACE June 6, 2018, site visit, BEI analyzed the wetland impact area at three different periods of time: 5 years prior (2013), current condition on June 6, 2018, and five years in the future (2023). For simplicity the project was broken down into two impact areas WAA#1 and WAA#2. The wetlands encompassed within WAA#1 are proposed to be impacted by the dredging and construction of a bulkhead. For simplicity, a consistent value was assigned for WAA#1 and used for each year. No discrepancy for the acreage or functional value of these wetlands was recognized. The wetlands encompassed within WAA#2 are the proposed wetland within the proposed dredge material stockpile area footprint. This footprint has been analyzed for impacts by conducting separate iHGM score sheets for each year (2013, 2018 and 2023) to calculate the average loss in function capacity units for the proposed DMSA area. A table of the potential functional capacity impacts at the project site follows.

**Potential Functional Capacity Impacts
WAA 1 FCU biota loss (bl) + WAA 2 bl + WAA 3 bl + WAA 4 bl = net FCU loss**

| Functional Capacity Units Lost (WAA 1 & WAA 2) | | | | |
|--|-------|--------|-------|-----------|
| | 2013 | 2018 | 2023 | Average |
| Biota (FCU) | -6.38 | -15.74 | -2.23 | -8.12 FCU |
| Botanical (FCU) | -3.12 | -10.76 | -1.18 | -5.02 FCU |
| Physical (FCU) | -3.29 | -9.6 | -0.88 | -4.59 FCU |
| Chemical (FCU) | -1.17 | -3.46 | -0.59 | -1.74 FCU |

**Potential Functional Capacity Gains
WAA #3 (Bean Tract Mitigation Site)
(Functional Capacity Units (FCU); FCI x wetland acres per WAA)**

| 11 Acres | Pre-project FCUs | Post project FCUs | Post – Pre |
|-----------------|---------------------------|---------------------------|-------------|
| Biota | 1.71 x 15.28 = 26.13 FCUs | 2.05 x 26.28 = 53.87 FCUs | +27.74 GAIN |
| Botanical | 1.0 x 15.28 = 15.28 FCUs | 1.0 x 26.28 = 26.28 FCUs | +11.00 GAIN |
| Physical | 0.54 x 15.28 = 8.25 FCUs | 0.88 x 26.28 = 23.13 FCUs | +14.88 GAIN |
| Chemical | 0.5 x 15.28 = 7.64 FCUs | 0.5 x 26.28 = 13.14 FCUs | +5.50 GAIN |

Mitigation Plan
SWG-2006-010166
Lavaca Bay near Point Comfort, Calhoun County, Texas
August 4, 2020

PERMITTED PLANS

SUMMARY OF NET GAINS

Biota: -8.12 (WAA 1&2) + 27.74 (WAA 3) = **19.62 Net FCU Gain**

Botanical: -5.02 (WAA 1&2) + 11.00 (WAA 3) = **5.98 Net FCU Gain**

Physical: -4.59 (WAA 1&2) + 14.88 (WAA 3) = **10.29 Net FCU Gain**

Chemical: -1.74 (WAA 1&2) + 5.50 (WAA 3) = **3.76 Net FCU Gain**

The iHGM report submitted to the USACE as part of the October 12, 2018 permit application package, and summarized here, as compared to the iHGM report prepared for the proposed mitigation site (enclosed as Exhibit B) demonstrates that more than adequate compensation will be provided for the types and qualities of impacted aquatic resources. It is CPA's goal to utilize the existing intertidal unvegetated area to create a highly productive, diverse, and resilient estuarine habitat.

VI. Mitigation Work Plan

The mitigation plan allows for the creation of a confined (via levees and a hard structure breakwater or articulated matting) 14-acre mitigation site. The mitigation site's perimeter will be constructed as described below. After the confined site is constructed, material will be hauled by barges or trucks or hydraulically pumped from CPA's impact area, if that is the selected alternative for material sourcing, to the mitigation site. If hydraulic dredging is utilized, interior levees and weirs will be constructed to accommodate settling of TSS. An access route for the dredge pipe that is free of oysters, navigation hazards, and sensitive resources will be staked prior to placement of the dredge pipe. Alternately, the material would be mechanically transported and placed. Up to two temporary access roads with 70-ft top surface width may be constructed to provide equipment access if mechanical placement of material is used. Wetlands will be avoided for these access roads (Exhibit A).

The mitigation plan involves the creation of a 3.0-acre levee system, including:

- 1.8 acres of levee armored with articulated mats which will remain in place after completion of construction and dredging, and
- 1.2 acres of temporary levee.

Material excavated from within the site adjacent to the levees and/or hauled-in fill material will be used for levee construction. The entire levee, which will confine the placed dredged material, will be constructed to approximately +10.0 ft NAVD 88 during mitigation site construction in order to contain the material and allow for construction equipment to travel along the levee top for construction activities. After construction is complete and consolidation of dredged material has occurred, the 1.8 acres of armored levee (1,775 linear feet) will be lowered to +5.0 ft NAVD 88, and the 1.2 acres of temporary levee (1,190 linear ft) will be lowered to +2.0 to +3.0 ft NAVD 88 to allow for tidal influence.

The articulated matting to be used for the long-term protection of levee areas subjected to significant wind-wave erosion will likely facilitate oyster and barnacle attachment. BEI's past experience indicates this. Between 1990 & 2010, BEI planned, permitted, and assisted with installation of four similar mitigation projects at the ANWR. Monitoring studies found that all four

Mitigation Plan
SWG-2006-010166
Lavaca Bay near Point Comfort, Calhoun County, Texas
August 4, 2020

PERMITTED PLANS

established substantial oyster populations within the intertidal zone. In addition to protecting the mitigation site and plantings from wave action and erosion, it is likely that the mats will encourage oyster growth.

After mitigation site construction and levee contouring to finished grades, 10-acres (8.7 acres of low marsh and 1.3 acres of high marsh) would then be planted on 3-ft centers with appropriate estuarine species (e.g. smooth cordgrass (*Spartina alterniflora*) on side slopes and saltgrass (*Distichlus spicata*), seashore paspalum (*Paspalum vaginatum*), saltwort (*Batis maritima*), chicken claws (*Sarcocornia ambigua*), sea ox-eye daisy (*Borrichia frutescens*), etc.). This 1.3 acres will compensate for the loss of 1.3 acres of high marsh at the project site. Approx. 60,000 to 80,000 cu yds of suitable material from the harbor dredging project will be mechanically or hydraulically placed within the levees at elevations ranging from +0.5 to +1.65 ft NAVD 88 for planting smooth cordgrass on 3-ft centers. Nearby existing smooth cordgrass is established at these elevations. Prior to start of construction, additional nearby smooth cordgrass beds will be surveyed to refine these elevations for plans and specifications.

As stated on the Plan View drawing in Exhibit A, the mitigation site boundary is subject to minor changes based on further engineering and contractor evaluations. The location of planting benches and circulations may be slightly altered due to further evaluation of site conditions.

A. High Marsh Creation

Approximately 1.3 acres of existing unvegetated bay bottom located on the edges of the mitigation site will be mechanically or hydraulically filled with dredged material to elevations consistent with nearby reference high marsh areas. The precise locations of these created high marsh areas may be modified based on onsite conditions. High marsh species will be planted on 3-foot centers to vegetate the contoured areas. Signage will be installed in an effort to prohibit human activity within the high marsh creation areas. Mitigation construction will begin within 6-months of impacts to jurisdictional areas.

B. Low Marsh Creation

Approximately 8.7 acres of existing unvegetated bay bottom on at the mitigation site will be mechanically or hydraulically filled with dredged material to elevations consistent with nearby reference low marsh areas. Low marsh species, predominantly smooth cordgrass, will be planted to vegetate the contoured areas. A reference survey of adjacent low marsh areas will be conducted prior to construction in order to establish precise target elevations and coverage of natural marshes. Signage will be installed in an effort to prohibit human activity within the low marsh creation areas. Mitigation construction will begin within 6-months of impacts to jurisdictional areas.

C. Circulation Channels

Approximately 1 acre of unvegetated bay bottom will be left undisturbed or excavated to a depth of approximately -2.0 to -3.0 ft NAVD 88 for the creation of 20-ft wide circulation channels.

Mitigation Plan
SWG-2006-010166
Lavaca Bay near Point Comfort, Calhoun County, Texas
August 4, 2020

PERMITTED PLANS

D. Planting

The mitigation site will be planted with appropriate species once the dredged material has sufficiently consolidated. Following sediment conditioning of at least 60 days, the areas will be planted on 3-ft centers. A planting unit will consist of a small bareroot clump of each of the various salt marsh species. Each planting unit will be securely embedded in the planting surface. Low marsh areas will be planted with predominantly smooth cordgrass (*Spartina alterniflora*). Intermediate to high marsh areas will be planted with saltgrass (*Distichlis spicata*), saltwort (*Batis maritima*), glasswort (*Salicornia virginica*), sea ox-eye daisy (*Borrichia frutescens*), and associated species. A written report, including complete photographic coverage of the planting areas, shall be submitted to the USACE immediately prior to and following within 30 days of transplanting activities.

VII. Maintenance Plan

If substantial changes in the mitigation site are observed during monitoring events, the applicant will include these results in the monitoring report(s) and will set up a meeting with the U.S. Army Corps of Engineers (USACE) to determine an agreed upon path forward.

VIII. Performance Standards and Monitoring Requirements

CPA will be responsible for monitoring the site for a total of 5 years to track the success of created habitats through quantitative assessments of vegetative cover (as described below). A pre-construction aerial photograph of the site will be taken immediately prior to construction. Additionally, within 30 days after completion of construction activities an aerial photograph will be taken and a monitoring survey will be conducted to establish existing baseline as-built conditions.

High & Low Marsh Creation

Survival of transplanted species will be monitored 60 days after completion of planting. A report will be submitted to the USACE within 30 days of completion of this monitoring. The coverage of the target vegetation, in percent, will also be monitored within the high and low marsh mitigation areas and recorded in subsequent reports. Coverage monitoring reports will include photo documentation and will be submitted to the USACE at 6-months, 1-year, 2-years, 3-years, 4-years, and 5-years following the initial planting of the above habitat.

1. A transplant survival survey will be conducted within 60 days following completion of the initial planting effort. If 50% survival of transplant material is not achieved, the USACE will be notified in writing and a 2nd planting effort will be made within the next 30 days or within the next seasonal high tide period (September 15 to November 15 or March 15 to June 15) using the original planting specifications.
2. If after one year from the initial planting effort (or subsequent planting efforts) the site does not have at least 35% aerial coverage of targeted vegetation, those areas that are not vegetated will be replanted within 60 days using the original planting specifications.
3. If at least 70% aerial coverage of the transplanted species for each respective plant community is not achieved within 3 years following initial planting, and additional re-

Mitigation Plan
SWG-2006-010166
Lavaca Bay near Point Comfort, Calhoun County, Texas
August 4, 2020

PERMITTED PLANS

planting will be performed within the next 30 days or within the next seasonal high tide period (September 15 to November 15 or March 15 to June 15) using the original planting specifications.

4. In addition to the initial 60-day survey report, progress reports will be submitted to USACE at 6 months, 1-year, 2-year, 3-year, 4-year, and 5-year intervals following the initial transplanting effort or subsequent replanting efforts. Photos of the mitigation site would be included. Any erosion or accretion, including circulation channels, will be documented during each monitoring effort.

If the established habitats mentioned above show significant change in the designated areas during any monitoring survey, a meeting will be held with CPA and USACE to determine if changes need to be made to the mitigation site.

IX. Long-term Management Plan

Long-term management of the site will be the responsibility of CPA. The entire mitigation site will be preserved in perpetuity via a conservation easement, deed restriction, or comparable legal instrument.

X. Adaptive Management

If results of the monitoring surveys indicate that the mitigation is not successful, the applicant will coordinate with the USACE in an attempt to agree upon the appropriate course of action. In the event of a discreet storm event or other "Act of God", CPA will discuss with the USACE how to best bring the site up to performance standards, or to reach an agreement that the site has achieved significant function and value to replace those at the impact area.

XI. Financial Assurances

Financial Assurances for the mitigation site will be provided via either an escrow account or bond and will be financially-based off the costs associated with Sections VIII and IX, above. The applicant will work with USACE personnel and their environmental consultant to determine an appropriate escrow account amount or bond amount to insure the completion of Sections VIII and IX, above.

PERMITTED PLANS

EXHIBIT A

Vicinity Map

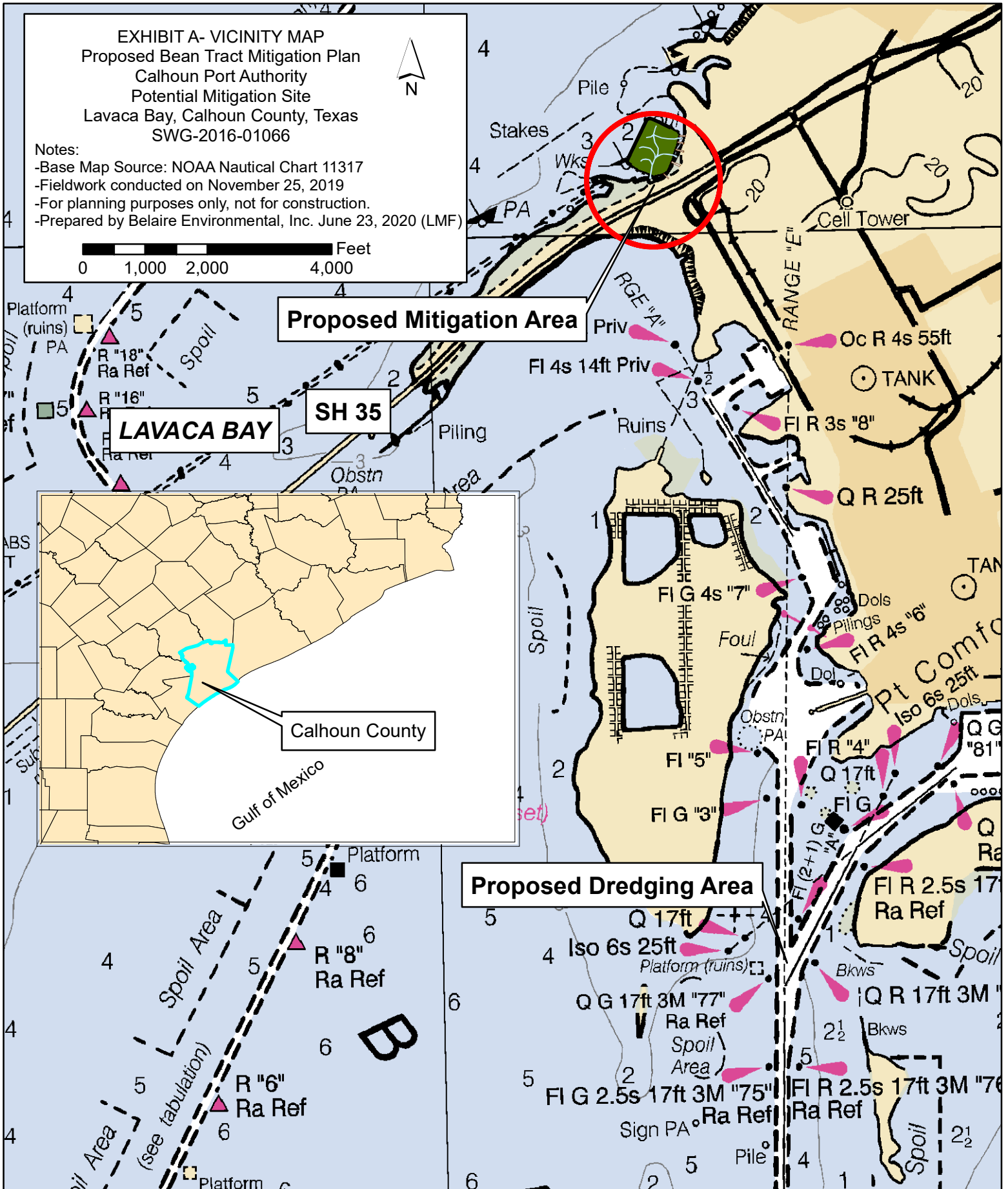
Plan View

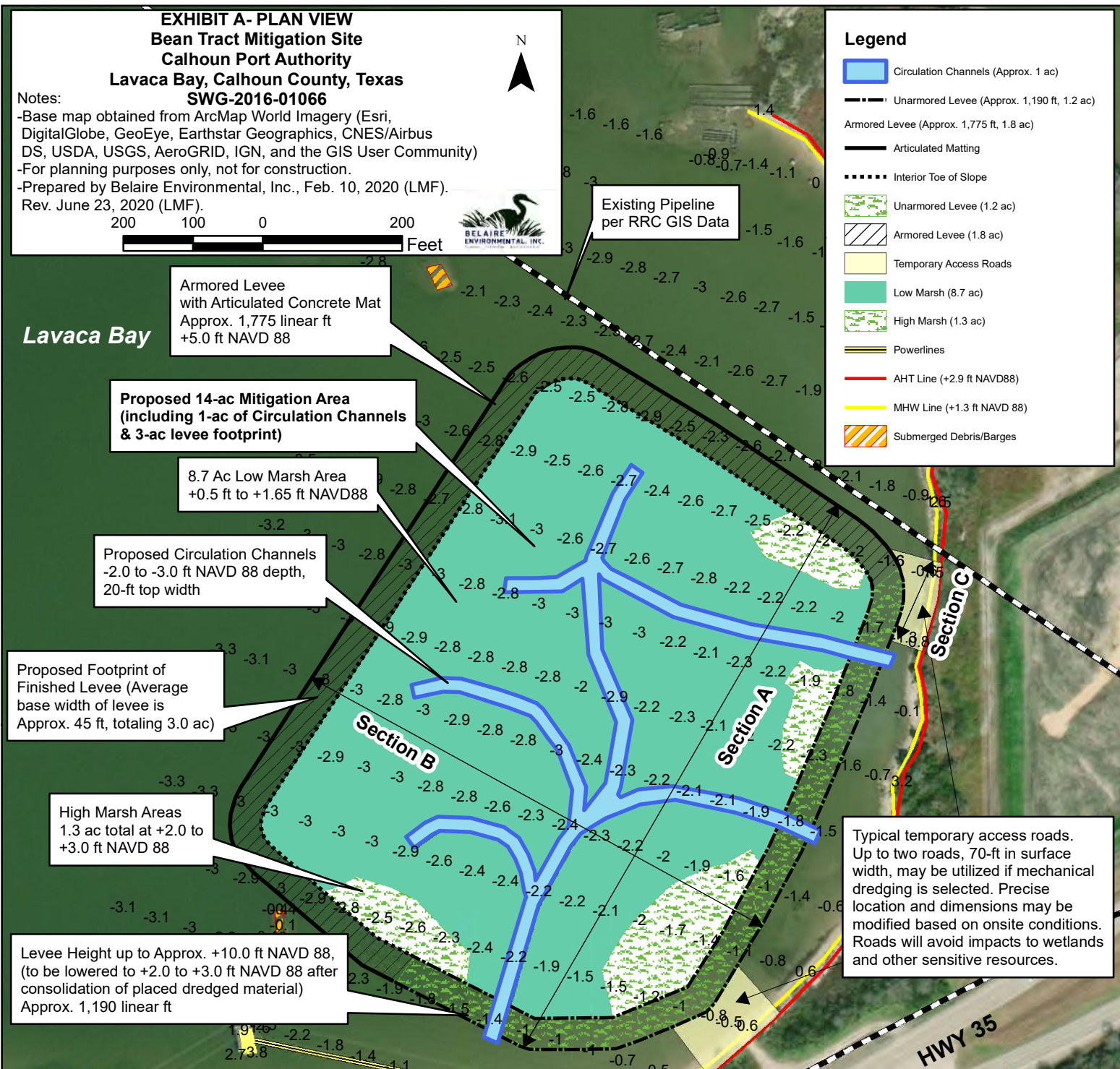
Plan View Notes

Section A-Mitigation Site

Section B-Mitigation Site

Section C-Temporary Access Road Section





NOTES:

- See Exhibit A Plan View Notes, pages ___ of ___.
- Levees will be built with hauled in fill and/or material excavated from within the site adjacent to the levees.
- During construction, the levees may be temporarily built up to an elevation of +10 ft NAVD 88 to accommodate equipment movements. Prior to mitigation site construction completion, the levees will be contoured to final grades as per Sections A & B.
- Within the 3.0-acre levee footprint, the 1.8-acre bayward portion of the levee would be armored with approx.1,775 linear ft of articulated mat to provide stabilization of the levee from wind and wave energy. The finished grade of the armored levee would be +5.0 ft NAVD 88. The finished grade of the 1.2 acres of unarmored levee will be between +2.0 ft and +3.0 ft NAVD 88 to allow for tidal influence. Circulation channels will be lowered to -2.0 to -3.0 ft NAVD 88 with a 20-ft top width. Along with the 1.3-acre high marsh fill within the site, the unarmored levee area would be planted on 3-ft centers with appropriate estuarine species (e.g. smooth cordgrass (*Spartina alterniflora*) on side slopes and saltgrass (*Distichlis spicata*), seashore paspalum (*Paspalum vaginatum*), turtle weed (*Batis maritima*), chicken claws (*Sarcocornia ambigua*), sea ox-eye daisy (*Borrchia frutescens*), etc.) on higher elevations. The 8.7 acres of low marsh creation involves planting smooth cordgrass on 3-ft centers at elevations ranging from +0.5 ft to +1.6 ft NAVD 88. Smooth cordgrass was observed growing in the vicinity from +0.5 ft NAVD 88 to +1.6 ft NAVD 88. Additional surveys will be performed prior to construction. The results will be used to make adjustments to finished grades as warranted.

PERMITTED PLANS

EXHIBIT A- PLAN VIEW NOTES
 Bean Tract Mitigation Site
 Calhoun Port Authority
 Lavaca Bay, Calhoun County, Texas
 SWG-2016-01066
 June 23, 2020

1. The maximum footprint of the mitigation site, including levees, will not exceed 14 acres.
2. Levees will be built with hauled in fill and/or material excavated from within the site adjacent to the levees.
3. During construction, the levees may be temporarily built up to an elevation of +10 ft NAVD 88 to accommodate equipment movements. Prior to mitigation site construction completion, the levees will be contoured to final grades as per Sections A & B.
4. Within the 3.0-acre levee footprint, the 1.8-acre bayward portion of the levee would be armored with approximately 1,775 linear ft of articulated mat to provide stabilization of the levee from wind and wave energy. The finished grade of the armored levee would be +5.0 ft NAVD 88. Belaire Environmental, Inc.'s (BEI) past experience indicates that the articulated matting to be used for the proposed 1,775-ft armored breakwater will likely facilitate oyster, barnacle, and other aquatic species attachment. Between 1990 & 2010, BEI planned, permitted, and assisted with installation of four similar BU projects at the Aransas National Wildlife Refuge. Monitoring studies found that all four established substantial oyster populations within the intertidal zone.

The remaining 1.2 acres of unarmored levee will be lowered to between +2.0 ft and +3.0 ft NAVD 88 after consolidation of fill within the site. Circulation channels will be lowered to -2.0 to -3.0 ft NAVD 88 with a 20-ft top width. Along with the 1.3-acre high marsh fill within the site, the levee area would then be planted on 3-ft centers with appropriate estuarine species (e.g. smooth cordgrass (*Spartina alterniflora*) on side slopes and saltgrass (*Distichlis spicata*), seashore paspalum (*Paspalum vaginatum*), turtle weed (*Batis maritima*), chicken claws (*Sarcocornia ambigua*), sea ox-eye daisy (*Borrchia frutescens*), etc.) on higher elevations.

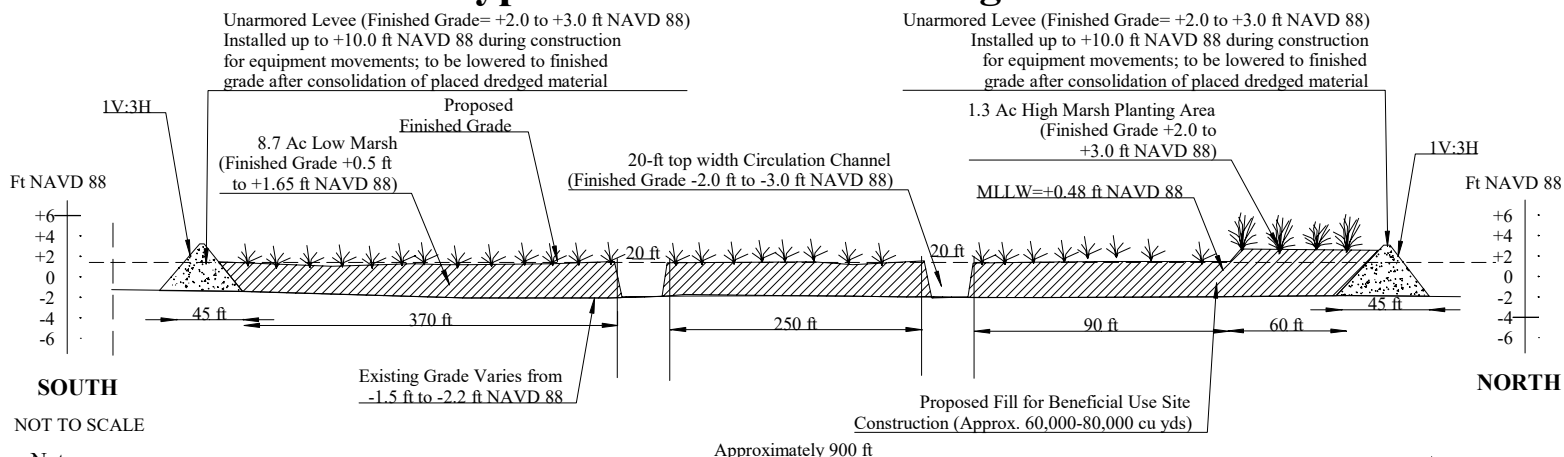
5. Depending upon final design, approx. 60,000 to 80,000 cu yds of suitable material from the CPA harbor dredging project will be mechanically or hydraulically dredged then placed within the 14-acre site into a confined leveed area at elevations suitable to create a network of intermixed low and high tidal marshes with circulation channels.
6. Within the interior of the finished grade levees, 8.7 ac of low marsh and 1.3 ac high marsh will be contoured and planted with appropriate species. The 8.7 acres of low marsh creation involves planting smooth cordgrass on 3-ft centers at elevations ranging from +0.5 ft to +1.6 ft NAVD 88. Smooth cordgrass was observed growing in the vicinity from +0.5 ft NAVD 88 to +1.6 ft NAVD 88. Additional surveys will be performed prior to construction. The results will be used to make adjustments to finished grades as warranted. Additionally, CPA will also plant high marsh species within targeted grades along the finished grade 1.2-acre unarmored levee in order to aid in stabilization of the levee. In addition to providing stabilization, the planted high marsh areas within the levee footprint will provide increased habitat function and value.

PERMITTED PLANS

7. Mechanically placed material will either be trucked or barged to the site. If land-based mechanical placement of material is used, up to two temporary access roads with 70-ft surface width may be constructed to provide equipment access, including ingress & egress for trucks. Wetlands will be avoided for these temporary access roads. These roads will be removed upon completion of construction and pre-construction contours restored.
8. If hydraulic dredging is utilized, interior levees and weirs will be constructed to accommodate settling of TSS. An access route for the dredge pipe that is free of oysters, navigation hazards, and sensitive resources will be staked prior to placement of the dredge pipe.
9. BEI conducted an extensive field survey in the area and found no seagrass, oysters, or other sensitive resources within the proposed mitigation site.
10. The mitigation site boundary, including levee dimensions, is subject to changes based on further engineering and contractor evaluations. The location of planting benches and circulation channels may be altered due to further evaluation of site conditions.
11. The mitigation site area is owned by the Calhoun Port Authority.
12. As verified by the USACE in JD SWG-2016-01066 on Sept. 25, 2017. MHW= +1.30 ft NAVD88
AHTL=+2.90 ft NAVD88. MLLW= 0.48 ft NAVD 88.

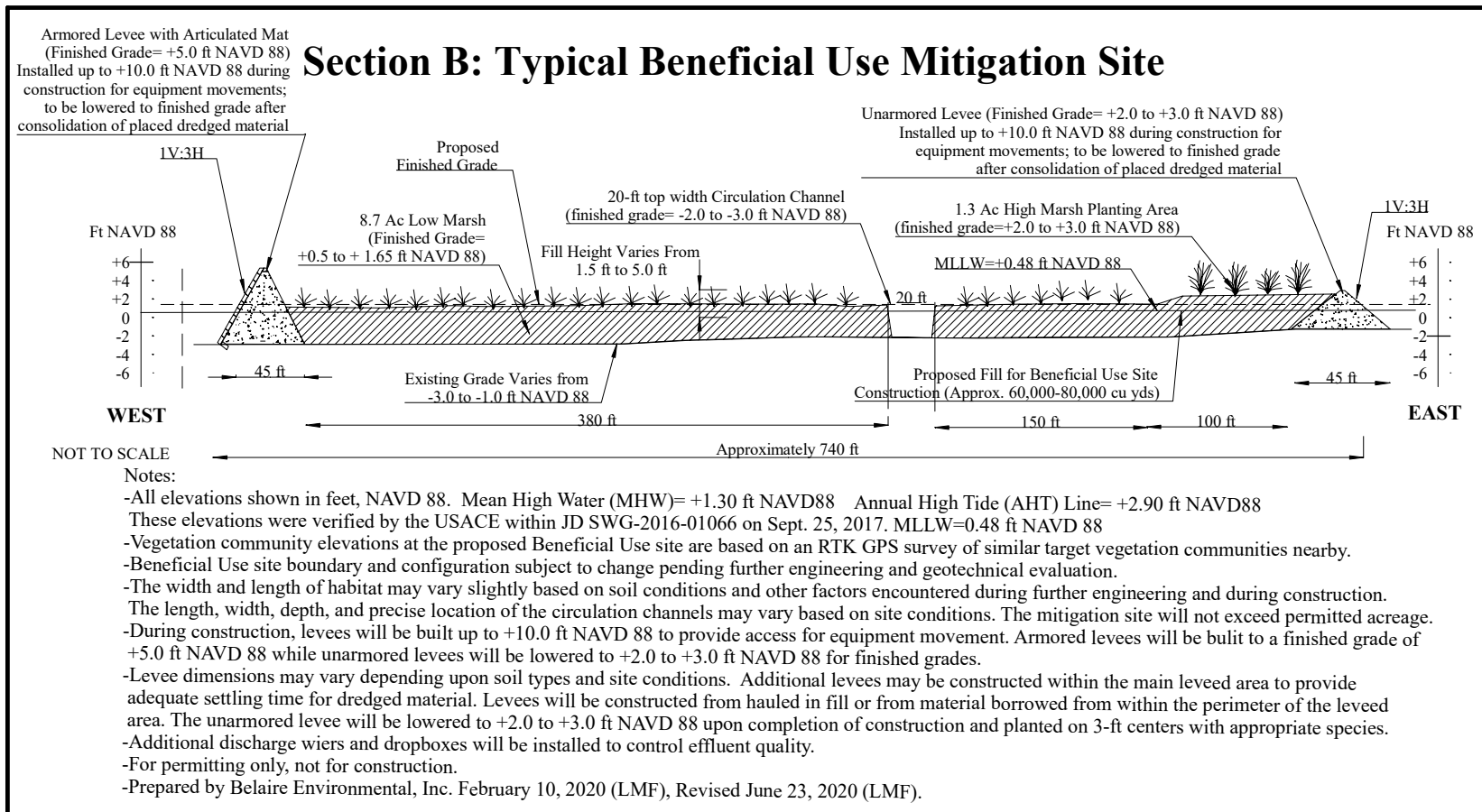
PERMITTED PLANS

Section A: Typical Beneficial Use Mitigation Site



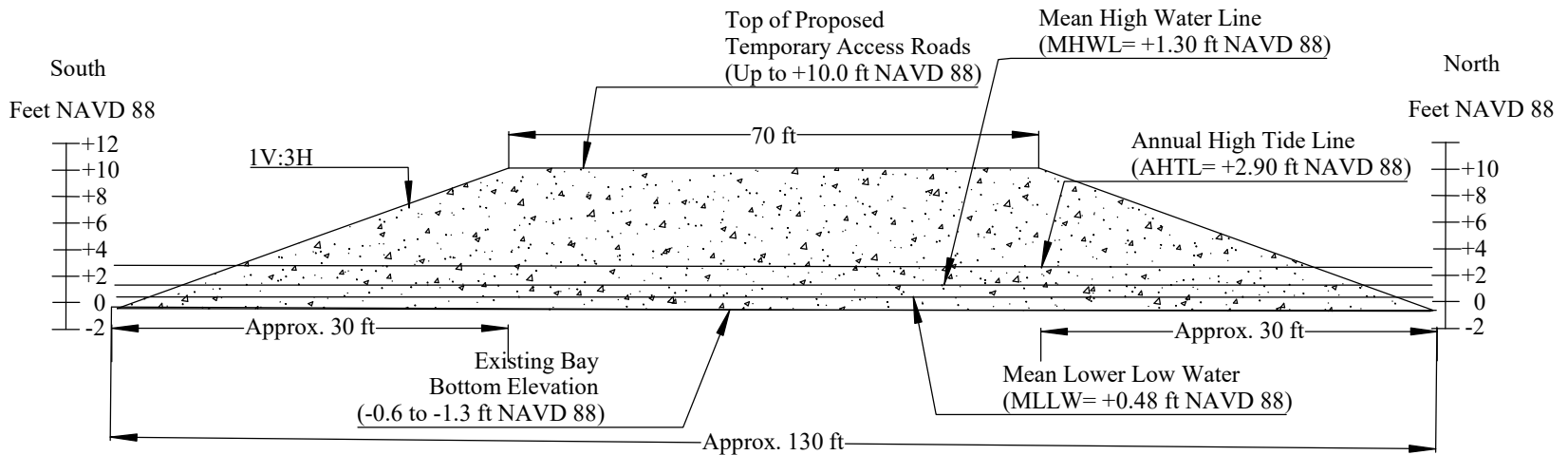
- Notes:
- All elevations shown in feet, NAVD 88. Mean High Water (MHW)= +1.30 ft NAVD88 Annual High Tide (AHT) Line= +2.90 ft NAVD88 These elevations were verified by the USACE within JD SWG-2016-01066 on Sept. 25, 2017. MLLW=0.48 ft NAVD 88
 - Vegetation community elevations at the proposed Beneficial Use site are based on an RTK GPS survey of similar target vegetation communities nearby.
 - Beneficial Use site boundary and configuration subject to change pending further engineering and geotechnical evaluation.
 - The width and length of habitat may vary slightly based on soil conditions and other factors encountered during further engineering and during construction. The length, width, depth, and precise location of the circulation channels may vary based on site conditions. The mitigation site will not exceed permitted acreage.
 - During construction, levees will be built up to +10.0 ft NAVD 88 to provide access for equipment movement. Armored levees will be built to a finished grade of +5.0 ft NAVD 88 while unarmored levees will be lowered to +2.0 to +3.0 ft NAVD 88 for finished grades.
 - Levee dimensions may vary depending upon soil types and site conditions. Additional levees may be constructed within the main leveed area to provide adequate settling time for dredged material. Levees will be constructed from hauled in fill or from material borrowed from within the perimeter of the leveed area. The unarmored levee will be lowered to +2.0 to +3.0 ft NAVD 88 upon completion of construction and planted on 3-ft centers with appropriate species.
 - Additional discharge weirs and dropboxes will be installed to control effluent quality.
 - For permitting only, not for construction.
 - Prepared by Belaire Environmental, Inc. February 10, 2020 (LMF), Revised June 23, 2020 (LMF).

PERMITTED PLANS



PERMITTED PLANS

Section C: Typical Temporary Access Roads
 Lavaca Bay, Calhoun County, Texas



NOTES:

- Up to two temporary roads with 70 foot surface width are proposed to be constructed to provide equipment access if land based mechanical placement of material is used. Precise location and dimensions may vary depending upon site conditions.
- Wetlands will be avoided for these proposed access roads.
- All elevations shown in feet, NAVD 88. Mean High Water (MHW)= +1.30 ft NAVD88
 Annual High Tide (AHT) Line= +2.90 ft NAVD88. These elevations were verified by the USACE within JD SWG-2016-01066 on Sept. 25, 2017. MLLW=+0.48 ft NAVD 88
- For permitting only, not for construction.
- Prepared by Belaire Environmental, Inc. on January 16, 2020 (JAM). Rev. June 23, 2020

Not To Scale

Jon Niermann, *Chairman*
Emily Lindley, *Commissioner*
Bobby Janecka, *Commissioner*
Toby Baker, *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

September 4, 2020

Ms. Kara Vick
Galveston District CESWG-PE-RE
U.S. Army Corps of Engineers
P.O. Box 1229
Galveston, Texas 77553-1229

Re: USACE Permit Application No. SWG-2016-01066

Dear Ms. Vick:

This letter is in response to the Statement of Findings (SOF) dated August 27, 2020, for the Joint Public Notice dated December 27, 2018, on the Calhoun Port Authority's (CPA) proposed marine terminal for liquid petrochemicals, and the construction of a 61-acre dredge material stockpile area to create an adjacent uplands area for future port expansion. The project is in Lavaca Bay and adjacent wetlands adjacent to the Port of Port Lavaca-Point Comfort, Point Comfort, Calhoun County, Texas.

The Texas Commission on Environmental Quality (TCEQ) has reviewed the public notice and related application information along with the SOF. On behalf of the Executive Director and based on our evaluation of the information contained in these documents, the TCEQ certifies that there is reasonable assurance that the project will be conducted in a way that will not violate water quality standards. General information regarding this water quality certification, including standard provisions of the certification, is included as an attachment to this letter.

For the marine terminal, the applicant proposes to mechanically dredge 2.615 million cubic yards (MCY) of material to a depth of 47 feet that will impact approximately 40.75 acres of open waters and 0.83 acres of marine emergent wetlands. For the uplands expansion, the applicant will fill approximately 11.95 acres of adjacent estuarine emergent wetlands and 21 acres of open waters.

To offset wetland impacts, the applicant proposes permittee-responsible mitigation at the applicant-owned property referred to as the Bean Tract in Lavaca Bay. The final mitigation plan dated August 4, 2020, states that low and high marsh areas will be established, and an approximately 1,775-foot hard substrate breakwater will be constructed.

The TCEQ has reviewed this proposed action for consistency with the Texas Coastal Management Program (CMP) goals and policies in accordance with the CMP regulations

Ms. Kara Vick
U.S. Army Corps of Engineers
USACE Permit Application No. SWG-2016-01066
Page 2

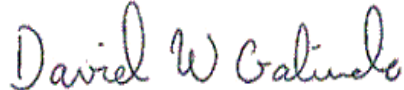
(Title 31, Texas Administrative Code (TAC), Section (§)505.30) and has determined that the action is consistent with the applicable CMP goals and policies.

This certification was reviewed for consistency with the CMP's development in critical areas policy (31 TAC §501.23) and dredging and dredged material disposal and placement policy (31 TAC §501.25). This certification complies with the CMP goals (31 TAC §501.12(1, 2, 3, 5)) applicable to these policies.

No review of property rights, location of property lines, nor the distinction between public and private ownership has been made, and this certification may not be used in any way with regard to questions of ownership.

If you require additional information or further assistance, please contact Dr. Mary Anne Wallace, Water Quality Assessment Section, Water Quality Division (MC-150), at (512) 239-4604 or by email at Mimi.Wallace@tceq.texas.gov.

Sincerely,



David W. Galindo
Water Quality Division Director
Texas Commission on Environmental Quality

DWG/MAW/__

Attachment

ccs: Charles R. Hausmann, Calhoun Port Authority, via e-mail at crh@calhounport.com
Ms. Allison Buchtien, via e-mail at Federal.Consistency@GLO.TEXAS.GOV

WORK DESCRIPTION: As described in the public notice dated December 27, 2018, and the August 27, 2020, Environmental Assessment and Statement of Findings.

SPECIAL CONDITIONS: None

GENERAL: This certification, issued pursuant to the requirements of Title 30, Texas Administrative Code, Chapter 279, is restricted to the work described in the August 27, 2020, Environmental Assessment and Statement of Findings and shall be concurrent with the Corps of Engineers (COE) permit. This certification may be extended to any minor revision of the COE permit when such change(s) would not result in an impact on water quality. The Texas Commission on Environmental Quality (TCEQ) reserves the right to require full joint public notice on a request for minor revision. The applicant is hereby placed on notice that any activity conducted pursuant to the COE permit which results in a violation of the state's surface water quality standards may result in an enforcement proceeding being initiated by the TCEQ or a successor agency.

STANDARD PROVISIONS: These following provisions attach to any permit issued by the COE and shall be followed by the permittee or any employee, agent, contractor, or subcontractor of the permittee during any phase of work authorized by a COE permit.

1. The water quality of wetlands shall be maintained in accordance with all applicable provisions of the Texas Surface Water Quality Standards including the General, Narrative, and Numerical Criteria.
2. The applicant shall not engage in any activity which will cause surface waters to be toxic to man, aquatic life, or terrestrial life.
3. Permittee shall employ measures to control spills of fuels, lubricants, or any other materials to prevent them from entering a watercourse. All spills shall be promptly reported to the TCEQ by calling the State of Texas Environmental Hotline at 1-800-832-8224.
4. Sanitary wastes shall be retained for disposal in some legal manner. Marinas and similar operations which harbor boats equipped with marine sanitation devices shall provide state/federal permitted treatment facilities or pump out facilities for ultimate transfer to a permitted treatment facility. Additionally, marinas shall display signs in appropriate locations advising boat owners that the discharge of sewage from a marine sanitation device to waters in the state is a violation of state and federal law.
5. Materials resulting from the destruction of existing structures shall be removed from the water or areas adjacent to the water and disposed of in some legal manner.
6. A discharge shall not cause substantial and persistent changes from ambient conditions of turbidity or color. The use of silt screens or other appropriate methods is encouraged to confine suspended particulates.

7. The placement of any material in a watercourse or wetlands shall be avoided and placed there only with the approval of the Corps when no other reasonable alternative is available. If work within a wetland is unavoidable, gouging or rutting of the substrate is prohibited. Heavy equipment shall be placed on mats to protect the substrate from gouging and rutting if necessary.
8. Dredged Material Placement: Dredged sediments shall be placed in such a manner as to prevent any sediment runoff onto any adjacent property not owned by the applicant. Liquid runoff from the disposal area shall be retained on-site or shall be filtered and returned to the watercourse from which the dredged materials were removed. Except for material placement authorized by this permit, sediments from the project shall be placed in such a manner as to prevent any sediment runoff into waters in the state, including wetlands.
9. If contaminated spoil that was not anticipated or provided for in the permit application is encountered during dredging, dredging operations shall be immediately terminated and the TCEQ shall be contacted by calling the State of Texas Environmental Hotline at 1-800-832-8224. Dredging activities shall not be resumed until authorized by the Commission.
10. Contaminated water, soil, or any other material shall not be allowed to enter a watercourse. Noncontaminated storm water from impervious surfaces shall be controlled to prevent the washing of debris into the waterway.
11. Storm water runoff from construction activities that result in a disturbance of one or more acres, or are a part of a common plan of development that will result in the disturbance of one or more acres, must be controlled and authorized under Texas Pollutant Discharge Elimination System (TPDES) general permit TXR150000. A copy of the general permit, application (notice of intent), and additional information is available at:
<http://www.tceq.texas.gov/permitting/stormwater/construction> or by contacting the TCEQ Stormwater Team at (512) 239-4671.
12. Upon completion of earthwork operations, all temporary fills shall be removed from the watercourse/wetland, and areas disturbed during construction shall be seeded, riprapped, or given some other type of protection to minimize subsequent soil erosion. Any fill material shall be clean and of such composition that it will not adversely affect the biological, chemical, or physical properties of the receiving waters.
13. Disturbance to vegetation will be limited to only what is absolutely necessary. After construction, all disturbed areas will be revegetated to approximate the pre-disturbance native plant assemblage.

14. Where the control of weeds, insects, and other undesirable species is deemed necessary by the permittee, control methods which are nontoxic to aquatic life or human health shall be employed when the activity is located in or in close proximity to water, including wetlands.
15. Concentrations of taste and odor producing substances shall not interfere with the production of potable water by reasonable water treatment methods, impart unpalatable flavor to food fish including shellfish, result in offensive odors arising from the water, or otherwise interfere with reasonable use of the water in the state.
16. Surface water shall be essentially free of floating debris and suspended solids that are conducive to producing adverse responses in aquatic organisms, putrescible sludge deposits, or sediment layers which adversely affect benthic biota or any lawful uses.
17. Surface waters shall be essentially free of settleable solids conducive to changes in flow characteristics of stream channels or the untimely filling of reservoirs, lakes, and bays.
18. The work of the applicant shall be conducted such that surface waters are maintained in an aesthetically attractive condition and foaming or frothing of a persistent nature is avoided. Surface waters shall be maintained so that oil, grease, or related residue will not produce a visible film of oil or globules of grease on the surface or coat the banks or bottoms of the watercourse.
19. This certification shall not be deemed as fulfilling the applicant's/permittee's responsibility to obtain additional authorization/approval from other local, state, or federal regulatory agencies having special/specific authority to preserve and/or protect resources within the area where the work will occur.