Replacement of Bridge 38 (SR 54 over Little Nixon Creek)

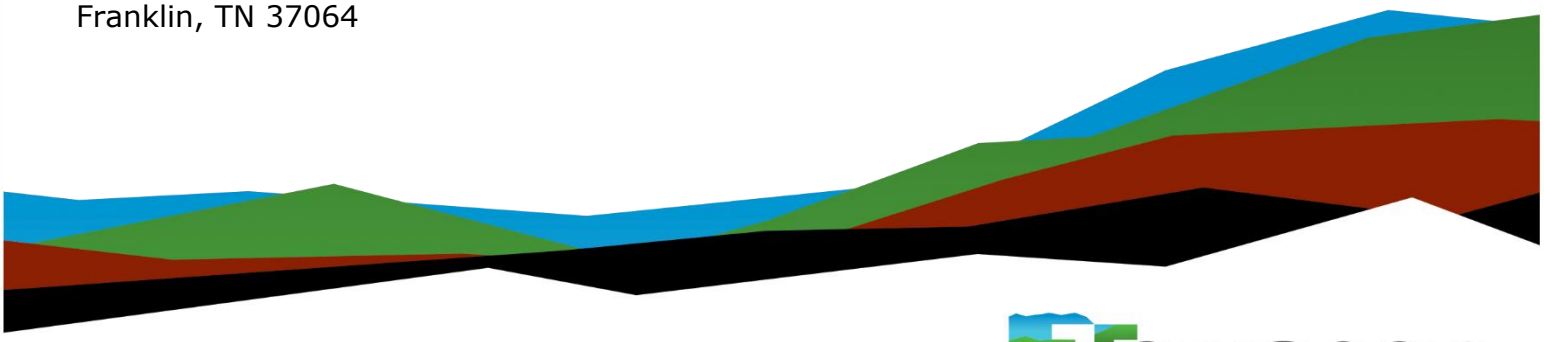
Geotechnical Data Report

Haywood County, Tennessee

May 29, 2026 | Terracon Project No. 1A255160

Prepared for:

American Structurepoint Inc. ☐
377 Riverside Drive, Suite 420 ☐
Franklin, TN 37064



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May 29, 2026

American Structurepoint Inc. ☐
377 Riverside Drive, Suite 420 ☐
Franklin, TN 37064

Attn: Mr. Gabe Liptak, P.E.
P: (440) 413-3587
E: gliptak@structurepoint.com

Re: Geotechnical Data Report
Replacement of Bridge 38 (SR 54 over Little Nixon Creek)
Haywood County, Tennessee
Terracon Project No. 1A255160

Dear Mr. Liptak:

We have completed the scope of work for the above-referenced project. This Data Report presents the findings of the subsurface exploration, including field and laboratory test results.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,

Terracon

Babak Vafaei, Ph.D., P.E.*
Senior Engineer
*Licensed in IN, KY, TN, & TX

Kenneth Zur, P.E.*
Program Manager/ Geotechnical Services
*Licensed in IN, GA, KY, NC, SC, TN, & WV

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Supporting Information

Introduction

This report presents the results of our subsurface exploration and Geotechnical Data services performed for the proposed bridge replacement located approximately 1.2 miles north of Brownsville, TN in Haywood County, Tennessee along SR 54 over Little Nixon Creek. The geotechnical Scope of Services included the advancement of test borings, laboratory testing, geophysical testing and preparation of this data report. The exploration locations were determined by Terracon field staff.

Site Information

The following description of site conditions is derived from our site visit in association with field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Site Information	The approximate coordinates for the bridge crossing are as follows: **Bridge No. 38**: 35.609877, -89.256746 See **Site Location**
Current Ground Cover	Away from the existing bridge, pavement is asphalt underlain by aggregate basecourse and fill materials.
Existing Topography (Estimated using Google Earth Pro)	The ground surface at the borings El. is approximately 336 ft MSL.

Geologic Formations

Formation [1]	Description
Alluvial Deposits	The geology is characterized by thick, unconsolidated Quaternary-aged alluvial deposits, including sand, silt, clay, and gravel.

1. Geologic Map of Tennessee, published by the State of Tennessee Department of Conservation, Division of Geology (1966).

Geotechnical Borings and Laboratory Testing

Terracon drilled two borings near the proposed bridge replacement. Each boring encountered asphalt over fill and native (alluvial) soil deposits.

Subsurface conditions observed at each location are indicated on the individual logs. The individual logs can be found in the **Exploration Results**. Drawings depicting site and boring locations relative to existing site features are attached.

Laboratory testing was performed to confirm visual descriptions and further characterize the encountered soils. Testing included the following:

- Natural Moisture
- Grain size distribution
- Atterberg Limits
- California Bearing Ratio (CBR)
- Unconfined Compression
- Standard Proctor
- Corrosion testing series

Test results are attached with the boring logs.

Seismic Site Survey

Terracon performed a limited seismic survey consisting of two Multi-Channel Analysis of Surface Waves (MASW) arrays at the bridge site to obtain shear wave velocity values of the soil within the upper 100 feet. Lines 1 and 2 were located on the southwest and northeast approach to the bridge, respectively. Their location of the seismic survey as well as location map for the arrays are attached.

General Comments

This geotechnical data report does not include any analysis or recommendations. The data presented in this report are based upon the geotechnical borings, laboratory testing results, and geophysical data at the indicated locations. This report does not reflect variations that may occur across the site, or due to the modifying effects of weather. The nature and extent of such variations may not become evident until, during, or after construction.

No warranties, either expressed or implied, are intended or made. The scope of geotechnical services does not include either specifically or by implication any

environmental assessment of the site or identification or prevention of pollutants, hazardous materials, or conditions.

Attachments

Exploration and Testing Procedures

Field Exploration

Number of Exploration Points	Approximate Exploration Depth (feet)	Location
2	100	Bridge Abutments
2 MASW Arrays	100	Bridge Abutments

Boring Layout and Elevations: Terracon personnel provided the boring layout using handheld GPS equipment (estimated horizontal accuracy of about ±10 feet) and referencing existing site features. Approximate ground surface elevations were estimated using Google Earth™.

Subsurface Exploration Procedures: We advanced the borings with a truck-mounted rotary drill rig using continuous flight solid stem augers and rotary wash boring techniques as necessary depending on soil conditions. Five samples were obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. In the thin-walled tube sampling procedure, a thin-walled, seamless steel tube with a sharp cutting edge was pushed hydraulically into the soil to obtain a relatively undisturbed sample. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at test depths.

We also observed the boreholes while drilling for the presence of groundwater. The groundwater levels are shown on the attached boring logs.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a Geotechnical Engineer. Our exploration team prepared boring field logs as part of the drilling operations. These field logs included visual classifications of the materials observed during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Multi-Channel Analysis of Surface Waves: Our method of investigation utilized a standard fixed-array set of MASW geophones. Each array consisted of 24 4.5Hz

geophones, spaced 10 feet apart along a sensor cable. For the passive surveys, ambient noise (such as nearby traffic or construction) on the site was recorded by a seismograph. For the active surveys, three sledgehammer strikes were performed every 10 feet against a polyethylene plate from 20 feet before the start of the array through geophone 12.

The data was returned to our office and processed using dispersion analysis software (SurfSeis, engineered by the Kansas Geological Survey) that extracts the fundamental-mode dispersion curve(s). The active and passive surveys performed at each line were combined to produce a broader-band overtone image to better identify the dispersion trends. The resulting curves were inverted and modeled to yield a 1D shear-wave velocity profile along the array to 100 feet below ground surface. The velocity models from the MASW surveys are presented on **Exhibit 2**.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests. The laboratory testing program included the following types of tests:

- Moisture Content
- Unconfined Compression
- Atterberg Limits
- Grain Size Analysis
- California Bearing Ratio
- Standard Proctor
- Corrosion testing

Based on the results of our field and laboratory programs, we described and classified the soil samples in accordance with the Unified Soil Classification System.

Site Location and Exploration Plans

Contents:

Site Location Plan
Exploration Plan

Site Location

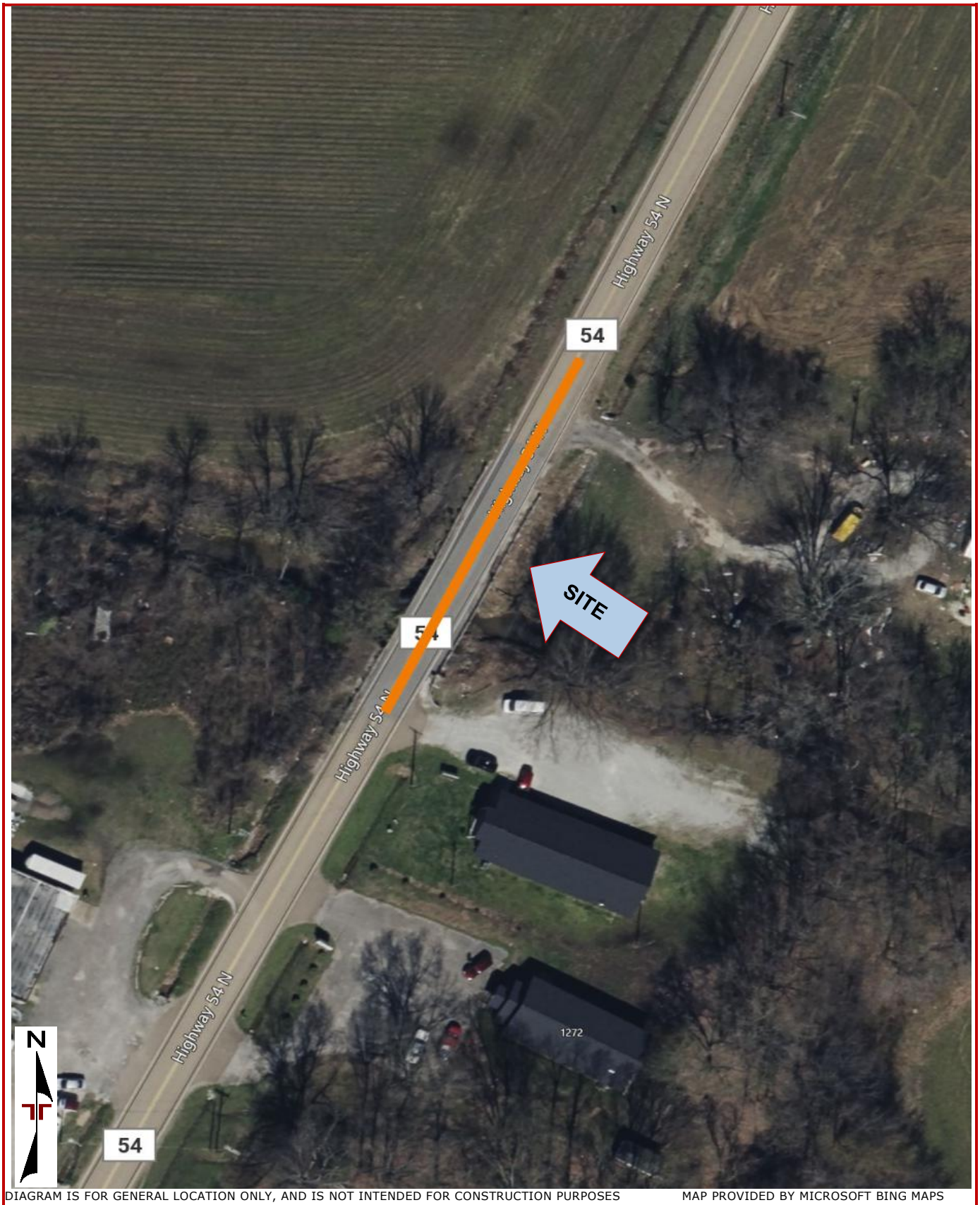


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES MAP PROVIDED BY MICROSOFT BING MAPS

Exploration Plan



DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES MAP PROVIDED BY MICROSOFT BING MAPS

Exploration and Laboratory Results

Contents:

Boring Logs (B-38-1 and B-38-2)
Atterberg Limits
California Bearing Ratio
Grain Size Distribution
Unconfined Compression Test
Standard Proctor
Corrosion Testing
Geophysical Exploration Results

Boring Log No. B-38-1

Location: See Exploration Plan

Latitude: 35.6099° Longitude: -89.2567°

Approximate Elevation: 335 (Ft.)

Depth (Ft.)	Description	Elevation (Ft.)	Field Test Results	HP (tsf)	Strength Test: Test Type	Strength Test: Compressive Strength (tsf)	Strength Test: Strain (%)	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI
0.3	**4" ASPHALT**	334.67								
1.1	**10" AGGREGATE BASE COURSE**	333.92								
2.5	**FILL - SILTY GRAVEL (GP-GM)**	332.5								
	LEAN CLAY (CL), with gravel, brown with black mottling, soft to stiff		7-6-5 N=11					6.6		
			3-2-3 N=5					15.3		
5			2-2-4 N=6	2						
			3-1-2 N=3					25.5		
					UC	0.81	8.2	27.6	94	41-19-22
10			4-5-6 N=11	2.25				23.3		
13.5		321.5								
	SILTY LEAN CLAY (CL-ML), with gravel, brown and gray with black mottling, stiff to very stiff		4-6-6 N=12	2.5				22.5		
15										
			3-4-7 N=11	2				23.0		
20										
23.5		311.5								
	SILTY CLAY WITH SAND (CL-ML), brown and gray, soft		9-11-15 N=26	2.75				18.8		25-19-6
25										
			1-2-2 N=4	1				28.2		
30										
33.5		301.5								
	LEAN CLAY WITH SAND (CL), dark gray, stiff to very stiff		3-5-7 N=12	4				29.0		
35										
			6-9-10 N=19	4.5				27.6		42-15-27
40										
			5-7-7 N=14	4.25				29.9		
45										
			5-6-9 N=15	3.5				33.6		
50										

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations were interpolated from Google Earth and therefore should be considered approximate and not for building construction use.

Water Level Observations
groundwater not encountered before beginning mud rotary

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Terracon Springfield

Logged by
Z. Lloyd

Boring Started
12-19-2025

Boring Completed
12-19-2025

Notes

Advancement Method
0 to 10.5 feet: Continuous Flight Auger

10.5 to 100 feet: Mud Rotary

Abandonment Method
Borings backfilled with soil cuttings upon completion. Sealed with bituminous cold patch at surface.

Boring Log No. B-38-1

Location: See Exploration Plan

Latitude: 35.6099° Longitude: -89.2567°

Depth (Ft.) Approximate Elevation: 335 (Ft.)

Depth (Ft.)	Elevation	Description	Field Test Results	HP (tsf)	Strength Test: Test Type	Strength Test: Compressive Strength (tsf)	Strength Test: Strain (%)	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI
53.5	281.5	**LEAN CLAY WITH SAND (CL)**, dark gray, stiff to very stiff *(continued)*								
		SANDY LEAN CLAY (CL), dark gray, stiff to very stiff	4-5-8 N=13	3				26.3		34-18-16
55										
			4-5-7 N=12	2.75				22.7		
60										
			4-7-25 N=32	3.25				18.2		
65										
68.5	266.5	**SILTY SAND (SM)**, fine grained, white to light brown and brown, medium dense	12-12-17 N=29							
70										
			5-7-11 N=18							
75										
			7-11-13 N=24					28.7		
80										
83.5	251.5	**POORLY GRADED SAND WITH SILT (SP-SM)**, fine grained, white to light brown and brown, dense	12-16-24 N=40							
85										
			11-12-21 N=33							
90										
			18-23-16 N=39					24.3		
95										
100.0	235		14-13-25 N=38							
100		***Boring Terminated at 100 Feet***								

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

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Water Level Observations
groundwater not encountered before beginning mud rotary

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Terracon Springfield

Logged by
Z. Lloyd

Boring Started
12-19-2025

Boring Completed
12-19-2025

Notes

Advancement Method
0 to 10.5 feet: Continuous Flight Auger

10.5 to 100 feet: Mud Rotary

Abandonment Method
Borings backfilled with soil cuttings upon completion. Sealed with bituminous cold patch at surface.

Boring Log No. B-38-2

Location: See Exploration Plan

Latitude: 35.6096° Longitude: -89.2569°

Depth (Ft.) Approximate Elevation: 336 (Ft.)

Depth (Ft.)	Elevation	Description	Field Test Results	Strength Test: Test Type	Strength Test: Compressive Strength (tsf)	Strength Test: Strain (%)	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI
0.4	335.58	**5" ASPHALT**							
0.5	335.5	**1" AGGREGATE BASE COURSE**							
		FILL - SILTY CLAY (CL-ML), trace limestone rock fragments and asphalt, brown	5-6-6 N=12				18.7		
			5-3-3 N=6				7.9		
			4-2-2 N=4				20.3		
6.0	330		2-2-2 N=4				25.1		
		SILTY LEAN CLAY (CL-ML), brown to grayish brown, soft to stiff			0.49	13.7	27.6	98	
			4-5-6 N=11				18.3		
			4-4-6 N=10				19.9		
18.5	317.5		3-4-6 N=10				24.7		
		LEAN CLAY WITH SAND (CL), brown with gray mottling, stiff to very stiff	14-16-16 N=32				19.4		28-15-13
28.5	307.5		4-3-4 N=7				20.8		
		FAT CLAY (CH), with sand, trace silt, reddish brown with gray mottling, medium stiff to stiff	3-4-5 N=9				31.0		53-15-38
38.5	297.5		4-9-11 N=20				28.2		
		LEAN CLAY WITH SAND (CL), with silt, trace sand lenses, dark grayish brown, very stiff	4-8-9 N=17				23.7		39-17-22
48.5	287.5		4-5-9 N=14				26.4		
		FAT CLAY (CH), dark grayish brown, stiff to very stiff							

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevation Reference: Elevations were interpolated from Google Earth and therefore should be considered approximate and not for building construction use.

Water Level Observations
Groundwater not encountered prior to beginning mud rotary

Drill Rig
CME 75

Hammer Type
Automatic

Driller
Terracon Springfield

Logged by
O. Hussein

Boring Started
01-06-2026

Boring Completed
01-06-2026

Notes

Advancement Method
0 to 13.5 feet: Continuous Flight Auger

13.5 to 100 feet: Mud Rotary

Abandonment Method
Borings backfilled with soil cuttings upon completion. Sealed with bituminous cold patch at surface.

Boring Log No. B-38-2

Location: See Exploration Plan

Latitude: 35.6096° Longitude: -89.2569°

Depth (Ft.) Approximate Elevation: 336 (Ft.)

Depth (Ft.)	Graphic Log	Water Level Observations	Sample Type	Field Test Results	HP (tsf)	Strength Test: Test Type	Strength Test: Compressive Strength (tsf)	Strength Test: Strain (%)	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits LL-PL-PI
55				5-9-10 N=19					27.5		
60				3-4-5 N=9					23.9		50-16-34
63.5	**FAT CLAY (CH)**, dark grayish brown, stiff to very stiff *(continued)*										
65				7-15-19 N=34					21.0		25-15-10
70				11-18-27 N=45					21.9		
73.5	**CLAYEY SAND (SC)**, fine grained, gray, dense										
75				13-15-17 N=32					22.0		
80				11-15-23 N=38					20.8		21-13-8
85				8-12-15 N=27					19.9		
88.5	**SANDY LEAN CLAY (CL)**, fine grained, gray to dark gray, dense to medium dense										
90				18-18-23 N=41					21.6		
95				12-13-10 N=23					17.8		
98.5	**CLAYEY SAND (SC)**, fine grained, gray to dark gray, dense to medium dense										
100	**POORLY GRADED SAND WITH CLAY (SP-SC)**, trace clay, fine grained, yellowish brown, dense			13-18-22 N=40					18.5		
100.0	***Boring Terminated at 100 Feet***										

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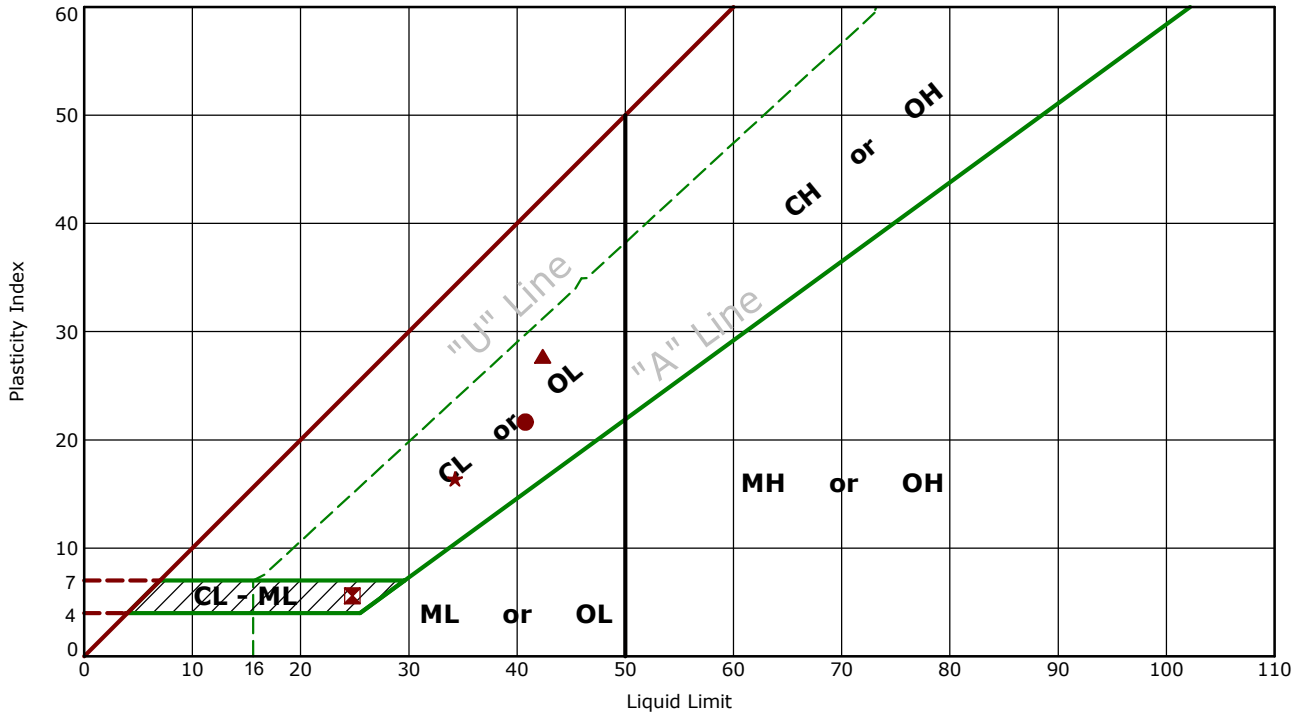
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0 to 13.5 feet: Continuous Flight Auger

13.5 to 100 feet: Mud Rotary

Abandonment Method
Borings backfilled with soil cuttings upon completion. Sealed with bituminous cold patch at surface.

Atterberg Limit Results

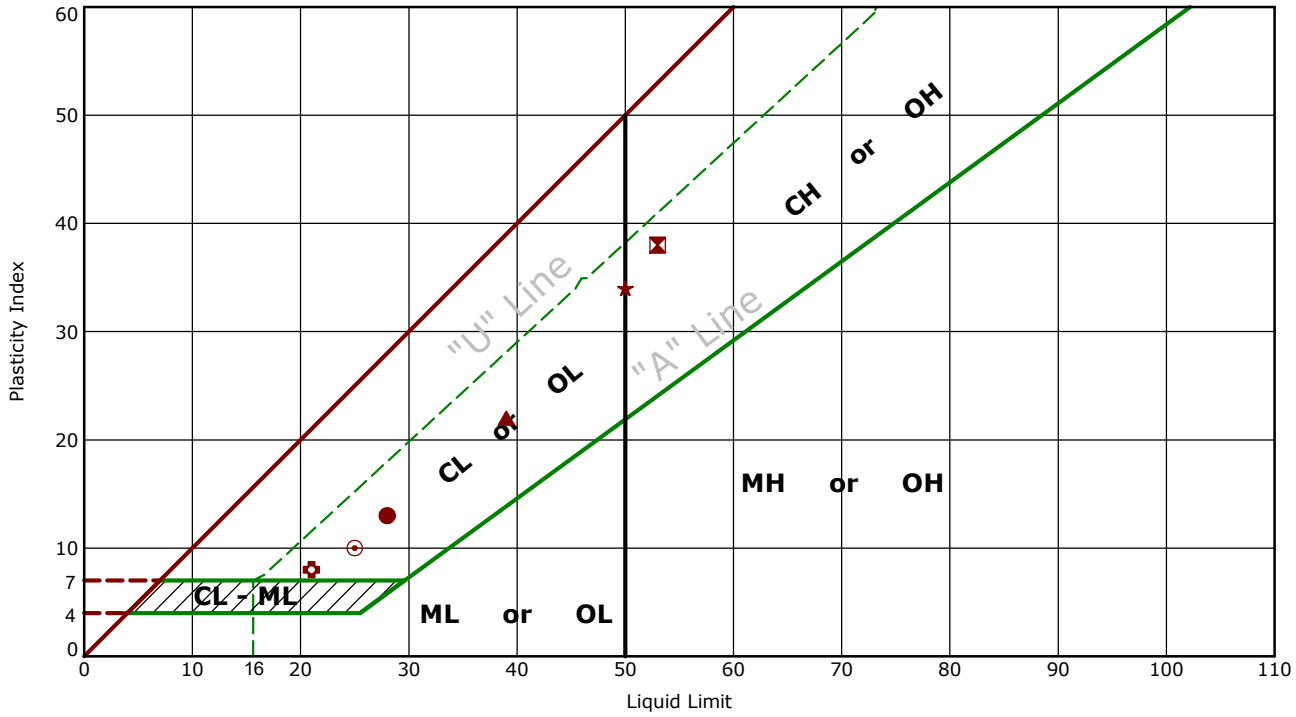
ASTM D4318



	Boring ID	Depth (Ft)	LL	PL	PI	Fines	USCS	Description
●	B-38-1	7 - 9	41	19	22	97.1	CL	LEAN CLAY
⊠	B-38-1	23.5 - 25	25	19	6	77.6	CL-ML	SILTY CLAY with SAND
▲	B-38-1	38.5 - 40	42	15	27	76.0	CL	LEAN CLAY with SAND
★	B-38-1	53.5 - 55	34	18	16	62.3	CL	SANDY LEAN CLAY

Atterberg Limit Results

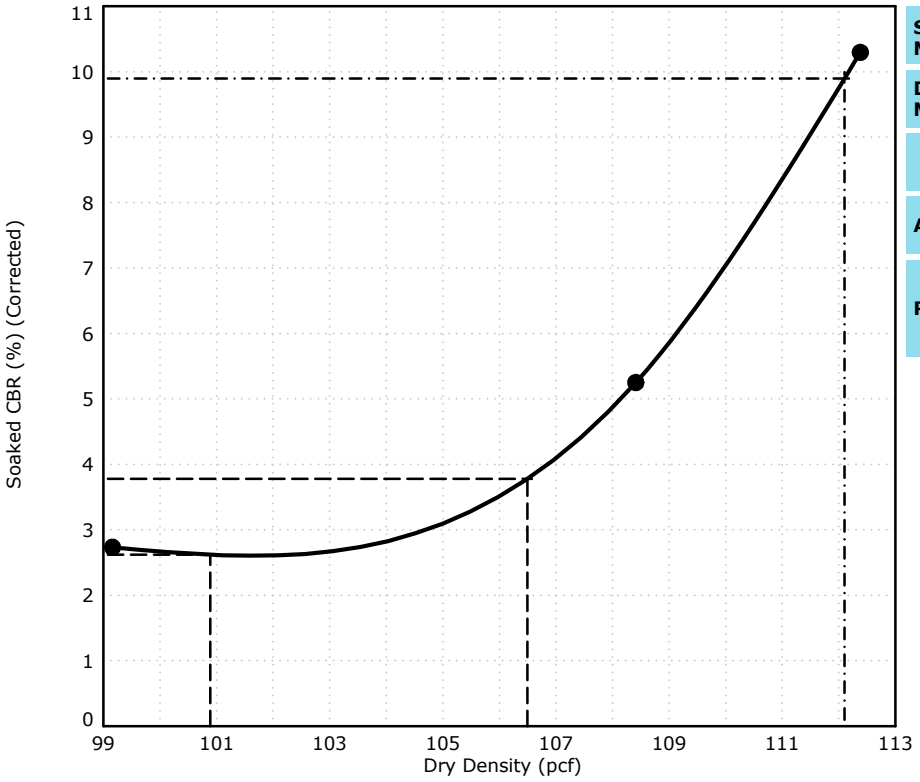
ASTM D4318



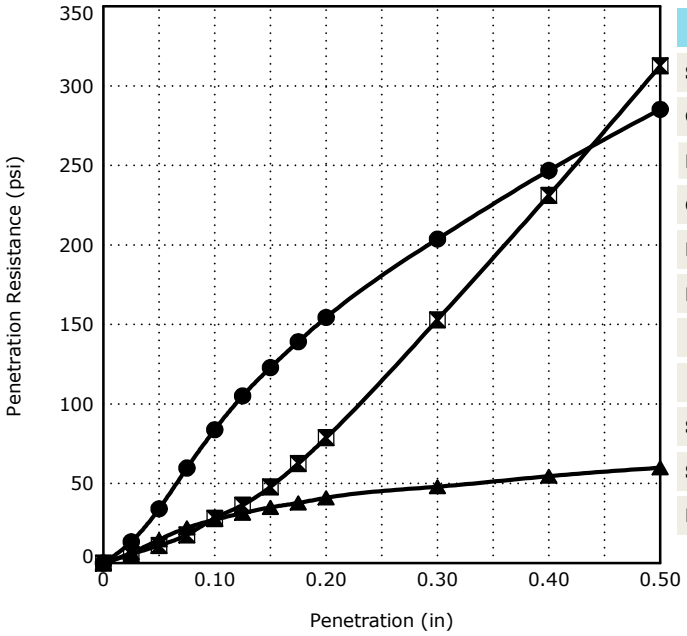
	Boring ID	Depth (Ft)	LL	PL	PI	Fines	USCS	Description
●	B-38-2	23.5 - 25	28	15	13	73.3	CL	LEAN CLAY with SAND
⊠	B-38-2	33.5 - 35	53	15	38	93.4	CH	FAT CLAY
▲	B-38-2	43.5 - 45	39	17	22	70.5	CL	LEAN CLAY with SAND
★	B-38-2	58.5 - 60	50	16	34	85.5	CH	FAT CLAY
⊙	B-38-2	63.5 - 65	25	15	10	49.0	SC	CLAYEY SAND
✿	B-38-2	78.5 - 80	21	13	8	54.2	CL	SANDY LEAN CLAY

California Bearing Ratio

ASTM D1883-07[2]



Source of Material	B-38-1 1.0
Description of Material	
Percent Fines	11.0
Atterberg Limits	LL PL PI
Remarks:	



Sample No.	10	11	12
Sample Condition	Soaked		
Compaction Method	AASHTO T99A		
Maximum Dry Density (pcf)	112.1	112.1	112.1
Optimum Moisture Content (%)	13.5	13.5	13.5
Dry Density before Soaking, (pcf)	112.38	108.41	99.16
Moisture Content, (%)			
After Compaction			
Top 1" After Soaking			
Surcharge, (lbs)	10.00	10.00	10.00
Swell, (%)	0.76	0.83	0.87
Bearing Ratio, (%)	10.3	5.3	2.7

Dry Density @ 90% 100.9 pcf

Dry Density @ 95% 106.5 pcf

Dry Density @ 100% 112.1 pcf

CBR @ 90% Density 2.6

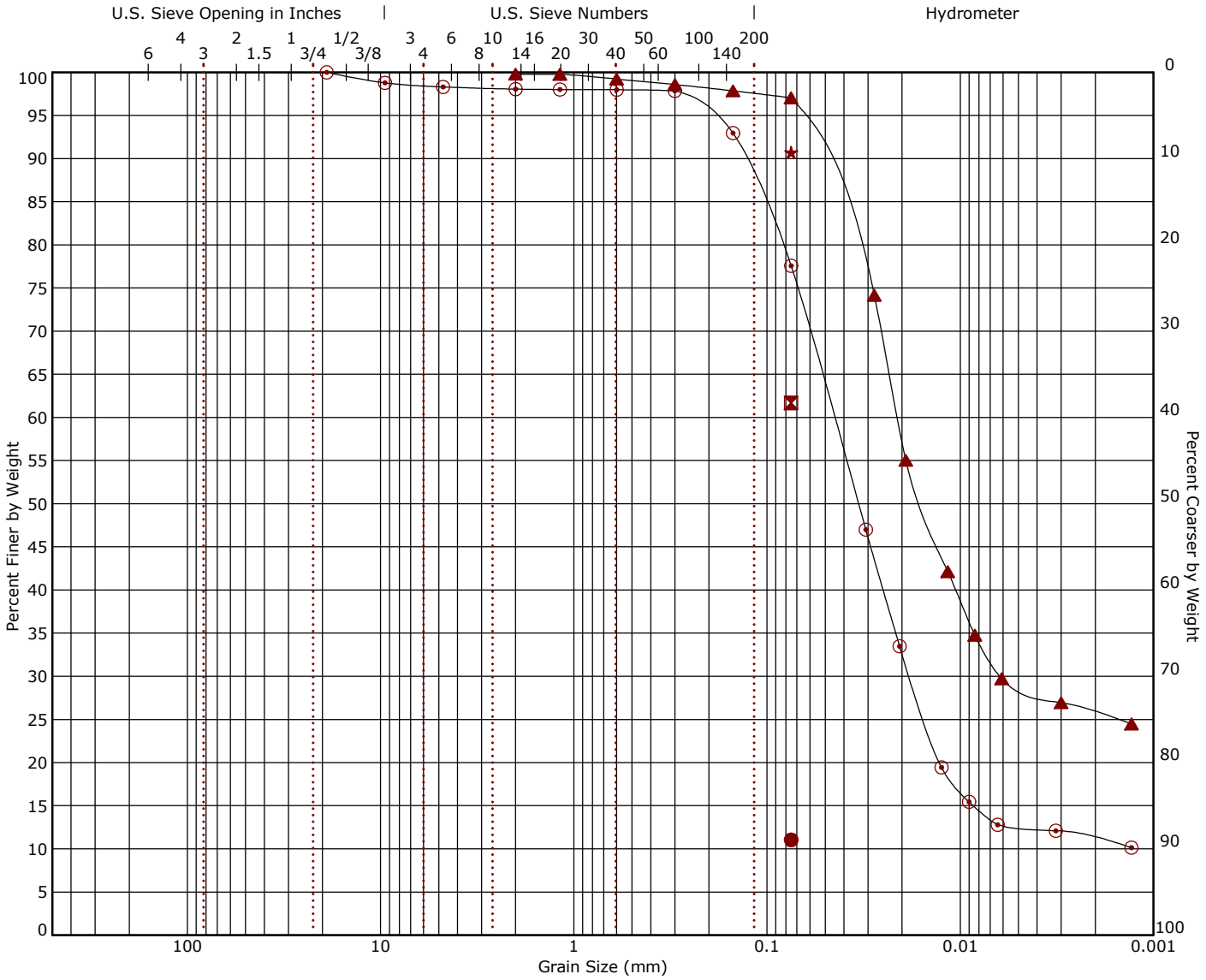
CBR @ 95% Density 3.8

CBR @ 100% Density 9.9

AltDeliv_TDOT_W. TN Timber Bridge Bundle 2
SR 54 Little Nixon Creek | Haywood County, TN
Terracon Project No. 1A255160

Grain Size Distribution

ASTM D422 / ASTM C136



Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

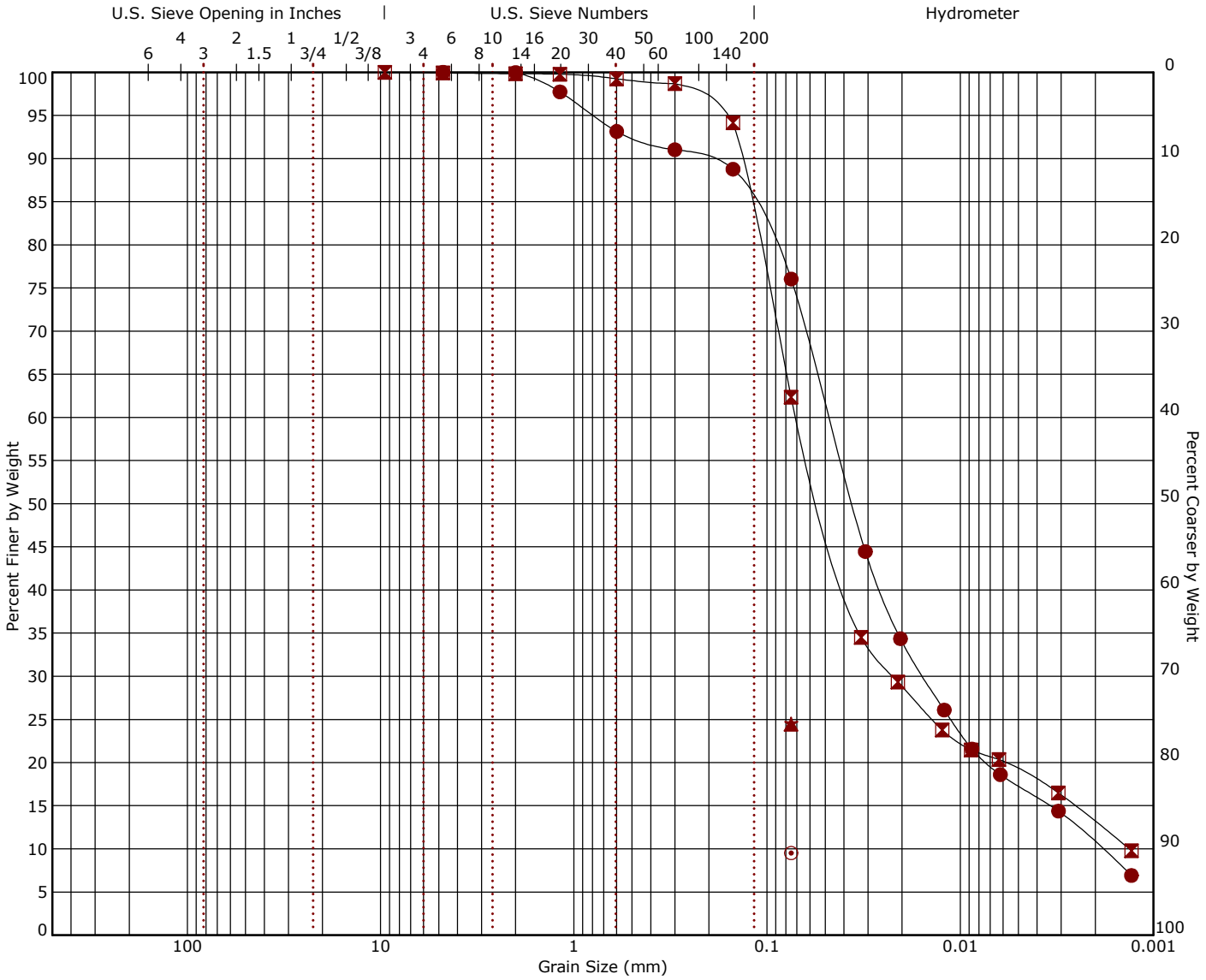
Boring ID	Depth (Ft)	Description	USCS	LL	PL	PI	Cc	Cu
B-38-1	1 - 2.5							
B-38-1	2.5 - 4							
B-38-1	7 - 9	LEAN CLAY	CL	41	19	22		
B-38-1	9 - 10.5							
B-38-1	23.5 - 25	SILTY CLAY with SAND	CL-ML	25	19	6		

Boring ID	Depth (Ft)	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Fines	%Silt	%Clay
B-38-1	1 - 2.5	0.075							11.0		
B-38-1	2.5 - 4	0.075							61.7		
B-38-1	7 - 9	2	0.021	0.006				2.7	97.1	68.1	28.9
B-38-1	9 - 10.5	0.075							90.7		
B-38-1	23.5 - 25	19	0.045	0.018		0.0	1.7	20.7	77.6	65.0	12.5

AltDeliv_TDOT_W. TN Timber Bridge Bundle 2
SR 54 Little Nixon Creek | Haywood County, TN
Terracon Project No. 1A255160

Grain Size Distribution

ASTM D422 / ASTM C136



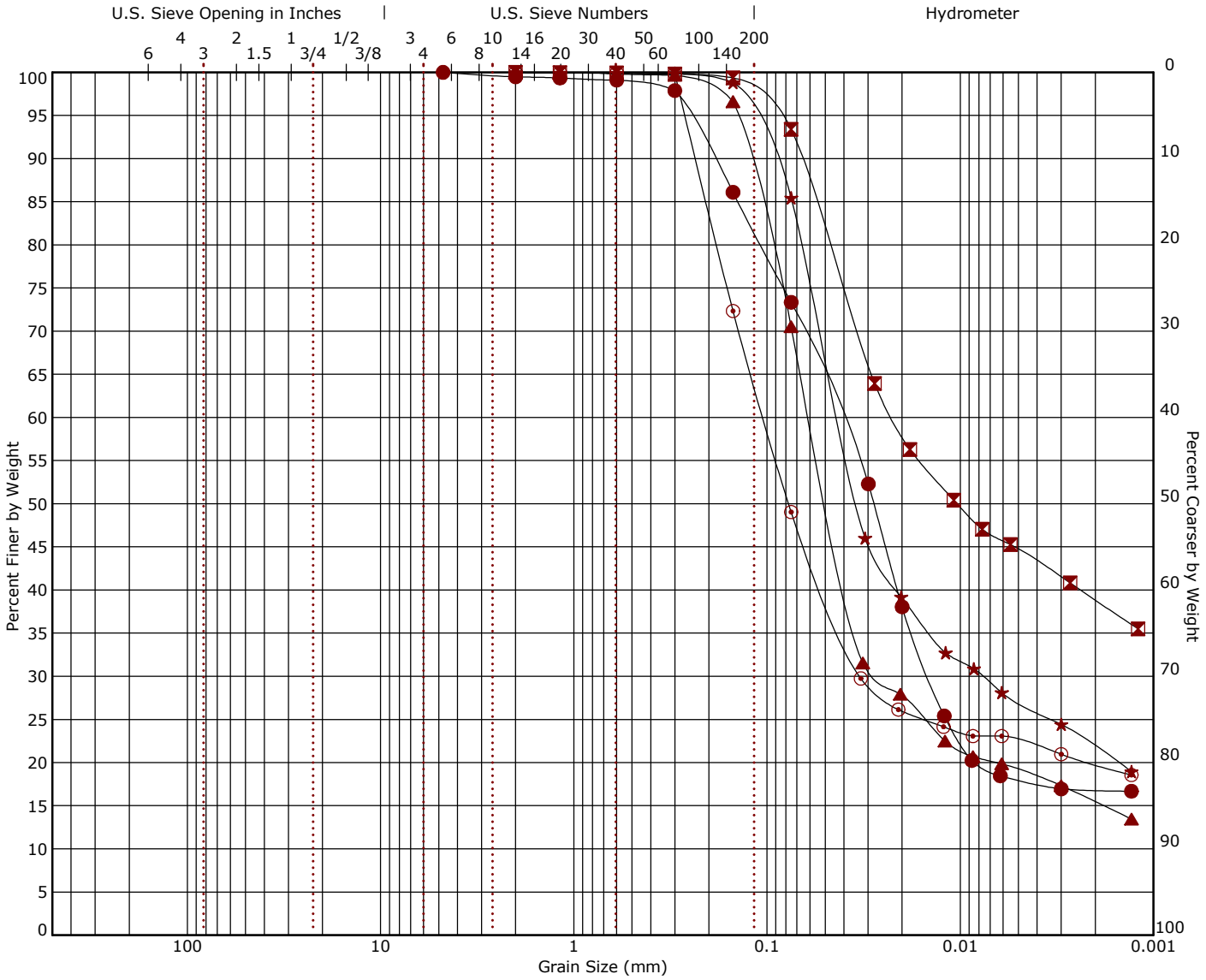
Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

Boring ID		Depth (Ft)	Description	USCS	LL	PL	PI	Cc	Cu
●	B-38-1	38.5 - 40	LEAN CLAY with SAND	CL	42	15	27	2.69	25.72
⊠	B-38-1	53.5 - 55	SANDY LEAN CLAY	CL	34	18	16	5.29	52.23
▲	B-38-1	68.5 - 70							
★	B-38-1	78.5 - 80							
⊙	B-38-1	93.5 - 95							

Boring ID		Depth (Ft)	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Fines	%Silt	%Clay
●	B-38-1	38.5 - 40	4.75	0.048	0.015	0.002	0.0	0.0	24.0	76.0	58.8	17.3
⊠	B-38-1	53.5 - 55	9.5	0.07	0.022	0.001	0.0	0.1	37.6	62.3	43.3	19.1
▲	B-38-1	68.5 - 70	0.075							24.4		
★	B-38-1	78.5 - 80	0.075							24.6		
⊙	B-38-1	93.5 - 95	0.075							9.5		

Grain Size Distribution

ASTM D422 / ASTM C136



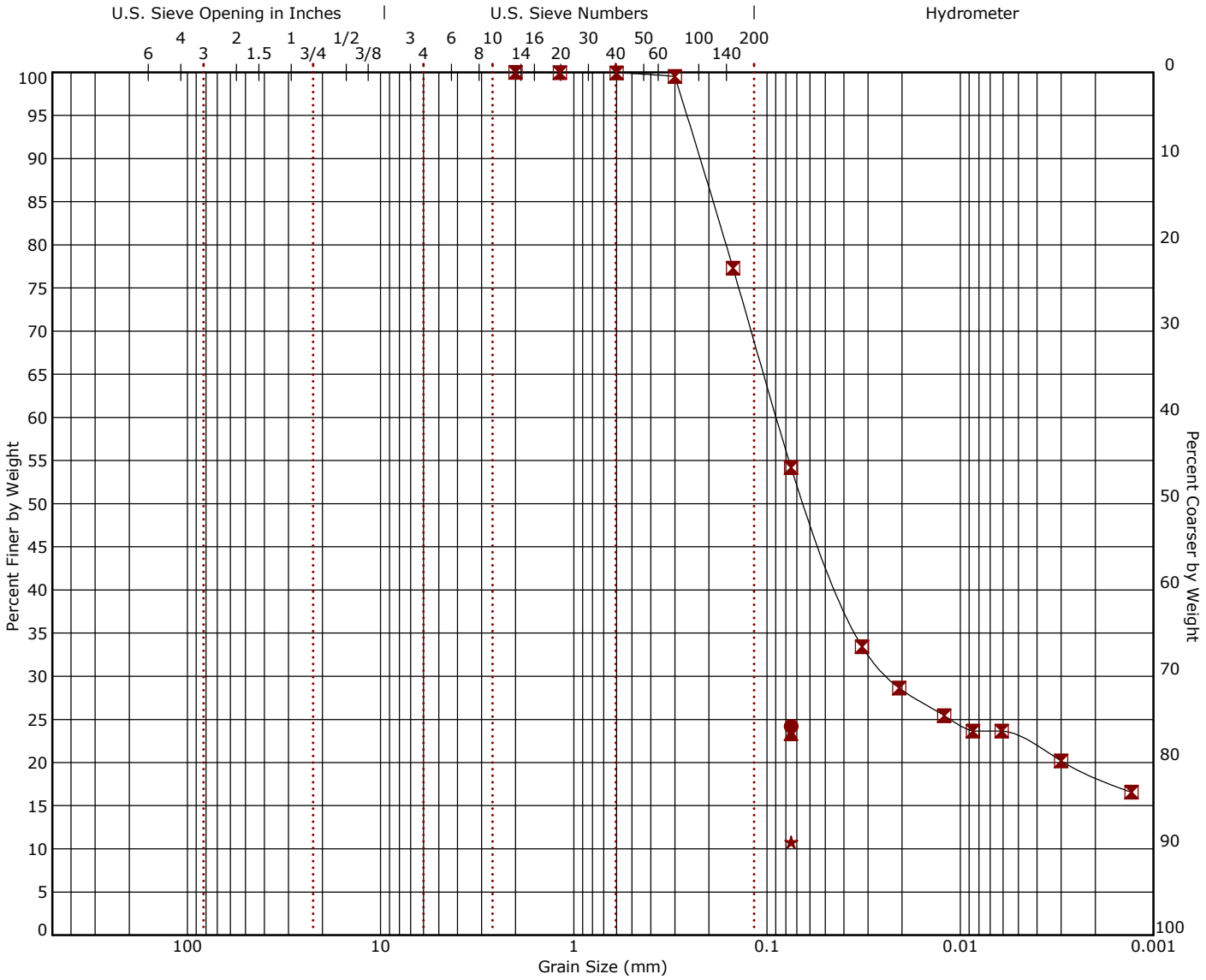
Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

Boring ID		Depth (Ft)	Description	USCS	LL	PL	PI	Cc	Cu
●	B-38-2	23.5 - 25	LEAN CLAY with SAND	CL	28	15	13		
⊠	B-38-2	33.5 - 35	FAT CLAY	CH	53	15	38		
▲	B-38-2	43.5 - 45	LEAN CLAY with SAND	CL	39	17	22		
★	B-38-2	58.5 - 60	FAT CLAY	CH	50	16	34		
⊙	B-38-2	63.5 - 65	CLAYEY SAND	SC	25	15	10		

Boring ID		Depth (Ft)	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Fines	%Silt	%Clay
●	B-38-2	23.5 - 25	4.75	0.042	0.015		0.0	0.0	26.7	73.3	55.3	18.0
⊠	B-38-2	33.5 - 35	2	0.022			0.0	0.0	6.6	93.4	48.7	44.7
▲	B-38-2	43.5 - 45	2	0.06	0.026		0.0	0.0	29.5	70.5	51.4	19.1
★	B-38-2	58.5 - 60	2	0.042	0.008		0.0	0.0	14.5	85.5	58.4	27.1
⊙	B-38-2	63.5 - 65	2	0.104	0.033		0.0	0.0	51.0	49.0	26.6	22.5

Grain Size Distribution

ASTM D422 / ASTM C136



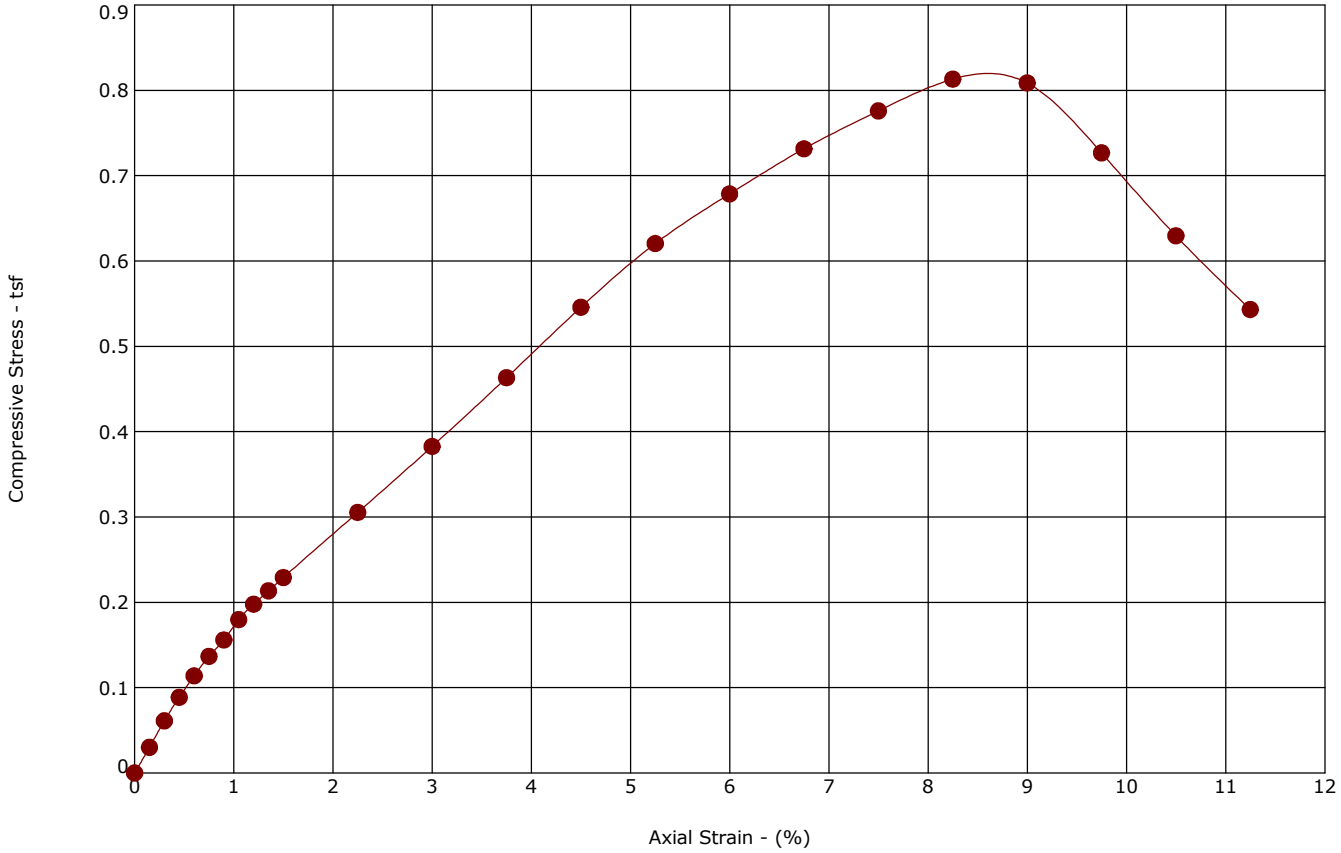
Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

Boring ID	Depth (Ft)	Description	USCS	LL	PL	PI	Cc	Cu
B-38-2	68.5 - 70							
B-38-2	78.5 - 80	SANDY LEAN CLAY	CL	21	13	8		
B-38-2	88.5 - 90							
B-38-2	98.5 - 100							

Boring ID	Depth (Ft)	D_{100}	D_{60}	D_{30}	D_{10}	%Cobbles	%Gravel	%Sand	%Fines	%Silt	%Clay
B-38-2	68.5 - 70	0.075							24.2		
B-38-2	78.5 - 80	2	0.089	0.023		0.0	0.0	45.8	54.2	31.5	22.7
B-38-2	88.5 - 90	0.075							23.2		
B-38-2	98.5 - 100	0.075							10.8		

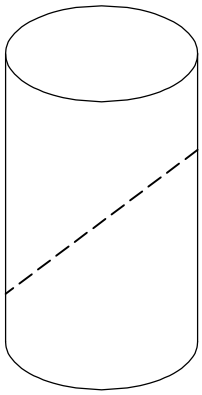
Unconsolidated-Undrained Test

ASTM D2850



Boring ID	Depth (Ft)	Sample type	LL	PL	PI	Fines (%)	Description
B-38-1	7 - 9	Shelby Tube	41	19	22	97.1	LEAN CLAY(CL)

Specimen Failure Mode



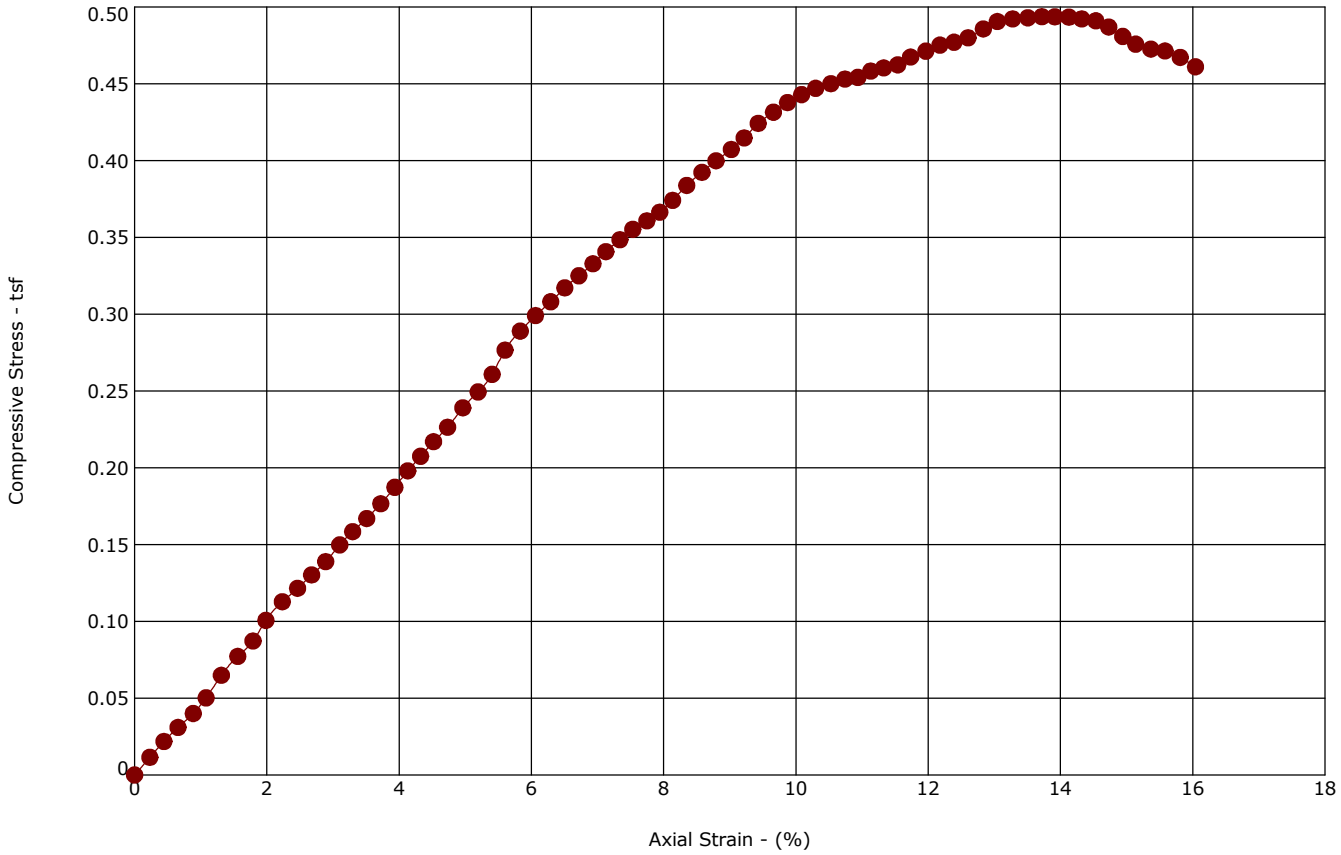
Failure Mode: Shear (dashed)

Specimen Test Data

Moisture Content (%):	27.6
Dry Density (pcf)	94.3
Diameter (in):	2.81
Height (in):	5.64
Height / Diameter Ratio:	2.00
Calculated Saturation (%)	
Calculated Void Ratio:	
Assumed Specific Gravity:	
Failure Strain (%):	8.25
Compressive Strength (tsf):	0.81
Undrained Shear Strength (tsf):	0.41
Strain Rate (in/min):	0.0846
Confining Pressure (psi):	
Remarks:	

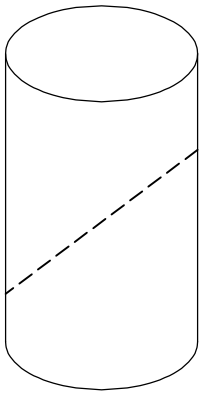
Unconsolidated-Undrained Test

ASTM D2850



Boring ID	Depth (Ft)	Sample type	LL	PL	PI	Fines (%)	Description
B-38-2	7.5 - 9.5	Shelby Tube					

Specimen Failure Mode



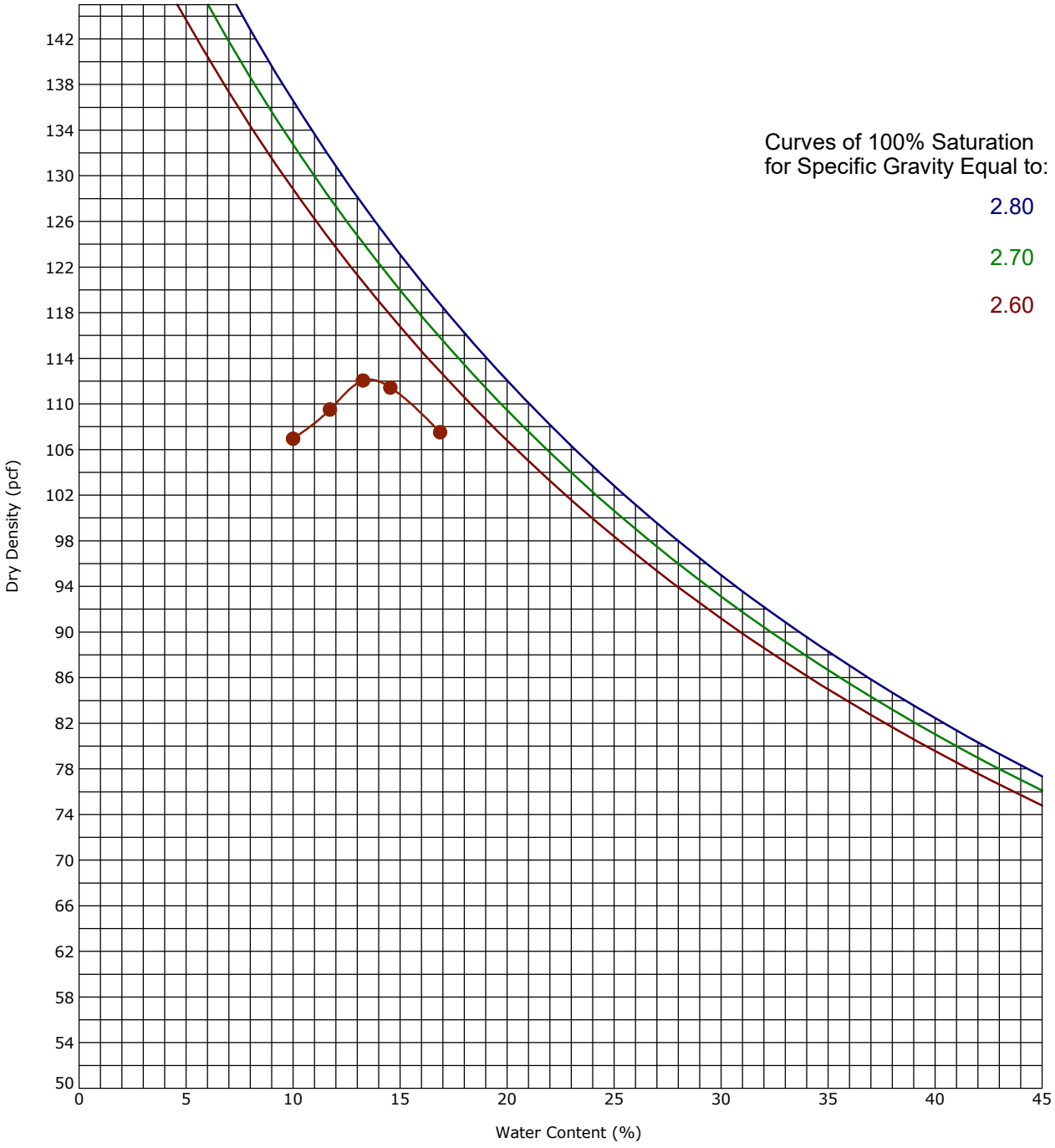
Failure Mode: Shear (dashed)

Specimen Test Data

Moisture Content (%):	27.6
Dry Density (pcf)	97.8
Diameter (in):	2.82
Height (in):	5.64
Height / Diameter Ratio:	2.00
Calculated Saturation (%)	102.92
Calculated Void Ratio:	0.72
Assumed Specific Gravity:	2.7
Failure Strain (%):	13.72
Compressive Strength (tsf):	0.49
Undrained Shear Strength (tsf):	0.25
Strain Rate (in/min):	
Confining Pressure (psi):	
Remarks:	

Moisture-Density Relationship

AASHTO T99-Method A



Boring ID	Depth (Ft)	Description of Materials
B-38-1	1 - 2.5	

Fines (%)	Fraction > mm size	LL	PL	PI	Test Method	Maximum Dry Density (pcf)	Optimum Water Content (%)
11	0.0				AASHTO T99-Method A	112.1	13.5

Client

American Structurepoint Inc
Round Rock, TX

Project

AltDeliv_TDOT_West Tennessee Timber Bridge Bundle 2
1A255160

Date Received: 4/3/2026

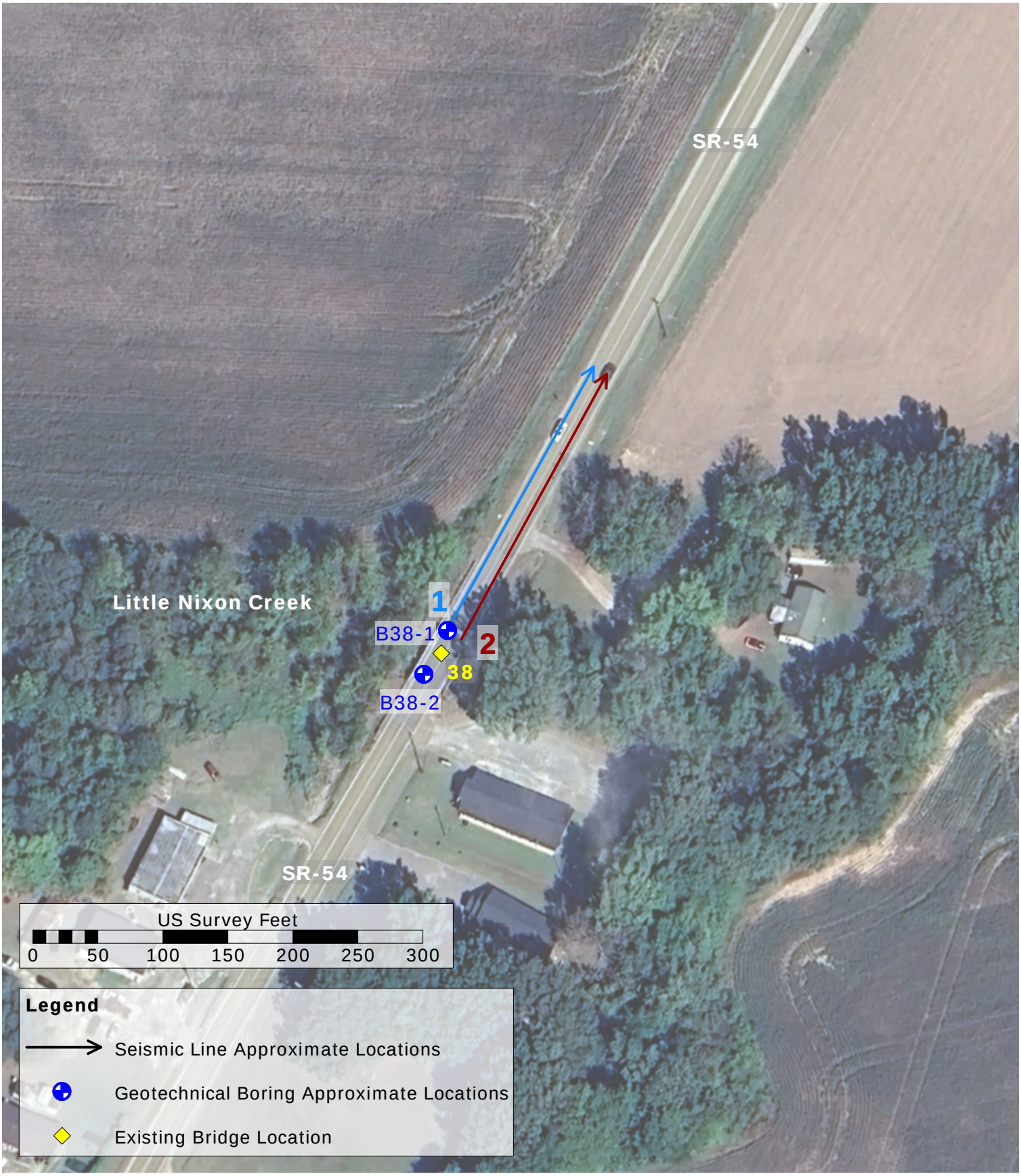
Corrosivity Suite - *Results*

Sample Location	38.1
Sample Depth (ft.)	-

Acidity (pH)	**AASHTO T289**	8.0
Water Soluble Sulfate Ion Content (mg/Kg)	**AASHTO T290B**	279
Water Soluble Chloride Ion Content (mg/Kg)	**AASHTO T291A**	40
Oxidation-Reduction Potential (RmV)	**ASTM G200**	285.2
Electrical Resistivity (Ω·cm)	**ASTM G57**	2000
Total Dissolved Salts (mg/Kg)	**AWWA 2520 B**	625
Water Soluble Sulfide Content (mg/Kg)	**AWWA 4500-S,D**	Nil

Verified By: *Myles Warner*
4/17/2026

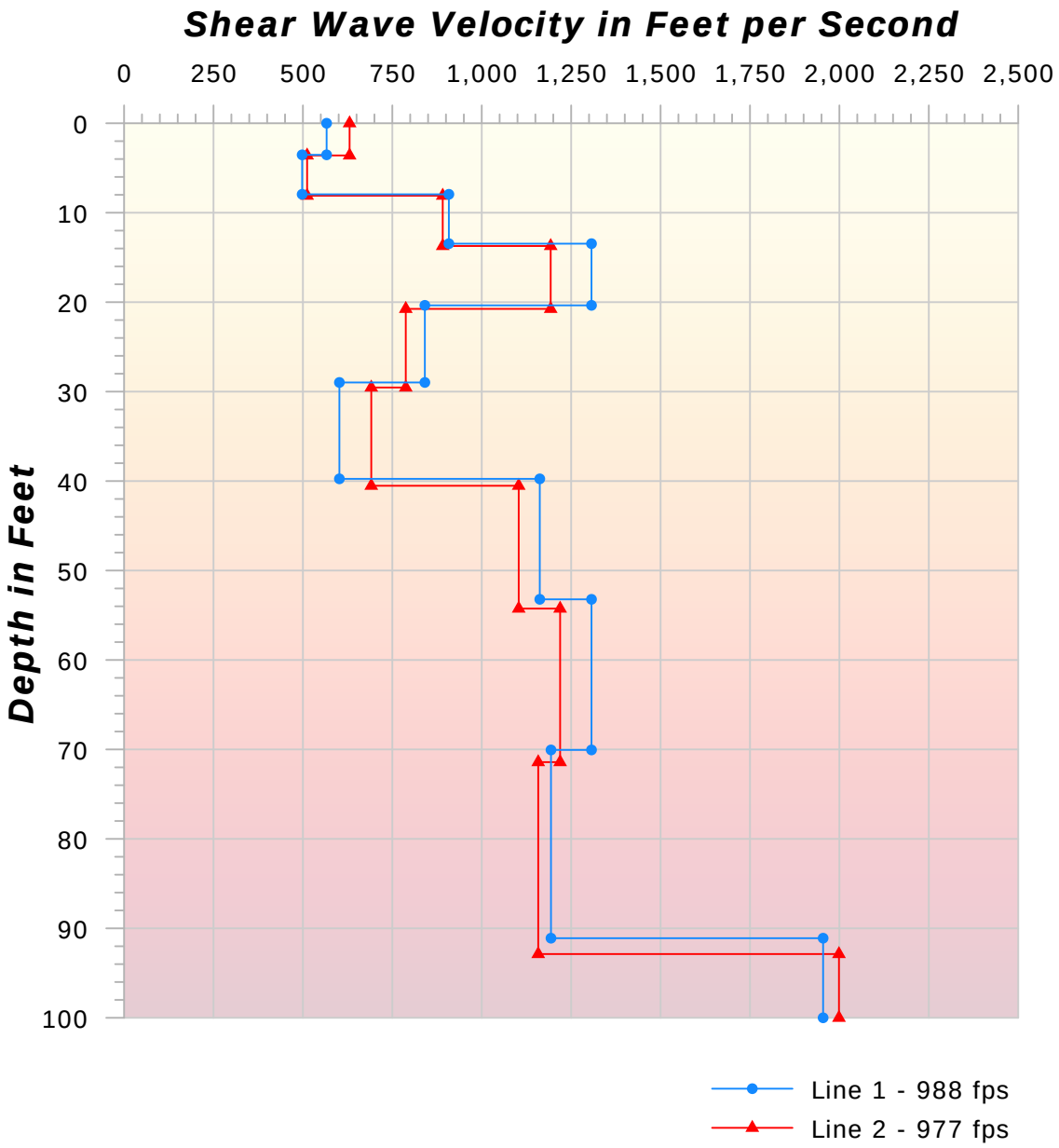
These tests were performed in general accordance with the applicable AASHTO, ASTM, and AWWA test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced without the full written consent of Terracon Consultants Inc.. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar materials.



Notes
1) Line and boring locations are approximate. Coordinates were collected via Google Earth approximately every 60 feet.
2) Aerial imagery provided by Google Earth.

N	Terracon Date: 05/2026 | Project No: 1A255160	Geophysical Location Plan Replacement of Bridge 38 SR-54 over Little Nixon Creek Haywood County, Tennessee	Exhibit 1

Vs100-ft Model
TDOT Bridge 38



Notes:
1) Seismic testing was conducted by Terracon on January 07, 2026.
2) Shear wave velocity testing and calculations were conducted in general accordance with ASCE 7-22 and IBC 2024.

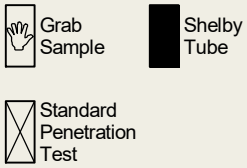
Drawn By:	AGW	Terracon Date: 05/2026 Project Number: 1A255160	Seismic Site Classification Data	Exhibit
PM:	ECC		Replacement of Bridge 38 SR-54 over Little Nixon Creek Haywood County, Tennessee	2
SME:	NBR			
APR:	JEA			

Supporting Information

Contents:

General Notes
Unified Soil Classification System

General Notes

Sampling	Water Level	Field Tests
	 Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	N Standard Penetration Test Resistance (Blows/Ft.) (HP) Hand Penetrometer (T) Torvane (DCP) Dynamic Cone Penetrometer UC Unconfined Compressive Strength (PID) Photo-Ionization Detector (OVA) Organic Vapor Analyzer

Descriptive Soil Classification

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

Location And Elevation Notes

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

Strength Terms

Relative Density of Coarse-Grained Soils (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		**Consistency of Fine-Grained Soils** (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Relative Density	**Standard Penetration or N-Value (Blows/Ft.)**	**Consistency**	**Unconfined Compressive Strength Qu (psf)**	**Standard Penetration or N-Value (Blows/Ft.)**
Very Loose	0 - 3	Very Soft	less than 500	0 - 1
Loose	4 - 9	Soft	500 to 1,000	2 - 4
Medium Dense	10 - 29	Medium Stiff	1,000 to 2,000	5 - 8
Dense	30 - 50	Stiff	2,000 to 4,000	9 - 15
Very Dense	> 50	Very Stiff	4,000 to 8,000	16 - 30
		Hard	> 8,000	> 30

Relevance of Exploration and Laboratory Test Results

Exploration/field results and/or laboratory test data contained within this document are intended for application to the project as described in this document. Use of such exploration/field results and/or laboratory test data should not be used independently of this document.

Unified Soil Classification System

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]				Soil Classification	
				Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 4 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu≥4 and 1≤Cc≤3 [E]	GW	Well-graded gravel [F]
			Cu<4 and/or [Cc<1 or Cc>3.0] [E]	GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH	GM	Silty gravel [F, G, H]
			Fines classify as CL or CH	GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu≥6 and 1≤Cc≤3 [E]	SW	Well-graded sand [I]
			Cu<6 and/or [Cc<1 or Cc>3.0] [E]	SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH	SM	Silty sand [G, H, I]
			Fines classify as CL or CH	SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots above "A" line [J]	CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]	ML	Silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OL	Organic clay [K, L, M, N]
					Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line	CH	Fat clay [K, L, M]
			PI plots below "A" line	MH	Elastic silt [K, L, M]
		Organic:	$\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$	OH	Organic clay [K, L, M, P]
					Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.
[E] $Cu = D_{60}/D_{10}$ $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.

