



GEOTECHNICAL SUBSURFACE DATA REPORT

S-46-59 over Little Turkey Creek
York County, South Carolina



PREPARED FOR

SCDOT

955 Park Street

Columbia, South Carolina 29201



PREPARED BY

F&ME Consultants, Inc.

211 Business Park Boulevard

Columbia, South Carolina 29203

SCDOT Project ID: P043996

FME Project No.: G7100.007—Task 00005

November 7, 2024

November 7, 2024

Mr. Trapp Harris, P.E.
South Carolina Department of Transportation
955 Park Street
Columbia, South Carolina 29201

Re: Geotechnical Subsurface Data Report
S-46-59 over Little Turkey Creek
Greenville County, South Carolina
SCDOT Project ID: P043996
FME Project No.: G7100.007 – Task 00005

Mr. Harris:

Submitted herein is F&ME Consultants, Inc.'s (FME) Geotechnical Subsurface Data Report for the S-46-59 over Little Turkey Creek project. This report contains findings from our subsurface field exploration and laboratory testing program.

It has been a pleasure collaborating with you on this project and we appreciate the opportunity to be of service. Please notify us if there are any questions or if we can be of further assistance.

Respectfully Submitted,

F&ME CONSULTANTS, INC.

A handwritten signature in blue ink, reading 'Rebecca M. Coldiron'.

Rebecca M. Coldiron
Geotechnical Professional

A handwritten signature in blue ink, reading 'Alex M. Abernethy'.

Alex M. Abernethy, E.I.T.
Materials Laboratory Manager

A handwritten signature in blue ink, reading 'William J. Gieser'.

William J. Gieser, P.E.
Senior Project Engineer



TABLE OF CONTENTS

1. INTRODUCTION.....	3
1.1. GENERAL	3
1.2. SCOPE	3
2. SUBSURFACE EXPLORATION SUMMARY	3
2.1. SOIL TEST BORINGS	3
2.2. COMPOSITE BULK SOIL SAMPLE	4
2.3. GROUNDWATER	4
2.4. TEST LOCATION TABLE	5
3. LABORATORY TESTING SUMMARY	5

APPENDIX

Section 1	Site Location Plan
Section 2	Boring Location Plan
Section 3	Subsurface Exploration Logs
Section 4	Laboratory Test Results
Section 4A	Split-Spoon Samples
Section 4B	Bulk Soil Samples
Section 4C	Rock Core Samples
Section 5	On Site Drill Rig Photos
Section 6	Pavement Core Photos
Section 7	SPT Hammer Calibration
Section 8	Geo-Scoping Form

1. INTRODUCTION

1.1. GENERAL

The project is located along S-46-59 (North Burris Road) and is located approximately three (3) miles southeast of Blairsville, South Carolina. We understand that this project will involve the demolition/removal of the existing bridge structure and the replacement with a new bridge structure on the existing roadway alignment. A Site Location Plan is presented in Section 1 of the Appendix of this report.

1.2. SCOPE

FME performed a geotechnical subsurface exploration and laboratory testing for the project. The South Carolina Department of Transportation (SCDOT) Scope of Services was issued on October 10, 2024.

The field exploration consisted of Soil Test Borings (STB) with Standard Penetration Testing (SPT), and the collection of one (1) composite Bulk Soil Sample (BS) that was obtained from Soil Test Boring auger cuttings. Laboratory testing was performed on soil and rock samples collected from the Soil Test Borings and the Bulk Soil Sample. Field exploration methods and laboratory procedures were conducted in general accordance with the current American Association of State Highway and Transportation Officials (AASHTO), American Society of Testing and Materials (ASTM) Standards. This report was prepared in general accordance with the 2022 SCDOT Geotechnical Design Manual (GDM).

2. SUBSURFACE EXPLORATION SUMMARY

From October 21, 2024, through October 23, 2024, eight (8) Soil Test Borings were performed on site. Additionally, one (1) Composite Bulk Soil Sample was collected from the upper two (2) feet of auger cuttings encountered during drilling operations at six (6) Soil Test Borings designated as P-1 through P-6.

The soils were visually classified in the field based upon the Unified Soil Classification System (USCS) in general accordance with ASTM D2488. Testing locations and target exploration depths were provided by the SCDOT. A Boring Location Plan (Figure 2) displaying the test locations performed during the subsurface exploration is contained in Section 2 of the Appendix within to this report.

2.1. SOIL TEST BORINGS

Soil Test Borings were performed utilizing a CME 550X ATV-mounted drill rig. The measured energy transfer ratio for the CME 550X was 89.7% utilizing an automatic hammer. SPT hammer calibration records are provided within Section 7 of the Appendix of this report. Soil Test Borings B-1 and B-2 and P-1 through P-6 utilized Rotary Wash drilling techniques to maintain a stable borehole. Borings were sampled continuously through the upper ten (10) feet below the existing ground surface, or specified termination depth, utilizing SPT testing. Following the continuous sampling, SPT testing was performed on standard five (5) foot intervals thereafter. Once rollercone refusal was encountered within Soil Test Borings B-1 and B-2, NQ rock coring techniques were deployed to obtain rock core specimens for

classification and laboratory testing purposes. SPT sampling was performed in general accordance with ASTM D1586 to determine the relative densities and consistencies of the subsurface soils, and to collect subsurface soil samples.

Pavement core samples from each Soil Test Boring were bagged and transported to FME's laboratory facility following boring completion. These cores were measured and photographed to document thickness, distress, and surface condition. These photos are presented in Section 6 in the Appendix of this report.

Copies of the Soil Test Boring Logs are contained within Section 3A in the Appendix of this report. The following table is a summary of the Soil Test Boring depths, locations, and surface elevations.

Table 1 – Field Exploration Summary Table – Soil Test Borings

Test ID	Test Type	Soil Depth (ft)	Rock Core Depth (ft)	Total Boring Depth (ft)	Latitude	Longitude	Elevation (ft-MSL)
B-1	STB	39.7	25.0	64.7	34.88389126	-81.31513361	434.9
B-2	STB	56.8	28.9	85.7	34.88368274	-81.31441875	435.0
P-1	STB	3.0	0.0	3.0	34.88430230	-81.31627045	433.7
P-2	STB	3.0	0.0	3.0	34.88414341	-81.31589494	433.9
P-3	STB	3.3	0.0	3.3	34.88404011	-81.31549249	434.6
P-4	STB	3.4	0.0	3.4	34.88353527	-81.31406965	435.9
P-5	STB	3.3	0.0	3.3	34.88343241	-81.31367003	436.8
P-6	STB	3.2	0.0	3.2	34.88327680	-81.31329660	438.1
TOTALS		115.7	53.9	169.6			

2.2. COMPOSITE BULK SOIL SAMPLE

One (1) Composite Bulk Soil Sample, designated as BS-1, was collected on site from upper two (2) feet of cuttings encountered within soil test borings P-1 through P-6. The following table is a summary of the Bulk Soil sample designation and depth. Locations where the material was taken from can be viewed in Section 2 on the Appendix.

Table 2 – Field Exploration Summary Table – Composite Bulk Soil Sample

Test ID	Test Type	Test Depth (ft)
BS-1	BS	2.0
TOTAL		2.0

2.3. GROUNDWATER

Groundwater depths were recorded at the time of boring (TOB) and twenty-four (24) hours following boring completion, where practical. Groundwater depth measurements are noted on the individual Subsurface Exploration Logs in Section 3 of the Appendix.

2.4. TEST LOCATION TABLE

The following table summarizes the state plane coordinates in feet, latitude-longitude in decimal degrees, and existing surface elevations of the test locations for the subsurface exploration.

Table 3 – Geotechnical Exploration Summary Table

Test ID	Test Type	Test Depth (ft)	Latitude	Longitude	Elevation (ft-MSL)
B-1	STB	64.7	34.88389126	-81.31513361	434.9
B-2	STB	85.7	34.88368274	-81.31441875	435.0
P-1	STB	3.0	34.88430230	-81.31627045	433.7
P-2	STB	3.0	34.88414341	-81.31589494	433.9
P-3	STB	3.3	34.88404011	-81.31549249	434.6
P-4	STB	3.4	34.88353527	-81.31406965	435.9
P-5	STB	3.3	34.88343241	-81.31367003	436.8
P-6	STB	3.2	34.88327680	-81.31329660	438.1

3. LABORATORY TESTING SUMMARY

Following completion of FME's field exploration, draft boring logs were generated and reviewed internally by FME. Based on the data represented in these logs, FME was authorized to designate soil and rock samples for laboratory testing on behalf of the SCDOT. The laboratory testing performed on the soil samples collected from the Soil Test Borings is summarized in the table below. Data sheets containing the results from this testing are provided in Section 4A and Section 4C within the Appendix of this report.

Table 4 – Laboratory Testing Summary Table – Soil Test Boring Samples

Type of Test	Quantity	Procedure
Moisture Content	13	AASHTO T265 (ASTM D2216)
Atterberg Limits	13	AASHTO T89/T90 (ASTM D4318)
Grain-size Distribution w/ Wash 200	6	ASTM D6913/AASHTO T11 (ASTM D1140)
Hydrometer and Grain Size	7	ASTM D7928/ASTM D6913
pH	2	AASHTO T289 (ASTM G51)
Soil Sulfate Content	2	AASHTO T290 (ASTM C1580)
Soil Chloride Content	2	AASHTO T291
Soil Resistivity	2	AASHTO T288
Compressive Strength of Rock Cores	6	ASTM D7012

Laboratory testing performed on the Composite Bulk Soil Sample is summarized in the table below. The data sheets containing the results from this testing are provided in Section 4B of the Appendix attached to this report.

Table 5 – Laboratory Testing Summary Table – Composite Bulk Soil Sample

Type of Test	Quantity	Procedure
Moisture Content	1	AASHTO T265 (ASTM D2216)
Atterberg Limits	1	AASHTO T89/T90 (ASTM D4318)
Grain-size Distribution w/ Wash 200	1	ASTM D6913/AASHTO T11 (ASTM D1140)
California Bearing Ratio	1	AASHTO T193 (ASTM D1883)

S-46-59 over Little Turkey Creek
Geotechnical Subsurface Data Report

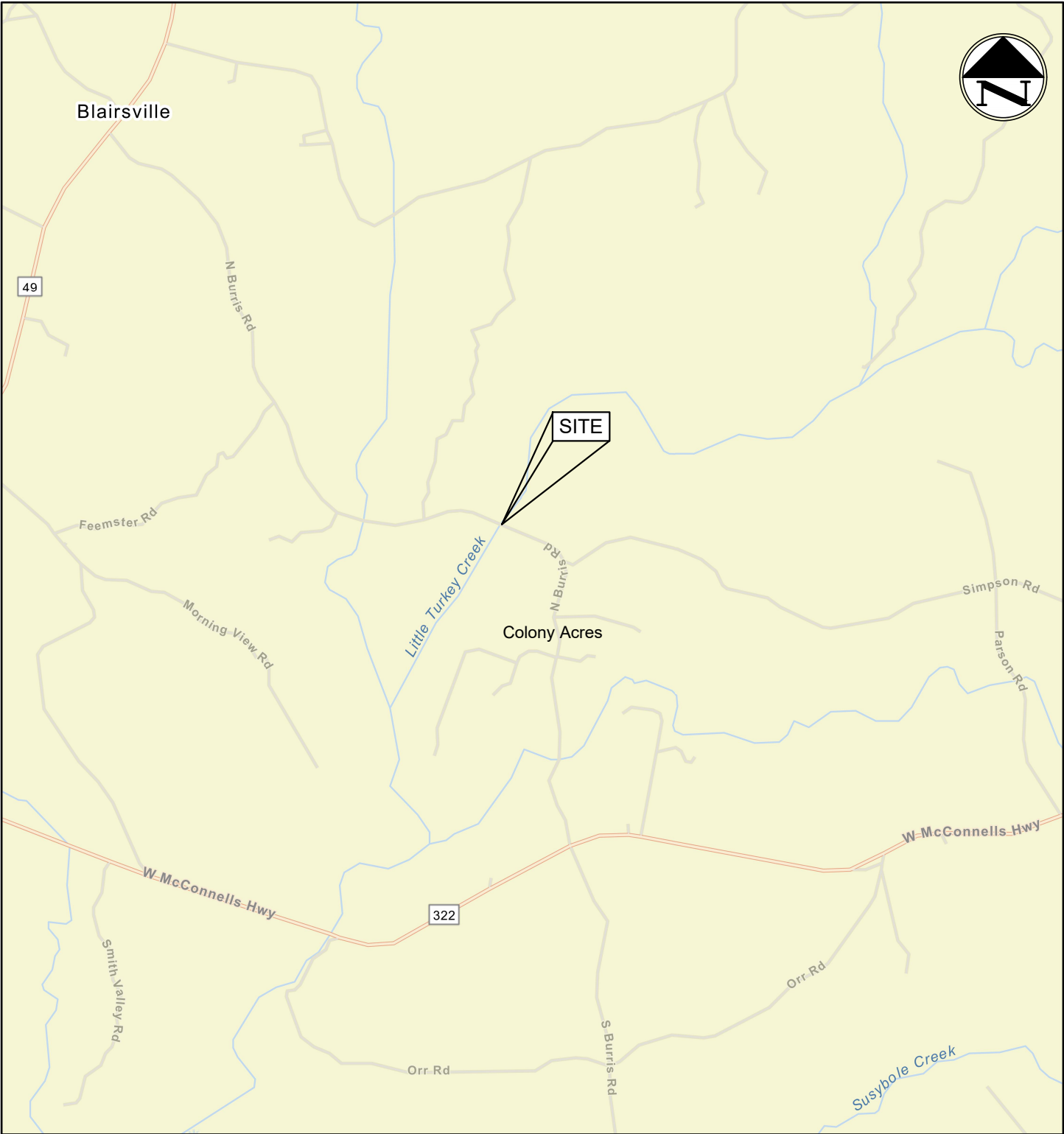
APPENDIX

SECTION 1	SITE LOCATION PLAN
SECTION 2	BORING LOCATION PLAN
SECTION 3	SUBSURFACE EXPLORATION LOGS
SECTION 4	LABORATORY TEST RESULTS
SECTION 4A	SPLIT-SPOON SAMPLES
SECTION 4B	BULK SOIL SAMPLES
SECTION 4C	ROCK CORE SAMPLES
SECTION 5	ON SITE DRILL RIG PHOTOS
SECTION 6	PAVEMENT CORE PHOTOS
SECTION 7	SPT HAMMER CALIBRATION
SECTION 8	GEO-SCOPING FORM

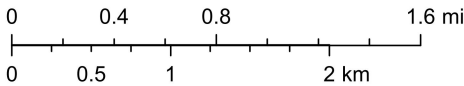
S-46-59 over Little Turkey Creek
Geotechnical Subsurface Data Report

APPENDIX

SECTION 1 SITE LOCATION PLAN



1:58,000



F&ME CONSULTANTS, INC.
COLUMBIA, SC

S-46-59 OVER LITTLE TURKEY CREEK
YORK COUNTY, SOUTH CAROLINA

SITE LOCATION PLAN

4			
3			
2			
1			
REV.	BY	DATE	DESCRIPTION OF REVISION
TOPO.		DATE	
DWG.	CTC	DATE	10.25.24
R/W		DATE	

GROUP -- --

SCDOT PROJECT ID: P043996

FME JOB NO. G7100.007 task 005

SCALE: AS NOTED

FIGURE 1

S-46-59 over Little Turkey Creek
Geotechnical Subsurface Data Report

APPENDIX

SECTION 2 BORING LOCATION PLAN




SUBSURFACE TESTING DATA							
Boring ID	Test Type	Northing	Easting	Latitude	Longitude	Test Elevation (MSL)	Test Depth (ft)
B-1	STB	1110101.703	1905482.178	34.88389126	-81.31513361	434.9	64.7
B-2	STB	1110025.153	1905696.353	34.88368274	-81.31441875	435.0	85.7
P-1 ¹	STB	1110252.353	1905141.666	34.88430230	-81.31627045	433.7	2.0
P-2 ¹	STB	1110194.174	1905254.114	34.88414341	-81.31589494	433.9	2.0
P-3 ¹	STB	1110156.206	1905374.703	34.88404011	-81.31549249	434.6	2.0
P-4 ¹	STB	1109971.158	1905800.894	34.88353527	-81.31406965	435.9	2.0
P-5 ¹	STB	1109933.354	1905920.641	34.88343241	-81.31367003	436.8	2.0
P-6 ¹	STB	1109876.377	1906032.472	34.88327680	-81.31329660	438.1	2.0

1 = Bulk Soil Sample BS-1 was a composite sample created from the upper 2-ft. of auger cuttings from the specified boreholes



LEGEND:

 SOIL TEST BORING LOCATION

4			
3			
2			
1			
REV.	BY	DATE	DESCRIPTION OF REVISION
TOPO.		DATE	
DWG.	CTC	DATE 10.25.24	GROUP ____ - ____
R/W		DATE	

 F&ME CONSULTANTS, INC.
COLUMBIA, SC

S-46-59 OVER LITTLE TURKEY CREEK
YORK COUNTY, SOUTH CAROLINA

BORING LOCATION PLAN

SCDOT PROJECT ID: P043996	FME JOB NO. G7100.007 Task 005
SCALE: 1" = 100'	FIGURE 2

S-46-59 over Little Turkey Creek
Geotechnical Subsurface Data Report

APPENDIX

SECTION 3 SUBSURFACE EXPLORATION LOGS

Soil Test Boring Log Descriptors

Correlation of Penetration Resistance with Relative Density and Consistency














Coarse Grained Soils (Sands/Gravel)		Fine Grained Soils (Silt/Clay)	
SPT Blow Count	Relative Density	SPT Blow Count	Consistency
≤ 4	Very Loose	≤ 2	Very Soft
5 – 10	Loose	3 – 4	Soft
11 – 30	Medium Dense	5 – 8	Firm
31 – 50	Dense	9 – 15	Stiff
≥ 51	Very Dense	16 – 30	Very Stiff
		≥ 31	Hard

Particle Size Identification

Gravel	Sieve Size
Fine	#4 to ¾ inch
Coarse	¾ inch to 3 inch

Sand	Sieve Size
Fine	#200 to #40
Medium	#40 to #10
Coarse	#10 to #4

Gravel	Sieve Size
Fines Content	< #200

SYMBOL	PRINT CODE*	TYPICAL DESCRIPTION
	SCCT	CONCRETE
	SCAT	ASPHALT
	SCTS	TOPSOIL/PEAT
	SCSAND	SAND
	SCSTSAND	SILTY SAND/SANDY SILT
	SCCLSAND	CLAYEY SAND/SANDY CLAY
	SCCLAY	CLAY
	SCSILT	SILT
	SCSTCLAY	SILTY CLAY/CLAYEY SILT
	SCSAP	SAPROLITE
	SCLS	LIMESTONE
	SCBR	GRANITE (BEDROCK)
	SCMARL	MARL

SOIL CLASSIFICATION CHART

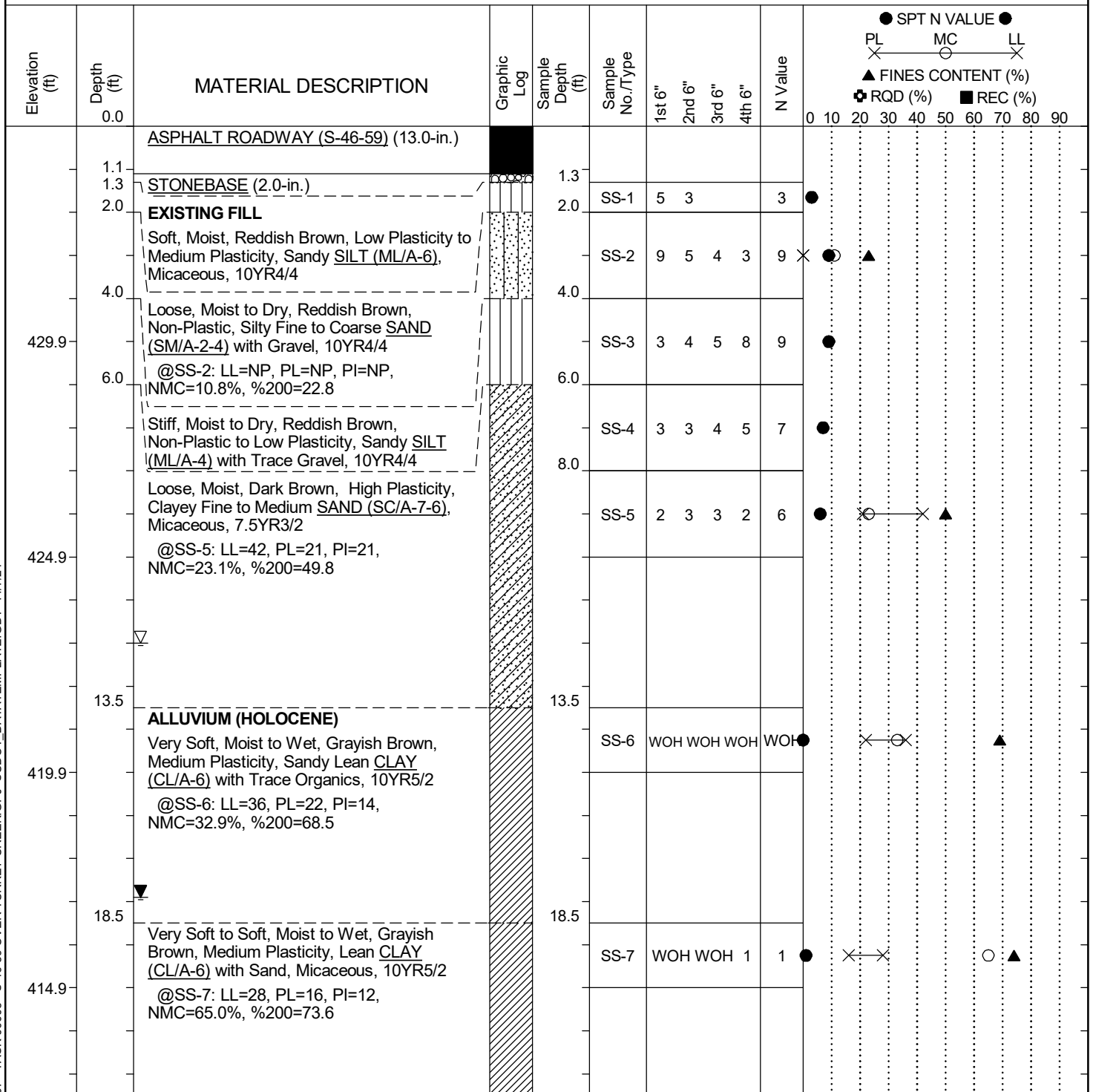
MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
				ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
				MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
HIGHLY ORGANIC SOILS				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS



SCDOT Soil Test Log

Project ID:		P043996			County:		York		Boring No.:		B-1				
Site Description:			S-46-59 over Little Turkey Creek							Route:		S-46-59			
Eng./Geo.:		B. Carter		Boring Location:		N/A		Offset:		N/A		Alignment:		Existing CL	
Elev.:		434.9 ft		Latitude:		34.88389126		Longitude:		-81.31513361		Date Started:		10/22/2024	
Total Depth:		64.7 ft		Soil Depth:		39.7 ft		Core Depth:		25 ft		Date Completed:		10/22/2024	
Bore Hole Diameter (in):			3.0		Sampler Configuration			Liner Required:		Y (N)		Liner Used:		Y (N)	
Drill Machine:		CME 550X		Drill Method:		RW/RC		Hammer Type:		Automatic		Energy Ratio:		89.7%	
Core Size:		NQ		Driller:		Bobby (CG2)		Groundwater:		TOB 12(Cave@55.7)		24HR		17.9 ft	



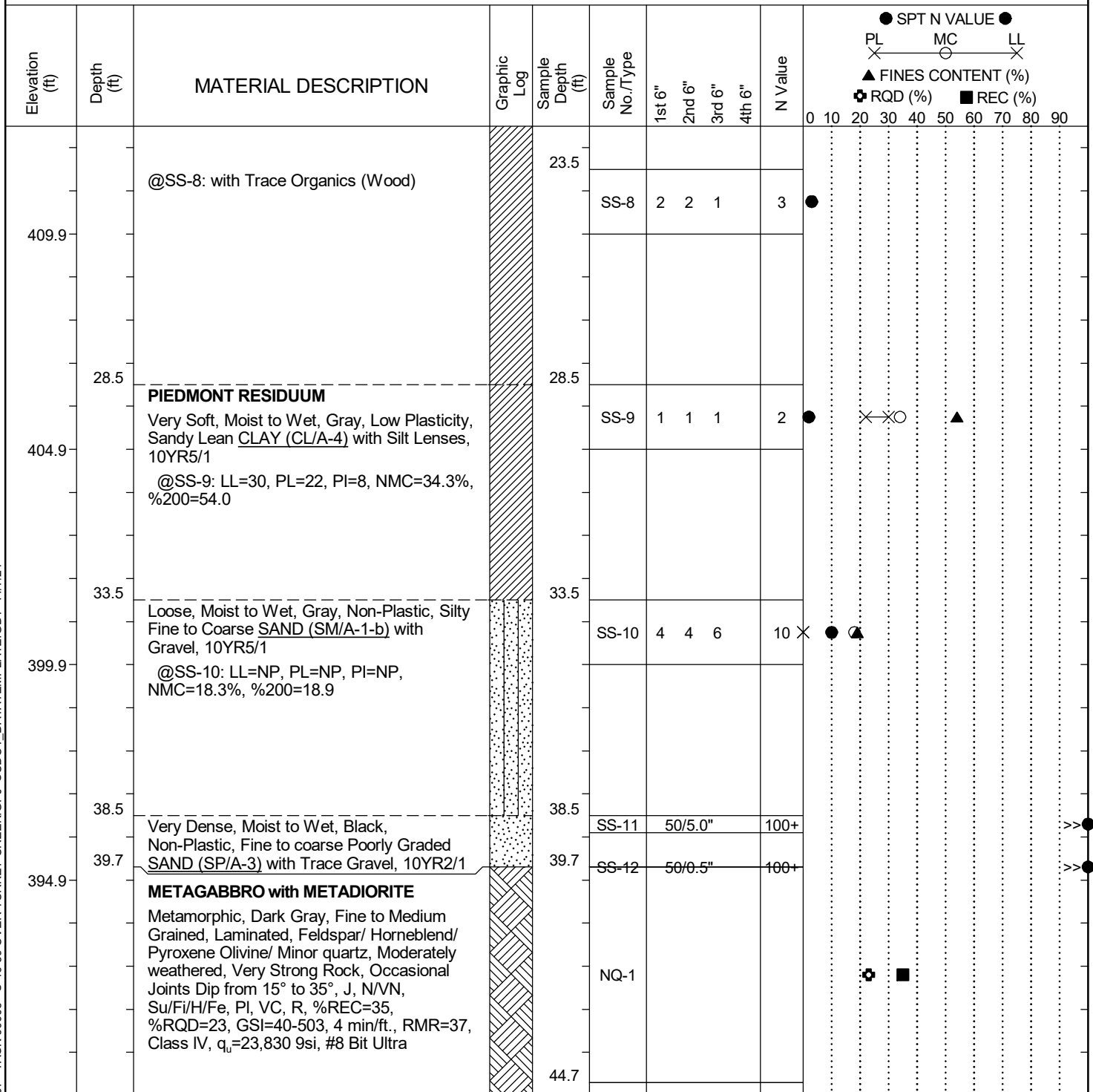
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SCDOT Soil Test Log

Project ID:		P043996			County:		York		Boring No.:		B-1					
Site Description:		S-46-59 over Little Turkey Creek								Route:		S-46-59				
Eng./Geo.:		B. Carter		Boring Location:		N/A		Offset:		N/A		Alignment:		Existing CL		
Elev.:		434.9 ft		Latitude:		34.88389126		Longitude:		-81.31513361		Date Started:		10/22/2024		
Total Depth:		64.7 ft		Soil Depth:		39.7 ft		Core Depth:		25 ft		Date Completed:		10/22/2024		
Bore Hole Diameter (in):			3.0		Sampler Configuration			Liner Required:		Y (N)		Liner Used:			Y (N)	
Drill Machine:		CME 550X		Drill Method:		RW/RC		Hammer Type:		Automatic		Energy Ratio:		89.7%		
Core Size:		NQ		Driller:		Bobby (CG2)		Groundwater:		TOB 12(Cave@55.7)		24HR		17.9 ft		



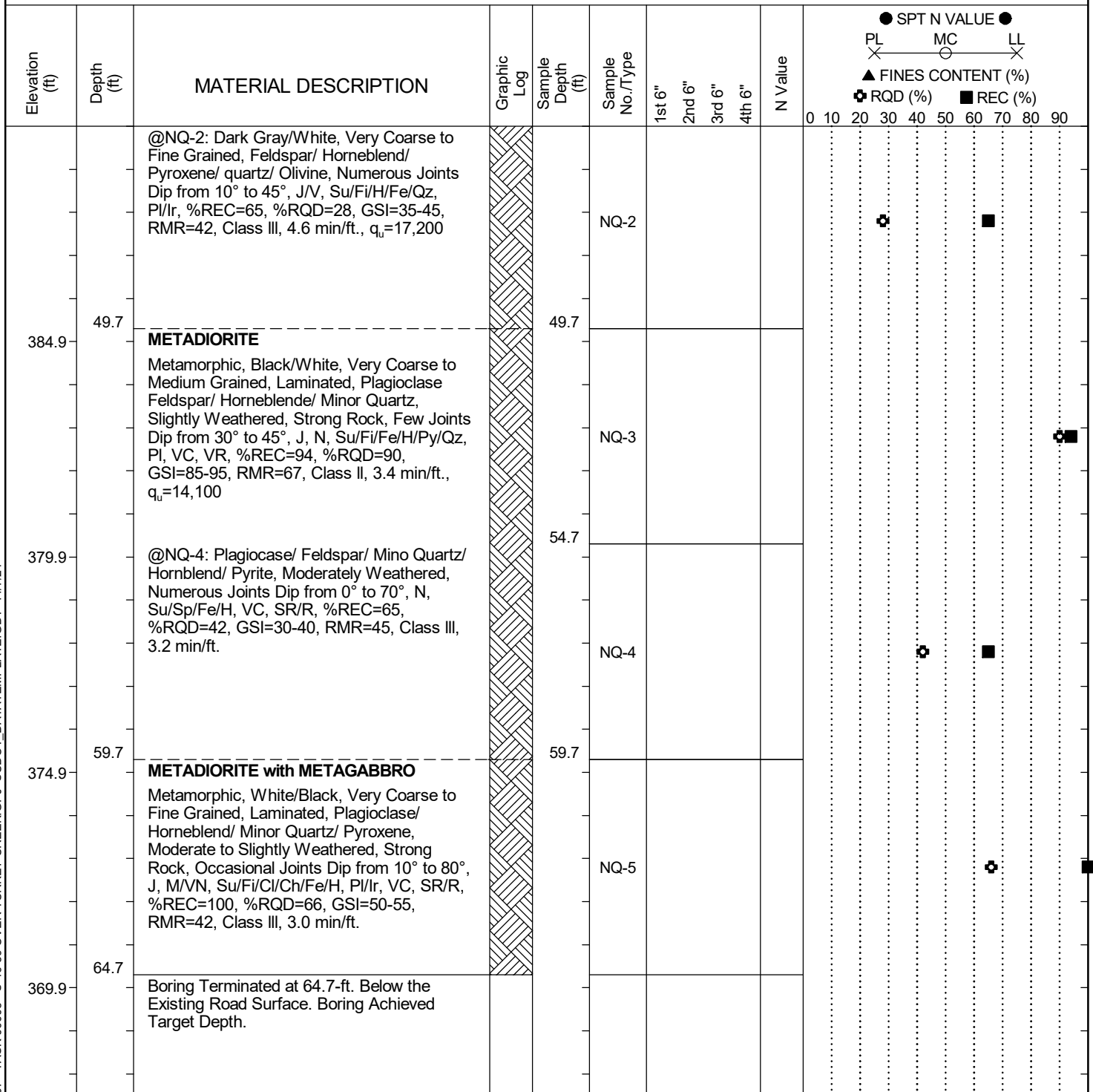
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SAMPLER TYPE		DRILLING METHOD	
SS	- Split Spoon	HSA	- Hollow Stem Auger
UD	- Undisturbed Sample	CFA	- Continuous Flight Augers
AWG	- Rock Core, 1-1/8"	DC	- Driving Casing
NQ	- Rock Core, 1-7/8"	RW	- Rotary Wash
CU	- Cuttings	RC	- Rock Core
CT	- Continuous Tube		

SCDOT Soil Test Log

Project ID:		P043996			County:		York		Boring No.:		B-1				
Site Description:		S-46-59 over Little Turkey Creek								Route:		S-46-59			
Eng./Geo.:		B. Carter		Boring Location:		N/A		Offset:		N/A		Alignment:		Existing CL	
Elev.:		434.9 ft		Latitude:		34.88389126		Longitude:		-81.31513361		Date Started:		10/22/2024	
Total Depth:		64.7 ft		Soil Depth:		39.7 ft		Core Depth:		25 ft		Date Completed:		10/22/2024	
Bore Hole Diameter (in):		3.0		Sampler Configuration			Liner Required:		Y (N)		Liner Used:		Y (N)		
Drill Machine:		CME 550X		Drill Method:		RW/RC		Hammer Type:		Automatic		Energy Ratio:		89.7%	
Core Size:		NQ		Driller:		Bobby (CG2)		Groundwater:		TOB 12(Cave@55ZHR)		17.9 ft			



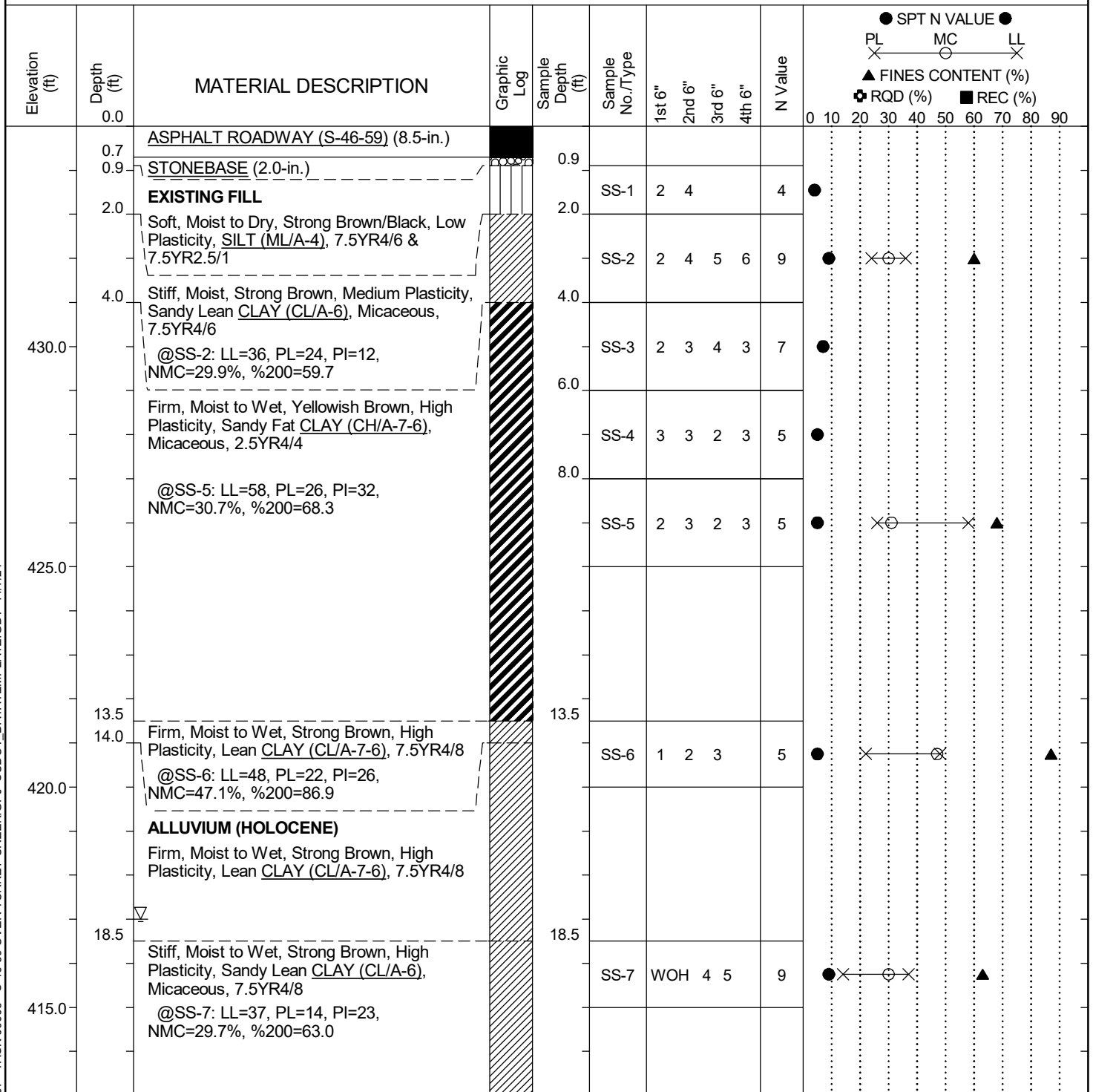
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC.DOT G7100.007 - TASK 00005 - S-46-59 OVER TURKEY CREEK.GPJ SCDOT_DATATEMPLATE.GDT 11/7/24

SCDOT Soil Test Log

Project ID:	P043996				County:	York		Boring No.:	B-2		
Site Description:		S-46-59 over Little Turkey Creek						Route:	S-46-59		
Eng./Geo.:	B. Carter		Boring Location:		N/A		Offset:	N/A		Alignment:	Existing CL
Elev.:	435.0 ft		Latitude:	34.88368274		Longitude:	-81.31441875		Date Started:	10/21/2024	
Total Depth:	85.7 ft		Soil Depth:	56.8 ft		Core Depth:	28.9 ft		Date Completed:	10/22/2024	
Bore Hole Diameter (in):		3.0		Sampler Configuration			Liner Required:	Y (N)		Liner Used:	Y (N)
Drill Machine:	CME 550X		Drill Method:	RW/RC		Hammer Type:	Automatic		Energy Ratio:	89.7%	
Core Size:	NQ		Driller:	Bobby (CG2)		Groundwater:	TOB	18(cave@85.7)		24HR	69.3 ft



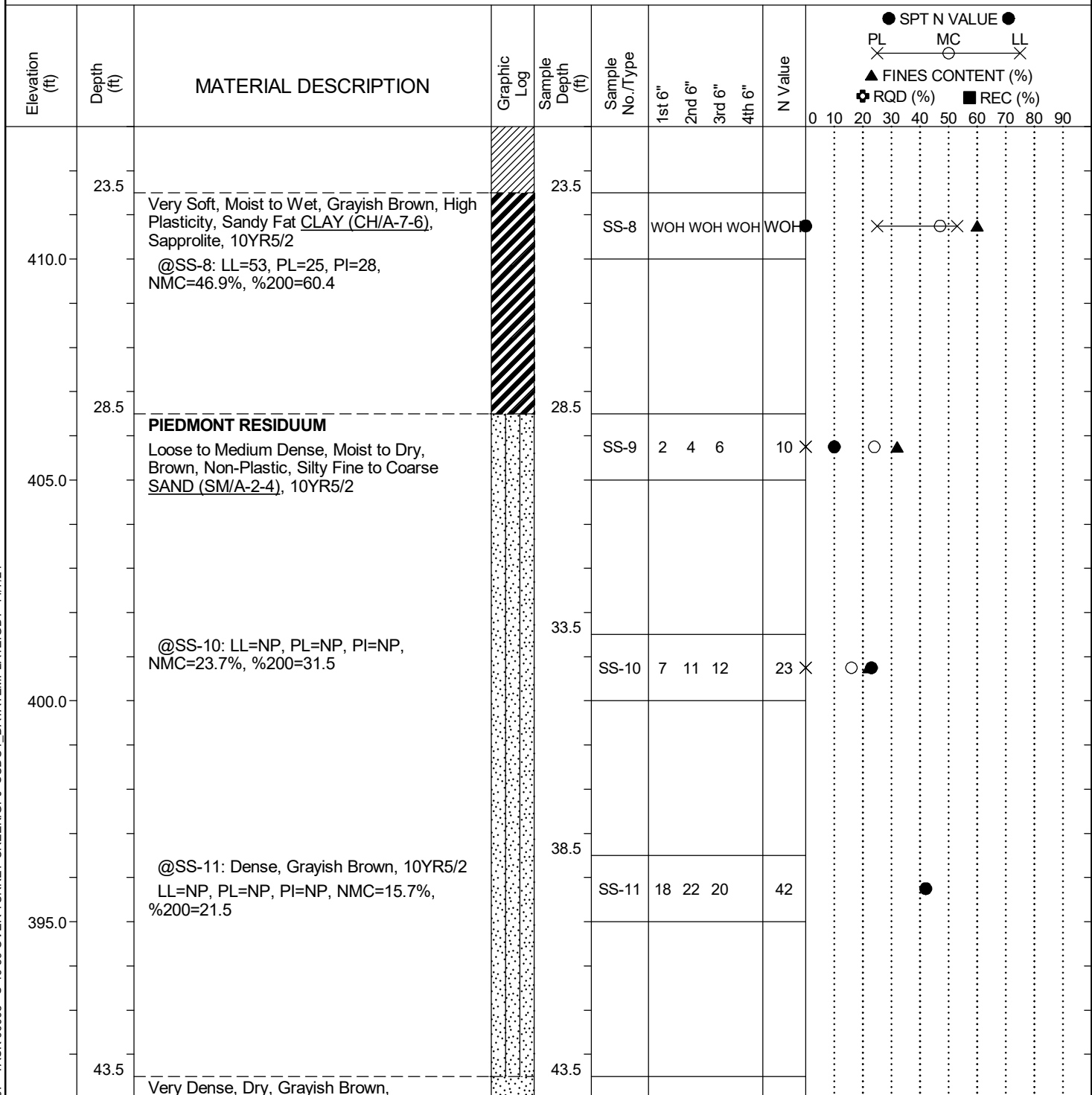
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SCDOT Soil Test Log

Project ID:	P043996				County:	York		Boring No.:	B-2		
Site Description:		S-46-59 over Little Turkey Creek						Route:	S-46-59		
Eng./Geo.:		B. Carter		Boring Location:		N/A		Offset:	N/A		
Alignment:				Existing CL							
Elev.:	435.0 ft		Latitude:	34.88368274		Longitude:	-81.31441875		Date Started:	10/21/2024	
Total Depth:		85.7 ft		Soil Depth:		56.8 ft		Core Depth:		28.9 ft	
Date Completed:		10/22/2024									
Bore Hole Diameter (in):			3.0		Sampler Configuration			Liner Required:		Y (N)	
Liner Used:			Y (N)								
Drill Machine:		CME 550X		Drill Method:		RW/RC		Hammer Type:		Automatic	
Energy Ratio:		89.7%									
Core Size:		NQ		Driller:		Bobby (CG2)		Groundwater:		TOB 18(cave@85.7)	
24HR		69.3 ft									



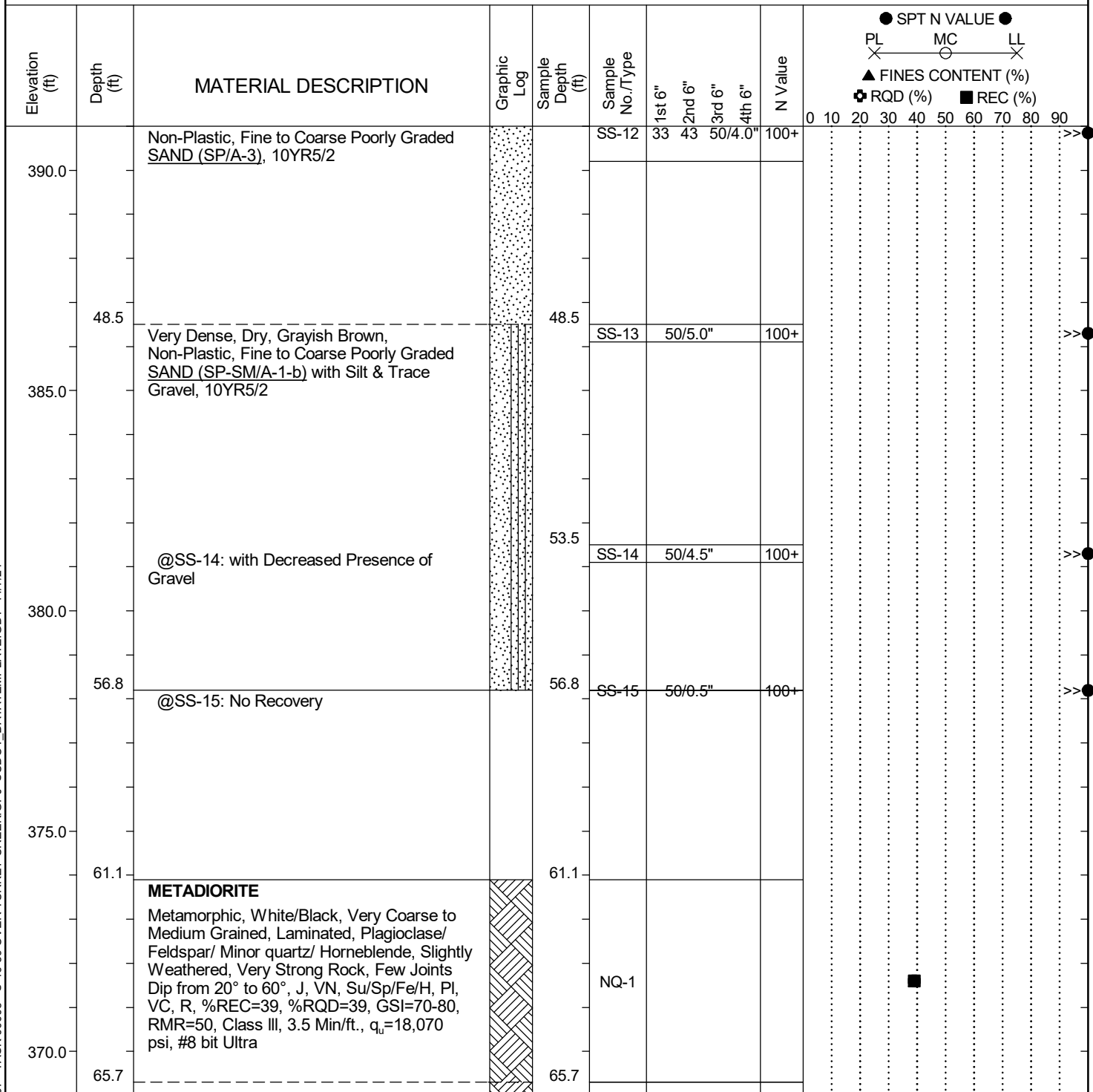
LEGEND

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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SCDOT Soil Test Log

Project ID:		P043996			County:		York		Boring No.:		B-2				
Site Description:		S-46-59 over Little Turkey Creek								Route:		S-46-59			
Eng./Geo.:		B. Carter		Boring Location:		N/A		Offset:		N/A		Alignment:		Existing CL	
Elev.:		435.0 ft		Latitude:		34.88368274		Longitude:		-81.31441875		Date Started:		10/21/2024	
Total Depth:		85.7 ft		Soil Depth:		56.8 ft		Core Depth:		28.9 ft		Date Completed:		10/22/2024	
Bore Hole Diameter (in):		3.0		Sampler Configuration			Liner Required:		Y (N)		Liner Used:		Y (N)		
Drill Machine:		CME 550X		Drill Method:		RW/RC		Hammer Type:		Automatic		Energy Ratio:		89.7%	
Core Size:		NQ		Driller:		Bobby (CG2)		Groundwater:		TOB 18(cave@85.24HR)				69.3 ft	



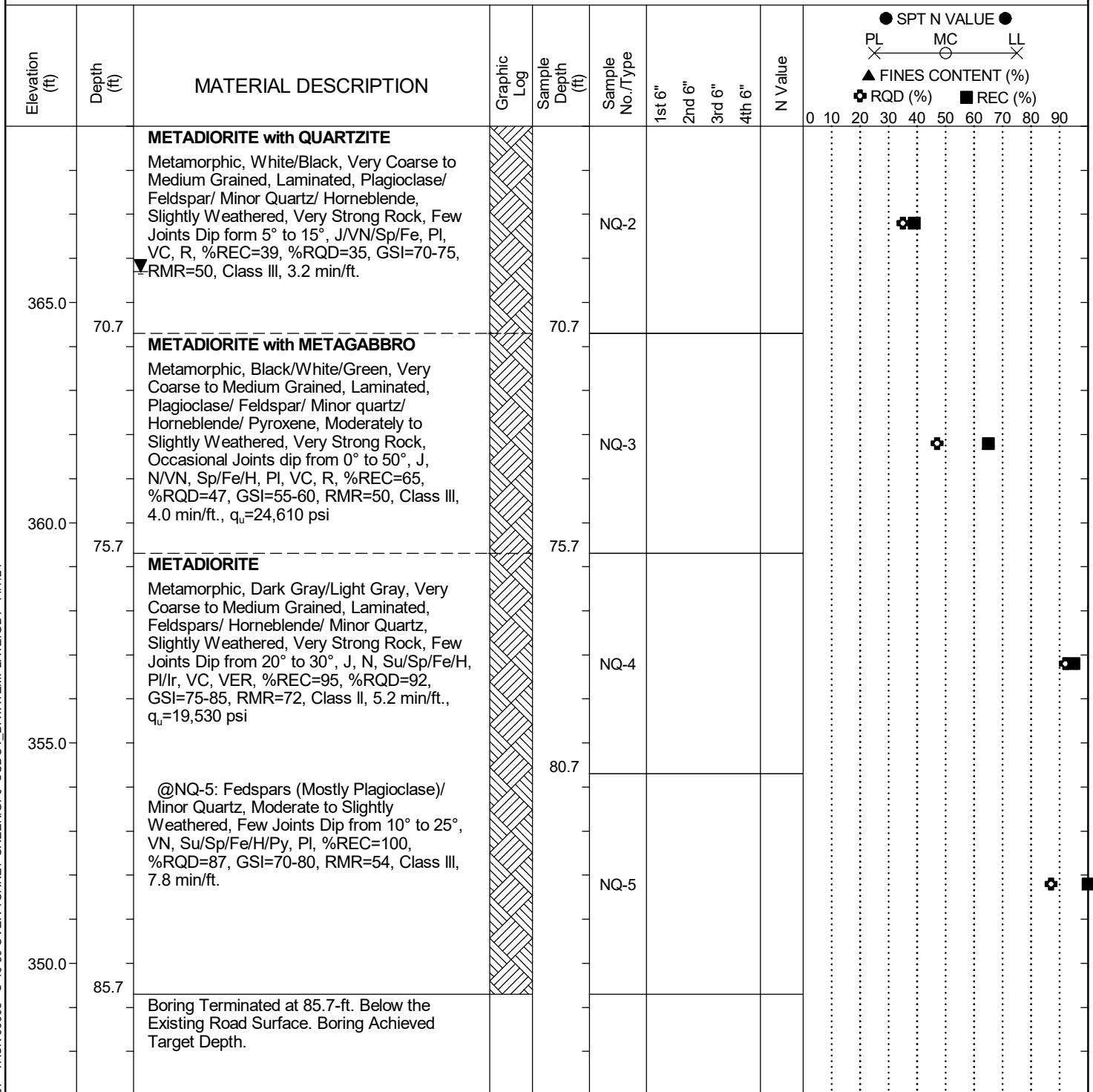
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SCDOT Soil Test Log

Project ID:		P043996			County:		York		Boring No.:		B-2				
Site Description:		S-46-59 over Little Turkey Creek								Route:		S-46-59			
Eng./Geo.:		B. Carter		Boring Location:		N/A		Offset:		N/A		Alignment:		Existing CL	
Elev.:		435.0 ft		Latitude:		34.88368274		Longitude:		-81.31441875		Date Started:		10/21/2024	
Total Depth:		85.7 ft		Soil Depth:		56.8 ft		Core Depth:		28.9 ft		Date Completed:		10/22/2024	
Bore Hole Diameter (in):		3.0		Sampler Configuration			Liner Required:		Y (N)		Liner Used:		Y (N)		
Drill Machine:		CME 550X		Drill Method:		RW/RC		Hammer Type:		Automatic		Energy Ratio:		89.7%	
Core Size:		NQ		Driller:		Bobby (CG2)		Groundwater:		TOB 18(cave@85.24HR				69.3 ft	



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC.DOT G7100.007 - TASK 00005 - S-46-59 OVER TURKEY CREEK.GPJ SCDOT_DATATEMPLATE.GDT 11/7/24

SCDOT Soil Test Log

Project ID:	P043996	County:	York	Boring No.:	P-1
Site Description:	S-46-59 over Little Turkey Creek			Route:	S-46-59
Eng./Geo.:	B. Carter	Boring Location:	N/A	Offset:	N/A
Elev.:	433.7 ft	Latitude:	34.8843023	Longitude:	-81.31627045
Date Started:	10/23/2024				
Total Depth:	3 ft	Soil Depth:	3.0 ft	Core Depth:	N/A ft
Date Completed:	10/23/2024				
Bore Hole Diameter (in):	3.0	Sampler Configuration	Liner Required: Y (N)		Liner Used: Y (N)
Drill Machine:	CME 550X	Drill Method:	RW	Hammer Type:	Automatic
Energy Ratio:	89.7%				
Core Size:	NQ	Driller:	Jake (CG2)	Groundwater:	TOB N/A
24HR	Backfilled				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value	<div> ● SPT N VALUE ● PL X MC O LL X ▲ FINES CONTENT (%) + RQD (%) ■ REC (%) </div>
	0.0	ASPHALT ROADWAY (S-46-59) (10.5-in.)									
	0.9			0.9							
	1.0	STONEBASE (1.5-in.)									
		Medium Dense, Moist to Dry, Brown, Non-Plastic, Silty Fine to Medium SAND (SM/A-2-4), 7.5YR4/2			5	6	7	8	13		
	3.0	Boring Terminated at 3.0-ft. Below the Existing Road Surface. Boring Achieved Target Depth.									
428.7											

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC.DOT G7100.007 - TASK 00005 - S-46-59 OVER TURKEY CREEK.GPJ SCDOT_DATATEMPLATE.GDT 11/6/24

SCDOT Soil Test Log

Project ID:	P043996	County:	York	Boring No.:	P-2
Site Description:	S-46-59 over Little Turkey Creek			Route:	S-46-59
Eng./Geo.:	B. Carter	Boring Location:	N/A	Offset:	N/A
Elev.:	433.9 ft	Latitude:	34.88414341	Longitude:	-81.31589494
Date Started:	10/23/2024				
Total Depth:	3 ft	Soil Depth:	3.0 ft	Core Depth:	N/A ft
Date Completed:	10/23/2024				
Bore Hole Diameter (in):	3.0	Sampler Configuration	Liner Required: Y (N)		Liner Used: Y (N)
Drill Machine:	CME 550X	Drill Method:	RW	Hammer Type:	Automatic
Energy Ratio:	89.7%				
Core Size:	NQ	Driller:	Jake (CG2)	Groundwater:	TOB N/A
24HR	Backfilled				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value	<div> ● SPT N VALUE ● PL X MC O LL X ▲ FINES CONTENT (%) + RQD (%) ■ REC (%) </div>
	0.0	ASPHALT ROADWAY (S-46-59) (4.5-in.)									
	0.4	STONEBASE (7.0-in.)									
	1.0	Loose, Moist to Dry, Brown, Non-Plastic, Silty Fine to Medium SAND (SM/A-2-4), 7.5YR5/3		1.0							
					SS-1	6	5	5	7	10	●
	3.0	Boring Terminated at 3.0-ft. Below the Existing Road Surface. Boring Achieved Target Depth.									
428.9											

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC.DOT G7100.007 - TASK 00005 - S-46-59 OVER TURKEY CREEK.GPJ SCDOT_DATATEMPLATE.GDT 11/6/24

SCDOT Soil Test Log

Project ID:	P043996	County:	York	Boring No.:	P-3
Site Description:	S-46-59 over Little Turkey Creek			Route:	S-46-59
Eng./Geo.:	B. Carter	Boring Location:	N/A	Offset:	N/A
Elev.:	434.6 ft	Latitude:	34.88404011	Longitude:	-81.31549249
Date Started:	10/23/2024				
Total Depth:	3.3 ft	Soil Depth:	3.3 ft	Core Depth:	N/A ft
Date Completed:	10/23/2024				
Bore Hole Diameter (in):	3.0	Sampler Configuration	Liner Required: Y (N)		Liner Used: Y (N)
Drill Machine:	CME 550X	Drill Method:	RW	Hammer Type:	Automatic
Energy Ratio:	89.7%				
Core Size:	NQ	Driller:	Jake (CG2)	Groundwater:	TOB N/A
24HR	Backfilled				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL X MC ○ LL X </div> <div> ▲ FINES CONTENT (%) </div> <div> ⊕ RQD (%) ■ REC (%) </div> </div>
	0.0	ASPHALT ROADWAY (S-46-59) (8.8-in.)									0 10 20 30 40 50 60 70 80 90
	0.7	STONEBASE (6.3-in.)									
	1.3	Stiff, Moist, Grayish Brown, Non-Plastic to Low Plasticity, Sandy SILT (ML/A-4), Micaceous, 10YR5/2		1.3							
					SS-1	3	4	6	7	10	●
	3.3	Boring Terminated at 3.3-ft. Below the Existing Road Surface. Boring Achieved Target Depth.									
429.6											

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC.DOT G7100.007 - TASK 00005 - S-46-59 OVER TURKEY CREEK.GPJ SCDOT_DATATEMPLATE.GDT 11/6/24

SCDOT Soil Test Log

Project ID:	P043996	County:	York	Boring No.:	P-4
Site Description:	S-46-59 over Little Turkey Creek			Route:	S-46-59
Eng./Geo.:	B. Carter	Boring Location:	N/A	Offset:	N/A
Elev.:	435.9 ft	Latitude:	34.88353527	Longitude:	-81.31406965
Date Started:	10/23/2024				
Total Depth:	3.4 ft	Soil Depth:	3.4 ft	Core Depth:	N/A ft
Date Completed:	10/23/2024				
Bore Hole Diameter (in):	3.0	Sampler Configuration	Liner Required: Y (N)		Liner Used: Y (N)
Drill Machine:	CME 550X	Drill Method:	RW	Hammer Type:	Automatic
Energy Ratio:	89.7%				
Core Size:	NQ	Driller:	Jake (CG2)	Groundwater:	TOB N/A
24HR	Backfilled				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL X</div> <div>MC ○</div> <div>LL X</div> </div> <div>▲ FINES CONTENT (%)</div> <div> <div>⊕ RQD (%)</div> <div>■ REC (%)</div> </div> </div>
	0.0	ASPHALT ROADWAY (S-46-59) (12.5-in.)									0 10 20 30 40 50 60 70 80 90
	1.0										
	1.4	STONEBASE (5.0-in.)									
		Firm, Moist to Dry, Brown, Non-Plastic to Low Plasticity, Sandy SILT (ML/A-4), Micaceous, 7.5YR4/3		1.4							
					SS-1	2	3	3	3	6	●
	3.4	Boring Terminated at 3.4-ft. Below the Existing Road Surface. Boring Achieved Target Depth.									
430.9											

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SCDOT Soil Test Log

Project ID:	P043996	County:	York	Boring No.:	P-5
Site Description:	S-46-59 over Little Turkey Creek			Route:	S-46-59
Eng./Geo.:	B. Carter	Boring Location:	N/A	Offset:	N/A
Elev.:	436.8 ft	Latitude:	34.88343241	Longitude:	-81.31367003
Date Started:	10/23/2024				
Total Depth:	3.3 ft	Soil Depth:	3.3 ft	Core Depth:	N/A ft
Date Completed:	10/23/2024				
Bore Hole Diameter (in):	3.0	Sampler Configuration		Liner Required:	Y (N)
Liner Used:	Y (N)				
Drill Machine:	CME 550X	Drill Method:	RW	Hammer Type:	Automatic
Energy Ratio:	89.7%				
Core Size:	NQ	Driller:	Jake (CG2)	Groundwater:	TOB N/A
24HR	Backfilled				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value	<div> ● SPT N VALUE ● PL — MC — LL X — X — X ▲ FINES CONTENT (%) + RQD (%) ■ REC (%) </div>
	0.0	ASPHALT ROADWAY (S-46-59) (11.5-in.)									
	1.0										
	1.3	STONEBASE (3.0-in.)		1.3							
		Stiff, Moist to Dry, Brown, Non-Plastic to Low Plasticity, Sandy SILT (ML/A-4), Micaceous, 7.5YR5/2			SS-1	3	4	5	7	9	●
	3.3	Boring Terminated at 3.3-ft. Below the Existing Road Surface. Boring Achieved Target Depth.									
431.8											

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC.DOT G7100.007 - TASK 00005 - S-46-59 OVER TURKEY CREEK.GPJ SCDOT_DATATEMPLATE.GDT 11/6/24

SCDOT Soil Test Log

Project ID:	P043996	County:	York	Boring No.:	P-6
Site Description:	S-46-59 over Little Turkey Creek			Route:	S-46-59
Eng./Geo.:	B. Carter	Boring Location:	N/A	Offset:	N/A
Elev.:	438.1 ft	Latitude:	34.8832768	Longitude:	-81.3132966
Date Started:	10/23/2024				
Total Depth:	3.2 ft	Soil Depth:	3.2 ft	Core Depth:	N/A ft
Date Completed:	10/23/2024				
Bore Hole Diameter (in):	3.0	Sampler Configuration	Liner Required: Y (N)		Liner Used: Y (N)
Drill Machine:	CME 550X	Drill Method:	RW	Hammer Type:	Automatic
Energy Ratio:	89.7%				
Core Size:	NQ	Driller:	Jake (CG2)	Groundwater:	TOB N/A
24HR	Backfilled				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div>PL X MC O LL X</div> <div>▲ FINES CONTENT (%)</div> <div>⊕ RQD (%) ■ REC (%)</div> </div>
	0.0	ASPHALT ROADWAY (S-46-59) (12.3-in.)									
	1.0										
	1.2	STONEBASE (1.8-in.)		1.2							
		Stiff, Moist to Dry, Brown, Medium Plasticity to High Plasticity, Sandy CLAY (CL/A-6) Micaceous, 7.5YR5/2			SS-1	3	6	7	9	13	●
	3.2	Boring Terminated at 3.2-ft. Below the Existing Road Surface. Boring Achieved Target Depth.									
433.1											

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

S-46-59 over Little Turkey Creek
Geotechnical Subsurface Data Report

APPENDIX

SECTION 4 LABORATORY TEST RESULTS

S-46-59 over Little Turkey Creek
Geotechnical Subsurface Data Report

APPENDIX

SECTION 4 LABORATORY TEST RESULTS

SECTION 4A SPLIT-SPOON SAMPLES



SUMMARY OF LABORATORY RESULTS

PAGE 1 OF 1

PROJECT ID P043996

PROJECT NAME S-46-59 over Little Turkey Creek

PROJECT COUNTY York

Borehole	Depth	Liquid Limit	Plastic Limit	Plasticity Index	Maximum Size (mm)	%<#200 Sieve	Classification	Water Content (%)	Dry Density (pcf)	Saturation (%)	Void Ratio
B-1	4.0	NP	NP	NP	25	23	SM	10.8			
B-1	10.0	42	21	21	19	50	SC	23.1			
B-1	15.0	36	22	14	4.76	68	CL	32.9			
B-1	20.0	28	16	12	4.76	74	CL	65.0			
B-1	30.0	30	22	8	19	54	CL	34.3			
B-1	35.0	NP	NP	NP	25	19	SM	18.3			
B-2	4.0	36	24	12	9.51	60	CL	29.9			
B-2	10.0	58	26	32	9.51	68	CH	30.7			
B-2	15.0	48	22	26	9.51	87	CL	47.1			
B-2	20.0	37	14	23	9.51	63	CL	29.7			
B-2	25.0	53	25	28	4.76	60	CH	46.9			
B-2	30.0	NP	NP	NP	9.51	31	SM	23.7			
B-2	40.0	NP	NP	NP	9.51	21	SM	15.7			



CORROSION SERIES SUMMARY (SPLIT-SPOON)

PAGE 1 OF 1

PROJECT ID P043996

PROJECT NAME S-46-59 over Little Turkey Creek

PROJECT COUNTY York

Borehole	Sample No.	Sample Depth (ft.)	pH of Soil in Distilled Water	Electrical Resistivity (Ω -cm)	Chloride Content (mg/kg (ppm))	Sulfate Content (mg/kg (ppm))
B-1	SS-3/SS-4	(4.0 – 8.0) (Composite)	6.5	5,440	10.58	93.1
B-2	SS-3/SS-4	(4.0 – 8.0) (Composite)	6.9	3,920	19.24	51.3



INDEX PROPERTIES VERSUS DEPTH

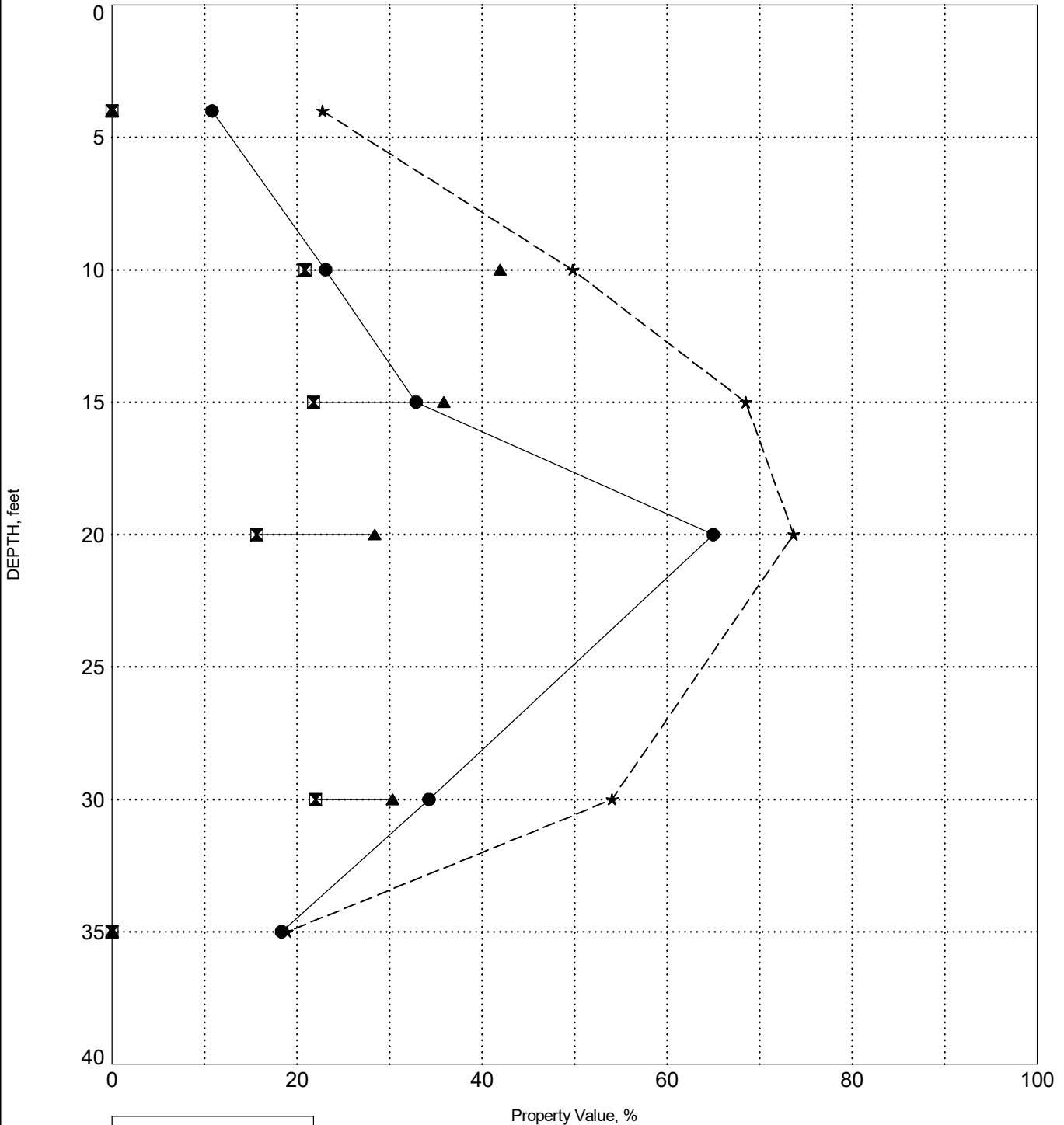
PROJECT ID P043996

PROJECT NAME S-46-59 over Little Turkey Creek

PROJECT COUNTY York

SURFACE ELEVATION: 434.9

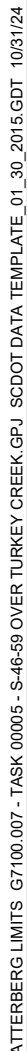
BORING B-1



LEGEND	
●	Water Content
⊠	Plastic Limit
▲	Liquid Limit
★	Fines



PROJECT COUNTY York

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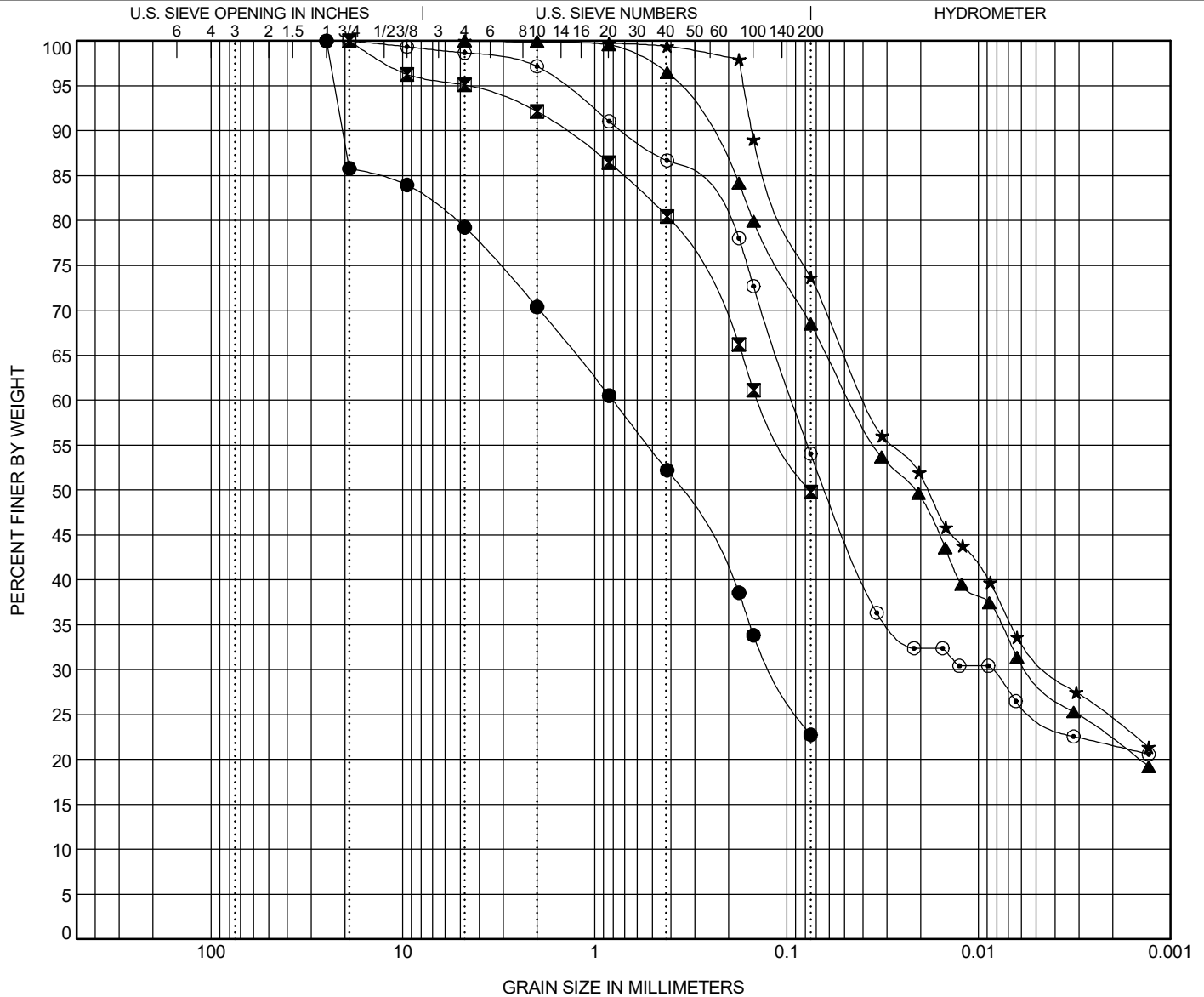


GRAIN SIZE DISTRIBUTION

PROJECT ID P043996

PROJECT NAME S-46-59 over Little Turkey Creek

PROJECT COUNTY York



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification					LL	PL	PI	Cc	Cu
● B-1	4.0	SILTY SAND with GRAVEL (SM/A-2-4)					NP	NP	NP		
■ B-1	10.0	CLAYEY SAND (SC/A-7-6)					42	21	21		
▲ B-1	15.0	SANDY LEAN CLAY (CL/A-6)					36	22	14		
★ B-1	20.0	LEAN CLAY with SAND (CL/A-6)					28	16	12		
⊙ B-1	30.0	SANDY LEAN CLAY (CL/A-4)					30	22	8		
BOREHOLE	DEPTH	D90	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● B-1	4.0	20.604	0.805	0.117		20.8	56.5	22.8			
■ B-1	10.0	1.441	0.139			4.9	45.3	49.8			
▲ B-1	15.0	0.266	0.046	0.005		0.0	31.5	39.2		29.3	
★ B-1	20.0	0.152	0.039	0.004		0.0	26.3	42.0		31.6	
⊙ B-1	30.0	0.711	0.093	0.009		1.3	44.6	28.9		25.1	

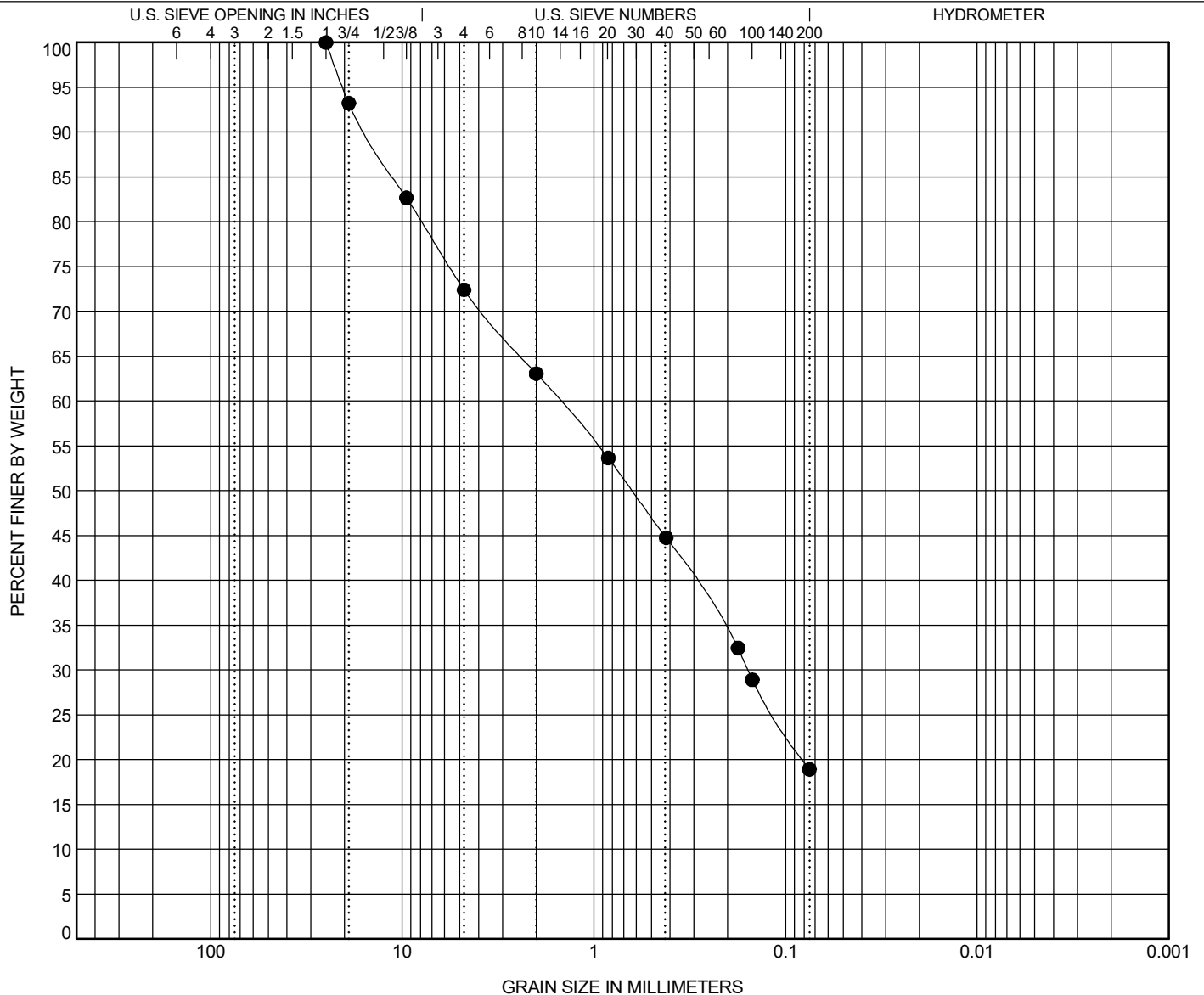


GRAIN SIZE DISTRIBUTION

PROJECT ID P043996

PROJECT NAME S-46-59 over Little Turkey Creek

PROJECT COUNTY York



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification					LL	PL	PI	Cc	Cu
● B-1	35.0	SILTY SAND with GRAVEL (SM/A-1-b)					NP	NP	NP		
BOREHOLE	DEPTH	D90	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● B-1	35.0	15.371	1.507	0.157		27.6	53.5	18.9			

GRAIN SIZE G7100.007 - TASK 00005 - S-46-59 OVER TURKEY CREEK.GPJ SCDOT DATA TEMPLATE 01_30_2015.GDT 10/31/24

F&ME CONSULTANTS, INC
211 Business Park Blvd.
Columbia, SC 29203

MOISTURE CONTENT DETERMINATION
(AASHTO T265)

PROJECT:	S-46-59 over Little Turkey Creek	SCDOT PROJECT ID:	P043996
SAMPLE NUMBER:	24-3826	DATE REQUESTED:	10/24/2024
DESCRIPTION OF SOIL:	Various		
TESTED BY:	DH	DATE OF TESTING:	10/25/2024
WEIGHED BY:	AC	DATE OF WEIGHING:	10/28/2024

BORING NO.	B-1	B-1	B-1	B-1	B-1
SAMPLE NO.	SS-2	SS-5	SS-6	SS-7	SS-9
SAMPLE DEPTH	2.0 - 4.0	8.0 - 10.0	13.5 - 15.0	18.5 - 20.0	28.5 - 30.0
WATER CONTENT, W%	10.8	23.1	32.9	65.0	34.3

BORING NO.	B-1				
SAMPLE NO.	SS-10				
SAMPLE DEPTH	33.5 - 35.0				
WATER CONTENT, W%	18.3				

BORING NO.					
SAMPLE NO.					
SAMPLE DEPTH					
WATER CONTENT, W%					

BORING NO.					
SAMPLE NO.					
SAMPLE DEPTH					
WATER CONTENT, W%					

**pH DETERMINATION
(AASHTO T289)**

Project Name:	S-46-59 over Little Turkey Creek	SCDOT Project ID:	P043996
Sample Location:	B-1	Sample Elevation/Depth:	4.0 - 8.0
Description of Sample:	Soil (Composite)	Date Received	10/24/2024
Tested By:	L. Johnson	Date Tested:	10/30/2024

SCDOT Sample ID	B-1			
Boring Depth	4.0 - 8.0			
FME Lab ID No.	24-3787			
pH Value	6.52			
Temperature (°C)	21.1			

Date Reviewed: 11/4/2024Reviewed By: J.Hiers

**SOIL RESISTIVITY
(AASHTO T288)**

Project Name:	S-46-59 over Little Turkey Creek	Project ID:	P043996
Location:	B-1	FME Lab ID No.:	24-3787
Sampled By:	BC	Date Sampled:	10/22/2024
Soil Description:	Soil (composite)	Date Received:	10/22/2024
Tested By:	AGB	Date Tested:	11/1/2024

Boring No.	Sample Depth (ft.)	Minimum Soil Resistivity, Ω -cm
B-1	4.0 - 8.0	5,440

Date Reviewed: 11/4/2024 Reviewed By: J. Hiers

CHLORIDE ION CONTENT IN SOILS

AASHTO T 291 - 94 (2018) (Method B)

Client: F&ME Consultants, Inc.
 Client Reference: Turkey Cr. G7100.007
 Project No.: 2024-800-001
 Lab ID: 2024-800-001-001

Boring No.: B-1
 Depth (ft): 4.0-8.0'
 Sample No.: SS-3/SS-4
 Description: Brown Soil

(- # 10 Sieve material)

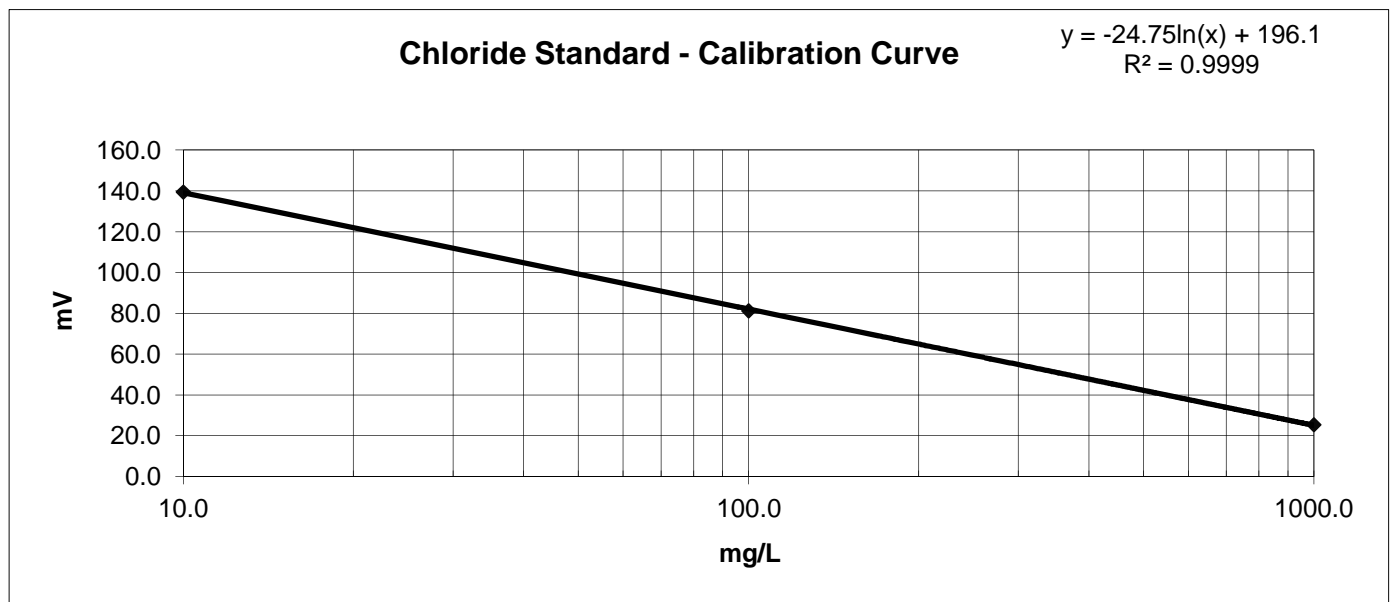
CHLORIDE STANDARD: CALIBRATION CURVE

STANDARD	MILLIVOLTS (mV)
10.0 mg/L	139.5
100.0 mg/L	81.3
1000.0 mg/L	25.5

MEASUREMENT OF CHLORIDES

Sample Weight (g):	100.0	CONCENTRATION	CONCENTRATION
Water added to Sample (ml):	100.0	(mg/L)	(mg/kg)
Size of Sample Aliquot (ml):	25.0		
Sample Reading (mV):	137.7	10.58	10.58

Notes: 1) Samples and standards were buffered by the addition of an equal volume of the 0.2 M KNO₃ solution (1:1 volume).
 2) Samples were dried for a minimum of 12 hours at 110 ± 5°C.



Notes:

Tested By JAM

Date 11/1/24

Checked By JLK

Date 11/1/24

Water-Soluble Sulfate Ion Content in Soil

AASHTO T 290-95 (2020)

Client: F&ME Consultants, Inc.
 Client Reference: Turkey Cr. G7100.007
 Project No.: 2024-800-001
 Lab ID: 2024-800-001-001

Boring No.: B-1
 Depth (ft): 4.0-8.0'
 Sample No.: SS-3/SS-4
 Soil Description: Brown Soil

Sulfate Standard - Calibration Curve Spectrophotometer Readings

<u>Sulfate Ion Concentrations (mg/L)</u>								
0.0	4.0	10.0	20.0	30.0	40.0	60.0	80.0	100.0
<u>Spectrophotometer Readings (FAU)</u>								
Underrange	Underrange	7	20	42	63	112	163	243

Measurement of Barium Chloride Turbidity

(Sample contains 5.0 mL NaCl solution and 0.3 g BaCl₂·2H₂O)

Sample Weight (g): 100.0
 Water added to Sample (mL): 300.0
 Size of Sample Aliquot (mL): 50.0
 Sample Reading (FAU): 47

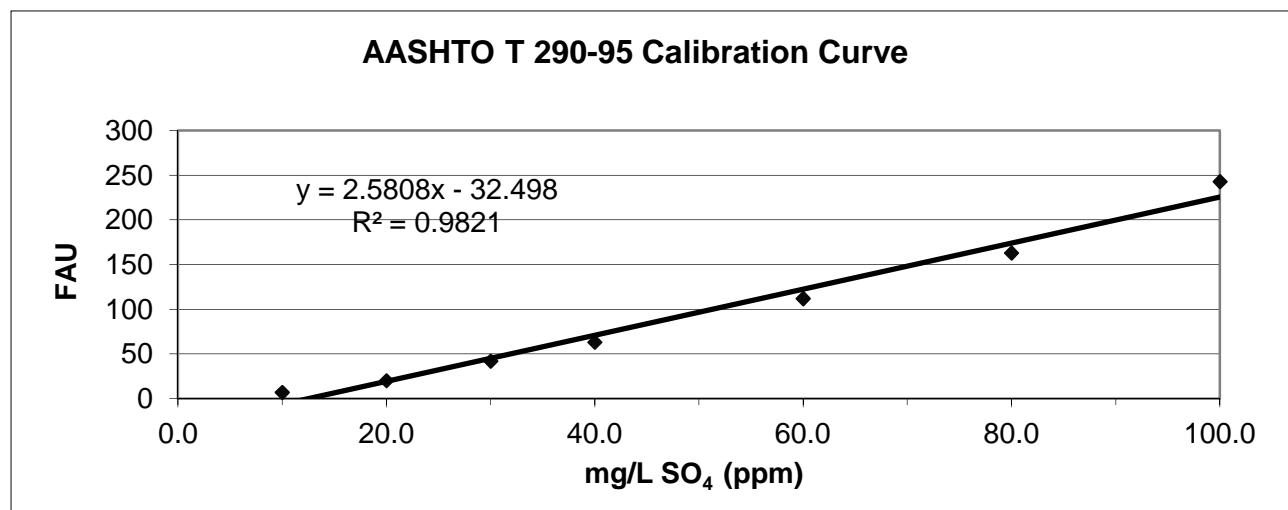
Sample Diluted: No

Sulfate Solution Added (ml): 0

Sample Moisture Content

Tare Number: 604
 Weight of Tare & Wet Sample (g): 184.87
 Weight of Tare & Dry Sample (g): 184.15
 Weight of Tare (g): 86.55
 Weight of Water (g): 0.72
 Weight of Dry Sample (g): 97.60
 Moisture Content (%): 0.74

Sample Sulfate Ion Concentration:	30.80	mg/L SO ₄ (ppm)
Sample Sulfate Ion Content:	92.4	mg/Kg SO ₄ (not corrected for moisture)
Sample Sulfate Ion Content:	93.1	mg/Kg SO ₄ (corrected for moisture)



Tested by: JAM Date: 10/31/24 Checked by: JLK Date: 11/1/24



INDEX PROPERTIES VERSUS DEPTH

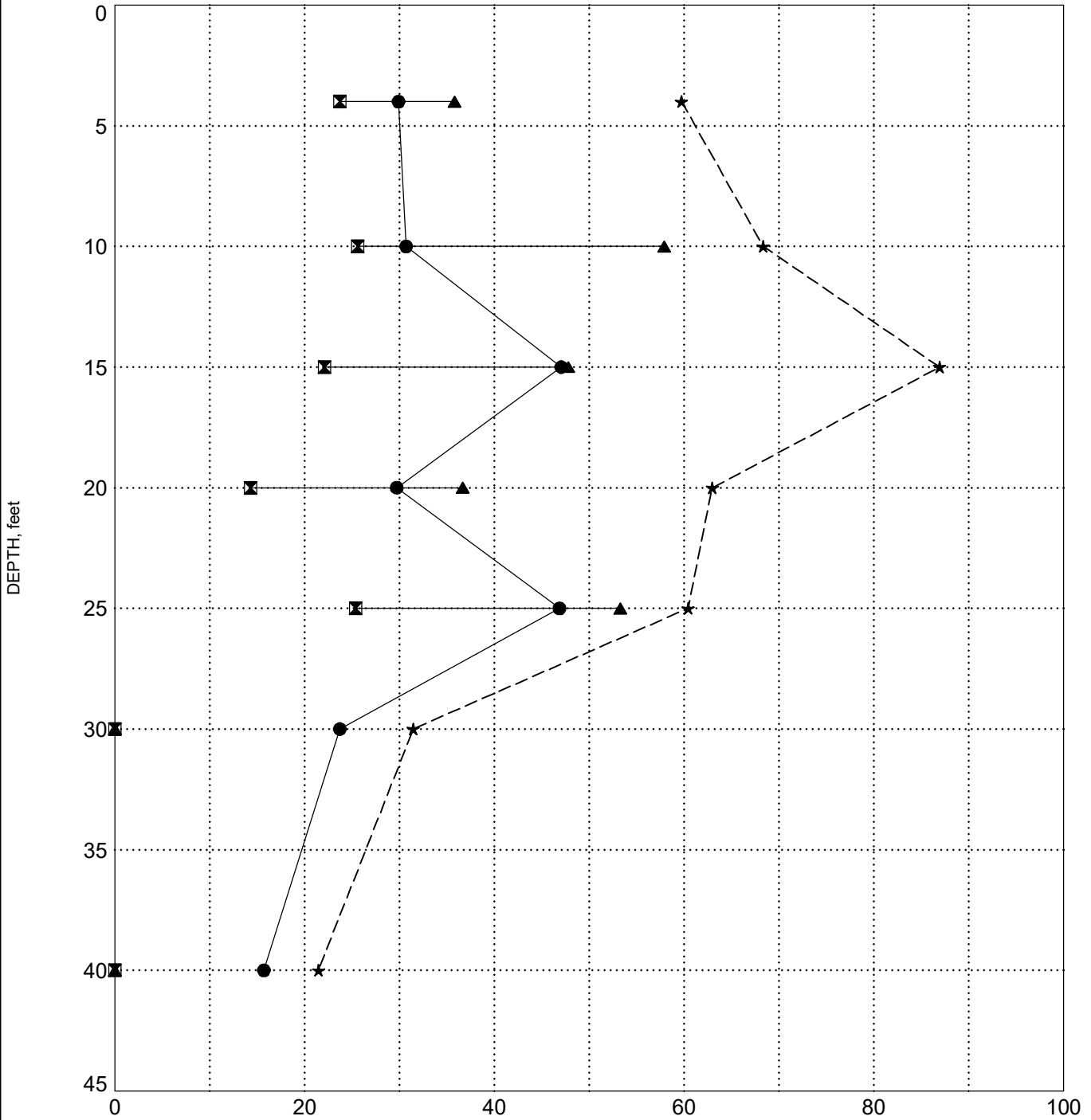
PROJECT ID P043996

PROJECT NAME S-46-59 over Little Turkey Creek

PROJECT COUNTY York

SURFACE ELEVATION: 435.0

BORING B-2



LEGEND	
●	Water Content
⊠	Plastic Limit
▲	Liquid Limit
★	Fines



PROJECT NAME S-46-59 over Little Turkey Creek

The figure is a semi-logarithmic plot of Plasticity Index (PI) versus Liquid Limit (LL) for soil classification. The y-axis is Plasticity Index (0 to 60) and the x-axis is Liquid Limit (0 to 100). The plot shows the A-line and U-line boundaries, with regions labeled CL, CH, ML, and MH. Data points are plotted as a solid circle, a star, a triangle, a square with an X, and a circle with a dot.

Symbol	Liquid Limit (LL)	Plasticity Index (PI)	Soil Type
Solid Circle	35	12	CL
Star	38	22	CL
Triangle	48	26	CL
Square with X	58	32	CH
Circle with Dot	55	28	CH

[illegible]

WATTERBERG LIMITS G7100.007 - TASK 00005 - S-46-59 OVER TURKEY CREEK.GPJ SCDOT DATA TEMPLATE_01 30_2015.GDT 11/1/24

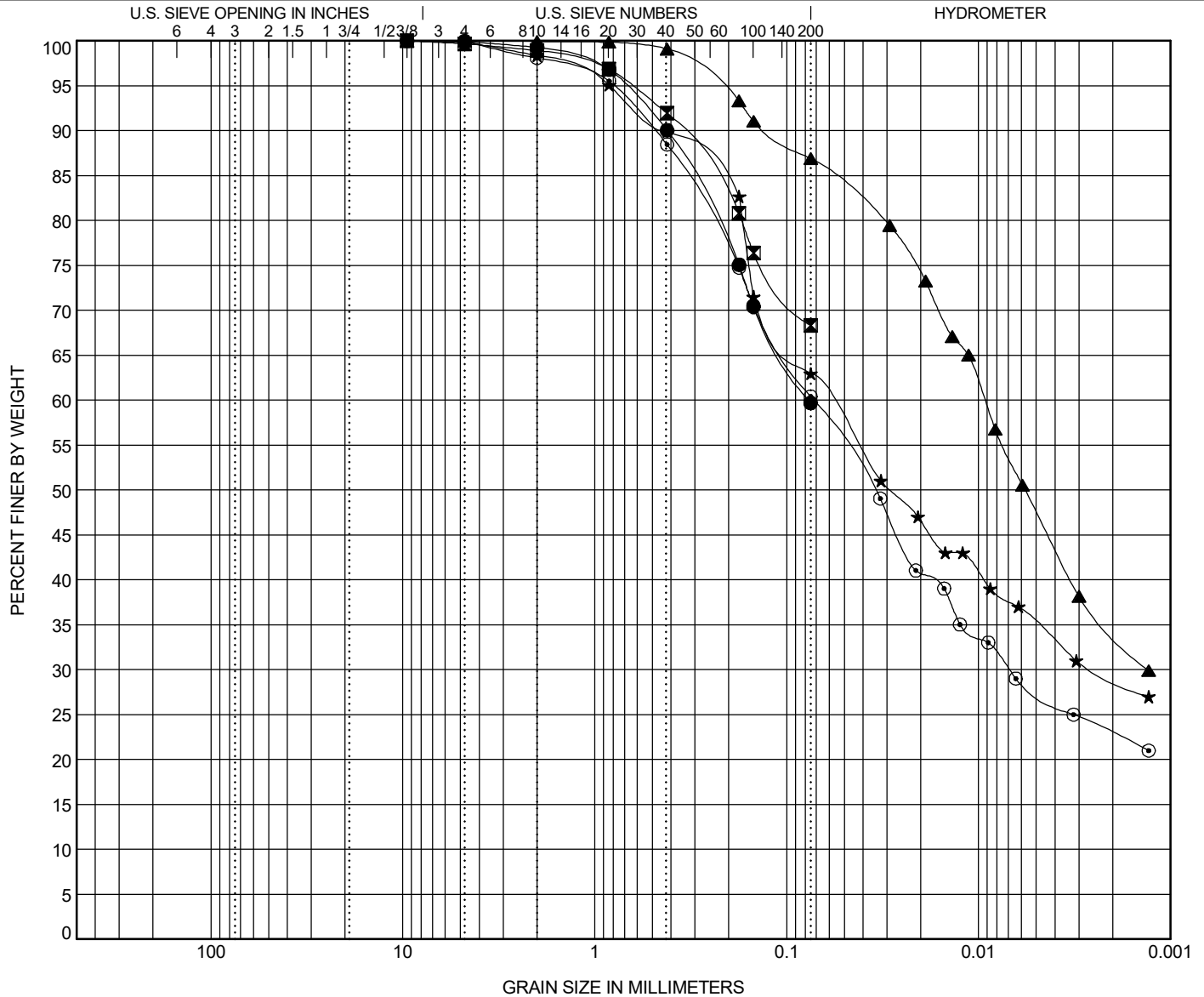


GRAIN SIZE DISTRIBUTION

PROJECT ID P043996

PROJECT NAME S-46-59 over Little Turkey Creek

PROJECT COUNTY York



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification					LL	PL	PI	Cc	Cu
● B-2	4.0	SANDY LEAN CLAY (CL/A-6)					36	24	12		
■ B-2	10.0	SANDY FAT CLAY (CH/A-7-6)					58	26	32		
▲ B-2	15.0	LEAN CLAY (CL/A-7-6)					48	22	26		
★ B-2	20.0	SANDY LEAN CLAY (CL/A-6)					37	14	23		
◎ B-2	25.0	SANDY FAT CLAY (CH/A-7-6)					53	25	28		
BOREHOLE	DEPTH	D90	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● B-2	4.0	0.419	0.076			0.1	40.2	59.7			
■ B-2	10.0	0.361				0.3	31.3	68.3			
▲ B-2	15.0	0.125	0.009	0.001		0.0	13.1	39.4		47.5	
★ B-2	20.0	0.421	0.061	0.002		0.2	36.8	27.8		35.2	
◎ B-2	25.0	0.488	0.073	0.007		0.0	39.6	32.8		27.6	

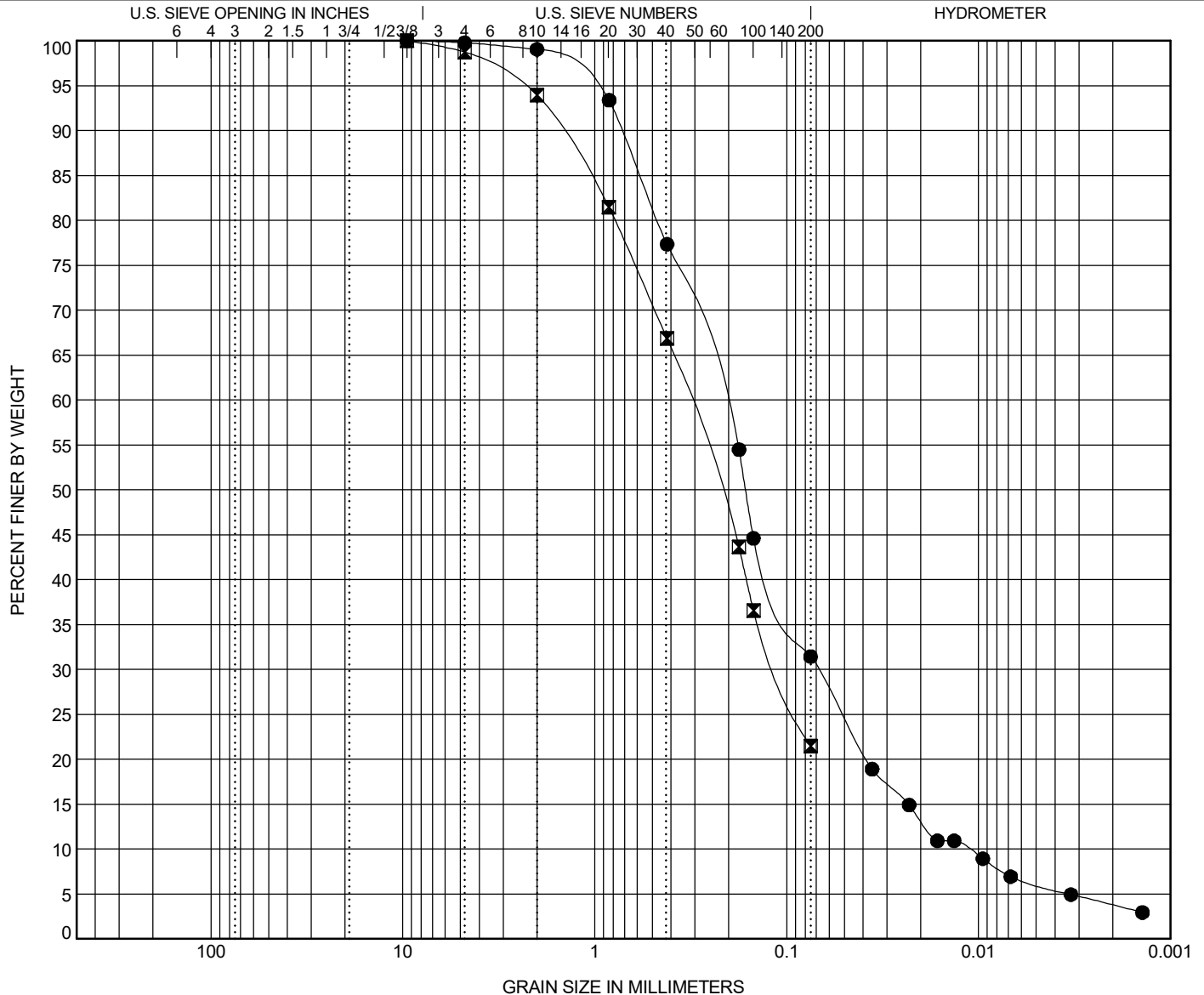


GRAIN SIZE DISTRIBUTION

PROJECT ID P043996

PROJECT NAME S-46-59 over Little Turkey Creek

PROJECT COUNTY York



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BOREHOLE	DEPTH	Classification					LL	PL	PI	Cc	Cu
● B-2	30.0	SILTY SAND (SM/A-2-4)					NP	NP	NP	1.91	19.10
✕ B-2	40.0	SILTY SAND (SM/A-2-4)					NP	NP	NP		
BOREHOLE	DEPTH	D90	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● B-2	30.0	0.726	0.218	0.069	0.011	0.2	68.4	25.4		6.1	
✕ B-2	40.0	1.518	0.325	0.11		1.2	77.3	21.5			

F&ME CONSULTANTS, INC
211 Business Park Blvd.
Columbia, SC 29203

MOISTURE CONTENT DETERMINATION
(AASHTO T265)

PROJECT:	S-46-59 over Little Turkey Creek	SCDOT PROJECT ID:	P043996
SAMPLE NUMBER:	24-3788	DATE REQUESTED:	10/24/2024
DESCRIPTION OF SOIL:	Various		
TESTED BY:	AAB	DATE OF TESTING:	10/25/2024
WEIGHED BY:	AC	DATE OF WEIGHING:	10/28/2024

BORING NO.	B-2	B-2	B-2	B-2	B-2
SAMPLE NO.	SS-2	SS-5	SS-6	SS-7	SS-8
SAMPLE DEPTH	2.0 - 4.0	8.0 - 10.0	13.5 - 15.0	18.5 - 20.0	23.5 - 25.0
WATER CONTENT, W%	29.9	30.7	47.1	29.7	46.9

BORING NO.	B-2	B-2			
SAMPLE NO.	SS-9	SS-11			
SAMPLE DEPTH	28.5 - 30.0	38.5 - 40.0			
WATER CONTENT, W%	23.7	15.7			

BORING NO.					
SAMPLE NO.					
SAMPLE DEPTH					
WATER CONTENT, W%					

BORING NO.					
SAMPLE NO.					
SAMPLE DEPTH					
WATER CONTENT, W%					

**pH DETERMINATION
(AASHTO T289)**

Project Name:	S-46-59 over Little Turkey Creek	SCDOT Project ID:	P043996
Sample Location:	B-2	Sample Elevation/Depth:	4.0 - 8.0
Description of Sample:	Soil (Composite)	Date Received	10/24/2024
Tested By:	L. Johnson	Date Tested:	10/30/2024

SCDOT Sample ID	B-2			
Boring Depth	4.0 - 8.0			
FME Lab ID No.	24-3788			
pH Value	6.87			
Temperature (°C)	21.4			

Date Reviewed: 11/4/2024Reviewed By: J.Hiers

**SOIL RESISTIVITY
(AASHTO T288)**

Project Name:	S-46-59 over Little Turkey Creek	Project ID:	G7100.007 - Task 00005
Location:	B-2	FME Lab ID No.:	24-3788
Sampled By:	BC	Date Sampled:	10/22/2024
Soil Description:	Soil (Composite)	Date Received:	10/22/2024
Tested By:	AGB	Date Tested:	11/1/2024

Boring No.	Sample Depth (ft.)	Minimum Soil Resistivity, Ω -cm
B-2	4.0 - 8.0	3,920

Date Reviewed: 11/4/2024 Reviewed By: J. Hiers

CHLORIDE ION CONTENT IN SOILS

AASHTO T 291 - 94 (2018) (Method B)

Client: F&ME Consultants, Inc.
 Client Reference: Turkey Cr. G7100.007
 Project No.: 2024-800-001
 Lab ID: 2024-800-001-002

Boring No.: B-2
 Depth (ft): 4.0-8.0'
 Sample No.: SS-3/SS-4
 Description: Reddish Brown
 (- # 10 Sieve material)

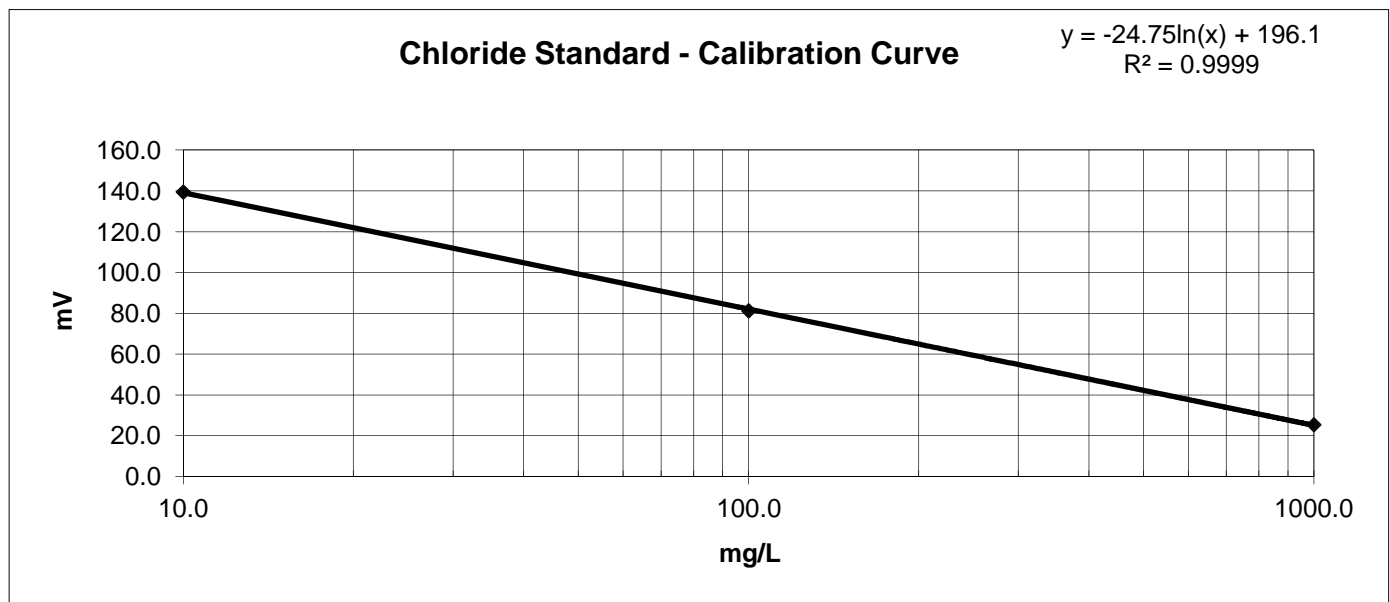
CHLORIDE STANDARD: CALIBRATION CURVE

STANDARD	MILLIVOLTS (mV)
10.0 mg/L	139.5
100.0 mg/L	81.3
1000.0 mg/L	25.5

MEASUREMENT OF CHLORIDES

Sample Weight (g):	100.0	CONCENTRATION	CONCENTRATION
Water added to Sample (ml):	100.0	(mg/L)	(mg/kg)
Size of Sample Aliquot (ml):	25.0		
Sample Reading (mV):	122.9	19.24	19.24

Notes: 1) Samples and standards were buffered by the addition of an equal volume of the 0.2 M KNO₃ solution (1:1 volume).
 2) Samples were dried for a minimum of 12 hours at 110 ± 5°C.



Notes:

Tested By JAM

Date 11/1/24

Checked By JLK

Date 11/1/24

Water-Soluble Sulfate Ion Content in Soil

AASHTO T 290-95 (2020)

Client:	F&ME Consultants, Inc.	Boring No.:	B-2
Client Reference:	Turkey Cr. G7100.007	Depth (ft):	4.0-8.0'
Project No.:	2024-800-001	Sample No.:	SS-3/SS-4
Lab ID:	2024-800-001-002	Soil Description:	Reddish Brown

Sulfate Standard - Calibration Curve Spectrophotometer Readings

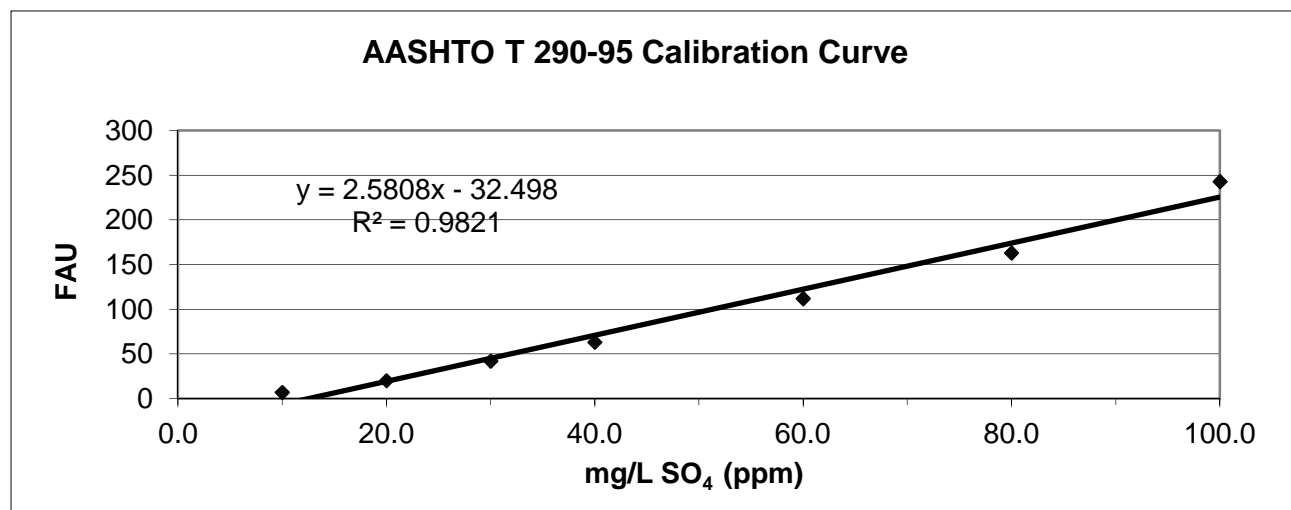
<u>Sulfate Ion Concentrations (mg/L)</u>								
0.0	4.0	10.0	20.0	30.0	40.0	60.0	80.0	100.0
<u>Spectrophotometer Readings (FAU)</u>								
Underrange	Underrange	7	20	42	63	112	163	243

Measurement of Barium Chloride Turbidity

(Sample contains 5.0 mL NaCl solution and 0.3 g BaCl₂·2H₂O)

<p>Sample Weight (g): 100.0</p> <p>Water added to Sample (mL): 300.0</p> <p>Size of Sample Aliquot (mL): 50.0</p> <p>Sample Reading (FAU): 11</p> <p>Sample Diluted: No</p> <p>Sulfate Solution Added (ml): 0</p>	<p><u>Sample Moisture Content</u></p> <p>Tare Number: 606</p> <p>Weight of Tare & Wet Sample (g): 185.55</p> <p>Weight of Tare & Dry Sample (g): 184.17</p> <p>Weight of Tare (g): 84.89</p> <p>Weight of Water (g): 1.38</p> <p>Weight of Dry Sample (g): 99.28</p> <p>Moisture Content (%): 1.39</p>
---	---

Sample Sulfate Ion Concentration:	16.85	mg/L SO ₄ (ppm)
Sample Sulfate Ion Content:	50.6	mg/Kg SO ₄ (not corrected for moisture)
Sample Sulfate Ion Content:	51.3	mg/Kg SO ₄ (corrected for moisture)



Tested by: JAM	Date: 10/31/24	Checked by: JLK	Date: 11/1/24
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S-46-59 over Little Turkey Creek
Geotechnical Subsurface Data Report

APPENDIX

SECTION 4 LABORATORY TEST RESULTS

SECTION 4B BULK SOIL SAMPLES



SUMMARY OF LABORATORY RESULTS

PROJECT ID P043996

PROJECT NAME S-46-59 over Little Turkey Creek

PROJECT COUNTY York

Boring No.	Sample Depth (ft.)	Liquid Limit	Plastic Limit	Plasticity Index	%<#200 Sieve	Soil Classification	Moisture Content (%)	Max Dry Density (PCF)	Optimum Moisture Content (%)	C (psi)	ϕ (Degrees)	C' (psi)	ϕ' (Degrees)
BS-1	0.0 – 2.0	31	18	13	43.1	SC	19.0	123.5	12.5	--	--	--	--



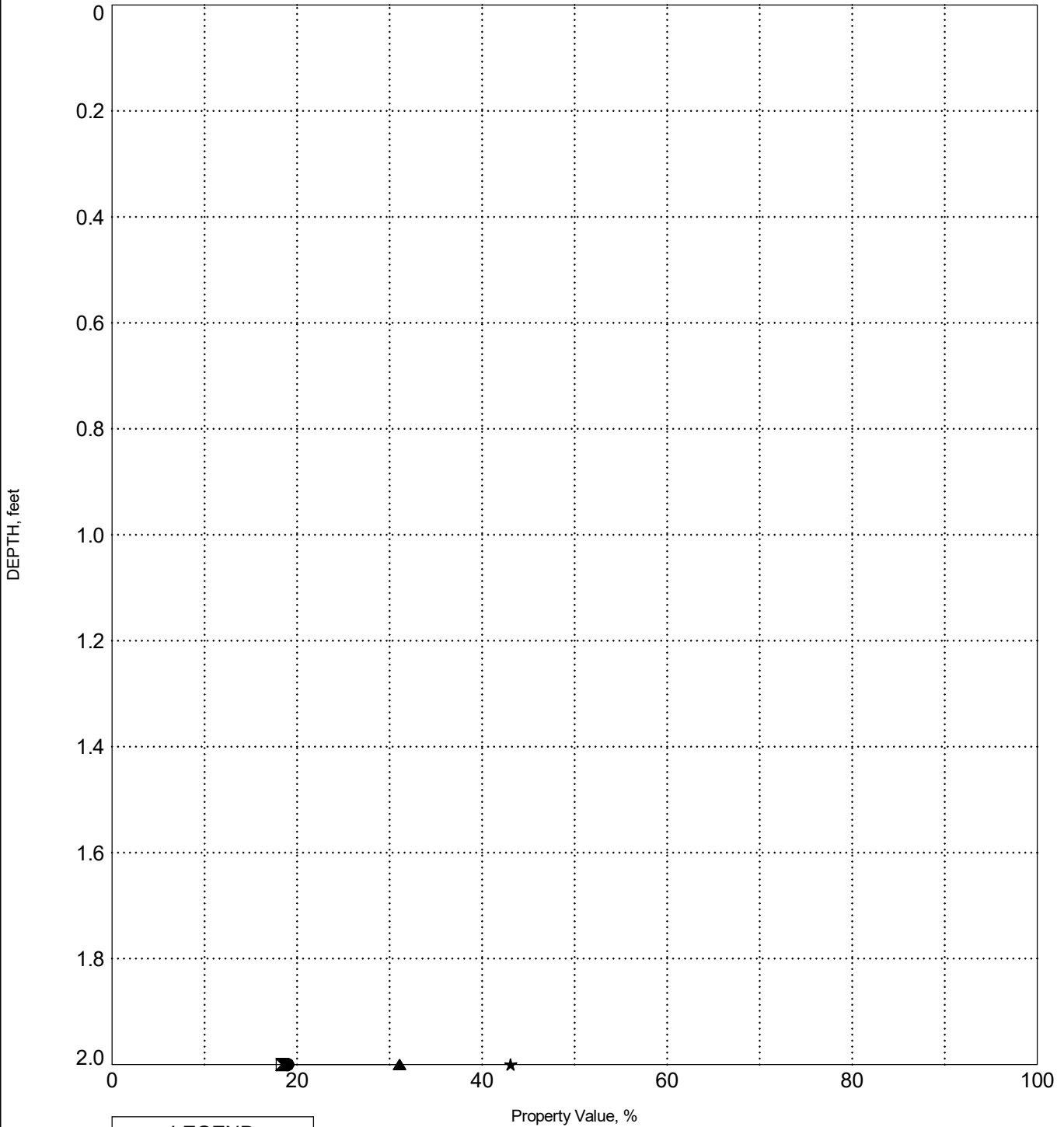
INDEX PROPERTIES VERSUS DEPTH

PROJECT ID P043996

PROJECT NAME S-46-59 over Little Turkey Creek

PROJECT COUNTY York

BORING BS-1



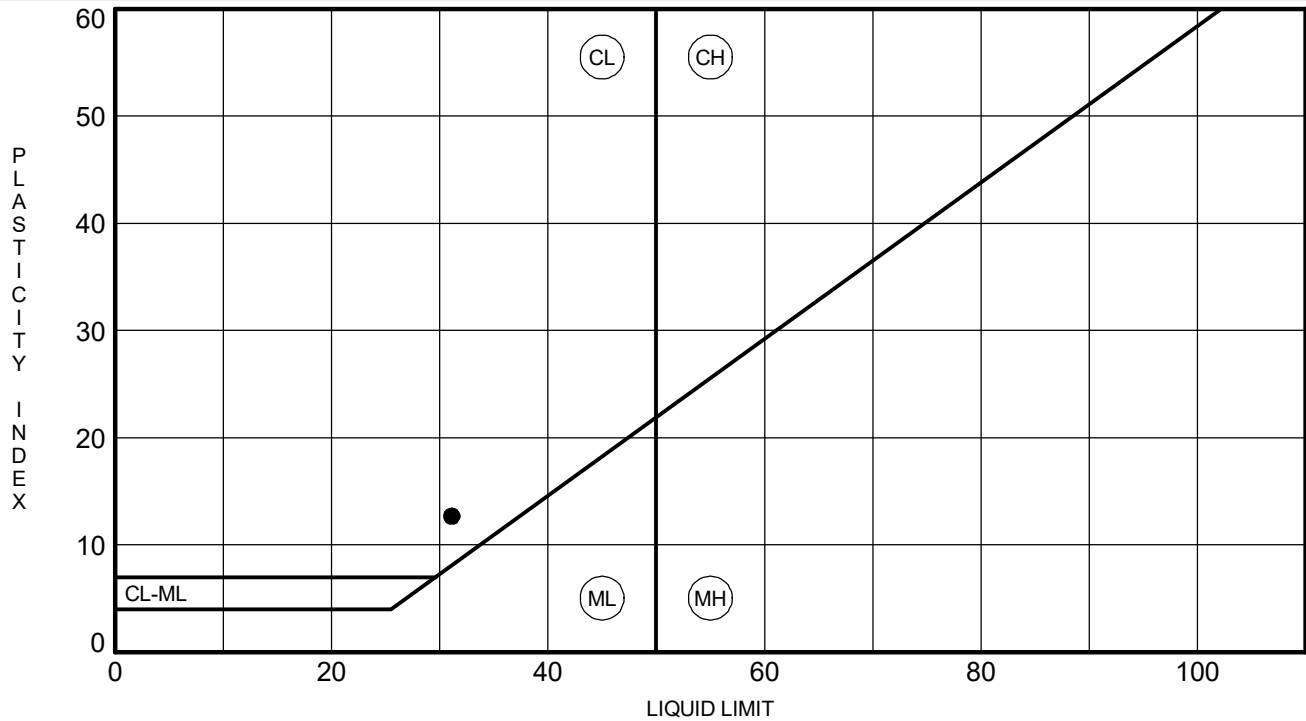
LEGEND	
●	Water Content
■	Plastic Limit
▲	Liquid Limit
★	Fines

ATTERBERG LIMITS' RESULTS

PROJECT ID P043996

PROJECT NAME S-46-59 over Little Turkey Creek

PROJECT COUNTY York

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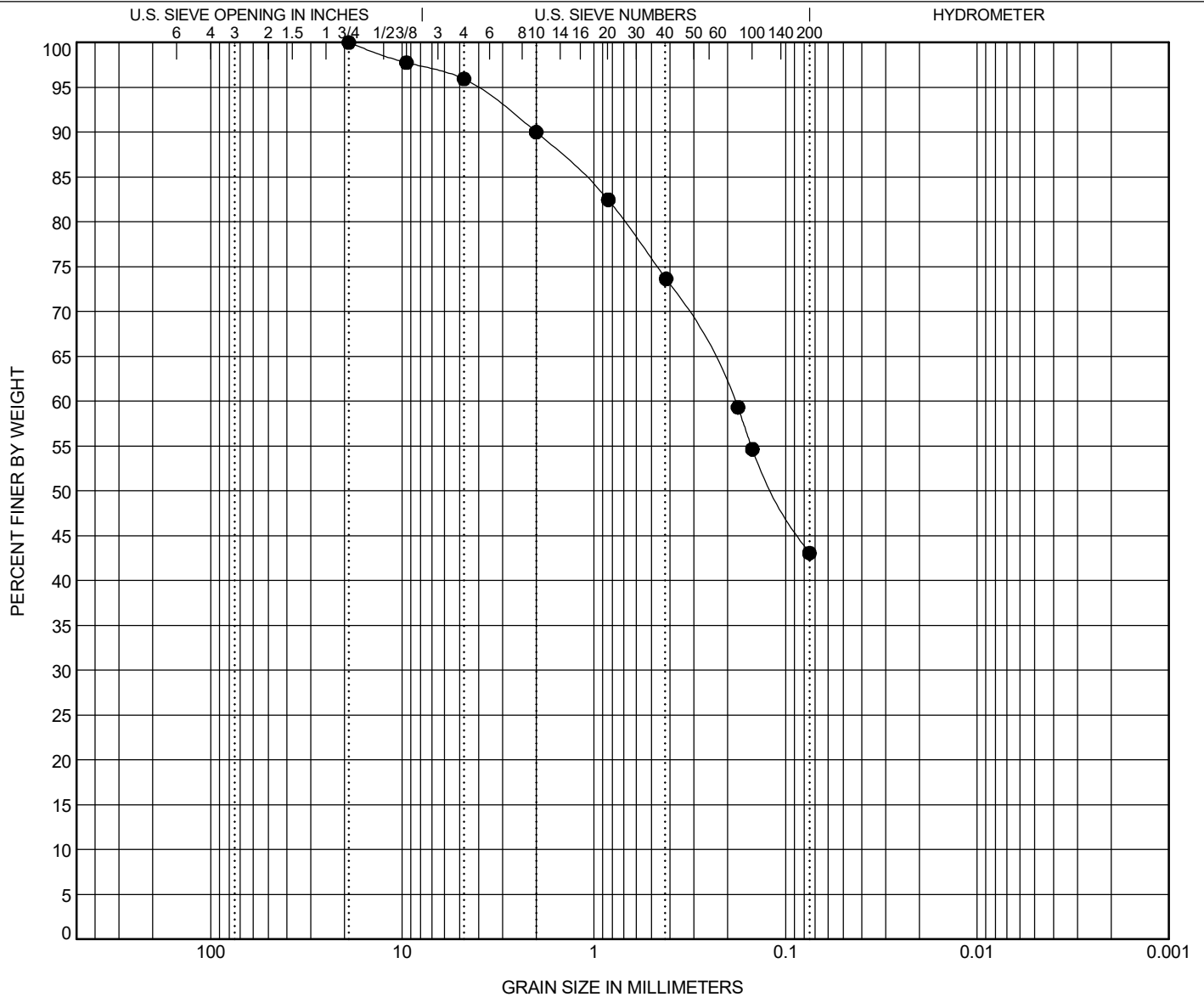


GRAIN SIZE DISTRIBUTION

PROJECT ID P043996

PROJECT NAME S-46-59 over Little Turkey Creek

PROJECT COUNTY York



F&ME CONSULTANTS, INC
211 Business Park Blvd.
Columbia, SC 29203

MOISTURE CONTENT DETERMINATION
(AASHTO T265)

PROJECT:	S-46-59 over Little Turkey Creek	SCDOT PROJECT ID:	P043996
SAMPLE NUMBER:	24-3791	DATE REQUESTED:	10/24/2024
DESCRIPTION OF SOIL:	CLAYEY SAND (SC/A-6)		
TESTED BY:	AAB/AGB	DATE OF TESTING:	10/25/2024
WEIGHED BY:	JM	DATE OF WEIGHING:	10/28/2024

BORING NO.	BS-1				
SAMPLE NO.	--				
SAMPLE DEPTH	0.0 - 2.0				
WATER CONTENT, W%	19.0				

BORING NO.					
SAMPLE NO.					
SAMPLE DEPTH					
WATER CONTENT, W%					

BORING NO.					
SAMPLE NO.					
SAMPLE DEPTH					
WATER CONTENT, W%					

BORING NO.					
SAMPLE NO.					
SAMPLE DEPTH					
WATER CONTENT, W%					

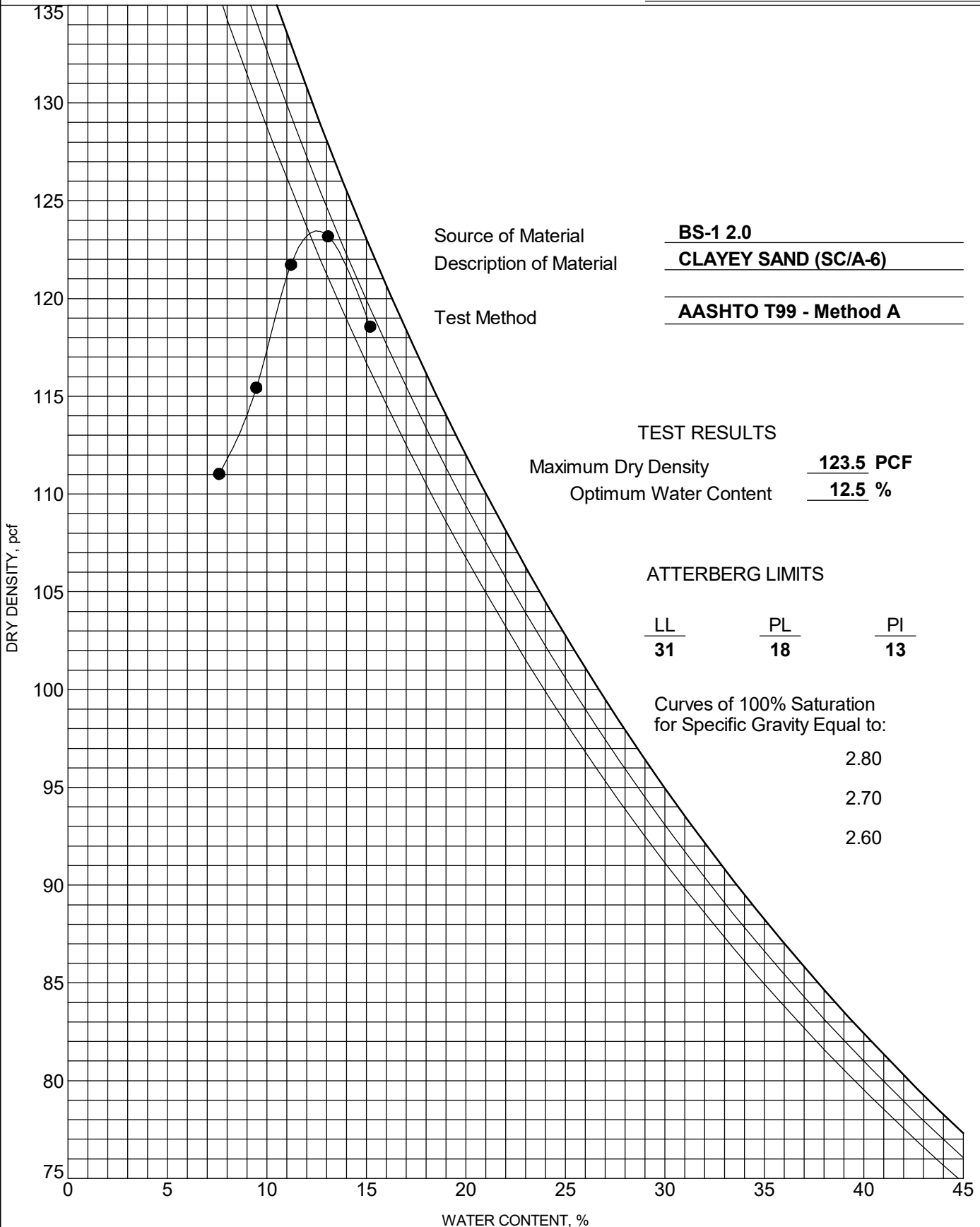


MOISTURE-DENSITY RELATIONSHIP

PROJECT ID P043996

PROJECT NAME S-46-59 over Little Turkey Creek

PROJECT COUNTY York



CALIFORNIA BEARING RATIO (CBR)
AASHTO T193

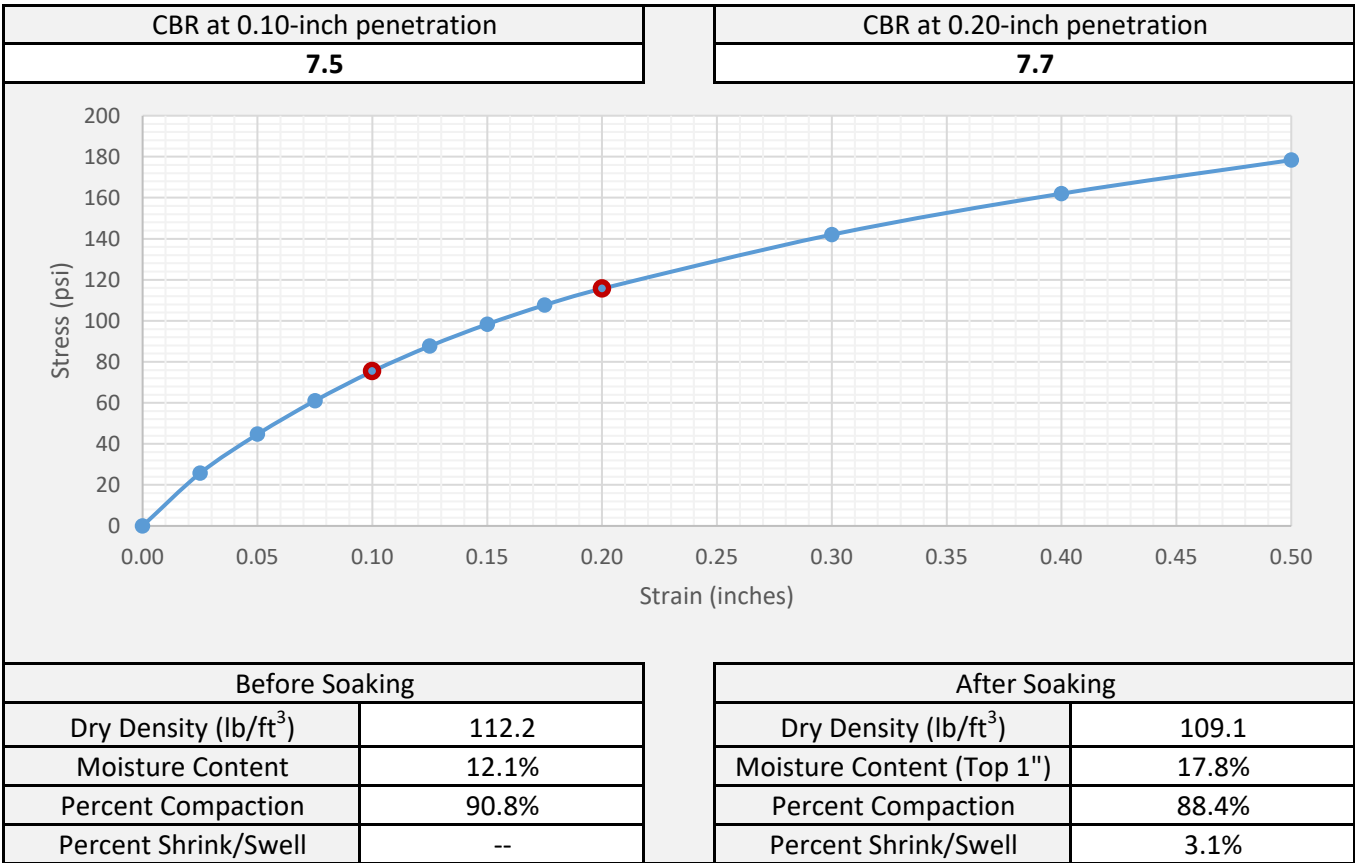
SAMPLE INFORMATION

Project Name	S-46-59 over Little Turkey Creek			Project No.	G7100.007 - Task00005
Sample Location	BS-1			FME Lab ID	24-3791
Soil Description	Clayey SAND (SC/A-6)			Depth/Elev.	0.0 - 2.0
Date Sampled	--	Sampled By:	F&ME	Date Received	10/24/2024
Date Test Began	11/1/2024	Date Completed	11/5/24	Tested By	DH/TE/JJ

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Retained on 3/4" Sieve	0%
Max Dry Density (lb/ft ³)	123.5	Optimum Moisture Content (%)	12.5
Soak Time (hr)	96	Surcharge Weight (lb)	10.0

TESTING RESULTS



ADDITIONAL COMMENTS

Target %Compaction = 90%

 <div>F&ME Consultants, Inc. 211 Business Park Blvd., Columbia, South Carolina 29203</div>		11/6/24
	Reviewed By	Date

CALIFORNIA BEARING RATIO (CBR)
AASHTO T193

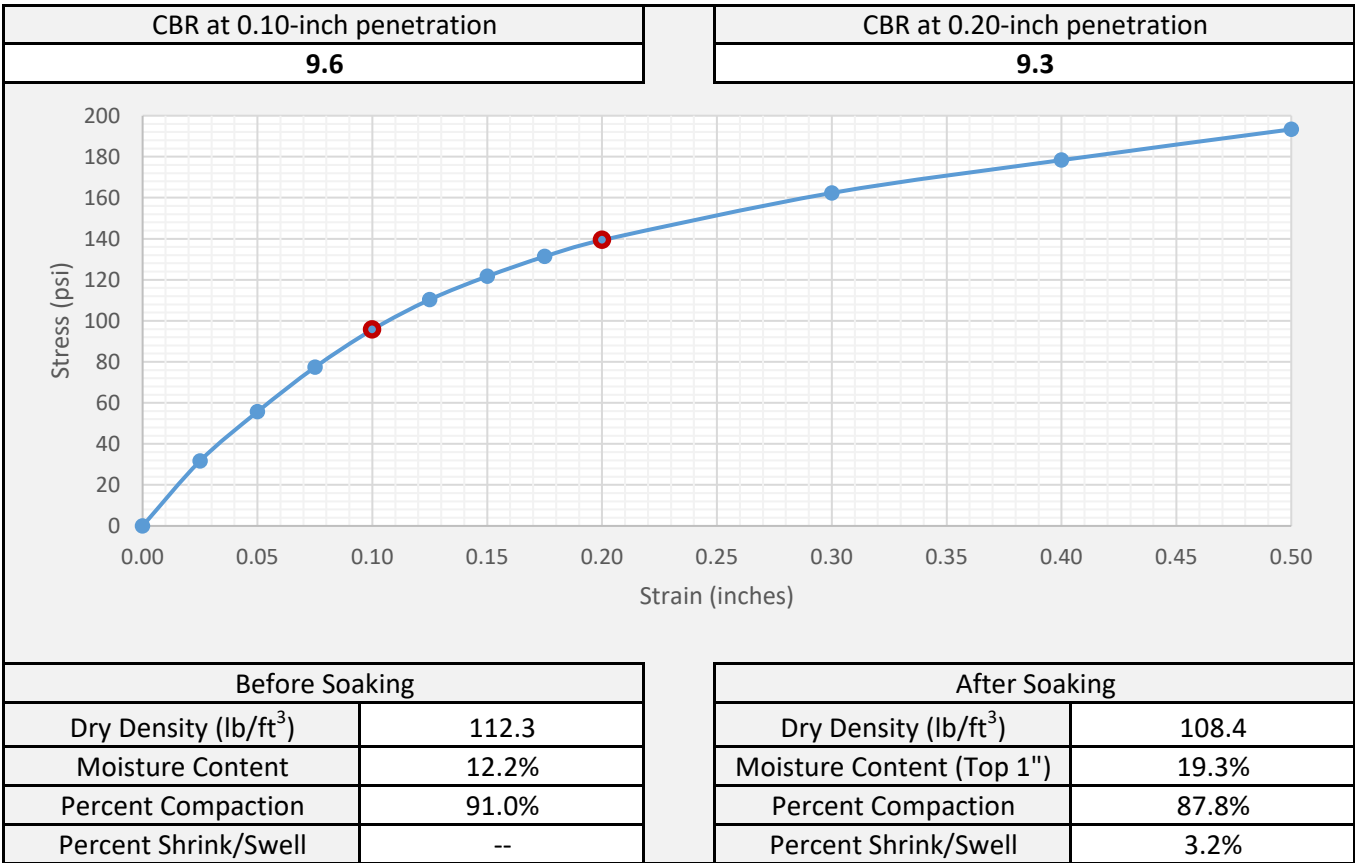
SAMPLE INFORMATION

Project Name	S-46-59 over Little Turkey Creek			Project No.	G7100.007 - Task00005
Sample Location	BS-1			FME Lab ID	24-3791
Soil Description	Clayey SAND (SC/A-6)			Depth/Elev.	0.0 - 2.0
Date Sampled	--	Sampled By:	F&ME	Date Received	10/24/2024
Date Test Began	11/1/2024	Date Completed	11/5/24	Tested By	DH/TE/JJ

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Retained on 3/4" Sieve	0%
Max Dry Density (lb/ft ³)	123.5	Optimum Moisture Content (%)	12.5
Soak Time (hr)	96	Surcharge Weight (lb)	10.0

TESTING RESULTS



ADDITIONAL COMMENTS

Target %Compaction = 95%

 F&ME Consultants, Inc. 211 Business Park Blvd., Columbia, South Carolina 29203		11/6/24
	Reviewed By	Date

CALIFORNIA BEARING RATIO (CBR)
AASHTO T193

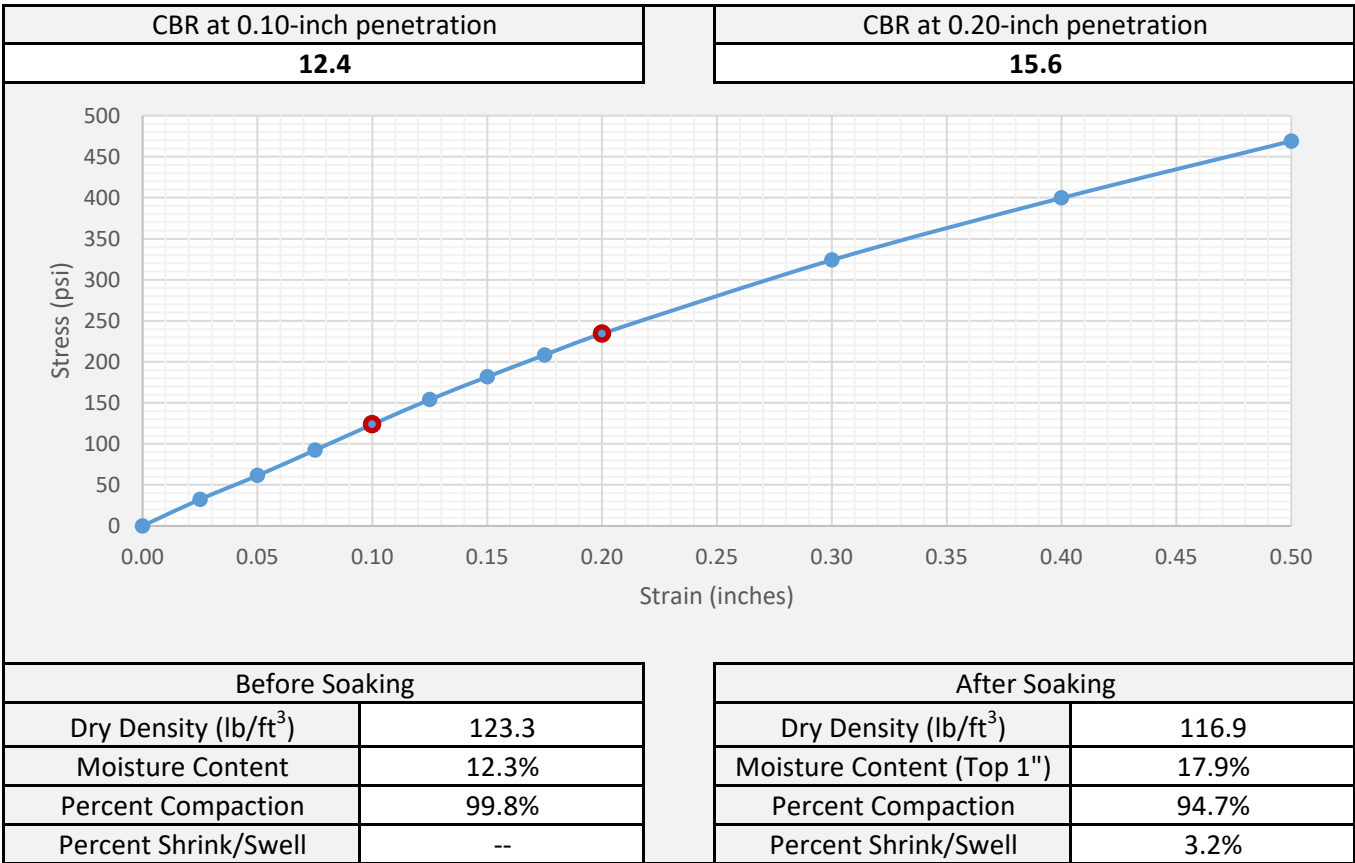
SAMPLE INFORMATION

Project Name	S-46-59 over Little Turkey Creek			Project No.	G7100.007 - Task00005
Sample Location	BS-1			FME Lab ID	24-3791
Soil Description	Clayey SAND (SC/A-6)			Depth/Elev.	0.0 - 2.0
Date Sampled	--	Sampled By:	F&ME	Date Received	10/24/2024
Date Test Began	11/1/2024	Date Completed	11/5/24	Tested By	DH/TE/JJ

MOLDING CHARACTERISTICS

Method	AASHTO T99 - Method A	% Retained on 3/4" Sieve	0%
Max Dry Density (lb/ft ³)	123.5	Optimum Moisture Content (%)	12.5
Soak Time (hr)	96	Surcharge Weight (lb)	10.0

TESTING RESULTS



ADDITIONAL COMMENTS

Target %Compaction = 100%

 <div>F&ME Consultants, Inc. 211 Business Park Blvd., Columbia, South Carolina 29203</div>		11/6/24
	Reviewed By	Date

S-46-59 over Little Turkey Creek
Geotechnical Subsurface Data Report

APPENDIX

SECTION 4 LABORATORY TEST RESULTS

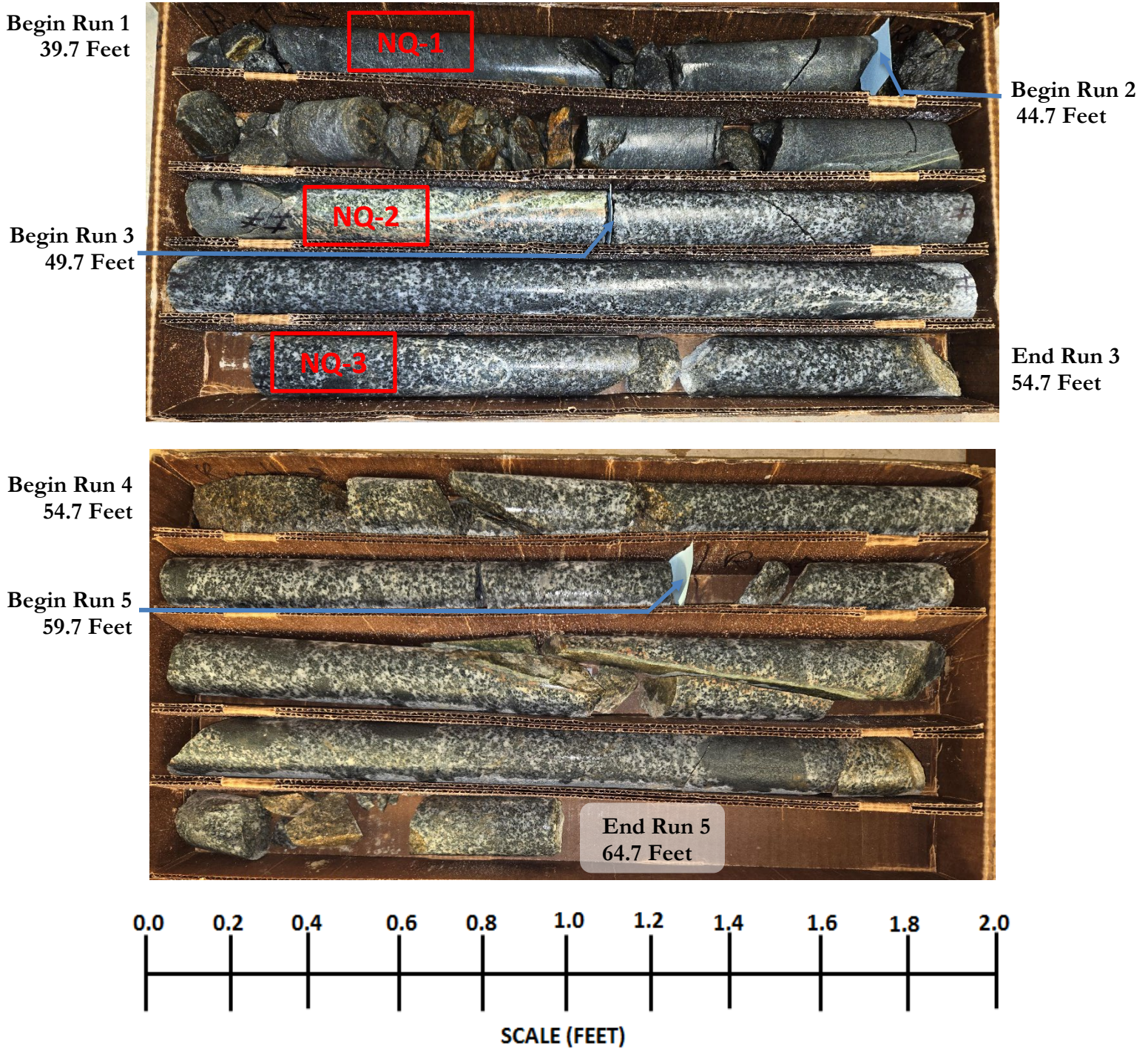
SECTION 4C ROCK CORE SAMPLE



PROJECT ID P043996 PROJECT NAME S-46-59 over Little Turkey Creek
PROJECT COUNTY York

Borehole	Core Run Number	Core Run Top Depth	REC (%)	RQD (%)	q _u (psi)	Poisson's Ratio	Elastic Modulus (ksi)	Unit Weight (pcf)	RMR	GSI
B-1	NQ-1	39.7	35	23	23,830	0.24	6,950	182	37	45
B-1	NQ-2	44.7	65	28	17,200	0.19	7,150	180	42	40
B-1	NQ-3	49.7	94	90	14,100	0.26	10,050	180	67	80
B-1	NQ-4	54.7	65	42					45	35
B-1	NQ-5	59.7	100	66					42	55
B-2	NQ-1	61.1	39	39	18,070	0.33	13,800	180	50	75
B-2	NQ-2	65.7	39	35					50	75
B-2	NQ-3	70.7	65	47	24,610	0.26	9,020	184	50	60
B-2	NQ-4	75.7	95	92	19,530	0.37	10,600	183	72	80
B-2	NQ-5	80.7	100	87					54	75

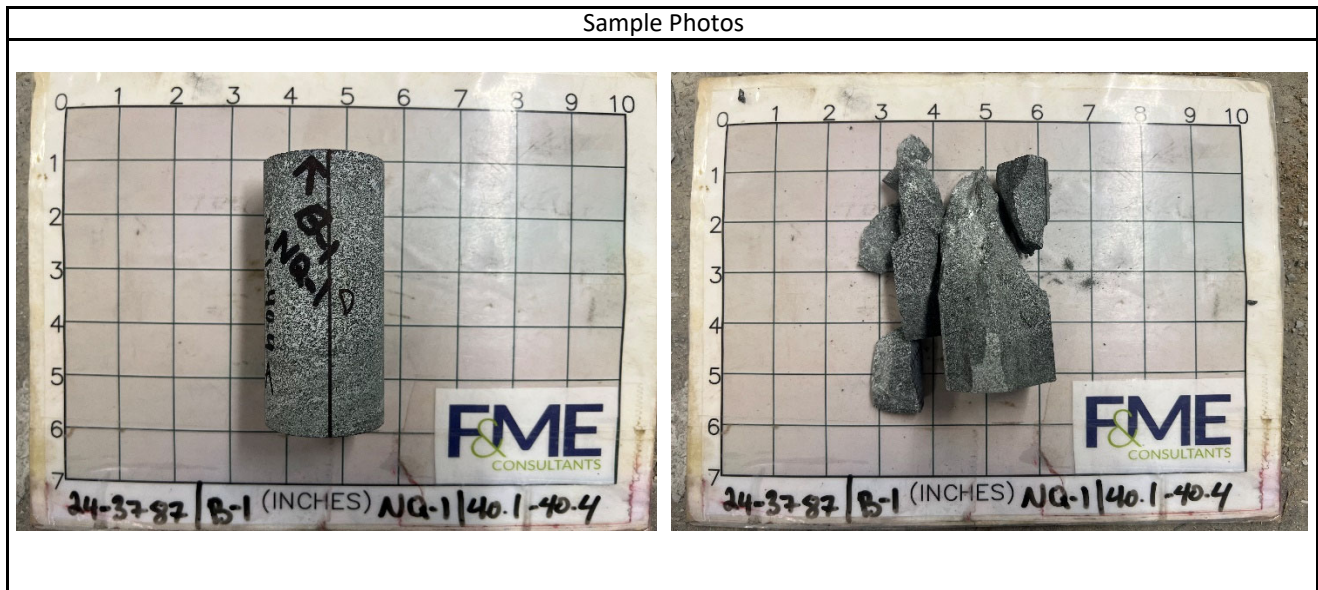
S-46-59 over Little Turkey Creek CORE PHOTOGRAPHS: B-1



Compressive Strength and Elastic Moduli of Intact Rock Core Specimens
ASTM D7012 - Method D / SC-T-39

Project	S-46-59 over Little Turkey Creek			Date	10/29/2024
Project No.	G7100.007 - Task 00005	Sample Diameter (in.)	1.868	Tested By	TP
SCDOT ID	P043996	Sample Length (in.)	4.17	Reviewed By	WJG
Boring	B-1	Unit Weight (pcf)	182.4	Core Size	NQ
Sample No.	NQ-1 / 24-3787	L/D Ratio	2.23	Recovery	35%
Depth	40.1' - 40.4'	Load Rate (psi/sec)	20	RQD	23%
Description	Dark Gray/White Metagabbro				

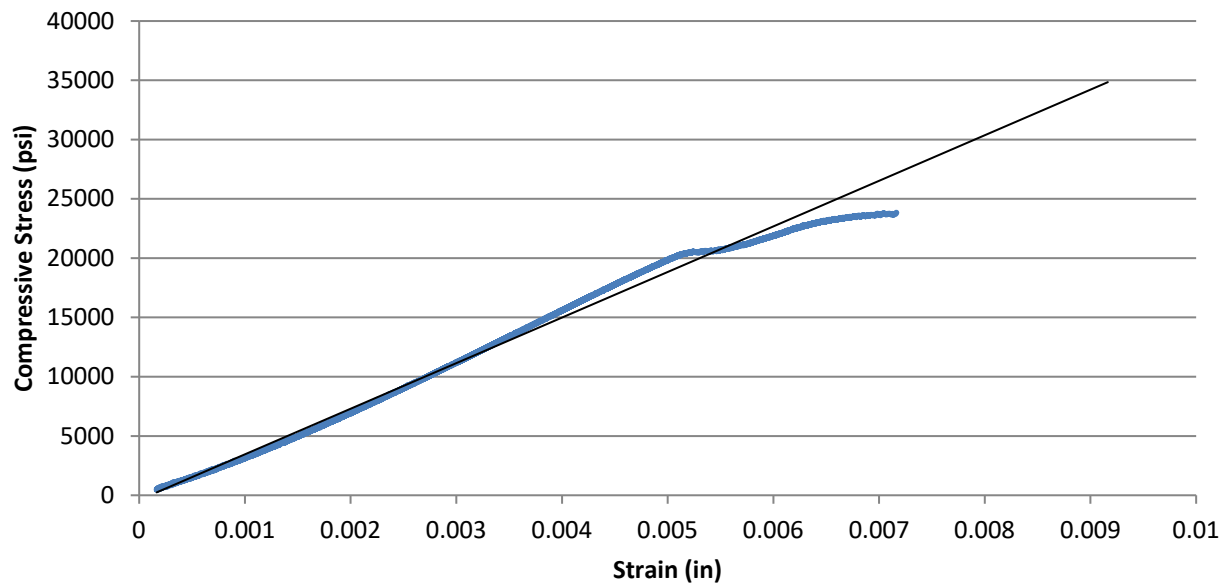
Test Data						
Percent of Failure Load	Strain (10^{-6})		Load (lbs)	Compressive Stress (psi)	Secant Modulus $\times 10^6$ (psi)	Poisson's Ratio
	Axial	Radial				
10%	-773	135	6,529	2,382	6.16	0.17
20%	-1437	301	13,095	4,778	6.65	0.21
30%	-2045	483	19,589	7,148	6.99	0.24
40%	-2613	680	26,125	9,532	7.30	0.26
50%	-3167	902	32,650	11,914	7.52	0.28
60%	-3708	1146	39,177	14,295	7.71	0.31
70%	-4240	1423	45,669	16,664	7.86	0.34
80%	-4812	1774	52,240	19,061	7.92	0.37
90%	-5848	4149	58,768	21,444	7.33	0.71
100%	-7164	8080	65,296	23,826		



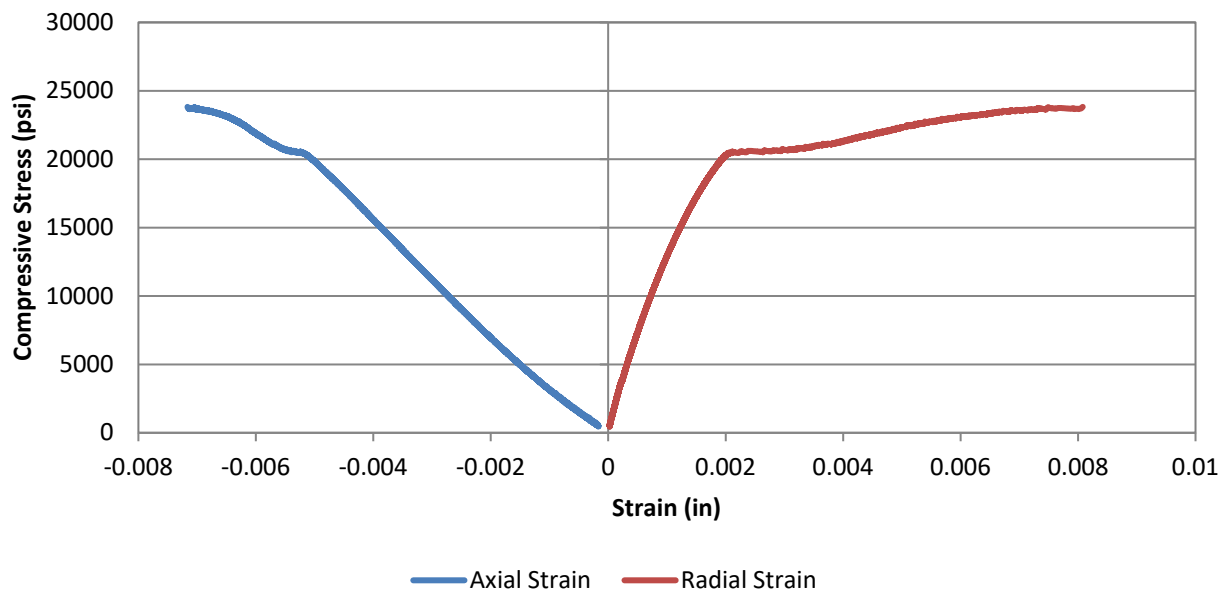
Test Results			
Unconfined Compressive Strength (psi)	23,830	Elastic Modulus (psi)	6.95E+06
		Poisson's Ratio in Elastic Range	0.24
Comments	Elastic range was taken as between 0.001 and 0.003 inches of axial strain. This range was chosen to avoid any non-linear behavior from the initial loading and the inflection point at the end of the elastic range.		

Project	S-46-59 over Little Turkey Creek			Date	10/29/2024
Project No.	G7100.007 - Task 00005	Sample Diameter (in.)	1.868	Tested By	TP
SCDOT ID	P043996	Sample Length (in.)	4.17	Reviewed By	WJG
Boring	B-1	Unit Weight (pcf)	182.4	Core Size	NQ
Sample No.	NQ-1 / 24-3787	L/D Ratio	2.23	Recovery	35%
Depth	40.1' - 40.4'	Load Rate (psi/sec)	20	RQD	23%
Description	Dark Gray/White Metagabbro				

Axial Stress vs. Strain



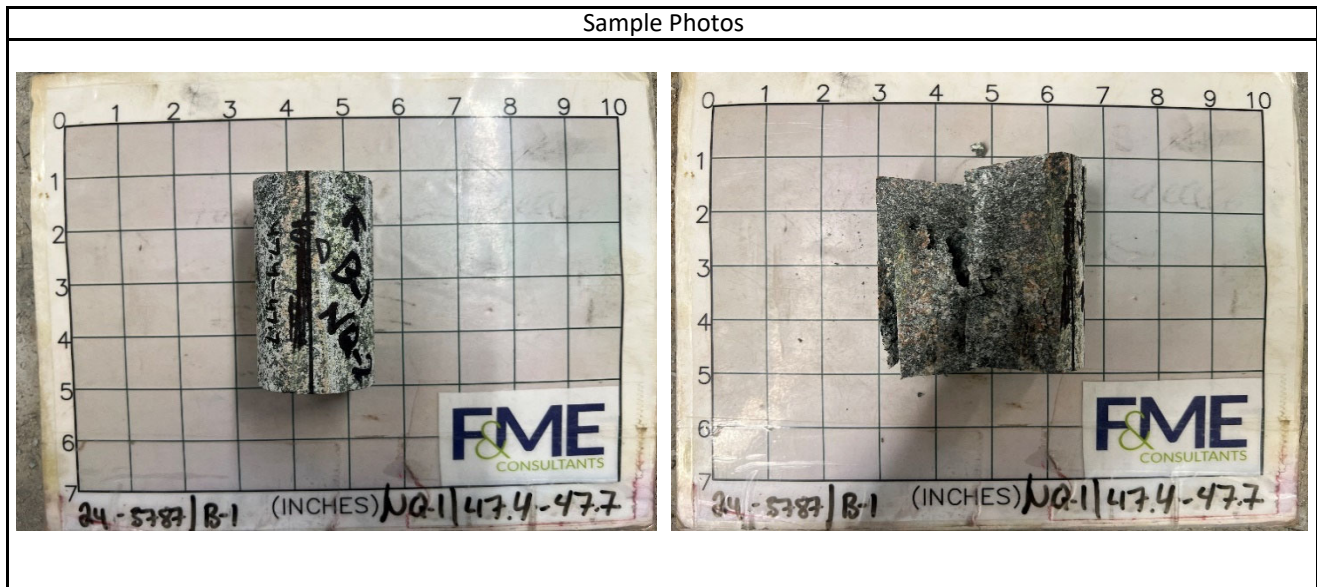
Stress vs. Strain



Compressive Strength and Elastic Moduli of Intact Rock Core Specimens
ASTM D7012 - Method D / SC-T-39

Project	S-46-59 over Little Turkey Creek			Date	10/29/2024
Project No.	G7100.007 - Task 00005	Sample Diameter (in.)	1.873	Tested By	TP
SCDOT ID	P043996	Sample Length (in.)	3.294	Reviewed By	WJG
Boring	B-1	Unit Weight (pcf)	180.0	Core Size	NQ
Sample No.	NQ-2 / 24-3787	L/D Ratio	1.76	Recovery	65%
Depth	47.4' - 47.7'	Load Rate (psi/sec)	20	RQD	28%
Description	Dark Gray/White Metagabbro				

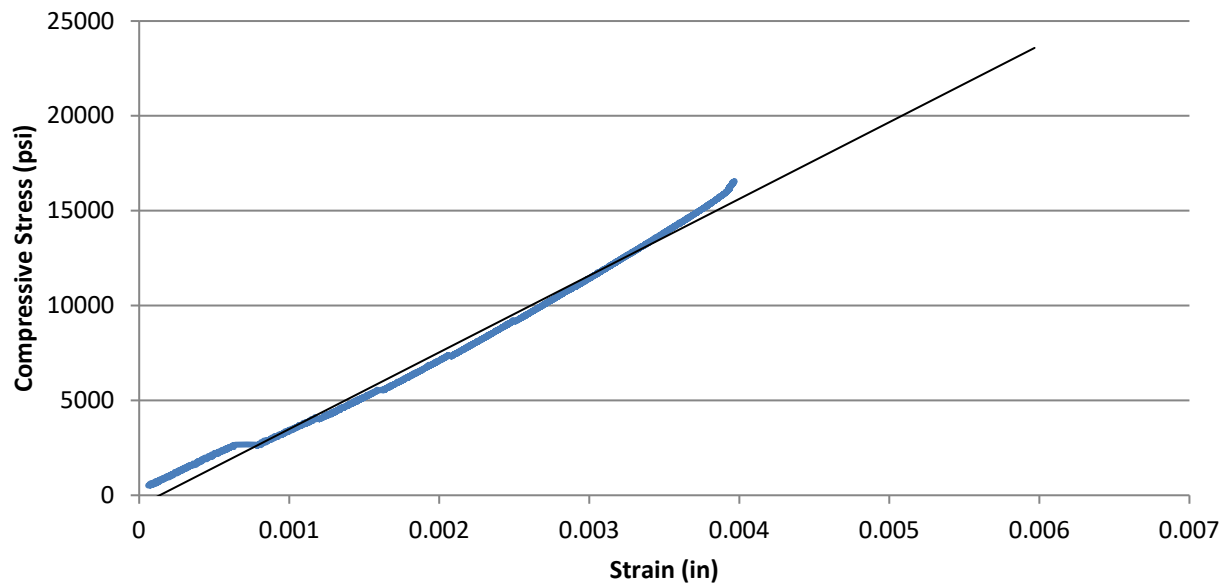
Test Data						
Percent of Failure Load	Strain (10^{-6})		Load (lbs)	Compressive Stress (psi)	Secant Modulus $\times 10^6$ (psi)	Poisson's Ratio
	Axial	Radial				
10%	-391	57	4,741	1,721	8.81	0.15
20%	-1015	161	9,476	3,439	6.78	0.16
30%	-1495	254	14,218	5,160	6.90	0.17
40%	-1946	351	18,952	6,879	7.07	0.18
50%	-2370	459	23,693	8,599	7.26	0.19
60%	-2758	575	28,434	10,320	7.48	0.21
70%	-3126	700	33,173	12,040	7.70	0.22
80%	-3489	852	37,929	13,766	7.89	0.24
90%	-3821	1033	42,650	15,479	8.10	0.27
100%	-7438	3364	47,389	17,199		



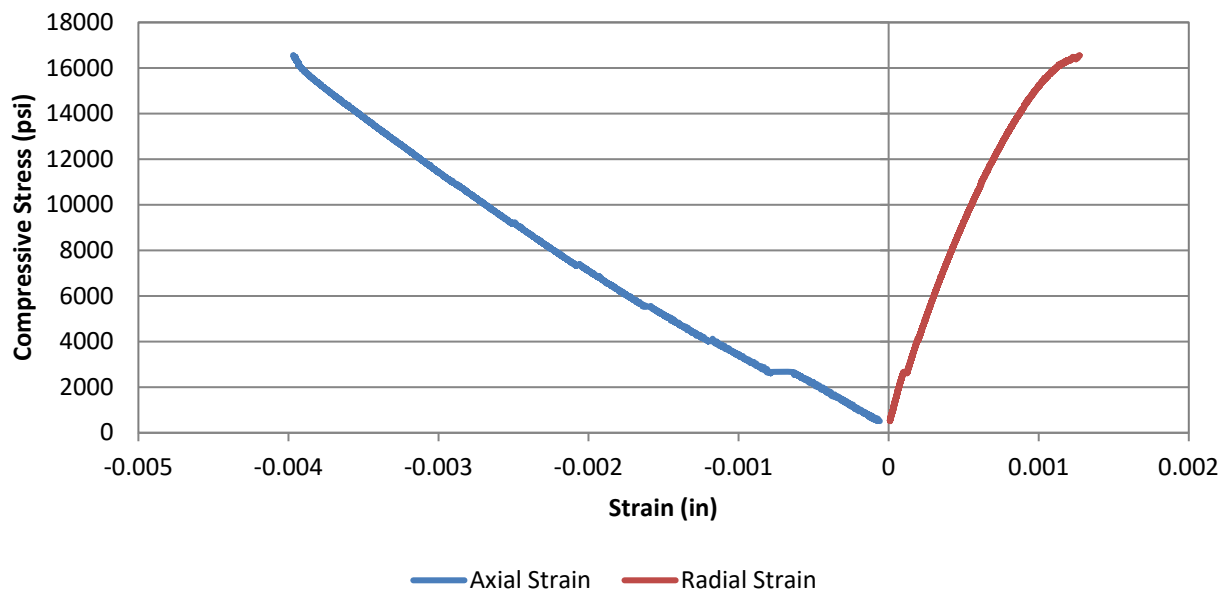
Test Results			
Unconfined Compressive Strength (psi)		17,200	Elastic Modulus (psi)
			7.15E+06
			Poisson's Ratio in Elastic Range
			0.19
Comments	Elastic range was taken as between 0.001 and 0.003 inches of axial strain. This range was chosen to avoid any non-linear behavior from the initial loading and the inflection point at the end of the elastic range. L/D Ratio is below 2.0 and may over compensate compressive stress results.		

Project	S-46-59 over Little Turkey Creek			Date	10/29/2024
Project No.	G7100.007 - Task 00005	Sample Diameter (in.)	1.873	Tested By	TP
SCDOT ID	P043996	Sample Length (in.)	3.294	Reviewed By	WJG
Boring	B-1	Unit Weight (pcf)	180.0	Core Size	NQ
Sample No.	NQ-2 / 24-3787	L/D Ratio	1.76	Recovery	65%
Depth	47.4' - 47.7'	Load Rate (psi/sec)	20	RQD	28%
Description	Dark Gray/White Metagabbro				

Axial Stress vs. Strain



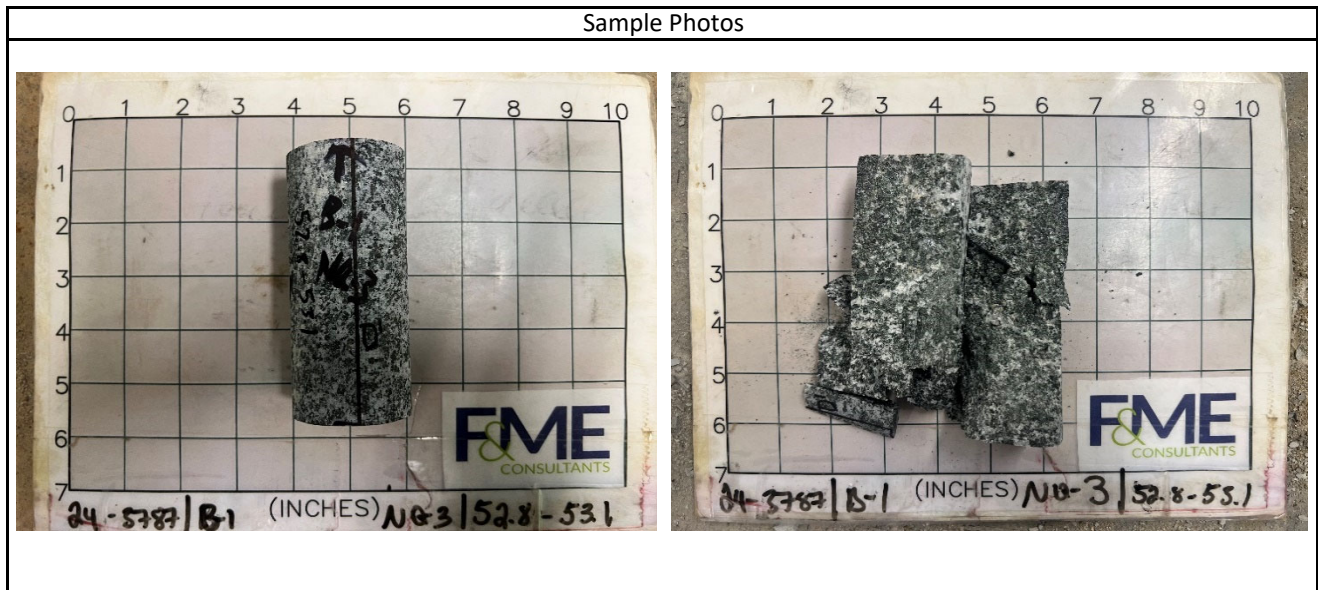
Stress vs. Strain



Compressive Strength and Elastic Moduli of Intact Rock Core Specimens
ASTM D7012 - Method D / SC-T-39

Project	S-46-59 over Little Turkey Creek			Date	10/29/2024
Project No.	G7100.007 - Task 00005	Sample Diameter (in.)	1.872	Tested By	TP
SCDOT ID	P043996	Sample Length (in.)	4.23	Reviewed By	WJG
Boring	B-1	Unit Weight (pcf)	180.0	Core Size	NQ
Sample No.	NQ-3 / 24-3787	L/D Ratio	2.26	Recovery	94%
Depth	52.8' - 53.1'	Load Rate (psi/sec)	20	RQD	90%
Description	Black/White Meta-Diorite				

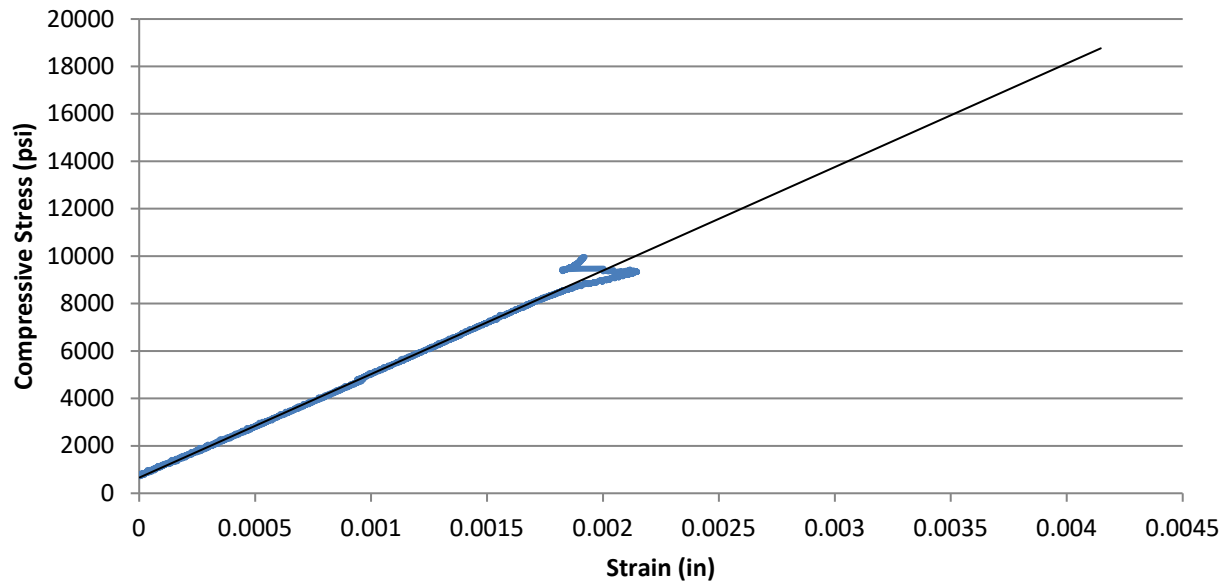
Test Data						
Percent of Failure Load	Strain (10^{-6})		Load (lbs)	Compressive Stress (psi)	Secant Modulus $\times 10^6$ (psi)	Poisson's Ratio
	Axial	Radial				
10%	-141	45	3,877	1,409	20.01	0.32
20%	-497	135	7,763	2,820	11.36	0.27
30%	-835	217	11,639	4,229	10.13	0.26
40%	-1143	287	15,521	5,639	9.86	0.25
50%	-1465	367	19,401	7,049	9.62	0.25
60%	-1806	452	23,282	8,459	9.37	0.25
70%	-1908	723	27,163	9,869	10.35	0.38
80%	-17787	23727	31,036	11,276	1.27	1.33
90%	-17832	23896	34,933	12,692	1.42	1.34
100%	83123	24588	38,803	14,098		



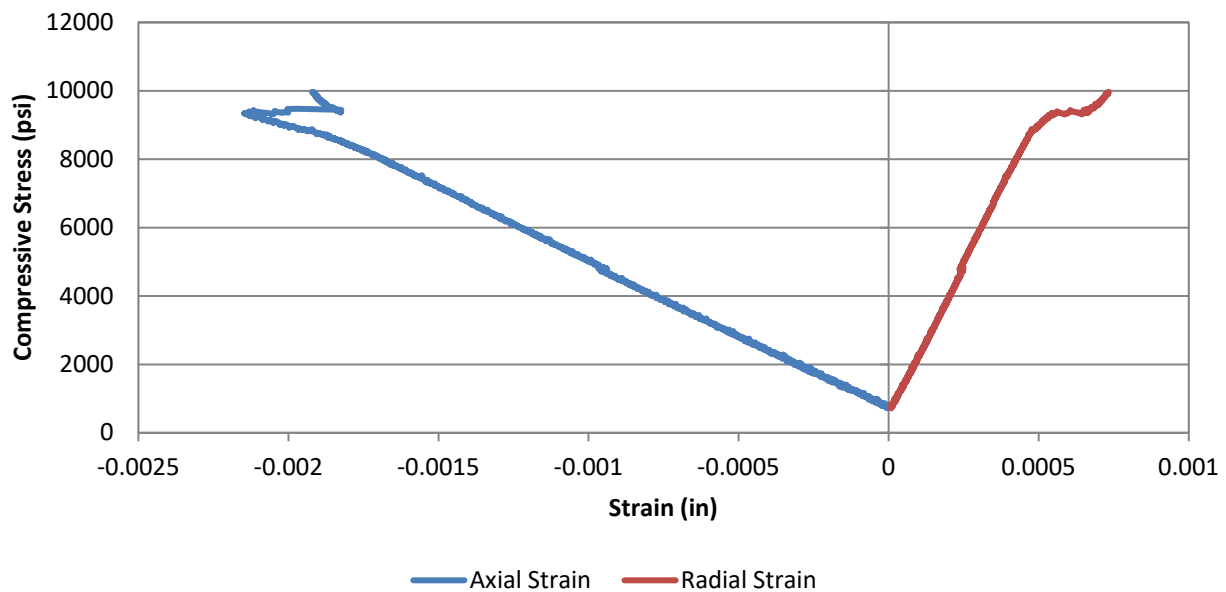
Test Results			
Unconfined Compressive Strength (psi)		14,100	Elastic Modulus (psi)
			1.05E+07
			Poisson's Ratio in Elastic Range
			0.26
Comments	Elastic range was taken as between 0.00025 and 0.0015 inches of axial strain. This range was chosen to avoid any non-linear behavior from the initial loading and the inflection point at the end of the elastic range.		

Project	S-46-59 over Little Turkey Creek			Date	10/29/2024
Project No.	G7100.007 - Task 00005	Sample Diameter (in.)	1.872	Tested By	TP
SCDOT ID	P043996	Sample Length (in.)	4.23	Reviewed By	WJG
Boring	B-1	Unit Weight (pcf)	180.0	Core Size	NQ
Sample No.	NQ-3 / 24-3787	L/D Ratio	2.26	Recovery	94%
Depth	52.8' - 53.1'	Load Rate (psi/sec)	20	RQD	90%
Description	Black/White Meta-Diorite				

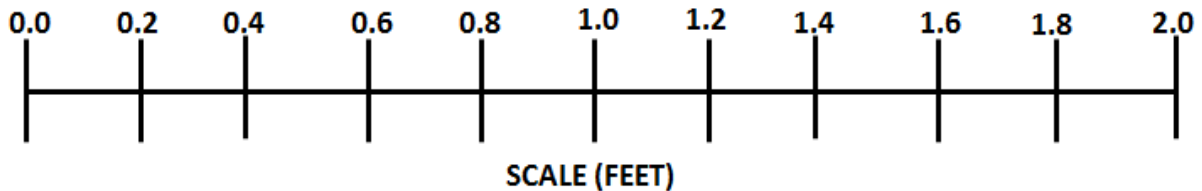
Axial Stress vs. Strain



Stress vs. Strain



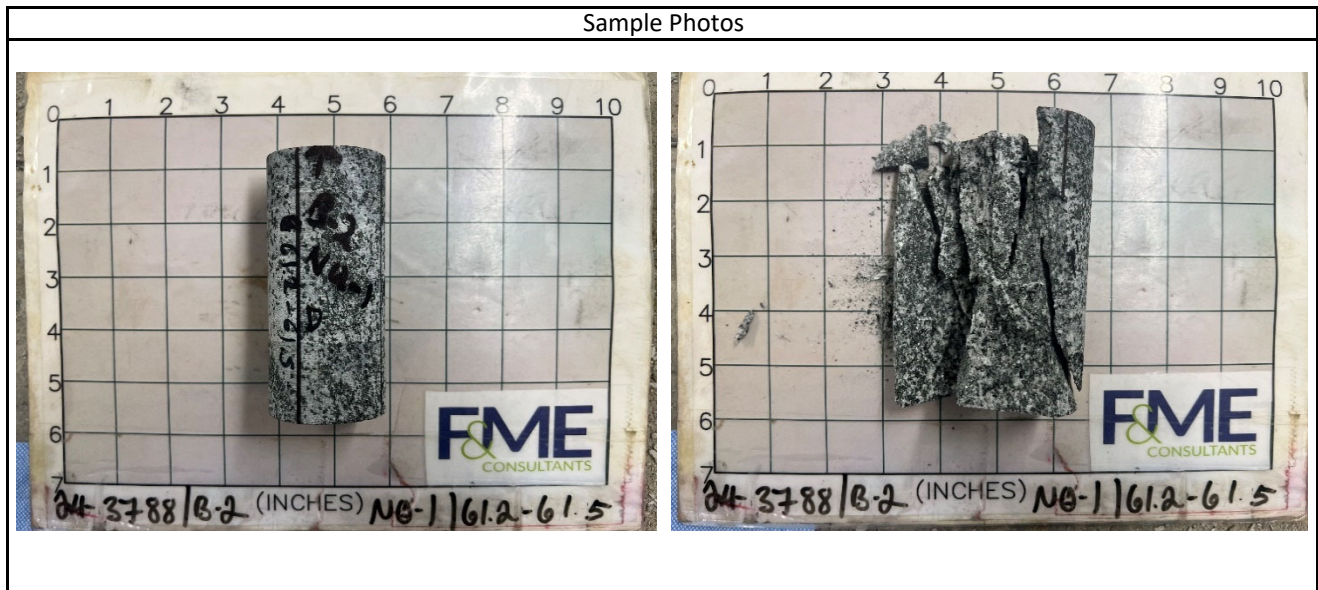
S-46-59 over Little Turkey Creek CORE PHOTOGRAPHS: B-2



Compressive Strength and Elastic Moduli of Intact Rock Core Specimens
ASTM D7012 - Method D / SC-T-39

Project	S-46-59 over Little Turkey Creek			Date	10/29/2024
Project No.	G7100.007 - Task 00005	Sample Diameter (in.)	1.864	Tested By	TP
SCDOT ID	P043996	Sample Length (in.)	4.14	Reviewed By	WJG
Boring	B-2	Unit Weight (pcf)	179.6	Core Size	NQ
Sample No.	NQ-1 / 24-3788	L/D Ratio	2.22	Recovery	39%
Depth	61.2' - 61.5'	Load Rate (psi/sec)	20	RQD	39%
Description	Black/White Meta-Diorite				

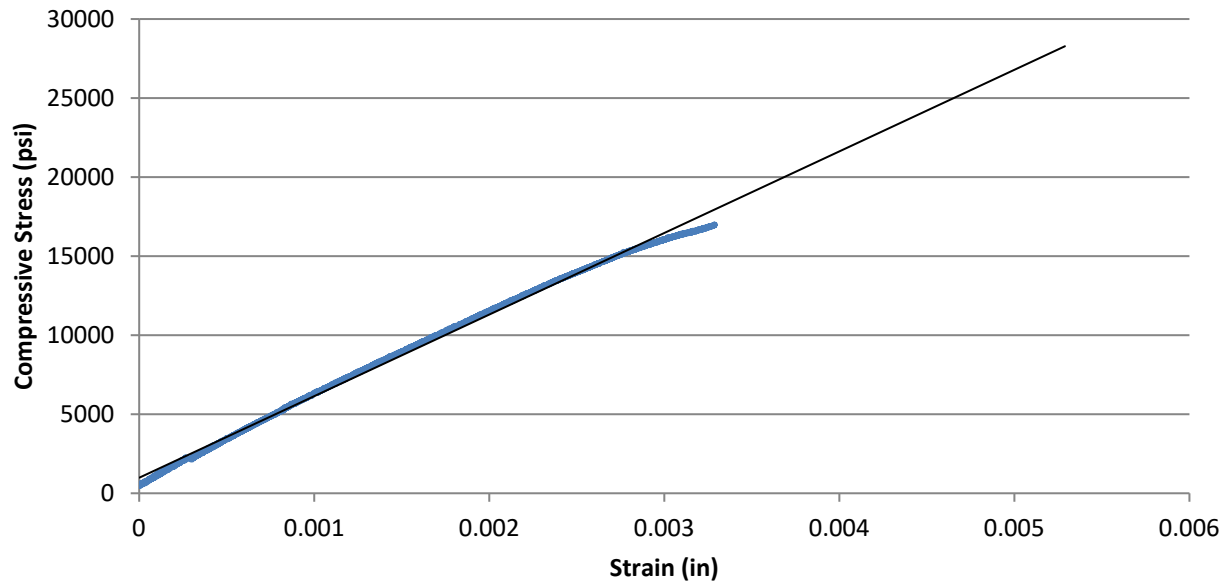
Test Data						
Percent of Failure Load	Strain (10^{-6})		Load (lbs)	Compressive Stress (psi)	Secant Modulus $\times 10^6$ (psi)	Poisson's Ratio
	Axial	Radial				
10%	-212	53	4,949	1,814	17.13	0.25
20%	-530	141	9,860	3,613	13.63	0.27
30%	-840	237	14,799	5,423	12.91	0.28
40%	-1172	332	19,721	7,227	12.33	0.28
50%	-1512	437	24,656	9,035	11.95	0.29
60%	-1864	560	29,577	10,839	11.63	0.30
70%	-2220	698	34,510	12,646	11.39	0.31
80%	-2599	884	39,439	14,453	11.12	0.34
90%	-3065	1361	44,370	16,260	10.61	0.44
100%	-17093	2281	49,299	18,066		



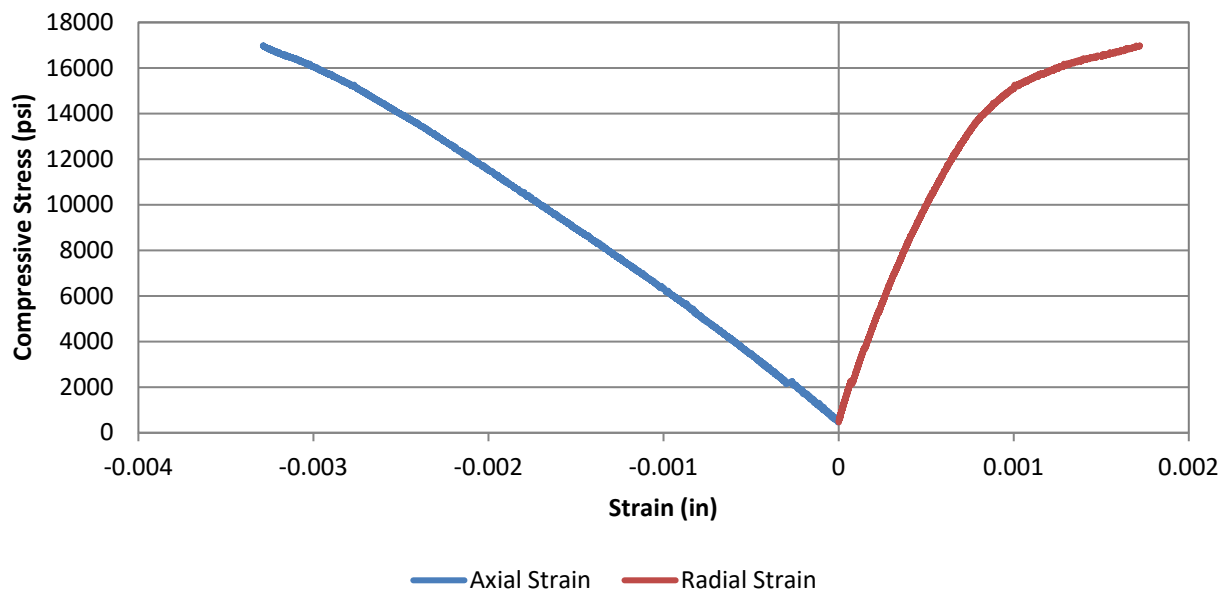
Test Results			
Unconfined Compressive Strength (psi)	18,070	Elastic Modulus (psi)	1.38E+07
		Poisson's Ratio in Elastic Range	0.33
Comments	Elastic range was taken as between 0.0005 and 0.0025 inches of axial strain. This range was chosen to avoid any non-linear behavior from the initial loading and the inflection point at the end of the elastic range.		

Project	S-46-59 over Little Turkey Creek			Date	10/29/2024
Project No.	G7100.007 - Task 00005	Sample Diameter (in.)	1.864	Tested By	TP
SCDOT ID	P043996	Sample Length (in.)	4.14	Reviewed By	WJG
Boring	B-2	Unit Weight (pcf)	179.6	Core Size	NQ
Sample No.	NQ-1 / 24-3788	L/D Ratio	2.22	Recovery	39%
Depth	61.2' - 61.5'	Load Rate (psi/sec)	20	RQD	39%
Description	Black/White Meta-Diorite				

Axial Stress vs. Strain



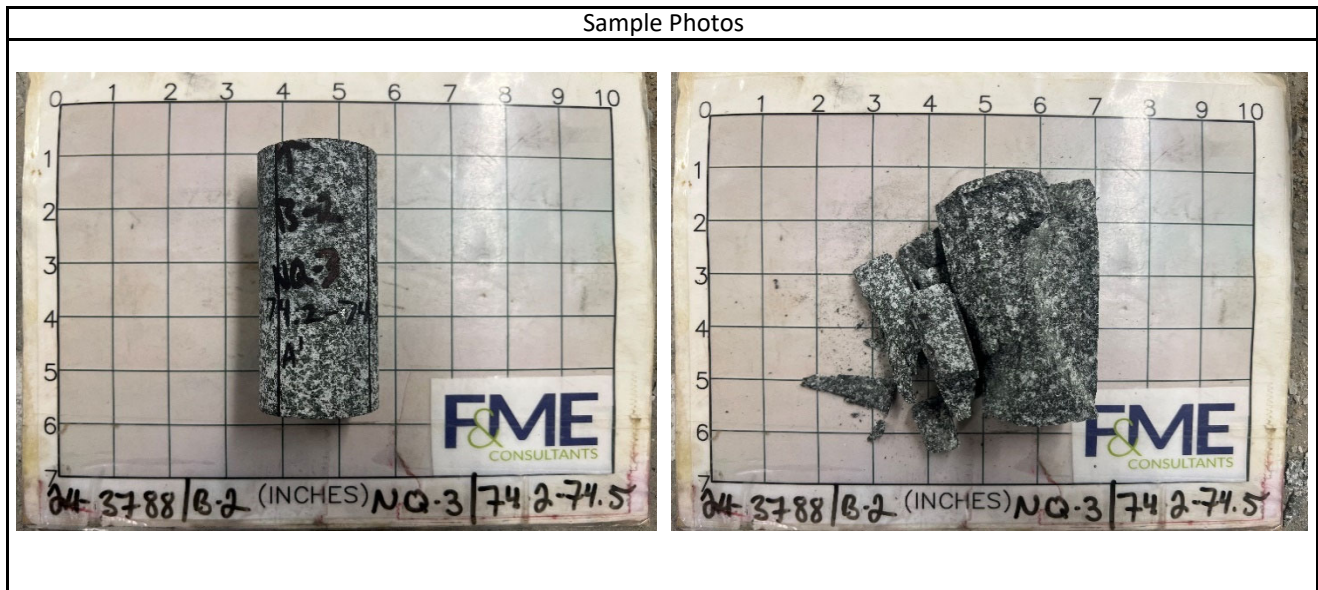
Stress vs. Strain



Compressive Strength and Elastic Moduli of Intact Rock Core Specimens
ASTM D7012 - Method D / SC-T-39

Project	S-46-59 over Little Turkey Creek			Date	10/29/2024
Project No.	G7100.007 - Task 00005	Sample Diameter (in.)	1.868	Tested By	TP
SCDOT ID	P043996	Sample Length (in.)	4.092	Reviewed By	WJG
Boring	B-2	Unit Weight (pcf)	183.7	Core Size	NQ
Sample No.	NQ-3 / 24-3788	L/D Ratio	2.19	Recovery	65%
Depth	74.2' - 74.5'	Load Rate (psi/sec)	20	RQD	47%
Description	Black/White Meta-Diorite				

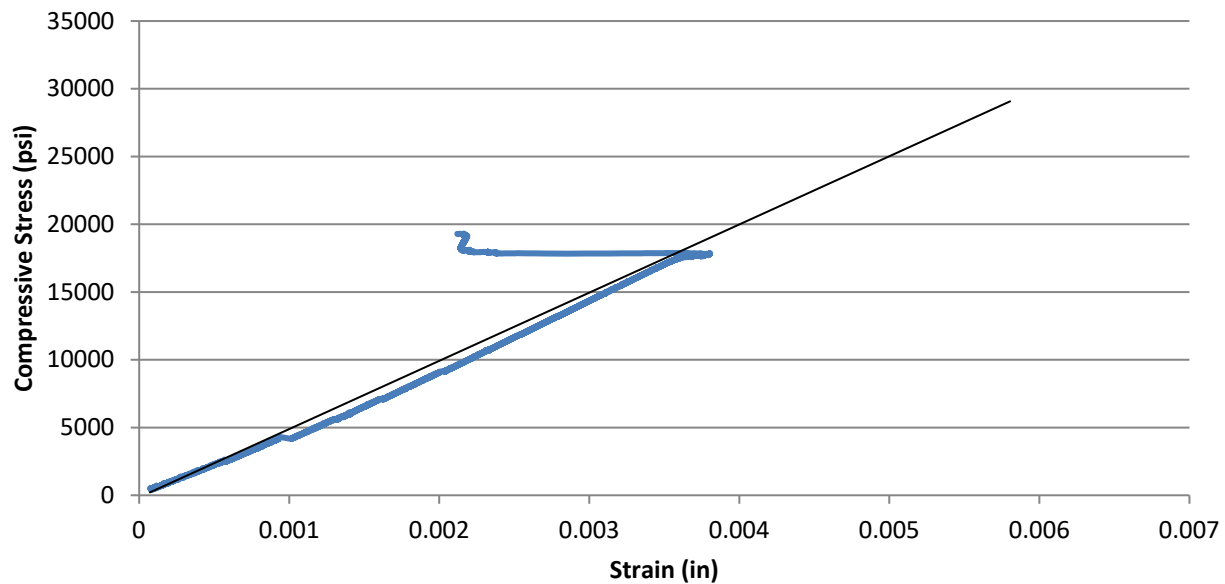
Test Data						
Percent of Failure Load	Strain (10^{-6})		Load (lbs)	Compressive Stress (psi)	Secant Modulus $\times 10^6$ (psi)	Poisson's Ratio
	Axial	Radial				
10%	-550	156	6,744	2,461	8.95	0.28
20%	-1161	283	13,489	4,922	8.48	0.24
30%	-1685	422	20,230	7,382	8.76	0.25
40%	-2165	569	26,978	9,844	9.09	0.26
50%	-2623	730	33,718	12,303	9.38	0.28
60%	-3082	909	40,458	14,763	9.58	0.29
70%	-3538	1111	47,204	17,224	9.74	0.31
80%	10592	6103	53,956	19,688	3.72	0.58
90%	10404	6453	60,689	22,145	4.26	0.62
100%	-14830	51694	67,434	24,606		



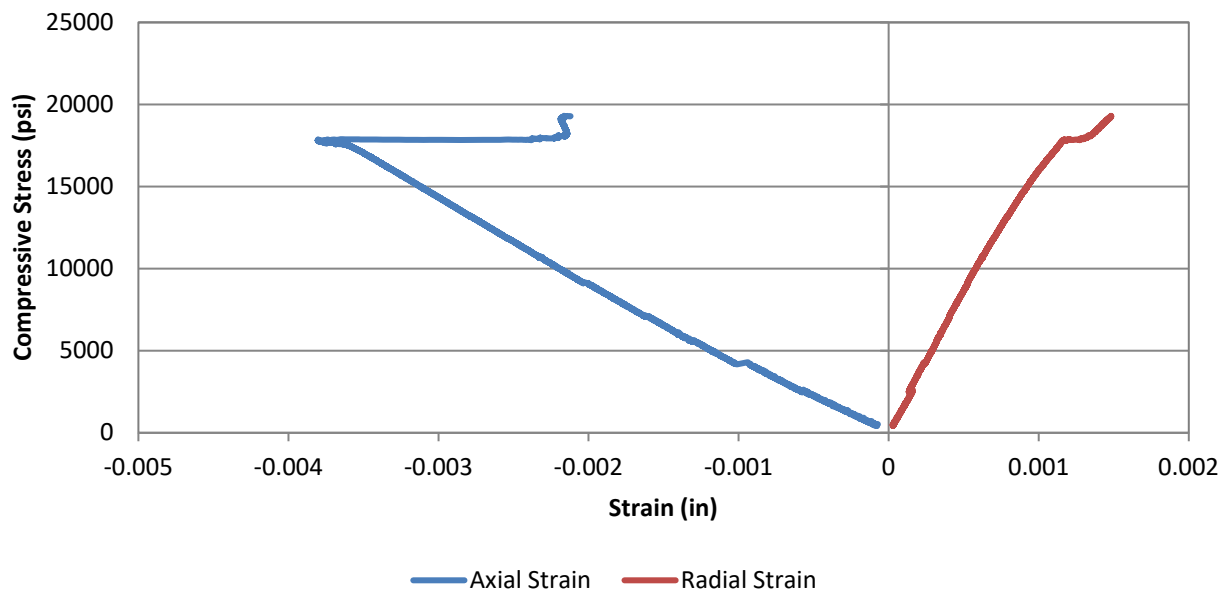
Test Results				
Unconfined Compressive Strength (psi)		24,610	Elastic Modulus (psi)	9.02E+06
			Poisson's Ratio in Elastic Range	0.26
Comments	Elastic range was taken as between 0.001 and 0.003 inches of axial strain. This range was chosen to avoid any non-linear behavior from the initial loading and the inflection point at the end of the elastic range.			

Project	S-46-59 over Little Turkey Creek			Date	10/29/2024
Project No.	G7100.007 - Task 00005	Sample Diameter (in.)	1.868	Tested By	TP
SCDOT ID	P043996	Sample Length (in.)	4.092	Reviewed By	WJG
Boring	B-2	Unit Weight (pcf)	183.7	Core Size	NQ
Sample No.	NQ-3 / 24-3788	L/D Ratio	2.19	Recovery	65%
Depth	74.2' - 74.5'	Load Rate (psi/sec)	20	RQD	47%
Description	Black/White Meta-Diorite				

Axial Stress vs. Strain



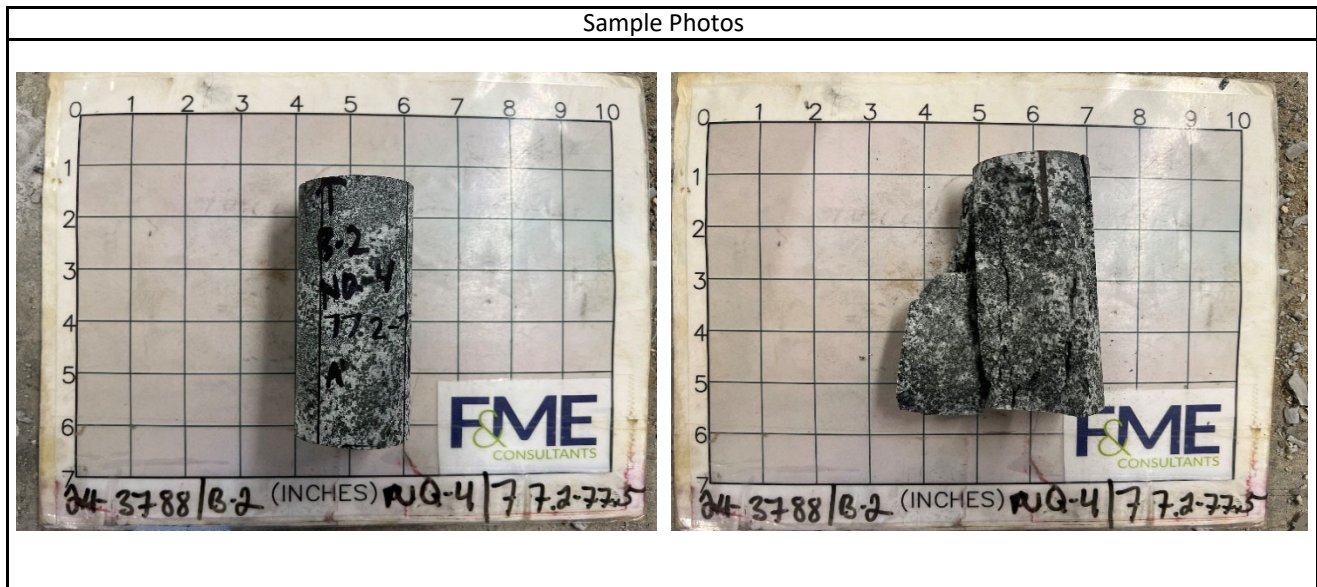
Stress vs. Strain



Compressive Strength and Elastic Moduli of Intact Rock Core Specimens
ASTM D7012 - Method D / SC-T-39

Project	S-46-59 over Little Turkey Creek			Date	10/29/2024
Project No.	G7100.007 - Task 00005	Sample Diameter (in.)	1.871	Tested By	TP
SCDOT ID	P043996	Sample Length (in.)	4.2	Reviewed By	WJG
Boring	B-2	Unit Weight (pcf)	182.6	Core Size	NQ
Sample No.	NQ-4 / 24-3788	L/D Ratio	2.24	Recovery	95%
Depth	77.2' - 77.5'	Load Rate (psi/sec)	20	RQD	92%
Description	Black/White Meta-Diorite				

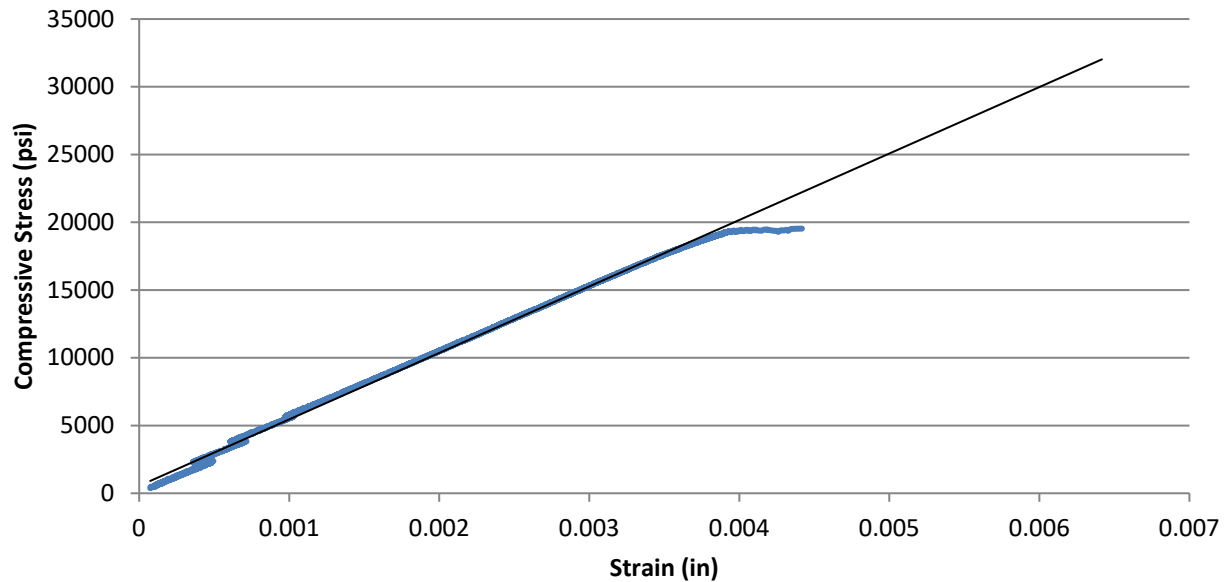
Test Data						
Percent of Failure Load	Strain (10^{-6})		Load (lbs)	Compressive Stress (psi)	Secant Modulus $\times 10^6$ (psi)	Poisson's Ratio
	Axial	Radial				
10%	-405	121	5,367	1,952	9.64	0.30
20%	-631	238	10,738	3,906	12.37	0.38
30%	-1021	377	16,105	5,858	11.48	0.37
40%	-1438	520	21,485	7,814	10.87	0.36
50%	-1843	668	26,848	9,765	10.60	0.36
60%	-2255	837	32,211	11,716	10.39	0.37
70%	-2663	1024	37,582	13,669	10.26	0.38
80%	-3064	1250	42,944	15,620	10.20	0.41
90%	-3483	1645	48,321	17,575	10.09	0.47
100%	-4417	5612	53,687	19,527		



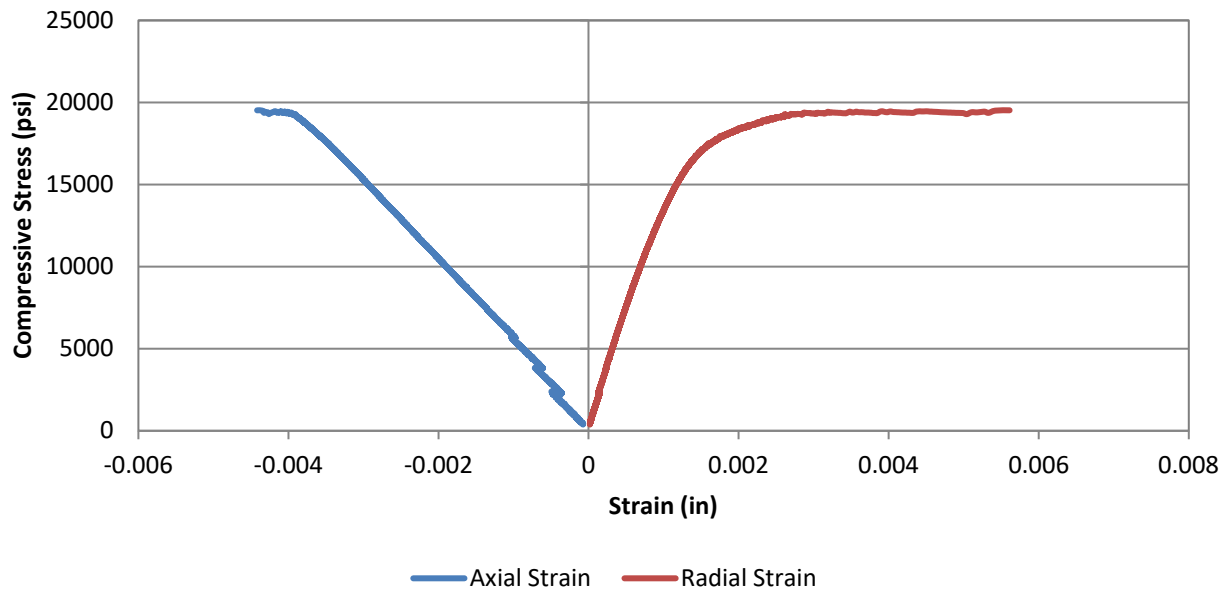
Test Results				
Unconfined Compressive Strength (psi)		19,530	Elastic Modulus (psi)	1.06E+07
			Poisson's Ratio in Elastic Range	0.37
Comments	Elastic range was taken as between 0.001 and 0.003 inches of axial strain. This range was chosen to avoid any non-linear behavior from the initial loading and the inflection point at the end of the elastic range.			

Project	S-46-59 over Little Turkey Creek			Date	10/29/2024
Project No.	G7100.007 - Task 00005	Sample Diameter (in.)	1.871	Tested By	TP
SCDOT ID	P043996	Sample Length (in.)	4.2	Reviewed By	WJG
Boring	B-2	Unit Weight (pcf)	182.6	Core Size	NQ
Sample No.	NQ-4 / 24-3788	L/D Ratio	2.24	Recovery	95%
Depth	77.2' - 77.5'	Load Rate (psi/sec)	20	RQD	92%
Description	Black/White Meta-Diorite				

Axial Stress vs. Strain



Stress vs. Strain



S-46-59 over Little Turkey Creek
Geotechnical Subsurface Data Report

APPENDIX

SECTION 5 ON SITE DRILL RIG PHOTOS

Drill Rig Photos



B-1

Drill Rig Photos



B-2

Drill Rig Photos



P-1

Drill Rig Photos



P-2

Drill Rig Photos



P-3

Drill Rig Photos



P-4

Drill Rig Photos



P-5

S-46-59 over Little Turkey Creek
Geotechnical Subsurface Data Report

APPENDIX

SECTION 6 PAVEMENT CORE PHOTOS

Pavement Core Photos



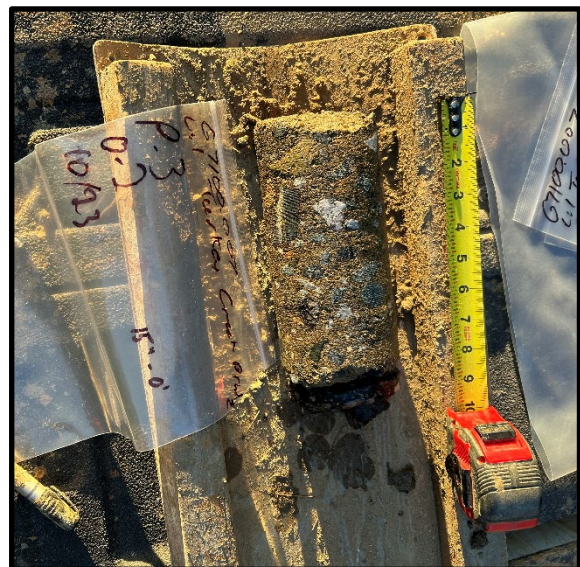
B-1



P-1



P-2



P-3

Pavement Core Photos



P-4



P-5



P-6

S-46-59 over Little Turkey Creek
Geotechnical Subsurface Data Report

APPENDIX

SECTION 7 SPT HAMMER CALIBRATION



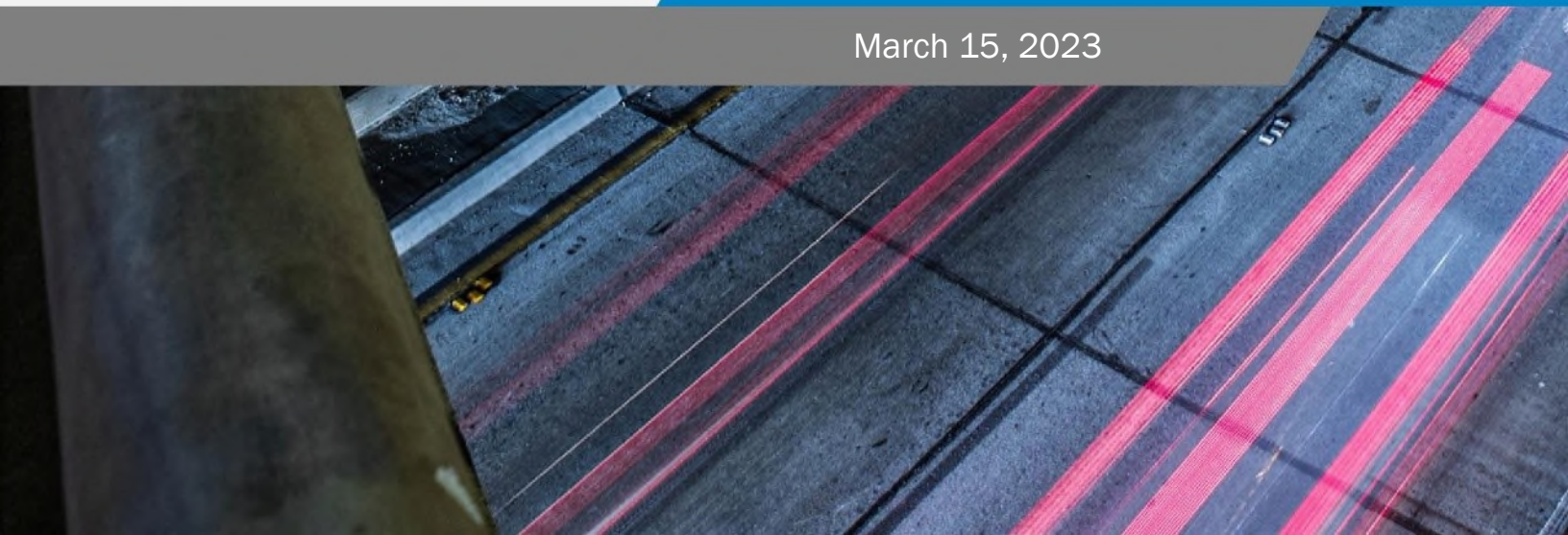
**CAROLINAS
GEOTECHNICAL
GROUP**

Report of SPT Hammer Energy

Prepared for:

North Carolina Department of Transportation
Geotechnical Engineering Unit
1589 Mail Service Center
Raleigh, North Carolina 27699

March 15, 2023





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March 15, 2023

North Carolina Department of Transportation
Geotechnical Engineering Unit
1589 Mail Service Center
Raleigh, North Carolina 27699

Attention: Mr. Greg C. Bodenheimer, P.E.

Cc: Dr. Shunyi "Chris" Chen, Ph.D., P.E.; Ms. Christina M. Bruinsma, L.G.

SUBJECT: **Report of SPT Hammer Energy**
CG2 CME 550X ATV Rig (SN 363639)
Iron Station, North Carolina
CG2 Project No.: 240019024

Dear Dr. Chen:

Carolinas Geotechnical Group, PLLC (CG2) has completed the Standard Penetration Test (SPT) energy measurements on the automatic hammer mounted on our CME 550X ATV-mounted drill rig with a serial number of 363639, see attached Drill Rig Photo Log. This service was performed by Mr. Robert E. Kral, PE on March 10, 2023. SPT energy testing was performed in general accordance with ASTM D4633 and the most recent revision of the North Carolina Department of Transportation (NCDOT), Geotechnical Engineering Unit's requirements. The testing procedures, equipment used during testing, and detailed results are presented in this report.

DYNAMIC TESTING METHODOLOGY

Testing was performed using a model SPT (Serial No. 4549 TB) Pile Driving Analyzer™ (PDA) manufactured by Pile Dynamics, Inc. The PDA was used to record and interpret data from two piezoresistive accelerometers (Serial Nos. K10959 and K10960) bolted to a 2-foot long AWJ drill rod (SN 528AWJ) internally instrumented with two strain transducers. The instrumented AWJ drill rod has a cross-sectional area of 1.19 square inches, an outside diameter of approximately 1.75 inches, and an inside diameter of 1.25 inches at the gauge location. The accelerometer and strain gauges, which are mounted on opposing axis near the middle of the instrumented rod, monitor acceleration and strain for each hammer blow. The analyzer converts the data to velocities and forces and computes the maximum transferred hammer energies with the "EFV" method described in ASTM D4633. Preliminary results are recorded and displayed in real-time for each blow. Calibration sheets for the PDA, accelerometers, and the instrumented rod are included in the Appendix III.

Report of SPT Hammer Energy

Iron Station, North Carolina

CG2 Project No.: 240019024

TESTING AND OBSERVATIONS

CG2 personnel were on site March 10, 2023 to observe and perform high-strain dynamic testing during SPT sampling on the CME 550X ATV-mounted drill rig operated by D. Demby of CG2. The measurements were taken during drilling operations at the approximate address of 1610 Foxdale Lane in Iron Station, North Carolina (Lincoln County). The approximate coordinates (not professionally surveyed) for the test location are 35.4362400, -81.1313383. No Soil Test Boring Log was maintained. SPT energy measurements were recorded during seven intervals at depths of approximately 28½, 33½, 38½, 43½, 48½, 53½, and 58½ feet below the existing ground surface. The information presented in the table below summarizes the equipment tested and tooling used during the SPT energy measurements.

Table 1: SPT Field Data

Drill Rig Information	
Manufacturer	CME
Model	550X
Serial Number	363639
Operator	D. Demby
Carrier	ATV
Hammer Information	
Model / Type	CME / Auto
Serial Number	N/A
Anvil Height (inches)	11.5
Anvil Diameter (inches)	2.5
Drop Height (inches)	30
Ram Weight (pounds)	140
Ram Serial Number	N/A
Drilling and Instrumented Rod Information	
Drill Rod Type	AWJ
OD (inches)	1.75
ID (inches)	1.25
Cross-Sectional Area (in ²)	1.19
Typical Lengths (feet)	5
Instrumented Rod Type	AWJ (SN 528)
OD (inches)	1.75
ID (inches)	1.25
Cross-Sectional Area (in ²)	1.19
Total Instrumented Rod Length (feet)	2.00
Length Below Gages (feet)	0.70
Split-Spoon Length (feet)	2.85

Report of SPT Hammer Energy

Iron Station, North Carolina

CG2 Project No.: 240019024

DYNAMIC TESTING RESULTS

The throttle level was low during hammer operation for sample interval beginning at 28½ and sample intervals beginning at 33½, 38½, and 43½ exhibited SPT N-values below the suggested range within the *NCDOT SPT Hammer Energy Measurement Requirement* document; therefore, data from these sample intervals were not used in the analysis.

The total rod length from the instrumentation to the tip of the split-spoon sampler was determined by adding 3.6 feet to the required drill rod length at each sample depth. Based on the test data, the automatic hammer on the CME 550X ATV-mounted drill rig operated at a rate of about 53.1 to 55.0 blows per minute (BPM) during dynamic testing. The measured transferred hammer energy (EFV) ranged from 278.6 to 338.7 foot-pounds, which corresponds to Energy Transfer Ratio (ETR) values of 79.6 to 96.8%, respectively.

The SPT Energy Measurement Data Summary tables in the Appendix present the test data from every hammer blow at each sampling interval along with representative force and velocity traces for each test interval. The reported blow counts, obtained by the drill rig personnel, and a summary of the test data and average computed hammer energy and transfer ratio values are provided in Table 2. Plots and tables of the following are also included in the Appendix and present the test data with depth for each test interval:

- Penetration vs. BLC
- Penetration vs. CSX
- Average ETR vs. Rod Length
- Penetration vs. FMX
- Penetration vs. VMX
- ETR vs. Rod Length
- Penetration vs. EFV
- Penetration vs. ETR

Table 2: Summary of Dynamic Testing Results

Data Set ID	Sample Depth (ft)	Drill Rod Length (ft)	Instrumentation to Sampler Tip Length (ft)	Blows per 6" Increment / N-value	Soil Sample Description (Piedmont Residual)	Avg. BPM	Avg. EFV (ft-lbs)	Avg. ETR (%)
1	48½ - 50	50	53.6	2-8-10 / 18	SI SAND	53.6	305.1	87.2
2	53½ - 55	55	58.6	9-12-13 / 25	SI SAND	54.2	314.6	89.9
3	58½ - 60	60	63.6	5-13-18 / 31	SI SAND	54.3	318.8	91.1
Overall Average						54.1	314.1	89.7

The average hammer rate, transferred energy, and transfer ratio were calculated for each depth interval. Per ASTM D4633, only the blows from the final foot of each sample interval (i.e., the blows that determine the N-value) were included when computing the average values shown in Table 2. The overall average transferred hammer energy for the automatic hammer on the CME 550X ATV-mounted drill rig (for all the depth intervals tested) was 314.1 foot-pounds, with an average ETR of 89.7%.

Report of SPT Hammer Energy

Iron Station, North Carolina

CG2 Project No.: 240019024

LIMITATIONS OF REPORT

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. The information contained in this report were based on the applicable standards of our profession in this geographic area at the time this report was prepared. No other warranty, express or implied, is made.

CLOSING

CG2 is pleased to have the opportunity to provide these services to you. If you have questions concerning the content of this report, or if CG2 can be of further service, please contact CG2 at (980) 339-8684.

Sincerely,
Carolinas Geotechnical Group, PLLC

DocuSigned by:


386129C0A4C1462...
D. Matthew Brewer, PE
Senior Project Engineer

DocuSigned by:


8AD703B2A8484F4...
Robert E. Kral, PE
Senior Project Engineer
NC Registration No. 042642**Appendices:**

- Appendix I - CME 550X ATV Rig (SN 363639) SPT Energy Measurements Summary Plots and Tables
- Appendix II - SPT Hammer Energy Field Form (Field Log) and Drill Rig Photo Log
- Appendix III - Instrumented Rod and Accelerometer Calibration Sheets
- Appendix IV - Certificate of Proficiency and Certificate of Calibration



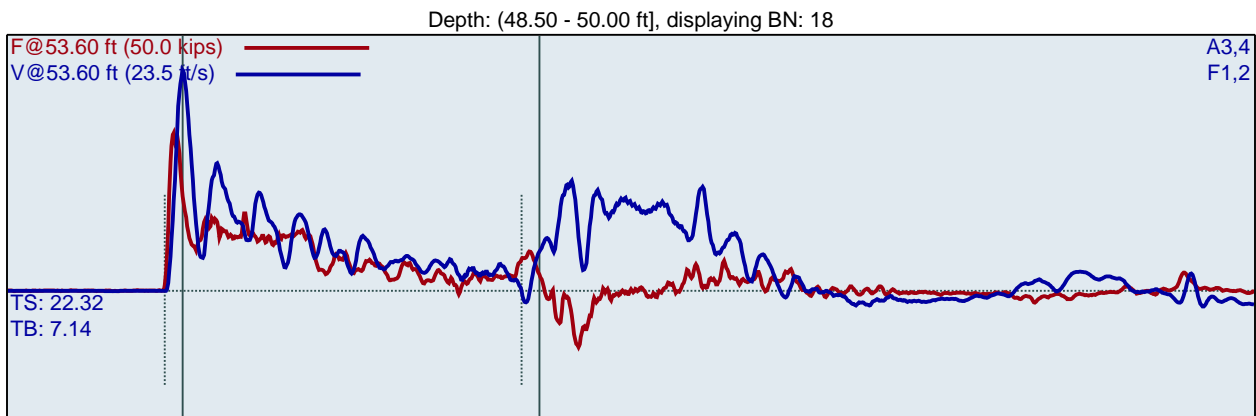
APPENDIX I

CME 550X (SN 363639)
REK
B-1

B-1
Interval start: 3/10/2023

AR: 1.19 in²
LE: 53.60 ft
WS: 16807.9 ft/s

SP: 0.492 k/ft³
EM: 30000 ksi



F1 : [528AWJ-1] 203.51 PDICAL (1) FF1
F2 : [528AWJ-2] 203.28 PDICAL (1) FF1

A3 (PR): [K10960] 419.894 mv/6.4v/5000g (1) VF1
A4 (PR): [K10959] 413.827 mv/6.4v/5000g (1) VF1

BPM: Blows/Minute

FMX: Maximum Force

VMX: Maximum Velocity

DMX: Maximum Displacement

CSX: Compression Stress Maximum

DFN: Final Displacement

EFV: Maximum Energy

ETR: Energy Transfer Ratio - Rated

LP	BL#	BC	BPM	FMX	VMX	DMX	CSX	DFN	EFV	ETR
ft		/6"	bpm	kips	ft/s	in	ksi	in	ft-lb	%
48.75	1	2	1.9	31.9	19.4	3.0	26.8	3.0	312.8	89.4
49.00	2	2	54.3	32.5	19.0	3.0	27.3	3.0	305.1	87.2
49.06	3	8	53.9	30.1	18.8	1.1	25.3	0.7	280.1	80.0
49.13	4	8	53.7	30.0	19.5	1.3	25.2	0.7	310.3	88.7
49.19	5	8	53.6	31.9	19.6	1.1	26.8	0.7	305.8	87.4
49.25	6	8	53.5	33.7	18.3	0.9	28.3	0.7	292.5	83.6
49.31	7	8	53.2	29.5	19.4	1.0	24.8	0.7	311.0	88.9
49.38	8	8	53.5	29.4	19.7	0.9	24.7	0.7	306.2	87.5
49.44	9	8	53.6	29.6	19.8	1.0	24.9	0.7	311.0	88.9
49.50	10	8	53.7	29.5	19.8	1.0	24.8	0.7	309.0	88.3
49.55	11	10	53.6	30.6	19.7	0.7	25.7	0.6	300.3	85.8
49.60	12	10	53.5	31.2	19.9	0.9	26.2	0.6	306.4	87.5
49.65	13	10	53.5	30.8	19.7	0.9	25.9	0.6	303.2	86.6
49.70	14	10	53.4	31.7	19.9	0.9	26.7	0.6	310.3	88.7
49.75	15	10	53.1	29.8	20.1	0.9	25.0	0.6	315.0	90.0
49.80	16	10	53.8	31.9	20.2	0.9	26.8	0.6	311.6	89.0
49.85	17	10	53.6	30.1	19.5	0.9	25.3	0.6	310.9	88.8
49.90	18	10	53.6	30.8	20.3	0.9	25.9	0.6	309.5	88.4
49.95	19	10	53.5	30.2	19.9	0.6	25.4	0.6	298.9	85.4
50.00	20	10	53.8	30.7	19.9	0.6	25.8	0.6	299.8	85.6
Average			53.6	30.6	19.7	0.9	25.7	0.7	305.1	87.2
Std Dev			0.2	1.1	0.5	0.2	0.9	0.1	8.2	2.3
Maximum			53.9	33.7	20.3	1.3	28.3	0.7	315.0	90.0
Minimum			53.1	29.4	18.3	0.6	24.7	0.6	280.1	80.0

N-value: 18

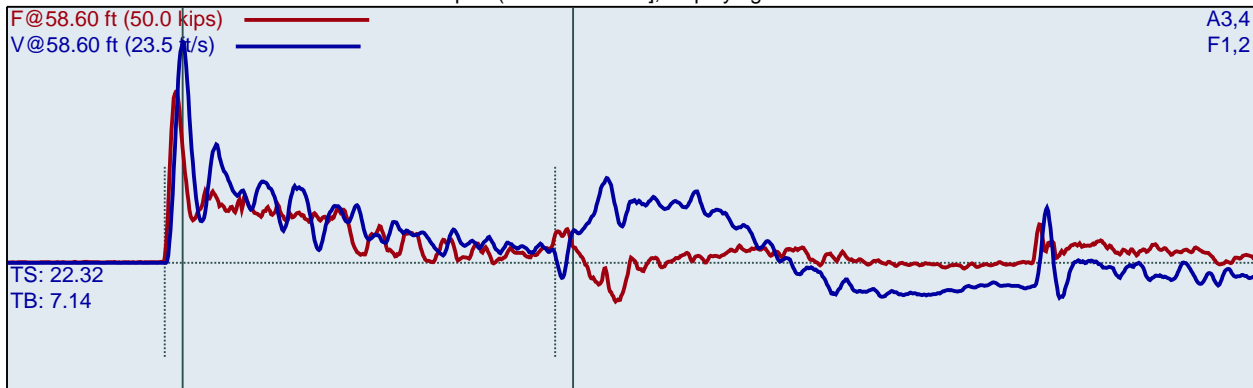
CME 550X (SN 363639)
REK
B-1

B-1
Interval start: 3/10/2023

AR: 1.19 in²
LE: 58.60 ft
WS: 16807.9 ft/s

SP: 0.492 k/ft³
EM: 30000 ksi

Depth: (53.50 - 55.00 ft), displaying BN: 32



F1 : [528AWJ-1] 203.51 PDICAL (1) FF1
F2 : [528AWJ-2] 203.28 PDICAL (1) FF1

A3 (PR): [K10960] 419.894 mv/6.4v/5000g (1) VF1
A4 (PR): [K10959] 413.827 mv/6.4v/5000g (1) VF1

LP ft	BL#	BC /6"	BPM bpm	FMX kips	VMX ft/s	DMX in	CSX ksi	DFN in	EFV ft-lb	ETR %
53.56	1	9	62.2	33.4	20.3	1.6	28.1	0.7	320.6	91.6
53.61	2	9	54.2	33.0	19.3	0.9	27.7	0.7	296.2	84.6
53.67	3	9	54.5	35.4	19.0	1.1	29.8	0.7	306.8	87.6
53.72	4	9	54.4	32.9	19.8	0.8	27.7	0.7	303.9	86.8
53.78	5	9	54.1	33.8	19.8	0.8	28.4	0.7	307.3	87.8
53.83	6	9	54.2	32.7	19.7	0.8	27.5	0.7	314.3	89.8
53.89	7	9	54.2	33.7	20.0	0.7	28.3	0.7	305.9	87.4
53.94	8	9	54.3	32.4	19.6	0.8	27.2	0.7	309.6	88.4
54.00	9	9	54.0	32.7	19.9	0.7	27.5	0.7	311.3	89.0
54.04	10	12	54.4	33.9	20.2	0.7	28.5	0.5	313.0	89.4
54.08	11	12	54.0	33.6	20.1	0.7	28.3	0.5	313.8	89.6
54.13	12	12	54.3	32.8	20.0	0.6	27.6	0.5	313.1	89.5
54.17	13	12	54.2	33.8	20.2	0.7	28.4	0.5	314.3	89.8
54.21	14	12	54.4	34.2	20.0	0.7	28.8	0.5	321.7	91.9
54.25	15	12	53.9	34.0	20.3	0.7	28.6	0.5	319.6	91.3
54.29	16	12	54.2	34.0	20.2	0.7	28.6	0.5	317.7	90.8
54.33	17	12	54.2	32.3	19.9	0.6	27.1	0.5	309.7	88.5
54.38	18	12	54.5	33.0	20.1	0.7	27.8	0.5	319.1	91.2
54.42	19	12	54.2	32.8	20.1	0.7	27.6	0.5	309.6	88.4
54.46	20	12	54.3	33.4	20.3	0.6	28.0	0.5	314.6	89.9
54.50	21	12	54.1	33.2	20.2	0.6	27.9	0.5	310.0	88.6
54.54	22	13	54.0	33.6	20.4	0.6	28.2	0.5	315.6	90.2
54.58	23	13	54.4	33.6	20.5	0.6	28.3	0.5	316.3	90.4
54.62	24	13	54.2	33.3	20.2	0.6	28.0	0.5	311.9	89.1
54.65	25	13	54.0	32.9	20.2	0.6	27.6	0.5	307.7	87.9
54.69	26	13	54.5	32.5	19.8	0.6	27.3	0.5	308.6	88.2
54.73	27	13	54.0	34.4	20.1	0.7	28.9	0.5	317.4	90.7
54.77	28	13	54.3	32.8	20.3	0.8	27.5	0.5	317.7	90.8
54.81	29	13	54.3	33.1	20.2	0.8	27.8	0.5	313.9	89.7
54.85	30	13	54.0	33.5	20.3	0.6	28.2	0.5	311.1	88.9
54.88	31	13	54.2	32.9	20.2	0.7	27.7	0.5	315.5	90.2

54.92	32	13	53.8	33.5	20.3	0.7	28.1	0.5	317.6	90.8
54.96	33	13	54.4	33.6	20.4	0.7	28.2	0.5	318.8	91.1
55.00	34	13	54.1	32.6	20.2	0.6	27.4	0.5	316.1	90.3
Average			54.2	33.3	20.2	0.7	28.0	0.5	314.6	89.9
Std Dev			0.2	0.5	0.1	0.1	0.5	0.0	3.7	1.1
Maximum			54.5	34.4	20.5	0.8	28.9	0.5	321.7	91.9
Minimum			53.8	32.3	19.8	0.6	27.1	0.5	307.7	87.9
N-value: 25										

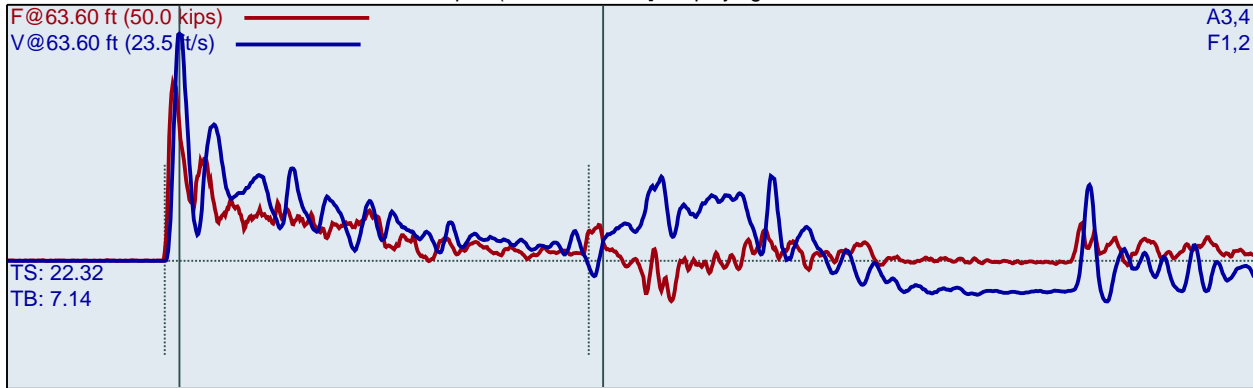
CME 550X (SN 363639)
REK
B-1

B-1
Interval start: 3/10/2023

AR: 1.19 in²
LE: 63.60 ft
WS: 16807.9 ft/s

SP: 0.492 k/ft³
EM: 30000 ksi

Depth: (58.50 - 60.00 ft), displaying BN: 34



F1 : [528AWJ-1] 203.51 PDICAL (1) FF1
F2 : [528AWJ-2] 203.28 PDICAL (1) FF1

A3 (PR): [K10960] 419.894 mv/6.4v/5000g (1) VF1
A4 (PR): [K10959] 413.827 mv/6.4v/5000g (1) VF1

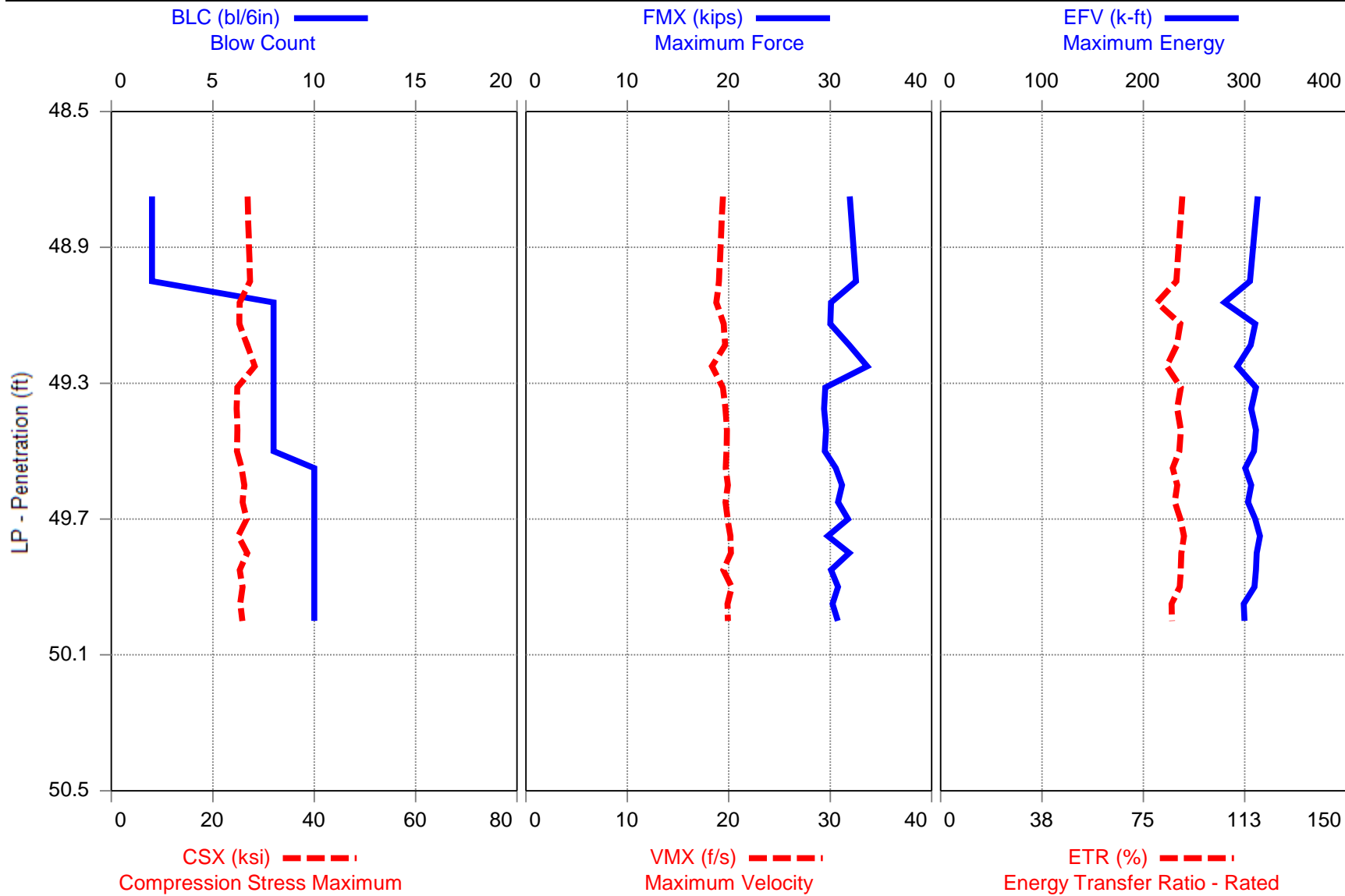
LP ft	BL#	BC /6"	BPM bpm	FMX kips	VMX ft/s	DMX in	CSX ksi	DFN in	EFV ft-lb	ETR %
58.60	1	5	1.9	33.3	19.2	1.8	28.0	1.2	316.2	90.3
58.70	2	5	54.7	33.6	19.1	1.2	28.2	1.2	308.3	88.1
58.80	3	5	54.6	33.5	19.1	1.4	28.1	1.2	313.8	89.7
58.90	4	5	54.6	34.0	19.0	1.4	28.6	1.2	316.5	90.4
59.00	5	5	54.4	33.1	19.0	1.2	27.8	1.2	314.0	89.7
59.04	6	13	54.4	33.7	19.0	0.7	28.4	0.5	309.3	88.4
59.08	7	13	54.2	34.3	19.5	0.9	28.8	0.5	338.7	96.8
59.12	8	13	54.1	34.2	19.3	0.6	28.7	0.5	278.6	79.6
59.15	9	13	55.0	34.0	20.0	0.9	28.5	0.5	322.9	92.3
59.19	10	13	54.3	33.8	19.9	0.6	28.4	0.5	315.9	90.2
59.23	11	13	54.5	33.4	19.7	0.6	28.1	0.5	313.0	89.4
59.27	12	13	54.6	34.1	20.4	0.7	28.6	0.5	324.0	92.6
59.31	13	13	54.5	34.0	20.3	0.6	28.5	0.5	318.6	91.0
59.35	14	13	54.2	34.1	20.3	0.6	28.7	0.5	323.3	92.4
59.38	15	13	54.3	34.0	20.4	0.6	28.6	0.5	320.4	91.6
59.42	16	13	54.3	34.0	20.7	0.6	28.6	0.5	327.2	93.5
59.46	17	13	54.6	34.2	20.1	0.6	28.7	0.5	320.8	91.6
59.50	18	13	54.2	34.4	20.4	0.6	28.9	0.5	320.7	91.6
59.53	19	18	54.4	33.3	20.0	0.6	28.0	0.3	321.8	92.0
59.56	20	18	54.3	33.0	20.1	0.5	27.7	0.3	322.3	92.1
59.58	21	18	54.3	33.1	20.4	0.5	27.8	0.3	318.2	90.9
59.61	22	18	54.2	33.7	20.4	0.5	28.3	0.3	320.1	91.4
59.64	23	18	54.3	33.5	20.0	0.5	28.1	0.3	320.6	91.6
59.67	24	18	54.2	35.1	20.7	0.5	29.5	0.3	318.8	91.1
59.69	25	18	54.3	32.9	20.0	0.5	27.6	0.3	314.3	89.8
59.72	26	18	54.4	33.9	20.3	0.5	28.5	0.3	318.7	91.1
59.75	27	18	54.4	33.7	20.6	0.5	28.3	0.3	321.4	91.8
59.78	28	18	54.5	33.9	20.4	0.5	28.5	0.3	312.1	89.2
59.81	29	18	54.3	33.1	20.1	0.5	27.8	0.3	317.6	90.7
59.83	30	18	54.1	34.0	20.5	0.5	28.6	0.3	320.0	91.4
59.86	31	18	54.6	32.5	20.0	0.6	27.3	0.3	322.7	92.2

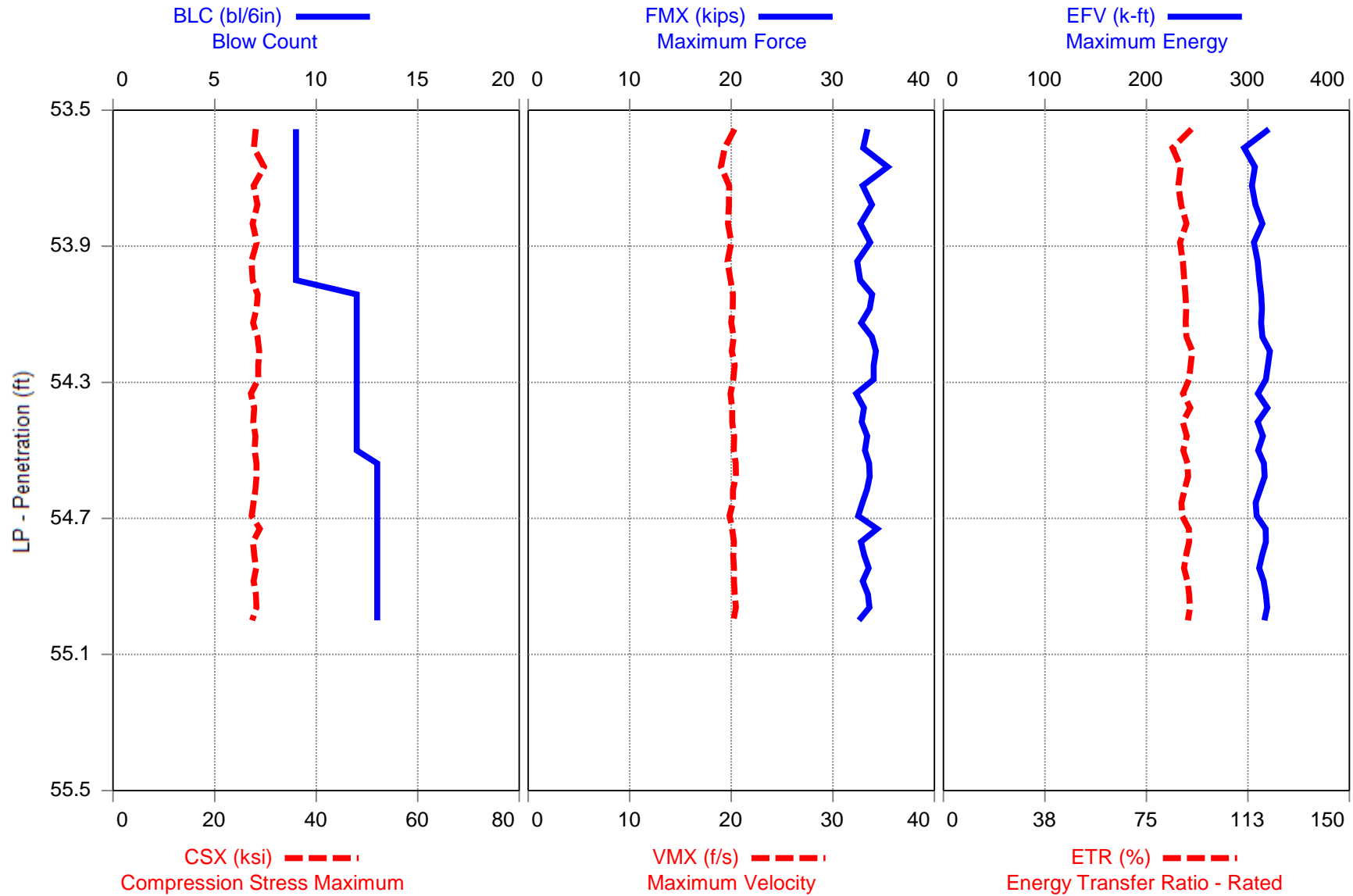
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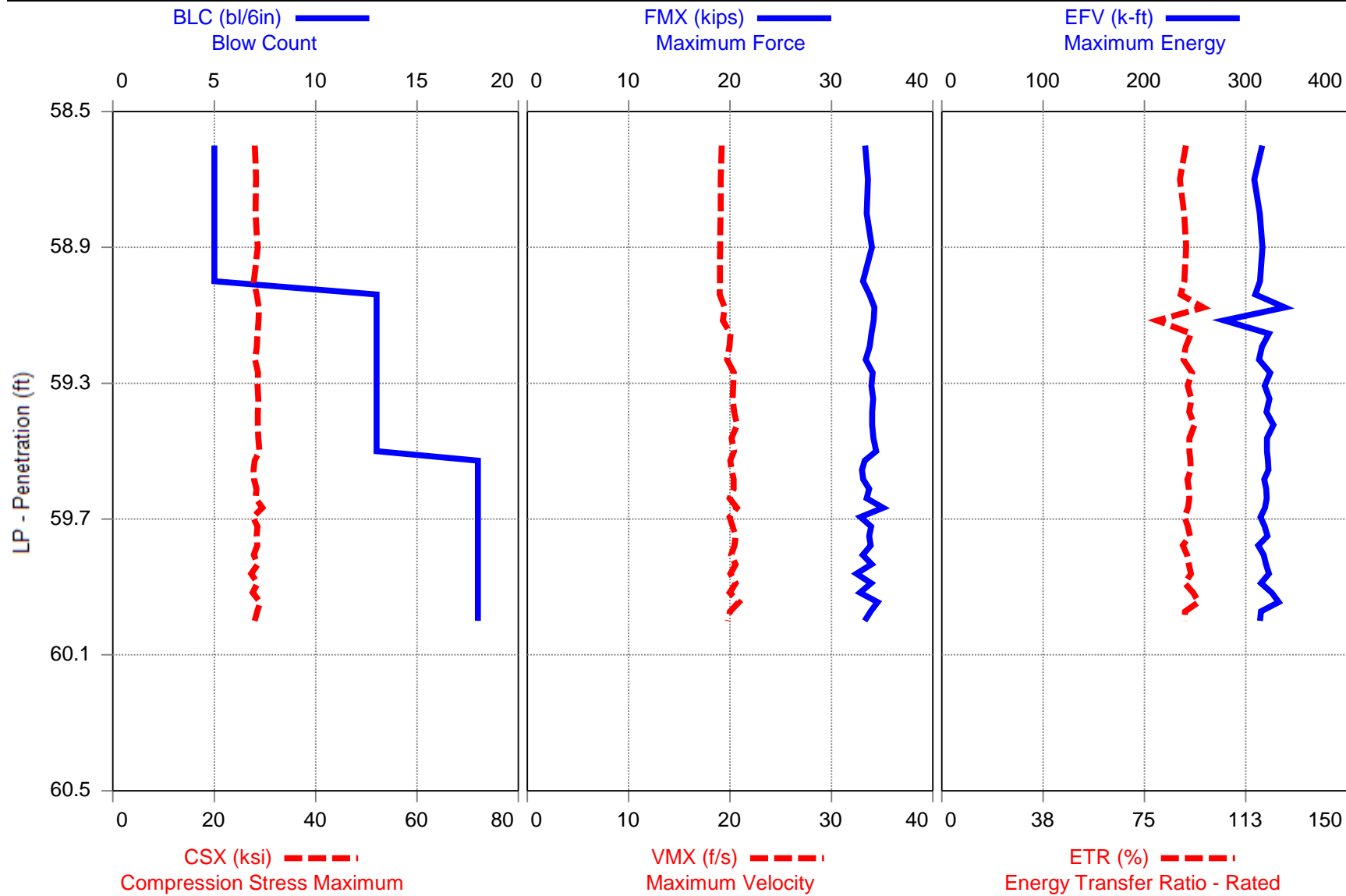
Summary of SPT Test Results

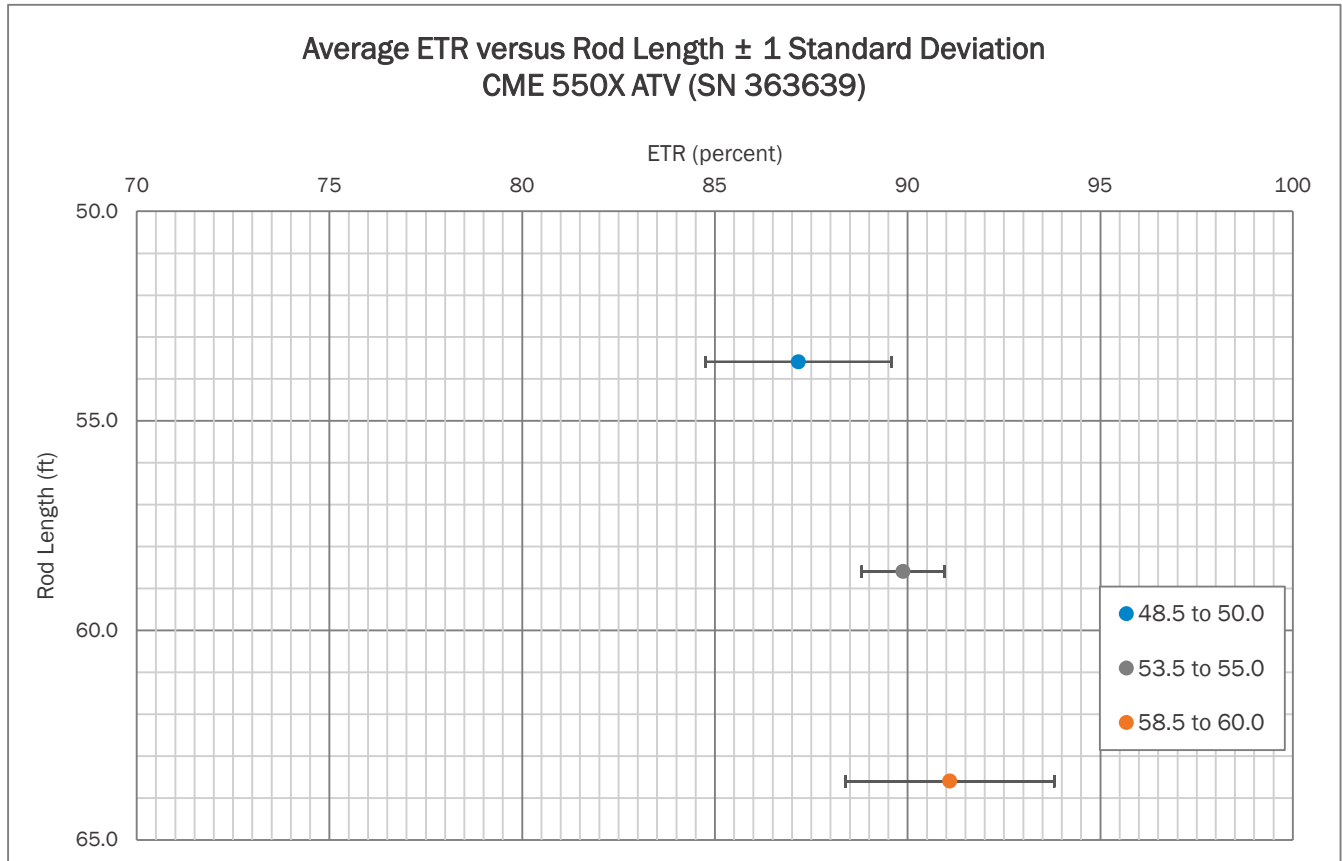
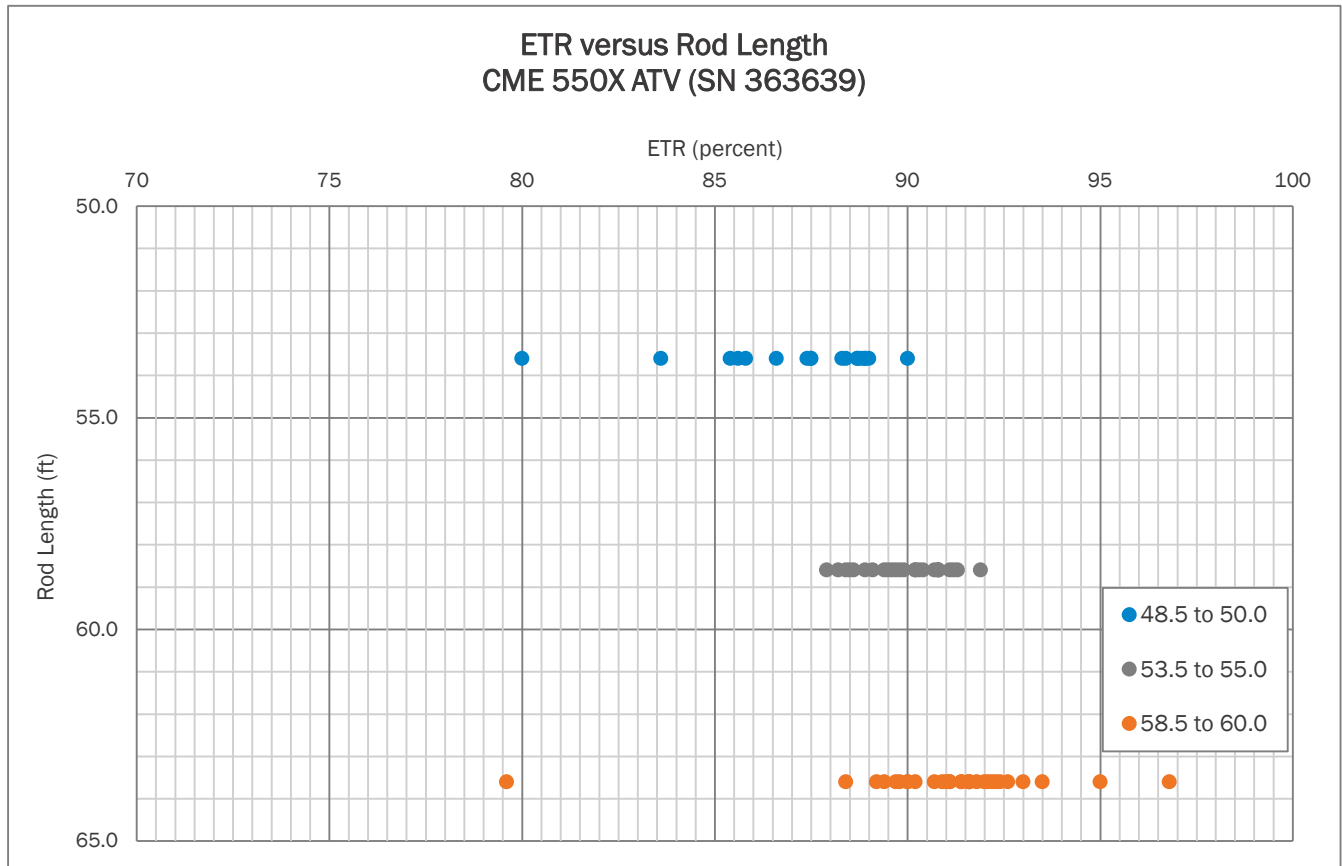
Project: CME 550X (SN 363639), Test Date: 3/10/2023

BPM: Blows/Minute						CSX: Compression Stress Maximum							
FMX: Maximum Force						DFN: Final Displacement							
VMX: Maximum Velocity						EFV: Maximum Energy							
DMX: Maximum Displacement						ETR: Energy Transfer Ratio - Rated							
Instr. Length ft	Start Depth ft	Final Depth ft	Blows Applied /6"	N Value	N60 Value	Average BPM bpm	Average FMX kips	Average VMX ft/s	Average DMX in	Average CSX ksi	Average DFN in	Average EFV ft-lb	Average ETR %
53.60	48.50	50.00	2-8-10	18	26	53.6	30.6	19.7	0.9	25.7	0.7	305.1	87.2
58.60	53.50	55.00	9-12-13	25	37	54.2	33.3	20.2	0.7	28.0	0.5	314.6	89.9
63.60	58.50	60.00	5-13-18	31	46	54.3	33.7	20.1	0.6	28.4	0.4	318.8	91.1
Overall Average Values:						54.1	32.9	20.0	0.7	27.6	0.5	314.1	89.7
Standard Deviation:						0.4	1.5	0.4	0.2	1.2	0.1	9.3	2.7
Overall Maximum Value:						55.0	35.1	20.9	1.3	29.5	0.7	338.7	96.8
Overall Minimum Value:						53.1	29.4	18.3	0.5	24.7	0.3	278.6	79.6











APPENDIX II

SPT Hammer Energy Field Form

Project: SPT HAMMER ENERGY
Project No.: 240019024
Boring No.: B-1

Date: 3/10/2023
Weather: 50's CLOUDY
Drill Rod Type: AWJ

On-site Personnel

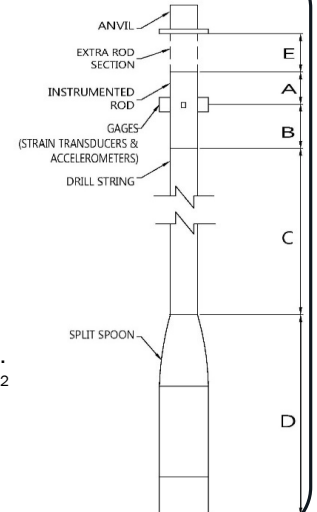
Drilling Company: CG2 EXPLORATION, LLC
 Rig Operator: D. DEMBY
 Engr/Geologist: N/A
 Client Rep.: N/A
 Analyzer Oper.: R. KRAL

Rig/Hammer Info

Drill Rig Make/Model: CME 550X
 Carrier Type: ATV
 Rig Serial No.: 363639
 Hammer Type/Model: CME
 Hammer Serial No.: N/A
 Hammer Drop System: AUTO
 Lubrication Condition: PER MANUFACTURER
 Manufacturer Recommended
 Operation Rate (bpm): 55
 Drop Height (in.): 30
 Hammer Weight (lbs): 140
 Anvil Dimension (in.): 11.5
 Drilling Method: 2.25" HSA

Rod Info

(A + E) Impact Surface to Gages Length: 1.36 ft
(B) Instr. Rod Length below Gages: 0.70 ft
(A) + (B) Instr. Rod Length: 2.00 ft
(D) Spoon Length: 2.85 ft
(E) Rod Length Above Instr. Rod (if applicable): 0.06 ft
 Instr. Rod S/N: 528AWJ
 Instr. Rod Outside Dia.: 1.75 in.
 Instr. Rod Area: 1.19 in²
 PDA Make/Model: SPT
 PDA Serial No.: 4549 TB
 Calib. Pulse Test (y/n): Y



Gage Info

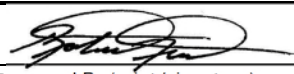
Gage		Serial No.	Calibration No.
Accel.	A3	K10959	413.83
	A4	K10960	419.89
Strain	F3	528AWJ-1	203.51
	F4	528AWJ-2	203.28

Date of Test	Test Depth Increment (ft to ft)	Test Time Start / Stop (military)	Length of Drill String (ft) (C)	(LE) Length below Gages (ft) (B) + (C) + (D)	Avg. Meas. Hammer Rate (BPM)	SPT Blow Counts				Drop Height in Tolerance (y/n)	Soil Class.
						6"	12"	18"	N-Value		
10-Mar	28.5 TO 30.0	1509/1509	30	33.6	51	3	3	5	8	Y	SA SI
10-Mar	33.5 TO 35.0	1515/1515	35	38.6	53	3	3	4	7	Y	SA SI
10-Mar	38.5 TO 40.0	1522/1522	40	43.6	53	2	3	3	6	Y	SA SI
10-Mar	43.5 TO 45.0	1531/1531	45	48.6	53	0	2	3	5	Y	SA SI
10-Mar	48.5 TO 50.0	1540/1541	50	53.6	53	2	8	10	18	Y	SI SA
10-Mar	53.5 TO 55.0	1551/1552	55	58.6	54	9	12	13	25	Y	SI SA
10-Mar	58.5 TO 60.0	1601/1602	60	63.6	54	5	13	18	31	Y	SI SA

Notes:

TESTING PERFORMED AT THE APPROXIMATE ADDRESS OF 1610 FOXDALE LANE IN IRON STATION, NORTH CAROLINA (LINCOLN COUNTY). THE APPROXIMATE COORDINATES ARE 35.4362400, -81.1313383. THROTTLE LEVEL LOW DURING SAMPLE INTERVAL 28.5 TO 30.0.

NOTE: (1) Note any unusual hammer operating conditions that affect the hammer performance, or changes in operating conditions (e.g. verticality, weather, or lubrication between trials). (2) Note any changes in rod diameter along drill string and record locations of short rod sections.


 Prepared By (print/signature)

3/10/2023
 Date



Figure No. 1: Rear View of Drill Rig



Figure No. 2: Side View of Drill Rig



Figure No. 3: Serial Number Plate



Figure No. 4: Automatic Hammer



APPENDIX III

Certificate of Calibration

Pile Dynamics, Inc. certifies that the

Pile Driving Analyzer®, Model SPT

Serial Number: 4549 TB

was calibrated on 14 July 2022

using a PDA Calibration Box whose output was calibrated with test equipment
traceable to NIST.

This certificate is valid for 2 years from above date.



Tested by

MCQ

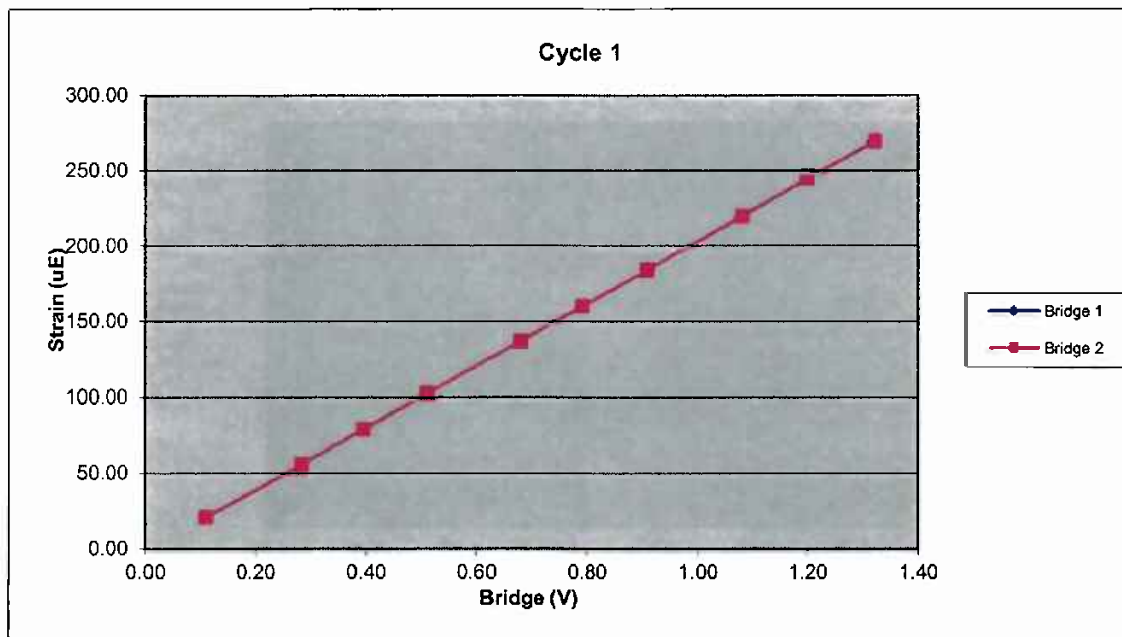


Pile Dynamics, Inc.
30725 Aurora Road
Cleveland, Ohio 44139 USA

528AWJ		Cycle 1		
Sample	Force (lb)	Strain (μE)	Bridge 1 (V)	Bridge 2 (V)
1	0.00	0.00	0.00	0.00
2	803.20	21.15	0.11	0.11
3	2080.73	56.33	0.28	0.28
4	2904.01	79.79	0.39	0.39
5	3765.89	103.49	0.51	0.51
6	5005.11	138.03	0.68	0.68
7	5828.59	161.56	0.79	0.79
8	6692.71	185.68	0.91	0.91
9	7962.93	221.03	1.08	1.08
10	8831.54	245.89	1.20	1.20
11	9736.80	270.68	1.32	1.32

Bridge 1		Bridge 2	
Force Calibration (lb/V)	7358.13	Force Calibration (lb/V)	7351.82
Offset	3.52	Offset	6.26
Correlation	0.999999	Correlation	0.999999
Strain Calibration ($\mu\text{E/V}$)	205.90	Strain Calibration ($\mu\text{E/V}$)	205.73
Offset	-1.56	Offset	-1.48
Correlation	0.999995	Correlation	0.999996

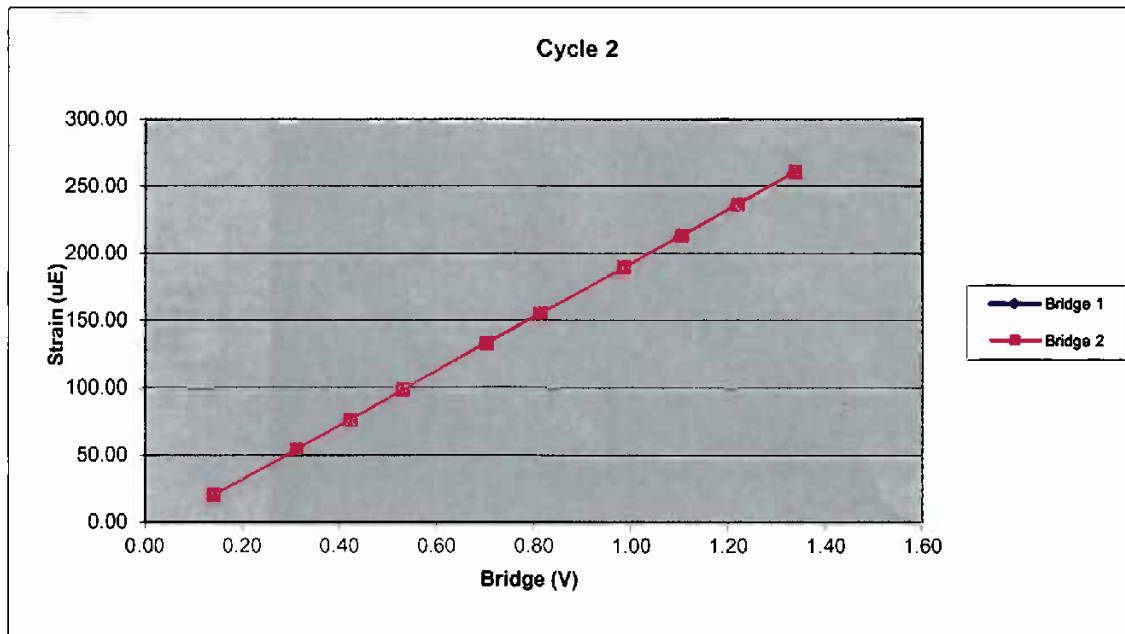
Force Strain Calibration	
EA (Kips)	35735.87
Offset	59.29
Correlation	0.999995



528AWJ		Cycle 2		
Sample	Force (lb)	Strain (μE)	Bridge 1 (V)	Bridge 2 (V)
1	0.00	0.00	0.00	0.00
2	1038.71	19.60	0.14	0.14
3	2288.25	53.30	0.31	0.31
4	3093.11	75.49	0.42	0.42
5	3893.00	97.84	0.53	0.53
6	5167.50	132.26	0.70	0.70
7	5988.25	154.39	0.81	0.81
8	7248.72	188.87	0.98	0.98
9	8125.71	212.29	1.10	1.10
10	8976.19	235.45	1.22	1.22
11	9854.85	259.50	1.33	1.34

Bridge 1		Bridge 2	
Force Calibration (lb/V)	7381.92	Force Calibration (lb/V)	7365.94
Offset	-0.76	Offset	4.69
Correlation	0.999998	Correlation	0.999999
Strain Calibration ($\mu\text{E}/\text{V}$)	200.83	Strain Calibration ($\mu\text{E}/\text{V}$)	200.40
Offset	-8.59	Offset	-8.44
Correlation	0.999997	Correlation	0.999996

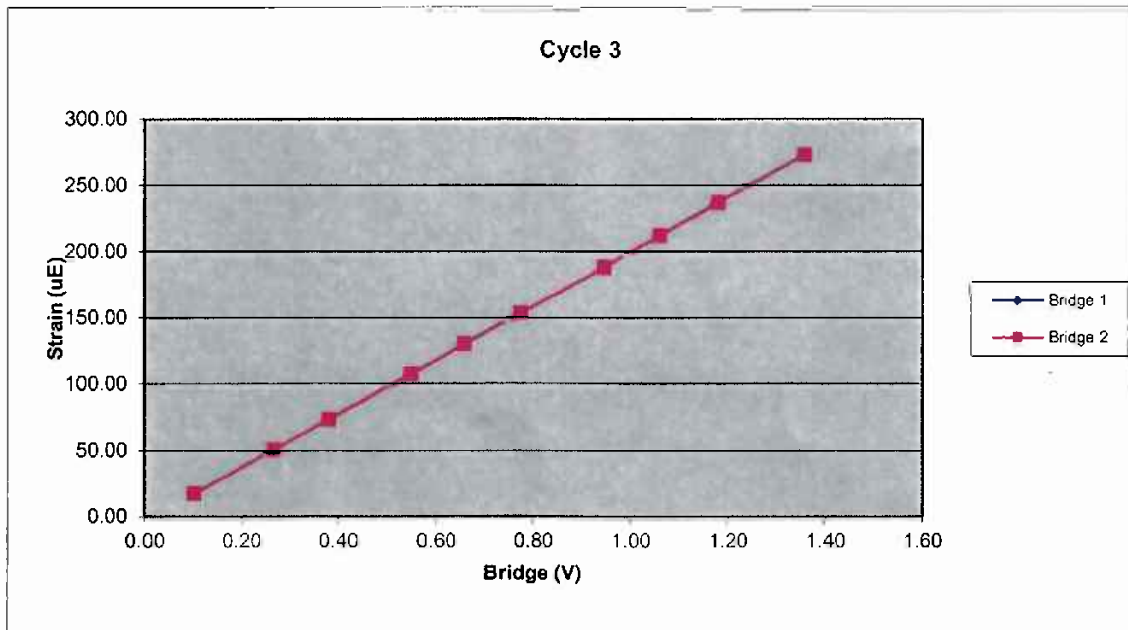
Force Strain Calibration	
EA (Kips)	36756.34
Offset	315.07
Correlation	0.999995



528AWJ		Cycle 3		
Sample	Force (lb)	Strain (μE)	Bridge 1 (V)	Bridge 2 (V)
1	0.00	0.00	0.00	0.00
2	734.68	18.74	0.10	0.10
3	1943.58	51.94	0.26	0.26
4	2781.29	75.07	0.38	0.38
5	4027.81	108.88	0.55	0.55
6	4829.55	131.78	0.66	0.66
7	5689.29	155.36	0.77	0.77
8	6956.49	190.12	0.95	0.95
9	7799.46	214.09	1.06	1.06
10	8693.90	238.78	1.18	1.18
11	10007.88	275.06	1.36	1.36

Bridge 1		Bridge 2	
Force Calibration (lb/V)	7366.71	Force Calibration (lb/V)	7364.49
Offset	-6.17	Offset	-9.40
Correlation	0.999998	Correlation	0.999999
Strain Calibration ($\mu\text{E/V}$)	203.78	Strain Calibration ($\mu\text{E/V}$)	203.72
Offset	-2.08	Offset	-2.17
Correlation	0.999989	Correlation	0.999993

Force Strain Calibration	
EA (Kips)	36149.33
Offset	69.26
Correlation	0.999994



Bridge Excitation (V) 5
Shunt Resistor (ohm) 60.4k

Calibration Factors	528AWJ		
Bridge 1 ($\mu\text{E/V}$)	203.51	Bridge 2 ($\mu\text{E/V}$)	203.28
EA Factor (Kips)	36213.85	Area (in^2)	1.21

Calibrated by:



Calibrated Date:

7/18/2022

Pile Dynamics Inc
30725 Aurora Rd
Solon, OH 44139

Traceable to N.I.S.T.

Accelerometer Calibration Certificate

Pile Dynamics, Inc.



Calibrated by Pile Dynamics, Inc.
Calibration performed on 14Jun2022

Serial No: K10959 Temperature: 79.0 °F

Model: PR Humidity: 50%

Calibrated on: Channel 3 on 8G 5161 LE

PDA CALIBRATION FACTOR

413.8 mv/5000g

(82.8 μ v/g)

R²: 0.999956 [Chip programmed]

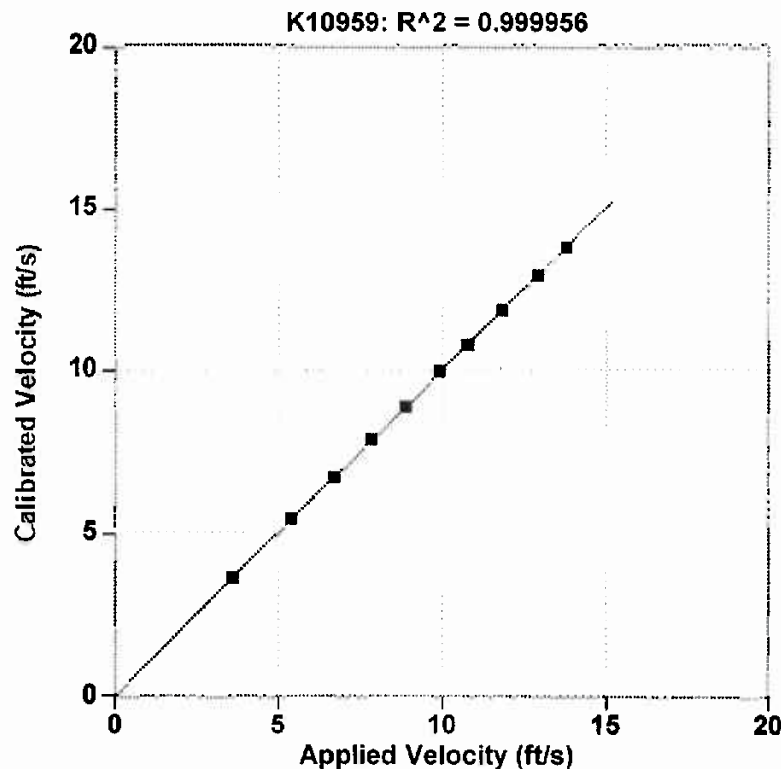
Ref Acc 1: 72517! Cal on: 24Mar2022
1049 g's/volt

Ref Acc 2: 72505! Cal on: 24Mar2022
1035 g's/volt

Operator: William Johnson


Signed

Reference accelerometer calibrations are traceable to
the United States National Institute of Standards and
Technology (NIST).



Reference Velocity	S/N K10959 Velocity
ft/s	ft/s
3.605	3.589
5.397	5.412
6.705	6.699
7.841	7.862
8.877	8.913
9.904	9.929
10.746	10.721
11.807	11.815
12.910	12.889
13.783	13.762

Maximum Acceleration: 935 g's

Accelerometer Calibration Certificate

Pile Dynamics, Inc.



Calibrated by Pile Dynamics, Inc.
Calibration performed on 14Jun2022

Serial No: K10960 Temperature: 79.0 °F

Model: PR Humidity: 50%

Calibrated on: Channel 3 on 8G 5161 LE

PDA CALIBRATION FACTOR

419.9 mv/5000g

(84.0 μ v/g)

R²: 0.999944 [Chip programmed]

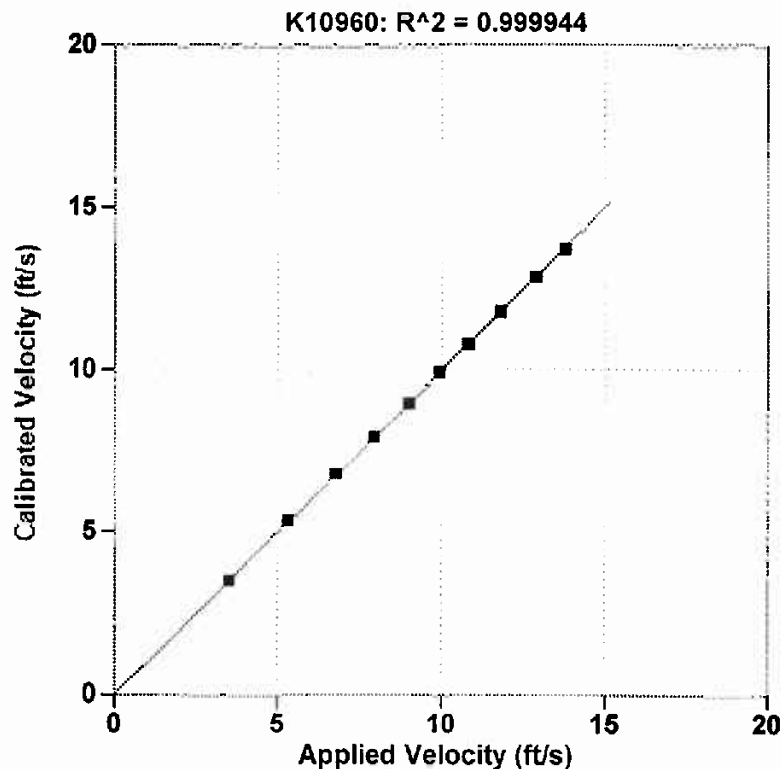
Operator: William Johnson

Ref Acc 1: 72517! Cal on: 24Mar2022
1049 g's/volt

Ref Acc 2: 72505! Cal on: 24Mar2022
1035 g's/volt


Signed

Reference accelerometer calibrations are traceable to
the United States National Institute of Standards and
Technology (NIST).



Reference Velocity	S/N K10960 Velocity
ft/s	ft/s
3.513	3.540
5.322	5.345
6.769	6.796
7.933	7.937
8.998	9.037
9.912	9.923
10.788	10.775
11.781	11.779
12.877	12.863
13.771	13.732

Maximum Acceleration: 934 g's

Accelerometer Calibration Certificate

Pile Dynamics, Inc.



Calibrated by Pile Dynamics, Inc.
Calibration performed on 14Jun2022

Serial No: K11957 Temperature: 79.0 °F

Model: PR Humidity: 50%

Calibrated on: Channel 3 on 8G 5161 LE

PDA CALIBRATION FACTOR

409.6 mv/5000g

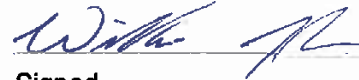
(81.9 μ v/g)

R²: 0.999919 [Chip programmed]

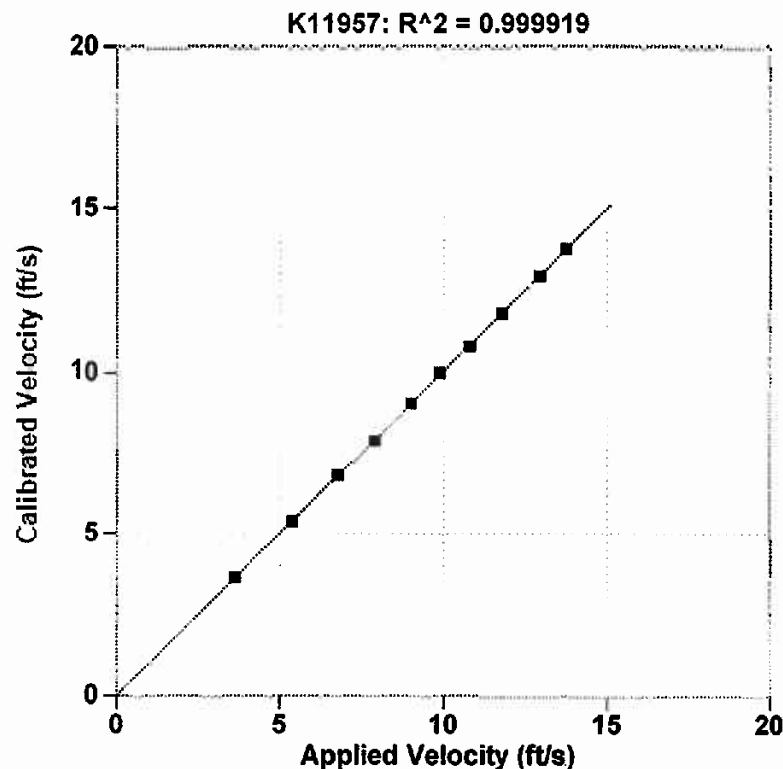
Operator: William Johnson

Ref Acc 1: 72517! Cal on: 24Mar2022
1049 g's/volt

Ref Acc 2: 72505! Cal on: 24Mar2022
1035 g's/volt


Signed

Reference accelerometer calibrations are traceable to
the United States National Institute of Standards and
Technology (NIST).



Reference Velocity ft/s	S/N K11957 Velocity ft/s
3.643	3.661
5.377	5.363
6.761	6.783
7.895	7.905
8.973	8.989
9.864	9.918
10.780	10.730
11.763	11.749
12.920	12.894
13.735	13.746

Maximum Acceleration: 931 g's



APPENDIX IV



This documents that
Robert E. Kral
Carolinas Geotechnical Group
has on May 20, 2016 achieved the rank of
ADVANCED


on the Dynamic Measurement and Analysis Proficiency Test.

The individual identified on this document demonstrated to the degree granted above an understanding of theory, data quality evaluation, interpretation and signal matching for high strain dynamic testing of deep foundations. ***It is recommended that individuals at the Advanced level seek Master or Expert levels through additional study within six years of the date of this document.***

The ability of the individual named to provide appropriate knowledge and advice on a specific project is not implied or warranted by the Pile Driving Contractors Association or Pile Dynamics, Inc. **This certificate can be verified at www.PDAproficiencytest.com.** The Pile Driving Contractors Association or Pile Dynamics, Inc. assumes no liability for foundation testing and analysis work performed by the bearer of this certificate.


Steven A. Hall, Executive Director
Pile Driving Contractors Association




Garland Likins, Senior Partner
Pile Dynamics, Inc.

No. 2072

S-46-59 over Little Turkey Creek
Geotechnical Subsurface Data Report

APPENDIX

SECTION 8 GEO-SCOPING FORM

GeoScoping Form

PROJECT INFORMATION		
Project ID: 67100.007	Task: 00005	Date of Trip: 10/22/2024
County: York County	Location: York Co Sharon, SC	
Rd/Route: S-46-59	Local Name: N Burris Rd	
Attendees: Baylen Carter		

EXISTING BRIDGE INFORMATION	
Bridge Length: 210'	Bridge Width: 32'
Superstructure Type:	Substructure Type: Wood Pile
Begin Bridge Sta.:	End Bridge Sta.:
Begin Bridge Embankment Sta. ¹ :	End Bridge Embankment Sta. ¹ :
Structure Number: 07522	Posted Weight Limit: N/A
Crossing: Little Turkey Creek	Skew: 7°
Latitude: 34°53'01"N	Longitude: 81°18'53"W
Existing Fill Height: ~12.5'	Approximate Existing Slope Angle:

¹Begin and End Bridge Embankment 100 feet down station or up station from bridge, respectively

EXISTING ROADWAY EMBANKMENT INFORMATION	
Begin Project Sta.:	Begin Bridge Embankment Sta. ¹ :
Accessibility Issues: Brush pushed over by river makes grading your next step difficult	
Ground Cover: Brush, grass, small trees	
Existing Fill Height: 14'	Approximate Existing Slope Angle:
Local Development (<u>undeveloped</u>) developed residential, developed commercial, developed industrial, etc.): Sparse Houses	
Topography (level, flat, <u>rolling</u> steep, hillside, valley, swamp, gully, etc.):	
Traffic Control Necessary (Y/N):	
Surface Soil: F-m Sandy SILT	
Muck (Y/N): minor to no	
Exposed Rock (Y/N):	In Stream Bed (Y/N):
In Banks (Y/N):	
Wetlands On-Site (Y/N):	Wetlands Adjacent (Y/N):
Depth FG to Water: 18.8'	Water Depth: 2.9'
Depth to Existing Ground: 21.7'	
Scour Condition at EB: Large hole	Scour Condition at IB: Large hole
End Bridge Embankment Sta. ¹ :	End Project Sta.:
Accessibility Issues: Danger of collapsing bank and bridge and many logs under bank	
Ground Cover: Brown, grass, small trees	
Existing Fill Height: 14'	Approximate Existing Slope Angle: 30°
Local Development (<u>undeveloped</u>) developed residential, developed commercial, developed industrial, etc.):	
Topography (level, flat, <u>rolling</u> steep, hillside, valley, swamp, gully, etc.):	
Traffic Control Necessary (Y/N):	
Surface Soil: F Sandy SILT	
Muck (Y/N): Minor to no	
Exposed Rock (Y/N):	In Stream Bed (Y/N):
In Banks (Y/N):	
Wetlands On-Site (Y/N):	Wetlands Adjacent (Y/N):
Depth FG to Water:	Water Depth:
Depth to Existing Ground:	
Scour Condition at EB: Pile is on ground	Scour Condition at IB: Large hole

GeoScoping Form

UTILITIES INFORMATION	
Attached:	<i>None</i>
Above Ground/ Overhead:	<i>Running Parallel is the the electrical lines</i>
Underground:	

COMMENTS
<i>The collapsed upstream side of the bridge began a large scour hole that was many times deeper than the river upstream. The upstream river was roughly 2' deep but at the bridge and tens of feet beyond the river was several feet deeper.</i>

Instructions:

1. Attach boring location plan for bridge and roadway.
2. Attach all photographs taken, photographs to be labeled as to direction looking in and what is being depicted.
3. Fill out GeoScoping Form as completely as possible, using additional sheets as necessary to describe site conditions.
4. If representative of GEC on site during GeoScoping, include GEC representative's name and contact number in Attendees block.




SUBSURFACE TESTING DATA							
Boring ID	Test Type	Northing	Easting	Latitude	Longitude	Test Elevation (MSL)	Test Depth (ft)
B-1	STB	1110101.703	1905482.178	34.88389126	-81.31513361	434.9	64.7
B-2	STB	1110025.153	1905696.353	34.88368274	-81.31441875	435.0	85.7
P-1 ¹	STB	1110252.353	1905141.666	34.88430230	-81.31627045	433.7	2.0
P-2 ¹	STB	1110194.174	1905254.114	34.88414341	-81.31589494	433.9	2.0
P-3 ¹	STB	1110156.206	1905374.703	34.88404011	-81.31549249	434.6	2.0
P-4 ¹	STB	1109971.158	1905800.894	34.88353527	-81.31406965	435.9	2.0
P-5 ¹	STB	1109933.354	1905920.641	34.88343241	-81.31367003	436.8	2.0
P-6 ¹	STB	1109876.377	1906032.472	34.88327680	-81.31329660	438.1	2.0

1 = Bulk Soil Sample BS-1 was a composite sample created from the upper 2-ft. of auger cuttings from the specified boreholes



LEGEND:

 SOIL TEST BORING LOCATION

4			
3			
2			
1			
REV.	BY	DATE	DESCRIPTION OF REVISION
TOPO.		DATE	
DWG.	CTC	DATE 10.25.24	GROUP ____ - ____
R/W		DATE	

 F&ME CONSULTANTS, INC.
COLUMBIA, SC

S-46-59 OVER LITTLE TURKEY CREEK
YORK COUNTY, SOUTH CAROLINA

BORING LOCATION PLAN

SCDOT PROJECT ID: P043996	FME JOB NO. G7100.007 task 005
SCALE: 1" = 100'	FIGURE 2

Geo-Scoping Form



Bridge damage as facing northwest



Bridge damage as facing southeast



Bridge Structure Number



Facing northwest from south side

Geo-Scoping Form



**Facing northwest from under bridge
(river flows left)**



Facing northwest



Facing southeast



Flow of river to the left of photo

Geo-Scoping Form



**Looking north on northwest (B-1)
side of bridge**



Looking southeast