



VICINITY MAP

LOCATION MAP

ENGINEERING DRAWINGS FOR SABINE-NECHES
WATERWAY NAVIGATION IMPROVEMENT PROJECT

COVER SHEET
AND INDEX OF DRAWINGS

SHEET ID

G-001



SABINE • NECHES
NAVIGATION DISTRICT
Our commitment runs deep



HDR
HDR ENGINEERING, INC.
Professional Seal of State of Texas
No. F-754

DATE:	REV.	DESCRIPTION
11/13/2025	4	
SCALE:	AS SHOWN	
DRAWN BY:	TWT	
DESIGNED BY:	GJM	
CHECKED BY:	LOW	
		4 FINAL FEASIBILITY STUDY DRAWINGS
		3 DRAWINGS FOR USAGE REVIEW (REV 3)
		2 DRAWINGS FOR USAGE REVIEW (REV 2)
		1 DRAWINGS FOR USAGE REVIEW (REV 1)
		DATE

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF
INTERIM REVIEW AND IS NOT INTENDED TO BE USED FOR
CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

ENGINEER: DANIEL J. HEILMAN, P.E.
LICENSE NUMBER: 86936
DATE: NOVEMBER 13, 2025

SHEET ID
G-001

CHANNEL BASELINE ALIGNMENT DATA

CURVE NO.	POINTS	STATION	NORTHING	EASTING	RADIUS	LENGTH	DELTA	DIRECTION
HORIZONTAL DATUM: TEXAS SOUTH-CENTRAL ZONE, NAD 83, U.S. SURVEY FEET								
SABINE-NECHES CANAL								
13	PC	62+795.25	13883084.69	3567534.27				
	PI	63+542.52	13883773.81	3567823.22	4,521.00	1,481.15	18°46'15.57"	Left
	CC		13884833.12	3563365.05				
	PT	64+276.40	13884519.28	3567875.15				
14	PC	64+276.40	13884519.28	3567875.15				
	PT	67+024.97	13887261.22	3568065.95				
	PC	67+024.97	13887261.22	3568065.95				
	PI	69+283.90	13889514.71	3568222.76	7,498.39	4,388.19	33°31'49.90"	Right
15	CC		13886740.89	3575546.25				
	PT	71+413.16	13891306.58	3569598.26				
	PT	71+413.16	13891306.58	3569598.26				
	PI	73+372.21	13892860.56	3570791.16				
16	PI	73+372.21	13892860.56	3570791.16				
	PI	74+262.44	13893561.82	3571339.56				
	PI	74+262.44	13893561.82	3571339.56				
	PC	77+712.91	13896293.97	3573446.94				
17	PC	77+712.91	13896293.97	3573446.94				
	PI	78+370.74	13896814.86	3573848.72	5,972.32	1,310.39	12°34'16.79"	Left
	CC		13899941.59	3568717.94				
	PT	79+023.30	13897410.71	3574127.49				
18	PT	79+023.30	13897410.71	3574127.49				
	PC	80+659.73	13898892.95	3574820.96				
	PC	80+659.73	13898892.95	3574820.96				
	PI	81+219.21	13899399.70	3575058.04	5,664.00	1,115.34	11°16'56.95"	Right
19	CC		13896492.73	3579951.24				
	PT	81+775.06	13899850.28	3575389.70				
	PT	81+775.06	13899850.28	3575389.70				
	PC	90+633.94	13906984.85	3580641.14				
20	PC	90+633.94	13906984.85	3580641.14				
	PI	90+913.38	13907289.90	3580806.79	5,300.00	558.36	6°02'10.07"	Right
	CC		13903843.07	3584909.54				
	PT	91+192.30	13907416.28	3580995.18				
21	PT	91+192.30	13907416.28	3580995.18				
	PC	95+052.82	13910267.50	3583597.91				
	PC	95+052.82	13910267.50	3583597.91				
	PI	95+388.23	13910500.44	3583810.55	5,500.00	630.11	6°33'50.86"	Left
22	CC		13913975.54	3579535.84				
	PT	95+682.94	13910756.16	3583995.17				
	PT	95+682.94	13910756.16	3583995.17				
	PC	111+617.48	13923675.67	3593322.33				
23	PC	111+617.48	13923675.67	3593322.33				
	PI	112+566.53	13924445.15	3593877.85	6,000.00	1,882.51	17°58'35.93"	Left
	CC		13927187.72	3588457.61				
	PT	113+499.99	13925348.51	3594168.77				
24	PT	113+499.99	13925348.51	3594168.77				
	POE	121+516.92	13932979.51	3596626.24				
NECHES RIVER CHANNEL								
1	PC	0+00.00	13,932,979.51	3,596,626.24				
	PI	60+19.87	13,938,709.58	3,598,471.54	5,049.76	8,814.98	100°01'00.79"	Left
	CC		13,934,527.44	3,591,819.58				
	PT	88+14.98	13,939,530.07	3,592,507.85				
2	PT	88+14.98	13,939,530.07	3,592,507.85				
	PC	225+15.47	13,941,397.41	3,578,935.20				
	PC	225+15.47	13,941,397.41	3,578,935.20				
	PI	226+45.28	13,941,415.10	3,578,806.61	5,199.82	259.56	2°51'35.96"	Right
3	CC		13,946,548.70	3,579,643.92				
	PT	227+75.03	13,941,439.19	3,578,679.06				
	PT	227+75.03	13,941,439.19	3,578,679.06				
	PC	288+45.05	13,942,565.53	3,572,714.45				
4	PC	288+45.05	13,942,565.53	3,572,714.45				
	PI	293+17.50	13,942,653.19	3,572,250.21	5,225.03	942.34	10°20'00.22"	Right
	CC		13,947,699.82	3,573,684.00				
	PT	297+87.39	13,942,822.71	3,571,809.21				
5	PT	297+87.39	13,942,822.71	3,571,809.21				
	PC	340+71.79	13,944,359.99	3,567,810.11				
	PC	340+71.79	13,944,359.99	3,567,810.11				
	PI	370+78.76	13,945,438.91	3,565,003.37	5,225.15	5,457.09	59°50'20.67"	Right
6	CC		13,949,237.20	3,569,684.93				
	PT	395+28.88	13,948,407.75	3,564,526.04				
	PT	395+28.88	13,948,407.75	3,564,526.04				
	PC	396+75.78	13,948,552.79	3,564,502.72				
7	PC	396+75.78	13,948,552.79	3,564,502.72				
	PI	403+78.67	13,949,246.77	3,564,391.14	2,405.11	1,367.69	32°34'54.36"	Left
	CC		13,948,171.00	3,562,128.11				
	PCC	410+43.47	13,949,771.44	3,563,923.42				
8	PCC	410+43.47	13,949,771.44	3,563,923.42				
	PI	419+76.71	13,950,468.06	3,563,302.40	2,178.05	1,763.40	46°23'16.73"	Left
	CC		13,948,322.09	3,562,297.60				
	PCC	428+06.87	13,950,498.95	3,562,369.67				
9	PCC	428+06.87	13,950,498.95	3,562,369.67				
	PI	435+16.43	13,950,522.43	3,561,660.49	2,699.82	1,387.75	29°27'03.29"	Left
	CC		13,947,800.61	3,562,280.33				
	PT	441+94.61	13,950,194.19	3,561,031.41				
10	PT	441+94.61	13,950,194.19	3,561,031.41				
	PC	467+07.95	13,949,031.53	3,558,803.16				
	PC	467+07.95	13,949,031.53	3,558,803.16				
	PI	486+76.50	13,948,120.90	3,557,057.91	5,000.00	3,750.72	42°58'48.09"	Right
11	CC		13,953,464.39	3,556,490.20				
	PT	504+58.67	13,948,644.50	3,555,160.27				
	PT	504+58.67	13,948,644.50	3,555,160.27				
	PC	624+41.84	13,951,831.84	3,543,608.77				
12	PC	624+41.84	13,951,831.84	3,543,608.77				
	PI	673+71.51	13,953,143.05	3,538,856.68	5,025.16	7,797.10	88°54'02.76"	Right
	CC		13,956,675.98	3,544,945.38				
	PT	702+38.94	13,957,919.42	3,540,076.49				

TURNING BASIN NO. 4 BASELINE ALIGNMENT DATA

CURVE NO.	POINT	STATION	NORTHING	EASTING	RADIUS	LENGTH	DELTA	DIRECTION
HORIZONTAL DATUM: TEXAS SOUTH-CENTRAL ZONE, NAD 83, U.S. SURVEY FEET								
	POB	0+00.00	13,948,643.55	3,555,163.70				
	POE	24+00.00	13,950,957.55	3,555,800.41				

ANCHORAGE BASIN NO. 4 BASELINE ALIGNMENT DATA

CURVE NO.	POINT	STATION	NORTHING	EASTING	RADIUS	LENGTH	DELTA	DIRECTION
HORIZONTAL DATUM: TEXAS SOUTH-CENTRAL ZONE, NAD 83, U.S. SURVEY FEET								
	POB	0+00.00	13,953,087.55	3,541,427.57				
	POE	21+00.00	13,954,598.65	3,542,885.86				

TURNING BASIN NO. 6 BASELINE ALIGNMENT DATA

CURVE NO.	POINT	STATION	NORTHING	EASTING	RADIUS	LENGTH	DELTA	DIRECTION
HORIZONTAL DATUM: TEXAS SOUTH-CENTRAL ZONE, NAD 83, U.S. SURVEY FEET								
	POB	699+12.70	13,956,872.97	3,539,924.08				
	PC	719+08.71	13,958,649.61	3,539,014.36				
	PC	719+08.71	13,958,649.61	3,539,014.36				
	PI	722+95.51	13,958,993.90	3,538,838.07	2,198.59	765.77	19°57'22.00"	Right
	CC		13,959,651.66	3,540,971.32				
	PT	726+74.48	13,959,377.69	3,538,789.87				

ANCHORAGE BASIN NO. 8 BASELINE ALIGNMENT DATA

CURVE NO.	POINT	STATION	NORTHING	EASTING	RADIUS	LENGTH	DELTA	DIRECTION
HORIZONTAL DATUM: TEXAS SOUTH-CENTRAL ZONE, NAD 83, U.S. SURVEY FEET								
	POB	0+00.00	13,967,144.15	3,537,662.96				
	PC	2+76.61	13,967,404.39	3,537,756.70				
	PI	3+82.69	13,967,504.20	3,537,792.65	1,200.00	211.62	10°06'14.14"	Right
	CC		13,966,997.74	3,538,885.70				
	PT	4+88.22	13,967,596.15	3,537,845.55				
	POE	19+85.05	13,968,893.59	3,538,591.98				

(*) POINT DEFINITIONS	
POB	Point of Beginning
POE	Point of Ending
PI	Point of Intersection
PT	Point of Tangency
PC	Point of Curvature
PCC	Point of Compound Curvature
CC	Curve Center

[illegible]

DATE:	11/13/2025	REV.	4
SCALE:		AS SHOWN	
DRAWN BY:		TWT	
DESIGNED BY:		GJW	
CHECKED BY:		LDW	



ENGINEERING DRAWINGS FOR SABINE-NECHES
WATERWAY NAVIGATION IMPROVEMENT PROJECT

ALIGNMENT DATA
SABINE-NECHES CANAL, NECHES RIVER,
TURNING AND ANCHORAGE BASINS

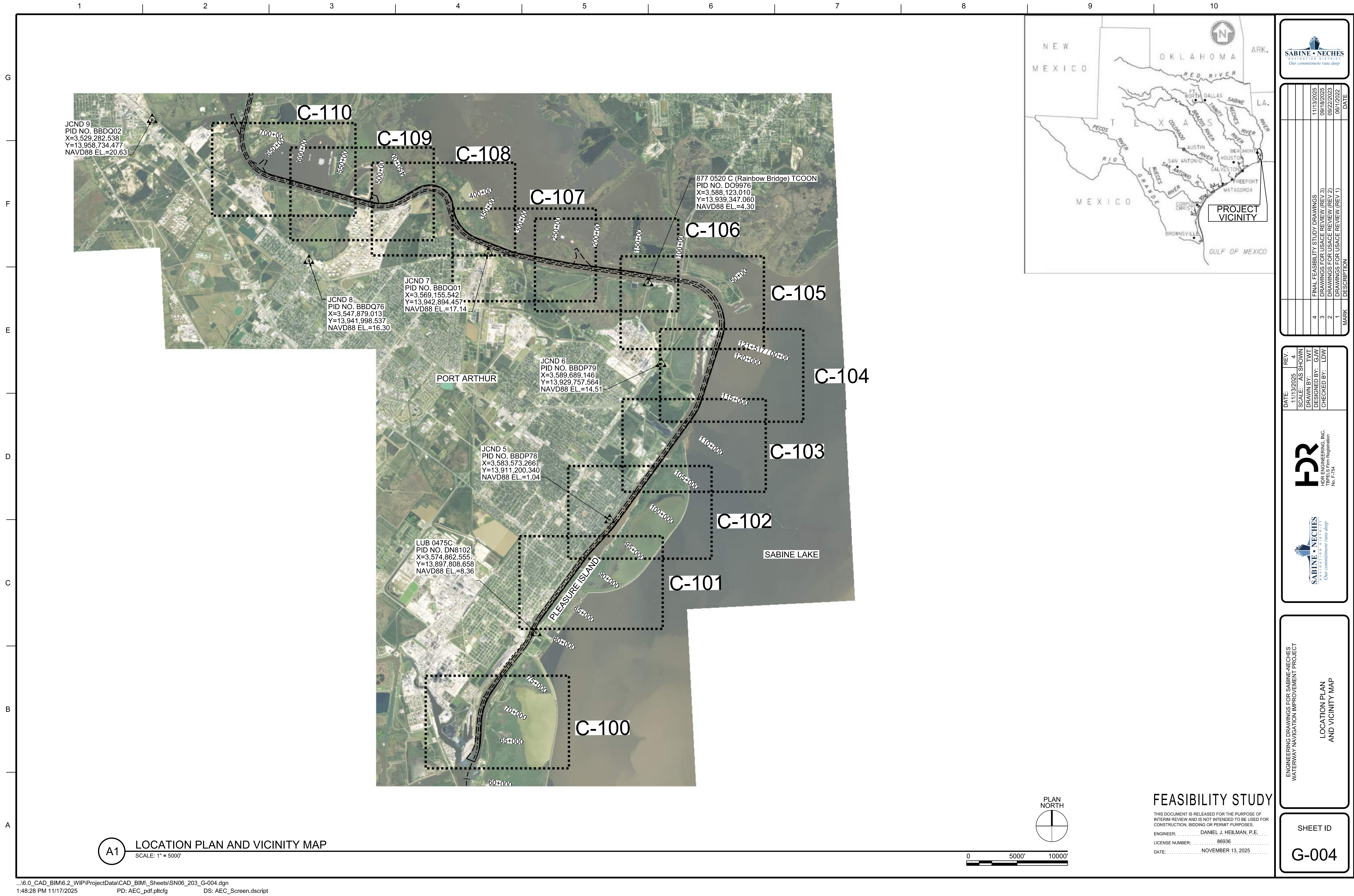
SHEET ID

G-003

FEASIBILITY STUDY

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ENGINEER: DANIEL J. HEILMAN, P.E.
LICENSE NUMBER: 86936
DATE: NOVEMBER 13, 2025



G

F

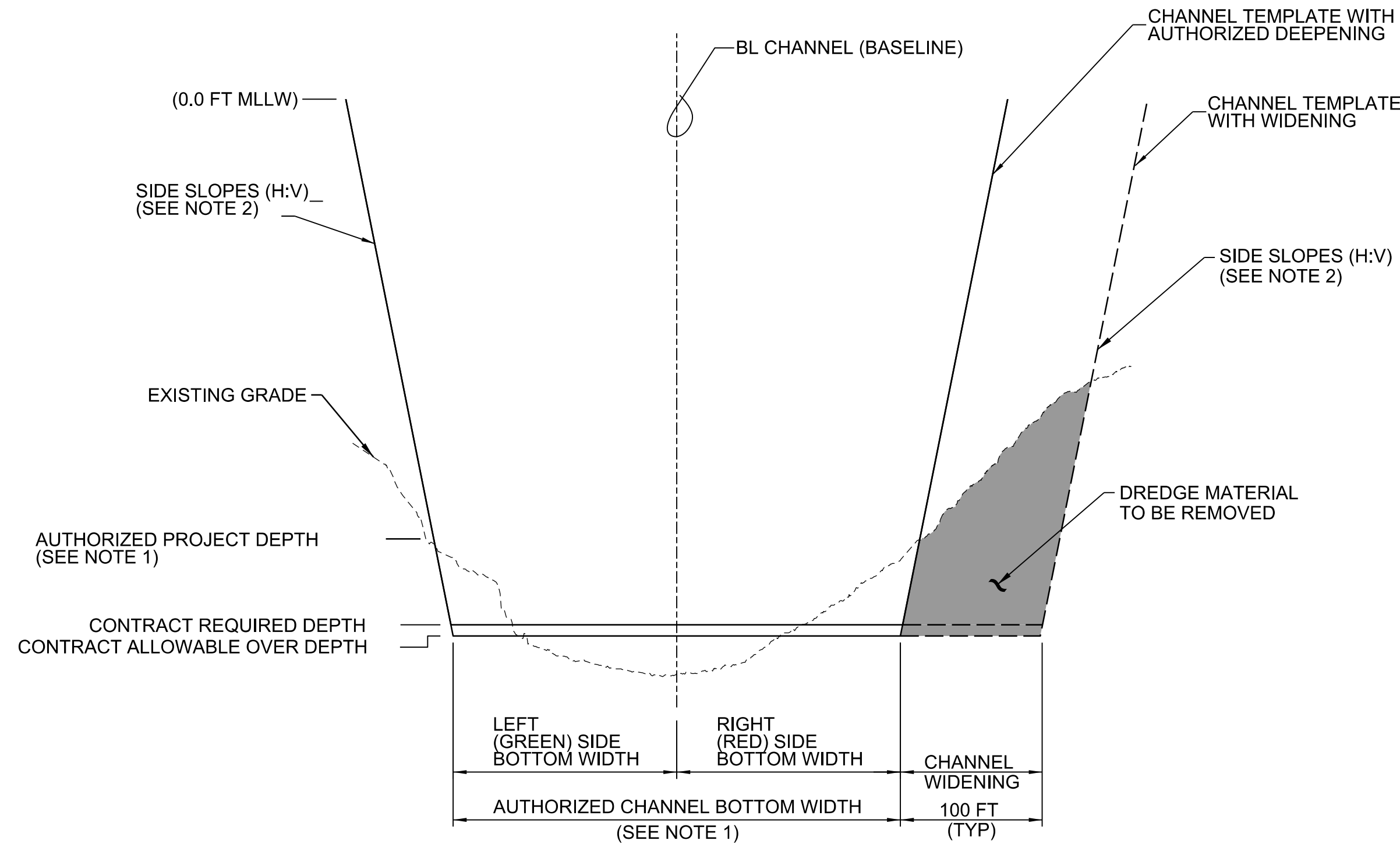
E

D

C

B

A



D1) TYPICAL SECTION - DREDGING TEMPLATE (SEE NOTE 3)
SCALE: NTS

SCALE: NTS

REACH	STATION (FROM)	STATION (TO)	AUTHORIZED DEEPENING CHANNEL BOTTOM WIDTH (SEE NOTES 2 AND 3)	CHANNEL WIDENING BOTTOM WIDTH (SEE NOTES 2, 3, AND 4)	AUTHORIZED PROJECT DEPTH, FT (MLLW)	CONTRACT REQUIRED DEPTH, FT (MLLW)	CONTRACT ALLOWABLE OVERDEPTH, FT (MLLW)	SIDE SLOPES (SEE NOTE 5)
SABINE-NECHES CANAL (SOUTH)	63+500 ^[1]	66+235	718 - 435 FT	718 - 535 FT	-48	-53	-54	2H:1V
	66+235	72+700 ^[1]	435 - 400 FT	535 - 500 FT	-48	-52	-53	2H:1V
SABINE-NECHES CANAL (NORTH)	80+660 ^[1]	121+517	400 - 500 FT	500 - 600 FT	-48	-52	-53	2H:1V
	0+00	40+00 ^[1]	500 FT	600 FT	-48	-53	-54	2H:1V
NECHES RIVER CHANNEL	122+40 ^[1]	155+00	400 FT	500 FT	-48	-53	-54	2H:1V
	155+00	345+00 ^[1]	400 FT	500 FT	-48	-52	-53	2H:1V
	345+00	510+00	400 - 600 FT	500 - 700 FT	-48	-53	-54	2H:1V
	510+00	640+00	423 - 400 FT	523 - 500 FT	-48	-52	-53	2H:1V

NOTES:

1. STATION MARKS THE LOCATION THAT THE CHANNEL BEGINS TO DEVIATE FROM THE AUTHORIZED DEEPENING CHANNEL BOTTOM WIDTH. THERE WILL BE A TAPER FROM THIS STATION TO THE CHANNEL WIDENING BOTTOM WIDTH, REFER TO PLAN VIEW SHEETS FOR ADDITIONAL INFORMATION.
2. THE CHANNEL BOTTOM WIDTHS PRESENTED ON THE PLAN SHEETS AND IN THE TABLE ON THIS SHEET ARE DEFINED AT THE CONTRACT ALLOWABLE OVERDEPTH.
3. CHANNEL WIDTH INCREASES ALONG TURNS IN THE CHANNEL ALIGNMENT. THESE BOTTOM WIDTHS APPLY TO STRAIGHT SEGMENTS OF THE CHANNEL.
4. THE CHANNEL WIDENING BOTTOM WIDTH'S WILL BE INCREASED BY 100 FT ALONG THE RED SIDE OF THE CHANNEL.
5. ALL SIDE SLOPES SHALL BE DREDGED AS MEASURED PERPENDICULAR TO THE BOTTOM OF CUT LINE. CROSS SECTIONS VISUALLY DEVIATING FROM THIS SLOPE ARE THE RESULT OF THE ANGLE THE CROSS SECTION WAS CUT.

NOTES:

1. THE AUTHORIZED PROJECT DEPTHS ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY AND DO NOT REPRESENT A CONSTRUCTION REQUIREMENT. THE AUTHORIZED CHANNEL BOTTOM WIDTHS PRESENTED ON THE PLAN SHEETS AND IN THE TABLE ON THIS SHEET ARE DEFINED AT THE CONTRACT ALLOWABLE OVERDEPTH. REFER TO CHANNEL CROSS SECTIONS ON SHEETS C-301 TO C-307 FOR ADDITIONAL INFORMATION.
2. ALL SIDE SLOPES SHALL BE DREDGED AS MEASURED PERPENDICULAR TO THE BOTTOM OF CUT LINE. CROSS SECTIONS VISUALLY DEVIATING FROM THIS SLOPE ARE THE RESULT OF THE ANGLE THE CROSS SECTION WAS CUT.
3. THE NEW-WORK CHANNEL DREDGE TEMPLATE DEPTHS ARE SUMMARIZED IN (TABLE A3) ON THIS SHEET. THE DREDGE TEMPLATE DESIGN AND DEPTHS MATCH THE ADJACENT SECTION OF CHANNEL FROM THE AUTHORIZED CHANNEL DEEPENING. REFER TO THE ENGINEERING APPENDIX SECTION 2.4 FOR ADDITIONAL INFORMATION.

[illegible]

11/13/2025	4
SCALE: AS SHOWN	
DRAWN BY: TWT	
DESIGNED BY: GJW	
CHECKED BY: LDW	

ENGINEERING DRAWINGS FOR SABINE-NECHES
WATERWAY NAVIGATION IMPROVEMENT PROJECT

CHANNEL STATIONING
AND TEMPLATE DIMENSIONS

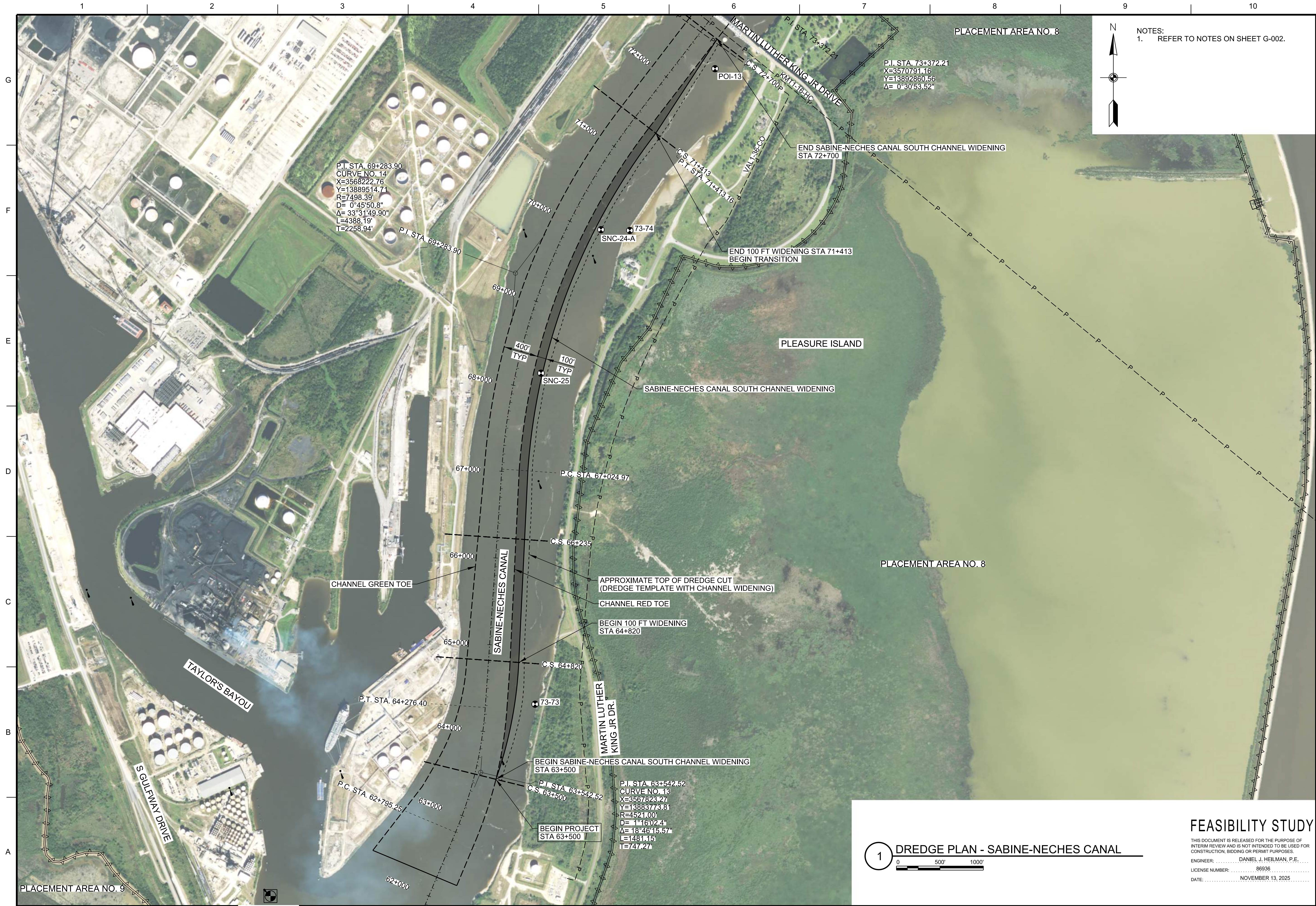
SHEET ID

G-005

FEASIBILITY STUDY

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ENGINEER: DANIEL J. HEILMAN, P.E.
 LICENSE NUMBER: 86936
 DATE: NOVEMBER 13, 2025



N

NOTES:
1. REFER TO NOTES ON SHEET G-002.

SABINE-NECHES
NAVIGATION DISTRICT
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REV.	DATE	DESCRIPTION
4	11/13/2025	FINAL FEASIBILITY STUDY DRAWINGS
3	09/18/2025	DRAWINGS FOR USACE REVIEW (REV 3)
2	09/22/2023	DRAWINGS FOR USACE REVIEW (REV 2)
1	06/1/2022	DRAWINGS FOR USACE REVIEW (REV 1)

DATE: 11/13/2025

REV: 4

SCALE: AS SHOWN

DRAWN BY: TWT

DESIGNED BY: GJM

CHECKED BY: LDW

HDR

HDR ENGINEERING, INC.
HDR's Firm Registration
No. 1754

SABINE-NECHES
NAVIGATION DISTRICT
Our commitment runs deep

ENGINEERING DRAWINGS FOR SABINE-NECHES
WATERWAY NAVIGATION IMPROVEMENT PROJECT

DREDGING PLAN
SABINE-NECHES CANAL CHANNEL WIDENING
STA. 63+500 TO STA. 72+000

SHEET ID
C-100

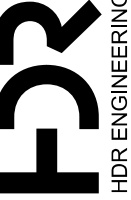
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- NOTES:
1. REFER TO NOTES ON SHEET G-002.
 2. THE DREDGED MATERIAL PLACEMENT PLAN FOR THIS STUDY ASSUMES THAT PLACEMENT AREA NO. 11 WILL NOT BE USED FOR THE NEW-WORK DREDGING ASSOCIATED WITH THE CHANNEL WIDENING.
 3. PA 11 IS A FEDERALLY OPERATED AND MAINTAINED PLACEMENT AREA THAT MAY OFFER ADDITIONAL CAPACITY FOR PLACEMENT OF NEW-WORK DREDGED MATERIAL FROM THE CHANNEL WIDENING. SUBJECT TO COORDINATION WITH USACE ON THE TIMING OF DIKE RAISES AT PA 11, AND WHETHER THE CHANNEL WIDENING IS CONSTRUCTED CONCURRENTLY WITH THE CHANNEL DEEPENING, PA 11 IS CONSIDERED A VIABLE ALTERNATIVE PLACEMENT AREA AND COULD HELP REDUCE THE COST OF DREDGED MATERIAL STORAGE.

			
		11/13/2025	DATE
		09/18/2025	
4	FINAL FEASIBILITY STUDY DRAWINGS	09/22/2023	
3	DRAWINGS FOR USACE REVIEW (REV 3)	06/1/2022	
2	DRAWINGS FOR USACE REVIEW (REV 2)		
1	DRAWINGS FOR USACE REVIEW (REV 1)		
	MARK		DESCRIPTION

DATE:	REV:
11/13/2025	4
SCALE:	AS SHOWN
DRAWN BY:	TWT
DESIGNED BY:	GJW
CHECKED BY:	LDW



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HDR ENGINEERING, INC.
TBD-ELS Firm Registration
No. 1754



SABINE-NECHES
NAVIGATION DISTRICT
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ENGINEERING DRAWINGS FOR SABINE-NECHES
WATERWAY NAVIGATION IMPROVEMENT PROJECT

DREDGING PLAN
SABINE-NECHES CANAL CHANNEL WIDENING
STA. 92+000 TO STA. 102+000

SHEET ID

C-102

FEASIBILITY STUDY

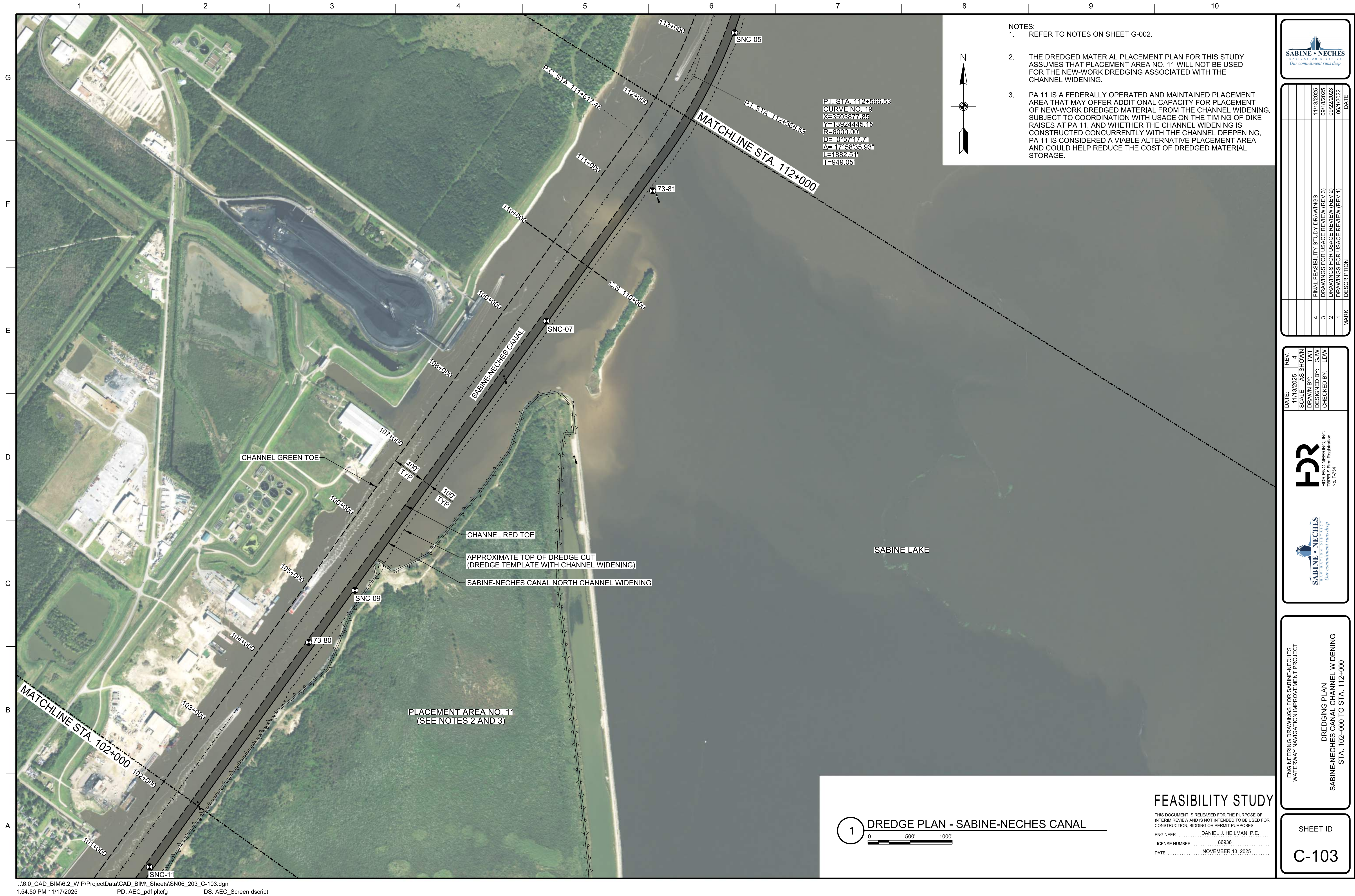
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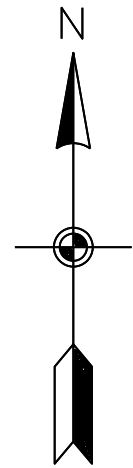
LICENSE NUMBER: 86936
DATE: NOVEMBER 13, 2025

1 DREDGE PLAN - SABINE-NECHES CANAL

0 500' 1000'



- NOTES:
1. REFER TO NOTES ON SHEET G-002.
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Our commitment runs deep

DATE	REV.	DESCRIPTION
11/13/2025	4	FINAL FEASIBILITY STUDY DRAWINGS
09/18/2025	3	DRAWINGS FOR USACE REVIEW (REV 3)
09/22/2023	2	DRAWINGS FOR USACE REVIEW (REV 2)
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DATE: 11/13/2025
SCALE: AS SHOWN
DRAWN BY: TWT
DESIGNED BY: GJM
CHECKED BY: LDW

HDR ENGINEERING, INC.
HDR Engineering, Inc.
10000
10000

ENGINEERING DRAWINGS FOR SABINE-NECHES
WATERWAY NAVIGATION IMPROVEMENT PROJECT

DREDGING PLAN
SABINE-NECHES CANAL CHANNEL WIDENING
STA. 102+000 TO STA. 112+000

SHEET ID
C-103

1 DREDGE PLAN - SABINE-NECHES CANAL

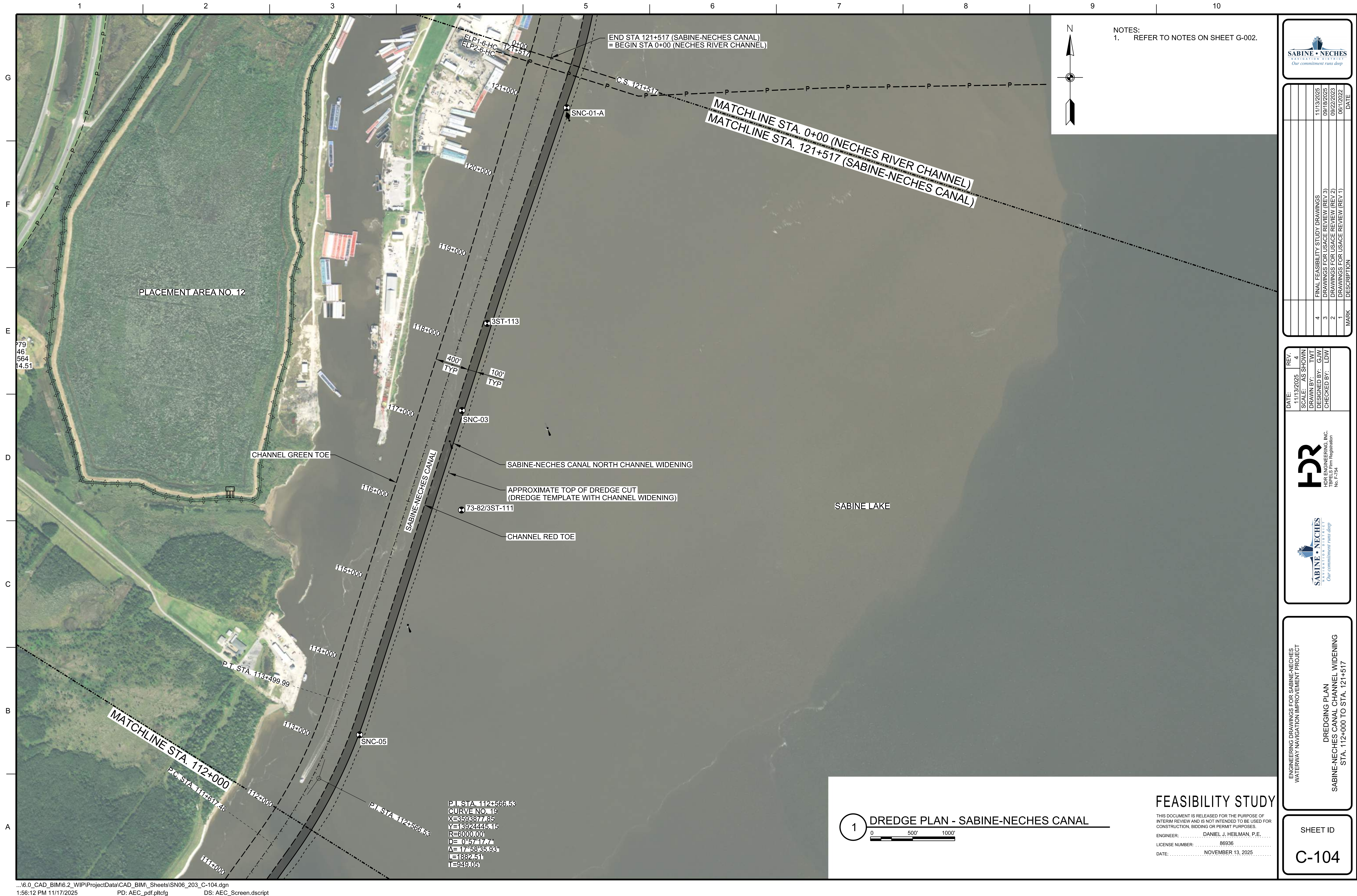
FEASIBILITY STUDY

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LICENSE NUMBER: 86936

DATE: NOVEMBER 13, 2025



1 DREDGE PLAN - SABINE-NECHES CANAL

FEASIBILITY STUDY

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ENGINEER: DANIEL J. HEILMAN, P.E.
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DATE: NOVEMBER 13, 2025



Our commitment runs deep

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4	11/13/2025	FINAL FEASIBILITY STUDY DRAWINGS
3	09/18/2025	DRAWINGS FOR USACE REVIEW (REV 3)
2	09/22/2023	DRAWINGS FOR USACE REVIEW (REV 2)
1	06/12/2022	DRAWINGS FOR USACE REVIEW (REV 1)



HDR ENGINEERING, INC.
HDR Engineering, Inc. is a registered professional engineering firm.
No. 17-54



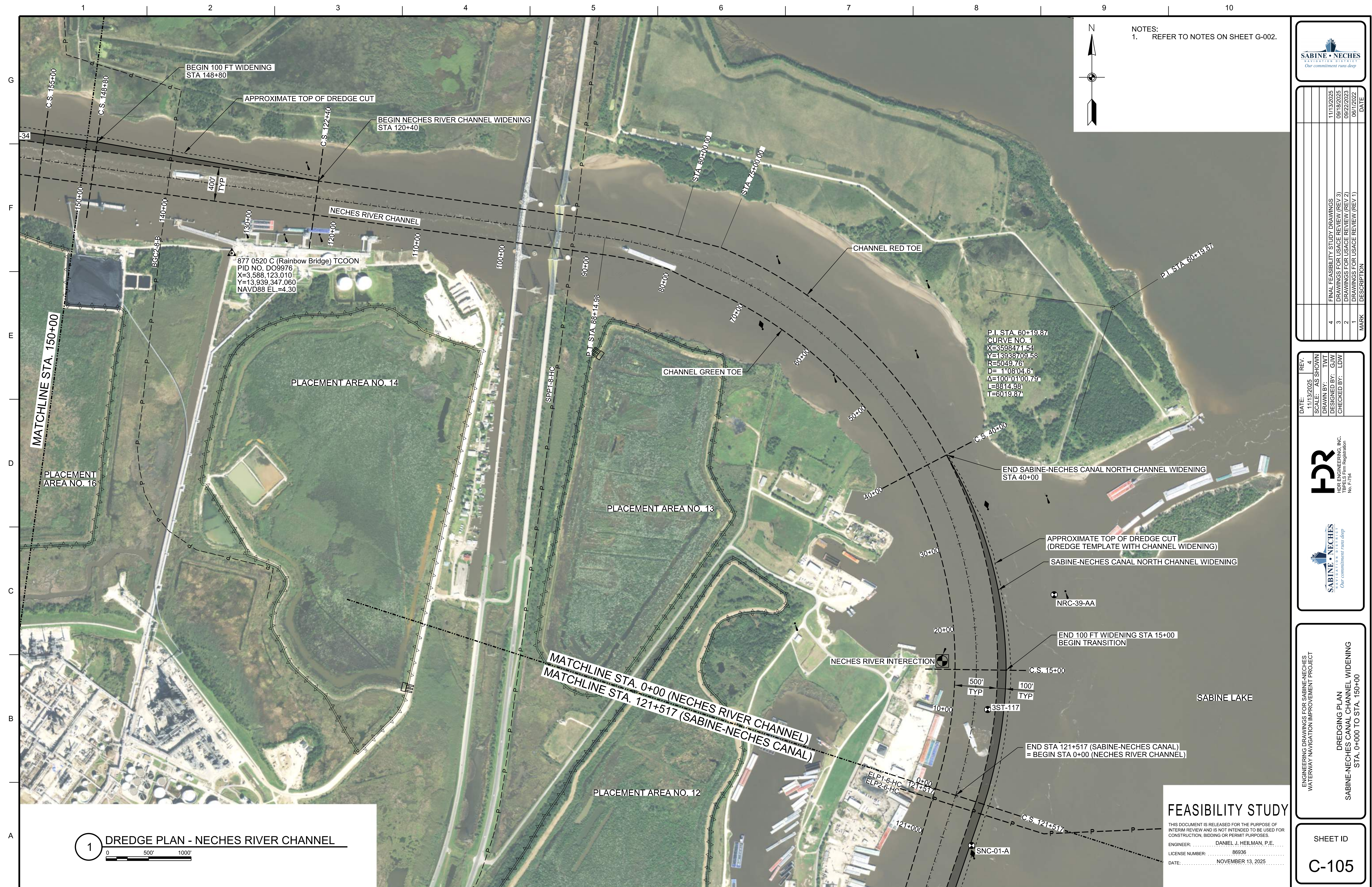
Our commitment runs deep

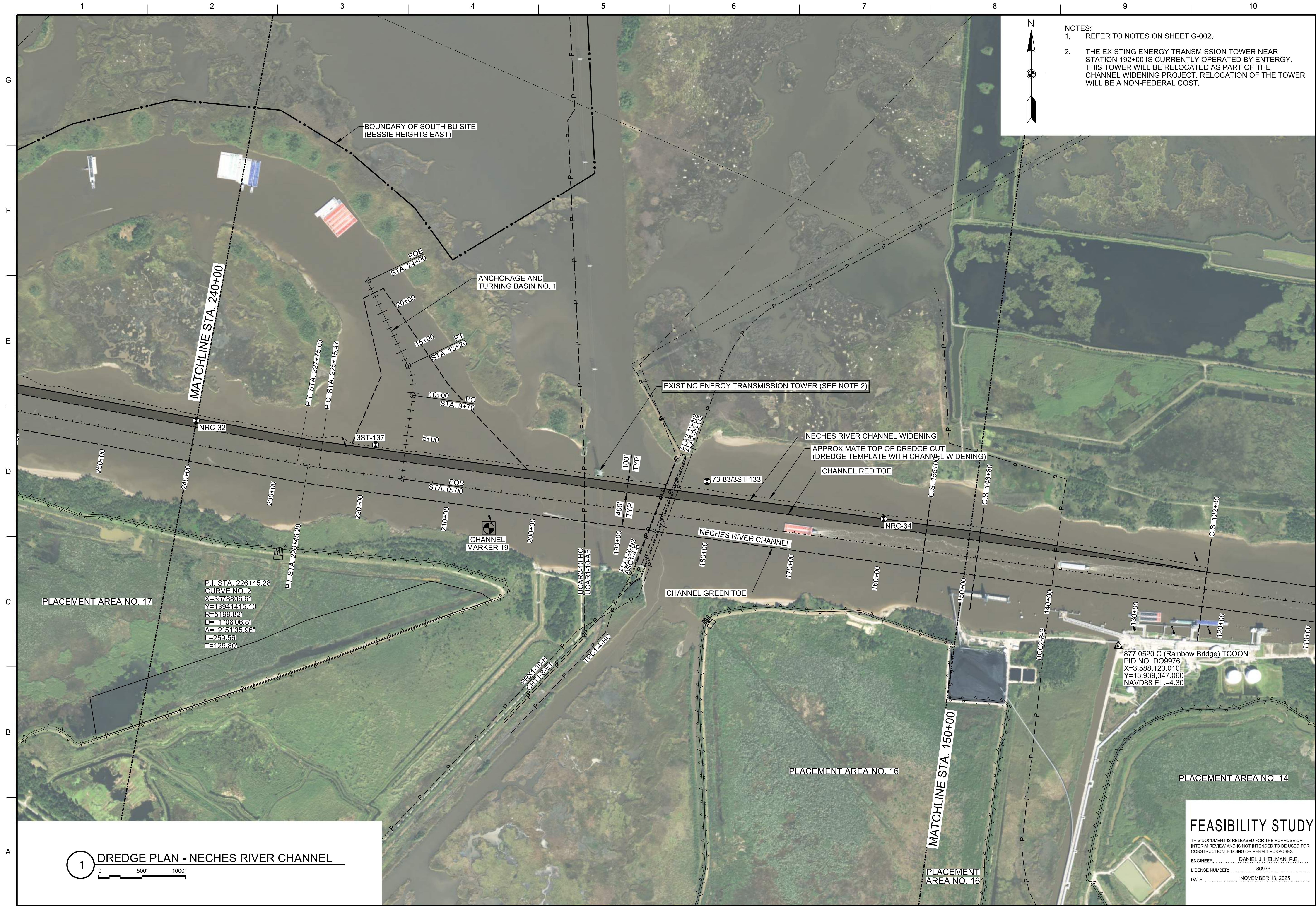
ENGINEERING DRAWINGS FOR SABINE-NECHES WATERWAY NAVIGATION IMPROVEMENT PROJECT

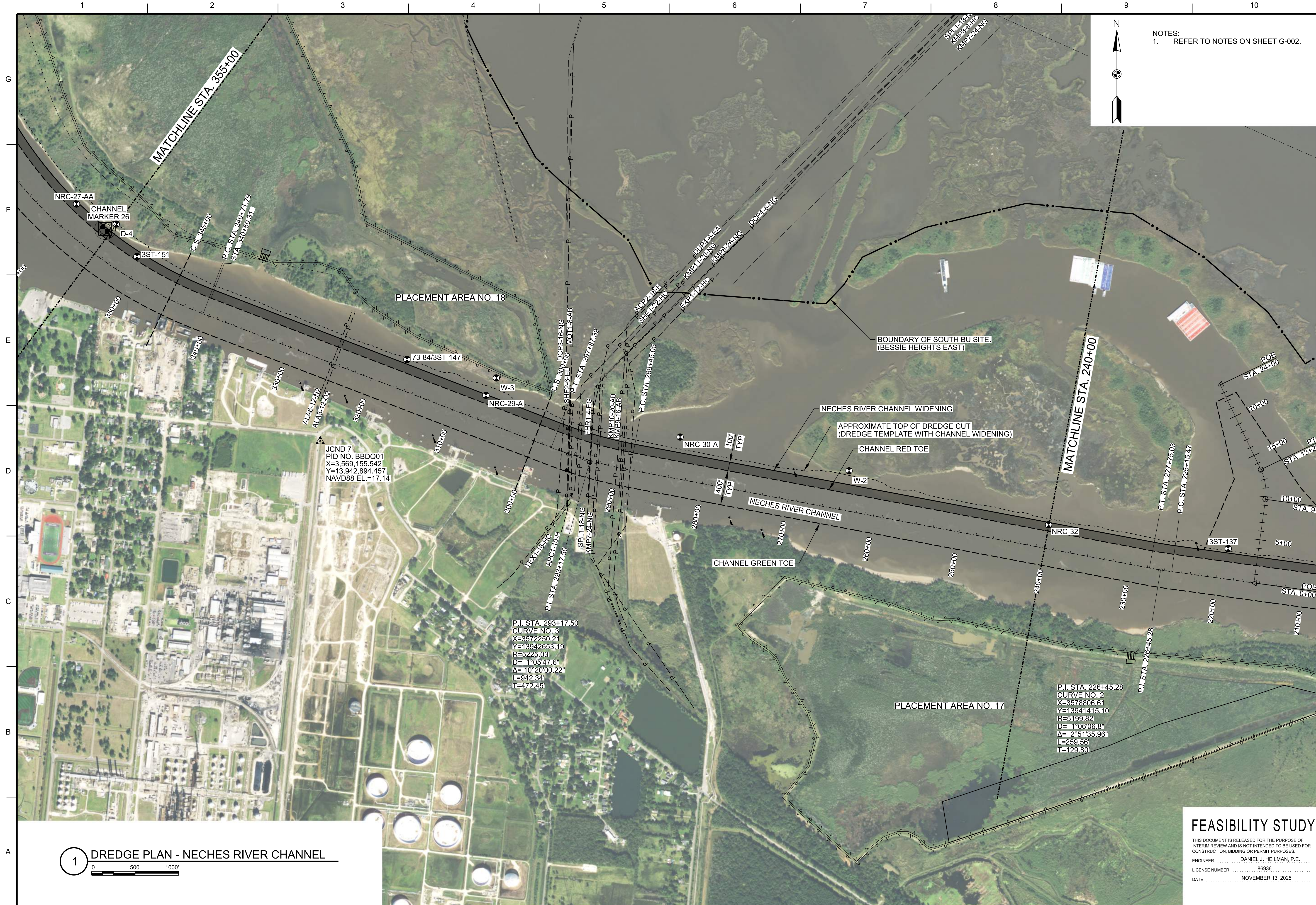
DREDGING PLAN
SABINE-NECHES CANAL CHANNEL WIDENING
STA. 112+000 TO STA. 121+517

SHEET ID

C-104







NOTES:
1. REFER TO NOTES ON SHEET G-002.

N

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REV.	DATE	DESCRIPTION	MARK
4	11/13/2025	FINAL FEASIBILITY STUDY DRAWINGS	
3	09/18/2025	DRAWINGS FOR USAGE REVIEW (REV 3)	
2	09/22/2023	DRAWINGS FOR USAGE REVIEW (REV 2)	
1	06/12/2022	DRAWINGS FOR USAGE REVIEW (REV 1)	

DATE: 11/13/2025
SCALE: AS SHOWN
DRAWN BY: TWT
DESIGNED BY: GJM
CHECKED BY: LDW

HDR ENGINEERING, INC.
TIPERIS Firm Registration
No. 1754

ENGINEERING DRAWINGS FOR SABINE-NECHES
WATERWAY NAVIGATION IMPROVEMENT PROJECT

DREDGING PLAN
SABINE-NECHES CANAL CHANNEL WIDENING
STA. 240+00 TO STA. 355+00

SHEET ID

C-107

1

DREDGE PLAN - NECHES RIVER CHANNEL

FEASIBILITY STUDY

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW AND IS NOT INTENDED TO BE USED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

ENGINEER: DANIEL J. HEILMAN, P.E.

LICENSE NUMBER: 86936

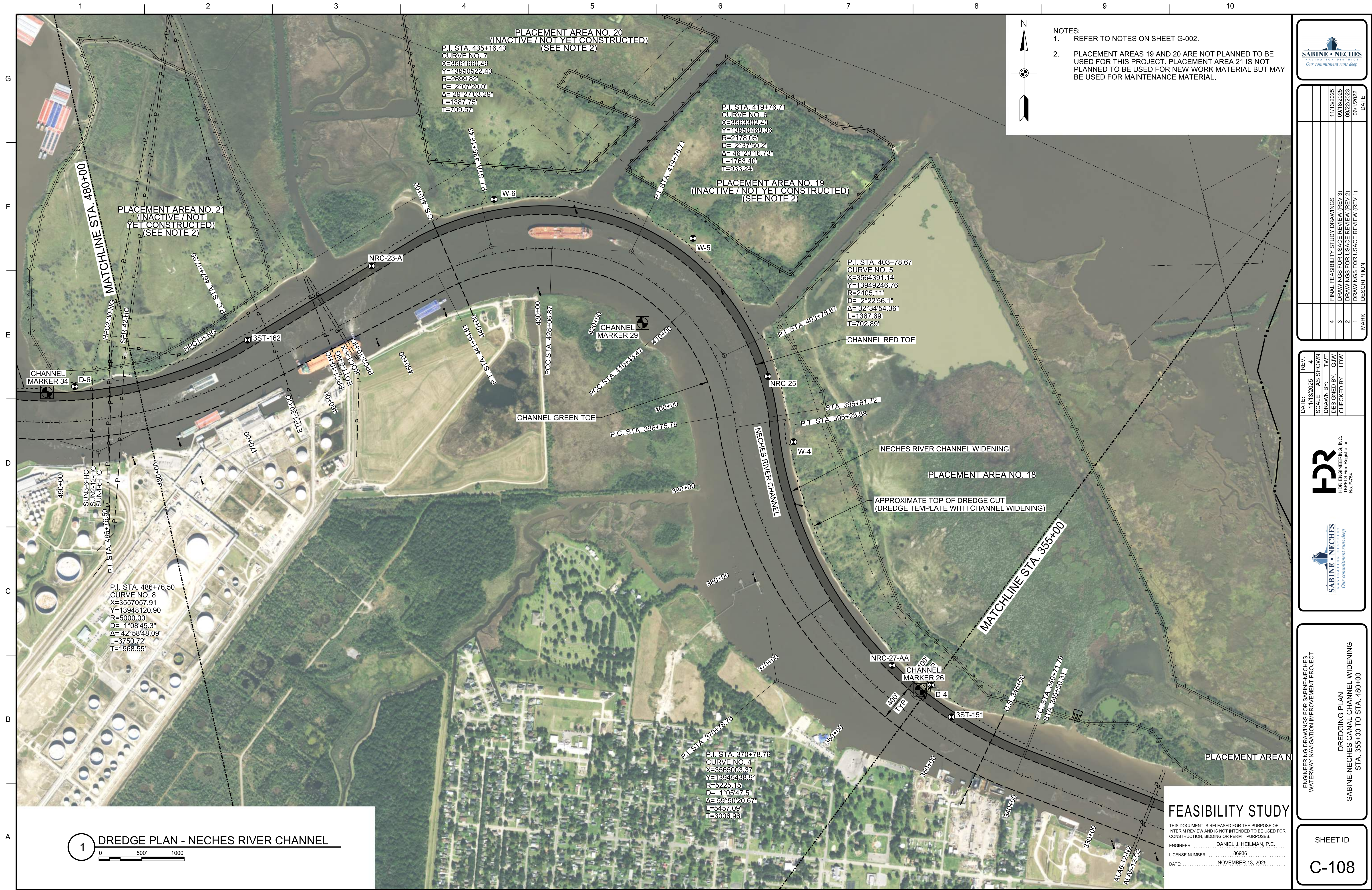
DATE: NOVEMBER 13, 2025

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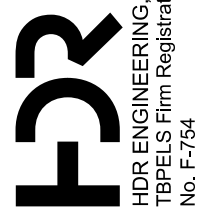


- NOTES:
1. REFER TO NOTES ON SHEET G-002.
 2. PLACEMENT AREAS 19 AND 20 ARE NOT PLANNED TO BE USED FOR THIS PROJECT. PLACEMENT AREA 21 IS NOT PLANNED TO BE USED FOR NEW-WORK MATERIAL BUT MAY BE USED FOR MAINTENANCE MATERIAL.



DATE	REV.	DESCRIPTION
11/13/2025	4	FINAL FEASIBILITY STUDY DRAWINGS
09/18/2025	3	DRAWINGS FOR USAGE REVIEW (REV 3)
09/22/2023	2	DRAWINGS FOR USAGE REVIEW (REV 2)
06/12/2022	1	DRAWINGS FOR USAGE REVIEW (REV 1)

DATE:	11/13/2025
REV:	4
SCALE:	AS SHOWN
DRAWN BY:	TWT
DESIGNED BY:	GJW
CHECKED BY:	LDW



HDR ENGINEERING, INC.
TERRIS Firm Registration
No. 1754



SABINE-NECHES NAVIGATION DISTRICT
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ENGINEERING DRAWINGS FOR SABINE-NECHES WATERWAY NAVIGATION IMPROVEMENT PROJECT

DREDGING PLAN

SABINE-NECHES CANAL CHANNEL WIDENING

STA. 355+00 TO STA. 480+00

SHEET ID

C-108

FEASIBILITY STUDY

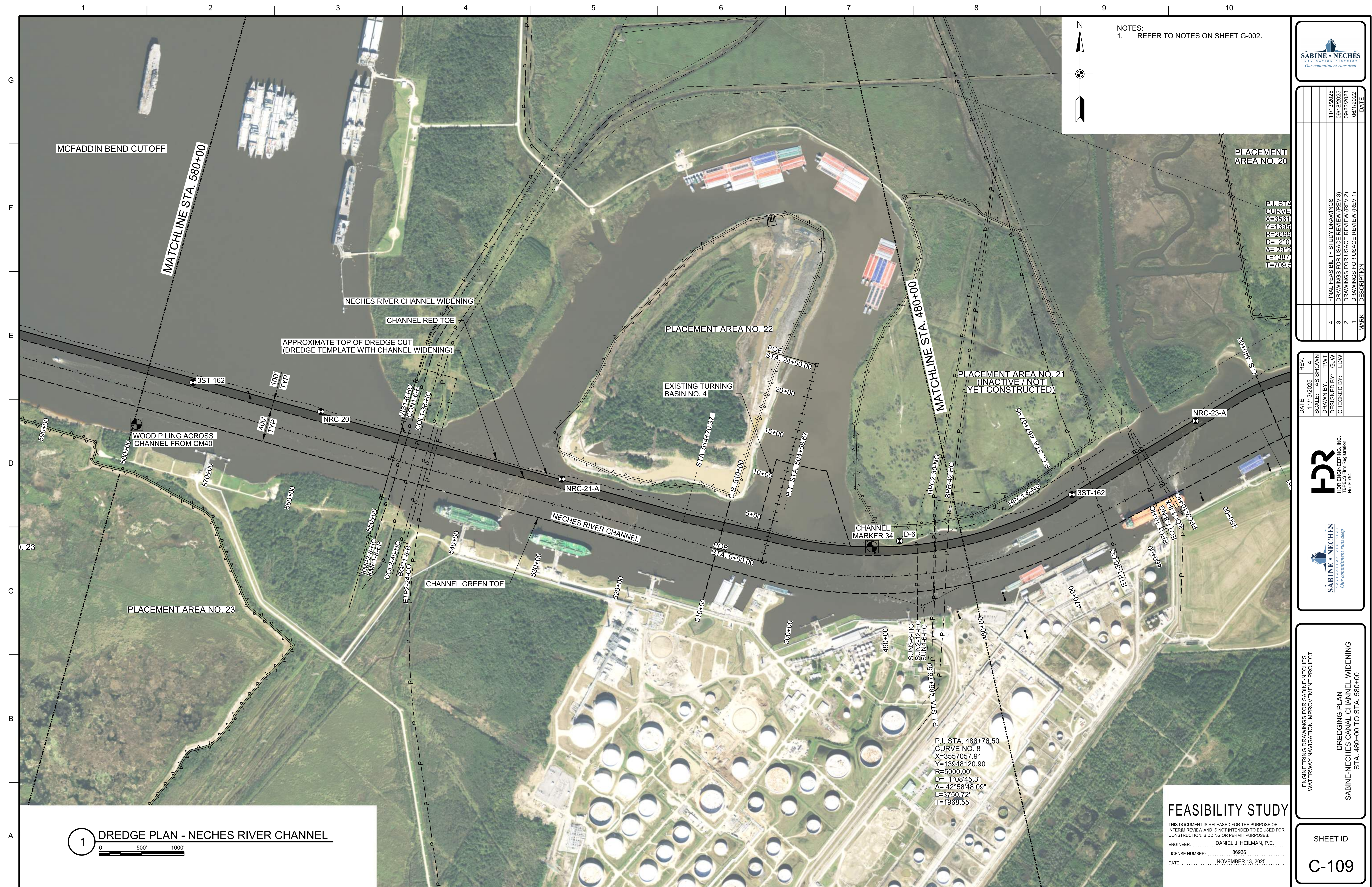
THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW AND IS NOT INTENDED TO BE USED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

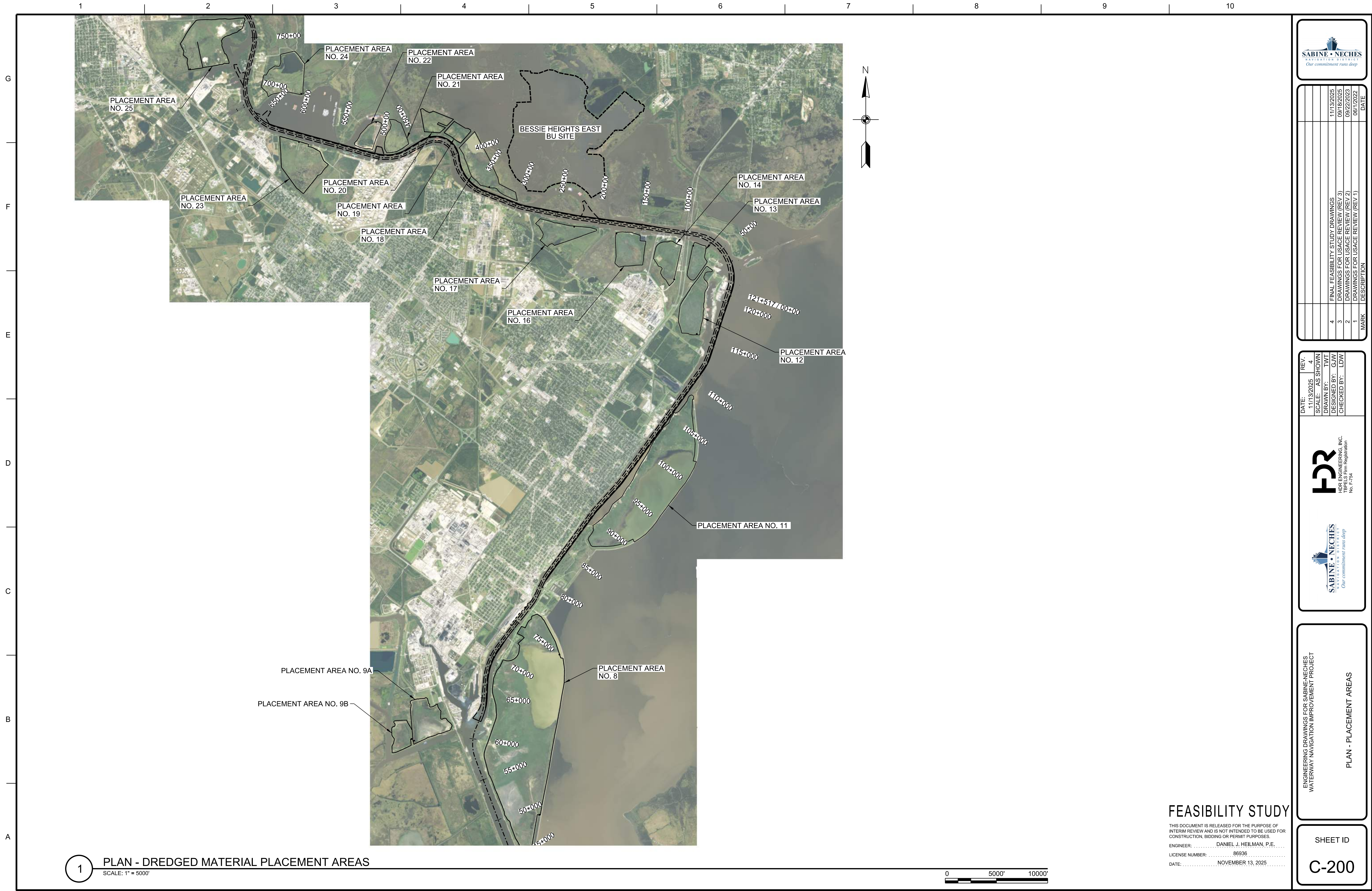
ENGINEER: DANIEL J. HEILMAN, P.E.

LICENSE NUMBER: 86936

DATE: NOVEMBER 13, 2025

1 DREDGE PLAN - NECHES RIVER CHANNEL





1

PLAN - DREDGED MATERIAL PLACEMENT AREAS

SCALE: 1" = 5000'

FEASIBILITY STUDY

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW AND IS NOT INTENDED TO BE USED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.
ENGINEER: DANIEL J. HEILMAN, P.E.
LICENSE NUMBER: 86936
DATE: NOVEMBER 13, 2025

DATE:	REV.
11/13/2025	4
SCALE:	AS SHOWN
DRAWN BY:	TWT
DESIGNED BY:	GJW
CHECKED BY:	LDW



HDR
HDR ENGINEERING, INC.
TBD-ELIS Firm Registration
No. 17-54



SABINE • NECHES
NAVIGATION DISTRICT
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ENGINEERING DRAWINGS FOR SABINE-NECHES
WATERWAY NAVIGATION IMPROVEMENT PROJECT

PLAN - PLACEMENT AREAS

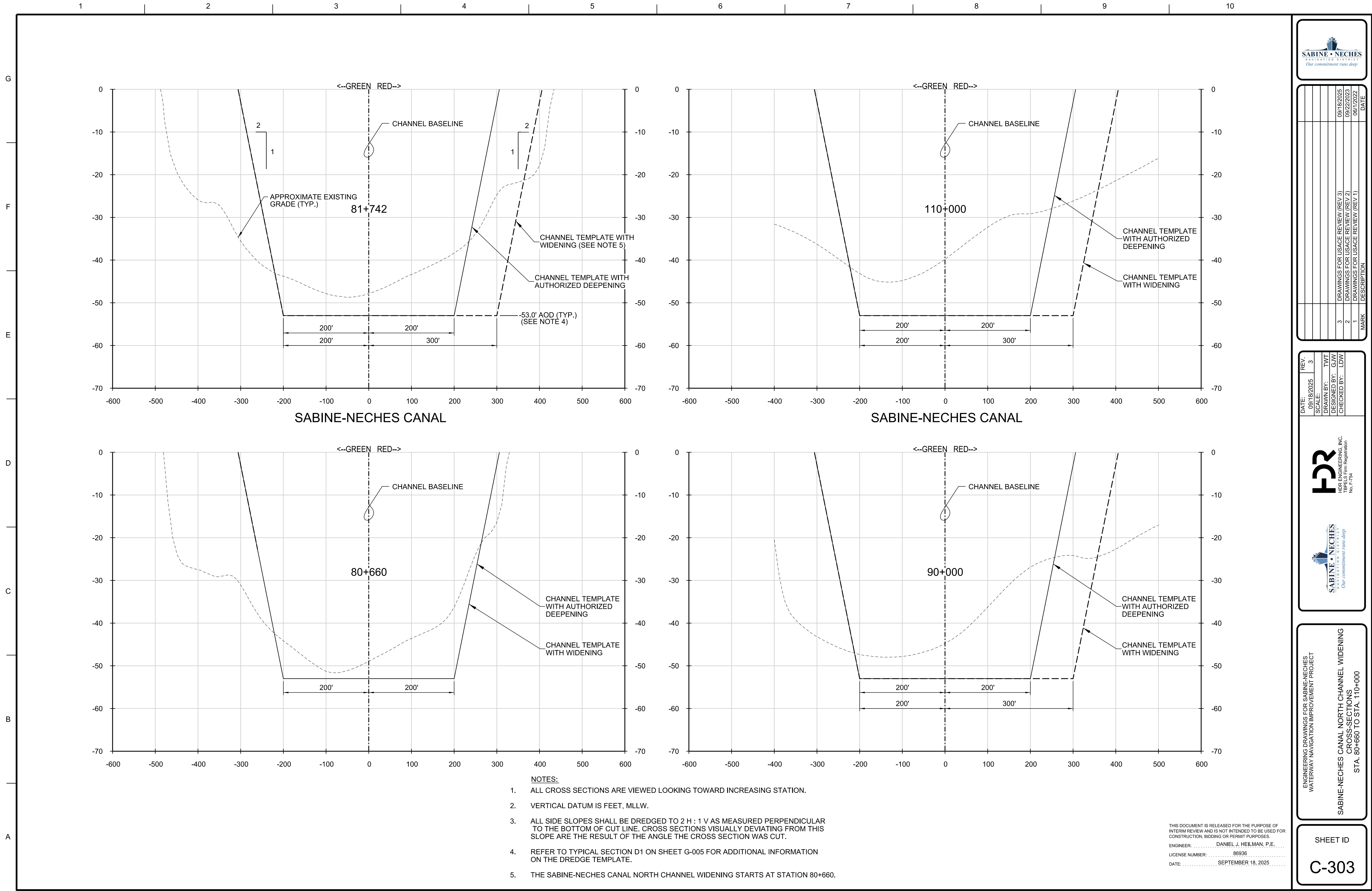
SHEET ID

C-200

MARK	DESCRIPTION	DATE
4	FINAL FEASIBILITY STUDY DRAWINGS	11/13/2025
3	DRAWINGS FOR USAGE REVIEW (REV 3)	09/18/2025
2	DRAWINGS FOR USAGE REVIEW (REV 2)	09/22/2023
1	DRAWINGS FOR USAGE REVIEW (REV 1)	06/12/2022



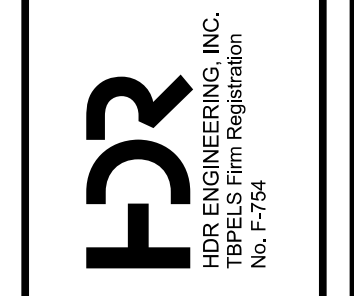
SABINE • NECHES
NAVIGATION DISTRICT
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SABINE • NECHES
NAVIGATION DISTRICT
Our commitment runs deep

REV.	DATE	DESCRIPTION
3	09/18/2025	DRAWINGS FOR USAGE REVIEW (REV 3)
2	09/22/2023	DRAWINGS FOR USAGE REVIEW (REV 2)
1	06/12/2022	DRAWINGS FOR USAGE REVIEW (REV 1)



HDR
HDR ENGINEERING, INC.
TYPE: EIR Firm Registration
No. 1754



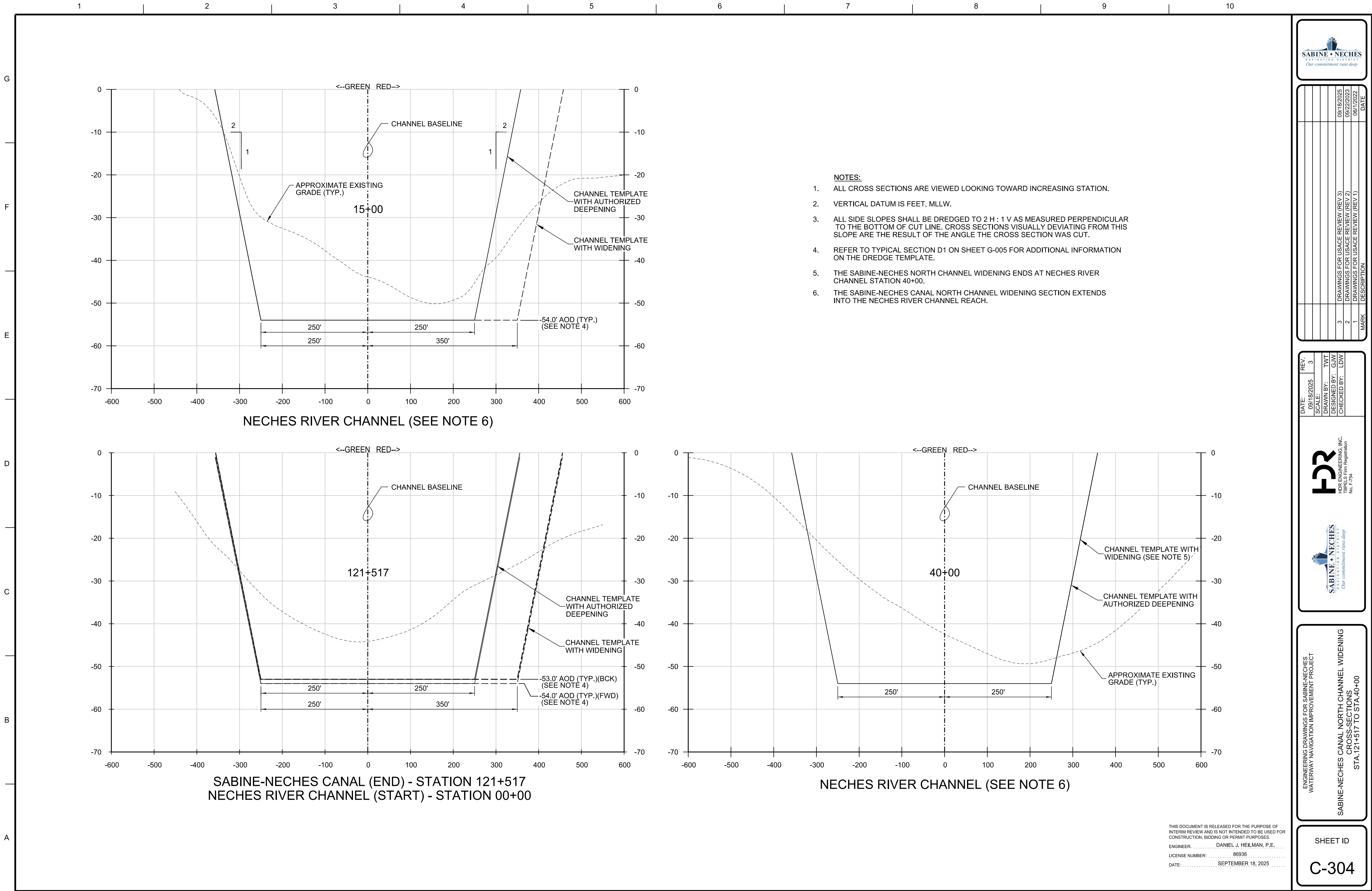
SABINE • NECHES
NAVIGATION DISTRICT
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ENGINEERING DRAWINGS FOR SABINE-NECHES
WATERWAY NAVIGATION IMPROVEMENT PROJECT

SABINE-NECHES CANAL NORTH CHANNEL WIDENING
CROSS-SECTIONS
STA. 80+660 TO STA. 110+000

SHEET ID

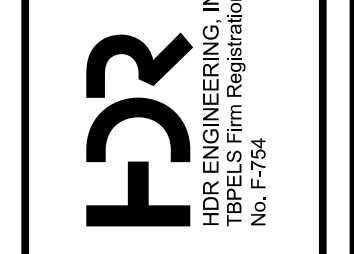
C-303





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REV.	DATE	DESCRIPTION
3	09/18/2025	DRAWINGS FOR USACE REVIEW (REV 3)
2	09/22/2023	DRAWINGS FOR USACE REVIEW (REV 2)
1	06/12/2022	DRAWINGS FOR USACE REVIEW (REV 1)



HDR ENGINEERING, INC.
TYPELS Firm Registration No. 1754



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ENGINEERING DRAWINGS FOR SABINE-NECHES WATERWAY NAVIGATION IMPROVEMENT PROJECT

SABINE-NECHES CANAL NORTH CHANNEL WIDENING CROSS-SECTIONS
STA. 121+517 TO STA. 40+00

SHEET ID

C-304



- A

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HDR ENGINEERING, INC.
 TBPELS Firm Registration
 No. F-754

SHEET ID

C-307



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SNC-18-A

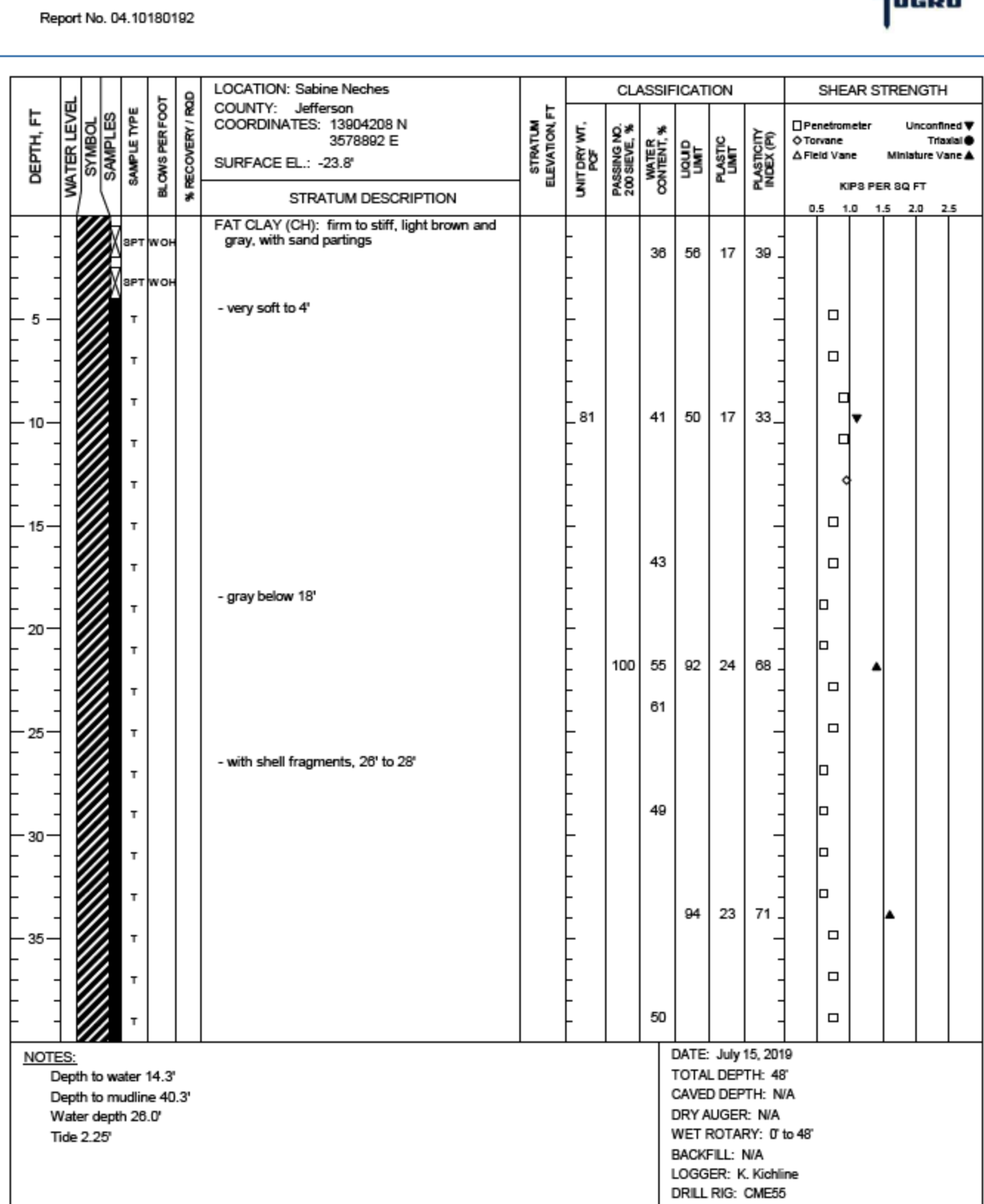


PLATE A-114a

SNC-16

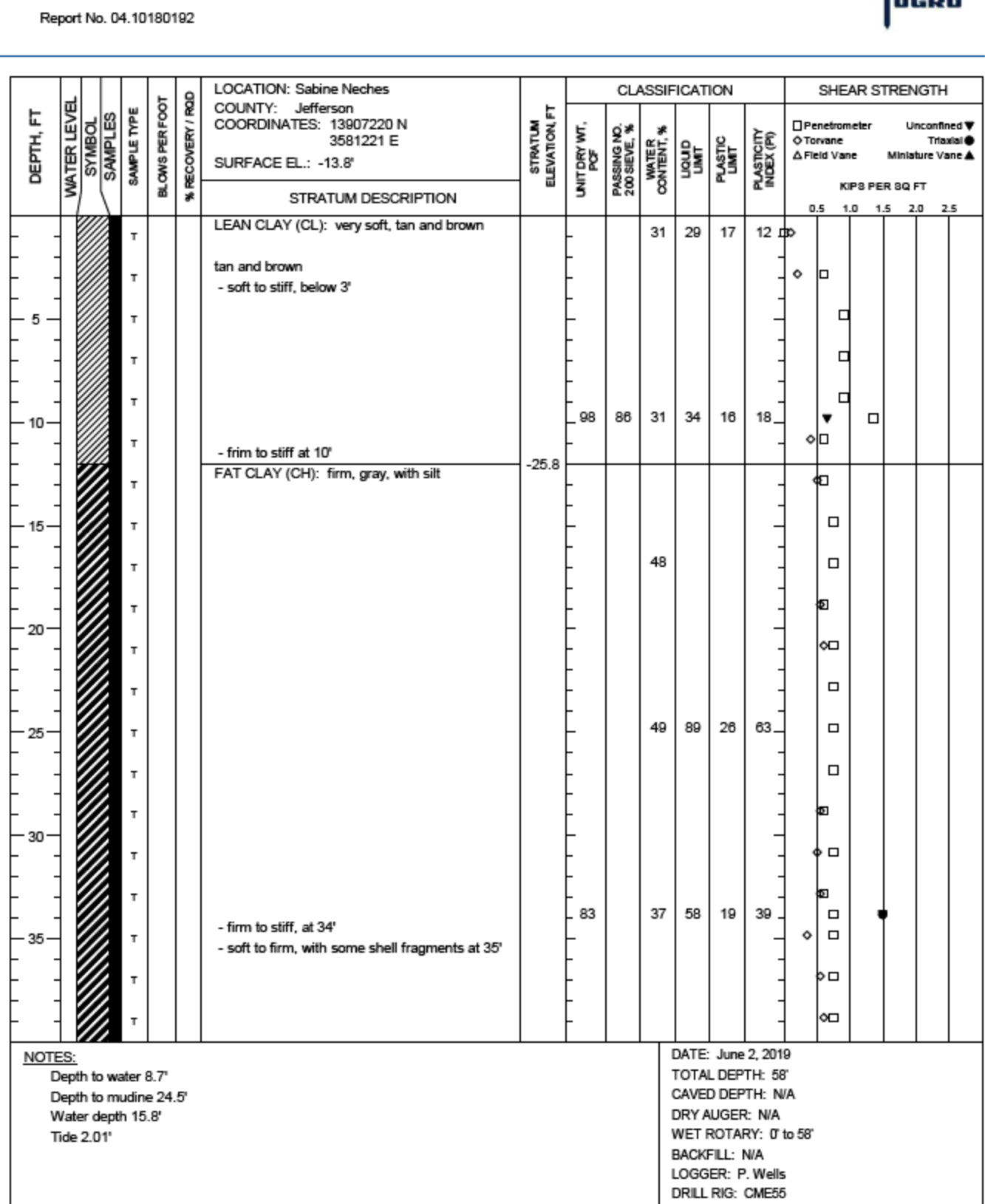


PLATE A-112a

SNC-13-A

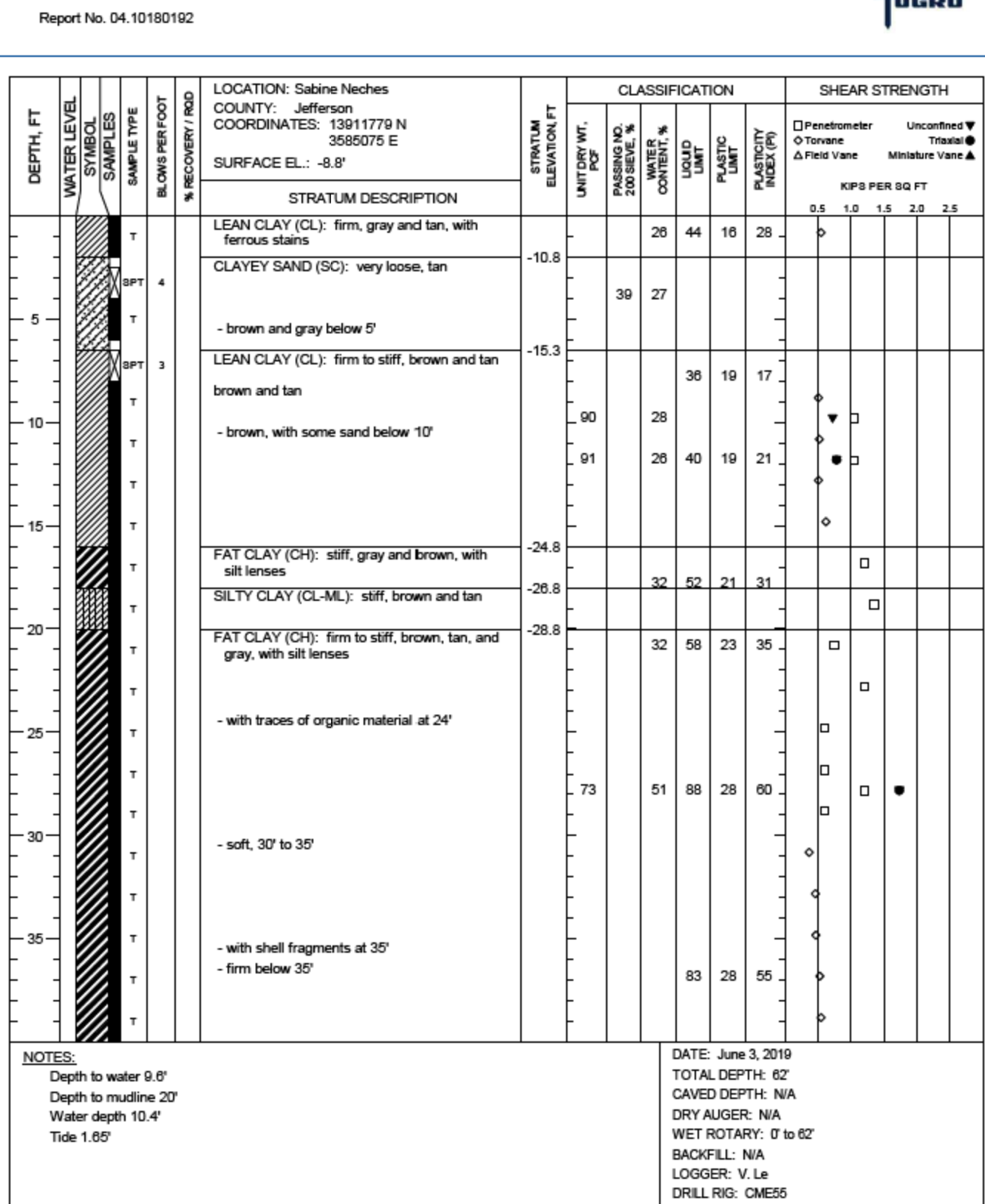


PLATE A-108a

SNC-18-A

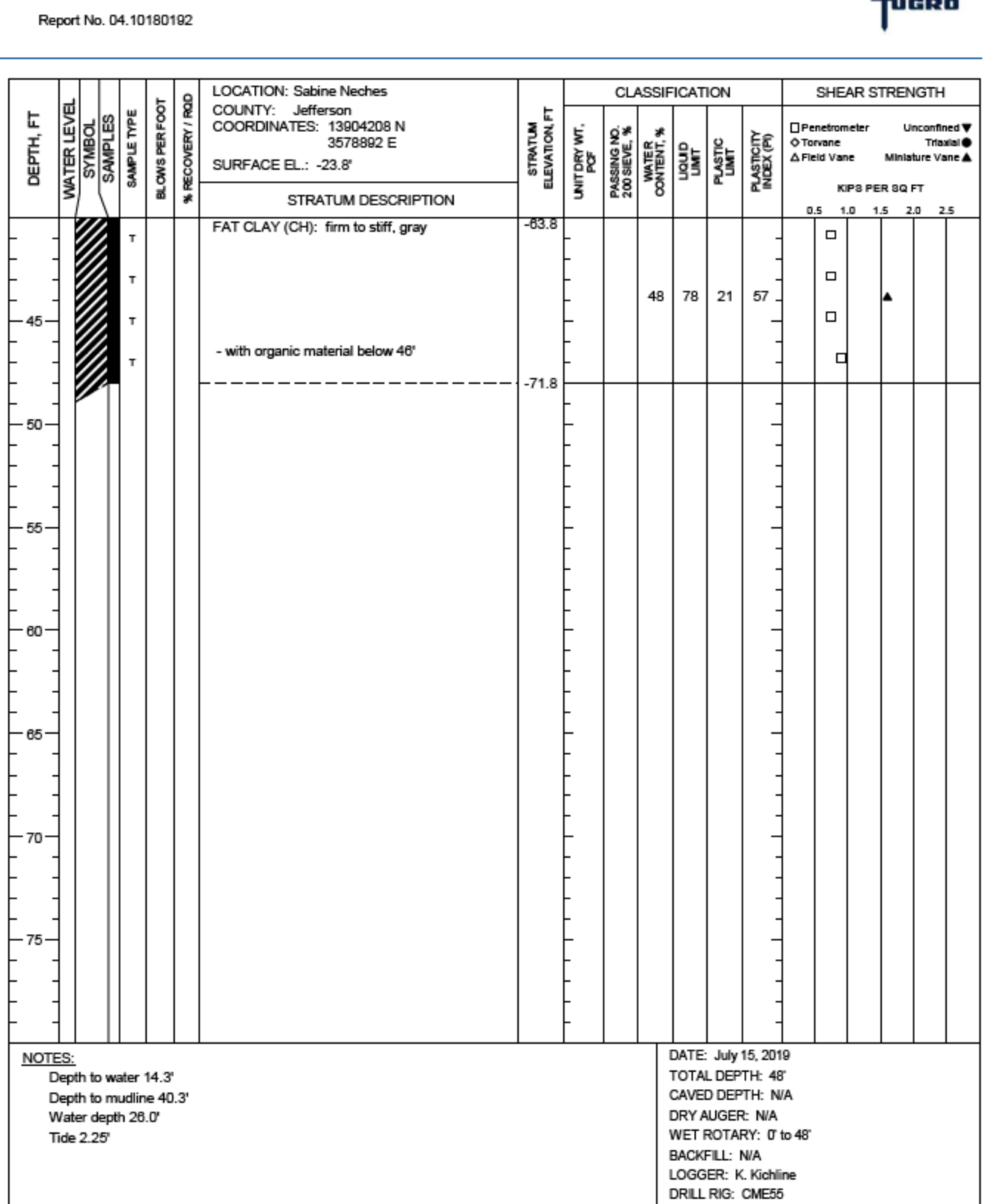


PLATE A-114b

SNC-16 (Cont'd)

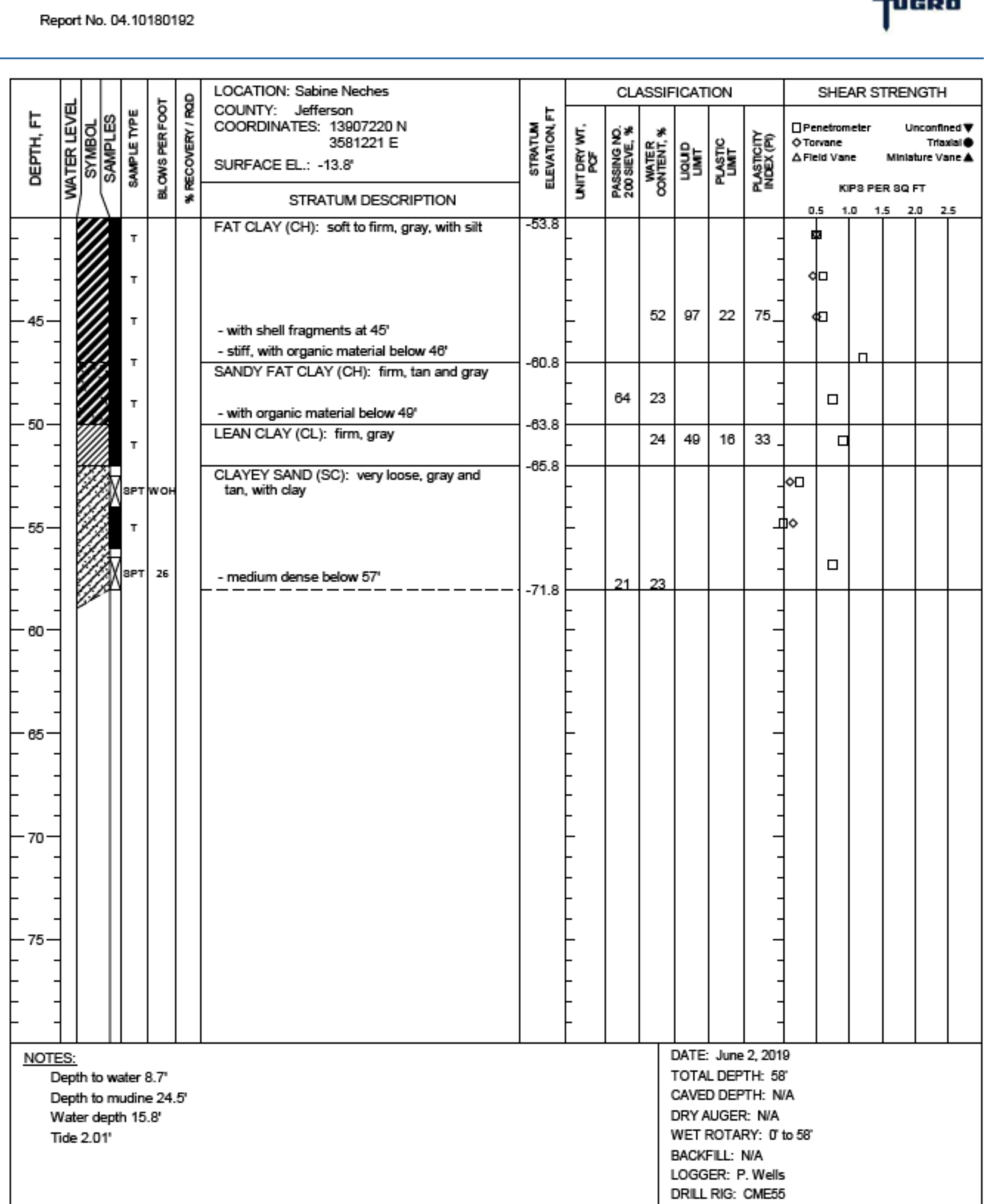


PLATE A-112b

SNC-13-A (Cont'd)

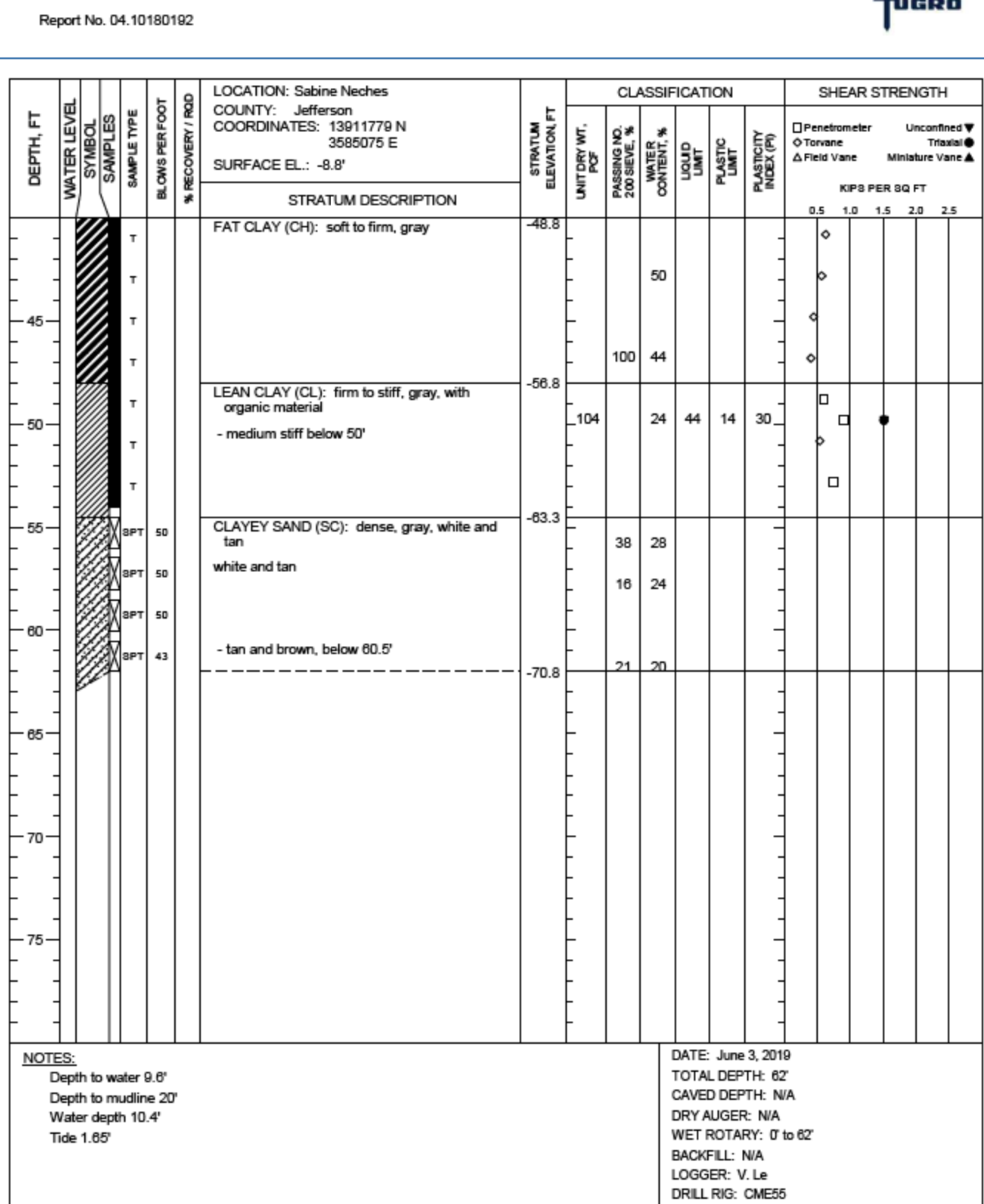


PLATE A-108b

NOTES: TO BORINGS
1. REFER TO NOTES ON SHEET B-300 FOR INFORMATION ON SOIL BORINGS.



REV.	DATE	DESCRIPTION
4	11/13/2025	FINAL FEASIBILITY STUDY DRAWINGS
3	09/18/2025	DRAWINGS FOR USACE REVIEW (REV 3)
2	09/22/2023	DRAWINGS FOR USACE REVIEW (REV 2)
1	06/12/2022	DRAWINGS FOR USACE REVIEW (REV 1)

DATE:	11/13/2025
REV:	4
SCALE:	AS SHOWN
DRAWN BY:	TWT
DESIGNED BY:	GJM
CHECKED BY:	LDW



ENGINEERING DRAWINGS FOR SABINE-NECHES
WATERWAY NAVIGATION IMPROVEMENT PROJECT

BORING LOGS

SHEET ID

B-302

FEASIBILITY STUDY

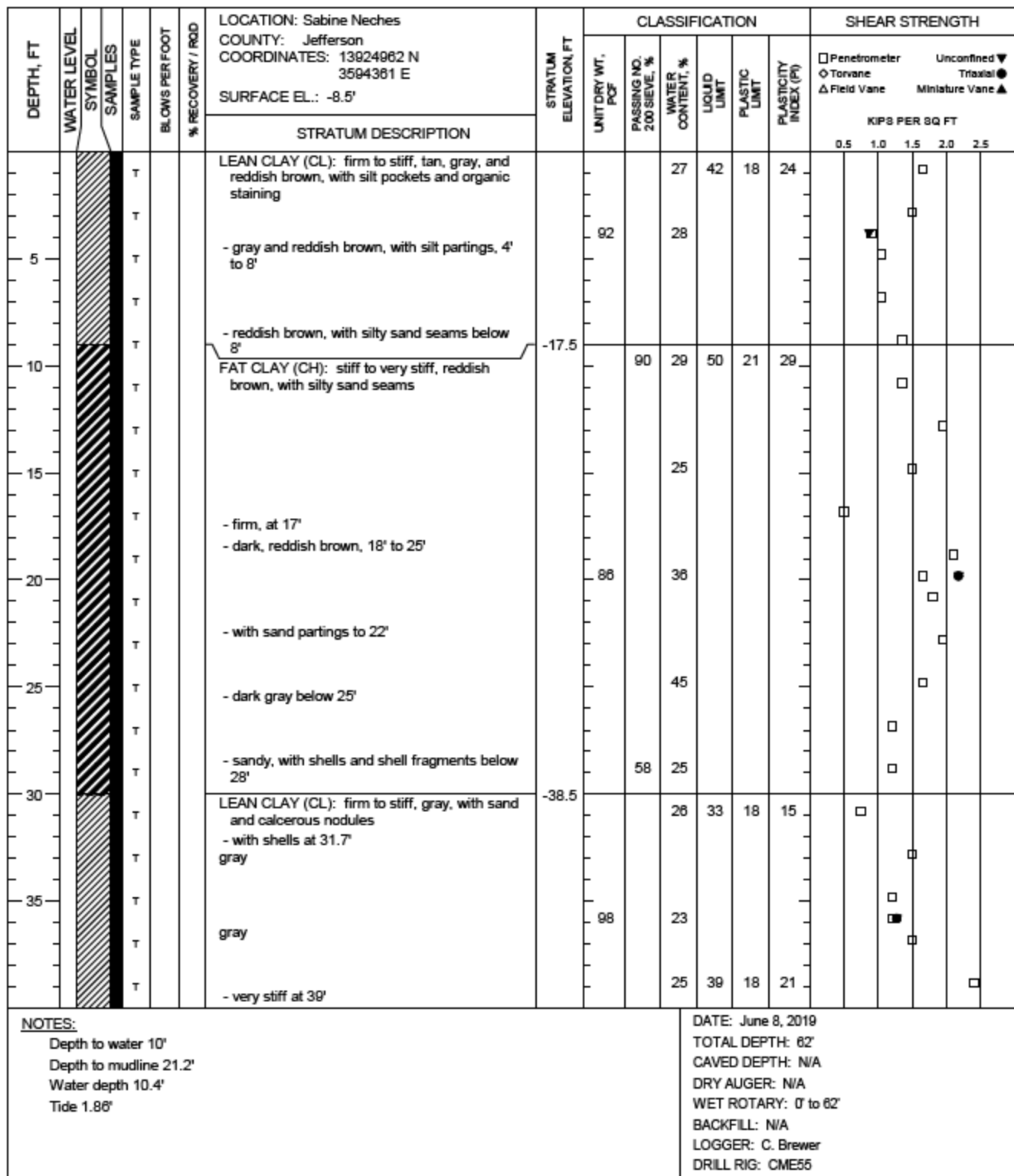
THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF
INTERIM REVIEW AND IS NOT INTENDED TO BE USED FOR
CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

ENGINEER: DANIEL J. HEILMAN, P.E.
LICENSE NUMBER: 86936
DATE: NOVEMBER 13, 2025

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SNC-05

Report No. 04.10180192

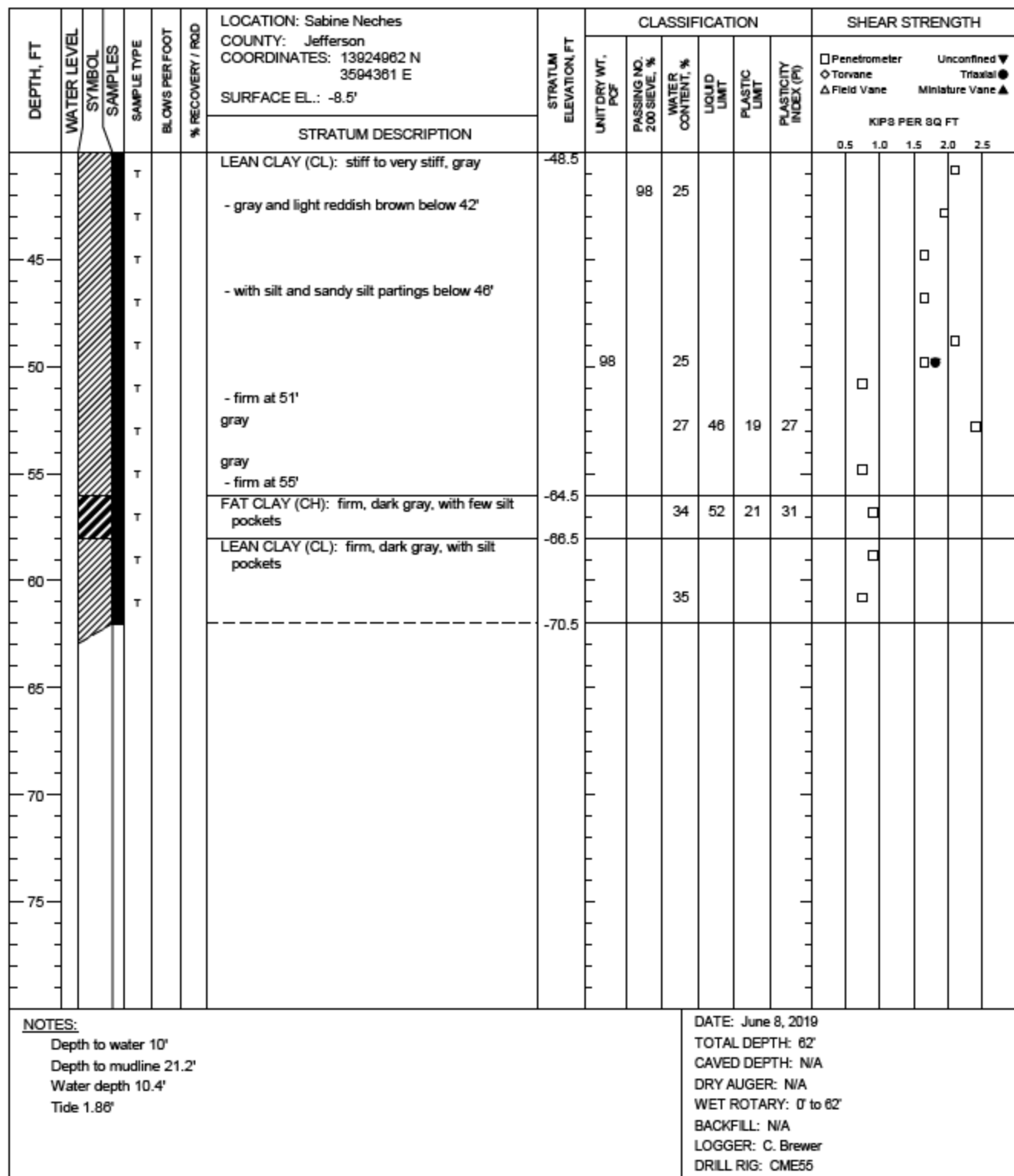


LOG OF BORING NO. SNC-05
SABINE-NECHES WATERWAY CHANNEL IMPROVEMENT PROJECT
SABINE-NECHES WATERWAY CHANNEL
SABINE-NECHES, TEXAS

PLATE A-100a

SNC-05 (Cont'd)

Report No. 04.10180192

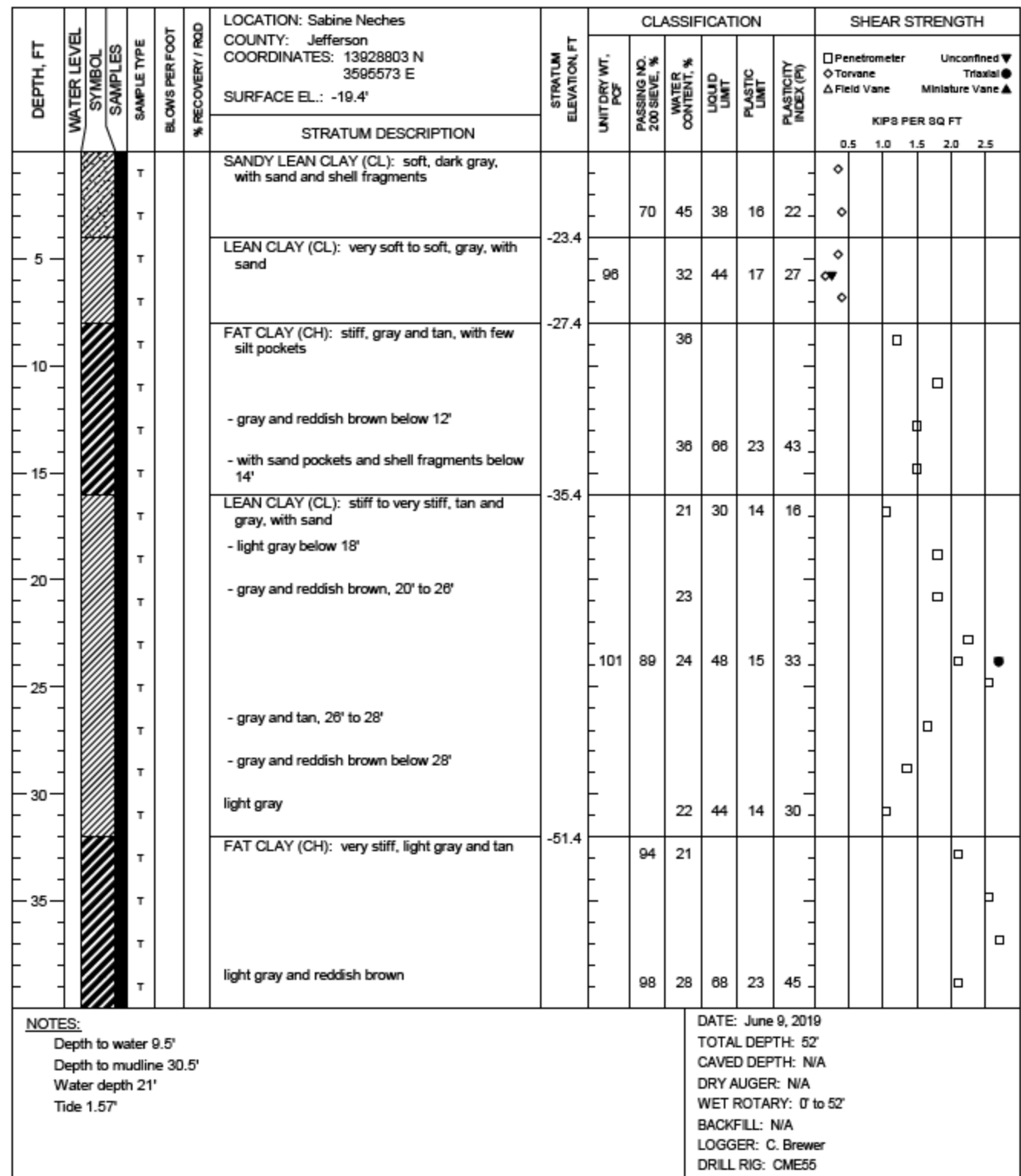


LOG OF BORING NO. SNC-05
SABINE-NECHES WATERWAY CHANNEL IMPROVEMENT PROJECT
SABINE-NECHES WATERWAY CHANNEL
SABINE-NECHES, TEXAS

PLATE A-100b

SNC-03

Report No. 04.10180192

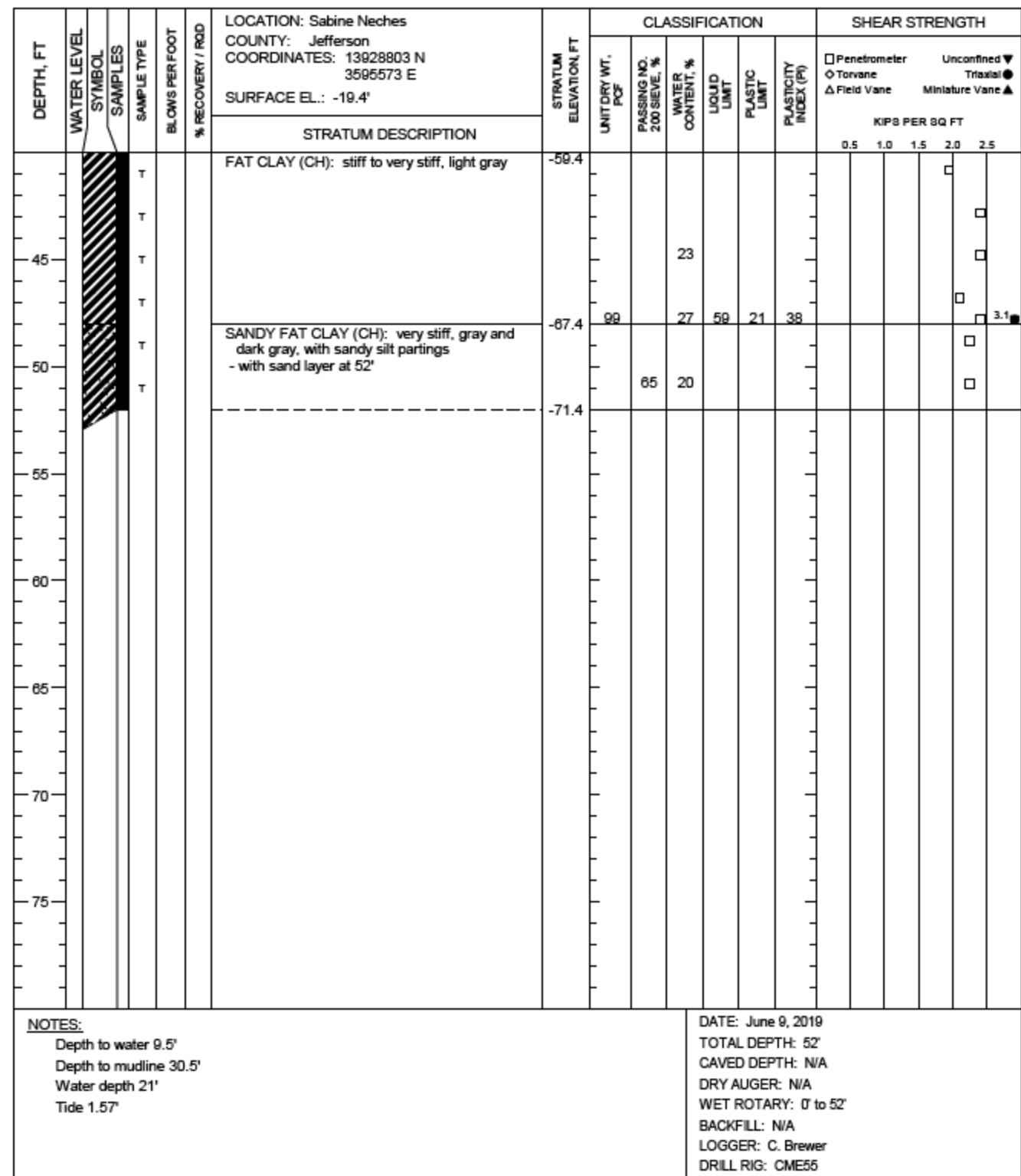


LOG OF BORING NO. SNC-03
SABINE-NECHES WATERWAY CHANNEL IMPROVEMENT PROJECT
SABINE-NECHES WATERWAY CHANNEL
SABINE-NECHES, TEXAS

PLATE A-98a

SNC-03 (Cont'd)

Report No. 04.10180192

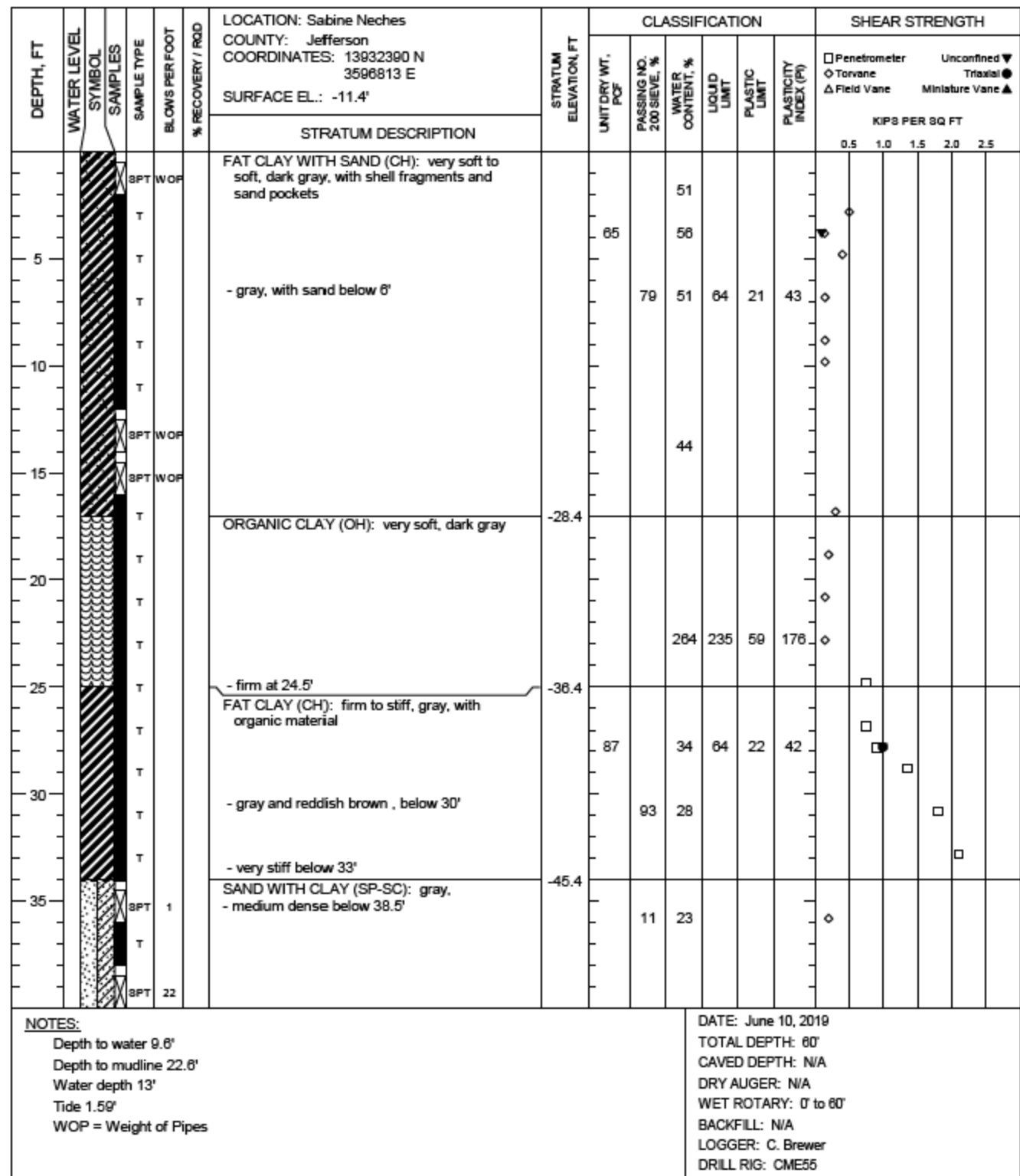


LOG OF BORING NO. SNC-03
SABINE-NECHES WATERWAY CHANNEL IMPROVEMENT PROJECT
SABINE-NECHES WATERWAY CHANNEL
SABINE-NECHES, TEXAS

PLATE A-98b

SNC-01-A

Report No. 04.10180192

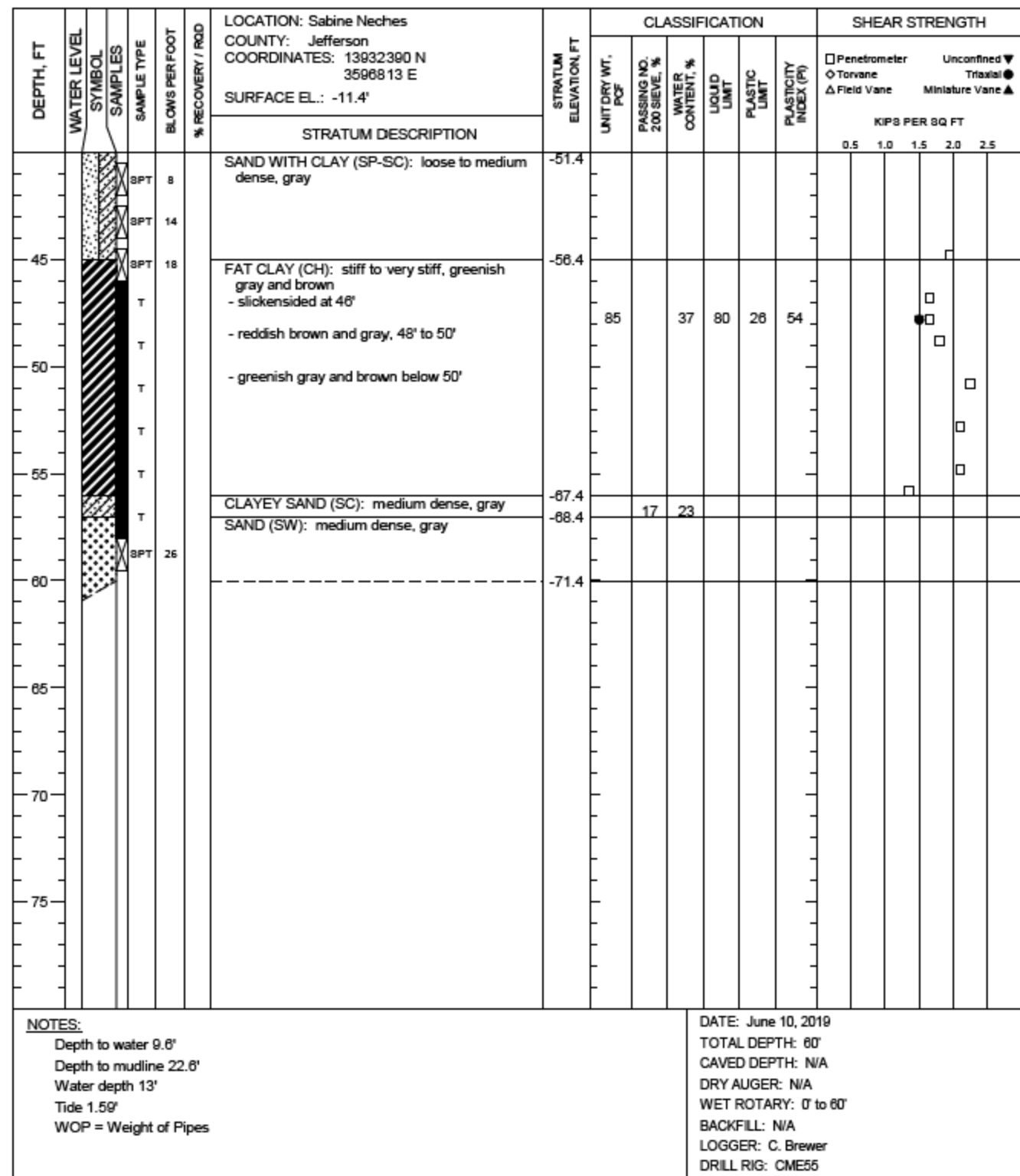


LOG OF BORING NO. SNC-01-A
SABINE-NECHES WATERWAY CHANNEL IMPROVEMENT PROJECT
SABINE-NECHES WATERWAY CHANNEL
SABINE-NECHES, TEXAS

PLATE A-96a

SNC-01-A (Cont'd)

Report No. 04.10180192



LOG OF BORING NO. SNC-01-A
SABINE-NECHES WATERWAY CHANNEL IMPROVEMENT PROJECT
SABINE-NECHES WATERWAY CHANNEL
SABINE-NECHES, TEXAS

PLATE A-96b

NOTES: TO BORINGS
1. REFER TO NOTES ON SHEET B-300 FOR INFORMATION ON SOIL BORINGS.



REV.	DATE	DESCRIPTION
4	11/13/2025	FINAL FEASIBILITY STUDY DRAWINGS
3	09/18/2025	DRAWINGS FOR USAGE REVIEW (REV 3)
2	09/22/2023	DRAWINGS FOR USAGE REVIEW (REV 2)
1	06/12/2022	DRAWINGS FOR USAGE REVIEW (REV 1)

DATE:	11/13/2025
SCALE:	AS SHOWN
DRAWN BY:	TWT
DESIGNED BY:	GJM
CHECKED BY:	LDW



ENGINEERING DRAWINGS FOR SABINE-NECHES
WATERWAY NAVIGATION IMPROVEMENT PROJECT

FEASIBILITY STUDY

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW AND IS NOT INTENDED TO BE USED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

ENGINEER: DANIEL J. HEILMAN, P.E.
LICENSE NUMBER: 86936
DATE: NOVEMBER 13, 2025

SHEET ID
B-304

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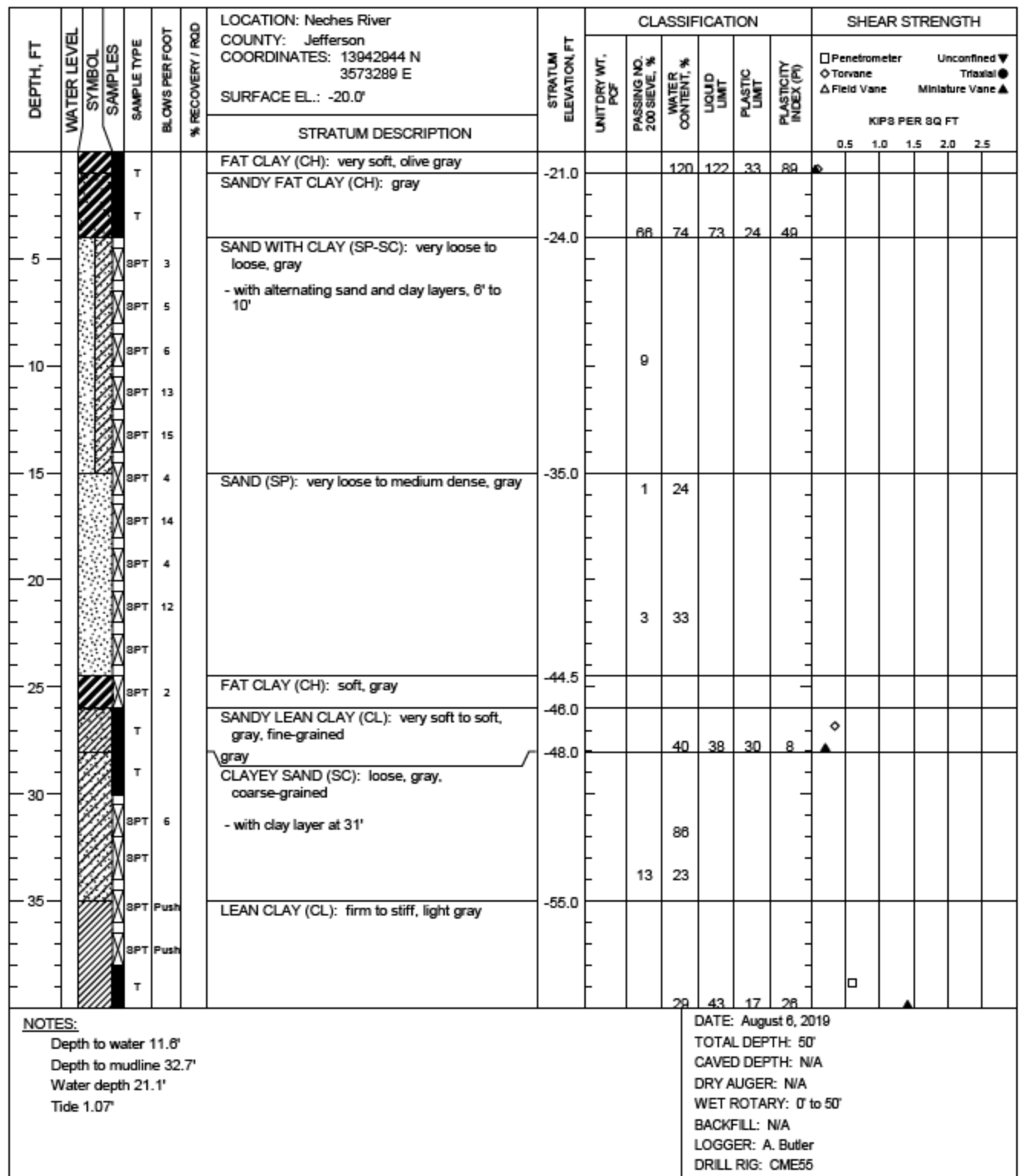
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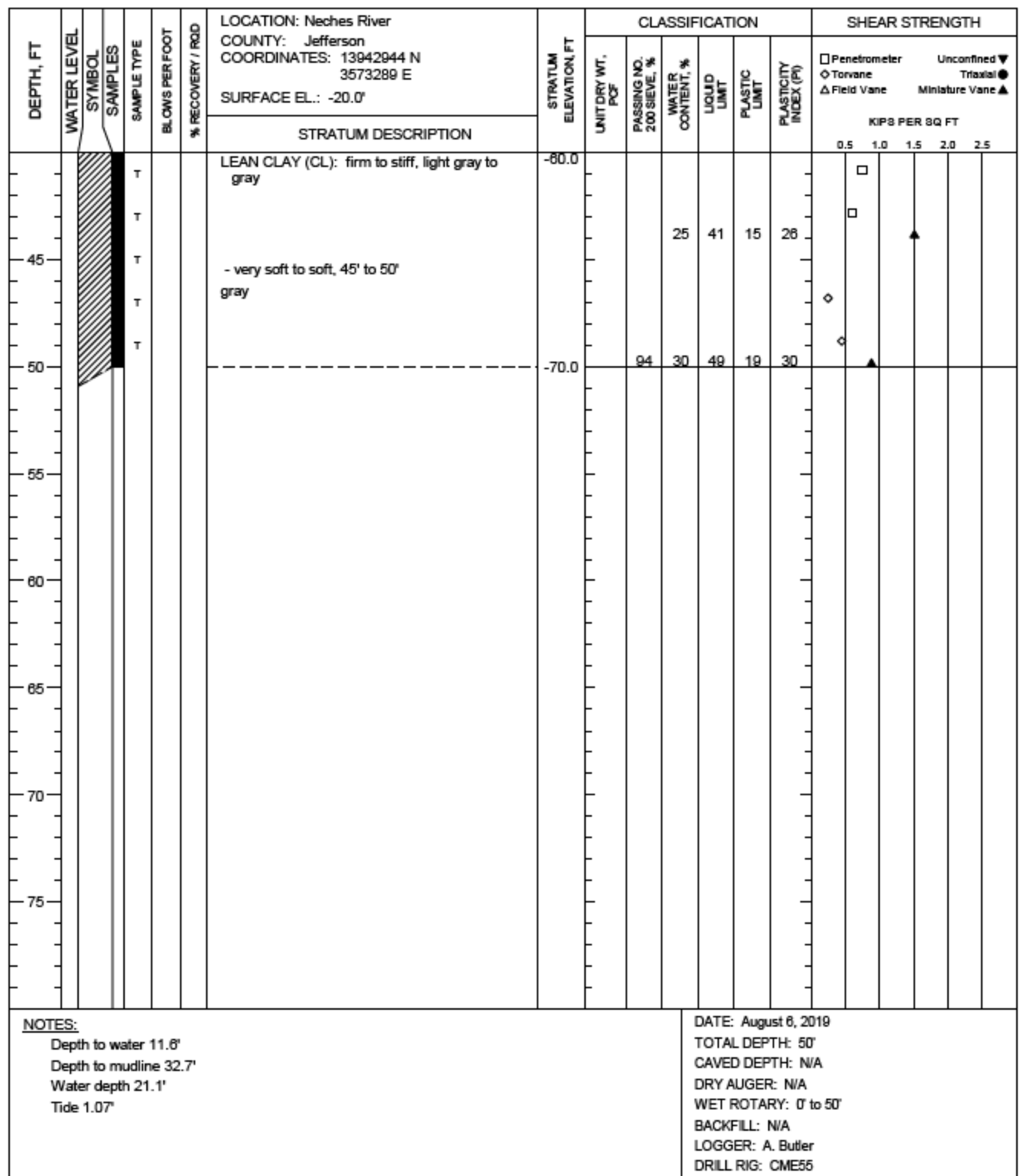
NRC-30-A

Report No. 04.10180192



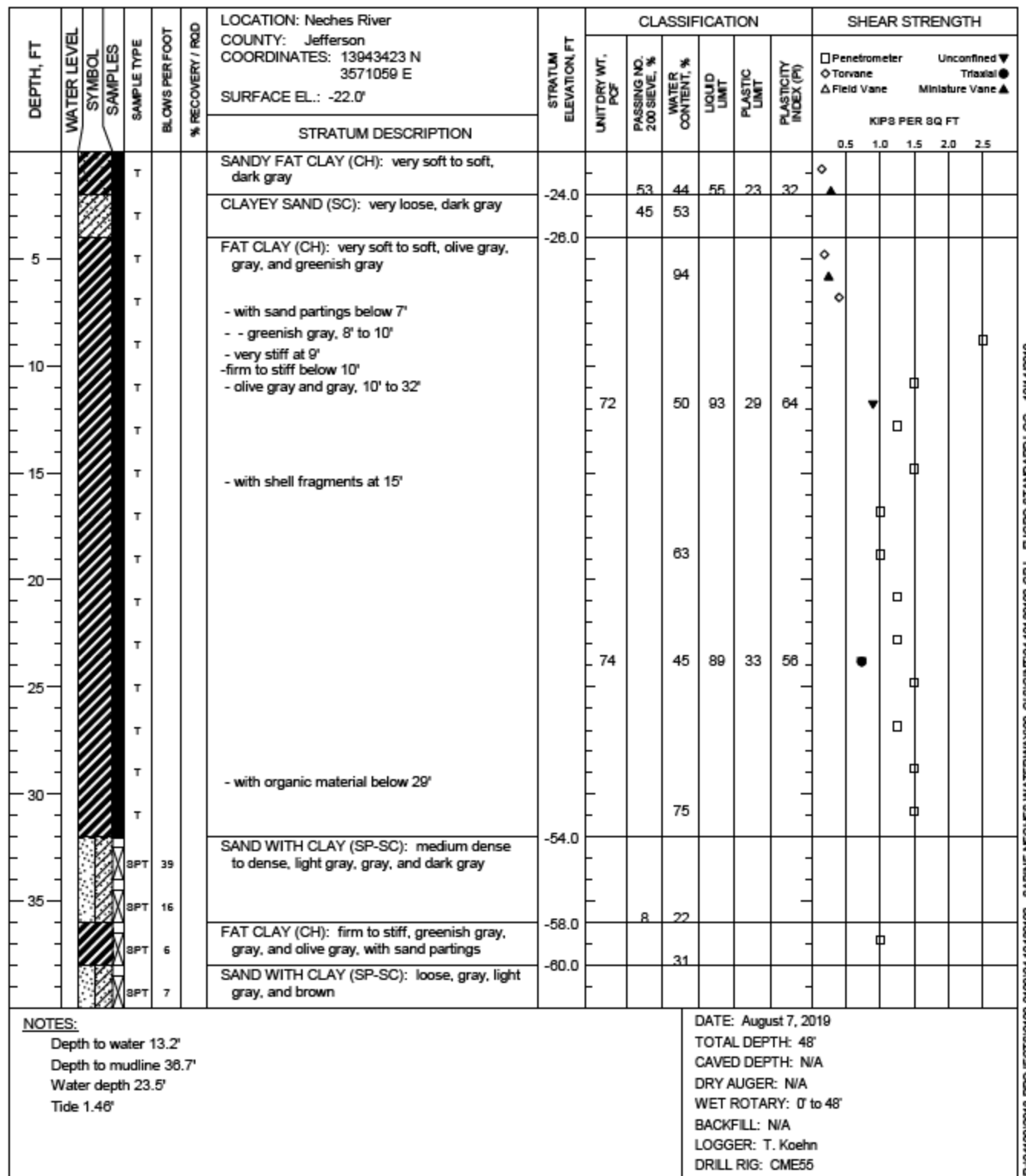
NRC-30-A (Cont'd)

Report No. 04.10180192



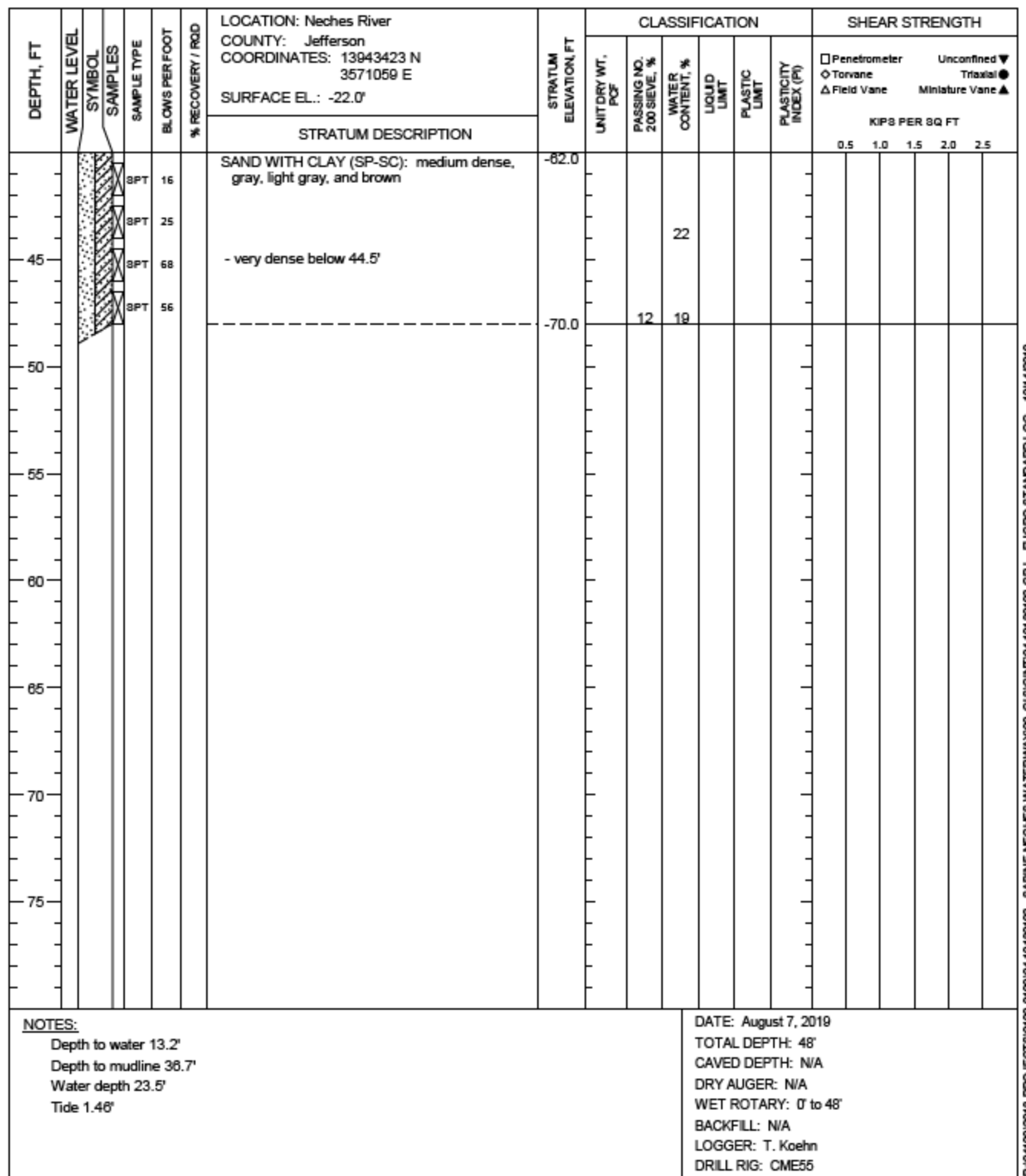
NRC-29-A

Report No. 04.10180192



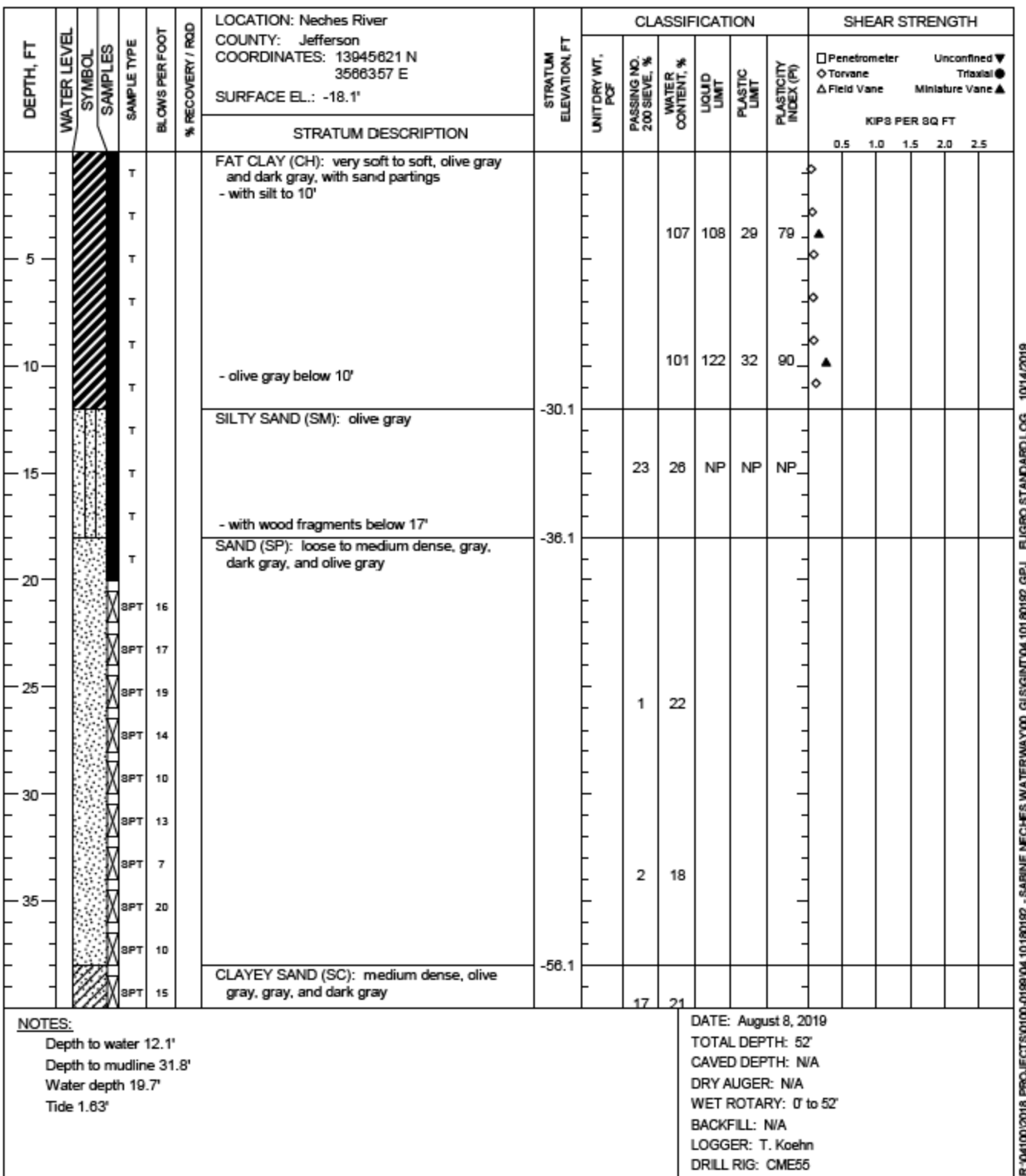
NRC-29-A (Cont'd)

Report No. 04.10180192



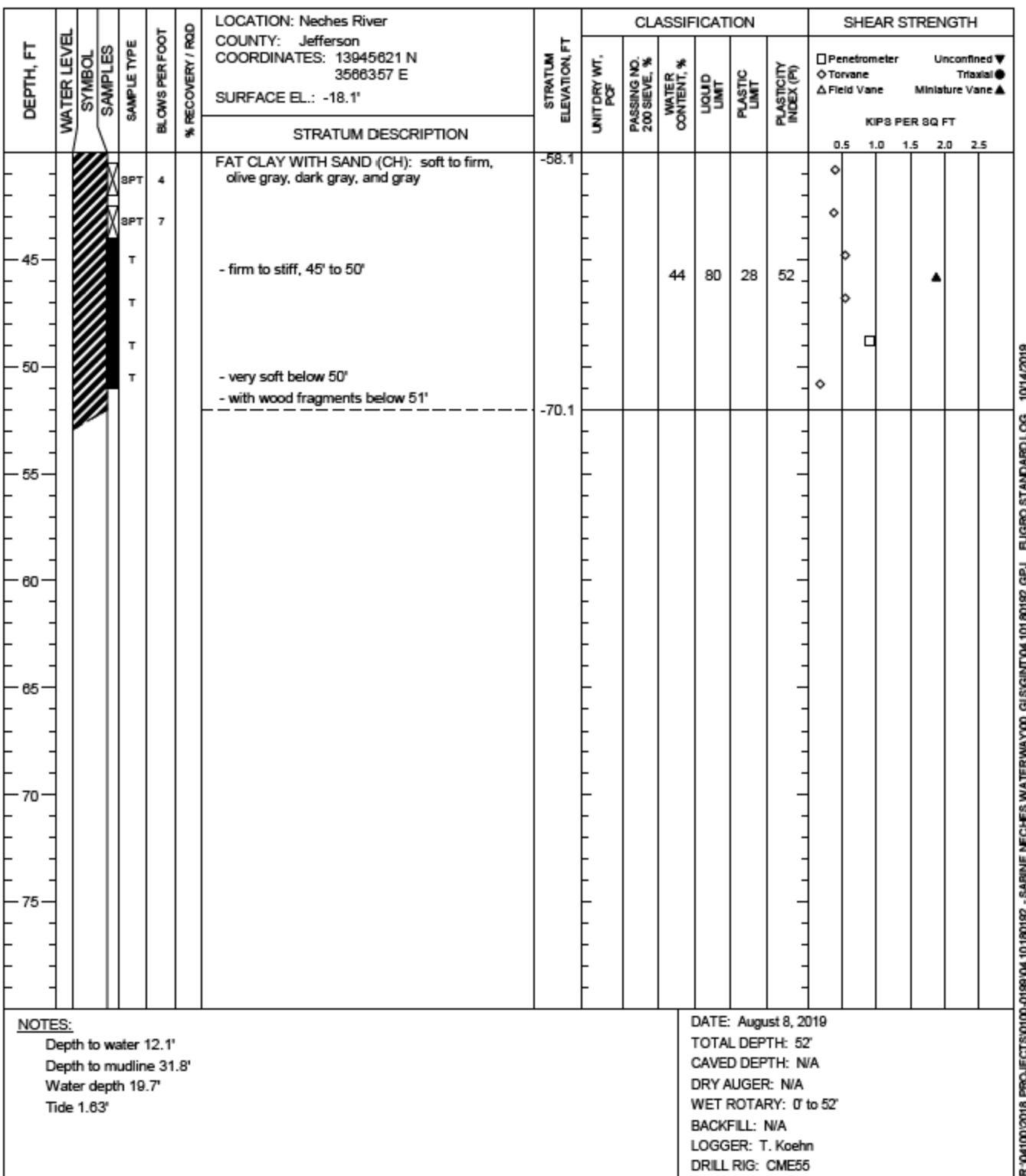
NRC-27-AA

Report No. 04.10180192



NRC-27-AA (Cont'd)

Report No. 04.10180192



NOTES: TO BORINGS
1. REFER TO NOTES ON SHEET B-300 FOR INFORMATION ON SOIL BORINGS.



REV.	DATE	DESCRIPTION
4	11/13/2025	FINAL FEASIBILITY STUDY DRAWINGS
3	09/18/2025	DRAWINGS FOR USACE REVIEW (REV 3)
2	09/22/2023	DRAWINGS FOR USACE REVIEW (REV 2)
1	06/12/2022	DRAWINGS FOR USACE REVIEW (REV 1)

DATE:	11/13/2025
SCALE:	AS SHOWN
DRAWN BY:	TWT
DESIGNED BY:	GJW
CHECKED BY:	LDW



ENGINEERING DRAWINGS FOR SABINE-NECHES
WATERWAY NAVIGATION IMPROVEMENT PROJECT

FEASIBILITY STUDY

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW AND IS NOT INTENDED TO BE USED FOR CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

ENGINEER: DANIEL J. HEILMAN, P.E.
LICENSE NUMBER: 86936
DATE: NOVEMBER 13, 2025

SHEET ID
B-306

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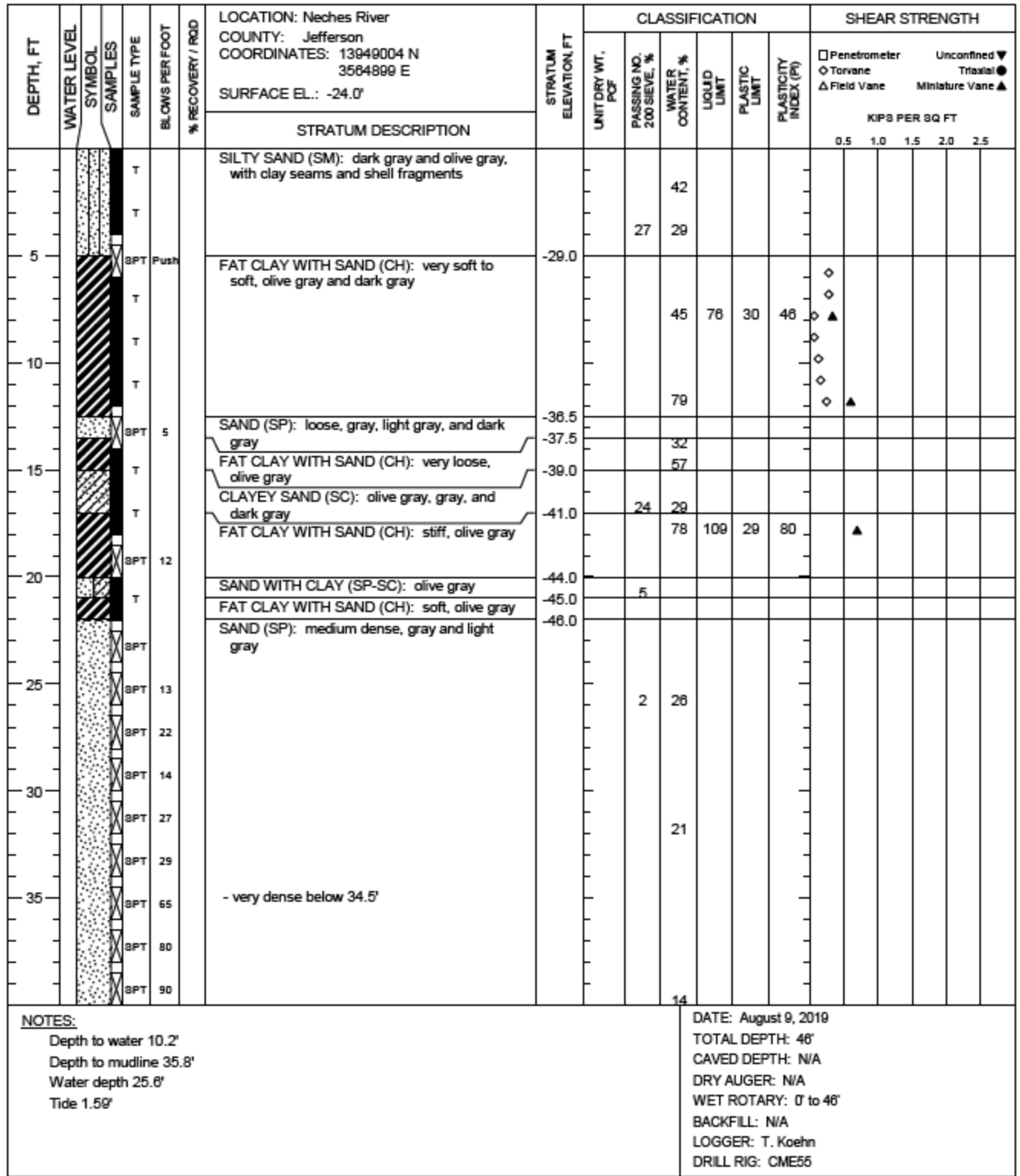
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NRC-25

Report No. 04.10180192

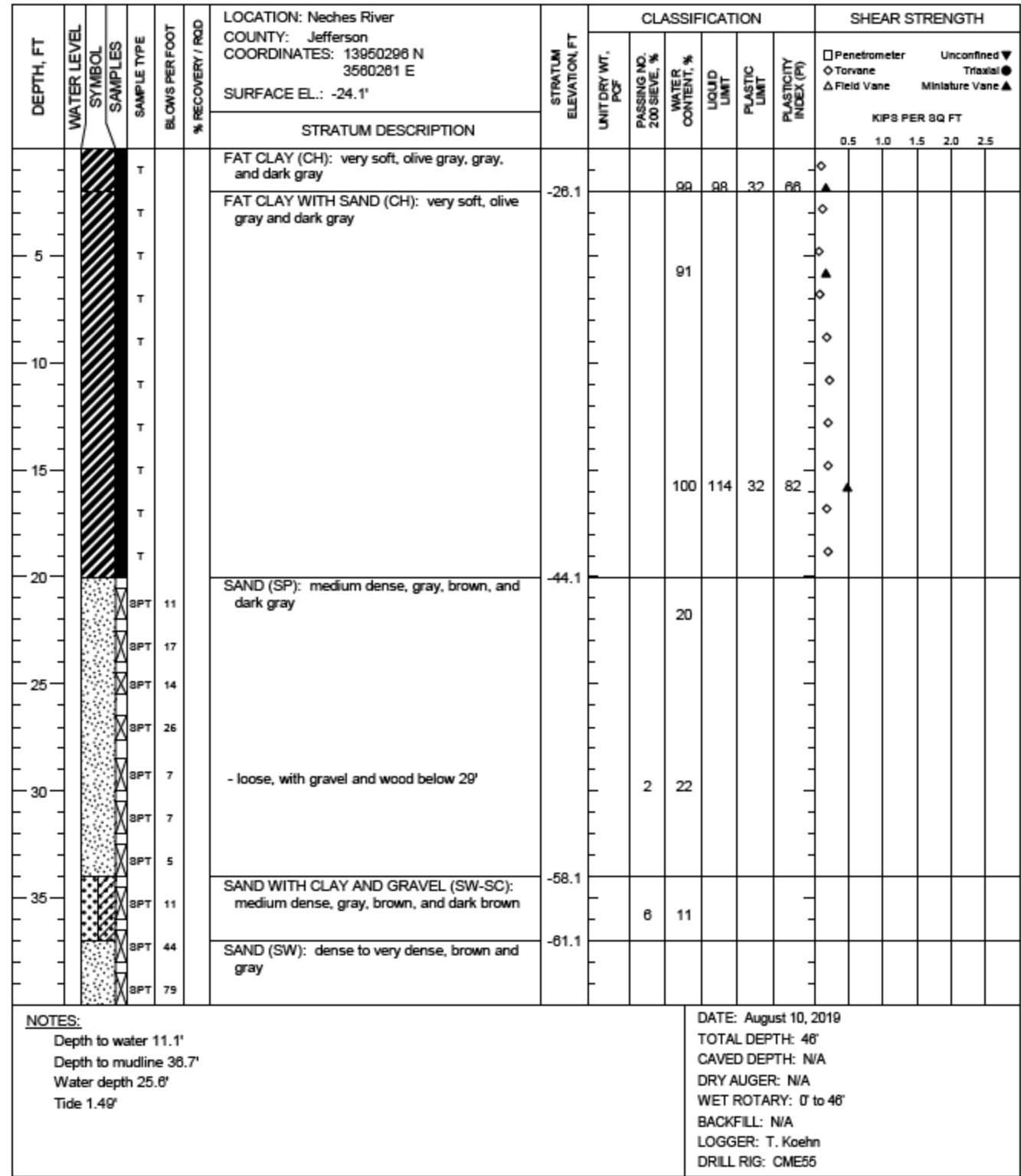


LOG OF BORING NO. NRC-25
SABINE-NECHES WATERWAY CHANNEL IMPROVEMENT PROJECT
SABINE-NECHES WATERWAY CHANNEL
SABINE-NECHES, TEXAS

PLATE A-30a

NRC-23-A

Report No. 04.10180192

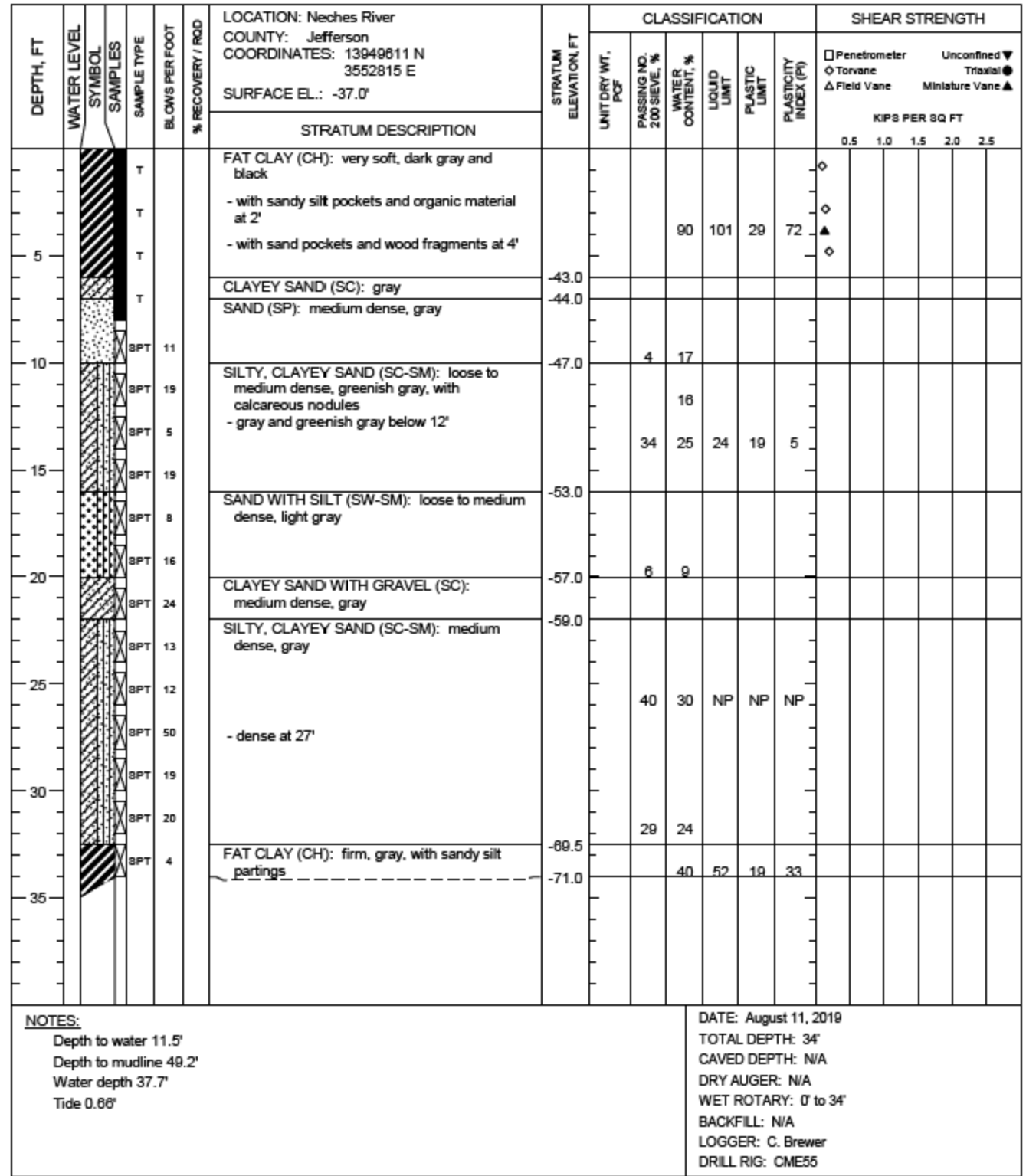


LOG OF BORING NO. NRC-23-A
SABINE-NECHES WATERWAY CHANNEL IMPROVEMENT PROJECT
SABINE-NECHES WATERWAY CHANNEL
SABINE-NECHES, TEXAS

PLATE A-28a

NRC-21-A

Report No. 04.10180192

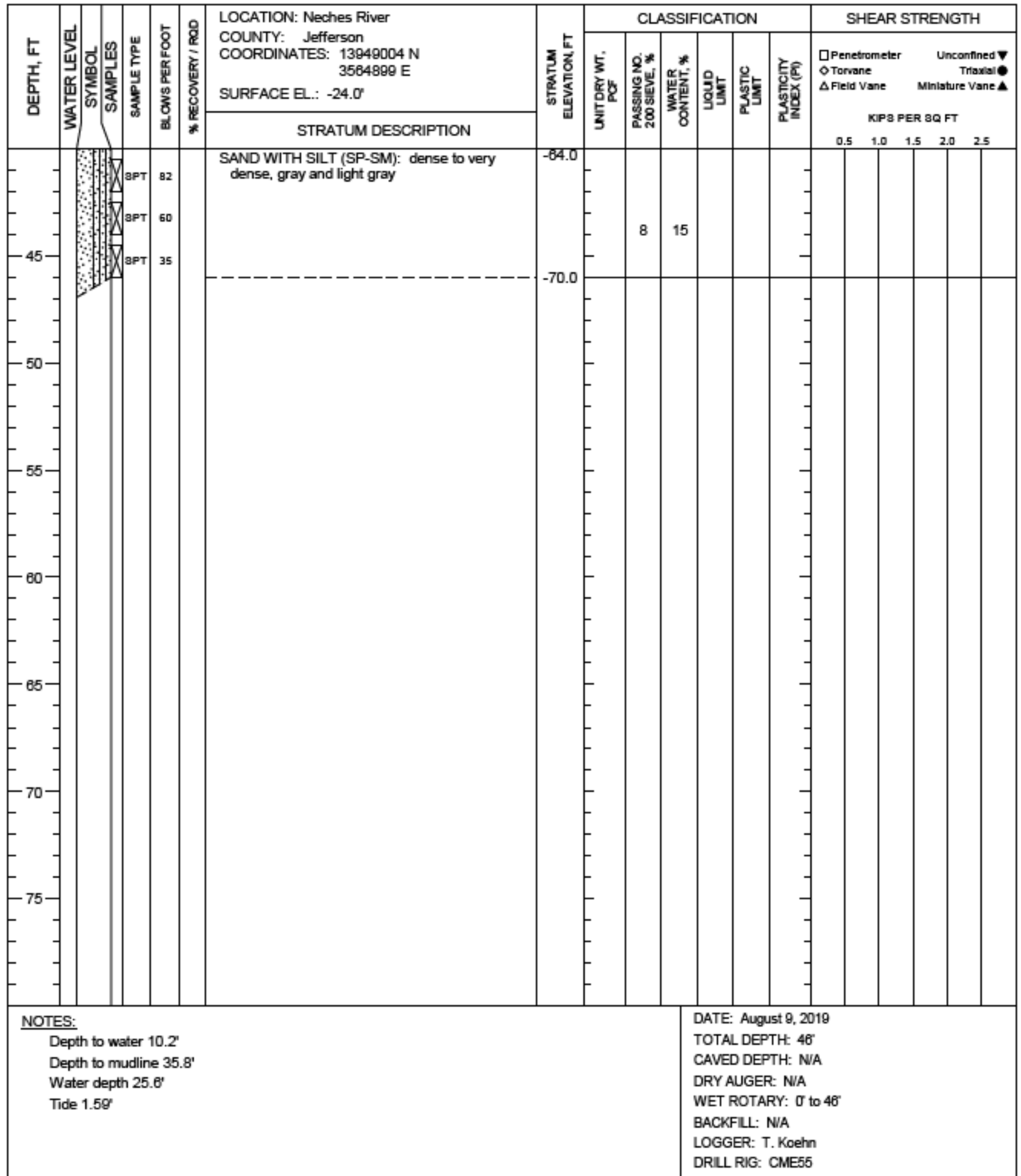


LOG OF BORING NO. NRC-21-A
SABINE-NECHES WATERWAY CHANNEL IMPROVEMENT PROJECT
SABINE-NECHES WATERWAY CHANNEL
SABINE-NECHES, TEXAS

PLATE A-26

NRC-25 (Cont'd)

Report No. 04.10180192

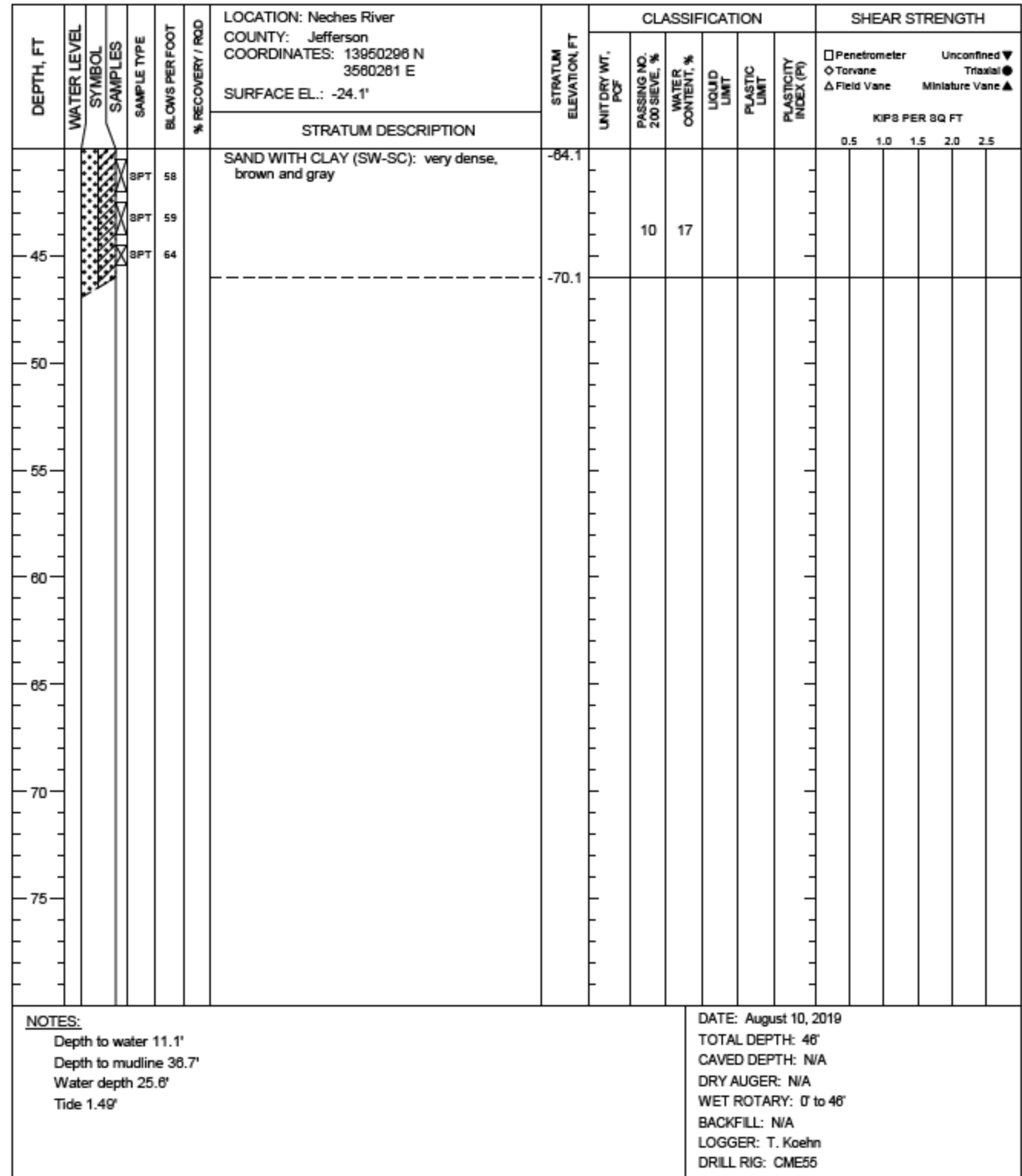


LOG OF BORING NO. NRC-25
SABINE-NECHES WATERWAY CHANNEL IMPROVEMENT PROJECT
SABINE-NECHES WATERWAY CHANNEL
SABINE-NECHES, TEXAS

PLATE A-30b

NRC-23-A (Cont'd)

Report No. 04.10180192



LOG OF BORING NO. NRC-23-A
SABINE-NECHES WATERWAY CHANNEL IMPROVEMENT PROJECT
SABINE-NECHES WATERWAY CHANNEL
SABINE-NECHES, TEXAS

PLATE A-28b

NOTES: TO BORINGS
1. REFER TO NOTES ON SHEET B-300 FOR INFORMATION ON SOIL BORINGS.



REV.	DATE	DESCRIPTION
1	06/12/2022	DRAWINGS FOR USAGE REVIEW (REV 1)
2	09/22/2023	DRAWINGS FOR USAGE REVIEW (REV 2)
3	09/18/2025	DRAWINGS FOR USAGE REVIEW (REV 3)
4	11/13/2025	FINAL FEASIBILITY STUDY DRAWINGS

DATE:	11/13/2025
SCALE:	AS SHOWN
DRAWN BY:	TWT
DESIGNED BY:	GJW
CHECKED BY:	LDW



ENGINEERING DRAWINGS FOR SABINE-NECHES
WATERWAY NAVIGATION IMPROVEMENT PROJECT

FEASIBILITY STUDY
THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF
INTERIM REVIEW AND IS NOT INTENDED TO BE USED FOR
CONSTRUCTION, BIDDING OR PERMIT PURPOSES.
ENGINEER: DANIEL J. HEILMAN, P.E.
LICENSE NUMBER: 86936
DATE: NOVEMBER 13, 2025
SHEET ID
B-307

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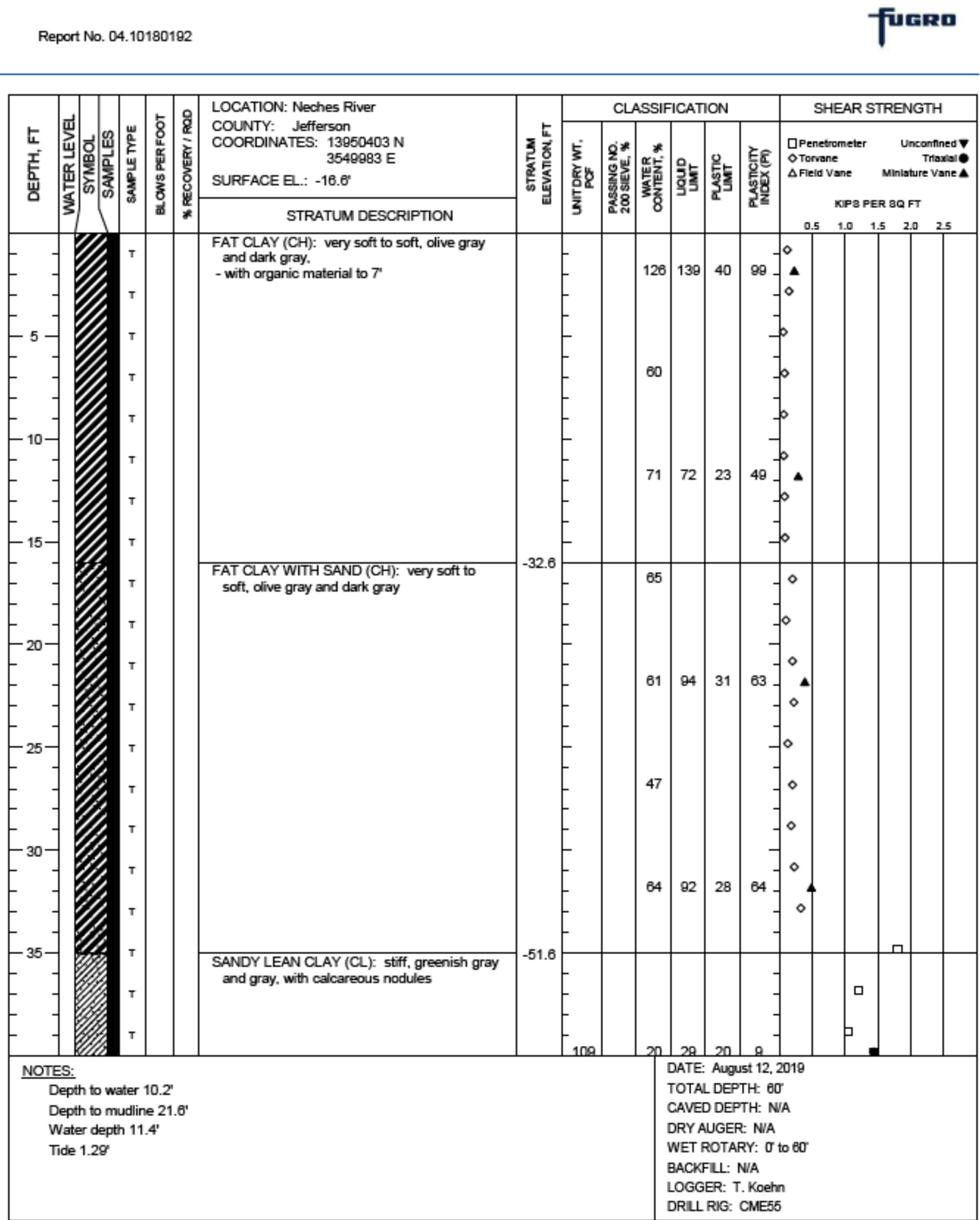
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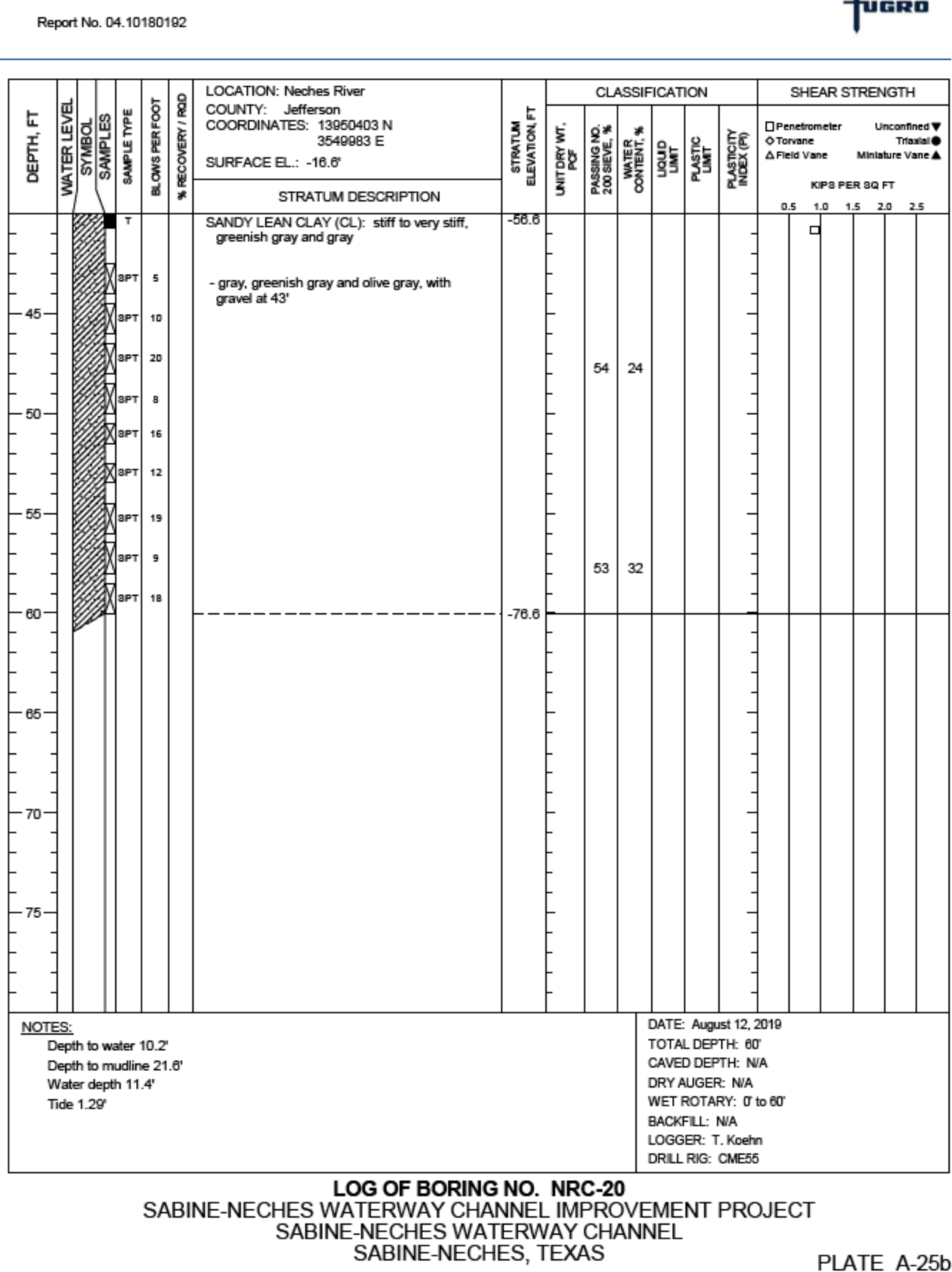
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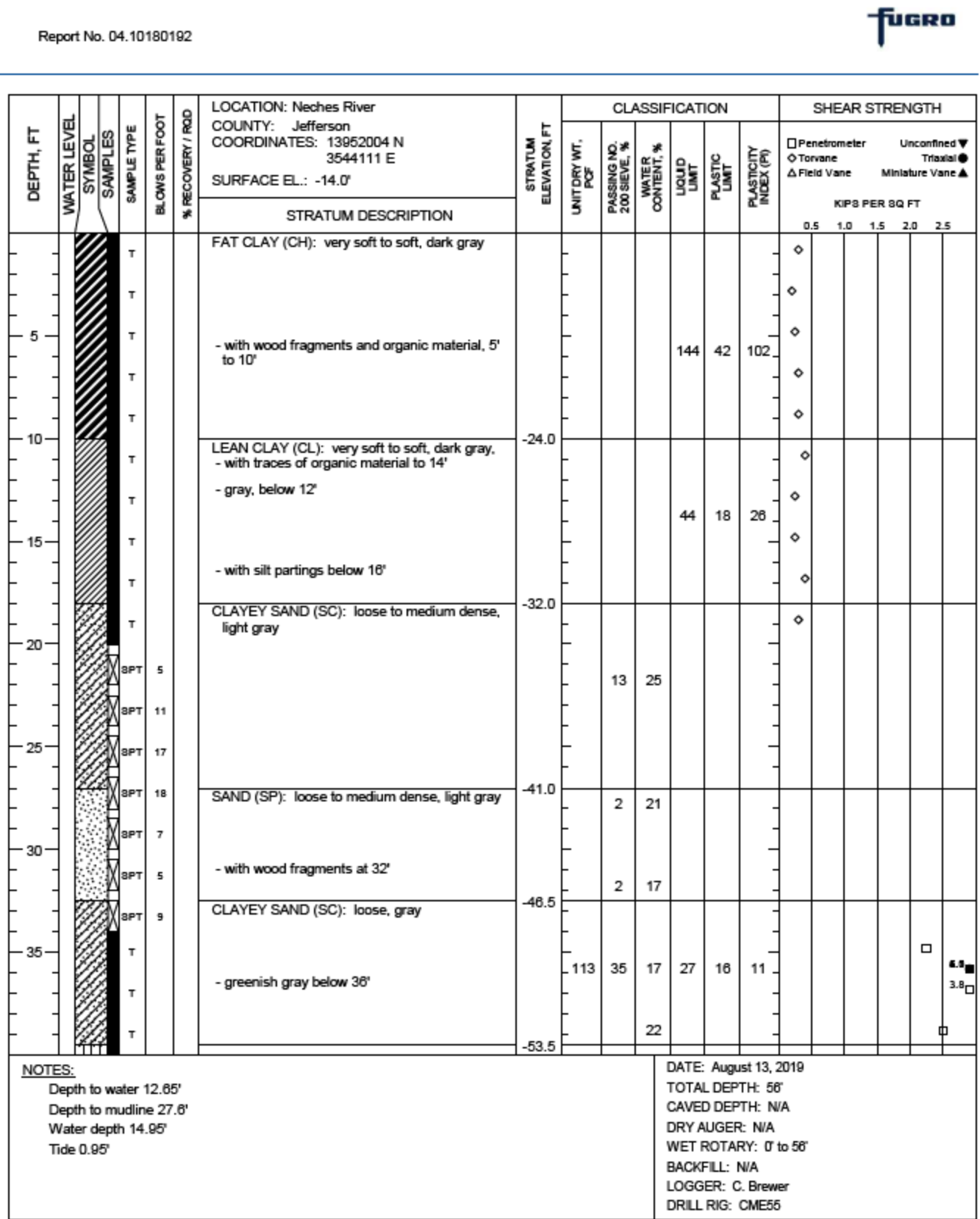
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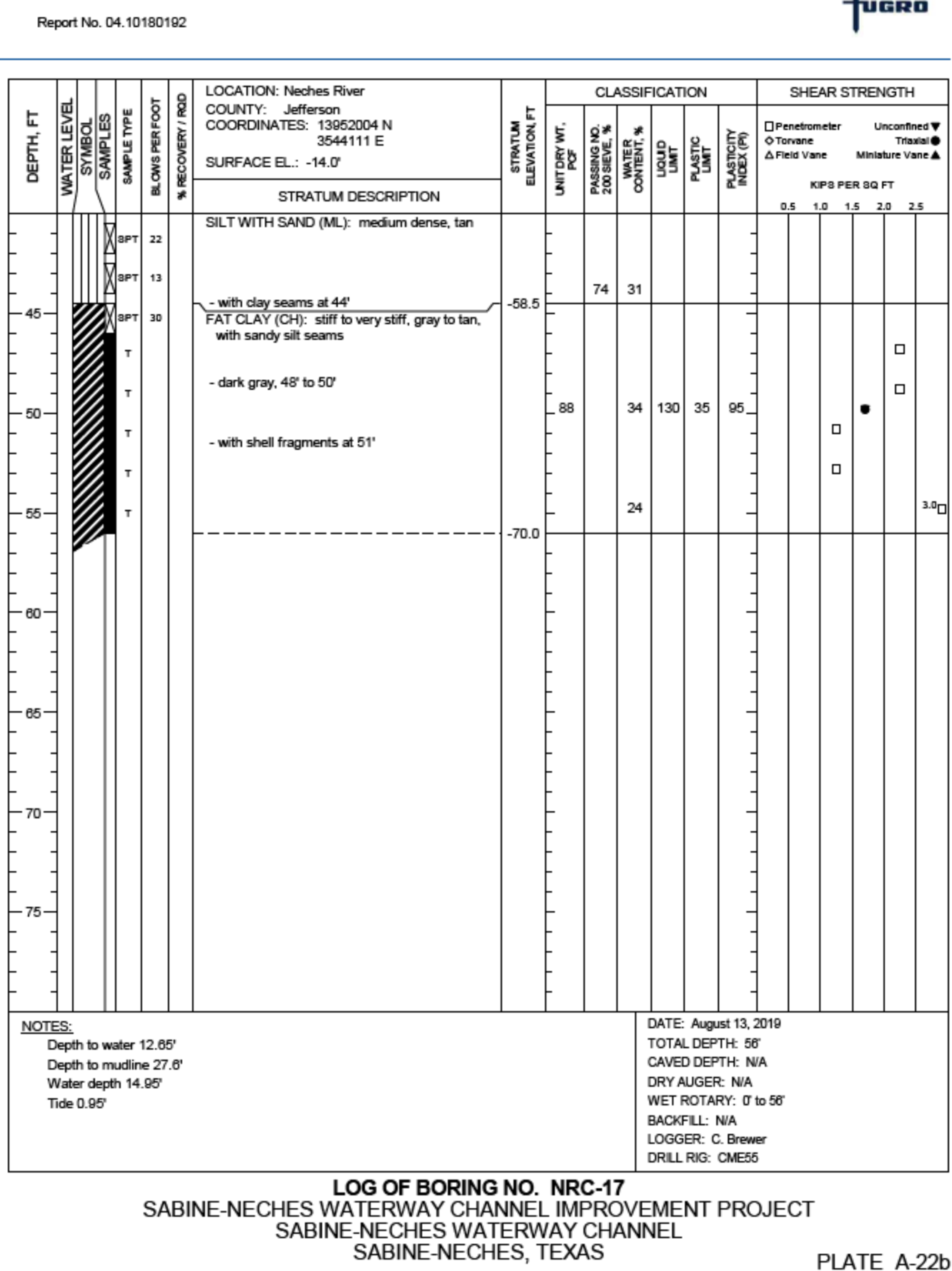
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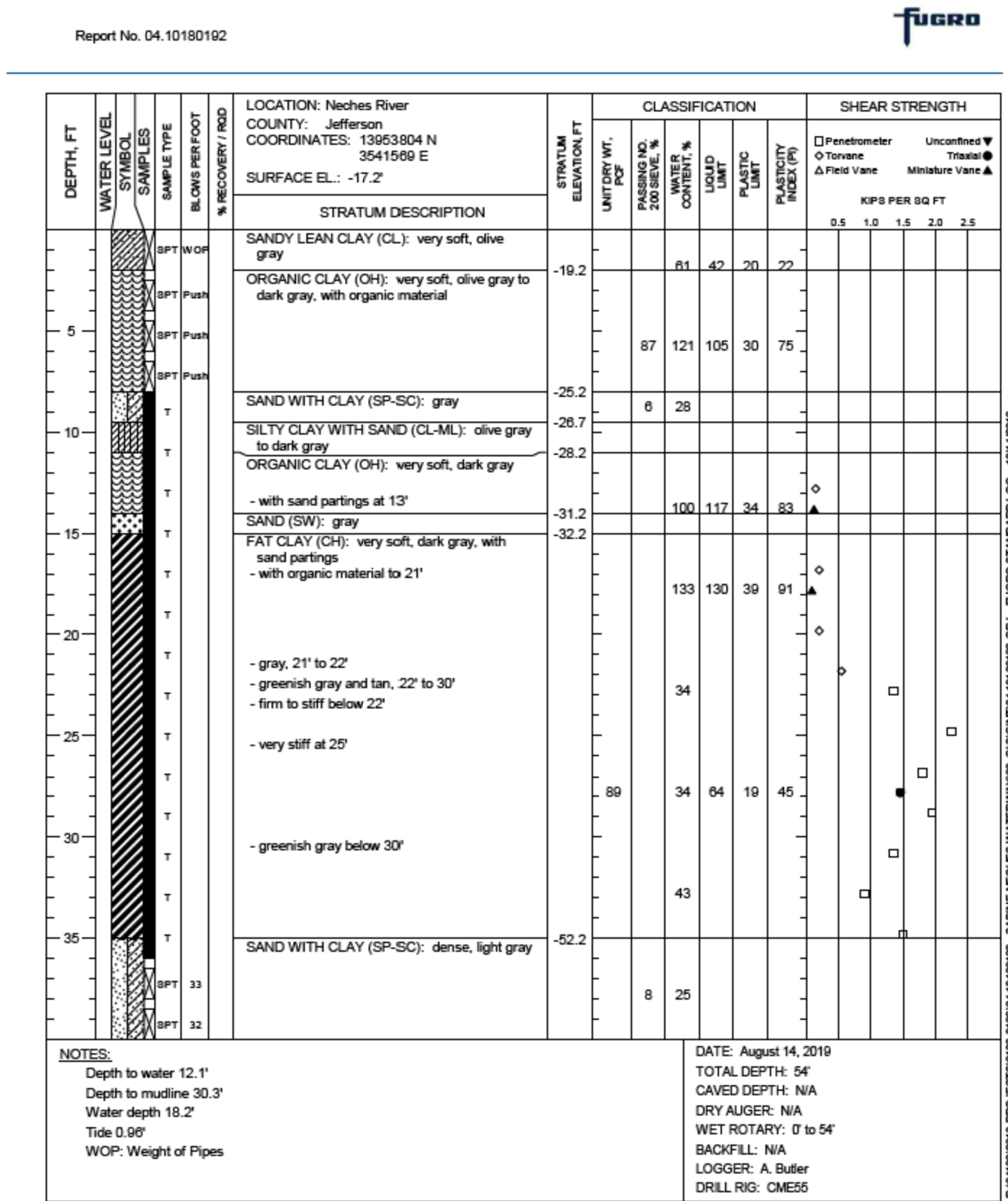
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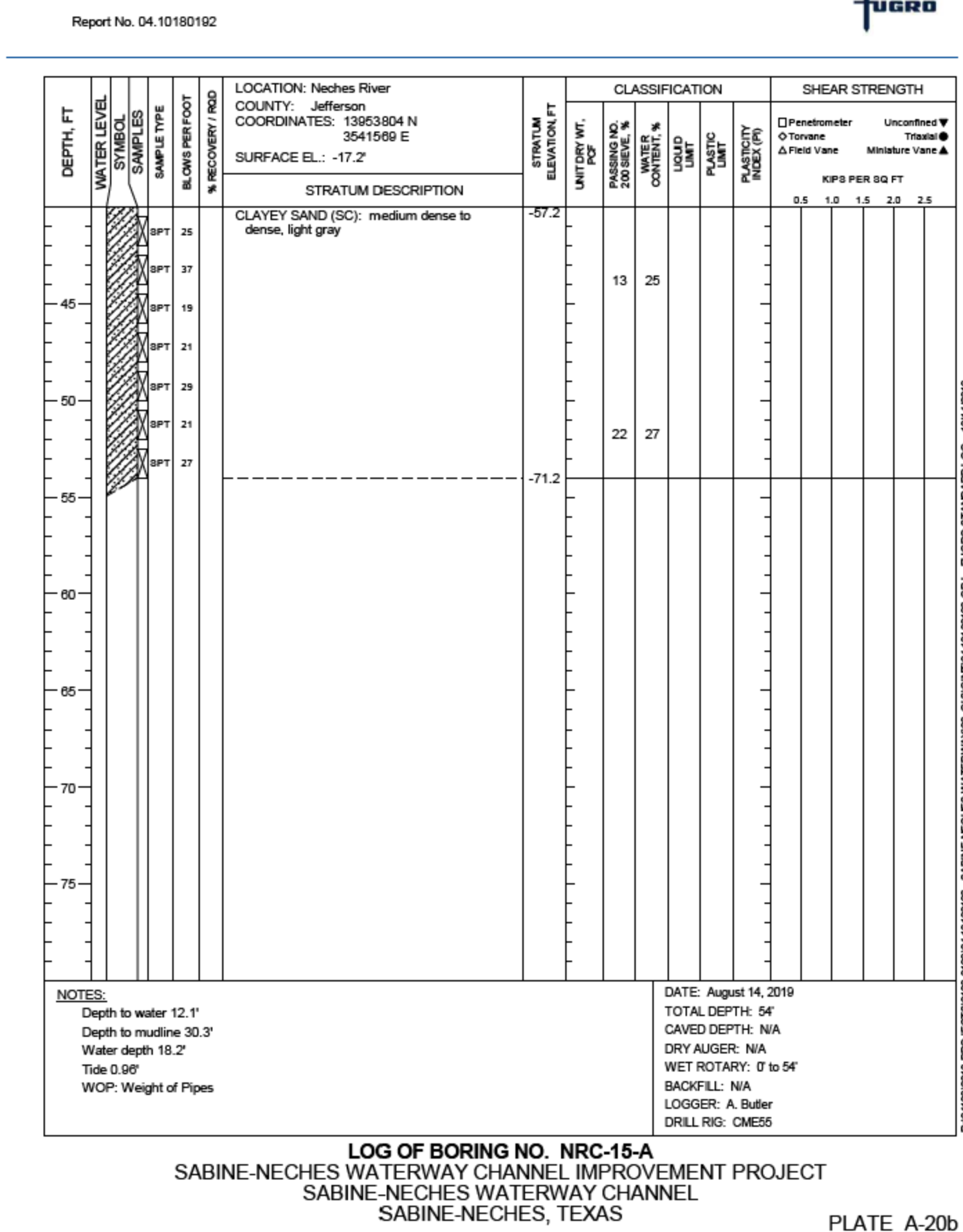
NRC-17 (Cont'd)



NRC-15-A



NRC-15-A (Cont'd)



NOTES: TO BORINGS

1. REFER TO NOTES ON SHEET B-300 FOR INFORMATION ON SOIL BORINGS.



REV.	DATE	DESCRIPTION
4	11/13/2025	FINAL FEASIBILITY STUDY DRAWINGS
3	09/18/2025	DRAWINGS FOR USACE REVIEW (REV 3)
2	09/22/2023	DRAWINGS FOR USACE REVIEW (REV 2)
1	06/12/2022	DRAWINGS FOR USACE REVIEW (REV 1)

DATE:	11/13/2025
REV:	4
SCALE:	AS SHOWN
DRAWN BY:	TWT
DESIGNED BY:	GJM
CHECKED BY:	LDW



ENGINEERING DRAWINGS FOR SABINE-NECHES WATERWAY NAVIGATION IMPROVEMENT PROJECT

SHEET ID

B-308

FEASIBILITY STUDY

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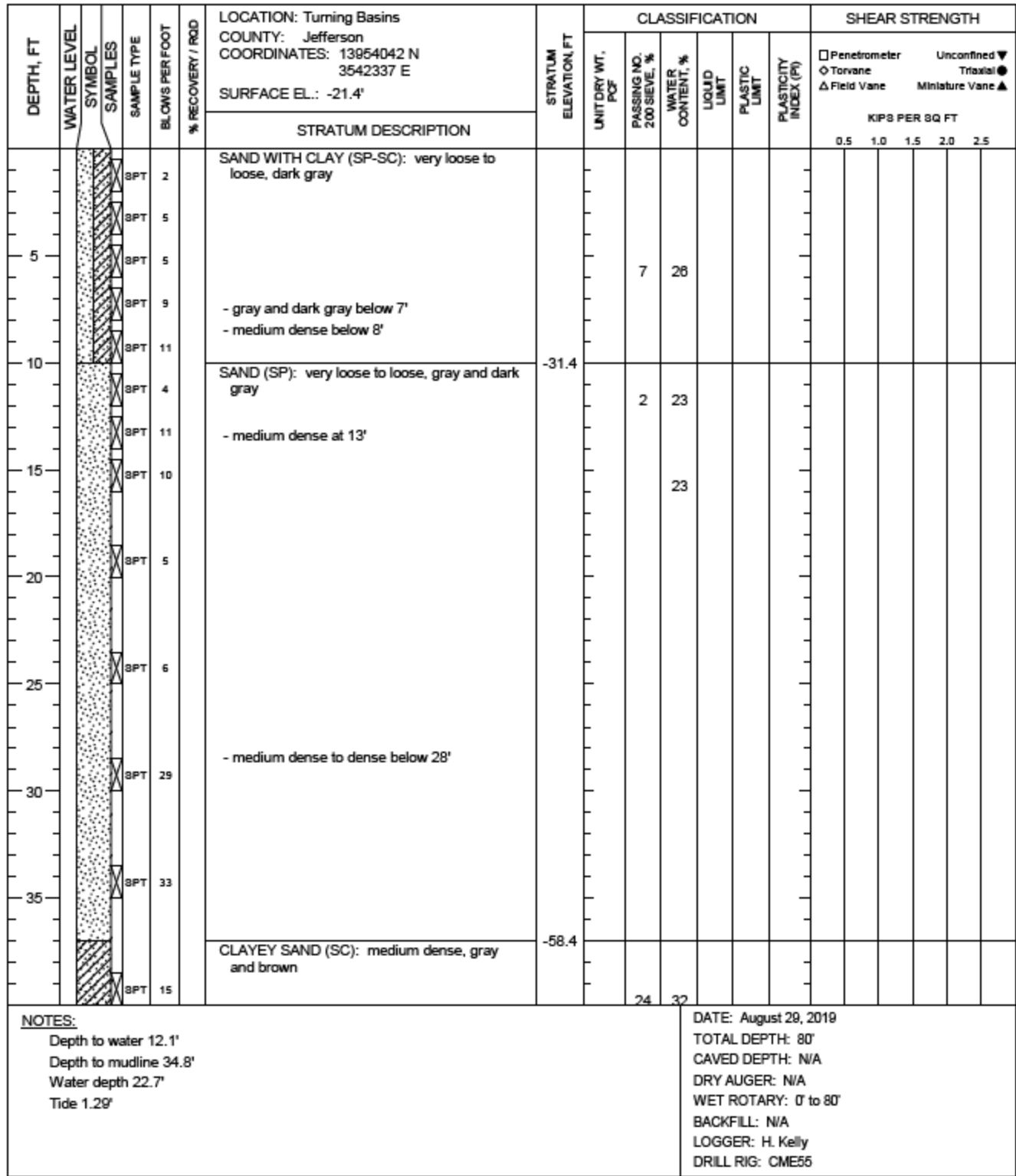
ENGINEER: DANIEL J. HEILMAN, P.E.

LICENSE NUMBER: 86936

DATE: NOVEMBER 13, 2025

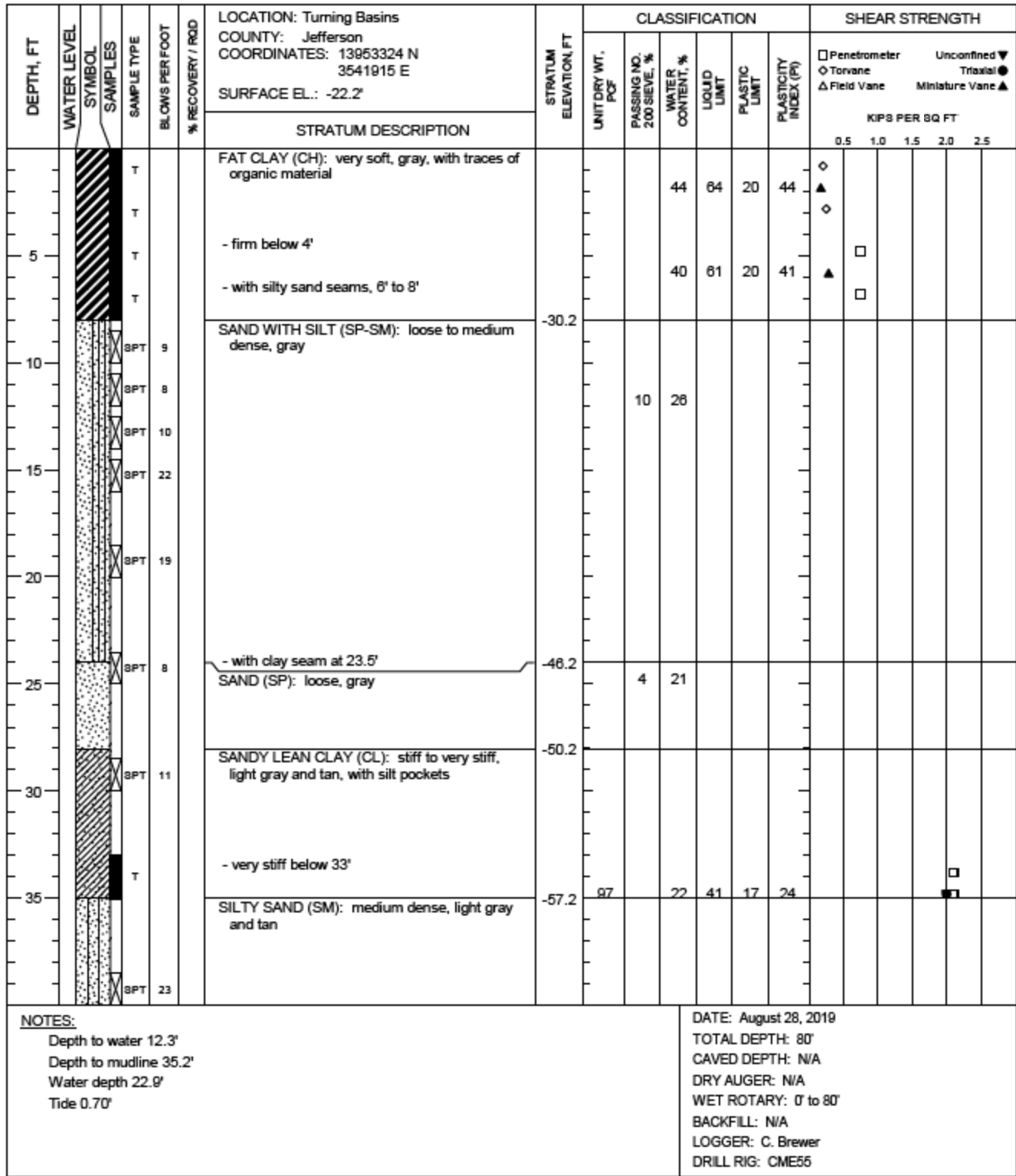
B-4-2

Report No. 04.10180192



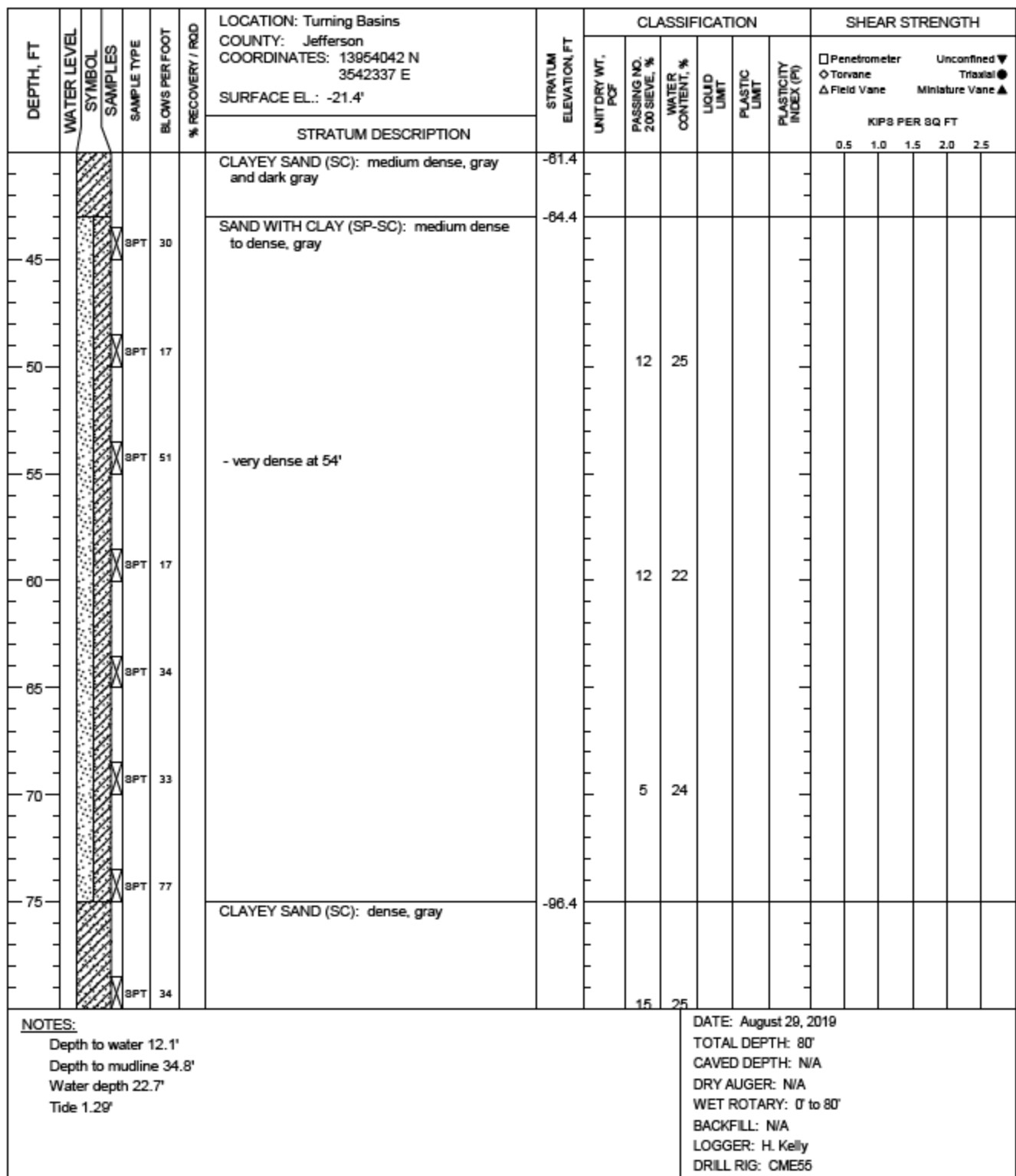
B-4-1

Report No. 04.10180192



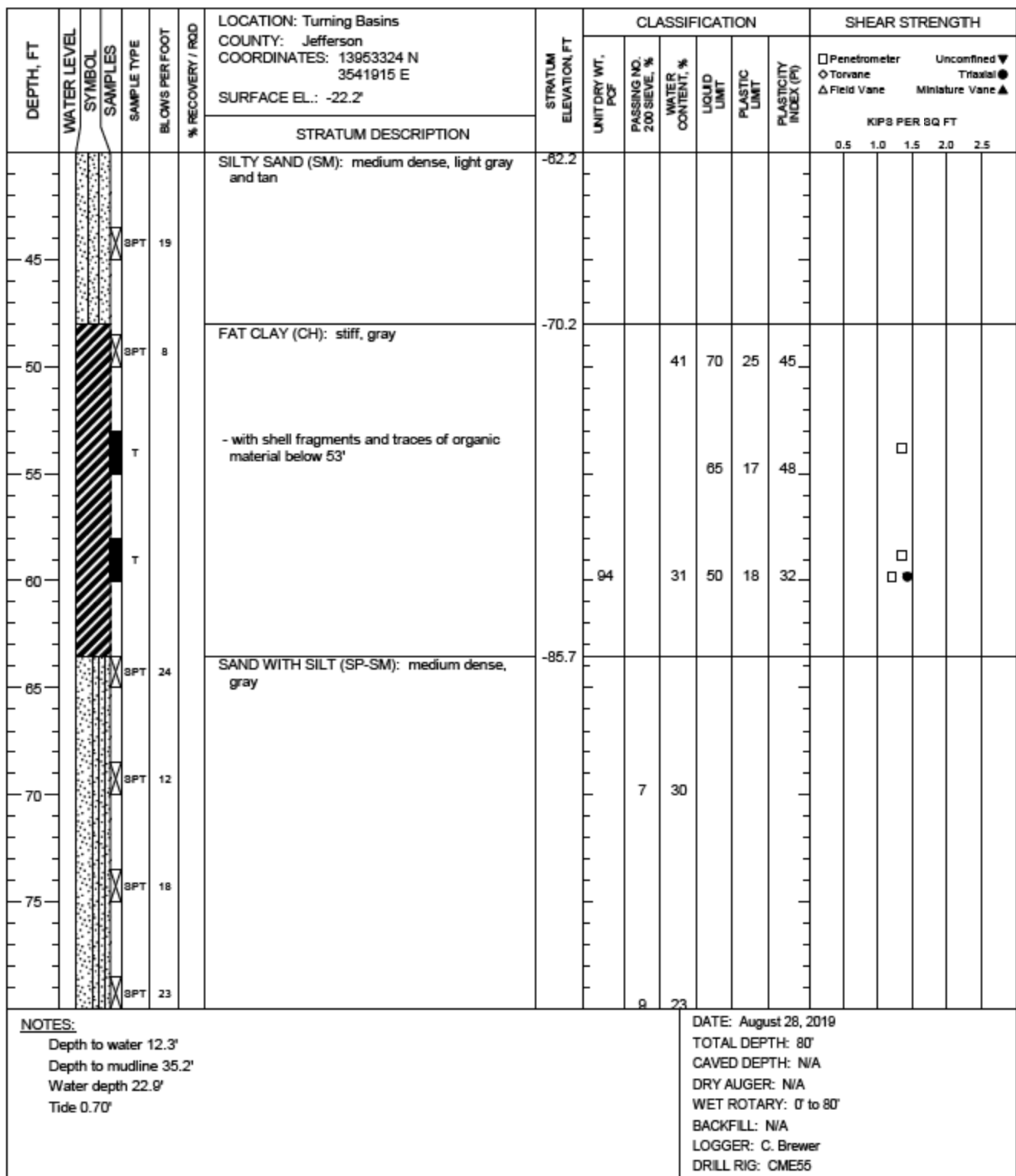
B-4-2 (Cont'd)

Report No. 04.10180192



B-4-1 (Cont'd.)

Report No. 04.10180192

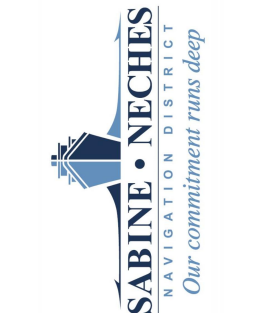


- NOTES: TO BORINGS
1. REFER TO NOTES ON SHEET B-300 FOR INFORMATION ON SOIL BORINGS.



REV.	DATE	DESCRIPTION	MARK
4	11/13/2025	FINAL FEASIBILITY STUDY DRAWINGS	
3	09/18/2025	DRAWINGS FOR USACE REVIEW (REV 3)	
2	09/22/2023	DRAWINGS FOR USACE REVIEW (REV 2)	
1	06/1/2022	DRAWINGS FOR USACE REVIEW (REV 1)	

REV.	DATE	DESCRIPTION
4	11/13/2025	FINAL FEASIBILITY STUDY DRAWINGS
3	09/18/2025	DRAWINGS FOR USACE REVIEW (REV 3)
2	09/22/2023	DRAWINGS FOR USACE REVIEW (REV 2)
1	06/1/2022	DRAWINGS FOR USACE REVIEW (REV 1)



ENGINEERING DRAWINGS FOR SABINE-NECHES
WATERWAY NAVIGATION IMPROVEMENT PROJECT

FEASIBILITY STUDY

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INTERIM REVIEW AND IS NOT INTENDED TO BE USED FOR
CONSTRUCTION, BIDDING OR PERMIT PURPOSES.

ENGINEER: DANIEL J. HEILMAN, P.E.
LICENSE NUMBER: 86936
DATE: NOVEMBER 13, 2025

SHEET ID

B-309

D-5 (CONT.)

PROJECT: Channel Deepening and Widening SNND - Jefferson County, Texas			CLIENT: Sabine Neches Navigation District Port Arthur, Texas											
ELEVATION (FT)	DEPTH (FT)	SAMPLE TYPE	COORDINATES: N 30° 00' 50.05" W 93° 57' 25.88"	(P) PROCT PER (N) (T) TORVANE (M)	STD. PEN. (TON) TEST BLOW/COUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSIVE STRENGTH (ksi)	FAILURE STRAIN (%)	CONFINING PRESSURE (psf)	PRESSURE (psf)	OTHER TESTS PERFORMED
			SURFACE ELEVATION: - -											
			DRILLING METHOD: Dry Augered: 0' to 4' Wash Bored: 4' to 100'											
			MATERIAL DESCRIPTION											
			Dense gray SILTY SAND (SM)											
	75		-with clay seams from 73.5' to 75'		9/8" 14/8" 17/8"	15			NP					17
	80		-becomes very dense at 78.5'		50/8"									
	85				50/8"									
	90		Very dense gray POORLY GRADED SAND with SILT (SP-GM)		38/8" 50/4"	11								6
	95				25/8" 50/8"									
	100				50/8"									
			Bottom @ 100'											

COMPLETION DEPTH: 100 ft
 DATE BORING STARTED: 05/17/25
 DATE BORING COMPLETED: 05/19/25
 LOGGER: C.Watts
 PROJECT NO.: 201UNAY-WONG

NOTES: Free Water Depth = 4.0-ft. 15-min Static Water Depth = N/A. 15-min Total Hole Depth = N/A. Borehole was backfilled with cement-bentonite grout.

Page 3 of 3



DATE:	REV.
11/13/2025	4
SCALE: AS SHOWN	
DRAWN BY: TWT	
DESIGNED BY: GJW	
CHECKED BY: LDW	

W-4 (CONT.)

PROJECT: Channel Deepening and Widening
SNND - Jefferson County, Texas

LOG OF BORING W-4

CIENT: Sabine Neches Navigation District
Port Arthur, Texas

ELEVATION (FT)	DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N 30° 00' 26.01" W 93° 57' 13.45" SURFACE ELEVATION: - - DRILLING METHOD: Dry Augered: 0' to 8' Wash Bored: 8' to 100'	(P) PACKET PRO (lb) (T) TORQUE (in)	STD. PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSIVE STRENGTH (psi)	FAILURE STRAIN (%)	CONFINING PRESSURE (psf)	PASSURE (psf) 60 SEVE (%)	OTHER TESTS PERFORMED
				MATERIAL DESCRIPTION											
				Very dense gray POORLY GRADED SAND with SILT (SP-SM)		31/6" 39/6" 33/6"									
	75														
				Very stiff gray LEAN CLAY (CL)		16/6" 13/6" 17/6"									
	80														
				-hard from 83' to 85'	(P)4.50+		20	48	27					93	
	85														
				-very stiff from 89' to 95'	(P)3.50										
	90														
				-with calcareous nodules from 93' to 95'	(P)4.25										
	95														
				-becomes hard at 98'	(P)4.50+										
	100														
				Bottom @ 100'											
	105														

COMPLETION DEPTH: 100 ft
DATE BORING STARTED: 05/15/25
DATE BORING COMPLETED: 05/16/25
LOGGER: C. Watts
PROJECT NO.: 25.23.059

NOTES: Free Water Depth = 3.0-ft. 15-min Static Water Depth = N/A. 15-min Total Hole Depth = N/A. Borehole was backfilled with cement-bentonite grout.
WCH: Weight of Hammer.

Page 3 of 3



HDR
HDR ENGINEERING, INC.
TBP&LS Firm Registration
No. F-754

B-311

D-4 (CONT.)

PROJECT: Channel Deepening and Widening SNND - Jefferson County, Texas			CLIENT: Sabine Neches Navigation District Port Arthur, Texas										
ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29° 59' 57.17" W 93° 56' 56.53" SURFACE ELEVATION: - -	(P) POCKET PEN (lb) (T) TORQUE (in-ft)	STD PENETRATION TEST BLOWCOUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSIVE STRESS (psi)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
MATERIAL DESCRIPTION													
75	Stiff gray FAT CLAY (CH)	-with sand seams from 73' to 75'	(P) 1.50										
80	Very dense gray POORLY GRADED SAND (SP)			14" 20" 36"									
85				16" 33" 40"									
90				12" 19" 32"	19							2	
95				25" 50"									
100				32" 50"									
105	Bottom @ 100'												

COMPLETION DEPTH:
DATE BORING STARTED: 05/13/26
DATE BORING COMPLETED: 05/14/26
LOGGER: C. Watts
PROJECT NO.: 25.23.059

NOTES: Free Water Depth = 0-ft. Static groundwater level measurements could not be obtained due to surficial free water. Borehole was backfilled with cement-bentonite grout. CU: Consolidated-Undrained. DS: Direct Shear.

Page 3 of 3



DATE:	REV:
11/13/2025	4
SCALE: AS SHOWN	
DRAWN BY: TWT	
DESIGNED BY: GJW	
CHECKED BY: LDW	

W-3 (CONT.)

PROJECT: Channel Deepening and Widening SNND - Jefferson County, Texas		LOG OF BORING W-3		CLIENT: Sabine Neches Navigation District Port Arthur, Texas									
ELEVATION (FT) DEPTH (FT)	SAMPLE TYPE SYMBOL	COORDINATES: N 29° 59' 37.91" W 03° 56' 07.82" SURFACE ELEVATION: - - DRILLING METHOD: Dry Augered: 0' to 10' Wash Bored: 10' to 100' MATERIAL DESCRIPTION	(P) POCKET PEN (in) (T) TORQUE (in ft)	STD. PENETRATION TEST BLOW/COUNT	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSION INDEX (%)	FAILURE STRAIN (%)	CONFINING PRESSURE (ksf)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
75		Medium dense gray POORLY GRADED SAND with SILT (SP-SM)		4/8" 6/8" 15/8"	22								
80		-becomes very dense at 73.5'		3/8" 50/3"									
85				50/4"									
90				3/8" 50/8"	17							8	
95				50/4"									
100			50/8"	18									
105		Bottom @ 100'											

COMPLETION DEPTH: 100 ft
 DATE BORING STARTED: 05/12/25
 DATE BORING COMPLETED: 05/12/25
 LOGGER: C.Watts
 PROJECT NO.: 25-23-059

NOTES: Free Water Depth = 0-ft. Static groundwater level measurements could not be obtained due to surficial free water. Borehole was backfilled with cement-bentonite grout.

TOLUNAY-WONG ENGINEERS, INC.

Page 3 of 3



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B-312

W-2 (CONT.)

PROJECT: Channel Deepening and Widening SNND - Jefferson County, Texas			LOG OF BORING W-2		CLIENT: Sabine Neches Navigation District Port Arthur, Texas										
ELEVATION (FT)	DEPTH (FT)	SYMBOL	MATERIAL DESCRIPTION	(F) POCKET PEN (lbf)	(T) TORQUE (lb-ft)	STD. PENETRATION (lb./in.)	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	COMPRESSIVE STRENGTH (lbf)	FAILURE STRAIN (%)	CONFINING PRESSURE (psi)	PASSING #200 SIEVE (%)	OTHER TESTS PERFORMED
			Very dense gray POORLY GRADED SAND with SILT (SP-SM)												
	75		-medium dense from 73.5' to 80' -with organics from 73.5' to 75'			6.6" 8.6" 9.6"									
	80		-with clay seams from 78.5' to 80'			8.6" 10.6" 12.6"									
	85		-becomes very dense at 83.5'			40.6" 50.6"	17								11
	90					25.6" 50.6"									
	95					24.6" 50.4"									
	100		Bottom @ 100'			21.6" 50.6"									
	105														

COMPLETION DEPTH: 100 ft

DATE BORING STARTED: 05/09/25

DATE BORING COMPLETED: 05/10/25

LOGGER: C.Watts

PROJECT NO.: 25.23.059

NOTES: Free Water Depth = 0-ft. Static groundwater level measurements could not be obtained due to surficial free water. Borehole was backfilled with cement-bentonite grout.



T. J. L. & W. C. ENGINEERS, INC.

Page 3 of 3



DATE:	11/13/2025	REV.	4
SCALE: AS SHOWN		DRAWN BY: TWT	
		DESIGNED BY: GJW	
		CHECKED BY: LDW	

D-2 (CONT.)

PROJECT: Channel Deepening and Widening
SNN-D - Jefferson County, Texas

CLIENT: Sabine Neches Navigation District
 Port Arthur, Texas

ELEVATION (FT)	DEPTH (FT)	SAMPLE TYPE	SYMBOL	COORDINATES: N: 29° 52' 50.86" W: 83° 50' 08.89"	SURFACE ELEVATION: -	DRILLING METHOD: Dry Augered: 0' to 14' Wash Bored: 14' to 100'	(P) POCKET PEN (lbf) (T) TORQUE (lb-ft)	STD. PENETRATION TEST (BLAND-FOUNT)	MOISTURE CONTENT (%)	DRY UNIT WEIGHT (pcf)	LOG UNIT (in)	PLASTICITY INDEX (%)	LIQUID LIMIT (%)	LAB MIN. VANE SHEAR (lbf)	UNCONSOLIDATED COMPRESSION STRESS (psf)	FAILURE STRAIN (%)	COHESION (psf)	COMPACTION PRESSURE (psf)	PASSING #200 SIEVE (%)
				MATERIAL DESCRIPTION															
				Stiff gray FAT CLAY (CH)				(P)1.50	51										
	75							(P)1.50											
	80																		
	85			-becomes very soft at 83.5'				WOH											
	90			Soft gray SANDY FAT CLAY (CH)				WOH 1 1/8" 2 1/8"	26									50	
	95			Loose gray CLAYEY SAND (SC)				3 1/8" 3 1/8" 2 1/8"											
	100			Firm gray FAT CLAY with SAND (CH)				WOH 2 1/8" 4 1/8"	28										
				Bottom @ 100'															
	105																		

COMPLETION DEPTH: 100 ft
DATE BORING STARTED: 07/28/2023
DATE BORING COMPLETED: 07/28/2023
LOGGER: C. Watts
PROJECT NO.: 23-23-096

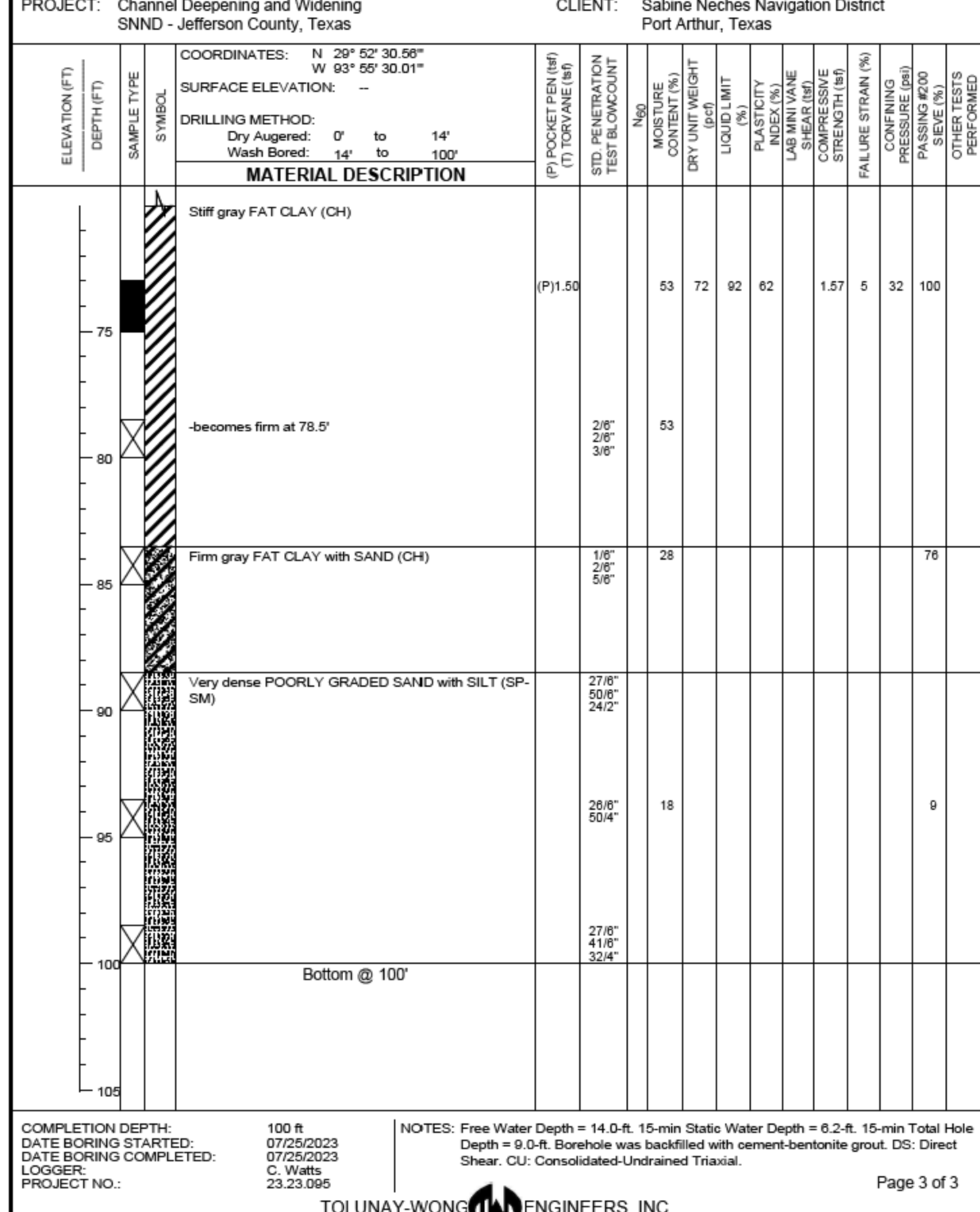
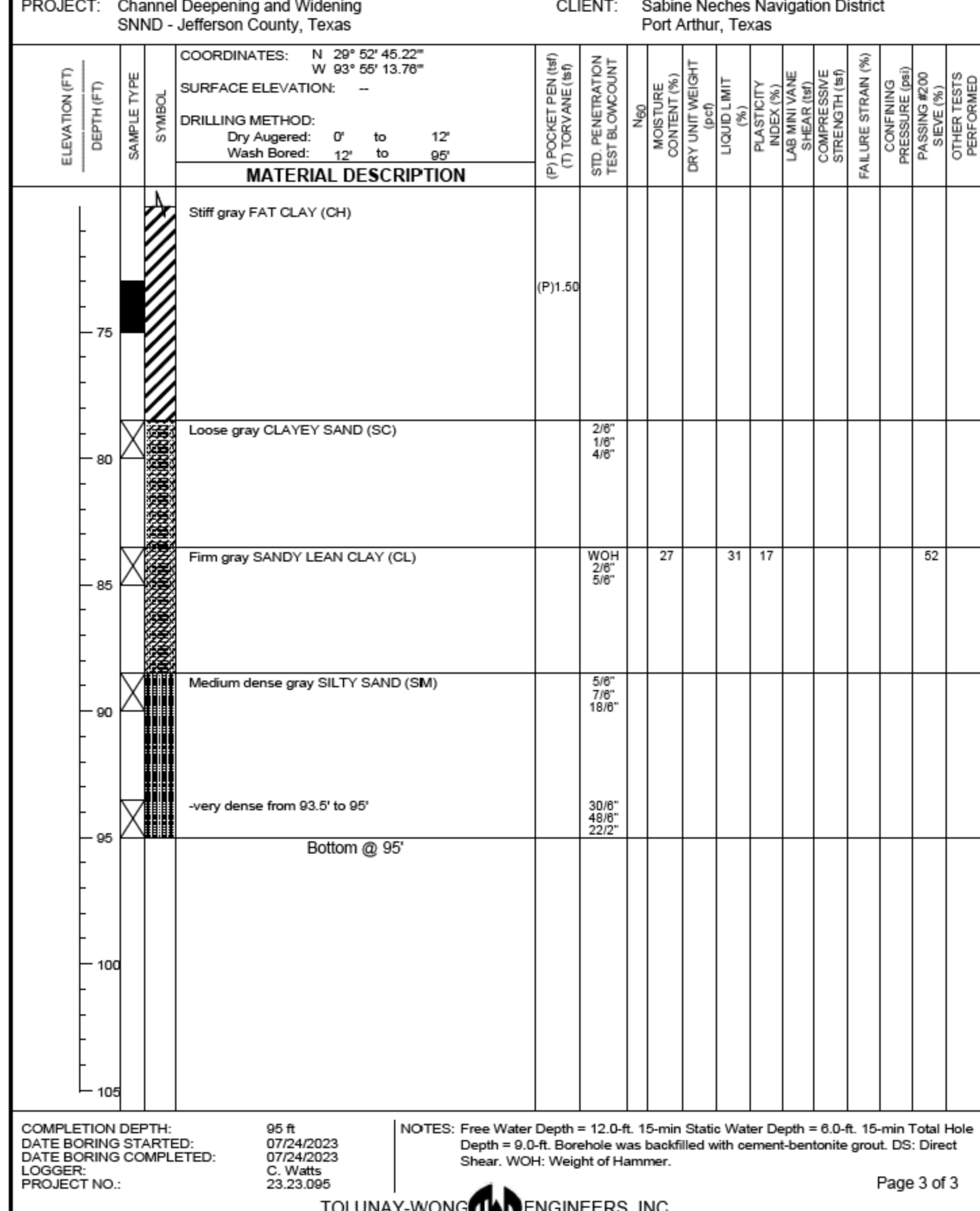
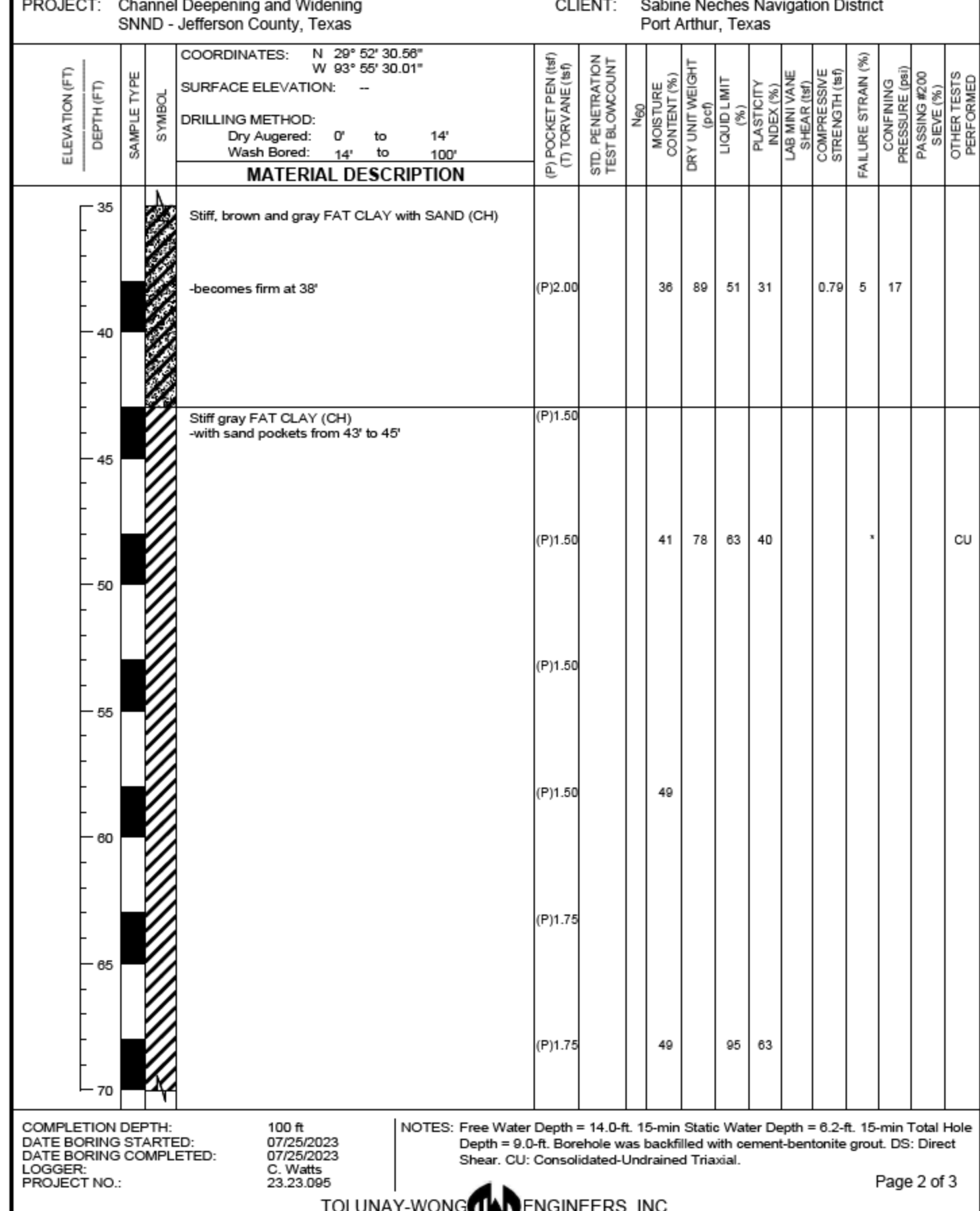
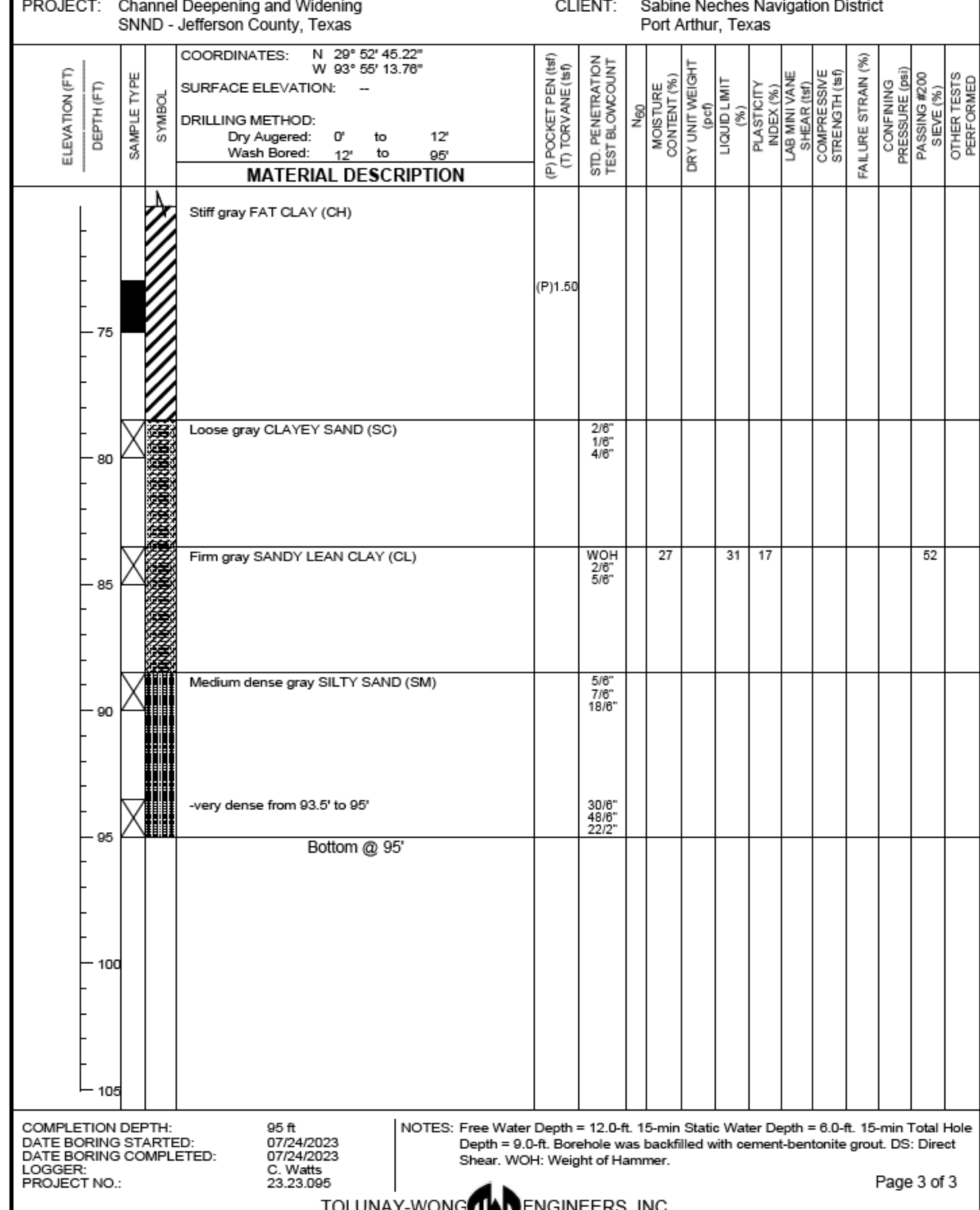
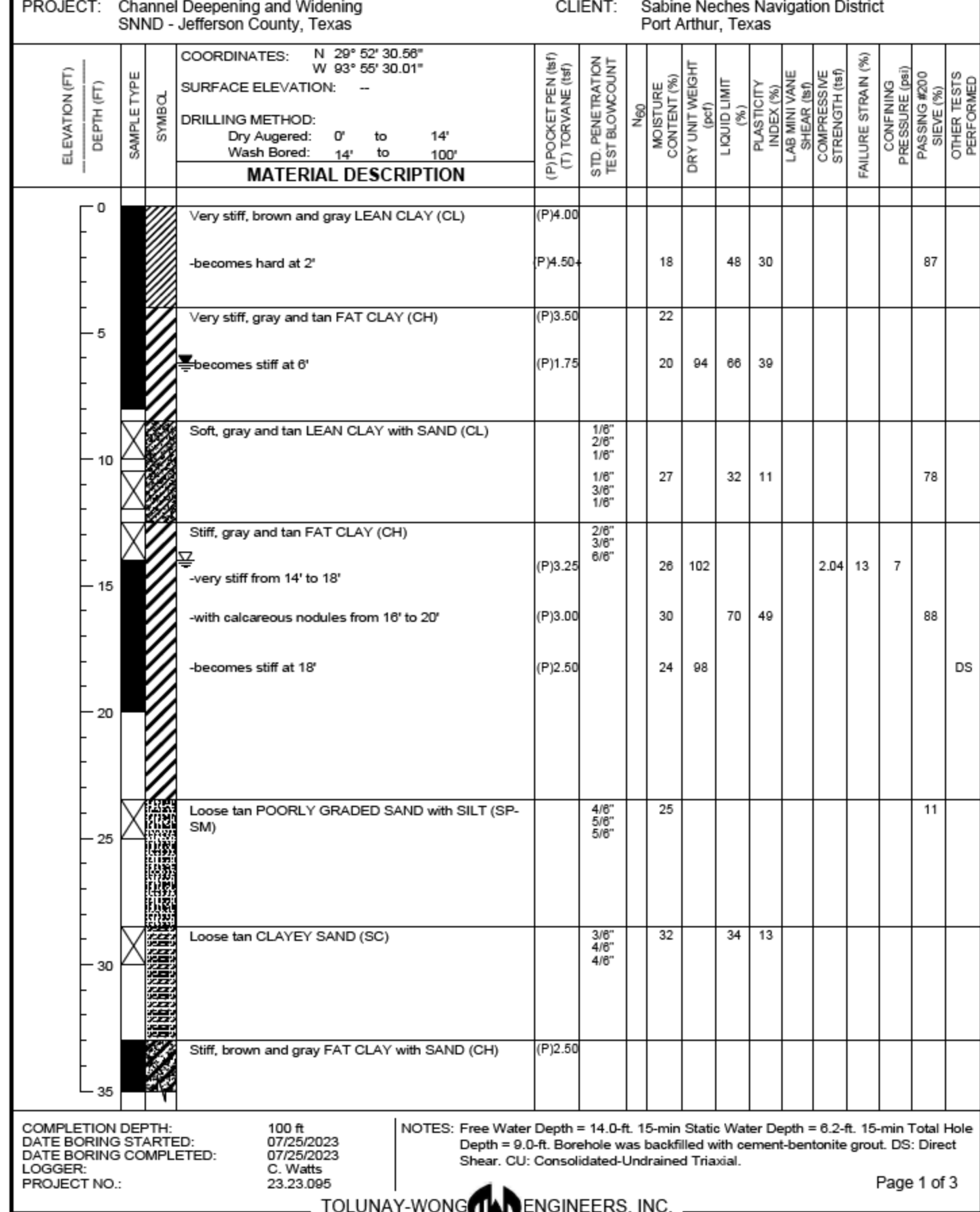
NOTES: Free Water Depth = 14.0-ft. 15-min Static Water Depth = 7.9-ft. 15-min Total H
 Depth = 10.0-ft. Borehole was backfilled with cement-bentonite grout. CU:
 Consolidated-Undrained Triaxial. WOH: Weight of Hammer.

TO UNAY-WONG ENGINEERS, INC.

Page 3 of 3

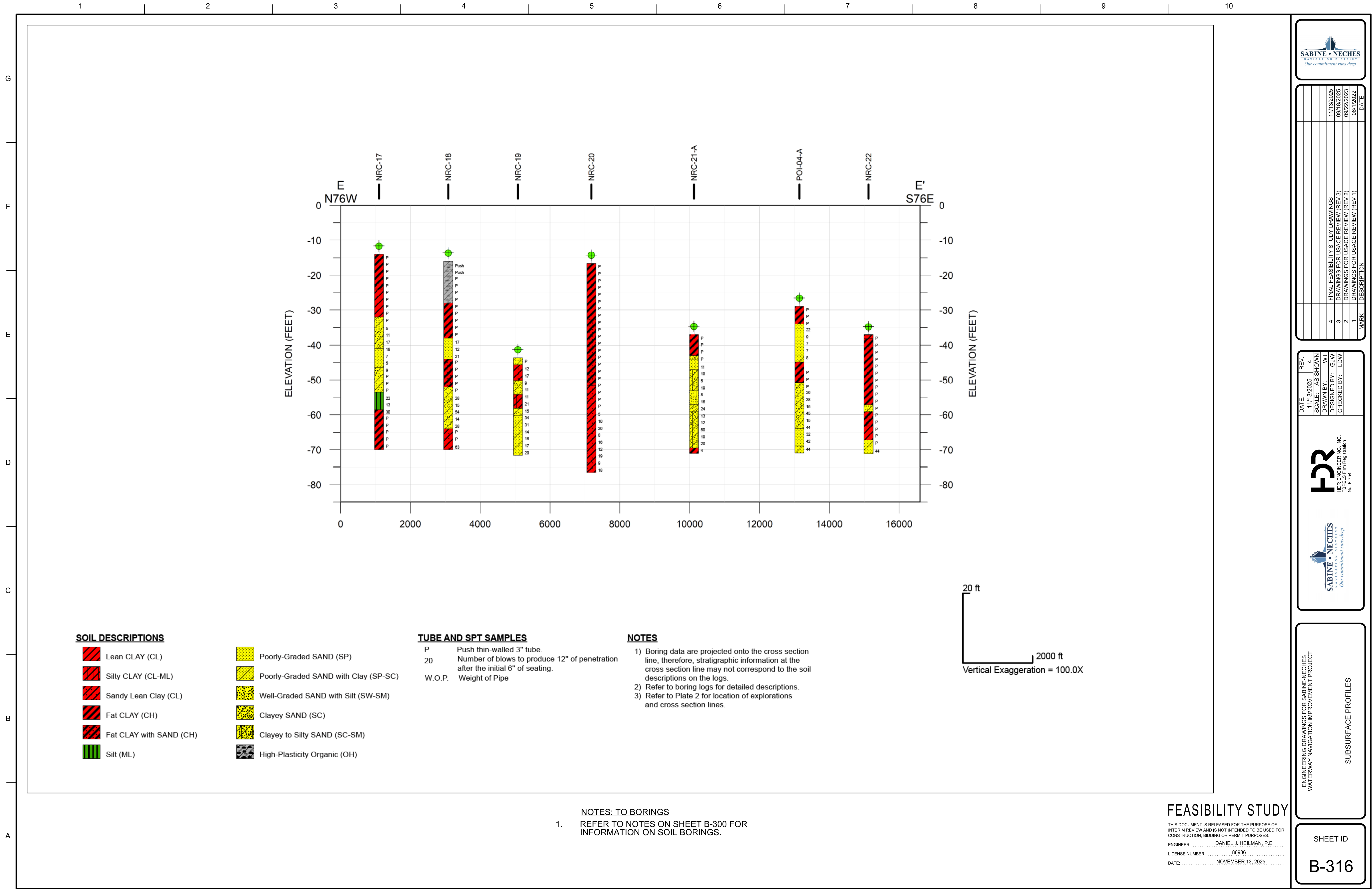

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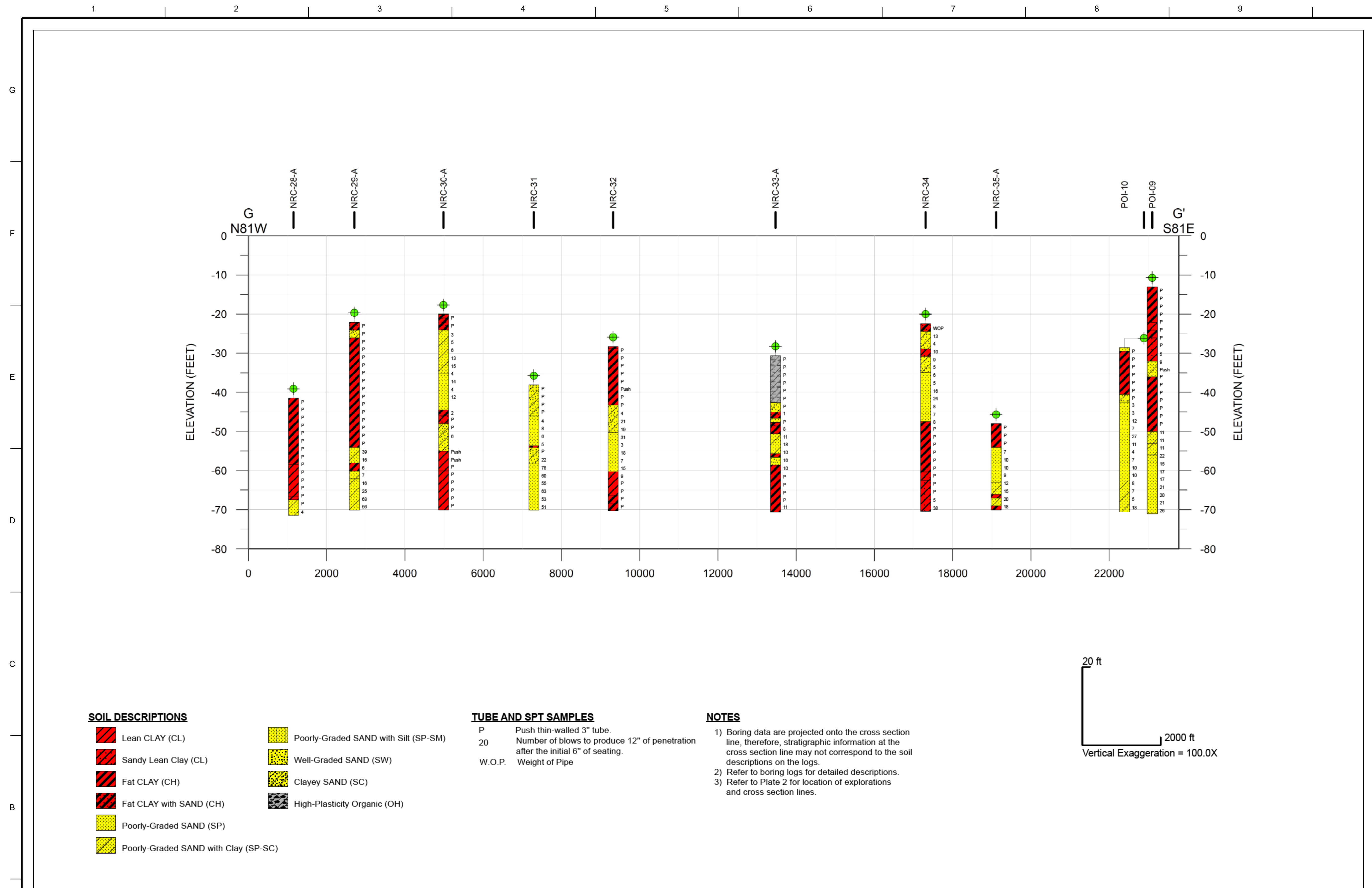
B-313



SHEET ID
B-314

ENGINEER: DANIEL J. HEILMAN, P.E.
LICENSE NUMBER: 86936
DATE: NOVEMBER 13, 2025





NOTES: TO BORINGS

1. REFER TO NOTES ON SHEET B-300 FOR INFORMATION ON SOIL BORINGS.

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ENGINEER: DANIEL J. HEILMAN, P.E.
LICENSE NUMBER: 86936
DATE: NOVEMBER 13, 2025

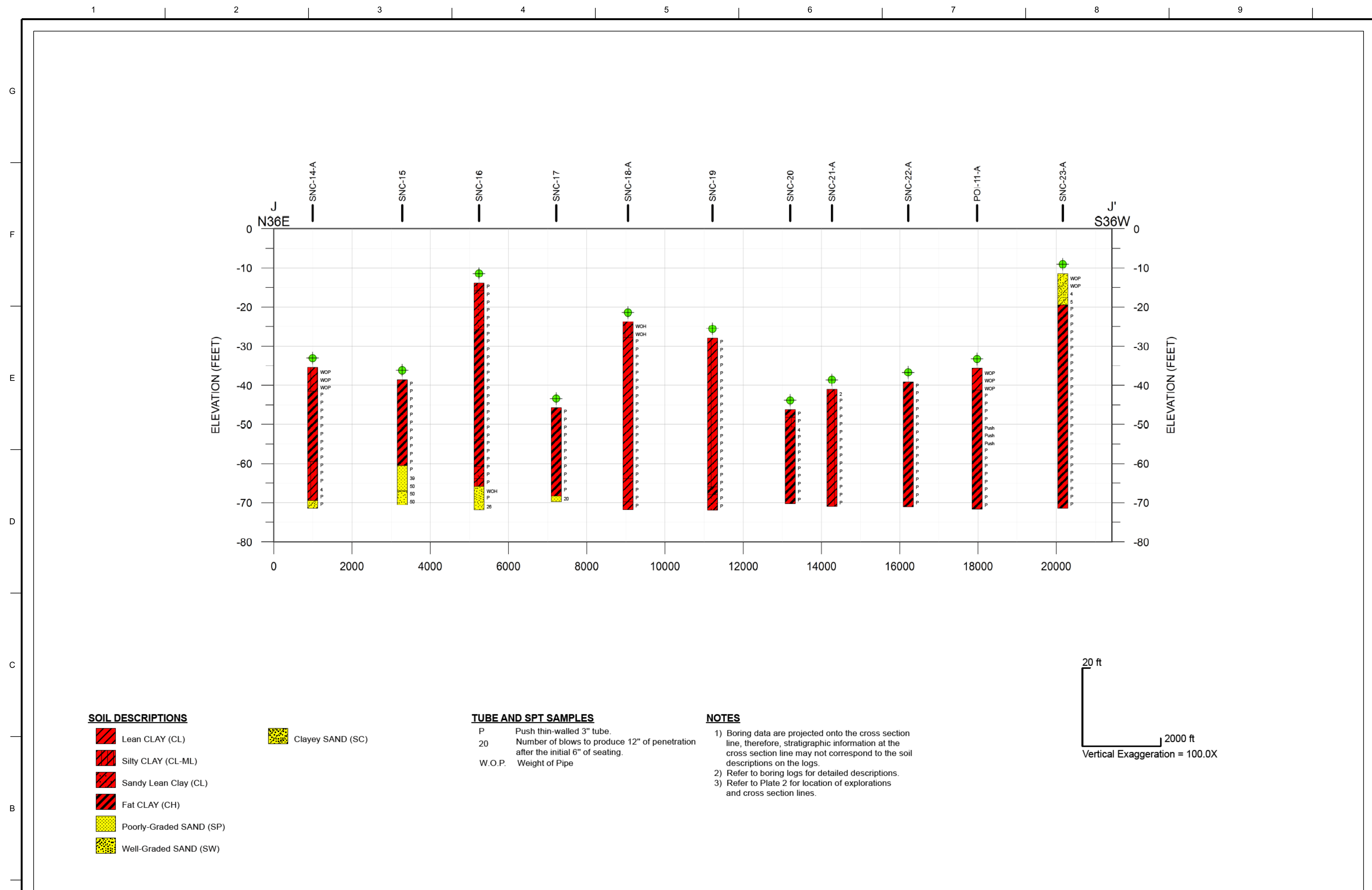
ENGINEERING DRAWINGS FOR SABINE-NECHES
WATERWAY NAVIGATION IMPROVEMENT PROJECT

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SHEET ID

B-318

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NOTES: TO BORINGS

1. REFER TO NOTES ON SHEET B-300 FOR INFORMATION ON SOIL BORINGS.

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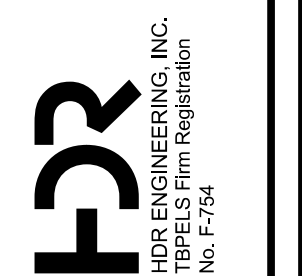
ENGINEER: DANIEL J. HEILMAN, P.E.

LICENSE NUMBER: 86936

DATE: NOVEMBER 13, 2025

[illegible]

11/13/2025	4
SCALE: AS SHOWN	
DRAWN BY: TWT	
DESIGNED BY: GJW	
CHECKED BY: LDW	

ENGINEERING DRAWINGS FOR SABINE-NECHES
WATERWAY NAVIGATION IMPROVEMENT PROJECT

SUBSURFACE PROFILES

SHEET ID

B-321