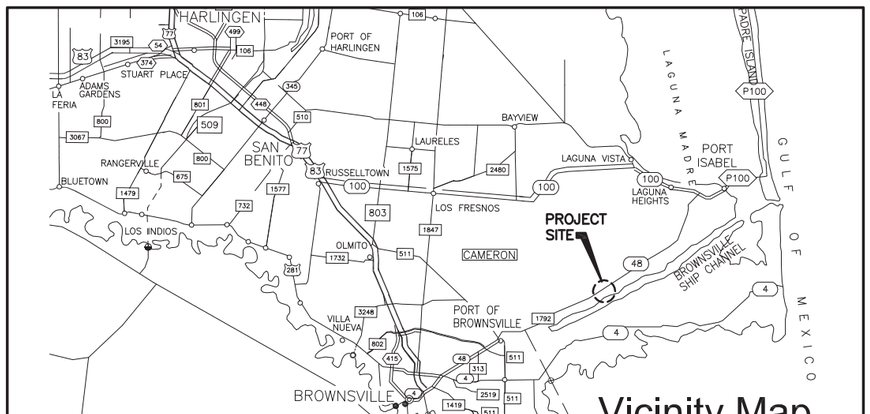
PORT OF BROWNSVILLE

• WORLD CLASS •

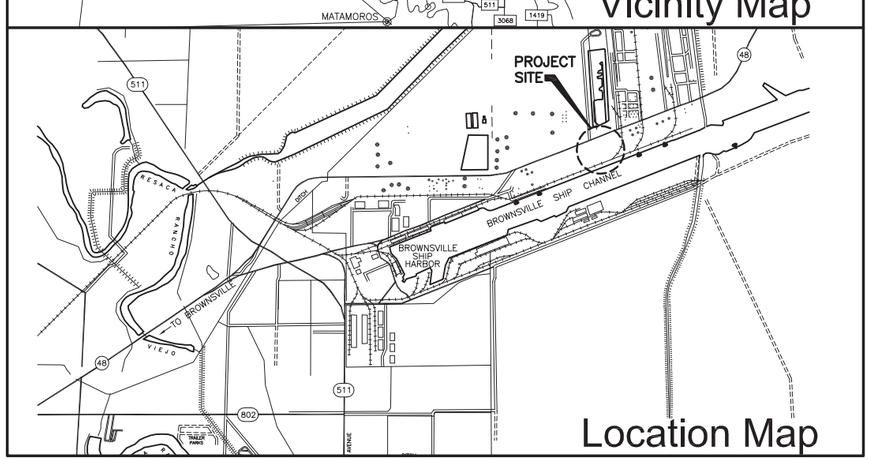
HDR

HDR Engineering, Inc.

Texas P.E. Firm
Registration No. 754



Vicinity Map



Location Map

Construction Drawings For

Brownsville Navigation District

Oil Dock No. 6

Project No.
111172

BROWNSVILLE, TEXAS
MARCH 2016

STATE OF TEXAS
ARTHUR B. COLWELL
60292
REGISTERED PROFESSIONAL ENGINEER
3.10.16

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ISSUED FOR BIDS

GENERAL NOTES

GENERAL

1. THE CONTRACTOR SHALL FIELD CHECK AND VERIFY ALL ELEVATIONS, COORDINATES, DIMENSIONS, AND EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION. REPORT DISCREPANCIES IMMEDIATELY TO THE ENGINEER.
2. THE CONTRACTOR SHALL COMPLY WITH ALL PROVISIONS OF THE ARMY CORPS OF ENGINEERS PERMIT FOR THIS PROJECT. REFER TO ARMY CORP OF ENGINEERS PERMIT NO. SWG-2009-00689.
3. THIS PROJECT IS SUBJECT TO ENVIRONMENTAL PROTECTION AGENCY (EPA) NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) CONSTRUCTION STORM WATER DISCHARGE REGULATIONS AND REQUIREMENTS. THE CONTRACTOR SHALL EXECUTE A NOTICE OF INTENT AND IMPLEMENT THE POLLUTION PREVENTION PLAN ON SHEET 02C01. COMPLY WITH ALL REPORTING AND INSPECTION REQUIREMENTS SET FORTH IN THE NPDES REGULATION.
4. 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.
5. AN UNDERWATER DIVE INSPECTION WAS PERFORMED BY INDEPTH UNDERWATER SERVICES THE WEEK OF MAY 18, 2009. THE SEARCH AREA STARTED AT THE SHORELINE 200 FEET WEST OF THE CENTER LINE OF OIL DOCK #3 AND CONTINUED 200 FEET OUT INTO THE CHANNEL AND 1,200 FEET TO THE WEST. THE INTENT OF THE SURVEY WAS TO LOCATE AND MARK ANY DEBRIS OR OBSTRUCTIONS THAT MIGHT BE ENCOUNTERED DURING CONSTRUCTION. FOR DEBRIS THAT WAS LOCATED, REFER TO SHEET 00C02 AND 00C03.

HORIZONTAL AND VERTICAL CONTROL

1. ALL ELEVATIONS SHOWN REFER TO U.S.C.E. MEAN LOW TIDE (MLT) DATUM.
2. EXISTING CONDITIONS DRAWINGS (00C01A THROUGH 00C01E) ARE BASED ON TOPOGRAPHIC SURVEY PERFORMED BY MEJIA & ROSE, INC., DATED FEBRUARY 18, 2016 ENLARGED EXISTING SITE AND DEMOLITION PLAN DRAWINGS (00C02 & 00C03) ARE BASED ON TOPOGRAPHIC SURVEY PERFORMED BY MEJIA & ROSE, INC., DATED SEPTEMBER 11, 2009. THE CONTRACTOR SHALL VERIFY EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION.
3. HYDROGRAPHIC SURVEYS WERE PERFORMED BY HDR ENGINEERING, INC., ON MAY 19, 2009 AND MAY 20, 2009.
4. COORDINATES SHOWN ARE STATE PLANE GRID, TEXAS SOUTH ZONE, NAD'83 IN U.S. FEET.
5. MONUMENTS USED FOR HORIZONTAL AND VERTICAL CONTROL ARE AS FOLLOWS:

BENCHMARK SET SQUARE CUT ON CONC. BASE	EL 12.44'
BENCHMARK SET SQUARE CUT ON CONC. BASE	EL 9.91'
CONTROL POINT 1 FOUND SPIKE NAIL	N 16,512,501.78 E 1,352,451.26
CONTROL POINT 2 FOUND SPIKE NAIL	N 16,512,241.80 E 1,351,739.80
"U.S.E.D. 89+679.68 535' R.L."	N 16,509,591.45 E 1,344,712.65 EL 14.99'
"U.S.E.D. 89+651.97 535' R.L."	N 16,509,601.71 E 1,344,738.37 EL 14.99'

6. DATUM CORRELATION TABLE:

MEAN HIGHER HIGH WATER (MHHW)	0' MHHW = 1.62' MLT
MEAN HIGH WATER (MHW)	0' MHW = 1.56' MLT
MEAN SEA LEVEL (MSL)	0' MSL = 1.06' MLT
MEAN TIDE LEVEL (MTL)	0' MTL = 0.99' MLT
MEAN LOW WATER (MLW)	0' MLW = 0.42' MLT
MEAN LOWER LOW WATER (MLLW)	0' MLLW = 0.26' MLT
NORTH AMERICAN VERTICAL DATUM 1988 (NAVD'88)	0' NAVD'88 = 1.21' MLT
NATIONAL GEODETIC VERTICAL DATUM 1929 (NGVD'29)	0' NGVD'29 = 0.89' MLT
CORPS OF ENGINEERS MEAN LOW TIDE (MLT)	0' MLT = 0.00' MLT

WATER SURFACE RANGE BETWEEN MLLW AND MHHW REPRESENTS A NORMAL STATISTICAL WATER SURFACE RANGE. WATER SURFACE WILL, ON OCCASION, BE HIGHER OR LOWER THAN THIS RANGE.

SOIL BORINGS

1. BORING LOGS ON SHEETS 00G07 AND 00G08 ARE FROM GEOTECHNICAL REPORT TITLED: "GEOTECHNICAL EXPLORATION REPORT BROWNSVILLE NAVIGATION DISTRICT (BND) OIL DOCK 6", REPORT NO. 286-155, AUGUST 18, 2009; PREPARED BY PROFESSIONAL SERVICES INDUSTRIES, INC. (PSI) HOUSTON TEXAS, SHAILEUDRA N. ENDLEY, PH.D., P.E.
2. FOR GRAPHICAL LOCATIONS OF ALL BORINGS REFER TO SHEET 00C01.
3. SOIL INVESTIGATION DATA IS PROVIDED FOR THE INFORMATION AND CONVENIENCE OF THE CONTRACTOR. THE OWNER AND ENGINEER DISCLAIM ANY RESPONSIBILITY FOR THE ACCURACY, TRUE LOCATION AND EXTENT OF THE SOIL INVESTIGATION THAT HAS BEEN PREPARED BY OTHERS. THEY FURTHER DISCLAIM RESPONSIBILITY FOR INTERPRETATION OF THAT DATA BY THE CONTRACTOR, AS IN PROJECTING SOIL-BEARING VALUES, SOIL STABILITY, AND THE PRESENCE, LEVEL, AND EXTENT OF UNDERGROUND WATER, ETC. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH SUBSURFACE AND GROUND WATER CONDITIONS PRIOR TO CONSTRUCTION.
4. SOIL INVESTIGATION REPORTS ARE NOT A PART OF THE CONTRACT DOCUMENTS. SOIL BORING LOGS ARE INCLUDED IN THIS DRAWING SET FOR REFERENCE PURPOSES ONLY.
5. A COPY OF THE ENTIRE SOIL INVESTIGATION REPORT IS AVAILABLE FOR REVIEW AT THE ENGINEER'S AND THE OWNER'S OFFICE.
6. SURFACE ELEVATIONS SHOWN ON BORING LOGS ARE APPROXIMATE. REFER TO SHEET 00C01 FOR SURVEY ELEVATIONS. CONTRACTOR SHALL CONDUCT HIS OWN SURVEYS FOR CURRENT ELEVATIONS.

STEEL SHEET PILING

1. ALL STEEL SHEET PILING SHALL HAVE A MINIMUM YIELD STRENGTH OF 50 KSI AND A MINIMUM TENSILE STRENGTH OF 65 KSI AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM A572.
2. ALL PILES SHALL BE DRIVEN TO THE FOLLOWING TOLERANCES.
   a) VARIATION FROM A STRAIGHT LINE: 1 1/2"
   b) VARIATION FROM PLUMB (PERPENDICULAR TO WALL ALIGNMENT): 1/2" IN 10'
   c) VARIATION FROM GRADE: 2"
   APPROPRIATE METHODS, EQUIPMENT, AND PROCEDURES FOR DRIVING PILES, AND FOR THE DESIGN OF TEMPLATES AND BRACING SHALL BE SELECTED IN ORDER TO DRIVE THE PILES WITHIN THE TOLERANCES.
3. CONTRACTOR MAY USE VIBRATORY EQUIPMENT TO DRIVE SHEET PILING TO REFUSAL (STABBING) OR FINAL GRADE. WHEN USING VIBRATORY EQUIPMENT INCREMENTALLY SEQUENCE DRIVING OF INDIVIDUAL PILES SUCH THAT THE TIP OF ANY SHEET PILE SHALL NOT BE MORE THAN 8 FEET BELOW THAT OF ANY ADJACENT SHEET PILE. THE USE OF VIBRATORY EQUIPMENT SHALL BE DISCONTINUED AND IMPACT (POWER) HAMMERS EMPLOYED WHEN THE PENETRATION RATE DUE TO VIBRATORY LOADING IS LESS THAN 1 FOOT OR LESS PER MINUTE.
4. WHEN AN IMPACT HAMMER IS USED, SHEET PILES SHALL BE DRIVEN SUCH THAT THE TIP OF THE PILE BEING DRIVEN DOES NOT ADVANCE MORE THAN 4 FEET BELOW THAT OF ANY ADJACENT SHEET PILE. WHEN THE PENETRATION RESISTANCE (TO THE PILE BEING DRIVEN) EXCEEDS 5 BLOWS PER INCH, THE TIP OF THE PILE SHALL NOT ADVANCE MORE THAN 3 FEET BELOW ANY ADJACENT SHEET PILE.
5. ALL PILE INSTALLATION SHALL BE CONDUCTED WITH THE OWNER'S REPRESENTATIVE PRESENT. THE ENGINEER SHALL BE CONTACTED IF DIFFICULT DRIVING IS ENCOUNTERED.
6. ALL MATERIAL SHALL BE HANDLED AND DRIVEN IN SUCH A MANNER AS TO AVOID DAMAGE OR DISTORTION TO THE PILING AND TO THE PROTECTIVE COATING. DAMAGED MATERIALS WHICH ARE CONSIDERED UNSATISFACTORY BY THE ENGINEER SHALL BE REPLACED WITH NEW, SATISFACTORY MATERIAL AND INCORPORATED INTO THE WORK AT NO ADDITIONAL COST TO THE OWNER. DAMAGED COATING WHICH THE ENGINEER DETERMINES CAN BE SATISFACTORILY RECOATED SHALL BE REPAIRED IN ACCORDANCE WITH SPECIFICATIONS (SECTION 09 97 13.26).

STEEL PIPE PILING

1. ALL STEEL PIPE PILES SHALL BE SEAMLESS OR WELDED STRAIGHT SEAM. THE PIPE MATERIAL SHALL HAVE A MINIMUM YIELD STRENGTH OF 50 KSI AND A MINIMUM TENSILE STRENGTH OF 65 KSI. (NOTE: SPIRAL WELDED PILES MAY BE PROVIDED AT CONTRACTORS OPTION.)
2. DRIVING TOLERANCES:
   a) MAXIMUM VARIATION FROM PLANNED PILE HEAD LOCATION SHALL BE = 1 1/2"
   b) MAXIMUM VARIATION FROM HORIZONTAL BATTER (ANGLE ON PLAN) SHALL BE 2 DEGREES
   c) MAXIMUM VARIATION FROM PLUMB FOR VERTICAL PILING SHALL BE 1/2" IN 10'
   d) ALLOWABLE VARIATION FROM REQUIRED VERTICAL BATTER FOR BATTER PILING SHALL BE 1/4" PER VERTICAL FT
3. PILES SHALL BE DRIVEN USING TEMPLATES OR OTHER MEANS NECESSARY TO COMPLY WITH THE ABOVE TOLERANCES. PILES SHALL BE INSTALLED TO TIP ELEVATIONS INDICATED.
4. MINIMUM INSTALLED LENGTH MAKES NO ALLOWANCE FOR TEMPLATES, CUT-OFFS, DRIVING WITH A "STINGER", ETC. CONTRACTOR SHALL ENSURE THAT SUFFICIENT PIPE PILE LENGTH IS FABRICATED SO THAT THE REQUIRED PIPE PILE PENETRATION CAN BE OBTAINED.
5. ALL PIPE BUTT WELDS SHALL BE COMPLETE PENETRATION, PRE-QUALIFIED WELDS AND SHALL BE 100% X-RAYED.

CONCRETE

1. ALL CAST-IN-PLACE AND PRE-CAST CONCRETE AND GROUT SHALL ATTAIN THE MINIMUM STRENGTHS, IN POUNDS PER SQUARE INCH, GIVEN IN THE TABLE BELOW:

	USE	COMPRESSIVE: BEFORE POST-TENSIONING	COMPRESSIVE: AT 28 DAYS	SPECIFICATION SECTION
CONCRETE:	SLAB-ON-GRADE, APRON, HIGH MAST LIGHT POLE FOUNDATION, AND OTHER MISC. SITE CONCRETE	N/A	4,000	03 31 29
	SHEET PILE CAP CONCRETE, BREASTING STRUCTURES, AND MOORING STRUCTURES	N/A	5,000	03 31 29
	JETTY PLATFORM, APPROACH, PIPE SUPPORTS	4,000	5,000	03 31 29
	PRECAST PANELS	4,000	5,000	03 45 33
	THRUST BLOCKS, ELECTRICAL CONDUIT ENCASEMENT, CAST-IN-PLACE REVETMENT, OTHER ANCILLARY CONCRETE	N/A	3,000	03 31 29
GROUT:	MASONRY	N/A	2,500	04 20 00

2. ALL EXPOSED CORNERS SHALL BE CHAMFERED 1 1/2" INCH, UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
3. HORIZONTAL CONSTRUCTION JOINTS SHALL BE PERMITTED ONLY WHERE INDICATED ON THE DRAWINGS OR WITH PRIOR APPROVAL FROM ENGINEER. ALL VERTICAL CONSTRUCTION JOINTS SHALL BE LOCATED AT MIDSPAN OR AS INDICATED ON THE DRAWINGS.
4. ALL EXPOSED DRIVING AND WALKING SURFACES, HORIZONTAL SURFACES OF PILE CAPS, MOORING AND BREASTING STRUCTURES, BEAMS, ETC., SHALL RECEIVE A MEDIUM BROOM FINISH. ALL FORMED SURFACES SHALL HAVE A SMOOTH FORM FINISH, WITH ALL DEFECTS REPAIRED IN ACCORDANCE WITH THE SPECIFICATIONS.
5. THE MAXIMUM WATER/CEMENT RATIO, BY WEIGHT SHALL BE 0.40 FOR ALL CONCRETE.
6. A HIGH RANGE WATER REDUCING ADMIXTURE IN ACCORDANCE WITH THE SPECIFICATIONS SHALL BE USED IN ALL CONCRETE.
7. DCI CORROSION INHIBITOR SHALL BE ADDED TO THE CONCRETE DURING THE BATCHING PROCESS FOR ALL CONCRETE EXCEPT CONCRETE LOCATED BEHIND THE BULKHEAD CAP. DCI SHALL BE ADDED AT THE RATE OF 4.0 GALLONS PER CUBIC YARD IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
8. PRIOR TO CASTING NEW CONCRETE AGAINST EXISTING CONCRETE SURFACE, ROUGHEN THE EXISTING SURFACE. THE EXISTING SURFACE SHALL BE FREE OF LAITANCE AND SHALL BE ROUGHENED TO FULL AMPLITUDE OF APPROX 1/4". APPLY EPOXY BONDING AGENT IN ACCORDANCE TO TECHNICAL SPECIFICATION 03 31 29.

REINFORCING STEEL

1. POST-TENSIONING BARS SHALL BE UNCOATED THREADBAR CONFORMING TO ASTM A 722, GRADE 150.
2. ALL REINFORCING STEEL SHALL BE DEFORMED STEEL BARS CONFORMING TO ASTM A 615, GRADE 60.
3. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, SPLICES IN REINFORCING STEEL SHALL BE STAGGERED WITH NO MORE THAN 50% OF THE BARS BEING SPLICED AT ANY ONE LOCATION. ALL LAP SPLICES SHALL BE ACI 318 CLASS B.
4. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, CONTINUOUS HORIZONTAL WALL STEEL SHALL HAVE 90 DEGREE BENDS AND 16 INCH RETURNS ALONG EACH WALL AT CORNERS. ALTERNATELY, PROVIDE CORNER BARS EQUAL TO HORIZONTAL REINFORCING AT EACH FACE AND LAP AS NOTED IN ITEM 3 ABOVE.
5. MECHANICAL CONNECTORS MAY BE USED AT CONSTRUCTION JOINTS OR IN LIEU OF LAP SPLICES. ALL MECHANICAL CONNECTORS SHALL BE SHOWN ON THE SHOP DRAWINGS AND SHALL CONFORM TO ACI 318.
6. DETAILING OF REINFORCING STEEL SHOP DRAWINGS SHALL CONFORM TO THE ACI DETAILING MANUAL, SP66.
7. ALL TOP BAR SPLICES SHALL OCCUR AT MIDSPAN. ALL BOTTOM BAR SPLICES SHALL OCCUR OVER SUPPORT LOCATIONS.

REINFORCING STEEL – CONT.

8. EMBEDMENT AND LAP SPLICE LENGTHS SHALL BE AS FOLLOWS:

TABLE 1 – MINIMUM SPLICE AND EMBEDMENT LENGTHS (INCHES)
CONCRETE STRENGTH = 5,000 PSI

BAR SIZE NUMBER	MINIMUM EMBEDMENT LENGTH	TOP BARS EMBEDMENT LENGTH	MINIMUM SPLICE LENGTH	TOP BARS SPLICE LENGTH
3	13	17	17	22
4	17	22	22	29
5	22	28	28	36
6	26	33	33	43
7	37	49	49	63
8	43	55	55	72
9	48	63	63	81
10	54	70	70	91
11	60	78	78	101

TABLE 1 – MINIMUM SPLICE AND EMBEDMENT LENGTHS (INCHES)
CONCRETE STRENGTH = 4,000 PSI

BAR SIZE NUMBER	MINIMUM EMBEDMENT LENGTH	TOP BARS EMBEDMENT LENGTH	MINIMUM SPLICE LENGTH	TOP BARS SPLICE LENGTH
3	15	19	19	24
4	19	25	25	32
5	24	31	31	40
6	29	37	37	48
7	42	54	54	70
8	48	62	62	80
9	54	70	70	91
10	61	79	79	102
11	67	87	87	113

A. WHERE BARS ARE OF DIFFERENT SIZE, THE LAP LENGTH SHALL BE BASED ON SMALLER BAR, UNLESS NOTED OTHERWISE.
B. THE CONTRACTOR SHALL DETERMINE ANY SPLICE LOCATIONS IN ADDITION TO THOSE SHOWN, SUBJECT TO SHOP DRAWING APPROVAL.
C. TOP BARS ARE HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW DEVELOPMENT LENGTH OR SPLICE.

FENDER ATTACHMENTS

1. ALL CHAINS, FENDER PANELS AND OTHER MISCELLANEOUS CONNECTIONS SHALL BE PROVIDED BY THE CONTRACTOR. CONTRACTOR SHALL FABRICATE ANCHOR BOLT TEMPLATE FOR FENDERS. TEMPLATE SHALL REMAIN IN PLACE FOR MULTIPLE CONCRETE PLACEMENTS TO PROVIDE ACCURATE BOLT PATTERN.
2. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND ANCHORAGE REQUIREMENTS WITH FENDER MANUFACTURER.
3. CONTRACTOR SHALL PROVIDE AND INSTALL ANCHOR BOLTS AND/OR INSERTS FOR BOLTS OF EACH APPROVED FENDER MANUFACTURER.
4. PROVIDE CHAINS, CONNECTING HARDWARE, CHAIN ATTACHMENT EMBEDDED ITEMS AND CHAIN TENSIONING DEVICES. CHAINS SIZES SHALL BE DETERMINED BY FENDER PROVIDER. CHAIN TERMINATING CONNECTORS SHALL BE DESIGNED FOR 1.5 TIMES MINIMUM PROOF LOAD OF CHAIN.
5. ALL ANCHOR BOLT EMBEDS SHALL BE DESIGNED TO RESIST 125% OF ULTIMATE BOLT STRENGTHS.
6. PROVIDE 2" LONG STAINLESS STEEL HEADLESS BOLTS WITH RECESS HEX SOCKETS FOR UNUSED EMBEDS.
7. AFTER INSTALLATION OF ALL CHAINS AND ALL GALVANIZED HARDWARE, LIBERALLY APPLY TEXACO RUSTPROOF COMPOUND TYPE "L".
8. APPLY ANTI-SEIZE COMPOUND TO ALL THREADED CONNECTORS.

DEMOLITION AND SALVAGE

1. DEMOLITION OF EXISTING FACILITIES SHALL BE AS INDICATED ON THE PLANS AND SPECIFICATIONS.
2. UNLESS NOTED OTHERWISE, DEMOLISHED MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF LEGALLY AND PROPERLY.
3. ITEMS TO BE SALVAGED AND TO REMAIN THE PROPERTY OF BROWNSVILLE NAVIGATION DISTRICT INCLUDE CONCRETE RUBBLE.

SHOP DRAWINGS

1. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS SHOWN ON THE DRAWINGS, PRIOR TO PREPARATION OF SHOP DRAWINGS.
2. SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW AND APPROVED BY THE ENGINEER BEFORE PURCHASE OR START OF FABRICATION.
3. THE USE OF REPRODUCTIONS OF THESE CONTRACT DRAWINGS BY ANY CONTRACTOR, SUBCONTRACTOR, ERECTOR, FABRICATOR, OR MATERIAL SUPPLIER IN LIEU OF PREPARATION OF SHOP DRAWINGS IS PROHIBITED.

HDR
HDR Engineering, Inc.
Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
0	3/10/2016	ISSUED FOR BIDS

PROJECT MANAGER	MIKE KRIEBER
DESIGNED BY	K. MATAKIS
DRAWN BY	B. INFANTE
CHECKED BY	B. COLWELL
PROJECT NUMBER	111172

STATE OF TEXAS · ARTHUR B. COLWELL · 60292 · REGISTERED PROFESSIONAL ENGINEER
3.10.16

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
PORT OF BROWNSVILLE · WORLD CLASS ·

GENERAL NOTES AND DESIGN CRITERIA

0 1" 2"

FILENAME	00G-02.DWG
SCALE	NONE

SHEET 00G02

DESIGN LIVE LOADS

1. UNIFORM LIVE LOADS:

DOCK PLATFORM

UNIFORM LIVE LOAD : 300 psf

CATWALKS

UNIFORM LIVE LOAD = 100 psf

APPROACHWAY

UNIFORM LIVE LOAD = 300 psf

BULKHEAD FROM STATION 81+713.1 – 82+110.7

MUDLINE ELEV. –16.0' W/ 2.5H:1V SLOPE

TOP ELEV. +9.5'

UNIFORM SURCHARGE = 250 psf

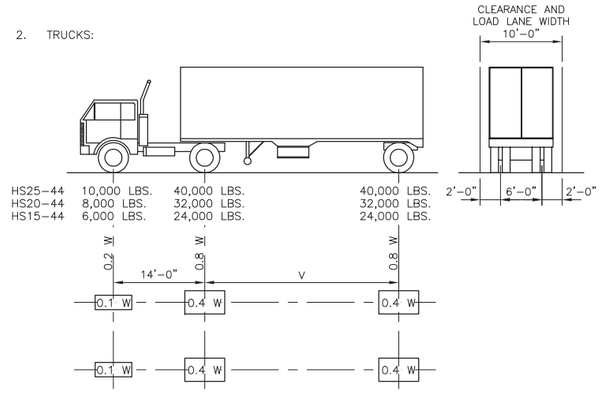
BULKHEAD FROM STATION 82+110.7 – 83+058.6

MUDLINE ELEV. –12.0' W/ 2.5H:1V SLOPE

TOP ELEV. +11.5'/9.5'

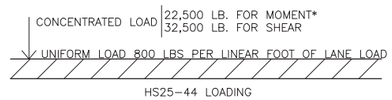
UNIFORM SURCHARGE = 250 psf

2. TRUCKS:

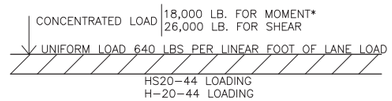


W = COMBINED WEIGHT ON THE FIRST TWO AXLES WHICH IS THE SAME AS FOR THE CORRESPONDING H TRUCK.

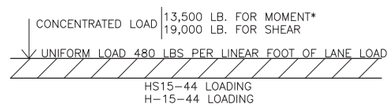
V = VARIABLE SPACING – 14 FEET TO 30' FEET INCLUSIVE. SPACING TO BE USED IS THAT WHICH PRODUCES MAXIMUM STRESSES.



HS25–44 LOADING



HS20–44 LOADING
H–20–44 LOADING



HS15–44 LOADING
H–15–44 LOADING

* REFER TO AASHTO 3.6.1.3 FOR CONTINUOUS SPANS INVOLVING LANE LOADING

3. SHIP IMPACT @ BERTHING:

A. DESIGN VESSEL:
1. LOADED DISPLACEMENT: 125,000 TONNES
2. L.O.A.: 900 FT.
3. DRAFT: 50 FT.
4. BREADTH: 145 FT.

B. APPROACH VELOCITY: 0.5 FPS PERPENDICULAR (TO DOCK FACE)

C. MAXIMUM BERTHING ANGLE: 10 DEG.

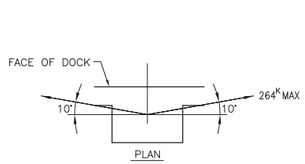
4. BARGE IMPACT @ BERTHING:

A. DESIGN VESSEL:
1. LOADED DISPLACEMENT: 5,000 TONNES
2. L.O.A.: 300 FT.
3. DRAFT: 12 FT.
4. BREADTH: 55 FT.

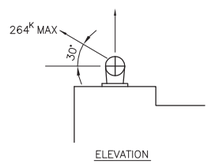
B. APPROACH VELOCITY: 1.0 FPS PERPENDICULAR (TO DOCK FACE)

C. MAXIMUM BERTHING ANGLE: 10 DEG.

5. LINE PULL @ BOLLARDS ON JETTY PLATFORM AND BREASTING STRUCTURES (SERVICE LOADS):



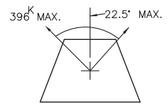
PLAN



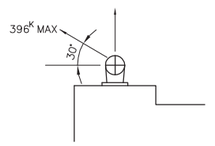
ELEVATION

6. LINE PULL @ MOORING STRUCTURES (SERVICE LOADS):

CASE I :



PLAN



ELEVATION

0	3/10/2016	ISSUED FOR BIDS
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	MIKE KRIEBER
DESIGNED BY	K. MATAKIS
DRAWN BY	B. INFANTE
CHECKED BY	B. COLWELL
PROJECT NUMBER	111172

HDR Engineering, Inc.

Texas P.E. Firm Registration No. 754

STATE OF TEXAS
ARTHUR B. COLWELL
60292
REGISTERED PROFESSIONAL ENGINEER
3.10.16

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6

PORT OF BROWNSVILLE
• WORLD CLASS •

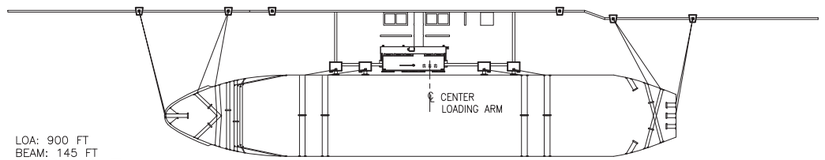
GENERAL NOTES AND DESIGN CRITERIA

0 1" 2"

FILENAME	00G–03.dwg
SCALE	NONE

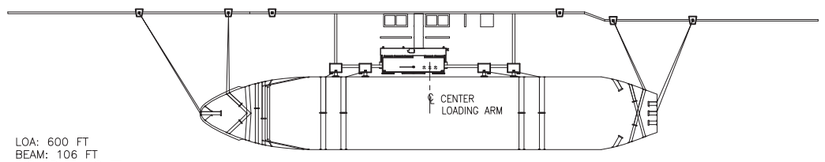
SHEET 00G03

DESIGN MOORING ARRANGEMENTS:



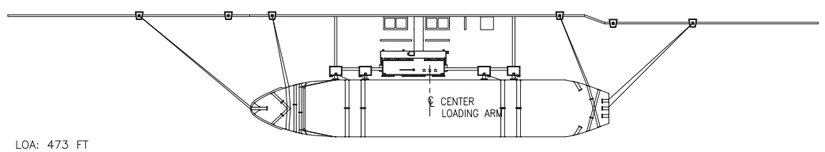
LOA: 900 FT
BEAM: 145 FT
IMO DRAFT: 24 FT
DWT: 125,000

STANDARD 12–LINE ARRANGEMENT



LOA: 600 FT
BEAM: 106 FT
IMO DRAFT: 18 FT
DWT: 50,000

STANDARD 12–LINE ARRANGEMENT



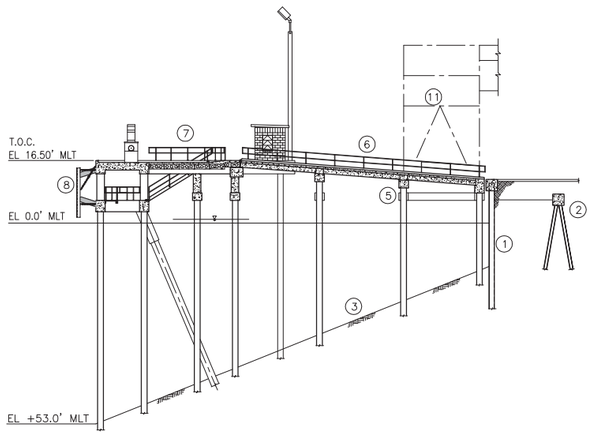
LOA: 473 FT
BEAM: 75 FT
IMO DRAFT: 15 FT
DWT: 30,000

STANDARD 12–LINE ARRANGEMENT

1. ANALYSIS AND DESIGN ASSUME VESSELS OPERATING AT IMO DRAFT. IF VESSELS CHOOSE TO OPERATE AT LIGHTSHIP ADDITIONAL MOORING LINES (I.E. 16 LINE ARRANGEMENTS) ARE REQUIRED, PROVIDED THAT NO BOLLARD CARRIES LOAD FROM MORE THAN 3 LINES.

CONSTRUCTION SEQUENCE

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SELECTION AND IMPLEMENTATION OF CONSTRUCTION METHODS AND SEQUENCES FOR THE DOCK STRUCTURE AND BULKHEAD.
2. NO FILL COMPRISED OF ROCK MATERIALS SHALL BE PLACED OUTSIDE THE LIMITS OF THE STEEL SHEET PILE WALL.
3. CONTRACTOR SHALL SUBMIT DETAILED MATERIAL TESTS AND PLACEMENT METHODS FOR FILL BEHIND NEW BULKHEAD ONE WEEK PRIOR TO BEGINNING FILL PLACEMENT OR SHEET PILE INSTALLATION.
4. AN AVAILABLE INSTALLATION SEQUENCE OPTION IS AS FOLLOWS:



(1) INSTALL STEEL SHEET PILING.
(2) INSTALL ANCHOR SYSTEM
(3) DREDGE
(4) CONSTRUCT MOORING STRUCTURES (NOT SHOWN)
(5) INSTALL STEEL AND CONCRETE PILING
(6) CONSTRUCT APPROACHWAY AND PIPE SUPPORTS
(7) CONSTRUCT JETTY PLATFORM
(8) CONSTRUCT BREASTING STRUCTURES (NOT SHOWN)
(9) INSTALL FENDERS
(10) CONSTRUCT CATWALKS (NOT SHOWN)
(11) CONSTRUCT PIPE BRIDGE (NOT SHOWN)

5. THE CONSTRUCTION SEQUENCE ABOVE IS GENERAL IN NATURE. THE CONTRACTOR HAS THE OPTION OF PROPOSING AN ALTERNATIVE CONSTRUCTION SEQUENCE. THE CONTRACTOR SHALL SUBMIT HIS ALTERNATIVE CONSTRUCTION SEQUENCE TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
6. CONTRACTOR SHALL NOT PLACE EXCESSIVE EQUIPMENT OR OTHER LOADS BEHIND BULKHEAD WHICH MAY CAUSE BULKHEAD DEFLECTIONS.

CRANE REQUIREMENTS AND DESIGN LOADS	
DESCRIPTION	CRANE
OPERATING RADIUS (FT.)	51 MIN.
HOOK HEIGHT ABOVE DOCK (FT.)	68 MIN.
CAPACITY @ OPERATING RADIUS (LBS.)	10,000
DEADWEIGHT (LBS.)	42,000
OVER TURNING MOMENT (LB.–FT.) (LIFT)	626,000
SHEAR (LBS.) (WIND)	18,000
OVERTURNING MOMENT (WIND)	549,000

DESIGN CRITERIA FOR MARINE LOADING ARMS AND FENDERS		
LOADS		BARGE FENDERS (PLATFORM)
ARM SIZE	12" + 8"	MAXIMUM REACTION (NORTH) = 14 FENDERS @ 49,000 lb./FENDER = 686,000 lb.
DEADWEIGHT	39,000 LB.	
OVER TURNING MOMENT	549,000 LB. FT.	
SHEAR	18,000 LB.	
TORQUE	45,000 LB. FT.	
ANCHOR BOLT LOAD	17,500 LB.	TANKER FENDERS (BREASTING STRUCTURE) MAXIMUM REACTION = 540,000 LBS (EACH)
WIND PRESSURE	60 PSF	
PARKED WIND SPEED	125 MPH	
OPERATING WIND SPEED	50 MPH	
MAINTENANCE WIND SPEED	30 MPH	
LOADS ARE ASSUMED TO ACT OVER 360°		

HDR Engineering, Inc.
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ISSUE	DATE	DESCRIPTION
0	3/10/2016	ISSUED FOR BIDS

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DESIGNED BY	K. MATAKIS
DRAWN BY	B. INFANTE
CHECKED BY	B. COLWELL
PROJECT NUMBER	111172

STATE OF TEXAS
ARTHUR B. COLWELL
60292
REGISTERED PROFESSIONAL ENGINEER
3.10.16

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
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GENERAL NOTES AND DESIGN CRITERIA

0 1" 2"

FILENAME	00G–04.dwg
SCALE	NONE

SHEET 00G04

A/C	AIR CONDITIONING
A/E	ARCHITECT/ENGINEER
A	AMPERE
AB	ANCHOR BOLT
ABAN	ABANDON
ABC	AGGREGATE BASE COURSE
ABT	ABOUT
ACB	ARTICULATED CONCRETE BLOCK
AC	ALTERNATING CURRENT
ACK	ACKNOWLEDGE
ACP	ACOUSTIC CEILING PANEL, ASPHALTIC CONCRETE PAVEMENT
ACST	ACOUSTIC
AD	ADDENDUM, AREA DRAIN
ADDL	ADDITIONAL
ADH	ADHESIVE
ADJ	ADJUSTABLE, ADJACENT
AF	AMP FRAME, AMP FUSE
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AGGR	AGGREGATE
AI	AREA INLET, ANALOG INPUT
AIC	AMPS INTERRUPTING CAPACITY
ALIG	ALIGNMENT
ALT	ALTERNATE, ALTITUDE
ALUM	ALUMINUM
AM	ACOUSTICAL MATERIAL
AMB	AMBIENT
ANC	ANCHOR
AO	ANALOG OUTPUT
AP	ACCESS PANEL
APRX	APPROXIMATE
APVD	APPROVED
ARCH	ARCHITECTURAL
ASSY	ASSEMBLY
AT	ACOUSTICAL TILE, AMP TRIP
ATC	ACOUSTICAL TILE CEILING
ATM	ATMOSPHERE
AUTO	AUTOMATIC
AUX	AUXILIARY
AVE	AVENUE
AVG	AVERAGE
AWG	AMERICAN WIRE GAGE
AWT	ACOUSTICAL WALL TILE
B TO B	BACK TO BACK
BAL	BALANCE
BBD	BULLETIN BOARD
BC	BASE CABINET, BOTTOM CHORD, BOLT CENTER, BOLT CIRCLE
BD	BOARD
BE	BOTH ENDS, BELL END
BF	BOTH FACES, BOTTOM FACE, BLIND FLANGE, BOARD FEET
BITUM	BITUMINOUS
BKG	BACKING
BL	BASE LINE
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BENCHMARK, BEAM
BOC	BACK OF CURB
BOD	BOTTOM OF DUCT
BOG	BOTTOM OF GRILLE
BOL	BOTTOM OF LOUVER, BOLLARD
BOP	BOTTOM OF PIPE
BOR	BOTTOM OF REGISTER
BOT	BOTTOM
BOU	BOTTOM OF UNIT
BP	BASE PLATE
BRG	BEARING
BRGP	BEARING PLATE
BRKT	BRACKET
BS	BOTH SIDES
BS1	BREASTING STRUCTURE IDENTIFICATION
BTU	BRITISH THERMAL UNIT
BTW	BETWEEN
BTWLD	BUTT WELD
BU	BELL UP, BUILT-UP
BUR	BUILT-UP ROOFING
BW	BOTH WAYS
BYP	BYPASS
C TO C	CENTER TO CENTER
C&G	CURB AND GUTTER
C	CHANNEL SHAPE, CENTIGRADE, CONDUIT
CAB	CABINET
CAP	CAPACITY
CAT	CATALOG, CATALOGIORY
CAV	CAVITY
CB	CATCH BASIN
CCB	CONCRETE BLOCK
CCW	COUNTER CLOCKWISE
CDF	CONTROLLED-DENSITY FILL
CE	CONCRETE EDGE
CER	CERAMIC
CF	CUBIC FEET (FOOT)
CFL	COUNTER FLASHING
CHBD	CHALKBOARD
CHD	CHORD
CHFR	CHAMFER
CHH	COMMUNICATION HANDHOLE
CI	CURB INLET
CIP	CAST-IN-PLACE
CIPB	CONCRETE INTERLOCKING PAVER BALLAST
CIRC	CIRCULATION, CIRCULAR
CJ	CONSTRUCTION JOINT
CKT	CIRCUIT
CL	CENTERLINE, CLASS, CLOSE
CLG	CEILING
CLKG	CAULKING
CLR	CLEAR
CMH	COMMUNICATION MANHOLE
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT, CONCRETE OPENING
COL	COLUMN
COM	COMMON
COMB	COMBINATION
COMM	COMMUNICATION
COMP	COMPOSITION, COMPRESSIBLE, COMPOSITE
CON	CONCENTRIC
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
COOR	COORDINATE
CORR	CORROSIVE, CORRUGATED
CP	CHECKER PLATE, CONTROL POINT
CPLG	COUPLING
CRL	CORROSION-RESISTANT LINING
CSC	COMPRESSION SLEEVE COUPLING
CSK	COUNTERSINK
CSS	CLINIC SERVICE SINK
CT	CERAMIC TILE
CTJ	CONTRACTION JOINT
CTR	CENTER
CTRL	CONTROL
CVT	CULVERT
CU	COPPER, CUBIC
CW	CLOCKWISE
CY	CUBIC YARD
d	PENNY (NAIL MEASURE)
D	DEEP, DIFFUSER, DRAIN
DB	DUCT BANK, DECIBEL, DRY BULB
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DC	DIRECT CURRENT
DEG	DEGREE
DEG C	DEGREE CENTIGRADE
DEG F	DEGREE FAHRENHEIT
DEMO	DEMOLITION
DEP	DEPRESSED
DEPT	DEPARTMENT
DET	DETAIL
DI	DROP INLET, DUCTILE IRON, DIGITAL INPUT
DIA	DIAMETER
DIAG	DIAGONAL, DIAGRAM
DIFF	DIFFERENTIAL, DIFFERENCE
DIM	DIMENSION
DISCH	DISCHARGE
DIST	DISTANCE, DISTRIBUTION
DIV	DIVISION
DL	DEAD LOAD
DMJ	DOUBLE MECHANICAL JOINT
DMPF	DAMP PROOFING
DN	DOWN
DO	DISSOLVED OXYGEN, DIGITAL OUTPUT, DITTO
DP	DEPTH
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
DS	DOWN SPOUT
DT	DOUBLE TEE, DRIP TRAP ASSEMBLY
DUP	DUPLICATE
DWG	DRAWING
DWL	DOWEL
DWR	DRAWER
E	EAST
EA	EACH, EXHAUST AIR
EC	ELECTRICAL CONTRACTOR
ECC	ECCENTRIC
ED	EQUIPMENT DRAIN
EDB	ELECTRICAL DUCT BANK
EE	EACH END
EF	EACH FACE
EFF	EFFLUENT, EFFICIENCY
EHH	ELECTRICAL HANDHOLE
EIFS	EXTERIOR INSULATION & FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELBOW, ELEVATION
ELEC	ELECTRICAL
EMBD	EMBEDDED
EMER	EMERGENCY
EMH	ELECTRICAL MANHOLE
ENCL	ENCLOSURE
ENGR	ENGINEER
ENTR	ENTRANCE
EOP	EDGE OF PAVEMENT
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ES	EACH SIDE, EQUAL SPACE, EMERGENCY SHOWER
ESEW	EMERGENCY SHOWER AND EYE WASH
EST	ESTIMATE
EW	EACH WAY, EMERGENCY EYE/FACE WASH
EWC	ELECTRIC WATER COOLER
EWEF	EACH WAY, EACH FACE
EWTB	EACH WAY, TOP AND BOTTOM
EXC	EXCAVATION
EXH	EXHAUST
EXP	EXPANSION, EXPOSED
EXST	EXISTING
EXT	EXTERIOR, EXTERNAL, EXTENSION
F TO F	FACE TO FACE
F&B	FACE AND BYPASS
FAB	FABRICATE
FB	FLOOR BEAM
FBD	FIBERBOARD
FBG	FIBERGLASS
FBM	BOARD FOOT MEASURE
FBO	FURNISHED BY OWNER
FC	FLUSHING CONNECTION
FCA	FLANGED COUPLING ADAPTER
FD	FLOOR DRAIN
FDC	FLEXIBLE DUCT CONNECTION
FDR	FEEDER
FDTN	FOUNDATION
FE	FLANGED END
FEC	FIRE EXTINGUISHER CABINET
FES	FLARED END SECTION
FEXT	FIRE EXTINGUISHER
FF	FAR FACE, FACTORY FINISH, FLAT FACE
FG	FINISHED GRADE
FH	FIRE HYDRANT
FIG	FIGURE
FIN	FINISH
FJT	FLUSH JOINT
FL	FLOW, FLOW LINE
FLEX	FLEXIBLE
FLG	FLANGE
FLOR	FLUORESCENT
FLR	FLOOR
FLS	FLASHING, FLUSH
FN	FENCE
FO	FINISHED OPENING, FIBER OPTIC
FOB	FLAT ON BOTTOM
FOC	FACE OF CONCRETE, FACE OF CURB
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FOT	FLAT ON TOP
FPT	FEMALE PIPE THREAD
FR	FRAME
FRP	FIBERGLASS REINFORCED PLASTIC
FRTM	FIRE RETARDANT TREATED MATERIAL
FS	FLOOR SINK, FAR SIDE
FT	FEET, FOOT
FTG	FOOTING, FITTING
FUR	FURRED, FURRING
FURN	FURNITURE, FURNISH
FUT	FUTURE
FV	FACE VELOCITY
FW	FIELD WELD, FIRE WALL
FWD	FORWARD
FWE	FURNISHED WITH EQUIPMENT
FXTR	FIXTURE
G	GRILLE, GROUND
GA	GAGE (METAL THICKNESS)
GAL	GALLON
GALV	GALVANIZED
GB	GRAB BAR, GRADE BREAK
GC	GROOVED COUPLING
GD	GUARD
GEN	GENERAL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFMU	GROUND FACE MASONRY UNIT
GG	GUTTER GRADE
GJ	GROOVED JOINT
GL	GLASS
GLB	GLASS BLOCK, GLULAM BEAM
GND	GROUND
GP	GUY POLE
GR	GRADE
GRTG	GRATING
GSB	GYPSUM SHEATHING BOARD
GT	GREASE TRAP
GVL	GRAVEL
GW	GUY WIRE
GWB	GYPSUM WALLBOARD
GYP	GYPSUM HARDBOARD
H	HIGH
HB	HOSE BIBB
HBD	HARDBOARD
HC	HANDICAPPED, HOLLOW CORE, HORIZONTAL CURVE, HORIZONTAL CENTERLINE
HD	HEAD, HOT DIP
HDG	HOT DIP GALVANIZE
HDPE	HIGH DENSITY POLYETHLENE
HDR	HEADER
HDW	HARDWARE
HEX	HEXAGONAL
HGR	HANGER
HH	HANDHOLE
HID	HIGH-INTENSITY DISCHARGE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HIGH POINT, HORSEPOWER
HPC	HORIZONTAL POINT OF CURVATURE
HPS	HIGH-PRESSURE SODIUM
HPT	HORIZONTAL POINT OF TANGENCY
HR	HOSE REEL, HOUR
HS	HEADED STUD, HIGH STRENGTH
HSS	HOLLOW STRUCTURAL SHAPE
HT	HEIGHT
HTG	HEATING
HV	HIGH VOLTAGE
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HWD	HARDWOOD
HWL	HIGH WATER LEVEL
HYD	HYDRAULIC
HZ	HERTZ, CYCLES PER SECOND
ID	INSIDE DIAMETER, INTERIOR DIMENSION
IE	INVERT ELEVATION, FOR EXAMPLE
IF	INSIDE FACE
IH	INTAKE HOOD
IMP	IMPACT
IN	INCH
INC	INCLUDE, INCANDESCENT
INF	INFLUENT
INSTR	INSTRUMENTATION
INSUL	INSULATION
INT	INTERIOR, INTERSECTION
INTR	INTERMEDIATE, INTERIOR
INV	INVERT
IPS	IRON PIPE SIZE
IPT	INTERNAL PIPE THREAD
IR	INSIDE RADIUS, IRON ROD
IRR	IRRIGATION
ISO	ISOMETRIC
JB	JUNCTION BOX
JCT	JUNCTION
JF	JOINT FILLER
JST	JOIST
JT	JOINT
K	KIP
KB	KNEE BRACE
KCMIL	THOUSAND CIRCULAR MILS
KD	KNOCK DOWN
KO	KNOCK OUT
KSI	KIPS PER SQUARE INCH
KW	KILOWATT
L	ANGLE, LENGTH, LAVATORY, LINTEL
LAD	LADDER
LAM	LAMINATE
LATL	LATERAL
LB	LAG BOLT, POUND
LCTB	LIQUID CHALK AND TACK BOARD
LDG	LANDING
LDR	LEADER
LE	LIFTING EYE
LF	LINEAR FOOT
LG	LONG
LH	LEFT HAND
LIN	LINEAR
LIQ	LIQUID
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LMLU	LIQUID MARKER LECTURE UNIT
LNG	LONGITUDINAL
LOC	LOCATION
LP	LOW POINT
LPS	LOW-PRESSURE SODIUM
LR	LONG RADIUS
LT	LEFT
LTD	LIMITED
LTG	LIGHTING
LTL	LINTEL
LTNG	LIGHTNING
LV	LOW VOLTAGE
LVL	LAMINATED VENEER LUMBER
LVR	LOUVER
LW	LIGHTWEIGHT
LWC	LIGHTWEIGHT CONCRETE
LWL	LOW WATER LEVEL
MA	MIXED AIR
MACH	MACHINED
MAINT	MAINTENANCE
MAN	MANUAL
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MBR	MEMBER
MC	MECHANICAL CONTRACTOR, MECHANICAL COUPLING, MOMENT CONNECTION
MCB	METAL CORNER BEAD
MCJ	MASONRY CONTROL JOINT
MDMJ	MODIFIED DOUBLE MECHANICAL JOINT
MECH	MECHANICAL
MED	MEDIUM
MFR	MANUFACTURER
MH	MANHOLE, METAL HALIDE
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
ML	MASONRY LINTEL
MLO	MAIN LUGS ONLY
MMB	MEMBRANE
MO	MASONRY OPENING
MOD	MODULAR, MODIFY
MON	MONUMENT
MPT	MALE PIPE THREAD
MRGWB	MOISTURE-RESISTANT GYPSUM WALLBOARD
MS	MOP SINK
MS1	MOORING STRUCTURE IDENTIFICATION
MSL	MEAN SEA LEVEL
MT	MOUNT, METRIC TON
MU	MASONRY UNIT
MULL	MULLION
MV	MEDIUM VOLTAGE
MW	MONITORING WELL
N	NORTH, NEUTRAL
NA	NOT APPLICABLE
NAT	NATURAL, NATIONAL
NC	NORMALLY CLOSED
NEG	NEGATIVE
NF	NEAR FACE, NON-FUSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN, NUMBER
NOM	NOMINAL
NPS	NOMINAL PIPE SIZE
NPT	NATIONAL PIPE THREAD
NS	NEAR SIDE
NTS	NOT TO SCALE
NWL	NORMAL WATER LEVEL
O TO O	OUT TO OUT
OA	OUTSIDE AIR, OVERALL
OC	ON CENTER
OCPD	OVER CURRENT PROTECTION DEVICE
OD	OUTSIDE DIAMETER
OED	OPEN END DUCT
OF	OUTSIDE FACE, OFFICE FURNISHING
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED OWNER INSTALLED
OG	ORIGINAL GROUND
OH	OVERHEAD
OPNG	OPENING
OPP	OPPOSITE
OPT	OPTIONAL
OR	OUTSIDE RADIUS
ORD	OVERFLOW ROOF DRAIN
ORIG	ORIGINAL
OVFL	OVERFLOW
OVHG	OVERHANG
OZ	OUNCE
P	PAINT
PA	PUBLIC ADDRESS
PAR	PARALLEL, PARAPET
PB	PANIC BAR, PULL BOX
PBD	PARTICLE BOARD
PC	POINT OF CURVE, PIECE, PRECAST
PCC	POINT OF COMPOUND CURVATURE
PCF	POUNDS PER CUBIC FOOT
PCT	PERCENT
PE	PLAIN END
PED	PEDESTAL
PEN	PENETRATION
PERF	PERFORATED
PERM	PERMANENT
PERP	PERPENDICULAR
PF	POWER FACTOR
PFMU	PREFACED MASONRY UNIT
PH	PHASE
PI	POINT OF INTERSECTION
PKG	PACKAGE
PL	PLATE, PROPERTY LINE, PRECAST LINTEL
PLAS	PLASTER
PLAT	PLATFORM
PLBG	PLUMBING
PLF	POUNDS PER LINEAR FOOT
PNEU	PNEUMATIC
POL	POLISH
POS	POSITIVE, POSITION
PP	POLYPROPYLENE, POWER POLE
PRC	POINT OF REVERSE CURVATURE
PREF	PREFINISHED
PREFAB	PREFABRICATED
PRELIM	PRELIMINARY
PREP	PREPARE
PRES	PRESSURE
PRI	PRIMARY
PROP	PROPERTY, PROPOSED
PROT	PROTECTION
PS	PIPE SUPPORT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAGE
PST	PRESTRESSED
PT	POINT, POINT OF TANGENCY
PTN	PARTITION
PVC	POLYVINYL CHLORIDE, POINT OF VERTICAL CURVE
PVMT	PAVEMENT
PWD	PLYWOOD
PWJ	PLYWOOD WEB JOIST
PZ	PIEZOMETER
Q	RATE OF FLOW
QT	QUARRY TILE
QTR	QUARTER
QTY	QUANTITY
QUAL	QUALITY
R&R	REMOVE AND REPLACE
R&S	REMOVE AND SALVAGE
R	RADIUS, REGISTER, RISER
RA	RETURN AIR
RB	RESILIENT BASE, ROCK BERM
RCPT	RECEPTACLE
RD	ROOF DRAIN
REC	RECESS
RECD	RECEIVED
RECT	RECTANGULAR
RED	REDUCER
REF	REFERENCE
REINF	REINFORCING
REM	REMOVE
REQD	REQUIRED
RESIL	RESILIENT
RET	RETAINING, RETURN
REV	REVISION, REVERSE
RF	RESILIENT FLOORING
RFG	ROOFING
RFL	REFLECTED, REFLECTOR
RGH	ROUGH
RGS	RIGID GALVANIZED STEEL
RGS-PVC	PVC COATED RGS
RH	RELIEF HOOD, RIGHT HAND, RELATIVE HUMIDITY
RL	REQUIRED LAP
RLFA	RELIEF AIR
RND	ROUND
RNG	RUNNING
RO	ROUGH OPENING
ROW	RIGHT-OF-WAY
RPM	REVOLUTIONS PER MINUTE
RR	RAILROAD
RSP	ROCK SLOPE PROTECTION
RT	RIGHT
RVT	RESILIENT VINYL TILE
RY	READY
S	SOUTH, SINK
SA	SUPPLY AIR
SAMU	SOUND-ABSORBING MASONRY UNIT
SAN	SANITARY
SB	SPLASH BLOCK
SC	SOLID CORE
SCH	SCHEDULE
SCHEM	SCHEMATIC
SCN	SCREEN
SE	STEEL/ALUMINUM EDGE
SEC	SECONDARY, SECONDS
SECT	SECTION
SEP	SEPARATE
SF	SQUARE FOOT, SILT FENCE
SG	SHEET GLASS, SEALANT GROOVE
SH	SHOWER
SHT	SHEET
SHTG	SHEATHING
SIL	SILENCE
SIM	SIMILAR
SJ	SLAB JOINT
SL	SLOPE, STEEL LINTEL
SLTD	SLOTTED
SLV	SLEEVE
SMLS	SEAMLESS
SOG	SLAB ON GRADE
SP	SOUNDPROOF, STANDPIPE
SPA	SPACING
SPEC	SPECIFICATION
SPLY	SUPPLY
SPST	SINGLE POLE SINGLE THROW
SPT	SET POINT
SQ	SQUARE
SR	SHORT RADIUS
SS	SERVICE SINK
SST	STAINLESS STEEL
ST	STREET
STA	STATION
STD	STANDARD
STIF	STIFFENER
STIR	STIRRUP
STL	STEEL
STOR	STORAGE
STR	STRUCTURAL, STRAIGHT
SUB	SUBSTITUTE
SUC	SUCTION
SUSP	SUSPENDED
SY	SQUARE YARD
SYM	SYMBOL
SYMM	SYMMETRICAL
SYN	SYNTHETIC
SYS	SYSTEM
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
T	TILE, TREAD
TA	TOILET ACCESSORY, TEMPERED AIR
TAN	TANGENT
TBM	TEMPORARY BENCHMARK
TCE	TEMPORARY CONSTRUCTION EASEMENT
TEF	TROWELED EPOXY FLOORING
TEMP	TEMPORARY, TEMPERATURE
THD	THREAD
THK	THICK
THRESH	THRESHOLD
TKBD	TACK BOARD
TOB	TOP OF BOLT, TOP OF BANK, TOP OF BEAM, TOP OF BERM
TOC	TOP OF CURB, TOP OF CONCRETE
TOD	TOP OF DUCT
TOF	TOP OF FOOTING
TOG	TOP OF GRATING
TOL	TOLERANCE, TOP OF LEDGER
TOM	TOP OF MASONRY
TOP	TOP OF PLATE
TOPO	TOPOGRAPHY
TOS	TOP OF SLAB, TOP OF STEEL, TOE OF SLOPE
TOW	TOP OF WALL
TP	TOILET PARTITION, TELEPHONE POLE, TOE PLATE, TRAP PRIMER
TPD	TOILET PAPER DISPENSER
TPG	TOPPING, THROUGH PLATE GIRDER
TR	TRANSOM
TRANS	TRANSITION
TRD	TRENCH DRAIN
TYP	TYPICAL
U	URINAL
UG	UNDERGROUND
ULT	ULTIMATE
UNFN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UTIL	UTILITY
V	VENT, VELOCITY, VOLT
VA	VOLT AMPERE
VAC	VACUUM
VAR	VARNISH, VARIABLE, VOLT AMPERES REACTIVE
VB	VAPOR BARRIER, VINYL BASE, VALVE BOX
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
VCT	VINYL COMPOSITION TILE, VERTICAL CENTERLINE
VEL	VELOCITY
VENT	VENTILATION
VERT	VERTICAL
VERTS	VERTICAL REINFORCING
VG	VERTICAL GRAIN
VIF	VERIFY IN FIELD
VIN	VINYL
VOL	VOLUME
VPC	VERTICAL POINT OF CURVATURE
VPI	VERTICAL POINT OF INTERSECTION
VPT	VERTICAL POINT OF TANGENCY
VS	VERSUS, VAPOR SEAL
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W/	WITH
W/O	WITHOUT
W	WATT, WEST, WIDE, WINDOW, WIRE, WIDE FLANGE BEAM
WB	WOOD BASE
WC	WATER CLOSET, WATER COLUMN
WD	WOOD, WIDTH
WF	WIDE FLANGE, WASH FOUNTAIN
WG	WIRE GLASS, WATER GAGE
WH	WALL HYDRANT, WEEP HOLE
WI	WROUGHT IRON
WL	WATER LEVEL
WLD	WELDED
WM	WIRE MESH
WP	WEATHERPROOF
WS	WATERSTOP, WATER SURFACE
WSCT	WAINSCOT
WT	WEIGHT, WATER TIGHT
W.T.	WALL THICKNESS
WTHP	WATERPROOF, WORKING POINT
WWF	WELDED WIRE FABRIC
XP	EXPLOSION-PROOF
XS	EXTRA STRONG
XSECT	CROSS SECTION
XXS	DOUBLE EXTRA STRONG
YH	YARD HYDRANT
YS	YIELD STRENGTH

GENERAL NOTES:

1. THESE ABBREVIATIONS APPLY TO THE ENTIRE SET OF CONTRACT DRAWINGS.
2. LISTING OF ABBREVIATIONS DOES NOT IMPLY THAT ALL ABBREVIATIONS ARE USED IN THE CONTRACT DRAWINGS.
3. ABBREVIATIONS SHOWN ON THIS SHEET INCLUDE VARIATIONS OF A WORD. FOR EXAMPLE, "MOD" MAY MEAN MODIFY OR MODIFICATION; "INC" MAY MEAN INCLUDED OR INCLUDING AND "REINF" MAY MEAN EITHER REINFORCE OR REINFORCING.

HDR

HDR Engineering, Inc.

Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
0	3/10/2016	ISSUED FOR BIDS

PROJECT MANAGER	MIKE KRIEBER
DESIGNED BY	K. MATAKIS
DRAWN BY	B. INFANTE
CHECKED BY	B. COLWELL
PROJECT NUMBER	111172

STATE OF TEXAS
ARTHUR B. COLWELL
60292
REGISTERED PROFESSIONAL ENGINEER
3.10.16

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6

PORT OF BROWNSVILLE
·WORLD CLASS·

GENERAL ABBREVIATIONS

0 1" 2"

FILENAME	00G-05.dwg
SCALE	NONE

SHEET 00G05

CIVIL MAPPING SYMBOLOGY

B1 — BORING IDENTIFICATION AND LOCATION

A — UNDERWATER DEBRIS IDENTIFICATION AND LOCATION

1 — PHOTOGRAPH IDENTIFICATION AND DIRECTION

MATERIALS IN PLAN/SECTION

CONCRETE (PLAN AND/OR SECTION)

EARTH (SECTION)

RUBBLE (PLAN AND/OR SECTION)

GENERAL LINE SYMBOLOGY

CHANNEL STATIONING — 82+800 82+700 82+600

CONSTRUCTION BASELINE

CENTER LINE

-45 CONTOUR LINE (EXISTING)

-45 CONTOUR LINE (DESIGN)

GENERAL SYMBOLOGY

ARROW INDICATES DIRECTION OF PLAN NORTH — N

PLAN
1/4" = 1'-0"
PLAN TITLE

SECTION LETTER
FLAG INDICATES DIRECTION OF SECTION CUT
X / XXX
SHEET WHERE SECTION IS LOCATED
SECTION CUT MARKER

SECTION LETTER
SECTION
3/8" = 1'-0"
X / XXX
SHEET WHERE SECTION VIEW IS FIRST CUT *
SECTION TITLE

DETAIL NUMBER
/ XXX
SHEET WHERE DETAIL IS LOCATED *
DETAIL MARKER
FOR REFERENCING DETAILS INCLUDED IN DRAWING SET.

XXXXXXXXX
DETAIL MARKER
FOR REFERENCING DETAILS BOUND IN SPECIFICATIONS OR SEPARATE VOLUME.

DETAIL NUMBER
DETAIL
3" = 1'-0"
/ XXX
SHEET WHERE DETAIL WAS CALLED OUT *
DETAIL TITLE

ELEVATION NUMBER
ARROW INDICATES POINT OF VIEW
X / XXX
SHEET WHERE ELEVATION IS LOCATED *
SINGLE ELEVATION OR PHOTO MARKER

ELEVATION IDENTIFICATION NUMBER
ELEVATION
3" = 1'-0"
X / XXX
SHEET WHERE POINT OF VIEW MARKER CAN BE FOUND *
ELEVATION TITLE

* EXCEPTIONS WHERE THE SHEET NUMBER IS REPLACED BY A DASH (-).
1) FOR COMMON DETAILS, SECTIONS, ELEVATIONS OR DETAILS THAT ARE CUT OR CALLED OUT ON MULTIPLE SHEETS.
2) SECTIONS, ELEVATIONS OR DETAILS THAT ARE LOCATED ON THE SAME SHEET THEY ARE CUT OR CALLED OUT ON.

SHEET NAMING CONVENTION

SERIES DESIGNATION

00	GENERAL
01	DREDGING AND HYDROGRAPHIC SURVEY
02	EARTHWORKS
03	UTILITIES
04	PAVING AND GRADING
05	DOCK PLATFORM
06	APPROACHWAY
07	CATWALKS
08	BREASTING STRUCTURES
09	MOORING STRUCTURES
10	BULKHEAD PLAN AND DETAILS
11	REVETMENT

DISCIPLINE DESIGNATOR & DISCIPLINE ORDER

G	GENERAL
V	SURVEYING/MAPPING
X	DEMOLITION
C	CIVIL
L	LANDSCAPING
U	MULTI-DISCIPLINE
S	STRUCTURAL
A	ARCHITECTURAL
D	PROCESS
M	MECHANICAL (HVAC)
P	PLUMBING
F	FIRE PROTECTION
E	ELECTRICAL
Y	INSTRUMENTATION

EXAMPLE

FIELD HOUSE, ELECTRICAL PLAN, SHEET 01

0	5				

AREA DESIGNATION

		E			

DISCIPLINE DESIGNATOR

			0	1

SHEET NUMBER

GENERAL NOTES:

1. THIS IS A STANDARD SHEET SHOWING COMMON SYMBOLOGY. ALL SYMBOLS ARE NOT NECESSARILY USED ON THIS PROJECT.
2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE-EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.

KEY NOTE DESIGNATION

KEY NOTE NUMBER
#

HDR Engineering, Inc.
Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
0	3/10/2016	ISSUED FOR BIDS

PROJECT MANAGER	MIKE KRIEBER
DESIGNED BY	K. MATAKIS
DRAWN BY	B. INFANTE
CHECKED BY	B. COLWELL
PROJECT NUMBER	111172

STATE OF TEXAS — ARTHUR B. COLWELL — 60292 — REGISTERED PROFESSIONAL ENGINEER
3.10.16

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
PORT OF BROWNSVILLE · WORLD CLASS ·

GENERAL SYMBOLS AND LEGENDS

0 1" 2"

FILENAME	00G-06.dwg
SCALE	NONE

SHEET 00G06

LOG OF BORING B-1
BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
BROWNSVILLE, TEXAS

TYPE OF BORING: WET ROTARY OFFSHORE — PSI PROJECT NO: 286-155

COORDINATE (X OR N): APPROX. N 16,512,222
COORDINATE (Y OR E): APPROX. E 1,351,462
SURFACE ELEVATION: 17' BELOW WATER SURFACE
BORING LOCATION PLAN: SEE PLATE 1

DEPTH, FEET	SOIL	USC GROUP SYMBOL	SURFACE ELEVATION	DESCRIPTION	N-BLOWS/FOOT	% PASSING 200	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	SHEAR STRENGTH (tons/ft²) OHP ●UC ΔTV ▲UU	UNIT DRY WT. (lbs/ft³)
0		CH		FAT CLAY (CH), FIRM, LIGHT BROWN						35		
5				- with calcareous nodules, 4 to 6 feet						30		
										23		
10		CL		SANDY LEAN CLAY (CL), SOFT TO FIRM, LIGHT BROWN - with calcareous nodules		60	31	15	16	20		
										22		107
15		CL		LEAN CLAY WITH SAND (CL), STIFF, LIGHT BROWN						18		
20				- with silt seams, 18 to 20 feet		28	17	11		22		
25		CH		FAT CLAY (CH), VERY STIFF TO HARD, LIGHT BROWN - yellowish brown, 23 to 25 feet						21		
30										24		(2.47) 100
35						98	63	23	40	25		
40										22		
45										21		(1.60) 107
50										25		

DEPTH OF BORING: EIGHTY (80) FEET — INITIAL WATER LEVEL: 17 FEET ABOVE MUDLINE
DATE DRILLED: May 28, 2009 — FINAL WATER LEVEL:

psi Geotechnical Consulting Services, Houston, Texas

PLATE A-5A

LOG OF BORING B-2
BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
BROWNSVILLE, TEXAS

TYPE OF BORING: WET ROTARY OFFSHORE — PSI PROJECT NO: 286-155

COORDINATE (X OR N): APPROX. N 16,512,133
COORDINATE (Y OR E): APPROX. E 1,351,730
SURFACE ELEVATION: 16' BELOW WATER SURFACE
BORING LOCATION PLAN: SEE PLATE 1

DEPTH, FEET	SOIL	USC GROUP SYMBOL	SURFACE ELEVATION	DESCRIPTION	N-BLOWS/FOOT	% PASSING 200	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	SHEAR STRENGTH (tons/ft²) OHP ●UC ΔTV ▲UU	UNIT DRY WT. (lbs/ft³)
0		CL		LEAN CLAY (CL), SOFT TO FIRM, LIGHT BROWN AND YELLOWISH BROWN - with silt seams						35		
5										32		
						97	45	19	26	35		91
10		CL		LEAN CLAY (CL), STIFF TO VERY STIFF, BROWN - with calcareous nodules, 8 to 10 feet - with silt seams						37		
15										21		
20						100	33	19	14	21		
25										29		100
30		CH		FAT CLAY (CH), VERY STIFF TO HARD, BROWN						26		
35										24		
40										23		
45						92	59	23	36	21		
50										30		
										25		

DEPTH OF BORING: EIGHTY (80) FEET — INITIAL WATER LEVEL: 16 FEET ABOVE MUDLINE
DATE DRILLED: May 28, 2009 — FINAL WATER LEVEL:

psi Geotechnical Consulting Services, Houston, Texas

PLATE A-6A

LOG OF BORING B-3
BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
BROWNSVILLE, TEXAS

TYPE OF BORING: WET ROTARY — PSI PROJECT NO: 286-155

COORDINATE (X OR N): N 16,511,993
COORDINATE (Y OR E): E 1,351,089
SURFACE ELEVATION: +7.9 feet
BORING LOCATION PLAN: SEE PLATE 1

DEPTH, FEET	SOIL	USC GROUP SYMBOL	SURFACE ELEVATION	DESCRIPTION	N-BLOWS/FOOT	% PASSING 200	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	SHEAR STRENGTH (tons/ft²) OHP ●UC ΔTV ▲UU	UNIT DRY WT. (lbs/ft³)
0		FILL		FILL: Sand, Brown, with organic material						4		
		SC		CLAYEY SAND (SC), MEDIUM DENSE, YELLOWISH BROWN						27		97
5		CL		LEAN CLAY (CL), FIRM TO STIFF, BROWN AND GRAY		42	27	14	13	23		
10										38		116
15										40		
20		SC		CLAYEY SAND (SC), MEDIUM DENSE, GRAY						34		
25						41	31	14	17	19		
30		CL		LEAN CLAY (CL), STIFF TO VERY STIFF, BROWN AND DARK YELLOWISH BROWN - with calcareous nodules, 23 to 35 feet						24		
35						99				19		109
40										29		
45										22		
50						99	34	18	16	24		(2.33) 101
										23		

DEPTH OF BORING: ONE HUNDRED (100) FEET — INITIAL WATER LEVEL: APPROXIMATE AT EL. +1 FEET
DATE DRILLED: June 19, 2009 — FINAL WATER LEVEL:

psi Geotechnical Consulting Services, Houston, Texas

PLATE A-7A

LOG OF BORING B-5
BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
BROWNSVILLE, TEXAS

TYPE OF BORING: WET ROTARY — PSI PROJECT NO: 286-155

COORDINATE (X OR N): N 16,512,239
COORDINATE (Y OR E): E 1,351,716
SURFACE ELEVATION: +0.8 feet
BORING LOCATION PLAN: SEE PLATE 1

DEPTH, FEET	SOIL	USC GROUP SYMBOL	SURFACE ELEVATION	DESCRIPTION	N-BLOWS/FOOT	% PASSING 200	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	SHEAR STRENGTH (tons/ft²) OHP ●UC ΔTV ▲UU	UNIT DRY WT. (lbs/ft³)
0		FILL		FILL: Gravel	24					4		
					17					8		
5		CL		LEAN CLAY (CL), FIRM TO VERY STIFF, YELLOWISH BROWN AND GRAY		97	39	18	21	21		
										28		87
10										36		
15						92				36		
20				- with sand seams, 18 to 20 feet						18		112
25										24		
30										22		
35				- with silty clay seams, 33 to 45 feet						23		
40										24		98
45						100	31	15	16	25		
50										27		97

DEPTH OF BORING: ONE HUNDRED (100) FEET — INITIAL WATER LEVEL: APPROXIMATE AT EL. +1 FEET
DATE DRILLED: June 17, 2009 — FINAL WATER LEVEL:

psi Geotechnical Consulting Services, Houston, Texas

PLATE A-9A

LOG OF BORING B-1 (CONT'D.)
BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
BROWNSVILLE, TEXAS

TYPE OF BORING: WET ROTARY OFFSHORE — PSI PROJECT NO: 286-155

COORDINATE (X OR N): APPROX. N 16,512,222
COORDINATE (Y OR E): APPROX. E 1,351,462
SURFACE ELEVATION: 17' BELOW WATER SURFACE
BORING LOCATION PLAN: SEE PLATE 1

DEPTH, FEET	SOIL	USC GROUP SYMBOL	SURFACE ELEVATION	DESCRIPTION	N-BLOWS/FOOT	% PASSING 200	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	SHEAR STRENGTH (tons/ft²) OHP ●UC ΔTV ▲UU	UNIT DRY WT. (lbs/ft³)
55		CH		FAT CLAY (CH), VERY STIFF TO HARD, LIGHT BROWN						25		
60		CL		LEAN CLAY (CL), VERY STIFF, LIGHT BROWN - with thin silty clay layers		100	42	20	22	24		
65										23		
70		CH		FAT CLAY (CH), VERY STIFF, YELLOWISH BROWN AND LIGHT BROWN						29		94
75										26		
80										27		
85												
90												
95												
100												

DEPTH OF BORING: EIGHTY (80) FEET — INITIAL WATER LEVEL: 17 FEET ABOVE MUDLINE
DATE DRILLED: May 28, 2009 — FINAL WATER LEVEL:

psi Geotechnical Consulting Services, Houston, Texas

PLATE A-5B

LOG OF BORING B-2 (CONT'D.)
BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
BROWNSVILLE, TEXAS

TYPE OF BORING: WET ROTARY OFFSHORE — PSI PROJECT NO: 286-155

COORDINATE (X OR N): APPROX. N 16,512,133
COORDINATE (Y OR E): APPROX. E 1,351,730
SURFACE ELEVATION: 16' BELOW WATER SURFACE
BORING LOCATION PLAN: SEE PLATE 1

DEPTH, FEET	SOIL	USC GROUP SYMBOL	SURFACE ELEVATION	DESCRIPTION	N-BLOWS/FOOT	% PASSING 200	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	SHEAR STRENGTH (tons/ft²) OHP ●UC ΔTV ▲UU	UNIT DRY WT. (lbs/ft³)
55		CH		FAT CLAY (CH), VERY STIFF TO HARD, BROWN AND YELLOWISH BROWN						26		(2.28) 99
60										27		
65										24		
70				- with thin silty clay layers, 73 to 75 feet						28		(2.32) 94
75						100	61	24	37	28		
80										28		
85												
90												
95												
100												

DEPTH OF BORING: EIGHTY (80) FEET — INITIAL WATER LEVEL: 16 FEET ABOVE MUDLINE
DATE DRILLED: May 28, 2009 — FINAL WATER LEVEL:

psi Geotechnical Consulting Services, Houston, Texas

PLATE A-6B

LOG OF BORING B-3 (CONT'D.)
BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
BROWNSVILLE, TEXAS

TYPE OF BORING: WET ROTARY — PSI PROJECT NO: 286-155

COORDINATE (X OR N): N 16,511,993
COORDINATE (Y OR E): E 1,351,089
SURFACE ELEVATION: +7.9 feet
BORING LOCATION PLAN: SEE PLATE 1

DEPTH, FEET	SOIL	USC GROUP SYMBOL	SURFACE ELEVATION	DESCRIPTION	N-BLOWS/FOOT	% PASSING 200	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	SHEAR STRENGTH (tons/ft²) OHP ●UC ΔTV ▲UU	UNIT DRY WT. (lbs/ft³)
55		CL		LEAN CLAY (CL), STIFF TO HARD, BROWN TO YELLOWISH BROWN						25		
60										23		(2.84) 102
65										23		
70										24		
75				- with thin sand layer, near 75 feet		99				23		
80										25		
85										30		
90				- yellowish brown below 88 feet						21		
95						97	30	17	13	24		104
100		CL		SANDY LEAN CLAY (CL), STIFF, YELLOWISH BROWN						26		

DEPTH OF BORING: ONE HUNDRED (100) FEET — INITIAL WATER LEVEL: APPROXIMATE AT EL. +1 FEET
DATE DRILLED: June 19, 2009 — FINAL WATER LEVEL:

psi Geotechnical Consulting Services, Houston, Texas

PLATE A-7B

LOG OF BORING B-5 (CONT'D.)
BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
BROWNSVILLE, TEXAS

TYPE OF BORING: WET ROTARY — PSI PROJECT NO: 286-155

COORDINATE (X OR N): N 16,512,239
COORDINATE (Y OR E): E 1,351,716
SURFACE ELEVATION: +0.8 feet
BORING LOCATION PLAN: SEE PLATE 1

DEPTH, FEET	SOIL	USC GROUP SYMBOL	SURFACE ELEVATION	DESCRIPTION	N-BLOWS/FOOT	% PASSING 200	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	SHEAR STRENGTH (tons/ft²) OHP ●UC ΔTV ▲UU	UNIT DRY WT. (lbs/ft³)
65		CH		FAT CLAY (CH), STIFF TO VERY STIFF, BROWN AND YELLOWISH BROWN						22		
70						100				25		103
75							55	25	33	25		
80										24		
85										27		
90										30		
95										21		
100						99				25		99
										28		

DEPTH OF BORING: ONE HUNDRED (100) FEET — INITIAL WATER LEVEL: APPROXIMATE AT EL. +1 FEET
DATE DRILLED: June 17, 2009 — FINAL WATER LEVEL:

psi Geotechnical Consulting Services, Houston, Texas

PLATE A-9B

HDR Engineering, Inc.
Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
0	3/10/2016	ISSUED FOR BIDS

PROJECT MANAGER	MIKE KRIEBER
DESIGNED BY	K. MATAKIS
DRAWN BY	B. INFANTE
CHECKED BY	B. COLWELL
PROJECT NUMBER	111172

STATE OF TEXAS — ARTHUR B. COLWELL — 60292 — REGISTERED PROFESSIONAL ENGINEER
3.10.16

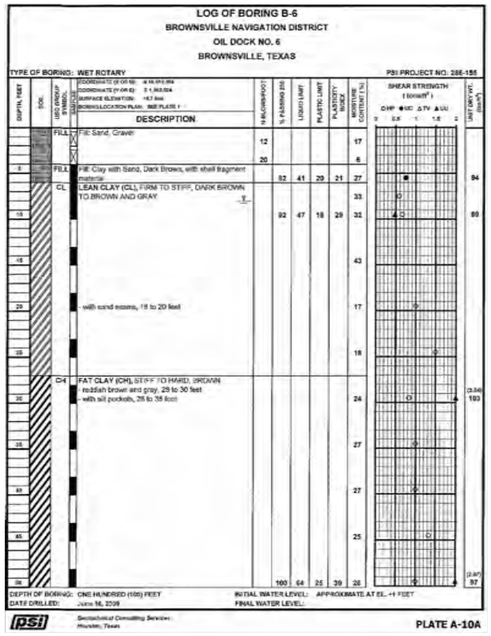
BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
PORT OF BROWNSVILLE
• WORLD CLASS •

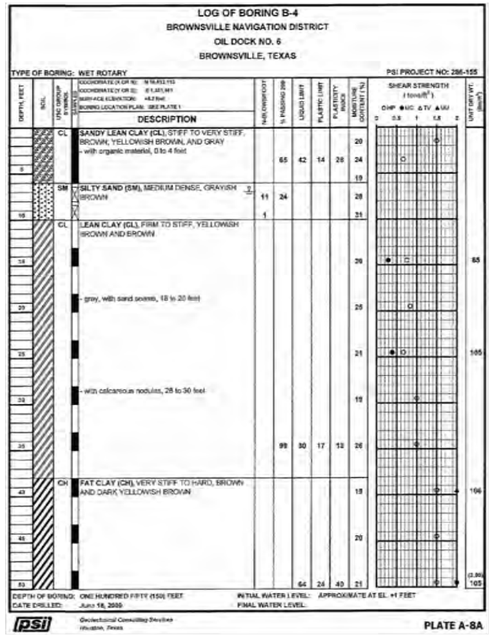
BORING LOGS

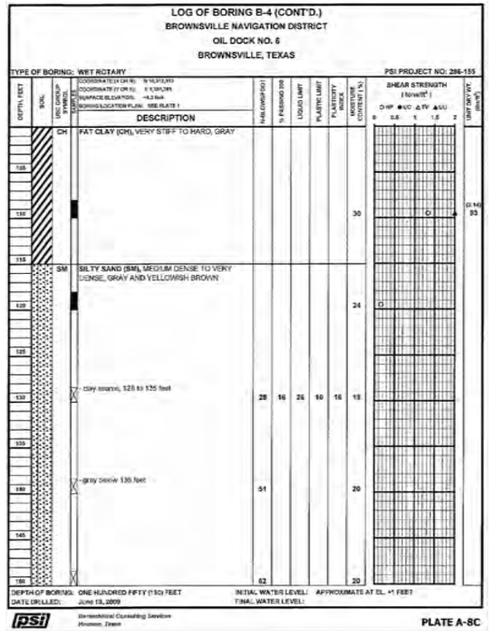
0 1" 2"

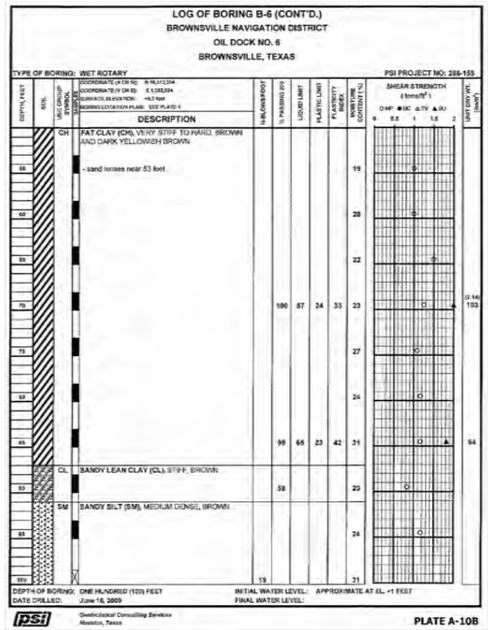
FILENAME	00G-07.dwg
SCALE	NONE

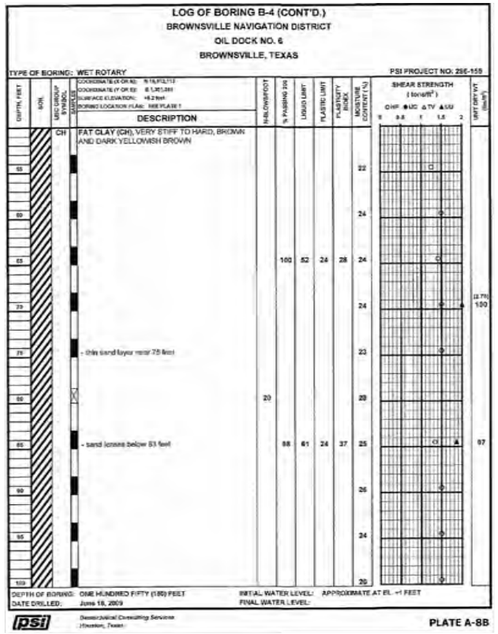
SHEET 00G07

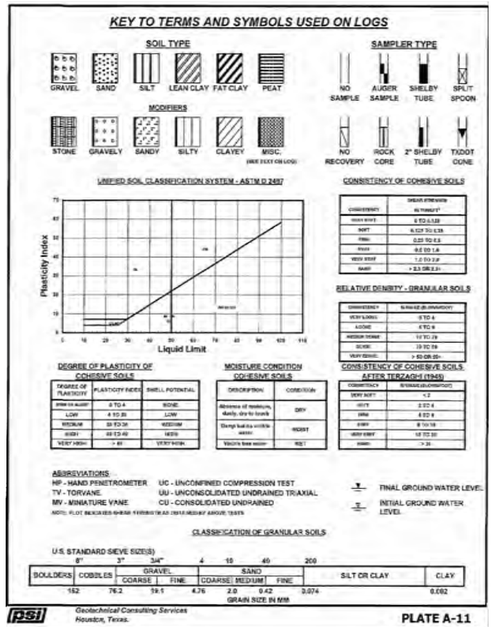












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STATE OF TEXAS
ARTHUR B. COLWELL
60292
REGISTERED PROFESSIONAL ENGINEER
3.10.16

HDR Engineering, Inc.
Texas P.E. Firm Registration No. 754

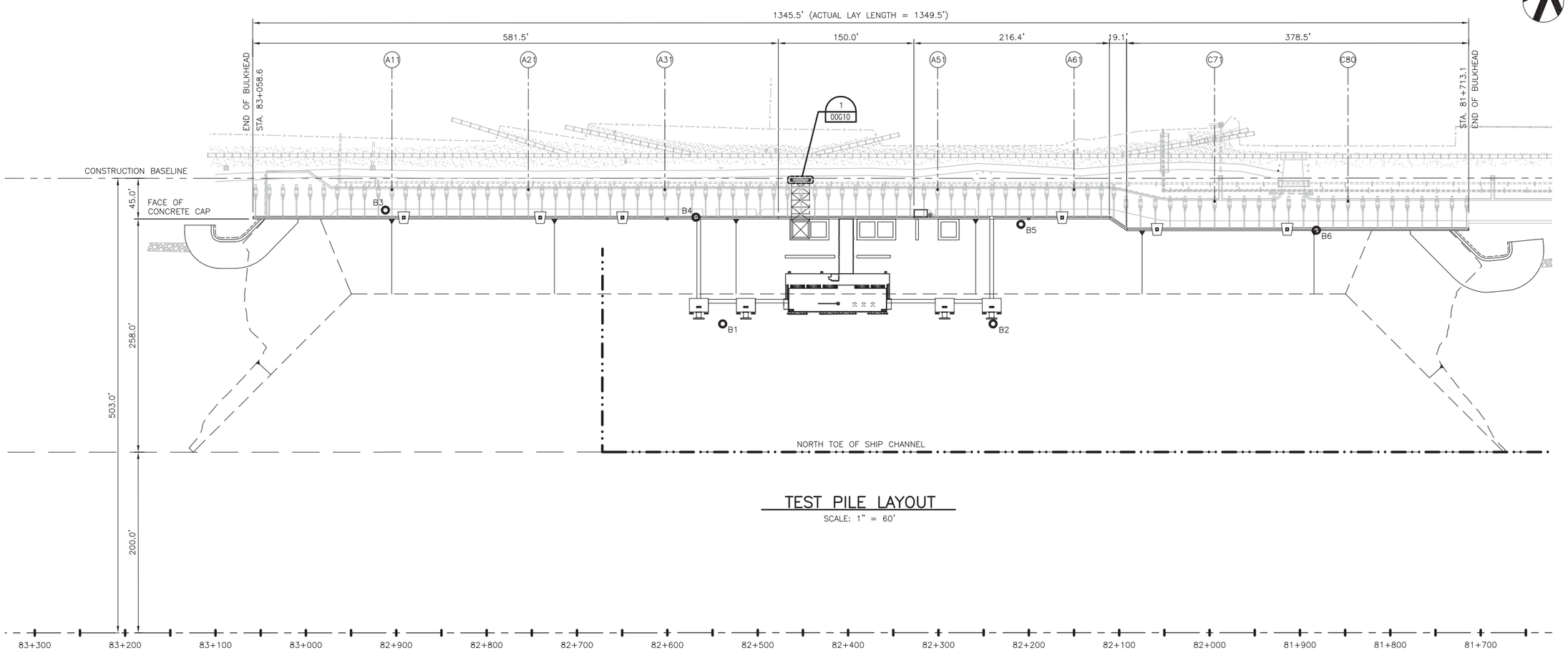
BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
PORT OF BROWNSVILLE
• WORLD CLASS •

BORING LOGS

0 1" 2"

FILENAME	00G-08.dwg
SCALE	NONE

SHEET 00G08



TEST PILE LAYOUT

SCALE: 1" = 60'

NOTE:

1. REFER TO SHEETS 05S04 AND 07S03 FOR TEST PILE LOCATIONS.
2. REFER TO SHEET 00G10 FOR TEST PILE SCHEDULE.

HDR Engineering, Inc.

Texas P.E. Firm
Registration No. 754

ISSUE	DATE	DESCRIPTION
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STATE OF TEXAS
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PROFESSIONAL ENGINEER
3.10.16

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6

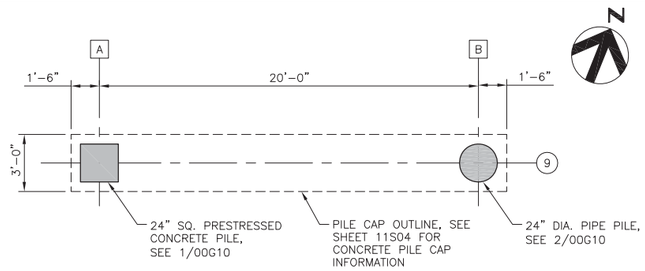
PORT OF BROWNSVILLE
• WORLD CLASS •

TEST PILE LAYOUT

0 1" 2"

FILENAME	00G-09.dwg
SCALE	AS NOTED

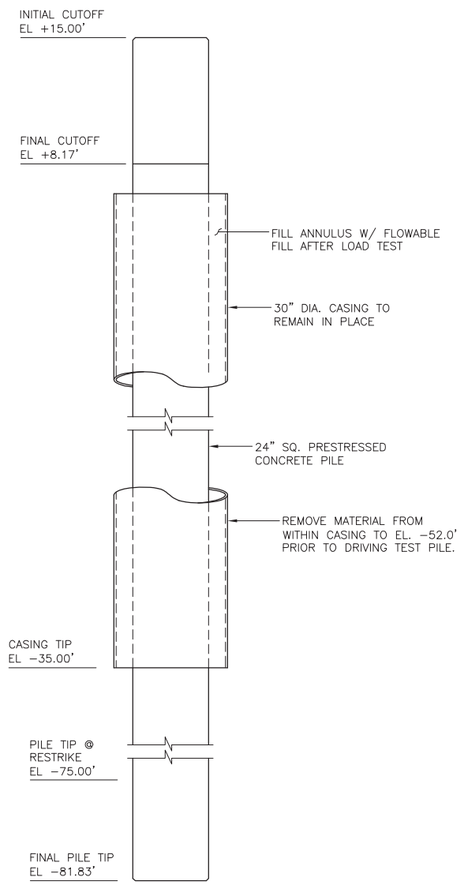
SHEET 00G09



PARTIAL TEST PILE PLAN

1 / 00G09

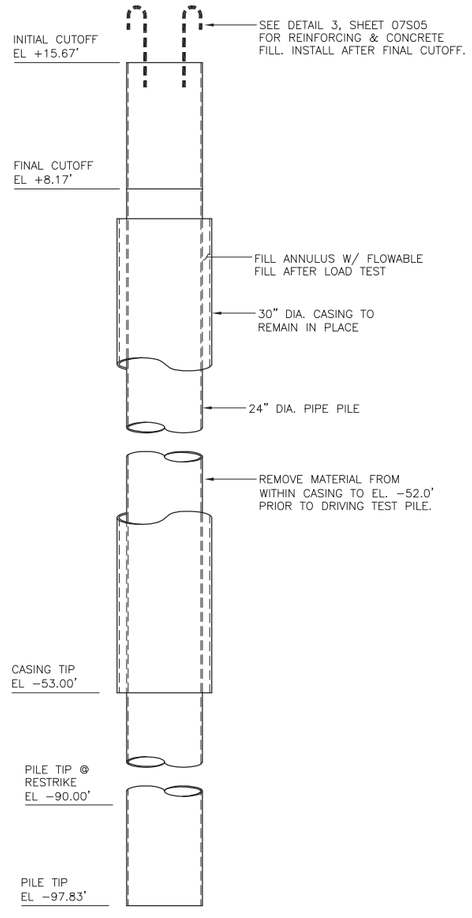
SCALE: 1/4" = 1'-0"



TEST PILE A9 – 24" SQ CONC. PILE

1 / –

SCALE: NONE



TEST PILE B9 – 24" Ø PIPE PILE

2 / –

SCALE: NONE

TEST PILE SCHEDULE

PILE LOCATION	QTY	TYPE/SIZE	WALL THK.	VERT BATTER	HORZ BATTER	TIP ELEV	INITIAL CUT OFF ELEV	FINAL CUT OFF ELEV	MIN INST LENGTH	REMARKS
DOCK PLATFORM										
A1	1	24" CONC.	-	PLUMB	-	-94	+3.17'	+3.17'	97.17'	SEE SHT 07S03 FOR LOCATION
E3	1	24" CONC.	-	PLUMB	-	-94	+3.17'	+3.17'	97.17'	SEE SHT 07S03 FOR LOCATION
K4	1	24" CONC.	-	PLUMB	-	-92	+6.17	+6.17	98.17'	SEE SHT 07S03 FOR LOCATION
P5	1	24" CONC.	-	PLUMB	-	-92	+6.17'	+6.17'	98.17'	SEE SHT 07S03 FOR LOCATION
APPROACHWAY										
E6	1	24" CONC.	-	PLUMB	-	-54	+11.17	+11.17	65.17'	SEE SHT 07S03 FOR LOCATION
PIPERACK FOUNDATION										
B7	1	24" CONC.	-	PLUMB	-	-54'	+6.17	+6.17	60.17	SEE SHT 07S03 FOR LOCATION
A9	1	24" CONC.	-	PLUMB	-	-82'	+15.00'	+8.17'	90'	SEE SHT 00G10 FOR DETAILS
B9	1	24" PIPE	0.75"	PLUMB	-	-98	+15.67'	+8.17'	106'	SEE SHT 00G10 FOR DETAILS
BREASTING STRUCTURES										
ROW 2	4	24" PIPE	0.75"	PLUMB	-	-86	+6.5'	+6.5'	93.0'	
ANCHOR SYSTEM										
A11	1	24" PIPE	0.75"	6H:12V	-	-44	+4.3'	+4.3'	54.00'	
A21	1	24" PIPE	0.75"	6H:12V	-	-44	+4.3'	+4.3'	54.00'	
A31	1	24" PIPE	0.75"	6H:12V	-	-44	+4.3'	+4.3'	54.00'	
A51	1	24" PIPE	0.75"	6H:12V	-	-44	+4.3'	+4.3'	54.00'	
A61	1	24" PIPE	0.75"	6H:12V	-	-44	+4.3'	+4.3'	54.00'	
C71	1	24" PIPE	0.75"	6H:12V	-	-44	+4.3'	+4.3'	54.00'	
C80	1	24" PIPE	0.75"	6H:12V	-	-44	+4.3'	+4.3'	54.00'	

MINIMUM AXIAL CAPACITY OF PILES

PRODUCTION TEST PILES	TIP ELEVATION (FT)	ULTIMATE PILE CAPACITY (KIPS)	
DOCK PLATFORM			
A1, E3 - 24'' SQ PCPS CONC PILE	-94	620	(COMPRESSION)
		460	(TENSION)
K4, P5 - 24'' SQ PCPS CONC PILE	-92	720	(COMPRESSION)
		580	(TENSION)
BREASTING STRUCTURES			
ROW 2 - 24'' DIA PIPE PILES	-86	400	(COMPRESSION)
		275	(TENSION)
APPROACHWAY			
E6 - 24'' SQ PCPS CONC PILE	-54	375	(COMPRESSION)
		225	(TENSION)
PIPE BRIDGE FOUNDATION			
B7 - 24'' SQ PCPS CONC PILE	-54	375	(COMPRESSION)
		225	(TENSION)
A9 - 24'' DIA PIPE PILES	-75 (AT RE-STRIKE)	800	(COMPRESSION)
		660	(TENSION)
ANCHOR SYSTEM			
A11, A21, A31, A51, A61, C71, C80 - 24'' DIA PIPE PILES	-44	547	(COMPRESSION)
		447	(TENSION)

HDR Engineering, Inc.
Texas P.E. Firm Registration No. 754

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CHECKED BY	B. COLWELL
PROJECT NUMBER	111172

STATE OF TEXAS · ARTHUR B. COLWELL · 60292 · REGISTERED PROFESSIONAL ENGINEER · 3.10.16

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6

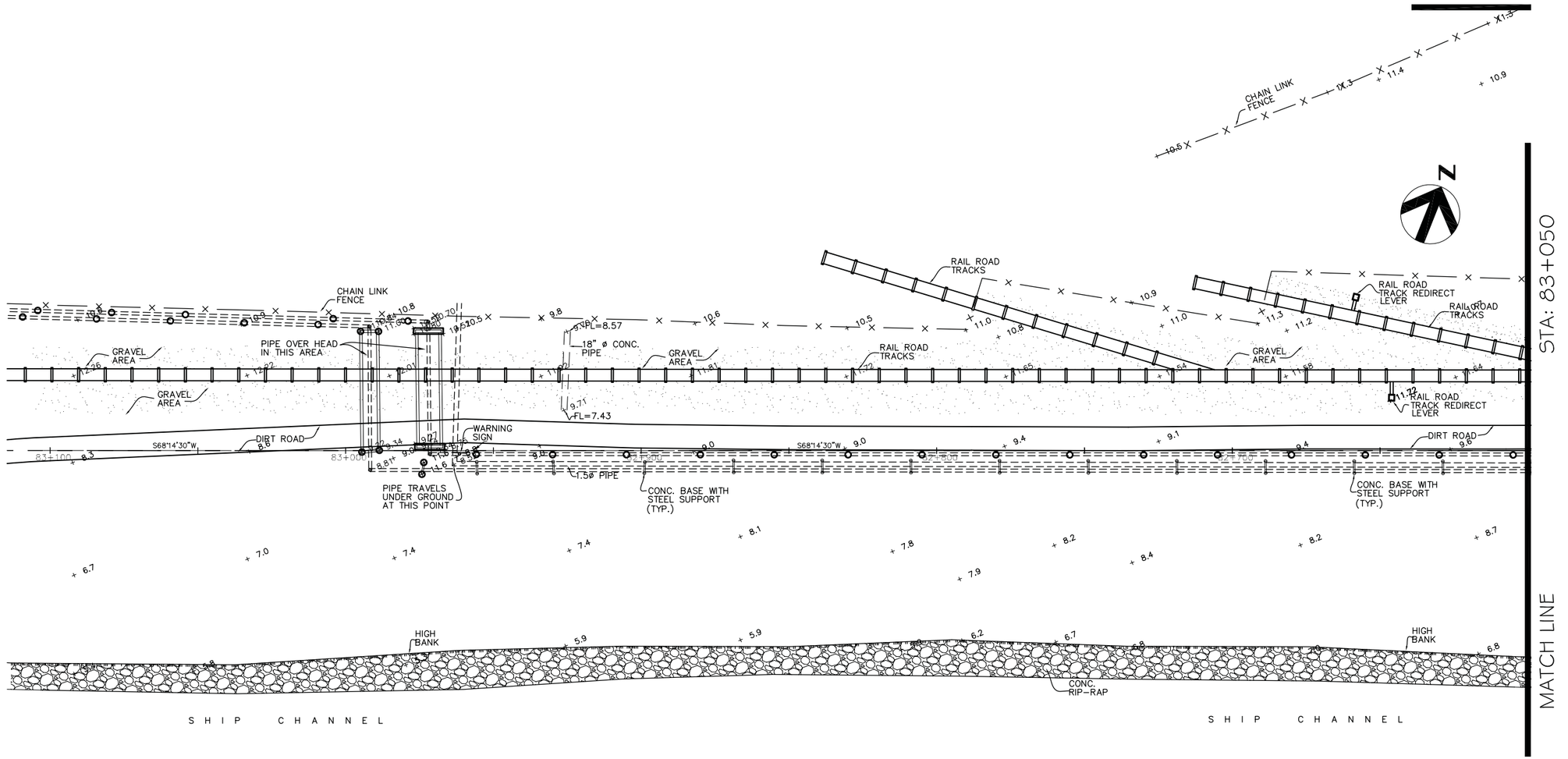
PORT OF BROWNSVILLE · WORLD CLASS ·

TEST PILE DETAILS AND SCHEDULE

0 1" 2"

FILENAME	00G-10.dwg
SCALE	AS NOTED

SHEET 00G10



Mejia & Rose, Incorporated

Engineering Surveying
T.B.P.E. Reg. No. F-2670
T.B.P.L.S. Reg. No. 10023900
1643 West Price Road (956) 544-3022
P.O. Box 3761 Brownsville, Texas 78520
Fax (956) 544-3068
email: mandrinc@cngmail.com

HDR Engineering, Inc.

Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
0	03/21/2016	ISSUED FOR BIDS

PROJECT MANAGER	
ENGINEERING	
CADD	
PROJECT NUMBER	M & R INC. 19744

STATE OF TEXAS — JAMES E. ROSE — 44028 — LICENSED PROFESSIONAL ENGINEER — 3/21/16

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6

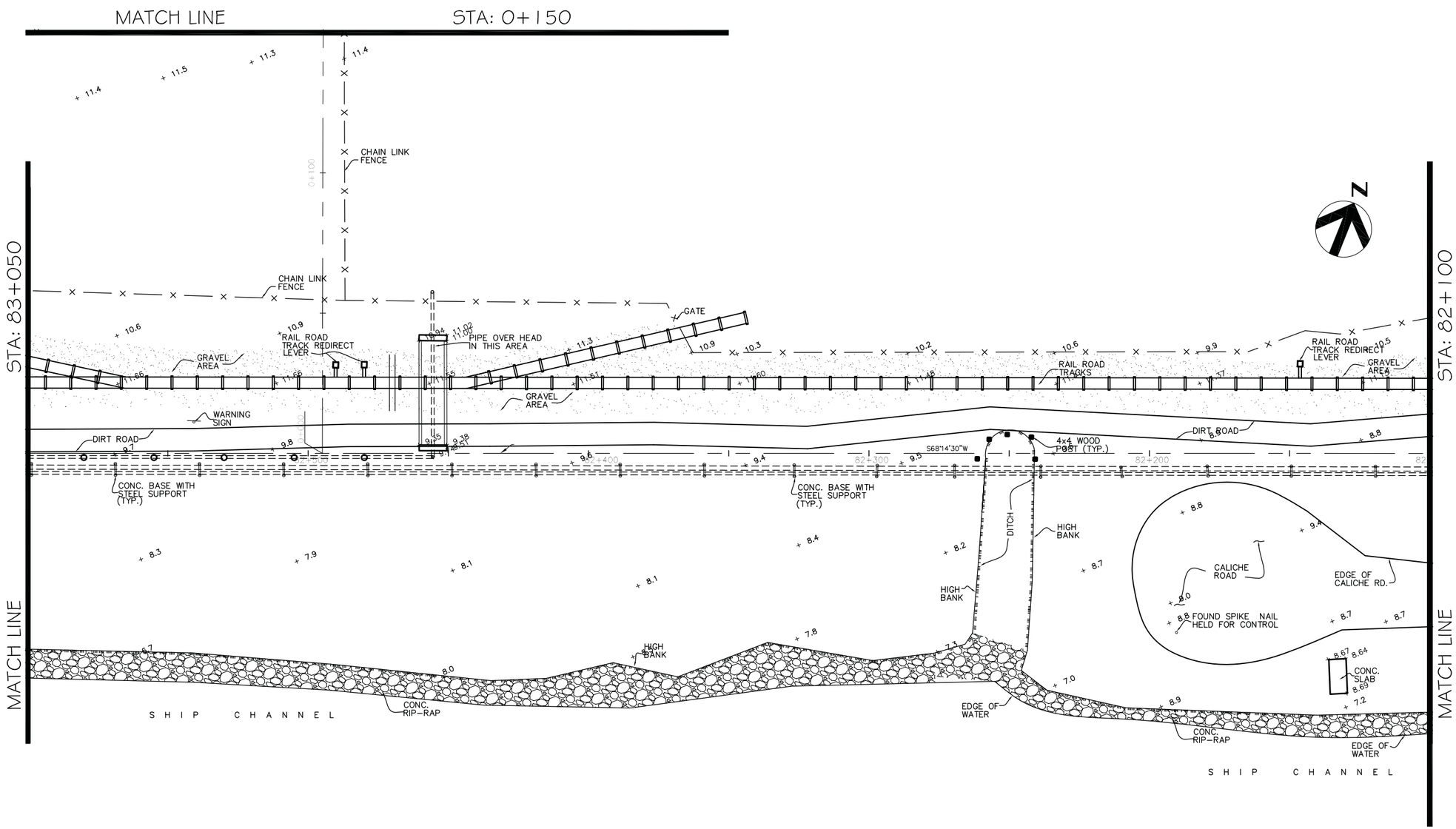
PORT OF BROWNSVILLE
• WORLD CLASS •

EXISTING CONDITIONS

0 20 40

FILENAME	19744HDR.dwg
SCALE	1"=20'

SHEET 00C01A



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email: mandrinc@cngmail.com

HDR Engineering, Inc.

Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
0	03/21/2016	ISSUED FOR BIDS

PROJECT MANAGER	
ENGINEERING	
CADD	
PROJECT NUMBER	M & R INC. 19744

STATE OF TEXAS JAMES E. ROSE 44068 LICENSED PROFESSIONAL ENGINEER

3/21/16

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6

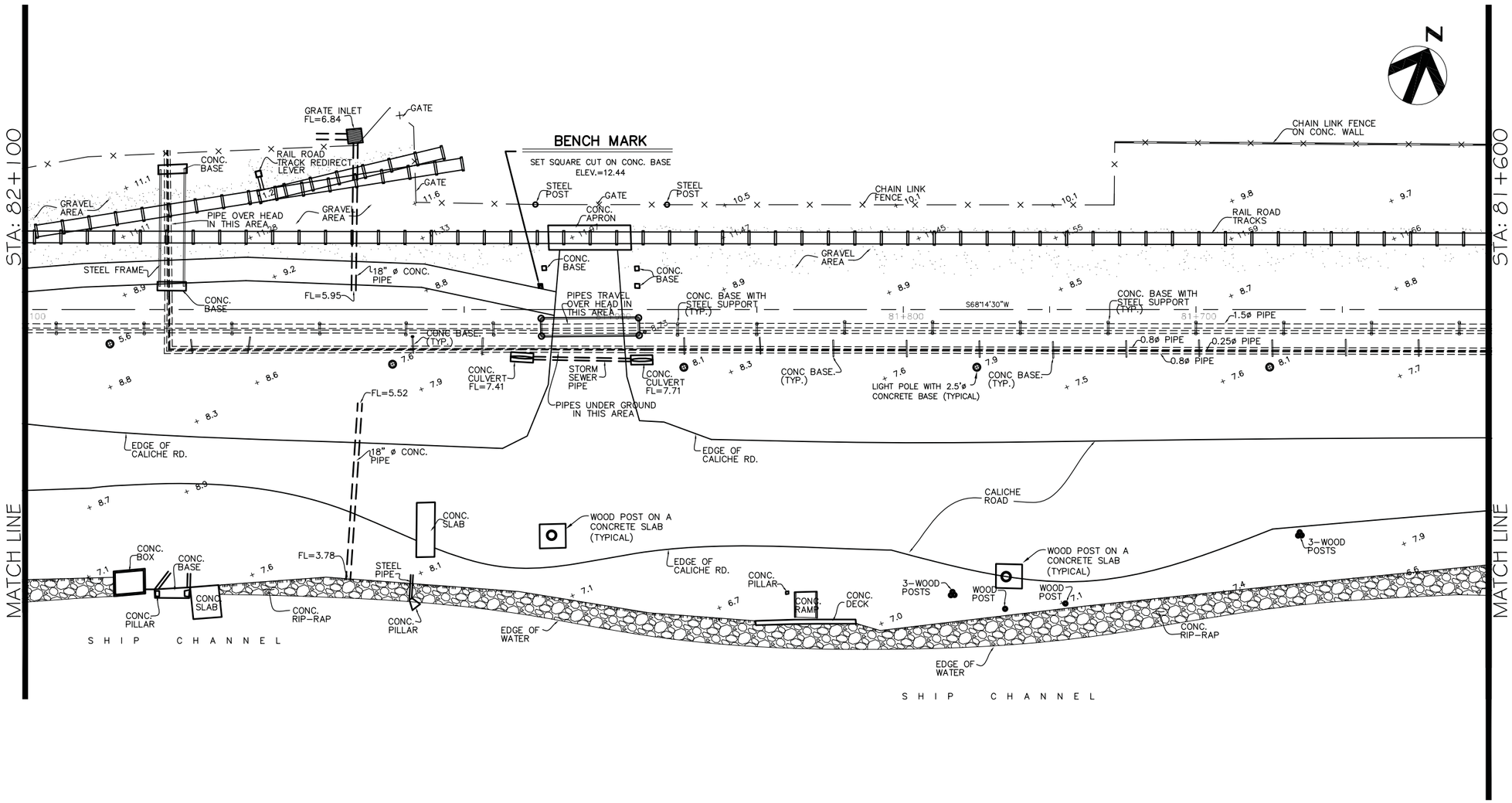
PORT OF BROWNSVILLE • WORLD CLASS •

EXISTING CONDITIONS

0 20 40

FILENAME: T9744HDR.dwg
SCALE: 1"=20'

SHEET: 00C01B



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HDR Engineering, Inc.
Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
0	03/21/2016	ISSUED FOR BIDS

PROJECT MANAGER	
ENGINEERING	
CADD	
PROJECT NUMBER	M & R INC. 19744

STATE OF TEXAS — JAMES E. ROSE — 44008 — LICENSED PROFESSIONAL ENGINEER
3/21/16

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6

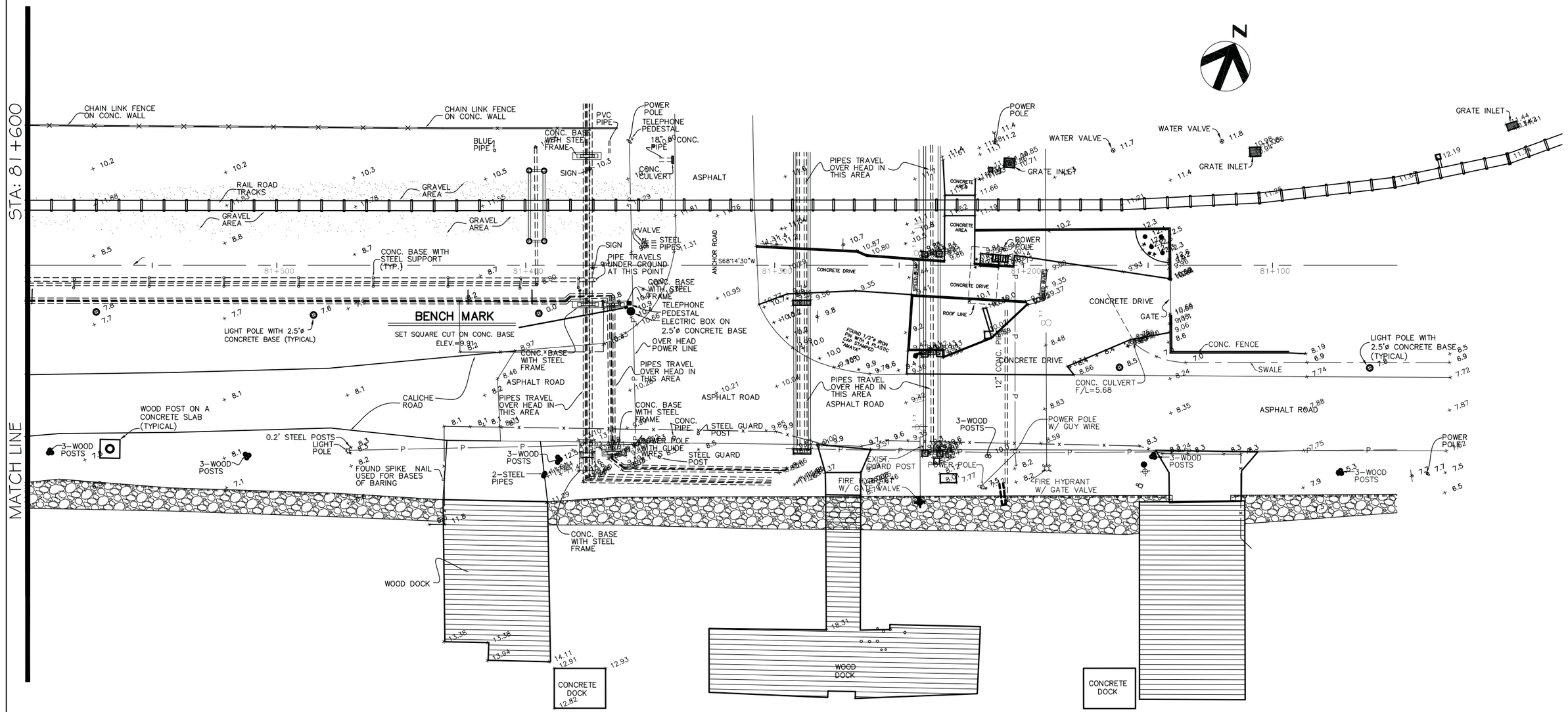
PORT OF BROWNSVILLE · WORLD CLASS ·

EXISTING CONDITIONS

0 20 40

FILENAME	19744HDR.dwg
SCALE	1"=20'

SHEET 00C01C



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HDR Engineering, Inc.

Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
0	03/21/2016	ISSUED FOR BIDS

PROJECT MANAGER	
ENGINEERING	
CADD	
PROJECT NUMBER	M. & R. INC. 19744

STATE OF TEXAS — JAMES E. ROSE — 44008 — LICENSED PROFESSIONAL ENGINEER

3/21/16

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6

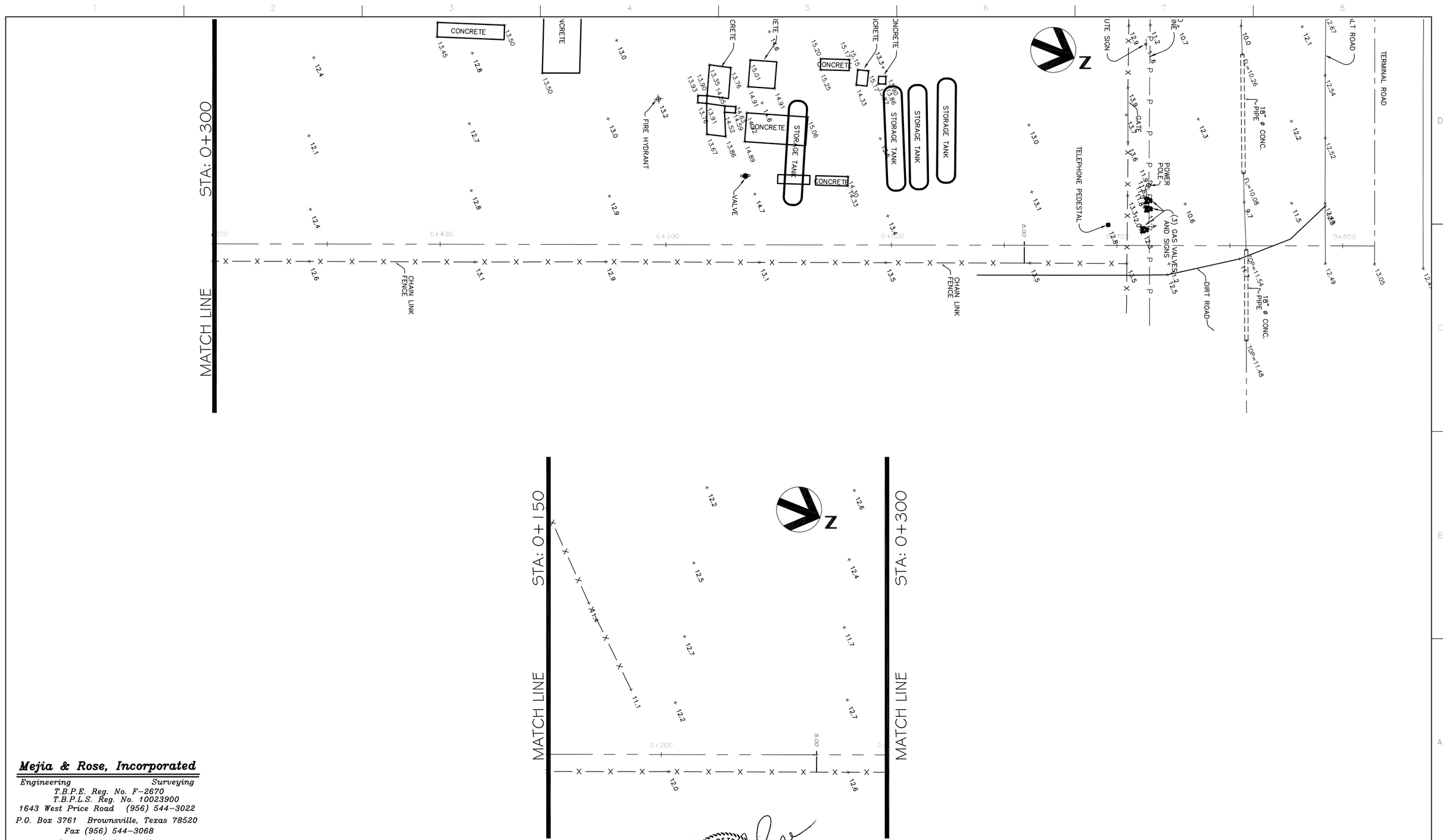
PORT OF BROWNSVILLE · WORLD CLASS ·

EXISTING CONDITIONS

0 20 40

FILENAME: 19744HDR.dwg
SCALE: 1"=20'

SHEET: 00C01D



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HDR Engineering, Inc.

Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
0	03/21/2016	ISSUED FOR BIDS

PROJECT MANAGER
ENGINEERING
CADD
PROJECT NUMBER M & R INC. 1974

STATE OF TEXAS — JAMES E. ROSE — 44026 — LICENSED PROFESSIONAL ENGINEER

3/21/16

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6

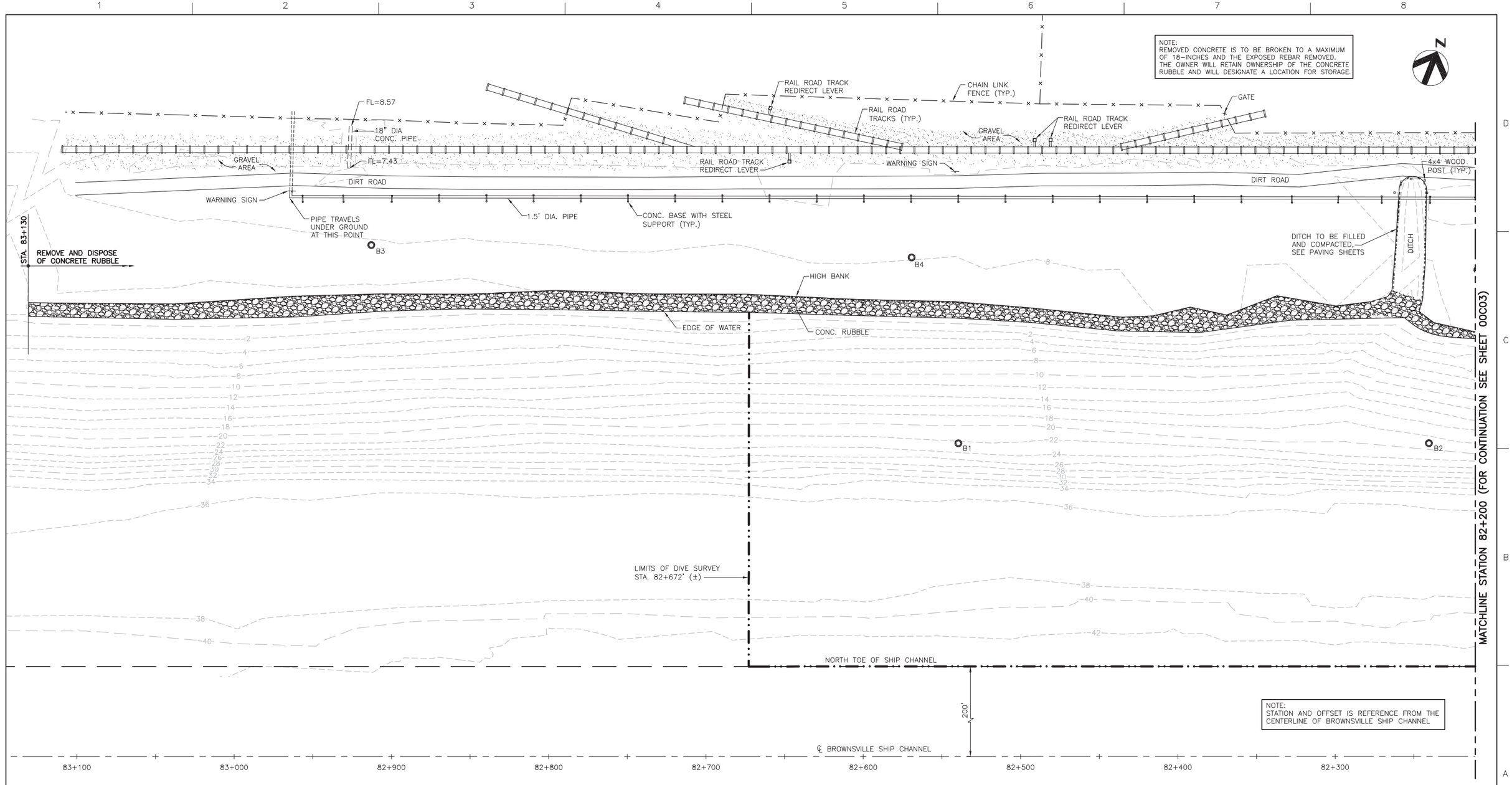
PORT OF BROWNSVILLE · WORLD CLASS ·

EXISTING CONDITIONS

0 20 40

FILENAME 01C05.dwg
SCALE 1"=20'

SHEET 00C01E



ENLARGED EXISTING SITE AND DEMOLITION PLAN

SCALE: 1" = 30'

1 / 00C01

HDR Engineering, Inc.

Texas P.E. Firm Registration No. 754

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DRAWN BY	B. INFANTE
CHECKED BY	B. COLWELL
PROJECT NUMBER	111172

STATE OF TEXAS · ARTHUR B. COLWELL · 60292 · REGISTERED PROFESSIONAL ENGINEER

3.10.16

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6

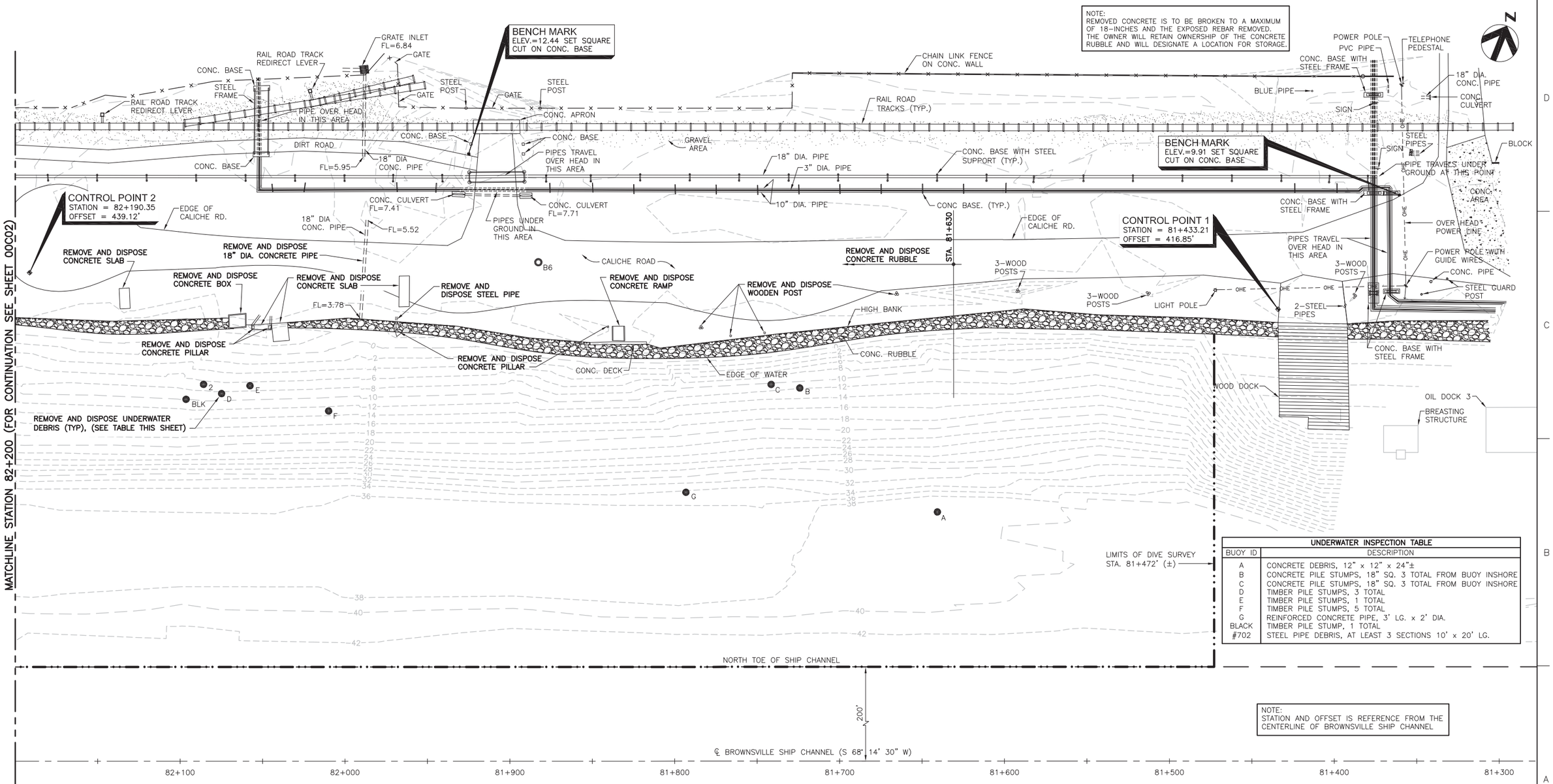
PORT OF BROWNSVILLE · WORLD CLASS ·

ENLARGED EXISTING SITE AND DEMOLITION PLAN

0 1" 2"

FILENAME	00C-02.dwg
SCALE	1" = 30'

SHEET 00C02



UNDERWATER INSPECTION TABLE	
BUOY ID	DESCRIPTION
A	CONCRETE DEBRIS, 12" x 12" x 24"±
B	CONCRETE PILE STUMPS, 18" SQ. 3 TOTAL FROM BUOY INSHORE
C	CONCRETE PILE STUMPS, 18" SQ. 3 TOTAL FROM BUOY INSHORE
D	TIMBER PILE STUMPS, 3 TOTAL
E	TIMBER PILE STUMPS, 1 TOTAL
F	TIMBER PILE STUMPS, 5 TOTAL
G	REINFORCED CONCRETE PIPE, 3' LG. x 2' DIA.
BLACK	TIMBER PILE STUMP, 1 TOTAL
#702	STEEL PIPE DEBRIS, AT LEAST 3 SECTIONS 10' x 20' LG.

ENLARGED EXISTING SITE AND DEMOLITION PLAN

SCALE: 1" = 30'

1 / 00C01

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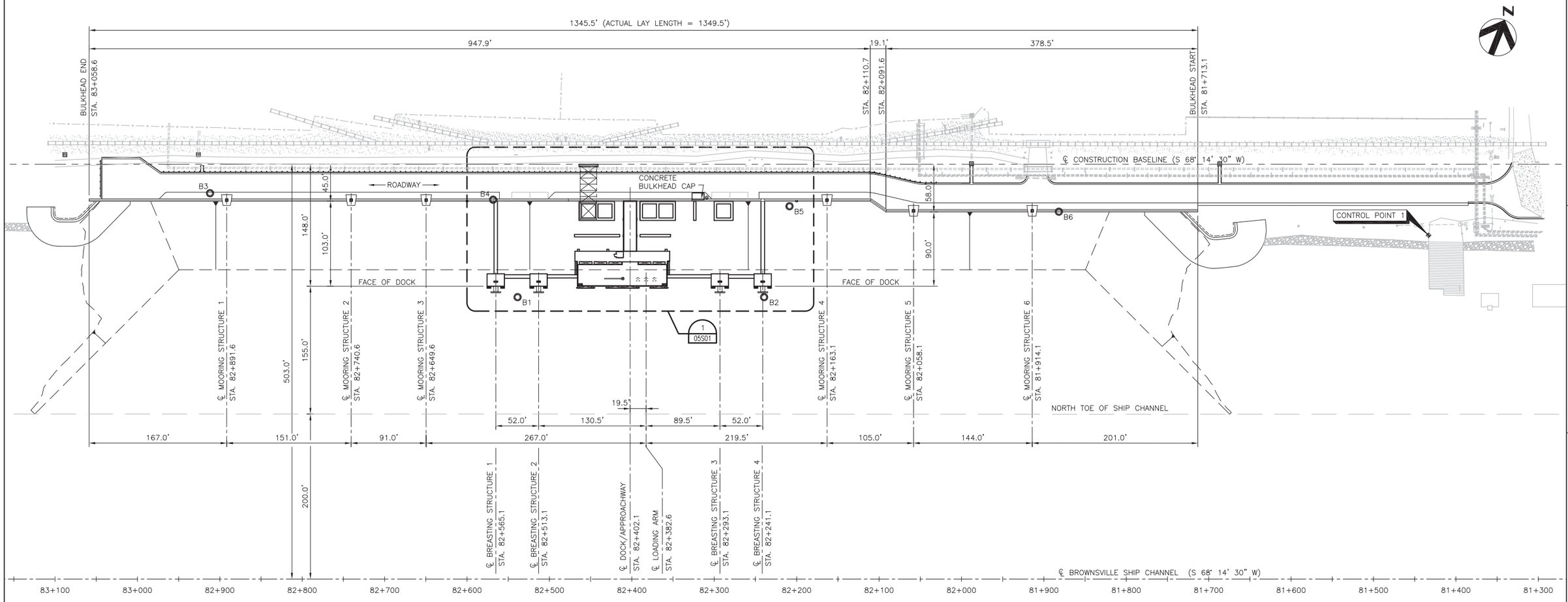
ENLARGED EXISTING SITE AND DEMOLITION PLAN

0 1" 2"

FILENAME	00C-03.dwg
SCALE	1" = 30'

SHEET 00C03



PROJECT LAYOUT

SCALE: 1" = 60'

SHEET REFERENCES

REFER TO SHEET 1/05S01 FOR BULKHEAD PLAN AND ELEVATION.
REFER TO SHEET 1/05S04 FOR A-FRAME PLAN AND SECTIONS.
REFER TO SHEET 1/06S01 FOR MOORING STRUCTURE PLANS, SECTIONS AND DETAILS.
REFER TO SHEET 1/07S03 FOR PILING PLAN.
REFER TO SHEET 1/07S06 FOR LOWER LEVEL FRAMING PLAN.
REFER TO SHEET 1/07S08 FOR UPPER LEVEL FRAMING PLAN.
REFER TO SHEET 1/07S12 FOR DECK PANEL PLAN.
REFER TO SHEET 1/07S14 FOR DECK REINFORCING PLAN.
REFER TO SHEET 1/07S16 FOR DOCK PLATFORM PLAN.
REFER TO SHEET 1/07S21 FOR DOCK HOUSE DETAILS.
REFER TO SHEET 1/08S01 FOR APPROACHWAY PLANS AND ELEVATION.
REFER TO SHEET 1/09S01 FOR BREASTING STRUCTURE PLANS AND SECTIONS.
REFER TO SHEET 1/10S01 FOR CATWALKS NO. 1 AND NO. 6 PLAN AND ELEVATION.
REFER TO SHEET 1/10S02 FOR CATWALKS NO. 2 AND NO. 3 PLAN AND ELEVATION.
REFER TO SHEET 1/10S03 FOR CATWALKS NO. 4 AND NO. 5 PLAN AND ELEVATION.
REFER TO SHEET 1/11S01 FOR PIPE BRIDGE AND SUPPORTS PLAN.

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BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
PORT OF BROWNSVILLE
• WORLD CLASS •

PROJECT LAYOUT

0 1" 2"

FILENAME	00C-04.dwg
SCALE	1" = 60'

SHEET 00C04

CONSTRUCTION NOTES:

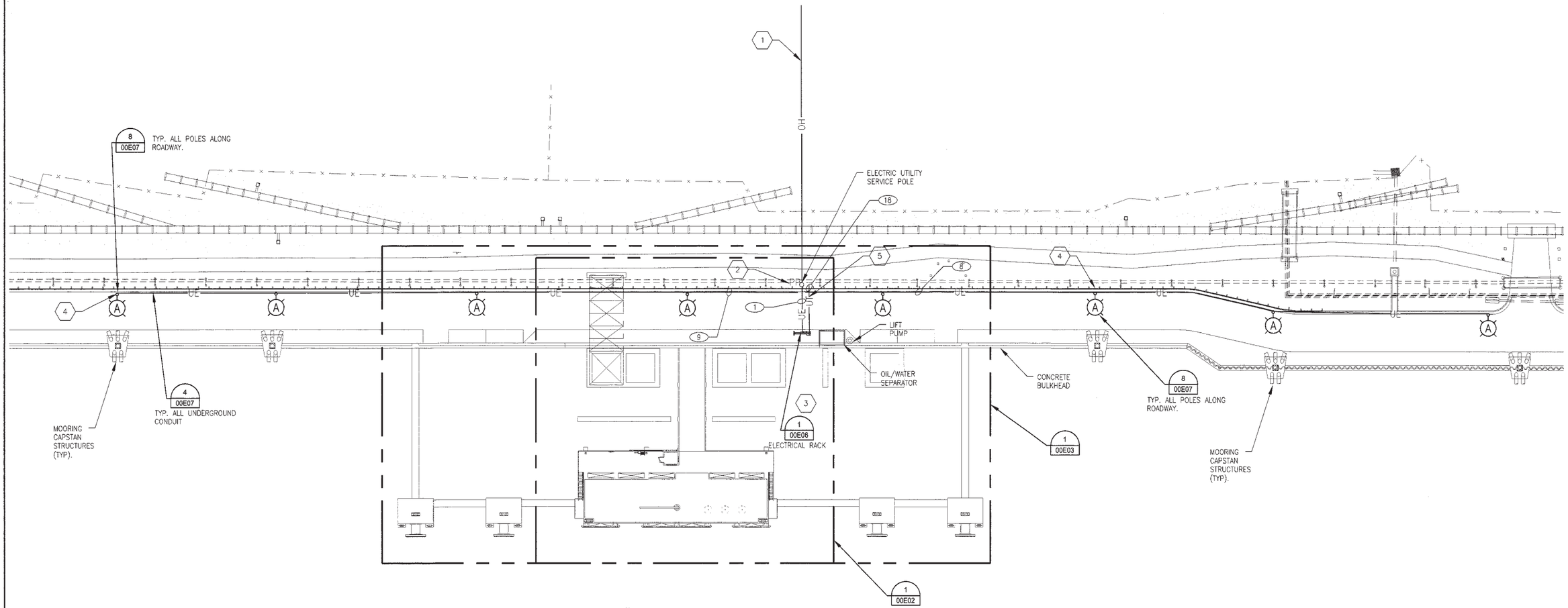
1. COORDINATE WITH BROWNSVILLE P.U.B. TO EXTEND 12.47KV OVER HEAD LINE AND PROVIDE NEW 480/277V 3 PHASE 4 WIRE SERVICE VIA POLE MOUNTED TRANSFORMERS. CONTRACTOR SHALL PAY ALL COSTS TO BROWNSVILLE P.U.B. ASSOCIATED WITH NEW ELECTRICAL SERVICE.
2. MOUNT NEW MAIN BREAKER AND UTILITY KWH METER ON NEW SERVICE POWER POLE. MOUNT PER BROWNSVILLE P.U.B. STANDARDS.
3. INSTALL NEW ELECTRICAL RACK.
4. INSTALL WOODEN POLE WITH FLOODLIGHT ALONG GUARD RAILING. COORDINATE POLE INSTALLATION WITH NEW GUARD RAIL INSTALLATION. FIXTURES INSTALLED NEAR MOORING CAPSTANS SHALL BE AIMED AT CAPSTAN. ALL OTHERS TO ILLUMINATE ROADWAY.
5. INSTALL SPARE TELEPHONE CONDUIT UNDER ROADWAY FROM ELECTRICAL RACK TO EDGE OF GUARDRAIL. STUB-UP AND CAP CONDUIT.

GENERAL NOTES

1. ALL EQUIPMENT INSTALLED IN CLASSIFIED AREAS SHALL BE UL RATED FOR USE IN HAZARDOUS AREAS PER THE N.E.C.
2. ALL EQUIPMENT RACKS, BRACKETS, SUPPORTS, AND OTHER MISCELLANEOUS METAL ITEMS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED AFTER FABRICATION.
3. ALL CONDUITS SHALL CONTAIN A GREEN GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH THE N.E.C.
4. INSTALL CONDUIT DRAINS AT LOW POINTS IN ALL EXTERIOR CONDUIT RUNS.

LEGEND

(A)	LIGHT FIXTURE, SEE SCHEDULE SHEET 00E08
—UE—	UNDERGROUND ELECTRICAL
—UT—	UNDERGROUND TELEPHONE
—OH—	OVERHEAD POWER LINE
PP	UTILITY POWER POLE
(X)	CONDUIT NO. SEE SCHEDULE SHEET 00E08



N

ELECTRICAL SITE PLAN (1 / 00E01)
SCALE: 1" = 30'-0"

GRAPHIC SCALE
1" = 30'-0"
0 15' 30' 60' 90' 120'

Bath ENGINEERING
TEXAS FIRM REGISTRATION NO. F-829
5656 S. STAPLES, SUITE 110
CORPUS CHRISTI, TX 78411
(361) 992-2284

HDR
HDR Engineering, Inc.
Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
–	–	–

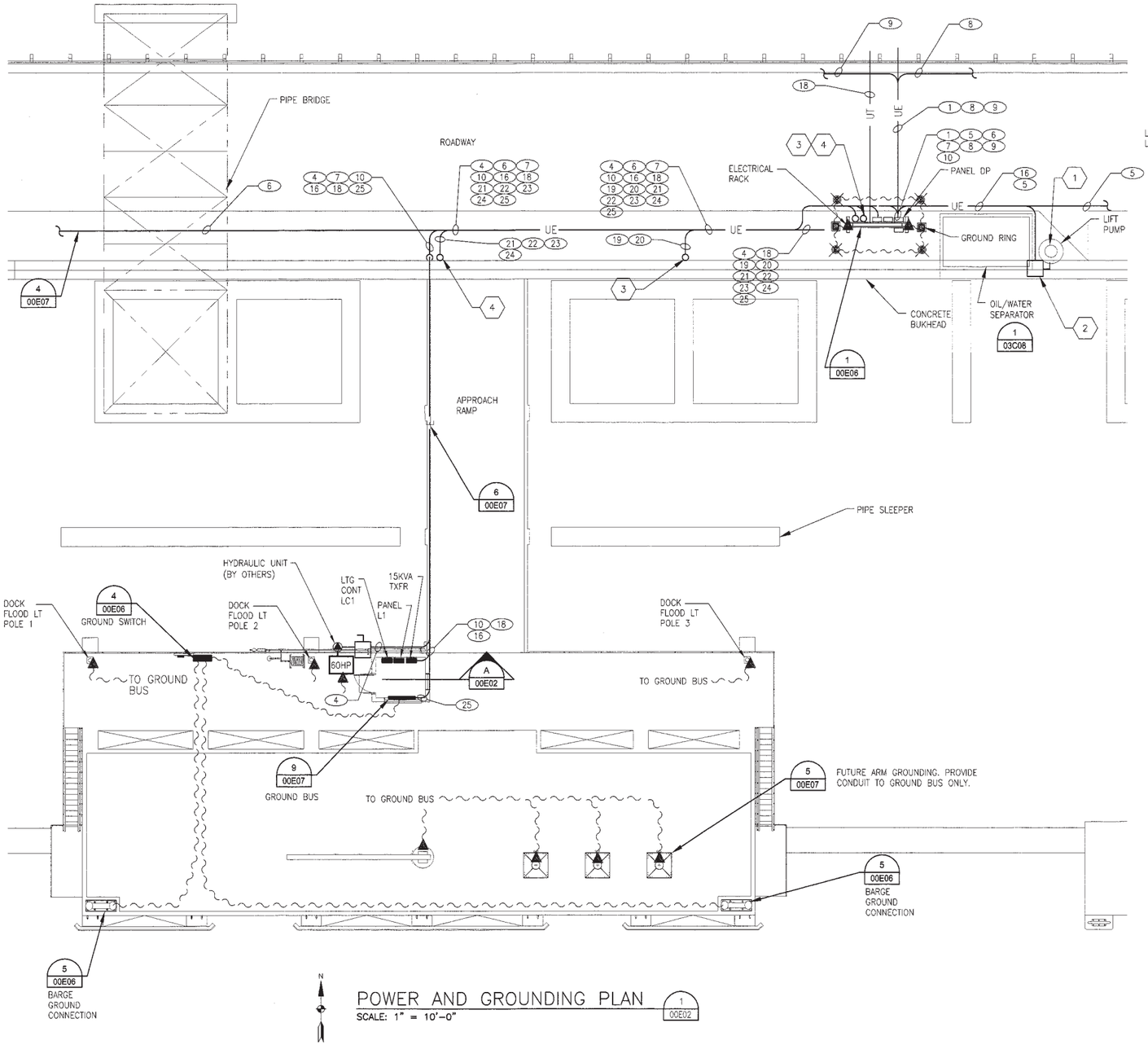
PROJECT MANAGER	JOE MARTINEZ
PROJECT NUMBER	1906

STATE OF TEXAS — JOSE B. MARTINEZ JR. — 89385 — LICENSED PROFESSIONAL ENGINEER — 1/4/11

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
PORT OF BROWNSVILLE
• WORLD CLASS •

ELECTRICAL SITE PLAN

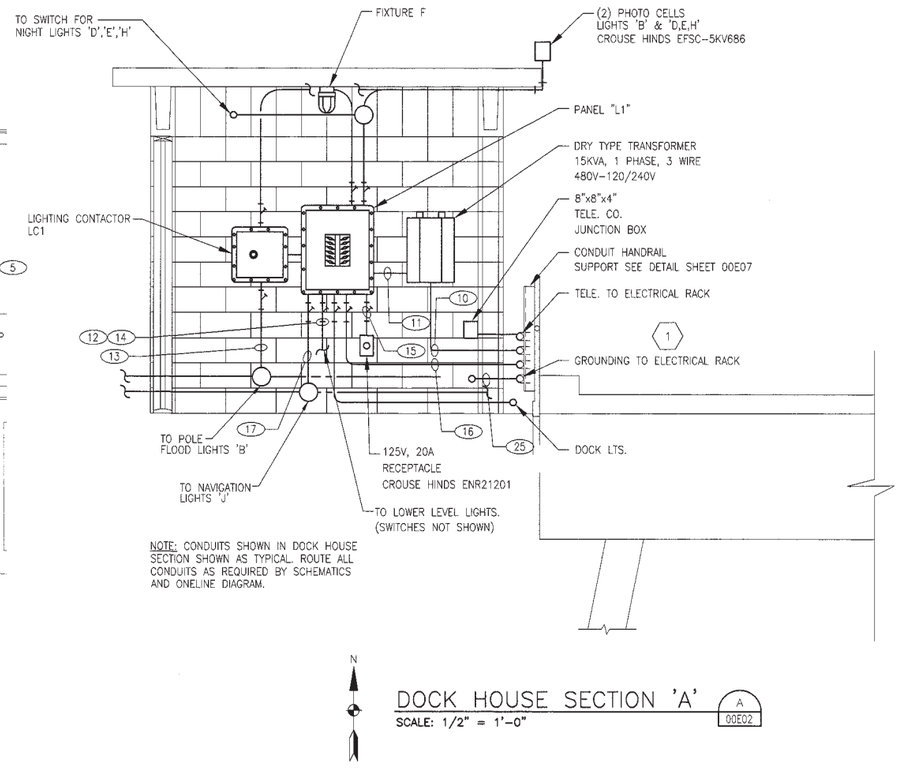
FILENAME	1906-E1.DWG
SCALE	1"=30'-0"
SHEET	00E01



N

POWER AND GROUNDING PLAN

SCALE: 1" = 10'-0"



NOTE: CONDUITS SHOWN IN DOCK HOUSE SECTION SHOWN AS TYPICAL. ROUTE ALL CONDUITS AS REQUIRED BY SCHEMATICS AND ONELINE DIAGRAM.

N

DOCK HOUSE SECTION 'A'

SCALE: 1/2" = 1'-0"

CONSTRUCTION NOTES:

1. ROUTE FEEDER FROM PANEL L1 TO LIFT STATION PUMP.
2. MOUNT DISCONNECT SWITCH ON GALVANIZED SUPPORT ANCHORED TO CONCRETE.
3. INSTALL SPARE CONDUITS FROM ELECTRICAL RACK TO EDGE OF DOCK FOR FUTURE LOADS. STUB-UP AND CAP CONDUITS WITH PULL STRING.
4. INSTALL SPARE CONDUITS FROM ELECTRICAL RACK TO EDGE OF DOCK FOR FUTURE LOADS. STUB-UP AND CAP CONDUITS WITH PULL STRING.

LEGEND

- —E— ABOVE GROUND ELEC.
- —UE— UNDERGROUND ELEC.
- —UT— UNDERGROUND TELE.
- #2/0 AWG GROUND CONDUCTOR
- GROUND ROD
- THERMOWELD CONNECTION
- NEMA 2 HOLE CRIMP COMPRESSION LUG
- SAFETY DISCONNECT SWITCH
- (X) CONDUIT NO. SEE SCHEDULE SHEET 00E08

GRAPHIC SCALE

1" = 10'-0" — 0, 5', 10', 20', 30', 40'

1/2" = 1'-0" — 0, 1', 2', 4', 6', 8'

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HDR
HDR Engineering, Inc.
Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
–	–	–

PROJECT MANAGER	JOE MARTINEZ
PROJECT NUMBER	1906

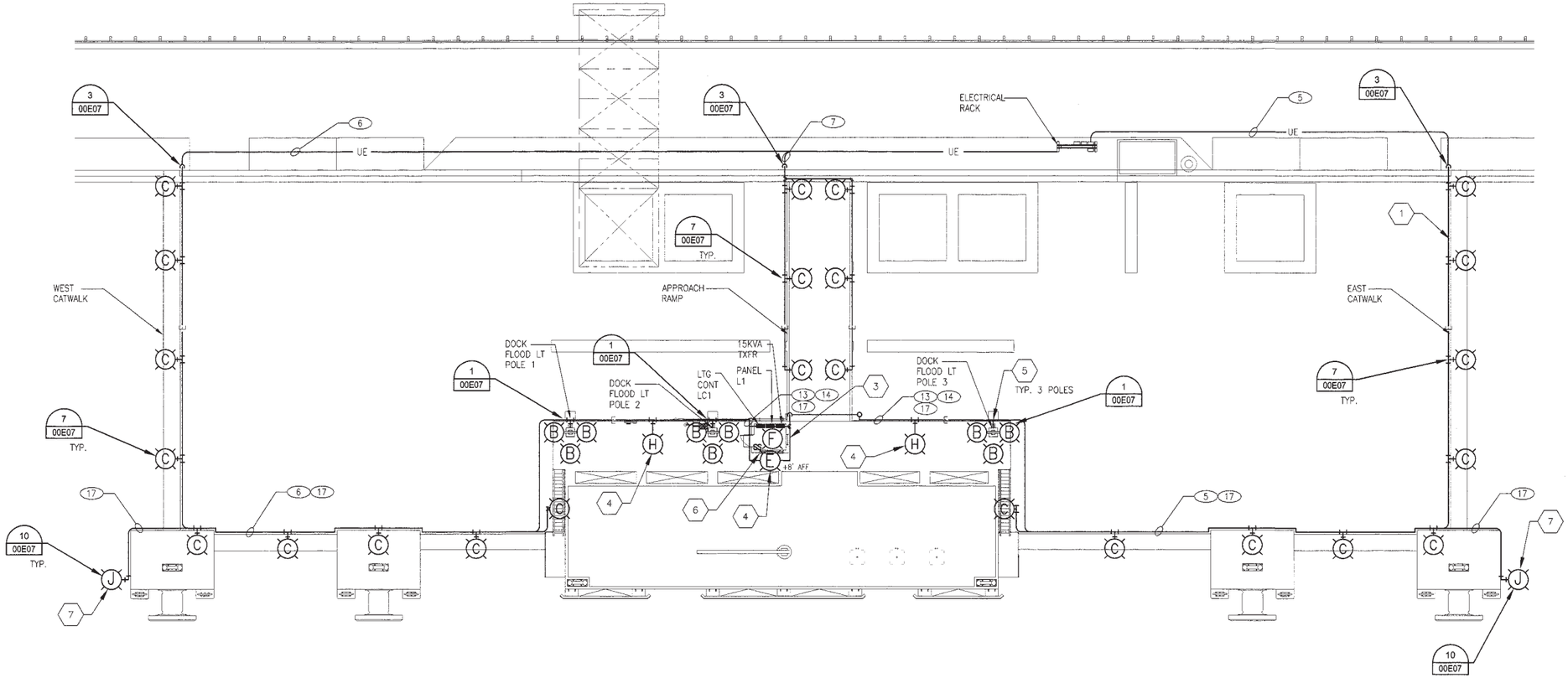
STATE OF TEXAS — JOSE B. MARTINEZ JR. — 89385 — LICENSED PROFESSIONAL ENGINEER — 1/4/11

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6

PORT OF BROWNSVILLE · WORLD CLASS ·

DOCK ELECTRICAL PLAN AND DOCK HOUSE SECTION

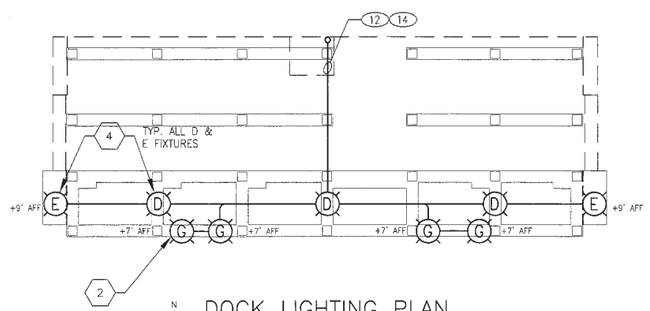
FILENAME	1906-E2.DWG	SHEET	00E02
SCALE	NOTED		



DOCK LIGHTING UPPER LEVEL

SCALE: 1/16" = 1'-0"

1 00E03



DOCK LIGHTING PLAN LOWER LEVEL

SCALE: 1/16" = 1'-0"

2 00E03

LEGEND

(A)	LIGHT FIXTURE, SEE SCHEDULE SHEET 00E08
—UE—	UNDERGROUND ELEC.
—UT—	UNDERGROUND TELE.
—OH—	OVERHEAD POWER LINE
— E —	ABOVE GROUND ELEC.

GENERAL NOTES

1. ALL EQUIPMENT INSTALLED IN CLASSIFIED AREAS SHALL BE UL RATED FOR USE IN HAZARDOUS AREAS PER THE N.E.C.
2. ALL EQUIPMENT RACKS, BRACKETS, SUPPORTS, AND OTHER MISCELLANEOUS METAL ITEMS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED AFTER FABRICATION.
3. ALL CONDUITS SHALL CONTAIN A GREEN GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH THE N.E.C.
4. INSTALL CONDUIT DRAINS AT LOW POINTS IN ALL EXTERIOR CONDUIT RUNS.

CONSTRUCTION NOTES:

1. ROUTE CONDUIT ALONG HAND RAIL. SEE DETAIL SHEET 00E07.
2. INSTALL MOORING LIGHTS ON SUPPORT COLUMN AND AIM TOWARDS WATER. WIRE TO TOGGLE SWITCH IN DOCK HOUSE.
3. MOUNT PHOTOCELLS ON DOCK HOUSE.
4. WIRE TO CONTROL VIA PHOTOCELL AND HOA SWITCH IN DOCK HOUSE.
5. AIM FIXTURES ON POLES TO ILLUMINATE DOCK AREA FOR UNIFORM DISTRIBUTION.
6. INSTALL SWITCHES FOR FIXTURE 'F' AND FIXTURE 'G'. INSTALL HOA SWITCH FOR FIXTURES 'D', 'E', & 'H' AND WIRE THROUGH PHOTOCELL.
7. WIRE FIXTURE TO DOCK PANEL L1.

GRAPHIC SCALE

1/16" = 1'-0" 0 8' 16' 32' 64' 128'

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TEXAS FIRM REGISTRATION NO. F-829
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HDR
HDR Engineering, Inc.
Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
–	–	–

PROJECT MANAGER	JOE MARTINEZ
PROJECT NUMBER	1906

STATE OF TEXAS — JOSE B. MARTINEZ JR. — 83385 — REGISTERED PROFESSIONAL ENGINEER — 1/4/11

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6

PORT OF BROWNSVILLE • WORLD CLASS •

DOCK UPPER AND LOWER LIGHTING PLAN

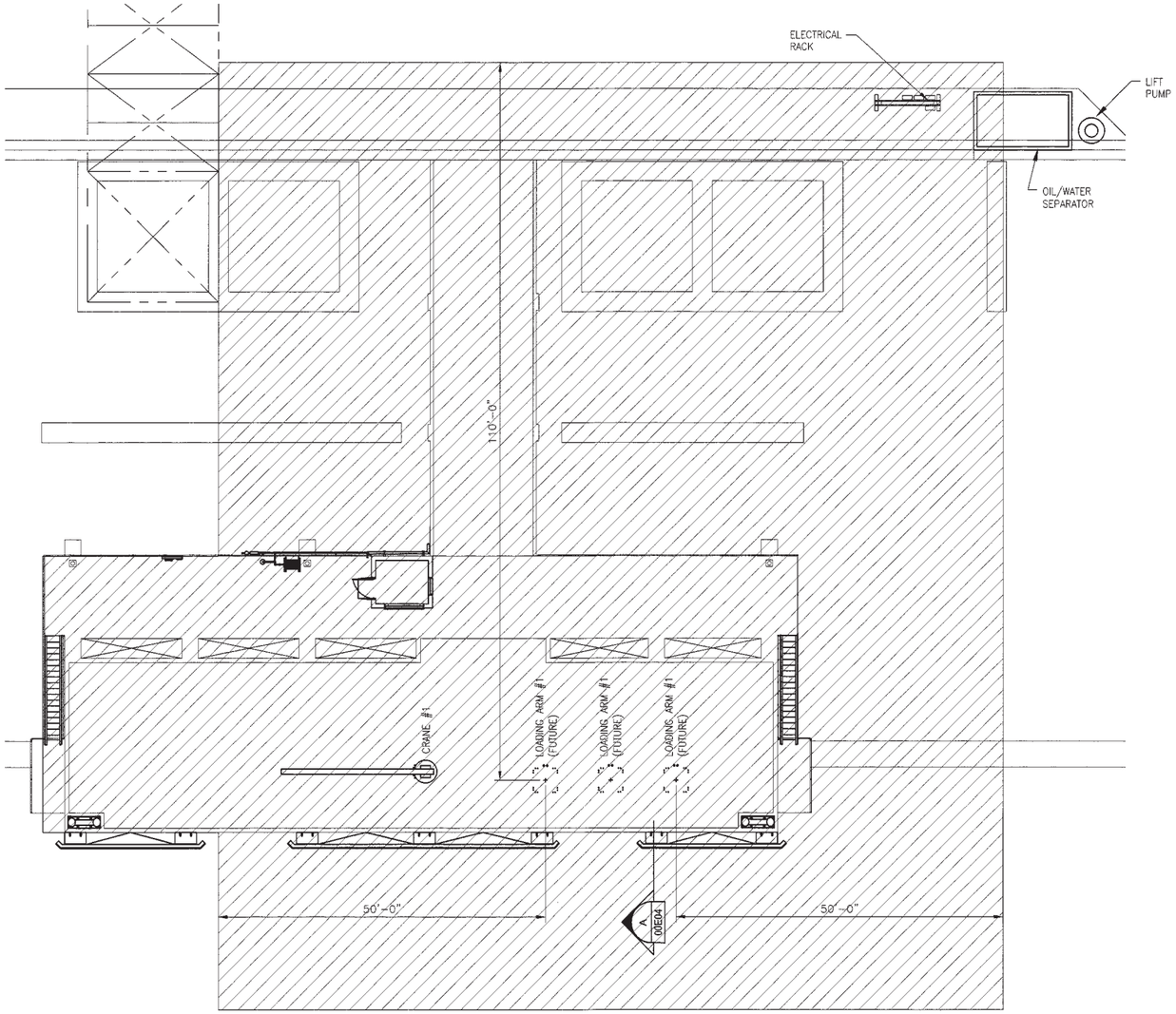
FILENAME	1906–E3.DWG
SCALE	1/16" = 1'-0"
SHEET	00E03

GENERAL NOTES

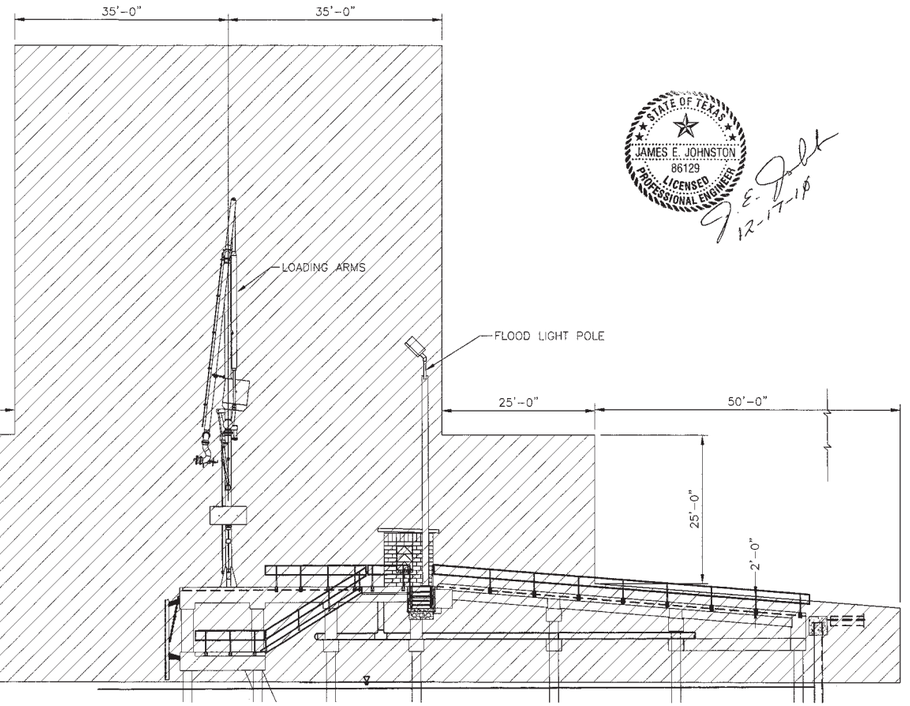
1. ALL EQUIPMENT INSTALLED IN CLASSIFIED AREAS SHALL BE UL RATED FOR USE IN HAZARDOUS AREAS PER THE N.E.C.
2. ALL EQUIPMENT RACKS, BRACKETS, SUPPORTS, AND OTHER MISCELLANEOUS METAL ITEMS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED AFTER FABRICATION.
3. ALL CONDUITS SHALL CONTAIN A GREEN GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH THE N.E.C.
4. INSTALL CONDUIT DRAINS AT LOW POINTS IN ALL EXTERIOR CONDUIT RUNS.

LEGEND

- UNCLASSIFIED
- CLASS I, DIV. 2, GROUP C & D



AREA CLASSIFICATION
SCALE: N.T.S.
1 / 00E04



DOCK SECTION
SCALE: N.T.S.
A / 00E04

STATE OF TEXAS
JAMES E. JOHNSTON
86129
LICENSED
PROFESSIONAL ENGINEER
12-17-18

Bath ENGINEERING
TEXAS FIRM REGISTRATION NO. F-829
5656 S. STAPLES, SUITE 110
CORPUS CHRISTI, TX 78411
(361) 992-2284

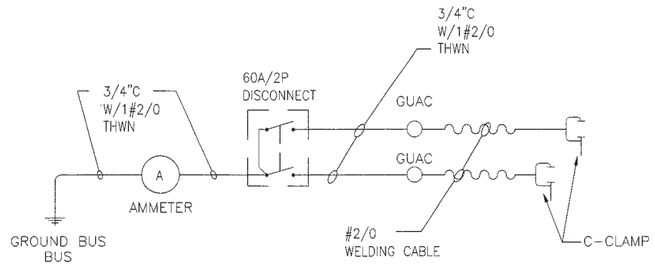
HDR
HDR Engineering, Inc.
Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION		
–	–	–	PROJECT MANAGER	JOE MARTINEZ
			PROJECT NUMBER	1906

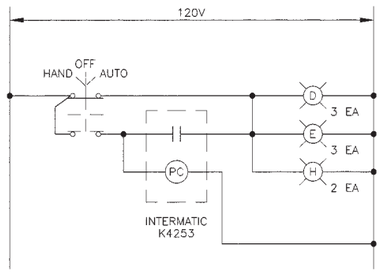
BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
PORT OF BROWNSVILLE
• WORLD CLASS •

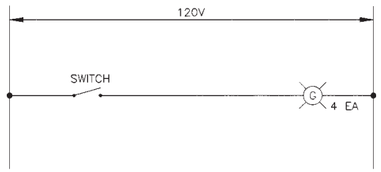
AREA CLASSIFICATION

FILENAME	1906-E4.DWG	SHEET
SCALE	NTS	00E04

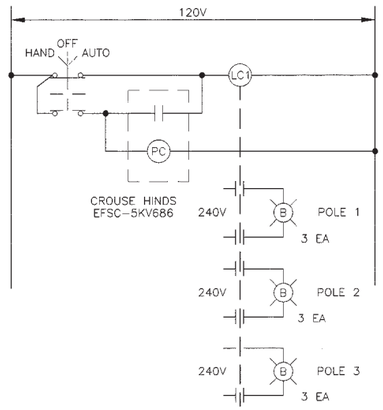


BARGE GROUNDING SCHEMATIC



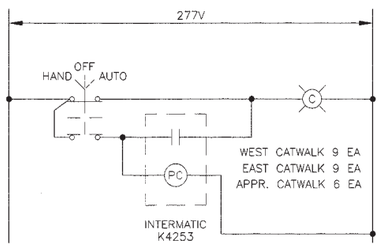


DOCK NIGHT LIGHTING SCHEMATIC (TYP.)

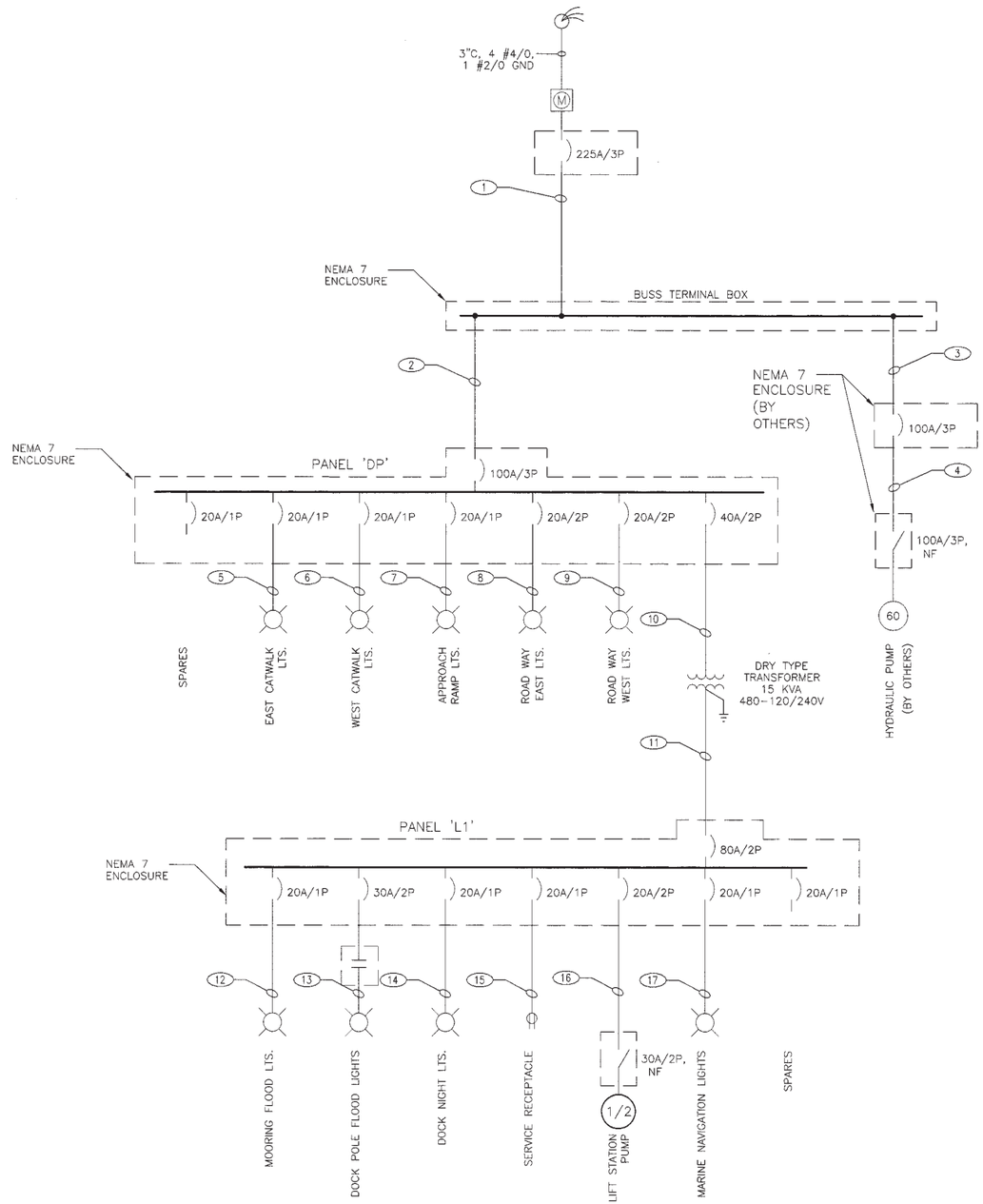


DOCK POLE FLOOD LTG SCHEMATIC (TYP.)

MOORING FLOODLIGHTS SCHEMATIC (TYP.)



WALKWAY LIGHTING (TYP. FOR EAST CATWALK, WEST CATWALK, & APPROACH WALKWAY)



ONE-LINE DIAGRAM

Bath ENGINEERING
TEXAS FIRM REGISTRATION NO. F-829
5656 S. STAPLES, SUITE 110
CORPUS CHRISTI, TX 78411
(361) 992-2284

HDR
HDR Engineering, Inc.
Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
–	–	–

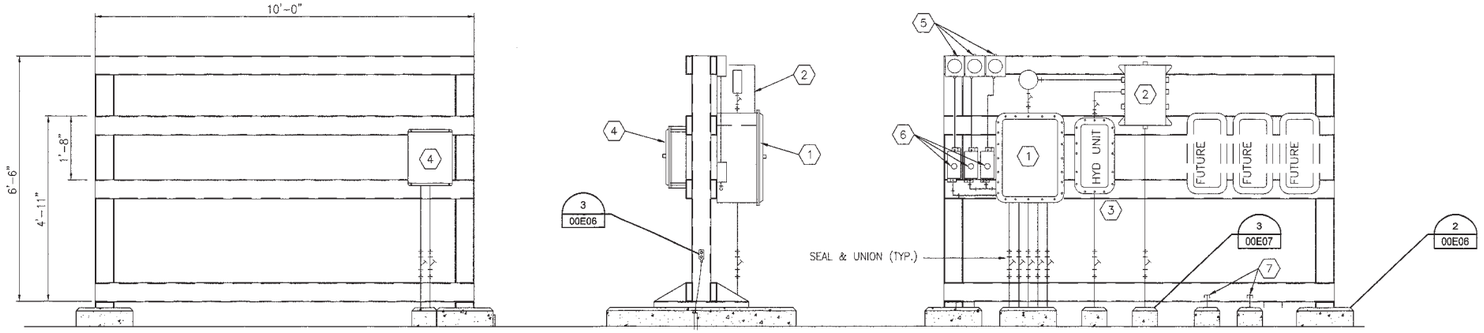
PROJECT MANAGER: JOE MARTINEZ
PROJECT NUMBER: 1906

STATE OF TEXAS
JOSE B. MARTINEZ JR.
89385
LICENSED
PROFESSIONAL ENGINEER
1/4/11

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
PORT OF BROWNSVILLE
• WORLD CLASS •

ELECTRICAL ONELINE & SCHEMATICS

FILENAME	1906-E5.DWG	SHEET
SCALE	NTS	00E05



SOUTH ELEVATION (LOOKING NORTH)
SCALE: N.T.S.

EAST ELEVATION (LOOKING WEST)
SCALE: N.T.S.

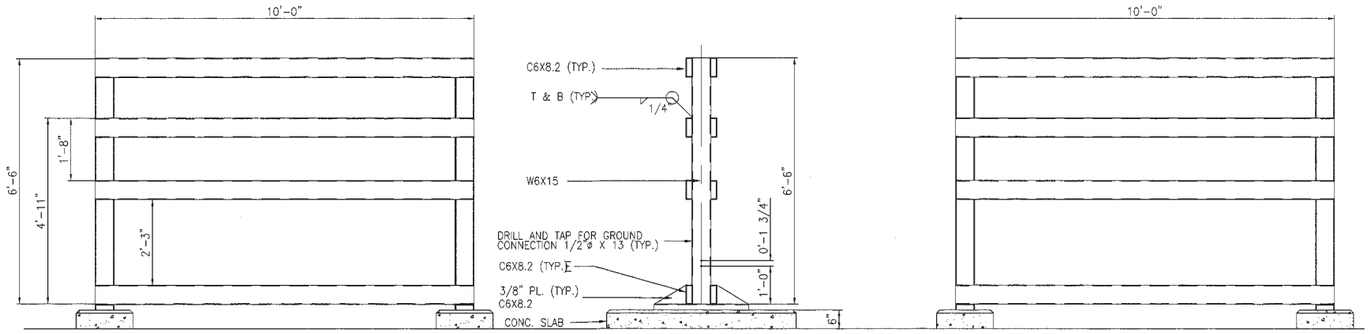
NORTH ELEVATION (LOOKING SOUTH)
SCALE: N.T.S.

EQUIPMENT LIST

1. PANELBOARD 'DP' 3 PHASE, 4 WIRE, 480Y/277V, 100A MCB, 24 CIRCUITS NEMA 7 ENCLOSURE O-Z/GEDNEY #7M24EHD WITH BREATHER, DRAIN AND STAINLESS STEEL COVER BOLTS.
2. BUSS TERMINAL BOX – NEMA 7, 3 PHASE, 4 WIRE, 600V O-Z/GEDNEY #IF121810X42 WITH BREATHER, DRAIN AND STAINLESS STEEL COVER BOLTS.
3. ENCLOSED CIRCUIT BREAKER (BY OTHERS)– NEMA 7, 100 AMP, 3 POLE, 600 VAC; WESTINGHOUSE TYPE FB, 14,000 AIC BREAKER WITH BREAKER, DRAIN, AND STAINLESS STEEL COVER BOLTS.
4. TELEPHONE J-BOX – NEMA 4X STAINLESS STEEL ENCLOSURE, 16"X14"X6", HOFFMAN CAT. NO. A-1614CHNFSS.
5. PHOTO ELECTRIC CELL EAST/WEST CATWALK, AND APPROACHWAY LTG – 277VOLT, 2300 WATT RATED INTERMATIC K4133 MOUNT IN OZ/GEDNEY GUBSW ENCLOSURE
6. HOA CONTROL STATION FOR EAST/WEST CATWALK, AND APPROACHWAY LTG, FEED THRU, 3 POSITION SELECTOR SWITCH FACTORY SEALED CONTACTS, CROUSE HINDS EDSC21273.
7. STUB-UP SPARE CONDUITS AND CAP (TYP.)

GENERAL NOTES

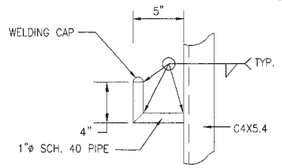
1. SWITCHRACK SHALL BE ALL WELDED CONSTRUCTION AND HOT DIPPED GALVANIZED AFTER FABRICATION.
2. ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED.
3. CONTRACTOR SHALL VERIFY ALL EQUIPMENT MOUNTING REQUIREMENTS AND SWITCHRACK DIMENSIONS PRIOR TO FABRICATION.
4. ALL HOLES SHALL BE DRILLED PRIOR TO HOT DIP GALVANIZING.

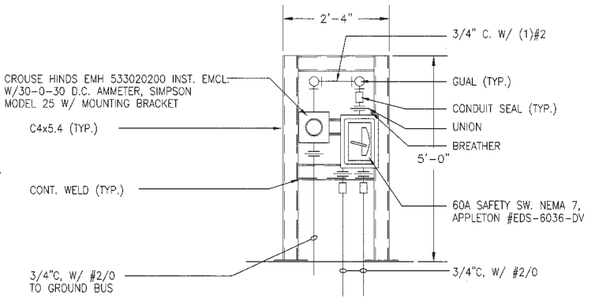


EAST ELEVATION
SCALE: N.T.S.

NORTH ELEVATION
SCALE: N.T.S.

EAST ELEVATION
SCALE: N.T.S.

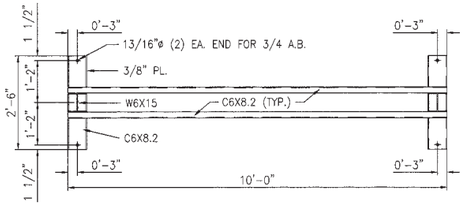




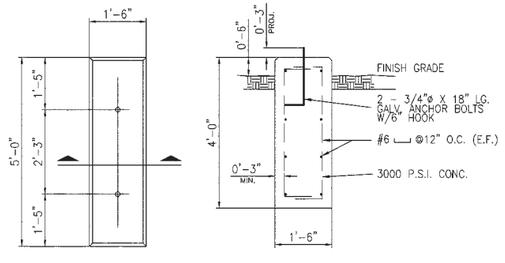
CABLE BRACKET (6 / 00E06)
SCALE: N.T.S.

GROUND SWITCH (4 / 00E06)
SCALE: N.T.S.

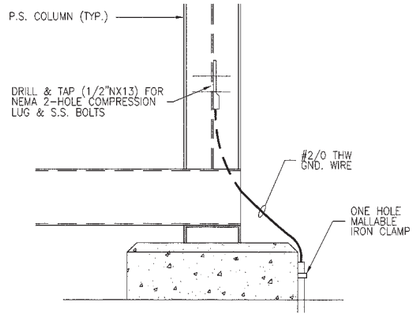
ELECTRICAL RACK ELEVATIONS (1 / 00E06)
SCALE: N.T.S.



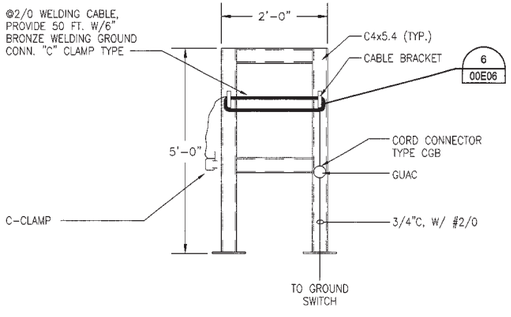
ELECTRICAL RACK PLAN
SCALE: N.T.S.



ELECTRICAL RACK FOUNDATION (2 / 00E06)
SCALE: N.T.S.



ELECTRICAL RACK GROUNDING (3 / 00E06)
SCALE: N.T.S.



BARGE GROUNDING CONNECTION (5 / 00E06)
SCALE: N.T.S.

Bath ENGINEERING
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5656 S. STAPLES, SUITE 110
CORPUS CHRISTI, TX 78411
(361) 992-2284

HDR
HDR Engineering, Inc.
Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
–	–	–

PROJECT MANAGER: JOE MARTINEZ
PROJECT NUMBER: 00E06

STATE OF TEXAS · JOSE B. MARTINEZ JR. · 89385 · LICENSED · PROFESSIONAL ENGINEER
1/4/11

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
PORT OF BROWNSVILLE · WORLD CLASS ·

EQUIPMENT RACK DETAILS

FILENAME	1906-E6.DWG	SHEET
SCALE	NTS	00E06

HINGED POLE SPECIFICATION: POLE: THE POLE SHAFT SHALL BE FABRICATED FROM A WELDABLE GRADE OF HOT ROLLED CARBON STEEL HAVING A MINIMUM YIELD OF 55,000 PSI SUPPLIED IN 7 GA. AND 1/4" WALL. THE SHAFT CONSTRUCTION SHALL BE ONE PIECE OF FORMED STEEL WELDED LONGITUDINALLY WITH HIGH FREQUENCY ELECTRIC RESISTANCE WELDING. THE SHAFT SHALL BE UNIFORMLY SQUARE WITH RADIUS CORNERS.

BASE PLATE: THE BASE PLATE SHALL BE FABRICATED FROM HOT ROLLED CARBON STEEL CONFORMING TO ASTM A36. THE BASE PLATE SHALL BE WELDED CONTINUOUSLY BOTH INTERNALLY AND EXTERNALLY.

HAND HOLE: THE HAND HOLE REINFORCEMENT RING SHALL BE 3" X 5" RECTANGLE TUBING. THE HAND HOLE COVER SHALL BE GASKETED AND SHALL BE PROVIDED WITH A STAINLESS STEEL PAN HEAD MACHINE SCREW AND ATTACHING BAR.

GROUND LUG: A GALVANIZED FLANGE SHALL BE WELDED DIRECTLY BACK FROM THE HAND HOLE INSIDE THE SHAFT WHICH SHALL BE PROVIDED WITH A BOLT TO ALLOW FOR EASY INSTALLATION OF THE GROUND WIRE.

HINGE: THE POLE SHALL BE PROVIDED WITH AN INTERNAL HINGE WHICH SHALL INCLUDE A STAINLESS STEEL HINGE PIN. THE HINGE SHALL BE CONSTRUCTED TO BE INTERNAL FOR A CLEAN AN UNINTERRUPTED POLE PROFILE. AN INTERNAL FLEXIBLE WIRE WAY SHALL BE PROVIDED TO INSURE WIRES ARE PROTECTED.

BASE COVER: A FULL BASE COVER SHALL BE PROVIDED TO ENCAPSULATE THE BASE PLATE AND ANCHOR BOLTS TO PROVIDE A CLEAN TRANSITION FROM POLE TOP PIER.

POLE TOP TENON: THE POLE SHALL BE PROVIDED WITH A TOP TENON FABRICATED FROM STRUCTURAL HOT ROLLED CARBON STEEL AND WELDED TO A TENON PLATE WELDED TO THE POLE TOP. THE TENON SHALL BE 2 3/8" O.D. AND 4" LONG.

POLE FINISH: THE FINISH SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION. ALL HOLES SHALL BE DRILLED PRIOR TO GALVANIZING.

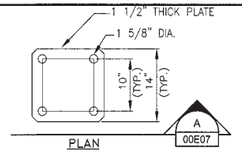
ALL FASTENERS SHALL BE HIGH STRENGTH GALVANIZED OR STAINLESS STEEL.

POLE DESIGN: POLES SHALL BE DESIGNED TO WITHSTAND DEAD LOADS AND WINDLOADS CREATED BY VARIABLE WIND SPEEDS WITH A 1.3 GUST FACTOR UNDER THE FOLLOWING CONDITIONS: A.)WITH FIXTURES AND/OR ARMS MOUNTED AT THE CENTER OF GRAVITY OF THE POLE AND LOCATED NO GREATER THAN 2'6" ABOVE POLE HEIGHT B.) THE EPA SHALL BE THE ACTUAL PROJECTED AREA AND DRAG COEFFICIENT.

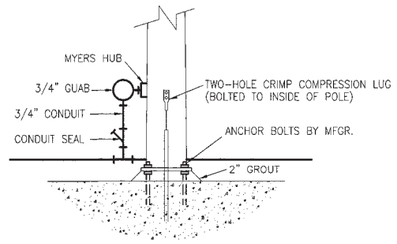
WINCH: LOWERING WINCH SHALL BE HEAVY DUTY HAND POWERED WITH GEAR DESIGN AND AUTOMATIC BRAKE. WINCH SHALL BE EASILY INSTALLED AND REMOVED USING A STEEL STRAPPING SYSTEM. THE WINCH SHALL BE PROVIDED WITH A 3/16" STAINLESS STEEL CABLE RATED FOR A MINIMUM LOAD OF 3500 LBS. WINCH SHALL BE CONSTRUCTED OF STURDY STEEL HOUSING AND DRUM WITH A HOT DIPPED GALVANIZED FINISH WITH A STAINLESS STEEL DRUM SHAFT WITH BALL BEARINGS AND BRASS ROLLER GUIDES.

MANUFACTURER: POLE SHALL BE AS MANUFACTURED BY TECHLIGHT INC. , DALLAS TX OR EQUAL.

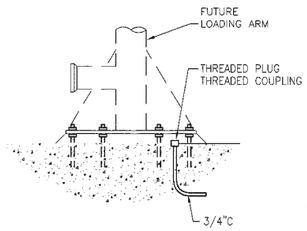
NOTE: LUMINAIRE SIZES AND TYPES SHALL BE AS SCHEDULED ON SHEET 00E08 LIGHTING FIXTURE.



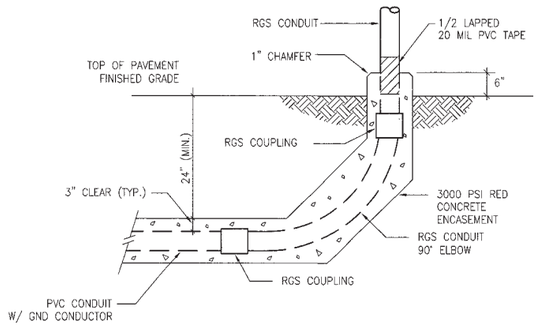
POLE BASE PLATE
SCALE: N.T.S.
1 00E07



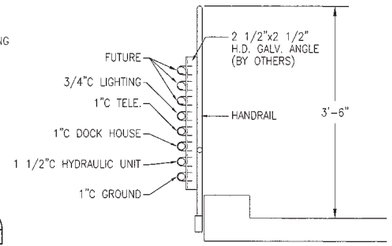
POLE BASE DETAIL
SCALE: N.T.S.
A 00E07



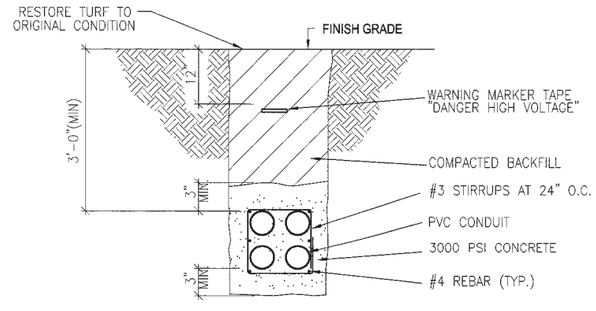
ARM GROUNDING
SCALE: N.T.S.
5 00E07



TYPICAL CONDUIT STUB-UP
SCALE: N.T.S.
3 00E07



CONDUIT SUPPORT AT HANDRAIL
SCALE: N.T.S.
6 00E07



TYPICAL CONDUIT DUCT BANK
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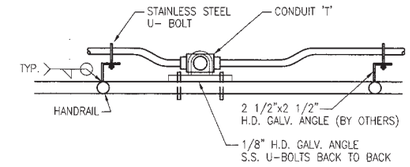
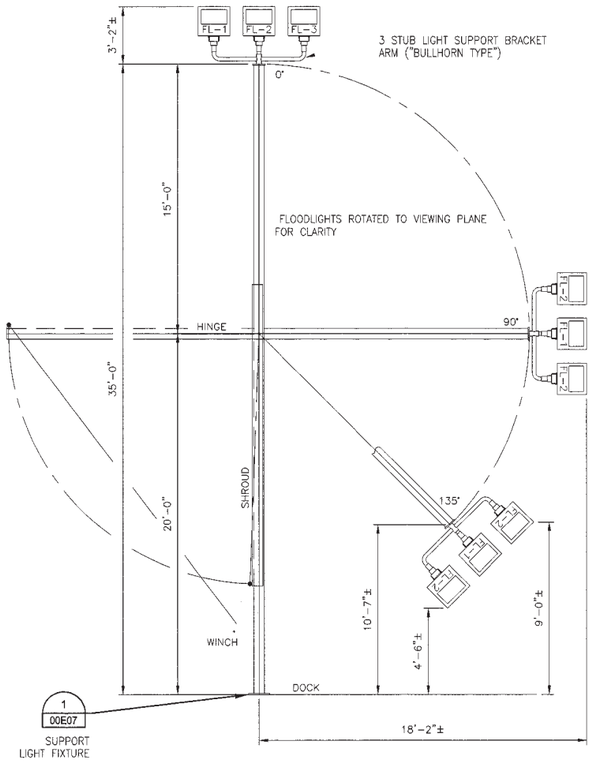
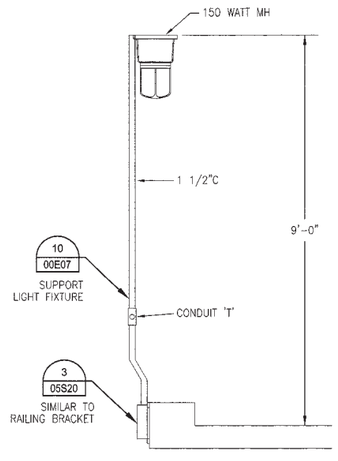
4 00E07



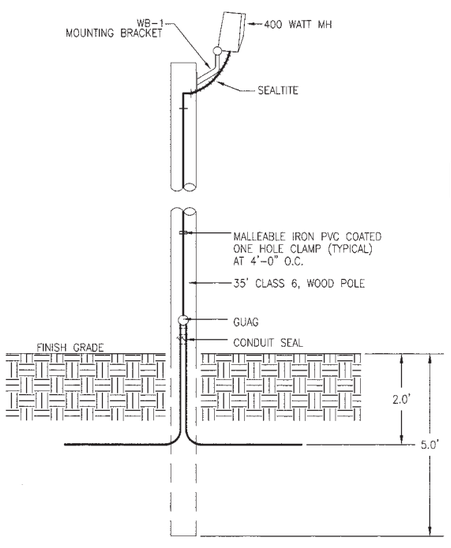
LIGHT FIXTURE SUPPORT DETAIL PLAN VIEW
SCALE: N.T.S.
10 00E07



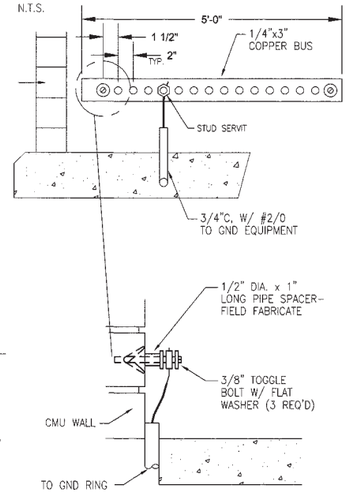
DOCK BREAK-OVER FLOOD LIGHT
SCALE: N.T.S.
1 00E07



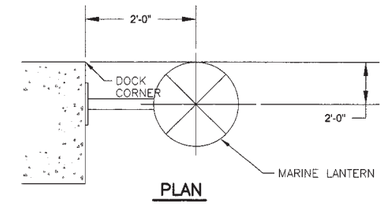
APPROACH LIGHT
SCALE: N.T.S.
7 00E07



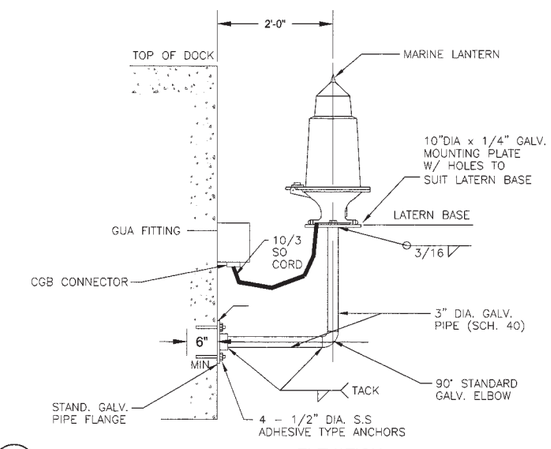
AREA FLOODLIGHT
SCALE: N.T.S.
8 00E07



EQUIPMENT GROUND BUS
SCALE: N.T.S.
9 00E07



PLAN



ELEVATION

MARINE LIGHT (TYP.)
SCALE: N.T.S.
10 00E07

Bath ENGINEERING
TEXAS FIRM REGISTRATION NO. F-829
5656 S. STAPLES, SUITE 110
CORPUS CHRISTI, TX 78411
(361) 992-2284

HDR
HDR Engineering, Inc.
Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
–	–	–

PROJECT MANAGER: JOE MARTINEZ
PROJECT NUMBER: 1906

STATE OF TEXAS
JOSE B. MARTINEZ JR.
89385
LICENSED
PROFESSIONAL ENGINEER
01/11/11

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
PORT OF BROWNSVILLE
• WORLD CLASS •

ELECTRICAL DETAILS

FILENAME: 1906-E7.DWG
SCALE: NTS
SHEET: 00E07

LIGHT FIXTURE SCHEDULE

MARK	MANUFACTURER	LAMP NO.	LAMP WATTS	LAMP TYPE	BALLAST	MOUNTING TYPE	MOUNTING EL. AFF.	MFG. DATA	REMARKS
A	WIDELITE	1	400	MH	480V	WOOD POLE	30'	MFM-400-B-480-F2-HAZ-GR-PCM-1	400W METAL HALIDE FLOODLIGHT TENON MOUNT WITH PHOTOCELL
B	WIDELITE : TECHLIGHT	1	400	MH	240V	HD GALV. POLE	30'	MFM-400-B-240-F2-HAZ-GR : POLE: HP30-6-7/7 WITH WINCH	400W METAL HALIDE FLOODLIGHT TENON MOUNT W/ BULL HORN BRACKET FOR 30' HINGED POLE 130MPH
C	CROUSE HINDS	1	150	MH	277V	STANCHION	9'	VMVMP150GP MT S828	150W METAL HALIDE FIXTURE ON STANCHION MOUNT
D	CROUSE HINDS	1	175	MH	120V	CEILING	9'	DMVM 2C175GP MT S828	175W METAL HALIDE FIXTURE CEILING MOUNT W/ GLOBE AND GUARD
E	CROUSE HINDS	1	175	MH	120V	WALL	NOTED	DMVM 2TW175GP MT S828	175W METAL HALIDE FIXTURE WALL MOUNT W/ GLOBE AND GUARD
F	CROUSE HINDS	1	36	LED	120V	CEILING	9'	EVLEDCX2201	DOCKHOUSE CEILING MOUNT
G	WIDELITE	1	250	MH	120V	WALL	7'	MFM-250-B-120-HAZ-GR WB-1	250W METAL HALIDE FLOODLIGHT TENON MOUNT W/ BRACKET FOR WALL MOUNT
H	CROUSE HINDS	1	150	MH	120V	STANCHON	10'	VMVMP150GP MT S828	150W METAL HALIDE FIXTURE ON STANCHION MOUNT
J	AUTOMATIC POWER	–	--	INC	120V	POST	–	FA-250 APCL5 TR-3	MARINE NAVIGATION LIGHT, BIRD SPIKE, INTERNAL POWER SUPPLY, FLASHER, RED, INTEGRAL PHOTOCELL

PANEL "DP" - SCHEDULE

100 AMP, 480/277 VAC, 3-PHASE, 4-WIRE, 100A MCB, S/N GND BUSS

NEMA 7 SURFACE, GROUND BUS, INTERRUPT CAPACITY - 22 KAIC

	TOTAL LOAD	LOAD - PHASE "A"	9,095	VA			SERVICE :	480/277 VAC, 3-PHASE, 4 WIRE		
	20 KVA	LOAD - PHASE "B"	7,945	VA			SOURCE :	UTILITY		
		LOAD - PHASE "C"	2,550	VA						

CKT	WIRE SIZE	SERVICE	VA LOAD	BKR. SIZE	PH	BKR. SIZE	VA LOAD	SERVICE	WIRE SIZE	CKT
1	#6	15KVA TRANSF DOCK HOUSE	6,195	40A/2P	A	20A/2P	950	EAST ROADWAY LTS	#10	2
3	#6		5,395		B		950		#10	4
5					C	20A/2P	950	EAST ROADWAY LTS	#10	6
7					A		950		#10	8
9					B	20A/1P	1600	EAST CATWALK LTS	#10	10
11					C	20A/1P	1600	WEST CATWALK LTS	#10	12
13					A	20A/1P	1000	APPROACH LTS	#10	14
15					B					16
17					C					18
19					A					20
21					B					22
23					C					24
25					A					26
27					B					28
29					C					30

PANEL "L1" - SCHEDULE

100 AMP, 240 VAC, 1-PHASE, 3-WIRE, 80A MCB, S/N GND BUS

NEMA 7 SURFACE, GROUND BUS, INTERRUPT CAPACITY - 10 KAIC

	TOTAL LOAD	LOAD - PHASE "A"	6,195	VA			SERVICE :	120/240 VAC, 1-PHASE, 3 WIRE		
	12 KVA	LOAD - PHASE "B"	5,395	VA			SOURCE :	PANEL DP		

CKT	WIRE SIZE	SERVICE	VA LOAD	BKR. SIZE	PH	BKR. SIZE	VA LOAD	SERVICE	WIRE SIZE	CKT
1	#4	MAIN		80A/2P	A	30A/2P	2120	DOCK POLE FLODD LITS	#10	2
3	#4				B		2120		#10	4
5	#10	LIFT PUMP	675	20A/2P	A	20A/1P	1200	MOORING FLOOD LTS	#10	6
7	#10		675		B	20A/1P	1600	DOCK NIGHT LTS.	#10	8
9	#12	SERVICE RECPTACLE	1200	20A/1P	A	20A/1P	1000	MARINE OBST LT WEST	#10	10
11		SPARE		20A/1P	B	20A/1P	1000	MARINE OBST LT EAST	#10	12
13		SPARE		20A/1P	A	20A/1P				14
15		SPARE		20A/1P	B	20A/1P				16
17		SPARE		20A/1P	A	20A/1P				18
19		SPARE		20A/1P	B	20A/1P				20
21		SPARE		20A/1P	A	20A/1P				22
23		SPARE		20A/1P	B	20A/1P				24
25		SPARE		20A/1P	A	20A/1P				26
27		SPARE		20A/1P	B	20A/1P				28
29		SPARE		20A/1P	A	20A/1P				30

CONDUIT & CABLE SCHEDULE

CONDUIT NO.	CONDUIT SIZE	DESTINATION FROM	DESTINATION TO	CONDUCTORS POWER	CONDUCTORS CONTROL	CONDUCTORS SPARE	CONDUCTORS GROUND	REMARKS
1	3"	METER POLE	SWITCHRACK	4#4/0			1#2/0	
2	2"	BUSS TAP BOX	PANEL DP.	4#1/0	–	–	1#2	–
3	1 1/2"	BUSS TAP BOX	ENCLOSED BREAKER	–	–	–	1#6	CONDUCTORS BY OTHERS. ROUTE CONDUIT ONLY
4	1 1/2"	ENCLOSED BREAKER	DOCK (HYD UNIT)	–	–	–	1#6	CONDUCTORS BY OTHERS. ROUTE CONDUIT ONLY
5	3/4"	PANEL DP	EAST CATWALK LIGHTS	2#10	–	–	1#12	–
6	3/4"	PANEL DP	WEST CATWALK LIGHTS	2#10	–	–	1#12	–
7	3/4"	PANEL DP	APPROACH RAMP LIGHTS	2#10	–	–	1#12	–
8	3/4"	PANEL DP	ROADWAY EAST LIGHTS	2#10	–	–	1#12	–
9	3/4"	PANEL DP	ROADWAY WEST LIGHTS	2#10	–	–	1#12	–
10	1 1/4"	PANEL DP	15KVA TRANSFORMER	2#6	–	–	1#8	–
11	1 1/4"	15KVA TRANSFORMER	PANEL L1	2#3	–	–	1#8	–
12	3/4"	PANEL L1	MOORING FLOOD LTS	2#10	–	–	1#12	–
13	3/4"	PANEL L1	DOCK POLE FLOOD LTS	2#10	–	–	1#10	–
14	3/4"	PANEL L1	DOCK NIGHT LIGHTS	2#12	–	–	1#12	–
15	3/4"	PANEL L1	SERVICE RECEPTACLE	2#12	–	–	1#12	–
16	3/4"	PANEL L1	LIFT STATION PUMP	2#10	–	–	1#10	–
17	3/4"	PANEL L1	MARINE NAVIGATION LIGHTS	2#10	–	–	1#12	–
18	2"	ROADWAY	DOCK HOUSE	–	–	–	–	SPARE FOR TELEPHONE
19	2"	ELECTRICAL RACK	EDGE OF DOCK	–	–	–	–	SPARE
20	2"	ELECTRICAL RACK	EDGE OF DOCK	–	–	–	–	SPARE
21	2"	ELECTRICAL RACK	EDGE OF DOCK	–	–	–	–	SPARE
22	2"	ELECTRICAL RACK	EDGE OF DOCK	–	–	–	–	SPARE
23	2"	ELECTRICAL RACK	EDGE OF DOCK	–	–	–	–	SPARE
24	2"	ELECTRICAL RACK	EDGE OF DOCK	–	–	–	–	SPARE
25	1 1/2"	ELECTRICAL RACK	DOCK BLDG GROUND BUS	–	–	–	1#2/0	–

Bath ENGINEERING
TEXAS FIRM REGISTRATION NO. F-829
5656 S. STAPLES, SUITE 110
CORPUS CHRISTI, TX 78411
(361) 992-2284

HDR
HDR Engineering, Inc.
Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
–	–	–

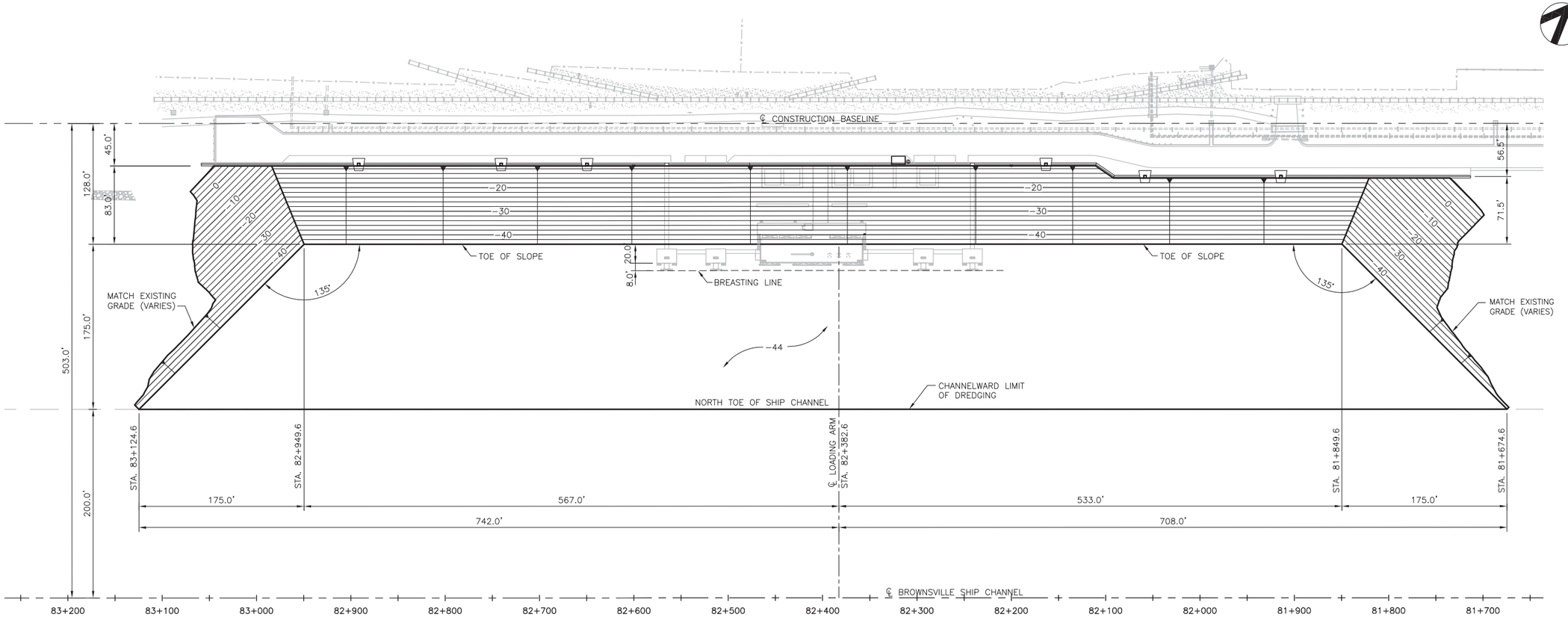
PROJECT MANAGER: JOE MARTINEZ
PROJECT NUMBER: 1906

STATE OF TEXAS — JOSE B. MARTINEZ JR. — 69385 — LICENSED PROFESSIONAL ENGINEER — 01/11/11

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
PORT OF BROWNSVILLE
• WORLD CLASS •

ELECTRICAL SCHEDULES

FILENAME: 1906-E8.DWG
SCALE: NTS
SHEET: 00E08



DREDGING PLAN

SCALE: 1" = 60'

DREDGING NOTES

1. REFER TO SPECIFICATION SECTION 35 20 23.
2. ALL EXISTING UTILITIES, PIPELINES, DEBRIS, AND OTHER POTENTIAL OBSTRUCTIONS MAY NOT BE SHOWN. CONTRACTOR SHALL LOCATE ALL POTENTIAL OBSTRUCTIONS PRIOR TO COMMENCING WORK.
3. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL TAKE MEASURES TO PROTECT ALL EXISTING IMPROVEMENTS WITHIN AND ADJACENT TO THE WORK AREA. ANY DAMAGE CAUSED BY THE CONTRACTOR'S ACTIVITIES SHALL BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR AND TO THE SATISFACTION OF THE OWNER.
4. PRIOR TO COMMENCING DREDGING, CONTRACTOR SHALL PERFORM A PRE-DREDGE HAZARD (MAGNETOMETER) SURVEY OVER THE WORK AREA TO LOCATE ANY BURIED OBSTRUCTIONS OR UNCHARTED PIPELINES THAT MAY BE PRESENT. REFER TO SPECIFICATION SECTION 35 20 23 FOR REQUIREMENTS.
5. LOCATIONS/LIMITS OF EXISTING DEBRIS ARE APPROXIMATE AND PROVIDED FOR CONVENIENCE OF CONTRACTOR. ACTUAL LOCATION OF DEBRIS SHALL BE DETERMINED BY THE CONTRACTOR PRIOR TO COMMENCING DREDGING. ALL DEBRIS ENCOUNTERED DURING DREDGING INCLUDING BUT NOT LIMITED TO THAT SHOWN ON THESE DRAWINGS SHALL BECOME THE PROPERTY OF THE CONTRACTOR. SUCH DEBRIS SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS AND ORDINANCES.
6. CONTRACTOR SHALL TAKE PRECAUTIONS AND SECURE EQUIPMENT AGAINST ADVERSE WEATHER AND MARINE CONDITIONS.
7. DREDGED MATERIAL SHALL BE DEPOSITED WITHIN THE LIMITS OF THE DESIGNATED PLACEMENT AREAS AS SHOWN ON 01C03. MATERIAL DEPOSITED OUTSIDE THESE LIMITS SHALL BE REMOVED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANUP, MITIGATION, PERMITTING, AND ALL OTHER CORRECTIVE MEASURES ASSOCIATED WITH MISPLACED DREDGED MATERIAL AND / OR DAMAGE CAUSED BY THE CONTRACTOR.
8. THE PORT OF BROWNSVILLE IS A HIGHLY UTILIZED FACILITY AND CONTRACTOR SHALL BE AWARE OF NAVIGATIONAL REQUIREMENTS. DREDGING OPERATIONS, EQUIPMENT, AND PERSONNEL SHALL NOT RESTRICT NAVIGATION IN THE SHIP CHANNEL. RIGHT OF WAY SHALL BE PROVIDED TO ANY AND ALL VESSELS ENTERING THE PORT. CONTRACTOR SHALL KEEP ABREAST OF THE NAVIGATION REQUIREMENTS OF VESSELS' INGRESS AND EGRESS THROUGH THE PORT AND PROVIDE APPROPRIATE ACCOMMODATIONS TO MOVE DREDGING PLANT AND OTHER EQUIPMENT SO AS NOT TO INTERFERE WITH NAVIGATION. DELAYS CAUSED BY SHIPPING SHALL NOT BE GROUNDS FOR CLAIMS, CHANGED CONDITIONS, OR TIME EXTENSIONS TO THE CONTRACT.
9. ALL DREDGES, TRAWLS, BARGES, AND OTHER SUPPORTING VESSELS SHALL CONTINUOUSLY MONITOR AND BE CAPABLE OF TRANSMITTING ON RADIOTELEPHONE TO COORDINATE WITH THE BRAZOS SANTIAGO PILOTS ASSOCIATION (BSPA). HOWEVER, THE BSPA CHANNEL SHALL NOT BE USED AS THE WORKING CHANNEL FOR CONTRACTOR'S OWN COORDINATION OF DAILY DREDGING ACTIVITIES. REFER TO SPECIFICATION SECTION 35 20 23 FOR ADDITIONAL REQUIREMENTS REGARDING BRIDGE-TO-BRIDGE RADIOTELEPHONE EQUIPMENT.
10. CONTRACTOR SHALL NOT UTILIZE HYDRAULIC DREDGING EQUIPMENT WITHIN 5 FT OF NEW OR EXISTING STRUCTURES/IMPROVEMENTS.

HDR
HDR Engineering, Inc.
Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
0	3/10/2016	ISSUED FOR BIDS

PROJECT MANAGER	MIKE KRIEBER
DESIGNED BY	C. PERRY
DRAWN BY	B. INFANTE
CHECKED BY	N. MCLELLAN
PROJECT NUMBER	111172

STATE OF TEXAS
MICHAEL G. KRIEBER
109274
LICENSED
PROFESSIONAL ENGINEER
3/10/16

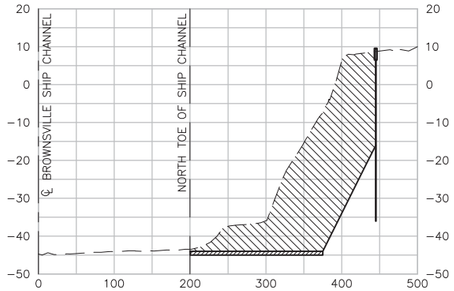
BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6
PORT OF BROWNSVILLE
• WORLD CLASS •

DREDGING -
PLAN

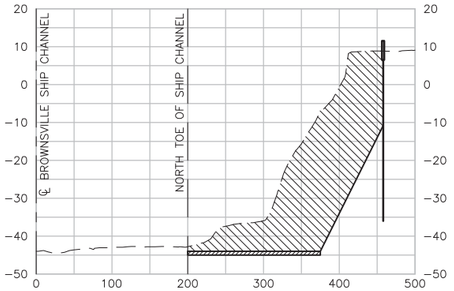
0 1" 2"

FILENAME	01C-01.dwg
SCALE	1" = 60'

SHEET 01C01



STATION 81+900



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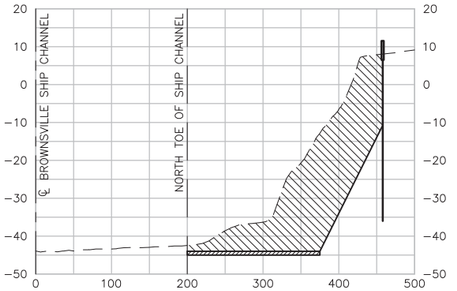

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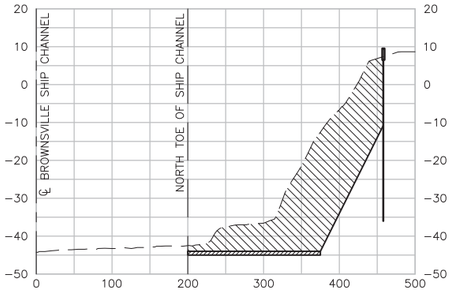

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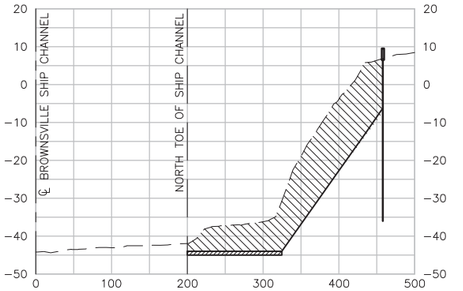

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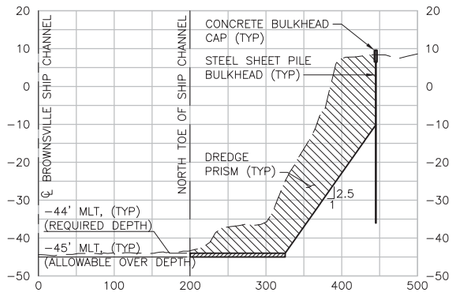
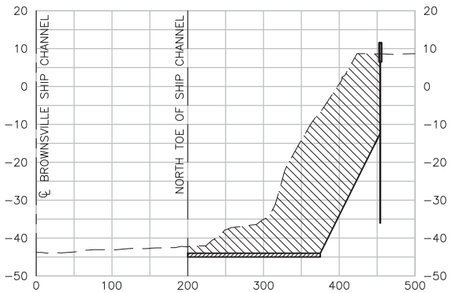
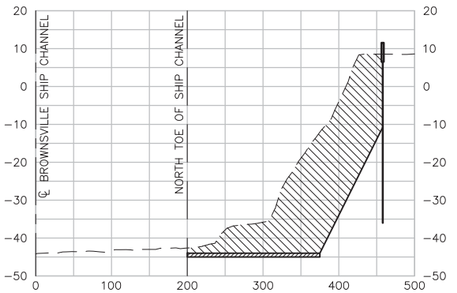


STATION 81+800



STATION 82+100



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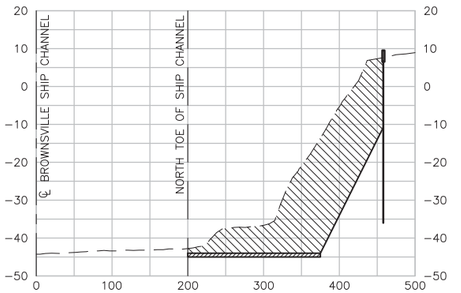

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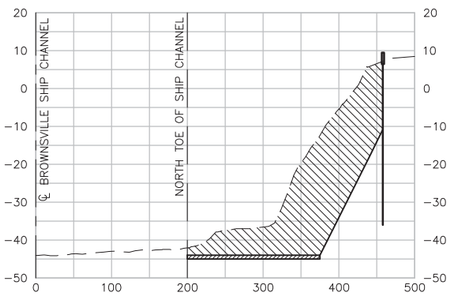
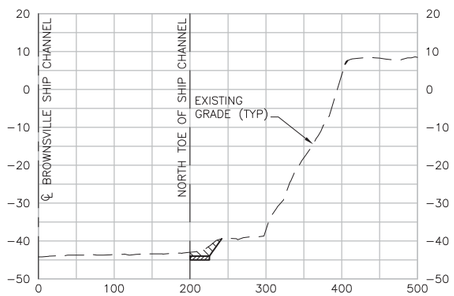


STATION 82+900



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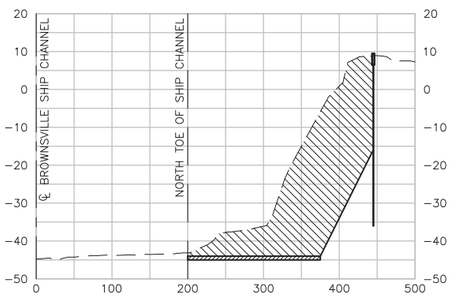

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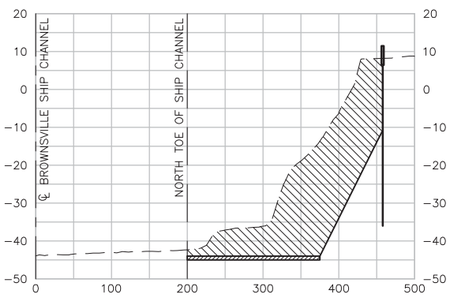
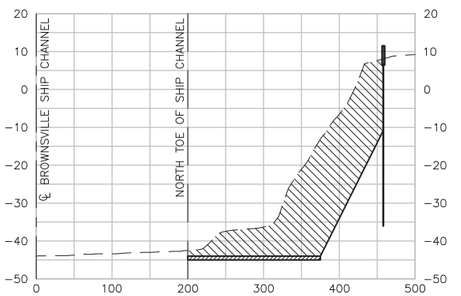
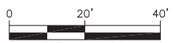
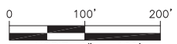


STATION 82+300



STATION 82+600





HDR Engineering, Inc.

Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
0	3/10/2016	ISSUED FOR BIDS

PROJECT MANAGER	MIKE KRIEBER
DESIGNED BY	C. PERRY
DRAWN BY	B. INFANTE
CHECKED BY	N. MCLELLAN
PROJECT NUMBER	111172

STATE OF TEXAS
MICHAEL G. KRIEBER
109274
LICENSED PROFESSIONAL ENGINEER
3/10/16

BROWNSVILLE NAVIGATION DISTRICT
OIL DOCK NO. 6

PORT OF BROWNSVILLE
• WORLD CLASS •

DREDGING -
CROSS-SECTIONS

0 1" 2"

FILENAME	01C-02.dwg
SCALE	AS NOTED

SHEET 01C02

DREDGE PIPELINE ROUTE LAYOUT

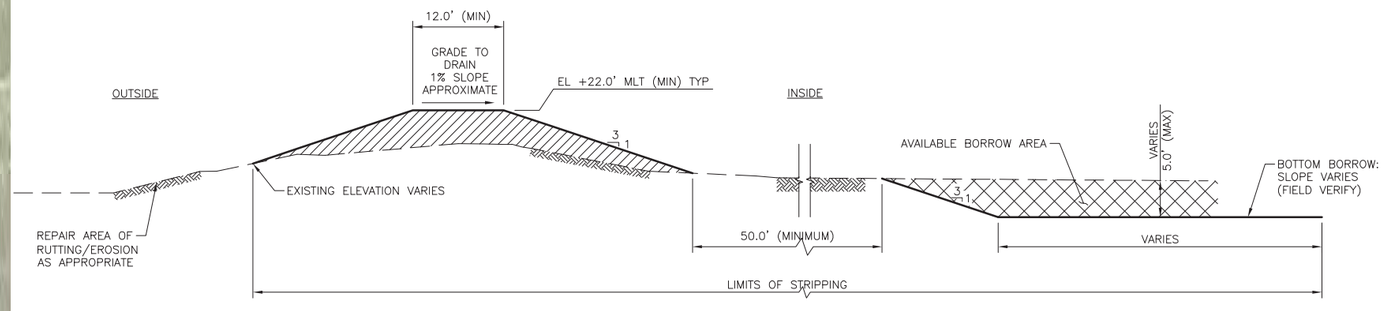
SCALE: 1" = 400'

PHOTOGRAPH NO. 1

LOOKING NORTH (HDR, 10/2009)

PHOTOGRAPH NO. 2

LOOKING SOUTH (HDR, 10/2009)



TYPICAL EXTERIOR LEVEE TYPICAL CROSS SECTION

NOT TO SCALE

NOTE:
SECTION PROVIDED FOR INFORMATIONAL PURPOSES ONLY. LEVEE CONSTRUCTION AND PLACEMENT AREA IMPROVEMENTS PERFORMED UNDER SEPARATE CONTRACT.

HDR Engineering, Inc.
Texas P.E. Firm Registration No. 754

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STATE OF TEXAS · MICHAEL G. KRIEBER · 109274 · LICENSED PROFESSIONAL ENGINEER · 3/10/16

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OIL DOCK NO. 6

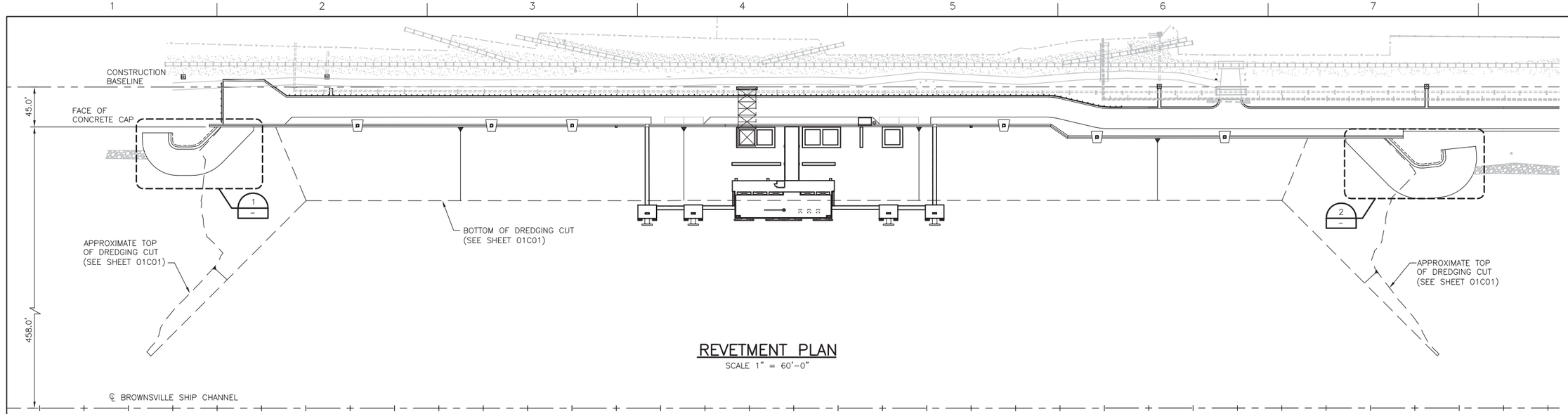
PORT OF BROWNSVILLE · WORLD CLASS ·

DREDGING -
PIPELINE ROUTE
AND PLACEMENT AREA

0 1" 2"

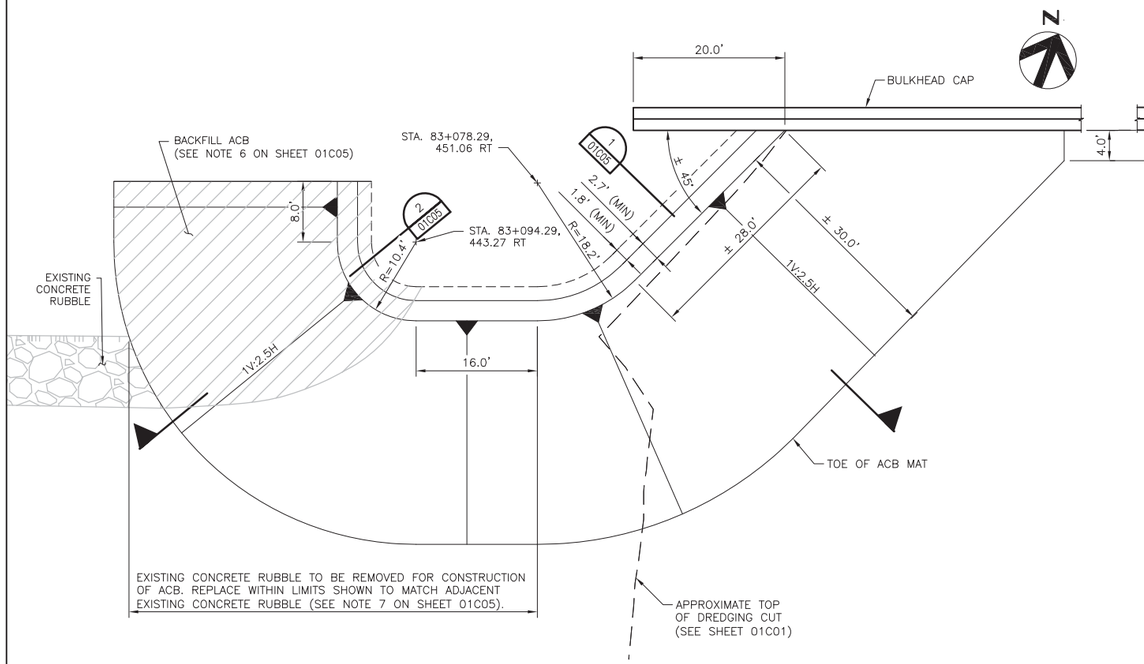
FILENAME	01C-03.dwg
SCALE	1" = 400'

SHEET 01C03



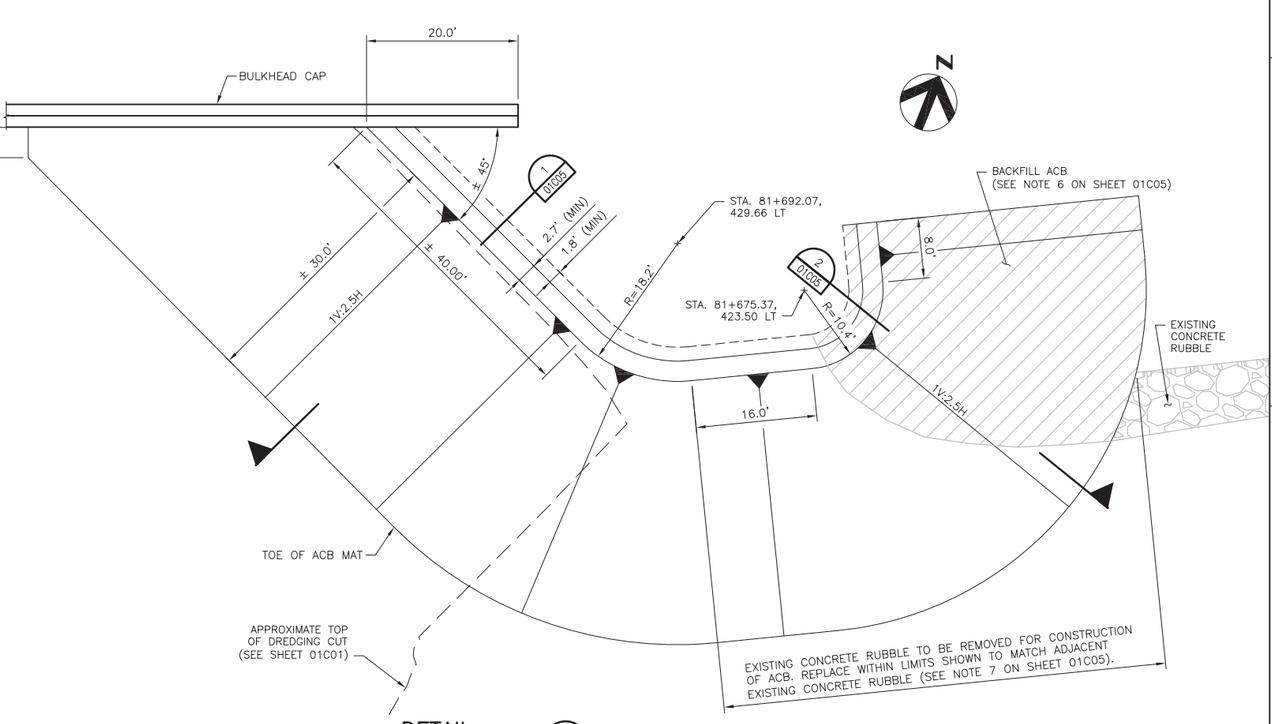
REVETMENT PLAN

SCALE 1" = 60'-0"



DETAIL 1

SCALE 1" = 10'-0"



DETAIL 2

SCALE 1" = 10'-0"

HDR

HDR Engineering, Inc.

Texas P.E. Firm Registration No. 754

ISSUE	DATE	DESCRIPTION
0	3/10/2016	ISSUED FOR BIDS

PROJECT MANAGER	MIKE KRIEBER
DESIGNED BY	C. PERRY
DRAWN BY	B. INFANTE
CHECKED BY	D. HEILMAN
PROJECT NUMBER	111172

STATE OF TEXAS
MICHAEL G. KRIEBER
109274
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3/10/16

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PORT OF BROWNSVILLE
• WORLD CLASS •

DREDGING -
REVETMENT PLAN AND DETAILS

0 1" 2"

FILENAME	01C-04.dwg
SCALE	AS NOTED

SHEET 01C04