

# Geotechnical Data Report

**S-48 (Columbia Avenue) Corridor Improvements  
Lexington County, South Carolina**

May 20, 2016

SCDOT Project Pin: 42383

Terracon Project No. 73155095

**Prepared for:**

**Mead & Hunt**

**Lexington, South Carolina**

**Prepared by:**

**Terracon Consultants, Inc.**

**Columbia, South Carolina**

Offices Nationwide  
Employee-Owned

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# Terracon

Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

May 20, 2016



Mead & Hunt, Inc.  
307 West Main Street  
Lexington, South Carolina 29072

Attn: Mr. Zack Haney, P.E.  
Transportation Project Manager

Re: Geotechnical Data Report  
S-48 (Columbia Avenue) Roadway Improvements  
Lexington County, South Carolina  
SCDOT Project Pin: 42383  
Terracon Project Number: 73155095

Dear Mr. Haney:

Terracon Consultants Inc. (Terracon) has completed the geotechnical exploration and testing services for the above referenced project. These services were conducted in general accordance with the Mead & Hunt, Inc. Scope of Services, dated May 1, 2014. This geotechnical data report presents the findings of the subsurface exploration and laboratory testing along with an overview of testing activities.

## 1.0 INTRODUCTION

Mead & Hunt, Inc. has contracted Terracon to perform subsurface exploration and laboratory testing for the S-48 (Columbia Avenue) Corridor Improvements in Lexington County, South Carolina. The corridor runs from Amicks Ferry Road to east of the intersection of Columbia Avenue and Comalander Drive along the proposed and existing right of way.

The purpose this work is to develop information relative to subsurface soil and groundwater conditions along the proposed and existing roadway alignment and at the bent locations for the S-48/I-26 interchange. This report presents the results of that work. No geotechnical recommendations are associated with the requested scope of study.

The following sections of this report contain a summary of the activities our field exploration and laboratory testing. The logs of the soil test borings, ReMi array, the Site Location Map and the Boring Location Plans are included in Appendix A of this report. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included in Appendix B of this report. Descriptions of the field exploration and laboratory testing are included in their respective appendices.



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## **2.0 PROJECT DESCRIPTION**

The project sites is located along the proposed and existing S-48 (Columbia Avenue) alignment near Chapin in Lexington County, SC as shown in Exhibits A-1 to A-7 in Appendix A. It is our understanding that the project will include the widening of S-48, improvement of the intersections and the removal/replacement of the existing bridge and will be replaced with a new wider structure on the existing or similar horizontal alignment. The existing bridge is a 4-span structure that is supported on a deep foundation system.

## **3.0 GEOTECHNICAL TESTING**

The geotechnical exploration for this project, including field and laboratory testing, was performed between December 3, 2015 and March 15, 2016. The results of our field work and our associated laboratory testing are included in Appendices A and B of this report.

### **3.1 Field Exploration**

Our field exploration at the site consisted of the following:

- Thirty Eight (38) Standard Penetration Test (SPT) Borings (B-1 through B-38)
- Geophysical testing consisting of three (1) Refraction Microtremor (ReMi) arrays (ReMi-1)

The shear wave velocity profile is provided in Appendix A. The 100-foot average shear wave velocity value shown on each profile is based on the data obtained below the fill embankment.

The tests were performed at the locations requested by Mead & Hunt. A description of our testing methods and graphical logs outlining the soil conditions at each test location are presented in Appendix A. Test locations were established in the field by Terracon and surveyed by Mead & Hunt after completion.

### **3.2 Laboratory Testing**

As directed in the Summary of Laboratory Assignment, dated February 24, 2016 by Mead & Hunt, the following laboratory tests were performed on the soil samples collected at the site:

- One-hundred twenty-four (124) Natural Moisture Content Tests (ASTM D2216)
- Seventy-nine (79) Atterberg Limits Tests (ASTM D4318)
- Seventeen (17) Sieve Analysis with Hydrometer (ASTM D422-63)
- Five (5) Standard Proctor Test (ASTM D698)
- Five (5) California Bearing Ratio Tests (ASTM D1883)
- Two (2) Tri-axial tests with Pore Pressure Tests (ASTM D4767)
- Eight (8) pH of Soils (ASTM D4972)

## Geotechnical Data Report

S-48 (Columbia Avenue) Corridor Improvements ■ Lexington County, SC  
May 20, 2016 ■ Terracon Project No. 73155095



- Eight (8) Water-Soluble Sulfate in Soils (ASTM C1580)
- Eight (8) Water-Soluble Chlorides in Soils (ASTM D1411)
- Eight (8) Measurement of Soil Resistivity Tests (ASTM G187)
- Six (6) Moisture, Ash, and Organic Matter Tests (ASTM D2974)
- Sixty-six (66) Sieve Analysis with #200 Wash Tests (ASTM D422-63)

The laboratory procedures and results of the laboratory tests are presented in Appendix B.

## 4.0 CLOSURE

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

Sincerely,  
**Terracon Consultants, Inc.**

Joseph D.M. Fredendall, E.I.T.  
Field Engineer

Phillip A. Morrison, P.E.  
Geotechnical Department Manager  
SC Registration No. 17275

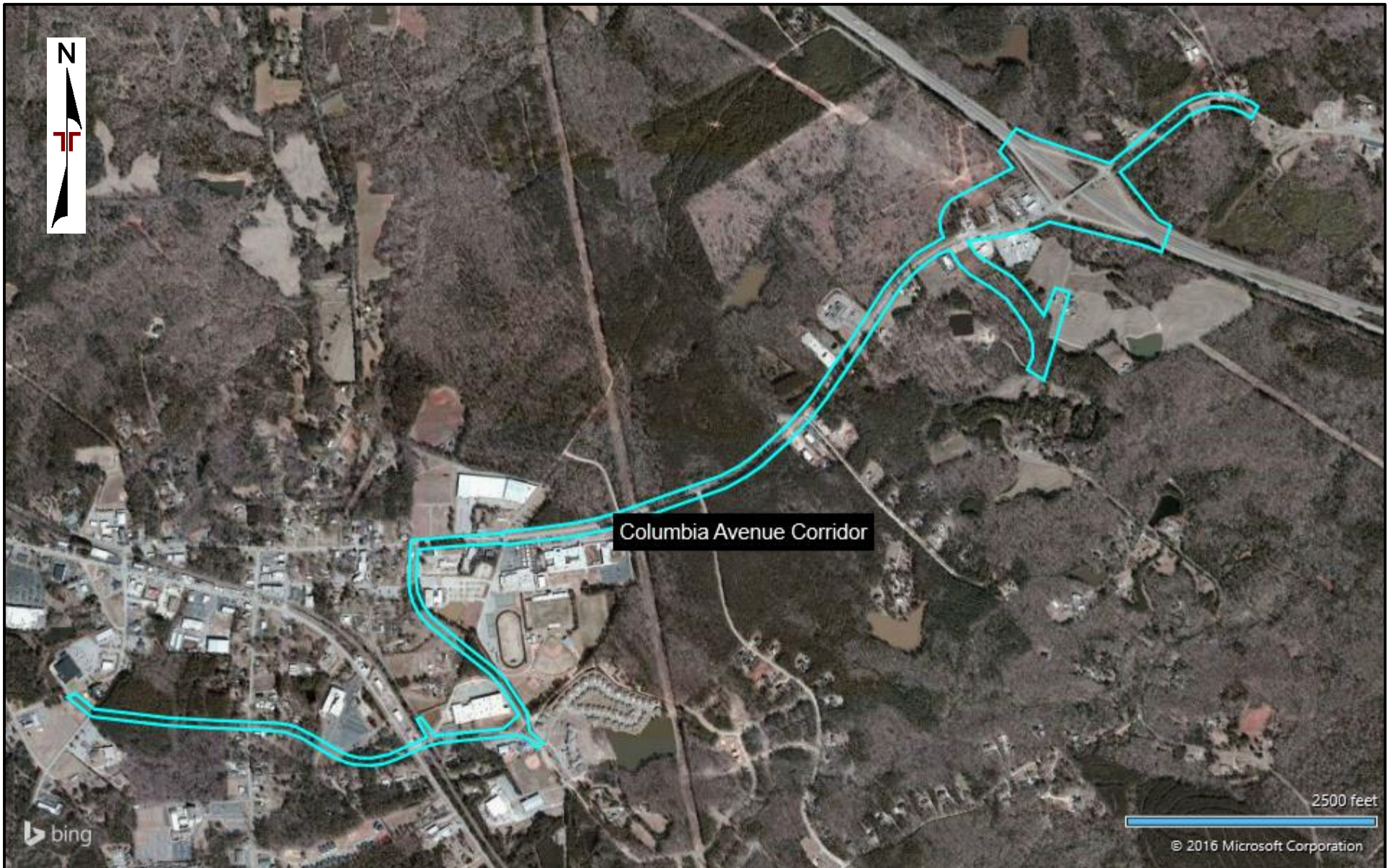
### Attachments

Copies: Addressee (1 via email)  
File (1)



**APPENDIX A**  
**FIELD EXPLORATION**

- Exhibit A-1 – Site Location Map**
- Exhibits A-2 – A-7 – Boring Location Plans**
- Exhibit A-8 – Field Testing Summary**
- Exhibits A-9 – ReMi Results**
- Exhibit A-10 – Field Testing Description**
- Exhibit A-11 – Soil Description Terms**
- Exhibit A-12 to A-64 – Boring Logs**



AERIAL PHOTOGRAPHY PROVIDED BY  
MICROSOFT BING MAPS

DIAGRAM IS FOR GENERAL LOCATION ONLY,  
AND IS NOT INTENDED FOR CONSTRUCTION  
PURPOSES

Project Manager:  
PAM

Drawn by:  
JDF

Checked by:  
PAM

Approved by:  
PAM

Project No.  
73155095

Scale:  
AS SHOWN

File Name:  
A-1

Date:  
May, 2016

**Terracon**

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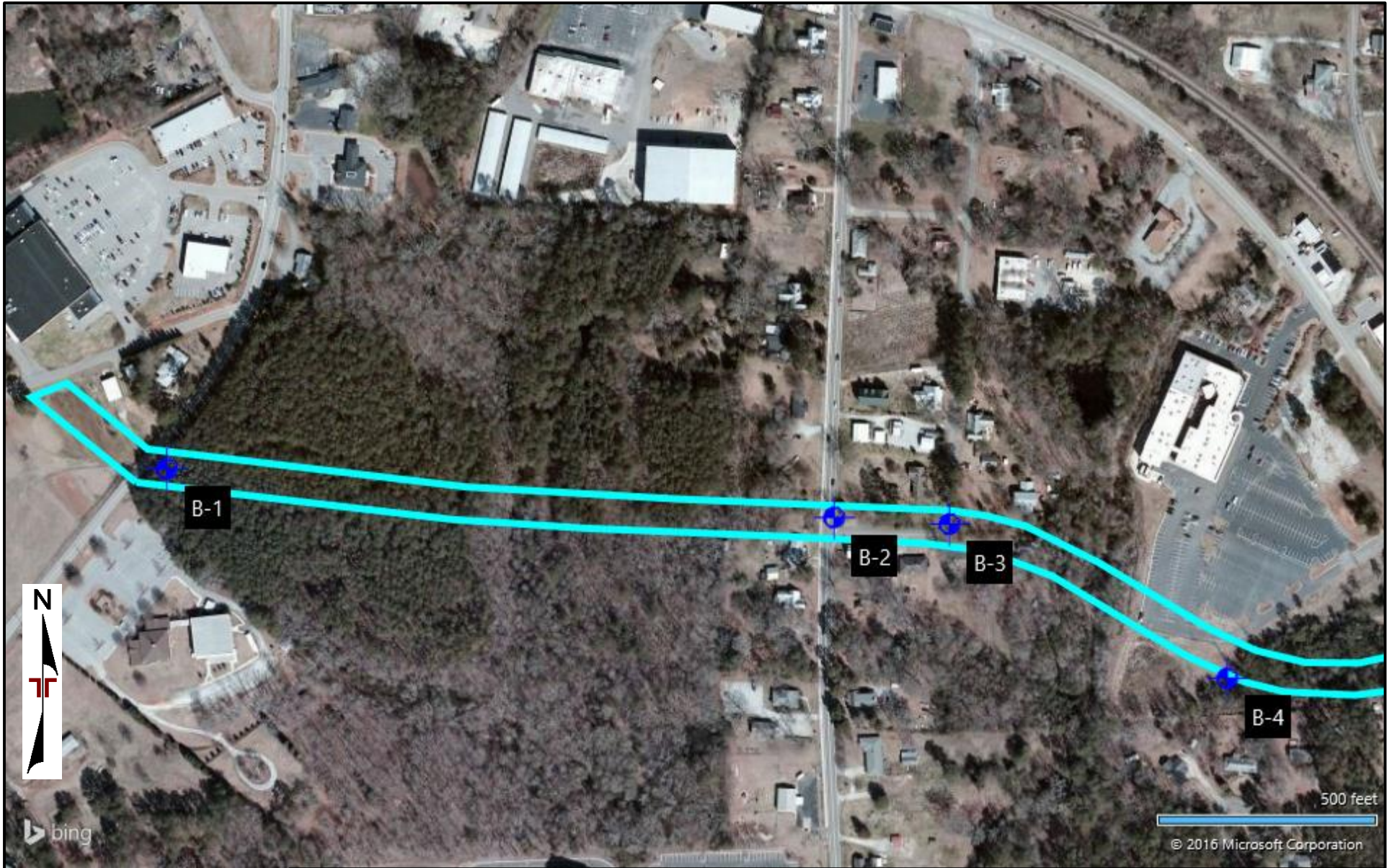
## SITE LOCATION PLAN

Columbia Avenue (S-48) Roadway Improvements  
Lexington County, South Carolina

Exhibit

A-1





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A-2

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May, 2016

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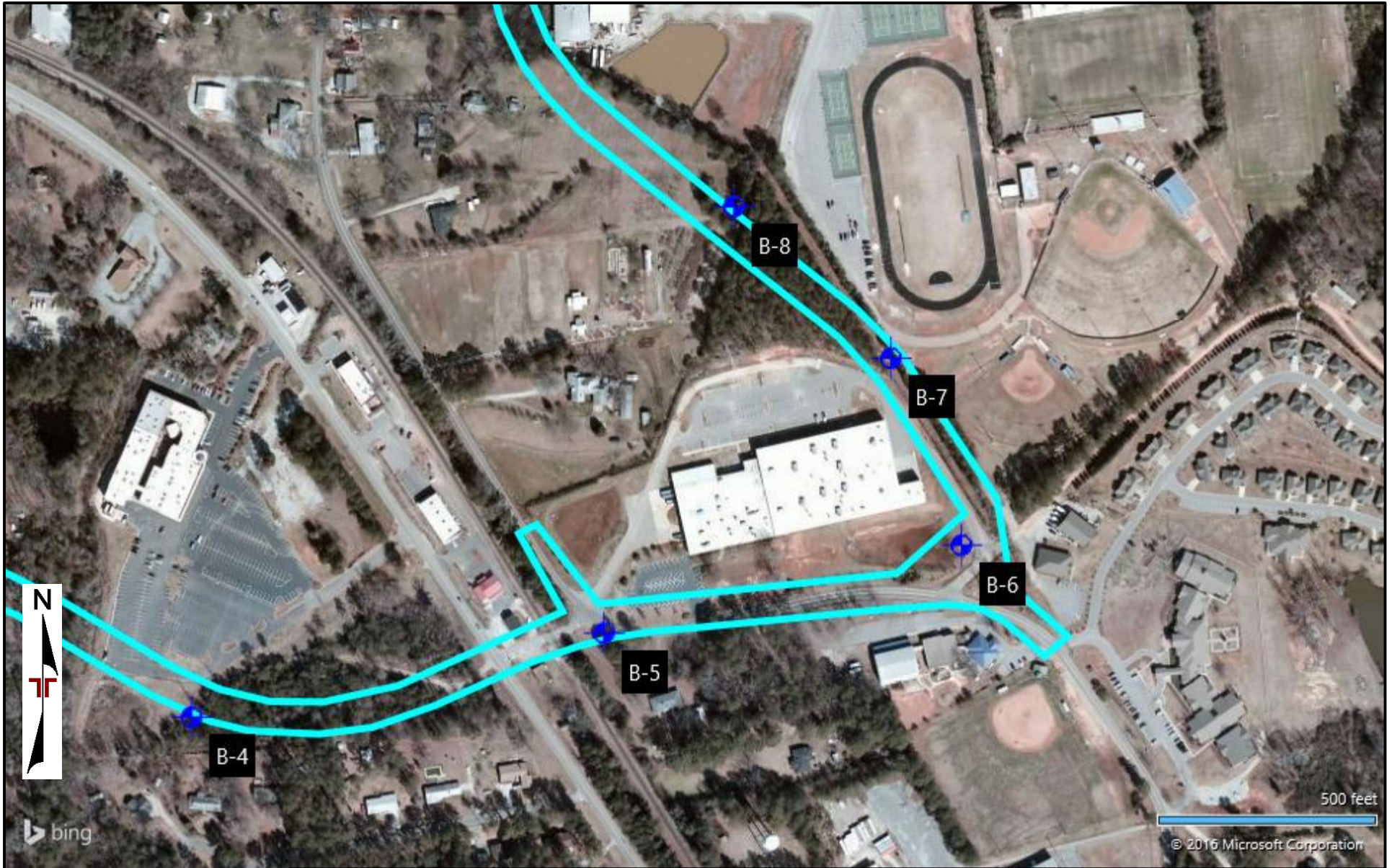
## BORING LOCATION PLAN

Columbia Avenue (S-48) Roadway Improvements  
Lexington County, South Carolina

Exhibit

A-2





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PAM

Project No.  
73155095

Scale:  
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File Name:  
A-3

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## BORING LOCATION PLAN

Columbia Avenue (S-48) Roadway Improvements  
Lexington County, South Carolina

Exhibit

A-3





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Drawn by: JDF  
Checked by: PAM  
Approved by: JDF

Project No. 73155095  
Scale: AS SHOWN  
File Name: A-4  
Date: May, 2016

**Terracon**

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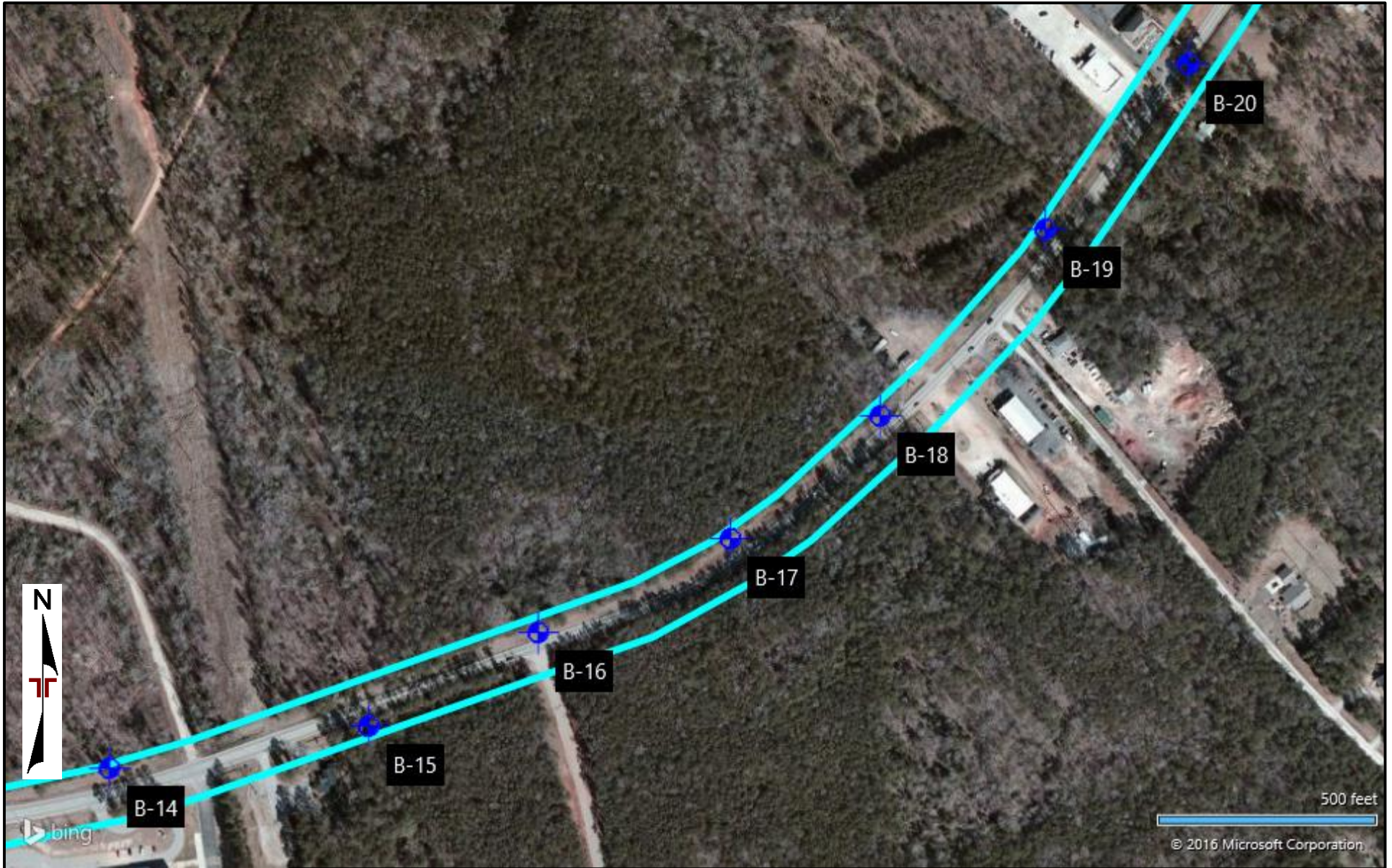
## BORING LOCATION PLAN

Columbia Avenue (S-48) Roadway Improvements  
Lexington County, South Carolina

Exhibit

**A-4**





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Project Manager: PAM  
Drawn by: JDF  
Checked by: PAM  
Approved by: PAM

Project No. 73155095  
Scale: AS SHOWN  
File Name: A-5  
Date: May, 2016

**Terracon**  
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Columbia, SC 29229-4307

## BORING LOCATION PLAN

Columbia Avenue (S-48) Roadway Improvements  
Lexington County, South Carolina

Exhibit

A-5





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Project Manager: PAM  
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Checked by: PAM  
Approved by: PAM

Project No. 73155095  
Scale: AS SHOWN  
File Name: A-6  
Date: May, 2016

**Terracon**  
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## BORING LOCATION PLAN

Columbia Avenue (S-48) Roadway Improvements  
Lexington County, South Carolina

Exhibit

A-6





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PAM

Drawn by:  
JDF

Checked by:  
PAM

Approved by:  
PAM

Project No.  
73155095

Scale:  
AS SHOWN

File Name:  
A-7

Date:  
May, 2016

**Terracon**

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## BORING LOCATION PLAN

Columbia Avenue (S-48) Roadway Improvements  
Lexington County, South Carolina

Exhibit

**A-7**



**Geotechnical Data Report**

S-48 (Columbia Avenue) Corridor Improvements ■ Lexington County, SC

May 20, 2016 ■ Terracon Project No. 73155095

**Field Testing Summary**

Boring No.	Ground Elevation (ft)	Test Depth (ft)	Northing	Easting	Latitude	Longitude
B-01	445.2	20	847763.7	1892581.6	34.16290765	-81.35513975
B-02	458.6	20	847648.2	1894109.7	34.16260462	-81.35008638
B-02 BULK	458.6	5	847649.2	1894110.7	34.16260462	-81.35008702
B-03	461.6	20	847632.3	1894373.7	34.16256333	-81.34921337
B-04	440.7	20	847278.7	1895009.0	34.16159761	-81.34710920
B-05	464.8	20	847467.0	1895953.8	34.16212374	-81.34398747
B-05 BULK	464.8	5	847467.0	1895954.8	34.16212256	-81.34398747
B-06	458.7	20	847664.9	1896773.4	34.16267513	-81.34127990
B-07	472.7	20	848091.8	1896613.1	34.16384685	-81.34181472
B-08	466.9	20	848438.3	1896254.7	34.16479581	-81.34300346
B-09	472.8	20	849036.8	1895713.6	34.16643581	-81.34479901
B-10	474.3	20	849414.4	1895779.1	34.16747400	-81.34458671
B-11	475.7	20	849447.4	1896191.8	34.16756856	-81.34322259
B-12	478.5	20	849488.3	1896753.8	34.16768591	-81.34136484
B-12 BULK	478.5	5	849488.3	1896755.8	34.16768591	-81.34136394
B-13	470.0	20	849576.7	1897098.0	34.16793200	-81.34022765
B-14	456.2	20	849688.4	1897603.7	34.16824360	-81.33855704
B-15	457.0	20	849782.6	1898197.6	34.16850779	-81.33659435
B-16	470.8	20	849995.0	1898586.4	34.16909514	-81.33531114
B-17	456.2	20	850207.5	1899027.2	34.16968294	-81.33385583
B-18	440.7	20	850486.5	1899371.2	34.17045271	-81.33272162
B-19	439.6	20	850911.0	1899750.7	34.17162268	-81.33147126
B-20	433.5	20	851284.4	1900075.3	34.17265171	-81.33040187
B-20 BULK	433.5	5	851285.4	1900076.3	34.17265205	-81.33040296
B-21	421.0	20	851710.7	1900310.7	34.17382553	-81.32962803
B-22	416.3	20	852193.5	1900673.1	34.17515553	-81.32843476
B-23	422.1	20	852387.9	1901206.3	34.17569435	-81.32667372

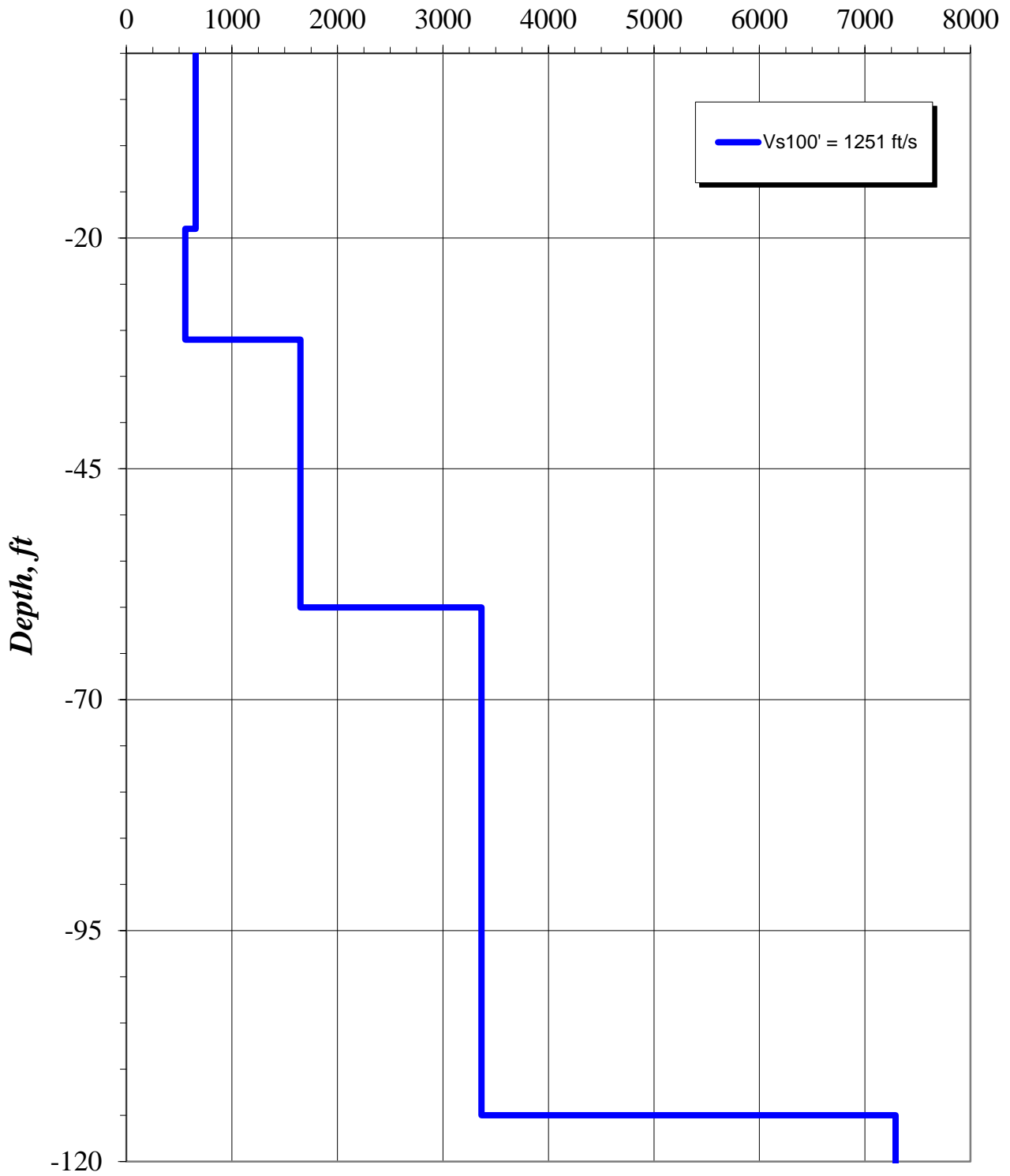
**Geotechnical Data Report**

S-48 (Columbia Avenue) Corridor Improvements ■ Lexington County, SC  
May 20, 2016 ■ Terracon Project No. 73155095



Boring No.	Ground Elevation (ft)	Test Depth (ft)	Northing	Easting	Latitude	Longitude
B-24	390.4	20	851667.6	1902132.5	34.17372281	-81.32360384
B-25	406.9	20	852939.8	1901380.1	34.17721259	-81.32610491
B-26	392.9	20	853740.0	1903461.0	34.17942959	-81.31923207
B-26 BULK	392.9	5	853740.0	1903462.0	34.17942865	-81.31923108
B-27	390.1	30	852463.8	1902932.3	34.17591777	-81.32096728
B-28	387.8	30	853150.5	1901820.4	34.17779560	-81.32465110
B-29	392.8	103.5	852947.9	1902249.8	34.17724242	-81.32322918
B-30	399.4	120	852823.8	1902389.8	34.17690257	-81.32276508
B-31	390.2	105	852974.2	1902379.7	34.17731581	-81.32280001
B-32	391.9	98.5	852900.4	1902446.6	34.17711363	-81.32257805
B-33	397.8	107.5	853113.7	1902538.5	34.17770061	-81.32227634
B-34	396.2	120	852971.2	1902571.7	34.17730917	-81.32216508
B-35	377.7	30	853404.6	1901932.6	34.17849480	-81.32428267
B-36	383.2	30	852653.6	1903049.7	34.17644057	-81.32058116
B-37	402.6	50	853198.1	1902707.9	34.17793384	-81.32171697
B-38	410.8	50	852698.6	1902125.1	34.17655625	-81.32363898

# *Shear-Wave Velocity, ft/s*



Project Mngr.	JDF
Drawn By:	PTK
Checked By:	JDF
Approved By:	PAM

Project No.	73155095
Scale:	As Shown
File Name:	A-9
Date:	May, 2016

**Terracon**  
Consulting Engineers & Scientists

521 CLEMSON ROAD COLUMBIA, SC 29229  
PH. (803) 741-9000 FAX. (803) 741-9900

**SHEAR WAVE VELOCITY PROFILE**

Columbia Avenue(S-48) Roadway  
Improvements

Lexington County, South Carolina

Exhibit

**A-9**

## **FIELD EXPLORATION DESCRIPTION**

### **Overview**

The testing locations were provided by Mead & Hunt and located in the field by Terracon by taking measurements from existing structures shown on the provided drawings. The borings were surveyed by Mead & Hunt after testing and drilling was complete. The locations as shown in the Exploration Location Plan are shown to the scale indicated.

A field log of each test location was prepared by our engineer. The final boring logs included with this report represent the engineer's description of the encountered conditions modified as necessary based on laboratory test results of the individual samples.

### **Soil Test Borings (STB)**

All boring and sampling operations were conducted in general accordance with the following procedures:

- SCDOT Geotechnical Design Manual 2010
- ASTM D5783, "Standard Guide for Use of Direct Rotary Drilling with Water-Based Drilling Fluid for Geo-environmental Exploration"
- ASTM D1586 "Test Method for Penetration Test and Split-Barrel Sampling of Soils"
- ASTM D4220 "Standard Practices for Preserving and Transporting Soil"

Each soil test boring was advanced using rotary wash drilling techniques. Five samples were collected in the upper 10 feet. Below that depth, samples were obtained at 5 foot intervals. Soil samples were obtained with a standard 1.4-inch I.D., 2-inch O.D., split-barrel sampler, also known as a standard split-spoon. The sampler is advanced into the soil a total of 18 inches by striking the drill rod using a 140-pound automatic hammer falling 30 inches. The number of blows required to advance the sampler for each of three, 6-inch increments is recorded. The sum of the number of blows for the second and third increments is called the "Standard Penetration Value", or N-value ( $N_{meas}$ , blows per foot). The N-value, when properly evaluated, is an index to the soil strength.

Soil Classification provides a general guide to the engineering properties of various soil types and enables the engineer to apply his experience to current situations. In our exploration, samples obtained during drilling operations are examined and visually classified by a geotechnical engineer using the procedures outlined in ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System). Laboratory testing was also performed on select split-spoon samples to evaluate index properties for further classification. The soils are described according to color, texture, and relative density or consistency (based on standard penetration resistance). The designations shown on the logs are described on Exhibit A-11 and Exhibit C-2.

**Geotechnical Data Report**

S-48 (Columbia Avenue) Corridor Improvements ■ Lexington County, SC

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Due to the drilling method (i.e. rotary wash), time-of-drilling water levels were not be recorded. The 24-hour groundwater readings were collected from those borings that could be maintained open overnight (those not in the existing roadways) and are indicated on the boring logs. At the conclusion of the work, the boreholes were backfilled with drill cuttings and capped with cold-patch asphalt. Those in the interstate right-of-way were backfilled with a cement-bentonite grout.

**Seismic Surface Wave Testing**

Terracon utilized the SeisOpt® ReMi™ method to develop the full depth shear wave velocity profile at the site for use in determining the seismic site class. This method employs non-linear optimization technology to derive one-dimensional S-wave velocities from refraction microtremor (ambient noise) recordings using a typical seismograph and standard, low frequency, refraction geophones. We utilized 12 receivers (geophones) set along a straight-line array with a 27±-foot receiver spacing for a total length of about 345 feet along Array 1 shown on the attached Boring Location Plans (Exhibits A-2 and A-3). Unfiltered, 30-second records were recorded using the background 'noise' created by the moving traffic and other ambient vibrations. The collected data, the response spectrum in the 5 to 40 Hz range, was processed using the computer software SeisOpt® ReMi™ by Optim, LLC with the results plotted as a conventional shear wave velocity vs. depth profile. The shear wave velocity profile obtained using the SeisOpt® ReMi™ data reduction method is shown on Exhibit A-9.

## **SOIL DESCRIPTION TERMS**

### **Relative Density/Consistency Terms**

#### Relative Density<sup>1</sup>

Descriptive Term	Relative Density	SPT Blow Count	Descriptive Term	Unconfined Compression Strength (q <sub>u</sub> ) (tsf)	SPT Blow Count
Very Loose	0 to 15%	4 and less	Very Soft	0.25 and less	2 and less
Loose	16 to 35%	5 to 10	Soft	0.26 to 0.50	3 to 4
Medium Dense	36 to 65%	11 to 30	Firm	0.51 to 1.00	5 to 8
Dense	66 to 85%	31 to 50	Stiff	1.01 to 2.00	9 to 15
Very Dense	86 to 100%	51 and more	Very Stiff	2.01 to 4.00	16 to 30
			Hard	4.01 and more	31 and more

### **Moisture Condition**

#### Descriptive Term

#### Criteria

Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually in coarse-grained soils below the water table

### **Color**

Describe the sample color while sample is still moist.

### **Angularity**<sup>1</sup>

#### Descriptive Term

#### Criteria

Angular	Particles have sharp edges and relatively plane sides with unpolished surfaces.
Subangular	Particles are similar to angular description but have rounded edges.
Subrounded	Particles have nearly plane sides but have well-rounded corners and edges.
Rounded	Particles have smoothly curved sides and no edges.

### **HCl Reaction**<sup>3</sup>

#### Descriptive Term

#### Criteria

None Reactive	No visible reaction
Weakly Reactive	Some reaction, with bubbles forming slowly
Strongly Reactive	Violent reaction, with bubbles forming immediately

### **Cementation**<sup>3</sup>

#### Descriptive Term

#### Criteria

Weakly Cemented	Crumbles or breaks with handling or little finger pressure
Moderately Cemented	Crumbles or breaks with considerable finger pressure
Strongly Cemented	Will not crumble or break with finger pressure

### **Particle-Size Range**<sup>1</sup>

<u>Gravel</u>	Diameter, mm	Sieve Size	<u>Sand</u>	Diameter, mm	Sieve Size
Fine	4.76 to 19.1	#4 to ¾ inch	Fine	0.074 to 0.42	#200 to #40
Coarse	19.1 to 76.2	¾ inch to 3 inch	Medium	0.42 to 2.00	#40 to #10
			Coarse	4.00 to 4.76	#10 to #4

### **Primary Soil Type**<sup>1, 2</sup>

The primary soil type will be shown in all capital letters.

### **USCS Soil Designation**

Indicate USCS soil designation as defined in ASTM D-2487 and D-2488

### **AASHTO Soil Designation**

Indicate AASHTO soil designation as defined in AASHTO M-145 and ASTM D-3282

<sup>1</sup> Applies to coarse-grained soils (major portion retained on No. 200 sieve)

<sup>2</sup> Applies to fine-grained soils (major portion passing No. 200 sieve)

<sup>3</sup> Use as required

# SCDOT Soil Test Log

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-01
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	JF	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	445.2 ft	<b>Latitude:</b>	34.16290765	<b>Longitude:</b>	-81.35513975
<b>Date Started:</b>	12/21/2015				
<b>Total Depth:</b>	20 ft	<b>Soil Depth:</b>	20 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	12/22/2015				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)	<b>Drill Machine:</b>	CME-550X	<b>Drill Method:</b>	RW
<b>Hammer Type:</b>	Automatic	<b>Energy Ratio:</b>	74.2%	<b>Core Size:</b>	N.A.
<b>Driller:</b>	JP	<b>Groundwater:</b>	TOB	<b>N.A.</b>	24HR
<b>2 feet</b>					

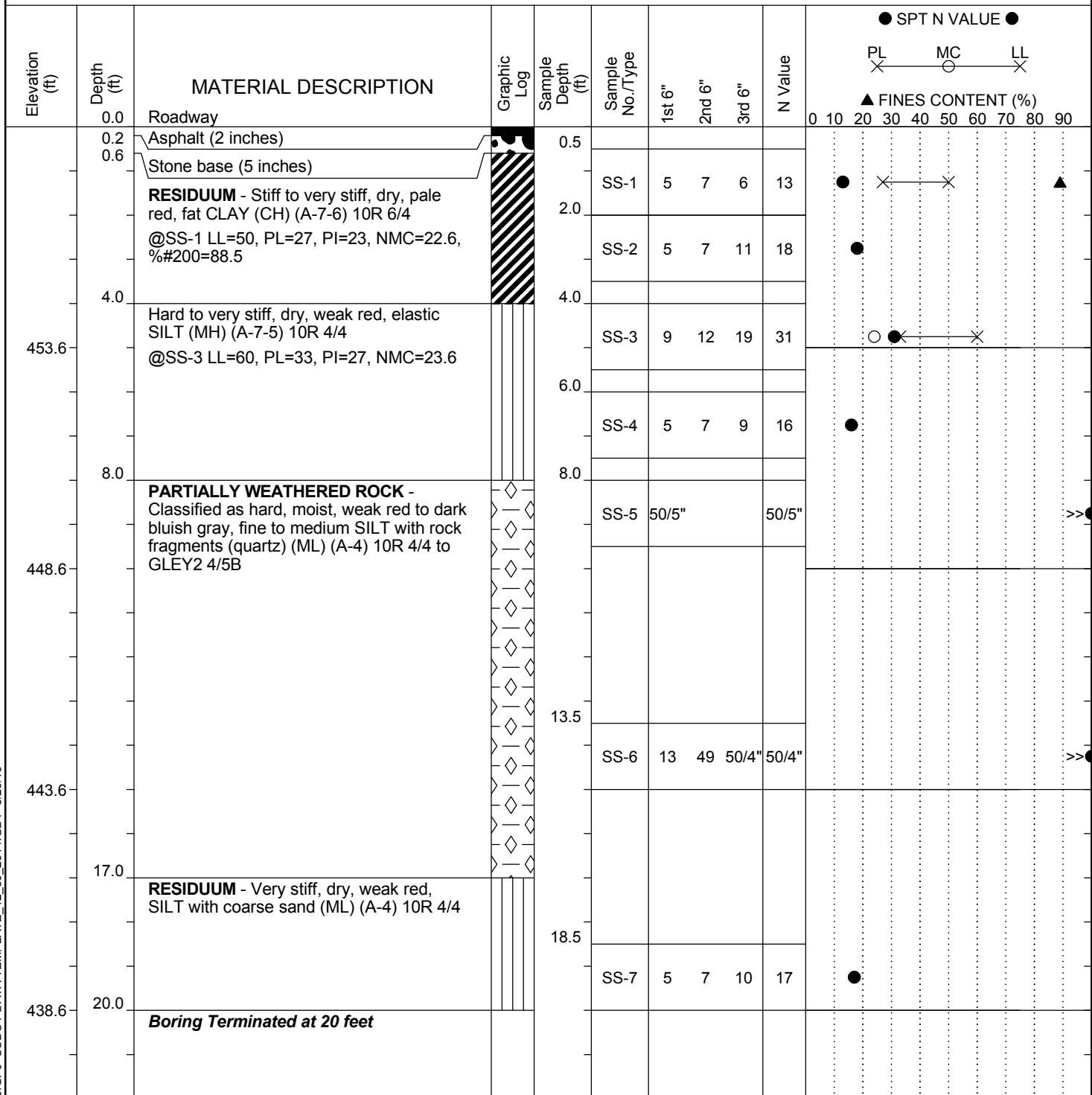
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	● SPT N VALUE ●	PL MC LL	▲ FINES CONTENT (%)
	0.0	Grassed Shoulder										
	0.3	Topsoil (3 inches)		0.0	SS-1	2	3	3	6	●	×	▲
	2.0	<b>RESIDUUM</b> - Firm, moist, brown, lean CLAY (CL) (A-4) 7.5YR 4/4 @SS-1 LL=32, PL=23, PI=9, NMC=27.5, %200=91.6		2.0								
	4.0	Firm, moist, reddish yellow, Sandy fat CLAY (CH) (A-7-6) 7.5YR 6/8 @SS-2 LL=59, PL=29, PI=30, NMC=26.7, %200=53.9		4.0	SS-2	2	3	3	6	●	×	▲
440.2	6.0	Stiff, dry, brown, SILT (ML) (A-4) 7.5YR 5/1 to 7.5 YR 5/2		6.0	SS-3	1	6	8	14	●		
		Stiff to very stiff, dry, light brown, Sandy SILT (ML) (A-6) 7.5YR 6/1		8.0	SS-4	WOH	4	6	10	●		
		@SS-5 LL=40, PL=27, PI=13, NMC=24.3, %200=60.2		8.0	SS-5	4	6	9	15	●	×	▲
435.2												
				13.5	SS-6	9	13	17	30	●		
430.2												
				18.5	SS-7	6	7	10	17	●		
425.2	20.0	<b>Boring Terminated at 20 feet</b>										

## 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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-02
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	JF	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	458.6 ft	<b>Latitude:</b>	34.16260462	<b>Longitude:</b>	-81.35008638
<b>Date Started:</b>	1/11/2016				
<b>Total Depth:</b>	20 ft	<b>Soil Depth:</b>	20 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/11/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-45C	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	71.8%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	JP	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	N.A.				



## 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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-02 BULK
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	JF	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	458.6 ft	<b>Latitude:</b>	34.16260462	<b>Longitude:</b>	-81.35008702
<b>Date Started:</b>	1/11/2016				
<b>Total Depth:</b>	5 ft	<b>Soil Depth:</b>	5 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/11/2016				
<b>Bore Hole Diameter (in):</b>	6-1/2	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-45C	<b>Drill Method:</b>	HSA	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	71.8%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	JP	<b>Groundwater:</b>	TOB N.E.
<b>24HR</b>	N.A.				

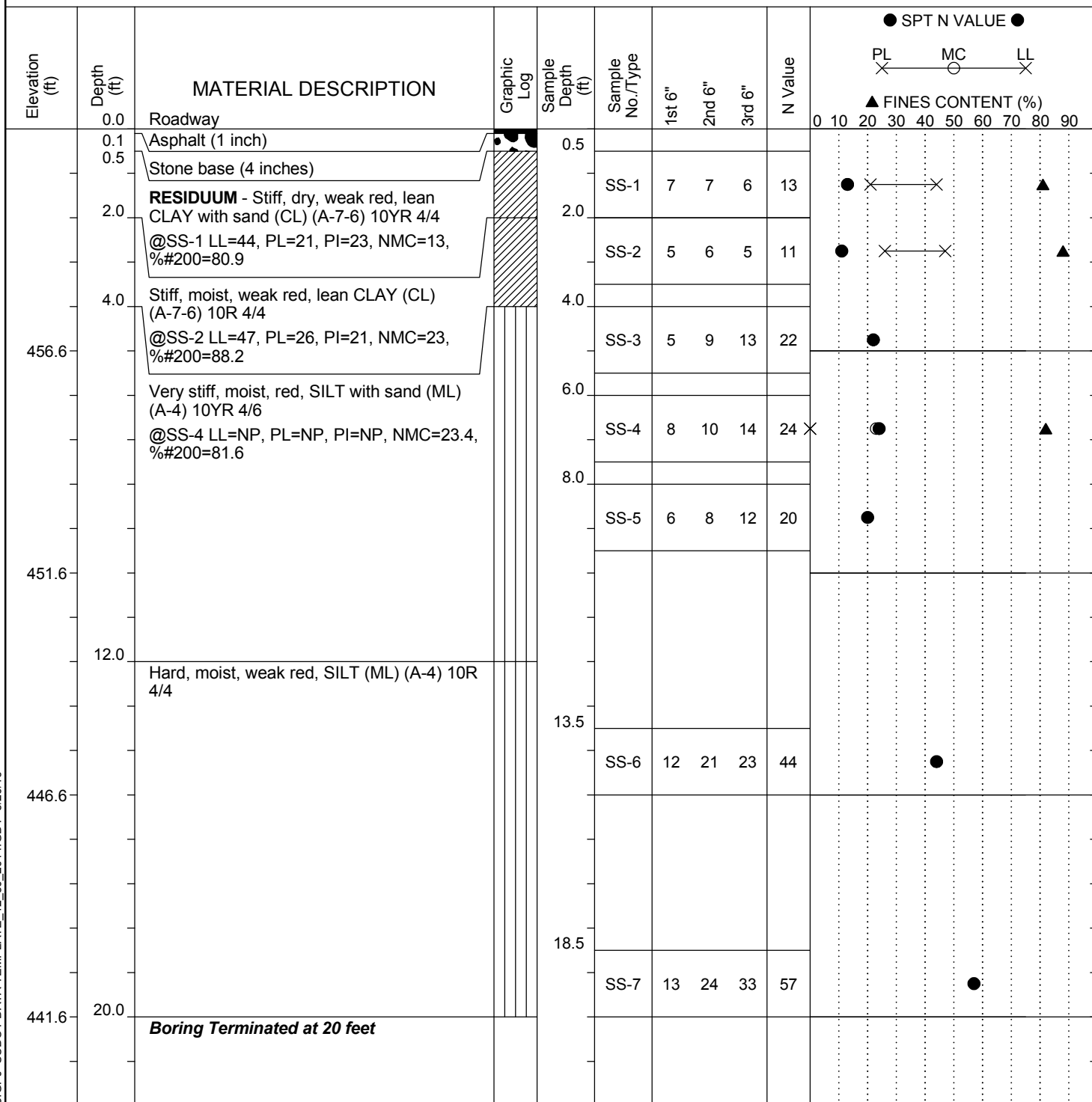
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	● SPT N VALUE ● PL — MC — LL ▲ FINES CONTENT (%)
	0.0	Roadway								0 10 20 30 40 50 60 70 80 90
	0.2	Asphalt (2 inches)		0.0						
	0.6	Stone base (5 inches)								
		<b>RESIDUUM</b> - Dry, pale red, sandy silty CLAY with gravel (CL-ML) (A-4) 10R 6/4 LL=25, PL=18, PI=7, NMC=16, %200=56								
453.6	5.0	<b>Boring Terminated at 5 feet</b>								
448.6										
443.6										
438.6										

## 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	

# SCDOT Soil Test Log

Project ID: 42383				County: Lexington		Boring No.: B-03		
Site Description:		Columbia Avenue (S-48) Roadway Improvements					Route: S-48	
Eng./Geo.: JF		Boring Location: -			Offset: -		Alignment: Proposed	
Elev.: 461.6 ft		Latitude: 34.16256333		Longitude: -81.34921337		Date Started: 1/11/2016		
Total Depth: 20 ft		Soil Depth: 20 ft		Core Depth: 0 ft		Date Completed: 1/11/2016		
Bore Hole Diameter (in): 2.94		Sampler Configuration			Liner Required: Y (N)		Liner Used: Y (N)	
Drill Machine: CME-45C		Drill Method: RW		Hammer Type: Automatic		Energy Ratio: 71.8%		
Core Size: N.A.		Driller: JP		Groundwater: TOB N.A.		24HR N.A.		



## 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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-04
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	RS	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	440.7 ft	<b>Latitude:</b>	34.16159761	<b>Longitude:</b>	-81.3471092
<b>Date Started:</b>	1/12/2016				
<b>Total Depth:</b>	20 ft	<b>Soil Depth:</b>	20 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/13/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-45C	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	71.8%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	JP	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	5 feet				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
	0.0	Grassed Lawn								
	0.3	Topsoil (4 inches)		0.0	SS-1	2	4	4	8	
	2.0	<b>RESIDUUM</b> - Firm, moist, light red, lean CLAY (CL) (A-7-6) 10R 6/8 @SS-1 LL=46, PL=22, PI=24, NMC=25.6, %200=88.1  Stiff to very stiff, moist, red, lean CLAY (CL) (A-7-6) 10R 5/8 @SS-2 LL=43, PL=26, PI=17, NMC=23.7, %200=89.7		2.0	SS-2	2	4	6	10	
435.7	6.0	Stiff, moist, reddish yellow, fat CLAY (CH) (A-7-6) 5YR 7/8 @SS-4 LL=54, PL=23, PI=31, NMC=23.2		4.0	SS-3	4	8	11	19	
				6.0	SS-4	3	6	7	13	
430.7				8.0	SS-5	3	5	9	14	
	12.0	Very stiff, moist, reddish yellow, Sandy SILT (ML) (A-4) 5YR 6/6		13.5	SS-6	6	12	16	28	
425.7				18.5	SS-7	7	9	11	20	
420.7	20.0	<b>Boring Terminated at 20 feet</b>								

## 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:	42383				County:	Lexington		Boring No.:	B-05		
Site Description:	Columbia Avenue (S-48) Roadway Improvements							Route:	S-48		
Eng./Geo.:	JF		Boring Location:	-		Offset:	-		Alignment:	Proposed	
Elev.:	464.8 ft		Latitude:	34.16212374		Longitude:	-81.34398747		Date Started:	1/15/2016	
Total Depth:	20 ft		Soil Depth:	20 ft		Core Depth:	0 ft		Date Completed:	1/19/2016	
Bore Hole Diameter (in):	2.94		Sampler Configuration			Liner Required:	Y (N)		Liner Used:	Y (N)	
Drill Machine:	CME-550X		Drill Method:	RW		Hammer Type:	Automatic		Energy Ratio:	74.2%	
Core Size:	N.A.		Driller:	AL		Groundwater:	TOB	N.A.		24HR	N.E.

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL MC LL </div> <div> ▲ FINES CONTENT (%) </div> </div>
	0.0	Unimproved Shoulder								
	2.0	RESIDUUM - Stiff, dry, weak red, elastic SILT (MH) (A-7-5) 10R 4/4 @SS-1 LL=66, PL=37, PI=29, NMC=26.6, %200=93.1		0.0	SS-1	5	6	8	14	● ○ × — × ▲
	4.0	Hard, dry, weak red, elastic SILT (MH) (A-7-5) 10R 4/4 @SS-2 LL=72, PL=39, PI=33, NMC=25.3, %200=94.9		2.0	SS-2	10	17	19	36	○ ● × — × ▲
459.8		Very stiff to stiff, dry, weak red, elastic SILT (MH) (A-7-5) 10R 4/4		4.0	SS-3	6	8	9	17	●
				6.0	SS-4	4	6	9	15	●
454.8				8.0	SS-5	2	4	5	9	●
	12.0	Stiff to very stiff, dry, dark yellowish brown, SILT (ML) (A-4) 10YR 4/6		13.5	SS-6	4	6	7	13	●
449.8				18.5	SS-7	3	6	10	16	●
444.8	20.0	Boring Terminated at 20 feet								

## 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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-05 BULK
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	JF	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	464.8 ft	<b>Latitude:</b>	34.16212256	<b>Longitude:</b>	-81.34398747
<b>Date Started:</b>	1/15/2016				
<b>Total Depth:</b>	5 ft	<b>Soil Depth:</b>	5 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/15/2016				
<b>Bore Hole Diameter (in):</b>	6-1/2	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-550X	<b>Drill Method:</b>	HSA	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	71.8%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	AL	<b>Groundwater:</b>	TOB N.E.
<b>24HR</b>	N.A.				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
	0.0	Unimproved Shoulder								0 10 20 30 40 50 60 70 80 90
		<b>RESIDUUM</b> - Dry, weak red, SILT (ML) (A-5) 10R 4/4 LL=43, PL=35, PI=8, NMC=25.9, %200=90.7		0.0						
459.8	5.0	<b>Boring Terminated at 5 feet</b>								
454.8										
449.8										
444.8										

## 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	

# SCDOT Soil Test Log

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-06
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	JF	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	458.7 ft	<b>Latitude:</b>	34.16267513	<b>Longitude:</b>	-81.3412799
<b>Date Started:</b>	1/15/2016				
<b>Total Depth:</b>	20 ft	<b>Soil Depth:</b>	20 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/19/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-550X	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	74.2%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	AL	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	N.E.				

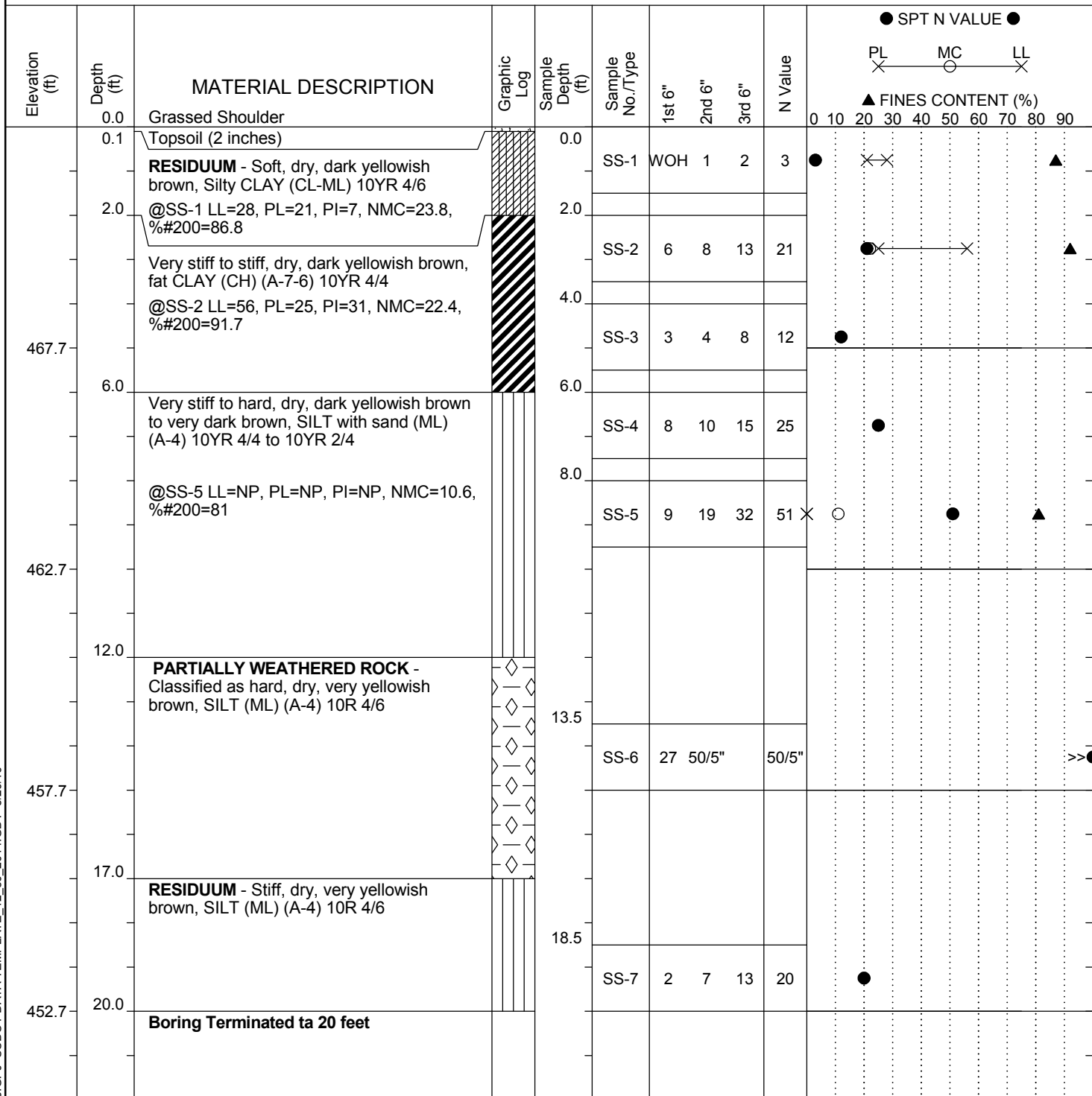
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
	0.0	Grassed Shoulder								
	0.1	Topsoil (1 inch)		0.0	SS-1	3	1	2	3	●
	2.0	<b>FILL</b> - Soft, dry, dark yellowish brown, lean CLAY (CL) (A-6) 10YR 4/6 @SS-1 LL=37, PL=21, PI=16, NMC=22.5, %200=85.8		2.0	SS-2	2	2	4	6	●
		<b>FILL</b> - Firm, dry, dark yellowish brown, lean CLAY (CL) (A-6) 10YR 4/6 @SS-2 LL=41, PL=22, PI=19, NMC=25.6, %200=91.5 @SS-3 NMC=27		4.0	SS-3	3	3	3	6	●
453.7	6.0	<b>RESIDUUM</b> - Very stiff, dry, dark yellowish brown, elastic SILT with sand (MH) (A-7-5) 10YR 4/4 @SS-4 LL=57, PL=32, PI=25, NMC=26.4, %200=79.6		6.0	SS-4	5	8	9	17	●
	8.0	Stiff, dry, reddish brown, SILT (ML) (A-4) 5YR 4/4		8.0	SS-5	4	6	8	14	●
448.7	12.0	Very stiff, dry, brown, SILT (ML) (A-4) 10YR 4/3		13.5	SS-6	4	8	12	20	●
443.7				18.5	SS-7	8	10	11	21	●
438.7	20.0	Boring Terminated at 20 feet								

## 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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-07
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	JF	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	472.7 ft	<b>Latitude:</b>	34.16384685	<b>Longitude:</b>	-81.34181472
<b>Total Depth:</b>	20 ft	<b>Soil Depth:</b>	20 ft	<b>Core Depth:</b>	0 ft
<b>Date Started:</b>	2/4/2016			<b>Date Completed:</b>	2/5/2016
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)	<b>Drill Machine:</b>	CME-55	<b>Drill Method:</b>	RW
<b>Hammer Type:</b>	Automatic	<b>Energy Ratio:</b>	81.9%	<b>Core Size:</b>	N.A.
<b>Driller:</b>	CF	<b>Groundwater:</b>	TOB	<b>N.A.</b>	24HR
					N.E.

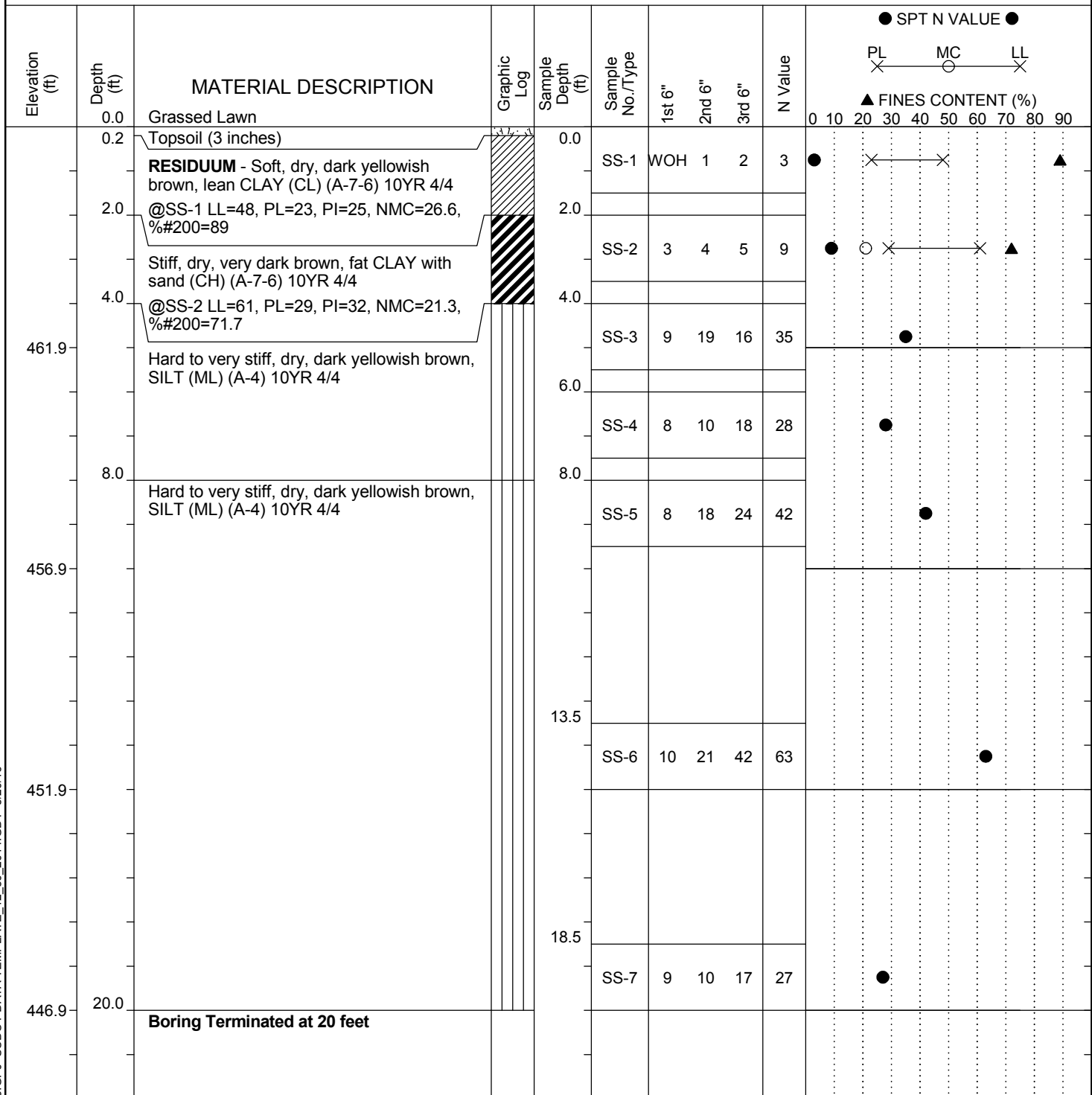


## LEGEND

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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-08
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	JF	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	466.9 ft	<b>Latitude:</b>	34.16479581	<b>Longitude:</b>	-81.34300346
<b>Date Started:</b>	2/4/2016				
<b>Total Depth:</b>	20 ft	<b>Soil Depth:</b>	20 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	2/5/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>	<b>Liner Required:</b> Y (N)		<b>Liner Used:</b> Y (N)
<b>Drill Machine:</b>	CME-55	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	81.9%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	CF	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	N.E.				



## 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: 42383				County: Lexington		Boring No.: B-09	
Site Description: Columbia Avenue (S-48) Roadway Improvements			Route: S-48				
Eng./Geo.: RS		Boring Location: -		Offset: -		Alignment: Proposed	
Elev.:	472.8 ft	Latitude:	34.16643581	Longitude:	-81.34479901	Date Started:	1/12/2016
Total Depth: 20 ft		Soil Depth: 20 ft		Core Depth: 0 ft		Date Completed: 1/13/2016	
Bore Hole Diameter (in): 2.94		Sampler Configuration		Liner Required: Y (N)		Liner Used: Y (N)	
Drill Machine: CME-45C		Drill Method: RW		Hammer Type: Automatic		Energy Ratio: 71.8%	
Core Size: N.A.		Driller: JP		Groundwater: TOB N.A.		24HR 6 feet	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
	0.0	Grassed Lawn								
	0.3	Topsoil (3 inches)		0.0	SS-1	3	7	7	14	●
	2.0	<b>FILL</b> - Stiff, dry, red, lean CLAY with crushed aggregate (CL) (A-6) 5R 5/8 @SS-1 NMC=20.1, %200=73.0		2.0						
		<b>RESIDUUM</b> - Very stiff, dry, light red, SILT with sand (ML) (A-4) 10R 6/8 @SS-2 LL=NP, PL=NP, PI=NP, NMC=23.8, %200=82.9		4.0	SS-2	9	11	11	22 X	●
467.8					SS-3	6	9	8	17	●
	6.0	Stiff, dry, pale red, SILT with sand (ML) (A-4) 10R 6/4 @SS-5 NMC=38.9, %200=82.4		6.0	SS-4	4	5	6	11	●
462.8					SS-5	4	5	7	12	●
				13.5	SS-6	4	6	9	15	●
457.8										
				18.5	SS-7	4	6	9	15	●
452.8	20.0	<b>Boring Terminated at 20 feet</b>								

## 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:	42383				County:	Lexington		Boring No.:	B-10		
Site Description:	Columbia Avenue (S-48) Roadway Improvements							Route:	S-48		
Eng./Geo.:	JF		Boring Location:	-		Offset:	-		Alignment:	Existing	
Elev.:	474.3 ft		Latitude:	34.167474		Longitude:	-81.34458671		Date Started:	12/21/2015	
Total Depth:	20 ft		Soil Depth:	20 ft		Core Depth:	0 ft		Date Completed:	12/22/2015	
Bore Hole Diameter (in):	2.94		Sampler Configuration			Liner Required:	Y (N)		Liner Used:	Y (N)	
Drill Machine:	CME-550X		Drill Method:	RW		Hammer Type:	Automatic		Energy Ratio:	74.2%	
Core Size:	N.A.		Driller:	JP		Groundwater:	TOB	N.A.		24HR	3 feet

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
	0.0	Grassed Shoulder								
	0.2	Topsoil (2 inches)		0.0	SS-1	2	3	3	6	●
	2.0	<b>RESIDUUM</b> - Firm, dry, red, lean CLAY with sand (CL) (A-6) 10R 4/8 @SS-1 LL=37, PL=19, PI=18, NMC=22.5, %200=74.0		2.0						
		Stiff to very stiff, dry, red, lean CLAY with sand (CL) (A-7-6) 10R 4/8 @SS-2 LL=41, PL=23, PI=18, NMC=24.2, %200=84.8		4.0	SS-2	3	5	9	14	●
469.3					SS-3	3	6	13	19	●
	6.0	Stiff, dry, red, elastic SILT (MH) (A-7-5) 10R 6/6 @SS-5 LL=71, PL=42, PI=29, NMC=19.7, %200=95.7		6.0	SS-4	2	5	9	14	●
464.3				8.0	SS-5	2	4	6	10	●
				13.5	SS-6	3	5	7	12	●
459.3				18.5	SS-7	2	5	5	10	●
454.3	20.0	<b>Boring Terminated at 20 feet</b>								

## 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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-11
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	JF	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	475.7 ft	<b>Latitude:</b>	34.16756856	<b>Longitude:</b>	-81.34322259
<b>Date Started:</b>	12/21/2015				
<b>Total Depth:</b>	20 ft	<b>Soil Depth:</b>	20 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	12/22/2015				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-550X	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	74.2%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	JP	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	N.E.				

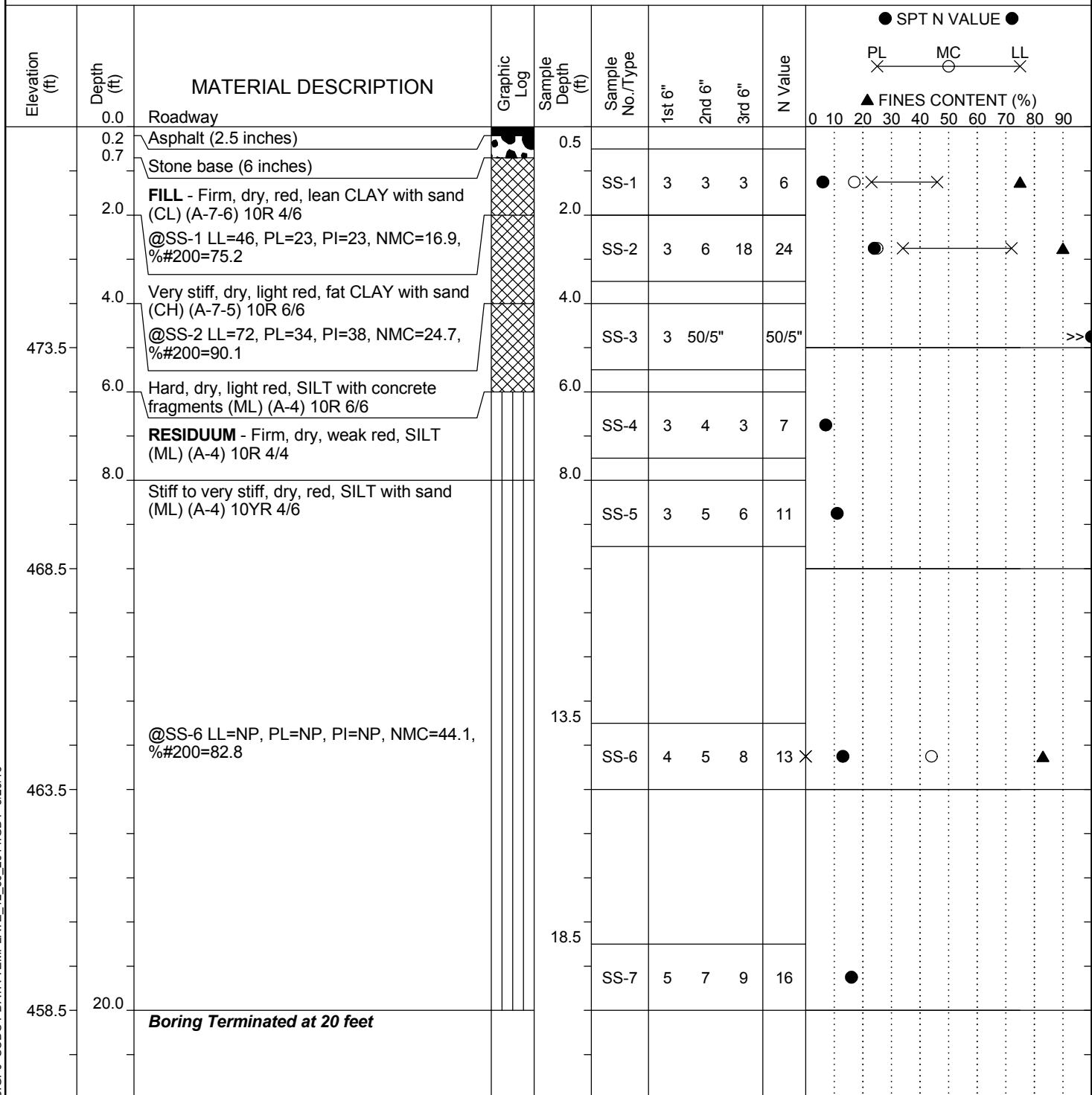
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
	0.0	Grassed Shoulder								
	0.2	Topsoil (2 inches)		0.0	SS-1	1	2	4	6	<div> <div>●</div> <div> <div>×</div> <div>×</div> </div> <div>▲</div> </div>
		<b>RESIDUUM</b> - Firm, moist, red, fat CLAY (CH) (A-7-6) 10R 4/8 @SS-1 LL=56, PL=25, PI=31, NMC=24.9, % <sub>#200</sub> =86.4 @SS-2 NMC=27.7		2.0						
					SS-2	1	4	6	10	<div> <div>●</div> <div>○</div> </div>
	4.0	Stiff to very stiff, moist, red, elastic SILT (MH) (A-7-5) 10R 4/8 @SS-3 LL=68, PL=40, PI=28, NMC=40.1, % <sub>#200</sub> =87.1		4.0						
					SS-3	3	4	5	9	<div> <div>●</div> <div> <div>×</div> <div>×</div> </div> <div>▲</div> </div>
				6.0						
					SS-4	1	3	7	10	<div> <div>●</div> </div>
				8.0						
					SS-5	1	5	8	13	<div> <div>●</div> </div>
465.7										
	12.0	Stiff, dry, pale red, SILT (ML) (A-4) 10R 7/4		13.5						
					SS-6	2	5	5	10	<div> <div>●</div> </div>
460.7										
				18.5						
					SS-7	2	7	10	17	<div> <div>●</div> </div>
455.7	20.0	<b>Boring Terminated at 20 feet</b>								

## 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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-12
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	JF	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	478.5 ft	<b>Latitude:</b>	34.16768591	<b>Longitude:</b>	-81.34136484
<b>Date Started:</b>	1/11/2016				
<b>Total Depth:</b>	20 ft	<b>Soil Depth:</b>	20 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/11/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-45C	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	71.8%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	JP	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	N.A.				



## 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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-12 BULK
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	JF	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	478.5 ft	<b>Latitude:</b>	34.16768591	<b>Longitude:</b>	-81.34136394
<b>Date Started:</b>	1/11/2016				
<b>Total Depth:</b>	5 ft	<b>Soil Depth:</b>	5 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/11/2016				
<b>Bore Hole Diameter (in):</b>	6-1/2	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-45C	<b>Drill Method:</b>	HSA	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	71.8%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	JP	<b>Groundwater:</b>	TOB N.E.
<b>24HR</b>	N.A.				

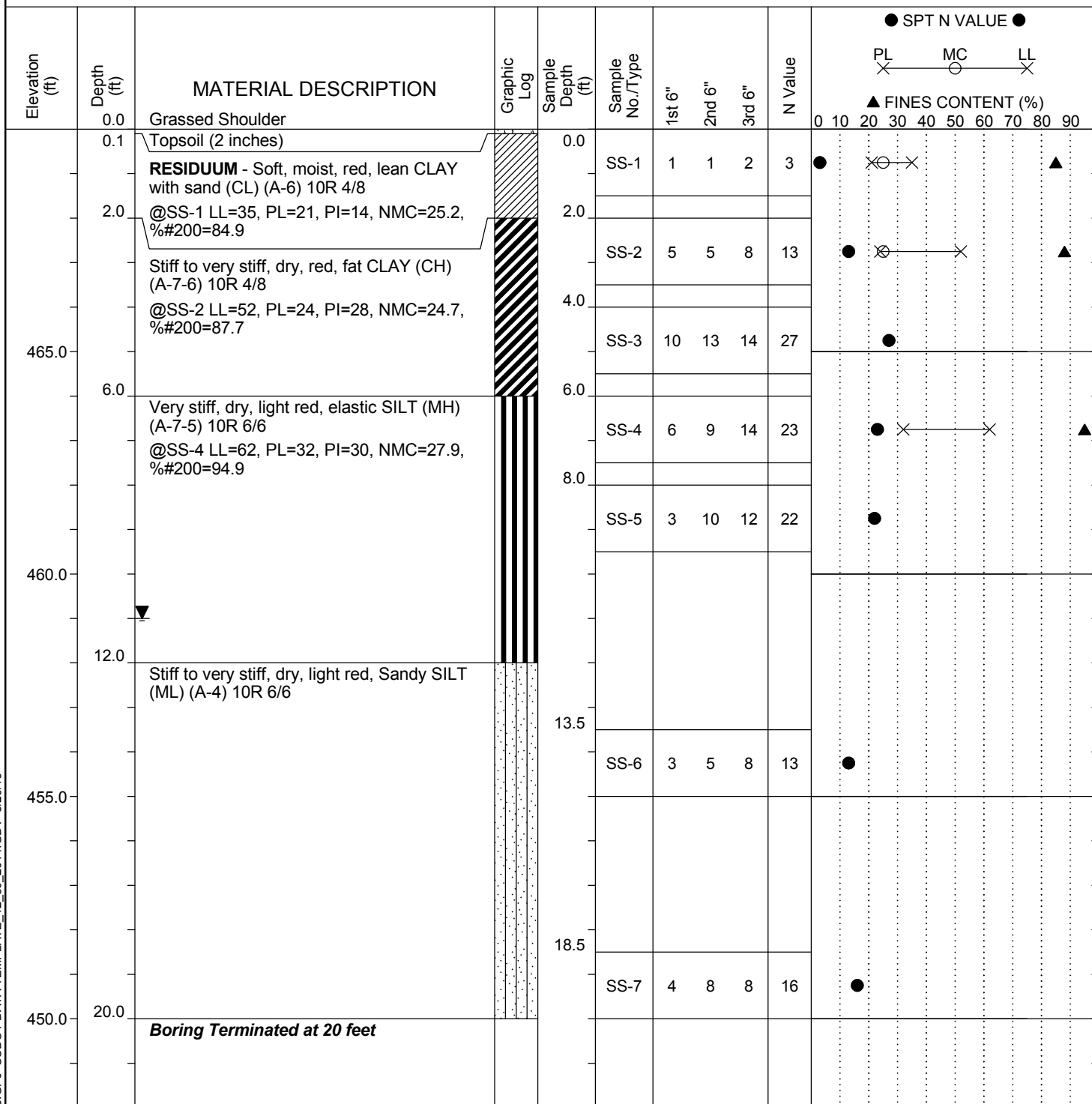
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	● SPT N VALUE ● PL — MC — LL ▲ FINES CONTENT (%)
	0.0	Roadway								0 10 20 30 40 50 60 70 80 90
	0.2	Asphalt (2.5 inches)		0.0						
	0.7	Stone base (6 inches)								
		FILL - Dry, red, clayey SAND with gravel (SC) (A-2-4) 10R 4/6 LL=28, PL=18, PI=10, NMC=13.9, %200=31.0								
473.5	5.0	Boring Terminated at 5 feet								
468.5										
463.5										
458.5										

## 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: 42383				County: Lexington		Boring No.: B-13	
Site Description: Columbia Avenue (S-48) Roadway Improvements			Route: S-48				
Eng./Geo.: RS		Boring Location: -		Offset: -		Alignment: Existing	
Elev.:	470.0 ft	Latitude:	34.167932	Longitude:	-81.34022765	Date Started: 12/24/2015	
Total Depth: 20 ft		Soil Depth: 20 ft		Core Depth: 0 ft		Date Completed: 12/29/2015	
Bore Hole Diameter (in): 2.94		Sampler Configuration		Liner Required: Y (N)		Liner Used: Y (N)	
Drill Machine: CME-550X		Drill Method: RW		Hammer Type: Automatic		Energy Ratio: 74.2%	
Core Size: N.A.		Driller: JP		Groundwater: TOB N.A.		24HR: 11 feet	

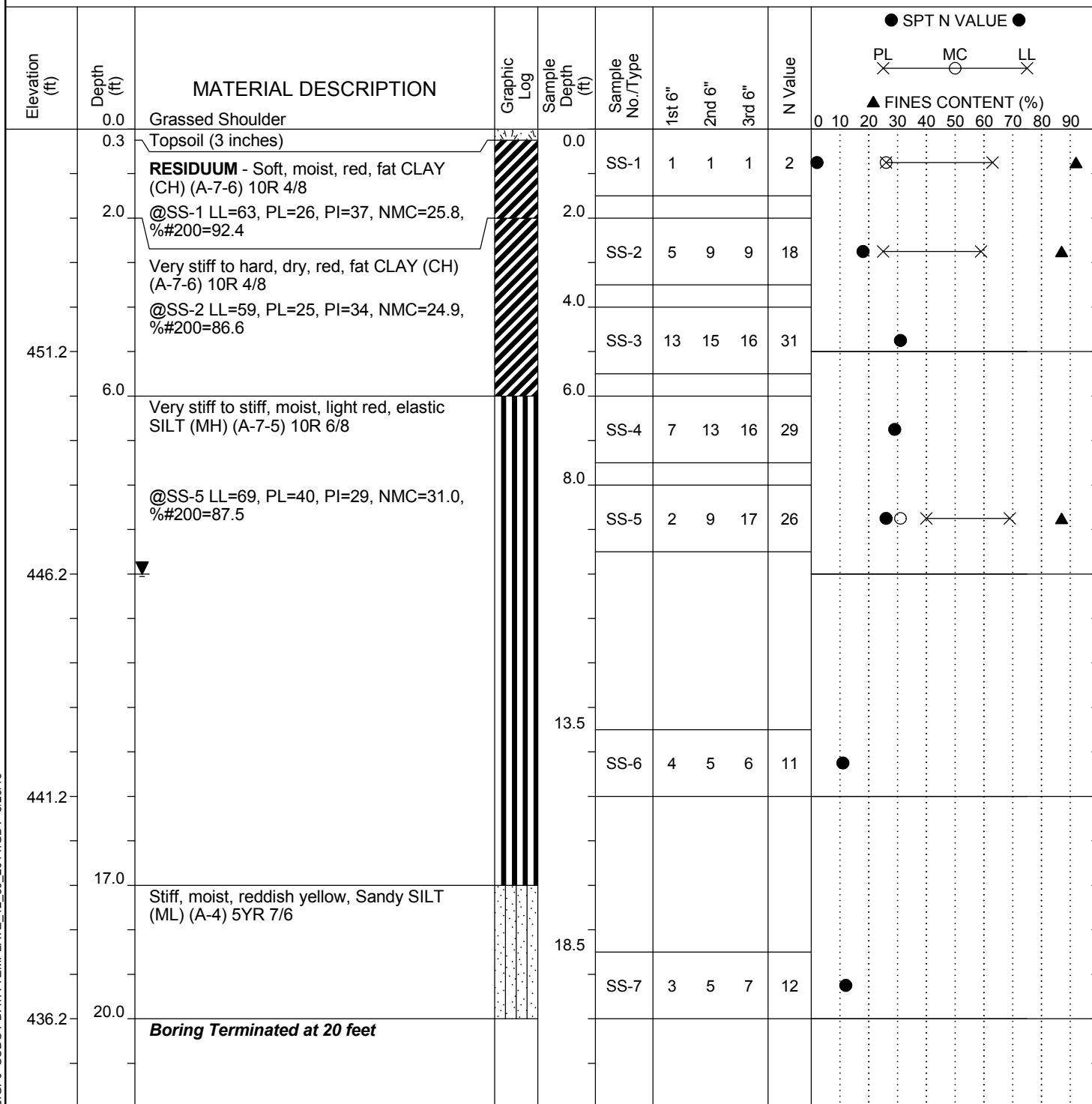


## LEGEND

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:	42383				County:	Lexington		Boring No.:	B-14		
Site Description:	Columbia Avenue (S-48) Roadway Improvements							Route:	S-48		
Eng./Geo.:	RS		Boring Location:	-		Offset:	-		Alignment:	Existing	
Elev.:	456.2 ft		Latitude:	34.1682436		Longitude:	-81.33855704		Date Started:	12/24/2015	
Total Depth:	20 ft		Soil Depth:	20 ft		Core Depth:	0 ft		Date Completed:	12/29/2015	
Bore Hole Diameter (in):	2.94		Sampler Configuration			Liner Required:	Y (N)		Liner Used:	Y (N)	
Drill Machine:	CME-550X		Drill Method:	RW		Hammer Type:	Automatic		Energy Ratio:	74.2%	
Core Size:	N.A.		Driller:	JP		Groundwater:	TOB	N.A.		24HR	10 feet



## 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:	42383				County:	Lexington		Boring No.:	B-15		
Site Description:	Columbia Avenue (S-48) Roadway Improvements							Route:	S-48		
Eng./Geo.:	RS		Boring Location:	-		Offset:	-		Alignment:	Existing	
Elev.:	457.0 ft		Latitude:	34.16850779		Longitude:	-81.33659435		Date Started:	12/24/2015	
Total Depth:	20 ft		Soil Depth:	20 ft		Core Depth:	0 ft		Date Completed:	12/29/2015	
Bore Hole Diameter (in):	2.94		Sampler Configuration			Liner Required:	Y (N)		Liner Used:	Y (N)	
Drill Machine:	CME-550X		Drill Method:	RW		Hammer Type:	Automatic		Energy Ratio:	74.2%	
Core Size:	N.A.		Driller:	JP		Groundwater:	TOB	N.A.		24HR	N.E.

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL X MC O LL X </div> <div> ▲ FINES CONTENT (%) </div> </div>
	0.0	Grassed Shoulder								
	0.3	Topsoil (3 inches)		0.0	SS-1	1	1	2	3	●
	2.0	<b>RESIDUUM</b> - Soft, moist, red, fat CLAY (CH) (A-7-6) 10R 4/8 @SS-1 NMC=27.1, %200=91 Very stiff, moist, red, fat CLAY (CH) (A-7-6) 10R 4/8 @SS-2 LL=59, PL=27, PI=32, NMC=27.1, %200=89.3		2.0	SS-2	6	10	11	21	●
452.0	4.0	Very stiff, dry, red, elastic SILT (MH) (A-7-5) 10R 4/8		4.0	SS-3	4	9	9	18	●
	8.0			6.0	SS-4	8	13	16	29	●
		Very stiff to stiff, dry, light red, SILT (ML) (A-4) 10R 6/6		8.0	SS-5	7	8	11	19	●
447.0				13.5	SS-6	3	4	6	10	●
442.0	17.0	Firm, dry, light red, SILT (ML) (A-4) 10R 7/6		18.5	SS-7	2	4	4	8	●
437.0	20.0	<b>Boring Terminated at 20 feet</b>								

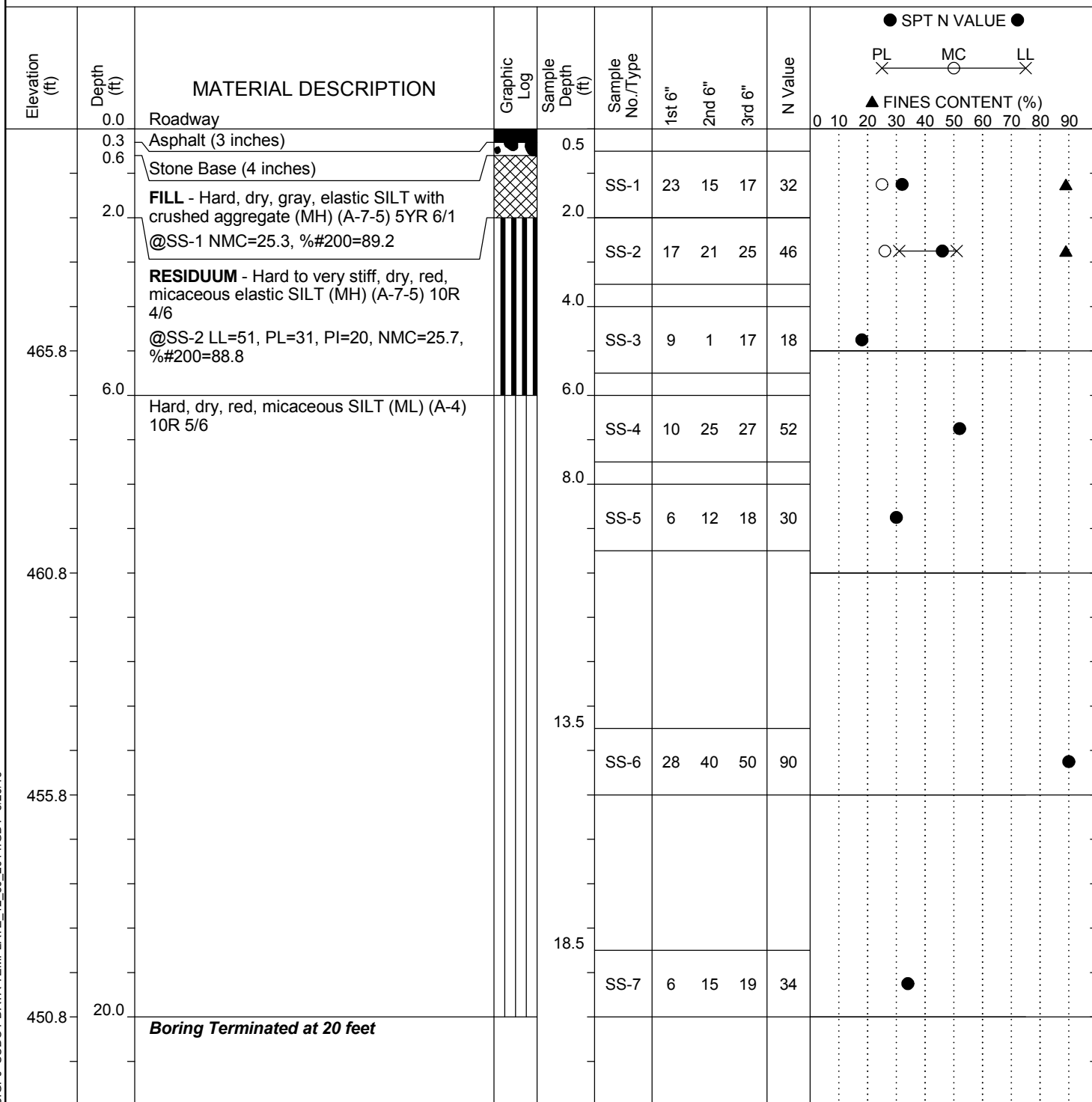
## LEGEND

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:	42383				County:	Lexington		Boring No.:	B-16		
Site Description:	Columbia Avenue (S-48) Roadway Improvements							Route:	S-48		
Eng./Geo.:	JF		Boring Location:	-		Offset:	-		Alignment:	Existing	
Elev.:	470.8 ft		Latitude:	34.16909514		Longitude:	-81.33531114		Date Started:	12/3/2015	
Total Depth:	20 ft		Soil Depth:	20 ft		Core Depth:	0 ft		Date Completed:	12/7/2015	
Bore Hole Diameter (in):	2.94		Sampler Configuration			Liner Required:	Y (N)		Liner Used:	Y (N)	
Drill Machine:	CME-45C		Drill Method:	RW		Hammer Type:	Automatic		Energy Ratio:	71.8%	
Core Size:	N.A.		Driller:	JP		Groundwater:	TOB	N.A.		24HR	N.E.



## LEGEND

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

# SCDOT Soil Test Log

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-17
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	RS	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	456.2 ft	<b>Latitude:</b>	34.16968294	<b>Longitude:</b>	-81.33385583
<b>Date Started:</b>	12/29/2015				
<b>Total Depth:</b>	20 ft	<b>Soil Depth:</b>	20 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	12/30/2015				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-550X	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	74.2%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	AL	<b>Groundwater:</b>	TOB N.A.
<b>24HR:</b>	N.E.				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
	0.0	Grassed Shoulder								
	0.2	Topsoil (2 inches)		0.0	SS-1	1	2	1	3	●
	2.0	<b>RESIDUUM</b> - Soft, dry, red, elastic SILT with sand (MH) (A-7-5) 10R 5/8 @SS-1 LL=54, PL=30, PI=24, NMC=31.5, % $\#200$ =75.3 Soft to firm, dry, red, lean CLAY with sand (CL) (A-7-6) 10R 4/8 @SS-2 NMC=38.3, % $\#200$ =86.8 @SS-3 LL=47, PL=25, PI=22, NMC=31.4		2.0	SS-2	1	1	1	2	●
451.2	4.0			4.0	SS-3	3	3	3	6	●
	6.0	Stiff to firm, dry, red, SILT (ML) (A-4) 10R 4/8		6.0	SS-4	2	3	6	9	●
	8.0			8.0						
	12.0	Stiff, dry, light red, SILT (ML) (A-4) 10R 6/8		13.5	SS-6	3	5	7	12	●
446.2	17.0	Stiff, dry, reddish yellow, Sandy SILT (ML) (A-4) 5YR 6/8		18.5	SS-7	4	5	9	14	●
441.2	20.0	<b>Boring Terminated at 20 feet</b>								
436.2										

## LEGEND

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

# SCDOT Soil Test Log

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-18
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	RS	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	440.7 ft	<b>Latitude:</b>	34.17045271	<b>Longitude:</b>	-81.33272162
<b>Date Started:</b>	12/29/2015				
<b>Total Depth:</b>	20 ft	<b>Soil Depth:</b>	20 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	12/30/2015				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-550X	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	74.2%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	AL	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	2 feet				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
	0.0	Grassed Shoulder								
	0.3	Topsoil (3 inches)		0.0	SS-1	1	1	2	3	●
		<b>RESIDUUM</b> - Soft to firm, moist, red, lean CLAY with sand (CL) (A-7-6) 10R 4/8								
		▼@SS-1 NMC=33.8		2.0						
		@SS-2 LL=41, PL=23, PI=18, NMC=30.5, % <sub>#200</sub> =82			SS-2	1	1	2	3	●
				4.0						
					SS-3	1	2	3	5	●
435.7	6.0	Stiff, dry, light red, SILT (ML) (A-4) 10R 6/8		6.0						
					SS-4	4	5	8	13	●
	8.0	Very stiff to stiff, dry, reddish yellow, Sandy SILT (ML) (A-4) 5YR 6/8		8.0						
					SS-5	3	9	13	22	●
430.7										
				13.5						
					SS-6	6	9	15	24	●
425.7										
				18.5						
					SS-7	2	5	9	14	●
420.7	20.0	<b>Boring Terminated at 20 feet</b>								

## 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: 42383				County: Lexington		Boring No.: B-19	
Site Description: Columbia Avenue (S-48) Roadway Improvements					Route: S-48		
Eng./Geo.: RS		Boring Location: -		Offset: -		Alignment: Existing	
Elev.: 439.6 ft		Latitude: 34.17162268		Longitude: -81.33147126		Date Started: 12/29/2015	
Total Depth: 20 ft		Soil Depth: 20 ft		Core Depth: 0 ft		Date Completed: 12/30/2015	
Bore Hole Diameter (in): 2.94		Sampler Configuration		Liner Required: Y (N)		Liner Used: Y (N)	
Drill Machine: CME-550X		Drill Method: RW		Hammer Type: Automatic		Energy Ratio: 74.2%	
Core Size: N.A.		Driller: AL		Groundwater: TOB N.A.		24HR 13 feet	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL X MC O LL X </div> <div> ▲ FINES CONTENT (%) </div> </div>
	0.0	Grassed Shoulder								
	0.2	Topsoil (2 inches)		0.0	SS-1	1	2	3	5	● X X ▲
	2.0	<b>RESIDUUM</b> - Firm, dry, red, fat CLAY with sand (CH) (A-7-6) 10R 4/8 @SS-1 LL=50, PL=24, PI=26, NMC=24, %200=83.9		2.0						
		Very stiff, dry, red, elastic SILT (MH) (A-7-5) 10R 4/8			SS-2	5	10	12	22	● O X X ▲
		@SS-2 LL=63, PL=32, PI=31, NMC=26.6, %200=88.7		4.0						
434.6					SS-3	2	7	17	24	●
	6.0	Very stiff, dry, light red, SILT (ML) (A-4) 10R 6/8		6.0						
					SS-4	5	9	12	21	●
	8.0	Very stiff to stiff, dry, pale red, SILT (ML) (A-4) 10R 7/4		8.0						
					SS-5	2	7	9	16	●
429.6										
	13.5			13.5						
					SS-6	5	10	12	22	●
424.6										
	18.5			18.5						
					SS-7	3	6	9	15	●
419.6	20.0	<b>Boring Terminated at 20 feet</b>								

## 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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-20
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	RS	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	433.5 ft	<b>Latitude:</b>	34.17265171	<b>Longitude:</b>	-81.33040187
<b>Date Started:</b>	1/12/2016				
<b>Total Depth:</b>	20 ft	<b>Soil Depth:</b>	20 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/12/2015				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-45C	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	71.8%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	JP	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	N.A.				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
	0.0	Roadway								
	0.2	Asphalt (2 inches)		0.5						
	0.6	Stone base (5 inches)								
	2.0	RESIDUUM - Very stiff, dry, weak red, elastic SILT (MH) (A-7-5) 10R 4/4 @SS-1 LL=64, PL=34, PI=30, NMC=22, %200=96.6		2.0	SS-1	9	11	16	27	
		Very stiff, dry, red, elastic SILT with sand (MH) (A-7-5) 10R 5/8 @SS-2 LL=56, PL=33, PI=23, NMC=20.2, %200=84.3		4.0	SS-2	7	9	12	21	
428.5					SS-3	7	11	12	23	
	6.0	Stiff to firm, dry, red, SILT (ML) (A-4) 7.5R 5/8 @SS-5 LL=NP, PL=NP, PI=NP, NMC=33, %200=95.7		6.0	SS-4	5	5	7	12	
				8.0	SS-5	4	4	4	8	
423.5										
	12.0	Very stiff to hard, dry, dark yellowish brown, SILT (ML) (A-4) 10YR 4/6		13.5	SS-6	5	7	12	19	
418.5										
				18.5	SS-7	8	12	21	33	
413.5	20.0	Boring Terminated at 20 feet								

## 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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-20 BULK
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	RS	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	433.5 ft	<b>Latitude:</b>	34.17265205	<b>Longitude:</b>	-81.33040296
<b>Date Started:</b>	1/12/2016				
<b>Total Depth:</b>	5 ft	<b>Soil Depth:</b>	5 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/12/2016				
<b>Bore Hole Diameter (in):</b>	6-1/2	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-45C	<b>Drill Method:</b>	HSA	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	71.8%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	JP	<b>Groundwater:</b>	TOB N.E.
<b>24HR</b>	N.A.				

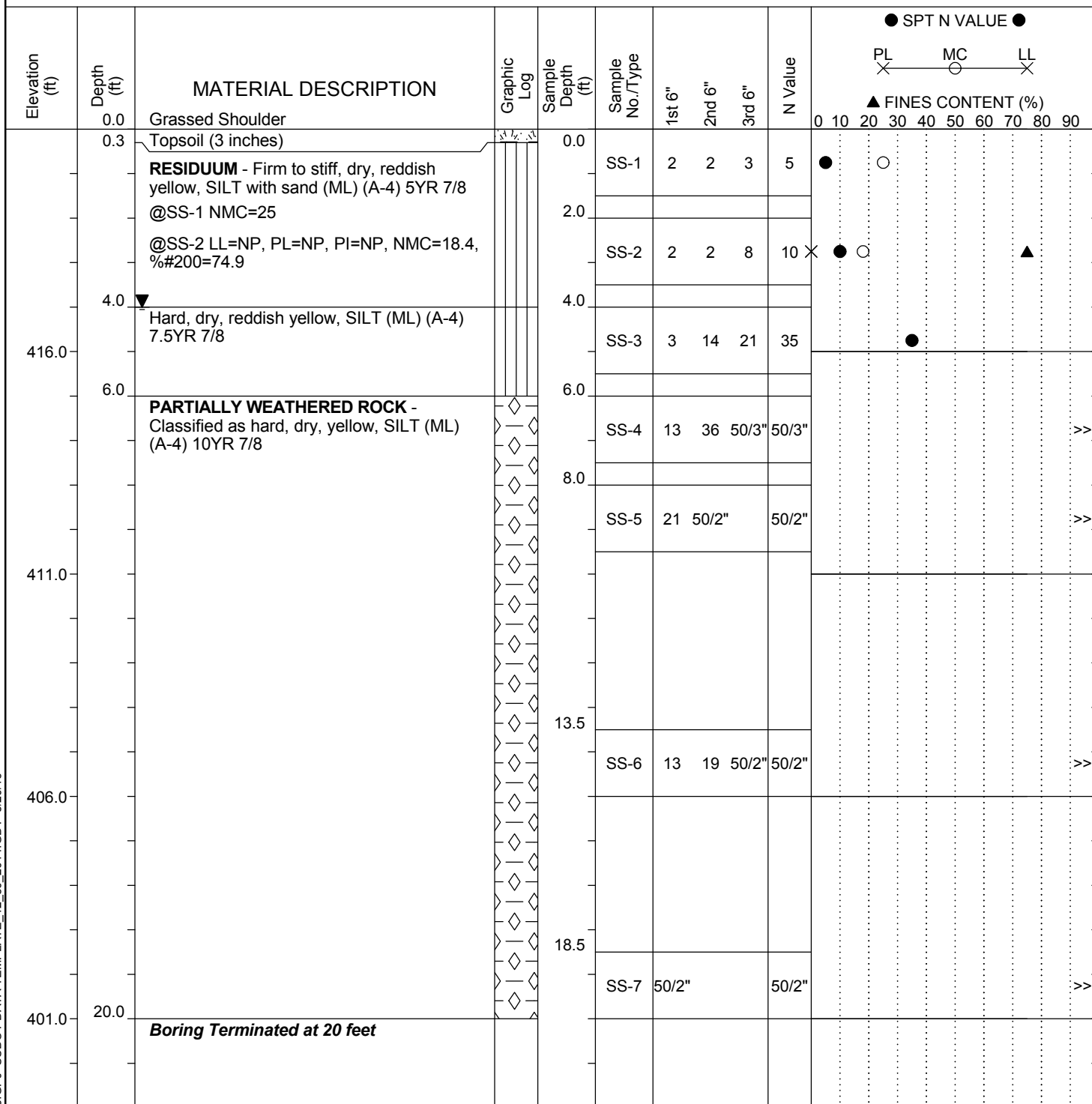
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	● SPT N VALUE ● PL — MC — LL ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90
	0.0	Roadway								
	0.2	Asphalt (2 inches)		0.0						
	0.6	Stone base (5 inches)								
		Dry, red, SILT with sand (ML) (A-7-6) 10R 5/8								
		LL=46, PL=28, PI=18, NMC=21.6, %200=76.6								
428.5	5.0	<b>Boring Terminated at 5 feet</b>								
423.5										
418.5										
413.5										

## 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:		42383			County:		Lexington		Boring No.:		B-21						
Site Description:			Columbia Avenue (S-48) Roadway Improvements							Route:		S-48					
Eng./Geo.:		RS		Boring Location:			-		Offset:		-		Alignment:		Existing		
Elev.:		421.0 ft		Latitude:		34.17382553		Longitude:		-81.32962803		Date Started:		12/29/2015			
Total Depth:		20 ft		Soil Depth:		20 ft		Core Depth:		0 ft		Date Completed:		12/30/2016			
Bore Hole Diameter (in):			2.94		Sampler Configuration			Liner Required:		Y (N)		Liner Used:		Y (N)			
Drill Machine:		CME-550X		Drill Method:		RW		Hammer Type:		Automatic		Energy Ratio:		74.2%			
Core Size:		N.A.		Driller:		AL		Groundwater:		TOB		N.A.		24HR		4 feet	

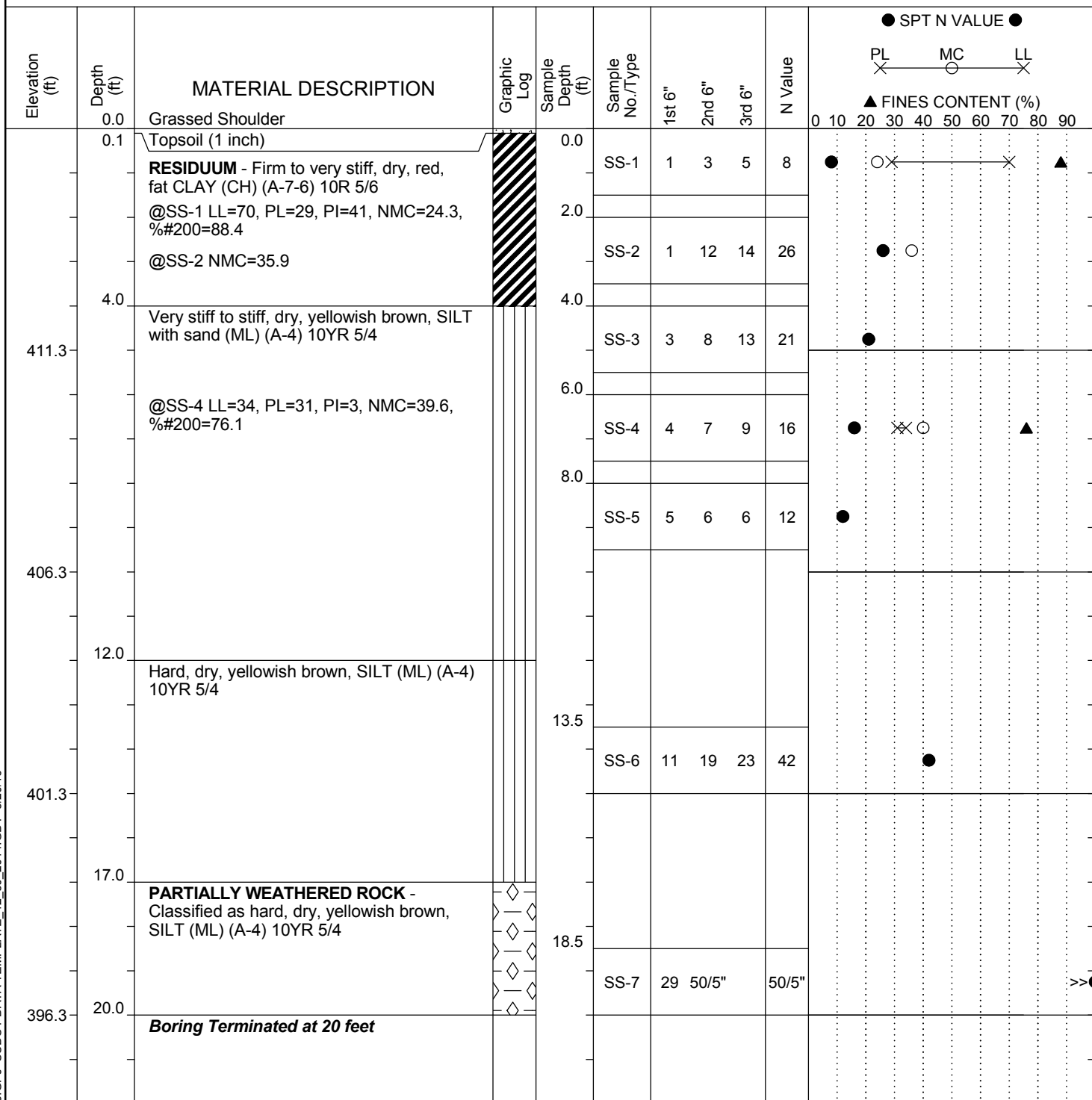


## LEGEND

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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-22
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	JF	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	416.3 ft	<b>Latitude:</b>	34.17515553	<b>Longitude:</b>	-81.32843476
<b>Date Started:</b>	01/04/2016				
<b>Total Depth:</b>	20 ft	<b>Soil Depth:</b>	20 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/6/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-55	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	81.9%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	AL	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	N.E.				



## 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	

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# SCDOT Soil Test Log

Project ID:	42383				County:	Lexington		Boring No.:	B-23	
Site Description:	Columbia Avenue (S-48) Roadway Improvements							Route:	S-48	
Eng./Geo.:	JF		Boring Location:	-		Offset:	-		Alignment:	Proposed
Elev.:	422.1 ft		Latitude:	34.17569435		Longitude:	-81.32667372		Date Started:	01/04/2016
Total Depth:	20 ft		Soil Depth:	20 ft		Core Depth:	0 ft		Date Completed:	1/6/2016
Bore Hole Diameter (in):	2.94		Sampler Configuration			Liner Required:	Y (N)		Liner Used:	Y (N)
Drill Machine:	CME-55		Drill Method:	RW		Hammer Type:	Automatic		Energy Ratio:	81.9%
Core Size:	N.A.		Driller:	AL		Groundwater:	TOB	N.A.	24HR	N.E.

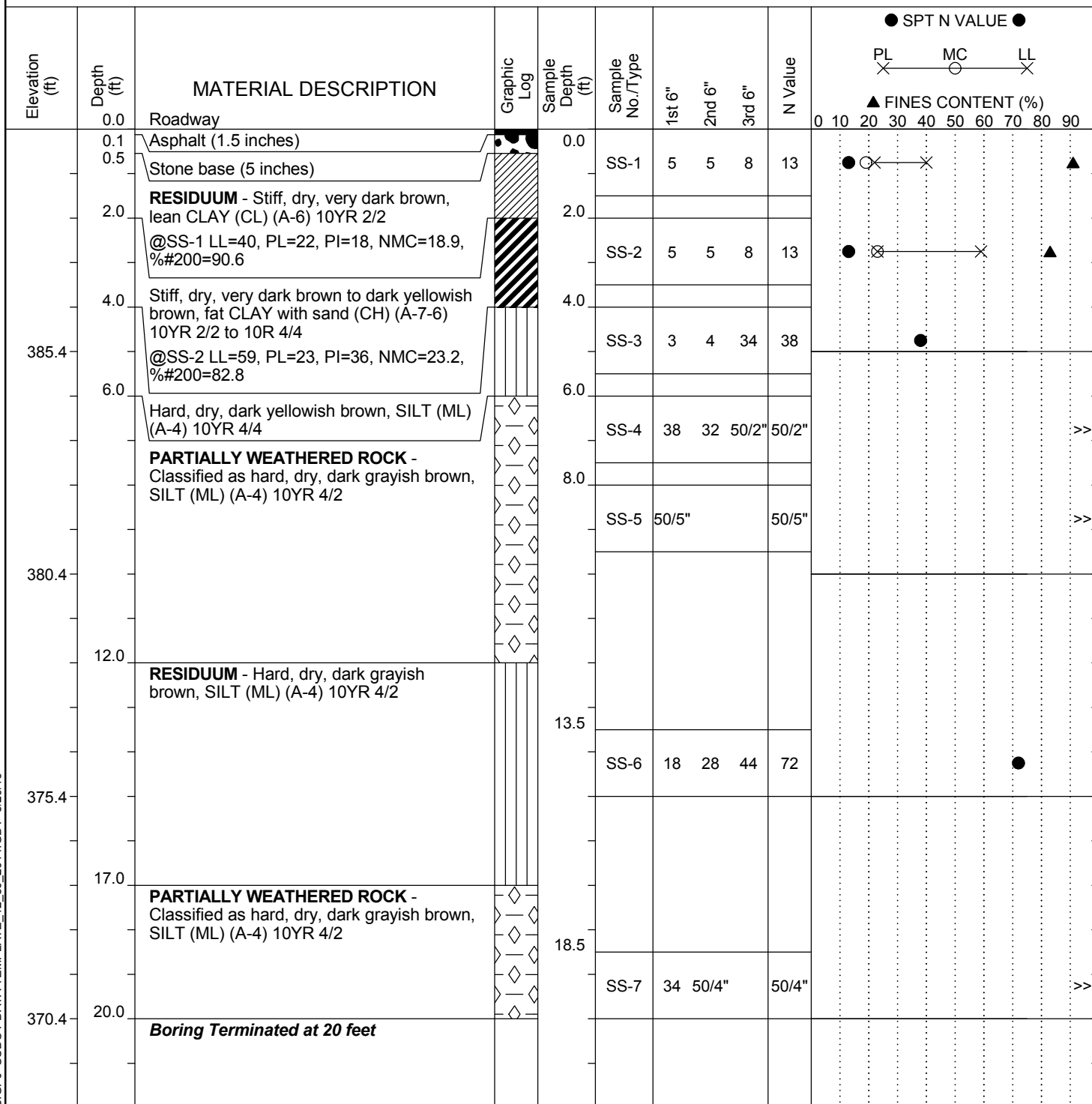
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
	0.0	Gravel Shoulder								
	0.3	Crushed aggregate (3 inches)		0.0	SS-1	7	5	8	13	
		<b>RESIDUUM</b> - Very stiff to hard, dry, red, elastic SILT (MH) (A-7-5) 10R 4/6								
		@SS-1 NMC=28.2		2.0						
		@SS-2 LL=77, PL=39, PI=38, NMC=29.9, %200=93.8			SS-2	7	12	21	33	
	4.0	Very stiff, dry, red, SILT (ML) (A-4) 10R 4/6		4.0						
417.1					SS-3	13	10	12	22	
	6.0			6.0						
					SS-4	7	9	11	20	
	8.0			8.0						
		Firm, dry, dusky red, SILT (ML) (A-4) 10R 3/4			SS-5	1	2	5	7	
412.1										
	12.0	Very stiff, dry, pale red, SILT (ML) (A-4) 10R 7/3		13.5						
					SS-6	5	7	9	16	
407.1										
	18.5			18.5						
					SS-7	4	8	13	21	
402.1	20.0	<b>Boring Terminated at 20 feet</b>								

## LEGEND

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

# SCDOT Soil Test Log

Project ID:			42383			County:		Lexington		Boring No.:		B-24						
Site Description:			Columbia Avenue (S-48) Roadway Improvements								Route:		S-48					
Eng./Geo.:			JF		Boring Location:			-		Offset:		-		Alignment:		Proposed		
Elev.:		390.4 ft		Latitude:		34.17372281		Longitude:		-81.32360384		Date Started:		1/11/2016				
Total Depth:		20 ft		Soil Depth:		20 ft		Core Depth:		0 ft		Date Completed:		1/11/2016				
Bore Hole Diameter (in):				2.94		Sampler Configuration			Liner Required:		Y (N)		Liner Used:		Y (N)			
Drill Machine:		CME-45C			Drill Method:		RW		Hammer Type:		Automatic		Energy Ratio:		71.8%			
Core Size:		N.A.			Driller:		JP		Groundwater:		TOB		N.A.		24HR		N.A.	

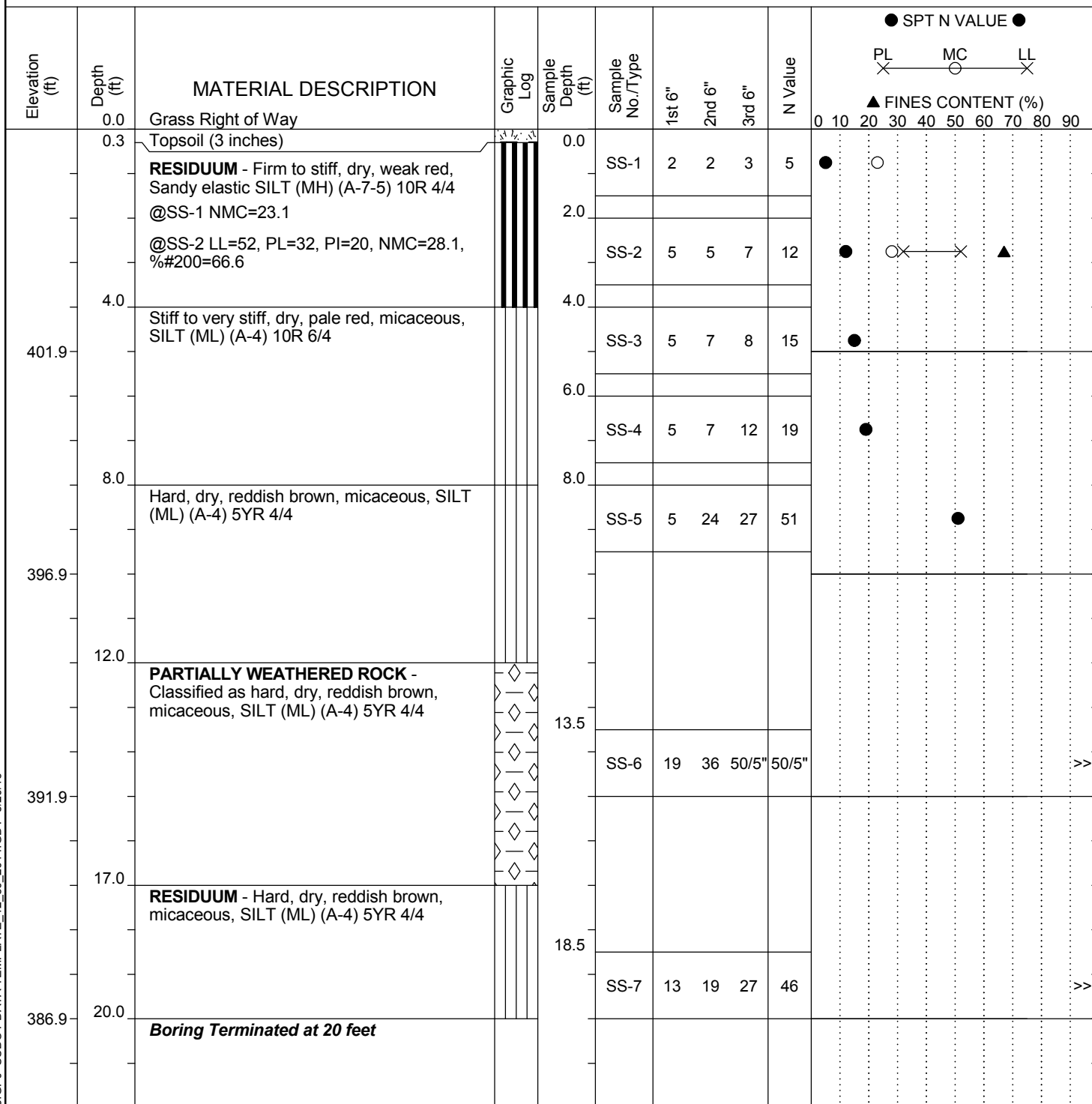


## LEGEND

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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-25
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	JF	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	406.9 ft	<b>Latitude:</b>	34.17721259	<b>Longitude:</b>	-81.32610491
<b>Date Started:</b>	1/15/2016				
<b>Total Depth:</b>	20 ft	<b>Soil Depth:</b>	20 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/16/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-550X	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	74.2%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	AL	<b>Groundwater:</b>	TOB N.A.
<b>24HR:</b>	N.E.				



## 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:		42383			County:		Lexington		Boring No.:		B-26							
Site Description:			Columbia Avenue (S-48) Roadway Improvements							Route:		S-48						
Eng./Geo.:			JF		Boring Location:			-		Offset:		-		Alignment:		Existing		
Elev.:		392.9 ft		Latitude:		34.17942959		Longitude:		-81.31923207		Date Started:		1/12/2016				
Total Depth:		20 ft		Soil Depth:		20 ft		Core Depth:		0 ft		Date Completed:		1/12/2016				
Bore Hole Diameter (in):				2.94		Sampler Configuration			Liner Required:		Y (N)		Liner Used:		Y (N)			
Drill Machine:		CME-45C			Drill Method:		RW		Hammer Type:		Automatic		Energy Ratio:		71.8%			
Core Size:		N.A.			Driller:		JP		Groundwater:		TOB		N.A.		24HR		N.A.	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL      MC      LL </div> <div> ▲ FINES CONTENT (%) </div> </div>
	0.0	Roadway								
	0.2	Asphalt (2 inches)		0.5						
	0.7	Stone base (6 inches)								
		<b>RESIDUUM</b> - Very stiff to stiff, dry, light red, elastic SILT (MH) (A-7-5) 10R 6/8		2.0	SS-1	13	14	16	30	
		@SS-1 LL=54, PL=33, PI=21, NMC=17.5, % <sub>#200</sub> =85.1								
		@SS-2 NMC=16.9			SS-2	4	5	8	13	
	4.0	Hard to very stiff, dry, light red to pale red, SILT (ML) (A-4) 10R 6/8 to 10R 6/4		4.0						
387.9		@SS-4 NMC=26.5		6.0	SS-3	19	20	25	45	
	8.0	Stiff, dry, weak red, SILT (ML) (A-4) 10R 4/4		8.0						
					SS-4	8	9	11	20	
382.9										
	12.0	Very stiff, dry, very dusky red, SILT (ML) (A-4) 10R 2.5/2		13.5	SS-5	5	6	8	14	
377.9										
	17.0	Very stiff, dry, light red, SILT (ML) (A-4) 10R 6/6		18.5	SS-6	9	11	14	25	
372.9	20.0	<b>Boring Terminated at 20 feet</b>			SS-7	12	7	10	17	

## LEGEND

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

# SCDOT Soil Test Log

Project ID: 42383			County: Lexington		Boring No.: B-26 BULK	
Site Description: Columbia Avenue (S-48) Roadway Improvements				Route: S-48		
Eng./Geo.: JF		Boring Location: -		Offset: -		
Alignment: Existing						
Elev.: 392.9 ft	Latitude: 34.17942865	Longitude: -81.31923108	Date Started: 1/12/2016			
Total Depth: 5 ft	Soil Depth: 5 ft	Core Depth: 0 ft	Date Completed: 1/12/2016			
Bore Hole Diameter (in): 6-1/2		Sampler Configuration		Liner Required: Y (N)	Liner Used: Y (N)	
Drill Machine: CME-45C	Drill Method: HSA	Hammer Type: Automatic		Energy Ratio: 71.8%		
Core Size: N.A.	Driller: JP	Groundwater: TOB N.E.		24HR	N.A.	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	● SPT N VALUE ● PL — MC — LL ▲ FINES CONTENT (%)
	0.0	Roadway								
	0.2	Asphalt (2 inches)		0.0						
	0.7	Stone base (6 inches)								
		RESIDUUM - Dry, light red, sandy SILT (ML) (A-6) 10R 6/8 LL=36, PL=25, PI=11, NMC=18.9, %200=67.1								
387.9	5.0	Boring Terminated at 5 feet								
382.9										
377.9										
372.9										

## 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: 42383				County: Lexington		Boring No.: B-27						
Site Description:		Columbia Avenue (S-48) Roadway Improvements					Route: S-48					
Eng./Geo.: JF		Boring Location: -			Offset: -		Alignment: Existing					
Elev.:	390.1 ft	Latitude:	34.17591777	Longitude:	-81.32096728	Date Started:		1/4/2016				
Total Depth:		30 ft	Soil Depth:	30 ft	Core Depth:		0 ft	Date Completed:		1/6/2016		
Bore Hole Diameter (in):		2.94	Sampler Configuration		Liner Required:		Y	(N)	Liner Used:		Y	(N)
Drill Machine:		CME-55	Drill Method:		RW	Hammer Type:		Automatic		Energy Ratio:		81.9%
Core Size:		N.A.	Driller:		AL	Groundwater:		TOB	N.A.		24HR	10 feet

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
	0.0	Grass Shoulder								
	0.3	Topsoil (3 inches)		0.0	SS-1	6	9	13	22	
	2.0	RESIDUUM - Very stiff, dry, red, elastic SILT (MH) (A-7-5) 10R 4/6 @SS-1 NMC=26.1		2.0						
		Hard, dry, red, SILT (ML) (A-4) 10R 4/6 @SS-2 LL=NP, PL=NP, PI=NP, NMC=30.6, % <sub>#200</sub> =93.4 @SS-3 NMC=30		4.0	SS-2	18	21	16	37 X	
385.1					SS-3	12	15	29	44	
	6.0	Stiff to very stiff, dry, red, SILT (ML) (A-4) 10R 4/6		6.0	SS-4	3	7	7	14	
				8.0						
					SS-5	2	5	7	12	
380.1										
				13.5						
					SS-6	5	9	14	23	
375.1										
				18.5						
					SS-7	3	5	12	17	
370.1										
	22.0									

## LEGEND

Continued Next Page

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: 42383				County: Lexington		Boring No.: B-27		
Site Description:		Columbia Avenue (S-48) Roadway Improvements					Route: S-48	
Eng./Geo.: JF		Boring Location: -			Offset: -		Alignment: Existing	
Elev.:	390.1 ft	Latitude:	34.17591777	Longitude:	-81.32096728	Date Started:		1/4/2016
Total Depth:		30 ft	Soil Depth:	30 ft	Core Depth:	0 ft	Date Completed: 1/6/2016	
Bore Hole Diameter (in):		2.94	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:		CME-55	Drill Method:	RW	Hammer Type:	Automatic	Energy Ratio:	81.9%
Core Size:		N.A.	Driller:	AL	Groundwater:	TOB N.A.	24HR	10 feet

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
365.1	23.5	Very stiff, dry, red, SILT (ML) (A-4) 10R 4/6			SS-8	3	8	10	18	●
27.0	28.5	Very stiff, moist, red, SILT (ML) (A-4) 10YR 5/6								
360.1	30.0	Boring Terminated at 30 feet			SS-9	3	7	11	18	●
355.1										
350.1										

## 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	

# SCDOT Soil Test Log

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-28
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	JF	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	387.8 ft	<b>Latitude:</b>	34.1777956	<b>Longitude:</b>	-81.3246511
<b>Date Started:</b>	1/4/2016				
<b>Total Depth:</b>	30 ft	<b>Soil Depth:</b>	30 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/6/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-55	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	81.9%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	AL	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	12 feet				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> </div> <div>▲ FINES CONTENT (%)</div> </div>
	0.0	Grassed Shoulder								
	0.2	Topsoil (2 inches)		0.0	SS-1	2	3	4	7	●
		<b>RESIDUUM</b> - Firm to stiff, dry, red, SILT with sand (ML) (A-4) 10R 4/6								
		@SS-1 NMC=26.6		2.0						
		@SS-2 LL=NP, PL=NP, PI=NP, NMC=33.7, %200=73.1			SS-2	3	3	3	6	●
		@SS-3 NMC=41.8		4.0						
					SS-3	3	4	7	11	●
382.8	6.0	Soft, dry, yellowish brown, SILT (ML) (A-4) 10YR 5/4		6.0						
		@SS-4 NMC=30.6			SS-4	1	1	2	3	●
	8.0	Firm, dry, brownish yellow, SILT with sand (ML) (A-4) 10YR 6/8		8.0						
					SS-5	1	3	4	7	●
377.8	12.0	Soft, moist, dark brown, SILT with sand (ML) (A-4) 10YR 3/3		13.5						
		@SS-6 NMC=28			SS-6	1	1	2	3	●
372.8	17.0	Stiff, dry, light gray, lean CLAY (CL) (A-6) 10YR 7/1		18.5						
					SS-7	2	4	8	12	●
367.8	22.0									

## LEGEND

Continued Next Page

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: 42383				County: Lexington		Boring No.: B-28		
Site Description:		Columbia Avenue (S-48) Roadway Improvements					Route: S-48	
Eng./Geo.: JF		Boring Location: -			Offset: -		Alignment: Existing	
Elev.:	387.8 ft	Latitude:	34.1777956	Longitude:	-81.3246511		Date Started: 1/4/2016	
Total Depth: 30 ft		Soil Depth: 30 ft		Core Depth: 0 ft		Date Completed: 1/6/2016		
Bore Hole Diameter (in): 2.94		Sampler Configuration			Liner Required: Y (N)		Liner Used: Y (N)	
Drill Machine: CME-55		Drill Method: RW		Hammer Type: Automatic		Energy Ratio: 81.9%		
Core Size: N.A.		Driller: AL		Groundwater: TOB N.A.		24HR: 12 feet		

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL X MC O LL X </div> <div> ▲ FINES CONTENT (%) </div> </div>
362.8	27.0	Very stiff, dry, white, SILT (ML) (A-4) 10YR 8/1		23.5	SS-8	4	8	18	26	<div> <div> ● </div> </div>
357.8	30.0	Very stiff, dry, yellow, SILT (ML) (A-4) 10YR 7/8		28.5	SS-9	5	9	14	23	<div> <div> ● </div> </div>
352.8		<b>Boring Terminated at 30 feet</b>								
347.8										

## 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	

# SCDOT Soil Test Log

Project ID: 42383				County: Lexington		Boring No.: B-29	
Site Description: Columbia Avenue (S-48) Roadway Improvements					Route: S-48		
Eng./Geo.: KZ		Boring Location: -		Offset: -		Alignment: Existing	
Elev.: 392.8 ft	Latitude: 34.17724242	Longitude: -81.32322918		Date Started:		1/14/2016	
Total Depth: 103.5 ft	Soil Depth: 103.5 ft	Core Depth: 0 ft		Date Completed:		1/15/2016	
Bore Hole Diameter (in): 2.94		Sampler Configuration		Liner Required: Y (N)		Liner Used: Y (N)	
Drill Machine: CME-55	Drill Method: RW	Hammer Type: Automatic		Energy Ratio:		81.9%	
Core Size: N.A.	Driller: CF	Groundwater: TOB		N.A.		24HR	8 feet

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <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>
	0.0	Toe of Slope								
	0.1	Topsoil (1 inch)		0.0	SS-1	2	3	5	8	●
	2.0	RESIDUUM - Firm, moist, light red, SILT (ML) (A-4) 10R 6/8 @SS-1 NMC=32.2		2.0						
		Stiff to very stiff, moist, red, SILT (ML) (A-4) 10R 5/8 @SS-2 LL=NP, PL=NP, PI=NP, NMC=30.4, %200=90.7		4.0	SS-2	3	7	7	14 X	●
387.8		@SS-3 NMC=28.8			SS-3	6	7	9	16	●
	6.0	Very stiff, dry, light red, SILT (ML) (A-4) 10R 7/8 @SS-4 NMC=25.9		6.0	SS-4	4	11	12	23	●
				8.0	SS-5	2	7	13	20	●
382.8										
		@SS-6 NMC=24.3		13.5	SS-6	6	10	13	23	●
377.8										
	17.0	Very stiff, dry, yellow to brownish yellow, SILT (ML) (A-4) 10YR 8/6 to 10YR6/6		18.5	SS-7	8	10	16	26	●
372.8										

## 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:		42383			County:		Lexington		Boring No.:		B-29							
Site Description:			Columbia Avenue (S-48) Roadway Improvements							Route:		S-48						
Eng./Geo.:			KZ		Boring Location:			-		Offset:		-		Alignment:		Existing		
Elev.:		392.8 ft		Latitude:		34.17724242		Longitude:		-81.32322918		Date Started:		1/14/2016				
Total Depth:		103.5 ft		Soil Depth:		103.5 ft		Core Depth:		0 ft		Date Completed:		1/15/2016				
Bore Hole Diameter (in):				2.94		Sampler Configuration			Liner Required:		Y (N)		Liner Used:		Y (N)			
Drill Machine:		CME-55			Drill Method:		RW		Hammer Type:		Automatic		Energy Ratio:		81.9%			
Core Size:		N.A.			Driller:		CF		Groundwater:		TOB		N.A.		24HR		8 feet	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL X MC O LL X </div> <div> ▲ FINES CONTENT (%) </div> </div>
367.8	27.0	Hard, dry, very pale brown, SILT (ML) (A-4) 10YR 8/2		23.5	SS-8	6	9	14	23	●
362.8	28.5									
357.8	32.0	<b>PARTIALLY WEATHERED ROCK-</b> Classified as hard, dry, very pale brown, SILT (ML) (A-4) 10YR 8/2		33.5						
	33.5				SS-10	50/5"		50/5"		>>●
352.8	37.0	<b>RESIDUUM</b> - Hard, dry, yellow, SILT (ML) (A-4) 10YR 7/6		38.5						
	38.5				SS-11	21	35	44	79	●
	42.0	<b>PARTIALLY WEATHERED ROCK-</b> Classified as hard, dry, very pale brown, SILT (ML) (A-4) 10YR 7/4		43.5						

## LEGEND

Continued Next Page

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: 42383				County: Lexington		Boring No.: B-29		
Site Description:		Columbia Avenue (S-48) Roadway Improvements					Route: S-48	
Eng./Geo.: KZ		Boring Location: -			Offset: -		Alignment: Existing	
Elev.:	392.8 ft	Latitude:	34.17724242	Longitude:	-81.32322918	Date Started:		1/14/2016
Total Depth:		103.5 ft	Soil Depth:	103.5 ft	Core Depth:	0 ft	Date Completed: 1/15/2016	
Bore Hole Diameter (in):		2.94	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:		CME-55	Drill Method:	RW	Hammer Type:	Automatic	Energy Ratio:	81.9%
Core Size:		N.A.	Driller:	CF	Groundwater:	TOB N.A.	24HR	8 feet

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 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>
347.8	47.0	RESIDUUM - Very stiff to hard, dry, very pale brown to brownish yellow, SILT with sand (ML) (A-4) 10YR 7/4 to 10YR 6/8			SS-12	23	48	50/5"	50/5"	
				48.5						
342.8					SS-13	7	10	14	24	●
				53.5						
337.8		@SS-14 LL=NP, PL=NP, PI=NP, NMC=30.3, % #200=77.9			SS-14	8	11	10	21 X	● ○ ▲
				58.5						
332.8					SS-15	13	14	17	31	●
				63.5						
327.8	62.0	PARTIALLY WEATHERED ROCK- Classified as hard, dry, brownish yellow, Sandy SILT (ML) (A-4) 10YR 6/6			SS-16	50/4"			50/4"	

## LEGEND

Continued Next Page

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: 42383				County: Lexington		Boring No.: B-29	
Site Description: Columbia Avenue (S-48) Roadway Improvements			Route: S-48				
Eng./Geo.: KZ		Boring Location: -		Offset: -		Alignment: Existing	
Elev.:	392.8 ft	Latitude:	34.17724242	Longitude:	-81.32322918	Date Started: 1/14/2016	
Total Depth: 103.5 ft		Soil Depth: 103.5 ft		Core Depth: 0 ft		Date Completed: 1/15/2016	
Bore Hole Diameter (in): 2.94		Sampler Configuration		Liner Required: Y (N)		Liner Used: Y (N)	
Drill Machine: CME-55		Drill Method: RW		Hammer Type: Automatic		Energy Ratio: 81.9%	
Core Size: N.A.		Driller: CF		Groundwater: TOB N.A.		24HR: 8 feet	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL MC LL </div> <div> ▲ FINES CONTENT (%) </div> </div>
322.8				68.5	SS-17	17	34	50/4"	50/4"	>>●
317.8				73.5	SS-18	50/2"		50/2"		>>●
312.8				78.5	SS-19	32	50/4"		50/4"	>>●
307.8				83.5	SS-20	50/5"		50/5"		>>●
87.0		<b>PARTIALLY WEATHERED ROCK-</b> Classified as hard, dry, olive, Sandy SILT								

## LEGEND

Continued Next Page

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:		42383			County:		Lexington		Boring No.:		B-29							
Site Description:			Columbia Avenue (S-48) Roadway Improvements							Route:		S-48						
Eng./Geo.:			KZ		Boring Location:			-		Offset:		-		Alignment:		Existing		
Elev.:		392.8 ft		Latitude:		34.17724242		Longitude:		-81.32322918		Date Started:		1/14/2016				
Total Depth:		103.5 ft		Soil Depth:		103.5 ft		Core Depth:		0 ft		Date Completed:		1/15/2016				
Bore Hole Diameter (in):				2.94		Sampler Configuration			Liner Required:		Y (N)		Liner Used:		Y (N)			
Drill Machine:		CME-55			Drill Method:		RW		Hammer Type:		Automatic		Energy Ratio:		81.9%			
Core Size:		N.A.			Driller:		CF		Groundwater:		TOB		N.A.		24HR		8 feet	

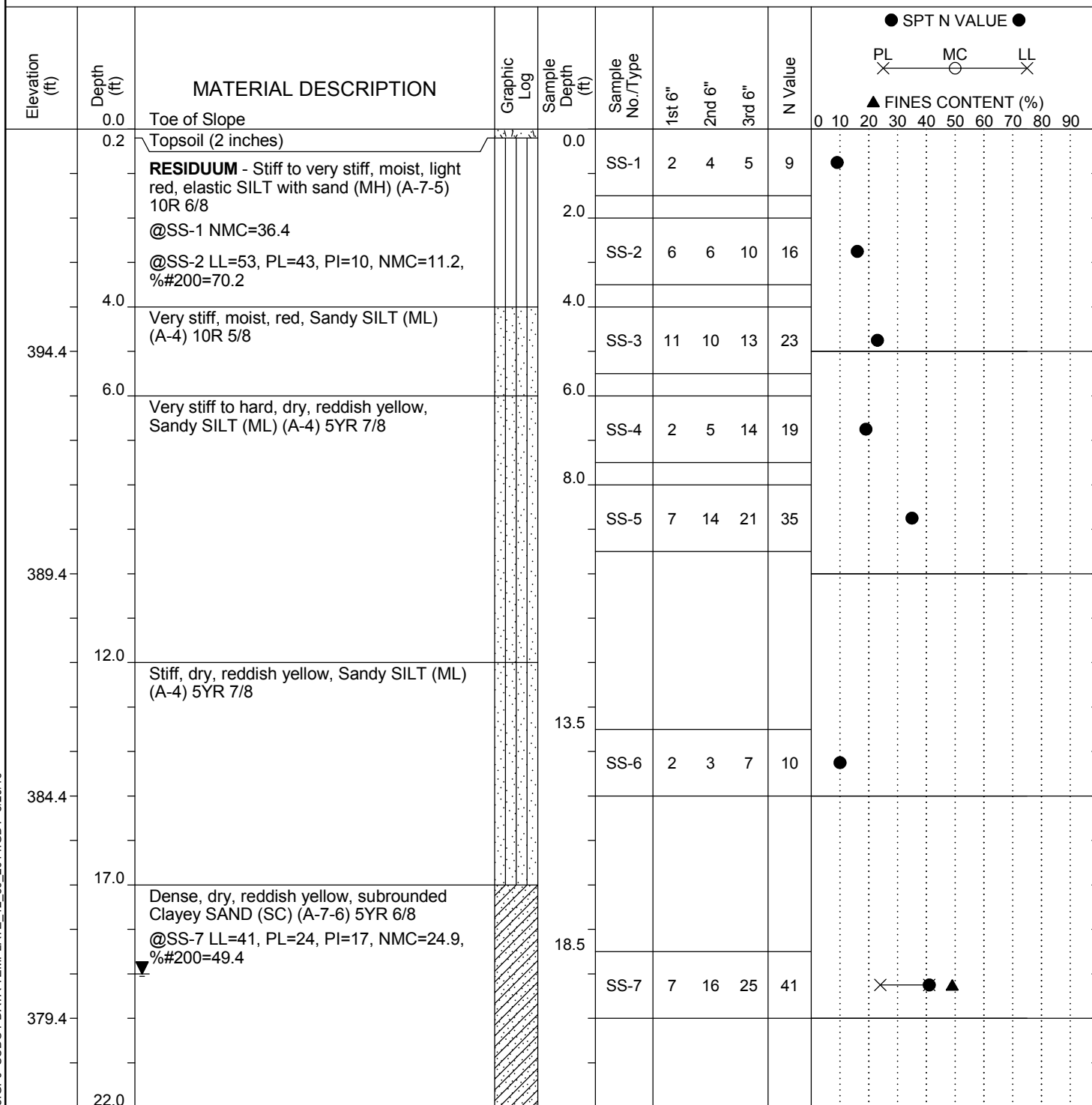
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL X MC O LL X </div> <div> ▲ FINES CONTENT (%) </div> <div> 0 10 20 30 40 50 60 70 80 90 </div> </div>
302.8		(ML) (A-4) 5Y 4/4 @SS-21 NMC=12.7		88.5						
					SS-21	50/3"			50/3"	>>●
				93.5						
					SS-22	50/1"			50/1"	>>●
297.8										
97.0		PARTIALLY WEATHERED ROCK- No sample recovered								
				98.5						
					SS-23	50/1"			50/1"	>>●
292.8										
103.5		Boring Terminated at 103.5 feet		103.5						
					SS-24	50/0"			50/0"	>>●
287.8										

## 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	

# SCDOT Soil Test Log

Project ID: 42383				County: Lexington		Boring No.: B-30	
Site Description: Columbia Avenue (S-48) Roadway Improvements			Route: S-48				
Eng./Geo.: RS		Boring Location: -		Offset: -		Alignment: Existing	
Elev.:	399.4 ft	Latitude:	34.17690257	Longitude:	-81.32276508	Date Started: 1/13/2016	
Total Depth: 120 ft		Soil Depth: 120 ft		Core Depth: 0 ft		Date Completed: 1/14/2016	
Bore Hole Diameter (in): 2.94		Sampler Configuration		Liner Required: Y (N)		Liner Used: Y (N)	
Drill Machine: CME-55		Drill Method: RW		Hammer Type: Automatic		Energy Ratio: 81.9%	
Core Size: N.A.		Driller: AL		Groundwater: TOB N.A.		24HR: 19 feet	



## 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: 42383				County: Lexington		Boring No.: B-30		
Site Description:			Columbia Avenue (S-48) Roadway Improvements				Route: S-48	
Eng./Geo.: RS		Boring Location: -			Offset: -		Alignment: Existing	
Elev.: 399.4 ft		Latitude: 34.17690257		Longitude: -81.32276508		Date Started: 1/13/2016		
Total Depth: 120 ft		Soil Depth: 120 ft		Core Depth: 0 ft		Date Completed: 1/14/2016		
Bore Hole Diameter (in): 2.94		Sampler Configuration			Liner Required: Y (N)		Liner Used: Y (N)	
Drill Machine: CME-55		Drill Method: RW		Hammer Type: Automatic		Energy Ratio: 81.9%		
Core Size: N.A.		Driller: AL		Groundwater: TOB N.A.		24HR 19 feet		

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
374.4	27.0	<b>PARTIALLY WEATHERED ROCK</b> - Classified as hard, dry, yellowish red, Sandy SILT (ML) (A-4) 5YR 5/8		23.5	SS-8	14	34	50/4"	50/4"	>>●
369.4	32.0	<b>RESIDUUM</b> - Hard, dry, yellow, Sandy SILT (ML) (A-4) 10YR 7/8		28.5	SS-9	9	22	28	50	●
364.4	38.5	<b>PARTIALLY WEATHERED ROCK</b> - Classified as hard, dry, yellowish brown, Sandy SILT (ML) (A-4) 10YR 6/8		33.5	SS-10	20	47	50/3"	50/3"	>>●
359.4	42.0	<b>RESIDUUM</b> - Hard, dry, brownish yellow, Sandy SILT (ML) (A-4) 10YR 6/8		43.5	SS-11	16	32	50/4"	50/4"	>>●

## LEGEND

Continued Next Page

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:	42383				County:	Lexington		Boring No.:	B-30		
Site Description:	Columbia Avenue (S-48) Roadway Improvements							Route:	S-48		
Eng./Geo.:	RS		Boring Location:	-		Offset:	-		Alignment:	Existing	
Elev.:	399.4 ft		Latitude:	34.17690257		Longitude:	-81.32276508		Date Started:	1/13/2016	
Total Depth:	120 ft		Soil Depth:	120 ft		Core Depth:	0 ft		Date Completed:	1/14/2016	
Bore Hole Diameter (in):	2.94		Sampler Configuration			Liner Required:	Y (N)		Liner Used:	Y (N)	
Drill Machine:	CME-55		Drill Method:	RW		Hammer Type:	Automatic		Energy Ratio:	81.9%	
Core Size:	N.A.		Driller:	AL		Groundwater:	TOB	N.A.		24HR	19 feet

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL X MC O LL X </div> <div> ▲ FINES CONTENT (%) </div> <div> 0 10 20 30 40 50 60 70 80 90 </div> </div>
354.4	47.0	PARTIALLY WEATHERED ROCK - Classified as hard, dry, olive brown, Sandy SILT (ML) (A-4) 2.5Y 5/6			SS-12	11	22	30	52	●
349.4				48.5	SS-13	50/4"			50/4"	>>●
344.4				53.5	SS-14	50/2"			50/2"	>>●
339.4		PARTIALLY WEATHERED ROCK - Classified as hard, dry, brownish yellow, Sandy SILT (ML) (A-4) 10YR 6/8		58.5						
					SS-15	50/1"			50/1"	>>●
334.4	62.0			63.5	SS-16	46 50/2"			50/2"	>>●

## LEGEND

Continued Next Page

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:	42383				County:	Lexington		Boring No.:	B-30		
Site Description:	Columbia Avenue (S-48) Roadway Improvements							Route:	S-48		
Eng./Geo.:	RS		Boring Location:	-		Offset:	-		Alignment:	Existing	
Elev.:	399.4 ft		Latitude:	34.17690257		Longitude:	-81.32276508		Date Started:	1/13/2016	
Total Depth:	120 ft		Soil Depth:	120 ft		Core Depth:	0 ft		Date Completed:	1/14/2016	
Bore Hole Diameter (in):	2.94		Sampler Configuration			Liner Required:	Y (N)		Liner Used:	Y (N)	
Drill Machine:	CME-55		Drill Method:	RW		Hammer Type:	Automatic		Energy Ratio:	81.9%	
Core Size:	N.A.		Driller:	AL		Groundwater:	TOB	N.A.		24HR	19 feet

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
329.4	72.0	PARTIALLY WEATHERED ROCK - Classified as hard, dry, light olive brown, Sandy SILT (ML) (A-4) 2.5Y 5/6		68.5	SS-17	50/4"			50/4"	>>●
324.4	73.5				SS-18	50/5"			50/5"	>>●
319.4	77.0	PARTIALLY WEATHERED ROCK - Classified as hard, dry, yellowish brown to brownish yellow, Sandy SILT (ML) (A-4) 10YR 5/8 to 10YR6/6		78.5	SS-19	50/5"			50/5"	>>●
314.4	83.5				SS-20	50/5"			50/5"	>>●

## LEGEND

Continued Next Page

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:	42383				County:	Lexington		Boring No.:	B-30		
Site Description:	Columbia Avenue (S-48) Roadway Improvements							Route:	S-48		
Eng./Geo.:	RS		Boring Location:	-		Offset:	-		Alignment:	Existing	
Elev.:	399.4 ft		Latitude:	34.17690257		Longitude:	-81.32276508		Date Started:	1/13/2016	
Total Depth:	120 ft		Soil Depth:	120 ft		Core Depth:	0 ft		Date Completed:	1/14/2016	
Bore Hole Diameter (in):	2.94		Sampler Configuration			Liner Required:	Y (N)		Liner Used:	Y (N)	
Drill Machine:	CME-55		Drill Method:	RW		Hammer Type:	Automatic		Energy Ratio:	81.9%	
Core Size:	N.A.		Driller:	AL		Groundwater:	TOB	N.A.		24HR	19 feet

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
309.4		@SS-21 NMC=22.6		88.5	SS-21	50/5"		50/5"		>>●
304.4				93.5	SS-22	50/3"		50/3"		>>●
299.4		<b>PARTIALLY WEATHERED ROCK -</b> Classified as hard, dry, olive gray, Sandy SILT (ML) (A-4) 5Y 5/2		98.5	SS-23	50/4"		50/4"		>>●
294.4		<b>PARTIALLY WEATHERED ROCK -</b> Classified as hard, dry, grayish green to pale green, Sandy SILT (ML) (A-4) GLEY1 5/2 to GLEY1 6/2		103.5	SS-24	50/5"		50/5"		>>●
				108.5	SS-25	35 50/5"		50/5"		>>●

## LEGEND

Continued Next Page

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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-30
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	RS	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	399.4 ft	<b>Latitude:</b>	34.17690257	<b>Longitude:</b>	-81.32276508
<b>Date Started:</b>	1/13/2016				
<b>Total Depth:</b>	120 ft	<b>Soil Depth:</b>	120 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/14/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-55	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	81.9%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	AL	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	19 feet				

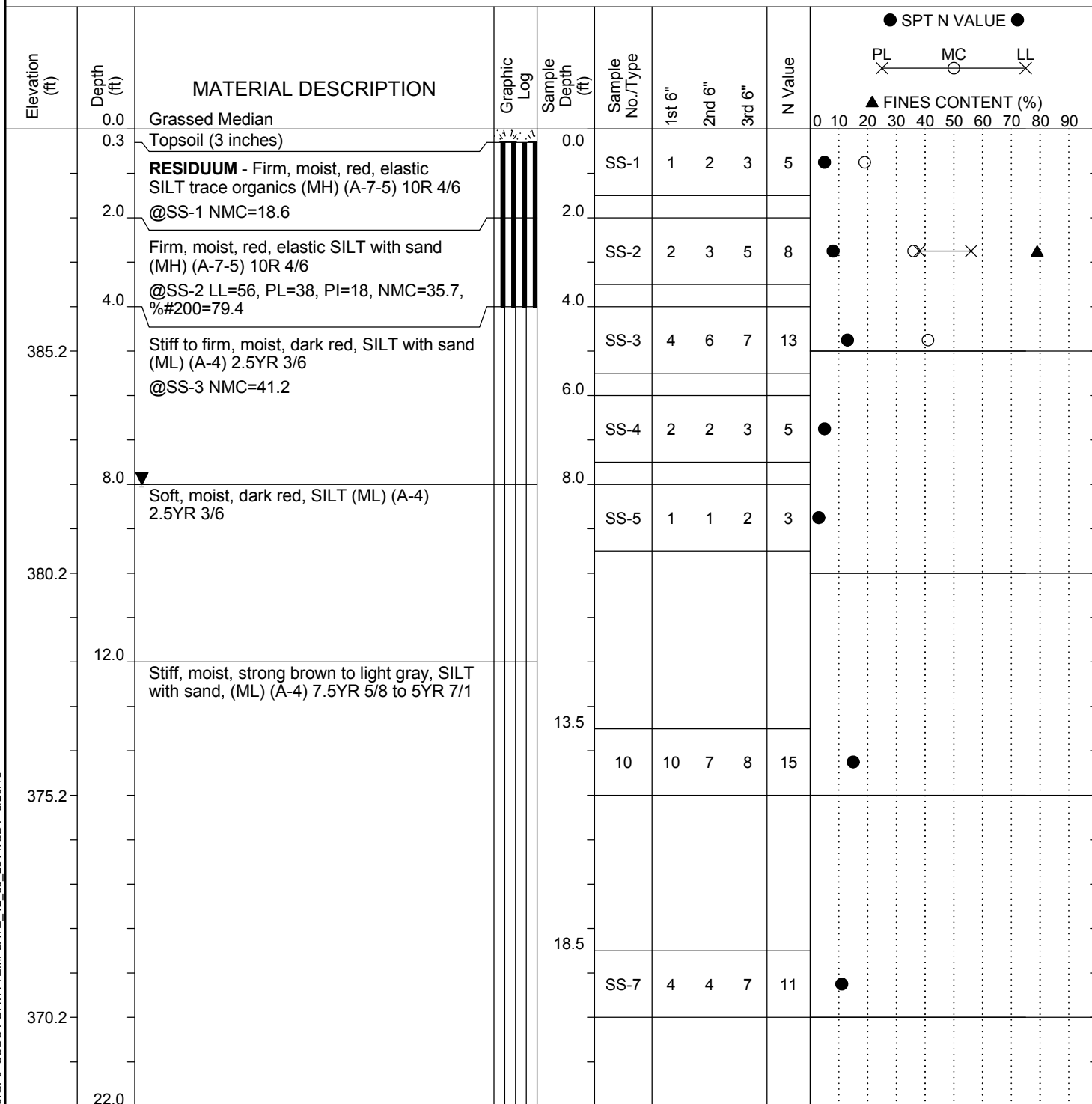
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
284.4				113.5	SS-26	48	50/3"	50/3"		>>●
279.4	120.0	Boring Terminated at 120 feet.		118.5	SS-27	50/3"	50/3"			>>●
274.4										
269.4										

## 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: 42383				County: Lexington		Boring No.: B-31	
Site Description: Columbia Avenue (S-48) Roadway Improvements			Route: S-48				
Eng./Geo.: KZ		Boring Location: -		Offset: -		Alignment: Existing	
Elev.:	390.2 ft	Latitude:	34.17731581	Longitude:	-81.32280001	Date Started: 1/17/2016	
Total Depth: 105 ft		Soil Depth: 105 ft		Core Depth: 0 ft		Date Completed: 1/18/2016	
Bore Hole Diameter (in): 2.94		Sampler Configuration		Liner Required: Y (N)		Liner Used: Y (N)	
Drill Machine: CME-55		Drill Method: RW		Hammer Type: Automatic		Energy Ratio: 81.9%	
Core Size: N.A.		Driller: CF		Groundwater: TOB N.A.		24HR: 8 feet	



## LEGEND

Continued Next Page

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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-31
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	KZ	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	390.2 ft	<b>Latitude:</b>	34.17731581	<b>Longitude:</b>	-81.32280001
<b>Date Started:</b>	1/17/2016				
<b>Total Depth:</b>	105 ft	<b>Soil Depth:</b>	105 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/18/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>			
<b>Liner Required:</b>	Y	<b>Liner Used:</b>	Y		
<b>Drill Machine:</b>	CME-55	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	81.9%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	CF	<b>Groundwater:</b>	TOB
<b>24HR</b>	8 feet				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL X MC O LL X </div> <div> ▲ FINES CONTENT (%) </div> </div>
365.2	27.0	Very stiff, moist, very pale brown, SILT with sand (ML) (A-4) 10YR 8/4		23.5	SS-8	10	9	12	21	●
360.2		Hard, moist, yellowish brown to light gray, SILT with sand (ML) (A-4) 10YR 5/6 and 10YR 7/7		28.5	SS-9	13	23	22	45	●
355.2		@SS-10 NMC=25.7		33.5	SS-10	28	29	31	60	○ ●
350.2				38.5	SS-11	6	14	18	32	●
	42.0	Stiff, moist, pale yellow, SILT (ML) (A-4) 5Y 7/4		43.5						

## LEGEND

Continued Next Page

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:		42383			County:		Lexington		Boring No.:		B-31							
Site Description:			Columbia Avenue (S-48) Roadway Improvements							Route:		S-48						
Eng./Geo.:			KZ		Boring Location:			-		Offset:		-		Alignment:		Existing		
Elev.:		390.2 ft		Latitude:		34.17731581		Longitude:		-81.32280001		Date Started:		1/17/2016				
Total Depth:		105 ft		Soil Depth:		105 ft		Core Depth:		0 ft		Date Completed:		1/18/2016				
Bore Hole Diameter (in):				2.94		Sampler Configuration			Liner Required:		Y (N)		Liner Used:		Y (N)			
Drill Machine:		CME-55			Drill Method:		RW		Hammer Type:		Automatic		Energy Ratio:		81.9%			
Core Size:		N.A.			Driller:		CF		Groundwater:		TOB		N.A.		24HR		8 feet	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 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>0 10 20 30 40 50 60 70 80 90</div> </div>
345.2	47.0	Hard, moist, strong brown, SILT with quartz fragments, (ML) (A-4) 7.5YR 4/6		48.5	SS-12	3	5	8	13	●
340.2	52.0	PARTIALLY WEATHERED ROCK - Classified as hard, moist, yellowish brown, SILT (ML) (A-4) 7.5YR 4/6		53.5	SS-13	13	15	33	48	●
335.2	58.5	PARTIALLY WEATHERED ROCK - Classified as very dense, wet, light brown, angular, strongly cemented, fine to coarse SAND with quartz rock fragments (SP) (A-3) 7.5YR 6/3		63.5	SS-14	13	28	50/5"	50/5"	>>●
330.2	62.0			58.5	SS-15	18	36	50/5"	50/5"	>>●
325.2				63.5	SS-16	50/5"			50/5"	>>●

## LEGEND

Continued Next Page

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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-31
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	KZ	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	390.2 ft	<b>Latitude:</b>	34.17731581	<b>Longitude:</b>	-81.32280001
<b>Date Started:</b>	1/17/2016				
<b>Total Depth:</b>	105 ft	<b>Soil Depth:</b>	105 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/18/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-55	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	81.9%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	CF	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	8 feet				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
320.2	67.0	PARTIALLY WEATHERED ROCK - Classified as hard, moist, strong brown, SILT with quartz fragments (ML) (A-4) 7.5YR 4/6		68.5	SS-17	39	47	50/5"	50/5"	>>●
315.2	73.5				SS-18	22	45	50/5"	50/5"	>>●
310.2	78.5	@SS-19 NMC=18.9			SS-19	24	39	50/5"	50/5"	>>●
305.2	83.5	PARTIALLY WEATHERED ROCK - Classified as hard, moist, dark brown, lean CLAY trace sand (CL) (A-6) 7.5YR 3/3			SS-20	30	50/3"		50/3"	>>●
87.0		PARTIALLY WEATHERED ROCK - Classified as hard, moist, dark brown, SILT								

## LEGEND

Continued Next Page

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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-31
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	KZ	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	390.2 ft	<b>Latitude:</b>	34.17731581	<b>Longitude:</b>	-81.32280001
<b>Date Started:</b>	1/17/2016				
<b>Total Depth:</b>	105 ft	<b>Soil Depth:</b>	105 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/18/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-55	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	81.9%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	CF	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	8 feet				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL X MC O LL X </div> <div> ▲ FINES CONTENT (%) </div> </div>
300.2	92.0	(ML) (A-4) 7.5YR 3/3		88.5	SS-21	50/3"		50/3"		>>●
295.2		<b>PARTIALLY WEATHERED ROCK -</b> Classified as hard, moist, dark greenish gray, lean CLAY with rock fragments (CL) (A-6) 5GY 4/2		93.5	SS-22	50/2"		50/2"		>>●
290.2				98.5	SS-23	50/1"		50/1"		>>●
285.2	105.0	@ SS-24: No Recovery		103.5	SS-24	50/0"		50/0"		>>●
		<b>Boring Terminated at 105 feet</b>								

## 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\_73155095.GPJ SCDOT DATA TEMPLATE\_12\_30\_2014.GDT 5/20/16

# SCDOT Soil Test Log

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-32
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	KZ	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	391.9 ft	<b>Latitude:</b>	34.17711363	<b>Longitude:</b>	-81.32257805
<b>Date Started:</b>	1/18/2016				
<b>Total Depth:</b>	98.5 ft	<b>Soil Depth:</b>	98.5 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/19/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-55	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	81.9%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	CF	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	10 feet				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	● SPT N VALUE ●	PL MC LL	▲ FINES CONTENT (%)
	0.0	Grassed Median										
	0.3	Topsoil (3 inches)		0.0	SS-1	2	2	2	4	●		
	2.0	<b>FILL</b> - Soft, moist, reddish brown, elastic SILT (MH) (A-7-5) 5YR 4/4 @SS-1 NMC=12.3		2.0								
	4.0	<b>RESIDUUM</b> - Stiff, moist, red, elastic SILT with sand (MH) (A-7-5) 5R 4/6 @SS-2 NMC=35.5			SS-2	4	4	6	10	●	○	
386.9		Stiff to firm, moist, yellowish red, SILT with sand (ML) (A-4) 5YR 4/6		4.0								
					SS-3	4	4	5	9	●		
				6.0								
					SS-4	2	3	7	10	●		
				8.0								
					SS-5	2	3	7	10	●		
381.9												
				13.5								
		@SS-6 LL=NP, PL=NP, PI=NP, NMC=45.7, % <sub>#200</sub> =75.2			SS-6	3	3	4	7	●	○	▲
376.9												
				18.5								
					SS-7	2	3	4	7	●		
371.9												
22.0												

## LEGEND

Continued Next Page

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: 42383				County: Lexington		Boring No.: B-32	
Site Description: Columbia Avenue (S-48) Roadway Improvements			Route: S-48				
Eng./Geo.: KZ		Boring Location: -		Offset: -		Alignment: Existing	
Elev.:	391.9 ft	Latitude:	34.17711363	Longitude:	-81.32257805	Date Started: 1/18/2016	
Total Depth: 98.5 ft		Soil Depth: 98.5 ft		Core Depth: 0 ft		Date Completed: 1/19/2016	
Bore Hole Diameter (in): 2.94		Sampler Configuration		Liner Required: Y (N)		Liner Used: Y (N)	
Drill Machine: CME-55		Drill Method: RW		Hammer Type: Automatic		Energy Ratio: 81.9%	
Core Size: N.A.		Driller: CF		Groundwater: TOB N.A.		24HR: 10 feet	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
366.9	27.0	Stiff, moist, yellow, SILT with sand (ML) (A-4) 10YR 7/6		23.5	SS-8	4	6	7	13	●
361.9		Hard, moist, very pale brown, SILT with sand (ML) (A-4) 10YR 8/2		28.5	SS-9	8	13	19	32	●
356.9				33.5	SS-10	8	12	18	30	●
351.9				38.5	SS-11	10	18	26	44	●
				43.5						

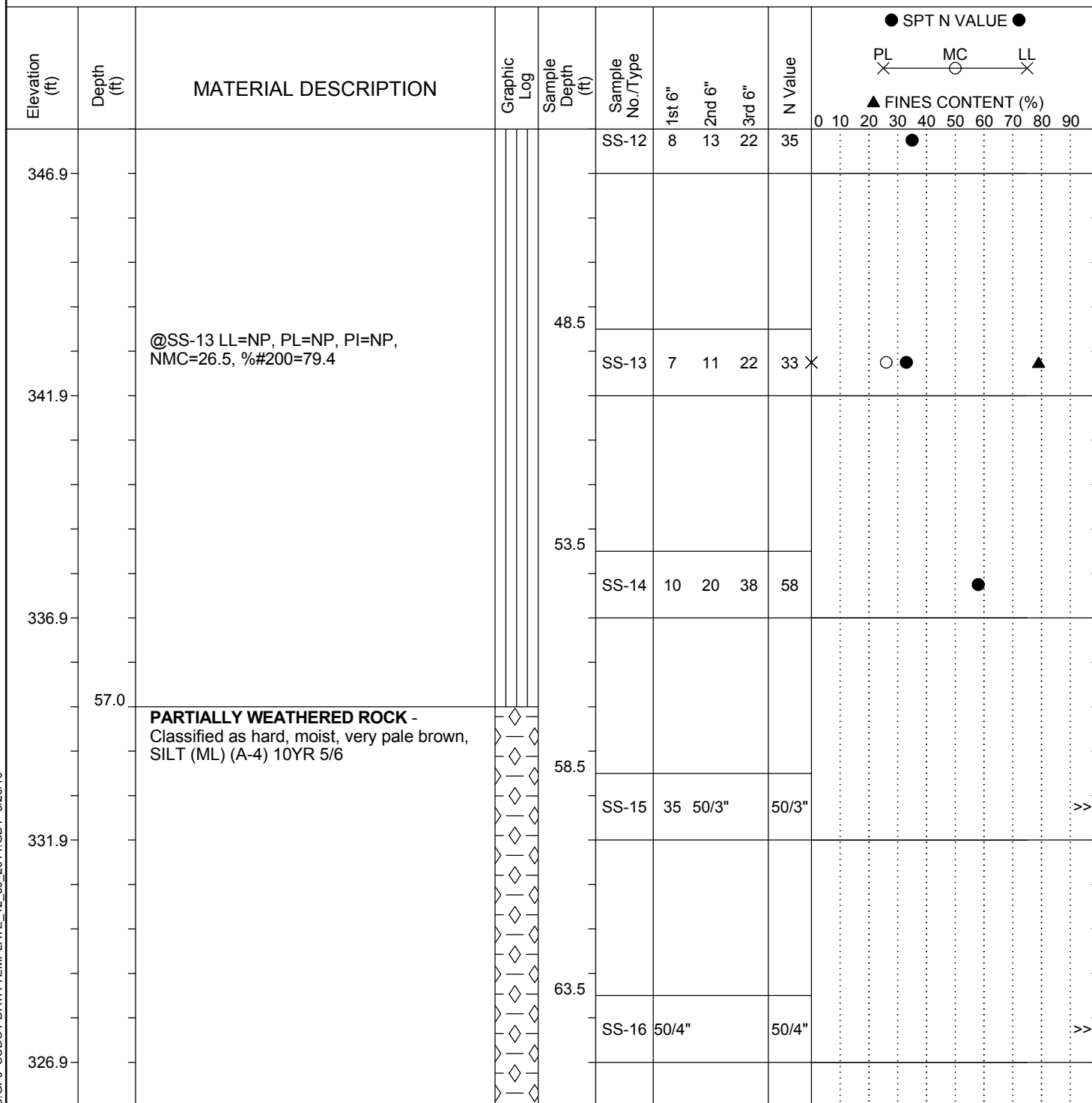
## LEGEND

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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: 42383				County: Lexington		Boring No.: B-32						
Site Description:		Columbia Avenue (S-48) Roadway Improvements					Route: S-48					
Eng./Geo.: KZ			Boring Location: -		Offset: -		Alignment: Existing					
Elev.:	391.9 ft	Latitude:	34.17711363	Longitude:	-81.32257805	Date Started:		1/18/2016				
Total Depth:		98.5 ft	Soil Depth:	98.5 ft	Core Depth:		0 ft	Date Completed:		1/19/2016		
Bore Hole Diameter (in):			2.94	Sampler Configuration		Liner Required:		Y (N)	Liner Used:		Y (N)	
Drill Machine:		CME-55	Drill Method:		RW	Hammer Type:		Automatic		Energy Ratio:		81.9%
Core Size:		N.A.	Driller:		CF	Groundwater:		TOB	N.A.		24HR	10 feet



## LEGEND

Continued Next Page

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:	42383				County:	Lexington		Boring No.:	B-32		
Site Description:	Columbia Avenue (S-48) Roadway Improvements							Route:	S-48		
Eng./Geo.:	KZ		Boring Location:	-		Offset:	-		Alignment:	Existing	
Elev.:	391.9 ft		Latitude:	34.17711363		Longitude:	-81.32257805		Date Started:	1/18/2016	
Total Depth:	98.5 ft		Soil Depth:	98.5 ft		Core Depth:	0 ft		Date Completed:	1/19/2016	
Bore Hole Diameter (in):	2.94		Sampler Configuration			Liner Required:	Y (N)		Liner Used:	Y (N)	
Drill Machine:	CME-55		Drill Method:	RW		Hammer Type:	Automatic		Energy Ratio:	81.9%	
Core Size:	N.A.		Driller:	CF		Groundwater:	TOB	N.A.		24HR	10 feet

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL X MC O LL X </div> <div> ▲ FINES CONTENT (%) </div> <div> 0 10 20 30 40 50 60 70 80 90 </div> </div>
321.9				68.5	SS-17	50/4"		50/4"		>>●
316.9				73.5	SS-18	23	40	50/5"	50/5"	>>●
311.9	77.0	<b>PARTIALLY WEATHERED ROCK -</b> Classified as hard, moist, very pale brown, Sandy SILT (ML) (A-4) 10YR 5/6 @SS-19 NMC=16.7, % #200=54.9		78.5	SS-19	50/5"		50/5"		○ ▲ >>●
306.9	82.0	<b>PARTIALLY WEATHERED ROCK -</b> Classified as hard, moist, grayish green, SILT with rock fragments (ML) (A-4) GLEY1 5/2		83.5	SS-20	50/1"		50/1"		>>●

## LEGEND

Continued Next Page

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: 42383				County: Lexington		Boring No.: B-32						
Site Description:		Columbia Avenue (S-48) Roadway Improvements					Route: S-48					
Eng./Geo.: KZ		Boring Location: -			Offset: -		Alignment: Existing					
Elev.:	391.9 ft	Latitude:	34.17711363	Longitude:	-81.32257805	Date Started:		1/18/2016				
Total Depth:		98.5 ft	Soil Depth:	98.5 ft	Core Depth:		0 ft	Date Completed:		1/19/2016		
Bore Hole Diameter (in):			2.94	Sampler Configuration		Liner Required:		Y (N)	Liner Used:		Y (N)	
Drill Machine:		CME-55	Drill Method:		RW	Hammer Type:		Automatic		Energy Ratio:		81.9%
Core Size:		N.A.	Driller:		CF	Groundwater:		TOB	N.A.		24HR	10 feet

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL X MC O LL X </div> <div> ▲ FINES CONTENT (%) </div> <div> 0 10 20 30 40 50 60 70 80 90 </div> </div>
301.9				88.5	SS-21	50/3"		50/3"		
296.9				93.5	SS-22	50/1"		50/1"		
291.9	98.5	RW Bit Refusal at 98.5 feet								
286.9										

## 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:	42383				County:	Lexington		Boring No.:	B-33		
Site Description:	Columbia Avenue (S-48) Roadway Improvements							Route:	S-48		
Eng./Geo.:	KZ		Boring Location:	-		Offset:	-		Alignment:	Existing	
Elev.:	397.8 ft		Latitude:	34.17770061		Longitude:	-81.32227634		Date Started:	1/11/2016	
Total Depth:	107.5 ft		Soil Depth:	107.5 ft		Core Depth:	0 ft		Date Completed:	1/12/2016	
Bore Hole Diameter (in):	2.94		Sampler Configuration			Liner Required:	Y (N)		Liner Used:	Y (N)	
Drill Machine:	CME-55		Drill Method:	RW		Hammer Type:	Automatic		Energy Ratio:	81.9%	
Core Size:	N.A.		Driller:	CF		Groundwater:	TOB	N.A.		24HR	13 feet

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
	0.0	Toe of Slope								
	0.2	Topsoil (2 inches)		0.0	SS-1	1	3	3	6	●
	2.0	<b>FILL</b> - Firm, moist, red, sandy elastic SILT with sand trace organics, (MH) (A-7-5) 5R 4/8 @SS-1 NMC=11.9, %200=68		2.0	SS-2	2	4	5	9	●
		<b>RESIDUUM</b> - Stiff to firm, moist, red, elastic SILT with gravel (MH) (A-7-5) 7.5R 4/8 @SS-2 LL=54, PL=30, PI=24, NMC=28, %200=83.1		4.0	SS-3	2	3	3	6	●
392.8	6.0	Hard to very stiff, moist, red to yellow, SILT trace organics (ML) (A-4) 7.5R 4/8 to 10YR 7/6		6.0	SS-4	3	12	18	30	●
				8.0	SS-5	3	18	27	45	●
387.8										
				13.5	SS-6	10	15	14	29	●
382.8										
				18.5	SS-7	4	9	12	21	●
377.8										
	22.0									

## LEGEND

Continued Next Page

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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-33
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	KZ	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	397.8 ft	<b>Latitude:</b>	34.17770061	<b>Longitude:</b>	-81.32227634
<b>Date Started:</b>	1/11/2016				
<b>Total Depth:</b>	107.5 ft	<b>Soil Depth:</b>	107.5 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/12/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>			
<b>Liner Required:</b>	Y	<b>Liner Used:</b>	Y		
<b>Drill Machine:</b>	CME-55	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	81.9%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	CF	<b>Groundwater:</b>	TOB
<b>24HR</b>	13 feet				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
372.8		Firm to stiff, moist to wet, brownish yellow to dark brown, SILT (ML) (A-4) 10YR 6/8 to 10YR 3/3 @SS-8 LL=NP, PL=NP, PI=NP, NMC=51.5, %200=91.1		23.5	SS-8	2	2	5	7	<div> <div>●</div> <div>○</div> <div>▲</div> </div>
367.8				28.5	SS-9	2	3	7	10	<div> <div>●</div> </div>
362.8		Hard, moist, olive gray, SILT (ML) (A-4) 5Y 5/2		33.5	SS-10	6	16	49	65	<div> <div>●</div> </div>
357.8				38.5	SS-11	32	34	39	73	<div> <div>●</div> </div>
42.0		PARTIALLY WEATHERED ROCK- Classified as hard, moist, strong brown, SILT (ML) (A-4) 7.5YR 4/6		43.5						

## LEGEND

Continued Next Page

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:		42383			County:		Lexington		Boring No.:		B-33							
Site Description:			Columbia Avenue (S-48) Roadway Improvements							Route:		S-48						
Eng./Geo.:			KZ		Boring Location:			-		Offset:		-		Alignment:		Existing		
Elev.:		397.8 ft		Latitude:		34.17770061		Longitude:		-81.32227634		Date Started:		1/11/2016				
Total Depth:		107.5 ft		Soil Depth:		107.5 ft		Core Depth:		0 ft		Date Completed:		1/12/2016				
Bore Hole Diameter (in):				2.94		Sampler Configuration			Liner Required:		Y (N)		Liner Used:		Y (N)			
Drill Machine:		CME-55			Drill Method:		RW		Hammer Type:		Automatic		Energy Ratio:		81.9%			
Core Size:		N.A.			Driller:		CF		Groundwater:		TOB		N.A.		24HR		13 feet	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
352.8		To 10YR 7/6			SS-12	16	33	50/5"	50/5"	>>●
				48.5						
347.8		To 10YR 6/6			SS-13	18	87	50/4"	50/4"	>>●
				53.5						
342.8		To 4YR 3/3			SS-14	30	36	50/4"	50/4"	>>●
				58.5						
337.8		To 5YR 4/6			SS-15	50/4"			50/4"	>>●
				63.5						
332.8					SS-16	50/4"			50/4"	>>●

## LEGEND

Continued Next Page

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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-33
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	KZ	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	397.8 ft	<b>Latitude:</b>	34.17770061	<b>Longitude:</b>	-81.32227634
<b>Date Started:</b>	1/11/2016				
<b>Total Depth:</b>	107.5 ft	<b>Soil Depth:</b>	107.5 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/12/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-55	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	81.9%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	CF	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	13 feet				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
327.8		To 7.5YR 4/6		68.5	SS-17	22	50/4"	50/4"		>>●
322.8				73.5	SS-18	22	50/5"	50/5"		>>●
317.8		To 5YR 3/3		78.5	SS-19	25	50/5"	50/5"		>>●
82.0				83.5	SS-20	50/5"	50/5"		○ ▲	>>●
312.8		<b>PARTIALLY WEATHERED ROCK -</b> Classified as very dense, dry, brown, subrounded, Silty SAND (SM) (A-2-4) 7.5YR 4/6 @SS-20 NMC=18.9, % #200=41.5								
		To 7.5YR 2.5/2								

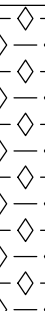
## LEGEND

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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:		42383			County:		Lexington		Boring No.:		B-33							
Site Description:			Columbia Avenue (S-48) Roadway Improvements							Route:		S-48						
Eng./Geo.:			KZ		Boring Location:			-		Offset:		-		Alignment:		Existing		
Elev.:		397.8 ft		Latitude:		34.17770061		Longitude:		-81.32227634		Date Started:		1/11/2016				
Total Depth:		107.5 ft		Soil Depth:		107.5 ft		Core Depth:		0 ft		Date Completed:		1/12/2016				
Bore Hole Diameter (in):				2.94		Sampler Configuration			Liner Required:		Y (N)		Liner Used:		Y (N)			
Drill Machine:		CME-55			Drill Method:		RW		Hammer Type:		Automatic		Energy Ratio:		81.9%			
Core Size:		N.A.			Driller:		CF		Groundwater:		TOB		N.A.		24HR		13 feet	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	● SPT N VALUE ●																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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## 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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-34
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	KZ	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	396.2 ft	<b>Latitude:</b>	34.17730917	<b>Longitude:</b>	-81.32216508
<b>Date Started:</b>	1/7/2016				
<b>Total Depth:</b>	120 ft	<b>Soil Depth:</b>	120 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/8/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-55	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	81.9%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	AL	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	16 feet				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> </div> <div>▲ FINES CONTENT (%)</div> </div>
	0.0	Toe of Slope								
	0.2	Topsoil (2 inches)		0.0	SS-1	2	3	7	10	
	2.0	<b>FILL</b> - Stiff, moist, red, elastic silt (MH) (A-7-5) 7.5R 4/8 @SS-1 NMC=11.1		2.0						
	4.0	<b>RESIDUUM</b> - Very stiff, moist, red, SILT with clay seams (ML) (A-4) 7.5R 4/8 @SS-2 LL=NP, PL=NP, PI=NP, NMC=23.3, % <sub>#200</sub> =89.6		4.0	SS-2	6	8	10	18 X	
391.2	6.0	Very stiff, moist, dark red, SILT (ML) (A-4) 7.5R 3/8		6.0	SS-3	4	9	19	28	
	8.0	Firm to stiff, moist, red to strong brown, SILT (ML) (A-4) 7.5r 4/8 to 7.5R 4/6		8.0	SS-4	2	3	5	8	
386.2										
	13.5			13.5	SS-5	2	4	5	9	
381.2	17.0			17.0	SS-6	2	3	6	9	
	18.5	Firm to stiff, moist, red to strong brown, SILT (ML) (A-4) 7.5r 4/8 to 7.5R 4/6		18.5	SS-7	2	2	5	7	
376.2										

## LEGEND

Continued Next Page

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:	42383				County:	Lexington		Boring No.:	B-34		
Site Description:	Columbia Avenue (S-48) Roadway Improvements							Route:	S-48		
Eng./Geo.:	KZ		Boring Location:	-		Offset:	-		Alignment:	Existing	
Elev.:	396.2 ft		Latitude:	34.17730917		Longitude:	-81.32216508		Date Started:	1/7/2016	
Total Depth:	120 ft		Soil Depth:	120 ft		Core Depth:	0 ft		Date Completed:	1/8/2016	
Bore Hole Diameter (in):	2.94		Sampler Configuration			Liner Required:	Y (N)		Liner Used:	Y (N)	
Drill Machine:	CME-55		Drill Method:	RW		Hammer Type:	Automatic		Energy Ratio:	81.9%	
Core Size:	N.A.		Driller:	AL		Groundwater:	TOB	N.A.		24HR	16 feet

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 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>
371.2		@SS-8 LL=NP, PL=NP, PI=NP, NMC=48.6, % <sub>#200</sub> =90.2		23.5	SS-8	2	3	5	8 X	●
366.2				28.5	SS-9	2	3	5	8	●
361.2	32.0	Hard, moist, yellowish red and black, SILT (ML) (A-4) 5YR 4/6 and 5YR 2.5/1		33.5	SS-10	7	13	19	32	●
356.2				38.5	SS-11	13	19	28	47	●
				43.5						

## LEGEND

Continued Next Page

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:	42383				County:	Lexington		Boring No.:	B-34		
Site Description:	Columbia Avenue (S-48) Roadway Improvements							Route:	S-48		
Eng./Geo.:	KZ		Boring Location:	-		Offset:	-		Alignment:	Existing	
Elev.:	396.2 ft		Latitude:	34.17730917		Longitude:	-81.32216508		Date Started:	1/7/2016	
Total Depth:	120 ft		Soil Depth:	120 ft		Core Depth:	0 ft		Date Completed:	1/8/2016	
Bore Hole Diameter (in):	2.94		Sampler Configuration			Liner Required:	Y (N)		Liner Used:	Y (N)	
Drill Machine:	CME-55		Drill Method:	RW		Hammer Type:	Automatic		Energy Ratio:	81.9%	
Core Size:	N.A.		Driller:	AL		Groundwater:	TOB	N.A.		24HR	16 feet

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL X MC O LL X </div> <div> ▲ FINES CONTENT (%) </div> </div>
351.2					SS-12	13	17	14	31	<div> <div> ● </div> <div> </div> <div> </div> </div>
		@SS-13 NMC=23.5		48.5						
					SS-13	15	23	37	60	<div> <div> ○ </div> <div> ● </div> <div> </div> </div>
346.2										
	52.0	<b>PARTIALLY WEATHERED ROCK -</b> Classified as hard, moist, very dark gray to strong brown, SILT (ML) (A-4) 7.4YR 3/1 to 7.5YR 4/6		53.5						
					SS-14	16	43	50/4"	50/4"	>>●
341.2		To 10YR 7/8								
		@SS-15 NMC=22.7		58.5						
					SS-15	10	17	50/4"	50/4"	>>●
336.2		To 10YR 4/4								
				63.5						
					SS-16	19	50/4"	50/4"	50/4"	>>●
331.2										

## LEGEND

Continued Next Page

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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-34
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	KZ	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	396.2 ft	<b>Latitude:</b>	34.17730917	<b>Longitude:</b>	-81.32216508
<b>Date Started:</b>	1/7/2016				
<b>Total Depth:</b>	120 ft	<b>Soil Depth:</b>	120 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/8/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-55	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	81.9%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	AL	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	16 feet				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL X MC O LL X </div> <div> ▲ FINES CONTENT (%) </div> <div> 0 10 20 30 40 50 60 70 80 90 </div> </div>
326.2		To 5Y 5/2		68.5	SS-17	43	50/1"	50/1"	50/1"	>>●
321.2		To 5Y 5/2		73.5	SS-18	50/3"		50/3"		>>●
316.2		To 10YR 8/4 to 10YR 3/3		78.5	SS-19	50/4"		50/4"		>>●
311.2		To 10YR 8/4 to 10YR 3/3		83.5	SS-20	38	50/4"	50/4"		>>●
		To 10YR 8/4								

## LEGEND

Continued Next Page

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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-34
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	KZ	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	396.2 ft	<b>Latitude:</b>	34.17730917	<b>Longitude:</b>	-81.32216508
<b>Date Started:</b>	1/7/2016				
<b>Total Depth:</b>	120 ft	<b>Soil Depth:</b>	120 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/8/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-55	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	81.9%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	AL	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	16 feet				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL X MC O LL X </div> <div> ▲ FINES CONTENT (%) </div> </div>
306.2		To 7.5YR 3/3 to 7.5YR 8/1		88.5	SS-21	50/2"		50/2"		>>●
				93.5	SS-22	50/2"		50/2"		>>●
301.2		To 7.5YR 3/3 to 7.5YR 8/1		98.5	SS-23	50/3"		50/3"		>>●
296.2				103.5	SS-24	50/1"		50/1"		>>●
291.2		To 2.5YR 3/3		108.5	SS-25	50/5"		50/5"		>>●

## LEGEND

Continued Next Page

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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-34
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	KZ	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	396.2 ft	<b>Latitude:</b>	34.17730917	<b>Longitude:</b>	-81.32216508
<b>Date Started:</b>	1/7/2016				
<b>Total Depth:</b>	120 ft	<b>Soil Depth:</b>	120 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/8/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-55	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	81.9%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	AL	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	16 feet				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
281.2		To 5YR 7/1 to 7.5YR 3/3		113.5	SS-26	50/4"		50/4"		>>●
276.2	120.0	To 7.5YR 3/1		118.5	SS-27	50/3"		50/3"		>>●
271.2		<b>Boring Terminated at 120 feet</b>								
266.2										

## 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: 42383				County: Lexington		Boring No.: B-35		
Site Description:		Columbia Avenue (S-48) Roadway Improvements					Route: S-48	
Eng./Geo.: RS		Boring Location: -		Offset: -		Alignment: Existing		
Elev.:	377.7 ft	Latitude:	34.1784948	Longitude:	-81.32428267	Date Started: 1/6/2016		
Total Depth: 30 ft		Soil Depth: 30 ft		Core Depth: 0 ft		Date Completed: 1/8/2016		
Bore Hole Diameter (in): 2.94		Sampler Configuration		Liner Required: Y (N)		Liner Used: Y (N)		
Drill Machine: CME-550X		Drill Method: RW		Hammer Type: Automatic		Energy Ratio: 74.2%		
Core Size: N.A.		Driller: AL		Groundwater: TOB N.A.		24HR: 7 feet		

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
	0.0	Grassed Shoulder								
	0.1	Topsoil (1 inch)		0.0	SS-1	3	8	7	15	●
		<b>RESIDUUM</b> - Stiff, dry, red, Sandy SILT (ML) (A-4) 10R 5/8								
		@SS-1 NMC=20.6		2.0						
		@SS-2 LL=NP, PL=NP, PI=NP, NMC=27.8, %200=65.4			SS-2	5	5	4	9	●
	4.0	Very stiff, dry, light red, SILT (ML) (A-4) 10R 6/8		4.0						
372.7					SS-3	2	8	8	16	●
	6.0	Stiff to firm, dry, light red, fat CLAY with sand (CH) (A-7-5) 10R 7/8		6.0						
		@SS-4 LL=59, PL=30, PI=29, NMC=29.4, %200=94.9			SS-4	5	5	8	13	●
		@SS-5 NMC=30.9		8.0						
					SS-5	1	2	3	5	●
367.7										
	12.0	Stiff, dry, light red, SILT (ML) (A-4) 10R 6/8		13.5						
					SS-6	4	5	6	11	●
362.7										
	17.0	Very stiff to hard, dry, reddish yellow, SILT (ML) (A-4) 5YR 7/8		18.5						
					SS-7	5	10	12	22	●
357.7										

## LEGEND

Continued Next Page

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:	42383				County:	Lexington			Boring No.:	B-35	
Site Description:	Columbia Avenue (S-48) Roadway Improvements								Route:	S-48	
Eng./Geo.:	RS		Boring Location:	-		Offset:	-		Alignment:	Existing	
Elev.:	377.7 ft		Latitude:	34.1784948		Longitude:	-81.32428267		Date Started:	1/6/2016	
Total Depth:	30 ft		Soil Depth:	30 ft		Core Depth:	0 ft		Date Completed:	1/8/2016	
Bore Hole Diameter (in):	2.94		Sampler Configuration			Liner Required:	Y (N)		Liner Used:	Y (N)	
Drill Machine:	CME-550X		Drill Method:	RW		Hammer Type:	Automatic		Energy Ratio:	74.2%	
Core Size:	N.A.		Driller:	AL		Groundwater:	TOB	N.A.		24HR	7 feet

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL X MC O LL X </div> <div> ▲ FINES CONTENT (%) </div> </div>
352.7				23.5	SS-8	6	10	16	26	<div> <div> ● </div> </div>
347.7	30.0	Boring Terminated at 30 feet		28.5	SS-9	5	11	29	40	<div> <div> ● </div> </div>
342.7										
337.7										

## 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	

# SCDOT Soil Test Log

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-36
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	RS	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	383.2 ft	<b>Latitude:</b>	34.17644057	<b>Longitude:</b>	-81.32058116
<b>Date Started:</b>	1/6/2016				
<b>Total Depth:</b>	30 ft	<b>Soil Depth:</b>	30 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/8/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-55	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	81.9%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	AL	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	7 feet				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	PL	MC	LL	FINES CONTENT (%)
	0.0	Grassed Shoulder											
	0.2	Topsoil (2 inches)		0.0	SS-1	3	4	4	8				
	2.0	<b>RESIDUUM</b> - Medium stiff, dry, light red, SILT (ML) (A-4) 5R 6/8 @SS-1 NMC=27.7		2.0									
	4.0	Hard, dry, light red, Sandy SILT (ML) (A-4) 5R 6/8 @SS-2 LL=NP, PL=NP, PI=NP, NMC=13.4, % $\#200=50.1$		4.0	SS-2	18	40	21	61				
378.2		<b>PARTIALLY WEATHERED ROCK</b> - Classified as hard, dry reddish gray, SILT with quartz (ML) (A-4) 10R 6/1 @SS-4 NMC=27.4		6.0	SS-3	50/2"			50/2"				>>
				8.0	SS-4	6	46	50/4"	50/4"				>>
				12.0	SS-5	50/4"			50/4"				>>
373.2													
	12.0	<b>RESIDUUM</b> - Very stiff, dry, reddish gray, SILT with quartz (ML) (A-4) 10R 6/1		13.5									
					SS-6	7	9	7	16				
368.2													
	17.0	<b>PARTIALLY WEATHERED ROCK</b> - Classified as hard, dry, reddish gray to pale red, SILT (ML) (A-4) 10R 6/1 to 10YR 6/2		18.5									
					SS-7	18	35	50/3"	50/3"				>>
363.2													

## LEGEND

Continued Next Page

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: 42383				County: Lexington		Boring No.: B-36						
Site Description:		Columbia Avenue (S-48) Roadway Improvements					Route: S-48					
Eng./Geo.: RS		Boring Location: -			Offset: -		Alignment: Existing					
Elev.:	383.2 ft	Latitude:	34.17644057	Longitude:	-81.32058116	Date Started:		1/6/2016				
Total Depth:		30 ft	Soil Depth:	30 ft	Core Depth:		0 ft	Date Completed:		1/8/2016		
Bore Hole Diameter (in):			2.94	Sampler Configuration		Liner Required:		Y (N)	Liner Used:		Y (N)	
Drill Machine:		CME-55	Drill Method:		RW	Hammer Type:		Automatic		Energy Ratio:		81.9%
Core Size:		N.A.	Driller:		AL	Groundwater:		TOB	N.A.		24HR	7 feet

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL X MC O LL X </div> <div> ▲ FINES CONTENT (%) </div> <div> 0 10 20 30 40 50 60 70 80 90 </div> </div>
358.2		@ SS-8: No Sample Recovered		23.5	SS-8	50/3"		50/3"		>>●
353.2	30.0	Boring Terminated at 30 feet		28.5	SS-9	50/4"		50/4"		>>●
348.2										
343.2										

## 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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-37
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	RS	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	402.6 ft	<b>Latitude:</b>	34.17793384	<b>Longitude:</b>	-81.32171697
<b>Total Depth:</b>	50 ft	<b>Soil Depth:</b>	50 ft	<b>Core Depth:</b>	0 ft
<b>Date Started:</b>	1/6/2016				
<b>Date Completed:</b>	1/7/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)	<b>Drill Machine:</b>	CME-550X	<b>Drill Method:</b>	RW
<b>Hammer Type:</b>	Automatic	<b>Energy Ratio:</b>	74.2%		
<b>Core Size:</b>	N.A.	<b>Driller:</b>	AL	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	22 feet				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> ● SPT N VALUE ● </div> <div> PL X MC O LL X </div> <div> ▲ FINES CONTENT (%) </div> </div>
	0.0	Grassed Shoulder								
	0.2	Topsoil (2 inches)		0.0	SS-1	3	4	6	10	<div> ● 20 O 30 X 70 ▲ </div>
		<b>RESIDUUM</b> - Stiff to very stiff, dry, red, fat CLAY with sand (CH) (A-7-5) 10R 5/8 @SS-1 LL=65, PL=31, PI=34, NMC=24.5, %200=70.4 @SS-2 NMC=22.2		2.0						
					SS-2	8	14	16	30	<div> O ● </div>
	4.0	Very stiff, dry, red, fat CLAY (CH) (A-7-5) 10R 4/8 @SS-3 NMC=24.3		4.0						
					SS-3	7	12	18	30	<div> O ● </div>
397.6	6.0	Very stiff, dry, light red, SILT (ML) (A-4) 10R 7/8		6.0						
					SS-4	4	8	12	20	<div> ● </div>
	8.0	Stiff to very stiff, dry, light red, SILT (ML) (A-4) 5R 6/8		8.0						
					SS-5	2	4	6	10	<div> ● </div>
392.6										
				13.5						
					SS-6	4	7	10	17	<div> ● </div>
387.6										
				18.5						
					SS-7	4	7	12	19	<div> ● </div>
382.6										
	22.0									

## LEGEND

Continued Next Page

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:		42383			County:		Lexington		Boring No.:		B-37						
Site Description:			Columbia Avenue (S-48) Roadway Improvements							Route:		S-48					
Eng./Geo.:		RS		Boring Location:			-		Offset:		-		Alignment:		Existing		
Elev.:		402.6 ft		Latitude:		34.17793384		Longitude:		-81.32171697		Date Started:		1/6/2016			
Total Depth:		50 ft		Soil Depth:		50 ft		Core Depth:		0 ft		Date Completed:		1/7/2016			
Bore Hole Diameter (in):				2.94		Sampler Configuration			Liner Required:		Y (N)		Liner Used:		Y (N)		
Drill Machine:		CME-550X			Drill Method:		RW		Hammer Type:		Automatic		Energy Ratio:		74.2%		
Core Size:		N.A.			Driller:		AL		Groundwater:		TOB		N.A.		24HR		
																22 feet	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 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>0 10 20 30 40 50 60 70 80 90</div> </div>
377.6	27.0	Very stiff, dry, light red, SILT (ML) (A-4) 5R 7/8		23.5	SS-8	6	12	15	27	●
372.6		Hard to very stiff, dry, light red, SILT (ML) (A-4) 5R 7/8		28.5	SS-9	10	14	29	43	●
367.6		@SS-10 LL=NP, PL=NP, PI=NP, NMC=24.7, % <sub>#200</sub> =85.9		33.5	SS-10	14	27	48	75 X	○ ● ▲
362.6				38.5	SS-11	6	9	16	25	●
	42.0	Hard, dry, light red, SILT (ML) (A-4) 5R 7/8		43.5						

## LEGEND

Continued Next Page

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: 42383				County: Lexington		Boring No.: B-37						
Site Description:		Columbia Avenue (S-48) Roadway Improvements					Route: S-48					
Eng./Geo.: RS		Boring Location: -			Offset: -		Alignment: Existing					
Elev.:	402.6 ft	Latitude:	34.17793384	Longitude:	-81.32171697	Date Started:		1/6/2016				
Total Depth:		50 ft	Soil Depth:	50 ft	Core Depth:		0 ft	Date Completed:		1/7/2016		
Bore Hole Diameter (in):		2.94	Sampler Configuration		Liner Required:		Y (N)		Liner Used:		Y (N)	
Drill Machine:		CME-550X	Drill Method:		RW	Hammer Type:		Automatic		Energy Ratio:		74.2%
Core Size:		N.A.	Driller:		AL	Groundwater:		TOB	N.A.		24HR	22 feet

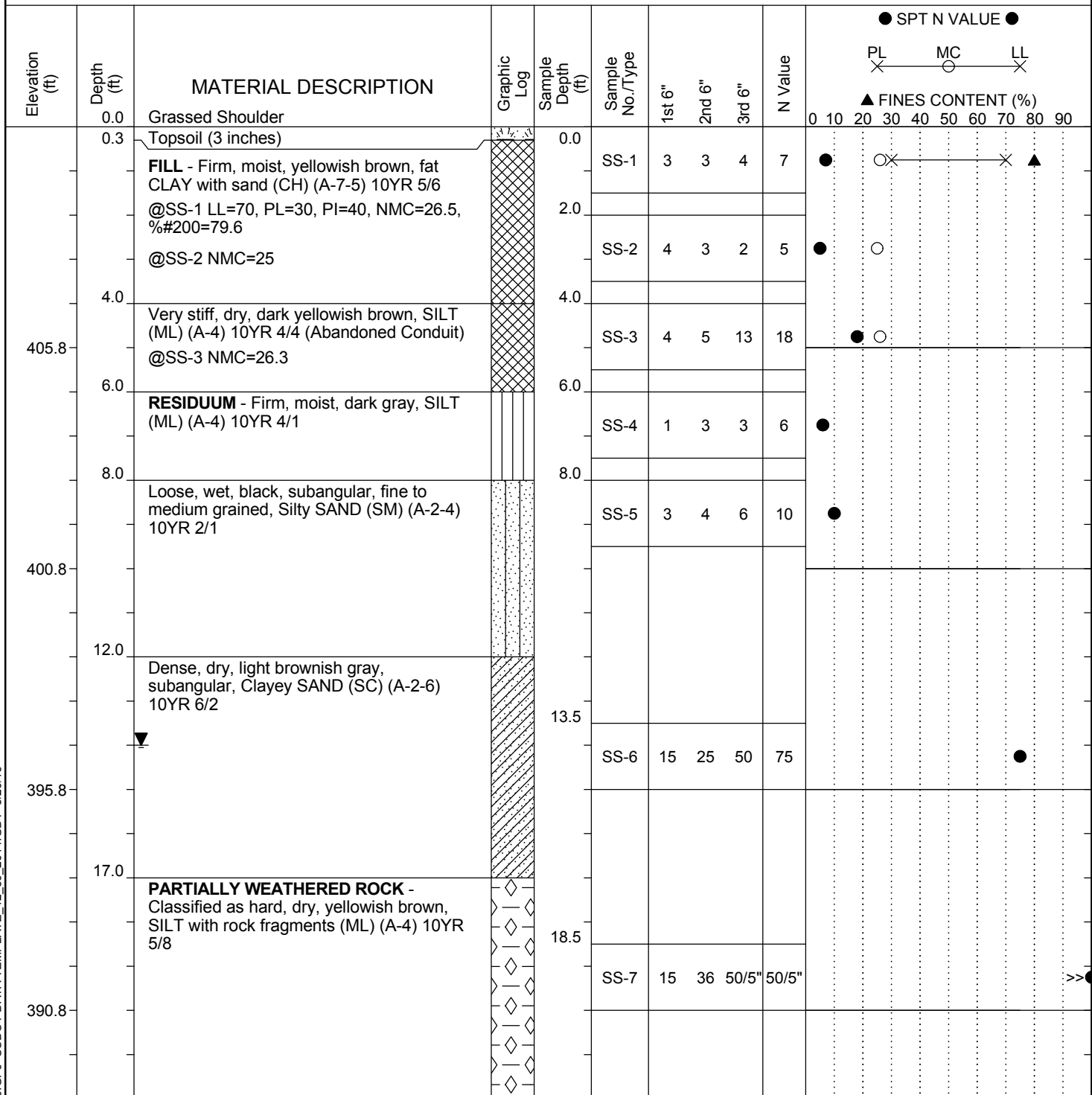
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL X</div> <div>MC ○</div> <div>LL X</div> </div> <div>▲ FINES CONTENT (%)</div> <div>0 10 20 30 40 50 60 70 80 90</div> </div>
357.6					SS-12	21	40	33	73	<div> <div>●</div> </div>
47.0		<b>PARTIALLY WEATHERED ROCK -</b> Classified as hard, dry, light red, SILT (ML) (A-4) 5R 7/8		48.5						
352.6	50.0	<b>Boring Terminated at 50 feet</b>			SS-13	33	50/4"		50/4"	>>●
347.6										
342.6										
337.6										

## 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	

# SCDOT Soil Test Log

Project ID: 42383				County: Lexington		Boring No.: B-38	
Site Description: Columbia Avenue (S-48) Roadway Improvements			Route: S-48				
Eng./Geo.: JF		Boring Location: -		Offset: -		Alignment: Existing	
Elev.: 410.8 ft		Latitude: 34.17655625		Longitude: -81.32363898		Date Started: 1/4/2016	
Total Depth: 50 ft		Soil Depth: 50 ft		Core Depth: 0 ft		Date Completed: 1/6/2016	
Bore Hole Diameter (in): 2.94		Sampler Configuration		Liner Required: Y (N)		Liner Used: Y (N)	
Drill Machine: CME-55		Drill Method: RW		Hammer Type: Automatic		Energy Ratio: 81.9%	
Core Size: N.A.		Driller: AL		Groundwater: TOB N.A.		24HR 14 feet	



## LEGEND

Continued Next Page

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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-38
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	JF	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	410.8 ft	<b>Latitude:</b>	34.17655625	<b>Longitude:</b>	-81.32363898
<b>Date Started:</b>	1/4/2016				
<b>Total Depth:</b>	50 ft	<b>Soil Depth:</b>	50 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/6/2016				
<b>Bore Hole Diameter (in):</b>	2.94	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)				
<b>Drill Machine:</b>	CME-55	<b>Drill Method:</b>	RW	<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	81.9%				
<b>Core Size:</b>	N.A.	<b>Driller:</b>	AL	<b>Groundwater:</b>	TOB N.A.
<b>24HR</b>	14 feet				

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL X</div> <div>MC O</div> <div>LL X</div> </div> <div>▲ FINES CONTENT (%)</div> <div>0 10 20 30 40 50 60 70 80 90</div> </div>
385.8				23.5	SS-8	15	24	50/5"	50/5"	>>●
380.8				28.5	SS-9	34	50/5"		50/5"	>>●
375.8		<b>PARTIALLY WEATHERED ROCK -</b> Classified as hard, dry, brownish yellow, SILT with rock fragments (ML) (A-4) 10YR 6/8		33.5	SS-10	50/5"			50/5"	>>●
370.8		<b>PARTIALLY WEATHERED ROCK -</b> Classified as hard, dry, yellowish brown, SILT with rock fragments (ML) (A-4) 10YR 5/6		38.5	SS-11	50/5"			50/5"	>>●
				43.5						

## LEGEND

Continued Next Page

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

<b>Project ID:</b>	42383	<b>County:</b>	Lexington	<b>Boring No.:</b>	B-38
<b>Site Description:</b>	Columbia Avenue (S-48) Roadway Improvements			<b>Route:</b>	S-48
<b>Eng./Geo.:</b>	JF	<b>Boring Location:</b>	-	<b>Offset:</b>	-
<b>Elev.:</b>	410.8 ft	<b>Latitude:</b>	34.17655625	<b>Longitude:</b>	-81.32363898
<b>Date Started:</b>	1/4/2016			<b>Alignment:</b>	Existing
<b>Total Depth:</b>	50 ft	<b>Soil Depth:</b>	50 ft	<b>Core Depth:</b>	0 ft
<b>Date Completed:</b>	1/6/2016			<b>Liner Required:</b>	Y (N)
<b>Liner Used:</b>	Y (N)			<b>Bore Hole Diameter (in):</b>	2.94
<b>Sampler Configuration</b>				<b>Hammer Type:</b>	Automatic
<b>Energy Ratio:</b>	81.9%			<b>Drill Machine:</b>	CME-55
<b>Drill Method:</b>	RW			<b>Driller:</b>	AL
<b>Groundwater:</b>	TOB			<b>Core Size:</b>	N.A.
<b>24HR</b>	14 feet			<b>Groundwater:</b>	N.A.

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> </div> <div> <div>▲ FINES CONTENT (%)</div> <div>0 10 20 30 40 50 60 70 80 90</div> </div> </div>
365.8					SS-12	50/4"			50/4"	
				48.5						
360.8	50.0	Boring Terminated at 50 feet			SS-13	28	50/3"		50/3"	
355.8										
350.8										
345.8										

## 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	

**APPENDIX B**  
**LABORATORY TESTING**

**Exhibit B-1 – Laboratory Testing Description**  
**Exhibit B-2 – Summary of Laboratory Data**  
**Exhibit B-3 - Laboratory Data Sheets**

## Geotechnical Data Report

S-48 (Columbia Avenue) Corridor Improvements ■ Lexington County, SC

May 20, 2016 ■ Terracon Project No. 73155095



### LABORATORY TESTING DESCRIPTION

The samples collected during the field exploration were taken to our laboratory for additional testing. The laboratory testing program was developed by Terracon at the request of the SCDOT. Using the determined testing program, the laboratory tests were conducted on selected soil samples to determine lithological information. The test results are presented in this appendix

The laboratory test results were used to confirm the soil descriptions presented on the boring logs in Appendix A. Laboratory tests were performed in general accordance with the applicable ASTM, AASHTO, SCDOT or other accepted standards.

Selected soil samples obtained from the site were tested for the following engineering properties:

■ Sieve Analysis with Wash	AASHTO T88/(ASTM 422-63)
■ Sieve Analysis with Hydrometer	AASHTO T88/(ASTM 422-63)
■ Atterberg Limits	AASHTO T89/T90(ASTM D4318)
■ Moisture Content Determination	AASHTO T265/(ASTM D2216)
■ Standard Proctor	AASHTO T99/ (ASTM D698)
■ California Bearing Ratio	AASHTO T193/(ASTM D1883)
■ Tri-axial Testing	AASHTO T296/(ASTM D4767)
■ pH of Soils	AASHTO T289/(ASTM D4972)
■ Water Soluble Sulfate Content	AASHTO T290/(ASTM C1580)
■ Water-Soluble Chloride Content	AASHTO T291/(ASTM D1411)
■ Laboratory Soil Resistivity	AASHTO T288/(ASTM G187)
■ Loss on ignition	AASHTO T267/(ASTM D2974)

# SUMMARY OF LABORATORY RESULTS

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. SMART LAB SUMMARY-LANDSCAPE 73155095 LAB TESTING.GPJ TERRACON2012.GDT 5/20/16

BORING ID	Depth	USCS Classification and Soil Description	Liquid Limit	Plastic Limit	Plasticity Index	% <#200 Sieve	% Gravel	% Sand	% Silt	% Clay	Water Content (%)	Organic Content (%)
B-01	0 - 1.5	LEAN CLAY(CL)	32	23	9	91.6	0.0	8.4	66.5	25.0	27.5	
B-01	2 - 3.5	SANDY FAT CLAY(CH)	59	29	30	53.9	0.8	45.4			26.7	
B-01	8 - 9.5	SANDY SILT(ML)	40	27	13	60.2	1.6	38.2			24.3	
B-02	0.5 - 2	ELASTIC SILT (MH)	50	27	23	88.5	1.4	10.0			22.6	
B-02	4 - 5.5	ELASTIC SILT (MH)	60	33	27						23.6	
B-02 BULK	0 - 5	SANDY SILTY CLAY with	25	18	7	56.0	17.0	27.0			16.0	4.8
		GRAVEL(CL-ML)										
B-03	0.5 - 2	LEAN CLAY with SAND(CL)	44	21	23	80.9	2.7	16.4			13.0	
B-03	2 - 3.5	LEAN CLAY(CL)	47	26	21	88.2	2.0	9.7			23.0	
B-03	6 - 7.5	SILT with SAND(ML)	NP	NP	NP	81.6	0.4	18.0			23.4	
B-04	0 - 1.5	LEAN CLAY(CL)	46	22	24	88.1	0.3	11.6			25.6	
B-04	2 - 3.5	LEAN CLAY(CL)	43	26	17	89.7	0.3	10.0			23.7	
B-04	6 - 7.5	FAT CLAY (CH)	54	23	31						23.2	
B-05	0 - 1.5	ELASTIC SILT(MH)	66	37	29	93.1	1.1	5.8			26.6	
B-05	2 - 3.5	ELASTIC SILT(MH)	72	39	33	94.9	0.0	5.1			25.3	
B-05 BULK	0 - 5	SILT(ML)	43	35	8	90.7	0.5	8.8			25.9	4.7
B-06	0 - 1.5	LEAN CLAY(CL)	37	21	16	85.8	1.4	12.8			22.5	
B-06	2 - 3.5	LEAN CLAY(CL)	41	22	19	91.5	0.2	8.3			25.6	
B-06	4 - 5.5	LEAN CLAY (CL)									27.0	
B-06	6 - 7.5	ELASTIC SILT with SAND(MH)	57	32	25	79.6	3.3	17.1	31.7	48.0	26.4	
B-07	0 - 1.5	SILTY CLAY(CL-ML)	28	21	7	86.8	1.4	11.8			23.8	
B-07	2 - 3.5	FAT CLAY(CH)	56	25	31	91.7	2.6	5.7			22.4	
B-07	8 - 9.5	SILT with SAND(ML)	NP	NP	NP	81.0	0.3	18.7			10.6	
B-08	0 - 1.5	LEAN CLAY(CL)	48	23	25	89.0	3.1	7.9	40.2	48.8	26.6	
B-08	2 - 3.5	FAT CLAY with SAND(CH)	61	29	32	71.7	6.2	22.1			21.3	

PROJECT: Columbia Avenue (S-48) Roadway Improvements

SITE: Columbia Avenue (S-48)  
Lexington County, South Carolina

**Terracon**  
521 Clemson Rd  
Columbia, SC

PH. 803-741-9000

FAX. 803-741-9900

PROJECT NUMBER: 73155095

CLIENT: Mead & Hunt, Inc.  
Lexington, South Carolina

# SUMMARY OF LABORATORY RESULTS

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. SMART LAB SUMMARY-LANDSCAPE 73155095 LAB TESTING.GPJ TERRACON2012.GDT 5/20/16

BORING ID	Depth	USCS Classification and Soil Description	Liquid Limit	Plastic Limit	Plasticity Index	% <#200 Sieve	% Gravel	% Sand	% Silt	% Clay	Water Content (%)	Organic Content (%)
B-09	0 - 1.5	LEAN CLAY (CL)				73.0	12.1	14.9			20.1	
B-09	2 - 3.5	SILT with SAND(ML)	NP	NP	NP	82.9	0.0	17.1			23.8	
B-09	8 - 9.5	SILT with SAND (ML)				82.4	0.1	17.5			38.9	
B-10	0 - 1.5	LEAN CLAY with SAND(CL)	37	19	18	74.0	5.9	20.1			22.5	
B-10	2 - 3.5	LEAN CLAY with SAND(CL)	41	23	18	84.8	1.0	14.2			24.2	
B-10	8 - 9.5	ELASTIC SILT(MH)	71	42	29	95.7	0.0	4.3			39.2	
B-11	0 - 1.5	FAT CLAY(CH)	56	25	31	86.4	2.5	11.1			24.9	
B-11	2 - 3.5	FAT CLAY (CH)									27.7	
B-11	4 - 5.5	ELASTIC SILT(MH)	68	40	28	87.1	0.0	12.9			40.1	
B-12	0.5 - 2	LEAN CLAY with SAND(CL)	46	23	23	75.2	5.0	19.7			16.9	
B-12	2 - 3.5	FAT CLAY(CH)	72	34	38	90.1	0.0	9.9			24.7	
B-12	13.5 - 15	SILT with SAND(ML)	NP	NP	NP	82.8	0.2	17.0			44.1	
B-12 BULK	0 - 5	CLAYEY SAND with GRAVEL(SC)	28	18	10	31.0	19.1	49.9			13.9	5.6
B-13	0 - 1.5	LEAN CLAY with SAND(CL)	35	21	14	84.9	0.0	15.1			25.2	
B-13	2 - 3.5	FAT CLAY(CH)	52	24	28	87.7	0.2	12.2			24.7	
B-13	6 - 7.5	ELASTIC SILT(MH)	62	32	30	94.9	0.0	5.1	29.6	65.4	27.9	
B-14	0 - 1.5	FAT CLAY(CH)	63	26	37	92.4	0.0	7.6			25.8	
B-14	2 - 3.5	FAT CLAY(CH)	59	25	34	86.6	1.3	12.1	28.0	58.7	24.9	
B-14	8 - 9.5	ELASTIC SILT(MH)	69	40	29	87.5	0.6	12.0	30.7	56.8	31.0	
B-15	0 - 1.5	FAT CLAY (CH)				91.0	0.5	8.5			27.1	
B-15	2 - 3.5	FAT CLAY(CH)	59	27	32	89.3	0.0	10.7	40.1	49.1	27.1	
B-16	0.5 - 2	SILT (ML)				89.2	0.3	10.5			25.3	
B-16	2 - 3.5	ELASTIC SILT(MH)	51	31	20	88.8	0.6	10.6			25.7	
B-17	0 - 1.5	ELASTIC SILT with SAND(MH)	54	30	24	75.3	3.5	21.2			31.5	
B-17	2 - 3.5	LEAN CLAY with SAND (CL)				86.8	0.0	13.1	29.4	57.4	38.3	

PROJECT: Columbia Avenue (S-48) Roadway Improvements

SITE: Columbia Avenue (S-48)  
Lexington County, South Carolina



PH. 803-741-9000

FAX. 803-741-9900

PROJECT NUMBER: 73155095

CLIENT: Mead & Hunt, Inc.  
Lexington, South Carolina



# SUMMARY OF LABORATORY RESULTS

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. SMART LAB SUMMARY-LANDSCAPE 73155095 LAB TESTING.GPJ TERRACON2012.GDT 5/20/16

BORING ID	Depth	USCS Classification and Soil Description	Liquid Limit	Plastic Limit	Plasticity Index	% <#200 Sieve	% Gravel	% Sand	% Silt	% Clay	Water Content (%)	Organic Content (%)
B-17	4 - 5.5	LEAN CLAY with SAND (CL)	47	25	22						31.4	
B-18	0 - 1.5	LEAN CLAY with SAND (CL)									33.8	
B-18	2 - 3.5	LEAN CLAY with SAND(CL)	41	23	18	82.0	0.0	18.0			30.5	
B-19	0 - 1.5	FAT CLAY with SAND(CH)	50	24	26	83.9	6.0	10.1	53.5	30.4	24.0	
B-19	2 - 3.5	ELASTIC SILT(MH)	63	32	31	88.7	3.1	8.2	28.5	60.2	26.6	
B-20	0.5 - 2	ELASTIC SILT(MH)	64	34	30	96.6	0.0	3.4			22.0	
B-20	2 - 3.5	ELASTIC SILT with SAND(MH)	56	33	23	84.3	3.0	12.7			20.2	
B-20	8 - 9.5	SILT(ML)	NP	NP	NP	95.7	0.0	4.3			33.0	
B-20 BULK	0 - 5	SILT with SAND(ML)	46	28	18	76.6	6.8	16.6			21.6	4.8
B-21	0 - 1.5	SILT with SAND (ML)									25.0	
B-21	2 - 3.5	SILT with SAND(ML)	NP	NP	NP	74.9	1.0	24.1			18.4	
B-22	0 - 1.5	FAT CLAY(CH)	70	29	41	88.4	0.3	11.4			24.3	
B-22	2 - 3.5	FAT CLAY with SAND (CH)									35.9	
B-22	6 - 7.5	SILT with SAND(ML)	34	31	3	76.1	0.0	23.9			39.6	
B-23	0 - 1.5	ELASTIC SILT (MH)									28.2	
B-23	2 - 3.5	ELASTIC SILT(MH)	77	39	38	93.8	0.0	6.2	31.2	62.6	29.9	
B-24	0 - 1.5	LEAN CLAY(CL)	40	22	18	90.6	0.6	8.8			18.9	
B-24	2 - 3.5	FAT CLAY with SAND(CH)	59	23	36	82.8	1.0	16.2			23.2	
B-25	0 - 1.5	SANDY ELASTIC SILT (MH)									23.1	
B-25	2 - 3.5	SANDY ELASTIC SILT(MH)	52	32	20	66.6	0.3	33.1			28.1	
B-26	0.5 - 2	ELASTIC SILT(MH)	54	33	21	85.1	1.9	13.0			17.5	
B-26	2 - 3.5	ELASTIC SILT (MH)									16.9	
B-26	6 - 7.5	SILT (ML)									26.5	
B-26 BULK	0 - 5	SANDY SILT(ML)	36	25	11	67.1	8.7	24.2			18.9	4.4
B-27	0 - 1.5	ELASTIC SILT (MH)									26.1	

PROJECT: Columbia Avenue (S-48) Roadway Improvements

SITE: Columbia Avenue (S-48)  
Lexington County, South Carolina



PH. 803-741-9000

FAX. 803-741-9900

PROJECT NUMBER: 73155095

CLIENT: Mead & Hunt, Inc.  
Lexington, South Carolina

# SUMMARY OF LABORATORY RESULTS

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. SMART LAB SUMMARY-LANDSCAPE 73155095 LAB TESTING.GPJ TERRACON2012.GDT 5/20/16

BORING ID	Depth	USCS Classification and Soil Description	Liquid Limit	Plastic Limit	Plasticity Index	% <#200 Sieve	% Gravel	% Sand	% Silt	% Clay	Water Content (%)	Organic Content (%)
B-27	2 - 3.5	SILT(ML)	NP	NP	NP	93.4	0.0	6.6			30.6	
B-27	4 - 5.5	SILT (ML)									30.0	
B-28	0 - 1.5	SILT with SAND (ML)									26.6	
B-28	2 - 3.5	SILT with SAND(ML)	NP	NP	NP	73.1	1.0	25.9			33.7	
B-28	4 - 5.5	SILT with SAND (ML)									41.8	
B-28	6 - 7.5	SILT (ML)									30.6	
B-28	13.5 - 15	SILT with SAND (ML)									28.0	
B-29	0 - 1.5	SILT (ML)									32.2	
B-29	2 - 3.5	SILT(ML)	NP	NP	NP	90.7	0.1	9.2			30.4	
B-29	4 - 5.5	SILT (ML)									28.8	
B-29	6 - 7.5	SILT (ML)									25.9	
B-29	13.5 - 15	SILT with SAND (ML)									24.3	
B-29	53.5 - 55	SILT with SAND(ML)	NP	NP	NP	77.9	0.7	21.4			30.3	
B-29	88.5 - 90	SANDY SILT (ML)									12.7	
B-30	0 - 1.5	SILT with SAND (ML)									36.4	
B-30	2 - 3.5	ELASTIC SILT with SAND(MH)	53	43	10	70.2	0.0	29.8			11.2	
B-30	18.5 - 20	CLAYEY SAND(SC)	41	24	17	49.4	6.9	43.7			24.9	
B-30	88.5 - 90	SANDY SILT (ML)									22.6	
B-31	0 - 1.5	ELASTIC SILT (MH)									18.6	
B-31	2 - 3.5	ELASTIC SILT with SAND(MH)	56	38	18	79.4	0.0	20.6			35.7	
B-31	4 - 5.5	SILT with SAND (ML)									41.2	
B-31	33.5 - 35	SILT with SAND (ML)									25.7	
B-31	78.5 - 80	SILT (ML)									18.9	
B-32	0 - 1.5	ELASTIC SILT (MH)									12.3	
B-32	2 - 3.5	ELASTIC SILT with SAND (MH)									35.5	

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BORING ID	Depth	USCS Classification and Soil Description	Liquid Limit	Plastic Limit	Plasticity Index	% <#200 Sieve	% Gravel	% Sand	% Silt	% Clay	Water Content (%)	Organic Content (%)
B-32	13.5 - 15	SILT with SAND(ML)	NP	NP	NP	75.2	0.0	24.8			45.7	
B-32	48.5 - 50	SILT with SAND(ML)	NP	NP	NP	79.4	0.1	20.5			26.5	
B-32	78.5 - 80	SANDY SILT (ML)				54.9	3.4	41.8			16.7	
B-33	0 - 1.5	ELASTIC SILT with SAND (MH)				68.0	0.0	32.0	40.3	27.7	11.9	4.7
B-33	2 - 3.5	ELASTIC SILT with GRAVEL(MH)	54	30	24	83.1	10.8	6.0			28.0	
B-33	23.5 - 25	SILT(ML)	NP	NP	NP	91.1	0.0	8.9	58.9	32.1	51.5	
B-33	83.5 - 85	SILTY SAND (SM)				41.5	4.2	54.3			18.9	
B-34	0 - 1.5	ELASTIC SILT (MH)									11.1	
B-34	2 - 3.5	SILT(ML)	NP	NP	NP	89.6	0.2	10.2			23.3	
B-34	23.5 - 25	SILT(ML)	NP	NP	NP	90.2	0.0	9.8			48.6	
B-34	48.5 - 50	SILT (ML)									23.5	
B-34	58.5 - 60	SILT (ML)									22.7	
B-35	0 - 1.5	SANDY SILT (ML)									20.6	
B-35	2 - 3.5	SANDY SILT(ML)	NP	NP	NP	65.4	4.1	30.5			27.8	
B-35	6 - 7.5	FAT CLAY(CH)	59	30	29	94.9	0.3	4.8	43.7	51.1	29.4	
B-35	8 - 9.5	FAT CLAY with SAND (CH)									30.9	
B-36	0 - 1.5	SILT (ML)									27.7	
B-36	2 - 3.5	SANDY SILT(ML)	NP	NP	NP	50.1	14.0	35.9			13.4	
B-36	6 - 7.5	SILT (ML)									27.4	
B-37	0 - 1.5	FAT CLAY with SAND(CH)	65	31	34	70.4	11.8	17.8			24.5	
B-37	2 - 3.5	FAY CLAY with SAND (CH)									22.2	
B-37	4 - 5.5	FAY CLAY (CH)									24.3	
B-37	33.5 - 35	SILT(ML)	NP	NP	NP	85.9	0.0	14.1			24.7	
B-38	0 - 1.5	FAT CLAY with SAND(CH)	70	30	40	79.6	6.6	13.8			26.5	
B-38	2 - 3.5	FAT CLAY with SAND (CH)									25.0	

PROJECT: Columbia Avenue (S-48) Roadway Improvements

SITE: Columbia Avenue (S-48)  
Lexington County, South Carolina

**Terracon**  
521 Clemson Rd  
Columbia, SC

PH. 803-741-9000

FAX. 803-741-9900

PROJECT NUMBER: 73155095

CLIENT: Mead & Hunt, Inc.  
Lexington, South Carolina

SUMMARY OF LABORATORY RESULTS

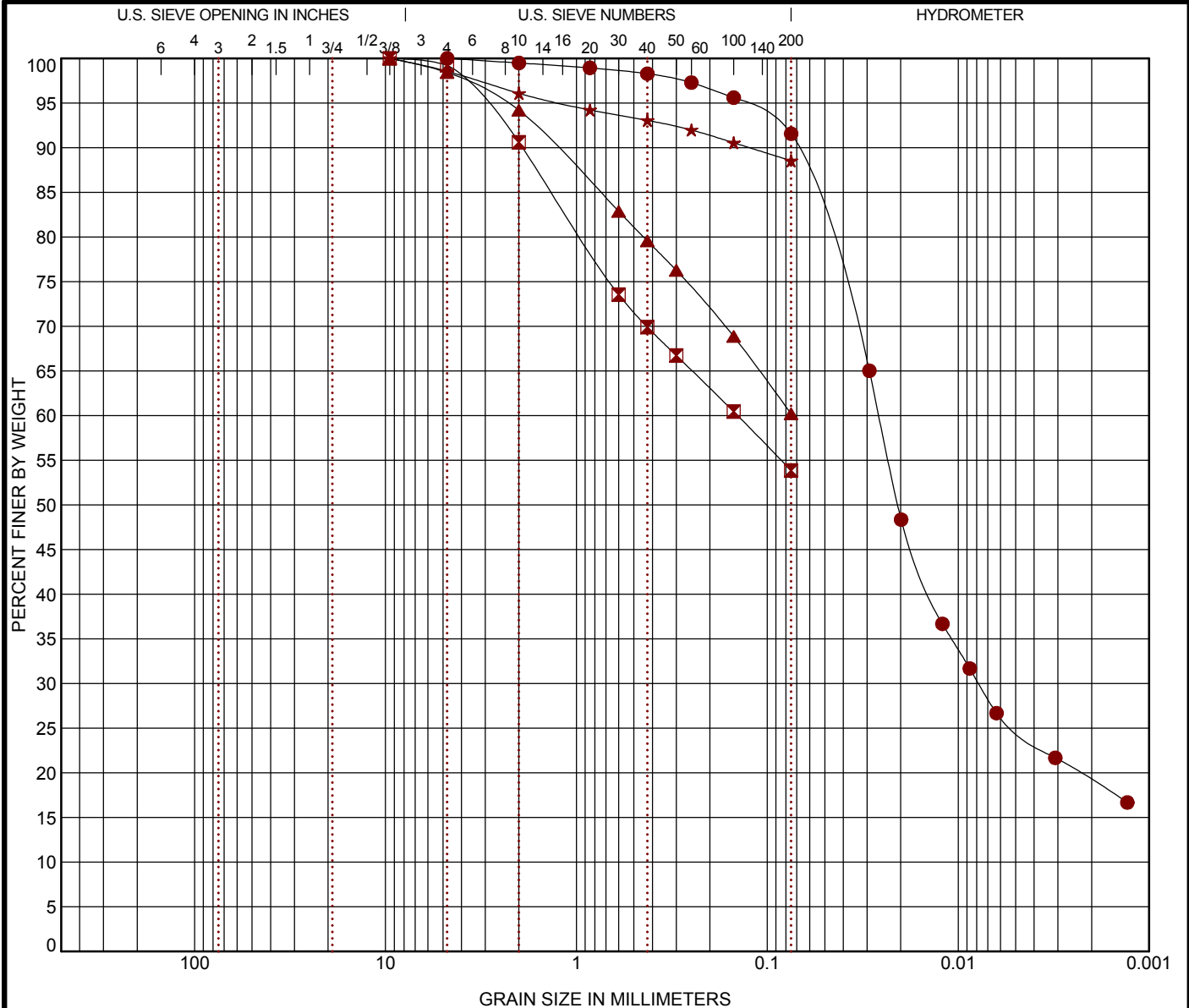
BORING ID	Depth	USCS Classification and Soil Description	Liquid Limit	Plastic Limit	Plasticity Index	% <#200 Sieve	% Gravel	% Sand	% Silt	% Clay	Water Content (%)	Organic Content (%)
B-38	4 - 5.5	SILT (ML)									26.3	
PROJECT: Columbia Avenue (S-48) Roadway Improvements			<div>Terracon</div> <div>521 Clemson Rd Columbia, SC</div>					PROJECT NUMBER: 73155095				
SITE: Columbia Avenue (S-48) Lexington County, South Carolina								CLIENT: Mead & Hunt, Inc. Lexington, South Carolina				
								PH. 803-741-9000      FAX. 803-741-9900				

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# GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS & AASHTO COMBINED 73155095 LAB TESTING.GPJ TERRACON2012.GDT 5/20/16



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID	Depth	USCS Classification		AASHTO Classification		LL	PL	PI	Cc	Cu
● B-01	0 - 1.5	LEAN CLAY (CL)		A-4 (8)		32	23	9		
☒ B-01	2 - 3.5	SANDY FAT CLAY (CH)		A-7-6 (13)		59	29	30		
▲ B-01	8 - 9.5	SANDY SILT (ML)		A-6 (6)		40	27	13		
★ B-02	0.5 - 2	ELASTIC SILT (MH) (CH)		ELASTIC SILT (MH) (23)		50	27	23		
Boring ID	Depth	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	%Gravel	%Sand	%Silt	%Clay	
● B-01	0 - 1.5	4.75	0.026	0.008		0.0	8.4	66.5	25.0	
☒ B-01	2 - 3.5	9.5	0.143			0.8	45.4	53.9		
▲ B-01	8 - 9.5	9.5				1.6	38.2	60.2		
★ B-02	0.5 - 2	9.5				1.4	10.0	88.5		

PROJECT: Columbia Avenue (S-48) Roadway Improvements

SITE: Columbia Avenue (S-48)  
Lexington County, South Carolina

**Terracon**  
521 Clemson Rd  
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PROJECT NUMBER: 73155095

CLIENT: Mead & Hunt, Inc.  
Lexington, South Carolina

**ASTM D422 / ASTM C136**

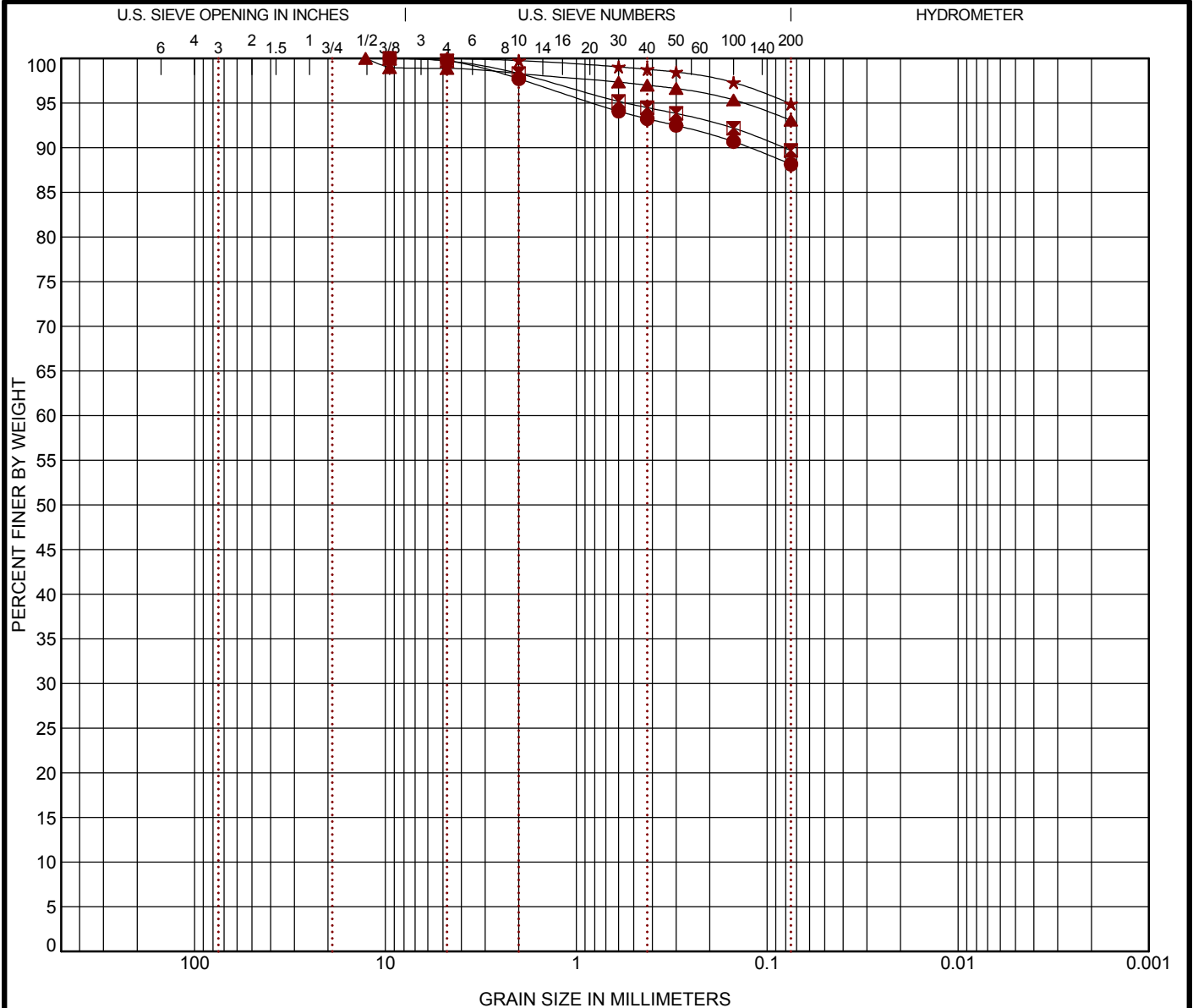
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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID	Depth	USCS Classification		AASHTO Classification		LL	PL	PI	Cc	Cu
● B-04	0 - 1.5	LEAN CLAY (CL)		A-7-6 (22)		46	22	24		
☒ B-04	2 - 3.5	LEAN CLAY (CL)		A-7-6 (17)		43	26	17		
▲ B-05	0 - 1.5	ELASTIC SILT (MH)		A-7-5 (34)		66	37	29		
★ B-05	2 - 3.5	ELASTIC SILT (MH)		A-7-5 (40)		72	39	33		
Boring ID	Depth	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	%Gravel	%Sand	%Silt	%Clay	
● B-04	0 - 1.5	9.5				0.3	11.6	88.1		
☒ B-04	2 - 3.5	9.5				0.3	10.0	89.7		
▲ B-05	0 - 1.5	12.7				1.1	5.8	93.1		
★ B-05	2 - 3.5	4.75				0.0	5.1	94.9		

PROJECT: Columbia Avenue (S-48) Roadway Improvements

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Lexington County, South Carolina

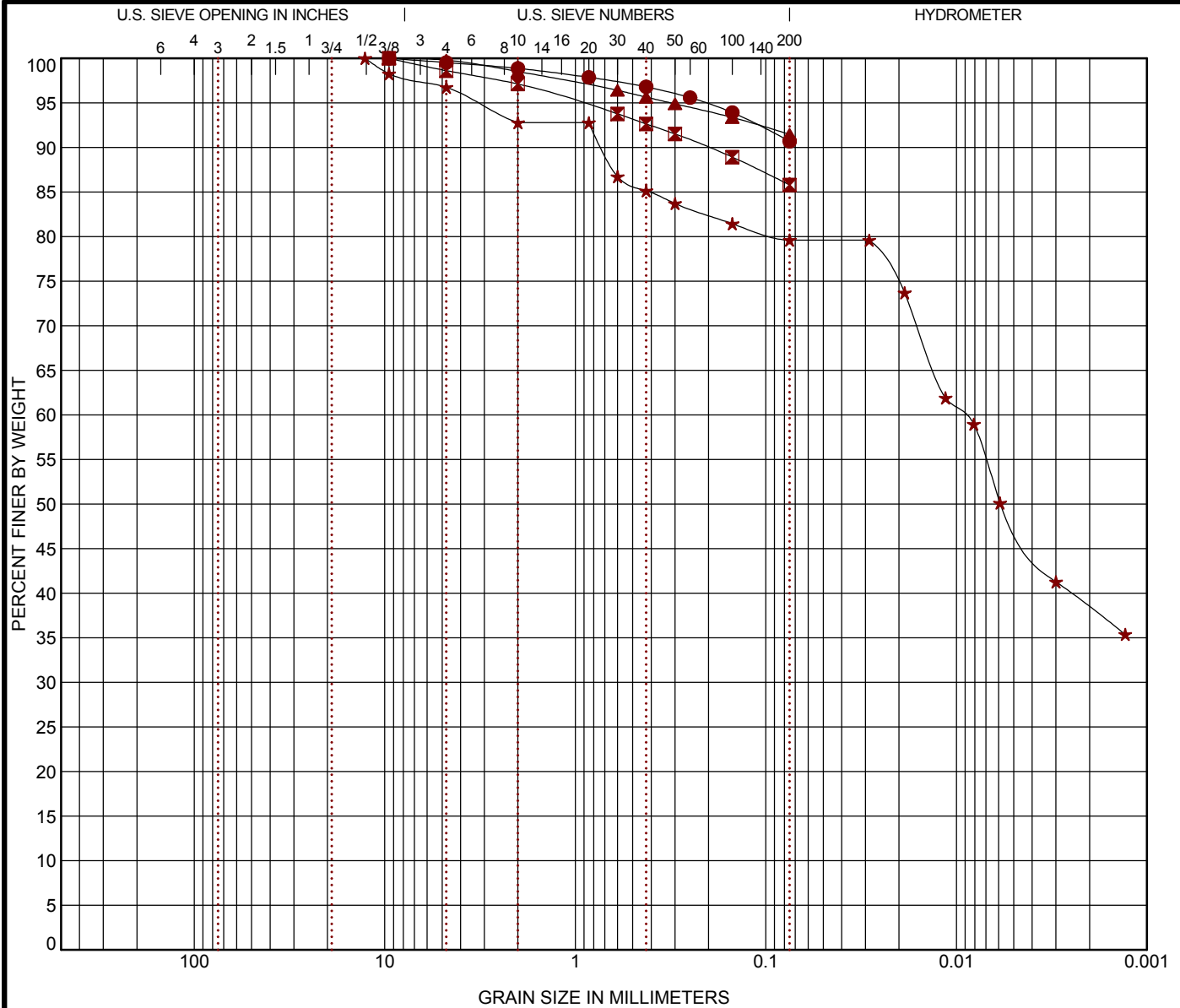
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521 Clemson Rd  
Columbia, SC

PROJECT NUMBER: 73155095

CLIENT: Mead & Hunt, Inc.  
Lexington, South Carolina

# GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification		AASHTO Classification			LL	PL	PI	Cc	Cu
●	B-05 BULK	0 - 5	SILT (ML)		A-5 (11)			43	35	8		
☒	B-06	0 - 1.5	LEAN CLAY (CL)		A-6 (14)			37	21	16		
▲	B-06	2 - 3.5	LEAN CLAY (CL)		A-7-6 (18)			41	22	19		
★	B-06	6 - 7.5	ELASTIC SILT with SAND (MH)		A-7-5 (23)			57	32	25		
Boring ID		Depth	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	%Gravel	%Sand	%Silt	%Clay		
●	B-05 BULK	0 - 5	9.5				0.5	8.8	90.7			
☒	B-06	0 - 1.5	9.5				1.4	12.8	85.8			
▲	B-06	2 - 3.5	9.5				0.2	8.3	91.5			
★	B-06	6 - 7.5	12.7	0.009			3.3	17.1	31.7	48.0		

PROJECT: Columbia Avenue (S-48) Roadway Improvements

SITE: Columbia Avenue (S-48)  
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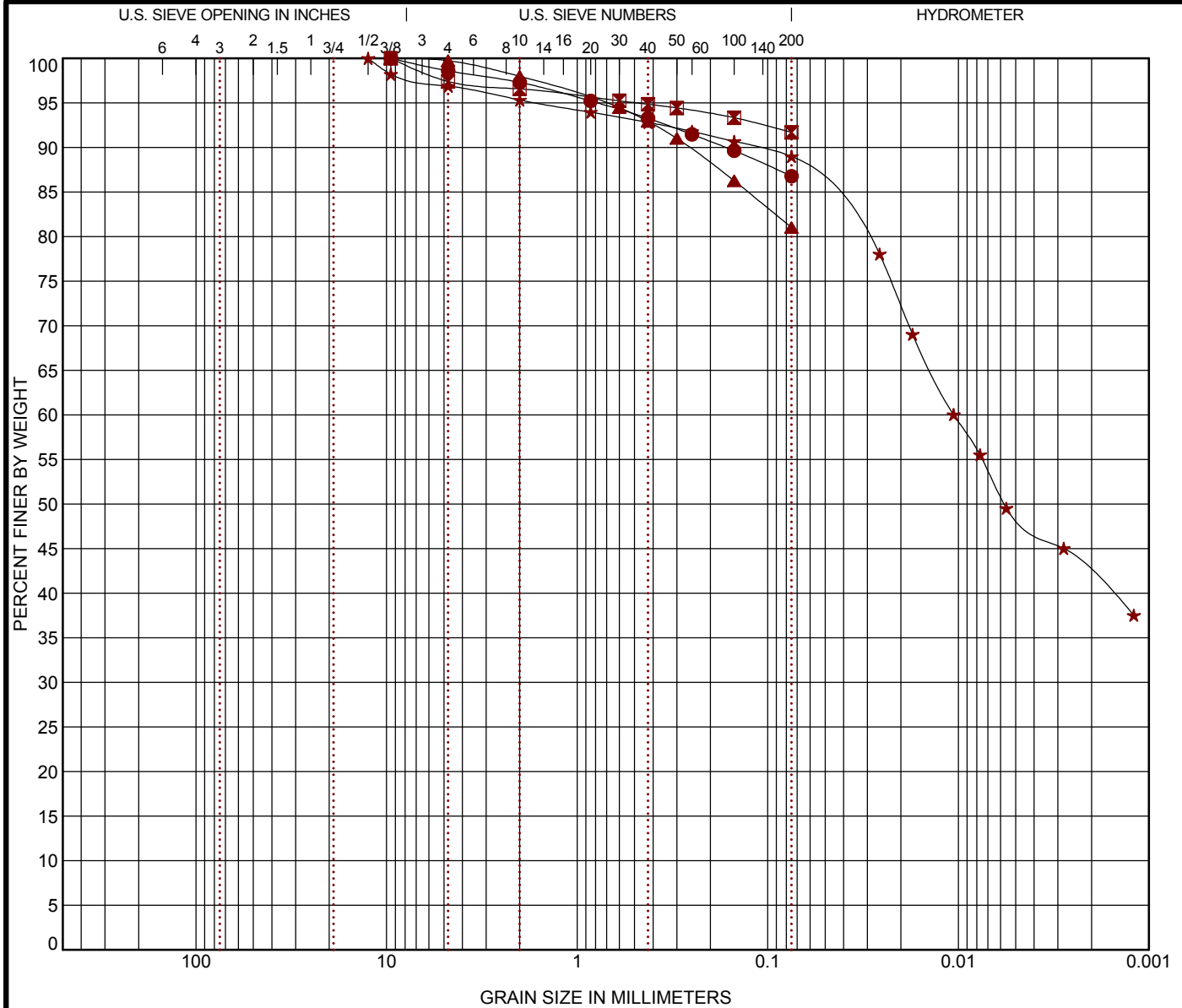
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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification			AASHTO Classification			LL	PL	PI	Cc	Cu
●	B-07	0 - 1.5	SILTY CLAY (CL-ML)			A-4 (5)			28	21	7		
⊠	B-07	2 - 3.5	FAT CLAY (CH)			A-7-6 (32)			56	25	31		
▲	B-07	8 - 9.5	SILT with SAND (ML)			A-4 (0)			NP	NP	NP		
★	B-08	0 - 1.5	LEAN CLAY (CL)			A-7-6 (24)			48	23	25		
Boring ID		Depth	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	%Gravel	%Sand	%Silt		%Clay		
●	B-07	0 - 1.5	9.5				1.4	11.8	86.8				
⊠	B-07	2 - 3.5	9.5				2.6	5.7	91.7				
▲	B-07	8 - 9.5	9.5				0.3	18.7	81.0				
★	B-08	0 - 1.5	12.5	0.011			3.1	7.9	40.2		48.8		

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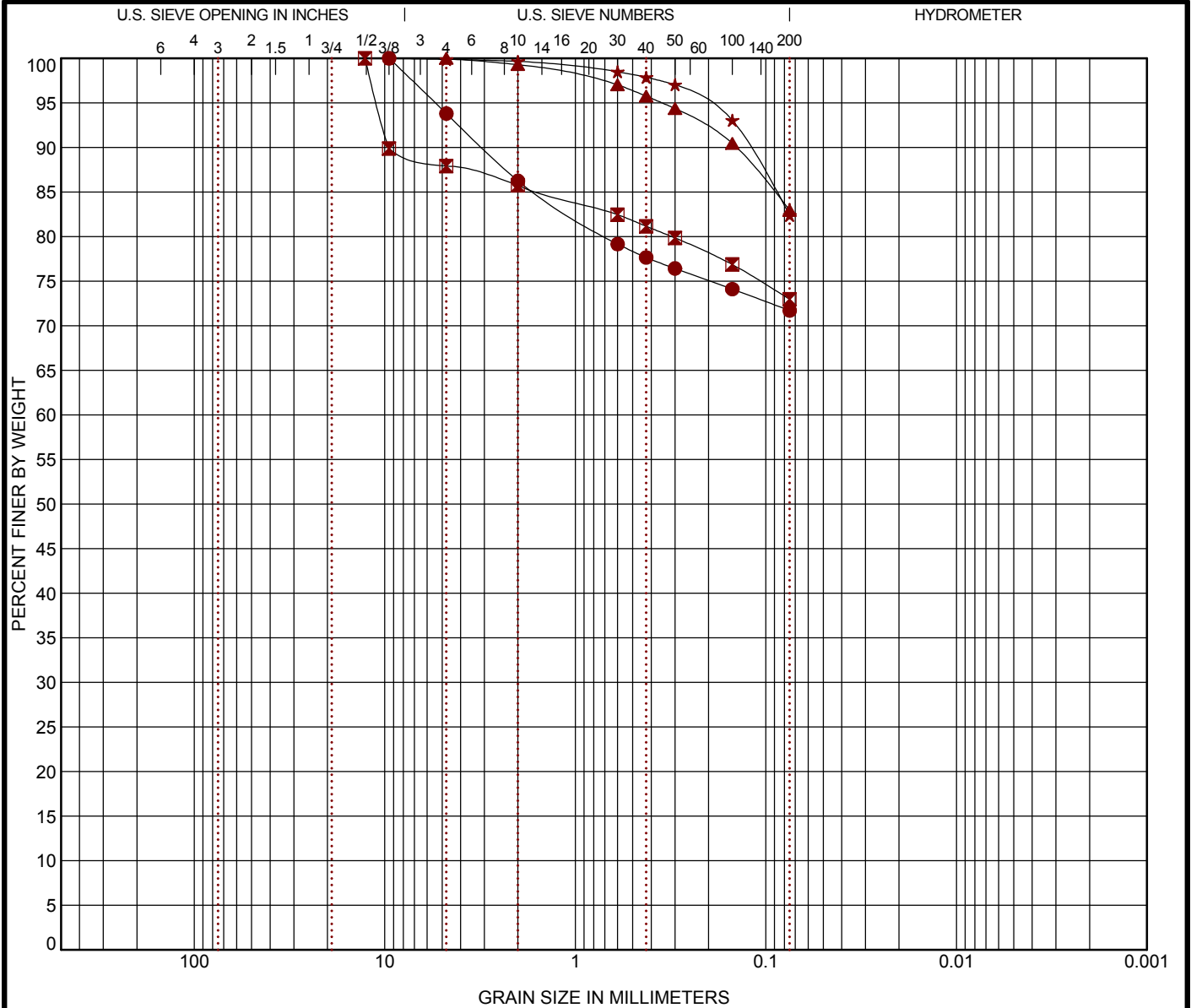
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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

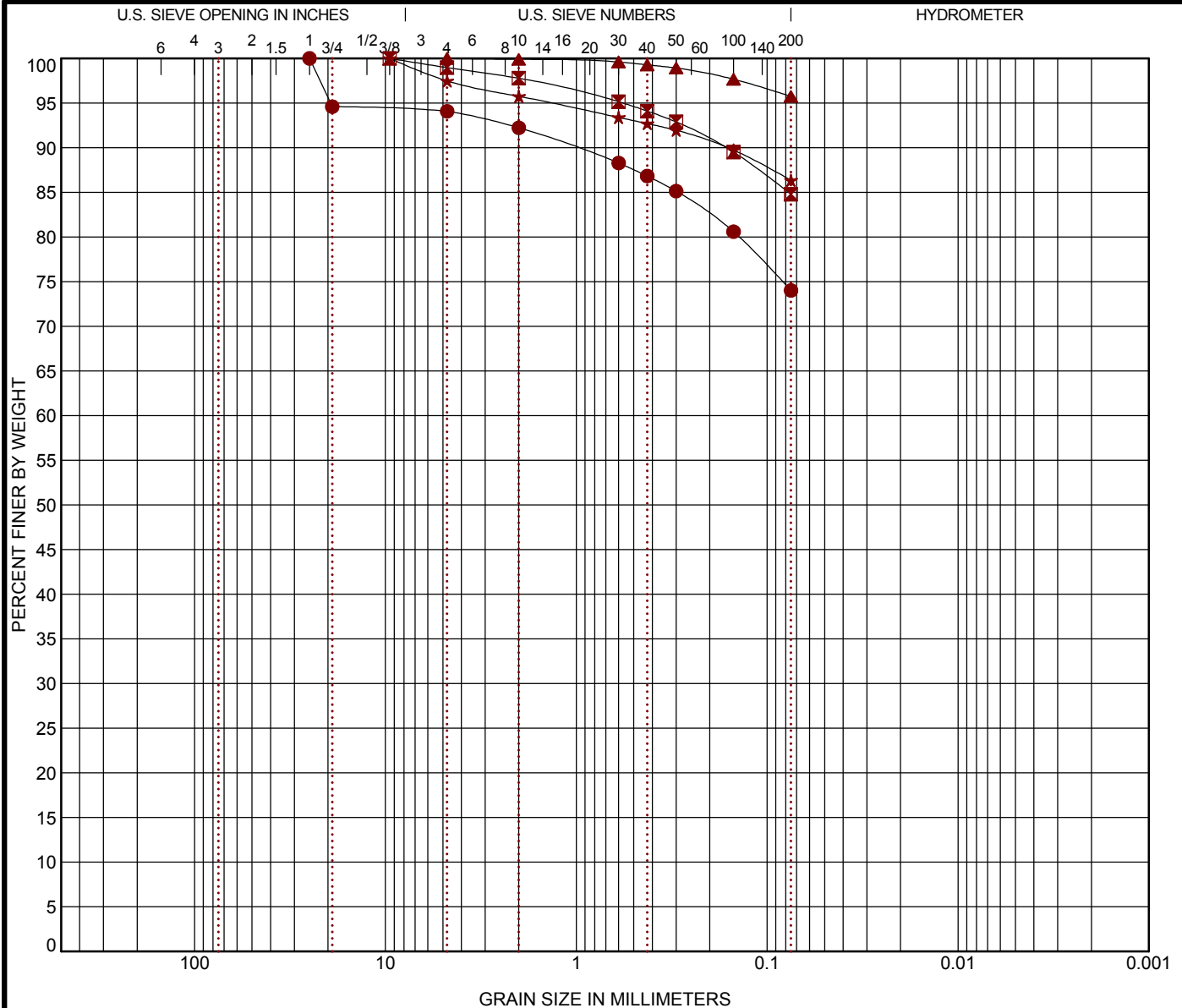
Boring ID		Depth	USCS Classification		AASHTO Classification			LL	PL	PI	Cc	Cu
●	B-08	2 - 3.5	FAT CLAY with SAND (CH)		A-7-6 (24)			61	29	32		
☒	B-09	0 - 1.5	LEAN CLAY (CL)		LEAN CLAY (CL)							
▲	B-09	2 - 3.5	SILT with SAND (ML)		A-4 (0)			NP	NP	NP		
★	B-09	8 - 9.5	SILT with SAND (ML)		SILT with SAND (ML)							
Boring ID		Depth	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	%Gravel	%Sand	%Silt	%Clay		
●	B-08	2 - 3.5	9.5				6.2	22.1	71.7			
☒	B-09	0 - 1.5	12.7				12.1	14.9	73.0			
▲	B-09	2 - 3.5	4.75				0.0	17.1	82.9			
★	B-09	8 - 9.5	9.5				0.1	17.5	82.4			

PROJECT: Columbia Avenue (S-48) Roadway Improvements			PROJECT NUMBER: 73155095		
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ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification		AASHTO Classification			LL	PL	PI	Cc	Cu
●	B-10	0 - 1.5	LEAN CLAY with SAND (CL)		A-6 (12)			37	19	18		
☒	B-10	2 - 3.5	LEAN CLAY with SAND (CL)		A-7-6 (16)			41	23	18		
▲	B-10	8 - 9.5	ELASTIC SILT (MH)		A-7-5 (37)			71	42	29		
★	B-11	0 - 1.5	FAT CLAY (CH)		A-7-6 (29)			56	25	31		
Boring ID		Depth	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	%Gravel	%Sand	%Silt		%Clay	
●	B-10	0 - 1.5	25				5.9	20.1	74.0			
☒	B-10	2 - 3.5	9.5				1.0	14.2	84.8			
▲	B-10	8 - 9.5	4.75				0.0	4.3	95.7			
★	B-11	0 - 1.5	9.5				2.5	11.1	86.4			

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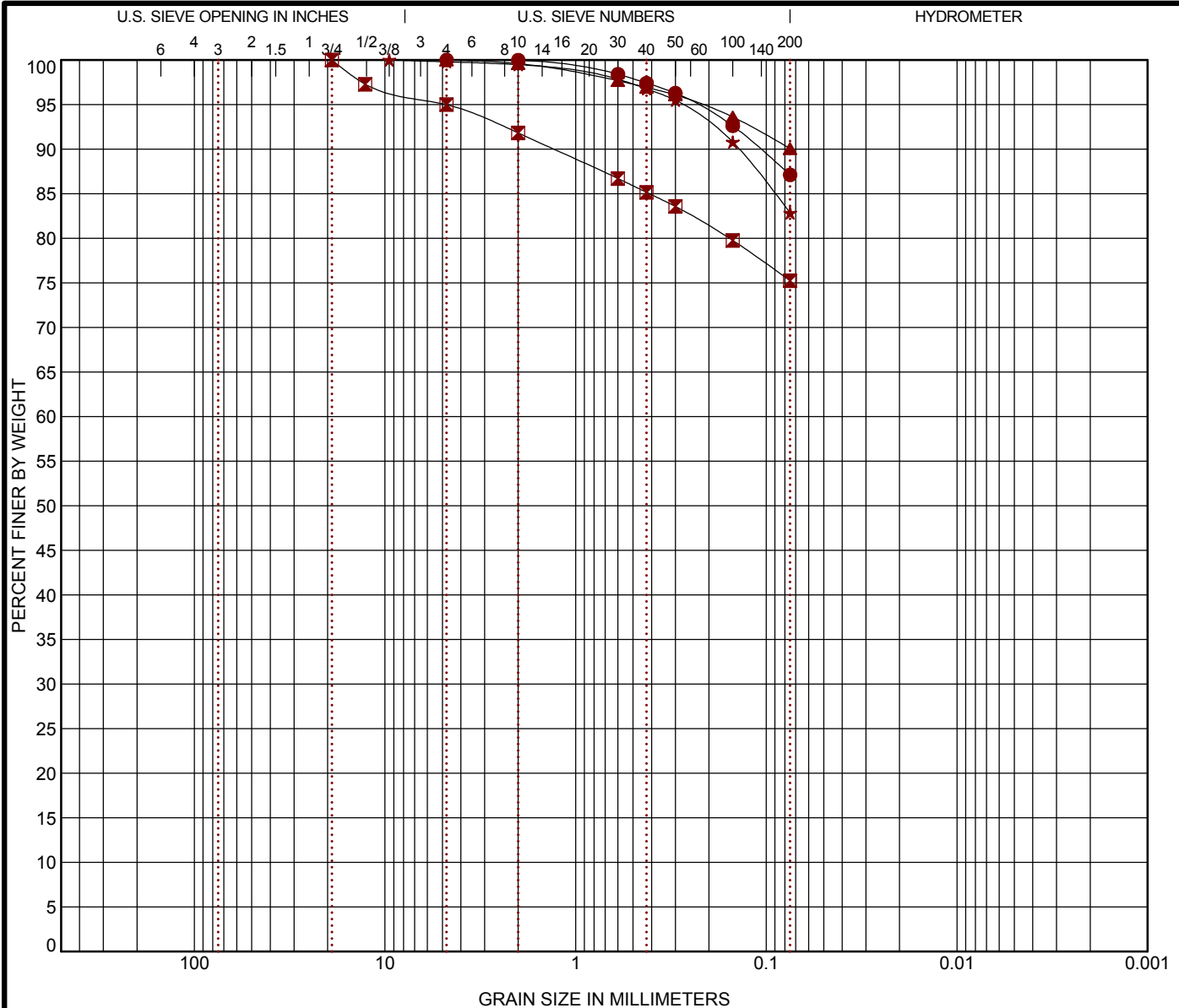
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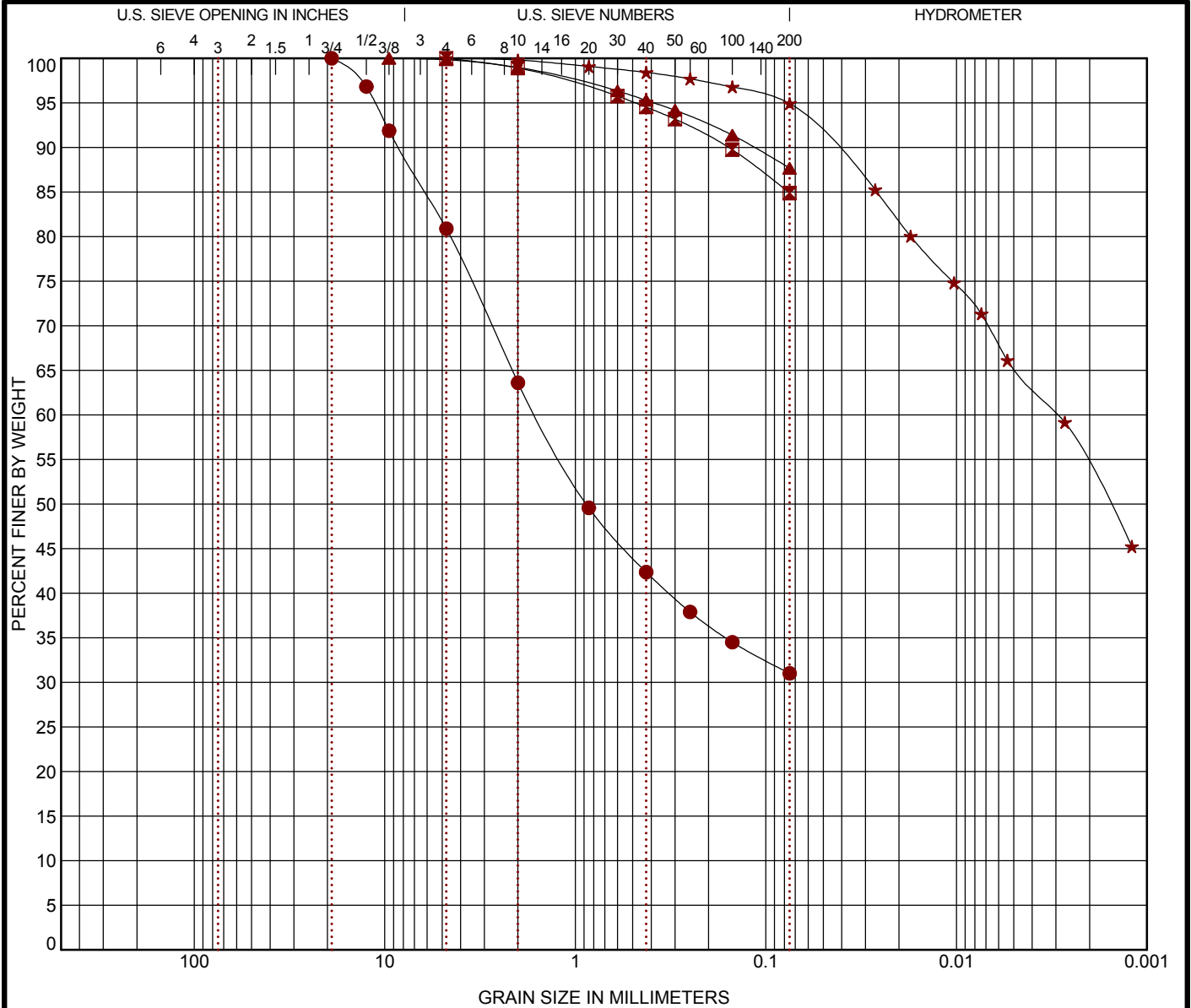
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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

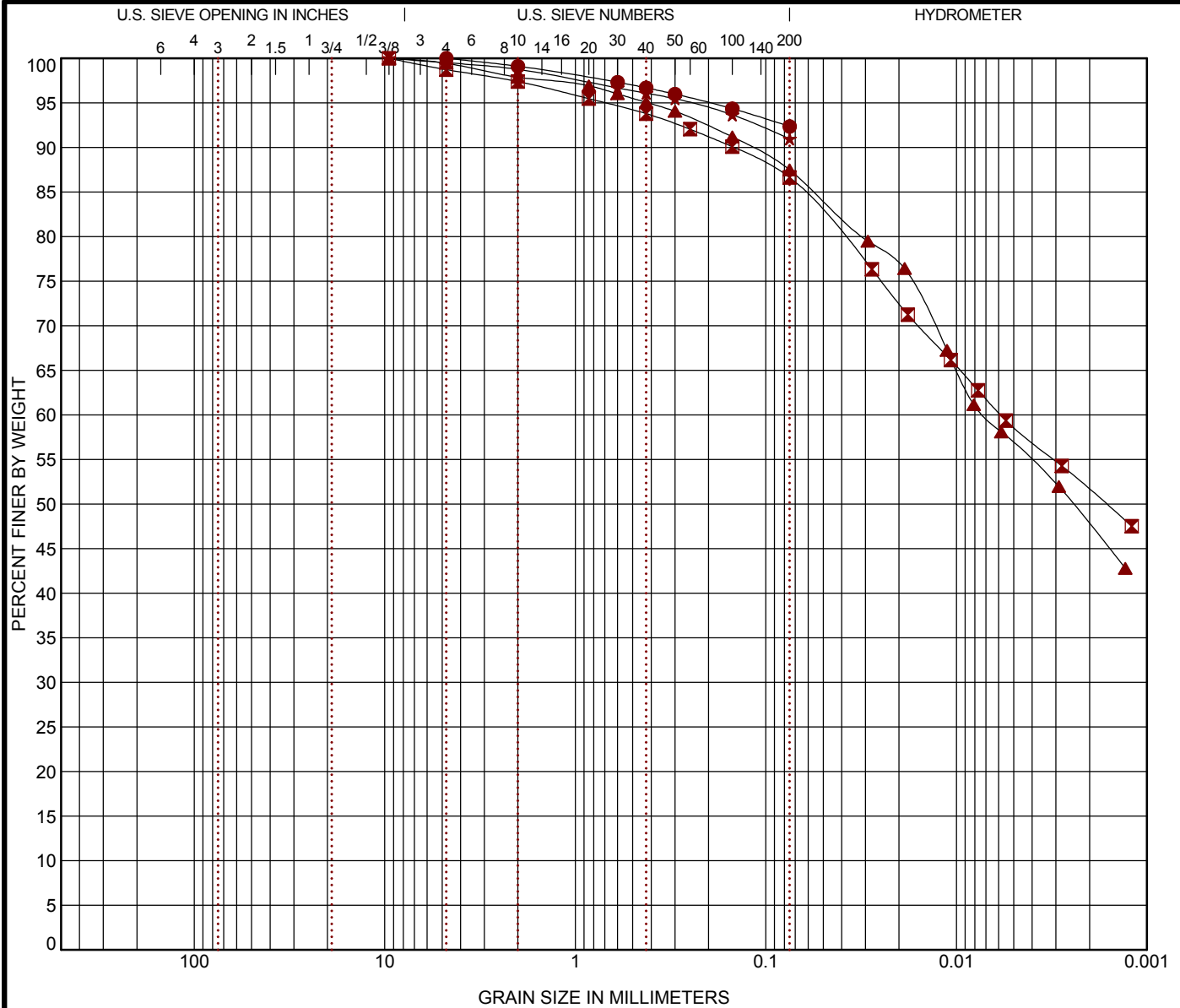
Boring ID	Depth	USCS Classification		AASHTO Classification		LL	PL	PI	Cc	Cu
● B-12 BULK	0 - 5	CLAYEY SAND with GRAVEL (SC)		A-2-4 (0)		28	18	10		
☒ B-13	0 - 1.5	LEAN CLAY with SAND (CL)		A-6 (12)		35	21	14		
▲ B-13	2 - 3.5	FAT CLAY (CH)		A-7-6 (27)		52	24	28		
★ B-13	6 - 7.5	ELASTIC SILT (MH)		A-7-5 (35)		62	32	30		
Boring ID	Depth	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	%Gravel	%Sand	%Silt	%Clay	
● B-12 BULK	0 - 5	19	1.605			19.1	49.9	31.0		
☒ B-13	0 - 1.5	4.75				0.0	15.1	84.9		
▲ B-13	2 - 3.5	9.5				0.2	12.2	87.7		
★ B-13	6 - 7.5	4.75	0.003			0.0	5.1	29.6	65.4	

PROJECT: Columbia Avenue (S-48) Roadway Improvements				PROJECT NUMBER: 73155095			
SITE: Columbia Avenue (S-48) Lexington County, South Carolina				CLIENT: Mead & Hunt, Inc. Lexington, South Carolina			

**Terracon**  
521 Clemson Rd  
Columbia, SC

# GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID	Depth	USCS Classification		AASHTO Classification		LL	PL	PI	Cc	Cu
● B-14	0 - 1.5	FAT CLAY (CH)		A-7-6 (39)		63	26	37		
☒ B-14	2 - 3.5	FAT CLAY (CH)		A-7-6 (33)		59	25	34		
▲ B-14	8 - 9.5	ELASTIC SILT (MH)		A-7-5 (32)		69	40	29		
★ B-15	0 - 1.5	FAT CLAY (CH)		FAT CLAY (CH)						
Boring ID	Depth	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	%Gravel	%Sand	%Silt	%Clay	
● B-14	0 - 1.5	4.75				0.0	7.6	92.4		
☒ B-14	2 - 3.5	9.5	0.006			1.3	12.1	28.0	58.7	
▲ B-14	8 - 9.5	9.5	0.007			0.6	12.0	30.7	56.8	
★ B-15	0 - 1.5	9.5				0.5	8.5	91.0		

PROJECT: Columbia Avenue (S-48) Roadway Improvements

SITE: Columbia Avenue (S-48)  
Lexington County, South Carolina

**Terracon**  
521 Clemson Rd  
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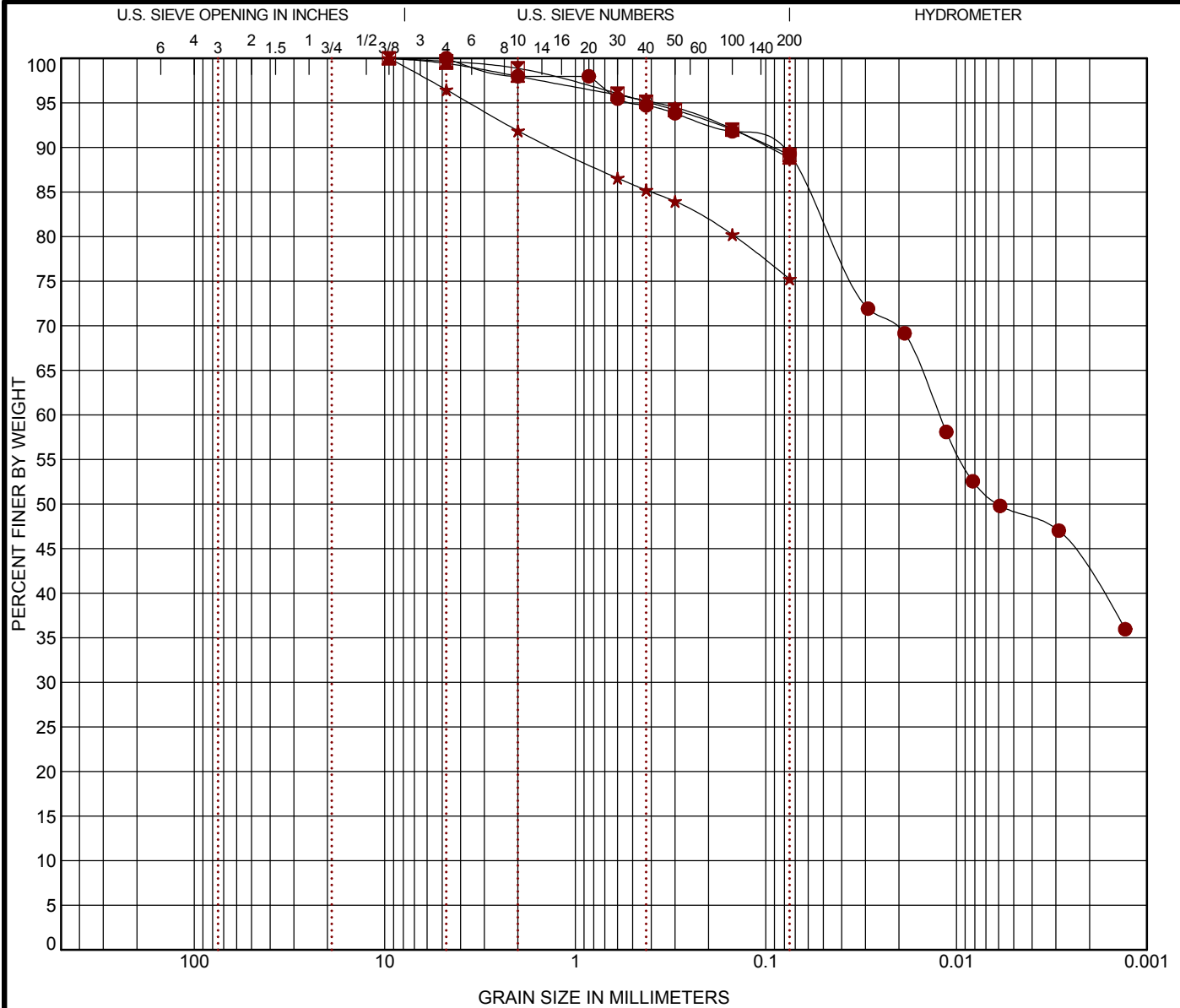
PROJECT NUMBER: 73155095

CLIENT: Mead & Hunt, Inc.  
Lexington, South Carolina

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# GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID	Depth	USCS Classification		AASHTO Classification		LL	PL	PI	Cc	Cu
● B-15	2 - 3.5	FAT CLAY (CH)		A-7-6 (32)		59	27	32		
☒ B-16	0.5 - 2	SILT (ML)		SILT (ML)						
▲ B-16	2 - 3.5	ELASTIC SILT (MH)		A-7-5 (21)		51	31	20		
★ B-17	0 - 1.5	ELASTIC SILT with SAND (MH)		A-7-5 (19)		54	30	24		
Boring ID	Depth	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	%Gravel	%Sand	%Silt	%Clay	
● B-15	2 - 3.5	4.75	0.012			0.0	10.7	40.1	49.1	
☒ B-16	0.5 - 2	9.5				0.3	10.5	89.2		
▲ B-16	2 - 3.5	9.5				0.6	10.6	88.8		
★ B-17	0 - 1.5	9.5				3.5	21.2	75.3		

PROJECT: Columbia Avenue (S-48) Roadway Improvements

SITE: Columbia Avenue (S-48)  
Lexington County, South Carolina

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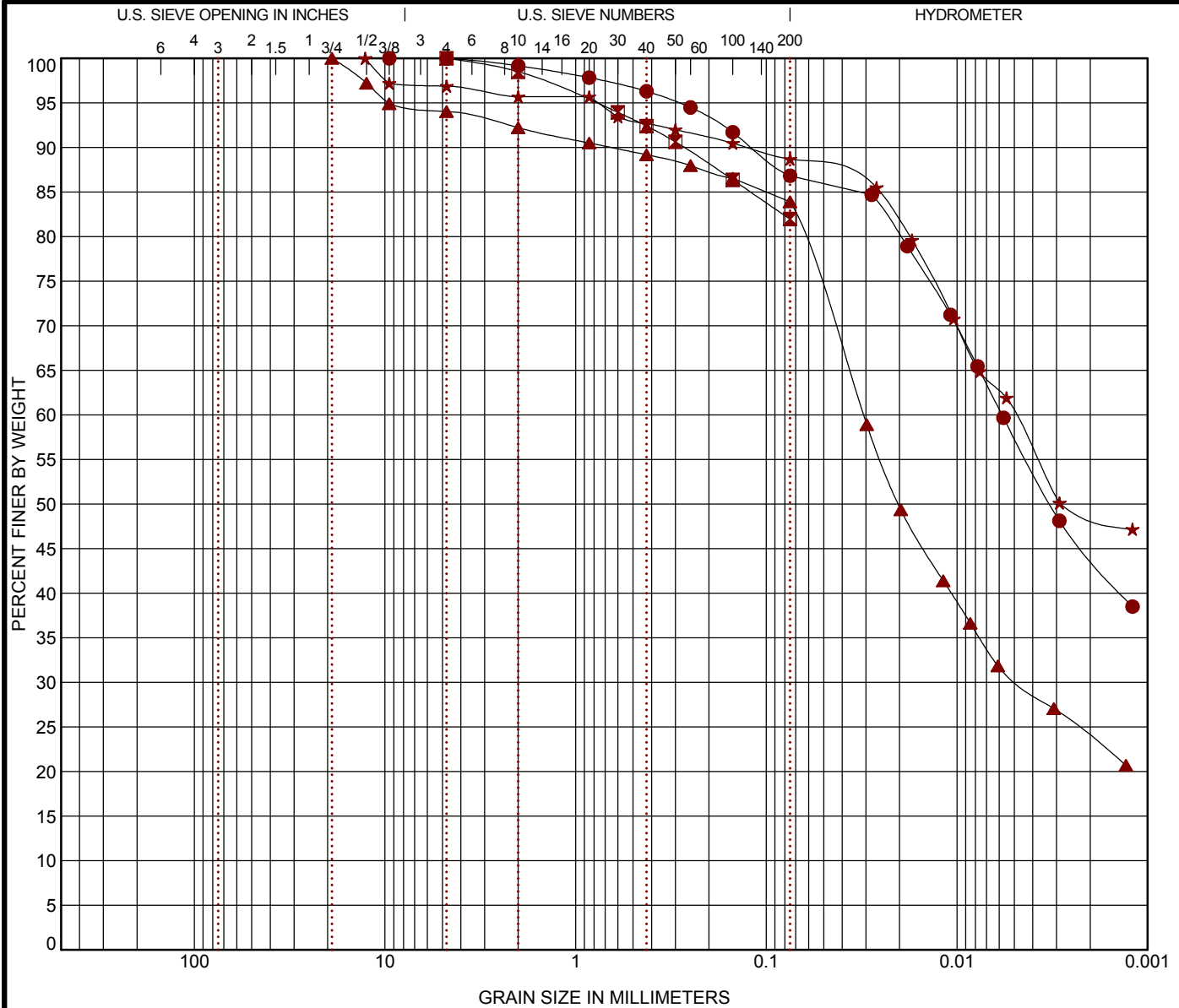
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PROJECT NUMBER: 73155095

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ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification		AASHTO Classification			LL	PL	PI	Cc	Cu
●	B-17	2 - 3.5	LEAN CLAY with SAND (CL)		LEAN CLAY with SAND (CL)							
☒	B-18	2 - 3.5	LEAN CLAY with SAND (CL)		A-7-6 (15)			41	23	18		
▲	B-19	0 - 1.5	FAT CLAY with SAND (CH)		A-7-6 (23)			50	24	26		
★	B-19	2 - 3.5	ELASTIC SILT (MH)		A-7-5 (33)			63	32	31		
Boring ID		Depth	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	%Gravel	%Sand	%Silt	%Clay		
●	B-17	2 - 3.5	9.5	0.006			0.0	13.1	29.4		57.4	
☒	B-18	2 - 3.5	4.75				0.0	18.0	82.0			
▲	B-19	0 - 1.5	19	0.031	0.005		6.0	10.1	53.5		30.4	
★	B-19	2 - 3.5	12.7	0.005			3.1	8.2	28.5		60.2	

PROJECT: Columbia Avenue (S-48) Roadway Improvements

SITE: Columbia Avenue (S-48)  
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PROJECT NUMBER: 73155095

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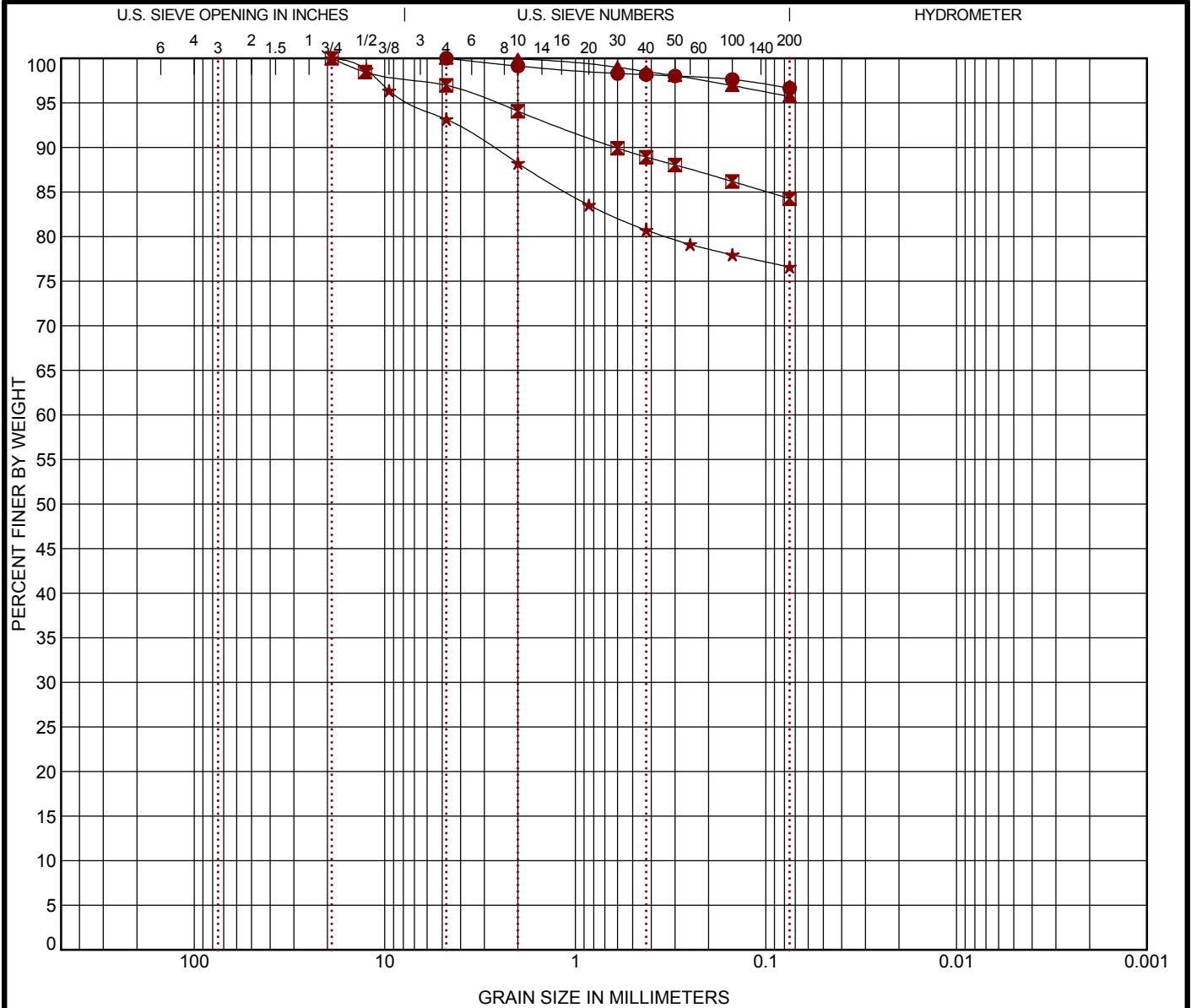
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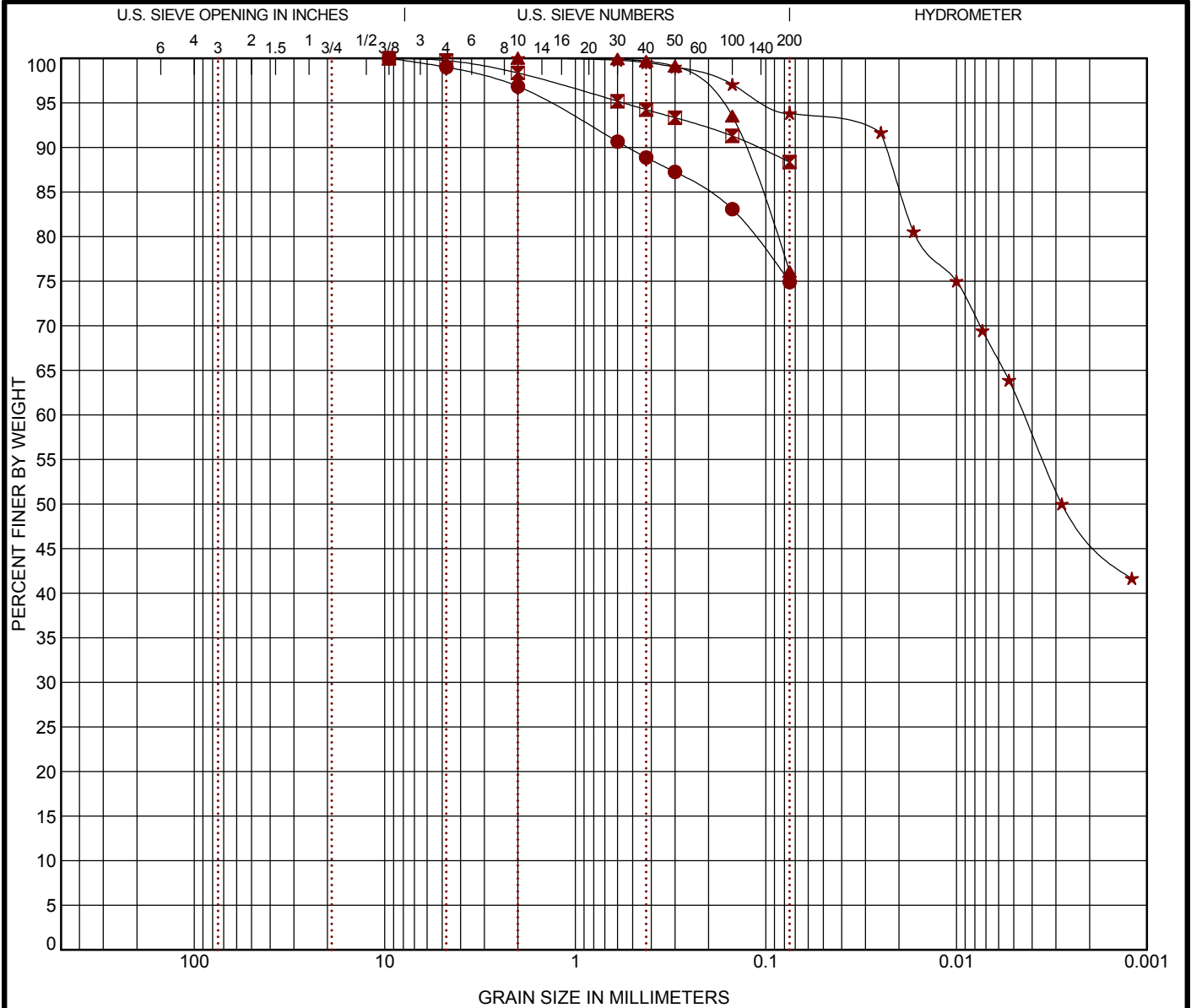
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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID		Depth	USCS Classification		AASHTO Classification			LL	PL	PI	Cc	Cu
●	B-21	2 - 3.5	SILT with SAND (ML)		A-4 (0)			NP	NP	NP		
☒	B-22	0 - 1.5	FAT CLAY (CH)		A-7-6 (41)			70	29	41		
▲	B-22	6 - 7.5	SILT with SAND (ML)		A-4 (3)			34	31	3		
★	B-23	2 - 3.5	ELASTIC SILT (MH)		A-7-5 (45)			77	39	38		
Boring ID		Depth	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	%Gravel	%Sand	%Silt	%Clay		
●	B-21	2 - 3.5	9.5				1.0	24.1	74.9			
☒	B-22	0 - 1.5	9.5				0.3	11.4	88.4			
▲	B-22	6 - 7.5	2				0.0	23.9	76.1			
★	B-23	2 - 3.5	2	0.004			0.0	6.2	31.2	62.6		

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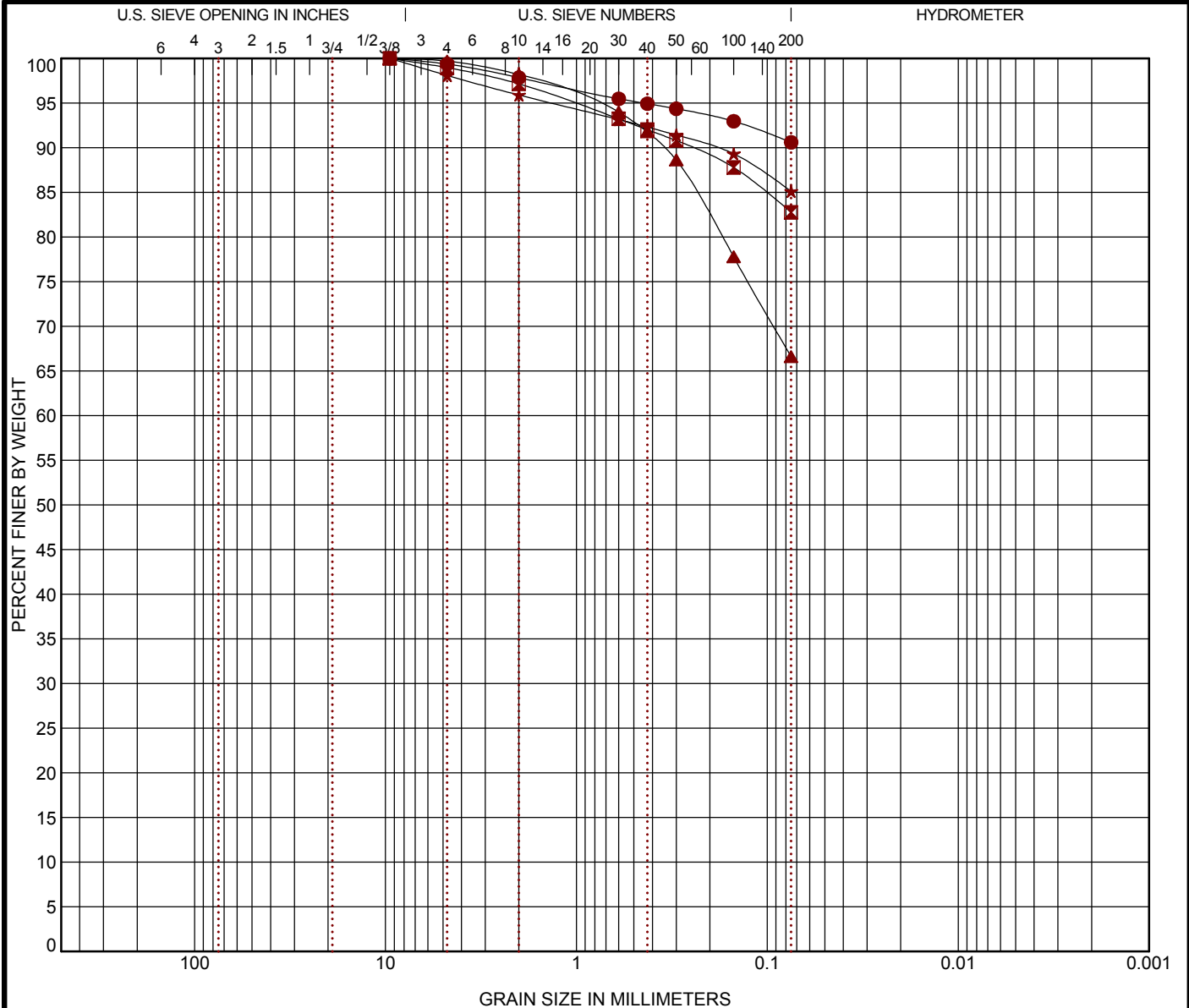
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Lexington, South Carolina

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID	Depth	USCS Classification		AASHTO Classification		LL	PL	PI	Cc	Cu
● B-24	0 - 1.5	LEAN CLAY (CL)		A-6 (17)		40	22	18		
✱ B-24	2 - 3.5	FAT CLAY with SAND (CH)		A-7-6 (32)		59	23	36		
▲ B-25	2 - 3.5	SANDY ELASTIC SILT (MH)		A-7-5 (14)		52	32	20		
★ B-26	0.5 - 2	ELASTIC SILT (MH)		A-7-5 (21)		54	33	21		
Boring ID	Depth	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	%Gravel	%Sand	%Silt	%Clay	
● B-24	0 - 1.5	9.5				0.6	8.8	90.6		
✱ B-24	2 - 3.5	9.5				1.0	16.2	82.8		
▲ B-25	2 - 3.5	9.5				0.3	33.1	66.6		
★ B-26	0.5 - 2	9.5				1.9	13.0	85.1		

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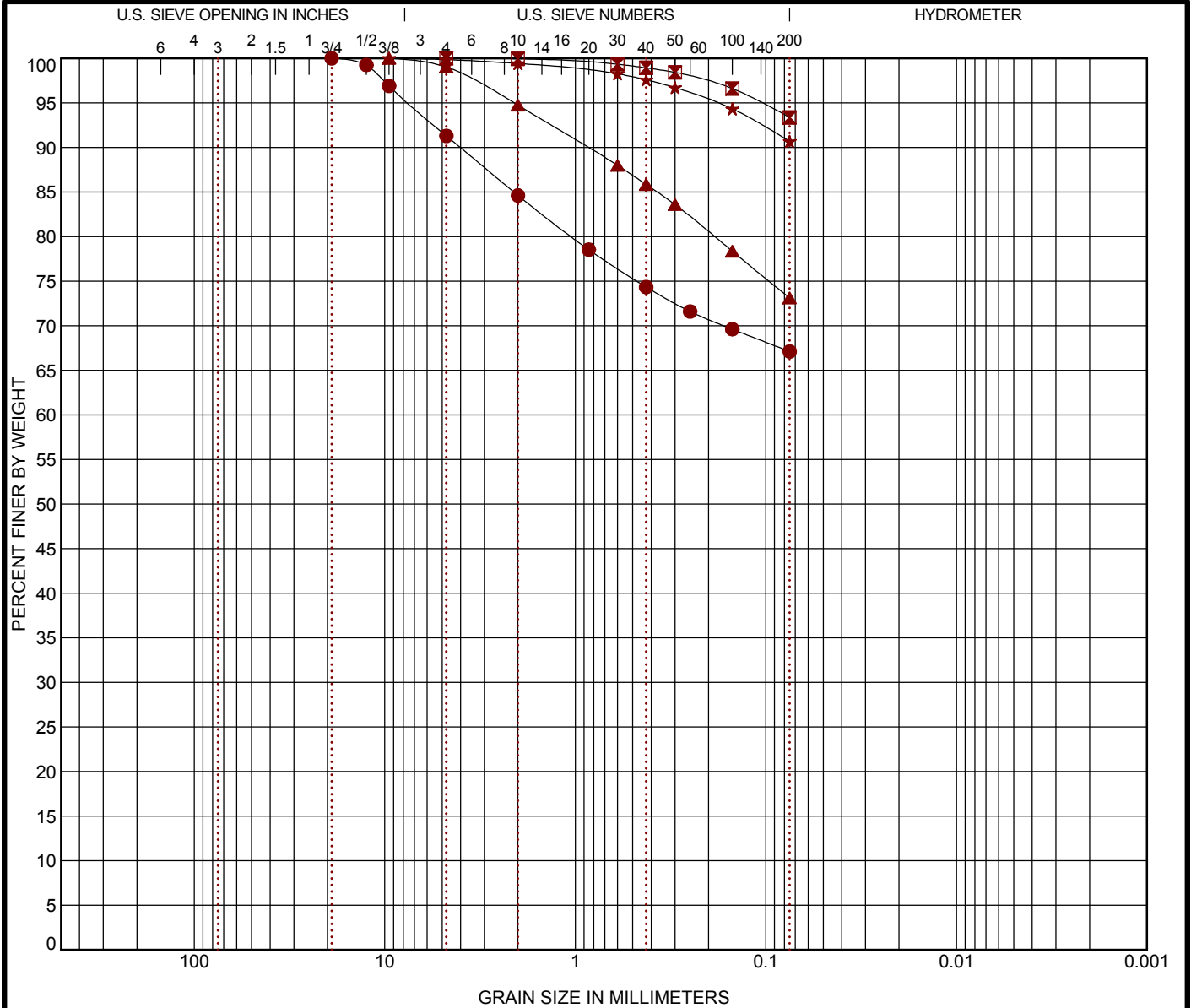
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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

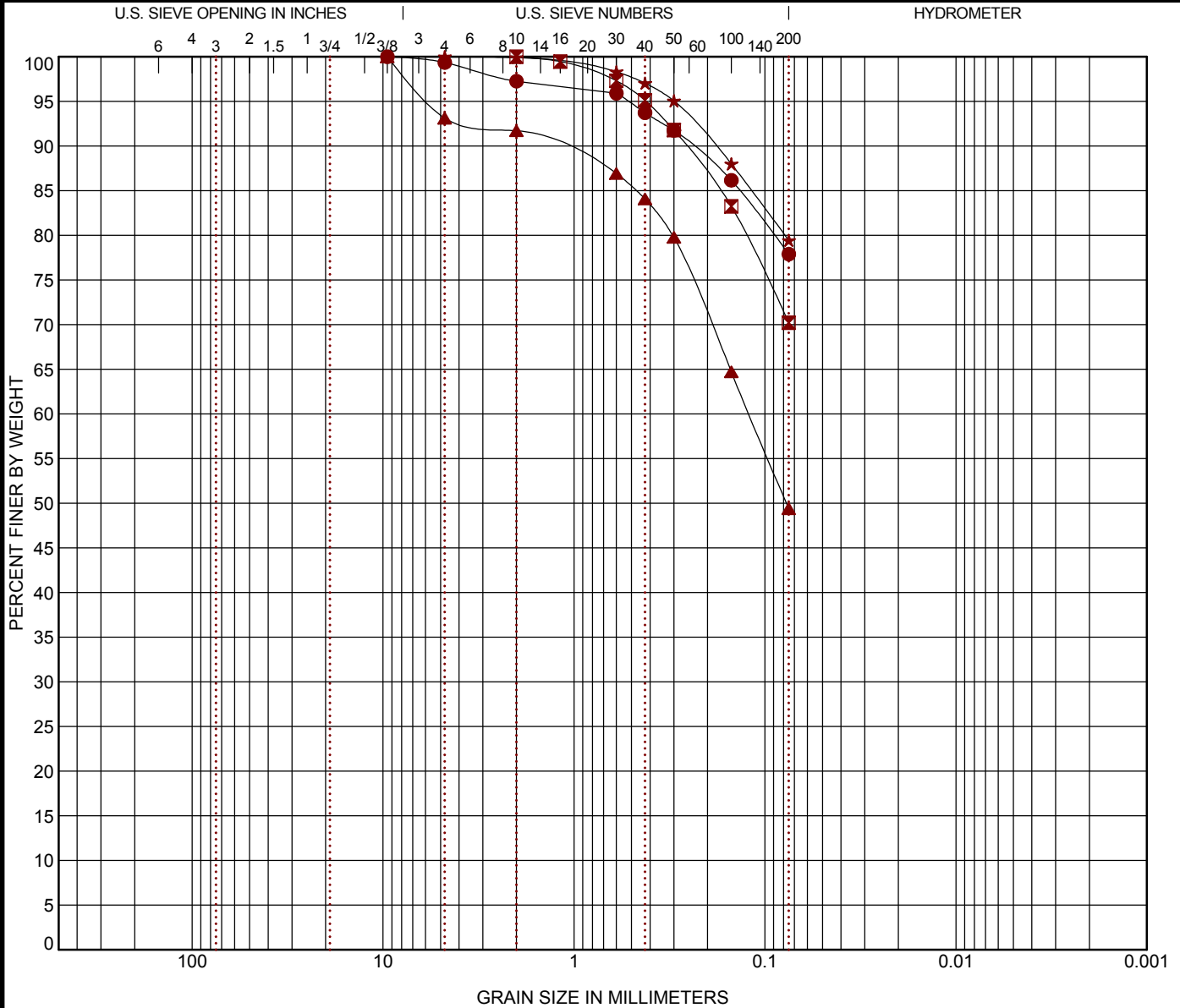
Boring ID		Depth	USCS Classification			AASHTO Classification			LL	PL	PI	Cc	Cu
●	B-26 BULK	0 - 5	SANDY SILT (ML)			A-6 (6)			36	25	11		
☒	B-27	2 - 3.5	SILT (ML)			A-4 (0)			NP	NP	NP		
▲	B-28	2 - 3.5	SILT with SAND (ML)			A-4 (0)			NP	NP	NP		
★	B-29	2 - 3.5	SILT (ML)			A-4 (0)			NP	NP	NP		
Boring ID		Depth	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	%Gravel	%Sand	%Silt		%Clay		
●	B-26 BULK	0 - 5	19				8.7	24.2	67.1				
☒	B-27	2 - 3.5	4.75				0.0	6.6	93.4				
▲	B-28	2 - 3.5	9.5				1.0	25.9	73.1				
★	B-29	2 - 3.5	9.5				0.1	9.2	90.7				

PROJECT: Columbia Avenue (S-48) Roadway Improvements	<div>Terracon</div> <div>521 Clemson Rd Columbia, SC</div>	PROJECT NUMBER: 73155095
SITE: Columbia Avenue (S-48) Lexington County, South Carolina		CLIENT: Mead & Hunt, Inc. Lexington, South Carolina

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID	Depth	USCS Classification		AASHTO Classification		LL	PL	PI	Cc	Cu
● B-29	53.5 - 55	SILT with SAND (ML)		A-4 (0)		NP	NP	NP		
■ B-30	2 - 3.5	ELASTIC SILT with SAND (MH)		A-5 (9)		53	43	10		
▲ B-30	18.5 - 20	CLAYEY SAND (SC)		A-7-6 (5)		41	24	17		
★ B-31	2 - 3.5	ELASTIC SILT with SAND (MH)		A-7-5 (17)		56	38	18		
Boring ID	Depth	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	%Gravel	%Sand	%Silt	%Clay	
● B-29	53.5 - 55	9.5				0.7	21.4	77.9		
■ B-30	2 - 3.5	2				0.0	29.8	70.2		
▲ B-30	18.5 - 20	9.5	0.121			6.9	43.7	49.4		
★ B-31	2 - 3.5	4.75				0.0	20.6	79.4		

PROJECT: Columbia Avenue (S-48) Roadway Improvements

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**Terracon**

521 Clemson Rd  
Columbia, SC

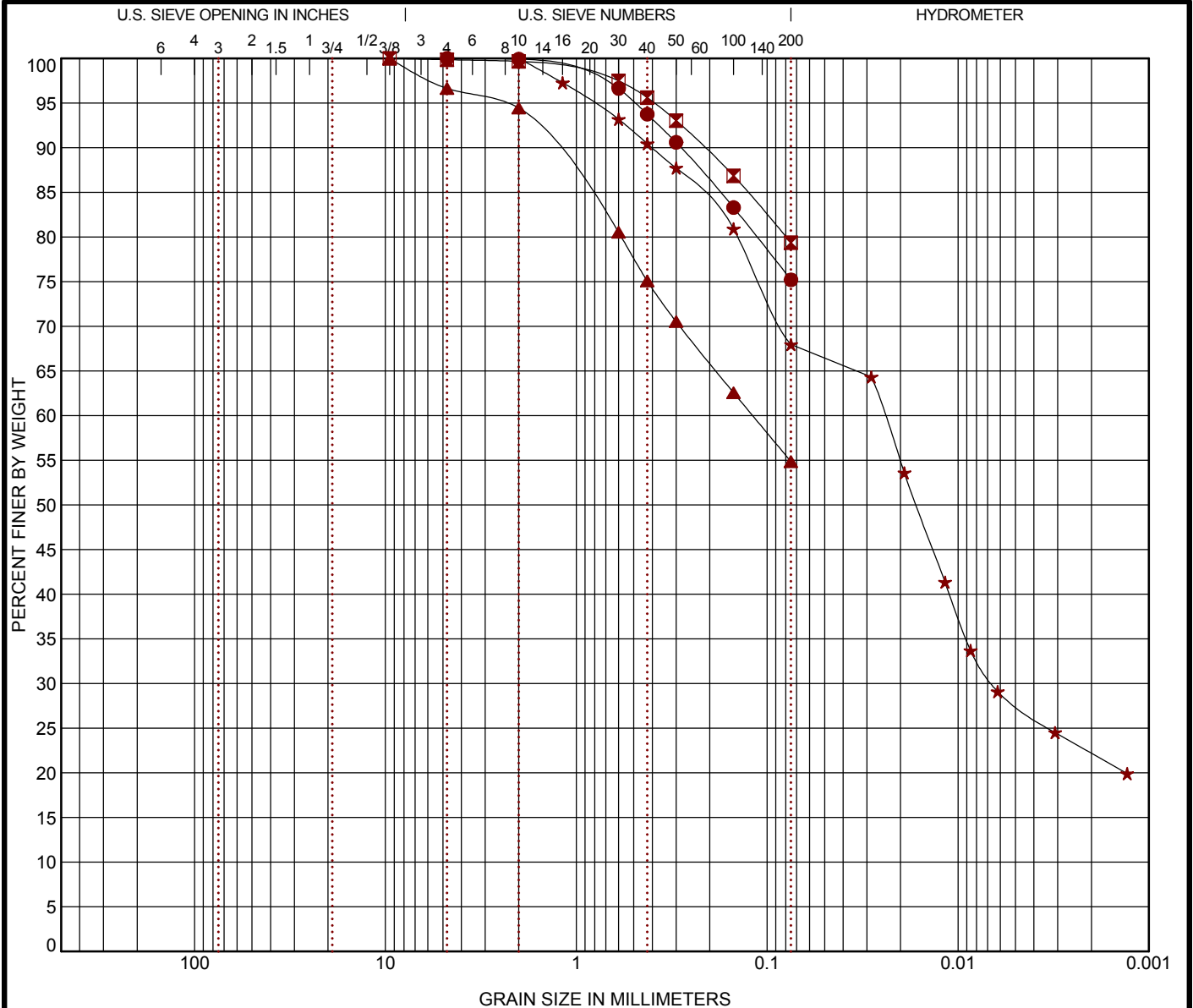
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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID	Depth	USCS Classification		AASHTO Classification		LL	PL	PI	Cc	Cu
● B-32	13.5 - 15	SILT with SAND (ML)		A-4 (0)		NP	NP	NP		
☒ B-32	48.5 - 50	SILT with SAND (ML)		A-4 (0)		NP	NP	NP		
▲ B-32	78.5 - 80	SANDY SILT (ML)		SANDY SILT (ML)						
★ B-33	0 - 1.5	ELASTIC SILT with SAND (MH)		ELASTIC SILT with SAND (MH)						
Boring ID	Depth	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	%Gravel	%Sand	%Silt	%Clay	
● B-32	13.5 - 15	4.75				0.0	24.8	75.2		
☒ B-32	48.5 - 50	9.5				0.1	20.5	79.4		
▲ B-32	78.5 - 80	9.5	0.119			3.4	41.8	54.9		
★ B-33	0 - 1.5	2	0.024	0.007		0.0	32.0	40.3	27.7	

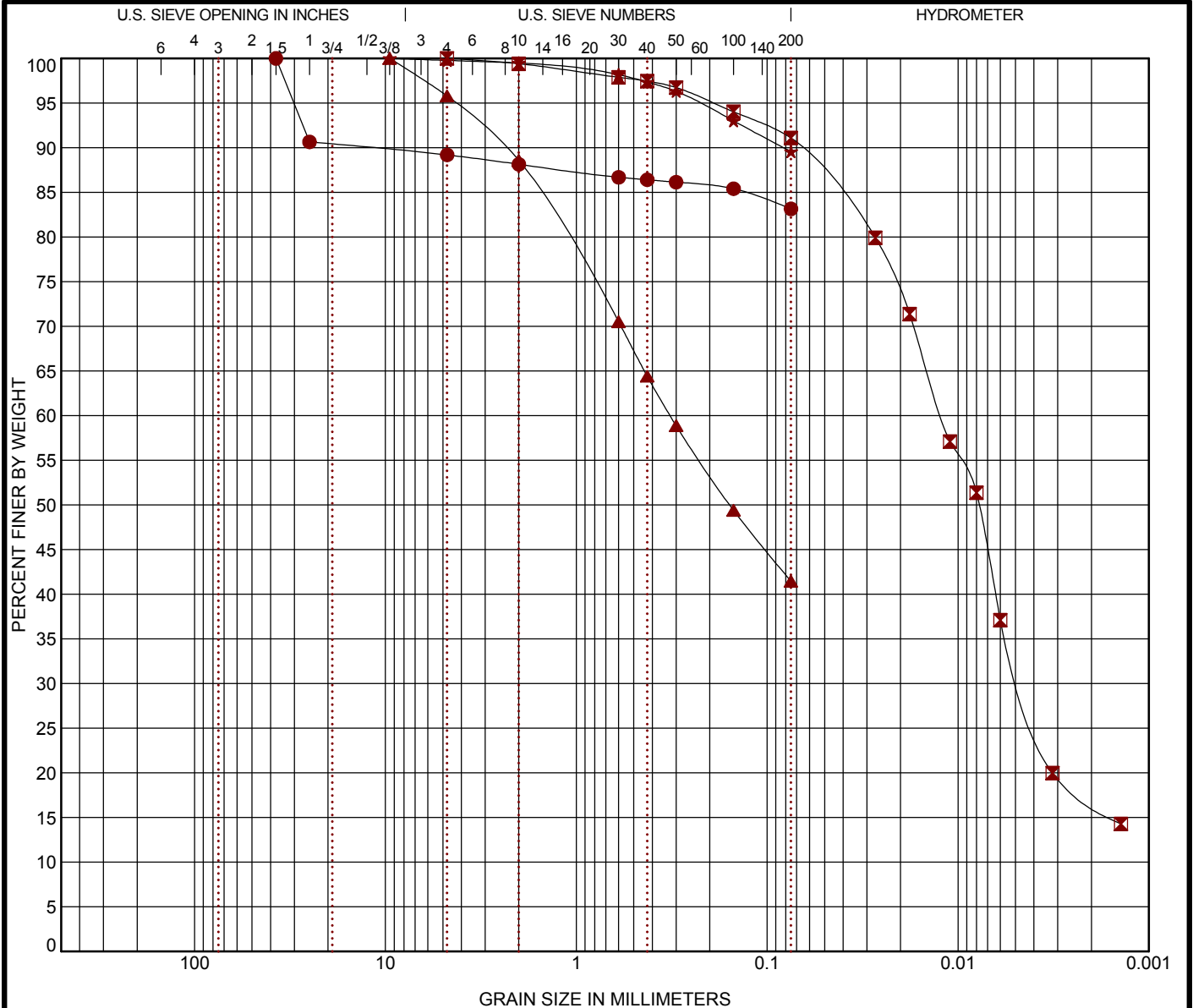
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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

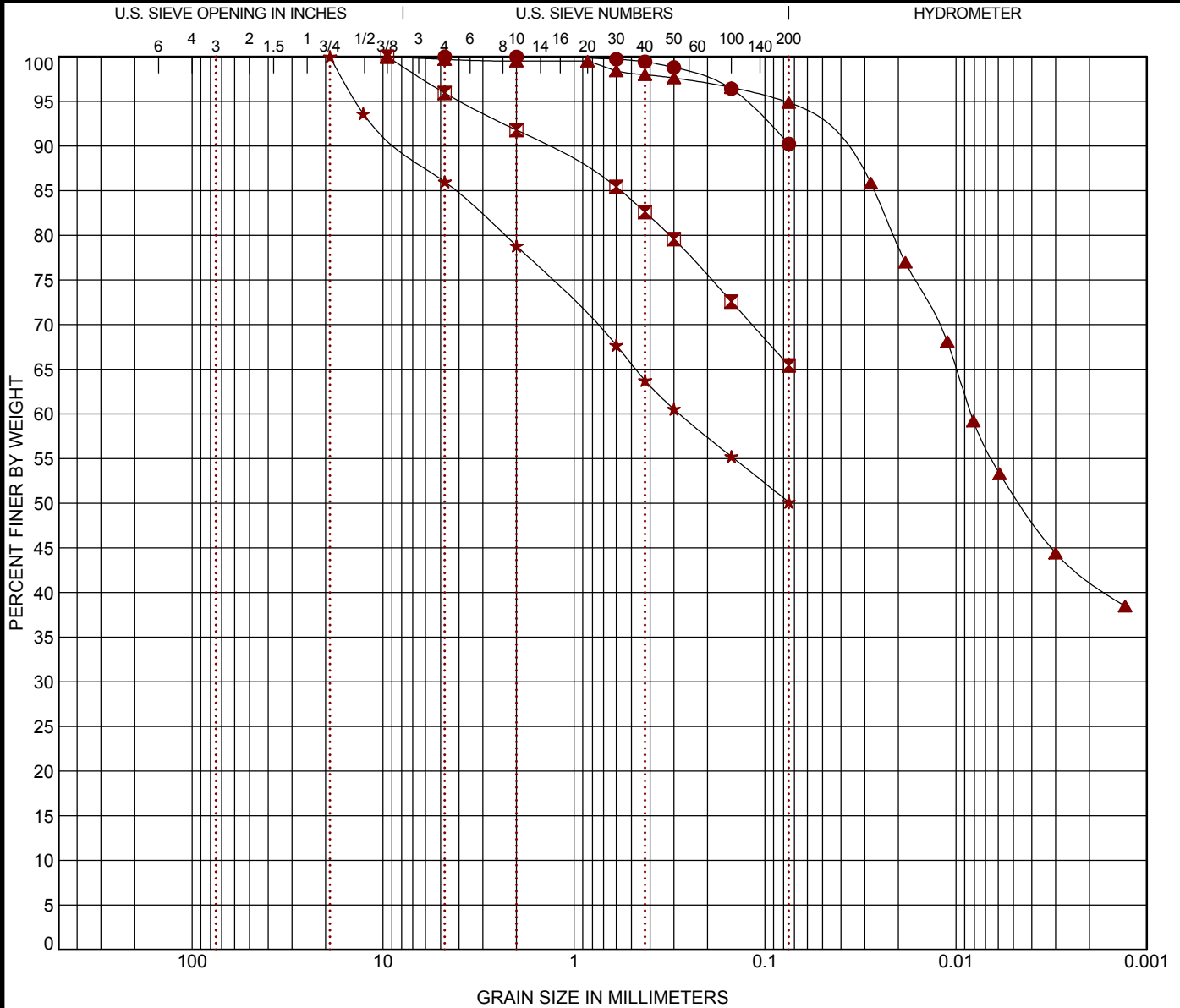
Boring ID	Depth	USCS Classification		AASHTO Classification		LL	PL	PI	Cc	Cu
● B-33	2 - 3.5	ELASTIC SILT with GRAVEL (MH)		A-7-5 (22)		54	30	24		
☒ B-33	23.5 - 25	SILT (ML)		A-4 (0)		NP	NP	NP		
▲ B-33	83.5 - 85	SILTY SAND (SM)		SILTY SAND (SM)						
★ B-34	2 - 3.5	SILT (ML)		A-4 (0)		NP	NP	NP		
Boring ID	Depth	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	%Gravel	%Sand	%Silt	%Clay	
● B-33	2 - 3.5	37.5				10.8	6.0	83.1		
☒ B-33	23.5 - 25	4.75	0.012	0.005		0.0	8.9	58.9	32.1	
▲ B-33	83.5 - 85	9.5	0.322			4.2	54.3	41.5		
★ B-34	2 - 3.5	9.5				0.2	10.2	89.6		

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COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring ID	Depth	USCS Classification		AASHTO Classification		LL	PL	PI	Cc	Cu
● B-34	23.5 - 25	SILT (ML)		A-4 (0)		NP	NP	NP		
■ B-35	2 - 3.5	SANDY SILT (ML)		A-4 (0)		NP	NP	NP		
▲ B-35	6 - 7.5	FAT CLAY (CH)		A-7-5 (33)		59	30	29		
★ B-36	2 - 3.5	SANDY SILT (ML)		A-4 (0)		NP	NP	NP		
Boring ID	Depth	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	%Gravel	%Sand	%Silt	%Clay	
● B-34	23.5 - 25	4.75				0.0	9.8	90.2		
■ B-35	2 - 3.5	9.5				4.1	30.5	65.4		
▲ B-35	6 - 7.5	9.5	0.008			0.3	4.8	43.7	51.1	
★ B-36	2 - 3.5	19	0.28			14.0	35.9	50.1		

PROJECT: Columbia Avenue (S-48) Roadway Improvements

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Lexington County, South Carolina

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PROJECT NUMBER: 73155095

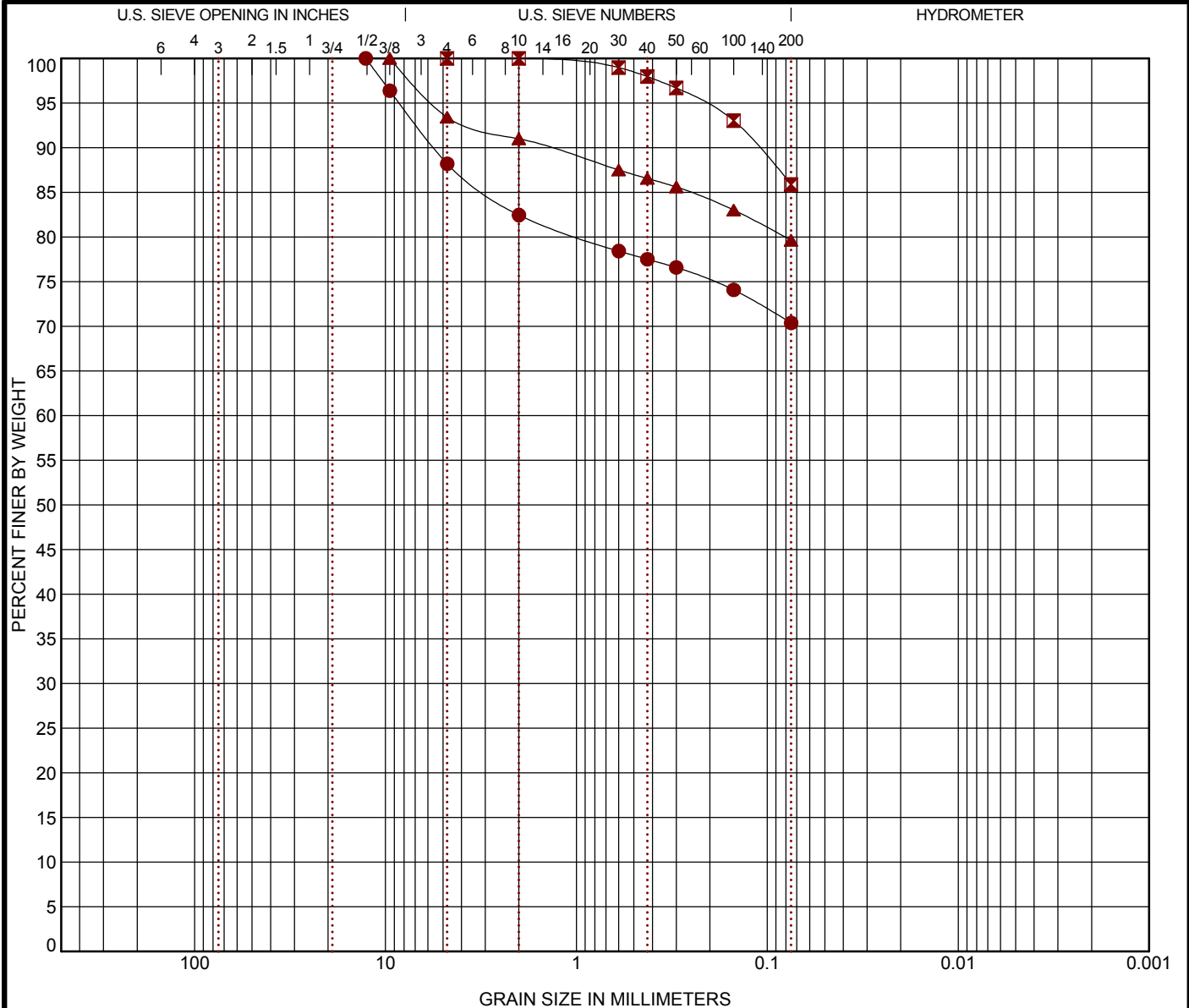
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	coarse	fine	coarse	medium	fine	

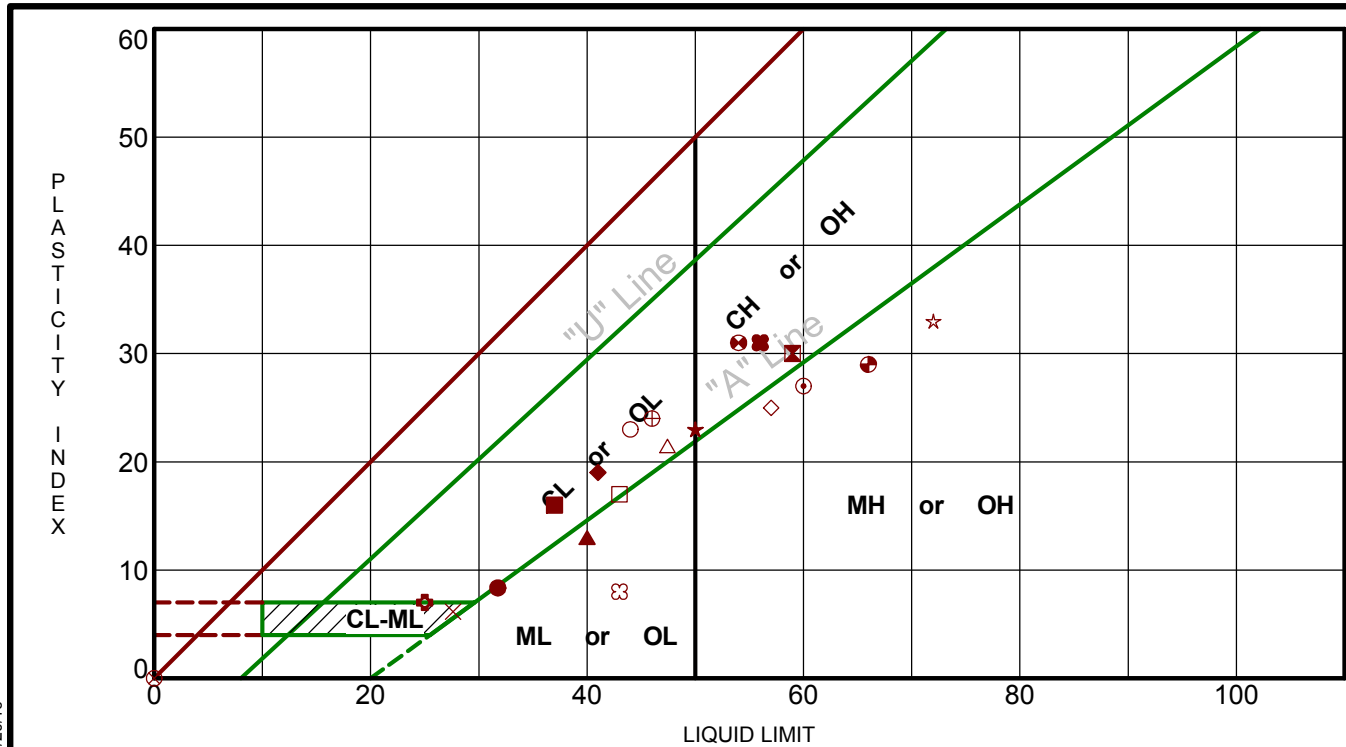
Boring ID	Depth	USCS Classification	AASHTO Classification	LL	PL	PI	Cc	Cu
● B-37	0 - 1.5	FAT CLAY with SAND (CH)	A-7-5 (25)	65	31	34		
■ B-37	33.5 - 35	SILT (ML)	A-4 (0)	NP	NP	NP		
▲ B-38	0 - 1.5	FAT CLAY with SAND (CH)	A-7-5 (35)	70	30	40		

Boring ID	Depth	D <sub>100</sub>	D <sub>60</sub>	D <sub>30</sub>	D <sub>10</sub>	%Gravel	%Sand	%Silt	%Clay
● B-37	0 - 1.5	12.7				11.8	17.8	70.4	
■ B-37	33.5 - 35	4.75				0.0	14.1	85.9	
▲ B-38	0 - 1.5	9.5				6.6	13.8	79.6	

PROJECT: Columbia Avenue (S-48) Roadway Improvements	 521 Clemson Rd Columbia, SC	PROJECT NUMBER: 73155095
SITE: Columbia Avenue (S-48) Lexington County, South Carolina		CLIENT: Mead & Hunt, Inc. Lexington, South Carolina

# ATTERBERG LIMITS RESULTS

ASTM D4318



Boring ID	Depth	LL	PL	PI	Fines	USCS	Description
● B-01	0 - 1.5	32	23	9	92	CL	LEAN CLAY
⊠ B-01	2 - 3.5	59	29	30	54	CH	SANDY FAT CLAY
▲ B-01	8 - 9.5	40	27	13	60	ML	SANDY SILT
★ B-02	0.5 - 2	50	27	23	89	CH	ELASTIC SILT (MH)
⊙ B-02	4 - 5.5	60	33	27			ELASTIC SILT (MH)
⊕ B-02 BULK	0 - 5	25	18	7	56	CL-ML	SANDY SILTY CLAY with GRAVEL
○ B-03	0.5 - 2	44	21	23	81	CL	LEAN CLAY with SAND
△ B-03	2 - 3.5	47	26	21	88	CL	LEAN CLAY
⊗ B-03	6 - 7.5	NP	NP	NP	82	ML	SILT with SAND
⊕ B-04	0 - 1.5	46	22	24	88	CL	LEAN CLAY
□ B-04	2 - 3.5	43	26	17	90	CL	LEAN CLAY
⊕ B-04	6 - 7.5	54	23	31			FAT CLAY (CH)
⊕ B-05	0 - 1.5	66	37	29	93	MH	ELASTIC SILT
★ B-05	2 - 3.5	72	39	33	95	MH	ELASTIC SILT
⊗ B-05 BULK	0 - 5	43	35	8	91	ML	SILT
■ B-06	0 - 1.5	37	21	16	86	CL	LEAN CLAY
◆ B-06	2 - 3.5	41	22	19	91	CL	LEAN CLAY
◇ B-06	6 - 7.5	57	32	25	80	MH	ELASTIC SILT with SAND
× B-07	0 - 1.5	28	21	7	87	CL-ML	SILTY CLAY
⊕ B-07	2 - 3.5	56	25	31	92	CH	FAT CLAY

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SITE: Columbia Avenue (S-48)  
Lexington County, South Carolina

**Terracon**  
521 Clemson Rd  
Columbia, SC

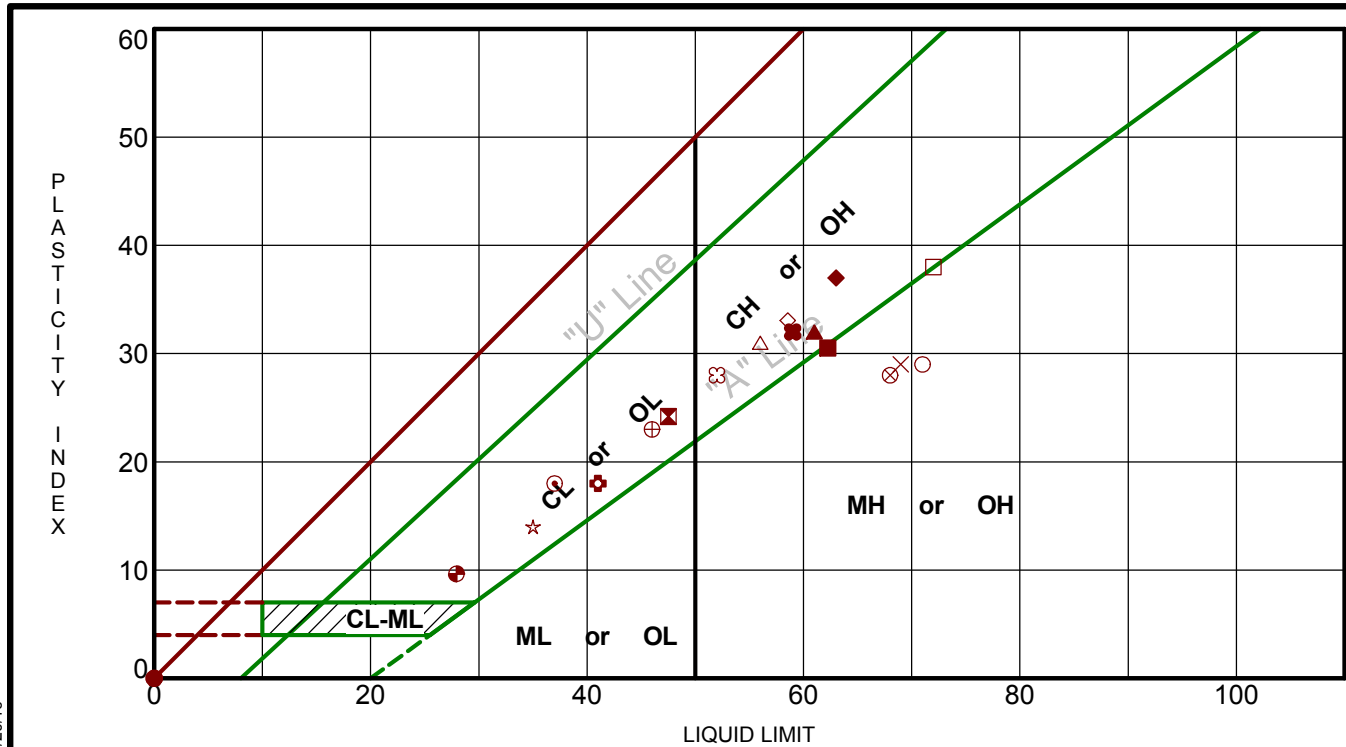
PROJECT NUMBER: 73155095

CLIENT: Mead & Hunt, Inc.  
Lexington, South Carolina

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ATTERBERG LIMITS 73155095 LAB TESTING.GPJ TERRACON2015.GDT 5/20/16

# ATTERBERG LIMITS RESULTS

ASTM D4318



Boring ID	Depth	LL	PL	PI	Fines	USCS	Description
● B-07	8 - 9.5	NP	NP	NP	81	ML	SILT with SAND
⊠ B-08	0 - 1.5	48	23	25	89	CL	LEAN CLAY
▲ B-08	2 - 3.5	61	29	32	72	CH	FAT CLAY with SAND
★ B-09	2 - 3.5	NP	NP	NP	83	ML	SILT with SAND
⊙ B-10	0 - 1.5	37	19	18	74	CL	LEAN CLAY with SAND
⊕ B-10	2 - 3.5	41	23	18	85	CL	LEAN CLAY with SAND
○ B-10	8 - 9.5	71	42	29	96	MH	ELASTIC SILT
△ B-11	0 - 1.5	56	25	31	86	CH	FAT CLAY
⊗ B-11	4 - 5.5	68	40	28	87	MH	ELASTIC SILT
⊕ B-12	0.5 - 2	46	23	23	75	CL	LEAN CLAY with SAND
□ B-12	2 - 3.5	72	34	38	90	CH	FAT CLAY
⊕ B-12	13.5 - 15	NP	NP	NP	83	ML	SILT with SAND
⊕ B-12 BULK	0 - 5	28	18	10	31	SC	CLAYEY SAND with GRAVEL
★ B-13	0 - 1.5	35	21	14	85	CL	LEAN CLAY with SAND
⊗ B-13	2 - 3.5	52	24	28	88	CH	FAT CLAY
■ B-13	6 - 7.5	62	32	30	95	MH	ELASTIC SILT
◆ B-14	0 - 1.5	63	26	37	92	CH	FAT CLAY
◇ B-14	2 - 3.5	59	25	34	87	CH	FAT CLAY
× B-14	8 - 9.5	69	40	29	87	MH	ELASTIC SILT
⊕ B-15	2 - 3.5	59	27	32	89	CH	FAT CLAY

PROJECT: Columbia Avenue (S-48) Roadway Improvements

SITE: Columbia Avenue (S-48)  
Lexington County, South Carolina

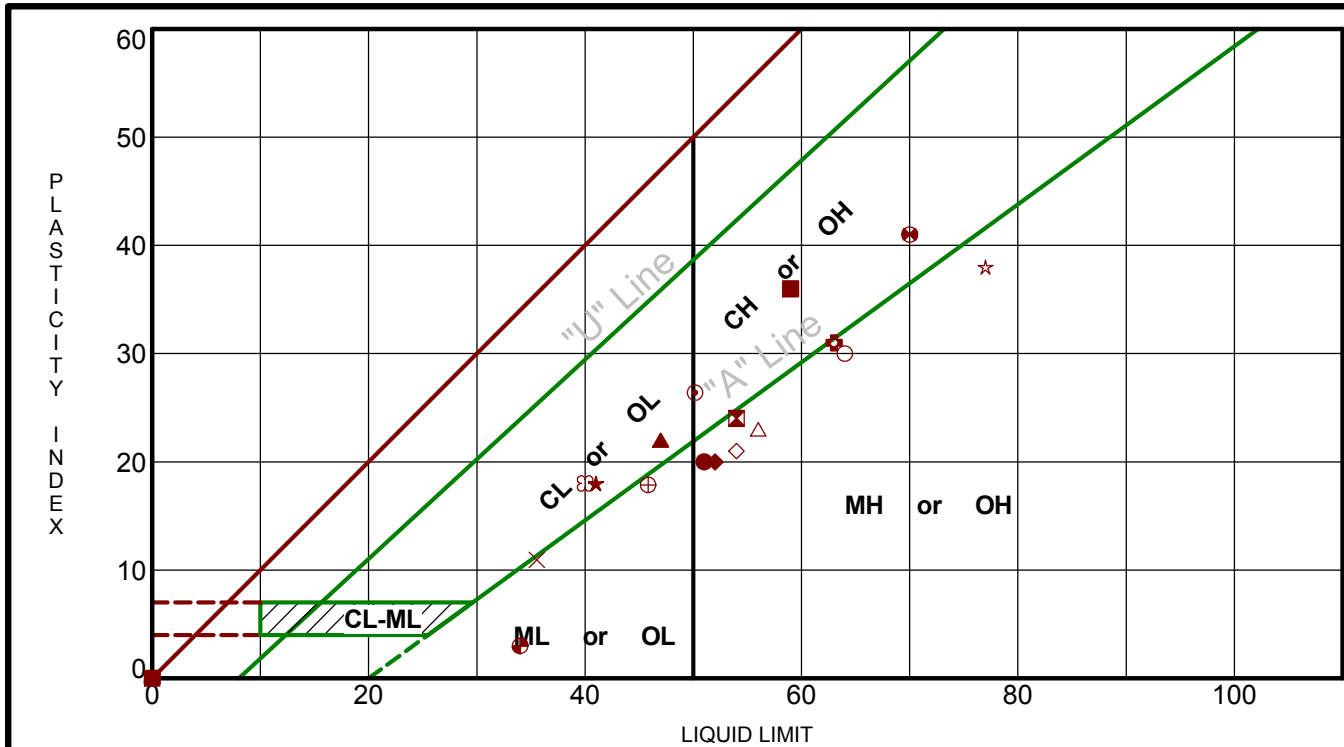
**Terracon**  
521 Clemson Rd  
Columbia, SC

PROJECT NUMBER: 73155095

CLIENT: Mead & Hunt, Inc.  
Lexington, South Carolina

# ATTERBERG LIMITS RESULTS

ASTM D4318



Boring ID	Depth	LL	PL	PI	Fines	USCS	Description
● B-16	2 - 3.5	51	31	20	89	MH	ELASTIC SILT
⊠ B-17	0 - 1.5	54	30	24	75	MH	ELASTIC SILT with SAND
▲ B-17	4 - 5.5	47	25	22			LEAN CLAY with SAND (CL)
★ B-18	2 - 3.5	41	23	18	82	CL	LEAN CLAY with SAND
⊙ B-19	0 - 1.5	50	24	26	84	CH	FAT CLAY with SAND
⊕ B-19	2 - 3.5	63	32	31	89	MH	ELASTIC SILT
○ B-20	0.5 - 2	64	34	30	97	MH	ELASTIC SILT
△ B-20	2 - 3.5	56	33	23	84	MH	ELASTIC SILT with SAND
⊗ B-20	8 - 9.5	NP	NP	NP	96	ML	SILT
⊕ B-20 BULK	0 - 5	46	28	18	77	ML	SILT with SAND
□ B-21	2 - 3.5	NP	NP	NP	75	ML	SILT with SAND
⊕ B-22	0 - 1.5	70	29	41	88	CH	FAT CLAY
⊕ B-22	6 - 7.5	34	31	3	76	ML	SILT with SAND
★ B-23	2 - 3.5	77	39	38	94	MH	ELASTIC SILT
⊗ B-24	0 - 1.5	40	22	18	91	CL	LEAN CLAY
■ B-24	2 - 3.5	59	23	36	83	CH	FAT CLAY with SAND
◆ B-25	2 - 3.5	52	32	20	67	MH	SANDY ELASTIC SILT
◇ B-26	0.5 - 2	54	33	21	85	MH	ELASTIC SILT
× B-26 BULK	0 - 5	36	25	11	67	ML	SANDY SILT
■ B-27	2 - 3.5	NP	NP	NP	93	ML	SILT

PROJECT: Columbia Avenue (S-48) Roadway Improvements

SITE: Columbia Avenue (S-48)  
Lexington County, South Carolina

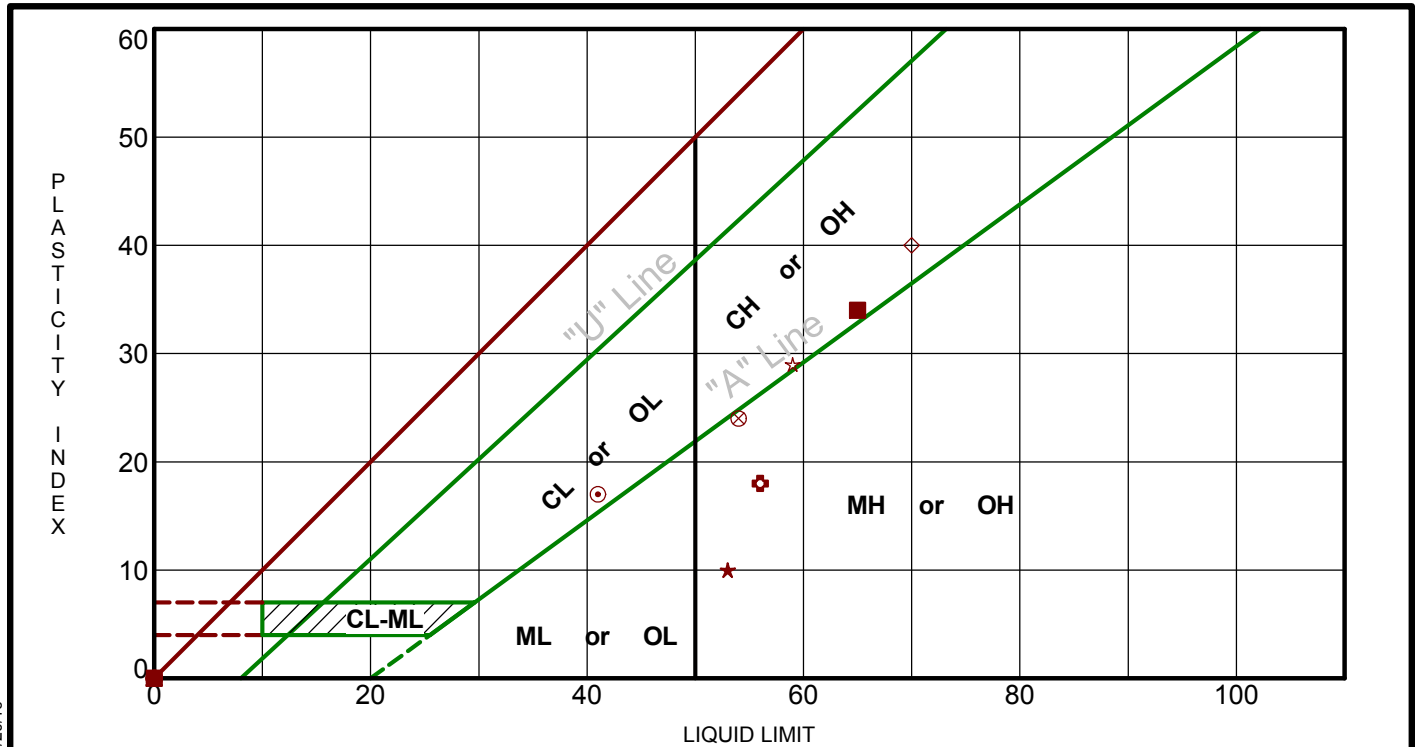
**Terracon**  
521 Clemson Rd  
Columbia, SC

PROJECT NUMBER: 73155095

CLIENT: Mead & Hunt, Inc.  
Lexington, South Carolina

# ATTERBERG LIMITS RESULTS

ASTM D4318



Boring ID	Depth	LL	PL	PI	Fines	USCS	Description
● B-28	2 - 3.5	NP	NP	NP	73	ML	SILT with SAND
⊠ B-29	2 - 3.5	NP	NP	NP	91	ML	SILT
▲ B-29	53.5 - 55	NP	NP	NP	78	ML	SILT with SAND
★ B-30	2 - 3.5	53	43	10	70	MH	ELASTIC SILT with SAND
⊙ B-30	18.5 - 20	41	24	17	49	SC	CLAYEY SAND
⊕ B-31	2 - 3.5	56	38	18	79	MH	ELASTIC SILT with SAND
○ B-32	13.5 - 15	NP	NP	NP	75	ML	SILT with SAND
△ B-32	48.5 - 50	NP	NP	NP	79	ML	SILT with SAND
⊗ B-33	2 - 3.5	54	30	24	83	MH	ELASTIC SILT with GRAVEL
⊕ B-33	23.5 - 25	NP	NP	NP	91	ML	SILT
□ B-34	2 - 3.5	NP	NP	NP	90	ML	SILT
⊕ B-34	23.5 - 25	NP	NP	NP	90	ML	SILT
⊕ B-35	2 - 3.5	NP	NP	NP	65	ML	SANDY SILT
★ B-35	6 - 7.5	59	30	29	95	CH	FAT CLAY
⊗ B-36	2 - 3.5	NP	NP	NP	50	ML	SANDY SILT
■ B-37	0 - 1.5	65	31	34	70	CH	FAT CLAY with SAND
◆ B-37	33.5 - 35	NP	NP	NP	86	ML	SILT
◇ B-38	0 - 1.5	70	30	40	80	CH	FAT CLAY with SAND

PROJECT: Columbia Avenue (S-48) Roadway Improvements

SITE: Columbia Avenue (S-48)  
Lexington County, South Carolina

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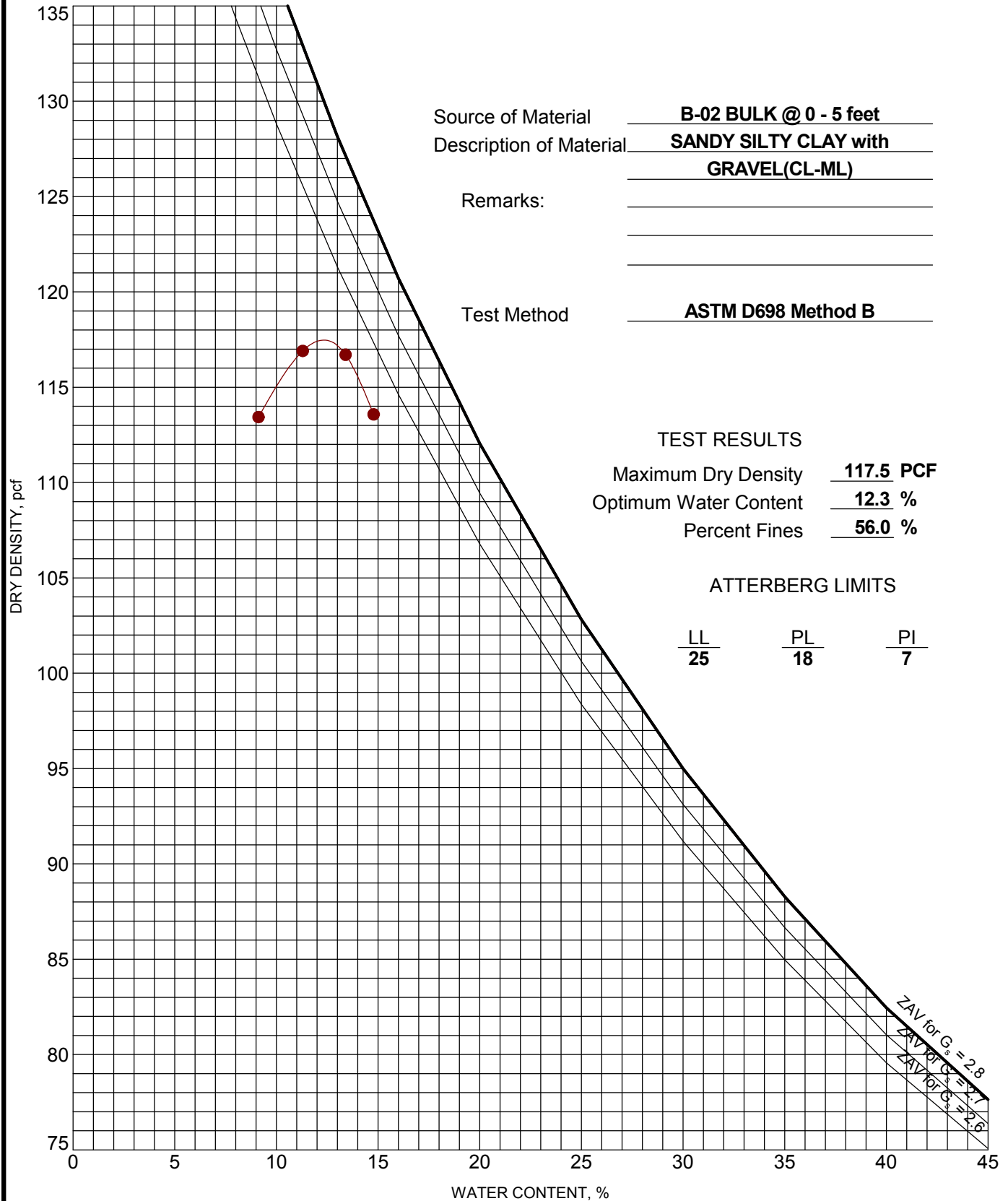
PROJECT NUMBER: 73155095

CLIENT: Mead & Hunt, Inc.  
Lexington, South Carolina

# MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 73155095 LAB TESTING.GPJ TERRACON2012.GDT 5/20/16



PROJECT: Columbia Avenue (S-48) Roadway Improvements

SITE: Columbia Avenue (S-48)  
Lexington County, South Carolina

**Terracon**  
521 Clemson Rd  
Columbia, SC

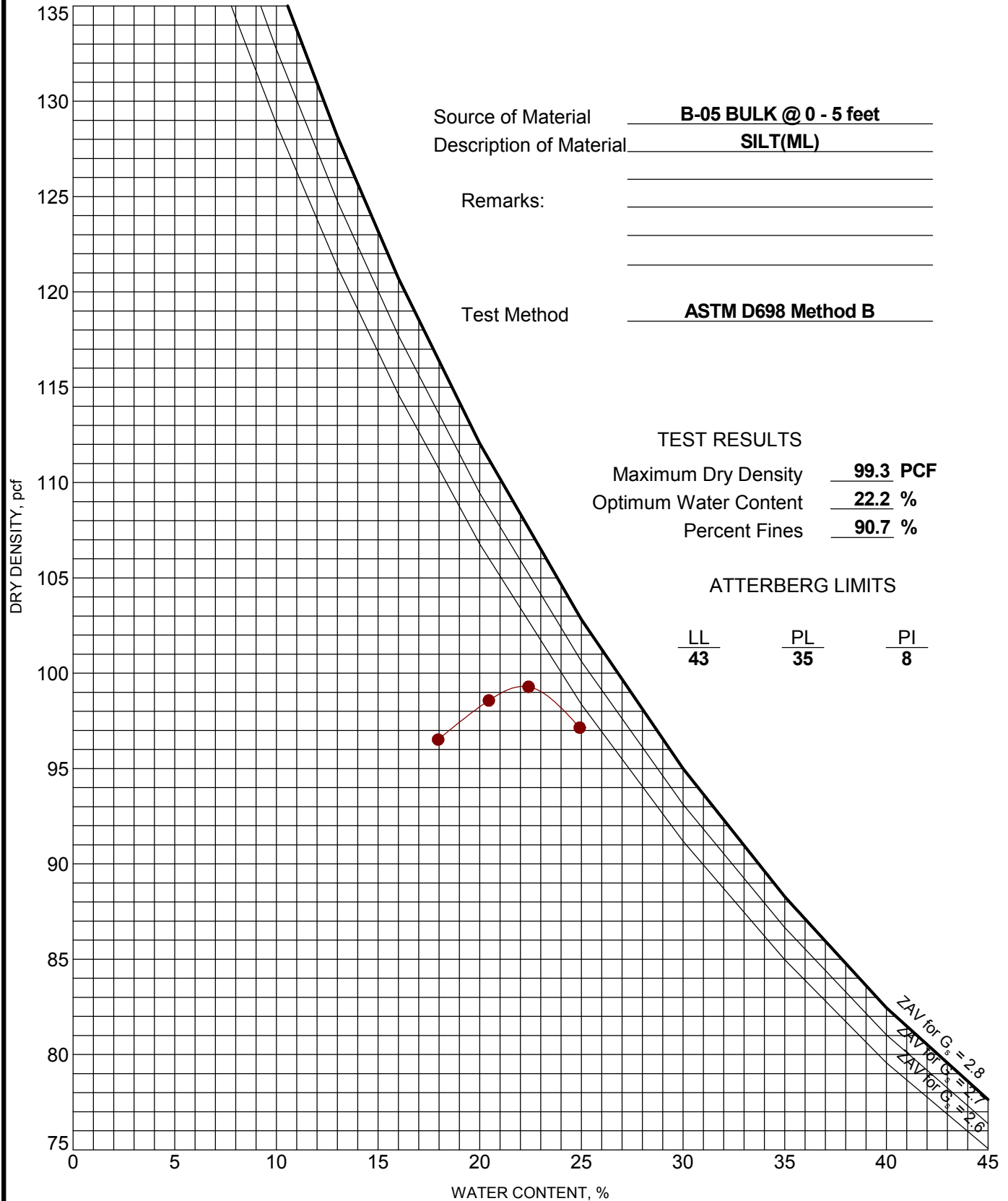
PROJECT NUMBER: 73155095

CLIENT: Mead & Hunt, Inc.  
Lexington, South Carolina

# MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

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PROJECT: Columbia Avenue (S-48) Roadway Improvements

SITE: Columbia Avenue (S-48)  
Lexington County, South Carolina

**Terracon**  
521 Clemson Rd  
Columbia, SC

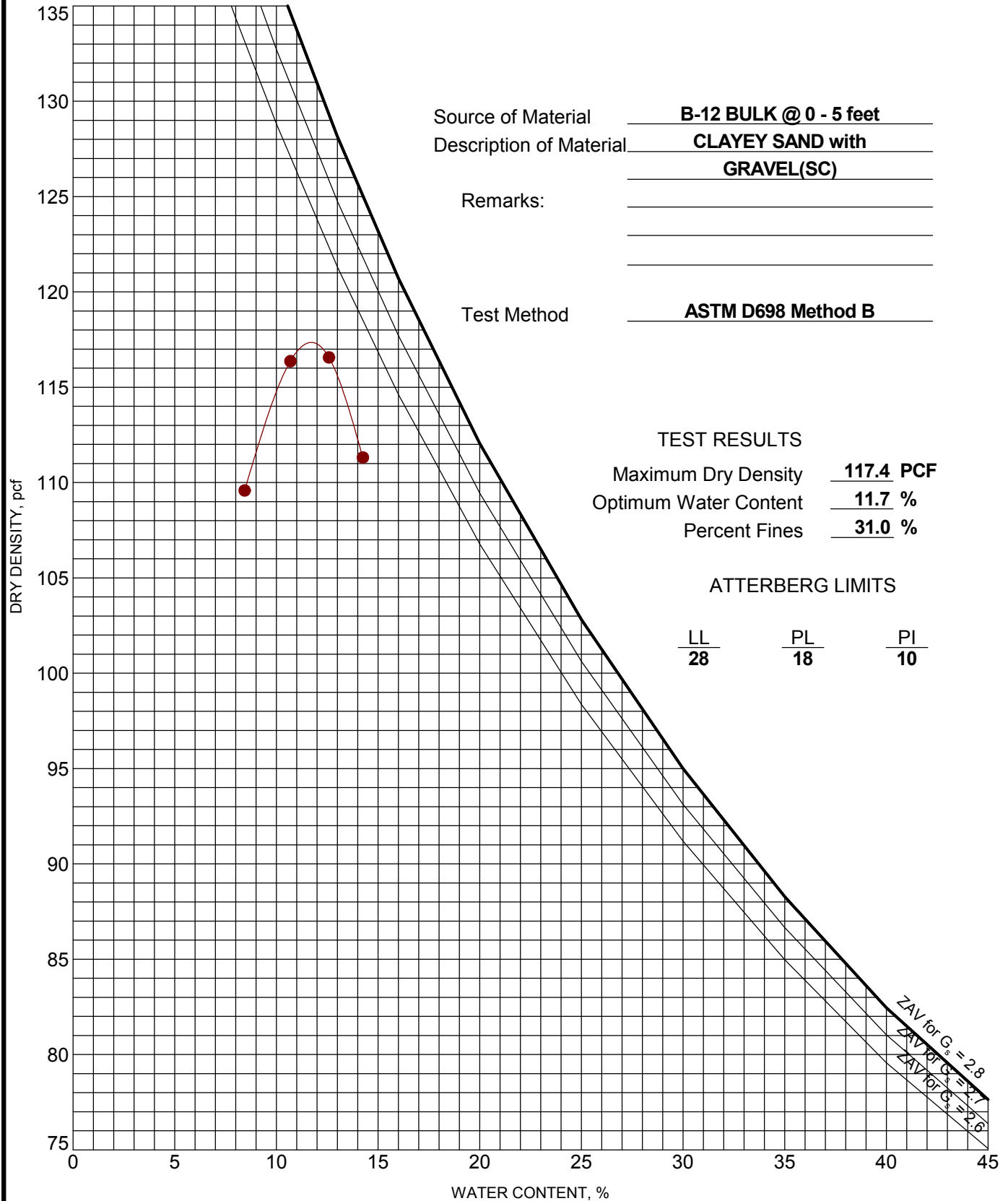
PROJECT NUMBER: 73155095

CLIENT: Mead & Hunt, Inc.  
Lexington, South Carolina

# MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

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PROJECT: Columbia Avenue (S-48) Roadway Improvements

SITE: Columbia Avenue (S-48)  
Lexington County, South Carolina

**Terracon**  
521 Clemson Rd  
Columbia, SC

PROJECT NUMBER: 73155095

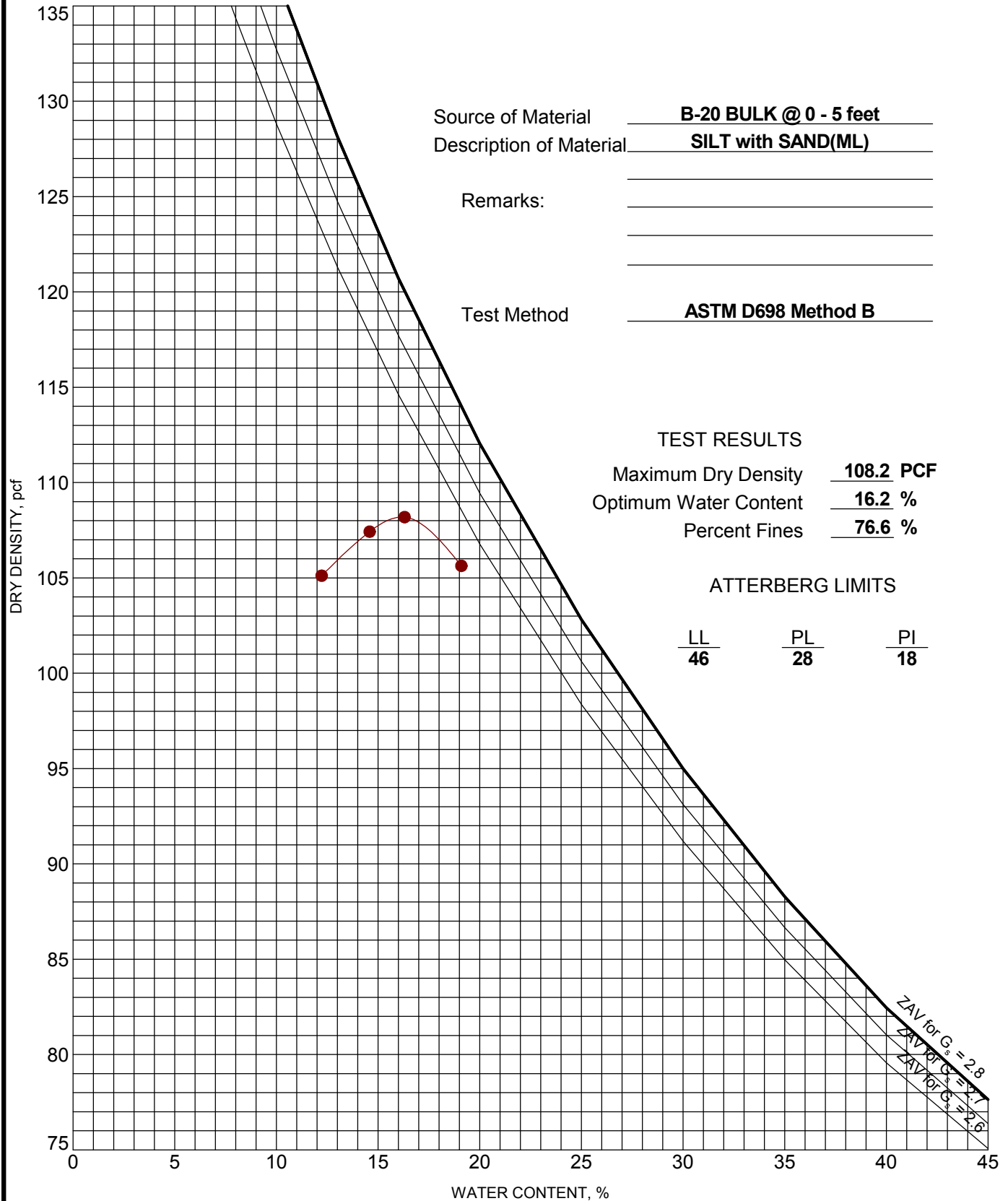
CLIENT: Mead & Hunt, Inc.  
Lexington, South Carolina



# MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 73155095 LAB TESTING.GPJ TERRACON2012.GDT 5/20/16



PROJECT: Columbia Avenue (S-48) Roadway Improvements

SITE: Columbia Avenue (S-48)  
Lexington County, South Carolina

**Terracon**  
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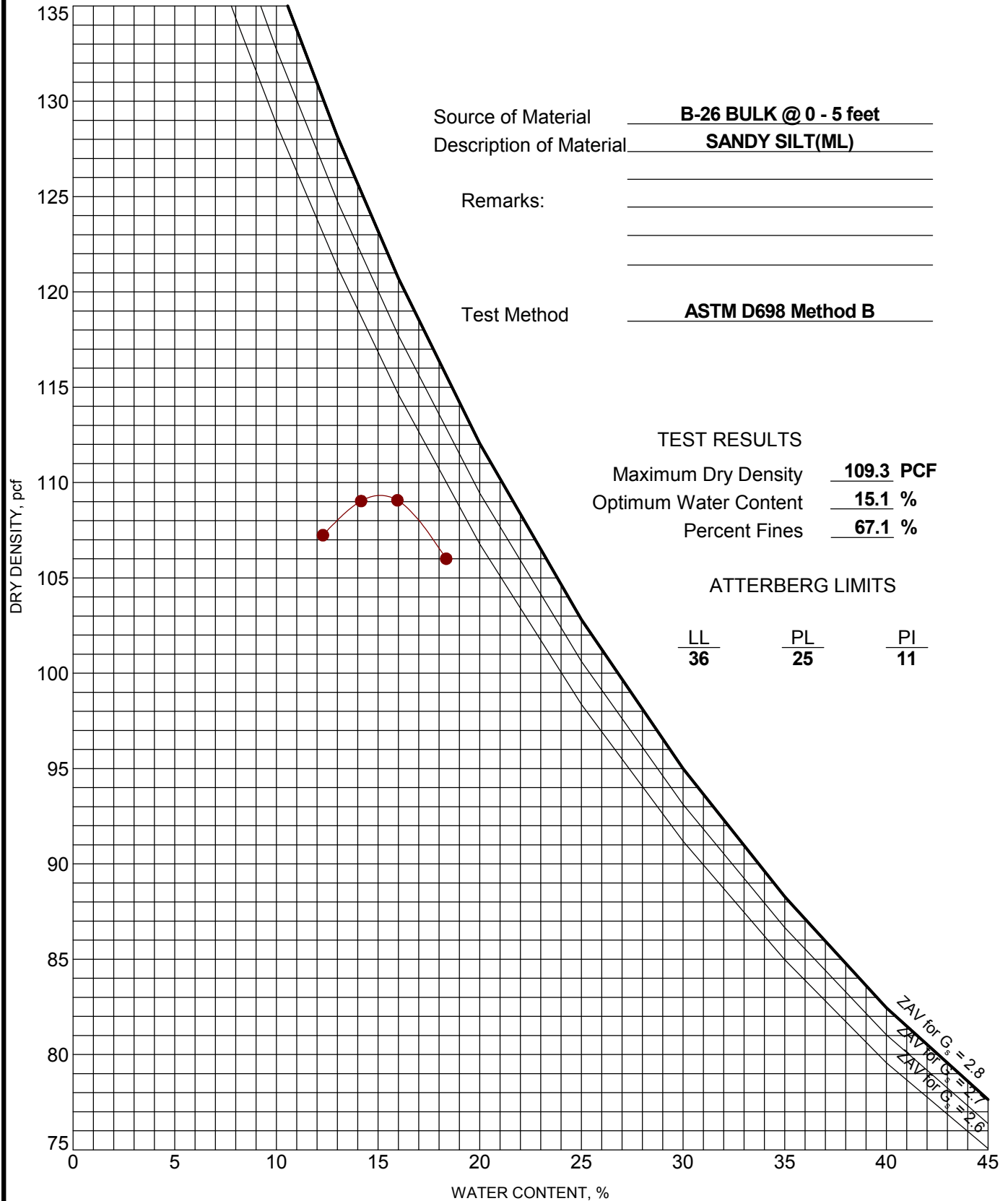
PROJECT NUMBER: 73155095

CLIENT: Mead & Hunt, Inc.  
Lexington, South Carolina

# MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

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PROJECT: Columbia Avenue (S-48) Roadway Improvements

SITE: Columbia Avenue (S-48)  
Lexington County, South Carolina

**Terracon**  
521 Clemson Rd  
Columbia, SC

PROJECT NUMBER: 73155095

CLIENT: Mead & Hunt, Inc.  
Lexington, South Carolina

# CHEMICAL LABORATORY TEST REPORT

**Project Number:** 73155095

**Service Date:** 04/14/16

**Report Date:** 04/15/16

**Task:**

# Terracon

750 Pilot Road, Suite F  
Las Vegas, Nevada 89119  
(702) 597-9393

---

## Client

Mead & Hunt, Inc.  
Lexington, South Carolina

## Project

Columbia Avenue (S-48) Roadway Improvements  
Lexington County, SC

**Sample Submitted By:** Terracon (73)

**Date Received:** 4/13/2016

**Lab No.:** 16-0217

## *Results of Resistivity Analysis*

<i>Sample Number</i>	Bulk
<i>Sample Location</i>	B-2
<i>Sample Depth (ft.)</i>	0.0-5.0
pH Analysis, AWWA 4500 H	7.87
Water Soluble Sulfate (SO <sub>4</sub> ), ASTM D 516, (mg/kg)	47
Chlorides, ASTM D 512, (mg/kg)	100
Resistivity, ASTM G-57, (ohm-cm)	4608
Organic Content by Loss on Ignition, ASTM D 2974 (percent, %)	4.8

---

**Analyzed By:**



Kurt D. Ergun  
Chemist

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. 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 or identical materials.

# CHEMICAL LABORATORY TEST REPORT

**Project Number:** 73155095

**Service Date:** 03/10/16

**Report Date:** 03/11/16

**Task:**

# Terracon

750 Pilot Road, Suite F  
Las Vegas, Nevada 89119  
(702) 597-9393

## Client

Mead & Hunt, Inc.  
Lexington, South Carolina

## Project

Columbia Avenue (S-48) Roadway Improvements  
Lexington County, SC

**Sample Submitted By:** Terracon (73)

**Date Received:** 3/4/2016

**Lab No.:** 16-0207

## *Results of Resistivity Analysis*

	<i>Sample Number</i>	SS-2	SS-1	SS-1	SS-1
	<i>Sample Location</i>	B-30	B-32	B-33	B-34
	<i>Sample Depth (ft.)</i>	2.0-4.0	0.0-2.0	0.0-2.0	0.0-2.0
pH Analysis, AWWA 4500 H		7.55	5.97	6.29	5.87
Water Soluble Sulfate (SO <sub>4</sub> ), ASTM D 516, (mg/kg)		11	41	25	28
Chlorides, ASTM D 512, (mg/kg)		12	25	12	12
Resistivity, ASTM G-57, (ohm-cm)		16102	7760	22310	22213
Organic Content by Loss on Ignition, ASTM D 2974 (percent, %)				4.7	
Moisture Content, ASTM D 2216 (percent, %)		11.2	12.3	11.9	11.1

**Analyzed By:**



Kurt D. Ergun  
Chemist

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# CHEMICAL LABORATORY TEST REPORT

**Project Number:** 73155095

**Service Date:** 03/14/16

**Report Date:** 03/15/16

**Task:**

# Terracon

750 Pilot Road, Suite F  
Las Vegas, Nevada 89119  
(702) 597-9393

## Client

Mead & Hunt, Inc.  
Lexington, South Carolina

## Project

Columbia Avenue (S-48) Roadway Improvements  
Lexington County, SC

**Sample Submitted By:** Terracon (73)

**Date Received:** 3/4/2016

**Lab No.:** 16-0217

## *Results of Resistivity Analysis*

	<i>Sample Number</i>	Bulk	Bulk	Bulk	Bulk
	<i>Sample Location</i>	B-5	B-12	B-20	B-26
	<i>Sample Depth (ft.)</i>	0.0-5.0	0.0-5.0	0.0-5.0	0.0-5.0
pH Analysis, AWWA 4500 H		7.48	6.70	7.61	6.50
Water Soluble Sulfate (SO <sub>4</sub> ), ASTM D 516, (mg/kg)		25	116	25	105
Chlorides, ASTM D 512, (mg/kg)		12	45	12	38
Resistivity, ASTM G-57, (ohm-cm)		22504	2037	23280	2377
Organic Content by Loss on Ignition, ASTM D 2974 (percent, %)		4.7	5.6	4.8	4.4

**Analyzed By:**

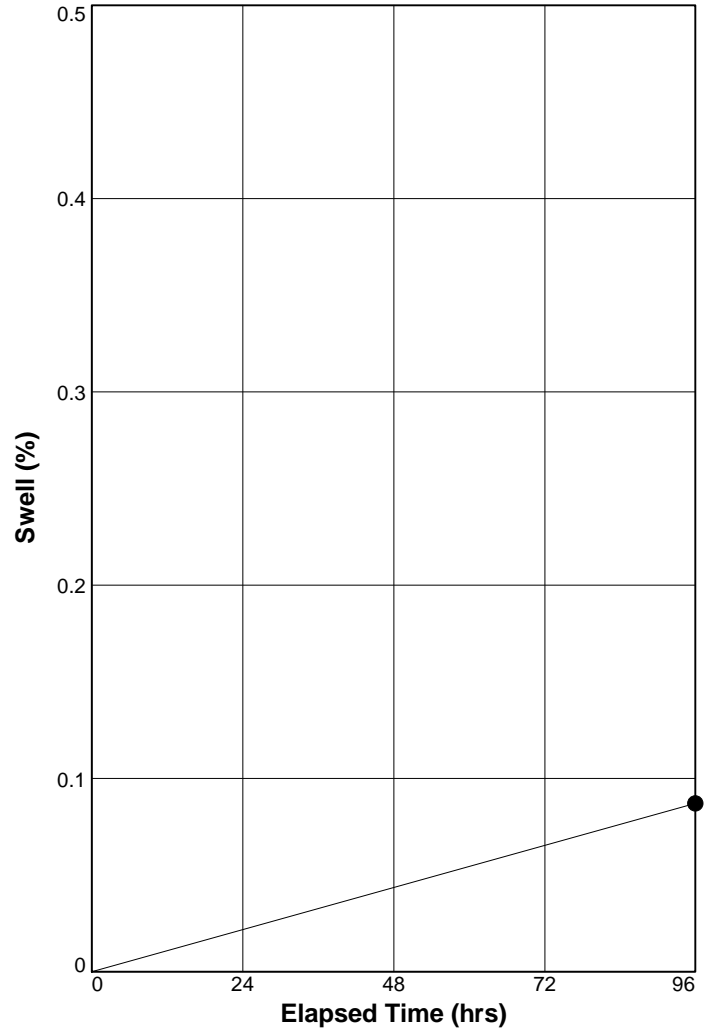
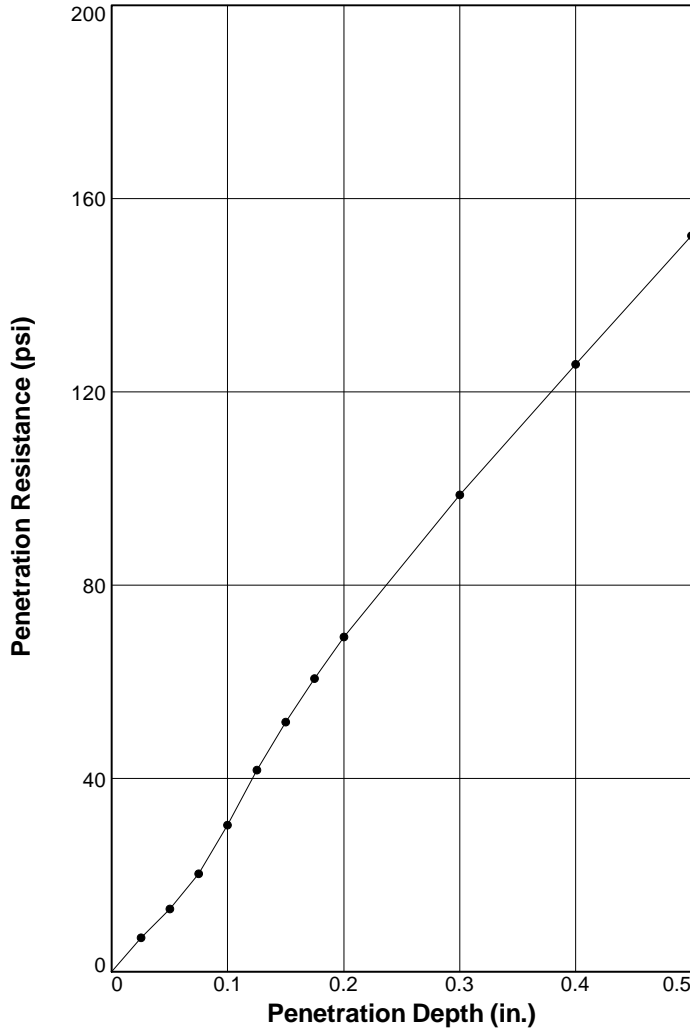


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Chemist

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# BEARING RATIO TEST REPORT

## ASTM D 1883-07



	Molded			Soaked			CBR (%)		Linearity	Surcharge	Max.
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.	Correction (in.)	(lbs.)	Swell (%)
1 ○	111.6	95	12.3	111.5	94.9	14.3	4.1	5.1	0.024	10	0.1
2 △											
3 □											

Material Description							USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Sandy Silty Clay with Gravel							CL-ML	117.5	12.3	25	7

**Project No:** 73155095

**Project:** S-48 (Columbia Avenue) Corridor Improvements

**Source of Sample:** B-2 Bulk      **Depth:** 0.0-5.0 ft

**Sample Number:** 1

**Date:** 3/17/16

**Test Description/Remarks:**

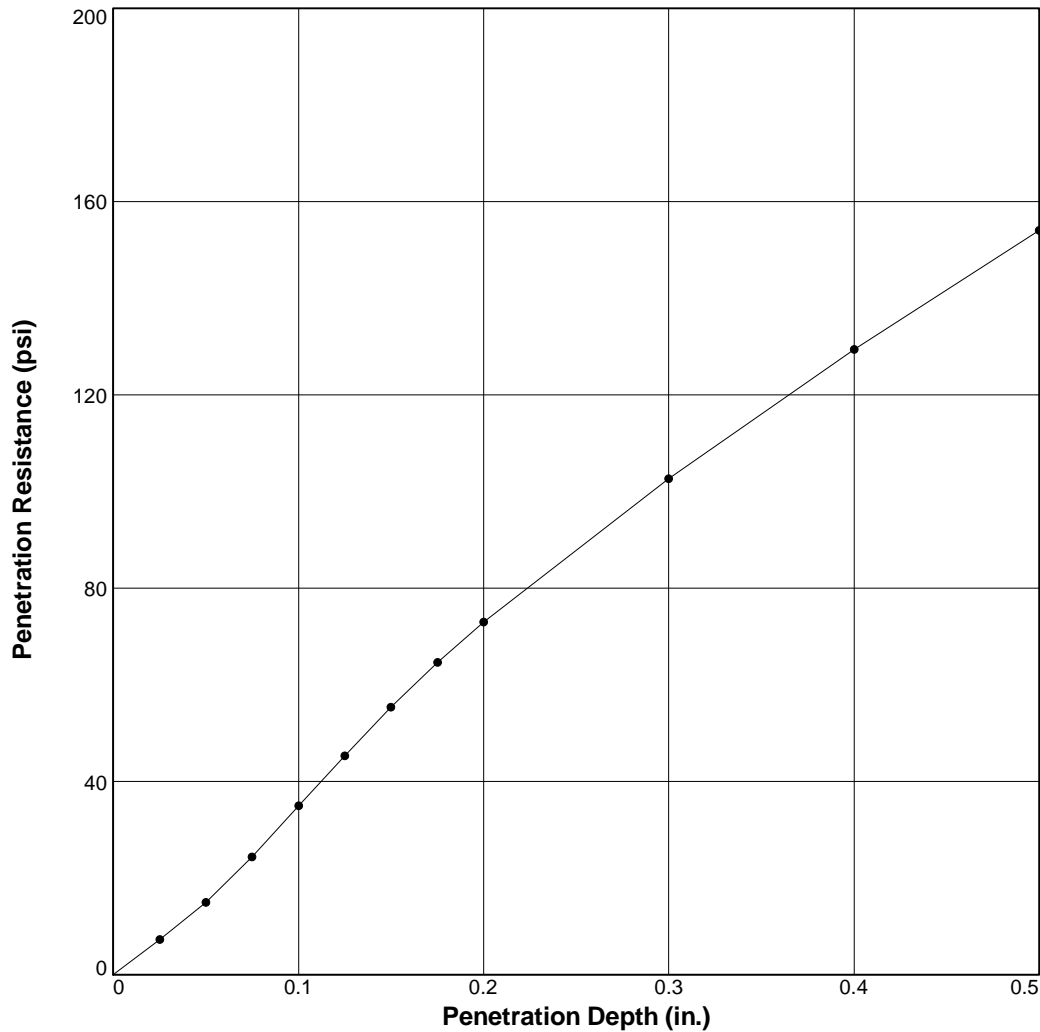
Compaction based on D698 effort.

BEARING RATIO TEST REPORT

**Terracon Consultants, Inc.**

# BEARING RATIO TEST REPORT

## ASTM D 1883-07



	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	94.3	95	22.2	94.3	95	27.7	4.1	5.1	0.014	10	0
2 △											
3 □											
Material Description							USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Silt							ML	99.3	22.2	43	8

**Project No:** 73155095  
**Project:** S-48 (Columbia Avenue) Corridor Improvements  
**Source of Sample:** B-5 Bulk      **Depth:** 0.0-5.0 ft  
**Sample Number:** 1  
**Date:** 3/17/16

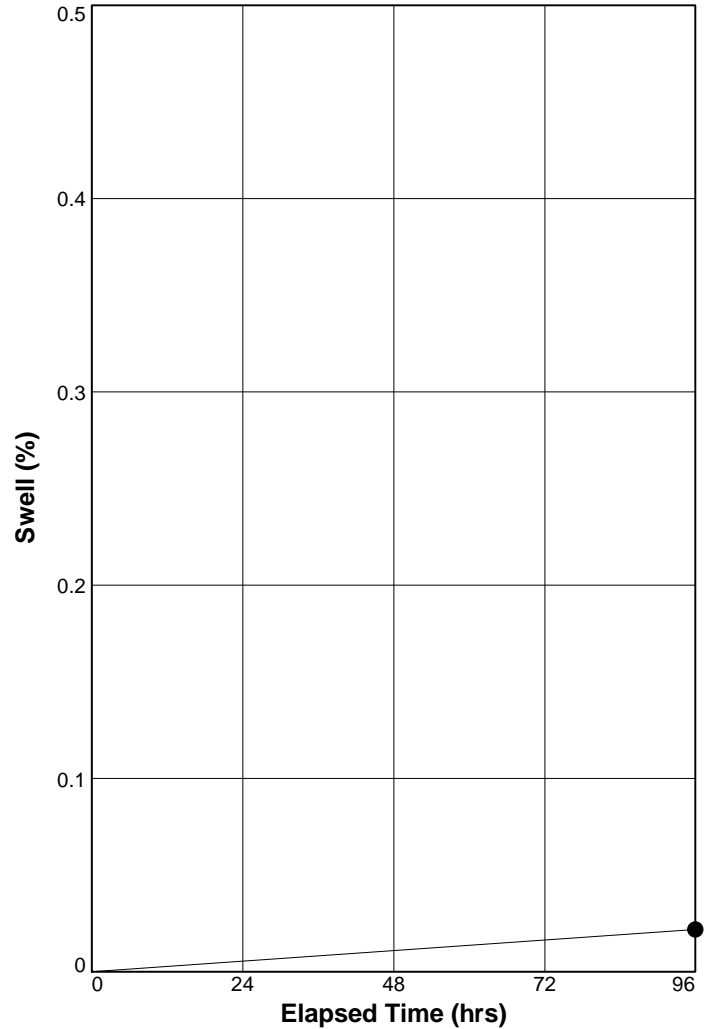
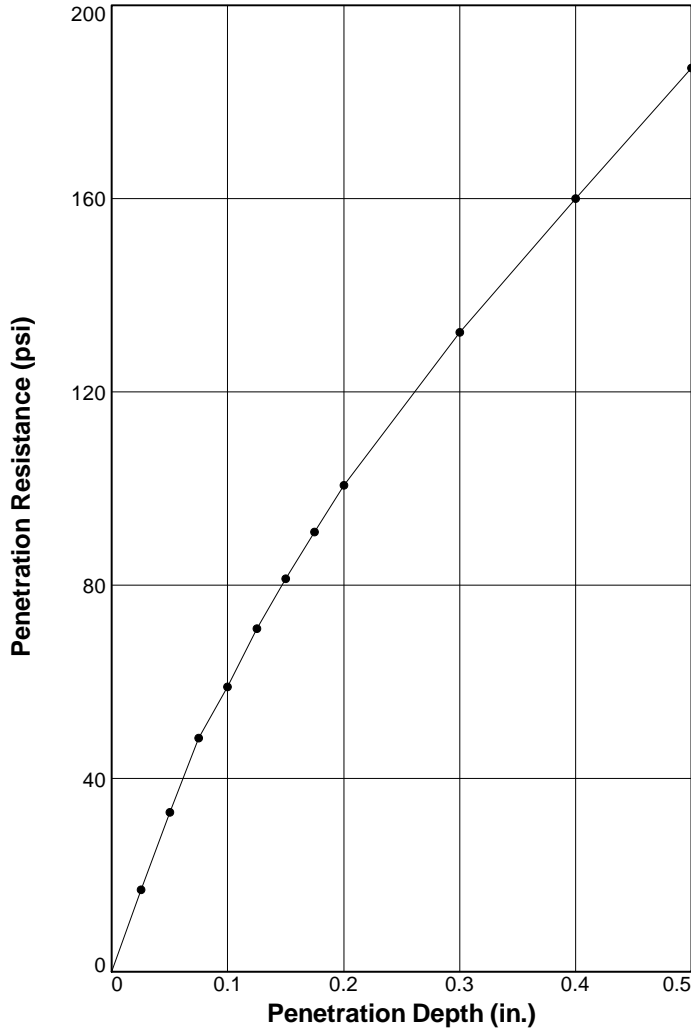
### Test Description/Remarks:

Compaction based on D698 effort.

BEARING RATIO TEST REPORT  
**Terracon Consultants, Inc.**

# BEARING RATIO TEST REPORT

## ASTM D 1883-07



	Molded			Soaked			CBR (%)		Linearity	Surcharge	Max.
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.	Correction (in.)	(lbs.)	Swell (%)
1 ○	111.5	95	11.7	111.5	95	13.4	5.9	6.7	0.000	10	0
2 △											
3 □											
Material Description							USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Clayey Sand with Gravel							SC	117.4	11.7	28	10

**Project No:** 73155095  
**Project:** S-48 (Columbia Avenue) Corridor Improvements  
**Source of Sample:** B-12 Bulk      **Depth:** 0.0-5.0 ft  
**Sample Number:** 1  
**Date:** 3/17/16

### Test Description/Remarks:

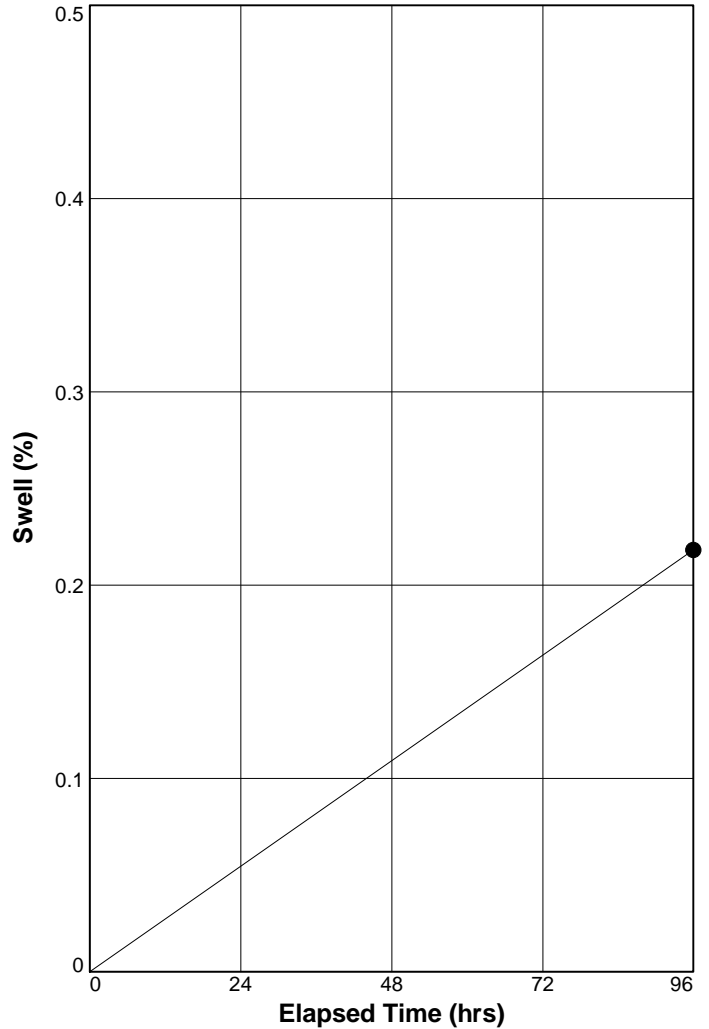
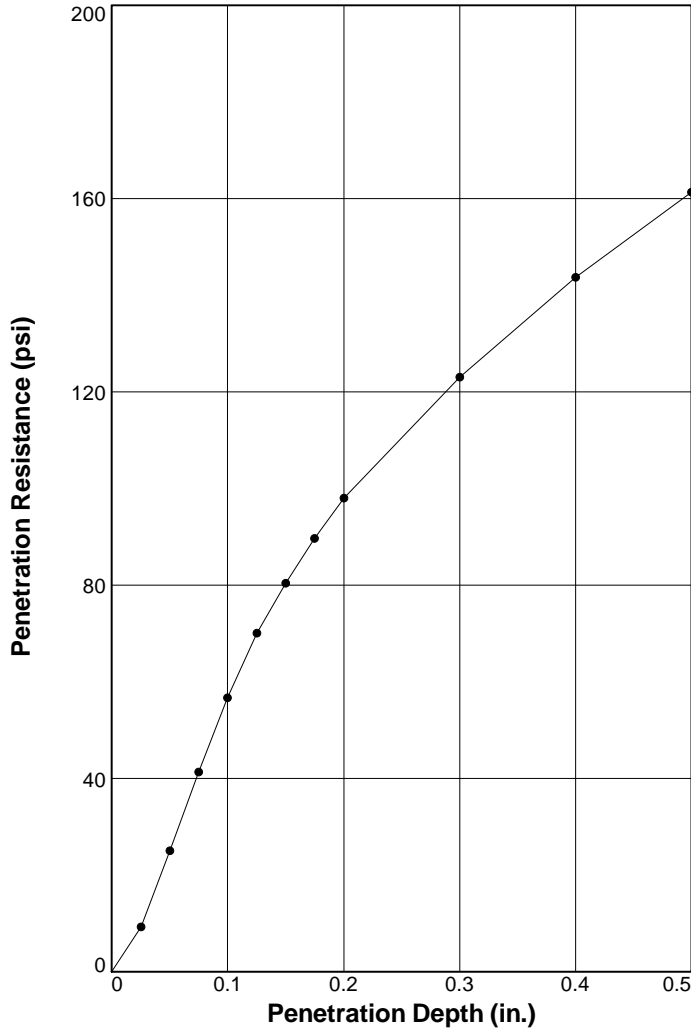
Compaction based on D698 effort.

BEARING RATIO TEST REPORT  
**Terracon Consultants, Inc.**



# BEARING RATIO TEST REPORT

## ASTM D 1883-07



	Molded			Soaked			CBR (%)		Linearity	Surcharge	Max.
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.	Correction (in.)	(lbs.)	Swell (%)
1 ○	102.8	95	16.2	102.6	94.8	21.7	6.2	6.7	0.010	10	0.2
2 △											
3 □											
Material Description							USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Silt with Sand							ML	108.2	16.2	46	18

**Project No:** 73155095

**Project:** S-48 (Columbia Avenue) Corridor Improvements

**Source of Sample:** B-20 Bulk      **Depth:** 0.0-5.0 ft

**Sample Number:** 1

**Date:** 3/17/16

**Test Description/Remarks:**

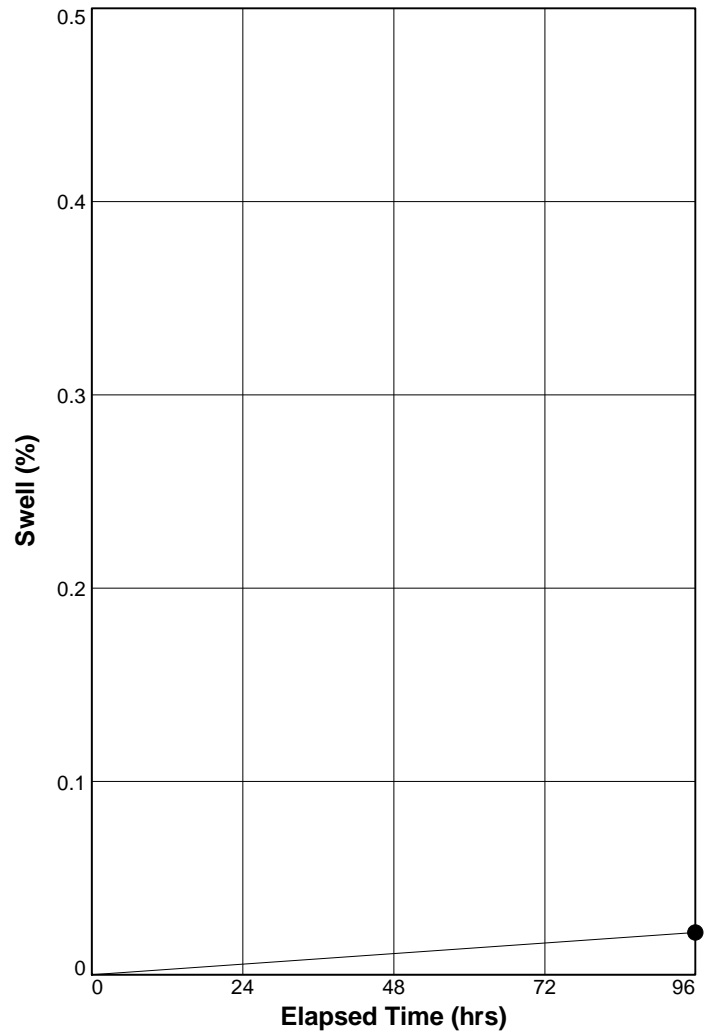
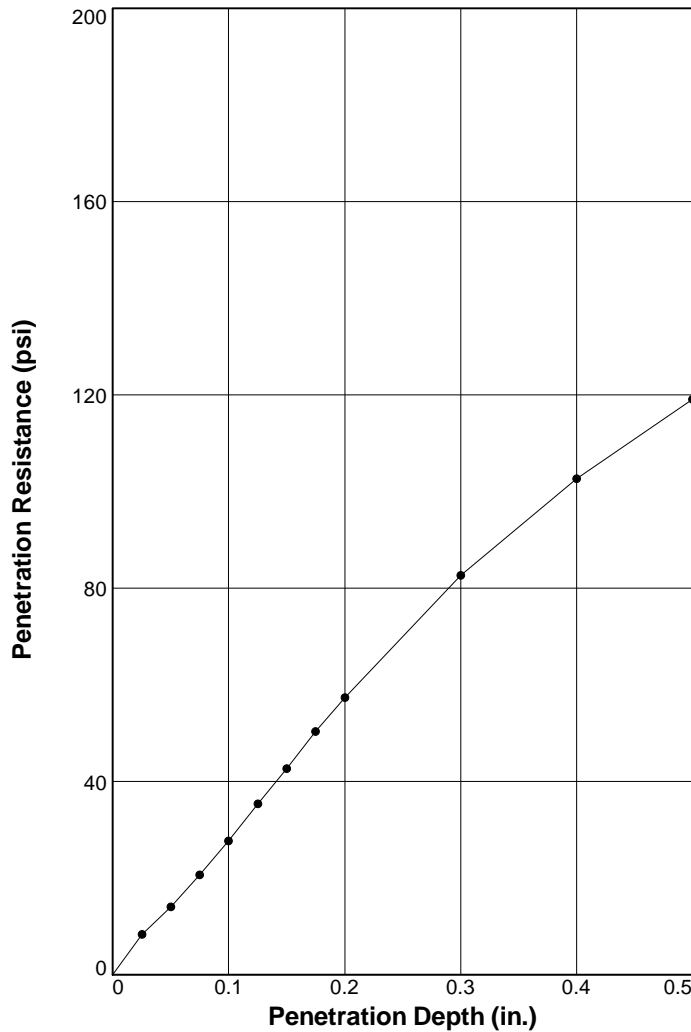
Compaction based on D698 effort.

BEARING RATIO TEST REPORT

**Terracon Consultants, Inc.**

# BEARING RATIO TEST REPORT

## ASTM D 1883-07



	Molded			Soaked			CBR (%)		Linearity	Surcharge	Max.
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.	Correction (in.)	(lbs.)	Swell (%)
1 ○	103.8	95	15.1	103.8	95	21.5	3.0	4.0	0.008	10	0
2 △											
3 □											
Material Description							USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Sandy Silt							ML	109.3	15.1	36	11

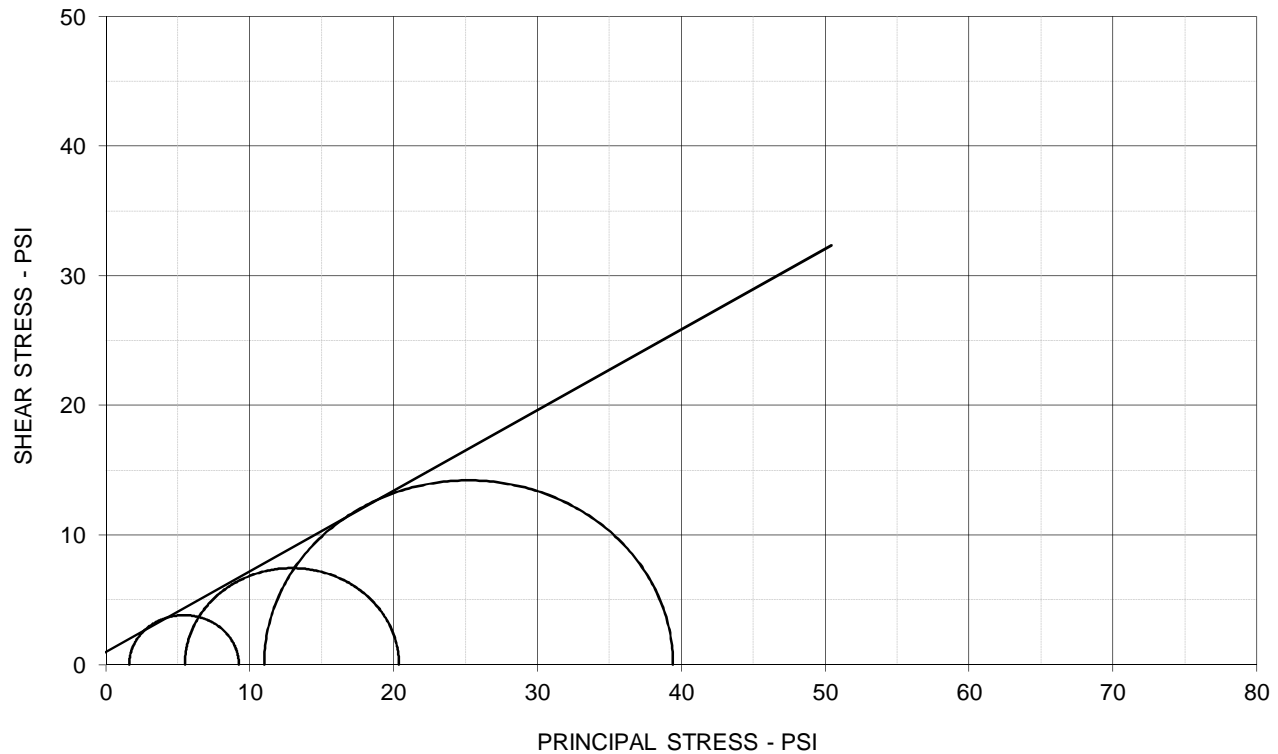
**Project No:** 73155095  
**Project:** S-48 (Columbia Avenue) Corridor Improvements  
**Source of Sample:** B-26 Bulk      **Depth:** 0.0-5.0 ft  
**Sample Number:** 1  
**Date:** 3/17/16

### Test Description/Remarks:

Compaction based on D698 effort.

BEARING RATIO TEST REPORT  
**Terracon Consultants, Inc.**

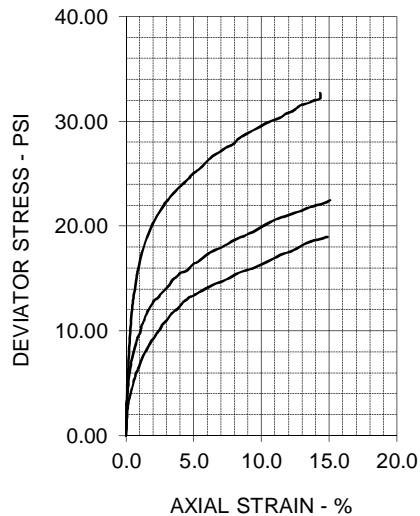
# TRIAXIAL SHEAR TEST REPORT



## EFFECTIVE STRESS PARAMETERS

$\phi' = 31.9 \text{ deg}$

$c' = 1.0 \text{ psi}$



### SPECIMEN NO.

1 2 3 4

#### INITIAL

Moisture Content - %	16.2	16.2	16.2
Dry Density - pcf	102.8	102.8	102.8
Diameter - inches	2.80	2.80	2.80
Height - inches	5.60	5.60	5.60

#### AT TEST

Final Moisture - %	23.3	23.1	23.0
Dry Density - pcf	102.9	103.4	103.6
Calculated Diameter (in.)	2.81	2.80	2.79
Height - inches	5.64	5.59	5.58
Effect. Cell Pressure - psi	3.5	6.9	13.9
Failure Stress - psi	7.62	14.88	28.42
Total Pore Pressure - psi	51.9	51.4	52.9
Strain Rate - inches/min.	0.00060	0.00060	0.00060
Failure Strain - %	1.3	3.5	8.4
$S_1'$ Failure - psi	9.25	20.38	39.43
$S_3'$ Failure - psi	1.63	5.50	11.01

## TEST DESCRIPTION

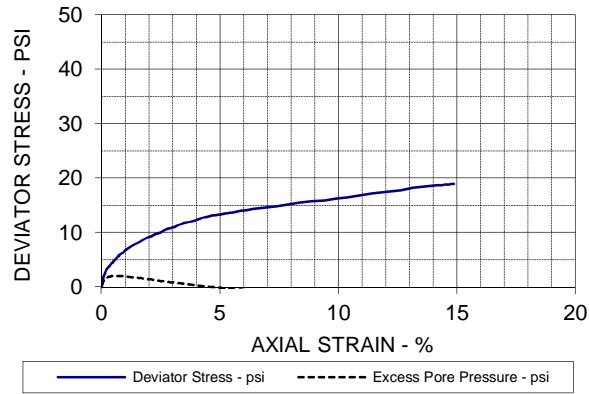
TYPE OF TEST & NO: CU with Pore Pressure  
 SAMPLE TYPE: Remolded  
 DESCRIPTION: Silt with Sand (ML)  
 SAMPLE LOCATION: B-20 Bulk, 0.0-5.0 ft  
 ASSUMED SPECIFIC GRAVITY: 2.75  
 LL: 46 PL: 28 PI: 18 Percent -200: 77  
 REMARKS: Specimens remolded to 95% at optimum.

## PROJECT INFORMATION

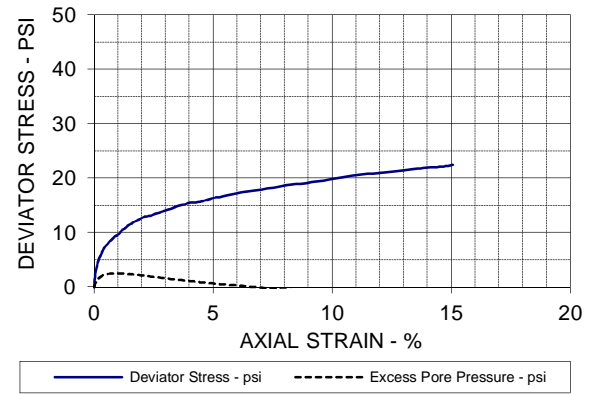
PROJECT: S-48 (Columbia Avenue) Corridor Improvements  
 LOCATION: Lexington County, SC  
 PROJECT NO: 73155095  
 CLIENT: Mead & Hunt  
 DATE: 3/17/16

**TERRACON**

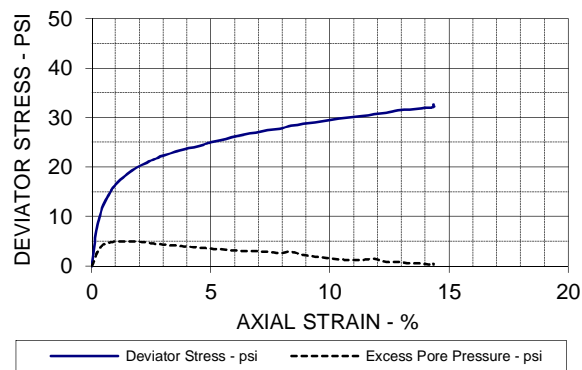
SPECIMEN NO. 1



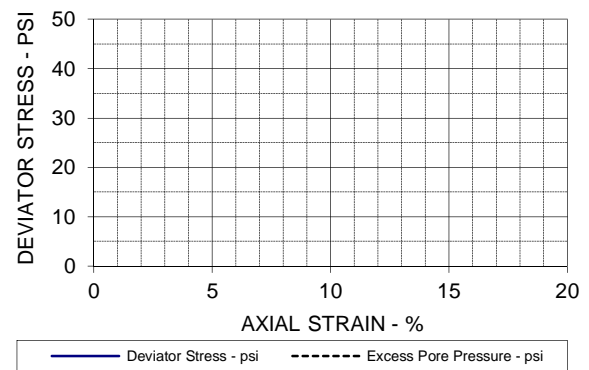
SPECIMEN NO. 2



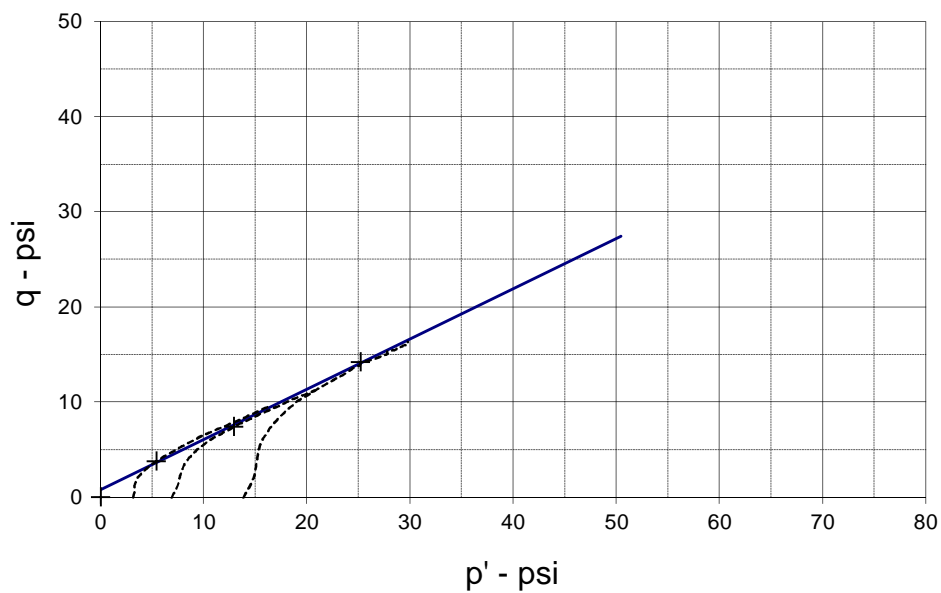
SPECIMEN NO. 3



SPECIMEN NO. 4

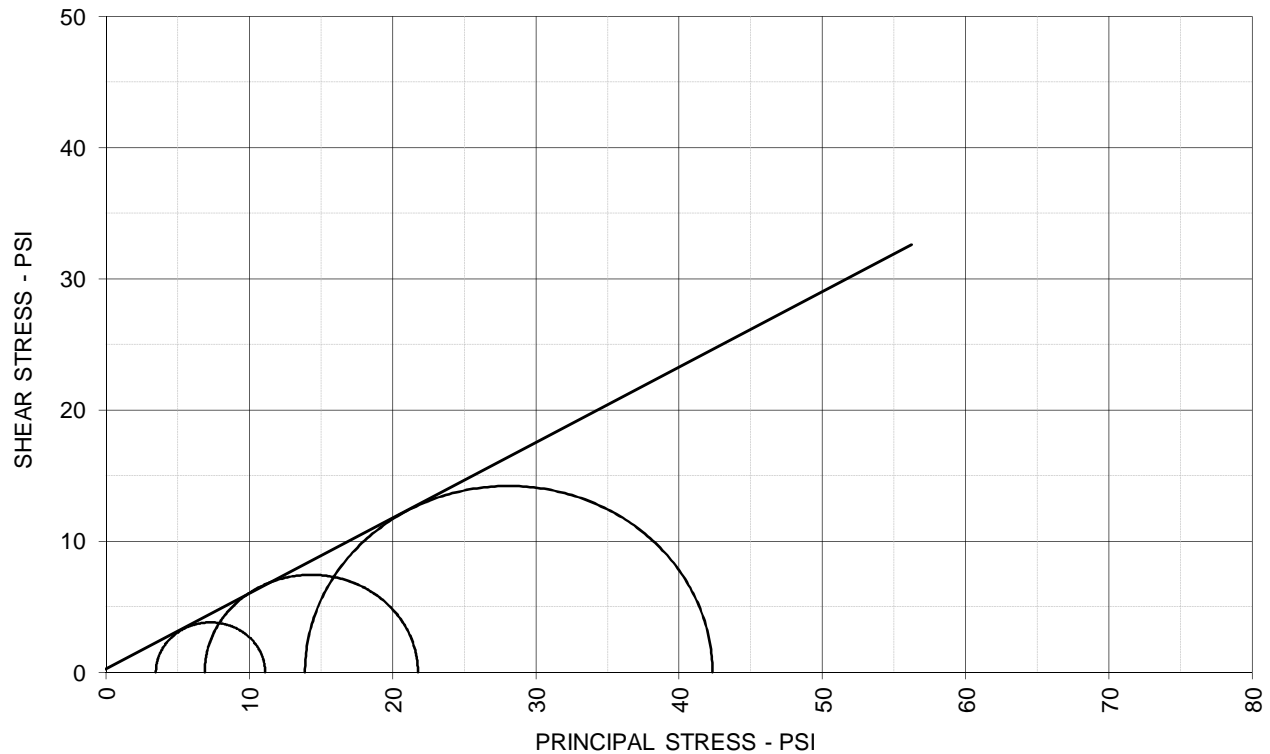


p - q DIAGRAM



EFFECTIVE STRESS PARAMETERS	$R^2 = 1.00$	a (deg) = 27.8	a (psi) = 0.8
PROJECT: S-48 (Columbia Avenue) Corridor Improvements	TYPE OF TEST & NO: CU with Pore Pressure		
PROJECT NO: 73155095	<b>TERRACON</b>		
DESCRIPTION: Silt with Sand (ML)			

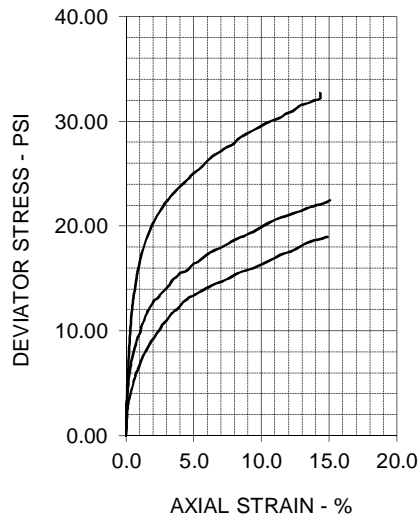
# TRIAXIAL SHEAR TEST REPORT



## TOTAL STRESS PARAMETERS

$\phi = 29.9 \text{ deg}$

$c = 0.2 \text{ psi}$



### SPECIMEN NO.

1

2

3

4

### INITIAL

Moisture Content - %

16.2

16.2

16.2

Dry Density - pcf

102.8

102.8

102.8

Diameter - inches

2.80

2.80

2.80

Height - inches

5.60

5.60

5.60

### AT TEST

Final Moisture - %

23.3

23.1

23.0

Dry Density - pcf

102.9

103.4

103.6

Calculated Diameter (in.)

2.81

2.80

2.79

Height - inches

5.64

5.59

5.58

Effect. Cell Pressure - psi

3.5

6.9

13.9

Failure Stress - psi

7.62

14.88

28.42

Total Pore Pressure - psi

51.9

51.4

52.9

Strain Rate - inches/min.

0.00060

0.00060

0.00060

Failure Strain - %

1.3

3.5

8.4

$S_1$  Failure - psi

11.12

21.78

42.32

$S_3$  Failure - psi

3.50

6.90

13.90

## TEST DESCRIPTION

TYPE OF TEST & NO: CU with Pore Pressure

SAMPLE TYPE: Remolded

DESCRIPTION: Silt with Sand (ML)

SAMPLE LOCATION: B-20 Bulk, 0.0-5.0 ft

ASSUMED SPECIFIC GRAVITY: 2.75

LL: 46 PL: 28 PI: 18 Percent -200: 77

REMARKS: Specimens remolded to 95% at optimum.

## PROJECT INFORMATION

PROJECT: S-48 (Columbia Avenue) Corridor Improvements

LOCATION: Lexington County, SC

PROJECT NO: 73155095

CLIENT: Mead & Hunt

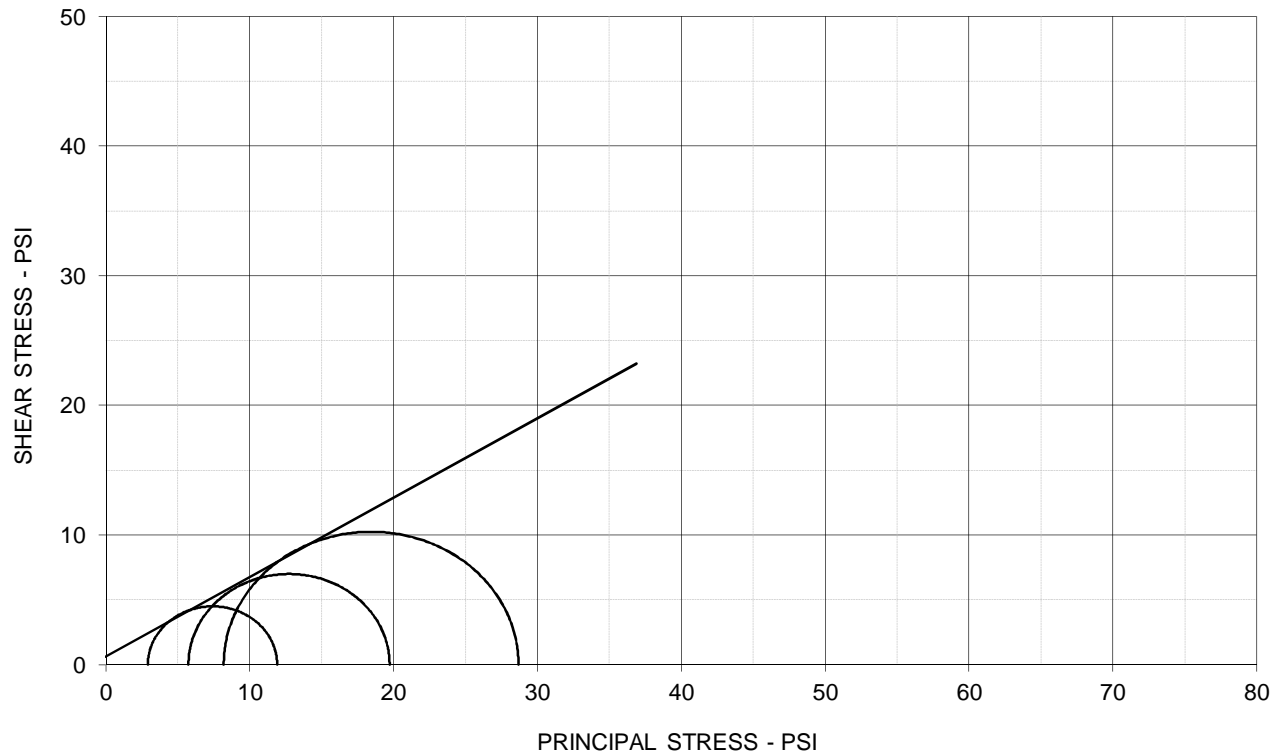
DATE: 3/17/16

**TERRACON**

# TRIAXIAL SHEAR TEST REPORT



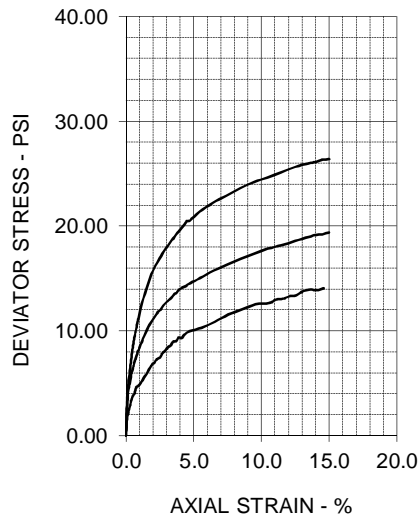
P.O. Box 5010, 51 Lost Mound Drive, Suite 135 Chattanooga, TN 37406



## EFFECTIVE STRESS PARAMETERS

$\phi' = 31.5 \text{ deg}$

$c' = 0.6 \text{ psi}$



### SPECIMEN NO.

1 2 3 4

#### INITIAL

Moisture Content - %	15.1	15.1	15.1
Dry Density - pcf	102.8	102.8	102.8
Diameter - inches	2.80	2.80	2.80
Height - inches	5.60	5.60	5.60

#### AT TEST

Final Moisture - %	24.0	23.6	22.4
Dry Density - pcf	103.0	103.8	105.7
Calculated Diameter (in.)	2.82	2.80	2.80
Height - inches	5.65	5.60	5.59
Effect. Cell Pressure - psi	3.5	6.9	13.9
Failure Stress - psi	8.98	13.98	20.49
Total Pore Pressure - psi	50.6	51.2	55.7
Strain Rate - inches/min.	0.00060	0.00060	0.00060
Failure Strain - %	3.5	4.0	4.5
$S_1'$ Failure - psi	11.91	19.73	28.69
$S_3'$ Failure - psi	2.93	5.75	8.20

## TEST DESCRIPTION

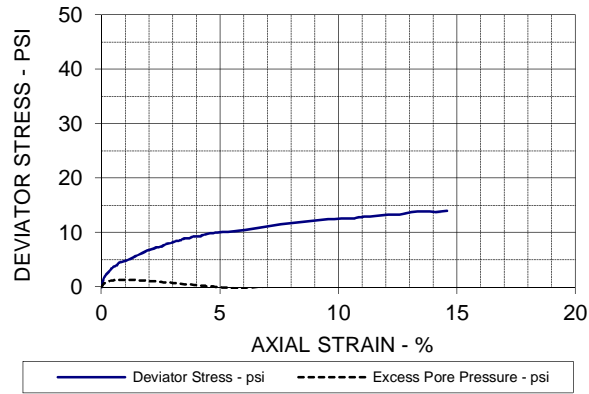
TYPE OF TEST & NO: CU with Pore Pressure  
 SAMPLE TYPE: Remolded  
 DESCRIPTION: Sandy Silt (ML)  
 SAMPLE LOCATION: B-26 Bulk, 0.0-5.0 ft  
 ASSUMED SPECIFIC GRAVITY: 2.75  
 LL: 36 PL: 25 PI: 11 Percent -200: 67  
 REMARKS: Specimens remolded to 95% at optimum.

## PROJECT INFORMATION

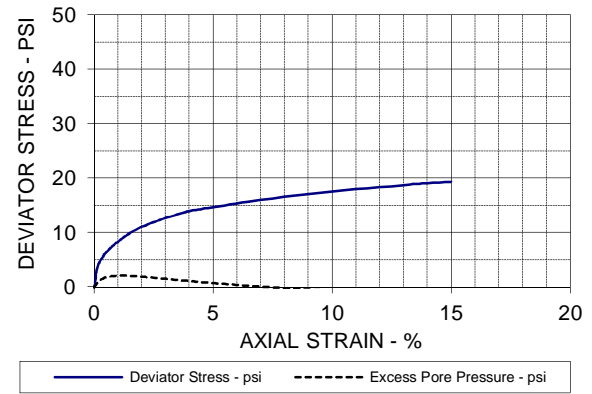
PROJECT: S-48 (Columbia Avenue) Corridor Improvements  
 LOCATION: Lexington County, SC  
 PROJECT NO: 73155095  
 CLIENT: Mead & Hunt  
 DATE: 3/17/16

**TERRACON**

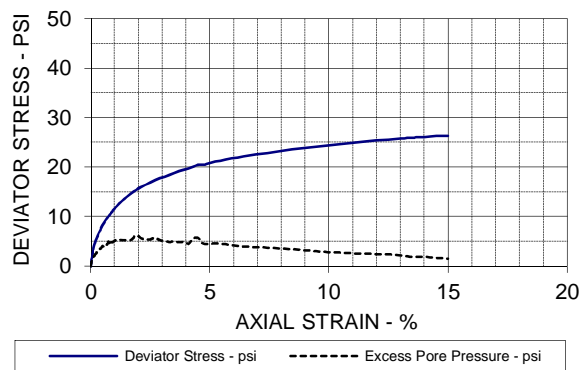
SPECIMEN NO. 1



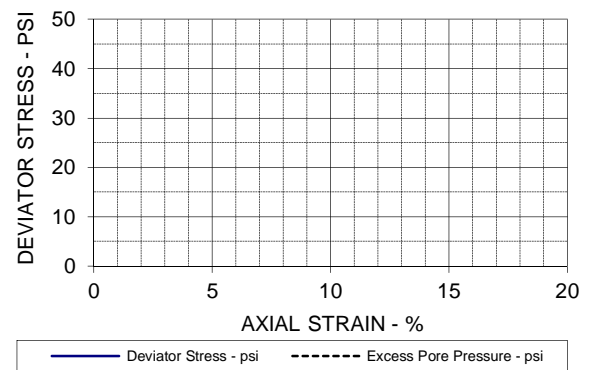
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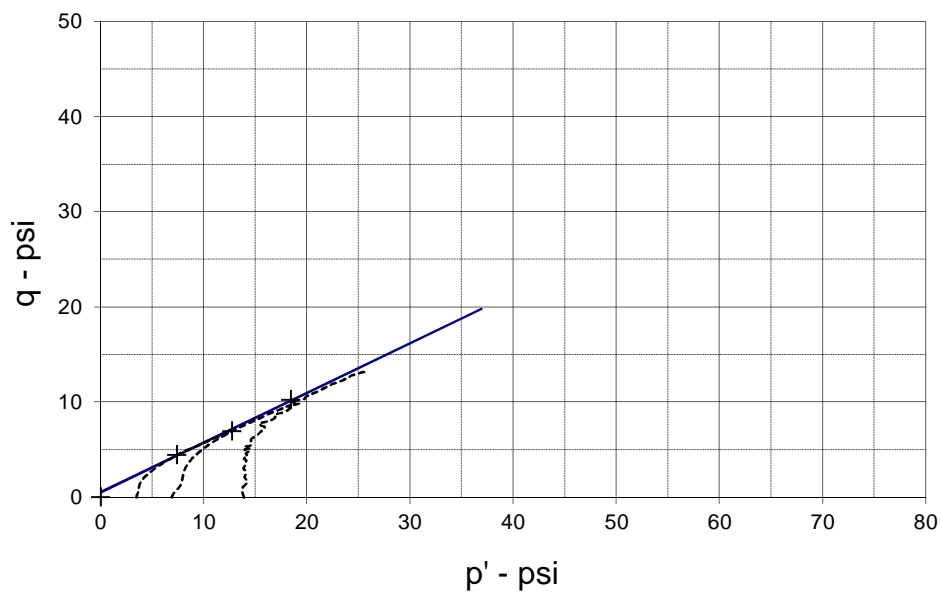
SPECIMEN NO. 3



SPECIMEN NO. 4

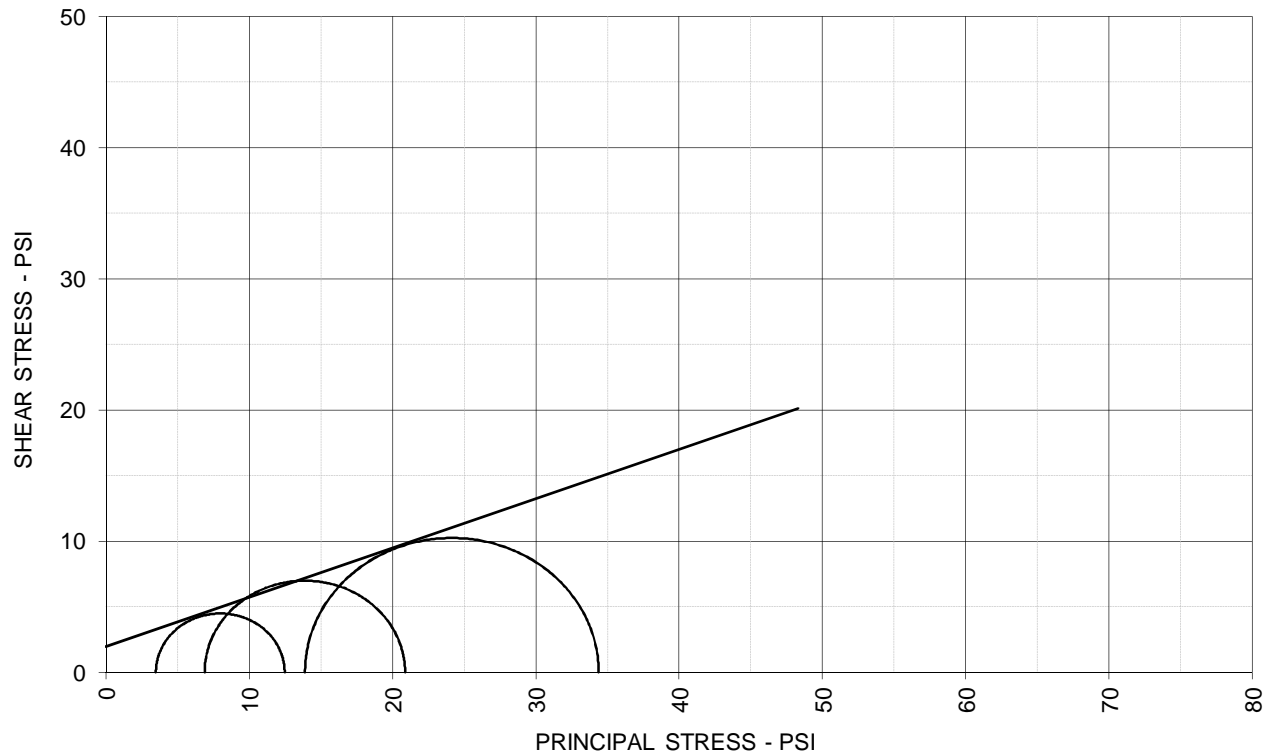


p - q DIAGRAM



EFFECTIVE STRESS PARAMETERS	$R^2 = 1.00$	$a \text{ (deg)} = 27.6$	$a \text{ (psi)} = 0.5$
PROJECT: S-48 (Columbia Avenue) Corridor Improvements	TYPE OF TEST & NO: CU with Pore Pressure		
PROJECT NO: 73155095	<b>TERRACON</b>		
DESCRIPTION: Sandy Silt (ML)			

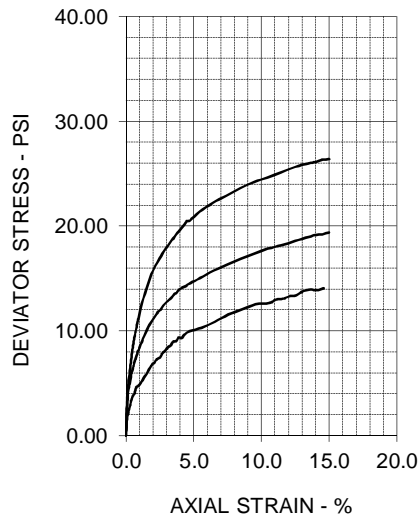
# TRIAXIAL SHEAR TEST REPORT



## TOTAL STRESS PARAMETERS

$\phi = 20.6 \text{ deg}$

$c = 2.0 \text{ psi}$



### SPECIMEN NO.

1 2 3 4

### INITIAL

Moisture Content - %	15.1	15.1	15.1
Dry Density - pcf	102.8	102.8	102.8
Diameter - inches	2.80	2.80	2.80
Height - inches	5.60	5.60	5.60

### AT TEST

Final Moisture - %	24.0	23.6	22.4
Dry Density - pcf	103.0	103.8	105.7
Calculated Diameter (in.)	2.82	2.80	2.80
Height - inches	5.65	5.60	5.59
Effect. Cell Pressure - psi	3.5	6.9	13.9
Failure Stress - psi	8.98	13.98	20.49
Total Pore Pressure - psi	50.6	51.2	55.7
Strain Rate - inches/min.	0.00060	0.00060	0.00060
Failure Strain - %	3.5	4.0	4.5
S <sub>1</sub> Failure - psi	12.48	20.88	34.39
S <sub>3</sub> Failure - psi	3.50	6.90	13.90

## TEST DESCRIPTION

TYPE OF TEST & NO: CU with Pore Pressure  
 SAMPLE TYPE: Remolded  
 DESCRIPTION: Sandy Silt (ML)  
 SAMPLE LOCATION: B-26 Bulk, 0.0-5.0 ft  
 ASSUMED SPECIFIC GRAVITY: 2.75  
 LL: 36 PL: 25 PI: 11 Percent -200: 67  
 REMARKS: Specimens remolded to 95% at optimum.

## PROJECT INFORMATION

PROJECT: S-48 (Columbia Avenue) Corridor Improvements  
 LOCATION: Lexington County, SC  
 PROJECT NO: 73155095  
 CLIENT: Mead & Hunt  
 DATE: 3/17/16

**TERRACON**














**APPENDIX C**  
**SUPPORTING DOCUMENTS**

Exhibit C-1 – Unified Soil Classification System  
Exhibit C-2 – Rig Calibration Reports

# GENERAL NOTES

## DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING			WATER LEVEL		Water Initially Encountered	FIELD TESTS	(HP)	Hand Penetrometer	
	Auger	Split Spoon			Water Level After a Specified Period of Time		(T)	Torvane	
					Water Level After a Specified Period of Time		(b/f)	Standard Penetration Test (blows per foot)	
	Shelby Tube	Macro Core		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.			(PID)	Photo-Ionization Detector	
							(OVA)	Organic Vapor Analyzer	
Ring Sampler	Rock Core								
									
Grab Sample	No Recovery								

## DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

## LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. 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.

<b>STRENGTH TERMS</b>	<b>RELATIVE DENSITY OF COARSE-GRAINED SOILS</b> (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			<b>CONSISTENCY OF FINE-GRAINED SOILS</b> (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
	Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength, Qu, psf	Standard Penetration or N-Value Blows/Ft.
	Very Loose	0 - 3	0 - 6	Very Soft	less than 500	0 - 1
	Loose	4 - 9	7 - 18	Soft	500 to 1,000	2 - 4
	Medium Dense	10 - 29	19 - 58	Medium-Stiff	1,000 to 2,000	4 - 8
	Dense	30 - 50	59 - 98	Stiff	2,000 to 4,000	8 - 15
	Very Dense	> 50	≥ 99	Very Stiff	4,000 to 8,000	15 - 30
				Hard	> 8,000	> 30

## RELATIVE PROPORTIONS OF SAND AND GRAVEL

<u>Descriptive Term(s) of other constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 15
With	15 - 29
Modifier	> 30

## GRAIN SIZE TERMINOLOGY

<u>Major Component of Sample</u>	<u>Particle Size</u>
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 sieve (0.075mm)

## RELATIVE PROPORTIONS OF FINES

<u>Descriptive Term(s) of other constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 5
With	5 - 12
Modifier	> 12

## PLASTICITY DESCRIPTION

<u>Term</u>	<u>Plasticity Index</u>
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

# UNIFIED SOIL CLASSIFICATION SYSTEM

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

<sup>A</sup> Based on the material passing the 3-inch (75-mm) sieve

<sup>B</sup> If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

<sup>C</sup> 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.

<sup>D</sup> 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

$$^E Cu = D_{60}/D_{10} \quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

<sup>F</sup> If soil contains  $\geq 15\%$  sand, add "with sand" to group name.

<sup>G</sup> If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

<sup>H</sup> If fines are organic, add "with organic fines" to group name.

<sup>I</sup> If soil contains  $\geq 15\%$  gravel, add "with gravel" to group name.

<sup>J</sup> If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

<sup>K</sup> If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

<sup>L</sup> If soil contains  $\geq 30\%$  plus No. 200 predominantly sand, add "sandy" to group name.

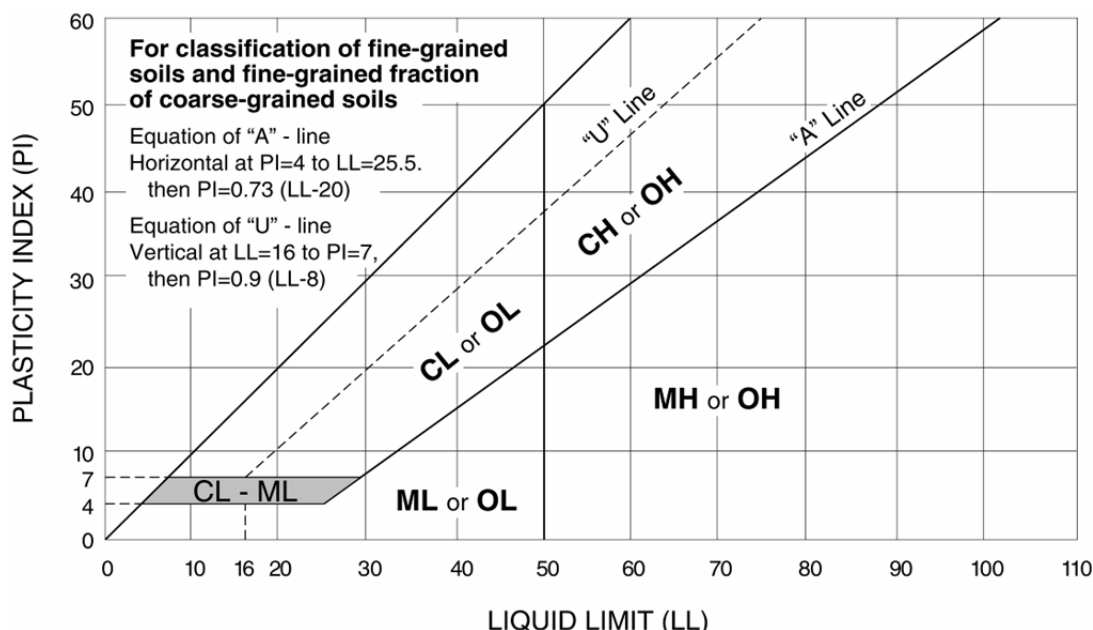
<sup>M</sup> If soil contains  $\geq 30\%$  plus No. 200, predominantly gravel, add "gravelly" to group name.

<sup>N</sup>  $PI \geq 4$  and plots on or above "A" line.

<sup>O</sup>  $PI < 4$  or plots below "A" line.

<sup>P</sup>  $PI$  plots on or above "A" line.

<sup>Q</sup>  $PI$  plots below "A" line.



# DRILL RIG SPT HAMMER ENERGY CALIBRATION REPORT

Drill Rig Model CME-55 SN 359485

Terracon Drill Rig No. 727

Columbia, SC

July 09, 2015

Project No. 73155070A



**Prepared for:**

Terracon Consultants, Inc.  
Columbia, SC

**Prepared by:**

Terracon Consultants, Inc.  
North Charleston, SC

Offices Nationwide  
Employee-Owned

Established in 1965  
[terracon.com](http://terracon.com)

# Terracon

Geotechnical   ■   Environmental   ■   Construction Materials   ■   Facilities

July 09, 2015



Terracon Consultants Inc.  
521 Clemson Road  
Columbia, SC 29229

Attn: Mr. Phillip Morris  
P: (803) 212-0062  
M: (803) 518-3788  
E: Phillip.Morrison@terracon.com

Re: SPT Rig Calibration Report  
Columbia, SC  
Terracon Project Number: 73155070A

Mr. Morrison:

The Charleston office of Terracon Consultants, Inc. (Terracon) has completed the SPT rig calibration for the above referenced rig. This report provides Energy Transfer Ratio (ETR) for the SPT hammer found on CME-55 (Serial Number 359485).

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 Consultants, Inc.**

A handwritten signature in black ink, appearing to read "Yulian A. Kebede".

Yulian A. Kebede,  
Project Manager  
Geotechnical Services

A handwritten signature in black ink, appearing to read "Bryan T. Shiver".

Bryan T. Shiver, P.E.  
Department Manager  
Geotechnical Services  
SC Registration No. 27816



Terracon Consultants, Inc. 1450 Fifth Street West North Charleston, South Carolina 29405  
P [843] 884 1234 F [843] 884 9234 [terracon.com](http://terracon.com)

Geotechnical



Environmental



Construction Materials



Facilities

## 1.0 PROJECT INFORMATION

ITEM	DESCRIPTION
Drill Rig Identification	CME-55, SN: 359485 (see photograph on cover page)
Drill Rig Owner	Terracon
Drill Rig Operator	Craig Fredrychowsky
Testing Date	July 2, 2015
Testing Location	Columbia, SC
Terracon Project Number	73155070A
Boring Identification	Test Hole (1)
Energy Measurement Depths	23.5 ft., 28.5 ft., 33.5 ft.
Hammer Type	Automatic
Boring Method	Mud Rotary
Drill Rods	■ AWJ ■ 1¾" outside diameter ■ 3/16" wall thickness
SPT Calibration Testing Equipment	■ 2 foot AWJ rod instrumented w/ 2 strain gauges and 2 accelerometers ■ Model PAX Pile Driving Analyzer™ (PDA)
SPT Calibration Personnel	Kenneth Zur

## 2.0 TEST RESULTS

**Table 1:**

SPT Hammer Energy Calibration Testing Summary.

Boring	Start Depth <sup>1</sup> (ft)	Rod Length <sup>2</sup> (ft)	Rod Sections <sup>3</sup>			Measured Blow Counts (blows/6 inches)				SPT N <sub>m</sub> (bpf)	Soil Type <sup>4</sup>
			2 ft	5 ft	10 ft	1 <sup>st</sup> Inc.	2 <sup>nd</sup> Inc.	3 <sup>rd</sup> Inc.	4 <sup>th</sup> Inc.		
Test Hole (1)	23.5	28.63	0	5	0	14	17	21	-	38	Sand
	28.5	33.65	0	6	0	6	12	12	-	24	Sand
	33.5	38.63	0	7	0	6	10	12	-	22	Sand

1. Depth from existing ground surface to bottom of drill rods at the beginning of SPT

2. Total rod length measured from instrumentation to bottom of sampler

3. Two foot section is instrumented and is located at top of drill rods

4. Soil type provided by Terracon personnel.



**Table 2:**  
Energy Measurement and Analysis Summary.

Boring	Start Depth <sup>1</sup> (ft)	SPT N <sub>m</sub> (bpf)	No. of Blows <sup>2</sup>	EFV (kip-ft) <sup>3</sup>			ETR (%) <sup>3</sup>		
				Max.	Min.	Ave.	Std. Dev.	Ave.	Std. Dev.
Test Hole (1)	23.5	38	50	0.29	0.27	0.28	0.01	81.3	1.93
	28.5	24	20	0.30	0.27	0.30	0.01	84.6	2.35
	33.5	22	6	0.29	0.26	0.28	0.01	80.0	3.13
Average:			25	0.29	0.27	0.29	0.01	81.9	2.47
1. Boring ID and depth from existing ground surface to bottom of drill rods at the beginning of SPT 2. Number of blows used in energy calibration analysis; limited to measurements recorded during the second and third 6-inch sampling intervals at each depth or during the first increment if refusal were encountered 3. EFV = Measured Transferred Energy, ETR = Energy Transfer Ratio.									

**Table 3:**  
Hammer Blow Rate Summary.

Boring	Start Depth <sup>1</sup> (ft)	SPT N <sub>m</sub> (bpf)	No. of Blows <sup>2</sup>	BPM <sup>3</sup>			
				Max.	Min.	Ave.	Std. Dev.
Test Hole (1)	23.5	38	50	54.50	2.00	52.40	7.28
	28.5	24	20	54.50	1.90	51.46	11.67
	33.5	22	6	52.20	46.40	50.57	2.34
Average:			25	53.73	16.77	51.48	7.10
1. Boring ID and depth from existing ground surface to bottom of drill rods at the beginning of SPT. 2. Number of blows used in energy calibration analysis. Limited to measurements recorded during the second and third 6-inch sampling intervals at each depth or during the 1st increment if refusal conditions were encountered. 3. BPM = Blows per minute							

## 3.0 CONCLUSIONS

### 3.1 Energy Transfer Ratio (ETR) and Hammer Efficiency Correction (CE)

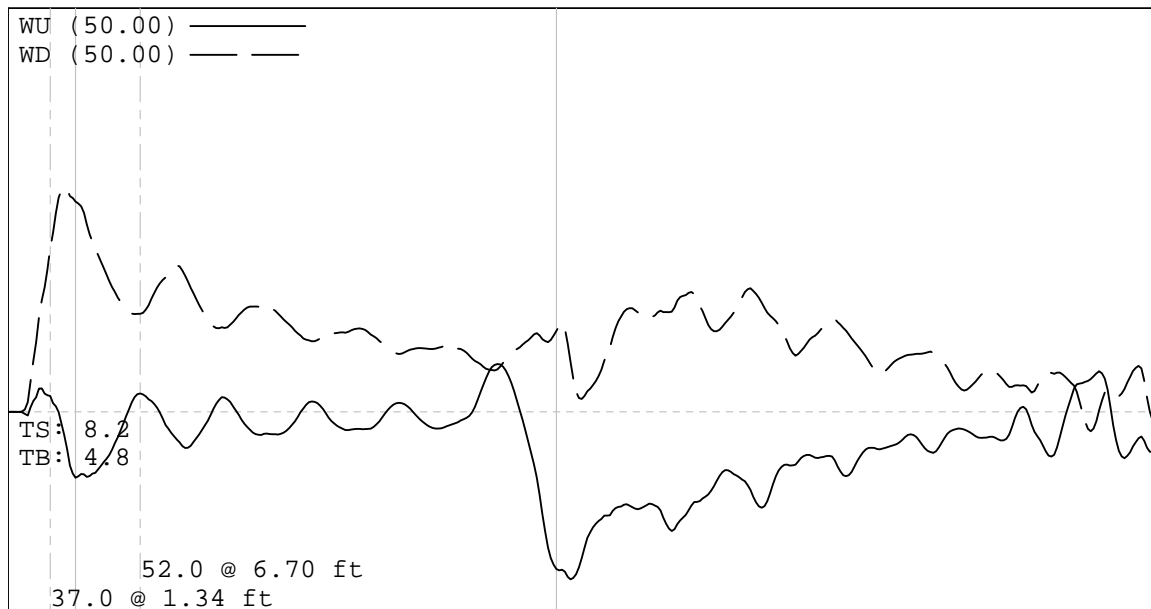
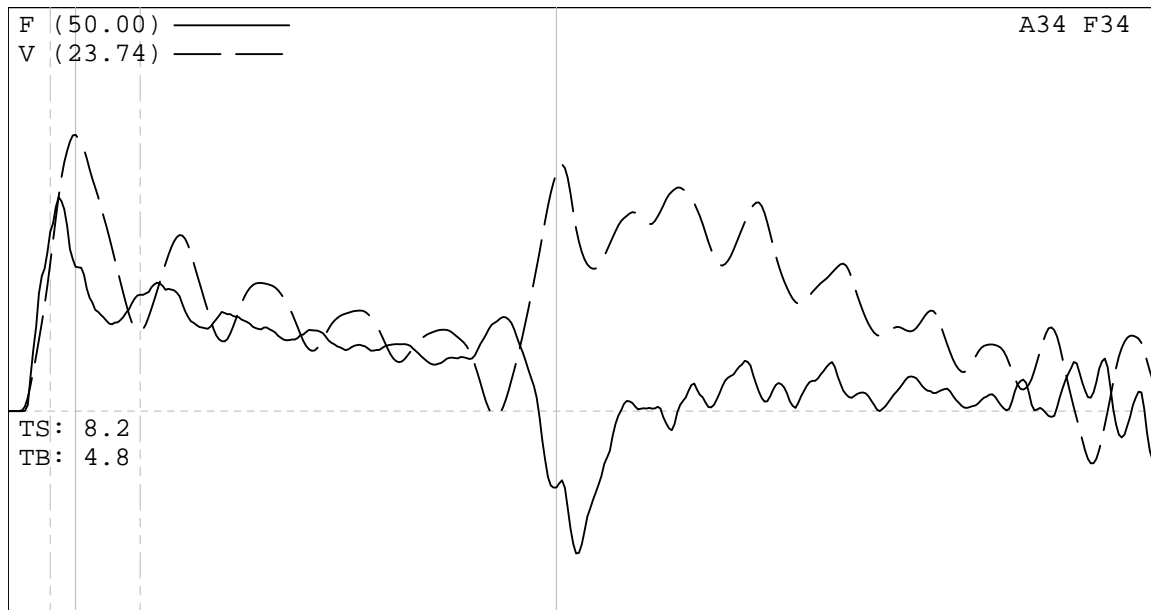
Based on our testing and subsequent analysis, CME-55 (Serial Number 359485) has an **ETR** of **81.9% ± 2.47%**. Based on this ETR, the hammer efficiency correction (**C<sub>E</sub>**) is **1.37**.

## **Exhibit A-1      Representative Blow**



CME55 727

B1 23.5 TO 25\_2

Project Information

PROJECT: CME55 727  
PILE NAME: B1 23.5 TO 25\_2  
DESCR: cme 55 auto  
OPERATOR: KJZ  
FILE: B1 23.5 TO 25\_2.w01  
7/2/2015 4:10:26 PM  
Blow Number 2

Pile Properties

LE 28.63 ft  
AR 1.18 in<sup>2</sup>  
EM 30000 ksi  
SP 0.492 k/ft<sup>3</sup>  
WS 16807.9 f/s  
EA/C 2.1 ksec/ft  
2L/C 3.42 ms  
JC []

Quantity Results

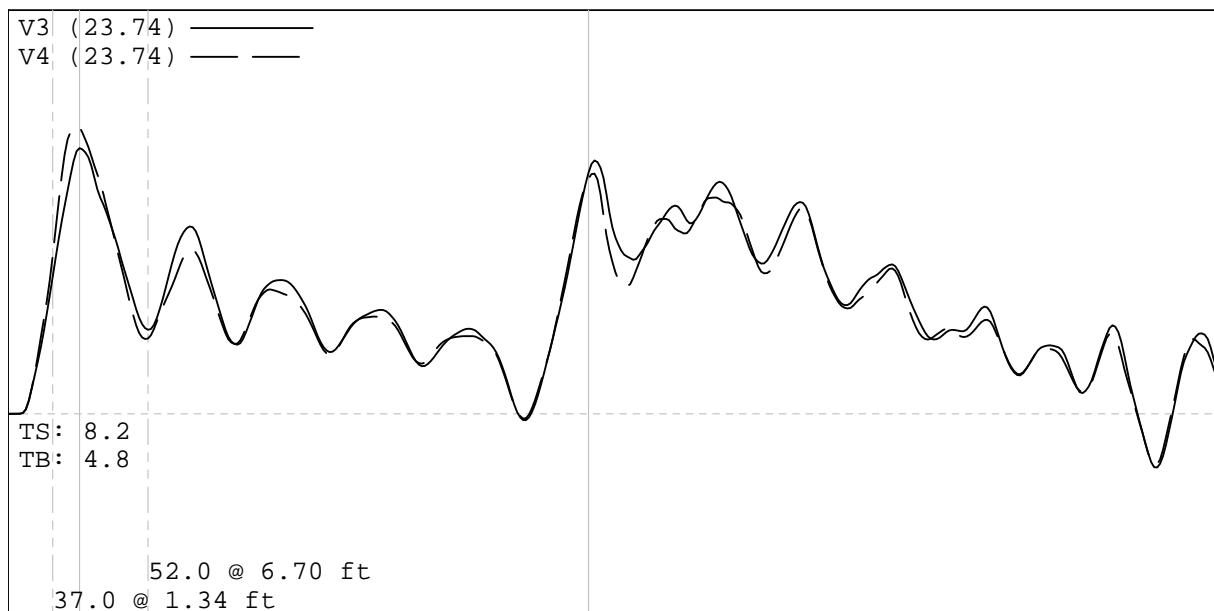
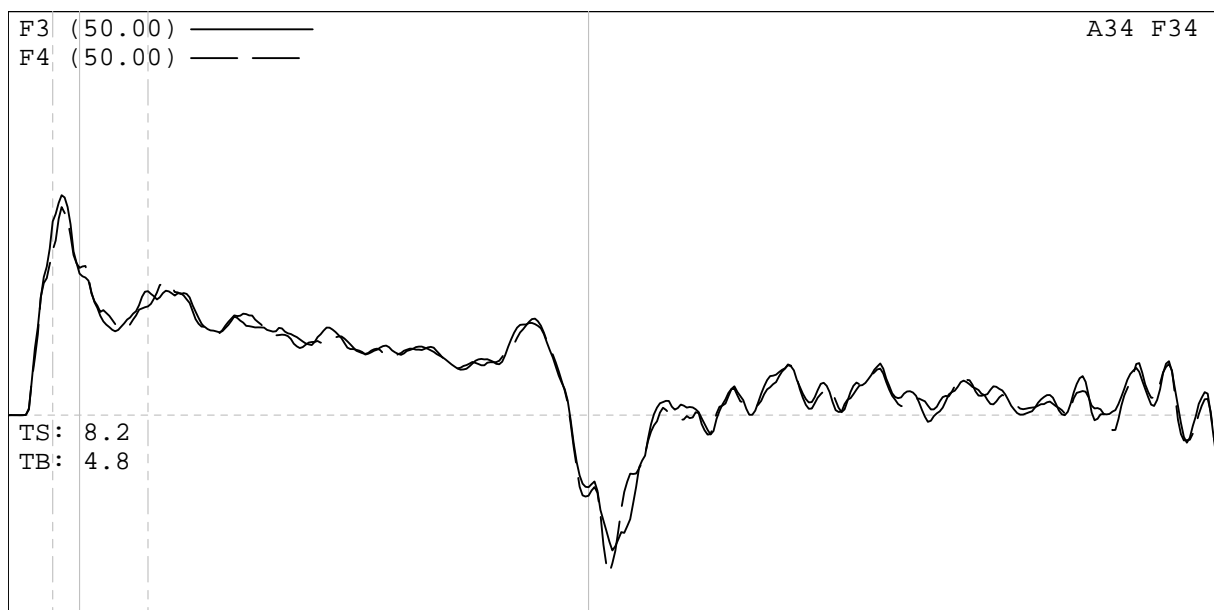
EMX 0.28 k-ft  
EF2 0.23 k-ft  
FMX 26.49 kips  
BPM 2.00 bpm  
VMX 16.24 f/s  
AMX 2108.49 g's  
DMX 0.85 in  
DFN 0.85 in  
TSX 14.95 ksi

Sensors

F3: [AWJ 1] 211.53 (1)  
F4: [AWJ 2] 211.77 (1)  
A3: [K4170] 390 mv/5000g's (1)  
A4: [K2578] 374 mv/5000g's (1)  
CLIP: OK

CME55 727

B1 23.5 TO 25\_2

Project Information

PROJECT: CME55 727  
PILE NAME: B1 23.5 TO 25\_2  
DESCR: cme 55 auto  
OPERATOR: KJZ  
FILE: B1 23.5 TO 25\_2.w01  
7/2/2015 4:10:26 PM  
Blow Number 2

Pile Properties

LE 28.63 ft  
AR 1.18 in<sup>2</sup>  
EM 30000 ksi  
SP 0.492 k/ft<sup>3</sup>  
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EA/C 2.1 ksec/ft  
2L/C 3.42 ms  
JC []

Quantity Results

EMX 0.28 k-ft  
EF2 0.23 k-ft  
FMX 26.49 kips  
BPM 2.00 bpm  
VMX 16.24 f/s  
AMX 2108.49 g's  
DMX 0.85 in  
DFN 0.85 in  
TSX 14.95 ksi

Sensors

F3: [AWJ 1] 211.53 (1)  
F4: [AWJ 2] 211.77 (1)  
A3: [K4170] 390 mv/5000g's (1)  
A4: [K2578] 374 mv/5000g's (1)  
CLIP: OK

## **Exhibit A-2    PDA Calibration Certification**

# *Certificate of Calibration*

**Pile Dynamics, Inc. certifies that the**

**Pile Driving Analyzer®, Model PAX**

**Serial Number: 3766L**

**was calibrated on**

28 March 2014

**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:**



*[Signature]*  
Pile Dynamics, Inc.  
30725 Aurora Road  
Cleveland, Ohio 44139 USA



# DRILL RIG SPT HAMMER ENERGY CALIBRATION REPORT

**Drill Rig Model CME - 45C Rig (Serial Number 289849)**  
**Terracon Drill Rig No. 778**  
**Columbia, South Carolina**

February 9, 2016  
Project No. 73155095



**Prepared for:**  
Terracon Consultants, Inc.  
Columbia, South Carolina

**Prepared by:**  
Terracon Consultants, Inc.  
Ft. Lauderdale, Florida

February 9, 2016

Terracon Consultants Inc.  
5371 NW 33<sup>rd</sup> Avenue Suite 201  
Fort Lauderdale, FL 33309

Attention: Mr. Phillip A. Morrison, P.E.

**Re: SPT Rig Hammer Energy Calibration Report**  
**Drill Rig Model CME - 45C Drill Rig (Serial Number 289849)**  
Terracon Drill Rig No. 778  
Columbia, South Carolina  
Terracon Project Number: 73155095

Dear Mr. Morrison:

Terracon has completed the SPT Rig hammer energy calibration for the Terracon Rig Model CME - 45C drill rig (Serial Number 289849). This drill rig is equipped with an automatic hammer lifted by a hydraulic chain system and uses AWJ drill rods with a split-barrel sampler for the Standard Penetration Test (SPT). The dynamic testing was conducted using a Pile Driving Analyzer (PDA), Model SPT, manufactured by Pile Dynamics, Inc. (PDI). The SPT hammer energy calibration testing was carried out in general accordance with ASTM D4945 Standard Test Method for High Strain Dynamic Testing of Piles and ASTM D4633 Standard Test Method for Energy Measurement for Dynamic Penetrometers.

Based on our testing and subsequent analysis, the Terracon CME - 45C drill rig (Serial Number 289849) has an Energy Transfer Ratio (ETR) of  $76.3\% \pm 3.1\%$ . Based on this ETR, the hammer efficiency correction ( $C_E$ ) is 1.27.

Sincerely,  
**Terracon Consultants, Inc.**



Mingu Kim, Ph.D., P.E. (P.E. in Florida)  
Senior Project Engineer  
Florida P.E. No. 64456



Carlos A. Quintana  
Project Geotechnical Engineer

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1.2 Drill Rig and Drilling Equipment.....	3
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<b>2.0 TEST RESULTS .....</b>	<b>3</b>
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2.2 Hammer Energy Calibration.....	4
<b>3.0 ENERGY TRANSFER RATIO (ETR) AND Hammer EFFICIENCY CORRECTION (<math>C_E</math>)..</b>	<b>4</b>

## APPENDICES

**Appendix A – PDA Equipment Certification**

**Appendix B – Representative Blow**

## SPT HAMMER ENERGY CALIBRATION REPORT

### Drill Rig Model CME - 45C Serial Number 289849

### Terracon Drill Rig No. 778

## 1.0 PROJECT INFORMATION

### 1.1 Overview

Standard Penetration Test hammer energy calibration testing was carried out at various testing depths below the existing grades in general accordance with ASTM D4945 Standard Test Method for High Strain Dynamic Testing of Piles and ASTM D4633 Standard Test Method for Energy Measurement for Dynamic Penetrometers. Dynamic testing was conducted using a Pile Driving Analyzer (PDA), Model SPT, manufactured by Pile Dynamics, Inc. (PDI).

ITEM	DESCRIPTION
Drill Rig Identification	CME – 45C, SN: 289849 (See photograph on cover page)
Drill Rig Owner	Terracon Consultants, Columbia, South Carolina
Drill Rig Operator	Craig F.
Testing Date	January 20, 2016
Testing Location	Columbia, South Carolina
Terracon Project Number	73155095
Boring Identification	TB-1 (Calibration Only)
Energy Measurement Depths and Soil Type	23.5 ft to 25.0 ft (SP), 28.5 ft to 30.0 ft (SP), 33.5 ft to 35.0 ft (SP), and 38.5 to 40.0 ft (SP)
Hammer Type	Automatic
Boring Method	Hollow Stem Augers (HSA)
Drill Rods	<ul style="list-style-type: none"> <li>■ AWJ</li> <li>■ 1 ¾ -in outside diameter</li> <li>■ 1.18-in<sup>2</sup> area</li> </ul>
SPT Hammer Calibration Testing Equipment	<ul style="list-style-type: none"> <li>■ 2-foot AWJ instrumented rod w/ 2 strain gauges and 2 accelerometers</li> <li>■ SPT Analyzer, SN: 3766L</li> </ul>
Tester	Kenneth J. Zur, P.E., Columbia Office, South Carolina



## **1.2 Drill Rig and Drilling Equipment**

The tested drill rig is a CME - 45C (SN 289849) drill rig with an automatic hammer lifted by a hydraulic chain system. According to information provided, this drill rig was built in 1999. The automatic hammer, with a theoretical potential energy (PE) of 350 ft-lbs., weighs about 140-pounds and has a drop height of 30 inches (2.5 feet). Manufacturer specifications for this drill rig are provided in Appendix A.

The HSA technique using a drill bit was used to reach the depths at which the Standard Penetration testing was to be performed. AWJ drill rod sections have a nominal outside diameter of 1 ¾ inches and a cross sectional area of 1.18 square inches. The instrumented sub-assembly (i.e. where gages were attached) consisted of a two-foot long section of AWJ rod that was threaded into the top drill rod at each testing interval.

## **1.3 Energy Measurement Instrumentation**

The SPT Energy measurement instrumentation consists of a 2-foot long AWJ instrumented drill rod with two strain gages and two accelerometer transducers attached at the center of the instrumented rod. The rod has a cross-sectional area of 1.18 square inches at the strain gauge locations. The strain gages and accelerometers are located on opposite sides of the AWJ drill rod to reduce the effects of uneven hammer impact and rod bending.

The strain gages and accelerometers are connected to a Pile Driving Analyzer (PDA), Model SPT, serial number 3766L, to collect the instrumentation data. The analyzer is a computer, fitted with a data acquisition and signal conditioning system. During driving, the strain and acceleration signals are recorded and processed for each hammer blow. The strain signal is converted to a force record and the acceleration signal is converted to a velocity record. The sampling frequency used during the SPT Energy Measurement Testing was 50,000 hertz (50 kHz). The PDA evaluates the energy at the point of measurement and saves all blows. Equipment calibrations for PAX, strain gauges, and accelerometers are provided in Appendix B.

# **2.0 TEST RESULTS**

## **2.1 Testing Summary**

Standard Penetration energy measurements were performed at four testing depths during SPT boring by Kenneth J. Zur (Terracon, Columbia office). A summary of the testing is provided in Table 1. No unusual operating conditions regarding drilling or hammer operations were observed during Standard Penetration energy measurements. However, due to the poor quality data collected along the first testing depth of 23.5 feet to 25 feet, the data at Test No. 1 was excluded in this report. In addition, two hammer blows (i.e. blow numbers 13 and 15) recorded during the second 6-inch sampling interval at Test No. 2 were excluded for our analyses.

**Table 1: Standard Penetration Hammer Energy Calibration Testing Summary.**

Boring	Start Depth <sup>1</sup> (ft)	Rod Length <sup>2</sup> (ft)	Rod Sections <sup>3</sup>			Measured Blow Counts (blows/6 inches)				SPT N <sub>m</sub> (bpf)
			2 ft	5 ft	10 ft	1 <sup>st</sup> Inc.	2 <sup>nd</sup> Inc.	3 <sup>rd</sup> Inc.	4 <sup>th</sup> Inc.	
TB-1	28.5	30.0	0	6	0	7	7	12	NA	19
	33.5	35.0	0	7	0	7	8	10	NA	18
	38.5	40.0	0	8	0	7	11	12	NA	23

1. Depth from existing ground surface to start of Standard Penetration Testing

2. Total rod length from instrumentation to bottom of split-barrel sampler

3. Two foot instrumented rod section is included and is located at top of drill rods

A representative output from the analyzer showing Individual Force and Velocity measurements with time are presented in Appendix C.

## 2.2 Hammer Energy Calibration

The measured transferred energies (EFV) and Energy Transfer Ratios (ETR) estimated from the testing results are summarized in Table 2. Note that the EFV's and ETR's shown in Table 2 are estimated from measurements recorded during the second and third 6-inch sampling intervals at each depth or during the 1<sup>st</sup> increment if refusal conditions were encountered. The ETR is based on measured EFV divided by the 0.35 kip-ft. theoretical potential energy of the SPT hammer.

**Table 2: Energy Measurement and Analysis Summary.**

Boring	Start Depth <sup>1</sup> (ft)	SPT N <sub>m</sub> (bpf)	No. of Blows <sup>2</sup>	EFV (kip-ft) <sup>3</sup>				ETR (%) <sup>3</sup>	
				Max.	Min.	Ave.	Std. Dev.	Ave.	Std. Dev.
TB-1	28.5	21	19	0.300	0.260	0.276	0.010	78.8	2.8
	33.5	18	18	0.290	0.240	0.262	0.012	74.8	3.4
	38.5	23	23	0.280	0.250	0.266	0.007	76.0	2.1
<b>TOTAL:</b>			<b>60</b>	<b>0.300</b>	<b>0.240</b>	<b>0.267</b>	<b>0.011</b>	<b>76.3</b>	<b>3.1</b>

1. Depth from existing ground surface to start of Standard Penetration Testing

2. Number of blows used in energy calibration analysis; limited to measurements recorded during the second and third 6-inch sampling intervals at each depth or during the first increment if refusal conditions were encountered

3. EFV = Measured Transferred Energy, ETR = Energy Transfer Ratio.

## 3.0 ENERGY TRANSFER RATIO (ETR) AND HAMMER EFFICIENCY CORRECTION (C<sub>E</sub>)

The automatic hammer mounted on the CME – 45C (Serial Number 289849) during Standard Penetration Testing has an estimated **ETR of 76.3% ± 3.1%**. Therefore, the hammer efficiency correction (C<sub>E</sub>) is **1.27**.

**SPT Hammer Energy Calibration Report**

Drill Rig CME – 45C SN 289849, Terracon Drill Rig No. 778 ■ Columbia, South Carolina  
February 9, 2016 ■ Terracon Project No. 73155095



If a change or repair in the hammer driving system will void this calibration and require a new calibration to be performed.

## **4.0 GENERAL COMMENTS**

We appreciate being of service to you in this phase of this project. For additional information regarding the interpretation of the test data and logs, or if you have any questions concerning this report, please do not hesitate to contact us.

Our professional services were performed using that degree of care and skill ordinarily exercised under similar circumstances, by reputable geotechnical engineers practicing in this or similar localities. No warranties, either expressed or implied, are intended or made.

## **APPENDIX A**

### **PDA TESTING EQUIPMENT CERTIFICATION**



# *Certificate of Calibration*

Pile Dynamics, Inc. certifies that the

Pile Driving Analyzer®, Model PAX

Serial Number: 3766L

was calibrated on 28 March 2014  
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: 

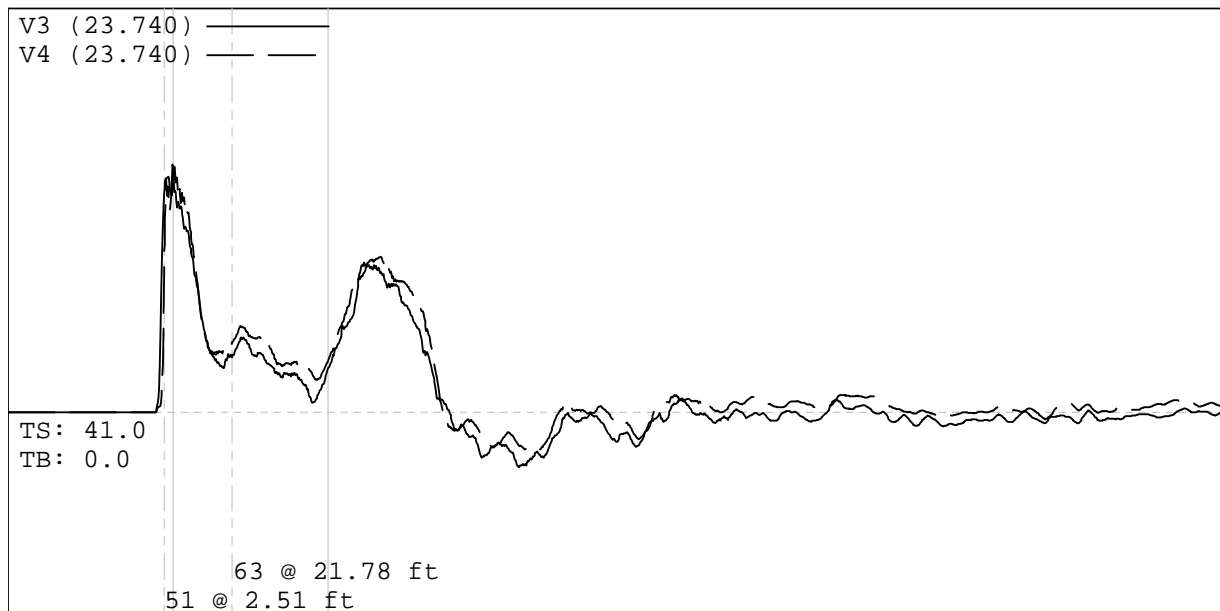
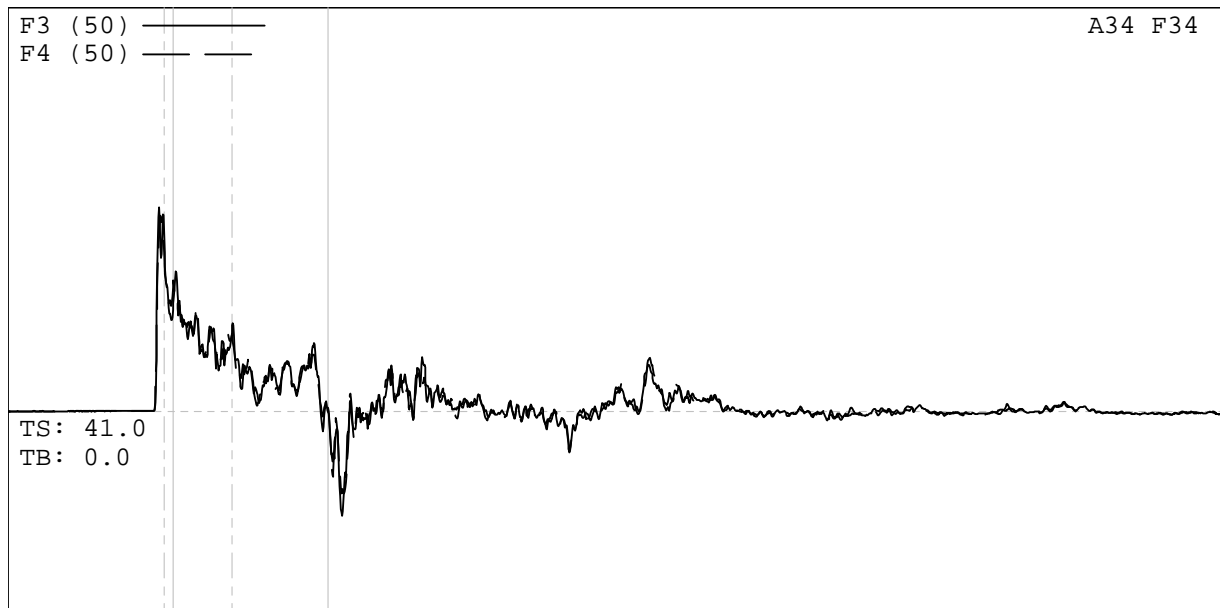


Pile Dynamics, Inc.  
30725 Aurora Road  
Cleveland, Ohio 44139 USA

**APPENDIX B  
REPRESENTATIVE BLOW**

COLUMBIA CME-45 RIG CAL

CME-45\_3

Project Information

PROJECT: COLUMBIA CME-45 RIG CAL  
PILE NAME: CME-45\_3  
DESCR: HOLE 1 38.5 TO 40  
OPERATOR: KJZ  
FILE: CME-45\_3.W01  
1/20/2016 1:35:26 PM  
Blow Number 18

Quantity Results

EMX 0.3 k-ft  
EF2 0.2 k-ft  
BPM 58.10 bpm  
FMX 24 kips  
VMX 14.101 f/s  
AMX 2924.752 g's  
DMX 0.62 in  
DFN 0.54 in  
TSX 9.94 ksi

Pile Properties

LE 43.71 ft  
AR 1.18 in<sup>2</sup>  
EM 30000 ksi  
SP 0.492 k/ft<sup>3</sup>  
WS 16807.9 f/s  
EA/C 2.1 ksec/ft  
2L/C 5.22 ms  
JC []  
LP 39.24 ft

Sensors

F3: [AWJ 1] 211.53 (1)  
F4: [AWJ 2] 211.77 (1)  
A3: [K5168] 348 mv/5000g's (1)  
A4: [K5170] 335 mv/5000g's (1)  
CLIP: OK

# DRILL RIG SPT HAMMER ENERGY CALIBRATION REPORT

Drill Rig Model CME-550X SN 347863

Terracon Drill Rig No. 975

Columbia, SC

October 5, 2015

Project No. 73150500

**Prepared for:**

Terracon Consultants, Inc.

Columbia, SC

**Prepared by:**

Terracon Consultants, Inc.

North Charleston, SC



Offices Nationwide  
Employee-Owned

Established in 1965  
[terracon.com](http://terracon.com)

# Terracon

Geotechnical   ■   Environmental   ■   Construction Materials   ■   Facilities



October 5, 2015



Terracon Consultants Inc.  
521 Clemson Road  
Columbia, SC 29229

Attn: Mr. Phillip Morrison  
P: (803) 212-0062  
M: (803) 518-3788  
E: Phillip.Morrison@terracon.com

Re: SPT Rig Calibration Report  
Columbia, SC  
Terracon Project Number: 73150500

Mr. Morrison:

The Charleston office of Terracon Consultants, Inc. (Terracon) has completed the SPT rig calibration for the above referenced rig. This report provides Energy Transfer Ratio (ETR) for the SPT hammer found on CME-550X (Serial Number 347863).

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 Consultants, Inc.**

A handwritten signature in black ink, reading "Yulian A. Kebede".

Yulian A. Kebede,  
Project Manager  
Geotechnical Services

A handwritten signature in black ink, reading "Bryan T. Shiver".

Bryan T. Shiver, P.E.  
Department Manager  
Geotechnical Services  
SC Registration No. 27816



Terracon Consultants, Inc. 1450 Fifth Street West North Charleston, South Carolina 29405  
P [843] 884 1234 F [843] 884 9234 terracon.com

## 1.0 PROJECT INFORMATION

ITEM	DESCRIPTION
Drill Rig Identification	CME-550X, SN: 347863 (see photograph on cover page)
Drill Rig Owner	Terracon
Drill Rig Operator	Jared Pawless
Testing Date	September 25, 2015
Testing Location	Columbia, SC
Terracon Project Number	73150500
Boring Identification	Test Hole (1)
Energy Measurement Depths	23.5 feet, 28.5 feet, 33.5 feet, and 38.5 feet
Hammer Type	Automatic
Boring Method	Hollow Stem Augers
Drill Rods	■ AWJ ■ 1¾" outside diameter ■ 3/16" wall thickness
SPT Calibration Testing Equipment	■ 2 foot AWJ rod instrumented w/ 2 strain gauges and 2 accelerometers ■ Model PAX Pile Driving Analyzer™ (PDA)
SPT Calibration Personnel	Kenneth Zur

## 2.0 TEST RESULTS

**Table 1:**

SPT Hammer Energy Calibration Testing Summary.

Boring	Start Depth <sup>1</sup> (ft)	Rod Length <sup>2</sup> (ft)	Rod Sections <sup>3</sup>			Measured Blow Counts (blows/6 inches)				SPT N <sub>m</sub> (bpf)	Soil Type <sup>4</sup>
			2 ft	5 ft	10 ft	1 <sup>st</sup> Inc.	2 <sup>nd</sup> Inc.	3 <sup>rd</sup> Inc.	4 <sup>th</sup> Inc.		
Test Hole (1)	23.5	28.8	0	1	2	18	10	11	-	21	Sand
	28.5	33.8	0	0	3	7	8	8	-	16	Sand
	33.5	38.8	0	1	3	5	7	9	-	16	Sand
	38.5	43.8	0	2	3	4	8	11	-	19	Sand

1. Depth from existing ground surface to bottom of drill rods at the beginning of SPT

2. Total rod length measured from instrumentation to bottom of sampler

3. Two foot section is instrumented and is located at top of drill rods

4. Soil type provided by Terracon personnel.

**Table 2:**  
Energy Measurement and Analysis Summary.

Boring	Start Depth <sup>1</sup> (ft)	SPT N <sub>m</sub> (bpf)	No. of Blows <sup>2</sup>	EFV (kip-ft) <sup>3</sup>				ETR (%) <sup>3</sup>	
				Max.	Min.	Ave.	Std. Dev.	Ave.	Std. Dev.
Test Hole (1)	23.5	21	38	0.280	0.250	0.262	0.008	74.8	2.29
	28.5	16	22	0.270	0.240	0.256	0.007	73.1	2.10
	33.5	16	19	0.270	0.250	0.254	0.006	72.5	1.71
	38.5	19	21	0.280	0.260	0.268	0.007	76.5	2.00
Average:			25	0.275	0.250	0.260	0.007	74.2	2.02

1. Boring ID and depth from existing ground surface to bottom of drill rods at the beginning of SPT  
2. Number of blows used in energy calibration analysis; limited to measurements recorded during the second and third 6-inch sampling intervals at each depth or during the first increment if refusal were encountered  
3. EFV = Measured Transferred Energy, ETR = Energy Transfer Ratio.

**Table 3:**  
Hammer Blow Rate Summary.

Boring	Start Depth <sup>1</sup> (ft)	SPT N <sub>m</sub> (bpf)	No. of Blows <sup>2</sup>	BPM <sup>3</sup>			
				Max.	Min.	Ave.	Std. Dev.
Test Hole (1)	23.5	21	38	52.0	48.9	50.2	0.8
	28.5	16	22	54.0	51.0	52.4	0.7
	33.5	16	19	53.0	52.1	52.5	0.2
	38.5	19	21	55.1	52.1	54.1	0.5
Average:			25	53.5	51.0	52.3	0.56

1. Boring ID and depth from existing ground surface to bottom of drill rods at the beginning of SPT.  
2. Number of blows used in energy calibration analysis. Limited to measurements recorded during the second and third 6-inch sampling intervals at each depth or during the 1st increment if refusal conditions were encountered.  
3. BPM = Blows per minute

## 3.0 CONCLUSIONS

### 3.1 Energy Transfer Ratio (ETR) and Hammer Efficiency Correction (CE)

Based on our testing and subsequent analysis, CME-55 (Serial Number 347863) has an **ETR** of **74.2% ± 2.02%**. Based on this ETR, the hammer efficiency correction (**C<sub>E</sub>**) is **1.24**.