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August 22, 2012

Ms. Sara Stone, P.E.
South Carolina Department of Transportation
P.O. Box 191
Columbia, South Carolina 29202-0191

Reference: Geotechnical Subsurface Data Report
S-80 Bridge Replacement over I-26
Shady Grove Road
Richland County, South Carolina
SCDOT File No.: 40.040649.1
F&R Project Number: 65N-0302

Dear Ms. Stone:

Froehling & Robertson, Inc. (F&R) has performed the drilling services and completed the requested laboratory testing for the above referenced project. Our services were performed in accordance with the Final Boring Request dated February 3, 2012 the Laboratory Testing Request dated June 4, 2012 and the addendum for laboratory testing dated June 7, 2012.

The scope of services for the drilling consisted of a total of twenty-nine (29) borings and one hand auger boring for the project. Six borings (B-1A, B-2A and B-3 thru B-6) were performed along the bridge alignment, two borings (RD-1 and RD-2) were performed along the road alignment for the relocated Oscar Amick Road, four (4) borings and one (1) hand auger boring (RD-4 thru RD-7 and HA-4) were performed along the road alignment for Shady Grove Road, and seventeen retaining wall borings (RW-1 thru RW-10, RW-12, RW-14 thru RW-18 and RW-20) were performed for the proposed retaining walls on the north and south approaches of the bridge. The bridge borings were drilled to tricone refusal and then rock coring was performed with a minimum of 20 feet of competent rock with substantial RQD and REC values. Boring B-2A was extended to a depth of 100 feet for downhole shear wave velocity testing. The roadway borings were drilled to depths ranging from 20 to 40 feet, and the retaining wall borings were drilled to depths of 40 feet each. The boring logs and a CADD drawing with the boring locations are included in Appendix I of the report.



In addition, a Spectral Analysis of Shear Wave (SASW) test was performed in boring B-2A to a depth of 100 feet. The results of the downhole shear wave velocity test are included in Appendix III.

Laboratory testing consisted of three consolidated-undrained (CU) triaxial shear tests, standard Proctor and index testing on three bulk samples of material, and the following index testing on the soil samples and rock cores from the borings:

Wash #200 with Sieve Analysis – 76 Tests
Atterberg Limits – 75 Tests
Natural Moisture Content – 75 Tests
Unconfined Compressive Strength Tests of Rock Cores – 12 Tests
Consolidated-Undrained (CU) Triaxial Shear Tests – 3 Tests
Corrosion Series Tests – 4 Tests

The laboratory testing results are presented in Appendix II.

F&R greatly appreciates the opportunity to work with you on this project. If there are any questions concerning this report or if any additional information is required, please do not hesitate to contact us.

Sincerely,
FROEHLING & ROBERTSON, INC.

Ross Deaver, PE
Regional Vice President

APPENDIX “I”

Site Photographs

F&R Project No. 65N-0302 – S-80 Bridge Replacement over I-26
SITE PHOTOS



1. View of existing Shady Grove Road looking north across I-26



2. View of new alignment for Shady Grove Road looking north across I-26



3. View of existing Shady Grove Road looking south across I-26



4. View of new alignment of Shady Grove Road looking south across I-26



5. View of new location of Oscar Amick Road from Shady Grove Road



6. View of drilling on southern side of I-26 west of Shady Grove Road.



7. Drilling on Shady Grove Road.



8. Downhole Shear Wave Velocity Testing on boring B-2A.

APPENDIX “II”

Drilling Procedures
Key to Soil Classification
Unified Soil Classification Chart



DRILLING PROCEDURES

The soil test borings were performed in accordance with generally accepted practice using an all-terrain CME 55 rotary drill rig and mud rotary drilling techniques. Representative soil samples were recovered with a standard split-spoon sampler without the inner liner in general accordance with ASTM Standards. Utilizing an automatic hammer with the CME 55 rotary drill rig, the split-spoon sampler was driven into the soil by freely dropping a weight of 140 pounds from a height of 30 inches.

The number of blows required to drive the split-spoon sampler three consecutive 6-inch increments is recorded, and the blows of the last two increments are summed to obtain the Standard Penetration Resistance (N-value). The N-value provides a general indication of in-situ soil conditions and has been correlated with certain engineering properties of soils.

Representative portions of the split-spoon soil samples obtained throughout the exploration program were placed in glass jars. Each sample was transported to our laboratory and evaluated by a member of our professional staff. In the laboratory, the soil samples were evaluated in general accordance with techniques outlined in the visual-manual identification procedure (ASTM D 2488) and the Unified Soil Classification System. Copies of the Boring Logs are provided in the attached Appendix II.



KEY TO SOIL CLASSIFICATION

Correlation of Penetration Resistance with Relative Density and Consistency

<u>Sands and Gravels</u>		<u>Silts and Clays</u>	
<u>No. of Blows, N</u>	<u>Relative Density</u>	<u>No. of Blows, N</u>	<u>Relative Density</u>
0 - 4	Very loose	0 - 2	Very soft
5 - 10	Loose	3 - 4	Soft
11 - 30	Medium dense	5 - 8	Firm
31 - 50	Dense	9 - 15	Stiff
Over 50	Very dense	16 - 30	Very stiff
		31 - 50	Hard
		Over 50	Very hard

Particle Size Identification (Unified Classification System)

Boulders:	Diameter exceeds 8 inches
Cobbles:	3 to 8 inches diameter
Gravel:	<u>Coarse</u> - 3/4 to 3 inches diameter <u>Fine</u> - 4.76 mm to 3/4 inch diameter
Sand:	<u>Coarse</u> - 2.0 mm to 4.76 mm diameter <u>Medium</u> - 0.42 mm to 2.0 mm diameter <u>Fine</u> - 0.074 mm to 0.42 mm diameter
Silt and Clay:	Less than 0.07 mm (particles cannot be seen with naked eye)

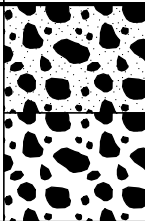
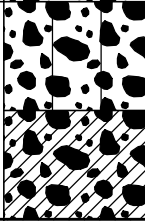
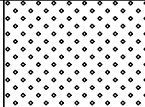
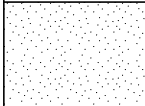
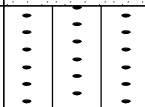
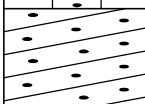
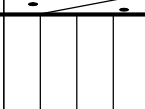
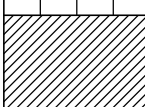
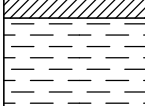
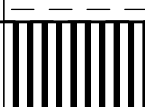
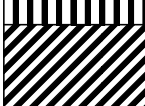
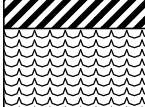
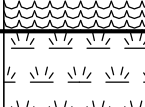
Modifiers

The modifiers provide our estimate of the amount of silt, clay or sand size particles in the soil sample.

<u>Approximate Content</u>	<u>Modifiers</u>
≤ 5%:	Trace
5% to 12%:	Slightly silty, slightly clayey, slightly sandy
12% to 30%:	Silty, clayey, sandy
30% to 50%:	Very silty, very clayey, very sandy

<u>Field Moisture Description</u>
Saturated: Usually liquid; very wet, usually from below the groundwater table
Wet: Semisolid; requires drying to attain optimum moisture
Moist: Solid; at or near optimum moisture
Dry: Requires additional water to attain optimum moisture

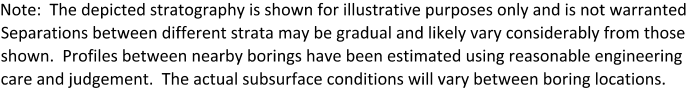
SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
		HIGHLY ORGANIC SOILS			PT

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

APPENDIX “III”

Boring Location Plan
Boring Logs
Explanation of Boring Offsets

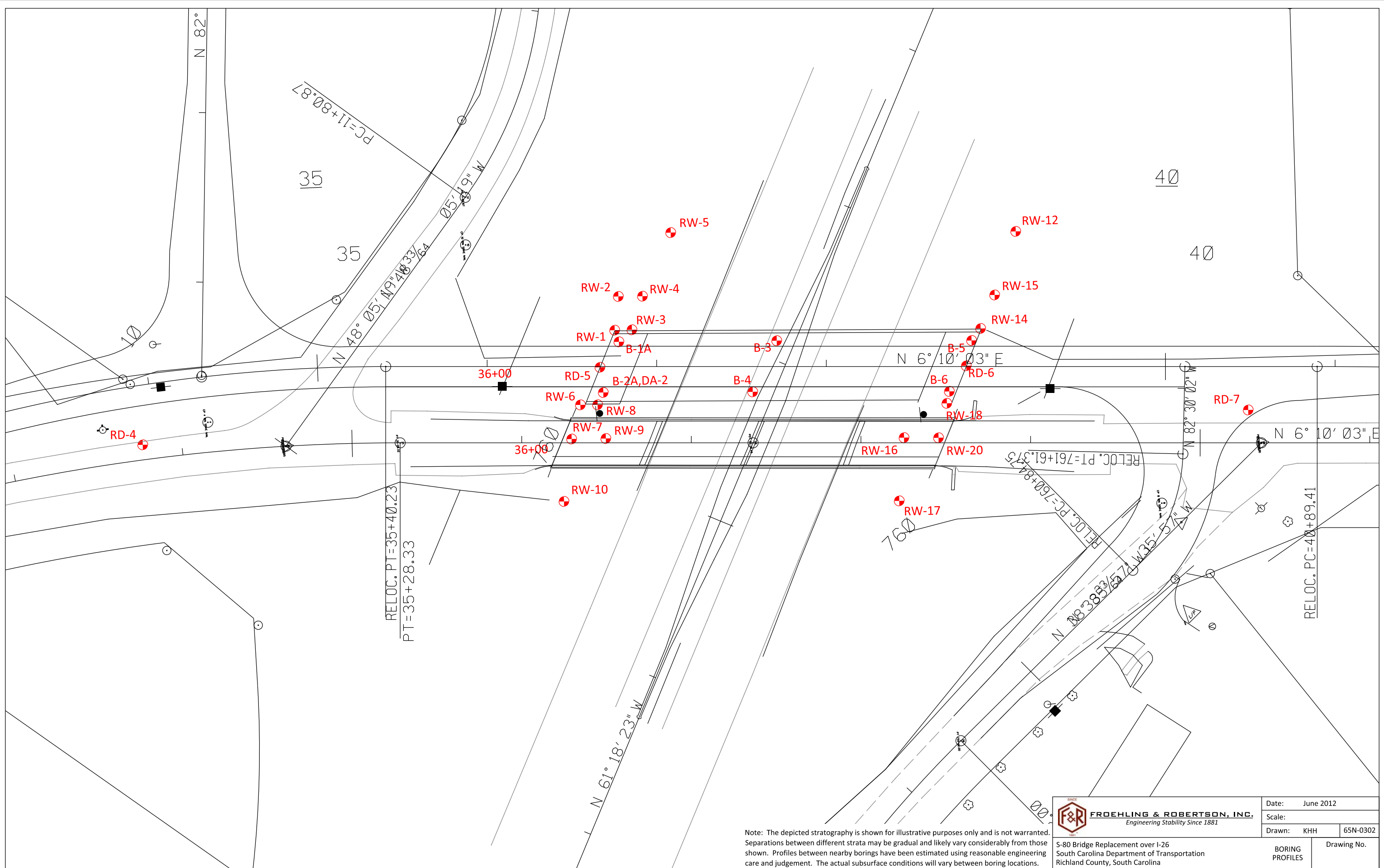


S-80 Bridge Replacement over I-26
South Carolina Department of Transportation
Richland County, South Carolina


Scale:

BORING PROFILES

wing No.

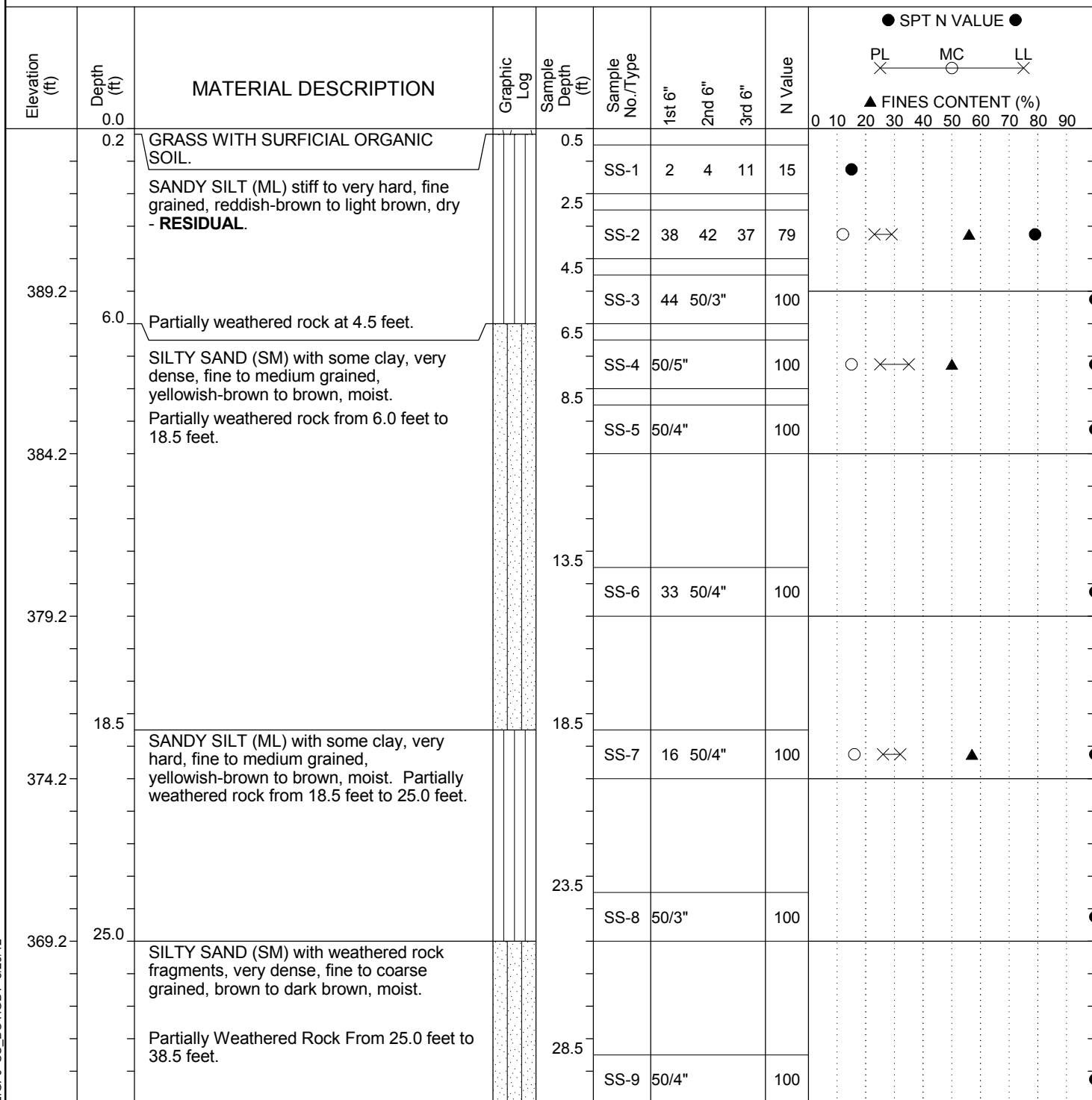


Note: The depicted stratigraphy is shown for illustrative purposes only and is not warranted. Separations between different strata may be gradual and likely vary considerably from those shown. Profiles between nearby borings have been estimated using reasonable engineering care and judgement. The actual subsurface conditions will vary between boring locations.

 FROEHLING & ROBERTSON, INC. <i>Engineering Stability Since 1881</i>	Date: June 2012	
	Scale:	
	Drawn: KHH	65N-0302
	BORING PROFILES	
S-80 Bridge Replacement over I-26 South Carolina Department of Transportation Richland County, South Carolina		Drawing No.

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	B-1A	Boring Location:	36+81	Offset:	12' LT	Alignment:	
Elev.:	394.2 ft	Latitude:	837988	Longitude:	1934210	Date Started:	03/14/12
Total Depth:	60.5 ft	Soil Depth:	38.5' ft	Core Depth:	22' ft	Date Completed:	3/15/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-550	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:	NQ Wireline	Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	24.1'



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
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
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Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-550	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:	NQ Wireline	Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	24.1'

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
359.2	38.5	Soon refusal at 38.5 feet. Tri-cone refusal at 38.5 feet. Set casing at 38.5 feet and started rock coring.		33.5	SS-10	50/1"			100	
354.2		Metamorphic schist; gray to greenish-gray; fine grained, subangular; thinly laminated; quartz, chlorite, biotite; slightly to moderately weathered; weak rock; no discontinuities; closely fractured; Carolina Terrane.		38.5	SS-11	50/0"			100	
				39.0						
				40.5	NX-12					REC = 92%, RQD = 54%
					NX-13					REC = 97%, RQD = 80%
				45.5						
					NX-14					REC = 100%, RQD = 100%
				50.5						
					NX-15					REC = 95%, RQD = 80%
				55.5						
					NX-16					REC = 100%, RQD = 97%

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
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SCDOT Soil Test Boring Log

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Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-550	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:	NQ Wireline	Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	24.1'

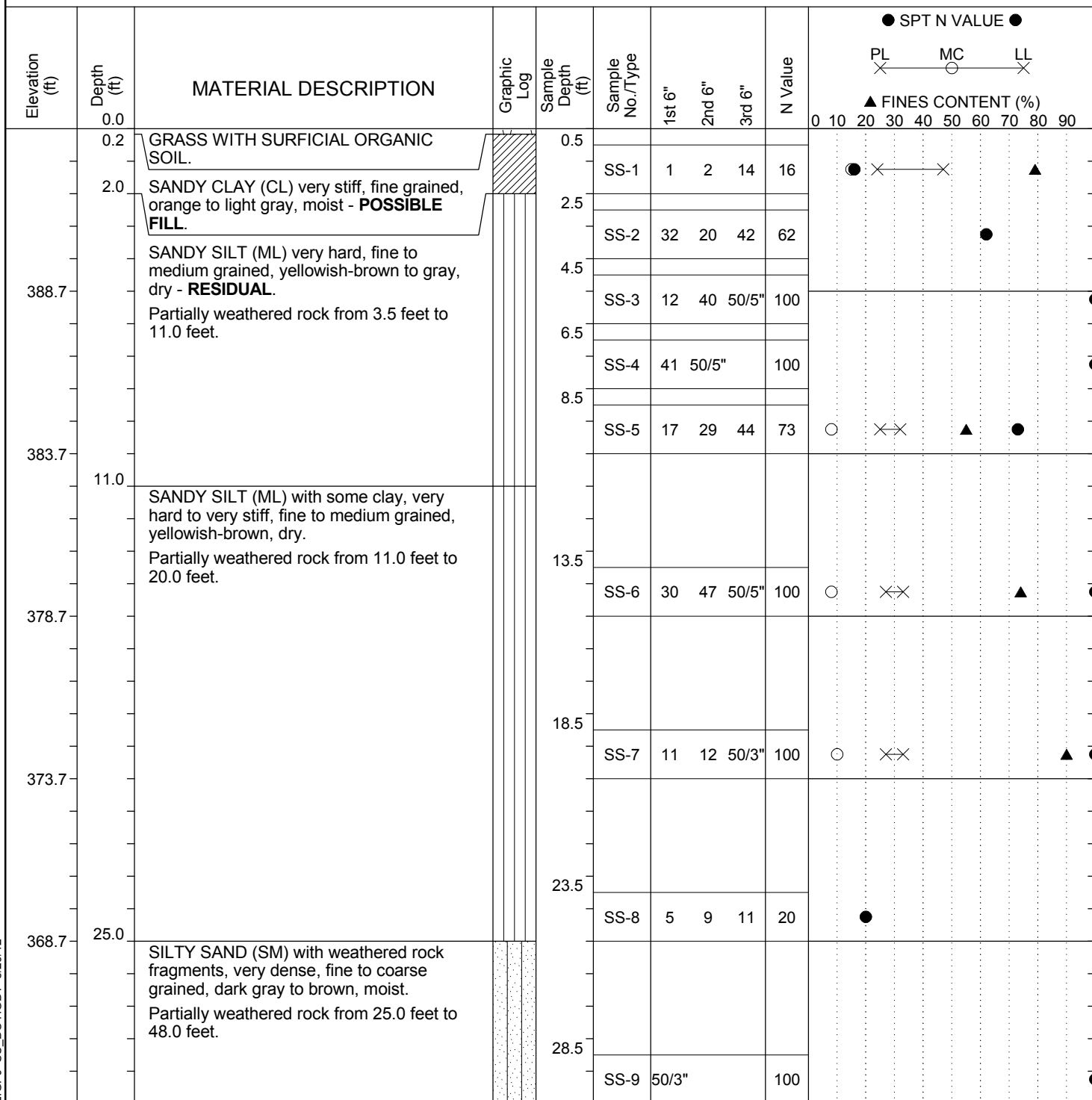
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	● SPT N VALUE ● PL MC LL ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90
	60.5	Bottom of borehole at 60.5 feet.								
329.2										
324.2										
319.2										
314.2										
309.2										

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	B-2A	Boring Location:	36+70	Offset:	18' RT	Alignment:	
Elev.:	393.7 ft	Latitude:	837975	Longitude:	1934238	Date Started:	03/20/12
Total Depth:	100 ft	Soil Depth:	48' ft	Core Depth:	52' ft	Date Completed:	3/19/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-550	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:	NQ Wireline	Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	25.5'



LEGEND

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SC_DOT 65N-0302.GPJ SC_DOT.GDT 8/29/12

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

SCDOT Soil Test Boring Log

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Drill Machine:	CME-550	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:	NQ Wireline	Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	25.5'

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
358.7		SILTY SAND (SM) with weathered rock fragments, very dense, fine to coarse grained, dark gray to brown, moist. Partially weathered rock from 25.0 feet to 48.0 feet.		33.5	SS-10	50/5"			100	
353.7				38.5	SS-11	50/2"			100	
348.7		Spoon refusal at 48.0 feet. Tri-cone refusal at 48.0 feet. Set casing at 48.0 feet and started rock coring.		43.5	SS-12	50/1"			100	
48.0		Metamorphic Phyllite; green to greenish-gray; very fine grained, subangular; thinly laminated; quartz, chlorite, biotite; slightly weathered; medium strong rock; no discontinuities; closely fractured; Carolina Terrane.		48.0	SS-13	50/0"			100	
343.7				49.0	NX-14					REC = 100%, RQD = 17%
				50.0	NX-15					REC = 100%, RQD = 77%
338.7				55.0	NX-16					REC = 100%, RQD = 82%
				60.0						

LEGEND

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SAMPLER TYPE

DRILLING METHOD

SS - Split Spoon
ST - Shelby Tube
AWG - Rock Core, 1-1/8"

NQ - Rock Core, 1-7/8"
CU - Cuttings
CT - Continuous Tube

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing

RW - Rotary Wash
RC - Rock Core

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
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Elev.:	393.7 ft	Latitude:	837975	Longitude:	1934238	Date Started:	03/20/12
Total Depth:	100 ft	Soil Depth:	48' ft	Core Depth:	52' ft	Date Completed:	3/19/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-550	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:	NQ Wireline	Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	25.5'

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
328.7				65.0	NX-17					REC = 93%, RQD = 93%
323.7				70.0	NX-18					REC = 100%, RQD = 83%
318.7				75.0	NX-19					REC = 93%, RQD = 87%
313.7				80.0	NX-20					REC = 97%, RQD = 92%
308.7				85.0	NX-21					REC = 100%, RQD = 100%
				90.0	NX-22					REC = 83%, RQD = 83%

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
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Elev.:	393.7 ft	Latitude:	837975	Longitude:	1934238	Date Started:	03/20/12
Total Depth:	100 ft	Soil Depth:	48' ft	Core Depth:	52' ft	Date Completed:	3/19/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-550	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:	NQ Wireline	Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	25.5'

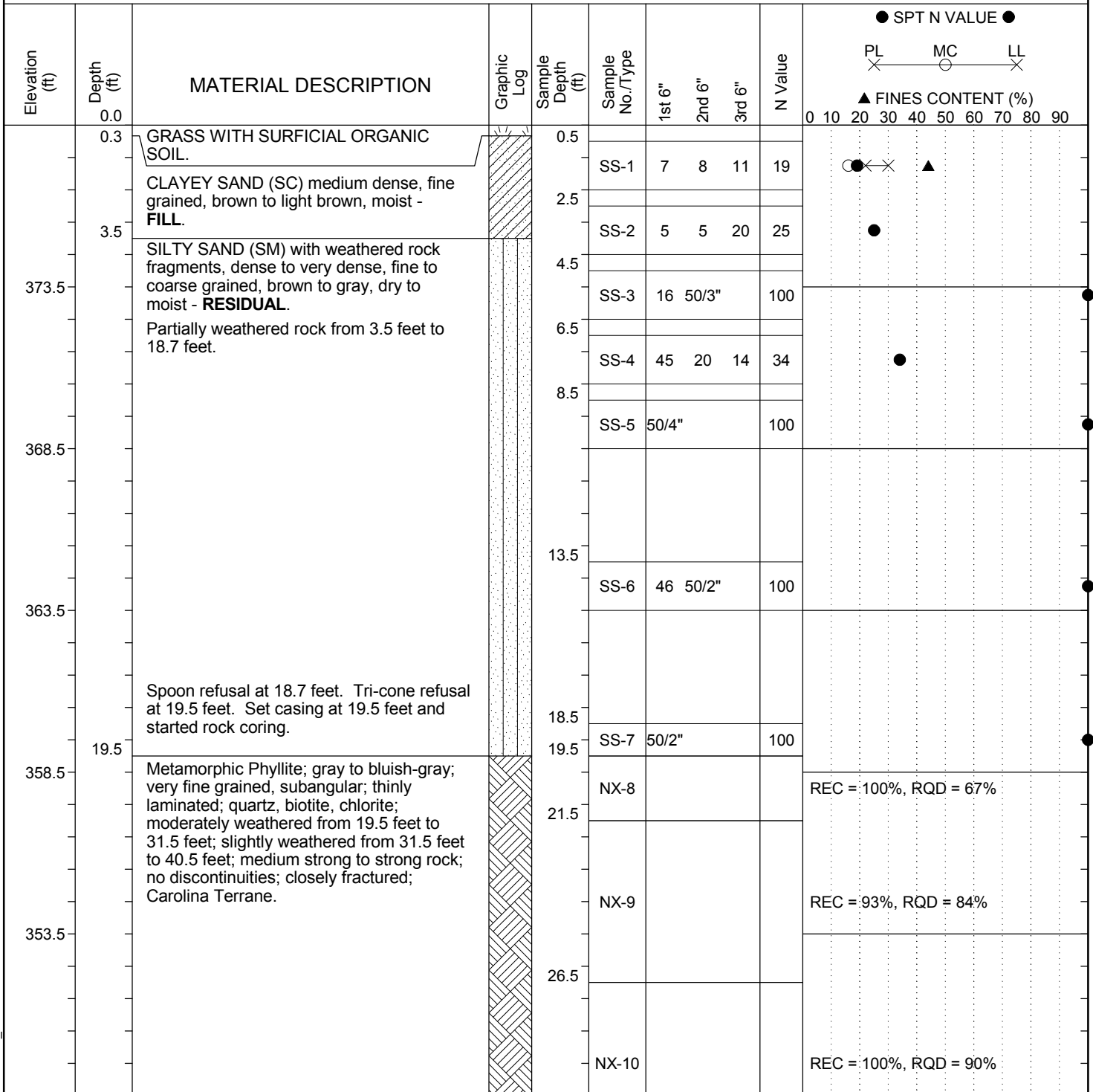
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	● SPT N VALUE ● PL MC LL ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90
298.7				95.0	NX-23					REC = 100%, RQD = 100%
293.7	100.0	Bottom of borehole at 100.0 feet.			NX-24					REC = 100%, RQD = 82%
288.7										
283.7										
278.7										

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	B-3	Boring Location:	37+70	Offset:	14' LT	Alignment:	
Elev.:	378.5 ft	Latitude:	838078	Longitude:	1934217	Date Started:	03/29/12
Total Depth:	40.5 ft	Soil Depth:	19.5' ft	Core Depth:	20' ft	Date Completed:	3/29/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-550	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:	NQ Wireline	Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	NR



LEGEND

Continued Next Page

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	B-3	Boring Location:	37+70	Offset:	14' LT	Alignment:	
Elev.:	378.5 ft	Latitude:	838078	Longitude:	1934217	Date Started:	03/29/12
Total Depth:	40.5 ft	Soil Depth:	19.5' ft	Core Depth:	20' ft	Date Completed:	3/29/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-550	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:	NQ Wireline	Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	NR

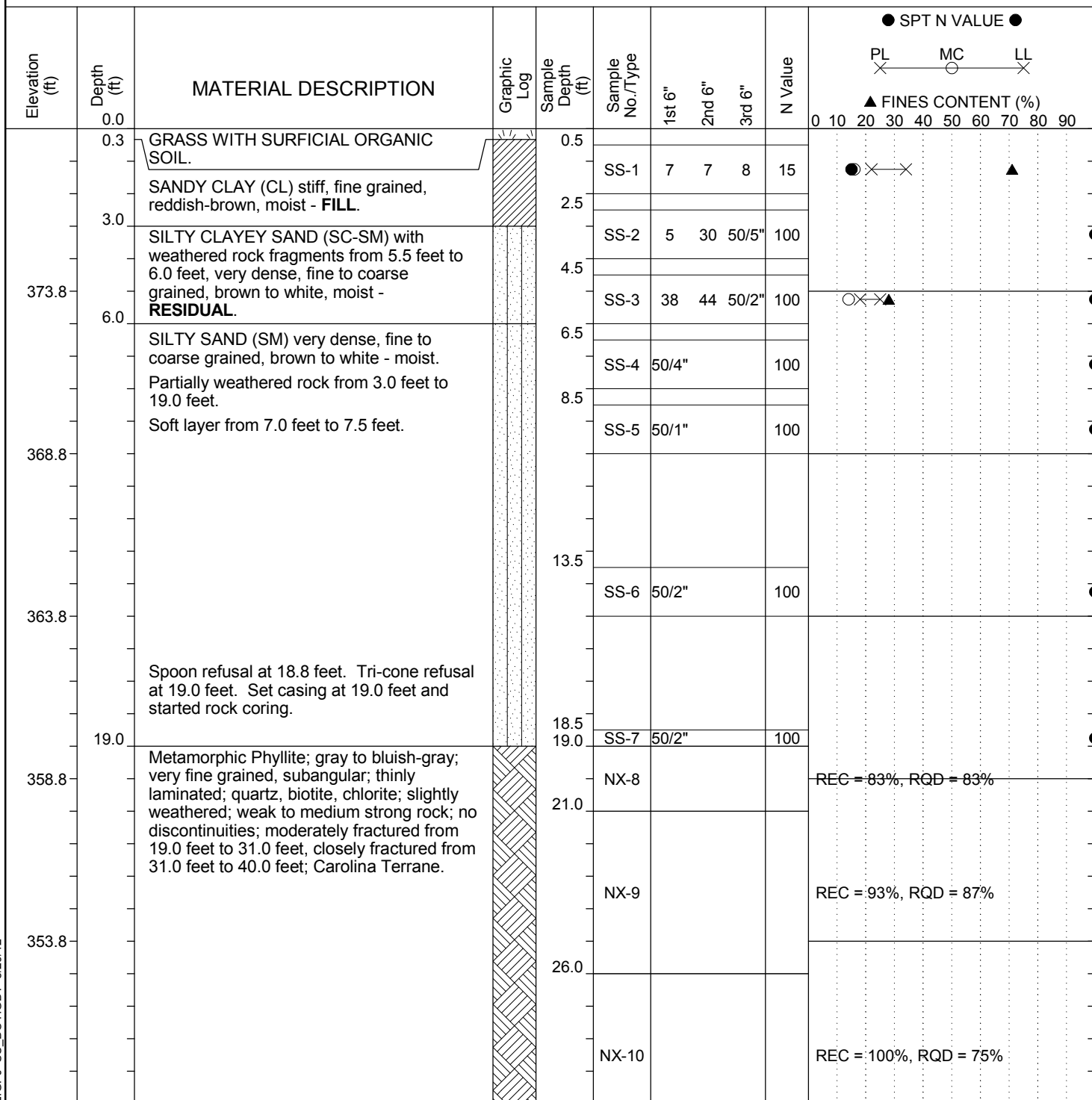
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	● SPT N VALUE ● PL X MC O LL X ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90
343.5				31.5						
					NX-11					REC = 95%, RQD = 84%
				36.5						
					NX-12					REC = 100%, RQD = 95%
338.5	40.5	Bottom of borehole at 40.5 feet.								
333.5										
328.5										
323.5										

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	B-4	Boring Location:	37+57	Offset:	13' RT	Alignment:	
Elev.:	378.8 ft	Latitude:	838062	Longitude:	1934242	Date Started:	03/28/12
Total Depth:	40 ft	Soil Depth:	19' ft	Core Depth:	20' ft	Date Completed:	3/28/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-550	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:	NQ Wireline	Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	NR



LEGEND

Continued Next Page

SC_DOT 65N-0302.GPJ SC_DOT.GDT 8/29/12

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	B-4	Boring Location:	37+57	Offset:	13' RT	Alignment:	
Elev.:	378.8 ft	Latitude:	838062	Longitude:	1934242	Date Started:	03/28/12
Total Depth:	40 ft	Soil Depth:	19' ft	Core Depth:	20' ft	Date Completed:	3/28/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-550	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:	NQ Wireline	Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	NR

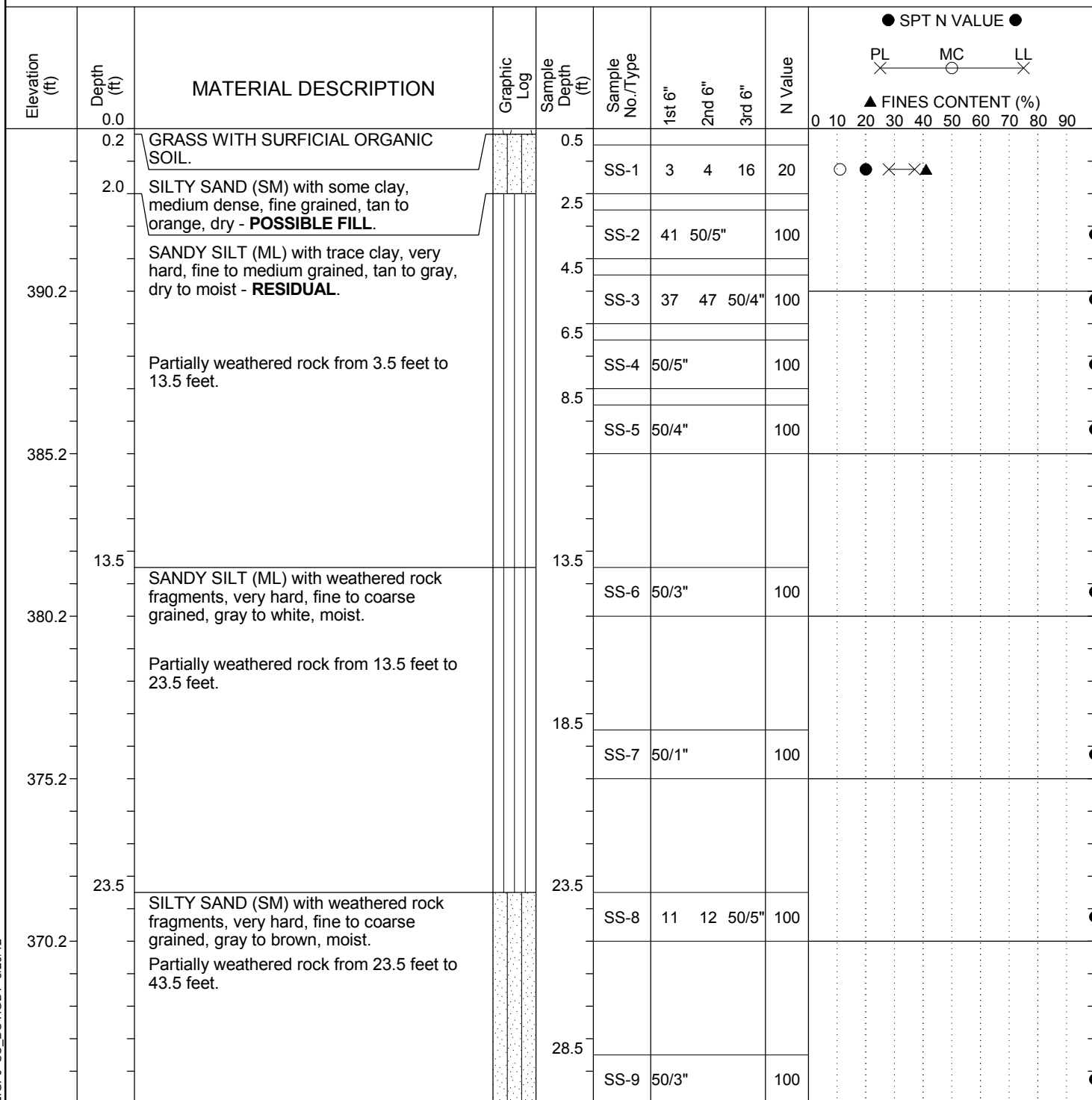
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	● SPT N VALUE ● PL MC LL ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90
343.8				31.0						
					NX-11					REC = 100%, RQD = 80%
338.8	40.0	Bottom of borehole at 40.0 feet.		35.0						
					NX-12					REC = 100%, RQD = 100%
333.8										
328.8										
323.8										

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	B-5	Boring Location:	38+87	Offset:	16' LT	Alignment:	
Elev.:	395.2 ft	Latitude:	838194	Longitude:	1934228	Date Started:	04/02/12
Total Depth:	82 ft	Soil Depth:	44' ft	Core Depth:	38' ft	Date Completed:	4/3/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-550	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:	NQ Wireline	Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	25.3'



LEGEND

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SAMPLER TYPE

DRILLING METHOD

SS - Split Spoon
ST - Shelby Tube
AWG - Rock Core, 1-1/8"

NQ - Rock Core, 1-7/8"
CU - Cuttings
CT - Continuous Tube

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing

RW - Rotary Wash
RC - Rock Core

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	B-5	Boring Location:	38+87	Offset:	16' LT	Alignment:	
Elev.:	395.2 ft	Latitude:	838194	Longitude:	1934228	Date Started:	04/02/12
Total Depth:	82 ft	Soil Depth:	44' ft	Core Depth:	38' ft	Date Completed:	4/3/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-550	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:	NQ Wireline	Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	25.3'

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>
360.2		Spool Refusal at 43.5 feet. Tri-cone refusal at 44.0 feet. Set casing at 44.0 feet and started rock coring.		33.5	SS-10	50/4"			100	
355.2				38.5	SS-11	50/2"			100	
350.2	44.0			43.5 44.0	SS-12	50/0"			100	
345.2		Metamorphic Phyllite; green to brown from 44.0 feet to 52.0 feet, green to bluish-gray from 52.0 feet to 82.0 feet; very fine grained, subangular, thinly laminated; quartz, biotite, chlorite; moderately weathered; weak to medium strong rock; mud seam from 48.0 feet to 48.5 feet, weathered rock seam from 52.0 feet to 62.0 feet, sand seam from 62.0 feet to 62.5 feet, sand seam from 73.5 feet to 75.0 feet; moderately fractured from 44.0 feet to 52.0 feet, highly fractured from 52.0 feet to 62.0 feet, moderately fractured from 62.0 feet to 82.0 feet; Carolina Terrane.		47.0	NX-13					REC = 100%, RQD = 64%
				52.0	NX-14					REC = 100%, RQD = 33%
340.2				57.0	NX-15	50/0"			100	REC = 90%, RQD = 0%
					NX-16					REC = 80%, RQD = 0%

LEGEND

Continued Next Page

SAMPLER TYPE

DRILLING METHOD

SS - Split Spoon
 ST - Shelby Tube
 AWG - Rock Core, 1-1/8"
 NQ - Rock Core, 1-7/8"
 CU - Cuttings
 CT - Continuous Tube

HSA - Hollow Stem Auger
 CFA - Continuous Flight Augers
 DC - Driving Casing
 RW - Rotary Wash
 RC - Rock Core

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	B-5	Boring Location:	38+87	Offset:	16' LT	Alignment:	
Elev.:	395.2 ft	Latitude:	838194	Longitude:	1934228	Date Started:	04/02/12
Total Depth:	82 ft	Soil Depth:	44' ft	Core Depth:	38' ft	Date Completed:	4/3/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-550	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:	NQ Wireline	Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	25.3'

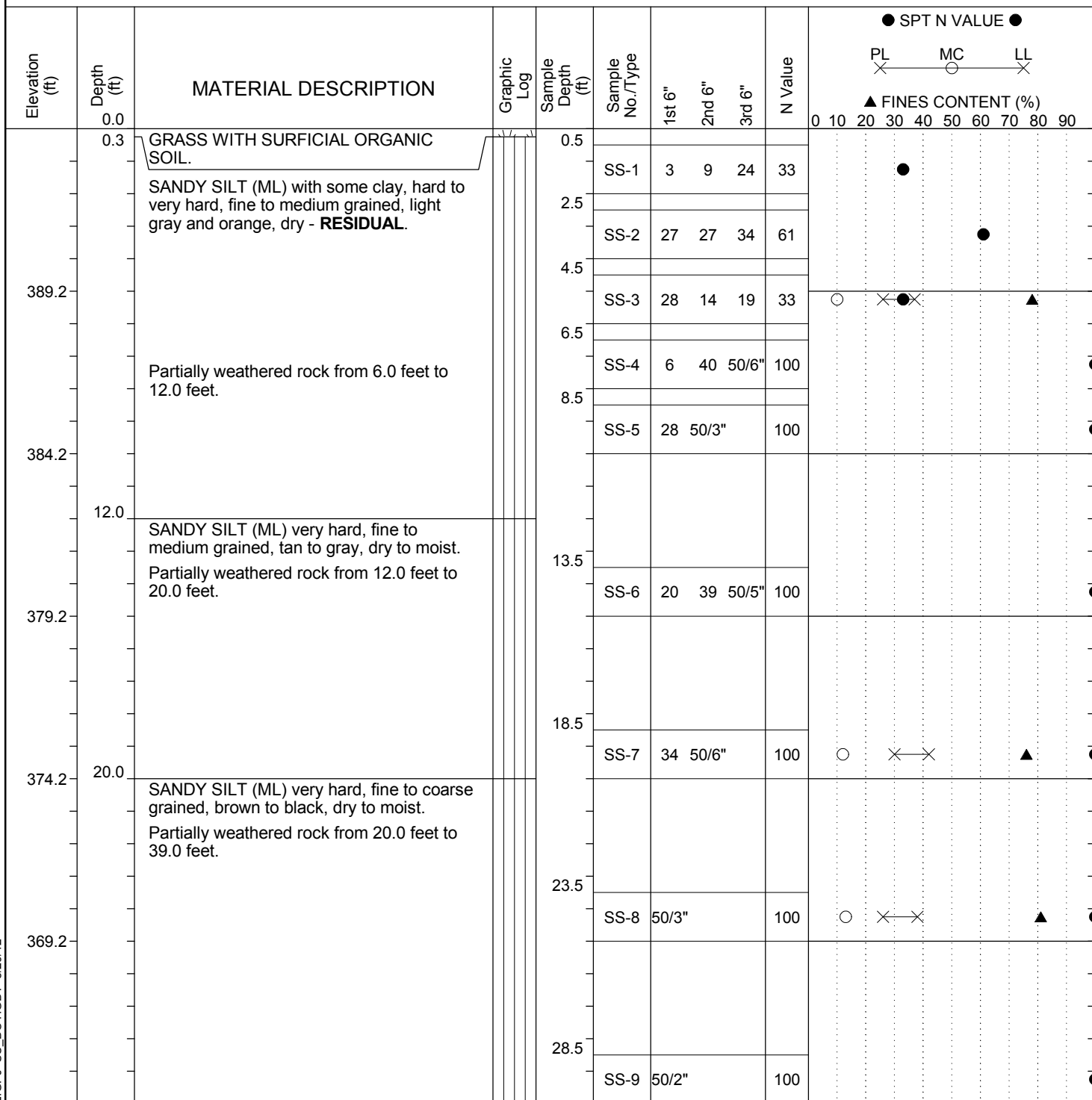
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
330.2				62.0						
					NX-17					REC = 100%, RQD = 53%
325.2				67.0						
					NX-18					REC = 90%, RQD = 60%
320.2				72.0						
					NX-19					REC = 95%, RQD = 55%
315.2				77.0						
					NX-20					REC = 100%, RQD = 100%
82.0		Bottom of borehole at 82.0 feet.								
310.2										

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	B-6	Boring Location:	38+72	Offset:	15' RT	Alignment:	
Elev.:	394.2 ft	Latitude:	838176	Longitude:	1934257	Date Started:	03/27/12
Total Depth:	59 ft	Soil Depth:	39' ft	Core Depth:	20' ft	Date Completed:	3/28/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-550	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:	NQ Wireline	Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	23.8'



LEGEND

Continued Next Page

SAMPLER TYPE

DRILLING METHOD

SS - Split Spoon
ST - Shelby Tube
AWG - Rock Core, 1-1/8"

NQ - Rock Core, 1-7/8"
CU - Cuttings
CT - Continuous Tube

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing

RW - Rotary Wash
RC - Rock Core

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	B-6	Boring Location:	38+72	Offset:	15' RT	Alignment:	
Elev.:	394.2 ft	Latitude:	838176	Longitude:	1934257	Date Started:	03/27/12
Total Depth:	59 ft	Soil Depth:	39' ft	Core Depth:	20' ft	Date Completed:	3/28/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-550	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:	NQ Wireline	Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	23.8'

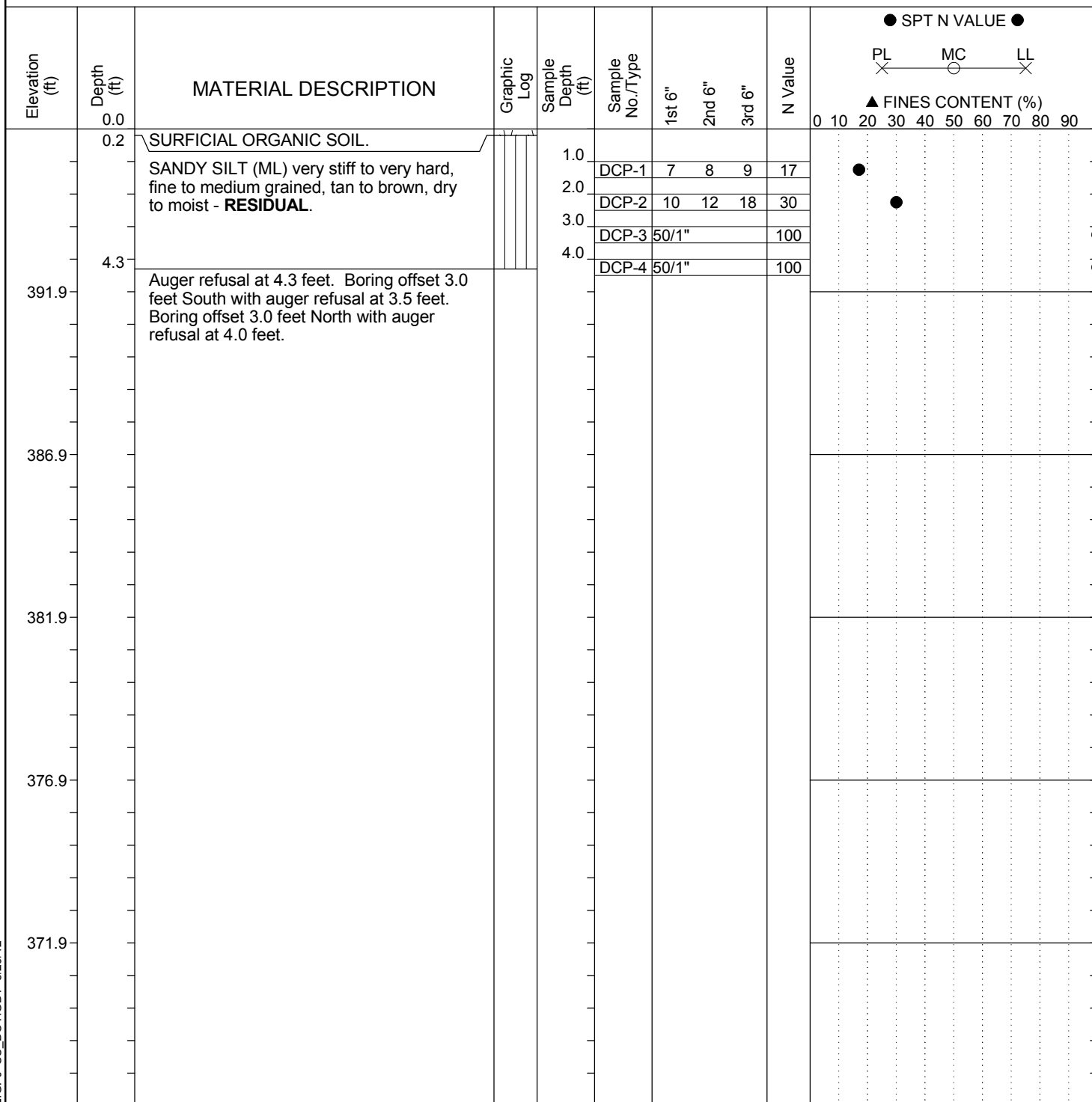
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	● SPT N VALUE ● PL — MC — LL ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90
359.2				33.5	SS-10	50/0"			100	
		Tri-cone refusal at 39.0 feet. Set casing at 39.0 feet and started rock coring.								
354.2	39.0	Metamorphic schist; green to bluish-gray; fine grained, subangular; thinly laminated; quartz, biotite, chlorite; slightly weathered; weak rock; no discontinuities; closely fractured from 39.0 feet to 46.0 feet, very fractured from 46.0 feet to 51.0 feet, moderately fractured from 51.0 feet to 59.0 feet; Carolina Terrane.		39.0	NX-11					REC = 100%, RQD = 67%
				41.0	NX-12					REC = 100%, RQD = 62%
349.2				46.0	NX-13					REC = 88%, RQD = 33%
344.2				51.0	NX-14					REC = 93%, RQD = 82%
339.2				56.0	NX-15					REC = 100%, RQD = 60%
	59.0	Bottom of borehole at 59.0 feet.								

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Deaver
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	HA-4	Boring Location:	33+46	Offset:	5' RT	Alignment:	
Elev.:	396.9 ft	Latitude:	837654	Longitude:	1934209	Date Started:	04/05/12
Total Depth:	4.3 ft	Soil Depth:	4.3' ft	Core Depth:	ft	Date Completed:	4/5/2012
Bore Hole Diameter (in):	3"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:		Drill Method:	Hand Auger	Hammer Type:	DCP	Energy Ratio:	
Core Size:		Driller:	Deaver	Groundwater:	TOB NR	24HR	

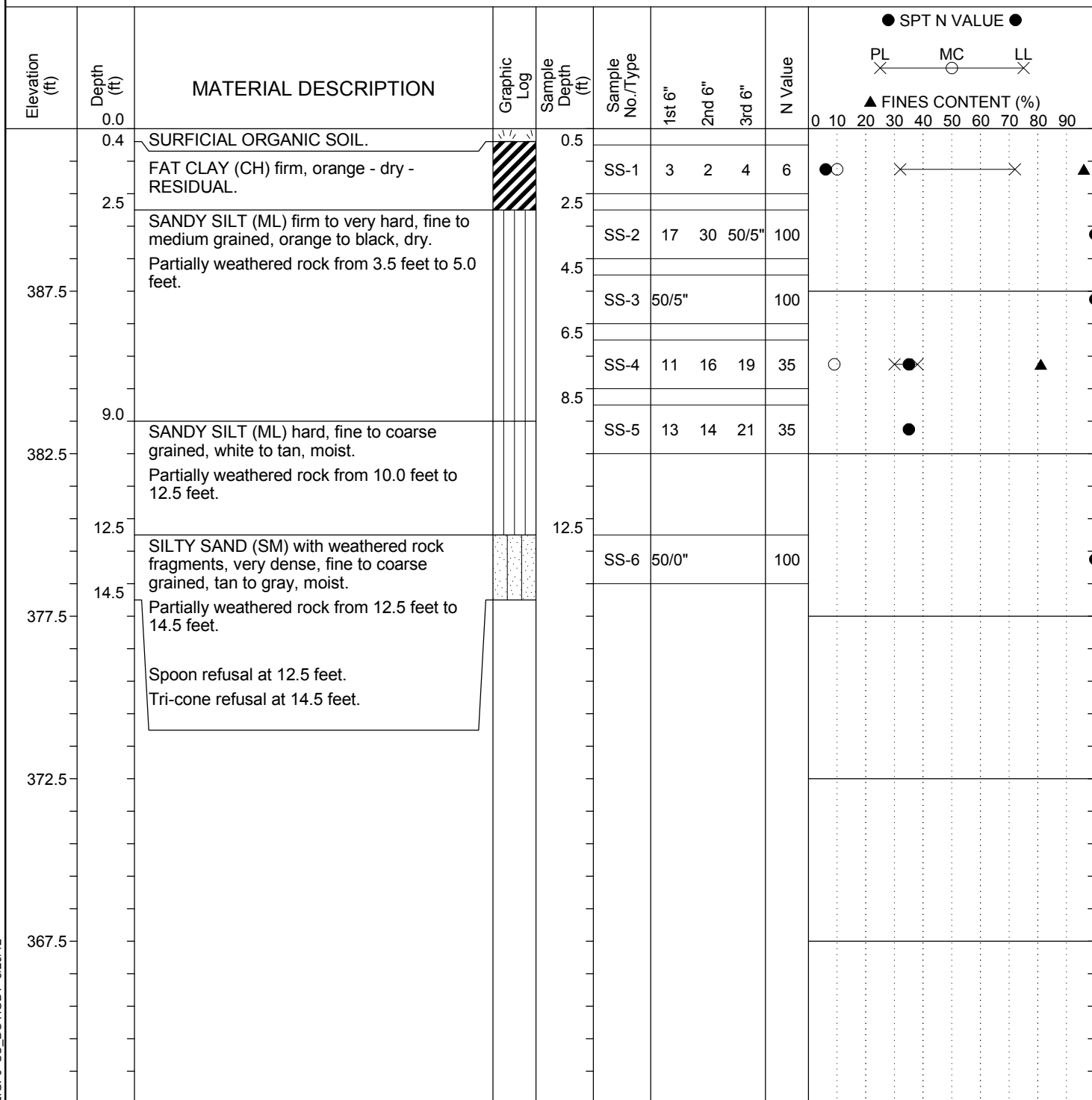


LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RD-1	Boring Location:	12+92	Offset:	10' S	Alignment:	
Elev.:	392.5 ft	Latitude:	837742	Longitude:	1934052	Date Started:	04/05/12
Total Depth:	14.5 ft	Soil Depth:	14.5' ft	Core Depth:	ft	Date Completed:	4/5/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:		Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	NR

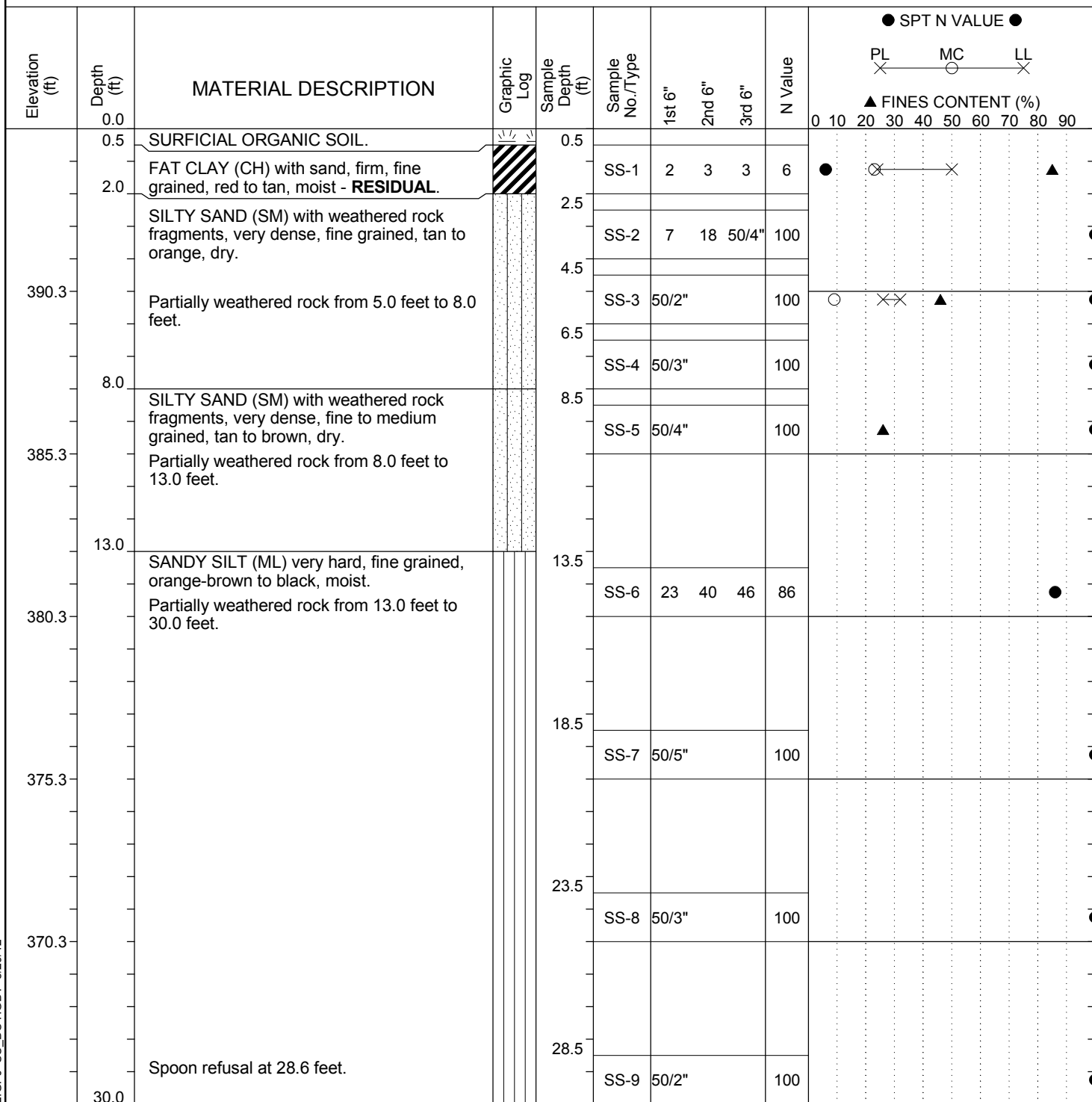


LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RD-2	Boring Location:	16+30	Offset:	30' S	Alignment:	
Elev.:	395.3 ft	Latitude:	837765	Longitude:	1933714	Date Started:	04/05/12
Total Depth:	30 ft	Soil Depth:	30' ft	Core Depth:	ft	Date Completed:	4/5/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:		Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	NR

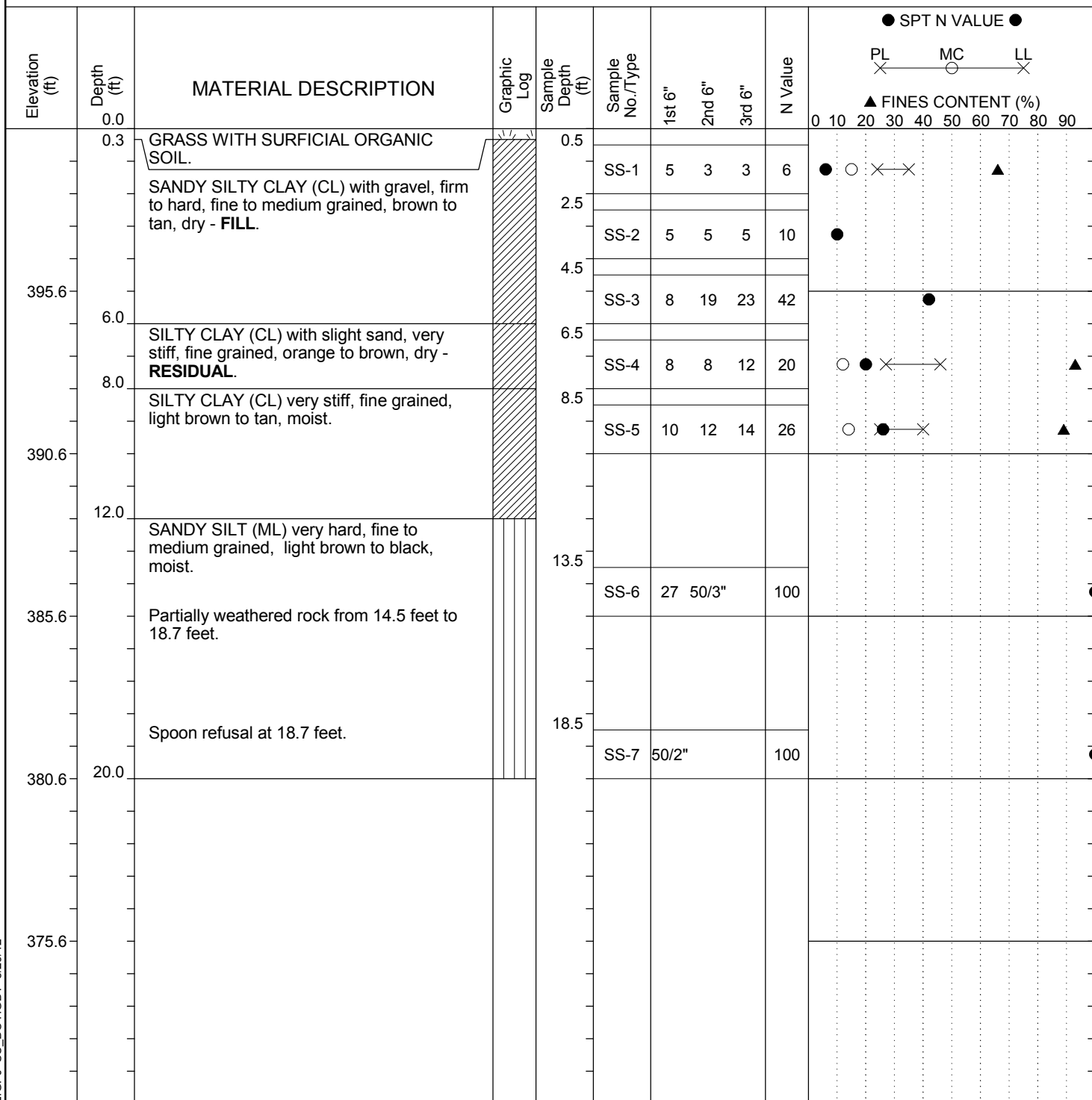


LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RD-4	Boring Location:	33+80	Offset:	25' RT	Alignment:	
Elev.:	400.6 ft	Latitude:	837689	Longitude:	1934227	Date Started:	04/06/12
Total Depth:	20 ft	Soil Depth:	20' ft	Core Depth:	ft	Date Completed:	4/6/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:		Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	Dry

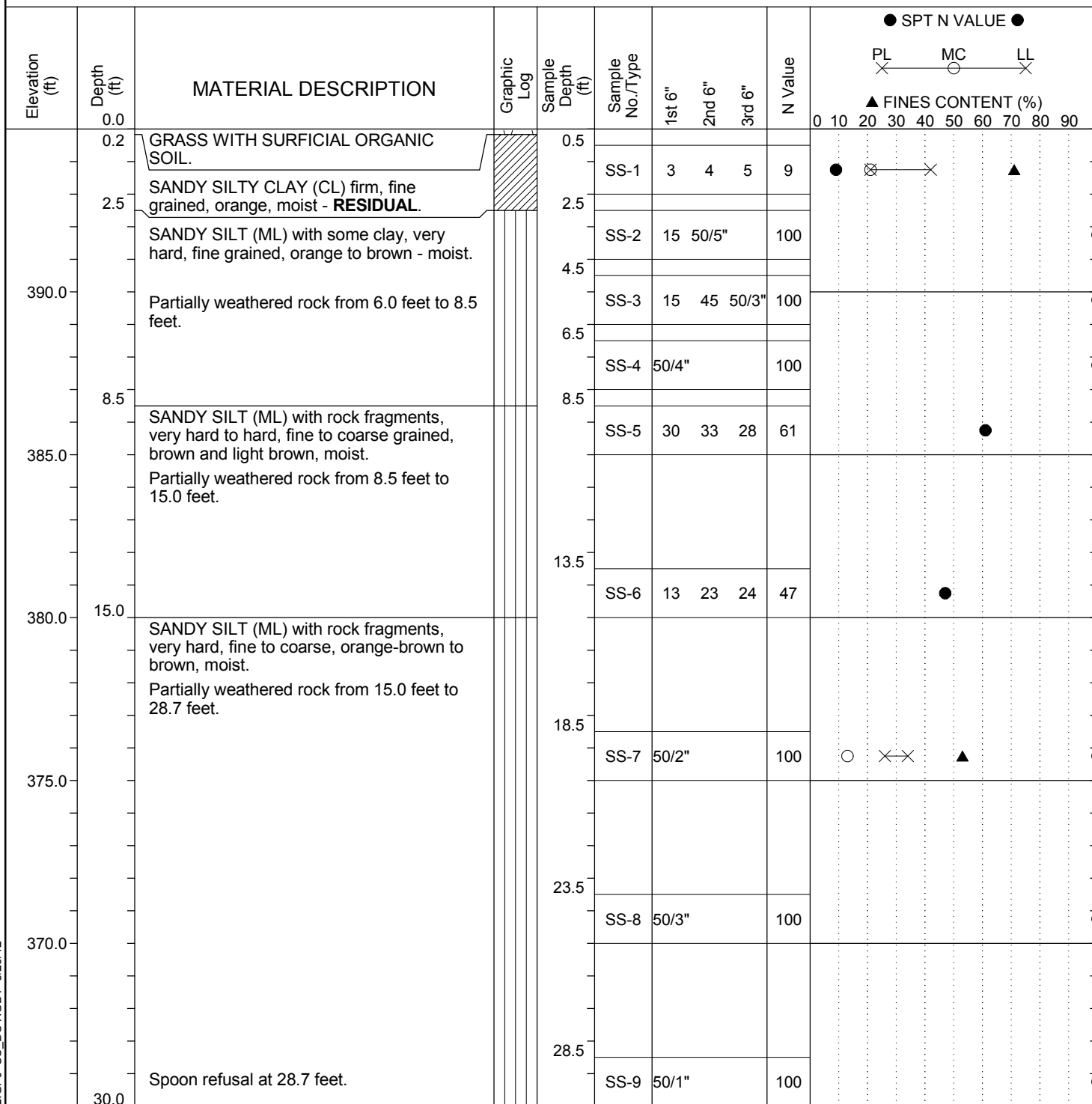


LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RD-5	Boring Location:	36+65	Offset:	1' LT	Alignment:	
Elev.:	395.0 ft	Latitude:	837972	Longitude:	1934218	Date Started:	03/21/12
Total Depth:	30 ft	Soil Depth:	30' ft	Core Depth:	ft	Date Completed:	3/21/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-850	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	74%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	18.5'



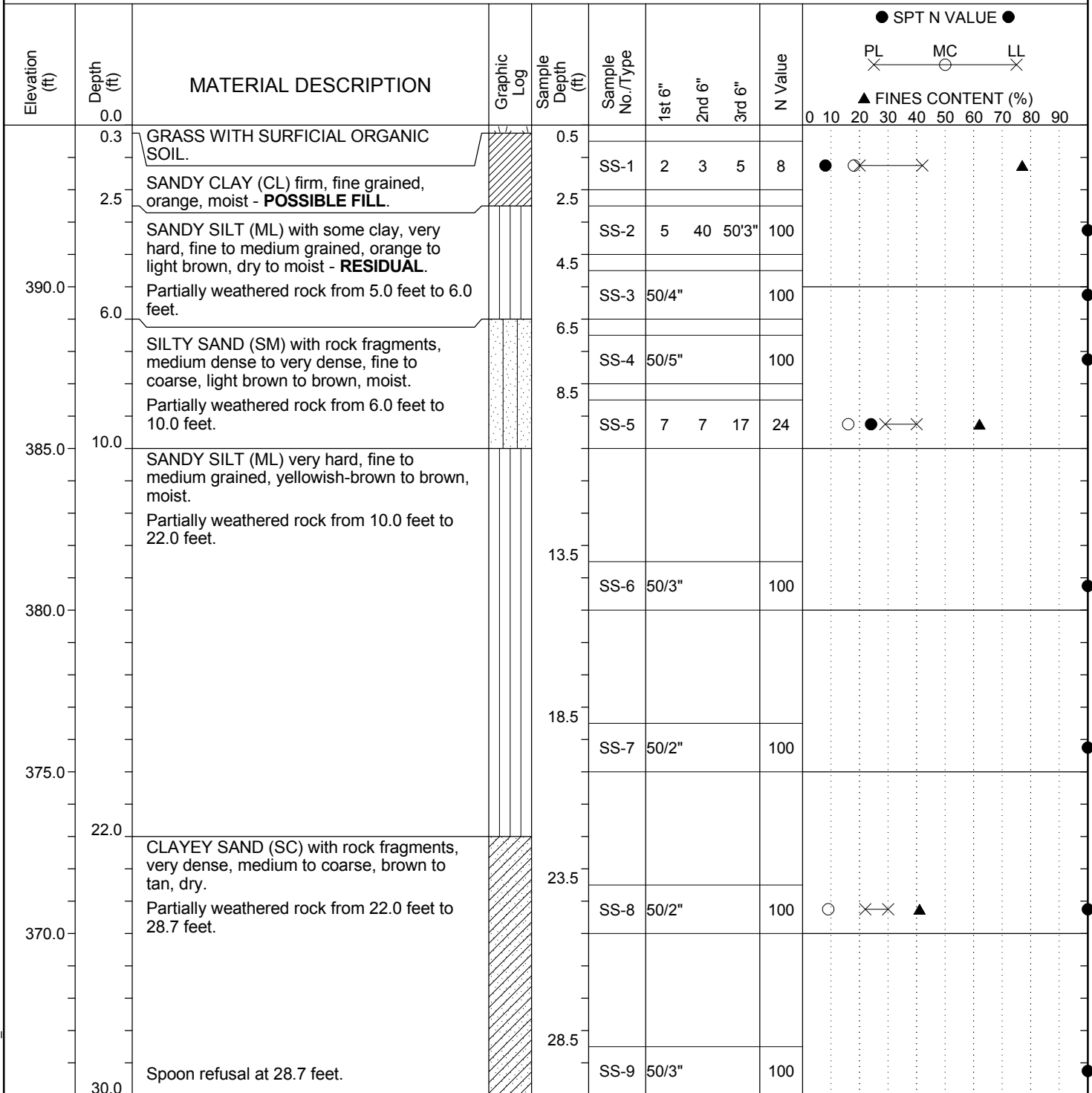
LEGEND

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

SC_DOT 65N-0302.GPJ SC_DOT.GDT 8/29/12

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RD-6	Boring Location:	38+83	Offset:	CL	Alignment:	
Elev.:	395.0 ft	Latitude:	838189	Longitude:	1934243	Date Started:	03/23/12
Total Depth:	30 ft	Soil Depth:	30' ft	Core Depth:	ft	Date Completed:	3/23/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-850	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	74%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	17.8'

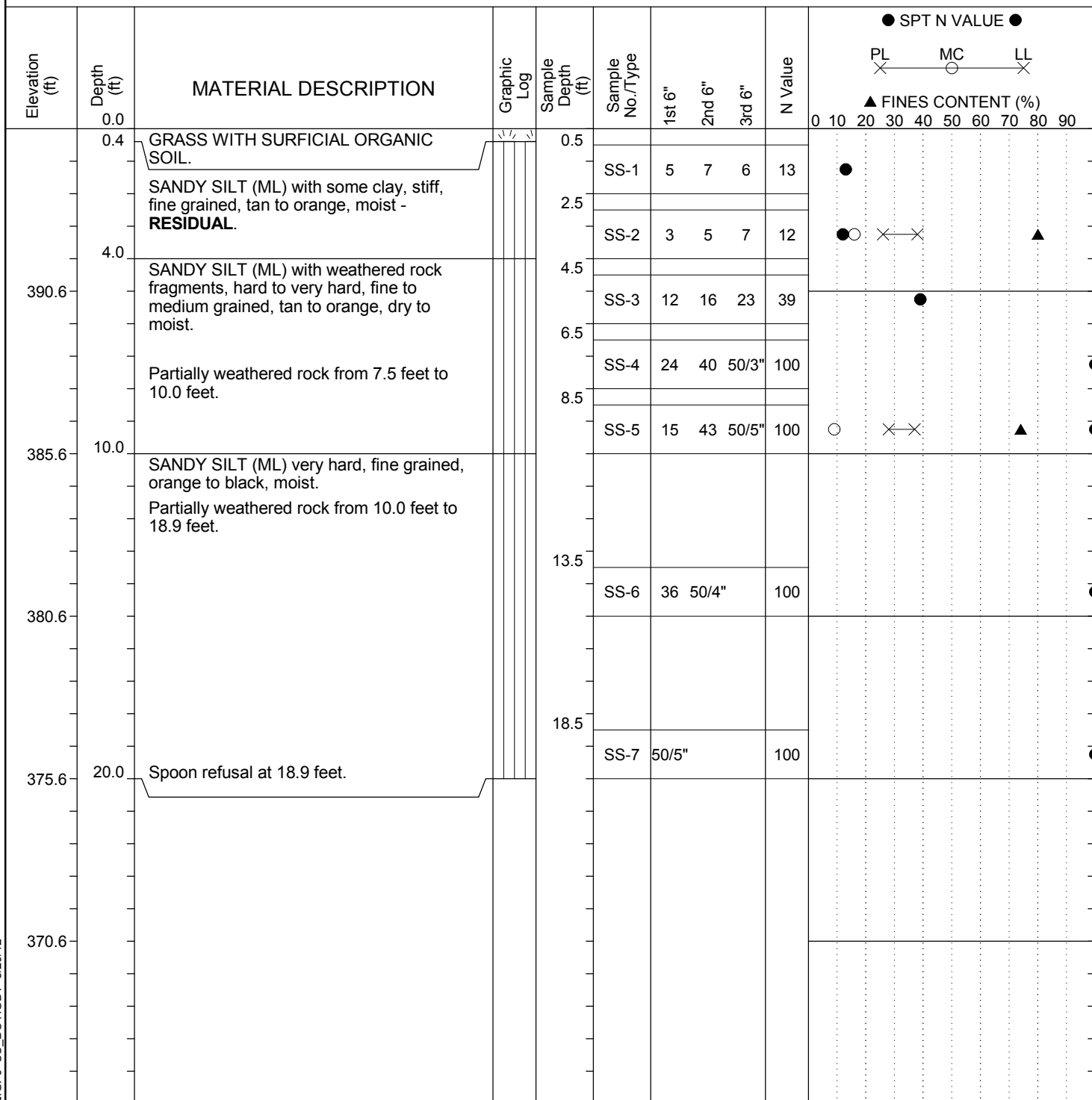


LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RD-7	Boring Location:	40+48	Offset:	25' RT	Alignment:	
Elev.:	395.6 ft	Latitude:	838350	Longitude:	1934286	Date Started:	04/04/12
Total Depth:	20 ft	Soil Depth:	20' ft	Core Depth:	ft	Date Completed:	4/4/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:		Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	Dry

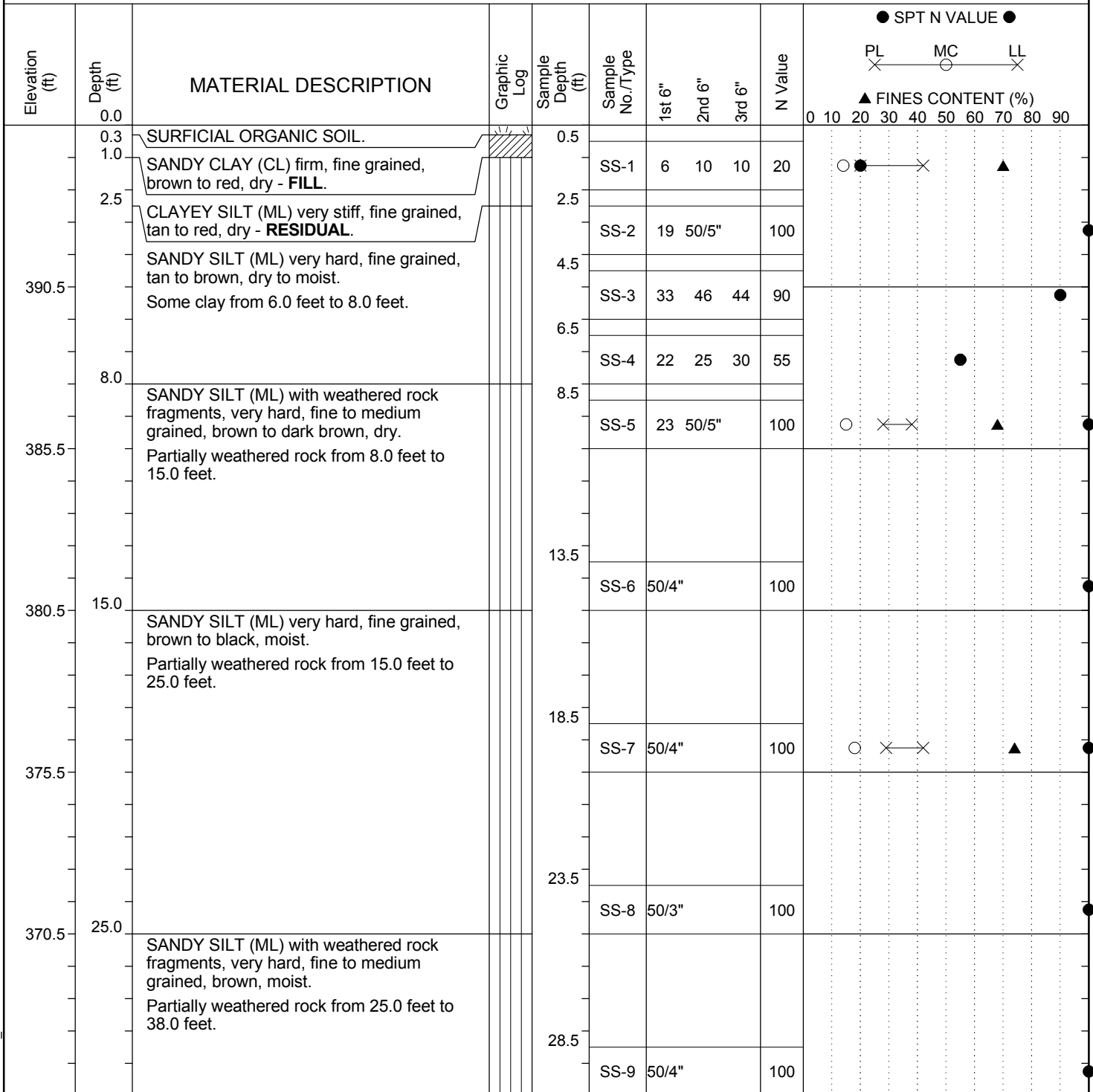


LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-1	Boring Location:	36+74	Offset:	21' LT	Alignment:	
Elev.:	395.5 ft	Latitude:	837983	Longitude:	1934199	Date Started:	03/21/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/21/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-850	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	74%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	20.1'



LEGEND

Continued Next Page

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-1	Boring Location:	36+74	Offset:	21' LT	Alignment:	
Elev.:	395.5 ft	Latitude:	837983	Longitude:	1934199	Date Started:	03/21/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/21/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-850	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	74%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	20.1'

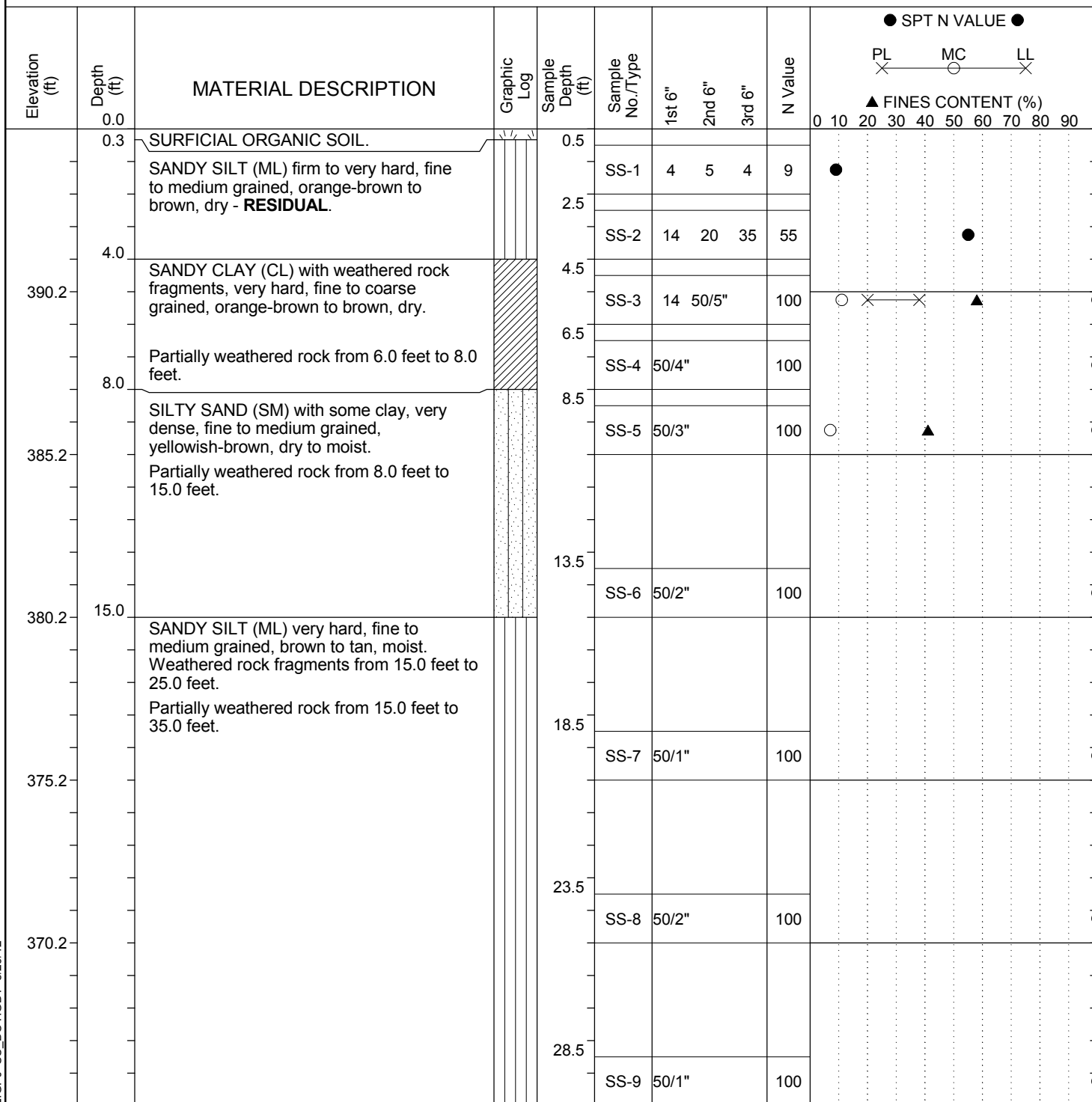
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
360.5		Moist to wet from 33.5 feet to 38.0 feet.		33.5	SS-10	50/2"			100	
355.5	40.0	Spoon refusal at 38.8 feet.		38.5	SS-11	50/4"			100	
350.5										
345.5										
340.5										

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-2	Boring Location:	36+79	Offset:	45' LT	Alignment:	
Elev.:	395.2 ft	Latitude:	837991	Longitude:	1934176	Date Started:	03/20/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/20/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-850	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	74%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	18.4'



LEGEND

Continued Next Page

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-2	Boring Location:	36+79	Offset:	45' LT	Alignment:	
Elev.:	395.2 ft	Latitude:	837991	Longitude:	1934176	Date Started:	03/20/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/20/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-850	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	74%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	18.4'

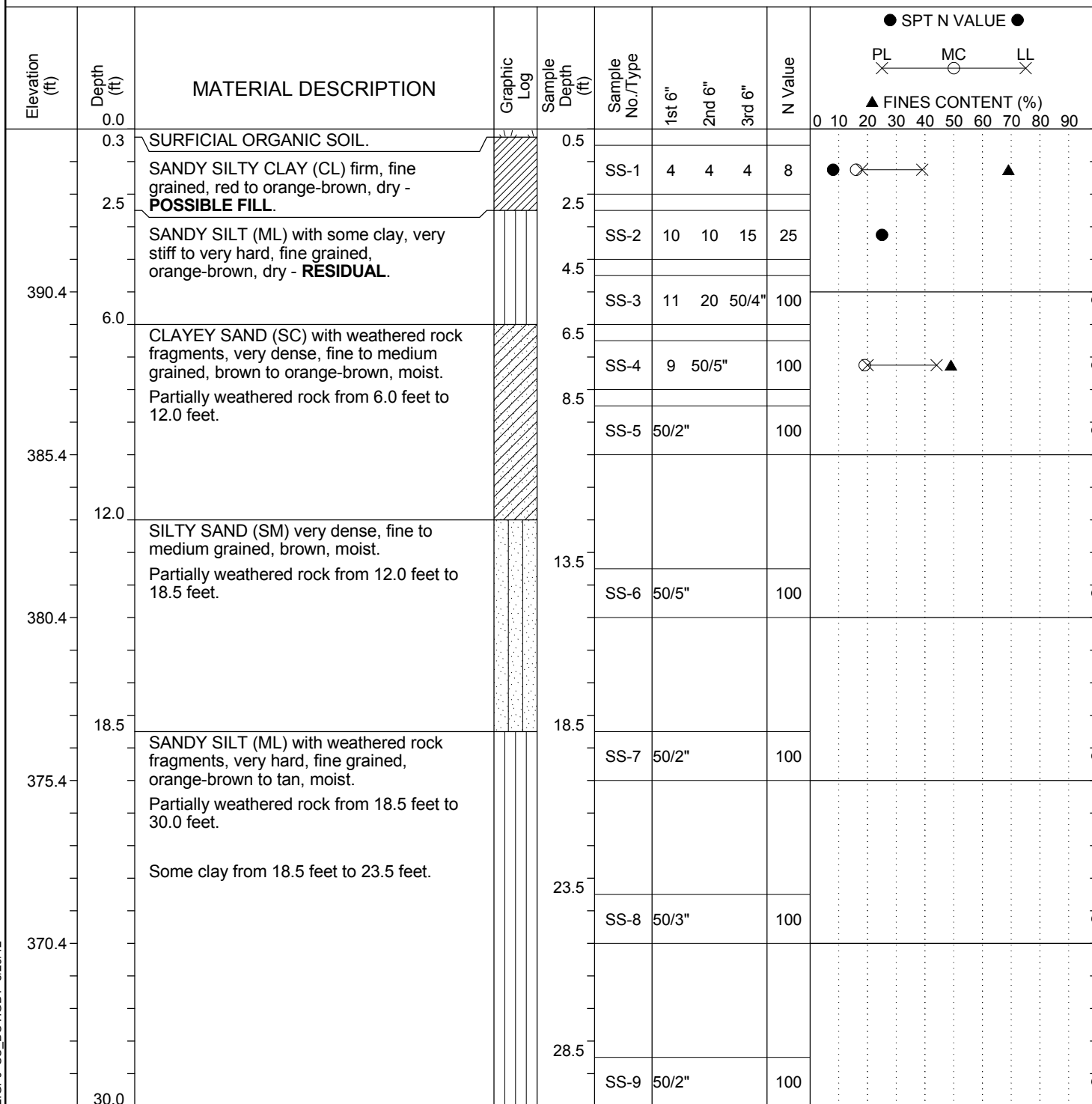
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	● SPT N VALUE ● PL — MC — LL ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90
360.2	35.0	SILTY SAND (SM) with weathered rock fragments, very dense, fine, brown, moist.		33.5	SS-10	18	50/2"		100	
355.2	40.0	Spoon refusal at 38.7 feet.		38.5	SS-11	50/2"			100	
350.2										
345.2										
340.2										

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-3	Boring Location:	36+84	Offset:	21.5' LT	Alignment:	
Elev.:	395.4 ft	Latitude:	837993	Longitude:	1934200	Date Started:	03/20/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/20/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-850	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	74%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	20.8'



LEGEND

Continued Next Page

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-3	Boring Location:	36+84	Offset:	21.5' LT	Alignment:	
Elev.:	395.4 ft	Latitude:	837993	Longitude:	1934200	Date Started:	03/20/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/20/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-850	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	74%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	20.8'

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
360.4		SILTY SAND (SM) with weathered rock fragments, very dense, fine to medium grained, light brown to dark brown, moist. Partially weathered rock from 30.0 feet to 40.0 feet.		33.5	SS-10	30	50/4"		100	
355.4	40.0	Spoon refusal at 38.6 feet.		38.5	SS-11	50/1"			100	
350.4										
345.4										
340.4										

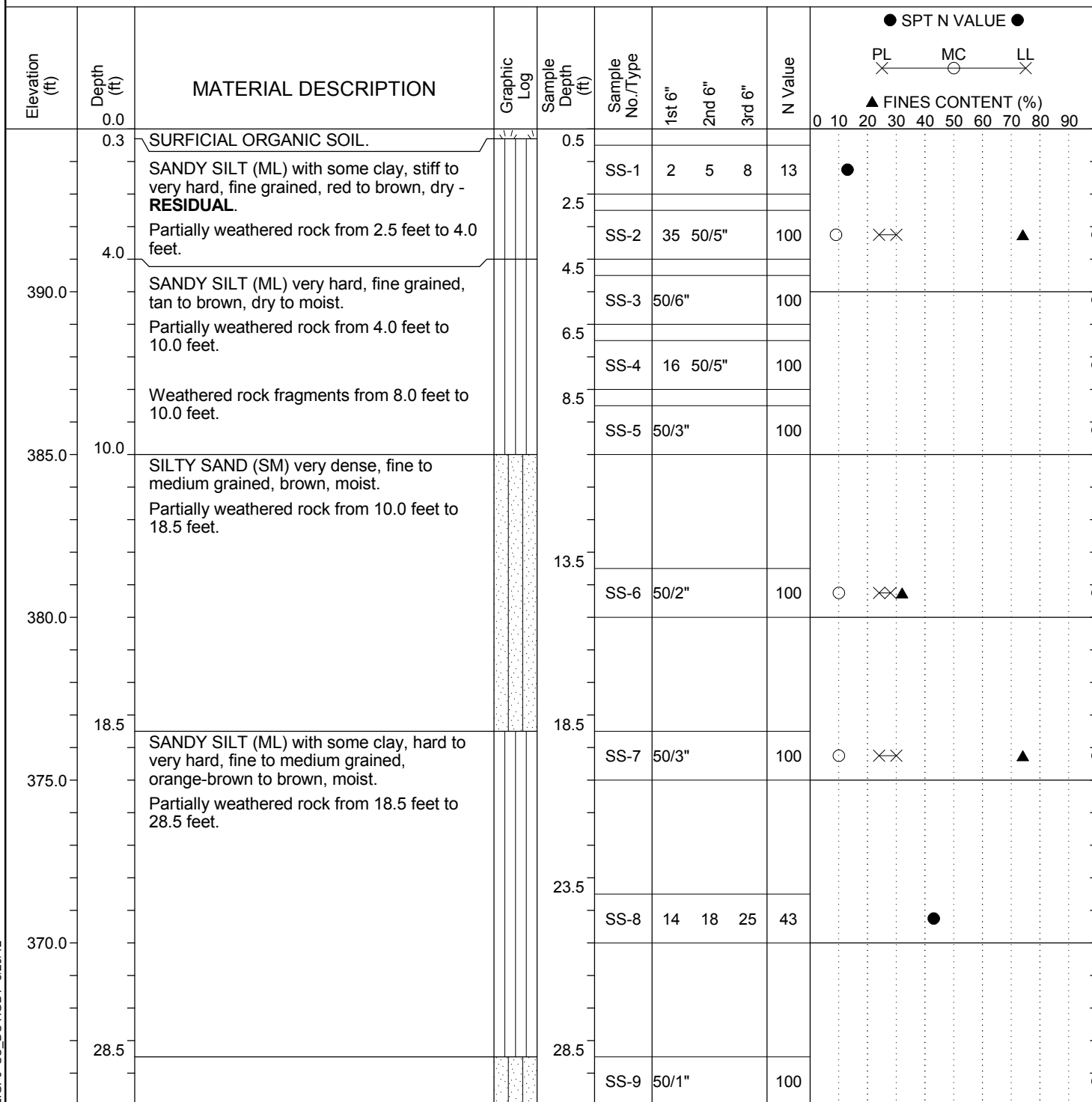
LEGEND

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

SC_DOT 65N-0302.GPJ SC_DOT.GDT 8/29/12

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-4	Boring Location:	36+92	Offset:	47' LT	Alignment:	
Elev.:	395.0 ft	Latitude:	838003	Longitude:	1934176	Date Started:	03/20/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/20/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-850	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	74%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	20.3'



LEGEND

Continued Next Page

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-4	Boring Location:	36+92	Offset:	47' LT	Alignment:	
Elev.:	395.0 ft	Latitude:	838003	Longitude:	1934176	Date Started:	03/20/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/20/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-850	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	74%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	20.3'

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
	33.5	SILTY SAND (SM) with weathered rock fragments, very dense, fine to medium grained, brown to tan, moist. Partially weathered rock from 28.5 feet to 33.5 feet.		33.5						
360.0		No Recovery. Partially weathered rock from 33.5 feet to 38.5 feet.			SS-10	50/0"			100	
		Spoon refusal at 38.5 feet.		38.5						
355.0	40.0				SS-11	50/0"			100	
350.0										
345.0										
340.0										

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-5	Boring Location:	37+10	Offset:	84' LT	Alignment:	
Elev.:	394.0 ft	Latitude:	838026	Longitude:	1934141	Date Started:	03/19/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/19/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-850	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	74%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	20.9'

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									0 10 20 30 40 50 60 70 80 90
	0.4	SURFICIAL ORGANIC SOIL.		0.5						
	1.5	SANDY SILT (ML) stiff, fine grained, red to brown, moist - POSSIBLE FILL.			SS-1	3	8	13	21	○ ● ×× ▲
		SANDY SILT (ML) with some clay, very hard, fine grained, tan to brown, dry - RESIDUAL.		2.5						
	4.0	Partially weathered rock from 2.5 feet to 4.0 feet.			SS-2	30	50/5"		100	
389.0				4.5						
		SANDY SILT (ML) very hard, fine to medium grained, orangish-brown to tan, dry.			SS-3	24	48	50/5"	100	
	8.0	Partially weathered rock from 4.0 feet to 8.0 feet.								
		SILTY SAND (SM) very dense, fine to medium grained, light brown to tan, dry.		6.5						
		Partially weathered rock from 8.0 feet to 18.5 feet.			SS-4	50/5"			100	
384.0				8.5						
					SS-5	50/4"			100	○ ×× ▲
				13.5						
					SS-6	50/4"			100	
379.0										
	18.5	SANDY SILT (ML) with some clay, very hard, fine grained, light brown to dark brown, dry to moist.		18.5						
		Partially weathered rock from 18.5 feet to 28.5 feet.			SS-7	50/3"			100	○ ×× ▲
374.0				23.5						
					SS-8	50/2"			100	○ ×× ▲
369.0										
	28.5			28.5						
					SS-9	50/1"			100	

LEGEND

Continued Next Page

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	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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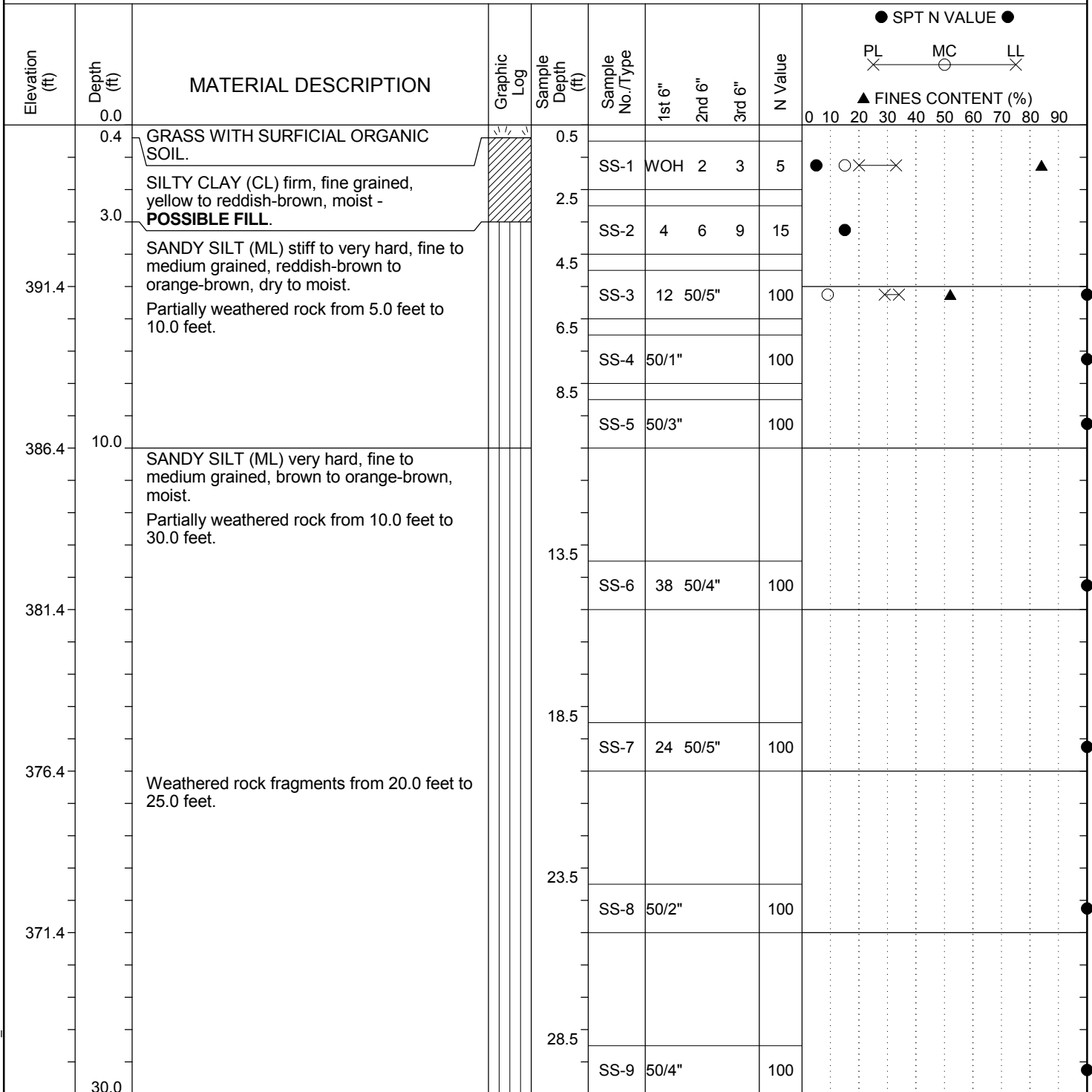
SAMPLER TYPE

DRILLING METHOD

SC DOT 65N-0302.GPJ SC DOT.GDT 8/29/12

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-6	Boring Location:	36+56	Offset:	22' RT	Alignment:	
Elev.:	396.4 ft	Latitude:	837961	Longitude:	1934240	Date Started:	03/26/12
Total Depth:	35 ft	Soil Depth:	35' ft	Core Depth:	ft	Date Completed:	3/26/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:		Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	22.8'



LEGEND

Continued Next Page

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	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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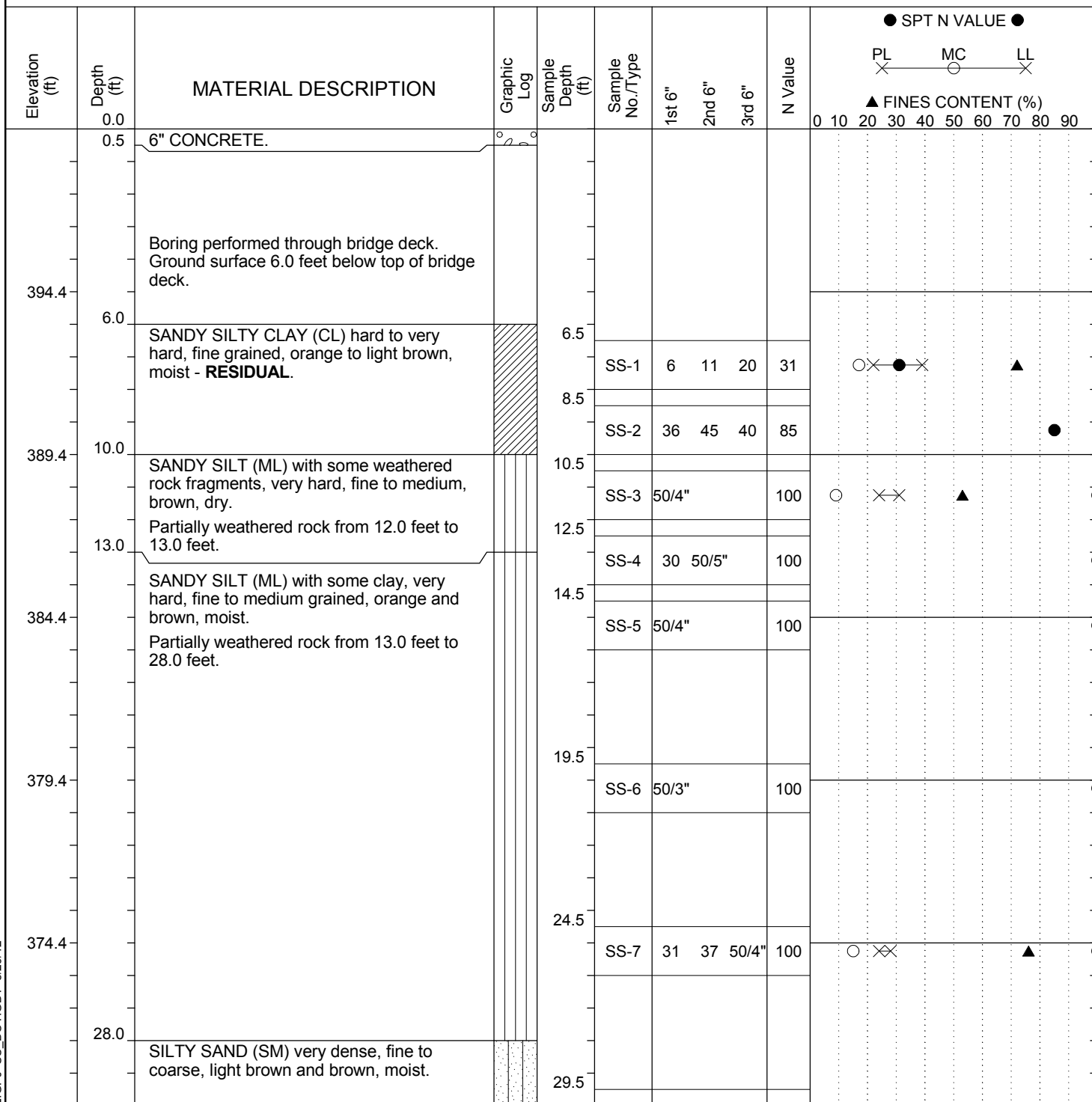
SAMPLER TYPE

DRILLING METHOD

SC DOT 65N-0302.GPJ SC DOT.GDT 8/29/12

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-7	Boring Location:	36+52	Offset:	39' RT	Alignment:	
Elev.:	399.4 ft	Latitude:	837955	Longitude:	1934257	Date Started:	03/27/12
Total Depth:	35 ft	Soil Depth:	29' ft	Core Depth:	ft	Date Completed:	3/27/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	73%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	NR



LEGEND

Continued Next Page

SAMPLER TYPE

DRILLING METHOD

SS - Split Spoon
ST - Shelby Tube
AWG - Rock Core, 1-1/8"

NQ - Rock Core, 1-7/8"
CU - Cuttings
CT - Continuous Tube

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing

RW - Rotary Wash
RC - Rock Core

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI	
Site Description:						S-80 Bridge Replacement over I-26	Route:	S-80
Boring No.:	RW-7	Boring Location:	36+52	Offset:	39' RT	Alignment:		
Elev.:	399.4 ft	Latitude:	837955	Longitude:	1934257	Date Started:		03/27/12
Total Depth:	35 ft	Soil Depth:	29' ft	Core Depth:	ft	Date Completed:		3/27/2012
Bore Hole Diameter (in):		6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:		73%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	NR	

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>
		Partially weathered rock from 28.0 feet to 34.5 feet.			SS-8	21	50/4"		100	
		Spoon refusal at 34.5 feet.								
		Tri-cone refusal at 35.0 feet.								
364.4	35.0			34.5	SS-9	50/0"			100	
359.4										
354.4										
349.4										
344.4										

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-8	Boring Location:	36+67	Offset:	23' RT	Alignment:	
Elev.:	394.0 ft	Latitude:	837971	Longitude:	1934243	Date Started:	03/15/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/15/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:		Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	21.9'

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									0 10 20 30 40 50 60 70 80 90
	0.4	GRASS WITH SURFICIAL ORGANIC SOIL.		0.5	SS-1	2	4	14	18	● ××
	2.0	SANDY SILT (ML) very stiff, fine to medium grained, red-brown to yellow-brown, dry to moist - POSSIBLE FILL .		2.5	SS-2	37	47	50/5"	100	●
389.0		SILTY SAND (SM) very dense, fine to medium grained, yellowish-brown, dry to moist - RESIDUAL .		4.5	SS-3	50/3"			100	●
		Partially weathered rock from 4.0 feet to 10.0 feet.		6.5	SS-4	50/4"			100	●
	10.0			8.5	SS-5	11	26	50/4"	100	●
384.0		SANDY SILT (ML) with some clay and weathered rock fragments, very dense, fine to coarse grained, yellowish-brown, moist.								
		Partially weathered rock from 10.0 feet to 18.5 feet.		13.5	SS-6	50/4"			48	○ ××
379.0										● ▲
	18.5	SANDY SILT (ML) with some clay, very stiff, fine grained, reddish-brown, moist.		18.5	SS-7	7	11	16	27	●
374.0										
	23.5	SANDY SILT (ML) with some clay, hard to very hard, fine grained, reddish-brown to brown, dry to moist.		23.5	SS-8	21	22	17	39	○ ×→●
369.0		Partially weathered rock from 27.0 feet to 33.5 feet.		28.5	SS-9	15	27	46	73	●

LEGEND

Continued Next Page

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-8	Boring Location:	36+67	Offset:	23' RT	Alignment:	
Elev.:	394.0 ft	Latitude:	837971	Longitude:	1934243	Date Started:	03/15/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/15/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:		Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	21.9'

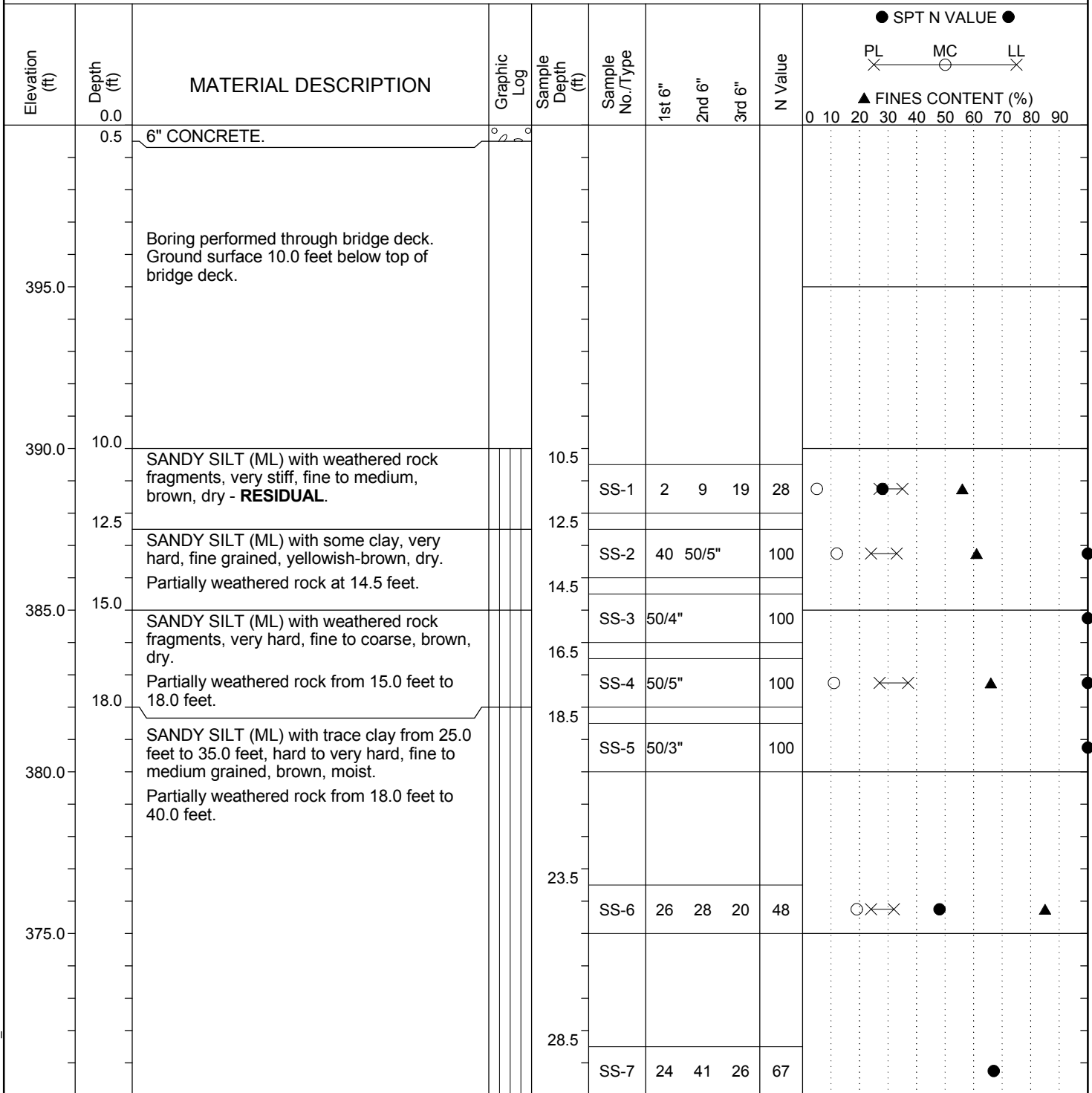
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> ● SPT N VALUE ● </div> <div> PL MC LL </div> <div> ▲ FINES CONTENT (%) </div>
359.0	33.5	SANDY SILT (ML) with weathered rock fragments, very hard, fine to medium grained, dark brown to brown, moist. Partially weathered rock from 33.5 feet to 40.0 feet.		33.5	SS-10	45	50/4"		100	
354.0	40.0	Spoon refusal at 39.8 feet.		38.5	SS-11	23	37	50/4"	100	

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-9	Boring Location:	36+70	Offset:	39'RT	Alignment:	
Elev.:	400.0 ft	Latitude:	837973	Longitude:	1934259	Date Started:	03/27/12
Total Depth:	50 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/27/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	73%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	NR



LEGEND

Continued Next Page

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-9	Boring Location:	36+70	Offset:	39'RT	Alignment:	
Elev.:	400.0 ft	Latitude:	837973	Longitude:	1934259	Date Started:	03/27/12
Total Depth:	50 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/27/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	73%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	NR

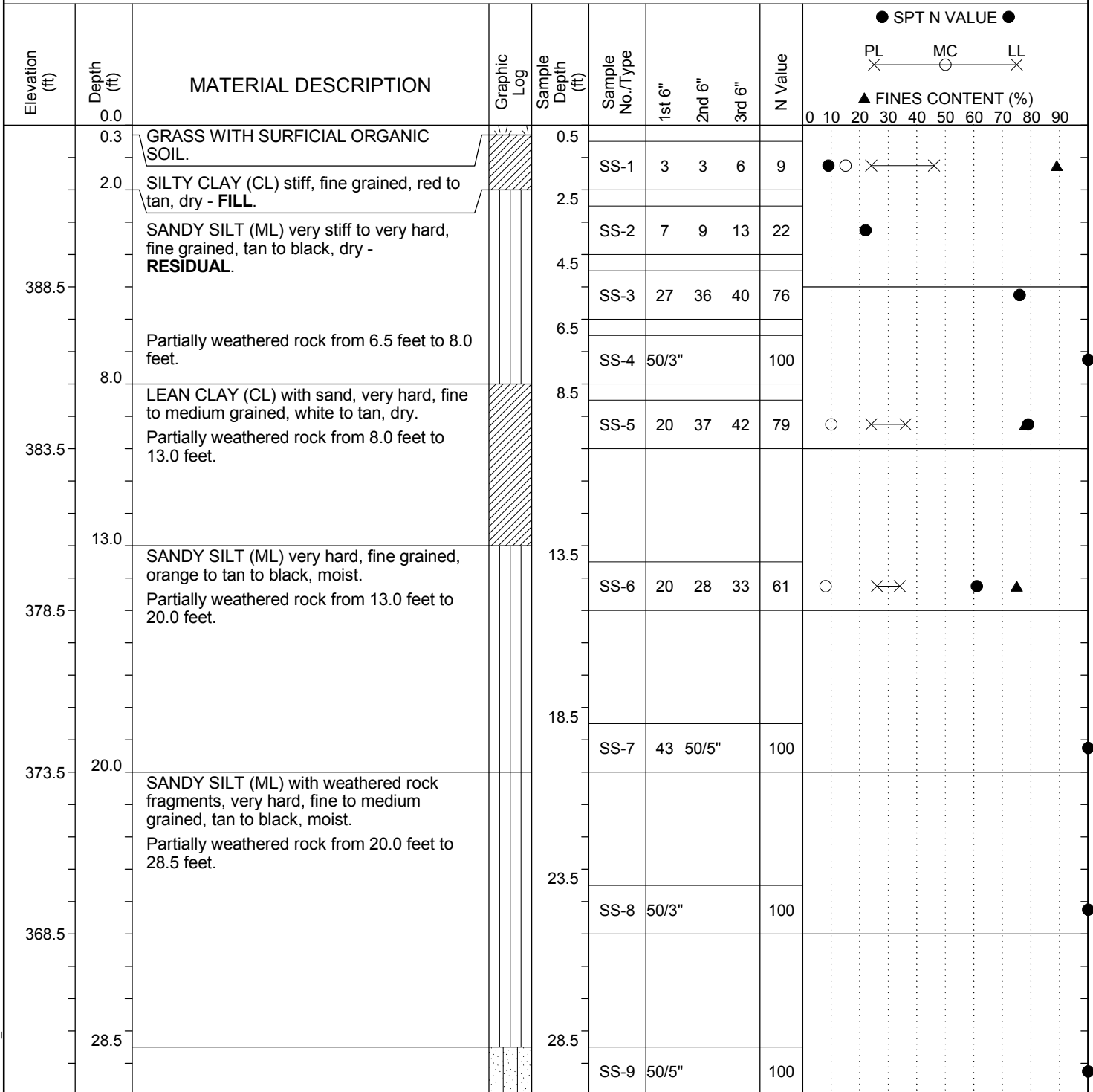
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
365.0				33.5	SS-8	44	28	35	63	
360.0	40.0	SILTY SAND (SM) with weathered rock fragments from 42.0 feet to 46.0 feet, very dense, fine to coarse, brown to gray, moist. Partially weathered rock from 40.0 feet to 48.8 feet.		38.5	SS-9	45	50/3"		100	
355.0				43.5	SS-10	50/2"			100	
350.0	50.0	Spoon refusal at 48.8 feet.		48.5	SS-11	50/2"			100	
345.0										

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-10	Boring Location:	36+42	Offset:	83' RT	Alignment:	
Elev.:	393.5 ft	Latitude:	837940	Longitude:	1934299	Date Started:	04/06/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	4/6/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:		Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	18.7'



LEGEND

Continued Next Page

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-10	Boring Location:	36+42	Offset:	83' RT	Alignment:	
Elev.:	393.5 ft	Latitude:	837940	Longitude:	1934299	Date Started:	04/06/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	4/6/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:		Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	18.7'

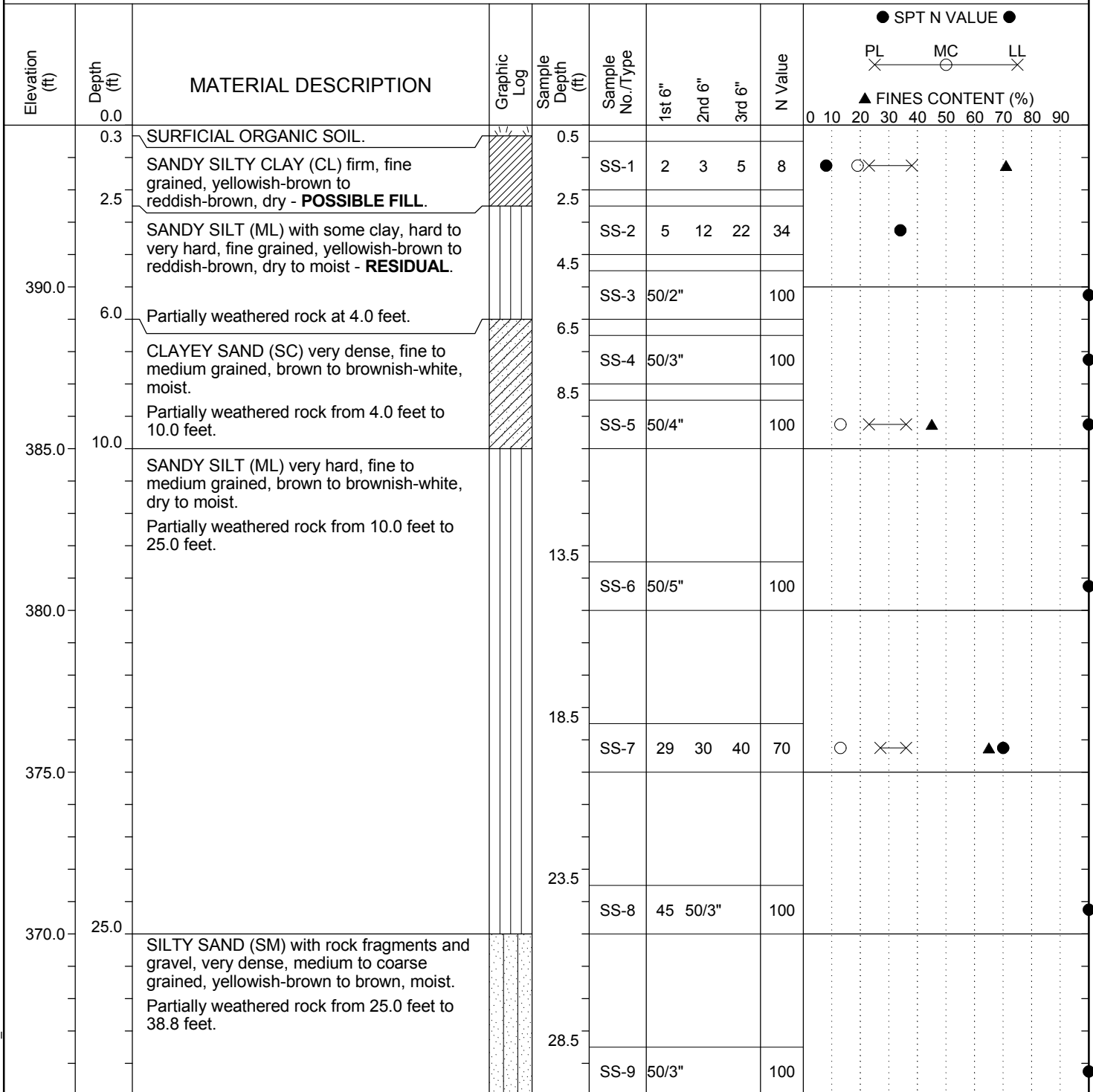
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	● SPT N VALUE ● PL — MC — LL ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90
358.5	40.0	SILTY SAND (SM) with weathered rock fragments, very dense, fine to coarse grained, brown to black, moist. Partially weathered rock from 28.5 feet to 38.7 feet. Spoon refusal at 38.7 feet.		33.5	SS-10	50/4"			100	
353.5				38.5	SS-11	50/2"			100	
348.5										
343.5										
338.5										

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-12	Boring Location:	39+16	Offset:	80' LT	Alignment:	
Elev.:	395.0 ft	Latitude:	838230	Longitude:	1934167	Date Started:	03/23/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/23/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-850	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	74%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	20.7'



LEGEND

Continued Next Page

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-12	Boring Location:	39+16	Offset:	80' LT	Alignment:	
Elev.:	395.0 ft	Latitude:	838230	Longitude:	1934167	Date Started:	03/23/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/23/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-850	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	74%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	20.7'

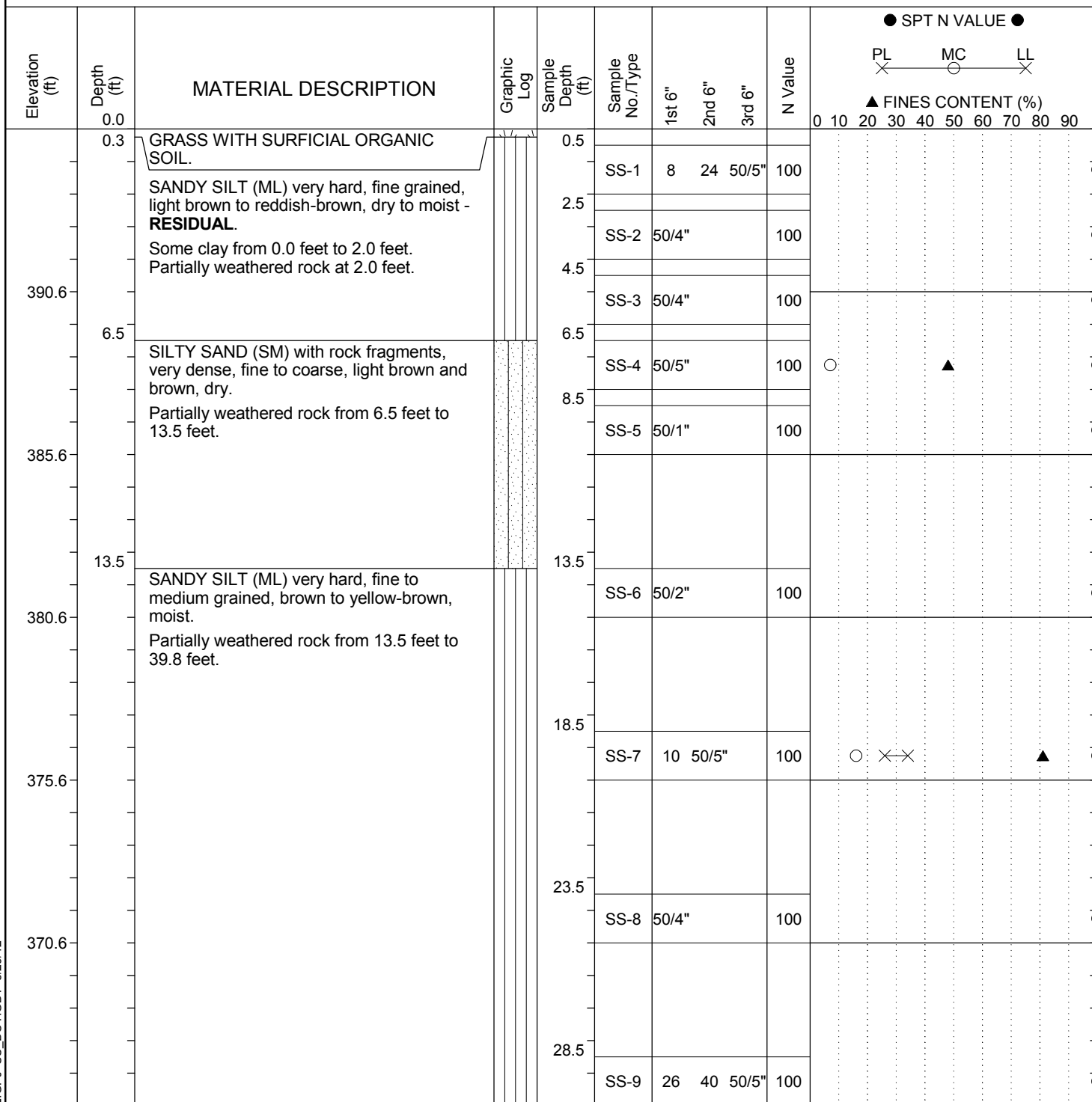
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
360.0				33.5	SS-10	50/2"			100	
355.0	40.0	Spoon refusal at 38.8 feet.		38.5	SS-11	50/2"			100	
350.0										
345.0										
340.0										

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-14	Boring Location:	38+92	Offset:	23' LT	Alignment:	
Elev.:	395.6 ft	Latitude:	838200	Longitude:	1934221	Date Started:	03/22/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/22/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-850	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	74%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	21.5'



LEGEND

Continued Next Page

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-14	Boring Location:	38+92	Offset:	23' LT	Alignment:	
Elev.:	395.6 ft	Latitude:	838200	Longitude:	1934221	Date Started:	03/22/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/22/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-850	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	74%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	21.5'

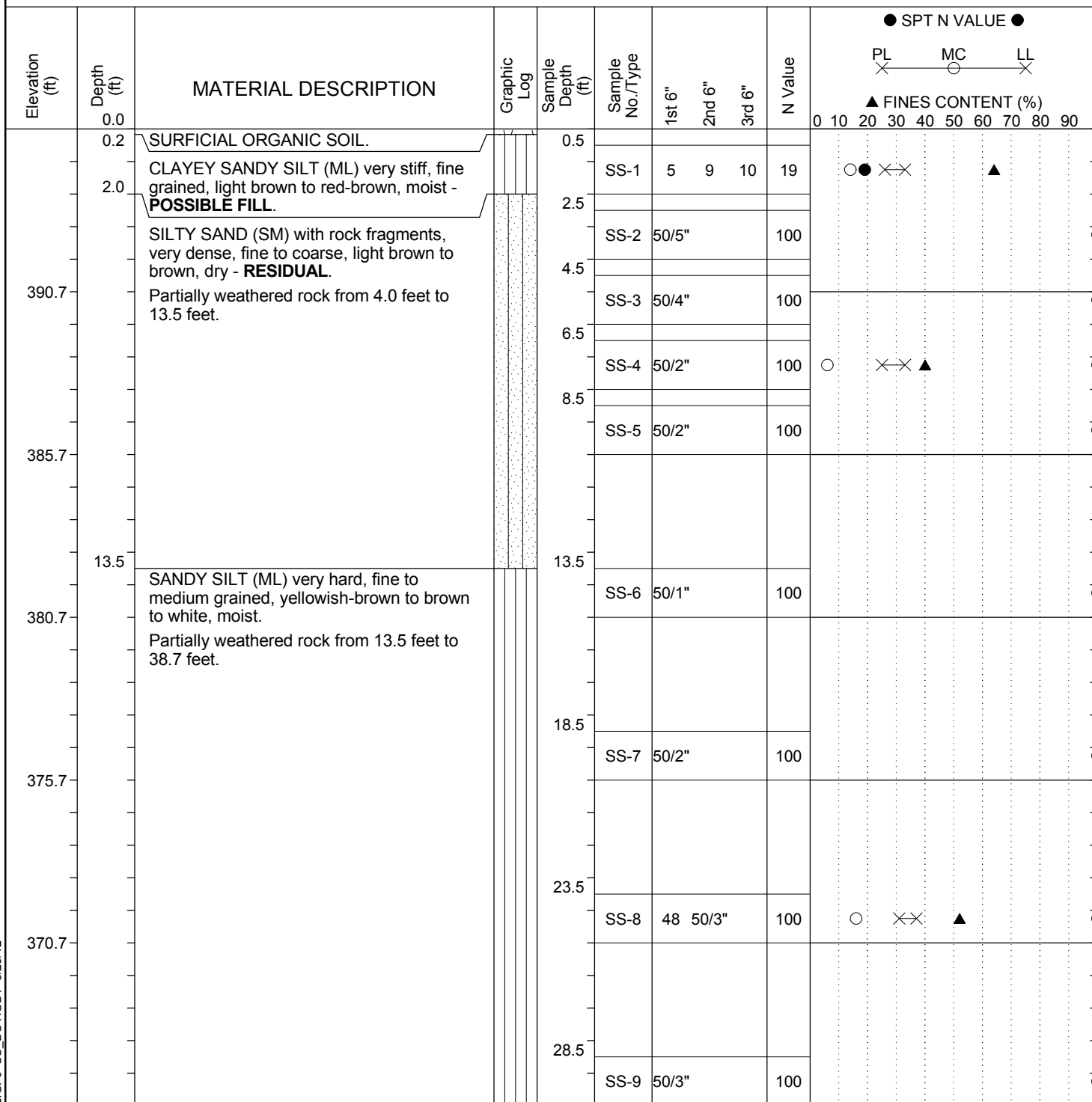
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	● SPT N VALUE ● PL — MC — LL ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90
360.6				33.5	SS-10	50/3"			100	
355.6	40.0	Spoon refusal at 39.8 feet.		38.5	SS-11	22	40	50/3"	100	
350.6										
345.6										
340.6										

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-15	Boring Location:	39+02	Offset:	42' LT	Alignment:	
Elev.:	395.7 ft	Latitude:	838212	Longitude:	1934203	Date Started:	03/22/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/22/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-850	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	74%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	22.1'



LEGEND

Continued Next Page

SAMPLER TYPE

DRILLING METHOD

SS - Split Spoon
ST - Shelby Tube
AWG - Rock Core, 1-1/8"

NQ - Rock Core, 1-7/8"
CU - Cuttings
CT - Continuous Tube

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing

RW - Rotary Wash
RC - Rock Core

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-15	Boring Location:	39+02	Offset:	42' LT	Alignment:	
Elev.:	395.7 ft	Latitude:	838212	Longitude:	1934203	Date Started:	03/22/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/22/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-850	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	74%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	22.1'

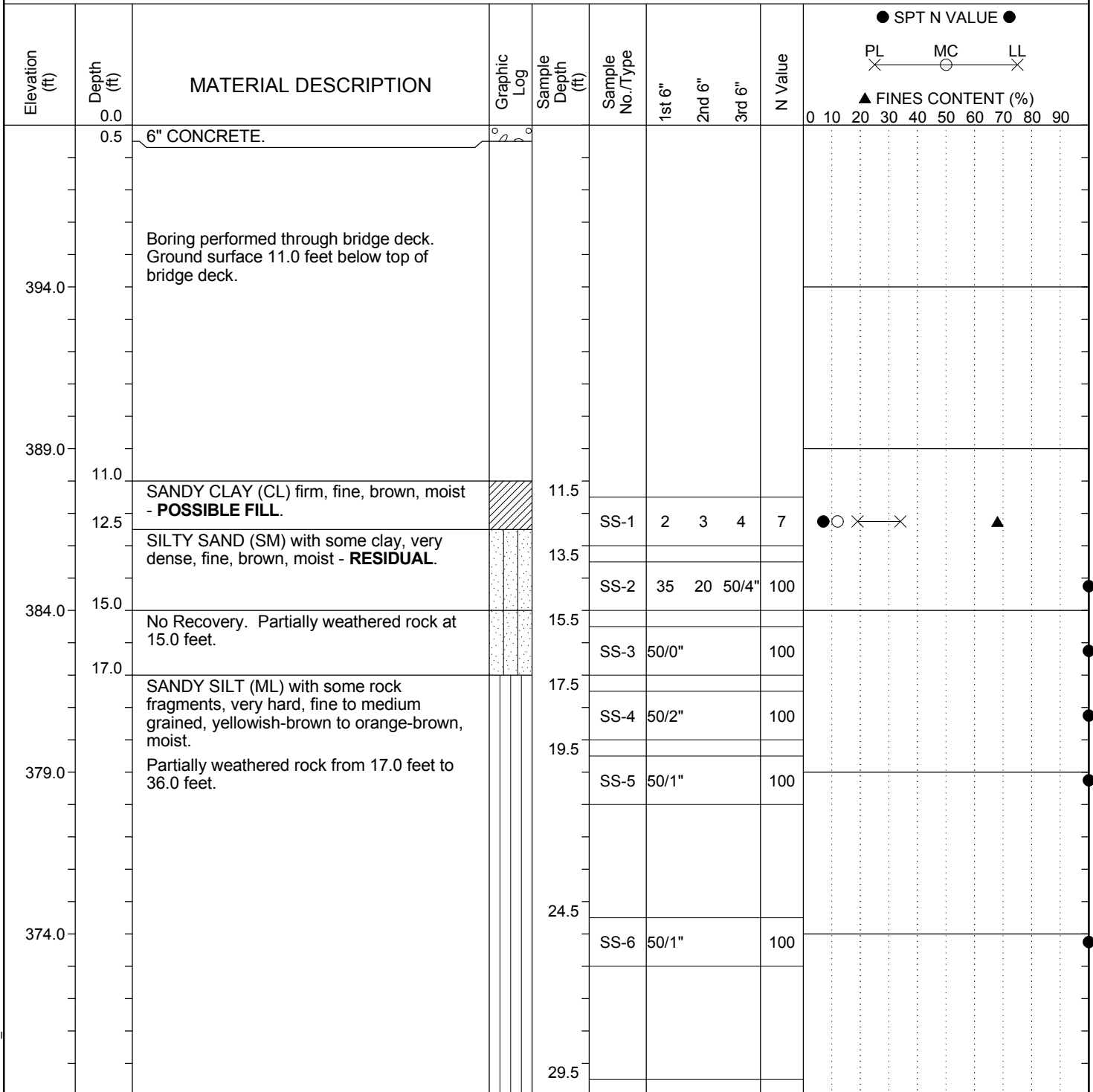
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
360.7				33.5	SS-10	50/2"			100	
355.7	40.0	Spoon refusal at 38.7 feet.		38.5	SS-11	50/1"			100	
350.7										
345.7										
340.7										

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-16	Boring Location:	38+44	Offset:	40' RT	Alignment:	
Elev.:	399.0 ft	Latitude:	838145	Longitude:	1934278	Date Started:	03/28/12
Total Depth:	51 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/28/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	73%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	NR



LEGEND

Continued Next Page

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-16	Boring Location:	38+44	Offset:	40' RT	Alignment:	
Elev.:	399.0 ft	Latitude:	838145	Longitude:	1934278	Date Started:	03/28/12
Total Depth:	51 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/28/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	73%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	NR

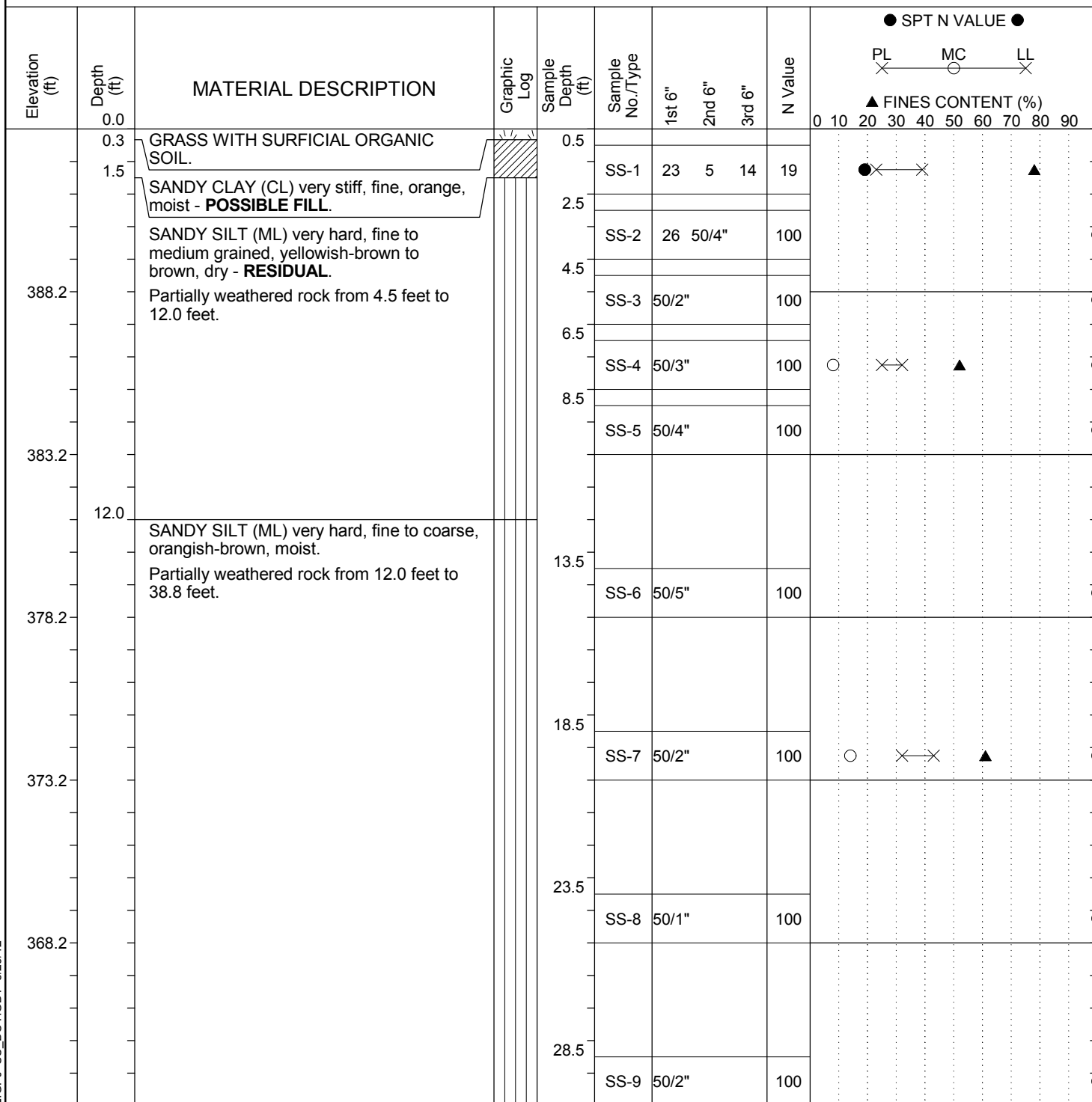
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	● SPT N VALUE ● PL — MC — LL ▲ FINES CONTENT (%)
364.0	36.0	SILTY SAND (SM) with rock fragments, very dense, fine to coarse grained, brown, moist. Partially weathered rock from 36.0 feet to 49.5 feet.		34.5	SS-7	50/2"			100	
359.0		Spoon refusal at 49.5 feet.		39.5	SS-8	50/1"			100	
354.0		Spoon refusal at 49.5 feet.		44.5	SS-9	50/1"			100	
349.0	51.0	Spoon refusal at 49.5 feet.		49.5	SS-10	50/1"			100	
344.0		Spoon refusal at 49.5 feet.			SS-11	50/0"			100	

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-17	Boring Location:	38+42	Offset:	79' RT	Alignment:	
Elev.:	393.2 ft	Latitude:	838140	Longitude:	1934318	Date Started:	03/26/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	3/26/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-850	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	74%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	19.8'



LEGEND

Continued Next Page

SAMPLER TYPE

DRILLING METHOD

SS - Split Spoon
ST - Shelby Tube
AWG - Rock Core, 1-1/8"

NQ - Rock Core, 1-7/8"
CU - Cuttings
CT - Continuous Tube

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing

RW - Rotary Wash
RC - Rock Core

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI	
Site Description:						S-80 Bridge Replacement over I-26	Route:	S-80
Boring No.:	RW-17	Boring Location:	38+42	Offset:	79' RT	Alignment:		
Elev.:	393.2 ft	Latitude:	838140	Longitude:	1934318	Date Started:		03/26/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:		3/26/2012
Bore Hole Diameter (in):		6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:		CME-850	Drill Method:		Mud Rotary	Hammer Type:		Automatic
Core Size:			Driller:		SCI	Groundwater:		TOB
						24HR		19.8'

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>
358.2	40.0	Spoon refusal at 38.8 feet.		33.5	SS-10	50/5"			100	
353.2				38.5	SS-11	50/2"			100	
348.2										
343.2										
338.2										

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-18	Boring Location:	38+67	Offset:	21' RT	Alignment:	
Elev.:	393.9 ft	Latitude:	838171	Longitude:	1934262	Date Started:	04/09/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	4/9/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:		Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	22.5'

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									0 10 20 30 40 50 60 70 80 90
	0.3	GRASS WITH SURFICIAL ORGANIC SOIL.		0.5	SS-1	3	21	50/5"	100	
		SANDY SILTY CLAY (CL-ML) with weathered rock fragments, very hard, fine to medium grained, tan, dry - RESIDUAL . Partially weathered rock from 1.0 feet to 6.0 feet.		2.5	SS-2	45	50/6"		100	
388.9				4.5	SS-3	50/4"			100	
	6.0	SANDY SILT (ML) very hard, fine grained, orange to black, dry. Partially weathered rock from 6.0 feet to 15.0 feet.		6.5	SS-4	42	50/5"		100	
383.9				8.5	SS-5	50/5"			100	
				13.5	SS-6	50/4"			100	
378.9	15.0	SILTY SAND (SM) with weathered rock fragments, very dense, fine to medium, tan to gray, dry. Partially weathered rock from 15.0 feet to 23.5 feet.		18.5	SS-7	50/3"			100	
373.9				23.5	SS-8	50/2"			100	
	23.5	SANDY SILT (ML) with weathered rock fragments, very hard, fine grained, orange to black, moist. Partially weathered rock from 23.5 feet to 38.7 feet.		28.5	SS-9	50/2"			100	
368.9										

LEGEND

Continued Next Page

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	Boyce/Fowler
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-18	Boring Location:	38+67	Offset:	21' RT	Alignment:	
Elev.:	393.9 ft	Latitude:	838171	Longitude:	1934262	Date Started:	04/09/12
Total Depth:	40 ft	Soil Depth:	40' ft	Core Depth:	ft	Date Completed:	4/9/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	80.6%
Core Size:		Driller:	Boyce/Fowler	Groundwater:	TOB	24HR	22.5'

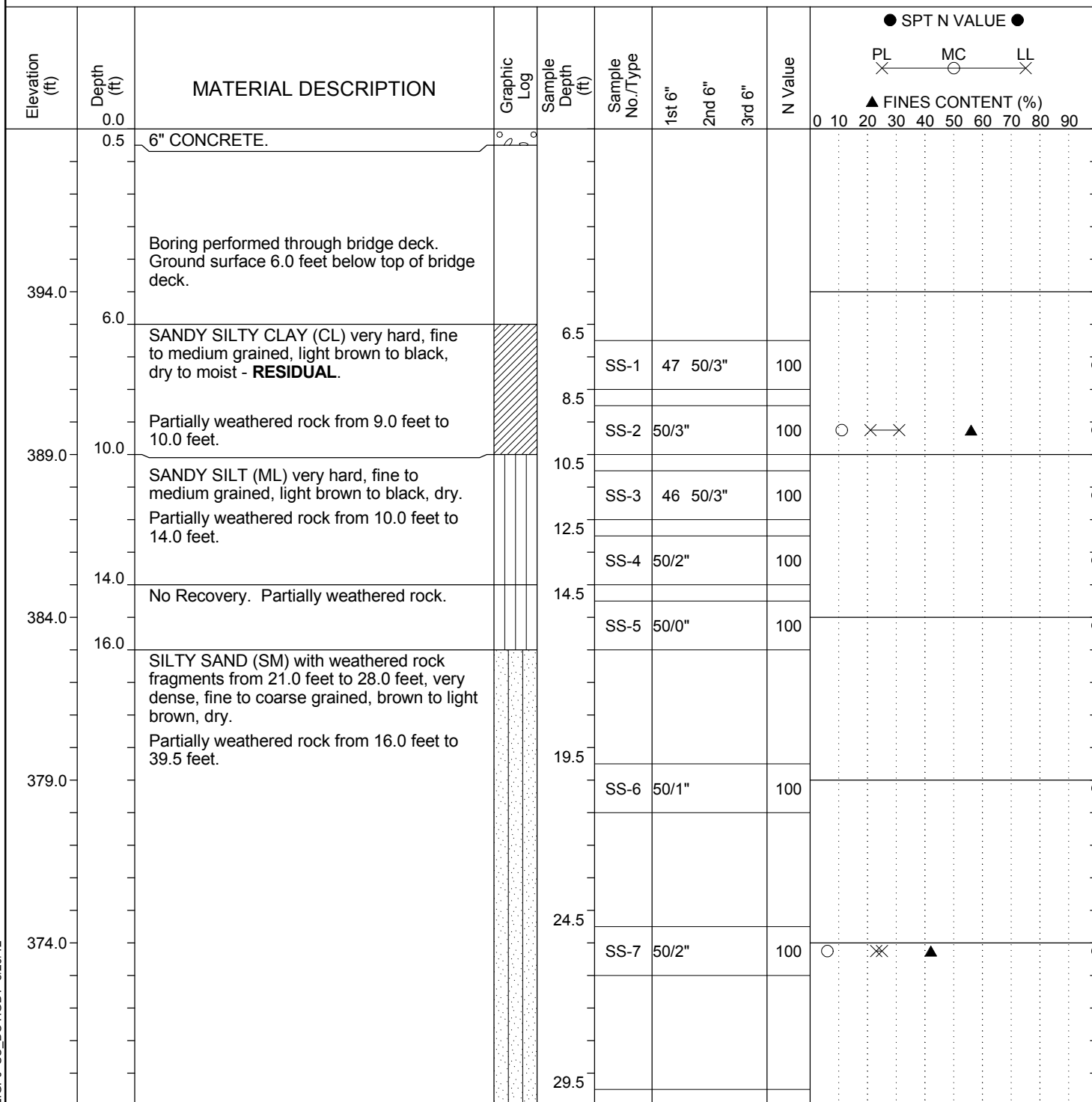
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
358.9	40.0	Spoon refusal at 38.7 feet.		33.5	SS-10	50/1"			100	
353.9				38.5	SS-11	50/1"			100	
348.9										
343.9										
338.9										

LEGEND

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI
Site Description:	S-80 Bridge Replacement over I-26					Route:	S-80
Boring No.:	RW-20	Boring Location:	38+64	Offset:	40' RT	Alignment:	
Elev.:	399.0 ft	Latitude:	838165	Longitude:	1934280	Date Started:	03/28/12
Total Depth:	41 ft	Soil Depth:	35' ft	Core Depth:	ft	Date Completed:	3/28/2012
Bore Hole Diameter (in):	6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:	73%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	NR



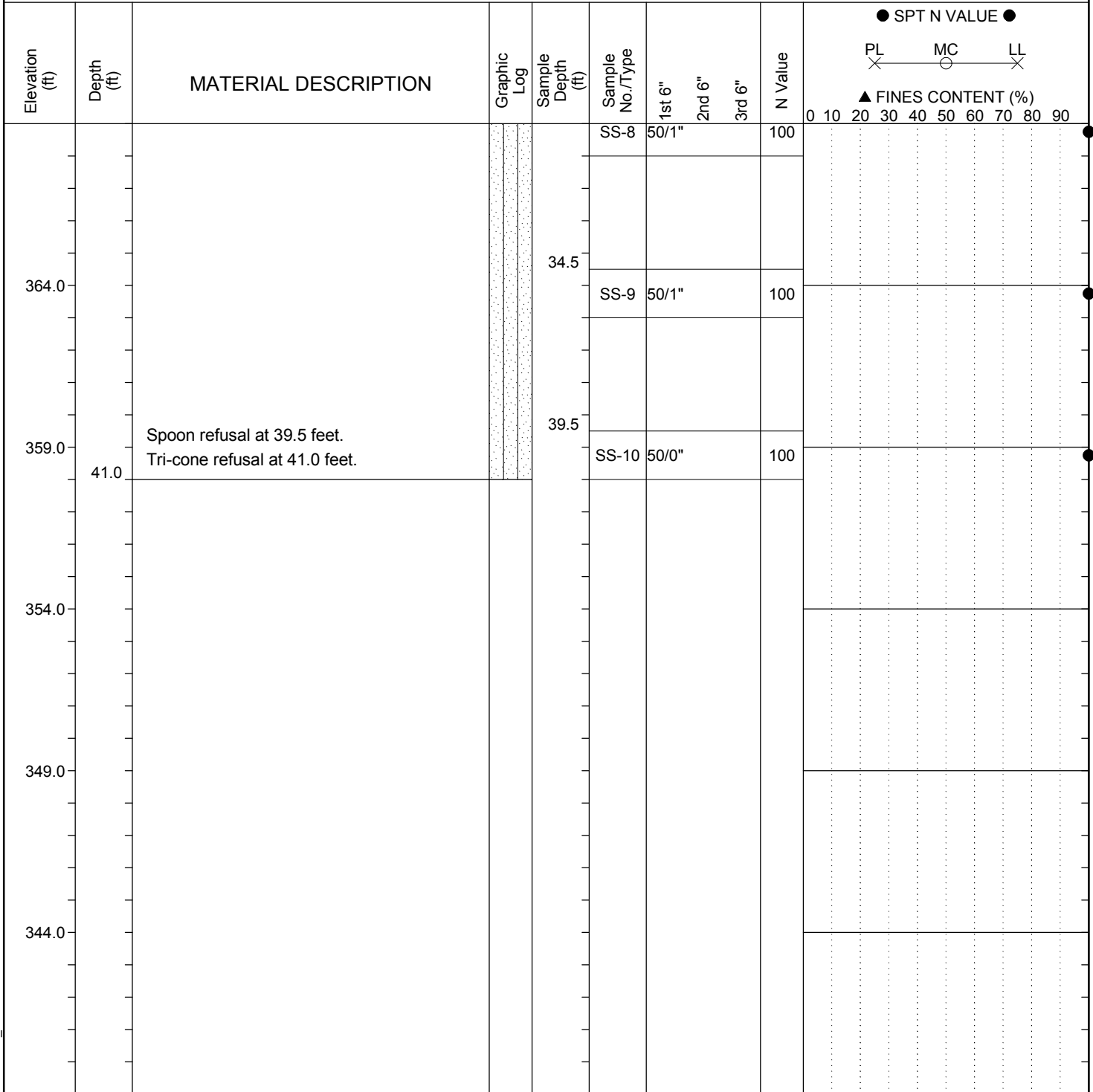
LEGEND

Continued Next Page

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

SCDOT Soil Test Boring Log

File No.:	40.040649	Project No. (PIN):	40649 RD01	County:	Richland	Eng./Geo.:	SCI	
Site Description:						S-80 Bridge Replacement over I-26	Route:	S-80
Boring No.:	RW-20	Boring Location:	38+64	Offset:	40' RT	Alignment:		
Elev.:	399.0 ft	Latitude:	838165	Longitude:	1934280	Date Started:		03/28/12
Total Depth:	41 ft	Soil Depth:	35' ft	Core Depth:	ft	Date Completed:		3/28/2012
Bore Hole Diameter (in):		6"	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-55	Drill Method:	Mud Rotary	Hammer Type:	Automatic	Energy Ratio:		73%
Core Size:		Driller:	SCI	Groundwater:	TOB	24HR	NR	



LEGEND

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

Boring Offsets for S-80 Shady Grove Road

RW-1 – Did not move

RW-2 – Moved appx. 6' south. This boring was moved since RW-4 had to be moved up the slope.

RW-3 – Did not move

RW-4 – Moved appx. 12' up the slope (south) due to the boring being located on the slope.

RW-5 – Moved appx. 10' up the slope (south) due to the boring being located on the slope.

RW-6 – Moved appx. 3' south due to conflict with underground fiber optic line and overhead power lines.

RW-7 – Performed on the bridge.

RW-8 – Moved appx. 3' south due to conflict with underground fiber optic line and overhead power lines.

RW-9 – Performed on the bridge.

RW-10 – Moved appx. 12' up the slope (south) due to the boring being located on the slope.

RW-11 – Eliminated due to close proximity to RW-15 after it was moved up the slope.

RW-12 – Moved appx. 18' up the slope (north) due to the boring being located on the slope.

RW-13 – Eliminated due to close proximity to RW-14 after it was moved up the slope.

RW-14 – Did not move.

RW-15 – Did not move.

RW-16 – Performed on the bridge.

RW-17 – Moved appx. 12' up the slope (north) due to the boring being located on the slope.

RW-18 – Moved appx. 7' north due to conflict with underground fiber optic line and overhead power lines.

RW-19 – Eliminated due to underground fiber optic line and overhead power lines. Boring could only be drilled beside RW-18, so the boring was not performed.

RW-20 – Performed on the bridge.

B-1 – Moved appx. 16' up the slope (south) due to the boring being located on the slope.

B-2 – Moved appx. 13' up the slope (south) due to the boring being located on the slope.

B-3 – Performed in median of I-26. Moved appx. 10' south to relocate the boring outside the guardrail.

B-4 – Performed in median of I-26. Moved appx. 12' south to relocate the boring outside the guardrail.

B-5 – Moved appx. 18' up the slope (north) due to the boring being located on the slope.

B-6 – Moved appx. 17' up the slope (north) due to the boring being located on the slope.

RD-1 – Moved the boring appx. 20' to 30' south due to the trees on the property. The actual boring location would have required significant clearing to access and Mr. Amick wanted to minimize the clearing.

RD-2 – Moved the boring appx. 30' to 35' south and 25' west to avoid any clearing or movement on adjacent property that we did not have authorization to access. Boring was also performed at this location to minimize clearing of trees on Mr. Amick's property.

RD-4 – Moved appx. 35' north to avoid conflicts with underground fiber optic line and underground water line and also due to conflict with overhead power lines.

RD-5 – Did not move.

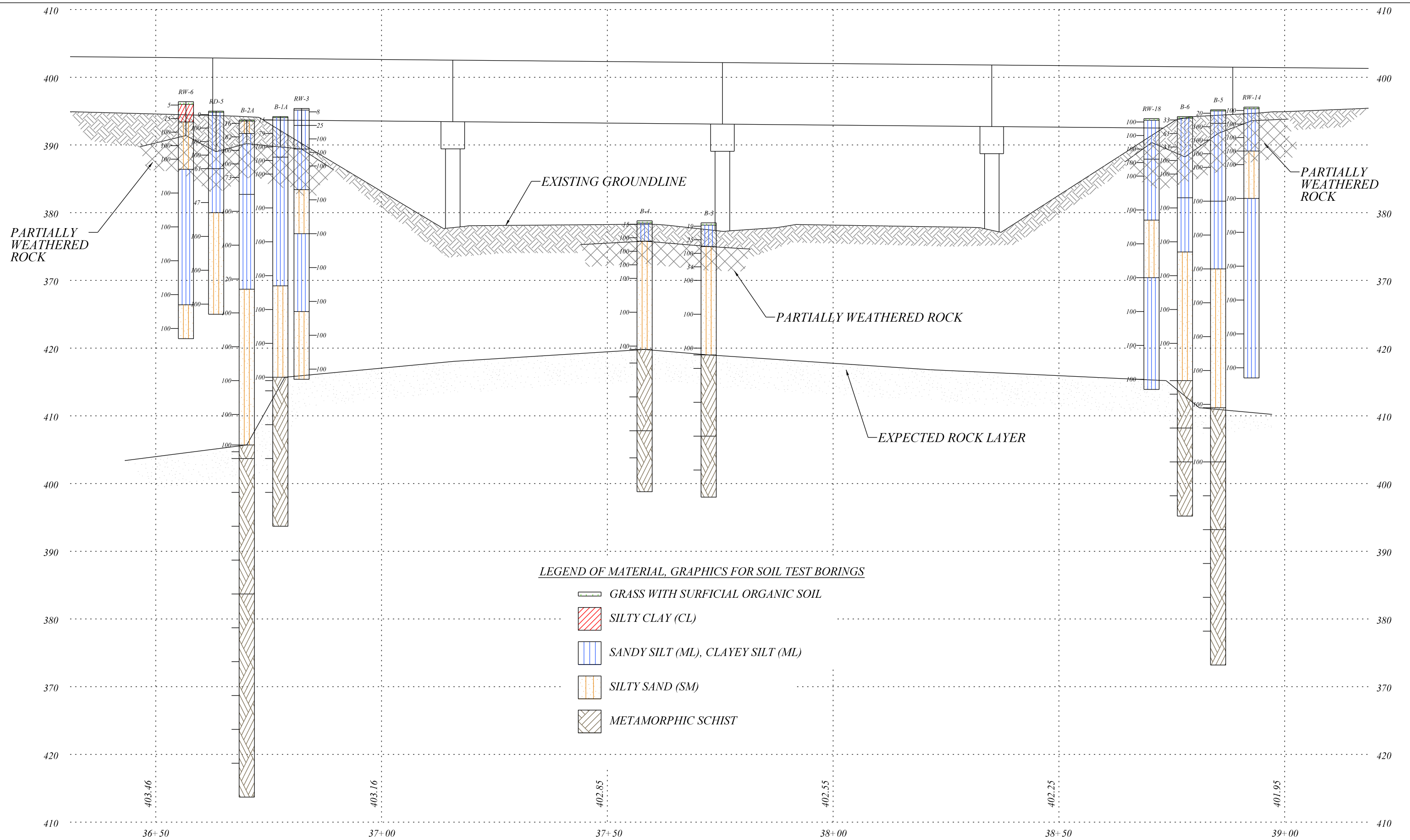
RD-6 – Did not move.

RD-7 – Did not move.

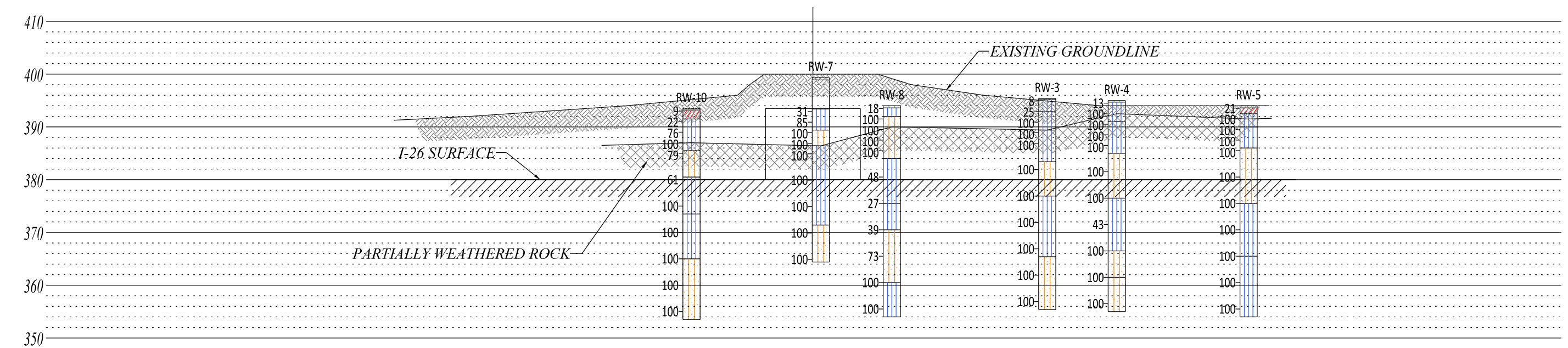
HA-4 – Did not move.

APPENDIX “IV”

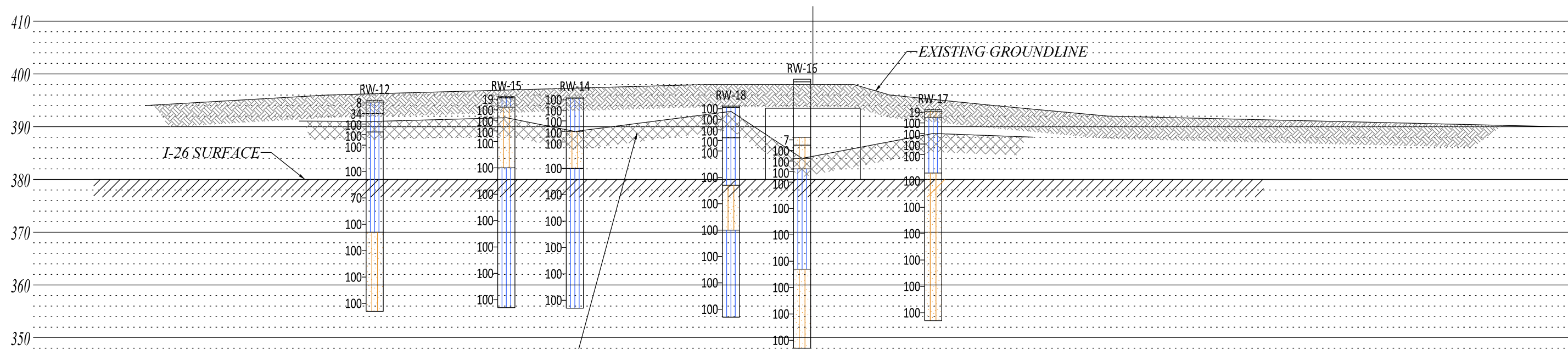
Subsurface Profiles



Note: The depicted stratigraphy is shown for illustrative purposes only and is not warranted. Separations between different strata may be gradual and likely vary considerably from those shown. Profiles between nearby borings have been estimated using reasonable engineering care and judgement. The actual subsurface conditions will vary between boring locations.



EB1



EB2

LEGEND OF MATERIAL, GRAPHICS FOR SOIL TEST BORINGS

- | | |
|-----------------------------------|--------------------|
| GRASS WITH SURFICIAL ORGANIC SOIL | SILTY SAND (SM) |
| SILTY CLAY (CL) | METAMORPHIC SCHIST |
| SANDY SILT (ML), CLAYEY SILT (ML) | |

Note: The depicted stratigraphy is shown for illustrative purposes only and is not warranted. Separations between different strata may be gradual and likely vary considerably from those shown. Profiles between nearby borings have been estimated using reasonable engineering care and judgement. The actual subsurface conditions will vary between boring locations.

 FROEHLING & ROBERTSON, INC. <i>Engineering Stability Since 1881</i>	Date: June 2012		
	Scale:		
	Drawn: KHH	65N-0302	
S-80 Bridge Replacement over I-26 South Carolina Department of Transportation Richland County, South Carolina		BORING PROFILES	Drawing No.

APPENDIX “V”

Results of Laboratory Testing



Laboratory Test Summary Sheet

Boring/ Sample No.	Depth (feet)	Sample Number	LL	PL	PI	% Natural Moisture	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS Classification	Maximum Dry Density	Optimum Moisture
Bulk	1'-5'	Sta. 13+00	56	24	32	18.5	2.6	22.4	75			CH	103.8	18.4
Bulk	1'-5'	Sta. 36+00	41	20	21	14.7	0	18.5	81.5			CL	107.4	17.3
Bulk	1'-5'	Sta. 39+00	34	22	12	9.7	10.5	25.3	64.2			CL	120.3	12.9
B-1A	2.5'-4.0'	SS-2	29	23	6	12.5	2.3	41.2	56.5			ML		
B-1A	6.5'-8.0'	SS-4	35	25	10	15.1	5.4	44.7	49.9			SM		
B-1A	18.5'-20.0'	SS-7	32	26	6	15.8	6	36.6	57.4			ML		
B-2A	0.5'-2.0'	SS-1	47	24	23	14.6	0.8	19.9	79.3			CL		
B-2A	8.5'-10.0'	SS-5	32	25	7	8.5	1.9	42.9	55.2			ML		
B-2A	13.5'-15.0'	SS-6	33	27	6	7.6	0	26.3	73.7			ML		
B-2A	18.5'-20.0'	SS-7	33	27	6	9.8	0	9.9	90.1			ML		
B-3	0.5'-2.0'	SS-1	30	22	8	16.5	14.8	40.7	44.5			SC		
B-4	0.5'-2.0'	SS-1	34	22	12	15.6	9.5	19.8	70.7			CL		
B-4	4.5'-6.0'	SS-3	25	18	7	13.8	31.8	40.5	27.7			SC-SM		
B-5	0.5'-2.0'	SS-1	37	28	9	11.5	7.1	51.9	41			SM		
B-6	4.5'-6.0'	SS-3	37	26	11	9.8	0.1	21.7	78.2			ML		
B-6	18.5'-20.0'	SS-7	42	30	12	11.6	0.9	22.6	76.5			ML		
B-6	23.5'-25.0'	SS-8	38	26	12	13.2	0	19.4	80.6			ML		



FROEHLING & ROBERTSON, INC.

Engineering Stability Since 1881

Laboratory Test Summary

Report No.: 65N-0302

Client: SCDOT

Project: S-80 Bridge Repl. over I-26

Location: Richland County, SC

Date: 6-Jul-12



Laboratory Test Summary Sheet

Boring/ Sample No.	Depth (feet)	Sample Number	LL	PL	PI	% Natural Moisture	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS Classification	Maximum Dry Density	Optimum Moisture
RD-1	0.5'-2.0'	SS-1	72	32	40	10.2	0.8	2.7	96.5			CH		
RD-1	6.5'-8.0'	SS-4	38	30	8	8.6	0.4	18.4	81.2			ML		
RD-2	0.5'-2.0'	SS-1	50	24	26	22.6	0	15.1	84.9			CH		
RD-2	4.5'-6.0'	SS-3	32	26	6	8.8	3.7	50.5	45.7			SM		
RD-2	8.5'-10.0'	SS-5					26	47.8	26.2			SM		
RD-4	0.5'-2.0'	SS-1	35	24	11	14.8	4.8	29.6	65.6			CL		
RD-4	6.5'-8.0'	SS-4	46	27	19	12.5	0	6.5	93.5			CL		
RD-4	8.5'-10.0'	SS-5	40	25	15	13.8	0	11.1	88.9			CL		
RD-5	0.5'-2.0'	SS-1	42	21	21	21.2	5.9	22.9	71.2			CL		
RD-5	18.5'-20.0'	SS-7	34	26	8	12.9	2.2	44.3	53.5			ML		
RD-6	0.5'-2.0'	SS-1	42	20	22	18.5	3.4	18.3	77.1			CL		
RD-6	8.5'-10.0'	SS-5	40	29	11	16	6.4	30.4	62.3			ML		
RD-6	23.5'-25.0'	SS-8	30	22	8	9.5	15.9	42.7	41.4			SC		
RD-7	2.5'-4.0'	SS-2	38	26	12	16.2	0.3	19.8	79.9			ML		
RD-7	8.5'-10.0'	SS-5	37	28	9	9.5	0	25.5	74.5			ML		
RW-1	0.5'-2.0'	SS-1	42	20	22	14.4	6	24.4	69.6			CL		
RW-1	8.5'-10.0'	SS-5	38	28	10	14.9	0.9	30.9	68.2			ML		
RW-1	18.5'-20.0'	SS-7	42	29	13	17.9	0	26.4	73.6			ML		



FROEHLING & ROBERTSON, INC.

Engineering Stability Since 1881

Laboratory Test Summary

Report No.: 65N-0302

Client: SCDOT

Project: S-80 Bridge Repl. over I-26

Location: Richland County, SC

Date: 6-Jul-12



Laboratory Test Summary Sheet

Boring/ Sample No.	Depth (feet)	Sample Number	LL	PL	PI	% Natural Moisture	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS Classification	Maximum Dry Density	Optimum Moisture
RW-2	4.5'-6.0'	SS-3	38	20	18	11.5	3.5	38.2	58.3			CL		
RW-2	8.5'-10.0'	SS-5	NP	NP	NP	7	17.1	41.9	41			SM		
RW-3	0.5'-2.0'	SS-1	39	18	21	16.1	5	26.2	68.8			CL		
RW-3	6.5'-8.0'	SS-4	44	20	24	18.9	24.7	26.1	49.2			SC		
RW-4	2.5'-4.0'	SS-2	30	24	6	9.3	4.3	21.8	73.9			ML		
RW-4	13.5'-15.0'	SS-6	28	24	4	10	30.9	37.4	31.6			SM		
RW-4	18.5'-20.0'	SS-7	30	24	6	9.9	0.8	25.1	74.1			ML		
RW-5	0.5'-2.0'	SS-1	44	36	8	15.7	1.5	23.5	75			ML		
RW-5	8.5'-10.0'	SS-5	30	25	5	5.8	14	43.1	42.9			SM		
RW-5	18.5'-20.0'	SS-7	29	23	6	9.2	1	38.4	60.5			ML		
RW-5	23.5'-25.0'	SS-8												
RW-6	0.5'-2.0'	SS-1	33	20	13	15.2	2.2	13.4	84.4			CL		
RW-6	4.5'-6.0'	SS-3	34	29	5	9.5	0.7	47.7	51.6			ML		
RW-7	6.5'-8.0'	SS-1	39	22	17	17.1	0.2	28	71.8			CL		
RW-7	10.5'-12.0'	SS-3	31	24	7	8.7	8.3	38.5	53.2			ML		
RW-7	24.5'-26.0'	SS-7	28	24	4	15.5	0.1	24	75.9			ML		
RW-8	0.5'-2.0'	SS-1	34	28	6	19.2	0.1	20.4	79.5			ML		
RW-8	13.5'-15.0'	SS-6	35	28	7	16.8	0	35.3	64.7			ML		
RW-8	23.5'-25.0'	SS-8	36	29	7	12.6	0.5	30	69.5			ML		



FROEHLING & ROBERTSON, INC.

Engineering Stability Since 1881

Laboratory Test Summary

Report No.: 65N-0302

Client: SCDOT

Project: S-80 Bridge Repl. over I-26

Location: Richland County, SC

Date: 6-Jul-12



Laboratory Test Summary Sheet

Boring/ Sample No.	Depth (feet)	Sample Number	LL	PL	PI	% Natural Moisture	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS Classification	Maximum Dry Density	Optimum Moisture
RW-9	10.5'-12.0'	SS-1	35	27	8	5.4	13.2	30.9	55.9			ML		
RW-9	12.5'-14.0'	SS-2	33	24	9	12.1	0.3	38.6	61.1			ML		
RW-9	16.5'-18.0'	SS-4	37	27	10	10.8	0	33.5	66.5			ML		
RW-9	23.5'-25.0'	SS-6	32	24	8	19	0	14.7	85.3			ML		
RW-10	0.5'-2.0'	SS-1	46	24	22	15.2	0.4	10.8	88.8			CL		
RW-10	8.5'-10.0'	SS-5	36	24	12	10.5	0	22.3	77.7			CL		
RW-10	13.5'-15.0'	SS-6	34	26	8	8.4	0	25	75			ML		
RW-12	0.5'-2.0'	SS-1	38	23	15	19.2	4.4	24.1	71.5			CL		
RW-12	8.5'-10.0'	SS-5	36	23	13	13	20.4	34.6	45			SC		
RW-12	18.5'-20.0'	SS-7	36	27	9	13.5	0.9	34.4	64.7			ML		
RW-14	6.5'-8.0'	SS-4	NP	NP	NP	7	20.8	30.8	48.4			SM		
RW-14	18.5'-20.0'	SS-7	34	26	8	15.9	0.1	19.3	80.6			ML		
RW-15	0.5'-2.0'	SS-1	33	26	7	13.8	12.5	23.8	63.7			ML		
RW-15	6.5'-8.0'	SS-4	33	25	8	5.8	26.7	33.1	40.3			SM		
RW-15	23.5'-25.0'	SS-8	37	31	6	15.9	4.1	44	51.9			ML		
RW-16	11.5'-13.0'	SS-1	34	19	15	11.9	8.6	23.5	67.9			CL		



FROEHLING & ROBERTSON, INC.
Engineering Stability Since 1881

Laboratory Test Summary

Report No.: 65N-0302

Client: SCDOT

Project: S-80 Bridge Repl. over I-26

Location: Richland County, SC

Date: 6-Jul-12



Laboratory Test Summary Sheet

Boring/ Sample No.	Depth (feet)	Sample Number	LL	PL	PI	% Natural Moisture	% Gravel	% Sand	% Fines	% Silt	% Clay	USCS Classification	Maximum Dry Density	Optimum Moisture
RW-17	0.5'-2.0'	SS-1	39	23	16	18.7	1.9	19.7	78.4			CL		
RW-17	6.5'-8.0'	SS-4	32	25	7	8.1	7.4	40.3	52.3			ML		
RW-17	18.5'-20.0'	SS-7	43	32	11	13.8	3.7	35	61.3			ML		
RW-18	2.5'-4.0'	SS-2	27	21	6	16.5	2.4	43.4	54.2			CL-ML		
RW-18	8.5'-10.0'	SS-5	37	27	10	12.3	0	30.4	69.6			ML		
RW-20	8.5'-10.0'	SS-2	31	21	10	10.7	2.1	42.3	55.6			CL		
RW-20	24.5'-26.0'	SS-7	25	23	2	6	8.4	49.4	42.2			SM		



FROEHLING & ROBERTSON, INC.

Engineering Stability Since 1881

Laboratory Test Summary

Report No.: 65N-0302

Client: SCDOT

Project: S-80 Bridge Repl. over I-26

Location: Richland County, SC

Date: 6-Jul-12

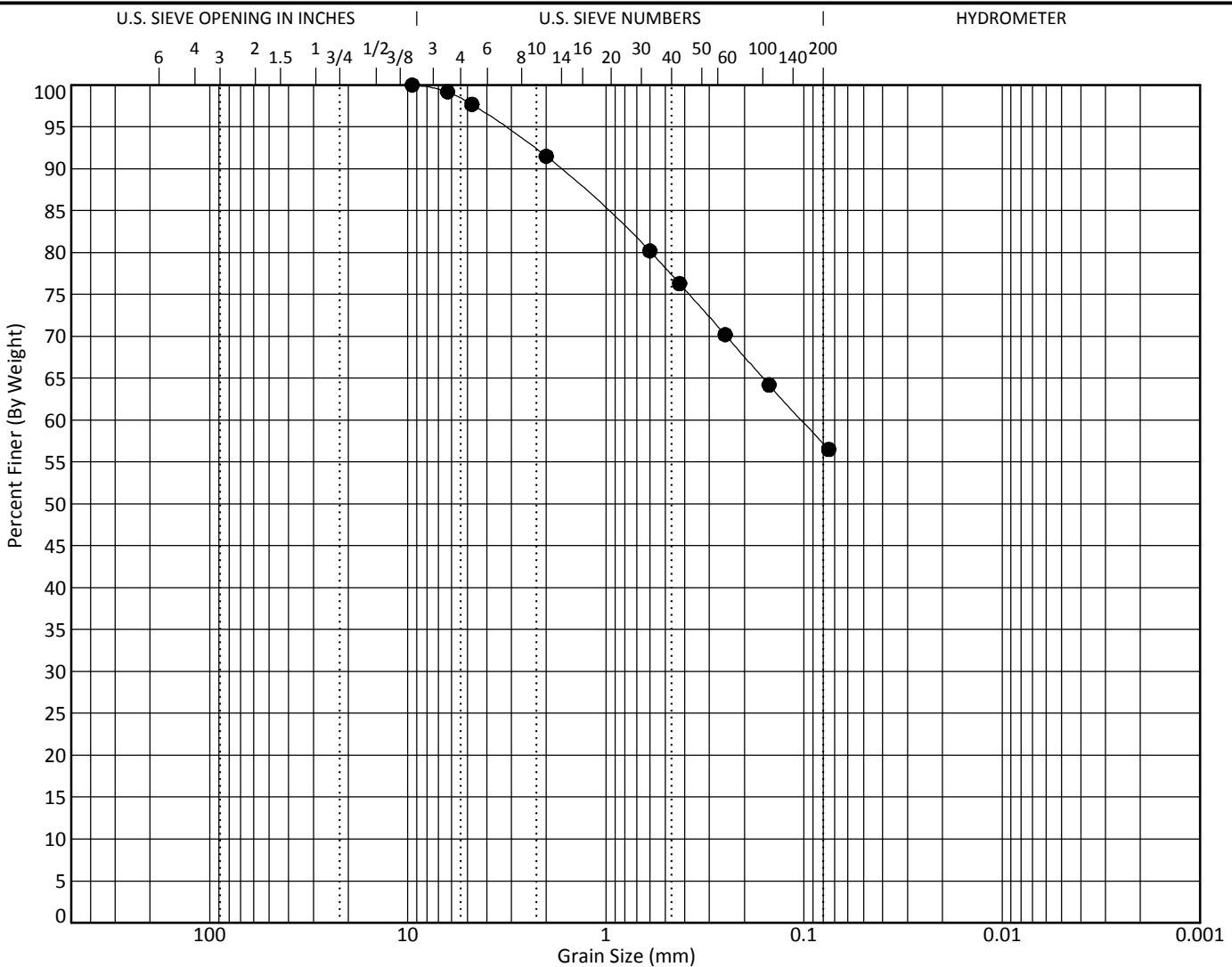


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	B-1A (SS-2)	2.5	SANDY SILT (ML)					29	23	6		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
●	B-1A (SS-2)	2.5	9.5	0.103			2.3	41.2	56.5			
	at											
	at											
	at											
	at											

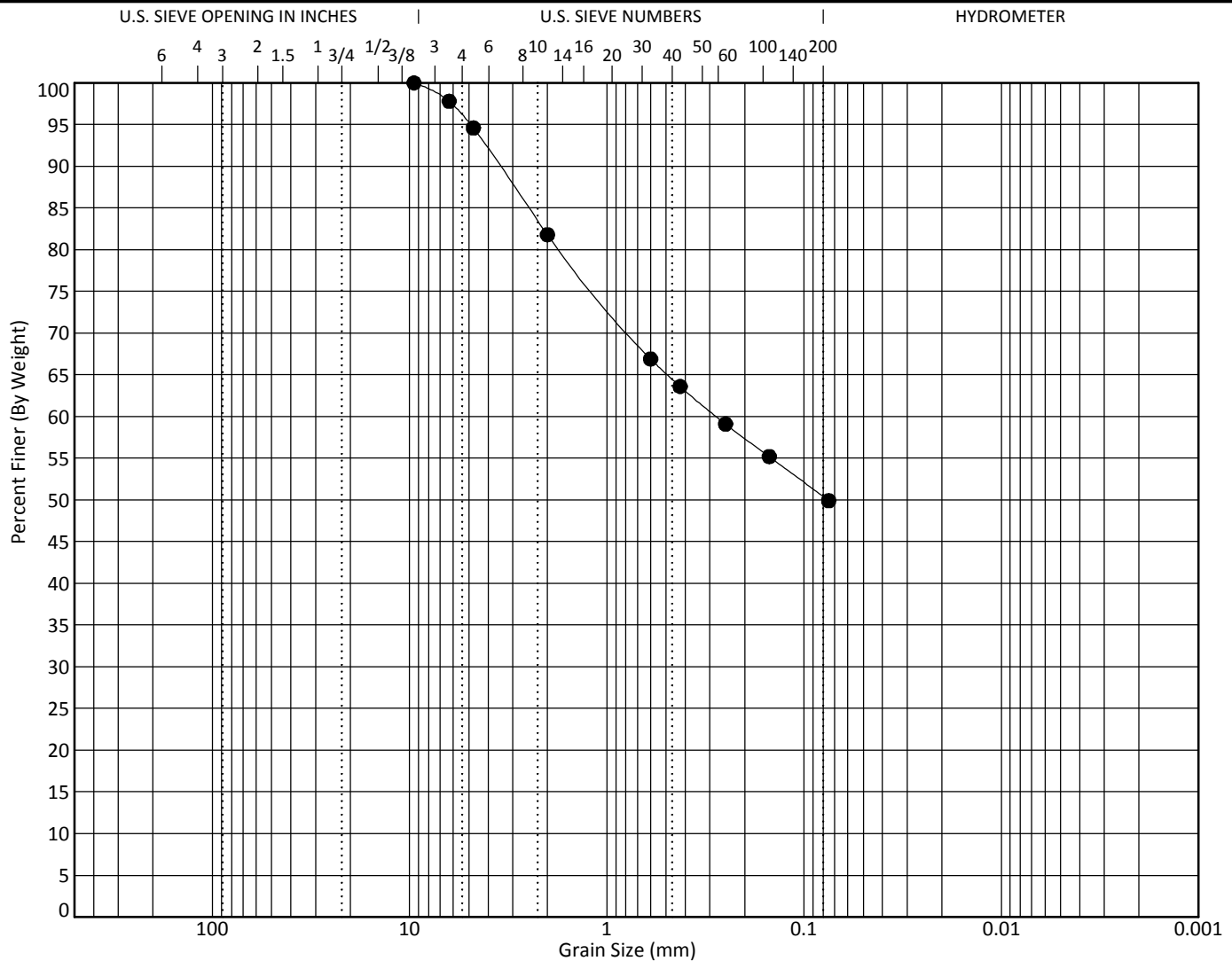


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	B-1A (SS-4)	6.5	SILTY SAND (SM)					35	25	10		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	B-1A (SS-4)	6.5	9.5	0.278			5.4	44.7	49.9			
	at											
	at											
	at											
	at											

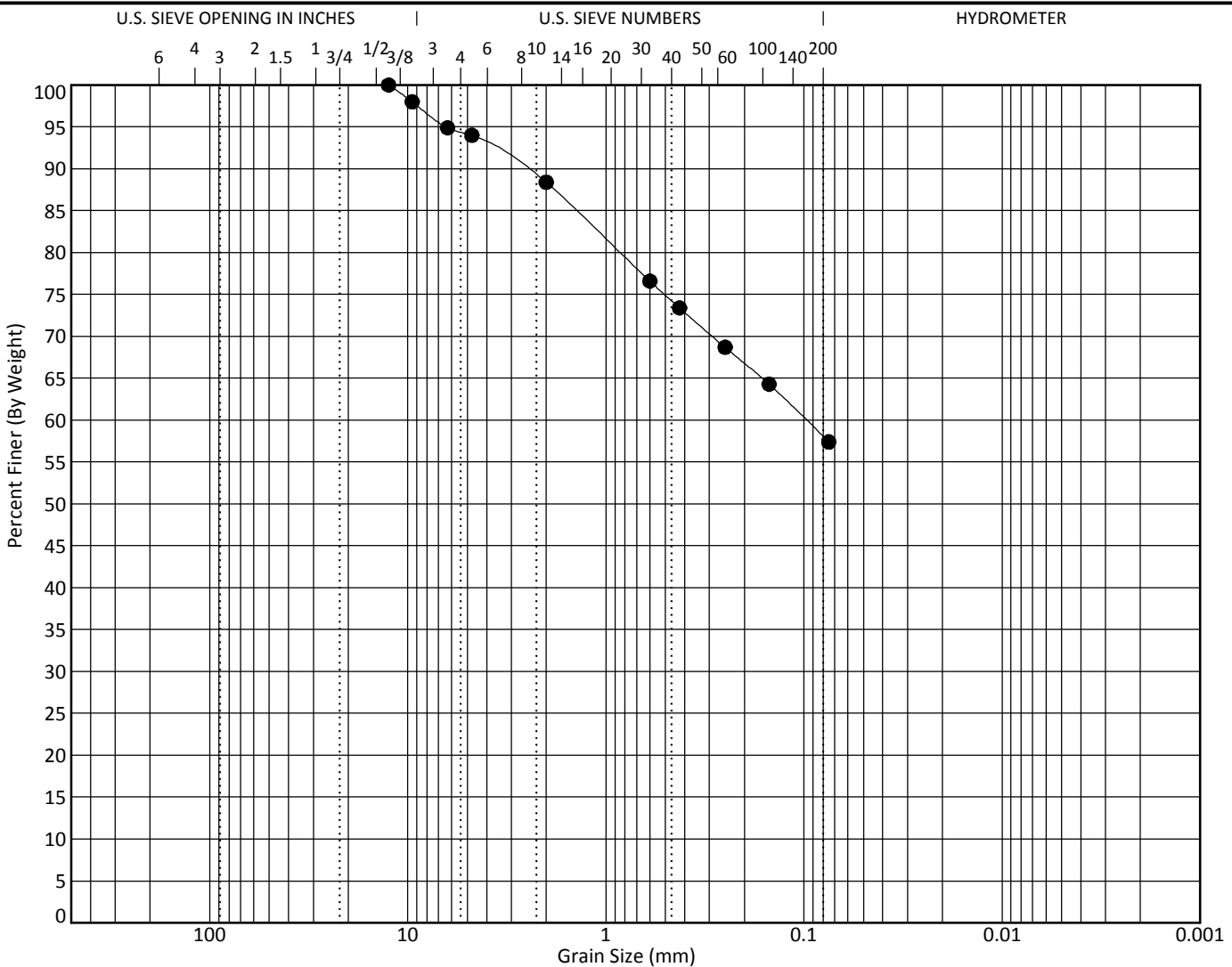


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	B-1A (SS-7)	18.5	SANDY SILT (ML)					32	26	6		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	B-1A (SS-7)	18.5	12.5	0.097			6.0	36.6	57.4			
	at											
	at											
	at											
	at											

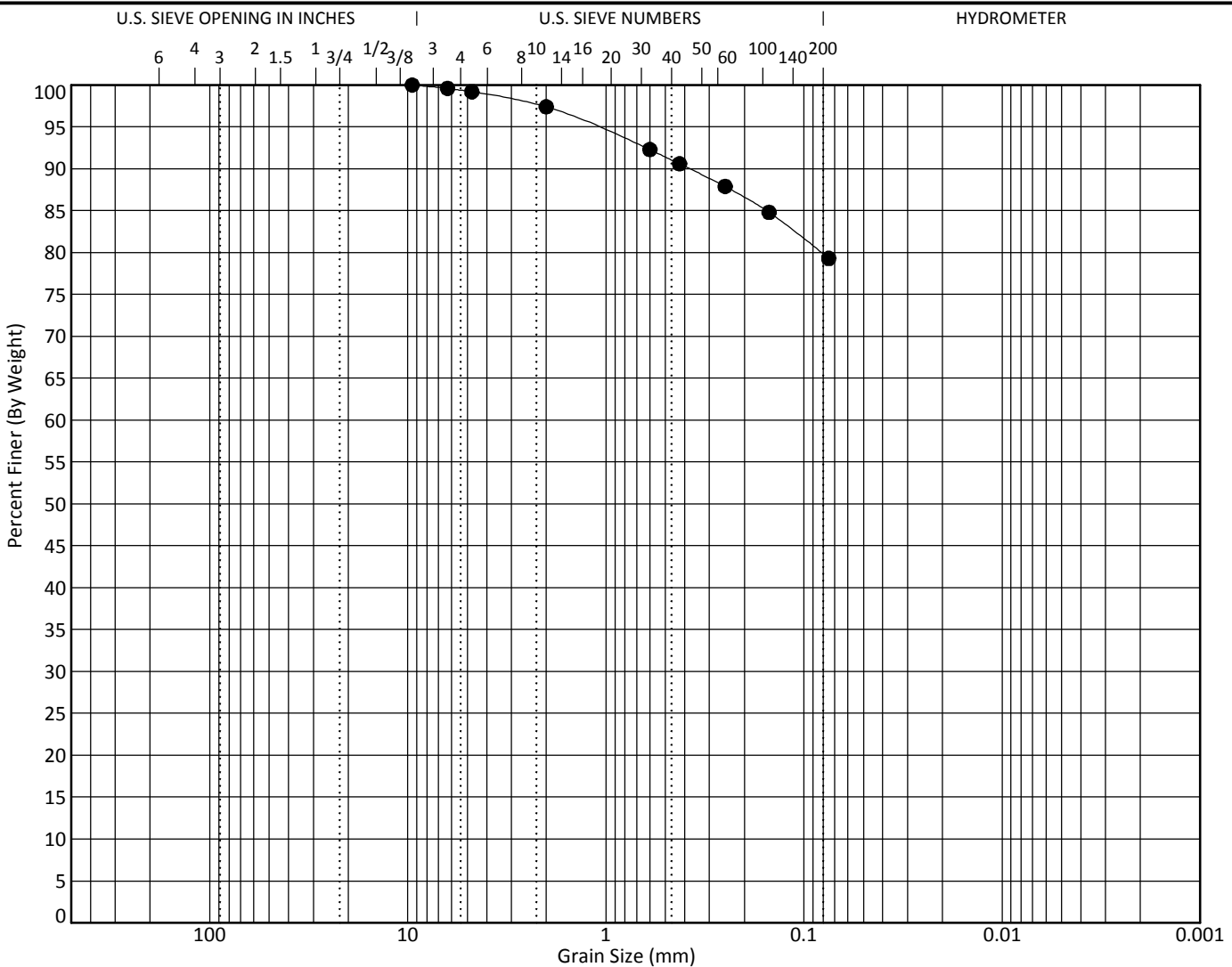


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	B-2A (SS-1)	0.5	LEAN CLAY with SAND (CL)					47	24	23		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	B-2A (SS-1)	0.5	9.5				0.8	19.9	79.3			
	at											
	at											
	at											
	at											

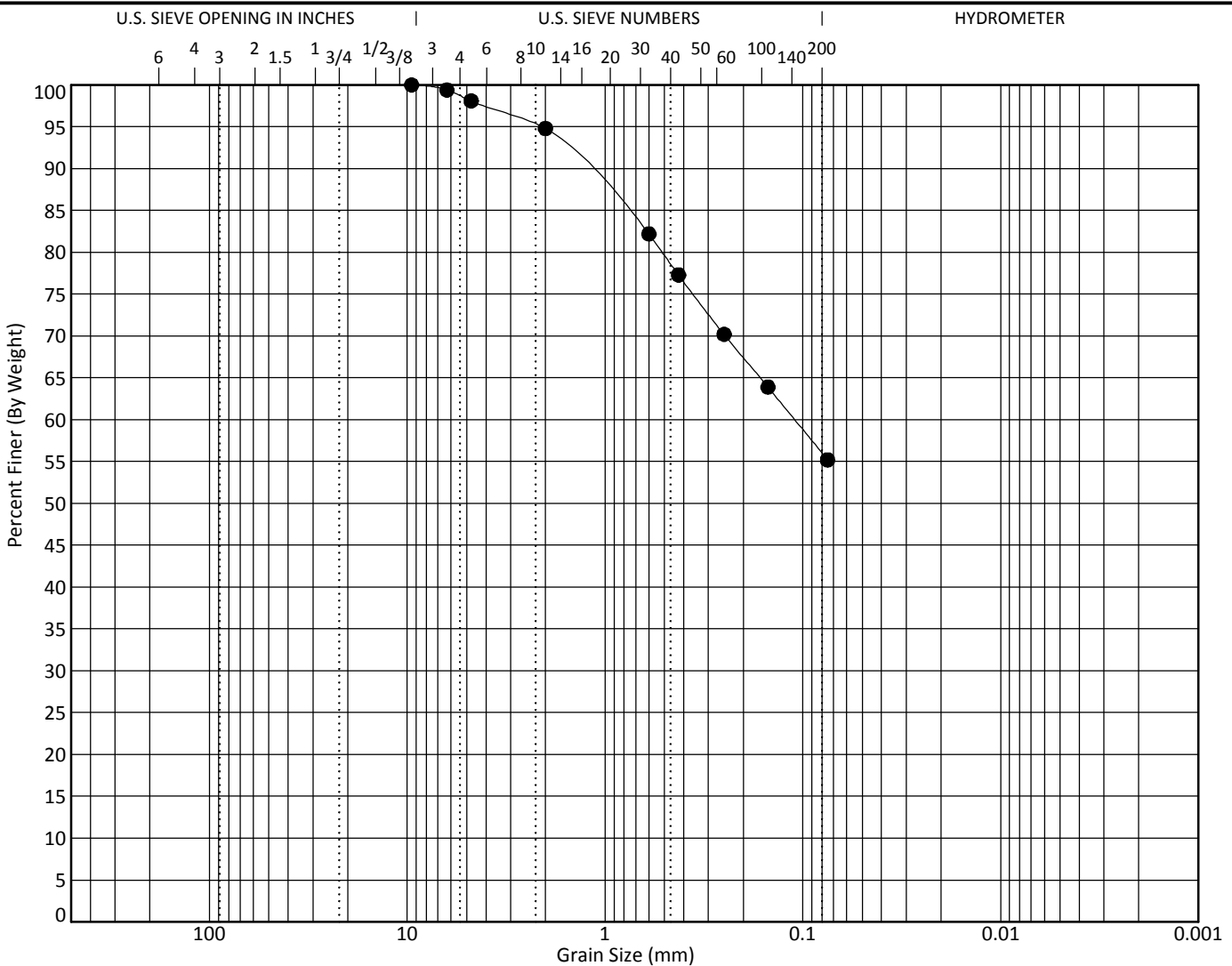


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	B-2A (SS-5)	8.5	SANDY SILT (ML)					32	25	7		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	B-2A (SS-5)	8.5	9.5	0.11			1.9	42.9	55.2			
	at											
	at											
	at											
	at											

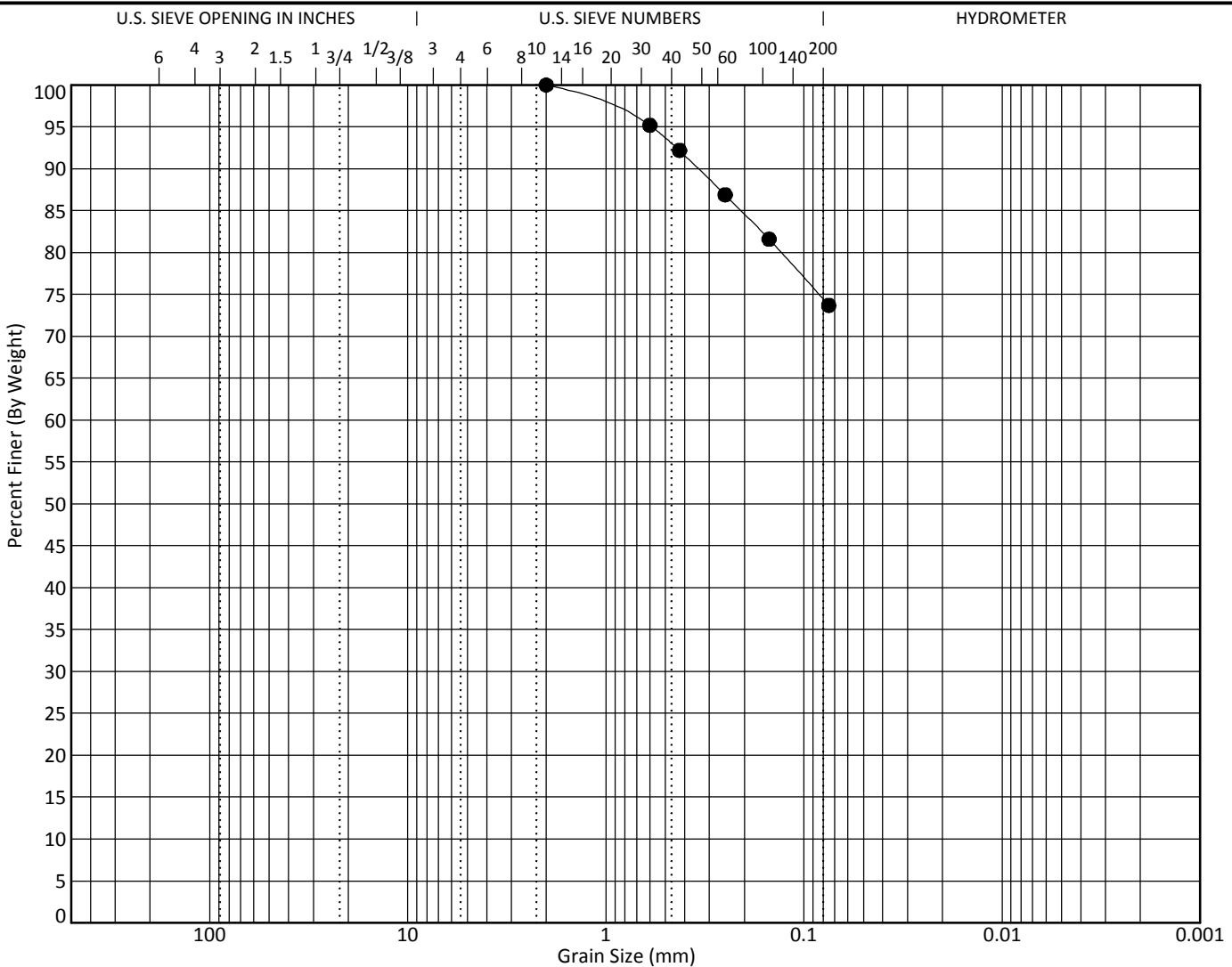


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	B-2A (SS-Gt)	13.5	SILT with SAND (ML)					33	27	6		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	B-2A (SS-Gt)	13.5	2				0.0	26.3	73.7			
	at											
	at											
	at											
	at											

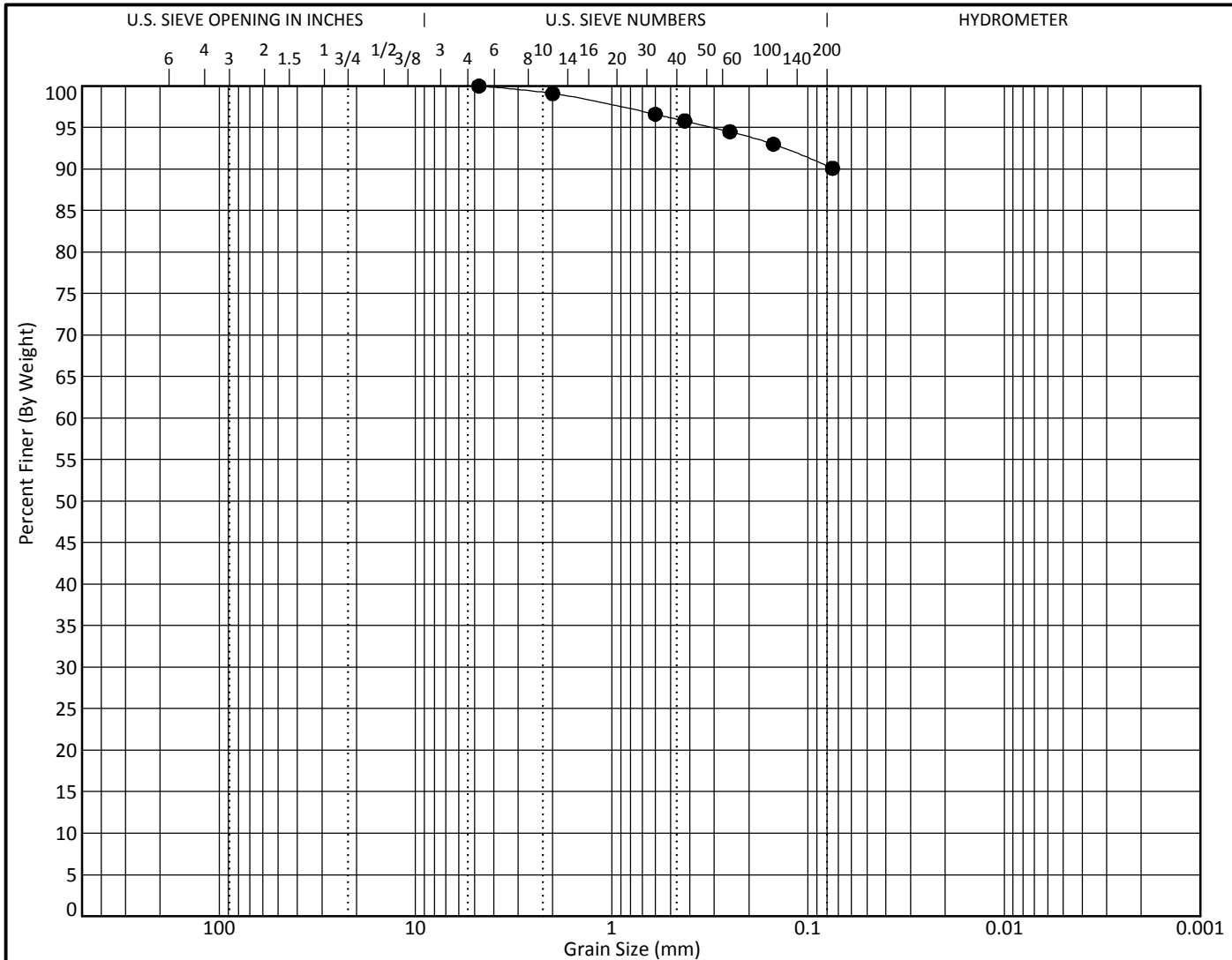


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● B-2A (SS-7)	18.5	SILT (ML)					33	27	6		
at											
at											
at											
at											
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● B-2A (SS-7)	18.5	4.75				0.0	9.9	90.1			
at											
at											
at											
at											

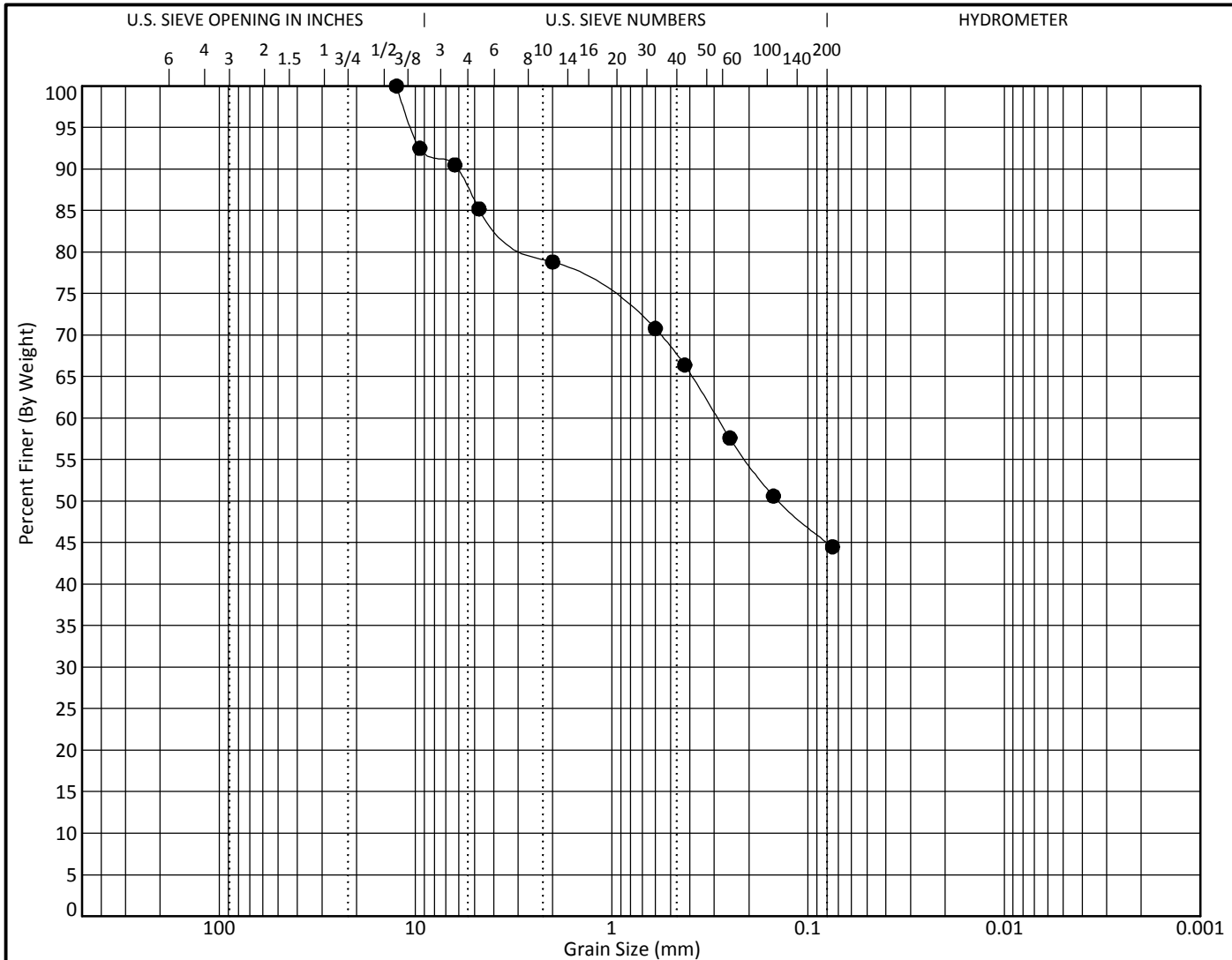


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	B-3 (SS-1)	at 0.5	CLAYEY SAND (SC)					30	22	8		
		at										
		at										
		at										
		at										
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	B-3 (SS-1)	at 0.5	12.5	0.289			14.8	40.7	44.5			
		at										
		at										
		at										
		at										

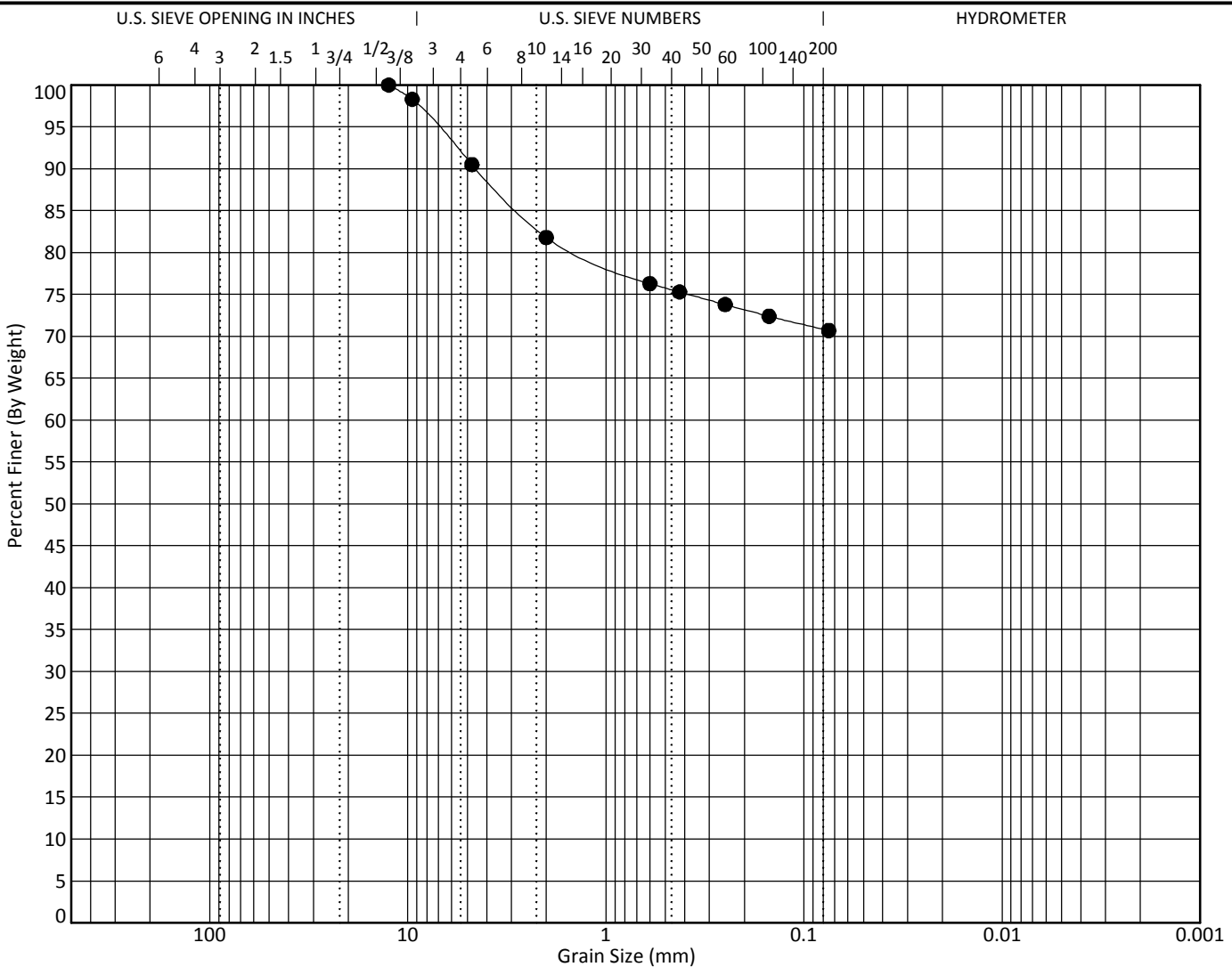


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	B-4 (SS-1)at	0.5	LEAN CLAY with SAND (CL)					34	22	12		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	B-4 (SS-1)at	0.5	12.5				9.5	19.8	70.7			
	at											
	at											
	at											
	at											

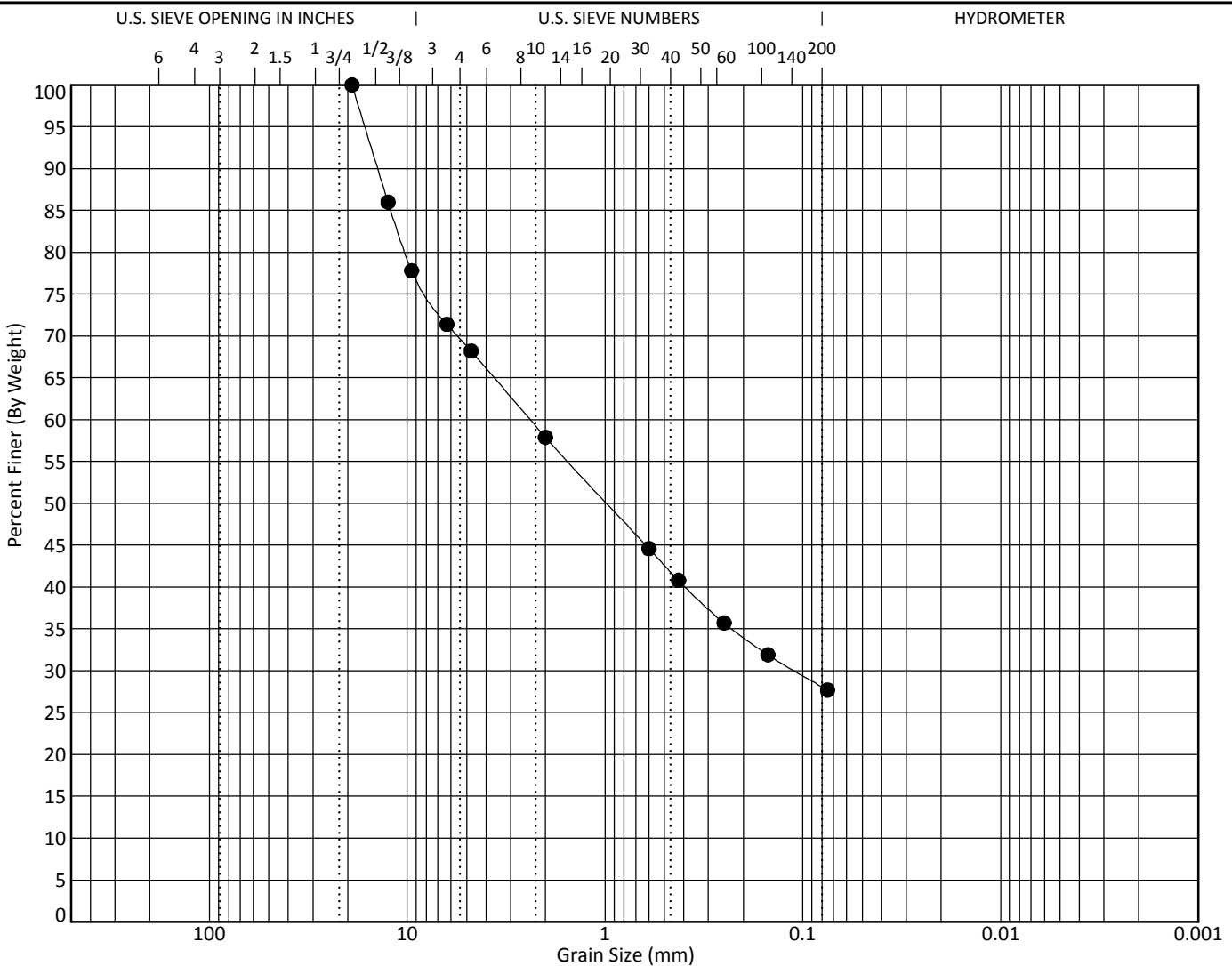


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	B-4 (SS-3)	at 4.5	SILTY, CLAYEY SAND with GRAVEL (SC-SM)					25	18	7		
		at										
		at										
		at										
		at										
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	B-4 (SS-3)	at 4.5	19	2.386	0.11		31.8	40.5	27.7			
		at										
		at										
		at										
		at										

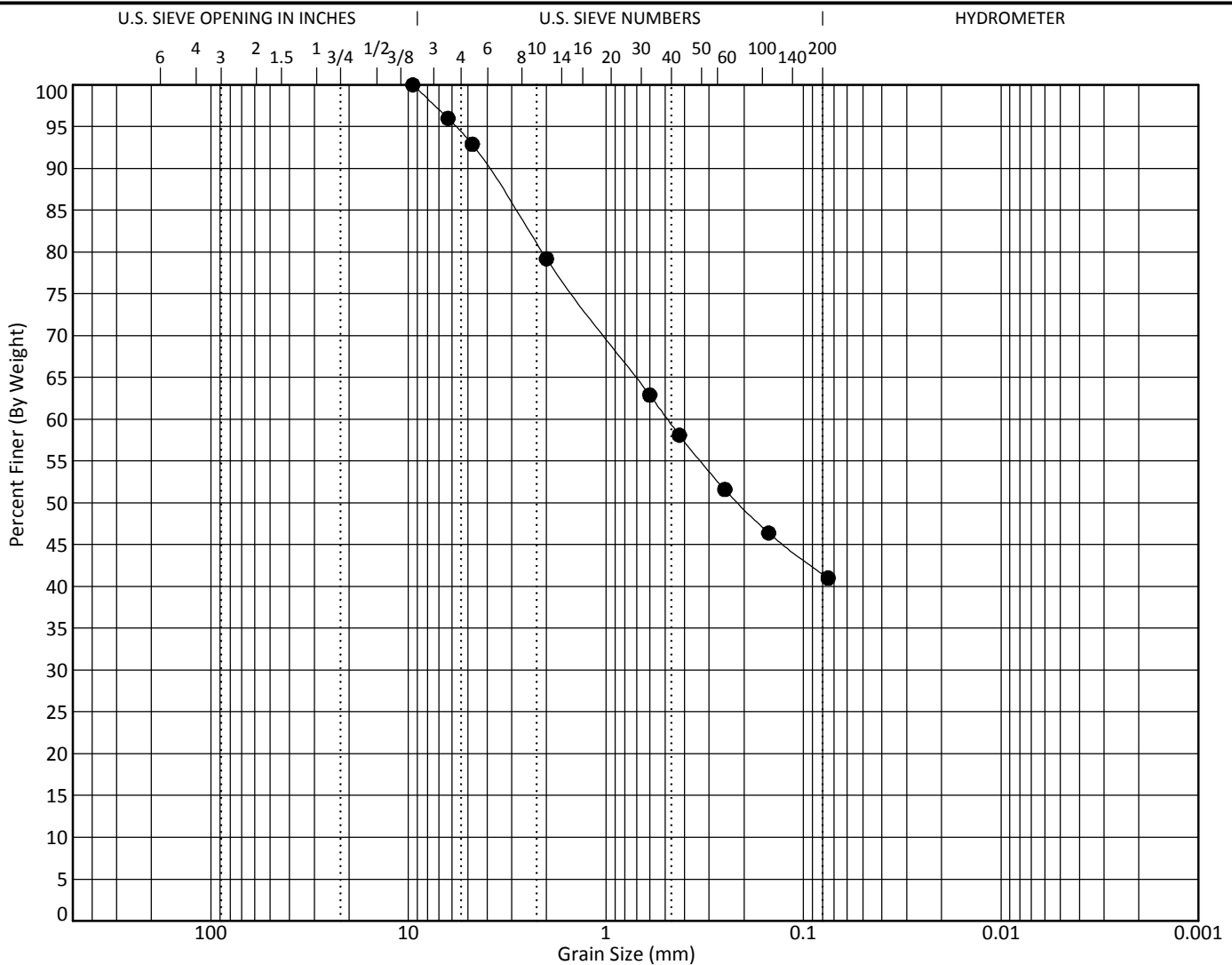


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● B-5 (SS-1)at	0.5	SILTY SAND (SM)					37	28	9		
at											
at											
at											
at											
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● B-5 (SS-1)at	0.5	9.5	0.487			7.1	51.9	41.0			
at											
at											
at											
at											

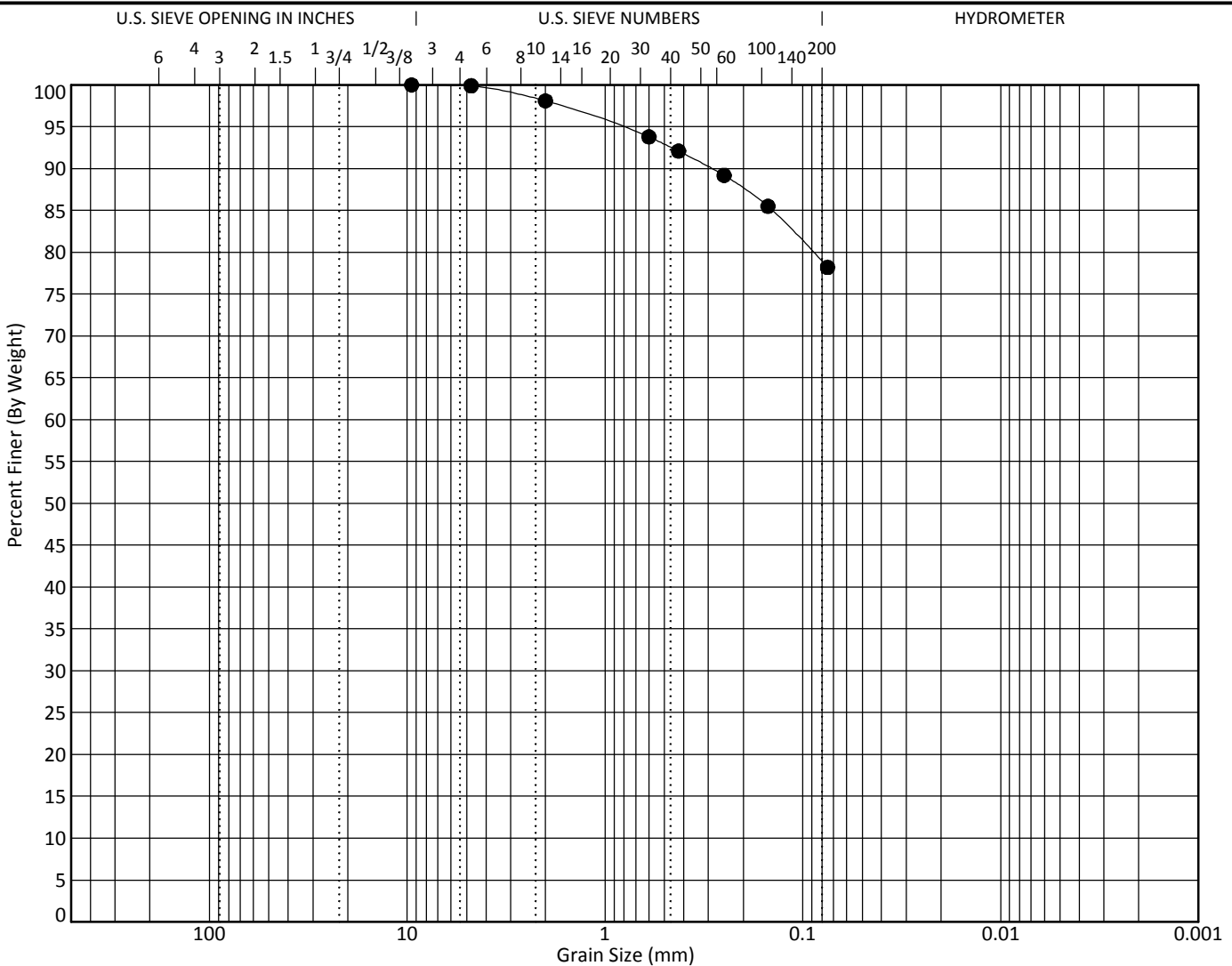


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	B-6 (SS-3)	at 4.5	SILT with SAND (ML)					37	26	11		
		at										
		at										
		at										
		at										
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	B-6 (SS-3)	at 4.5	9.5				0.1	21.7	78.2			
		at										
		at										
		at										
		at										

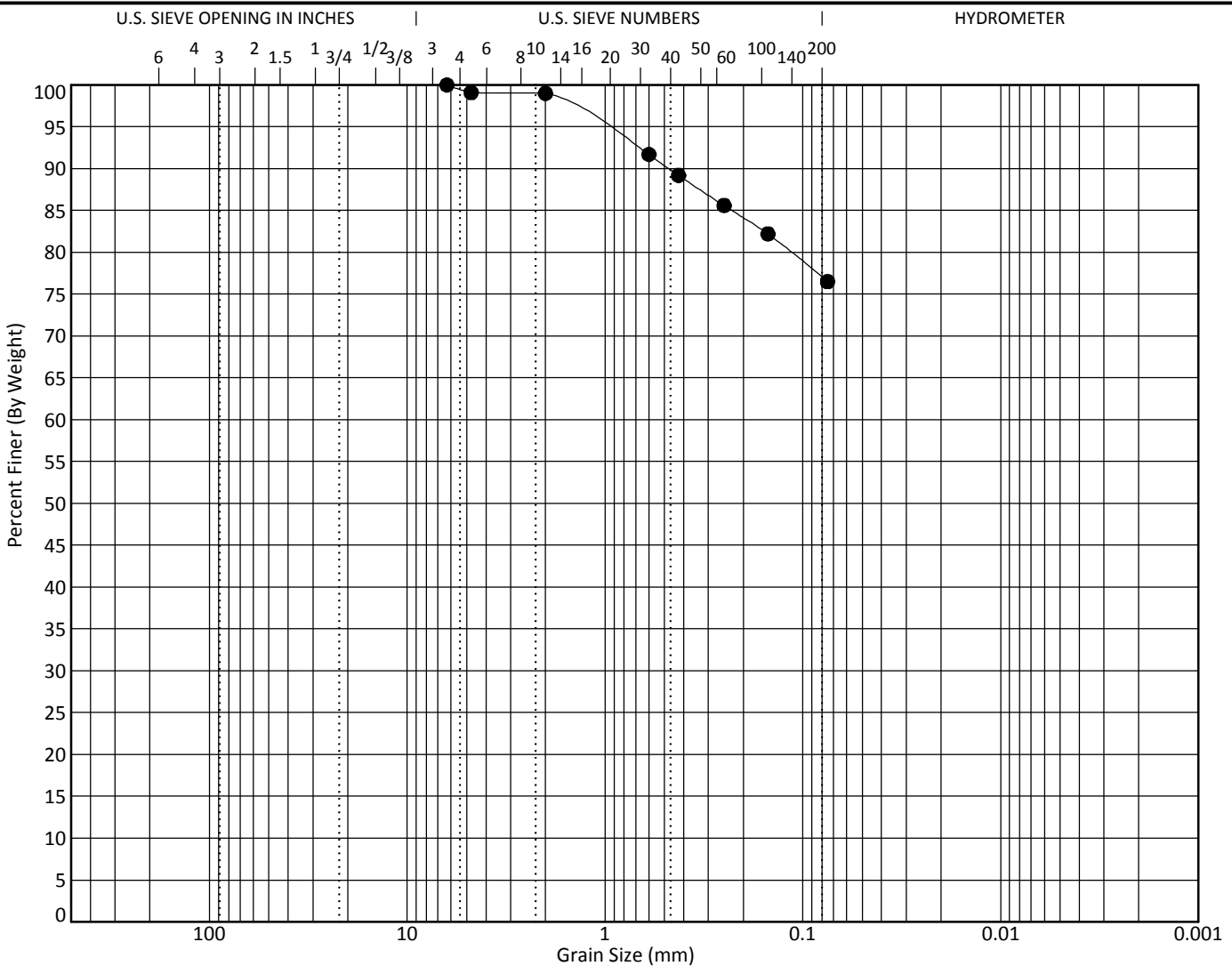


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	B-6 (SS-7)at	18.5	SILT with SAND (ML)					42	30	12		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
●	B-6 (SS-7)at	18.5	6.3				0.9	22.6	76.5			
	at											
	at											
	at											
	at											

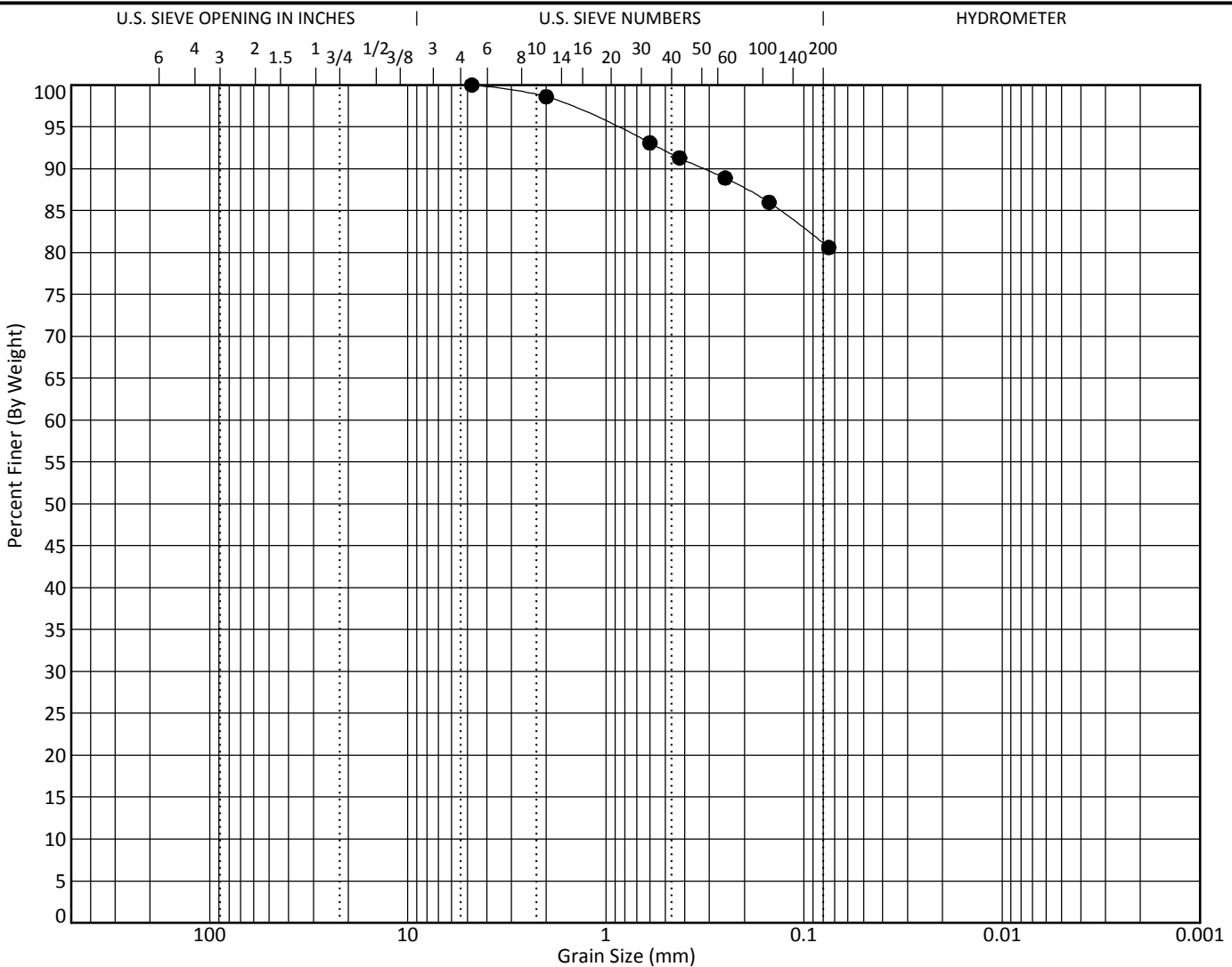


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	B-6 (SS-8)at	23.5	SILT with SAND (ML)					38	26	12		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	B-6 (SS-8)at	23.5	4.75				0.0	19.4	80.6			
	at											
	at											
	at											
	at											



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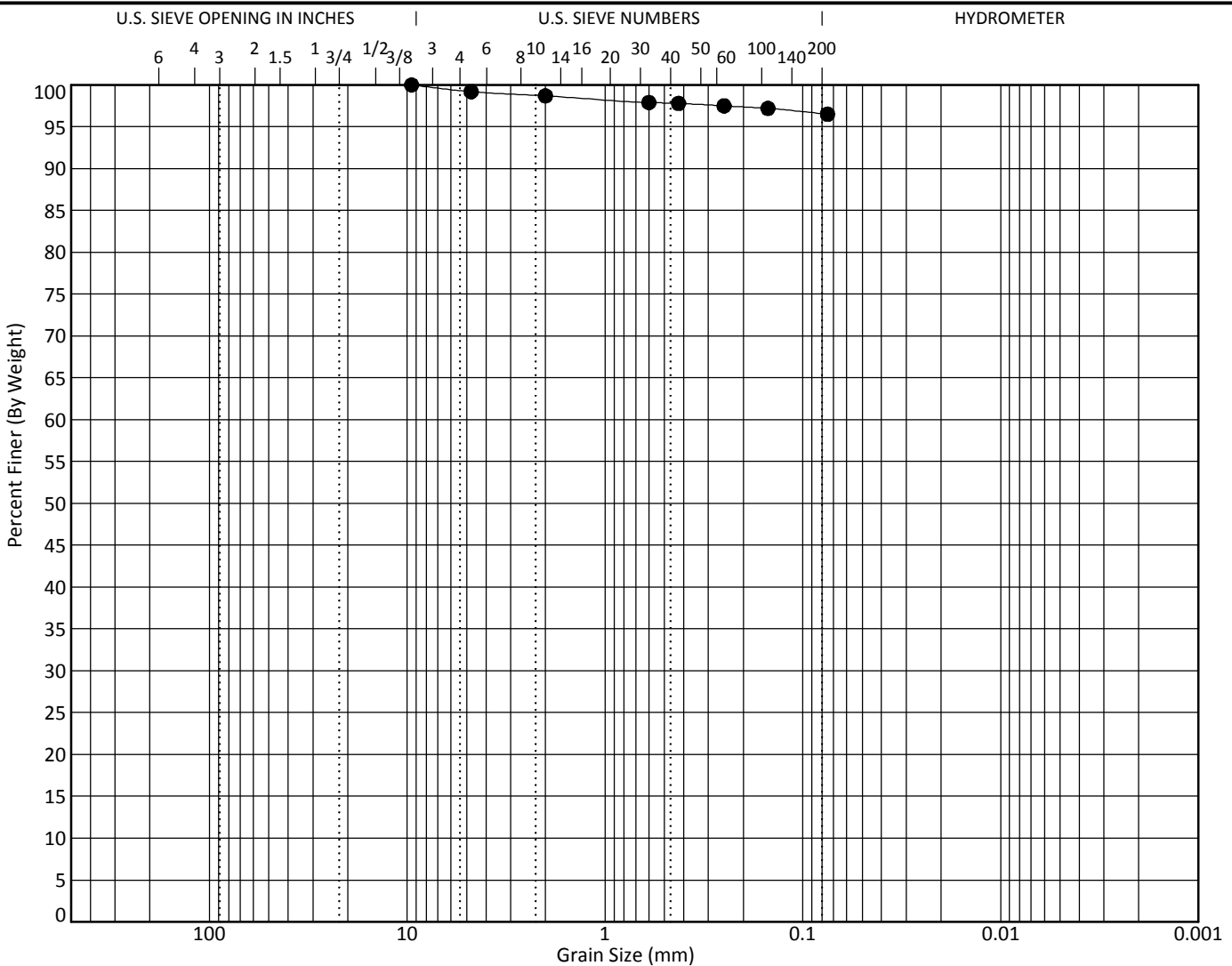
GRAIN SIZE DISTRIBUTION

Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RD-1 (SS-1)	0.5	FAT CLAY (CH)					72	32	40		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RD-1 (SS-1)	0.5	9.5				0.8	2.7	96.5			
	at											
	at											
	at											
	at											

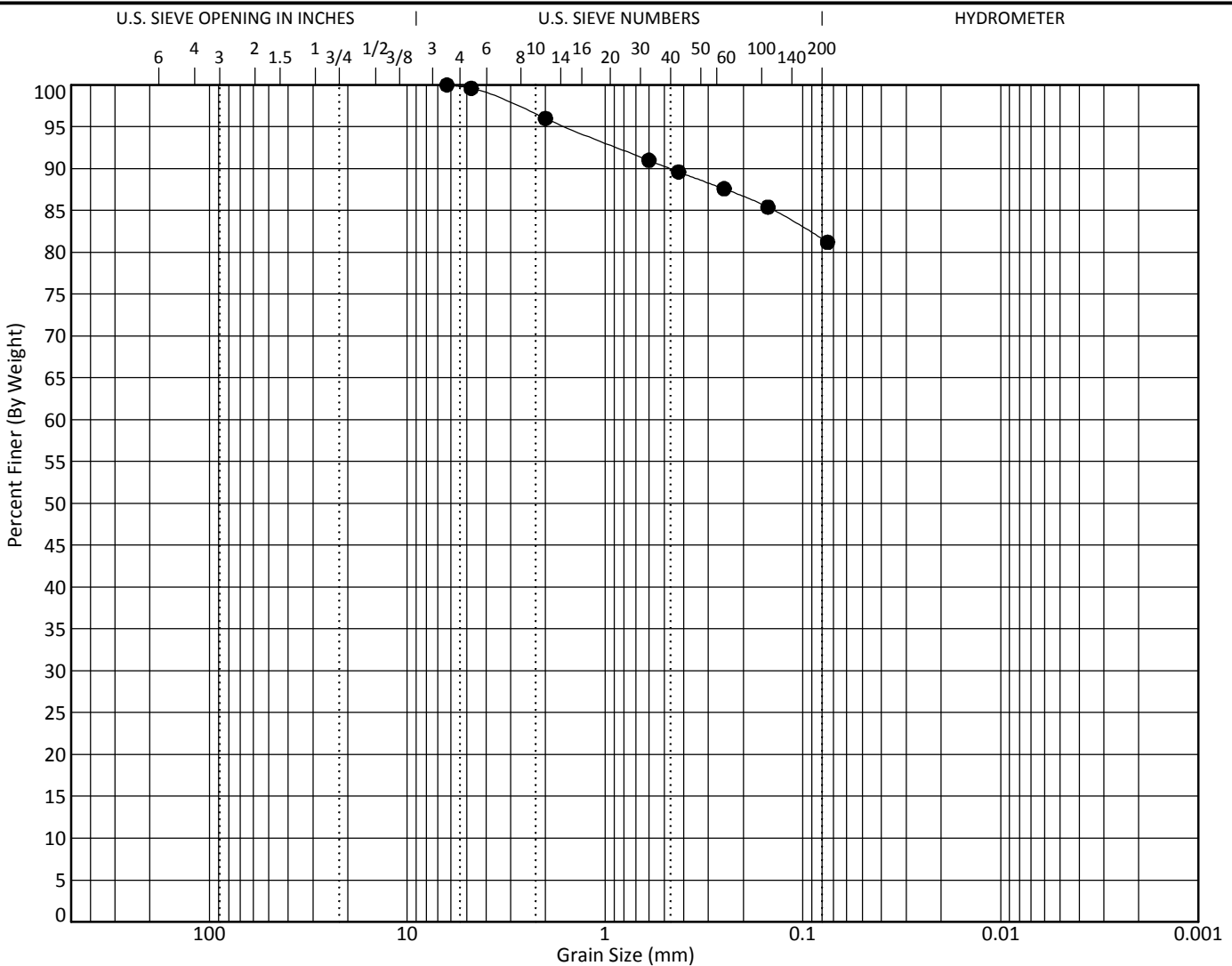


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RD-1 (SS-4)	6.5	SILT with SAND (ML)					38	30	8		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RD-1 (SS-4)	6.5	6.3				0.4	18.4	81.2			
	at											
	at											
	at											
	at											

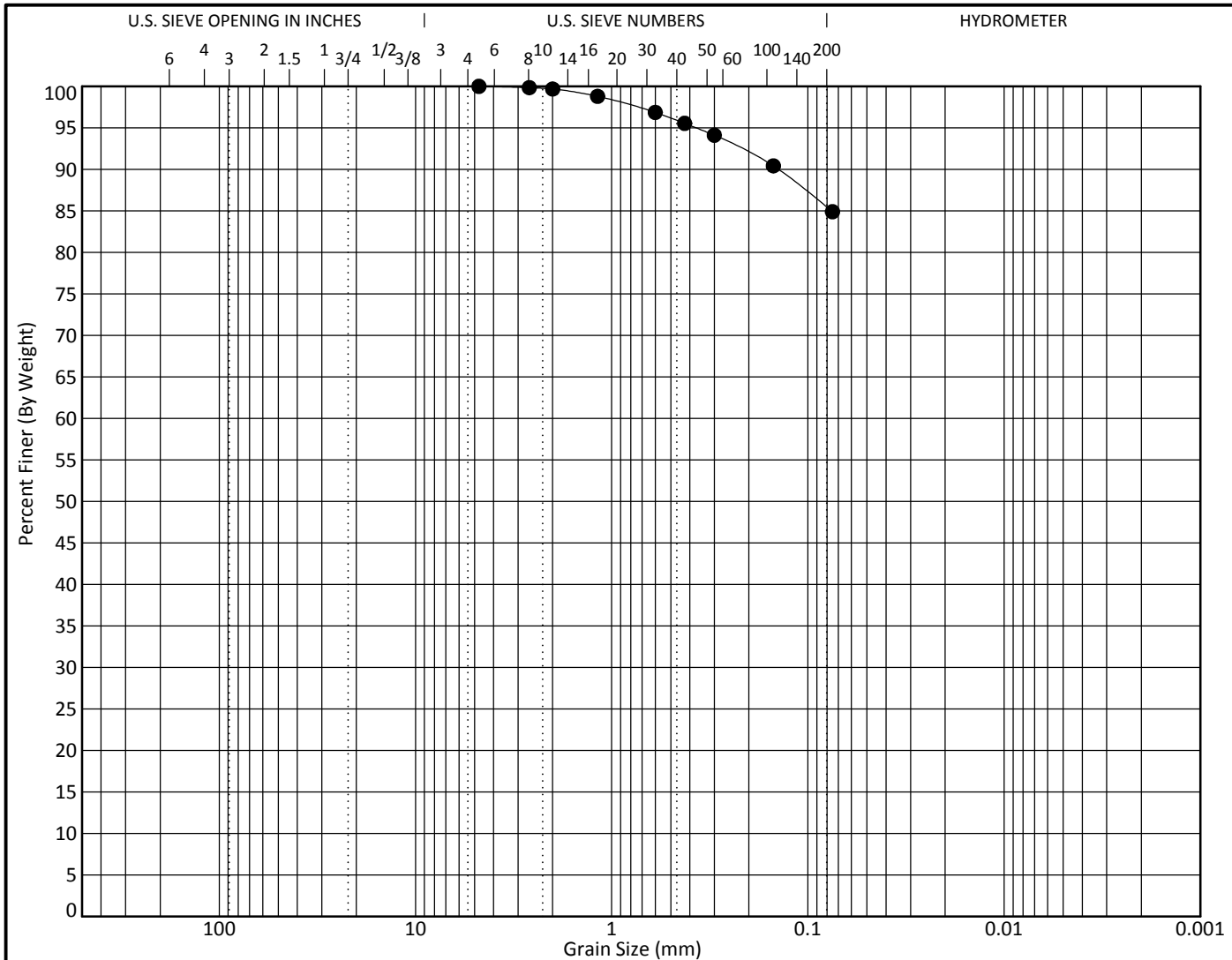


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RD-2 SS-1at	0.5	FAT CLAY with SAND (CH)					50	24	26		
at											
at											
at											
at											
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RD-2 SS-1at	0.5	4.75				0.0	15.1	84.9			
at											
at											
at											
at											

U.S. GRAIN SIZE 65N-302-RT.GPJ F&R.GDT 7/6/12

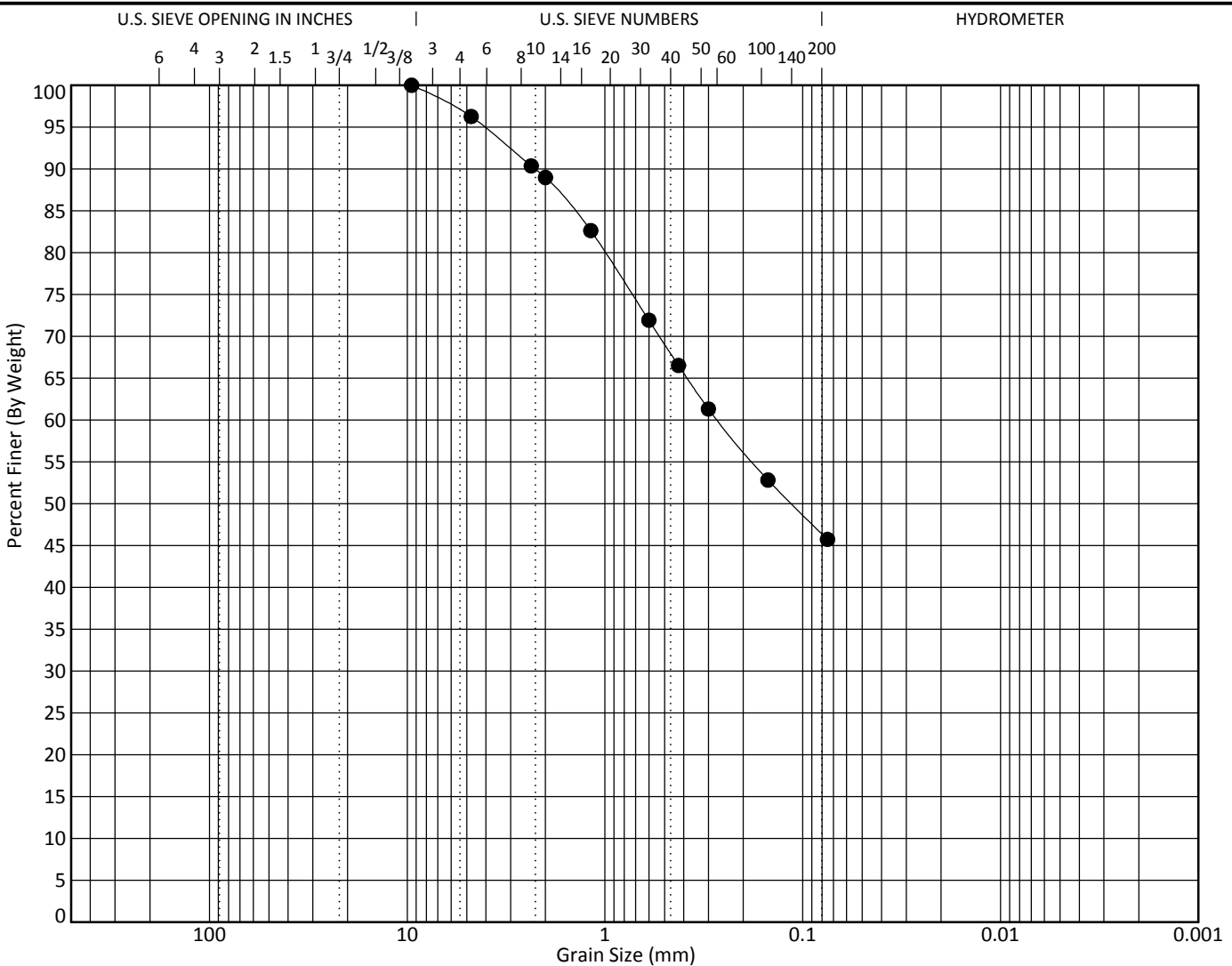


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RD-2 SS-3at	4.5	SILTY SAND (SM)					32	26	6		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RD-2 SS-3at	4.5	9.5	0.269			3.7	50.5	45.7			
	at											
	at											
	at											
	at											

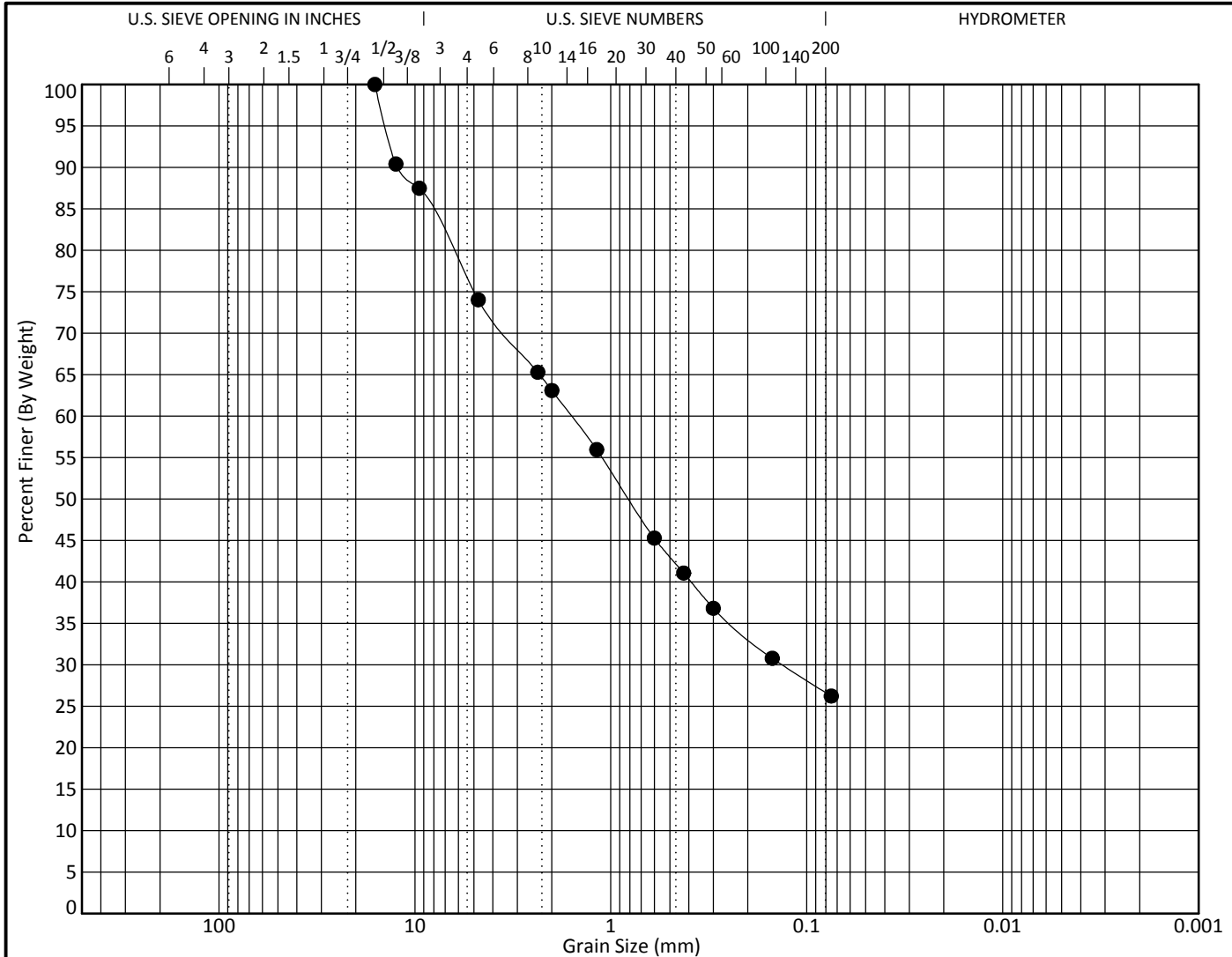


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RD-2 SS-5at	8.5	()									
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RD-2 SS-5at	8.5	16	1.592	0.133		26.0	47.8	26.2			
	at											
	at											
	at											
	at											

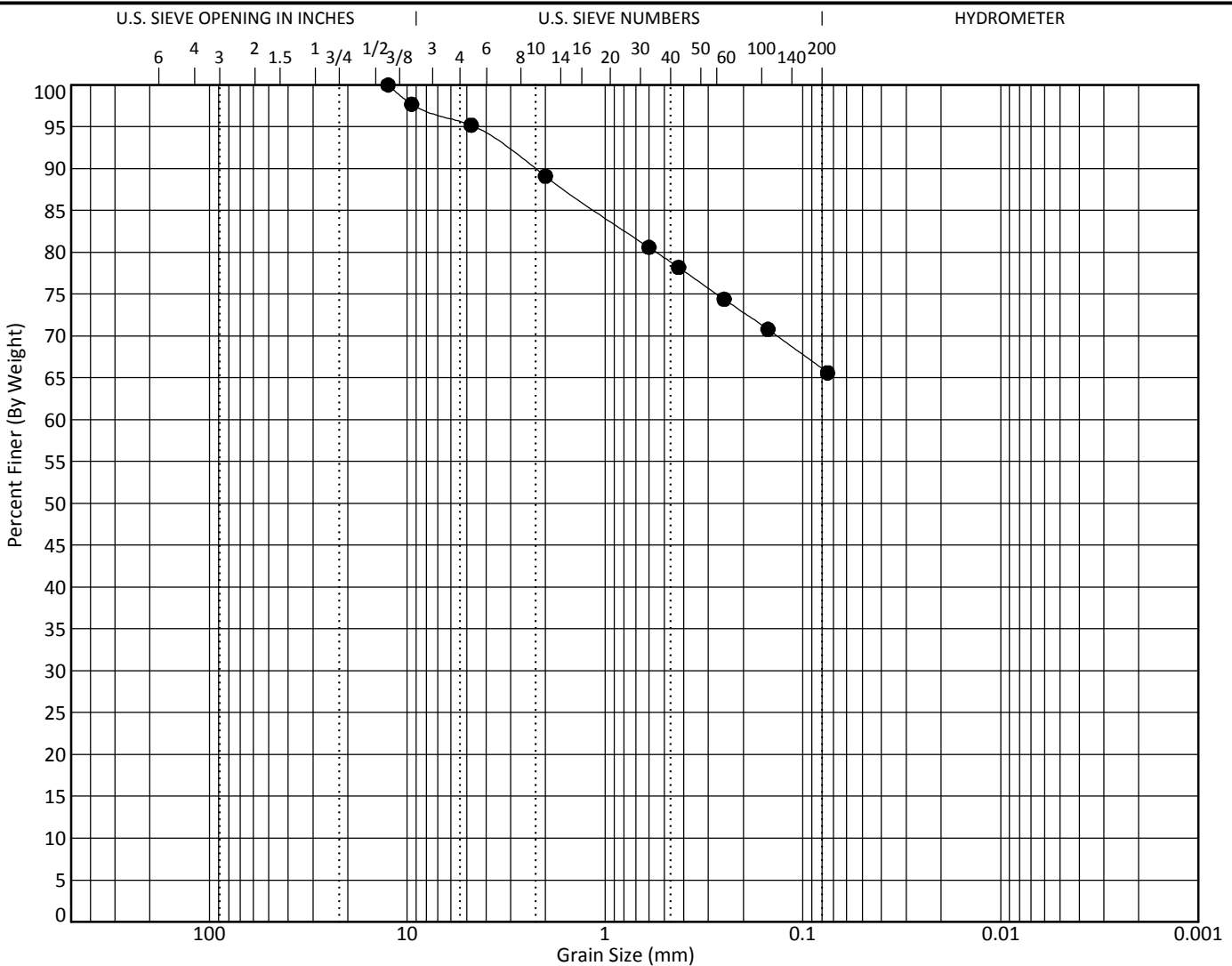


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RD-4 (SS-1)	0.5	SANDY LEAN CLAY (CL)					35	24	11		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RD-4 (SS-1)	0.5	12.5				4.8	29.6	65.6			
	at											
	at											
	at											
	at											

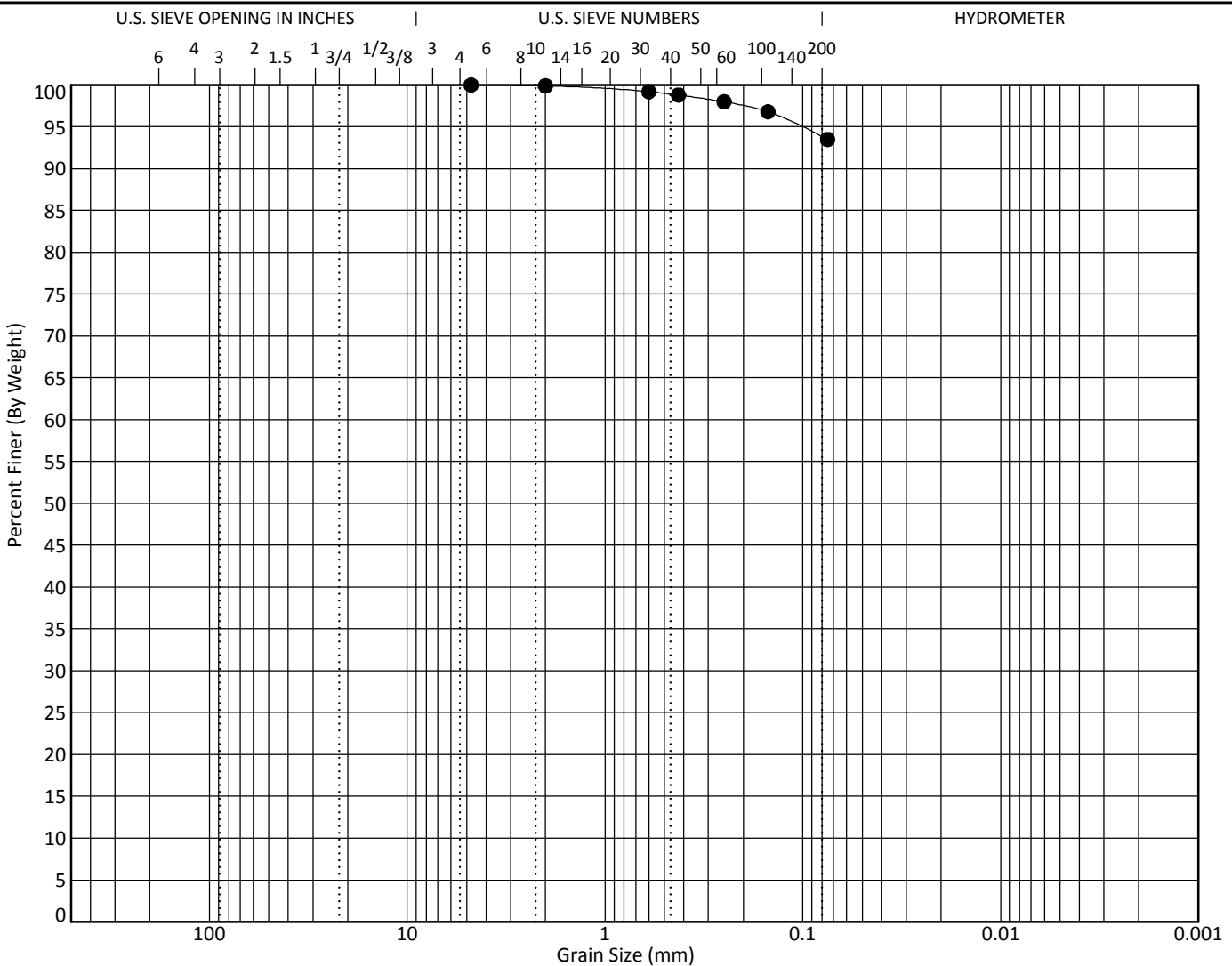


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RD-4 (SS-4)	6.5	LEAN CLAY (CL)					46	27	19		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RD-4 (SS-4)	6.5	4.75				0.0	6.5	93.5			
	at											
	at											
	at											
	at											



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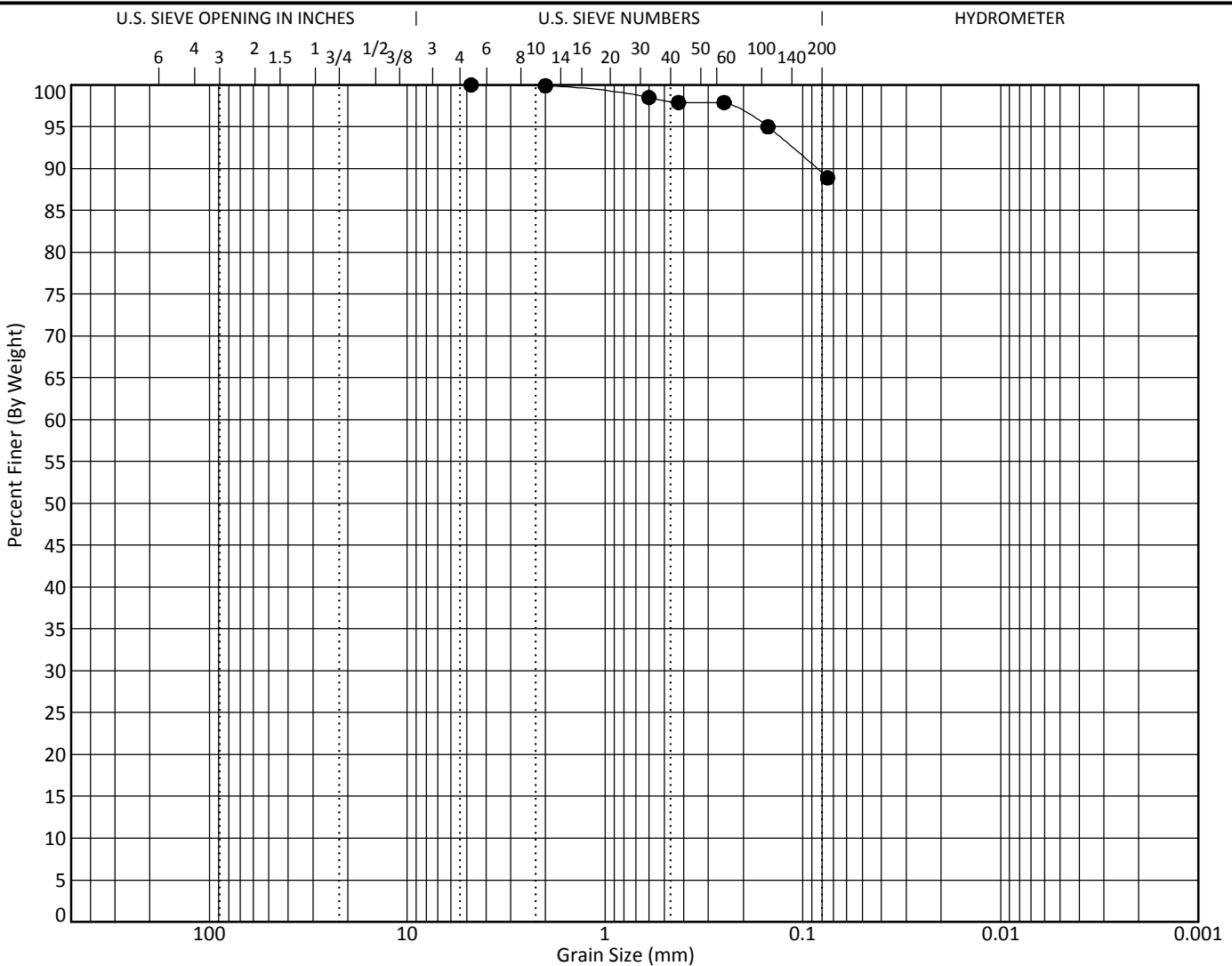
GRAIN SIZE DISTRIBUTION

Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RD-4 (SS-5)	8.5	LEAN CLAY (CL)					40	25	15		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RD-4 (SS-5)	8.5	4.75				0.0	11.1	88.9			
	at											
	at											
	at											
	at											

U.S. GRAIN SIZE LAB TEST G.P.I. F&R.GDT 6/27/12

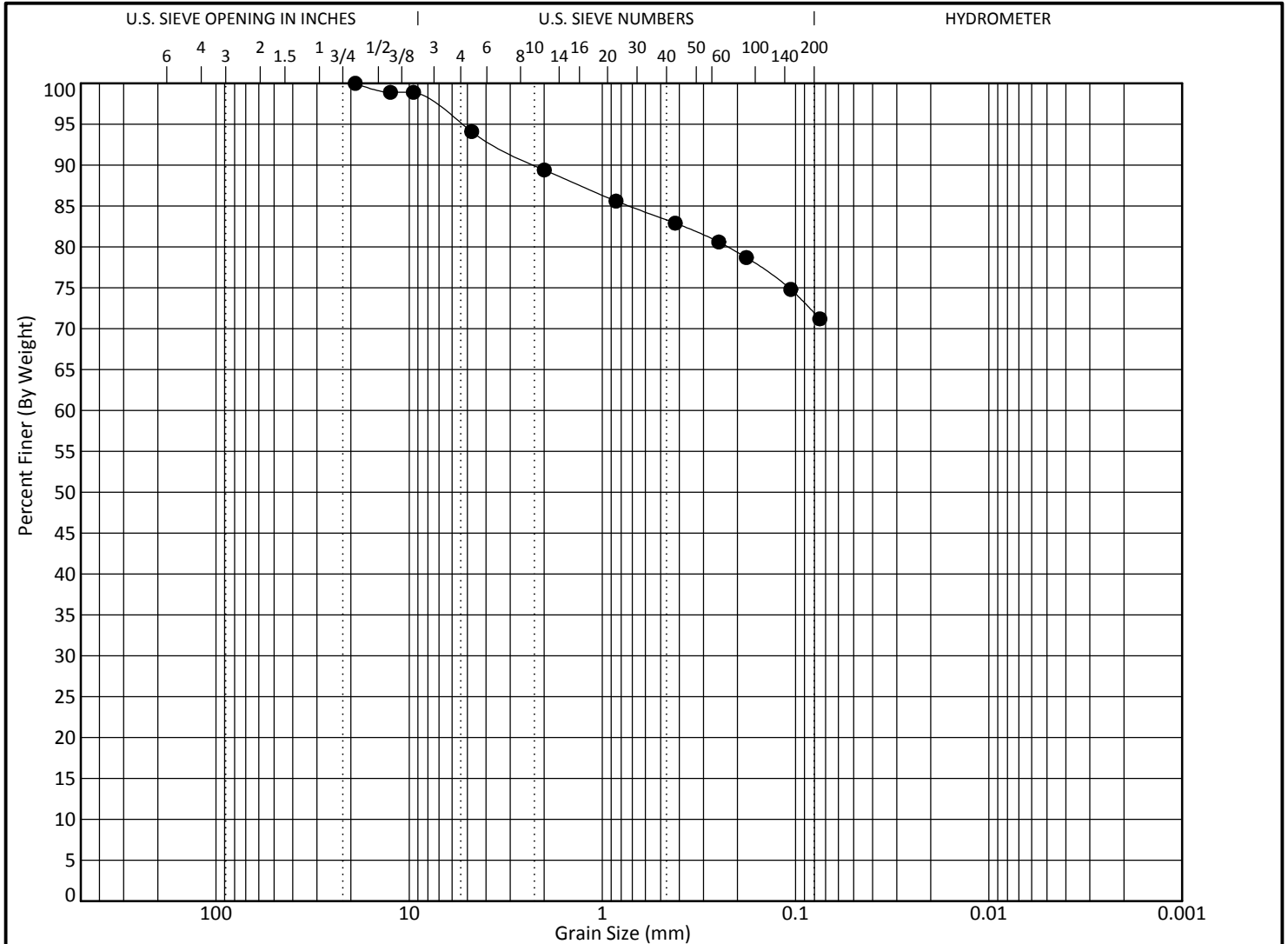


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RD-5 SS-1at	0.5	LEAN CLAY with SAND (CL)					42	21	21		
at											
at											
at											
at											
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RD-5 SS-1at	0.5	19				5.9	22.9	71.2			
at											
at											
at											
at											

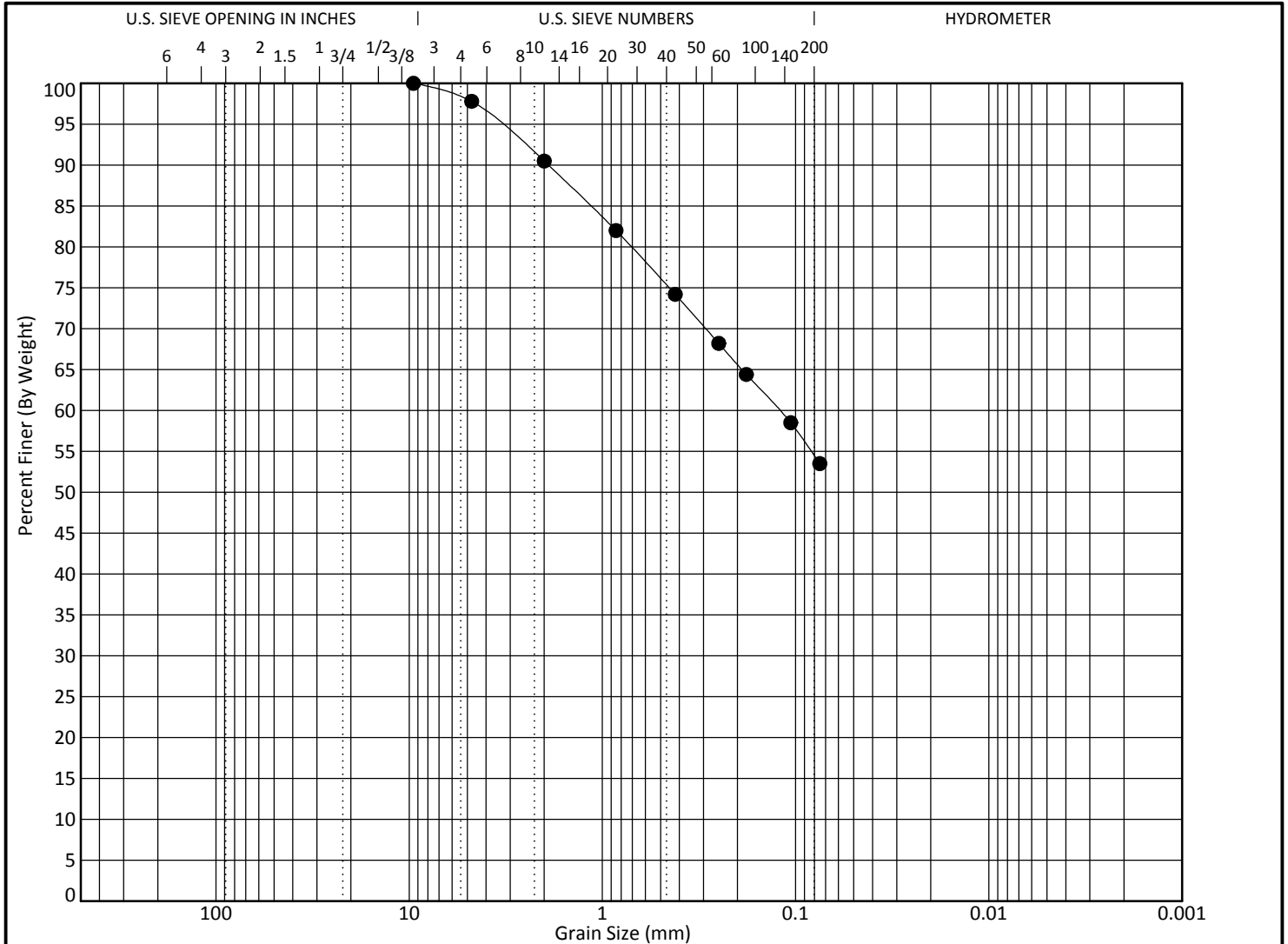


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.			Depth	Classification					LL	PL	PI	Cc	Cu
●	RD-5 SS-7at	18.5	SANDY SILT (ML)					34	26	8			
	at												
	at												
	at												
	at												
Boring No.			Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RD-5 SS-7at	18.5	9.5	0.121				2.2	44.3	53.5			
	at												
	at												
	at												
	at												

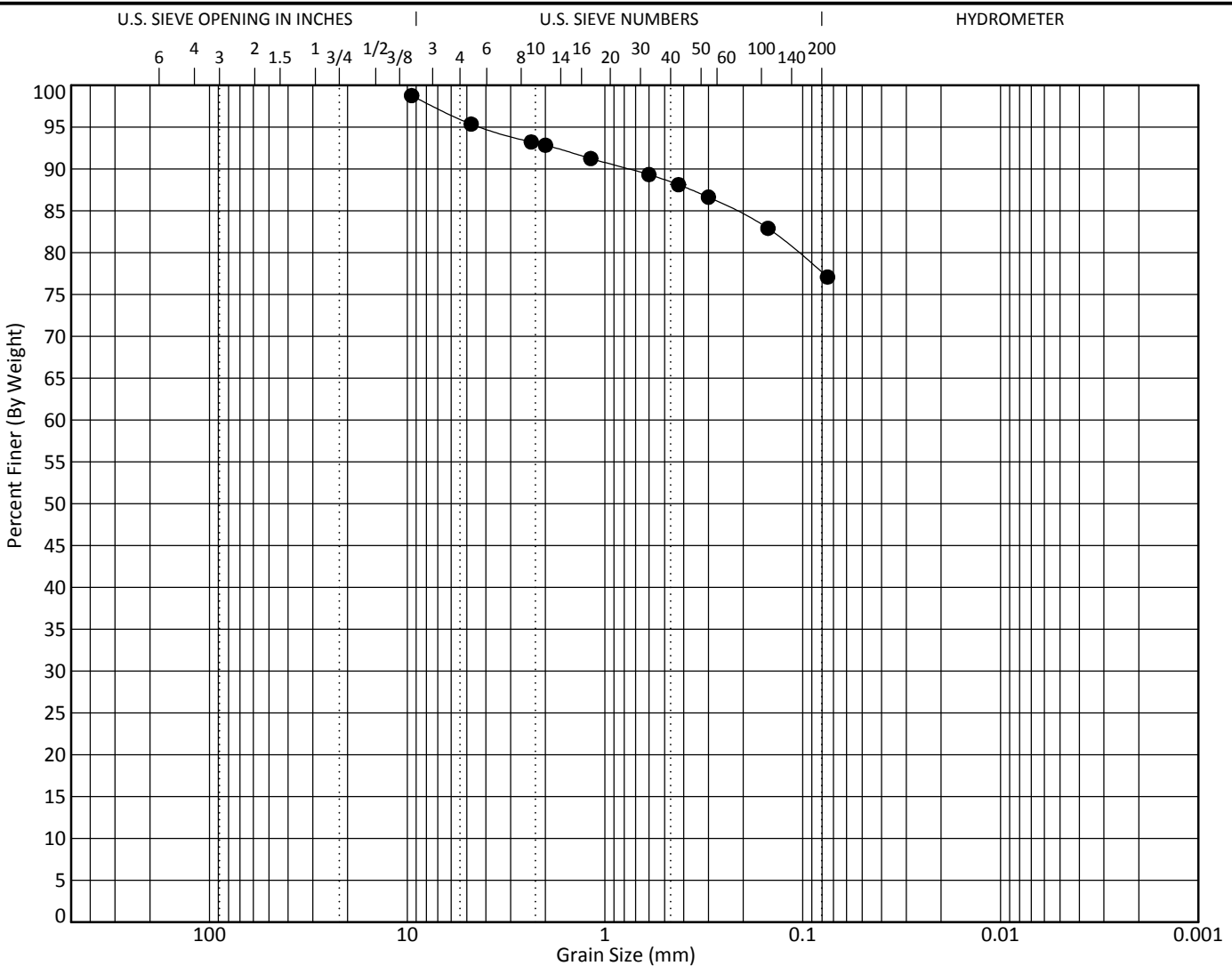


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RD-6 SS-1at	0.5	LEAN CLAY with SAND (CL)					42	20	22		
at											
at											
at											
at											
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RD-6 SS-1at	0.5	9.5				3.4	18.3	77.1			
at											
at											
at											
at											

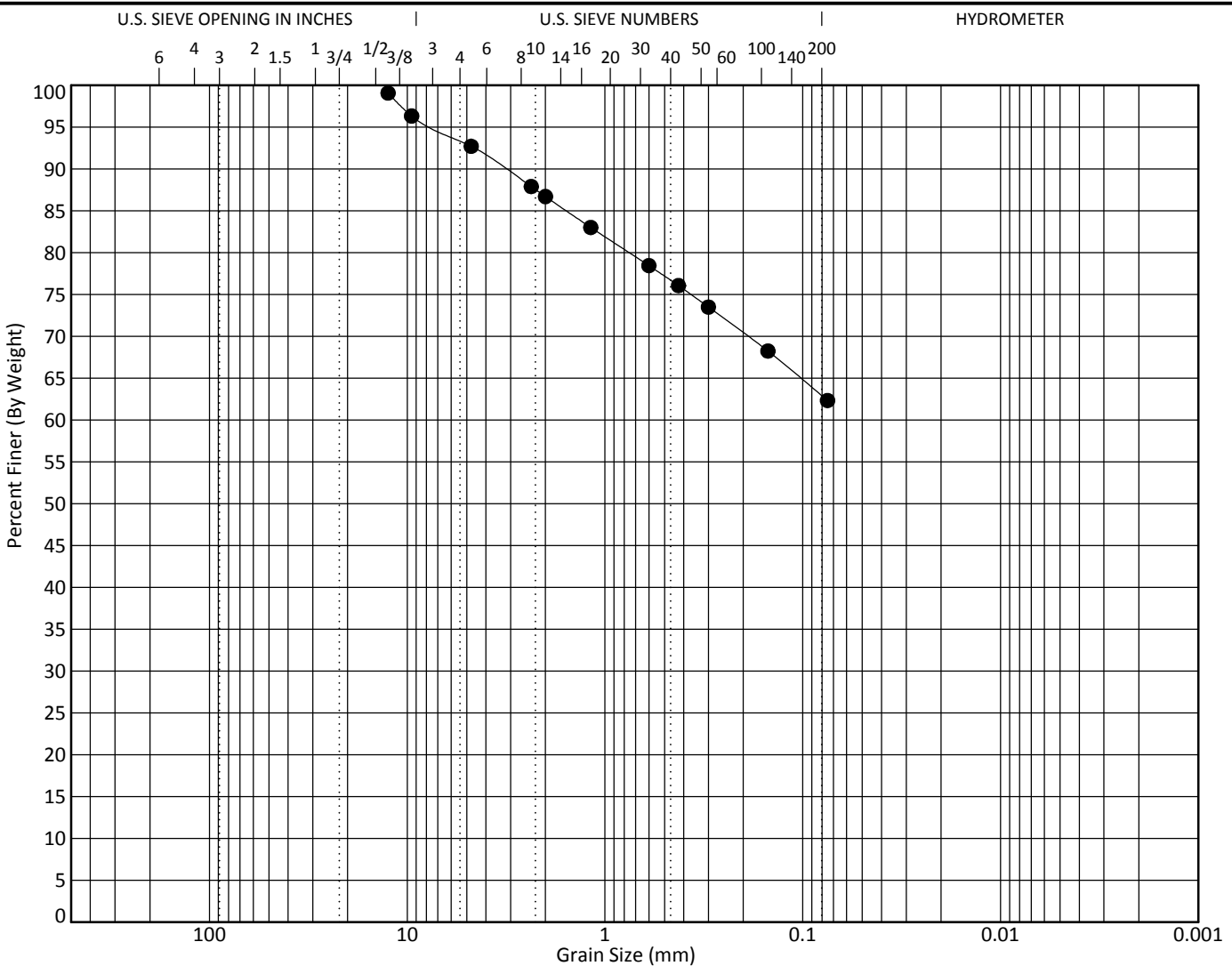


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RD-6 SS-5at	8.5	SANDY SILT (ML)					40	29	11		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RD-6 SS-5at	8.5	12.5				6.4	30.4	62.3			
	at											
	at											
	at											
	at											

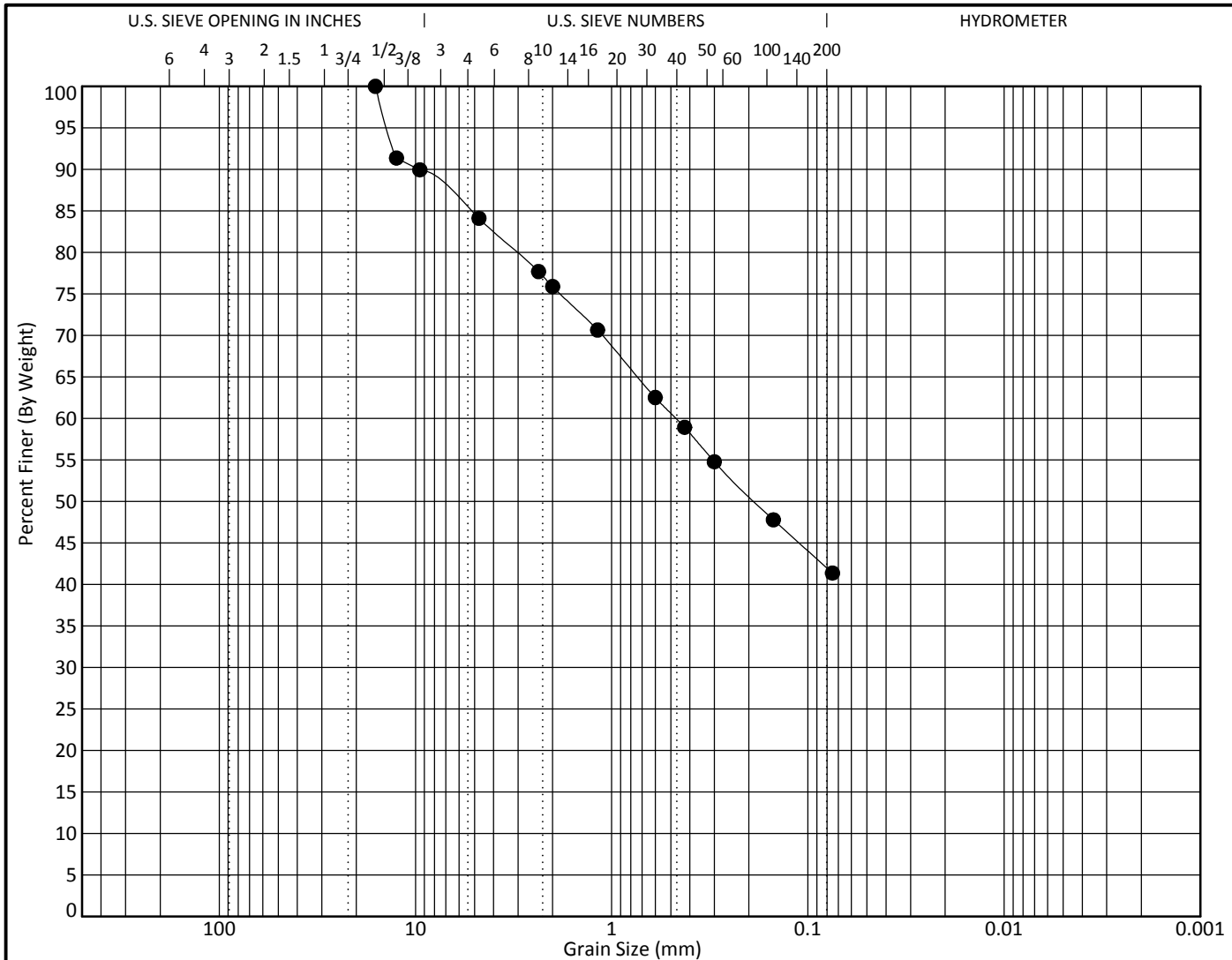


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RD-6 SS-8at	23.5	CLAYEY SAND with GRAVEL (SC)					30	22	8		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RD-6 SS-8at	23.5	16	0.471			15.9	42.7	41.4			
	at										
	at										
	at										
	at										

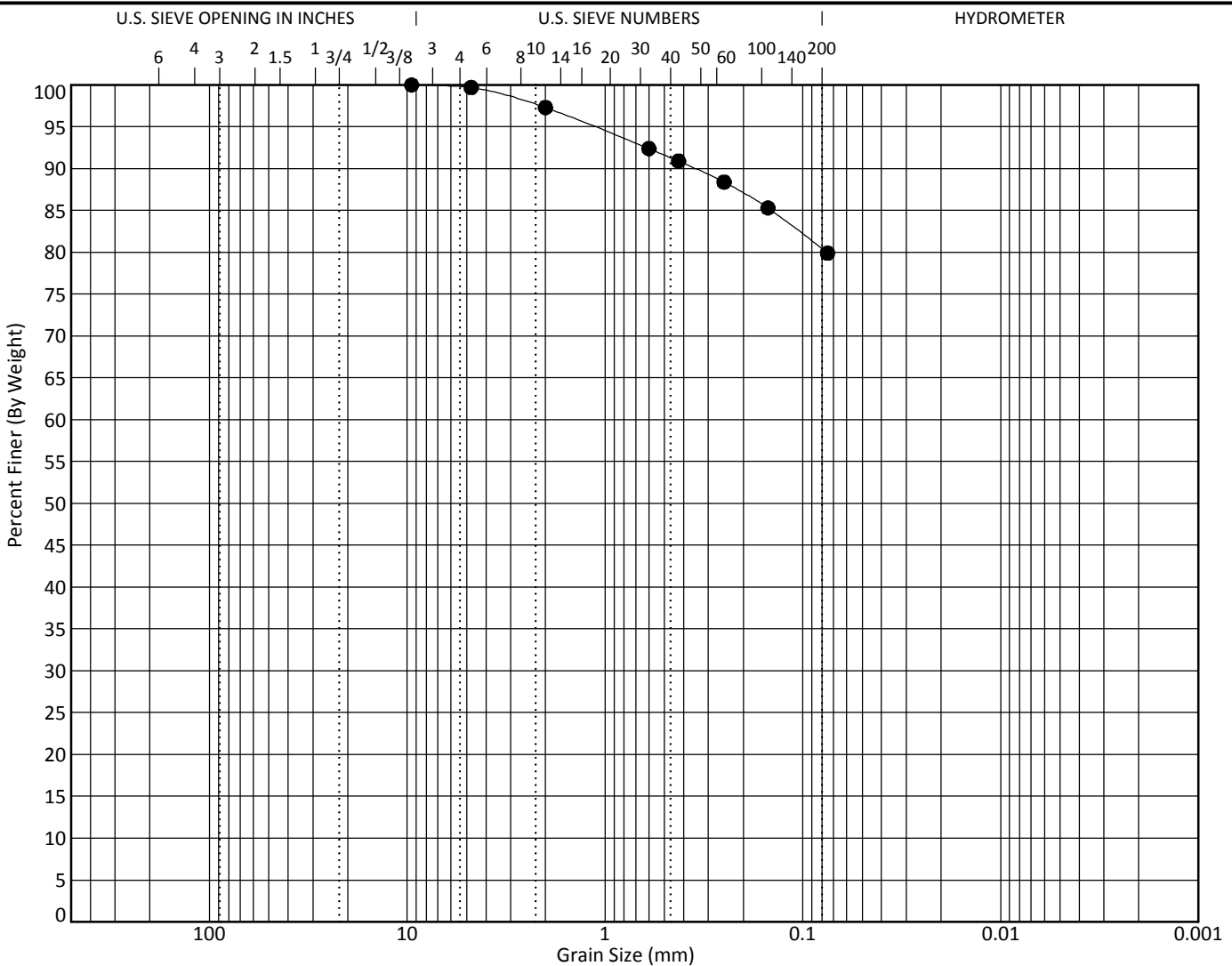


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RD-7 (SS-2)	2.5	SILT with SAND (ML)					38	26	12		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
●	RD-7 (SS-2)	2.5	9.5				0.3	19.8	79.9			
	at											
	at											
	at											
	at											

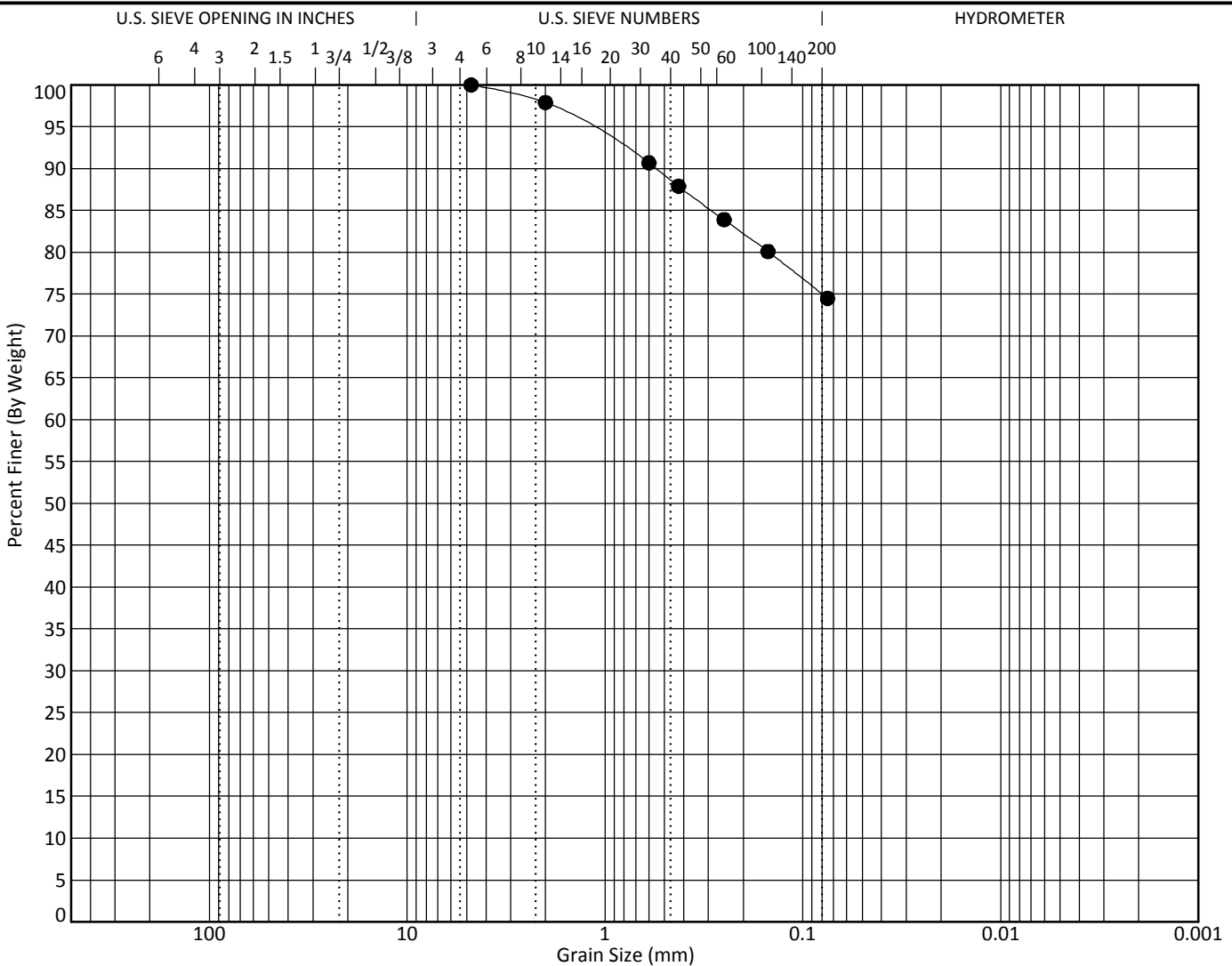


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RD-7 (SS-5)	8.5	SILT with SAND (ML)					37	28	9		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RD-7 (SS-5)	8.5	4.75				0.0	25.5	74.5			
	at											
	at											
	at											
	at											

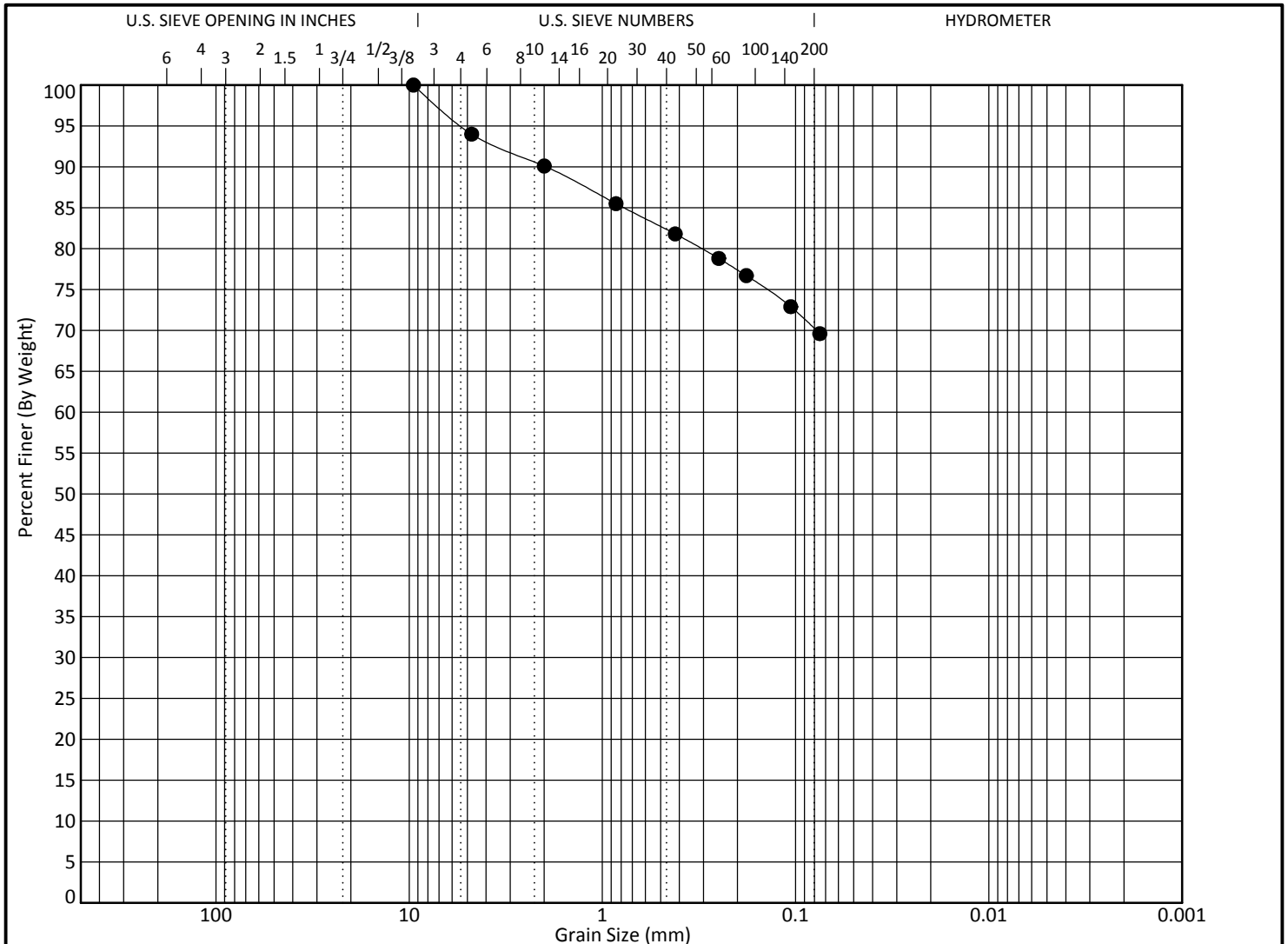


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-1 SS-1t	0.5	SANDY LEAN CLAY (CL)					42	20	22		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-1 SS-1t	0.5	9.5				6.0	24.4	69.6			
	at										
	at										
	at										
	at										

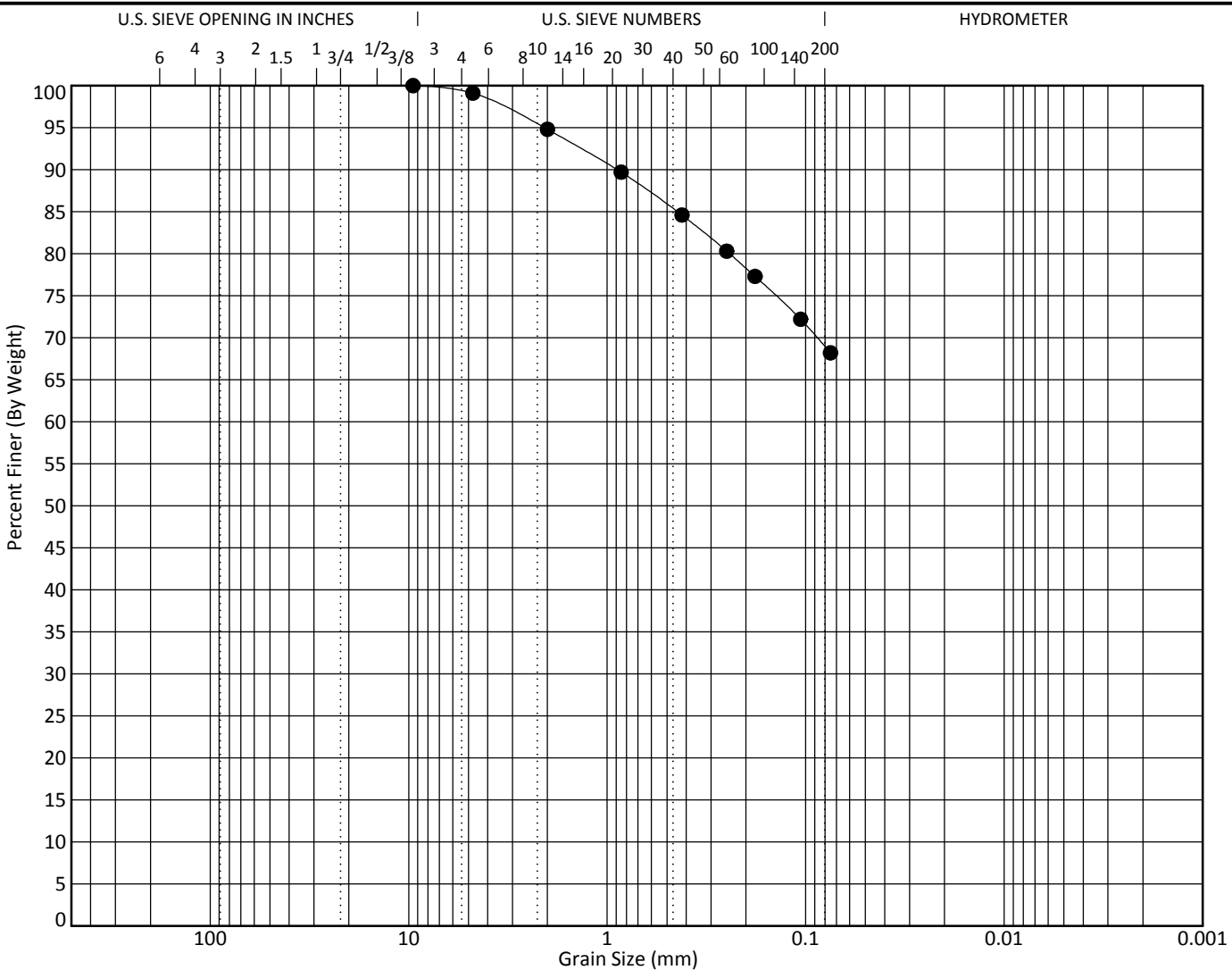


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



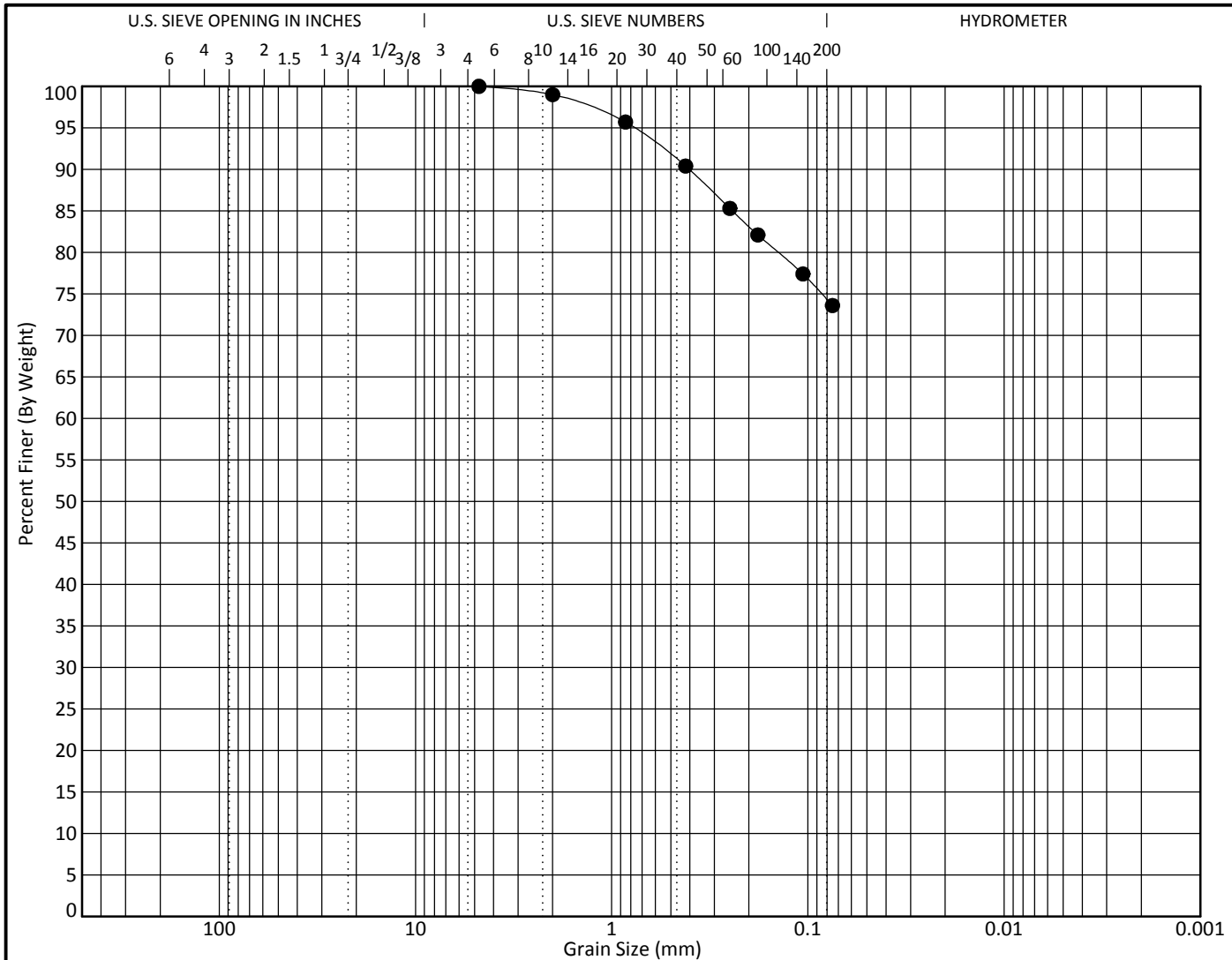


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-1 SS-7t	18.5	SILT with SAND (ML)					42	29	13		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-1 SS-7t	18.5	4.75				0.0	26.4	73.6			
	at										
	at										
	at										
	at										

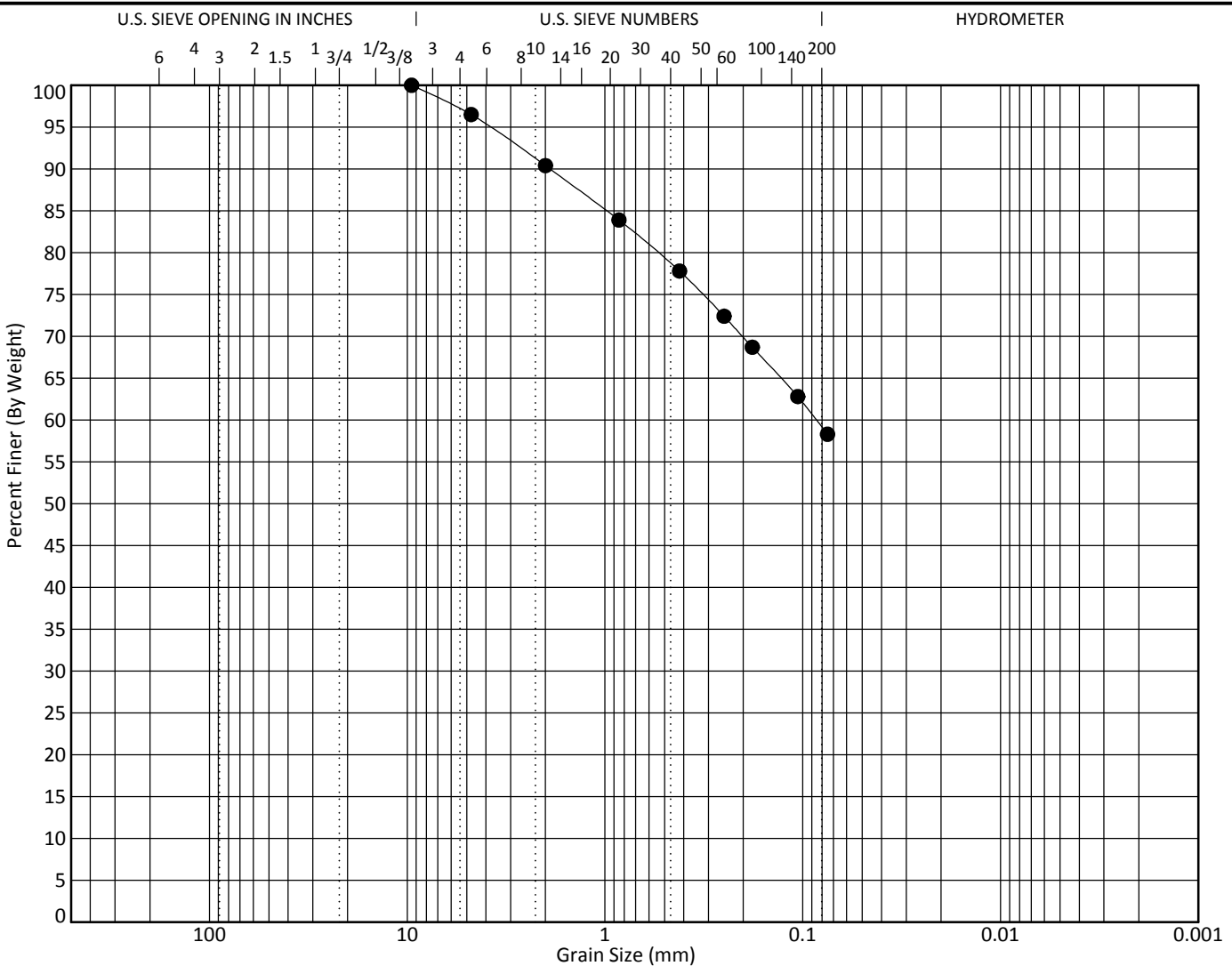


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RW-2 SS-3t	4.5	SANDY LEAN CLAY (CL)					38	20	18		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RW-2 SS-3t	4.5	9.5	0.085			3.5	38.2	58.3			
	at											
	at											
	at											
	at											

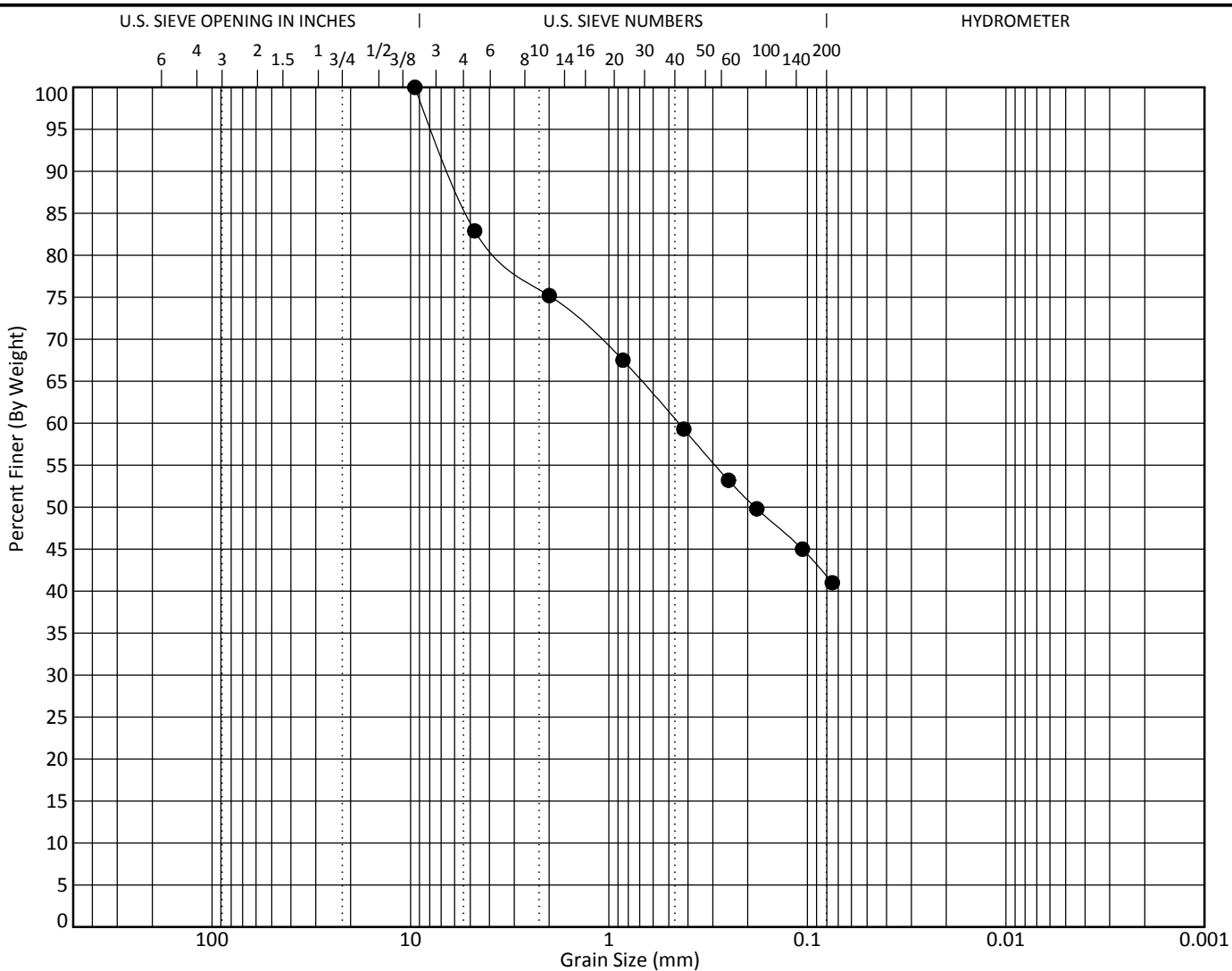


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-2 SS-5t	8.5	SILTY SAND with GRAVEL (SM)					NP	NP	NP		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-2 SS-5t	8.5	9.5	0.446			17.1	41.9	41.0			
	at										
	at										
	at										
	at										

U.S. GRAIN SIZE 65N-302-RT.GPJ F&R.GDT 7/6/12

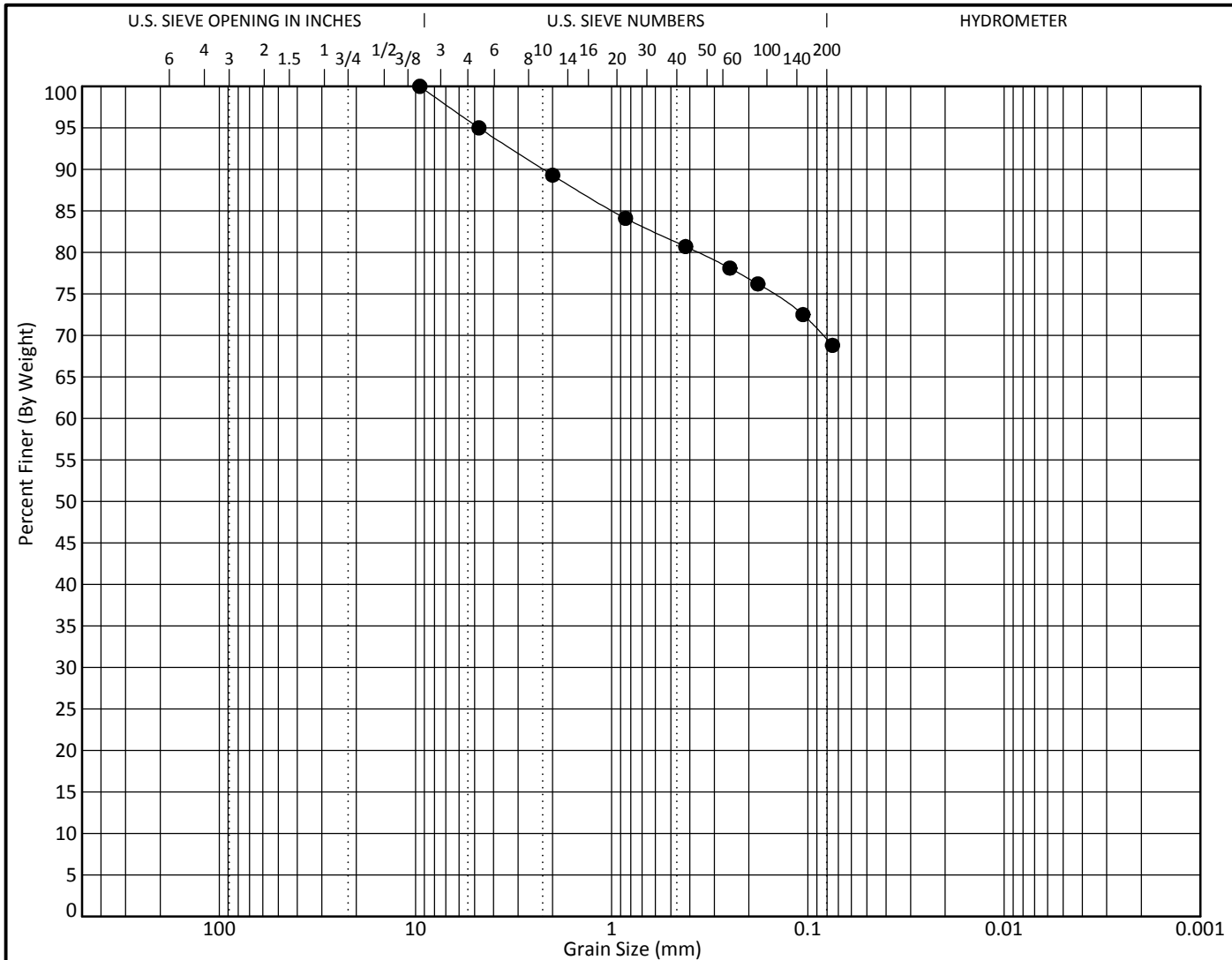


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-3 SS-1t	0.5	SANDY LEAN CLAY (CL)					39	18	21		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-3 SS-1t	0.5	9.5				5.0	26.2	68.8			
	at										
	at										
	at										
	at										

U.S. GRAIN SIZE 65N-302-RT.GPJ F&R.GDT 7/6/12

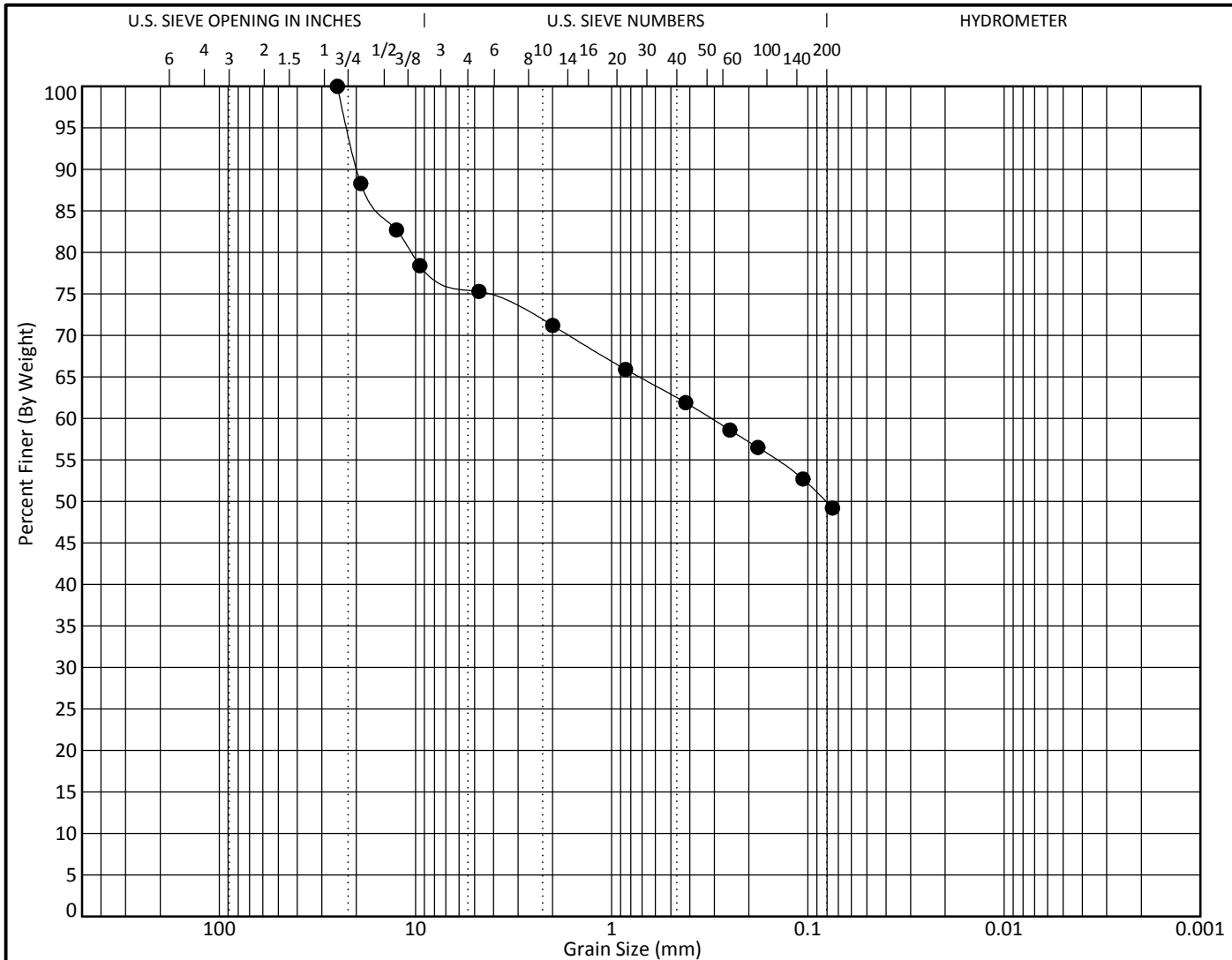


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-3 SS-4t	6.5	CLAYEY SAND with GRAVEL (SC)					44	20	24		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-3 SS-4t	6.5	25	0.312			24.7	26.1	49.2			
	at										
	at										
	at										
	at										

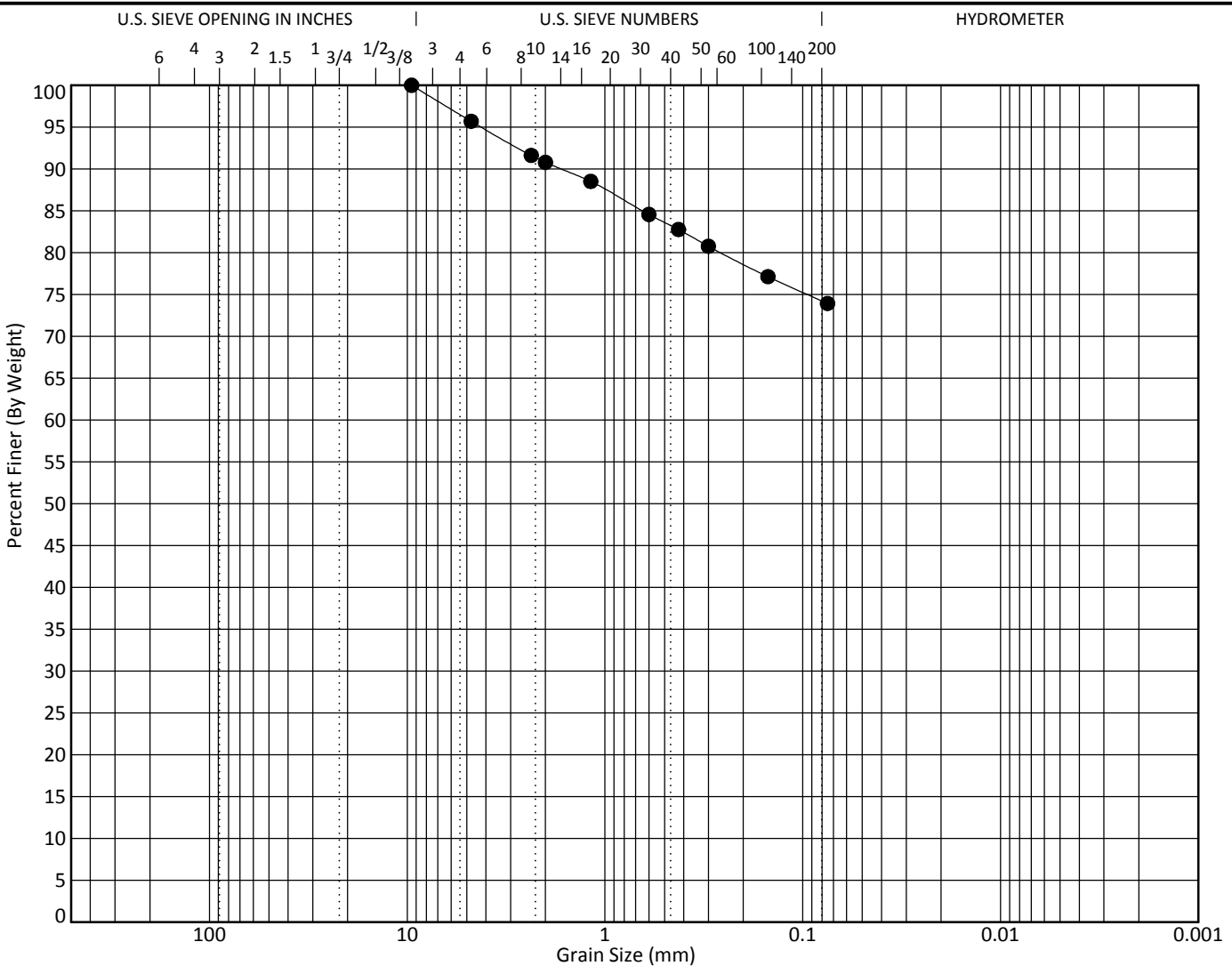


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RW-4 SS-2t	2.5	SILT with SAND (ML)					30	24	6		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RW-4 SS-2t	2.5	9.5				4.3	21.8	73.9			
	at											
	at											
	at											
	at											

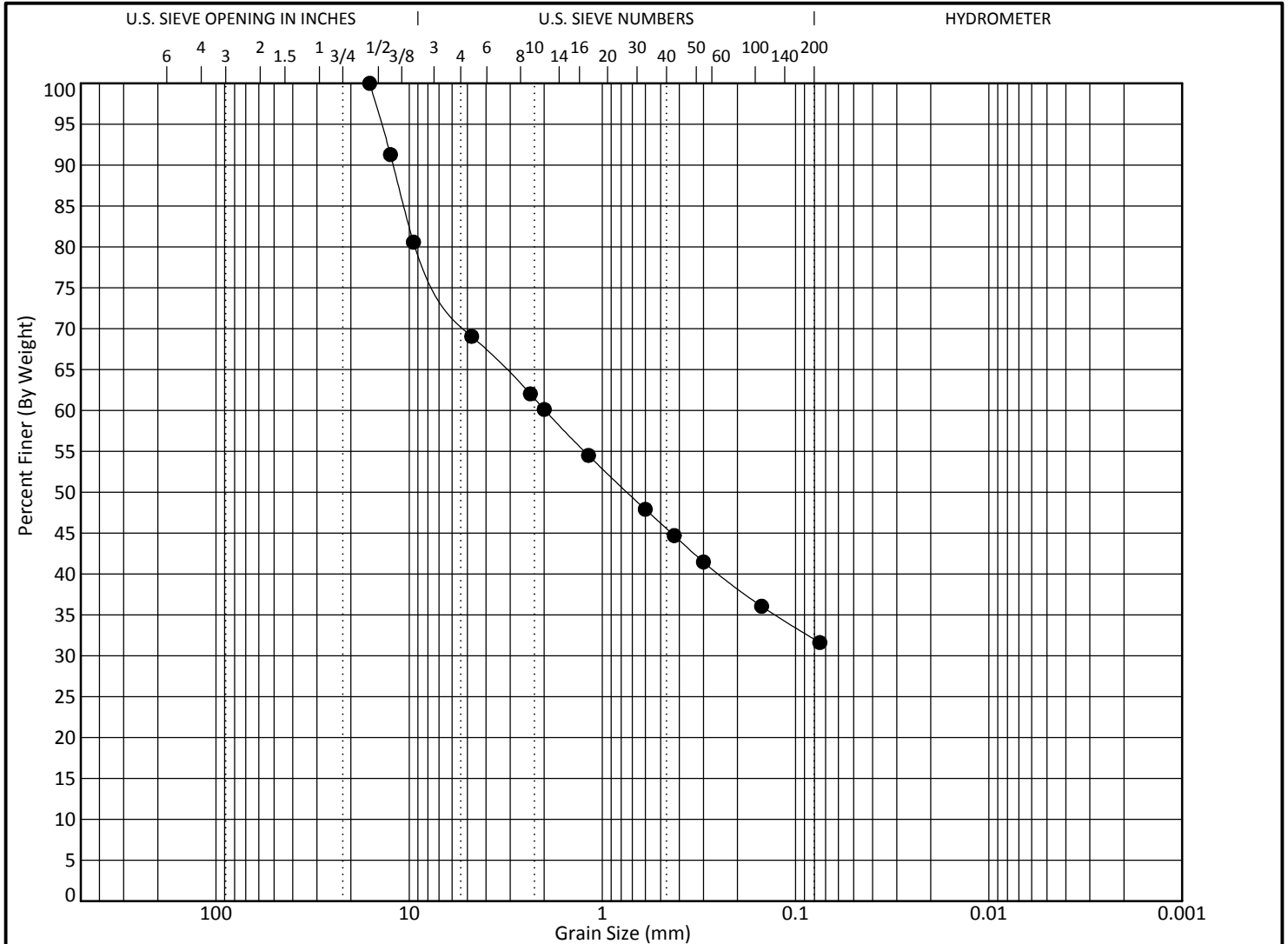


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-4 SS-6	13.5	SILTY SAND with GRAVEL (SM)					28	24	4		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-4 SS-6	13.5	16	1.977			30.9	37.4	31.6			
	at										
	at										
	at										
	at										

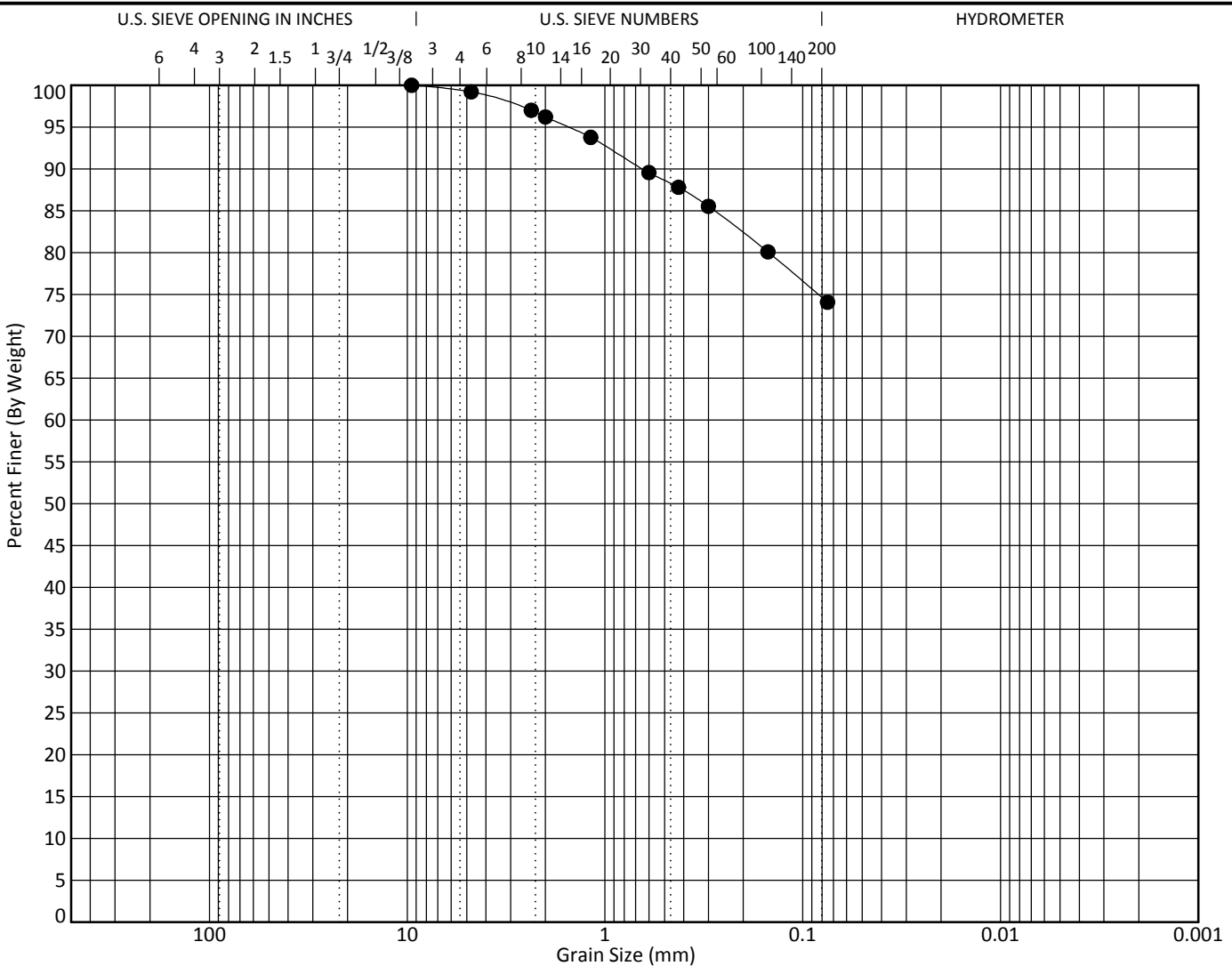


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-4 SS-7t	18.5	SILT with SAND (ML)					30	24	6		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-4 SS-7t	18.5	9.5				0.8	25.1	74.1			
	at										
	at										
	at										
	at										

U.S. GRAIN SIZE 65N-302-RT.GPJ F&R.GDT 7/6/12



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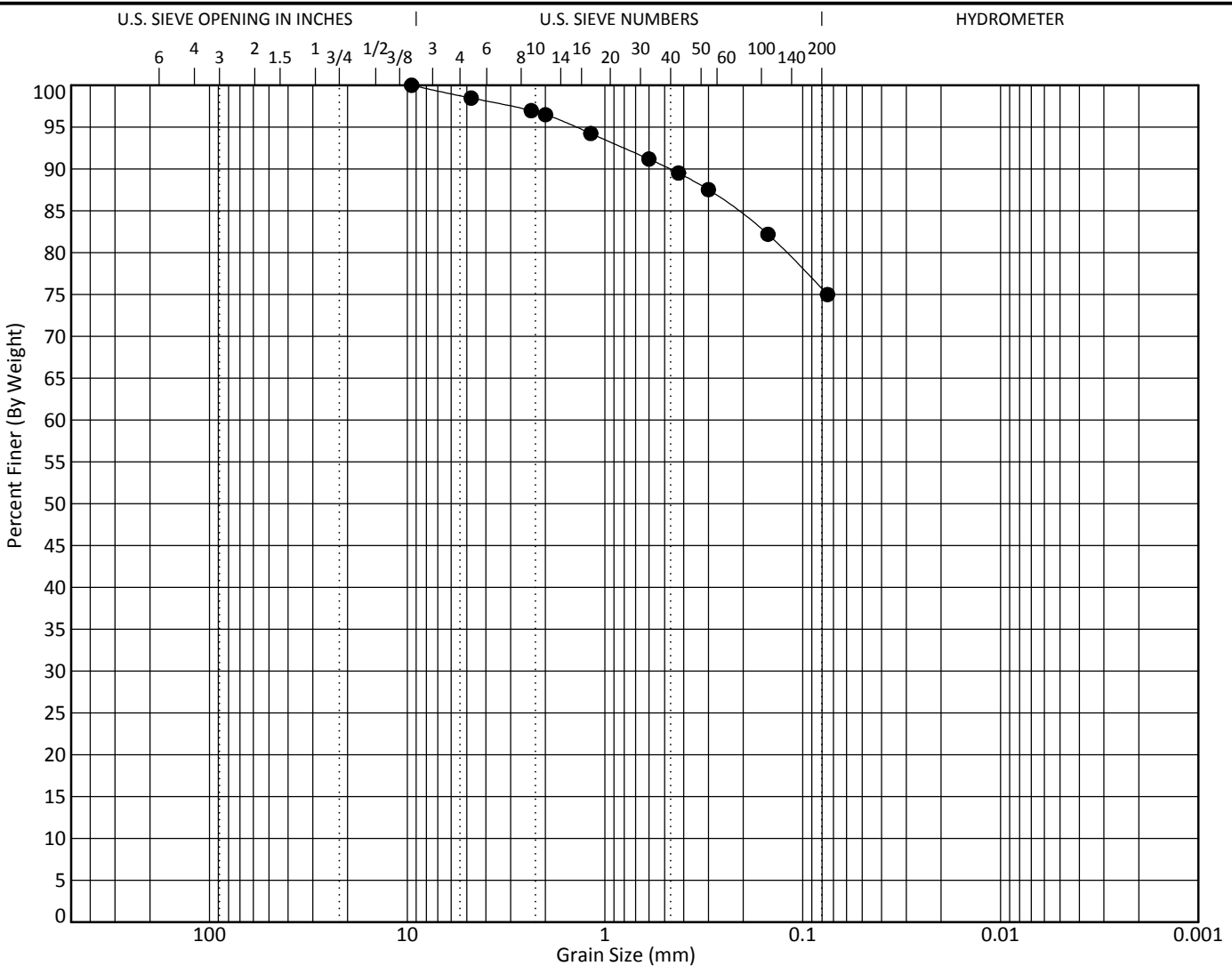
GRAIN SIZE DISTRIBUTION

Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RW-5 SS-1t	0.5	SILT with SAND (ML)					44	36	8		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
●	RW-5 SS-1t	0.5	9.5				1.5	23.5	75.0			
	at											
	at											
	at											
	at											

U.S. GRAIN SIZE 65N-302-RT.GPJ F&R.GDT 7/6/12

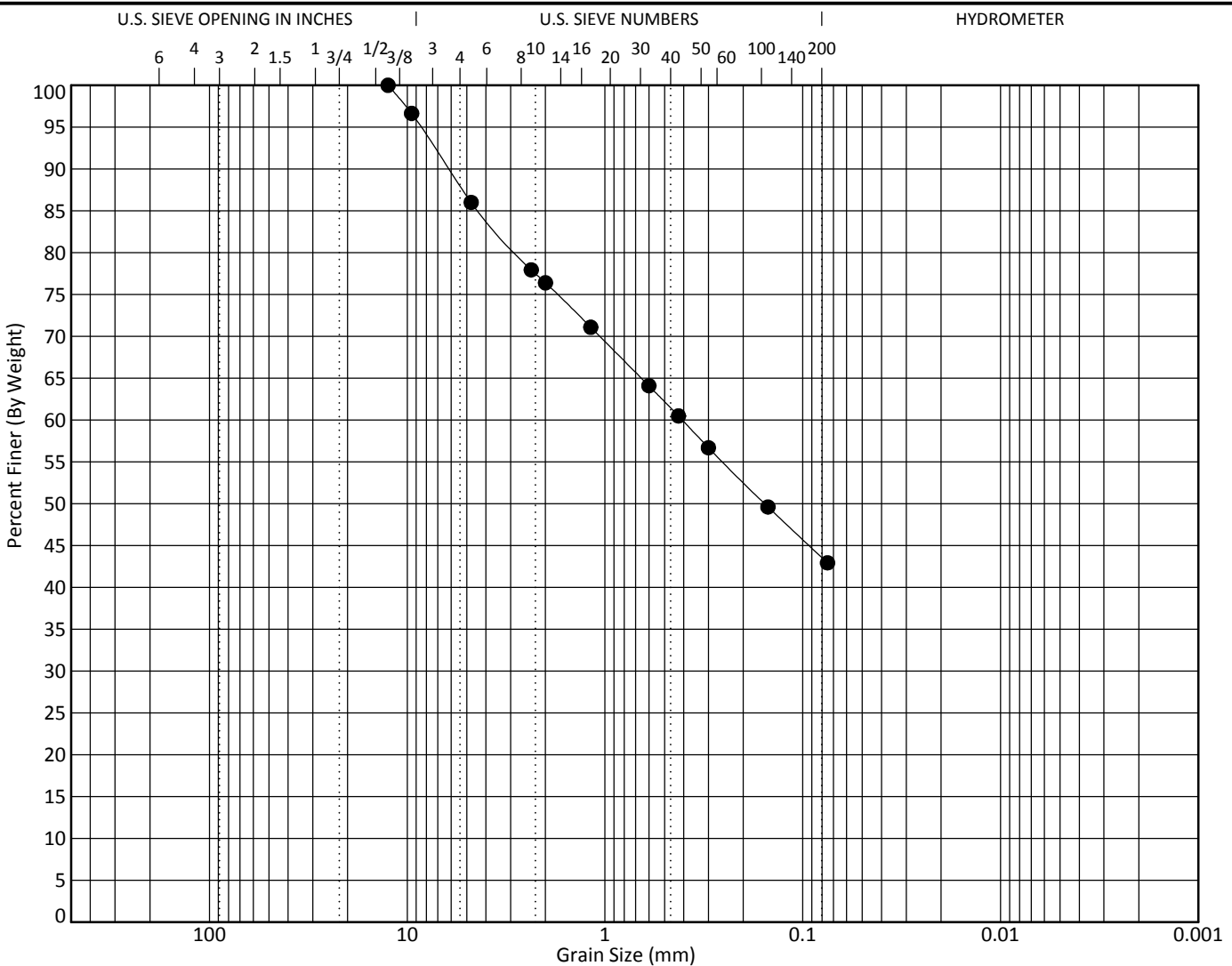


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RW-5 SS-5t	8.5	SILTY SAND (SM)					30	25	5		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RW-5 SS-5t	8.5	12.5	0.407			14.0	43.1	42.9			
	at											
	at											
	at											
	at											

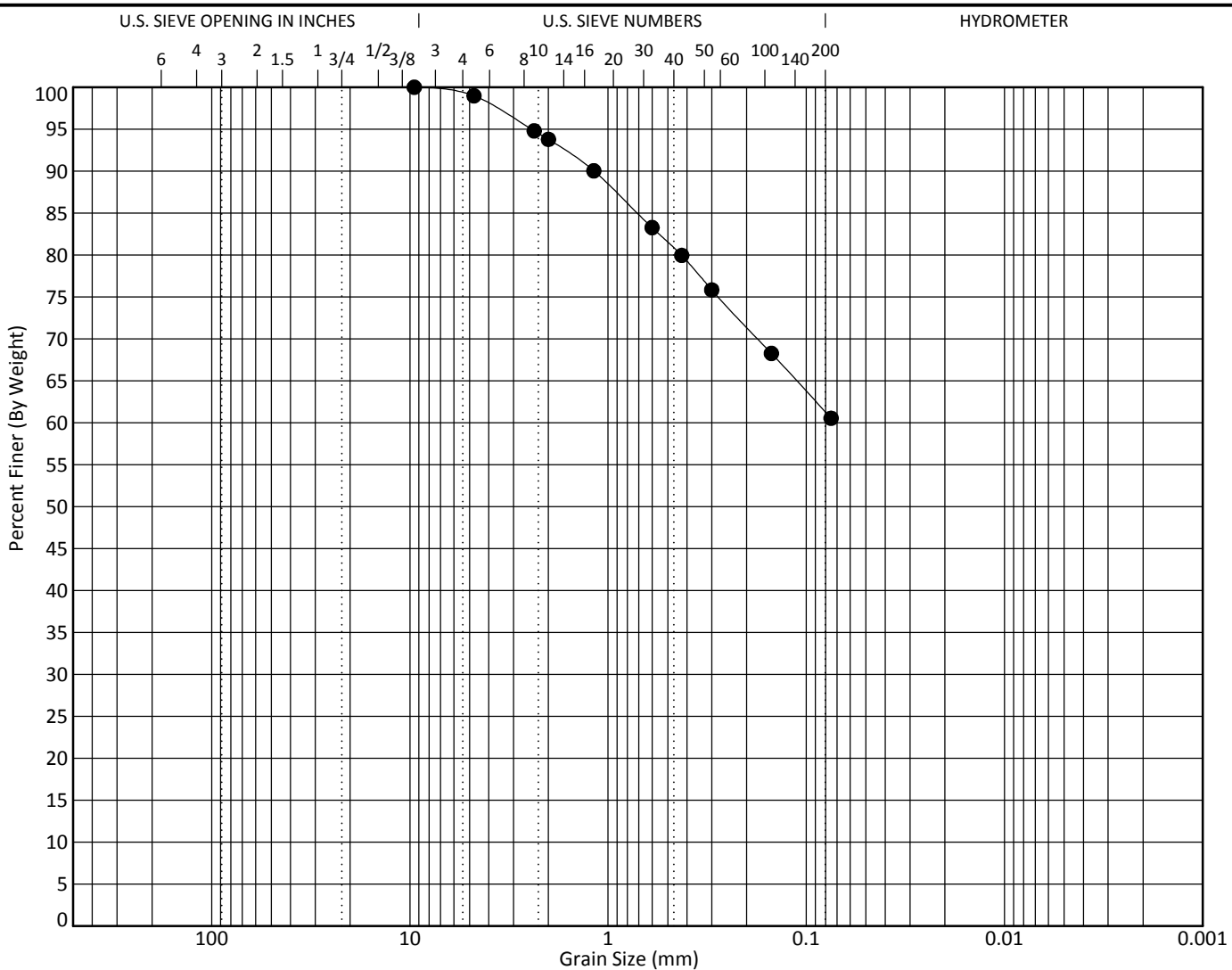


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-5 SS-788	18.5	SANDY SILT (ML)					29	23	6		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-5 SS-788	18.5	9.5				1.0	38.4	60.5			
	at										
	at										
	at										
	at										

U.S. GRAIN SIZE 65N-302-RT.GPJ F&R.GDT 7/6/12

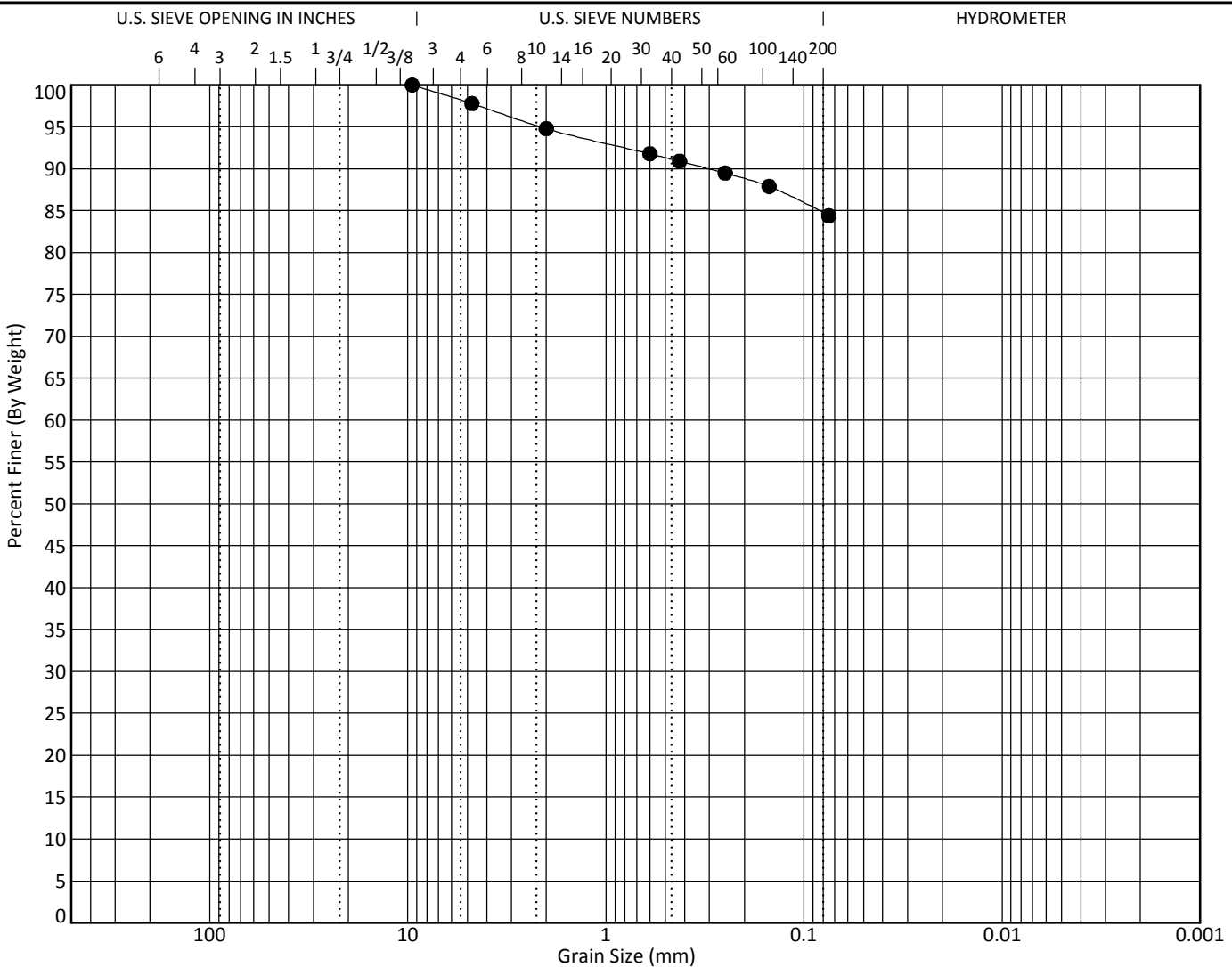


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RW-6 (SS- at)	0.5	LEAN CLAY with SAND (CL)					33	20	13		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
●	RW-6 (SS- at)	0.5	9.5				2.2	13.4	84.4			
	at											
	at											
	at											
	at											



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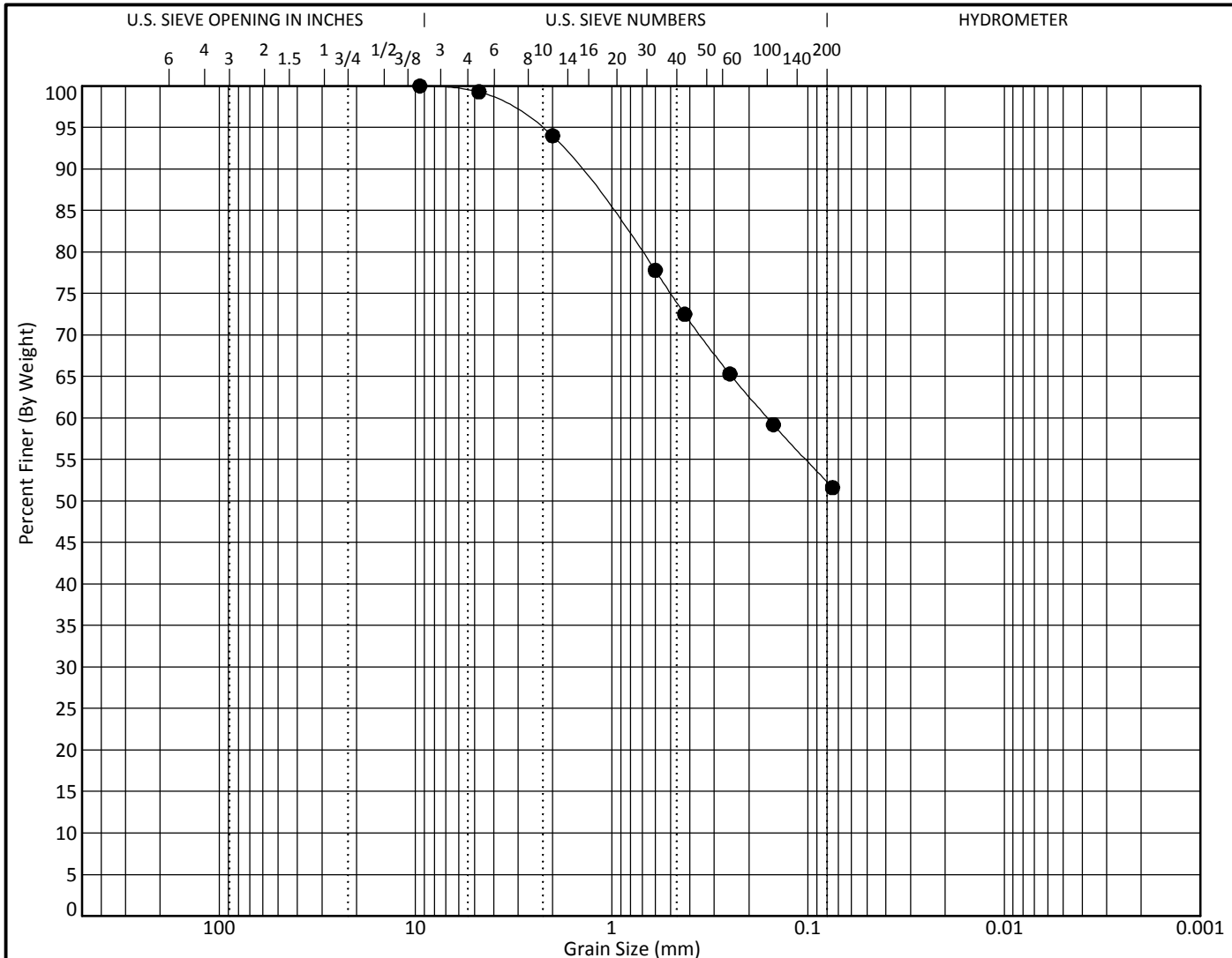
GRAIN SIZE DISTRIBUTION

Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RW-6 (SS-2)	4.5	SANDY SILT (ML)					34	29	5		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RW-6 (SS-2)	4.5	9.5	0.16			0.7	47.7	51.6			
	at											
	at											
	at											
	at											

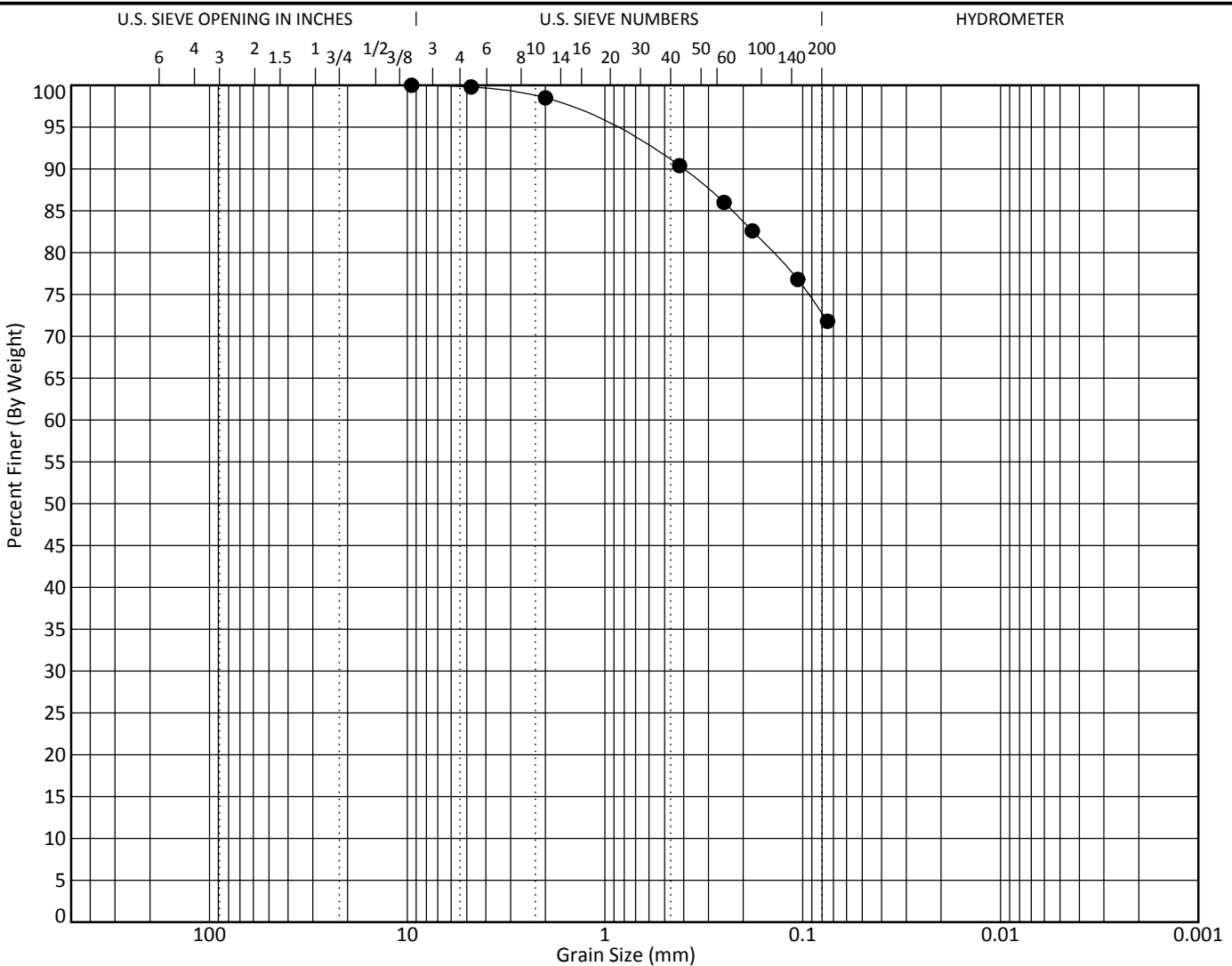


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-7 SS-1t	6.5	LEAN CLAY with SAND (CL)					39	22	17		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-7 SS-1t	6.5	9.5				0.2	28.0	71.8			
	at										
	at										
	at										
	at										

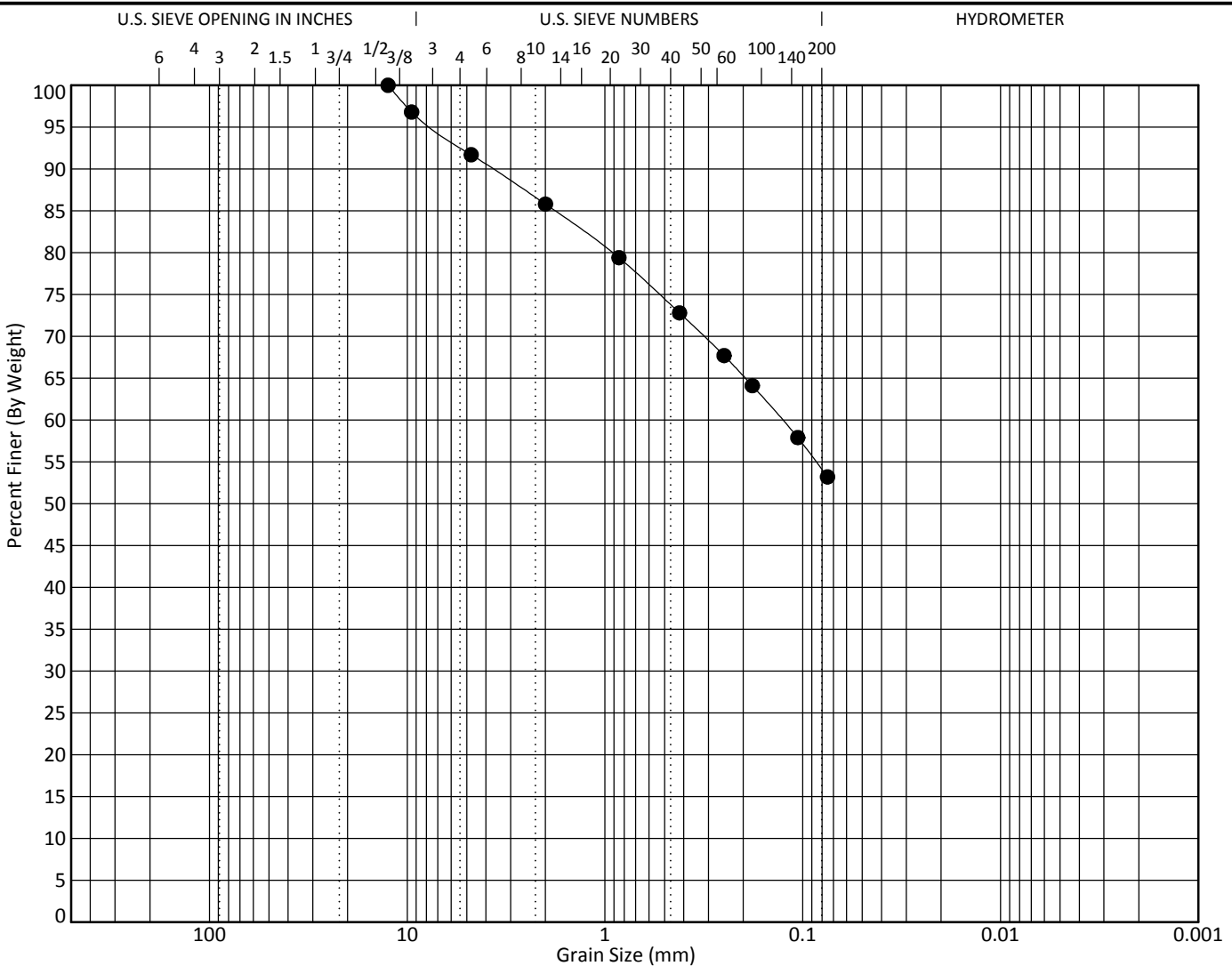


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RW-7 SS-3t	10.5	SANDY SILT (ML)					31	24	7		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RW-7 SS-3t	10.5	12.5	0.127			8.3	38.5	53.2			
	at											
	at											
	at											
	at											

U.S. GRAIN SIZE 65N-302-RT.GPJ F&R.GDT 7/6/12

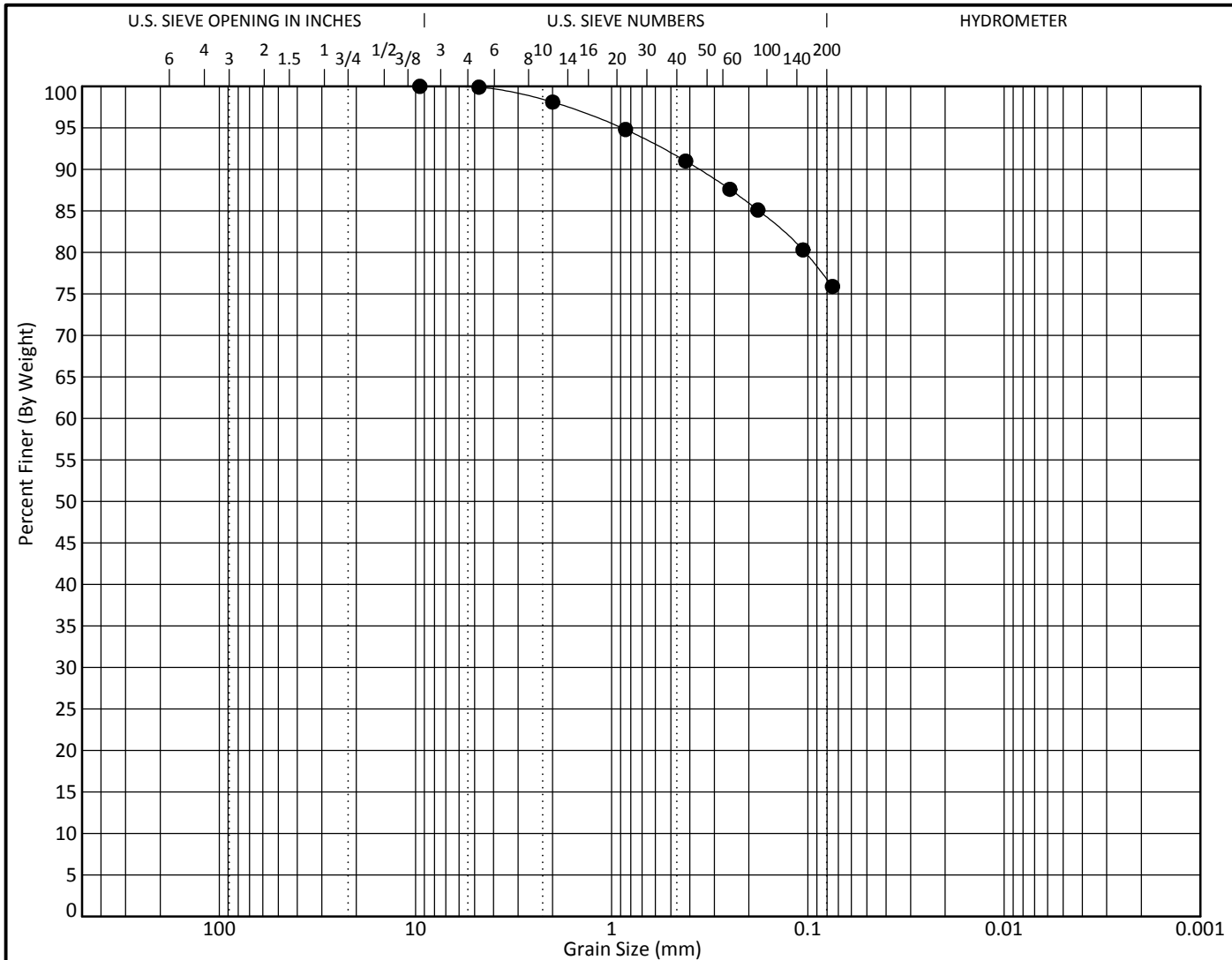


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-7 SS-7t	24.5	SILT with SAND (ML)					28	24	4		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-7 SS-7t	24.5	9.5				0.1	24.0	75.9			
	at										
	at										
	at										
	at										

U.S. GRAIN SIZE 65N-302-RT.GPJ F&R.GDT 7/6/12



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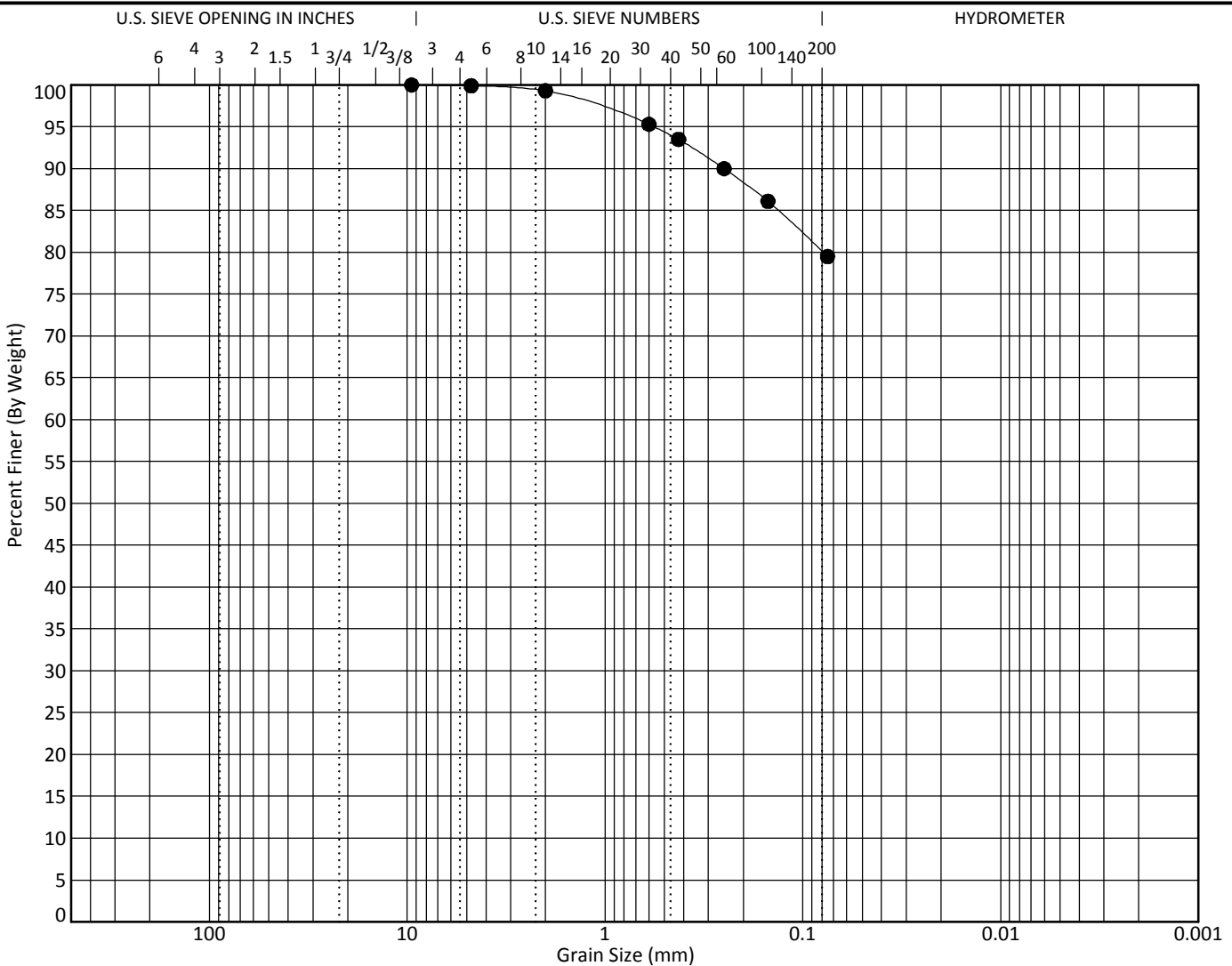
GRAIN SIZE DISTRIBUTION

Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-8 (SS- at)	0.5	SILT with SAND (ML)					34	28	6		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-8 (SS- at)	0.5	9.5				0.1	20.4	79.5			
	at										
	at										
	at										
	at										

U.S. GRAIN SIZE LAB TEST GPJ F&R GDT 6/27/12

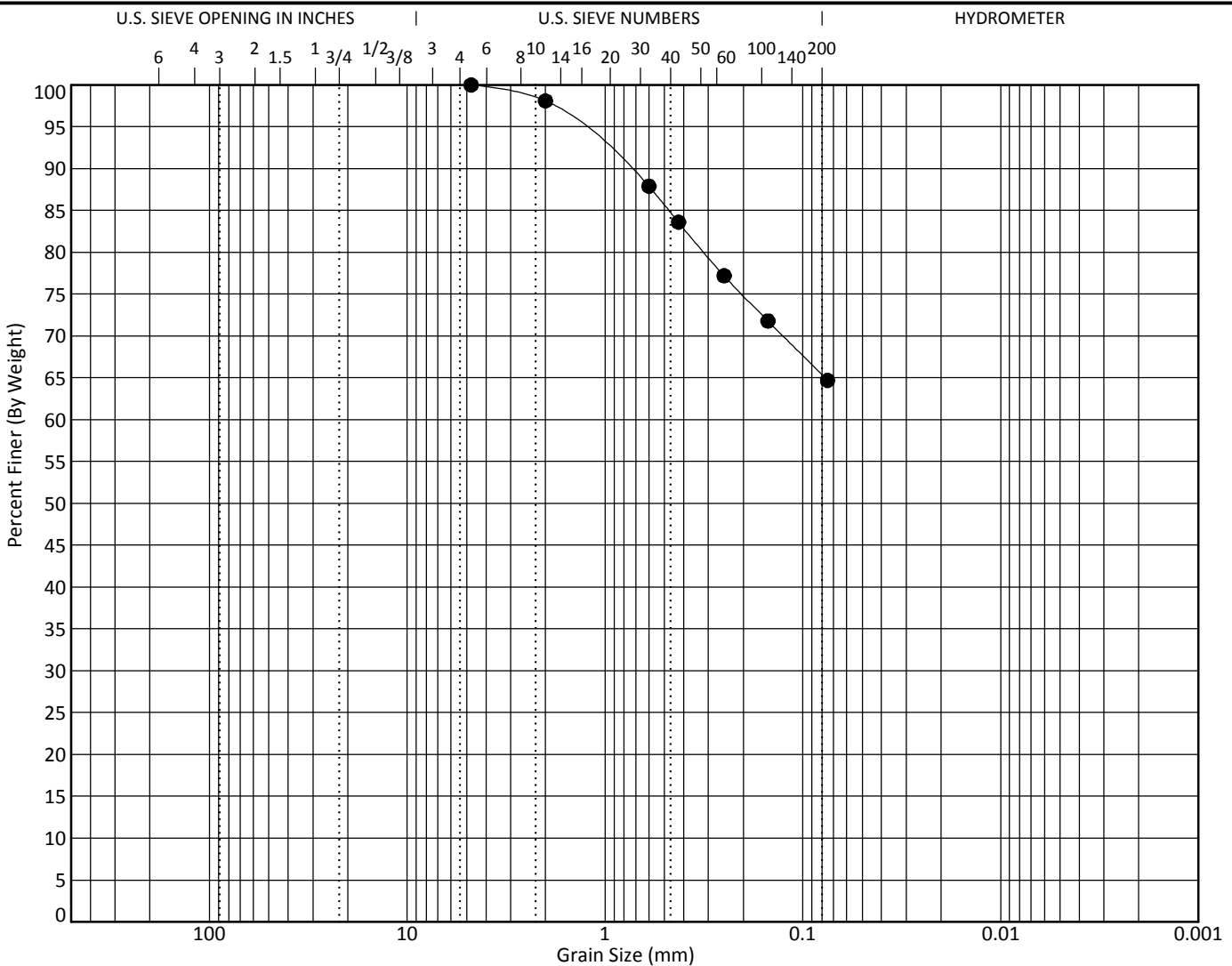


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RW-8 (SS-6)	13.5	SANDY SILT (ML)					35	28	7		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RW-8 (SS-6)	13.5	4.75				0.0	35.3	64.7			
	at											
	at											
	at											
	at											

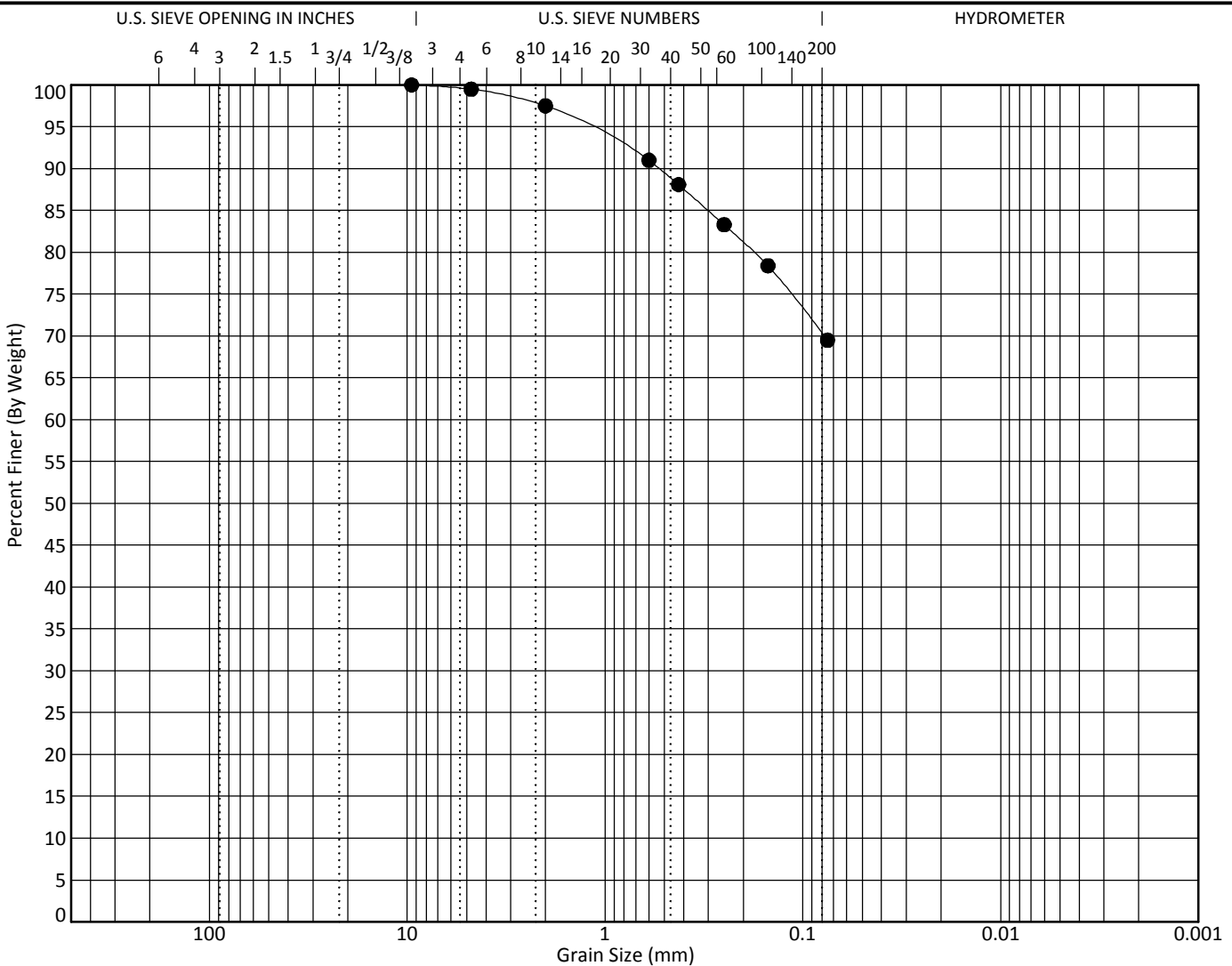


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-8 (SS-30)	23.5	SANDY SILT (ML)					36	29	7		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-8 (SS-30)	23.5	9.5				0.5	30.0	69.5			
	at										
	at										
	at										
	at										

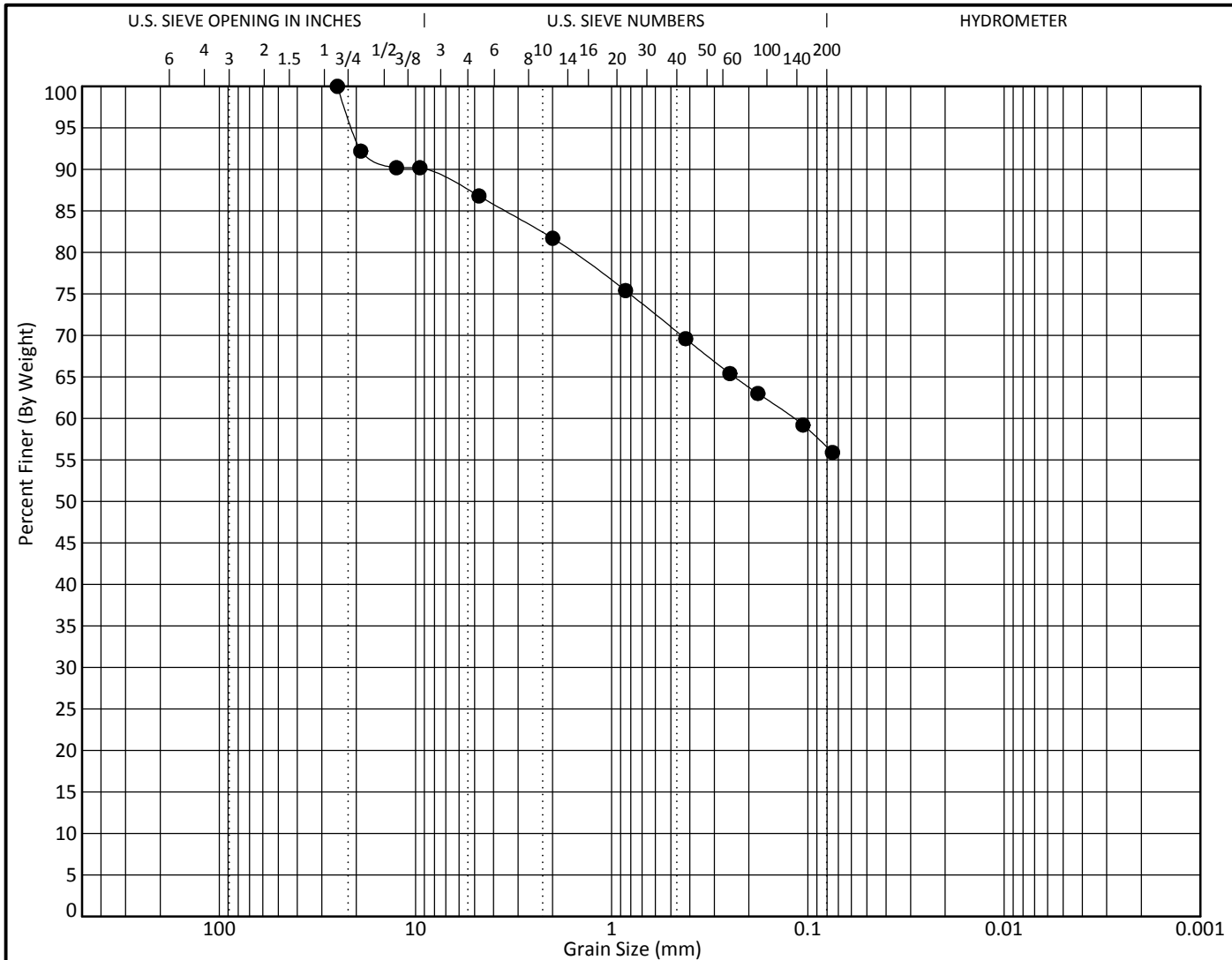


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-9 SS-1t	10.5	SANDY SILT (ML)					35	27	8		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-9 SS-1t	10.5	25	0.119			13.2	30.9	55.9			
	at										
	at										
	at										
	at										

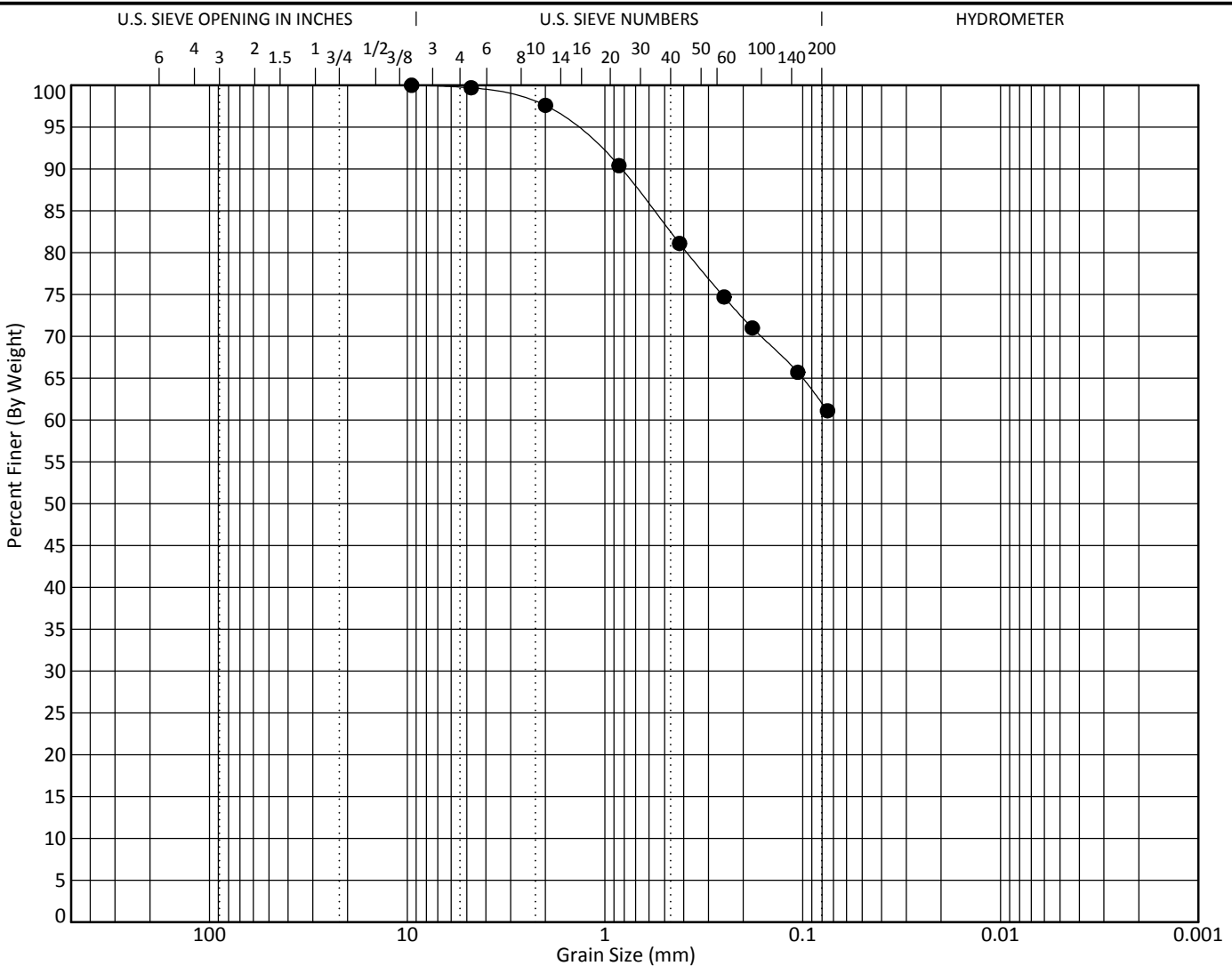


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc		Cu
●	RW-9 SS-2t	12.5	SANDY SILT (ML)					33	24	9			
	at												
	at												
	at												
	at												
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay		
●	RW-9 SS-2t	12.5	9.5				0.3	38.6	61.1				
	at												
	at												
	at												
	at												

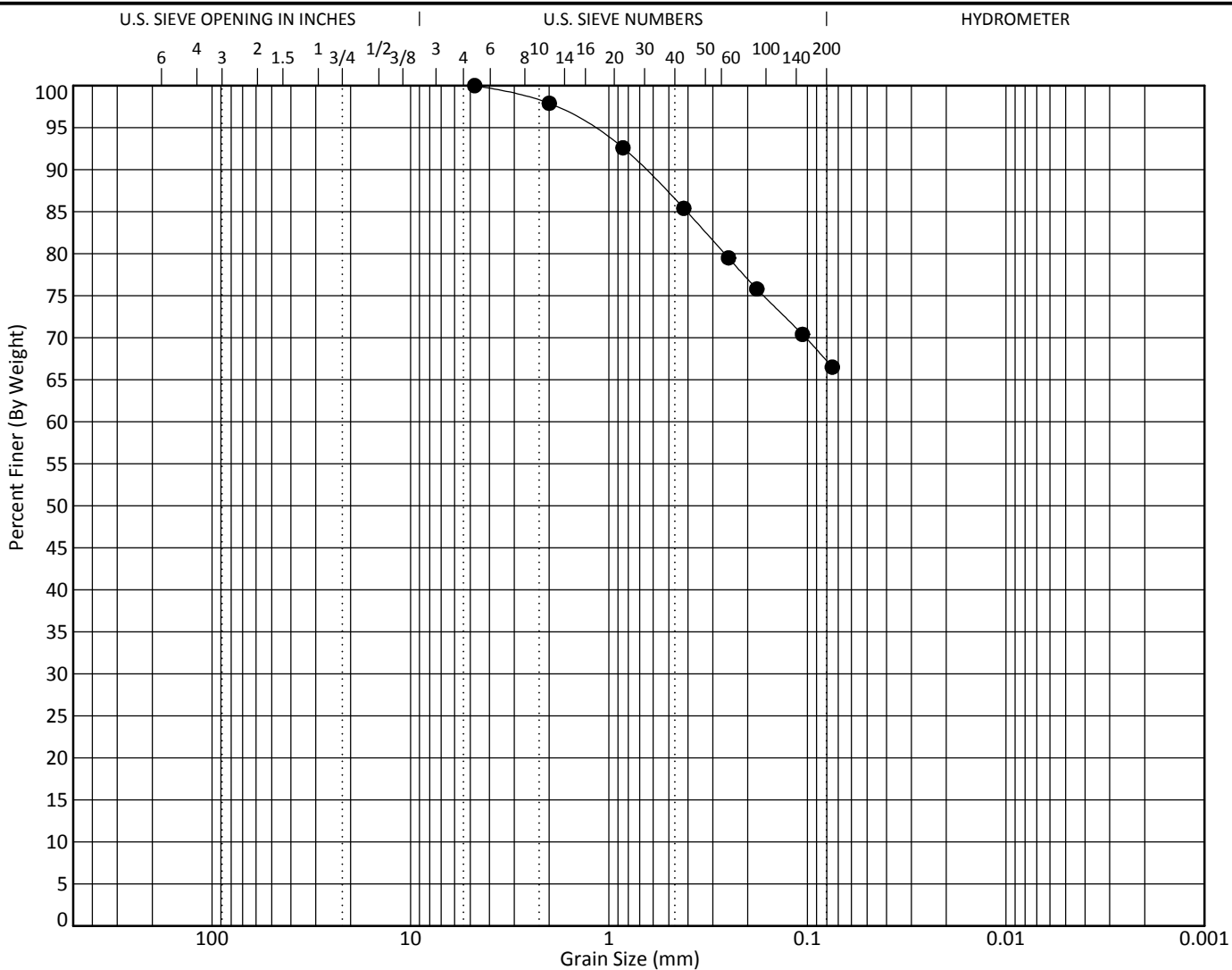


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc		Cu
●	RW-9 SS-4t	16.0	SANDY SILT (ML)					37	27	10			
	at												
	at												
	at												
	at												
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay		
●	RW-9 SS-4t	16.0	4.75				0.0	33.5	66.5				
	at												
	at												
	at												
	at												

U.S. GRAIN SIZE 65N-302-RT.GPJ F&R.GDT 7/6/12

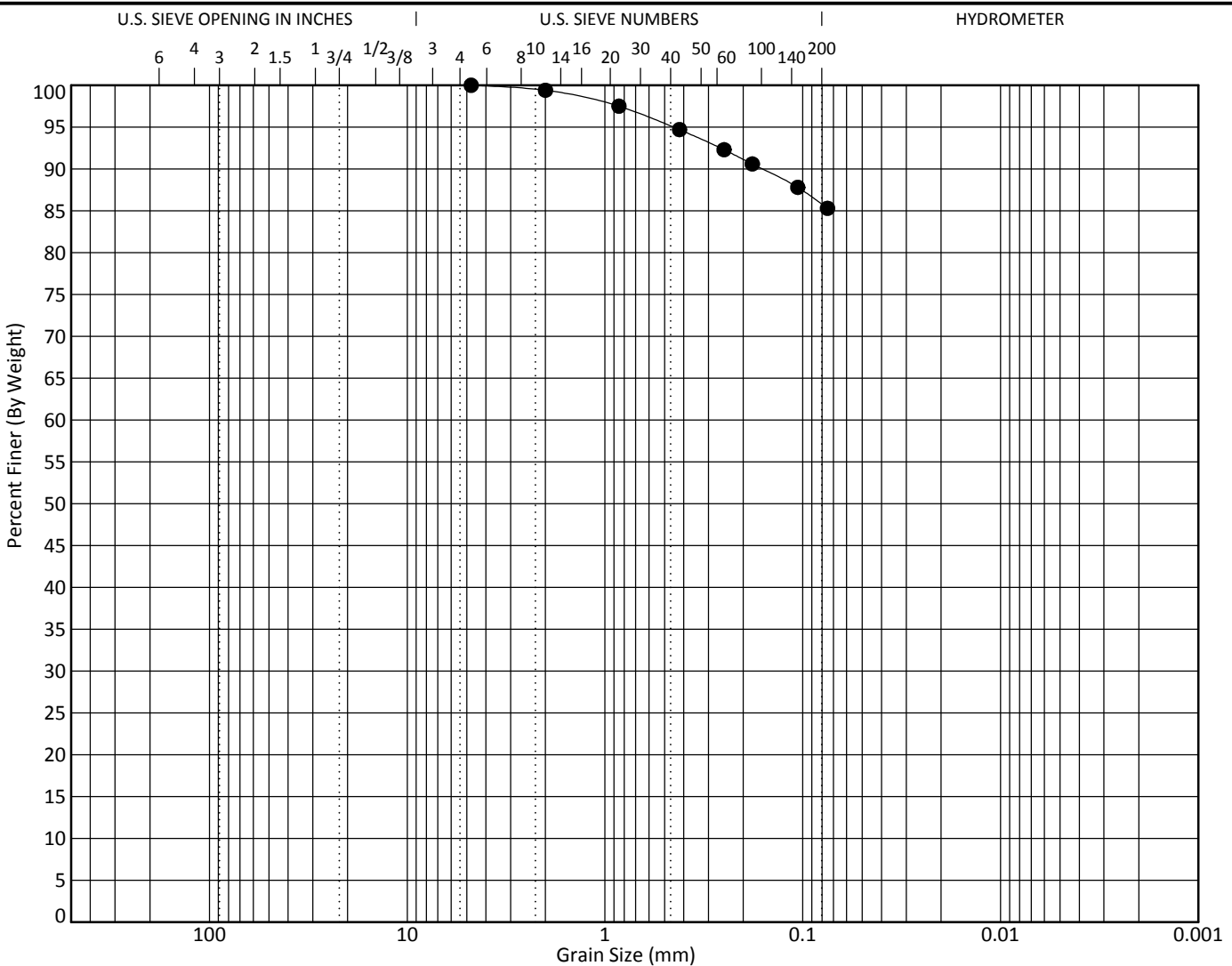


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RW-9 SS-6	23.5	SILT (ML)					32	24	8		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RW-9 SS-6	23.5	4.75				0.0	14.7	85.3			
	at											
	at											
	at											
	at											

U.S. GRAIN SIZE 65N-302-RT.GPJ F&R.GDT 7/6/12

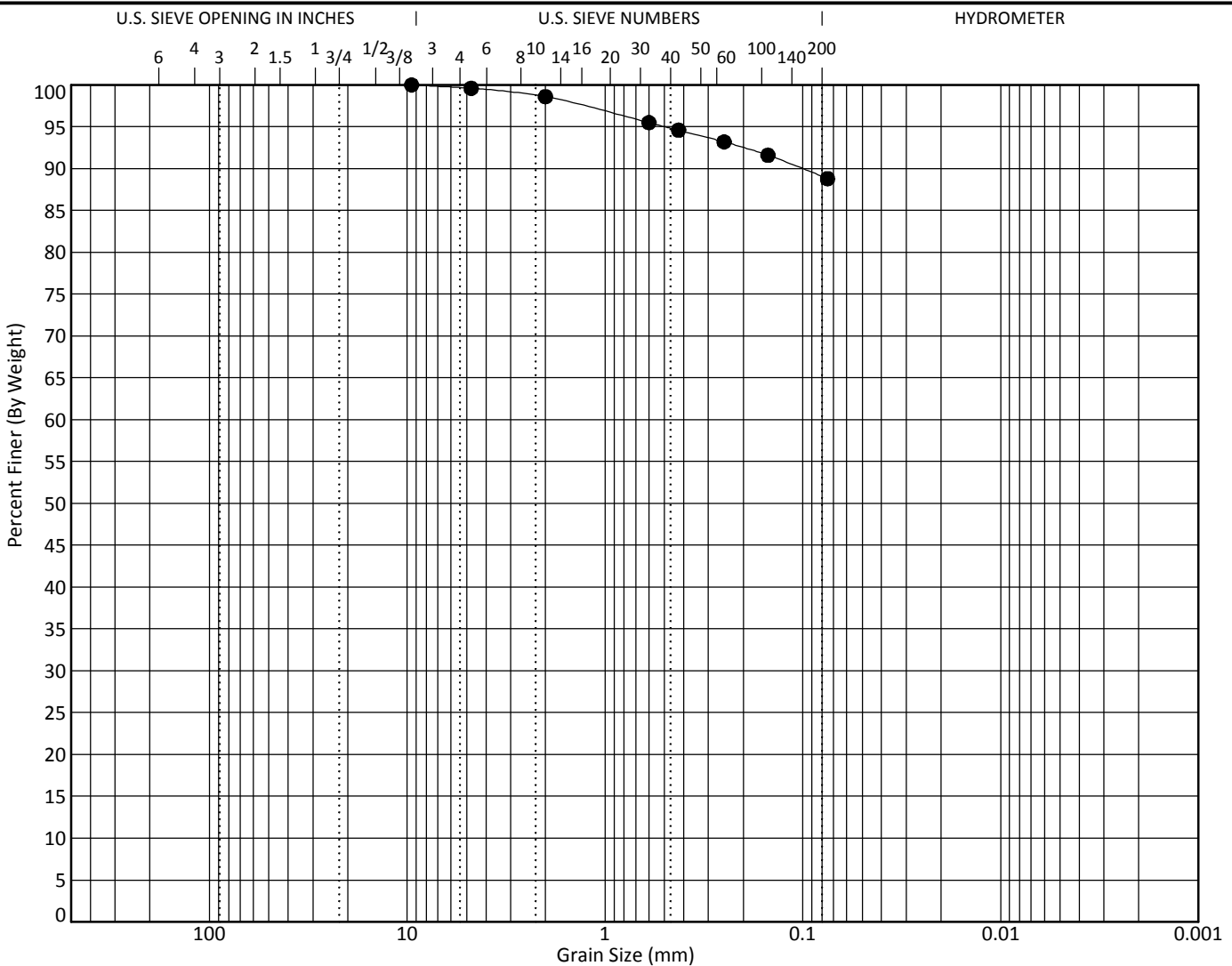


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RW-10(SSa1)	0.5	LEAN CLAY (CL)					46	24	22		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RW-10(SSa1)	0.5	9.5				0.4	10.8	88.8			
	at											
	at											
	at											
	at											

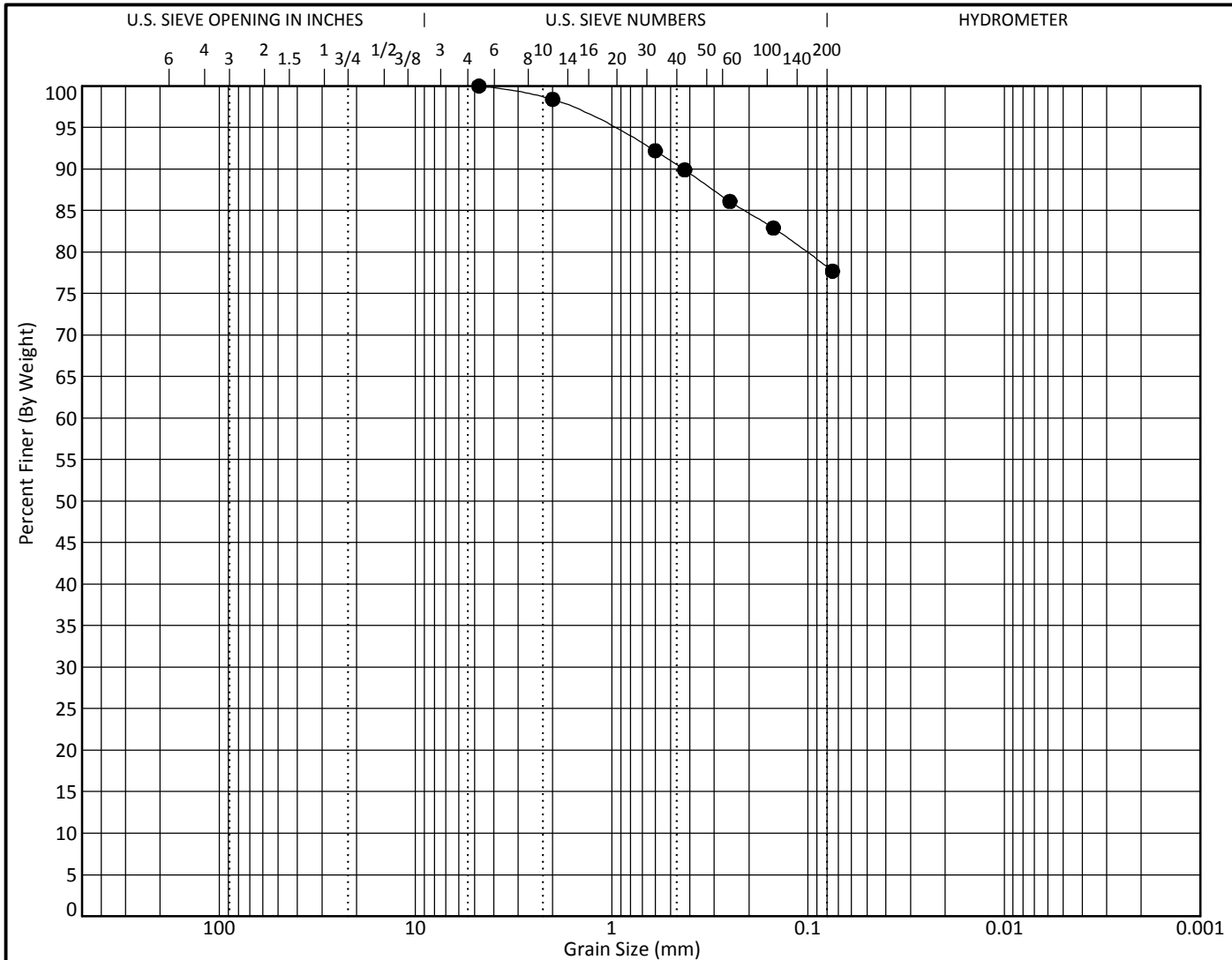


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-10(SSa5)	8.5	LEAN CLAY with SAND (CL)					36	24	12		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-10(SSa5)	8.5	4.75				0.0	22.3	77.7			
	at										
	at										
	at										
	at										

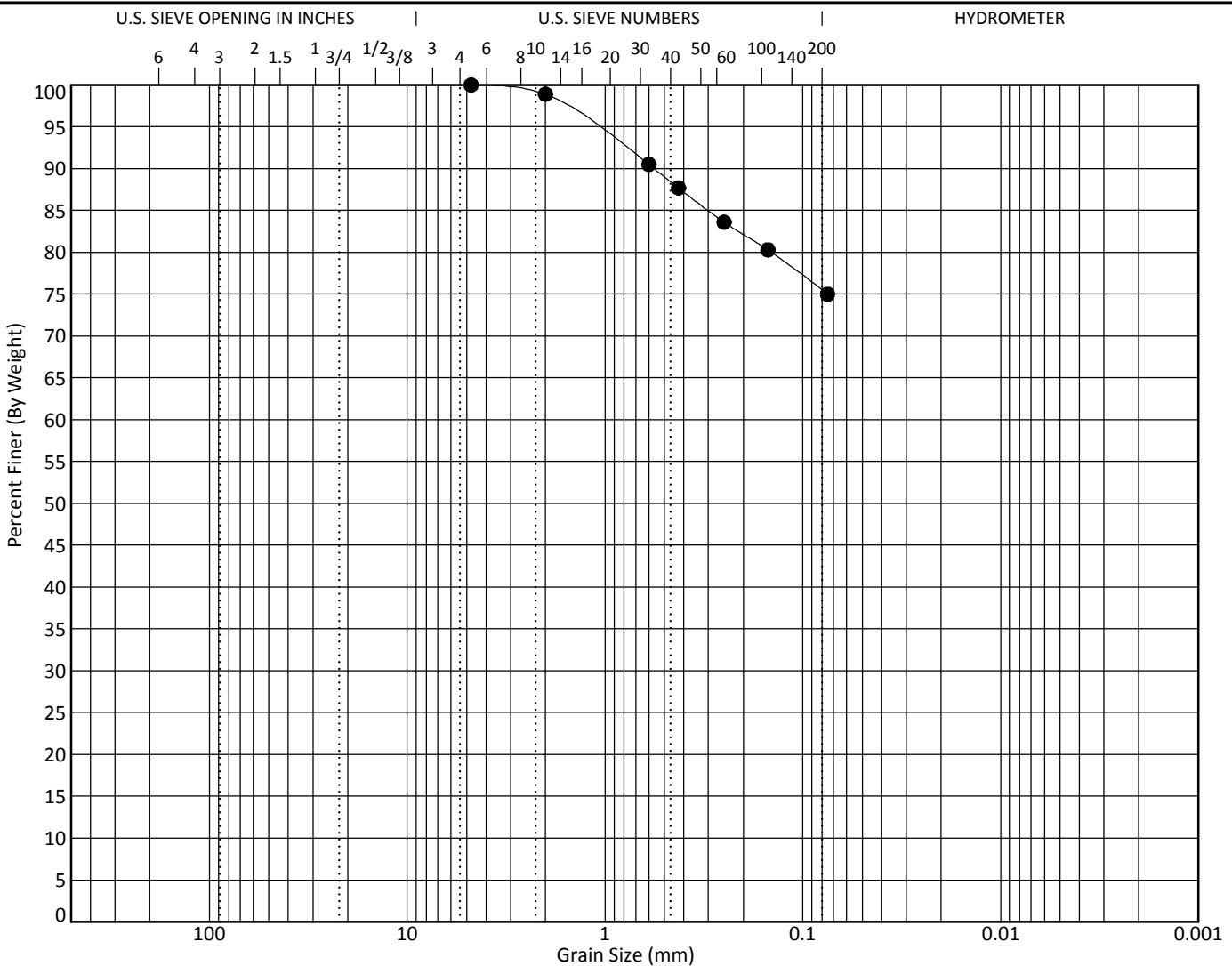


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-10(SSa6)	13.5	SILT with SAND (ML)					34	26	8		
at											
at											
at											
at											
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-10(SSa6)	13.5	4.75				0.0	25.0	75.0			
at											
at											
at											
at											

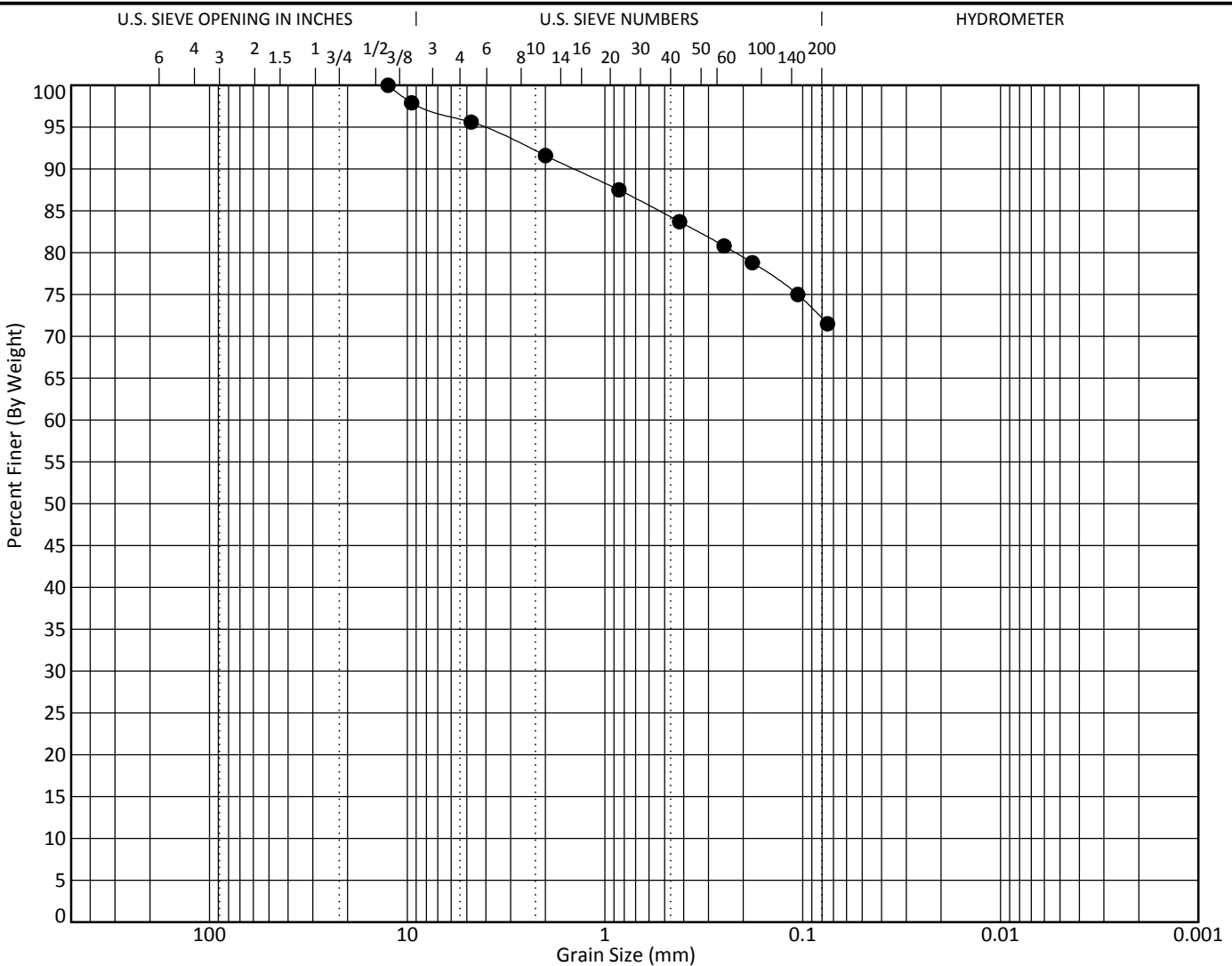


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-12 SSa	0.5	LEAN CLAY with SAND (CL)					38	23	15		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-12 SSa	0.5	12.5				4.4	24.1	71.5			
	at										
	at										
	at										
	at										

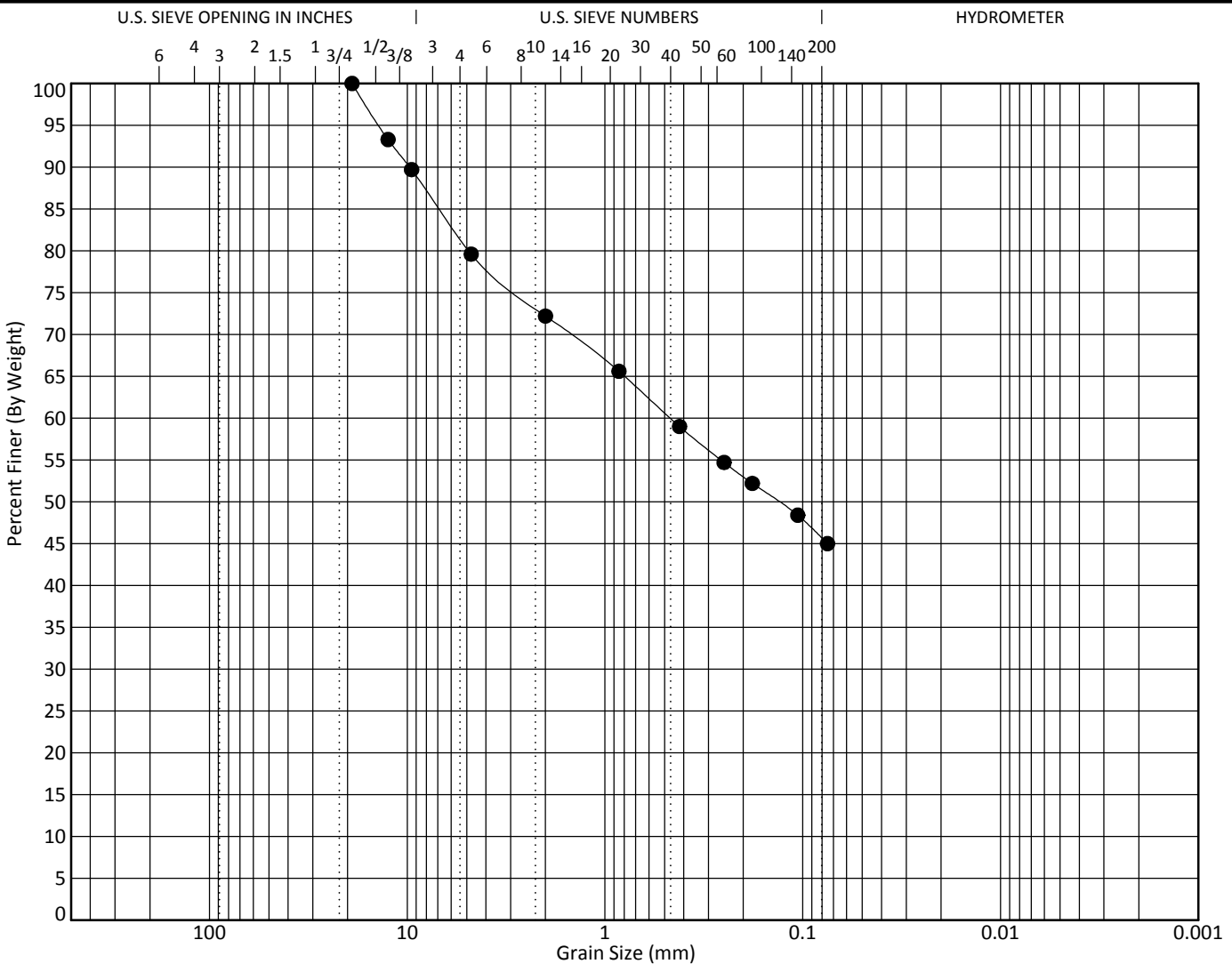


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-12 S	8.5	CLAYEY SAND with GRAVEL (SC)					36	23	13		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-12 S	8.5	19	0.467			20.4	34.6	45.0			
	at										
	at										
	at										
	at										

U.S. GRAIN SIZE 65N-302-RT.GPJ F&R.GDT 7/6/12

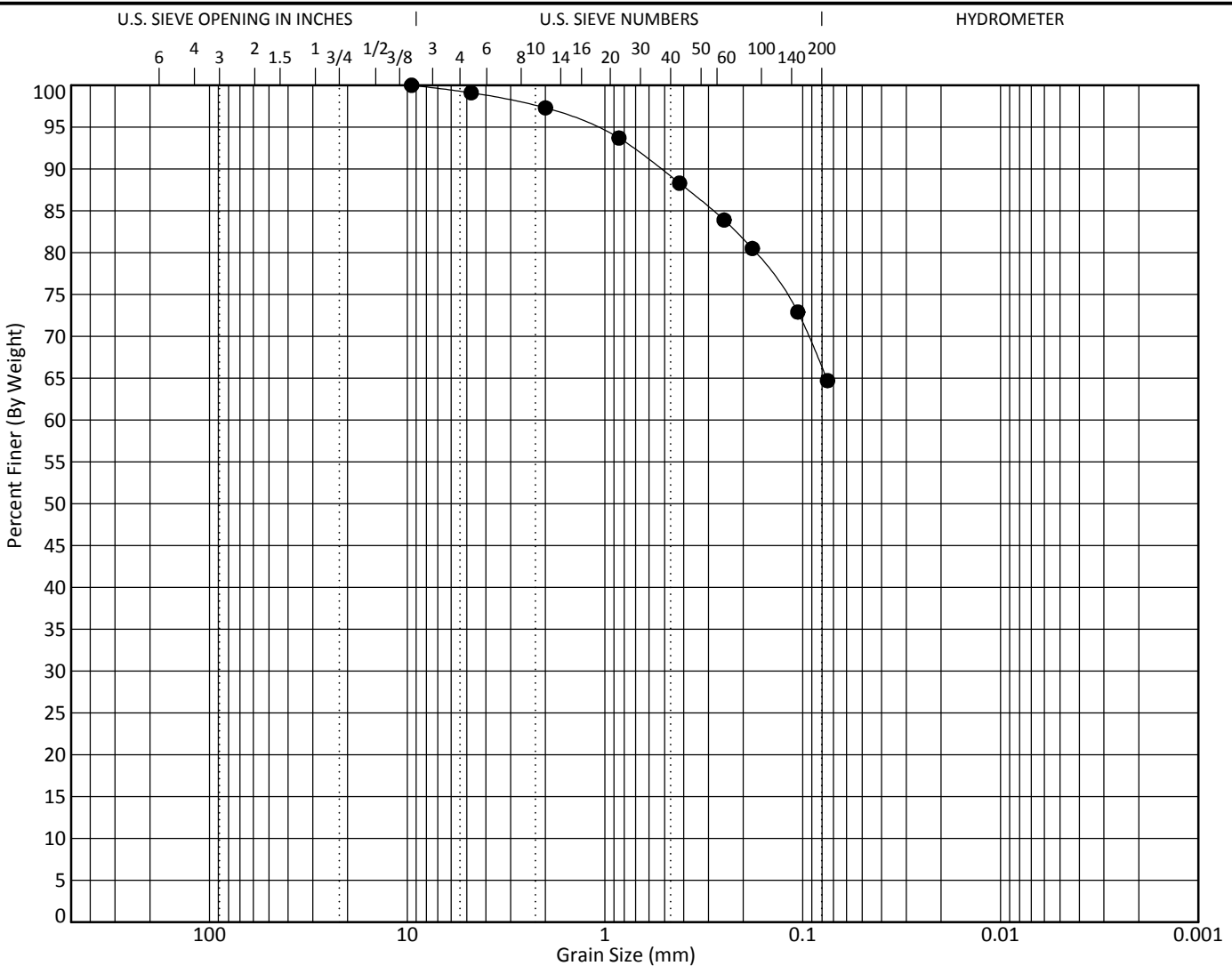


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-12 S5a7	18.5	SANDY SILT (ML)					36	27	9		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-12 S5a7	18.5	9.5				0.9	34.4	64.7			
	at										
	at										
	at										
	at										

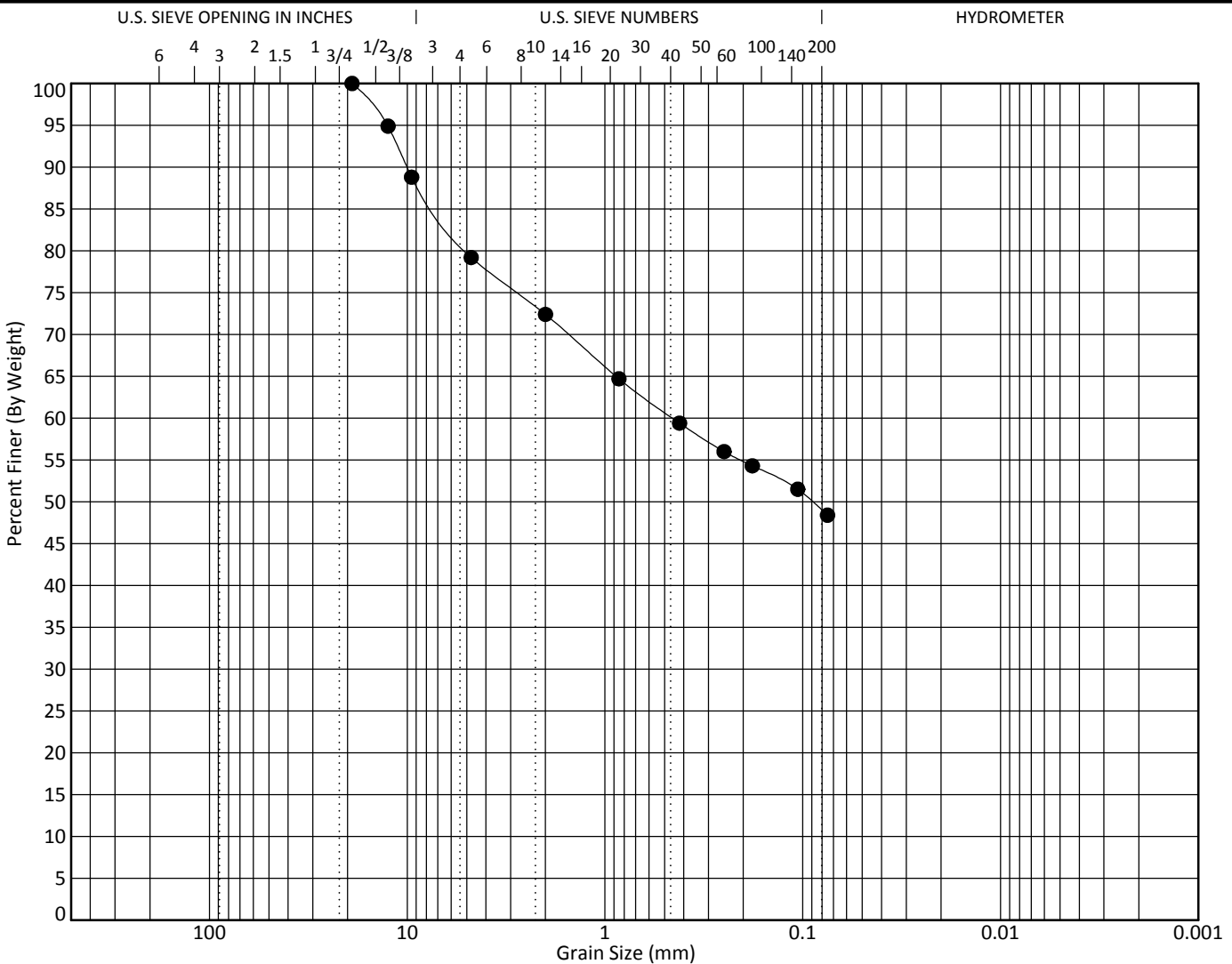


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-14 S	6.5	SILTY SAND with GRAVEL (SM)					NP	NP	NP		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-14 S	6.5	19	0.455			20.8	30.8	48.4			
	at										
	at										
	at										
	at										

U.S. GRAIN SIZE 65N-302-RT.GPJ F&R.GDT 7/6/12

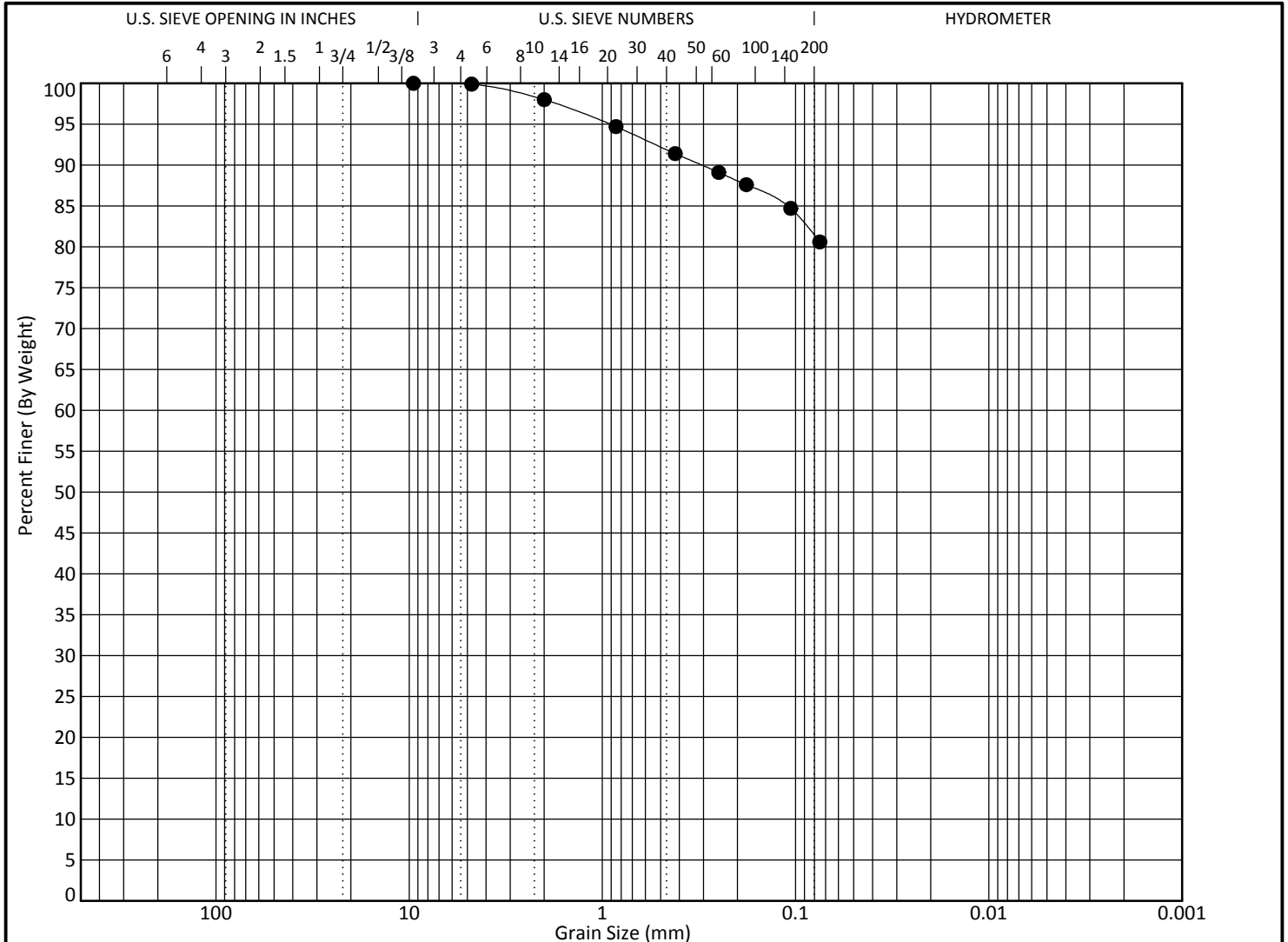


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RW-14 SSaṭ	18.5	SILT with SAND (ML)					34	26	8		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RW-14 SSaṭ	18.5	9.5				0.1	19.3	80.6			
	at											
	at											
	at											
	at											

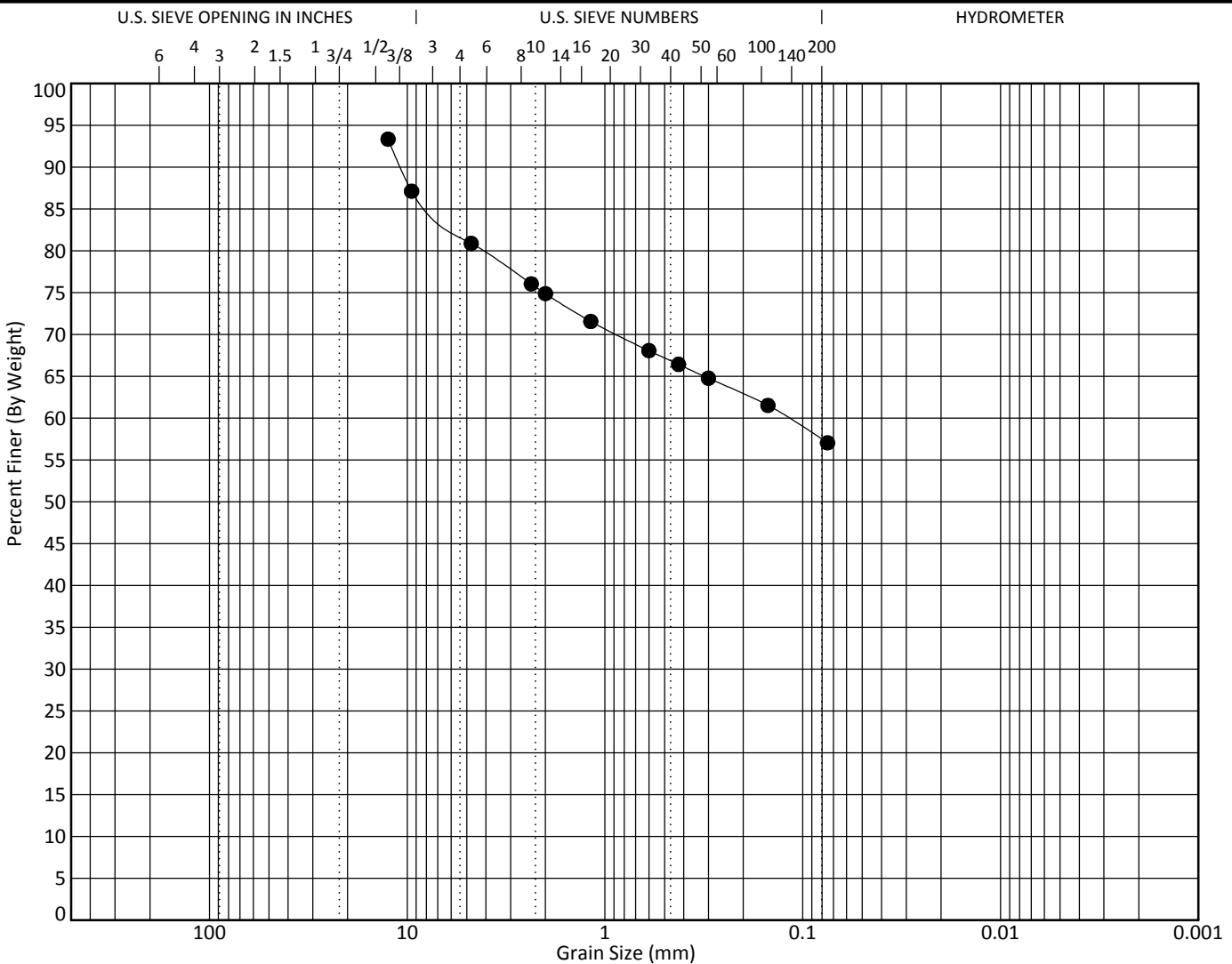


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-15 SSa1	0.5	SANDY SILT with GRAVEL (ML)					33	26	7		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-15 SSa1	0.5	12.5	0.118			12.5	23.8	57.0			
	at										
	at										
	at										
	at										

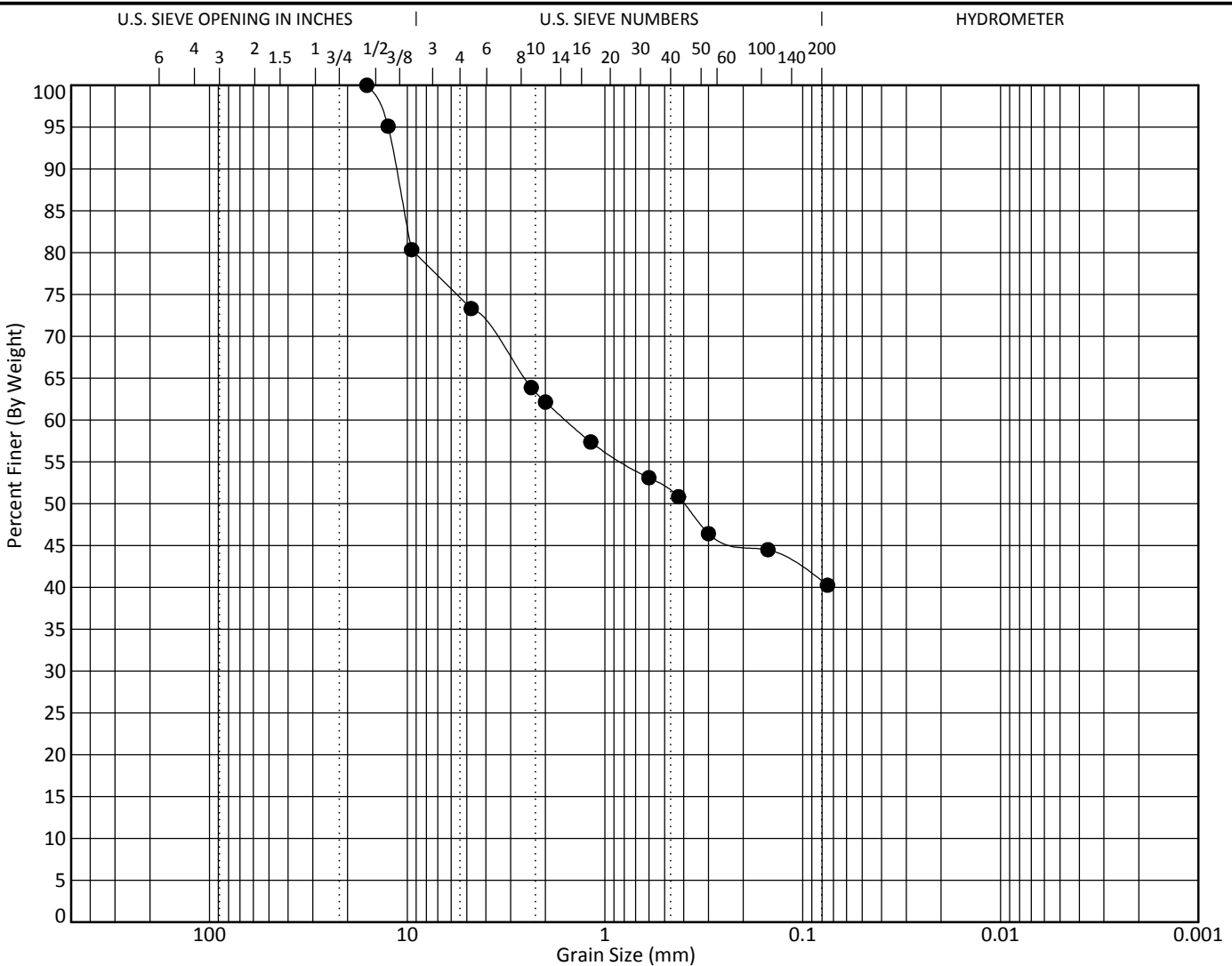


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-15 S	6.5	SILTY SAND with GRAVEL (SM)					33	25	8		
at											
at											
at											
at											
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-15 S	6.5	16	1.578			26.7	33.1	40.3			
at											
at											
at											
at											

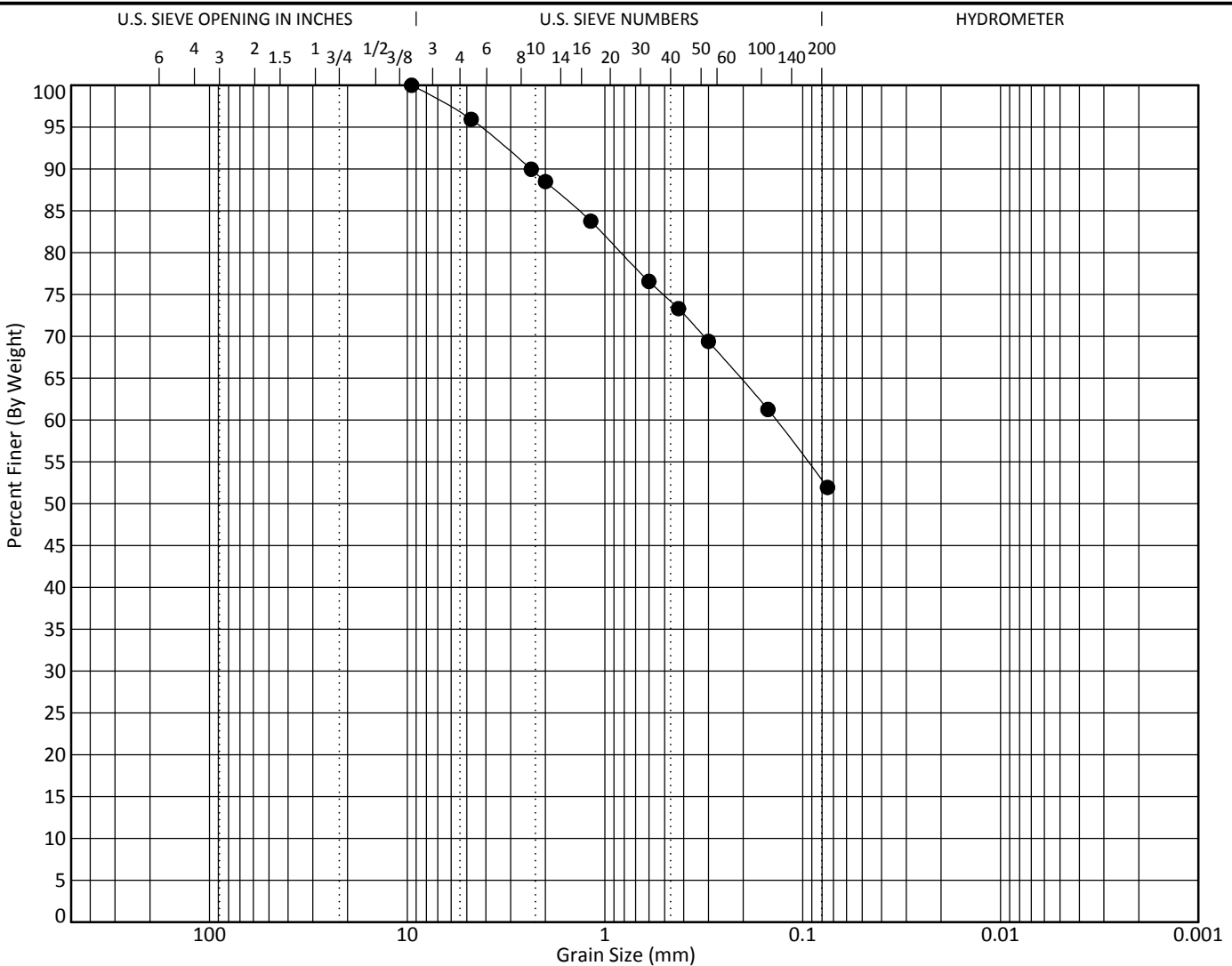


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RW-15 S8a	23.5	SANDY SILT (ML)					37	31	6		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RW-15 S8a	23.5	9.5	0.137			4.1	44.0	51.9			
	at											
	at											
	at											
	at											

U.S. GRAIN SIZE 65N-302-RT.GPJ F&R.GDT 7/6/12

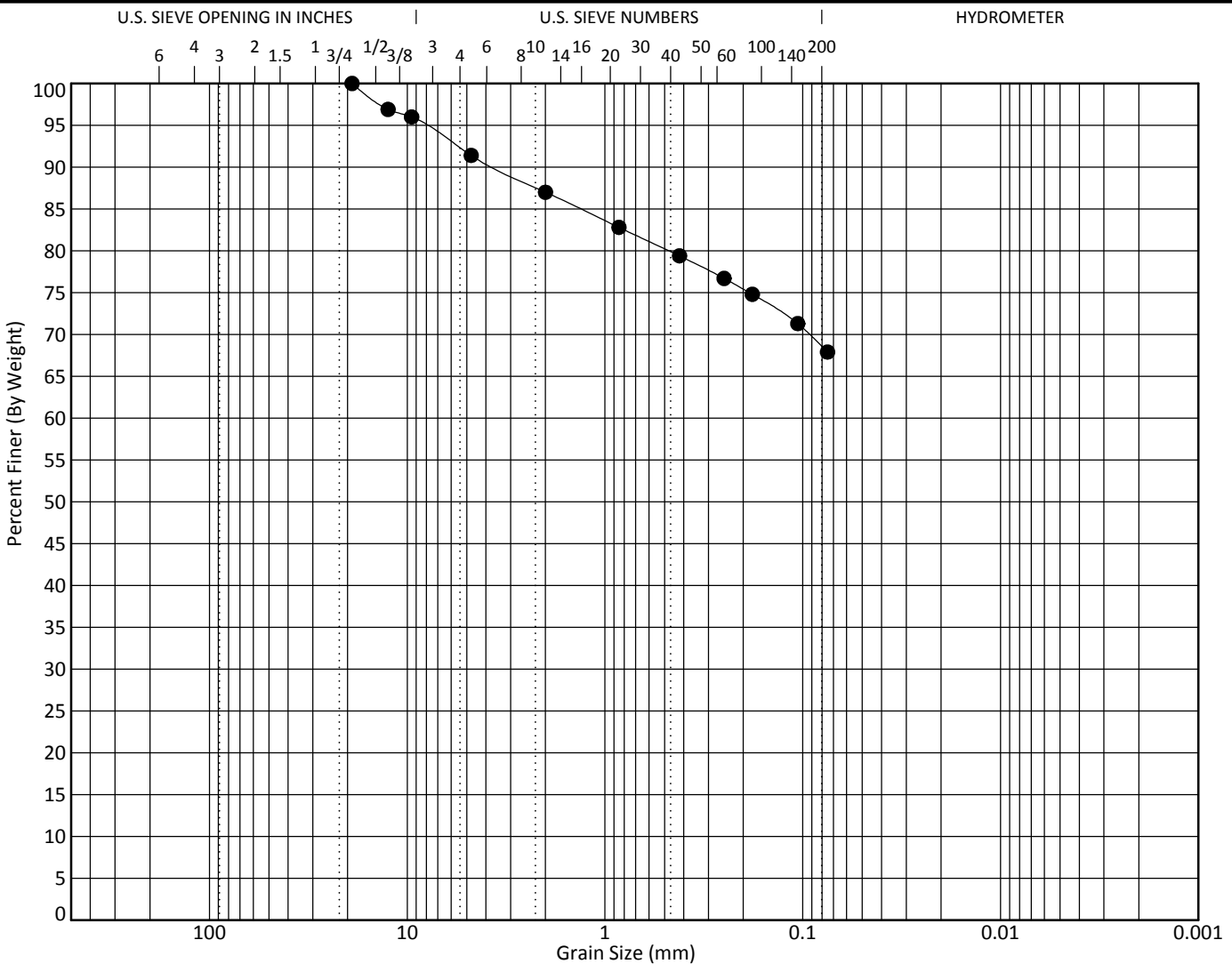


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RW-16 SSa	11.5	SANDY LEAN CLAY (CL)					34	19	15		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RW-16 SSa	11.5	19				8.6	23.5	67.9			
	at											
	at											
	at											
	at											

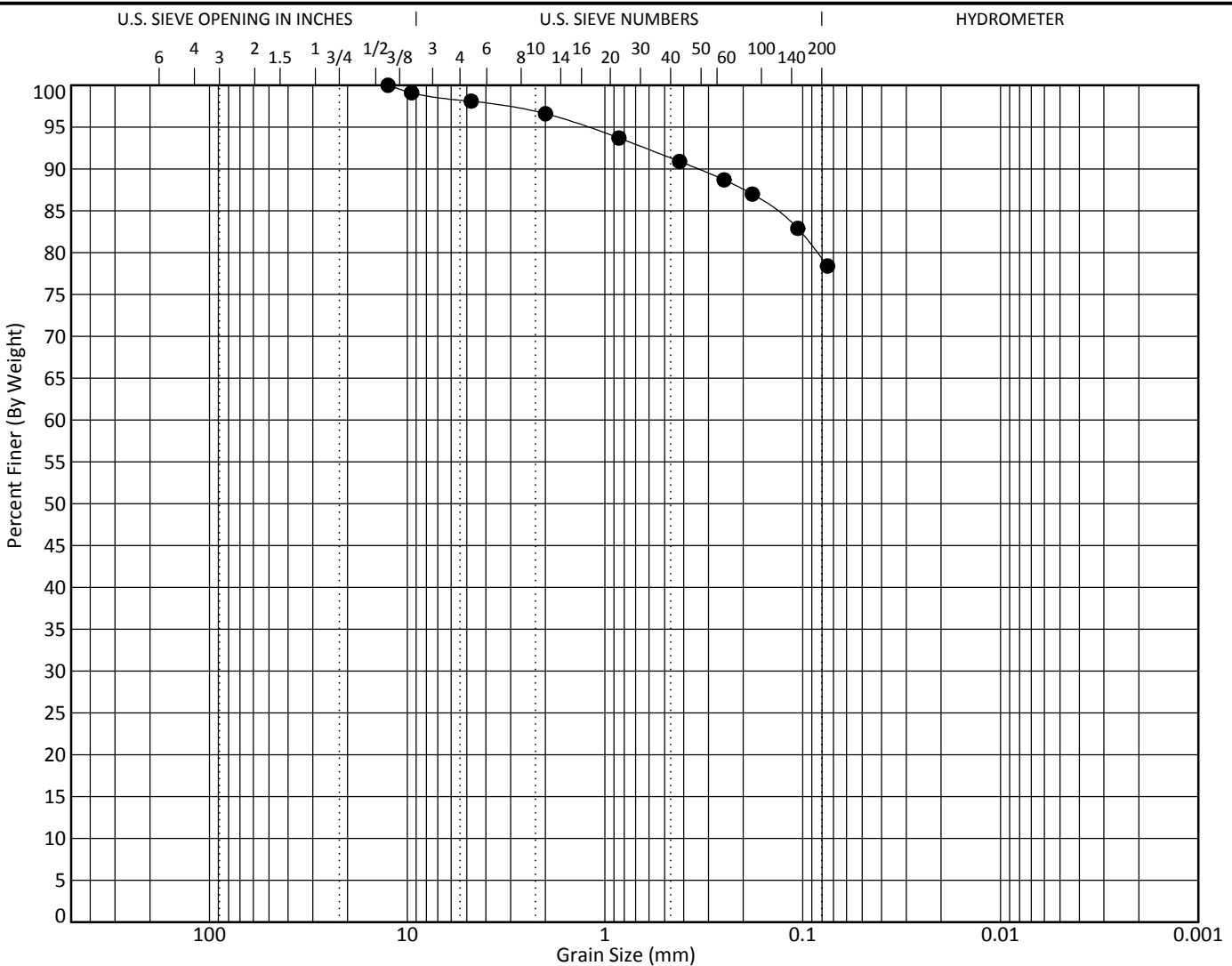


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RW-17 SSa	0.5	LEAN CLAY with SAND (CL)					39	23	16		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
●	RW-17 SSa	0.5	12.5				1.9	19.7	78.4			
	at											
	at											
	at											
	at											

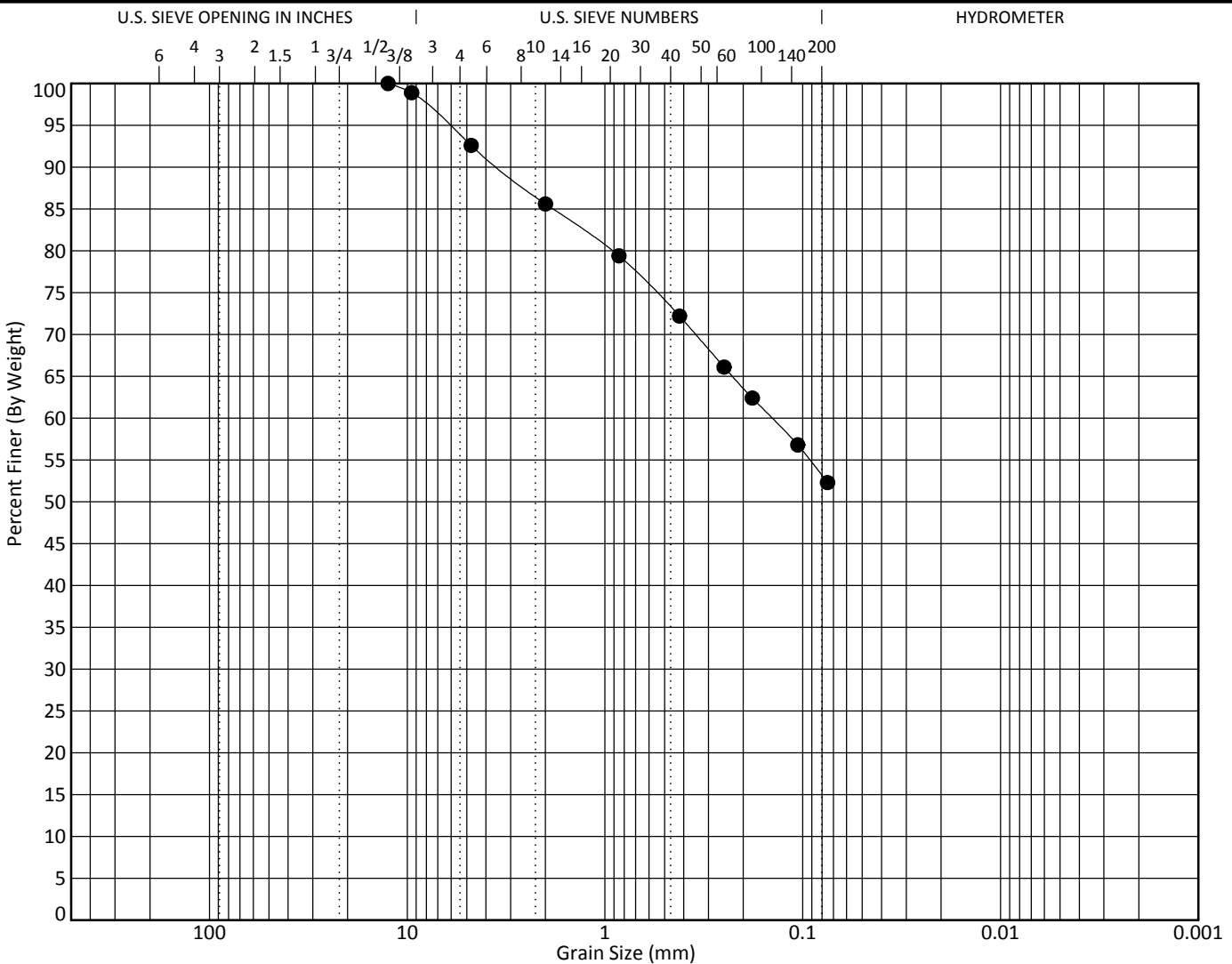


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RW-17 SSat	6.5	SANDY SILT (ML)					32	25	7		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RW-17 SSat	6.5	12.5	0.143			7.4	40.3	52.3			
	at											
	at											
	at											
	at											

U.S. GRAIN SIZE 65N-302-RT.GPJ F&R.GDT 7/6/12

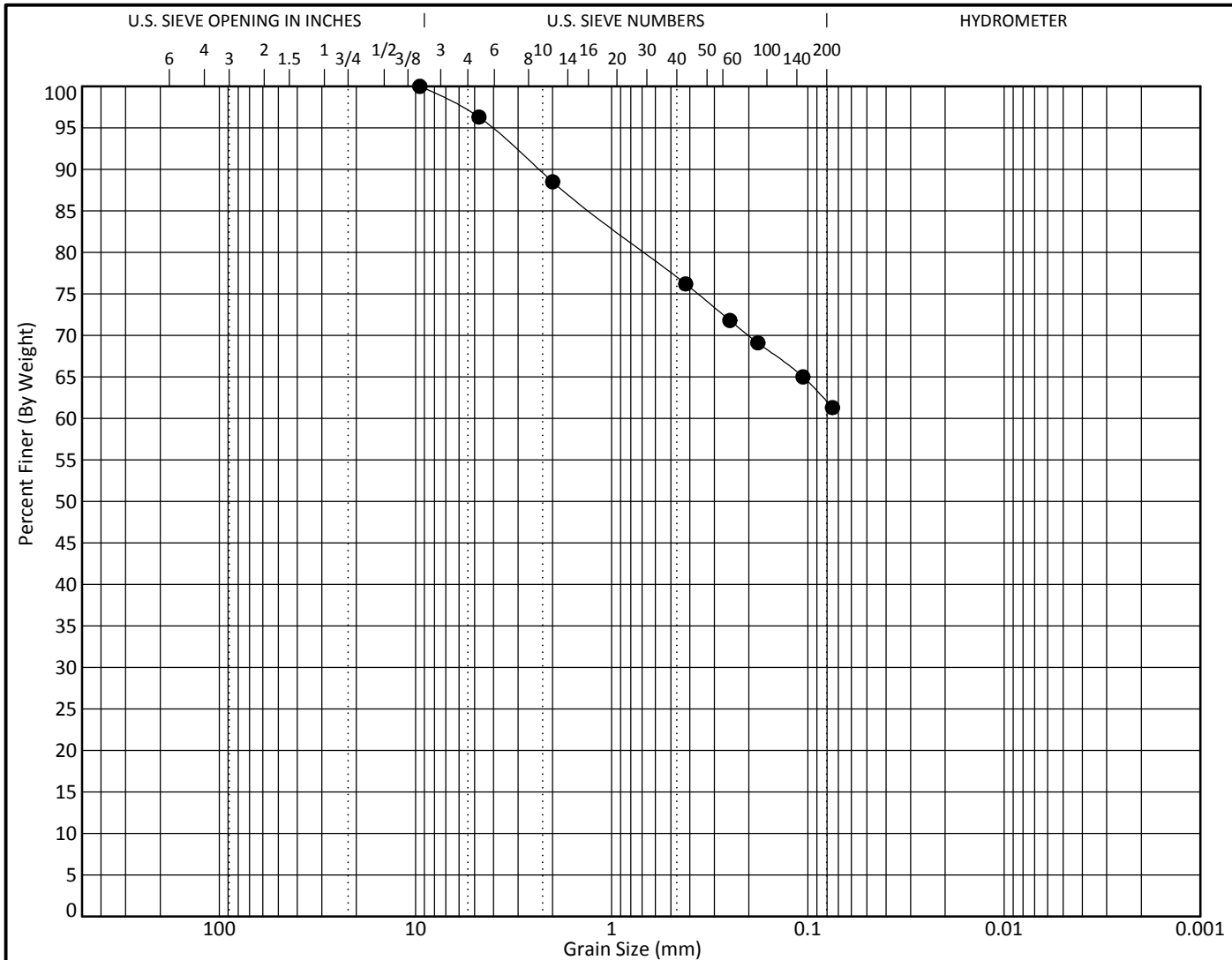


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RW-17 SSaṭ	18.5	SANDY SILT (ML)					43	32	11		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RW-17 SSaṭ	18.5	9.5				3.7	35.0	61.3			
	at											
	at											
	at											
	at											



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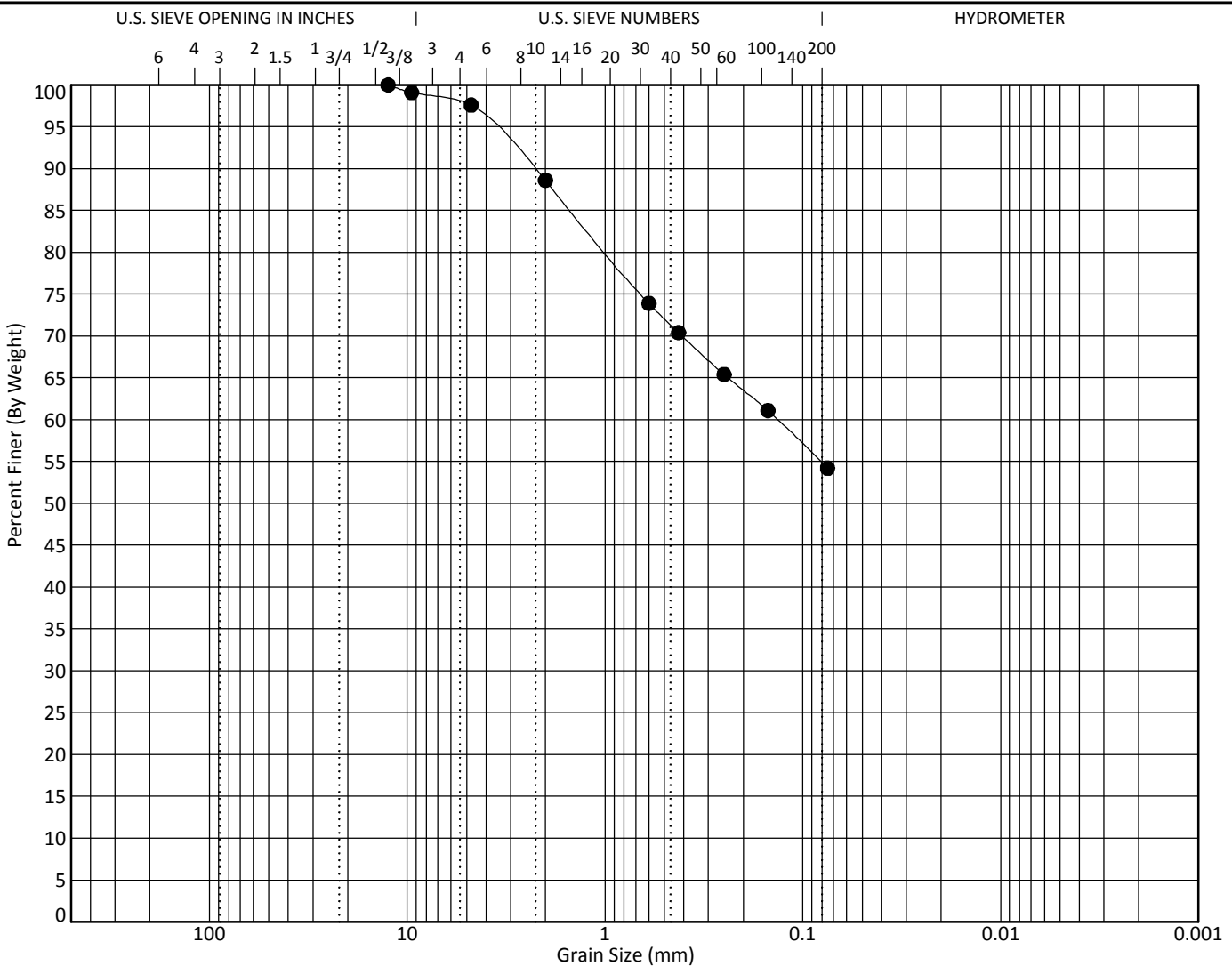
GRAIN SIZE DISTRIBUTION

Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RW-18(SSa2)	2.5	SANDY SILTY CLAY (CL-ML)					27	21	6		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RW-18(SSa2)	2.5	12.5	0.134			2.4	43.4	54.2			
	at											
	at											
	at											
	at											

U.S. GRAIN SIZE LAB TEST GPJ F&R GDT 6/27/12

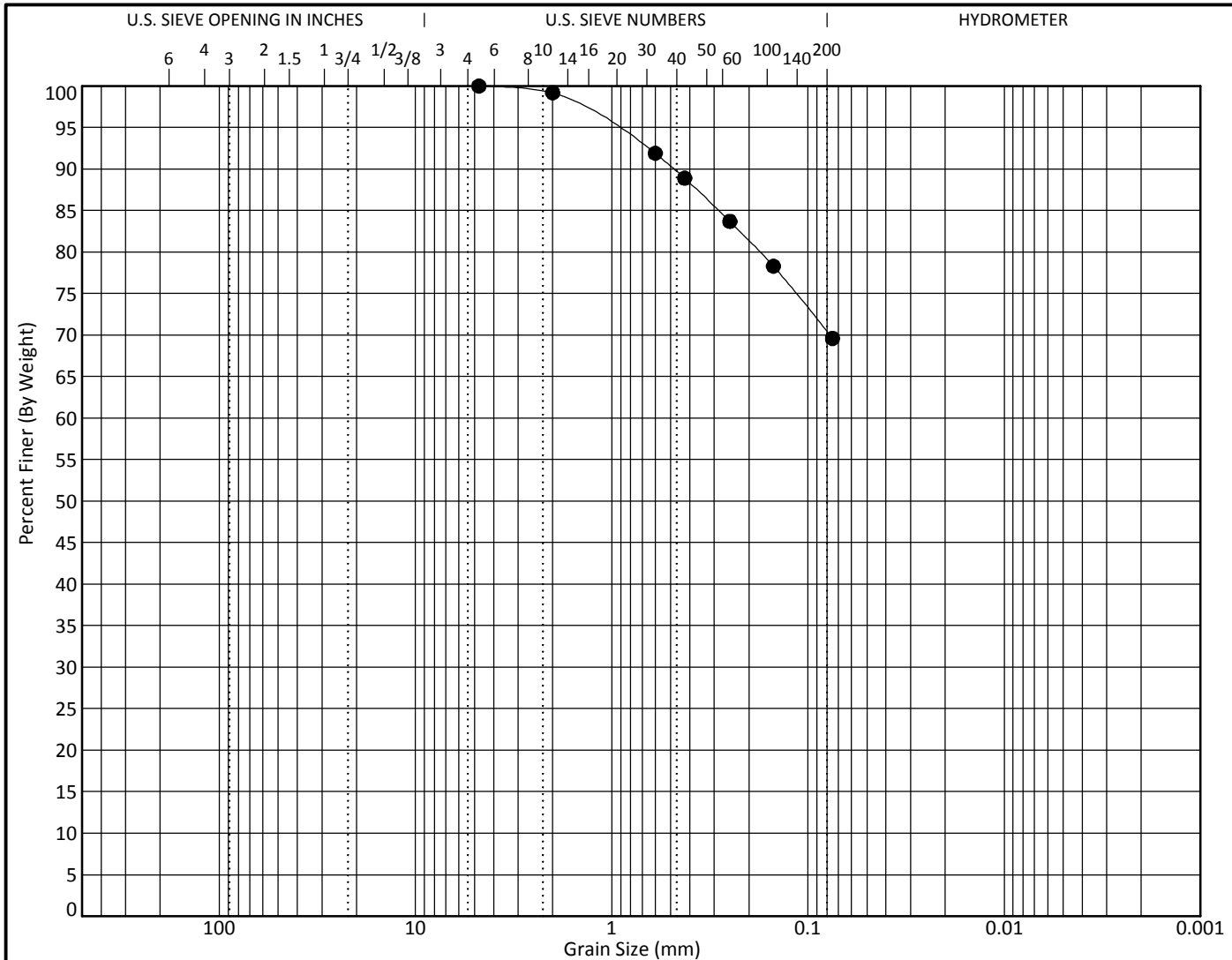


Project No: 65N0302

Client: SCDOT

Project: S-80 Bridge Replacement Over I-26

City/State: Greenville, SC



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.		Depth	Classification					LL	PL	PI	Cc	Cu
●	RW-18(SSa5)	8.0	SANDY SILT (ML)					37	27	10		
	at											
	at											
	at											
	at											
Boring No.		Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RW-18(SSa5)	8.0	4.75				0.0	30.4	69.6			
	at											
	at											
	at											
	at											

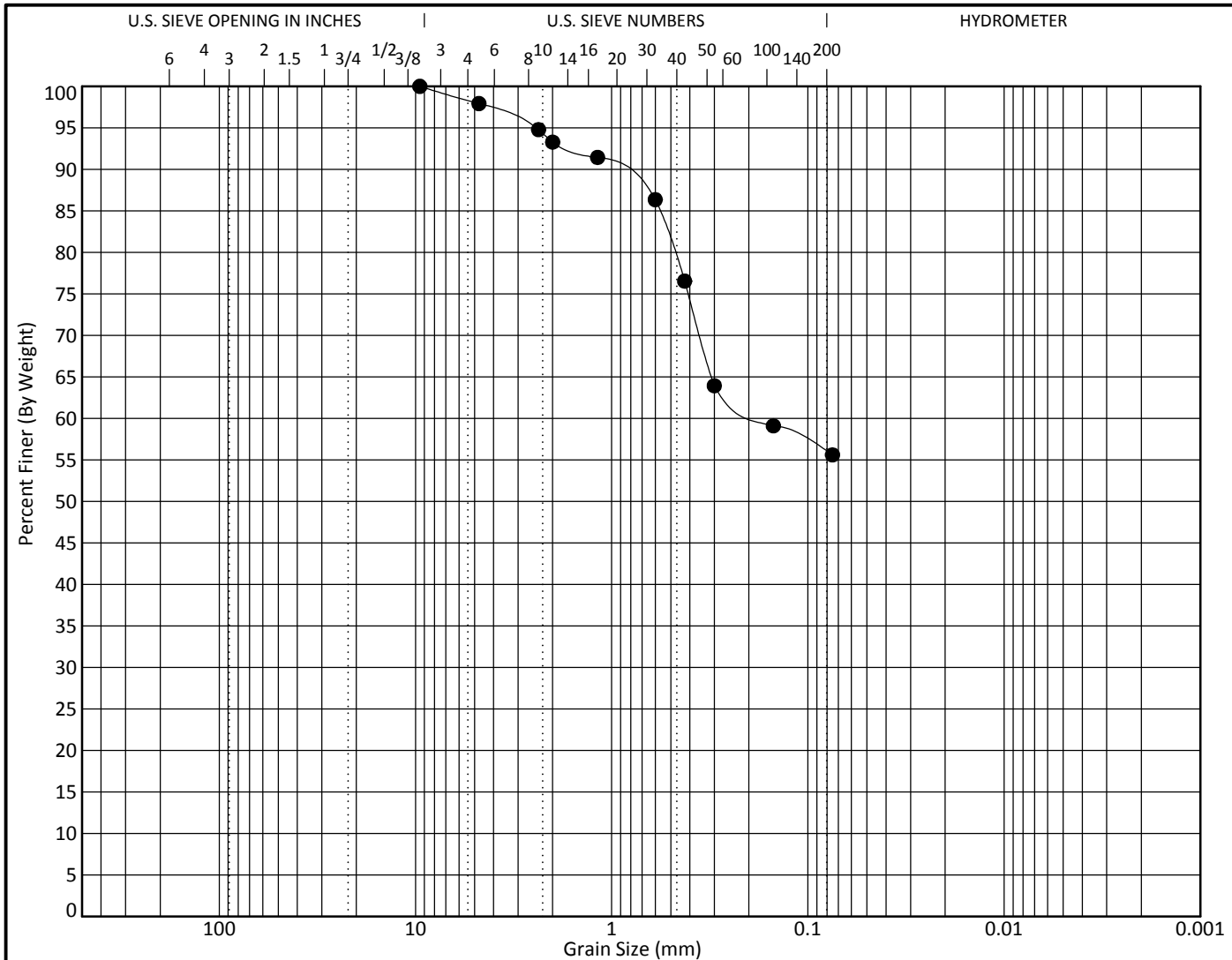


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-20 S5a2	8.5	SANDY LEAN CLAY (CL)					31	21	10		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-20 S5a2	8.5	9.5	0.171			2.1	42.3	55.6			
	at										
	at										
	at										
	at										

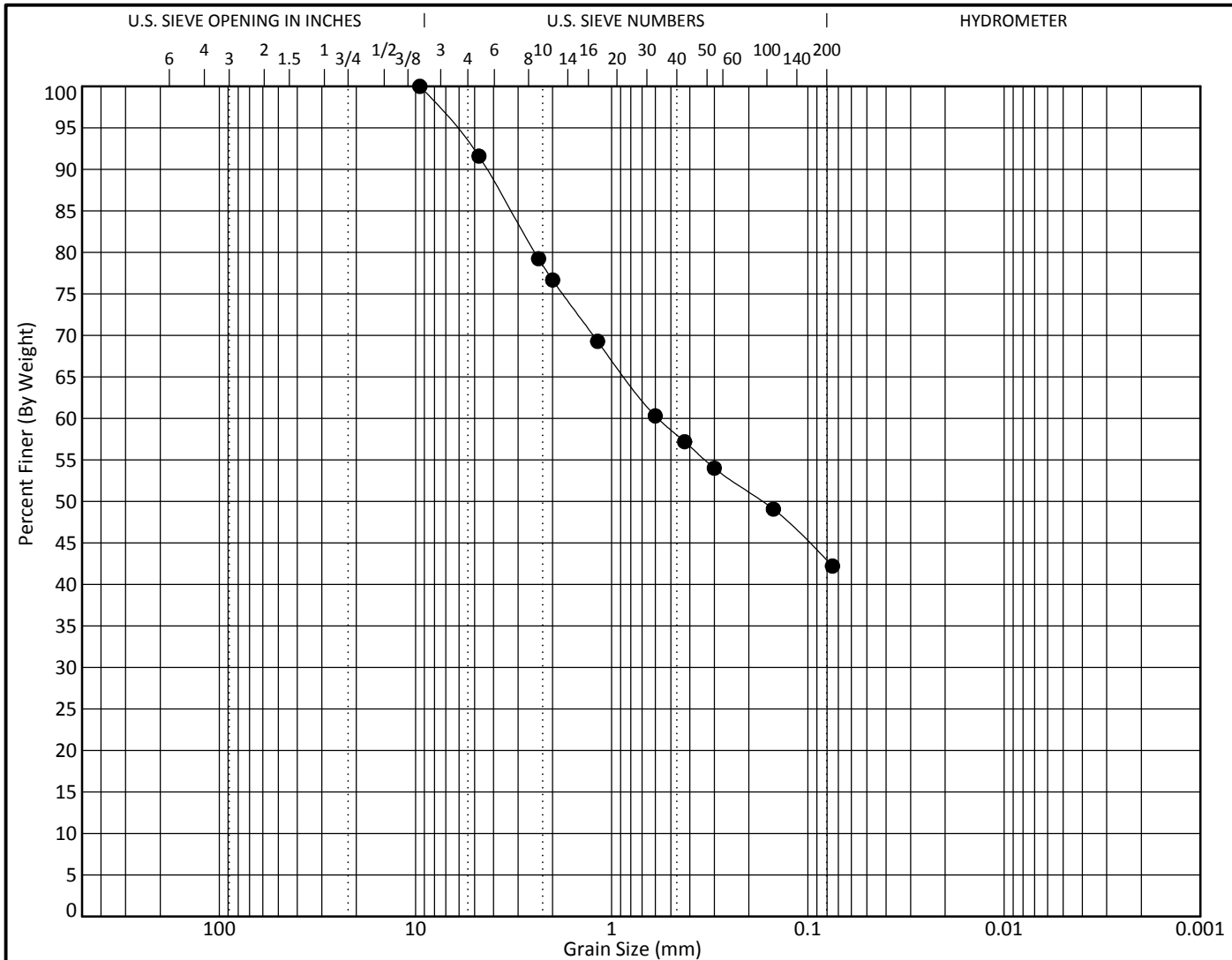


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-20 S5a7	18.5	SILTY SAND (SM)					25	23	2		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-20 S5a7	18.5	9.5	0.58			8.4	49.4	42.2			
	at										
	at										
	at										
	at										

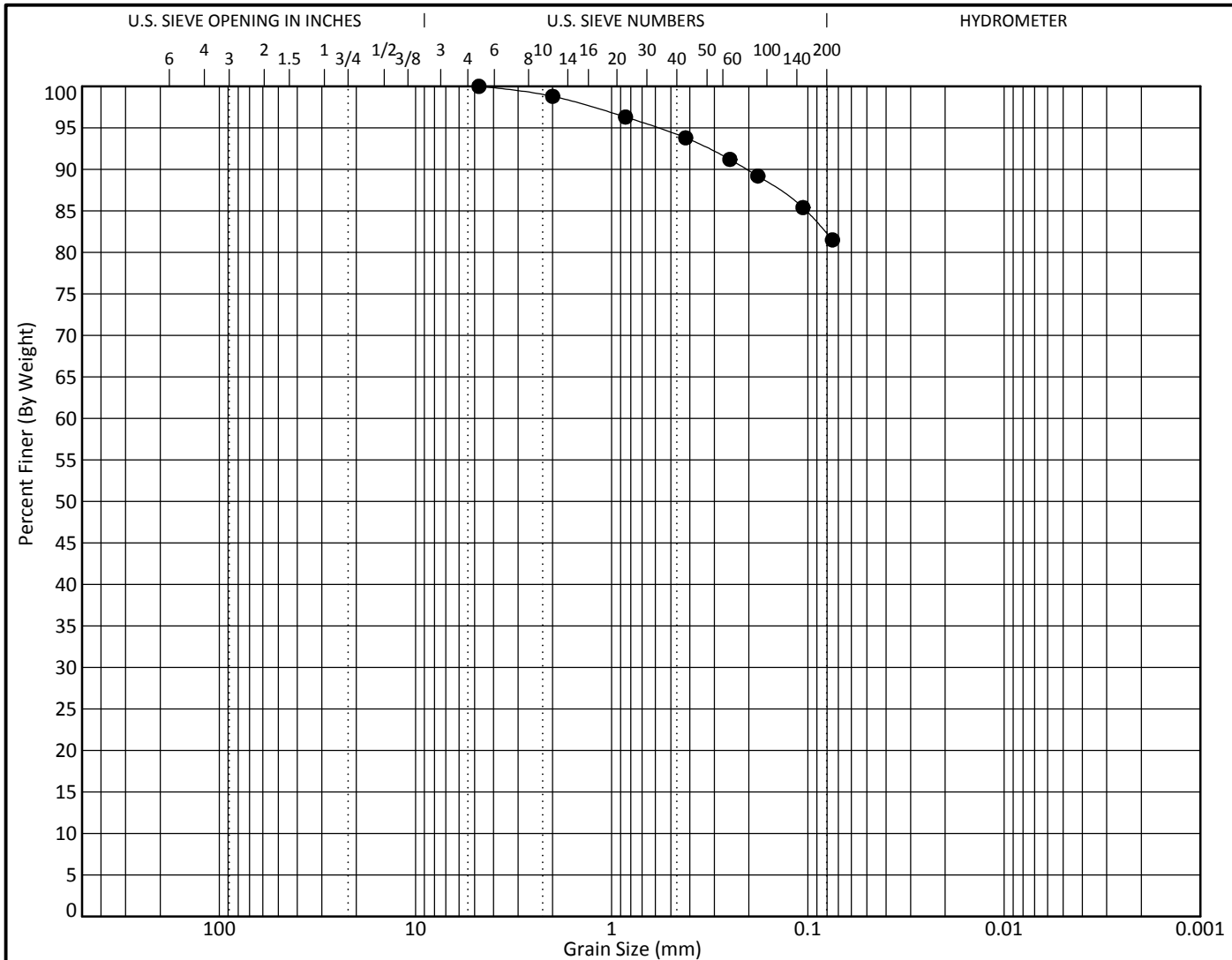


Project No: 65N-302

Client: SCDOT

Project: S-80 Bridge Over I-26

City/State: South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth	Classification					LL	PL	PI	Cc	Cu
● RW-7 Bul	5.0	LEAN CLAY with SAND (CL)					41	20	21		
	at										
	at										
	at										
	at										
Boring No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt		%Clay	
● RW-7 Bul	5.0	4.75				0.0	18.5	81.5			
	at										
	at										
	at										
	at										

U.S. GRAIN SIZE 65N-302-RT.GPJ F&R.GDT 7/6/12

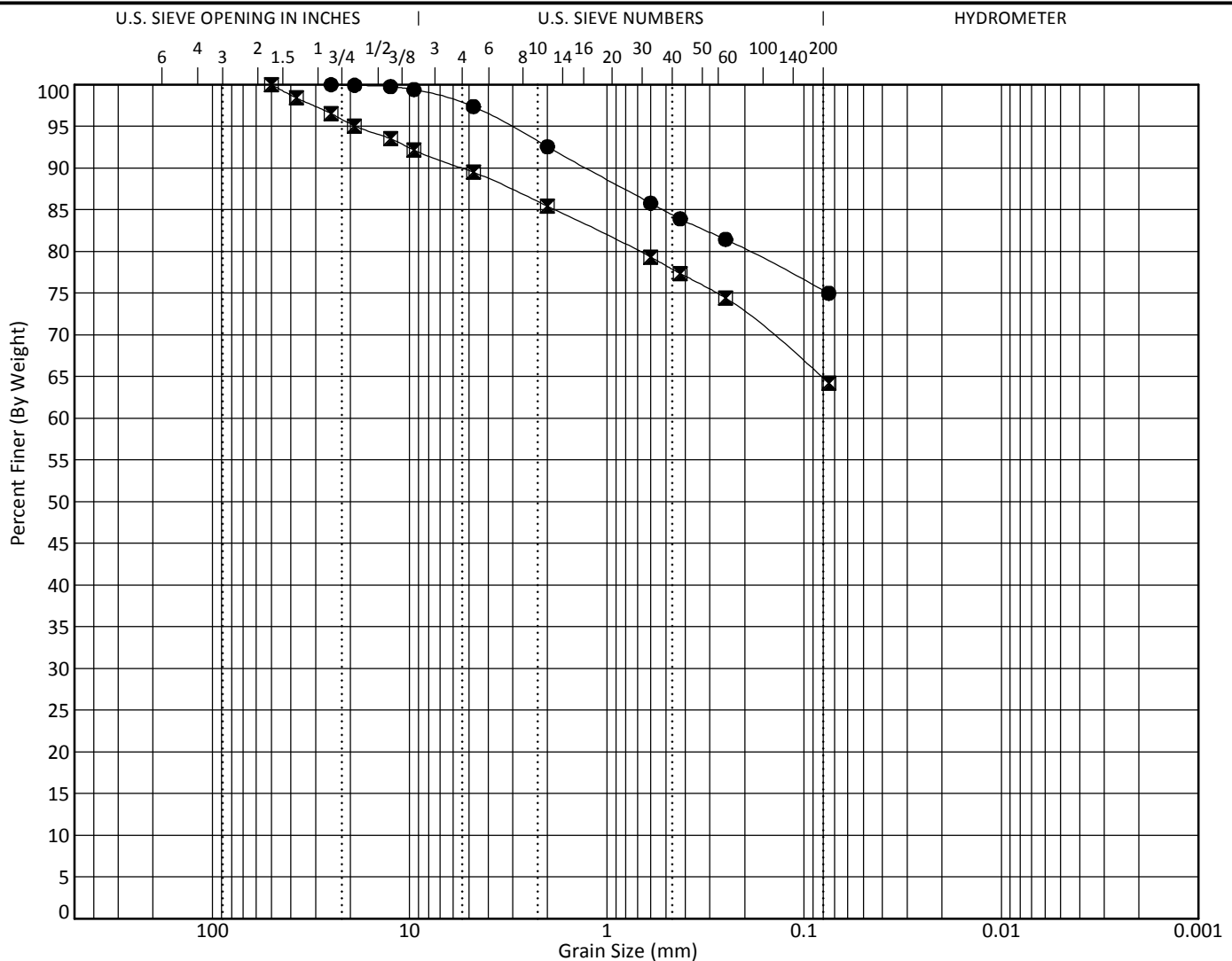


Project No: 65N-0302

Client: SCDOT

Project: Shady Grove Rd. S-80 Bridge Replacement

City/State: Columbia, South Carolina



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample No.				Depth	Classification					LL	PL	PI	Cc	Cu
●	RD-1	at	0.0	Light Brown, FAT CLAY with SAND (CH)					56	24	32			
☒	RD-20	at	0.0	Brown, SANDY LEAN CLAY (CL)					34	22	12			
Sample No.				Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	RD-1	at	0.0	25				2.6	22.4	75.0				
☒	RD-20	at	0.0	50				10.5	25.3	64.2				



FROEHLING & ROBERTSON, INC.
MOISTURE CONTENT (ASTM D2216)

Client: SCDOT
Project: Shady Grove Road
Project No: 65N-0302

Date: 2-Jul-12
Location: S-80 Bridge Repl. over I-26
Page: 1 of 2

Sample Location	Depth	Moisture Content
B-1A SS-2	2.5'-4.0'	12.5%
B-1A SS-4	6.5'-8.0'	15.1%
B-1A SS-7	18.5'-20.0'	15.8%
B-2A SS-1	0.5'-2.0'	14.6%
B-2A SS-5	8.5'-10.0'	8.5%
B-2A SS-6	13.5'-15.0'	7.6%
B-2A SS-7	18.5'-20.0'	9.8%
B-3 SS-1	0.5'-2.0'	16.5%
B-4 SS-1	0.5'-2.0'	15.6%
B-4 SS-3	4.5'-6.0'	13.8%
B-5 SS-1	0.5'-2.0'	11.5%
B-6 SS-3	4.5'-6.0'	9.8%
B-6 SS-7	18.5'-20.0'	11.6%
B-6 SS-8	23.5'-25.0'	13.2%
RD-1 SS-1	0.5'-2.0'	10.2%
RD-1 SS-4	6.5'-8.0'	8.6%
RD-2 SS-1	0.5'-2.0'	22.6%
RD-2 SS-3	4.5'-6.0'	8.8%
RD-4 SS-1	0.5'-2.0'	14.8%
RD-4 SS-4	6.5'-8.0'	12.5%
RD-4 SS-5	8.5'-10.0'	13.8%
RD-5 SS-1	0.5'-2.0'	21.2%
RD-5 SS-7	18.5'-20.0'	12.9%
RD-6 SS-1	0.5'-2.0'	18.5%
RD-6 SS-5	8.5'-10.0'	16.0%
RD-6 SS-8	23.5'-25.0'	9.5%
RD-7 SS-2	2.5'-4.0'	16.2%
RD-7 SS-5	8.5'-10.0'	9.5%

Sample Location	Depth	Moisture Content
RW-1 SS-1	0.5'-2.0'	14.4%
RW-1 SS-5	8.5'-10.0'	14.9%
RW-1 SS-7	18.5'-20.0'	17.9%
RW-2 SS-3	4.5'-6.0'	11.5%
RW-2 SS-5	8.5'-10.0'	7.0%
RW-3 SS-1	0.5'-2.0'	16.1%
RW-3 SS-4	6.5'-8.0'	18.9%
RW-4 SS-2	2.5'-4.0'	9.3%
RW-4 SS-6	13.5'-15.0'	10.0%
RW-4 SS-7	18.5'-20.0'	9.9%
RW-5 SS-1	0.5'-2.0'	15.7%
RW-5 SS-5	8.5'-10.0'	5.8%
RW-5 SS-7	18.5'-20.0'	9.2%
RW-6 SS-1	0.5'-2.0'	15.2%
RW-6 SS-3	4.5'-6.0'	9.5%
RW-7 SS-1	6.5'-8.0'	17.1%
RW-7 SS-3	10.5'-12.0'	8.7%
RW-7 SS-7	24.5'-26.0'	15.5%
RW-8 SS-1	0.5'-2.0'	19.2%
RW-8 SS-6	13.5'-15.0'	16.8%
RW-8 SS-8	23.5'-25.0'	12.6%
RW-9 SS-1	10.5'-12.0'	5.4%
RW-9 SS-2	12.5'-14.0'	12.1%
RW-9 SS-4	16.5'-18.0'	10.8%
RW-9 SS-6	23.5'-25.0'	19.0%
RW-10 SS-1	0.5'-2.0'	15.2%
RW-10 SS-5	8.5'-10.0'	10.5%
RW-10 SS-6	13.5'-15.0'	8.4%



FROEHLING & ROBERTSON, INC.
MOISTURE CONTENT (ASTM D2216)

Client: SCDOT
Project: Shady Grove Road
Project No: 65N-0302

Date: 2-Jul-12
Location: S-80 Bridge Repl. over I-26
Page: 2 of 2

Sample Location	Depth	Moisture Content
RW-12 SS-1	0.5'-2.0'	19.2%
RW-12 SS-5	8.5'-10.0'	13.0%
RW-12 SS-7	18.5'-20.0'	13.5%
RW-14 SS-4	6.5'-8.0'	7.0%
RW-14 SS-7	18.5'-20.0'	15.9%
RW-15 SS-1	0.5'-2.0'	13.8%
RW-15 SS-4	6.5'-8.0'	5.8%
RW-15 SS-8	23.5'-25.0'	15.9%
RD-1 Bulk	0'-5.0'	18.5%
RW-7 Bulk	0'-5.0'	14.7%

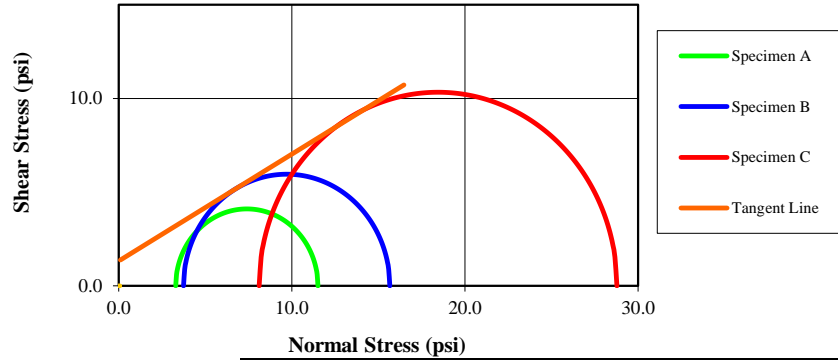
Sample Location	Depth	Moisture Content
RW-16 SS-1	11.5'-13.0'	11.9%
RW-17 SS-1	0.5'-2.0'	18.7%
RW-17 SS-4	6.5'-8.0'	8.1%
RW-17 SS-7	18.5'-20.0'	13.8%
RW-18 SS-2	2.5'-4.0'	16.5%
RW-18 SS-5	13.5'-15.0'	12.3%
RW-20 SS-2	8.5'-10.0'	10.7%
RW-20 SS-7	24.5'-26.0'	6.0%
RW-20 Bulk	0'-5.0'	9.7%



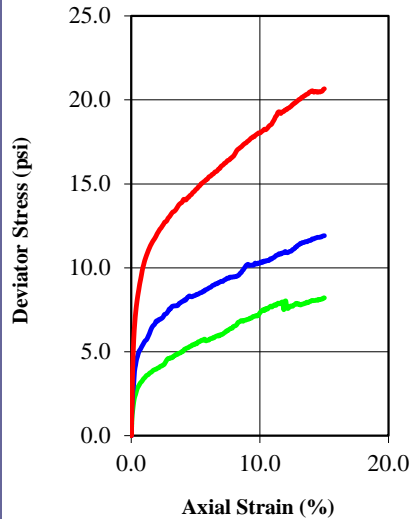
FROEHLING & ROBERTSON

Consolidated Undrained Triaxial Test (ASTM D4767)

Effective Stress at Maximum Deviator Stress Criterion



Deviator Stress Vs. Axial Strain



	Specimen			
	Initial	A	B	C
Water Content (%)	21.9	21.9	21.9	
Dry Density (pcf)	98.7	99.3	100.3	
Saturation (%)	85.84	87.17	89.47	
Void Ratio	0.673	0.663	0.646	
Diameter (in)	2.864	2.859	2.861	
Height (in)	5.752	5.764	5.741	
Specific Gravity (Assumed)	2.65	2.65	2.65	
Liquid Limit	56	56	56	
Plastic Limit	24	24	25	
After Consolidation				
B-Value	97	98	98	
Water Content (%)	21.3	21.3	21.0	
Dry Density (pcf)	98.90	108.45	102.54	
Saturation (%)	100	100	100	
Void Ratio	0.673	0.525	0.613	
Effective Stress (psi)	2.7	4.0	8.3	
Back Press. (psi)	60.4	60.1	75.8	
Rate of Strain	0.00029	0.00029	0.00029	

Maximum Deviator Stress Criterion		After Shear			
		A	B	C	
C (psi)	1.5	σ'_1 at Failure (psi)	11.50	15.65	28.77
C' (psi)	1.3	σ'_3 at Failure (psi)	3.29	3.74	8.11
ϕ (deg)	28.6				
ϕ' (deg)	29.7				

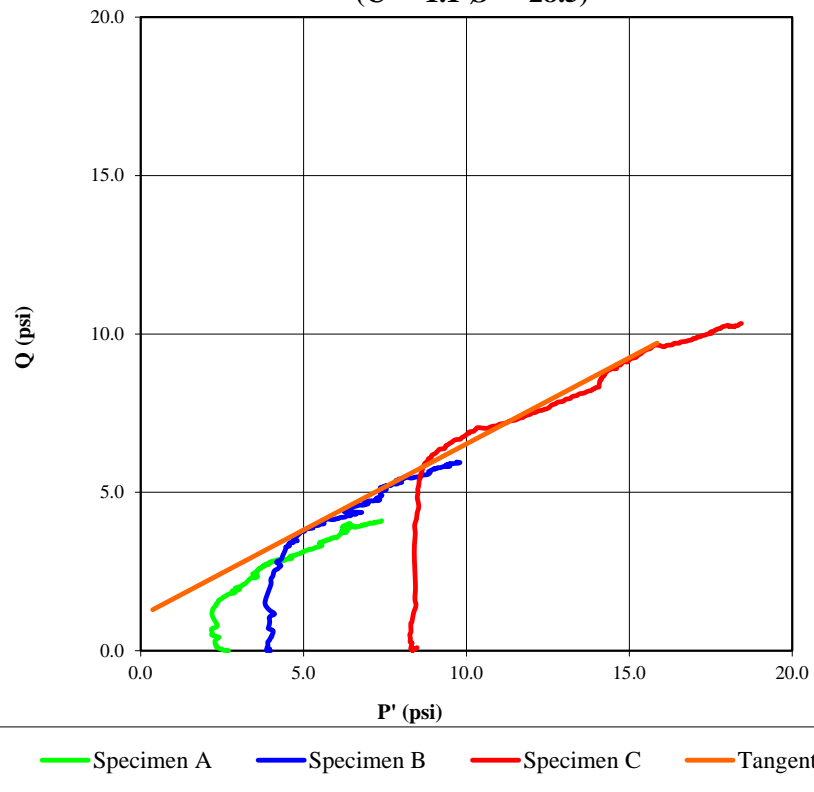
Project:	Shady Grove Rd. I-80 Bridge Replacement	N/A	N/A	N/A	N/A
Location:	Columbia, South Carolina				
Project Number:	65N-0302				
Boring Number:	0				
Sample Number:	RD-1				
Depth:	N.A.	Failure Photographs			
Sample Type:	Remolded				
Description:	Light Brown, Fat Clay with Sand				
Test Type	Consolidated Undrained				
USCS:	CH				



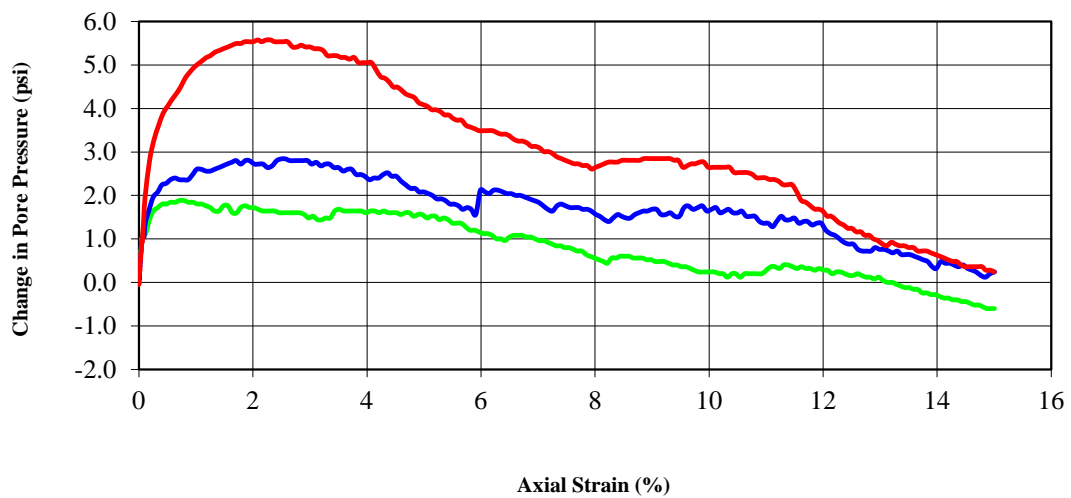
FROEHLING & ROBERTSON

Consolidated Undrained Triaxial Test (ASTM D4767)

Stress Paths (Effective) ($C' = 1.1$ $\phi' = 28.5$)

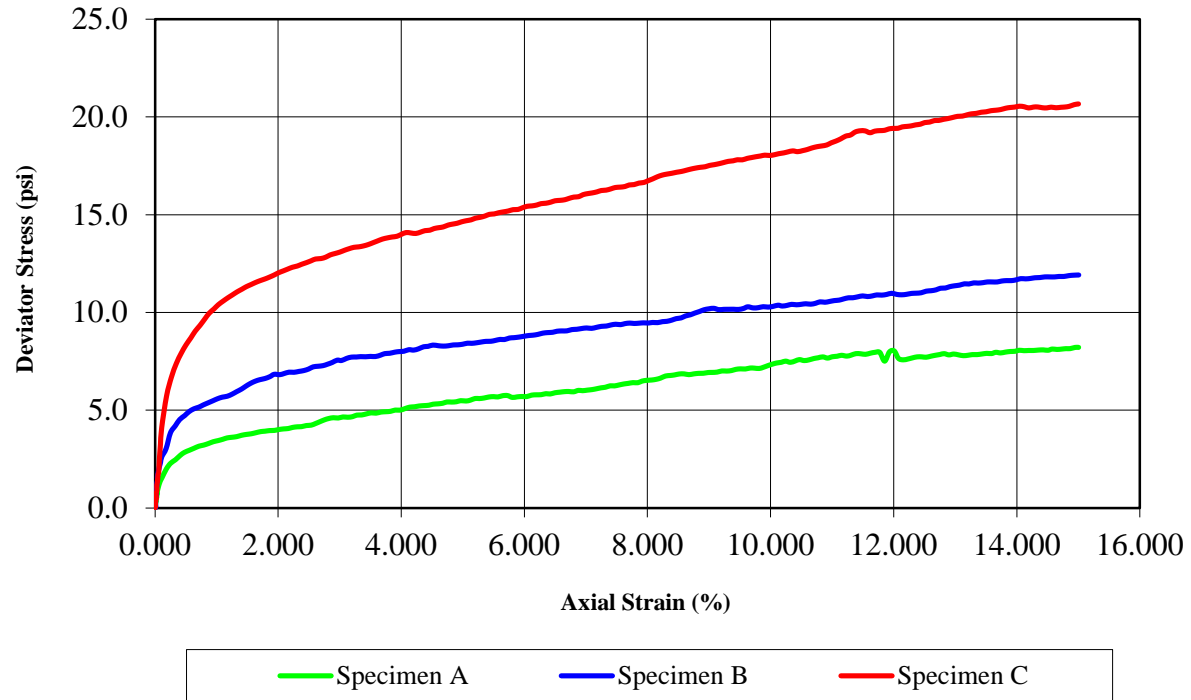


Change in Pore Pressure vs. Axial Strain

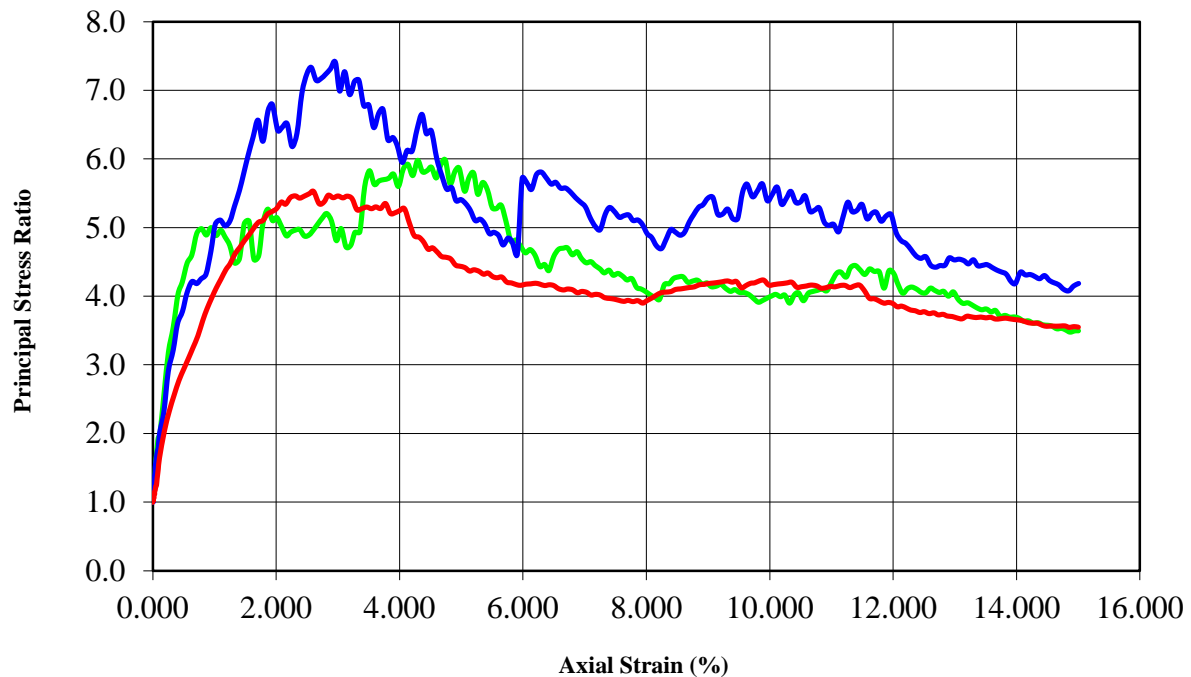




Deviator Stress vs. Axial Strain

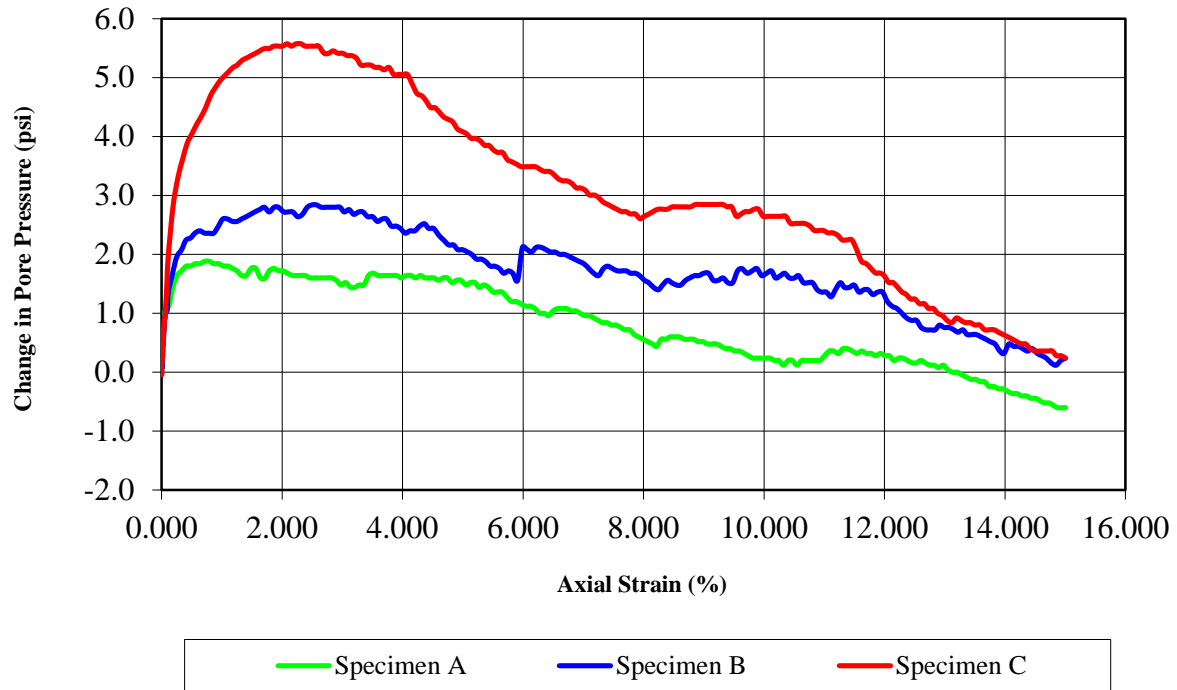


Principal Stress Ratio vs. Axial Strain



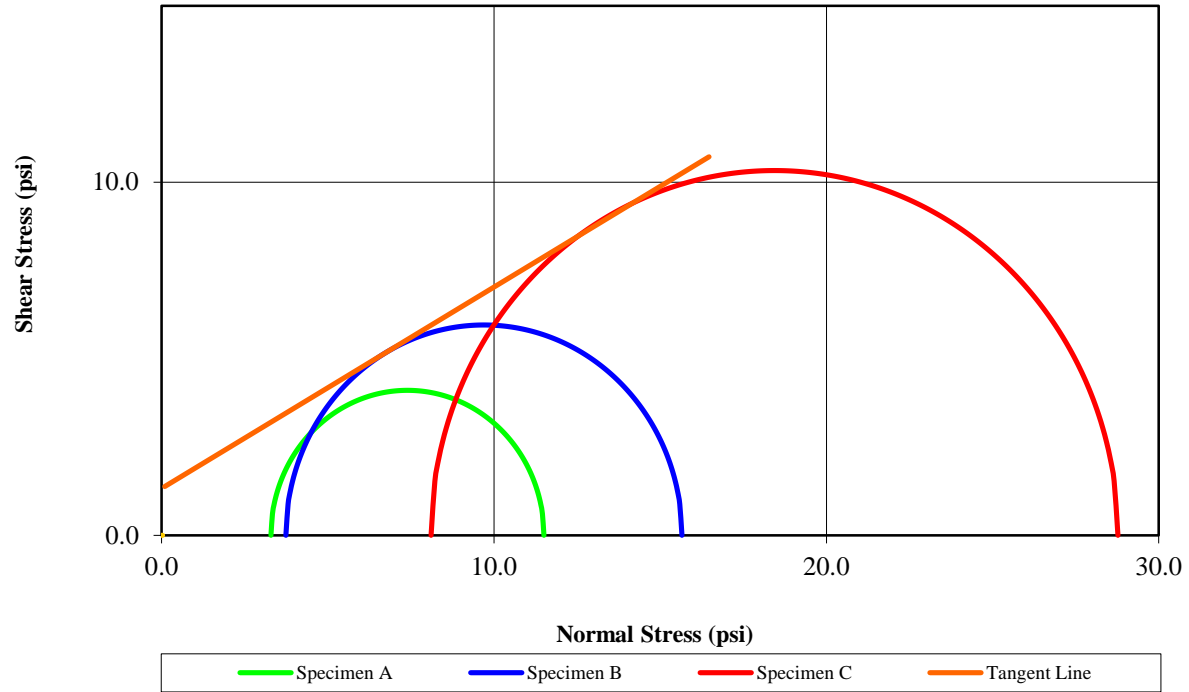


Change in Pore Pressure vs. Axial Strain

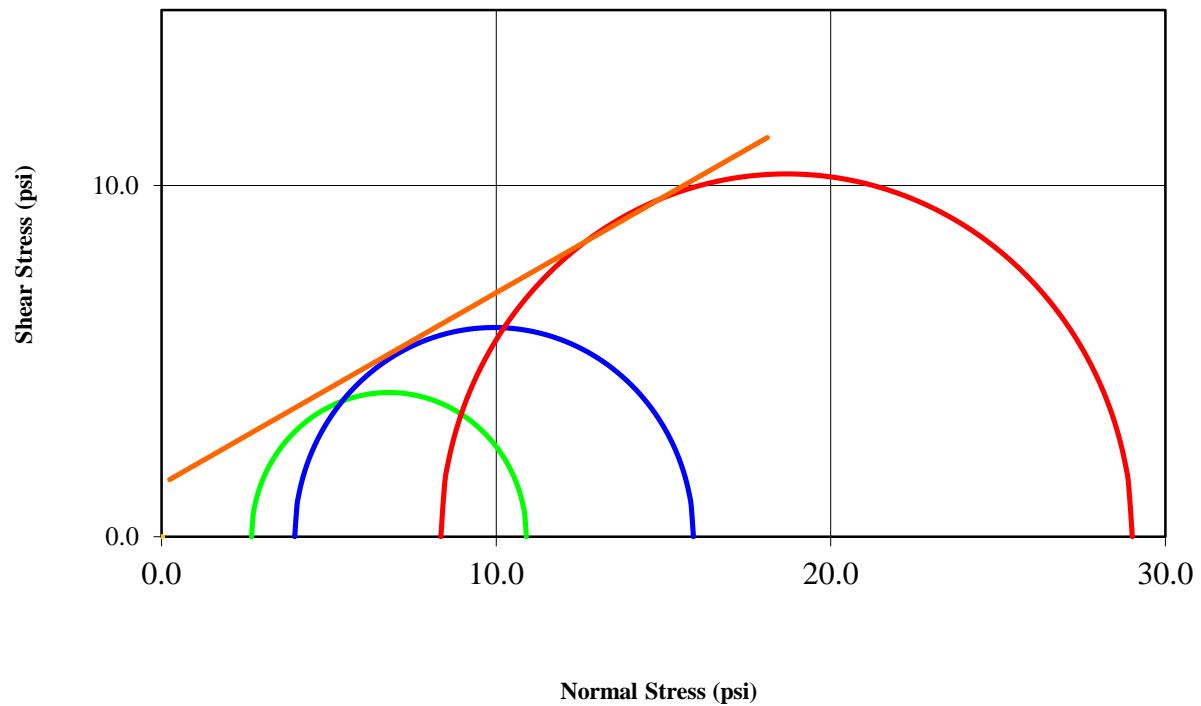




Mohr Stress Circles at Maximum Deviator Stress Criterion
Effective Stress
($C' = 1.3 \ \phi' = 29.7$)



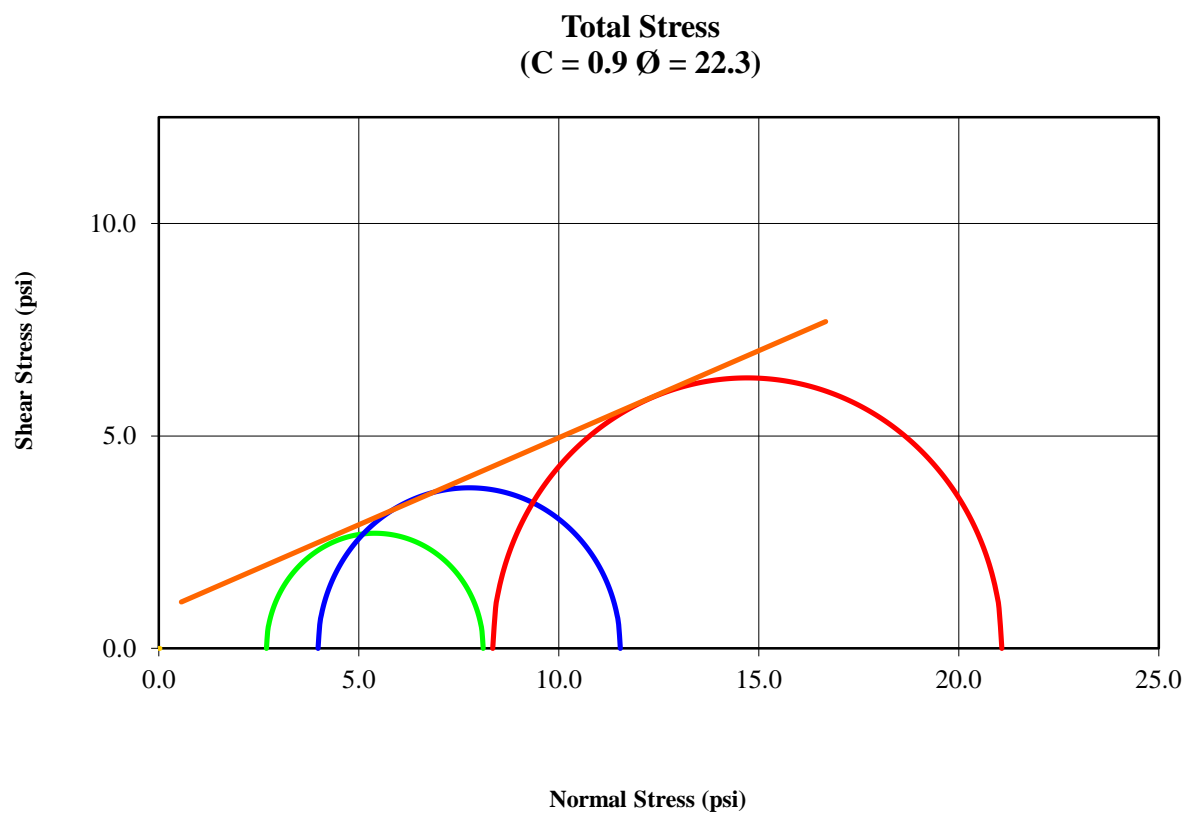
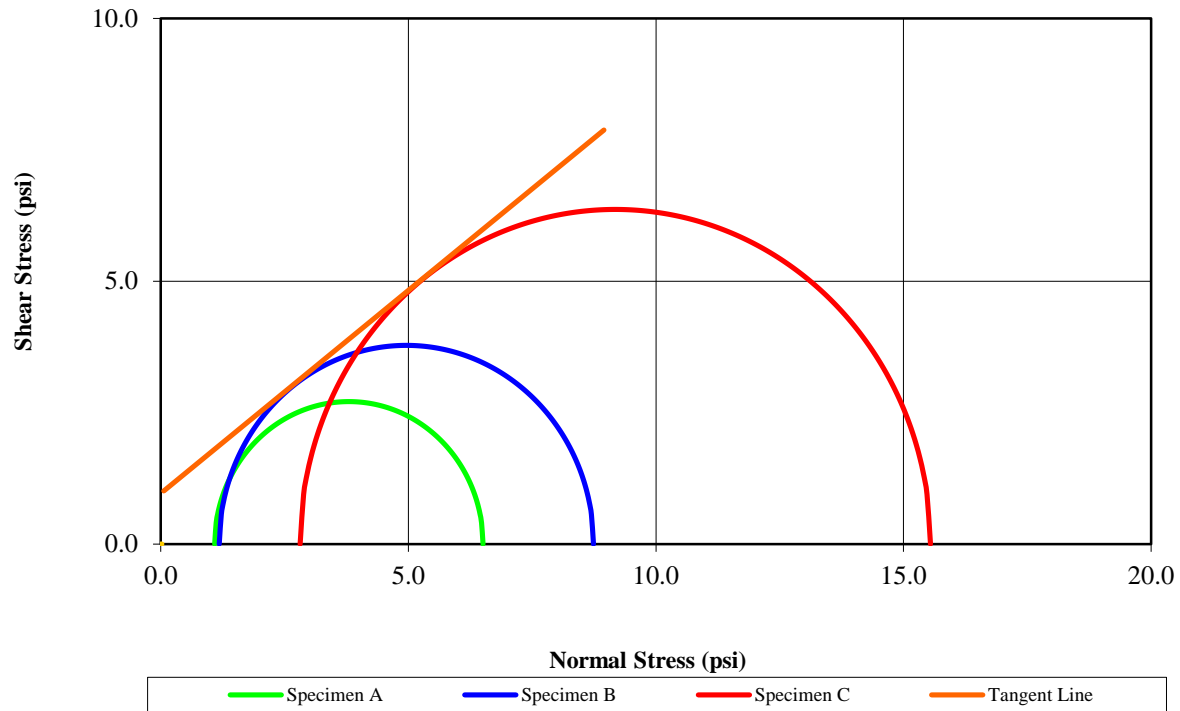
Total Stress
($C = 1.5 \ \phi = 28.6$)





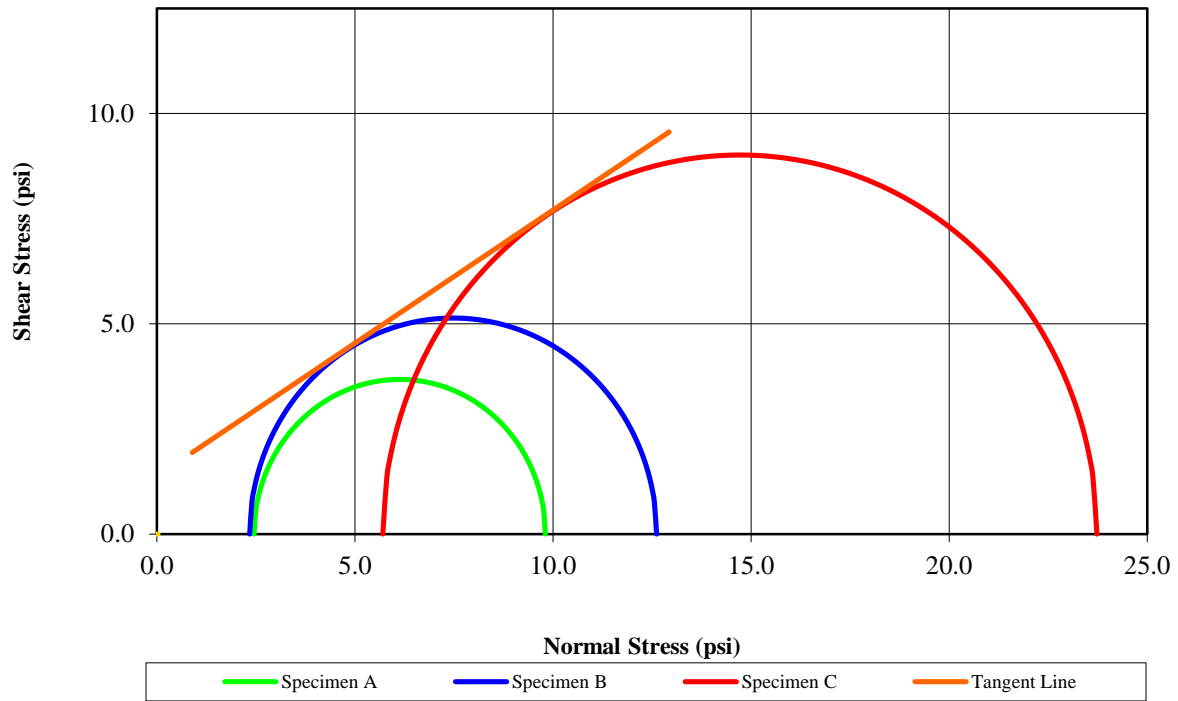
Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress
($C' = 1.0$ $\phi' = 37.7$)

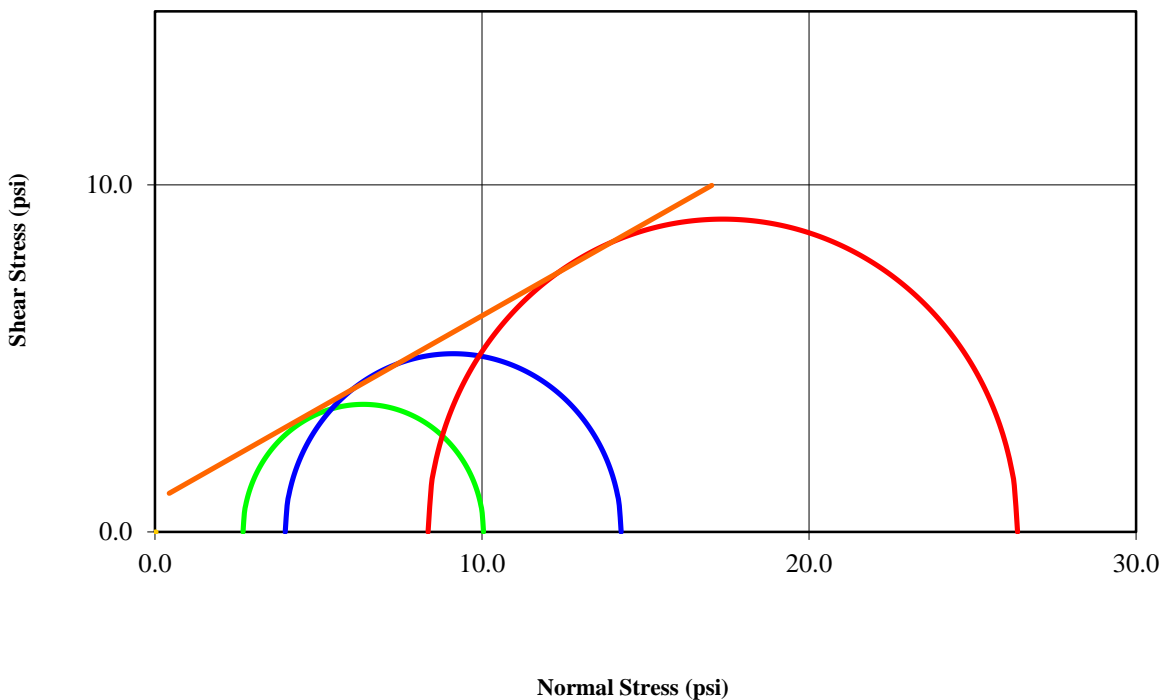




Mohr Stress Circles at 10% Axial Strain Criterion
Effective Stress
($C' = 1.4 \sigma' = 32.3$)

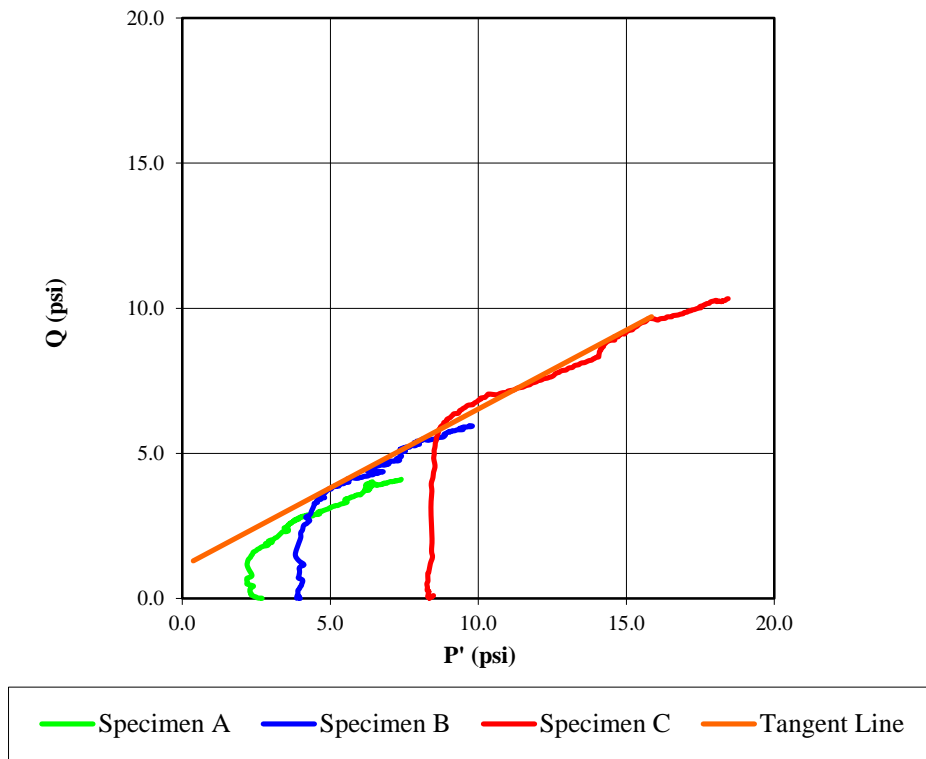


Total Stress
($C = 0.9 \sigma = 28.1$)

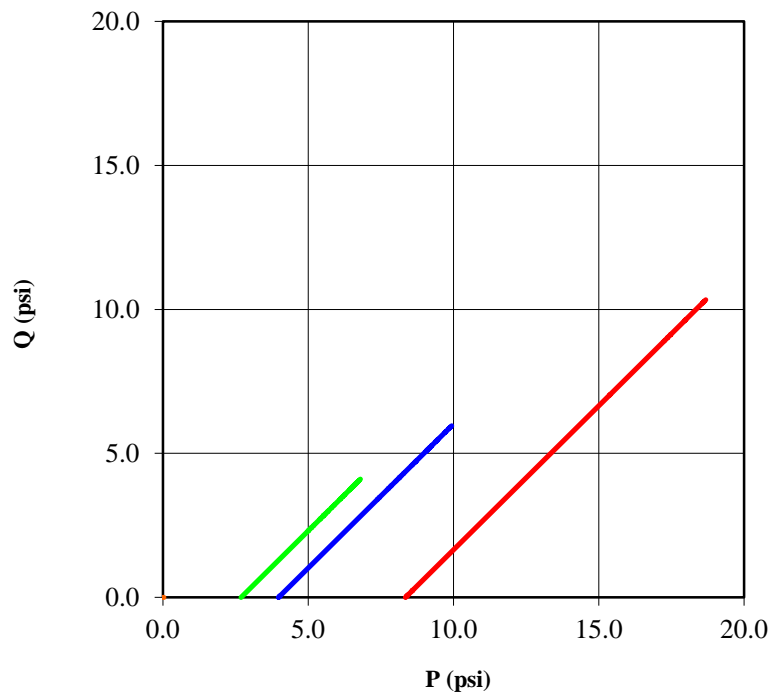




Stress Paths (Effective)
($C' = 1.1$ $\phi' = 28.5$)



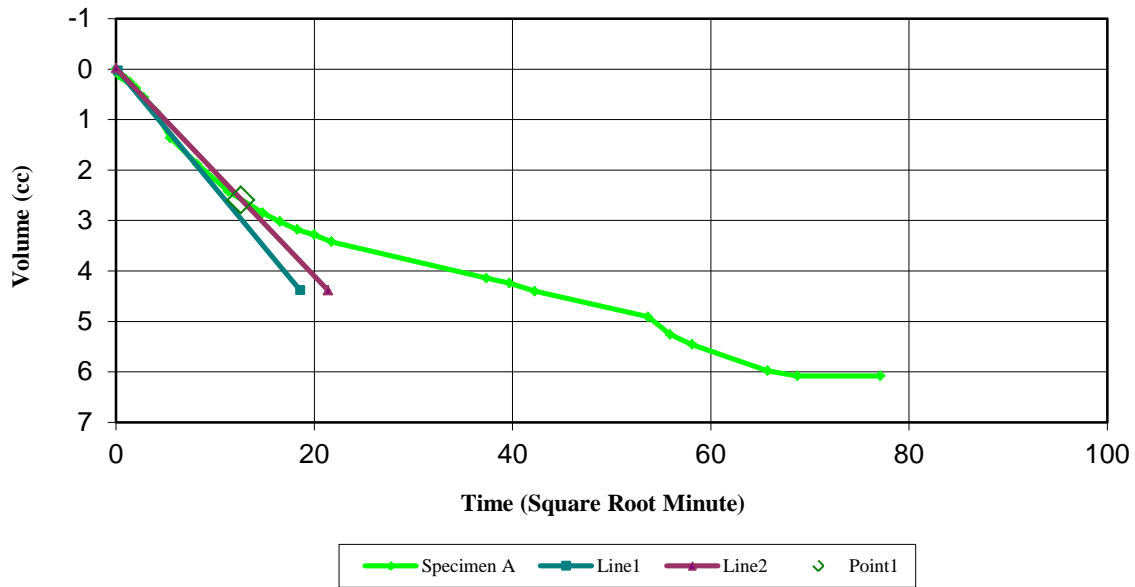
Stress Paths (Total)



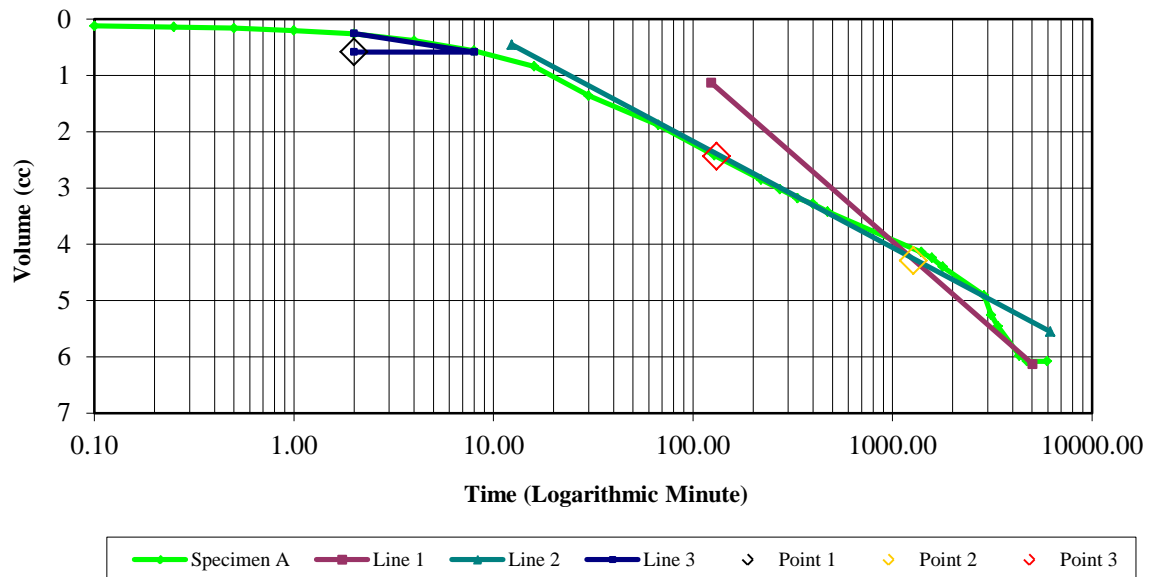


Specimen A Consolidation Graphs

Consolidation Graph (Square Root Time)



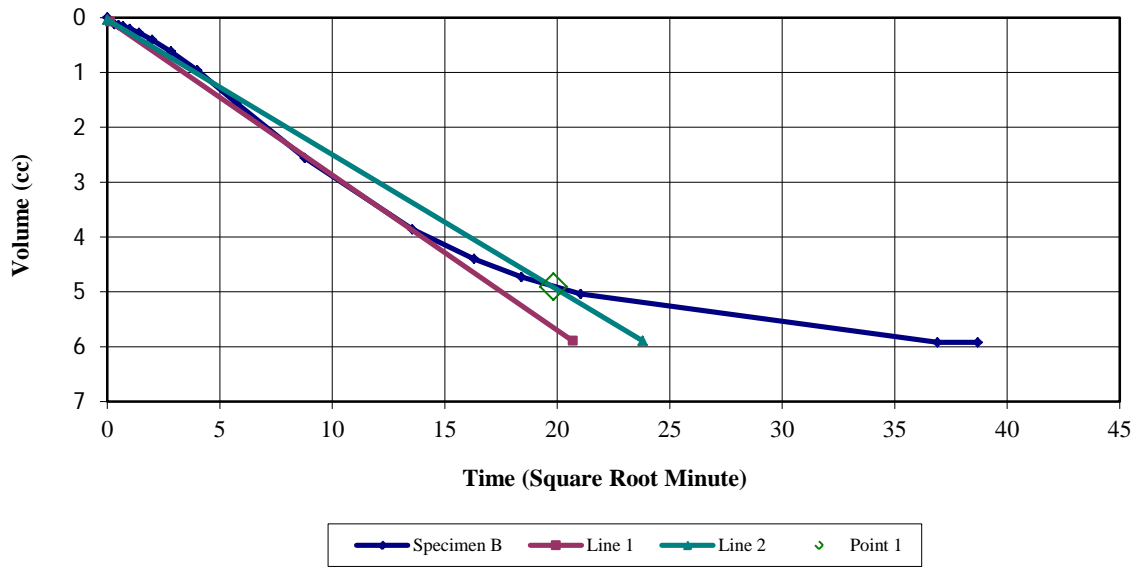
Consolidation Graph (Logarithmic Time)



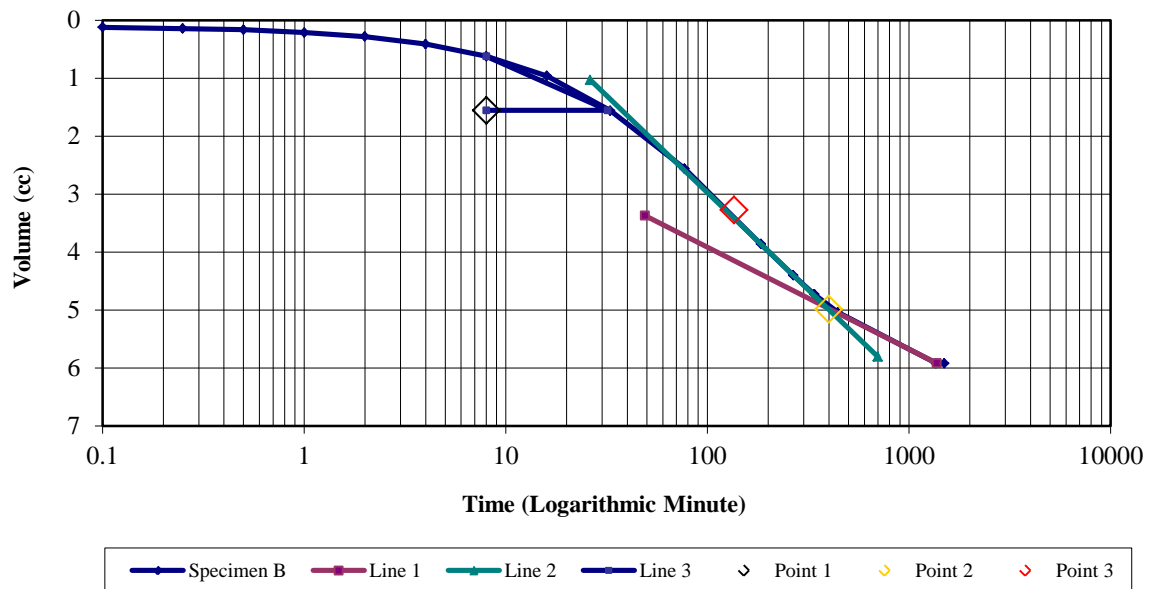


Specimen B Consolidation Graphs

Consolidation Graph (Square Root Time)



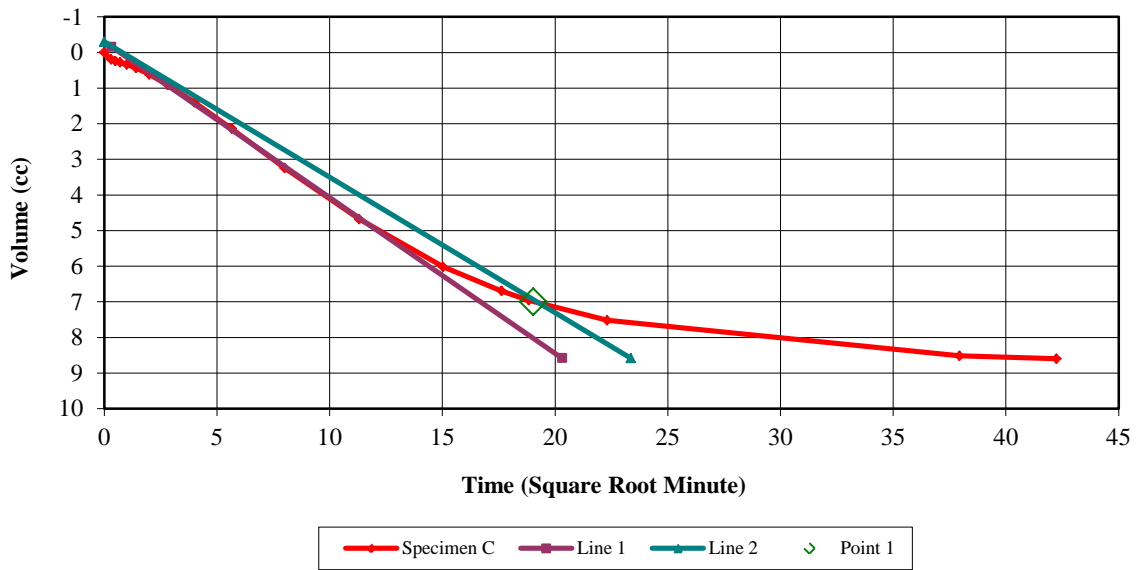
Consolidation Graph (Logarithmic Time)



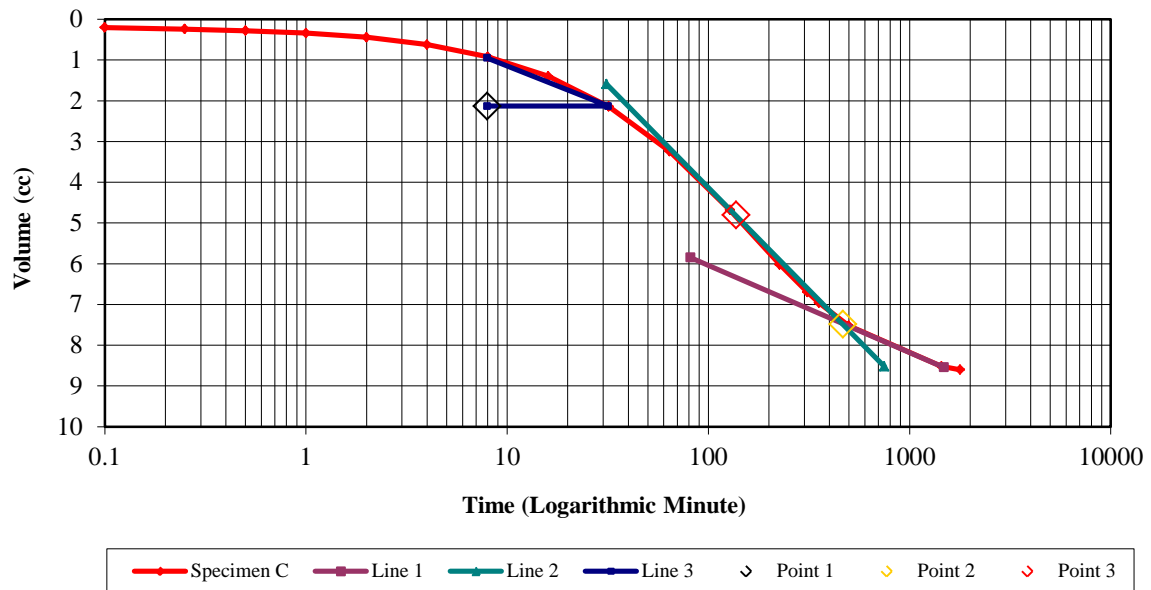


Specimen C Consolidation Graphs

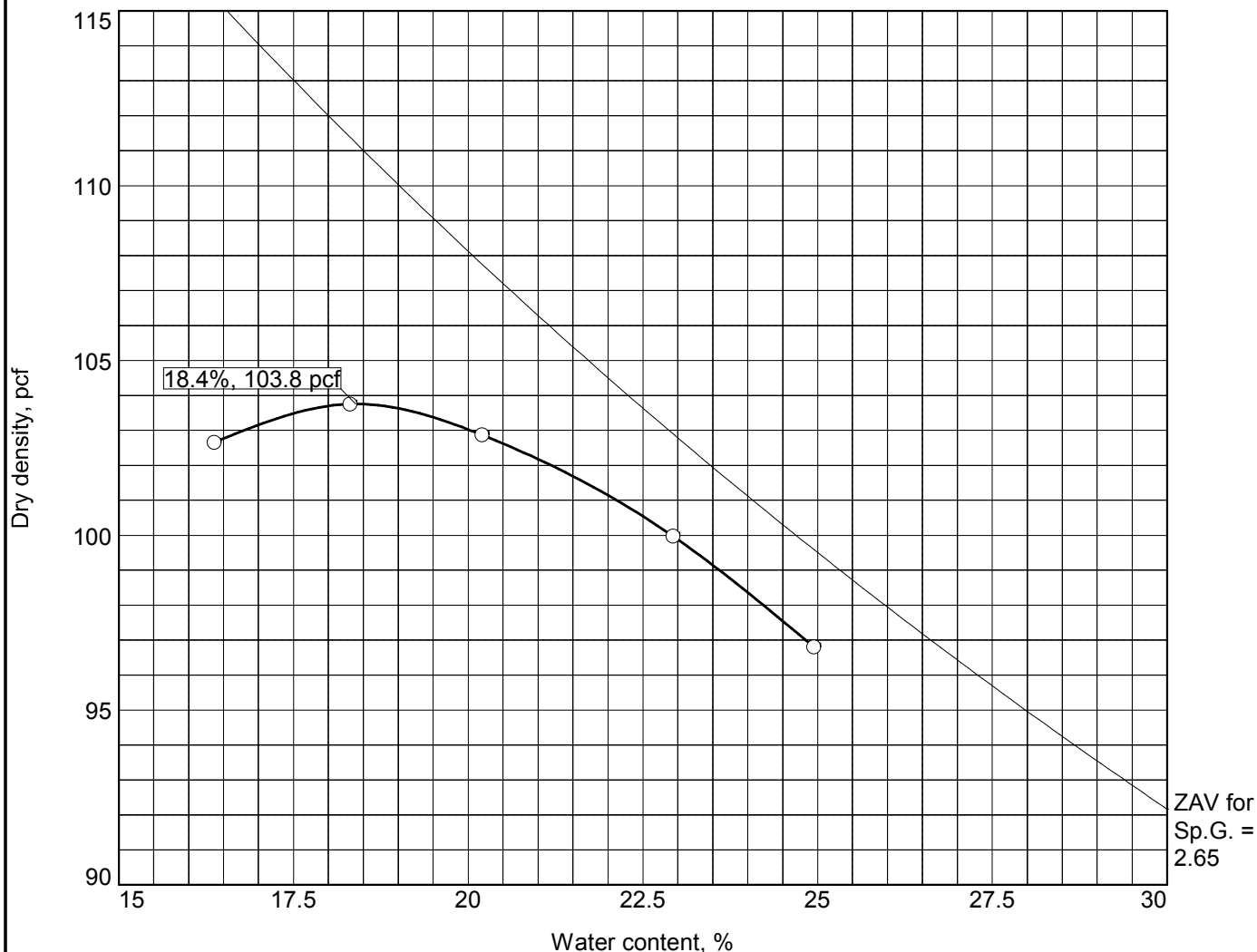
Consolidation Graph (Square Root Time)



Consolidation Graph (Logarithmic Time)



COMPACTION TEST REPORT



Test specification: ASTM D 698-07 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
N.A.	CH		18.5	2.65	56	32	2.6	75.0

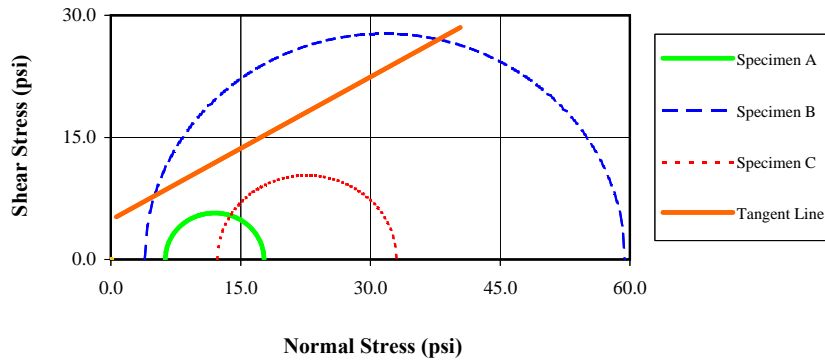
TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 103.8 pcf Optimum moisture = 18.4 %	Light Brown, Fat Clay with Sand.
Project No. 65N-0302 Client: SCDOT Project: Shady Grove Rd. S-80 Bridge Replacement <input type="radio"/> Loc.: Borrow Material Depth: N.A. Sample No.: RD-1	Remarks: Sample Received on 06/07/2012
<div><div>FROEHLING & ROBERTSON, INC.</div><div>Figure01</div></div>	

Figure 01

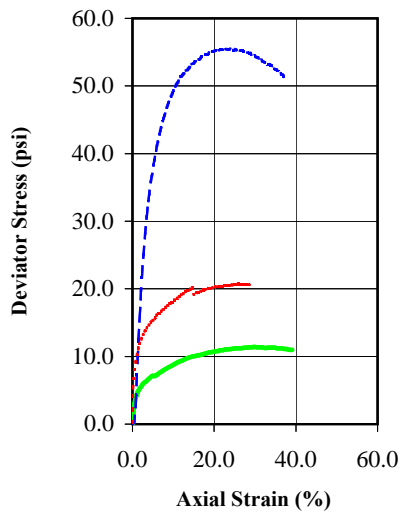
Tested By: E.Hofmann Checked By: D.Jenks

Soil Consultants, Inc.
Consolidated Undrained Triaxial Test (ASTM D4767)

Effective Stress at Maximum Deviator Stress Criterion



Deviator Stress Vs. Axial Strain



	Specimen			D
Initial	A	B	C	
Water Content (%)	11.7	12.2	13.2	
Dry Density (pcf)	110.7	109.0	107.6	
Saturation (%)	62.48	62.59	65.14	
Void Ratio	0.492	0.515	0.535	
Diameter (in)	1.406	1.406	1.406	
Height (in)	3.469	3.469	3.469	
Specific Gravity	2.65	2.65	2.65	
Liquid Limit	0	0	0	
Plastic Limit	0	0	0	
After Consolidation	A	B	C	D
B-Value	98.00	98.00	98.00	
Water Content (%)	11.5	11.7	12.3	
Dry Density (pcf)	106.09	106.17	106.50	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.559	0.558	0.553	
Effective Stress (psi)	1.0	3.4	7.4	
Back Press. (psi)	31.0	30.6	30.6	
Rate of Strain	0.00387	0.00359	0.00198	

Maximum Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	6.3	σ'_1 at Failure (psi)	17.70	59.41	33.00	
C' (psi)	4.9	σ'_3 at Failure (psi)	6.30	3.89	12.30	
ϕ (deg)	31.8					
ϕ' (deg)	30.3					

Project: SC-80 Shady Grove Road
Location: RW-7
Project Number: 120028
Boring Number: RW-7
Sample Number: RW-7
Depth: NA
Sample Type: Remolded
Description: Red clay with sand
Test Type: Consolidated Undrained
Remarks:



Failure Photographs

Tested
 By:

Date:

Checked By:

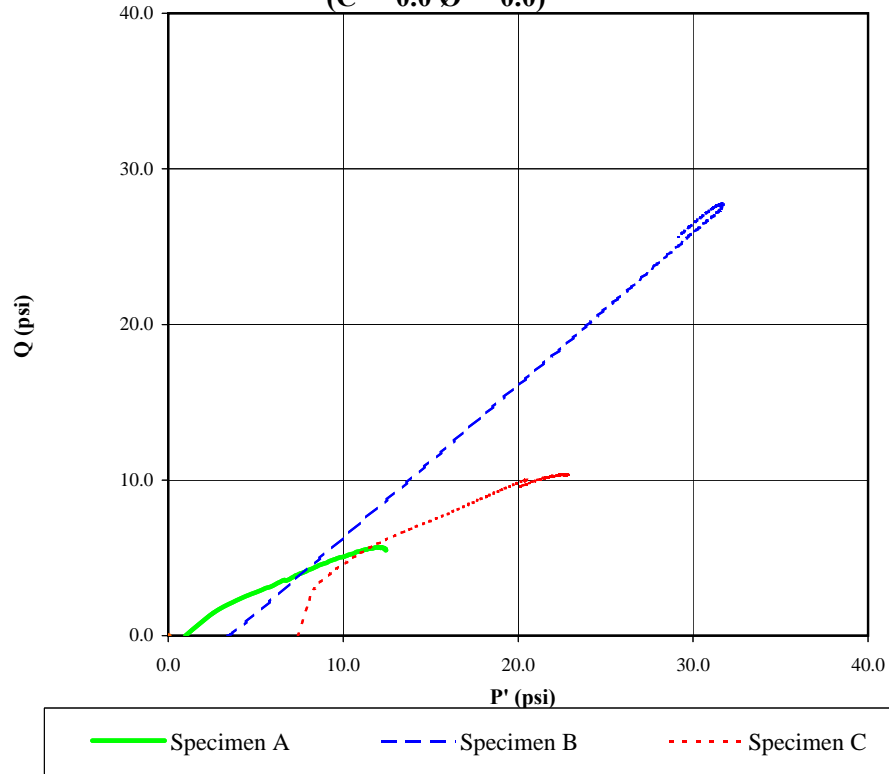
Date:

Soil Consultants, Inc.
Consolidated Undrained Triaxial Test (ASTM D4767)

Stress Paths (Effective)
($C' = 0.0$ $\phi' = 0.0$)

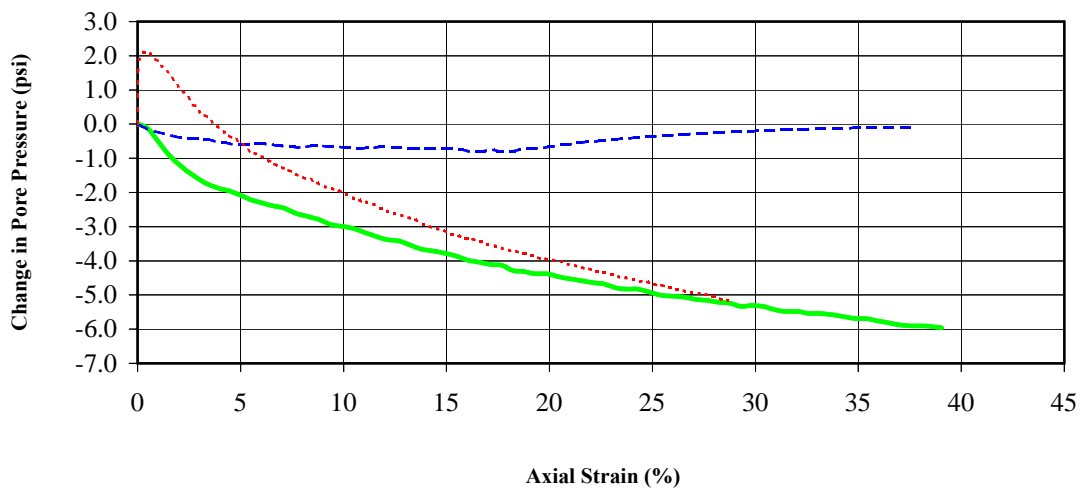
Date:

Checked By:



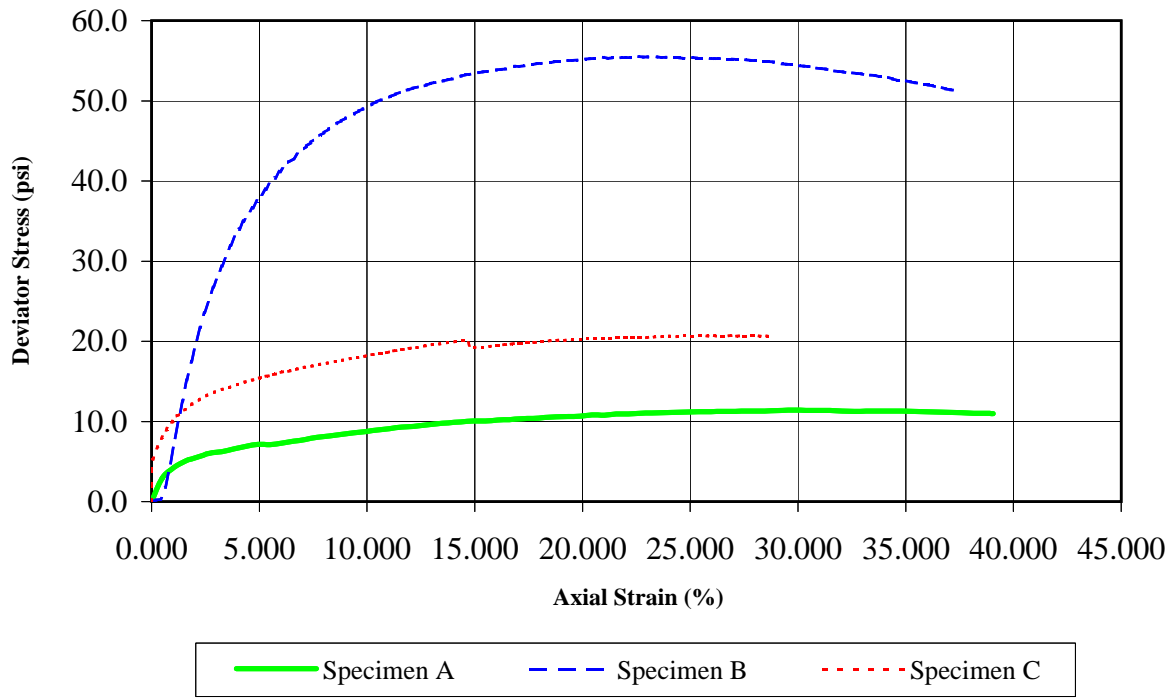
Change in Pore Pressure vs. Axial Strain

Date:

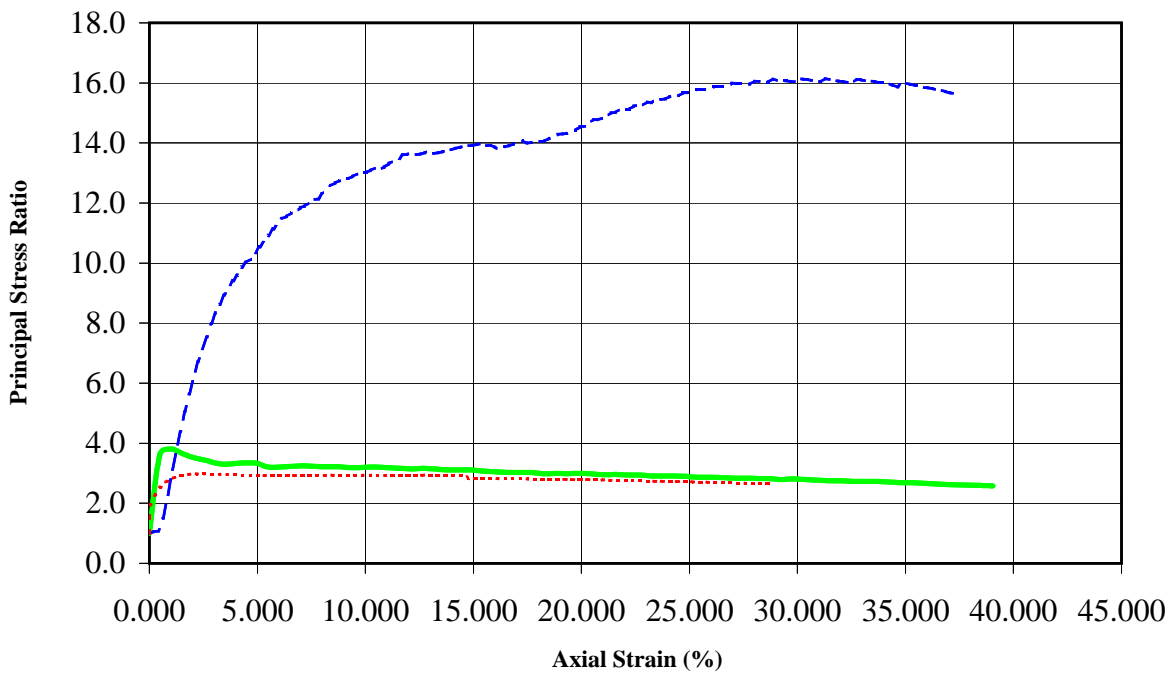


Tested By:

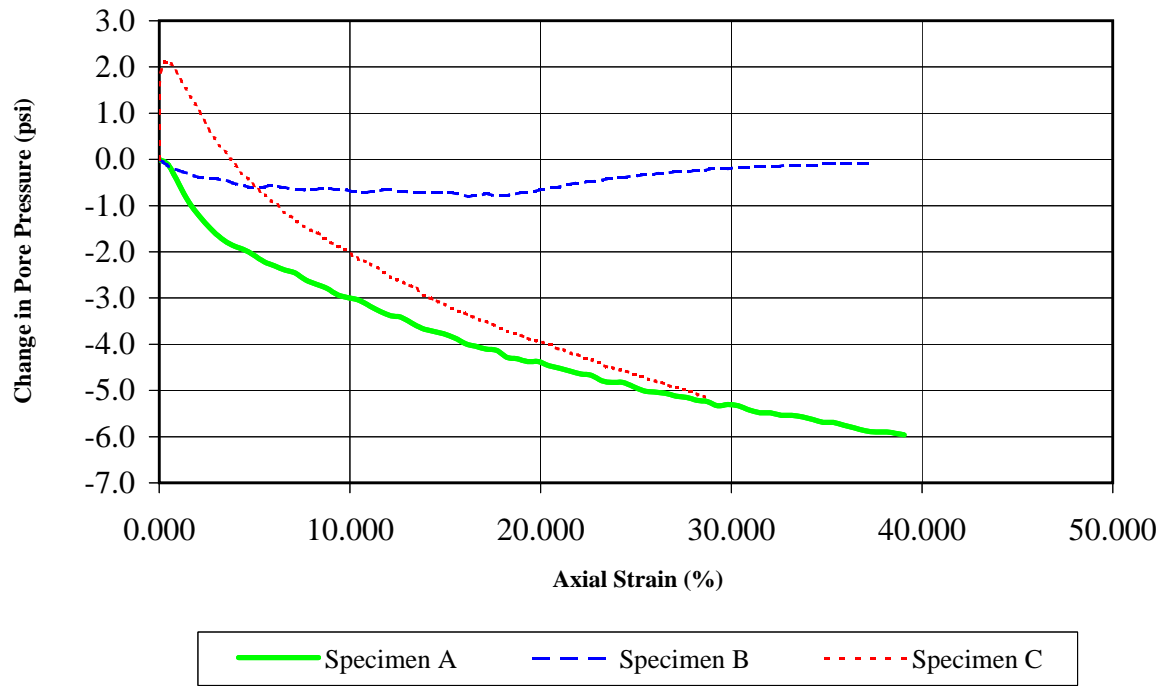
Deviator Stress vs. Axial Strain



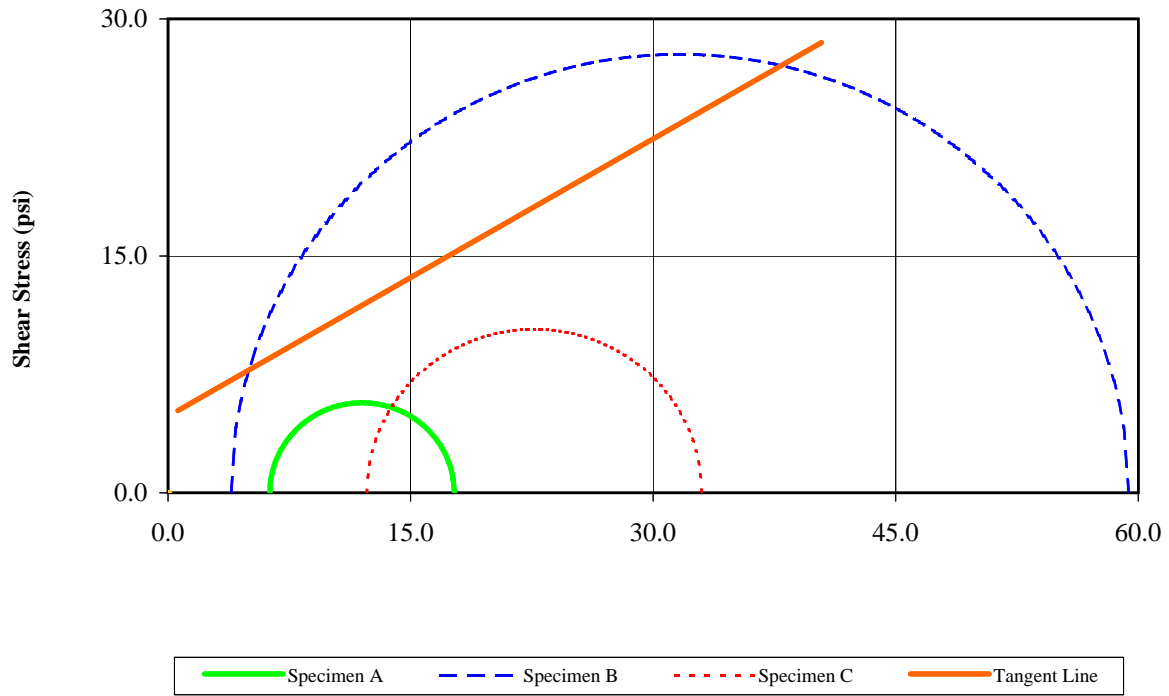
Principal Stress Ratio vs. Axial Strain



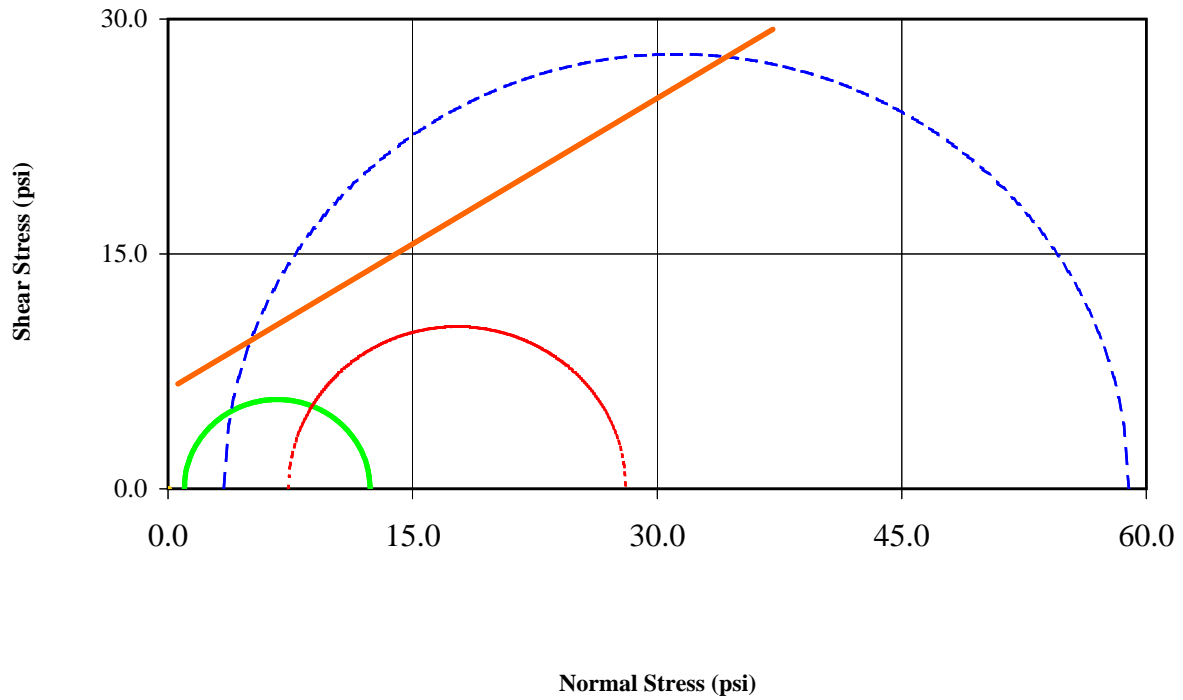
Change in Pore Pressure vs. Axial Strain



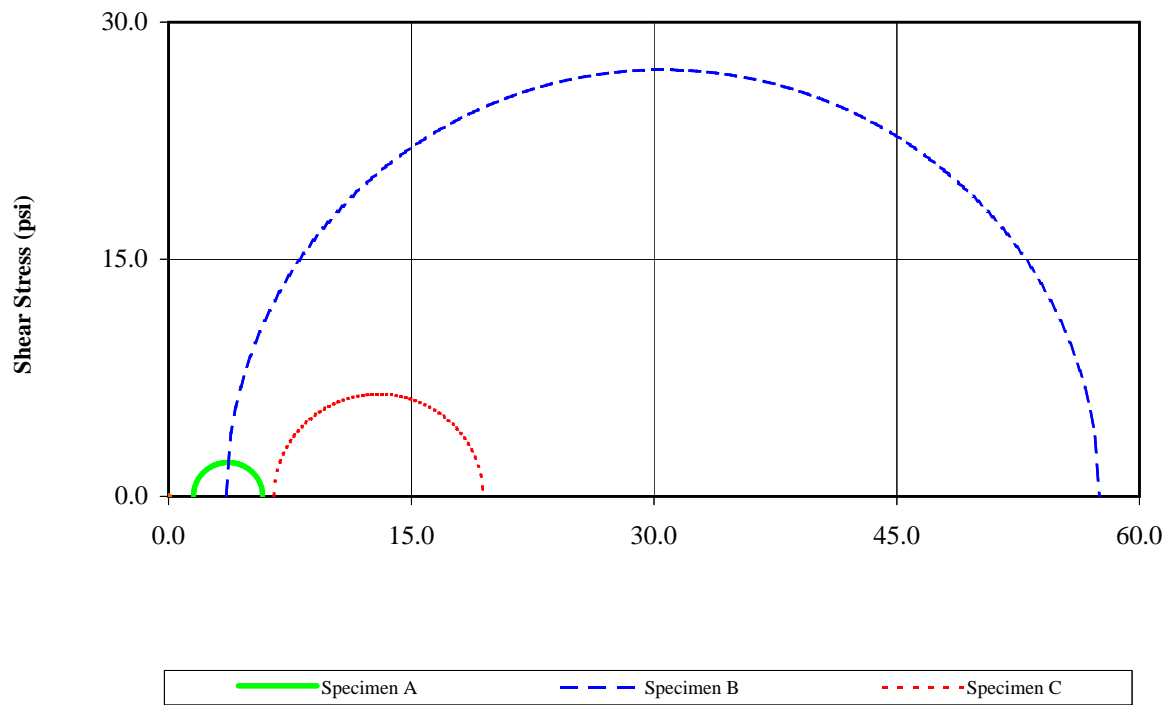
Mohr Stress Circles at Maximum Deviator Stress Criterion **Effective Stress** **($C' = 4.9$ $\phi' = 30.3$)**



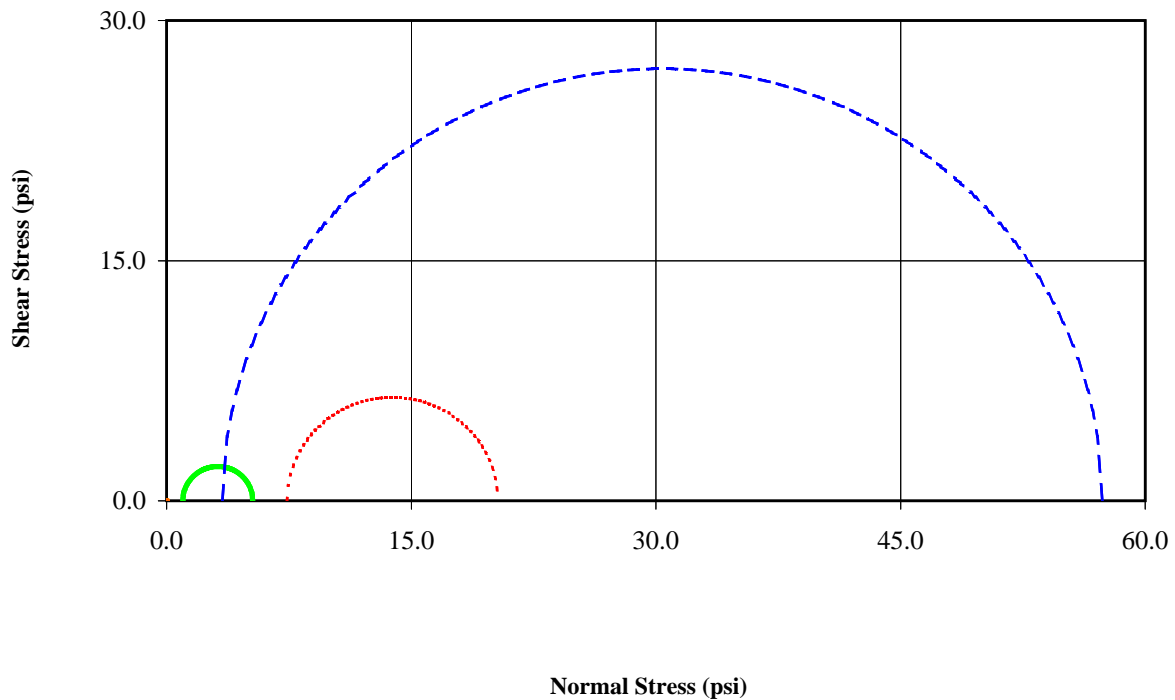
Total Stress **($C = 6.3$ $\phi = 31.8$)**



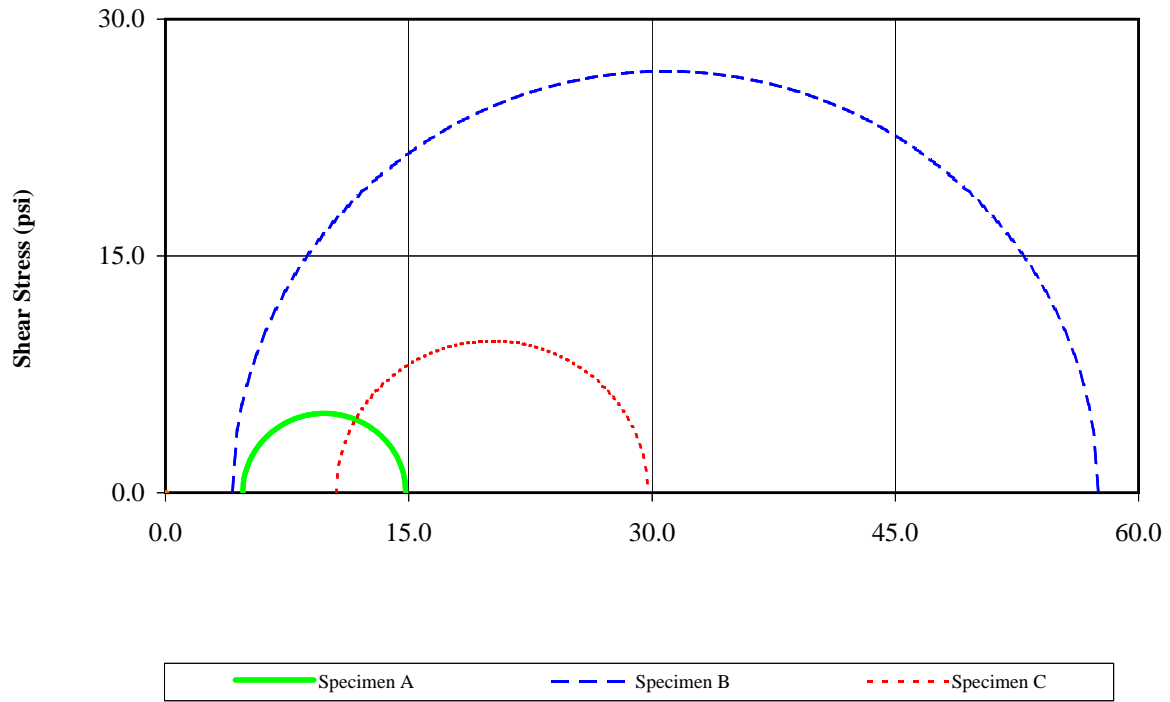
Mohr Stress Circles at Maximum Principal Stress Ratio Criterion
Effective Stress
($C' = 0.0$ $\phi' = 0.0$)



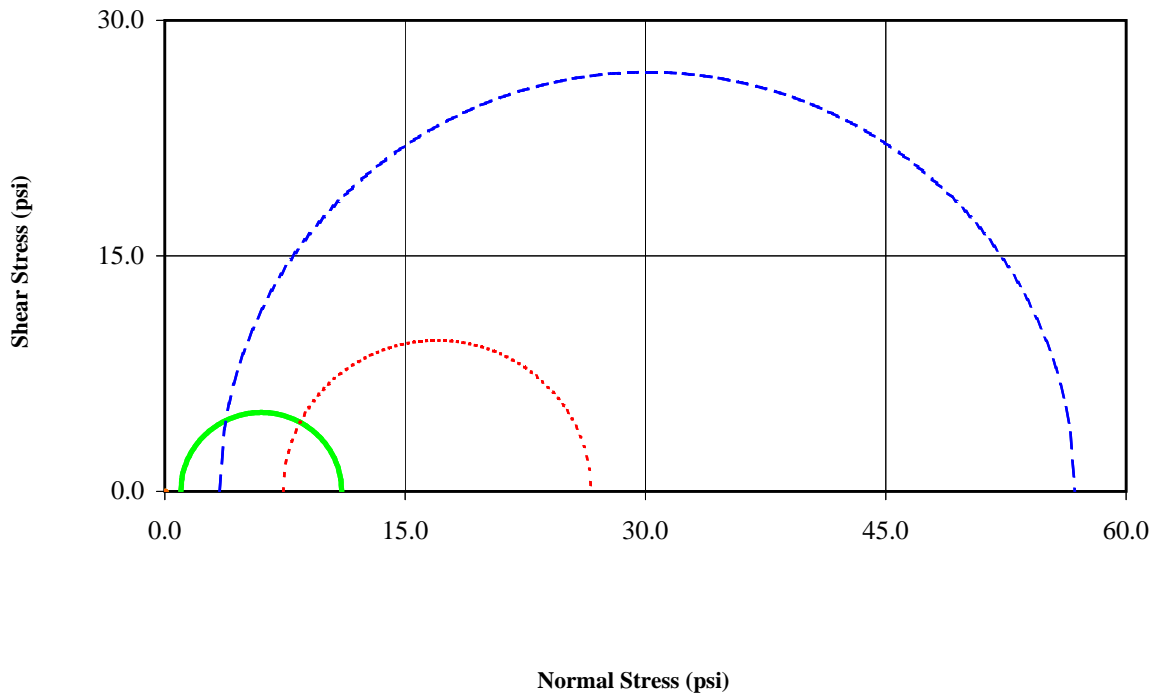
Total Stress
($C = 0.0$ $\phi = 0.0$)



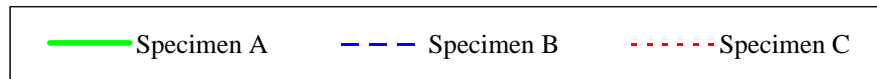
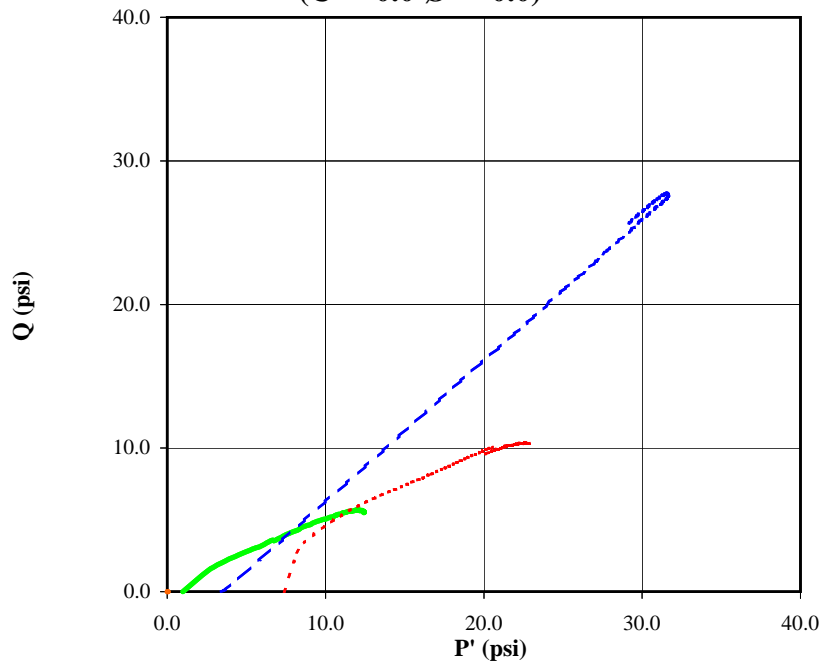
Mohr Stress Circles at 15% Axial Strain Criterion
Effective Stress
(C' = 0.0 Ø' = 0.0)



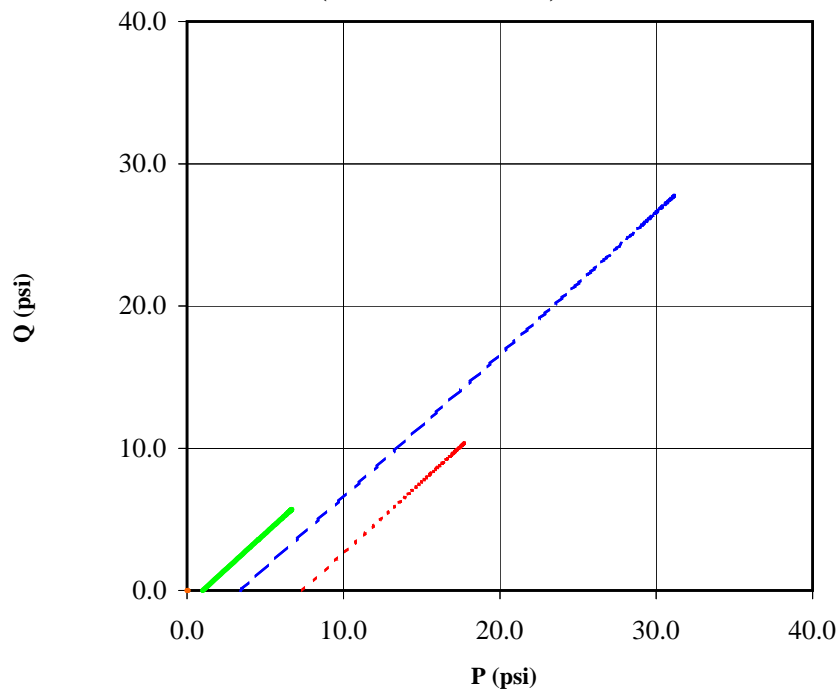
Total Stress
(C = 0.0 Ø = 0.0)

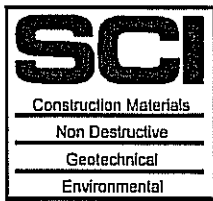


Stress Paths (Effective)
($C' = 0.0$ $\phi' = 0.0$)



Stress Paths (Total)
($C' = 0.0$ $\phi' = 0.0$)





SOIL CONSULTANTS, INC.

ENGINEERS AND GEOLOGISTS

SINCE 1951

P.O. Drawer 698 • CHARLESTON, SC 29402 • (843) 723-4539 • Fax (843) 723-3648

www.soilconsultantsinc.com

Acct. No: FR012
Report Date: 07/02/2012
Project: SC-80 (Shady Grove Road Project) - Richland County, SC
Location: RW-7

Project No: 120028

Date Sampled: 06/05/2012
Sampled By: Client
By Order Of: Client
Order Number:

Client: FROEHLING & ROBERTSON, INC.

REPORT: Proctor

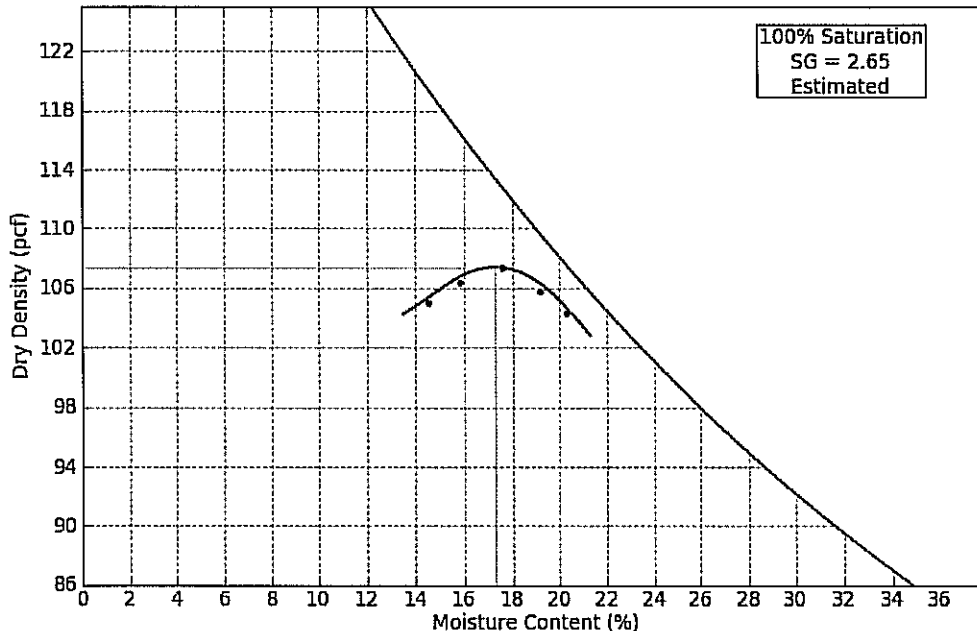
LAB NO: 24333-1
Test Method: See Below

TEST RESULTS

Report No: 24333-1
Page 1 of 1

Visual Classification: Red clay with sand content.
Supplier: On site Material
Material Application:

Rammer Type: Mechanical
Prep. Method: Dry



Test Results:

Maximum Dry Unit Weight: 107.4 pcf
Optimum Water Content: 17.3 %

Properties:

Liquid Limit
Plastic Limit
Plasticity Index

Test Methods: ASTM D-698 Method-A

Orig: FROEHLING & ROBERTSON, INC. (Greenville, SC)
Attn: Mr. Ross R. Deaver P.E.
(1-cc copy)

Respectfully Submitted,
SOIL CONSULTANTS, INC.

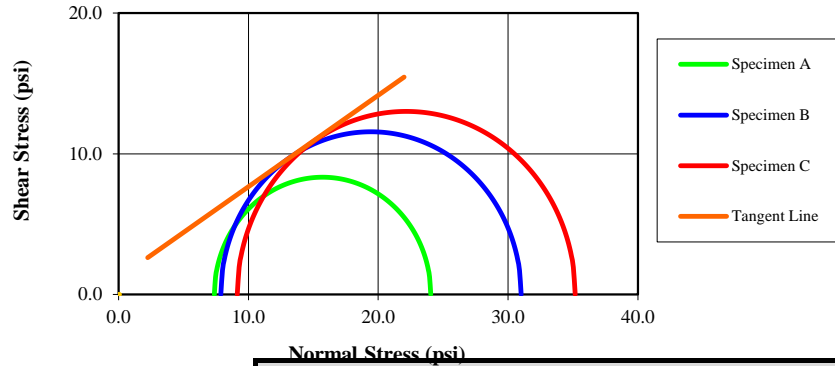




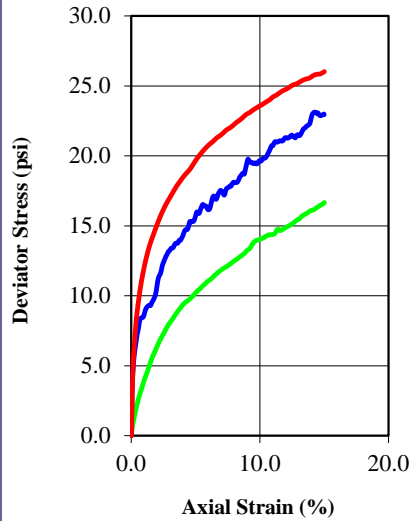
FROEHLING & ROBERTSON

Consolidated Undrained Triaxial Test (ASTM D4767)

Effective Stress at Maximum Deviator Stress Criterion



Deviator Stress Vs. Axial Strain



	Specimen			
	Initial	A	B	C
Water Content (%)	13.2	13.2	13.5	
Dry Density (pcf)	115.0	114.4	112.8	
Saturation (%)	79.8	78.3	76.9	
Void Ratio	0.436	0.443	0.464	
Diameter (in)	2.862	2.864	2.863	
Height (in)	5.848	5.861	5.846	
Specific Gravity (Assumed)	2.65	2.65	2.65	
Liquid Limit	34	34	34	
Plastic Limit	22	22	22	
After Consolidation				
B-Value	95	96	95	
Water Content (%)	12.9	12.6	13.0	
Dry Density (pcf)	113.3	113.2	114.4	
Saturation (%)	100	100	100	
Void Ratio	0.460	0.462	0.446	
Effective Stress (psi)	2.6	4.4	8.7	
Back Press. (psi)	55.7	72.5	93.3	
Rate of Strain	0.00084	0.00036	0.001	

Maximum Deviator Stress Criterion		After Shear			
		A	B	C	
C (psi)	8.5	σ'_1 at Failure (psi)	24.05	31.01	35.17
C' (psi)	1.2	σ'_3 at Failure (psi)	7.38	7.88	9.14
ϕ (deg)	12.4				
ϕ' (deg)	33.0				

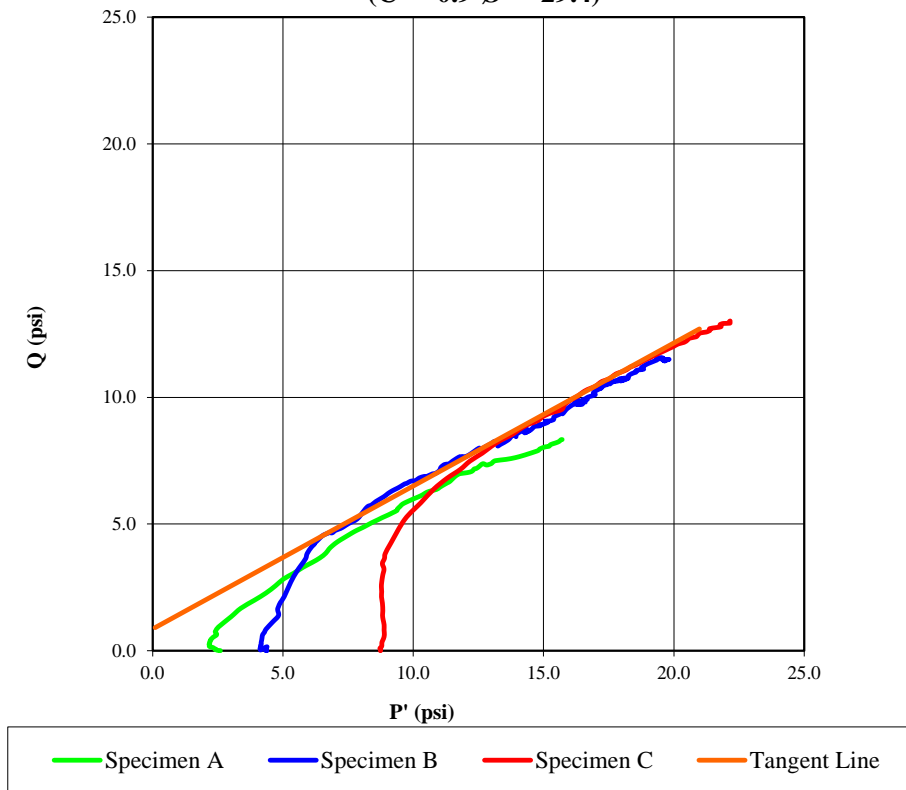
Project:	Shelby Grove Rd. (I-80) Bridge Replacement	N/A	N/A	N/A	N/A
Location:	Columbia, South Carolina				
Project Number:	65N-0302				
Boring Number:	N.A.				
Sample Number:	RW-20				
Depth:	N.A.	Failure Photographs			
Sample Type:	Remolded				
Description:	Brown, Sandy Lean Clay				
Test Type	Consolidated Undrained				
USCS:	CL				



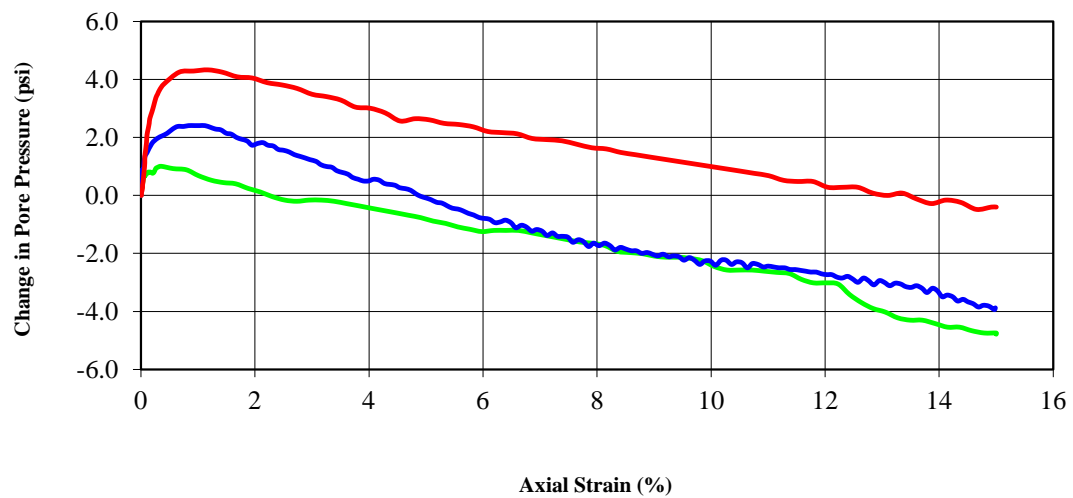
FROEHLING & ROBERTSON

Consolidated Undrained Triaxial Test (ASTM D4767)

Stress Paths (Effective) ($C' = 0.9$ $\phi' = 29.4$)

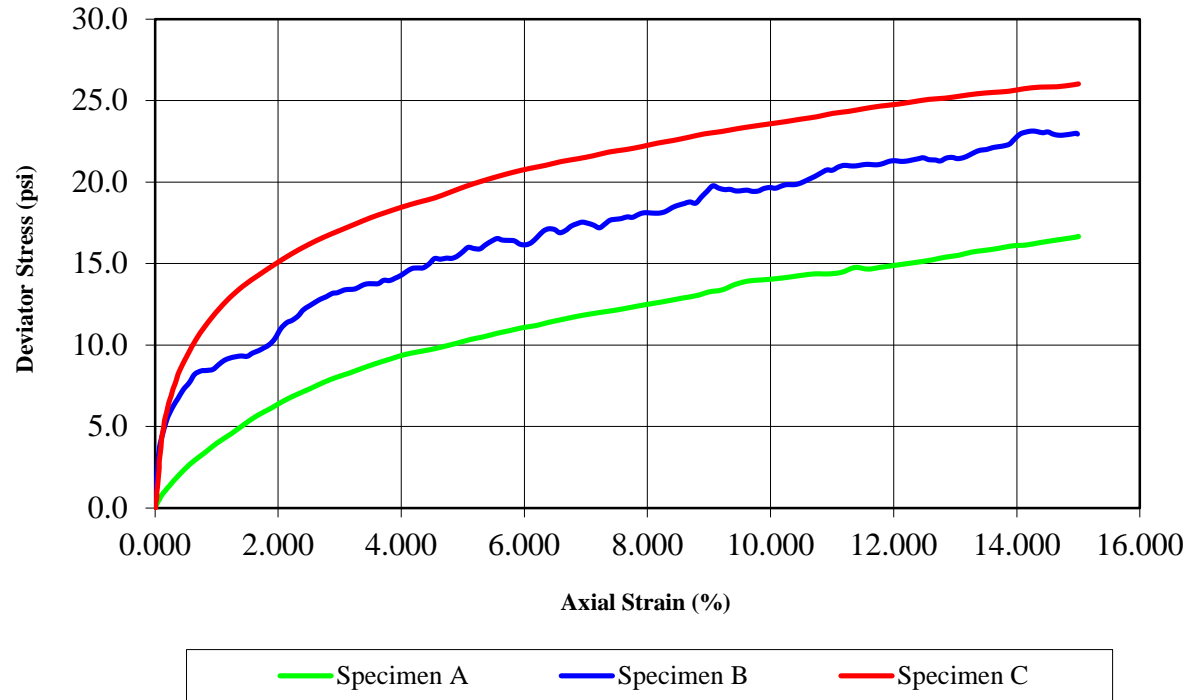


Change in Pore Pressure vs. Axial Strain

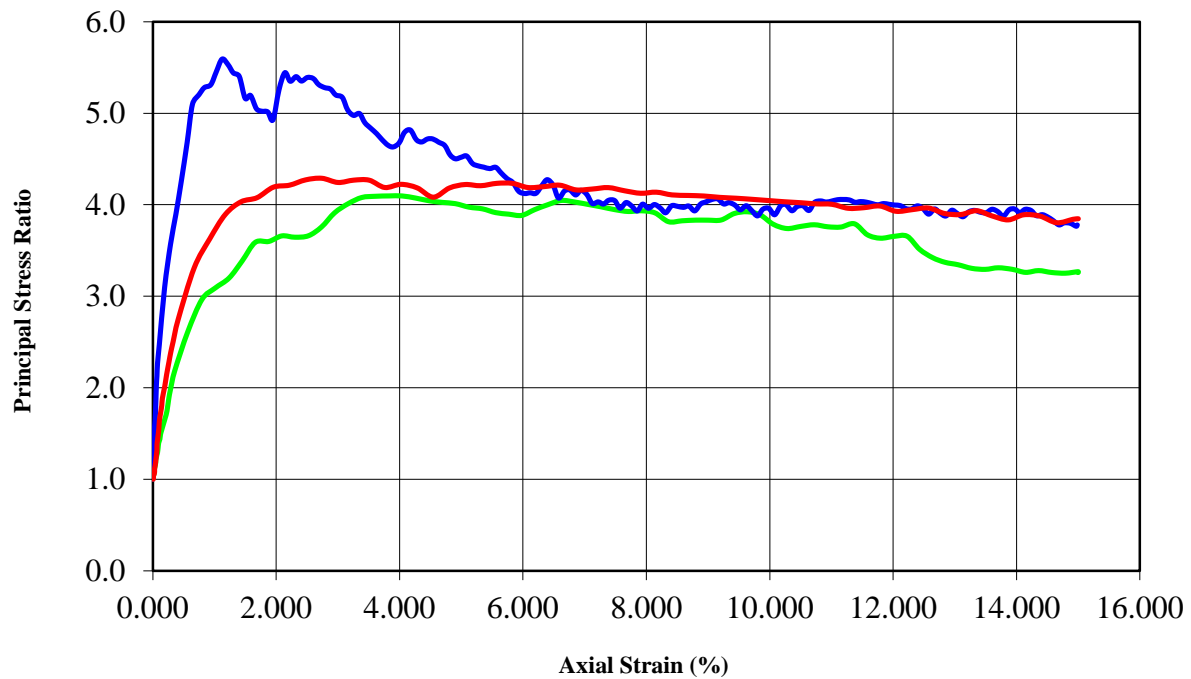




Deviator Stress vs. Axial Strain

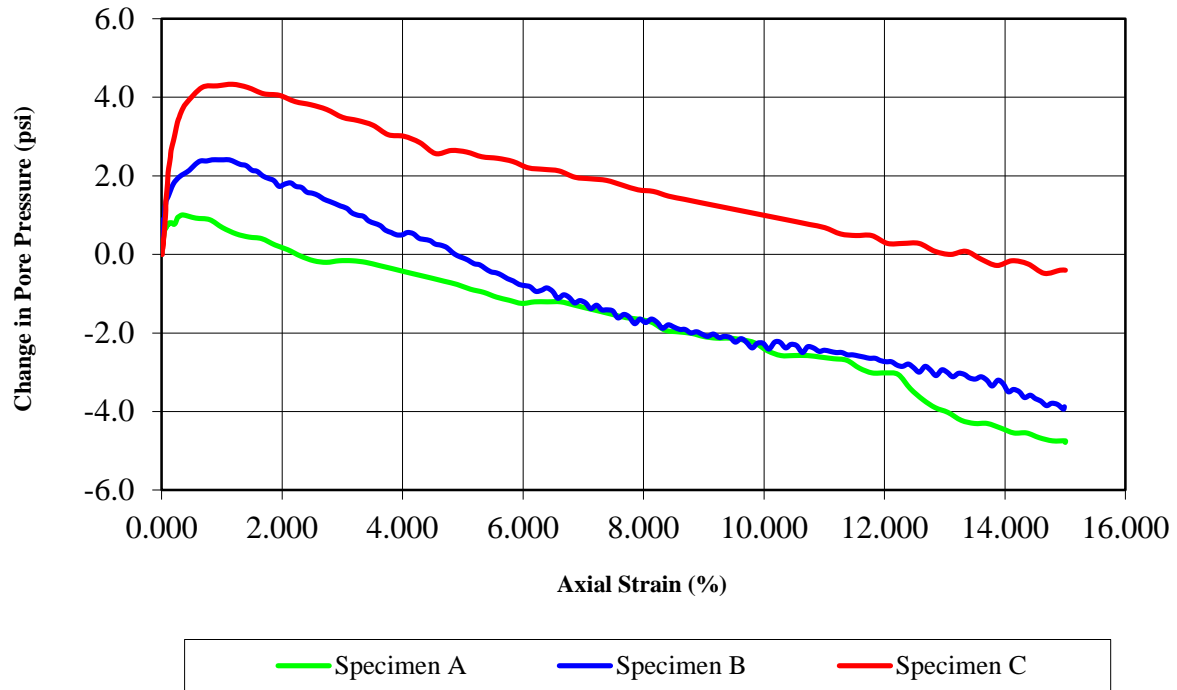


Principal Stress Ratio vs. Axial Strain



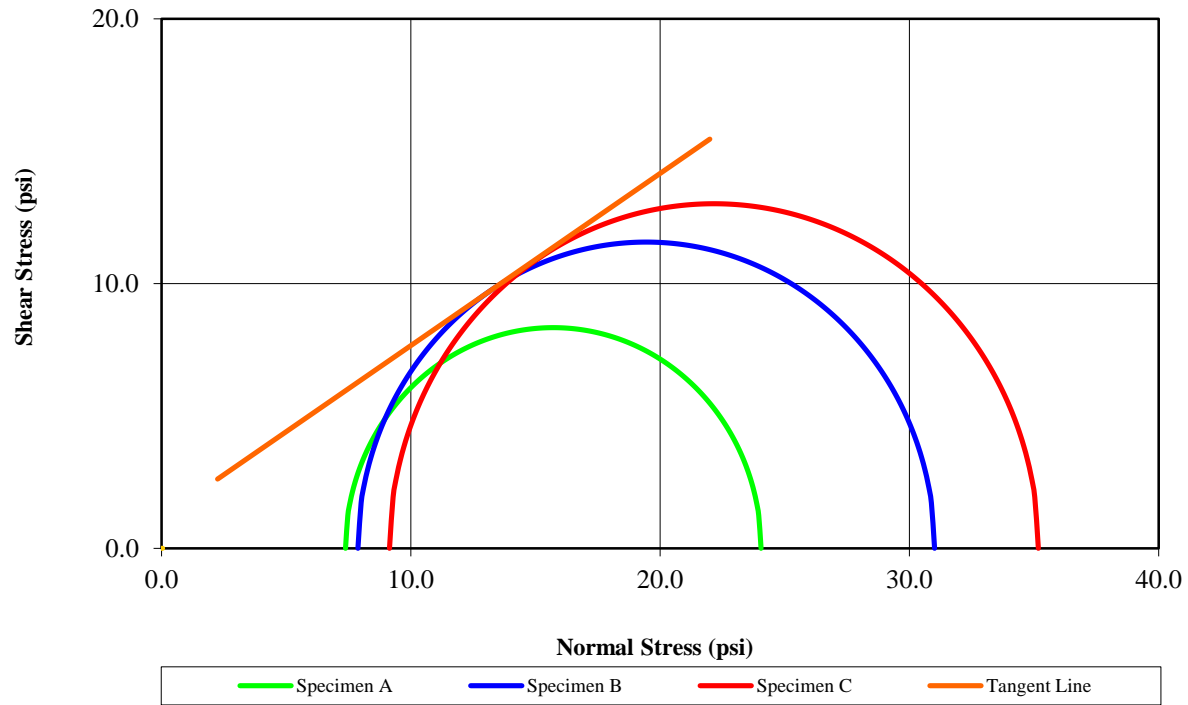


Change in Pore Pressure vs. Axial Strain

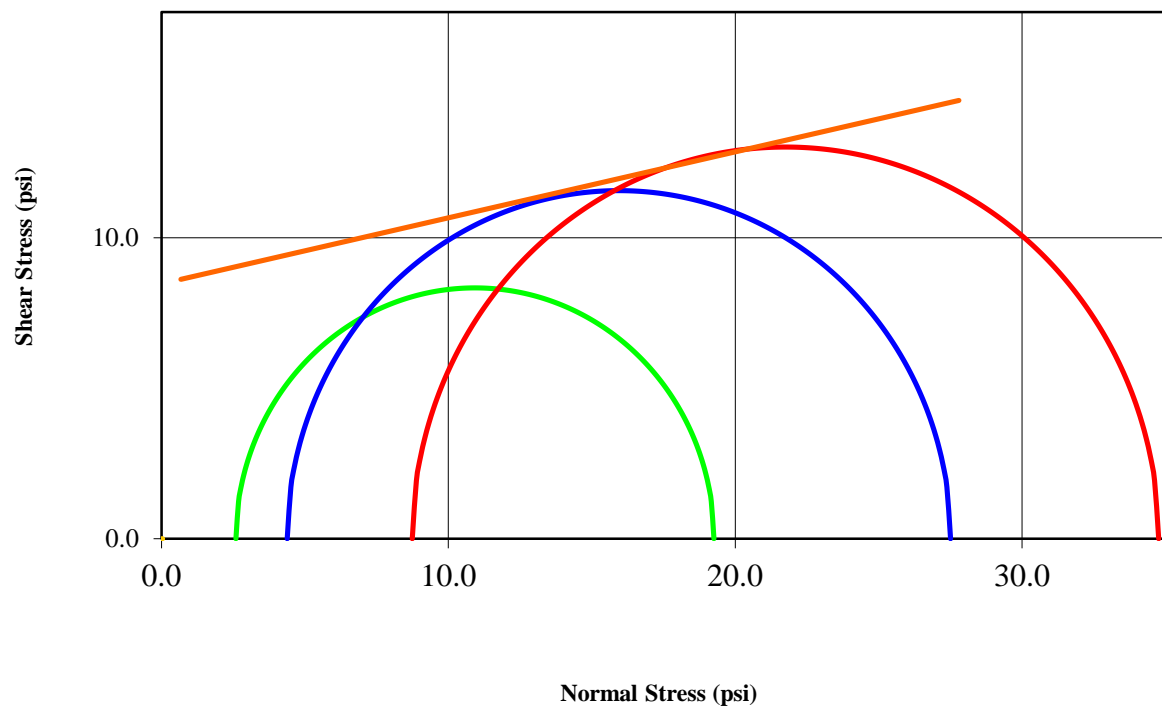




Mohr Stress Circles at Maximum Deviator Stress Criterion
Effective Stress
($C' = 1.2$ $\phi' = 33.0$)



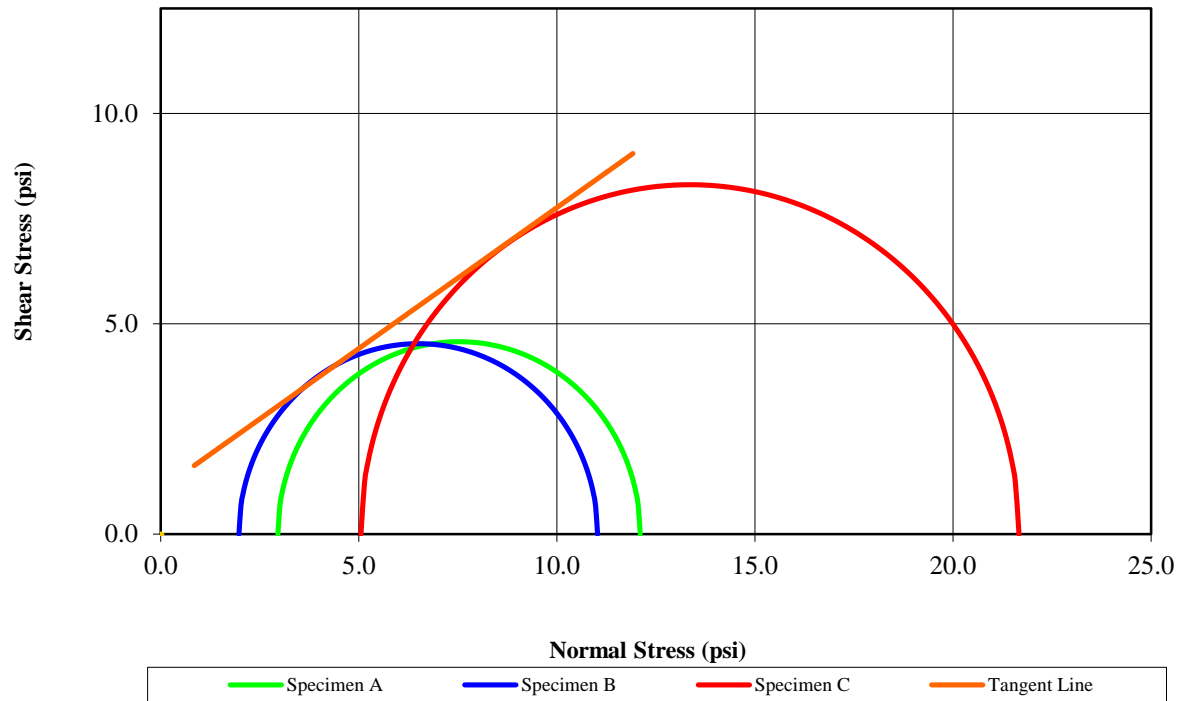
Total Stress
($C = 8.5$ $\phi = 12.4$)



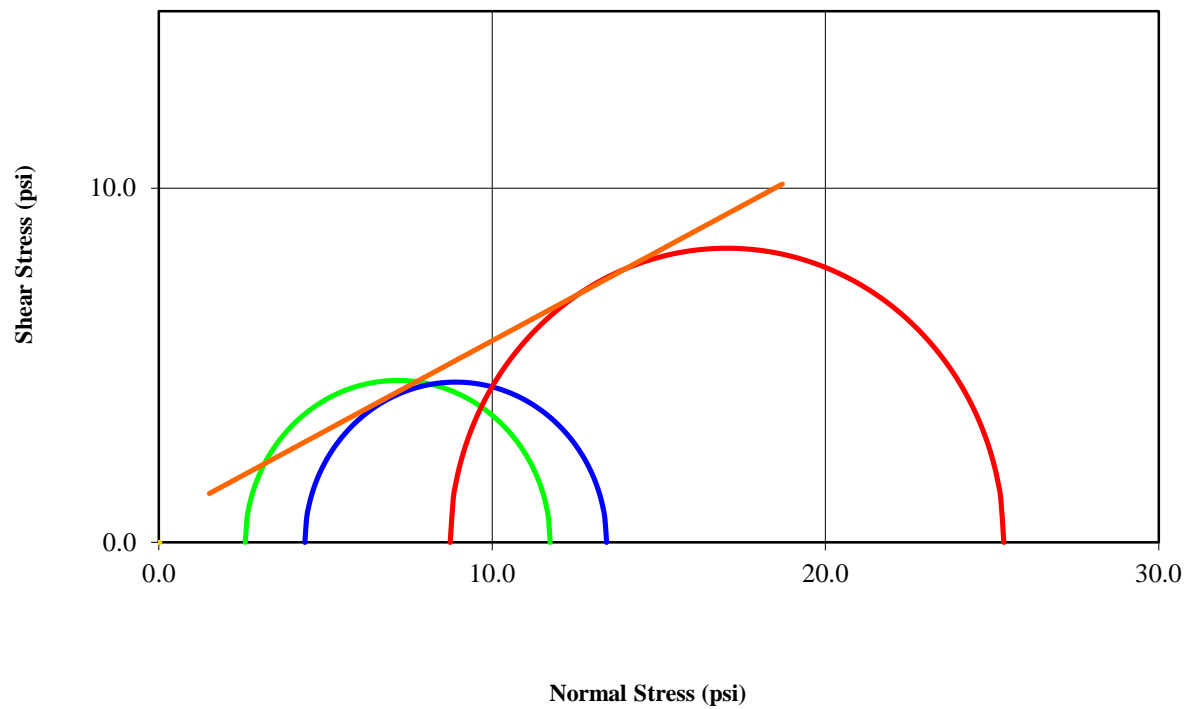


Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

Effective Stress
($C' = 1.1 \text{ } \phi' = 33.8$)

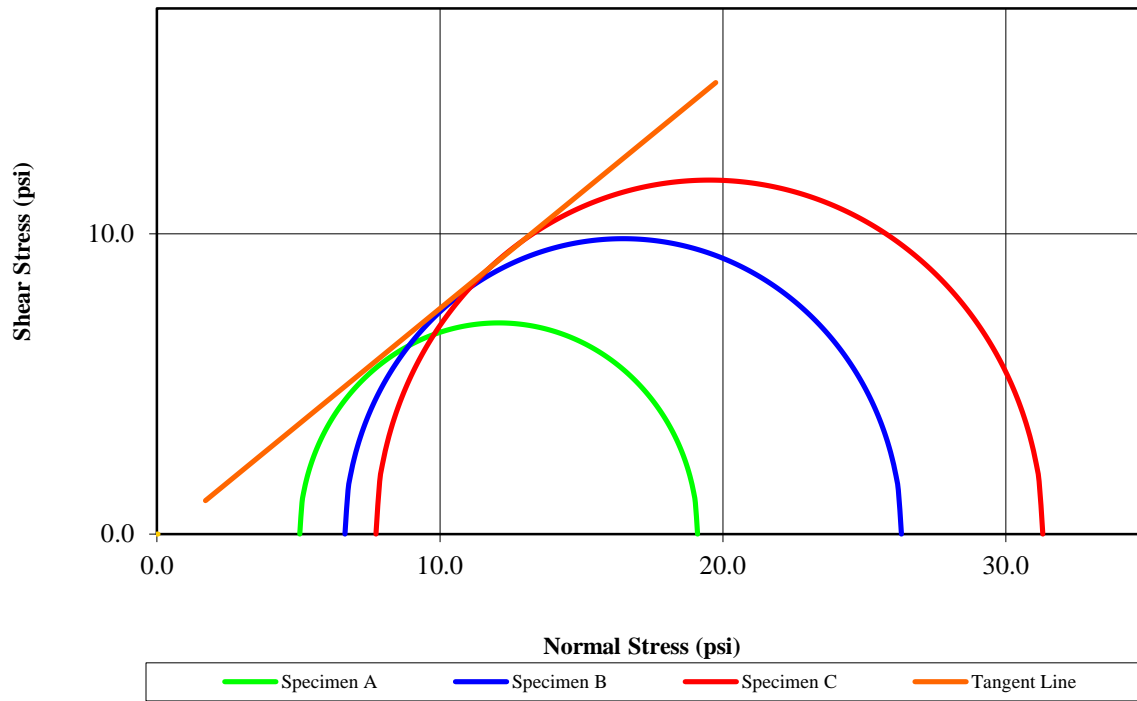


Total Stress ($C = 0.6 \text{ } \phi = 26.9$)

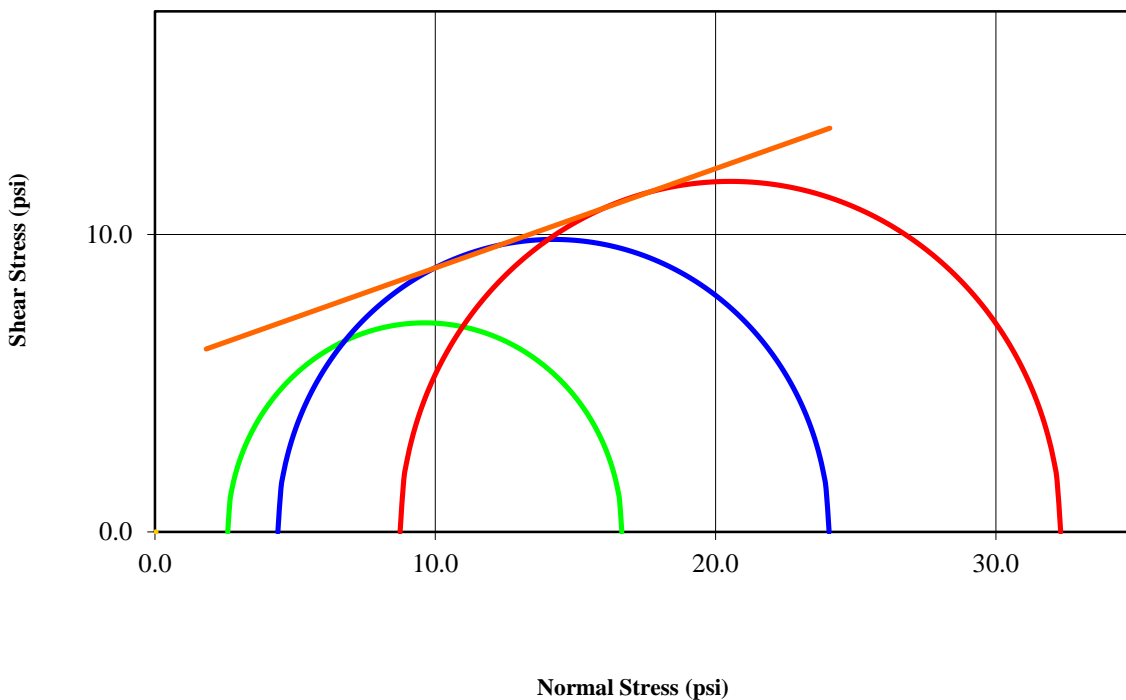




Mohr Stress Circles at 10% Axial Strain Criterion
Effective Stress
($C' = -0.2$ $\phi' = 37.7$)

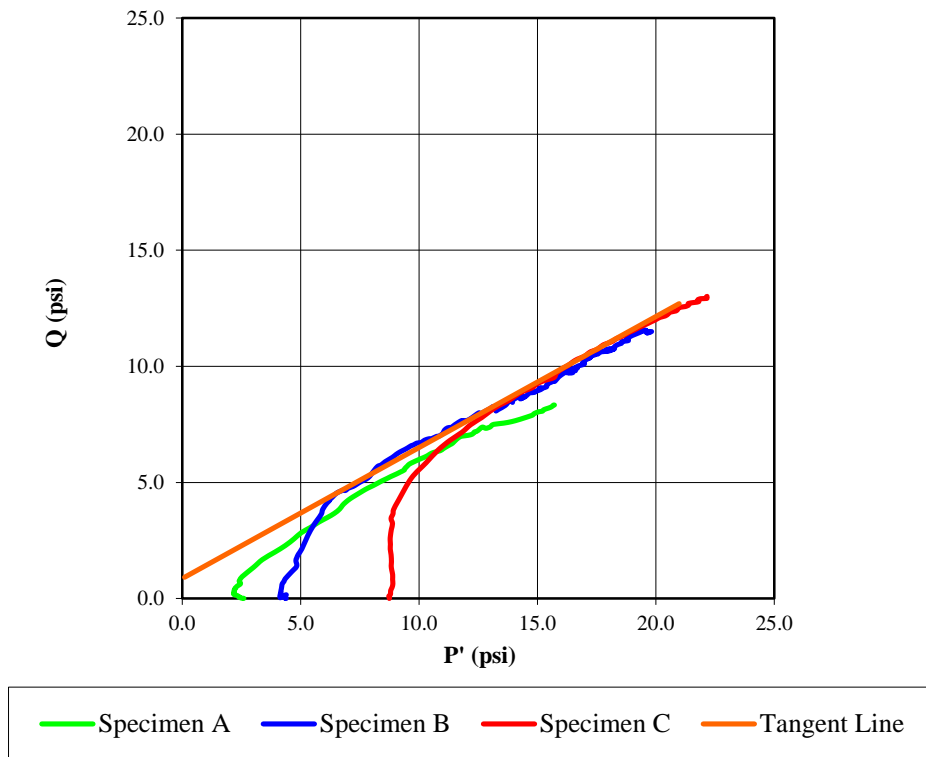


Total Stress
($C = 5.5$ $\phi = 18.5$)

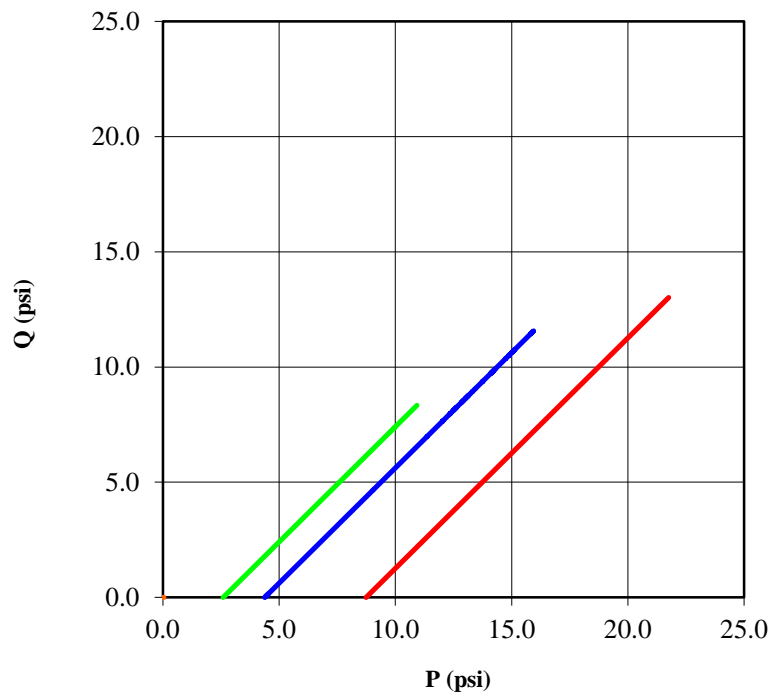




Stress Paths (Effective)
($C' = 0.9$ $\phi' = 29.4$)



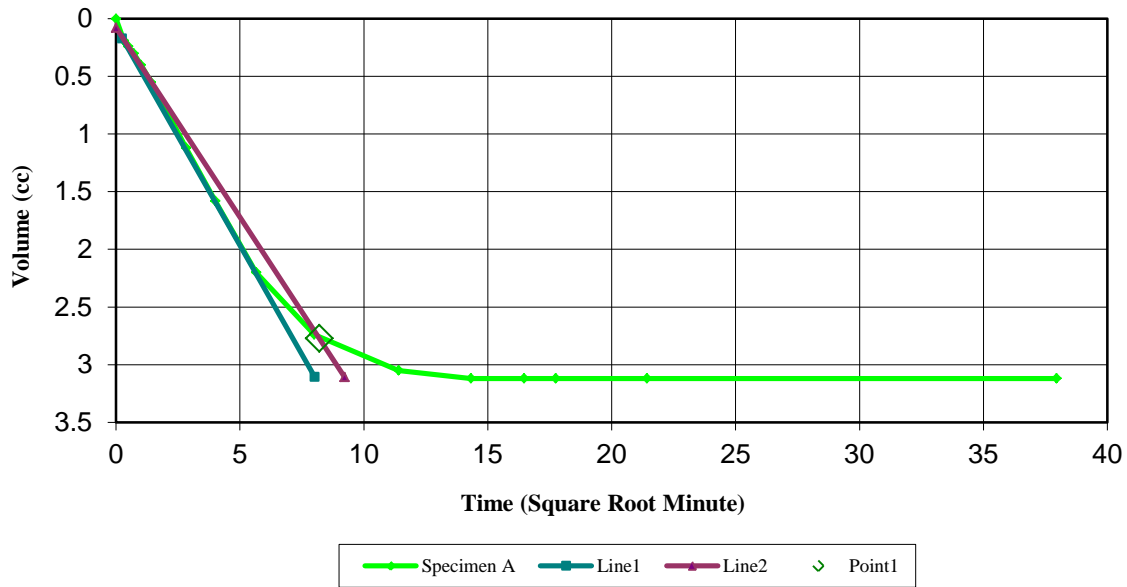
Stress Paths (Total)



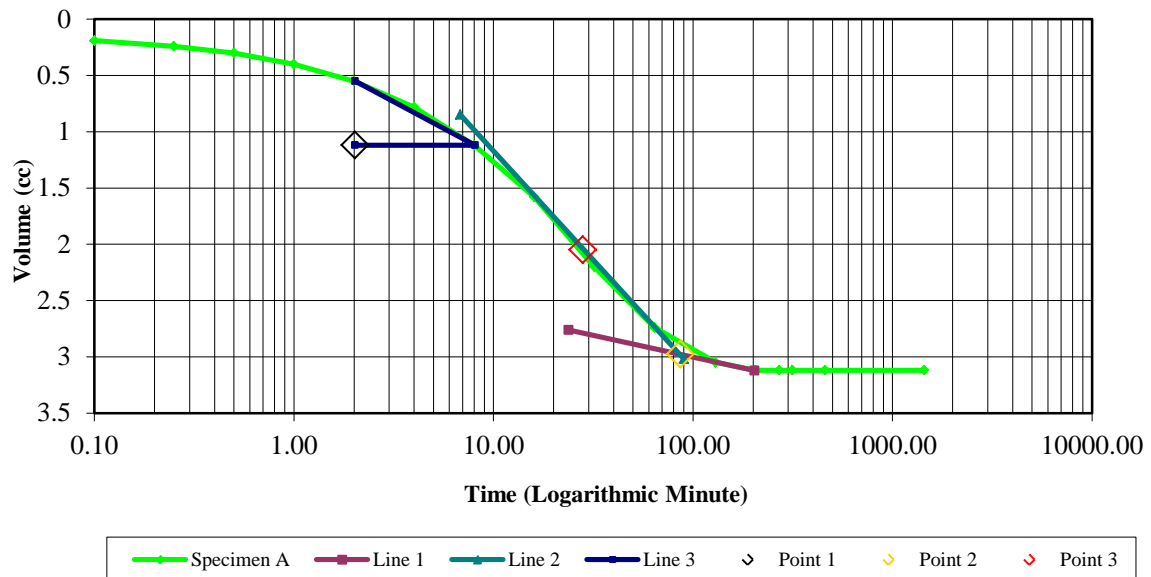


Specimen A Consolidation Graphs

Consolidation Graph (Square Root Time)



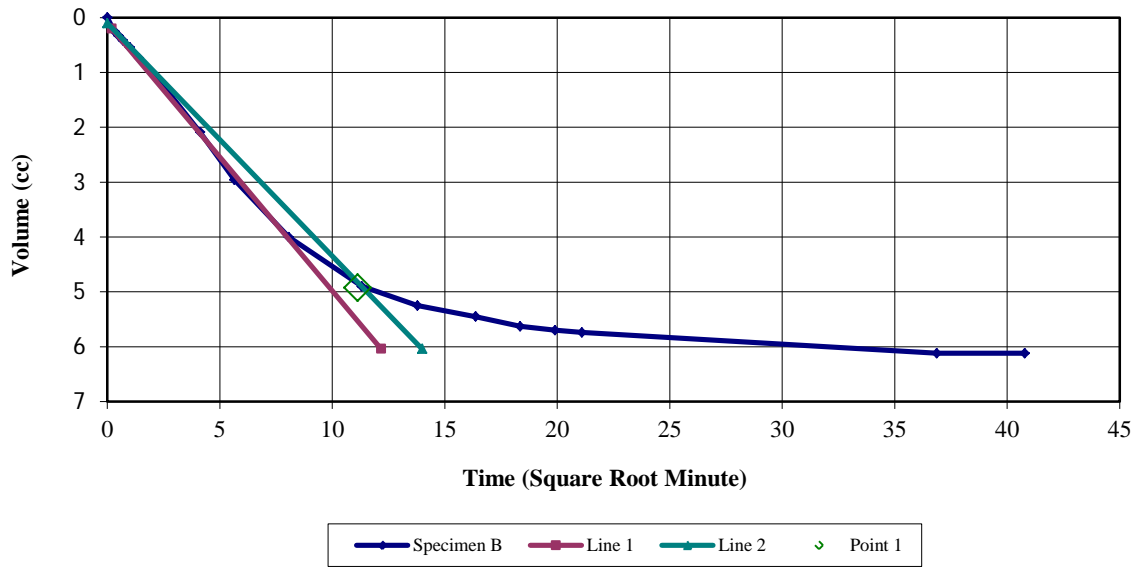
Consolidation Graph (Logarithmic Time)



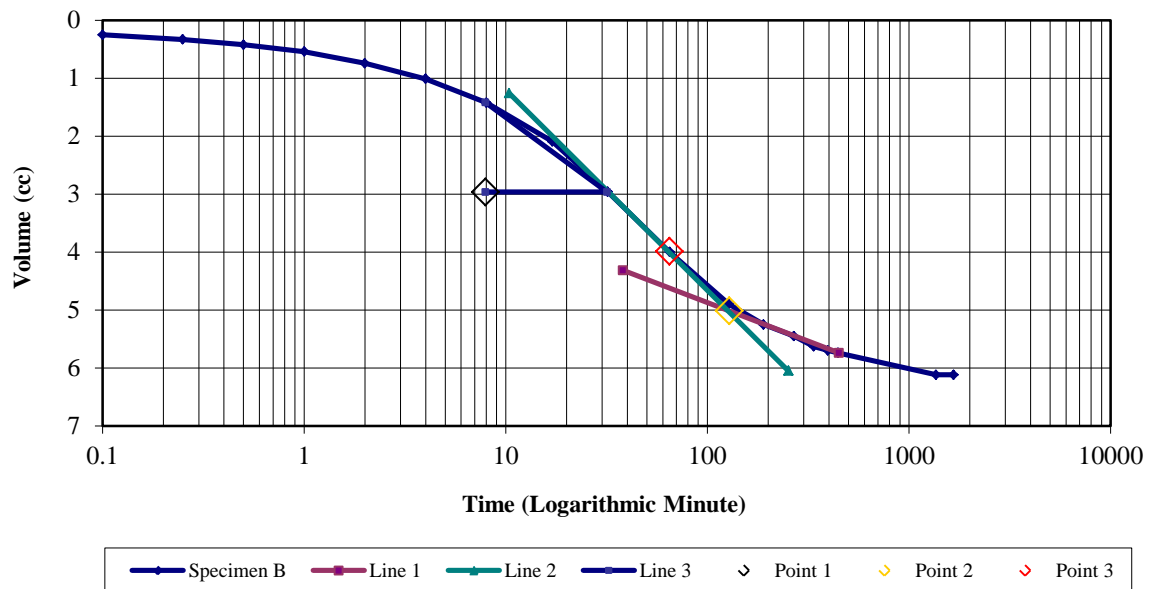


Specimen B Consolidation Graphs

Consolidation Graph (Square Root Time)



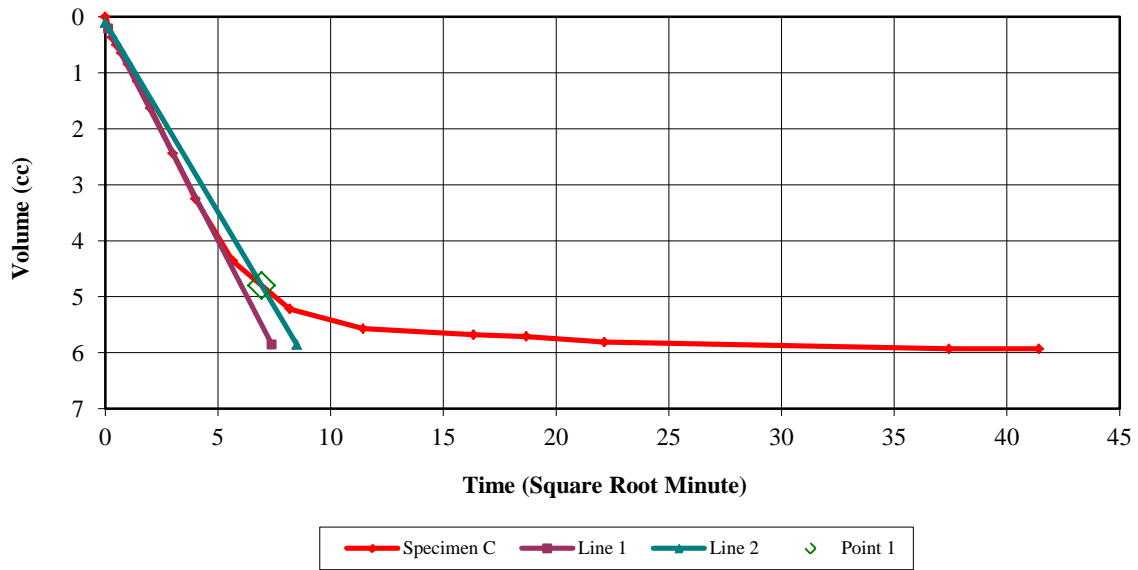
Consolidation Graph (Logarithmic Time)



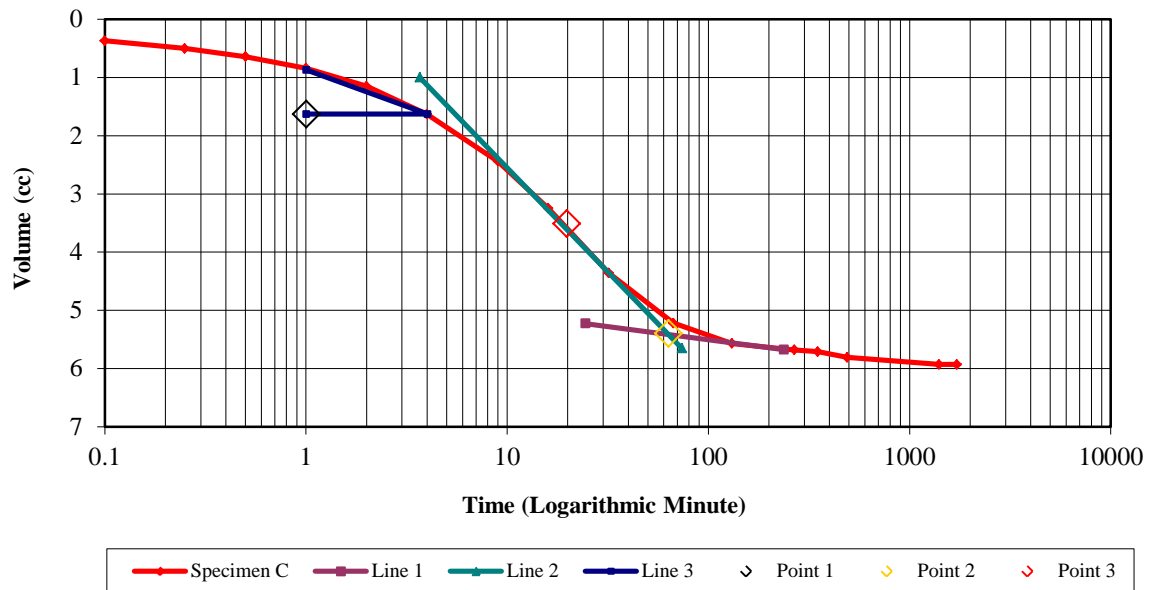


Specimen C Consolidation Graphs

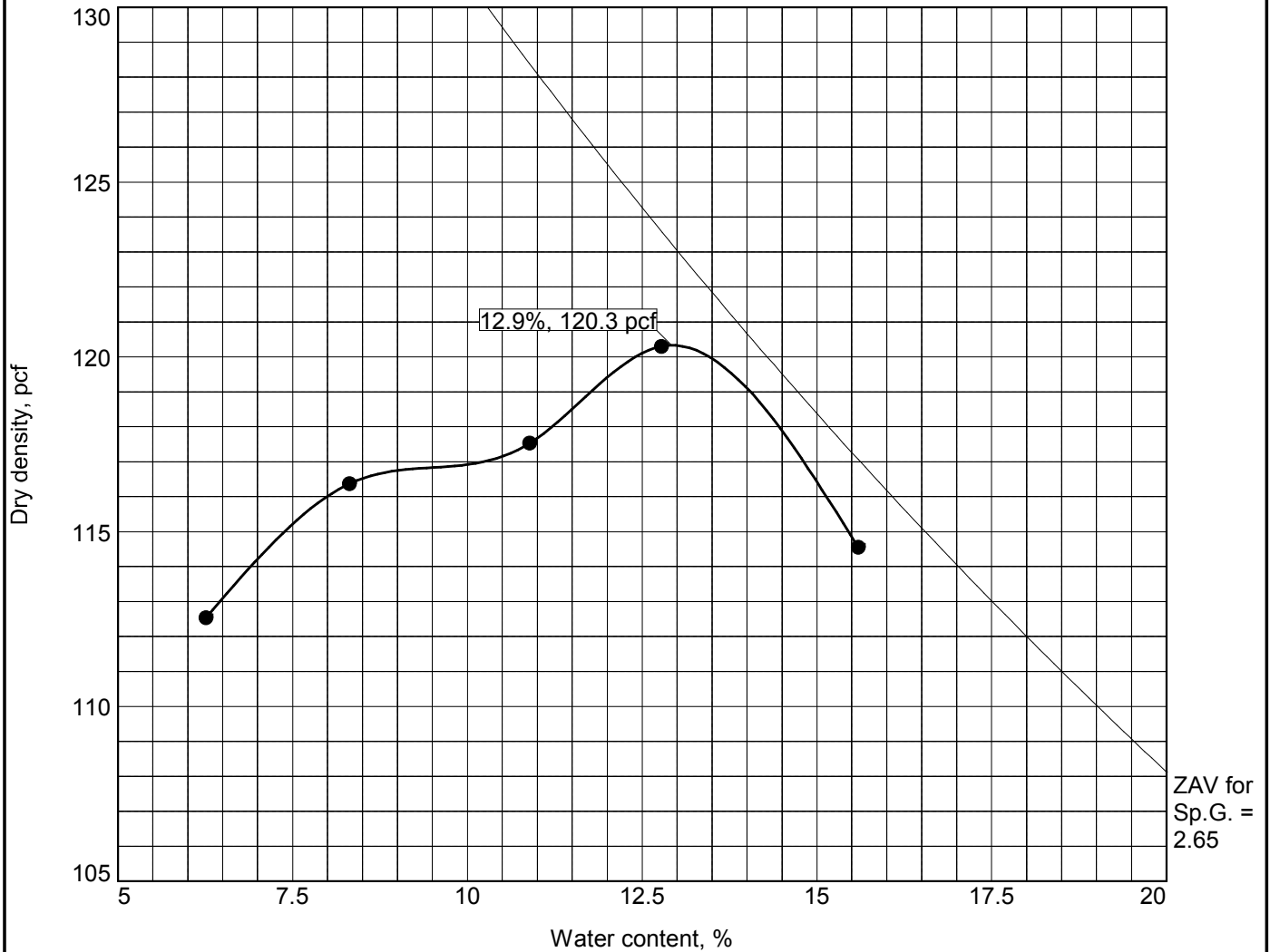
Consolidation Graph (Square Root Time)



Consolidation Graph (Logarithmic Time)



COMPACTION TEST REPORT



Test specification: ASTM D 698-07 Method B Standard
 ASTM D 4718-87 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
N.A.	CL		9.7	2.65	34	12	7.8	64.2

ROCK CORRECTED TEST RESULTS		UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 120.3 pcf		117.6 pcf	Brown, Sandy Lean Clay
Optimum moisture = 12.9 %		14.0 %	
Project No. 65N-0302 Client: SCDOT Project: Shady Grove Rd. S-80 Bridge Replacement <input type="radio"/> Loc.: Borrow Material Depth: N.A. Sample No.: RW-20			Remarks: Sample Received on 06/07/2012
FROEHLING & ROBERTSON, INC.			

Figure

Tested By: D. Council Checked By: D.Jenks



FROEHLING & ROBERTSON, INC.
CORROSION SERIES TESTING

Client: SCDOT
Project: Shady Grove Road
Project No: 65N-0302

Date: 2-Jul-12
Location: S-80 Bridge Repl. over I-26
Page: 1 of 2

Boring Number	Sample Number	pH	Resistivity (ohms-cm)	Chloride (mg/kg)	Sulfate (mg/kg)
B-1A and B-2A	SS-5, SS-6, SS-3, SS-4	8.149	74357.5	26	31
B-5	SS-2, SS-3, SS-4, SS-5	5.896	69781.6	19	27
Station 36+00 (RW-7)	Bulk Sample	4.06	74738.8	270	142
Station 39+00 (RW-20)	Bulk Sample	5.093	77217.4	126	32

LABORATORY SUMMARY SHEET FOR ROCK CORE SAMPLES

PROJECT NO.: 65N-0302
PROJECT NAME: Shady Grove Road
SITE DESCRIPTION: S-80 Bridge Replacement over I-26

Boring No.	Sample Number	Depth (feet)	Rock Type	Run RQD (%)	Length (inches)	Diameter (inches)	Unit Weight (pcf)	Unconfined Compressive Strength (psi)
B-1A	NX-13	40.5-45.5	Metamorphic Schist	80	5.13	1.995	155.4	1,460
B-2A	NX-15	50.0-55.0	Metamorphic Schist	77	5.01	1.995	171.0	4,290
B-3	NX-8	19.5-21.5	Metamorphic Schist	67	5.10	1.995	162.0	3,885
B-3	NX-9	21.5-26.5	Metamorphic Schist	84	5.07	1.995	171.7	8,375
B-3	NX-10	26.5-31.5	Metamorphic Schist	90	3.75	2.05	154.8	6,445
B-4	NX-8	19.0-21.0	Metamorphic Schist	83	4.38	2.05	155.9	1,260
B-4	NX-9	21.0-26.0	Metamorphic Schist	87	4.58	1.995	163.8	4,125
B-4	NX-10	26.0-31.0	Metamorphic Schist	75	5.05	1.995	168.8	5,925
B-5	NX-13	44.0-47.0	Metamorphic Schist	64	3.91	2.00	153.9	4,085

Boring No.	Sample Number	Depth (feet)	Rock Type	Run RQD (%)	Length (inches)	Diameter (inches)	Unit Weight (pcf)	Unconfined Compressive Strength (psi)
B-5	NX-17	62.0-67.0	Schist	53	3.41	2.00	171.9	2,970
B-5	NX-18	67.0-72.0	Schist	60	4.42	1.995	169.7	3,160
B-6	NX-12	41.0-46.0	Metamorphic Schist	62	4.95	2.00	154.0	2,645

APPENDIX “VI”

Results of SASW Downhole Shear Wave Velocity Test



April 10, 2012

Mr. Ross R. Deaver, P.E.
Froehling & Robertson, Inc.
18 Woods Lake Road
Greenville, SC 29607

Subject: Results of Downhole Seismic Shear-Wave Investigation
Shady Grove Road at Interstate 26
Irmo, South Carolina

Dear Mr. Deaver:

As requested, GeoWave Solutions, Inc. has completed a downhole seismic shear-wave investigation at the Shady Grove Road bridge over Interstate 26 in Irmo, South Carolina. The study was conducted to determine the IBC seismic shear-wave soil classification for the site. This report summarizes our downhole testing method and presents the shear-wave velocity results.

Site Description

The area of investigation is in the southwest quadrant of the Shady Grove Road (SR 80) bridge-crossing over Interstate 26 in Irmo, South Carolina. For the downhole test, a 100-foot borehole was drilled and grouted using 2-inch diameter PVC casing a few days prior to our testing to allow the grout adequate time to cure. Of the 100-foot borehole, only 93.5 feet were available for testing due to a 4-foot borehole wall collapse in the bottom and the size of the downhole geophone. Refer to the site plan for an approximate location of the test area.

Downhole Shear-Wave Testing Method

Seismic shear-wave data for the downhole testing were collected by recording shear-wave arrival times with a multi-channel seismograph and a downhole geophone receiver. A 24-channel Geometrics Geode seismograph along with a three-component GeoStuff BHG-3 borehole geophone and control box were used to record S and P waveforms generated from a sixteen-pound sledgehammer horizontally striking an 8.5-foot long, 7x7-inch wooden beam. The geophone was lowered at 2.5-foot intervals to a maximum depth of 93.5 feet in the borehole so that shear-waves being generated at the surface would be recorded at distinctive depth intervals. Each interval included three separate recordings from energy sources designed to enhance specific properties of the wave: 1)positive shear, 2)negative shear, and 3)compression.

Analysis and Results

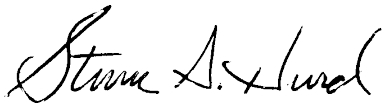
Data collected from the downhole testing were plotted with a positive-negative shear overlay to aid in identifying shear-wave arrivals within the waveform. These arrival times were then correlated to determine interval velocities between adjacent waveforms. The results from these data are in the attached seismic velocity profile and table displaying the interval shear-wave velocities and depths.

Typically, the calculation of Vs100 shear-wave velocities using geophysical methods (including single-hole downhole, crosshole, SASW and MASW) requires data collection that extend a full 100 feet below the surface. Since data for this testing were only obtainable to a depth of 93.5 feet, we have extrapolated the final 6.5 feet using the velocity measured at 93.5 feet (10,241.30 ft/sec). The resulting shear-wave data from this testing produced a Vs100 value of 2347.3 ft/sec. This value falls within the 'C' range of the shear-wave site classification table of the IBC code.

This study reports one-dimensional, subsurface shear-wave results at the testing location. Because abrupt changes in the subsurface are common in this geologic province, the attached seismic velocity profile may not be representative of subsurface conditions across the entire area. Additional testing may be desired at areas not covered by this report.

If you have any questions about the findings of this study or the data contained in this report, or if you require any further services, please feel free to call us. We appreciate the opportunity to offer these consulting services and look forward to working with you again on future projects.

Sincerely,

A handwritten signature in black ink, appearing to read "Steven A. Hurd". The signature is fluid and cursive, with the first name "Steven" being more prominent.

Steven A. Hurd, P.G.
GeoWave Solutions, Inc.



GeoWave Solutions, Inc.
4575 Ansley Lane
Cumming, Georgia 30040
770-886-3776
www.geowavesolutions.com

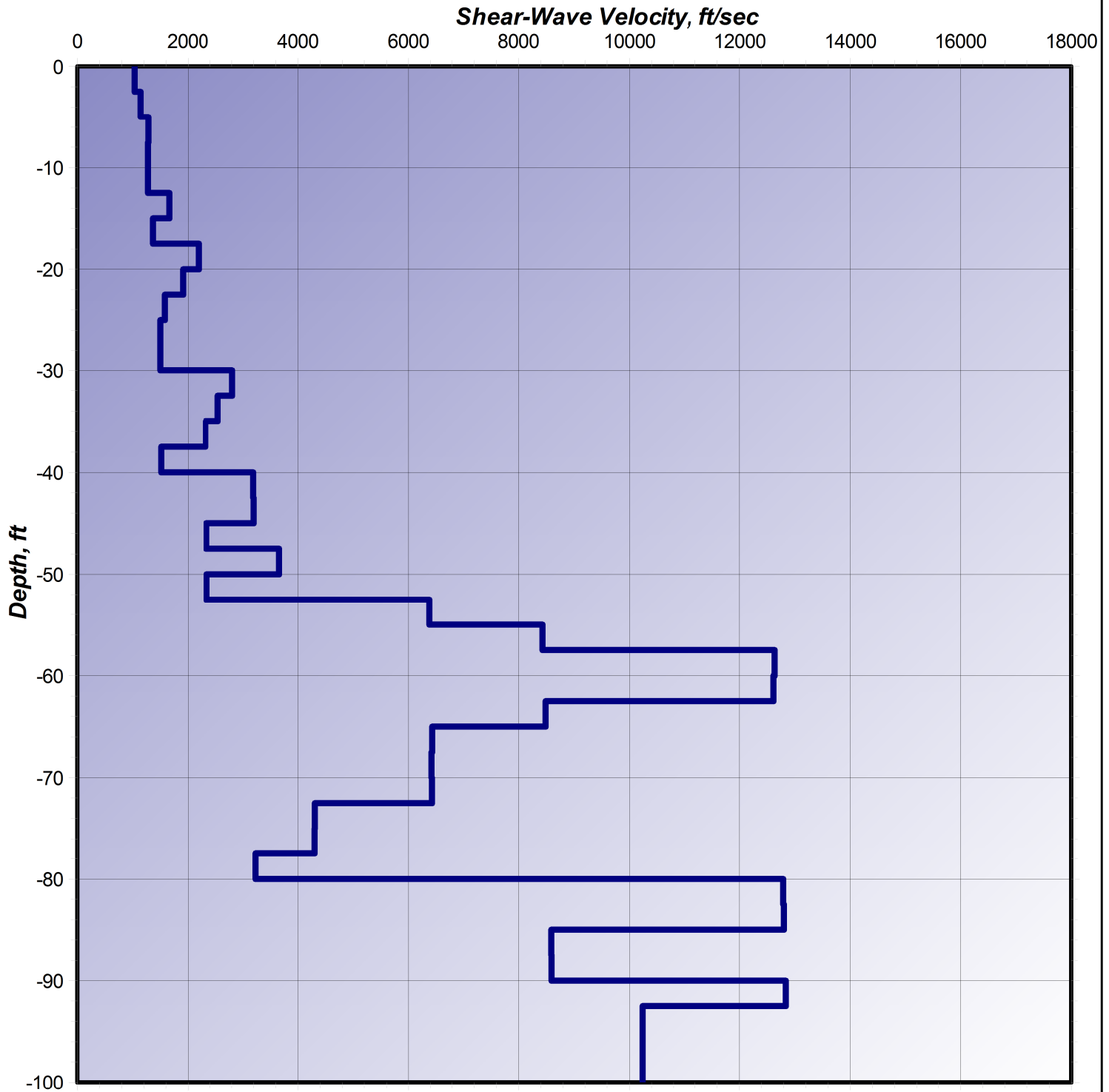
Shady Grove Road at Interstate 26
Froehling & Robertson, Inc.
Downhole Shear-Wave Investigation

Project Manager: S. Hurd

April 10, 2012



Downhole Shear-Wave Investigation



Average Vs (100 feet) = 2347.3 ft/sec



GeoWave Solutions, Inc.
4575 Ansley Lane
Cumming, Georgia 30040
Tel: 770-886-3776
Fax: 770-886-7212
www.geowavesolutions.com

Shady Grove Road at Interstate 26
Froehling & Robertson, Inc.
Downhole Shear-Wave Investigation

Project Manager: S. Hurd

April 12, 2012

Downhole Shear-Wave Investigation

Depth (ft)	Vs (ft/sec)
0.0	1034.80
-2.5	1034.80
-5.0	1141.90
-7.5	1283.00
-12.5	1276.70
-15.0	1662.00
-17.5	1367.10
-20.0	2193.30
-22.5	1910.20
-25.0	1581.50
-27.5	1498.90
-30.0	1498.90
-32.5	2808.00
-35.0	2546.80
-37.5	2325.40
-40.0	1516.90
-42.5	3189.60
-45.0	3200.60
-47.5	2339.30
-50.0	3660.40
-52.5	2343.30
-55.0	6377.60
-57.5	8434.80
-60.0	12636.10
-62.5	12614.70
-65.0	8490.90
-67.5	6430.10
-70.0	6419.70
-72.5	6425.20
-75.0	4306.30
-77.5	4300.50
-80.0	3234.60
-82.5	12792.40
-85.0	12805.30
-87.5	8592.60
-90.0	8597.10
-92.5	12837.20
-93.5	10241.30
-100.0	10241.30

Average Vs (100 feet) = 2347.3 ft/sec



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Shady Grove Road at Interstate 26
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 Downhole Shear-Wave Investigation

PI Project Manager: S. Hurd

April 12, 2012