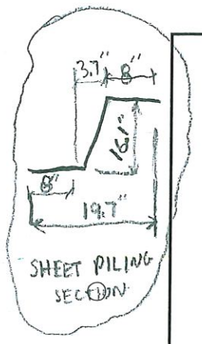
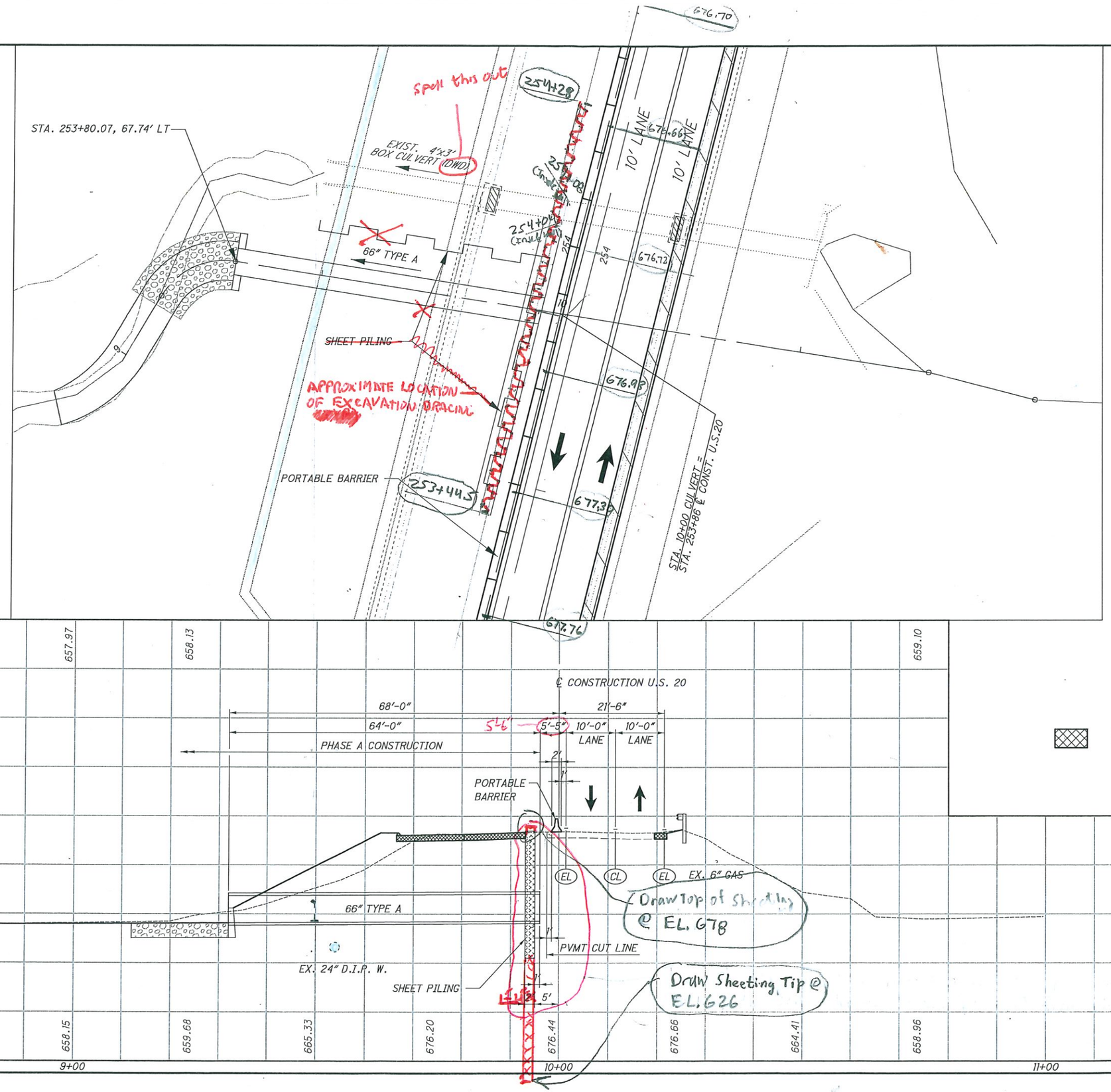
MOT Culvert @ 253+86 | 17

9





NOTES

1. AFTER INSTALLATION OF SHEET PILING AND EXCAVATION, CUT HOLE IN SHEET PILING FOR CULVERT. PUSH CULVERT SECTION THROUGH HOLE.

LEGEND

PROPOSED TEMPORARY PAVEMENT CONSTRUCTED THIS PHASE

21'-6"
10'-0
10'-0
1'-6"
8"

5'-6"
#0
6'-6"
1'-6"
1'-6"
5'-0"

6" RCP
6½'
66"
6½'
76" OD

(4x19') = 76'

H:\2018\180743\ODOT\ProjectData\08665_LAK_20_WEST\Design\MOT\Sheets\108665_MH001.dgn Sheet 3/11/2022 3:13:50 PM troyer

MAINTENANCE OF TRAFFIC PRE-PHASE 1A
CULVERT DETAIL STA. 253+86

CALCULATED TLS
CHECKED JMP

HORIZONTAL SCALE IN FEET
0 5 10 20

LAK-US-20-19.59

~~103~~ 103
1172

PZ40
w = 19.7" = 1.64'

677.4 − 658.0 = 19.4' ✓ ×2 = 38.8' ✓

676.7 − 658.0 = 18.7' ×2 = 37.4' ✓

38.8'
+ 5'
+ 5'
+ 37.4'
86.2' ✓ 0

86.2' / 1.64' = 52.6' → 53 sheets

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Project _____
Project No. _____ Sheet No. ____ of ____
Calculated By _____ Date _____
Checked By _____ Date _____
Subject _____

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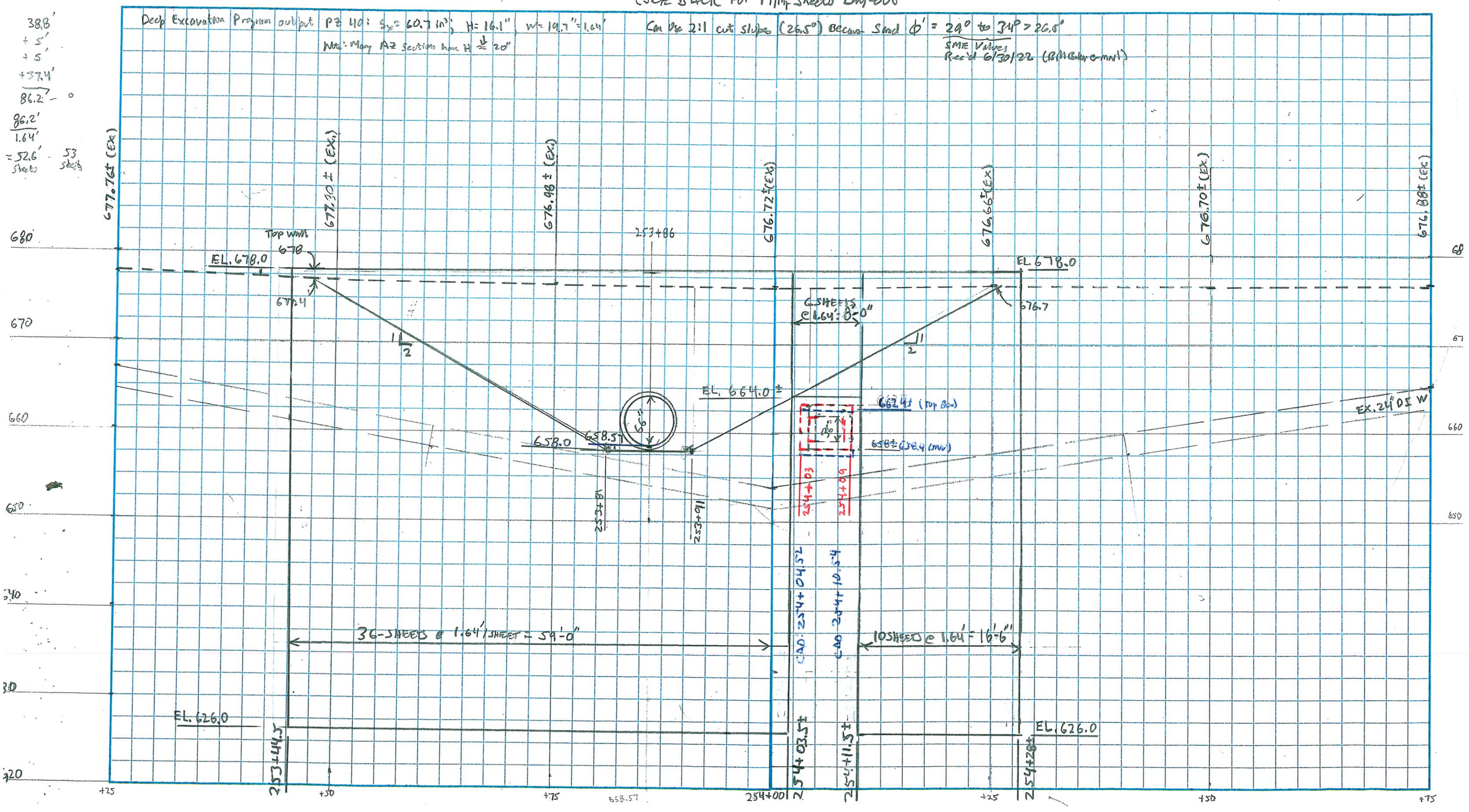
Project LAK-20-19.59
Project No. 180743 Sheet No. 1 of 1
Calculated By JPP Date 7/11/22
Checked By _____ Date _____
Subject Excavation Bracing Wall @ STA 253+86, LT.

(SEE BASIC For PI/MT Sheets Lay-out)

Deep Excavation Program output PZ 40: S_x = 60.7 in³, H = 16.1", w = 19.7" = 1.64'
Note: Many AZ sections have H ≥ 20"

Can use 2:1 cut slope (26.5°) because Sand ϕ' = 29° to 34° > 26.5°
SME Values Rec'd 6/30/22 (BM Geotechnical)



CULVERT @ STA. 253+86

5

PERRY TOWNSHIP PROJECT LAK-US-20-19.59

TEST BORING B-016-1-19, STA. 253+42, 16' LT

Soil Description	Depth (Feet)	UNIT WEIGHTS: Saturated γ_s (pcf)	UNIT WEIGHTS: Total (Moist) γ_t (pcf)	UNIT WEIGHTS: Effective (Bouyant) γ' (pcf)	STRENGTH PARAMETERS: Unconfined compress. C (psf)	STRENGTH PARAMETERS: Φ' (degree)	K_a	K_p	STRENGTH PARAMETERS: Undrained shear strength S_u (psf)	At Rest coefficient K_o
SAND	1'-19'	128	120	66	0	30	0.33	3.0	0	0.5
SAND	19'-22'	125	120	62	0	30	0.33	3.0	0	0.5
SANDY SILT	22'-38'	134	134	72	2500*	32*	0.31	3.25	2500	0.47
SANDY SILT (Below Water Table)	38'-40'	136	136	74	4000*	32*	0.31	3.25	4000	0.47

SOILS ARE SATURATED BELOW 12', ELEV. 665

PERRY TOWNSHIP PROJECT LAK-US-20-19.59

TEST BORING B-016-2-19, STA. 254+45, 16' RT

Soil Description	Depth (Feet)	UNIT WEIGHTS: Saturated γ_s (pcf)	UNIT WEIGHTS: Total (Moist) γ_t (pcf)	UNIT WEIGHTS: Effective (Bouyant) γ' (pcf)	STRENGTH PARAMETERS: Unconfined compress. C (psf)	STRENGTH PARAMETERS: Φ' (degree)	K_a	K_p	STRENGTH PARAMETERS: Undrained shear strength S_u (psf)	At Rest coefficient K_o
SAND	1'-15.5'	128	120	65	0	32	0.31	3.25	0	0.47
SAND	15.5'-20.5'	118	118	56	0	29	0.35	2.88	0	0.52
SAND	20.5'-26'	124	124	61	0	34	0.28	3.54	0	0.44
SILT & CLAY	26'-32'	134	134	72	2500*	32*	0.31	3.25	2500	0.47
SANDY SILT (Below Water Table)	32'-40'	136	136	74	3000*	32*	0.31	3.25	3000	0.47

SOILS ARE SATURATED BELOW 12 FT, ELEV 664.

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Project LAK-20-19.59
Project No. 180743 Sheet No. 1 of 1
Calculated By JPR Date 6/24/22
Checked By ____ Date ____
Subject Soil Parameters Recommended for Sheetpile Piling Design @ Culvert, STA 253+86

17

Prop 66" Pipe Culvert @ STA. 253+86 → Boring B-016-1-19 is 44' West of ℄ Culvert Cut to 657.88?

(7)

677.1 − 657.88 = 19.22'

PROJECT: LAK-20-19.59	DRILLING FIRM / OPERATOR: SME / JH/RM	DRILL RIG: 293-CME55-TRK	STATION / OFFSET: 253+42, 16' LT.	EXPLORATION ID B-016-1-19
TYPE: RETAINING WALL	SAMPLING FIRM / LOGGER: SME / JF	HAMMER: AUTOMATIC HAMMER	ALIGNMENT: U.S. 20	
PID: 108665 SFN:	DRILLING METHOD: 3.75" HSA	CALIBRATION DATE: 7/30/20	ELEVATION: 677.1 (MSL) EOB: 40.0 ft.	PAGE 1 OF 2
START: 7/13/20 END: 7/13/20	SAMPLING METHOD: SPT	ENERGY RATIO (%): 82.5	LAT / LONG: 41.777329, -81.155701	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	ABAN-DONED
4" ASPHALT AND 6" CONCRETE (DRILLER'S DESCRIPTION)	677.1 / 676.3																	
DENSE, BROWN, **FINE SAND**, TRACE SILT, TRACE CLAY, TRACE GRAVEL, DAMP	674.1		9 14 11	34	67	SS-1	-	-	-	-	-	-	-	-	-	5	A-3 (V)	
LOOSE TO MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, LITTLE GRAVEL, LITTLE SILT, TRACE CLAY	670.1		6 6 5	15	78	SS-2	-	18	16	49	12	5	NP	NP	NP	7	A-3a (0)	
LOOSE, BROWN, **FINE SAND**, TRACE SILT, TRACE CLAY, TRACE GRAVEL, DAMP	666.6		2 2 2	6	78	SS-3A	-	-	-	-	-	-	-	-	-	11	A-3a (V)	
						SS-3B	-	-	-	-	-	-	-	-	-	-	A-3 (V)	
			2 2 2	6	78	SS-4	-	-	-	-	-	-	-	-	-	9	A-3 (V)	
VERY LOOSE, BROWN, **COARSE AND FINE SAND**, LITTLE SILT, TRACE CLAY, TRACE GRAVEL, MOIST TO WET		W 665.1	1 1 1	3	100	SS-5	-	0	11	73	12	4	NP	NP	NP	23	A-3a (0)	
			0 0 1	1	100	SS-6	-	-	-	-	-	-	-	-	-	21	A-3a (V)	
	660.6		1 4 7	15	100	SS-7A	-	-	-	-	-	-	-	-	-	21	A-3a (V)	
LOOSE TO MEDIUM DENSE, BROWN AND GRAY, **COARSE AND FINE SAND**, LITTLE SILT, TRACE CLAY, TRACE GRAVEL, TRACE ORGANICS, DAMP						SS-7B	-	-	-	-	-	-	-	-	-	-	A-3a (V)	
	658.1		2 2 2	6	100	SS-8A	-	-	-	-	-	-	-	-	-	32	A-3a (V)	
LOOSE, GRAY, **FINE SAND**, SOME SILT, TRACE CLAY, TRACE GRAVEL, WET		657.88 Bot of Excavation				SS-8B	-	-	-	-	-	-	-	-	-	-	A-3 (V)	
	655.1		4 3 3	8	100	SS-9A	-	-	-	-	-	-	-	-	-	20	A-3 (V)	
VERY STIFF TO HARD, GRAY, **SANDY SILT**, AND TO SOME CLAY, TRACE GRAVEL, DAMP						SS-9B	3.00	-	-	-	-	-	-	-	-	-	A-4a (V)	
			5 6 9	21	78	SS-10	4.50	2	3	6	46	43	27	19	8	17	A-4a (8)	
			5 7 8	21	78	SS-11A	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
						SS-11B	4.50	-	-	-	-	-	-	-	-	-	A-4a (V)	
			4 7 9	22	100	SS-12	4.50	-	-	-	-	-	-	-	-	14	A-4a (V)	
VERY STIFF TO HARD, GRAY, **SANDY SILT**, AND TO SOME CLAY, TRACE GRAVEL, DAMP *(continued)*			4 7 10	23	100	SS-13	4.50	-	-	-	-	-	-	-	-	13	A-4a (V)	
			9 10 14	33	100	SS-14	4.50	8	8	14	43	27	24	17	7	14	A-4a (7)	
			8 11 12	32	100	SS-15	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	
	637.1	▽ 639.1 Saturated Below EOB The Level	9 10 14	33	100	SS-16	4.50	-	-	-	-	-	-	-	-	12	A-4a (V)	

16' SILT SAND

Estimated (By Rule of Thumb) 38' EMBEDMENT

19' SATURATED SILT

620 Sheet Pile Tip EL. (Estimated)

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS; BENTONITE CHIPS; SAND

Prop. 16" Pipe Culvert @ STA. 253+86 → Boring B-016-2-19 is 59' East of ℄ Culvert Cut to 657.88±

(8)

676.4
− 657.88
18.52'

PROJECT: LAK-20-19.59	DRILLING FIRM / OPERATOR: SME / JH/RM	DRILL RIG: 293-CME55-TRK	STATION / OFFSET: 254+45, 16' RT.	EXPLORATION ID B-016-2-19
TYPE: RETAINING WALL	SAMPLING FIRM / LOGGER: SME / JF	HAMMER: AUTOMATIC HAMMER	ALIGNMENT: U.S. 20	
PID: 108665 SFN:	DRILLING METHOD: 3.75" HSA	CALIBRATION DATE: 7/30/20	ELEVATION: 676.4 (MSL) EOB: 40.0 ft.	PAGE 1 OF 2
START: 7/13/20 END: 7/13/20	SAMPLING METHOD: SPT	ENERGY RATIO (%): 82.5	LAT / LONG: 41.777363, -81.155309	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	ABAN-DONED
4" ASPHALT AND 6" CONCRETE (DRILLER'S DESCRIPTION)	676.4																	
	675.6																	
LOOSE TO MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, LITTLE SILT, TRACE CLAY, TRACE GRAVEL, DAMP			9 6 4	14	100	SS-1	-	-	-	-	-	-	-	-	-	5	A-3a (V)	
			2 2 2	6	100	SS-2	-	7	18	54	16	5	NP	NP	NP	9	A-3a (0)	
			2 2 3	7	100	SS-3A	-	-	-	-	-	-	-	-	-	-	A-3a (V)	
						SS-3B	-	-	-	-	-	-	-	-	-	10	A-3a (V)	
			2 3 3	8	89	SS-4	-	-	-	-	-	-	-	-	-	11	A-3a (V)	
	665.9																	
LOOSE TO MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, SOME SILT, TRACE CLAY, TRACE GRAVEL, MOIST TO WET		W 664.4	10 6 4	14	56	SS-5	-	-	-	-	-	-	-	-	-	11	A-3 (V)	
			3 3 4	10	56	SS-6	-	0	0	72	23	5	NP	NP	NP	20	A-3a (0)	
	660.9																	
VERY LOOSE, BROWN, **COARSE AND FINE SAND**, AND SILT, TRACE CLAY, TRACE GRAVEL, WET			2 1 2	4	67	SS-7	-	-	-	-	-	-	-	-	-	35	A-3 (V)	
	658.4																	
VERY LOOSE, GRAY, **FINE SAND**, TRACE SILT, TRACE CLAY, TRACE GRAVEL, WET		657.88 Bot. of Excavation	2 1 2	4	100	SS-8	-	-	-	-	-	-	-	-	-	33	A-3 (V)	
	655.9																	
MEDIUM DENSE TO DENSE, GRAY, **COARSE AND FINE SAND**, LITTLE SILT, TRACE TO LITTLE GRAVEL, TRACE CLAY, WET			4 5 7	17	100	SS-9	-	-	-	-	-	-	-	-	-	32	A-3 (V)	
			5 11 13	33	100	SS-10	-	-	-	-	-	-	-	-	-	13	A-3a (V)	
	650.4																	
VERY STIFF, GRAY, **SILT AND CLAY**, TRACE SAND, TRACE GRAVEL, MOIST			4 5 7	17	100	SS-11	3.50	-	-	-	-	-	-	-	-	21	A-6a (V)	
			3 4 7	15	100	SS-12	3.00	0	2	6	37	55	34	20	14	24	A-6a (10)	
	645.9																	
HARD, GRAY, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP		▽ 644.4	2 6 9	21	100	SS-13	4.50	6	9	13	45	27	24	17	7	15	A-4a (7)	
			4 7 9	22	100	SS-14	4.25	-	-	-	-	-	-	-	-	15	A-4a (V)	
			7 8 14	30	56	SS-15	4.50	-	-	-	-	-	-	-	-	15	A-4a (V)	
	636.4	EOB	9 9 6	21	100	SS-16	4.50	-	-	-	-	-	-	-	-	15	A-4a (V)	

19' (RETAIN SAND)

7.5' SAND

6' SILT & SAND

Estimated (by Rule-of-Thumb) 38' EMBEDMENT

Saturated Below this Level

24.5' SATURATED SILT

620

Sheet Pile Tip EL. (Estimated)

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: AUGER CUTTINGS; BENTONITE CHIPS; SAND