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July 14, 2023

Mr. Kyle J. Dohlen, PE  
Transportation Engineer  
Planning and Engineering  
ODOT District 12  
5500 Transportation Boulevard  
Garfield Heights, Ohio 44125

Via E-Mail: [Kyle.Dohlen@dot.ohio.gov](mailto:Kyle.Dohlen@dot.ohio.gov)

RE: District 12/3 General Engineering Services Agreement  
GES PID No. 117276  
CRS: D12/D3 GES FY2023-2025 Subsurface  
Agreement No. 38659  
Task Order Number (38659-D-12-4)  
County-Route-Section LAK-20-19.59  
Task PID No. 108665

Dear Mr. Dohlen:

The attached data report presents the results of our CPT and SPT exploration for LAK-20-19.59 in Perry, Ohio.

If you have questions, please feel free to call.

Sincerely,

**SME**

Brendan P. Lieske, PE  
Senior Consultant/Project Manager

Enclosure: CPT/SPT Data Report, Dated July 14, 2023

# 1. PROJECT INFORMATION AND FIELD EXPLORATION

This data report presents the results of our CPT and SPT exploration for the LAK-20-19.59 project in Perry, Ohio. Subsurface conditions were identified by performing Cone Penetration Tests (CPT) at two locations, designated C-001-0-23 and C-001-1-23, and a Standard Penetration Test (SPT) boring, designated B-001-0-23. The SPT boring was performed below the termination depth at C-001-0-23. The tests were performed through pre-cored holes, which were measured in the field to determine pavement material thicknesses.

The CPT soundings were performed in general accordance with ASTM D 5778 and the SPT boring was performed in general accordance with the ODOT Specifications for Geotechnical Explorations (SGE). The CPT equipment consisted of a Vertek CPT (serial #: 4644.171) attached to the back of a CME-55 rig, calibrated on June 27, 2023. The SPT drilling equipment consisted of the CME-55 rig with a CME auto hammer having an energy transfer ratio of 65 percent, calibrated on August 5, 2022. The field-measured blow counts are corrected to  $N_{60}$  based on the hammer system calibration.

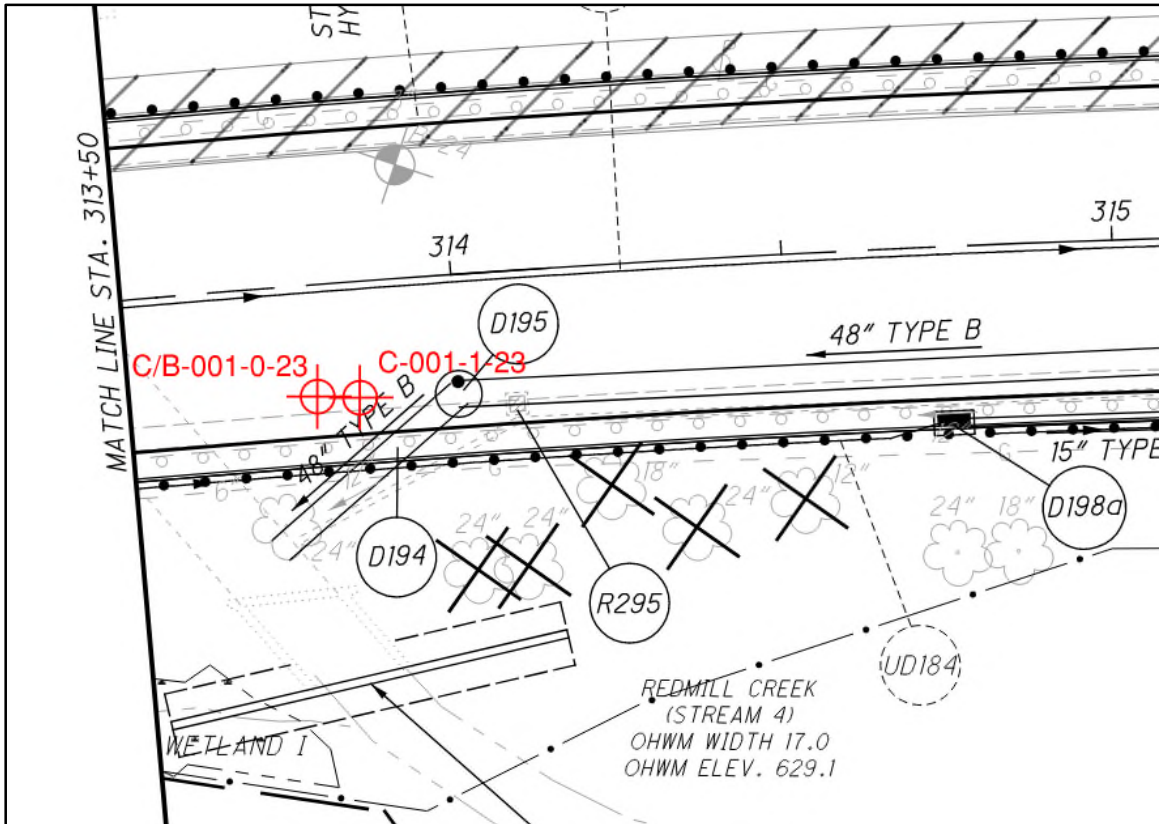
Due to refusal at various stages during the CPT soundings, the SME drill crew stopped sounding, augered through the refusal material, then continued the sounding. Notes on the various refusal depths are shown on the CPT logs. At a depth of 36 feet at location C-001-0-23, we terminated the CPT sounding and began an SPT boring (B-001-0-23) at 37 feet. At location C-001-1-23, the driller pre-augered to a depth of 13 feet before beginning the CPT sounding to avoid encountering refusal in the upper 13 feet.

Groundwater was observed at a depth of 30 feet at B-001-0-23 during drilling. At completion, the borehole at B-001-0-23 was backfilled with auger cuttings and the surface was patched with asphalt cold patch. SPT samples were placed in clean glass jars each marked with the project, boring, depth interval, and blow-count data. Samples were taken to SME’s laboratory for storage.

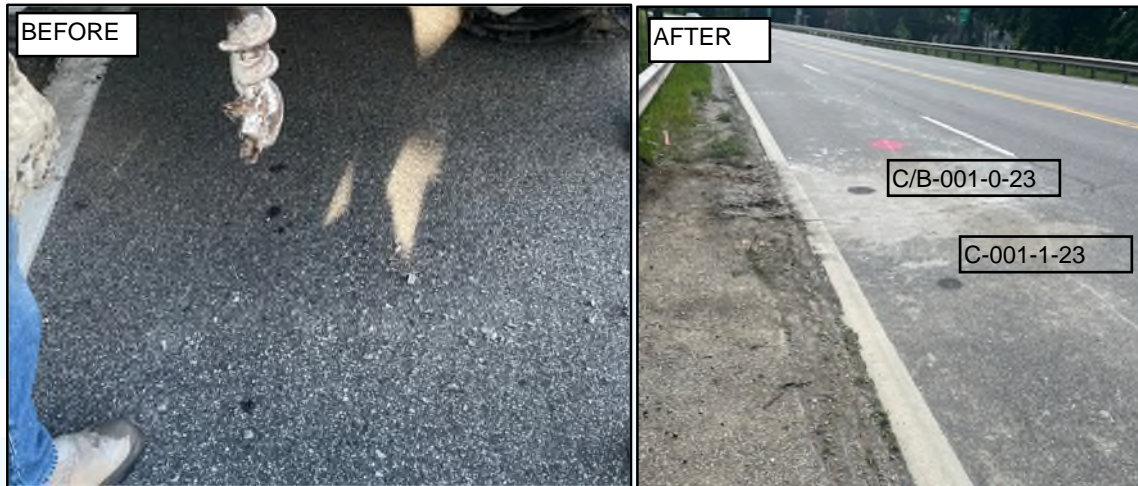
The elevations at each location were estimated to the nearest foot based on the project Plan and Profile sheets. The latitude and longitude at each test location were estimated using Google Earth. Table 1 shows a summary of information at the test locations. Figure 1 shows the approximate test locations. Figure 2 shows before and after photographs at the test locations.

**Table 1. Test Location Summary**

Sounding ID	Completion Date	Elevation (feet)	Latitude	Longitude	Surface Material	Depth (feet)
C/B-001-0-23	7/14/23	653+/-	41.785143°	-81.136477°	Asphalt (4") over Concrete (5")	58.5
C-001-1-23	7/14/23	653+/-	41.785149°	-81.136456°	Asphalt (4") over Concrete (5")	32



**FIGURE NO. 1: Approximate CPT and Boring Locations**



**FIGURE NO. 2: Before and After Photographs at the CPT and Boring Locations**

The raw CPT data is available upon request. The CPT and SPT logs included as attachments to this report are for informational purposes only. The CPT logs have been corrected for inclination at depth and filtered for data spikes. Additionally, for each sounding, the measured values of  $q_c$  and  $f_s$  were shifted relative to one another with a cross correlation function.

## 2. TEST DATA AND INTERPRETATION

The subsurface profile presented on the logs is a generalized description of the conditions encountered. The stratification depths indicate a zone of transition from one soil type to another. They are not meant to delineate exact depths of change between soil types. Soil conditions may vary between or away from the exploration locations. The CPT plots include interpreted Soil Behavior Type (SBT) based on the method described by Robertson. The interpretations are presented only as a guide for geotechnical use and should be carefully reviewed.

Groundwater levels will fluctuate throughout the year, based on variations in precipitation, evaporation, run-off, and other factors. The groundwater information reported on the SPT log represents conditions at the time the readings were taken and may vary from the groundwater conditions encountered at other times.

## 3. SIGNATURES

### REPORT PREPARED BY:

Brendan P. Lieske, PE  
Senior Consultant

Attachments: CPT Logs  
Dissipation Test Results  
SPT Log

### REPORT REVIEWED BY:

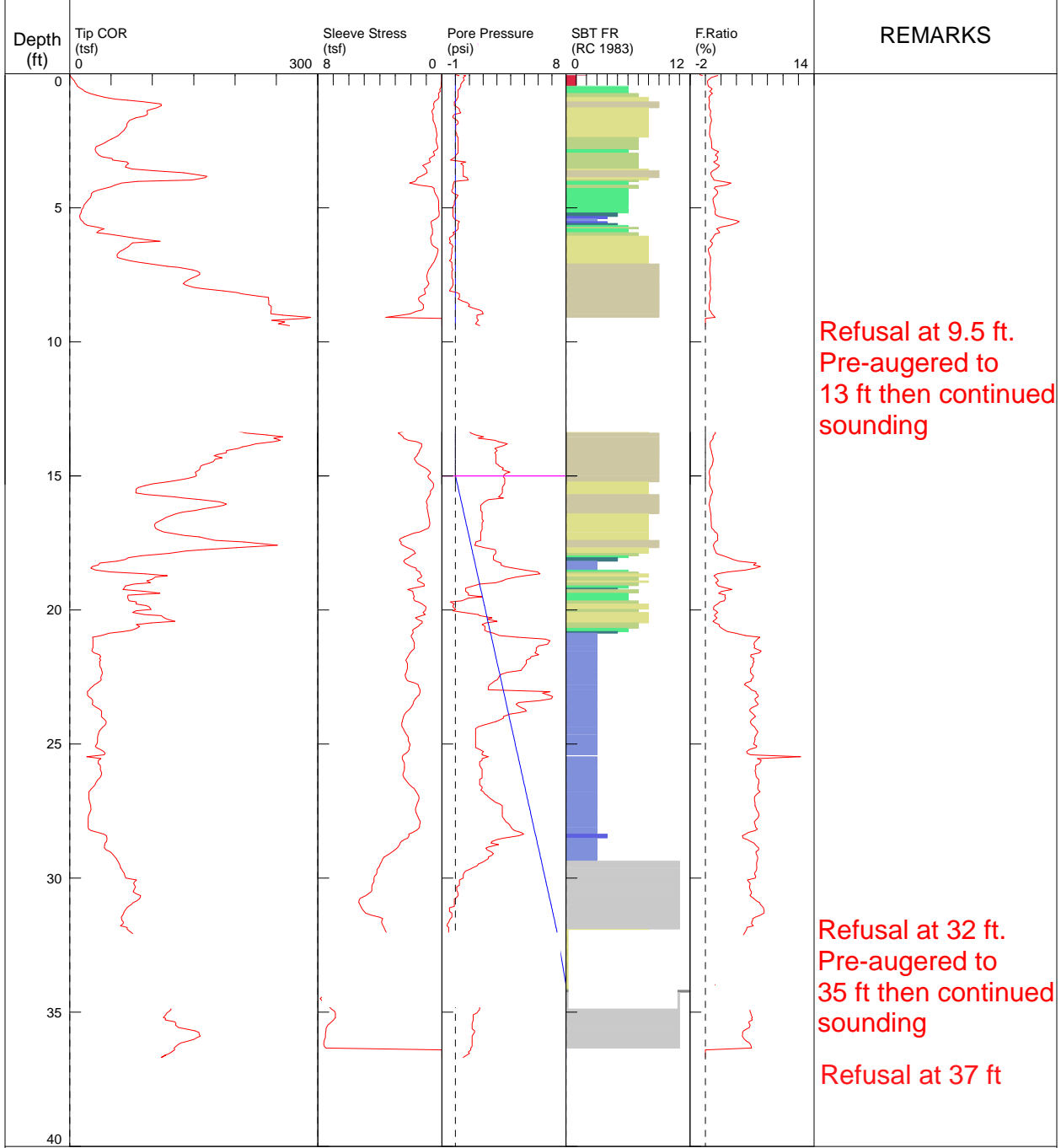
Thomas P. Olding, PE  
Project Engineer

# SOUNDING



PROJECT: Lak-20-19.59 (PID 108665)  
 LOCATION: N Ridge Road, Perry, Ohio  
 TEST ID: C-001-0-23  
 CLIENT: ODOT  
 SITE: Elevation 653 ft

COMPANY: SME  
 OPERATOR: J Hall  
 PROBE ID: 4644.171XX  
 TEST DATE: Fri 14/Jul/2023  
 START TIME: 09:12:59



FINAL BASELINE: -90.19 (tsf)      FINAL BASELINE: -0.0050 (tsf)      FINAL BASELINE: 8.600 (psi)

**NOTES:: Example of notes**

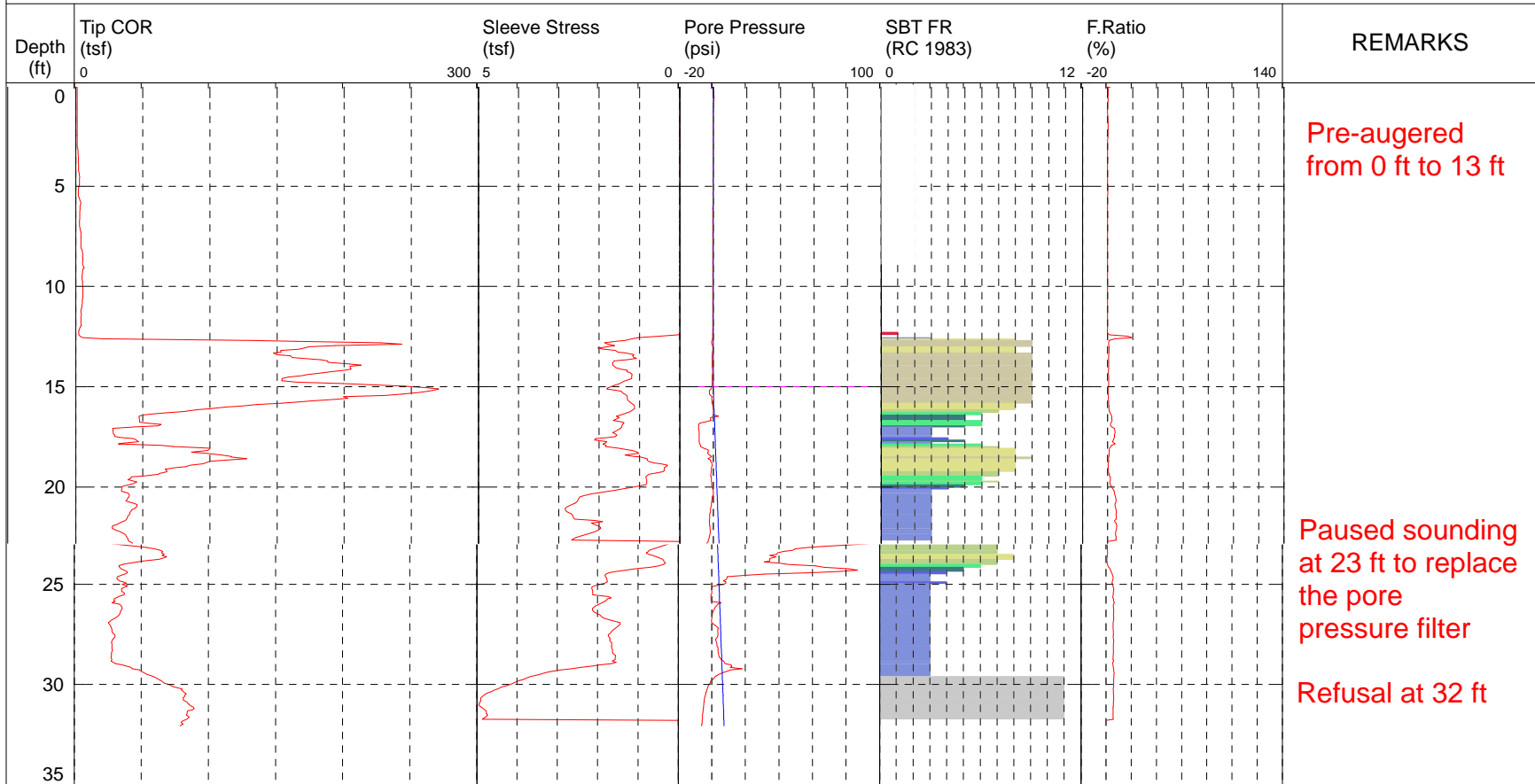
- |   |   |  |  |
|---|---|--|--|
| <ul style="list-style-type: none"> <li><span style="color: red;">■</span> 1 sensitive fine grained</li> <li><span style="color: pink;">■</span> 2 organic material</li> <li><span style="color: blue;">■</span> 3 clay</li> </ul> | <ul style="list-style-type: none"> <li><span style="color: blue;">■</span> 4 silty clay to clay</li> <li><span style="color: darkblue;">■</span> 5 clayey silt to silty clay</li> <li><span style="color: green;">■</span> 6 sandy silt to clayey silt</li> </ul> | <ul style="list-style-type: none"> <li><span style="color: lightgreen;">■</span> 7 silty sand to sandy silt</li> <li><span style="color: yellowgreen;">■</span> 8 sand to silty sand</li> <li><span style="color: tan;">■</span> 9 sand</li> </ul> | <ul style="list-style-type: none"> <li><span style="color: orange;">■</span> 10 gravelly sand to sand</li> <li><span style="color: grey;">■</span> 11 very stiff fine grained (*)</li> <li><span style="color: darkgrey;">■</span> 12 sand to clayey sand (*)</li> </ul> |
|---|---|--|--|
- \*SBT/SPT CORRELATION: UBC-1983

# SOUNDING



PROJECT: Lak-20-19.59 (PID 108665)  
 LOCATION: N Ridge Road, Perry, Ohio  
 TEST ID: C-001-1-23  
 CLIENT: ODOT  
 SITE: Elevation 653 ft

COMPANY: SME  
 OPERATOR: J Hall  
 PROBE ID: 4644.171XX  
 TEST DATE: Fri 14/Jul/2023  
 START TIME: 13:18:11



FINAL BASELINE: -1.14 (tsf)

FINAL BASELINE: -0.0017 (tsf)

FINAL BASELINE: -0.365 (psi)

- |   |   |  |  |
|---|---|--|--|
| <ul style="list-style-type: none"> <li><span style="color: red;">■</span> 1 sensitive fine grained</li> <li><span style="color: pink;">■</span> 2 organic material</li> <li><span style="color: blue;">■</span> 3 clay</li> </ul> | <ul style="list-style-type: none"> <li><span style="color: blue;">■</span> 4 silty clay to clay</li> <li><span style="color: teal;">■</span> 5 clayey silt to silty clay</li> <li><span style="color: green;">■</span> 6 sandy silt to clayey silt</li> </ul> | <ul style="list-style-type: none"> <li><span style="color: lightgreen;">■</span> 7 silty sand to sandy silt</li> <li><span style="color: yellowgreen;">■</span> 8 sand to silty sand</li> <li><span style="color: olive;">■</span> 9 sand</li> </ul> | <ul style="list-style-type: none"> <li><span style="color: orange;">■</span> 10 gravelly sand to sand</li> <li><span style="color: grey;">■</span> 11 very stiff fine grained (*)</li> <li><span style="color: darkgrey;">■</span> 12 sand to clayey sand (*)</li> </ul> |
|---|---|--|--|

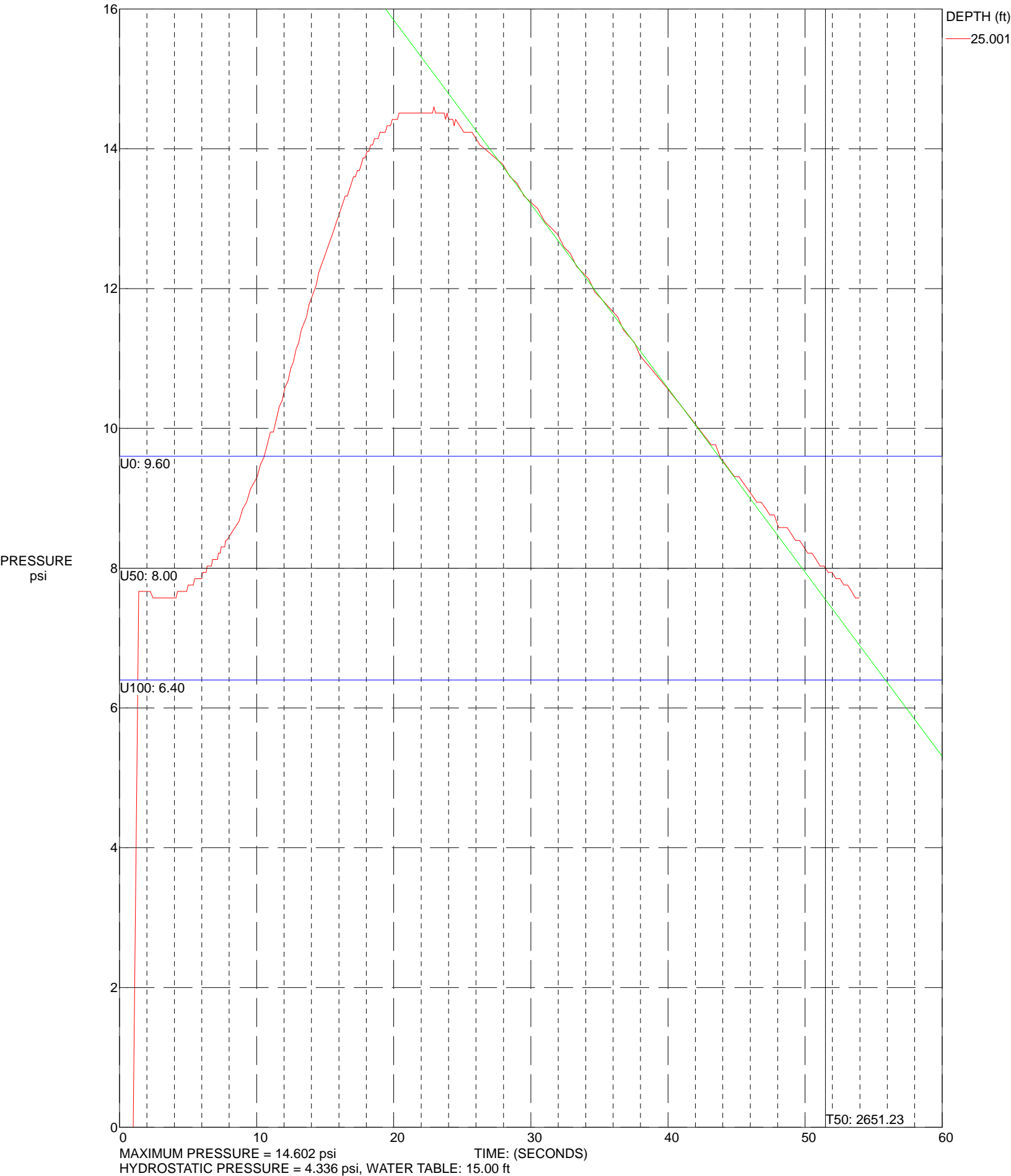
\*SBT/SPT CORRELATION: UBC-1983



PROJECT: Lak-20-19.59 (PID 108665)  
LOCATION: N Ridge Road, Perry, Ohio  
TEST ID: C-001-1-23  
CLIENT: ODOT

# DISSIPATION

COMPANY: SME  
OPERATOR: J Hall  
COMMENT: Offset 5' E from C-001-0-23  
TEST DATE: Fri 14/Jul/2023  
START TIME: 13:18:11







STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 7/14/23 17:40 - \\SME-INCP\Z\WIP\092062.04\PROJECT DATA\INT\AK-20-19.59 LOGS.GPJ

PID: 108665		SFN:		PROJECT: LAK-20-19.59		STATION / OFFSET:			START: 7/14/23		END: 7/14/23		PG 2 OF 2		B-001-0-23										
MATERIAL DESCRIPTION AND NOTES				ELEV. 623.0	DEPTHS		SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			ODOT CLASS (GI)	BACK FILL				
												GR	CS	FS	SI	CL	LL	PL	PI			WC			
				616.0	31																				
HARD, GRAY, <b>SILTY CLAY</b> , LITTLE SAND, LITTLE GRAVEL, DRILLER'S DESCRIPTION				616.0	36																				
					37																				
				608.5	38																				
HARD, GRAY, <b>SILTY CLAY</b> , LITTLE SAND, LITTLE GRAVEL, DRILLER'S DESCRIPTION					39		6	31	100	SS-1	-	-	-	-	-	-	-	-	-	-	-	-	A-6b (V)		
				40		12		17																	
				608.5	41																				
					42																				
				608.5	43																				
					44		11			SS-2A	-	-	-	-	-	-	-	-	-	-	-	-	A-6b (V)		
				608.5	45		19	52	100	SS-2B	-	-	-	-	-	-	-	-	-	-	-	-	A-6b (V)		
					46																				
				608.5	47																				
					48																				
				608.5	49		17																		
					50		19	47	100	SS-3	-	-	-	-	-	-	-	-	-	-	-	-	A-6b (V)		
				608.5	51																				
					52																				
				608.5	53																				
					54		50		100	SS-4	-	-	-	-	-	-	-	-	-	-	-	-	A-6b (V)		
				608.5	55																				
					56																				
				608.5	57																				
					58																				
SHALE, GRAY.				595.0																					
				594.5	TR																				
					EOB	50'0"	-			SS-5	-	-	-	-	-	-	-	-	-	-	-	-	Rock (V)		

NOTES: NONE

ABANDONMENT METHODS, MATERIALS, QUANTITIES: BACKFILLED WITH AUGER CUTTINGS