

Geotechnical Data Report

I-85/I-385 Interchange Improvements

Greenville County, SC

January 25, 2013

Prepared For:



South Carolina
Department of Transportation



Prepared By:



Florence & Hutcheson

An **ICA** Company

flohut.com



Florence & Hutcheson

An **ICA** Company

January 25, 2013

Mr. Greg Schuch, P.E.
Florence & Hutcheson
501 Huger Street
Columbia, SC 29201

**RE: Geotechnical Data Report
I-85/I-385 Interchange Improvements
Greenville County, South Carolina**

Dear Mr. Schuch,

We have completed the geotechnical data report for the referenced project. The purpose of this report is to provide preliminary geotechnical information to the design team.

Sincerely,

Florence & Hutcheson - An ICA Company


Devin L. Chittenden, PE
Geotechnical Engineer



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1. Project Information

This report provides a characterization of the subsurface conditions for the proposed intersection improvements at Interstate 85 and Interstate 385 in Greenville County, SC. Geotechnical data including standard penetration testing, shelby tube sampling, rock coring, bag sampling, MASW survey and a variety of laboratory tests are presented herein to provide regional geological features and site conditions to aid in the design and construction of the proposed project. A site vicinity map is included in Section I of the Appendix.

2. Site Conditions

2.1 Regional Geology

The proposed I-85 / I-385 Interchange improvements are located within the perimeter limits of the USGS, Mauldin 7.5 minute X 7.5 minute, topographic quadrangle map. This location places the alignment within the Inner Piedmont geologic belt of the Piedmont physiographic province as defined in South Carolina (*Generalized Tectonic Map of the Greenville 1°X 2° Quadrangle, Georgia, South Carolina and North Carolina, Nelson, Horton and Clarke, 1987*). Published geologic mapping (*Geologic Map of the Greenville 1°X 2° Quadrangle, South Carolina, Georgia and North Carolina, Nelson, Horton and Clarke, 1998*) suggests the proposed project site lies within the Paris Mountain Thrust Sheet limits. Rock units within the thrust sheet are described as sillimanite mica schist intruded in places by granite gneiss with lesser occurrences of quartzite and scattered diabase dikes. Recovered rock cores indicate that the underlying rock is gneiss with granitoid intervals, layers of schist, less frequent pegmatite seams and traces of quartzite and amphibolite pods or augen.

Residual soils developed upon these rock units are described, within published documents, as sandy loam to sandy clayey loam with less frequent clay.

2.2 Site Geology

Seventy-two (72) total borings were advanced within the subject interchange and along roadways approaching the I-85 / I-385 interchange. Additional alignments for proposed retaining walls and ramps were also evaluated for this preliminary study. Generally each boring intercepted micaceous, silty, fine to medium grain sandy soil with occasional larger fragments of parent rock and/or layers of sandy silt or sandy clay, a widely variable thickness of weathered rock and variably weathered gneiss, schist, granitoid rock, pegmatite or a combination of some of the four. Thickness of the sandy soils was widely variable with SPT values ranging from WOH to 100 blows per foot. Weathered rock, interpreted as SPT values greater than 100 blows per foot or described as highly weathered rock also exhibited variable thickness. Again, the highly variable depth to competent rock cannot be emphasized sufficiently; depths to rock may vary greatly along individual wall alignments or within individual bridge bent footprints. Recovered rock core exhibited primarily fresh to moderate weathering but thin intervals of highly weathered rock, within the more competent mass, were also logged. Details of soil and rock specimen testing are included within the appendices. Boring groupings, for the purpose of detailed discussion below, are the existing interchange bounded by the current ramp alignments, borings along I-385 from the interchange south to Smith-Hines Road (includes Garlington Road and Woodruff Road interchanges), borings along I-385 south of Roper Mountain Road to the interchange, borings along I-85 west of Pelham Road to the interchange and borings along I-85 north of Sulphur Springs Road to the interchange.

Soils comprising the boring group within the existing interchange bounded by the current ramp alignments are predominately low plasticity to non-plastic, silty, fine to medium grain sands with mica. Interlayering of low to medium plasticity, sandy silts and sandy clays, medium to coarse grain sand with minimal silt and clay and a few seams of weathered rock (up to 2.8 feet in thickness) within residual soils were indicated by the advanced borings. Residual soil thickness ranged from 19.5 feet (Boring 8) to in excess of 101.5 feet (Boring 12). Soils interpreted as roadway embankment were encountered within Borings 10, 18, 20, 22, 24, 26 and 29 with depths ranging from 1.8 feet to 7.8 feet (Borings 10, 20, 22, 24 and 29) and 33.3 feet (Borings 18 and 26, respectively). Weathered rock thickness ranged from 3.7 feet (Boring 21) to 78.8 feet (Boring 17) within borings where encountered. Intercepted and cored rock included schist, pegmatite, gneiss, amphibolite and quartzite.

Soils within the boring group along I-385 from the interchange south to Garlington Road, Woodruff Road and Smith-Hines Road are predominately low plasticity to non-plastic, silty, fine to medium grain sands with mica and traces to few coarse grain sand fractions and gravel size rock fragments. Thickness exceeded 30.0 to 35.0 feet (thickest residual soil for this grouping reported as 87.0 feet, Boring 2) in most cases except Borings 1, 3, 4, 5, 7, 65, 66 and 67. Within these borings penetrated residual soil thickness ranged from 0 foot (Boring 34) to 25.5 feet (Boring 4). Widely scattered layers of sandy silt were also encountered with intercepted thickness ranging from 2.0 feet to 10.0 feet. Soils interpreted as roadway embankment were encountered within Borings 1, 2, 7, 33, 34, 35, 61 and 64 with depths ranging from 1.5 feet to 7.8 feet (Borings 1, 2, 7, 61 and 64) and 23.5 feet, 32.7 feet and 34.0 feet (Borings 33, 34 and 35, respectively). Alluvial soils were interpreted within Borings 32, 34 and 35 with reported thickness of 5.8 feet, 15.4 feet and 5.0 feet, respectively. Weathered rock thickness ranged from 0.3 feet (Borings 4 and 34) to 49.0 feet (Boring 3)

within borings where encountered. Intercepted and cored rock included gneiss, granitoid rock, schist and pegmatite.

Soils borings along I-385 south of Roper Mountain Road to the interchange are interbedded low plasticity, silty, fine to medium grain sand and sandy silt exhibiting medium plasticity. Thickness is widely variable from 8.0 feet to in excess of 46.0 feet. Soil interpreted as roadway embankment was penetrated within Boring 44 from ground surface to 3.8 feet. Weathered rock was encountered only within Boring 45 where 1.0 foot was described. Cored rock, recovered from Boring 45 at 9.0 feet, was described as gneiss with a pegmatite layer.

Soils within the boring group along I-85 west of Pelham Road to the interchange (includes east Roper Mountain Road interchange) are predominately non-plastic to low plasticity, silty, fine to medium grain sands with mica and traces to few coarse grain sand fractions and gravel size rock fragments. Widely scattered layers of sandy clay and sandy silt, exhibiting medium to rarely high plasticity, were also encountered with intercepted thickness ranging from 2.0 feet to 10.0 feet. Seams of coarse grain sand to gravel size rock fragments with thickness of 3.2 feet to 10.2 feet, interpreted as weathered rock, were occasionally encountered within the residual soil mass. Overall thickness of residual soils ranged from 7 feet to 48.0 feet with several borings terminated within residual soils. Soils interpreted as roadway embankment were encountered within Borings 30, 31, 36, and 46 with depths ranging from 2.3 feet to 7.0 feet. Weathered rock thickness ranged from 0.5 foot (Boring 36) to in excess of 31.0 feet (Boring 59) within borings where encountered. Borings 59 and 73 encountered silty sand residual soils within the weathered rock mass. Intercepted and cored rock (Borings 30 and 31) included gneiss and granitoid rock.

Soils within the boring group along I-85 north of Sulphur Springs Road to the interchange (includes Woodruff Road interchange) are predominately non=plastic to low plasticity, silty, fine to medium grain sands with mica and traces to few coarse grain sand fractions and gravel size rock fragments. Widely scattered layers of low to medium plasticity, sandy silt were also encountered with intercepted thickness of 2.0 feet. Soils interpreted as roadway embankment were encountered within Boring 51 with a depth to 5.8 feet and composed of silty sand and sandy silt. Weathered rock, encountered within Boring 52, was noted as 0.9 feet in thickness however the boring was terminated prior to determining if the weathered rock was a seam or continued into additional weathered rock.

Groundwater was noted on drilling tools during SPT sampling, within recovered saturated soil samples and measured within several of the advanced borings. Interpreted groundwater elevation levels varied from to 830.2 to 985.0 suggesting potential perched water bodies and variable elevations due to differential weathering and fracturing of the underlying rock mass.

3. Field Exploration Program

A total of seventy-two (72) standard penetration testing borings were advanced. The borings were advanced by the following drill rig types: CME-45C trailer, CME-45C track, CME-55 truck, CME-550 ATV and CME-850 track. Upon encountering refusal, twenty-two (22) of the seventy-two (72) borings were continued to core the bedrock. WPC, a Terracon Company also advanced four (4) MASW surveys. Plan sheets depicting the locations of the borings and MASW surveys are presented in Section V of the Appendix. Boring logs and any applicable rock core photos are presented in Section II and the results of the laboratory testing are presented in Section III. The results of the MASW survey are also depicted in Section IV.

3.1 Standard Penetration Testing

Of the seventy-two (72) standard penetration testing borings, thirty-one (31) borings were performed for the proposed bridges. The remaining borings were completed for the proposed roadway improvements and retaining walls. It is worth noting that all of the borings were based on the location of the proposed roadway improvements, retaining walls and bridges at the time of drilling. Boring logs are presented in Section II of the Appendix.

Standard penetration tests were conducted mainly at 2-foot intervals within the top 10 feet and at 5-foot intervals thereafter until achieving the boring termination depths. It should be noted that the N-values presented in the boring logs are the uncorrected, field N-values. Blow counts recorded at these intervals were produced from standard penetration test hammers with energy efficiencies ranging from 73% to 93%. The eight (8) hammer reports from the drill rigs used to advance the borings on this project are included in Section VI of the Appendix.

The following is a list of the borings, their alignments, stations, offsets, and total drilled depths.

Table 1. - Borings

Test Hole No.	Alignment	Station	Offset (ft)	Depth (ft)
B-1	I-385 SB C/D	106+81	83' LT	46.0
B-2	I-385 SB C/D	100+28	63' RT	110.0
B-3	I-385 NB C/D	359+28	18' RT	100.3
B-4	I-385 SB C/D	114+01	56' RT	45.3
B-5	I-385 NB C/D	381+47	37' RT	35.0
B-6	I-385 NB C/D	376+18	19' RT	68.3
B-7	I-385 NB C/D	385+88	37' RT	64.5
B-8	Ramp 2	60+41	5' LT	49.0

Table 1. - Borings

Test Hole No.	Alignment	Station	Offset (ft)	Depth (ft)
B-9	Ramp 4B	411+13	71' RT	66.0
B-10	Ramp 4B	408+78	94' RT	102.0
B-11	I-385	404+98	94' LT	101.5
B-12	I-385	404+37	95' RT	101.5
B-13	Ramp 3A	307+24	82' LT	101.8
B-14	Ramp 3A	303+99	54' LT	110.8
B-15	Ramp 4B	412+86	22' LT	35.0
B-16	Ramp 4B	406+04	4' LT	114.0
B-17	Ramp 4B	395+89	15' LT	100.3
B-18	Ramp 2A	70+60	5' LT	100.3
B-19	Ramp 2A	74+70	43' RT	100.2
B-20	Ramp 2B	31+19	8' LT	60.0
B-21	Ramp 2B	36+60	28' LT	87.0
B-22	I-385	400+62	81' RT	101.5
B-23	I-385	397+25	90' RT	100.3
B-24	I-385	393+76	151' RT	100.3
B-25	Ramp 1A	86+11	4' LT	100.1
B-26	Ramp 1A	83+26	7' LT	101.5
B-27	Ramp 1A	75+49	CL	104.5
B-28	Ramp 1A	72+06	5' RT	55.0
B-29	Ramp 3A	296+84	30' LT	101.5
B-30	Roper Mt. Rd	36+39	25' LT	90.0
B-31	Roper Mt. Rd	40+08	69' RT	85.0
B-32	Ramp 2B	40+70	87' LT	89.0
B-33	Ramp 1A	88+76	24' LT	79.1
B-34	I-385 SB C/D	94+10	23' LT	49.7
B-35	I-385 SB C/D	97+07	14' LT	50.9
B-36	Ramp 1A	66+49	26' LT	26.0
B-37	Ramp 1A	63+01	19' LT	43.7

Table 1. - Borings

Test Hole No.	Alignment	Station	Offset (ft)	Depth (ft)
B-38	Ramp 1A	56+27	10' LT	19.5
B-39	Ramp 2A	85+35	3' RT	60.9
B-40	Ramp 2A	89+91	2' RT	46.1
B-41	I-385 SB C/D	113+09	37' LT	34.3
B-42	I-385 NB C/D	340+05	13' RT	30.0
B-43	I-385 NB C/D	341+96	6' LT	30.0
B-44	I-385	431+86	135' RT	46.0
B-45	I-385	439+42	136' RT	55.7
B-46	Ramp 2A	107+40	40' RT	35.7
B-47	I-385 SB C/D	120+03	70' RT	35.0
B-48	Omitted			
B-49	I-85	224+04	92' RT	21.5
B-50	Ramp 5	137+97	40' RT	36.5
B-51	I-85 NB C/D	244+13	39' RT	36.0
B-52	Ramp 5	117+93	30' RT	5.4
B-53	I-85 NB C/D	257+64	85' RT	10.0
B-54	Ramp 2A	98+99	36' RT	41.0
B-55	Ramp 1	61+03	3' RT	17.5
B-56	I-85	360+06	112' RT	36.5
B-57	I-85	379+93	68' LT	8.3
B-58	I-85	399+98	99' RT	15.0
B-59	I-85	420+11	94' LT	39.0
B-60	I-385	324+88	84' LT	9.5
B-61	I-385 NB C/D	332+58	20' RT	30.0
B-62	I-385 NB C/D	349+94	19' LT	10.0
B-63	I-385 NB C/D	354+98	85' RT	30.0
B-64	Ramp 8	55+93	76' LT	30.8
B-65	I-385 NB C/D	364+95	11' RT	35.3
B-66	I-385 NB C/D	369+87	16' LT	15.8

Table 1. - Borings

Test Hole No.	Alignment	Station	Offset (ft)	Depth (ft)
B-67	Ramp 8	65+94	137' LT	35.7
B-68	Ramp 2A	59+09	41' LT	16.1
B-69	Omitted			
B-70	Ramp 1	72+31	23' RT	35.0
B-71	Ramp 2A	118+86	11' RT	31.5
B-72	I-85	372+06	73' LT	20.0
B-73	I-85	414+45	106' LT	30.0
B-74	I-85	413+00	88' RT	33.7

3.2 MASW Survey

MASW is a seismic method that used the dispersive characteristics of Rayleigh-type surface waves to determine the variation of the shear wave velocity of layered systems with depth. Unlike SASW which can get overwhelmed by noise and other artificial source waves, the MASW method can identify and reject non-fundamental Rayleigh waves and noise, thereby can focus the data collection on the Rayleigh waves. Refraction Microtremor (ReMi) and Microtremor Array Measurement (MAM) are two methods of passive source techniques to measure noise. In both, lower frequency surface waves arising from microtremors and/or noise, such as traffic, are recorded using linear or two dimensional arrays of geophones. Due to the shortcomings of techniques being performed along and the advantages offered through their combined use, WPC, a Terracon company used MAM in conjunction with MASW for the development of this survey.

The results of the four (4) surveys performed on this project are provided below in Table 2.

Table 2. - MASW Results

MASW Analysis No.	Alignment	Station	Offset (ft)	Average Shear Wave Velocity in Top 100 feet (feet/sec)
MASW-1	I-385 NB C/D	359+39	17' RT	1405.6
MASW-2	I-385	393+66	115' RT	1034.8
MASW-3	Ramp 4B	408+70	102' RT	1081.5
MASW-4	Roper Mt. Rd.	36+15	25' LT	1060.2

Based on the results above in Table 2, MASW-2 through MASW-4 would classify as Site Class D in accordance with Table 12-22 in the *SCDOT Geotechnical Design Manual (GDM)*. MASW-1 would classify as Site Class C. The four (4) MASW survey reports are presented in Section IV of the Appendix.

4. Laboratory Testing Program

Laboratory tests performed on representative samples were selected by Florence & Hutcheson. Testing included: natural moisture content of soils, Atterberg limits, sieve analysis, AASHTO and ASTM soil classification, California Bearing Ratio, Standard Proctor, Unconsolidated Undrained (UU) Triaxial Compression, Unconfined Compressive Strength (Soil), Consolidated Undrained (CU) Triaxial Compression, Consolidation and Unconfined Compressive Strength of Rock Core. The following table summarizes the tests that were performed and quantity of each.

Table 3. - Laboratory Testing

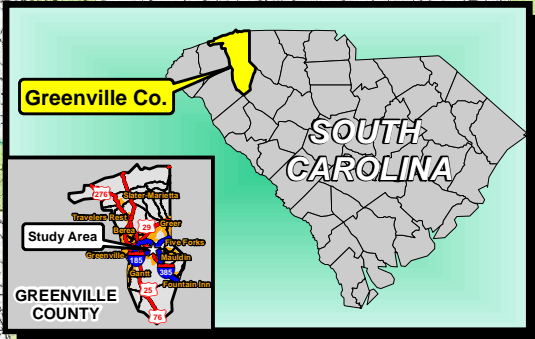
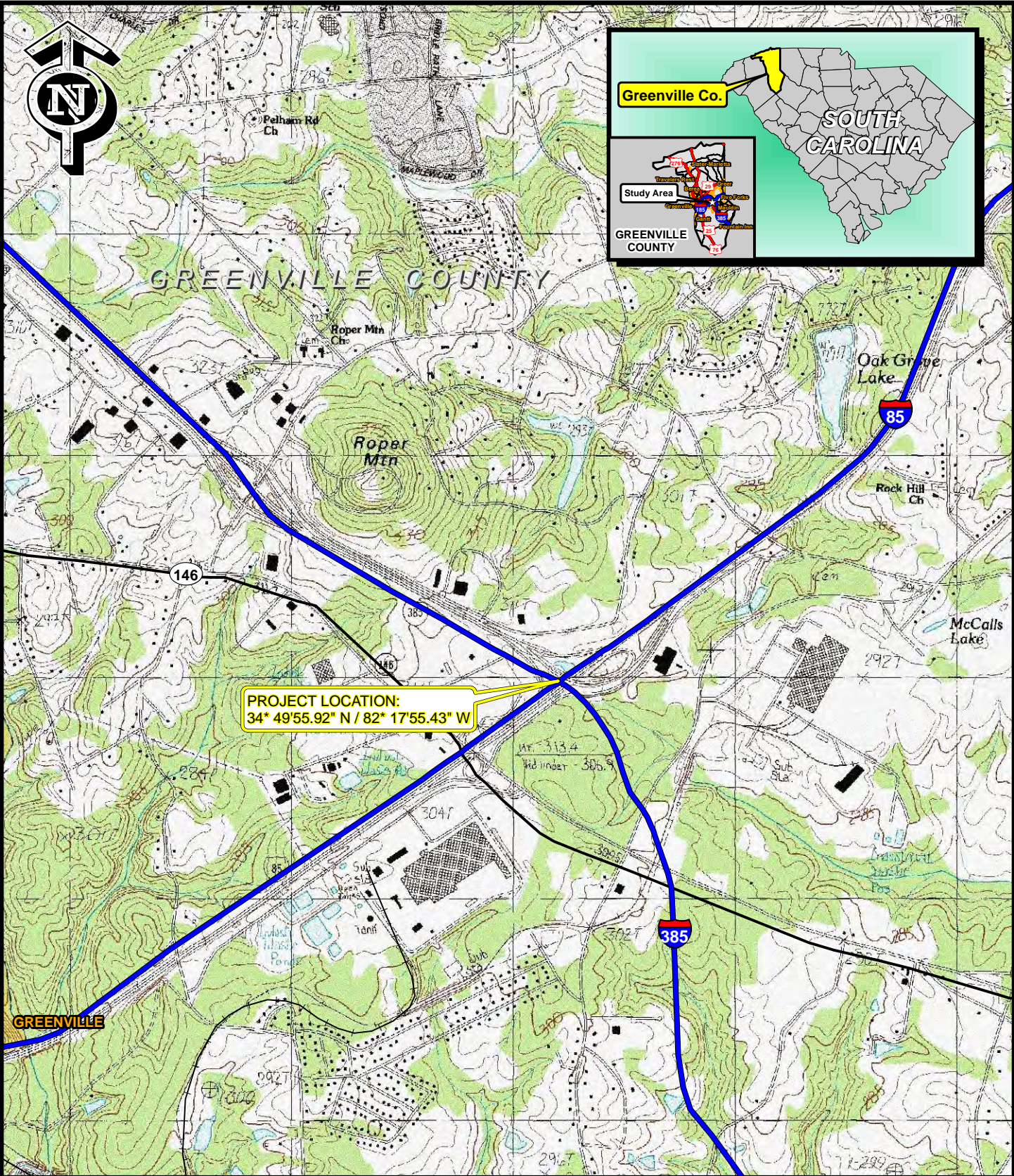
Test Type	Quantity
Natural Moisture Content	347
Atterberg Limits	268
Sieve Analysis/Soil Classification	348
California Bearing Ratio (CBR)	16
Standard Proctor	8
Unconsolidated Undrained (UU) Triaxial	15
Unconfined Compressive Strength (Soil)	11
Consolidated Undrained (CU) Triaxial	8
Consolidation	6
Unconfined Compressive Strength (Rock Core)	26

Laboratory results are presented in Section III of the Appendix.


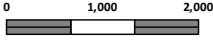
5. Limitations to Report

Discussion of geologic and geotechnical conditions observed in the field, observed from field sample recovery, observed in laboratory examination of samples and computed data analysis, which are all quantified in this data report, should be considered preliminary investigation and are subject to change upon the acquisition of additional data during the final investigation. No other warranty, express or implied, is made. The Geotechnical Engineer of Record for the project must review the data submitted in this report and develop their own interpretation of the testing results as they apply to design.

Appendix Section I Site Vicinity Map



PROJECT LOCATION:
 34° 49'55.92" N / 82° 17'55.43" W

F&H JOB NO.: 08195-01	DATE: JAN 2013	STATE: SOUTH CAROLINA	PROJECT: I-85 / I-385 INTERCHANGE IMPROVEMENTS
 Florence & Hutcheson An ICA Company		COUNTY: GREENVILLE	TOPO QUAD: MAULDIN
		SCALE:  FEET Graphic Scale: (1" = 2,000 ft)	DRAWING: LOCATION MAP

Appendix Section II Boring Logs

Field Exploration Description

Overview

The testing locations were chosen by Florence & Hutcheson using aerial photography and landmarks. Stations and offsets were estimated using aerial photography and existing drawings. The borings were surveyed by Florence & Hutcheson after drilling was complete. The locations as shown in the Exploration Location Plan should be considered accurate only to the degree implied by the means and methods used to define them.

A field log of each test was prepared by field personnel. These logs included visual classifications of the materials encountered during drilling as well as the driller's interpretation of the subsurface conditions between samples. Final boring logs included with this report represent the engineer's interpretation of the field logs and include modifications based on laboratory observation and tests of the samples.

Soil Test Borings

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

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

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

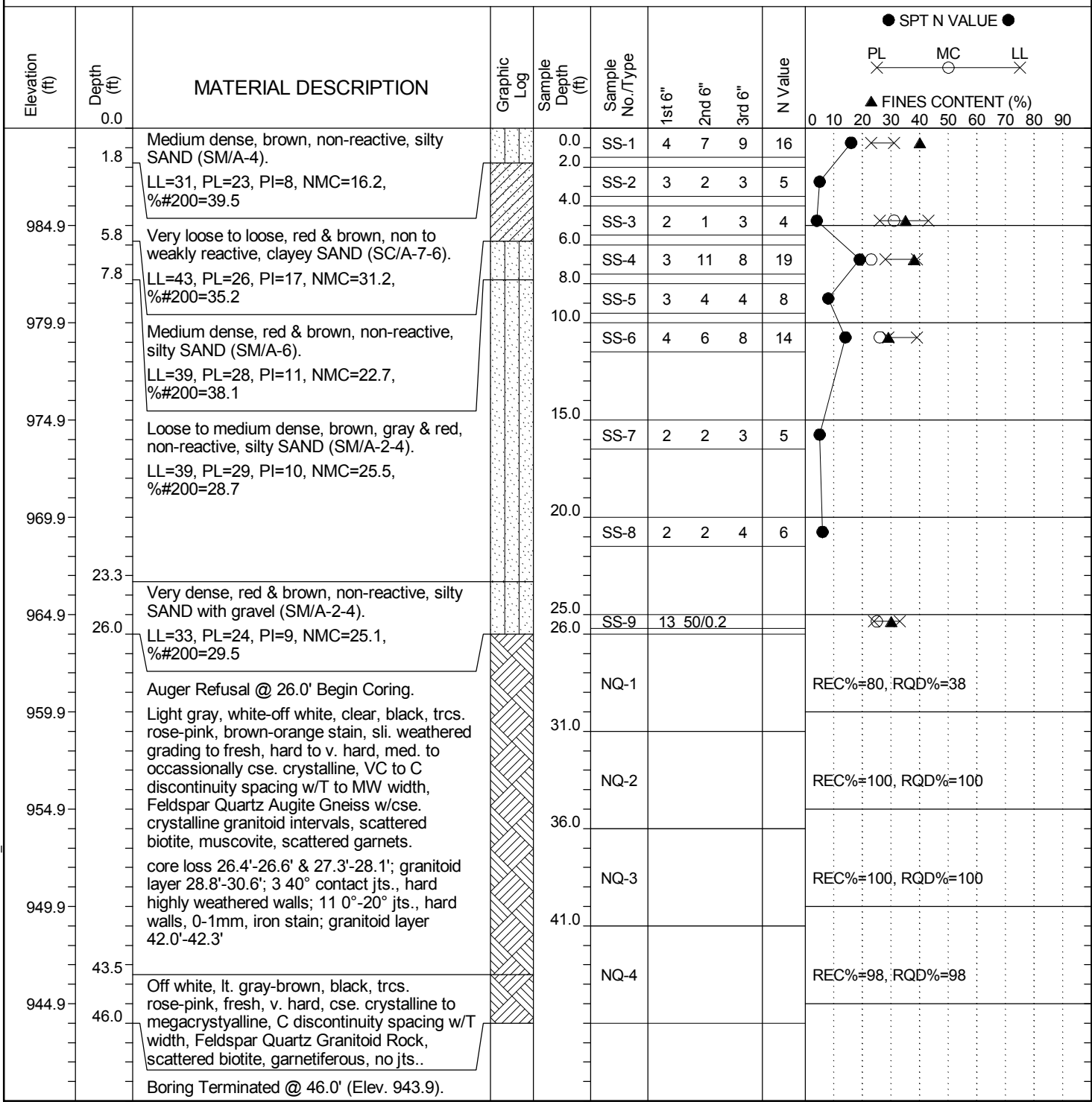
Soil Classification provides a general guide to the engineering properties of various soil types and enables the engineer to apply his experience to current situations. In our exploration, samples obtained during drilling operations are examined and visually classified by a geotechnical engineer using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

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

*These codes are not the classification for the material. These are the Graphic codes to be used in the Lithology table.

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-1	Boring Location: 106+81	Offset: 83' Lt.	Alignment: I-385 SB C/D
Elev.: 989.9 ft	Latitude: 34.82626	Longitude: 82.29259	Date Started: 7/12/2012
Total Depth: 46 ft	Soil Depth: 26.0 ft	Core Depth: 46.0 ft	Date Completed: 7/16/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	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	

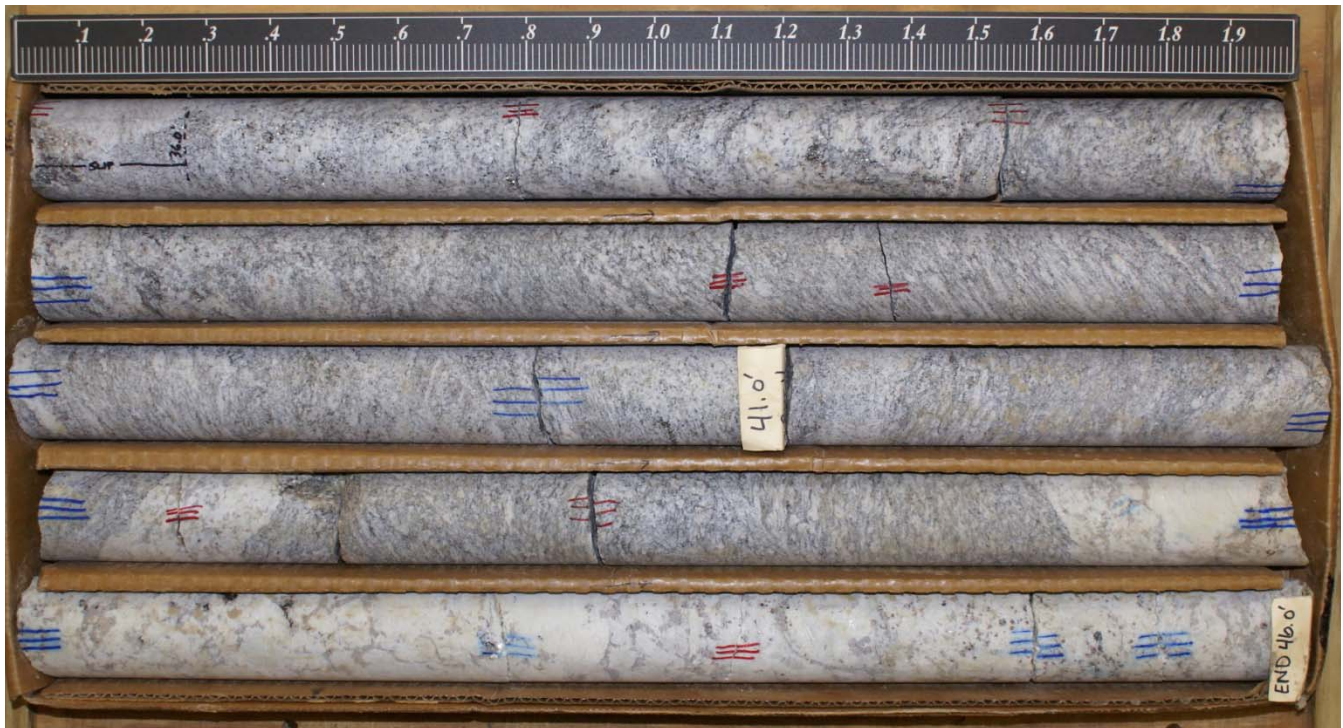
SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



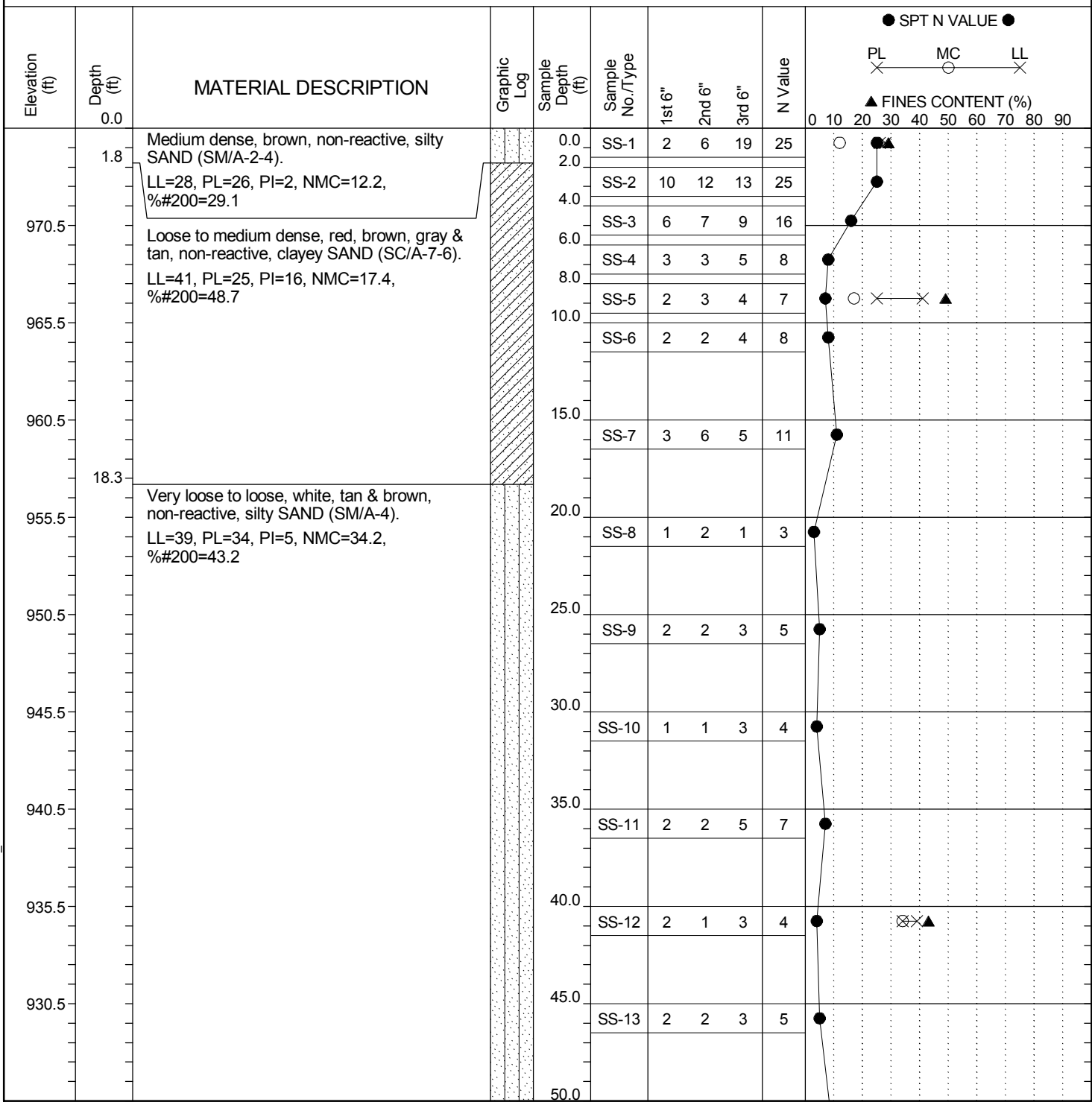
B-1 Box 1 of 2



B-1 Box 2 of 2

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-2	Boring Location: 100+28	Offset: 63' Rt.	Alignment: I-385 SB C/D
Elev.: 975.5 ft	Latitude: 34.82779	Longitude: 82.29383	Date Started: 6/28/2012
Total Depth: 110 ft	Soil Depth: 90.0 ft	Core Depth: 110.0 ft	Date Completed: 7/11/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR



LEGEND

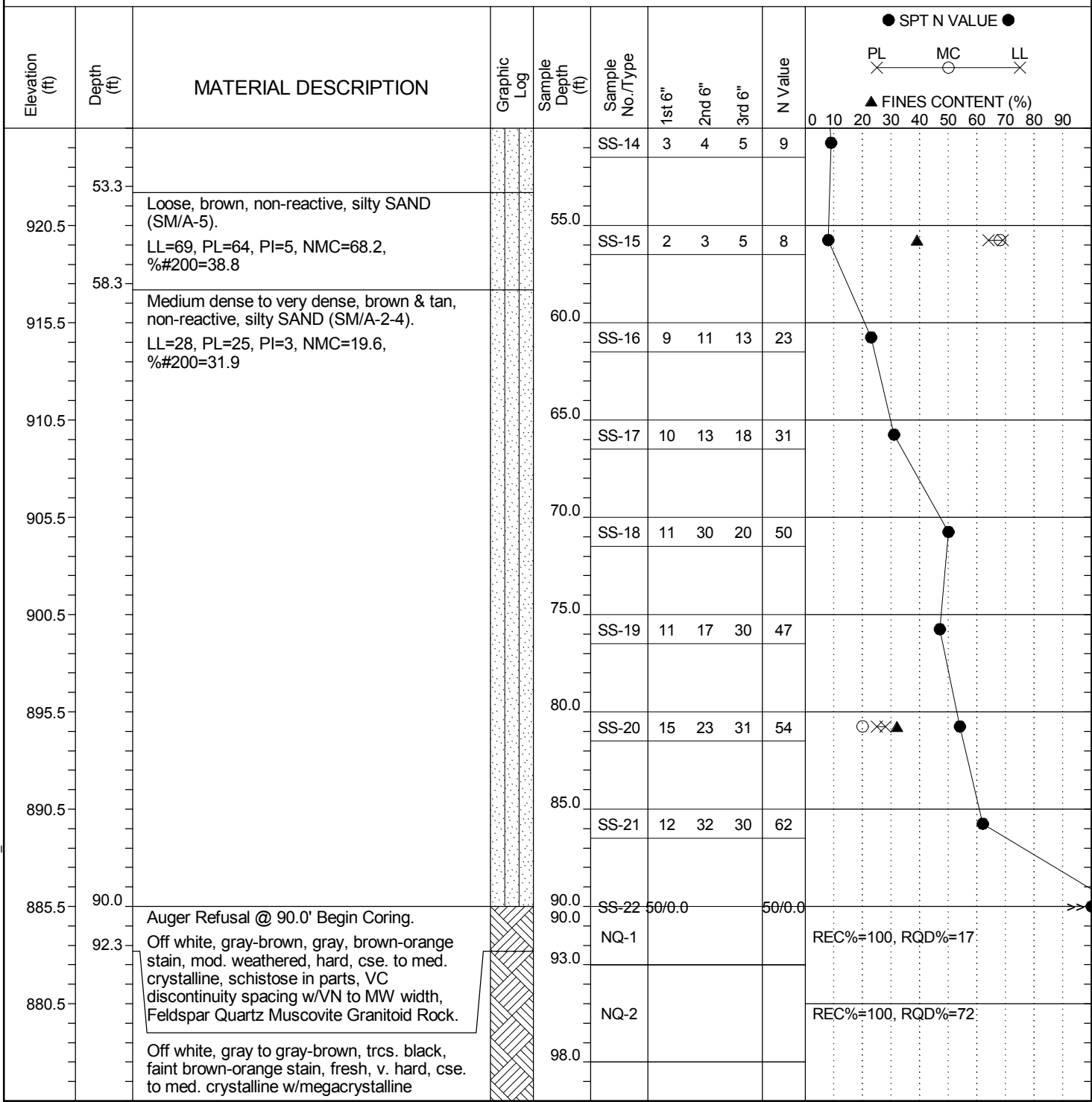
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SAMPLER TYPE	DRILLING METHOD
SS - Split Spoon	HSA - Hollow Stem Auger
ST - Shelby Tube	RW - Rotary Wash
AWG - Rock Core, 1-1/8"	CFA - Continuous Flight Augers
NQ - Rock Core, 1-7/8"	DC - Driving Casing
CU - Cuttings	RC - Rock Core
CT - Continuous Tube	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-2	Boring Location: 100+28	Offset: 63' Rt.	Alignment: I-385 SB C/D
Elev.: 975.5 ft	Latitude: 34.82779	Longitude: 82.29383	Date Started: 6/28/2012
Total Depth: 110 ft	Soil Depth: 90.0 ft	Core Depth: 110.0 ft	Date Completed: 7/11/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR



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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-2	Boring Location: 100+28	Offset: 63' Rt.	Alignment: I-385 SB C/D
Elev.: 975.5 ft	Latitude: 34.82779	Longitude: 82.29383	Date Started: 6/28/2012
Total Depth: 110 ft	Soil Depth: 90.0 ft	Core Depth: 110.0 ft	Date Completed: 7/11/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	SPT N VALUE			N Value	FINES CONTENT (%)									
						1st 6"	2nd 6"	3rd 6"		PL	MC	LL	0	10	20	30	40	50	60
870.5	110.0	intervals, schistose to gneissic intervals, VC discontinuity spacing w/T to VN width, Feldspar Quartz Muscovite Granitoid Rock, traces garnets.		103.0	NQ-3					REC%=98, RQD%=88									
870.5		80° jt., hard smooth walls, 1mm open; 44 0°-20° jts., hard, rough walls, some highly weathered, 0-10mm open; 5 30° jts., hard walls, iron oxide stain; 2 50° foliation jts., smooth, hard walls		108.0	NQ-4					REC%=100, RQD%=88									
865.5		Boring Terminated @ 110.0' (Elev. 865.5).			NQ-5					REC%=70, RQD%=35									
860.5																			
855.5																			
850.5																			
845.5																			
840.5																			
835.5																			
830.5																			

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 I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



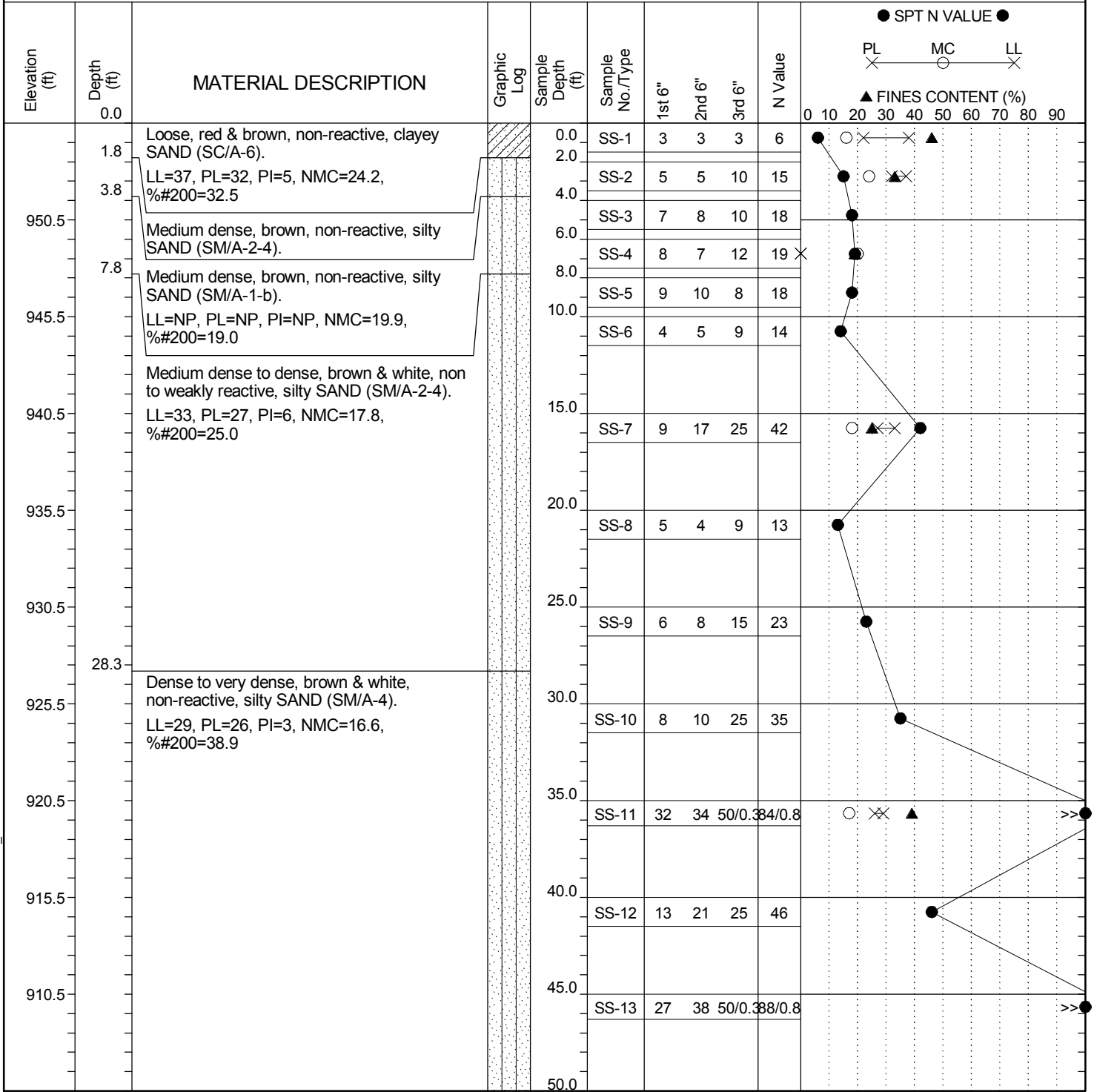
B-2 Box 1 of 2



B-2 Box 2 of 2

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-3	Boring Location: 359+28	Offset: 18' Rt.	Alignment: I-385 NB C/D
Elev.: 955.5 ft	Latitude: 34.82341	Longitude: 82.29118	Date Started: 5/21/2012
Total Depth: 100.3 ft	Soil Depth: 100.3 ft	Core Depth: 95.0 ft	Date Completed: 5/25/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR



LEGEND

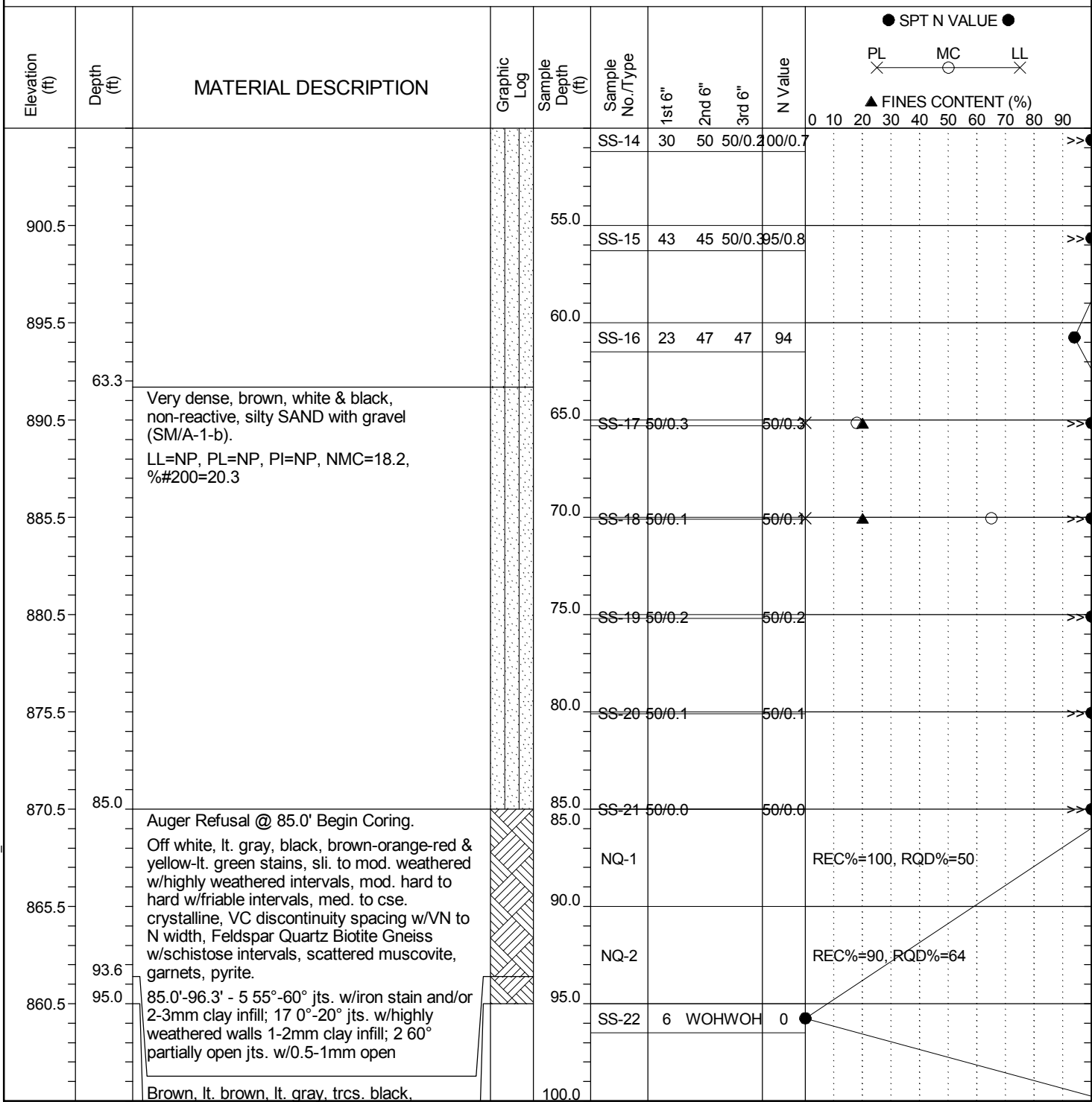
Continued Next Page

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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-3	Boring Location: 359+28	Offset: 18' Rt.	Alignment: I-385 NB C/D
Elev.: 955.5 ft	Latitude: 34.82341	Longitude: 82.29118	Date Started: 5/21/2012
Total Depth: 100.3 ft	Soil Depth: 100.3 ft	Core Depth: 95.0 ft	Date Completed: 5/25/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR



LEGEND

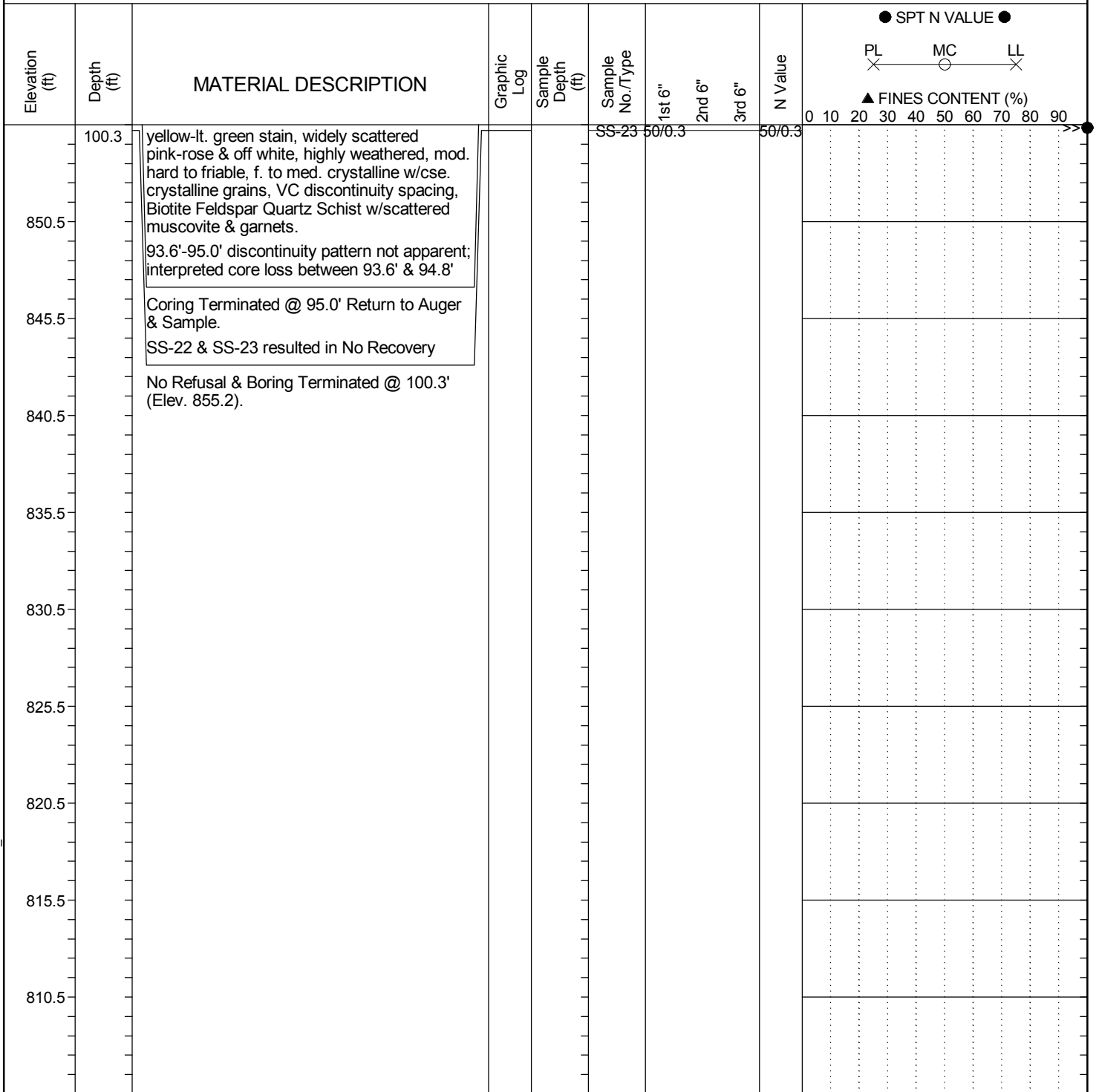
Continued Next Page

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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-3	Boring Location: 359+28	Offset: 18' Rt.	Alignment: I-385 NB C/D
Elev.: 955.5 ft	Latitude: 34.82341	Longitude: 82.29118	Date Started: 5/21/2012
Total Depth: 100.3 ft	Soil Depth: 100.3 ft	Core Depth: 95.0 ft	Date Completed: 5/25/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

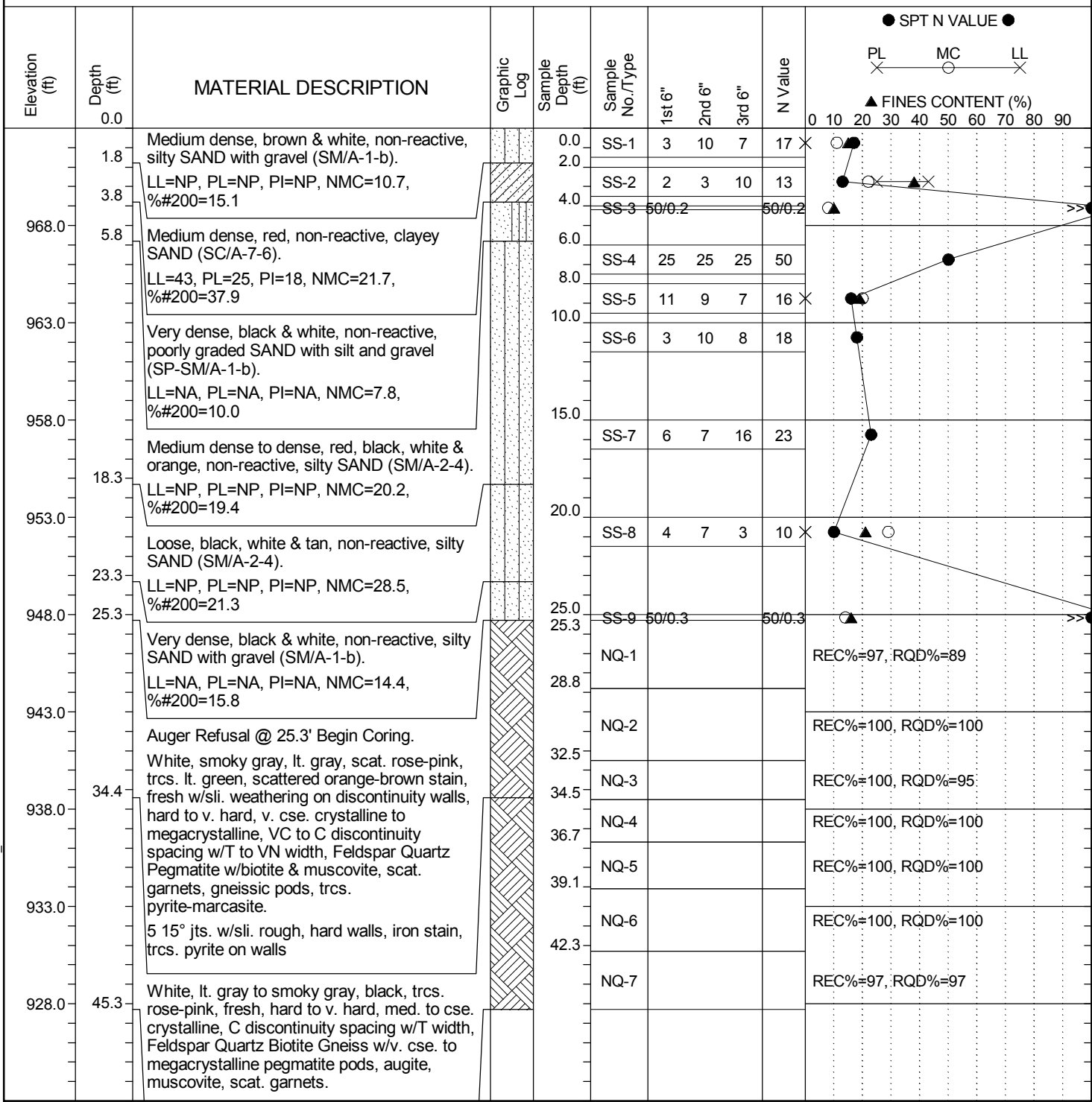
CORE PHOTOGRAPHIC RECORD
I-85 / I-385 Interchange Improvements



B-3 Box 1 of 1

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements		Route:	
Boring No.: B-4	Boring Location: 114+01	Offset: 56' Rt.	Alignment: I-385 SB C/D
Elev.: 973.0 ft	Latitude: 34.82426	Longitude: 82.29235	Date Started: 5/17/2012
Total Depth: 45.3 ft	Soil Depth: 25.3 ft	Core Depth: 45.3 ft	Date Completed: 5/18/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR



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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-4	Boring Location: 114+01	Offset: 56' Rt.	Alignment: I-385 SB C/D
Elev.: 973.0 ft	Latitude: 34.82426	Longitude: 82.29235	Date Started: 5/17/2012
Total Depth: 45.3 ft	Soil Depth: 25.3 ft	Core Depth: 45.3 ft	Date Completed: 5/18/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR

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 X — O — X ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90											
										0	10	20	30	40	50	60	70	80	90		
918.0		3 0°-15° jts. w/sli. rough, hard walls, faint iron stain; granitoid interval 37.5'-38.3'; foliation 80°-65°																			
		Boring Terminated @ 45.3' (Elev. 927.7).																			
913.0																					
908.0																					
903.0																					
898.0																					
893.0																					
888.0																					
883.0																					
878.0																					

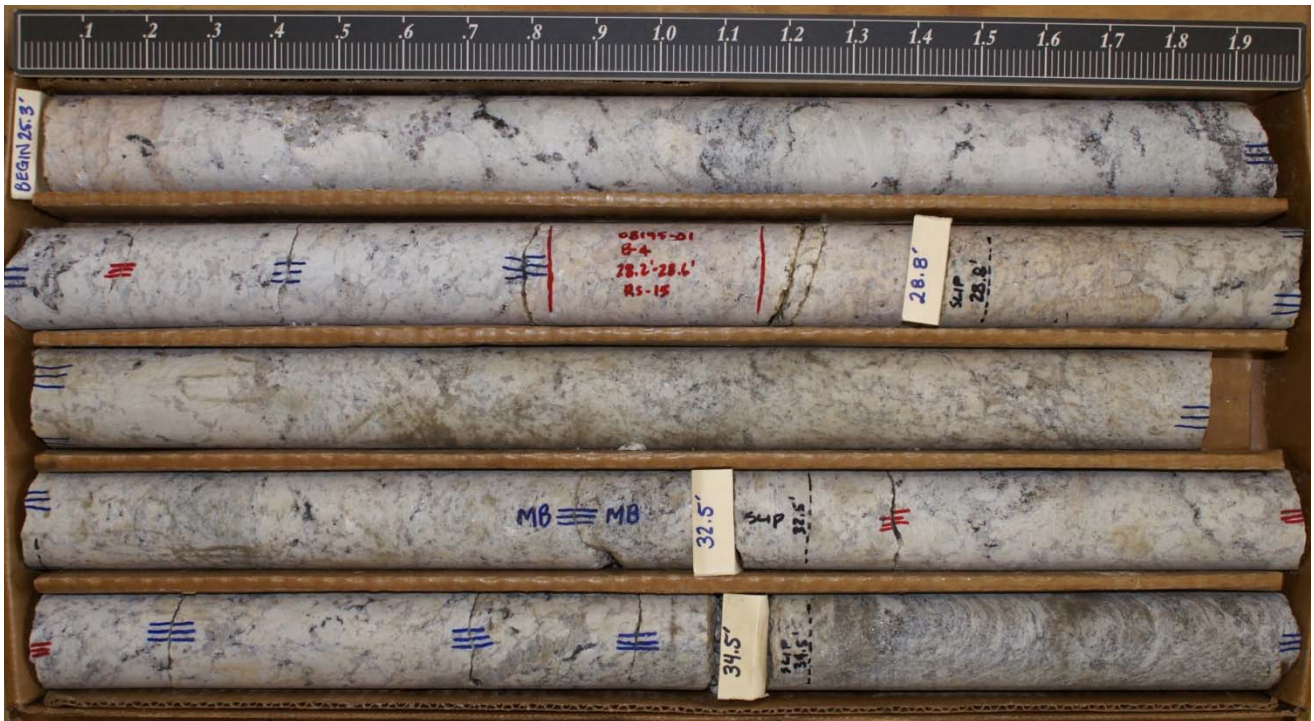
LEGEND

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	

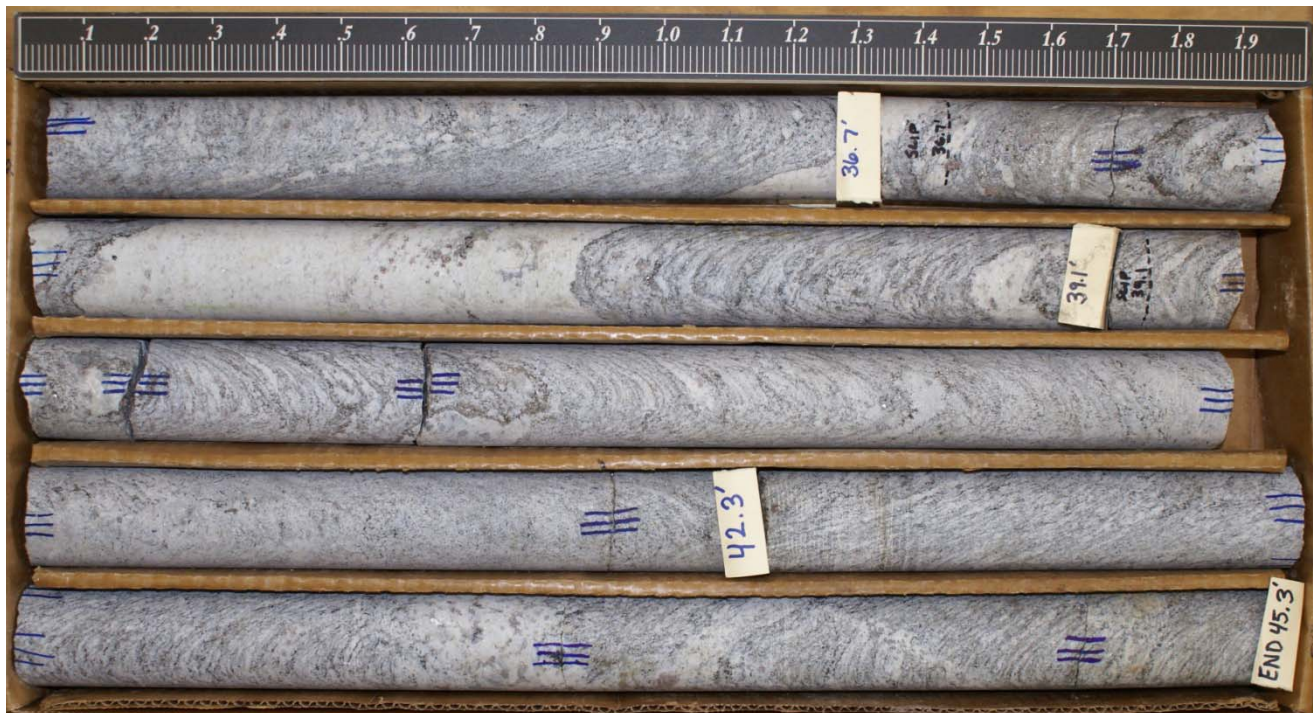
SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



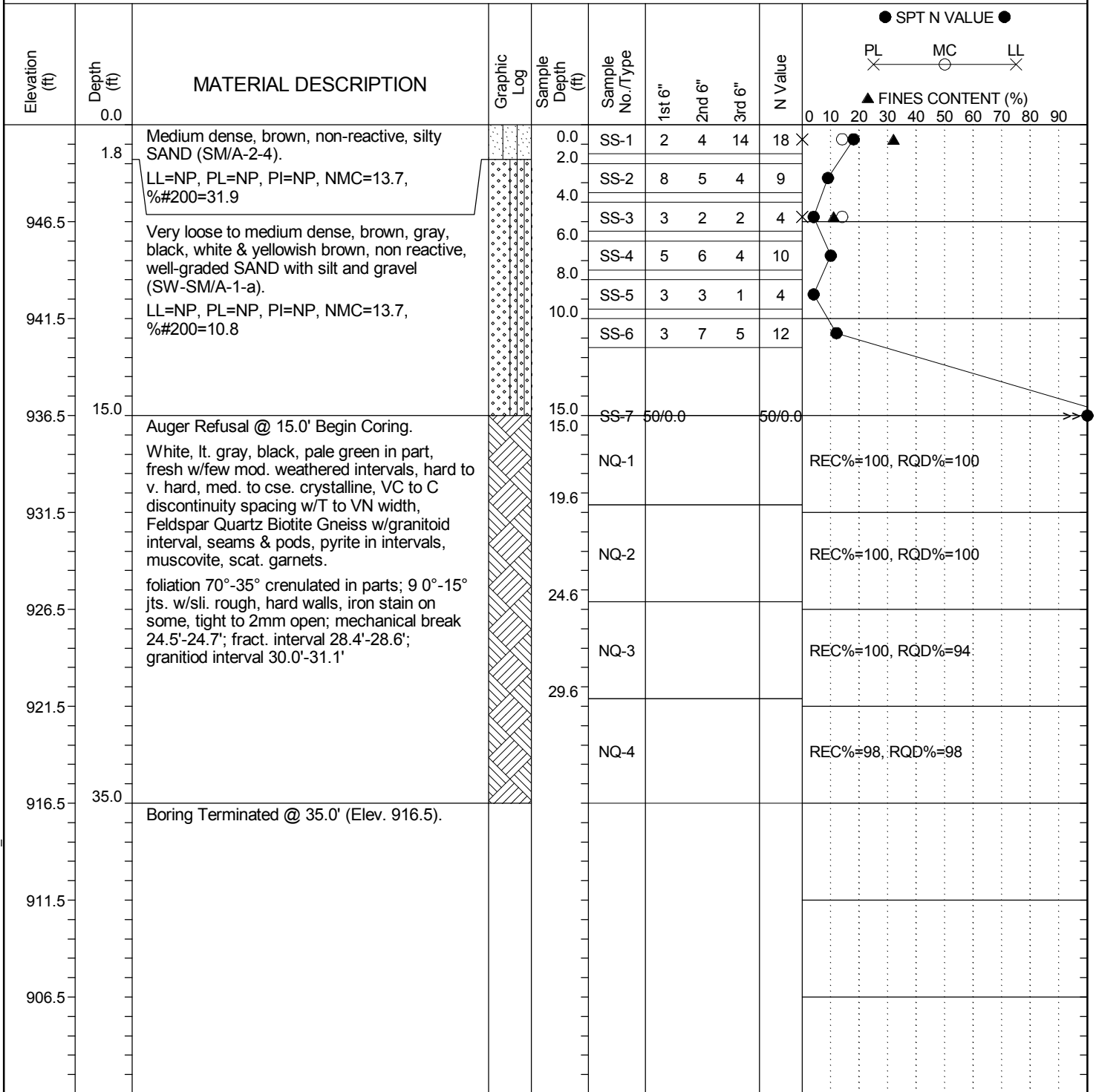
B-4 Box 1 of 2



B-4 Box 2 of 2

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements		Route:	
Boring No.: B-5	Boring Location: 381+47	Offset: 37' Rt.	Alignment: I-385 NB C/D
Elev.: 951.5 ft	Latitude: 34.82925	Longitude: 82.29325	Date Started: 6/18/2012
Total Depth: 35 ft	Soil Depth: 15.0 ft	Core Depth: 35.0 ft	Date Completed: 6/20/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 850	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 74%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR

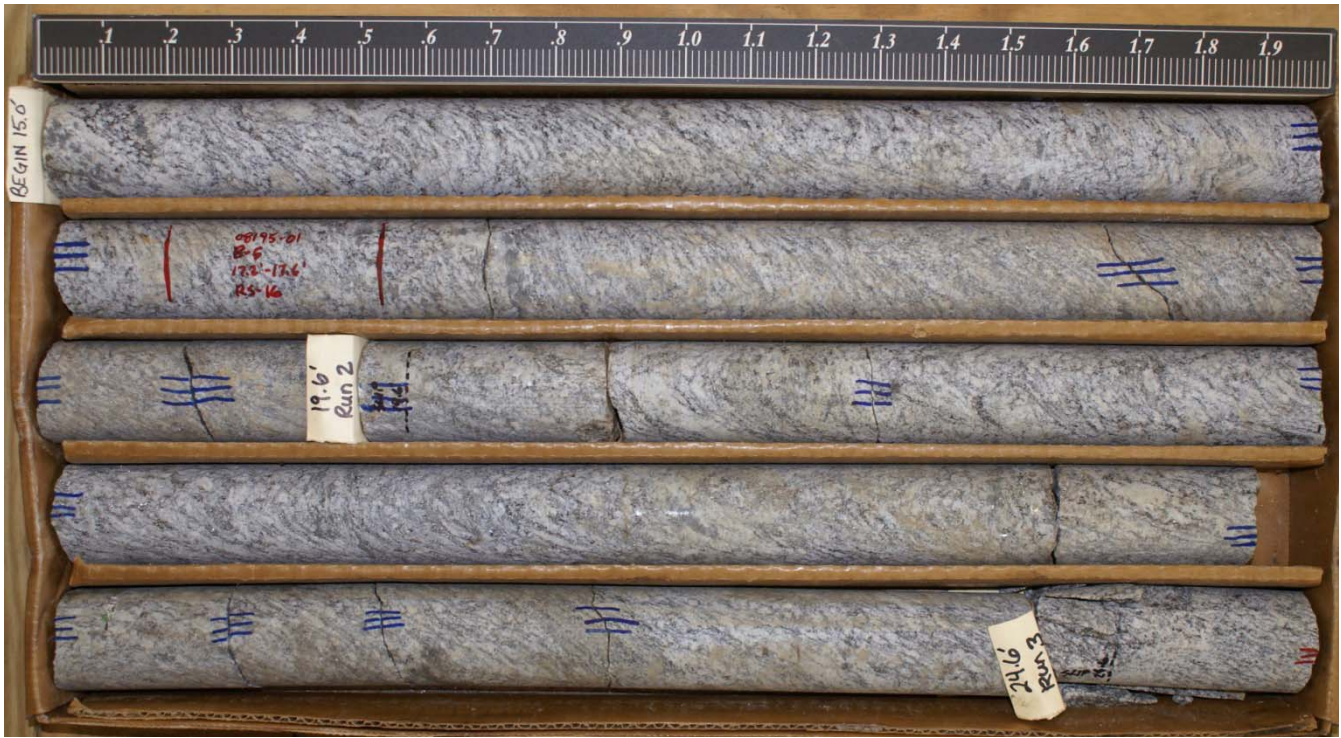


LEGEND

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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

CORE PHOTOGRAPHIC RECORD
I-85 / I-385 Interchange Improvements



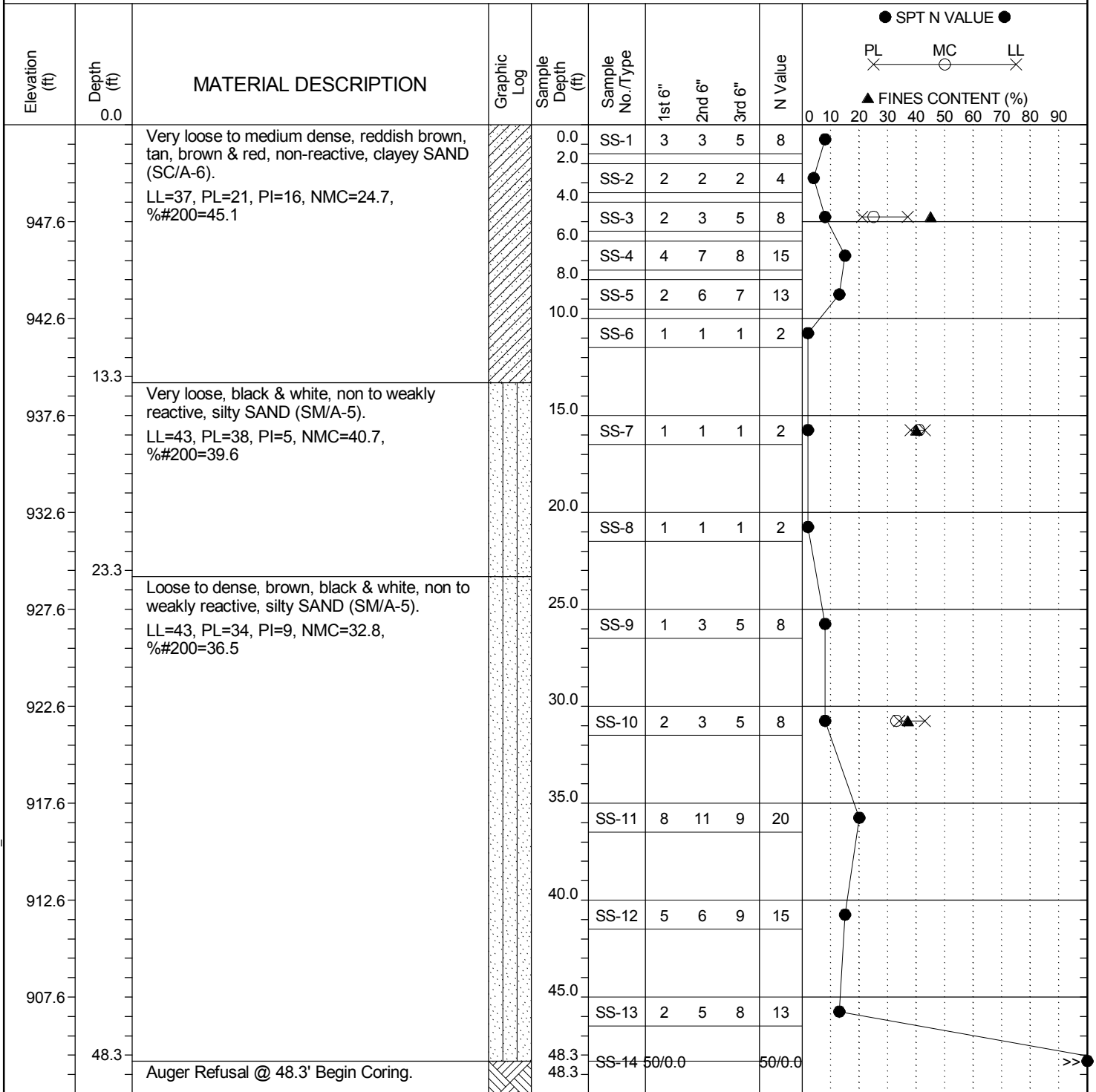
B-5 Box 1 of 2



B-5 Box 2 of 2

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-6	Boring Location: 376+18	Offset: 19' Rt.	Alignment: I-385 NB C/D
Elev.: 952.6 ft	Latitude: 34.8279	Longitude: 82.29257	Date Started: 6/6/2012
Total Depth: 68.3 ft	Soil Depth: 48.3 ft	Core Depth: 68.3 ft	Date Completed: 6/8/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR



LEGEND

Continued Next Page

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

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.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-6	Boring Location: 376+18	Offset: 19' Rt.	Alignment: I-385 NB C/D
Elev.: 952.6 ft	Latitude: 34.8279	Longitude: 82.29257	Date Started: 6/6/2012
Total Depth: 68.3 ft	Soil Depth: 48.3 ft	Core Depth: 68.3 ft	Date Completed: 6/8/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR

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
897.6	53.6	White, lt. gray, black, trcs. lt. green, faint brown-orange-red stain, fresh, hard to v. hard, med. to cse. crystalline, VC to C discontinuity spacing w/T to VN width, Feldspar Quartz Augite Gneiss w/granitoid intervals, pyrite in widely scattered laminae & disseminated, scattered muscovite, garnets. 48.3'-53.6' healed to partially healed 0°-20° discontinuities		52.0	NQ-1						REC%=100, RQD%=100								
892.6		Off white, lt. to med. gray, black, trcs. lt. green, faint brown-orange-red-pink stain, fresh, v. hard, cse. crystalline to megacrystalline, VC discontinuity spacing w/T to VN width, Feldspar Quartz Granitoid Rock w/gneissic intervals, scattered muscovite, biotite pods & laminae.		57.0	NQ-2						REC%=100, RQD%=100								
887.6		53.6'-58.3' 25 0°-20° jts. w/sli. rough, hard walls, tight to 0.5 open, iron stain on most; jts. & mod. weathered 62.1'-62.2', 62.8'-62.9', 64.3'-64.4'		61.2	NQ-3						REC%=100, RQD%=95								
882.6	68.3	Boring Terminated @ 68.3' (Elev. 884.3).		66.1	NQ-4						REC%=98, RQD%=65								
877.6					NQ-5						REC%=95, RQD%=45								

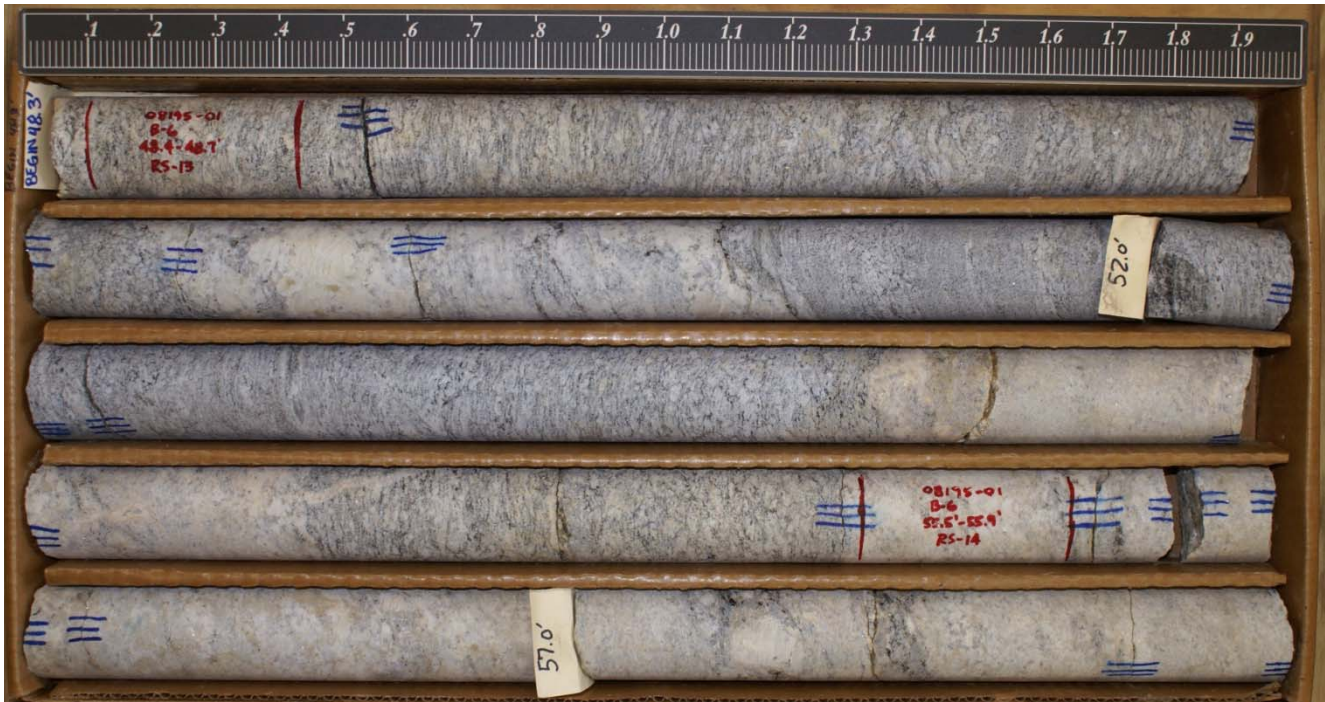
LEGEND

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	

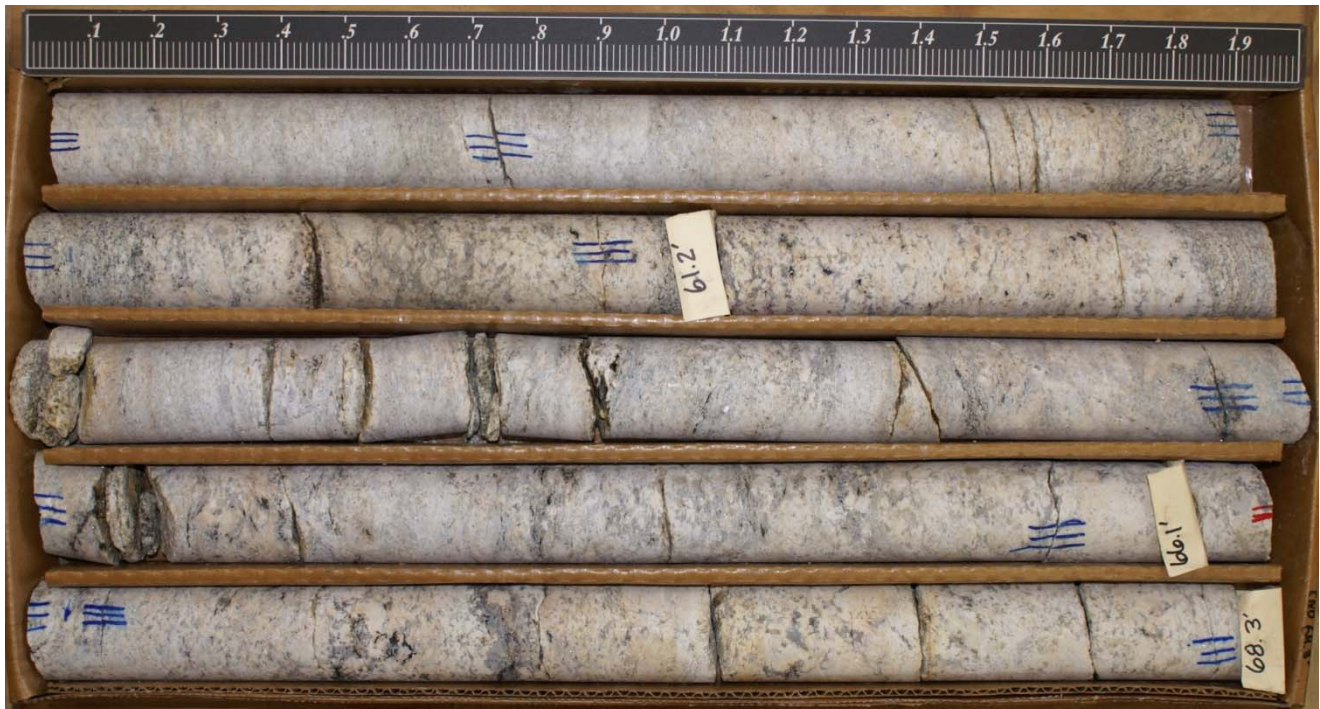
SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



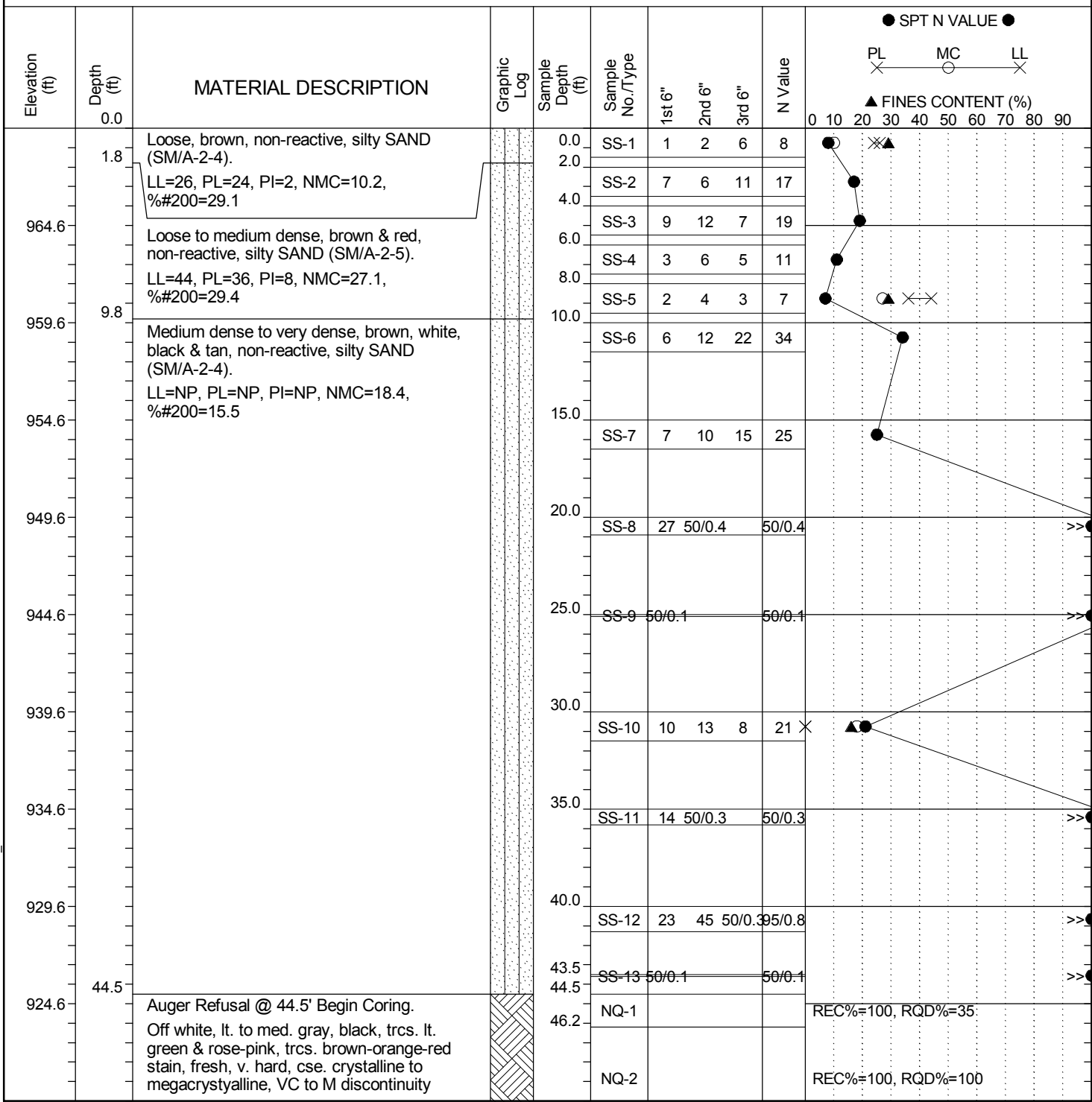
B-6 Box 1 of 2



B-6 Box 2 of 2

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-7	Boring Location: 385+88	Offset: 37' Rt.	Alignment: I-385 NB C/D
Elev.: 969.6 ft	Latitude: 34.83035	Longitude: 82.29386	Date Started: 6/25/2012
Total Depth: 64.5 ft	Soil Depth: 44.5 ft	Core Depth: 64.5 ft	Date Completed: 6/27/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR



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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-7	Boring Location: 385+88	Offset: 37' Rt.	Alignment: I-385 NB C/D
Elev.: 969.6 ft	Latitude: 34.83035	Longitude: 82.29386	Date Started: 6/25/2012
Total Depth: 64.5 ft	Soil Depth: 44.5 ft	Core Depth: 64.5 ft	Date Completed: 6/27/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR

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 (%)						
914.6	54.5	spacing w/T to VN width, Feldspar Quartz Granitoid Rock w/gneissic foliation in parts, scattered muscovite, biotite pods & laminae, trcs. garnets.		51.4	NQ-3					REC%=100, RQD%=100									
909.6		4 0°-30° jts., v. hard walls, 1mm open; 1 40° jt., v. hard walls, 0mm open; 1 35° foliation jt., hard walls, 0mm open		56.0	NQ-4					REC%=96, RQD%=61									
904.6	64.5	White, lt. gray, black, trcs. lt. green, fresh, v. hard, med. to cse. crystalline, VC to C discontinuity spacing w/T to VN width, Feldspar Quartz Augite Gneiss w/granitoid intervals, biotite & scattered muscovite, garnetiferous.		60.6	NQ-5					REC%=100, RQD%=100									
		foliation 80°-90° 65° in bottom; 13 0° jts., v. hard walls, 0mm open; 1 20° jt., 1-10mm open; VC discontinuity spacing 56.8'-60.4' includes core loss																	
		Boring Terminated @ 64.5' (Elev. 905.1).																	

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	

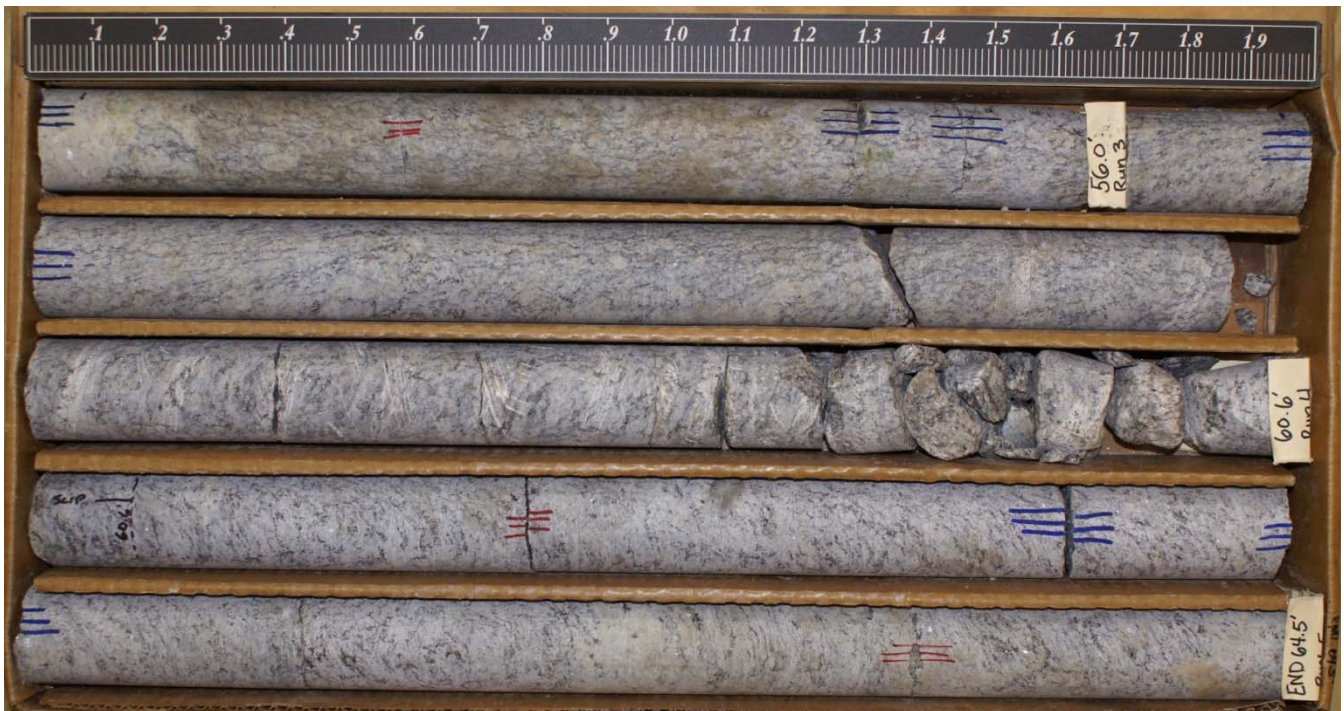
SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



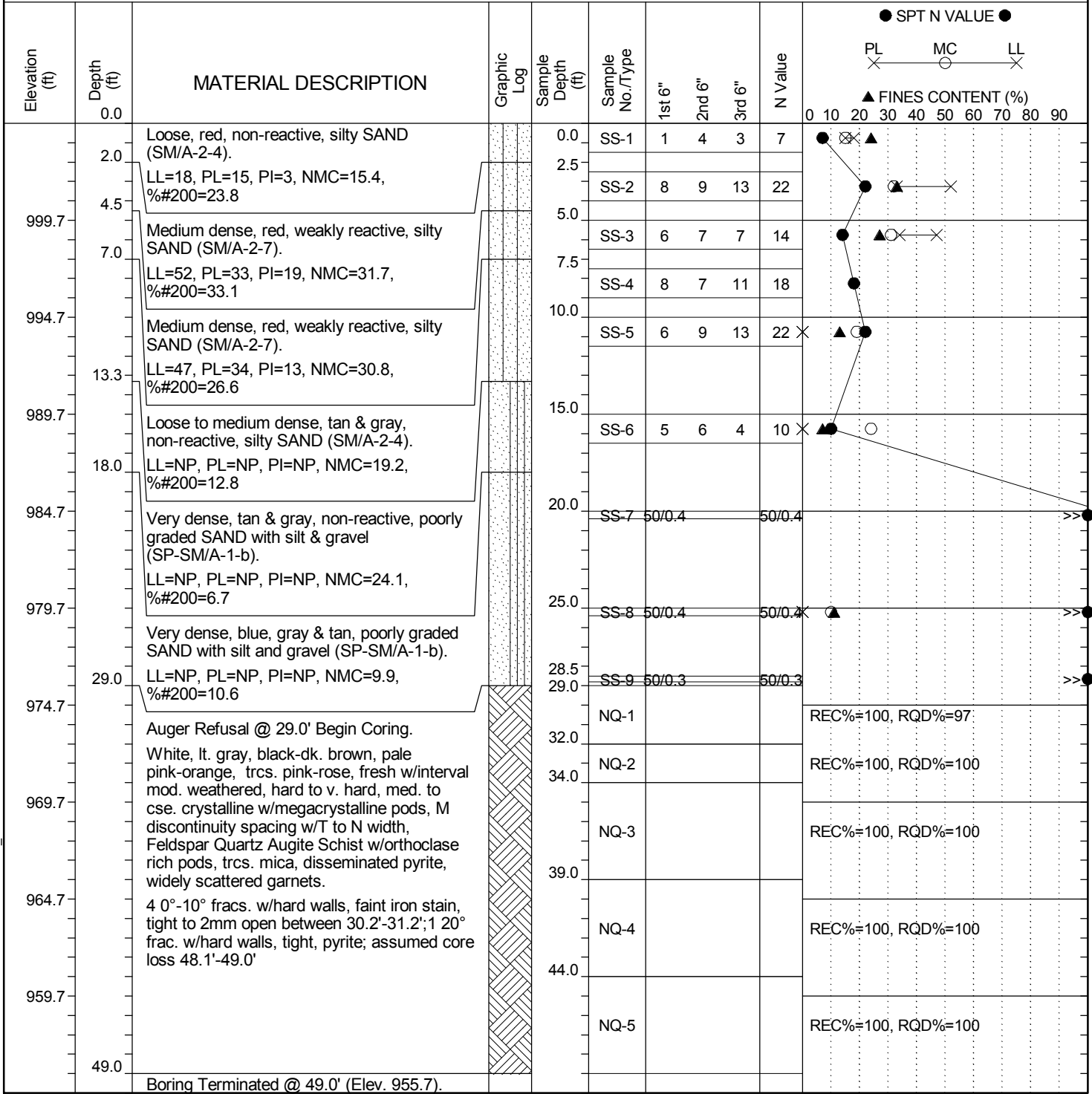
B-7 Box 1 of 2



B-7 Box 2 of 2

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements		Route:	
Boring No.: B-8	Boring Location: 60+41	Offset: 5' Lt.	Alignment: Ramp 2
Elev.: 1004.7 ft	Latitude: 34.83184	Longitude: 82.3006	Date Started: 1/4/2012
Total Depth: 49 ft	Soil Depth: 29.0 ft	Core Depth: 49.0 ft	Date Completed: 1/4/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 55	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 73%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR



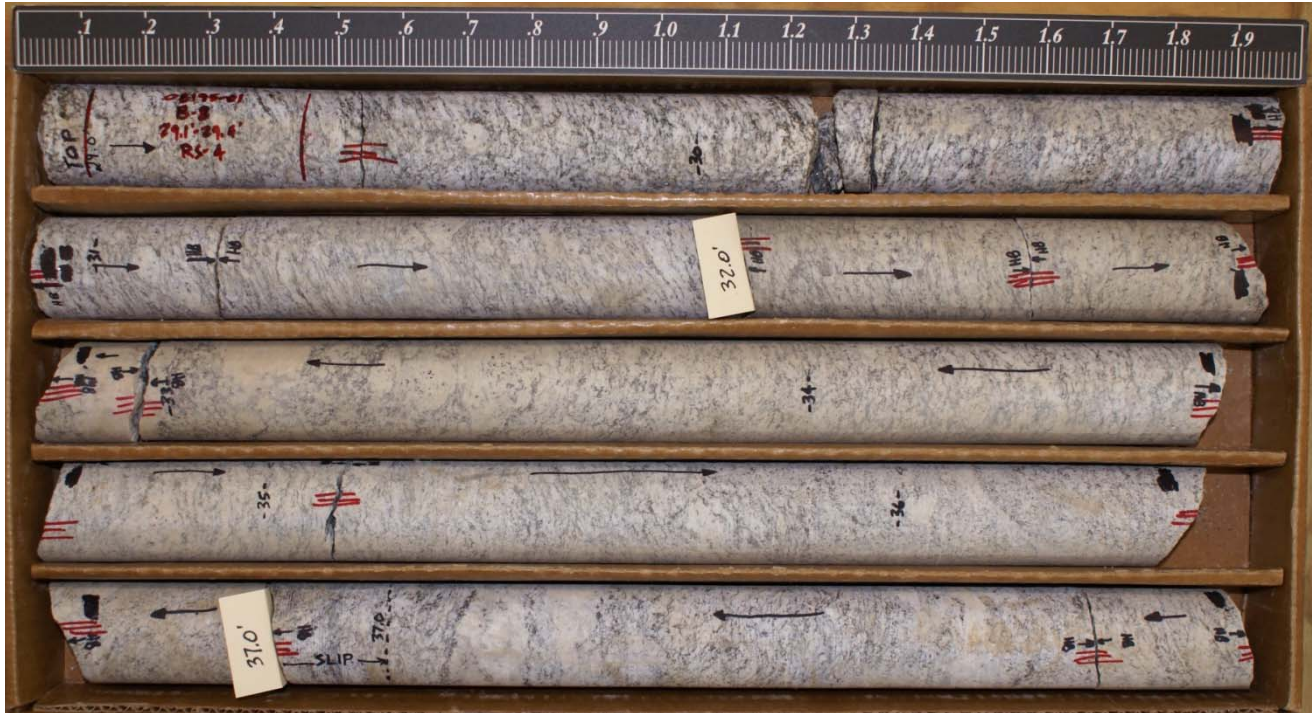
LEGEND

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	

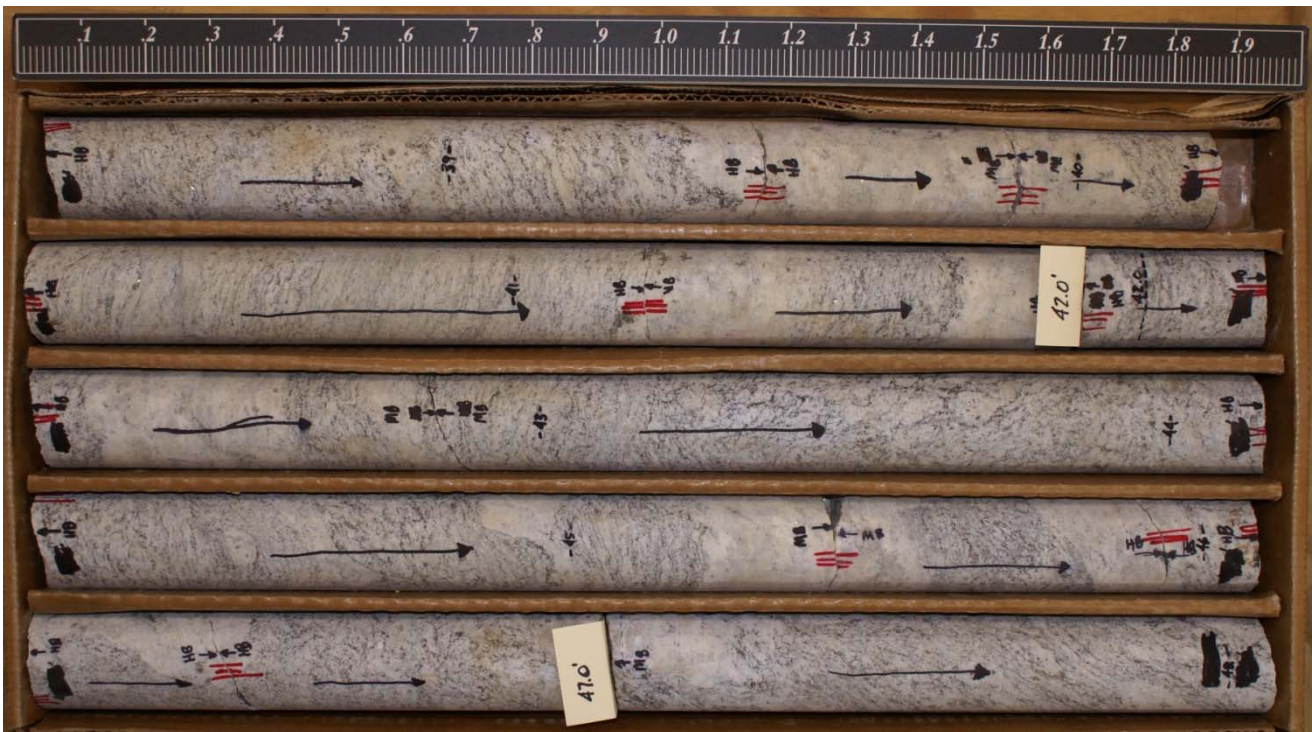
SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



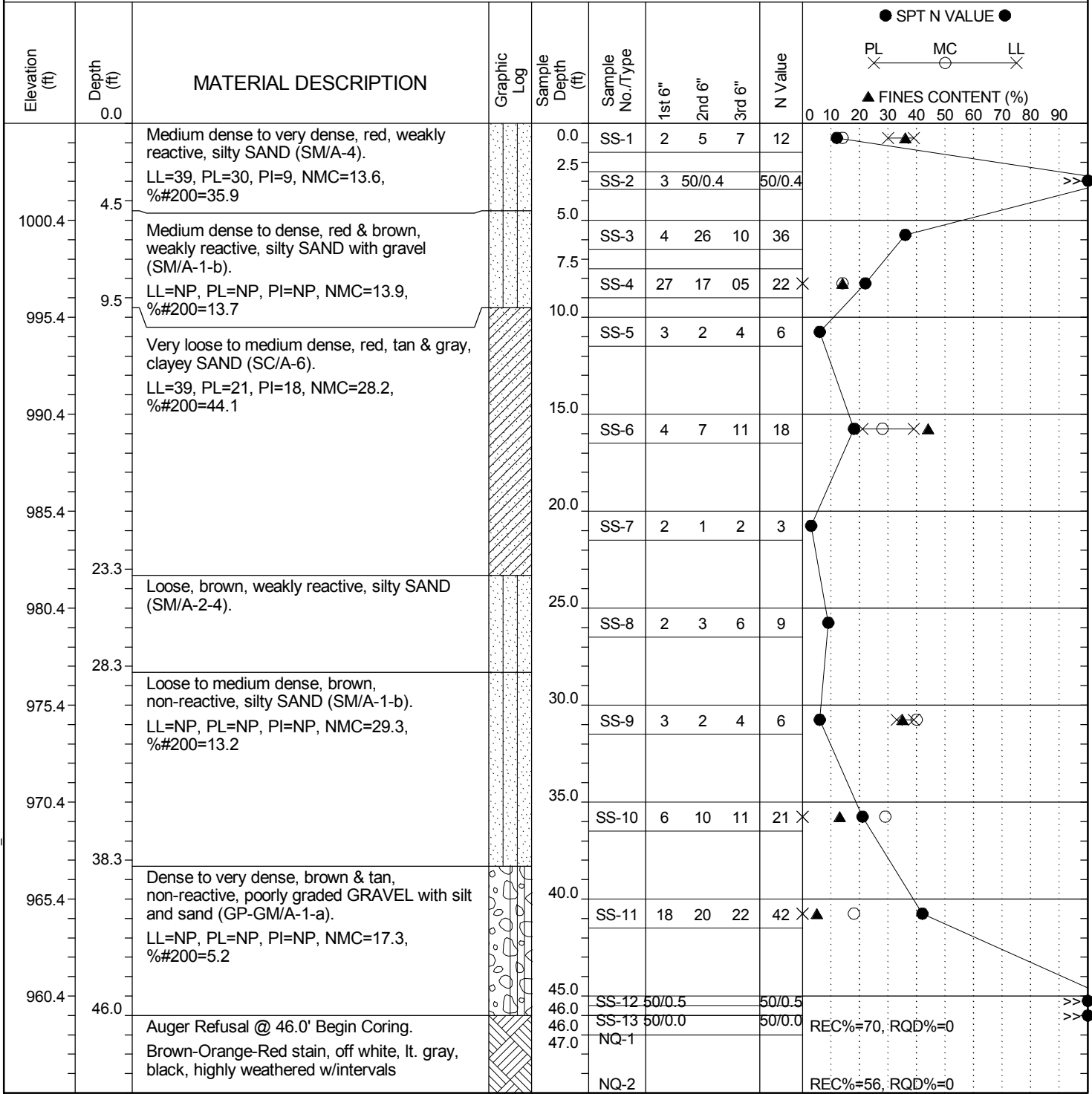
B-8 Box 1 of 2



B-8 Box 2 of 2

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements		Route:	
Boring No.: B-9	Boring Location: 411+13	Offset: 71' Rt.	Alignment: Ramp 4B
Elev.: 1005.4 ft	Latitude: 34.83252	Longitude: 82.30001	Date Started: 2/1/2012
Total Depth: 66 ft	Soil Depth: 46.0 ft	Core Depth: 66.0 ft	Date Completed: 2/2/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR



LEGEND

Continued Next Page

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

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	

CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



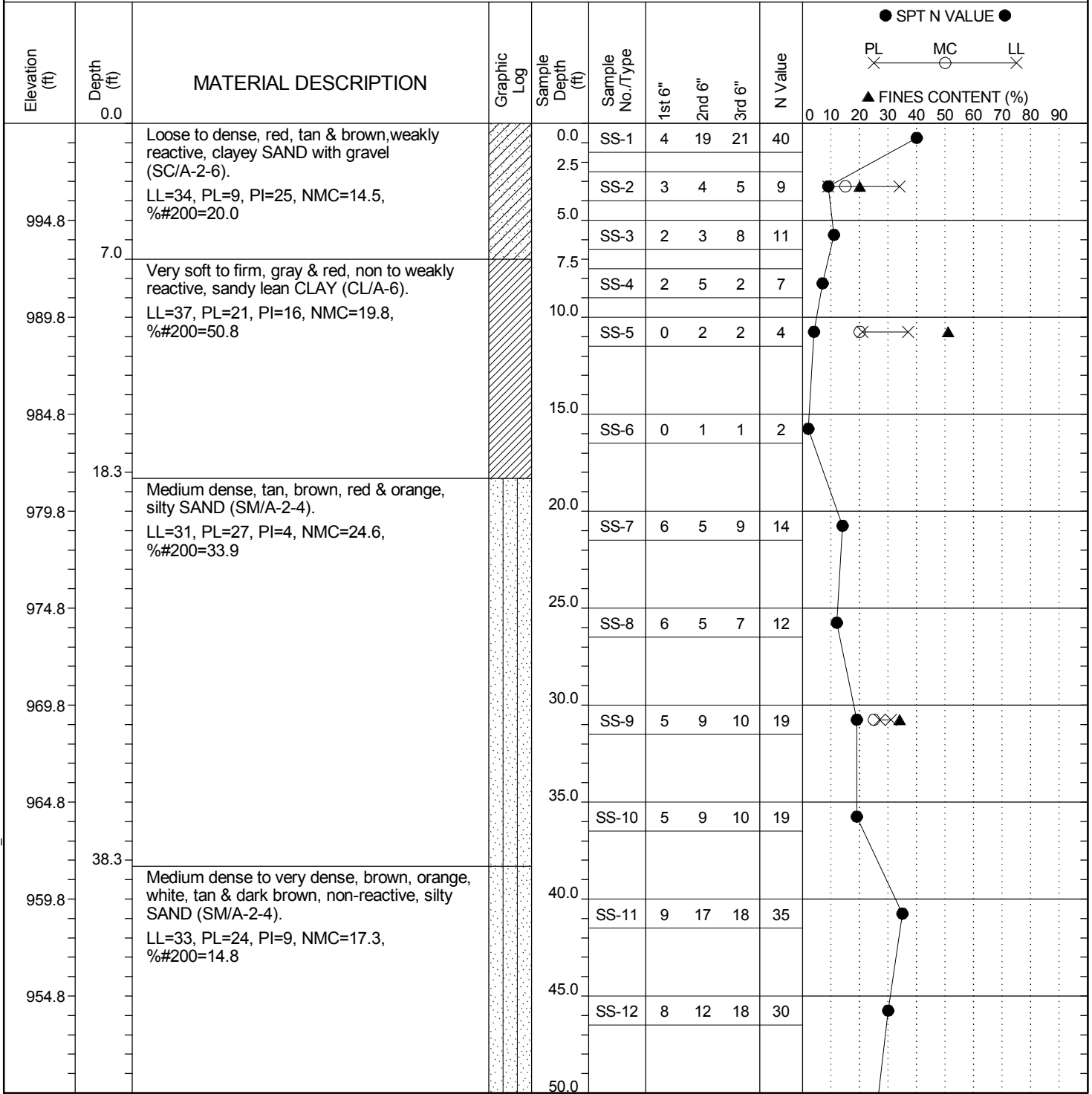
B-9 Box 1 of 2



B-9 Box 2 of 2

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-10	Boring Location: 408+78	Offset: 94' Rt.	Alignment: Ramp 4B
Elev.: 999.8 ft	Latitude: 34.83311	Longitude: 82.29955	Date Started: 1/19/2012
Total Depth: 102 ft	Soil Depth: 80.0 ft	Core Depth: 102.0 ft	Date Completed: 1/31/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR



LEGEND

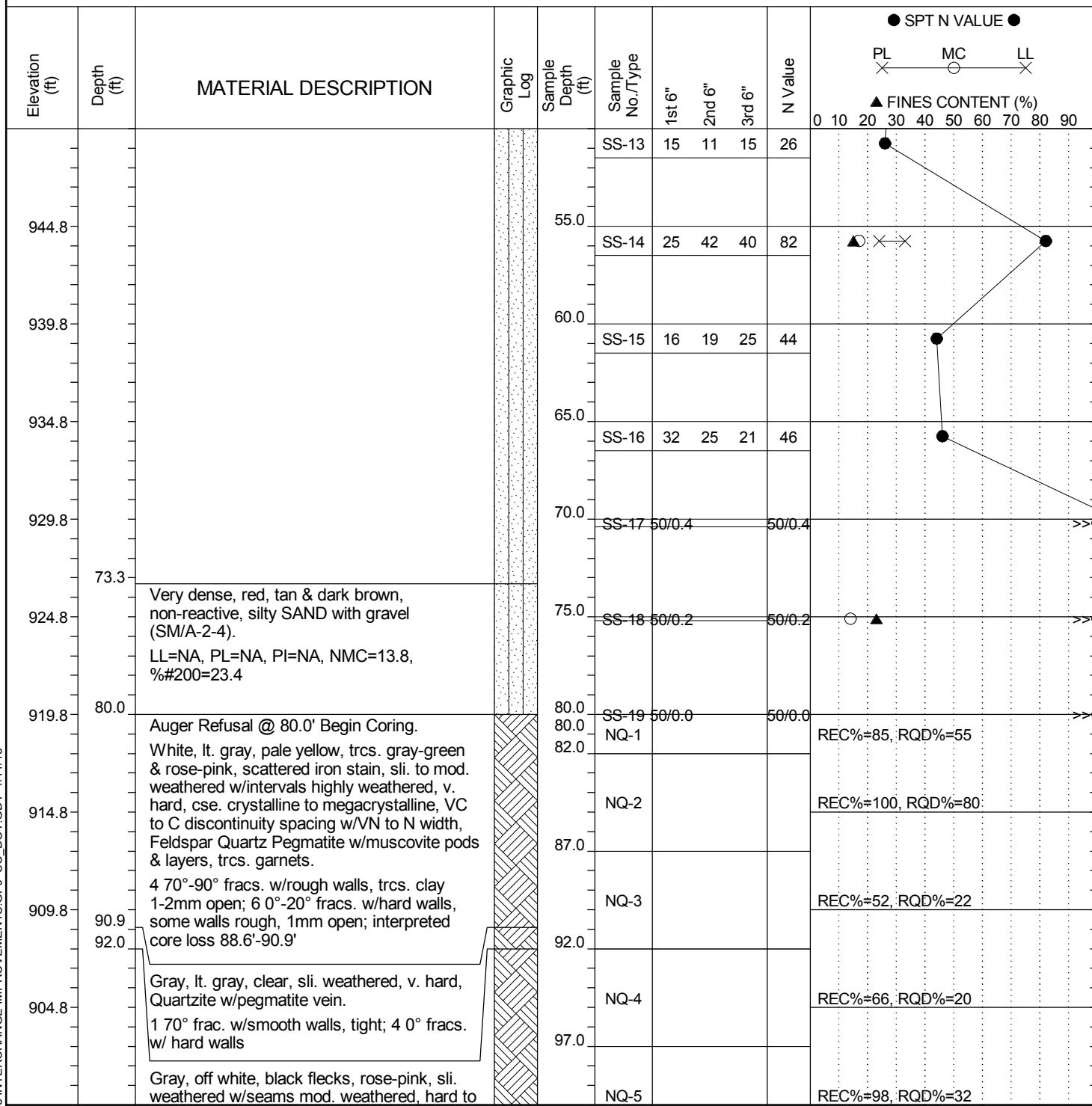
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-10	Boring Location: 408+78	Offset: 94' Rt.	Alignment: Ramp 4B
Elev.: 999.8 ft	Latitude: 34.83311	Longitude: 82.29955	Date Started: 1/19/2012
Total Depth: 102 ft	Soil Depth: 80.0 ft	Core Depth: 102.0 ft	Date Completed: 1/31/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR



LEGEND

Continued Next Page

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

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.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-10	Boring Location: 408+78	Offset: 94' Rt.	Alignment: Ramp 4B
Elev.: 999.8 ft	Latitude: 34.83311	Longitude: 82.29955	Date Started: 1/19/2012
Total Depth: 102 ft	Soil Depth: 80.0 ft	Core Depth: 102.0 ft	Date Completed: 1/31/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR

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 (%)										
102.0		v. hard, med. crystalline & equigranular w/veins & pods cse. to megacrystalline, VC discontinuity spacing w/T to N width, Quartz Biotite Schist w/Feldspar Quartz Pegmatite veins & pods, pyrite disseminated & along frac. walls, scattered garnets. interpreted core loss 92.7'-94.4'; 4 70°-90° frags. w/clay film 1-2mm open; 14 40°-50° frags. w/mod. weathered surfaces, trcs. clay, 2mm open; 24 10°-20° frags. w/hard walls, some walls rough, 1-2mm open Boring Terminated @ 102.0' (Elev. 897.8).																					
894.8																							
889.8																							
884.8		Ground was frozen resulting in higher than expected blow counts for SS-1. At approximately 7.5' the drill bit became tangled with a chain link fence underground, boring moved approximately 5' and drilling resumed with SS-4 @ 7.5'. Crushed rock layer located at approximately 88.65'.																					
879.8																							
874.8																							
869.8																							
864.8																							
859.8																							
854.8																							

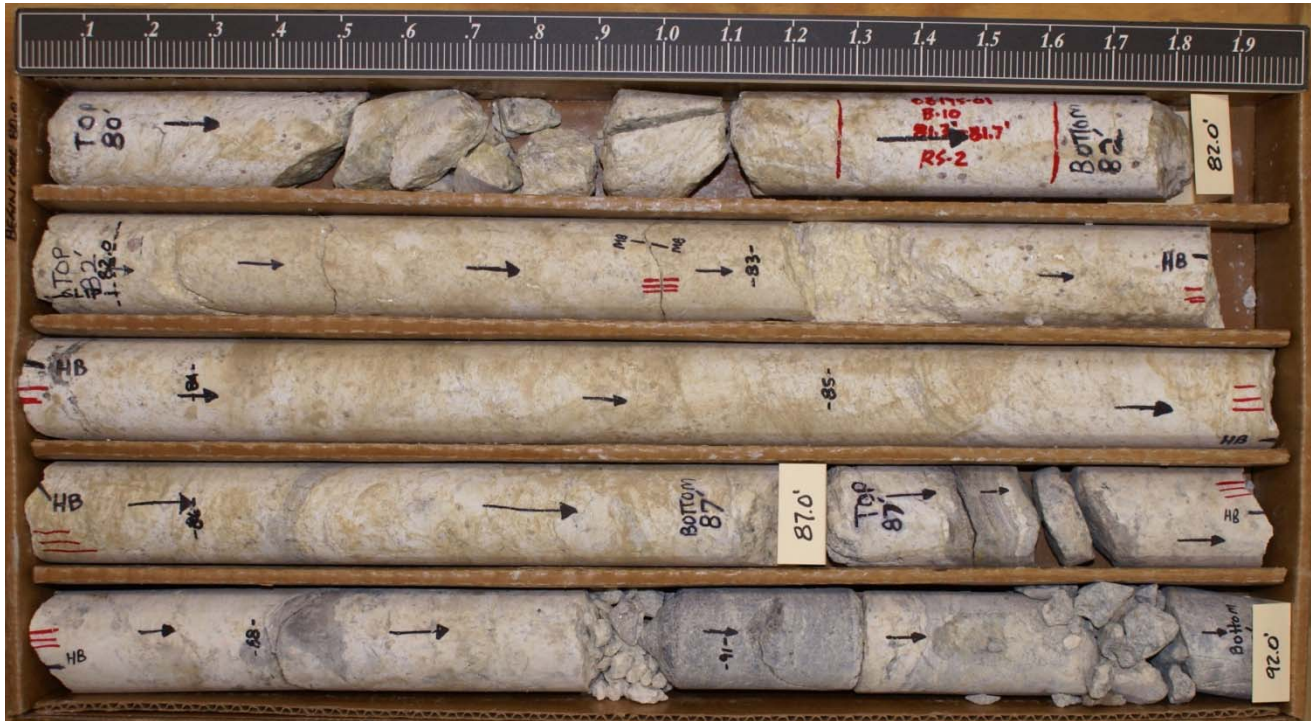
LEGEND

SAMPLER TYPE SS - Split Spoon ST - Shelby Tube AWG - Rock Core, 1-1/8" NQ - Rock Core, 1-7/8" CU - Cuttings CT - Continuous Tube		DRILLING METHOD HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing RW - Rotary Wash RC - Rock Core	
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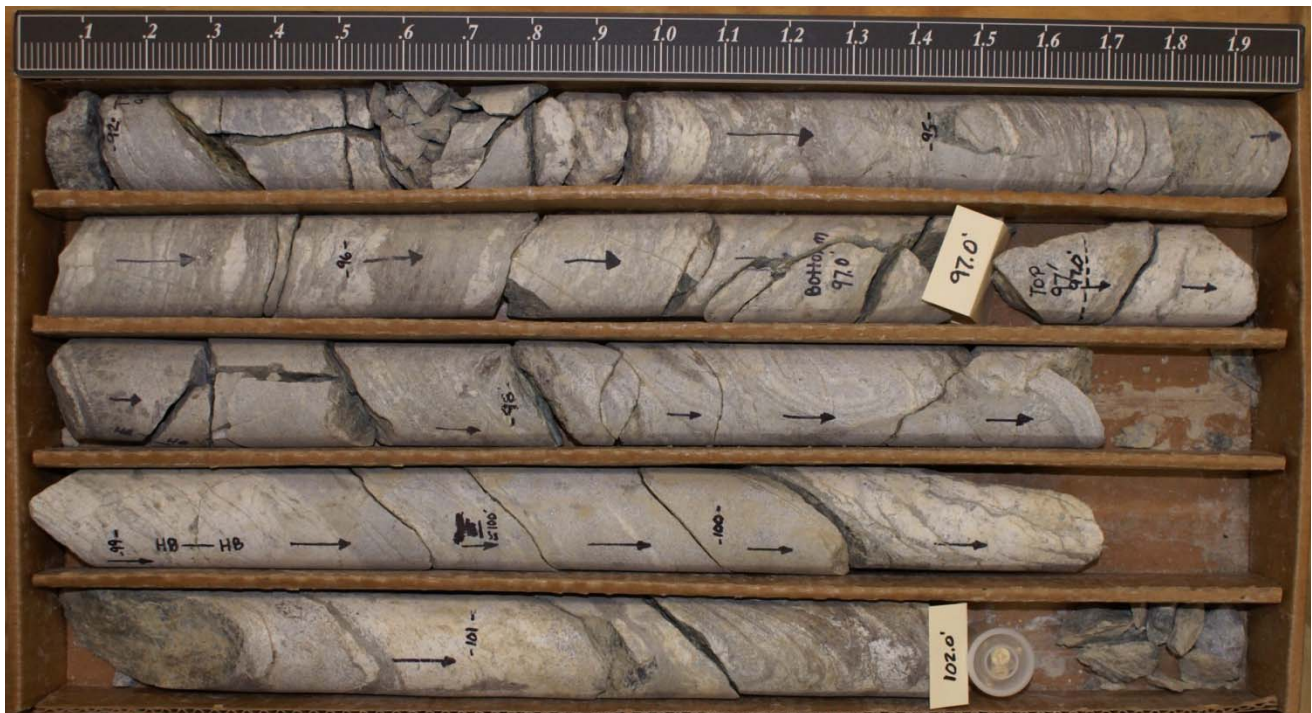
SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



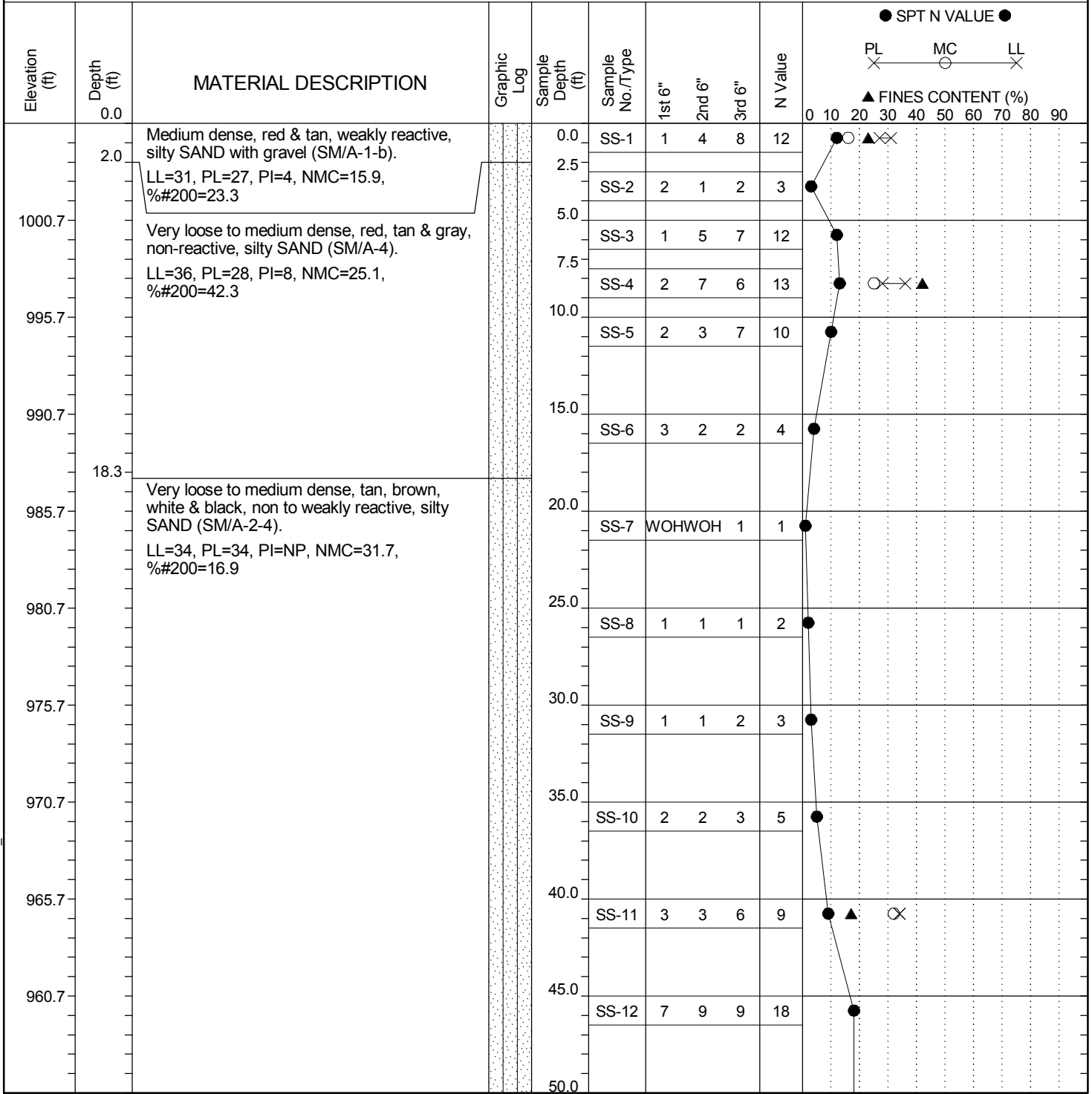
B-10 Box 1 of 2



B-10 Box 2 of 2

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-11	Boring Location: 404+98	Offset: 94' Lt.	Alignment: I-385
Elev.: 1005.7 ft	Latitude: 34.83368	Longitude: 82.29895	Date Started: 1/18/2012
Total Depth: 101.5 ft	Soil Depth: 101.5 ft	Core Depth: ft	Date Completed: 1/18/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



LEGEND

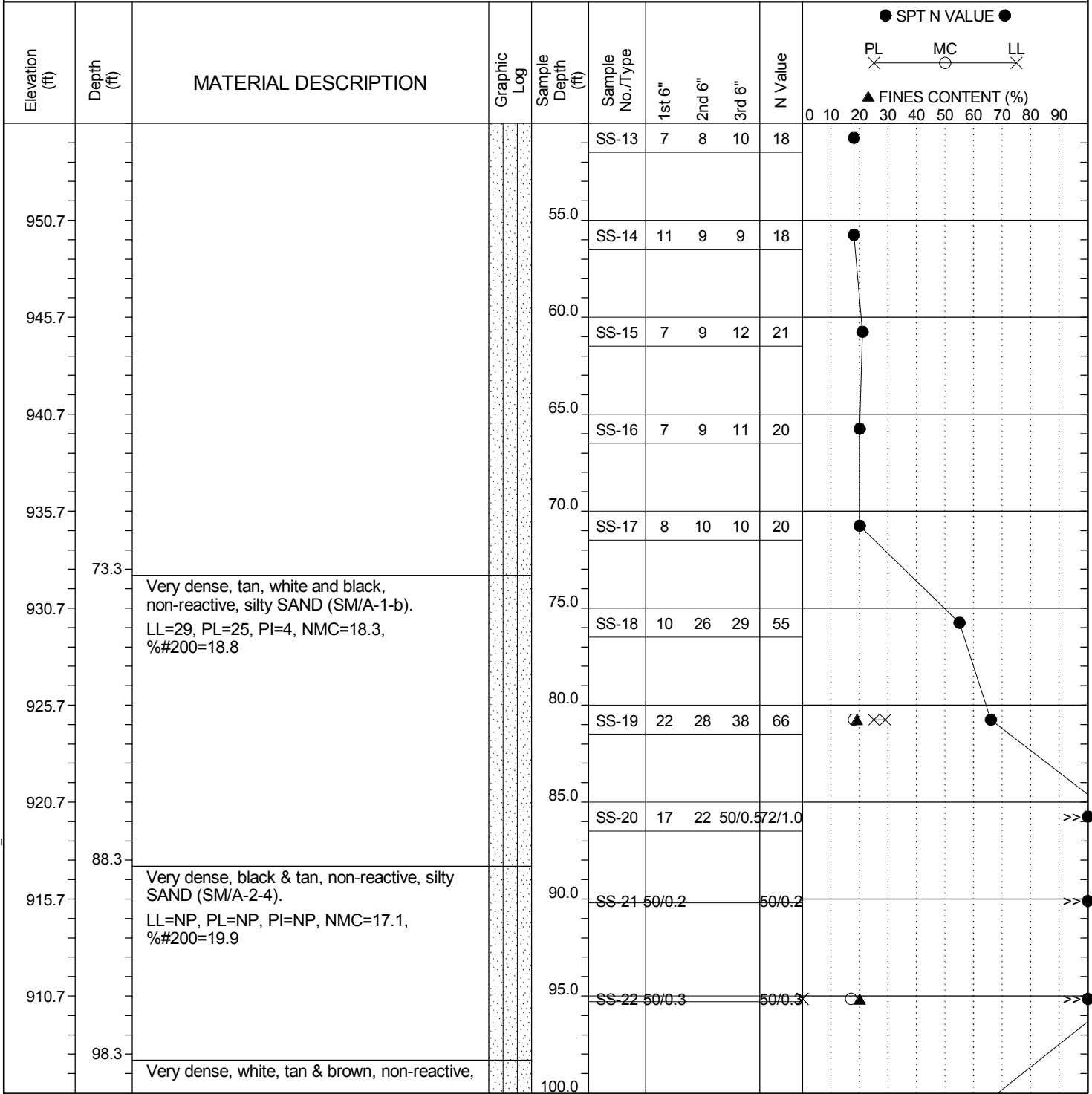
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-11	Boring Location: 404+98	Offset: 94' Lt.	Alignment: I-385
Elev.: 1005.7 ft	Latitude: 34.83368	Longitude: 82.29895	Date Started: 1/18/2012
Total Depth: 101.5 ft	Soil Depth: 101.5 ft	Core Depth: ft	Date Completed: 1/18/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-11	Boring Location: 404+98	Offset: 94' Lt.	Alignment: I-385
Elev.: 1005.7 ft	Latitude: 34.83368	Longitude: 82.29895	Date Started: 1/18/2012
Total Depth: 101.5 ft	Soil Depth: 101.5 ft	Core Depth: ft	Date Completed: 1/18/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<p>● SPT N VALUE ●</p> <p>PL — MC — LL</p> <p>▲ FINES CONTENT (%)</p> <p>0 10 20 30 40 50 60 70 80 90</p>									
										0	10	20	30	40	50	60	70	80	90
101.5	101.5	silty SAND (SM/A-1-b). No Refusal & Boring Terminated @ 101.5' (Elev. 904.2).			SS-23	16	18	44	62										
900.7																			
895.7																			
890.7																			
885.7																			
880.7																			
875.7																			
870.7																			
865.7																			
860.7																			

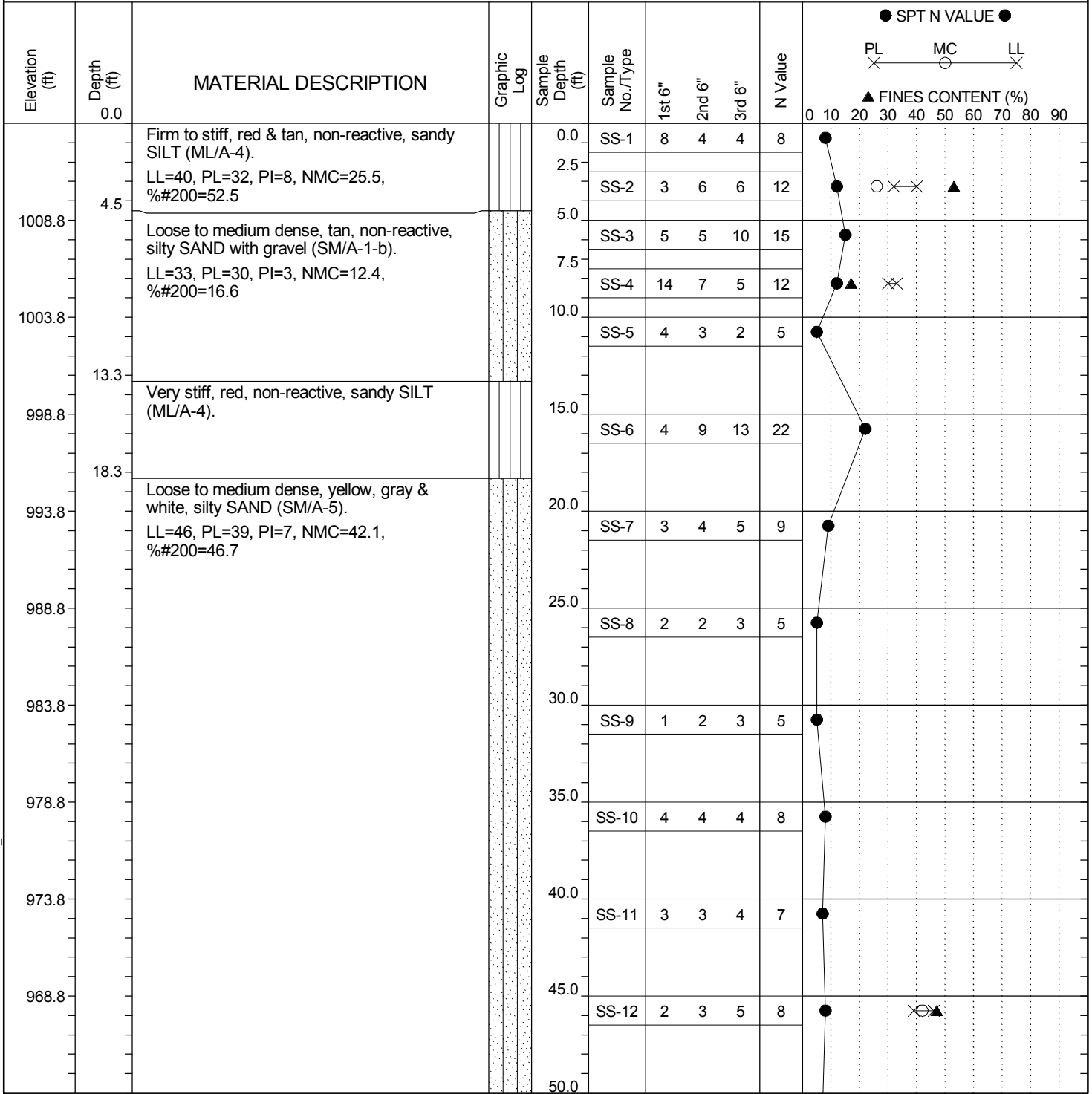
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements		Route:	
Boring No.: B-12	Boring Location: 404+37	Offset: 95' Rt.	Alignment: I-385
Elev.: 1013.8 ft	Latitude: 34.83407	Longitude: 82.29848	Date Started: 1/6/2012
Total Depth: 101.5 ft	Soil Depth: 101.5 ft	Core Depth: ft	Date Completed: 1/10/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 55	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 73%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



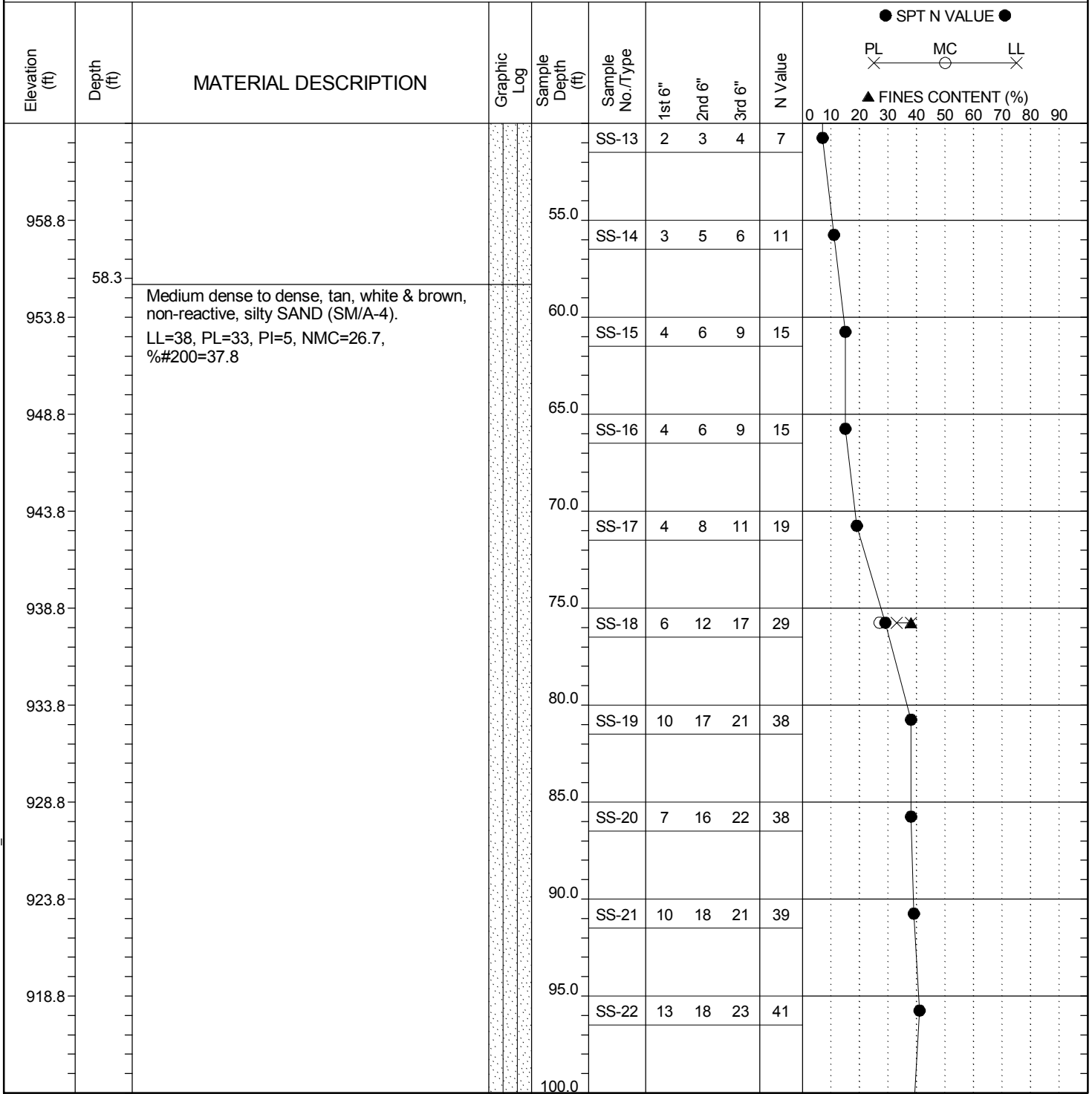
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-12	Boring Location: 404+37	Offset: 95' Rt.	Alignment: I-385
Elev.: 1013.8 ft	Latitude: 34.83407	Longitude: 82.29848	Date Started: 1/6/2012
Total Depth: 101.5 ft	Soil Depth: 101.5 ft	Core Depth: ft	Date Completed: 1/10/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 55	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 73%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



LEGEND

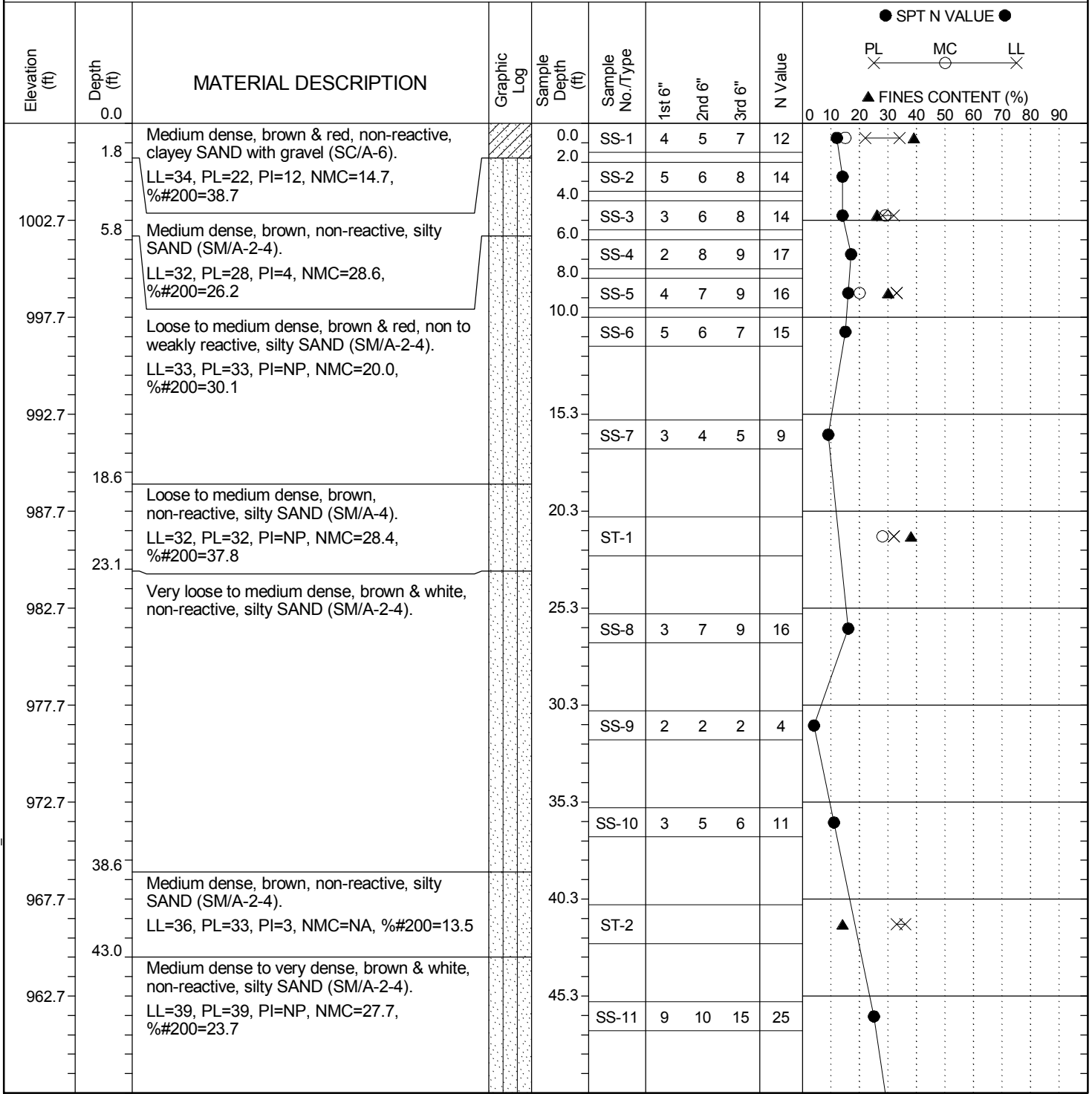
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-13	Boring Location: 307+24	Offset: 82' Lt.	Alignment: Ramp 3A
Elev.: 1007.7 ft	Latitude: 34.83461	Longitude: 82.29752	Date Started: 11/17/11
Total Depth: 101.8 ft	Soil Depth: 101.8 ft	Core Depth: ft	Date Completed: 11/18/2011
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: RW	Hammer Type: Automatic	Energy Ratio: 93%
Core Size: NA	Driller: F. Woodard	Groundwater: TOB	24HR



LEGEND

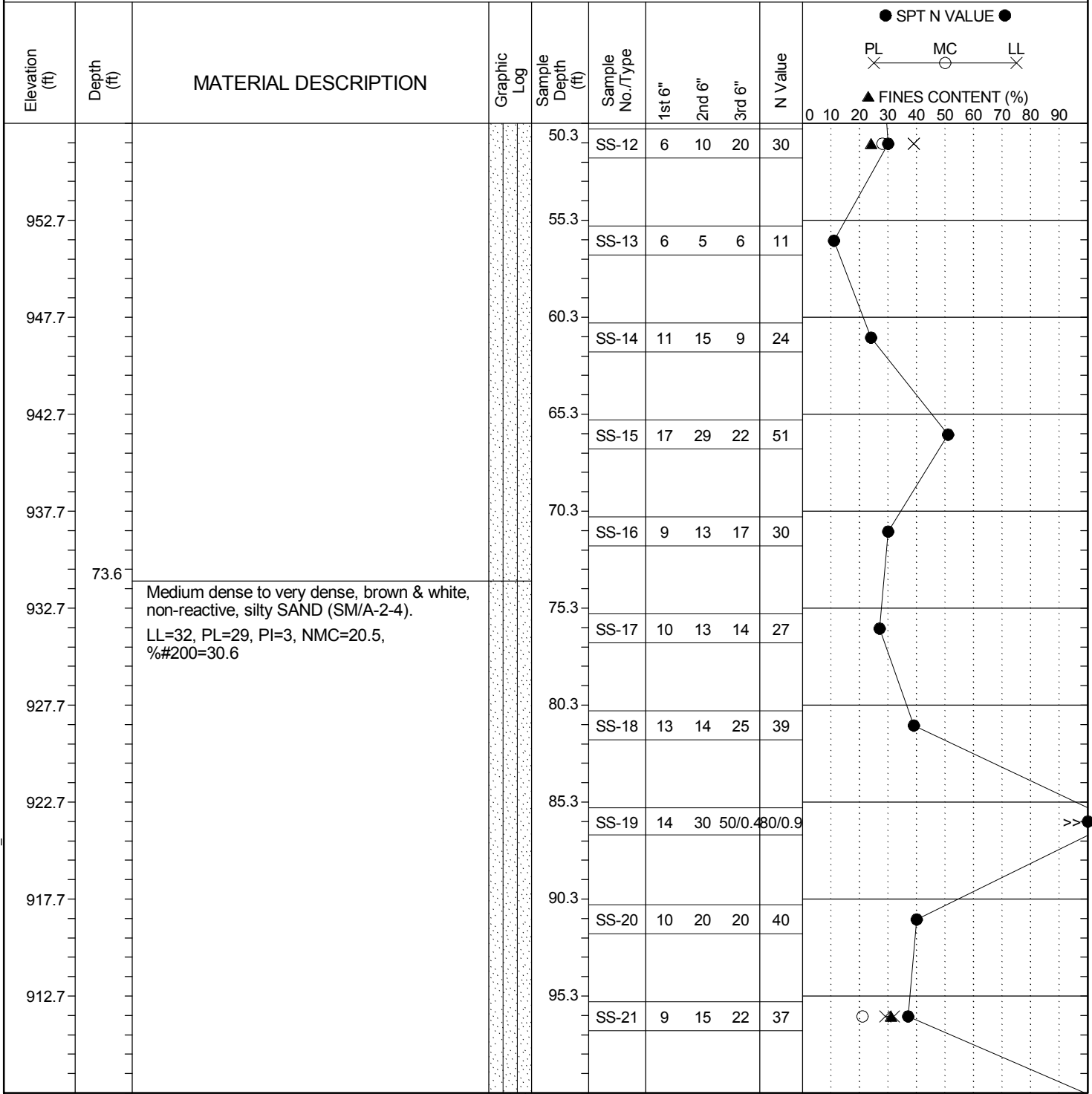
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-13	Boring Location: 307+24	Offset: 82' Lt.	Alignment: Ramp 3A
Elev.: 1007.7 ft	Latitude: 34.83461	Longitude: 82.29752	Date Started: 11/17/11
Total Depth: 101.8 ft	Soil Depth: 101.8 ft	Core Depth: ft	Date Completed: 11/18/2011
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: RW	Hammer Type: Automatic	Energy Ratio: 93%
Core Size: NA	Driller: F. Woodard	Groundwater: TOB	24HR



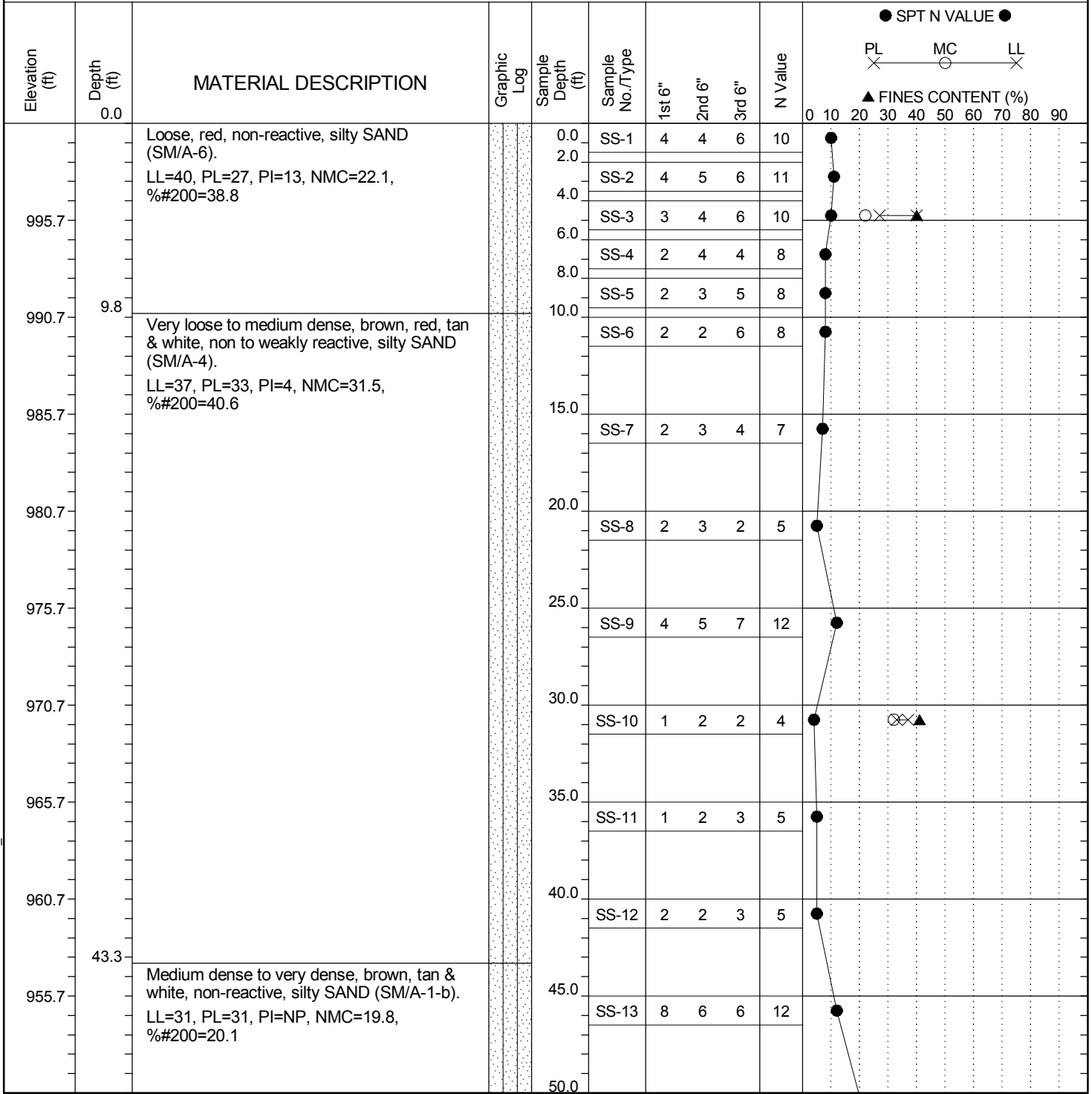
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SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

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.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-14	Boring Location: 303+99	Offset: 54' Lt.	Alignment: Ramp 3A
Elev.: 1000.7 ft	Latitude: 34.83471	Longitude: 82.29644	Date Started: 11/6/2011
Total Depth: 110.8 ft	Soil Depth: 90.8 ft	Core Depth: 110.8 ft	Date Completed: 11/8/2011
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: RW/RC	Hammer Type: Automatic	Energy Ratio: 93%
Core Size: NQ2	Driller: F. Woodard	Groundwater: TOB	24HR



LEGEND

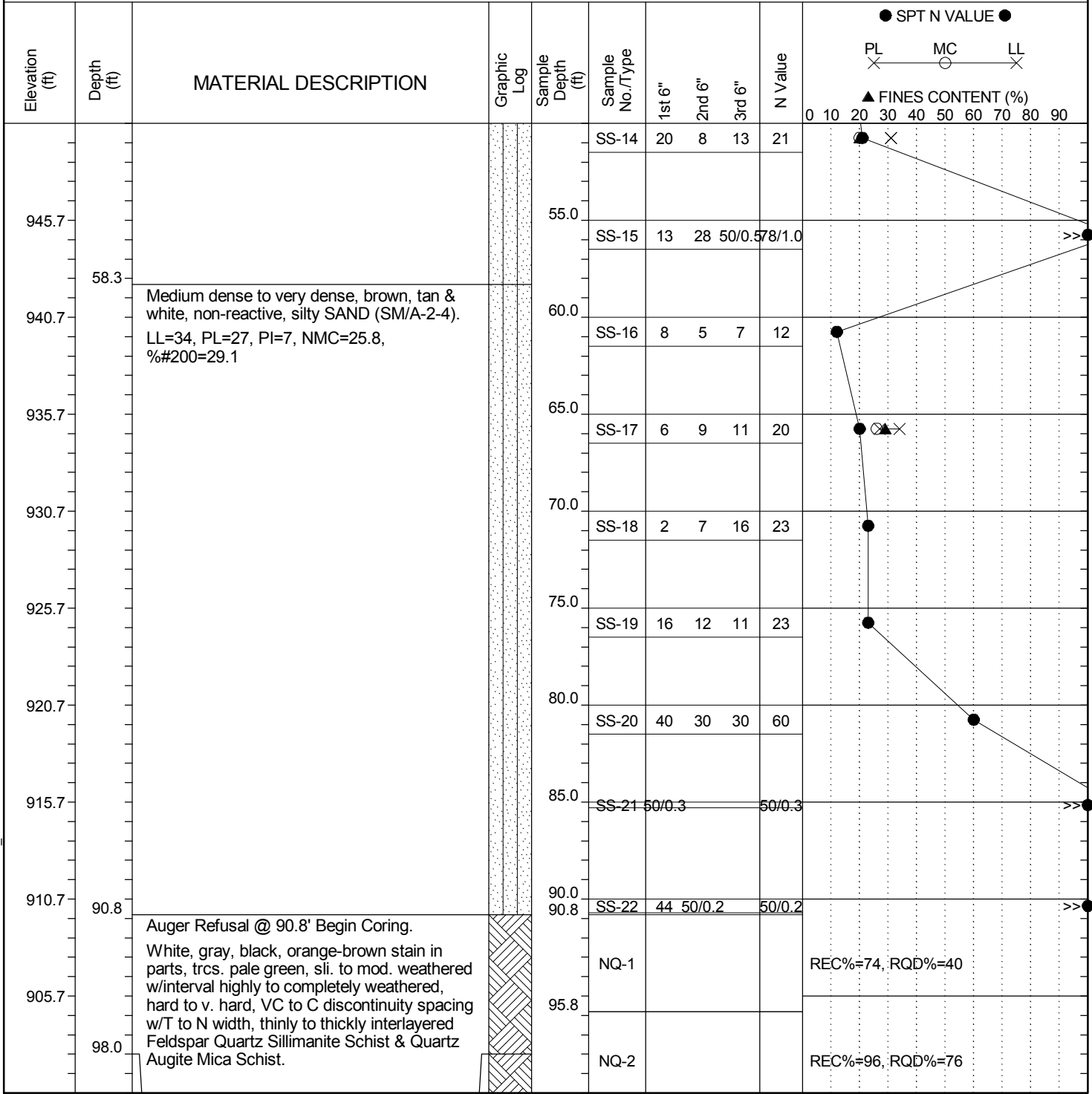
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-14	Boring Location: 303+99	Offset: 54' Lt.	Alignment: Ramp 3A
Elev.: 1000.7 ft	Latitude: 34.83471	Longitude: 82.29644	Date Started: 11/6/2011
Total Depth: 110.8 ft	Soil Depth: 90.8 ft	Core Depth: 110.8 ft	Date Completed: 11/8/2011
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: RW/RC	Hammer Type: Automatic	Energy Ratio: 93%
Core Size: NQ2	Driller: F. Woodard	Groundwater: TOB	24HR



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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-14	Boring Location: 303+99	Offset: 54' Lt.	Alignment: Ramp 3A
Elev.: 1000.7 ft	Latitude: 34.83471	Longitude: 82.29644	Date Started: 11/6/2011
Total Depth: 110.8 ft	Soil Depth: 90.8 ft	Core Depth: 110.8 ft	Date Completed: 11/8/2011
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: RW/RC	Hammer Type: Automatic	Energy Ratio: 93%
Core Size: NQ2	Driller: F. Woodard	Groundwater: TOB	24HR

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 (%)									
895.7	107.7	13 0° frags. w/iron stain, 2mm sep.; 3 30° frags. w/iron stain, 1-2mm sep.; 1 90° frac w/heavy iron stain, 1mm sep.; core loss 93.8'-95.1'		100.8	NQ-3					REC%=100, RQD%=92												
890.7	110.8	Black-brown, white-lt. gray, orange-brown stain in parts, sli. weathered w/seams highly weathered, mod. hard to hard, VC to C discontinuity spacing w/VN width, Augite Quartz Schist w/augen cse. grain quartz, pyrite grain clusters, trcs. garnet. 2 20° frags. w/<1mm sep.; 2 40° frags. w/<1mm sep.; 2 50°-65° frags. w/iron stain & <1mm sep. Lt. gray, dk. gray-black, lt. brown stain in parts, fresh, hard, VC discontinuity spacing w/T width, Quartz Augite Schist w/small pods cse. grain quartz, clusters anthophyllite. 1 35° frac. w/faint iron stain, <1mm sep.		105.8	NQ-4					REC%=100, RQD%=96												
885.7		Boring Terminated @ 110.8' (Elev. 889.9).																				

LEGEND

SAMPLER TYPE SS - Split Spoon ST - Shelby Tube AWG - Rock Core, 1-1/8" NQ - Rock Core, 1-7/8" CU - Cuttings CT - Continuous Tube		DRILLING METHOD HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing RW - Rotary Wash RC - Rock Core	
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SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



B-14 Box 1 of 3



B-14 Box 2 of 3

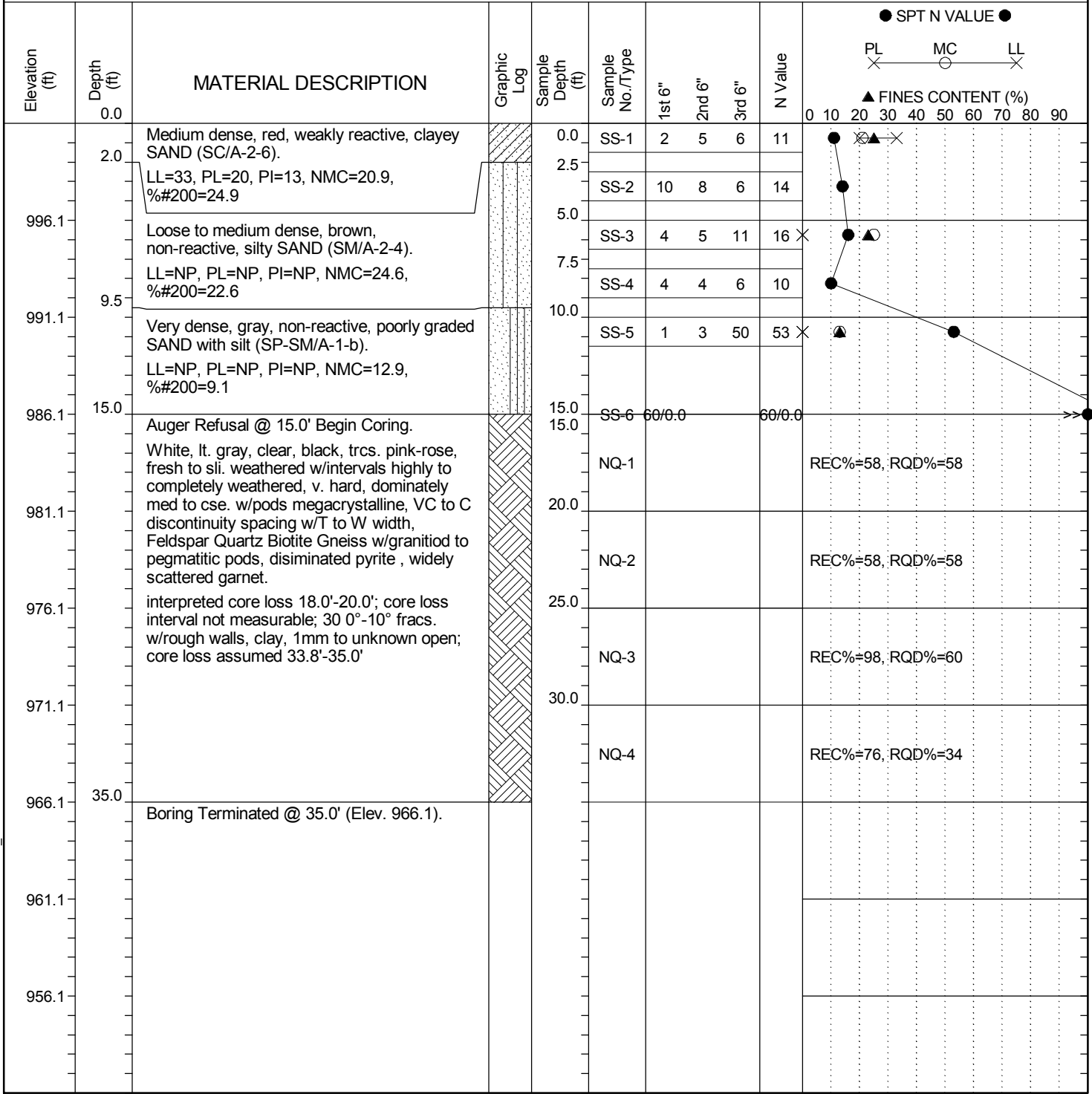
CORE PHOTOGRAPHIC RECORD
I-85 / I-385 Interchange Improvements



B-14 Box 3 of 3

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-15	Boring Location: 412+86	Offset: 22' Lt.	Alignment: Ramp 4B
Elev.: 1001.1 ft	Latitude: 34.83198	Longitude: 82.30007	Date Started: 12/7/2011
Total Depth: 35 ft	Soil Depth: 15.0 ft	Core Depth: 35.0 ft	Date Completed: 12/7/2011
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 55	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 73%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/113

CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



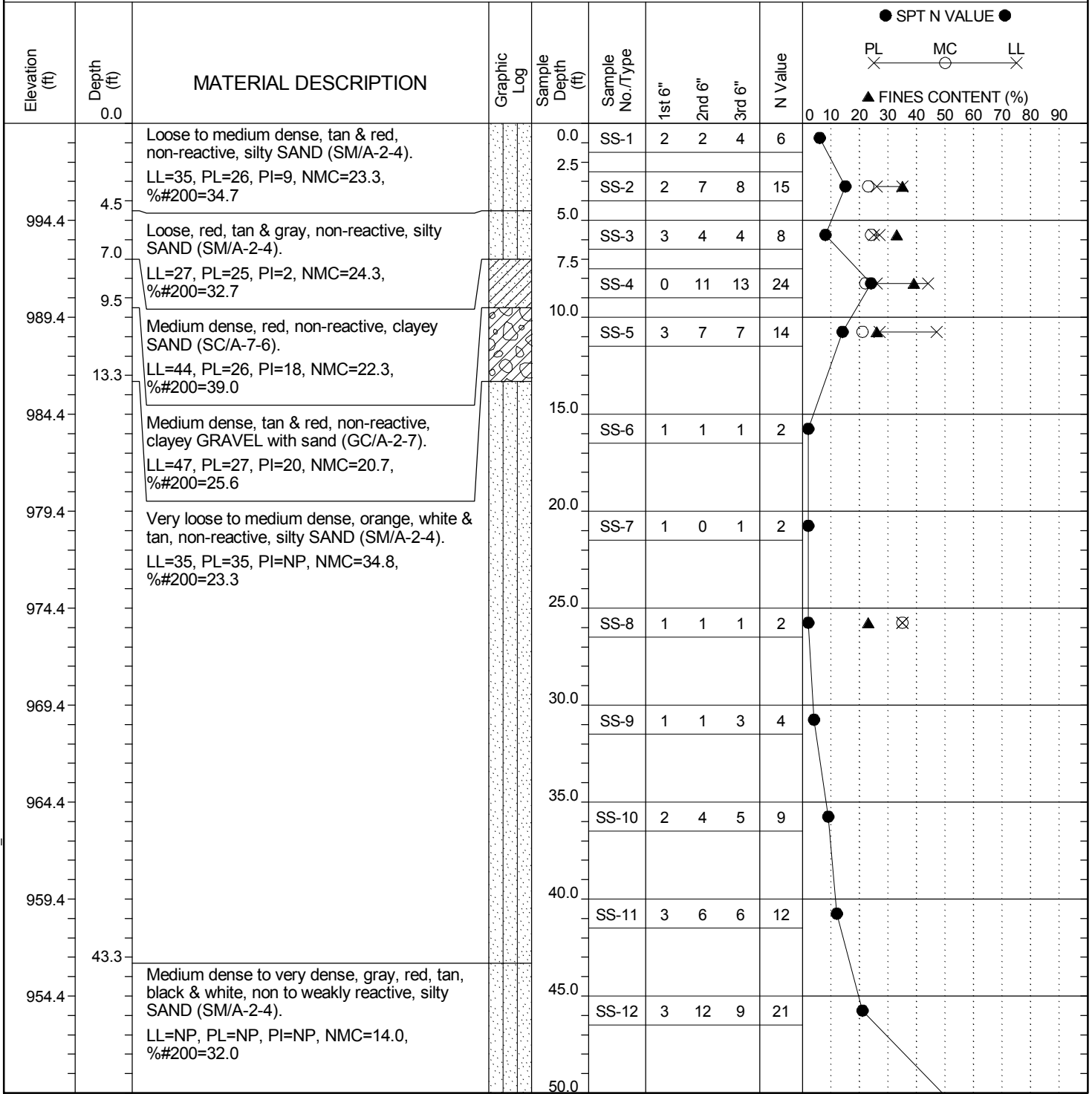
B-15 Box 1 of 2



B-15 Box 2 of 2

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-16	Boring Location: 406+04	Offset: 4' Lt.	Alignment: Ramp 4B
Elev.: 999.4 ft	Latitude: 34.83334	Longitude: 82.29858	Date Started: 1/20/2012
Total Depth: 114 ft	Soil Depth: 85.0 ft	Core Depth: 114.0 ft	Date Completed: 1/27/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR



LEGEND

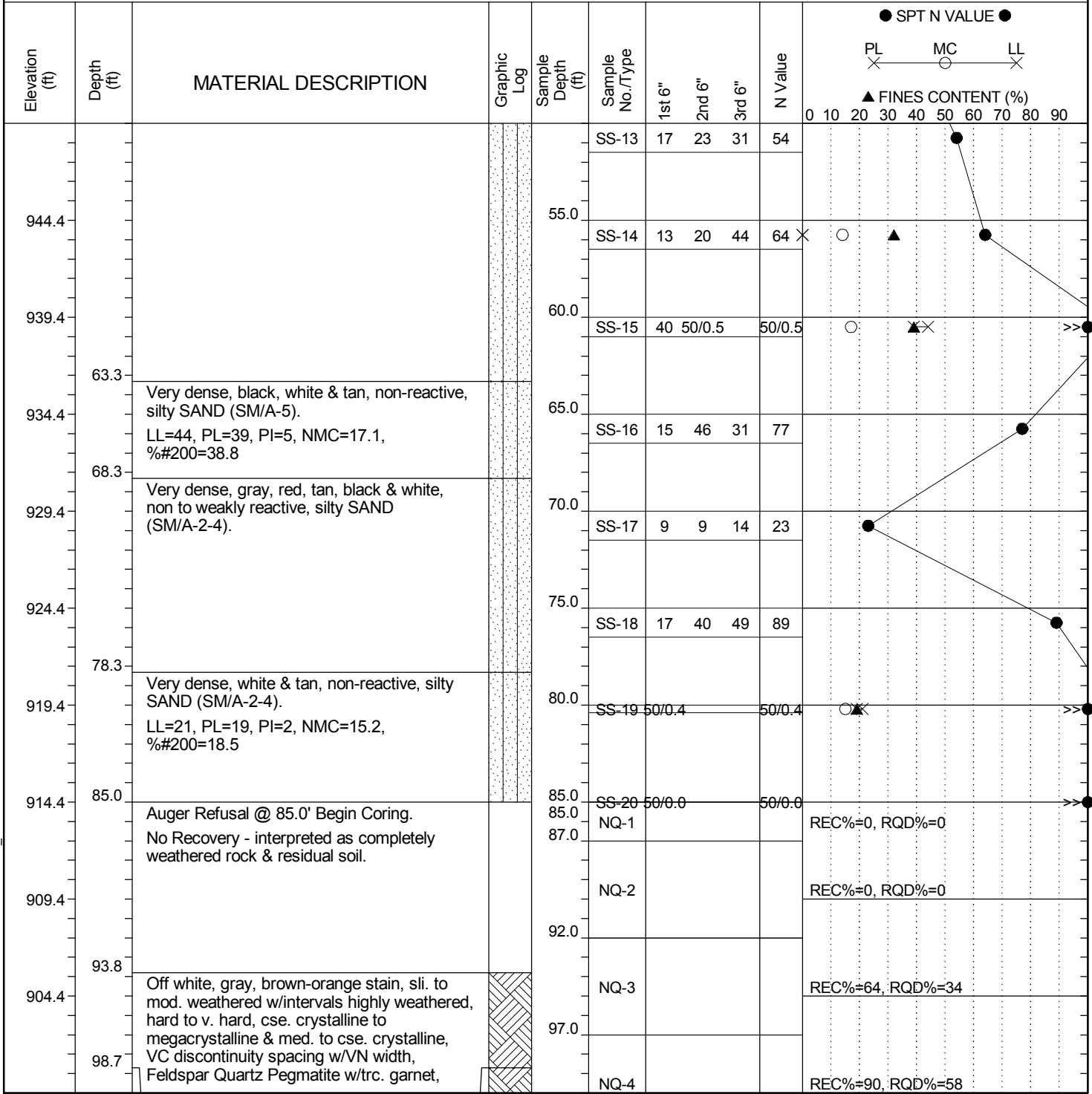
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.:	23.038111	Project No. (PIN):		County:	Greenville	Eng./Geo.:	J. Patterson
Site Description:	I-85/I-385 Interchange Improvements					Route:	
Boring No.:	B-16	Boring Location:	406+04	Offset:	4' Lt.	Alignment:	Ramp 4B
Elev.:	999.4 ft	Latitude:	34.83334	Longitude:	82.29858	Date Started:	1/20/2012
Total Depth:	114 ft	Soil Depth:	85.0 ft	Core Depth:	114.0 ft	Date Completed:	1/27/2012
Bore Hole Diameter (in):	4	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME 550	Drill Method:	RC	Hammer Type:	Automatic	Energy Ratio:	77%
Core Size:	NQ2	Driller:	SCI	Groundwater:	TOB	24HR	



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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements		Route:	
Boring No.: B-16	Boring Location: 406+04	Offset: 4' Lt.	Alignment: Ramp 4B
Elev.: 999.4 ft	Latitude: 34.83334	Longitude: 82.29858	Date Started: 1/20/2012
Total Depth: 114 ft	Soil Depth: 85.0 ft	Core Depth: 114.0 ft	Date Completed: 1/27/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR

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			
894.4	106.2	diopside rods & Quartz Muscovite Schist w/pods pegmatite, contact 90°. 1 90° contact w/iron stain & precip., 1mm open; 185° frac., clay film, <1mm open; 15 0°-40° fracs., rough walls, 1-2mm open		102.0	NQ-5																REC%=100, RQD%=92	
889.4		Gray, gray-brown, black, off white, trcs. rose-pink, sli. weathered to fresh w/surfaces mod. weathered, hard w/v. hard seams, med. crystalline & equigranular w/pods cse. to megacrystalline, VC discontinuity spacing w/T width, Quartz Muscovite Schist w/muscovite rich layers (4-20mm) & Feldspar Quartz Pegmatite pods, pyrite disseminated & along frac. walls, trcs. garnets.		107.0	NQ-6																REC%=92, RQD%=54	
884.4	114.0	7 50°-60° foliation partings w/iron stain, high weathering, pyrite, tight; 2 50° fracs. across foliationclay film, 1mm open; 6 0°-20° fracs. w/rough walls, 1-2mm open		112.0	NQ-7																REC%=95, RQD%=65	
879.4		Gray-brown, gray, off white, black, scattered violet, fresh to sli. weathered w/seams mod. to highly weathered, hard to v. hard, med. crystalline & equigranular & cse. to megacrystalline, VC discontinuity spacing w/T to N width, interlayered Muscovite Quartz Schist (contorted foliation), Quartz Muscovite Schist & Feldspar Quartz Pegmatite pods.																				
874.4		60° frac. w/slickensides 106.3'; 11 0°-20° fracs w/iron stain, 1-2mm open; 6 60°-70° foliation partings, iron stain & clay 1-2mm; assumed core loss 111.6'-112.0																				
869.4		Boring Terminated @ 114.0' (Elev. 885.4).																				
864.4																						
859.4																						
854.4																						

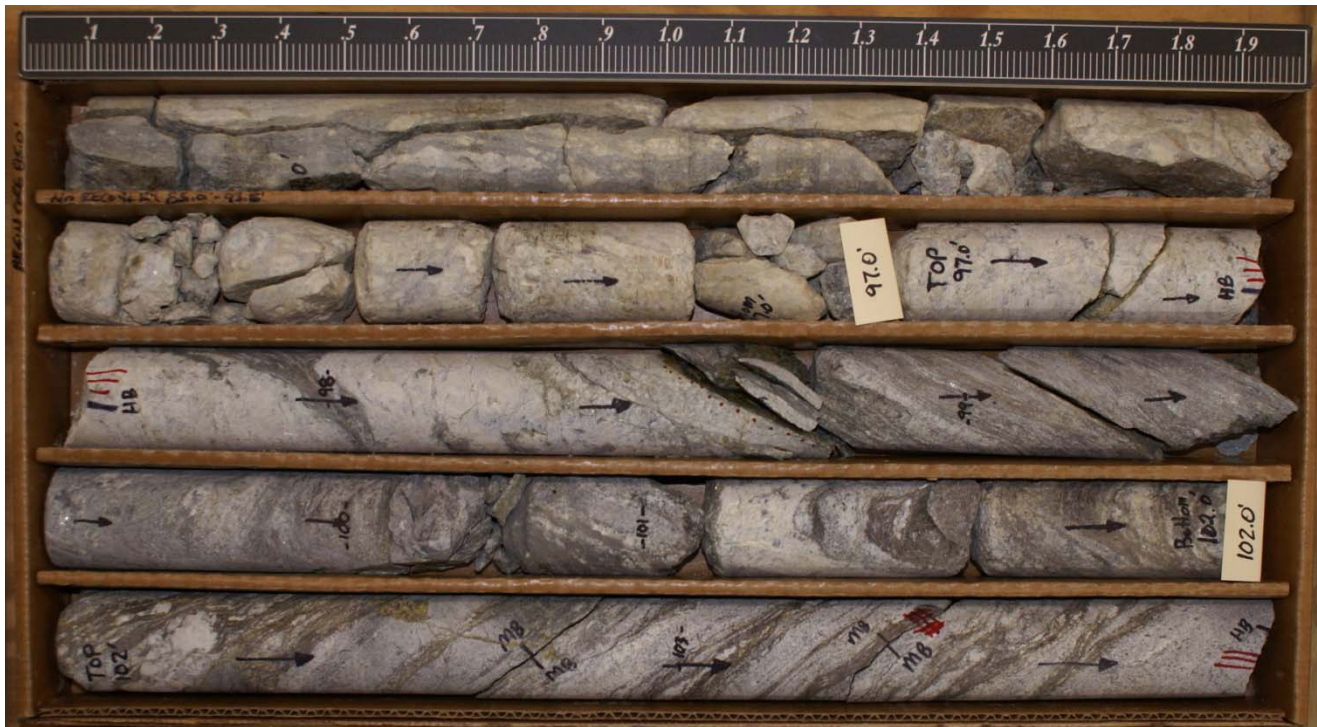
LEGEND

SAMPLER TYPE SS - Split Spoon ST - Shelby Tube AWG - Rock Core, 1-1/8"		SAMPLER TYPE NQ - Rock Core, 1-7/8" CU - Cuttings CT - Continuous Tube		DRILLING METHOD HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing		DRILLING METHOD RW - Rotary Wash RC - Rock Core	
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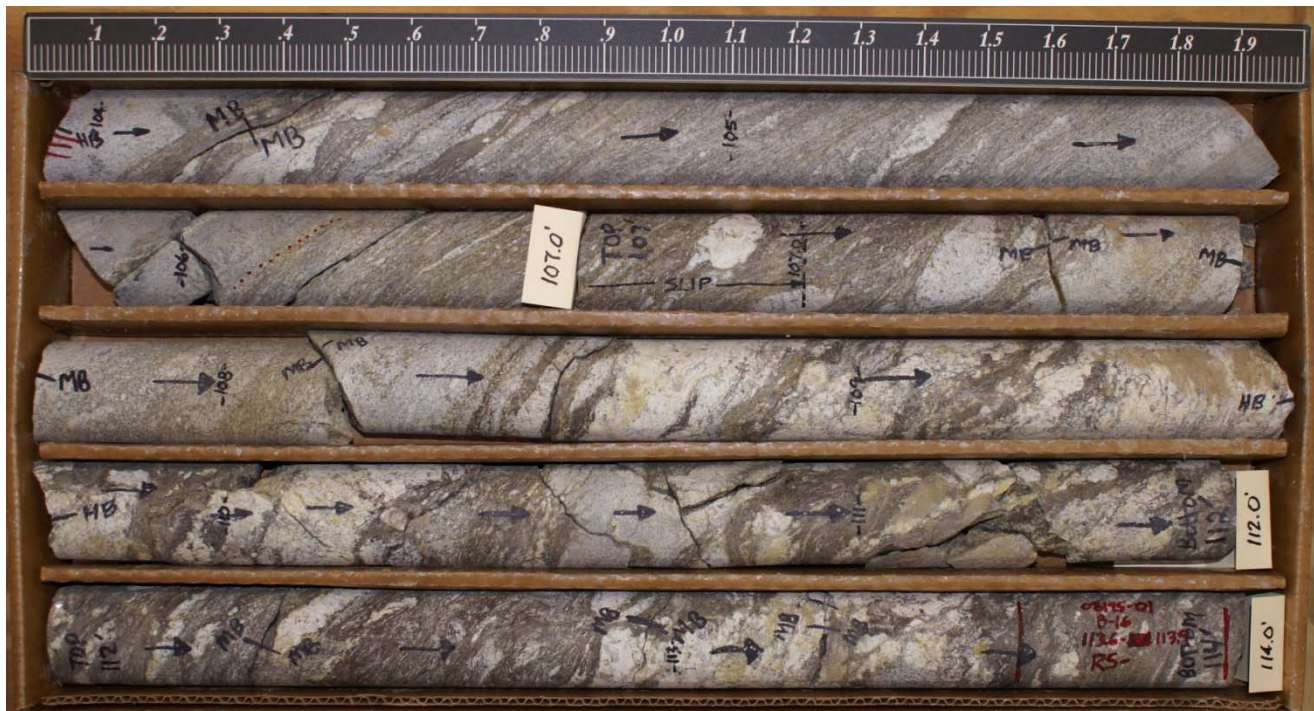
SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



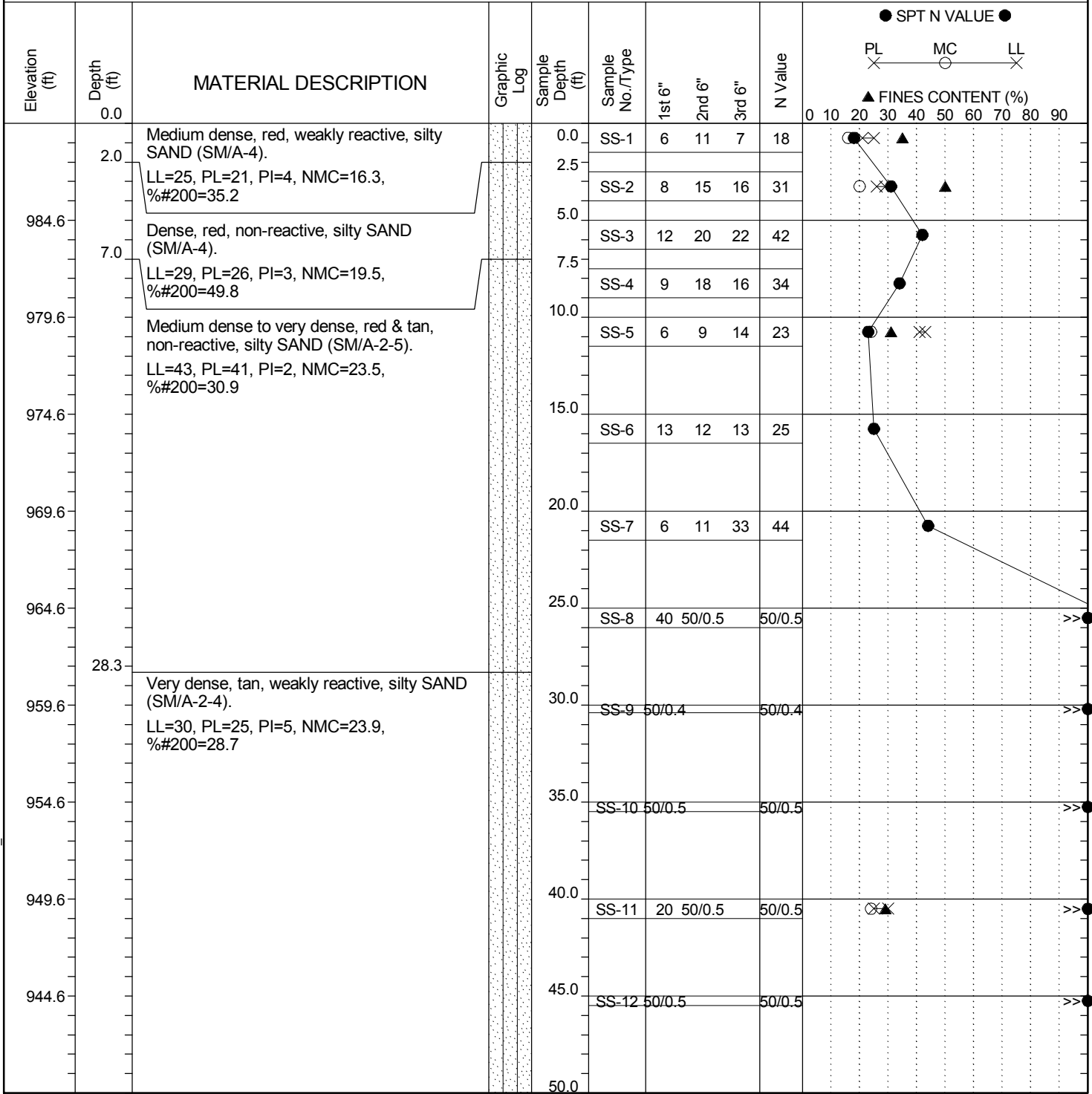
B-16 Box 1 of 2



B-16 Box 2 of 2

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-17	Boring Location: 395+89	Offset: 15' Lt.	Alignment: Ramp 4B
Elev.: 989.6 ft	Latitude: 34.8327	Longitude: 82.29556	Date Started: 1/12/2012
Total Depth: 100.3 ft	Soil Depth: 100.3 ft	Core Depth: ft	Date Completed: 1/13/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 55	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 73%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



LEGEND

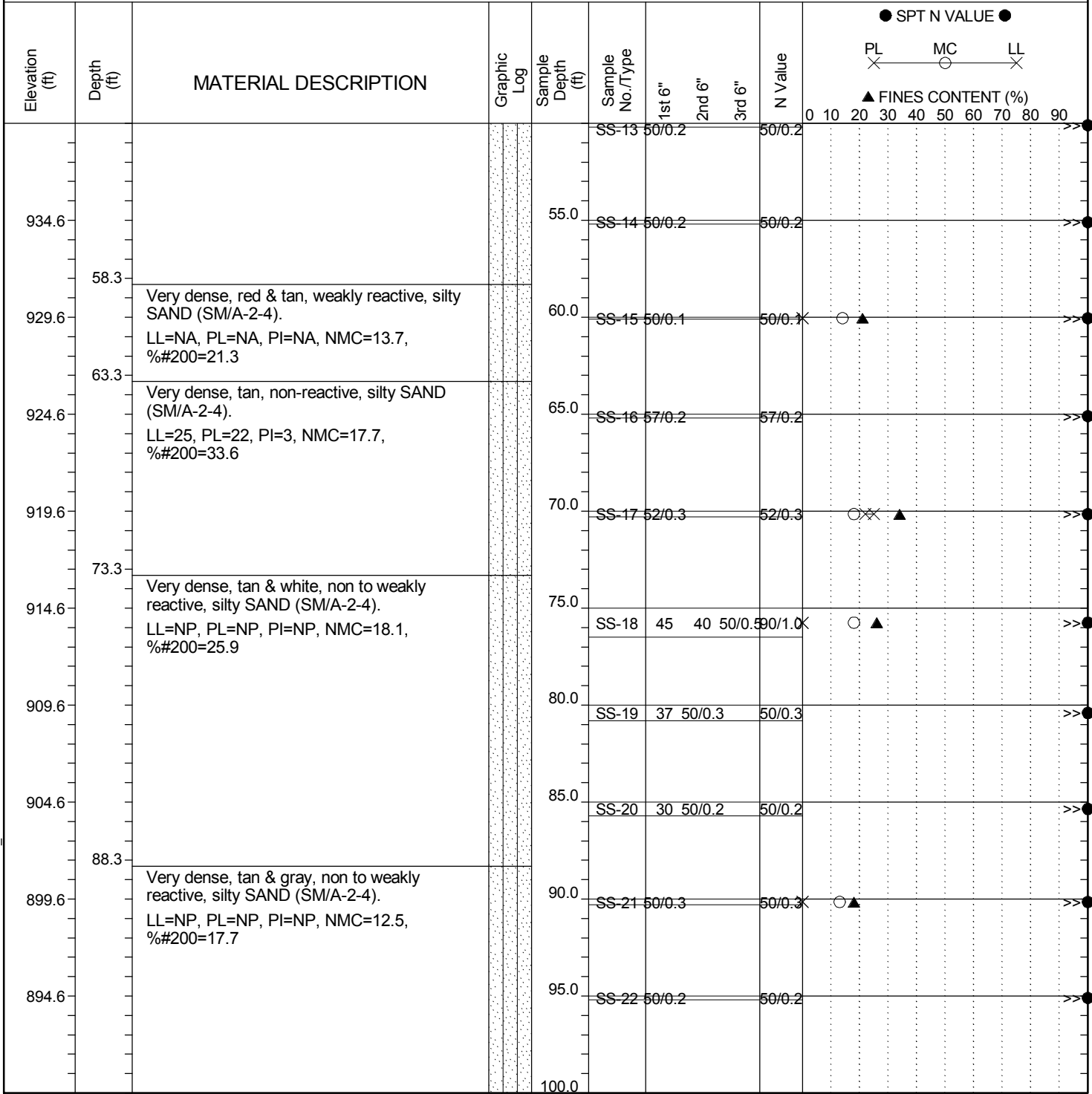
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SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-17	Boring Location: 395+89	Offset: 15' Lt.	Alignment: Ramp 4B
Elev.: 989.6 ft	Latitude: 34.8327	Longitude: 82.29556	Date Started: 1/12/2012
Total Depth: 100.3 ft	Soil Depth: 100.3 ft	Core Depth: ft	Date Completed: 1/13/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 55	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 73%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



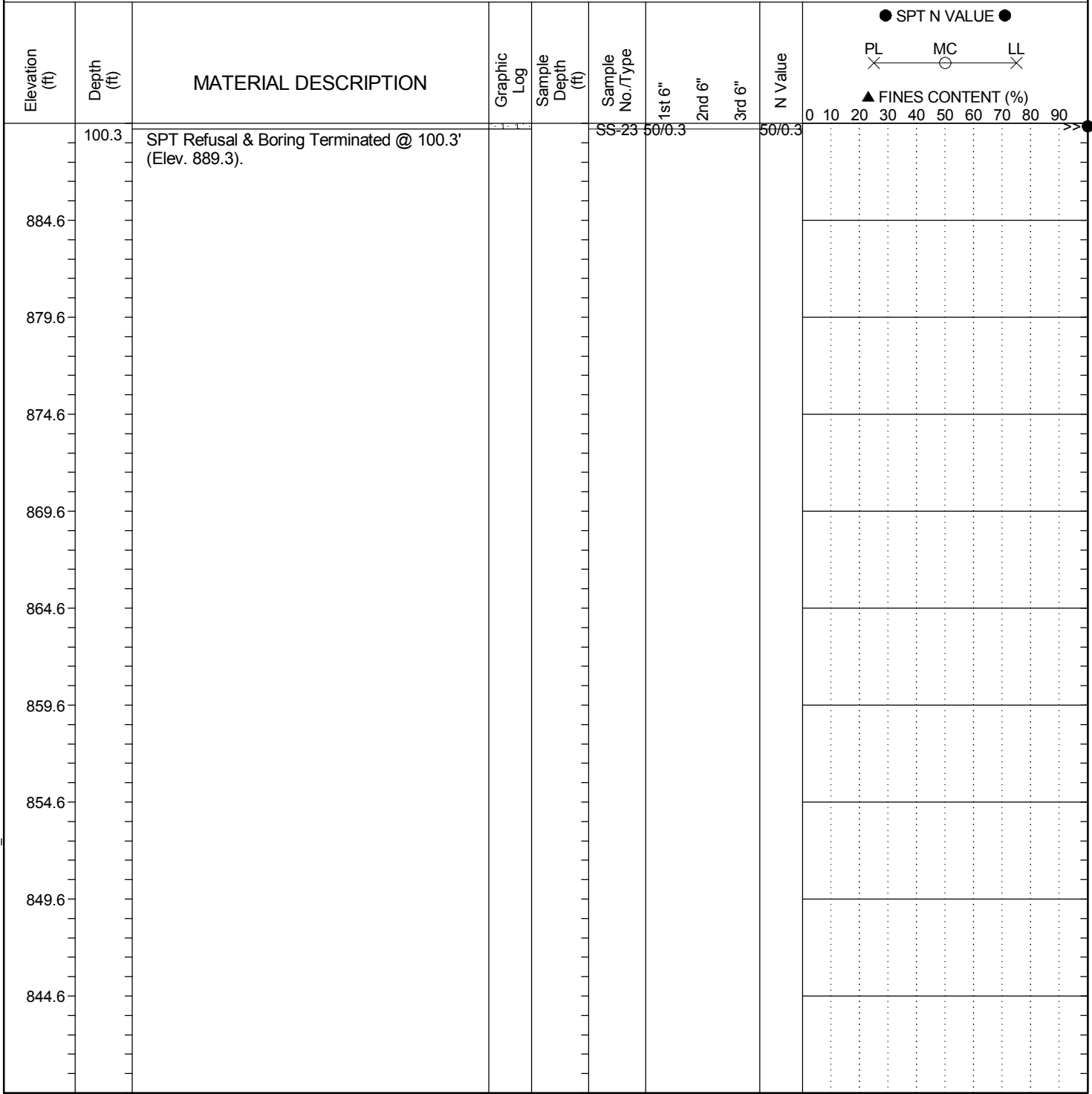
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SAMPLER TYPE SS - Split Spoon ST - Shelby Tube AWG - Rock Core, 1-1/8"		DRILLING METHOD NQ - Rock Core, 1-7/8" CU - Cuttings CT - Continuous Tube HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing RW - Rotary Wash RC - Rock Core	
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SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-17	Boring Location: 395+89	Offset: 15' Lt.	Alignment: Ramp 4B
Elev.: 989.6 ft	Latitude: 34.8327	Longitude: 82.29556	Date Started: 1/12/2012
Total Depth: 100.3 ft	Soil Depth: 100.3 ft	Core Depth: ft	Date Completed: 1/13/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 55	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 73%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



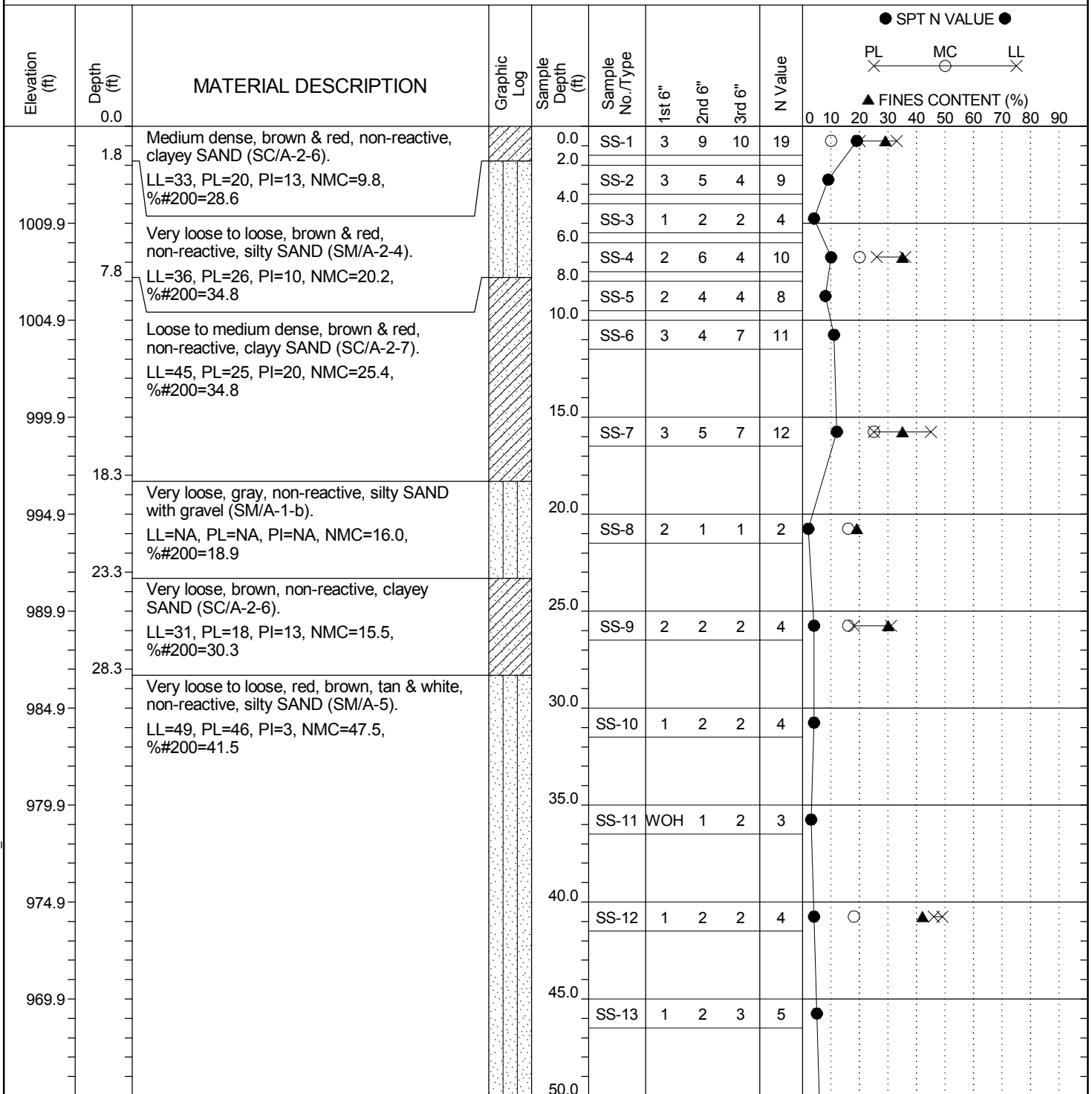
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-18	Boring Location: 70+60	Offset: 5' Lt.	Alignment: Ramp 2A
Elev.: 1014.9 ft	Latitude: 34.83221	Longitude: 82.29923	Date Started: 5/7/2012
Total Depth: 100.3 ft	Soil Depth: 100.3 ft	Core Depth: ft	Date Completed: 5/8/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



LEGEND

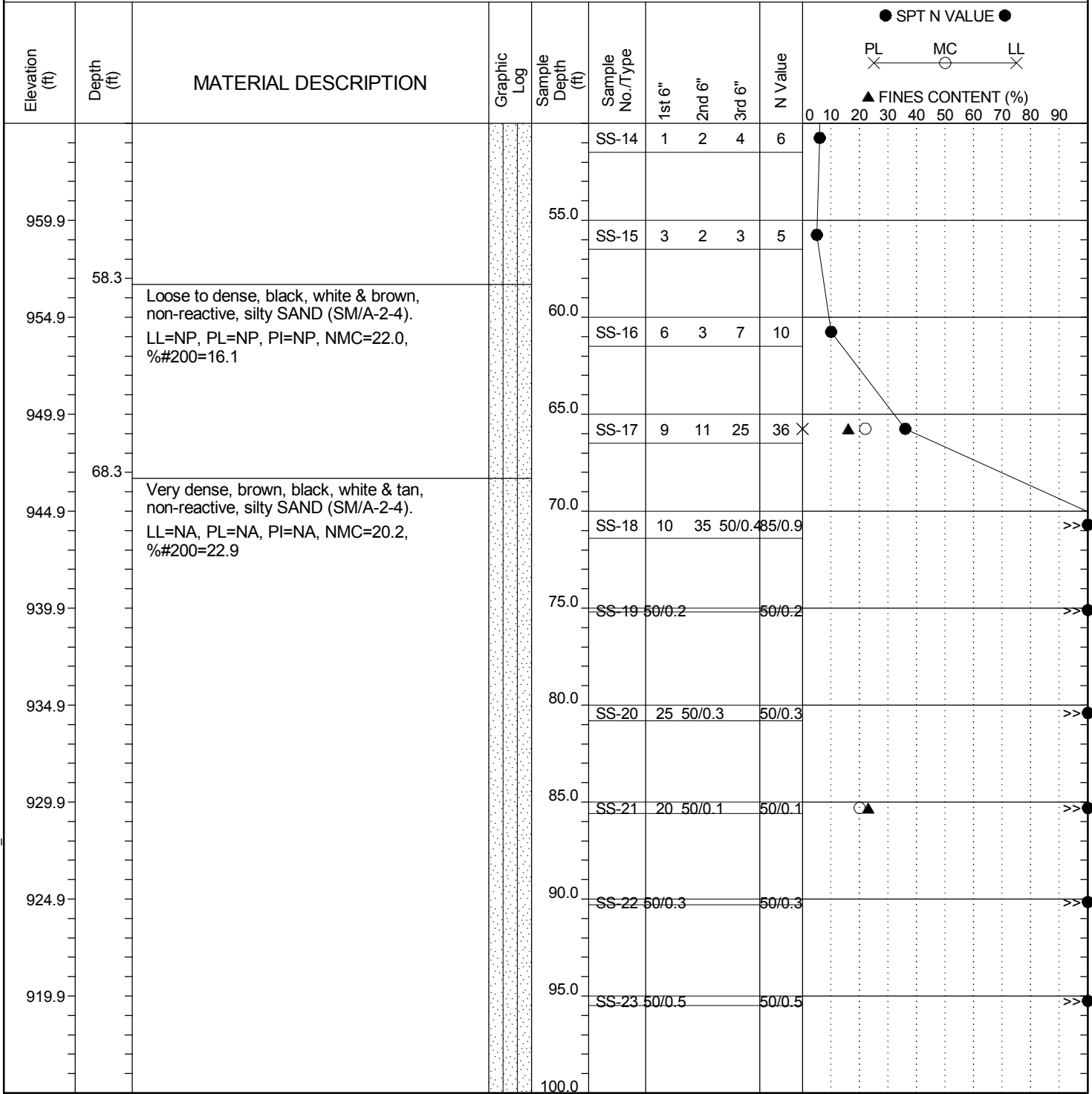
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SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

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.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-18	Boring Location: 70+60	Offset: 5' Lt.	Alignment: Ramp 2A
Elev.: 1014.9 ft	Latitude: 34.83221	Longitude: 82.29923	Date Started: 5/7/2012
Total Depth: 100.3 ft	Soil Depth: 100.3 ft	Core Depth: ft	Date Completed: 5/8/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



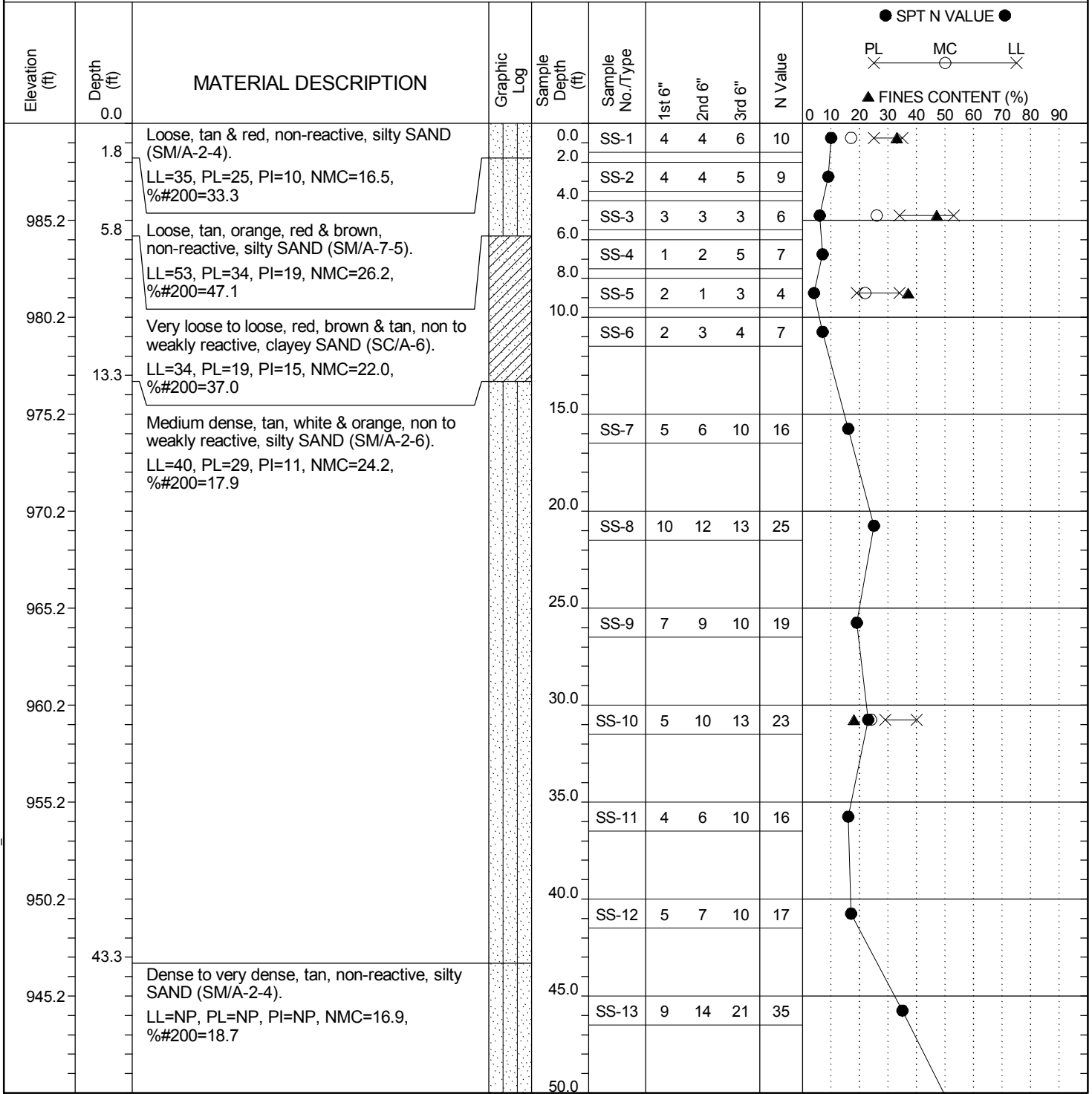
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements		Route:	
Boring No.: B-19	Boring Location: 74+70	Offset: 43' Rt.	Alignment: Ramp 2A
Elev.: 990.2 ft	Latitude: 34.8318	Longitude: 82.29793	Date Started: 5/9/2012
Total Depth: 100.2 ft	Soil Depth: 100.2 ft	Core Depth: ft	Date Completed: 5/9/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



LEGEND

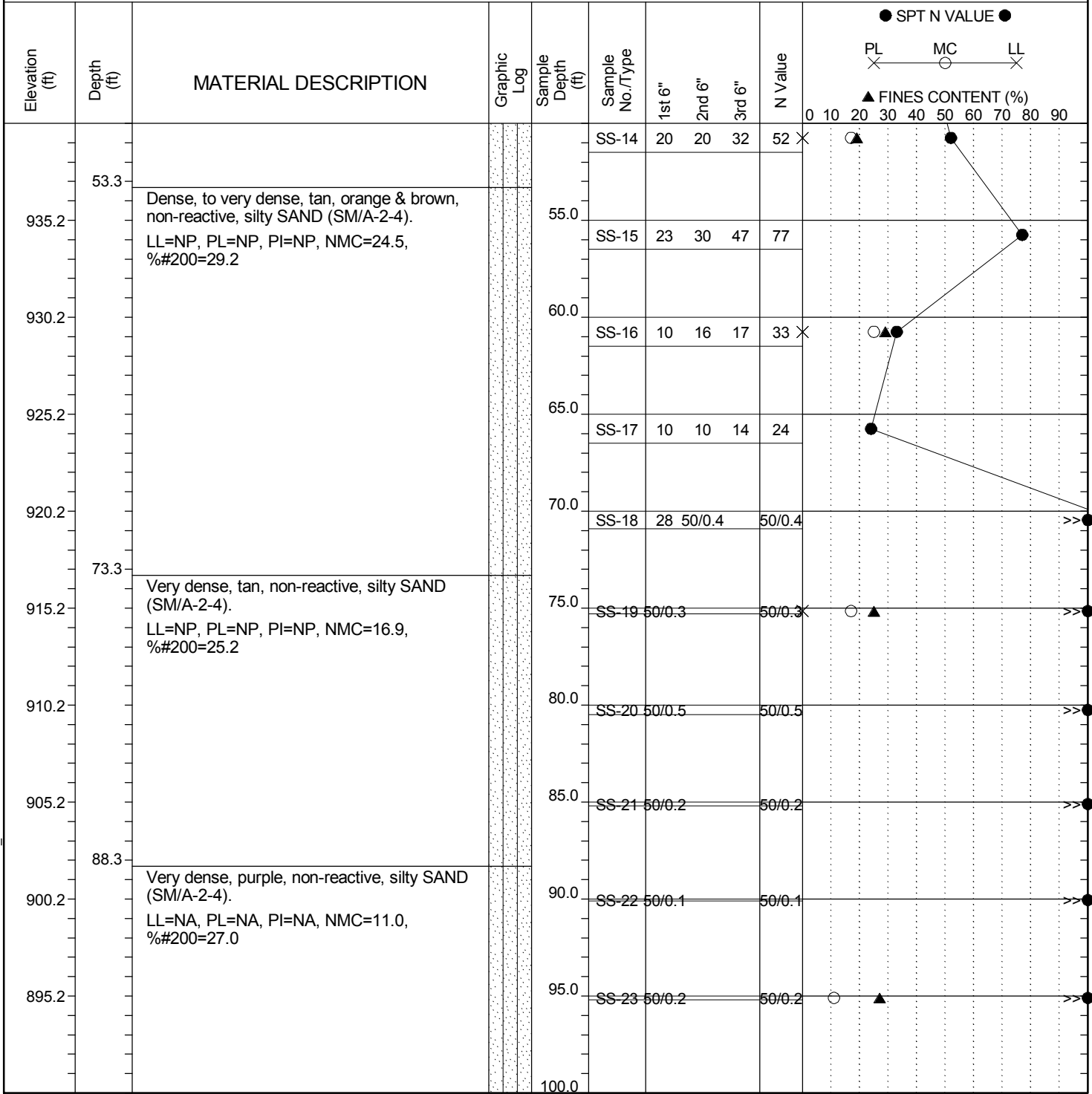
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SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-19	Boring Location: 74+70	Offset: 43' Rt.	Alignment: Ramp 2A
Elev.: 990.2 ft	Latitude: 34.8318	Longitude: 82.29793	Date Started: 5/9/2012
Total Depth: 100.2 ft	Soil Depth: 100.2 ft	Core Depth: ft	Date Completed: 5/9/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



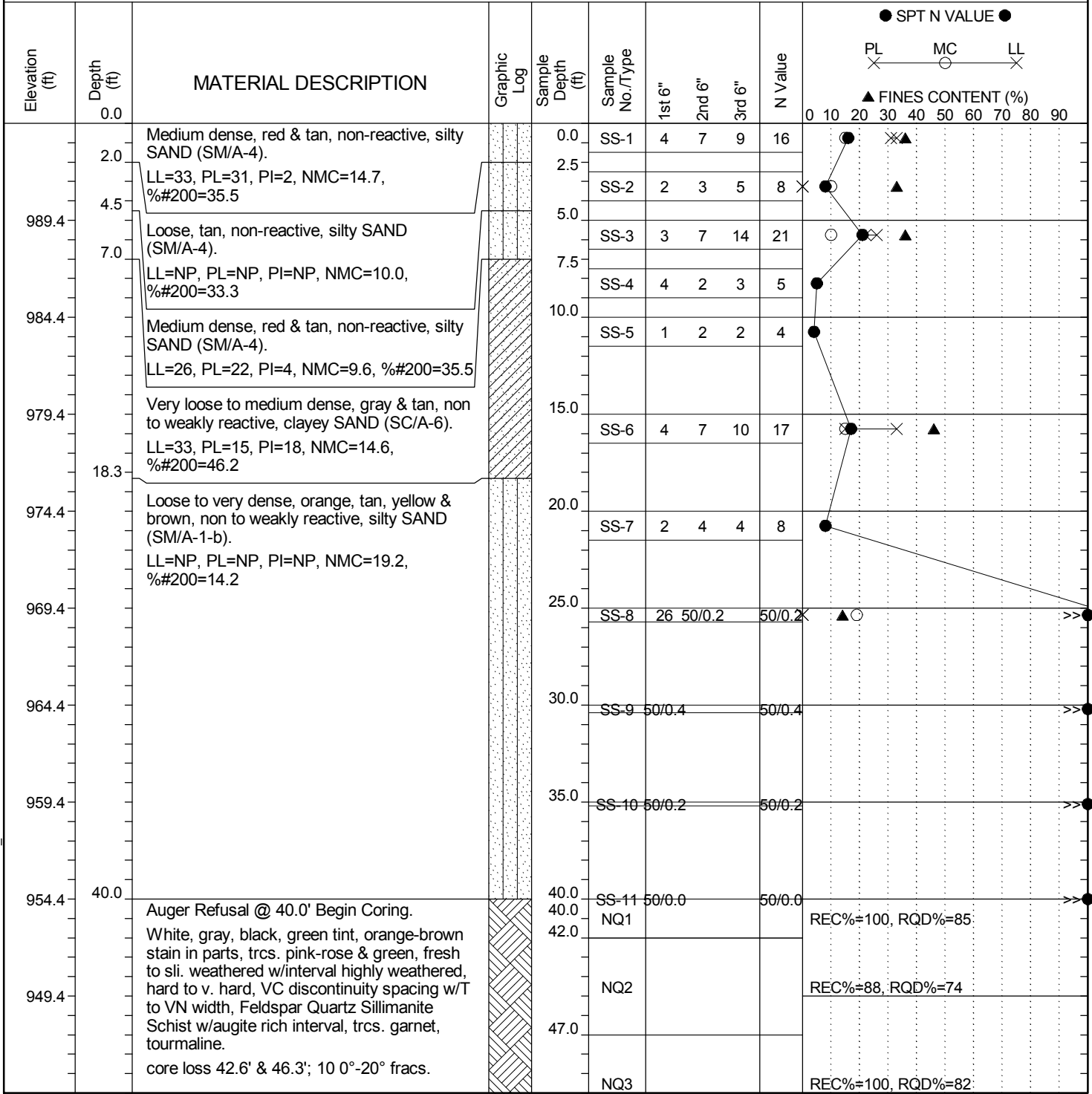
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements		Route:	
Boring No.: B-20	Boring Location: 31+19	Offset: 8' Lt.	Alignment: Ramp 2B
Elev.: 994.4 ft	Latitude: 34.83284	Longitude: 82.29807	Date Started: 1/11/2012
Total Depth: 60 ft	Soil Depth: 40.0 ft	Core Depth: ft	Date Completed: 1/12/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 55	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 73%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR



LEGEND

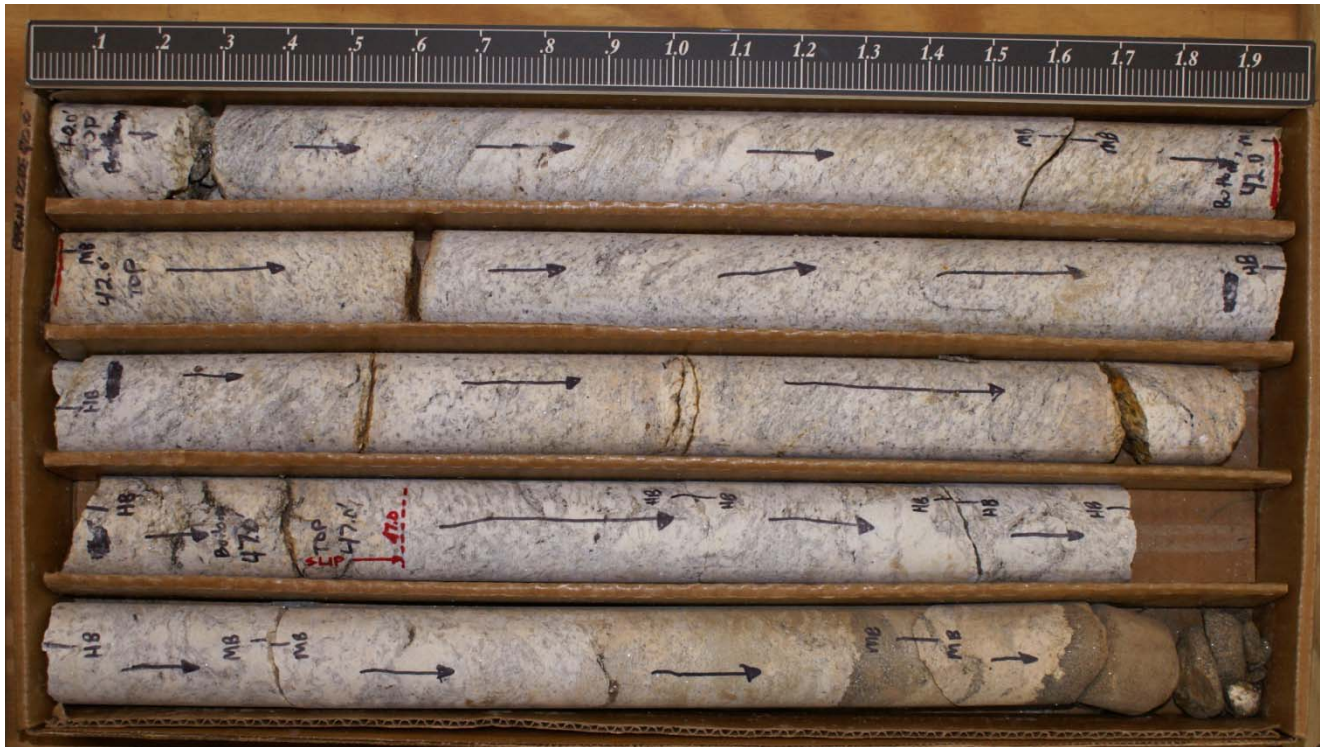
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

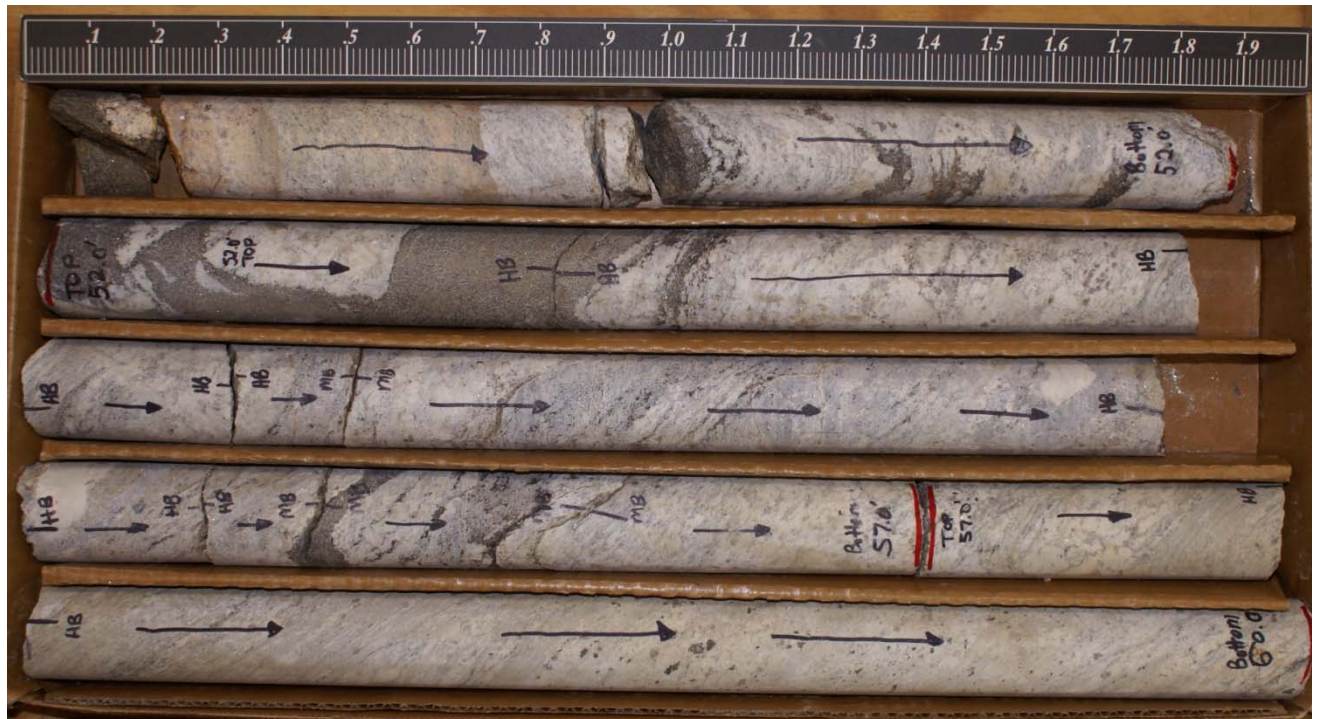
SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



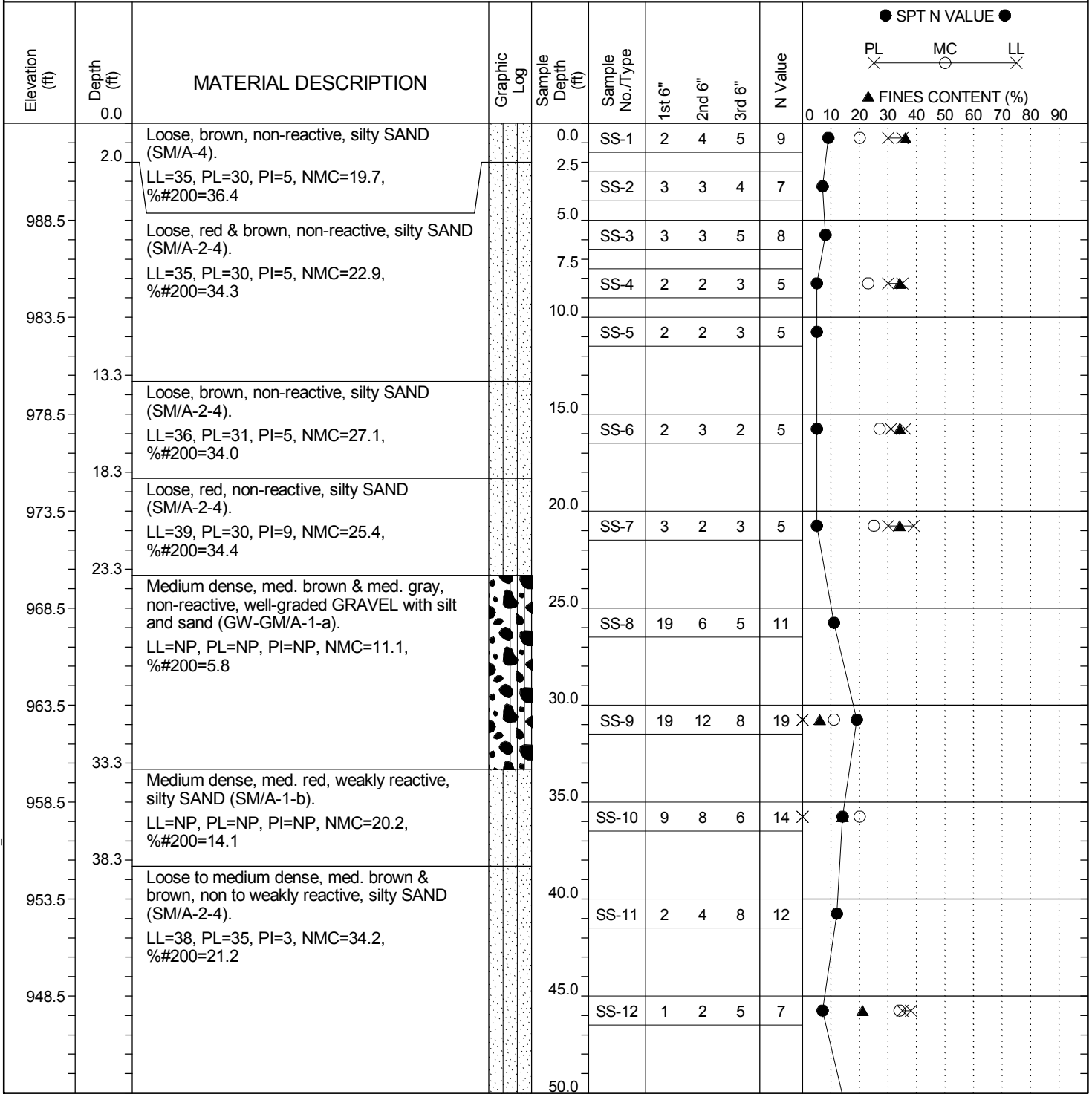
B-20 Box 1 of 2



B-20 Box 2 of 2

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-21	Boring Location: 36+60	Offset: 28' Lt.	Alignment: Ramp 2B
Elev.: 993.5 ft	Latitude: 34.83176	Longitude: 82.29682	Date Started: 12/14/2011
Total Depth: 87 ft	Soil Depth: 72.0 ft	Core Depth: 87.0 ft	Date Completed: 12/30/2011
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 55	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 73%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR



LEGEND

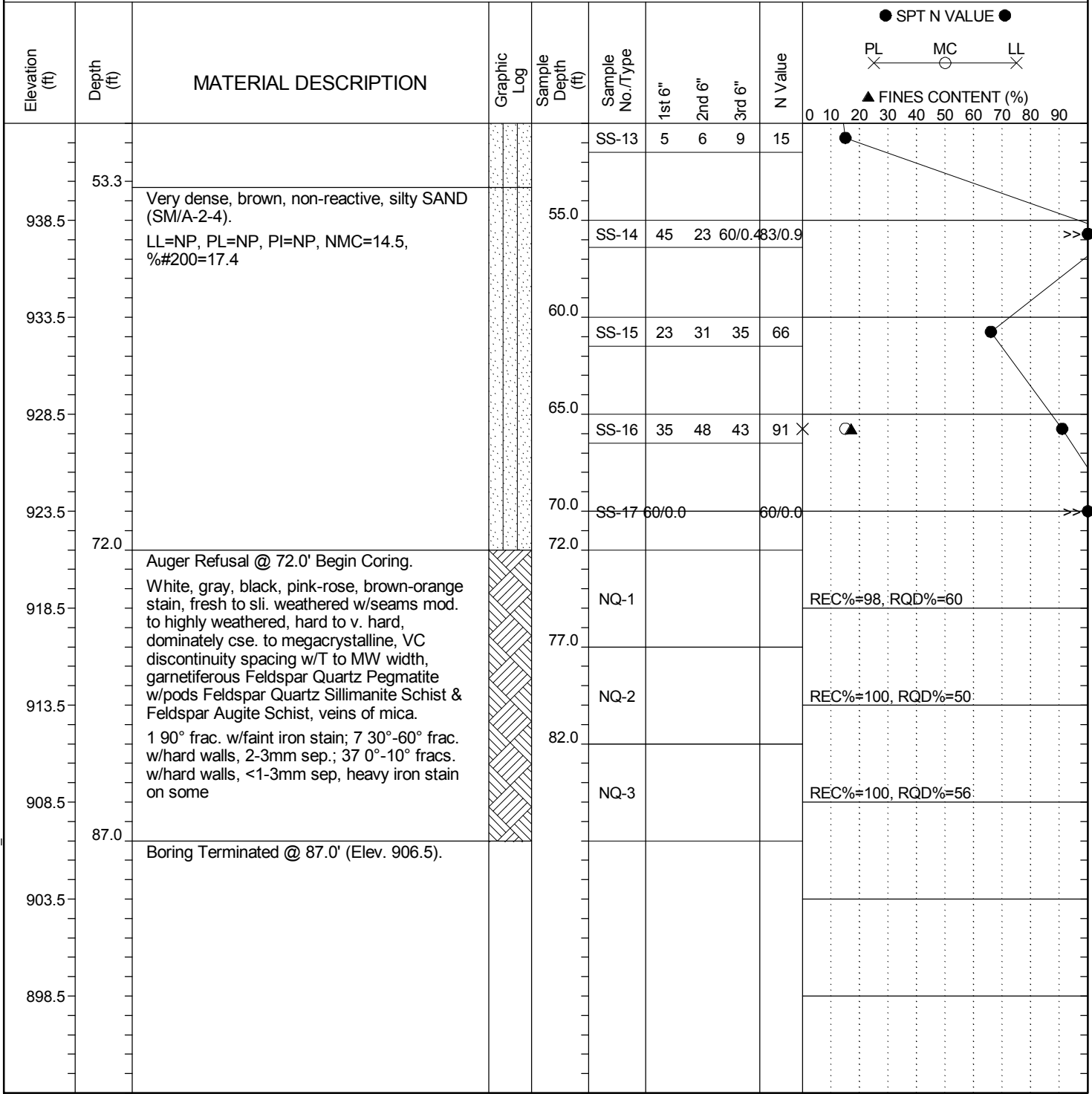
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/113

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements		Route:	
Boring No.: B-21	Boring Location: 36+60	Offset: 28' Lt.	Alignment: Ramp 2B
Elev.: 993.5 ft	Latitude: 34.83176	Longitude: 82.29682	Date Started: 12/14/2011
Total Depth: 87 ft	Soil Depth: 72.0 ft	Core Depth: 87.0 ft	Date Completed: 12/30/2011
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 55	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 73%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



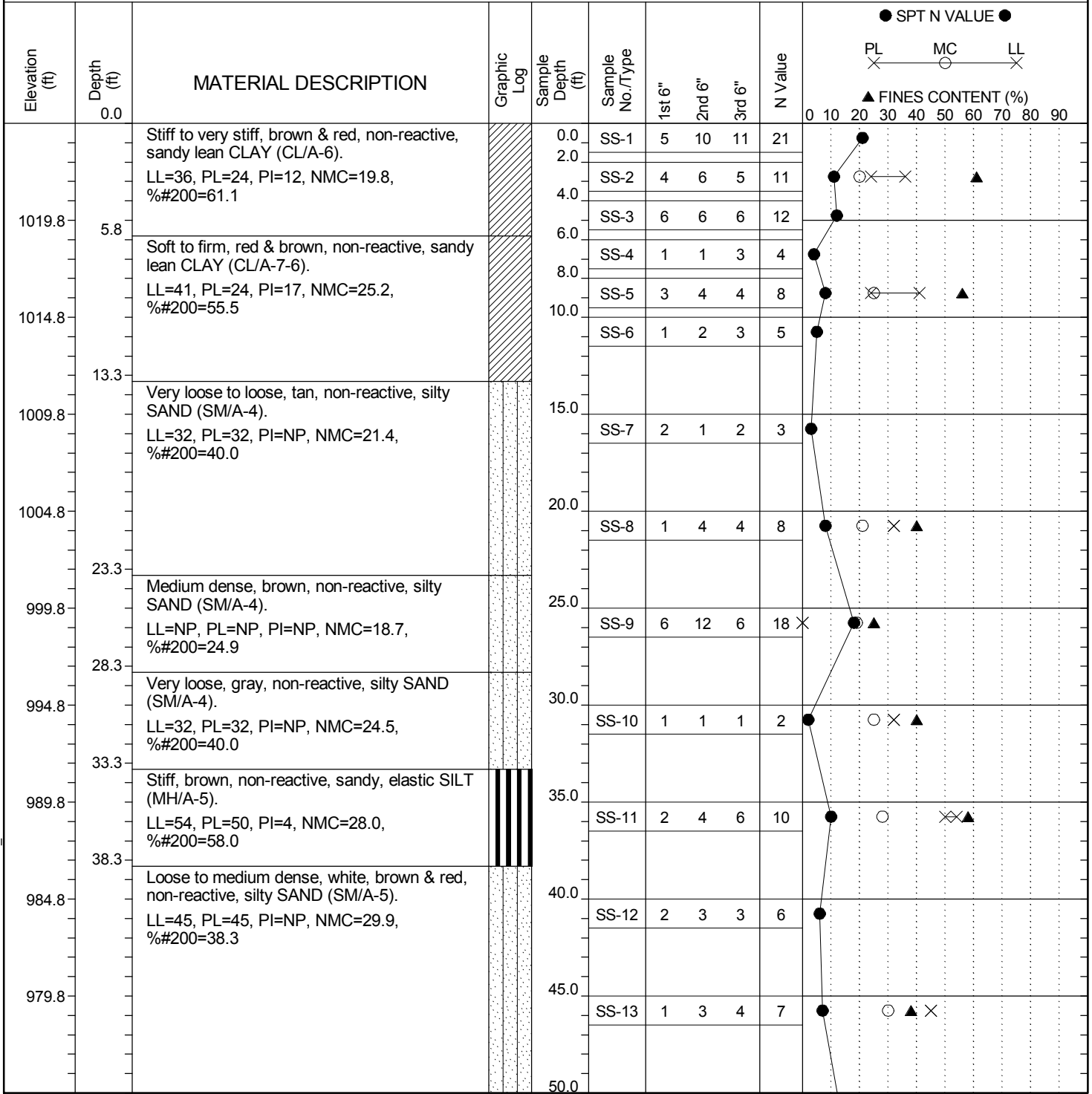
B-21 Box 1 of 2



B-21 Box 2 of 2

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-22	Boring Location: 400+62	Offset: 81' Rt.	Alignment: I-385
Elev.: 1024.8 ft	Latitude: 34.83348	Longitude: 82.2974	Date Started: 7/11/2012
Total Depth: 101.5 ft	Soil Depth: 101.5 ft	Core Depth: ft	Date Completed: 7/12/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



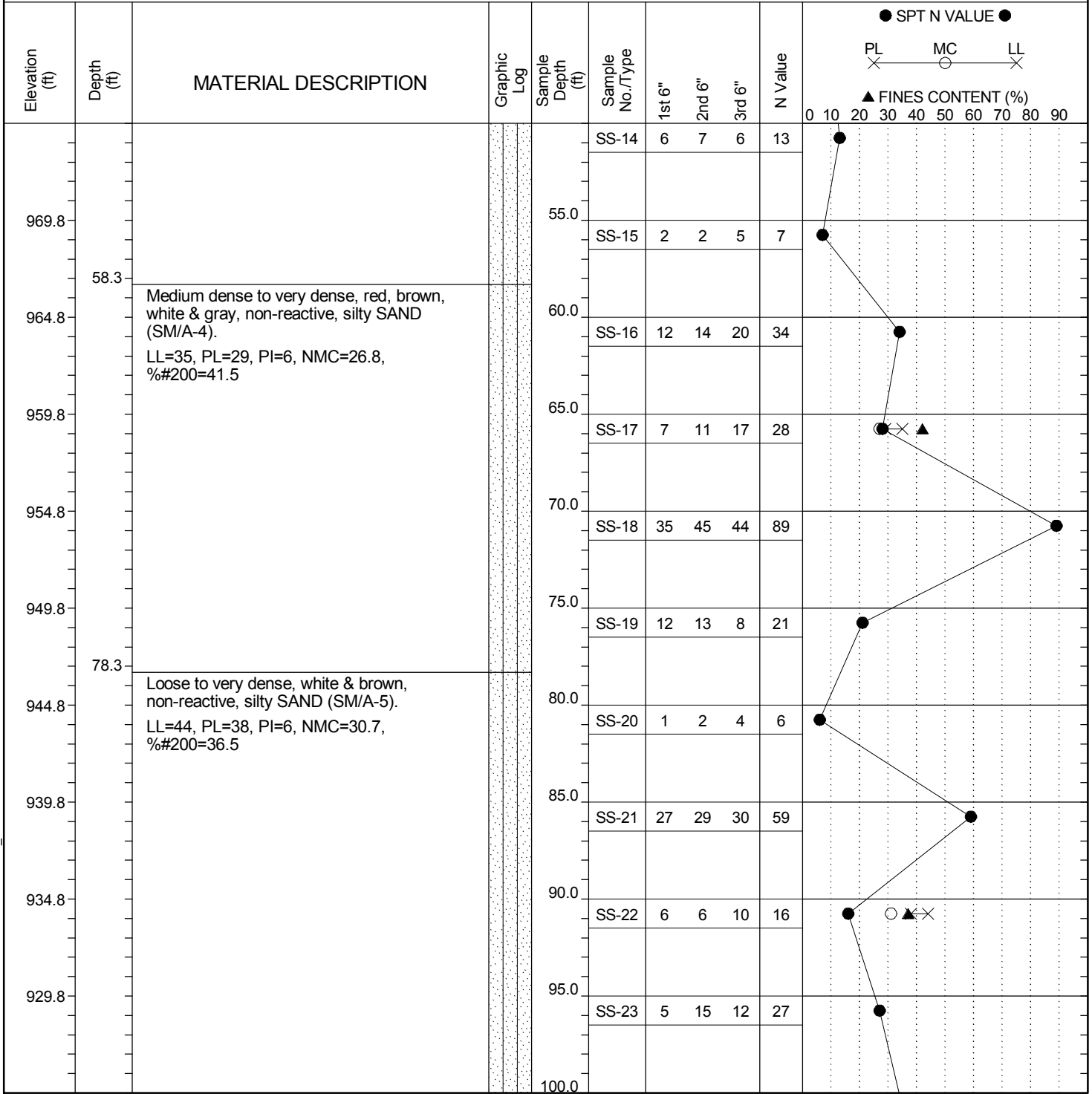
LEGEND Continued Next Page

SAMPLER TYPE SS - Split Spoon ST - Shelby Tube AWG - Rock Core, 1-1/8"		DRILLING METHOD 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	
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SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-22	Boring Location: 400+62	Offset: 81' Rt.	Alignment: I-385
Elev.: 1024.8 ft	Latitude: 34.83348	Longitude: 82.2974	Date Started: 7/11/2012
Total Depth: 101.5 ft	Soil Depth: 101.5 ft	Core Depth: ft	Date Completed: 7/12/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.:	23.038111	Project No. (PIN):		County:	Greenville	Eng./Geo.:	J. Patterson	
Site Description:		I-85/I-385 Interchange Improvements				Route:		
Boring No.:	B-22	Boring Location:	400+62	Offset:	81' Rt.	Alignment:	I-385	
Elev.:	1024.8 ft	Latitude:	34.83348	Longitude:	82.2974	Date Started:	7/11/2012	
Total Depth:	101.5 ft	Soil Depth:	101.5 ft	Core Depth:	ft	Date Completed:	7/12/2012	
Bore Hole Diameter (in):		4	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME 550	Drill Method:	HSA	Hammer Type:	Automatic	Energy Ratio:		77%
Core Size:	NA	Driller:	SCI	Groundwater:	TOB	24HR		

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	SPT N VALUE			N Value	● SPT N VALUE ● PL — MC — LL ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90
						1st 6"	2nd 6"	3rd 6"		
101.5		No Refusal & Boring Terminated @ 101.5' (Elev. 923.3).			SS-24	7	15	20	35	●
919.8										
914.8										
909.8										
904.8										
899.8										
894.8										
889.8										
884.8										
879.8										

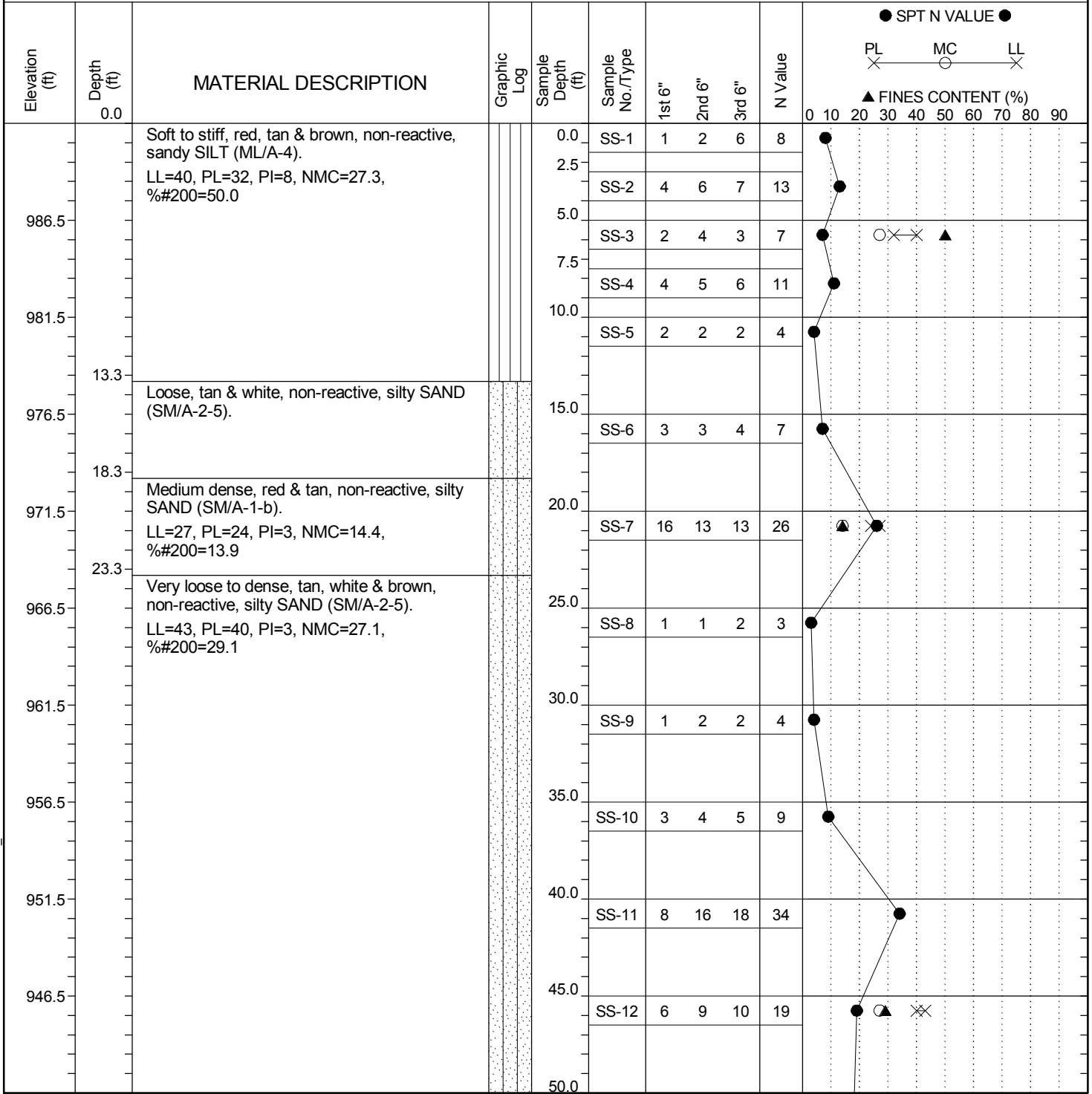
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SAMPLER TYPE SS - Split Spoon ST - Shelby Tube AWG - Rock Core, 1-1/8" NQ - Rock Core, 1-7/8" CU - Cuttings CT - Continuous Tube		DRILLING METHOD HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing RW - Rotary Wash RC - Rock Core	
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SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-23	Boring Location: 397+25	Offset: 90 Rt.	Alignment: I-385
Elev.: 991.5 ft	Latitude: 34.8329	Longitude: 82.29648	Date Started: 1/12/2012
Total Depth: 100.3 ft	Soil Depth: 100.3 ft	Core Depth: ft	Date Completed: 1/12/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 55	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 73%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



LEGEND

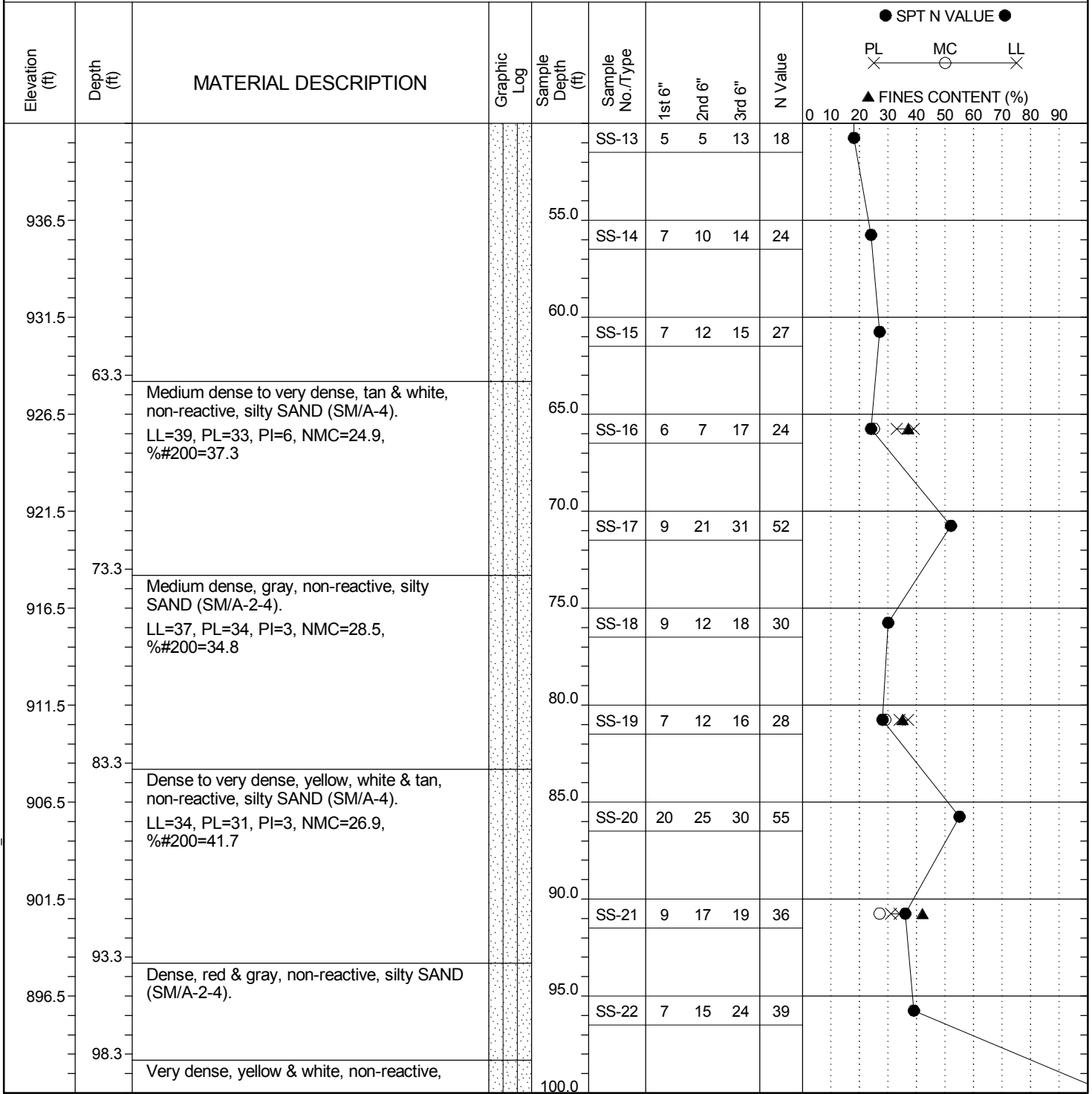
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SAMPLER TYPE SS - Split Spoon ST - Shelby Tube AWG - Rock Core, 1-1/8"		DRILLING METHOD HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing		NQ - Rock Core, 1-7/8" CU - Cuttings CT - Continuous Tube		RW - Rotary Wash RC - Rock Core	
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SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements		Route:	
Boring No.: B-23	Boring Location: 397+25	Offset: 90 Rt.	Alignment: I-385
Elev.: 991.5 ft	Latitude: 34.8329	Longitude: 82.29648	Date Started: 1/12/2012
Total Depth: 100.3 ft	Soil Depth: 100.3 ft	Core Depth: ft	Date Completed: 1/12/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 55	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 73%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-23	Boring Location: 397+25	Offset: 90 Rt.	Alignment: I-385
Elev.: 991.5 ft	Latitude: 34.8329	Longitude: 82.29648	Date Started: 1/12/2012
Total Depth: 100.3 ft	Soil Depth: 100.3 ft	Core Depth: ft	Date Completed: 1/12/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 55	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 73%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR

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
991.5	100.3	silty SAND (SM/A-4). SPT Refusal & Boring Terminated @ 100.3' (Elev. 891.2).			SS-23	50/0.3			50/0.3										
886.5																			
881.5																			
876.5																			
871.5																			
866.5																			
861.5																			
856.5																			
851.5																			
846.5																			

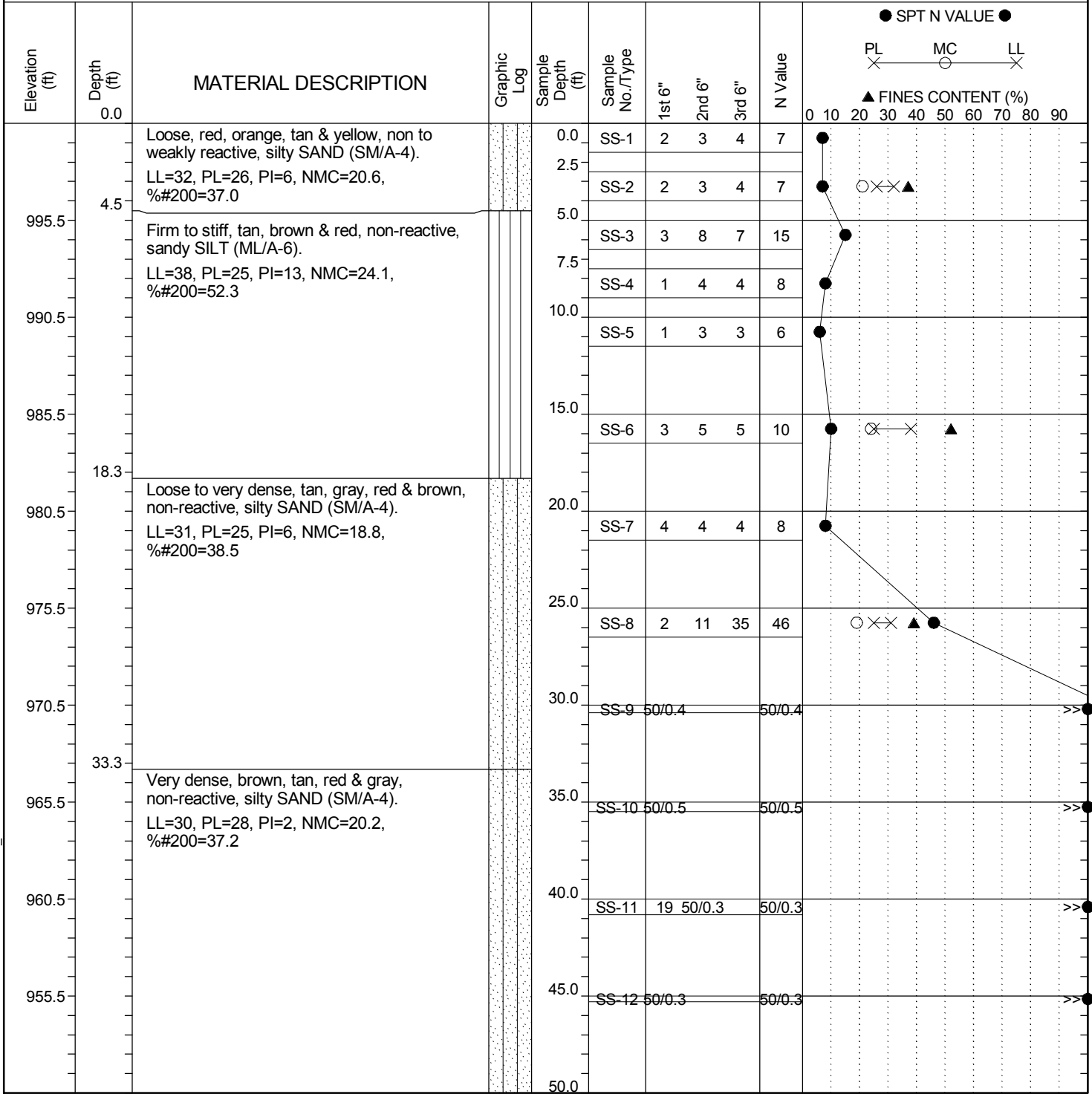
LEGEND

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 I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements		Route:	
Boring No.: B-24	Boring Location: 393+76	Offset: 151' Rt.	Alignment: I-385
Elev.: 1000.5 ft	Latitude: 34.8323	Longitude: 82.29549	Date Started: 1/16/2012
Total Depth: 100.3 ft	Soil Depth: 100.3 ft	Core Depth: ft	Date Completed: 1/17/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



LEGEND

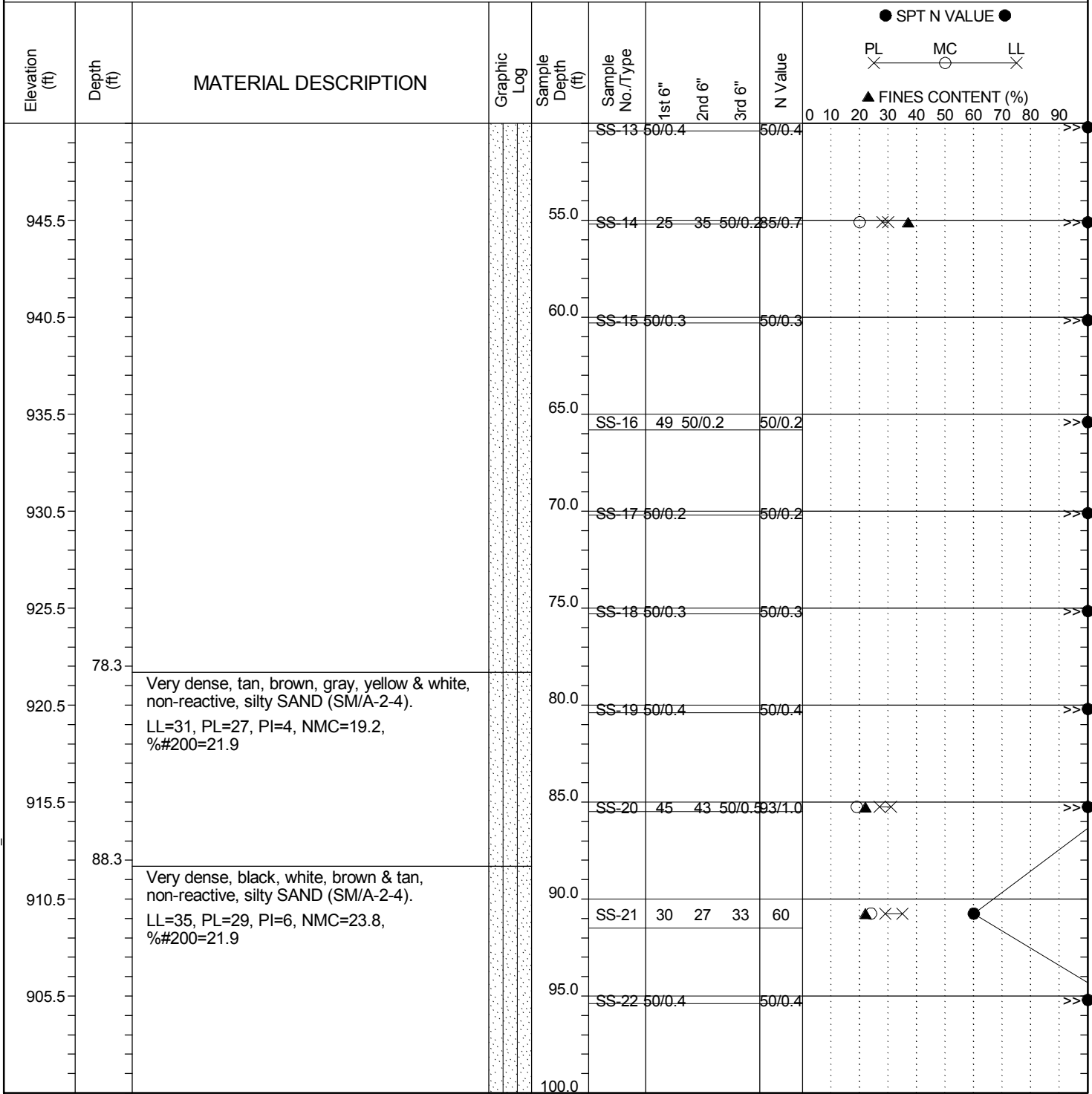
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SAMPLER TYPE SS - Split Spoon ST - Shelby Tube AWG - Rock Core, 1-1/8"		DRILLING METHOD HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing		SAMPLER TYPE NQ - Rock Core, 1-7/8" CU - Cuttings CT - Continuous Tube		DRILLING METHOD RW - Rotary Wash RC - Rock Core	
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SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-24	Boring Location: 393+76	Offset: 151' Rt.	Alignment: I-385
Elev.: 1000.5 ft	Latitude: 34.8323	Longitude: 82.29549	Date Started: 1/16/2012
Total Depth: 100.3 ft	Soil Depth: 100.3 ft	Core Depth: ft	Date Completed: 1/17/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



LEGEND

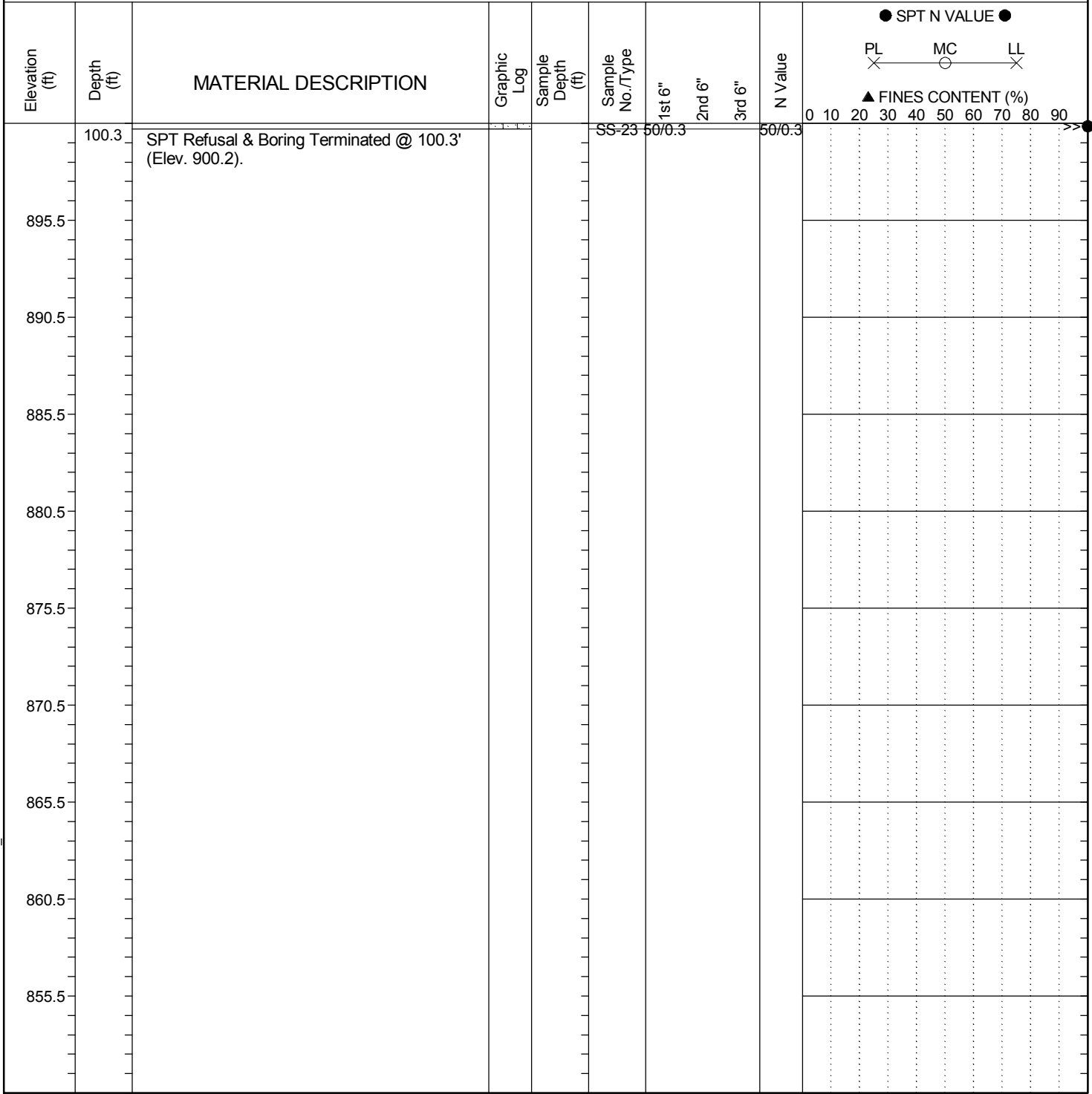
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SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-24	Boring Location: 393+76	Offset: 151' Rt.	Alignment: I-385
Elev.: 1000.5 ft	Latitude: 34.8323	Longitude: 82.29549	Date Started: 1/16/2012
Total Depth: 100.3 ft	Soil Depth: 100.3 ft	Core Depth: ft	Date Completed: 1/17/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



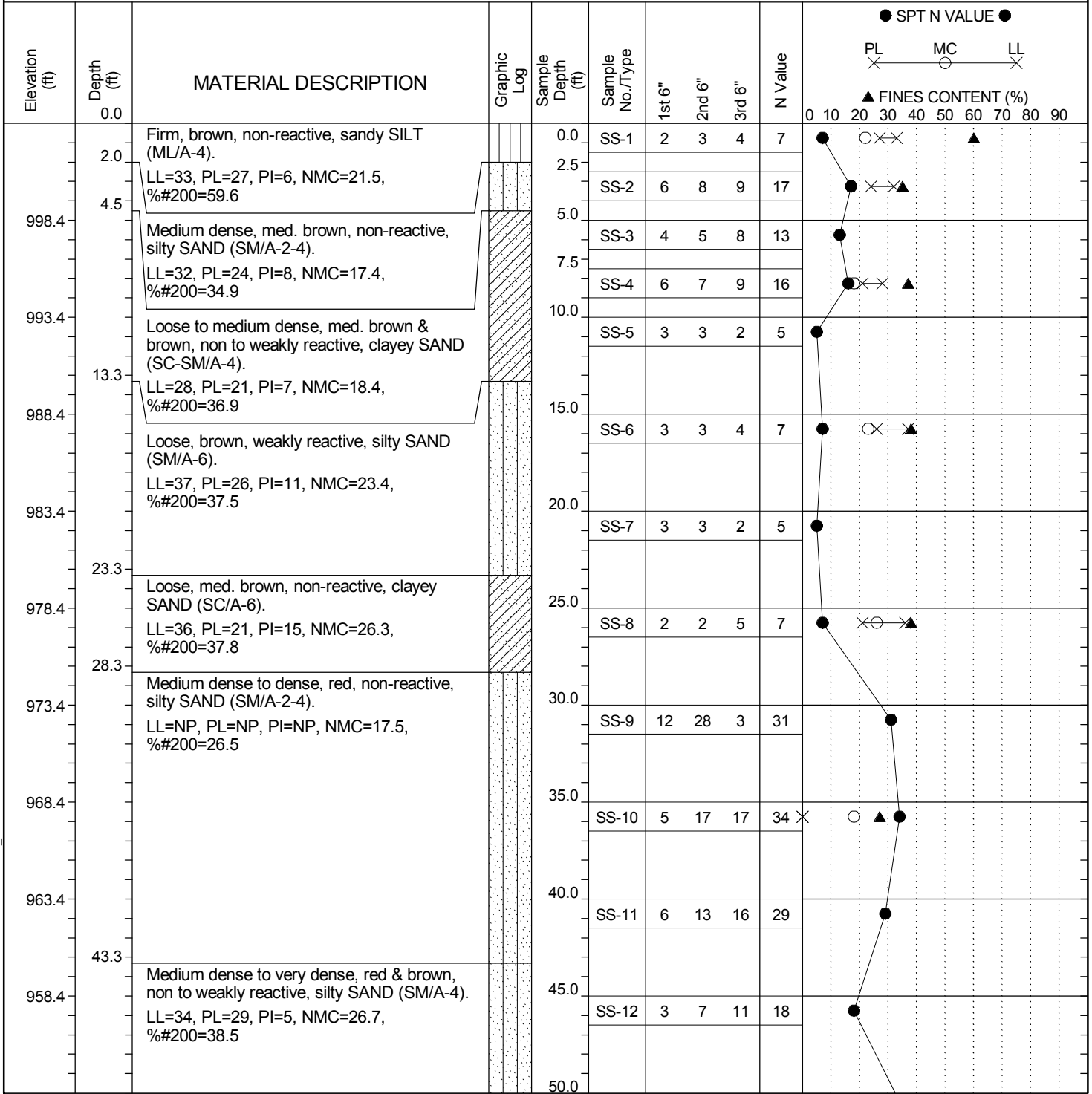
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-25	Boring Location: 86+11	Offset: 4' Lt.	Alignment: Ramp 1A
Elev.: 1003.4 ft	Latitude: 34.8313	Longitude: 82.29578	Date Started: 12/13/2011
Total Depth: 100.1 ft	Soil Depth: 100.1 ft	Core Depth: ft	Date Completed: 12/13/2011
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 55	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 73%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



LEGEND

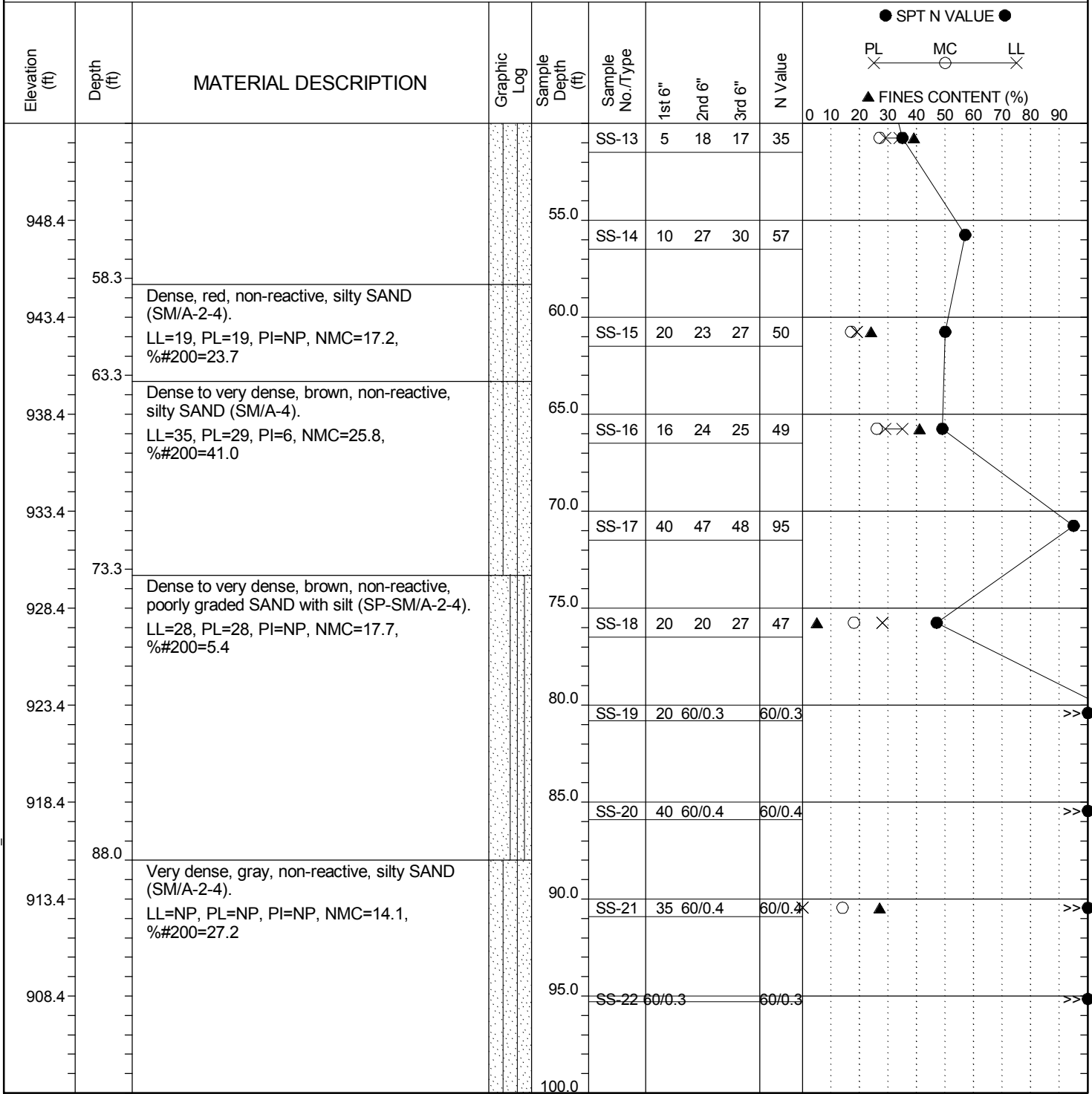
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-25	Boring Location: 86+11	Offset: 4' Lt.	Alignment: Ramp 1A
Elev.: 1003.4 ft	Latitude: 34.8313	Longitude: 82.29578	Date Started: 12/13/2011
Total Depth: 100.1 ft	Soil Depth: 100.1 ft	Core Depth: ft	Date Completed: 12/13/2011
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 55	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 73%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



LEGEND Continued Next Page

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

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/113

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-25	Boring Location: 86+11	Offset: 4' Lt.	Alignment: Ramp 1A
Elev.: 1003.4 ft	Latitude: 34.8313	Longitude: 82.29578	Date Started: 12/13/2011
Total Depth: 100.1 ft	Soil Depth: 100.1 ft	Core Depth: ft	Date Completed: 12/13/2011
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 55	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 73%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR

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		FINES CONTENT (%)	
										PL	MC	LL	▲
100.1	100.1	Rotary Bit Refusal & Boring Terminated @ 100.1' (Elev. 903.3).			SS-23	60/0.1			60/0.1				
898.4													
893.4													
888.4													
883.4													
878.4													
873.4													
868.4													
863.4													
858.4													

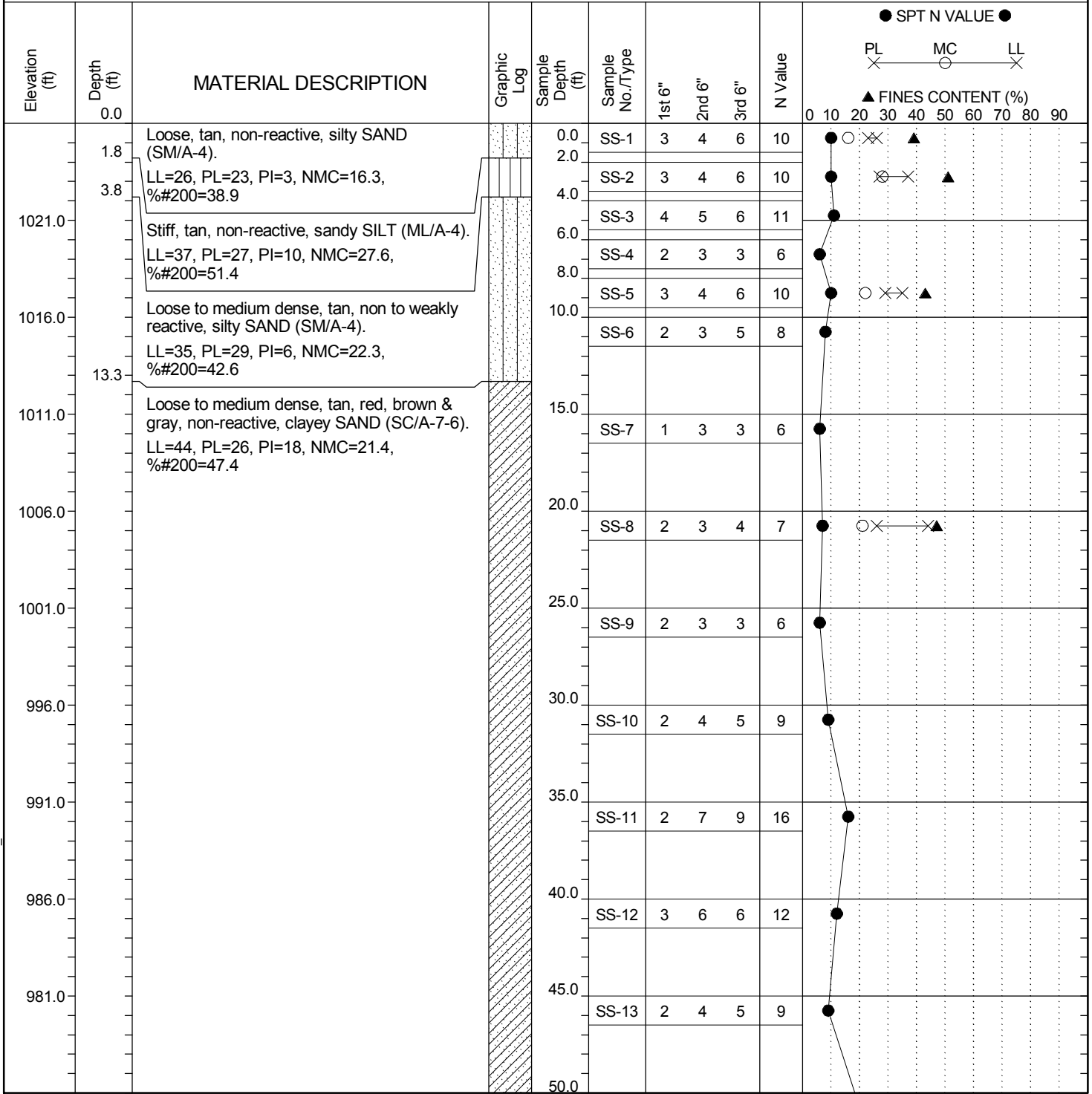
LEGEND

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 I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-26	Boring Location: 83+26	Offset: 7' Lt.	Alignment: Ramp 1A
Elev.: 1026.0 ft	Latitude: 34.832	Longitude: 82.29618	Date Started: 7/23/2012
Total Depth: 101.5 ft	Soil Depth: 101.5 ft	Core Depth: ft	Date Completed: 7/24/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 850	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 74%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



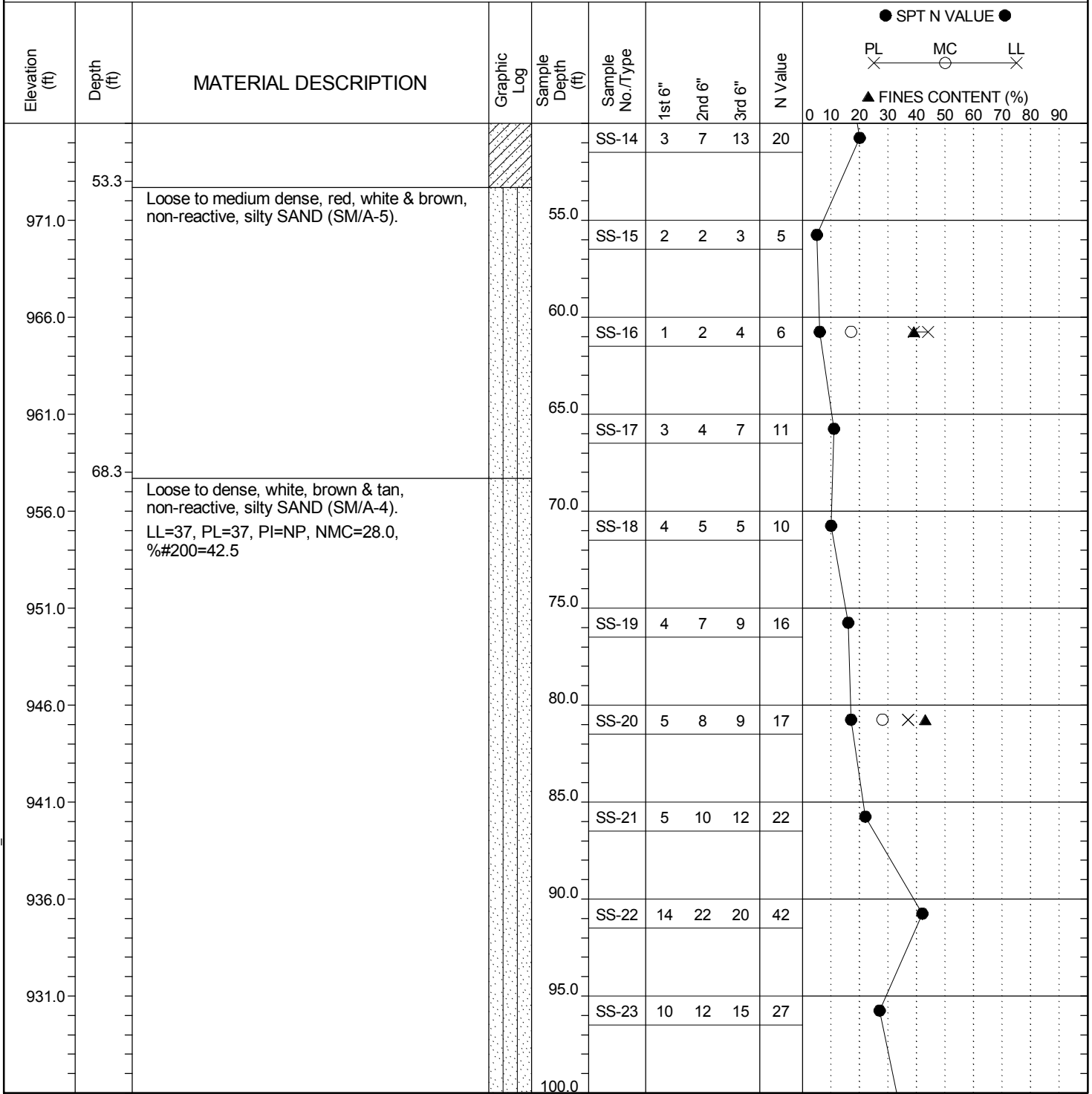
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-26	Boring Location: 83+26	Offset: 7' Lt.	Alignment: Ramp 1A
Elev.: 1026.0 ft	Latitude: 34.832	Longitude: 82.29618	Date Started: 7/23/2012
Total Depth: 101.5 ft	Soil Depth: 101.5 ft	Core Depth: ft	Date Completed: 7/24/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 850	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 74%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



LEGEND Continued Next Page

SAMPLER TYPE SS - Split Spoon ST - Shelby Tube AWG - Rock Core, 1-1/8"		SAMPLER TYPE NQ - Rock Core, 1-7/8" CU - Cuttings CT - Continuous Tube		DRILLING METHOD HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing		DRILLING METHOD RW - Rotary Wash RC - Rock Core	
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SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-26	Boring Location: 83+26	Offset: 7' Lt.	Alignment: Ramp 1A
Elev.: 1026.0 ft	Latitude: 34.832	Longitude: 82.29618	Date Started: 7/23/2012
Total Depth: 101.5 ft	Soil Depth: 101.5 ft	Core Depth: ft	Date Completed: 7/24/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 850	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 74%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value												
										0	10	20	30	40	50	60	70	80	90		
101.5		No Refusal & Boring Terminated @ 101.5' (Elev. 924.5).			SS-24	16	15	19	34												
921.0																					
916.0																					
911.0																					
906.0																					
901.0																					
896.0																					
891.0																					
886.0																					
881.0																					

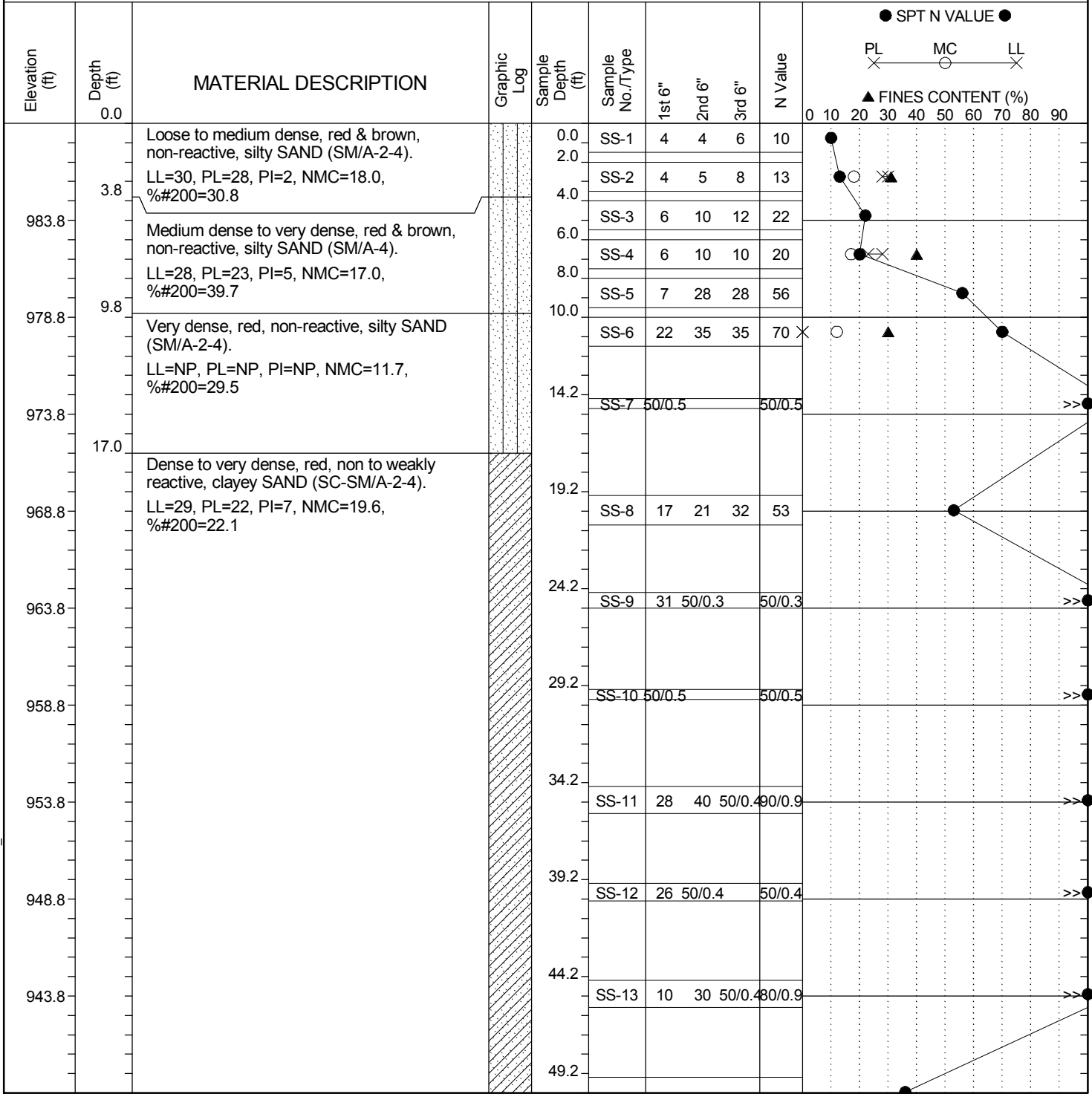
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-27	Boring Location: 75+49	Offset: CL	Alignment: Ramp 1A
Elev.: 988.8 ft	Latitude: 34.83407	Longitude: 82.29592	Date Started: 11/4/2011
Total Depth: 104.5 ft	Soil Depth: 84.5 ft	Core Depth: 104.5 ft	Date Completed: 11/5/2011
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA/RC	Hammer Type: Automatic	Energy Ratio: 93%
Core Size: NQ2	Driller: F. Woodard	Groundwater: TOB	24HR



LEGEND

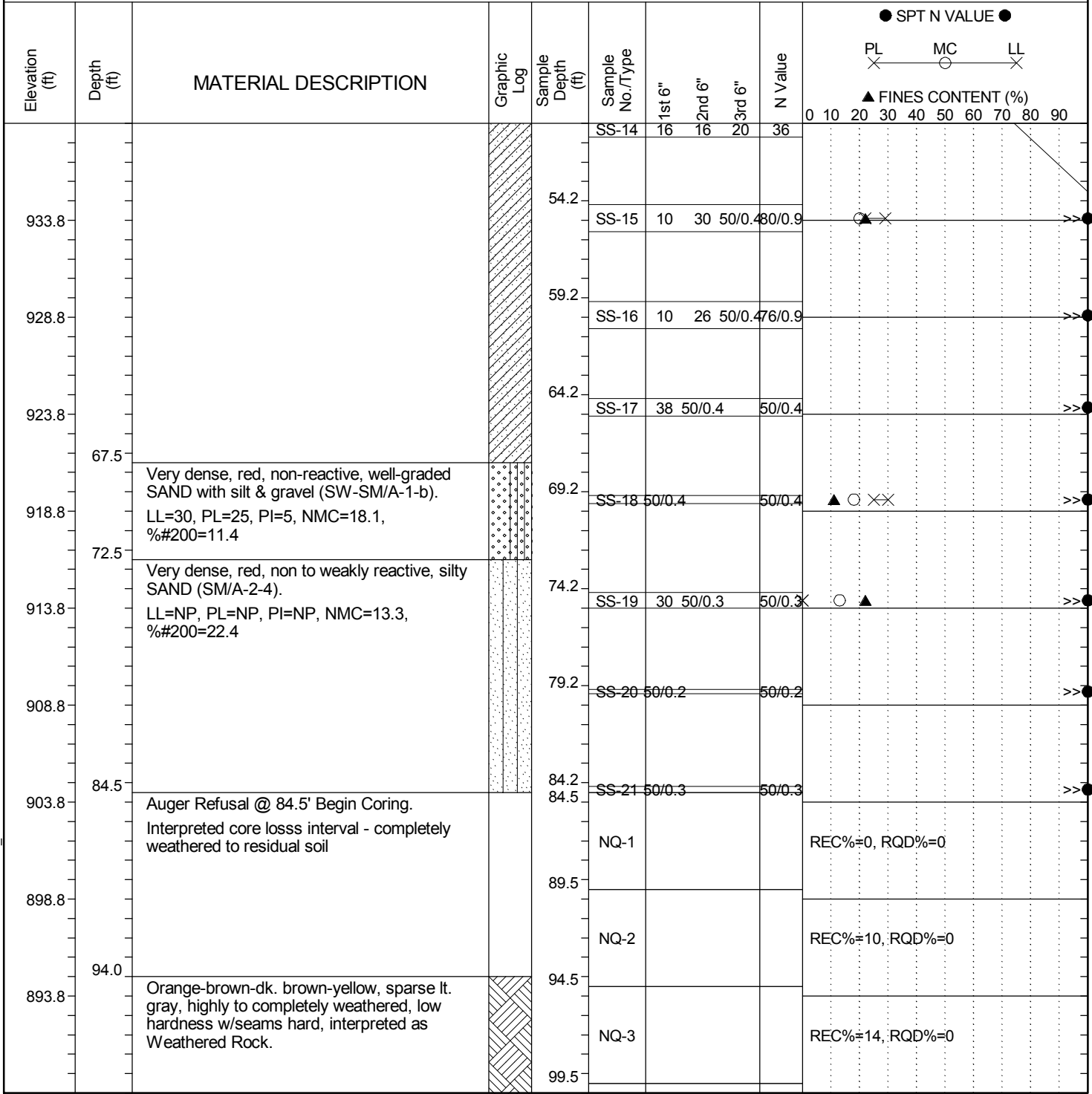
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

SCDOT Soil Test Boring Log

File No.:	23.038111	Project No. (PIN):		County:	Greenville	Eng./Geo.:	S. Berry
Site Description:	I-85/I-385 Interchange Improvements					Route:	
Boring No.:	B-27	Boring Location:	75+49	Offset:	CL	Alignment:	Ramp 1A
Elev.:	988.8 ft	Latitude:	34.83407	Longitude:	82.29592	Date Started:	11/4/2011
Total Depth:	104.5 ft	Soil Depth:	84.5 ft	Core Depth:	104.5 ft	Date Completed:	11/5/2011
Bore Hole Diameter (in):	4	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME 45C	Drill Method:	HSA/RC	Hammer Type:	Automatic	Energy Ratio:	93%
Core Size:	NQ2	Driller:	F. Woodard	Groundwater:	TOB	24HR	



LEGEND Continued Next Page

SAMPLER TYPE SS - Split Spoon ST - Shelby Tube AWG - Rock Core, 1-1/8"		SAMPLER TYPE NQ - Rock Core, 1-7/8" CU - Cuttings CT - Continuous Tube		DRILLING METHOD HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing		DRILLING METHOD RW - Rotary Wash RC - Rock Core	
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SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/113

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-27	Boring Location: 75+49	Offset: CL	Alignment: Ramp 1A
Elev.: 988.8 ft	Latitude: 34.83407	Longitude: 82.29592	Date Started: 11/4/2011
Total Depth: 104.5 ft	Soil Depth: 84.5 ft	Core Depth: 104.5 ft	Date Completed: 11/5/2011
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA/RC	Hammer Type: Automatic	Energy Ratio: 93%
Core Size: NQ2	Driller: F. Woodard	Groundwater: TOB	24HR

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		
100.7		Lt. gray, white, pale green, black, sli. to mod. weathered w/seam highly to completely weathered, hard w/seam friable, VC discontinuity spacing w/VN to N width, Feldspar Quartz Sillimanite Augite Schist. 5 0°-20° w/hard walls, iron stain, 2mm sep.; 4 30°-55° frags. w/hard walls, pyrtie grains on wallsw, 2mm sep.			NQ-4					REC%=90, RQD%=48											
104.5																					
883.8		Boring Terminated @ 104.5' (Elev. 884.3).																			
878.8																					
873.8																					
868.8																					
863.8																					
858.8																					
853.8																					
848.8																					
843.8																					

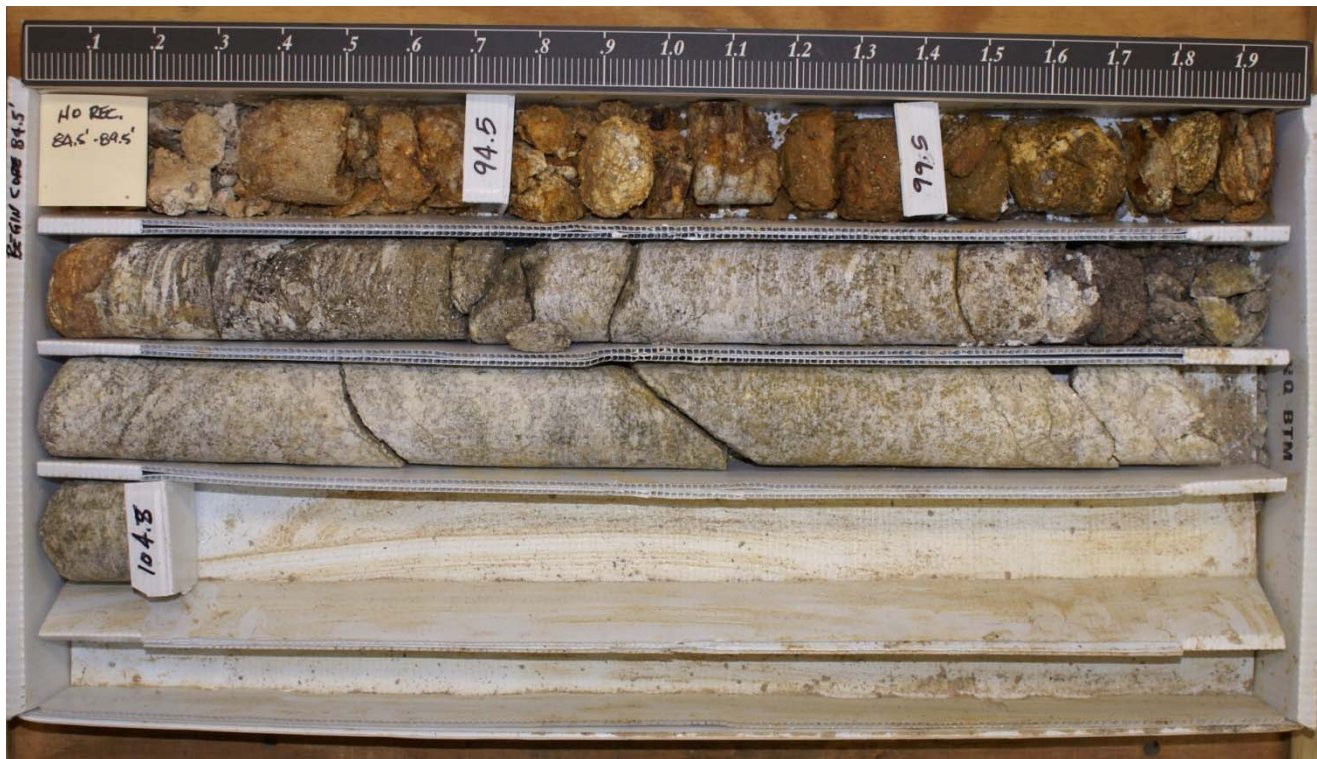
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

CORE PHOTOGRAPHIC RECORD

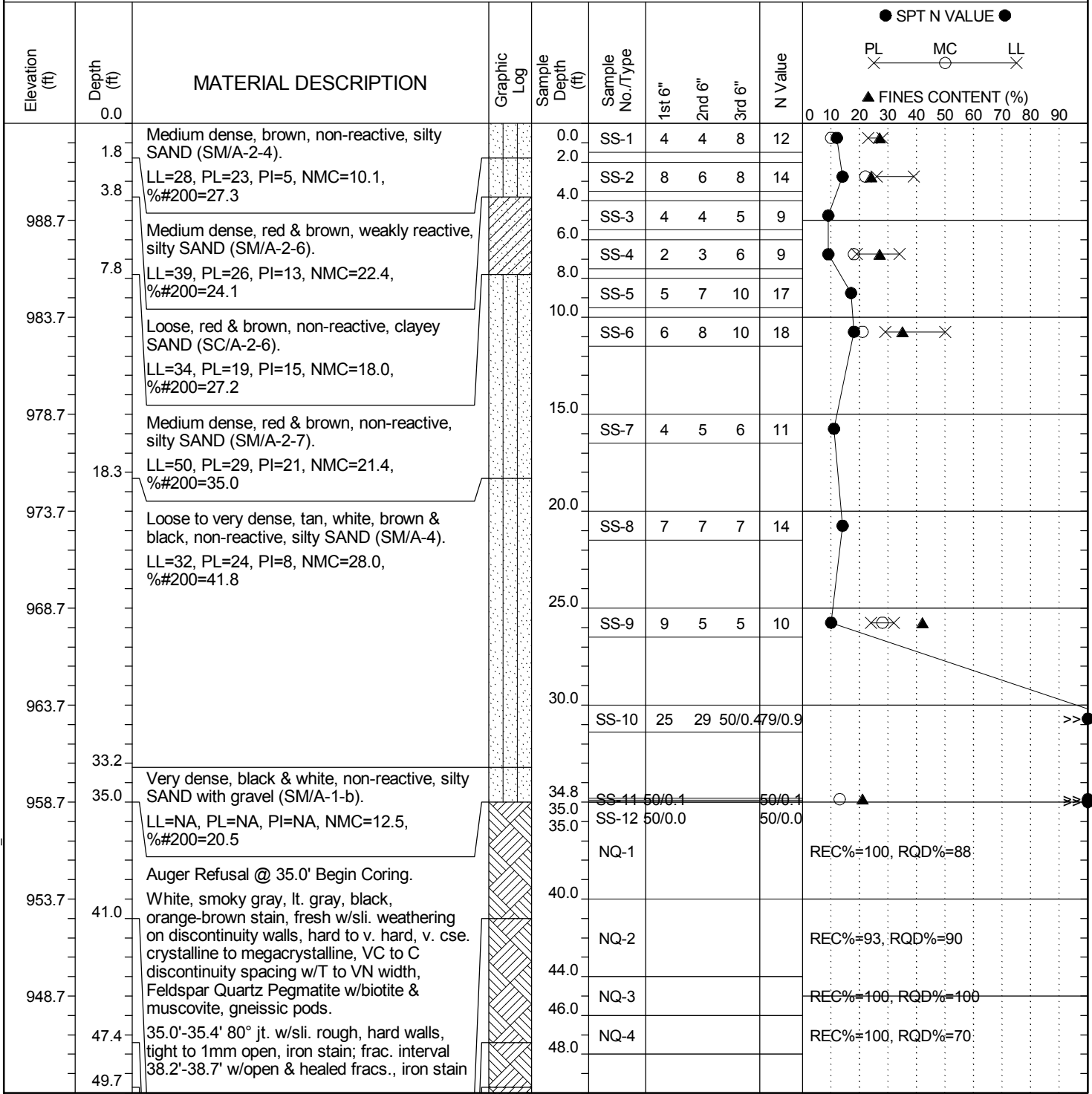
I-85 / I-385 Interchange Improvements



B-27 Box 1 of 1

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements		Route:	
Boring No.: B-28	Boring Location: 72+06	Offset: 5' Rt.	Alignment: Ramp 1A
Elev.: 993.7 ft	Latitude: 34.83483	Longitude: 82.29526	Date Started: 5/14/2012
Total Depth: 55 ft	Soil Depth: 35.0 ft	Core Depth: 55.0 ft	Date Completed: 5/16/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR



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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-28	Boring Location: 72+06	Offset: 5' Rt.	Alignment: Ramp 1A
Elev.: 993.7 ft	Latitude: 34.83483	Longitude: 82.29526	Date Started: 5/14/2012
Total Depth: 55 ft	Soil Depth: 35.0 ft	Core Depth: 55.0 ft	Date Completed: 5/16/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR

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 (%)									
938.7	55.0	White, lt. gray, black, pale green in part, fresh, hard to v. hard, med. to cse. crystalline, VC to C discontinuity spacing w/T to VN width, Feldspar Quartz Biotite Gneiss w/pegmatite interval & pods, pyrite-marcasite in intervals, augite, muscovite, trcs. garnets. vugular & healed frac. 41.9'-42.1', pale green stain; interpreted core loss 42.3'-42.6'	[Hatched Pattern]	54.0	NQ-5					REC%=100, RQD%=100												
933.7		Off white, smoky gray, lt. gray, black, orange-brown stain, fresh to sli. weathered, v. hard, v. cse. to megacrystalline, VC discontinuity spacing w/T to VN, width, healed fracs., Feldspar Quartz Pegmatite w/biotite & muscovite.			NQ-6					REC%=70, RQD%=70												
928.7		White, lt. gray, black, fresh, v. hard, med. to cse. crystalline, C discontinuity spacing w/T width, Feldspar Quartz Gneiss w/biotite, pyrite-marcasite in laminae, augite, muscovite.																				
923.7		interpreted core loss 54.7'-55.0'																				
		Boring Terminated @ 55.0' (Elev. 938.7).																				
918.7																						
913.7																						
908.7																						
903.7																						
898.7																						

LEGEND

SAMPLER TYPE SS - Split Spoon ST - Shelby Tube AWG - Rock Core, 1-1/8"		SAMPLER TYPE NQ - Rock Core, 1-7/8" CU - Cuttings CT - Continuous Tube		DRILLING METHOD HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing		DRILLING METHOD RW - Rotary Wash RC - Rock Core	
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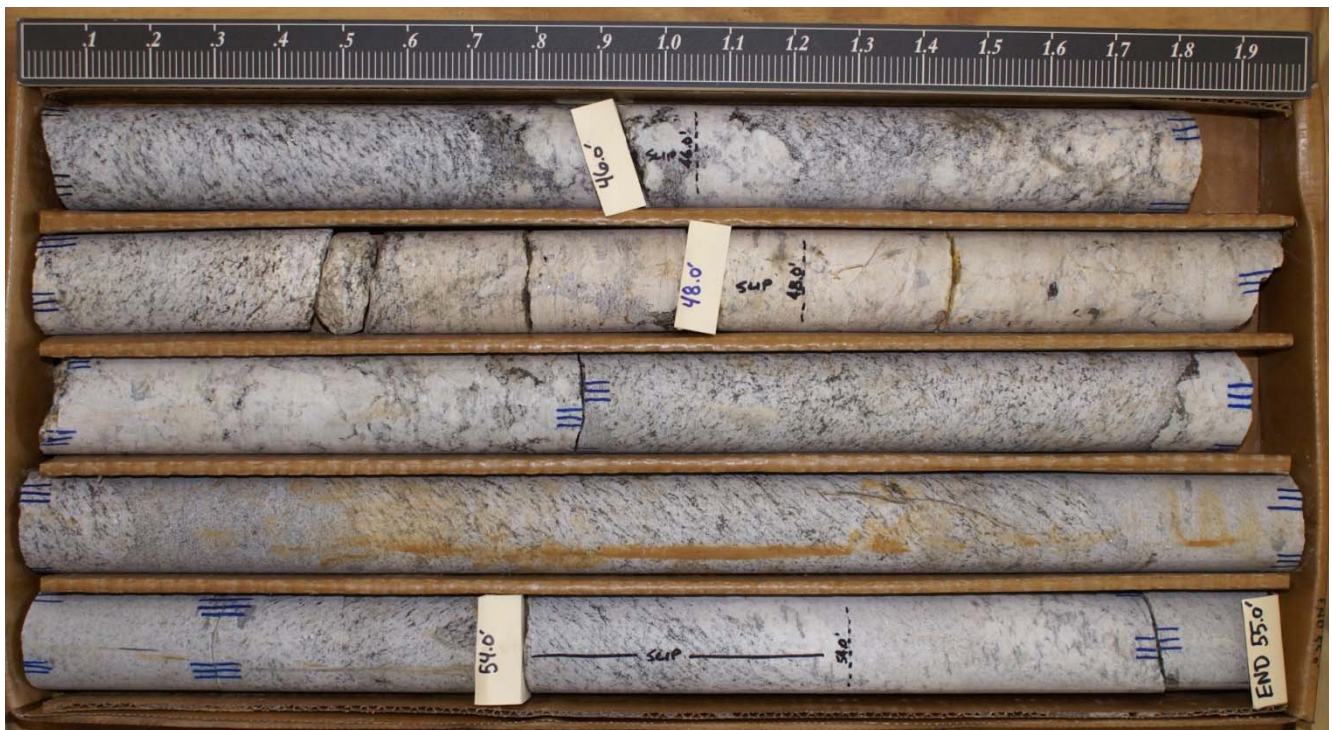
SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



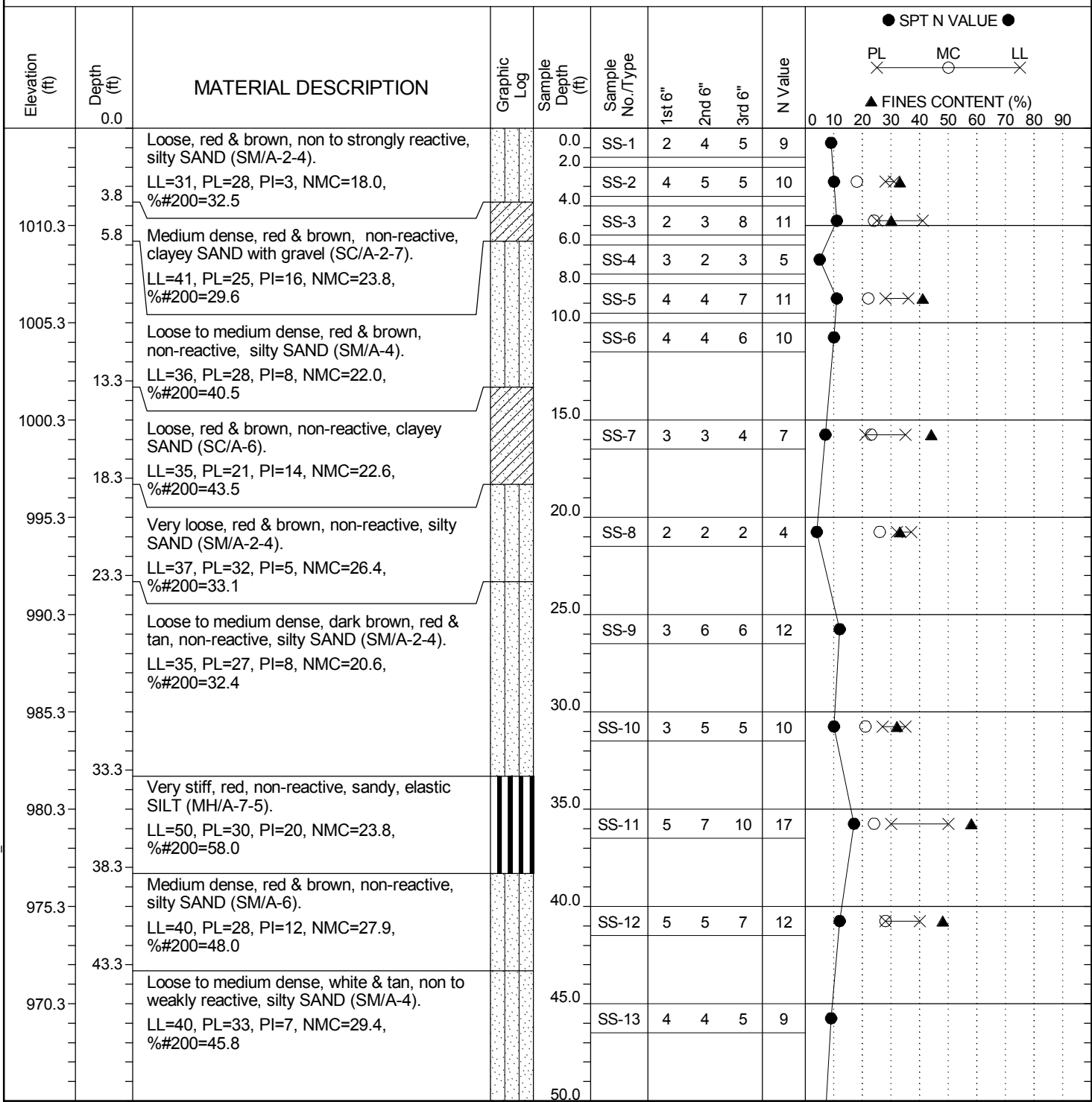
B-28 Box 1 of 2



B-28 Box 2 of 2

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements		Route:	
Boring No.: B-29	Boring Location: 296+84	Offset: 30' Lt.	Alignment: Ramp 3A
Elev.: 1015.3 ft	Latitude: 34.83354	Longitude: 82.29524	Date Started: 5/10/2012
Total Depth: 101.5 ft	Soil Depth: 101.5 ft	Core Depth: ft	Date Completed: 5/10/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



LEGEND

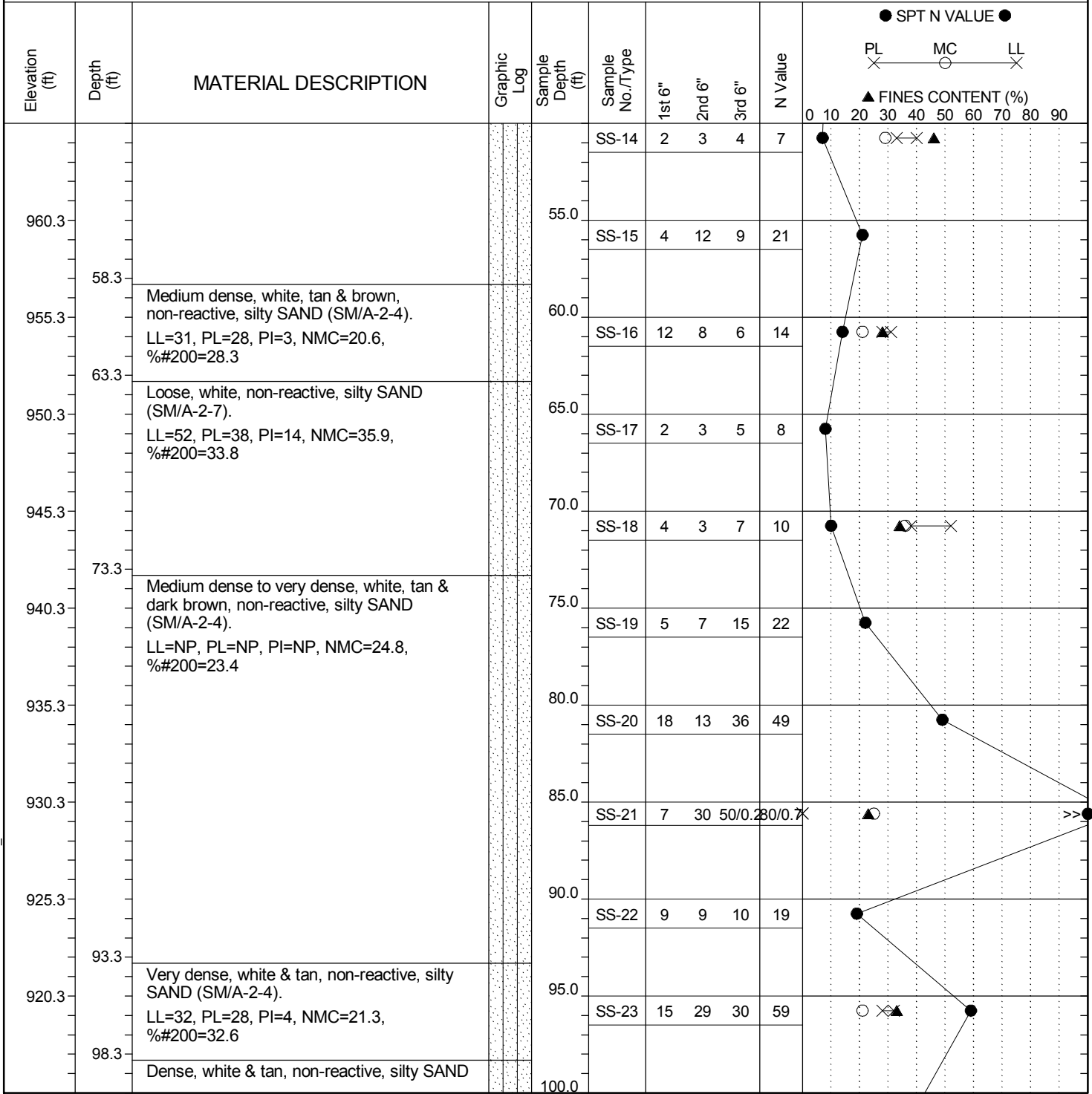
Continued Next Page

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-29	Boring Location: 296+84	Offset: 30' Lt.	Alignment: Ramp 3A
Elev.: 1015.3 ft	Latitude: 34.83354	Longitude: 82.29524	Date Started: 5/10/2012
Total Depth: 101.5 ft	Soil Depth: 101.5 ft	Core Depth: ft	Date Completed: 5/10/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NA	Driller: SCI	Groundwater: TOB	24HR



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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.:	23.038111	Project No. (PIN):		County:	Greenville	Eng./Geo.:	J. Patterson
Site Description:	I-85/I-385 Interchange Improvements					Route:	
Boring No.:	B-29	Boring Location:	296+84	Offset:	30' Lt.	Alignment:	Ramp 3A
Elev.:	1015.3 ft	Latitude:	34.83354	Longitude:	82.29524	Date Started:	5/10/2012
Total Depth:	101.5 ft	Soil Depth:	101.5 ft	Core Depth:	ft	Date Completed:	5/10/2012
Bore Hole Diameter (in):	4	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME 550	Drill Method:	HSA	Hammer Type:	Automatic	Energy Ratio:	77%
Core Size:	NA	Driller:	SCI	Groundwater:	TOB	24HR	

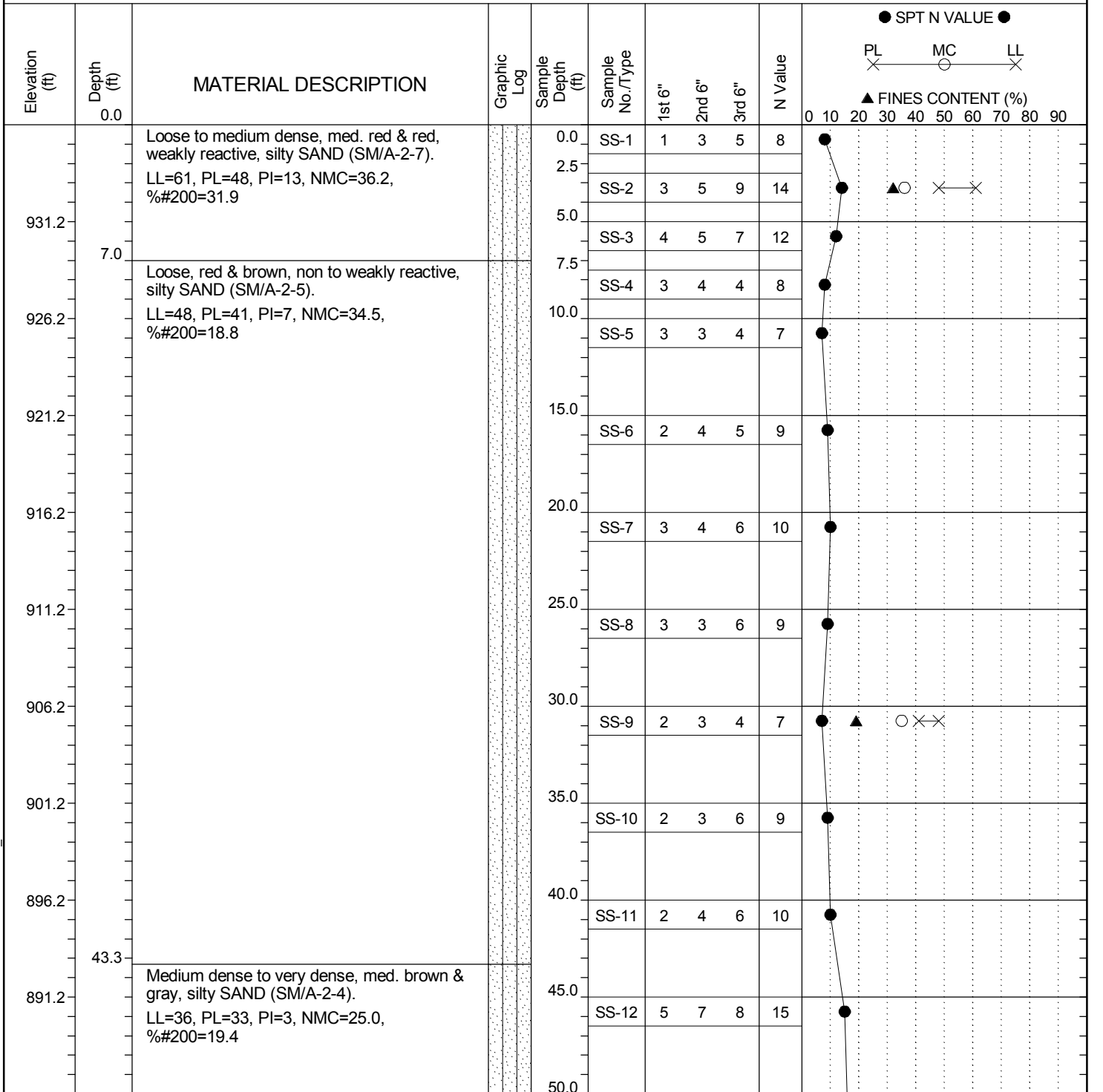
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	SPT N VALUE			N Value	FINES CONTENT (%)									
						1st 6"	2nd 6"	3rd 6"		0	10	20	30	40	50	60	70	80	90
101.5		(SM/A-2-4). LL=32, PL=30, PI=2, NMC=23.6, %#200=29.7			SS-24	9	17	23	40	● SPT N VALUE ● PL × MC ○ LL × ▲ FINES CONTENT (%)									
910.3		No Refusal & Boring Terminated @ 101.5' (Elev. 913.8).																	
905.3																			
900.3																			
895.3																			
890.3																			
885.3																			
880.3																			
875.3																			
870.3																			

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.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-30	Boring Location: 36+39	Offset: 25' Lt.	Alignment: Roper Mounta
Elev.: 936.2 ft	Latitude: 34.83776	Longitude: 82.28849	Date Started: 12/5/2011
Total Depth: 90 ft	Soil Depth: 70.0 ft	Core Depth: 85.0 ft	Date Completed: 12/5/2011
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 55	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 73%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR



LEGEND

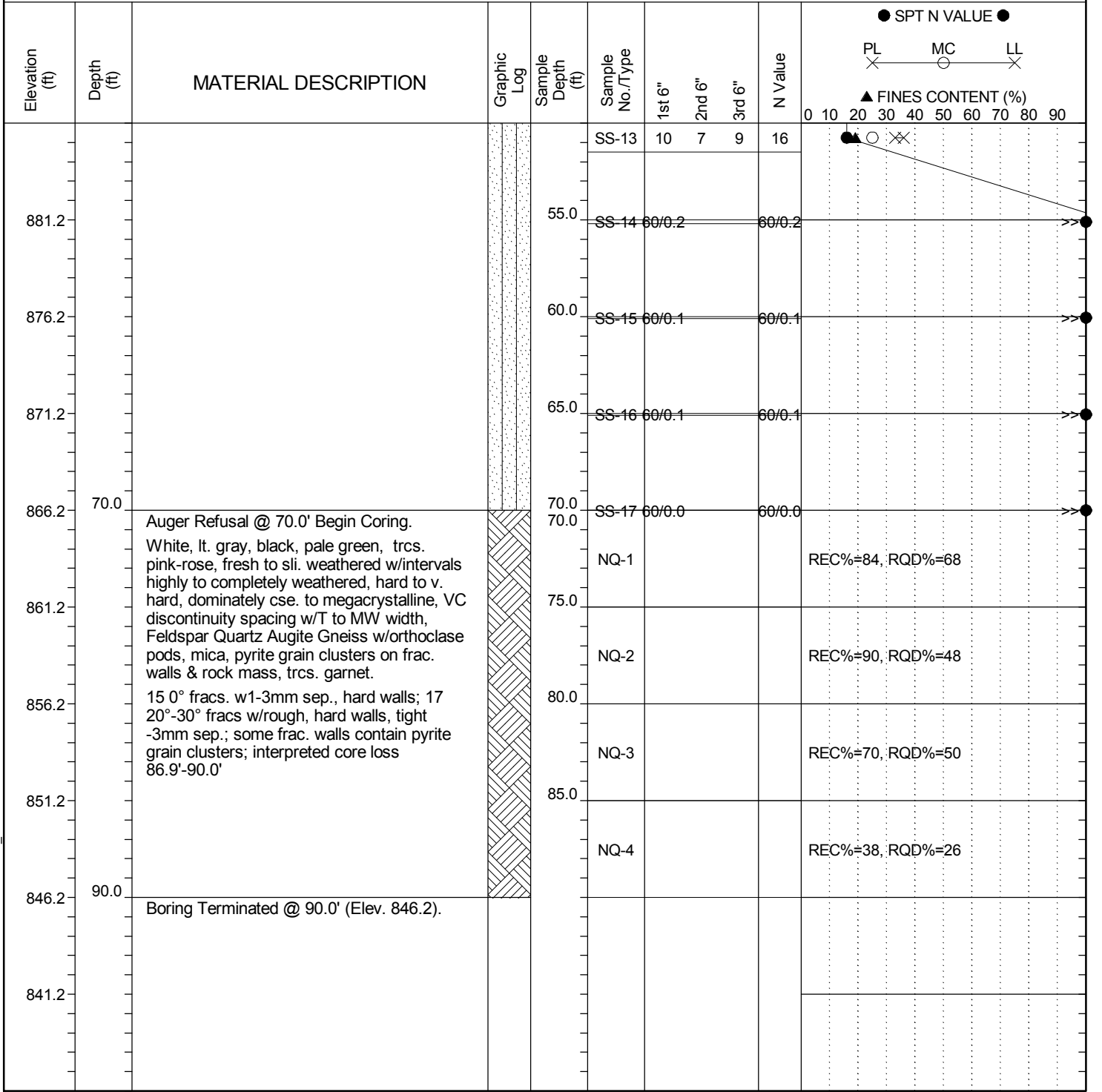
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SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

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.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-30	Boring Location: 36+39	Offset: 25' Lt.	Alignment: Roper Mounta
Elev.: 936.2 ft	Latitude: 34.83776	Longitude: 82.28849	Date Started: 12/5/2011
Total Depth: 90 ft	Soil Depth: 70.0 ft	Core Depth: 85.0 ft	Date Completed: 12/5/2011
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 55	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 73%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



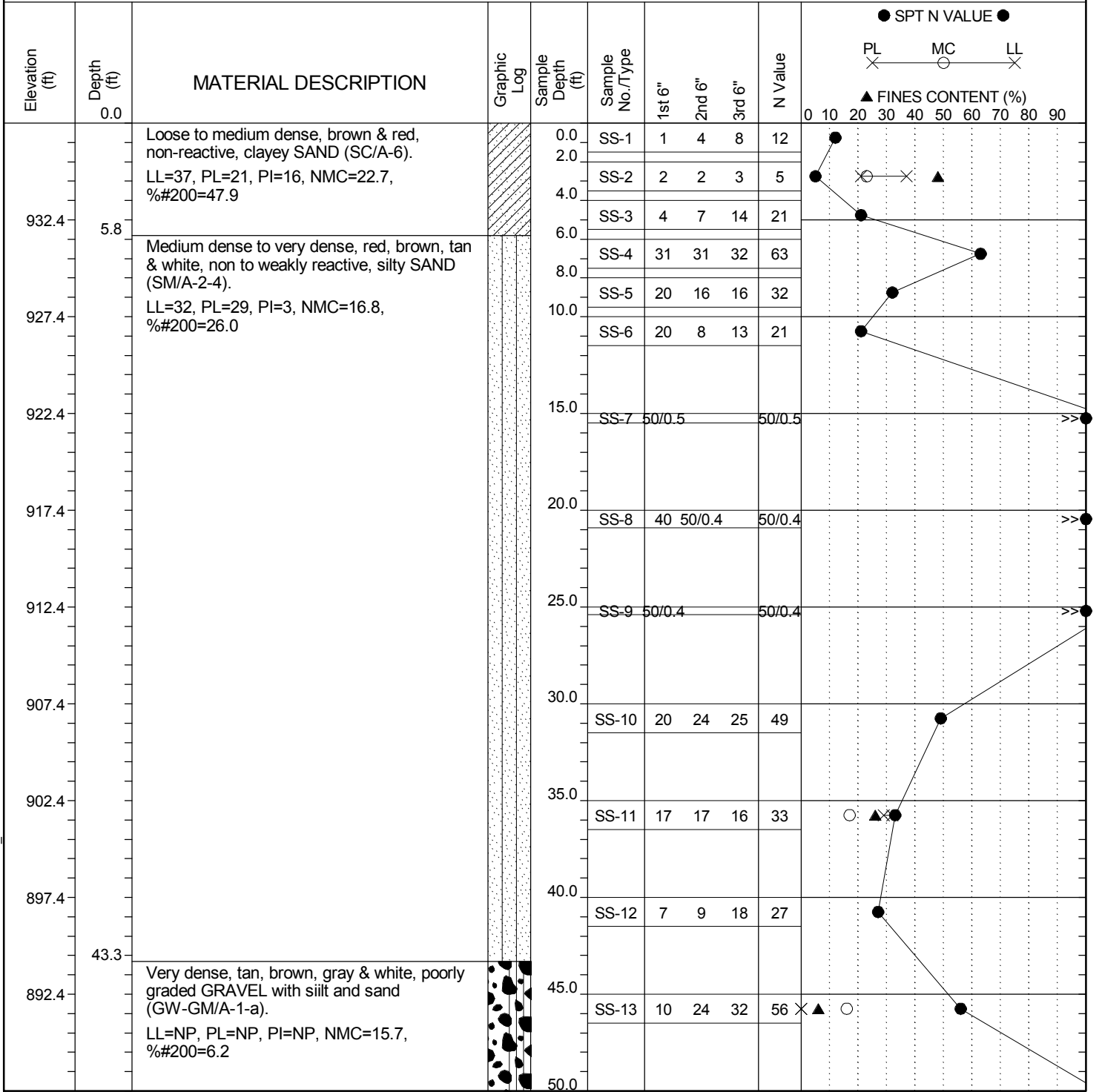
B-30 Box 1 of 2



B-30 Box 2 of 2

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-31	Boring Location: 40+08	Offset: 69' Rt.	Alignment: Roper Mounta
Elev.: 937.4 ft	Latitude: 34.83852	Longitude: 82.28934	Date Started: 7/16/2012
Total Depth: 85 ft	Soil Depth: 65.0 ft	Core Depth: 85.0 ft	Date Completed: 7/19/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR



LEGEND

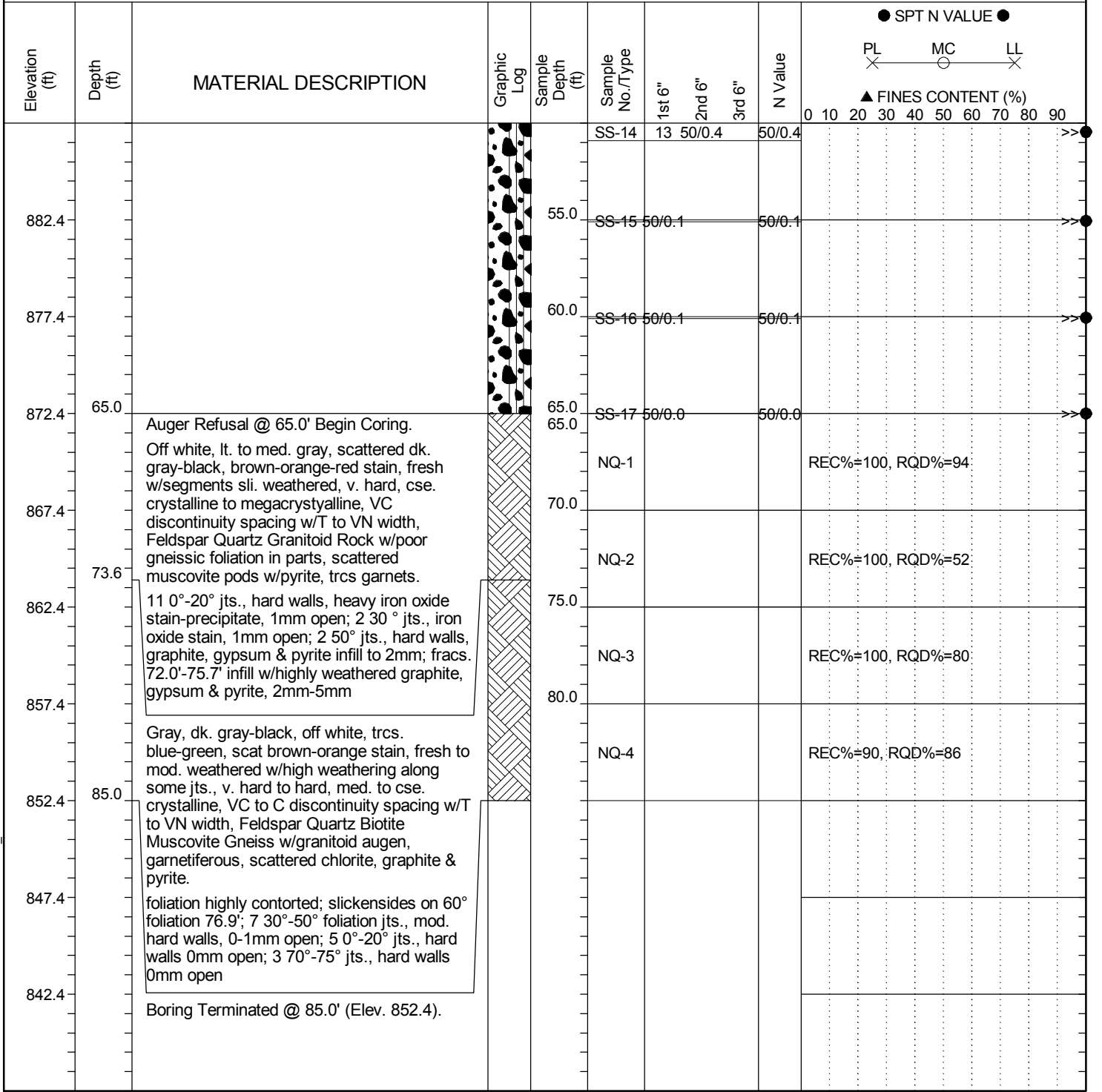
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SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: J. Patterson
Site Description: I-85/I-385 Interchange Improvements		Route:	
Boring No.: B-31	Boring Location: 40+08	Offset: 69' Rt.	Alignment: Roper Mounta
Elev.: 937.4 ft	Latitude: 34.83852	Longitude: 82.28934	Date Started: 7/16/2012
Total Depth: 85 ft	Soil Depth: 65.0 ft	Core Depth: 85.0 ft	Date Completed: 7/19/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 550	Drill Method: RC	Hammer Type: Automatic	Energy Ratio: 77%
Core Size: NQ2	Driller: SCI	Groundwater: TOB	24HR



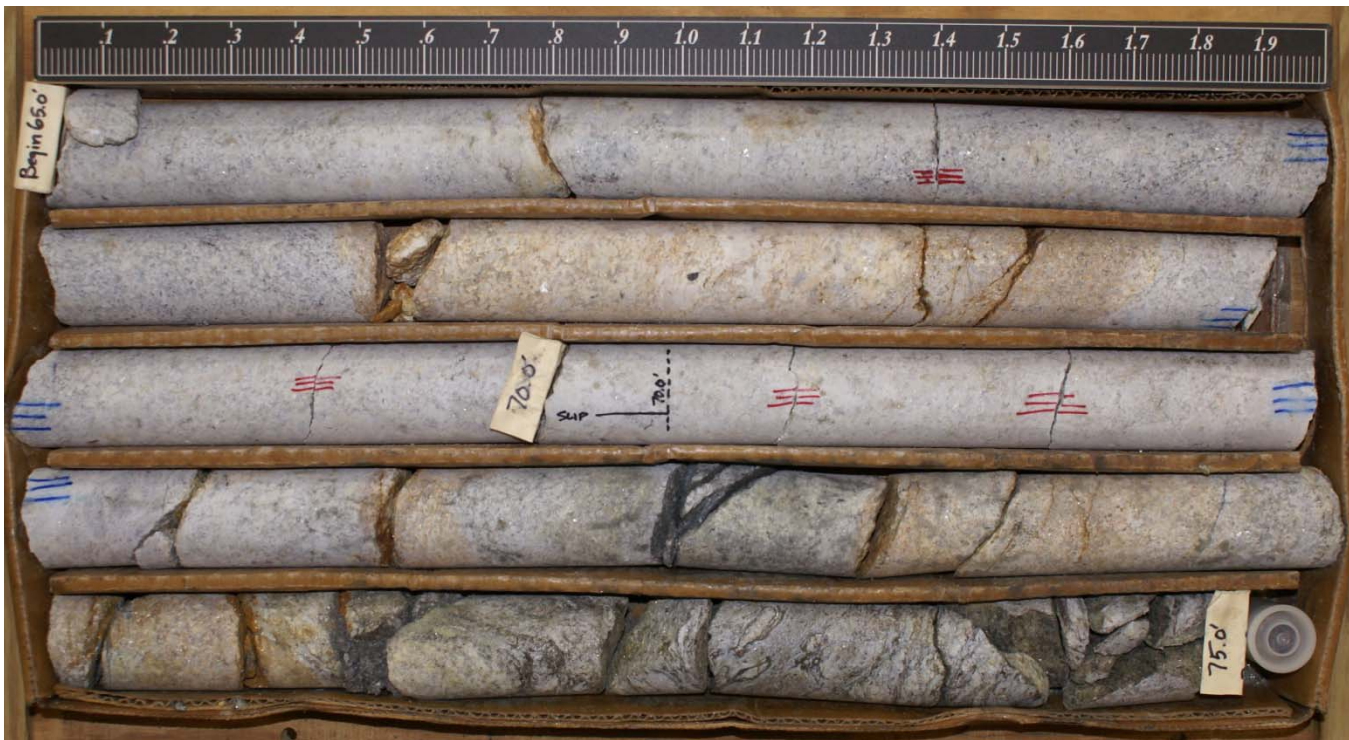
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/11/13

CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



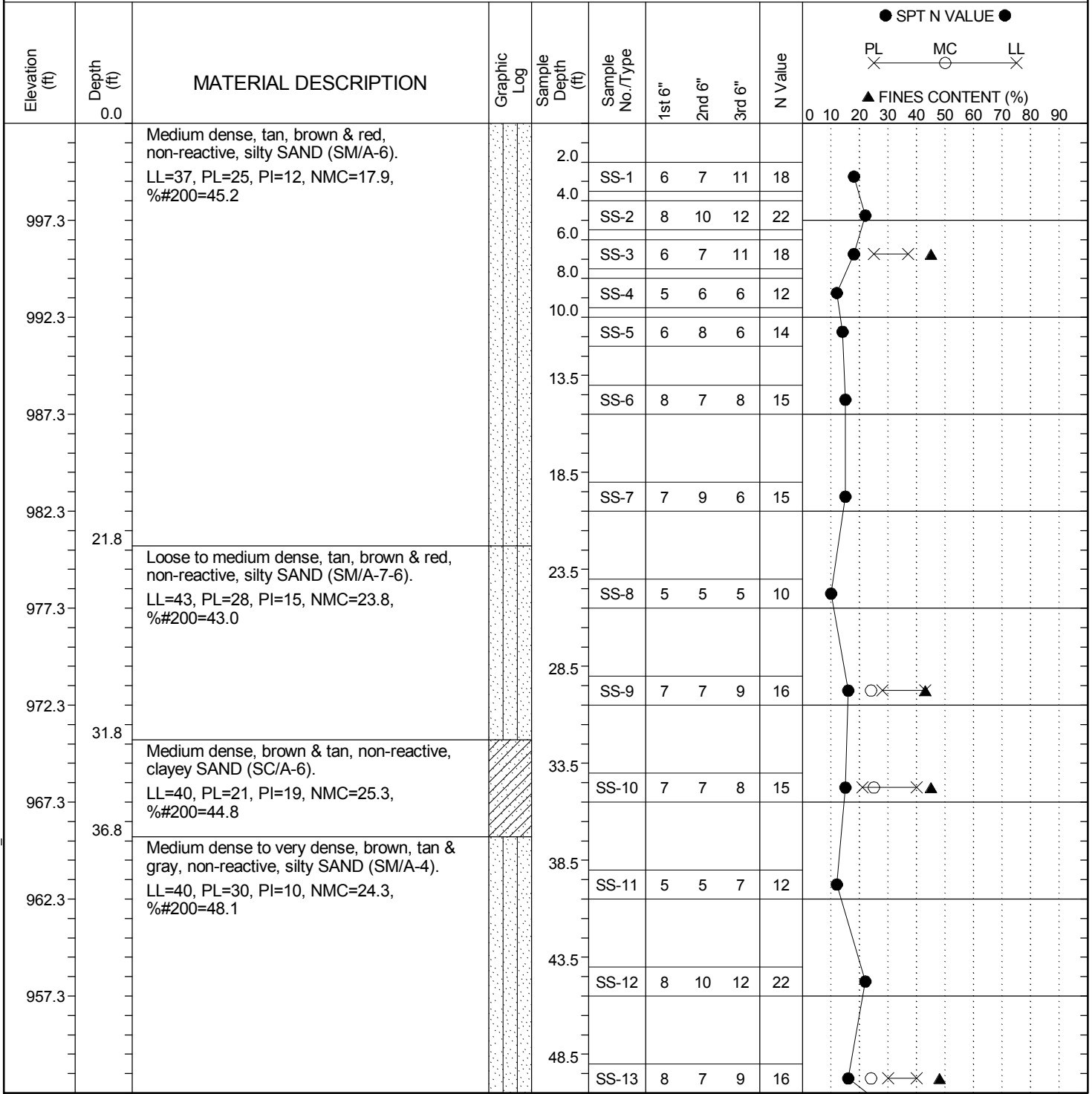
B-31 Box 1 of 2



B-31 Box 2 of 2

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-32	Boring Location: 40+70	Offset: 87' Lt.	Alignment: Ramp 2B
Elev.: 1002.3 ft	Latitude: 34.83109	Longitude: 82.29574	Date Started: 10/6/2012
Total Depth: 89 ft	Soil Depth: 89.0 ft	Core Depth: ft	Date Completed: 10/7/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 79%
Core Size: NA	Driller: C. Frazier	Groundwater: TOB	24HR



LEGEND

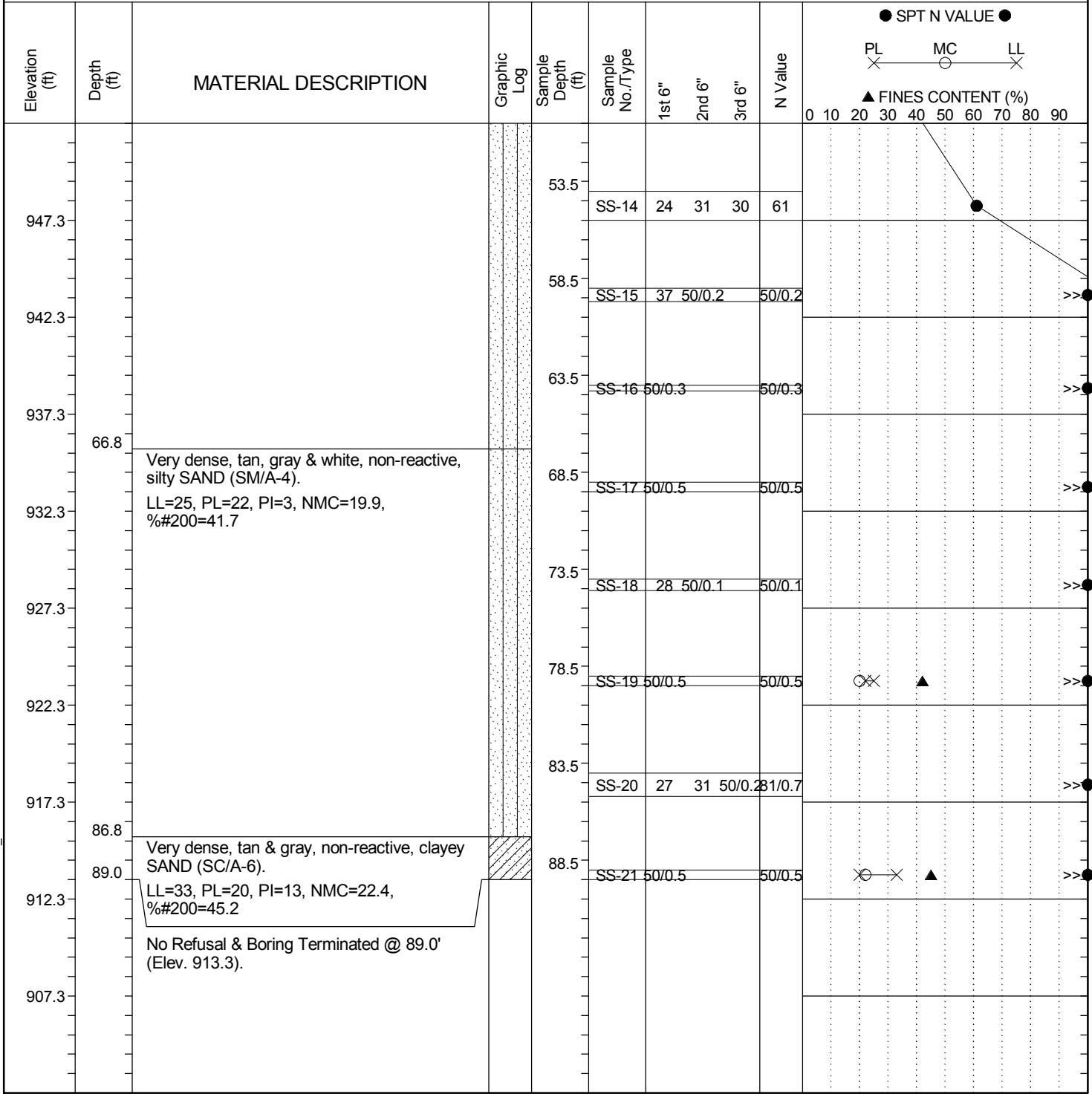
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SAMPLER TYPE SS - Split Spoon ST - Shelby Tube AWG - Rock Core, 1-1/8"		DRILLING METHOD HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing		DRILLING METHOD NQ - Rock Core, 1-7/8" CU - Cuttings CT - Continuous Tube RW - Rotary Wash RC - Rock Core	
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SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/113

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-32	Boring Location: 40+70	Offset: 87' Lt.	Alignment: Ramp 2B
Elev.: 1002.3 ft	Latitude: 34.83109	Longitude: 82.29574	Date Started: 10/6/2012
Total Depth: 89 ft	Soil Depth: 89.0 ft	Core Depth: ft	Date Completed: 10/7/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 79%
Core Size: NA	Driller: C. Frazier	Groundwater: TOB	24HR



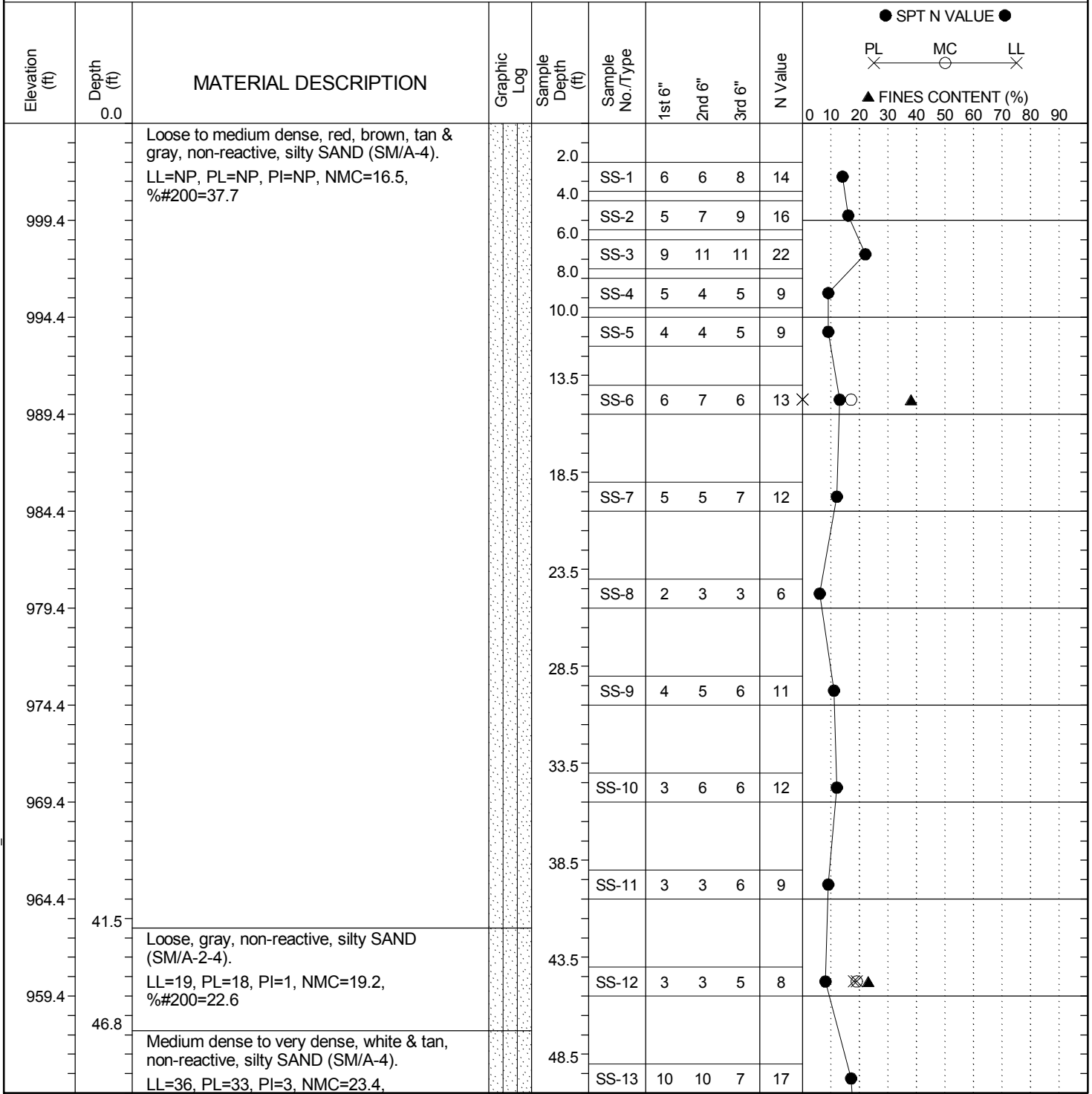
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-33	Boring Location: 88+76	Offset: 24' Lt.	Alignment: Ramp 1A
Elev.: 1004.4 ft	Latitude: 34.83073	Longitude: 82.29522	Date Started: 10/6/2012
Total Depth: 79.1 ft	Soil Depth: 79.1 ft	Core Depth: ft	Date Completed: 10/6/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 86%
Core Size: NA	Driller: M. Frazier	Groundwater: TOB	24HR



LEGEND

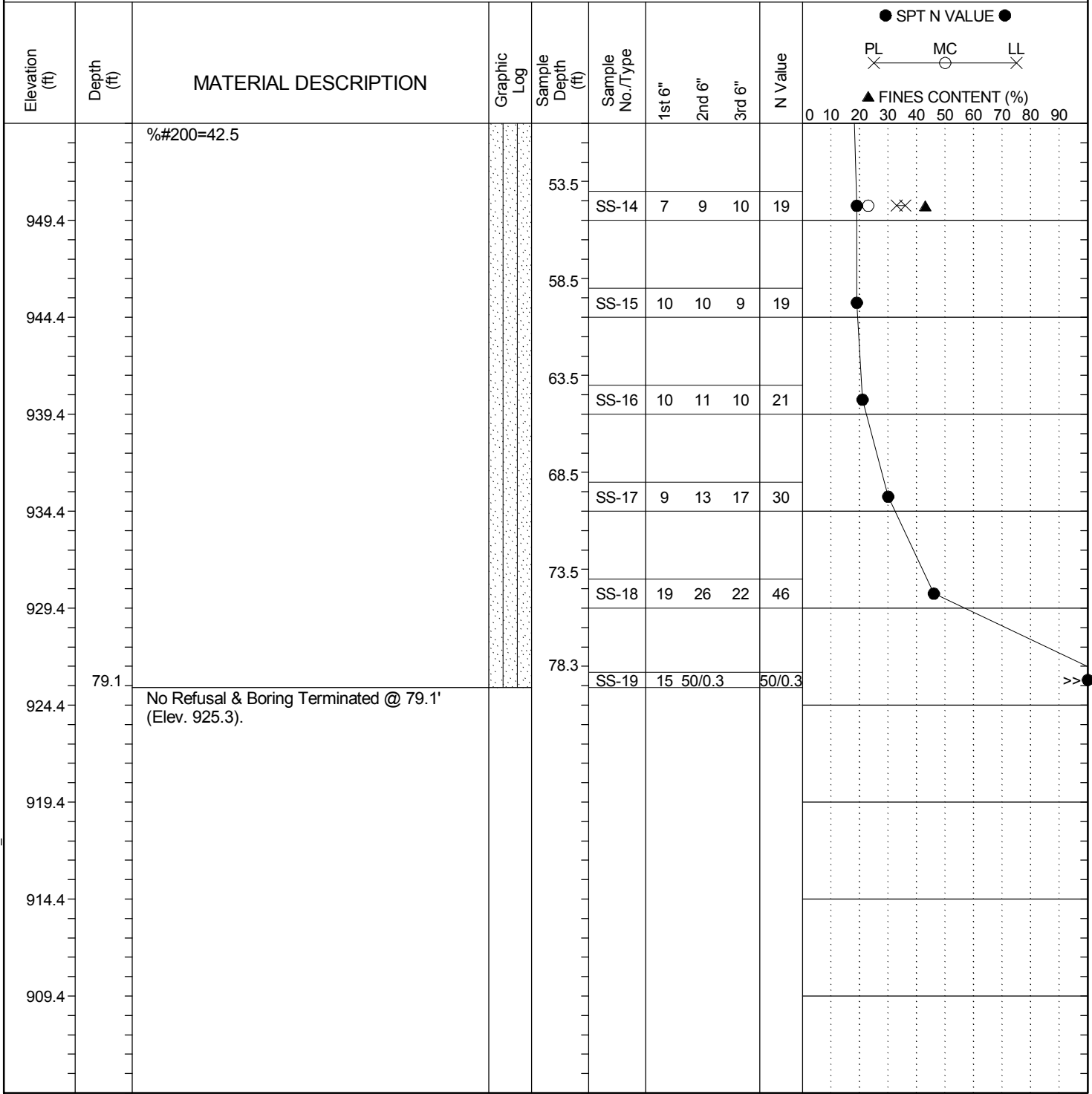
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SAMPLER TYPE SS - Split Spoon ST - Shelby Tube AWG - Rock Core, 1-1/8"		DRILLING METHOD HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing	
NQ - Rock Core, 1-7/8" CU - Cuttings CT - Continuous Tube		RW - Rotary Wash RC - Rock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

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-33	Boring Location: 88+76	Offset: 24' Lt.	Alignment: Ramp 1A
Elev.: 1004.4 ft	Latitude: 34.83073	Longitude: 82.29522	Date Started: 10/6/2012
Total Depth: 79.1 ft	Soil Depth: 79.1 ft	Core Depth: ft	Date Completed: 10/6/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 86%
Core Size: NA	Driller: M. Frazier	Groundwater: TOB	24HR



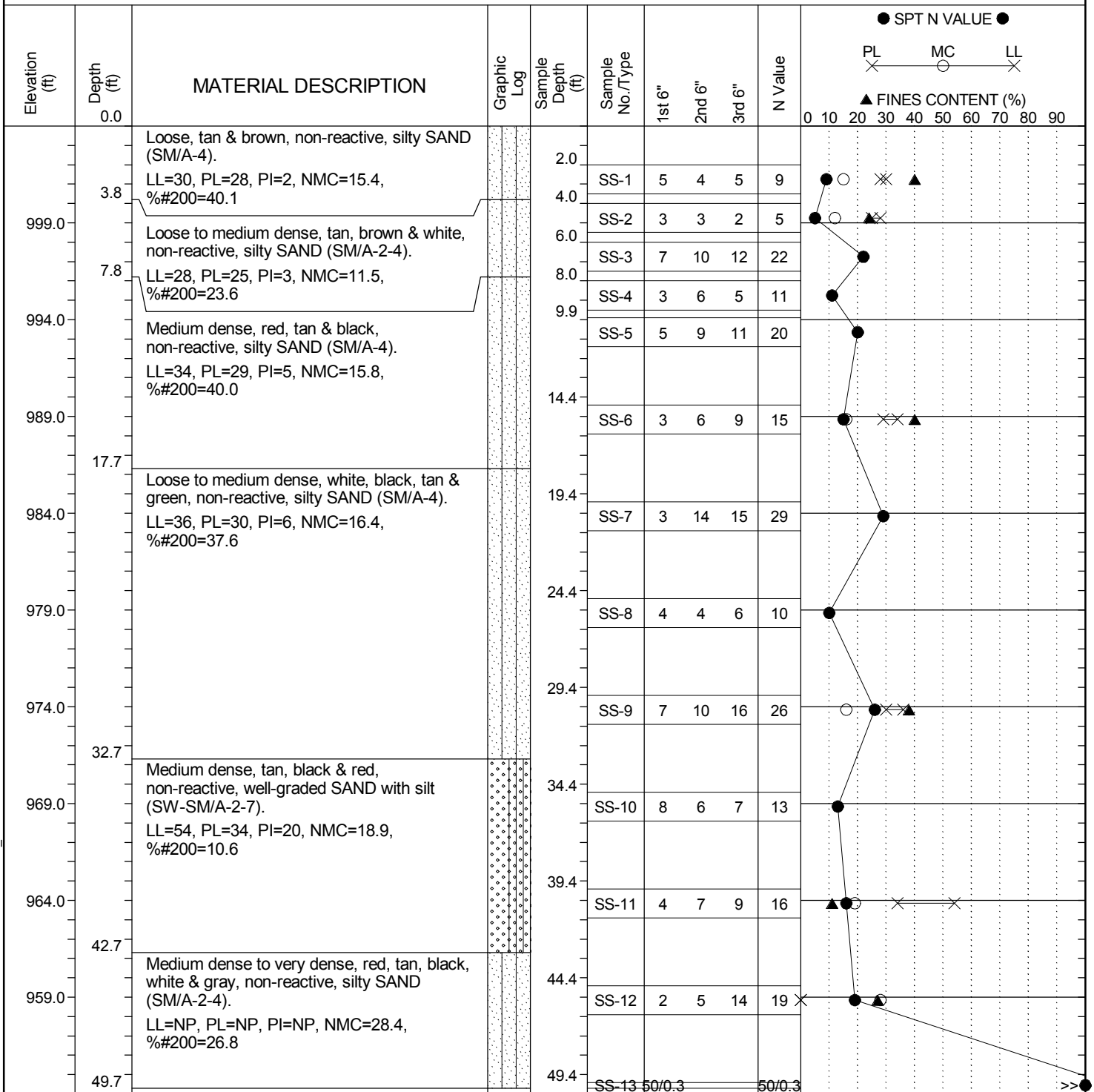
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-34	Boring Location: 94+10	Offset: 23' Lt.	Alignment: I-385 SB C/D
Elev.: 1004.0 ft	Latitude: 34.82946	Longitude: 82.29434	Date Started: 11/2/2012
Total Depth: 49.7 ft	Soil Depth: 49.7 ft	Core Depth: ft	Date Completed: 11/2/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 82%
Core Size: NA	Driller: C. Banning	Groundwater: TOB	24HR



LEGEND

Continued Next Page

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

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.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-34	Boring Location: 94+10	Offset: 23' Lt.	Alignment: I-385 SB C/D
Elev.: 1004.0 ft	Latitude: 34.82946	Longitude: 82.29434	Date Started: 11/2/2012
Total Depth: 49.7 ft	Soil Depth: 49.7 ft	Core Depth: ft	Date Completed: 11/2/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 82%
Core Size: NA	Driller: C. Banning	Groundwater: TOB	24HR

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 X — O — X ▲ FINES CONTENT (%)												
										0	10	20	30	40	50	60	70	80	90			
		No Refusal & Boring Terminated @ 49.7' (Elev. 954.3).																				
949.0																						
944.0																						
939.0																						
934.0																						
929.0																						
924.0																						
919.0																						
914.0																						
909.0																						

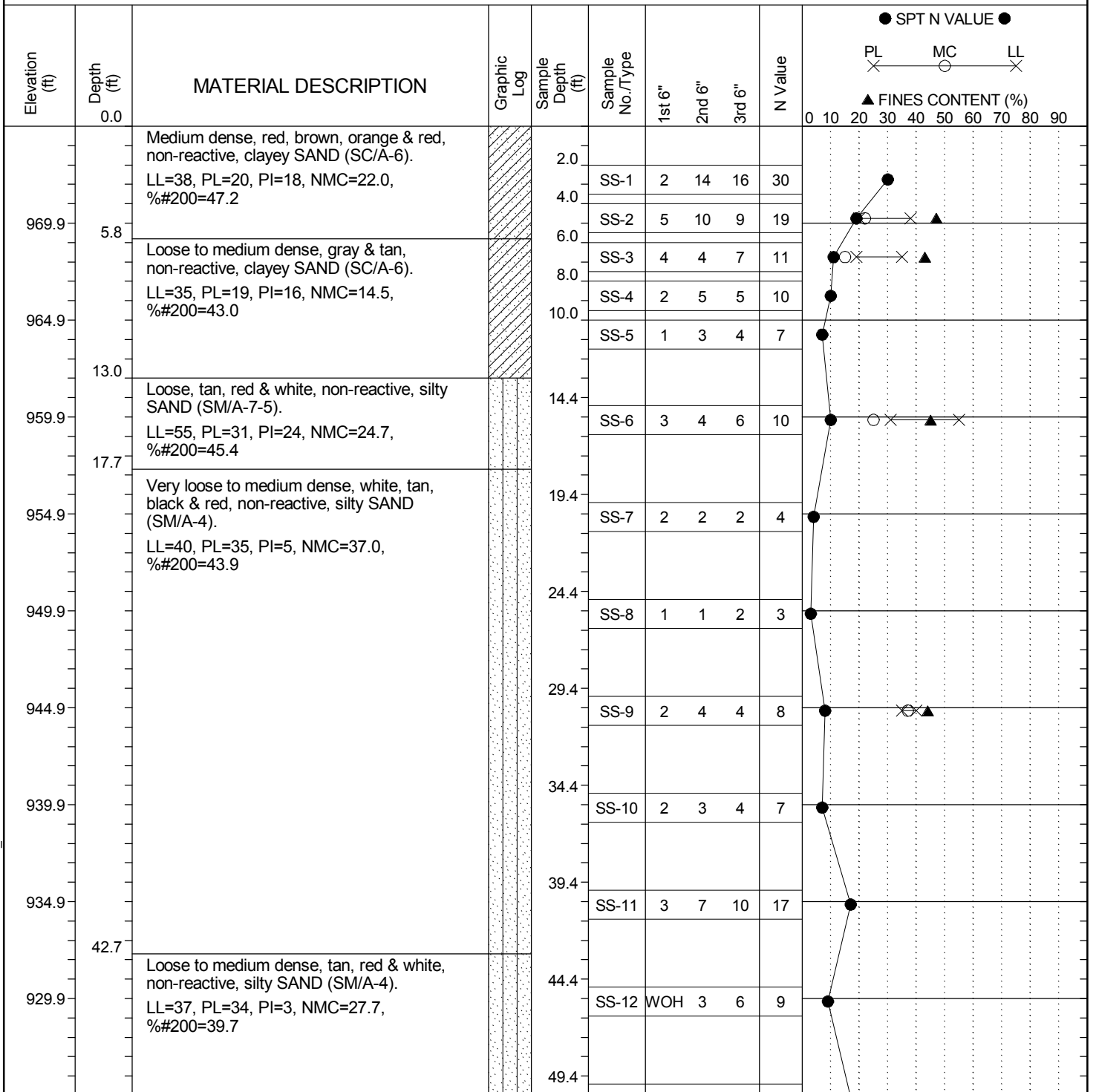
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-35	Boring Location: 97+07	Offset: 14' Lt.	Alignment: I-385 SB C/D
Elev.: 974.9 ft	Latitude: 34.82778	Longitude: 82.29386	Date Started: 11/3/2012
Total Depth: 50.9 ft	Soil Depth: 50.9 ft	Core Depth: ft	Date Completed: 11/3/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 82%
Core Size: NA	Driller: C. Banning	Groundwater: TOB	24HR



LEGEND

Continued Next Page

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

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.:	23.038111	Project No. (PIN):		County:	Greenville	Eng./Geo.:	R. DeLost		
Site Description:						I-85/I-385 Interchange Improvements			
Site Description:	I-85/I-385 Interchange Improvements						Route:		
Boring No.:	B-35	Boring Location:		97+07	Offset:	14' Lt.	Alignment:	I-385 SB C/D	
Elev.:	974.9 ft	Latitude:	34.82778	Longitude:	82.29386	Date Started:		11/3/2012	
Total Depth:	50.9 ft	Soil Depth:	50.9 ft	Core Depth:	ft	Date Completed:		11/3/2012	
Bore Hole Diameter (in):		4	Sampler Configuration		Liner Required:	Y (N)	Liner Used:		Y (N)
Drill Machine:	CME 45C	Drill Method:	HSA	Hammer Type:	Automatic	Energy Ratio: 82%			
Core Size:	NA	Driller:	C. Banning	Groundwater:	TOB	24HR			

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
50.9		No Refusal & Boring Terminated @ 50.9' (Elev. 924.0).			SS-13	4	7	10	17	●	○	×	○	×	▲			
919.9																		
914.9																		
909.9																		
904.9																		
899.9																		
894.9																		
889.9																		
884.9																		
879.9																		

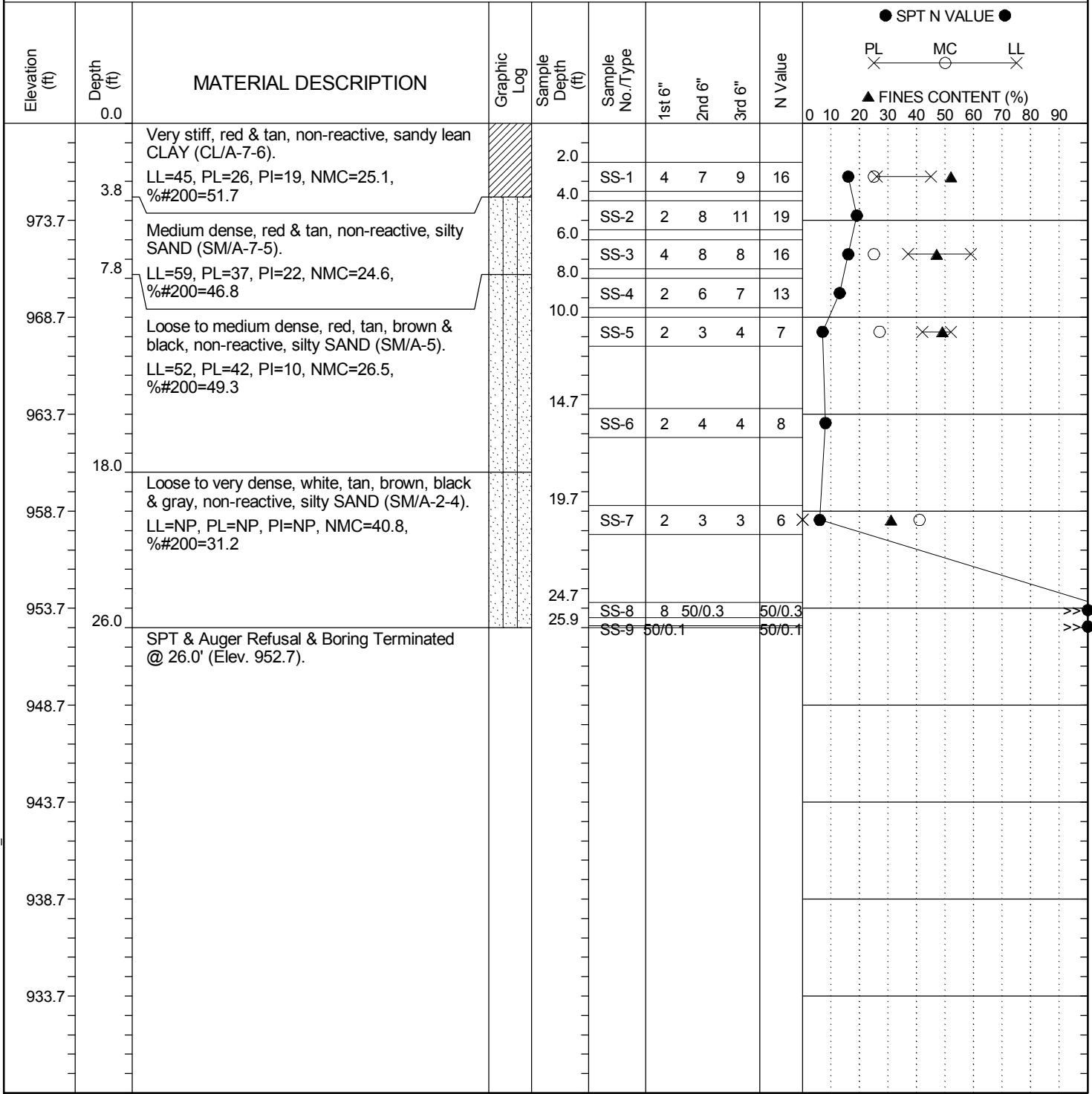
LEGEND

SAMPLER TYPE SS - Split Spoon ST - Shelby Tube AWG - Rock Core, 1-1/8"		NQ - Rock Core, 1-7/8" CU - Cuttings CT - Continuous Tube		DRILLING METHOD HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing		RW - Rotary Wash RC - Rock Core	
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SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-36	Boring Location: 66+49	Offset: 26' Lt.	Alignment: Ramp 1A
Elev.: 978.7 ft	Latitude: 34.8356	Longitude: 82.29366	Date Started: 11/5/2012
Total Depth: 26 ft	Soil Depth: 26.0 ft	Core Depth: ft	Date Completed: 11/5/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 82%
Core Size: NA	Driller: C. Banning	Groundwater: TOB	24HR



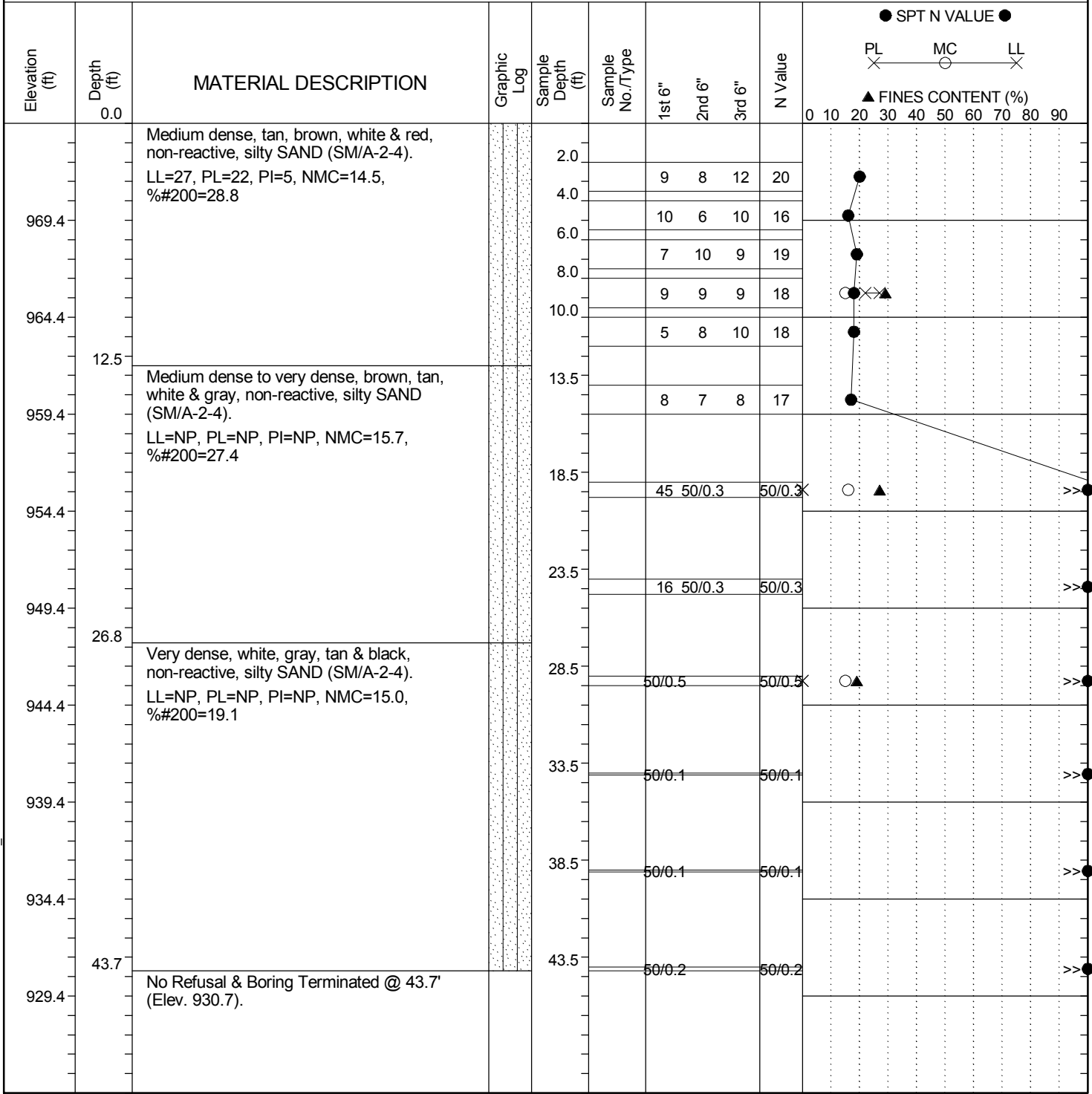
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-37	Boring Location: 63+01	Offset: 19' Lt.	Alignment: Ramp 1A
Elev.: 974.4 ft	Latitude: 34.83616	Longitude: 82.29271	Date Started: 10/4/2012
Total Depth: 43.7 ft	Soil Depth: 43.7 ft	Core Depth: ft	Date Completed: 10/5/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 79%
Core Size: NA	Driller: C. Frazier	Groundwater: TOB	24HR



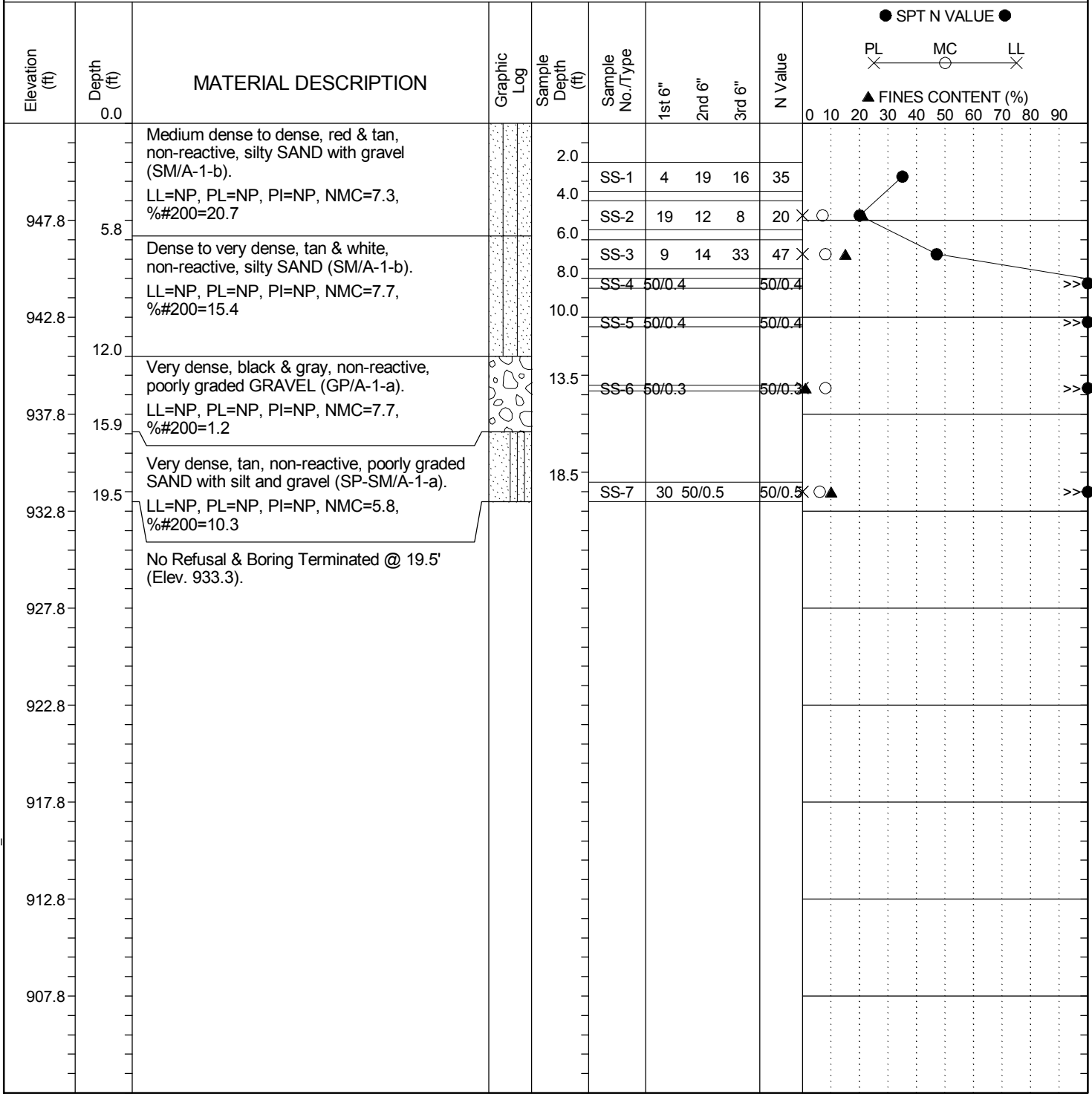
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-38	Boring Location: 56+27	Offset: 10' Lt.	Alignment: Ramp 1A
Elev.: 952.8 ft	Latitude: 34.83729	Longitude: 82.29093	Date Started: 10/5/2012
Total Depth: 19.5 ft	Soil Depth: 19.5 ft	Core Depth: ft	Date Completed: 10/5/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 86%
Core Size: NA	Driller: M. Frazier	Groundwater: TOB	24HR



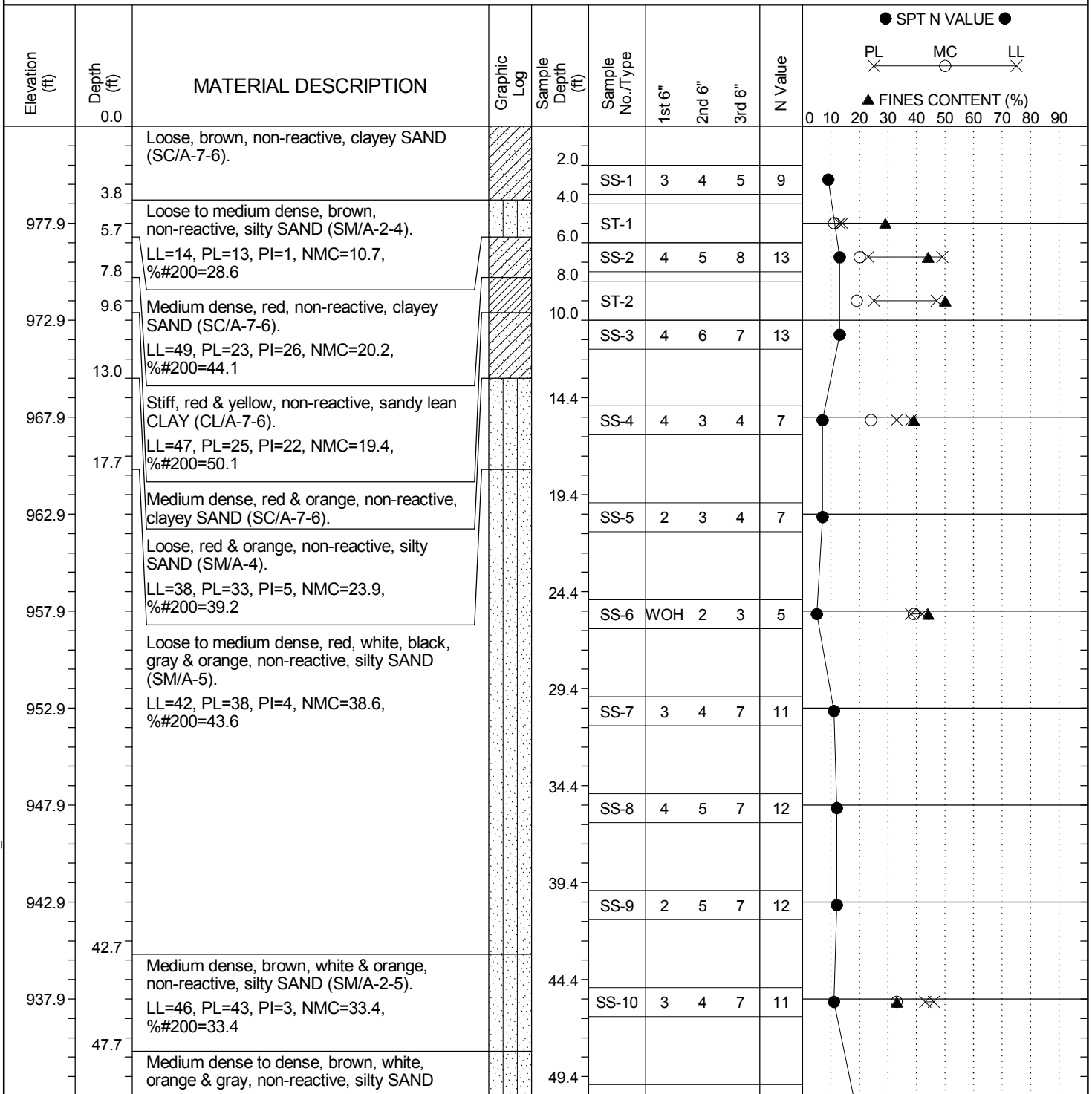
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-39	Boring Location: 85+35	Offset: 3' Rt.	Alignment: Ramp 2A
Elev.: 982.9 ft	Latitude: 34.83322	Longitude: 82.29495	Date Started: 10/4/2012
Total Depth: 60.9 ft	Soil Depth: 60.9 ft	Core Depth: ft	Date Completed: 10/4/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 82%
Core Size: NA	Driller: C. Banning	Groundwater: TOB	24HR



LEGEND

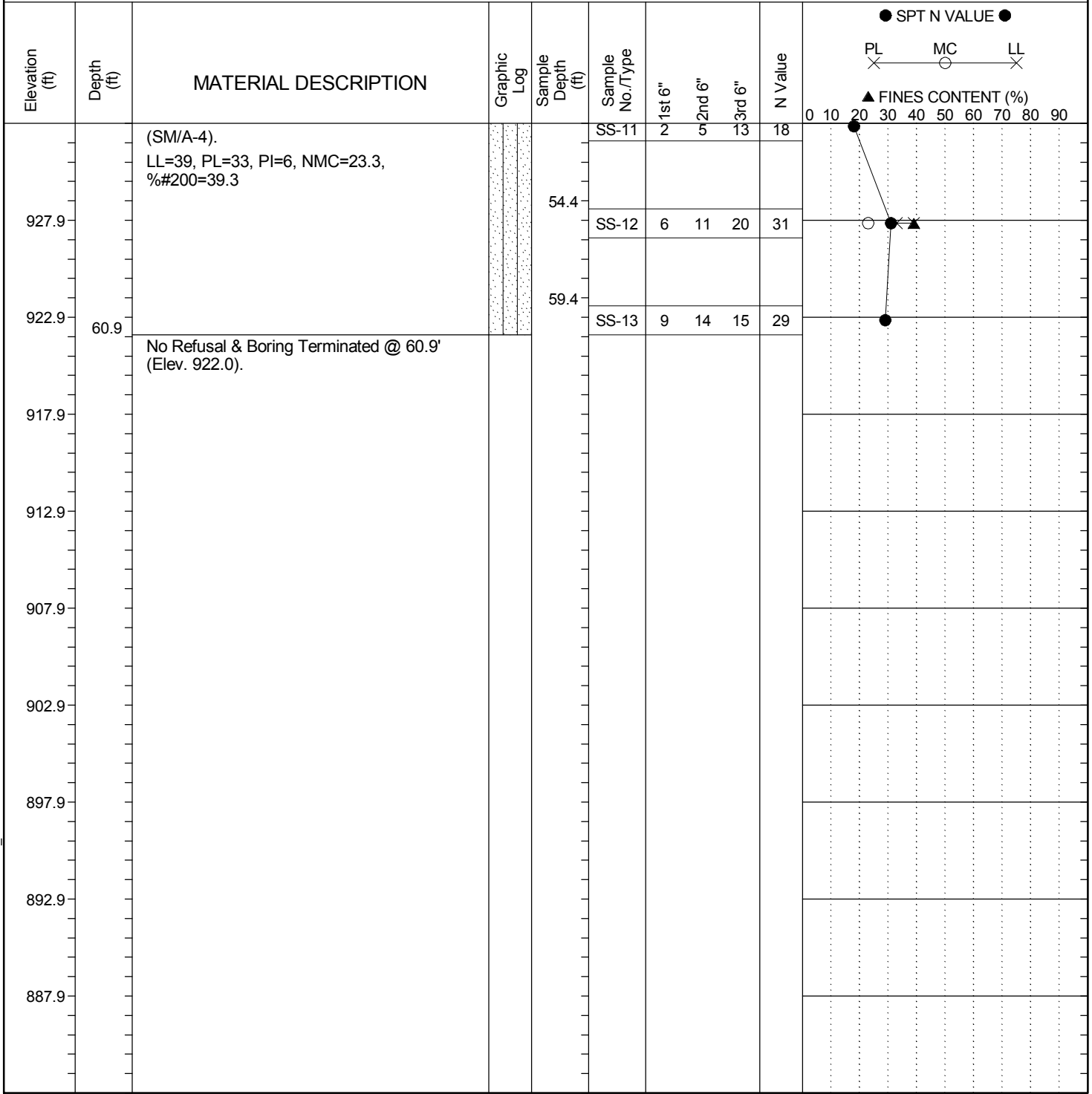
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SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

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.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-39	Boring Location: 85+35	Offset: 3' Rt.	Alignment: Ramp 2A
Elev.: 982.9 ft	Latitude: 34.83322	Longitude: 82.29495	Date Started: 10/4/2012
Total Depth: 60.9 ft	Soil Depth: 60.9 ft	Core Depth: ft	Date Completed: 10/4/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 82%
Core Size: NA	Driller: C. Banning	Groundwater: TOB	24HR



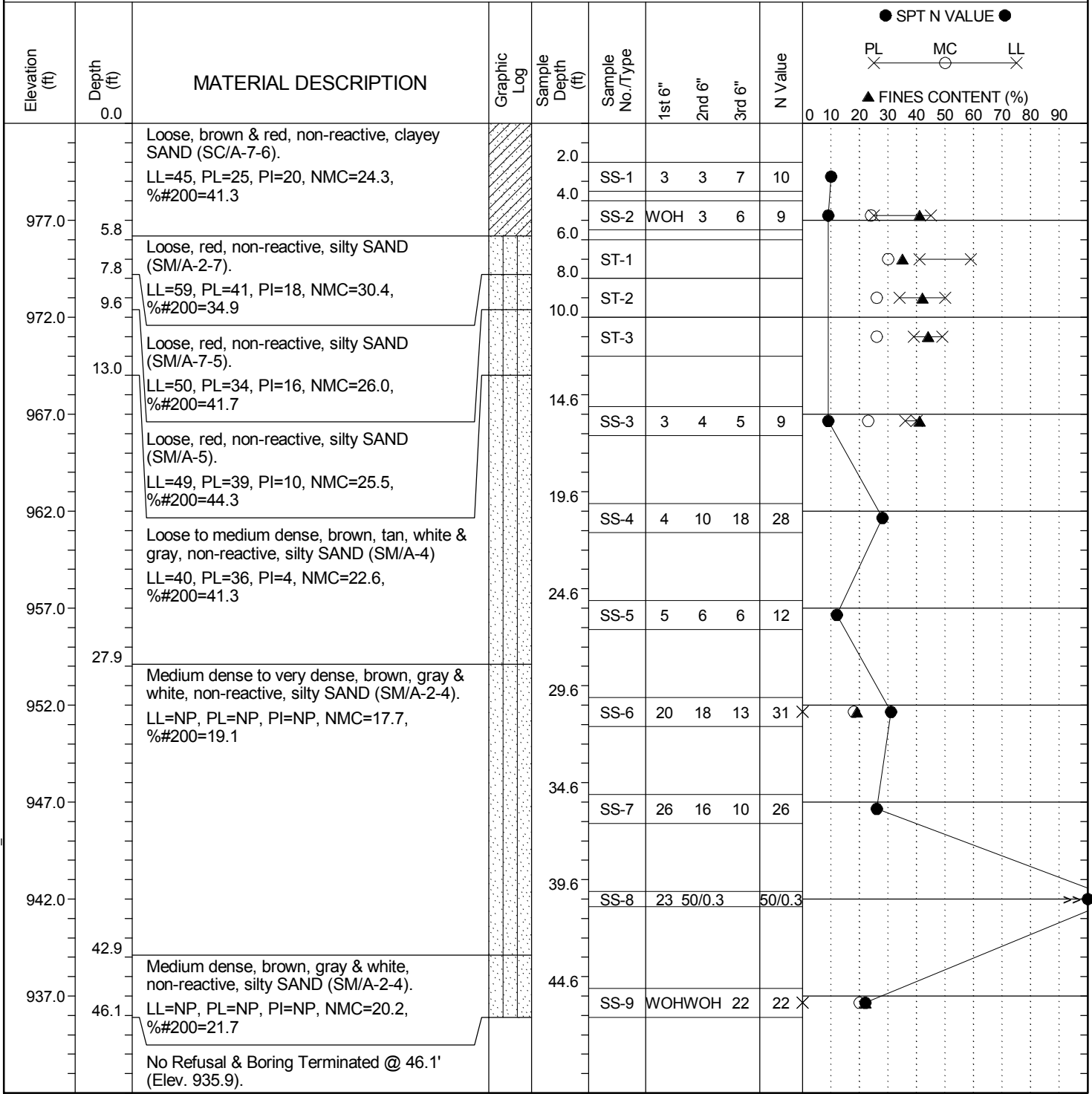
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-40	Boring Location: 89+91	Offset: 2' Rt.	Alignment: Ramp 2A
Elev.: 982.0 ft	Latitude: 34.8343	Longitude: 82.29417	Date Started: 10/3/2012
Total Depth: 46.1 ft	Soil Depth: 46.1 ft	Core Depth: ft	Date Completed: 10/3/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 82%
Core Size: NA	Driller: C. Banning	Groundwater: TOB	24HR



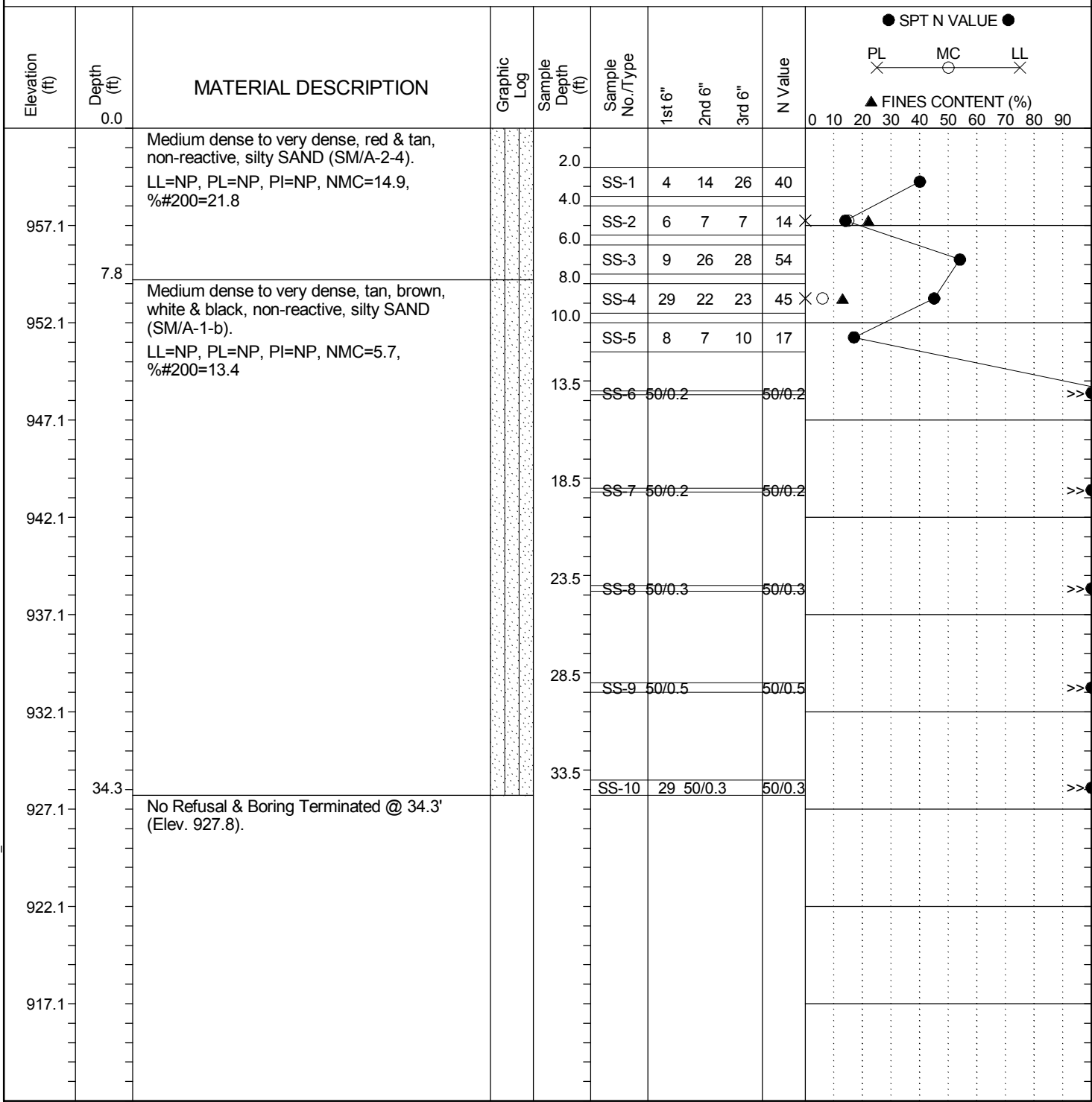
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-41	Boring Location: 113+09	Offset: 37' Lt.	Alignment: I-385 SB C/D
Elev.: 962.1 ft	Latitude: 34.82455	Longitude: 82.2923	Date Started: 10/7/2012
Total Depth: 34.3 ft	Soil Depth: 34.3 ft	Core Depth: ft	Date Completed: 10/7/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 86%
Core Size: NA	Driller: M. Frazier	Groundwater: TOB	24HR



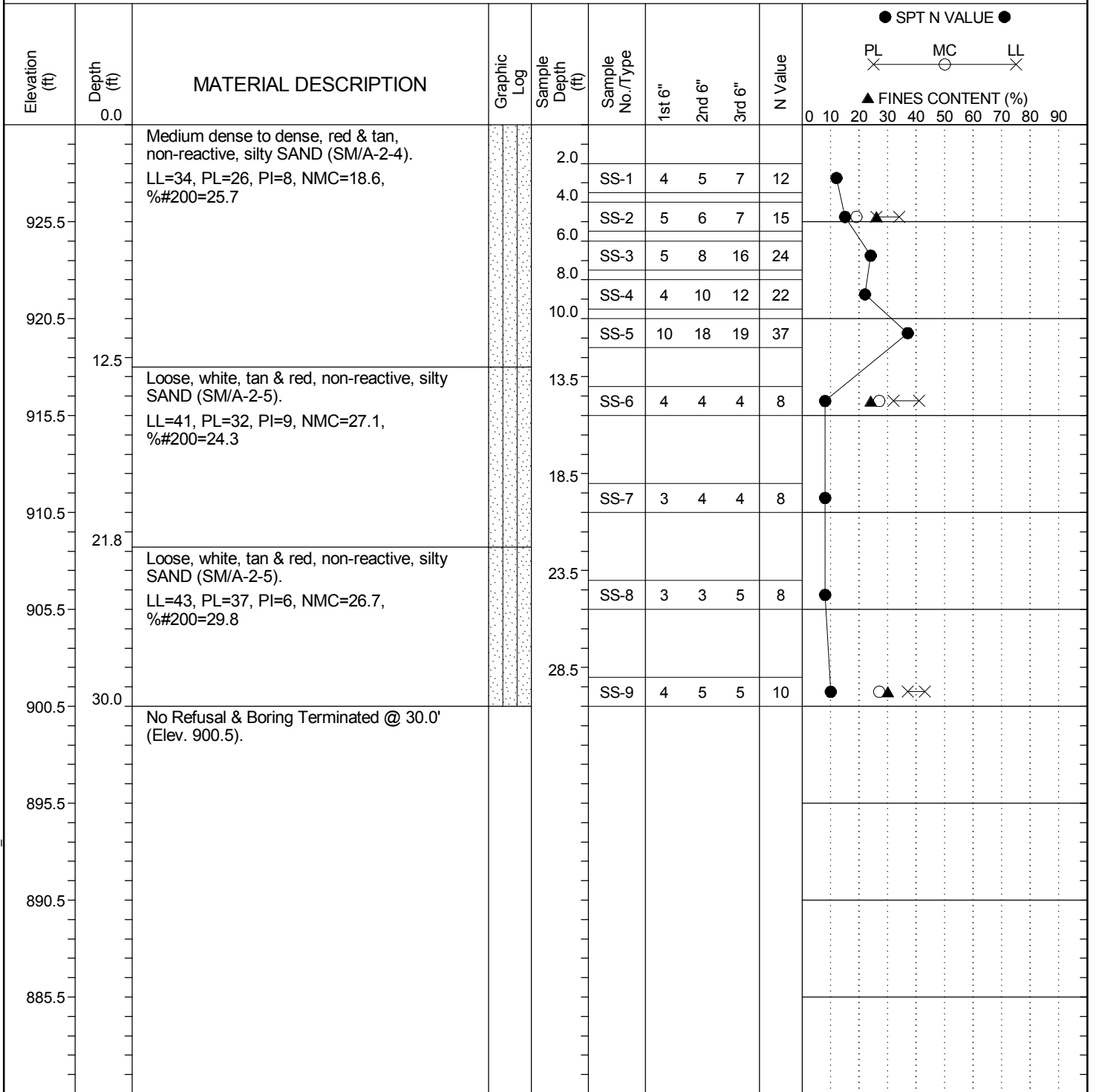
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-42	Boring Location: 340+05	Offset: 13' Rt.	Alignment: I-385 NB C/D
Elev.: 930.5 ft	Latitude: 34.81816	Longitude: 82.29043	Date Started: 10/8/2012
Total Depth: 30 ft	Soil Depth: 30.0 ft	Core Depth: ft	Date Completed: 10/8/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 86%
Core Size: NA	Driller: M. Frazier	Groundwater: TOB	24HR



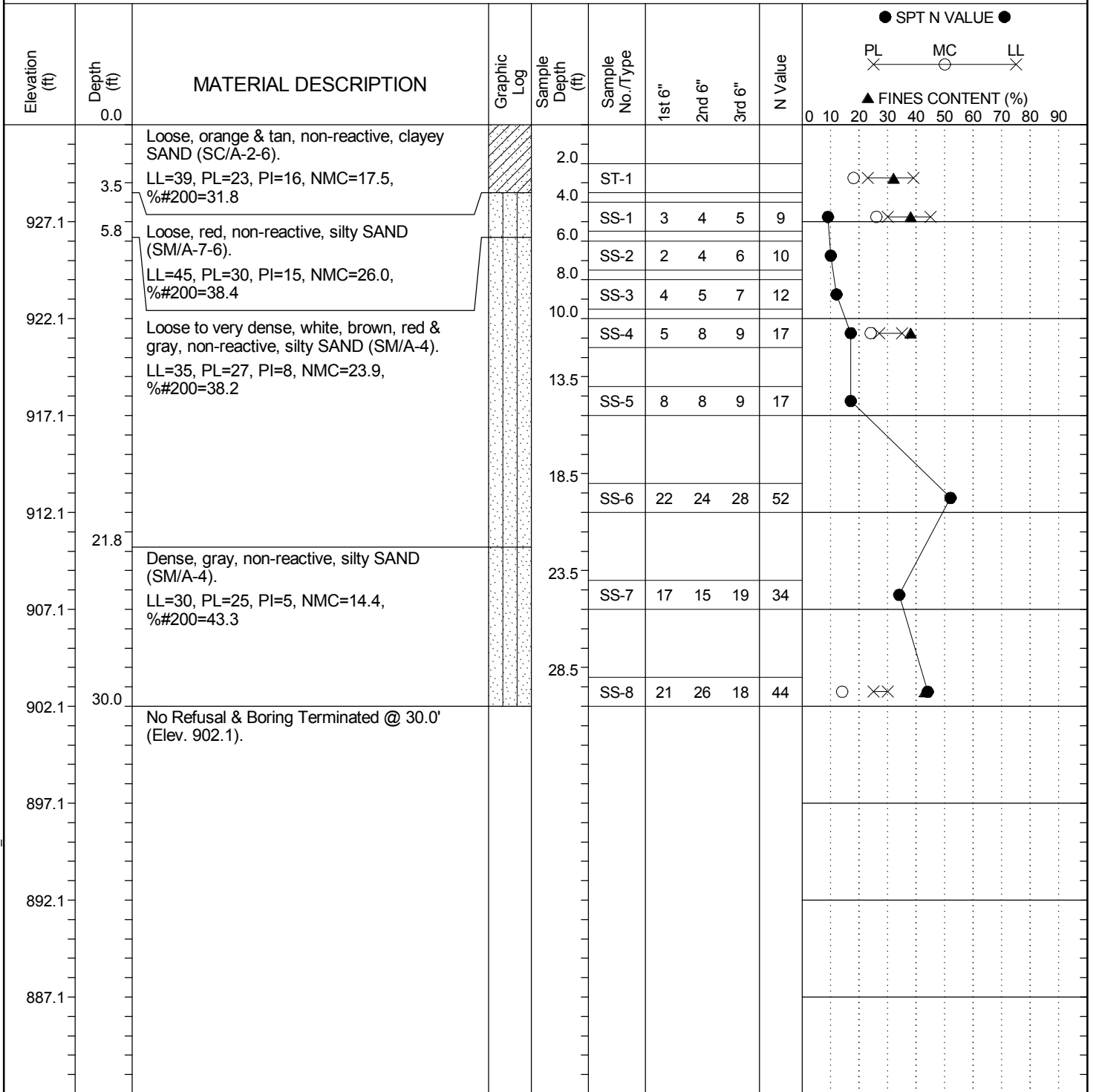
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-43	Boring Location: 341+96	Offset: 6' Lt.	Alignment: I-385 NB C/D
Elev.: 932.1 ft	Latitude: 34.81867	Longitude: 82.29058	Date Started: 10/9/2012
Total Depth: 30 ft	Soil Depth: 30.0 ft	Core Depth: ft	Date Completed: 10/9/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 86%
Core Size:	Driller: M. Frazier	Groundwater: TOB	24HR



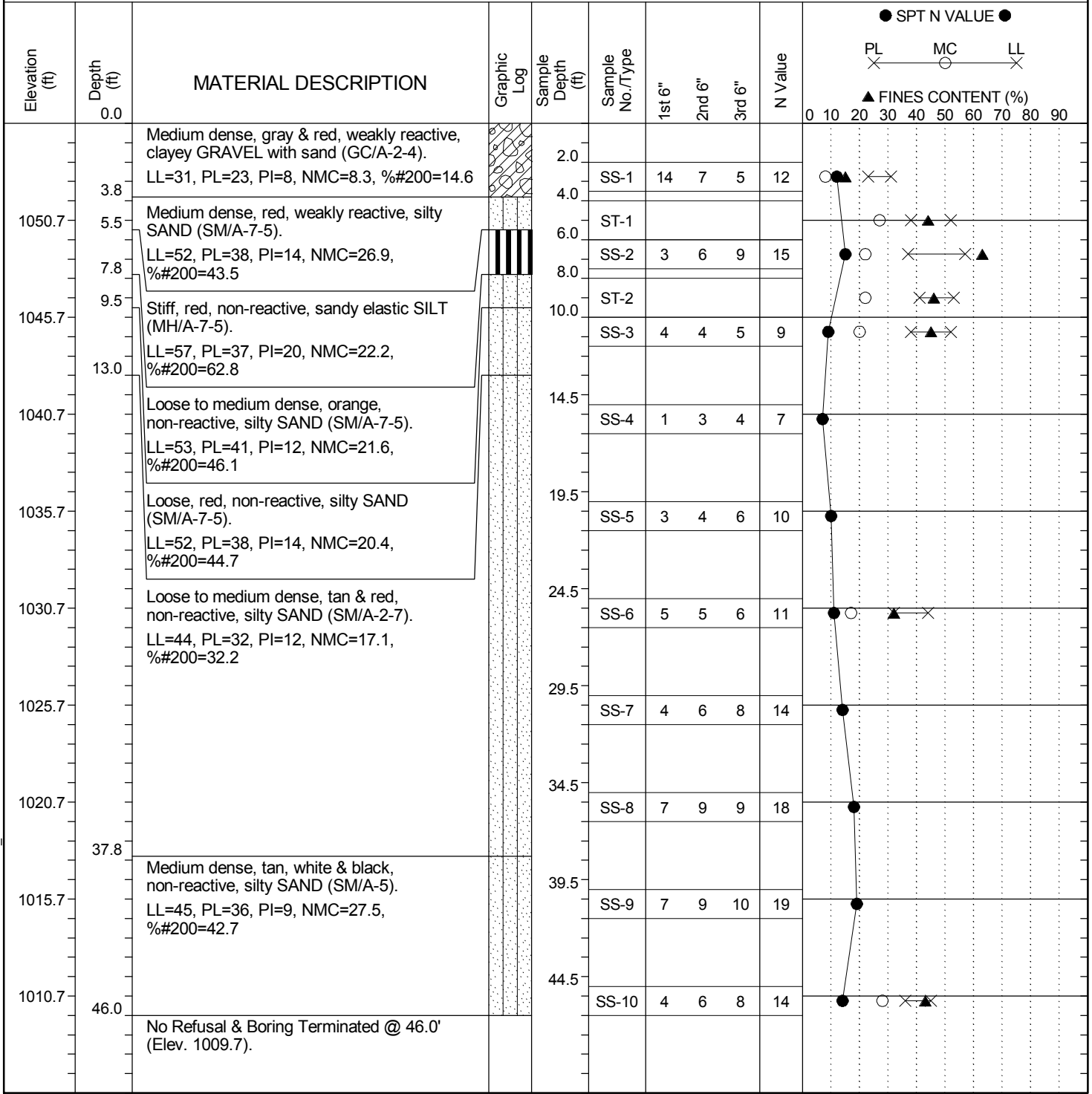
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-44	Boring Location: 431+86	Offset: 135' Rt.	Alignment: I-385
Elev.: 1055.7 ft	Latitude: 34.83648	Longitude: 82.30706	Date Started: 10/7/2012
Total Depth: 46 ft	Soil Depth: 46.0 ft	Core Depth: ft	Date Completed: 10/7/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 82%
Core Size: NA	Driller: C. Banning	Groundwater: TOB	24HR



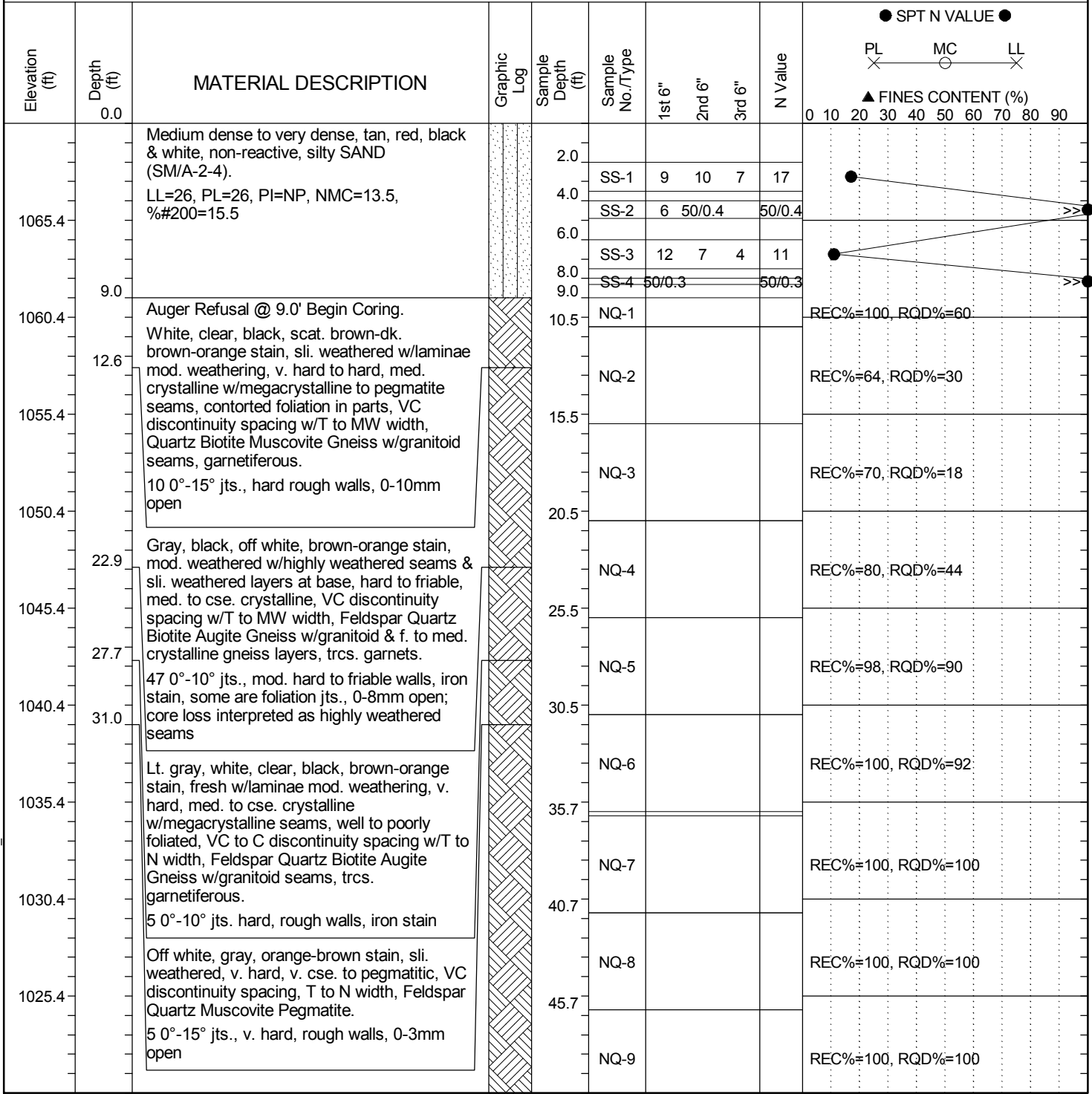
LEGEND

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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements		Route:	
Boring No.: B-45	Boring Location: 439+42	Offset: 136' Rt.	Alignment: I-385
Elev.: 1070.4 ft	Latitude: 34.83741	Longitude: 82.30931	Date Started: 10/31/2012
Total Depth: 55.7 ft	Soil Depth: 9 ft	Core Depth: 55.7 ft	Date Completed: 11/1/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 79%
Core Size: NQ2	Driller: F. Woodard	Groundwater: TOB	24HR



LEGEND

Continued Next Page

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

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-45	Boring Location: 439+42	Offset: 136' Rt.	Alignment: I-385
Elev.: 1070.4 ft	Latitude: 34.83741	Longitude: 82.30931	Date Started: 10/31/2012
Total Depth: 55.7 ft	Soil Depth: 9 ft	Core Depth: 55.7 ft	Date Completed: 11/1/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y <input checked="" type="radio"/>	Liner Used: Y <input checked="" type="radio"/>
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 79%
Core Size: NQ2	Driller: F. Woodard	Groundwater: TOB	24HR

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	
1015.4	55.7	White, lt. gray, clear, black, brown-orange stain in upper part, fresh, v. hard, med. to cse. crystalline w/v. cse. crystalline seams & augen, well to poorly foliated, VC to C discontinuity spacing w/T width, Quartz Feldspar Biotite Gneiss w/granitoid augen & seams, garnetiferous in parts. 11 0°-10° jts.. hard, rough walls, some w/faint stain, tight; granitoid seams 42.3'-42.8' & 51.1'-51.8' Boring Terminated @ 55.7' (Elev. 1014.7).		50.7	NQ-10						REC%=96, RQD%=96									
1010.4																				
1005.4																				
1000.4																				
995.4																				
990.4																				
985.4																				
980.4																				
975.4																				

LEGEND

SAMPLER TYPE SS - Split Spoon ST - Shelby Tube AWG - Rock Core, 1-1/8" NQ - Rock Core, 1-7/8" CU - Cuttings CT - Continuous Tube		DRILLING METHOD HSA - Hollow Stem Auger CFA - Continuous Flight Augers DC - Driving Casing RW - Rotary Wash RC - Rock Core	
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SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



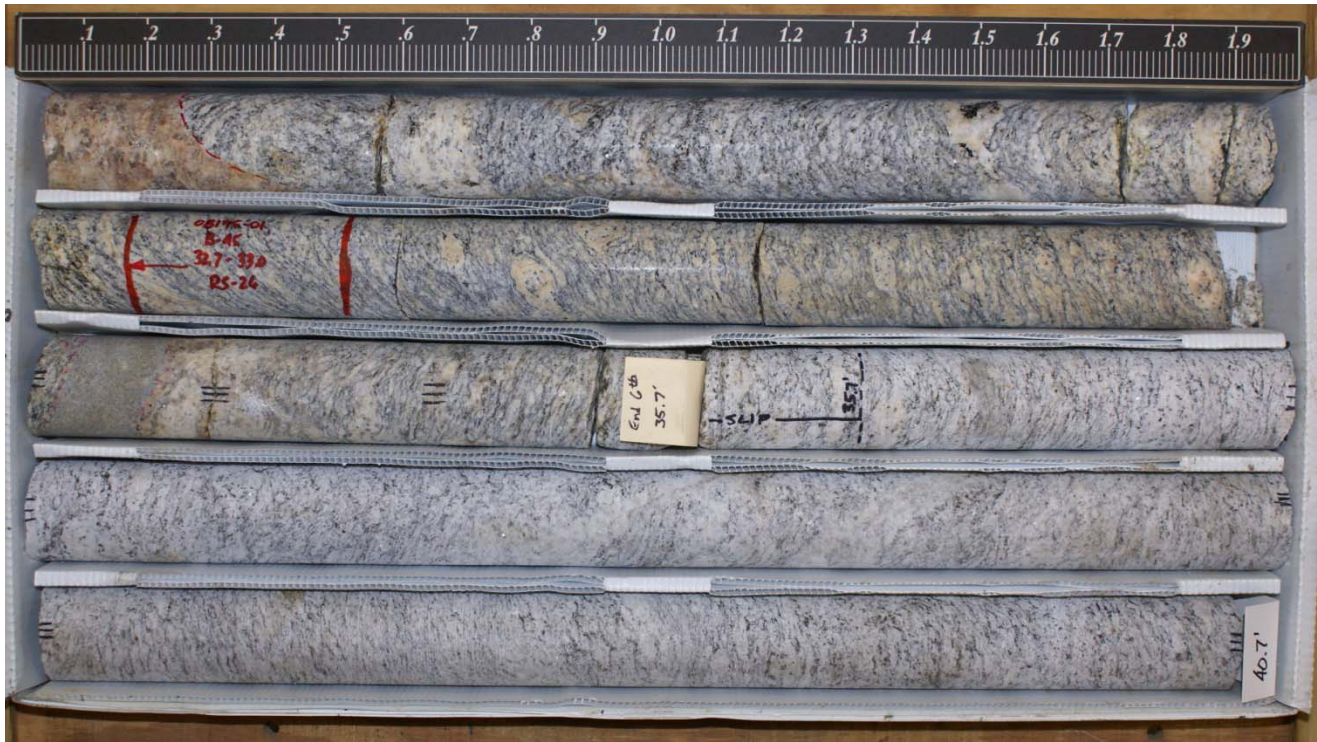
B-45 Box 1 of 5



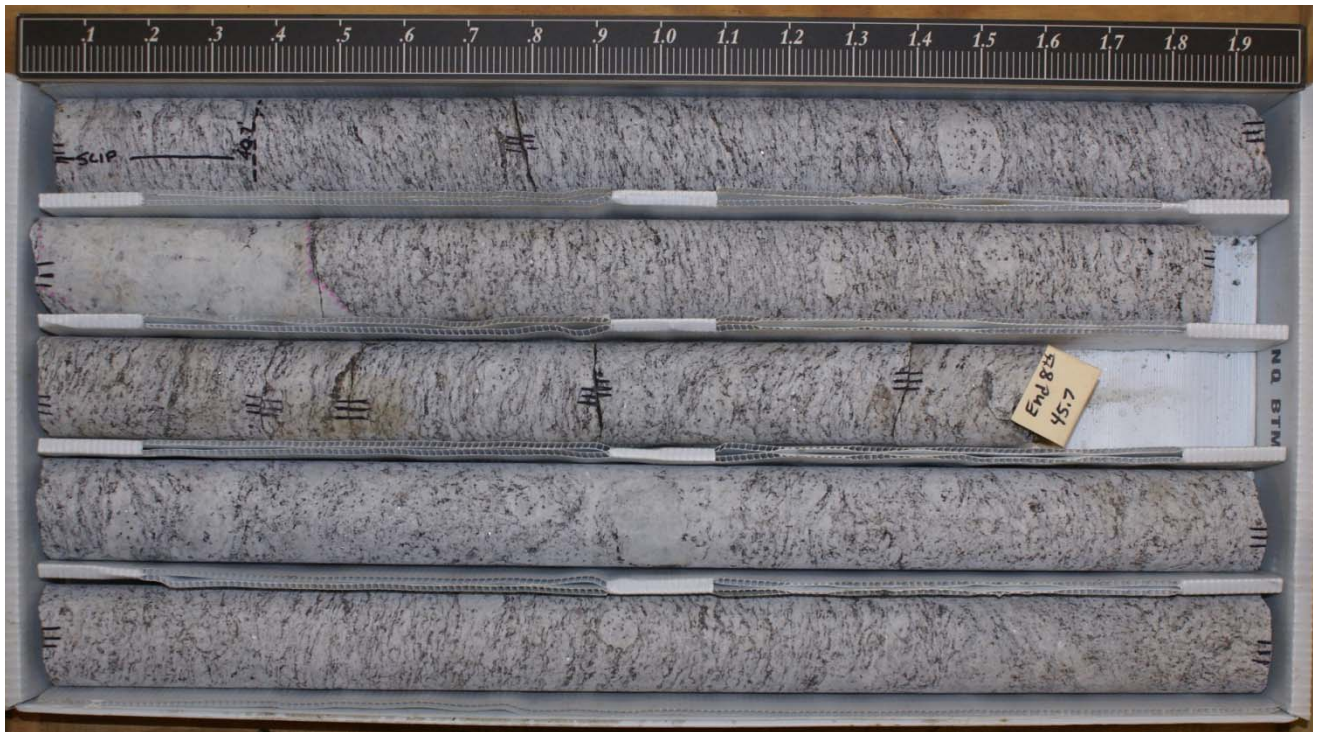
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CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



B-45 Box 3 of 5



B-45 Box 4 of 5

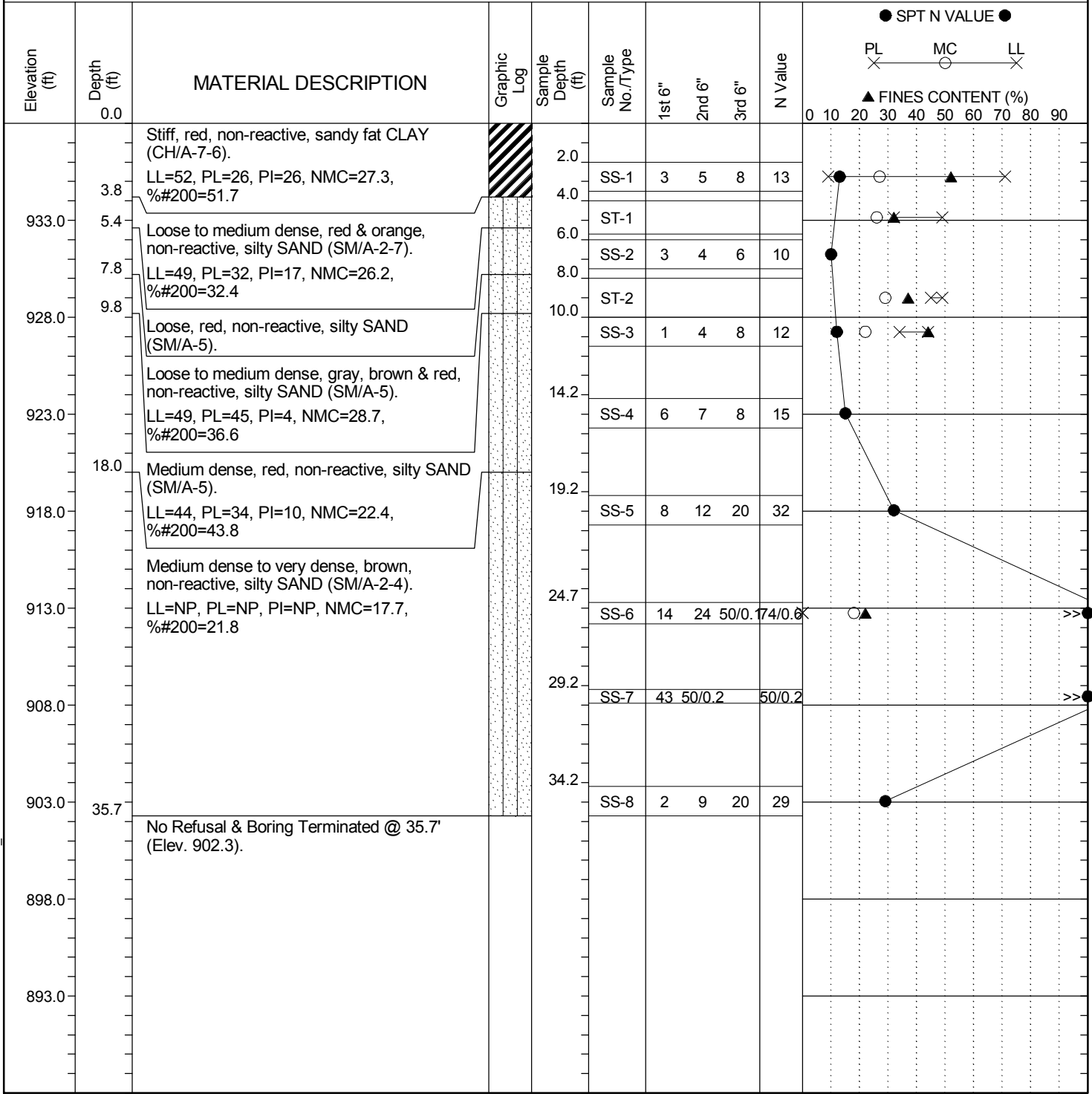
CORE PHOTOGRAPHIC RECORD
I-85 / I-385 Interchange Improvements



B-45 Box 5 of 5

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-46	Boring Location: 107+40	Offset: 40' Rt.	Alignment: Ramp 2A
Elev.: 938.0 ft	Latitude: 34.83721	Longitude: 82.28954	Date Started: 10/16/2012
Total Depth: 35.7 ft	Soil Depth: 35.7 ft	Core Depth: ft	Date Completed: 10/16/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 82%
Core Size: NA	Driller: C. Banning	Groundwater: TOB	24HR



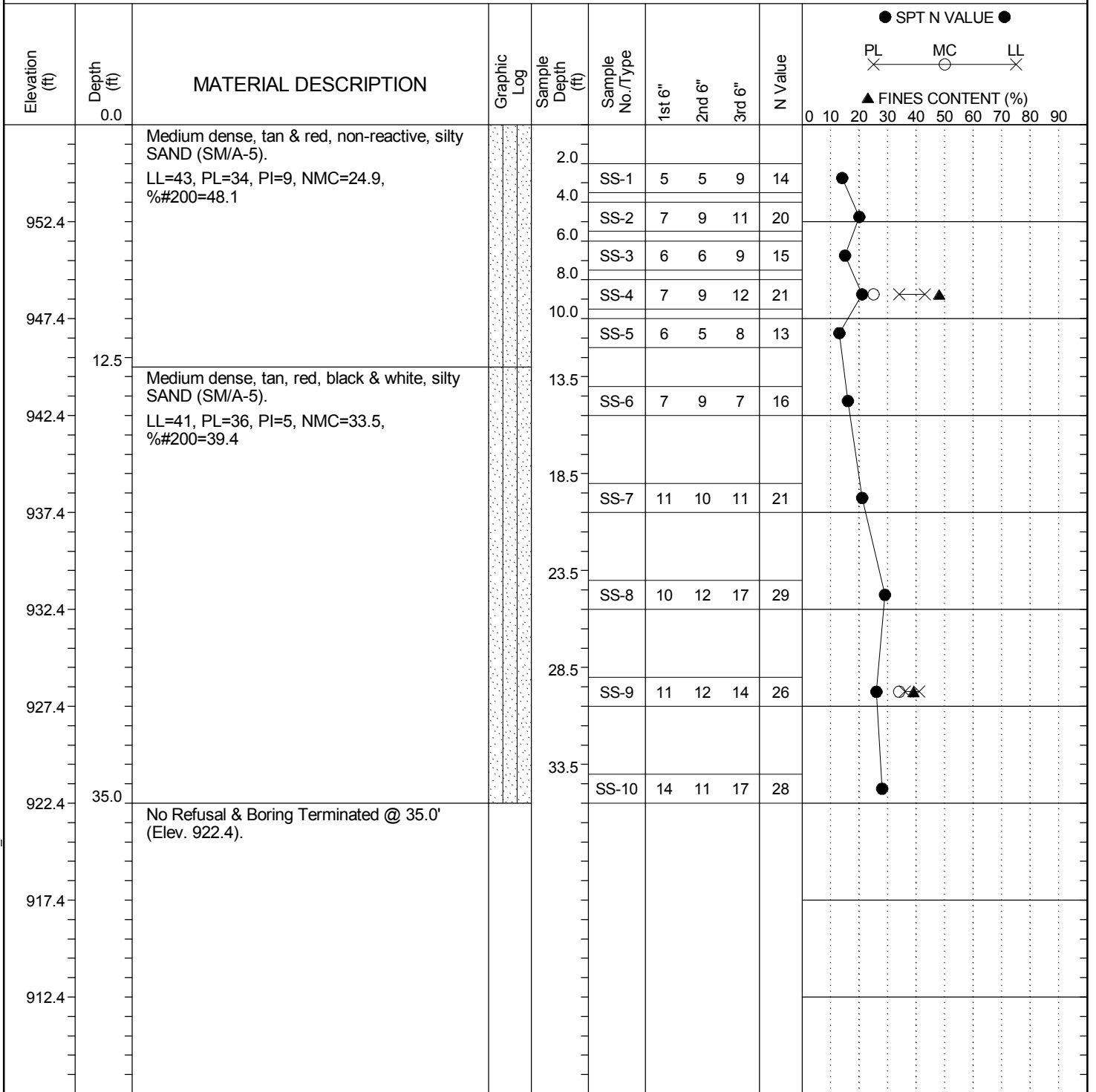
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-47	Boring Location: 120+03	Offset: 70' Rt.	Alignment: I-385 SB C/D
Elev.: 957.4 ft	Latitude: 34.82263	Longitude: 82.29204	Date Started: 10/7/2012
Total Depth: 35 ft	Soil Depth: 35.0 ft	Core Depth: ft	Date Completed: 10/7/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 79%
Core Size: NA	Driller: C. Frazier	Groundwater: TOB	24HR



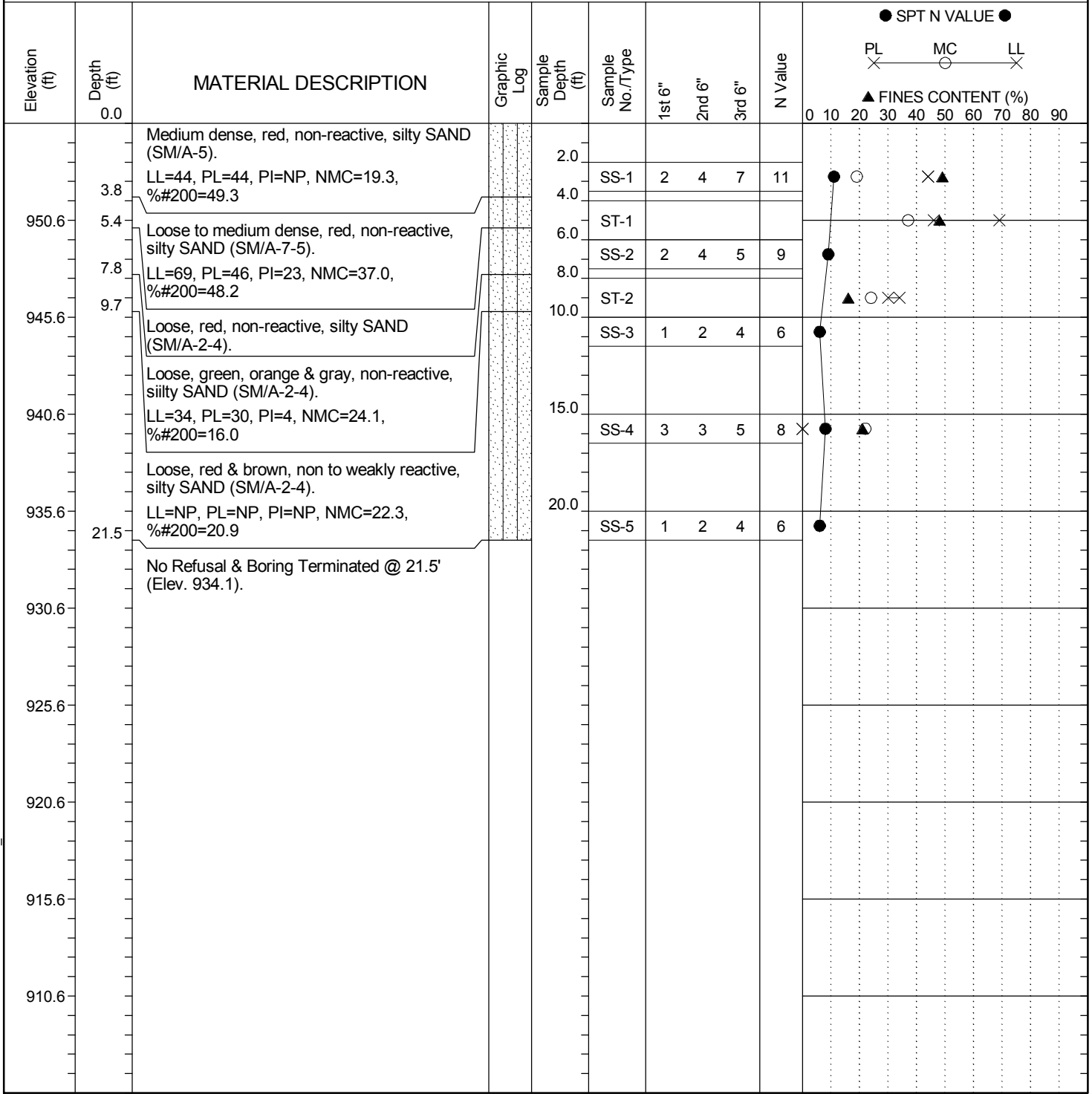
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-49	Boring Location: 224+04	Offset: 92' Rt.	Alignment: I-85
Elev.: 955.6 ft	Latitude: 34.82209	Longitude: 82.31453	Date Started: 10/18/2012
Total Depth: 21.5 ft	Soil Depth: 21.5 ft	Core Depth: ft	Date Completed: 10/18/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 82%
Core Size: NA	Driller: C. Banning	Groundwater: TOB	24HR



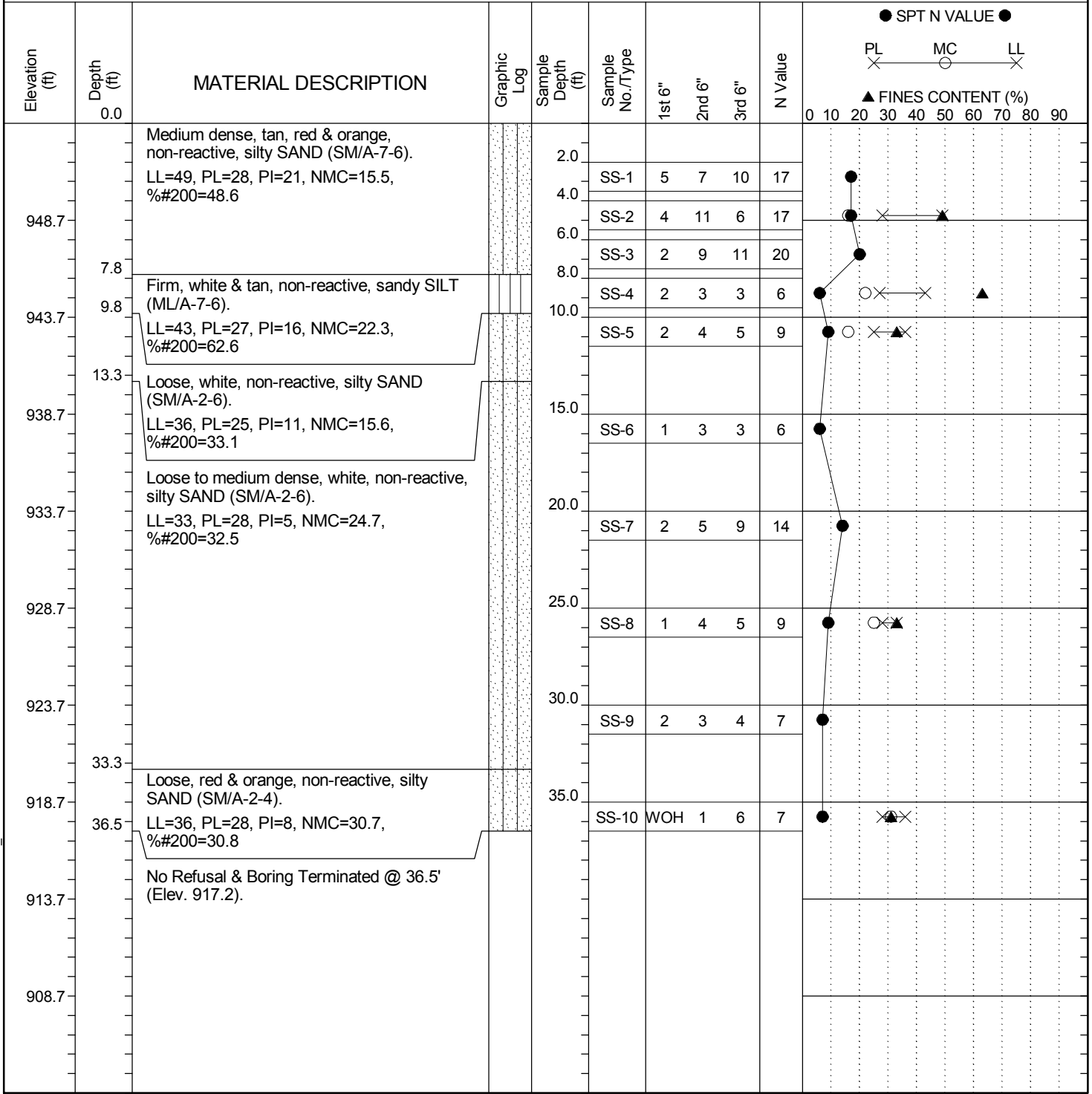
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements		Route:	
Boring No.: B-50	Boring Location: 137+97	Offset: 40' Rt.	Alignment: Ramp 5
Elev.: 953.7 ft	Latitude: 34.82373	Longitude: 82.31288	Date Started: 10/18/2012
Total Depth: 36.5 ft	Soil Depth: 36.5 ft	Core Depth: ft	Date Completed: 10/18/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 79%
Core Size: NA	Driller: F. Woodard	Groundwater: TOB	24HR



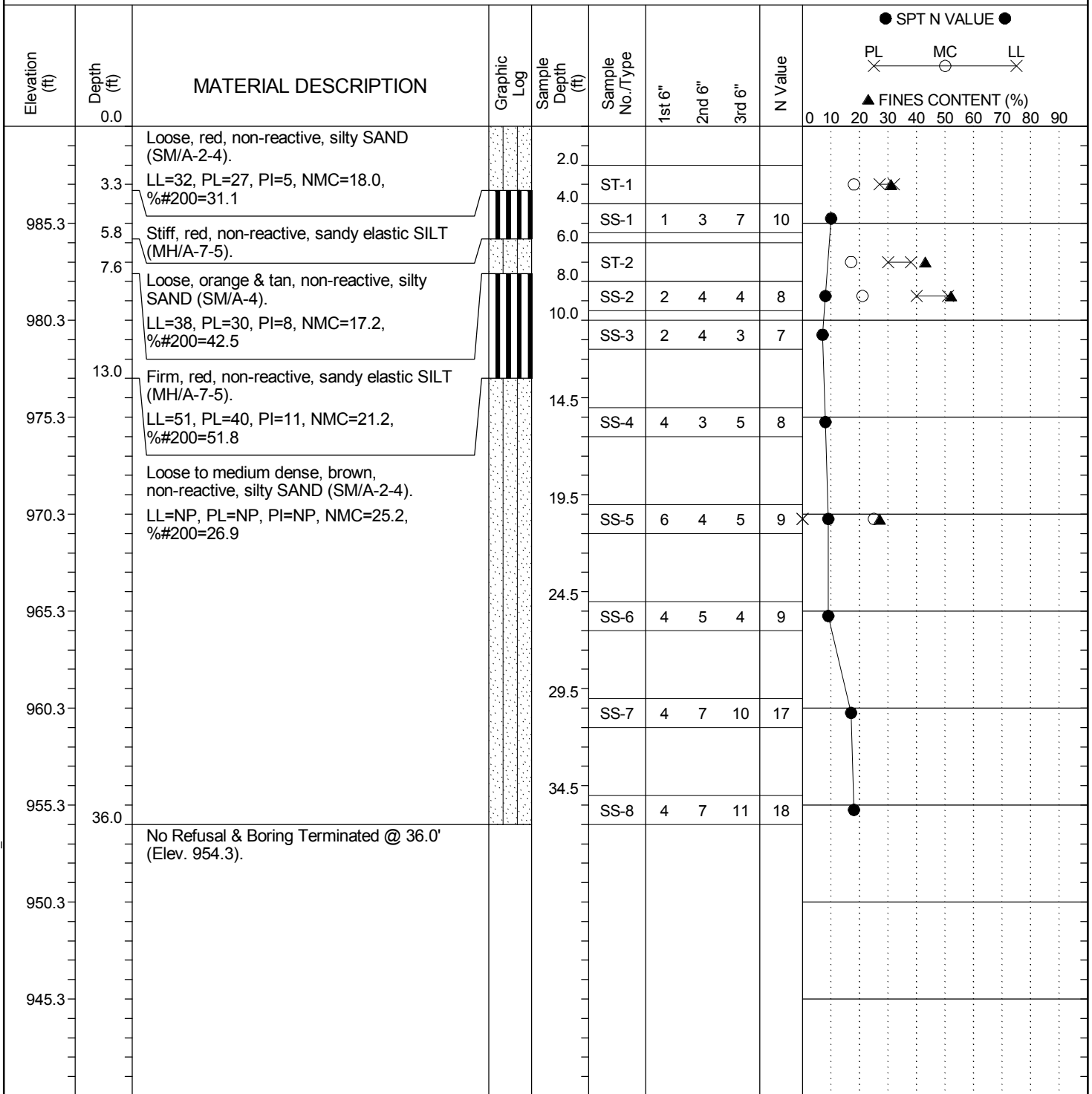
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-51	Boring Location: 244+13	Offset: 39' Rt.	Alignment: I-85 NB C/D
Elev.: 990.3 ft	Latitude: 34.8253	Longitude: 82.30909	Date Started: 10/5/2012
Total Depth: 36 ft	Soil Depth: 36.0 ft	Core Depth: ft	Date Completed: 10/5/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 82%
Core Size: NA	Driller: C. Banning	Groundwater: TOB	24HR



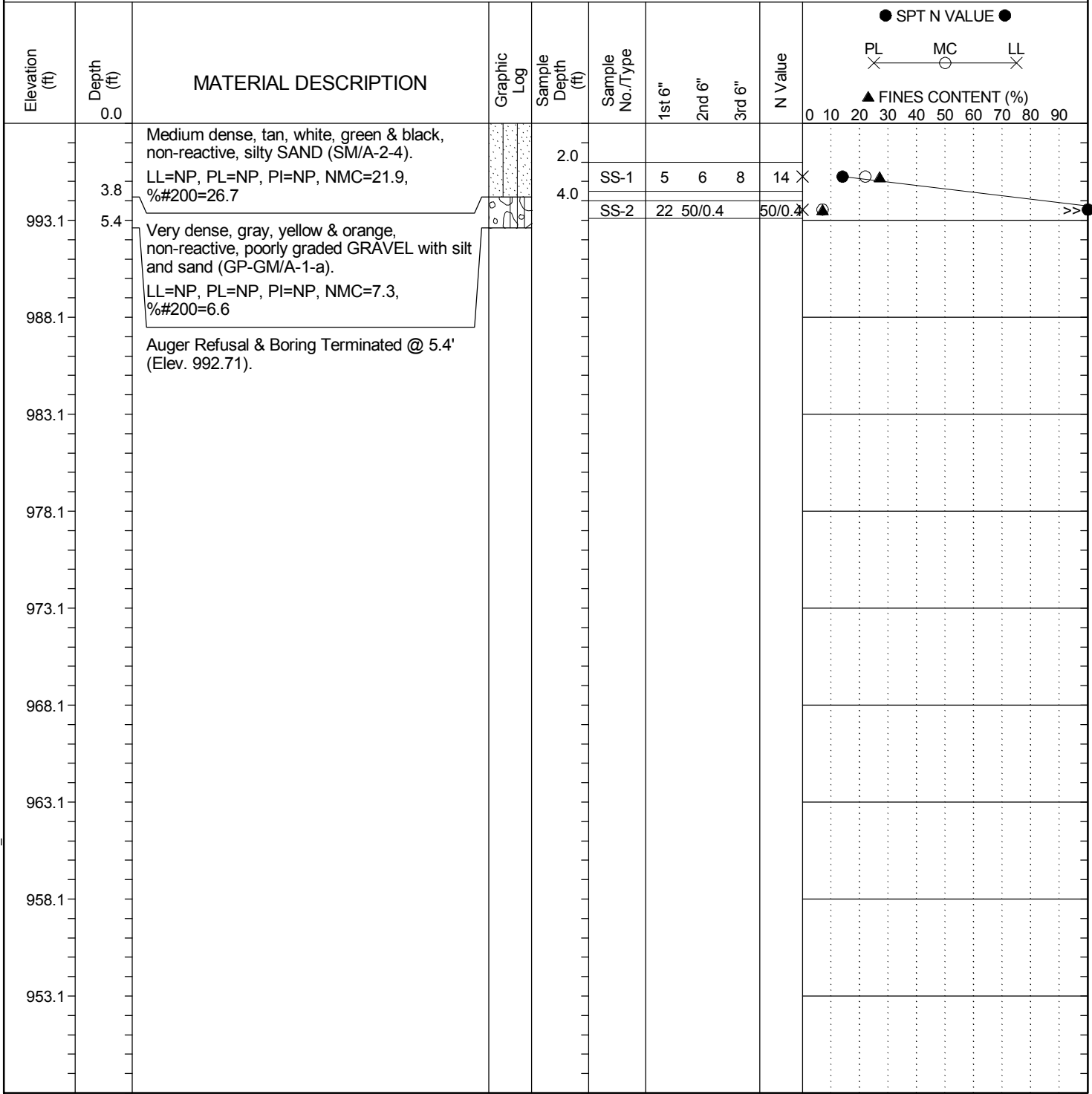
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-52	Boring Location: 117+93	Offset: 30' Rt.	Alignment: Ramp 5
Elev.: 998.1 ft	Latitude: 34.82701	Longitude: 82.30752	Date Started: 10/18/2012
Total Depth: 5.4 ft	Soil Depth: 5.4 ft	Core Depth: ft	Date Completed: 10/18/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 79%
Core Size: NA	Driller: F. Woodard	Groundwater: TOB	24HR



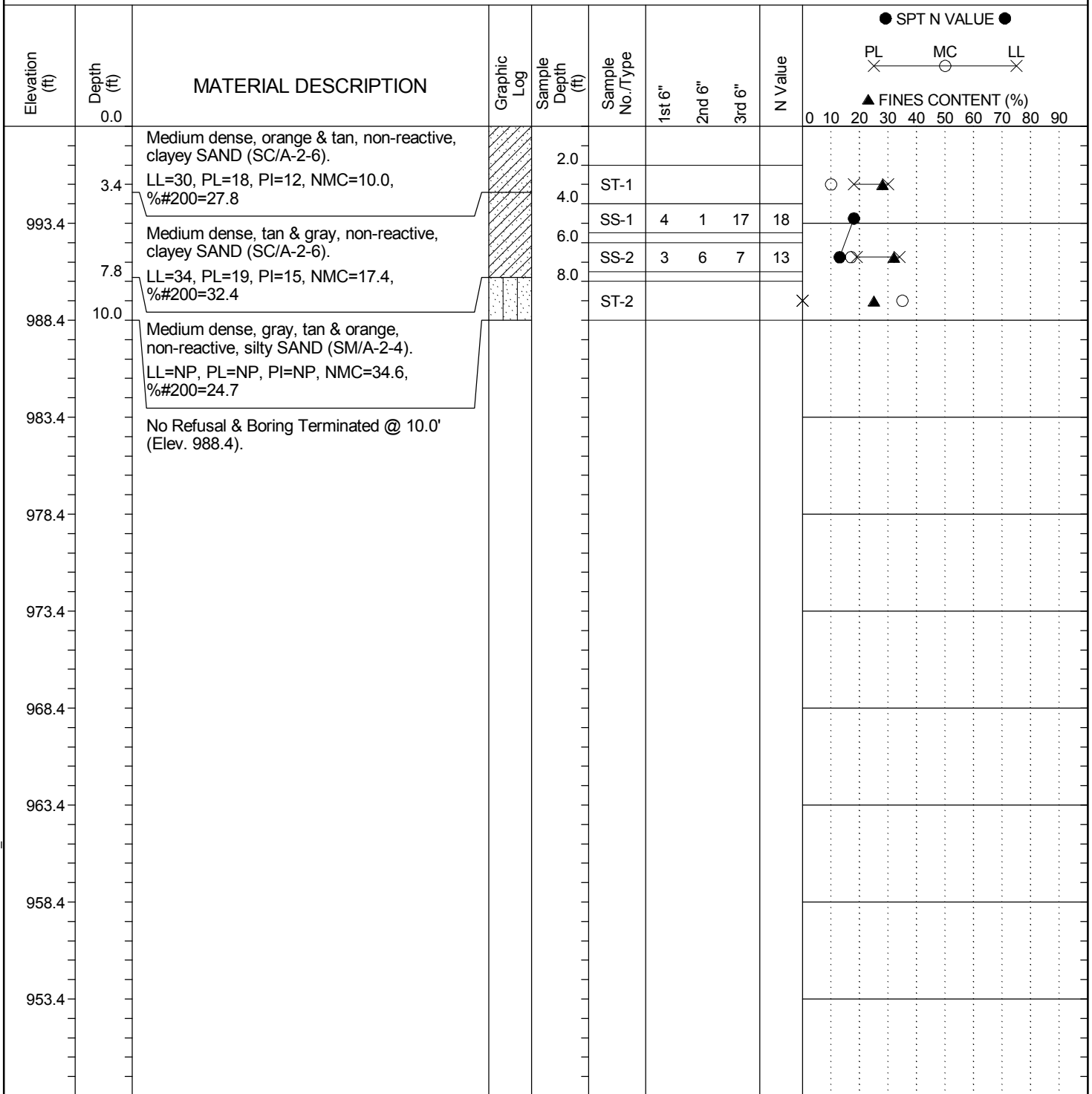
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-53	Boring Location: 257+64	Offset: 85' Rt.	Alignment: I-85 NB C/D
Elev.: 998.4 ft	Latitude: 34.82731	Longitude: 82.30529	Date Started: 10/6/2012
Total Depth: 10 ft	Soil Depth: 10.0 ft	Core Depth: ft	Date Completed: 10/6/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 82%
Core Size: NA	Driller: C. Banning	Groundwater: TOB	24HR



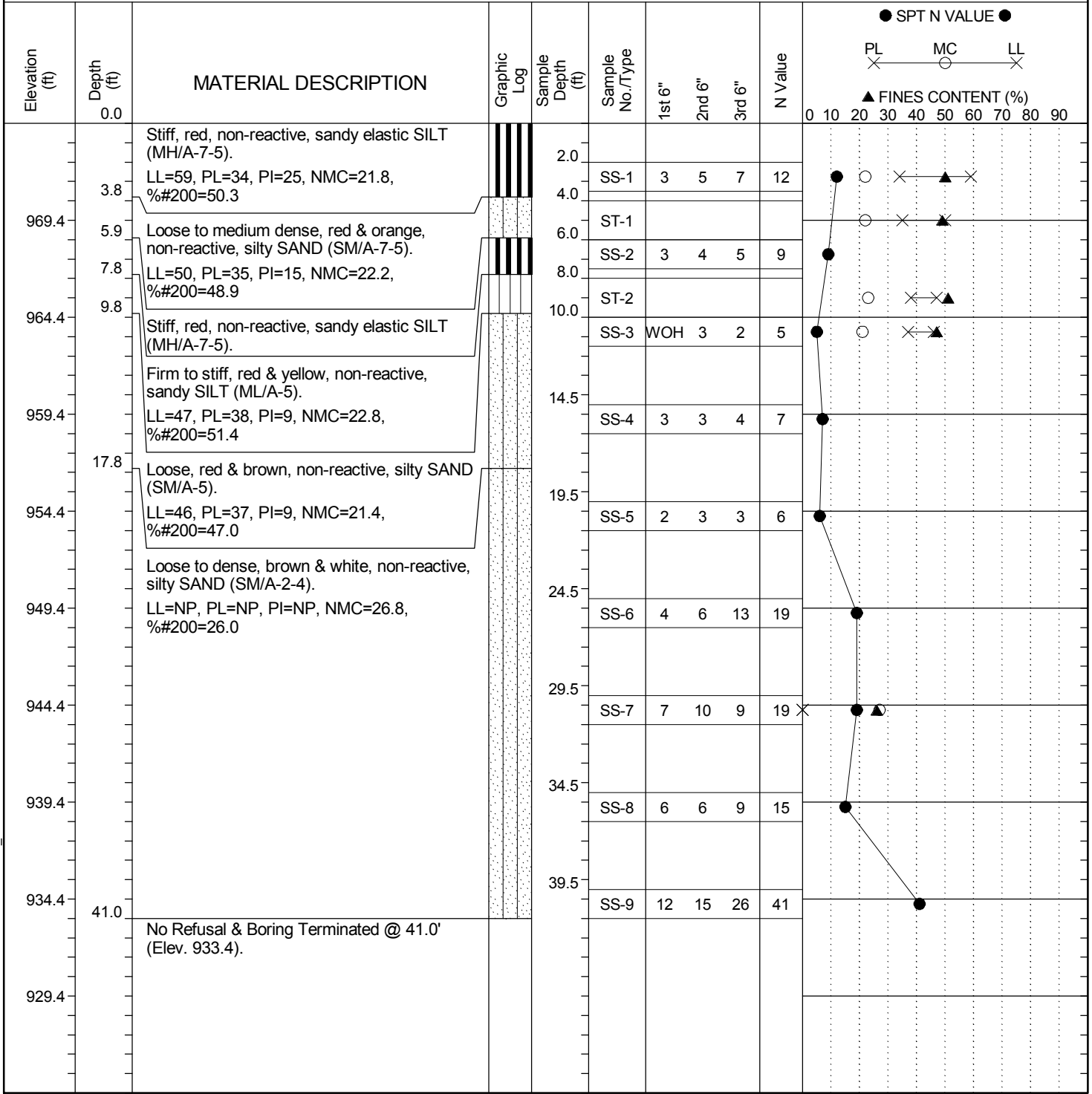
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements		Route:	
Boring No.: B-54	Boring Location: 98+99	Offset: 36' Rt.	Alignment: Ramp 2A
Elev.: 974.4 ft	Latitude: 34.83581	Longitude: 82.29178	Date Started: 10/16/2012
Total Depth: 41 ft	Soil Depth: 41.0 ft	Core Depth: ft	Date Completed: 10/16/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 82%
Core Size: NA	Driller: C. Banning	Groundwater: TOB	24HR



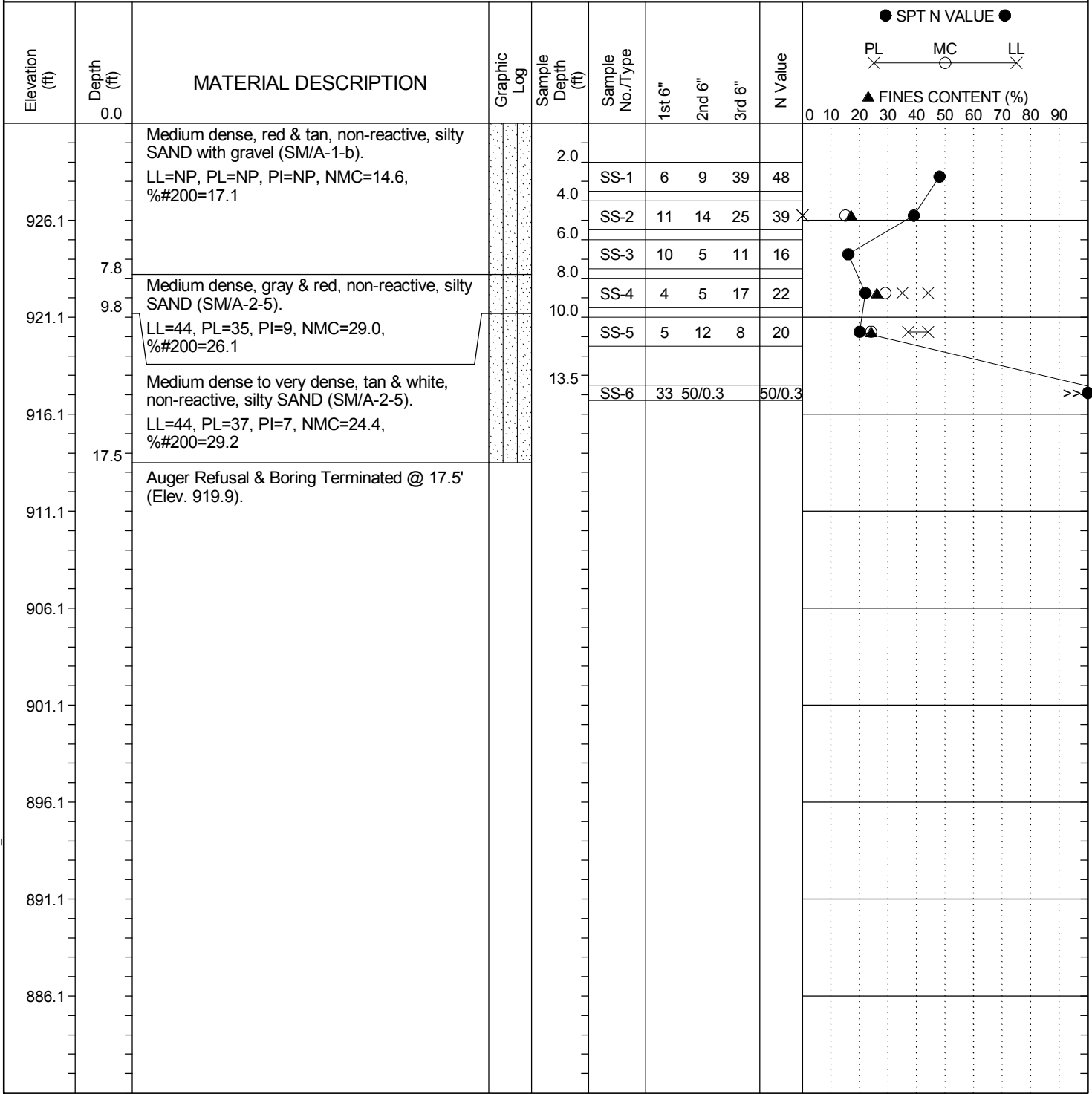
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

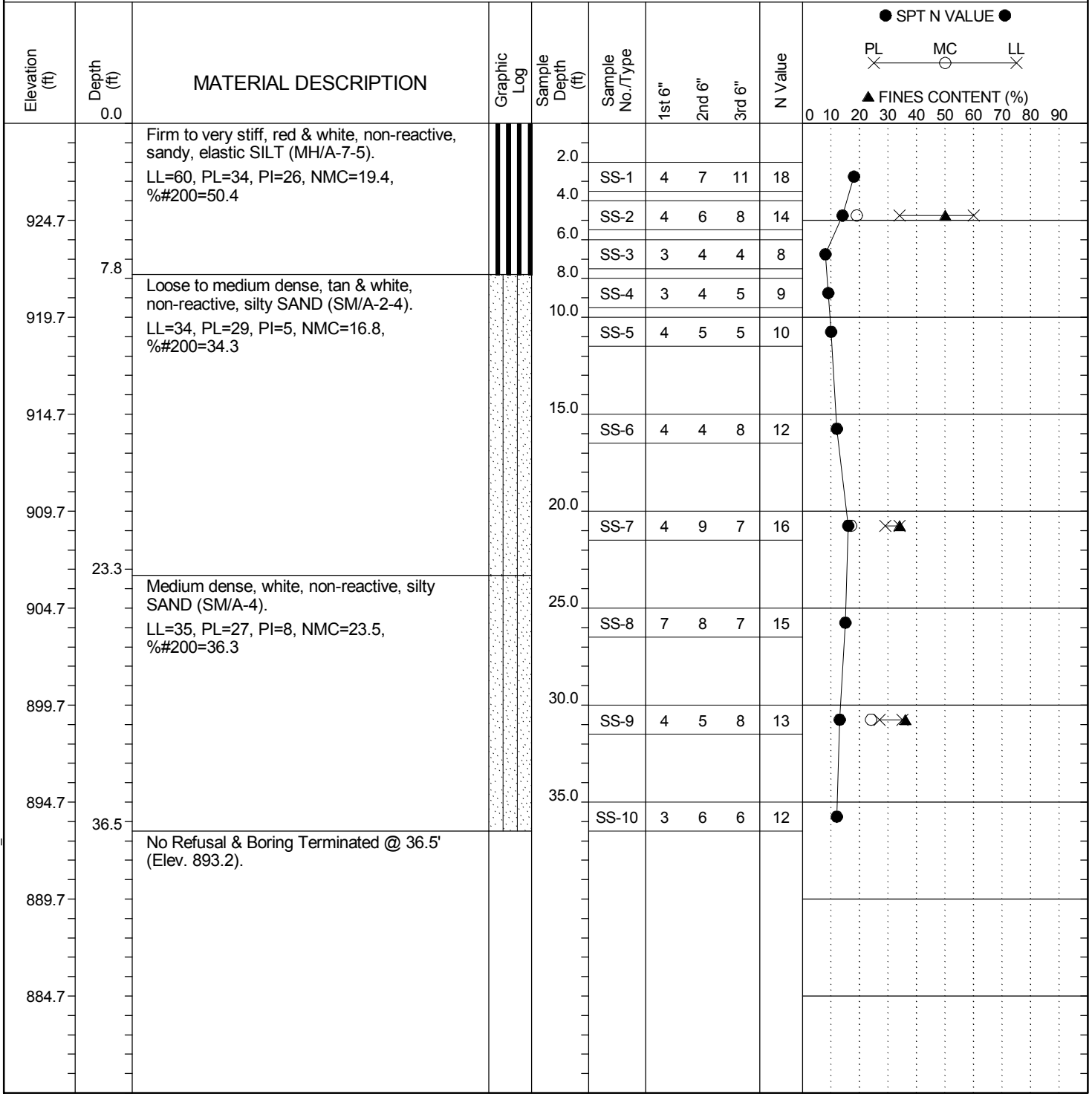
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Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-55	Boring Location: 61+03	Offset: 3' Rt.	Alignment: Ramp 1
Elev.: 931.1 ft	Latitude: 34.84164	Longitude: 82.28397	Date Started: 10/17/2012
Total Depth: 17.5 ft	Soil Depth: 17.5 ft	Core Depth: ft	Date Completed: 10/17/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 86%
Core Size: NA	Driller: M. Frazier	Groundwater: TOB	24HR



SC.DOT I-85 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-56	Boring Location: 360+06	Offset: 112' Rt.	Alignment: I-85
Elev.: 929.7 ft	Latitude: 34.84613	Longitude: 82.28035	Date Started: 10/18/2012
Total Depth: 36.5 ft	Soil Depth: 36.5 ft	Core Depth: ft	Date Completed: 10/18/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 79%
Core Size: NA	Driller: F. Woodard	Groundwater: TOB	24HR



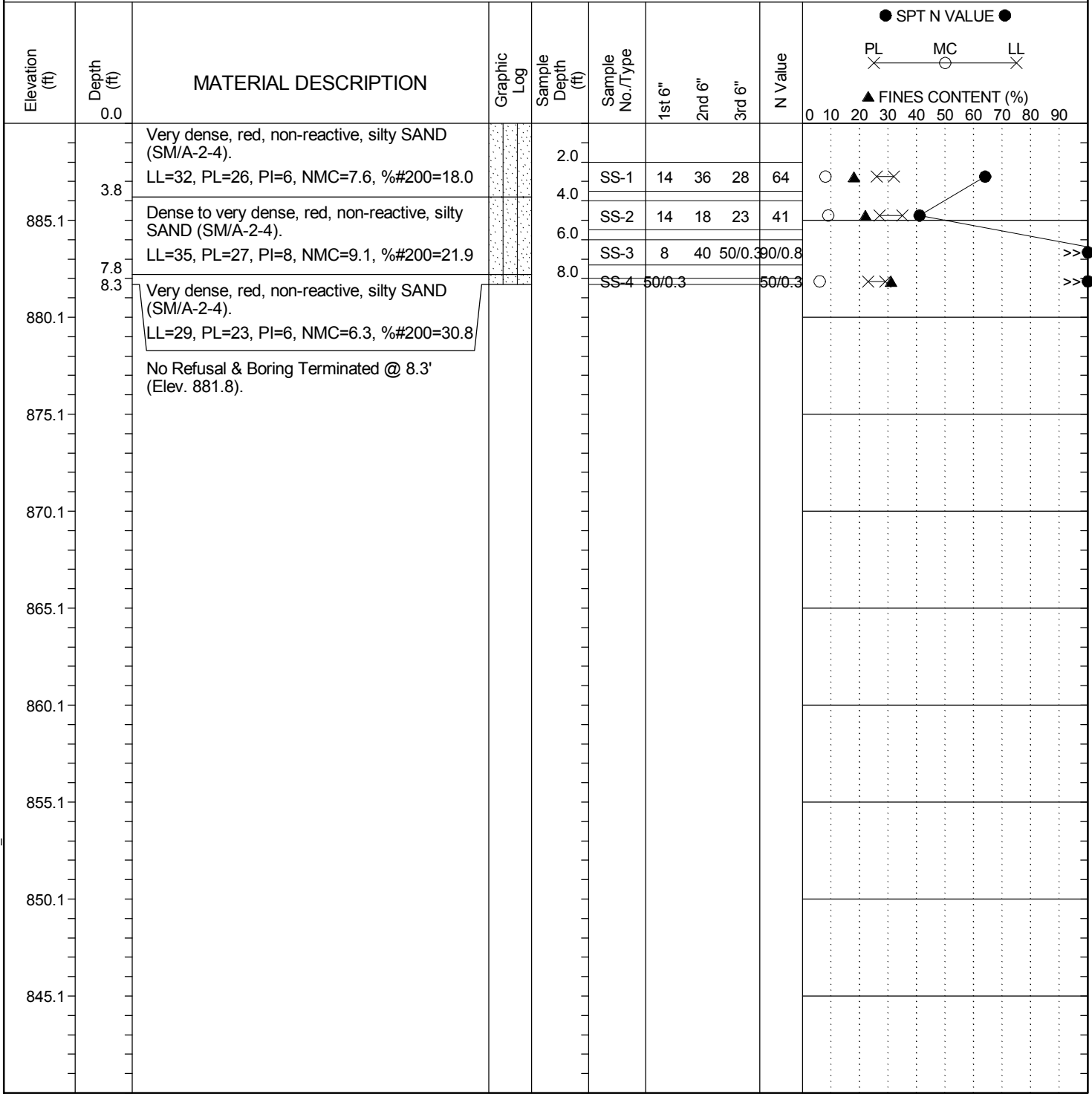
LEGEND

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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-57	Boring Location: 379+93	Offset: 68' Lt.	Alignment: I-85
Elev.: 890.1 ft	Latitude: 34.85129	Longitude: 82.27806	Date Started: 10/16/2012
Total Depth: 8.3 ft	Soil Depth: 8.3 ft	Core Depth: ft	Date Completed: 10/16/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 86%
Core Size: NA	Driller: M. Frazier	Groundwater: TOB	24HR



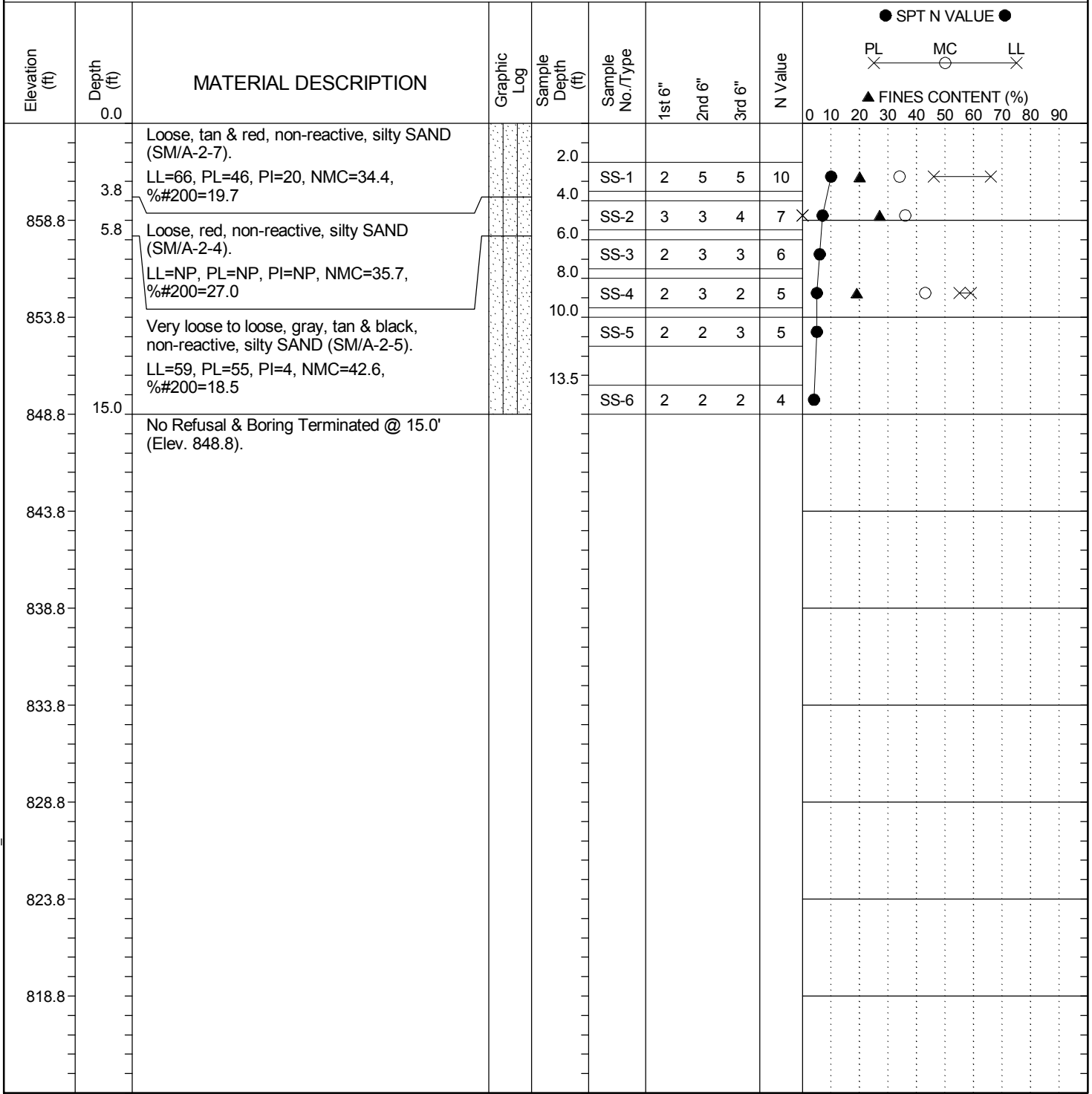
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-58	Boring Location: 399+98	Offset: 99' Rt.	Alignment: I-85
Elev.: 863.8 ft	Latitude: 34.85398	Longitude: 82.2723	Date Started: 9/25/2012
Total Depth: 15 ft	Soil Depth: 15.0 ft	Core Depth: ft	Date Completed: 9/25/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 86%
Core Size: NA	Driller: M. Frazier	Groundwater: TOB	24HR



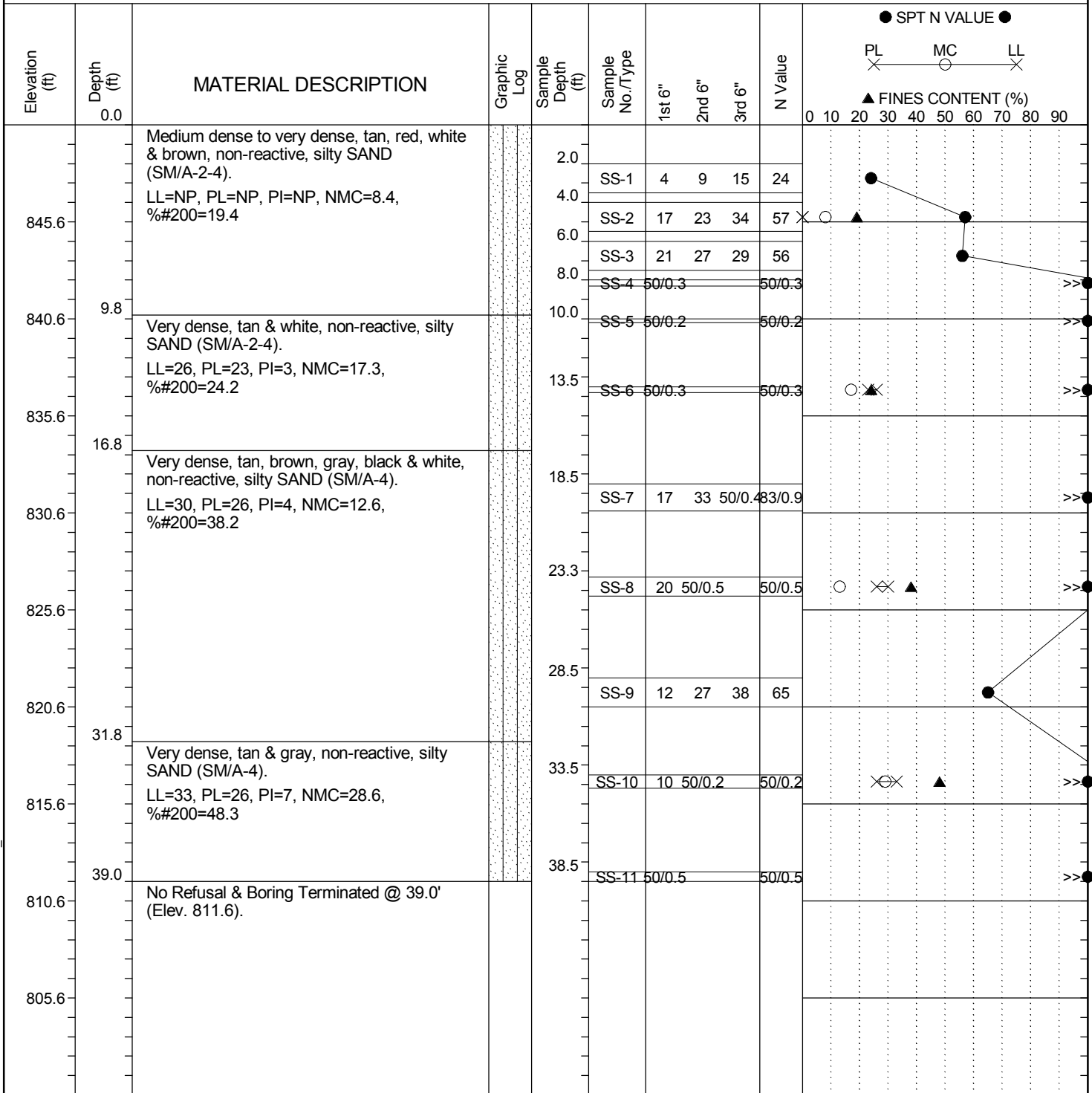
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

SCDOT Soil Test Boring Log

File No.:	23.038111	Project No. (PIN):		County:	Greenville	Eng./Geo.:	S. Berry	
Site Description:		I-85/I-385 Interchange Improvements				Route:		
Boring No.:	B-59	Boring Location:	420+11	Offset:	94' Lt.	Alignment:	I-85	
Elev.:	850.6 ft	Latitude:	34.85671	Longitude:	82.26643	Date Started:	10/3/2012	
Total Depth:	39 ft	Soil Depth:	39.0 ft	Core Depth:	ft	Date Completed:	10/4/2012	
Bore Hole Diameter (in):		4	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME 45C	Drill Method:	HSA	Hammer Type:	Automatic	Energy Ratio:		79%
Core Size:	NA	Driller:	C. Frazier	Groundwater:	TOB	24HR		



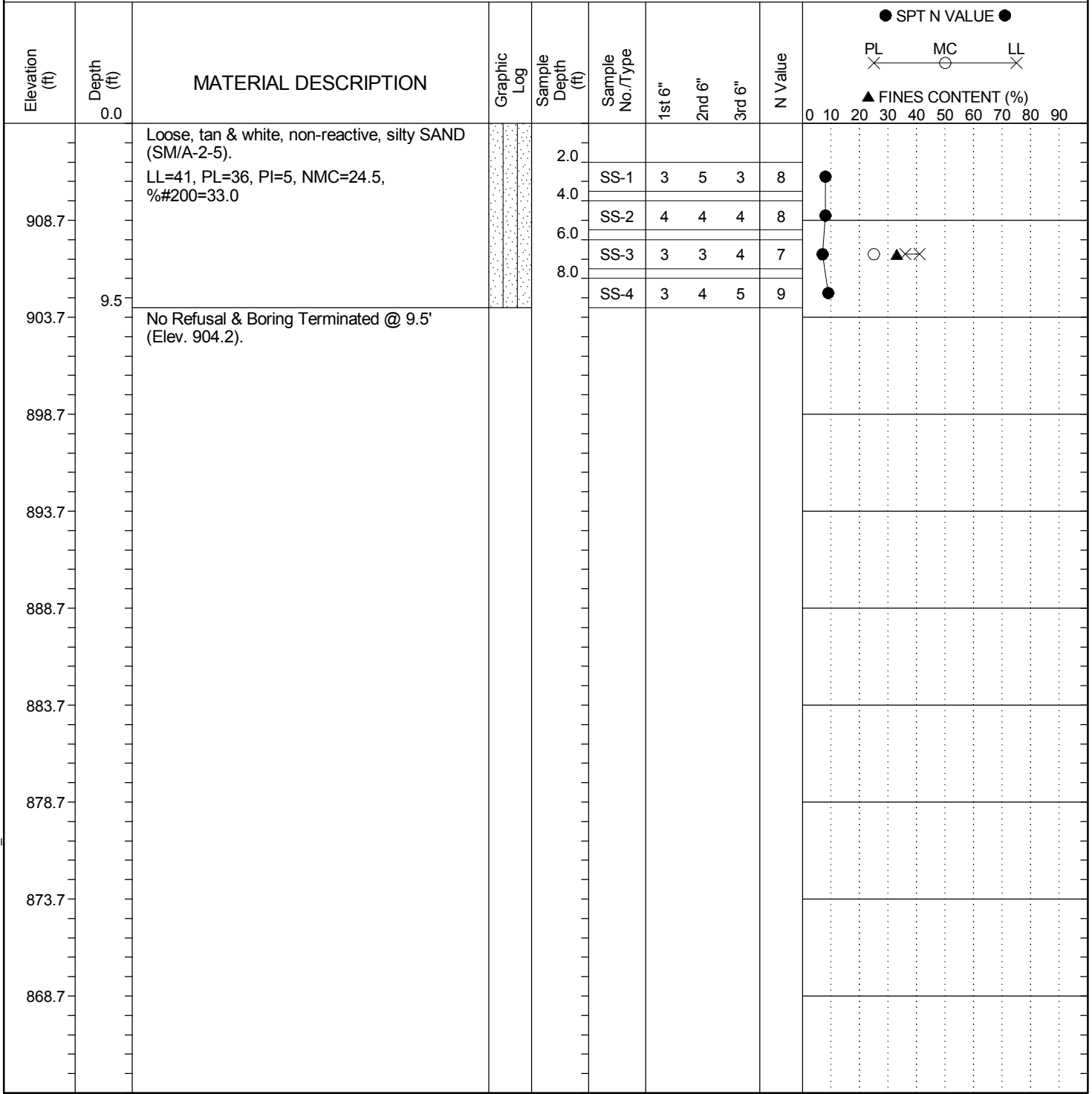
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-60	Boring Location: 324+88	Offset: 84' Lt.	Alignment: I-385
Elev.: 913.7 ft	Latitude: 34.81406	Longitude: 82.28929	Date Started: 10/8/2012
Total Depth: 9.5 ft	Soil Depth: 9.5 ft	Core Depth: ft	Date Completed: 10/8/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 86%
Core Size: NA	Driller: M. Frazier	Groundwater: TOB	24HR



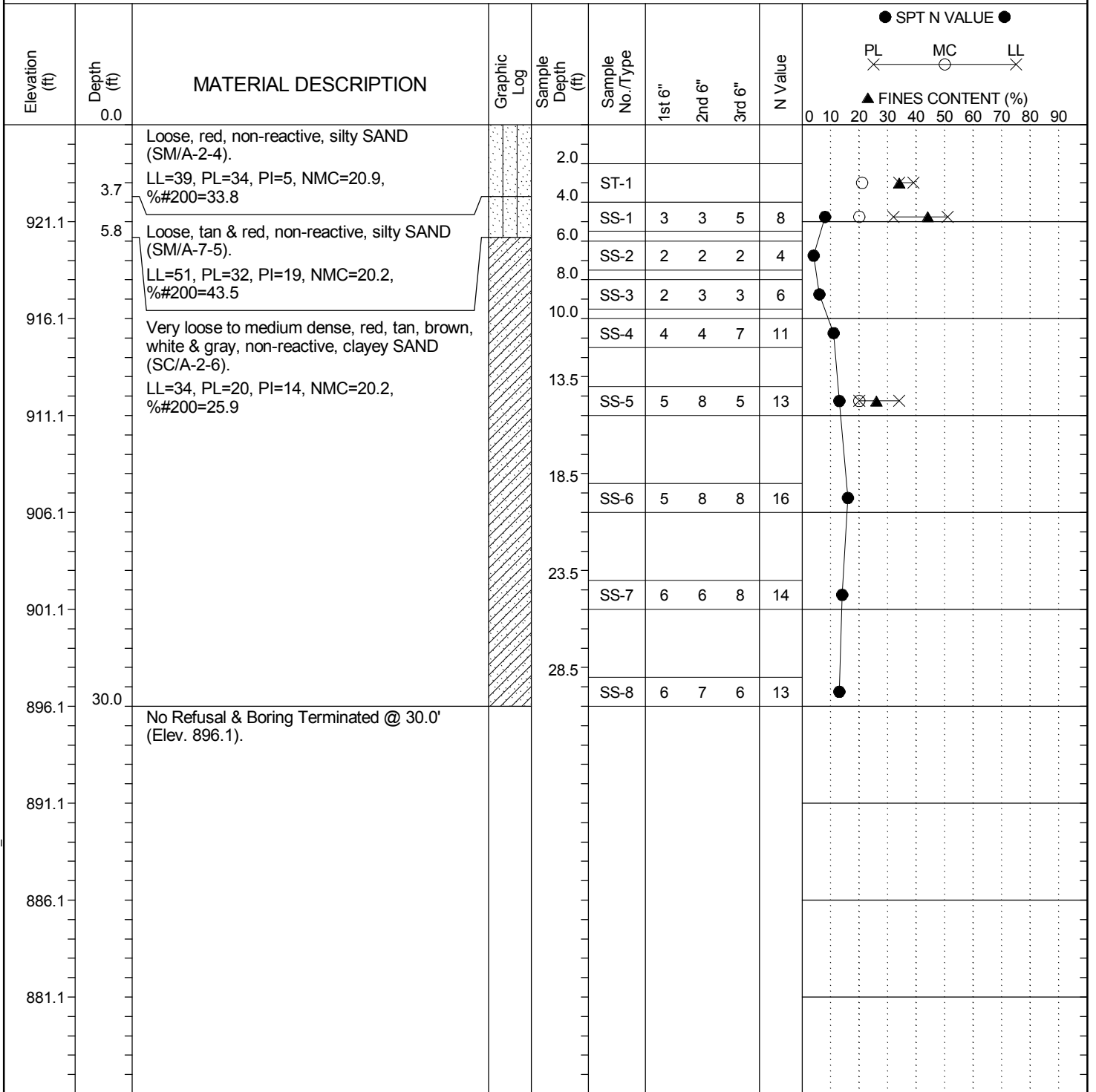
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-61	Boring Location: 332+58	Offset: 20' Rt.	Alignment: I-385 NB C/D
Elev.: 926.1 ft	Latitude: 34.81617	Longitude: 82.28983	Date Started: 10/9/2012
Total Depth: 30 ft	Soil Depth: 30.0 ft	Core Depth: ft	Date Completed: 10/9/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 86%
Core Size: NA	Driller: M. Frazier	Groundwater: TOB	24HR



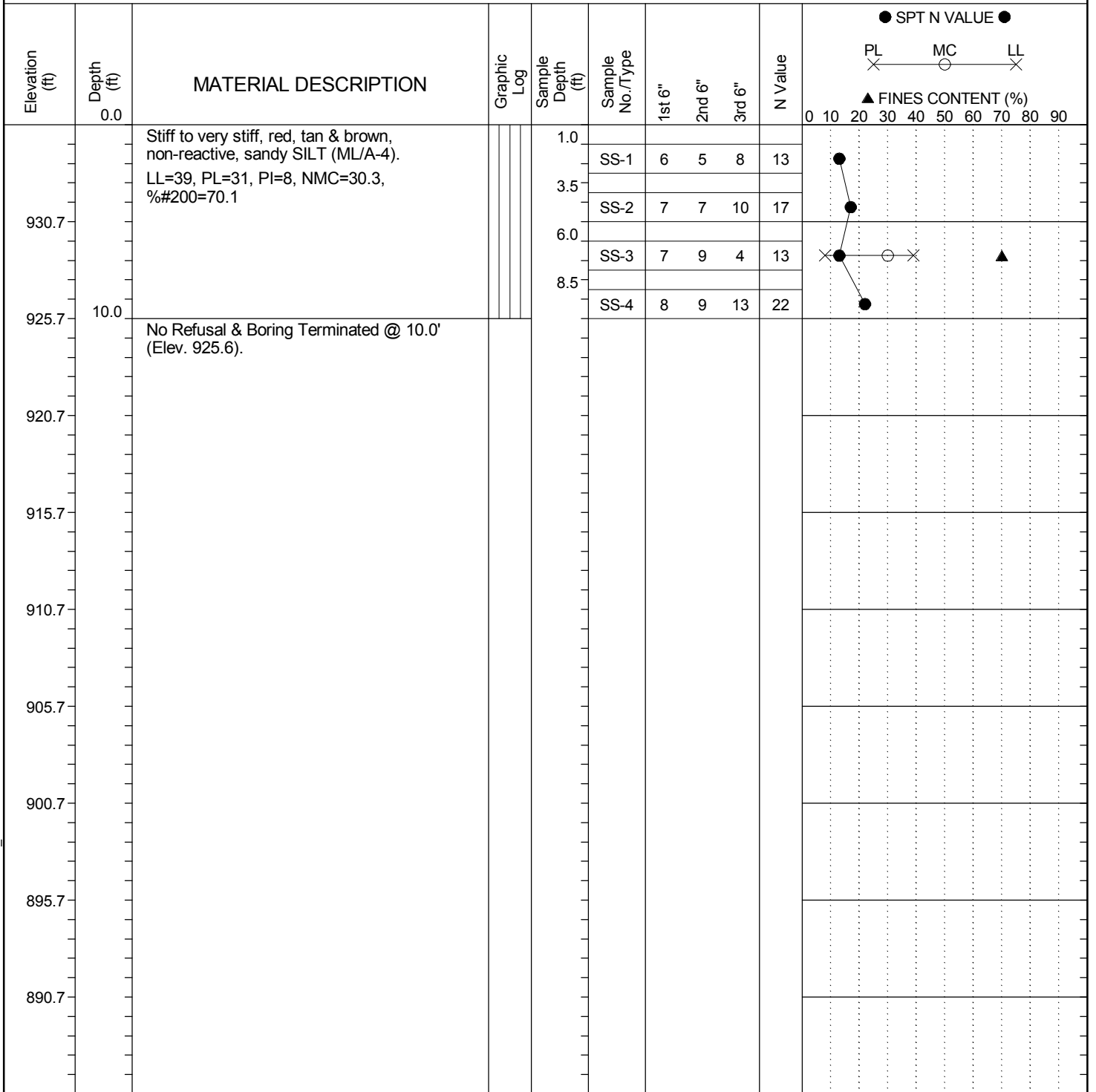
LEGEND

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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-62	Boring Location: 349+94	Offset: 19' Lt.	Alignment: I-385 NB C/D
Elev.: 935.7 ft	Latitude: 34.82084	Longitude: 82.29095	Date Started: 10/8/2012
Total Depth: 10 ft	Soil Depth: 10.0 ft	Core Depth: ft	Date Completed: 10/8/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 79%
Core Size: NA	Driller: C. Frazier	Groundwater: TOB	24HR



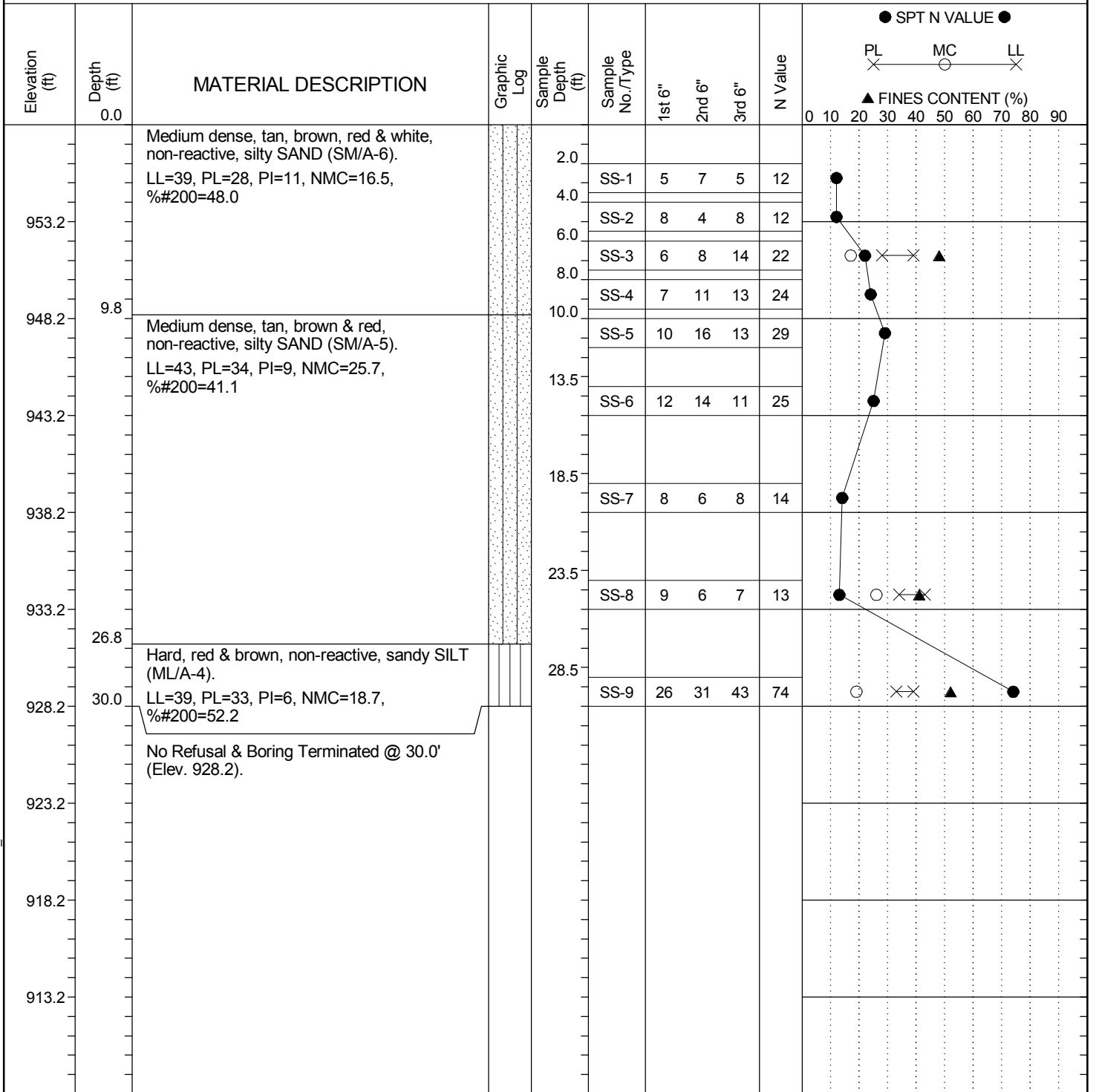
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-63	Boring Location: 354+98	Offset: 85' Rt.	Alignment: I-385 NB C/D
Elev.: 958.2 ft	Latitude: 34.82224	Longitude: 82.29076	Date Started: 10/8/2012
Total Depth: 30 ft	Soil Depth: 30.0 ft	Core Depth: ft	Date Completed: 10/8/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 79%
Core Size: NA	Driller: C. Frazier	Groundwater: TOB	24HR



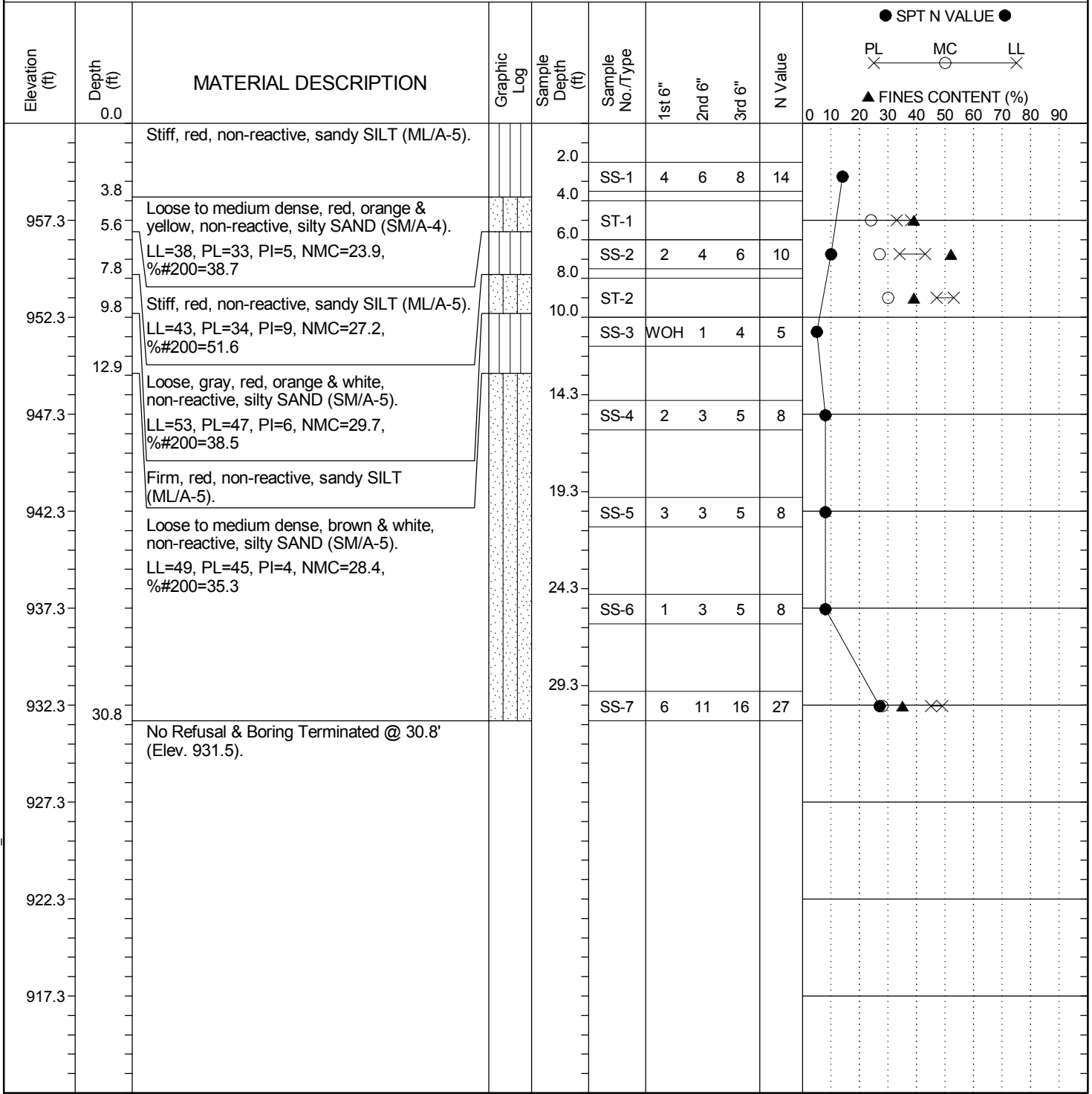
LEGEND

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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-64	Boring Location: 55+93	Offset: 76' Lt.	Alignment: Ramp 8
Elev.: 962.3 ft	Latitude: 34.82456	Longitude: 82.29118	Date Started: 10/18/2012
Total Depth: 30.8 ft	Soil Depth: 30.8 ft	Core Depth: ft	Date Completed: 10/18/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 82%
Core Size: NA	Driller: C. Banning	Groundwater: TOB	24HR



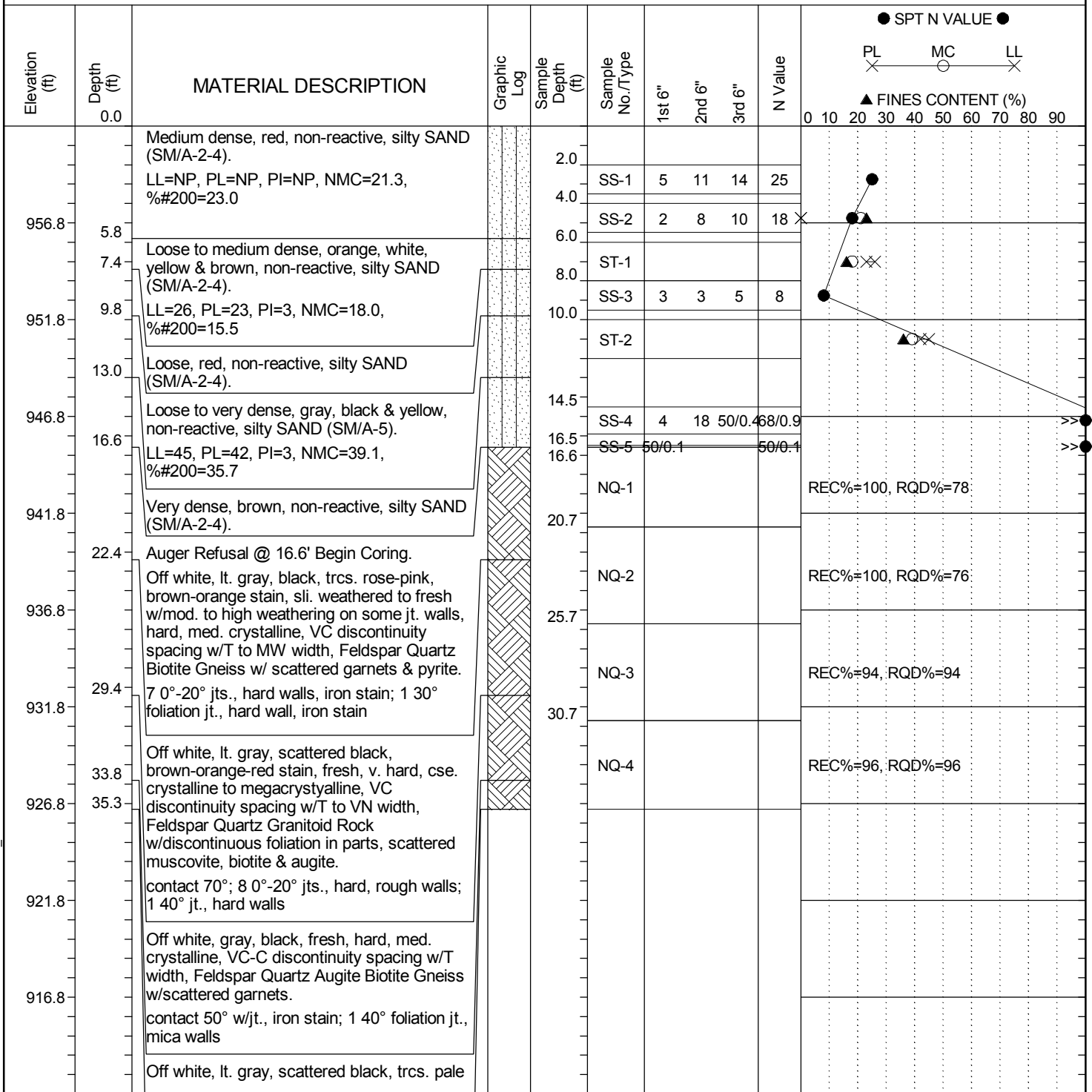
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-65	Boring Location: 364+95	Offset: 11' Rt.	Alignment: I-385 NB C/D
Elev.: 961.8 ft	Latitude: 34.82493	Longitude: 82.29158	Date Started: 10/9/2012
Total Depth: 35.3 ft	Soil Depth: 16.6 ft	Core Depth: 35.3 ft	Date Completed: 10/9/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 82%
Core Size: NQ2	Driller: C. Banning	Groundwater: TOB	24HR



LEGEND

Continued Next Page

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

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.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-65	Boring Location: 364+95	Offset: 11' Rt.	Alignment: I-385 NB C/D
Elev.: 961.8 ft	Latitude: 34.82493	Longitude: 82.29158	Date Started: 10/9/2012
Total Depth: 35.3 ft	Soil Depth: 16.6 ft	Core Depth: 35.3 ft	Date Completed: 10/9/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 82%
Core Size: NQ2	Driller: C. Banning	Groundwater: TOB	24HR

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 X — O — X ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90											
										0	10	20	30	40	50	60	70	80	90		
906.8		green, fresh, v. hard, cse. crystalline to pegmatitic, Feldspar Quartz Granitoid Rock w/scattered muscovite, biotite & augite, trcs. garnets, no jts. Boring Terminated @ 35.3' (Elev. 926.5).																			
901.8																					
896.8																					
891.8																					
886.8																					
881.8																					
876.8																					
871.8																					
866.8																					

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	

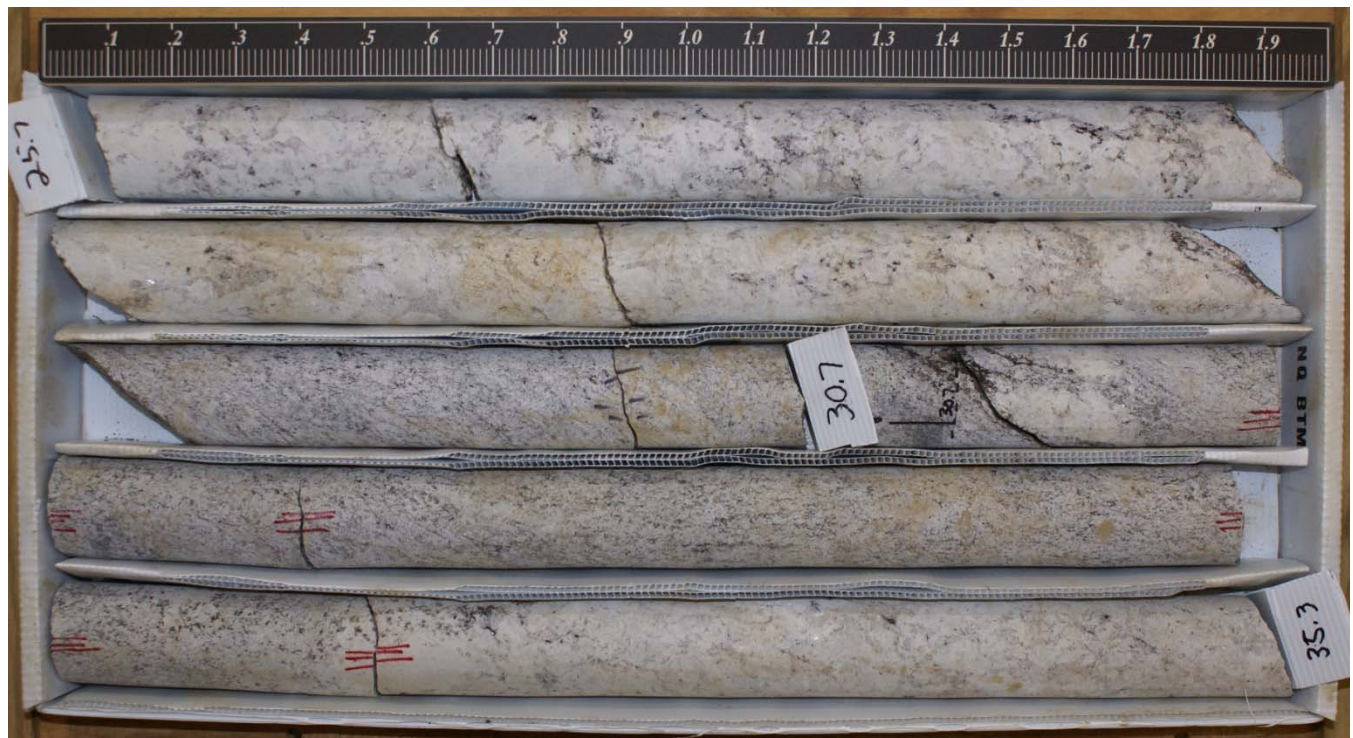
SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

CORE PHOTOGRAPHIC RECORD

I-85 / I-385 Interchange Improvements



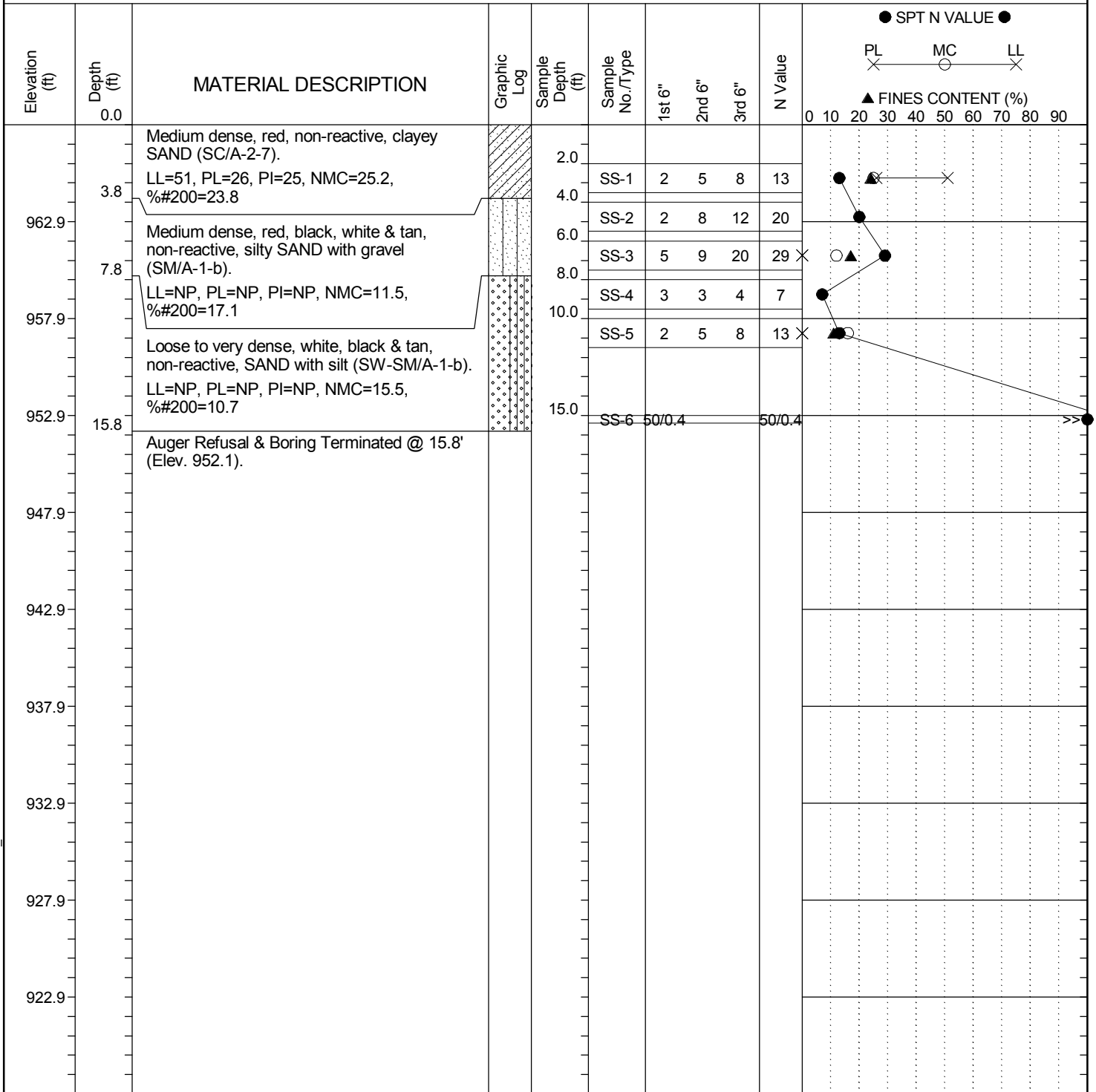
B-65 Box 1 of 2



B-65 Box 2 of 2

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-66	Boring Location: 369+87	Offset: 16' Lt.	Alignment: I-385 NB C/D
Elev.: 967.9 ft	Latitude: 34.82623	Longitude: 82.292	Date Started: 10/17/2012
Total Depth: 15.8 ft	Soil Depth: 15.8 ft	Core Depth: ft	Date Completed: 10/17/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 79%
Core Size: NA	Driller: F. Woodard	Groundwater: TOB	24HR



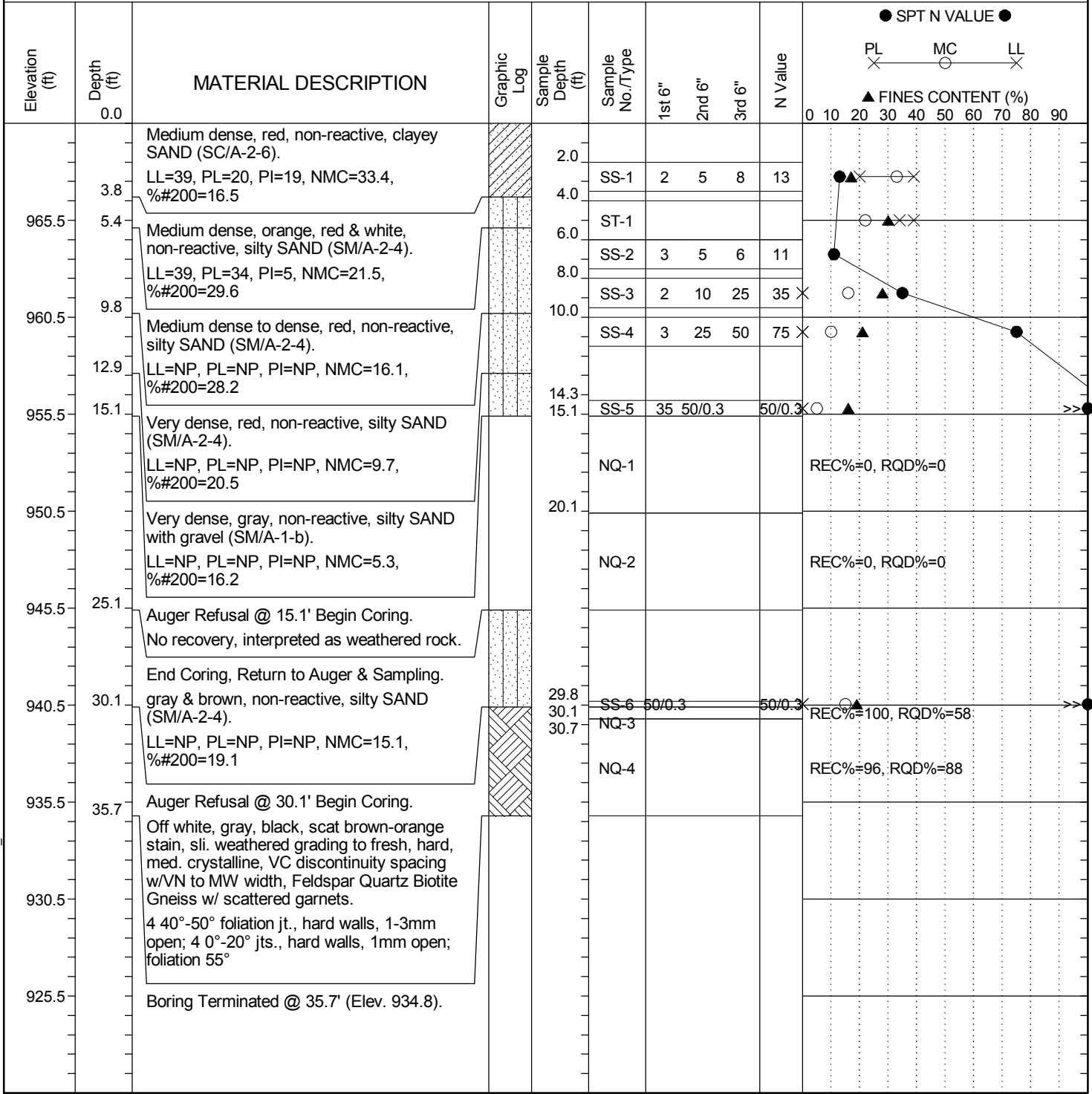
LEGEND

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

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-67	Boring Location: 65+94	Offset: 137' Lt.	Alignment: Ramp 8
Elev.: 970.5 ft	Latitude: 34.82719	Longitude: 82.29241	Date Started: 10/17/2012
Total Depth: 35.7 ft	Soil Depth: 30.1 ft	Core Depth: 35.7 ft	Date Completed: 10/17/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 82%
Core Size: NQ2	Driller: C. Banning	Groundwater: TOB	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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

CORE PHOTOGRAPHIC RECORD

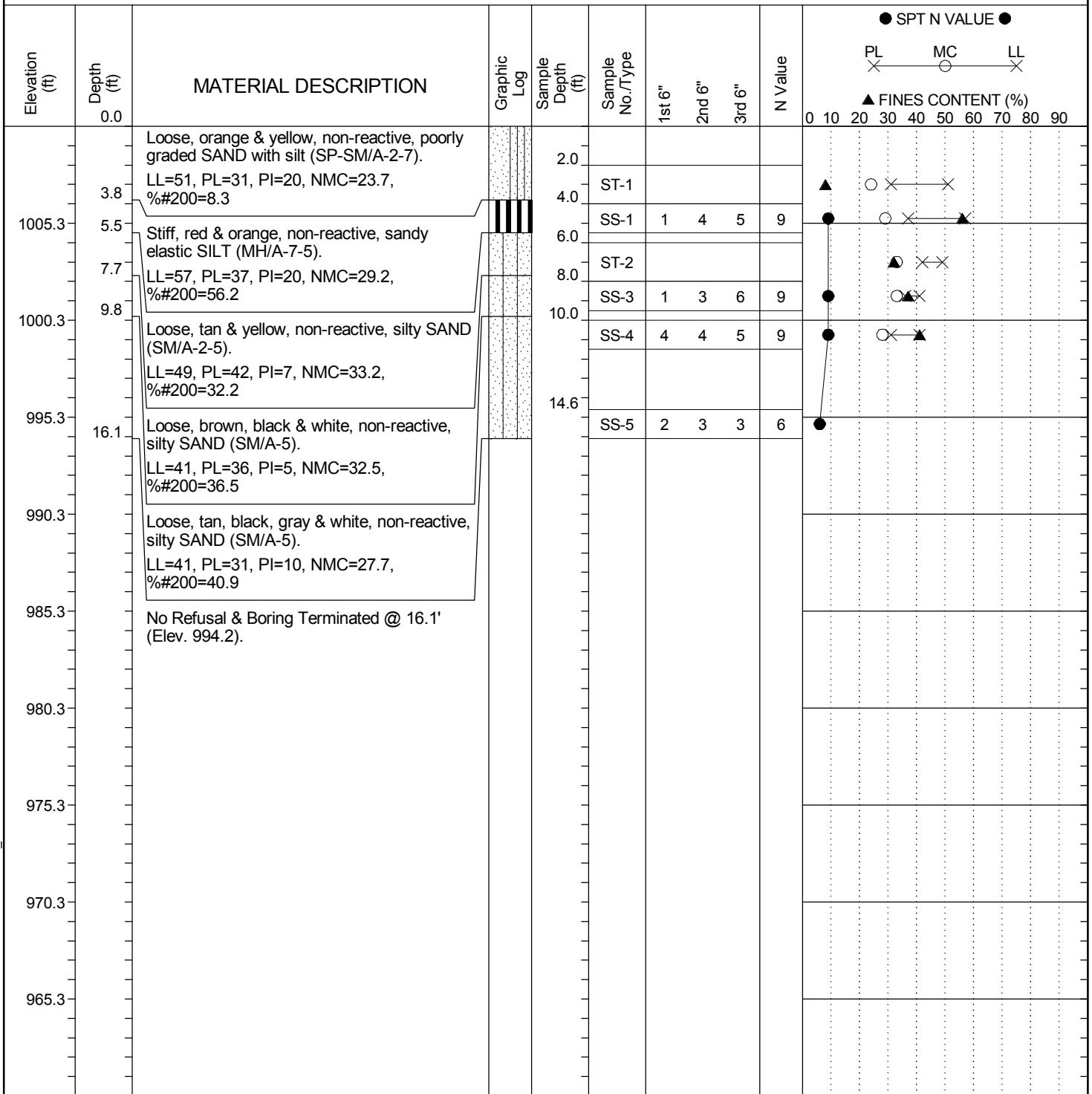
I-85 / I-385 Interchange Improvements



B-67 Box 1 of 1

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-68	Boring Location: 59+09	Offset: 41' Lt.	Alignment: Ramp 2A
Elev.: 1010.3 ft	Latitude: 34.83425	Longitude: 82.30217	Date Started: 10/6/2012
Total Depth: 16.1 ft	Soil Depth: 16.1 ft	Core Depth: ft	Date Completed: 10/6/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 82%
Core Size: NA	Driller: C. Banning	Groundwater: TOB	24HR



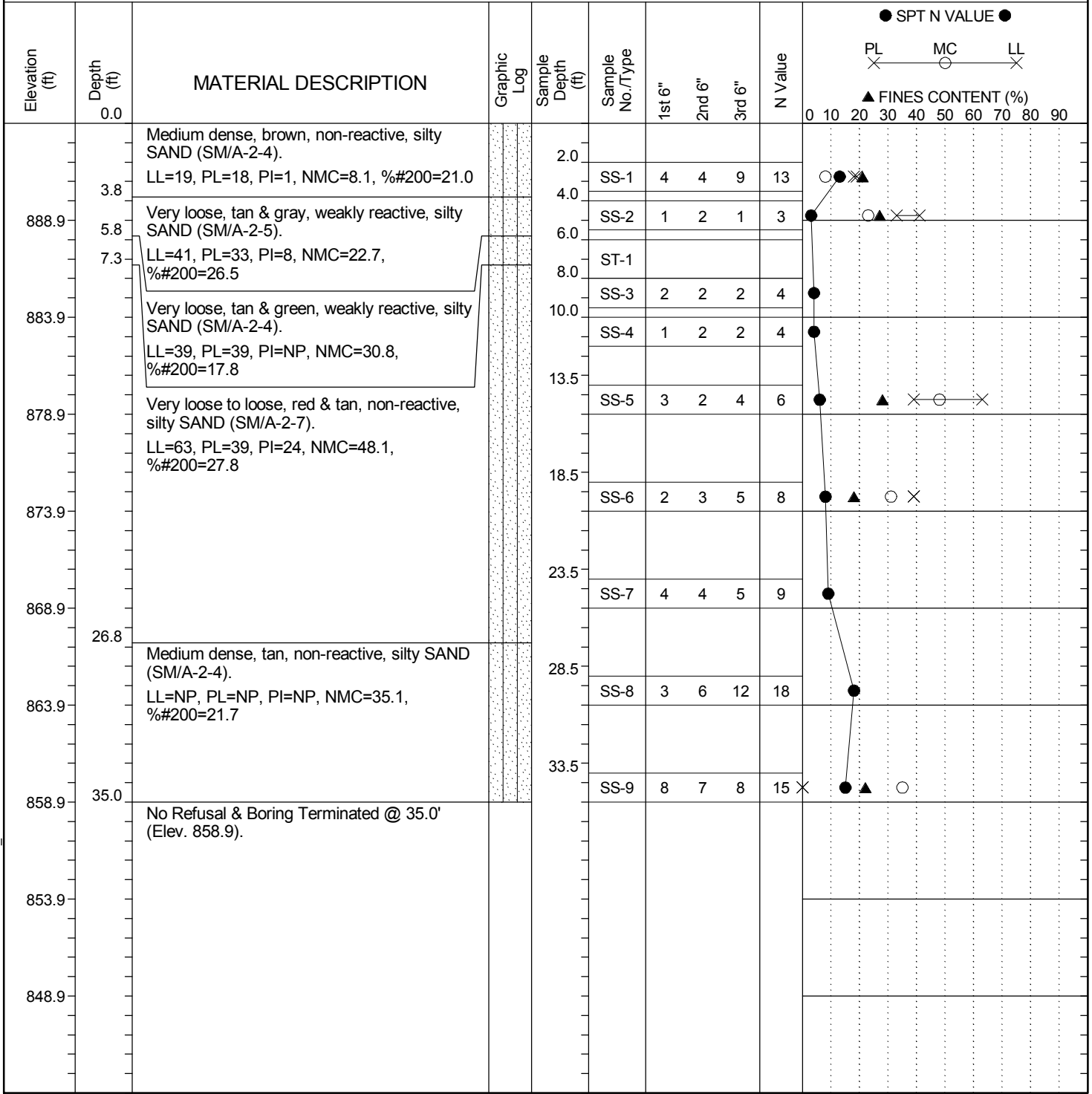
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements		Route:	
Boring No.: B-70	Boring Location: 72+31	Offset: 23' Rt.	Alignment: Ramp 1
Elev.: 893.9 ft	Latitude: 34.83976	Longitude: 82.28695	Date Started: 10/18/2012
Total Depth: 35 ft	Soil Depth: 35.0 ft	Core Depth: ft	Date Completed: 10/18/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 86%
Core Size: NA	Driller: M. Frazier	Groundwater: TOB	24HR



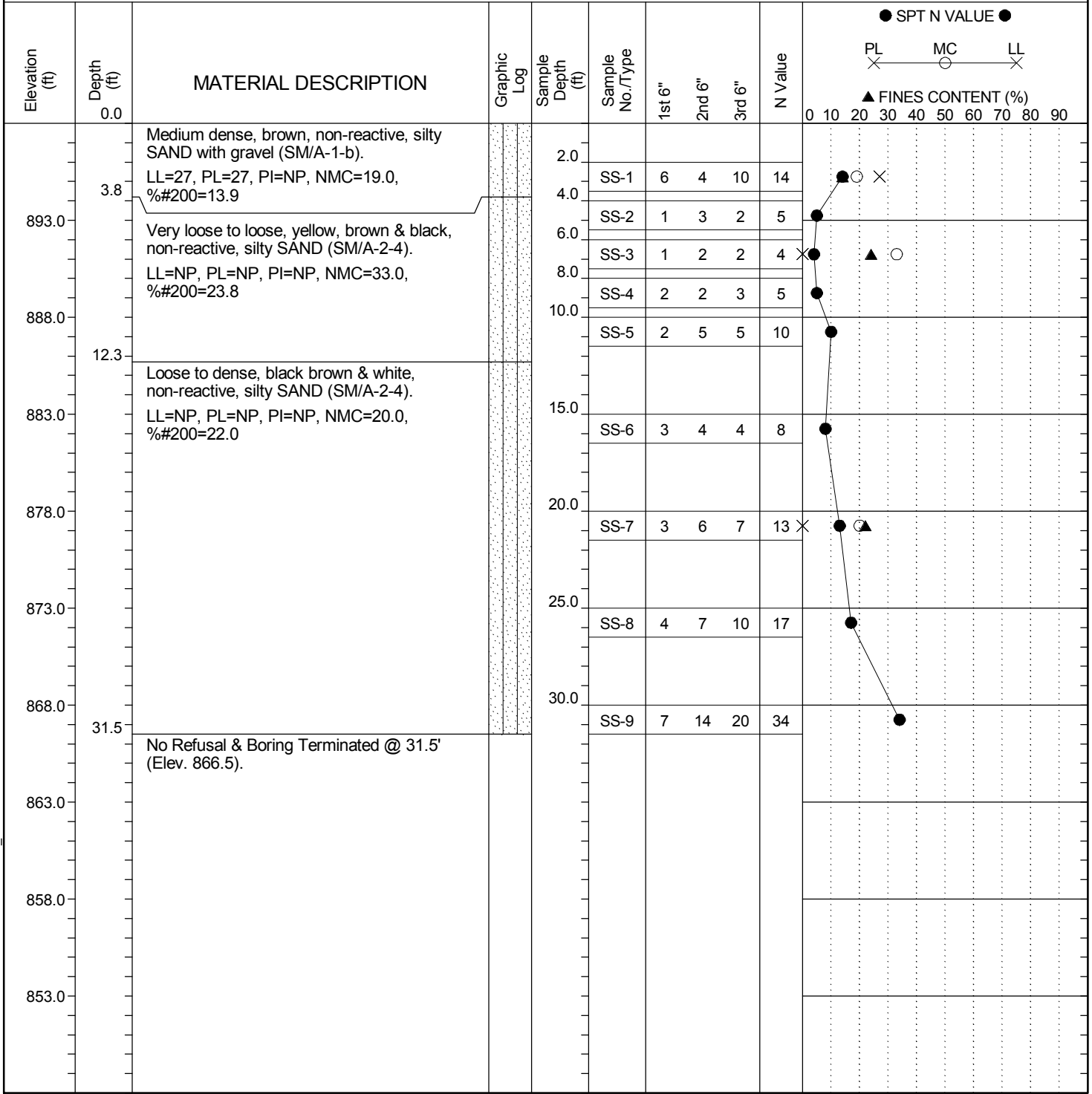
LEGEND

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	

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-71	Boring Location: 118+86	Offset: 11' Rt.	Alignment: Ramp 2A
Elev.: 898.0 ft	Latitude: 34.8392	Longitude: 82.28659	Date Started: 10/17/2012
Total Depth: 31.5 ft	Soil Depth: 31.5 ft	Core Depth: 31.5 ft	Date Completed: 10/17/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 79%
Core Size: NA	Driller: F. Woodard	Groundwater: TOB	24HR



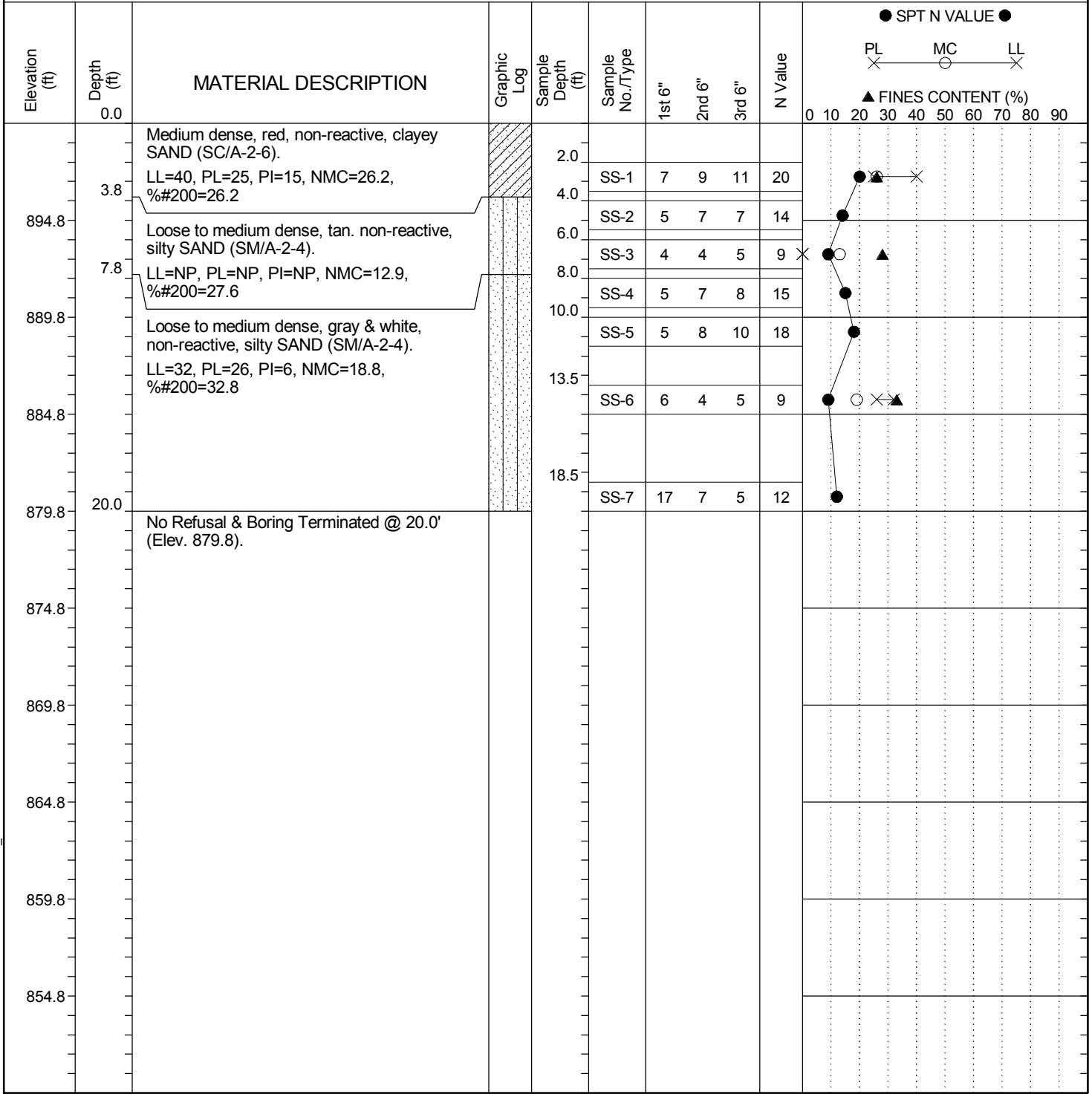
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: R. DeLost
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-72	Boring Location: 372+06	Offset: 73' Lt.	Alignment: I-85
Elev.: 899.8 ft	Latitude: 34.84937	Longitude: 82.27939	Date Started: 10/16/2012
Total Depth: 20 ft	Soil Depth: 20.0 ft	Core Depth: ft	Date Completed: 10/16/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 86%
Core Size: NA	Driller: M. Frazier	Groundwater: TOB	24HR



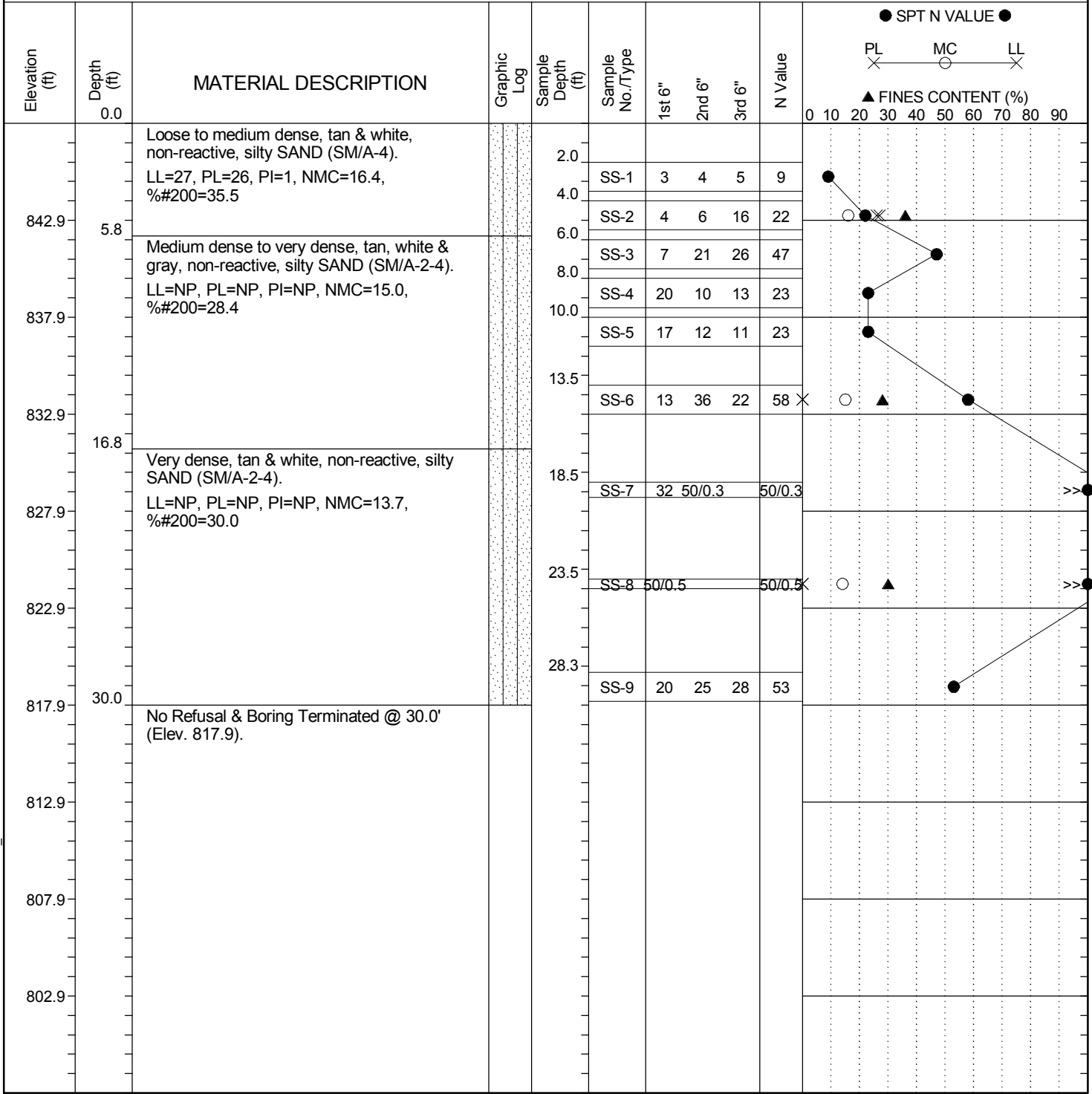
LEGEND

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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-73	Boring Location: 414+45	Offset: 106' Lt.	Alignment: I-85
Elev.: 847.9 ft	Latitude: 34.85611	Longitude: 82.26817	Date Started: 9/25/2012
Total Depth: 30 ft	Soil Depth: 30.0 ft	Core Depth: ft	Date Completed: 9/25/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 79%
Core Size: NA	Driller: C. Frazier	Groundwater: TOB	24HR



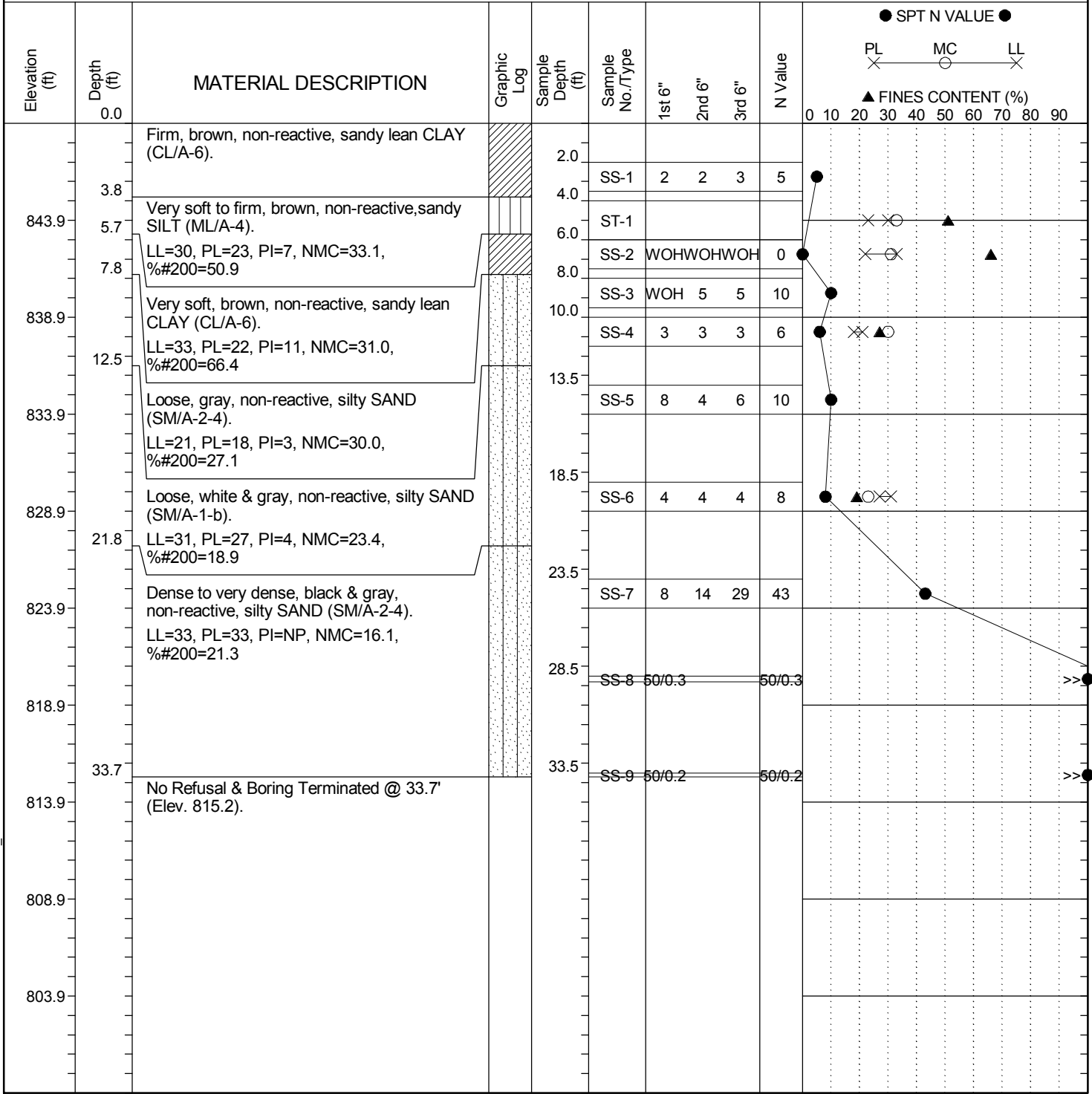
LEGEND

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

SC.DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 1/7/13

SCDOT Soil Test Boring Log

File No.: 23.038111	Project No. (PIN):	County: Greenville	Eng./Geo.: S. Berry
Site Description: I-85/I-385 Interchange Improvements			Route:
Boring No.: B-74	Boring Location: 413+00	Offset: 88' Rt.	Alignment: I-85
Elev.: 848.9 ft	Latitude: 34.85546	Longitude: 82.26835	Date Started: 10/3/2012
Total Depth: 33.7 ft	Soil Depth: 33.7 ft	Core Depth: ft	Date Completed: 10/4/2012
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 86%
Core Size: NA	Driller: M. Frazier	Groundwater: TOB	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	

SC_DOT I-85 I-385 INTERCHANGE IMPROVEMENTS.GPJ SC_DOT.GDT 17/13

Appendix Section III Laboratory Testing



Florence & Hutcheson

An **ICA** Company

Project Name : I-85/I-385 Interchange
 Location : Greenville County, South Carolina
 Job Number : 08195-01
 Project Job No. : 08195-01

Soil Classifications Summary

Boring Number	Sample Number	Depth (ft)	Grain Size Data				Atterberg Limits			Classification		
			Natural Moisture (%)	%< #4 Sieve	%< #10 Sieve	%< #40 Sieve	%< #200 Sieve	LL	PL	PI	ASTM	AASHTO
B-1	SS-1	0-1.5	16.2	98.4	94.0	69.1	39.5	31	23	8	SM	A-4 (0)
B-1	SS-3	4-5.5	31.2	95.1	89.0	62.1	35.2	43	26	17	SC	A-7-6 (1)
B-1	SS-4	6-7.5	22.7	90.0	86.1	62.4	38.1	39	28	11	SM	A-6 (1)
B-1	SS-6	10-11.5	25.5	92.7	84.6	54.4	28.7	39	29	10	SM	A-2-4 (0)
B-1	SS-9	25-26.5	25.1	77.0	69.4	50.1	29.5	33	24	9	SM	A-2-4 (0)
B-2	SS-1	0-1.5	12.2	96.4	91.6	57.9	29.1	28	26	2	SM	A-2-4 (0)
B-2	SS-5	8-9.5	17.4	99.3	97.2	71.5	48.7	41	25	16	SC	A-7-6 (5)
B-2	SS-12	40-41.5	34.2	100.0	98.3	69.1	43.2	39	34	5	SM	A-4 (0)
B-2	SS-15	55-56.5	68.2	100.0	100.0	96.0	38.8	69	64	5	SM	A-5 (0)
B-2	SS-20	80-81.5	19.6	99.8	97.3	64.0	31.9	28	25	3	SM	A-2-4 (0)
B-3	SS-1	0-1.5	16.0	99.0	96.0	72.2	45.8	38	22	16	SC	A-6 (4)
B-3	SS-2	2-3.5	24.2	98.3	93.2	71.0	32.5	37	32	5	SM	A-2-4 (0)
B-3	SS-4	6-7.5	19.9	85.7	74.0	43.0	19.0	NP	NP	NP	SM	A-1-b (0)
B-3	SS-7	15-16.5	17.8	97.6	86.1	52.8	25.0	33	27	6	SM	A-2-4 (0)
B-3	SS-11	35-36.5	16.6	97.7	91.9	71.4	38.9	29	26	3	SM	A-4 (0)
B-3	SS-17	65-66.5	18.2	89.1	80.8	46.6	20.3	NP	NP	NP	SM	A-1-b (0)
B-4	SS-1	0-1.5	10.7	66.4	57.5	35.8	15.1	NP	NP	NP	SM	A-1-b (0)
B-4	SS-2	2-3.5	21.7	90.1	86.6	64.5	37.9	43	25	18	SC	A-7-6 (2)
B-4	SS-3	4-5.5	7.8	68.6	58.8	43.3	10.0	NA	NA	NA	SP-SM	A-1-b (0)
B-4	SS-5	8-9.5	20.2	98.9	91.0	56.8	19.4	NP	NP	NP	SM	A-2-4 (0)
B-4	SS-8	20-21.5	28.5	99.8	95.6	61.9	21.3	NP	NP	NP	SM	A-2-4 (0)
B-4	SS-9	25-26.5	14.4	72.9	59.5	37.7	15.8	NA	NA	NA	SM	A-1-b (0)
B-5	SS-1	0-1.5	13.7	98.8	95.2	69.1	31.9	NP	NP	NP	SM	A-2-4 (0)
B-5	SS-4	6-7.5	13.7	60.7	49.8	29.0	10.8	NP	NP	NP	SW-SM	A-1-a (0)
B-6	SS-3	4-5.5	24.7	99.2	97.3	70.5	45.1	37	21	16	SC	A-6 (4)
B-6	SS-7	15-16.5	40.7	99.8	99.5	82.3	39.6	43	38	5	SM	A-5 (0)
B-6	SS-10	30-31.5	32.8	100.0	99.1	73.7	36.5	43	34	9	SM	A-5 (0)
B-7	SS-1	0-1.5	10.2	98.8	95.0	63.9	29.1	26	24	2	SM	A-2-4 (0)
B-7	SS-5	8-9.5	27.1	100.0	97.4	58.8	29.4	44	36	8	SM	A-2-5 (0)
B-7	SS-10	30-31.5	18.4	99.5	94.7	56.8	15.5	NP	NP	NP	SM	A-2-4 (0)
B-8	SS-1	0-1.5	15.4	98.7	97.1	67.9	23.8	18	15	3	SM	A-2-4 (0)
B-8	SS-2	2.5-4	31.7	100.0	99.6	70.5	33.1	52	33	19	SM	A-2-7 (2)
B-8	SS-3	5-6.5	30.8	100.0	100.0	78.9	26.6	47	34	13	SM	A-2-7 (1)
B-8	SS-5	10-11.5	19.2	97.8	89.2	55.2	12.8	NP	NP	NP	SM	A-2-4 (0)
B-8	SS-6	15-16	24.1	80.1	63.8	31.9	6.7	NP	NP	NP	SP-SM	A-1-b (0)
B-8	SS-8	25-25.5	9.9	76.3	66.3	45.5	10.6	NP	NP	NP	SP-SM	A-1-b (0)
B-9	SS-1	0-1.5	13.6	90.5	86.8	63.1	35.9	39	30	9	SM	A-4 (0)
B-9	SS-4	7.5-9	13.9	69.2	54.4	37.6	13.7	NP	NP	NP	SM	A-1-b (0)
B-9	SS-6	15-16.5	28.2	99.9	98.7	79.6	44.1	39	21	18	SC	A-6 (4)
B-9	SS-9	30-31.5	39.6	100.0	99.7	81.6	34.7	39	33	6	SM	A-2-4 (0)
B-9	SS-10	35-36.5	29.3	95.9	87.0	47.7	13.2	NP	NP	NP	SM	A-1-b (0)
B-9	SS-11	40-41.5	17.6	38.7	26.3	17.3	5.2	NP	NP	NP	GP-GM	A-1-a (0)
B-10	SS-2	2.5-4	14.5	68.6	58.9	44.1	20.0	34	9	25	SC	A-2-6 (3)
B-10	SS-5	10-11.5	19.8	99.7	98.2	80.0	50.8	37	21	16	CL	A-6 (5)
B-10	SS-9	30-31.5	24.6	93.9	83.1	66.8	33.9	31	27	4	SM	A-2-4 (0)
B-10	SS-14	55-56.5	17.3	90.5	76.4	43.0	14.8	33	24	9	SM	A-2-4 (0)
B-10	SS-18	75-76.5	13.8	69.6	60.5	51.6	23.4	NA	NA	NA	SM	A-2-4 (0)
B-11	SS-1	0-1.5	15.9	74.3	62.7	47.5	23.3	31	27	4	SM	A-1-b (0)
B-11	SS-4	7.5-9	25.1	86.7	81.3	69.0	42.3	36	28	8	SM	A-4 (1)
B-11	SS-11	40-41.5	31.7	99.7	94.8	50.7	16.9	34	34	NP	SM	A-2-4 (0)
B-11	SS-19	80-81.5	18.3	89.2	75.3	42.6	18.8	29	25	4	SM	A-1-b (0)

B-11	SS-22	95-96.5	17.1	95.1	84.0	65.4	19.9	NP	NP	NP	SM	A-2-4 (0)
B-12	SS-2	2.5-4	25.5	96.6	92.8	78.5	52.5	40	32	8	ML	A-4 (3)
B-12	SS-4	7.5-9	12.4	61.9	45.1	33.3	16.6	33	30	3	SM	A-1-b (0)
B-12	SS-12	45-46.5	42.1	99.1	96.1	80.8	46.7	46	39	7	SM	A-5 (2)
B-12	SS-18	75-76.5	26.7	100.0	95.1	69.3	37.8	38	33	5	SM	A-4 (0)
B-13	SS-1	0-1.5	14.7	79.4	76.8	64.6	38.7	34	22	12	SC	A-6 (1)
B-13	SS-3	4-5.5	28.6	96.2	82.1	55.5	26.2	32	28	4	SM	A-2-4 (0)
B-13	SS-5	8-9.5	20.0	99.9	90.0	65.3	30.1	33	33	NP	SM	A-2-4 (0)
B-13	ST-1	20.3-20.8	28.4	99.4	95.9	68.9	37.8	32	32	NP	SM	A-4 (0)
B-13	ST-2	40.3-40.7	NA	93.5	90.0	73.2	13.5	36	33	3	SM	A-2-4 (0)
B-13	SS-12	50.3-51.8	27.7	100.0	97.9	93.0	23.7	39	39	NP	SM	A-2-4 (0)
B-13	SS-21	95.3-96.8	20.5	98.1	88.7	62.4	30.6	32	29	3	SM	A-2-4 (0)
B-14	SS-3	4-5.5	22.1	92.1	88.0	54.0	38.8	40	27	13	SM	A-6 (1)
B-14	SS-10	30-31.5	31.5	100.0	96.9	66.2	40.6	37	33	4	SM	A-4 (0)
B-14	SS-14	50-51.5	19.8	97.9	87.3	47.5	20.1	31	31	NP	SM	A-1-b (0)
B-14	SS-17	65-66.5	25.8	99.9	94.5	61.3	29.1	34	27	7	SM	A-2-4 (0)
B-15	SS-1	0-1.5	20.9	99.1	96.5	69.0	24.9	33	20	13	SC	A-2-6 (1)
B-15	SS-3	5-6.5	24.6	99.7	94.8	64.7	22.6	NP	NP	NP	SM	A-2-4 (0)
B-15	SS-5	10-11.5	12.9	86.6	73.8	43.1	9.1	NP	NP	NP	SP-SM	A-1-b (0)
B-16	SS-2	2.5-4	23.3	94.4	88.4	72.7	34.7	35	26	9	SM	A-2-4 (0)
B-16	SS-3	5-6.5	24.3	97.6	92.0	69.9	32.7	27	25	2	SM	A-2-4 (0)
B-16	SS-4	7.5-9	22.3	94.0	86.9	65.9	39.0	44	26	18	SC	A-7-6 (3)
B-16	SS-5	10-11.5	20.7	59.8	58.1	42.5	25.6	47	27	20	GC	A-2-7 (2)
B-16	SS-8	25-26.5	34.8	99.7	97.2	74.6	23.3	35	35	NP	SM	A-2-4 (0)
B-16	SS-14	55-56.5	14.0	99.6	96.2	75.4	32.0	NP	NP	NP	SM	A-2-4 (0)
B-16	SS-19	80-81.5	15.2	96.5	83.5	53.4	18.5	21	19	2	SM	A-2-4 (0)
B-17	SS-1	0-1.5	16.3	92.3	85.2	68.3	35.2	25	21	4	SM	A-4 (0)
B-17	SS-2	2.5-4	19.5	94.3	89.9	83.8	49.8	29	26	3	SM	A-4 (0)
B-17	SS-5	10-11.5	23.5	99.5	90.3	59.0	30.9	43	41	2	SM	A-2-5 (0)
B-17	SS-11	40-41.5	23.9	98.1	91.9	73.5	28.7	30	25	5	SM	A-2-4 (0)
B-17	SS-15	60-61.5	13.7	89.4	73.1	52.6	21.3	NA	NA	NA	SM	A-2-4 (0)
B-17	SS-17	70-71.5	17.7	98.5	85.4	65.6	33.6	25	22	3	SM	A-2-4 (0)
B-17	SS-18	75-76.5	18.1	96.6	91.2	71.9	25.9	NP	NP	NP	SM	A-2-4 (0)
B-17	SS-21	90-91.5	12.5	100.0	98.3	60.5	17.7	NP	NP	NP	SM	A-2-4 (0)
B-18	SS-1	0-1.5	9.8	89.2	86.2	60.9	28.6	33	20	13	SC	A-2-6 (1)
B-18	SS-3	4-5.5	20.2	98.3	92.7	63.7	34.8	36	26	10	SM	A-2-4 (0)
B-18	SS-7	15-16.5	25.4	97.0	92.7	64.0	34.8	45	25	20	SC	A-2-7 (2)
B-18	SS-8	20-21.5	16.0	73.8	64.8	43.9	18.9	NA	NA	NA	SM	A-1-b (0)
B-18	SS-9	25-26.5	15.5	99.5	97.7	66.3	30.3	31	18	13	SC	A-2-6 (1)
B-18	SS-12	40-41.5	47.5	100.0	100.0	77.7	41.5	49	46	3	SM	A-5 (0)
B-18	SS-17	65-66.5	22.0	99.3	91.6	51.1	16.1	NP	NP	NP	SM	A-2-4 (0)
B-18	SS-21	85-86.5	20.2	99.8	97.8	65.4	22.9	NA	NA	NA	SM	A-2-4 (0)
B-19	SS-1	0-1.5	16.5	98.8	94.8	67.3	33.3	35	25	10	SM	A-2-4 (0)
B-19	SS-3	4-5.5	26.2	99.7	97.7	74.5	47.1	53	34	19	SM	A-7-5 (6)
B-19	SS-5	8-9.5	22.0	99.3	96.8	66.9	37.0	34	19	15	SC	A-6 (1)
B-19	SS-10	30-31.5	24.2	98.2	82.3	38.0	17.9	40	29	11	SM	A-2-6 (0)
B-19	SS-14	50-51.5	16.9	100.0	99.9	61.3	18.7	NP	NP	NP	SM	A-2-4 (0)
B-19	SS-16	60-61.5	24.5	99.9	97.7	64.2	29.2	NP	NP	NP	SM	A-2-4 (0)
B-19	SS-19	75-76.5	16.9	100.0	97.1	63.4	25.2	NP	NP	NP	SM	A-2-4 (0)
B-19	SS-23	95-96.5	11.0	98.2	94.2	66.1	27.0	NA	NA	NA	SM	A-2-4 (0)
B-20	SS-1	0-1.5	14.7	97.0	90.5	71.7	35.5	33	31	2	SM	A-4 (0)
B-20	SS-2	2.5-4	10.0	100.0	98.7	84.6	33.3	NP	NP	NP	SM	A-2-4 (0)
B-20	SS-3	5-6.5	9.6	99.4	97.0	74.5	35.5	26	22	4	SM	A-4 (0)
B-20	SS-6	15-16.5	14.6	99.9	96.4	74.7	46.2	33	15	18	SC	A-6 (4)
B-20	SS-8	25-26.5	19.2	95.5	78.1	41.3	14.2	NP	NP	NP	SM	A-1-b (0)
B-21	SS-1	0-1.5	19.7	96.6	91.2	70.0	36.4	35	30	5	SM	A-4 (0)
B-21	SS-4	7.5-9	22.9	97.2	90.1	64.8	34.3	35	30	5	SM	A-2-4 (0)
B-21	SS-6	15-16.5	27.1	94.8	88.3	65.2	34.0	36	31	5	SM	A-2-4 (0)
B-21	SS-7	20-21.5	25.4	87.3	82.0	65.9	34.4	39	30	9	SM	A-2-4 (0)
B-21	SS-9	30-31.5	11.1	41.0	30.6	18.5	5.8	NP	NP	NP	GW-GM	A-1-a (0)
B-21	SS-10	35-36.5	20.2	96.5	78.1	35.4	14.1	NP	NP	NP	SM	A-1-b (0)
B-21	SS-12	45-46.5	34.2	100.0	99.9	99.2	21.2	38	35	3	SM	A-2-4 (0)
B-21	SS-16	65-66.5	14.5	98.1	81.8	50.6	17.4	NP	NP	NP	SM	A-2-4 (0)
B-22	SS-2	2-3.5	19.8	90.6	86.3	74.3	61.1	36	24	12	CL	A-6 (6)
B-22	SS-5	8-9.5	25.2	99.6	97.6	78.3	55.5	41	24	17	CL	A-7-6 (7)
B-22	SS-8	20-21.5	21.4	98.6	96.2	73.9	40.0	32	32	NP	SM	A-4 (0)

B-22	SS-9	25-26.5	18.7	88.1	78.6	55.8	24.9	NP	NP	NP	SM	A-2-4 (0)
B-22	SS-10	30-31.5	24.5	99.6	96.8	73.8	40.0	32	32	NP	SM	A-4 (0)
B-22	SS-11	35-36.5	28.0	99.5	97.7	77.2	58.0	54	50	4	MH	A-5 (4)
B-22	SS-13	45-46.5	29.9	100.0	97.8	63.1	38.3	45	45	NP	SM	A-5 (0)
B-22	SS-17	65-66.5	26.8	100.0	97.6	68.4	41.5	35	29	6	SM	A-4 (0)
B-22	SS-22	90-91.5	30.7	99.5	91.8	65.0	36.5	44	38	6	SM	A-5 (0)
B-23	SS-3	5-6.5	27.3	93.3	91.7	79.0	50.0	40	32	8	ML	A-4 (2)
B-23	SS-7	20-21.5	14.4	99.1	91.8	46.0	13.9	27	24	3	SM	A-1-b (0)
B-23	SS-12	45-46.5	27.1	99.4	93.0	59.1	29.1	43	40	3	SM	A-2-5 (0)
B-23	SS-16	65-66.5	24.9	99.0	80.8	50.8	37.3	39	33	6	SM	A-4 (0)
B-23	SS-19	80-81.5	28.5	100.0	99.9	97.8	34.8	37	34	3	SM	A-2-4 (0)
B-23	SS-21	90-91.5	26.9	95.9	84.5	66.3	41.7	34	31	3	SM	A-4 (0)
B-24	SS-2	2.5-4	20.6	94.2	87.9	72.5	37.0	32	26	6	SM	A-4 (0)
B-24	SS-6	15-16.5	24.1	99.9	98.2	85.6	52.3	38	25	13	ML	A-6 (4)
B-24	SS-8	25-26.5	18.8	97.8	93.0	73.1	38.5	31	25	6	SM	A-4 (0)
B-24	SS-14	55-56.5	20.2	96.0	85.4	68.2	37.2	30	28	2	SM	A-4 (0)
B-24	SS-20	85-86.5	19.2	97.9	82.1	50.5	21.9	31	27	4	SM	A-2-4 (0)
B-24	SS-21	90-91.5	23.8	96.5	85.0	59.8	21.9	35	29	6	SM	A-2-4 (0)
B-25	SS-1	0-1.5	21.5	98.6	93.6	78.0	59.6	33	27	6	ML	A-4 (2)
B-25	SS-2	2.5-4	17.4	97.6	92.4	67.5	34.9	32	24	8	SM	A-2-4 (0)
B-25	SS-4	7.5-9	18.4	98.0	94.0	75.0	36.9	28	21	7	SC-SM	A-4 (0)
B-25	SS-6	15-16.5	23.4	98.8	95.1	76.8	37.5	37	26	11	SM	A-6 (1)
B-25	SS-8	25-26.5	26.3	99.2	95.0	74.8	37.8	36	21	15	SC	A-6 (2)
B-25	SS-10	35-36.5	17.5	99.9	98.5	71.5	26.5	NP	NP	NP	SM	A-2-4 (0)
B-25	SS-13	50-51.5	26.7	100.0	97.5	79.5	38.5	34	29	5	SM	A-4 (0)
B-25	SS-15	60-61.5	17.2	100.0	99.2	67.1	23.7	19	19	NP	SM	A-2-4 (0)
B-25	SS-16	65-66.5	25.8	99.6	96.9	74.7	41.0	35	29	6	SM	A-4 (0)
B-25	SS-18	75-76.5	17.7	92.9	86.5	50.4	5.4	28	28	NP	SP-SM	A-2-4 (0)
B-25	SS-21	90-91	14.1	99.3	91.8	73.8	27.2	NP	NP	NP	SM	A-2-4 (0)
B-26	SS-1	0-1.5	16.3	99.0	95.3	72.3	38.9	26	23	3	SM	A-4 (0)
B-26	SS-2	2-3.5	27.6	99.4	97.9	78.7	51.4	37	27	10	ML	A-4 (3)
B-26	SS-5	8-9.5	22.3	97.4	93.6	77.3	42.6	35	29	6	SM	A-4 (0)
B-26	SS-8	20-21.5	21.4	93.5	89.9	69.9	47.4	44	26	18	SC	A-7-6 (5)
B-26	SS-16	60-61.5	35.3	100.0	97.1	64.7	38.8	44	39	5	SM	A-5 (0)
B-26	SS-20	80-81.5	28.0	99.4	89.9	59.6	42.5	37	37	NP	SM	A-4 (0)
B-27	SS-2	2-3.5	18.0	97.1	90.2	69.2	30.8	30	28	2	SM	A-2-4 (0)
B-27	SS-4	6-7.5	17.0	91.4	87.7	75.5	39.7	28	23	5	SM	A-4 (0)
B-27	SS-6	10-11.5	11.7	100.0	98.5	76.6	29.5	NP	NP	NP	SM	A-2-4 (0)
B-27	SS-15	54.2-55.7	19.6	96.2	91.0	70.0	22.1	29	22	7	SC-SM	A-2-4 (0)
B-27	SS-18	69.2-70.7	18.1	64.7	48.5	31.5	11.4	30	25	5	SW-SM	A-1-b (0)
B-27	SS-19	74.2-75.7	13.3	99.5	88.6	62.0	22.4	NP	NP	NP	SM	A-2-4 (0)
B-28	SS-1	0-1.5	10.1	86.5	79.8	54.3	27.3	28	23	5	SM	A-2-4 (0)
B-28	SS-2	2-3.5	22.4	99.2	96.6	64.7	24.1	39	26	13	SM	A-2-6 (1)
B-28	SS-4	6-7.5	18.0	91.6	85.6	55.0	27.2	34	19	15	SC	A-2-6 (1)
B-28	SS-6	10-11.5	21.4	98.7	93.4	63.5	35.0	50	29	21	SM	A-2-7 (2)
B-28	SS-9	25-26.5	28.0	100.0	99.3	78.0	41.8	32	24	8	SM	A-4 (1)
B-28	SS-11	34.8-36.3	12.5	64.3	53.9	36.4	20.5	NA	NA	NA	SM	A-1-b (0)
B-29	SS-2	2-3.5	18.0	93.7	85.0	64.1	32.5	31	28	3	SM	A-2-4 (0)
B-29	SS-3	4-5.5	23.8	72.6	65.7	50.3	29.6	41	25	16	SC	A-2-7 (1)
B-29	SS-5	8-9.5	22.0	98.8	93.3	75.7	40.5	36	28	8	SM	A-4 (0)
B-29	SS-7	15-16.5	22.6	99.3	96.3	71.9	43.5	35	21	14	SC	A-6 (3)
B-29	SS-8	20-21.5	26.4	93.9	88.0	60.3	33.1	37	32	5	SM	A-2-4 (0)
B-29	SS-10	30-31.5	20.6	94.1	87.7	59.8	32.4	35	27	8	SM	A-2-4 (0)
B-29	SS-11	35-36.5	23.8	99.3	98.2	83.7	58.0	50	30	20	MH	A-7-5 (10)
B-29	SS-12	40-41.5	27.9	97.5	94.9	77.8	48.0	40	28	12	SM	A-6 (3)
B-29	SS-14	50-51.5	29.4	100.0	97.5	64.6	45.8	40	33	7	SM	A-4 (1)
B-29	SS-16	60-61.5	20.6	99.7	94.6	60.5	28.3	31	28	3	SM	A-2-4 (0)
B-29	SS-18	70-71.5	35.9	99.6	92.1	48.7	33.8	52	38	14	SM	A-2-7 (1)
B-29	SS-21	85-86.5	24.8	99.2	96.0	60.1	23.4	NP	NP	NP	SM	A-2-4 (0)
B-29	SS-23	95-96.5	21.3	98.4	80.3	49.2	32.6	32	28	4	SM	A-2-4 (0)
B-29	SS-24	100-101.5	23.6	100.0	99.7	71.7	29.7	32	30	2	SM	A-2-4 (0)
B-30	SS-2	2.5-4	36.9	100.0	100.0	83.9	31.9	61	48	13	SM	A-2-7 (1)
B-30	SS-9	30-31.5	34.5	100.0	99.7	85.0	18.8	48	41	7	SM	A-2-5 (0)
B-30	SS-13	50-51.1	25.0	99.7	92.8	55.0	19.4	36	33	3	SM	A-2-4 (0)
B-31	SS-2	2-3.5	22.7	98.6	94.0	70.8	47.9	37	21	16	SC	A-6 (4)
B-31	SS-11	35-36.5	16.8	99.0	94.6	55.1	26.0	32	29	3	SM	A-2-4 (0)

B-31	SS-13	45-46.5	15.7	37.7	27.3	14.7	6.2	NP	NP	NP	GW-GM	A-1-a (0)
B-32	SS-3	6-7.5	17.9	98.1	94.6	76.2	45.2	37	25	12	SM	A-6 (3)
B-32	SS-9	28.5-30	23.8	99.6	96.8	76.2	43.0	43	28	15	SM	A-7-6 (3)
B-32	SS-10	33.5-35	25.3	95.8	92.4	71.0	44.8	40	21	19	SC	A-6 (5)
B-32	SS-13	48.5-50	24.3	100.0	97.1	80.2	48.1	40	30	10	SM	A-4 (3)
B-32	SS-19	78.5-80	19.9	100.0	98.5	75.4	41.7	25	22	3	SM	A-4 (0)
B-32	SS-21	88.5-90	22.4	100.0	100.0	96.6	45.2	33	20	13	SC	A-6 (3)
B-33	SS-6	13.5-15	16.5	97.3	93.8	76.7	37.7	NP	NP	NP	SM	A-4 (0)
B-33	SS-12	43.5-45	19.2	99.1	95.3	58.6	22.6	19	18	1	SM	A-2-4 (0)
B-33	SS-14	53.5-55	23.4	99.7	94.5	59.8	42.5	36	33	3	SM	A-4 (0)
B-34	SS-1	2-3.5	15.4	98.7	95.5	77.3	40.1	30	28	2	SM	A-4 (0)
B-34	SS-2	4-5.5	11.5	97.2	90.0	59.3	23.6	28	25	3	SM	A-2-4 (0)
B-34	SS-6	14.4-15.9	15.8	95.4	90.2	70.0	40.0	34	29	5	SM	A-4 (0)
B-34	SS-9	29.4-30.9	16.4	97.9	94.7	68.3	37.6	36	30	6	SM	A-4 (0)
B-34	SS-11	39.4-40.9	18.9	97.4	84.6	39.0	10.6	54	34	20	SW-SM	A-2-7 (2)
B-34	SS-12	44.4-45.9	28.4	99.8	95.8	58.0	26.8	NP	NP	NP	SM	A-2-4 (0)
B-35	SS-2	4-5.5	22.0	100.0	96.0	75.4	47.2	38	20	18	SC	A-6 (5)
B-35	SS-3	6-7.5	14.5	98.9	96.6	69.3	43.0	35	19	16	SC	A-6 (3)
B-35	SS-6	14.4-15.9	24.7	98.9	92.3	64.2	45.4	55	31	24	SM	A-7-5 (7)
B-35	SS-10	34.4-35.9	37.0	99.4	96.7	72.6	43.9	40	35	5	SM	A-4 (0)
B-35	SS-13	49.4-50.9	27.7	100.0	98.6	74.0	39.7	37	34	3	SM	A-4 (0)
B-36	SS-1	2-3.5	25.1	100.0	97.0	73.3	51.7	45	26	19	CL	A-7-6 (7)
B-36	SS-3	6-7.5	24.6	100.0	98.1	73.1	46.8	59	37	22	SM	A-7-5 (7)
B-36	SS-5	10-11.5	26.2	100.0	99.4	80.9	49.3	52	42	10	SM	A-5 (4)
B-36	SS-7	19.7-21.2	40.8	100.0	96.7	68.2	31.2	NP	NP	NP	SM	A-2-4 (0)
B-37	SS-4	8-9.5	14.5	92.5	85.7	52.6	28.8	27	22	5	SM	A-2-4 (0)
B-37	SS-7	18.5-20	15.7	97.2	93.4	70.6	27.4	NP	NP	NP	SM	A-2-4 (0)
B-37	SS-9	28.5-30	15.0	90.3	82.9	55.6	19.1	NP	NP	NP	SM	A-2-4 (0)
B-38	SS-2	4-5.5	7.3	72.6	70.3	41.3	20.7	NP	NP	NP	SM	A-1-b (0)
B-38	SS-3	6-7.5	7.7	95.9	89.7	43.3	15.4	NP	NP	NP	SM	A-1-b (0)
B-38	SS-6	13.5-13.8	1.7	8.2	7.6	4.8	1.2	NA	NA	NA	GP	A-1-a (0)
B-38	SS-7	18-20	5.8	56.7	49.3	25.0	10.3	NP	NP	NP	SP-SM	A-1-a (0)
B-39	ST-1	4-5.3	10.4	99.8	98.5	64.9	34.0	27	16	11	SC	A-2-6 (0)
B-39	SS-2	6-7.5	20.2	99.5	97.6	69.0	44.1	49	23	26	SC	A-7-6 (7)
B-39	ST-2	8-9.2	19.4	96.6	92.1	71.6	50.1	47	25	22	CL	A-7-6 (8)
B-39	SS-4	14.4-15.9	23.9	99.8	98.4	69.7	39.2	38	33	5	SM	A-4 (0)
B-39	SS-6	24.4-25.9	38.6	100.0	98.7	77.2	43.6	42	38	4	SM	A-5 (0)
B-39	SS-10	44.4-45.9	33.4	100.0	99.3	72.4	33.4	46	43	3	SM	A-2-5 (0)
B-39	SS-12	54.4-55.9	23.3	99.9	92.8	57.2	39.3	39	33	6	SM	A-4 (0)
B-40	SS-2	4-5.5	24.3	100.0	97.9	69.3	41.3	45	25	20	SC	A-7-6 (4)
B-40	ST-1	6-7.5	30.4	100.0	98.4	69.8	34.9	59	41	18	SM	A-2-7 (2)
B-40	ST-2	8-9.2	26.0	99.7	98.3	70.2	41.7	50	34	16	SM	A-7-5 (3)
B-40	ST-3	10-11.3	25.5	100.0	100.0	77.0	44.3	49	39	10	SM	A-5 (2)
B-40	SS-3	14.6-16.1	22.6	100.0	99.3	72.6	41.3	40	36	4	SM	A-4 (0)
B-40	SS-6	29.6-31.1	17.7	90.2	82.0	50.6	19.1	NP	NP	NP	SM	A-2-4 (0)
B-40	SS-9	44.6-46.1	20.2	99.0	90.5	53.9	21.7	NP	NP	NP	SM	A-2-4 (0)
B-41	SS-2	4-5.5	14.9	99.7	95.2	58.6	21.8	NP	NP	NP	SM	A-2-4 (0)
B-41	SS-4	8-9.5	5.7	91.4	71.5	35.8	13.4	NP	NP	NP	SM	A-1-b (0)
B-42	SS-2	4-5.5	18.6	99.2	96.6	62.2	25.7	34	26	8	SM	A-2-4 (0)
B-42	SS-6	13.5-15	27.1	94.0	79.2	43.2	24.3	41	32	9	SM	A-2-5 (0)
B-42	SS-9	28.5-30	26.7	99.9	92.9	54.2	29.8	43	37	6	SM	A-2-5 (0)
B-43	ST-1	2-2.9	17.5	97.6	92.7	57.5	31.8	39	23	16	SC	A-2-6 (1)
B-43	SS-1	4-5.5	26.0	97.9	95.3	63.8	38.4	45	30	15	SM	A-7-6 (2)
B-43	SS-5	13.5-15	23.9	99.1	95.8	59.9	38.2	35	27	8	SM	A-4 (0)
B-43	SS-8	28.5-30	14.4	99.1	95.8	79.0	43.3	30	25	5	SM	A-4 (0)
B-44	SS-1	2-3.5	8.3	42.7	35.4	24.9	14.6	31	23	8	GC	A-2-4 (0)
B-44	ST-1	4-5	26.9	99.9	99.5	67.7	43.5	52	38	14	SM	A-7-5 (3)
B-44	SS-2	6-7.5	22.2	99.4	98.3	78.4	62.8	57	37	20	MH	A-7-5 (13)
B-44	ST-2	8-8.9	21.6	100.0	98.6	72.6	46.1	53	41	12	SM	A-7-5 (4)
B-44	SS-3	10-11.5	20.4	100.0	99.2	70.5	44.7	52	38	14	SM	A-7-5 (4)
B-44	SS-6	24.5-26	17.1	100.0	98.7	70.5	32.2	44	32	12	SM	A-2-7 (0)
B-44	SS-10	44.5-46	27.5	97.6	88.6	60.8	42.7	45	36	9	SM	A-5 (1)
B-45	SS-1	2-3.5	13.5	86.4	77.7	50.6	15.5	26	26	NP	SM	A-2-4 (0)
B-46	SS-1	2-3.5	27.3	98.9	95.5	71.9	51.7	52	26	26	CH	A-7-6 (10)
B-46	ST-1	4-4.8	26.2	99.8	98.7	60.2	32.4	49	32	17	SM	A-2-7 (1)
B-46	ST-2	8-9.5	28.7	100.0	99.9	70.7	36.6	49	45	4	SM	A-5 (0)

B-46	SS-3	10-11.5	22.4	100.0	98.4	74.0	43.8	44	34	10	SM	A-5 (2)
B-46	SS-6	24.7-26.1	17.7	97.8	90.8	56.6	21.8	NP	NP	NP	SM	A-2-4 (0)
B-47	SS-4	8-9.5	24.9	100.0	99.0	78.0	48.1	43	34	9	SM	A-5 (2)
B-47	SS-9	28.5-30	33.5	100.0	98.6	69.9	39.4	41	36	5	SM	A-5 (0)
B-49	SS-1	2-3.5	19.3	94.1	89.3	70.9	49.3	44	44	NP	SM	A-5 (0)
B-49	ST-1	4-4.8	37.0	100.0	98.8	74.1	48.2	69	46	23	SM	A-7-5 (9)
B-49	ST-2	8-9.3	24.1	100.0	99.7	79.5	16.0	34	30	4	SM	A-2-4 (0)
B-49	SS-4	15-16.5	32.3	100.0	99.9	87.8	20.9	NP	NP	NP	SM	A-2-4 (0)
B-49	Bag-1	0-21.5	23.0	98.8	97.2	85.6	43.9	45	34	11	SM	A-7-5 (2)
B-50	SS-2	4-5.5	15.5	99.7	97.7	70.0	48.6	49	28	21	SM	A-7-6 (7)
B-50	SS-4	8-9.5	22.3	99.8	97.9	80.7	62.6	43	27	16	ML	A-7-6 (9)
B-50	SS-5	10-11.5	15.6	87.1	80.2	54.0	33.1	36	25	11	SM	A-2-6 (0)
B-50	SS-8	25-26.5	24.1	99.9	96.3	60.0	32.5	33	28	5	SM	A-2-4 (0)
B-50	SS-10	35-36.5	30.7	97.4	89.6	63.8	30.8	36	28	8	SM	A-2-4 (0)
B-51	ST-1	2-2.5	18.0	97.9	94.3	63.9	31.1	32	27	5	SM	A-2-4 (0)
B-51	ST-2	6-7.2	17.2	100.0	96.8	66.0	42.5	38	30	8	SM	A-4 (1)
B-51	SS-2	8-9.5	21.2	97.6	95.9	77.1	51.8	51	40	11	MH	A-7-5 (5)
B-51	SS-5	19.5-21	25.2	99.3	93.0	60.6	26.9	NP	NP	NP	SM	A-2-4 (0)
B-51	Bag-1	0-36	25.0	99.8	97.5	68.8	37.0	33	24	9	SM	A-4 (0)
B-52	SS-1	2-3.5	21.9	92.7	88.4	58.3	26.7	NP	NP	NP	SM	A-2-4 (0)
B-52	SS-2	4-4.9	7.3	39.3	33.2	20.4	6.6	NP	NP	NP	GP-GM	A-1-a (0)
B-53	ST-1	2-2.8	10.0	100.0	99.5	64.5	27.8	30	18	12	SC	A-2-6 (0)
B-53	SS-2	6-7.5	17.4	91.0	89.0	61.8	32.4	34	19	15	SC	A-2-6 (1)
B-53	ST-2	8-9.3	34.6	99.7	94.7	68.0	24.7	NP	NP	NP	SM	A-2-4 (0)
B-54	SS-1	2-3.5	21.8	99.8	98.8	72.4	50.3	59	34	25	MH	A-7-5 (10)
B-54	ST-1	4-5.7	22.2	100.0	99.4	68.6	48.9	50	35	15	SM	A-7-5 (5)
B-54	ST-2	8-9.5	22.8	97.5	94.8	66.6	51.4	47	38	9	ML	A-5 (4)
B-54	SS-3	10-11.5	21.4	100.0	99.7	66.0	47.0	46	37	9	SM	A-5 (2)
B-54	SS-7	29.5-31	26.8	98.7	92.7	62.7	26.0	NP	NP	NP	SM	A-2-4 (0)
B-54	Bag-1	0-41	18.1	99.4	98.1	67.9	48.5	46	30	16	SM	A-7-5 (5)
B-55	SS-2	4-5.5	14.6	66.4	60.6	36.7	17.1	NP	NP	NP	SM	A-1-b (0)
B-55	SS-4	8-9.5	29.0	96.8	93.1	77.8	26.1	44	35	9	SM	A-2-5 (0)
B-55	SS-5	10-11.5	24.4	90.3	86.7	72.4	29.2	44	37	7	SM	A-2-5 (0)
B-56	Bag-1	0-10	16.5	99.9	98.0	71.1	52.4	40	24	16	CL	A-6 (6)
B-56	Bag-2	10-35	17.0	100.0	98.0	71.9	49.3	34	24	10	SM	A-4 (2)
B-56	SS-2	4-5.5	19.4	100.0	98.7	73.7	50.4	60	34	26	MH	A-7-5 (10)
B-56	SS-7	20-21.5	16.8	99.9	97.0	63.8	34.3	34	29	5	SM	A-2-4 (0)
B-56	SS-9	30-31.5	23.5	100.0	98.8	64.8	36.3	35	27	8	SM	A-4 (0)
B-57	SS-1	2-3.5	7.6	97.3	91.1	55.8	18.0	32	26	6	SM	A-2-4 (0)
B-57	SS-2	4-5.5	9.1	97.9	88.8	57.7	21.9	35	27	8	SM	A-2-4 (0)
B-57	SS-4	8-9.5	6.3	98.7	95.2	69.6	30.8	29	23	6	SM	A-2-4 (0)
B-58	SS-1	2-3.5	34.4	100.0	99.7	83.6	19.7	66	46	20	SM	A-2-7 (2)
B-58	SS-2	4-5.5	35.7	100.0	100.0	82.1	27.0	NP	NP	NP	SM	A-2-4 (0)
B-58	SS-4	8-9.5	42.6	100.0	100.0	75.8	18.5	59	55	4	SM	A-2-5 (0)
B-59	SS-2	4-5.5	8.4	98.5	89.7	50.7	19.4	NP	NP	NA	SM	A-2-4 (0)
B-59	SS-6	13.5-15	17.3	100.0	94.4	61.9	24.2	26	23	3	SM	A-2-4 (0)
B-59	SS-8	23.5-25	12.6	98.9	95.6	80.3	38.2	30	26	4	SM	A-4 (0)
B-59	SS-10	33.5-35	28.6	98.4	95.5	83.0	48.3	33	26	7	SM	A-4 (1)
B-59	Bag-1	0-40	4.3	95.6	82.3	47.5	20.3	32	27	5	SM	A-1-b (0)
B-60	SS-3	6-7.5	24.5	98.7	97.0	65.6	33.0	41	36	5	SM	A-2-5 (0)
B-61	ST-1	2-3.3	20.9	96.2	92.1	66.9	33.8	39	34	5	SM	A-2-4 (0)
B-61	SS-1	4-5.5	20.2	97.2	91.8	67.6	43.5	51	32	19	SM	A-7-5 (5)
B-61	SS-6	18.5-20	20.2	99.5	92.9	63.2	25.9	34	20	14	SC	A-2-6 (1)
B-62	SS-3	6-7.5	30.3	100.0	97.4	84.6	70.1	39	31	8	ML	A-4 (6)
B-63	SS-3	6-7.5	16.5	100.0	99.6	80.2	48.0	39	28	11	SM	A-6 (3)
B-63	SS-8	23.5-25	25.7	100.0	99.6	70.5	41.1	43	34	9	SM	A-5 (1)
B-63	SS-9	28.5-30	18.7	100.0	99.3	84.9	52.2	39	33	6	ML	A-4 (2)
B-64	ST-1	4-5.2	23.9	99.8	99.4	69.8	38.7	38	33	5	SM	A-4 (0)
B-64	SS-2	6-7.5	27.2	99.8	98.0	81.0	51.6	43	34	9	ML	A-5 (3)
B-64	ST-2	8-9.5	29.7	100.0	99.9	81.5	38.5	53	47	6	SM	A-5 (0)
B-64	SS-7	29.3-30.8	28.4	100.0	98.8	78.6	35.3	49	45	4	SM	A-5 (0)
B-65	SS-2	4-5.5	21.3	97.6	92.2	59.0	23.0	NP	NP	NP	SM	A-2-4 (0)
B-65	ST-1	6-6.8	18.0	99.9	95.4	55.4	15.5	26	23	3	SM	A-2-4 (0)
B-65	ST-2	10-11.4	39.1	100.0	99.9	79.2	35.7	45	42	3	SM	A-5 (0)
B-65	Bag-1	0-15	25.3	99.3	93.6	59.8	31.3	36	26	10	SM	A-2-4 (0)
B-66	SS-1	2-3.5	25.2	97.1	91.9	55.7	23.8	51	26	25	SC	A-2-7 (3)

B-66	SS-3	6-7.5	11.5	80.7	70.4	45.0	17.1	NP	NP	NP	SM	A-1-b (0)
B-66	SS-5	10-11.5	15.5	96.3	86.2	45.7	10.7	NP	NP	NP	SW-SM	A-1-b (0)
B-67	SS-1	2-3.5	33.4	97.6	89.0	51.6	16.5	39	20	19	SC	A-2-6 (2)
B-67	ST-1	4-4.7	21.5	99.8	96.5	55.8	29.6	39	34	5	SM	A-2-4 (0)
B-67	SS-3	8-9.5	16.1	99.0	89.7	58.4	28.2	NP	NP	NP	SM	A-2-4 (0)
B-67	SS-4	10-11.5	9.7	98.3	88.9	55.0	20.5	NP	NP	NP	SM	A-2-4 (0)
B-67	SS-5	14.3-15.1	5.3	70.6	61.3	42.0	16.2	NP	NP	NP	SM	A-1-b (0)
B-67	SS-6	29.8-30.1	15.1	89.4	81.9	53.4	19.0	NP	NP	NP	SM	A-2-4 (0)
B-68	ST-1	2-3.5	23.7	99.8	97.2	44.9	8.3	51	31	20	SP-SM	A-2-7 (2)
B-68	SS-1	4-5.5	29.2	100.0	98.7	76.7	56.2	57	37	20	MH	A-7-5 (10)
B-68	ST-2	6-7.3	33.2	100.0	99.8	76.2	32.2	49	42	7	SM	A-2-5 (0)
B-68	SS-2	8-9.5	32.5	99.3	95.9	72.9	36.5	41	36	5	SM	A-5 (0)
B-68	SS-3	10-11.5	27.7	100.0	97.0	74.3	40.9	41	31	10	SM	A-5 (1)
B-68	Bag-1	0-16	29.9	99.5	97.6	95.7	94.1	52	33	19	MH	A-7-5 (23)
B-70	SS-1	2-3.5	8.1	98.6	97.6	69.9	21.0	19	18	1	SM	A-2-4 (0)
B-70	SS-2	4-5.5	22.7	95.9	87.4	49.9	26.5	41	33	8	SM	A-2-5 (0)
B-70	ST-1	6-6.6	30.8	100.0	100.0	89.4	17.8	39	39	NP	SM	A-2-4 (0)
B-70	SS-5	13.5-15	48.1	99.6	98.1	82.1	27.8	63	39	24	SM	A-2-7 (3)
B-70	SS-9	33.5-35	35.1	100.0	98.8	73.9	21.7	NP	NP	NP	SM	A-2-4 (0)
B-71	SS-1	2-3.5	19.0	73.6	67.3	41.8	13.9	27	27	NP	SM	A-1-b (0)
B-71	SS-3	6-7.5	33.0	96.8	93.7	55.2	23.8	NP	NP	NP	SM	A-2-4 (0)
B-71	SS-7	20-21.5	20.0	99.8	96.2	54.9	22.0	NP	NP	NP	SM	A-2-4 (0)
B-72	SS-1	2-3.5	26.2	100.0	97.9	63.6	26.2	40	25	15	SC	A-2-6 (1)
B-72	SS-3	6-7.5	12.9	99.9	98.8	66.4	27.6	NP	NP	NP	SM	A-2-4 (0)
B-72	SS-6	13.5-15	18.8	100.0	99.3	66.1	32.8	32	26	6	SM	A-2-4 (0)
B-73	SS-2	4-5.5	16.4	99.6	96.6	65.8	35.5	27	26	1	SM	A-4 (0)
B-73	SS-6	13.5-15	15.0	100.0	96.8	60.8	28.4	NP	NP	NP	SM	A-2-4 (0)
B-73	SS-8	23.5-25	13.7	96.9	92.2	68.0	30.0	NP	NP	NP	SM	A-2-4 (0)
B-74	ST-1	4-5.3	33.1	99.7	99.2	87.0	50.9	30	23	7	ML	A-4 (1)
B-74	SS-2	6-7.5	31.0	100.0	99.2	88.4	66.4	33	22	11	CL	A-6 (6)
B-74	SS-4	10-11.5	30.0	100.0	99.5	54.7	27.1	21	18	3	SM	A-2-4 (0)
B-74	SS-6	18.5-20	23.4	96.2	88.3	45.4	18.9	31	27	4	SM	A-1-b (0)
B-74	SS-7	23.5-25	16.1	99.8	92.9	52.3	21.3	33	33	NP	SM	A-2-4 (0)



Moisture Data

Project Name : I-85/I-385 Interchange

(AASHTO T255-T265 / ASTM C566-D2216)

Location : Greenville County, South Carolina

Job Number : 08195-01

Project Job No. : 08195-01

Natural
Moisture
Content

Soil No.	Boring No.	Station & Offset	Sample No.	Depth	Description of Soil	pH	(%)	
153	B-1		SS-1	0.0	1.5	Brown Silty Sand	N	16.2
154			SS-2	2.0	3.5	Red & Brown Clayey Sand	N	
154			SS-3	4.0	5.5	Red & Brown Clayey Sand	W	31.2
155			SS-4	6.0	7.5	Red & Brown Silty Sand	N	22.7
156			SS-5	8.0	9.5	Brown Silty Sand	N	
156			SS-6	10.0	11.5	Brown Silty Sand	N	25.5
156			SS-7	15.0	16.5	Brown & Gray Silty Sand	N	
156			SS-8	20.0	21.5	Gray, Red & Brown Silty Sand	N	
157			SS-9	25.0	26.5	Red & Brown Silty Sand with Gravel	N	25.1
158	B-2		SS-1	0.0	1.5	Brown Silty Sand	N	12.2
159			SS-2	2.0	3.5	Red Clayey Sand	N	
159			SS-3	4.0	5.5	Brown & Red Clayey Sand	N	
159			SS-4	6.0	7.5	Gray & Brown Clayey Sand	N	
159			SS-5	8.0	9.5	Gray & Brown Clayey Sand	N	17.4
159			SS-6	10.0	11.5	Gray, Brown & Red Clayey Sand	N	
159			SS-7	15.0	16.5	Red & Tan Clayey Sand	N	
160			SS-8	20.0	21.5	White & Tan Silty Sand	N	
160			SS-9	25.0	26.5	White & Tan Silty Sand	N	
160			SS-10	30.0	31.5	White Silty Sand	N	
160			SS-11	35.0	36.5	White & Brown Silty Sand	N	
160			SS-12	40.0	41.5	Tan Silty Sand	N	34.2
160			SS-13	45.0	46.5	White Silty Sand	N	
160			SS-14	50.0	51.5	White Silty Sand	N	
161			SS-15	55.0	56.5	Brown Silty Sand	N	68.2
162			SS-16	60.0	61.5	Brown & Tan Silty Sand	N	
162			SS-17	65.0	66.5	Tan Silty Sand	N	
162			SS-18	70.0	71.5	Tan Silty Sand	N	
162			SS-19	75.0	76.5	Tan Silty Sand	N	
162			SS-20	80.0	81.5	Tan Silty Sand	N	19.6
162			SS-21	85.0	86.5	Tan Silty Sand	N	
			SS-22	90.0	91.5	No Recovery		
142	B-3		SS-1	0.0	1.5	Red & Brown Clayey Sand	N	16.0
143			SS-2	2.0	3.5	Brown Silty Sand	N	24.2
144			SS-3	4.0	5.5	Brown Silty Sand	N	
144			SS-4	6.0	7.5	Brown Silty Sand	N	19.9
145			SS-5	8.0	9.5	Brown Silty Sand	N	
145			SS-6	10.0	11.5	Brown Silty Sand	W	
145			SS-7	15.0	16.5	Brown Silty Sand	N	17.8
145			SS-8	20.0	21.5	Brown & White Silty Sand	N	
145			SS-9	25.0	26.5	Brown & White Silty Sand	N	
146			SS-10	30.0	31.5	Brown & White Silty Sand	N	
146			SS-11	35.0	36.5	Brown Silty Sand	N	16.6
146			SS-12	40.0	41.5	Brown & White Silty Sand	N	
146			SS-13	45.0	46.5	Brown & White Silty Sand	N	
146			SS-14	50.0	51.5	Brown & White Silty Sand	N	
146			SS-15	55.0	56.5	Brown & White Silty Sand	N	
146			SS-16	60.0	61.5	Brown & White Silty Sand	N	
147			SS-17	65.0	66.5	Brown & White Silty Sand with Gravel	N	18.2
147			SS-18	70.0	71.5	Brown & White Silty Sand with Gravel	N	
147			SS-19	75.0	76.5	Black & White Silty Sand with Gravel	N	
147			SS-20	80.0	81.5	Black & White Silty Sand with Gravel	N	
			SS-21	85.0	86.5	No Recovery		
			SS-22	90.0	91.5	No Recovery		
			SS-23	95.0	96.5	No Recovery		

147			SS-24	100.0	101.5	Black & White Silty Sand with Gravel	N	
147			SS-25	105.0	106.5	Black & White Silty Sand with Gravel	N	
100	B-4		SS-1	0.0	1.5	Brown & White Silty Sand with Gravel	N	10.7
101			SS-2	2.0	3.5	Red Clayey Sand	N	21.7
102			SS-3	4.0	5.5	Black & White Poorly Graded Sand with Silt and Gravel	N	7.8
103			SS-4	6.0	7.5	Red, Black & White Silty Sand	N	
103			SS-5	8.0	9.5	Red, Black & White Silty Sand	N	20.2
103			SS-6	10.0	11.5	Red, Black & White Silty Sand	N	
103			SS-7	15.0	16.5	Black, White, Orange & Red Silty Sand	N	
104			SS-8	20.0	21.5	Black, White & Tan Silty Sand	N	28.5
105			SS-9	25.0	26.5	Black & White Silty Sand with Gravel	N	14.4
148	B-5		SS-1	0.0	1.5	Brown Silty Sand	N	13.7
149			SS-2	2.0	3.5	Brown Well-Graded Sand with Silt and Gravel	N	
149			SS-3	4.0	5.5	Brown Well-Graded Sand with Silt and Gravel	N	
149			SS-4	6.0	7.5	Gray & Brown Well-Graded Sand with Silt and Gravel	N	13.7
149			SS-5	8.0	9.5	Black, White, Yellow & Brown Well-Graded Sand with Silt and Gravel	N	
149			SS-6	10.0	11.5	Brown Well-Graded Sand with Silt and Gravel	N	
150	B-6		SS-1	0.0	1.5	Brown & Red Clayey Sand	N	
150			SS-2	2.0	3.5	Tan Clayey Sand	N	
150			SS-3	4.0	5.5	Brown Clayey Sand	N	24.7
150			SS-4	6.0	7.5	Red & Tan Clayey Sand	N	
150			SS-5	8.0	9.5	Tan Clayey Sand	N	
150			SS-6	10.0	11.5	Tan Clayey Sand	N	
151			SS-7	15.0	16.5	Black & White Silty Sand	N	40.7
151			SS-8	20.0	21.5	Black & White Silty Sand	W	
152			SS-9	25.0	26.5	Brown Silty Sand	N	
152			SS-10	30.0	31.5	Brown Silty Sand	N	32.8
152			SS-11	35.0	36.5	Brown Silty Sand	W	
152			SS-12	40.0	41.5	Brown Silty Sand	N	
152			SS-13	45.0	46.5	Brown, Black & White Silty Sand	N	
163	B-7		SS-1	0.0	1.5	Brown Silty Sand	N	10.2
164			SS-2	2.0	3.5	Brown Silty Sand	N	
164			SS-3	4.0	5.5	Red & Brown Silty Sand	N	
164			SS-4	6.0	7.5	Brown Silty Sand	N	
164			SS-5	8.0	9.5	Red & Brown Silty Sand	N	27.1
165			SS-6	10.0	11.5	Brown Silty Sand	N	
165			SS-7	15.0	16.5	Brown Silty Sand	N	
165			SS-8	20.0	20.9	Brown & White Silty Sand	N	
165			SS-9	25.0	25.1	Brown Silty Sand	N	
165			SS-10	30.0	31.5	Black, White & Brown Silty Sand	N	18.4
165			SS-11	35.0	35.8	Tan & Brown Silty Sand	N	
165			SS-12	40.0	41.3	Brown Silty Sand	N	
165			SS-13	43.5	43.6	Brown Silty Sand	N	
17.1	B-8		SS-1	0.0	1.5	Red Silty Sand	N	15.4
18			SS-2	2.5	4.0	Red Silty Sand	W	31.7
19			SS-3	5.0	6.5	Red Silty Sand	W	30.8
20			SS-4	7.5	9.0	Tan Silty Sand	N	
20			SS-5	10.0	11.5	Tan & Gray Silty Sand	N	19.2
21			SS-6	15.0	16.0	Tan & Gray Poorly Graded Sand with Silt and Gravel	N	24.1
22			SS-7	20.0	20.5	Blue Poorly Graded Sand with Silt and Gravel	N	
22			SS-8	25.0	25.5	Blue & Gray Poorly Graded Sand with Silt and Gravel	N	9.9
22			SS-9	28.5	29.0	Tan & Gray Poorly Graded Sand with Silt and Gravel	N	
82	B-9		SS-1	0.0	1.5	Red Silty Sand	W	13.6
82			SS-2	2.5	4.0	Red Silty Sand	W	
83			SS-3	5.0	6.5	Red & Brown Silty Sand with Gravel	W	
83			SS-4	7.5	9.0	Red Silty Sand with Gravel	W	13.9
84			SS-5	10.0	11.5	Red & Tan Clayey Sand	N	
84			SS-6	15.0	16.5	Red, Gray & Tan Clayey Sand	W	28.2
84			SS-7	20.0	21.5	Tan Clayey Sand	W	
85			SS-8	25.0	26.5	Brown Silty Sand	W	
86			SS-9	30.0	31.5	Brown Silty Sand	N	39.6
86			SS-10	35.0	36.5	Brown Silty Sand	N	29.3

87			SS-11	40.0	41.5	Tan Poorly Graded Gravel with Silt and Sand	N	17.6
87			SS-12	45.0	46.5	Tan Poorly Graded Gravel with Silt and Sand	N	
88	B-10		SS-1	0.0	1.5	Red, Tan & Brown Clayey Sand with Gravel	W	
88			SS-2	2.5	4.0	Red, Tan & Brown Clayey Sand with Gravel	W	14.5
88			SS-3	5.0	6.5	Red, Tan & Brown Clayey Sand with Gravel	W	
89			SS-4	7.5	9.0	Gray & Red Sandy Lean Clay	N	
89			SS-5	10.0	11.5	Gray Sandy Lean Clay	W	19.8
89			SS-6	15.0	16.5	Gray Sandy Lean Clay	N	
90			SS-7	20.0	21.5	Tan & Brown Silty Sand	N	
90			SS-8	25.0	26.5	Tan & Brown Silty Sand	N	
90			SS-9	30.0	31.5	Tan, Brown & Red Silty Sand	N	24.6
90			SS-10	35.0	36.5	Brown & Orange Silty Sand	N	
91			SS-11	40.0	41.5	Brown & Orange Silty Sand	N	
91			SS-12	45.0	46.5	Brown & Orange Silty Sand	N	
91			SS-13	50.0	51.5	White Silty Sand	N	
91			SS-14	55.0	56.5	Tan & Dark Brown Silty Sand	N	17.3
91			SS-15	60.0	61.5	Tan & Brown Silty Sand	N	
91			SS-16	65.0	66.5	Brown, Tan & White Silty Sand	N	
91			SS-17	70.0	71.5	White Silty Sand	N	
92			SS-18	75.0	76.5	Red, Tan & Dark Brown Silty Sand with Gravel	N	13.8
48	B-11		SS-1	0.0	1.5	Red & Tan Silty Sand with Gravel	W	15.9
49			SS-2	2.5	4.0	Red & Tan Silty Sand	N	
49			SS-3	5.0	6.5	Red, Gray & Tan Silty Sand	N	
49			SS-4	7.5	9.0	Red & Tan Silty Sand	N	25.1
49			SS-5	10.0	11.5	Red & Tan Silty Sand	N	
49			SS-6	15.0	16.5	Red & Tan Silty Sand	N	
50			SS-7	20.0	21.5	Tan & Brown Silty Sand	N	
50			SS-8	25.0	26.5	Tan & White Silty Sand	N	
50			SS-9	30.0	31.5	Tan & White Silty Sand	W	
50			SS-10	35.0	36.5	White Silty Sand	N	
50			SS-11	40.0	41.5	White, Tan & Black Silty Sand	N	31.7
50			SS-12	45.0	46.5	White & Tan Silty Sand	N	
50			SS-13	50.0	51.5	White, Tan & Black Silty Sand	N	
50			SS-14	55.0	56.5	White, Tan & Black Silty Sand	N	
50			SS-15	60.0	61.5	White, Tan & Black Silty Sand	N	
50			SS-16	65.0	66.5	White, Tan & Black Silty Sand	N	
50			SS-17	70.0	71.5	White & Tan Silty Sand	N	
51			SS-18	75.0	76.5	Tan & White Silty Sand	N	
51			SS-19	80.0	81.5	Tan & White Silty Sand	N	18.3
51			SS-20	85.0	86.5	White, Black & Tan Silty Sand	N	
52			SS-21	90.0	91.5	Black & Tan Silty Sand	N	
52			SS-22	95.0	96.5	Tan & Black Silty Sand	N	17.1
51			SS-23	100.0	101.5	White, Tan & Brown Silty Sand	N	
53	B-12		SS-1	0.0	1.5	Red Sandy Silt	N	
53			SS-2	2.5	4.0	Tan & Red Sandy Silt	N	25.5
54			SS-3	5.0	6.5	Tan Silty Sand with Gravel	N	
54			SS-4	7.5	9.0	Tan Silty Sand with Gravel	N	12.4
54			SS-5	10.0	11.5	Tan Silty Sand with Gravel	N	
53			SS-6	15.0	16.5	Red Sandy Silt	N	
55			SS-7	20.0	21.5	Yellow Silty Sand	N	
55			SS-8	25.0	26.5	Yellow Silty Sand	N	
55			SS-9	30.0	31.5	Yellow Silty Sand	N	
55			SS-10	35.0	36.5	Yellow & Gray Silty Sand	N	
55			SS-11	40.0	41.5	Yellow & White Silty Sand	N	
55			SS-12	45.0	46.5	Yellow & White Silty Sand	N	42.1
55			SS-13	50.0	51.5	Tan & White Silty Sand	N	
55			SS-14	55.0	56.5	Tan & White Silty Sand	N	
56			SS-15	60.0	61.5	Tan & White Silty Sand	N	
56			SS-16	65.0	66.5	Tan & White Silty Sand	N	
56			SS-17	70.0	71.5	Tan & White Silty Sand	N	
56			SS-18	75.0	76.5	Tan & White Silty Sand	N	26.7
56			SS-19	80.0	81.5	Tan & White Silty Sand	N	
56			SS-20	85.0	86.5	Tan & White Silty Sand	N	
56			SS-21	90.0	91.5	Tan & White Silty Sand	N	
56			SS-22	95.0	96.5	Brown & Tan Silty Sand	N	

56			SS-23	100.0	101.5	Brown & Tan Silty Sand	N	
11	B-13		SS-1	0.0	1.5	Brown & Red Clayey Sand with Gravel	N	14.7
12			SS-2	2.0	3.5	Brown Silty Sand	N	
12			SS-3	4.0	5.5	Brown Silty Sand	N	28.6
13			SS-4	6.0	7.5	Brown Silty Sand	W	
13			SS-5	8.0	9.5	Brown Silty Sand	N	20.0
13			SS-6	10.0	11.5	Brown Silty Sand	N	
13			SS-7	15.3	16.8	Brown & Red Silty Sand	N	
16			ST-1	20.3	20.8	Brown Silty Sand	N	28.4
14			SS-8	25.3	26.8	Brown & White Silty Sand	N	
14			SS-9	30.3	31.8	Brown & White Silty Sand	N	
14			SS-10	35.3	36.8	Brown & White Silty Sand	N	
17			ST-2	40.3	40.7	Brown Silty Sand	N	
14			SS-11	45.3	46.8	Brown & White Silty Sand	N	
14			SS-12	50.3	51.8	Brown & White Silty Sand	N	27.7
14			SS-13	55.3	56.8	Brown & White Silty Sand	N	
14			SS-14	60.3	61.8	Brown & White Silty Sand	N	
14			SS-15	65.3	66.8	Brown & White Silty Sand	N	
14			SS-16	70.3	71.8	Brown & White Silty Sand	N	
15			SS-17	75.3	76.8	Brown & White Silty Sand	N	
15			SS-18	80.3	81.8	Brown & White Silty Sand	N	
15			SS-19	85.3	86.8	Brown Silty Sand	N	
15			SS-20	90.3	91.8	White Silty Sand	N	
15			SS-21	95.3	96.8	White Silty Sand	N	20.5
15			SS-22	100.3	101.8	Brown Silty Sand	N	
7	B-14		SS-1	0.0	1.5	Red Silty Sand	N	
7			SS-2	2.0	3.5	Red Silty Sand	N	
7			SS-3	4.0	5.5	Red Silty Sand	N	22.1
7			SS-4	6.0	7.5	Red Silty Sand	N	
7			SS-5	8.0	9.5	Red Silty Sand	N	
8			SS-6	10.0	11.5	Brown & Red Silty Sand	N	
8			SS-7	15.0	16.5	Brown, Tan & White Silty Sand	N	
8			SS-8	20.0	21.5	Brown, Tan & White Silty Sand	N	
8			SS-9	25.0	26.5	Brown, Tan & White Silty Sand	N	
8			SS-10	30.0	31.5	Brown, Tan & White Silty Sand	W	31.5
8			SS-11	35.0	36.5	Brown, Tan & White Silty Sand	N	
8			SS-12	40.0	41.5	Brown, Tan & White Silty Sand	N	
9			SS-13	45.0	46.5	Brown, Tan & White Silty Sand	N	
9			SS-14	50.0	51.5	Brown, Tan & White Silty Sand	N	19.8
9			SS-15	55.0	56.5	Brown, Tan & White Silty Sand	N	
10			SS-16	60.0	61.5	Brown, Tan & White Silty Sand	N	
10			SS-17	65.0	66.5	Brown, Tan & White Silty Sand	N	25.8
10			SS-18	70.0	71.5	Brown, Tan & White Silty Sand	N	
10			SS-19	75.0	76.5	Brown, Tan & White Silty Sand	N	
10			SS-20	80.0	81.5	Brown, Tan & White Silty Sand	N	
10			SS-21	85.0	86.5	Brown, Tan & White Silty Sand	N	
10			SS-22	90.0	91.5	Brown, Tan & White Silty Sand	N	
23	B-15		SS-1	0.0	1.5	Red Clayey Sand	W	20.9
24			SS-2	2.5	4.0	Brown Silty Sand	N	
24			SS-3	5.0	6.5	Brown Silty Sand	N	24.6
24			SS-4	7.5	9.0	Brown Silty Sand	N	
25			SS-5	10.0	11.5	Gray Poorly Graded Sand with Silt	N	12.9
93	B-16		SS-1	0.0	1.5	Tan Silty Sand	N	
93			SS-2	2.5	4.0	Tan & Red Silty Sand	N	23.3
94			SS-3	5.0	6.5	Red, Tan & Gray Silty Sand	N	24.3
95			SS-4	7.5	9.0	Red Clayey Sand	N	22.3
96			SS-5	10.0	11.5	Tan & Red Clayey Gravel with Sand	N	20.7
97			SS-6	15.0	16.5	Orange Silty Sand	N	
97			SS-7	20.0	21.5	White & Tan Silty Sand	N	
97			SS-8	25.0	26.5	White & Tan Silty Sand	N	34.8
97			SS-9	30.0	31.5	White Silty Sand	N	
97			SS-10	35.0	36.5	Tan & White Silty Sand	N	
97			SS-11	40.0	41.5	Tan & White Silty Sand	N	
98			SS-12	45.0	46.5	Gray, Red & Tan Silty Sand	W	

98			SS-13	50.0	51.5	Tan Silty Sand	N	
98			SS-14	55.0	56.5	Black, Tan & White Silty Sand	N	14.0
98			SS-15	60.0	61.5	White & Tan Silty Sand	N	
98			SS-16	65.0	66.5	White, Black & Tan Silty Sand	N	17.1
98			SS-17	70.0	71.5	White Silty Sand	N	
98			SS-18	75.0	76.5	Tan & Gray Silty Sand	N	
99			SS-19	80.0	81.5	White & Tan Silty Sand	N	15.2
57	B-17		SS-1	0.0	1.5	Red Silty Sand	W	16.3
58			SS-2	2.5	4.0	Red Silty Sand	N	19.5
58			SS-3	5.0	6.5	Red Silty Sand	N	
59			SS-4	7.5	9.0	Red Silty Sand	N	
59			SS-5	10.0	11.5	Red Silty Sand	N	23.5
59			SS-6	15.0	16.5	Red Silty Sand	N	
59			SS-7	20.0	21.5	Red Silty Sand	N	
59			SS-8	25.0	26.5	Tan Silty Sand	N	
60			SS-9	30.0	31.5	Tan Silty Sand	W	
60			SS-10	35.0	36.5	Tan Silty Sand	W	
60			SS-11	40.0	41.5	Tan Silty Sand	W	23.9
60			SS-12	45.0	46.5	Tan Silty Sand	W	
			SS-13	50.0	51.5	No Recovery		
60			SS-14	55.0	56.5	Tan Silty Sand	W	
61			SS-15	60.0	61.5	Red & Tan Silty Sand	W	13.7
62			SS-16	65.0	66.5	Tan Silty Sand	N	
62			SS-17	70.0	71.5	Tan Silty Sand	N	17.7
63			SS-18	75.0	76.5	Tan & White Silty Sand	N	18.1
63			SS-19	80.0	81.5	Tan Silty Sand	N	
63			SS-20	85.0	86.5	Tan Silty Sand	W	
64			SS-21	90.0	91.5	Tan Silty Sand	N	12.5
64			SS-22	95.0	96.5	Gray Silty Sand	W	
64			SS-23	100.0	101.5	Gray Silty Sand	W	
106	B-18		SS-1	0.0	1.5	Brown & Red Clayey Sand	N	9.8
107			SS-2	2.0	3.5	Brown & Red Silty Sand	N	
107			SS-3	4.0	5.5	Brown & Red Silty Sand	N	20.2
107			SS-4	6.0	7.5	Brown & Red Silty Sand	N	
108			SS-5	8.0	9.5	Brown & Red Clayey Sand	N	
108			SS-6	10.0	11.5	Brown & Red Clayey Sand	N	
108			SS-7	15.0	16.5	Brown & Red Clayey Sand	N	25.4
109			SS-8	20.0	21.5	Gray Silty Sand with Gravel	N	16.0
110			SS-9	25.0	26.5	Brown Clayey Sand	N	15.5
111			SS-10	30.0	31.5	Red, Brown & Tan Silty Sand	N	
111			SS-11	35.0	36.5	Brown, White & Red Silty Sand	N	
111			SS-12	40.0	41.5	Brown Silty Sand	N	47.5
111			SS-13	45.0	46.5	Brown, White & Red Silty Sand	N	
111			SS-14	50.0	51.5	Brown Silty Sand	N	
111			SS-15	55.0	56.5	Brown & White Silty Sand	N	
112			SS-16	60.0	61.5	Black & White Silty Sand	N	
112			SS-17	65.0	66.5	Brown, Black & White Silty Sand	N	22.0
113			SS-18	70.0	71.5	Brown, Black & White Silty Sand	N	
113			SS-19	75.0	76.5	Brown, Black & White Silty Sand	N	
113			SS-20	80.0	81.5	Tan Silty Sand	N	
113			SS-21	85.0	86.5	Tan & White Silty Sand	N	20.2
113			SS-22	90.0	91.5	Tan & White Silty Sand	N	
113			SS-23	95.0	96.5	Tan & White Silty Sand	N	
113			SS-24	100.0	101.5	Tan & White Silty Sand	N	
114	B-19		SS-1	0.0	1.5	Tan & Red Silty Sand	N	16.5
115			SS-2	2.0	3.5	Tan & Orange Silty Sand	N	
115			SS-3	4.0	5.5	Red & Brown Silty Sand	N	26.2
116			SS-4	6.0	7.5	Red & Brown Clayey Sand	W	
116			SS-5	8.0	9.5	Tan Clayey Sand	N	22.0
116			SS-6	10.0	11.5	Tan Clayey Sand	N	
117			SS-7	15.0	16.5	Tan Silty Sand	N	
117			SS-8	20.0	21.5	Tan Silty Sand	N	
117			SS-9	25.0	26.5	White & Tan Silty Sand	N	
117			SS-10	30.0	31.5	Tan Silty Sand	N	24.2
117			SS-11	35.0	36.5	Tan & Orange Silty Sand	W	

117			SS-12	40.0	41.5	Tan Silty Sand	N	
118			SS-13	45.0	46.5	Tan Silty Sand	N	
118			SS-14	50.0	51.5	Tan Silty Sand	N	16.9
119			SS-15	55.0	56.5	Tan Silty Sand	N	
119			SS-16	60.0	61.5	Tan Silty Sand	N	24.5
119			SS-17	65.0	66.5	Tan & Orange Silty Sand	N	
119			SS-18	70.0	71.5	Tan & Brown Silty Sand	N	
120			SS-19	75.0	76.5	Tan Silty Sand	N	16.9
120			SS-20	80.0	81.5	Tan Silty Sand	N	
			SS-21	85.0	86.5	No Recovery		
			SS-22	90.0	91.5	No Recovery		
121			SS-23	95.0	96.5	Purple Silty Sand	N	11.0
121			SS-24	100.0	101.5	Purple Silty Sand	N	
65	B-20		SS-1	0.0	1.5	Red & Tan Silty Sand	N	14.7
66			SS-2	2.5	4.0	Tan Silty Sand	N	10.0
67			SS-3	5.0	6.5	Red & Tan Silty Sand	N	9.6
68			SS-4	7.5	9.0	Gray Clayey Sand	N	
68			SS-5	10.0	11.5	Gray Clayey Sand	N	
68			SS-6	15.0	16.5	Tan Clayey Sand	W	14.6
69			SS-7	20.0	21.5	Orange & Tan Silty Sand	W	
69			SS-8	25.0	26.5	Brown & Tan Silty Sand	N	19.2
69			SS-9	30.0	31.5	Yellow & Tan Silty Sand	N	
69			SS-10	35.0	36.5	Yellow & Tan Silty Sand	N	
26	B-21		SS-1	0.0	1.5	Brown Silty Sand	N	19.7
27			SS-2	2.5	4.0	Red Silty Sand	N	
27			SS-3	5.0	6.5	Brown Silty Sand	N	
27			SS-4	7.5	9.0	Brown Silty Sand	N	22.9
27			SS-5	10.0	11.5	Brown Silty Sand	N	
28			SS-6	15.0	16.5	Brown Silty Sand	N	27.1
29			SS-7	20.0	21.5	Red Silty Sand	N	25.4
30			SS-8	25.0	26.5	Brown Well-Graded Gravel with Silt and Sand	N	
30			SS-9	30.0	31.5	Gray Well-Graded Gravel with Silt and Sand	N	11.1
31			SS-10	35.0	36.5	Red Silty Sand	W	20.2
32			SS-11	40.0	41.5	Brown Silty Sand	N	
32			SS-12	45.0	46.5	Brown Silty Sand	N	34.2
32			SS-13	50.0	51.5	Brown Silty Sand	W	
33			SS-14	55.0	56.5	Brown Silty Sand	N	
33			SS-15	60.0	61.5	Brown Silty Sand	N	
33			SS-16	65.0	66.5	Brown Silty Sand	N	14.5
166	B-22		SS-1	0.0	1.5	Brown Sandy Lean Clay	N	
166			SS-2	2.0	3.5	Red & Brown Sandy Lean Clay	N	19.8
166			SS-3	4.0	5.5	Brown Sandy Lean Clay	N	
167			SS-4	6.0	7.5	Red & Brown Sandy Lean Clay	N	
167			SS-5	8.0	9.5	Red & Brown Sandy Lean Clay	N	25.2
167			SS-6	10.0	11.5	Red & Brown Sandy Lean Clay	N	
168			SS-7	15.0	16.5	Tan Silty Sand	N	
168			SS-8	20.0	21.5	Tan Silty Sand	N	21.4
169			SS-9	25.0	26.5	Brown Silty Sand	N	18.7
170			SS-10	30.0	31.5	Gray Silty Sand	N	24.5
171			SS-11	35.0	36.5	Brown Sandy Elastic Silt	N	28.0
172			SS-12	40.0	41.5	White & Brown Silty Sand	N	
172			SS-13	45.0	46.5	White & Brown Silty Sand	N	29.9
172			SS-14	50.0	51.5	White & Brown Silty Sand	N	
172			SS-15	55.0	56.5	White & Red Silty Sand	N	
173			SS-16	60.0	61.5	Red & Brown Silty Sand	N	
173			SS-17	65.0	66.5	White & Brown Silty Sand	N	26.8
173			SS-18	70.0	71.5	Brown & Gray Silty Sand	N	
173			SS-19	75.0	76.5	Brown Silty Sand	N	
174			SS-20	80.0	81.5	White Silty Sand	N	
174			SS-21	85.0	86.5	White & Brown Silty Sand	N	
174			SS-22	90.0	91.5	White Silty Sand	N	30.7
174			SS-23	95.0	96.5	White & Brown Silty Sand	N	
174			SS-24	100.0	101.5	White & Brown Silty Sand	N	
70	B-23		SS-1	0.0	1.5	Red Sandy Silt	N	

70			SS-2	2.5	4.0	Red & Tan Sandy Silt	N	
70			SS-3	5.0	6.5	Tan Sandy Silt	N	27.3
70			SS-4	7.5	9.0	Brown Sandy Silt	N	
70			SS-5	10.0	11.5	Red Sandy Silt	N	
72			SS-6	15.0	16.5	Tan & White Silty Sand	N	
71			SS-7	20.0	21.5	Red & Tan Silty Sand	N	14.4
72			SS-8	25.0	26.5	Tan & White Silty Sand	N	
72			SS-9	30.0	31.5	Tan & White Silty Sand	N	
72			SS-10	35.0	36.5	Tan Silty Sand	N	
72			SS-11	40.0	41.5	Brown Silty Sand	N	
72			SS-12	45.0	46.5	Brown & Tan Silty Sand	N	27.1
72			SS-13	50.0	51.5	Tan & White Silty Sand	N	
72			SS-14	55.0	56.5	Tan & White Silty Sand	N	
72			SS-15	60.0	61.5	Tan & White Silty Sand	N	
73			SS-16	65.0	66.5	Tan & White Silty Sand	N	24.9
73			SS-17	70.0	71.5	Tan & White Silty Sand	N	
74			SS-18	75.0	76.5	Gray Silty Sand	N	
74			SS-19	80.0	81.5	Gray Silty Sand	N	28.5
75			SS-20	85.0	86.5	Yellow & White Silty Sand	N	
75			SS-21	90.0	91.5	Tan & White Silty Sand	N	26.9
74			SS-22	95.0	96.5	Red & Gray Silty Sand	N	
75			SS-23	100.0	101.5	Yellow & White Silty Sand	N	
76	B-24		SS-1	0.0	1.5	Red & Orange Silty Sand	N	20.6
76			SS-2	2.5	4.0	Tan & Yellow Silty Sand	W	
77			SS-3	5.0	6.5	Tan Sandy Silt	N	
77			SS-4	7.5	9.0	Brown & Tan Sandy Silt	N	
77			SS-5	10.0	11.5	Red & Tan Sandy Silt	N	
77			SS-6	15.0	16.5	Red & Tan Sandy Silt	N	24.1
78			SS-7	20.0	21.5	Tan & Gray Silty Sand	N	
78			SS-8	25.0	26.5	Red & Tan Silty Sand	N	18.8
78			SS-9	30.0	31.5	Brown Silty Sand	N	
79			SS-10	35.0	36.5	Brown Silty Sand	N	
79			SS-11	40.0	41.5	Brown & Tan Silty Sand	W	
79			SS-12	45.0	46.5	Brown & Tan Silty Sand	W	
79			SS-13	50.0	51.5	Brown & Tan Silty Sand	N	
79			SS-14	55.0	56.5	Brown & Tan Silty Sand	N	20.2
79			SS-15	60.0	61.5	Brown & Red Silty Sand	N	
79			SS-16	65.0	66.5	Tan & Red Silty Sand	N	
79			SS-17	70.0	71.5	Gray Silty Sand	N	
79			SS-18	75.0	76.5	Brown & Tan Silty Sand	N	
80			SS-19	80.0	81.5	Tan, Brown & Gray Silty Sand	N	
80			SS-20	85.0	86.5	Tan, Yellow & White Silty Sand	N	19.2
81			SS-21	90.0	91.5	Black, White & Brown Silty Sand	N	23.8
81			SS-22	95.0	96.5	Brown, Tan & White Silty Sand	N	
81			SS-23	100.0	101.5	Brown, Tan & White Silty Sand	N	
34	B-25		SS-1	0.0	1.5	Brown Sandy Silt	N	21.5
35			SS-2	2.5	4.0	Brown Silty Sand	N	17.4
36			SS-3	5.0	6.5	Brown Silty, Clayey Sand	N	
36			SS-4	7.5	9.0	Brown Silty, Clayey Sand	N	18.4
36			SS-5	10.0	11.5	Brown Silty, Clayey Sand	W	
37			SS-6	15.0	16.5	Brown Silty Sand	W	23.4
37			SS-7	20.0	21.5	Brown Silty Sand	W	
38			SS-8	25.0	26.5	Brown Clayey Sand	N	26.3
39			SS-9	30.0	31.5	Red Silty Sand	N	
39			SS-10	35.0	36.5	Red Silty Sand	N	17.5
39			SS-11	40.0	41.5	Red Silty Sand	N	
40			SS-12	45.0	46.5	Red Silty Sand	N	
40			SS-13	50.0	51.5	Brown Silty Sand	W	26.7
40			SS-14	55.0	56.5	Red Silty Sand	W	
41			SS-15	60.0	61.5	Red Silty Sand	N	17.2
42			SS-16	65.0	66.5	Brown Silty Sand	N	25.8
42			SS-17	70.0	71.5	Brown Silty Sand	N	
43			SS-18	75.0	76.5	Brown Poorly Graded Sand with Silt	N	17.7
43			SS-19	80.0	80.7	Brown Poorly Graded Sand with Silt	N	
43			SS-20	85.0	86.0	Brown Poorly Graded Sand with Silt	N	
44			SS-21	90.0	91.0	Gray Silty Sand	N	14.1

44			SS-22	95.0	95.2	Gray Silty Sand	N	
44			SS-23	100.0	100.1	Gray Silty Sand	N	
175	B-26		SS-1	0.0	1.5	Tan Silty Sand	N	16.3
176			SS-2	2.0	3.5	Tan Sandy Silt	N	27.6
177			SS-3	4.0	5.5	Tan Silty Sand	N	
177			SS-4	6.0	7.5	Tan Silty Sand	N	
177			SS-5	8.0	9.5	Tan Silty Sand	W	22.3
177			SS-6	10.0	11.5	Tan Silty Sand	N	
178			SS-7	15.0	16.5	Tan Clayey Sand	N	
178			SS-8	20.0	21.5	Tan Clayey Sand	N	21.4
178			SS-9	25.0	26.5	Red Clayey Sand	N	
178			SS-10	30.0	31.5	Brown Clayey Sand	N	
178			SS-11	35.0	36.5	Gray & Brown Clayey Sand	N	
178			SS-12	40.0	41.5	Brown Clayey Sand	N	
178			SS-13	45.0	46.5	Brown & Red Clayey Sand	N	
178			SS-14	50.0	51.5	Gray & Brown Clayey Sand	N	
179			SS-15	55.0	56.5	Red Silty Sand	N	
179			SS-16	60.0	61.5	White, Brown & Red Silty Sand	N	35.3
179			SS-17	65.0	66.5	White Silty Sand	N	
180			SS-18	70.0	71.5	White Silty Sand	N	
180			SS-19	75.0	76.5	White Silty Sand	N	
180			SS-20	80.0	81.5	White Silty Sand	N	28.0
180			SS-21	85.0	86.5	White Silty Sand	N	
180			SS-22	90.0	91.5	White Silty Sand	N	
180			SS-23	95.0	96.5	Brown, Tan & White Silty Sand	N	
180			SS-24	100.0	101.5	Brown & White Silty Sand	N	
1	B-27		SS-1	0.0	1.5	Red & Brown Silty Sand	N	
1			SS-2	2.0	3.5	Red & Brown Silty Sand	N	18.0
2			SS-3	4.0	5.5	Red & Brown Silty Sand	N	
2			SS-4	6.0	7.5	Red & Brown Silty Sand	N	17.0
2			SS-5	8.0	9.5	Red Silty Sand	N	
3			SS-6	10.0	11.5	Red Silty Sand	N	11.7
3			SS-7	14.2	14.7	Red Silty Sand	N	
4			SS-8	19.2	20.7	Red Silty, Clayey Sand	N	
4			SS-9	24.2	25.7	Red Silty, Clayey Sand	N	
4			SS-10	29.2	30.7	Red Silty, Clayey Sand	N	
4			SS-11	34.2	35.7	Red Silty, Clayey Sand	N	
4			SS-12	39.2	40.7	Red Silty, Clayey Sand	W	
4			SS-13	44.2	45.7	Red Silty, Clayey Sand	N	
4			SS-14	49.2	50.7	Red Silty, Clayey Sand	N	
4			SS-15	54.2	55.7	Red Silty, Clayey Sand	N	19.6
4			SS-16	59.2	60.7	Red Silty, Clayey Sand	N	
4			SS-17	64.2	65.7	Red Silty, Clayey Sand	N	
5			SS-18	69.2	70.7	Red Well-Graded Sand with Silt and Gravel	N	18.1
6			SS-19	74.2	75.7	Red Silty Sand	N	13.3
-			SS-20	79.2	79.4	No Recovery	W	
6			SS-21	84.2	84.5	Red Silty Sand	N	
122	B-28		SS-1	0.0	1.5	Brown Silty Sand	N	10.1
123			SS-2	2.0	3.5	Red & Brown Silty Sand	W	22.4
124			SS-3	4.0	5.5	Red & Brown Clayey Sand	N	
124			SS-4	6.0	7.5	Red & Brown Clayey Sand	N	18.0
125			SS-5	8.0	9.5	Red & Brown Silty Sand	N	
125			SS-6	10.0	11.5	Red & Brown Silty Sand	N	21.4
125			SS-7	15.0	16.5	Red Silty Sand	N	
126			SS-8	20.0	21.5	Tan, White & Brown Silty Sand	N	
126			SS-9	25.0	26.5	White & Brown Silty Sand	N	28.0
126			SS-10	30.0	31.5	Black & White Silty Sand	N	
127			SS-11	34.8	36.3	Black & White Silty Sand with Gravel	N	12.5
128	B-29		SS-1	0.0	1.5	Red & Brown Silty Sand	S	
128			SS-2	2.0	3.5	Red & Brown Silty Sand	N	18.0
129			SS-3	4.0	5.5	#N/A	N	23.8
130			SS-4	6.0	7.5	Red & Brown Silty Sand	N	
130			SS-5	8.0	9.5	Brown Silty Sand	N	22.0
130			SS-6	10.0	11.5	Red & Brown Silty Sand	N	

131			SS-7	15.0	16.5	Red & Brown Clayey Sand	N	22.6
132			SS-8	20.0	21.5	Red & Brown Silty Sand	N	26.4
133			SS-9	25.0	26.5	Dark Brown Silty Sand	N	
133			SS-10	30.0	31.5	Red & Tan Silty Sand	N	20.6
134			SS-11	35.0	36.5	Red Sandy Elastic Silt	N	23.8
135			SS-12	40.0	41.5	Red & Brown Silty Sand	N	27.9
136			SS-13	45.0	46.5	White Silty Sand	N	
136			SS-14	50.0	51.5	White Silty Sand	W	29.4
136			SS-15	55.0	56.5	White & Tan Silty Sand	N	
137			SS-16	60.0	61.5	White, Tan & Brown Silty Sand	N	20.6
138			SS-17	65.0	66.5	White Silty Sand	N	
138			SS-18	70.0	71.5	White Silty Sand	N	35.9
139			SS-19	75.0	76.5	White & Tan Silty Sand	N	
139			SS-20	80.0	81.5	White & Tan Silty Sand	N	
139			SS-21	85.0	86.5	White, Dark Brown & Tan Silty Sand	N	24.8
139			SS-22	90.0	91.5	White, Dark Brown & Tan Silty Sand	N	
140			SS-23	95.0	96.5	White & Tan Silty Sand	N	21.3
141			SS-24	100.0	101.5	White & Tan Silty Sand	N	23.6
45	B-30		SS-1	0.0	1.5	Red Silty Sand	W	
45			SS-2	2.5	4.0	Red Silty Sand	W	36.9
45			SS-3	5.0	6.5	Red Silty Sand	W	
46			SS-4	7.5	9.0	Red Silty Sand	N	
46			SS-5	10.0	11.5	Brown Silty Sand	N	
46			SS-6	15.0	16.5	Brown Silty Sand	N	
46			SS-7	20.0	21.5	Brown Silty Sand	N	
46			SS-8	25.0	26.5	Brown Silty Sand	N	
46			SS-9	30.0	31.5	Brown Silty Sand	W	34.5
46			SS-10	35.0	36.5	Brown Silty Sand	N	
46			SS-11	40.0	41.5	Brown Silty Sand	N	
47			SS-12	45.0	46.5	Brown Silty Sand	N	
47			SS-13	50.0	51.1	Brown Silty Sand	N	25.0
47			SS-14	55.0	55.1	Gray Silty Sand	N	
47			SS-15	60.0	60.1	Gray Silty Sand	N	
47			SS-16	65.0	65.1	Gray Silty Sand	N	
181	B-31		SS-1	0.0	1.5	Brown Clayey Sand	N	
181			SS-2	2.0	3.5	Brown Clayey Sand	N	22.7
181			SS-3	4.0	5.5	Red & Brown Clayey Sand	N	
182			SS-4	6.0	7.5	Red & Brown Silty Sand	N	
182			SS-5	8.0	9.5	Tan Silty Sand	N	
182			SS-6	10.0	11.5	Red & Brown Silty Sand	W	
182			SS-7	15.0	16.5	Tan Silty Sand	N	
182			SS-8	20.0	21.5	Tan Silty Sand	N	
182			SS-9	25.0	26.5	Tan Silty Sand	N	
182			SS-10	30.0	31.5	Red & Brown Silty Sand	N	
182			SS-11	35.0	36.5	Brown & White Silty Sand	N	16.8
182			SS-12	40.0	41.5	Brown & White Silty Sand	N	
183			SS-13	45.0	46.5	Tan Poorly Graded Gravel with Silt and Sand	N	15.7
183			SS-14	50.0	51.5	Brown Poorly Graded Gravel with Silt and Sand	N	
183			SS-15	55.0	56.5	Gray & White Poorly Graded Gravel with Silt and Sand	N	
183			SS-16	60.0	61.5	Tan Poorly Graded Gravel with Silt and Sand	N	
			SS-17	65.0	66.5	No Recovery		
191	B-32		SS-1	2.0	3.5	Tan Silty Sand	N	
191			SS-2	4.0	5.5	Tan & Brown Silty Sand	N	
191			SS-3	6.0	7.5	Red & Brown Silty Sand	N	17.9
191			SS-4	8.0	9.5	Red Silty Sand	N	
191			SS-5	10.0	11.5	Red & Brown Silty Sand	N	
191			SS-6	13.5	15.0	Tan & Brown Silty Sand	N	
191			SS-7	18.5	20.0	Tan & Brown Silty Sand	N	
192			SS-8	23.5	25.0	Tan & Brown Silty Sand	N	
192			SS-9	28.5	30.0	Brown & Red Silty Sand	N	23.8
193			SS-10	33.5	35.0	Brown & Tan Clayey Sand	N	25.3
194			SS-11	38.5	40.0	Brown & Tan Silty Sand	N	
194			SS-12	43.5	45.0	Brown & Tan Silty Sand	N	
194			SS-13	48.5	50.0	Brown & Tan Silty Sand	N	24.3
194			SS-14	53.5	55.0	Tan Silty Sand	N	

194			SS-15	58.5	60.0	Tan Silty Sand	N	
194			SS-16	63.5	65.0	Gray & Tan Silty Sand	N	
195			SS-17	68.5	70.0	Tan, Gray & White Silty Sand	N	
195			SS-18	73.5	75.0	Tan, Gray & White Silty Sand	N	
195			SS-19	78.5	80.0	Tan, Gray & White Silty Sand	N	19.9
195			SS-20	83.5	85.0	Tan & White Silty Sand	N	
222			SS-21	88.5	90.0	Tan & Gray Clayey Sand	N	22.4
196	B-33		SS-1	2.0	3.5	Red Silty Sand	N	
196			SS-2	4.0	5.5	Red & Brown Silty Sand	N	
196			SS-3	6.0	7.5	Brown & Tan Silty Sand	N	
196			SS-4	8.0	9.5	Tan & Red Silty Sand	N	
196			SS-5	10.0	11.5	Tan Silty Sand	N	
196			SS-6	13.5	15.0	Brown Silty Sand	N	16.5
196			SS-7	18.5	20.0	Tan Silty Sand	N	
196			SS-8	23.5	25.0	Red & Tan Silty Sand	N	
196			SS-9	28.5	30.0	Gray & Red Silty Sand	N	
196			SS-10	33.5	35.0	Red & Tan Silty Sand	N	
196			SS-11	38.5	40.0	Brown Silty Sand	N	
197			SS-12	43.5	45.0	Gray Silty Sand	N	19.2
198			SS-13	48.5	50.0	White Silty Sand	N	
198			SS-14	53.5	55.0	White & Tan Silty Sand	N	23.4
198			SS-15	58.5	60.0	Tan Silty Sand	N	
198			SS-16	63.5	65.0	Tan Silty Sand	N	
198			SS-17	68.5	70.0	Tan Silty Sand	N	
198			SS-18	73.5	75.0	Tan Silty Sand	N	
198			SS-19	78.3	79.1	Tan Silty Sand	N	
301	B-34		SS-1	2.0	3.5	Tan & Brown Silty Sand	N	15.4
302			SS-2	4.0	5.5	Tan, Brown & White Silty Sand	N	11.5
302			SS-3	6.0	7.5	Tan Silty Sand	N	
303			SS-4	8.0	9.5	Red, Tan & Black Silty Sand	N	
303			SS-5	9.9	11.4	Red, Tan & Black Silty Sand	N	
303			SS-6	14.4	15.9	Red, Tan & Black Silty Sand	N	15.8
304			SS-7	19.4	20.9	White, Black, Tan & Green Silty Sand	N	
304			SS-8	24.4	25.9	Gray & Black Silty Sand	N	
304			SS-9	29.4	30.9	White, Tan & Black Silty Sand	N	16.4
305			SS-10	34.4	35.9	Tan & Black Well-Graded Sand with Silt	N	
305			SS-11	39.4	40.9	Red Well-Graded Sand with Silt	N	18.9
306			SS-12	44.4	45.9	Red, Tan, Black & White Silty Sand	N	28.4
306			SS-13	49.4	49.7	Gray Silty Sand	N	
307	B-35		SS-1	2.0	3.5	Red Clayey Sand	N	
307			SS-2	4.0	5.5	Brown, Orange & Red Clayey Sand	N	22.0
308			SS-3	6.0	7.5	Gray Clayey Sand	N	14.5
308			SS-4	8.0	9.5	Gray Clayey Sand	N	
308			SS-5	10.0	11.5	Tan & Gray Clayey Sand	N	
309			SS-6	14.4	15.9	Tan, Red & White Silty Sand	N	24.7
310			SS-7	19.4	20.9	White & Tan Silty Sand	N	
310			SS-8	24.4	25.9	White Silty Sand	N	
310			SS-9	29.4	30.9	Tan & White Silty Sand	N	
310			SS-10	34.4	35.9	White, Tan & Black Silty Sand	N	37.0
310			SS-11	39.4	40.9	Tan, Red & White Silty Sand	N	
311			SS-12	44.4	45.9	Tan, Red & White Silty Sand	N	
311			SS-13	49.4	50.9	Tan, Red & White Silty Sand	N	27.7
312	B-36		SS-1	2.0	3.5	Red & Tan Sandy Lean Clay	N	25.1
313			SS-2	4.0	5.5	Red & Tan Silty Sand	N	
313			SS-3	6.0	7.5	Red & Tan Silty Sand	N	24.6
314			SS-4	8.0	9.5	Red & Tan Silty Sand	N	
314			SS-5	10.0	11.5	Red & Tan Silty Sand	N	26.2
314			SS-6	14.7	16.2	Tan, Brown & Black Silty Sand	N	
315			SS-7	19.7	21.2	White, Tan, Brown & Black Silty Sand	N	40.8
315			SS-8	24.7	25.5	Gray Silty Sand	N	
199	B-37		SS-1	2.0	3.5	Tan & Brown Silty Sand	N	
199			SS-2	4.0	5.5	White & Red Silty Sand	N	
199			SS-3	6.0	7.5	Red & White Silty Sand	N	

199			SS-4	8.0	9.5	White & Red Silty Sand	N	14.5
199			SS-5	10.0	11.5	White & Red Silty Sand	N	
200			SS-6	13.5	15.0	Brown & Tan Silty Sand	N	
200			SS-7	18.5	20.0	White & Gray Silty Sand	N	15.7
200			SS-8	23.5	25.0	White & Gray Silty Sand	N	
201			SS-9	28.5	30.0	White & Gray Silty Sand	N	15.0
201			SS-10	33.5	35.0	Tan, White & Black Silty Sand	N	
201			SS-11	38.5	40.0	Tan, White & Black Silty Sand	N	
201			SS-12	43.5	45.0	Tan, White & Black Silty Sand	N	
280	B-38		SS-1	2.0	3.5	Red & Tan Silty Sand with Gravel	N	
280			SS-2	4.0	5.5	Red & Tan Silty Sand with Gravel	N	7.3
281			SS-3	6.0	7.5	Tan Silty Sand	N	7.7
281			SS-4	8.0	8.4	White & Tan Silty Sand	N	
281			SS-5	10.0	10.4	Tan Silty Sand	N	
282			SS-6	13.5	13.8	Black & Gray Poorly Graded Gravel	N	1.7
283			SS-7	18.0	20.0	Tan Poorly Graded Sand with Silt and Gravel	N	5.8
227	B-39		SS-1	2.0	3.5	Brown Clayey Sand	N	
316			ST-1	4.0	5.3	Brown Clayey Sand	N	10.4
227			SS-2	6.0	7.5	Red Clayey Sand	N	20.2
317			ST-2	8.0	9.2	Red & Yellow Sandy Lean Clay	N	19.4
227			SS-3	10.0	11.5	Red & Orange Clayey Sand	N	
228			SS-4	14.4	15.9	Red & Orange Silty Sand	N	23.9
229			SS-5	19.4	20.9	Red, White & Black Silty Sand	N	
229			SS-6	24.4	25.9	Red, White & Gray Silty Sand	N	38.6
229			SS-7	29.4	30.9	Red, White & Gray Silty Sand	N	
229			SS-8	34.4	35.9	Red, White & Gray Silty Sand	N	
229			SS-9	39.4	40.9	Gray, Red, White & Orange Silty Sand	N	
230			SS-10	44.4	45.9	Brown, White & Orange Silty Sand	N	33.4
231			SS-11	49.4	50.9	Brown, White & Orange Silty Sand	N	
231			SS-12	54.4	55.9	Brown, White & Gray Silty Sand	N	23.3
231			SS-13	59.4	60.9	Brown, White & Gray Silty Sand	N	
232	B-40		SS-1	2.0	3.5	Brown & Red Clayey Sand	N	
232			SS-2	4.0	5.5	Red Clayey Sand	N	24.3
318			ST-1	6.0	7.5	Red Silty Sand	N	30.4
319			ST-2	8.0	9.2	Red Silty Sand	N	26.0
320			ST-3	10.0	11.3	Red Silty Sand	N	25.5
233			SS-3	14.6	16.1	Brown & Tan Silty Sand	N	22.6
233			SS-4	19.6	21.1	Brown, White & Gray Silty Sand	N	
233			SS-5	24.6	26.1	Brown, Gray & White Silty Sand	N	
234			SS-6	29.6	31.1	Brown, Gray & White Silty Sand	N	17.7
234			SS-7	34.6	36.1	Brown, Gray & White Silty Sand	N	
234			SS-8	39.6	41.1	Brown, Gray & White Silty Sand	N	
235			SS-9	44.6	46.1	Brown, Gray & White Silty Sand	N	20.2
202	B-41		SS-1	2.0	3.5	Red & Tan Silty Sand	N	
202			SS-2	4.0	5.5	Tan Silty Sand	N	14.9
202			SS-3	6.0	7.5	Tan Silty Sand	N	
203			SS-4	8.0	9.5	Tan Silty Sand	N	5.7
203			SS-5	10.0	11.5	Tan Silty Sand	N	
203			SS-6	13.5	15.0	Tan, Brown & White Silty Sand	N	
203			SS-7	18.5	20.0	Tan, Brown & White Silty Sand	N	
203			SS-8	23.5	25.0	Tan, Brown & White Silty Sand	N	
203			SS-9	28.5	30.0	Black, Tan & White Silty Sand	N	
203			SS-10	33.5	35.0	Tan, Black & White Silty Sand	N	
204	B-42		SS-1	2.0	3.5	Red & Tan Silty Sand	N	
204			SS-2	4.0	5.5	Red & Tan Silty Sand	N	18.6
204			SS-3	6.0	7.5	Tan & Red Silty Sand	N	
204			SS-4	8.0	9.5	Tan & Red Silty Sand	N	
204			SS-5	10.0	11.5	Tan & Red Silty Sand	N	
205			SS-6	13.5	15.0	White, Tan & Red Silty Sand	N	27.1
205			SS-7	18.5	20.0	White, Tan & Red Silty Sand	N	
206			SS-8	23.5	25.0	White, Tan & Red Silty Sand	N	
206			SS-9	28.5	30.0	White, Tan & Red Silty Sand	N	26.7

321	B-43		ST-1	2.0	2.9	Orange & Tan Clayey Sand	N	17.5
207			SS-1	4.0	5.5	Red Silty Sand	N	26.0
208			SS-2	6.0	7.5	White Silty Sand	N	
208			SS-3	8.0	9.5	White Silty Sand	N	
208			SS-4	10.0	11.5	Red & White Silty Sand	N	
208			SS-5	13.5	15.0	Brown Silty Sand	N	23.9
208			SS-6	18.5	20.0	Gray Silty Sand	N	
209			SS-7	23.5	25.0	Gray Silty Sand	N	
209			SS-8	28.5	30.0	Gray Silty Sand	N	14.4
236	B-44		SS-1	2.0	3.5	Gray & Red Clayey Gravel with Sand	W	8.3
322			ST-1	4.0	5.0	Red Silty Sand	W	26.9
237			SS-2	6.0	7.5	Red Sandy Elastic Silt	N	22.2
323			ST-2	8.0	8.9	Orange Silty Sand	N	21.6
238			SS-3	10.0	11.5	Red Silty Sand	N	20.4
239			SS-4	14.5	16.0	Tan & Red Silty Sand	N	
239			SS-5	19.5	21.0	Tan Silty Sand	N	
239			SS-6	24.5	26.0	Tan Silty Sand	N	17.1
239			SS-7	29.5	31.0	Tan Silty Sand	N	
239			SS-8	34.5	36.0	Tan Silty Sand	N	
240			SS-9	39.5	41.0	Tan, White & Black Silty Sand	N	
240			SS-10	44.5	46.0	Tan, White & Black Silty Sand	N	27.5
348	B-45		SS-1	2.0	3.5	Tan, Red, Black & White Silty Sand	N	13.5
348			SS-2	4.0	5.5	Tan & Red Silty Sand	N	
348			SS-3	6.0	7.5	White Silty Sand	N	
			SS-4	8.0	8.2	No Recovery		
245	B-46		SS-1	2.0	3.5	Red Sandy Fat Clay	N	27.3
324			ST-1	4.0	4.8	Red & Orange Silty Sand	N	26.2
246			SS-2	6.0	7.5	Red Silty Sand	N	
325			ST-2	8.0	9.5	Gray, Brown & Red Silty Sand	N	28.7
246			SS-3	10.0	11.5	Red Silty Sand	N	22.4
246			SS-4	14.2	16.7	Red Silty Sand	N	
247			SS-5	19.2	20.7	Brown Silty Sand	N	
247			SS-6	24.7	26.1	Brown Silty Sand	N	17.7
247			SS-7	29.2	29.9	Brown Silty Sand	N	
247			SS-8	34.2	35.7	Brown Silty Sand	N	
210	B-47		SS-1	2.0	3.5	Tan & Red Silty Sand	N	
210			SS-2	4.0	5.5	Red & Tan Silty Sand	N	
210			SS-3	6.0	7.5	Red & Tan Silty Sand	N	
210			SS-4	8.0	9.5	Tan & Red Silty Sand	N	24.9
210			SS-5	10.0	11.5	Tan & Red Silty Sand	N	
211			SS-6	13.5	15.0	Tan, Red & Black Silty Sand	N	
211			SS-7	18.5	20.0	Red & Tan Silty Sand	N	
211			SS-8	23.5	25.0	Red & Tan Silty Sand	N	
211			SS-9	28.5	30.0	Red, White & Tan Silty Sand	N	33.5
211			SS-10	33.5	35.0	Red, White & Tan Silty Sand	N	
248	B-49		SS-1	2.0	3.5	Red Silty Sand	N	19.3
326			ST-1	4.0	4.8	Red Silty Sand	N	37.0
249			SS-2	6.0	7.5	Red Silty Sand	N	
327			ST-2	8.0	9.3	Green, Orange & Gray Silty Sand	N	24.1
249			SS-3	10.0	11.5	Red & Brown Silty Sand	N	
249			SS-4	15.0	16.5	Brown Silty Sand	N	32.3
249			SS-5	20.0	21.5	Brown Silty Sand	W	
344			Bag-1	0.0	21.5	Red, Brown & Gray Silty Sand	N	23.0
250	B-50		SS-1	2.0	3.5	Tan & Red Silty Sand	N	
250			SS-2	4.0	5.5	Tan & Red Silty Sand	N	15.5
250			SS-3	6.0	7.5	Tan & Orange Silty Sand	N	
251			SS-4	8.0	9.5	White & Tan Sandy Silt	N	22.3
252			SS-5	10.0	11.5	White Silty Sand	N	15.6
253			SS-6	15.0	16.5	White Silty Sand	N	
253			SS-7	20.0	21.5	White Silty Sand	N	
253			SS-8	25.0	26.5	White Silty Sand	N	24.1
253			SS-9	30.0	31.5	White Silty Sand	N	

254			SS-10	35.0	36.5	Red & Orange Silty Sand	N	30.7
328	B-51		ST-1	2.0	2.5	Red Silty Sand	N	18.0
224			SS-1	4.0	5.5	Red Sandy Elastic Silt	N	
329			ST-2	6.0	7.2	Orange & Tan Silty Sand	N	17.2
224			SS-2	8.0	9.5	Red Sandy Elastic Silt	N	21.2
224			SS-3	10.0	11.5	Red Sandy Elastic Silt	N	
225			SS-4	14.5	16.0	Brown Silty Sand	N	
225			SS-5	19.5	21.0	Brown Silty Sand	N	25.2
225			SS-6	24.5	26.0	Brown Silty Sand	N	
225			SS-7	24.5	31.0	Brown Silty Sand	N	
225			SS-8	34.5	36.0	Brown Silty Sand	N	
276			Bag-1	0.0	36.0	Red & Brown Silty Sand	N	25.0
255	B-52		SS-1	2.0	3.5	Tan, White, Green & Black Silty Sand	N	21.9
256			SS-2	4.0	4.9	Gray, Yellow & Orange Poorly Graded Gravel with Silt and Sand	N	7.3
330	B-53		ST-1	2.0	2.8	Orange & Tan Clayey Sand	N	10.0
241			SS-1	4.0	5.5	Tan Clayey Sand	N	
241			SS-2	6.0	7.5	Gray Clayey Sand	N	17.4
331			ST-2	8.0	9.3	Gray, Tan & Orange Silty Sand	N	34.6
257	B-54		SS-1	2.0	3.5	Red Sandy Elastic Silt	N	21.8
332			ST-1	4.0	5.7	Red & Orange Silty Sand	N	22.2
257			SS-2	6.0	7.5	Red Sandy Elastic Silt	N	
333			ST-2	8.0	9.5	Red & Yellow Sandy Silt	N	22.8
258			SS-3	10.0	11.5	Red Silty Sand	N	21.4
258			SS-4	14.5	16.0	Brown Silty Sand	N	
259			SS-5	19.5	21.0	Brown Silty Sand	N	
259			SS-6	24.5	26.0	White Silty Sand	N	
259			SS-7	29.5	31.0	Brown & White Silty Sand	N	26.8
259			SS-8	34.5	36.0	Brown & White Silty Sand	N	
259			SS-9	39.5	41.0	Brown & White Silty Sand	N	
345			Bag-1	0.0	41.0	Red, Orange, Brown & White Silty Sand	N	18.1
284	B-55		SS-1	2.0	3.5	Red & Tan Silty Sand with Gravel	N	
284			SS-2	4.0	5.5	Red & Tan Silty Sand with Gravel	N	14.6
284			SS-3	6.0	7.5	Tan Silty Sand with Gravel	N	
285			SS-4	8.0	9.5	Gray & Red Silty Sand	N	29.0
286			SS-5	10.0	11.5	Tan Silty Sand	N	24.4
286			SS-6	13.5	14.3	Tan & White Silty Sand	N	
346	B-56		Bag-1	0.0	10.0	Red, Tan & White Sandy Lean Clay	N	16.5
347			Bag-2	10.0	35.0	White & Tan Silty Sand	N	17.0
260			SS-1	2.0	3.5	Red Sandy Elastic Silt	N	
260			SS-2	4.0	5.5	Red Sandy Elastic Silt	N	19.4
260			SS-3	6.0	7.5	Red & White Sandy Elastic Silt	N	
261			SS-4	8.0	9.5	Tan & White Silty Sand	N	
261			SS-5	10.0	11.5	Tan & White Silty Sand	N	
261			SS-6	15.0	16.5	Tan & White Silty Sand	N	
261			SS-7	20.0	21.5	Tan & White Silty Sand	N	16.8
262			SS-8	25.0	26.5	White Silty Sand	N	
262			SS-9	30.0	31.5	White Silty Sand	N	23.5
262			SS-10	35.0	36.5	White Silty Sand	N	
287	B-57		SS-1	2.0	3.5	Red Silty Sand	N	7.6
288			SS-2	4.0	5.5	Red Silty Sand	N	9.1
288			SS-3	6.0	7.5	Red Silty Sand	N	
289			SS-4	8.0	9.5	Red Silty Sand	N	6.3
185	B-58		SS-1	2.0	3.5	Tan & Red Silty Sand	N	34.4
186			SS-2	4.0	5.5	Red Silty Sand	N	35.7
187			SS-3	6.0	7.5	Gray, Tan & Black Silty Sand	N	
187			SS-4	8.0	9.5	Gray, Tan & Black Silty Sand	N	42.6
187			SS-5	10.0	11.5	Gray, Tan & Black Silty Sand	N	
187			SS-6	13.5	15.0	Gray, Tan & Black Silty Sand	N	
212	B-59		SS-1	2.0	3.5	Tan & Red Silty Sand	N	

212			SS-2	4.0	5.5	Tan, Red & White Silty Sand	N	8.4
212			SS-3	6.0	7.5	Tan, White & Red Silty Sand	N	
212			SS-4	8.0	9.5	Brown & White Silty Sand	N	
223			SS-5	10.0	11.5	Tan & White Silty Sand	N	
223			SS-6	13.5	15.0	Tan & White Silty Sand	N	17.3
213			SS-7	18.5	20.0	Tan & Brown Silty Sand	N	
213			SS-8	23.5	25.0	Tan & Brown Silty Sand	N	12.6
213			SS-9	28.5	30.0	Gray, Black & White Silty Sand	N	
214			SS-10	33.5	35.0	Tan & Gray Silty Sand	N	28.6
214			SS-11	38.5	40.0	Gray Silty Sand	N	
277			Bag-1	0.0	40.0	Tan, Brown, Red & White Silty Sand	N	4.3
215	B-60		SS-1	2.0	3.5	Tan Silty Sand	N	
			SS-2	4.0	5.5	White Silty Sand	N	
215			SS-3	6.0	7.5	Tan & White Silty Sand	N	24.5
215			SS-4	8.0	9.5	Tan & White Silty Sand	N	
334	B-61		ST-1	2.0	3.3	Red Silty Sand	N	20.9
216			SS-1	4.0	5.5	Tan & Red Silty Sand	N	20.2
217			SS-2	6.0	7.5	Red & Tan Clayey Sand	N	
217			SS-3	8.0	9.5	Red & Tan Clayey Sand	N	
217			SS-4	10.0	11.5	Red, Tan & Brown Clayey Sand	N	
217			SS-5	13.5	15.0	White & Gray Clayey Sand	N	
217			SS-6	18.5	20.0	Tan Clayey Sand	N	20.2
217			SS-7	23.5	25.0	Tan Clayey Sand	N	
217			SS-8	28.5	30.0	Tan Clayey Sand	N	
218	B-62		SS-1	1.0	2.5	Red, Tan & Brown Sandy Silt	N	
218			SS-2	3.5	5.0	Red, Tan & Brown Sandy Silt	N	
218			SS-3	6.0	7.5	Red & Brown Sandy Silt	N	30.3
218			SS-4	8.5	10.0	Red & Brown Sandy Silt	N	
219	B-63		SS-1	2.0	3.5	Tan & Brown Silty Sand	N	
219			SS-2	4.0	5.5	Red & White Silty Sand	N	
219			SS-3	6.0	7.5	Red & Brown Silty Sand	N	16.5
219			SS-4	8.0	9.5	Red & Tan Silty Sand	N	
220			SS-5	10.0	11.5	Tan & Brown Silty Sand	N	
220			SS-6	13.5	15.0	Red & Brown Silty Sand	N	
220			SS-7	18.5	20.0	Red, Tan & Brown Silty Sand	N	
220			SS-8	23.5	25.0	Red, Tan & Brown Silty Sand	N	25.7
221			SS-9	28.5	30.0	Red & Brown Sandy Silt	N	18.7
263	B-64		SS-1	2.0	3.5	Red Sandy Silt	N	
335			ST-1	4.0	5.2	Red, Orange & Yellow Silty Sand	N	23.9
263			SS-2	6.0	7.5	Red Sandy Silt	N	27.2
336			ST-2	8.0	9.5	Gray, Red, Orange & White Silty Sand	N	29.7
263			SS-3	10.0	11.5	Red Sandy Silt	N	
264			SS-4	14.3	15.8	Brown Silty Sand	N	
264			SS-5	19.3	20.8	Brown & White Silty Sand	N	
264			SS-6	24.3	25.8	Brown & White Silty Sand	N	
264			SS-7	29.3	30.8	Brown & White Silty Sand	N	28.4
226	B-65		SS-1	2.0	3.5	Red Silty Sand	N	
226			SS-2	4.0	5.5	Red Silty Sand	N	21.3
337			ST-1	6.0	6.8	Orange, White, Yellow & Brown Silty Sand	N	18.0
226			SS-3	8.0	9.5	Red Silty Sand	N	
338			ST-2	10.0	11.4	Gray, Black & Yellow Silty Sand	N	39.1
226			SS-4	14.5	15.1	Brown Silty Sand	N	
278			Bag-1	0.0	15.0	Red, Brown, Gray & Yellow Silty Sand	N	25.3
265	B-66		SS-1	2.0	3.5	Red Clayey Sand	N	25.2
266			SS-2	4.0	5.5	Red, Black & White Silty Sand with Gravel	N	
266			SS-3	6.0	7.5	White, Black, Tan & Red Silty Sand with Gravel	N	11.5
267			SS-4	8.0	9.5	White, Black & Tan Well-Graded Sand with Silt	N	
267			SS-5	10.0	11.5	White & Black Well-Graded Sand with Silt	N	15.5
267			SS-6	15.0	15.4	White & Black Well-Graded Sand with Silt	N	
268	B-67		SS-1	2.0	3.5	Red Clayey Sand	N	33.4

339			ST-1	4.0	4.7	Orange, Red & White Silty Sand	N	21.5
269			SS-2	6.0	7.5	Red Silty Sand	N	
269			SS-3	8.0	9.5	Red Silty Sand	N	16.1
270			SS-4	10.0	11.5	Red Silty Sand	N	9.7
271			SS-5	14.3	15.1	Gray Silty Sand with Gravel	N	5.3
272			SS-6	29.8	30.1	Gray & Brown Silty Sand	N	15.1
340	B-68		ST-1	2.0	3.5	Orange & Yellow Poorly Graded Sand with Silt	N	23.7
242			SS-1	4.0	5.5	Red & Orange Sandy Elastic Silt	N	29.2
341			ST-2	6.0	7.3	Tan & Yellow Silty Sand	N	33.2
243			SS-2	8.0	9.5	Brown, Black & White Silty Sand	N	32.5
244			SS-3	10.0	11.5	Tan, Black, Gray & White Silty Sand	N	27.7
244			SS-4	14.6	16.1	Tan, Gray & White Silty Sand	N	
279			Bag-1	0.0	16.0	Tan, Red, Gray & White Elastic Silt	N	29.9
290	B-70		SS-1	2.0	3.5	Brown Silty Sand	N	8.1
291			SS-2	4.0	5.5	Tan & Gray Silty Sand	W	22.7
342			ST-1	6.0	6.6	Tan & Green Silty Sand	W	30.8
292			SS-3	8.0	9.5	Red & Tan Silty Sand	N	
292			SS-4	10.0	11.5	Red Silty Sand	N	
292			SS-5	13.5	15.0	Red Silty Sand	N	48.1
292			SS-6	18.5	20.0	Red Silty Sand	N	
292			SS-7	23.5	25.0	Tan Silty Sand	N	
293			SS-8	28.5	30.0	Tan Silty Sand	N	
293			SS-9	33.5	35.0	Tan Silty Sand	N	35.1
273	B-71		SS-1	2.0	3.5	Brown Silty Sand with Gravel	N	19.0
274			SS-2	4.0	5.5	Yellow & Brown Silty Sand	N	
274			SS-3	6.0	7.5	Yellow & Brown Silty Sand	N	33.0
274			SS-4	8.0	9.5	Black & Brown Silty Sand	N	
275			SS-5	15.0	16.5	Black & Brown Silty Sand	N	
275			SS-6	20.0	21.5	Brown Silty Sand	N	
275			SS-7	20.0	21.5	White & Brown Silty Sand	N	20.0
275			SS-8	25.0	26.5	Brown Silty Sand	N	
275			SS-9	30.0	31.5	White & Brown Silty Sand	N	
294	B-72		SS-1	2.0	3.5	Red Clayey Sand	N	26.2
295			SS-2	4.0	5.5	Tan Silty Sand	N	
295			SS-3	6.0	7.5	Tan Silty Sand	N	12.9
296			SS-4	8.0	9.5	Gray & White Silty Sand	N	
296			SS-5	10.0	11.5	Gray & White Silty Sand	N	
296			SS-6	13.5	15.0	Gray & White Silty Sand	N	18.8
296			SS-7	18.5	20.0	Gray & White Silty Sand	N	
188	B-73		SS-1	2.0	3.5	Tan & White Silty Sand	N	
188			SS-2	4.0	5.5	Tan & White Silty Sand	N	16.4
189			SS-3	6.0	7.5	Tan & White Silty Sand	N	
189			SS-4	8.0	9.5	Tan & White Silty Sand	N	
189			SS-5	10.0	11.5	Tan, White & Gray Silty Sand	N	
189			SS-6	13.5	15.0	Tan, White & Gray Silty Sand	N	15.0
190			SS-7	18.5	20.0	Tan & White Silty Sand	N	
190			SS-8	23.5	25.0	Tan & White Silty Sand	N	13.7
190			SS-9	28.5	30.0	Tan Silty Sand	N	
297	B-74		SS-1	2.0	3.5	Brown Sandy Lean Clay	N	
343			ST-1	4.0	5.3	Brown Sandy Silt	N	33.1
297			SS-2	6.0	7.5	Brown Sandy Lean Clay	N	31.0
298			SS-3	8.0	9.5	Gray Silty Sand	N	
298			SS-4	10.0	11.5	Gray Silty Sand	N	30.0
299			SS-5	13.5	15.0	White & Gray Silty Sand	N	
299			SS-6	18.5	20.0	White & Gray Silty Sand	N	23.4
300			SS-7	23.5	25.0	Black & Gray Silty Sand	N	16.1
300			SS-8	28.5	30.0	Black & Gray Silty Sand	N	
300			SS-9	33.5	35.0	Black & Tan Silty Sand	N	



Florence & Hutcheson

An **ICA** Company

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-1
 Sample Depth : 0.0' to 1.5'
 Date Tested : 08/20/12
 Date Reported : 08/29/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.4
No.6		3.35	mm	
No.10		2	mm	94.0

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	69.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	39.5
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1388 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 16.2
 Liquid Limit (AASHTO T89) : 31
 Plastic Limit (AASHTO T90) : 23
 Plasticity Index : 8

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 6.0
 Coarse Sand (-No.10 + No.40) : 24.9
 Fine Sand (-No.40 + No.200) : 29.6
 Silt + Clay (-No.200) : 39.5

Liquidity Index : -0.90
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.6
 Coarse Sand (-No.4 + No.10) : 4.4
 Medium Sand (-No.10 + No.40) : 24.9
 Fine Sand (-No.40 + No.200) : 29.6
 Silt + Clay (-No.200) : 39.5

Approved By : J.S.

Soil No. 153



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Clayey Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-1
 Sample Depth : 4.0' to 5.5'
 Date Tested : 08/23/12
 Date Reported : 08/29/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	97.8	
1/4		6.3	mm		
No.4		4.75	mm	95.1	
No.6		3.35	mm		
No.10		2	mm	89.0	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	62.1	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	35.2	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1948 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 31.2
 Liquid Limit (AASHTO T89) : 43
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 17
 Liquidity Index : 0.28

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 11.0
 Coarse Sand (-No.10 + No.40) : 26.9
 Fine Sand (-No.40 + No.200) : 26.9
 Silt + Clay (-No.200) : 35.2

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-6 (1)
 ASTM Classification: D2487 : SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 4.9
 Coarse Sand (-No.4 + No.10) : 6.1
 Medium Sand (-No.10 + No.40) : 26.9
 Fine Sand (-No.40 + No.200) : 26.9
 Silt + Clay (-No.200) : 35.2

Approved By :

BS

Soil No. 154



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Silty Sand

Sample No. : SS-4
 Sample Loc. : Boring No. B-1
 Sample Depth : 6.0' to 7.5'
 Date Tested : 08/20/12
 Date Reported : 08/29/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	91.5	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	90.8	
1/4		6.3	mm		
No.4		4.75	mm	90.0	
No.6		3.35	mm		
No.10		2	mm	86.1	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	62.4	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	38.1	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1754 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22.7
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 28
 Plasticity Index : 11
 Liquidity Index : -0.48
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (1)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 13.9
 Coarse Sand (-No.10 + No.40) : 23.7
 Fine Sand (-No.40 + No.200) : 24.3
 Silt + Clay (-No.200) : 38.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 8.5
 Fine Gravel (-3/4in. + No.4) : 1.5
 Coarse Sand (-No.4 + No.10) : 3.9
 Medium Sand (-No.10 + No.40) : 23.7
 Fine Sand (-No.40 + No.200) : 24.3
 Silt + Clay (-No.200) : 38.1

Approved By : J.S.

Soil No. 155



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-1
 Sample Depth : 10.0' to 11.5'
 Date Tested : 08/23/12
 Date Reported : 08/29/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	97.2
1/4		6.3	mm	
No.4		4.75	mm	92.7
No.6		3.35	mm	
No.10		2	mm	84.6

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	54.4
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	28.7
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.3158 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 25.5
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 29
 Plasticity Index : 10
 Liquidity Index : -0.39

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 15.4
 Coarse Sand (-No.10 + No.40) : 30.2
 Fine Sand (-No.40 + No.200) : 25.7
 Silt + Clay (-No.200) : 28.7

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 7.3
 Coarse Sand (-No.4 + No.10) : 8.1
 Medium Sand (-No.10 + No.40) : 30.2
 Fine Sand (-No.40 + No.200) : 25.7
 Silt + Clay (-No.200) : 28.7

Approved By : J.S.

Soil No. 156



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Red & Brown Silty Sand with Gravel

Sample No. : SS-9

Sample Loc. : Boring No. B-1

Sample Depth : 25.0' to 26.5'

Date Tested : 08/20/12

Date Reported : 08/29/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	90.5
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	83.4
1/4		6.3	mm	
No.4		4.75	mm	77.0
No.6		3.35	mm	
No.10		2	mm	69.4

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	50.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	29.5
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.4214 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 25.1
Liquid Limit (AASHTO T89) : 33
Plastic Limit (AASHTO T90) : 24
Plasticity Index : 9
Liquidity Index : 0.16
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 30.6
Coarse Sand (-No.10 + No.40) : 19.3
Fine Sand (-No.40 + No.200) : 20.6
Silt + Clay (-No.200) : 29.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 9.5
Fine Gravel (-3/4in. + No.4) : 13.5
Coarse Sand (-No.4 + No.10) : 7.6
Medium Sand (-No.10 + No.40) : 19.3
Fine Sand (-No.40 + No.200) : 20.6
Silt + Clay (-No.200) : 29.5

Approved By : J.S.

Soil No. 157



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-2
 Sample Depth : 0.0' to 1.5'
 Date Tested : 08/20/12
 Date Reported : 08/29/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	98.0	
1/4		6.3	mm		
No.4		4.75	mm	96.4	
No.6		3.35	mm		
No.10		2	mm	91.6	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	57.9	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	29.1	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.2641 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 12.2
 Liquid Limit (AASHTO T89) : 28
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 2
 Liquidity Index : -6.72

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 8.4
 Coarse Sand (-No.10 + No.40) : 33.7
 Fine Sand (-No.40 + No.200) : 28.8
 Silt + Clay (-No.200) : 29.1

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 3.6
 Coarse Sand (-No.4 + No.10) : 4.8
 Medium Sand (-No.10 + No.40) : 33.7
 Fine Sand (-No.40 + No.200) : 28.8
 Silt + Clay (-No.200) : 29.1

Approved By : J.S.

Soil No. 158



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray & Brown Clayey Sand

Sample No. : SS-5
 Sample Loc. : Boring No. B-2
 Sample Depth : 8.0' to 9.5'
 Date Tested : 08/20/12
 Date Reported : 08/29/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	99.6
1/4		6.3	mm	
No.4		4.75	mm	99.3
No.6		3.35	mm	
No.10		2	mm	97.2

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	71.5
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	48.7
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0828 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17.4
 Liquid Limit (AASHTO T89) : 41
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 16
 Liquidity Index : -0.48
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 2.8
 Coarse Sand (-No.10 + No.40) : 25.7
 Fine Sand (-No.40 + No.200) : 22.8
 Silt + Clay (-No.200) : 48.7

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-6 (5)
 ASTM Classification: D2487 : SC

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.7
 Coarse Sand (-No.4 + No.10) : 2.1
 Medium Sand (-No.10 + No.40) : 25.7
 Fine Sand (-No.40 + No.200) : 22.8
 Silt + Clay (-No.200) : 48.7

Approved By : J.S.

Soil No. 159



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-12
 Sample Loc. : Boring No. B-2
 Sample Depth : 40.0' to 41.5'
 Date Tested : 08/20/12
 Date Reported : 08/29/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	98.3

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	69.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	43.2
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1183 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 34.2
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 34
 Plasticity Index : 5
 Liquidity Index : 0.06

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.7
 Coarse Sand (-No.10 + No.40) : 29.2
 Fine Sand (-No.40 + No.200) : 25.9
 Silt + Clay (-No.200) : 43.2

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.7
 Medium Sand (-No.10 + No.40) : 29.2
 Fine Sand (-No.40 + No.200) : 25.9
 Silt + Clay (-No.200) : 43.2

Approved By : J.S.

Soil No. 160



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-15
 Sample Loc. : Boring No. B-2
 Sample Depth : 55.0' to 56.5'
 Date Tested : 08/20/12
 Date Reported : 08/29/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	100.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	38.8
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1053 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 68.2
 Liquid Limit (AASHTO T89) : 69
 Plastic Limit (AASHTO T90) : 64
 Plasticity Index : 5
 Liquidity Index : 0.91
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.0
 Coarse Sand (-No.10 + No.40) : 4.0
 Fine Sand (-No.40 + No.200) : 57.2
 Silt + Clay (-No.200) : 38.8

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.0
 Medium Sand (-No.10 + No.40) : 4.0
 Fine Sand (-No.40 + No.200) : 57.2
 Silt + Clay (-No.200) : 38.8

Approved By : J.S.

Soil No. 161



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-20
 Sample Loc. : Boring No. B-2
 Sample Depth : 80.0' to 81.5'
 Date Tested : 08/20/12
 Date Reported : 08/29/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	97.3

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	64.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	31.9
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1995 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19.6
 Liquid Limit (AASHTO T89) : 28
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 3
 Liquidity Index : -1.72
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 2.7
 Coarse Sand (-No.10 + No.40) : 33.3
 Fine Sand (-No.40 + No.200) : 32.1
 Silt + Clay (-No.200) : 31.9

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.2
 Coarse Sand (-No.4 + No.10) : 2.5
 Medium Sand (-No.10 + No.40) : 33.3
 Fine Sand (-No.40 + No.200) : 32.1
 Silt + Clay (-No.200) : 31.9

Approved By : J.S.

Soil No. 162



SOIL CLASSIFICATION

Project Name : I85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Clayey Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-3
 Sample Depth : 0.0' to 1.5'
 Date Tested : 06/22/12
 Date Reported : 06/27/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	99.0	
No.6		3.35	mm		
No.10		2	mm	96.0	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	72.2	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	45.8	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.0988 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 16
 Liquid Limit (AASHTO T89) : 38
 Plastic Limit (AASHTO T90) : 22
 Plasticity Index : 16
 Liquidity Index : -0.38
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (4)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.0
 Coarse Sand (-No.10 + No.40) : 23.8
 Fine Sand (-No.40 + No.200) : 26.4
 Silt + Clay (-No.200) : 45.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.0
 Coarse Sand (-No.4 + No.10) : 3.0
 Medium Sand (-No.10 + No.40) : 23.8
 Fine Sand (-No.40 + No.200) : 26.4
 Silt + Clay (-No.200) : 45.8

Approved By : J.S.

Soil No. 142



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-3
 Sample Depth : 2.0' to 3.5'
 Date Tested : 06/22/12
 Date Reported : 06/27/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.3
No.6		3.35	mm	
No.10		2	mm	93.2

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	71.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	32.5
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.165 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.2
 Liquid Limit (AASHTO T89) : 37
 Plastic Limit (AASHTO T90) : 32
 Plasticity Index : 5
 Liquidity Index : -1.54
 Activity : NA

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 6.8
 Coarse Sand (-No.10 + No.40) : 22.2
 Fine Sand (-No.40 + No.200) : 38.5
 Silt + Clay (-No.200) : 32.5

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.7
 Coarse Sand (-No.4 + No.10) : 5.1
 Medium Sand (-No.10 + No.40) : 22.2
 Fine Sand (-No.40 + No.200) : 38.5
 Silt + Clay (-No.200) : 32.5

Approved By : J.S.

Soil No. 143



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-4
 Sample Loc. : Boring No. B-3
 Sample Depth : 6.0' to 7.5'
 Date Tested : 06/22/12
 Date Reported : 06/27/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		100.0
1 1/4	in.	31.5	mm		
1	in.	25	mm		100.0
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		93.9
1/4		6.3	mm		
No.4		4.75	mm		85.7
No.6		3.35	mm		
No.10		2	mm		74.0

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		43.0
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		19.0
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.6029 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19.9
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 26.0
 Coarse Sand (-No.10 + No.40) : 31.0
 Fine Sand (-No.40 + No.200) : 24.0
 Silt + Clay (-No.200) : 19.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 14.3
 Coarse Sand (-No.4 + No.10) : 11.7
 Medium Sand (-No.10 + No.40) : 31.0
 Fine Sand (-No.40 + No.200) : 24.0
 Silt + Clay (-No.200) : 19.0

Approved By : J.S.

Soil No. 144



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-7
 Sample Loc. : Boring No. B-3
 Sample Depth : 15.0' to 16.5'
 Date Tested : 06/22/12
 Date Reported : 06/27/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	97.6	
No.6		3.35	mm		
No.10		2	mm	86.1	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	52.8	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	25.0	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.3569 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17.8
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : 6
 Liquidity Index : -1.61

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 13.9
 Coarse Sand (-No.10 + No.40) : 33.3
 Fine Sand (-No.40 + No.200) : 27.8
 Silt + Clay (-No.200) : 25.0

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.4
 Coarse Sand (-No.4 + No.10) : 11.5
 Medium Sand (-No.10 + No.40) : 33.3
 Fine Sand (-No.40 + No.200) : 27.8
 Silt + Clay (-No.200) : 25.0

Approved By : J.S.

Soil No. 145



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-11
 Sample Loc. : Boring No. B-3
 Sample Depth : 35.0' to 36.5'
 Date Tested : 06/22/12
 Date Reported : 06/27/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	97.7	
No.6		3.35	mm		
No.10		2	mm	91.9	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	71.4	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	38.9	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1356 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 16.6
 Liquid Limit (AASHTO T89) : 29
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 3
 Liquidity Index : -3.00
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 8.1
 Coarse Sand (-No.10 + No.40) : 20.5
 Fine Sand (-No.40 + No.200) : 32.5
 Silt + Clay (-No.200) : 38.9

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.3
 Coarse Sand (-No.4 + No.10) : 5.8
 Medium Sand (-No.10 + No.40) : 20.5
 Fine Sand (-No.40 + No.200) : 32.5
 Silt + Clay (-No.200) : 38.9

Approved By : J.S.

Soil No. 146



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown & White Silty Sand with Gravel

Sample No. : SS-17
 Sample Loc. : Boring No. B-3
 Sample Depth : 65.0' to 66.5'
 Date Tested : 06/22/12
 Date Reported : 06/27/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	89.8	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	89.1	
No.6		3.35	mm		
No.10		2	mm	80.8	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	46.6	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	20.3	
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.4957 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 18.2
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 19.2
 Coarse Sand (-No.10 + No.40) : 34.2
 Fine Sand (-No.40 + No.200) : 26.3
 Silt + Clay (-No.200) : 20.3

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 10.2
 Fine Gravel (-3/4in. + No.4) : 10.9
 Coarse Sand (-No.4 + No.10) : 8.3
 Medium Sand (-No.10 + No.40) : 34.2
 Fine Sand (-No.40 + No.200) : 26.3
 Silt + Clay (-No.200) : 20.3

Approved By : J.S.

Soil No. 147



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown & White Silty Sand with Gravel

Sample No. : SS-1
 Sample Loc. : Boring No. B-4
 Sample Depth : 0.0' to 1.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	81.0	
3/4	in.	19	mm	81.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	72.2	
1/4		6.3	mm		
No.4		4.75	mm	66.4	
No.6		3.35	mm		
No.10		2	mm	57.5	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	35.8	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	15.1	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 1.171 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 10.7

Liquid Limit (AASHTO T89) : NP

Plastic Limit (AASHTO T90) : NP

Plasticity Index : NP

Liquidity Index : NA

Activity : NA

Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-1-b (0)

ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 42.5

Coarse Sand (-No.10 + No.40) : 21.7

Fine Sand (-No.40 + No.200) : 20.7

Silt + Clay (-No.200) : 15.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 19.0

Fine Gravel (-3/4in. + No.4) : 14.6

Coarse Sand (-No.4 + No.10) : 8.9

Medium Sand (-No.10 + No.40) : 21.7

Fine Sand (-No.40 + No.200) : 20.7

Silt + Clay (-No.200) : 15.1

Approved By :

BE

Soil No. 100



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Clayey Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-4
 Sample Depth : 2.0' to 3.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	94.3	
1/4		6.3	mm		
No.4		4.75	mm	90.1	
No.6		3.35	mm		
No.10		2	mm	86.6	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	64.5	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	37.9	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1651 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 21.7
 Liquid Limit (AASHTO T89) : 43
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 18
 Liquidity Index : -0.19
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 13.4
 Coarse Sand (-No.10 + No.40) : 22.1
 Fine Sand (-No.40 + No.200) : 26.6
 Silt + Clay (-No.200) : 37.9

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-6 (2)
 ASTM Classification: D2487 : SC

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 9.9
 Coarse Sand (-No.4 + No.10) : 3.5
 Medium Sand (-No.10 + No.40) : 22.1
 Fine Sand (-No.40 + No.200) : 26.6
 Silt + Clay (-No.200) : 37.9

Approved By : BE

Soil No. 101



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Black & White Poorly Graded Sand with Silt and Gravel

Sample No. : SS-3
 Sample Loc. : Boring No. B-4
 Sample Depth : 4.0' to 5.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		100.0
1 1/4	in.	31.5	mm		
1	in.	25	mm		100.0
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		80.9
1/4		6.3	mm		
No.4		4.75	mm		68.6
No.6		3.35	mm		
No.10		2	mm		58.8

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		43.3
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		10.0
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.8301 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 7.8
 Liquid Limit (AASHTO T89) : NA
 Plastic Limit (AASHTO T90) : NA
 Plasticity Index : NA
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0) *
 ASTM Classification: D2487 : SP-SM *
 * Visual Classification

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 41.2
 Coarse Sand (-No.10 + No.40) : 15.5
 Fine Sand (-No.40 + No.200) : 33.3
 Silt + Clay (-No.200) : 10.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 31.4
 Coarse Sand (-No.4 + No.10) : 9.8
 Medium Sand (-No.10 + No.40) : 15.5
 Fine Sand (-No.40 + No.200) : 33.3
 Silt + Clay (-No.200) : 10.0

Approved By : BSE

Soil No. 102



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Red Black & White Silty Sand

Sample No. : SS-5

Sample Loc. : Boring No. B-4

Sample Depth : 8.0' to 9.5'

Date Tested : 06/14/12

Date Reported : 06/19/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	98.9	
No.6		3.35	mm		
No.10		2	mm	91.0	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	56.8	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	19.4	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.31 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20.2

Liquid Limit (AASHTO T89) : NP

Plastic Limit (AASHTO T90) : NP

Plasticity Index : NP

Liquidity Index : NA

Activity : NA

Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-2-4 (0)

ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 9.0

Coarse Sand (-No.10 + No.40) : 34.2

Fine Sand (-No.40 + No.200) : 37.4

Silt + Clay (-No.200) : 19.4

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0

Fine Gravel (-3/4in. + No.4) : 1.1

Coarse Sand (-No.4 + No.10) : 7.9

Medium Sand (-No.10 + No.40) : 34.2

Fine Sand (-No.40 + No.200) : 37.4

Silt + Clay (-No.200) : 19.4

Approved By :

BE

Soil No. 103



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Black White & Tan Silty Sand

Sample No. : SS-8
 Sample Loc. : Boring No. B-4
 Sample Depth : 20.0' to 21.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		100.0
1 1/4	in.	31.5	mm		
1	in.	25	mm		100.0
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.8
No.6		3.35	mm		
No.10		2	mm		95.6

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		61.9
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		21.3
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.2556 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 28.5
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.4
 Coarse Sand (-No.10 + No.40) : 33.7
 Fine Sand (-No.40 + No.200) : 40.6
 Silt + Clay (-No.200) : 21.3

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.2
 Coarse Sand (-No.4 + No.10) : 4.2
 Medium Sand (-No.10 + No.40) : 33.7
 Fine Sand (-No.40 + No.200) : 40.6
 Silt + Clay (-No.200) : 21.3

Approved By : BE

Soil No. 104



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Black & White Silty Sand with Gravel

Sample No. : SS-9

Sample Loc. : Boring No. B-4

Sample Depth : 25.0' to 26.5'

Date Tested : 06/14/12

Date Reported : 06/19/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	79.1	
1/4		6.3	mm		
No.4		4.75	mm	72.9	
No.6		3.35	mm		
No.10		2	mm	59.5	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	37.7	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	15.8	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 1.0184 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 14.4
Liquid Limit (AASHTO T89) : NA
Plastic Limit (AASHTO T90) : NA
Plasticity Index : NA
Liquidity Index : NA
Activity : NA

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 40.5
Coarse Sand (-No.10 + No.40) : 21.8
Fine Sand (-No.40 + No.200) : 21.9
Silt + Clay (-No.200) : 15.8

Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-1-b (0) *
ASTM Classification: D2487 : SM *
* Visual Classification

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 27.1
Coarse Sand (-No.4 + No.10) : 13.4
Medium Sand (-No.10 + No.40) : 21.8
Fine Sand (-No.40 + No.200) : 21.9
Silt + Clay (-No.200) : 15.8

Approved By : BS

Soil No. 105



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-5
 Sample Depth : 0.0' to 1.5'
 Date Tested : 07/28/12
 Date Reported : 08/01/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.8
No.6		3.35	mm	
No.10		2	mm	95.2

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	69.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	31.9
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1744 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 13.7
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.8
 Coarse Sand (-No.10 + No.40) : 26.1
 Fine Sand (-No.40 + No.200) : 37.2
 Silt + Clay (-No.200) : 31.9

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.2
 Coarse Sand (-No.4 + No.10) : 3.6
 Medium Sand (-No.10 + No.40) : 26.1
 Fine Sand (-No.40 + No.200) : 37.2
 Silt + Clay (-No.200) : 31.9

Approved By : J.S.

Soil No. 148



SOIL CLASSIFICATION

Project Name : 1-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray & Brown Well-Graded Sand with Silt and Gravel

Sample No. : SS-4
 Sample Loc. : Boring No. B-5
 Sample Depth : 6.0' to 7.5'
 Date Tested : 07/28/12
 Date Reported : 08/01/12

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd.	# 1		mm
Hyd. Rd.	# 2		mm
Hyd. Rd.	# 3		mm
Hyd. Rd.	# 4		mm
Hyd. Rd.	# 5		mm
Hyd. Rd.	# 6		mm
Hyd. Rd.	# 7		mm

D₅₀ = 2.032 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 13.7
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-a (0)
 ASTM Classification: D2487 : SW-SM

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 50.2
 Coarse Sand (-No.10 + No.40) : 20.8
 Fine Sand (-No.40 + No.200) : 18.2
 Silt + Clay (-No.200) : 10.8

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 11.7
 Fine Gravel (-3/4in. + No.4) : 27.6
 Coarse Sand (-No.4 + No.10) : 10.9
 Medium Sand (-No.10 + No.40) : 20.8
 Fine Sand (-No.40 + No.200) : 18.2
 Silt + Clay (-No.200) : 10.8

Approved By : J.S.

Soil No. 149



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Clayey Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-6
 Sample Depth : 4.0' to 5.5'
 Date Tested : 07/28/12
 Date Reported : 08/01/12

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.1048 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.7
 Liquid Limit (AASHTO T89) : 37
 Plastic Limit (AASHTO T90) : 21
 Plasticity Index : 16
 Liquidity Index : 0.22

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 2.7
 Coarse Sand (-No.10 + No.40) : 26.8
 Fine Sand (-No.40 + No.200) : 25.4
 Silt + Clay (-No.200) : 45.1

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (4)
 ASTM Classification: D2487 : SC

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.8
 Coarse Sand (-No.4 + No.10) : 1.9
 Medium Sand (-No.10 + No.40) : 26.8
 Fine Sand (-No.40 + No.200) : 25.4
 Silt + Clay (-No.200) : 45.1

Approved By : J.S.

Soil No. 150



Florence & Hutcheson

An **ICA** Company

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Black & White Silty Sand

Sample No. : SS-7
 Sample Loc. : Boring No. B-6
 Sample Depth : 15.0' to 16.5'
 Date Tested : 07/28/12
 Date Reported : 08/01/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	99.5

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	82.3
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	39.6
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1144 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 40.7
 Liquid Limit (AASHTO T89) : 43
 Plastic Limit (AASHTO T90) : 38
 Plasticity Index : 5
 Liquidity Index : 0.55
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.5
 Coarse Sand (-No.10 + No.40) : 17.2
 Fine Sand (-No.40 + No.200) : 42.7
 Silt + Clay (-No.200) : 39.6

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.2
 Coarse Sand (-No.4 + No.10) : 0.3
 Medium Sand (-No.10 + No.40) : 17.2
 Fine Sand (-No.40 + No.200) : 42.7
 Silt + Clay (-No.200) : 39.6

Approved By : J.S.

Soil No. 151



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-10
 Sample Loc. : Boring No. B-6
 Sample Depth : 305.0' to 31.5'
 Date Tested : 07/28/12
 Date Reported : 08/01/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	99.1	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	73.7	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	36.5	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1407 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 32.8
 Liquid Limit (AASHTO T89) : 43
 Plastic Limit (AASHTO T90) : 34
 Plasticity Index : 9
 Liquidity Index : -0.18

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.9
 Coarse Sand (-No.10 + No.40) : 25.4
 Fine Sand (-No.40 + No.200) : 37.2
 Silt + Clay (-No.200) : 36.5

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.9
 Medium Sand (-No.10 + No.40) : 25.4
 Fine Sand (-No.40 + No.200) : 37.2
 Silt + Clay (-No.200) : 36.5

Approved By : J.S.

Soil No. 152



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-7
 Sample Depth : 0.0' to 1.5'
 Date Tested : 08/20/12
 Date Reported : 08/29/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.8
No.6		3.35	mm	
No.10		2	mm	95.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	63.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	29.1
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.2126 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 10.2
 Liquid Limit (AASHTO T89) : 26
 Plastic Limit (AASHTO T90) : 24
 Plasticity Index : 2
 Liquidity Index : -6.69
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 5.0
 Coarse Sand (-No.10 + No.40) : 31.1
 Fine Sand (-No.40 + No.200) : 34.8
 Silt + Clay (-No.200) : 29.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.2
 Coarse Sand (-No.4 + No.10) : 3.8
 Medium Sand (-No.10 + No.40) : 31.1
 Fine Sand (-No.40 + No.200) : 34.8
 Silt + Clay (-No.200) : 29.1

Approved By : J.S.

Soil No. 163



Florence & Hutcheson

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SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Silty Sand

Sample No. : SS-5
 Sample Loc. : Boring No. B-7
 Sample Depth : 8.0' to 9.5'
 Date Tested : 08/20/12
 Date Reported : 08/30/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	97.4

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	58.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	29.4
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.2529 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 27.1
 Liquid Limit (AASHTO T89) : 44
 Plastic Limit (AASHTO T90) : 36
 Plasticity Index : 8
 Liquidity Index : -1.13

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 2.6
 Coarse Sand (-No.10 + No.40) : 38.6
 Fine Sand (-No.40 + No.200) : 29.4
 Silt + Clay (-No.200) : 29.4

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-5 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 2.6
 Medium Sand (-No.10 + No.40) : 38.6
 Fine Sand (-No.40 + No.200) : 29.4
 Silt + Clay (-No.200) : 29.4

Approved By : J.S.

Soil No. 164



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Black White & Brown Silty Sand

Sample No. : SS-10
 Sample Loc. : Boring No. B-7
 Sample Depth : 30.0' to 31.5'
 Date Tested : 08/20/12
 Date Reported : 08/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.5
No.6		3.35	mm		
No.10		2	mm		94.7

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		56.8
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		15.5
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.3194 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 18.4
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 5.3
 Coarse Sand (-No.10 + No.40) : 37.9
 Fine Sand (-No.40 + No.200) : 41.3
 Silt + Clay (-No.200) : 15.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.5
 Coarse Sand (-No.4 + No.10) : 4.8
 Medium Sand (-No.10 + No.40) : 37.9
 Fine Sand (-No.40 + No.200) : 41.3
 Silt + Clay (-No.200) : 15.5

Approved By : J.S.

Soil No. 165



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange	Sample No. : SS-1
Project No. : 08195-01	Sample Loc. : Boring No. 8
Project County : Greenville	Sample Depth : 0.5' to 1.5'
Project State : South Carolina	Date Tested : 01/23/12
Laboratory No. : 08195-01	Date Reported : 01/30/12
Submitted By : Florence & Hutcheson	
Soil Type : Red Silty Sand	

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	99.0	
1/4		6.3	mm		
No.4		4.75	mm	98.7	
No.6		3.35	mm		
No.10		2	mm	97.1	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	67.9	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	23.8	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.2102 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 15.4
 Liquid Limit (AASHTO T89) : 18
 Plastic Limit (AASHTO T90) : 15
 Plasticity Index : 3
 Liquidity Index : 0.23
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 2.9
 Coarse Sand (-No.10 + No.40) : 29.2
 Fine Sand (-No.40 + No.200) : 44.1
 Silt + Clay (-No.200) : 23.8

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.3
 Coarse Sand (-No.4 + No.10) : 1.6
 Medium Sand (-No.10 + No.40) : 29.2
 Fine Sand (-No.40 + No.200) : 44.1
 Silt + Clay (-No.200) : 23.8

Approved By : BE

Soil No. 17.1



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. 8
 Sample Depth : 2.5' to 4.0'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.6

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	70.5
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	33.1
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1642 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 31.7
 Liquid Limit (AASHTO T89) : 52
 Plastic Limit (AASHTO T90) : 33
 Plasticity Index : 19
 Liquidity Index : -0.06
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-7 (2)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.4
 Coarse Sand (-No.10 + No.40) : 29.1
 Fine Sand (-No.40 + No.200) : 37.4
 Silt + Clay (-No.200) : 33.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.4
 Medium Sand (-No.10 + No.40) : 29.1
 Fine Sand (-No.40 + No.200) : 37.4
 Silt + Clay (-No.200) : 33.1

Approved By : BE

Soil No. 18



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. 8
 Sample Depth : 5.0' to 6.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	100.0	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	78.9	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	26.6	
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.163 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 30.8
 Liquid Limit (AASHTO T89) : 47
 Plastic Limit (AASHTO T90) : 34
 Plasticity Index : 13
 Liquidity Index : -0.28
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-7 (1)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.0
 Coarse Sand (-No.10 + No.40) : 21.1
 Fine Sand (-No.40 + No.200) : 52.3
 Silt + Clay (-No.200) : 26.6

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.0
 Medium Sand (-No.10 + No.40) : 21.1
 Fine Sand (-No.40 + No.200) : 52.3
 Silt + Clay (-No.200) : 26.6

Approved By : BE

Soil No. 19



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Tan & Gray Silty Sand

Sample No. : SS-5

Sample Loc. : Boring No. 8

Sample Depth : 10.0' to 11.5'

Date Tested : 01/23/12

Date Reported : 01/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.8
No.6		3.35	mm	
No.10		2	mm	89.2

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	55.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	12.8
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.3436 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19.2

Liquid Limit (AASHTO T89) : NP

Plastic Limit (AASHTO T90) : NP

Plasticity Index : NP

Liquidity Index : NA

Activity : NA

Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-2-4 (0)

ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 10.8

Coarse Sand (-No.10 + No.40) : 34.0

Fine Sand (-No.40 + No.200) : 42.4

Silt + Clay (-No.200) : 12.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0

Fine Gravel (-3/4in. + No.4) : 2.2

Coarse Sand (-No.4 + No.10) : 8.6

Medium Sand (-No.10 + No.40) : 34.0

Fine Sand (-No.40 + No.200) : 42.4

Silt + Clay (-No.200) : 12.8

Approved By :

BE

Soil No. 20



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Tan & Gray Poorly Graded Sand with Silt and Gravel

Sample No. : SS-6

Sample Loc. : Boring No. 8

Sample Depth : 15.0' to 16.0'

Date Tested : 01/23/12

Date Reported : 01/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	85.4
1/4		6.3	mm	
No.4		4.75	mm	80.1
No.6		3.35	mm	
No.10		2	mm	63.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	31.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	6.7
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 1.0234 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.1

Liquid Limit (AASHTO T89) : NP

Plastic Limit (AASHTO T90) : NP

Plasticity Index : NP

Liquidity Index : NA

Activity : NA

Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-1-b (0)

ASTM Classification: D2487 : SP-SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 36.2

Coarse Sand (-No.10 + No.40) : 31.9

Fine Sand (-No.40 + No.200) : 25.2

Silt + Clay (-No.200) : 6.7

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0

Fine Gravel (-3/4in. + No.4) : 19.9

Coarse Sand (-No.4 + No.10) : 16.3

Medium Sand (-No.10 + No.40) : 31.9

Fine Sand (-No.40 + No.200) : 25.2

Silt + Clay (-No.200) : 6.7

Approved By : BZ

Soil No. 21



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : 185 / 1385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Blue & Gray Poorly Graded Sand with Silt and Gravel

Sample No. : SS-8
 Sample Loc. : Boring No. 8
 Sample Depth : 25.0' to 25.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	90.5
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	79.9
1/4		6.3	mm	
No.4		4.75	mm	76.3
No.6		3.35	mm	
No.10		2	mm	66.3

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	45.5
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	10.6
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.5942 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 9.9
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SP-SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 33.7
 Coarse Sand (-No.10 + No.40) : 20.8
 Fine Sand (-No.40 + No.200) : 34.9
 Silt + Clay (-No.200) : 10.6

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 9.5
 Fine Gravel (-3/4in. + No.4) : 14.2
 Coarse Sand (-No.4 + No.10) : 10.0
 Medium Sand (-No.10 + No.40) : 20.8
 Fine Sand (-No.40 + No.200) : 34.9
 Silt + Clay (-No.200) : 10.6

Approved By : BE

Soil No. 22



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. 9
 Sample Depth : 0.0' to 1.5'
 Date Tested : 02/13/12
 Date Reported : 02/09/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		100.0
1 1/4	in.	31.5	mm		
1	in.	25	mm		100.0
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		93.6
1/4		6.3	mm		
No.4		4.75	mm		90.5
No.6		3.35	mm		
No.10		2	mm		86.8

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		63.1
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		35.9
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1843 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 13.6
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 30
 Plasticity Index : 9
 Liquidity Index : -1.87
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 13.2
 Coarse Sand (-No.10 + No.40) : 23.7
 Fine Sand (-No.40 + No.200) : 27.2
 Silt + Clay (-No.200) : 35.9

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 9.5
 Coarse Sand (-No.4 + No.10) : 3.7
 Medium Sand (-No.10 + No.40) : 23.7
 Fine Sand (-No.40 + No.200) : 27.2
 Silt + Clay (-No.200) : 35.9

Approved By : BE

Soil No. 82



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red, Gray & Tan Clayey Sand

Sample No. : SS-6
 Sample Loc. : Boring No. 9
 Sample Depth : 15.0' to 16.5'
 Date Tested : 02/13/12
 Date Reported : 02/09/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	99.9	
No.6		3.35	mm		
No.10		2	mm	98.7	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	79.6	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	44.1	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1001 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 28.2
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 21
 Plasticity Index : 18
 Liquidity Index : 0.42

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.3
 Coarse Sand (-No.10 + No.40) : 19.1
 Fine Sand (-No.40 + No.200) : 35.5
 Silt + Clay (-No.200) : 44.1

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (4)
 ASTM Classification: D2487 : SC

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.1
 Coarse Sand (-No.4 + No.10) : 1.2
 Medium Sand (-No.10 + No.40) : 19.1
 Fine Sand (-No.40 + No.200) : 35.5
 Silt + Clay (-No.200) : 44.1

Approved By : BE

Soil No. 84



SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-9
 Sample Loc. : Boring No. 9
 Sample Depth : 30.0' to 31.5'
 Date Tested : 02/13/12
 Date Reported : 02/09/12

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.1321 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 39.6
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 33
 Plasticity Index : 6
 Liquidity Index : 1.03

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.3
 Coarse Sand (-No.10 + No.40) : 18.1
 Fine Sand (-No.40 + No.200) : 46.9
 Silt + Clay (-No.200) : 34.7

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.3
 Medium Sand (-No.10 + No.40) : 18.1
 Fine Sand (-No.40 + No.200) : 46.9
 Silt + Clay (-No.200) : 34.7

Approved By : BE

Soil No. 85



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Poorly Graded Gravel with Silt and Sand

Sample No. : SS-11
 Sample Loc. : Boring No. 9
 Sample Depth : 40.0' to 41.5'
 Date Tested : 02/13/12
 Date Reported : 02/09/12

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 9.7558 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17.6
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 73.7
 Coarse Sand (-No.10 + No.40) : 9.0
 Fine Sand (-No.40 + No.200) : 12.1
 Silt + Clay (-No.200) : 5.2

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-a (0)
 ASTM Classification: D2487 : GP-GM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 19.9
 Fine Gravel (-3/4in. + No.4) : 41.4
 Coarse Sand (-No.4 + No.10) : 12.4
 Medium Sand (-No.10 + No.40) : 9.0
 Fine Sand (-No.40 + No.200) : 12.1
 Silt + Clay (-No.200) : 5.2

Approved By : BE

Soil No. 87



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red, Tan & Brown Clayey Sand with Gravel

Sample No. : SS-2
 Sample Loc. : Boring No. 10
 Sample Depth : 2.5' to 4.0'
 Date Tested : 02/13/12
 Date Reported : 02/09/12

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.788 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 14.5
 Liquid Limit (AASHTO T89) : 34
 Plastic Limit (AASHTO T90) : 9
 Plasticity Index : 25
 Liquidity Index : 0.21

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 41.1
 Coarse Sand (-No.10 + No.40) : 14.8
 Fine Sand (-No.40 + No.200) : 24.1
 Silt + Clay (-No.200) : 20.0

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-6 (3)
 ASTM Classification: D2487 : SC

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 15.2
 Fine Gravel (-3/4in. + No.4) : 16.2
 Coarse Sand (-No.4 + No.10) : 9.7
 Medium Sand (-No.10 + No.40) : 14.8
 Fine Sand (-No.40 + No.200) : 24.1
 Silt + Clay (-No.200) : 20.0

Approved By : BE

Soil No. 88



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray Sandy Lean Clay

Sample No. : SS-5
 Sample Loc. : Boring No. 10
 Sample Depth : 10.0' to 11.5'
 Date Tested : 02/13/12
 Date Reported : 02/09/12

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.0676 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19.8
 Liquid Limit (AASHTO T89) : 37
 Plastic Limit (AASHTO T90) : 21
 Plasticity Index : 16
 Liquidity Index : -0.06

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.8
 Coarse Sand (-No.10 + No.40) : 18.2
 Fine Sand (-No.40 + No.200) : 29.2
 Silt + Clay (-No.200) : 50.8

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (5)
 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.3
 Coarse Sand (-No.4 + No.10) : 1.5
 Medium Sand (-No.10 + No.40) : 18.2
 Fine Sand (-No.40 + No.200) : 29.2
 Silt + Clay (-No.200) : 50.8

Approved By : BE

Soil No. 89



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan, Brown & Red Silty Sand

Sample No. : SS-9
 Sample Loc. : Boring No. 10
 Sample Depth : 30.0' to 31.5'
 Date Tested : 02/13/12
 Date Reported : 02/09/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	98.9
1/4		6.3	mm	
No.4		4.75	mm	93.9
No.6		3.35	mm	
No.10		2	mm	83.1

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	66.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	33.9
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1753 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.6
 Liquid Limit (AASHTO T89) : 31
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : 4
 Liquidity Index : -0.66
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 16.9
 Coarse Sand (-No.10 + No.40) : 16.3
 Fine Sand (-No.40 + No.200) : 32.9
 Silt + Clay (-No.200) : 33.9

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 6.1
 Coarse Sand (-No.4 + No.10) : 10.8
 Medium Sand (-No.10 + No.40) : 16.3
 Fine Sand (-No.40 + No.200) : 32.9
 Silt + Clay (-No.200) : 33.9

Approved By : BS

Soil No. 90



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & Dark Brown Silty Sand

Sample No. : SS-14
 Sample Loc. : Boring No. 10
 Sample Depth : 55.0' to 56.5'
 Date Tested : 02/13/12
 Date Reported : 02/09/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	95.6	
1/4		6.3	mm		
No.4		4.75	mm	90.5	
No.6		3.35	mm		
No.10		2	mm	76.4	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	43.0	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	14.8	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.588 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17.3
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 24
 Plasticity Index : 9
 Liquidity Index : -0.73
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 23.6
 Coarse Sand (-No.10 + No.40) : 33.4
 Fine Sand (-No.40 + No.200) : 28.2
 Silt + Clay (-No.200) : 14.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 9.5
 Coarse Sand (-No.4 + No.10) : 14.1
 Medium Sand (-No.10 + No.40) : 33.4
 Fine Sand (-No.40 + No.200) : 28.2
 Silt + Clay (-No.200) : 14.8

Approved By : BS

Soil No. 91



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red, Tan & Dark Brown Silty Sand with Gravel

Sample No. : SS-18
 Sample Loc. : Boring No. 10
 Sample Depth : 75.0' to 76.5'
 Date Tested : 02/13/12
 Date Reported : 02/09/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	81.7	
1/4		6.3	mm		
No.4		4.75	mm	69.6	
No.6		3.35	mm		
No.10		2	mm	60.5	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	51.6	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	23.4	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.3852 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 13.8
 Liquid Limit (AASHTO T89) : NA
 Plastic Limit (AASHTO T90) : NA
 Plasticity Index : NA
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 39.5
 Coarse Sand (-No.10 + No.40) : 8.9
 Fine Sand (-No.40 + No.200) : 28.2
 Silt + Clay (-No.200) : 23.4

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0) *
 ASTM Classification: D2487 : SM *
 * Visual Classification

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 30.4
 Coarse Sand (-No.4 + No.10) : 9.1
 Medium Sand (-No.10 + No.40) : 8.9
 Fine Sand (-No.40 + No.200) : 28.2
 Silt + Clay (-No.200) : 23.4

Approved By : BE

Soil No. 92



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : 185 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Tan Silty Sand with Gravel

Sample No. : SS-1
 Sample Loc. : Boring No. 11
 Sample Depth : 0.0' to 1.5'
 Date Tested : 02/02/12
 Date Reported : 02/08/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	85.0	
1/4		6.3	mm		
No.4		4.75	mm	74.3	
No.6		3.35	mm		
No.10		2	mm	62.7	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	47.5	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	23.3	
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.5483 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 15.9
 Liquid Limit (AASHTO T89) : 31
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : 4
 Liquidity Index : -2.83
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 37.3
 Coarse Sand (-No.10 + No.40) : 15.2
 Fine Sand (-No.40 + No.200) : 24.2
 Silt + Clay (-No.200) : 23.3

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 25.7
 Coarse Sand (-No.4 + No.10) : 11.6
 Medium Sand (-No.10 + No.40) : 15.2
 Fine Sand (-No.40 + No.200) : 24.2
 Silt + Clay (-No.200) : 23.3

Approved By :

BE

Soil No. 48



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Tan Silty Sand

Sample No. : SS-4
 Sample Loc. : Boring No. 11
 Sample Depth : 7.5' to 9.0'
 Date Tested : 02/02/12
 Date Reported : 02/08/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	88.1	
1/4		6.3	mm		
No.4		4.75	mm	86.7	
No.6		3.35	mm		
No.10		2	mm	81.3	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	69.0	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	42.3	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1237 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 25.1
 Liquid Limit (AASHTO T89) : 36
 Plastic Limit (AASHTO T90) : 28
 Plasticity Index : 8
 Liquidity Index : -0.33
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (1)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 18.7
 Coarse Sand (-No.10 + No.40) : 12.3
 Fine Sand (-No.40 + No.200) : 26.7
 Silt + Clay (-No.200) : 42.3

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 13.3
 Coarse Sand (-No.4 + No.10) : 5.4
 Medium Sand (-No.10 + No.40) : 12.3
 Fine Sand (-No.40 + No.200) : 26.7
 Silt + Clay (-No.200) : 42.3

Approved By : BE

Soil No. 49



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White, Tan & Black Silty Sand

Sample No. : SS-11
 Sample Loc. : Boring No. 11
 Sample Depth : 40.0' to 41.5'
 Date Tested : 02/02/12
 Date Reported : 02/08/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		100.0
1 1/4	in.	31.5	mm		
1	in.	25	mm		100.0
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.7
No.6		3.35	mm		
No.10		2	mm		94.8

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		50.7
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		16.9
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.41 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 31.7
 Liquid Limit (AASHTO T89) : 34
 Plastic Limit (AASHTO T90) : 34
 Plasticity Index : NP
 Liquidity Index : NA

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 5.2
 Coarse Sand (-No.10 + No.40) : 44.1
 Fine Sand (-No.40 + No.200) : 33.8
 Silt + Clay (-No.200) : 16.9

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.3
 Coarse Sand (-No.4 + No.10) : 4.9
 Medium Sand (-No.10 + No.40) : 44.1
 Fine Sand (-No.40 + No.200) : 33.8
 Silt + Clay (-No.200) : 16.9

Approved By :

BZ

Soil No. 50



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & White Silty Sand

Sample No. : SS-19
 Sample Loc. : Boring No. 11
 Sample Depth : 80.0' to 81.5'
 Date Tested : 02/02/12
 Date Reported : 02/08/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	95.3	
1/4		6.3	mm		
No.4		4.75	mm	89.2	
No.6		3.35	mm		
No.10		2	mm	75.3	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	42.6	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	18.8	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.6034 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 18.3
 Liquid Limit (AASHTO T89) : 29
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 4
 Liquidity Index : -1.76

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 24.7
 Coarse Sand (-No.10 + No.40) : 32.7
 Fine Sand (-No.40 + No.200) : 23.8
 Silt + Clay (-No.200) : 18.8

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 10.8
 Coarse Sand (-No.4 + No.10) : 13.9
 Medium Sand (-No.10 + No.40) : 32.7
 Fine Sand (-No.40 + No.200) : 23.8
 Silt + Clay (-No.200) : 18.8

Approved By :

Bz

Soil No. 51



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & Black Silty Sand

Sample No. : SS-22
 Sample Loc. : Boring No. 11
 Sample Depth : 95.0' to 96.5'
 Date Tested : 02/02/12
 Date Reported : 02/08/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	95.1	
No.6		3.35	mm		
No.10		2	mm	84.0	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	65.4	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	19.9	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.2363 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17.1
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 16.0
 Coarse Sand (-No.10 + No.40) : 18.6
 Fine Sand (-No.40 + No.200) : 45.5
 Silt + Clay (-No.200) : 19.9

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 4.9
 Coarse Sand (-No.4 + No.10) : 11.1
 Medium Sand (-No.10 + No.40) : 18.6
 Fine Sand (-No.40 + No.200) : 45.5
 Silt + Clay (-No.200) : 19.9

Approved By :

BS

Soil No. 52



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & Red Sandy Silt

Sample No. : SS-2
 Sample Loc. : Boring No. 12
 Sample Depth : 2.5' to 4.0'
 Date Tested : 02/02/12
 Date Reported : 02/08/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	97.8
1/4		6.3	mm	
No.4		4.75	mm	96.6
No.6		3.35	mm	
No.10		2	mm	92.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	78.5
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	52.5
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.0547 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 25.5
 Liquid Limit (AASHTO T89) : 40
 Plastic Limit (AASHTO T90) : 32
 Plasticity Index : 8
 Liquidity Index : -0.81
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 7.2
 Coarse Sand (-No.10 + No.40) : 14.3
 Fine Sand (-No.40 + No.200) : 26.0
 Silt + Clay (-No.200) : 52.5

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (3)
 ASTM Classification: D2487 : ML

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 3.4
 Coarse Sand (-No.4 + No.10) : 3.8
 Medium Sand (-No.10 + No.40) : 14.3
 Fine Sand (-No.40 + No.200) : 26.0
 Silt + Clay (-No.200) : 52.5

Approved By : BE

Soil No. 53



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand with Gravel

Sample No. : SS-4
 Sample Loc. : Boring No. 12
 Sample Depth : 7.5' to 9.0'
 Date Tested : 02/02/12
 Date Reported : 02/08/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		100.0
1 1/4	in.	31.5	mm		
1	in.	25	mm		100.0
3/4	in.	19	mm		94.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		81.8
1/4		6.3	mm		
No.4		4.75	mm		61.9
No.6		3.35	mm		
No.10		2	mm		45.1

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		33.3
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		16.6
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 2.5739 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 12.4
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 30
 Plasticity Index : 3
 Liquidity Index : -5.72
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 54.9
 Coarse Sand (-No.10 + No.40) : 11.8
 Fine Sand (-No.40 + No.200) : 16.7
 Silt + Clay (-No.200) : 16.6

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 6.0
 Fine Gravel (-3/4in. + No.4) : 32.1
 Coarse Sand (-No.4 + No.10) : 16.8
 Medium Sand (-No.10 + No.40) : 11.8
 Fine Sand (-No.40 + No.200) : 16.7
 Silt + Clay (-No.200) : 16.6

Approved By : BE

Soil No. 54



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Yellow & White Silty Sand

Sample No. : SS-12
 Sample Loc. : Boring No. 12
 Sample Depth : 45.0' to 46.5'
 Date Tested : 02/02/12
 Date Reported : 02/08/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		100.0
1 1/4	in.	31.5	mm		
1	in.	25	mm		100.0
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.1
No.6		3.35	mm		
No.10		2	mm		96.1

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		80.8
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		46.7
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.0887 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 42.1
 Liquid Limit (AASHTO T89) : 46
 Plastic Limit (AASHTO T90) : 39
 Plasticity Index : 7

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 3.9
 Coarse Sand (-No.10 + No.40) : 15.3
 Fine Sand (-No.40 + No.200) : 34.1
 Silt + Clay (-No.200) : 46.7

Liquidity Index : 0.44
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (2)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.9
 Coarse Sand (-No.4 + No.10) : 3.0
 Medium Sand (-No.10 + No.40) : 15.3
 Fine Sand (-No.40 + No.200) : 34.1
 Silt + Clay (-No.200) : 46.7

Approved By : BE

Soil No. 55



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & White Silty Sand

Sample No. : SS-18
 Sample Loc. : Boring No. 12
 Sample Depth : 75.0' to 76.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	95.1

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	69.3
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	37.8
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1468 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 26.7
 Liquid Limit (AASHTO T89) : 38
 Plastic Limit (AASHTO T90) : 33
 Plasticity Index : 5
 Liquidity Index : -1.18
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 4.9
 Coarse Sand (-No.10 + No.40) : 25.8
 Fine Sand (-No.40 + No.200) : 31.5
 Silt + Clay (-No.200) : 37.8

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 4.9
 Medium Sand (-No.10 + No.40) : 25.8
 Fine Sand (-No.40 + No.200) : 31.5
 Silt + Clay (-No.200) : 37.8

Approved By : BE

Soil No. 56



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Clayey Sand with Gravel

Sample No. : SS-1
 Sample Loc. : Boring No. 13
 Sample Depth : 0.0' to 1.5'
 Date Tested : 11/15/11
 Date Reported : 11/21/11

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	82.9
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	80.0
1/4		6.3	mm	
No.4		4.75	mm	79.4
No.6		3.35	mm	
No.10		2	mm	76.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	64.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	38.7
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1599 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 14.7
 Liquid Limit (AASHTO T89) : 34
 Plastic Limit (AASHTO T90) : 22
 Plasticity Index : 12
 Liquidity Index : -0.61
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 23.2
 Coarse Sand (-No.10 + No.40) : 12.2
 Fine Sand (-No.40 + No.200) : 25.9
 Silt + Clay (-No.200) : 38.7

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (1)
 ASTM Classification: D2487 : SC

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 17.1
 Fine Gravel (-3/4in. + No.4) : 3.5
 Coarse Sand (-No.4 + No.10) : 2.6
 Medium Sand (-No.10 + No.40) : 12.2
 Fine Sand (-No.40 + No.200) : 25.9
 Silt + Clay (-No.200) : 38.7

Approved By : BE

Soil No. 11



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Brown Silty Sand

Sample No. : SS-3

Sample Loc. : Boring No. 13

Sample Depth : 4.0' to 5.5'

Date Tested : 11/15/11

Date Reported : 11/21/11

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	96.2	
No.6		3.35	mm		
No.10		2	mm	82.1	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	55.5	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	26.2	
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.3069 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 28.6
Liquid Limit (AASHTO T89) : 32
Plastic Limit (AASHTO T90) : 28
Plasticity Index : 4
Liquidity Index : 0.08
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 17.9
Coarse Sand (-No.10 + No.40) : 26.6
Fine Sand (-No.40 + No.200) : 29.3
Silt + Clay (-No.200) : 26.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 3.8
Coarse Sand (-No.4 + No.10) : 14.1
Medium Sand (-No.10 + No.40) : 26.6
Fine Sand (-No.40 + No.200) : 29.3
Silt + Clay (-No.200) : 26.2

Approved By : BE

Soil No. 12



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-5
 Sample Loc. : Boring No. 13
 Sample Depth : 8.0' to 9.5'
 Date Tested : 11/15/11
 Date Reported : 11/21/11

AASHTO T27 :

		% Passing	
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

		% Passing	
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.2 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 33
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 10.0
 Coarse Sand (-No.10 + No.40) : 24.7
 Fine Sand (-No.40 + No.200) : 35.2
 Silt + Clay (-No.200) : 30.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.1
 Coarse Sand (-No.4 + No.10) : 9.9
 Medium Sand (-No.10 + No.40) : 24.7
 Fine Sand (-No.40 + No.200) : 35.2
 Silt + Clay (-No.200) : 30.1

Approved By : BE

Soil No. 13



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Brown Silty Sand

Sample No. : ST-1

Sample Loc. : Boring No. 13

Sample Depth : 20.3' to 20.8'

Date Tested : 01/10/12

Date Reported : 01/12/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.4
No.6		3.35	mm	
No.10		2	mm	95.9

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	68.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	37.8
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1481 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 28.4

Liquid Limit (AASHTO T89) : 32

Plastic Limit (AASHTO T90) : 32

Plasticity Index : NP

Liquidity Index : NA

Activity : NA

Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-4 (0)

ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.1

Coarse Sand (-No.10 + No.40) : 27.0

Fine Sand (-No.40 + No.200) : 31.1

Silt + Clay (-No.200) : 37.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0

Fine Gravel (-3/4in. + No.4) : 0.6

Coarse Sand (-No.4 + No.10) : 3.5

Medium Sand (-No.10 + No.40) : 27.0

Fine Sand (-No.40 + No.200) : 31.1

Silt + Clay (-No.200) : 37.8

Approved By :

BE

Soil No. 16



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : ST-2
 Sample Loc. : Boring No. 13
 Sample Depth : 40.3' to 40.7'
 Date Tested : 01/10/12
 Date Reported : 01/12/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	95.7	
3/4	in.	19	mm	95.7	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	93.5	
1/4		6.3	mm		
No.4		4.75	mm	93.5	
No.6		3.35	mm		
No.10		2	mm	90.0	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	73.2	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	13.5	
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.2166 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : NA
 Liquid Limit (AASHTO T89) : 36
 Plastic Limit (AASHTO T90) : 33
 Plasticity Index : 3
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 10.0
 Coarse Sand (-No.10 + No.40) : 16.8
 Fine Sand (-No.40 + No.200) : 59.7
 Silt + Clay (-No.200) : 13.5

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 4.3
 Fine Gravel (-3/4in. + No.4) : 2.2
 Coarse Sand (-No.4 + No.10) : 3.5
 Medium Sand (-No.10 + No.40) : 16.8
 Fine Sand (-No.40 + No.200) : 59.7
 Silt + Clay (-No.200) : 13.5

Approved By : BE

Soil No. 17



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown & White Silty Sand

Sample No. : SS-12
 Sample Loc. : Boring No. 13
 Sample Depth : 55.3' to 56.8'
 Date Tested : 11/15/11
 Date Reported : 11/21/11

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	97.9

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	93.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	78.1
No.100		0.15	mm	
No.200		0.075	mm	23.7
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1145 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 27.7
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 39
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.1
 Coarse Sand (-No.10 + No.40) : 4.9
 Fine Sand (-No.40 + No.200) : 69.3
 Silt + Clay (-No.200) : 23.7

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 2.1
 Medium Sand (-No.10 + No.40) : 4.9
 Fine Sand (-No.40 + No.200) : 69.3
 Silt + Clay (-No.200) : 23.7

Approved By :

BE

Soil No. 14



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange	Sample No. : SS-21
Project No. : 08195-01	Sample Loc. : Boring No. 13
Project County : Greenville	Sample Depth : 95.3' to 96.8'
Project State : South Carolina	Date Tested : 11/15/11
Laboratory No. : 08195-01	Date Reported : 11/21/11
Submitted By : Florence & Hutcheson	
Soil Type : White, Orange & Brown Silty Sand	

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.1
No.6		3.35	mm	
No.10		2	mm	88.7

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	62.4
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	30.6
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.2161 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20.5
 Liquid Limit (AASHTO T89) : 32
 Plastic Limit (AASHTO T90) : 29
 Plasticity Index : 3
 Liquidity Index : -2.72
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 11.3
 Coarse Sand (-No.10 + No.40) : 26.3
 Fine Sand (-No.40 + No.200) : 31.8
 Silt + Clay (-No.200) : 30.6

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.9
 Coarse Sand (-No.4 + No.10) : 9.4
 Medium Sand (-No.10 + No.40) : 26.3
 Fine Sand (-No.40 + No.200) : 31.8
 Silt + Clay (-No.200) : 30.6

Approved By : BS

Soil No. 15



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. 14
 Sample Depth : 4.0' to 5.5'
 Date Tested : 11/15/11
 Date Reported : 11/21/11

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	93.4
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	92.6
1/4		6.3	mm	
No.4		4.75	mm	92.1
No.6		3.35	mm	
No.10		2	mm	88.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	54.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	38.8
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.2692 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22.1
 Liquid Limit (AASHTO T89) : 40
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : 13
 Liquidity Index : -0.37
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (I)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 12.0
 Coarse Sand (-No.10 + No.40) : 34.0
 Fine Sand (-No.40 + No.200) : 15.2
 Silt + Clay (-No.200) : 38.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 6.6
 Fine Gravel (-3/4in. + No.4) : 1.3
 Coarse Sand (-No.4 + No.10) : 4.1
 Medium Sand (-No.10 + No.40) : 34.0
 Fine Sand (-No.40 + No.200) : 15.2
 Silt + Clay (-No.200) : 38.8

Approved By : BF

Soil No. 7



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Red Silty Sand

Sample No. : SS-10

Sample Loc. : Boring No. 14

Sample Depth : 30.0' to 31.5'

Date Tested : 11/15/11

Date Reported : 11/21/11

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	96.9

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	66.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	40.6
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1418 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 31.5

Liquid Limit (AASHTO T89) : 37

Plastic Limit (AASHTO T90) : 33

Plasticity Index : 4

Liquidity Index : -0.40

Activity : NA

Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-4 (0)

ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.1

Coarse Sand (-No.10 + No.40) : 30.7

Fine Sand (-No.40 + No.200) : 25.6

Silt + Clay (-No.200) : 40.6

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0

Fine Gravel (-3/4in. + No.4) : 0.0

Coarse Sand (-No.4 + No.10) : 3.1

Medium Sand (-No.10 + No.40) : 30.7

Fine Sand (-No.40 + No.200) : 25.6

Silt + Clay (-No.200) : 40.6

Approved By : BE

Soil No. 8



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-14
 Sample Loc. : Boring No. 14
 Sample Depth : 50.0' to 51.5'
 Date Tested : 11/15/11
 Date Reported : 11/21/11

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.9
No.6		3.35	mm	
No.10		2	mm	87.3

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	47.5
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	20.1
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.4684 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19.8
 Liquid Limit (AASHTO T89) : 31
 Plastic Limit (AASHTO T90) : 31
 Plasticity Index : NP
 Liquidity Index : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 12.7
 Coarse Sand (-No.10 + No.40) : 39.8
 Fine Sand (-No.40 + No.200) : 27.4
 Silt + Clay (-No.200) : 20.1

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.1
 Coarse Sand (-No.4 + No.10) : 10.6
 Medium Sand (-No.10 + No.40) : 39.8
 Fine Sand (-No.40 + No.200) : 27.4
 Silt + Clay (-No.200) : 20.1

Approved By : BZ

Soil No. 9



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Red Silty Sand

Sample No. : SS-17

Sample Loc. : Boring No. 14

Sample Depth : 65.0' to 66.5'

Date Tested : 11/15/11

Date Reported : 11/21/11

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	99.9	
No.6		3.35	mm		
No.10		2	mm	94.5	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	61.3	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	29.1	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.2312 mm

CBR : NA

Dry Dens. : NA

Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 25.8

Liquid Limit (AASHTO T89) : 34

Plastic Limit (AASHTO T90) : 27

Plasticity Index : 7

Liquidity Index : -0.12

Activity : NA

Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-2-4 (0)

ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 5.5

Coarse Sand (-No.10 + No.40) : 33.2

Fine Sand (-No.40 + No.200) : 32.2

Silt + Clay (-No.200) : 29.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0

Fine Gravel (-3/4in. + No.4) : 0.1

Coarse Sand (-No.4 + No.10) : 5.4

Medium Sand (-No.10 + No.40) : 33.2

Fine Sand (-No.40 + No.200) : 32.2

Silt + Clay (-No.200) : 29.1

Approved By : BE

Soil No. 10



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Clayey Sand

Sample No. : SS-1
 Sample Loc. : Boring No. 15
 Sample Depth : 0.0' to 1.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	99.1	
No.6		3.35	mm		
No.10		2	mm	96.5	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	69.0	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	24.9	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.2013 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20.9
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 20
 Plasticity Index : 13
 Liquidity Index : 0.10
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 3.5
 Coarse Sand (-No.10 + No.40) : 27.5
 Fine Sand (-No.40 + No.200) : 44.1
 Silt + Clay (-No.200) : 24.9

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-6 (1)
 ASTM Classification: D2487 : SC

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.9
 Coarse Sand (-No.4 + No.10) : 2.6
 Medium Sand (-No.10 + No.40) : 27.5
 Fine Sand (-No.40 + No.200) : 44.1
 Silt + Clay (-No.200) : 24.9

Approved By : BE

Soil No. 23



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. 15
 Sample Depth : 5.0' to 6.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.7
No.6		3.35	mm	
No.10		2	mm	94.8

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	64.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	22.6
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.2319 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.6
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 5.2
 Coarse Sand (-No.10 + No.40) : 30.1
 Fine Sand (-No.40 + No.200) : 42.1
 Silt + Clay (-No.200) : 22.6

Liquidity Index : NA
 Activity : NA

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.3
 Coarse Sand (-No.4 + No.10) : 4.9
 Medium Sand (-No.10 + No.40) : 30.1
 Fine Sand (-No.40 + No.200) : 42.1
 Silt + Clay (-No.200) : 22.6

Approved By : BE

Soil No. 24



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray Poorly Graded Sand with Silt

Sample No. : SS-5
 Sample Loc. : Boring No. 15
 Sample Depth : 10.0' to 11.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	89.8
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	89.8
1/4		6.3	mm	
No.4		4.75	mm	86.6
No.6		3.35	mm	
No.10		2	mm	73.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	43.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	9.1
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.602 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 12.9
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SP-SM

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 26.2
 Coarse Sand (-No.10 + No.40) : 30.7
 Fine Sand (-No.40 + No.200) : 34.0
 Silt + Clay (-No.200) : 9.1

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 10.2
 Fine Gravel (-3/4in. + No.4) : 3.2
 Coarse Sand (-No.4 + No.10) : 12.8
 Medium Sand (-No.10 + No.40) : 30.7
 Fine Sand (-No.40 + No.200) : 34.0
 Silt + Clay (-No.200) : 9.1

Approved By : BE

Soil No. 25



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & Red Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. 16
 Sample Depth : 2.5' to 4.0'
 Date Tested : 02/24/12
 Date Reported : 02/28/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		100.0
1 1/4	in.	31.5	mm		
1	in.	25	mm		100.0
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		98.8
1/4		6.3	mm		
No.4		4.75	mm		94.4
No.6		3.35	mm		
No.10		2	mm		88.4

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		72.7
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		34.7
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1508 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 23.3
 Liquid Limit (AASHTO T89) : 35
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 9
 Liquidity Index : -0.33

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 11.6
 Coarse Sand (-No.10 + No.40) : 15.7
 Fine Sand (-No.40 + No.200) : 38.0
 Silt + Clay (-No.200) : 34.7

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 5.6
 Coarse Sand (-No.4 + No.10) : 6.0
 Medium Sand (-No.10 + No.40) : 15.7
 Fine Sand (-No.40 + No.200) : 38.0
 Silt + Clay (-No.200) : 34.7

Approved By :

Soil No. 93



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red, Tan & Gray Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. 16
 Sample Depth : 5.0' to 6.5'
 Date Tested : 02/13/12
 Date Reported : 02/09/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.6
No.6		3.35	mm	
No.10		2	mm	92.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	69.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	32.7
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.168 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.3
 Liquid Limit (AASHTO T89) : 27
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 2
 Liquidity Index : -0.17
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 8.0
 Coarse Sand (-No.10 + No.40) : 22.1
 Fine Sand (-No.40 + No.200) : 37.2
 Silt + Clay (-No.200) : 32.7

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.4
 Coarse Sand (-No.4 + No.10) : 5.6
 Medium Sand (-No.10 + No.40) : 22.1
 Fine Sand (-No.40 + No.200) : 37.2
 Silt + Clay (-No.200) : 32.7

Approved By :

BE

Soil No. 94



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Clayey Sand

Sample No. : SS-4
 Sample Loc. : Boring No. 16
 Sample Depth : 7.5' to 9.0'
 Date Tested : 02/13/12
 Date Reported : 02/09/12

AASHTO T27:

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	94.0
No.6		3.35	mm	
No.10		2	mm	86.9

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	65.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	39.0
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1524 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22.3
 Liquid Limit (AASHTO T89) : 44
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 18
 Liquidity Index : -0.20

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 13.1
 Coarse Sand (-No.10 + No.40) : 21.0
 Fine Sand (-No.40 + No.200) : 26.9
 Silt + Clay (-No.200) : 39.0

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-6 (3)
 ASTM Classification: D2487 : SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 6.0
 Coarse Sand (-No.4 + No.10) : 7.1
 Medium Sand (-No.10 + No.40) : 21.0
 Fine Sand (-No.40 + No.200) : 26.9
 Silt + Clay (-No.200) : 39.0

Approved By : BS

Soil No. 95



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & Red Clayey Gravel with Sand

Sample No. : SS-5
 Sample Loc. : Boring No. 16
 Sample Depth : 10.0' to 11.5'
 Date Tested : 02/13/12
 Date Reported : 02/09/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	60.2
3/4	in.	19	mm	60.2
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	60.2
1/4		6.3	mm	
No.4		4.75	mm	59.8
No.6		3.35	mm	
No.10		2	mm	58.1

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	42.5
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	25.6
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.8949 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20.7
 Liquid Limit (AASHTO T89) : 47
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : 20
 Liquidity Index : -0.30
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-7 (2)
 ASTM Classification: D2487 : GC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 41.9
 Coarse Sand (-No.10 + No.40) : 15.6
 Fine Sand (-No.40 + No.200) : 16.9
 Silt + Clay (-No.200) : 25.6

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 39.8
 Fine Gravel (-3/4in. + No.4) : 0.4
 Coarse Sand (-No.4 + No.10) : 1.7
 Medium Sand (-No.10 + No.40) : 15.6
 Fine Sand (-No.40 + No.200) : 16.9
 Silt + Clay (-No.200) : 25.6

Approved By : BE

Soil No. 96



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White & Tan Silty Sand

Sample No. : SS-8
 Sample Loc. : Boring No. 16
 Sample Depth : 25.0' to 26.5'
 Date Tested : 02/24/12
 Date Reported : 02/28/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.7
No.6		3.35	mm	
No.10		2	mm	97.2

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	74.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	23.3
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.185 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 34.8
 Liquid Limit (AASHTO T89) : 35
 Plastic Limit (AASHTO T90) : 35
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.8
 Coarse Sand (-No.10 + No.40) : 22.6
 Fine Sand (-No.40 + No.200) : 51.3
 Silt + Clay (-No.200) : 23.3

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.3
 Coarse Sand (-No.4 + No.10) : 2.5
 Medium Sand (-No.10 + No.40) : 22.6
 Fine Sand (-No.40 + No.200) : 51.3
 Silt + Clay (-No.200) : 23.3

Approved By : BE

Soil No. 97



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Black, Tan & White Silty Sand

Sample No. : SS-14
 Sample Loc. : Boring No. 16
 Sample Depth : 55.0' to 56.5'
 Date Tested : 02/13/12
 Date Reported : 02/09/12

AASHTO T27:

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.6
No.6		3.35	mm	
No.10		2	mm	96.2

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	75.4
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	32.0
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.154 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 14
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.8
 Coarse Sand (-No.10 + No.40) : 20.8
 Fine Sand (-No.40 + No.200) : 43.4
 Silt + Clay (-No.200) : 32.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.4
 Coarse Sand (-No.4 + No.10) : 3.4
 Medium Sand (-No.10 + No.40) : 20.8
 Fine Sand (-No.40 + No.200) : 43.4
 Silt + Clay (-No.200) : 32.0

Approved By :

BE

Soil No. 98



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White & Tan Silty Sand

Sample No. : SS-19
 Sample Loc. : Boring No. 16
 Sample Depth : 80.0' to 81.5'
 Date Tested : 02/13/12
 Date Reported : 02/09/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	96.5
No.6		3.35	mm	
No.10		2	mm	83.5

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	53.4
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	18.5
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.3589 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 15.2
 Liquid Limit (AASHTO T89) : 21
 Plastic Limit (AASHTO T90) : 19
 Plasticity Index : 2
 Liquidity Index : -1.69

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 16.5
 Coarse Sand (-No.10 + No.40) : 30.1
 Fine Sand (-No.40 + No.200) : 34.9
 Silt + Clay (-No.200) : 18.5

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 3.5
 Coarse Sand (-No.4 + No.10) : 13.0
 Medium Sand (-No.10 + No.40) : 30.1
 Fine Sand (-No.40 + No.200) : 34.9
 Silt + Clay (-No.200) : 18.5

Approved By : BE

Soil No. 99



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. 17
 Sample Depth : 0.0' to 1.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	99.0
1/4		6.3	mm	
No.4		4.75	mm	92.3
No.6		3.35	mm	
No.10		2	mm	85.2

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	68.3
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	35.2
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1629 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 16.3
 Liquid Limit (AASHTO T89) : 25
 Plastic Limit (AASHTO T90) : 21
 Plasticity Index : 4
 Liquidity Index : -1.28
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 14.8
 Coarse Sand (-No.10 + No.40) : 16.9
 Fine Sand (-No.40 + No.200) : 33.1
 Silt + Clay (-No.200) : 35.2

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 7.7
 Coarse Sand (-No.4 + No.10) : 7.1
 Medium Sand (-No.10 + No.40) : 16.9
 Fine Sand (-No.40 + No.200) : 33.1
 Silt + Clay (-No.200) : 35.2

Approved By : BE

Soil No. 57



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : 185 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. 17
 Sample Depth : 2.5' to 4.0'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		100.0
1 1/4	in.	31.5	mm		
1	in.	25	mm		100.0
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		96.6
1/4		6.3	mm		
No.4		4.75	mm		94.3
No.6		3.35	mm		
No.10		2	mm		89.9

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		83.8
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		49.8
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.0758 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19.5
 Liquid Limit (AASHTO T89) : 29
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 3
 Liquidity Index : -2.09
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 10.1
 Coarse Sand (-No.10 + No.40) : 6.1
 Fine Sand (-No.40 + No.200) : 34.0
 Silt + Clay (-No.200) : 49.8

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 5.7
 Coarse Sand (-No.4 + No.10) : 4.4
 Medium Sand (-No.10 + No.40) : 6.1
 Fine Sand (-No.40 + No.200) : 34.0
 Silt + Clay (-No.200) : 49.8

Approved By : BE

Soil No. 58



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-5
 Sample Loc. : Boring No. 17
 Sample Depth : 10.0' to 11.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.2438 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 23.5
 Liquid Limit (AASHTO T89) : 43
 Plastic Limit (AASHTO T90) : 41
 Plasticity Index : 2
 Liquidity Index : -8.63
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 9.7
 Coarse Sand (-No.10 + No.40) : 31.3
 Fine Sand (-No.40 + No.200) : 28.1
 Silt + Clay (-No.200) : 30.9

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-5 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.5
 Coarse Sand (-No.4 + No.10) : 9.2
 Medium Sand (-No.10 + No.40) : 31.3
 Fine Sand (-No.40 + No.200) : 28.1
 Silt + Clay (-No.200) : 30.9

Approved By : BE

Soil No. 59



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-11
 Sample Loc. : Boring No. 17
 Sample Depth : 40.0' to 41.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	98.1	
No.6		3.35	mm		
No.10		2	mm	91.9	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	73.5	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	28.7	
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.1711 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 23.9
 Liquid Limit (AASHTO T89) : 30
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 5
 Liquidity Index : -0.26
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 8.1
 Coarse Sand (-No.10 + No.40) : 18.4
 Fine Sand (-No.40 + No.200) : 44.8
 Silt + Clay (-No.200) : 28.7

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.9
 Coarse Sand (-No.4 + No.10) : 6.2
 Medium Sand (-No.10 + No.40) : 18.4
 Fine Sand (-No.40 + No.200) : 44.8
 Silt + Clay (-No.200) : 28.7

Approved By : BE

Soil No. 60



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Tan Silty Sand

Sample No. : SS-15
 Sample Loc. : Boring No. 17
 Sample Depth : 60.0' to 61.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	95.5	
1/4		6.3	mm		
No.4		4.75	mm	89.4	
No.6		3.35	mm		
No.10		2	mm	73.1	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	52.6	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	21.3	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.368 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 13.7
 Liquid Limit (AASHTO T89) : NA
 Plastic Limit (AASHTO T90) : NA
 Plasticity Index : NA
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 26.9
 Coarse Sand (-No.10 + No.40) : 20.5
 Fine Sand (-No.40 + No.200) : 31.3
 Silt + Clay (-No.200) : 21.3

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0) *
 ASTM Classification: D2487 : SM *
 * Visual Classification

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 10.6
 Coarse Sand (-No.4 + No.10) : 16.3
 Medium Sand (-No.10 + No.40) : 20.5
 Fine Sand (-No.40 + No.200) : 31.3
 Silt + Clay (-No.200) : 21.3

Approved By : BE

Soil No. 61



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-17
 Sample Loc. : Boring No. 17
 Sample Depth : 70.0' to 71.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.5
No.6		3.35	mm	
No.10		2	mm	85.4

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	65.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	33.6
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1824 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17.7
 Liquid Limit (AASHTO T89) : 25
 Plastic Limit (AASHTO T90) : 22
 Plasticity Index : 3
 Liquidity Index : -1.49
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 14.6
 Coarse Sand (-No.10 + No.40) : 19.8
 Fine Sand (-No.40 + No.200) : 32.0
 Silt + Clay (-No.200) : 33.6

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.5
 Coarse Sand (-No.4 + No.10) : 13.1
 Medium Sand (-No.10 + No.40) : 19.8
 Fine Sand (-No.40 + No.200) : 32.0
 Silt + Clay (-No.200) : 33.6

Approved By :

BE

Soil No. 62



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & White Silty Sand

Sample No. : SS-18
 Sample Loc. : Boring No. 17
 Sample Depth : 75.0' to 76.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	98.1	
1/4		6.3	mm		
No.4		4.75	mm	96.6	
No.6		3.35	mm		
No.10		2	mm	91.2	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	71.9	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	25.9	
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.1861 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 18.1
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 8.8
 Coarse Sand (-No.10 + No.40) : 19.3
 Fine Sand (-No.40 + No.200) : 46.0
 Silt + Clay (-No.200) : 25.9

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 3.4
 Coarse Sand (-No.4 + No.10) : 5.4
 Medium Sand (-No.10 + No.40) : 19.3
 Fine Sand (-No.40 + No.200) : 46.0
 Silt + Clay (-No.200) : 25.9

Approved By :

BE

Soil No. 63



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-21
 Sample Loc. : Boring No. 17
 Sample Depth : 90.0' to 91.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	98.3	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	60.5	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	17.7	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.2777 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 12.5
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.7
 Coarse Sand (-No.10 + No.40) : 37.8
 Fine Sand (-No.40 + No.200) : 42.8
 Silt + Clay (-No.200) : 17.7

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.7
 Medium Sand (-No.10 + No.40) : 37.8
 Fine Sand (-No.40 + No.200) : 42.8
 Silt + Clay (-No.200) : 17.7

Approved By :

BE

Soil No. 64



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown & Red Clayey Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-18
 Sample Depth : 0.0' to 1.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		100.0
1 1/4	in.	31.5	mm		
1	in.	25	mm		100.0
3/4	in.	19	mm		90.9
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		90.9
1/4		6.3	mm		
No.4		4.75	mm		89.2
No.6		3.35	mm		
No.10		2	mm		86.2

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		60.9
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		28.6
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.2367 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 9.8
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 20
 Plasticity Index : 13
 Liquidity Index : -0.78
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-6 (1)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 13.8
 Coarse Sand (-No.10 + No.40) : 25.3
 Fine Sand (-No.40 + No.200) : 32.3
 Silt + Clay (-No.200) : 28.6

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 9.1
 Fine Gravel (-3/4in. + No.4) : 1.7
 Coarse Sand (-No.4 + No.10) : 3.0
 Medium Sand (-No.10 + No.40) : 25.3
 Fine Sand (-No.40 + No.200) : 32.3
 Silt + Clay (-No.200) : 28.6

Approved By : BS

Soil No. 106



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Brown & Red Silty Sand

Sample No. : SS-3

Sample Loc. : Boring No. B-18

Sample Depth : 4.0' to 5.5'

Date Tested : 06/14/12

Date Reported : 06/19/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	98.3	
No.6		3.35	mm		
No.10		2	mm	92.7	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	63.7	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	34.8	
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.1868 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20.2

Liquid Limit (AASHTO T89) : 36

Plastic Limit (AASHTO T90) : 26

Plasticity Index : 10

Liquidity Index : -0.54

Activity : NA

Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-2-4 (0)

ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 7.3

Coarse Sand (-No.10 + No.40) : 29.0

Fine Sand (-No.40 + No.200) : 28.9

Silt + Clay (-No.200) : 34.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0

Fine Gravel (-3/4in. + No.4) : 1.7

Coarse Sand (-No.4 + No.10) : 5.6

Medium Sand (-No.10 + No.40) : 29.0

Fine Sand (-No.40 + No.200) : 28.9

Silt + Clay (-No.200) : 34.8

Approved By :

BS

Soil No. 107



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown & Red Clayey Sand

Sample No. : SS-7
 Sample Loc. : Boring No. B-18
 Sample Depth : 15.0' to 16.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	98.7	
1/4		6.3	mm		
No.4		4.75	mm	97.0	
No.6		3.35	mm		
No.10		2	mm	92.7	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	64.0	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	34.8	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.185 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 25.4
 Liquid Limit (AASHTO T89) : 45
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 20
 Liquidity Index : 0.04
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 7.3
 Coarse Sand (-No.10 + No.40) : 28.7
 Fine Sand (-No.40 + No.200) : 29.2
 Silt + Clay (-No.200) : 34.8

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-7 (2)
 ASTM Classification: D2487 : SC

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 3.0
 Coarse Sand (-No.4 + No.10) : 4.3
 Medium Sand (-No.10 + No.40) : 28.7
 Fine Sand (-No.40 + No.200) : 29.2
 Silt + Clay (-No.200) : 34.8

Approved By :

BE

Soil No. 108



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray Silty Sand with Gravel

Sample No. : SS-8
 Sample Loc. : Boring No. B-18
 Sample Depth : 20.0' to 21.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	85.7
3/4	in.	19	mm	85.7
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	81.4
1/4		6.3	mm	
No.4		4.75	mm	73.8
No.6		3.35	mm	
No.10		2	mm	64.8

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	43.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	18.9
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.6679 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 16
 Liquid Limit (AASHTO T89) : NA
 Plastic Limit (AASHTO T90) : NA
 Plasticity Index : NA
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0) *
 ASTM Classification: D2487 : SM *
 * Visual Classification

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 35.2
 Coarse Sand (-No.10 + No.40) : 20.9
 Fine Sand (-No.40 + No.200) : 25.0
 Silt + Clay (-No.200) : 18.9

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 14.3
 Fine Gravel (-3/4in. + No.4) : 11.9
 Coarse Sand (-No.4 + No.10) : 9.0
 Medium Sand (-No.10 + No.40) : 20.9
 Fine Sand (-No.40 + No.200) : 25.0
 Silt + Clay (-No.200) : 18.9

Approved By : BE

Soil No. 109



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Clayey Sand

Sample No. : SS-9
 Sample Loc. : Boring No. B-18
 Sample Depth : 25.0' to 26.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	99.5	
No.6		3.35	mm		
No.10		2	mm	97.7	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	66.3	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	30.3	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1938 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 15.5
 Liquid Limit (AASHTO T89) : 31
 Plastic Limit (AASHTO T90) : 18
 Plasticity Index : 13
 Liquidity Index : -0.16
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 2.3
 Coarse Sand (-No.10 + No.40) : 31.4
 Fine Sand (-No.40 + No.200) : 36.0
 Silt + Clay (-No.200) : 30.3

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-6 (1)
 ASTM Classification: D2487 : SC

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.5
 Coarse Sand (-No.4 + No.10) : 1.8
 Medium Sand (-No.10 + No.40) : 31.4
 Fine Sand (-No.40 + No.200) : 36.0
 Silt + Clay (-No.200) : 30.3

Approved By : BE

Soil No. 110



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Brown Silty Sand

Sample No. : SS-12

Sample Loc. : Boring No. B-18

Sample Depth : 40.0' to 41.5'

Date Tested : 06/14/12

Date Reported : 06/19/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	100.0

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	77.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	41.5
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1127 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 47.5

Liquid Limit (AASHTO T89) : 49

Plastic Limit (AASHTO T90) : 46

Plasticity Index : 3

Liquidity Index : 0.45

Activity : NA

Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-5 (0)

ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.0

Coarse Sand (-No.10 + No.40) : 22.3

Fine Sand (-No.40 + No.200) : 36.2

Silt + Clay (-No.200) : 41.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0

Fine Gravel (-3/4in. + No.4) : 0.0

Coarse Sand (-No.4 + No.10) : 0.0

Medium Sand (-No.10 + No.40) : 22.3

Fine Sand (-No.40 + No.200) : 36.2

Silt + Clay (-No.200) : 41.5

Approved By : Bz

Soil No. 111



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Black & White Silty Sand

Sample No. : SS-17
 Sample Loc. : Boring No. B-18
 Sample Depth : 65.0' to 66.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.3
No.6		3.35	mm	
No.10		2	mm	91.6

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	51.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	16.1
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.4025 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 8.4
 Coarse Sand (-No.10 + No.40) : 40.5
 Fine Sand (-No.40 + No.200) : 35.0
 Silt + Clay (-No.200) : 16.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.7
 Coarse Sand (-No.4 + No.10) : 7.7
 Medium Sand (-No.10 + No.40) : 40.5
 Fine Sand (-No.40 + No.200) : 35.0
 Silt + Clay (-No.200) : 16.1

Approved By : BE

Soil No. 112



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & White Silty Sand

Sample No. : SS-21
 Sample Loc. : Boring No. B-18
 Sample Depth : 85.0' to 86.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	97.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	65.4
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	22.9
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.2267 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20.2
 Liquid Limit (AASHTO T89) : NA
 Plastic Limit (AASHTO T90) : NA
 Plasticity Index : NA
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 2.2
 Coarse Sand (-No.10 + No.40) : 32.4
 Fine Sand (-No.40 + No.200) : 42.5
 Silt + Clay (-No.200) : 22.9

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0) *
 ASTM Classification: D2487 : SM *
 * Visual Classification

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.2
 Coarse Sand (-No.4 + No.10) : 2.0
 Medium Sand (-No.10 + No.40) : 32.4
 Fine Sand (-No.40 + No.200) : 42.5
 Silt + Clay (-No.200) : 22.9

Approved By : BS

Soil No. 113



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & Red Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-19
 Sample Depth : 0.0' to 1.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.8
No.6		3.35	mm	
No.10		2	mm	94.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	67.3
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	33.3
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1758 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 16.5
 Liquid Limit (AASHTO T89) : 35
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 10
 Liquidity Index : -0.86

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 5.2
 Coarse Sand (-No.10 + No.40) : 27.5
 Fine Sand (-No.40 + No.200) : 34.0
 Silt + Clay (-No.200) : 33.3

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.2
 Coarse Sand (-No.4 + No.10) : 4.0
 Medium Sand (-No.10 + No.40) : 27.5
 Fine Sand (-No.40 + No.200) : 34.0
 Silt + Clay (-No.200) : 33.3

Approved By : BE

Soil No. 114



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-19
 Sample Depth : 4.0' to 5.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.7
No.6		3.35	mm	
No.10		2	mm	97.7

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	74.5
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	47.1
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0901 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 26.2
 Liquid Limit (AASHTO T89) : 53
 Plastic Limit (AASHTO T90) : 34
 Plasticity Index : 19
 Liquidity Index : -0.43

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.3
 Coarse Sand (-No.10 + No.40) : 23.2
 Fine Sand (-No.40 + No.200) : 27.4
 Silt + Clay (-No.200) : 47.1

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (6)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.3
 Coarse Sand (-No.4 + No.10) : 2.0
 Medium Sand (-No.10 + No.40) : 23.2
 Fine Sand (-No.40 + No.200) : 27.4
 Silt + Clay (-No.200) : 47.1

Approved By : BE

Soil No. 115



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Clayey Sand

Sample No. : SS-5
 Sample Loc. : Boring No. B-19
 Sample Depth : 8.0' to 9.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.3
No.6		3.35	mm	
No.10		2	mm	96.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	66.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	37.0
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1594 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22
 Liquid Limit (AASHTO T89) : 34
 Plastic Limit (AASHTO T90) : 19
 Plasticity Index : 15
 Liquidity Index : 0.23
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (1)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.2
 Coarse Sand (-No.10 + No.40) : 29.9
 Fine Sand (-No.40 + No.200) : 29.9
 Silt + Clay (-No.200) : 37.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.7
 Coarse Sand (-No.4 + No.10) : 2.5
 Medium Sand (-No.10 + No.40) : 29.9
 Fine Sand (-No.40 + No.200) : 29.9
 Silt + Clay (-No.200) : 37.0

Approved By : BE

Soil No. 116



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-10
 Sample Loc. : Boring No. B-19
 Sample Depth : 30.0' to 31.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	98.2	
No.6		3.35	mm		
No.10		2	mm	82.3	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	38.0	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	17.9	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.6465 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.2
 Liquid Limit (AASHTO T89) : 40
 Plastic Limit (AASHTO T90) : 29
 Plasticity Index : 11
 Liquidity Index : -0.48

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 17.7
 Coarse Sand (-No.10 + No.40) : 44.3
 Fine Sand (-No.40 + No.200) : 20.1
 Silt + Clay (-No.200) : 17.9

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-6 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.8
 Coarse Sand (-No.4 + No.10) : 15.9
 Medium Sand (-No.10 + No.40) : 44.3
 Fine Sand (-No.40 + No.200) : 20.1
 Silt + Clay (-No.200) : 17.9

Approved By : BE

Soil No. 117



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-14
 Sample Loc. : Boring No. B-19
 Sample Depth : 50.0' to 51.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.2683 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 16.9
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.1
 Coarse Sand (-No.10 + No.40) : 38.6
 Fine Sand (-No.40 + No.200) : 42.6
 Silt + Clay (-No.200) : 18.7

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.1
 Medium Sand (-No.10 + No.40) : 38.6
 Fine Sand (-No.40 + No.200) : 42.6
 Silt + Clay (-No.200) : 18.7

Approved By : BE

Soil No. 118



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-16
 Sample Loc. : Boring No. B-19
 Sample Depth : 60.0' to 61.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	97.7

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	64.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	29.2
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.2103 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.5
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 2.3
 Coarse Sand (-No.10 + No.40) : 33.5
 Fine Sand (-No.40 + No.200) : 35.0
 Silt + Clay (-No.200) : 29.2

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.1
 Coarse Sand (-No.4 + No.10) : 2.2
 Medium Sand (-No.10 + No.40) : 33.5
 Fine Sand (-No.40 + No.200) : 35.0
 Silt + Clay (-No.200) : 29.2

Approved By : BE

Soil No. 119



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-19
 Sample Loc. : Boring No. B-19
 Sample Depth : 75.0' to 76.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	97.1

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	63.4
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	25.2
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.2313 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 16.9
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 2.9
 Coarse Sand (-No.10 + No.40) : 33.7
 Fine Sand (-No.40 + No.200) : 38.2
 Silt + Clay (-No.200) : 25.2

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 2.9
 Medium Sand (-No.10 + No.40) : 33.7
 Fine Sand (-No.40 + No.200) : 38.2
 Silt + Clay (-No.200) : 25.2

Approved By : Bz

Soil No. 120



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Purple Silty Sand

Sample No. : SS-23
 Sample Loc. : Boring No. B-19
 Sample Depth : 95.0' to 96.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	98.2	
No.6		3.35	mm		
No.10		2	mm	94.2	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	66.1	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	27.0	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.2081 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 11
 Liquid Limit (AASHTO T89) : NA
 Plastic Limit (AASHTO T90) : NA
 Plasticity Index : NA
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0) *
 ASTM Classification: D2487 : SM *
 * Visual Classification

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 5.8
 Coarse Sand (-No.10 + No.40) : 28.1
 Fine Sand (-No.40 + No.200) : 39.1
 Silt + Clay (-No.200) : 27.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.8
 Coarse Sand (-No.4 + No.10) : 4.0
 Medium Sand (-No.10 + No.40) : 28.1
 Fine Sand (-No.40 + No.200) : 39.1
 Silt + Clay (-No.200) : 27.0

Approved By : BC

Soil No. 121



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Tan Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. 20
 Sample Depth : 0.0' to 1.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.0
No.6		3.35	mm	
No.10		2	mm	90.5

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	71.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	35.5
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1502 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 14.7
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 31
 Plasticity Index : 2
 Liquidity Index : -8.08
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 9.5
 Coarse Sand (-No.10 + No.40) : 18.8
 Fine Sand (-No.40 + No.200) : 36.2
 Silt + Clay (-No.200) : 35.5

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 3.0
 Coarse Sand (-No.4 + No.10) : 6.5
 Medium Sand (-No.10 + No.40) : 18.8
 Fine Sand (-No.40 + No.200) : 36.2
 Silt + Clay (-No.200) : 35.5

Approved By : BS

Soil No. 65



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. 20
 Sample Depth : 2.5' to 4.0'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	98.7	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	84.6	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	33.3	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1319 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 10
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.3
 Coarse Sand (-No.10 + No.40) : 14.1
 Fine Sand (-No.40 + No.200) : 51.3
 Silt + Clay (-No.200) : 33.3

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.3
 Medium Sand (-No.10 + No.40) : 14.1
 Fine Sand (-No.40 + No.200) : 51.3
 Silt + Clay (-No.200) : 33.3

Approved By : BE

Soil No. 66



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : 185 / 1385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Red & Tan Silty Sand

Sample No. : SS-3

Sample Loc. : Boring No. 20

Sample Depth : 5.0' to 6.5'

Date Tested : 02/02/12

Date Reported : 02/09/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	99.4	
No.6		3.35	mm		
No.10		2	mm	97.0	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	74.5	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	35.5	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1429 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 9.6

Liquid Limit (AASHTO T89) : 26

Plastic Limit (AASHTO T90) : 22

Plasticity Index : 4

Liquidity Index : -3.14

Activity : NA

Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-4 (0)

ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.0

Coarse Sand (-No.10 + No.40) : 22.5

Fine Sand (-No.40 + No.200) : 39.0

Silt + Clay (-No.200) : 35.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0

Fine Gravel (-3/4in. + No.4) : 0.6

Coarse Sand (-No.4 + No.10) : 2.4

Medium Sand (-No.10 + No.40) : 22.5

Fine Sand (-No.40 + No.200) : 39.0

Silt + Clay (-No.200) : 35.5

Approved By : BE

Soil No. 67



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Clayey Sand

Sample No. : SS-6
 Sample Loc. : Boring No. 20
 Sample Depth : 15.0' to 16.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	96.4

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	74.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	46.2
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0945 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 14.6
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 15
 Plasticity Index : 18
 Liquidity Index : 0.00
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (4)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.6
 Coarse Sand (-No.10 + No.40) : 21.7
 Fine Sand (-No.40 + No.200) : 28.5
 Silt + Clay (-No.200) : 46.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.1
 Coarse Sand (-No.4 + No.10) : 3.5
 Medium Sand (-No.10 + No.40) : 21.7
 Fine Sand (-No.40 + No.200) : 28.5
 Silt + Clay (-No.200) : 46.2

Approved By : BS

Soil No. 68



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown & Tan Silty Sand

Sample No. : SS-8
 Sample Loc. : Boring No. 20
 Sample Depth : 25.0' to 26.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	95.5	
No.6		3.35	mm		
No.10		2	mm	78.1	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	41.3	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	14.2	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.6129 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19.2
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 21.9
 Coarse Sand (-No.10 + No.40) : 36.8
 Fine Sand (-No.40 + No.200) : 27.1
 Silt + Clay (-No.200) : 14.2

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 4.5
 Coarse Sand (-No.4 + No.10) : 17.4
 Medium Sand (-No.10 + No.40) : 36.8
 Fine Sand (-No.40 + No.200) : 27.1
 Silt + Clay (-No.200) : 14.2

Approved By : BE

Soil No. 69



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. 21
 Sample Depth : 0.0' to 1.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.1513 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19.7
 Liquid Limit (AASHTO T89) : 35
 Plastic Limit (AASHTO T90) : 30
 Plasticity Index : 5
 Liquidity Index : -1.97

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 8.8
 Coarse Sand (-No.10 + No.40) : 21.2
 Fine Sand (-No.40 + No.200) : 33.6
 Silt + Clay (-No.200) : 36.4

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 3.4
 Coarse Sand (-No.4 + No.10) : 5.4
 Medium Sand (-No.10 + No.40) : 21.2
 Fine Sand (-No.40 + No.200) : 33.6
 Silt + Clay (-No.200) : 36.4

Approved By : BE

Soil No. 26



SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-4
 Sample Loc. : Boring No. 21
 Sample Depth : 7.5' to 9.0'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.2
No.6		3.35	mm	
No.10		2	mm	90.1

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	64.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	34.3
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1832 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22.9
 Liquid Limit (AASHTO T89) : 35
 Plastic Limit (AASHTO T90) : 30
 Plasticity Index : 5
 Liquidity Index : -1.45
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 9.9
 Coarse Sand (-No.10 + No.40) : 25.3
 Fine Sand (-No.40 + No.200) : 30.5
 Silt + Clay (-No.200) : 34.3

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.8
 Coarse Sand (-No.4 + No.10) : 7.1
 Medium Sand (-No.10 + No.40) : 25.3
 Fine Sand (-No.40 + No.200) : 30.5
 Silt + Clay (-No.200) : 34.3

Approved By : Bz

Soil No. 27



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. 21
 Sample Depth : 15.0' to 16.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	97.7
1/4		6.3	mm	
No.4		4.75	mm	94.8
No.6		3.35	mm	
No.10		2	mm	88.3

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	65.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	34.0
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1826 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 27.1
 Liquid Limit (AASHTO T89) : 36
 Plastic Limit (AASHTO T90) : 31
 Plasticity Index : 5
 Liquidity Index : -0.70
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 11.7
 Coarse Sand (-No.10 + No.40) : 23.1
 Fine Sand (-No.40 + No.200) : 31.2
 Silt + Clay (-No.200) : 34.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 5.2
 Coarse Sand (-No.4 + No.10) : 6.5
 Medium Sand (-No.10 + No.40) : 23.1
 Fine Sand (-No.40 + No.200) : 31.2
 Silt + Clay (-No.200) : 34.0

Approved By : BE

Soil No. 28



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-7
 Sample Loc. : Boring No. 21
 Sample Depth : 20.0' to 21.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	92.4
1/4		6.3	mm	
No.4		4.75	mm	87.3
No.6		3.35	mm	
No.10		2	mm	82.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	65.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	34.4
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1771 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 25.4
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 30
 Plasticity Index : 9
 Liquidity Index : -0.54
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 18.0
 Coarse Sand (-No.10 + No.40) : 16.1
 Fine Sand (-No.40 + No.200) : 31.5
 Silt + Clay (-No.200) : 34.4

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 12.7
 Coarse Sand (-No.4 + No.10) : 5.3
 Medium Sand (-No.10 + No.40) : 16.1
 Fine Sand (-No.40 + No.200) : 31.5
 Silt + Clay (-No.200) : 34.4

Approved By : BE

Soil No. 29



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Well-Graded Gravel with Silt and Sand

Sample No. : SS-9
 Sample Loc. : Boring No. 21
 Sample Depth : 30.0' to 31.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	52.9	
1/4		6.3	mm		
No.4		4.75	mm	41.0	
No.6		3.35	mm		
No.10		2	mm	30.6	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	18.5	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	5.8	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 8.0235 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 11.1
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-a (0)
 ASTM Classification: D2487 : GW-GM

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 69.4
 Coarse Sand (-No.10 + No.40) : 12.1
 Fine Sand (-No.40 + No.200) : 12.7
 Silt + Clay (-No.200) : 5.8

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 59.0
 Coarse Sand (-No.4 + No.10) : 10.4
 Medium Sand (-No.10 + No.40) : 12.1
 Fine Sand (-No.40 + No.200) : 12.7
 Silt + Clay (-No.200) : 5.8

Approved By : BS

Soil No. 30



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-10
 Sample Loc. : Boring No. 21
 Sample Depth : 35.0' to 36.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.7217 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20.2
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 21.9
 Coarse Sand (-No.10 + No.40) : 42.7
 Fine Sand (-No.40 + No.200) : 21.3
 Silt + Clay (-No.200) : 14.1

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 3.5
 Coarse Sand (-No.4 + No.10) : 18.4
 Medium Sand (-No.10 + No.40) : 42.7
 Fine Sand (-No.40 + No.200) : 21.3
 Silt + Clay (-No.200) : 14.1

Approved By : BE

Soil No. 31



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-12
 Sample Loc. : Boring No. 21
 Sample Depth : 45.0' to 46.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.9

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	99.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	21.2
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1423 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 34.2
 Liquid Limit (AASHTO T89) : 38
 Plastic Limit (AASHTO T90) : 35
 Plasticity Index : 3
 Liquidity Index : -0.32
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.1
 Coarse Sand (-No.10 + No.40) : 0.7
 Fine Sand (-No.40 + No.200) : 78.0
 Silt + Clay (-No.200) : 21.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.1
 Medium Sand (-No.10 + No.40) : 0.7
 Fine Sand (-No.40 + No.200) : 78.0
 Silt + Clay (-No.200) : 21.2

Approved By : BE

Soil No. 32



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-16
 Sample Loc. : Boring No. 21
 Sample Depth : 65.0' to 66.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		100.0
1 1/4	in.	31.5	mm		
1	in.	25	mm		100.0
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		98.1
No.6		3.35	mm		
No.10		2	mm		81.8

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		50.6
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		17.4
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.4119 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 14.5
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 18.2
 Coarse Sand (-No.10 + No.40) : 31.2
 Fine Sand (-No.40 + No.200) : 33.2
 Silt + Clay (-No.200) : 17.4

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.9
 Coarse Sand (-No.4 + No.10) : 16.3
 Medium Sand (-No.10 + No.40) : 31.2
 Fine Sand (-No.40 + No.200) : 33.2
 Silt + Clay (-No.200) : 17.4

Approved By : BE

Soil No. 33



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Sandy Lean Clay

Sample No. : SS-2
 Sample Loc. : Boring No. B-22
 Sample Depth : 2.0' to 3.5'
 Date Tested : 08/20/12
 Date Reported : 08/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	92.8
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	92.8
1/4		6.3	mm	
No.4		4.75	mm	90.6
No.6		3.35	mm	
No.10		2	mm	86.3

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	74.3
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	61.1
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.0225 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19.8
 Liquid Limit (AASHTO T89) : 36
 Plastic Limit (AASHTO T90) : 24
 Plasticity Index : 12
 Liquidity Index : -0.37
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (6)
 ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 13.7
 Coarse Sand (-No.10 + No.40) : 12.0
 Fine Sand (-No.40 + No.200) : 13.2
 Silt + Clay (-No.200) : 61.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 7.2
 Fine Gravel (-3/4in. + No.4) : 2.2
 Coarse Sand (-No.4 + No.10) : 4.3
 Medium Sand (-No.10 + No.40) : 12.0
 Fine Sand (-No.40 + No.200) : 13.2
 Silt + Clay (-No.200) : 61.1

Approved By : J.S.

Soil No. 166



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Sandy Lean Clay

Sample No. : SS-5
 Sample Loc. : Boring No. B-22
 Sample Depth : 8.0' to 9.5'
 Date Tested : 08/20/12
 Date Reported : 08/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.6
No.6		3.35	mm	
No.10		2	mm	97.6

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	78.3
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	55.5
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0389 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 25.2
 Liquid Limit (AASHTO T89) : 41
 Plastic Limit (AASHTO T90) : 24
 Plasticity Index : 17
 Liquidity Index : 0.10

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.4
 Coarse Sand (-No.10 + No.40) : 19.3
 Fine Sand (-No.40 + No.200) : 22.8
 Silt + Clay (-No.200) : 55.5

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-6 (7)
 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.4
 Coarse Sand (-No.4 + No.10) : 2.0
 Medium Sand (-No.10 + No.40) : 19.3
 Fine Sand (-No.40 + No.200) : 22.8
 Silt + Clay (-No.200) : 55.5

Approved By : J.S.

Soil No. 167



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-8
 Sample Loc. : Boring No. B-22
 Sample Depth : 20.0' to 21.5'
 Date Tested : 08/20/12
 Date Reported : 08/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.6
No.6		3.35	mm	
No.10		2	mm	96.2

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	73.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	40.0
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1251 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 21.4
 Liquid Limit (AASHTO T89) : 32
 Plastic Limit (AASHTO T90) : 32
 Plasticity Index : NP

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.8
 Coarse Sand (-No.10 + No.40) : 22.3
 Fine Sand (-No.40 + No.200) : 33.9
 Silt + Clay (-No.200) : 40.0

Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.4
 Coarse Sand (-No.4 + No.10) : 2.4
 Medium Sand (-No.10 + No.40) : 22.3
 Fine Sand (-No.40 + No.200) : 33.9
 Silt + Clay (-No.200) : 40.0

Approved By : J.S.

Soil No. 168



SOIL CLASSIFICATION

Project Name : 1-85/1-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-9
 Sample Loc. : Boring No. B-22
 Sample Depth : 25.0' to 26.5'
 Date Tested : 08/16/12
 Date Reported : 08/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	91.9	
1/4		6.3	mm		
No.4		4.75	mm	88.1	
No.6		3.35	mm		
No.10		2	mm	78.6	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	55.8	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	24.9	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.3069 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 18.7
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 21.4
 Coarse Sand (-No.10 + No.40) : 22.8
 Fine Sand (-No.40 + No.200) : 30.9
 Silt + Clay (-No.200) : 24.9

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 11.9
 Coarse Sand (-No.4 + No.10) : 9.5
 Medium Sand (-No.10 + No.40) : 22.8
 Fine Sand (-No.40 + No.200) : 30.9
 Silt + Clay (-No.200) : 24.9

Approved By : J.S.

Soil No. 169



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray Silty Sand

Sample No. : SS-10
 Sample Loc. : Boring No. B-22
 Sample Depth : 30.0' to 31.5'
 Date Tested : 08/16/12
 Date Reported : 08/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	99.6	
No.6		3.35	mm		
No.10		2	mm	96.8	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	73.8	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	40.0	
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.1253 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.5
 Liquid Limit (AASHTO T89) : 32
 Plastic Limit (AASHTO T90) : 32
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.2
 Coarse Sand (-No.10 + No.40) : 23.0
 Fine Sand (-No.40 + No.200) : 33.8
 Silt + Clay (-No.200) : 40.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.4
 Coarse Sand (-No.4 + No.10) : 2.8
 Medium Sand (-No.10 + No.40) : 23.0
 Fine Sand (-No.40 + No.200) : 33.8
 Silt + Clay (-No.200) : 40.0

Approved By : J.S.

Soil No. 170



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Sandy Elastic Silt

Sample No. : SS-11
 Sample Loc. : Boring No. B-22
 Sample Depth : 35.0' to 36.5'
 Date Tested : 08/16/12
 Date Reported : 08/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	99.5	
No.6		3.35	mm		
No.10		2	mm	97.7	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	77.2	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	58.0	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.0301 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 28
 Liquid Limit (AASHTO T89) : 54
 Plastic Limit (AASHTO T90) : 50
 Plasticity Index : 4
 Liquidity Index : -5.52
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (4)
 ASTM Classification: D2487 : MH

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.3
 Coarse Sand (-No.10 + No.40) : 20.5
 Fine Sand (-No.40 + No.200) : 19.2
 Silt + Clay (-No.200) : 58.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.5
 Coarse Sand (-No.4 + No.10) : 1.8
 Medium Sand (-No.10 + No.40) : 20.5
 Fine Sand (-No.40 + No.200) : 19.2
 Silt + Clay (-No.200) : 58.0

Approved By : J.S.

Soil No. 171



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White & Brown Silty Sand

Sample No. : SS-13
 Sample Loc. : Boring No. B-22
 Sample Depth : 45.0' to 46.5'
 Date Tested : 08/16/12
 Date Reported : 08/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	97.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	63.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	38.3
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.17 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 29.9
 Liquid Limit (AASHTO T89) : 45
 Plastic Limit (AASHTO T90) : 45
 Plasticity Index : NP

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.2
 Coarse Sand (-No.10 + No.40) : 34.7
 Fine Sand (-No.40 + No.200) : 24.8
 Silt + Clay (-No.200) : 38.3

Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 2.2
 Medium Sand (-No.10 + No.40) : 34.7
 Fine Sand (-No.40 + No.200) : 24.8
 Silt + Clay (-No.200) : 38.3

Approved By : J.S.

Soil No. 172



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White & Brown Silty Sand

Sample No. : SS-17
 Sample Loc. : Boring No. B-22
 Sample Depth : 65.0' to 66.5'
 Date Tested : 08/16/12
 Date Reported : 08/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	97.6

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	68.4
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	41.5
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1297 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 26.8
 Liquid Limit (AASHTO T89) : 35
 Plastic Limit (AASHTO T90) : 29
 Plasticity Index : 6
 Liquidity Index : -0.38
 Activity : NA

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.4
 Coarse Sand (-No.10 + No.40) : 29.2
 Fine Sand (-No.40 + No.200) : 26.9
 Silt + Clay (-No.200) : 41.5

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 2.4
 Medium Sand (-No.10 + No.40) : 29.2
 Fine Sand (-No.40 + No.200) : 26.9
 Silt + Clay (-No.200) : 41.5

Approved By : J.S.

Soil No. 173



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White Silty Sand

Sample No. : SS-22
 Sample Loc. : Boring No. B-22
 Sample Depth : 90.0' to 91.5'
 Date Tested : 08/16/12
 Date Reported : 08/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	99.5	
No.6		3.35	mm		
No.10		2	mm	91.8	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	65.0	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	36.5	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1706 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 30.7
 Liquid Limit (AASHTO T89) : 44
 Plastic Limit (AASHTO T90) : 38
 Plasticity Index : 6
 Liquidity Index : -1.23
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 8.2
 Coarse Sand (-No.10 + No.40) : 26.8
 Fine Sand (-No.40 + No.200) : 28.5
 Silt + Clay (-No.200) : 36.5

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.5
 Coarse Sand (-No.4 + No.10) : 7.7
 Medium Sand (-No.10 + No.40) : 26.8
 Fine Sand (-No.40 + No.200) : 28.5
 Silt + Clay (-No.200) : 36.5

Approved By : J.S.

Soil No. 174



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Sandy Silt

Sample No. : SS-3
 Sample Loc. : Boring No. 23
 Sample Depth : 5.0' to 6.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	94.1
1/4		6.3	mm	
No.4		4.75	mm	93.3
No.6		3.35	mm	
No.10		2	mm	91.7

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	79.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	50.0
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.075 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 27.3
 Liquid Limit (AASHTO T89) : 40
 Plastic Limit (AASHTO T90) : 32
 Plasticity Index : 8
 Liquidity Index : -0.64
 Activity : NA

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 8.3
 Coarse Sand (-No.10 + No.40) : 12.7
 Fine Sand (-No.40 + No.200) : 29.0
 Silt + Clay (-No.200) : 50.0

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (2)
 ASTM Classification: D2487 : ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 6.7
 Coarse Sand (-No.4 + No.10) : 1.6
 Medium Sand (-No.10 + No.40) : 12.7
 Fine Sand (-No.40 + No.200) : 29.0
 Silt + Clay (-No.200) : 50.0

Approved By : BE

Soil No. 70



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Tan Silty Sand

Sample No. : SS-7
 Sample Loc. : Boring No. 23
 Sample Depth : 20.0' to 21.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.1
No.6		3.35	mm	
No.10		2	mm	91.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	46.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	13.9
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.4866 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 14.4
 Liquid Limit (AASHTO T89) : 27
 Plastic Limit (AASHTO T90) : 24
 Plasticity Index : 3
 Liquidity Index : -3.08
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 8.2
 Coarse Sand (-No.10 + No.40) : 45.8
 Fine Sand (-No.40 + No.200) : 32.1
 Silt + Clay (-No.200) : 13.9

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.9
 Coarse Sand (-No.4 + No.10) : 7.3
 Medium Sand (-No.10 + No.40) : 45.8
 Fine Sand (-No.40 + No.200) : 32.1
 Silt + Clay (-No.200) : 13.9

Approved By : BE

Soil No. 71



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : 185 / 1385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown & Tan Silty Sand

Sample No. : SS-12
 Sample Loc. : Boring No. 23
 Sample Depth : 45.0' to 46.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.4
No.6		3.35	mm	
No.10		2	mm	93.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	59.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	29.1
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.2511 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 27.1
 Liquid Limit (AASHTO T89) : 43
 Plastic Limit (AASHTO T90) : 40
 Plasticity Index : 3
 Liquidity Index : -4.28
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-5 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 7.0
 Coarse Sand (-No.10 + No.40) : 33.9
 Fine Sand (-No.40 + No.200) : 30.0
 Silt + Clay (-No.200) : 29.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.6
 Coarse Sand (-No.4 + No.10) : 6.4
 Medium Sand (-No.10 + No.40) : 33.9
 Fine Sand (-No.40 + No.200) : 30.0
 Silt + Clay (-No.200) : 29.1

Approved By : BE

Soil No. 72



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & White Silty Sand

Sample No. : SS-I6
 Sample Loc. : Boring No. 23
 Sample Depth : 65.0' to 66.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.0
No.6		3.35	mm	
No.10		2	mm	80.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	50.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	37.3
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.3835 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.9
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 33
 Plasticity Index : 6
 Liquidity Index : -1.36
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 19.2
 Coarse Sand (-No.10 + No.40) : 30.0
 Fine Sand (-No.40 + No.200) : 13.5
 Silt + Clay (-No.200) : 37.3

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.0
 Coarse Sand (-No.4 + No.10) : 18.2
 Medium Sand (-No.10 + No.40) : 30.0
 Fine Sand (-No.40 + No.200) : 13.5
 Silt + Clay (-No.200) : 37.3

Approved By : BE

Soil No. 73



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray Silty Sand

Sample No. : SS-19
 Sample Loc. : Boring No. 23
 Sample Depth : 80.0' to 81.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	99.9	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	97.8	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	34.8	
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.114 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 28.5
 Liquid Limit (AASHTO T89) : 37
 Plastic Limit (AASHTO T90) : 34
 Plasticity Index : 3
 Liquidity Index : -1.99

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.1
 Coarse Sand (-No.10 + No.40) : 2.1
 Fine Sand (-No.40 + No.200) : 63.0
 Silt + Clay (-No.200) : 34.8

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.1
 Medium Sand (-No.10 + No.40) : 2.1
 Fine Sand (-No.40 + No.200) : 63.0
 Silt + Clay (-No.200) : 34.8

Approved By : BS

Soil No. 74



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & White Silty Sand

Sample No. : SS-21
 Sample Loc. : Boring No. 23
 Sample Depth : 90.0' to 91.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	99.0
1/4		6.3	mm	
No.4		4.75	mm	95.9
No.6		3.35	mm	
No.10		2	mm	84.5

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	66.3
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	41.7
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1347 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 26.9
 Liquid Limit (AASHTO T89) : 34
 Plastic Limit (AASHTO T90) : 31
 Plasticity Index : 3
 Liquidity Index : -1.39
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 15.5
 Coarse Sand (-No.10 + No.40) : 18.2
 Fine Sand (-No.40 + No.200) : 24.6
 Silt + Clay (-No.200) : 41.7

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 4.1
 Coarse Sand (-No.4 + No.10) : 11.4
 Medium Sand (-No.10 + No.40) : 18.2
 Fine Sand (-No.40 + No.200) : 24.6
 Silt + Clay (-No.200) : 41.7

Approved By : BE

Soil No. 75



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & Yellow Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. 24
 Sample Depth : 2.5' to 4.0'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	96.6	
1/4		6.3	mm		
No.4		4.75	mm	94.2	
No.6		3.35	mm		
No.10		2	mm	87.9	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	72.5	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	37.0	
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.1416 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20.6
 Liquid Limit (AASHTO T89) : 32
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 6
 Liquidity Index : -0.97

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 12.1
 Coarse Sand (-No.10 + No.40) : 15.4
 Fine Sand (-No.40 + No.200) : 35.5
 Silt + Clay (-No.200) : 37.0

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 5.8
 Coarse Sand (-No.4 + No.10) : 6.3
 Medium Sand (-No.10 + No.40) : 15.4
 Fine Sand (-No.40 + No.200) : 35.5
 Silt + Clay (-No.200) : 37.0

Approved By : BE

Soil No. 76



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Tan Sandy Silt

Sample No. : SS-6
 Sample Loc. : Boring No. 24
 Sample Depth : 15.0' to 16.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		100.0
1 1/4	in.	31.5	mm		
1	in.	25	mm		100.0
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.9
No.6		3.35	mm		
No.10		2	mm		98.2

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		85.6
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		52.3
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

AASHTO T88

$D_{50} = 0.0561 \text{ mm}$

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.1
 Liquid Limit (AASHTO T89) : 38
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 13
 Liquidity Index : -0.08

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.8
 Coarse Sand (-No.10 + No.40) : 12.6
 Fine Sand (-No.40 + No.200) : 33.3
 Silt + Clay (-No.200) : 52.3

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (4)
 ASTM Classification: D2487 : ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.1
 Coarse Sand (-No.4 + No.10) : 1.7
 Medium Sand (-No.10 + No.40) : 12.6
 Fine Sand (-No.40 + No.200) : 33.3
 Silt + Clay (-No.200) : 52.3

Approved By : BCE

Soil No. 77



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Tan Silty Sand

Sample No. : SS-8
 Sample Loc. : Boring No. 24
 Sample Depth : 25.0' to 26.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.8
No.6		3.35	mm	
No.10		2	mm	93.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	73.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	38.5
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1335 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 18.8
 Liquid Limit (AASHTO T89) : 31
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 6
 Liquidity Index : -1.08

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 7.0
 Coarse Sand (-No.10 + No.40) : 19.9
 Fine Sand (-No.40 + No.200) : 34.6
 Silt + Clay (-No.200) : 38.5

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.2
 Coarse Sand (-No.4 + No.10) : 4.8
 Medium Sand (-No.10 + No.40) : 19.9
 Fine Sand (-No.40 + No.200) : 34.6
 Silt + Clay (-No.200) : 38.5

Approved By : Bz

Soil No. 78



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : 185 / I385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Brown & Tan Silty Sand

Sample No. : SS-14

Sample Loc. : Boring No. 24

Sample Depth : 55.0' to 56.5'

Date Tested : 02/02/12

Date Reported : 02/09/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	99.3	
1/4		6.3	mm		
No.4		4.75	mm	96.0	
No.6		3.35	mm		
No.10		2	mm	85.4	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	68.2	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	37.2	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1535 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20.2
Liquid Limit (AASHTO T89) : 30
Plastic Limit (AASHTO T90) : 28
Plasticity Index : 2
Liquidity Index : -4.12
Activity : NA

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 14.6
Coarse Sand (-No.10 + No.40) : 17.2
Fine Sand (-No.40 + No.200) : 31.0
Silt + Clay (-No.200) : 37.2

Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 4.0
Coarse Sand (-No.4 + No.10) : 10.6
Medium Sand (-No.10 + No.40) : 17.2
Fine Sand (-No.40 + No.200) : 31.0
Silt + Clay (-No.200) : 37.2

Approved By : BS

Soil No. 79



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan, Yellow & White Silty Sand

Sample No. : SS-20
 Sample Loc. : Boring No. 24
 Sample Depth : 85.0' to 86.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	97.9	
No.6		3.35	mm		
No.10		2	mm	82.1	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	50.5	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	21.9	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.4123 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19.2
 Liquid Limit (AASHTO T89) : 31
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : 4
 Liquidity Index : -1.94

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 17.9
 Coarse Sand (-No.10 + No.40) : 31.6
 Fine Sand (-No.40 + No.200) : 28.6
 Silt + Clay (-No.200) : 21.9

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.1
 Coarse Sand (-No.4 + No.10) : 15.8
 Medium Sand (-No.10 + No.40) : 31.6
 Fine Sand (-No.40 + No.200) : 28.6
 Silt + Clay (-No.200) : 21.9

Approved By : BE

Soil No. 80



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Black, White & Brown Silty Sand

Sample No. : SS-21
 Sample Loc. : Boring No. 24
 Sample Depth : 90.0' to 91.5'
 Date Tested : 02/02/12
 Date Reported : 02/09/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	96.5	
No.6		3.35	mm		
No.10		2	mm	85.0	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	59.8	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	21.9	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.2714 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 23.8
 Liquid Limit (AASHTO T89) : 35
 Plastic Limit (AASHTO T90) : 29
 Plasticity Index : 6
 Liquidity Index : -0.94
 Activity : NA

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 15.0
 Coarse Sand (-No.10 + No.40) : 25.2
 Fine Sand (-No.40 + No.200) : 37.9
 Silt + Clay (-No.200) : 21.9

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 3.5
 Coarse Sand (-No.4 + No.10) : 11.5
 Medium Sand (-No.10 + No.40) : 25.2
 Fine Sand (-No.40 + No.200) : 37.9
 Silt + Clay (-No.200) : 21.9

Approved By : BE

Soil No. 81



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Sandy Silt

Sample No. : SS-1
 Sample Loc. : Boring No. 25
 Sample Depth : 0.0' to 1.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.6
No.6		3.35	mm	
No.10		2	mm	93.6

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	78.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	59.6
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0258 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 21.5
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : 6

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 6.4
 Coarse Sand (-No.10 + No.40) : 15.6
 Fine Sand (-No.40 + No.200) : 18.4
 Silt + Clay (-No.200) : 59.6

Liquidity Index : -0.96
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (2)
 ASTM Classification: D2487 : ML

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.4
 Coarse Sand (-No.4 + No.10) : 5.0
 Medium Sand (-No.10 + No.40) : 15.6
 Fine Sand (-No.40 + No.200) : 18.4
 Silt + Clay (-No.200) : 59.6

Approved By :

BE

Soil No. 34



SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. 25
 Sample Depth : 2.5' to 4.0'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.6
No.6		3.35	mm	
No.10		2	mm	92.4

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	67.5
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	34.9
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1675 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17.4
 Liquid Limit (AASHTO T89) : 32
 Plastic Limit (AASHTO T90) : 24
 Plasticity Index : 8
 Liquidity Index : -0.84
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 7.6
 Coarse Sand (-No.10 + No.40) : 24.9
 Fine Sand (-No.40 + No.200) : 32.6
 Silt + Clay (-No.200) : 34.9

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.4
 Coarse Sand (-No.4 + No.10) : 5.2
 Medium Sand (-No.10 + No.40) : 24.9
 Fine Sand (-No.40 + No.200) : 32.6
 Silt + Clay (-No.200) : 34.9

Approved By : BE

Soil No. 35



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty, Clayey Sand

Sample No. : SS-4
 Sample Loc. : Boring No. 25
 Sample Depth : 7.5' to 9.0'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	98.0	
No.6		3.35	mm		
No.10		2	mm	94.0	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	75.0	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	36.9	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1362 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 18.4
 Liquid Limit (AASHTO T89) : 28
 Plastic Limit (AASHTO T90) : 21
 Plasticity Index : 7
 Liquidity Index : -0.35
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 6.0
 Coarse Sand (-No.10 + No.40) : 19.0
 Fine Sand (-No.40 + No.200) : 38.1
 Silt + Clay (-No.200) : 36.9

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SC-SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.0
 Coarse Sand (-No.4 + No.10) : 4.0
 Medium Sand (-No.10 + No.40) : 19.0
 Fine Sand (-No.40 + No.200) : 38.1
 Silt + Clay (-No.200) : 36.9

Approved By : BE

Soil No. 36



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. 25
 Sample Depth : 15.0' to 16.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.8
No.6		3.35	mm	
No.10		2	mm	95.1

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	76.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	37.5
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1302 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 23.4
 Liquid Limit (AASHTO T89) : 37
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 11
 Liquidity Index : -0.21
 Activity : NA

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.9
 Coarse Sand (-No.10 + No.40) : 18.3
 Fine Sand (-No.40 + No.200) : 39.3
 Silt + Clay (-No.200) : 37.5

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (1)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.2
 Coarse Sand (-No.4 + No.10) : 3.7
 Medium Sand (-No.10 + No.40) : 18.3
 Fine Sand (-No.40 + No.200) : 39.3
 Silt + Clay (-No.200) : 37.5

Approved By : Bz

Soil No. 37



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Clayey Sand

Sample No. : SS-8
 Sample Loc. : Boring No. 25
 Sample Depth : 25.0' to 26.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.1329 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 26.3
 Liquid Limit (AASHTO T89) : 36
 Plastic Limit (AASHTO T90) : 21
 Plasticity Index : 15
 Liquidity Index : 0.32
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (2)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 5.0
 Coarse Sand (-No.10 + No.40) : 20.2
 Fine Sand (-No.40 + No.200) : 37.0
 Silt + Clay (-No.200) : 37.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.8
 Coarse Sand (-No.4 + No.10) : 4.2
 Medium Sand (-No.10 + No.40) : 20.2
 Fine Sand (-No.40 + No.200) : 37.0
 Silt + Clay (-No.200) : 37.8

Approved By : BE

Soil No. 38



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-10
 Sample Loc. : Boring No. 25
 Sample Depth : 35.0' to 36.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	98.5

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	71.5
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	26.5
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1856 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17.5
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.5
 Coarse Sand (-No.10 + No.40) : 27.0
 Fine Sand (-No.40 + No.200) : 45.0
 Silt + Clay (-No.200) : 26.5

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.1
 Coarse Sand (-No.4 + No.10) : 1.4
 Medium Sand (-No.10 + No.40) : 27.0
 Fine Sand (-No.40 + No.200) : 45.0
 Silt + Clay (-No.200) : 26.5

Approved By : BE

Soil No. 39



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-13
 Sample Loc. : Boring No. 25
 Sample Depth : 50.0' to 51.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		100.0
1 1/4	in.	31.5	mm		
1	in.	25	mm		100.0
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		100.0
No.6		3.35	mm		
No.10		2	mm		97.5

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		79.5
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		38.5
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.122 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 26.7
 Liquid Limit (AASHTO T89) : 34
 Plastic Limit (AASHTO T90) : 29
 Plasticity Index : 5
 Liquidity Index : -0.41
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.5
 Coarse Sand (-No.10 + No.40) : 18.0
 Fine Sand (-No.40 + No.200) : 41.0
 Silt + Clay (-No.200) : 38.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 2.5
 Medium Sand (-No.10 + No.40) : 18.0
 Fine Sand (-No.40 + No.200) : 41.0
 Silt + Clay (-No.200) : 38.5

Approved By : BE

Soil No. 40



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-15
 Sample Loc. : Boring No. 25
 Sample Depth : 60.0' to 61.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		100.0
1 1/4	in.	31.5	mm		
1	in.	25	mm		100.0
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		100.0
No.6		3.35	mm		
No.10		2	mm		99.2

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		67.1
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		23.7
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.2146 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17.2
 Liquid Limit (AASHTO T89) : 19
 Plastic Limit (AASHTO T90) : 19
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.8
 Coarse Sand (-No.10 + No.40) : 32.1
 Fine Sand (-No.40 + No.200) : 43.4
 Silt + Clay (-No.200) : 23.7

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.8
 Medium Sand (-No.10 + No.40) : 32.1
 Fine Sand (-No.40 + No.200) : 43.4
 Silt + Clay (-No.200) : 23.7

Approved By : BE

Soil No. 41



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-16
 Sample Loc. : Boring No. 25
 Sample Depth : 65.0' to 66.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.6
No.6		3.35	mm	
No.10		2	mm	96.9

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	74.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	41.0
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1192 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 25.8
 Liquid Limit (AASHTO T89) : 35
 Plastic Limit (AASHTO T90) : 29
 Plasticity Index : 6
 Liquidity Index : -0.57
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.1
 Coarse Sand (-No.10 + No.40) : 22.2
 Fine Sand (-No.40 + No.200) : 33.7
 Silt + Clay (-No.200) : 41.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.4
 Coarse Sand (-No.4 + No.10) : 2.7
 Medium Sand (-No.10 + No.40) : 22.2
 Fine Sand (-No.40 + No.200) : 33.7
 Silt + Clay (-No.200) : 41.0

Approved By : BE

Soil No. 42



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Poorly Graded Sand with Silt

Sample No. : SS-18
 Sample Loc. : Boring No. 25
 Sample Depth : 75.0' to 76.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	93.7	
1/4		6.3	mm		
No.4		4.75	mm	92.9	
No.6		3.35	mm		
No.10		2	mm	86.5	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	50.4	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	5.4	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.4185 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17.7
 Liquid Limit (AASHTO T89) : 28
 Plastic Limit (AASHTO T90) : 28
 Plasticity Index : NP
 Liquidity Index : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 13.5
 Coarse Sand (-No.10 + No.40) : 36.1
 Fine Sand (-No.40 + No.200) : 45.0
 Silt + Clay (-No.200) : 5.4

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SP-SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 7.1
 Coarse Sand (-No.4 + No.10) : 6.4
 Medium Sand (-No.10 + No.40) : 36.1
 Fine Sand (-No.40 + No.200) : 45.0
 Silt + Clay (-No.200) : 5.4

Approved By : BE

Soil No. 43



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray Silty Sand

Sample No. : SS-21
 Sample Loc. : Boring No. 25
 Sample Depth : 90.0' to 91.0'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.3
No.6		3.35	mm	
No.10		2	mm	91.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	73.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	27.2
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1752 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 14.1
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 8.2
 Coarse Sand (-No.10 + No.40) : 18.0
 Fine Sand (-No.40 + No.200) : 46.6
 Silt + Clay (-No.200) : 27.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.7
 Coarse Sand (-No.4 + No.10) : 7.5
 Medium Sand (-No.10 + No.40) : 18.0
 Fine Sand (-No.40 + No.200) : 46.6
 Silt + Clay (-No.200) : 27.2

Approved By : BE

Soil No. 44



Florence & Hutcheson

An **ICA** Company

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-26
 Sample Depth : 0.0' to 1.5'
 Date Tested : 08/16/12
 Date Reported : 08/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	99.0	
No.6		3.35	mm		
No.10		2	mm	95.3	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	72.3	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	38.9	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1335 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 16.3
 Liquid Limit (AASHTO T89) : 26
 Plastic Limit (AASHTO T90) : 23
 Plasticity Index : 3
 Liquidity Index : -2.33
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.7
 Coarse Sand (-No.10 + No.40) : 23.0
 Fine Sand (-No.40 + No.200) : 33.4
 Silt + Clay (-No.200) : 38.9

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.0
 Coarse Sand (-No.4 + No.10) : 3.7
 Medium Sand (-No.10 + No.40) : 23.0
 Fine Sand (-No.40 + No.200) : 33.4
 Silt + Clay (-No.200) : 38.9

Approved By : J.S.

Soil No. 175



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Sandy Silt

Sample No. : SS-2
 Sample Loc. : Boring No. B-26
 Sample Depth : 2.0' to 3.5'
 Date Tested : 08/16/12
 Date Reported : 08/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	99.4	
No.6		3.35	mm		
No.10		2	mm	97.9	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	78.7	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	51.4	
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.0626 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 27.6
 Liquid Limit (AASHTO T89) : 37
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : 10
 Liquidity Index : 0.02

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.1
 Coarse Sand (-No.10 + No.40) : 19.2
 Fine Sand (-No.40 + No.200) : 27.3
 Silt + Clay (-No.200) : 51.4

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (3)
 ASTM Classification: D2487 : ML

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.6
 Coarse Sand (-No.4 + No.10) : 1.5
 Medium Sand (-No.10 + No.40) : 19.2
 Fine Sand (-No.40 + No.200) : 27.3
 Silt + Clay (-No.200) : 51.4

Approved By : J.S.

Soil No. 176



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-5
 Sample Loc. : Boring No. B-26
 Sample Depth : 8.0' to 9.5'
 Date Tested : 08/16/12
 Date Reported : 08/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	97.4	
No.6		3.35	mm		
No.10		2	mm	93.6	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	77.3	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	42.6	
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.1086 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22.3
 Liquid Limit (AASHTO T89) : 35
 Plastic Limit (AASHTO T90) : 29
 Plasticity Index : 6
 Liquidity Index : -1.12

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 6.4
 Coarse Sand (-No.10 + No.40) : 16.3
 Fine Sand (-No.40 + No.200) : 34.7
 Silt + Clay (-No.200) : 42.6

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.6
 Coarse Sand (-No.4 + No.10) : 3.8
 Medium Sand (-No.10 + No.40) : 16.3
 Fine Sand (-No.40 + No.200) : 34.7
 Silt + Clay (-No.200) : 42.6

Approved By : J.S.

Soil No. 177



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Clayey Sand

Sample No. : SS-8
 Sample Loc. : Boring No. B-26
 Sample Depth : 20.0' to 21.5'
 Date Tested : 08/16/12
 Date Reported : 08/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	93.7
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	93.7
1/4		6.3	mm	
No.4		4.75	mm	93.5
No.6		3.35	mm	
No.10		2	mm	89.9

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	69.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	47.4
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.0916 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 21.4
 Liquid Limit (AASHTO T89) : 44
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 18
 Liquidity Index : -0.25

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 10.1
 Coarse Sand (-No.10 + No.40) : 20.0
 Fine Sand (-No.40 + No.200) : 22.5
 Silt + Clay (-No.200) : 47.4

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-6 (5)
 ASTM Classification: D2487 : SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 6.3
 Fine Gravel (-3/4in. + No.4) : 0.2
 Coarse Sand (-No.4 + No.10) : 3.6
 Medium Sand (-No.10 + No.40) : 20.0
 Fine Sand (-No.40 + No.200) : 22.5
 Silt + Clay (-No.200) : 47.4

Approved By : J.S.

Soil No. 178



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Black White & Tan Silty Sand

Sample No. : SS-16
 Sample Loc. : Boring No. B-26
 Sample Depth : 65.0' to 66.5'
 Date Tested : 08/20/12
 Date Reported : 08/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		100.0
No.6		3.35	mm		
No.10		2	mm		97.1

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		64.7
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		38.8
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.1588 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 35.3
 Liquid Limit (AASHTO T89) : 44
 Plastic Limit (AASHTO T90) : 39
 Plasticity Index : 5
 Liquidity Index : -4.37
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 2.9
 Coarse Sand (-No.10 + No.40) : 32.4
 Fine Sand (-No.40 + No.200) : 25.9
 Silt + Clay (-No.200) : 38.8

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 2.9
 Medium Sand (-No.10 + No.40) : 32.4
 Fine Sand (-No.40 + No.200) : 25.9
 Silt + Clay (-No.200) : 38.8

Approved By : J.S.

Soil No. 179



Florence & Hutcheson

An **ICA** Company

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White Silty Sand

Sample No. : SS-20
 Sample Loc. : Boring No. B-26
 Sample Depth : 80.0' to 81.5'
 Date Tested : 08/20/12
 Date Reported : 08/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	99.4	
No.6		3.35	mm		
No.10		2	mm	89.9	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	59.6	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	42.5	
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.1605 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 28
 Liquid Limit (AASHTO T89) : 37
 Plastic Limit (AASHTO T90) : 37
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 10.1
 Coarse Sand (-No.10 + No.40) : 30.3
 Fine Sand (-No.40 + No.200) : 17.1
 Silt + Clay (-No.200) : 42.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.6
 Coarse Sand (-No.4 + No.10) : 9.5
 Medium Sand (-No.10 + No.40) : 30.3
 Fine Sand (-No.40 + No.200) : 17.1
 Silt + Clay (-No.200) : 42.5

Approved By : J.S.

Soil No. 180



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. 27
 Sample Depth : 2.0' to 3.5'
 Date Tested : 11/15/11
 Date Reported : 11/21/11

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.1
No.6		3.35	mm	
No.10		2	mm	90.2

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	69.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	30.8
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1785 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 18
 Liquid Limit (AASHTO T89) : 30
 Plastic Limit (AASHTO T90) : 28
 Plasticity Index : 2
 Liquidity Index : -5.07
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 9.8
 Coarse Sand (-No.10 + No.40) : 21.0
 Fine Sand (-No.40 + No.200) : 38.4
 Silt + Clay (-No.200) : 30.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.9
 Coarse Sand (-No.4 + No.10) : 6.9
 Medium Sand (-No.10 + No.40) : 21.0
 Fine Sand (-No.40 + No.200) : 38.4
 Silt + Clay (-No.200) : 30.8

Approved By : BS

Soil No. 1



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Red & Brown Silty Sand

Sample No. : SS-4

Sample Loc. : Boring No. 27

Sample Depth : 6.0' to 7.5'

Date Tested : 11/15/11

Date Reported : 11/21/11

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	95.0
1/4		6.3	mm	
No.4		4.75	mm	91.4
No.6		3.35	mm	
No.10		2	mm	87.7

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	75.5
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	39.7
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1235 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17
Liquid Limit (AASHTO T89) : 28
Plastic Limit (AASHTO T90) : 23
Plasticity Index : 5
Liquidity Index : -1.25
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 12.3
Coarse Sand (-No.10 + No.40) : 12.2
Fine Sand (-No.40 + No.200) : 35.8
Silt + Clay (-No.200) : 39.7

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 8.6
Coarse Sand (-No.4 + No.10) : 3.7
Medium Sand (-No.10 + No.40) : 12.2
Fine Sand (-No.40 + No.200) : 35.8
Silt + Clay (-No.200) : 39.7

Approved By :

BE

Soil No. 2



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : 185 / 1385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. 27
 Sample Depth : 10.0' to 11.5'
 Date Tested : 11/15/11
 Date Reported : 11/21/11

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	98.5	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	76.6	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	29.5	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1596 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 11.7
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.5
 Coarse Sand (-No.10 + No.40) : 21.9
 Fine Sand (-No.40 + No.200) : 47.1
 Silt + Clay (-No.200) : 29.5

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.5
 Medium Sand (-No.10 + No.40) : 21.9
 Fine Sand (-No.40 + No.200) : 47.1
 Silt + Clay (-No.200) : 29.5

Approved By : BE

Soil No. 3



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Red Silty, Clayey Sand

Sample No. : SS-15

Sample Loc. : Boring No. 27

Sample Depth : 54.2' to 55.7'

Date Tested : 11/15/11

Date Reported : 11/21/11

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.206 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19.6

Liquid Limit (AASHTO T89) : 29

Plastic Limit (AASHTO T90) : 22

Plasticity Index : 7

Liquidity Index : -0.38

Activity : NA

Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-2-4 (0)

ASTM Classification: D2487 : SC-SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 9.0

Coarse Sand (-No.10 + No.40) : 21.0

Fine Sand (-No.40 + No.200) : 47.9

Silt + Clay (-No.200) : 22.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0

Fine Gravel (-3/4in. + No.4) : 3.8

Coarse Sand (-No.4 + No.10) : 5.2

Medium Sand (-No.10 + No.40) : 21.0

Fine Sand (-No.40 + No.200) : 47.9

Silt + Clay (-No.200) : 22.1

Approved By : BS

Soil No. 4



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Well-Graded Sand with Silt and Gravel

Sample No. : SS-18
 Sample Loc. : Boring No. 27
 Sample Depth : 69.2' to 70.7'
 Date Tested : 11/15/11
 Date Reported : 11/21/11

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	88.3	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	78.5	
1/4		6.3	mm		
No.4		4.75	mm	64.7	
No.6		3.35	mm		
No.10		2	mm	48.5	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	31.5	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	11.4	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 2.1668 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 18.1
 Liquid Limit (AASHTO T89) : 30
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 5
 Liquidity Index : -1.38
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SW-SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 51.5
 Coarse Sand (-No.10 + No.40) : 17.0
 Fine Sand (-No.40 + No.200) : 20.1
 Silt + Clay (-No.200) : 11.4

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 11.7
 Fine Gravel (-3/4in. + No.4) : 23.6
 Coarse Sand (-No.4 + No.10) : 16.2
 Medium Sand (-No.10 + No.40) : 17.0
 Fine Sand (-No.40 + No.200) : 20.1
 Silt + Clay (-No.200) : 11.4

Approved By : BS

Soil No. 5



SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-19
 Sample Loc. : Boring No. 27
 Sample Depth : 74.2' to 75.7'
 Date Tested : 11/15/11
 Date Reported : 11/21/11

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	99.5	
No.6		3.35	mm		
No.10		2	mm	88.6	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	62.0	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	22.4	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.2513 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 13.3
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 11.4
 Coarse Sand (-No.10 + No.40) : 26.6
 Fine Sand (-No.40 + No.200) : 39.6
 Silt + Clay (-No.200) : 22.4

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.5
 Coarse Sand (-No.4 + No.10) : 10.9
 Medium Sand (-No.10 + No.40) : 26.6
 Fine Sand (-No.40 + No.200) : 39.6
 Silt + Clay (-No.200) : 22.4

Approved By : BE

Soil No. 6



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-28
 Sample Depth : 0.0' to 1.5'
 Date Tested : 06/14/12
 Date Reported : 06/19/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	93.3	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	89.6	
1/4		6.3	mm		
No.4		4.75	mm	86.5	
No.6		3.35	mm		
No.10		2	mm	79.8	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	54.3	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	27.3	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.3224 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 10.1
 Liquid Limit (AASHTO T89) : 28
 Plastic Limit (AASHTO T90) : 23
 Plasticity Index : 5
 Liquidity Index : -2.52

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 20.2
 Coarse Sand (-No.10 + No.40) : 25.5
 Fine Sand (-No.40 + No.200) : 27.0
 Silt + Clay (-No.200) : 27.3

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 6.7
 Fine Gravel (-3/4in. + No.4) : 6.8
 Coarse Sand (-No.4 + No.10) : 6.7
 Medium Sand (-No.10 + No.40) : 25.5
 Fine Sand (-No.40 + No.200) : 27.0
 Silt + Clay (-No.200) : 27.3

Approved By : BS

Soil No. 122



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-28
 Sample Depth : 2.0' to 3.5'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.2
No.6		3.35	mm	
No.10		2	mm	96.6

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	64.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	24.1
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.2268 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22.4
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 13
 Liquidity Index : -0.27
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 3.4
 Coarse Sand (-No.10 + No.40) : 31.9
 Fine Sand (-No.40 + No.200) : 40.6
 Silt + Clay (-No.200) : 24.1

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-6 (1)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.8
 Coarse Sand (-No.4 + No.10) : 2.6
 Medium Sand (-No.10 + No.40) : 31.9
 Fine Sand (-No.40 + No.200) : 40.6
 Silt + Clay (-No.200) : 24.1

Approved By : BE

Soil No. 123



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Clayey Sand

Sample No. : SS-4
 Sample Loc. : Boring No. B-28
 Sample Depth : 6.0' to 7.5'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	96.3
1/4		6.3	mm	
No.4		4.75	mm	91.6
No.6		3.35	mm	
No.10		2	mm	85.6

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	55.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	27.2
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.3111 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 18
 Liquid Limit (AASHTO T89) : 34
 Plastic Limit (AASHTO T90) : 19
 Plasticity Index : 15
 Liquidity Index : -0.08
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-6 (1)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 14.4
 Coarse Sand (-No.10 + No.40) : 30.6
 Fine Sand (-No.40 + No.200) : 27.8
 Silt + Clay (-No.200) : 27.2

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 8.4
 Coarse Sand (-No.4 + No.10) : 6.0
 Medium Sand (-No.10 + No.40) : 30.6
 Fine Sand (-No.40 + No.200) : 27.8
 Silt + Clay (-No.200) : 27.2

Approved By : BE

Soil No. 124



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-28
 Sample Depth : 10.0' to 11.5'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.7
No.6		3.35	mm	
No.10		2	mm	93.4

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	63.5
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	35.0
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1869 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 21.4
 Liquid Limit (AASHTO T89) : 50
 Plastic Limit (AASHTO T90) : 29
 Plasticity Index : 21
 Liquidity Index : -0.38
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-7 (2)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 6.6
 Coarse Sand (-No.10 + No.40) : 29.9
 Fine Sand (-No.40 + No.200) : 28.5
 Silt + Clay (-No.200) : 35.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.3
 Coarse Sand (-No.4 + No.10) : 5.3
 Medium Sand (-No.10 + No.40) : 29.9
 Fine Sand (-No.40 + No.200) : 28.5
 Silt + Clay (-No.200) : 35.0

Approved By : BS

Soil No. 125



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White & Brown Silty Sand

Sample No. : SS-9
 Sample Loc. : Boring No. B-28
 Sample Depth : 25.0' to 26.5'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	99.3	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	78.0	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	41.8	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1111 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 28
 Liquid Limit (AASHTO T89) : 32
 Plastic Limit (AASHTO T90) : 24
 Plasticity Index : 8
 Liquidity Index : 0.47
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (1)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.7
 Coarse Sand (-No.10 + No.40) : 21.3
 Fine Sand (-No.40 + No.200) : 36.2
 Silt + Clay (-No.200) : 41.8

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.7
 Medium Sand (-No.10 + No.40) : 21.3
 Fine Sand (-No.40 + No.200) : 36.2
 Silt + Clay (-No.200) : 41.8

Approved By : BE

Soil No. 126



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Black & White Silty Sand with Gravel

Sample No. : SS-11
 Sample Loc. : Boring No. B-28
 Sample Depth : 34.8' to 36.3'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	85.7	
1/4		6.3	mm		
No.4		4.75	mm	64.3	
No.6		3.35	mm		
No.10		2	mm	53.9	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	36.4	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	20.5	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 1.4162 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 12.5
 Liquid Limit (AASHTO T89) : NA
 Plastic Limit (AASHTO T90) : NA
 Plasticity Index : NA
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: MI45 : A-1-b (0) *
 ASTM Classification: D2487 : SM *
 * Visual Classification

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 46.1
 Coarse Sand (-No.10 + No.40) : 17.5
 Fine Sand (-No.40 + No.200) : 15.9
 Silt + Clay (-No.200) : 20.5

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 35.7
 Coarse Sand (-No.4 + No.10) : 10.4
 Medium Sand (-No.10 + No.40) : 17.5
 Fine Sand (-No.40 + No.200) : 15.9
 Silt + Clay (-No.200) : 20.5

Approved By : BE

Soil No. 127



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-29
 Sample Depth : 2.0' to 3.5'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	93.7
No.6		3.35	mm	
No.10		2	mm	85.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	64.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	32.5
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.196 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 18
 Liquid Limit (AASHTO T89) : 31
 Plastic Limit (AASHTO T90) : 28
 Plasticity Index : 3
 Liquidity Index : -3.17
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 15.0
 Coarse Sand (-No.10 + No.40) : 20.9
 Fine Sand (-No.40 + No.200) : 31.6
 Silt + Clay (-No.200) : 32.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 6.3
 Coarse Sand (-No.4 + No.10) : 8.7
 Medium Sand (-No.10 + No.40) : 20.9
 Fine Sand (-No.40 + No.200) : 31.6
 Silt + Clay (-No.200) : 32.5

Approved By : BS

Soil No. 128



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Clayey Sand with Gravel

Sample No. : SS-3
 Sample Loc. : Boring No. B-29
 Sample Depth : 4.0' to 5.5'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		100.0
1 1/4	in.	31.5	mm		
1	in.	25	mm		81.2
3/4	in.	19	mm		81.2
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		76.6
1/4		6.3	mm		
No.4		4.75	mm		72.6
No.6		3.35	mm		
No.10		2	mm		65.7

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		50.3
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		29.6
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.4144 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 23.8
 Liquid Limit (AASHTO T89) : 41
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 16
 Liquidity Index : -0.05
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-7 (1)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 34.3
 Coarse Sand (-No.10 + No.40) : 15.4
 Fine Sand (-No.40 + No.200) : 20.7
 Silt + Clay (-No.200) : 29.6

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 18.8
 Fine Gravel (-3/4in. + No.4) : 8.6
 Coarse Sand (-No.4 + No.10) : 6.9
 Medium Sand (-No.10 + No.40) : 15.4
 Fine Sand (-No.40 + No.200) : 20.7
 Silt + Clay (-No.200) : 29.6

Approved By : BE

Soil No. 129



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-5
 Sample Loc. : Boring No. B-29
 Sample Depth : 8.0' to 9.5'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	98.8	
No.6		3.35	mm		
No.10		2	mm	93.3	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	75.7	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	40.5	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1198 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22
 Liquid Limit (AASHTO T89) : 36
 Plastic Limit (AASHTO T90) : 28
 Plasticity Index : 8
 Liquidity Index : -0.77
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 6.7
 Coarse Sand (-No.10 + No.40) : 17.6
 Fine Sand (-No.40 + No.200) : 35.2
 Silt + Clay (-No.200) : 40.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.2
 Coarse Sand (-No.4 + No.10) : 5.5
 Medium Sand (-No.10 + No.40) : 17.6
 Fine Sand (-No.40 + No.200) : 35.2
 Silt + Clay (-No.200) : 40.5

Approved By : BE

Soil No. 130



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Clayey Sand

Sample No. : SS-7
 Sample Loc. : Boring No. B-29
 Sample Depth : 15.0' to 16.5'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.3
No.6		3.35	mm	
No.10		2	mm	96.3

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	71.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	43.5
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1116 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22.6
 Liquid Limit (AASHTO T89) : 35
 Plastic Limit (AASHTO T90) : 21
 Plasticity Index : I4
 Liquidity Index : 0.11
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (3)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: MI45

Gravel (3in. + No.10) : 3.7
 Coarse Sand (-No.10 + No.40) : 24.4
 Fine Sand (-No.40 + No.200) : 28.4
 Silt + Clay (-No.200) : 43.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.7
 Coarse Sand (-No.4 + No.10) : 3.0
 Medium Sand (-No.10 + No.40) : 24.4
 Fine Sand (-No.40 + No.200) : 28.4
 Silt + Clay (-No.200) : 43.5

Approved By : BE

Soil No. 131



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Silty Sand

Sample No. : SS-8
 Sample Loc. : Boring No. B-29
 Sample Depth : 20.0' to 21.5'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		100.0
1 1/4	in.	31.5	mm		
1	in.	25	mm		100.0
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		95.9
1/4		6.3	mm		
No.4		4.75	mm		93.9
No.6		3.35	mm		
No.10		2	mm		88.0

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		60.3
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		33.1
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.2204 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 26.4
 Liquid Limit (AASHTO T89) : 37
 Plastic Limit (AASHTO T90) : 32
 Plasticity Index : 5
 Liquidity Index : -1.22

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 12.0
 Coarse Sand (-No.10 + No.40) : 27.7
 Fine Sand (-No.40 + No.200) : 27.2
 Silt + Clay (-No.200) : 33.1

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 6.1
 Coarse Sand (-No.4 + No.10) : 5.9
 Medium Sand (-No.10 + No.40) : 27.7
 Fine Sand (-No.40 + No.200) : 27.2
 Silt + Clay (-No.200) : 33.1

Approved By : BE

Soil No. 132



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Tan Silty Sand

Sample No. : SS-10
 Sample Loc. : Boring No. B-29
 Sample Depth : 30.0' to 31.5'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	98.8	
1/4		6.3	mm		
No.4		4.75	mm	94.1	
No.6		3.35	mm		
No.10		2	mm	87.7	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	59.8	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	32.4	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.2285 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20.6
 Liquid Limit (AASHTO T89) : 35
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : 8
 Liquidity Index : -0.77
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 12.3
 Coarse Sand (-No.10 + No.40) : 27.9
 Fine Sand (-No.40 + No.200) : 27.4
 Silt + Clay (-No.200) : 32.4

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 5.9
 Coarse Sand (-No.4 + No.10) : 6.4
 Medium Sand (-No.10 + No.40) : 27.9
 Fine Sand (-No.40 + No.200) : 27.4
 Silt + Clay (-No.200) : 32.4

Approved By : BE

Soil No. 133



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Sandy Elastic Silt

Sample No. : SS-11
 Sample Loc. : Boring No. B-29
 Sample Depth : 35.0' to 36.5'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		100.0
1 1/4	in.	31.5	mm		
1	in.	25	mm		100.0
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.3
No.6		3.35	mm		
No.10		2	mm		98.2

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		83.7
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		58.0
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.0301 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 23.8
 Liquid Limit (AASHTO T89) : 50
 Plastic Limit (AASHTO T90) : 30
 Plasticity Index : 20
 Liquidity Index : -0.33
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (10)
 ASTM Classification: D2487 : MH

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.8
 Coarse Sand (-No.10 + No.40) : 14.5
 Fine Sand (-No.40 + No.200) : 25.7
 Silt + Clay (-No.200) : 58.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.7
 Coarse Sand (-No.4 + No.10) : 1.1
 Medium Sand (-No.10 + No.40) : 14.5
 Fine Sand (-No.40 + No.200) : 25.7
 Silt + Clay (-No.200) : 58.0

Approved By : BE

Soil No. 134



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Silty Sand

Sample No. : SS-12
 Sample Loc. : Boring No. B-29
 Sample Depth : 40.0' to 41.5'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	98.0	
1/4		6.3	mm		
No.4		4.75	mm	97.5	
No.6		3.35	mm		
No.10		2	mm	94.9	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	77.8	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	48.0	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.0843 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 27.9
 Liquid Limit (AASHTO T89) : 40
 Plastic Limit (AASHTO T90) : 28
 Plasticity Index : 12
 Liquidity Index : -0.02
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 5.1
 Coarse Sand (-No.10 + No.40) : 17.1
 Fine Sand (-No.40 + No.200) : 29.8
 Silt + Clay (-No.200) : 48.0

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (3)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.5
 Coarse Sand (-No.4 + No.10) : 2.6
 Medium Sand (-No.10 + No.40) : 17.1
 Fine Sand (-No.40 + No.200) : 29.8
 Silt + Clay (-No.200) : 48.0

Approved By : BS

Soil No. 135



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White Silty Sand

Sample No. : SS-14
 Sample Loc. : Boring No. B-29
 Sample Depth : 50.0' to 51.5'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	97.5	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	64.6	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	45.8	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1105 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 29.4
 Liquid Limit (AASHTO T89) : 40
 Plastic Limit (AASHTO T90) : 33
 Plasticity Index : 7
 Liquidity Index : -0.56
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (1)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.5
 Coarse Sand (-No.10 + No.40) : 32.9
 Fine Sand (-No.40 + No.200) : 18.8
 Silt + Clay (-No.200) : 45.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 2.5
 Medium Sand (-No.10 + No.40) : 32.9
 Fine Sand (-No.40 + No.200) : 18.8
 Silt + Clay (-No.200) : 45.8

Approved By : BE

Soil No. 136



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White Tan & Black Silty Sand

Sample No. : SS-16
 Sample Loc. : Boring No. B-29
 Sample Depth : 60.0' to 61.5'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		100.0
1 1/4	in.	31.5	mm		
1	in.	25	mm		100.0
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.7
No.6		3.35	mm		
No.10		2	mm		94.6

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		60.5
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		28.3
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.2414 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20.6
 Liquid Limit (AASHTO T89) : 31
 Plastic Limit (AASHTO T90) : 28
 Plasticity Index : 3
 Liquidity Index : -2.33
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 5.4
 Coarse Sand (-No.10 + No.40) : 34.1
 Fine Sand (-No.40 + No.200) : 32.2
 Silt + Clay (-No.200) : 28.3

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.3
 Coarse Sand (-No.4 + No.10) : 5.1
 Medium Sand (-No.10 + No.40) : 34.1
 Fine Sand (-No.40 + No.200) : 32.2
 Silt + Clay (-No.200) : 28.3

Approved By :

BE

Soil No. 137



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White Silty Sand

Sample No. : SS-18
 Sample Loc. : Boring No. B-29
 Sample Depth : 70.0' to 71.5'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.6
No.6		3.35	mm	
No.10		2	mm	92.1

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	48.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	33.8
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.4452 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 35.9
 Liquid Limit (AASHTO T89) : 52
 Plastic Limit (AASHTO T90) : 38
 Plasticity Index : 14
 Liquidity Index : -0.16

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 7.9
 Coarse Sand (-No.10 + No.40) : 43.4
 Fine Sand (-No.40 + No.200) : 14.9
 Silt + Clay (-No.200) : 33.8

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-7 (1)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.4
 Coarse Sand (-No.4 + No.10) : 7.5
 Medium Sand (-No.10 + No.40) : 43.4
 Fine Sand (-No.40 + No.200) : 14.9
 Silt + Clay (-No.200) : 33.8

Approved By : BE

Soil No. 138



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White Dark Brown & Tan Silty Sand

Sample No. : SS-21
 Sample Loc. : Boring No. B-29
 Sample Depth : 85.0' to 86.5'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.2
No.6		3.35	mm	
No.10		2	mm	96.0

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	60.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	23.4
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.2637 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.8
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 4.0
 Coarse Sand (-No.10 + No.40) : 35.9
 Fine Sand (-No.40 + No.200) : 36.7
 Silt + Clay (-No.200) : 23.4

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.8
 Coarse Sand (-No.4 + No.10) : 3.2
 Medium Sand (-No.10 + No.40) : 35.9
 Fine Sand (-No.40 + No.200) : 36.7
 Silt + Clay (-No.200) : 23.4

Approved By : BE

Soil No. 139



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White & Tan Silty Sand

Sample No. : SS-23
 Sample Loc. : Boring No. B-29
 Sample Depth : 95.0' to 96.5'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

% Passing				
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.4
No.6		3.35	mm	
No.10		2	mm	80.3

% Passing				
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	49.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	32.6
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.4423 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 21.3
 Liquid Limit (AASHTO T89) : 32
 Plastic Limit (AASHTO T90) : 28
 Plasticity Index : 4
 Liquidity Index : -1.77

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 19.7
 Coarse Sand (-No.10 + No.40) : 31.1
 Fine Sand (-No.40 + No.200) : 16.6
 Silt + Clay (-No.200) : 32.6

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.6
 Coarse Sand (-No.4 + No.10) : 18.1
 Medium Sand (-No.10 + No.40) : 31.1
 Fine Sand (-No.40 + No.200) : 16.6
 Silt + Clay (-No.200) : 32.6

Approved By : BE

Soil No. 140



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I-85/I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White & Tan Silty Sand

Sample No. : SS-24
 Sample Loc. : Boring No. B-29
 Sample Depth : 100.0' to 101.5'
 Date Tested : 06/14/12
 Date Reported : 06/20/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.7

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	71.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	29.7
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1734 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 23.6
 Liquid Limit (AASHTO T89) : 32
 Plastic Limit (AASHTO T90) : 30
 Plasticity Index : 2
 Liquidity Index : -3.05
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.3
 Coarse Sand (-No.10 + No.40) : 28.0
 Fine Sand (-No.40 + No.200) : 42.0
 Silt + Clay (-No.200) : 29.7

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.3
 Medium Sand (-No.10 + No.40) : 28.0
 Fine Sand (-No.40 + No.200) : 42.0
 Silt + Clay (-No.200) : 29.7

Approved By : BE

Soil No. 141



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. 30
 Sample Depth : 2.5' to 4.0'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	100.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	83.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	31.9
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

$D_{50} = 0.1372 \text{ mm}$

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 36.9
 Liquid Limit (AASHTO T89) : 61
 Plastic Limit (AASHTO T90) : 48
 Plasticity Index : 13
 Liquidity Index : -0.88
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-7 (1)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.0
 Coarse Sand (-No.10 + No.40) : 16.1
 Fine Sand (-No.40 + No.200) : 52.0
 Silt + Clay (-No.200) : 31.9

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.0
 Medium Sand (-No.10 + No.40) : 16.1
 Fine Sand (-No.40 + No.200) : 52.0
 Silt + Clay (-No.200) : 31.9

Approved By : 

Soil No. 45



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-9
 Sample Loc. : Boring No. 30
 Sample Depth : 30.0' to 31.5'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm	100.0	
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	100.0	
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	99.7	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	85.0	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	18.8	
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.1699 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 34.5
 Liquid Limit (AASHTO T89) : 48
 Plastic Limit (AASHTO T90) : 41
 Plasticity Index : 7
 Liquidity Index : -0.87
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-5 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.3
 Coarse Sand (-No.10 + No.40) : 14.7
 Fine Sand (-No.40 + No.200) : 66.2
 Silt + Clay (-No.200) : 18.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.3
 Medium Sand (-No.10 + No.40) : 14.7
 Fine Sand (-No.40 + No.200) : 66.2
 Silt + Clay (-No.200) : 18.8

Approved By :

BE

Soil No. 46



Florence & Hutcheson

CONSULTING ENGINEERS

SOIL CLASSIFICATION

Project Name : I85 / I385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-13
 Sample Loc. : Boring No. 30
 Sample Depth : 50.0' to 51.1'
 Date Tested : 01/23/12
 Date Reported : 01/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.7
No.6		3.35	mm	
No.10		2	mm	92.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	55.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	19.4
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.3331 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 25
 Liquid Limit (AASHTO T89) : 36
 Plastic Limit (AASHTO T90) : 33
 Plasticity Index : 3
 Liquidity Index : -2.56
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 7.2
 Coarse Sand (-No.10 + No.40) : 37.8
 Fine Sand (-No.40 + No.200) : 35.6
 Silt + Clay (-No.200) : 19.4

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.3
 Coarse Sand (-No.4 + No.10) : 6.9
 Medium Sand (-No.10 + No.40) : 37.8
 Fine Sand (-No.40 + No.200) : 35.6
 Silt + Clay (-No.200) : 19.4

Approved By : BS

Soil No. 47



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Clayey Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-31
 Sample Depth : 2.0' to 3.5'
 Date Tested : 08/20/12
 Date Reported : 08/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.6
No.6		3.35	mm	
No.10		2	mm	94.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	70.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	47.9
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.0879 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22.7
 Liquid Limit (AASHTO T89) : 37
 Plastic Limit (AASHTO T90) : 21
 Plasticity Index : 16
 Liquidity Index : 0.11
 Activity : NA

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 6.0
 Coarse Sand (-No.10 + No.40) : 23.2
 Fine Sand (-No.40 + No.200) : 22.9
 Silt + Clay (-No.200) : 47.9

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (4)
 ASTM Classification: D2487 : SC

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.4
 Coarse Sand (-No.4 + No.10) : 4.6
 Medium Sand (-No.10 + No.40) : 23.2
 Fine Sand (-No.40 + No.200) : 22.9
 Silt + Clay (-No.200) : 47.9

Approved By : J.S.

Soil No. 181



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown & White Silty Sand

Sample No. : SS-11
 Sample Loc. : Boring No. B-31
 Sample Depth : 35.0' to 36.5'
 Date Tested : 08/20/12
 Date Reported : 08/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.0
No.6		3.35	mm	
No.10		2	mm	94.6

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	55.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	26.0
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.3136 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 16.8
 Liquid Limit (AASHTO T89) : 32
 Plastic Limit (AASHTO T90) : 29
 Plasticity Index : 3
 Liquidity Index : -3.96
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 5.4
 Coarse Sand (-No.10 + No.40) : 39.5
 Fine Sand (-No.40 + No.200) : 29.1
 Silt + Clay (-No.200) : 26.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.0
 Coarse Sand (-No.4 + No.10) : 4.4
 Medium Sand (-No.10 + No.40) : 39.5
 Fine Sand (-No.40 + No.200) : 29.1
 Silt + Clay (-No.200) : 26.0

Approved By : J.S.

Soil No. 182



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Tan Well-Graded Gravel with Silt and Sand

Sample No. : SS-13

Sample Loc. : Boring No. B-31

Sample Depth : 45.0' to 46.5'

Date Tested : 08/20/12

Date Reported : 08/30/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	69.8
3/4	in.	19	mm	60.4
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	47.8
1/4		6.3	mm	
No.4		4.75	mm	37.7
No.6		3.35	mm	
No.10		2	mm	27.3

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	14.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	6.2
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 10.7222 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 15.7
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-1-a (0)
ASTM Classification: D2487 : GW-GM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 72.7
Coarse Sand (-No.10 + No.40) : 12.6
Fine Sand (-No.40 + No.200) : 8.5
Silt + Clay (-No.200) : 6.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 39.6
Fine Gravel (-3/4in. + No.4) : 22.7
Coarse Sand (-No.4 + No.10) : 10.4
Medium Sand (-No.10 + No.40) : 12.6
Fine Sand (-No.40 + No.200) : 8.5
Silt + Clay (-No.200) : 6.2

Approved By : J.S.

Soil No. 183



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-32
 Sample Depth : 6.0' to 7.5'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.0981 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17.9
 Liquid Limit (AASHTO T89) : 37
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 12
 Liquidity Index : -0.63
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (3)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 5.4
 Coarse Sand (-No.10 + No.40) : 18.4
 Fine Sand (-No.40 + No.200) : 31.0
 Silt + Clay (-No.200) : 45.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.9
 Coarse Sand (-No.4 + No.10) : 3.5
 Medium Sand (-No.10 + No.40) : 18.4
 Fine Sand (-No.40 + No.200) : 31.0
 Silt + Clay (-No.200) : 45.2

Approved By : J.S.

Soil No. 191



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown & Red Silty Sand

Sample No. : SS-9
 Sample Loc. : Boring No. B-32
 Sample Depth : 28.5' to 30.0'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.6
No.6		3.35	mm	
No.10		2	mm	96.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	76.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	43.0
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1081 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 23.8
 Liquid Limit (AASHTO T89) : 43
 Plastic Limit (AASHTO T90) : 28
 Plasticity Index : 15
 Liquidity Index : -0.30
 Activity : NA

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.2
 Coarse Sand (-No.10 + No.40) : 20.6
 Fine Sand (-No.40 + No.200) : 33.2
 Silt + Clay (-No.200) : 43.0

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-6 (3)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.4
 Coarse Sand (-No.4 + No.10) : 2.8
 Medium Sand (-No.10 + No.40) : 20.6
 Fine Sand (-No.40 + No.200) : 33.2
 Silt + Clay (-No.200) : 43.0

Approved By : J.S.

Soil No. 192



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown & Tan Clayey Sand

Sample No. : SS-10
 Sample Loc. : Boring No. B-32
 Sample Depth : 33.5' to 35.0'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	97.1
1/4		6.3	mm	
No.4		4.75	mm	95.8
No.6		3.35	mm	
No.10		2	mm	92.4

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	71.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	44.8
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1058 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 25.3
 Liquid Limit (AASHTO T89) : 40
 Plastic Limit (AASHTO T90) : 21
 Plasticity Index : 19
 Liquidity Index : 0.25
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 7.6
 Coarse Sand (-No.10 + No.40) : 21.4
 Fine Sand (-No.40 + No.200) : 26.2
 Silt + Clay (-No.200) : 44.8

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (5)
 ASTM Classification: D2487 : SC

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 4.2
 Coarse Sand (-No.4 + No.10) : 3.4
 Medium Sand (-No.10 + No.40) : 21.4
 Fine Sand (-No.40 + No.200) : 26.2
 Silt + Clay (-No.200) : 44.8

Approved By : J.S.

Soil No. 193



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown & Tan Silty Sand

Sample No. : SS-13
 Sample Loc. : Boring No. B-32
 Sample Depth : 48.5' to 50.0'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	97.1

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	80.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	48.1
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0831 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.3
 Liquid Limit (AASHTO T89) : 40
 Plastic Limit (AASHTO T90) : 30
 Plasticity Index : 10
 Liquidity Index : -0.53
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (3)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.9
 Coarse Sand (-No.10 + No.40) : 16.9
 Fine Sand (-No.40 + No.200) : 32.1
 Silt + Clay (-No.200) : 48.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 2.9
 Medium Sand (-No.10 + No.40) : 16.9
 Fine Sand (-No.40 + No.200) : 32.1
 Silt + Clay (-No.200) : 48.1

Approved By : J.S.

Soil No. 194



Florence & Hutcheson

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SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan, Gray & White Silty Sand

Sample No. : SS-19
 Sample Loc. : Boring No. B-32
 Sample Depth : 78.5' to 80.0'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	98.5

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	75.4
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	41.7
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.115 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19.9
 Liquid Limit (AASHTO T89) : 25
 Plastic Limit (AASHTO T90) : 22
 Plasticity Index : 3
 Liquidity Index : -0.76
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.5
 Coarse Sand (-No.10 + No.40) : 23.1
 Fine Sand (-No.40 + No.200) : 33.7
 Silt + Clay (-No.200) : 41.7

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.5
 Medium Sand (-No.10 + No.40) : 23.1
 Fine Sand (-No.40 + No.200) : 33.7
 Silt + Clay (-No.200) : 41.7

Approved By : J.S.

Soil No. 195



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & Gray Clayey Sand

Sample No. : SS-21
 Sample Loc. : Boring No. B-32
 Sample Depth : 88.5' to 90.0'
 Date Tested : 10/18/12
 Date Reported : 10/25/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	100.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	96.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	45.2
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.0882 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22.4
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 20
 Plasticity Index : 13
 Liquidity Index : 0.15
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (3)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.0
 Coarse Sand (-No.10 + No.40) : 3.4
 Fine Sand (-No.40 + No.200) : 51.4
 Silt + Clay (-No.200) : 45.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.0
 Medium Sand (-No.10 + No.40) : 3.4
 Fine Sand (-No.40 + No.200) : 51.4
 Silt + Clay (-No.200) : 45.2

Approved By : J.S.

Soil No. 222



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-33
 Sample Depth : 13.5' to 15.0'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	99.6	
1/4		6.3	mm		
No.4		4.75	mm	97.3	
No.6		3.35	mm		
No.10		2	mm	93.8	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	76.7	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	37.7	
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.1296 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 16.5
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 6.2
 Coarse Sand (-No.10 + No.40) : 17.1
 Fine Sand (-No.40 + No.200) : 39.0
 Silt + Clay (-No.200) : 37.7

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.7
 Coarse Sand (-No.4 + No.10) : 3.5
 Medium Sand (-No.10 + No.40) : 17.1
 Fine Sand (-No.40 + No.200) : 39.0
 Silt + Clay (-No.200) : 37.7

Approved By : J.S.

Soil No. 196



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray Silty Sand

Sample No. : SS-12
 Sample Loc. : Boring No. B-33
 Sample Depth : 43.5' to 45.0'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.2808 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19.2
 Liquid Limit (AASHTO T89) : 19
 Plastic Limit (AASHTO T90) : 18
 Plasticity Index : 1

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 4.7
 Coarse Sand (-No.10 + No.40) : 36.7
 Fine Sand (-No.40 + No.200) : 36.0
 Silt + Clay (-No.200) : 22.6

Liquidity Index : 1.42
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.9
 Coarse Sand (-No.4 + No.10) : 3.8
 Medium Sand (-No.10 + No.40) : 36.7
 Fine Sand (-No.40 + No.200) : 36.0
 Silt + Clay (-No.200) : 22.6

Approved By : J.S.

Soil No. 197



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White & Tan Silty Sand

Sample No. : SS-14
 Sample Loc. : Boring No. B-33
 Sample Depth : 53.5' to 55.0'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.7
No.6		3.35	mm	
No.10		2	mm	94.5

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	59.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	42.5
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1591 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 23.4
 Liquid Limit (AASHTO T89) : 36
 Plastic Limit (AASHTO T90) : 33
 Plasticity Index : 3
 Liquidity Index : -3.20
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 5.5
 Coarse Sand (-No.10 + No.40) : 34.7
 Fine Sand (-No.40 + No.200) : 17.3
 Silt + Clay (-No.200) : 42.5

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.3
 Coarse Sand (-No.4 + No.10) : 5.2
 Medium Sand (-No.10 + No.40) : 34.7
 Fine Sand (-No.40 + No.200) : 17.3
 Silt + Clay (-No.200) : 42.5

Approved By : J.S.

Soil No. 198



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & Brown Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-34
 Sample Depth : 2.0' to 3.5'
 Date Tested : 11/12/12
 Date Reported : 11/15/12

AASHTO T27 :

		% Passing	
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

		% Passing	
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd.	# 1		mm
Hyd. Rd.	# 2		mm
Hyd. Rd.	# 3		mm
Hyd. Rd.	# 4		mm
Hyd. Rd.	# 5		mm
Hyd. Rd.	# 6		mm
Hyd. Rd.	# 7		mm

D₅₀ = 0.119 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 15.4
 Liquid Limit (AASHTO T89) : 30
 Plastic Limit (AASHTO T90) : 28
 Plasticity Index : 2
 Liquidity Index : -6.30
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.5
 Coarse Sand (-No.10 + No.40) : 18.2
 Fine Sand (-No.40 + No.200) : 37.2
 Silt + Clay (-No.200) : 40.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.3
 Coarse Sand (-No.4 + No.10) : 3.2
 Medium Sand (-No.10 + No.40) : 18.2
 Fine Sand (-No.40 + No.200) : 37.2
 Silt + Clay (-No.200) : 40.1

Approved By : J.S.

Soil No. 301



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan, Brown & White Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-34
 Sample Depth : 4.0' to 5.5'
 Date Tested : 11/12/12
 Date Reported : 11/15/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	98.5
1/4		6.3	mm	
No.4		4.75	mm	97.2
No.6		3.35	mm	
No.10		2	mm	90.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	59.3
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	23.6
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.2705 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 11.5
 Liquid Limit (AASHTO T89) : 28
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 3
 Liquidity Index : -4.50
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 10.0
 Coarse Sand (-No.10 + No.40) : 30.7
 Fine Sand (-No.40 + No.200) : 35.7
 Silt + Clay (-No.200) : 23.6

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.8
 Coarse Sand (-No.4 + No.10) : 7.2
 Medium Sand (-No.10 + No.40) : 30.7
 Fine Sand (-No.40 + No.200) : 35.7
 Silt + Clay (-No.200) : 23.6

Approved By : J.S.

Soil No. 302



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red, Tan & Black Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-34
 Sample Depth : 14.4' to 15.9'
 Date Tested : 11/12/12
 Date Reported : 11/15/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	99.2
1/4		6.3	mm	
No.4		4.75	mm	95.4
No.6		3.35	mm	
No.10		2	mm	90.2

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	70.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	40.0
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1337 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 15.8
 Liquid Limit (AASHTO T89) : 34
 Plastic Limit (AASHTO T90) : 29
 Plasticity Index : 5
 Liquidity Index : -2.64

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 9.8
 Coarse Sand (-No.10 + No.40) : 20.2
 Fine Sand (-No.40 + No.200) : 30.0
 Silt + Clay (-No.200) : 40.0

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 4.6
 Coarse Sand (-No.4 + No.10) : 5.2
 Medium Sand (-No.10 + No.40) : 20.2
 Fine Sand (-No.40 + No.200) : 30.0
 Silt + Clay (-No.200) : 40.0

Approved By : J.S.

Soil No. 303



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White, Tan & Black Silty Sand

Sample No. : SS-9
 Sample Loc. : Boring No. B-34
 Sample Depth : 29.4' to 30.9'
 Date Tested : 11/12/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	98.8
1/4		6.3	mm	
No.4		4.75	mm	97.9
No.6		3.35	mm	
No.10		2	mm	94.7

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	68.3
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	37.6
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1511 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 16.4
 Liquid Limit (AASHTO T89) : 36
 Plastic Limit (AASHTO T90) : 30
 Plasticity Index : 6
 Liquidity Index : -2.22
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 5.3
 Coarse Sand (-No.10 + No.40) : 26.4
 Fine Sand (-No.40 + No.200) : 30.7
 Silt + Clay (-No.200) : 37.6

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.1
 Coarse Sand (-No.4 + No.10) : 3.2
 Medium Sand (-No.10 + No.40) : 26.4
 Fine Sand (-No.40 + No.200) : 30.7
 Silt + Clay (-No.200) : 37.6

Approved By : J.S.

Soil No. 304



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Well-Graded Sand with Silt

Sample No. : SS-11
 Sample Loc. : Boring No. B-34
 Sample Depth : 39.4' to 40.9'
 Date Tested : 11/12/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.4
No.6		3.35	mm	
No.10		2	mm	84.6

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	39.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	10.6
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.6175 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 18.9
 Liquid Limit (AASHTO T89) : 54
 Plastic Limit (AASHTO T90) : 34
 Plasticity Index : 20
 Liquidity Index : -0.78
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-7 (2)
 ASTM Classification: D2487 : SW-SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 15.4
 Coarse Sand (-No.10 + No.40) : 45.6
 Fine Sand (-No.40 + No.200) : 28.4
 Silt + Clay (-No.200) : 10.6

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.6
 Coarse Sand (-No.4 + No.10) : 12.8
 Medium Sand (-No.10 + No.40) : 45.6
 Fine Sand (-No.40 + No.200) : 28.4
 Silt + Clay (-No.200) : 10.6

Approved By : J.S.

Soil No. 305



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red, Tan, Black & White Silty Sand

Sample No. : SS-12
 Sample Loc. : Boring No. B-34
 Sample Depth : 44.4' to 45.9'
 Date Tested : 11/12/12
 Date Reported : 11/15/12

AASHTO T27 :

		% Passing	
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

		% Passing	
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd.	# 1		mm
Hyd. Rd.	# 2		mm
Hyd. Rd.	# 3		mm
Hyd. Rd.	# 4		mm
Hyd. Rd.	# 5		mm
Hyd. Rd.	# 6		mm
Hyd. Rd.	# 7		mm

D₅₀ = 0.2724 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 28.4
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.2
 Coarse Sand (-No.10 + No.40) : 37.8
 Fine Sand (-No.40 + No.200) : 31.2
 Silt + Clay (-No.200) : 26.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.2
 Coarse Sand (-No.4 + No.10) : 4.0
 Medium Sand (-No.10 + No.40) : 37.8
 Fine Sand (-No.40 + No.200) : 31.2
 Silt + Clay (-No.200) : 26.8

Approved By : J.S.

Soil No. 306



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown, Orange & Red Clayey Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-35
 Sample Depth : 4.0' to 5.5'
 Date Tested : 11/12/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	96.0

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	75.4
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	47.2
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0891 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22
 Liquid Limit (AASHTO T89) : 38
 Plastic Limit (AASHTO T90) : 20
 Plasticity Index : 18
 Liquidity Index : 0.13
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (5)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.0
 Coarse Sand (-No.10 + No.40) : 20.6
 Fine Sand (-No.40 + No.200) : 28.2
 Silt + Clay (-No.200) : 47.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 4.0
 Medium Sand (-No.10 + No.40) : 20.6
 Fine Sand (-No.40 + No.200) : 28.2
 Silt + Clay (-No.200) : 47.2

Approved By : J.S.

Soil No. 307



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray Clayey Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-35
 Sample Depth : 6.0' to 7.5'
 Date Tested : 11/12/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	99.2	
1/4		6.3	mm		
No.4		4.75	mm	98.9	
No.6		3.35	mm		
No.10		2	mm	96.6	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	69.3	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	43.0	
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.119 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 14.5
 Liquid Limit (AASHTO T89) : 35
 Plastic Limit (AASHTO T90) : 19
 Plasticity Index : 16
 Liquidity Index : -0.31
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (3)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.4
 Coarse Sand (-No.10 + No.40) : 27.3
 Fine Sand (-No.40 + No.200) : 26.3
 Silt + Clay (-No.200) : 43.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.1
 Coarse Sand (-No.4 + No.10) : 2.3
 Medium Sand (-No.10 + No.40) : 27.3
 Fine Sand (-No.40 + No.200) : 26.3
 Silt + Clay (-No.200) : 43.0

Approved By : J.S.

Soil No. 308



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan, Red & White Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-35
 Sample Depth : 14.4' to 15.9'
 Date Tested : 11/12/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.9
No.6		3.35	mm	
No.10		2	mm	92.3

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	64.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	45.4
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1147 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.7
 Liquid Limit (AASHTO T89) : 55
 Plastic Limit (AASHTO T90) : 31
 Plasticity Index : 24
 Liquidity Index : -0.28
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (7)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 7.7
 Coarse Sand (-No.10 + No.40) : 28.1
 Fine Sand (-No.40 + No.200) : 18.8
 Silt + Clay (-No.200) : 45.4

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.1
 Coarse Sand (-No.4 + No.10) : 6.6
 Medium Sand (-No.10 + No.40) : 28.1
 Fine Sand (-No.40 + No.200) : 18.8
 Silt + Clay (-No.200) : 45.4

Approved By : J.S.

Soil No. 309



Florence & Hutcheson

An ICA Company

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White, Tan & Black Silty Sand

Sample No. : SS-10
 Sample Loc. : Boring No. B-35
 Sample Depth : 29.4' to 30.9'
 Date Tested : 11/12/12
 Date Reported : 11/15/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.4
No.6		3.35	mm	
No.10		2	mm	96.7

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	72.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	43.9
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1084 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 37
 Liquid Limit (AASHTO T89) : 40
 Plastic Limit (AASHTO T90) : 35
 Plasticity Index : 5
 Liquidity Index : 0.31
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.3
 Coarse Sand (-No.10 + No.40) : 24.1
 Fine Sand (-No.40 + No.200) : 28.7
 Silt + Clay (-No.200) : 43.9

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.6
 Coarse Sand (-No.4 + No.10) : 2.7
 Medium Sand (-No.10 + No.40) : 24.1
 Fine Sand (-No.40 + No.200) : 28.7
 Silt + Clay (-No.200) : 43.9

Approved By : J.S.

Soil No. 310



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan, Red & White Silty Sand

Sample No. : SS-13
 Sample Loc. : Boring No. B-35
 Sample Depth : 49.4' to 50.9'
 Date Tested : 11/12/12
 Date Reported : 11/15/12

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.1263 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 27.7
 Liquid Limit (AASHTO T89) : 37
 Plastic Limit (AASHTO T90) : 34
 Plasticity Index : 3

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.4
 Coarse Sand (-No.10 + No.40) : 24.6
 Fine Sand (-No.40 + No.200) : 34.3
 Silt + Clay (-No.200) : 39.7

Liquidity Index : -2.03
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.4
 Medium Sand (-No.10 + No.40) : 24.6
 Fine Sand (-No.40 + No.200) : 34.3
 Silt + Clay (-No.200) : 39.7

Approved By : J.S.

Soil No. 311



Florence & Hutcheson

An **ICA** Company

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Red & Tan Sandy Lean Clay

Sample No. : SS-1

Sample Loc. : Boring No. B-36

Sample Depth : 2.0' to 3.5'

Date Tested : 11/12/12

Date Reported : 11/15/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	97.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	73.3
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	51.7
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0603 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 25.1
Liquid Limit (AASHTO T89) : 45
Plastic Limit (AASHTO T90) : 26
Plasticity Index : 19
Liquidity Index : -0.03
Activity : NA

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.0
Coarse Sand (-No.10 + No.40) : 23.7
Fine Sand (-No.40 + No.200) : 21.6
Silt + Clay (-No.200) : 51.7

Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-7-6 (7)
ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 3.0
Medium Sand (-No.10 + No.40) : 23.7
Fine Sand (-No.40 + No.200) : 21.6
Silt + Clay (-No.200) : 51.7

Approved By : J.S.

Soil No. 312



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Tan Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-36
 Sample Depth : 6.0' to 7.5'
 Date Tested : 11/12/12
 Date Reported : 11/15/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	98.1

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	73.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	46.8
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.0926 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.6
 Liquid Limit (AASHTO T89) : 59
 Plastic Limit (AASHTO T90) : 37
 Plasticity Index : 22
 Liquidity Index : -0.57
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.9
 Coarse Sand (-No.10 + No.40) : 25.0
 Fine Sand (-No.40 + No.200) : 26.3
 Silt + Clay (-No.200) : 46.8

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (7)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.9
 Medium Sand (-No.10 + No.40) : 25.0
 Fine Sand (-No.40 + No.200) : 26.3
 Silt + Clay (-No.200) : 46.8

Approved By : J.S.

Soil No. 313



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Tan Silty Sand

Sample No. : SS-5
 Sample Loc. : Boring No. B-36
 Sample Depth : 10.0' to 11.5'
 Date Tested : 11/12/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		
1/4		6.3	mm		
No.4		4.75	mm		100.0
No.6		3.35	mm		
No.10		2	mm		99.4

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		80.9
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		49.3
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.0779 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 26.2
 Liquid Limit (AASHTO T89) : 52
 Plastic Limit (AASHTO T90) : 42
 Plasticity Index : 10
 Liquidity Index : -1.60
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (4)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.6
 Coarse Sand (-No.10 + No.40) : 18.5
 Fine Sand (-No.40 + No.200) : 31.6
 Silt + Clay (-No.200) : 49.3

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.6
 Medium Sand (-No.10 + No.40) : 18.5
 Fine Sand (-No.40 + No.200) : 31.6
 Silt + Clay (-No.200) : 49.3

Approved By : J.S.

Soil No. 314



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange	Sample No. : SS-7
Project No. : 08195-01	Sample Loc. : Boring No. B-36
Project County : Greenville	Sample Depth : 19.7' to 21.2'
Project State : South Carolina	Date Tested : 11/12/12
Laboratory No. : 08195-01	Date Reported : 11/15/12
Submitted By : Florence & Hutcheson	
Soil Type : White, Tan, Brown & Black Silty Sand	

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	96.7

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	68.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	31.2
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1811 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 40.8
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in.+ No.10) : 3.3
 Coarse Sand (-No.10 + No.40) : 28.5
 Fine Sand (-No.40 + No.200) : 37.0
 Silt + Clay (-No.200) : 31.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 3.3
 Medium Sand (-No.10 + No.40) : 28.5
 Fine Sand (-No.40 + No.200) : 37.0
 Silt + Clay (-No.200) : 31.2

Approved By : J.S.

Soil No. 315



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White & Red Silty Sand

Sample No. : SS-4
 Sample Loc. : Boring No. B-37
 Sample Depth : 8.0' to 9.5'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	94.4
1/4		6.3	mm	
No.4		4.75	mm	92.5
No.6		3.35	mm	
No.10		2	mm	85.7

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	52.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	28.8
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.3516 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 14.5
 Liquid Limit (AASHTO T89) : 27
 Plastic Limit (AASHTO T90) : 22
 Plasticity Index : 5
 Liquidity Index : -1.47
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 14.3
 Coarse Sand (-No.10 + No.40) : 33.1
 Fine Sand (-No.40 + No.200) : 23.8
 Silt + Clay (-No.200) : 28.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 7.5
 Coarse Sand (-No.4 + No.10) : 6.8
 Medium Sand (-No.10 + No.40) : 33.1
 Fine Sand (-No.40 + No.200) : 23.8
 Silt + Clay (-No.200) : 28.8

Approved By : J.S.

Soil No. 199



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White & Gray Silty Sand

Sample No. : SS-7
 Sample Loc. : Boring No. B-37
 Sample Depth : 18.5' to 20.0'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	98.0	
1/4		6.3	mm		
No.4		4.75	mm	97.2	
No.6		3.35	mm		
No.10		2	mm	93.4	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	70.6	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	27.4	
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.1859 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 15.7
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 6.6
 Coarse Sand (-No.10 + No.40) : 22.8
 Fine Sand (-No.40 + No.200) : 43.2
 Silt + Clay (-No.200) : 27.4

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.8
 Coarse Sand (-No.4 + No.10) : 3.8
 Medium Sand (-No.10 + No.40) : 22.8
 Fine Sand (-No.40 + No.200) : 43.2
 Silt + Clay (-No.200) : 27.4

Approved By : J.S.

Soil No. 200



Florence & Hutcheson

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SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White & Gray Silty Sand

Sample No. : SS-9
 Sample Loc. : Boring No. B-37
 Sample Depth : 28.5' to 30.0'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm	100.0	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	95.2	
1/4		6.3	mm		
No.4		4.75	mm	90.3	
No.6		3.35	mm		
No.10		2	mm	82.9	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	55.6	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	19.1	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.3257 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 15
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 17.1
 Coarse Sand (-No.10 + No.40) : 27.3
 Fine Sand (-No.40 + No.200) : 36.5
 Silt + Clay (-No.200) : 19.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 9.7
 Coarse Sand (-No.4 + No.10) : 7.4
 Medium Sand (-No.10 + No.40) : 27.3
 Fine Sand (-No.40 + No.200) : 36.5
 Silt + Clay (-No.200) : 19.1

Approved By : J.S.

Soil No. 201



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Tan Silty Sand with Gravel

Sample No. : SS-2
 Sample Loc. : Boring No. B-38
 Sample Depth : 4.0' to 5.5'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	75.9
3/4	in.	19	mm	75.9
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	73.1
1/4		6.3	mm	
No.4		4.75	mm	72.6
No.6		3.35	mm	
No.10		2	mm	70.3

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	41.3
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	20.7
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.6764 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 7.3
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 29.7
 Coarse Sand (-No.10 + No.40) : 29.0
 Fine Sand (-No.40 + No.200) : 20.6
 Silt + Clay (-No.200) : 20.7

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 24.1
 Fine Gravel (-3/4in. + No.4) : 3.3
 Coarse Sand (-No.4 + No.10) : 2.3
 Medium Sand (-No.10 + No.40) : 29.0
 Fine Sand (-No.40 + No.200) : 20.6
 Silt + Clay (-No.200) : 20.7

Approved By : J.S.

Soil No. 280



Florence & Hutcheson

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SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-38
 Sample Depth : 6.0' to 7.5'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.5315 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 7.7
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 10.3
 Coarse Sand (-No.10 + No.40) : 46.4
 Fine Sand (-No.40 + No.200) : 27.9
 Silt + Clay (-No.200) : 15.4

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 4.1
 Coarse Sand (-No.4 + No.10) : 6.2
 Medium Sand (-No.10 + No.40) : 46.4
 Fine Sand (-No.40 + No.200) : 27.9
 Silt + Clay (-No.200) : 15.4

Approved By : J.S.

Soil No. 281



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Black & Gray Poorly Graded Gravel

Sample No. : SS-6

Sample Loc. : Boring No. B-38

Sample Depth : 13.5' to 15.0'

Date Tested : 10/29/12

Date Reported : 11/02/12

AASHTO T27 :

Table with 5 columns: Sieve Size, Unit, Sieve No., Unit, % Passing. Rows include sieves from 4 in. down to No.10.

Table with 5 columns: Sieve No., Unit, Sieve No., Unit, % Passing. Rows include sieves from No.16 down to Hyd. Rd. #7.

D50 = 30.2873 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 1.7
Liquid Limit (AASHTO T89) : NA
Plastic Limit (AASHTO T90) : NA
Plasticity Index : NA
Liquidity Index : NA
Activity : NA

AASHTO Composition of Total Sample: M145
Gravel (3in. + No.10) : 92.4
Coarse Sand (-No.10 + No.40) : 2.8
Fine Sand (-No.40 + No.200) : 3.6
Silt + Clay (-No.200) : 1.2

Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-1-a (0)
ASTM Classification: D2487 : GP

ASTM Composition of Total Sample: D2487
Coarse Gravel (3in. + 3/4in.) : 91.8
Fine Gravel (-3/4in. + No.4) : 0.0
Coarse Sand (-No.4 + No.10) : 0.6
Medium Sand (-No.10 + No.40) : 2.8
Fine Sand (-No.40 + No.200) : 3.6
Silt + Clay (-No.200) : 1.2

Approved By : J.S.

Soil No. 282



SOIL CLASSIFICATION

Project Name : 1-85/I-385 Interchange	Sample No. : SS-7
Project No. : 08195-01	Sample Loc. : Boring No. B-38
Project County : Greenville	Sample Depth : 18.5' to 20.0'
Project State : South Carolina	Date Tested : 10/29/12
Laboratory No. : 08195-01	Date Reported : 11/02/12
Submitted By : Florence & Hutcheson	
Soil Type : Tan Poorly Graded Sand with Silt and Gravel	

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	60.6
3/4	in.	19	mm	60.6
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	60.0
1/4		6.3	mm	
No.4		4.75	mm	56.7
No.6		3.35	mm	
No.10		2	mm	49.3

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	25.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	10.3
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 2.1705 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 5.8
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-a (0)
 ASTM Classification: D2487 : SP-SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 50.7
 Coarse Sand (-No.10 + No.40) : 24.3
 Fine Sand (-No.40 + No.200) : 14.7
 Silt + Clay (-No.200) : 10.3

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 39.4
 Fine Gravel (-3/4in. + No.4) : 3.9
 Coarse Sand (-No.4 + No.10) : 7.4
 Medium Sand (-No.10 + No.40) : 24.3
 Fine Sand (-No.40 + No.200) : 14.7
 Silt + Clay (-No.200) : 10.3

Approved By : J.S.

Soil No. 283



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Clayey Sand

Sample No. : ST-1
 Sample Loc. : Boring No. B-39
 Sample Depth : 4.0' to 5.3'
 Date Tested : 11/06/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.8
No.6		3.35	mm		
No.10		2	mm		98.5

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		64.9
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		34.0
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1841 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 10.4
 Liquid Limit (AASHTO T89) : 27
 Plastic Limit (AASHTO T90) : 16
 Plasticity Index : 11
 Liquidity Index : -0.47
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-6 (0)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.5
 Coarse Sand (-No.10 + No.40) : 33.6
 Fine Sand (-No.40 + No.200) : 30.9
 Silt + Clay (-No.200) : 34.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.2
 Coarse Sand (-No.4 + No.10) : 1.3
 Medium Sand (-No.10 + No.40) : 33.6
 Fine Sand (-No.40 + No.200) : 30.9
 Silt + Clay (-No.200) : 34.0

Approved By : J.S.

Soil No. 316



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Clayey Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-39
 Sample Depth : 6.0' to 7.5'
 Date Tested : 10/18/12
 Date Reported : 10/25/12

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.1131 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20.2
 Liquid Limit (AASHTO T89) : 49
 Plastic Limit (AASHTO T90) : 23
 Plasticity Index : 26
 Liquidity Index : -0.12
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 2.4
 Coarse Sand (-No.10 + No.40) : 28.6
 Fine Sand (-No.40 + No.200) : 24.9
 Silt + Clay (-No.200) : 44.1

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-6 (7)
 ASTM Classification: D2487 : SC

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.5
 Coarse Sand (-No.4 + No.10) : 1.9
 Medium Sand (-No.10 + No.40) : 28.6
 Fine Sand (-No.40 + No.200) : 24.9
 Silt + Clay (-No.200) : 44.1

Approved By : J.S.

Soil No. 227



Florence & Hutcheson

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SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Yellow Sandy Lean Clay

Sample No. : ST-2
 Sample Loc. : Boring No. B-39
 Sample Depth : 8.0' to 9.2'
 Date Tested : 11/06/12
 Date Reported : 11/15/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	98.6
1/4		6.3	mm	
No.4		4.75	mm	96.6
No.6		3.35	mm	
No.10		2	mm	92.1

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	71.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	50.1
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.074 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19.4
 Liquid Limit (AASHTO T89) : 47
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 22
 Liquidity Index : -0.27
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-6 (8)
 ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 7.9
 Coarse Sand (-No.10 + No.40) : 20.5
 Fine Sand (-No.40 + No.200) : 21.5
 Silt + Clay (-No.200) : 50.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 3.4
 Coarse Sand (-No.4 + No.10) : 4.5
 Medium Sand (-No.10 + No.40) : 20.5
 Fine Sand (-No.40 + No.200) : 21.5
 Silt + Clay (-No.200) : 50.1

Approved By : J.S.

Soil No. 317



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Red & Orange Silty Sand

Sample No. : SS-4

Sample Loc. : Boring No. B-39

Sample Depth : 14.4' to 15.9'

Date Tested : 10/19/12

Date Reported : 10/25/12

AASHTO T27 :

		% Passing	
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

		% Passing	
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.1386 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 23.9
Liquid Limit (AASHTO T89) : 38
Plastic Limit (AASHTO T90) : 33
Plasticity Index : 5
Liquidity Index : -1.75
Activity : NA

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.6
Coarse Sand (-No.10 + No.40) : 28.7
Fine Sand (-No.40 + No.200) : 30.5
Silt + Clay (-No.200) : 39.2

Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 0.2
Coarse Sand (-No.4 + No.10) : 1.4
Medium Sand (-No.10 + No.40) : 28.7
Fine Sand (-No.40 + No.200) : 30.5
Silt + Clay (-No.200) : 39.2

Approved By : J.S.

Soil No. 228



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red, White & Gray Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-39
 Sample Depth : 24.4' to 25.9'
 Date Tested : 10/19/12
 Date Reported : 10/25/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	98.7	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	77.2	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	43.6	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1044 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 38.6
 Liquid Limit (AASHTO T89) : 42
 Plastic Limit (AASHTO T90) : 38
 Plasticity Index : 4
 Liquidity Index : 0.06

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.3
 Coarse Sand (-No.10 + No.40) : 21.5
 Fine Sand (-No.40 + No.200) : 33.6
 Silt + Clay (-No.200) : 43.6

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: MI45 : A-5 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.3
 Medium Sand (-No.10 + No.40) : 21.5
 Fine Sand (-No.40 + No.200) : 33.6
 Silt + Clay (-No.200) : 43.6

Approved By : J.S.

Soil No. 229



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown, White & Orange Silty Sand

Sample No. : SS-10
 Sample Loc. : Boring No. B-39
 Sample Depth : 44.4' to 45.9'
 Date Tested : 10/19/12
 Date Reported : 10/25/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		
1/4		6.3	mm		
No.4		4.75	mm		100.0
No.6		3.35	mm		
No.10		2	mm		99.3

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		72.4
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		33.4
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.1569 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 33.4
 Liquid Limit (AASHTO T89) : 46
 Plastic Limit (AASHTO T90) : 43
 Plasticity Index : 3
 Liquidity Index : -3.18
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-5 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.7
 Coarse Sand (-No.10 + No.40) : 26.9
 Fine Sand (-No.40 + No.200) : 39.0
 Silt + Clay (-No.200) : 33.4

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.7
 Medium Sand (-No.10 + No.40) : 26.9
 Fine Sand (-No.40 + No.200) : 39.0
 Silt + Clay (-No.200) : 33.4

Approved By : J.S.

Soil No. 230



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown, White & Gray Silty Sand

Sample No. : SS-12
 Sample Loc. : Boring No. B-39
 Sample Depth : 54.4' to 55.9'
 Date Tested : 10/19/12
 Date Reported : 10/25/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	92.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	57.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	39.3
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.2115 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 23.3
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 33
 Plasticity Index : 6
 Liquidity Index : -1.68

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 7.2
 Coarse Sand (-No.10 + No.40) : 35.6
 Fine Sand (-No.40 + No.200) : 17.9
 Silt + Clay (-No.200) : 39.3

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.1
 Coarse Sand (-No.4 + No.10) : 7.1
 Medium Sand (-No.10 + No.40) : 35.6
 Fine Sand (-No.40 + No.200) : 17.9
 Silt + Clay (-No.200) : 39.3

Approved By : J.S.

Soil No. 231



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Clayey Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-40
 Sample Depth : 4.0' to 5.5'
 Date Tested : 10/18/12
 Date Reported : 10/25/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	97.9

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	69.3
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	41.3
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1286 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.3
 Liquid Limit (AASHTO T89) : 45
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 20
 Liquidity Index : -0.04
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-6 (4)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.1
 Coarse Sand (-No.10 + No.40) : 28.6
 Fine Sand (-No.40 + No.200) : 28.0
 Silt + Clay (-No.200) : 41.3

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 2.1
 Medium Sand (-No.10 + No.40) : 28.6
 Fine Sand (-No.40 + No.200) : 28.0
 Silt + Clay (-No.200) : 41.3

Approved By : J.S.

Soil No. 232



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : ST-1
 Sample Loc. : Boring No. B-40
 Sample Depth : 6.0' to 7.5'
 Date Tested : 11/06/12
 Date Reported : 11/15/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	98.4

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	69.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	34.9
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1589 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 30.4
 Liquid Limit (AASHTO T89) : 59
 Plastic Limit (AASHTO T90) : 41
 Plasticity Index : 18
 Liquidity Index : -0.59

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.6
 Coarse Sand (-No.10 + No.40) : 28.6
 Fine Sand (-No.40 + No.200) : 34.9
 Silt + Clay (-No.200) : 34.9

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-7 (2)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.6
 Medium Sand (-No.10 + No.40) : 28.6
 Fine Sand (-No.40 + No.200) : 34.9
 Silt + Clay (-No.200) : 34.9

Approved By : J.S.

Soil No. 318



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : ST-2
 Sample Loc. : Boring No. B-40
 Sample Depth : 8.0' to 9.2'
 Date Tested : 11/06/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.7
No.6		3.35	mm	
No.10		2	mm	98.3

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	70.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	41.7
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1243 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 26
 Liquid Limit (AASHTO T89) : 50
 Plastic Limit (AASHTO T90) : 34
 Plasticity Index : 16
 Liquidity Index : -0.52
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (3)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.7
 Coarse Sand (-No.10 + No.40) : 28.1
 Fine Sand (-No.40 + No.200) : 28.5
 Silt + Clay (-No.200) : 41.7

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.3
 Coarse Sand (-No.4 + No.10) : 1.4
 Medium Sand (-No.10 + No.40) : 28.1
 Fine Sand (-No.40 + No.200) : 28.5
 Silt + Clay (-No.200) : 41.7

Approved By : J.S.

Soil No. 319



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : ST-3
 Sample Loc. : Boring No. B-40
 Sample Depth : 10.0' to 11.3'
 Date Tested : 11/06/12
 Date Reported : 11/15/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	100.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	77.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	44.3
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1015 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 25.5
 Liquid Limit (AASHTO T89) : 49
 Plastic Limit (AASHTO T90) : 39
 Plasticity Index : 10
 Liquidity Index : -1.36

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.0
 Coarse Sand (-No.10 + No.40) : 23.0
 Fine Sand (-No.40 + No.200) : 32.7
 Silt + Clay (-No.200) : 44.3

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (2)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.0
 Medium Sand (-No.10 + No.40) : 23.0
 Fine Sand (-No.40 + No.200) : 32.7
 Silt + Clay (-No.200) : 44.3

Approved By : J.S.

Soil No. 320



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown & Tan Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-40
 Sample Depth : 14.6' to 16.1'
 Date Tested : 10/19/12
 Date Reported : 10/25/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	99.3	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	72.6	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	41.3	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1215 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22.6
 Liquid Limit (AASHTO T89) : 40
 Plastic Limit (AASHTO T90) : 36
 Plasticity Index : 4
 Liquidity Index : -3.39
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.7
 Coarse Sand (-No.10 + No.40) : 26.7
 Fine Sand (-No.40 + No.200) : 31.3
 Silt + Clay (-No.200) : 41.3

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.7
 Medium Sand (-No.10 + No.40) : 26.7
 Fine Sand (-No.40 + No.200) : 31.3
 Silt + Clay (-No.200) : 41.3

Approved By : J.S.

Soil No. 233



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown, Gray & White Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-40
 Sample Depth : 29.6' to 31.1'
 Date Tested : 10/19/12
 Date Reported : 10/25/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	95.4
1/4		6.3	mm	
No.4		4.75	mm	90.2
No.6		3.35	mm	
No.10		2	mm	82.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	50.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	19.1
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.4112 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17.7
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 18.0
 Coarse Sand (-No.10 + No.40) : 31.4
 Fine Sand (-No.40 + No.200) : 31.5
 Silt + Clay (-No.200) : 19.1

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 9.8
 Coarse Sand (-No.4 + No.10) : 8.2
 Medium Sand (-No.10 + No.40) : 31.4
 Fine Sand (-No.40 + No.200) : 31.5
 Silt + Clay (-No.200) : 19.1

Approved By : J.S.

Soil No. 234



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown, Gray & White Silty Sand

Sample No. : SS-9
 Sample Loc. : Boring No. B-40
 Sample Depth : 44.6' to 46.1'
 Date Tested : 10/19/12
 Date Reported : 10/25/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.0
No.6		3.35	mm		
No.10		2	mm		90.5

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		53.9
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		21.7
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.3445 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20.2
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 9.5
 Coarse Sand (-No.10 + No.40) : 36.6
 Fine Sand (-No.40 + No.200) : 32.2
 Silt + Clay (-No.200) : 21.7

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.0
 Coarse Sand (-No.4 + No.10) : 8.5
 Medium Sand (-No.10 + No.40) : 36.6
 Fine Sand (-No.40 + No.200) : 32.2
 Silt + Clay (-No.200) : 21.7

Approved By : J.S.

Soil No. 235



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-41
 Sample Depth : 4.0' to 5.5'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.7
No.6		3.35	mm	
No.10		2	mm	95.2

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	58.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	21.8
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.2834 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 14.9
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 4.8
 Coarse Sand (-No.10 + No.40) : 36.6
 Fine Sand (-No.40 + No.200) : 36.8
 Silt + Clay (-No.200) : 21.8

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.3
 Coarse Sand (-No.4 + No.10) : 4.5
 Medium Sand (-No.10 + No.40) : 36.6
 Fine Sand (-No.40 + No.200) : 36.8
 Silt + Clay (-No.200) : 21.8

Approved By : J.S.

Soil No. 202



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-4
 Sample Loc. : Boring No. B-41
 Sample Depth : 8.0' to 9.5'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	98.8
1/4		6.3	mm	
No.4		4.75	mm	91.4
No.6		3.35	mm	
No.10		2	mm	71.5

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	35.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	13.4
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.7869 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 5.7
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 28.5
 Coarse Sand (-No.10 + No.40) : 35.7
 Fine Sand (-No.40 + No.200) : 22.4
 Silt + Clay (-No.200) : 13.4

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 8.6
 Coarse Sand (-No.4 + No.10) : 19.9
 Medium Sand (-No.10 + No.40) : 35.7
 Fine Sand (-No.40 + No.200) : 22.4
 Silt + Clay (-No.200) : 13.4

Approved By : J.S.

Soil No. 203



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Tan Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-42
 Sample Depth : 4.0' to 5.5'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.2
No.6		3.35	mm	
No.10		2	mm	96.6

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	62.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	25.7
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.238 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 18.6
 Liquid Limit (AASHTO T89) : 34
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 8
 Liquidity Index : -0.88
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.4
 Coarse Sand (-No.10 + No.40) : 34.4
 Fine Sand (-No.40 + No.200) : 36.5
 Silt + Clay (-No.200) : 25.7

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.8
 Coarse Sand (-No.4 + No.10) : 2.6
 Medium Sand (-No.10 + No.40) : 34.4
 Fine Sand (-No.40 + No.200) : 36.5
 Silt + Clay (-No.200) : 25.7

Approved By : J.S.

Soil No. 204



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White, Tan & Red Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-42
 Sample Depth : 13.5' to 15.0'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	97.9
1/4		6.3	mm	
No.4		4.75	mm	94.0
No.6		3.35	mm	
No.10		2	mm	79.2

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	43.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	24.3
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.5694 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 27.1
 Liquid Limit (AASHTO T89) : 41
 Plastic Limit (AASHTO T90) : 32
 Plasticity Index : 9
 Liquidity Index : -0.50
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-5 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 20.8
 Coarse Sand (-No.10 + No.40) : 36.0
 Fine Sand (-No.40 + No.200) : 18.9
 Silt + Clay (-No.200) : 24.3

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 6.0
 Coarse Sand (-No.4 + No.10) : 14.8
 Medium Sand (-No.10 + No.40) : 36.0
 Fine Sand (-No.40 + No.200) : 18.9
 Silt + Clay (-No.200) : 24.3

Approved By : J.S.

Soil No. 205



Florence & Hutcheson

An **ICA** Company

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : White, Tan & Red Silty Sand

Sample No. : SS-9

Sample Loc. : Boring No. B-42

Sample Depth : 28.5' to 30.0'

Date Tested : 10/15/12

Date Reported : 10/18/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	92.9

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	54.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	29.8
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.3153 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 26.7

Liquid Limit (AASHTO T89) : 43

Plastic Limit (AASHTO T90) : 37

Plasticity Index : 6

Liquidity Index : -1.75

Activity : NA

Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-2-5 (0)

ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 7.1

Coarse Sand (-No.10 + No.40) : 38.7

Fine Sand (-No.40 + No.200) : 24.4

Silt + Clay (-No.200) : 29.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0

Fine Gravel (-3/4in. + No.4) : 0.1

Coarse Sand (-No.4 + No.10) : 7.0

Medium Sand (-No.10 + No.40) : 38.7

Fine Sand (-No.40 + No.200) : 24.4

Silt + Clay (-No.200) : 29.8

Approved By : J.S.

Soil No. 206



Florence & Hutcheson

An **ICA** Company

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Orange & Tan Clayey Sand

Sample No. : ST-1
 Sample Loc. : Boring No. B-43
 Sample Depth : 2.0' to 2.9'
 Date Tested : 11/06/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		99.8
1/4		6.3	mm		
No.4		4.75	mm		97.6
No.6		3.35	mm		
No.10		2	mm		92.7

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		57.5
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		31.8
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.2562 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17.5
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 23
 Plasticity Index : 16
 Liquidity Index : -0.34
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-6(1)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 7.3
 Coarse Sand (-No.10 + No.40) : 35.2
 Fine Sand (-No.40 + No.200) : 25.7
 Silt + Clay (-No.200) : 31.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.4
 Coarse Sand (-No.4 + No.10) : 4.9
 Medium Sand (-No.10 + No.40) : 35.2
 Fine Sand (-No.40 + No.200) : 25.7
 Silt + Clay (-No.200) : 31.8

Approved By : J.S.

Soil No. 321



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-43
 Sample Depth : 4.0' to 5.5'
 Date Tested : 10/15/12
 Date Reported : 10/25/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		99.4
1/4		6.3	mm		
No.4		4.75	mm		97.9
No.6		3.35	mm		
No.10		2	mm		95.3

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		63.8
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		38.4
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1656 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 26
 Liquid Limit (AASHTO T89) : 45
 Plastic Limit (AASHTO T90) : 30
 Plasticity Index : 15
 Liquidity Index : -0.30
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-6 (2)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.7
 Coarse Sand (-No.10 + No.40) : 31.5
 Fine Sand (-No.40 + No.200) : 25.4
 Silt + Clay (-No.200) : 38.4

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.1
 Coarse Sand (-No.4 + No.10) : 2.6
 Medium Sand (-No.10 + No.40) : 31.5
 Fine Sand (-No.40 + No.200) : 25.4
 Silt + Clay (-No.200) : 38.4

Approved By : J.S.

Soil No. 207



Florence & Hutcheson

An **ICA** Company

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-5
 Sample Loc. : Boring No. B-43
 Sample Depth : 10.0' to 11.5'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.1
No.6		3.35	mm	
No.10		2	mm	95.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	59.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	38.2
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1926 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 23.9
 Liquid Limit (AASHTO T89) : 35
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : 8
 Liquidity Index : -0.35
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.2
 Coarse Sand (-No.10 + No.40) : 35.9
 Fine Sand (-No.40 + No.200) : 21.7
 Silt + Clay (-No.200) : 38.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.9
 Coarse Sand (-No.4 + No.10) : 3.3
 Medium Sand (-No.10 + No.40) : 35.9
 Fine Sand (-No.40 + No.200) : 21.7
 Silt + Clay (-No.200) : 38.2

Approved By : J.S.

Soil No. 208



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray Silty Sand

Sample No. : SS-8
 Sample Loc. : Boring No. B-43
 Sample Depth : 28.5' to 30.0'
 Date Tested : 10/15/12
 Date Reported : 10/25/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.1
No.6		3.35	mm	
No.10		2	mm	95.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	79.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	43.3
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1039 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 14.4
 Liquid Limit (AASHTO T89) : 30
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 5
 Liquidity Index : -2.04
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 4.2
 Coarse Sand (-No.10 + No.40) : 16.8
 Fine Sand (-No.40 + No.200) : 35.7
 Silt + Clay (-No.200) : 43.3

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.9
 Coarse Sand (-No.4 + No.10) : 3.3
 Medium Sand (-No.10 + No.40) : 16.8
 Fine Sand (-No.40 + No.200) : 35.7
 Silt + Clay (-No.200) : 43.3

Approved By : J.S.

Soil No. 209



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Gray & Red Clayey Gravel with Sand

Sample No. : SS-1

Sample Loc. : Boring No. B-44

Sample Depth : 2.0' to 3.5'

Date Tested : 10/19/12

Date Reported : 10/25/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	81.3
3/4	in.	19	mm	81.3
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	51.5
1/4		6.3	mm	
No.4		4.75	mm	42.7
No.6		3.35	mm	
No.10		2	mm	35.4

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	24.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	14.6
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 8.4413 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 8.3
Liquid Limit (AASHTO T89) : 31
Plastic Limit (AASHTO T90) : 23
Plasticity Index : 8
Liquidity Index : -1.81
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : GC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 64.6
Coarse Sand (-No.10 + No.40) : 10.5
Fine Sand (-No.40 + No.200) : 10.3
Silt + Clay (-No.200) : 14.6

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 18.7
Fine Gravel (-3/4in. + No.4) : 38.6
Coarse Sand (-No.4 + No.10) : 7.3
Medium Sand (-No.10 + No.40) : 10.5
Fine Sand (-No.40 + No.200) : 10.3
Silt + Clay (-No.200) : 14.6

Approved By : J.S.

Soil No. 236



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : ST-1
 Sample Loc. : Boring No. B-44
 Sample Depth : 4.0' to 5.0'
 Date Tested : 11/05/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	99.5

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	67.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	43.5
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1195 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 26.9
 Liquid Limit (AASHTO T89) : 52
 Plastic Limit (AASHTO T90) : 38
 Plasticity Index : 14
 Liquidity Index : -0.80
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (3)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.5
 Coarse Sand (-No.10 + No.40) : 31.8
 Fine Sand (-No.40 + No.200) : 24.2
 Silt + Clay (-No.200) : 43.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.1
 Coarse Sand (-No.4 + No.10) : 0.4
 Medium Sand (-No.10 + No.40) : 31.8
 Fine Sand (-No.40 + No.200) : 24.2
 Silt + Clay (-No.200) : 43.5

Approved By : J.S.

Soil No. 322



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Sandy Elastic Silt

Sample No. : SS-2
 Sample Loc. : Boring No. B-44
 Sample Depth : 6.0' to 7.5'
 Date Tested : 10/19/12
 Date Reported : 10/25/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.4
No.6		3.35	mm		
No.10		2	mm		98.3

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		78.4
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		62.8
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.0195 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22.2
 Liquid Limit (AASHTO T89) : 57
 Plastic Limit (AASHTO T90) : 37
 Plasticity Index : 20
 Liquidity Index : -0.74
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.7
 Coarse Sand (-No.10 + No.40) : 19.9
 Fine Sand (-No.40 + No.200) : 15.6
 Silt + Clay (-No.200) : 62.8

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (13)
 ASTM Classification: D2487 : MH

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.6
 Coarse Sand (-No.4 + No.10) : 1.1
 Medium Sand (-No.10 + No.40) : 19.9
 Fine Sand (-No.40 + No.200) : 15.6
 Silt + Clay (-No.200) : 62.8

Approved By : J.S.

Soil No. 237



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Orange Silty Sand

Sample No. : ST-2
 Sample Loc. : Boring No. B-44
 Sample Depth : 8.0' to 8.9'
 Date Tested : 11/05/12
 Date Reported : 11/15/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	98.6

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	72.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	46.1
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0968 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 21.6
 Liquid Limit (AASHTO T89) : 53
 Plastic Limit (AASHTO T90) : 41
 Plasticity Index : 12
 Liquidity Index : -1.61
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.4
 Coarse Sand (-No.10 + No.40) : 26.0
 Fine Sand (-No.40 + No.200) : 26.5
 Silt + Clay (-No.200) : 46.1

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (4)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.4
 Medium Sand (-No.10 + No.40) : 26.0
 Fine Sand (-No.40 + No.200) : 26.5
 Silt + Clay (-No.200) : 46.1

Approved By : J.S.

Soil No. 323



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-44
 Sample Depth : 10.0' to 11.5'
 Date Tested : 10/19/12
 Date Reported : 10/25/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.2

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	70.5
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	44.7
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1071 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20.4
 Liquid Limit (AASHTO T89) : 52
 Plastic Limit (AASHTO T90) : 38
 Plasticity Index : 14
 Liquidity Index : -1.28
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.8
 Coarse Sand (-No.10 + No.40) : 28.7
 Fine Sand (-No.40 + No.200) : 25.8
 Silt + Clay (-No.200) : 44.7

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (4)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.8
 Medium Sand (-No.10 + No.40) : 28.7
 Fine Sand (-No.40 + No.200) : 25.8
 Silt + Clay (-No.200) : 44.7

Approved By : J.S.

Soil No. 238



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-44
 Sample Depth : 24.5' to 26.0'
 Date Tested : 10/19/12
 Date Reported : 10/25/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	98.7	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	70.5	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	32.2	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1679 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17.1
 Liquid Limit (AASHTO T89) : 44
 Plastic Limit (AASHTO T90) : 32
 Plasticity Index : 12
 Liquidity Index : -1.23
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-7 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.3
 Coarse Sand (-No.10 + No.40) : 28.2
 Fine Sand (-No.40 + No.200) : 38.3
 Silt + Clay (-No.200) : 32.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.3
 Medium Sand (-No.10 + No.40) : 28.2
 Fine Sand (-No.40 + No.200) : 38.3
 Silt + Clay (-No.200) : 32.2

Approved By : J.S.

Soil No. 239



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan, White & Black Silty Sand

Sample No. : SS-10
 Sample Loc. : Boring No. B-44
 Sample Depth : 44.5' to 46.0'
 Date Tested : 10/19/12
 Date Reported : 10/25/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.6
No.6		3.35	mm	
No.10		2	mm	88.6

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	60.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	42.7
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.151 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 27.5
 Liquid Limit (AASHTO T89) : 45
 Plastic Limit (AASHTO T90) : 36
 Plasticity Index : 9
 Liquidity Index : -0.92
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (1)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 11.4
 Coarse Sand (-No.10 + No.40) : 27.8
 Fine Sand (-No.40 + No.200) : 18.1
 Silt + Clay (-No.200) : 42.7

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.4
 Coarse Sand (-No.4 + No.10) : 9.0
 Medium Sand (-No.10 + No.40) : 27.8
 Fine Sand (-No.40 + No.200) : 18.1
 Silt + Clay (-No.200) : 42.7

Approved By : J.S.

Soil No. 240



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan, Red, Black & White Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-45
 Sample Depth : 2.0' to 3.5'
 Date Tested : 11/26/12
 Date Reported : 11/28/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	97.4
1/4		6.3	mm	
No.4		4.75	mm	86.4
No.6		3.35	mm	
No.10		2	mm	77.7

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	50.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	15.5
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.4126 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 13.5
 Liquid Limit (AASHTO T89) : 26
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 22.3
 Coarse Sand (-No.10 + No.40) : 27.1
 Fine Sand (-No.40 + No.200) : 35.1
 Silt + Clay (-No.200) : 15.5

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 13.6
 Coarse Sand (-No.4 + No.10) : 8.7
 Medium Sand (-No.10 + No.40) : 27.1
 Fine Sand (-No.40 + No.200) : 35.1
 Silt + Clay (-No.200) : 15.5

Approved By : J.S.

Soil No. 348



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Sandy Fat Clay

Sample No. : SS-1
 Sample Loc. : Boring No. B-46
 Sample Depth : 2.0' to 3.5'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		99.6
1/4		6.3	mm		
No.4		4.75	mm		98.9
No.6		3.35	mm		
No.10		2	mm		95.5

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		71.9
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		51.7
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.0603 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 27.3
 Liquid Limit (AASHTO T89) : 52
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 26
 Liquidity Index : 0.05
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-6 (10)
 ASTM Classification: D2487 : CH

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.5
 Coarse Sand (-No.10 + No.40) : 23.6
 Fine Sand (-No.40 + No.200) : 20.2
 Silt + Clay (-No.200) : 51.7

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.1
 Coarse Sand (-No.4 + No.10) : 3.4
 Medium Sand (-No.10 + No.40) : 23.6
 Fine Sand (-No.40 + No.200) : 20.2
 Silt + Clay (-No.200) : 51.7

Approved By : J.S.

Soil No. 245



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SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Orange Silty Sand

Sample No. : ST-1
 Sample Loc. : Boring No. B-46
 Sample Depth : 4.0' to 4.8'
 Date Tested : 11/06/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.8
No.6		3.35	mm		
No.10		2	mm		98.7

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		60.2
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		32.4
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.2249 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 26.2
 Liquid Limit (AASHTO T89) : 49
 Plastic Limit (AASHTO T90) : 32
 Plasticity Index : 17
 Liquidity Index : -0.37
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-7 (1)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.3
 Coarse Sand (-No.10 + No.40) : 38.5
 Fine Sand (-No.40 + No.200) : 27.8
 Silt + Clay (-No.200) : 32.4

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.2
 Coarse Sand (-No.4 + No.10) : 1.1
 Medium Sand (-No.10 + No.40) : 38.5
 Fine Sand (-No.40 + No.200) : 27.8
 Silt + Clay (-No.200) : 32.4

Approved By : J.S.

Soil No. 324



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray, Brown & Red Silty Sand

Sample No. : ST-2
 Sample Loc. : Boring No. B-46
 Sample Depth : 8.0' to 9.5'
 Date Tested : 11/06/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	99.9	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	70.7	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	36.6	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1483 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 28.7
 Liquid Limit (AASHTO T89) : 49
 Plastic Limit (AASHTO T90) : 45
 Plasticity Index : 4
 Liquidity Index : -3.96

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.1
 Coarse Sand (-No.10 + No.40) : 29.2
 Fine Sand (-No.40 + No.200) : 34.1
 Silt + Clay (-No.200) : 36.6

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.1
 Medium Sand (-No.10 + No.40) : 29.2
 Fine Sand (-No.40 + No.200) : 34.1
 Silt + Clay (-No.200) : 36.6

Approved By : J.S.

Soil No. 325



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-46
 Sample Depth : 10.0' to 11.5'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	98.4

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	74.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	43.8
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1071 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22.4
 Liquid Limit (AASHTO T89) : 44
 Plastic Limit (AASHTO T90) : 34
 Plasticity Index : 10
 Liquidity Index : -1.18
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.6
 Coarse Sand (-No.10 + No.40) : 24.4
 Fine Sand (-No.40 + No.200) : 30.2
 Silt + Clay (-No.200) : 43.8

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (2)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.6
 Medium Sand (-No.10 + No.40) : 24.4
 Fine Sand (-No.40 + No.200) : 30.2
 Silt + Clay (-No.200) : 43.8

Approved By : J.S.

Soil No. 246



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-46
 Sample Depth : 24.7' to 26.1'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.8
No.6		3.35	mm	
No.10		2	mm	90.8

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	56.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	21.8
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.3059 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17.7
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 9.2
 Coarse Sand (-No.10 + No.40) : 34.2
 Fine Sand (-No.40 + No.200) : 34.8
 Silt + Clay (-No.200) : 21.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.2
 Coarse Sand (-No.4 + No.10) : 7.0
 Medium Sand (-No.10 + No.40) : 34.2
 Fine Sand (-No.40 + No.200) : 34.8
 Silt + Clay (-No.200) : 21.8

Approved By : J.S.

Soil No. 247



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & Red Silty Sand

Sample No. : SS-4
 Sample Loc. : Boring No. B-47
 Sample Depth : 8.0' to 9.5'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.0

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	78.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	48.1
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0837 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.9
 Liquid Limit (AASHTO T89) : 43
 Plastic Limit (AASHTO T90) : 34
 Plasticity Index : 9
 Liquidity Index : -1.06
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (2)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.0
 Coarse Sand (-No.10 + No.40) : 21.0
 Fine Sand (-No.40 + No.200) : 29.9
 Silt + Clay (-No.200) : 48.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.0
 Medium Sand (-No.10 + No.40) : 21.0
 Fine Sand (-No.40 + No.200) : 29.9
 Silt + Clay (-No.200) : 48.1

Approved By : J.S.

Soil No. 210



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red, White & Tan Silty Sand

Sample No. : SS-9
 Sample Loc. : Boring No. B-47
 Sample Depth : 28.5' to 30.0'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	98.6

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	69.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	39.4
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.137 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 33.5
 Liquid Limit (AASHTO T89) : 41
 Plastic Limit (AASHTO T90) : 36
 Plasticity Index : 5
 Liquidity Index : -0.58
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.4
 Coarse Sand (-No.10 + No.40) : 28.7
 Fine Sand (-No.40 + No.200) : 30.5
 Silt + Clay (-No.200) : 39.4

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.4
 Medium Sand (-No.10 + No.40) : 28.7
 Fine Sand (-No.40 + No.200) : 30.5
 Silt + Clay (-No.200) : 39.4

Approved By : J.S.

Soil No. 211



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-49
 Sample Depth : 2.0' to 3.5'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		98.0
1/4		6.3	mm		
No.4		4.75	mm		94.1
No.6		3.35	mm		
No.10		2	mm		89.3

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		70.9
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		49.3
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.0793 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19.3
 Liquid Limit (AASHTO T89) : 44
 Plastic Limit (AASHTO T90) : 44
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 10.7
 Coarse Sand (-No.10 + No.40) : 18.4
 Fine Sand (-No.40 + No.200) : 21.6
 Silt + Clay (-No.200) : 49.3

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 5.9
 Coarse Sand (-No.4 + No.10) : 4.8
 Medium Sand (-No.10 + No.40) : 18.4
 Fine Sand (-No.40 + No.200) : 21.6
 Silt + Clay (-No.200) : 49.3

Approved By : J.S.

Soil No. 248



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : ST-1
 Sample Loc. : Boring No. B-49
 Sample Depth : 4.0' to 4.8'
 Date Tested : 11/06/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	98.8

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	74.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	48.2
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0846 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 37
 Liquid Limit (AASHTO T89) : 69
 Plastic Limit (AASHTO T90) : 46
 Plasticity Index : 23
 Liquidity Index : -0.37
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (9)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.2
 Coarse Sand (-No.10 + No.40) : 24.7
 Fine Sand (-No.40 + No.200) : 25.9
 Silt + Clay (-No.200) : 48.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.2
 Medium Sand (-No.10 + No.40) : 24.7
 Fine Sand (-No.40 + No.200) : 25.9
 Silt + Clay (-No.200) : 48.2

Approved By : J.S.

Soil No. 326



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Green, Orange & Gray Silty Sand

Sample No. : ST-2
 Sample Loc. : Boring No. B-49
 Sample Depth : 8.0' to 9.3'
 Date Tested : 11/06/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	99.7	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	79.5	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	16.0	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1899 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.1
 Liquid Limit (AASHTO T89) : 34
 Plastic Limit (AASHTO T90) : 30
 Plasticity Index : 4
 Liquidity Index : -1.50
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.3
 Coarse Sand (-No.10 + No.40) : 20.2
 Fine Sand (-No.40 + No.200) : 63.5
 Silt + Clay (-No.200) : 16.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.3
 Medium Sand (-No.10 + No.40) : 20.2
 Fine Sand (-No.40 + No.200) : 63.5
 Silt + Clay (-No.200) : 16.0

Approved By : J.S.

Soil No. 327



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White & Tan Silty Sand

Sample No. : SS-4
 Sample Loc. : Boring No. B-49
 Sample Depth : 15.0' to 16.5'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.9

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	20.9
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1595 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 32.3
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.1
 Coarse Sand (-No.10 + No.40) : 12.1
 Fine Sand (-No.40 + No.200) : 66.9
 Silt + Clay (-No.200) : 20.9

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.1
 Medium Sand (-No.10 + No.40) : 12.1
 Fine Sand (-No.40 + No.200) : 66.9
 Silt + Clay (-No.200) : 20.9

Approved By : J.S.

Soil No. 249



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red, Brown & Gray Silty Sand

Sample No. : Bag #1
 Sample Loc. : Boring No. B-49
 Sample Depth : 0.0' to 21.5'
 Date Tested : 10/30/12
 Date Reported : 11/26/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		99.2
1/4		6.3	mm		
No.4		4.75	mm		98.8
No.6		3.35	mm		
No.10		2	mm		97.2

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		85.6
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		43.9
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.0967 mm

CBR (AASHTO: T-193 - @95% Comp.) : 4.8
 Dry Dens. (AASHTO: T-99; Method (C)) : 97 pcf
 Opt. Moist. (AASHTO: T-99; Method (C)) : 21.2 %

Natural Moisture (%) (AASHTO T265) : 23
 Liquid Limit (AASHTO T89) : 45
 Plastic Limit (AASHTO T90) : 34
 Plasticity Index : 11
 Liquidity Index : -0.96
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (2)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.8
 Coarse Sand (-No.10 + No.40) : 11.6
 Fine Sand (-No.40 + No.200) : 41.7
 Silt + Clay (-No.200) : 43.9

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.2
 Coarse Sand (-No.4 + No.10) : 1.6
 Medium Sand (-No.10 + No.40) : 11.6
 Fine Sand (-No.40 + No.200) : 41.7
 Silt + Clay (-No.200) : 43.9

Approved By : J.S.

Soil No. 344



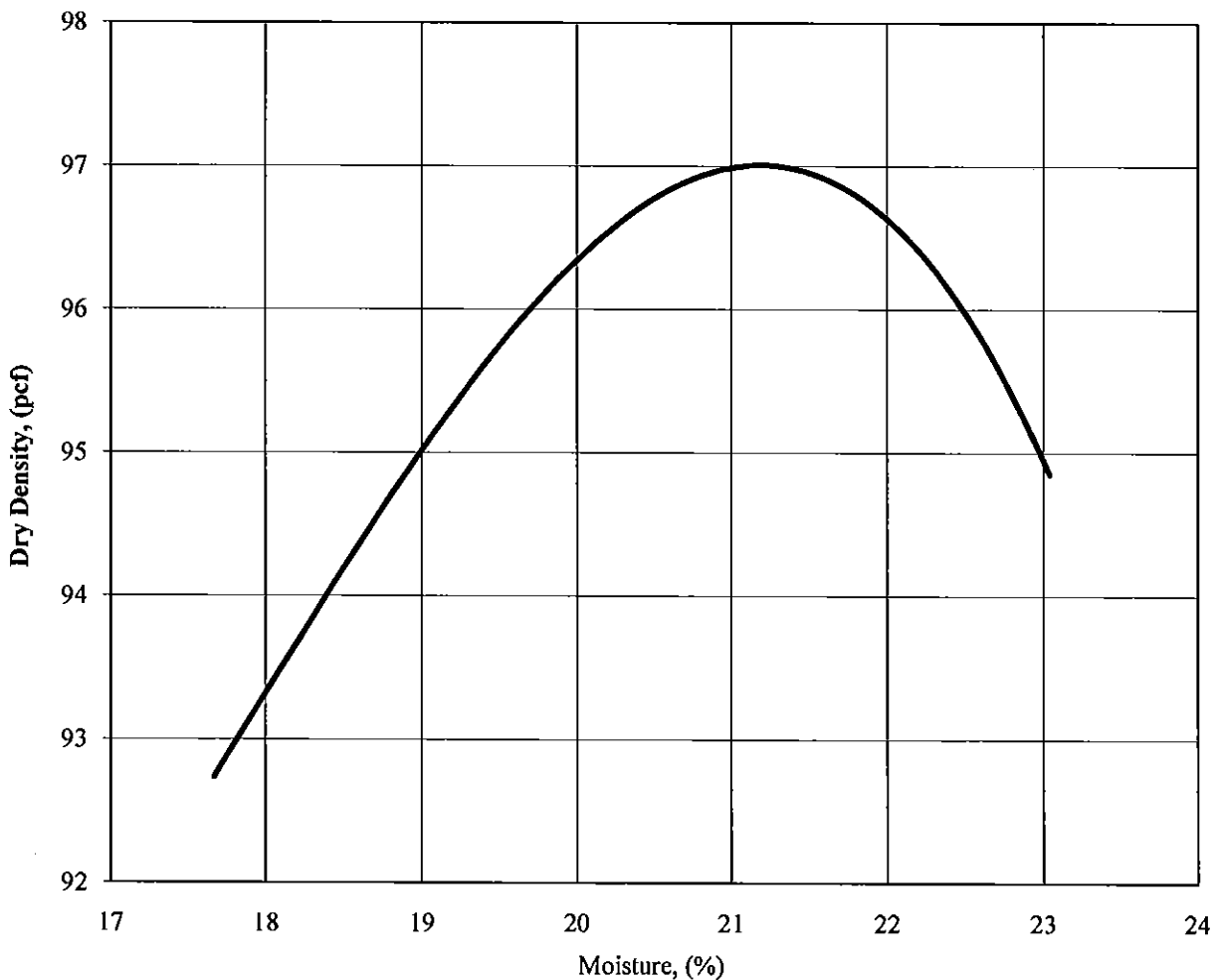
Florence & Hutcheson

An **ICA** Company

MOISTURE-DENSITY RELATIONSHIP

Project Name : I-85/I-385 Interchange
Project No. : 08195-01
Project County : Greenville
Project State : South Carolina
Laboratory No. : 08195-01
Submitted By : Florence & Hutcheson
Soil Type : Red, Brown & Gray Silty Sand

Sample No. : Bag #1
Sample Loc. : Boring No. B-49
Sample Depth : 0.0' to 21.5'
Date Tested : 10/30/12
Date Reported : 11/26/12



MAXIMUM DENSITY: 97 pcf

OPTIMUM MOISTURE: 21.2 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



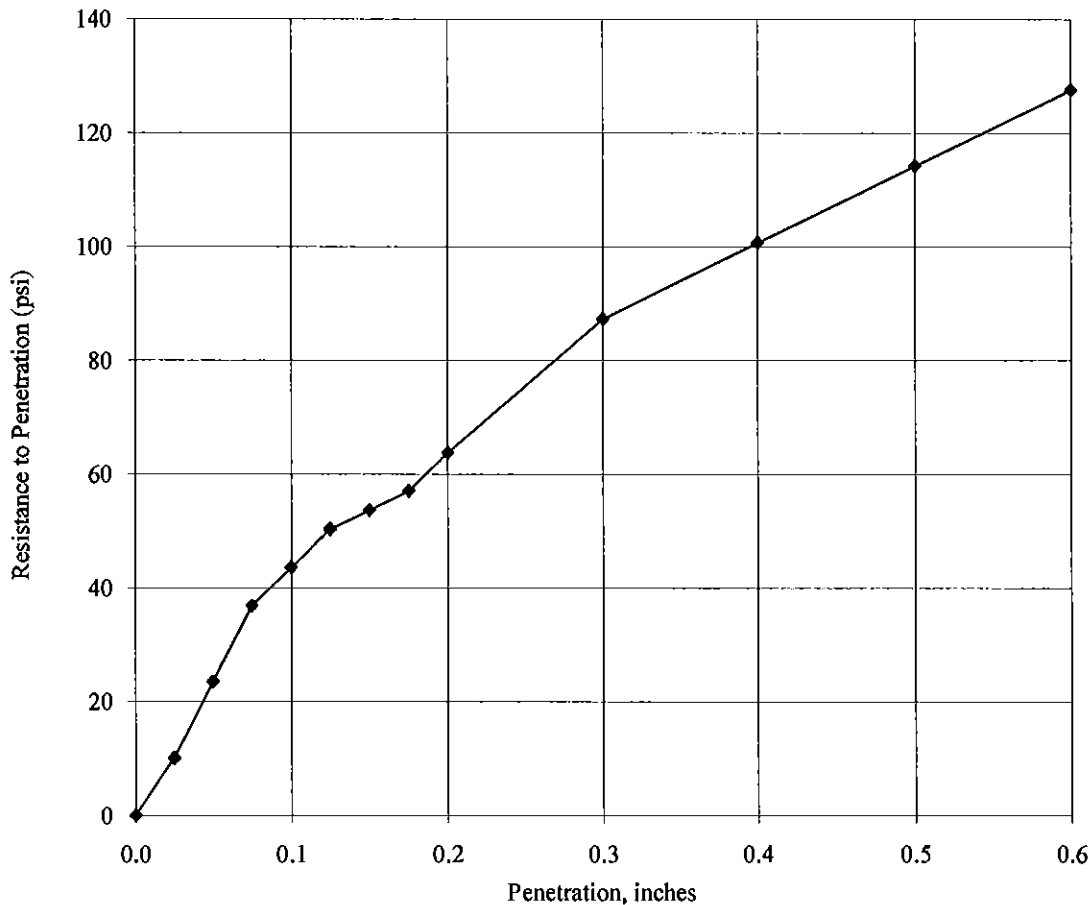
Florence & Hutcheson

An **ICA** Company

CALIFORNIA BEARING RATIO

Project Name : I-85/I-385 Interchange
Project No. : 08195-01
Project County : Greenville
Project State : South Carolina
Laboratory No. : 08195-01
Submitted By : Florence & Hutcheson
Soil Type : Red, Brown & Gray Silty Sand

Sample No. : Bag #1
Sample Loc. : Boring No. B-49
Sample Depth : 0.0' to 21.5'
Date Tested : 10/30/12
Date Reported : 11/26/12



Compaction Effort = 20 Blows per layer
Percent Compacted = 92.5
Percent Swell = 1.61

C.B.R. @ 0.1 In. = 4.4*
C.B.R. @ 0.2 In. = 4.3

COMMENTS: AASHTO: T-193 - @95% Comp.

APPROVED BY: _____ JS



Florence & Hutcheson

An **ICA** Company

CALIFORNIA BEARING RATIO

Project Name : I-85/I-385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Red, Brown & Gray Silty Sand

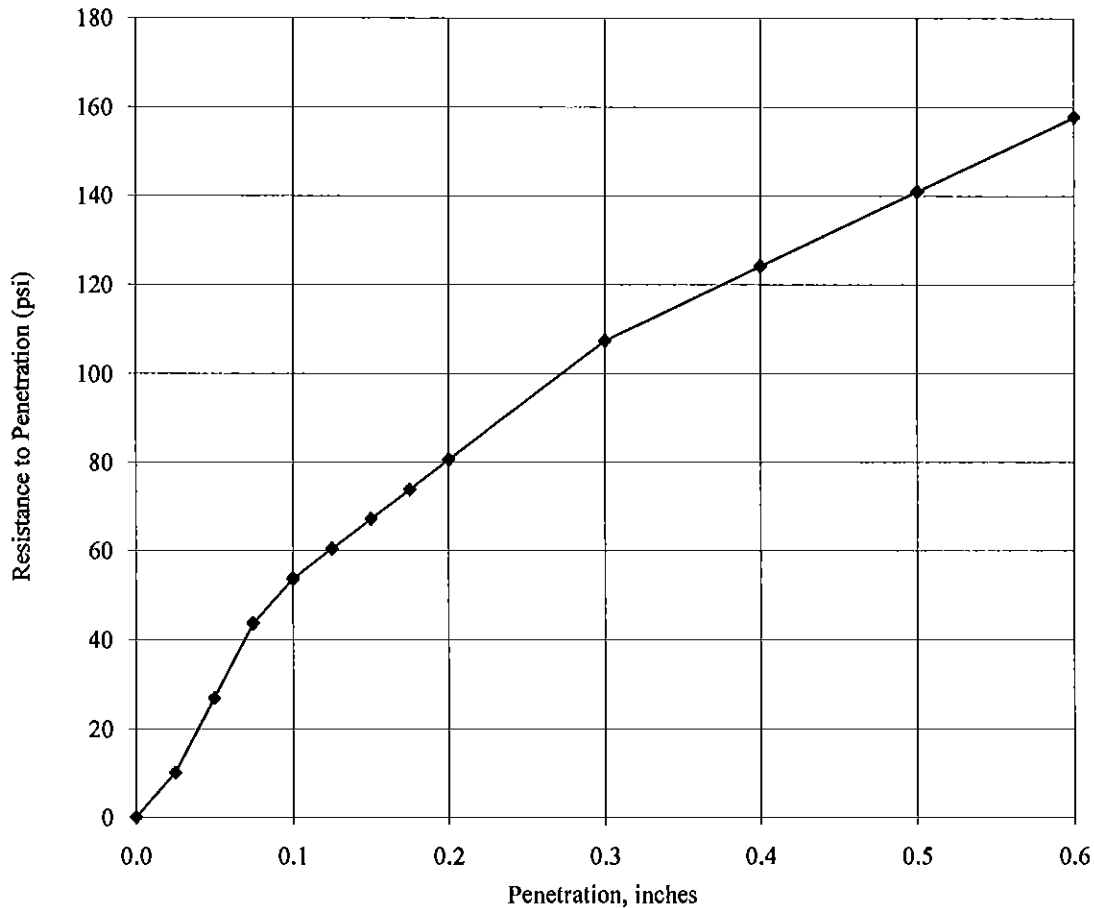
Sample No. : Bag #1

Sample Loc. : Boring No. B-49

Sample Depth : 0.0' to 21.5'

Date Tested : 10/30/12

Date Reported : 11/26/12



Compaction Effort = 40 Blows per layer

Percent Compacted = 99.1

Percent Swell = 1.38

C.B.R. @ 0.1 In. = 5.4*

C.B.R. @ 0.2 In. = 5.4

AASHTO: T-193 - @95% Comp.

APPROVED BY: _____ JS



Florence & Hutcheson

An **ICA** Company

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & Red Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-50
 Sample Depth : 4.0' to 5.5'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.7
No.6		3.35	mm		
No.10		2	mm		97.7

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		70.0
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		48.6
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.084 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 15.5
 Liquid Limit (AASHTO T89) : 49
 Plastic Limit (AASHTO T90) : 28
 Plasticity Index : 21
 Liquidity Index : -0.60
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-6 (7)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.3
 Coarse Sand (-No.10 + No.40) : 27.7
 Fine Sand (-No.40 + No.200) : 21.4
 Silt + Clay (-No.200) : 48.6

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.3
 Coarse Sand (-No.4 + No.10) : 2.0
 Medium Sand (-No.10 + No.40) : 27.7
 Fine Sand (-No.40 + No.200) : 21.4
 Silt + Clay (-No.200) : 48.6

Approved By : J.S.

Soil No. 250



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White & Tan Sandy Silt

Sample No. : SS-4
 Sample Loc. : Boring No. B-50
 Sample Depth : 8.0' to 9.5'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	97.9

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	80.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	62.6
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0198 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22.3
 Liquid Limit (AASHTO T89) : 43
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : 16
 Liquidity Index : -0.30
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-6 (9)
 ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.1
 Coarse Sand (-No.10 + No.40) : 17.2
 Fine Sand (-No.40 + No.200) : 18.1
 Silt + Clay (-No.200) : 62.6

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.2
 Coarse Sand (-No.4 + No.10) : 1.9
 Medium Sand (-No.10 + No.40) : 17.2
 Fine Sand (-No.40 + No.200) : 18.1
 Silt + Clay (-No.200) : 62.6

Approved By : J.S.

Soil No. 251



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White Silty Sand

Sample No. : SS-5
 Sample Loc. : Boring No. B-50
 Sample Depth : 10.0' to 11.5'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		90.9
1/4		6.3	mm		
No.4		4.75	mm		87.1
No.6		3.35	mm		
No.10		2	mm		80.2

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		54.0
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		33.1
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.3049 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 15.6
 Liquid Limit (AASHTO T89) : 36
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 11
 Liquidity Index : -0.83
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-6 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 19.8
 Coarse Sand (-No.10 + No.40) : 26.2
 Fine Sand (-No.40 + No.200) : 20.9
 Silt + Clay (-No.200) : 33.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 12.9
 Coarse Sand (-No.4 + No.10) : 6.9
 Medium Sand (-No.10 + No.40) : 26.2
 Fine Sand (-No.40 + No.200) : 20.9
 Silt + Clay (-No.200) : 33.1

Approved By : J.S.

Soil No. 252



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White Silty Sand

Sample No. : SS-8
 Sample Loc. : Boring No. B-50
 Sample Depth : 25.0' to 26.5'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.2262 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.1
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 28
 Plasticity Index : 5
 Liquidity Index : -0.88
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.7
 Coarse Sand (-No.10 + No.40) : 36.3
 Fine Sand (-No.40 + No.200) : 27.5
 Silt + Clay (-No.200) : 32.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.1
 Coarse Sand (-No.4 + No.10) : 3.6
 Medium Sand (-No.10 + No.40) : 36.3
 Fine Sand (-No.40 + No.200) : 27.5
 Silt + Clay (-No.200) : 32.5

Approved By : J.S.

Soil No. 253



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Orange Silty Sand

Sample No. : SS-10
 Sample Loc. : Boring No. B-50
 Sample Depth : 35.0' to 36.5'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.4
No.6		3.35	mm	
No.10		2	mm	89.6

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	63.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	30.8
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.2058 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 30.7
 Liquid Limit (AASHTO T89) : 36
 Plastic Limit (AASHTO T90) : 28
 Plasticity Index : 8
 Liquidity Index : 0.38
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 10.4
 Coarse Sand (-No.10 + No.40) : 25.8
 Fine Sand (-No.40 + No.200) : 33.0
 Silt + Clay (-No.200) : 30.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.6
 Coarse Sand (-No.4 + No.10) : 7.8
 Medium Sand (-No.10 + No.40) : 25.8
 Fine Sand (-No.40 + No.200) : 33.0
 Silt + Clay (-No.200) : 30.8

Approved By : J.S.

Soil No. 254



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : ST-1
 Sample Loc. : Boring No. B-51
 Sample Depth : 2.0' to 2.5'
 Date Tested : 11/06/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		99.2
1/4		6.3	mm		
No.4		4.75	mm		97.9
No.6		3.35	mm		
No.10		2	mm		94.3

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		63.9
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		31.1
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.2038 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 18
 Liquid Limit (AASHTO T89) : 32
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : 5
 Liquidity Index : -1.82
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: MI45 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 5.7
 Coarse Sand (-No.10 + No.40) : 30.4
 Fine Sand (-No.40 + No.200) : 32.8
 Silt + Clay (-No.200) : 31.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.1
 Coarse Sand (-No.4 + No.10) : 3.6
 Medium Sand (-No.10 + No.40) : 30.4
 Fine Sand (-No.40 + No.200) : 32.8
 Silt + Clay (-No.200) : 31.1

Approved By : J.S.

Soil No. 328



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Orange & Tan Silty Sand

Sample No. : ST-2
 Sample Loc. : Boring No. B-5I
 Sample Depth : 6.0' to 7.2'
 Date Tested : 11/05/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	96.8	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	66.0	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	42.5	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1305 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17.2
 Liquid Limit (AASHTO T89) : 38
 Plastic Limit (AASHTO T90) : 30
 Plasticity Index : 8
 Liquidity Index : -1.62
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (1)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.2
 Coarse Sand (-No.10 + No.40) : 30.8
 Fine Sand (-No.40 + No.200) : 23.5
 Silt + Clay (-No.200) : 42.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 3.2
 Medium Sand (-No.10 + No.40) : 30.8
 Fine Sand (-No.40 + No.200) : 23.5
 Silt + Clay (-No.200) : 42.5

Approved By : J.S.

Soil No. 329



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Sandy Elastic Silt

Sample No. : SS-2
 Sample Loc. : Boring No. B-51
 Sample Depth : 8.0' to 9.5'
 Date Tested : 10/18/12
 Date Reported : 10/25/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		98.1
1/4		6.3	mm		
No.4		4.75	mm		97.6
No.6		3.35	mm		
No.10		2	mm		95.9

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		77.1
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		51.8
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.0596 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 21.2
 Liquid Limit (AASHTO T89) : 51
 Plastic Limit (AASHTO T90) : 40
 Plasticity Index : 11
 Liquidity Index : -1.73
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (5)
 ASTM Classification: D2487 : MH

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.1
 Coarse Sand (-No.10 + No.40) : 18.8
 Fine Sand (-No.40 + No.200) : 25.3
 Silt + Clay (-No.200) : 51.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.4
 Coarse Sand (-No.4 + No.10) : 1.7
 Medium Sand (-No.10 + No.40) : 18.8
 Fine Sand (-No.40 + No.200) : 25.3
 Silt + Clay (-No.200) : 51.8

Approved By : J.S.

Soil No. 224



Florence & Hutcheson

An **ICA** Company

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-5
 Sample Loc. : Boring No. B-51
 Sample Depth : 19.5' to 21.0'
 Date Tested : 10/18/12
 Date Reported : 10/25/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.3
No.6		3.35	mm		
No.10		2	mm		93.0

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		60.6
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		26.9
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.2463 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 25.2
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 7.0
 Coarse Sand (-No.10 + No.40) : 32.4
 Fine Sand (-No.40 + No.200) : 33.7
 Silt + Clay (-No.200) : 26.9

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.7
 Coarse Sand (-No.4 + No.10) : 6.3
 Medium Sand (-No.10 + No.40) : 32.4
 Fine Sand (-No.40 + No.200) : 33.7
 Silt + Clay (-No.200) : 26.9

Approved By : J.S.

Soil No. 225



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown & Red Silty Sand

Sample No. : Bag 1
 Sample Loc. : Boring No. B-51
 Sample Depth : 0.0' to 36.0'
 Date Tested : 10/18/12
 Date Reported : 10/24/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	97.5

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	68.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	37.0
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1524 mm

CBR (AASHTO: T-193 - @95% Comp.) : 7.7
 Dry Dens. (AASHTO: T-99; Method (C)) : 108.4 pcf
 Opt. Moist. (AASHTO: T-99; Method (C)) : 15.6 %

Natural Moisture (%) (AASHTO T265) : 25
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 24
 Plasticity Index : 9
 Liquidity Index : 0.07
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.5
 Coarse Sand (-No.10 + No.40) : 28.7
 Fine Sand (-No.40 + No.200) : 31.8
 Silt + Clay (-No.200) : 37.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.2
 Coarse Sand (-No.4 + No.10) : 2.3
 Medium Sand (-No.10 + No.40) : 28.7
 Fine Sand (-No.40 + No.200) : 31.8
 Silt + Clay (-No.200) : 37.0

Approved By : J.S.

Soil No. 276



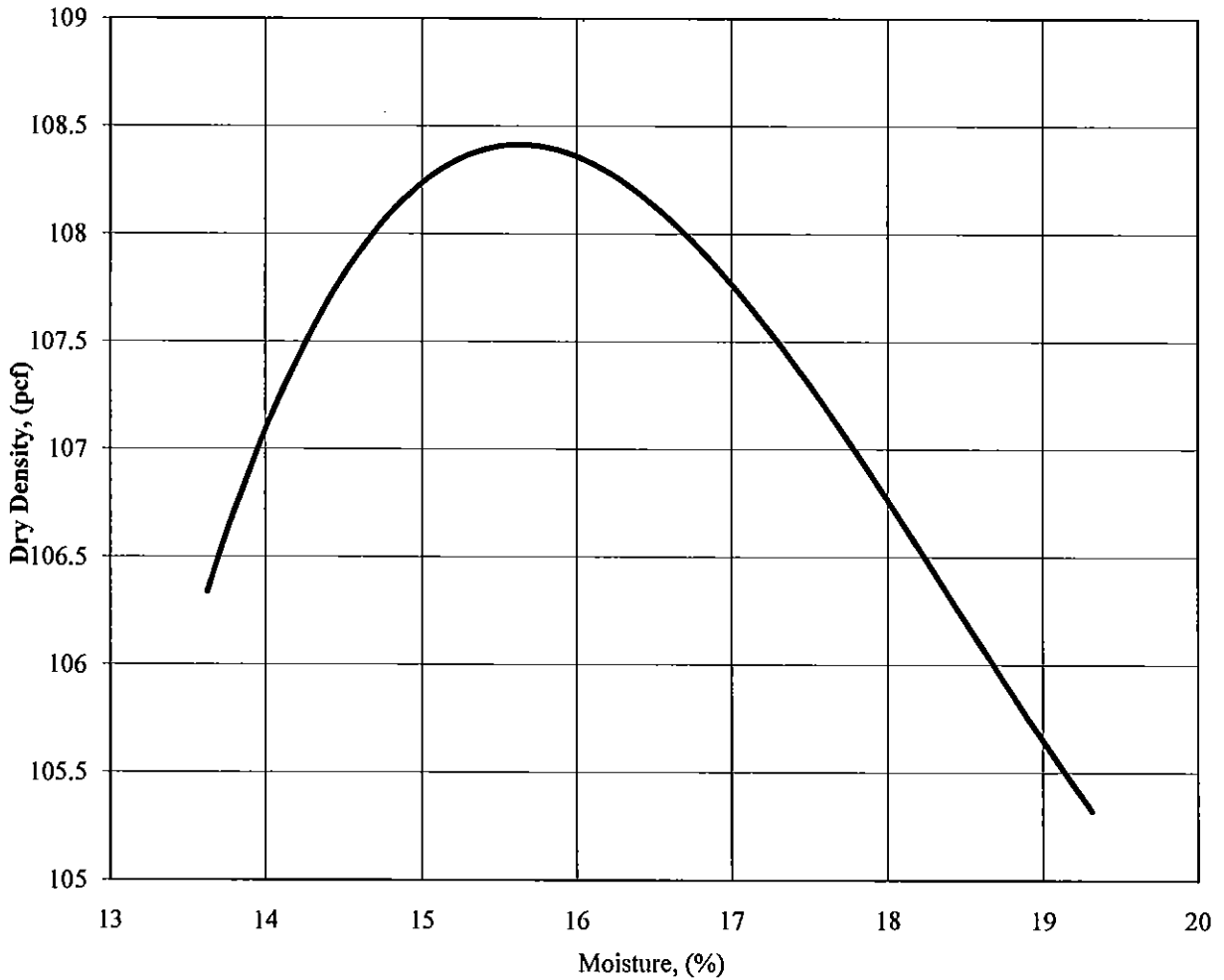
Florence & Hutcheson

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MOISTURE-DENSITY RELATIONSHIP

Project Name : I-85/I-385 Interchange
Project No. : 08195-01
Project County : Greenville
Project State : South Carolina
Laboratory No. : 08195-01
Submitted By : Florence & Hutcheson
Soil Type : Brown & Red Silty Sand

Sample No. : Bag 1
Sample Loc. : Boring No. B-51
Sample Depth : 0.0' to 36.0'
Date Tested : 10/18/12
Date Reported : 10/24/12



MAXIMUM DENSITY: 108.4 pcf

OPTIMUM MOISTURE: 15.6 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



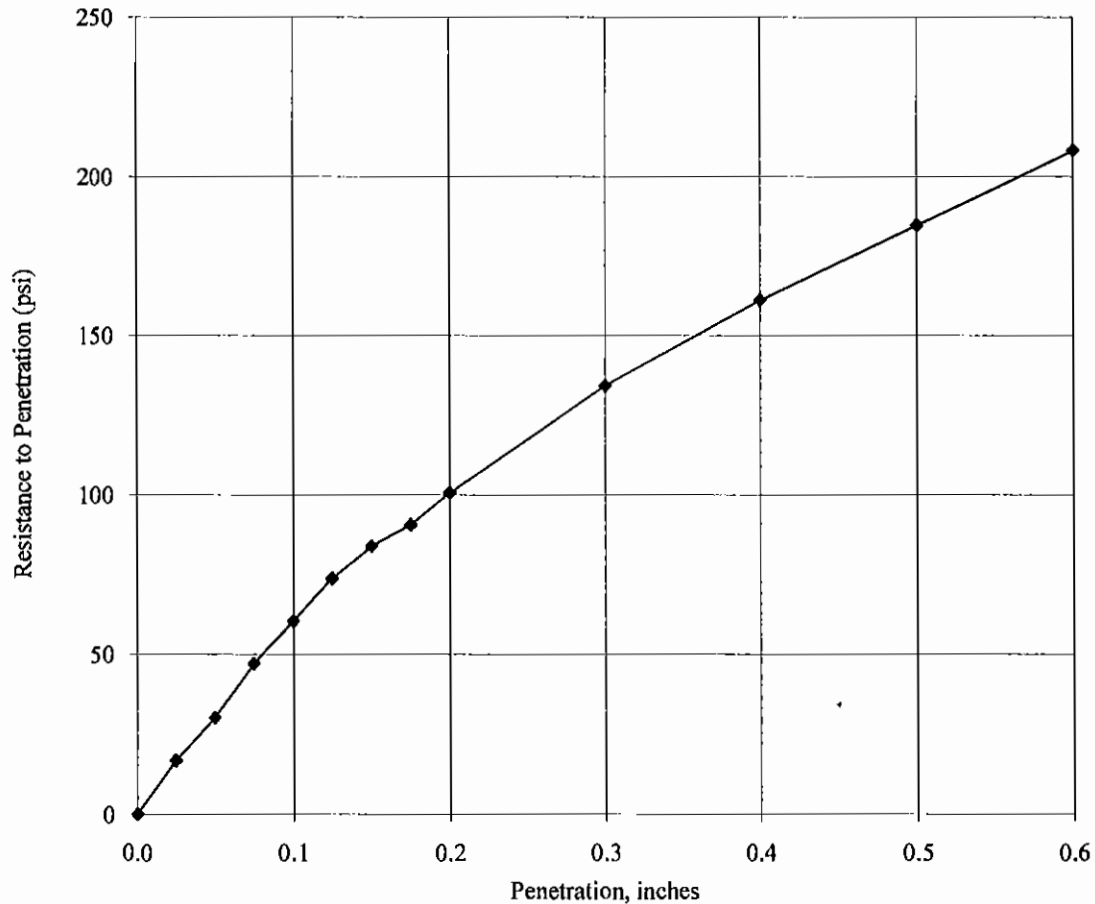
Florence & Hutcheson

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CALIFORNIA BEARING RATIO

Project Name : I-85/I-385 Interchange
Project No. : 08195-01
Project County : Greenville
Project State : South Carolina
Laboratory No. : 08195-01
Submitted By : Florence & Hutcheson
Soil Type : Brown & Red Silty Sand

Sample No. : Bag 1
Sample Loc. : Boring No. B-51
Sample Depth : 0.0' to 36.0'
Date Tested : 10/18/12
Date Reported : 10/24/12



Compaction Effort = 20 Blows per layer
Percent Compacted = 94.3
Percent Swell = 0.83

C.B.R. @ 0.1 In. = 6
C.B.R. @ 0.2 In. = 6.7*

COMMENTS: AASHTO: T-193 - @95% Comp.

APPROVED BY: JS



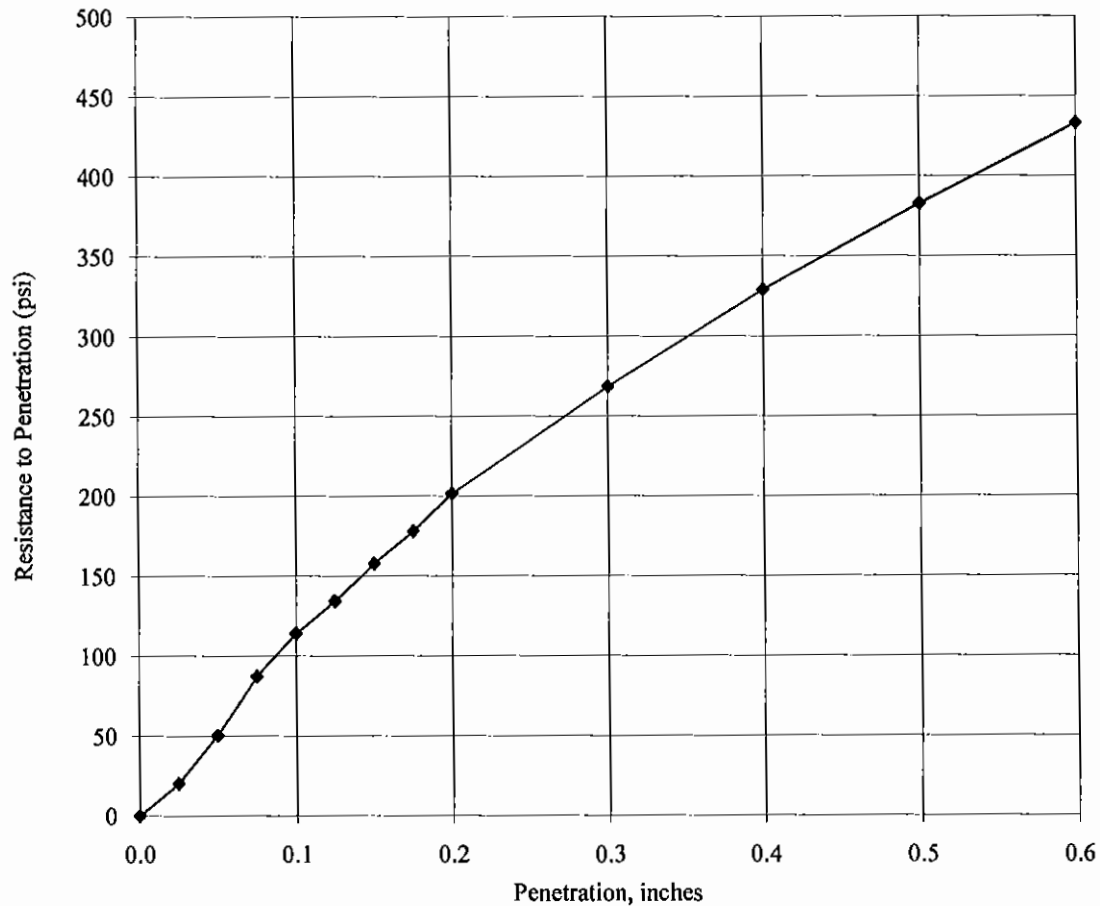
Florence & Hutcheson

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CALIFORNIA BEARING RATIO

Project Name : I-85/I-385 Interchange
Project No. : 08195-01
Project County : Greenville
Project State : South Carolina
Laboratory No. : 08195-01
Submitted By : Florence & Hutcheson
Soil Type : Brown & Red Silty Sand

Sample No. : Bag 1
Sample Loc. : Boring No. B-51
Sample Depth : 0.0' to 36.0'
Date Tested : 10/18/12
Date Reported : 10/24/12



Compaction Effort = 40 Blows per layer
Percent Compacted = 99
Percent Swell = 0.5

C.B.R. @ 0.1 In. = 11.4
C.B.R. @ 0.2 In. = 13.4*

COMMENTS: AASHTO: T-193

APPROVED BY: _____ JS



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan, White, Green & Black Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-52
 Sample Depth : 2.0' to 3.5'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		96.1
1/4		6.3	mm		
No.4		4.75	mm		92.7
No.6		3.35	mm		
No.10		2	mm		88.4

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		58.3
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		26.7
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.2695 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 21.9
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 11.6
 Coarse Sand (-No.10 + No.40) : 30.1
 Fine Sand (-No.40 + No.200) : 31.6
 Silt + Clay (-No.200) : 26.7

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 7.3
 Coarse Sand (-No.4 + No.10) : 4.3
 Medium Sand (-No.10 + No.40) : 30.1
 Fine Sand (-No.40 + No.200) : 31.6
 Silt + Clay (-No.200) : 26.7

Approved By : J.S.

Soil No. 255



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray, Yellow & Orange Poorly Graded Gravel with Silt and Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-52
 Sample Depth : 4.0' to 4.9'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	59.7
3/4	in.	19	mm	59.7
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	46.8
1/4		6.3	mm	
No.4		4.75	mm	39.3
No.6		3.35	mm	
No.10		2	mm	33.2

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	20.4
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	6.6
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 11.2823 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 7.3
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-a (0)
 ASTM Classification: D2487 : GP-GM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 66.8
 Coarse Sand (-No.10 + No.40) : 12.8
 Fine Sand (-No.40 + No.200) : 13.8
 Silt + Clay (-No.200) : 6.6

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 40.3
 Fine Gravel (-3/4in. + No.4) : 20.4
 Coarse Sand (-No.4 + No.10) : 6.1
 Medium Sand (-No.10 + No.40) : 12.8
 Fine Sand (-No.40 + No.200) : 13.8
 Silt + Clay (-No.200) : 6.6

Approved By : J.S.

Soil No. 256



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Orange & Tan Clayey Sand

Sample No. : ST-1
 Sample Loc. : Boring No. B-53
 Sample Depth : 2.0' to 2.8'
 Date Tested : 11/05/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		
1/4		6.3	mm		
No.4		4.75	mm		100.0
No.6		3.35	mm		
No.10		2	mm		99.5

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		64.5
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		27.8
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.2142 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 10
 Liquid Limit (AASHTO T89) : 30
 Plastic Limit (AASHTO T90) : 18
 Plasticity Index : 12
 Liquidity Index : -0.63
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-6 (0)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.5
 Coarse Sand (-No.10 + No.40) : 35.0
 Fine Sand (-No.40 + No.200) : 36.7
 Silt + Clay (-No.200) : 27.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.5
 Medium Sand (-No.10 + No.40) : 35.0
 Fine Sand (-No.40 + No.200) : 36.7
 Silt + Clay (-No.200) : 27.8

Approved By : J.S.

Soil No. 330



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Clayey Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-53
 Sample Depth : 6.0' to 7.5'
 Date Tested : 10/18/12
 Date Reported : 10/25/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	92.4	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	91.6	
1/4		6.3	mm		
No.4		4.75	mm	91.0	
No.6		3.35	mm		
No.10		2	mm	89.0	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	61.8	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	32.4	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

AASHTO T88

D₅₀ = 0.2119 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17.4
 Liquid Limit (AASHTO T89) : 34
 Plastic Limit (AASHTO T90) : 19
 Plasticity Index : 15
 Liquidity Index : -0.10
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-6 (1)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 11.0
 Coarse Sand (-No.10 + No.40) : 27.2
 Fine Sand (-No.40 + No.200) : 29.4
 Silt + Clay (-No.200) : 32.4

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 7.6
 Fine Gravel (-3/4in. + No.4) : 1.4
 Coarse Sand (-No.4 + No.10) : 2.0
 Medium Sand (-No.10 + No.40) : 27.2
 Fine Sand (-No.40 + No.200) : 29.4
 Silt + Clay (-No.200) : 32.4

Approved By : J.S.

Soil No. 241



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray, Tan & Orange Silty Sand

Sample No. : ST-2
 Sample Loc. : Boring No. B-53
 Sample Depth : 8.0' to 9.3'
 Date Tested : 11/05/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.7
No.6		3.35	mm	
No.10		2	mm	94.7

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	68.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	24.7
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.2066 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 34.6
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 5.3
 Coarse Sand (-No.10 + No.40) : 26.7
 Fine Sand (-No.40 + No.200) : 43.3
 Silt + Clay (-No.200) : 24.7

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.3
 Coarse Sand (-No.4 + No.10) : 5.0
 Medium Sand (-No.10 + No.40) : 26.7
 Fine Sand (-No.40 + No.200) : 43.3
 Silt + Clay (-No.200) : 24.7

Approved By: J.S.

Soil No. 331



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Sandy Elastic Silt

Sample No. : SS-1
 Sample Loc. : Boring No. B-54
 Sample Depth : 2.0' to 3.5'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	98.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	72.4
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	50.3
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.0721 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 21.8
 Liquid Limit (AASHTO T89) : 59
 Plastic Limit (AASHTO T90) : 34
 Plasticity Index : 25
 Liquidity Index : -0.51
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.2
 Coarse Sand (-No.10 + No.40) : 26.4
 Fine Sand (-No.40 + No.200) : 22.1
 Silt + Clay (-No.200) : 50.3

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (10)
 ASTM Classification: D2487 : MH

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.2
 Coarse Sand (-No.4 + No.10) : 1.0
 Medium Sand (-No.10 + No.40) : 26.4
 Fine Sand (-No.40 + No.200) : 22.1
 Silt + Clay (-No.200) : 50.3

Approved By : J.S.

Soil No. 257



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Orange Silty Sand

Sample No. : ST-1
 Sample Loc. : Boring No. B-54
 Sample Depth : 4.0' to 5.7'
 Date Tested : 11/05/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.4

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	68.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	48.9
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0826 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22.2
 Liquid Limit (AASHTO T89) : 50
 Plastic Limit (AASHTO T90) : 35
 Plasticity Index : 15
 Liquidity Index : -0.86
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (5)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.6
 Coarse Sand (-No.10 + No.40) : 30.8
 Fine Sand (-No.40 + No.200) : 19.7
 Silt + Clay (-No.200) : 48.9

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.6
 Medium Sand (-No.10 + No.40) : 30.8
 Fine Sand (-No.40 + No.200) : 19.7
 Silt + Clay (-No.200) : 48.9

Approved By : J.S.

Soil No. 332



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Yellow Sandy Silt

Sample No. : ST-2
 Sample Loc. : Boring No. B-54
 Sample Depth : 8.0' to 9.5'
 Date Tested : 11/05/12
 Date Reported : 11/15/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	99.7
1/4		6.3	mm	
No.4		4.75	mm	97.5
No.6		3.35	mm	
No.10		2	mm	94.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	66.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	51.4
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0626 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22.8
 Liquid Limit (AASHTO T89) : 47
 Plastic Limit (AASHTO T90) : 38
 Plasticity Index : 9
 Liquidity Index : -1.74
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 5.2
 Coarse Sand (-No.10 + No.40) : 28.2
 Fine Sand (-No.40 + No.200) : 15.2
 Silt + Clay (-No.200) : 51.4

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (4)
 ASTM Classification: D2487 : ML

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.5
 Coarse Sand (-No.4 + No.10) : 2.7
 Medium Sand (-No.10 + No.40) : 28.2
 Fine Sand (-No.40 + No.200) : 15.2
 Silt + Clay (-No.200) : 51.4

Approved By : J.S.

Soil No. 333



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-54
 Sample Depth : 10.0' to 11.5'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.7

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	66.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	47.0
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0986 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 21.4
 Liquid Limit (AASHTO T89) : 46
 Plastic Limit (AASHTO T90) : 37
 Plasticity Index : 9
 Liquidity Index : -1.72
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.3
 Coarse Sand (-No.10 + No.40) : 33.7
 Fine Sand (-No.40 + No.200) : 19.0
 Silt + Clay (-No.200) : 47.0

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (2)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.3
 Medium Sand (-No.10 + No.40) : 33.7
 Fine Sand (-No.40 + No.200) : 19.0
 Silt + Clay (-No.200) : 47.0

Approved By : J.S.

Soil No. 258



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown & White Silty Sand

Sample No. : SS-7
 Sample Loc. : Boring No. B-54
 Sample Depth : 29.5' to 31.0'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.7
No.6		3.35	mm	
No.10		2	mm	92.7

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	62.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	26.0
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.2332 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 26.8
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 7.3
 Coarse Sand (-No.10 + No.40) : 30.0
 Fine Sand (-No.40 + No.200) : 36.7
 Silt + Clay (-No.200) : 26.0

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.3
 Coarse Sand (-No.4 + No.10) : 6.0
 Medium Sand (-No.10 + No.40) : 30.0
 Fine Sand (-No.40 + No.200) : 36.7
 Silt + Clay (-No.200) : 26.0

Approved By : J.S.

Soil No. 259



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red, Orange, Brown & White Silty Sand

Sample No. : Bag #1
 Sample Loc. : Boring No. B-54
 Sample Depth : 0.0' to 41.0'
 Date Tested : 10/30/12
 Date Reported : 11/26/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		99.8
1/4		6.3	mm		
No.4		4.75	mm		99.4
No.6		3.35	mm		
No.10		2	mm		98.1

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		67.9
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		48.5
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.0858 mm

CBR (AASHTO: T-193 - @95% Comp.) : 4.3
 Dry Dens. (AASHTO: T-99; Method (C)) : 107.2 pcf
 Opt. Moist. (AASHTO: T-99; Method (C)) : 17.3 %

Natural Moisture (%) (AASHTO T265) : 18.1
 Liquid Limit (AASHTO T89) : 46
 Plastic Limit (AASHTO T90) : 30
 Plasticity Index : 16
 Liquidity Index : -0.73
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (5)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.9
 Coarse Sand (-No.10 + No.40) : 30.2
 Fine Sand (-No.40 + No.200) : 19.4
 Silt + Clay (-No.200) : 48.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.6
 Coarse Sand (-No.4 + No.10) : 1.3
 Medium Sand (-No.10 + No.40) : 30.2
 Fine Sand (-No.40 + No.200) : 19.4
 Silt + Clay (-No.200) : 48.5

Approved By : J.S.

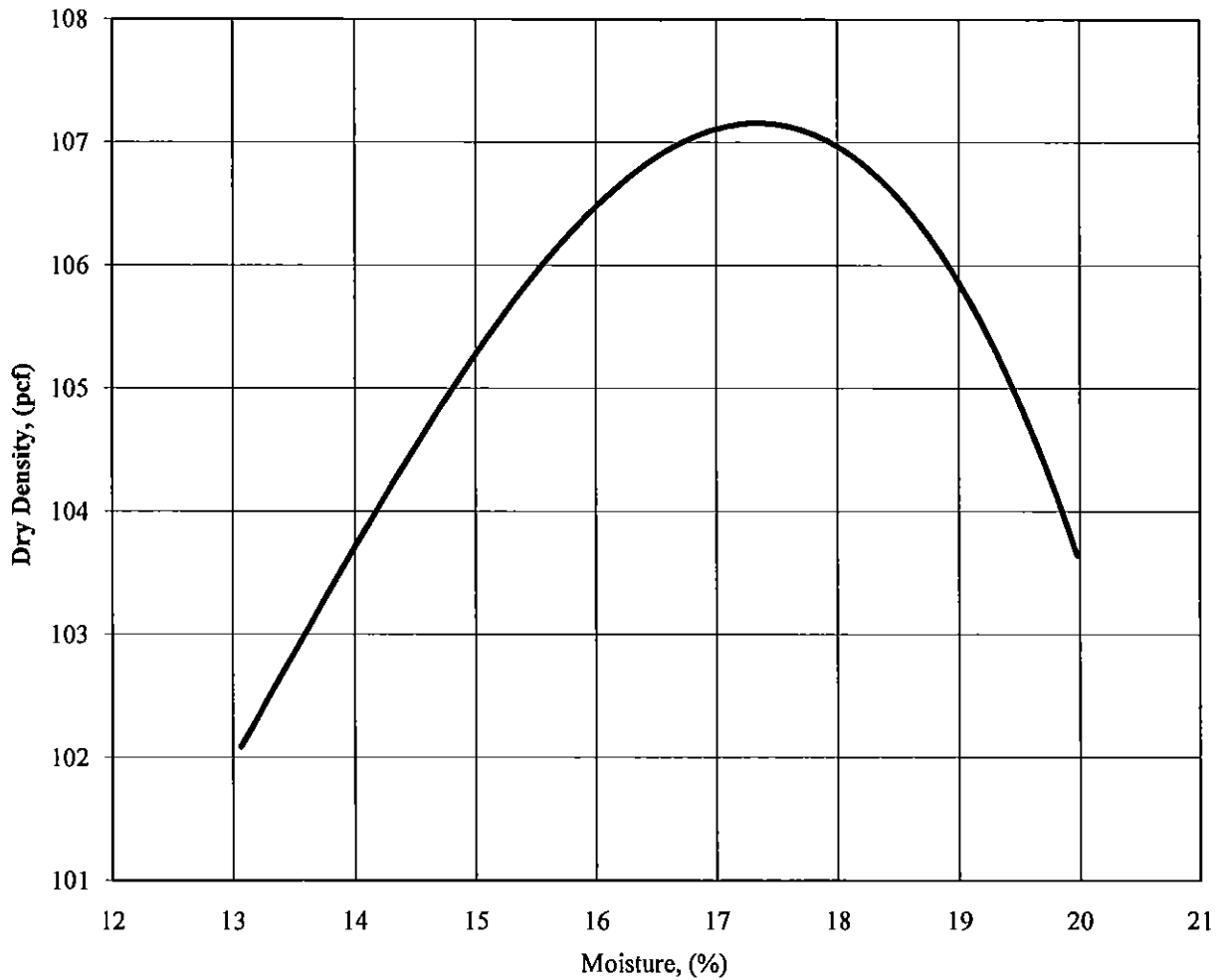
Soil No. 345



MOISTURE-DENSITY RELATIONSHIP

Project Name : I-85/I-385 Interchange
Project No. : 08195-01
Project County : Greenville
Project State : South Carolina
Laboratory No. : 08195-01
Submitted By : Florence & Hutcheson
Soil Type : Red, Orange, Brown & White Silty Sand

Sample No. : Bag #1
Sample Loc. : Boring No. B-54
Sample Depth : 0.0' to 41.0'
Date Tested : 10/30/12
Date Reported : 11/26/12



MAXIMUM DENSITY: 107.2 pcf

OPTIMUM MOISTURE: 17.3 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



Florence & Hutcheson

An **ICA** Company

CALIFORNIA BEARING RATIO

Project Name : I-85/I-385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Red, Orange, Brown & White Silty Sand

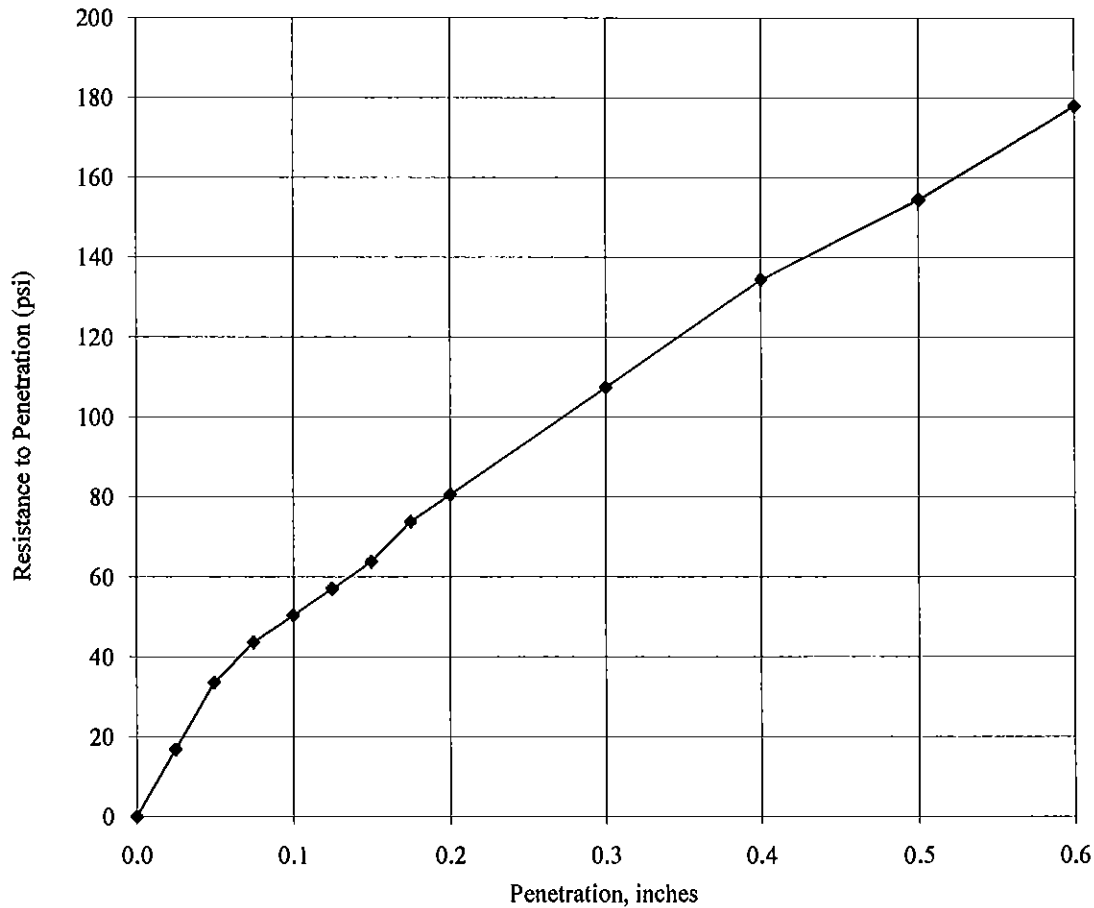
Sample No. : Bag #1

Sample Loc. : Boring No. B-54

Sample Depth : 0.0' to 41.0'

Date Tested : 10/30/12

Date Reported : 11/26/12



Compaction Effort = 40 Blows per layer

Percent Compacted = 97.9

Percent Swell = 1.22

C.B.R. @ 0.1 In. = 5

C.B.R. @ 0.2 In. = 5.4*

AASHTO: T-193 - @95% Comp.

APPROVED BY: _____ JS



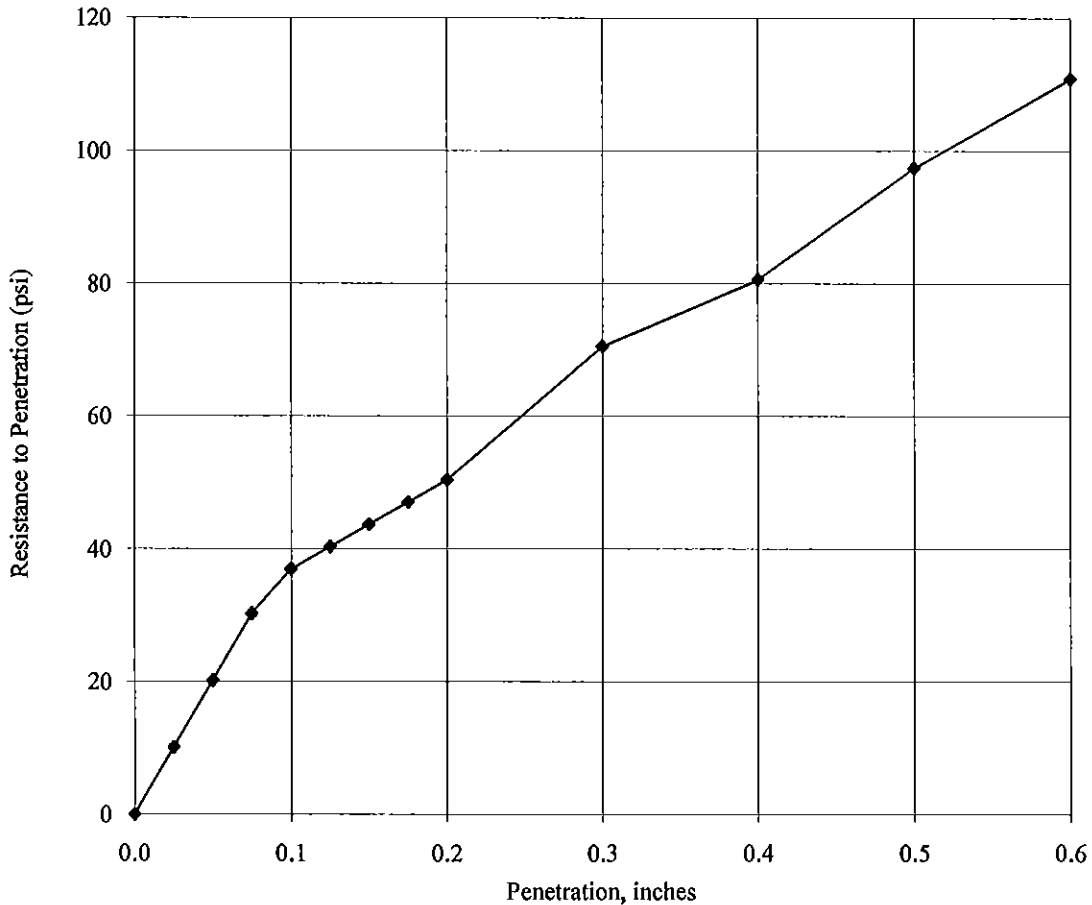
Florence & Hutcheson

An **ICA** Company

CALIFORNIA BEARING RATIO

Project Name : I-85/I-385 Interchange
Project No. : 08195-01
Project County : Greenville
Project State : South Carolina
Laboratory No. : 08195-01
Submitted By : Florence & Hutcheson
Soil Type : Red, Orange, Brown & White Silty Sand

Sample No. : Bag #1
Sample Loc. : Boring No. B-54
Sample Depth : 0.0' to 41.0'
Date Tested : 10/30/12
Date Reported : 11/26/12



Compaction Effort = 20 Blows per layer
Percent Compacted = 93.3
Percent Swell = 1.53

C.B.R. @ 0.1 In. = 3.7*
C.B.R. @ 0.2 In. = 3.4

COMMENTS: AASHTO: T-193 - @95% Comp.

APPROVED BY: _____ JS



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Tan Silty Sand with Gravel

Sample No. : SS-2
 Sample Loc. : Boring No. B-55
 Sample Depth : 4.0' to 5.5'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	100.0
1 1/4	in.	31.5	mm	
1	in.	25	mm	77.8
3/4	in.	19	mm	72.5
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	72.5
1/4		6.3	mm	
No.4		4.75	mm	66.4
No.6		3.35	mm	
No.10		2	mm	60.6

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	36.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	17.1
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 1.0062 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 14.6
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 39.4
 Coarse Sand (-No.10 + No.40) : 23.9
 Fine Sand (-No.40 + No.200) : 19.6
 Silt + Clay (-No.200) : 17.1

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 27.5
 Fine Gravel (-3/4in. + No.4) : 6.1
 Coarse Sand (-No.4 + No.10) : 5.8
 Medium Sand (-No.10 + No.40) : 23.9
 Fine Sand (-No.40 + No.200) : 19.6
 Silt + Clay (-No.200) : 17.1

Approved By : J.S.

Soil No. 284



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray & Red Silty Sand

Sample No. : SS-4
 Sample Loc. : Boring No. B-55
 Sample Depth : 8.0' to 9.5'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		99.5
1/4		6.3	mm		
No.4		4.75	mm		96.8
No.6		3.35	mm		
No.10		2	mm		93.1

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		77.8
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		26.1
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1672 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 29
 Liquid Limit (AASHTO T89) : 44
 Plastic Limit (AASHTO T90) : 35
 Plasticity Index : 9
 Liquidity Index : -0.68
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-5 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 6.9
 Coarse Sand (-No.10 + No.40) : 15.3
 Fine Sand (-No.40 + No.200) : 51.7
 Silt + Clay (-No.200) : 26.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 3.2
 Coarse Sand (-No.4 + No.10) : 3.7
 Medium Sand (-No.10 + No.40) : 15.3
 Fine Sand (-No.40 + No.200) : 51.7
 Silt + Clay (-No.200) : 26.1

Approved By : J.S.

Soil No. 285



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-5
 Sample Loc. : Boring No. B-55
 Sample Depth : 10.0' to 11.5'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	100.0
3/4	in.	19	mm	92.2
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	92.2
1/4		6.3	mm	
No.4		4.75	mm	90.3
No.6		3.35	mm	
No.10		2	mm	86.7

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	72.4
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	29.2
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1729 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.4
 Liquid Limit (AASHTO T89) : 44
 Plastic Limit (AASHTO T90) : 37
 Plasticity Index : 7
 Liquidity Index : -1.75

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 13.3
 Coarse Sand (-No.10 + No.40) : 14.3
 Fine Sand (-No.40 + No.200) : 43.2
 Silt + Clay (-No.200) : 29.2

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-5 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 7.8
 Fine Gravel (-3/4in. + No.4) : 1.9
 Coarse Sand (-No.4 + No.10) : 3.6
 Medium Sand (-No.10 + No.40) : 14.3
 Fine Sand (-No.40 + No.200) : 43.2
 Silt + Clay (-No.200) : 29.2

Approved By : J.S.

Soil No. 286



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red, Tan & White Sandy Lean Clay

Sample No. : Bag #1
 Sample Loc. : Boring No. B-56
 Sample Depth : 0.0' to 10.0'
 Date Tested : 10/30/12
 Date Reported : 11/26/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	98.0

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	71.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	52.4
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0554 mm

CBR (AASHTO: T-193 - @95% Comp.) : 3.7
 Dry Dens. (AASHTO: T-99; Method (C)) : 108.2 pcf
 Opt. Moist. (AASHTO: T-99; Method (C)) : 15.3 %

Natural Moisture (%) (AASHTO T265) : 16.5

Liquid Limit (AASHTO T89) : 40

Plastic Limit (AASHTO T90) : 24

Plasticity Index : 16

Liquidity Index : -0.50

Activity : NA

Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-6 (6)

ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.0

Coarse Sand (-No.10 + No.40) : 26.9

Fine Sand (-No.40 + No.200) : 18.7

Silt + Clay (-No.200) : 52.4

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0

Fine Gravel (-3/4in. + No.4) : 0.1

Coarse Sand (-No.4 + No.10) : 1.9

Medium Sand (-No.10 + No.40) : 26.9

Fine Sand (-No.40 + No.200) : 18.7

Silt + Clay (-No.200) : 52.4

Approved By : J.S.

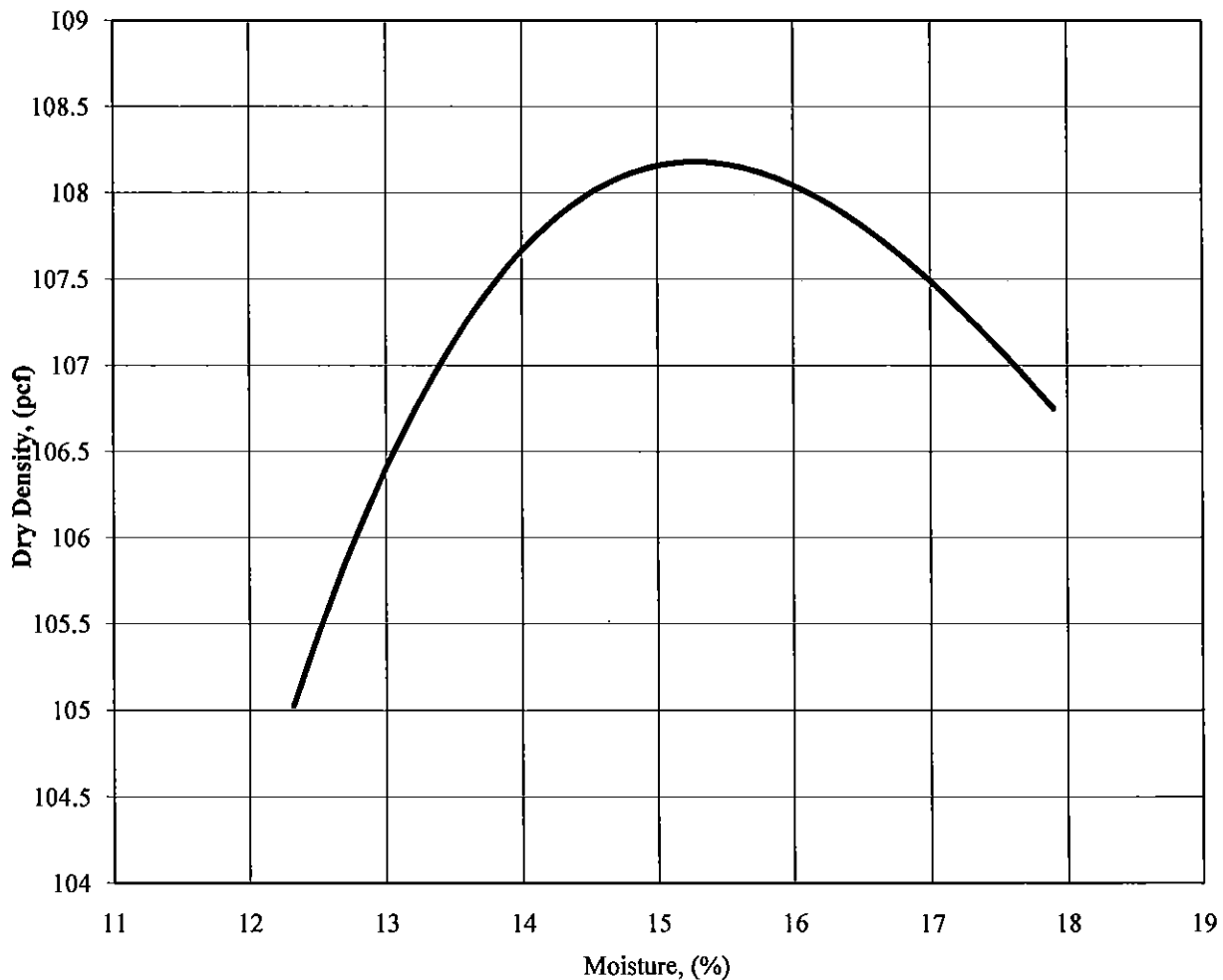
Soil No. 346



MOISTURE-DENSITY RELATIONSHIP

Project Name : I-85/I-385 Interchange
Project No. : 08195-01
Project County : Greenville
Project State : South Carolina
Laboratory No. : 08195-01
Submitted By : Florence & Hutcheson
Soil Type : Red, Tan & White Sandy Lean Clay

Sample No. : Bag #1
Sample Loc. : Boring No. B-56
Sample Depth : 0.0' to 10.0'
Date Tested : 10/30/12
Date Reported : 11/26/12



MAXIMUM DENSITY: 108.2 pcf

OPTIMUM MOISTURE: 15.3 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



Florence & Hutcheson

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CALIFORNIA BEARING RATIO

Project Name : I-85/I-385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Red, Tan & White Sandy Lean Clay

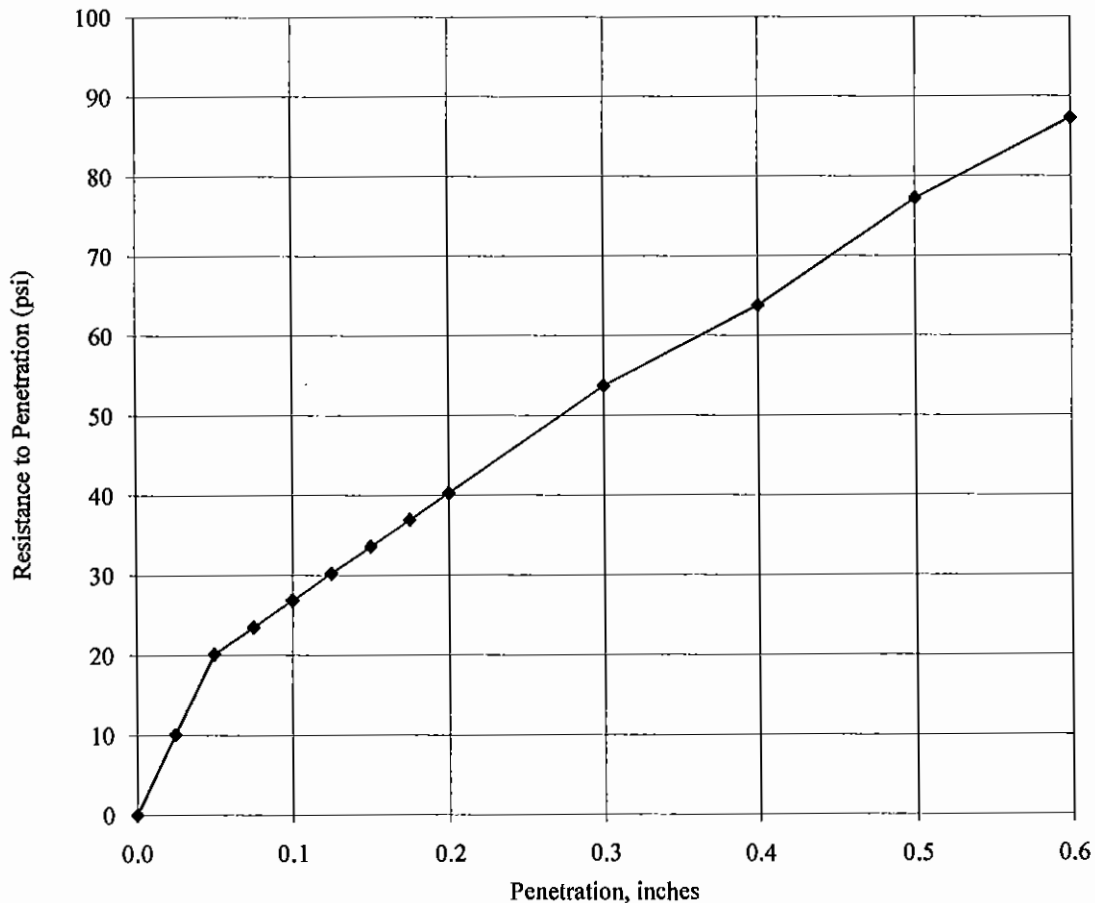
Sample No. : Bag #1

Sample Loc. : Boring No. B-56

Sample Depth : 0.0' to 10.0'

Date Tested : 10/30/12

Date Reported : 11/26/12



Compaction Effort = 20 Blows per layer

Percent Compacted = 93.1

Percent Swell = 1.59

C.B.R. @ 0.1 In. = 2.7*

C.B.R. @ 0.2 In. = 2.7

COMMENTS: AASHTO: T-193 - @95% Comp.

APPROVED BY: _____ JS



Florence & Hutcheson

An **ICA** Company

CALIFORNIA BEARING RATIO

Project Name : I-85/I-385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Red, Tan & White Sandy Lean Clay

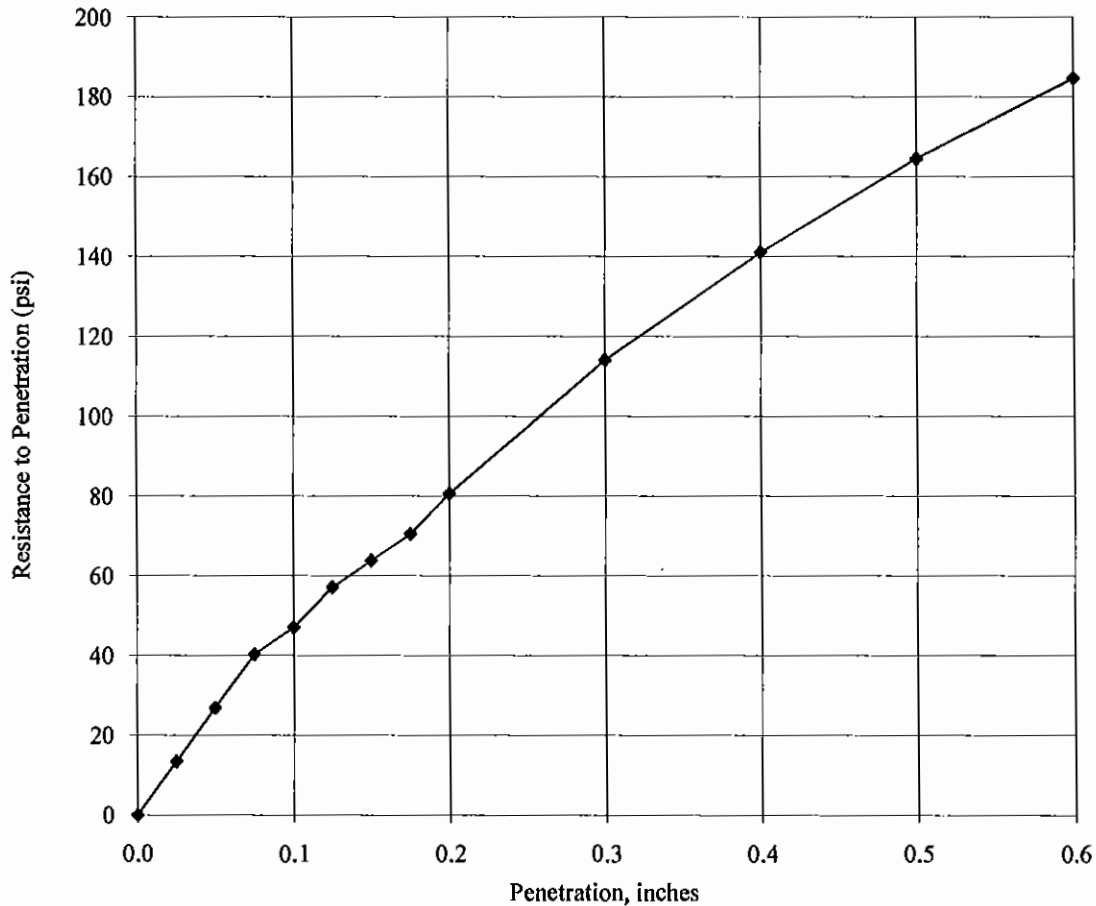
Sample No. : Bag #1

Sample Loc. : Boring No. B-56

Sample Depth : 0.0' to 10.0'

Date Tested : 10/30/12

Date Reported : 11/26/12



Compaction Effort = 40 Blows per layer

Percent Compacted = 98

Percent Swell = 1.37

C.B.R. @ 0.1 In. = 4.7

C.B.R. @ 0.2 In. = 5.4*

AASHTO: T-193 - @95% Comp.

APPROVED BY: _____ JS



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White & Tan Silty Sand

Sample No. : Bag #2
 Sample Loc. : Boring No. B-56
 Sample Depth : 10.0' to 35.0'
 Date Tested : 10/30/12
 Date Reported : 11/26/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	98.0

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	71.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	49.3
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0791 mm

CBR (AASHTO: T-193 - @95% Comp.) : 4.0
 Dry Dens. (AASHTO: T-99; Method (A)) : 112.6 pcf
 Opt. Moist. (AASHTO: T-99; Method (A)) : 14.4 %

Natural Moisture (%) (AASHTO T265) : 17
 Liquid Limit (AASHTO T89) : 34
 Plastic Limit (AASHTO T90) : 24
 Plasticity Index : 10
 Liquidity Index : -0.72
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (2)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.0
 Coarse Sand (-No.10 + No.40) : 26.1
 Fine Sand (-No.40 + No.200) : 22.6
 Silt + Clay (-No.200) : 49.3

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 2.0
 Medium Sand (-No.10 + No.40) : 26.1
 Fine Sand (-No.40 + No.200) : 22.6
 Silt + Clay (-No.200) : 49.3

Approved By : J.S.

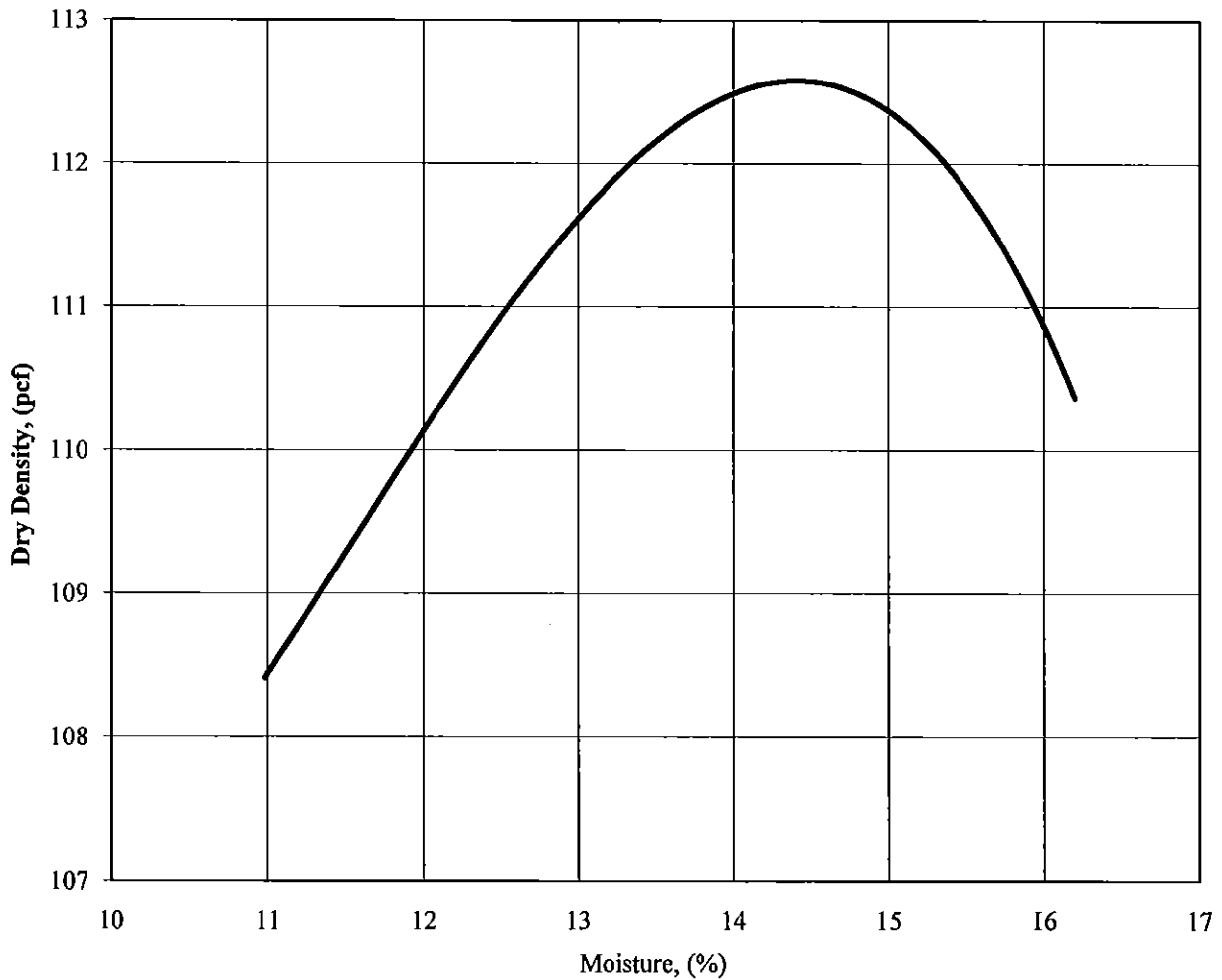
Soil No. 347



MOISTURE-DENSITY RELATIONSHIP

Project Name : I-85/I-385 Interchange
Project No. : 08195-01
Project County : Greenville
Project State : South Carolina
Laboratory No. : 08195-01
Submitted By : Florence & Hutcheson
Soil Type : White & Tan Silty Sand

Sample No. : Bag #2
Sample Loc. : Boring No. B-56
Sample Depth : 10.0' to 35.0'
Date Tested : 10/30/12
Date Reported : 11/26/12



MAXIMUM DENSITY: 112.6 pcf

OPTIMUM MOISTURE: 14.4 %

COMMENTS: AASHTO: T-99; Method (A)

APPROVED BY: J.S.



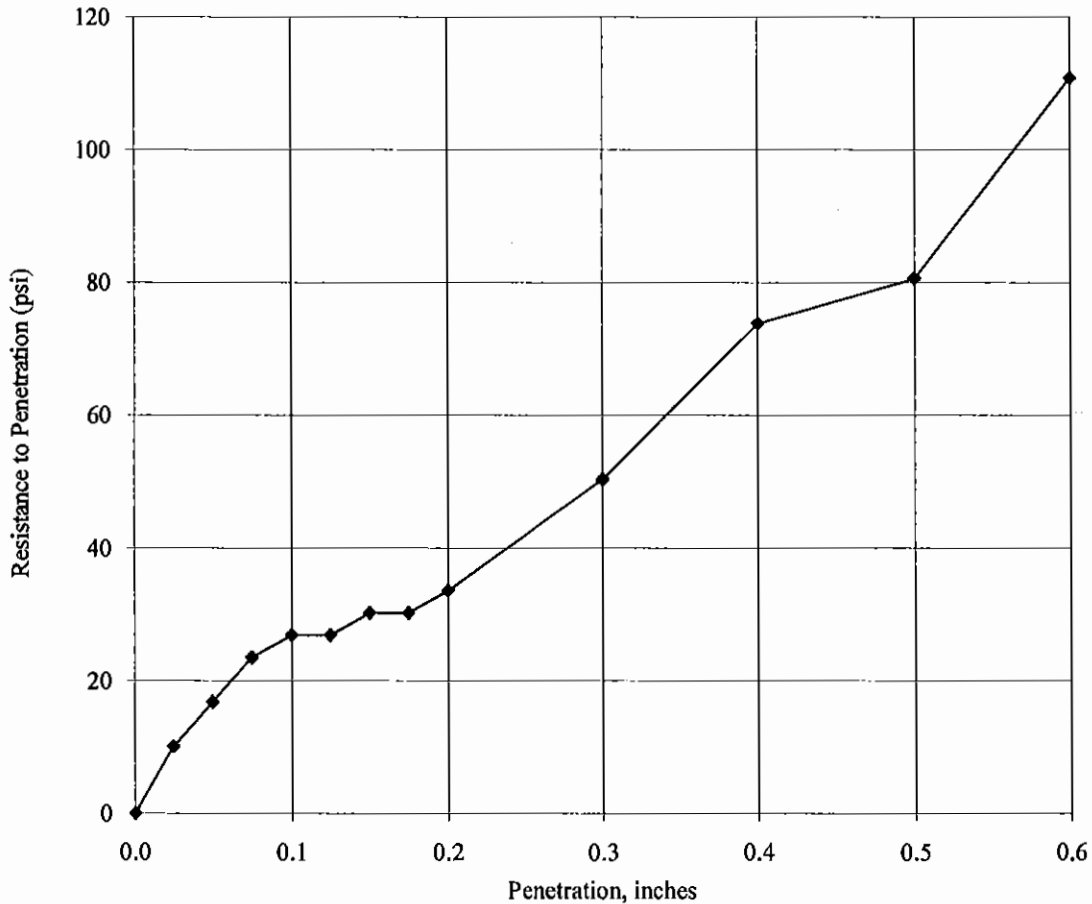
Florence & Hutcheson

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CALIFORNIA BEARING RATIO

Project Name : I-85/I-385 Interchange
Project No. : 08195-01
Project County : Greenville
Project State : South Carolina
Laboratory No. : 08195-01
Submitted By : Florence & Hutcheson
Soil Type : White & Tan Silty Sand

Sample No. : Bag #2
Sample Loc. : Boring No. B-56
Sample Depth : 10.0' to 35.0'
Date Tested : 10/25/12
Date Reported : 10/29/12



Compaction Effort = 20 Blows per layer
Percent Compacted = 93
Percent Swell = 0.96

C.B.R. @ 0.1 In. = 2.7*
C.B.R. @ 0.2 In. = 2.2

COMMENTS: AASHTO: T-193 - @95% Comp.

APPROVED BY: _____ JS



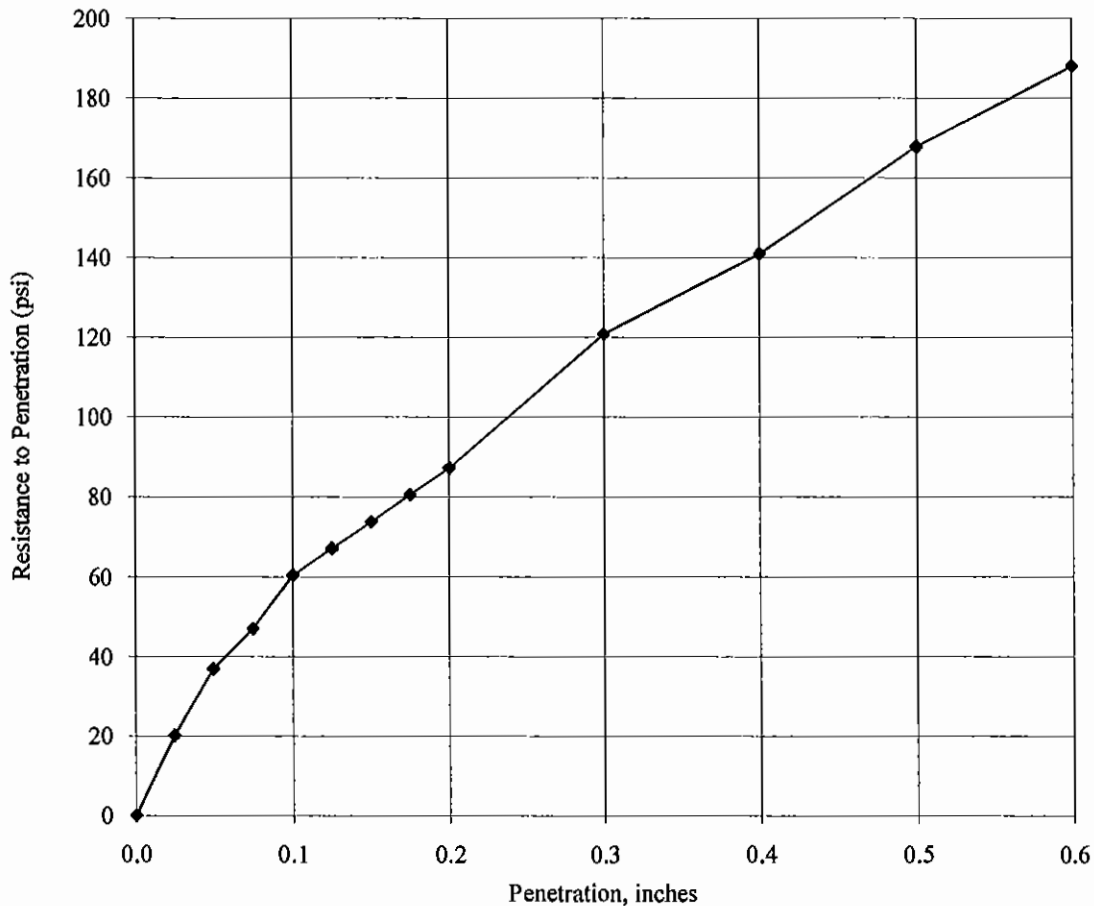
Florence & Hutcheson

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CALIFORNIA BEARING RATIO

Project Name : I-85/I-385 Interchange
Project No. : 08195-01
Project County : Greenville
Project State : South Carolina
Laboratory No. : 08195-01
Submitted By : Florence & Hutcheson
Soil Type : White & Tan Silty Sand

Sample No. : Bag #2
Sample Loc. : Boring No. B-56
Sample Depth : 10.0' to 35.0'
Date Tested : 10/25/12
Date Reported : 10/29/12



Compaction Effort = 40 Blows per layer
Percent Compacted = 98.1
Percent Swell = 0.83

C.B.R. @ 0.1 In. = 6*
C.B.R. @ 0.2 In. = 5.8

COMMENTS: AASHTO: T-193 - @95% Comp.

APPROVED BY: _____ JS



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Sandy Elastic Silt

Sample No. : SS-2
 Sample Loc. : Boring No. B-56
 Sample Depth : 4.0' to 5.5'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	98.7

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	73.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	50.4
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0712 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19.4
 Liquid Limit (AASHTO T89) : 60
 Plastic Limit (AASHTO T90) : 34
 Plasticity Index : 26
 Liquidity Index : -0.55

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.3
 Coarse Sand (-No.10 + No.40) : 25.0
 Fine Sand (-No.40 + No.200) : 23.3
 Silt + Clay (-No.200) : 50.4

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (10)
 ASTM Classification: D2487 : MH

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.3
 Medium Sand (-No.10 + No.40) : 25.0
 Fine Sand (-No.40 + No.200) : 23.3
 Silt + Clay (-No.200) : 50.4

Approved By : J.S.

Soil No. 260



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & White Silty Sand

Sample No. : SS-7
 Sample Loc. : Boring No. B-56
 Sample Depth : 20.0' to 21.5'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.9
No.6		3.35	mm		
No.10		2	mm		97.0

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		63.8
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		34.3
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.1888 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 16.8
 Liquid Limit (AASHTO T89) : 34
 Plastic Limit (AASHTO T90) : 29
 Plasticity Index : 5
 Liquidity Index : -2.46
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.0
 Coarse Sand (-No.10 + No.40) : 33.2
 Fine Sand (-No.40 + No.200) : 29.5
 Silt + Clay (-No.200) : 34.3

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.1
 Coarse Sand (-No.4 + No.10) : 2.9
 Medium Sand (-No.10 + No.40) : 33.2
 Fine Sand (-No.40 + No.200) : 29.5
 Silt + Clay (-No.200) : 34.3

Approved By : J.S.

Soil No. 261



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White Silty Sand

Sample No. : SS-9
 Sample Loc. : Boring No. B-56
 Sample Depth : 30.0' to 31.5'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	98.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	64.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	36.3
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1727 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 23.5
 Liquid Limit (AASHTO T89) : 35
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : 8
 Liquidity Index : -0.42
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.2
 Coarse Sand (-No.10 + No.40) : 34.0
 Fine Sand (-No.40 + No.200) : 28.5
 Silt + Clay (-No.200) : 36.3

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.2
 Medium Sand (-No.10 + No.40) : 34.0
 Fine Sand (-No.40 + No.200) : 28.5
 Silt + Clay (-No.200) : 36.3

Approved By : J.S.

Soil No. 262



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-57
 Sample Depth : 2.0' to 3.5'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		99.1
1/4		6.3	mm		
No.4		4.75	mm		97.3
No.6		3.35	mm		
No.10		2	mm		91.1

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		55.8
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		18.0
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.3257 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 7.6
 Liquid Limit (AASHTO T89) : 32
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 6
 Liquidity Index : -3.05
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 8.9
 Coarse Sand (-No.10 + No.40) : 35.3
 Fine Sand (-No.40 + No.200) : 37.8
 Silt + Clay (-No.200) : 18.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.7
 Coarse Sand (-No.4 + No.10) : 6.2
 Medium Sand (-No.10 + No.40) : 35.3
 Fine Sand (-No.40 + No.200) : 37.8
 Silt + Clay (-No.200) : 18.0

Approved By : J.S.

Soil No. 287



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-57
 Sample Depth : 4.0' to 5.5'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	99.1
1/4		6.3	mm	
No.4		4.75	mm	97.9
No.6		3.35	mm	
No.10		2	mm	88.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	57.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	21.9
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.2927 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 9.1
 Liquid Limit (AASHTO T89) : 35
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : 8
 Liquidity Index : -2.26
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 11.2
 Coarse Sand (-No.10 + No.40) : 31.1
 Fine Sand (-No.40 + No.200) : 35.8
 Silt + Clay (-No.200) : 21.9

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.1
 Coarse Sand (-No.4 + No.10) : 9.1
 Medium Sand (-No.10 + No.40) : 31.1
 Fine Sand (-No.40 + No.200) : 35.8
 Silt + Clay (-No.200) : 21.9

Approved By : J.S.

Soil No. 288



Florence & Hutcheson

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SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-4
 Sample Loc. : Boring No. B-57
 Sample Depth : 8.0' to 8.3'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		98.7
No.6		3.35	mm		
No.10		2	mm		95.2

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		69.6
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		30.8
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1769 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 6.3
 Liquid Limit (AASHTO T89) : 29
 Plastic Limit (AASHTO T90) : 23
 Plasticity Index : 6
 Liquidity Index : -2.86
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.8
 Coarse Sand (-No.10 + No.40) : 25.6
 Fine Sand (-No.40 + No.200) : 38.8
 Silt + Clay (-No.200) : 30.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.3
 Coarse Sand (-No.4 + No.10) : 3.5
 Medium Sand (-No.10 + No.40) : 25.6
 Fine Sand (-No.40 + No.200) : 38.8
 Silt + Clay (-No.200) : 30.8

Approved By : J.S.

Soil No. 289



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & Red Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-58
 Sample Depth : 2.0' to 3.5'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.7

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	83.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	19.7
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1707 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 34.4
 Liquid Limit (AASHTO T89) : 66
 Plastic Limit (AASHTO T90) : 46
 Plasticity Index : 20
 Liquidity Index : -0.56
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-7 (2)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.3
 Coarse Sand (-No.10 + No.40) : 16.1
 Fine Sand (-No.40 + No.200) : 63.9
 Silt + Clay (-No.200) : 19.7

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.3
 Medium Sand (-No.10 + No.40) : 16.1
 Fine Sand (-No.40 + No.200) : 63.9
 Silt + Clay (-No.200) : 19.7

Approved By : J.S.

Soil No. 185



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-58
 Sample Depth : 4.0' to 5.5'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	100.0	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	82.1	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	27.0	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1547 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 35.7
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.0
 Coarse Sand (-No.10 + No.40) : 17.9
 Fine Sand (-No.40 + No.200) : 55.1
 Silt + Clay (-No.200) : 27.0

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.0
 Medium Sand (-No.10 + No.40) : 17.9
 Fine Sand (-No.40 + No.200) : 55.1
 Silt + Clay (-No.200) : 27.0

Approved By : J.S.

Soil No. 186



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray, Tan & Black Silty Sand

Sample No. : SS-4
 Sample Loc. : Boring No. B-58
 Sample Depth : 8.0' to 9.5'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	100.0	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	75.8	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	18.5	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1946 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 42.6
 Liquid Limit (AASHTO T89) : 59
 Plastic Limit (AASHTO T90) : 55
 Plasticity Index : 4
 Liquidity Index : -3.04

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.0
 Coarse Sand (-No.10 + No.40) : 24.2
 Fine Sand (-No.40 + No.200) : 57.3
 Silt + Clay (-No.200) : 18.5

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-5 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.0
 Medium Sand (-No.10 + No.40) : 24.2
 Fine Sand (-No.40 + No.200) : 57.3
 Silt + Clay (-No.200) : 18.5

Approved By : J.S.

Soil No. 187



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan, Red & White Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-59
 Sample Depth : 4.0' to 5.5'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.5
No.6		3.35	mm	
No.10		2	mm	89.7

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	50.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	19.4
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.4088 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 8.4
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 10.3
 Coarse Sand (-No.10 + No.40) : 39.0
 Fine Sand (-No.40 + No.200) : 31.3
 Silt + Clay (-No.200) : 19.4

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.5
 Coarse Sand (-No.4 + No.10) : 8.8
 Medium Sand (-No.10 + No.40) : 39.0
 Fine Sand (-No.40 + No.200) : 31.3
 Silt + Clay (-No.200) : 19.4

Approved By : J.S.

Soil No. 212



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & White Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-59
 Sample Depth : 13.5' to 15.0'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	94.4

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	61.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	24.2
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.2458 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 17.3
 Liquid Limit (AASHTO T89) : 26
 Plastic Limit (AASHTO T90) : 23
 Plasticity Index : 3
 Liquidity Index : -2.01
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 5.6
 Coarse Sand (-No.10 + No.40) : 32.5
 Fine Sand (-No.40 + No.200) : 37.7
 Silt + Clay (-No.200) : 24.2

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 5.6
 Medium Sand (-No.10 + No.40) : 32.5
 Fine Sand (-No.40 + No.200) : 37.7
 Silt + Clay (-No.200) : 24.2

Approved By : J.S.

Soil No. 223



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & Brown Silty Sand

Sample No. : SS-8
 Sample Loc. : Boring No. B-59
 Sample Depth : 23.5' to 25.0'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		98.9
No.6		3.35	mm		
No.10		2	mm		95.6

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		80.3
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		38.2
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.122 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 12.6
 Liquid Limit (AASHTO T89) : 30
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 4
 Liquidity Index : -3.24
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 4.4
 Coarse Sand (-No.10 + No.40) : 15.3
 Fine Sand (-No.40 + No.200) : 42.1
 Silt + Clay (-No.200) : 38.2

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.1
 Coarse Sand (-No.4 + No.10) : 3.3
 Medium Sand (-No.10 + No.40) : 15.3
 Fine Sand (-No.40 + No.200) : 42.1
 Silt + Clay (-No.200) : 38.2

Approved By : J.S.

Soil No. 213



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & Gray Silty Sand

Sample No. : SS-10
 Sample Loc. : Boring No. B-59
 Sample Depth : 33.5' to 35.0'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	98.5
1/4		6.3	mm	
No.4		4.75	mm	98.4
No.6		3.35	mm	
No.10		2	mm	95.5

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	83.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	48.3
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0817 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 28.6
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 7
 Liquidity Index : 0.39

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 4.5
 Coarse Sand (-No.10 + No.40) : 12.5
 Fine Sand (-No.40 + No.200) : 34.7
 Silt + Clay (-No.200) : 48.3

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (1)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.6
 Coarse Sand (-No.4 + No.10) : 2.9
 Medium Sand (-No.10 + No.40) : 12.5
 Fine Sand (-No.40 + No.200) : 34.7
 Silt + Clay (-No.200) : 48.3

Approved By : J.S.

Soil No. 214



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown, Gray, Tan, Red & White Silty Sand

Sample No. : Bag 1
 Sample Loc. : Boring No. B-59
 Sample Depth : 0.0' to 39.0'
 Date Tested : 10/18/12
 Date Reported : 10/24/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	95.6
No.6		3.35	mm	
No.10		2	mm	82.3

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	47.5
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	20.3
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.475 mm

CBR (AASHTO: T-193 - @ 95% Comp.) : 7.0
 Dry Dens. (AASHTO: T-99; Method (C)) : 117.3 pcf
 Opt. Moist. (AASHTO: T-99; Method (C)) : 11.8 %

Natural Moisture (%) (AASHTO T265) : 4.3
 Liquid Limit (AASHTO T89) : 32
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : 5
 Liquidity Index : -4.59
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 17.7
 Coarse Sand (-No.10 + No.40) : 34.8
 Fine Sand (-No.40 + No.200) : 27.2
 Silt + Clay (-No.200) : 20.3

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 4.4
 Coarse Sand (-No.4 + No.10) : 13.3
 Medium Sand (-No.10 + No.40) : 34.8
 Fine Sand (-No.40 + No.200) : 27.2
 Silt + Clay (-No.200) : 20.3

Approved By : J.S.

Soil No. 277



MOISTURE-DENSITY RELATIONSHIP

Project Name : I-85/I-385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : Brown ,Gray, Tan, Red & White Silty Sand

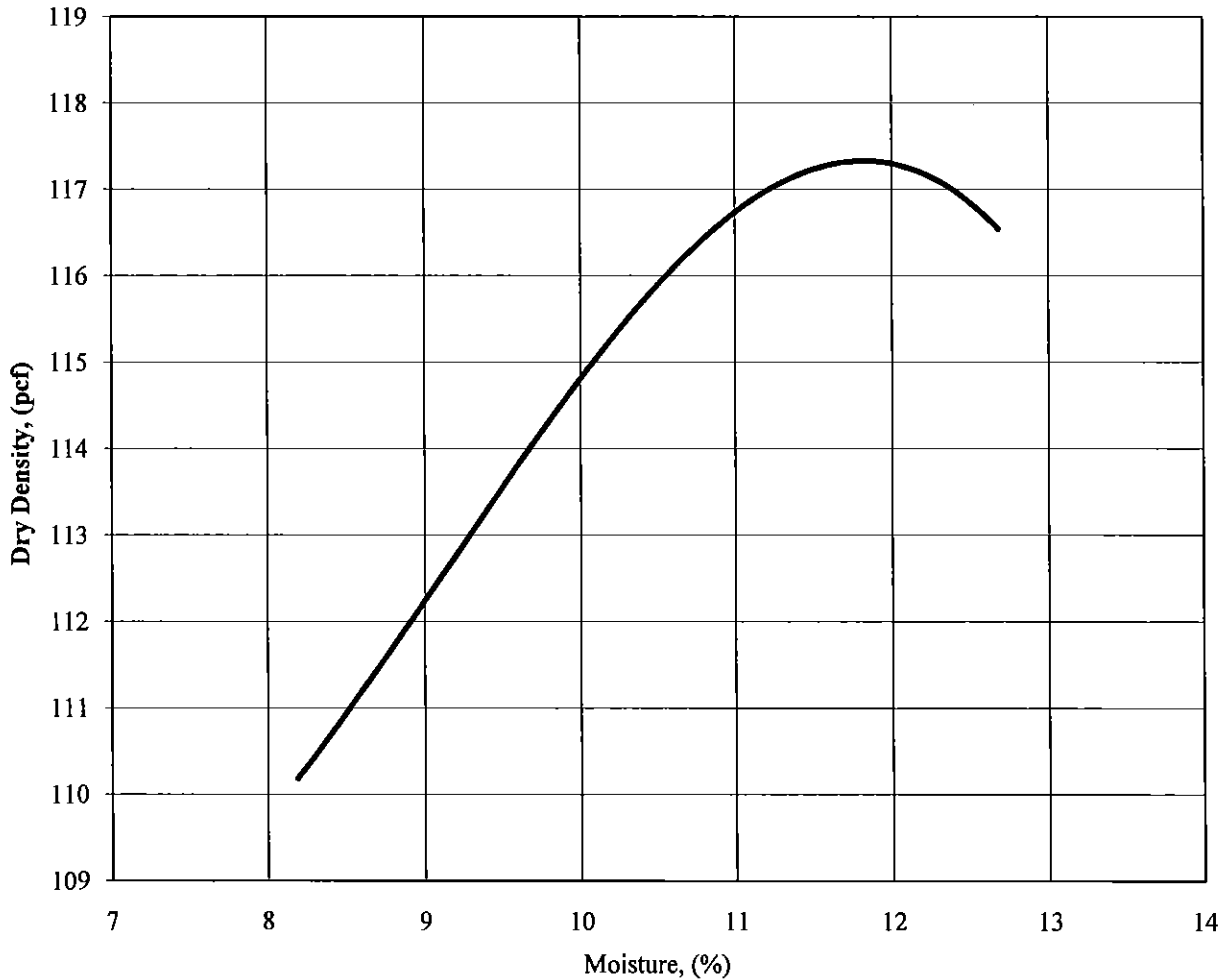
Sample No. : Bag 1

Sample Loc. : Boring No. B-59

Sample Depth : 0.0' to 39.0'

Date Tested : 10/18/12

Date Reported : 10/24/12



MAXIMUM DENSITY: 117.3 pcf

OPTIMUM MOISTURE: 11.8 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



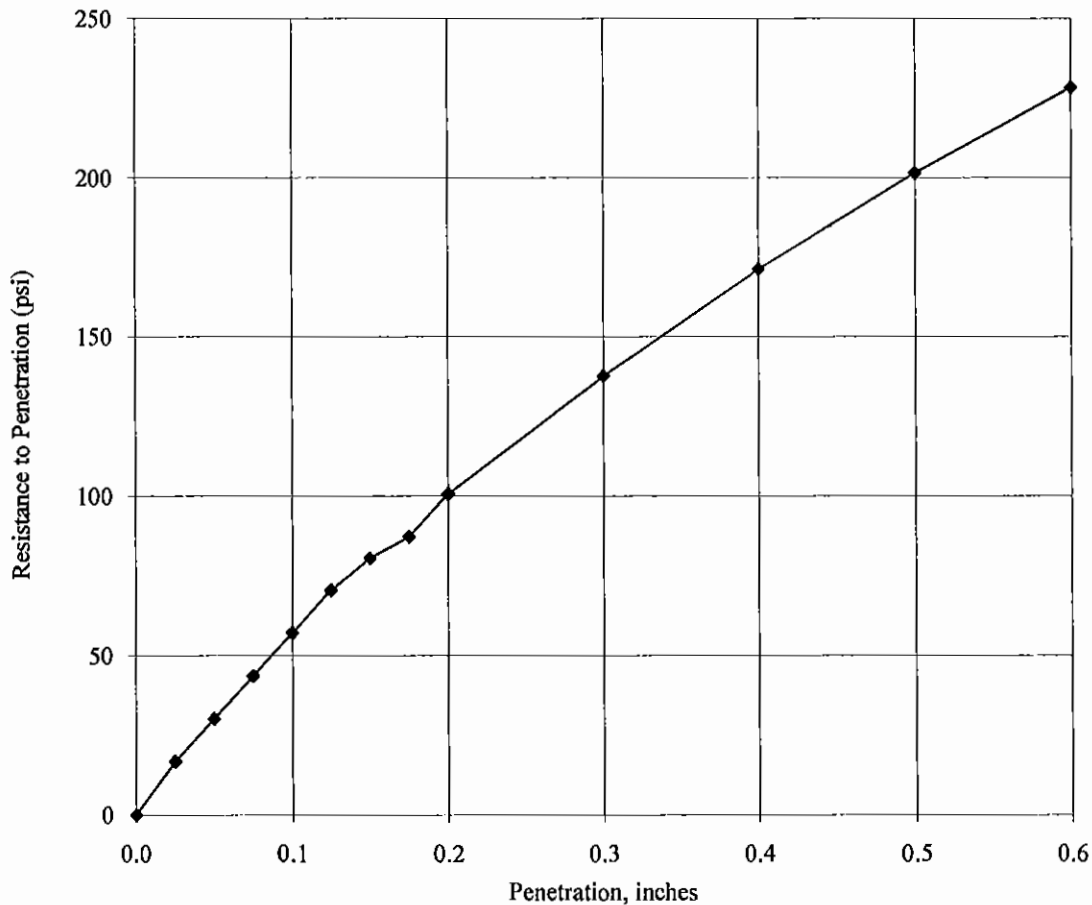
Florence & Hutcheson

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CALIFORNIA BEARING RATIO

Project Name : I-85/I-385 Interchange
Project No. : 08195-01
Project County : Greenville
Project State : South Carolina
Laboratory No. : 08195-01
Submitted By : Florence & Hutcheson
Soil Type : Brown, Gray, Tan, Red & White Silty Sand

Sample No. : Bag 1
Sample Loc. : Boring No. B-59
Sample Depth : 0.0' to 39.0'
Date Tested : 10/18/12
Date Reported : 10/24/12



Compaction Effort = 20 Blows per layer
Percent Compacted = 94.7
Percent Swell = 0.2

C.B.R. @ 0.1 In. = 5.7
C.B.R. @ 0.2 In. = 6.7*

COMMENTS: AASHTO: T-193 - @ 95% Comp.

APPROVED BY: _____ JS

COMMENTS:

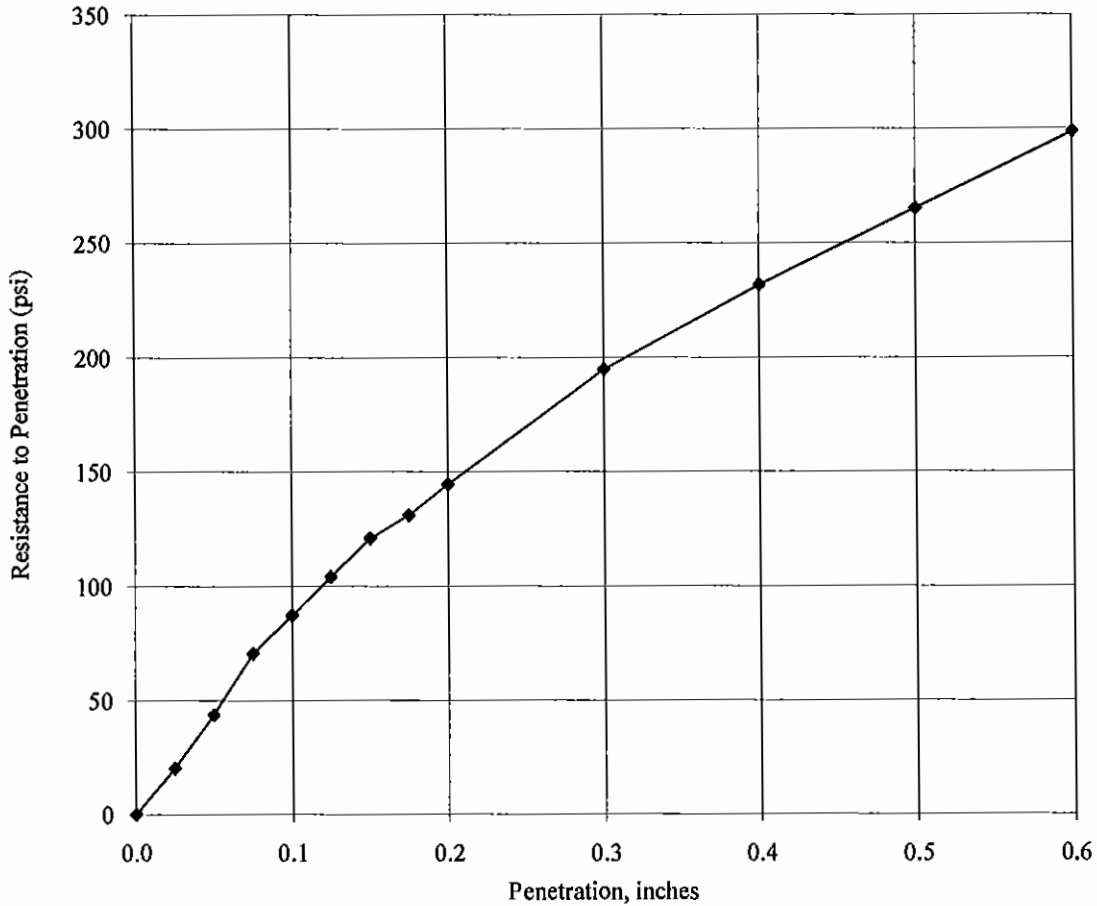


Florence & Hutcheson

An **ICA** Company

CALIFORNIA BEARING RATIO

Project Name : I-85/I-385 Interchange	Sample No. : Bag 1
Project No. : 08195-01	Sample Loc. : Boring No. B-59
Project County : Greenville	Sample Depth : 0.0' to 39.0'
Project State : South Carolina	Date Tested : 10/18/12
Laboratory No. : 08195-01	Date Reported : 10/24/12
Submitted By : Florence & Hutcheson	
Soil Type : Brown, Gray, Tan, Red & White Silty Sand	



Compaction Effort = 40 Blows per layer
Percent Compacted = 98
Percent Swell = 0.09

C.B.R. @ 0.1 In. = 8.7
C.B.R. @ 0.2 In. = 9.6*

COMMENTS: AASHTO: T-193

APPROVED BY: _____ JS



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & White Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-60
 Sample Depth : 6.0' to 7.5'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	98.7
No.6		3.35	mm	
No.10		2	mm	97.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	65.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	33.0
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1853 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 24.5
 Liquid Limit (AASHTO T89) : 41
 Plastic Limit (AASHTO T90) : 36
 Plasticity Index : 5
 Liquidity Index : -2.24
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-5 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.0
 Coarse Sand (-No.10 + No.40) : 31.4
 Fine Sand (-No.40 + No.200) : 32.6
 Silt + Clay (-No.200) : 33.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.3
 Coarse Sand (-No.4 + No.10) : 1.7
 Medium Sand (-No.10 + No.40) : 31.4
 Fine Sand (-No.40 + No.200) : 32.6
 Silt + Clay (-No.200) : 33.0

Approved By : J.S.

Soil No. 215



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : ST-1
 Sample Loc. : Boring No. B-61
 Sample Depth : 2.0' to 3.3'
 Date Tested : 11/05/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		99.7
1/4		6.3	mm		
No.4		4.75	mm		96.2
No.6		3.35	mm		
No.10		2	mm		92.1

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		66.9
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		33.8
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1753 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20.9
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 34
 Plasticity Index : 5
 Liquidity Index : -2.57
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: MI45 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: MI45

Gravel (3in. + No.10) : 7.9
 Coarse Sand (-No.10 + No.40) : 25.2
 Fine Sand (-No.40 + No.200) : 33.1
 Silt + Clay (-No.200) : 33.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 3.8
 Coarse Sand (-No.4 + No.10) : 4.1
 Medium Sand (-No.10 + No.40) : 25.2
 Fine Sand (-No.40 + No.200) : 33.1
 Silt + Clay (-No.200) : 33.8

Approved By : J.S.

Soil No. 334



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & Red Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-61
 Sample Depth : 4.0' to 5.5'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		99.3
1/4		6.3	mm		
No.4		4.75	mm		97.2
No.6		3.35	mm		
No.10		2	mm		91.8

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		67.6
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		43.5
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.1197 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20.2
 Liquid Limit (AASHTO T89) : 51
 Plastic Limit (AASHTO T90) : 32
 Plasticity Index : 19
 Liquidity Index : -0.63
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (5)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 8.2
 Coarse Sand (-No.10 + No.40) : 24.2
 Fine Sand (-No.40 + No.200) : 24.1
 Silt + Clay (-No.200) : 43.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.8
 Coarse Sand (-No.4 + No.10) : 5.4
 Medium Sand (-No.10 + No.40) : 24.2
 Fine Sand (-No.40 + No.200) : 24.1
 Silt + Clay (-No.200) : 43.5

Approved By : J.S.

Soil No. 216



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Clayey Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-61
 Sample Depth : 13.5' to 15.0'
 Date Tested : 10/15/12
 Date Reported : 10/25/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.5
No.6		3.35	mm	
No.10		2	mm	92.9

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	63.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	25.9
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.23 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20.2
 Liquid Limit (AASHTO T89) : 34
 Plastic Limit (AASHTO T90) : 20
 Plasticity Index : 14
 Liquidity Index : 0.01
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 7.1
 Coarse Sand (-No.10 + No.40) : 29.7
 Fine Sand (-No.40 + No.200) : 37.3
 Silt + Clay (-No.200) : 25.9

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-6 (1)
 ASTM Classification: D2487 : SC

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.5
 Coarse Sand (-No.4 + No.10) : 6.6
 Medium Sand (-No.10 + No.40) : 29.7
 Fine Sand (-No.40 + No.200) : 37.3
 Silt + Clay (-No.200) : 25.9

Approved By : J.S.

Soil No. 217



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Sandy Silt

Sample No. : SS-3
 Sample Loc. : Boring No. B-62
 Sample Depth : 6.0' to 7.5'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	97.4

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	84.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	70.1
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.0112 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 30.3
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 31
 Plasticity Index : 8
 Liquidity Index : -0.14
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (6)
 ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.6
 Coarse Sand (-No.10 + No.40) : 12.8
 Fine Sand (-No.40 + No.200) : 14.5
 Silt + Clay (-No.200) : 70.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 2.6
 Medium Sand (-No.10 + No.40) : 12.8
 Fine Sand (-No.40 + No.200) : 14.5
 Silt + Clay (-No.200) : 70.1

Approved By : J.S.

Soil No. 218



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-63
 Sample Depth : 6.0' to 7.5'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.6

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	80.2
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	48.0
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0835 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 16.5
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 28
 Plasticity Index : 11
 Liquidity Index : -1.05
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (3)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.4
 Coarse Sand (-No.10 + No.40) : 19.4
 Fine Sand (-No.40 + No.200) : 32.2
 Silt + Clay (-No.200) : 48.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.4
 Medium Sand (-No.10 + No.40) : 19.4
 Fine Sand (-No.40 + No.200) : 32.2
 Silt + Clay (-No.200) : 48.0

Approved By : J.S.

Soil No. 219



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red, Tan & Brown Silty Sand

Sample No. : SS-8
 Sample Loc. : Boring No. B-63
 Sample Depth : 23.5' to 25.0'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.6

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	70.5
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	41.1
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1268 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 25.7
 Liquid Limit (AASHTO T89) : 43
 Plastic Limit (AASHTO T90) : 34
 Plasticity Index : 9
 Liquidity Index : -0.91
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (1)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.4
 Coarse Sand (-No.10 + No.40) : 29.1
 Fine Sand (-No.40 + No.200) : 29.4
 Silt + Clay (-No.200) : 41.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.4
 Medium Sand (-No.10 + No.40) : 29.1
 Fine Sand (-No.40 + No.200) : 29.4
 Silt + Clay (-No.200) : 41.1

Approved By : J.S.

Soil No. 220



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Sandy Silt

Sample No. : SS-9
 Sample Loc. : Boring No. B-63
 Sample Depth : 28.5' to 30.0'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.3

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	84.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	52.2
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0567 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 18.7
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 33
 Plasticity Index : 6
 Liquidity Index : -2.42
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (2)
 ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.7
 Coarse Sand (-No.10 + No.40) : 14.4
 Fine Sand (-No.40 + No.200) : 32.7
 Silt + Clay (-No.200) : 52.2

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.7
 Medium Sand (-No.10 + No.40) : 14.4
 Fine Sand (-No.40 + No.200) : 32.7
 Silt + Clay (-No.200) : 52.2

Approved By : J.S.

Soil No. 221



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red, Orange & Yellow Silty Sand

Sample No. : ST-1
 Sample Loc. : Boring No. B-64
 Sample Depth : 4.0' to 5.2'
 Date Tested : 11/05/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.8
No.6		3.35	mm		
No.10		2	mm		99.4

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		69.8
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		38.7
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.1409 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 23.9
 Liquid Limit (AASHTO T89) : 38
 Plastic Limit (AASHTO T90) : 33
 Plasticity Index : 5
 Liquidity Index : -1.80

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.6
 Coarse Sand (-No.10 + No.40) : 29.6
 Fine Sand (-No.40 + No.200) : 31.1
 Silt + Clay (-No.200) : 38.7

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.2
 Coarse Sand (-No.4 + No.10) : 0.4
 Medium Sand (-No.10 + No.40) : 29.6
 Fine Sand (-No.40 + No.200) : 31.1
 Silt + Clay (-No.200) : 38.7

Approved By : J.S.

Soil No. 335



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Sandy Silt

Sample No. : SS-2
 Sample Loc. : Boring No. B-64
 Sample Depth : 6.0' to 7.5'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	98.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	81.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	51.6
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0611 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 27.2
 Liquid Limit (AASHTO T89) : 43
 Plastic Limit (AASHTO T90) : 34
 Plasticity Index : 9
 Liquidity Index : -0.77
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 2.0
 Coarse Sand (-No.10 + No.40) : 17.0
 Fine Sand (-No.40 + No.200) : 29.4
 Silt + Clay (-No.200) : 51.6

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (3)
 ASTM Classification: D2487 : ML

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.2
 Coarse Sand (-No.4 + No.10) : 1.8
 Medium Sand (-No.10 + No.40) : 17.0
 Fine Sand (-No.40 + No.200) : 29.4
 Silt + Clay (-No.200) : 51.6

Approved By : J.S.

Soil No. 263



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray, Red, Orange & White Silty Sand

Sample No. : ST-2
 Sample Loc. : Boring No. B-64
 Sample Depth : 8.0' to 9.5'
 Date Tested : 11/05/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	99.9	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	81.5	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	38.5	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1193 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 29.7
 Liquid Limit (AASHTO T89) : 53
 Plastic Limit (AASHTO T90) : 47
 Plasticity Index : 6
 Liquidity Index : -2.80

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.1
 Coarse Sand (-No.10 + No.40) : 18.4
 Fine Sand (-No.40 + No.200) : 43.0
 Silt + Clay (-No.200) : 38.5

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.1
 Medium Sand (-No.10 + No.40) : 18.4
 Fine Sand (-No.40 + No.200) : 43.0
 Silt + Clay (-No.200) : 38.5

Approved By : J.S.

Soil No. 336



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown & White Silty Sand

Sample No. : SS-7
 Sample Loc. : Boring No. B-64
 Sample Depth : 29.3' to 30.8'
 Date Tested : 10/25/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		
1/4		6.3	mm		
No.4		4.75	mm		100.0
No.6		3.35	mm		
No.10		2	mm		98.8

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		78.6
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		35.3
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1351 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 28.4
 Liquid Limit (AASHTO T89) : 49
 Plastic Limit (AASHTO T90) : 45
 Plasticity Index : 4
 Liquidity Index : -4.10
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.2
 Coarse Sand (-No.10 + No.40) : 20.2
 Fine Sand (-No.40 + No.200) : 43.3
 Silt + Clay (-No.200) : 35.3

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.2
 Medium Sand (-No.10 + No.40) : 20.2
 Fine Sand (-No.40 + No.200) : 43.3
 Silt + Clay (-No.200) : 35.3

Approved By : J.S.

Soil No. 264



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-65
 Sample Depth : 4.0' to 5.5'
 Date Tested : 10/18/12
 Date Reported : 10/25/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		100.0
1/4		6.3	mm		
No.4		4.75	mm		97.6
No.6		3.35	mm		
No.10		2	mm		92.2

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		59.0
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		23.0
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.2755 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 21.3
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 7.8
 Coarse Sand (-No.10 + No.40) : 33.2
 Fine Sand (-No.40 + No.200) : 36.0
 Silt + Clay (-No.200) : 23.0

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.4
 Coarse Sand (-No.4 + No.10) : 5.4
 Medium Sand (-No.10 + No.40) : 33.2
 Fine Sand (-No.40 + No.200) : 36.0
 Silt + Clay (-No.200) : 23.0

Approved By : J.S.

Soil No. 226



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange	Sample No. : ST-1
Project No. : 08195-01	Sample Loc. : Boring No. B-65
Project County : Greenville	Sample Depth : 6.0' to 6.8'
Project State : South Carolina	Date Tested : 11/05/12
Laboratory No. : 08195-01	Date Reported : 11/15/12
Submitted By : Florence & Hutcheson	
Soil Type : Orange, White, Yellow & Brown Silty Sand	

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.3361 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 18
 Liquid Limit (AASHTO T89) : 26
 Plastic Limit (AASHTO T90) : 23
 Plasticity Index : 3
 Liquidity Index : -1.62
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.6
 Coarse Sand (-No.10 + No.40) : 40.0
 Fine Sand (-No.40 + No.200) : 39.9
 Silt + Clay (-No.200) : 15.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.1
 Coarse Sand (-No.4 + No.10) : 4.5
 Medium Sand (-No.10 + No.40) : 40.0
 Fine Sand (-No.40 + No.200) : 39.9
 Silt + Clay (-No.200) : 15.5

Approved By : J.S.

Soil No. 337



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray, Black & Yellow Silty Sand

Sample No. : ST-2
 Sample Loc. : Boring No. B-65
 Sample Depth : 10.0' to 11.4'
 Date Tested : 11/05/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	99.9	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	79.2	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	35.7	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1326 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 39.1
 Liquid Limit (AASHTO T89) : 45
 Plastic Limit (AASHTO T90) : 42
 Plasticity Index : 3
 Liquidity Index : -0.81
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.1
 Coarse Sand (-No.10 + No.40) : 20.7
 Fine Sand (-No.40 + No.200) : 43.5
 Silt + Clay (-No.200) : 35.7

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.1
 Medium Sand (-No.10 + No.40) : 20.7
 Fine Sand (-No.40 + No.200) : 43.5
 Silt + Clay (-No.200) : 35.7

Approved By : J.S.

Soil No. 338



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Brown Silty Sand

Sample No. : Bag 1
 Sample Loc. : Boring No. B-65
 Sample Depth : 0.0' to 16.5'
 Date Tested : 10/18/12
 Date Reported : 10/24/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.3
No.6		3.35	mm	
No.10		2	mm	93.6

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	59.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	31.3
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.2341 mm

CBR (AASHTO: T-193 - @ 95% Comp.) : 10.3
 Dry Dens. (AASHTO: T-99; Method (C)) : 106.5 pcf
 Opt. Moist. (AASHTO: T-99; Method (C)) : 18.2 %

Natural Moisture (%) (AASHTO T265) : 25.3

Liquid Limit (AASHTO T89) : 36

Plastic Limit (AASHTO T90) : 26

Plasticity Index : 10

Liquidity Index : -0.05

Activity : NA

Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-2-4 (0)

ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 6.4
 Coarse Sand (-No.10 + No.40) : 33.8
 Fine Sand (-No.40 + No.200) : 28.5
 Silt + Clay (-No.200) : 31.3

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.7
 Coarse Sand (-No.4 + No.10) : 5.7
 Medium Sand (-No.10 + No.40) : 33.8
 Fine Sand (-No.40 + No.200) : 28.5
 Silt + Clay (-No.200) : 31.3

Approved By : J.S.

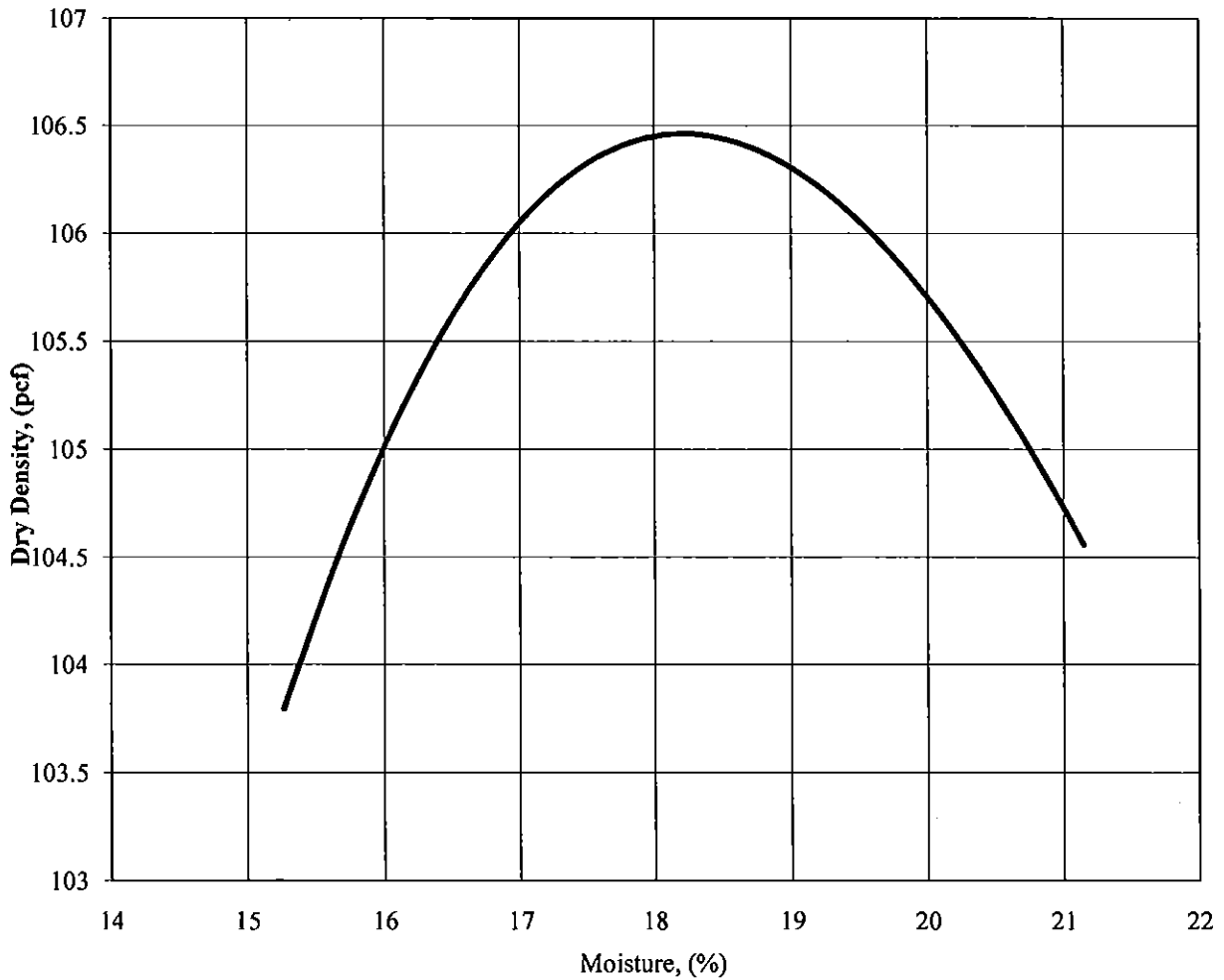
Soil No. 278



MOISTURE-DENSITY RELATIONSHIP

Project Name : I-85/I-385 Interchange
Project No. : 08195-01
Project County : Greenville
Project State : South Carolina
Laboratory No. : 08195-01
Submitted By : Florence & Hutcheson
Soil Type : Red & Brown Silty Sand

Sample No. : Bag 1
Sample Loc. : Boring No. B-65
Sample Depth : 0.0' to 16.5'
Date Tested : 10/18/12
Date Reported : 10/24/12



MAXIMUM DENSITY: 106.5 pcf

OPTIMUM MOISTURE: 18.2 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



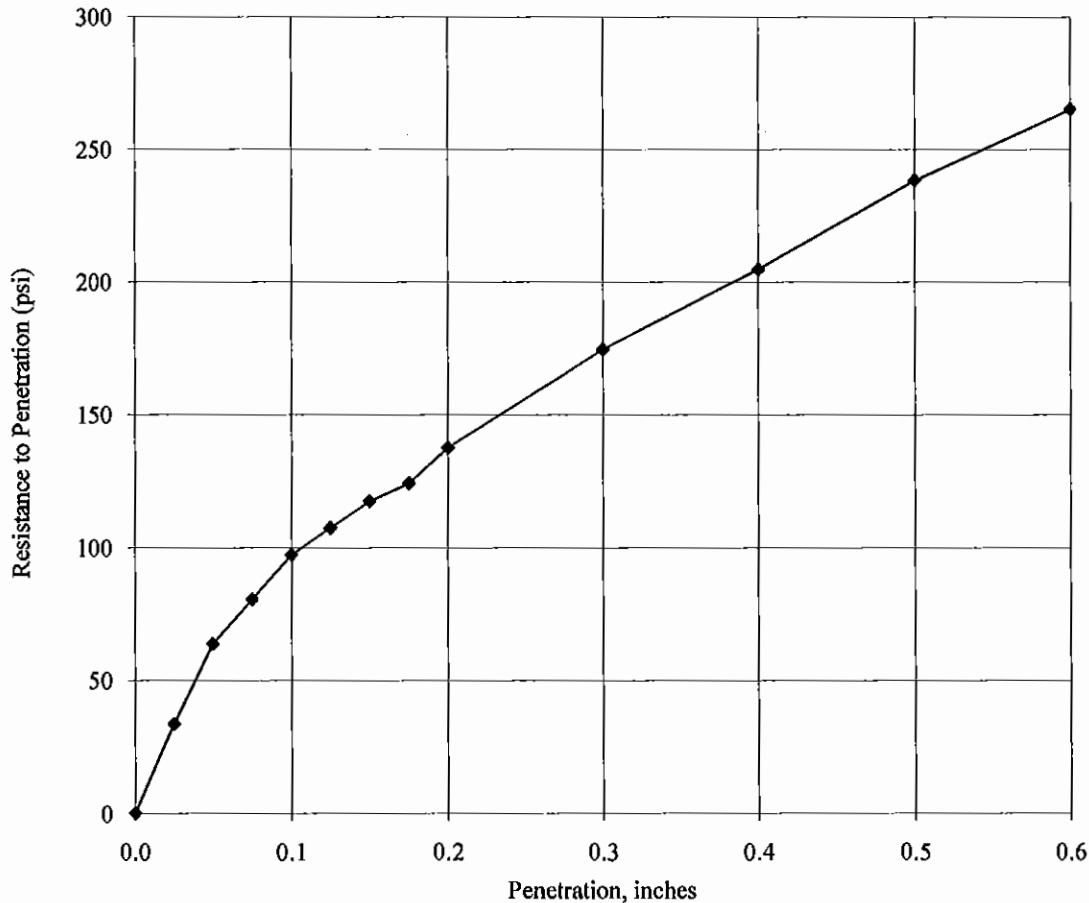
Florence & Hutcheson

An **ICA** Company

CALIFORNIA BEARING RATIO

Project Name : I-85/I-385 Interchange
Project No. : 08195-01
Project County : Greenville
Project State : South Carolina
Laboratory No. : 08195-01
Submitted By : Florence & Hutcheson
Soil Type : Red & Brown Silty Sand

Sample No. : Bag 1
Sample Loc. : Boring No. B-65
Sample Depth : 0.0' to 16.5'
Date Tested : 10/18/12
Date Reported : 10/24/12



Compaction Effort = 20 Blows per layer
Percent Compacted = 94.1
Percent Swell = 0.24

C.B.R. @ 0.1 In. = 9.7*
C.B.R. @ 0.2 In. = 9.2

COMMENTS: AASHTO: T-193 - @ 95% Comp.

APPROVED BY: _____ JS

COMMENTS:



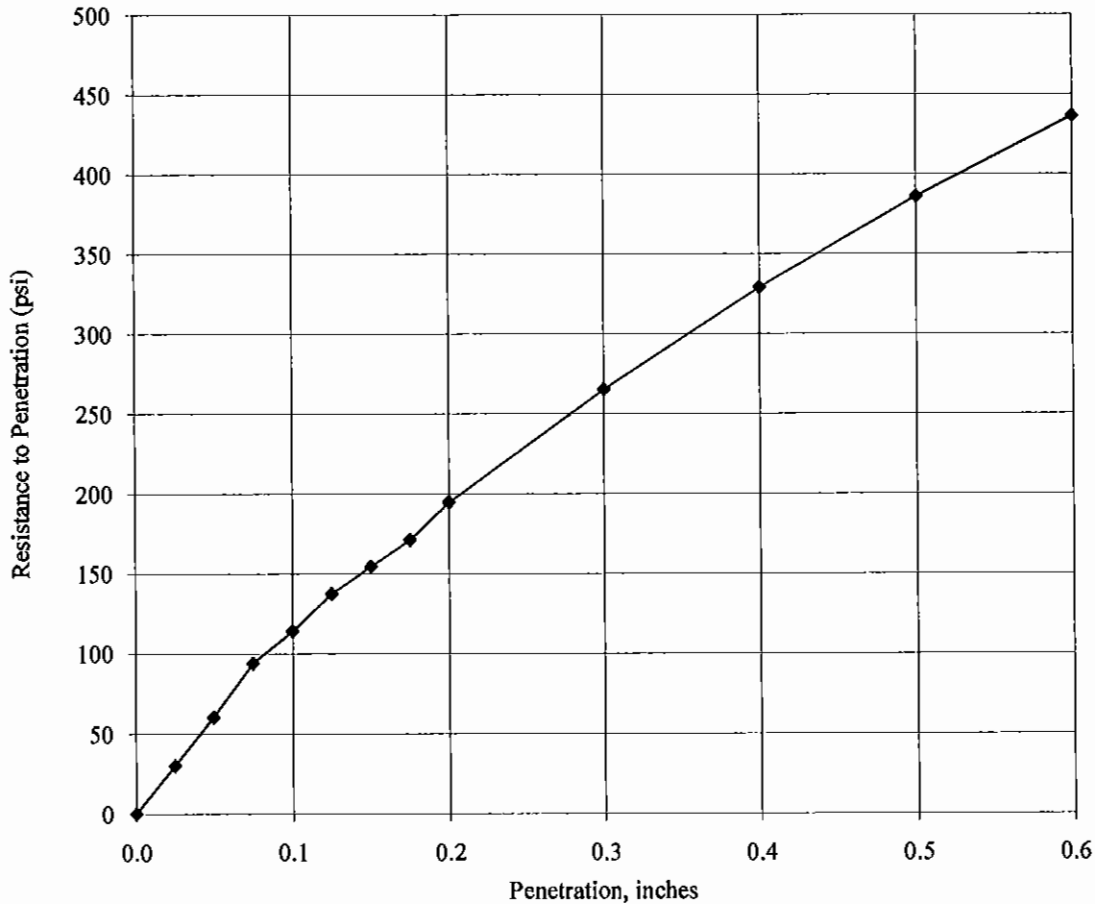
Florence & Hutcheson

An **ICA** Company

CALIFORNIA BEARING RATIO

Project Name : I-85/I-385 Interchange
Project No. : 08195-01
Project County : Greenville
Project State : South Carolina
Laboratory No. : 08195-01
Submitted By : Florence & Hutcheson
Soil Type : Red & Brown Silty Sand

Sample No. : Bag 1
Sample Loc. : Boring No. B-65
Sample Depth : 0.0' to 16.5'
Date Tested : 10/18/12
Date Reported : 10/24/12



Compaction Effort = 40 Blows per layer
Percent Compacted = 98.7
Percent Swell = 0.13

C.B.R. @ 0.1 In. = 11.4
C.B.R. @ 0.2 In. = 13*

COMMENTS: AASHTO: T-193

APPROVED BY: _____ JS



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Clayey Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-66
 Sample Depth : 2.0' to 3.5'
 Date Tested : 10/26/12
 Date Reported : 10/29/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	98.0
1/4		6.3	mm	
No.4		4.75	mm	97.1
No.6		3.35	mm	
No.10		2	mm	91.9

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	55.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	23.8
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.3117 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 25.2
 Liquid Limit (AASHTO T89) : 51
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 25
 Liquidity Index : -0.04
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-7 (3)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 8.1
 Coarse Sand (-No.10 + No.40) : 36.2
 Fine Sand (-No.40 + No.200) : 31.9
 Silt + Clay (-No.200) : 23.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.9
 Coarse Sand (-No.4 + No.10) : 5.2
 Medium Sand (-No.10 + No.40) : 36.2
 Fine Sand (-No.40 + No.200) : 31.9
 Silt + Clay (-No.200) : 23.8

Approved By : J.S.

Soil No. 265



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White, Black, Tan & Red Silty Sand with Gravel

Sample No. : SS-3
 Sample Loc. : Boring No. B-66
 Sample Depth : 6.0' to 7.5'
 Date Tested : 10/26/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		92.0
1/4		6.3	mm		
No.4		4.75	mm		80.7
No.6		3.35	mm		
No.10		2	mm		70.4

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		45.0
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		17.1
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.5765 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 11.5
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 29.6
 Coarse Sand (-No.10 + No.40) : 25.4
 Fine Sand (-No.40 + No.200) : 27.9
 Silt + Clay (-No.200) : 17.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 19.3
 Coarse Sand (-No.4 + No.10) : 10.3
 Medium Sand (-No.10 + No.40) : 25.4
 Fine Sand (-No.40 + No.200) : 27.9
 Silt + Clay (-No.200) : 17.1

Approved By : J.S.

Soil No. 266



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange

Project No. : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory No. : 08195-01

Submitted By : Florence & Hutcheson

Soil Type : White & Black Well-Graded Sand with Silt

Sample No. : SS-5

Sample Loc. : Boring No. B-66

Sample Depth : 10.0' to 11.5'

Date Tested : 10/26/12

Date Reported : 10/29/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	96.3
No.6		3.35	mm	
No.10		2	mm	86.2

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	45.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	10.7
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.501 mm

CBR : NA
Dry Dens. : NA
Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 15.5

Liquid Limit (AASHTO T89) : NP

Plastic Limit (AASHTO T90) : NP

Plasticity Index : NP

Liquidity Index : NA

Activity : NA

Sp. Gr. (AASHTO T100) : NA

AASHTO Classification: M145 : A-1-b (0)

ASTM Classification: D2487 : SW-SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 13.8

Coarse Sand (-No.10 + No.40) : 40.5

Fine Sand (-No.40 + No.200) : 35.0

Silt + Clay (-No.200) : 10.7

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0

Fine Gravel (-3/4in. + No.4) : 3.7

Coarse Sand (-No.4 + No.10) : 10.1

Medium Sand (-No.10 + No.40) : 40.5

Fine Sand (-No.40 + No.200) : 35.0

Silt + Clay (-No.200) : 10.7

Approved By : J.S.

Soil No. 267



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Clayey Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-67
 Sample Depth : 2.0' to 3.5'
 Date Tested : 10/26/12
 Date Reported : 10/29/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.6
No.6		3.35	mm	
No.10		2	mm	89.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	51.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	16.5
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.3927 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 33.4
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 20
 Plasticity Index : 19
 Liquidity Index : 0.69
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-6 (2)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 11.0
 Coarse Sand (-No.10 + No.40) : 37.4
 Fine Sand (-No.40 + No.200) : 35.1
 Silt + Clay (-No.200) : 16.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 2.4
 Coarse Sand (-No.4 + No.10) : 8.6
 Medium Sand (-No.10 + No.40) : 37.4
 Fine Sand (-No.40 + No.200) : 35.1
 Silt + Clay (-No.200) : 16.5

Approved By : J.S.

Soil No. 268



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Orange, Red & White Silty Sand

Sample No. : ST-1
 Sample Loc. : Boring No. B-67
 Sample Depth : 4.0' to 4.7'
 Date Tested : 11/05/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	96.5

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	55.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	29.6
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.2895 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 21.5
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 34
 Plasticity Index : 5
 Liquidity Index : -2.55

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 3.5
 Coarse Sand (-No.10 + No.40) : 40.7
 Fine Sand (-No.40 + No.200) : 26.2
 Silt + Clay (-No.200) : 29.6

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.2
 Coarse Sand (-No.4 + No.10) : 3.3
 Medium Sand (-No.10 + No.40) : 40.7
 Fine Sand (-No.40 + No.200) : 26.2
 Silt + Clay (-No.200) : 29.6

Approved By : J.S.

Soil No. 339



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-67
 Sample Depth : 8.0' to 9.5'
 Date Tested : 10/26/12
 Date Reported : 10/29/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.0
No.6		3.35	mm	
No.10		2	mm	89.7

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	58.4
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	28.2
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.2623 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 16.1
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 10.3
 Coarse Sand (-No.10 + No.40) : 31.3
 Fine Sand (-No.40 + No.200) : 30.2
 Silt + Clay (-No.200) : 28.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.0
 Coarse Sand (-No.4 + No.10) : 9.3
 Medium Sand (-No.10 + No.40) : 31.3
 Fine Sand (-No.40 + No.200) : 30.2
 Silt + Clay (-No.200) : 28.2

Approved By : J.S.

Soil No. 269



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-4
 Sample Loc. : Boring No. B-67
 Sample Depth : 10.0' to 11.5'
 Date Tested : 10/26/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		99.6
1/4		6.3	mm		
No.4		4.75	mm		98.3
No.6		3.35	mm		
No.10		2	mm		88.9

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		55.0
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		20.5
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.3305 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 9.7
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 11.1
 Coarse Sand (-No.10 + No.40) : 33.9
 Fine Sand (-No.40 + No.200) : 34.5
 Silt + Clay (-No.200) : 20.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.7
 Coarse Sand (-No.4 + No.10) : 9.4
 Medium Sand (-No.10 + No.40) : 33.9
 Fine Sand (-No.40 + No.200) : 34.5
 Silt + Clay (-No.200) : 20.5

Approved By : J.S.

Soil No. 270



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray Silty Sand with Gravel

Sample No. : SS-5
 Sample Loc. : Boring No. B-67
 Sample Depth : 14.3' to 15.1'
 Date Tested : 10/26/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		82.7
1/4		6.3	mm		
No.4		4.75	mm		70.6
No.6		3.35	mm		
No.10		2	mm		61.3

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		42.0
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		16.2
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.8076 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 5.3
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 38.7
 Coarse Sand (-No.10 + No.40) : 19.3
 Fine Sand (-No.40 + No.200) : 25.8
 Silt + Clay (-No.200) : 16.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 29.4
 Coarse Sand (-No.4 + No.10) : 9.3
 Medium Sand (-No.10 + No.40) : 19.3
 Fine Sand (-No.40 + No.200) : 25.8
 Silt + Clay (-No.200) : 16.2

Approved By : J.S.

Soil No. 271



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray & Brown Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-67
 Sample Depth : 29.8' to 30.1'
 Date Tested : 10/26/12
 Date Reported : 10/29/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	93.5
1/4		6.3	mm	
No.4		4.75	mm	89.4
No.6		3.35	mm	
No.10		2	mm	81.9

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	53.4
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	19.0
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.358 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 15.1
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 18.1
 Coarse Sand (-No.10 + No.40) : 28.5
 Fine Sand (-No.40 + No.200) : 34.4
 Silt + Clay (-No.200) : 19.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 10.6
 Coarse Sand (-No.4 + No.10) : 7.5
 Medium Sand (-No.10 + No.40) : 28.5
 Fine Sand (-No.40 + No.200) : 34.4
 Silt + Clay (-No.200) : 19.0

Approved By : J.S.

Soil No. 272



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Orange & Yellow Poorly Graded Sand with Silt

Sample No. : ST-1
 Sample Loc. : Boring No. B-68
 Sample Depth : 2.0' to 3.5'
 Date Tested : 11/05/12
 Date Reported : 11/15/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	97.2

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	44.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	8.3
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.4943 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 23.7
 Liquid Limit (AASHTO T89) : 51
 Plastic Limit (AASHTO T90) : 31
 Plasticity Index : 20
 Liquidity Index : -0.38
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 2.8
 Coarse Sand (-No.10 + No.40) : 52.3
 Fine Sand (-No.40 + No.200) : 36.6
 Silt + Clay (-No.200) : 8.3

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-7 (2)
 ASTM Classification: D2487 : SP-SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.2
 Coarse Sand (-No.4 + No.10) : 2.6
 Medium Sand (-No.10 + No.40) : 52.3
 Fine Sand (-No.40 + No.200) : 36.6
 Silt + Clay (-No.200) : 8.3

Approved By : J.S.

Soil No. 340



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red & Orange Sandy Elastic Silt

Sample No. : SS-1
 Sample Loc. : Boring No. B-68
 Sample Depth : 4.0' to 5.5'
 Date Tested : 10/18/12
 Date Reported : 10/25/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	98.7

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	76.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	56.2
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0361 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 29.2
 Liquid Limit (AASHTO T89) : 57
 Plastic Limit (AASHTO T90) : 37
 Plasticity Index : 20
 Liquidity Index : -0.37
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (10)
 ASTM Classification: D2487 : MH

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.3
 Coarse Sand (-No.10 + No.40) : 22.0
 Fine Sand (-No.40 + No.200) : 20.5
 Silt + Clay (-No.200) : 56.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.3
 Medium Sand (-No.10 + No.40) : 22.0
 Fine Sand (-No.40 + No.200) : 20.5
 Silt + Clay (-No.200) : 56.2

Approved By : J.S.

Soil No. 242



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & Yellow Silty Sand

Sample No. : ST-2
 Sample Loc. : Boring No. B-68
 Sample Depth : 6.0' to 7.3'
 Date Tested : 11/05/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	99.8	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	76.2	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	32.2	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1513 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 33.2
 Liquid Limit (AASHTO T89) : 49
 Plastic Limit (AASHTO T90) : 42
 Plasticity Index : 7
 Liquidity Index : -1.22
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-5 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.2
 Coarse Sand (-No.10 + No.40) : 23.6
 Fine Sand (-No.40 + No.200) : 44.0
 Silt + Clay (-No.200) : 32.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.2
 Medium Sand (-No.10 + No.40) : 23.6
 Fine Sand (-No.40 + No.200) : 44.0
 Silt + Clay (-No.200) : 32.2

Approved By : J.S.

Soil No. 341



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown, White & Black Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-68
 Sample Depth : 8.0' to 9.5'
 Date Tested : 10/18/12
 Date Reported : 10/25/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.3
No.6		3.35	mm	
No.10		2	mm	95.9

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	72.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	36.5
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1427 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 32.5
 Liquid Limit (AASHTO T89) : 41
 Plastic Limit (AASHTO T90) : 36
 Plasticity Index : 5
 Liquidity Index : -0.77
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 4.1
 Coarse Sand (-No.10 + No.40) : 23.0
 Fine Sand (-No.40 + No.200) : 36.4
 Silt + Clay (-No.200) : 36.5

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.7
 Coarse Sand (-No.4 + No.10) : 3.4
 Medium Sand (-No.10 + No.40) : 23.0
 Fine Sand (-No.40 + No.200) : 36.4
 Silt + Clay (-No.200) : 36.5

Approved By : J.S.

Soil No. 243



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan, Black, Gray & White Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-68
 Sample Depth : 10.0' to 11.5'
 Date Tested : 10/18/12
 Date Reported : 10/25/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		
1/4		6.3	mm		
No.4		4.75	mm	100.0	
No.6		3.35	mm		
No.10		2	mm	97.0	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	74.3	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	40.9	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.1203 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 27.7
 Liquid Limit (AASHTO T89) : 41
 Plastic Limit (AASHTO T90) : 31
 Plasticity Index : 10
 Liquidity Index : -0.37

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 3.0
 Coarse Sand (-No.10 + No.40) : 22.7
 Fine Sand (-No.40 + No.200) : 33.4
 Silt + Clay (-No.200) : 40.9

Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (1)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 3.0
 Medium Sand (-No.10 + No.40) : 22.7
 Fine Sand (-No.40 + No.200) : 33.4
 Silt + Clay (-No.200) : 40.9

Approved By : J.S.

Soil No. 244



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Elastic Silt

Sample No. : Bag 1
 Sample Loc. : Boring No. B-68
 Sample Depth : 0.0' to 16.0'
 Date Tested : 10/18/12
 Date Reported : 10/24/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.5
No.6		3.35	mm	
No.10		2	mm	97.6

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	95.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	94.1
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0034 mm

CBR (AASHTO: T-193 - @ 95% Comp.) : 5.9
 Dry Dens. (AASHTO: T-99; Method (C)) : 102.5 pcf
 Opt. Moist. (AASHTO: T-99; Method (C)) : 22.1 %

Natural Moisture (%) (AASHTO T265) : 29.9
 Liquid Limit (AASHTO T89) : 52
 Plastic Limit (AASHTO T90) : 33
 Plasticity Index : 19
 Liquidity Index : -0.18
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (23)
 ASTM Classification: D2487 : MH

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 2.4
 Coarse Sand (-No.10 + No.40) : 1.9
 Fine Sand (-No.40 + No.200) : 1.6
 Silt + Clay (-No.200) : 94.1

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.5
 Coarse Sand (-No.4 + No.10) : 1.9
 Medium Sand (-No.10 + No.40) : 1.9
 Fine Sand (-No.40 + No.200) : 1.6
 Silt + Clay (-No.200) : 94.1

Approved By : J.S.

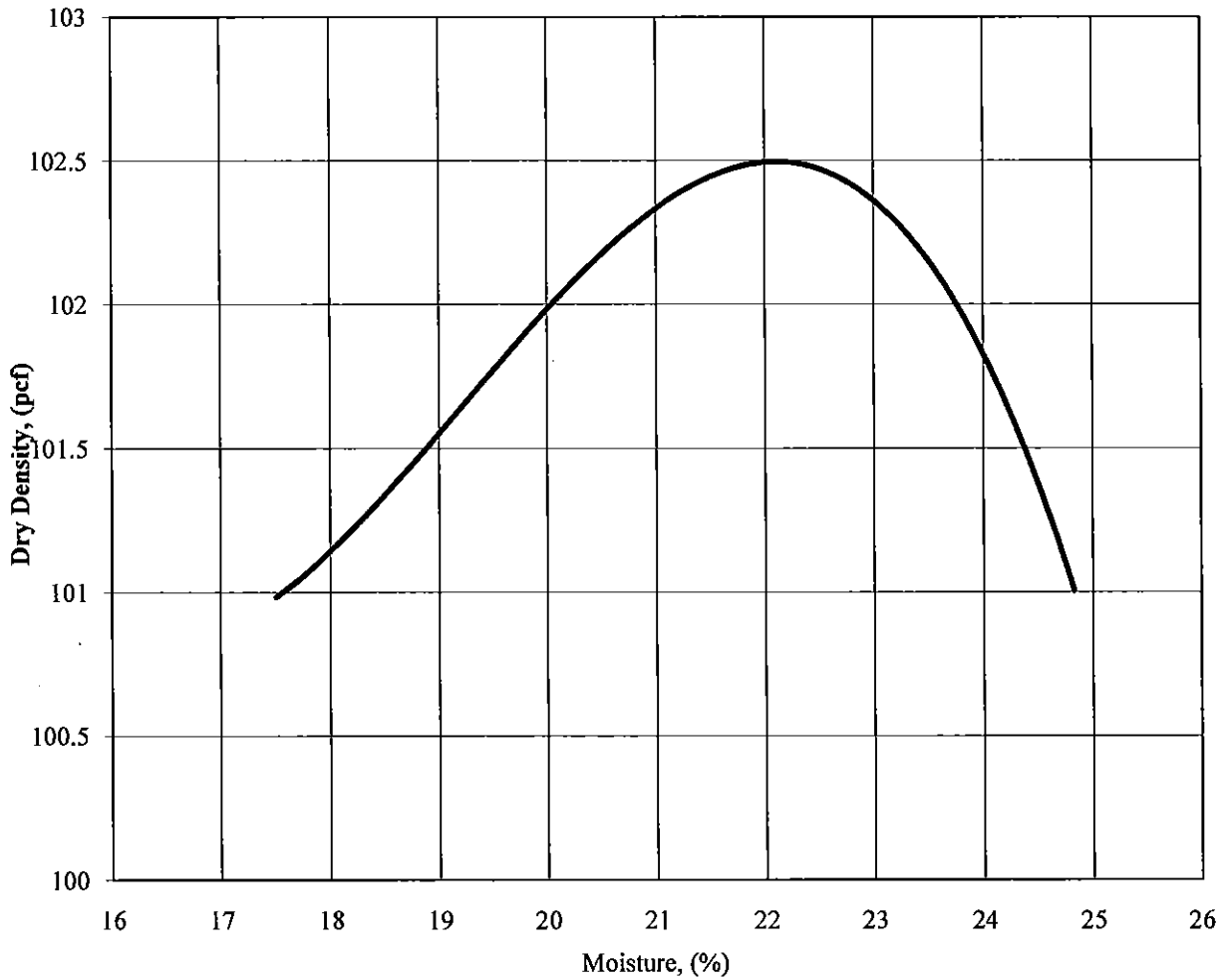
Soil No. 279



MOISTURE-DENSITY RELATIONSHIP

Project Name : I-85/I-385 Interchange
Project No. : 08195-01
Project County : Greenville
Project State : South Carolina
Laboratory No. : 08195-01
Submitted By : Florence & Hutcheson
Soil Type : Red Elastic Silt

Sample No. : Bag 1
Sample Loc. : Boring No. B-68
Sample Depth : 0.0' to 16.0'
Date Tested : 10/18/12
Date Reported : 10/24/12



MAXIMUM DENSITY: 102.5 pcf

OPTIMUM MOISTURE: 22.1 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



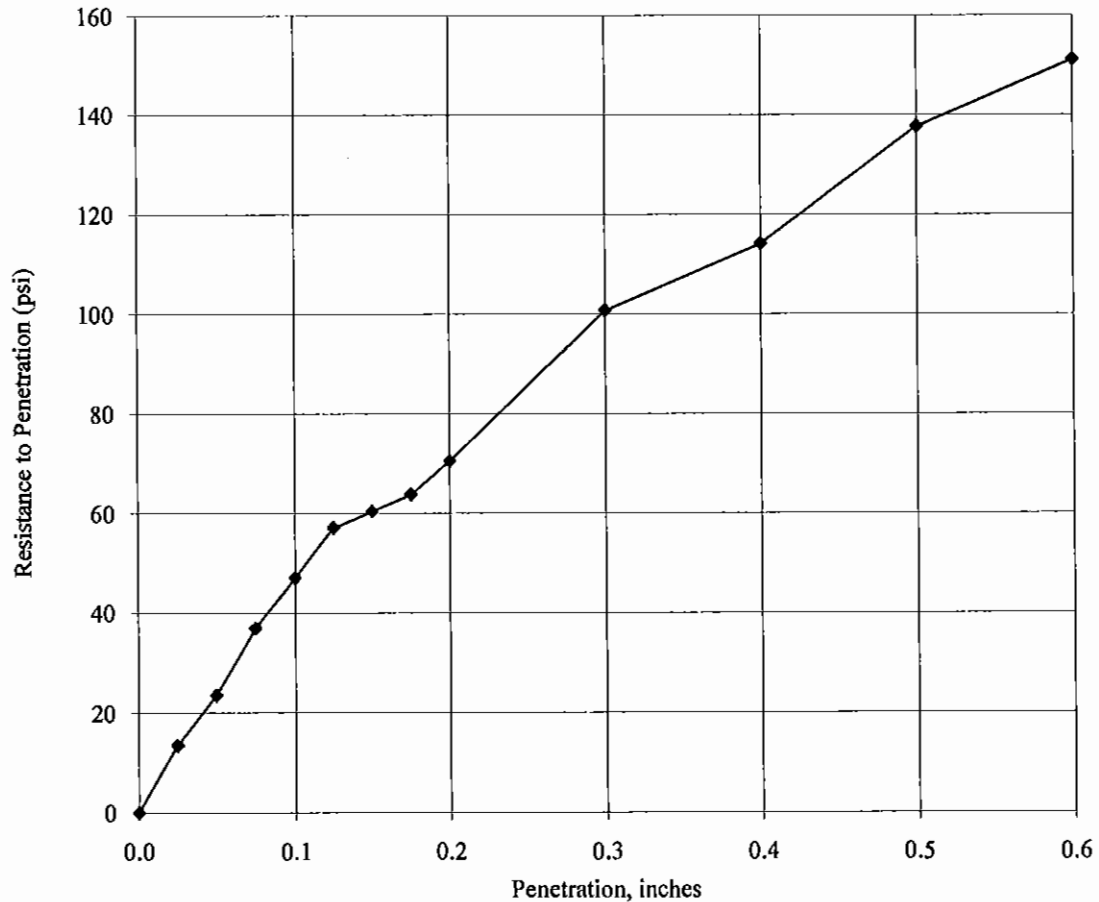
Florence & Hutcheson

An **ICA** Company

CALIFORNIA BEARING RATIO

Project Name : I-85/I-385 Interchange
Project No. : 08195-01
Project County : Greenville
Project State : South Carolina
Laboratory No. : 08195-01
Submitted By : Florence & Hutcheson
Soil Type : Red Elastic Silt

Sample No. : Bag 1
Sample Loc. : Boring No. B-68
Sample Depth : 0.0' to 16.0'
Date Tested : 10/18/12
Date Reported : 10/24/12



Compaction Effort = 20 Blows per layer
Percent Compacted = 93.7
Percent Swell = 0.52

C.B.R. @ 0.1 In. = 4.7*
C.B.R. @ 0.2 In. = 4.7

COMMENTS: AASHTO: T-193 - @ 95% Comp.

APPROVED BY: JS

COMMENTS:



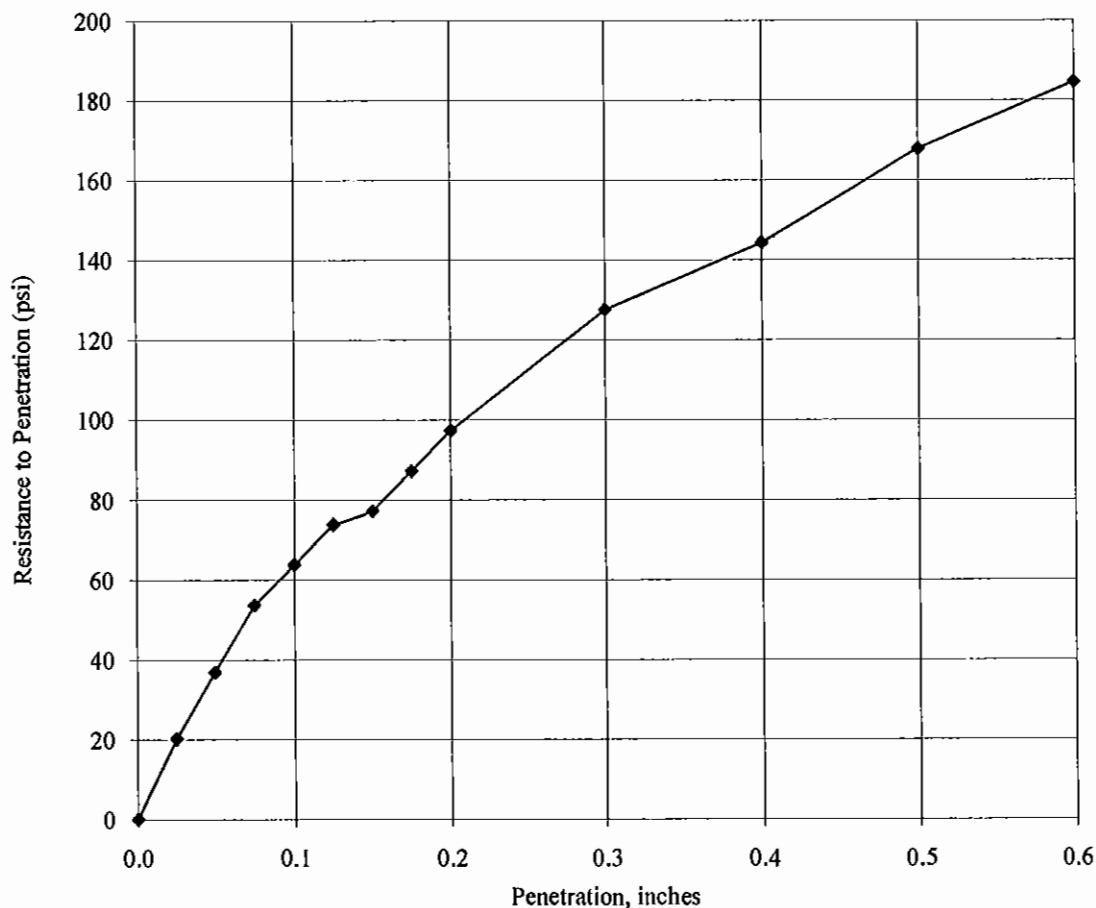
Florence & Hutcheson

An **ICA** Company

CALIFORNIA BEARING RATIO

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Elastic Silt

Sample No. : Bag 1
 Sample Loc. : Boring No. B-68
 Sample Depth : 0.0' to 16.0'
 Date Tested : 10/18/12
 Date Reported : 10/24/12



Compaction Effort = 40 Blows per layer
 Percent Compacted = 95.6
 Percent Swell = 0.44

C.B.R. @ 0.1 In. = 6.4
 C.B.R. @ 0.2 In. = 6.5*

COMMENTS: AASHTO: T-193

APPROVED BY: JS



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-70
 Sample Depth : 2.0' to 3.5'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		99.0
1/4		6.3	mm		
No.4		4.75	mm		98.6
No.6		3.35	mm		
No.10		2	mm		97.6

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		69.9
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		21.0
No.270		0.053	mm		
Hyd. Rd.	# 1		mm		
Hyd. Rd.	# 2		mm		
Hyd. Rd.	# 3		mm		
Hyd. Rd.	# 4		mm		
Hyd. Rd.	# 5		mm		
Hyd. Rd.	# 6		mm		
Hyd. Rd.	# 7		mm		

D₅₀ = 0.2098 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 8.1
 Liquid Limit (AASHTO T89) : 19
 Plastic Limit (AASHTO T90) : 18
 Plasticity Index : 1
 Liquidity Index : -10.4
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.4
 Coarse Sand (-No.10 + No.40) : 27.7
 Fine Sand (-No.40 + No.200) : 48.9
 Silt + Clay (-No.200) : 21.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.4
 Coarse Sand (-No.4 + No.10) : 1.0
 Medium Sand (-No.10 + No.40) : 27.7
 Fine Sand (-No.40 + No.200) : 48.9
 Silt + Clay (-No.200) : 21.0

Approved By : J.S.

Soil No. 290



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & Gray Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-70
 Sample Depth : 4.0' to 5.5'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	95.9
No.6		3.35	mm	
No.10		2	mm	87.4

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	49.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	26.5
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.4268 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 22.7
 Liquid Limit (AASHTO T89) : 41
 Plastic Limit (AASHTO T90) : 33
 Plasticity Index : 8
 Liquidity Index : -1.25
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-5 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 12.6
 Coarse Sand (-No.10 + No.40) : 37.5
 Fine Sand (-No.40 + No.200) : 23.4
 Silt + Clay (-No.200) : 26.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 4.1
 Coarse Sand (-No.4 + No.10) : 8.5
 Medium Sand (-No.10 + No.40) : 37.5
 Fine Sand (-No.40 + No.200) : 23.4
 Silt + Clay (-No.200) : 26.5

Approved By : J.S.

Soil No. 291



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & Green Silty Sand

Sample No. : ST-1
 Sample Loc. : Boring No. B-70
 Sample Depth : 6.0' to 6.6'
 Date Tested : 11/05/12
 Date Reported : 11/15/12

AASHTO T27 :

% Passing			
4	in.	101.6	mm
3.5	in.	88.9	mm
3	in.	76.2	mm
2.5	in.	63.5	mm
2	in.	50.8	mm
1 3/4	in.	45	mm
1 1/2	in.	38.1	mm
1 1/4	in.	31.5	mm
1	in.	25	mm
3/4	in.	19	mm
1/2	in.	12.5	mm
3/8	in.	9.5	mm
1/4		6.3	mm
No.4		4.75	mm
No.6		3.35	mm
No.10		2	mm

% Passing			
No.16		1.18	mm
No.30		0.6	mm
No.40		0.425	mm
No.50		0.3	mm
No.60		0.25	mm
No.80		0.18	mm
No.100		0.15	mm
No.200		0.075	mm
No.270		0.053	mm
Hyd. Rd. # 1			mm
Hyd. Rd. # 2			mm
Hyd. Rd. # 3			mm
Hyd. Rd. # 4			mm
Hyd. Rd. # 5			mm
Hyd. Rd. # 6			mm
Hyd. Rd. # 7			mm

D₅₀ = 0.1636 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 30.8
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 39
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.0
 Coarse Sand (-No.10 + No.40) : 10.6
 Fine Sand (-No.40 + No.200) : 71.6
 Silt + Clay (-No.200) : 17.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.0
 Medium Sand (-No.10 + No.40) : 10.6
 Fine Sand (-No.40 + No.200) : 71.6
 Silt + Clay (-No.200) : 17.8

Approved By : J.S.

Soil No. 342



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Silty Sand

Sample No. : SS-5
 Sample Loc. : Boring No. B-70
 Sample Depth : 13.5' to 15.0'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.6
No.6		3.35	mm	
No.10		2	mm	98.1

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	82.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	27.8
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1524 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 48.1
 Liquid Limit (AASHTO T89) : 63
 Plastic Limit (AASHTO T90) : 39
 Plasticity Index : 24
 Liquidity Index : 0.36
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.9
 Coarse Sand (-No.10 + No.40) : 16.0
 Fine Sand (-No.40 + No.200) : 54.3
 Silt + Clay (-No.200) : 27.8

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-7 (3)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.4
 Coarse Sand (-No.4 + No.10) : 1.5
 Medium Sand (-No.10 + No.40) : 16.0
 Fine Sand (-No.40 + No.200) : 54.3
 Silt + Clay (-No.200) : 27.8

Approved By : J.S.

Soil No. 292



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-9
 Sample Loc. : Boring No. B-70
 Sample Depth : 33.5' to 35.0'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	98.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	73.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	21.7
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1921 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 35.1
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.2
 Coarse Sand (-No.10 + No.40) : 24.9
 Fine Sand (-No.40 + No.200) : 52.2
 Silt + Clay (-No.200) : 21.7

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 1.2
 Medium Sand (-No.10 + No.40) : 24.9
 Fine Sand (-No.40 + No.200) : 52.2
 Silt + Clay (-No.200) : 21.7

Approved By : J.S.

Soil No. 293



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Silty Sand with Gravel

Sample No. : SS-1
 Sample Loc. : Boring No. B-71
 Sample Depth : 2.0' to 3.5'
 Date Tested : 10/26/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm	100.0	
3/4	in.	19	mm	89.6	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	76.3	
1/4		6.3	mm		
No.4		4.75	mm	73.6	
No.6		3.35	mm		
No.10		2	mm	67.3	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	41.8	
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm	13.9	
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.6993 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 19
 Liquid Limit (AASHTO T89) : 27
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 32.7
 Coarse Sand (-No.10 + No.40) : 25.5
 Fine Sand (-No.40 + No.200) : 27.9
 Silt + Clay (-No.200) : 13.9

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 10.4
 Fine Gravel (-3/4in. + No.4) : 16.0
 Coarse Sand (-No.4 + No.10) : 6.3
 Medium Sand (-No.10 + No.40) : 25.5
 Fine Sand (-No.40 + No.200) : 27.9
 Silt + Clay (-No.200) : 13.9

Approved By : J.S.

Soil No. 273



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Yellow & Brown Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-71
 Sample Depth : 6.0' to 7.5'
 Date Tested : 10/26/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		100.0
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		97.2
1/4		6.3	mm		
No.4		4.75	mm		96.8
No.6		3.35	mm		
No.10		2	mm		93.7

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		55.2
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		23.8
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.3189 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 33
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 6.3
 Coarse Sand (-No.10 + No.40) : 38.5
 Fine Sand (-No.40 + No.200) : 31.4
 Silt + Clay (-No.200) : 23.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 3.2
 Coarse Sand (-No.4 + No.10) : 3.1
 Medium Sand (-No.10 + No.40) : 38.5
 Fine Sand (-No.40 + No.200) : 31.4
 Silt + Clay (-No.200) : 23.8

Approved By : J.S.

Soil No. 274



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White & Brown Silty Sand

Sample No. : SS-7
 Sample Loc. : Boring No. B-71
 Sample Depth : 20.0' to 21.5'
 Date Tested : 10/26/12
 Date Reported : 10/29/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	96.2

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	54.9
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	22.0
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

$D_{50} = 0.3282 \text{ mm}$

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 20
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.8
 Coarse Sand (-No.10 + No.40) : 41.3
 Fine Sand (-No.40 + No.200) : 32.9
 Silt + Clay (-No.200) : 22.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.2
 Coarse Sand (-No.4 + No.10) : 3.6
 Medium Sand (-No.10 + No.40) : 41.3
 Fine Sand (-No.40 + No.200) : 32.9
 Silt + Clay (-No.200) : 22.0

Approved By : J.S.

Soil No. 275



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Red Clayey Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-72
 Sample Depth : 2.0' to 3.5'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	97.9

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	63.6
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	26.2
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.2262 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 26.2
 Liquid Limit (AASHTO T89) : 40
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 15
 Liquidity Index : 0.06
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-6 (1)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.1
 Coarse Sand (-No.10 + No.40) : 34.3
 Fine Sand (-No.40 + No.200) : 37.4
 Silt + Clay (-No.200) : 26.2

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 2.1
 Medium Sand (-No.10 + No.40) : 34.3
 Fine Sand (-No.40 + No.200) : 37.4
 Silt + Clay (-No.200) : 26.2

Approved By : J.S.

Soil No. 294



Florence & Hutcheson

An **ICA** Company

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-72
 Sample Depth : 6.0' to 7.5'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
No.6		3.35	mm	
No.10		2	mm	98.8

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	66.4
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	27.6
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.2042 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 12.9
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.2
 Coarse Sand (-No.10 + No.40) : 32.4
 Fine Sand (-No.40 + No.200) : 38.8
 Silt + Clay (-No.200) : 27.6

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.1
 Coarse Sand (-No.4 + No.10) : 1.1
 Medium Sand (-No.10 + No.40) : 32.4
 Fine Sand (-No.40 + No.200) : 38.8
 Silt + Clay (-No.200) : 27.6

Approved By : J.S.

Soil No. 295



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray & White Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-72
 Sample Depth : 13.5' to 15.0'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.3

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	66.1
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	32.8
No.270		0.053	mm	
Hyd. Rd.	# 1		mm	
Hyd. Rd.	# 2		mm	
Hyd. Rd.	# 3		mm	
Hyd. Rd.	# 4		mm	
Hyd. Rd.	# 5		mm	
Hyd. Rd.	# 6		mm	
Hyd. Rd.	# 7		mm	

D₅₀ = 0.1837 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 18.8
 Liquid Limit (AASHTO T89) : 32
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 6
 Liquidity Index : -1.18
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.7
 Coarse Sand (-No.10 + No.40) : 33.2
 Fine Sand (-No.40 + No.200) : 33.3
 Silt + Clay (-No.200) : 32.8

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.7
 Medium Sand (-No.10 + No.40) : 33.2
 Fine Sand (-No.40 + No.200) : 33.3
 Silt + Clay (-No.200) : 32.8

Approved By : J.S.

Soil No. 296



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & White Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-73
 Sample Depth : 4.0' to 5.5'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.6
No.6		3.35	mm	
No.10		2	mm	96.6

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	65.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	35.5
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.172 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 16.4
 Liquid Limit (AASHTO T89) : 27
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 1
 Liquidity Index : -9.48
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.4
 Coarse Sand (-No.10 + No.40) : 30.8
 Fine Sand (-No.40 + No.200) : 30.3
 Silt + Clay (-No.200) : 35.5

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.4
 Coarse Sand (-No.4 + No.10) : 3.0
 Medium Sand (-No.10 + No.40) : 30.8
 Fine Sand (-No.40 + No.200) : 30.3
 Silt + Clay (-No.200) : 35.5

Approved By : J.S.

Soil No. 188



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan, White & Gray Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-73
 Sample Depth : 13.5' to 15.0'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	96.8

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	60.8
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	28.4
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.2384 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 15
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.2
 Coarse Sand (-No.10 + No.40) : 36.0
 Fine Sand (-No.40 + No.200) : 32.4
 Silt + Clay (-No.200) : 28.4

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 3.2
 Medium Sand (-No.10 + No.40) : 36.0
 Fine Sand (-No.40 + No.200) : 32.4
 Silt + Clay (-No.200) : 28.4

Approved By : J.S.

Soil No. 189



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Tan & White Silty Sand

Sample No. : SS-8
 Sample Loc. : Boring No. B-73
 Sample Depth : 23.5' to 25.0'
 Date Tested : 10/15/12
 Date Reported : 10/18/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	98.9
1/4		6.3	mm	
No.4		4.75	mm	96.9
No.6		3.35	mm	
No.10		2	mm	92.2

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	68.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	30.0
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.1869 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 13.7
 Liquid Limit (AASHTO T89) : NP
 Plastic Limit (AASHTO T90) : NP
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 7.8
 Coarse Sand (-No.10 + No.40) : 24.2
 Fine Sand (-No.40 + No.200) : 38.0
 Silt + Clay (-No.200) : 30.0

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 3.1
 Coarse Sand (-No.4 + No.10) : 4.7
 Medium Sand (-No.10 + No.40) : 24.2
 Fine Sand (-No.40 + No.200) : 38.0
 Silt + Clay (-No.200) : 30.0

Approved By : J.S.

Soil No. 190



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Sandy Silt

Sample No. : ST-1
 Sample Loc. : Boring No. B-74
 Sample Depth : 4.0' to 5.3'
 Date Tested : 11/05/12
 Date Reported : 11/15/12

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.7
No.6		3.35	mm	
No.10		2	mm	99.2

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.0
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	50.9
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.0667 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 33.1
 Liquid Limit (AASHTO T89) : 30
 Plastic Limit (AASHTO T90) : 23
 Plasticity Index : 7
 Liquidity Index : 1.38
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.8
 Coarse Sand (-No.10 + No.40) : 12.2
 Fine Sand (-No.40 + No.200) : 36.1
 Silt + Clay (-No.200) : 50.9

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (1)
 ASTM Classification: D2487 : ML

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.3
 Coarse Sand (-No.4 + No.10) : 0.5
 Medium Sand (-No.10 + No.40) : 12.2
 Fine Sand (-No.40 + No.200) : 36.1
 Silt + Clay (-No.200) : 50.9

Approved By : J.S.

Soil No. 343



Florence & Hutcheson

An **ICA** Company

SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Brown Sandy Lean Clay

Sample No. : SS-2
 Sample Loc. : Boring No. B-74
 Sample Depth : 6.0' to 7.5'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
2.5	in.	63.5	mm		
2	in.	50.8	mm		
1 3/4	in.	45	mm		
1 1/2	in.	38.1	mm		
1 1/4	in.	31.5	mm		
1	in.	25	mm		
3/4	in.	19	mm		
1/2	in.	12.5	mm		
3/8	in.	9.5	mm		
1/4		6.3	mm		
No.4		4.75	mm		100.0
No.6		3.35	mm		
No.10		2	mm		99.2

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		88.4
No.50		0.3	mm		
No.60		0.25	mm		
No.80		0.18	mm		
No.100		0.15	mm		
No.200		0.075	mm		66.4
No.270		0.053	mm		
Hyd. Rd. # 1			mm		
Hyd. Rd. # 2			mm		
Hyd. Rd. # 3			mm		
Hyd. Rd. # 4			mm		
Hyd. Rd. # 5			mm		
Hyd. Rd. # 6			mm		
Hyd. Rd. # 7			mm		

D₅₀ = 0.0146 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 31
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 22
 Plasticity Index : 11

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.8
 Coarse Sand (-No.10 + No.40) : 10.8
 Fine Sand (-No.40 + No.200) : 22.0
 Silt + Clay (-No.200) : 66.4

Liquidity Index : 0.84
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (6)
 ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.8
 Medium Sand (-No.10 + No.40) : 10.8
 Fine Sand (-No.40 + No.200) : 22.0
 Silt + Clay (-No.200) : 66.4

Approved By : J.S.

Soil No. 297



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Gray Silty Sand

Sample No. : SS-4
 Sample Loc. : Boring No. B-74
 Sample Depth : 10.0' to 11.5'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	
1/4		6.3	mm	
No.4		4.75	mm	100.0
No.6		3.35	mm	
No.10		2	mm	99.5

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	54.7
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	27.1
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.3163 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 30
 Liquid Limit (AASHTO T89) : 21
 Plastic Limit (AASHTO T90) : 18
 Plasticity Index : 3
 Liquidity Index : 3.97
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.5
 Coarse Sand (-No.10 + No.40) : 44.8
 Fine Sand (-No.40 + No.200) : 27.6
 Silt + Clay (-No.200) : 27.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.5
 Medium Sand (-No.10 + No.40) : 44.8
 Fine Sand (-No.40 + No.200) : 27.6
 Silt + Clay (-No.200) : 27.1

Approved By : J.S.

Soil No. 298



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : White & Gray Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-74
 Sample Depth : 18.5' to 20.0'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	100.0
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	98.1
1/4		6.3	mm	
No.4		4.75	mm	96.2
No.6		3.35	mm	
No.10		2	mm	88.3

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	45.4
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	18.9
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.5018 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 23.4
 Liquid Limit (AASHTO T89) : 31
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : 4
 Liquidity Index : -0.98
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 11.7
 Coarse Sand (-No.10 + No.40) : 42.9
 Fine Sand (-No.40 + No.200) : 26.5
 Silt + Clay (-No.200) : 18.9

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 3.8
 Coarse Sand (-No.4 + No.10) : 7.9
 Medium Sand (-No.10 + No.40) : 42.9
 Fine Sand (-No.40 + No.200) : 26.5
 Silt + Clay (-No.200) : 18.9

Approved By : J.S.

Soil No. 299



SOIL CLASSIFICATION

Project Name : I-85/I-385 Interchange
 Project No. : 08195-01
 Project County : Greenville
 Project State : South Carolina
 Laboratory No. : 08195-01
 Submitted By : Florence & Hutcheson
 Soil Type : Black & Gray Silty Sand

Sample No. : SS-7
 Sample Loc. : Boring No. B-74
 Sample Depth : 23.5' to 25.0'
 Date Tested : 10/29/12
 Date Reported : 11/02/12

AASHTO T27 :

		% Passing		
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
2.5	in.	63.5	mm	
2	in.	50.8	mm	
1 3/4	in.	45	mm	
1 1/2	in.	38.1	mm	
1 1/4	in.	31.5	mm	
1	in.	25	mm	
3/4	in.	19	mm	
1/2	in.	12.5	mm	
3/8	in.	9.5	mm	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
No.6		3.35	mm	
No.10		2	mm	92.9

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	52.3
No.50		0.3	mm	
No.60		0.25	mm	
No.80		0.18	mm	
No.100		0.15	mm	
No.200		0.075	mm	21.3
No.270		0.053	mm	
Hyd. Rd. # 1			mm	
Hyd. Rd. # 2			mm	
Hyd. Rd. # 3			mm	
Hyd. Rd. # 4			mm	
Hyd. Rd. # 5			mm	
Hyd. Rd. # 6			mm	
Hyd. Rd. # 7			mm	

D₅₀ = 0.3737 mm

CBR : NA
 Dry Dens. : NA
 Opt. Moist. : NA

Natural Moisture (%) (AASHTO T265) : 16.1
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 33
 Plasticity Index : NP
 Liquidity Index : NA
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 7.1
 Coarse Sand (-No.10 + No.40) : 40.6
 Fine Sand (-No.40 + No.200) : 31.0
 Silt + Clay (-No.200) : 21.3

ASTM Composition of Total Sample: D2487
 Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.2
 Coarse Sand (-No.4 + No.10) : 6.9
 Medium Sand (-No.10 + No.40) : 40.6
 Fine Sand (-No.40 + No.200) : 31.0
 Silt + Clay (-No.200) : 21.3

Approved By : J.S.

Soil No. 300



Florence & Hutcheson

An **ICA** Company

Project Name : I-85/I-385 Interchange
Location : Greenville County, South Carolina
Job Number : 08195-01
Project Job No. : 08195-01

Unconfined Compressive Strength Summary

Boring Number	Sample Number	Depth (ft)	Natural Moisture (%)	ASTM Classification	Wet Density (pcf)	Dry Density (pcf)	q _u (ksf)	Cohesion (psf)
B-39	ST-1	4-4.5	10.7	SC	138.7	125.3	1.09	545
B-40	ST-2	8.5-9.0	26	SM	119.1	94.5	2.23	1115
B-43	ST-1	2-2.5	17.5	SC	132.4	112.7	2.48	1240
B-46	ST-1	4-4.5	26.2	SM	117.3	93.0	1.81	905
B-46	ST-2	8-8.5	28.7	SM	111.8	86.9	1.15	575
B-53	ST-2	8-8.5	34.6	SM	54.6	40.6	0.03	15
B-54	ST-1	5-5.5	22.2	SM	121.8	99.6	1.96	980
B-54	ST-2	9-9.5	22.8	ML	121.6	99.0	1.47	735
B-65	ST-2	10-10.5	39.1	SM	110.0	79.1	0.47	235
B-68	ST-2	6-6.5	33.2	SM	117.6	88.3	1.92	960
B-70	ST-1	6-6.5	30.8	SM	126.4	96.6	0.46	230



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory # : 08195-01

Submitted By : Florence & Hutcheson, Inc.

Sample # : ST-1

Sample Loc. : Boring No. B-39

Sample Depth : 4.0' to 4.5'

Date Tested : 10/22/12

Date Reported : 10/24/12

Soil Type : Brown Silty Sand

Wet Density : 138.7 pcf

Dry Density : 125.3 pcf

Moisture : 10.7 %

Initial Height : 5.86 in

Initial Diameter : 2.84 in

Proving Ring : #22734

RESULTS:	Axial Load	Corrected Area	Unit Strain	Stress
#	lbs	sf	%	Ksf
1	0.0	0.04	0.0	0.00
2	9.6	0.05	2.6	0.21
3	18.3	0.05	5.1	0.39
4	26.9	0.05	7.7	0.56
5	35.6	0.05	10.2	0.73
6	47.1	0.05	12.8	0.93
7	57.7	0.05	15.3	1.11
8	67.3	0.05	17.9	1.26
9	75.0	0.06	20.5	1.36
10	80.8	0.06	23.9	1.40
11	78.9	0.06	27.3	1.30
12	77.9	0.06	30.7	1.23
13	74.1	0.07	34.1	1.11
14	69.3	0.07	37.5	0.98
15	65.4	0.07	40.9	0.88
16	58.7	0.08	44.3	0.74



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory # : 08195-01

Submitted By : Florence & Hutcheson, Inc.

Sample # : ST-1

Sample Loc. : Boring No. B-39

Sample Depth : 4.0' to 4.5'

Date Tested : 10/22/12

Date Reported : 10/24/12

Soil Type : Brown Silty Sand

Wet Density : 138.7 pcf

Dry Density : 125.3 pcf

Moisture : 10.7 %

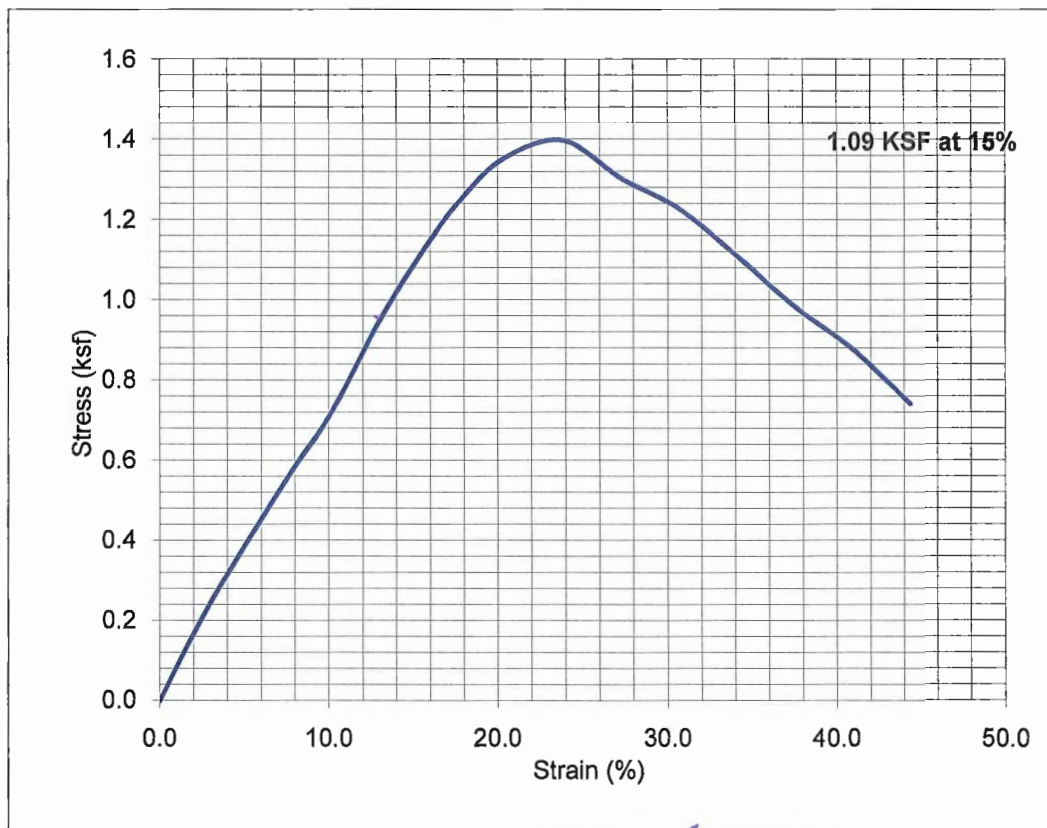
Deg. of Sat. : NA

Initial Height : 5.86 in

Initial Diameter : 2.84 in

Proving Ring : #22734

Comments : AASHTO: T-208



APPROVED BY: 



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Sample # : ST-2

Project County : Greenville

Sample Loc. : Boring No. B-40

Project State : South Carolina

Sample Depth : 8.5' to 9.0'

Laboratory # : 08195-01

Date Tested : 10/22/12

Submitted By : Florence & Hutcheson, Inc.

Date Reported : 10/24/12

Soil Type : Red Silty Sand

Wet Density : 119.1 pcf

Initial Height : 5.92 in

Dry Density : 94.5 pcf

Initial Diameter : 2.89 in

Moisture : 26.0 %

Proving Ring : #22734

RESULTS:	Axial Load	Corrected Area	Unit Strain	Stress
#	lbs	sf	%	Ksf
1	0.0	0.05	0.0	0.00
2	20.2	0.05	2.5	0.43
3	37.5	0.05	5.1	0.78
4	51.9	0.05	7.6	1.06
5	73.1	0.05	10.1	1.45
6	95.2	0.05	12.7	1.83
7	121.2	0.05	15.2	2.26
8	144.3	0.06	17.7	2.61
9	167.4	0.06	20.3	2.94
10	184.7	0.06	23.7	3.10
11	176.0	0.06	27.0	2.83
12	135.6	0.07	30.4	2.08
13	75.0	0.07	33.8	1.09



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory # : 08195-01

Submitted By : Florence & Hutcheson, Inc.

Sample # : ST-2

Sample Loc. : Boring No. B-40

Sample Depth : 8.5' to 9.0'

Date Tested : 10/22/12

Date Reported : 10/24/12

Soil Type : Red Silty Sand

Wet Density : 119.1 pcf

Dry Density : 94.5 pcf

Moisture : 26.0 %

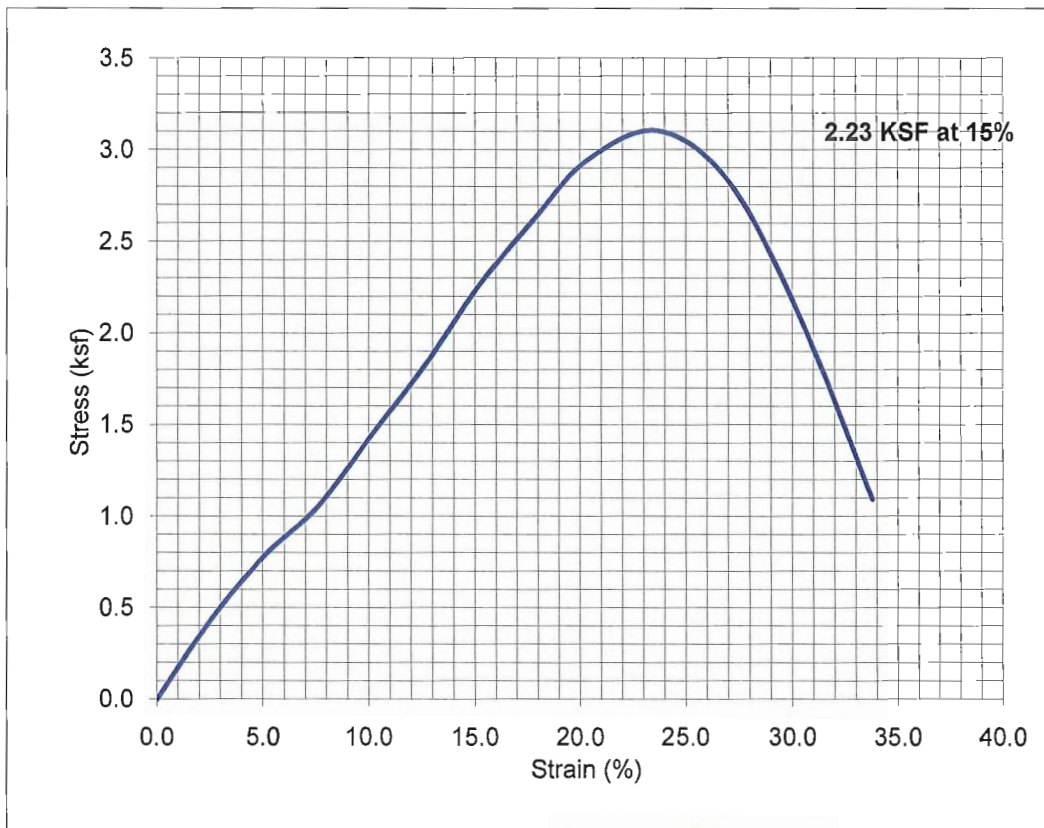
Deg. of Sat. : NA

Initial Height : 5.92 in

Initial Diameter : 2.89 in

Proving Ring : #22734

Comments : AASHTO: T-208



APPROVED BY:



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Sample # : ST-1

Project County : Greenville

Sample Loc. : Boring No. B-43

Project State : South Carolina

Sample Depth : 2.0' to 2.5'

Laboratory # : 08195-01

Date Tested : 10/22/12

Submitted By : Florence & Hutcheson, Inc.

Date Reported : 10/24/12

Soil Type : Orange & Tan Clayey Sand

Wet Density : 132.4 pcf

Initial Height : 5.84 in

Dry Density : 112.7 pcf

Initial Diameter : 2.86 in

Moisture : 17.5 %

Proving Ring : #22734

RESULTS:	Axial Load	Corrected Area	Unit Strain	Stress
#	lbs	sf	%	Ksf
1	0.0	0.04	0.0	0.00
2	21.2	0.05	2.6	0.46
3	46.2	0.05	5.1	0.98
4	69.3	0.05	7.7	1.43
5	89.5	0.05	10.3	1.80
6	112.5	0.05	12.8	2.20
7	133.7	0.05	15.4	2.53
8	153.9	0.05	18.0	2.83
9	164.5	0.06	20.5	2.93
10	175.1	0.06	24.0	2.98
11	178.9	0.06	27.4	2.91
12	175.1	0.06	30.8	2.71
13	161.6	0.07	34.2	2.38
14	142.4	0.07	37.7	1.99



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory # : 08195-01

Submitted By : Florence & Hutcheson, Inc.

Sample # : ST-1

Sample Loc. : Boring No. B-43

Sample Depth : 2.0' to 2.5'

Date Tested : 10/22/12

Date Reported : 10/24/12

Soil Type : Orange & Tan Clayey Sand

Wet Density : 132.4 pcf

Dry Density : 112.7 pcf

Moisture : 17.5 %

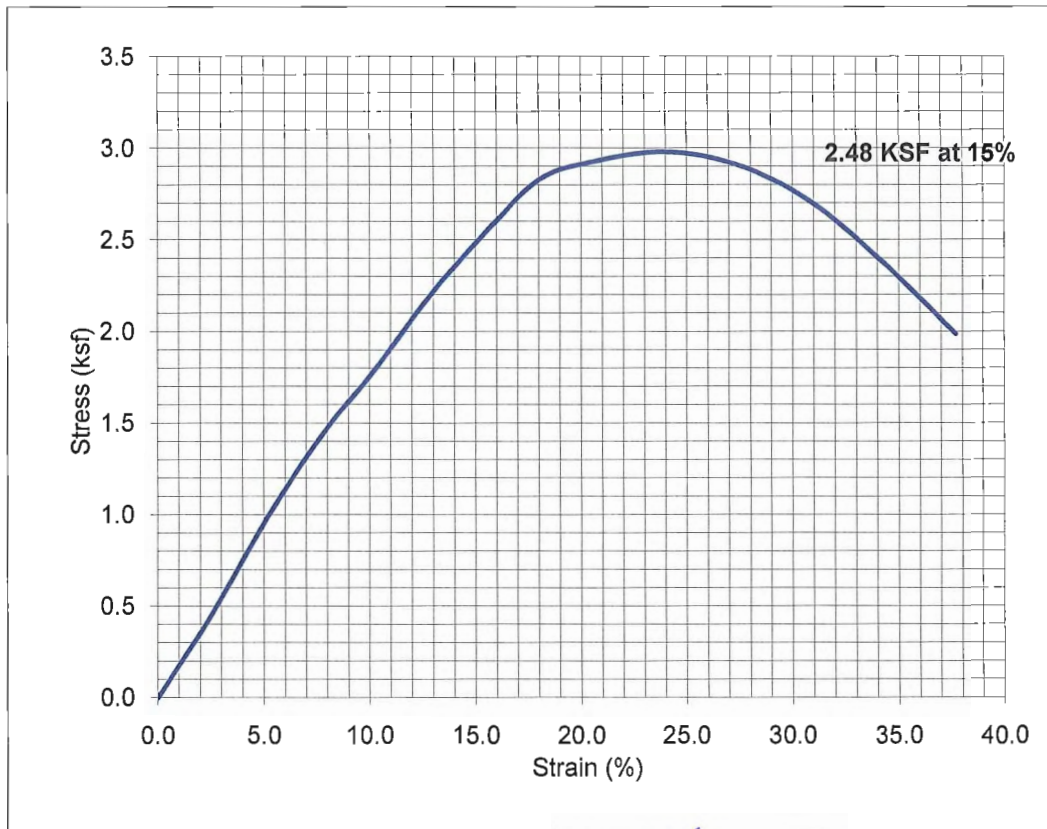
Deg. of Sat. : NA

Initial Height : 5.84 in

Initial Diameter : 2.86 in

Proving Ring : #22734

Comments : AASHTO: T-208



APPROVED BY:

Amy Soto



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Sample # : ST-1

Project County : Greenville

Sample Loc. : Boring No. B-46

Project State : South Carolina

Sample Depth : 4.0' to 4.5'

Laboratory # : 08195-01

Date Tested : 10/23/12

Submitted By : Florence & Hutcheson, Inc.

Date Reported : 10/30/12

Soil Type : Red & Orange Silty Sand

Wet Density : 117.3 pcf

Initial Height : 5.95 in

Dry Density : 93.0 pcf

Initial Diameter : 2.86 in

Moisture : 26.2 %

Proving Ring : #22734

RESULTS:	Axial Load	Corrected Area	Unit Strain	Stress
#	lbs	sf	%	Ksf
1	0.0	0.04	0.0	0.00
2	6.7	0.05	2.5	0.15
3	15.4	0.05	5.0	0.33
4	32.7	0.05	7.6	0.68
5	51.0	0.05	10.1	1.03
6	72.1	0.05	12.6	1.41
7	96.2	0.05	15.1	1.83
8	107.7	0.05	17.6	1.99
9	114.5	0.06	20.2	2.05
10	108.7	0.06	23.5	1.87
11	90.4	0.06	26.9	1.48
12	69.3	0.06	30.3	1.08



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory # : 08195-01

Submitted By : Florence & Hutcheson, Inc.

Sample # : ST-1

Sample Loc. : Boring No. B-46

Sample Depth : 4.0' to 4.5'

Date Tested : 10/23/12

Date Reported : 10/30/12

Soil Type : Red & Orange Silty Sand

Wet Density : 117.3 pcf

Dry Density : 93.0 pcf

Moisture : 26.2 %

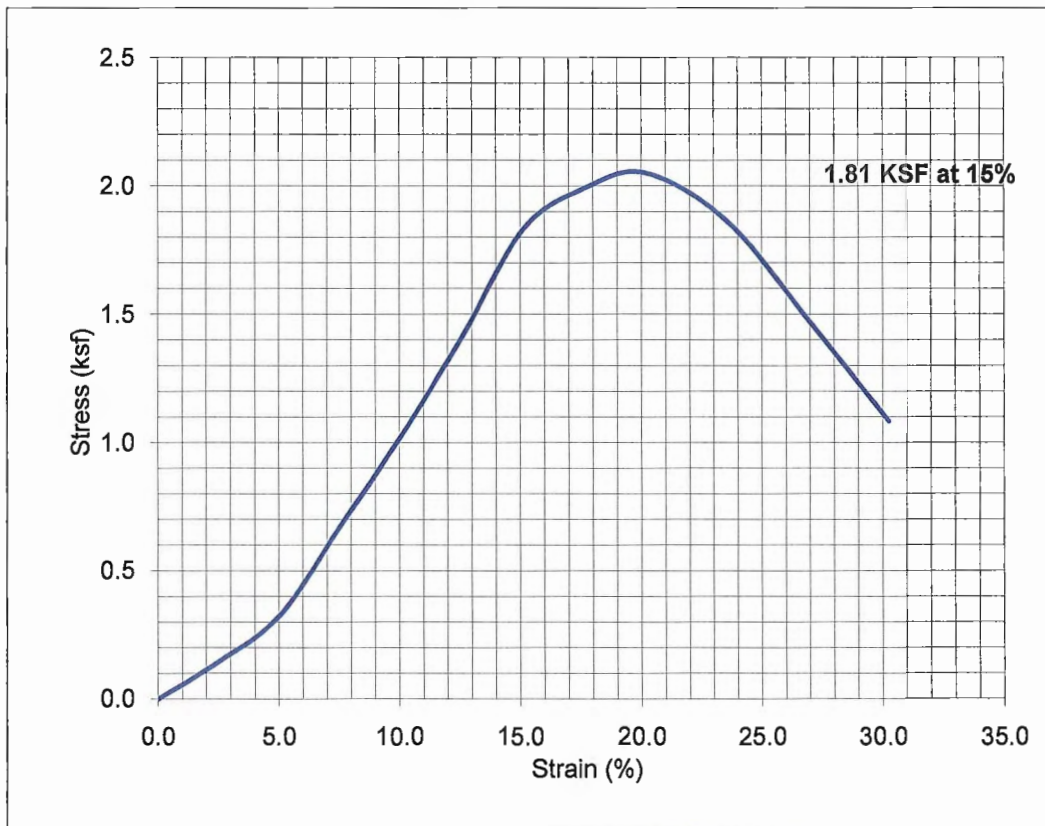
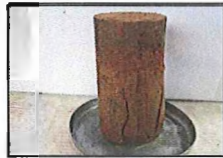
Deg. of Sat. : NA

Initial Height : 5.95 in

Initial Diameter : 2.86 in

Proving Ring : #22734

Comments : AASHTO: T-208



APPROVED BY:



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Sample # : ST-2

Project County : Greenville

Sample Loc. : Boring No. B-46

Project State : South Carolina

Sample Depth : 8.0' to 8.5'

Laboratory # : 08195-01

Date Tested : 10/23/12

Submitted By : Florence & Hutcheson, Inc.

Date Reported : 10/30/12

Soil Type : Gray, Brown & Red Silty Sand

Wet Density : 111.8 pcf

Initial Height : 5.80 in

Dry Density : 86.9 pcf

Initial Diameter : 2.85 in

Moisture : 28.7 %

Proving Ring : #22734

RESULTS:	Axial Load	Corrected Area	Unit Strain	Stress
#	lbs	sf	%	Ksf
1	0.0	0.04	0.0	0.00
2	12.5	0.05	2.6	0.27
3	23.1	0.05	5.2	0.49
4	35.6	0.05	7.8	0.74
5	45.2	0.05	10.4	0.91
6	53.9	0.05	12.9	1.06
7	61.6	0.05	15.5	1.17
8	66.4	0.05	18.1	1.22
9	61.6	0.06	20.7	1.10
10	53.9	0.06	24.2	0.92
11	51.9	0.06	27.6	0.85
12	44.2	0.06	31.1	0.69



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory # : 08195-01

Submitted By : Florence & Hutcheson, Inc.

Sample # : ST-2

Sample Loc. : Boring No. B-46

Sample Depth : 8.0' to 8.5'

Date Tested : 10/23/12

Date Reported : 10/30/12

Soil Type : Gray, Brown & Red Silty Sand

Wet Density : 111.8 pcf

Dry Density : 86.9 pcf

Moisture : 28.7 %

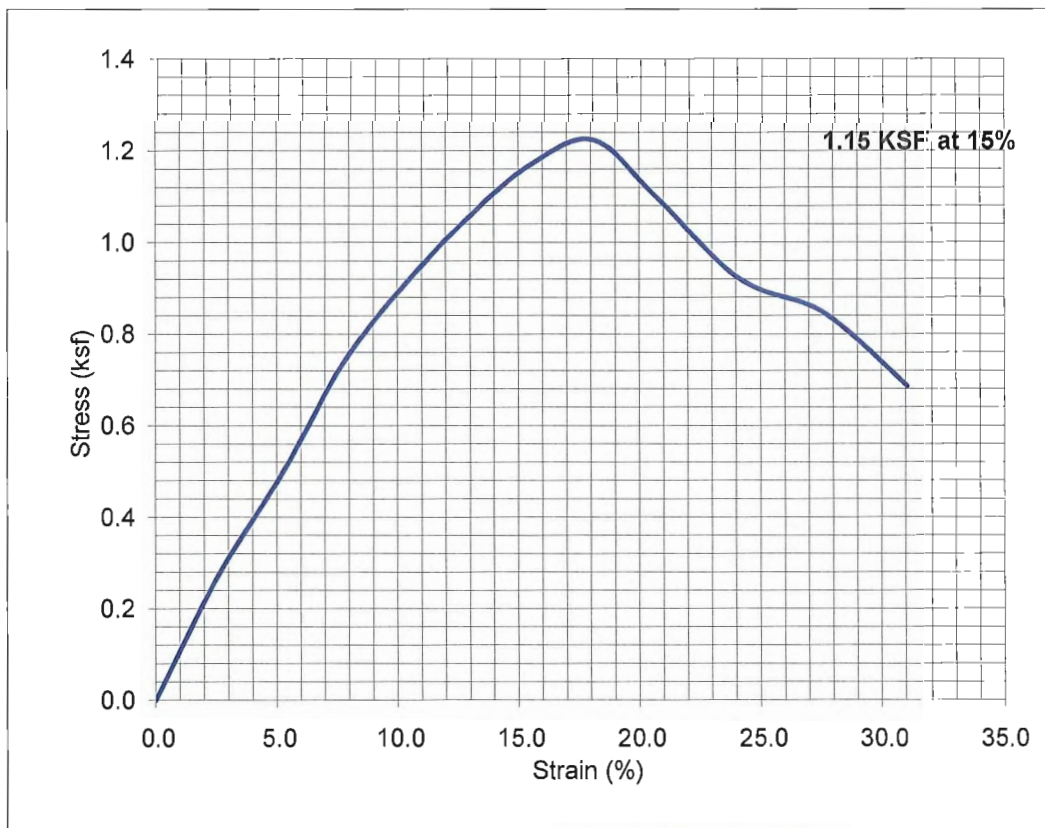
Deg. of Sat. : NA

Initial Height : 5.80 in

Initial Diameter : 2.85 in

Proving Ring : #22734

Comments : AASHTO: T-208



APPROVED BY:

Amy Solis



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Sample # : ST-2

Project County : Greenville

Sample Loc. : Boring No. B-53

Project State : South Carolina

Sample Depth : 8.0' to 8.5'

Laboratory # : 08195-01

Date Tested : 10/22/12

Submitted By : Florence & Hutcheson, Inc.

Date Reported : 10/30/12

Soil Type : Gray, Tan & Orange Silty Sand

Wet Density : 54.6 pcf

Initial Height : 2.84 in

Dry Density : 40.6 pcf

Initial Diameter : 5.87 in

Moisture : 34.6 %

Proving Ring : #22734

RESULTS:	Axial	Corrected	Unit	
	Load	Area	Strain	Stress
#	lbs	sf	%	Ksf
1	0.0	0.19	0.0	0.00
2	1.0	0.20	5.3	0.00
3	3.8	0.21	10.6	0.02
4	6.7	0.22	15.9	0.03
5	8.7	0.24	21.1	0.04
6	12.5	0.26	26.4	0.05
7	16.4	0.28	31.7	0.06
8	21.2	0.30	37.0	0.07
9	24.0	0.33	42.3	0.07
10	29.8	0.37	49.3	0.08
11	33.7	0.43	56.4	0.08
12	36.6	0.51	63.4	0.07
13	39.4	0.64	70.5	0.06
14	42.3	0.84	77.5	0.05
15	43.3	1.22	84.6	0.04
16	44.2	2.25	91.6	0.02
17	44.2	14.42	98.7	0.00



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Sample # : ST-2

Project County : Greenville

Sample Loc. : Boring No. B-53

Project State : South Carolina

Sample Depth : 8.0' to 8.5'

Laboratory # : 08195-01

Date Tested : 10/22/12

Submitted By : Florence & Hutcheson, Inc.

Date Reported : 10/30/12

Soil Type : Gray, Tan & Orange Silty Sand

Wet Density : 54.6 pcf

Initial Height : 2.84 in

Dry Density : 40.6 pcf

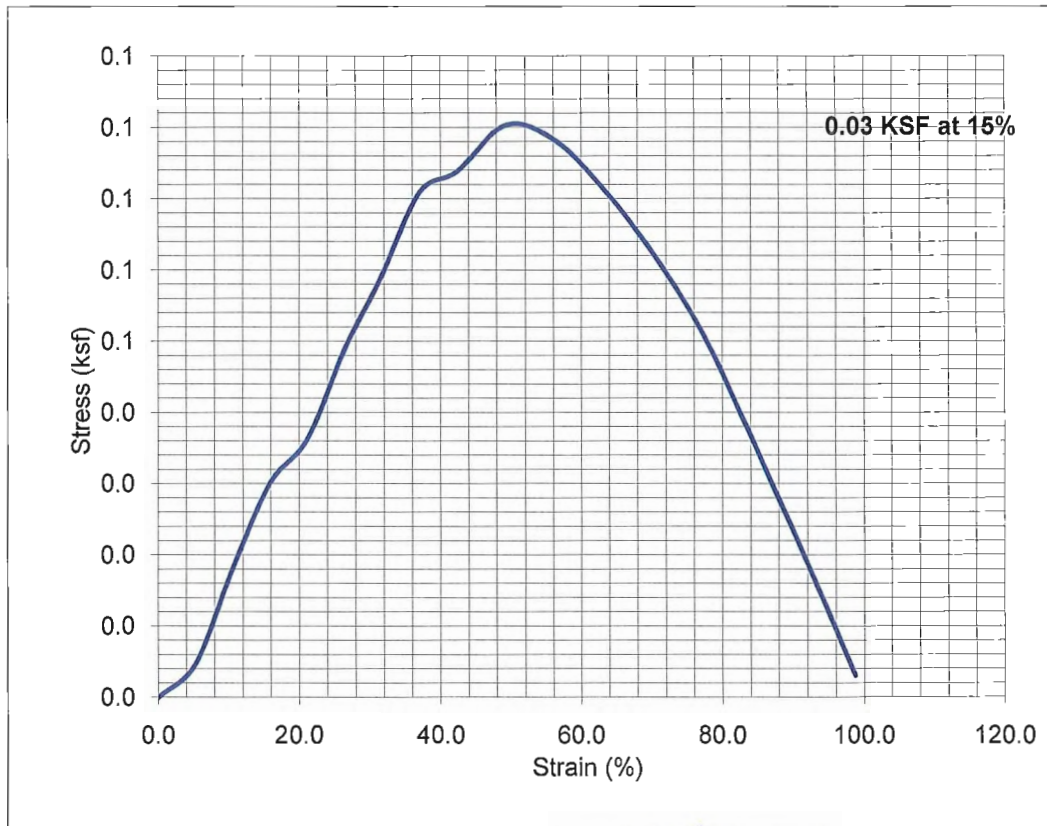
Initial Diameter : 5.87 in

Moisture : 34.6 %

Proving Ring : #22734

Deg. of Sat. : NA

Comments : AASHTO: T-208 ; L / D Ratio < 2



APPROVED BY:



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Sample # : ST-1

Project County : Greenville

Sample Loc. : Boring No. B-54

Project State : South Carolina

Sample Depth : 5.0' to 5.5'

Laboratory # : 08195-01

Date Tested : 10/24/12

Submitted By : Florence & Hutcheson, Inc.

Date Reported : 10/30/12

Soil Type : Red & Orange Silty Sand

Wet Density : 121.8 pcf

Initial Height : 5.88 in

Dry Density : 99.6 pcf

Initial Diameter : 2.87 in

Moisture : 22.2 %

Proving Ring : #22734

RESULTS:	Axial Load	Corrected Area	Unit Strain	Stress
#	lbs	sf	%	Ksf
1	0.0	0.05	0.0	0.00
2	17.3	0.05	2.6	0.37
3	37.5	0.05	5.1	0.79
4	56.8	0.05	7.7	1.16
5	74.1	0.05	10.2	1.48
6	90.4	0.05	12.8	1.75
7	105.8	0.05	15.3	1.99
8	121.2	0.05	17.9	2.21
9	136.6	0.06	20.4	2.42
10	154.9	0.06	23.8	2.62
11	168.3	0.06	27.2	2.72
12	181.8	0.06	30.6	2.80
13	192.4	0.07	34.0	2.82
14	196.2	0.07	37.4	2.73
15	167.4	0.08	40.8	2.20
16	103.9	0.08	44.2	1.29



UNCONFINED COMPRESSION TEST

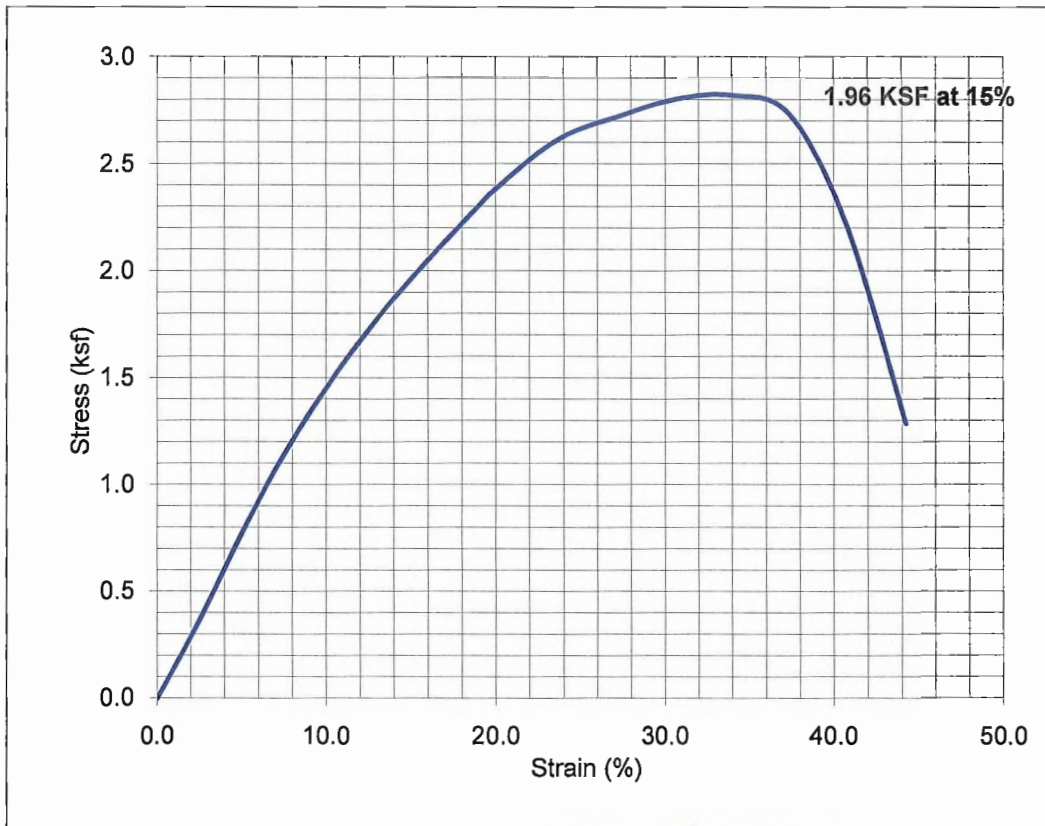
Project Name : I-85/I-385 Interchange
Project # : 08195-01
Project County : Greenville
Project State : South Carolina
Laboratory # : 08195-01
Submitted By : Florence & Hutcheson, Inc.

Sample # : ST-1
Sample Loc. : Boring No. B-54
Sample Depth : 5.0' to 5.5'
Date Tested : 10/24/12
Date Reported : 10/30/12

Soil Type : Red & Orange Silty Sand
Wet Density : 121.8 pcf
Dry Density : 99.6 pcf
Moisture : 22.2 %
Deg. of Sat. : NA

Initial Height : 5.88 in
Initial Diameter : 2.87 in
Proving Ring : #22734

Comments : AASHTO: T-208



APPROVED BY:



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Sample # : ST-2

Project County : Greenville

Sample Loc. : Boring No. B-54

Project State : South Carolina

Sample Depth : 9.0' to 9.5'

Laboratory # : 08195-01

Date Tested : 10/24/12

Submitted By : Florence & Hutcheson, Inc.

Date Reported : 10/30/12

Soil Type : Red & Yellow Sandy Silt

Wet Density : 121.6 pcf

Initial Height : 5.87 in

Dry Density : 99.0 pcf

Initial Diameter : 2.86 in

Moisture : 22.8 %

Proving Ring : #22734

RESULTS:	Axial Load	Corrected Area	Unit Strain	Stress
#	lbs	sf	%	Ksf
1	0.0	0.04	0.0	0.00
2	14.4	0.05	2.6	0.31
3	26.9	0.05	5.1	0.57
4	41.4	0.05	7.7	0.85
5	53.9	0.05	10.2	1.08
6	67.3	0.05	12.8	1.31
7	78.9	0.05	15.3	1.49
8	92.3	0.05	17.9	1.70
9	105.8	0.06	20.4	1.88
10	121.2	0.06	23.9	2.06
11	134.7	0.06	27.3	2.19
12	143.3	0.06	30.7	2.22
13	148.1	0.07	34.1	2.18
14	146.2	0.07	37.5	2.04



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory # : 08195-01

Submitted By : Florence & Hutcheson, Inc.

Sample # : ST-2

Sample Loc. : Boring No. B-54

Sample Depth : 9.0' to 9.5'

Date Tested : 10/24/12

Date Reported : 10/30/12

Soil Type : Red & Yellow Sandy Silt

Wet Density : 121.6 pcf

Dry Density : 99.0 pcf

Moisture : 22.8 %

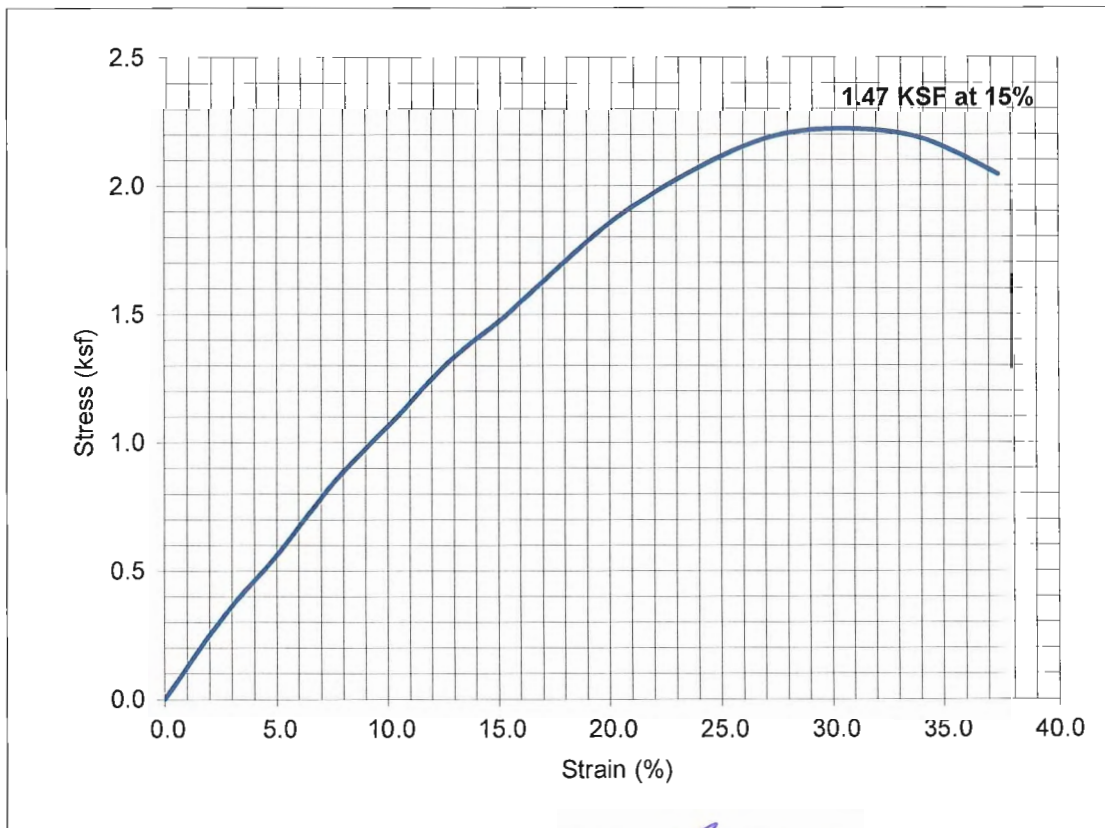
Deg. of Sat. : NA

Initial Height : 5.87 in

Initial Diameter : 2.86 in

Proving Ring : #22734

Comments : AASHTO: T-208



APPROVED BY:



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Sample # : ST-2

Project County : Greenville

Sample Loc. : Boring No. B-65

Project State : South Carolina

Sample Depth : 10.0' to 10.5'

Laboratory # : 08195-01

Date Tested : 10/22/12

Submitted By : Florence & Hutcheson, Inc.

Date Reported : 10/24/12

Soil Type : Gray, Black & Yellow Silty Sand

Wet Density : 110.0 pcf

Initial Height : 5.90 in

Dry Density : 79.1 pcf

Initial Diameter : 2.84 in

Moisture : 39.1 %

Proving Ring : #22734

RESULTS:	Axial	Corrected	Unit	
	Load	Area	Strain	Stress
#	lbs	sf	%	Ksf
1	0.0	0.04	0.0	0.00
2	3.8	0.05	2.5	0.09
3	7.7	0.05	5.1	0.17
4	11.5	0.05	7.6	0.24
5	15.4	0.05	10.2	0.31
6	20.2	0.05	12.7	0.40
7	25.0	0.05	15.3	0.48
8	28.9	0.05	17.8	0.54
9	32.7	0.06	20.3	0.59
10	35.6	0.06	23.7	0.62
11	39.4	0.06	27.1	0.65
12	42.3	0.06	30.5	0.67
13	43.3	0.07	33.9	0.65
14	44.2	0.07	37.3	0.63
15	45.2	0.07	40.7	0.61
16	42.3	0.08	44.1	0.54



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory # : 08195-01

Submitted By : Florence & Hutcheson, Inc.

Sample # : ST-2

Sample Loc. : Boring No. B-65

Sample Depth : 10.0' to 10.5'

Date Tested : 10/22/12

Date Reported : 10/24/12

Soil Type : Gray, Black & Yellow Silty Sand

Wet Density : 110.0 pcf

Dry Density : 79.1 pcf

Moisture : 39.1 %

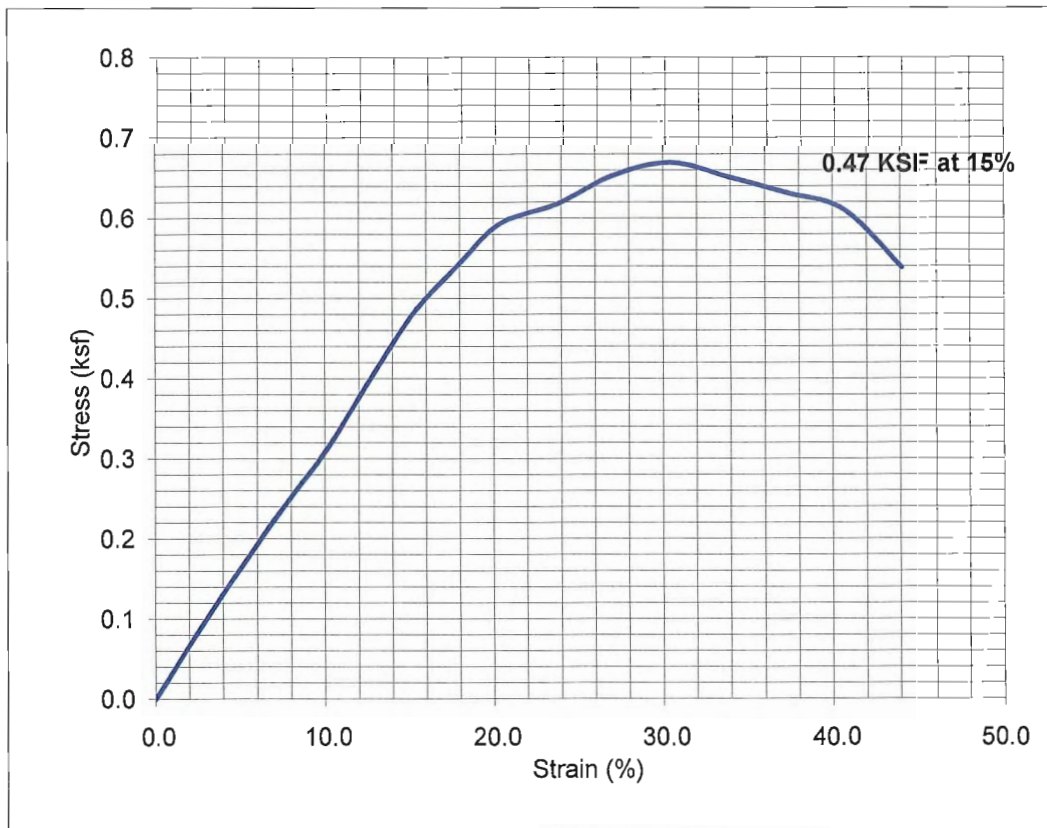
Deg. of Sat. : NA

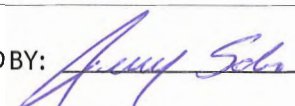
Initial Height : 5.90 in

Initial Diameter : 2.84 in

Proving Ring : #22734

Comments : AASHTO: T-208



APPROVED BY: 



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Sample # : ST-2

Project County : Greenville

Sample Loc. : Boring No. B-68

Project State : South Carolina

Sample Depth : 6.0' to 6.5'

Laboratory # : 08195-01

Date Tested : 10/22/12

Submitted By : Florence & Hutcheson, Inc.

Date Reported : 10/24/12

Soil Type : Tan & Yellow Silty Sand

Wet Density : 117.6 pcf

Initial Height : 5.86 in

Dry Density : 88.3 pcf

Initial Diameter : 2.84 in

Moisture : 33.2 %

Proving Ring : #22734

RESULTS:	Axial	Corrected	Unit	
	Load	Area	Strain	Stress
#	lbs	sf	%	Ksf
1	0.0	0.04	0.0	0.00
2	13.5	0.05	2.6	0.30
3	28.9	0.05	5.1	0.62
4	47.1	0.05	7.7	0.99
5	65.4	0.05	10.2	1.34
6	84.6	0.05	12.8	1.68
7	102.0	0.05	15.4	1.96
8	116.4	0.05	17.9	2.17
9	127.9	0.06	20.5	2.31
10	135.6	0.06	23.9	2.35
11	134.7	0.06	27.3	2.23



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Project County : Greenville

Project State : South Carolina

Laboratory # : 08195-01

Submitted By : Florence & Hutcheson, Inc.

Sample # : ST-2

Sample Loc. : Boring No. B-68

Sample Depth : 6.0' to 6.5'

Date Tested : 10/22/12

Date Reported : 10/24/12

Soil Type : Tan & Yellow Silty Sand

Wet Density : 117.6 pcf

Dry Density : 88.3 pcf

Moisture : 33.2 %

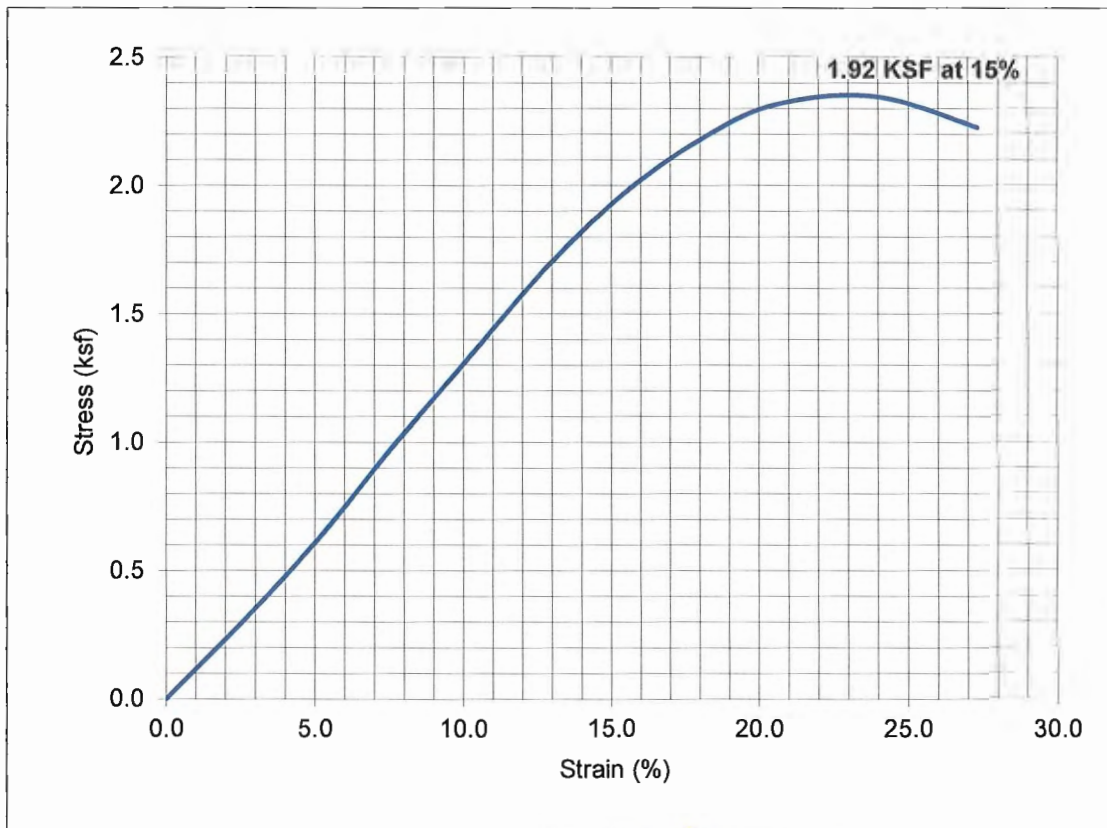
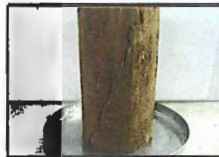
Deg. of Sat. : NA

Initial Height : 5.86 in

Initial Diameter : 2.84 in

Proving Ring : #22734

Comments : AASHTO: T-208



APPROVED BY:



UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange

Project # : 08195-01

Sample # : ST-1

Project County : Greenville

Sample Loc. : Boring No. B-70

Project State : South Carolina

Sample Depth : 6.0' to 6.5'

Laboratory # : 08195-01

Date Tested : 10/24/12

Submitted By : Florence & Hutcheson, Inc.

Date Reported : 10/30/12

Soil Type : Tan & Green Silty Sand

Wet Density : 126.4 pcf

Initial Height : 5.77 in

Dry Density : 96.6 pcf

Initial Diameter : 2.86 in

Moisture : 30.8 %

Proving Ring : #22734

RESULTS:	Axial Load	Corrected Area	Unit Strain	Stress
#	lbs	sf	%	Ksf
1	0.0	0.04	0.0	0.00
2	4.8	0.05	2.6	0.11
3	9.6	0.05	5.2	0.20
4	12.5	0.05	7.8	0.26
5	17.3	0.05	10.4	0.35
6	21.2	0.05	13.0	0.41
7	25.0	0.05	15.6	0.47
8	27.9	0.05	18.2	0.51
9	32.7	0.06	20.8	0.58
10	41.4	0.06	24.2	0.70
11	47.1	0.06	27.7	0.77
12	51.9	0.06	31.2	0.80
13	54.8	0.07	34.6	0.81
14	46.2	0.07	38.1	0.64
15	6.7	0.08	41.6	0.09

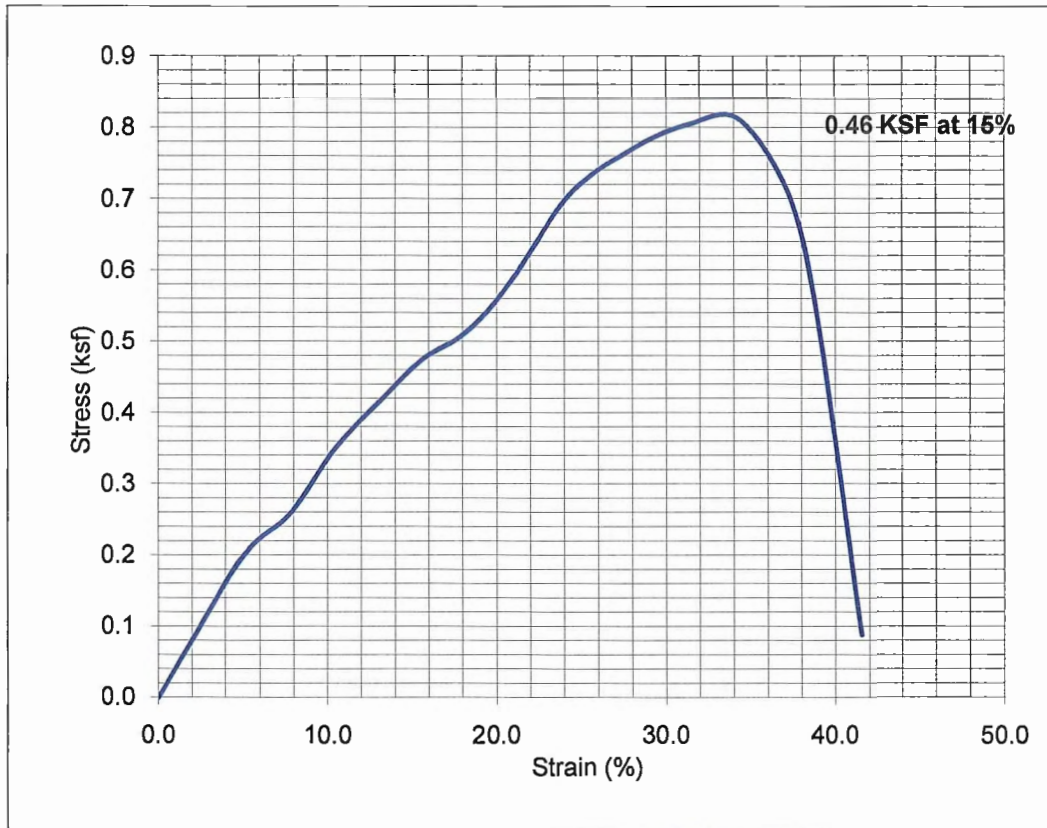


UNCONFINED COMPRESSION TEST

Project Name : I-85/I-385 Interchange	Sample # : ST-1
Project # : 08195-01	Sample Loc. : Boring No. B-70
Project County : Greenville	Sample Depth : 6.0' to 6.5'
Project State : South Carolina	Date Tested : 10/24/12
Laboratory # : 08195-01	Date Reported : 10/30/12
Submitted By : Florence & Hutcheson, Inc.	

Soil Type : Tan & Green Silty Sand	
Wet Density : 126.4 pcf	Initial Height : 5.77 in
Dry Density : 96.6 pcf	Initial Diameter : 2.86 in
Moisture : 30.8 %	Proving Ring : #22734
Deg. of Sat. : NA	

Comments : AASHTO: T-208



APPROVED BY: *Amy Sabo*



Florence & Hutcheson

An **ICA** Company

Project Name : I-85/I-385 Interchange
Location : Greenville County, South Carolina
Job Number : 08195-01
Project Job No. : 08195-01

Triaxial Compression Summary

Boring Number	Sample Number	Depth (ft)	Natural Moisture (%)	ASTM Classification	Wet Density (pcf)	Dry Density (pcf)	q _u (psf)	Cohesion (psf)
B-13	ST-1	20.3-20.8	28.4	SM	116.7	90.9	1152	576
B-39	ST-2	8-8.5	19.4	CL	126.9	106.3	1232	616
B-40	ST-1	6.5-7	30.4	SM	118.9	91.2	2610	1305
B-40	ST-3	10.5-11	25.5	SM	123.9	98.7	2406	1203
B-44	ST-1	4-4.5	26.9	SM	120.2	94.8	1833	917
B-44	ST-2	8-8.5	21.6	SM	115.0	94.6	2128	1064
B-49	ST-1	4-4.5	37.1	SM	113.7	82.9	1655	828
B-49	ST-2	8.5-9	24.1	SM	119.3	96.2	882	441
B-51	ST-2	6.5-7	17.2	SM	123.1	105.0	3276	1638
B-61	ST-1	2-2.5	20.9	SM	125.1	103.5	2071	1035
B-64	ST-1	4.5-5	23.9	SM	114.9	92.7	2765	1383
B-64	ST-2	9-9.5	29.7	SM	108.2	83.4	1855	928
B-67	ST-1	4-4.5	21.5	SM	122.1	100.5	3532	1766
B-68	ST-1	2-2.5	23.7	SP-SM	124.7	100.8	1834	917
B-74	ST-1	4-4.5	33.1	ML	114.7	86.2	396	198



Florence & Hutcheson

CONSULTING ENGINEERS

TRIAxIAL COMPRESSION TEST

Page 1 of 3

PROJECT NAME	: I85 / I385 Interchange	POINT #	: 1
PROJECT #	: 08195-01	SAMPLE LOC.	: B-13
PROJECT COUNTY	: Greenville	SAMPLE DEPTH	: 20.3' To 20.8'
PROJECT STATE	: South Carolina	DATE TESTED	: 12/27/2011
LABORATORY #	: 08195-01	DATE REPORTED	: 1/12/2012
SUBMITTED BY	: Florence & Hutcheson		
SOIL TYPE	: Redish Brown Silty Sand		
WET DENSITY	: 116.65 pcf	DELTA HEIGHT	: NA
DRY DENSITY	: 90.87 pcf	DELTA VOLUME	: NA
MOISTURE	: 28.38 %	CHAMBER PRES.	: 12.22 psi
		INITIAL HEIGHT	: 14.91 cm
		INITIAL DIAMETER	: 7.18 cm

RESULTS:

	ϵ_a	σ_3 (psi)	σ_1 (psi)	σ_1/σ_3
1	0.00	0.00	0.00	0.00
2	0.85	12.22	13.33	1.09
3	1.70	12.22	14.2	1.16
4	2.56	12.22	14.4	1.18
5	3.41	12.22	14.81	1.21
6	4.26	12.22	15.64	1.28
7	5.11	12.22	16.03	1.31
8	10.22	12.22	18.63	1.52
9	15.33	12.22	20.34	1.66
10	20.44	12.22	21.61	1.77
11	25.55	12.22	22.15	1.81
12	30.67	12.22	22.38	1.83
13	34.07	12.22	22.46	1.84
14	42.59	12.22	22.02	1.8
15	51.11	12.22	21.11	1.73
16	59.63	12.22	20.09	1.64
17	68.15	12.22	18.57	1.52
18	76.66	12.22	17.08	1.4
19	85.18	12.22	15.4	1.26
20	93.70	12.22	13.6	1.11
21	102.22	12.22	11.73	0.96
22	110.74	12.22	9.8	0.8
23	119.25	12.22	7.8	0.64
24	127.77	12.22	5.78	0.47
25	136.29	12.22	3.73	0.31
26	144.81	12.22	1.74	0.14
27	153.33	12.22	-0.6	-0.05
28	161.84	12.22	-2.78	-0.23
29	170.36	12.22	-5.14	-0.42
30	178.88	12.22	-7.24	-0.59
31	187.40	12.22	-9.91	-0.81
32	195.92	12.22	-12.27	-1



Florence & Hutcheson

CONSULTING ENGINEERS

TRIAxIAL COMPRESSION TEST

PROJECT NAME : I85 / I385 Interchange
PROJECT # : 08195-01
PROJECT COUNTY : Greenville
PROJECT STATE : South Carolina
LABORATORY # : 08195-01
SUBMITTED BY : Florence & Hutcheson

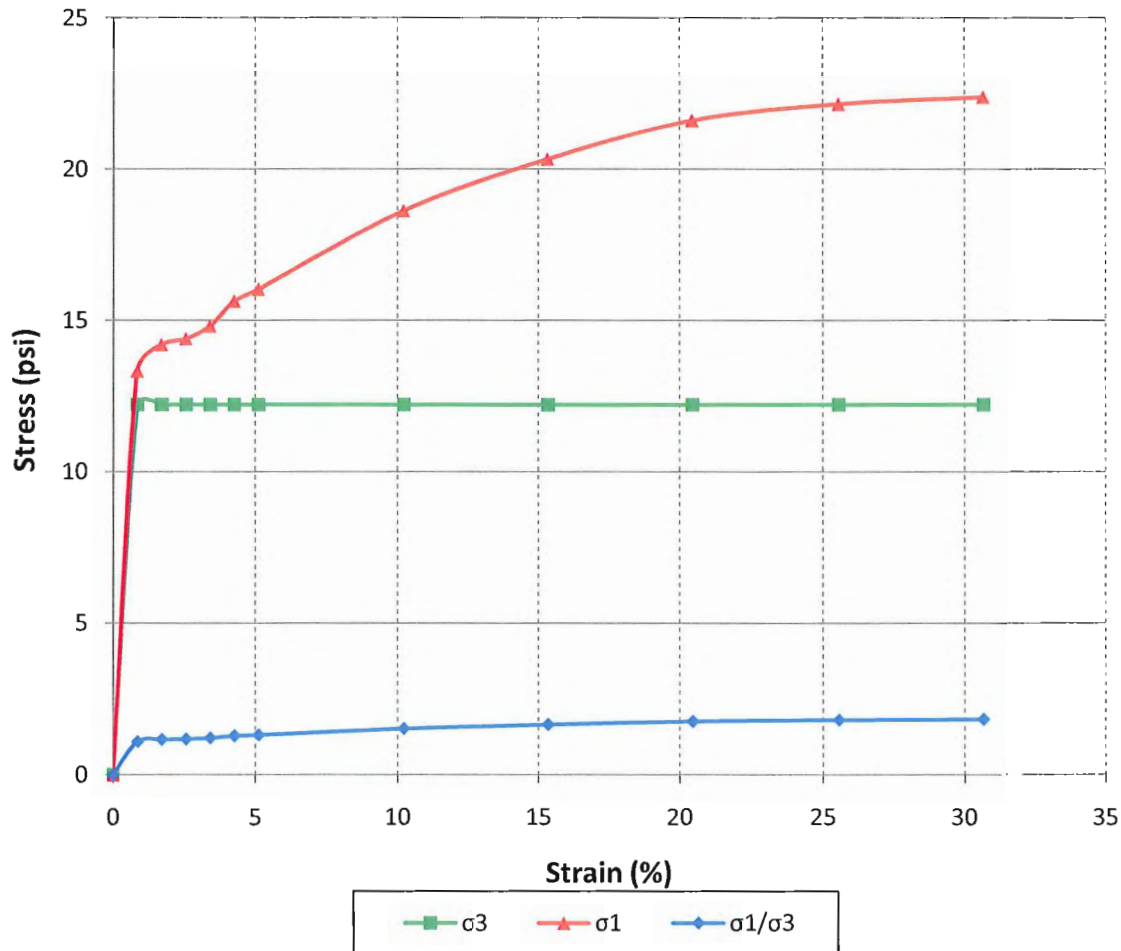
POINT # : 1
SAMPLE LOC. : B-13
SAMPLE DEPTH : 20.3' To 20.8'
DATE TESTED : 12/27/2011
DATE REPORTED : 1/12/2012

Page 2 of 3

FINAL MOISTURE : 28.38 %
FINAL HEIGHT : 11.99 cm
FINAL DIAMETER : 8.01 cm

EFF. CONS. STRESS : 12.22 psi
SPECIFIC GRAVITY : NA
COMMENTS : AASHTO T-296

RESULTS:





PROJECT NAME	: I85 / I385 Interchange	Page 3 of 3
PROJECT #	: 08195-01	
PROJECT COUNTY	: Greenville	SAMPLE LOC. : B-13
PROJECT STATE	: South Carolina	SAMPLE DEPTH : 20.3' To 20.8'
LABORATORY #	: 08195-01	DATE TESTED : 12/27/2011
SUBMITTED BY	: Florence & Hutcheson	DATE REPORTED : 1/12/2012

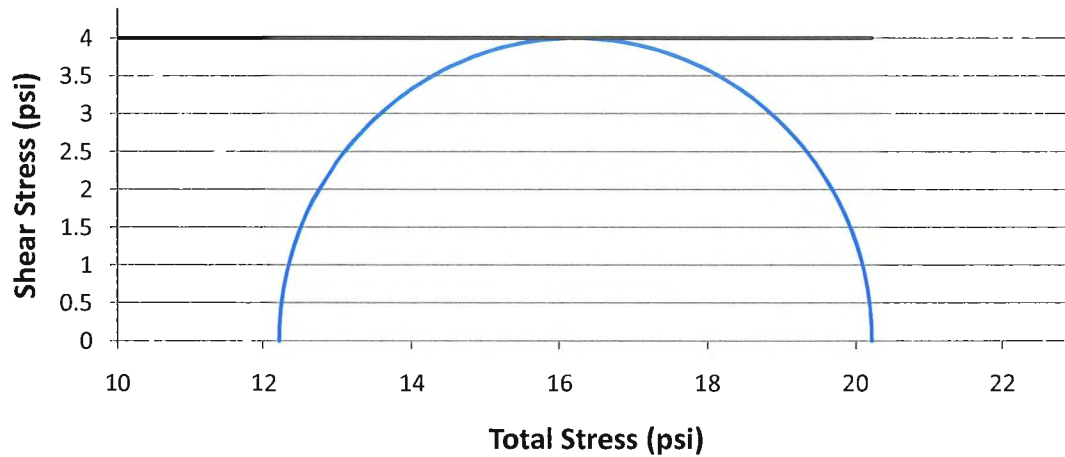
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total	Compressive Strength =	1152 psf
1	12.22	20.22	Cohesion =	576 psf
			Phi =	0 deg
			Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles

Unconsolidated Undrained Triaxial Test



Approved By: _____



PROJECT NAME	: I-85/I-385 Interchange	POINT #	: 1	Page 1 of 3
PROJECT #	: 08195-01	SAMPLE LOC.	: B-39	
PROJECT COUNTY	: Greenville	SAMPLE DEPTH	: 8.0' to 8.5'	
PROJECT STATE	: South Carolina	DATE TESTED	: 10/23/12	
LABORATORY #	: 08195-01	DATE REPORTED	: 10/30/12	
SUBMITTED BY	: Florence & Hutcheson			
SOIL TYPE	: Red & Yellow Sandy Lean Clay			
WET DENSITY	: 126.94 pcf	DELTA HEIGHT	: NA	INITIAL HEIGHT : 15 cm
DRY DENSITY	: 106.28 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER : 7.21 cm
MOISTURE	: 19.43 %	CHAMBER PRES.	: 7.54 psi	

RESULTS:

	ϵ_a	σ_3 (psi)	σ_1 (psi)	σ_1/σ_3
1	0.00	0.00	0.00	0.00
2	0.85	7.54	8.42	1.12
3	1.69	7.54	9.28	1.23
4	2.54	7.54	10.13	1.34
5	3.39	7.54	10.75	1.43
6	4.23	7.54	11.15	1.48
7	5.08	7.54	11.96	1.59
8	10.16	7.54	14.51	1.92
9	15.24	7.54	16.18	2.14
10	20.32	7.54	17.41	2.31
11	25.40	7.54	18.25	2.42
12	30.48	7.54	18.73	2.48
13	33.87	7.54	19.2	2.55
14	42.33	7.54	19.72	2.61
15	50.80	7.54	19.72	2.61
16	59.27	7.54	19.35	2.57
17	67.73	7.54	18.25	2.42
18	76.20	7.54	16.51	2.19
19	84.66	7.54	13.83	1.83
20	93.13	7.54	10.58	1.4
21	101.60	7.54	6.79	0.9
22	110.06	7.54	2.5	0.33
23	118.53	7.54	-2.01	-0.27
24	127.00	7.54	-6.74	-0.89
25	135.46	7.54	-11.58	-1.54
26	143.93	7.54	-16.7	-2.21
27	152.40	7.54	-21.59	-2.86
28	160.86	7.54	-26.55	-3.52
29	169.33	7.54	-31.44	-4.17
30	177.80	7.54	-36.69	-4.86
31	186.26	7.54	-41.68	-5.53
32	194.73	7.54	-46.51	-6.17

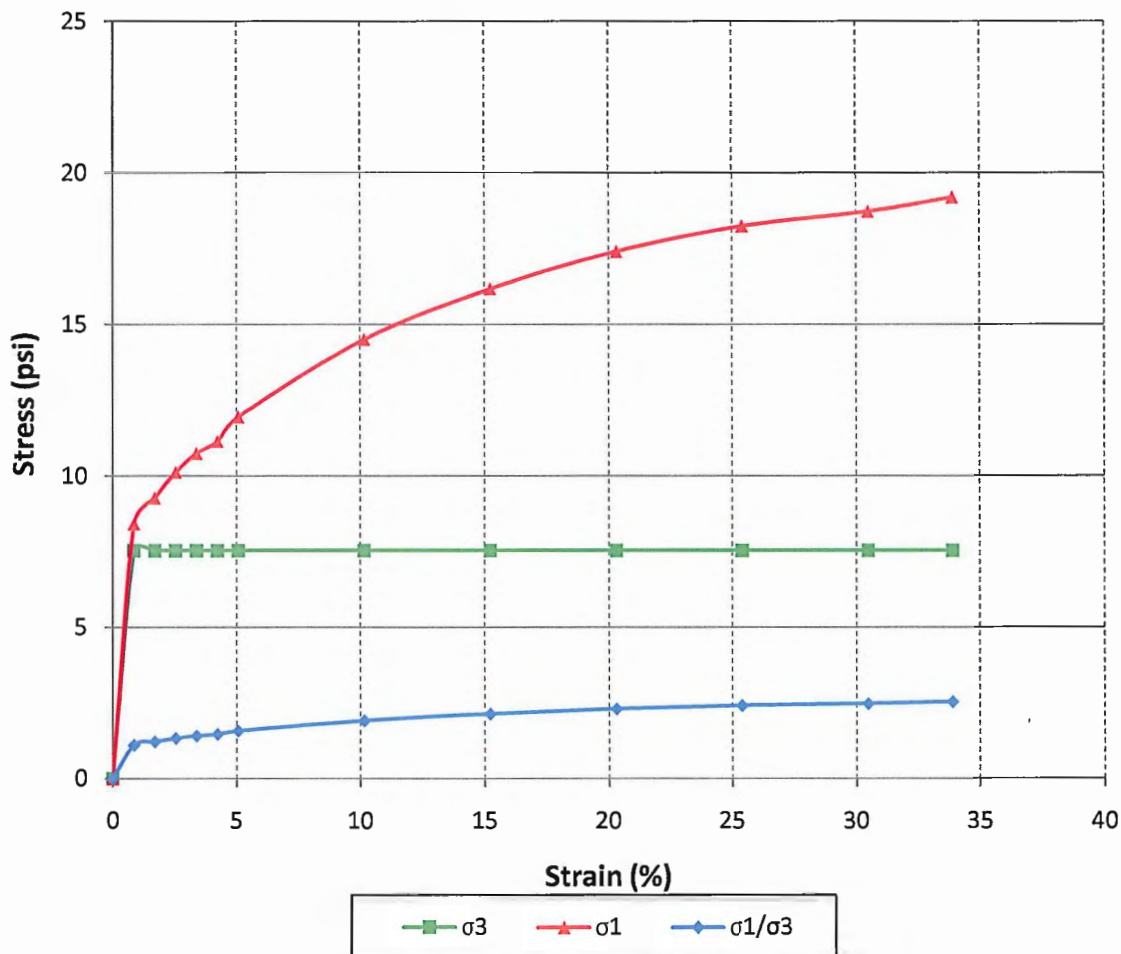
PROJECT NAME : I-85/I-385 Interchange
 PROJECT # : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY # : 08195-01
 SUBMITTED BY : Florence & Hutcheson

POINT # : 1
 SAMPLE LOC. : B-39
 SAMPLE DEPTH : 8.0' to 8.5'
 DATE TESTED : 10/23/12
 DATE REPORTED : 10/30/12

FINAL MOISTURE : 19.43 %
 FINAL HEIGHT : 12.08 cm
 FINAL DIAMETER : 8.03 cm

EFF. CONS. STRESS : 7.54 psi
 SPECIFIC GRAVITY : NA
 COMMENTS : AASHTO T-296

RESULTS:





PROJECT NAME : I-85/I-385 Interchange
 PROJECT # : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY # : 08195-01
 SUBMITTED BY : Florence & Hutcheson

SAMPLE LOC. : B-39
 SAMPLE DEPTH : 8.0' to 8.5'
 DATE TESTED : 10/23/12
 DATE REPORTED : 10/30/12

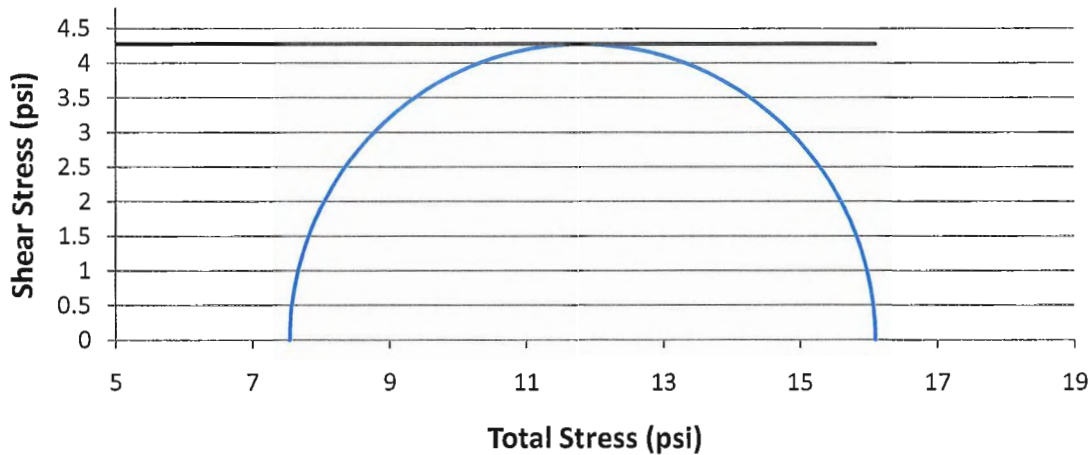
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

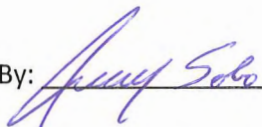
Test	Lateral	Total	Compressive Strength =	1232 psf
1	7.54	16.1	Cohesion =	616 psf
			Phi =	0 deg
			Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles

Unconsolidated Undrained Triaxial Test



Approved By: 



PROJECT NAME	: I-85/I-385 Interchange	POINT #	: 1	Page 1 of 3
PROJECT #	: 08195-01	SAMPLE LOC.	: B-40	
PROJECT COUNTY	: Greenville	SAMPLE DEPTH	: 6.5' to 7.0'	
PROJECT STATE	: South Carolina	DATE TESTED	: 10/23/12	
LABORATORY #	: 08195-01	DATE REPORTED	: 10/30/12	
SUBMITTED BY	: Florence & Hutcheson			

SOIL TYPE	: Red Silty Sand				
WET DENSITY	: 118.88 pcf	DELTA HEIGHT	: NA	INITIAL HEIGHT	: 15.06 cm
DRY DENSITY	: 91.15 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.28 cm
MOISTURE	: 30.42 %	CHAMBER PRES.	: 6.05 psi		

RESULTS:

	ϵ_a	σ_3 (psi)	σ_1 (psi)	σ_1/σ_3
1	0.00	0.00	0.00	0.00
2	0.84	6.05	9.06	1.5
3	1.69	6.05	10.32	1.71
4	2.53	6.05	11.55	1.91
5	3.37	6.05	12.55	2.08
6	4.22	6.05	13.74	2.27
7	5.06	6.05	14.7	2.43
8	10.12	6.05	20.03	3.31
9	15.18	6.05	24.33	4.02
10	20.24	6.05	27.21	4.5
11	25.30	6.05	29.29	4.84
12	30.36	6.05	30.43	5.03
13	33.74	6.05	30.52	5.05
14	42.17	6.05	29.97	4.95
15	50.60	6.05	28.07	4.64
16	59.04	6.05	25.16	4.16
17	67.47	6.05	21.63	3.58
18	75.91	6.05	17.86	2.95
19	84.34	6.05	13.81	2.28
20	92.77	6.05	9.68	1.6
21	101.21	6.05	5.44	0.9
22	109.64	6.05	1.07	0.18
23	118.08	6.05	-3.4	-0.56
24	126.51	6.05	-7.91	-1.31
25	134.95	6.05	-12.57	-2.08
26	143.38	6.05	-17.24	-2.85
27	151.81	6.05	-21.66	-3.58
28	160.25	6.05	-25.92	-4.29
29	168.68	6.05	-30.4	-5.03
30	177.12	6.05	-34.71	-5.74



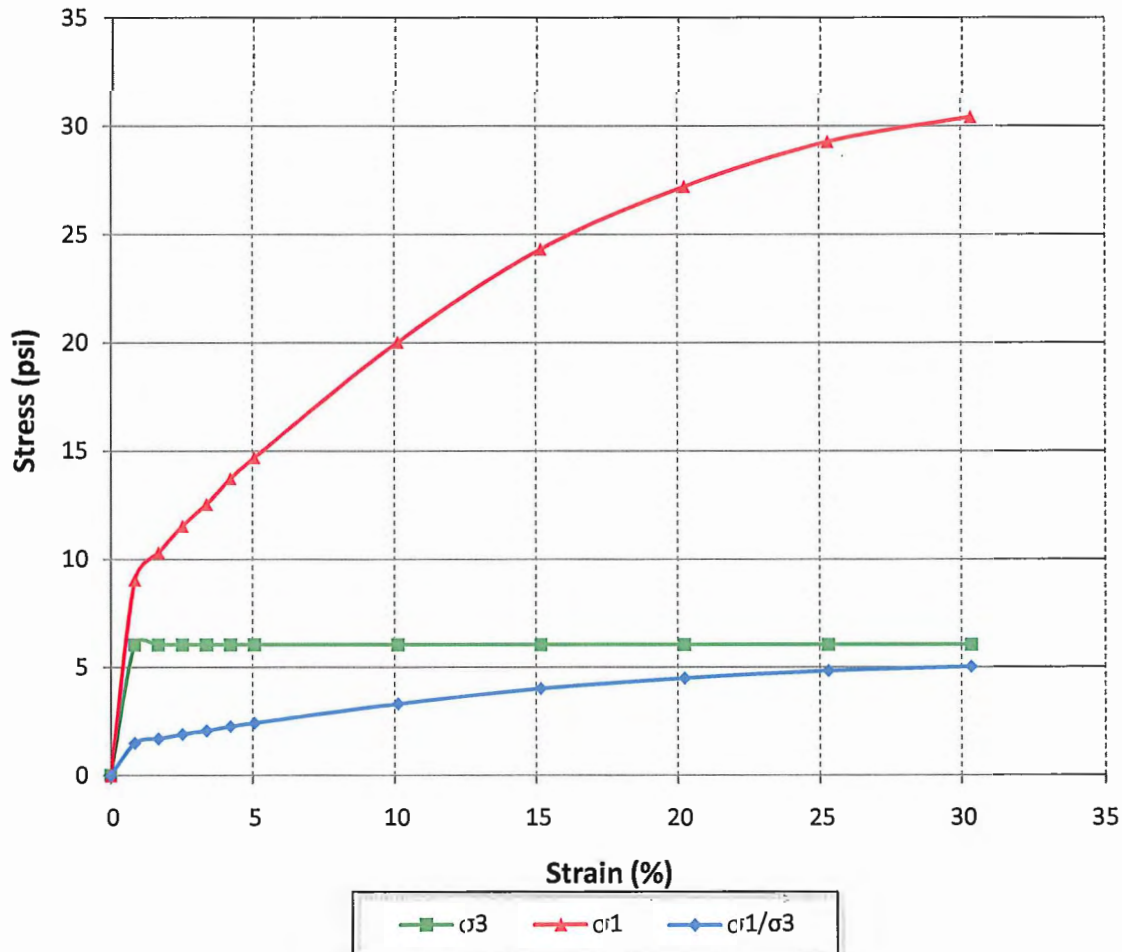
PROJECT NAME : I-85/I-385 Interchange
PROJECT # : 08195-01
PROJECT COUNTY : Greenville
PROJECT STATE : South Carolina
LABORATORY # : 08195-01
SUBMITTED BY : Florence & Hutcheson

POINT # : 1
SAMPLE LOC. : B-40
SAMPLE DEPTH : 6.5' to 7.0'
DATE TESTED : 10/23/12
DATE REPORTED : 10/30/12

FINAL MOISTURE : 30.42 %
FINAL HEIGHT : 12.14 cm
FINAL DIAMETER : 8.11 cm

EFF. CONS. STRESS : 6.05 psi
SPECIFIC GRAVITY : NA
COMMENTS : AASHTO T-296

RESULTS:





PROJECT NAME : I-85/I-385 Interchange
PROJECT # : 08195-01
PROJECT COUNTY : Greenville
PROJECT STATE : South Carolina
LABORATORY # : 08195-01
SUBMITTED BY : Florence & Hutcheson

SAMPLE LOC. : B-40
SAMPLE DEPTH : 6.5' to 7.0'
DATE TESTED : 10/23/12
DATE REPORTED : 10/30/12

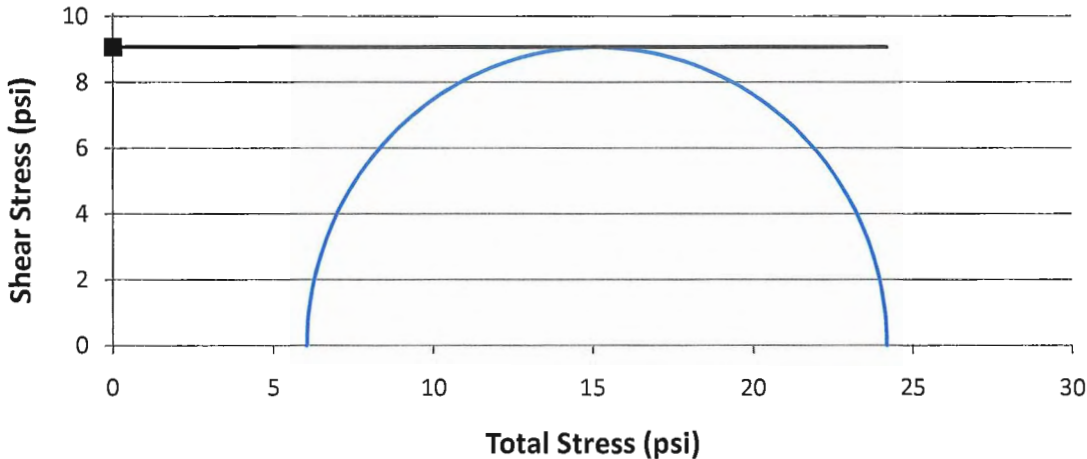
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total	Compressive Strength =	2610 psf
1	6.05	24.17	Cohesion =	1305 psf
			Phi =	0 deg
			Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles

Unconsolidated Undrained Triaxial Test



Approved By: *Amy Sob*



PROJECT NAME : I-85/I-385 Interchange Page 1 of 3
 PROJECT # : 08195-01 POINT # : 1
 PROJECT COUNTY : Greenville SAMPLE LOC. : B-40
 PROJECT STATE : South Carolina SAMPLE DEPTH : 10.5' to 11.0'
 LABORATORY # : 08195-01 DATE TESTED : 10/23/12
 SUBMITTED BY : Florence & Hutcheson DATE REPORTED : 10/30/12

SOIL TYPE : Red Silty Sand
 WET DENSITY : 123.88 pcf DELTA HEIGHT : NA INITIAL HEIGHT : 14.85 cm
 DRY DENSITY : 98.73 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.22 cm
 MOISTURE : 25.48 % CHAMBER PRES. : 9.04 psi

RESULTS:

	ϵ_a	σ_3 (psi)	σ_1 (psi)	σ_1/σ_3
1	0.00	9.04	9.04	1.00
2	0.85	9.04	11.88	1.31
3	1.71	9.04	12.94	1.43
4	2.56	9.04	13.98	1.55
5	3.42	9.04	15	1.66
6	4.27	9.04	15.79	1.75
7	5.13	9.04	16.77	1.86
8	10.26	9.04	21.65	2.4
9	15.39	9.04	26.08	2.89
10	20.52	9.04	29.45	3.26
11	25.65	9.04	31.58	3.49
12	30.78	9.04	32.83	3.63
13	34.20	9.04	33.2	3.67
14	42.75	9.04	31.74	3.51
15	51.30	9.04	30.01	3.32
16	59.85	9.04	27.3	3.02
17	68.40	9.04	24.01	2.66
18	76.94	9.04	20.08	2.22
19	85.49	9.04	15.8	1.75
20	94.04	9.04	11.81	1.31
21	102.59	9.04	7.8	0.86
22	111.14	9.04	3.69	0.41
23	119.69	9.04	-0.47	-0.05
24	128.24	9.04	-4.75	-0.53
25	136.79	9.04	-9.28	-1.03
26	145.34	9.04	-13.87	-1.54
27	153.89	9.04	-18.6	-2.06
28	162.44	9.04	-23.46	-2.6
29	170.99	9.04	-27.91	-3.09
30	179.54	9.04	-32.36	-3.58
31	188.09	9.04	-36.89	-4.08
32	196.64	9.04	-41.62	-4.61



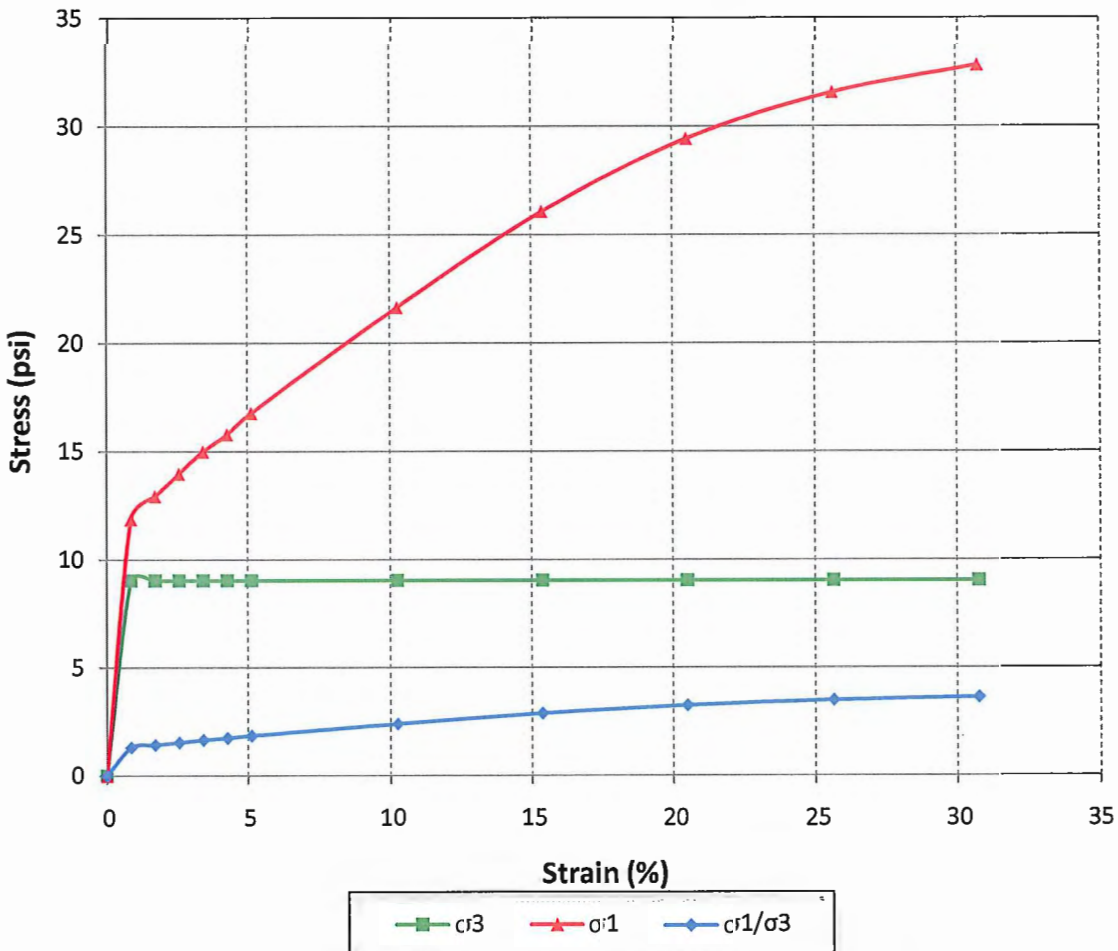
PROJECT NAME : I-85/I-385 Interchange
 PROJECT # : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY # : 08195-01
 SUBMITTED BY : Florence & Hutcheson

POINT # : 1
 SAMPLE LOC. : B-40
 SAMPLE DEPTH : 10.5' to 11.0'
 DATE TESTED : 10/23/12
 DATE REPORTED : 10/30/12

FINAL MOISTURE : 25.48 %
 FINAL HEIGHT : 11.93 cm
 FINAL DIAMETER : 8.06 cm

EFF. CONS. STRESS : 9.04 psi
 SPECIFIC GRAVITY : NA
 COMMENTS : AASHTO T-296

RESULTS:





PROJECT NAME : I-85/I-385 Interchange
 PROJECT # : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY # : 08195-01
 SUBMITTED BY : Florence & Hutcheson

SAMPLE LOC. : B-40
 SAMPLE DEPTH : 10.5' to 11.0'
 DATE TESTED : 10/23/12
 DATE REPORTED : 10/30/12

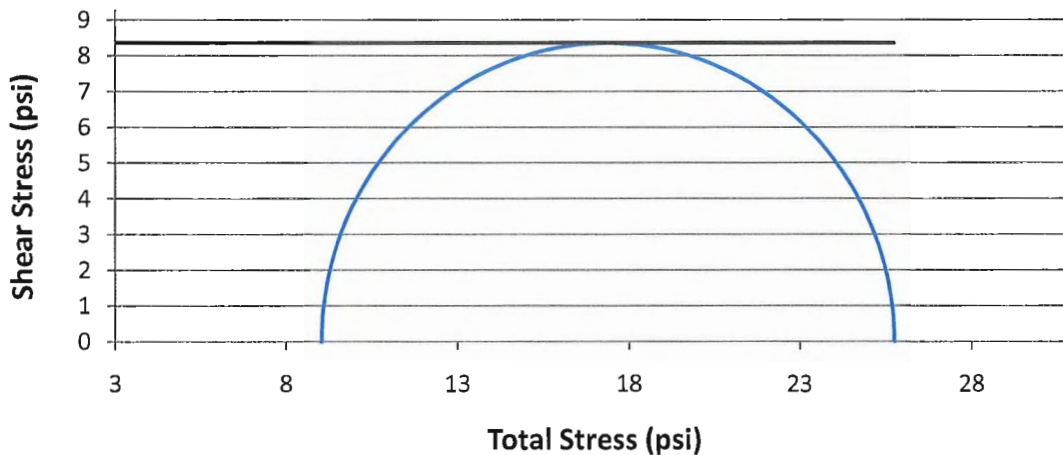
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

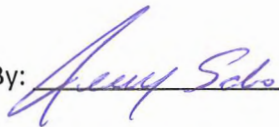
Test	Lateral	Total	Compressive Strength =	2406 psf
1	9.04	25.74	Cohesion =	1203 psf
			Phi =	0 deg
			Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles

Unconsolidated Undrained Triaxial Test



Approved By: 



PROJECT NAME : I-85/I-385 Interchange
 PROJECT # : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY # : 08195-01
 SUBMITTED BY : Florence & Hutcheson

POINT # : 1
 SAMPLE LOC. : B-44
 SAMPLE DEPTH : 4.0' to 4.5'
 DATE TESTED : 10/23/12
 DATE REPORTED : 10/30/12

SOIL TYPE : Red Silty Sand
 WET DENSITY : 120.21 pcf DELTA HEIGHT : NA INITIAL HEIGHT : 14.61 cm
 DRY DENSITY : 94.75 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.24 cm
 MOISTURE : 26.87 % CHAMBER PRES. : 3.86 psi

RESULTS:

	ϵ_a	σ_3 (psi)	σ_1 (psi)	σ_1/σ_3
1	0.00	0.00	0.00	0.00
2	0.87	3.86	5.16	1.34
3	1.74	3.86	6.01	1.56
4	2.61	3.86	6.63	1.72
5	3.48	3.86	7.25	1.88
6	4.35	3.86	7.63	1.98
7	5.22	3.86	8.22	2.13
8	10.43	3.86	11.52	2.99
9	15.65	3.86	17.31	4.49
10	20.87	3.86	23.09	5.99
11	26.08	3.86	27.57	7.15
12	31.30	3.86	29.24	7.58
13	34.78	3.86	28.85	7.48
14	43.47	3.86	27.49	7.13
15	52.17	3.86	25	6.48
16	60.86	3.86	22.06	5.72
17	69.56	3.86	18.37	4.76
18	78.25	3.86	14.45	3.75
19	86.95	3.86	10.38	2.69
20	95.64	3.86	6.08	1.58
21	104.34	3.86	1.63	0.42
22	113.03	3.86	-2.71	-0.7
23	121.73	3.86	-7.06	-1.83
24	130.42	3.86	-11.45	-2.97
25	139.11	3.86	-15.83	-4.1
26	147.81	3.86	-20.56	-5.33
27	156.50	3.86	-25.48	-6.61
28	165.20	3.86	-30.31	-7.86
29	173.89	3.86	-35.33	-9.16
30	182.59	3.86	-40.45	-10.5
31	191.28	3.86	-45.87	-11.9
32	199.98	3.86	-51.02	-13.2



PROJECT NAME : I-85/I-385 Interchange
PROJECT # : 08195-01
PROJECT COUNTY : Greenville
PROJECT STATE : South Carolina
LABORATORY # : 08195-01
SUBMITTED BY : Florence & Hutcheson

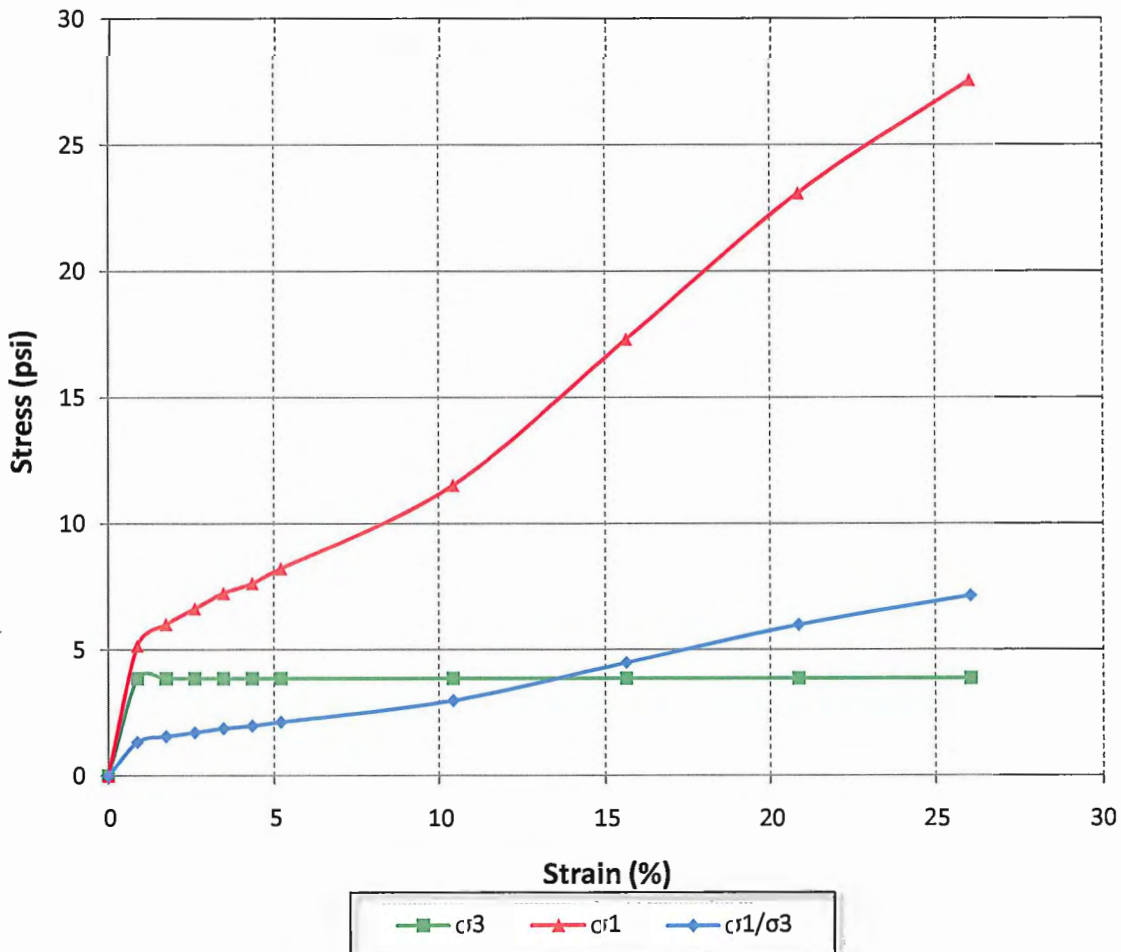
POINT # : 1
SAMPLE LOC. : B-44
SAMPLE DEPTH : 4.0' to 4.5'
DATE TESTED : 10/23/12
DATE REPORTED : 10/30/12

Page 2 of 3

FINAL MOISTURE : 26.87 %
FINAL HEIGHT : 11.69 cm
FINAL DIAMETER : 8.09 cm

EFF. CONS. STRESS : 3.86 psi
SPECIFIC GRAVITY : NA
COMMENTS : AASHTO T-296

RESULTS:





PROJECT NAME : I-85/I-385 Interchange
 PROJECT # : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY # : 08195-01
 SUBMITTED BY : Florence & Hutcheson

SAMPLE LOC. : B-44
 SAMPLE DEPTH : 4.0' to 4.5'
 DATE TESTED : 10/23/12
 DATE REPORTED : 10/30/12

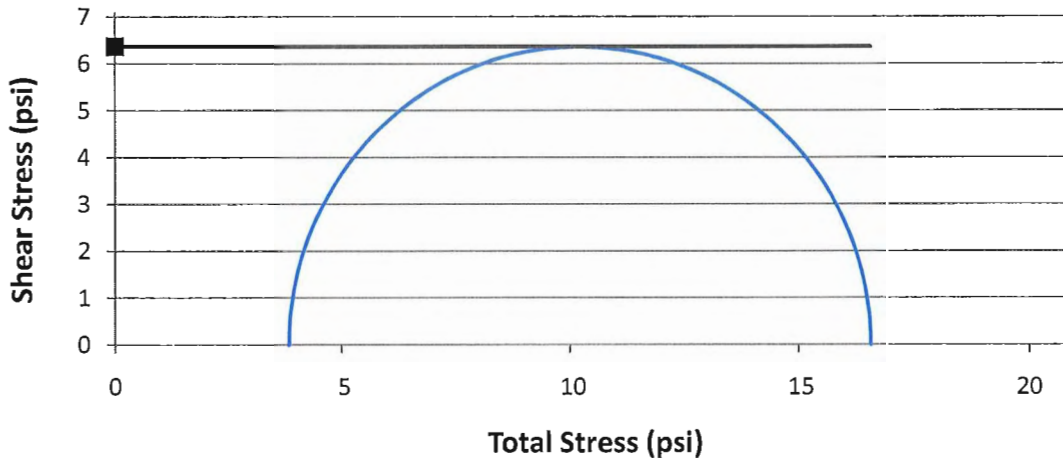
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total	Compressive Strength =	1833 psf
1	3.86	16.59	Cohesion =	917 psf
			Phi =	0 deg
			Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles

Unconsolidated Undrained Triaxial Test



Approved By: *Amy Scho*



PROJECT NAME	: I-85/I-385 Interchange	POINT #	: 1	Page 1 of 3
PROJECT #	: 08195-01	SAMPLE LOC.	: B-44	
PROJECT COUNTY	: Greenville	SAMPLE DEPTH	: 8.0' to 8.5'	
PROJECT STATE	: South Carolina	DATE TESTED	: 10/23/12	
LABORATORY #	: 08195-01	DATE REPORTED	: 10/30/12	
SUBMITTED BY	: Florence & Hutcheson			
SOIL TYPE	: Orange Silty Sand			
WET DENSITY	: 114.98 pcf	DELTA HEIGHT	: NA	INITIAL HEIGHT : 14.16 cm
DRY DENSITY	: 94.55 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER : 7.29 cm
MOISTURE	: 21.61 %	CHAMBER PRES.	: 6.75 psi	

RESULTS:

	ϵ_a	σ_3 (psi)	σ_1 (psi)	σ_1/σ_3
1	0.00	0.00	0.00	0.00
2	0.90	6.75	8.68	1.29
3	1.79	6.75	9.93	1.47
4	2.69	6.75	10.75	1.59
5	3.59	6.75	11.13	1.65
6	4.48	6.75	12.53	1.86
7	5.38	6.75	13.09	1.94
8	10.76	6.75	18.12	2.69
9	16.14	6.75	22.44	3.33
10	21.52	6.75	26.21	3.89
11	26.90	6.75	28.66	4.25
12	32.28	6.75	30.13	4.47
13	35.87	6.75	30.25	4.48
14	44.83	6.75	28.76	4.26
15	53.80	6.75	25.94	3.85
16	62.77	6.75	21.75	3.22
17	71.73	6.75	17.48	2.59
18	80.70	6.75	13.74	2.04
19	89.66	6.75	10.43	1.55



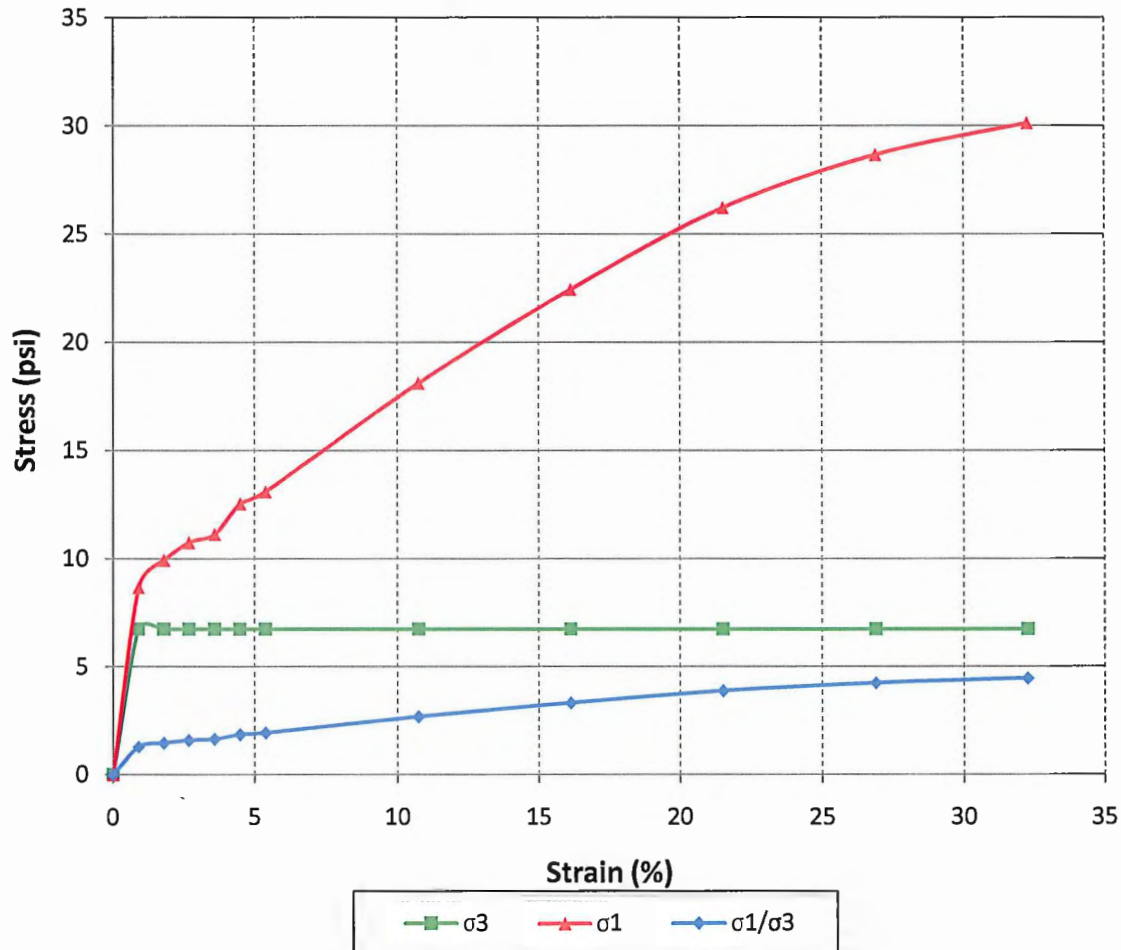
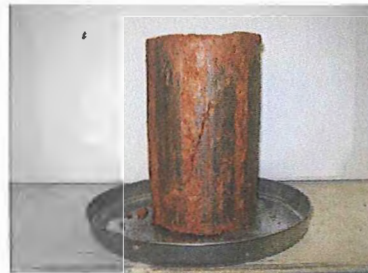
PROJECT NAME : I-85/I-385 Interchange
 PROJECT # : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY # : 08195-01
 SUBMITTED BY : Florence & Hutcheson

POINT # : 1
 SAMPLE LOC. : B-44
 SAMPLE DEPTH : 8.0' to 8.5'
 DATE TESTED : 10/23/12
 DATE REPORTED : 10/30/12

FINAL MOISTURE : 21.61 %
 FINAL HEIGHT : 11.24 cm
 FINAL DIAMETER : 8.18 cm

EFF. CONS. STRESS : 6.75 psi
 SPECIFIC GRAVITY : NA
 COMMENTS : AASHTO T-296

RESULTS:





PROJECT NAME : I-85/I-385 Interchange
 PROJECT # : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY # : 08195-01
 SUBMITTED BY : Florence & Hutcheson

SAMPLE LOC. : B-44
 SAMPLE DEPTH : 8.0' to 8.5'
 DATE TESTED : 10/23/12
 DATE REPORTED : 10/30/12

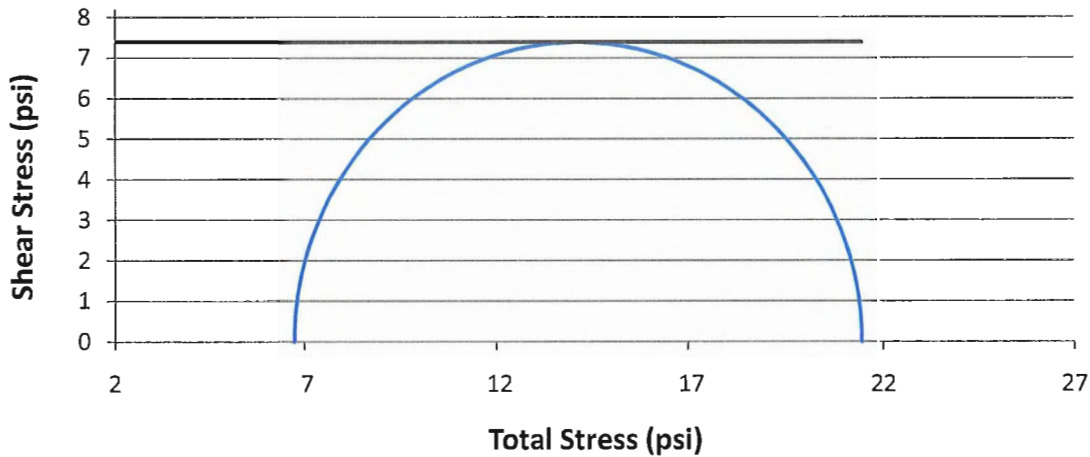
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

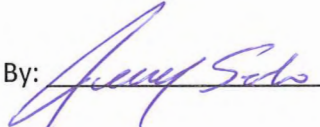
Test	Lateral	Total	Compressive Strength =	2128 psf
1	6.75	21.53	Cohesion =	1064 psf
			Phi =	0 deg
			Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles

Unconsolidated Undrained Triaxial Test



Approved By: 



PROJECT NAME : I-85/I-385 Interchange Page 1 of 3
 PROJECT # : 08195-01 POINT # : 1
 PROJECT COUNTY : Greenville SAMPLE LOC. : B-49
 PROJECT STATE : South Carolina SAMPLE DEPTH : 4.0' to 4.5'
 LABORATORY # : 08195-01 DATE TESTED : 10/28/12
 SUBMITTED BY : Florence & Hutcheson DATE REPORTED : 10/30/12

SOIL TYPE : Red Silty Sand
 WET DENSITY : 113.66 pcf DELTA HEIGHT : NA INITIAL HEIGHT : 14.99 cm
 DRY DENSITY : 82.94 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.22 cm
 MOISTURE : 37.03 % CHAMBER PRES. : 3.66 psi

RESULTS:

	ϵ_a	σ_3 (psi)	σ_1 (psi)	σ_1/σ_3
1	0.00	0.00	0.00	0.00
2	0.85	3.66	6.28	1.72
3	1.70	3.66	7.56	2.07
4	2.54	3.66	8.6	2.35
5	3.39	3.66	9.84	2.69
6	4.24	3.66	10.63	2.91
7	5.09	3.66	11.19	3.06
8	10.17	3.66	13.96	3.82
9	15.26	3.66	15.22	4.16
10	20.34	3.66	16.43	4.49
11	25.43	3.66	17.07	4.67
12	30.51	3.66	18.57	5.08
13	33.90	3.66	19.67	5.38
14	42.38	3.66	21.02	5.75
15	50.85	3.66	19.99	5.47
16	59.33	3.66	17.42	4.76
17	67.80	3.66	14.55	3.98
18	76.28	3.66	11.64	3.18
19	84.75	3.66	8.84	2.42
20	93.23	3.66	6	1.64
21	101.70	3.66	3.06	0.84
22	110.18	3.66	0.06	0.02
23	118.65	3.66	-3.13	-0.85
24	127.13	3.66	-6.21	-1.7
25	135.60	3.66	-9.5	-2.6
26	144.08	3.66	-12.63	-3.45
27	152.55	3.66	-15.76	-4.31
28	161.03	3.66	-18.89	-5.17
29	169.50	3.66	-22.03	-6.02
30	177.98	3.66	-25.16	-6.88
31	186.45	3.66	-28.46	-7.78
32	194.93	3.66	-31.61	-8.64



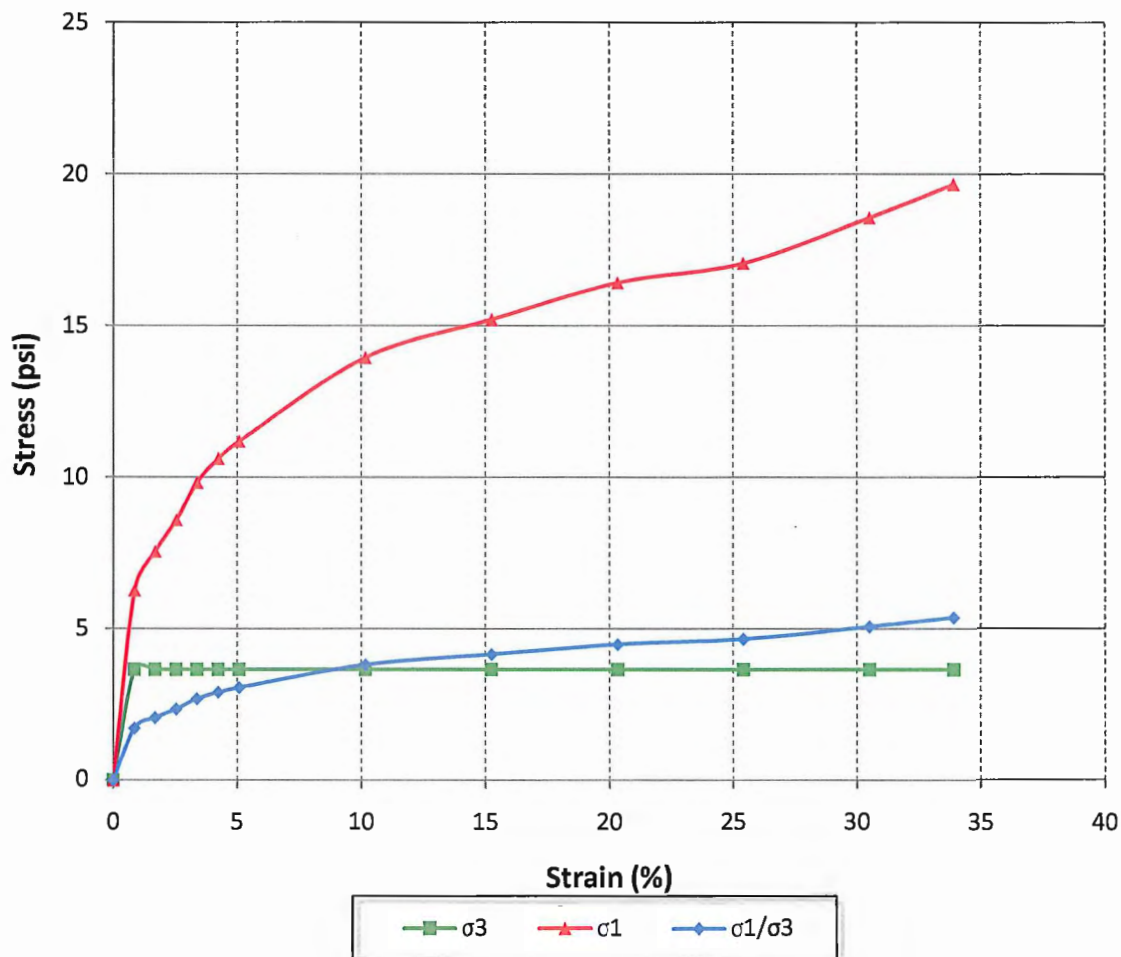
PROJECT NAME : I-85/I-385 Interchange
PROJECT # : 08195-01
PROJECT COUNTY : Greenville
PROJECT STATE : South Carolina
LABORATORY # : 08195-01
SUBMITTED BY : Florence & Hutcheson

POINT # : 1
SAMPLE LOC. : B-49
SAMPLE DEPTH : 4.0' to 4.5'
DATE TESTED : 10/28/12
DATE REPORTED : 10/30/12

FINAL MOISTURE : 37.03 %
FINAL HEIGHT : 12.06 cm
FINAL DIAMETER : 8.05 cm

EFF. CONS. STRESS : 3.66 psi
SPECIFIC GRAVITY : NA
COMMENTS : AASHTO T-296

RESULTS:





PROJECT NAME : I-85/I-385 Interchange
PROJECT # : 08195-01
PROJECT COUNTY : Greenville
PROJECT STATE : South Carolina
LABORATORY # : 08195-01
SUBMITTED BY : Florence & Hutcheson

SAMPLE LOC. : B-49
SAMPLE DEPTH : 4.0' to 4.5'
DATE TESTED : 10/28/12
DATE REPORTED : 10/30/12

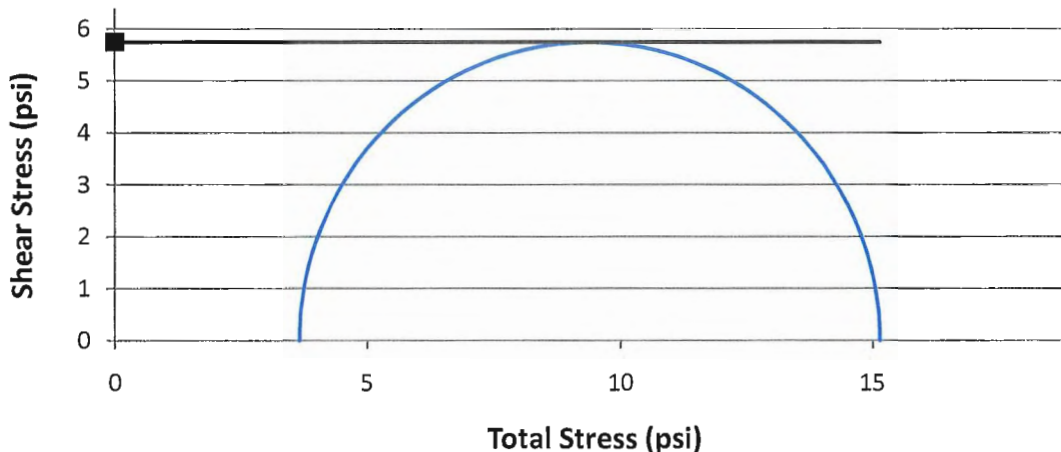
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

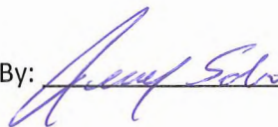
Test	Lateral	Total	Compressive Strength =	1655 psf
1	3.66	15.15	Cohesion =	828 psf
			Phi =	0 deg
			Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles

Unconsolidated Undrained Triaxial Test



Approved By: 



PROJECT NAME : I-85/I-385 Interchange
 PROJECT # : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY # : 08195-01
 SUBMITTED BY : Florence & Hutcheson

POINT # : 1
 SAMPLE LOC. : B-49
 SAMPLE DEPTH : 8.5' to 9.0'
 DATE TESTED : 10/29/12
 DATE REPORTED : 11/01/12

SOIL TYPE : Green, Orange & Gray
 WET DENSITY : 119.32 pcf DELTA HEIGHT : NA INITIAL HEIGHT : 14.67 cm
 DRY DENSITY : 96.16 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.25 cm
 MOISTURE : 24.08 % CHAMBER PRES. : 7.54 psi

RESULTS:

	ϵ_a	σ_3 (psi)	σ_1 (psi)	σ_1/σ_3
1	0.00	0.00	0.00	0.00
2	0.87	7.54	8.19	1.09
3	1.73	7.54	9.05	1.2
4	2.60	7.54	9.46	1.25
5	3.46	7.54	9.86	1.31
6	4.33	7.54	10.47	1.39
7	5.20	7.54	10.86	1.44
8	10.39	7.54	12.44	1.65
9	15.59	7.54	13.82	1.83
10	20.78	7.54	14.99	1.99
11	25.98	7.54	16.12	2.14
12	31.17	7.54	16.7	2.21
13	34.64	7.54	16.66	2.21
14	43.30	7.54	15.58	2.07
15	51.95	7.54	14.25	1.89
16	60.61	7.54	13.12	1.74
17	69.27	7.54	12.1	1.6
18	77.93	7.54	11	1.46
19	86.59	7.54	9.79	1.3
20	95.25	7.54	8.38	1.11
21	103.91	7.54	6.82	0.9
22	112.57	7.54	5.17	0.68
23	121.23	7.54	3.48	0.46
24	129.89	7.54	1.76	0.23
25	138.54	7.54	0	0
26	147.20	7.54	-1.79	-0.24
27	155.86	7.54	-3.75	-0.5
28	164.52	7.54	-5.5	-0.73
29	173.18	7.54	-7.25	-0.96
30	181.84	7.54	-9.17	-1.22
31	190.50	7.54	-11.33	-1.5
32	199.16	7.54	-13.35	-1.77



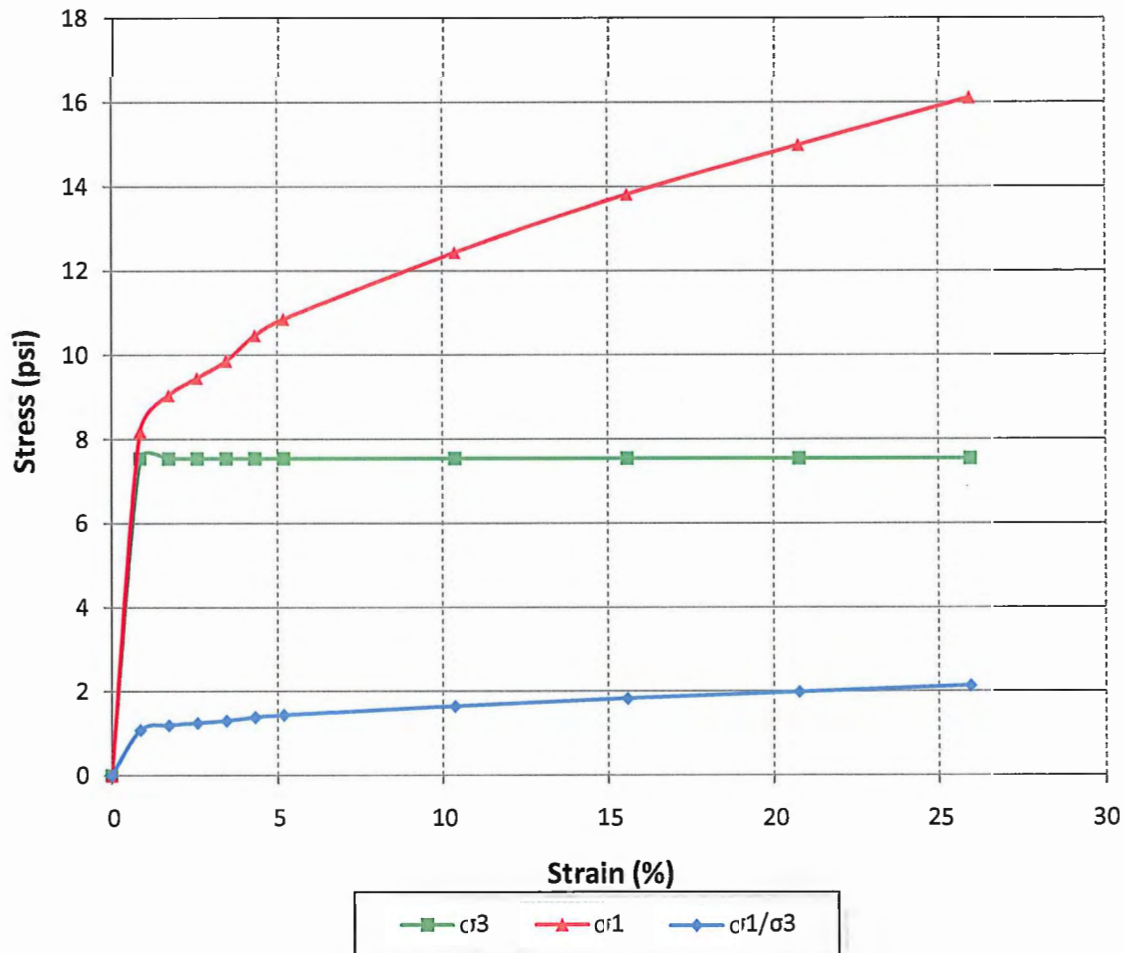
PROJECT NAME : I-85/I-385 Interchange
PROJECT # : 08195-01
PROJECT COUNTY : Greenville
PROJECT STATE : South Carolina
LABORATORY # : 08195-01
SUBMITTED BY : Florence & Hutcheson

POINT # : 1
SAMPLE LOC. : B-49
SAMPLE DEPTH : 8.5' to 9.0'
DATE TESTED : 10/29/12
DATE REPORTED : 11/01/12

FINAL MOISTURE : 24.08 %
FINAL HEIGHT : 11.75 cm
FINAL DIAMETER : 8.1 cm

EFF. CONS. STRESS : 7.54 psi
SPECIFIC GRAVITY : NA
COMMENTS : AASHTO T-296

RESULTS:





PROJECT NAME : I-85/I-385 Interchange
PROJECT # : 08195-01
PROJECT COUNTY : Greenville
PROJECT STATE : South Carolina
LABORATORY # : 08195-01
SUBMITTED BY : Florence & Hutcheson

SAMPLE LOC. : B-49
SAMPLE DEPTH : 8.5' to 9.0'
DATE TESTED : 10/29/12
DATE REPORTED : 11/01/12

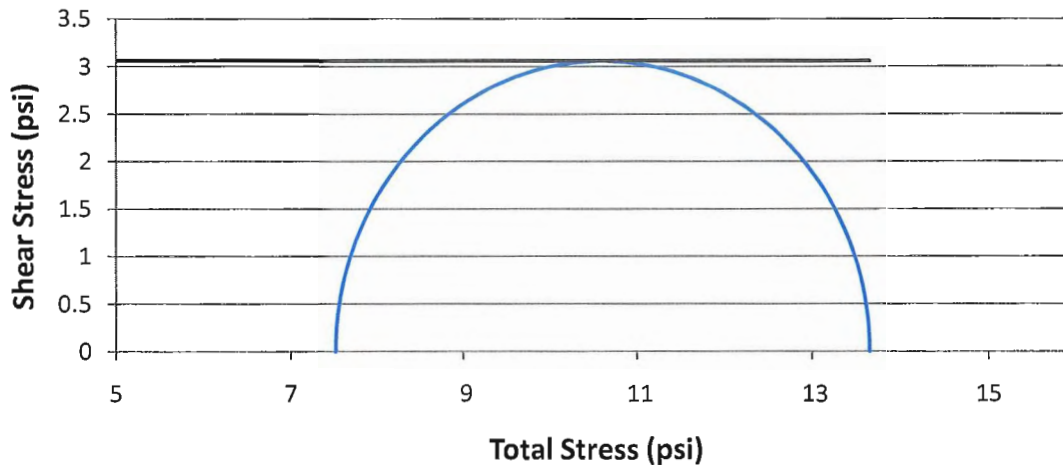
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

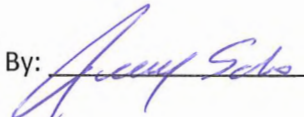
Test	Lateral	Total	Compressive Strength =	882 psf
1	7.54	13.66	Cohesion =	441 psf
			Phi =	0 deg
			Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles

Unconsolidated Undrained Triaxial Test



Approved By: 



PROJECT NAME	: I-85/I-385 Interchange	POINT #	: 1	Page 1 of 3
PROJECT #	: 08195-01	SAMPLE LOC.	: B-51	
PROJECT COUNTY	: Greenville	SAMPLE DEPTH	: 6.5' to 7.0'	
PROJECT STATE	: South Carolina	DATE TESTED	: 10/23/12	
LABORATORY #	: 08195-01	DATE REPORTED	: 10/30/12	
SUBMITTED BY	: Florence & Hutcheson			
SOIL TYPE	: Orange & Tan Silty Sand			
WET DENSITY	: 123.09 pcf	DELTA HEIGHT	: NA	INITIAL HEIGHT : 14.83 cm
DRY DENSITY	: 105.04 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER : 7.29 cm
MOISTURE	: 17.18 %	CHAMBER PRES.	: 6.05 psi	

RESULTS:

	ϵ_a	σ_3 (psi)	σ_1 (psi)	σ_1/σ_3
1	0.00	0.00	0.00	0.00
2	0.86	6.05	8.62	1.43
3	1.71	6.05	10.3	1.7
4	2.57	6.05	11.74	1.94
5	3.43	6.05	13.15	2.17
6	4.28	6.05	14.54	2.4
7	5.14	6.05	15.9	2.63
8	10.28	6.05	23.03	3.81
9	15.41	6.05	29.3	4.85
10	20.55	6.05	34.7	5.74
11	25.69	6.05	39.49	6.53
12	30.83	6.05	42.08	6.96
13	34.25	6.05	41.77	6.91
14	42.81	6.05	38.98	6.45
15	51.38	6.05	34.35	5.68
16	59.94	6.05	28.71	4.75
17	68.50	6.05	22.97	3.8
18	77.07	6.05	17.83	2.95
19	85.63	6.05	13.33	2.2
20	94.19	6.05	8.98	1.49



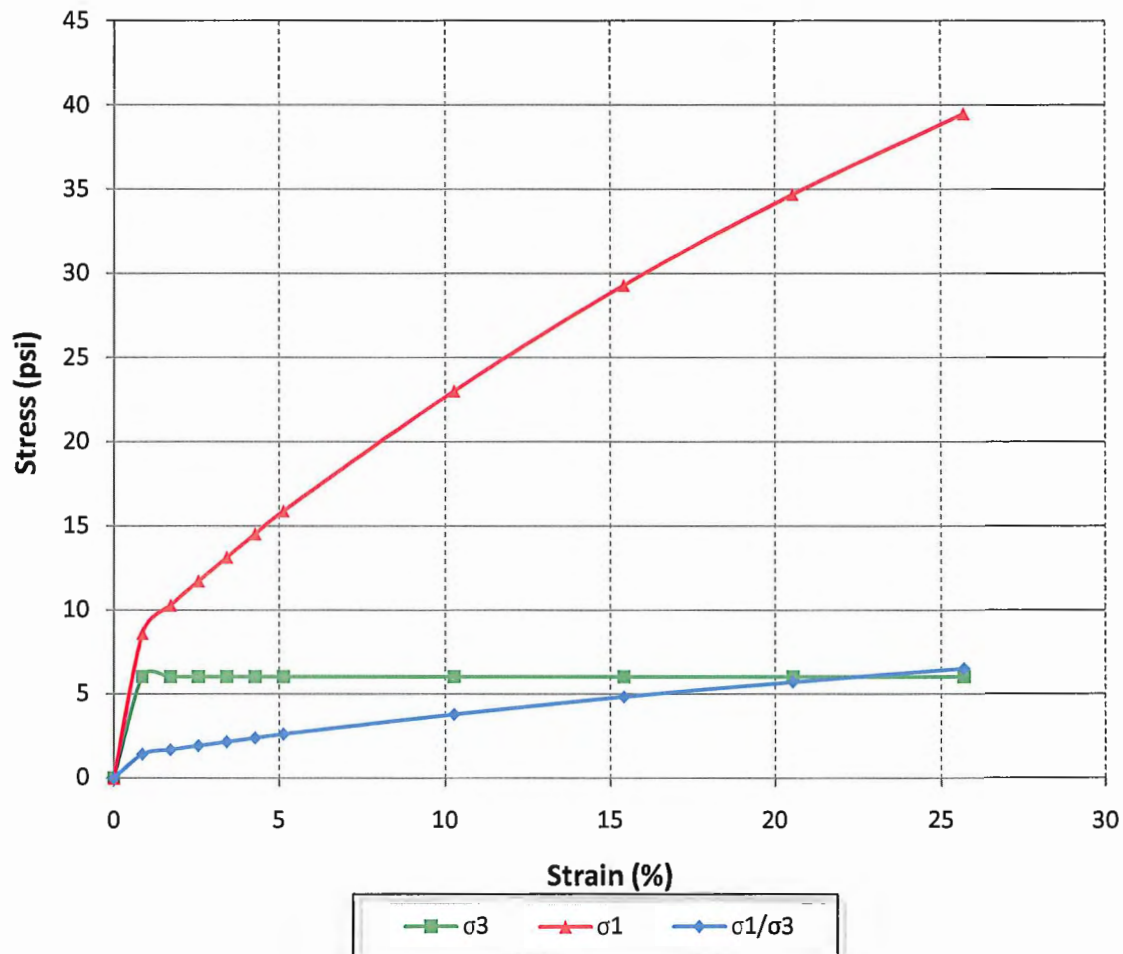
PROJECT NAME : I-85/I-385 Interchange
 PROJECT # : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY # : 08195-01
 SUBMITTED BY : Florence & Hutcheson

POINT # : 1
 SAMPLE LOC. : B-51
 SAMPLE DEPTH : 6.5' to 7.0'
 DATE TESTED : 10/23/12
 DATE REPORTED : 10/30/12

FINAL MOISTURE : 17.18 %
 FINAL HEIGHT : 11.91 cm
 FINAL DIAMETER : 8.13 cm

EFF. CONS. STRESS : 6.05 psi
 SPECIFIC GRAVITY : NA
 COMMENTS : AASHTO T-296

RESULTS:





PROJECT NAME : I-85/I-385 Interchange
 PROJECT # : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY # : 08195-01
 SUBMITTED BY : Florence & Hutcheson

SAMPLE LOC. : B-51
 SAMPLE DEPTH : 6.5' to 7.0'
 DATE TESTED : 10/23/12
 DATE REPORTED : 10/30/12

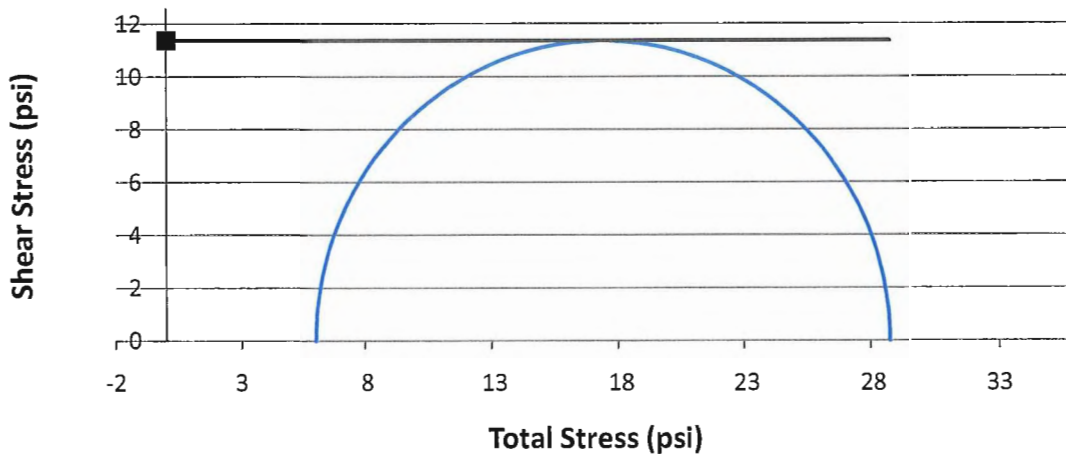
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total	Compressive Strength =	3276 psf
1	6.05	28.8	Cohesion =	1638 psf
			Phi =	0 deg
			Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles

Unconsolidated Undrained Triaxial Test



Approved By: *Amy Sob...*



PROJECT NAME : I-85/I-385 Interchange
 PROJECT # : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY # : 08195-01
 SUBMITTED BY : Florence & Hutcheson

POINT # : 1
 SAMPLE LOC. : B-61
 SAMPLE DEPTH : 2.0' to 2.5'
 DATE TESTED : 10/23/12
 DATE REPORTED : 10/30/12

SOIL TYPE : Red Silty Sand
 WET DENSITY : 125.08 pcf DELTA HEIGHT : NA INITIAL HEIGHT : 14.86 cm
 DRY DENSITY : 103.48 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.21 cm
 MOISTURE : 20.88 % CHAMBER PRES. : 2.26 psi

RESULTS:

	ϵ_a	σ_3 (psi)	σ_1 (psi)	σ_1/σ_3
1	0.00	0.00	0.00	0.00
2	0.85	2.26	3.14	1.39
3	1.71	2.26	3.79	1.67
4	2.56	2.26	4.85	2.14
5	3.42	2.26	5.68	2.51
6	4.27	2.26	6.71	2.97
7	5.13	2.26	7.3	3.23
8	10.25	2.26	12.39	5.48
9	15.38	2.26	16.98	7.51
10	20.51	2.26	21.08	9.32
11	25.63	2.26	23.02	10.18
12	30.76	2.26	23.64	10.45
13	34.18	2.26	23.56	10.42
14	42.72	2.26	22.49	9.94
15	51.27	2.26	20.05	8.86
16	59.81	2.26	17.32	7.66
17	68.36	2.26	14.49	6.41
18	76.90	2.26	11.24	4.97
19	85.45	2.26	8.03	3.55
20	93.99	2.26	4.69	2.07
21	102.53	2.26	1.21	0.54
22	111.08	2.26	-2.37	-1.05
23	119.62	2.26	-6.02	-2.66
24	128.17	2.26	-9.83	-4.35
25	136.71	2.26	-13.99	-6.18
26	145.26	2.26	-17.92	-7.92
27	153.80	2.26	-21.85	-9.66
28	162.35	2.26	-25.61	-11.3
29	170.89	2.26	-29.58	-13.1
30	179.44	2.26	-33.07	-14.6
31	187.98	2.26	-36.97	-16.3
32	196.53	2.26	-40.99	-18.1



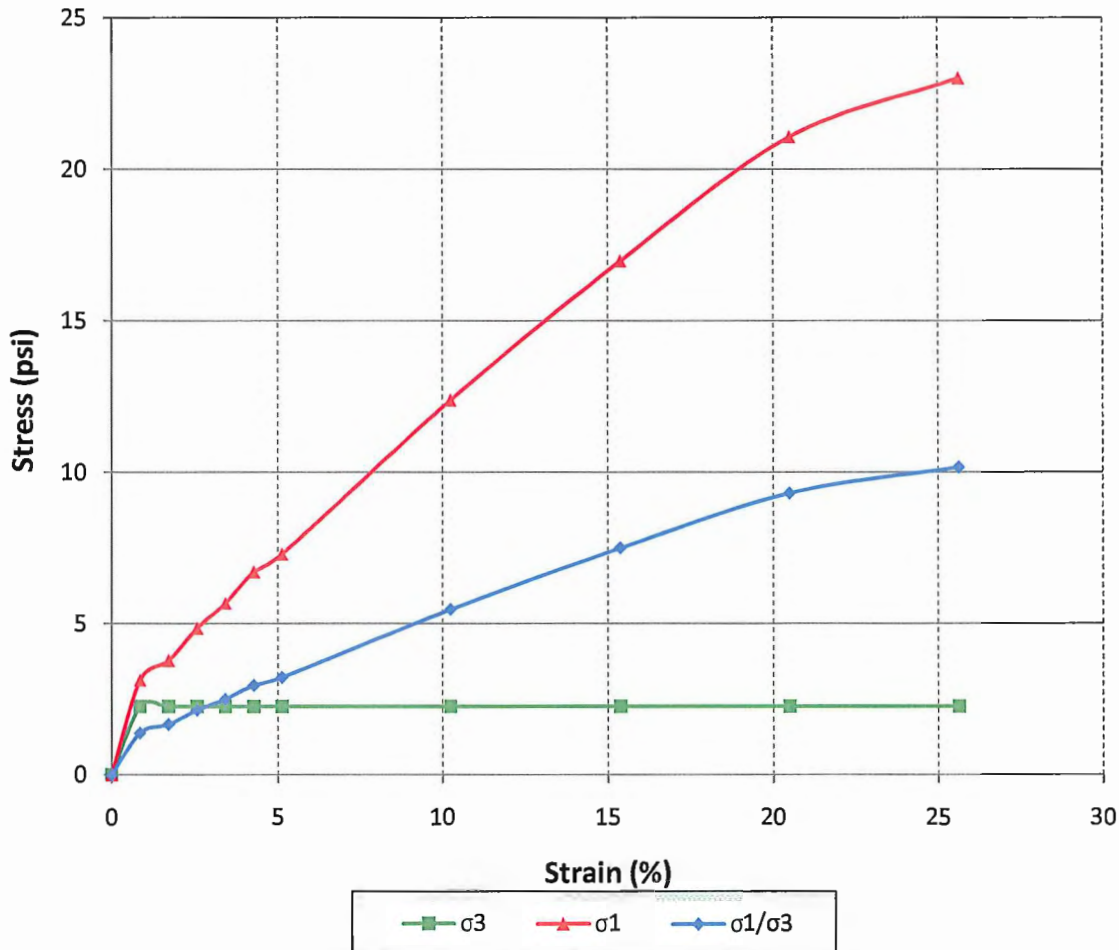
PROJECT NAME : I-85/I-385 Interchange
PROJECT # : 08195-01
PROJECT COUNTY : Greenville
PROJECT STATE : South Carolina
LABORATORY # : 08195-01
SUBMITTED BY : Florence & Hutcheson

POINT # : 1
SAMPLE LOC. : B-61
SAMPLE DEPTH : 2.0' to 2.5'
DATE TESTED : 10/23/12
DATE REPORTED : 10/30/12

FINAL MOISTURE : 20.88 %
FINAL HEIGHT : 11.94 cm
FINAL DIAMETER : 8.04 cm

EFF. CONS. STRESS : 2.26 psi
SPECIFIC GRAVITY : NA
COMMENTS : AASHTO T-296

RESULTS:





PROJECT NAME : I-85/I-385 Interchange
 PROJECT # : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY # : 08195-01
 SUBMITTED BY : Florence & Hutcheson

SAMPLE LOC. : B-61
 SAMPLE DEPTH : 2.0' to 2.5'
 DATE TESTED : 10/23/12
 DATE REPORTED : 10/30/12

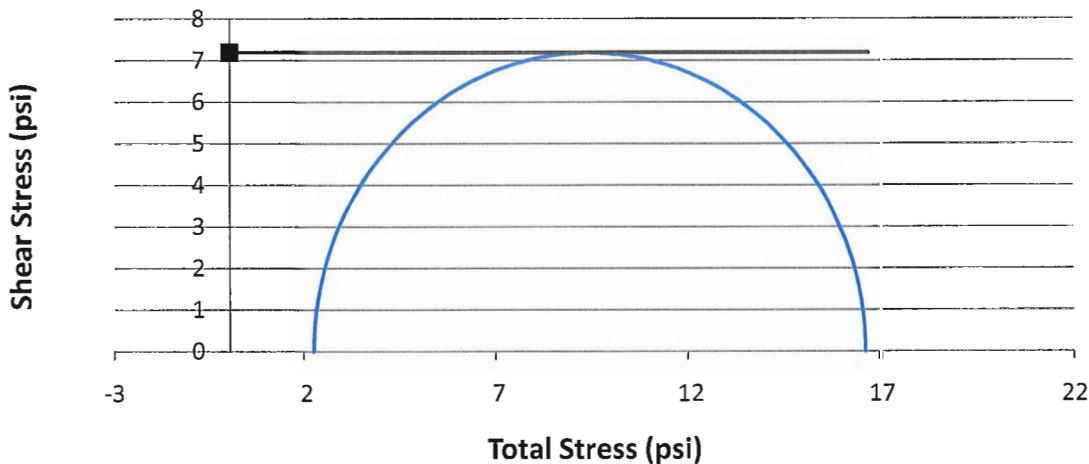
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total	Compressive Strength =	2071 psf
1	2.26	16.64	Cohesion =	1035 psf
			Phi =	0 deg
			Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles

Unconsolidated Undrained Triaxial Test



Approved By: *[Signature]*



PROJECT NAME : I-85/I-385 Interchange
 PROJECT # : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY # : 08195-01
 SUBMITTED BY : Florence & Hutcheson

POINT # : 1
 SAMPLE LOC. : B-64
 SAMPLE DEPTH : 4.5' to 5.0'
 DATE TESTED : 10/26/12
 DATE REPORTED : 10/30/12

SOIL TYPE : Red, Orange & Yellow Silty Sand
 WET DENSITY : 114.88 pcf DELTA HEIGHT : NA INITIAL HEIGHT : 14.71 cm
 DRY DENSITY : 92.73 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.3 cm
 MOISTURE : 23.89 % CHAMBER PRES. : 4.35 psi

RESULTS:

	ϵ_a	σ_3 (psi)	σ_1 (psi)	σ_1/σ_3
1	0.00	0.00	0.00	0.00
2	0.86	4.35	8.2	1.88
3	1.73	4.35	9.86	2.27
4	2.59	4.35	11.28	2.59
5	3.45	4.35	12.26	2.82
6	4.32	4.35	13.43	3.08
7	5.18	4.35	14.37	3.3
8	10.36	4.35	19.73	4.53
9	15.54	4.35	24	5.51
10	20.72	4.35	26.56	6.1
11	25.90	4.35	26.64	6.12
12	31.08	4.35	25.79	5.92
13	34.53	4.35	24.72	5.68
14	43.17	4.35	19.69	4.52
15	51.80	4.35	17.36	3.99
16	60.43	4.35	14.78	3.4
17	69.06	4.35	12.44	2.86



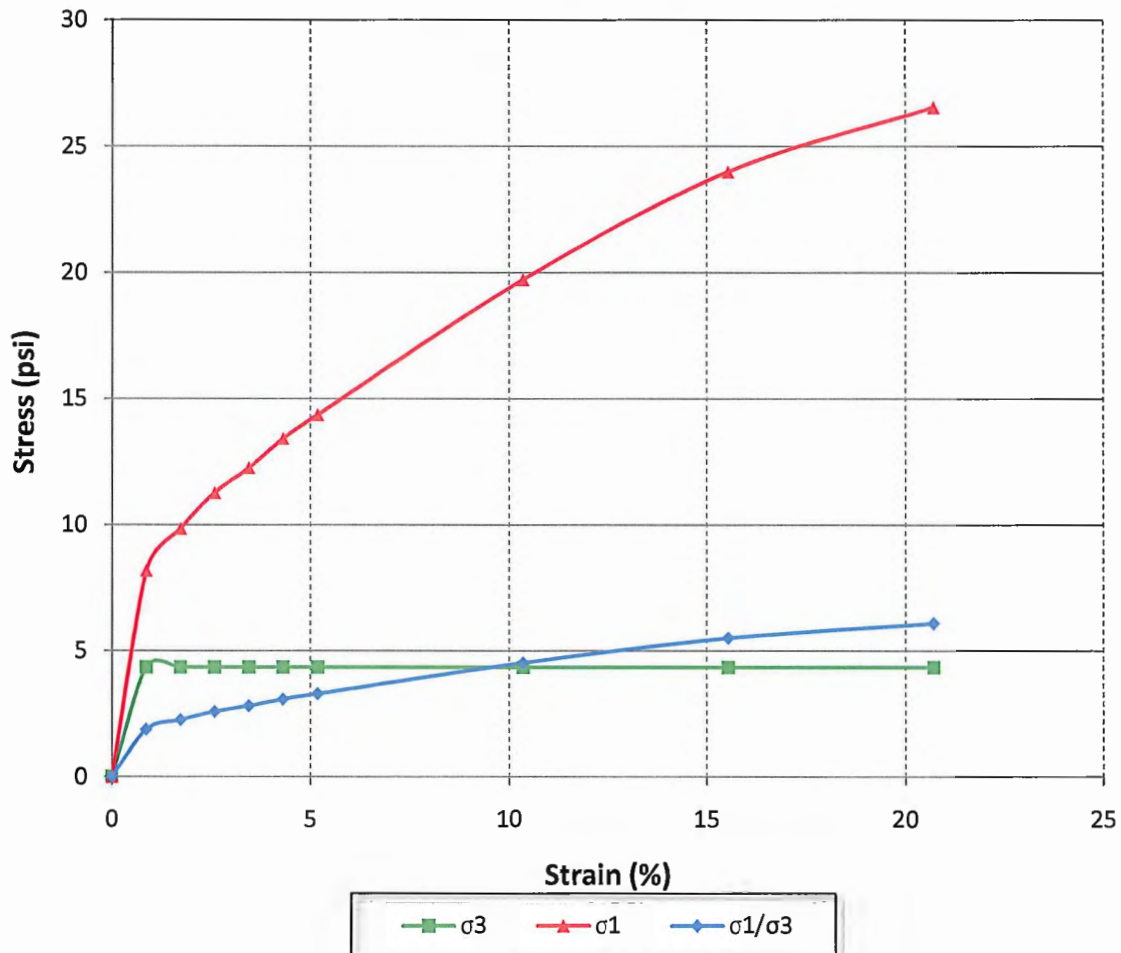
PROJECT NAME : I-85/I-385 Interchange
PROJECT # : 08195-01
PROJECT COUNTY : Greenville
PROJECT STATE : South Carolina
LABORATORY # : 08195-01
SUBMITTED BY : Florence & Hutcheson

POINT # : 1
SAMPLE LOC. : B-64
SAMPLE DEPTH : 4.5' to 5.0'
DATE TESTED : 10/26/12
DATE REPORTED : 10/30/12

FINAL MOISTURE : 23.89 %
FINAL HEIGHT : 11.79 cm
FINAL DIAMETER : 8.16 cm

EFF. CONS. STRESS : 4.35 psi
SPECIFIC GRAVITY : NA
COMMENTS : AASHTO T-296

RESULTS:





PROJECT NAME : I-85/I-385 Interchange
PROJECT # : 08195-01
PROJECT COUNTY : Greenville
PROJECT STATE : South Carolina
LABORATORY # : 08195-01
SUBMITTED BY : Florence & Hutcheson

SAMPLE LOC. : B-64
SAMPLE DEPTH : 4.5' to 5.0'
DATE TESTED : 10/26/12
DATE REPORTED : 10/30/12

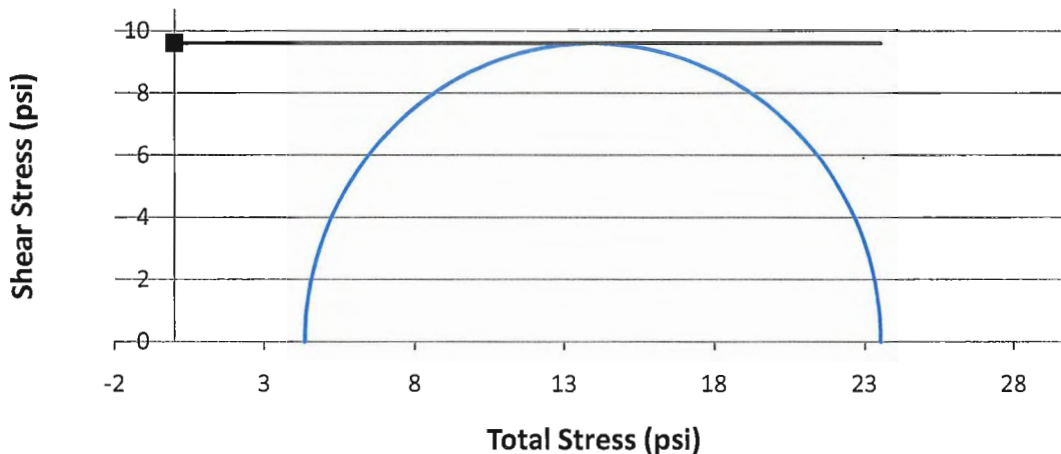
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

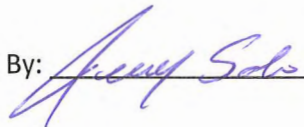
Test	Lateral	Total	Compressive Strength =	2765 psf
1	4.35	23.56	Cohesion =	1383 psf
			Phi =	0 deg
			Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles

Unconsolidated Undrained Triaxial Test



Approved By: 



PROJECT NAME	: I-85/I-385 Interchange	POINT #	: 1	Page 1 of 3
PROJECT #	: 08195-01	SAMPLE LOC.	: B-64	
PROJECT COUNTY	: Greenville	SAMPLE DEPTH	: 9.0' to 9.5'	
PROJECT STATE	: South Carolina	DATE TESTED	: 10/25/12	
LABORATORY #	: 08195-01	DATE REPORTED	: 10/30/12	
SUBMITTED BY	: Florence & Hutcheson			

SOIL TYPE	: Gray, Red, Orange & White Silty Sand				
WET DENSITY	: 108.21 pcf	DELTA HEIGHT	: NA	INITIAL HEIGHT	: 14.66 cm
DRY DENSITY	: 83.41 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.2 cm
MOISTURE	: 29.73 %	CHAMBER PRES.	: 7.14 psi		

RESULTS:

	ϵ_a	σ_3 (psi)	σ_1 (psi)	σ_1/σ_3
1	0.00	0.00	0.00	0.00
2	0.87	7.14	9.12	1.28
3	1.73	7.14	10.2	1.43
4	2.60	7.14	11.03	1.54
5	3.47	7.14	12.07	1.69
6	4.33	7.14	12.66	1.77
7	5.20	7.14	13.45	1.88
8	10.40	7.14	17.28	2.42
9	15.60	7.14	20.38	2.85
10	20.79	7.14	23.21	3.25
11	25.99	7.14	25.33	3.55
12	31.19	7.14	26.83	3.76
13	34.66	7.14	27.23	3.81
14	43.32	7.14	26.65	3.73
15	51.99	7.14	24.71	3.46
16	60.65	7.14	22.08	3.09
17	69.32	7.14	19.09	2.67
18	77.98	7.14	15.85	2.22
19	86.65	7.14	12.4	1.74
20	95.31	7.14	8.94	1.25
21	103.97	7.14	5.72	0.8



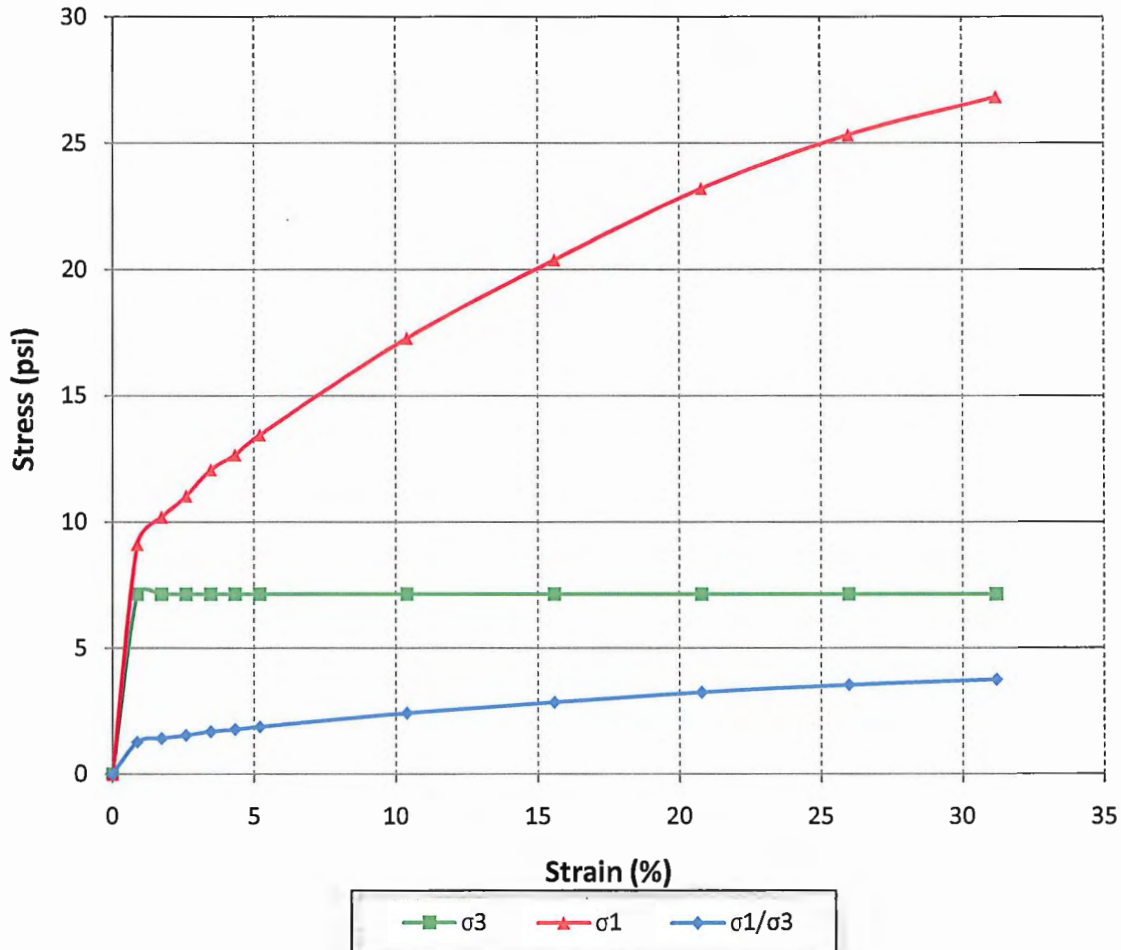
PROJECT NAME : I-85/I-385 Interchange
 PROJECT # : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY # : 08195-01
 SUBMITTED BY : Florence & Hutcheson

POINT # : 1
 SAMPLE LOC. : B-64
 SAMPLE DEPTH : 9.0' to 9.5'
 DATE TESTED : 10/25/12
 DATE REPORTED : 10/30/12

FINAL MOISTURE : 29.73 %
 FINAL HEIGHT : 11.74 cm
 FINAL DIAMETER : 8.05 cm

EFF. CONS. STRESS : 7.14 psi
 SPECIFIC GRAVITY : NA
 COMMENTS : AASHTO T-296

RESULTS:





PROJECT NAME : I-85/I-385 Interchange
 PROJECT # : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY # : 08195-01
 SUBMITTED BY : Florence & Hutcheson

SAMPLE LOC. : B-64
 SAMPLE DEPTH : 9.0' to 9.5'
 DATE TESTED : 10/25/12
 DATE REPORTED : 10/30/12

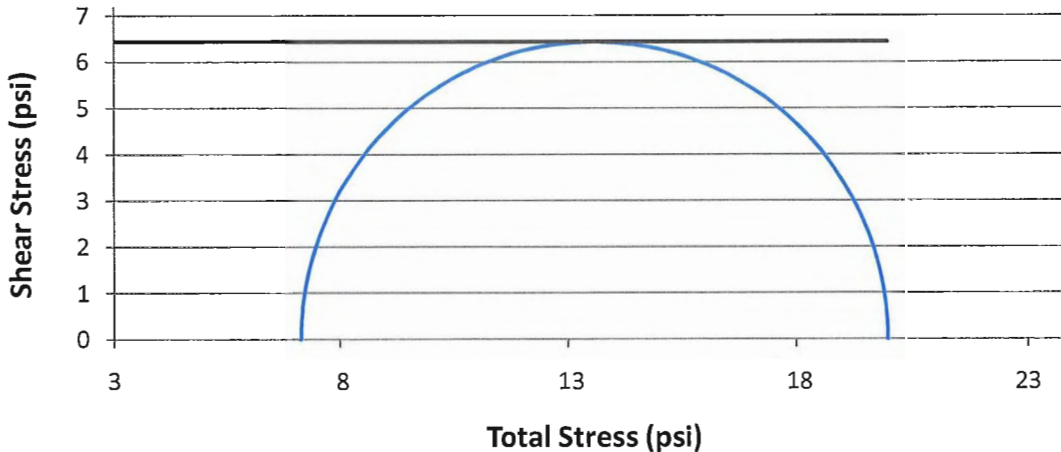
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES


Test	Lateral	Total	Compressive Strength =	1855 psf
1	7.14	20.03	Cohesion =	928 psf
			Phi =	0 deg
			Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles

Unconsolidated Undrained Triaxial Test



Approved By: 



PROJECT NAME : I-85/I-385 Interchange Page 1 of 3
 PROJECT # : 08195-01 POINT # : 1
 PROJECT COUNTY : Greenville SAMPLE LOC. : B-67
 PROJECT STATE : South Carolina SAMPLE DEPTH : 4.0' to 4.5'
 LABORATORY # : 08195-01 DATE TESTED : 10/26/12
 SUBMITTED BY : Florence & Hutcheson DATE REPORTED : 10/30/12

SOIL TYPE : Orange, Red & White
 WET DENSITY : 122.12 pcf DELTA HEIGHT : NA INITIAL HEIGHT : 14.99 cm
 DRY DENSITY : 100.54 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.21 cm
 MOISTURE : 21.47 % CHAMBER PRES. : 3.96 psi

RESULTS:

	ϵ_a	σ_3 (psi)	σ_1 (psi)	σ_1/σ_3
1	0.00	0.00	0.00	0.00
2	0.85	3.96	6.8	1.72
3	1.69	3.96	8.08	2.04
4	2.54	3.96	9.34	2.36
5	3.39	3.96	10.79	2.73
6	4.24	3.96	12.21	3.09
7	5.08	3.96	13.6	3.44
8	10.17	3.96	22.1	5.59
9	15.25	3.96	28.82	7.29
10	20.34	3.96	32.82	8.3
11	25.42	3.96	34.33	8.68
12	30.51	3.96	34.35	8.68
13	33.90	3.96	33.81	8.55
14	42.37	3.96	32.06	8.1
15	50.85	3.96	28.44	7.19
16	59.32	3.96	24.64	6.23
17	67.80	3.96	20.54	5.19
18	76.27	3.96	16.4	4.15
19	84.75	3.96	11.97	3.03
20	93.22	3.96	7.53	1.9
21	101.69	3.96	3.05	0.77
22	110.17	3.96	-1.49	-0.38
23	118.64	3.96	-6.04	-1.53
24	127.12	3.96	-10.52	-2.66
25	135.59	3.96	-14.9	-3.77
26	144.07	3.96	-19.48	-4.92
27	152.54	3.96	-23.66	-5.98
28	161.02	3.96	-27.94	-7.06



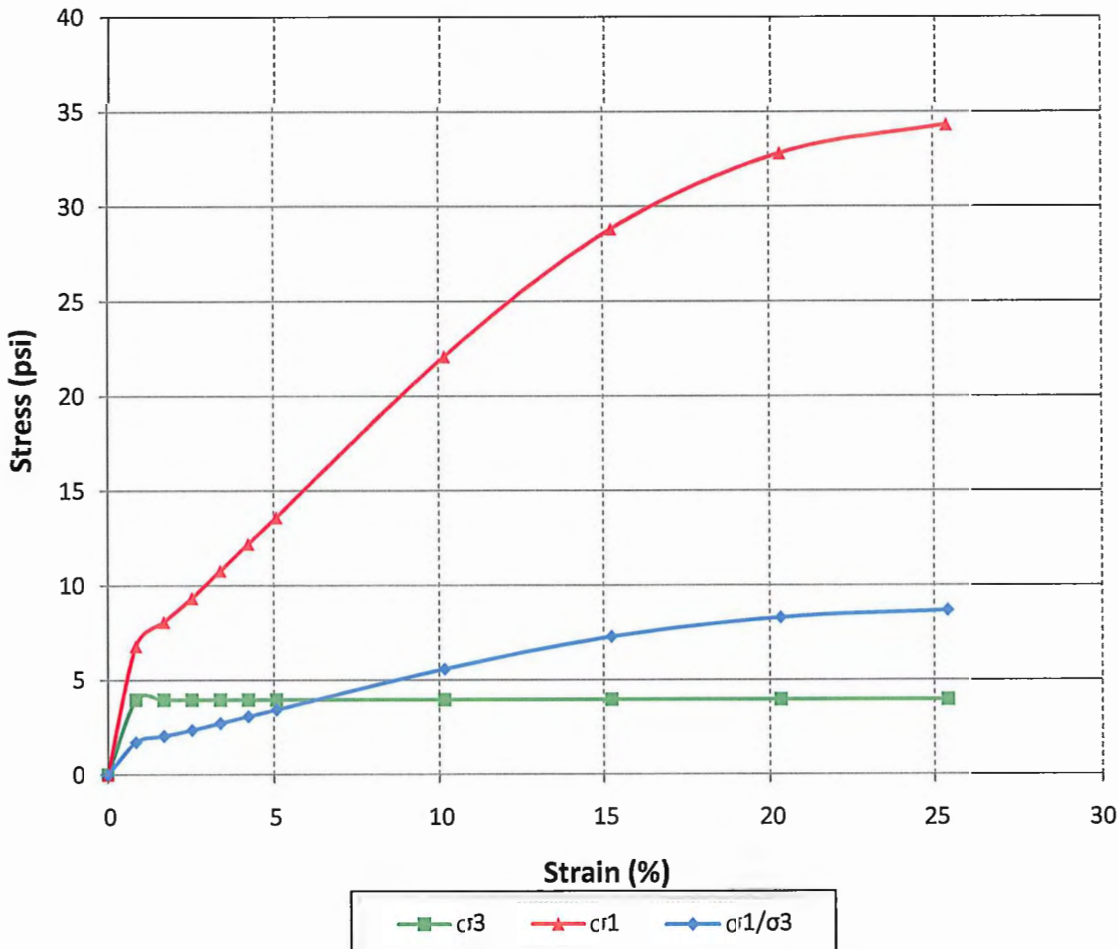
PROJECT NAME : I-85/I-385 Interchange
PROJECT # : 08195-01
PROJECT COUNTY : Greenville
PROJECT STATE : South Carolina
LABORATORY # : 08195-01
SUBMITTED BY : Florence & Hutcheson

POINT # : 1
SAMPLE LOC. : B-67
SAMPLE DEPTH : 4.0' to 4.5'
DATE TESTED : 10/26/12
DATE REPORTED : 10/30/12

FINAL MOISTURE : 21.47 %
FINAL HEIGHT : 12.07 cm
FINAL DIAMETER : 8.04 cm

EFF. CONS. STRESS : 3.96 psi
SPECIFIC GRAVITY : NA
COMMENTS : AASHTO T-296

RESULTS:





PROJECT NAME : I-85/I-385 Interchange
PROJECT # : 08195-01
PROJECT COUNTY : Greenville
PROJECT STATE : South Carolina
LABORATORY # : 08195-01
SUBMITTED BY : Florence & Hutcheson

SAMPLE LOC. : B-67
SAMPLE DEPTH : 4.0' to 4.5'
DATE TESTED : 10/26/12
DATE REPORTED : 10/30/12

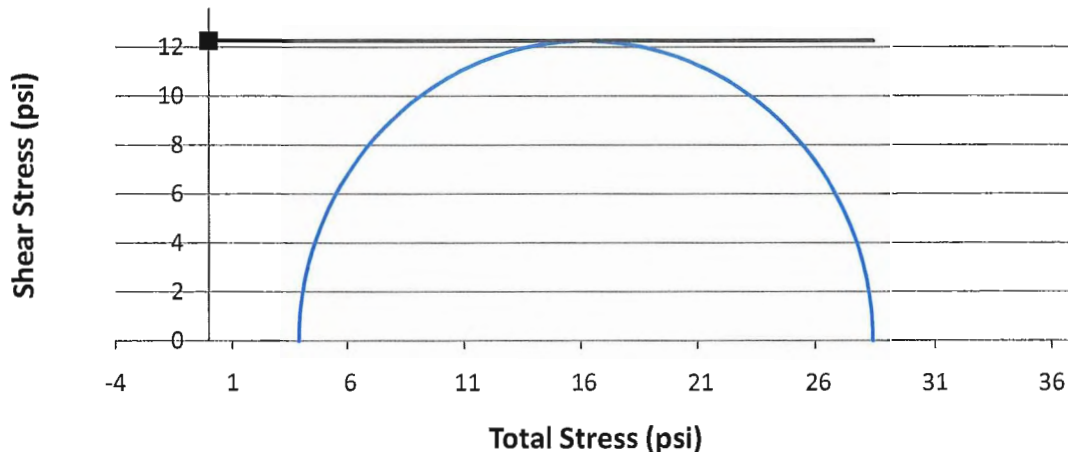
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total	Compressive Strength =	3532 psf
1	3.96	28.48	Cohesion =	1766 psf
			Phi =	0 deg
			Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles

Unconsolidated Undrained Triaxial Test



Approved By:



PROJECT NAME : I-85/I-385 Interchange Page 1 of 3
 PROJECT # : 08195-01 POINT # : 1
 PROJECT COUNTY : Greenville SAMPLE LOC. : B-68
 PROJECT STATE : South Carolina SAMPLE DEPTH : 2.0' to 2.5'
 LABORATORY # : 08195-01 DATE TESTED : 10/22/12
 SUBMITTED BY : Florence & Hutcheson DATE REPORTED : 10/30/12
 SOIL TYPE : Orange & Yellow Poorly Graded Sand with Silt
 WET DENSITY : 124.68 pcf DELTA HEIGHT : NA INITIAL HEIGHT : 15.05 cm
 DRY DENSITY : 100.83 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.27 cm
 MOISTURE : 23.65 % CHAMBER PRES. : 2.26 psi

RESULTS:

	ϵ_a	σ_3 (psi)	σ_1 (psi)	σ_1/σ_3
1	0.00	0.00	0.00	0.00
2	0.84	2.26	4.42	1.95
3	1.69	2.26	5.26	2.32
4	2.53	2.26	6.08	2.69
5	3.38	2.26	6.89	3.04
6	4.22	2.26	7.47	3.3
7	5.06	2.26	8.05	3.56
8	10.13	2.26	11.65	5.15
9	15.19	2.26	15.13	6.69
10	20.25	2.26	18.12	8.01
11	25.31	2.26	20.89	9.23
12	30.38	2.26	23.4	10.34
13	33.75	2.26	24.63	10.89
14	42.19	2.26	26.12	11.55
15	50.63	2.26	24.44	10.8
16	59.07	2.26	21.45	9.48
17	67.50	2.26	16.83	7.44
18	75.94	2.26	12.24	5.41
19	84.38	2.26	8.74	3.86
20	92.82	2.26	5.26	2.33
21	101.25	2.26	1.74	0.77
22	109.69	2.26	-1.74	-0.77



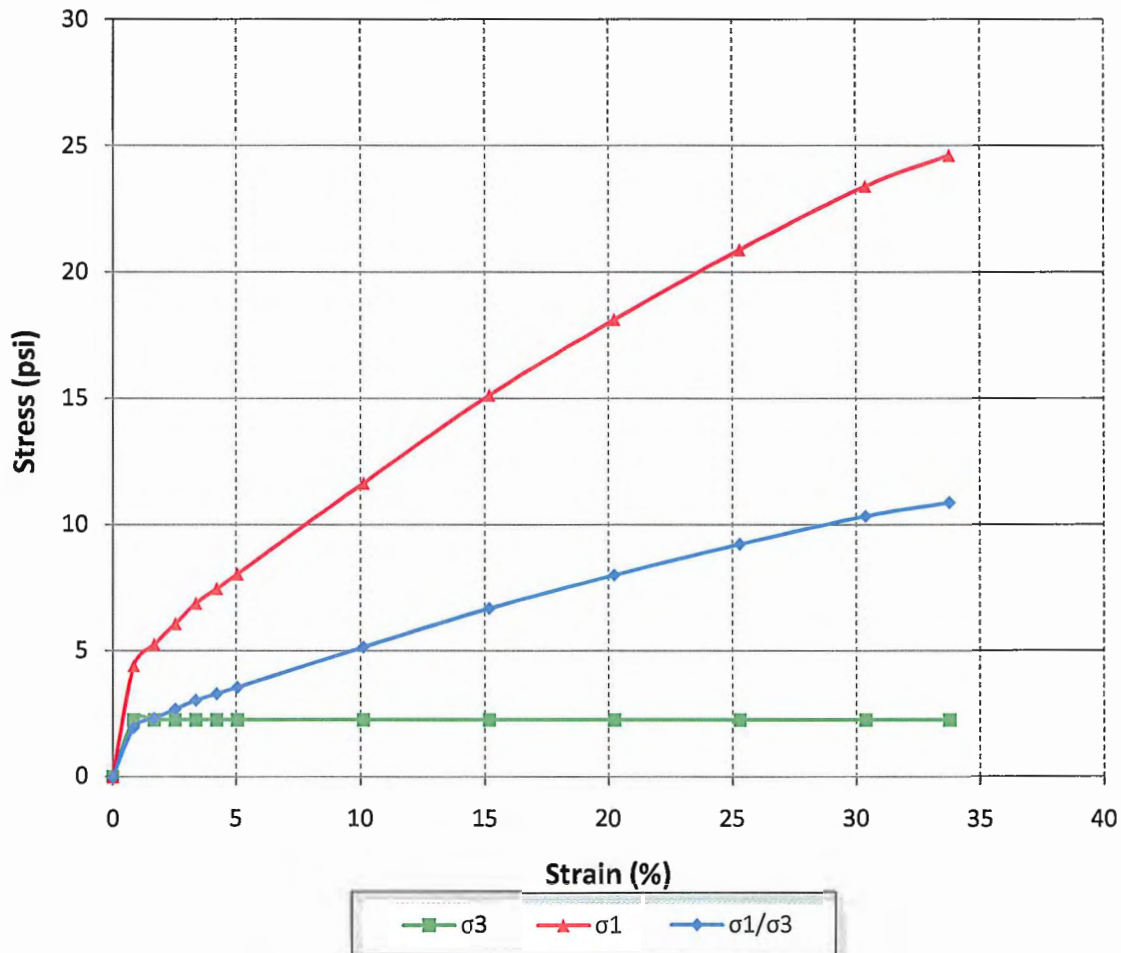
PROJECT NAME : I-85/I-385 Interchange
 PROJECT # : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY # : 08195-01
 SUBMITTED BY : Florence & Hutcheson

POINT # : 1
 SAMPLE LOC. : B-68
 SAMPLE DEPTH : 2.0' to 2.5'
 DATE TESTED : 10/22/12
 DATE REPORTED : 10/30/12

FINAL MOISTURE : 23.65 %
 FINAL HEIGHT : 12.13 cm
 FINAL DIAMETER : 8.1 cm

EFF. CONS. STRESS : 2.26 psi
 SPECIFIC GRAVITY : NA
 COMMENTS : AASHTO T-296

RESULTS:





PROJECT NAME : I-85/I-385 Interchange
PROJECT # : 08195-01
PROJECT COUNTY : Greenville
PROJECT STATE : South Carolina
LABORATORY # : 08195-01
SUBMITTED BY : Florence & Hutcheson

Page 3 of 3

SAMPLE LOC. : B-68
SAMPLE DEPTH : 2.0' to 2.5'
DATE TESTED : 10/22/12
DATE REPORTED : 10/30/12

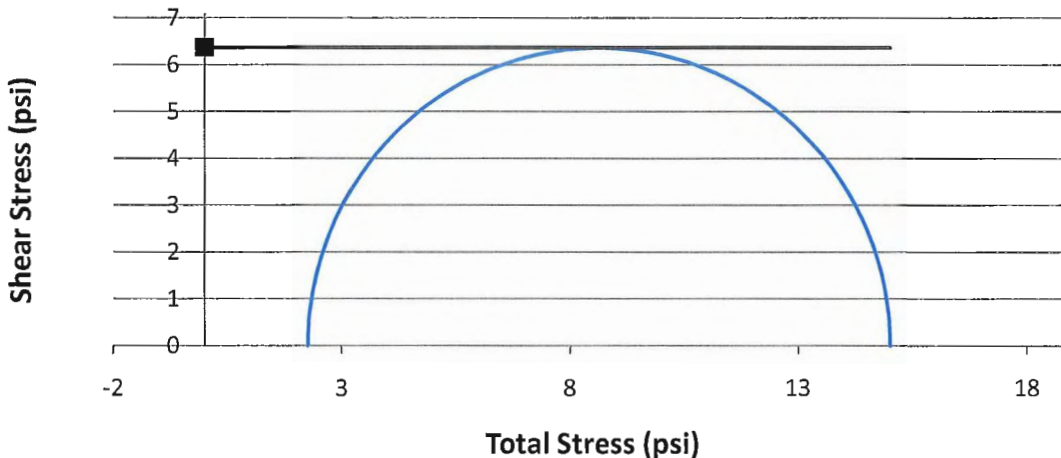
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

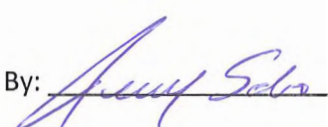
Test	Lateral	Total	Compressive Strength =	1834 psf
1	2.26	15	Cohesion =	917 psf
			Phi =	0 deg
			Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles

Unconsolidated Undrained Triaxial Test



Approved By: 

TRIAXIAL COMPRESSION TEST

PROJECT NAME : I-85/I-385 Interchange Page 1 of 3
 PROJECT # : 08195-01 POINT # : 1
 PROJECT COUNTY : Greenville SAMPLE LOC. : B-74
 PROJECT STATE : South Carolina SAMPLE DEPTH : 4.0' to 4.5'
 LABORATORY # : 08195-01 DATE TESTED : 10/30/12
 SUBMITTED BY : Florence & Hutcheson DATE REPORTED : 11/01/12

SOIL TYPE : Brown Sandy Silt
 WET DENSITY : 114.72 pcf DELTA HEIGHT : NA INITIAL HEIGHT : 14.76 cm
 DRY DENSITY : 86.21 pcf DELTA VOLUME : NA INITIAL DIAMETER : 7.18 cm
 MOISTURE : 33.07 % CHAMBER PRES. : 3.66 psi

RESULTS:

	ϵ_a	σ_3 (psi)	σ_1 (psi)	σ_1/σ_3
1	0.00	0.00	0.00	0.00
2	0.86	3.66	4.1	1.12
3	1.72	3.66	4.53	1.24
4	2.58	3.66	4.74	1.3
5	3.44	3.66	4.95	1.35
6	4.30	3.66	5.15	1.41
7	5.16	3.66	5.35	1.46
8	10.33	3.66	5.66	1.55
9	15.49	3.66	6.48	1.77
10	20.66	3.66	6.84	1.87
11	25.82	3.66	7.3	1.99
12	30.98	3.66	7.5	2.05
13	34.43	3.66	7.6	2.08
14	43.03	3.66	7.59	2.08
15	51.64	3.66	7.32	2
16	60.25	3.66	7.11	1.95
17	68.85	3.66	6.43	1.76
18	77.46	3.66	5.77	1.58
19	86.07	3.66	5.05	1.38
20	94.68	3.66	4.21	1.15
21	103.28	3.66	3.31	0.9
22	111.89	3.66	2.38	0.65
23	120.50	3.66	1.37	0.38
24	129.10	3.66	0.28	0.08
25	137.71	3.66	-0.55	-0.15
26	146.32	3.66	-1.51	-0.41
27	154.92	3.66	-2.83	-0.77
28	163.53	3.66	-3.84	-1.05
29	172.14	3.66	-4.86	-1.33
30	180.74	3.66	-5.7	-1.56
31	189.35	3.66	-6.7	-1.83
32	197.96	3.66	-7.91	-2.16



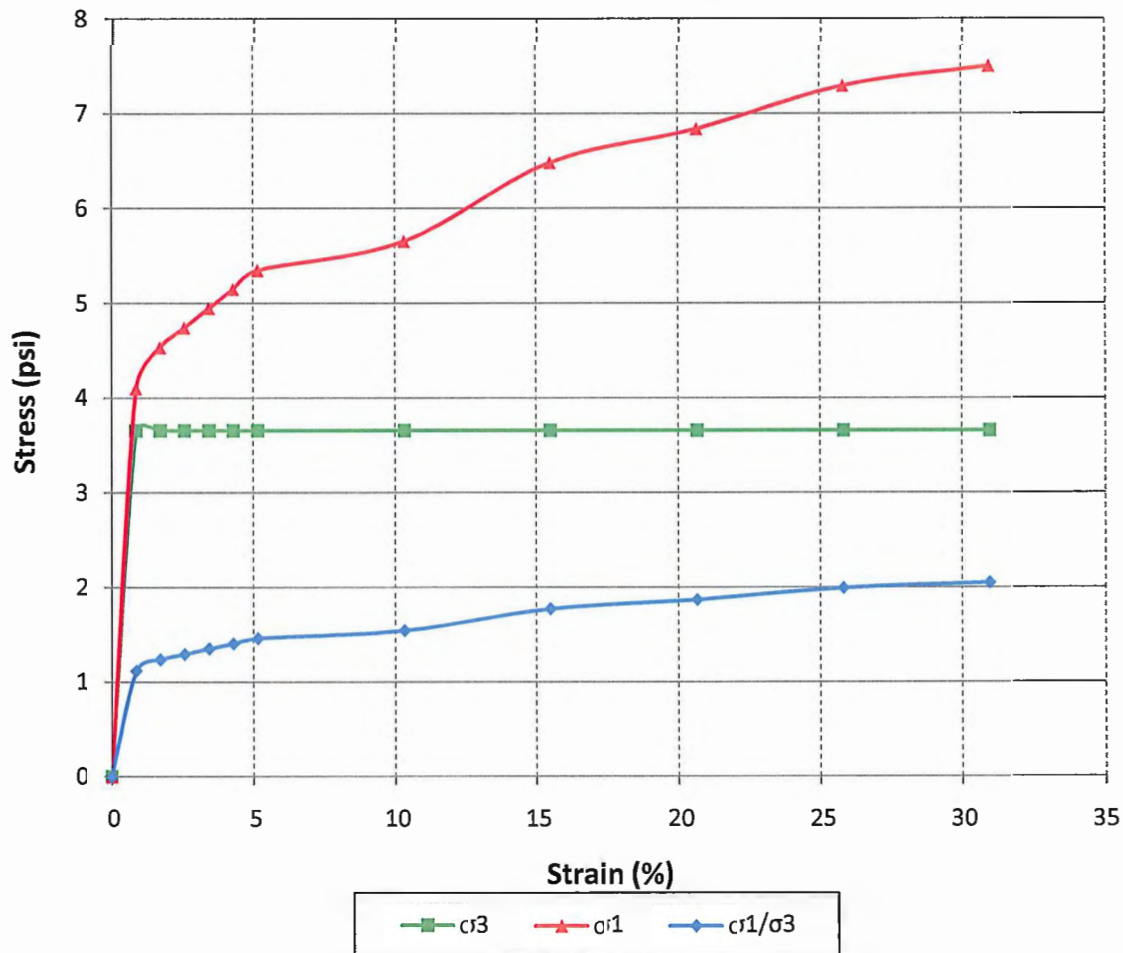
PROJECT NAME : I-85/I-385 Interchange
PROJECT # : 08195-01
PROJECT COUNTY : Greenville
PROJECT STATE : South Carolina
LABORATORY # : 08195-01
SUBMITTED BY : Florence & Hutcheson

POINT # : 1
SAMPLE LOC. : B-74
SAMPLE DEPTH : 4.0' to 4.5'
DATE TESTED : 10/30/12
DATE REPORTED : 11/01/12

FINAL MOISTURE : 33.07 %
FINAL HEIGHT : 11.83 cm
FINAL DIAMETER : 8.02 cm

EFF. CONS. STRESS : 3.66 psi
SPECIFIC GRAVITY : NA
COMMENTS : AASHTO T-296

RESULTS:





PROJECT NAME : I-85/I-385 Interchange
 PROJECT # : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY # : 08195-01
 SUBMITTED BY : Florence & Hutcheson

SAMPLE LOC. : B-74
 SAMPLE DEPTH : 4.0' to 4.5'
 DATE TESTED : 10/30/12
 DATE REPORTED : 11/01/12

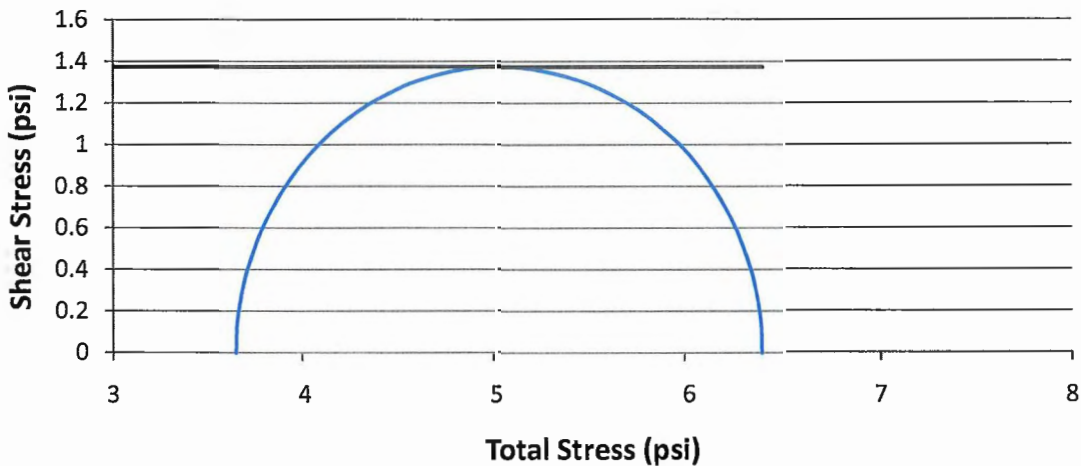
COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total	Compressive Strength =	396 psf
1	3.66	6.4	Cohesion =	198 psf
			Phi =	0 deg
			Tan (Phi) =	0

At Maximum Deviator Stress 15%

Triaxial Mohr's Circles

Unconsolidated Undrained Triaxial Test



Approved By: *Amy Soto*



Florence & Hutcheson

An **ICA** Company

Project Name : I-85/I-385 Interchange
Location : Greenville County, South Carolina
Job Number : 08195-01
Project Job No. : 08195-01

Unconfined Compression (Rock Core) Summary

Boring Number	Sample Number	Depth	Air-Dry Density (pcf)	Max Stress (psi)
B-1	RS-20	29.5-29.9	160.0	4597.7
B-2	RS-21	92.5-92.9	164.0	7391.1
B-3	RS-12	85.2-85.6	164.1	314.2
B-4	RS-15	28.2-28.6	160.2	8599.6
B-5	RS-16	17.2-17.6	166.7	9481.7
B-6	RS-13	48.4-48.7	165.8	8658.2
B-6	RS-14	55.5-55.9	163.1	11348.9
B-7	RS-18	47.2-47.5	161.5	9554.9
B-8	RS-4	29.1-29.4	158.8	8094.2
B-9	RS-3	57.2-57.6	161.4	7720.8
B-10	RS-2	81.3-81.7	159.4	1069.5
B-14	RS-6	104.6-104.9	168.5	1535.5
B-14	RS-7	90.9-91.3	165.0	5312.3
B-15	RS-5	30.3-30.7	165.7	10548.8
B-16	RS-1	113.6-113.9	116.9	3050.8
B-20	RS-8	52.4-52.8	170.8	4720.3
B-21	RS-11	72.2-72.6	157.5	2353.8
B-27	RS-10	101.3-101.7	164.2	1517.1
B-28	RS-17	35.8-36.1	162.6	7111.2
B-30	RS-9	72.4-72.7	161.4	7352.8
B-31	RS-19	77-77.4	174.4	6448.8
B-45	RS-24	19.5-19.9	157.4	2157.4
B-45	RS-25	28.4-28.7	163.4	5337.9
B-45	RS-26	32.7-33	165.4	4408.8
B-65	RS-23	20.9-21.2	166.1	5751.6
B-67	RS-22	33.5-33.8	163.8	3377.1



Florence & Hutcheson

An **ICA** Company

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I-85/I-385 Interchange	SAMPLE NO. : RS-20
PROJECT NO. : 08195-01	SAMPLE LOC. : B-1
PROJECT COUNTY : Greenville	SAMPLE DEPTH : 29.5' to 29.9'
PROJECT STATE : South Carolina	DATE TESTED : 11/07/12
LABORATORY NO. : 08195-01	DATE REPORTED : 11/14/12
SUBMITTED BY : Florence & Hutcheson	

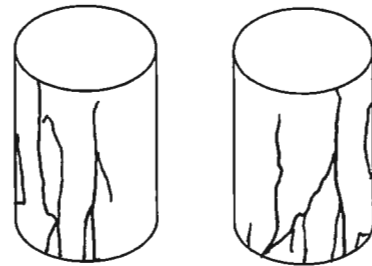
ROCK DESCRIPTION : Feldspar quartz biotite gneiss, sli. withd

Diameter : 1.98 in
Height : 4.00 in

Area : 3.09 in²
Volume : 0.00715 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	160.03	lbs/ft. ³
Maximum Stress :	4597.7	psi
Elapsed Time :	5:20	min.
Rate of Loading :	50.0	lb/sec



Comments :

Approved By : *Jenny Sabo*



Florence & Hutcheson

An **ICA** Company

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I-85/I-385 Interchange	SAMPLE NO. : RS-21
PROJECT NO. : 08195-01	SAMPLE LOC. : B-2
PROJECT COUNTY : Greenville	SAMPLE DEPTH : 92.5' to 92.9'
PROJECT STATE : South Carolina	DATE TESTED : 11/07/12
LABORATORY NO. : 08195-01	DATE REPORTED : 11/14/12
SUBMITTED BY : Florence & Hutcheson	

ROCK DESCRIPTION : Feldspar quartz biotite gneiss, shistose, med. crystalline, sli. wthd

Diameter : 1.98 in

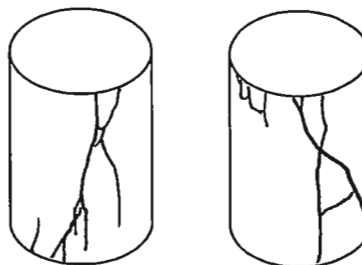
Area : 3.09 in²

Height : 4.05 in

Volume : 0.00724 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	163.97	lbs/ft. ³
Maximum Stress :	7391.1	psi
Elapsed Time :	6:37	min.
Rate of Loading :	80.0	lb/sec



Comments :

Approved By :



Florence & Hutcheson

An **ICA** Company

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I85 / I385 Interchange

PROJECT NO. : 08195-01

PROJECT COUNTY : Greenville

PROJECT STATE : South Carolina

LABORATORY NO. : 08195-01

SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-12

SAMPLE LOC. : B-3

SAMPLE DEPTH : 85.2' to 85.6'

DATE TESTED : 07/31/12

DATE REPORTED : 08/07/12

ROCK DESCRIPTION : Feldspar Quartz Biotite Gneiss w/part. Healed jt. Mod. Wthd

Diameter : 1.98 in

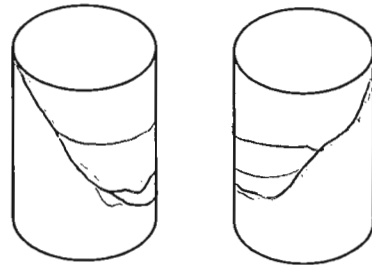
Height : 3.96 in

Area : 3.09 in²

Volume : 0.00707 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	164.13	lbs/ft. ³
Maximum Stress :	314.2	psi
Elapsed Time :	1:08	min.
Rate of Loading :	20	lb/sec



Comments :

Approved By :



Florence & Hutcheson

An **ICA** Company

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I85 / I385 Interchange

PROJECT NO. : 08195-01

PROJECT COUNTY : Greenville

PROJECT STATE : South Carolina

LABORATORY NO. : 08195-01

SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-15

SAMPLE LOC. : B-4

SAMPLE DEPTH : 28.2' to 28.6'

DATE TESTED : 07/31/12

DATE REPORTED : 08/07/12

ROCK DESCRIPTION : Feldspar Quartz Pegmatite Fresh

Diameter : 1.99 in

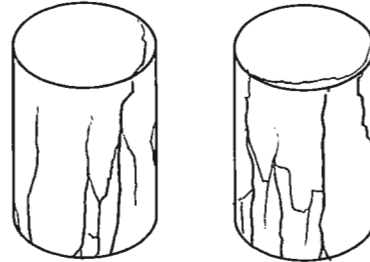
Height : 4.08 in

Area : 3.11 in²

Volume : 0.00733 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	160.2	lbs/ft. ³
Maximum Stress :	8599.6	psi
Elapsed Time :	6:23	min.
Rate of Loading :	90	lb/sec



Comments :

Approved By :



UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I85 / I385 Interchange

PROJECT NO. : 08195-01

PROJECT COUNTY : Greenville

PROJECT STATE : South Carolina

LABORATORY NO. : 08195-01

SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-16

SAMPLE LOC. : B-5

SAMPLE DEPTH : 17.2' to 17.6'

DATE TESTED : 7/31/2012

DATE REPORTED : 8/7/2012

ROCK DESCRIPTION : Feldspar Quartz Biotite Gneiss Fresh

Diameter : 1.99 in

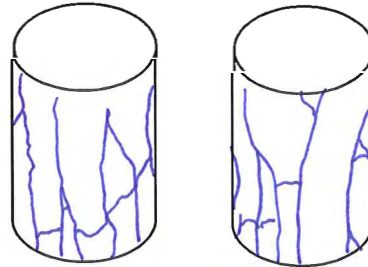
Height : 4.10 in

Area : 3.12 in²

Volume : 0.00739 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	166.65	lbs/ft. ³
Maximum Stress :	9481.7	psi
Elapsed Time :	6:15	min.
Rate of Loading :	90	lb/sec



Comments :

Approved By : *[Signature]*



Florence & Hutcheson

An **ICA** Company

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I85 / I385 Interchange

PROJECT NO. : 08195-01

PROJECT COUNTY : Greenville

PROJECT STATE : South Carolina

LABORATORY NO. : 08195-01

SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-13

SAMPLE LOC. : B-6

SAMPLE DEPTH : 48.4' to 48.7'

DATE TESTED : 07/31/12

DATE REPORTED : 08/07/12

ROCK DESCRIPTION : Feldspar Quartz Augite Gneiss Fresh

Diameter : 1.99 in

Height : 4.08 in

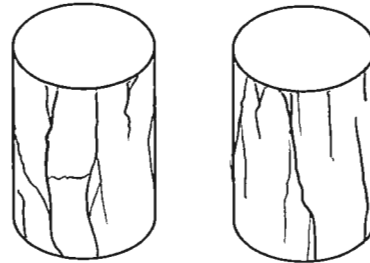
Area : 3.10 in²

Volume : 0.00732 ft³

RESULTS :

Moisture Air-Dry : NA
Air-Dry Density : 165.79 lbs/ft.³

Maximum Stress : 8658.2 psi
Elapsed Time : 7:25 min.
Rate of Loading : 80 lb/sec



Comments :

Approved By :



Florence & Hutcheson

An **ICA** Company

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I85 / I385 Interchange

PROJECT NO. : 08195-01

PROJECT COUNTY : Greenville

PROJECT STATE : South Carolina

LABORATORY NO. : 08195-01

SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-14

SAMPLE LOC. : B-6

SAMPLE DEPTH : 55.5' to 55.9'

DATE TESTED : 07/31/12

DATE REPORTED : 08/07/12

ROCK DESCRIPTION : Feldspar Quartz Granitoid Rock Fresh

Diameter : 1.99 in

Height : 4.04 in

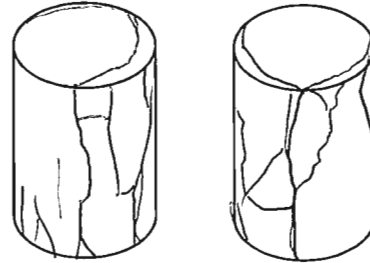
Area : 3.11 in²

Volume : 0.00728 ft³

RESULTS :

Moisture Air-Dry : NA
 Air-Dry Density : 163.1 lbs/ft.³

Maximum Stress : 11348.9 psi
 Elapsed Time : 8:05 min.
 Rate of Loading : 100 lb/sec



Comments :

Approved By :



Florence & Hutcheson

An **ICA** Company

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I-85/I-385 Interchange	SAMPLE NO. : RS-18
PROJECT NO. : 08195-01	SAMPLE LOC. : B-7
PROJECT COUNTY : Greenville	SAMPLE DEPTH : 47.2' to 47.5'
PROJECT STATE : South Carolina	DATE TESTED : 11/07/12
LABORATORY NO. : 08195-01	DATE REPORTED : 11/14/12
SUBMITTED BY : Florence & Hutcheson	

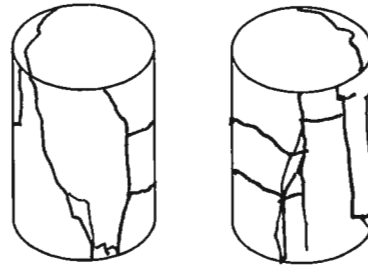
ROCK DESCRIPTION : Feldspar quartz granitoid rock, fresh

Diameter : 1.98 in
Height : 4.04 in

Area : 3.08 in²
Volume : 0.00721 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	161.45	lbs/ft. ³
Maximum Stress :	9554.9	psi
Elapsed Time :	7:20	min.
Rate of Loading :	70.0	lb/sec



Comments :

Approved By :



Florence & Hutcheson

CONSULTING ENGINEERS

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I85 / I385 Interchange

PROJECT NO. : 08195-01

PROJECT COUNTY : Greenville

PROJECT STATE : South Carolina

LABORATORY NO. : 08195-01

SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-4

SAMPLE LOC. : B-8

SAMPLE DEPTH : 29.1' to 29.4'

DATE TESTED : 2/27/2012

DATE REPORTED : 2/29/2012

ROCK DESCRIPTION : Feldspar quartz augite schist fresh

Diameter : 1.97 in

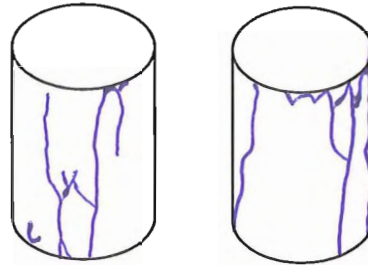
Height : 4.15 in

Area : 3.06 in²

Volume : 0.00733 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	158.76	lbs/ft. ³
Maximum Stress :	8094.2	psi
Elapsed Time :	9:02	min.
Strain :	1.76	%



Comments :

Approved By :



Florence & Hutcheson

CONSULTING ENGINEERS

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I85 / I385 Interchange

PROJECT NO. : 08195-01

PROJECT COUNTY : Greenville

PROJECT STATE : South Carolina

LABORATORY NO. : 08195-01

SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-3

SAMPLE LOC. : B-9

SAMPLE DEPTH : 57.2' to 57.6'

DATE TESTED : 2/27/2012

DATE REPORTED : 2/29/2012

ROCK DESCRIPTION : Feldspar quartz augite schist slight wthd

Diameter : 1.99 in

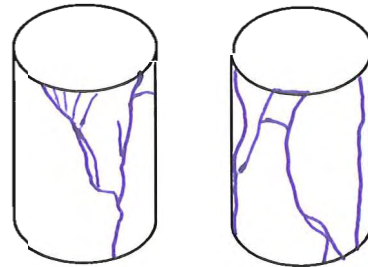
Height : 4.00 in

Area : 3.12 in²

Volume : 0.00721 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	161.43	lbs/ft. ³
Maximum Stress :	7720.8	psi
Elapsed Time :	11:40	min.
Strain :	1.83	%



Comments :

Approved By :



Florence & Hutcheson

CONSULTING ENGINEERS

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I85 / I385 Interchange

PROJECT NO. : 08195-01

PROJECT COUNTY : Greenville

PROJECT STATE : South Carolina

LABORATORY NO. : 08195-01

SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-2

SAMPLE LOC. : B-10

SAMPLE DEPTH : 81.3' to 81.7'

DATE TESTED : 2/27/2012

DATE REPORTED : 2/29/2012

ROCK DESCRIPTION : Feldspar quartz pegmatite slight withd

Diameter : 1.99 in

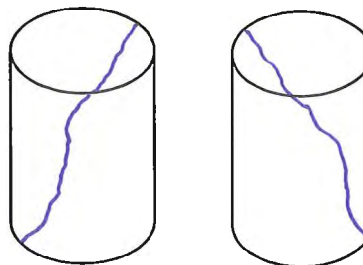
Height : 3.98 in

Area : 3.12 in²

Volume : 0.0072 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	159.36	lbs/ft. ³
Maximum Stress :	1069.5	psi
Elapsed Time :	2:06	min.
Strain :	1.83	%



Comments :

Approved By :



Florence & Hutcheson

CONSULTING ENGINEERS

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I85 / I385 Interchange

PROJECT NO. : 08195-01

PROJECT COUNTY : Greenville

PROJECT STATE : South Carolina

LABORATORY NO. : 08195-01

SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-6

SAMPLE LOC. : B-14

SAMPLE DEPTH : 104.6' to 104.9'

DATE TESTED : 2/27/2012

DATE REPORTED : 2/29/2012

ROCK DESCRIPTION : Augite quartz schist mod wthd

Diameter : 1.97 in

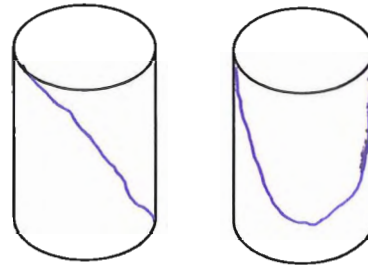
Height : 3.98 in

Area : 3.04 in²

Volume : 0.007 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	168.5	lbs/ft. ³
Maximum Stress :	1535.5	psi
Elapsed Time :	1:50	min.
Strain :	1.83	%



Comments :

Approved By :



Florence & Hutcheson

CONSULTING ENGINEERS

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I85 / I385 Interchange

PROJECT NO. : 08195-01

PROJECT COUNTY : Greenville

PROJECT STATE : South Carolina

LABORATORY NO. : 08195-01

SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-7

SAMPLE LOC. : B-14

SAMPLE DEPTH : 90.9' to 91.3'

DATE TESTED : 2/27/2012

DATE REPORTED : 2/29/2012

ROCK DESCRIPTION : Feldspar quartz sillimanite schist slight wthd

Diameter : 1.96 in

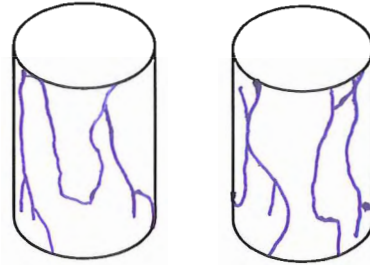
Height : 4.01 in

Area : 3.02 in²

Volume : 0.007 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	164.97	lbs/ft. ³
Maximum Stress :	5312.3	psi
Elapsed Time :	6:53	min.
Strain :	1.82	%



Comments :

Approved By :



Florence & Hutcheson

CONSULTING ENGINEERS

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I85 / I385 Interchange

PROJECT NO. : 08195-01

PROJECT COUNTY : Greenville

PROJECT STATE : South Carolina

LABORATORY NO. : 08195-01

SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-5

SAMPLE LOC. : B-15

SAMPLE DEPTH : 30.3' to 30.7'

DATE TESTED : 2/27/2012

DATE REPORTED : 2/29/2012

ROCK DESCRIPTION : Feldspar quartz bitite gneiss slight wthd

Diameter : 1.99 in

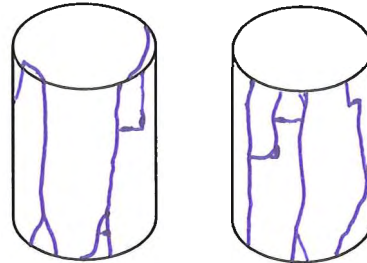
Height : 4.14 in

Area : 3.12 in²

Volume : 0.00747 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	165.68	lbs/ft. ³
Maximum Stress :	10548.8	psi
Elapsed Time :	10:31	min.
Strain :	1.76	%



Comments :

Approved By :



Florence & Hutcheson

CONSULTING ENGINEERS

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I85 / I385 Interchange

PROJECT NO. : 08195-01

PROJECT COUNTY : Greenville

PROJECT STATE : South Carolina

LABORATORY NO. : 08195-01

SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-1

SAMPLE LOC. : B-16

SAMPLE DEPTH : 113.6' to 113.9'

DATE TESTED : 2/27/2012

DATE REPORTED : 2/29/2012

ROCK DESCRIPTION : Muscovite quartz schist fresh

Diameter : 1.99 in

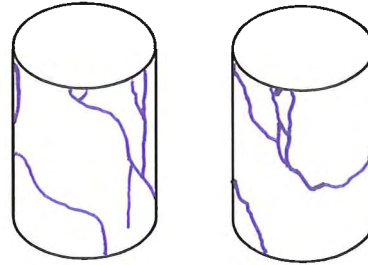
Height : 3.91 in

Area : 3.11 in²

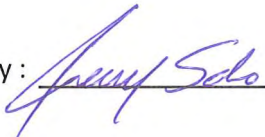
Volume : 0.00704 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	166.86	lbs/ft. ³
Maximum Stress :	3050.8	psi
Elapsed Time :	5:53	min.
Strain :	1.87	%



Comments :

Approved By : 



Florence & Hutcheson

CONSULTING ENGINEERS

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I85 / I385 Interchange
 PROJECT NO. : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY NO. : 08195-01
 SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-8
 SAMPLE LOC. : B-20
 SAMPLE DEPTH : 52.4' to 52.8'
 DATE TESTED : 2/27/2012
 DATE REPORTED : 2/29/2012

ROCK DESCRIPTION : Quartz augite schist fresh

Diameter : 1.99 in

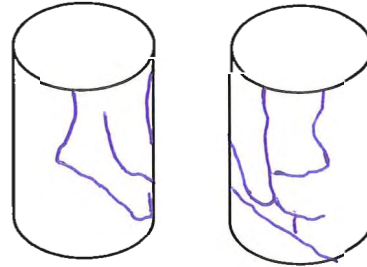
Height : 3.94 in

Area : 3.11 in²

Volume : 0.00708 ft³

RESULTS :

Moisture Air-Dry : NA
 Air-Dry Density : 170.8 lbs/ft.³
 Maximum Stress : 4720.3 psi
 Elapsed Time : 5:21 min.
 Strain : 1.85 %



Comments :

Approved By :



Florence & Hutcheson

CONSULTING ENGINEERS

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I85 / I385 Interchange

PROJECT NO. : 08195-01

PROJECT COUNTY : Greenville

PROJECT STATE : South Carolina

LABORATORY NO. : 08195-01

SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-11

SAMPLE LOC. : B-21

SAMPLE DEPTH : 72.2' to 72.6'

DATE TESTED : 2/27/2012

DATE REPORTED : 2/29/2012

ROCK DESCRIPTION : Feldspar quartz pegmatite slight wthd

Diameter : 1.99 in

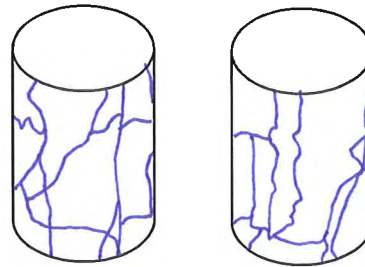
Height : 4.06 in

Area : 3.11 in²

Volume : 0.00729 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	157.48	lbs/ft. ³
Maximum Stress :	2353.8	psi
Elapsed Time :	3:13	min.
Strain :	1.80	%



Comments :

Approved By :



Florence & Hutcheson

CONSULTING ENGINEERS

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I85 / I385 Interchange

PROJECT NO. : 08195-01

PROJECT COUNTY : Greenville

PROJECT STATE : South Carolina

LABORATORY NO. : 08195-01

SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-10

SAMPLE LOC. : B-27

SAMPLE DEPTH : 101.3' to 101.7'

DATE TESTED : 2/27/2012

DATE REPORTED : 2/29/2012

ROCK DESCRIPTION : Feldspar quartz sillimanite augite schist mod

Diameter : 1.99 in

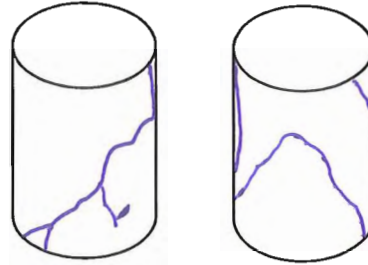
Height : 4.03 in

Area : 3.10 in²

Volume : 0.00723 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	164.16	lbs/ft. ³
Maximum Stress :	1517.1	psi
Elapsed Time :	2:00	min.
Strain :	1.81	%



Comments :

Approved By :



Florence & Hutcheson

An **ICA** Company

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I85 / I385 Interchange
 PROJECT NO. : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY NO. : 08195-01
 SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-17
 SAMPLE LOC. : B-28
 SAMPLE DEPTH : 35.8' to 36.1'
 DATE TESTED : 07/31/12
 DATE REPORTED : 08/07/12

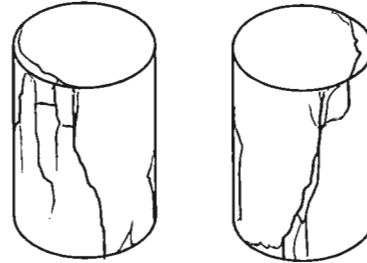
ROCK DESCRIPTION : Feldspar Quartz Pegmatite Fresh

Diameter : 2.00 in
 Height : 4.13 in

Area : 3.15 in²
 Volume : 0.00754 ft³

RESULTS :

Moisture Air-Dry : NA
 Air-Dry Density : 162.63 lbs/ft.³
 Maximum Stress : 7111.2 psi
 Elapsed Time : 5:30 min.
 Rate of Loading : 70 lb/sec



Comments :

Approved By :



Florence & Hutcheson

CONSULTING ENGINEERS

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I85 / I385 Interchange	SAMPLE NO. : RS-9
PROJECT NO. : 08195-01	SAMPLE LOC. : B-30
PROJECT COUNTY : Greenville	SAMPLE DEPTH : 72.4' to 72.7'
PROJECT STATE : South Carolina	DATE TESTED : 2/27/2012
LABORATORY NO. : 08195-01	DATE REPORTED : 2/29/2012
SUBMITTED BY : Florence & Hutcheson	

ROCK DESCRIPTION : Feldspar quartz augite gneiss fresh

Diameter : 1.98 in

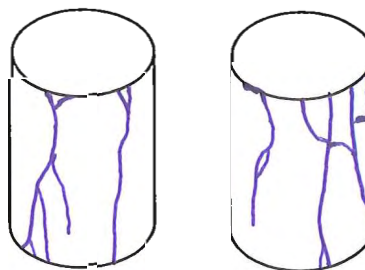
Area : 3.09 in²

Height : 4.08 in

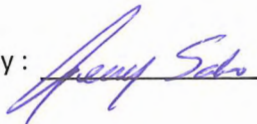
Volume : 0.00729 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	161.37	lbs/ft. ³
Maximum Stress :	7352.8	psi
Elapsed Time :	7:46	min.
Strain :	1.79	%



Comments :

Approved By : 



Florence & Hutcheson

An **ICA** Company

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I-85/I-385 Interchange
 PROJECT NO. : 08195-01
 PROJECT COUNTY : Greenville
 PROJECT STATE : South Carolina
 LABORATORY NO. : 08195-01
 SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-19
 SAMPLE LOC. : B-31
 SAMPLE DEPTH : 77.0' to 77.4'
 DATE TESTED : 11/07/12
 DATE REPORTED : 11/14/12

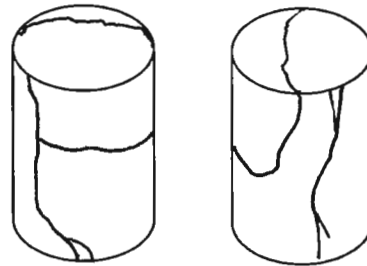
ROCK DESCRIPTION : Feldspar quartz augite muscovite biotite gneiss, schistose, contorted foliation, fresh

Diameter : 1.98 in
 Height : 4.04 in

Area : 3.09 in²
 Volume : 0.00723 ft³

RESULTS :

Moisture Air-Dry : NA
 Air-Dry Density : 174.43 lbs/ft.³
 Maximum Stress : 6448.8 psi
 Elapsed Time : 5:25 min.
 Rate of Loading : 60.0 lb/sec



Comments :

Approved By :



Florence & Hutcheson

An **ICA** Company

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I-85/I-385 Interchange	SAMPLE NO. : RS-24
PROJECT NO. : 08195-01	SAMPLE LOC. : B-45
PROJECT COUNTY : Greenville	SAMPLE DEPTH : 19.5' to 19.9'
PROJECT STATE : South Carolina	DATE TESTED : 11/16/12
LABORATORY NO. : 08195-01	DATE REPORTED : 11/19/12
SUBMITTED BY : Florence & Hutcheson	

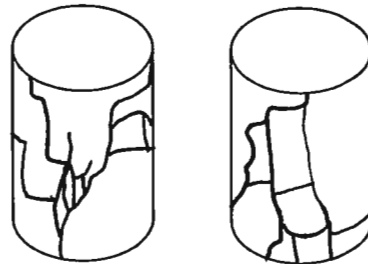
ROCK DESCRIPTION : Feldspar quartz biotite augite gneiss, mod. whtd

Diameter : 1.99 in
Height : 4.03 in

Area : 3.10 in²
Volume : 0.00722 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	157.41	lbs/ft. ³
Maximum Stress :	2157.4	psi
Elapsed Time :	3:05	min.
Rate of Loading :	30	lb/sec



Comments :

Approved By :



Florence & Hutcheson

An **ICA** Company

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I-85/I-385 Interchange

PROJECT NO. : 08195-01

PROJECT COUNTY : Greenville

PROJECT STATE : South Carolina

LABORATORY NO. : 08195-01

SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-25

SAMPLE LOC. : B-45

SAMPLE DEPTH : 28.4' to 28.7'

DATE TESTED : 11/16/12

DATE REPORTED : 11/19/12

ROCK DESCRIPTION : Feldspar quartz muscovite pegmatite, sli. whtd

Diameter : 1.99 in

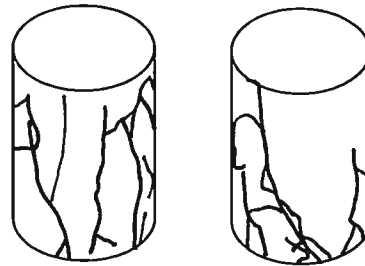
Height : 4.05 in

Area : 3.12 in²

Volume : 0.0073 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	163.36	lbs/ft. ³
Maximum Stress :	5337.9	psi
Elapsed Time :	5:30	min.
Rate of Loading :	60	lb/sec



Comments :

Approved By :



Florence & Hutcheson

An **ICA** Company

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I-85/I-385 Interchange

PROJECT NO. : 08195-01

PROJECT COUNTY : Greenville

PROJECT STATE : South Carolina

LABORATORY NO. : 08195-01

SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-26

SAMPLE LOC. : B-45

SAMPLE DEPTH : 32.7' to 33.0'

DATE TESTED : 11/16/12

DATE REPORTED : 11/19/12

ROCK DESCRIPTION : Quartz feldspar biotite gneiss, fresh

Diameter : 1.99 in

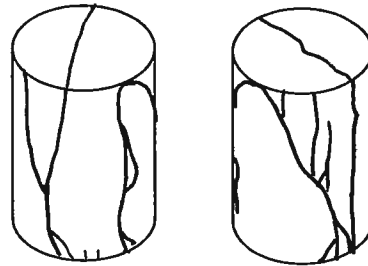
Height : 4.04 in

Area : 3.12 in²

Volume : 0.00728 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	165.37	lbs/ft. ³
Maximum Stress :	4408.8	psi
Elapsed Time :	6:20	min.
Rate of Loading :	40	lb/sec



Comments :

Approved By :



Florence & Hutcheson

An ICA Company

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I-85/I-385 Interchange	SAMPLE NO. : RS-23
PROJECT NO. : 08195-01	SAMPLE LOC. : B-65
PROJECT COUNTY : Greenville	SAMPLE DEPTH : 20.9' to 21.2'
PROJECT STATE : South Carolina	DATE TESTED : 11/07/12
LABORATORY NO. : 08195-01	DATE REPORTED : 11/14/12
SUBMITTED BY : Florence & Hutcheson	

ROCK DESCRIPTION : Feldspar quartz augite gneiss w/garnets, fresh

Diameter : 1.98 in

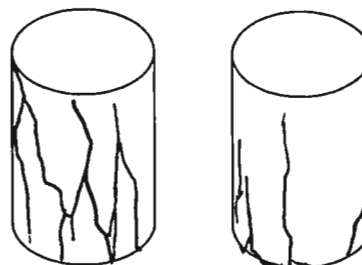
Area : 3.07 in²

Height : 4.04 in

Volume : 0.00718 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	166.14	lbs/ft. ³
Maximum Stress :	5751.6	psi
Elapsed Time :	5:15	min.
Rate of Loading :	60.0	lb/sec



Comments :

Approved By : *James Soto*



Florence & Hutcheson

An **ICA** Company

UNCONFINED COMPRESSION TEST (ROCK CORE)

PROJECT NAME : I-85/I-385 Interchange

PROJECT NO. : 08195-01

PROJECT COUNTY : Greenville

PROJECT STATE : South Carolina

LABORATORY NO. : 08195-01

SUBMITTED BY : Florence & Hutcheson

SAMPLE NO. : RS-22

SAMPLE LOC. : B-67

SAMPLE DEPTH : 33.5' to 33.8'

DATE TESTED : 11/07/12

DATE REPORTED : 11/14/12

ROCK DESCRIPTION : Feldspar quartz augite gneiss, fresh

Diameter : 1.98 in

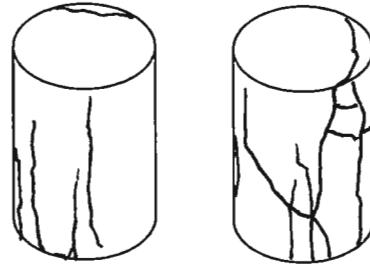
Height : 4.01 in

Area : 3.09 in²

Volume : 0.00717 ft³

RESULTS :

Moisture Air-Dry :	NA	
Air-Dry Density :	163.82	lbs/ft. ³
Maximum Stress :	3377.1	psi
Elapsed Time :	4:20	min.
Rate of Loading :	40.0	lb/sec



Comments :

Approved By : 



Florence & Hutcheson

An **ICA** Company

Project Name : I-85/I-385 Interchange
Location : Greenville County, South Carolina
Job Number : 08195-01
Project Job No. : 08195-01

Consolidated Undrained Triaxial Summary

Boring Number	Sample Number	Depth (ft)	Natural Moisture (%)	ASTM Classification	LL	PL	PI	C (psi)	ϕ (°)	C' (psi)	ϕ' (°)
B-49	Bag-1	0-21.5	23.0	SM	45	34	11	5.5	9.1	2.1	25.2
B-51	Bag-1	0-36	25.0	SM	33	24	9	3.9	14.6	0.8	31.1
B-54	Bag-1	0-41	18.1	SM	46	30	16	3	14.6	1.2	28
B-56	Bag-1	0-10	16.5	CL	40	24	16	2.2	13.5	0.7	29.4
B-56	Bag-2	10-35	17.0	SM	34	24	10	0	28.9	1.2	29
B-59	Bag-1	0-40	4.3	SM	32	27	5	1.4	28.2	1.1	30.3
B-65	Bag-1	0-15	25.3	SM	36	26	10	0	31.6	0.1	36.6
B-68	Bag-1	0-16	29.9	MH	52	33	19	2.8	16.4	0.6	32.8

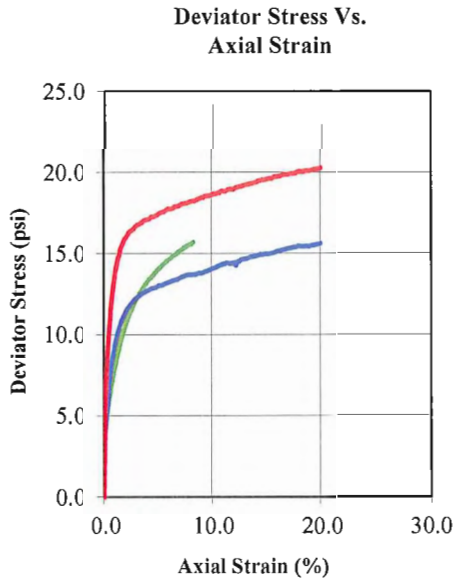


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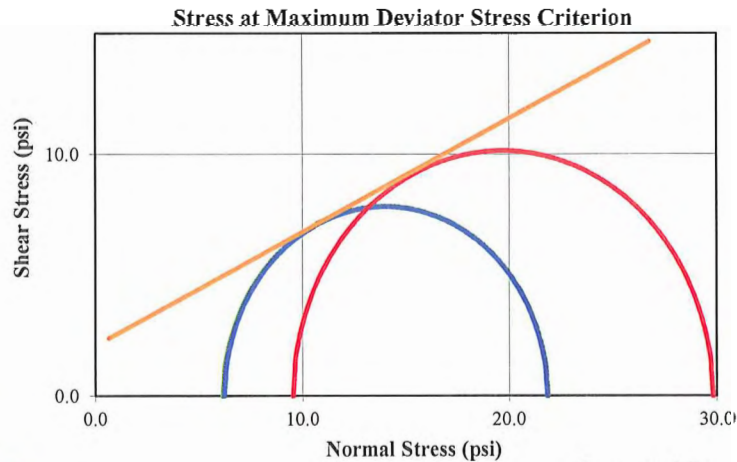
Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME : I-85/I-385 Interchange	SAMPLE NO. : Bag #1
PROJECT NO. : 08195-01	SAMPLE DEPTH : 0.0' to 21.5'
PROJECT LOCATION : B-49	SAMPLE TYPE : Remolded
BORING NUMBER : B-49	DESCRIPTION : Red Brown & Gray Silty Sand
REMARKS :	TEST TYPE : Consolidated Undrained



Initial	Specimen			
	A	B	C	D
Water Content (%)	22.2	22.8	22.1	
Dry Density (pcf)	88.6	88.3	89.5	
Saturation (%)	67.83	69.13	69.08	
Void Ratio	0.863	0.869	0.845	
Diameter (in)	2.807	2.808	2.807	
Height (in)	5.733	5.742	5.684	
Specific Gravity	2.65	2.65	2.65	
Liquid Limit	45	45	45	
Plastic Limit	34	34	34	
After Consolidation	A	B	C	D
B-Value	0.96	0.99	0.96	
Water Content (%)	32.7	34.1	31.7	
Dry Density (pcf)	89.41	88.35	89.46	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.850	0.872	0.849	
Effective Stress (psi)	5.0	10.0	20.0	
Back Press. (psi)	63.0	88.0	54.4	
Rate of Strain	0.002	0.002	0.002	

Maximum Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	5.5	σ'_1 at Failure (psi)	21.85	21.84	29.83	
ϕ (deg)	9.1	σ'_3 at Failure (psi)	6.14	6.19	9.53	
C' (psi)	2.1					
ϕ' (deg)	25.2					

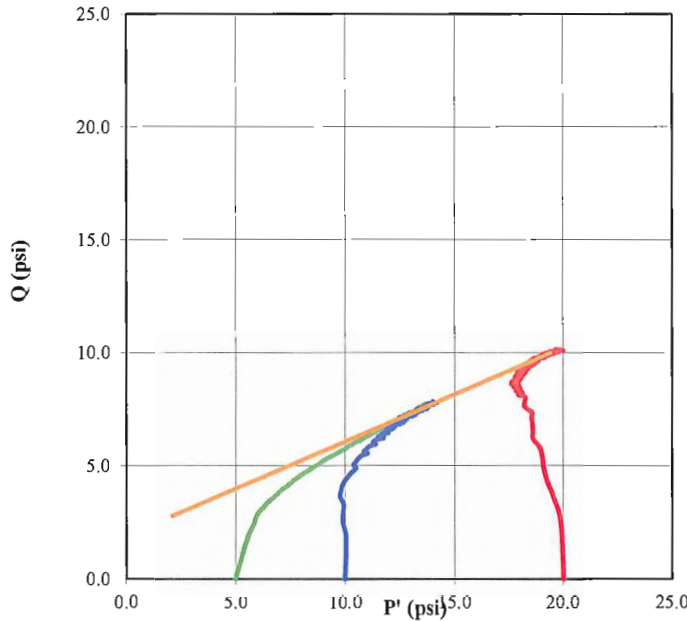


Tested By: [Signature]
 Date: 12-11-12

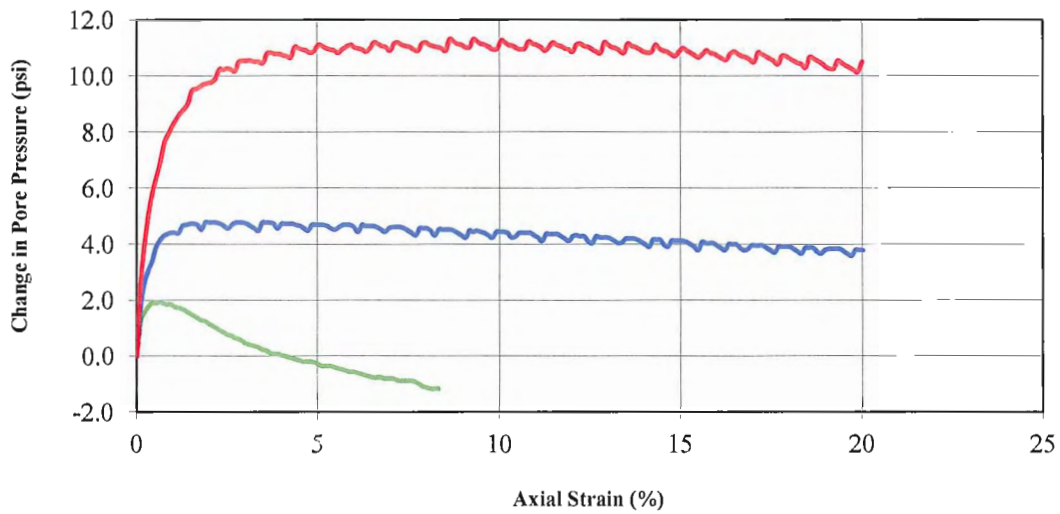
Approved By: SKB
 Date: 12-11-12



Stress Paths (Effective)
($a = 1.9$ $\alpha = 22.6$)



Change in Pore Pressure vs. Axial Strain





File Location
B-49 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-49
Sample Description: Red Brown & Gray Silty Sand
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 45.000
PL: 34.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.807	2.803	
Height (in)	5.733	5.700	
Weight (grams)	1008.40		1094.95
Moisture (%)	22.19		32.68
Dry Density (pcf)	88.61	89.41	
Saturation (%)	67.83	100.00	
Void Ratio	0.863	0.850	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 68.000
Effective Confining Stress (psi): 5.0
Corrected Peak Deviator Stress (psi): 15.718 at reading number: 79

Specimen A

Reading No.	Deviator Load (lbs)	~ Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	2.3	0.000	63.0	0.0	6.17	0.000	0.000	0.000	5.0	5.0	5.0	5.0	1.00	0.00	5.0	0.0	5.0
1	24.4	0.006	64.3	1.2	6.18	0.105	3.576	3.572	8.5	5.0	7.3	3.7	1.96	0.35	6.8	1.8	5.5
2	31.9	0.012	64.6	1.6	6.18	0.211	4.795	4.785	9.8	5.0	8.2	3.4	2.41	0.33	7.4	2.4	5.8
3	35.7	0.018	64.8	1.8	6.19	0.316	5.411	5.394	10.4	5.0	8.6	3.2	2.69	0.33	7.7	2.7	5.9
4	38.7	0.024	64.9	1.9	6.19	0.421	5.893	5.868	10.8	5.0	8.9	3.1	2.91	0.32	7.9	2.9	6.0
5	41.4	0.030	64.9	1.9	6.20	0.526	6.335	6.302	11.3	5.0	9.4	3.1	3.05	0.30	8.1	3.2	6.2
6	44.1	0.036	65.0	1.9	6.21	0.632	6.777	6.734	11.7	5.0	9.8	3.0	3.22	0.29	8.3	3.4	6.4
7	46.5	0.042	64.9	1.9	6.21	0.737	7.166	7.113	12.1	5.0	10.2	3.1	3.31	0.27	8.5	3.6	6.6
8	49.0	0.048	64.9	1.8	6.22	0.842	7.568	7.504	12.5	5.0	10.6	3.1	3.40	0.25	8.7	3.8	6.9
9	51.4	0.054	64.9	1.8	6.23	0.947	7.956	7.881	12.9	5.0	11.0	3.1	3.53	0.23	8.9	3.9	7.1
10	53.5	0.060	64.8	1.8	6.23	1.053	8.291	8.204	13.2	5.0	11.4	3.2	3.56	0.22	9.1	4.1	7.3
11	55.5	0.066	64.8	1.7	6.24	1.158	8.626	8.526	13.5	5.0	11.8	3.2	3.63	0.20	9.2	4.3	7.5
12	57.6	0.072	64.7	1.7	6.25	1.263	8.960	8.847	13.8	5.0	12.1	3.3	3.70	0.19	9.4	4.4	7.7
13	59.6	0.078	64.6	1.6	6.25	1.368	9.282	9.155	14.1	5.0	12.5	3.4	3.72	0.18	9.5	4.6	7.9
14	61.3	0.084	64.6	1.5	6.26	1.474	9.563	9.422	14.4	5.0	12.9	3.4	3.74	0.16	9.7	4.7	8.2
15	63.2	0.090	64.5	1.4	6.27	1.579	9.871	9.715	14.7	5.0	13.2	3.5	3.76	0.15	9.8	4.9	8.4
16	64.6	0.096	64.4	1.4	6.27	1.684	10.099	9.929	14.9	5.0	13.5	3.6	3.76	0.14	9.9	5.0	8.6
17	66.3	0.102	64.3	1.3	6.28	1.790	10.367	10.181	15.2	5.0	13.9	3.7	3.76	0.13	10.1	5.1	8.8
18	67.8	0.108	64.3	1.2	6.29	1.895	10.621	10.420	15.4	5.0	14.1	3.7	3.80	0.12	10.2	5.2	8.9



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	69.2	0.114	64.2	1.2	6.29	2.000	10.836	10.619	15.6	5.0	14.4	3.8	3.79	0.11	10.3	5.3	9.1
20	70.6	0.120	64.1	1.1	6.30	2.105	11.063	10.830	15.8	5.0	14.7	3.9	3.79	0.10	10.4	5.4	9.3
21	71.9	0.126	64.0	1.0	6.31	2.211	11.278	11.028	16.0	5.0	15.0	4.0	3.78	0.09	10.5	5.5	9.5
22	73.1	0.132	64.0	0.9	6.32	2.316	11.479	11.213	16.2	5.0	15.3	4.0	3.77	0.08	10.6	5.6	9.7
23	74.2	0.138	63.9	0.8	6.32	2.421	11.653	11.371	16.3	5.0	15.5	4.1	3.76	0.07	10.7	5.7	9.8
24	75.3	0.144	63.8	0.8	6.33	2.526	11.827	11.528	16.5	5.0	15.7	4.2	3.74	0.07	10.7	5.8	10.0
25	76.4	0.150	63.8	0.7	6.34	2.632	12.014	11.698	16.7	5.0	15.9	4.2	3.76	0.06	10.8	5.8	10.1
26	77.5	0.156	63.7	0.6	6.34	2.737	12.188	11.855	16.8	5.0	16.2	4.3	3.74	0.05	10.9	5.9	10.3
27	78.5	0.162	63.6	0.6	6.35	2.842	12.349	11.998	17.0	5.0	16.4	4.4	3.75	0.05	11.0	6.0	10.4
28	79.4	0.168	63.6	0.5	6.36	2.947	12.496	12.128	17.1	5.0	16.6	4.4	3.73	0.04	11.0	6.1	10.5
29	80.2	0.174	63.5	0.4	6.36	3.053	12.630	12.245	17.2	5.0	16.8	4.5	3.70	0.04	11.1	6.1	10.6
30	81.1	0.180	63.4	0.4	6.37	3.158	12.764	12.361	17.3	5.0	16.9	4.6	3.71	0.03	11.2	6.2	10.7
31	82.0	0.186	63.4	0.4	6.38	3.263	12.925	12.503	17.5	5.0	17.1	4.6	3.71	0.03	11.2	6.3	10.9
32	82.9	0.192	63.4	0.3	6.38	3.369	13.059	12.619	17.6	5.0	17.3	4.6	3.71	0.03	11.3	6.3	11.0
33	83.6	0.198	63.3	0.2	6.39	3.474	13.180	12.722	17.7	5.0	17.5	4.7	3.69	0.02	11.3	6.4	11.1
34	84.4	0.204	63.2	0.2	6.40	3.579	13.313	12.837	17.8	5.0	17.6	4.8	3.69	0.02	11.4	6.4	11.2
35	85.3	0.210	63.2	0.1	6.40	3.684	13.447	12.952	17.9	5.0	17.8	4.8	3.67	0.01	11.4	6.5	11.3
36	86.0	0.216	63.1	0.1	6.41	3.790	13.568	13.054	18.0	5.0	17.9	4.9	3.67	0.01	11.5	6.5	11.4
37	86.8	0.222	63.1	0.1	6.42	3.895	13.689	13.155	18.1	5.0	18.0	4.9	3.69	0.01	11.5	6.6	11.5
38	87.5	0.228	63.1	0.0	6.43	4.000	13.809	13.257	18.2	5.0	18.2	4.9	3.69	0.00	11.6	6.6	11.6
39	88.2	0.234	63.0	0.0	6.43	4.105	13.916	13.345	18.3	5.0	18.3	5.0	3.69	0.00	11.6	6.7	11.6
40	88.8	0.240	63.0	0.0	6.44	4.211	14.023	13.433	18.4	5.0	18.4	5.0	3.68	0.00	11.7	6.7	11.7
41	89.3	0.246	62.9	-0.1	6.45	4.316	14.104	13.495	18.5	5.0	18.5	5.1	3.67	-0.01	11.7	6.7	11.8
42	89.8	0.252	62.9	-0.1	6.45	4.421	14.184	13.557	18.5	5.0	18.6	5.1	3.66	-0.01	11.7	6.8	11.9
43	90.5	0.258	62.9	-0.2	6.46	4.526	14.291	13.644	18.6	5.0	18.8	5.1	3.66	-0.01	11.8	6.8	12.0
44	91.1	0.264	62.8	-0.2	6.47	4.632	14.398	13.731	18.7	5.0	18.9	5.2	3.66	-0.01	11.8	6.9	12.0
45	91.8	0.270	62.8	-0.2	6.48	4.737	14.506	13.818	18.8	5.0	19.0	5.2	3.67	-0.01	11.9	6.9	12.1
46	92.4	0.276	62.8	-0.2	6.48	4.842	14.599	13.892	18.9	5.0	19.1	5.2	3.69	-0.01	11.9	6.9	12.1
47	93.0	0.282	62.8	-0.2	6.49	4.947	14.693	13.966	18.9	5.0	19.2	5.2	3.68	-0.02	12.0	7.0	12.2
48	93.6	0.288	62.7	-0.3	6.50	5.053	14.800	14.052	19.0	5.0	19.3	5.3	3.66	-0.02	12.0	7.0	12.3
49	94.0	0.294	62.7	-0.4	6.50	5.158	14.867	14.100	19.1	5.0	19.4	5.3	3.64	-0.03	12.0	7.1	12.4
50	94.6	0.300	62.7	-0.4	6.51	5.263	14.961	14.173	19.1	5.0	19.5	5.3	3.66	-0.03	12.1	7.1	12.4
51	95.3	0.306	62.7	-0.4	6.52	5.369	15.068	14.259	19.2	5.0	19.6	5.3	3.67	-0.03	12.1	7.1	12.5
52	95.8	0.312	62.6	-0.4	6.53	5.474	15.148	14.319	19.3	5.0	19.7	5.4	3.67	-0.03	12.1	7.2	12.5
53	96.3	0.318	62.6	-0.4	6.53	5.579	15.229	14.379	19.3	5.0	19.8	5.4	3.66	-0.03	12.2	7.2	12.6
54	96.8	0.324	62.5	-0.5	6.54	5.684	15.323	14.452	19.4	5.0	19.9	5.5	3.65	-0.03	12.2	7.2	12.7
55	97.3	0.330	62.5	-0.5	6.55	5.790	15.403	14.511	19.5	5.0	20.0	5.5	3.64	-0.04	12.2	7.3	12.7
56	97.7	0.336	62.5	-0.6	6.56	5.895	15.470	14.558	19.5	5.0	20.1	5.5	3.63	-0.04	12.2	7.3	12.8
57	98.2	0.342	62.5	-0.6	6.56	6.000	15.550	14.617	19.6	5.0	20.1	5.5	3.64	-0.04	12.3	7.3	12.8
58	98.7	0.348	62.4	-0.6	6.57	6.105	15.631	14.676	19.6	5.0	20.2	5.6	3.63	-0.04	12.3	7.3	12.9
59	99.2	0.354	62.4	-0.6	6.58	6.211	15.711	14.735	19.7	5.0	20.3	5.6	3.63	-0.04	12.3	7.4	13.0



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	99.7	0.360	62.3	-0.7	6.58	6.316	15.791	14.794	19.8	5.0	20.4	5.7	3.62	-0.05	12.4	7.4	13.1
61	100.1	0.366	62.3	-0.7	6.59	6.421	15.858	14.840	19.8	5.0	20.5	5.7	3.61	-0.05	12.4	7.4	13.1
62	100.6	0.372	62.3	-0.8	6.60	6.526	15.939	14.898	19.9	5.0	20.6	5.7	3.60	-0.05	12.4	7.4	13.2
63	101.0	0.378	62.3	-0.8	6.61	6.632	15.992	14.932	19.9	5.0	20.7	5.7	3.60	-0.05	12.4	7.5	13.2
64	101.6	0.384	62.3	-0.8	6.61	6.737	16.099	15.015	20.0	5.0	20.7	5.7	3.62	-0.05	12.5	7.5	13.2
65	102.0	0.390	62.2	-0.8	6.62	6.842	16.166	15.060	20.0	5.0	20.8	5.8	3.61	-0.05	12.5	7.5	13.3
66	102.5	0.396	62.2	-0.8	6.63	6.948	16.247	15.118	20.1	5.0	20.9	5.8	3.62	-0.05	12.5	7.6	13.3
67	103.0	0.402	62.2	-0.8	6.64	7.053	16.327	15.176	20.1	5.0	20.9	5.8	3.63	-0.05	12.6	7.6	13.4
68	103.5	0.408	62.2	-0.8	6.64	7.158	16.407	15.233	20.2	5.0	21.0	5.8	3.62	-0.06	12.6	7.6	13.4
69	103.9	0.414	62.1	-0.9	6.65	7.263	16.461	15.265	20.2	5.0	21.1	5.9	3.61	-0.06	12.6	7.6	13.5
70	104.4	0.420	62.1	-0.9	6.66	7.369	16.541	15.323	20.3	5.0	21.2	5.9	3.62	-0.06	12.6	7.7	13.5
71	104.9	0.426	62.1	-0.9	6.67	7.474	16.622	15.379	20.3	5.0	21.2	5.9	3.63	-0.06	12.7	7.7	13.5
72	105.2	0.432	62.1	-0.9	6.67	7.579	16.675	15.411	20.4	5.0	21.3	5.9	3.63	-0.06	12.7	7.7	13.6
73	105.7	0.438	62.1	-0.9	6.68	7.684	16.756	15.468	20.4	5.0	21.4	5.9	3.62	-0.06	12.7	7.7	13.6
74	105.9	0.444	62.0	-1.0	6.69	7.790	16.796	15.488	20.5	5.0	21.5	6.0	3.59	-0.06	12.7	7.7	13.7
75	106.3	0.450	61.9	-1.1	6.70	7.895	16.863	15.532	20.5	5.0	21.6	6.1	3.57	-0.07	12.7	7.8	13.8
76	106.7	0.456	61.9	-1.1	6.71	8.000	16.916	15.563	20.5	5.0	21.7	6.1	3.55	-0.07	12.8	7.8	13.9
77	107.0	0.462	61.9	-1.2	6.71	8.105	16.970	15.595	20.6	5.0	21.7	6.1	3.54	-0.07	12.8	7.8	13.9
78	107.4	0.468	61.9	-1.2	6.72	8.211	17.037	15.638	20.6	5.0	21.8	6.1	3.55	-0.07	12.8	7.8	14.0
79	108.1	0.474	61.9	-1.2	6.73	8.316	17.144	15.718	20.7	5.0	21.9	6.1	3.56	-0.07	12.8	7.9	14.0
80	108.1	0.474	61.9	-1.2	6.73	8.316	17.144	15.718	20.7	5.0	21.9	6.1	3.56	-0.07	12.8	7.9	14.0



File Location
B-49 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-49
Sample Description: Red Brown & Gray Silty Sand
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 45.000
PL: 34.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.808	2.818	
Height (in)	5.742	5.700	
Weight (grams)	1012.40		1105.60
Moisture (%)	22.76		34.06
Dry Density (pcf)	88.35	88.35	
Saturation (%)	69.13	100.00	
Void Ratio	0.869	0.872	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 98.000
Effective Confining Stress (psi): 10.0
Corrected Peak Deviator Stress (psi): 15.645 at reading number: 190

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	12.0	0.000	88.0	0.0	6.24	0.000	0.000	0.000	10.0	10.0	10.0	10.0	1.00	0.00	10.0	0.0	10.0
1	35.0	0.006	89.8	1.8	6.24	0.105	3.693	3.689	13.7	10.0	11.9	8.2	1.45	0.49	11.8	1.8	10.0
2	43.4	0.012	90.6	2.6	6.25	0.211	5.038	5.027	15.0	10.0	12.4	7.4	1.68	0.52	12.5	2.5	9.9
3	49.2	0.018	91.1	3.1	6.26	0.316	5.961	5.942	15.9	10.0	12.9	6.9	1.86	0.51	13.0	3.0	9.9
4	53.6	0.024	91.4	3.4	6.26	0.421	6.673	6.645	16.6	10.0	13.2	6.6	2.01	0.51	13.3	3.3	9.9
5	57.8	0.030	91.9	3.9	6.27	0.527	7.333	7.294	17.3	10.0	13.4	6.1	2.19	0.53	13.6	3.6	9.8
6	61.5	0.036	92.1	4.1	6.28	0.632	7.926	7.876	17.9	10.0	13.7	5.9	2.34	0.52	13.9	3.9	9.8
7	64.4	0.042	92.3	4.3	6.28	0.737	8.401	8.339	18.3	10.0	14.0	5.7	2.46	0.51	14.1	4.2	9.9
8	67.1	0.048	92.4	4.4	6.29	0.843	8.836	8.762	18.7	10.0	14.4	5.6	2.56	0.50	14.4	4.4	10.0
9	69.7	0.055	92.4	4.4	6.30	0.948	9.245	9.157	19.1	10.0	14.7	5.6	2.64	0.48	14.6	4.6	10.2
10	72.0	0.061	92.4	4.4	6.30	1.053	9.614	9.513	19.5	10.0	15.1	5.6	2.71	0.46	14.7	4.8	10.3
11	74.0	0.067	92.4	4.4	6.31	1.159	9.931	9.816	19.8	10.0	15.4	5.6	2.76	0.45	14.9	4.9	10.5
12	75.8	0.073	92.7	4.6	6.32	1.264	10.221	10.092	20.1	10.0	15.4	5.3	2.89	0.46	15.0	5.0	10.4
13	77.4	0.079	92.7	4.7	6.33	1.369	10.485	10.341	20.3	10.0	15.6	5.3	2.95	0.45	15.2	5.2	10.5
14	79.0	0.085	92.7	4.7	6.33	1.475	10.735	10.577	20.6	10.0	15.8	5.3	3.01	0.45	15.3	5.3	10.5
15	80.4	0.091	92.7	4.7	6.34	1.580	10.959	10.786	20.8	10.0	16.0	5.3	3.05	0.44	15.4	5.4	10.6
16	81.5	0.097	92.7	4.7	6.35	1.685	11.144	10.956	20.9	10.0	16.3	5.3	3.07	0.43	15.5	5.5	10.8
17	82.6	0.103	92.5	4.5	6.35	1.791	11.316	11.113	21.1	10.0	16.6	5.5	3.04	0.41	15.5	5.6	11.0
18	83.6	0.109	92.8	4.8	6.36	1.896	11.474	11.256	21.2	10.0	16.5	5.2	3.16	0.42	15.6	5.6	10.8



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	84.6	0.115	92.8	4.8	6.37	2.001	11.632	11.399	21.4	10.0	16.6	5.2	3.19	0.42	15.7	5.7	10.9
20	85.6	0.121	92.8	4.8	6.37	2.107	11.790	11.542	21.5	10.0	16.8	5.2	3.21	0.41	15.8	5.8	11.0
21	86.4	0.127	92.8	4.8	6.38	2.212	11.922	11.658	21.6	10.0	16.9	5.2	3.24	0.41	15.8	5.8	11.0
22	87.1	0.133	92.7	4.7	6.39	2.317	12.041	11.762	21.7	10.0	17.0	5.3	3.24	0.40	15.9	5.9	11.1
23	87.8	0.139	92.7	4.6	6.39	2.423	12.146	11.852	21.8	10.0	17.2	5.3	3.22	0.39	15.9	5.9	11.3
24	88.4	0.145	92.6	4.6	6.40	2.528	12.239	11.929	21.9	10.0	17.3	5.4	3.20	0.38	15.9	6.0	11.4
25	88.9	0.151	92.7	4.7	6.41	2.633	12.331	12.006	22.0	10.0	17.3	5.3	3.27	0.39	16.0	6.0	11.3
26	89.7	0.157	92.8	4.8	6.41	2.739	12.450	12.109	22.1	10.0	17.3	5.2	3.32	0.39	16.0	6.1	11.3
27	90.3	0.163	92.8	4.8	6.42	2.844	12.542	12.185	22.2	10.0	17.4	5.2	3.34	0.39	16.1	6.1	11.3
28	90.7	0.169	92.8	4.8	6.43	2.949	12.621	12.249	22.2	10.0	17.5	5.2	3.35	0.39	16.1	6.1	11.3
29	91.2	0.175	92.7	4.7	6.43	3.055	12.700	12.312	22.3	10.0	17.6	5.3	3.34	0.38	16.1	6.2	11.4
30	91.7	0.181	92.7	4.6	6.44	3.160	12.766	12.363	22.3	10.0	17.7	5.3	3.32	0.38	16.2	6.2	11.5
31	92.0	0.187	92.6	4.6	6.45	3.265	12.819	12.400	22.4	10.0	17.8	5.4	3.29	0.37	16.2	6.2	11.6
32	92.5	0.193	92.5	4.5	6.46	3.371	12.898	12.463	22.4	10.0	18.0	5.5	3.27	0.36	16.2	6.2	11.7
33	93.0	0.199	92.8	4.8	6.46	3.476	12.977	12.526	22.5	10.0	17.7	5.2	3.40	0.38	16.2	6.3	11.5
34	93.3	0.205	92.8	4.8	6.47	3.582	13.030	12.563	22.5	10.0	17.8	5.2	3.41	0.38	16.3	6.3	11.5
35	93.6	0.211	92.8	4.8	6.48	3.687	13.083	12.600	22.6	10.0	17.8	5.2	3.42	0.38	16.3	6.3	11.5
36	94.0	0.217	92.7	4.7	6.48	3.792	13.149	12.650	22.6	10.0	17.9	5.3	3.41	0.37	16.3	6.3	11.6
37	94.4	0.223	92.6	4.6	6.49	3.898	13.201	12.687	22.7	10.0	18.1	5.4	3.34	0.36	16.3	6.3	11.8
38	94.7	0.229	92.7	4.7	6.50	4.003	13.254	12.724	22.7	10.0	18.0	5.3	3.42	0.37	16.3	6.4	11.6
39	94.9	0.235	92.7	4.7	6.51	4.108	13.294	12.748	22.7	10.0	18.0	5.3	3.43	0.37	16.4	6.4	11.6
40	95.3	0.241	92.7	4.7	6.51	4.214	13.347	12.784	22.8	10.0	18.0	5.3	3.43	0.37	16.4	6.4	11.6
41	95.7	0.247	92.7	4.7	6.52	4.319	13.413	12.833	22.8	10.0	18.1	5.3	3.44	0.37	16.4	6.4	11.7
42	95.9	0.253	92.7	4.7	6.53	4.424	13.452	12.857	22.8	10.0	18.2	5.3	3.43	0.36	16.4	6.4	11.7
43	96.1	0.259	92.7	4.6	6.53	4.530	13.478	12.868	22.8	10.0	18.2	5.3	3.41	0.36	16.4	6.4	11.8
44	96.3	0.265	92.6	4.6	6.54	4.635	13.518	12.891	22.9	10.0	18.3	5.4	3.38	0.35	16.4	6.4	11.9
45	96.6	0.271	92.5	4.5	6.55	4.740	13.558	12.915	22.9	10.0	18.4	5.5	3.35	0.35	16.4	6.5	12.0
46	96.8	0.277	92.7	4.7	6.56	4.846	13.597	12.938	22.9	10.0	18.2	5.3	3.44	0.36	16.4	6.5	11.8
47	97.2	0.283	92.7	4.7	6.56	4.951	13.650	12.974	23.0	10.0	18.3	5.3	3.45	0.36	16.5	6.5	11.8
48	97.6	0.289	92.7	4.7	6.57	5.056	13.716	13.022	23.0	10.0	18.3	5.3	3.46	0.36	16.5	6.5	11.8
49	97.8	0.295	92.7	4.7	6.58	5.162	13.755	13.045	23.0	10.0	18.3	5.3	3.46	0.36	16.5	6.5	11.8
50	97.8	0.301	92.7	4.6	6.59	5.267	13.755	13.031	23.0	10.0	18.4	5.3	3.44	0.36	16.5	6.5	11.9
51	98.1	0.307	92.6	4.6	6.59	5.372	13.795	13.054	23.0	10.0	18.5	5.4	3.41	0.35	16.5	6.5	11.9
52	98.5	0.313	92.5	4.5	6.60	5.478	13.861	13.102	23.1	10.0	18.6	5.5	3.40	0.35	16.5	6.6	12.0
53	98.7	0.319	92.6	4.6	6.61	5.583	13.900	13.124	23.1	10.0	18.5	5.4	3.44	0.35	16.5	6.6	11.9
54	99.1	0.325	92.7	4.7	6.61	5.688	13.953	13.160	23.1	10.0	18.5	5.3	3.49	0.36	16.6	6.6	11.9
55	99.3	0.331	92.7	4.7	6.62	5.794	13.993	13.182	23.2	10.0	18.5	5.3	3.49	0.36	16.6	6.6	11.9
56	99.6	0.337	92.7	4.7	6.63	5.899	14.046	13.217	23.2	10.0	18.5	5.3	3.50	0.35	16.6	6.6	11.9
57	99.9	0.343	92.6	4.6	6.64	6.004	14.085	13.239	23.2	10.0	18.6	5.4	3.46	0.35	16.6	6.6	12.0
58	100.1	0.349	92.5	4.4	6.64	6.110	14.125	13.262	23.2	10.0	18.8	5.5	3.39	0.33	16.6	6.6	12.2
59	100.4	0.355	92.7	4.7	6.65	6.215	14.164	13.284	23.3	10.0	18.6	5.3	3.51	0.35	16.6	6.6	11.9



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	100.8	0.361	92.7	4.6	6.66	6.320	14.230	13.331	23.3	10.0	18.7	5.3	3.50	0.35	16.6	6.7	12.0
61	101.0	0.367	92.7	4.6	6.67	6.426	14.257	13.340	23.3	10.0	18.7	5.3	3.50	0.35	16.7	6.7	12.0
62	101.3	0.373	92.7	4.6	6.67	6.531	14.309	13.375	23.4	10.0	18.7	5.3	3.51	0.35	16.7	6.7	12.0
63	101.5	0.379	92.6	4.6	6.68	6.636	14.349	13.397	23.4	10.0	18.8	5.4	3.49	0.34	16.7	6.7	12.1
64	101.6	0.385	92.5	4.5	6.69	6.742	14.362	13.394	23.4	10.0	18.9	5.5	3.45	0.34	16.7	6.7	12.2
65	102.0	0.391	92.5	4.4	6.70	6.847	14.428	13.440	23.4	10.0	19.0	5.5	3.43	0.33	16.7	6.7	12.3
66	102.3	0.397	92.6	4.6	6.70	6.952	14.481	13.474	23.5	10.0	18.9	5.4	3.49	0.34	16.7	6.7	12.2
67	102.7	0.403	92.6	4.6	6.71	7.058	14.534	13.508	23.5	10.0	18.9	5.4	3.51	0.34	16.7	6.8	12.1
68	103.1	0.409	92.6	4.6	6.72	7.163	14.599	13.554	23.5	10.0	18.9	5.4	3.52	0.34	16.8	6.8	12.2
69	103.4	0.415	92.6	4.6	6.73	7.268	14.652	13.587	23.6	10.0	19.0	5.4	3.53	0.34	16.8	6.8	12.2
70	103.5	0.421	92.6	4.6	6.74	7.374	14.665	13.584	23.6	10.0	19.0	5.4	3.51	0.34	16.8	6.8	12.2
71	103.9	0.427	92.5	4.5	6.74	7.479	14.731	13.630	23.6	10.0	19.1	5.5	3.48	0.33	16.8	6.8	12.3
72	104.3	0.433	92.4	4.4	6.75	7.584	14.797	13.675	23.7	10.0	19.3	5.6	3.45	0.32	16.8	6.8	12.4
73	104.5	0.439	92.3	4.3	6.76	7.690	14.824	13.684	23.7	10.0	19.3	5.7	3.42	0.32	16.8	6.8	12.5
74	104.7	0.445	92.6	4.6	6.77	7.795	14.850	13.692	23.7	10.0	19.1	5.4	3.53	0.33	16.8	6.8	12.3
75	104.8	0.451	92.6	4.6	6.77	7.900	14.876	13.701	23.7	10.0	19.1	5.4	3.53	0.33	16.8	6.9	12.3
76	105.1	0.457	92.6	4.6	6.78	8.006	14.916	13.722	23.7	10.0	19.1	5.4	3.53	0.33	16.8	6.9	12.3
77	105.0	0.463	92.5	4.5	6.79	8.111	14.903	13.694	23.7	10.0	19.2	5.5	3.49	0.33	16.8	6.8	12.3
78	105.1	0.469	92.3	4.3	6.80	8.216	14.929	13.703	23.7	10.0	19.4	5.7	3.42	0.32	16.8	6.9	12.5
79	105.3	0.475	92.5	4.5	6.80	8.322	14.956	13.711	23.7	10.0	19.2	5.5	3.51	0.33	16.8	6.9	12.3
80	105.6	0.481	92.5	4.5	6.81	8.427	14.995	13.731	23.7	10.0	19.2	5.5	3.52	0.33	16.8	6.9	12.3
81	105.6	0.487	92.5	4.5	6.82	8.532	14.995	13.716	23.7	10.0	19.2	5.5	3.51	0.33	16.8	6.9	12.3
82	106.0	0.493	92.5	4.5	6.83	8.638	15.061	13.760	23.7	10.0	19.2	5.5	3.52	0.33	16.9	6.9	12.3
83	106.3	0.499	92.5	4.5	6.84	8.743	15.114	13.792	23.8	10.0	19.3	5.5	3.51	0.32	16.9	6.9	12.4
84	106.5	0.505	92.4	4.4	6.84	8.848	15.153	13.813	23.8	10.0	19.4	5.6	3.48	0.32	16.9	6.9	12.5
85	106.5	0.511	92.3	4.3	6.85	8.954	15.153	13.797	23.8	10.0	19.5	5.7	3.44	0.31	16.9	6.9	12.6
86	106.7	0.517	92.3	4.2	6.86	9.059	15.180	13.805	23.8	10.0	19.5	5.7	3.40	0.31	16.9	6.9	12.6
87	107.0	0.523	92.5	4.5	6.87	9.164	15.232	13.837	23.8	10.0	19.3	5.5	3.52	0.32	16.9	6.9	12.4
88	107.3	0.529	92.5	4.4	6.88	9.270	15.272	13.856	23.8	10.0	19.4	5.5	3.50	0.32	16.9	6.9	12.5
89	107.7	0.535	92.5	4.5	6.88	9.375	15.338	13.900	23.9	10.0	19.4	5.5	3.53	0.32	16.9	7.0	12.4
90	107.9	0.541	92.5	4.4	6.89	9.480	15.364	13.908	23.9	10.0	19.4	5.5	3.51	0.32	16.9	7.0	12.5
91	108.2	0.547	92.4	4.4	6.90	9.586	15.417	13.939	23.9	10.0	19.5	5.6	3.50	0.32	17.0	7.0	12.5
92	108.5	0.553	92.3	4.3	6.91	9.691	15.470	13.971	24.0	10.0	19.6	5.7	3.47	0.31	17.0	7.0	12.6
93	108.8	0.559	92.3	4.2	6.92	9.796	15.523	14.002	24.0	10.0	19.7	5.7	3.44	0.30	17.0	7.0	12.7
94	109.2	0.565	92.5	4.4	6.92	9.902	15.575	14.033	24.0	10.0	19.6	5.5	3.53	0.32	17.0	7.0	12.6
95	109.6	0.571	92.5	4.4	6.93	10.007	15.641	14.076	24.1	10.0	19.6	5.5	3.54	0.32	17.0	7.0	12.6
96	109.8	0.577	92.5	4.4	6.94	10.113	15.681	14.095	24.1	10.0	19.6	5.5	3.54	0.32	17.0	7.0	12.6
97	110.1	0.583	92.4	4.4	6.95	10.218	15.720	14.114	24.1	10.0	19.7	5.6	3.53	0.31	17.0	7.1	12.6
98	110.5	0.589	92.3	4.2	6.96	10.323	15.786	14.157	24.1	10.0	19.9	5.7	3.47	0.30	17.1	7.1	12.8
99	110.7	0.595	92.3	4.3	6.96	10.429	15.813	14.164	24.1	10.0	19.9	5.7	3.48	0.30	17.1	7.1	12.8
100	111.2	0.601	92.4	4.4	6.97	10.534	15.892	14.218	24.2	10.0	19.8	5.6	3.55	0.31	17.1	7.1	12.7



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	111.5	0.607	92.4	4.4	6.98	10.639	15.945	14.248	24.2	10.0	19.8	5.6	3.55	0.31	17.1	7.1	12.7
102	111.8	0.613	92.4	4.4	6.99	10.745	15.997	14.279	24.3	10.0	19.9	5.6	3.56	0.31	17.1	7.1	12.7
103	112.2	0.619	92.4	4.4	7.00	10.850	16.063	14.321	24.3	10.0	19.9	5.6	3.57	0.31	17.1	7.2	12.7
104	112.4	0.625	92.3	4.3	7.01	10.955	16.090	14.327	24.3	10.0	20.0	5.7	3.53	0.30	17.1	7.2	12.8
105	112.9	0.631	92.3	4.2	7.01	11.061	16.169	14.381	24.4	10.0	20.1	5.7	3.50	0.29	17.2	7.2	12.9
106	112.9	0.637	92.1	4.1	7.02	11.166	16.169	14.363	24.3	10.0	20.2	5.9	3.45	0.29	17.2	7.2	13.0
107	113.1	0.643	92.4	4.4	7.03	11.271	16.208	14.382	24.4	10.0	20.0	5.6	3.56	0.30	17.2	7.2	12.8
108	113.6	0.649	92.4	4.4	7.04	11.377	16.288	14.435	24.4	10.0	20.1	5.6	3.57	0.30	17.2	7.2	12.8
109	113.6	0.655	92.4	4.4	7.05	11.482	16.288	14.417	24.4	10.0	20.0	5.6	3.57	0.30	17.2	7.2	12.8
110	113.8	0.661	92.4	4.4	7.06	11.587	16.314	14.424	24.4	10.0	20.0	5.6	3.57	0.30	17.2	7.2	12.8
111	113.6	0.667	92.3	4.3	7.06	11.693	16.288	14.383	24.4	10.0	20.1	5.7	3.52	0.30	17.2	7.2	12.9
112	113.9	0.673	92.2	4.2	7.07	11.798	16.340	14.412	24.4	10.0	20.2	5.8	3.49	0.29	17.2	7.2	13.0
113	114.1	0.679	92.1	4.1	7.08	11.903	16.367	14.419	24.4	10.0	20.3	5.9	3.46	0.29	17.2	7.2	13.1
114	113.9	0.685	92.3	4.3	7.09	12.009	16.340	14.378	24.4	10.0	20.1	5.7	3.52	0.30	17.2	7.2	12.9
115	114.7	0.691	92.3	4.3	7.10	12.114	16.459	14.465	24.4	10.0	20.1	5.7	3.56	0.30	17.2	7.2	12.9
116	113.5	0.697	92.3	4.3	7.11	12.219	16.274	14.286	24.3	10.0	20.0	5.7	3.51	0.30	17.1	7.1	12.8
117	115.1	0.703	92.3	4.3	7.12	12.325	16.525	14.488	24.5	10.0	20.2	5.7	3.54	0.30	17.2	7.2	12.9
118	115.5	0.709	92.1	4.1	7.12	12.430	16.591	14.529	24.5	10.0	20.4	5.9	3.48	0.28	17.2	7.3	13.1
119	115.6	0.715	92.1	4.0	7.13	12.535	16.604	14.523	24.5	10.0	20.5	5.9	3.44	0.28	17.2	7.3	13.2
120	116.3	0.721	92.3	4.3	7.14	12.641	16.723	14.609	24.6	10.0	20.3	5.7	3.56	0.29	17.3	7.3	13.0
121	116.7	0.727	92.3	4.2	7.15	12.746	16.789	14.649	24.6	10.0	20.4	5.7	3.55	0.29	17.3	7.3	13.1
122	117.0	0.733	92.3	4.2	7.16	12.851	16.828	14.666	24.6	10.0	20.4	5.7	3.55	0.29	17.3	7.3	13.1
123	117.1	0.739	92.3	4.2	7.17	12.957	16.841	14.659	24.6	10.0	20.4	5.7	3.55	0.29	17.3	7.3	13.1
124	117.5	0.745	92.2	4.2	7.18	13.062	16.907	14.699	24.7	10.0	20.5	5.8	3.54	0.29	17.3	7.3	13.1
125	117.5	0.751	92.1	4.1	7.18	13.167	16.907	14.681	24.7	10.0	20.5	5.9	3.50	0.28	17.3	7.3	13.2
126	117.9	0.757	92.1	4.0	7.19	13.273	16.973	14.721	24.7	10.0	20.7	5.9	3.48	0.27	17.3	7.4	13.3
127	118.1	0.763	92.1	4.1	7.20	13.378	17.013	14.737	24.7	10.0	20.6	5.9	3.50	0.28	17.3	7.4	13.3
128	118.6	0.769	92.2	4.2	7.21	13.483	17.079	14.776	24.8	10.0	20.6	5.8	3.55	0.28	17.4	7.4	13.2
129	119.0	0.775	92.2	4.2	7.22	13.589	17.145	14.815	24.8	10.0	20.6	5.8	3.56	0.28	17.4	7.4	13.2
130	119.1	0.781	92.2	4.2	7.23	13.694	17.171	14.820	24.8	10.0	20.6	5.8	3.56	0.28	17.4	7.4	13.2
131	119.2	0.787	92.2	4.2	7.24	13.799	17.184	14.813	24.8	10.0	20.6	5.8	3.54	0.28	17.4	7.4	13.2
132	119.5	0.793	92.1	4.1	7.25	13.905	17.237	14.840	24.8	10.0	20.7	5.9	3.51	0.27	17.4	7.4	13.3
133	119.8	0.799	92.0	4.0	7.25	14.010	17.277	14.856	24.8	10.0	20.8	6.0	3.48	0.27	17.4	7.4	13.4
134	120.0	0.805	91.9	3.9	7.26	14.115	17.316	14.872	24.9	10.0	20.9	6.1	3.45	0.26	17.4	7.4	13.5
135	120.3	0.811	92.2	4.2	7.27	14.221	17.356	14.888	24.9	10.0	20.7	5.8	3.56	0.28	17.4	7.4	13.3
136	120.6	0.817	92.2	4.2	7.28	14.326	17.409	14.915	24.9	10.0	20.7	5.8	3.56	0.28	17.4	7.5	13.3
137	120.9	0.823	92.2	4.2	7.29	14.431	17.461	14.941	24.9	10.0	20.8	5.8	3.57	0.28	17.5	7.5	13.3
138	121.2	0.829	92.0	4.0	7.30	14.537	17.501	14.957	24.9	10.0	20.9	6.0	3.50	0.27	17.5	7.5	13.5
139	121.1	0.835	91.9	3.9	7.31	14.642	17.488	14.927	24.9	10.0	21.0	6.1	3.46	0.26	17.4	7.5	13.5
140	121.4	0.841	92.1	4.1	7.32	14.747	17.540	14.954	24.9	10.0	20.8	5.9	3.55	0.28	17.5	7.5	13.3
141	121.7	0.847	92.1	4.1	7.33	14.853	17.580	14.969	24.9	10.0	20.8	5.9	3.55	0.27	17.5	7.5	13.3



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CONSULTING ENGINEERS

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	121.8	0.853	92.1	4.1	7.34	14.958	17.606	14.973	25.0	10.0	20.8	5.9	3.55	0.27	17.5	7.5	13.4
143	122.2	0.859	92.1	4.1	7.34	15.063	17.659	14.999	25.0	10.0	20.9	5.9	3.56	0.27	17.5	7.5	13.4
144	122.2	0.865	92.1	4.1	7.35	15.169	17.659	14.980	25.0	10.0	20.9	5.9	3.54	0.27	17.5	7.5	13.4
145	122.3	0.871	92.0	4.0	7.36	15.274	17.686	14.984	25.0	10.0	21.0	6.0	3.50	0.27	17.5	7.5	13.5
146	122.6	0.877	91.9	3.9	7.37	15.379	17.725	14.999	25.0	10.0	21.1	6.1	3.47	0.26	17.5	7.5	13.6
147	123.0	0.883	91.8	3.8	7.38	15.485	17.791	15.036	25.0	10.0	21.2	6.2	3.43	0.25	17.5	7.5	13.7
148	123.2	0.889	92.1	4.1	7.39	15.590	17.817	15.040	25.0	10.0	20.9	5.9	3.55	0.27	17.5	7.5	13.4
149	123.4	0.895	92.1	4.0	7.40	15.695	17.857	15.054	25.0	10.0	21.0	5.9	3.53	0.27	17.5	7.5	13.5
150	123.7	0.901	92.1	4.0	7.41	15.801	17.910	15.080	25.1	10.0	21.0	5.9	3.54	0.27	17.5	7.5	13.5
151	124.2	0.907	92.1	4.0	7.42	15.906	17.976	15.116	25.1	10.0	21.1	5.9	3.54	0.27	17.5	7.6	13.5
152	124.5	0.913	92.0	4.0	7.43	16.011	18.028	15.142	25.1	10.0	21.2	6.0	3.51	0.26	17.6	7.6	13.6
153	124.8	0.919	91.9	3.9	7.44	16.117	18.081	15.167	25.1	10.0	21.3	6.1	3.48	0.26	17.6	7.6	13.7
154	125.0	0.925	91.8	3.8	7.45	16.222	18.108	15.170	25.2	10.0	21.4	6.2	3.45	0.25	17.6	7.6	13.8
155	125.1	0.931	92.0	4.0	7.46	16.327	18.134	15.173	25.2	10.0	21.2	6.0	3.53	0.26	17.6	7.6	13.6
156	125.6	0.937	92.0	4.0	7.47	16.433	18.213	15.220	25.2	10.0	21.2	6.0	3.54	0.26	17.6	7.6	13.6
157	125.9	0.943	92.0	4.0	7.47	16.538	18.253	15.234	25.2	10.0	21.2	6.0	3.54	0.26	17.6	7.6	13.6
158	126.1	0.949	91.9	3.9	7.48	16.644	18.292	15.248	25.2	10.0	21.4	6.1	3.50	0.25	17.6	7.6	13.7
159	126.4	0.955	91.8	3.8	7.49	16.749	18.332	15.261	25.2	10.0	21.5	6.2	3.47	0.25	17.6	7.6	13.8
160	126.7	0.961	91.9	3.8	7.50	16.854	18.385	15.286	25.3	10.0	21.4	6.1	3.49	0.25	17.6	7.6	13.8
161	127.0	0.967	92.0	4.0	7.51	16.960	18.437	15.310	25.3	10.0	21.3	6.0	3.54	0.26	17.6	7.7	13.7
162	127.2	0.973	92.0	4.0	7.52	17.065	18.464	15.313	25.3	10.0	21.3	6.0	3.54	0.26	17.6	7.7	13.7
163	127.5	0.979	92.0	4.0	7.53	17.170	18.516	15.337	25.3	10.0	21.4	6.0	3.54	0.26	17.6	7.7	13.7
164	127.7	0.985	92.0	4.0	7.54	17.276	18.543	15.339	25.3	10.0	21.4	6.0	3.54	0.26	17.7	7.7	13.7
165	127.9	0.991	91.9	3.9	7.55	17.381	18.582	15.353	25.3	10.0	21.5	6.1	3.51	0.25	17.7	7.7	13.8
166	128.3	0.997	91.8	3.8	7.56	17.486	18.648	15.387	25.4	10.0	21.6	6.2	3.49	0.25	17.7	7.7	13.9
167	128.6	1.003	91.7	3.7	7.57	17.592	18.688	15.400	25.4	10.0	21.7	6.3	3.46	0.24	17.7	7.7	14.0
168	128.8	1.009	91.9	3.9	7.58	17.697	18.714	15.402	25.4	10.0	21.5	6.1	3.54	0.25	17.7	7.7	13.8
169	129.1	1.015	91.9	3.9	7.59	17.802	18.767	15.426	25.4	10.0	21.5	6.1	3.54	0.25	17.7	7.7	13.8
170	129.5	1.021	91.9	3.9	7.60	17.908	18.833	15.460	25.4	10.0	21.5	6.1	3.55	0.25	17.7	7.7	13.8
171	129.7	1.027	91.9	3.9	7.61	18.013	18.872	15.473	25.5	10.0	21.5	6.1	3.55	0.25	17.7	7.7	13.8
172	129.8	1.033	91.9	3.8	7.62	18.118	18.886	15.464	25.4	10.0	21.6	6.1	3.51	0.25	17.7	7.7	13.9
173	129.9	1.039	91.8	3.7	7.63	18.224	18.899	15.455	25.4	10.0	21.7	6.2	3.48	0.24	17.7	7.7	14.0
174	130.1	1.045	91.7	3.7	7.64	18.329	18.925	15.456	25.4	10.0	21.8	6.3	3.45	0.24	17.7	7.7	14.0
175	130.2	1.051	91.9	3.9	7.65	18.434	18.938	15.447	25.4	10.0	21.6	6.1	3.53	0.25	17.7	7.7	13.8
176	130.3	1.057	91.9	3.9	7.66	18.540	18.965	15.449	25.4	10.0	21.6	6.1	3.53	0.25	17.7	7.7	13.8
177	130.6	1.063	91.9	3.9	7.67	18.645	19.004	15.461	25.4	10.0	21.6	6.1	3.53	0.25	17.7	7.7	13.8
178	130.8	1.069	91.8	3.7	7.68	18.750	19.044	15.473	25.5	10.0	21.7	6.2	3.48	0.24	17.7	7.7	14.0
179	130.8	1.075	91.7	3.7	7.69	18.856	19.044	15.453	25.4	10.0	21.8	6.3	3.45	0.24	17.7	7.7	14.0
180	131.0	1.081	91.8	3.8	7.70	18.961	19.070	15.454	25.4	10.0	21.6	6.2	3.50	0.25	17.7	7.7	13.9
181	131.4	1.087	91.9	3.8	7.71	19.066	19.136	15.488	25.5	10.0	21.6	6.1	3.52	0.25	17.7	7.7	13.9
182	131.7	1.093	91.9	3.8	7.72	19.172	19.189	15.510	25.5	10.0	21.7	6.1	3.52	0.25	17.7	7.8	13.9



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	131.8	1.099	91.9	3.8	7.73	19.277	19.202	15.501	25.5	10.0	21.7	6.1	3.52	0.25	17.7	7.8	13.9
184	132.2	1.105	91.9	3.8	7.74	19.382	19.268	15.534	25.5	10.0	21.7	6.1	3.53	0.25	17.7	7.8	13.9
185	132.4	1.111	91.8	3.7	7.75	19.488	19.294	15.534	25.5	10.0	21.8	6.2	3.49	0.24	17.7	7.8	14.0
186	132.8	1.117	91.7	3.7	7.76	19.593	19.360	15.567	25.5	10.0	21.9	6.3	3.47	0.24	17.8	7.8	14.1
187	133.0	1.123	91.6	3.6	7.77	19.698	19.387	15.568	25.5	10.0	22.0	6.4	3.43	0.23	17.8	7.8	14.2
188	133.3	1.129	91.8	3.8	7.78	19.804	19.440	15.590	25.6	10.0	21.8	6.2	3.52	0.24	17.8	7.8	14.0
189	133.6	1.135	91.8	3.8	7.79	19.909	19.492	15.612	25.6	10.0	21.8	6.2	3.52	0.24	17.8	7.8	14.0
190	134.0	1.141	91.8	3.8	7.80	20.006	19.558	15.645	25.6	10.0	21.8	6.2	3.53	0.24	17.8	7.8	14.0



File Location
B-49 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-49
Sample Description: Red Brown & Gray Silty Sand
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 45.000
PL: 34.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.807	2.831	
Height (in)	5.684	5.590	
Weight (grams)	1009.10		1088.00
Moisture (%)	22.14		31.69
Dry Density (pcf)	89.46	89.46	
Saturation (%)	69.08	100.00	
Void Ratio	0.845	0.849	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 74.400
Effective Confining Stress (psi): 20.0
Corrected Peak Deviator Stress (psi): 20.298 at reading number: 182

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	-5.8	0.000	54.4	0.0	6.29	0.000	0.000	0.000	20.0	20.0	20.0	20.0	1.00	0.00	20.0	0.0	20.0
1	25.6	0.007	57.0	2.6	6.30	0.109	4.991	4.986	25.0	20.0	22.4	17.4	1.29	0.52	22.5	2.5	19.9
2	39.7	0.013	58.4	4.1	6.31	0.218	7.238	7.222	27.3	20.0	23.2	16.0	1.45	0.56	23.6	3.6	19.6
3	49.2	0.019	59.5	5.1	6.31	0.328	8.741	8.712	28.7	20.0	23.6	14.9	1.58	0.59	24.4	4.4	19.3
4	56.8	0.025	60.2	5.9	6.32	0.437	9.956	9.912	29.9	20.0	24.1	14.2	1.70	0.59	25.0	5.0	19.1
5	62.9	0.031	60.8	6.4	6.33	0.546	10.923	10.863	30.9	20.0	24.5	13.6	1.80	0.59	25.5	5.4	19.1
6	68.3	0.037	61.3	7.0	6.34	0.655	11.785	11.708	31.7	20.0	24.8	13.1	1.90	0.59	25.9	5.9	18.9
7	72.9	0.043	62.0	7.6	6.34	0.764	12.517	12.421	32.5	20.0	24.8	12.4	2.00	0.61	26.2	6.2	18.6
8	77.0	0.049	62.3	7.9	6.35	0.874	13.157	13.042	33.1	20.0	25.1	12.1	2.08	0.61	26.6	6.5	18.6
9	80.5	0.055	62.6	8.2	6.36	0.983	13.719	13.584	33.6	20.0	25.4	11.8	2.15	0.60	26.8	6.8	18.6
10	83.3	0.062	62.8	8.5	6.36	1.092	14.163	14.008	34.0	20.0	25.6	11.6	2.21	0.60	27.0	7.0	18.6
11	85.8	0.068	63.0	8.7	6.37	1.201	14.555	14.380	34.4	20.0	25.8	11.4	2.26	0.60	27.2	7.2	18.6
12	88.1	0.074	63.2	8.8	6.38	1.310	14.921	14.725	34.8	20.0	25.9	11.2	2.31	0.60	27.4	7.4	18.6
13	89.2	0.080	63.4	9.0	6.38	1.420	15.104	14.889	34.9	20.0	25.9	11.0	2.35	0.61	27.5	7.4	18.5
14	91.9	0.086	63.8	9.5	6.39	1.529	15.522	15.284	35.3	20.0	25.9	10.6	2.45	0.62	27.7	7.6	18.2
15	93.1	0.092	63.9	9.5	6.40	1.638	15.718	15.460	35.5	20.0	26.0	10.5	2.47	0.62	27.8	7.7	18.2
16	94.3	0.098	64.0	9.6	6.41	1.747	15.914	15.636	35.7	20.0	26.1	10.4	2.50	0.62	27.9	7.8	18.2
17	95.6	0.104	64.1	9.7	6.41	1.856	16.110	15.810	35.8	20.0	26.1	10.3	2.53	0.61	27.9	7.9	18.2
18	96.5	0.110	64.1	9.7	6.42	1.966	16.253	15.934	36.0	20.0	26.2	10.3	2.55	0.61	28.0	8.0	18.3



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	97.2	0.116	64.1	9.8	6.43	2.075	16.371	16.031	36.1	20.0	26.3	10.3	2.56	0.61	28.0	8.0	18.3
20	98.0	0.123	64.3	9.9	6.43	2.184	16.502	16.141	36.2	20.0	26.3	10.1	2.59	0.61	28.1	8.1	18.2
21	99.0	0.129	64.6	10.2	6.44	2.293	16.658	16.276	36.3	20.0	26.1	9.8	2.66	0.63	28.2	8.1	18.0
22	99.7	0.135	64.6	10.2	6.45	2.402	16.763	16.360	36.4	20.0	26.2	9.8	2.67	0.62	28.2	8.2	18.0
23	100.1	0.141	64.6	10.3	6.46	2.512	16.828	16.405	36.4	20.0	26.2	9.8	2.68	0.63	28.2	8.2	18.0
24	100.6	0.147	64.6	10.2	6.46	2.621	16.907	16.463	36.5	20.0	26.3	9.8	2.68	0.62	28.3	8.2	18.0
25	101.0	0.153	64.5	10.2	6.47	2.730	16.972	16.509	36.5	20.0	26.4	9.9	2.68	0.62	28.3	8.3	18.1
26	101.8	0.159	64.9	10.5	6.48	2.839	17.103	16.617	36.7	20.0	26.1	9.5	2.74	0.63	28.3	8.3	17.8
27	102.9	0.171	64.9	10.5	6.49	3.058	17.272	16.744	36.8	20.0	26.2	9.5	2.76	0.63	28.4	8.4	17.9
28	103.2	0.178	64.9	10.5	6.50	3.167	17.325	16.776	36.8	20.0	26.3	9.5	2.77	0.63	28.4	8.4	17.9
29	103.5	0.184	64.9	10.5	6.51	3.276	17.377	16.808	36.8	20.0	26.3	9.5	2.76	0.62	28.4	8.4	17.9
30	104.1	0.190	64.9	10.5	6.51	3.385	17.468	16.877	36.9	20.0	26.4	9.5	2.77	0.62	28.5	8.4	18.0
31	104.3	0.196	64.8	10.5	6.52	3.494	17.494	16.883	36.9	20.0	26.5	9.6	2.76	0.62	28.5	8.4	18.0
32	105.0	0.202	65.2	10.8	6.53	3.604	17.612	16.977	37.0	20.0	26.2	9.2	2.84	0.64	28.5	8.5	17.7
33	105.5	0.208	65.2	10.8	6.54	3.713	17.690	17.034	37.1	20.0	26.2	9.2	2.85	0.64	28.6	8.5	17.7
34	105.7	0.214	65.2	10.8	6.54	3.822	17.730	17.052	37.1	20.0	26.3	9.2	2.84	0.63	28.6	8.5	17.8
35	106.1	0.220	65.2	10.8	6.55	3.931	17.782	17.083	37.1	20.0	26.3	9.2	2.85	0.63	28.6	8.5	17.8
36	106.2	0.226	65.1	10.7	6.56	4.040	17.808	17.089	37.1	20.0	26.4	9.3	2.84	0.63	28.6	8.5	17.8
37	106.6	0.232	65.1	10.7	6.57	4.150	17.860	17.119	37.2	20.0	26.4	9.3	2.83	0.63	28.6	8.6	17.9
38	107.0	0.239	65.0	10.7	6.57	4.259	17.926	17.162	37.2	20.0	26.5	9.4	2.83	0.62	28.6	8.6	18.0
39	107.6	0.245	65.4	11.0	6.58	4.368	18.030	17.243	37.3	20.0	26.3	9.0	2.91	0.64	28.7	8.6	17.6
40	107.9	0.251	65.4	11.0	6.59	4.477	18.069	17.260	37.3	20.0	26.3	9.0	2.91	0.64	28.7	8.6	17.7
41	108.1	0.257	65.3	10.9	6.60	4.586	18.095	17.266	37.3	20.0	26.4	9.1	2.90	0.63	28.7	8.6	17.7
42	108.5	0.263	65.3	10.9	6.60	4.696	18.161	17.308	37.3	20.0	26.4	9.1	2.90	0.63	28.7	8.7	17.8
43	108.7	0.269	65.2	10.8	6.61	4.805	18.200	17.326	37.4	20.0	26.5	9.2	2.88	0.62	28.7	8.7	17.9
44	109.0	0.275	65.3	10.9	6.62	4.914	18.252	17.355	37.4	20.0	26.5	9.1	2.90	0.63	28.7	8.7	17.8
45	109.6	0.281	65.5	11.1	6.63	5.023	18.344	17.422	37.5	20.0	26.3	8.9	2.95	0.64	28.7	8.7	17.6
46	110.0	0.287	65.4	11.1	6.63	5.132	18.409	17.464	37.5	20.0	26.4	9.0	2.95	0.63	28.8	8.7	17.7
47	110.4	0.293	65.4	11.0	6.64	5.242	18.474	17.506	37.5	20.0	26.6	9.0	2.93	0.63	28.8	8.8	17.8
48	110.8	0.300	65.3	10.9	6.65	5.351	18.527	17.535	37.6	20.0	26.6	9.1	2.93	0.62	28.8	8.8	17.9
49	111.1	0.306	65.3	10.9	6.66	5.460	18.579	17.564	37.6	20.0	26.7	9.1	2.92	0.62	28.8	8.8	17.9
50	111.3	0.312	65.2	10.8	6.66	5.569	18.605	17.569	37.6	20.0	26.8	9.2	2.91	0.62	28.8	8.8	18.0
51	111.8	0.318	65.3	10.9	6.67	5.679	18.683	17.622	37.7	20.0	26.7	9.1	2.94	0.62	28.8	8.8	17.9
52	112.8	0.330	65.5	11.1	6.69	5.897	18.853	17.742	37.8	20.0	26.7	8.9	2.99	0.63	28.9	8.9	17.8
53	113.1	0.336	65.4	11.0	6.70	6.006	18.892	17.758	37.8	20.0	26.8	9.0	2.97	0.62	28.9	8.9	17.9
54	113.0	0.342	65.4	11.0	6.70	6.115	18.879	17.725	37.8	20.0	26.8	9.0	2.96	0.62	28.9	8.9	17.9
55	113.4	0.348	65.3	10.9	6.71	6.225	18.945	17.766	37.8	20.0	26.9	9.1	2.95	0.62	28.9	8.9	18.0
56	113.6	0.355	65.2	10.9	6.72	6.334	18.984	17.782	37.8	20.0	27.0	9.2	2.94	0.61	28.9	8.9	18.1
57	113.9	0.361	65.4	11.0	6.73	6.443	19.023	17.797	37.8	20.0	26.8	9.0	2.97	0.62	28.9	8.9	17.9
58	114.6	0.367	65.6	11.2	6.74	6.552	19.141	17.887	37.9	20.0	26.7	8.8	3.02	0.63	29.0	8.9	17.8
59	114.8	0.373	65.5	11.1	6.74	6.661	19.167	17.890	37.9	20.0	26.8	8.9	3.01	0.62	29.0	8.9	17.8



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	115.0	0.379	65.4	11.1	6.75	6.771	19.206	17.906	37.9	20.0	26.9	9.0	3.00	0.62	29.0	9.0	17.9
61	115.4	0.385	65.4	11.0	6.76	6.880	19.258	17.933	38.0	20.0	26.9	9.0	2.99	0.61	29.0	9.0	18.0
62	115.5	0.391	65.3	10.9	6.77	6.989	19.284	17.937	38.0	20.0	27.1	9.1	2.96	0.61	29.0	9.0	18.1
63	116.2	0.397	65.5	11.1	6.77	7.098	19.389	18.013	38.0	20.0	26.9	8.9	3.03	0.62	29.0	9.0	17.9
64	116.6	0.403	65.6	11.2	6.78	7.207	19.454	18.052	38.1	20.0	26.9	8.8	3.04	0.62	29.1	9.0	17.9
65	116.8	0.409	65.5	11.1	6.79	7.317	19.493	18.067	38.1	20.0	27.0	8.9	3.02	0.61	29.1	9.0	18.0
66	117.1	0.416	65.4	11.1	6.80	7.426	19.533	18.082	38.1	20.0	27.0	9.0	3.02	0.61	29.1	9.0	18.0
67	117.3	0.422	65.4	11.0	6.81	7.535	19.572	18.097	38.1	20.0	27.1	9.0	3.01	0.61	29.1	9.0	18.1
68	117.5	0.428	65.3	10.9	6.81	7.644	19.598	18.100	38.1	20.0	27.2	9.1	2.99	0.60	29.1	9.0	18.1
69	117.8	0.434	65.3	10.9	6.82	7.753	19.650	18.127	38.2	20.0	27.3	9.1	2.99	0.60	29.1	9.1	18.2
70	118.2	0.440	65.5	11.1	6.83	7.863	19.716	18.165	38.2	20.0	27.1	8.9	3.04	0.61	29.1	9.1	18.0
71	118.7	0.446	65.6	11.2	6.84	7.972	19.781	18.204	38.2	20.0	27.1	8.8	3.06	0.61	29.1	9.1	17.9
72	118.8	0.452	65.5	11.1	6.85	8.081	19.807	18.206	38.2	20.0	27.1	8.9	3.04	0.61	29.1	9.1	18.0
73	119.2	0.458	65.4	11.1	6.86	8.190	19.859	18.233	38.3	20.0	27.2	9.0	3.03	0.61	29.2	9.1	18.1
74	119.3	0.464	65.4	11.0	6.86	8.299	19.885	18.235	38.3	20.0	27.2	9.0	3.02	0.60	29.2	9.1	18.1
75	119.5	0.471	65.4	11.0	6.87	8.409	19.912	18.237	38.3	20.0	27.3	9.0	3.02	0.60	29.2	9.1	18.2
76	119.9	0.477	65.3	10.9	6.88	8.518	19.977	18.275	38.3	20.0	27.4	9.1	3.00	0.60	29.2	9.1	18.3
77	120.4	0.483	65.7	11.3	6.89	8.627	20.055	18.325	38.4	20.0	27.1	8.7	3.10	0.62	29.2	9.2	17.9
78	120.7	0.489	65.6	11.2	6.90	8.736	20.108	18.351	38.4	20.0	27.2	8.8	3.08	0.61	29.2	9.2	18.0
79	121.1	0.495	65.5	11.1	6.90	8.845	20.173	18.389	38.4	20.0	27.3	8.9	3.07	0.61	29.2	9.2	18.1
80	121.5	0.501	65.5	11.1	6.91	8.955	20.225	18.414	38.4	20.0	27.3	8.9	3.06	0.60	29.2	9.2	18.1
81	121.8	0.507	65.4	11.0	6.92	9.064	20.277	18.440	38.5	20.0	27.4	9.0	3.05	0.60	29.3	9.2	18.2
82	121.9	0.513	65.4	11.0	6.93	9.173	20.304	18.441	38.5	20.0	27.4	9.0	3.05	0.60	29.3	9.2	18.2
83	122.6	0.519	65.7	11.3	6.94	9.282	20.408	18.514	38.5	20.0	27.2	8.7	3.12	0.61	29.3	9.3	18.0
84	122.9	0.525	65.6	11.2	6.95	9.391	20.460	18.539	38.6	20.0	27.3	8.8	3.11	0.61	29.3	9.3	18.1
85	123.1	0.532	65.5	11.1	6.95	9.501	20.486	18.540	38.6	20.0	27.4	8.9	3.09	0.60	29.3	9.3	18.2
86	123.4	0.538	65.5	11.1	6.96	9.610	20.539	18.565	38.6	20.0	27.5	8.9	3.08	0.60	29.3	9.3	18.2
87	123.6	0.544	65.4	11.0	6.97	9.719	20.565	18.566	38.6	20.0	27.6	9.0	3.06	0.59	29.3	9.3	18.3
88	123.8	0.550	65.3	10.9	6.98	9.828	20.604	18.579	38.6	20.0	27.7	9.1	3.04	0.59	29.3	9.3	18.4
89	124.1	0.556	65.4	11.0	6.99	9.937	20.643	18.592	38.6	20.0	27.6	9.0	3.05	0.59	29.3	9.3	18.3
90	124.7	0.562	65.6	11.3	7.00	10.047	20.735	18.652	38.7	20.0	27.4	8.8	3.13	0.60	29.4	9.3	18.1
91	125.0	0.568	65.6	11.2	7.01	10.156	20.787	18.676	38.7	20.0	27.5	8.8	3.11	0.60	29.4	9.3	18.2
92	125.1	0.574	65.5	11.1	7.01	10.265	20.800	18.665	38.7	20.0	27.6	8.9	3.09	0.60	29.4	9.3	18.3
93	125.3	0.580	65.4	11.1	7.02	10.374	20.839	18.677	38.7	20.0	27.6	9.0	3.08	0.59	29.4	9.3	18.3
94	125.8	0.587	65.4	11.0	7.03	10.483	20.918	18.725	38.8	20.0	27.8	9.0	3.07	0.59	29.4	9.4	18.4
95	126.1	0.593	65.3	10.9	7.04	10.593	20.957	18.737	38.8	20.0	27.8	9.1	3.06	0.58	29.4	9.4	18.5
96	126.2	0.599	65.4	11.0	7.05	10.702	20.983	18.737	38.8	20.0	27.8	9.0	3.07	0.59	29.4	9.4	18.4
97	127.0	0.605	65.6	11.2	7.06	10.811	21.114	18.831	38.9	20.0	27.6	8.8	3.14	0.60	29.4	9.4	18.2
98	127.2	0.611	65.5	11.1	7.07	10.920	21.140	18.831	38.9	20.0	27.7	8.9	3.12	0.59	29.4	9.4	18.3
99	127.5	0.617	65.5	11.1	7.07	11.029	21.192	18.855	38.9	20.0	27.8	8.9	3.11	0.59	29.5	9.4	18.4
100	127.5	0.623	65.4	11.0	7.08	11.139	21.192	18.831	38.9	20.0	27.8	9.0	3.09	0.59	29.4	9.4	18.4



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	127.7	0.629	65.3	10.9	7.09	11.248	21.218	18.832	38.9	20.0	28.0	9.1	3.06	0.58	29.4	9.4	18.5
102	128.2	0.635	65.4	11.0	7.10	11.357	21.297	18.878	38.9	20.0	27.9	9.0	3.10	0.58	29.5	9.4	18.4
103	128.8	0.641	65.6	11.2	7.11	11.466	21.388	18.936	39.0	20.0	27.8	8.8	3.14	0.59	29.5	9.5	18.3
104	129.0	0.648	65.5	11.1	7.12	11.575	21.427	18.947	39.0	20.0	27.9	8.9	3.12	0.59	29.5	9.5	18.4
105	129.3	0.654	65.4	11.1	7.13	11.685	21.466	18.958	39.0	20.0	27.9	9.0	3.11	0.58	29.5	9.5	18.4
106	129.6	0.660	65.4	11.0	7.14	11.794	21.519	18.981	39.0	20.0	28.0	9.0	3.10	0.58	29.5	9.5	18.5
107	129.5	0.666	65.3	10.9	7.14	11.903	21.506	18.946	39.0	20.0	28.0	9.1	3.08	0.58	29.5	9.5	18.6
108	129.8	0.672	65.2	10.9	7.15	12.012	21.558	18.968	39.0	20.0	28.1	9.2	3.07	0.57	29.5	9.5	18.7
109	130.5	0.678	65.5	11.1	7.16	12.121	21.662	19.037	39.1	20.0	28.0	8.9	3.13	0.58	29.6	9.5	18.4
110	130.9	0.684	65.5	11.1	7.17	12.231	21.728	19.070	39.1	20.0	28.0	8.9	3.15	0.58	29.6	9.5	18.4
111	131.1	0.690	65.4	11.1	7.18	12.340	21.754	19.069	39.1	20.0	28.0	9.0	3.13	0.58	29.6	9.5	18.5
112	131.6	0.696	65.4	11.0	7.19	12.449	21.832	19.114	39.1	20.0	28.1	9.0	3.12	0.58	29.6	9.6	18.6
113	131.7	0.703	65.3	10.9	7.20	12.558	21.858	19.113	39.1	20.0	28.2	9.1	3.10	0.57	29.6	9.6	18.6
114	132.1	0.709	65.2	10.9	7.21	12.667	21.911	19.135	39.2	20.0	28.3	9.2	3.09	0.57	29.6	9.6	18.7
115	132.5	0.715	65.2	10.8	7.22	12.777	21.976	19.168	39.2	20.0	28.4	9.2	3.08	0.56	29.6	9.6	18.8
116	132.9	0.721	65.6	11.2	7.22	12.886	22.041	19.201	39.2	20.0	28.0	8.8	3.17	0.58	29.6	9.6	18.4
117	133.2	0.727	65.5	11.1	7.23	12.995	22.093	19.222	39.3	20.0	28.1	8.9	3.15	0.58	29.6	9.6	18.5
118	133.5	0.733	65.4	11.0	7.24	13.104	22.133	19.232	39.3	20.0	28.2	9.0	3.14	0.57	29.6	9.6	18.6
119	133.8	0.739	65.4	11.0	7.25	13.213	22.185	19.254	39.3	20.0	28.3	9.0	3.13	0.57	29.7	9.6	18.7
120	134.1	0.745	65.3	10.9	7.26	13.323	22.237	19.275	39.3	20.0	28.4	9.1	3.11	0.57	29.7	9.6	18.8
121	134.2	0.751	65.2	10.8	7.27	13.432	22.250	19.262	39.3	20.0	28.5	9.2	3.09	0.56	29.7	9.6	18.8
122	134.7	0.757	65.5	11.1	7.28	13.541	22.329	19.305	39.3	20.0	28.2	8.9	3.17	0.58	29.7	9.7	18.5
123	134.9	0.764	65.4	11.1	7.29	13.650	22.368	19.315	39.3	20.0	28.3	9.0	3.15	0.57	29.7	9.7	18.6
124	135.3	0.770	65.4	11.0	7.30	13.759	22.420	19.335	39.4	20.0	28.3	9.0	3.15	0.57	29.7	9.7	18.7
125	135.6	0.776	65.3	10.9	7.31	13.869	22.472	19.356	39.4	20.0	28.4	9.1	3.13	0.57	29.7	9.7	18.8
126	135.9	0.782	65.2	10.9	7.32	13.978	22.525	19.376	39.4	20.0	28.5	9.2	3.11	0.56	29.7	9.7	18.9
127	136.2	0.788	65.2	10.8	7.33	14.087	22.564	19.385	39.4	20.0	28.6	9.2	3.11	0.56	29.7	9.7	18.9
128	136.7	0.794	65.2	10.9	7.34	14.196	22.642	19.428	39.5	20.0	28.6	9.2	3.12	0.56	29.7	9.7	18.9
129	137.3	0.800	65.5	11.1	7.34	14.305	22.747	19.493	39.5	20.0	28.4	8.9	3.18	0.57	29.8	9.7	18.7
130	137.5	0.806	65.4	11.0	7.35	14.415	22.773	19.490	39.5	20.0	28.5	9.0	3.15	0.56	29.8	9.7	18.8
131	137.9	0.812	65.3	10.9	7.36	14.524	22.838	19.521	39.6	20.0	28.6	9.1	3.14	0.56	29.8	9.8	18.9
132	138.2	0.819	65.2	10.9	7.37	14.633	22.890	19.541	39.6	20.0	28.7	9.2	3.13	0.56	29.8	9.8	18.9
133	138.3	0.825	65.2	10.8	7.38	14.742	22.904	19.527	39.6	20.0	28.8	9.2	3.11	0.55	29.8	9.8	19.0
134	138.6	0.831	65.1	10.7	7.39	14.851	22.956	19.547	39.6	20.0	28.9	9.3	3.10	0.55	29.8	9.8	19.1
135	139.0	0.837	65.2	10.9	7.40	14.961	23.008	19.566	39.6	20.0	28.7	9.2	3.13	0.56	29.8	9.8	19.0
136	139.3	0.843	65.4	11.0	7.41	15.070	23.060	19.585	39.6	20.0	28.6	9.0	3.16	0.56	29.8	9.8	18.8
137	139.7	0.849	65.3	10.9	7.42	15.179	23.126	19.615	39.6	20.0	28.7	9.1	3.15	0.56	29.8	9.8	18.9
138	139.9	0.855	65.2	10.8	7.43	15.288	23.152	19.612	39.6	20.0	28.8	9.2	3.13	0.55	29.8	9.8	19.0
139	140.2	0.861	65.1	10.7	7.44	15.397	23.204	19.631	39.7	20.0	28.9	9.3	3.11	0.55	29.8	9.8	19.1
140	140.3	0.867	65.0	10.7	7.45	15.507	23.217	19.617	39.7	20.0	29.0	9.4	3.09	0.54	29.8	9.8	19.2
141	140.9	0.873	65.2	10.8	7.46	15.616	23.309	19.669	39.7	20.0	28.9	9.2	3.13	0.55	29.9	9.8	19.1



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	141.4	0.880	65.3	10.9	7.47	15.725	23.400	19.720	39.8	20.0	28.8	9.1	3.16	0.55	29.9	9.9	19.0
143	141.8	0.886	65.2	10.8	7.48	15.834	23.452	19.739	39.8	20.0	28.9	9.2	3.14	0.55	29.9	9.9	19.1
144	141.9	0.892	65.2	10.8	7.49	15.943	23.478	19.735	39.8	20.0	29.0	9.2	3.13	0.55	29.9	9.9	19.1
145	142.2	0.898	65.1	10.7	7.50	16.053	23.518	19.742	39.8	20.0	29.1	9.3	3.12	0.54	29.9	9.9	19.2
146	142.6	0.904	65.0	10.6	7.51	16.162	23.583	19.771	39.8	20.0	29.2	9.4	3.10	0.54	29.9	9.9	19.3
147	142.8	0.910	64.9	10.6	7.52	16.271	23.609	19.768	39.8	20.0	29.2	9.5	3.09	0.54	29.9	9.9	19.3
148	143.2	0.916	65.2	10.8	7.53	16.380	23.687	19.807	39.8	20.0	29.1	9.2	3.14	0.54	29.9	9.9	19.2
149	143.7	0.922	65.2	10.9	7.54	16.490	23.766	19.847	39.9	20.0	29.0	9.2	3.16	0.55	30.0	9.9	19.1
150	144.0	0.928	65.2	10.8	7.55	16.599	23.805	19.854	39.9	20.0	29.1	9.2	3.15	0.54	30.0	9.9	19.2
151	144.2	0.934	65.1	10.7	7.56	16.708	23.844	19.860	39.9	20.0	29.2	9.3	3.13	0.54	30.0	9.9	19.3
152	144.4	0.941	65.0	10.7	7.57	16.817	23.870	19.856	39.9	20.0	29.2	9.4	3.12	0.54	30.0	9.9	19.3
153	144.7	0.947	64.9	10.6	7.58	16.926	23.923	19.873	39.9	20.0	29.3	9.5	3.10	0.53	30.0	9.9	19.4
154	144.9	0.953	64.9	10.5	7.59	17.036	23.949	19.869	39.9	20.0	29.4	9.5	3.08	0.53	30.0	9.9	19.5
155	145.4	0.959	65.2	10.8	7.60	17.145	24.027	19.908	39.9	20.0	29.1	9.2	3.16	0.54	30.0	10.0	19.2
156	145.7	0.965	65.2	10.8	7.61	17.254	24.079	19.925	40.0	20.0	29.2	9.2	3.15	0.54	30.0	10.0	19.2
157	146.0	0.971	65.1	10.7	7.62	17.363	24.119	19.931	40.0	20.0	29.3	9.3	3.14	0.54	30.0	10.0	19.3
158	146.1	0.977	65.0	10.6	7.63	17.472	24.145	19.926	40.0	20.0	29.3	9.4	3.12	0.53	30.0	10.0	19.4
159	146.5	0.983	64.9	10.5	7.64	17.582	24.197	19.943	40.0	20.0	29.4	9.5	3.10	0.53	30.0	10.0	19.5
160	146.6	0.989	64.8	10.4	7.65	17.691	24.223	19.938	40.0	20.0	29.5	9.6	3.07	0.52	30.0	10.0	19.6
161	147.4	0.996	65.1	10.7	7.66	17.800	24.341	20.008	40.0	20.0	29.3	9.3	3.14	0.53	30.0	10.0	19.3
162	147.7	1.002	65.1	10.7	7.67	17.909	24.393	20.024	40.1	20.0	29.4	9.3	3.15	0.53	30.0	10.0	19.3
163	148.2	1.008	65.0	10.6	7.68	18.018	24.471	20.062	40.1	20.0	29.5	9.4	3.13	0.53	30.1	10.0	19.4
164	148.3	1.014	64.9	10.5	7.69	18.128	24.484	20.046	40.1	20.0	29.5	9.5	3.11	0.53	30.1	10.0	19.5
165	148.6	1.020	64.8	10.5	7.70	18.237	24.537	20.062	40.1	20.0	29.6	9.6	3.10	0.52	30.1	10.0	19.6
166	148.7	1.026	64.8	10.4	7.71	18.346	24.550	20.046	40.1	20.0	29.7	9.6	3.09	0.52	30.1	10.0	19.6
167	148.9	1.032	64.7	10.3	7.72	18.455	24.589	20.051	40.1	20.0	29.8	9.7	3.06	0.51	30.1	10.0	19.8
168	149.6	1.038	65.0	10.7	7.73	18.564	24.693	20.109	40.1	20.0	29.5	9.4	3.15	0.53	30.1	10.1	19.4
169	149.7	1.044	65.0	10.6	7.74	18.674	24.707	20.093	40.1	20.0	29.5	9.4	3.14	0.53	30.1	10.0	19.5
170	150.0	1.050	64.9	10.5	7.75	18.783	24.759	20.108	40.1	20.0	29.6	9.5	3.12	0.52	30.1	10.1	19.5
171	150.2	1.057	64.8	10.5	7.76	18.892	24.785	20.103	40.1	20.0	29.7	9.6	3.10	0.52	30.1	10.1	19.6
172	150.4	1.063	64.7	10.3	7.77	19.001	24.824	20.107	40.1	20.0	29.8	9.7	3.07	0.51	30.1	10.1	19.7
173	150.8	1.069	64.6	10.3	7.78	19.110	24.889	20.133	40.2	20.0	29.9	9.8	3.06	0.51	30.1	10.1	19.8
174	151.1	1.075	64.6	10.3	7.79	19.220	24.929	20.137	40.2	20.0	29.9	9.8	3.06	0.51	30.1	10.1	19.8
175	151.6	1.081	64.9	10.5	7.80	19.329	25.007	20.174	40.2	20.0	29.7	9.5	3.13	0.52	30.1	10.1	19.6
176	151.9	1.087	64.8	10.5	7.81	19.438	25.059	20.188	40.2	20.0	29.8	9.6	3.11	0.52	30.1	10.1	19.7
177	152.1	1.093	64.7	10.4	7.82	19.547	25.099	20.192	40.2	20.0	29.8	9.7	3.09	0.51	30.1	10.1	19.7
178	152.4	1.099	64.7	10.3	7.83	19.656	25.138	20.197	40.2	20.0	29.9	9.7	3.08	0.51	30.1	10.1	19.8
179	152.8	1.105	64.6	10.2	7.84	19.766	25.203	20.222	40.3	20.0	30.0	9.8	3.06	0.51	30.1	10.1	19.9
180	152.9	1.112	64.5	10.1	7.85	19.875	25.229	20.215	40.2	20.0	30.1	9.9	3.04	0.50	30.1	10.1	20.0
181	153.5	1.118	64.8	10.5	7.87	19.984	25.321	20.261	40.3	20.0	29.8	9.6	3.12	0.52	30.2	10.1	19.7
182	153.9	1.119	64.9	10.5	7.87	20.001	25.373	20.298	40.3	20.0	29.8	9.5	3.13	0.52	30.2	10.1	19.7

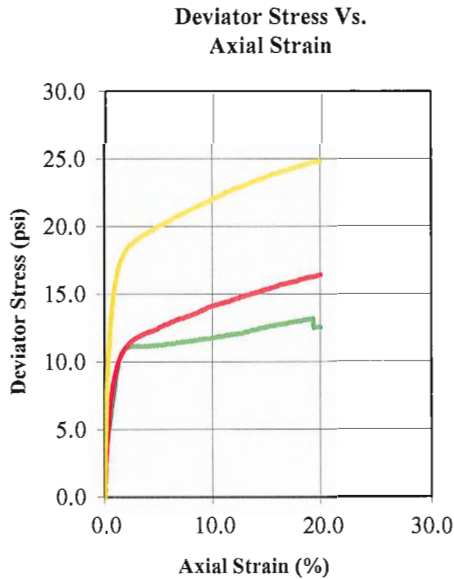


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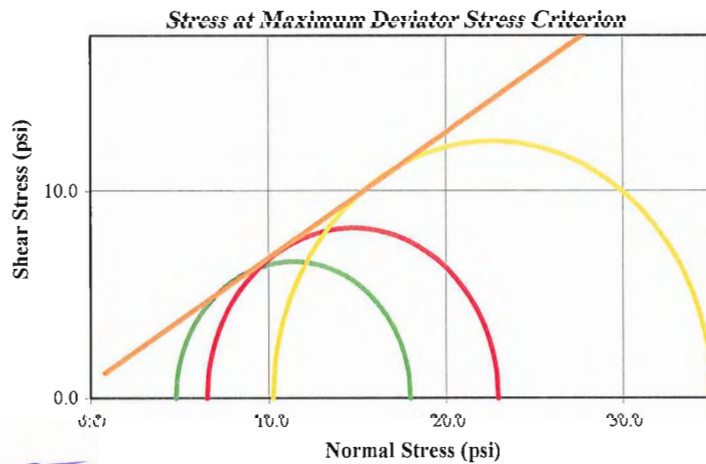
Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME : I-85/I-385 Interchange	SAMPLE NO. : Bag #1
PROJECT NO. : 08195-01	SAMPLE DEPTH : 0.0' to 36.0'
PROJECT LOCATION : B-51	SAMPLE TYPE : Remolded
BORING NUMBER : B-51	DESCRIPTION : Brown & Red Silty Sand
REMARKS :	TEST TYPE : Consolidated Undrained



Initial	Specimen			
	A	D	C	B
Water Content (%)	15.6	16.6	15.6	
Dry Density (pcf)	101.1	101.9	101.5	
Saturation (%)	64.93	70.50	65.86	
Void Ratio	0.633	0.619	0.626	
Diameter (in)	2.808	0.619	2.810	
Height (in)	5.647	5.634	5.650	
Specific Gravity	2.65	2.65	2.65	
Liquid Limit	33	33	33	
Plastic Limit	24	24	24	
After Consolidation		A	D	C
B-Value		0.95	0.97	0.95
Water Content (%)		23.9	20.9	23.1
Dry Density (pcf)		102.18	102.88	109.04
Saturation (%)		100.00	100.00	100.00
Void Ratio		0.619	0.608	0.517
Effective Stress (psi)		5.0	20.0	10.0
Back Press. (psi)		69.7	63.9	57.3
Rate of Strain		0.002	0.002	0.002

Maximum Deviator Stress Criterion		After Shear	A	D	C
C (psi)	3.9	σ'_1 at Failure (psi)	17.97	35.04	22.95
ϕ (deg)	14.6	σ'_3 at Failure (psi)	4.77	10.22	6.50
C' (psi)	0.8				
ϕ' (deg)	31.1				

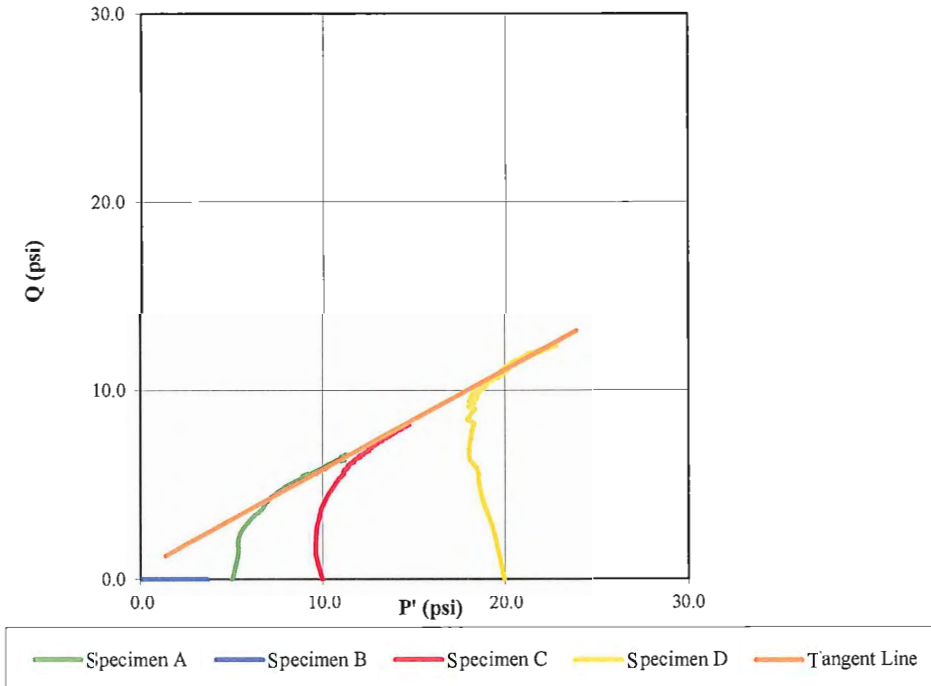


Tested By: [Signature]
 Date: 12-11-12

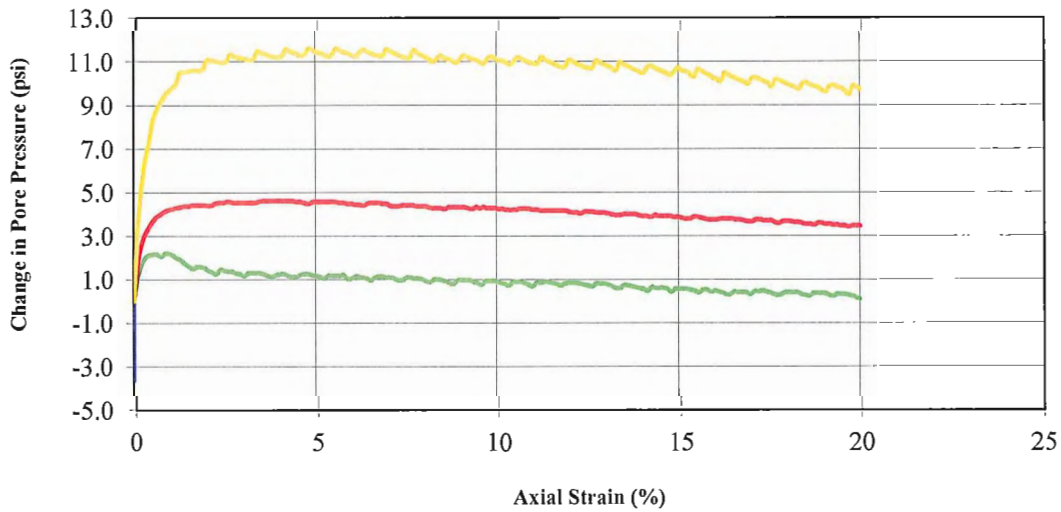
Approved By: SKB
 Date: 12-11-12



Stress Paths (Effective)
($a = 0.5$ $\alpha = 27.8$)



Change in Pore Pressure vs. Axial Strain





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Specimen A Shear Data CU Triaxial Test

File Location
B-51 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-51
Sample Description: Brown & Red Silty Sand
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 33.000
PL: 24.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.808	2.801	
Height (in)	5.647	5.612	
Weight (grams)	1072.60		1150.00
Moisture (%)	15.59		23.94
Dry Density (pcf)	101.10	102.18	
Saturation (%)	64.93	100.00	
Void Ratio	0.633	0.619	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 74.700
Effective Confining Stress (psi): 5.0
Corrected Peak Deviator Stress (psi): 13.196 at reading number: 177

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	0.6	0.000	69.7	0.0	6.16	0.000	0.000	0.000	5.0	5.0	5.0	5.0	1.00	0.00	5.0	0.0	5.0
1	17.6	0.007	70.7	1.1	6.17	0.109	2.762	2.759	7.8	5.0	6.7	4.0	1.70	0.38	6.4	1.4	5.3
2	25.1	0.013	71.4	1.7	6.18	0.218	3.976	3.967	9.0	5.0	7.3	3.3	2.19	0.42	7.0	2.0	5.3
3	30.6	0.019	71.7	2.0	6.18	0.326	4.869	4.853	9.9	5.0	7.9	3.0	2.61	0.41	7.4	2.4	5.4
4	34.6	0.025	71.8	2.1	6.19	0.435	5.523	5.499	10.5	5.0	8.4	2.9	2.90	0.39	7.8	2.7	5.6
5	38.9	0.031	71.8	2.2	6.20	0.544	6.217	6.183	11.2	5.0	9.0	2.9	3.16	0.35	8.1	3.1	5.9
6	42.8	0.037	71.8	2.2	6.20	0.653	6.857	6.812	11.8	5.0	9.7	2.9	3.38	0.32	8.4	3.4	6.3
7	46.6	0.043	71.8	2.1	6.21	0.761	7.471	7.414	12.4	5.0	10.4	2.9	3.52	0.28	8.7	3.7	6.6
8	50.7	0.049	71.9	2.2	6.22	0.870	8.124	8.054	13.1	5.0	10.9	2.8	3.86	0.27	9.0	4.0	6.8
9	54.3	0.055	71.9	2.2	6.22	0.979	8.711	8.626	13.6	5.0	11.4	2.8	4.06	0.26	9.3	4.3	7.1
10	57.8	0.062	71.8	2.1	6.23	1.088	9.285	9.184	14.2	5.0	12.1	2.9	4.17	0.23	9.6	4.6	7.5
11	60.7	0.068	71.7	2.0	6.24	1.197	9.752	9.635	14.7	5.0	12.7	3.0	4.19	0.21	9.8	4.8	7.8
12	63.2	0.074	71.6	1.9	6.25	1.305	10.166	10.033	15.1	5.0	13.1	3.1	4.23	0.19	10.0	5.0	8.1
13	65.0	0.080	71.4	1.8	6.25	1.414	10.459	10.311	15.3	5.0	13.6	3.3	4.16	0.17	10.2	5.2	8.4
14	66.7	0.086	71.3	1.6	6.26	1.523	10.726	10.563	15.6	5.0	14.0	3.4	4.12	0.15	10.3	5.3	8.7
15	67.8	0.092	71.2	1.5	6.27	1.632	10.899	10.721	15.7	5.0	14.2	3.5	4.05	0.14	10.4	5.4	8.9
16	68.7	0.098	71.3	1.6	6.27	1.740	11.059	10.867	15.9	5.0	14.3	3.4	4.17	0.15	10.5	5.4	8.9
17	69.6	0.104	71.3	1.6	6.28	1.849	11.193	10.986	16.0	5.0	14.4	3.4	4.20	0.14	10.5	5.5	8.9
18	70.1	0.110	71.2	1.5	6.29	1.958	11.273	11.052	16.1	5.0	14.5	3.5	4.19	0.14	10.5	5.5	9.0



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	70.2	0.116	71.1	1.4	6.29	2.067	11.300	11.066	16.1	5.0	14.7	3.6	4.08	0.13	10.6	5.5	9.1
20	70.5	0.123	71.0	1.3	6.30	2.175	11.340	11.093	16.1	5.0	14.8	3.7	4.02	0.12	10.6	5.5	9.2
21	70.6	0.129	70.9	1.3	6.31	2.284	11.366	11.107	16.1	5.0	14.9	3.8	3.96	0.11	10.6	5.6	9.3
22	70.9	0.135	71.1	1.5	6.31	2.393	11.406	11.133	16.2	5.0	14.7	3.6	4.14	0.13	10.6	5.6	9.1
23	71.0	0.141	71.1	1.4	6.32	2.502	11.420	11.134	16.2	5.0	14.7	3.6	4.10	0.13	10.6	5.6	9.2
24	71.1	0.147	71.1	1.4	6.33	2.611	11.446	11.147	16.2	5.0	14.8	3.6	4.07	0.12	10.6	5.6	9.2
25	71.2	0.153	71.1	1.4	6.34	2.719	11.460	11.148	16.2	5.0	14.8	3.6	4.07	0.12	10.6	5.6	9.2
26	71.2	0.159	71.0	1.3	6.34	2.828	11.460	11.136	16.2	5.0	14.8	3.7	4.00	0.12	10.6	5.6	9.3
27	71.5	0.165	70.9	1.3	6.35	2.937	11.500	11.162	16.2	5.0	14.9	3.8	3.97	0.11	10.6	5.6	9.3
28	71.5	0.171	70.9	1.2	6.36	3.046	11.500	11.149	16.2	5.0	15.0	3.8	3.91	0.11	10.6	5.6	9.4
29	71.6	0.178	71.0	1.3	6.36	3.154	11.526	11.163	16.2	5.0	14.9	3.7	4.01	0.12	10.6	5.6	9.3
30	71.6	0.184	71.0	1.3	6.37	3.263	11.526	11.150	16.2	5.0	14.9	3.7	4.00	0.12	10.6	5.6	9.3
31	71.6	0.190	71.0	1.3	6.38	3.372	11.526	11.138	16.2	5.0	14.9	3.7	4.00	0.12	10.6	5.6	9.3
32	71.7	0.196	71.0	1.3	6.39	3.481	11.540	11.138	16.2	5.0	14.9	3.7	4.00	0.12	10.6	5.6	9.3
33	71.8	0.202	70.9	1.3	6.39	3.590	11.553	11.138	16.2	5.0	14.9	3.8	3.97	0.11	10.6	5.6	9.3
34	72.0	0.208	70.9	1.2	6.40	3.698	11.580	11.151	16.2	5.0	15.0	3.8	3.91	0.11	10.6	5.6	9.4
35	72.0	0.214	70.8	1.1	6.41	3.807	11.593	11.152	16.2	5.0	15.0	3.9	3.88	0.10	10.6	5.6	9.5
36	72.0	0.220	70.9	1.2	6.42	3.916	11.593	11.139	16.2	5.0	14.9	3.8	3.93	0.11	10.6	5.6	9.4
37	72.2	0.226	70.9	1.3	6.42	4.025	11.620	11.152	16.2	5.0	14.9	3.8	3.97	0.11	10.6	5.6	9.3
38	72.4	0.232	70.9	1.3	6.43	4.133	11.646	11.165	16.2	5.0	14.9	3.8	3.97	0.11	10.6	5.6	9.3
39	72.5	0.239	70.9	1.2	6.44	4.242	11.673	11.178	16.2	5.0	15.0	3.8	3.91	0.11	10.6	5.6	9.4
40	72.6	0.245	70.8	1.1	6.44	4.351	11.686	11.178	16.2	5.0	15.1	3.9	3.88	0.10	10.6	5.6	9.5
41	72.9	0.251	70.8	1.1	6.45	4.460	11.726	11.203	16.2	5.0	15.1	3.9	3.89	0.10	10.6	5.6	9.5
42	72.9	0.257	70.9	1.2	6.46	4.569	11.726	11.191	16.2	5.0	15.0	3.8	3.95	0.11	10.6	5.6	9.4
43	73.0	0.263	70.9	1.3	6.47	4.677	11.753	11.203	16.2	5.0	15.0	3.8	3.98	0.11	10.6	5.6	9.4
44	73.1	0.269	70.9	1.3	6.47	4.786	11.766	11.203	16.2	5.0	15.0	3.8	3.98	0.11	10.6	5.6	9.4
45	73.3	0.275	70.9	1.2	6.48	4.895	11.806	11.229	16.2	5.0	15.0	3.8	3.96	0.11	10.6	5.6	9.4
46	73.4	0.281	70.9	1.2	6.49	5.004	11.820	11.228	16.2	5.0	15.1	3.8	3.93	0.11	10.6	5.6	9.5
47	73.6	0.287	70.8	1.1	6.50	5.112	11.846	11.241	16.3	5.0	15.1	3.9	3.90	0.10	10.6	5.6	9.5
48	73.5	0.293	70.7	1.1	6.50	5.221	11.833	11.215	16.2	5.0	15.2	4.0	3.83	0.09	10.6	5.6	9.6
49	73.8	0.300	70.9	1.2	6.51	5.330	11.887	11.253	16.3	5.0	15.1	3.8	3.93	0.11	10.6	5.6	9.5
50	73.9	0.306	70.9	1.2	6.52	5.439	11.900	11.253	16.3	5.0	15.1	3.8	3.93	0.11	10.6	5.6	9.5
51	74.1	0.312	70.9	1.2	6.53	5.547	11.927	11.265	16.3	5.0	15.1	3.8	3.94	0.10	10.7	5.6	9.5
52	74.4	0.318	70.9	1.2	6.53	5.656	11.980	11.302	16.3	5.0	15.1	3.8	3.95	0.10	10.7	5.7	9.5
53	74.7	0.324	70.9	1.2	6.54	5.765	12.020	11.327	16.3	5.0	15.1	3.8	3.98	0.11	10.7	5.7	9.5
54	74.7	0.330	70.7	1.1	6.55	5.874	12.033	11.326	16.3	5.0	15.3	4.0	3.86	0.09	10.7	5.7	9.6
55	74.7	0.336	70.7	1.1	6.56	5.983	12.033	11.313	16.3	5.0	15.3	4.0	3.86	0.09	10.7	5.7	9.6
56	74.9	0.342	70.8	1.1	6.56	6.091	12.060	11.325	16.3	5.0	15.2	3.9	3.92	0.10	10.7	5.7	9.5
57	75.1	0.348	70.8	1.1	6.57	6.200	12.087	11.337	16.4	5.0	15.2	3.9	3.92	0.10	10.7	5.7	9.5
58	75.2	0.355	70.8	1.1	6.58	6.309	12.113	11.349	16.4	5.0	15.3	3.9	3.90	0.10	10.7	5.7	9.6
59	75.2	0.361	70.7	1.1	6.59	6.418	12.113	11.336	16.4	5.0	15.3	4.0	3.86	0.09	10.7	5.7	9.6



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	75.5	0.367	70.7	1.0	6.59	6.526	12.153	11.360	16.4	5.0	15.4	4.0	3.81	0.09	10.7	5.7	9.7
61	76.0	0.373	70.8	1.1	6.60	6.635	12.233	11.422	16.4	5.0	15.3	3.9	3.92	0.10	10.7	5.7	9.6
62	76.0	0.379	70.8	1.1	6.61	6.744	12.233	11.408	16.4	5.0	15.3	3.9	3.94	0.10	10.7	5.7	9.6
63	76.1	0.385	70.8	1.1	6.62	6.853	12.247	11.407	16.4	5.0	15.3	3.9	3.94	0.10	10.7	5.7	9.6
64	76.2	0.391	70.8	1.1	6.63	6.962	12.273	11.419	16.4	5.0	15.3	3.9	3.91	0.10	10.7	5.7	9.6
65	76.4	0.397	70.8	1.1	6.63	7.070	12.300	11.430	16.4	5.0	15.3	3.9	3.92	0.10	10.7	5.7	9.6
66	76.7	0.403	70.7	1.1	6.64	7.179	12.353	11.467	16.5	5.0	15.4	4.0	3.90	0.09	10.8	5.7	9.7
67	76.8	0.409	70.7	1.0	6.65	7.288	12.367	11.466	16.5	5.0	15.5	4.0	3.84	0.09	10.8	5.7	9.8
68	77.0	0.416	70.7	1.0	6.66	7.397	12.393	11.477	16.5	5.0	15.5	4.0	3.84	0.09	10.8	5.7	9.8
69	77.1	0.422	70.8	1.1	6.66	7.505	12.420	11.488	16.5	5.0	15.4	3.9	3.93	0.10	10.8	5.7	9.7
70	77.4	0.428	70.8	1.1	6.67	7.614	12.460	11.511	16.5	5.0	15.4	3.9	3.94	0.10	10.8	5.8	9.7
71	77.5	0.434	70.7	1.1	6.68	7.723	12.474	11.510	16.5	5.0	15.5	4.0	3.91	0.09	10.8	5.8	9.7
72	77.7	0.440	70.7	1.1	6.69	7.832	12.514	11.534	16.6	5.0	15.5	4.0	3.91	0.09	10.8	5.8	9.7
73	77.8	0.446	70.7	1.0	6.70	7.940	12.527	11.532	16.6	5.0	15.5	4.0	3.88	0.09	10.8	5.8	9.8
74	78.0	0.452	70.6	0.9	6.70	8.049	12.567	11.555	16.6	5.0	15.6	4.1	3.83	0.08	10.8	5.8	9.9
75	78.0	0.458	70.6	0.9	6.71	8.158	12.567	11.542	16.6	5.0	15.7	4.1	3.80	0.08	10.8	5.8	9.9
76	78.4	0.464	70.7	1.0	6.72	8.267	12.620	11.577	16.6	5.0	15.6	4.0	3.89	0.09	10.8	5.8	9.8
77	78.5	0.471	70.7	1.0	6.73	8.376	12.647	11.588	16.6	5.0	15.6	4.0	3.90	0.09	10.8	5.8	9.8
78	78.7	0.477	70.7	1.0	6.74	8.484	12.674	11.598	16.6	5.0	15.6	4.0	3.87	0.08	10.8	5.8	9.8
79	78.9	0.483	70.6	0.9	6.74	8.593	12.700	11.609	16.6	5.0	15.7	4.1	3.84	0.08	10.8	5.8	9.9
80	79.0	0.489	70.5	0.9	6.75	8.702	12.727	11.619	16.6	5.0	15.8	4.2	3.79	0.07	10.8	5.8	10.0
81	79.4	0.495	70.5	0.8	6.76	8.811	12.780	11.654	16.7	5.0	15.9	4.2	3.77	0.07	10.8	5.8	10.0
82	79.4	0.501	70.7	1.0	6.77	8.919	12.794	11.653	16.7	5.0	15.7	4.0	3.88	0.08	10.8	5.8	9.9
83	79.5	0.507	70.7	1.0	6.78	9.028	12.807	11.651	16.7	5.0	15.7	4.0	3.88	0.08	10.8	5.8	9.9
84	79.8	0.513	70.7	1.0	6.78	9.137	12.847	11.673	16.7	5.0	15.7	4.0	3.89	0.08	10.9	5.8	9.9
85	80.1	0.519	70.7	1.0	6.79	9.246	12.900	11.708	16.7	5.0	15.7	4.0	3.90	0.08	10.9	5.9	9.9
86	80.1	0.525	70.6	0.9	6.80	9.355	12.900	11.694	16.7	5.0	15.8	4.1	3.84	0.08	10.9	5.8	10.0
87	80.3	0.532	70.5	0.9	6.81	9.463	12.927	11.704	16.7	5.0	15.9	4.2	3.81	0.07	10.9	5.9	10.0
88	80.4	0.538	70.5	0.8	6.82	9.572	12.954	11.714	16.7	5.0	16.0	4.2	3.76	0.07	10.9	5.9	10.1
89	80.6	0.544	70.6	0.9	6.82	9.681	12.980	11.724	16.7	5.0	15.8	4.1	3.87	0.08	10.9	5.9	9.9
90	80.8	0.550	70.6	0.9	6.83	9.790	13.020	11.746	16.8	5.0	15.8	4.1	3.88	0.08	10.9	5.9	10.0
91	81.2	0.556	70.6	0.9	6.84	9.898	13.074	11.780	16.8	5.0	15.9	4.1	3.89	0.08	10.9	5.9	10.0
92	81.2	0.562	70.6	0.9	6.85	10.007	13.087	11.778	16.8	5.0	15.9	4.1	3.89	0.08	10.9	5.9	10.0
93	81.4	0.568	70.5	0.9	6.86	10.116	13.114	11.787	16.8	5.0	15.9	4.2	3.83	0.07	10.9	5.9	10.1
94	81.7	0.574	70.5	0.8	6.87	10.225	13.167	11.821	16.8	5.0	16.0	4.2	3.81	0.07	10.9	5.9	10.1
95	81.7	0.580	70.4	0.7	6.87	10.334	13.154	11.795	16.8	5.0	16.1	4.3	3.75	0.06	10.9	5.9	10.2
96	82.1	0.587	70.6	0.9	6.88	10.442	13.234	11.852	16.9	5.0	16.0	4.1	3.88	0.08	10.9	5.9	10.0
97	82.3	0.593	70.6	0.9	6.89	10.551	13.261	11.861	16.9	5.0	16.0	4.1	3.88	0.08	10.9	5.9	10.1
98	82.6	0.599	70.6	0.9	6.90	10.660	13.301	11.883	16.9	5.0	16.0	4.1	3.88	0.08	11.0	5.9	10.1
99	82.5	0.605	70.5	0.9	6.91	10.769	13.287	11.856	16.9	5.0	16.0	4.2	3.85	0.07	10.9	5.9	10.1
100	82.8	0.611	70.5	0.8	6.92	10.877	13.341	11.890	16.9	5.0	16.1	4.2	3.80	0.07	11.0	5.9	10.2



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	83.0	0.617	70.4	0.7	6.92	10.986	13.367	11.899	16.9	5.0	16.2	4.3	3.75	0.06	11.0	5.9	10.3
102	83.3	0.623	70.5	0.9	6.93	11.095	13.421	11.932	16.9	5.0	16.1	4.2	3.87	0.07	11.0	6.0	10.1
103	83.5	0.629	70.5	0.9	6.94	11.204	13.447	11.941	17.0	5.0	16.1	4.2	3.87	0.07	11.0	6.0	10.1
104	83.8	0.635	70.6	0.9	6.95	11.312	13.501	11.973	17.0	5.0	16.1	4.1	3.91	0.07	11.0	6.0	10.1
105	83.9	0.641	70.6	0.9	6.96	11.421	13.514	11.971	17.0	5.0	16.1	4.1	3.90	0.07	11.0	6.0	10.1
106	84.0	0.648	70.5	0.9	6.97	11.530	13.527	11.968	17.0	5.0	16.1	4.2	3.88	0.07	11.0	6.0	10.1
107	84.4	0.654	70.5	0.8	6.98	11.639	13.594	12.012	17.0	5.0	16.2	4.2	3.86	0.07	11.0	6.0	10.2
108	84.4	0.660	70.4	0.7	6.98	11.748	13.594	11.997	17.0	5.0	16.3	4.3	3.80	0.06	11.0	6.0	10.3
109	84.8	0.666	70.5	0.8	6.99	11.856	13.661	12.041	17.1	5.0	16.2	4.2	3.86	0.07	11.0	6.0	10.2
110	84.8	0.672	70.5	0.9	7.00	11.965	13.661	12.026	17.0	5.0	16.2	4.2	3.89	0.07	11.0	6.0	10.2
111	85.0	0.678	70.5	0.9	7.01	12.074	13.701	12.047	17.1	5.0	16.2	4.2	3.89	0.07	11.0	6.0	10.2
112	85.1	0.684	70.5	0.9	7.02	12.183	13.714	12.043	17.1	5.0	16.2	4.2	3.89	0.07	11.0	6.0	10.2
113	85.4	0.690	70.5	0.8	7.03	12.291	13.768	12.075	17.1	5.0	16.3	4.2	3.87	0.07	11.1	6.0	10.2
114	85.5	0.696	70.5	0.8	7.04	12.400	13.781	12.072	17.1	5.0	16.3	4.2	3.84	0.06	11.1	6.0	10.3
115	85.7	0.703	70.4	0.7	7.05	12.509	13.808	12.080	17.1	5.0	16.4	4.3	3.82	0.06	11.1	6.0	10.3
116	85.8	0.709	70.4	0.7	7.05	12.618	13.834	12.089	17.1	5.0	16.4	4.3	3.80	0.06	11.1	6.0	10.4
117	86.1	0.715	70.5	0.8	7.06	12.727	13.874	12.109	17.1	5.0	16.3	4.2	3.88	0.07	11.1	6.1	10.3
118	86.4	0.721	70.5	0.8	7.07	12.835	13.928	12.140	17.2	5.0	16.3	4.2	3.89	0.07	11.1	6.1	10.3
119	86.8	0.727	70.5	0.8	7.08	12.944	13.994	12.183	17.2	5.0	16.4	4.2	3.90	0.07	11.1	6.1	10.3
120	87.1	0.733	70.5	0.8	7.09	13.053	14.034	12.202	17.2	5.0	16.4	4.2	3.88	0.06	11.1	6.1	10.3
121	87.2	0.739	70.4	0.7	7.10	13.162	14.061	12.210	17.2	5.0	16.5	4.3	3.82	0.06	11.1	6.1	10.4
122	87.3	0.745	70.3	0.6	7.11	13.270	14.074	12.207	17.2	5.0	16.6	4.4	3.77	0.05	11.1	6.1	10.5
123	87.9	0.751	70.3	0.6	7.12	13.379	14.168	12.272	17.3	5.0	16.7	4.4	3.78	0.05	11.2	6.1	10.5
124	88.3	0.757	70.4	0.7	7.12	13.488	14.234	12.315	17.3	5.0	16.6	4.3	3.87	0.06	11.2	6.2	10.4
125	88.5	0.764	70.4	0.7	7.13	13.597	14.261	12.322	17.3	5.0	16.6	4.3	3.88	0.06	11.2	6.2	10.4
126	88.6	0.770	70.4	0.7	7.14	13.706	14.288	12.330	17.3	5.0	16.7	4.3	3.85	0.06	11.2	6.2	10.5
127	89.0	0.776	70.3	0.7	7.15	13.814	14.341	12.360	17.4	5.0	16.7	4.4	3.83	0.05	11.2	6.2	10.5
128	89.2	0.782	70.3	0.6	7.16	13.923	14.381	12.379	17.4	5.0	16.8	4.4	3.81	0.05	11.2	6.2	10.6
129	89.3	0.788	70.3	0.6	7.17	14.032	14.395	12.375	17.4	5.0	16.8	4.4	3.78	0.05	11.2	6.2	10.6
130	89.6	0.794	70.2	0.5	7.18	14.141	14.448	12.405	17.4	5.0	16.9	4.5	3.74	0.04	11.2	6.2	10.7
131	90.0	0.800	70.3	0.7	7.19	14.249	14.501	12.435	17.5	5.0	16.8	4.4	3.85	0.05	11.2	6.2	10.6
132	90.4	0.806	70.3	0.6	7.20	14.358	14.568	12.476	17.5	5.0	16.9	4.4	3.83	0.05	11.3	6.2	10.6
133	90.5	0.812	70.3	0.6	7.21	14.467	14.595	12.483	17.5	5.0	16.9	4.4	3.83	0.05	11.3	6.2	10.6
134	90.8	0.819	70.3	0.6	7.22	14.576	14.635	12.502	17.5	5.0	16.9	4.4	3.84	0.05	11.3	6.3	10.7
135	90.9	0.825	70.3	0.6	7.22	14.684	14.661	12.508	17.5	5.0	17.0	4.4	3.81	0.05	11.3	6.3	10.7
136	91.1	0.831	70.1	0.4	7.23	14.793	14.688	12.515	17.5	5.0	17.1	4.6	3.74	0.04	11.3	6.3	10.8
137	91.5	0.837	70.3	0.6	7.24	14.902	14.755	12.556	17.6	5.0	17.0	4.4	3.82	0.05	11.3	6.3	10.7
138	91.9	0.843	70.3	0.6	7.25	15.011	14.821	12.597	17.6	5.0	17.0	4.4	3.83	0.05	11.3	6.3	10.7
139	91.9	0.849	70.3	0.6	7.26	15.120	14.821	12.581	17.6	5.0	17.0	4.4	3.83	0.05	11.3	6.3	10.7
140	92.3	0.855	70.3	0.6	7.27	15.228	14.875	12.610	17.6	5.0	17.1	4.4	3.84	0.05	11.3	6.3	10.8
141	92.7	0.861	70.2	0.5	7.28	15.337	14.942	12.650	17.7	5.0	17.1	4.5	3.82	0.04	11.3	6.3	10.8



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	92.8	0.867	70.2	0.5	7.29	15.446	14.955	12.645	17.7	5.0	17.2	4.5	3.79	0.04	11.3	6.3	10.9
143	92.8	0.873	70.1	0.4	7.30	15.555	14.968	12.640	17.7	5.0	17.3	4.6	3.74	0.03	11.3	6.3	10.9
144	93.2	0.880	70.2	0.5	7.31	15.663	15.022	12.669	17.7	5.0	17.2	4.5	3.82	0.04	11.4	6.3	10.8
145	93.3	0.886	70.2	0.5	7.32	15.772	15.048	12.675	17.7	5.0	17.2	4.5	3.82	0.04	11.4	6.3	10.8
146	93.8	0.892	70.1	0.4	7.33	15.881	15.128	12.726	17.7	5.0	17.3	4.6	3.78	0.04	11.4	6.4	10.9
147	94.1	0.898	70.2	0.5	7.34	15.990	15.168	12.743	17.8	5.0	17.3	4.5	3.81	0.04	11.4	6.4	10.9
148	94.3	0.904	70.1	0.4	7.35	16.099	15.208	12.760	17.8	5.0	17.3	4.6	3.79	0.04	11.4	6.4	10.9
149	94.6	0.910	70.1	0.4	7.36	16.207	15.248	12.777	17.8	5.0	17.4	4.6	3.77	0.03	11.4	6.4	11.0
150	94.6	0.916	70.0	0.3	7.37	16.316	15.248	12.760	17.8	5.0	17.5	4.7	3.72	0.03	11.4	6.4	11.1
151	94.8	0.922	70.0	0.3	7.38	16.425	15.288	12.777	17.8	5.0	17.5	4.7	3.72	0.03	11.4	6.4	11.1
152	95.1	0.928	70.1	0.4	7.38	16.534	15.342	12.805	17.8	5.0	17.4	4.6	3.80	0.04	11.4	6.4	11.0
153	95.2	0.934	70.1	0.4	7.39	16.642	15.355	12.800	17.8	5.0	17.4	4.6	3.78	0.03	11.4	6.4	11.0
154	95.6	0.941	70.1	0.4	7.40	16.751	15.408	12.827	17.8	5.0	17.4	4.6	3.78	0.03	11.4	6.4	11.0
155	95.9	0.947	70.1	0.4	7.41	16.860	15.462	12.855	17.9	5.0	17.5	4.6	3.79	0.03	11.4	6.4	11.0
156	96.0	0.953	70.0	0.3	7.42	16.969	15.475	12.849	17.9	5.0	17.5	4.7	3.74	0.03	11.4	6.4	11.1
157	96.4	0.959	70.1	0.4	7.43	17.078	15.542	12.888	17.9	5.0	17.5	4.6	3.82	0.03	11.5	6.4	11.0
158	96.6	0.965	70.1	0.4	7.44	17.186	15.582	12.904	17.9	5.0	17.5	4.6	3.82	0.03	11.5	6.5	11.0
159	96.9	0.971	70.2	0.5	7.45	17.295	15.622	12.920	17.9	5.0	17.4	4.5	3.85	0.04	11.5	6.5	11.0
160	97.0	0.977	70.1	0.4	7.46	17.404	15.649	12.925	17.9	5.0	17.5	4.6	3.83	0.03	11.5	6.5	11.0
161	97.4	0.983	70.1	0.4	7.47	17.513	15.702	12.952	18.0	5.0	17.6	4.6	3.81	0.03	11.5	6.5	11.1
162	97.6	0.989	70.0	0.3	7.48	17.621	15.742	12.968	18.0	5.0	17.7	4.7	3.76	0.03	11.5	6.5	11.2
163	97.8	0.996	70.0	0.3	7.49	17.730	15.769	12.973	18.0	5.0	17.7	4.7	3.74	0.02	11.5	6.5	11.2
164	98.2	1.002	70.0	0.3	7.50	17.839	15.835	13.010	18.0	5.0	17.7	4.7	3.77	0.03	11.5	6.5	11.2
165	98.3	1.008	70.1	0.4	7.51	17.948	15.862	13.015	18.0	5.0	17.6	4.6	3.82	0.03	11.5	6.5	11.1
166	98.3	1.014	70.1	0.4	7.52	18.056	15.862	12.998	18.0	5.0	17.6	4.6	3.82	0.03	11.5	6.5	11.1
167	98.8	1.020	70.1	0.4	7.53	18.165	15.929	13.035	18.1	5.0	17.6	4.6	3.83	0.03	11.5	6.5	11.1
168	99.0	1.026	70.1	0.4	7.54	18.274	15.969	13.051	18.1	5.0	17.7	4.6	3.83	0.03	11.5	6.5	11.1
169	99.3	1.032	70.0	0.3	7.55	18.383	16.022	13.077	18.1	5.0	17.8	4.7	3.79	0.02	11.6	6.5	11.2
170	99.6	1.038	70.0	0.3	7.56	18.492	16.062	13.092	18.1	5.0	17.8	4.7	3.77	0.02	11.6	6.5	11.3
171	99.7	1.044	69.9	0.2	7.57	18.600	16.089	13.096	18.1	5.0	17.9	4.8	3.74	0.02	11.6	6.5	11.3
172	100.2	1.050	70.0	0.4	7.58	18.709	16.156	13.133	18.2	5.0	17.8	4.7	3.82	0.03	11.6	6.6	11.2
173	100.4	1.057	70.0	0.4	7.59	18.818	16.196	13.148	18.2	5.0	17.8	4.7	3.83	0.03	11.6	6.6	11.2
174	100.4	1.063	70.0	0.4	7.60	18.927	16.196	13.130	18.1	5.0	17.8	4.7	3.82	0.03	11.6	6.6	11.2
175	100.7	1.069	70.0	0.4	7.61	19.035	16.249	13.156	18.2	5.0	17.8	4.7	3.83	0.03	11.6	6.6	11.2
176	100.9	1.075	70.0	0.3	7.62	19.144	16.276	13.160	18.2	5.0	17.9	4.7	3.78	0.02	11.6	6.6	11.3
177	101.3	1.081	69.9	0.2	7.63	19.253	16.342	13.196	18.2	5.0	18.0	4.8	3.76	0.02	11.6	6.6	11.4
178	101.5	1.087	70.0	0.3	7.64	19.362	16.369	12.536	17.6	5.0	17.2	4.7	3.67	0.03	11.3	6.3	11.0
179	101.7	1.093	70.0	0.3	7.65	19.471	16.409	12.547	17.6	5.0	17.2	4.7	3.67	0.03	11.3	6.3	11.0
180	101.9	1.099	70.0	0.3	7.66	19.579	16.436	12.547	17.6	5.0	17.2	4.7	3.67	0.03	11.3	6.3	11.0
181	102.1	1.105	70.0	0.3	7.67	19.688	16.476	12.557	17.6	5.0	17.3	4.7	3.65	0.02	11.3	6.3	11.0
182	102.5	1.112	69.9	0.2	7.69	19.797	16.529	12.578	17.6	5.0	17.4	4.8	3.64	0.02	11.3	6.3	11.1



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	102.6	1.118	69.8	0.2	7.70	19.906	16.556	12.578	17.6	5.0	17.4	4.9	3.59	0.01	11.3	6.3	11.1
184	102.8	1.122	69.8	0.1	7.70	19.989	16.582	12.583	17.6	5.0	17.5	4.9	3.57	0.01	11.3	6.3	11.2



File Location
B-51 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-51
Sample Description: Brown & Red Silty Sand
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 33.000
PL: 24.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.800	2.794	
Height (in)	5.634	5.607	
Weight (grams)	1082.20		1122.80
Moisture (%)	16.57		20.94
Dry Density (pcf)	101.94	102.88	
Saturation (%)	70.50	100.00	
Void Ratio	0.619	0.608	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 83.900
Effective Confining Stress (psi): 20.0
Corrected Peak Deviator Stress (psi): 24.820 at reading number: 187

Specimen D

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	0.7	0.000	63.9	0.0	6.13	0.000	0.000	0.000	20.0	20.0	20.0	20.0	1.00	0.00	20.0	0.0	20.0
1	32.0	0.006	67.1	3.1	6.14	0.107	5.113	5.107	25.1	20.0	21.9	16.8	1.30	0.61	22.5	2.6	19.4
2	49.9	0.012	69.1	5.1	6.14	0.214	8.038	8.021	28.0	20.0	22.9	14.8	1.54	0.64	24.0	4.0	18.9
3	62.7	0.018	70.3	6.4	6.15	0.321	10.118	10.085	30.0	20.0	23.6	13.6	1.74	0.63	25.0	5.0	18.6
4	72.0	0.024	71.2	7.2	6.16	0.428	11.634	11.584	31.5	20.0	24.3	12.7	1.91	0.63	25.7	5.8	18.5
5	79.2	0.030	72.2	8.2	6.16	0.535	12.815	12.746	32.7	20.0	24.5	11.7	2.09	0.65	26.3	6.4	18.1
6	85.4	0.036	72.7	8.8	6.17	0.643	13.822	13.733	33.7	20.0	24.9	11.2	2.23	0.64	26.8	6.9	18.1
7	90.5	0.042	73.1	9.1	6.18	0.750	14.654	14.544	34.5	20.0	25.4	10.8	2.34	0.63	27.2	7.3	18.1
8	94.7	0.048	73.4	9.4	6.18	0.857	15.338	15.206	35.2	20.0	25.7	10.5	2.44	0.62	27.6	7.6	18.1
9	98.1	0.055	73.6	9.6	6.19	0.964	15.888	15.735	35.7	20.0	26.1	10.3	2.52	0.61	27.8	7.9	18.2
10	100.9	0.061	73.7	9.8	6.20	1.071	16.344	16.169	36.1	20.0	26.3	10.2	2.59	0.60	28.0	8.1	18.3
11	103.4	0.067	73.9	9.9	6.20	1.178	16.760	16.563	36.5	20.0	26.6	10.0	2.65	0.60	28.2	8.3	18.3
12	105.7	0.073	74.4	10.5	6.21	1.285	17.136	16.916	36.9	20.0	26.4	9.5	2.78	0.62	28.4	8.5	18.0
13	107.7	0.079	74.4	10.5	6.22	1.392	17.458	17.215	37.2	20.0	26.7	9.5	2.82	0.61	28.6	8.6	18.1
14	109.2	0.085	74.5	10.5	6.22	1.499	17.700	17.434	37.4	20.0	26.8	9.4	2.85	0.60	28.7	8.7	18.1
15	110.6	0.091	74.5	10.6	6.23	1.606	17.928	17.640	37.6	20.0	27.0	9.4	2.88	0.60	28.8	8.8	18.2
16	111.9	0.097	74.5	10.6	6.24	1.713	18.142	17.832	37.8	20.0	27.2	9.4	2.90	0.59	28.9	8.9	18.3
17	112.9	0.103	74.5	10.6	6.24	1.820	18.303	17.970	37.9	20.0	27.3	9.4	2.92	0.59	28.9	9.0	18.4
18	113.9	0.109	74.6	10.7	6.25	1.928	18.464	18.109	38.1	20.0	27.4	9.3	2.95	0.59	29.0	9.1	18.3



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	115.0	0.115	75.0	11.1	6.26	2.035	18.652	18.273	38.2	20.0	27.2	8.9	3.06	0.61	29.1	9.1	18.0
20	115.8	0.121	75.0	11.0	6.27	2.142	18.773	18.371	38.3	20.0	27.3	8.9	3.06	0.60	29.1	9.2	18.1
21	116.4	0.127	75.0	11.0	6.27	2.249	18.880	18.456	38.4	20.0	27.4	8.9	3.07	0.60	29.2	9.2	18.2
22	117.2	0.133	74.9	11.0	6.28	2.356	19.001	18.554	38.5	20.0	27.5	9.0	3.07	0.59	29.2	9.3	18.2
23	117.7	0.139	74.9	10.9	6.29	2.463	19.095	18.625	38.6	20.0	27.6	9.0	3.07	0.59	29.3	9.3	18.3
24	118.3	0.145	75.0	11.0	6.29	2.570	19.189	18.696	38.7	20.0	27.6	8.9	3.09	0.59	29.3	9.3	18.3
25	119.1	0.151	75.3	11.3	6.30	2.677	19.323	18.806	38.8	20.0	27.5	8.6	3.17	0.60	29.4	9.4	18.1
26	119.6	0.157	75.2	11.2	6.31	2.784	19.404	18.864	38.8	20.0	27.6	8.7	3.16	0.60	29.4	9.4	18.2
27	120.2	0.163	75.1	11.2	6.31	2.891	19.498	18.934	38.9	20.0	27.7	8.8	3.16	0.59	29.4	9.5	18.2
28	120.8	0.169	75.1	11.1	6.32	2.998	19.592	19.004	39.0	20.0	27.8	8.8	3.16	0.59	29.5	9.5	18.3
29	121.4	0.175	75.1	11.1	6.33	3.105	19.686	19.074	39.0	20.0	27.9	8.8	3.16	0.58	29.5	9.5	18.4
30	121.7	0.181	75.0	11.1	6.33	3.213	19.739	19.105	39.1	20.0	28.0	8.9	3.15	0.58	29.5	9.6	18.4
31	122.3	0.187	75.1	11.1	6.34	3.320	19.833	19.175	39.1	20.0	28.0	8.8	3.18	0.58	29.5	9.6	18.4
32	122.8	0.193	75.4	11.5	6.35	3.427	19.927	19.244	39.2	20.0	27.7	8.5	3.27	0.60	29.6	9.6	18.1
33	123.4	0.199	75.3	11.4	6.36	3.534	20.021	19.314	39.3	20.0	27.9	8.6	3.25	0.59	29.6	9.7	18.2
34	123.8	0.205	75.3	11.3	6.36	3.641	20.088	19.357	39.3	20.0	28.0	8.6	3.25	0.59	29.6	9.7	18.3
35	124.2	0.211	75.2	11.3	6.37	3.748	20.142	19.387	39.3	20.0	28.1	8.7	3.23	0.58	29.6	9.7	18.4
36	124.6	0.217	75.2	11.2	6.38	3.855	20.222	19.443	39.4	20.0	28.2	8.7	3.23	0.58	29.7	9.7	18.5
37	125.0	0.223	75.1	11.2	6.38	3.962	20.276	19.473	39.4	20.0	28.2	8.8	3.22	0.57	29.7	9.7	18.5
38	125.6	0.229	75.2	11.3	6.39	4.069	20.383	19.554	39.5	20.0	28.2	8.7	3.25	0.58	29.7	9.8	18.5
39	126.2	0.235	75.5	11.5	6.40	4.176	20.477	19.622	39.6	20.0	28.0	8.4	3.33	0.59	29.8	9.8	18.2
40	126.7	0.241	75.4	11.5	6.41	4.283	20.558	19.677	39.6	20.0	28.2	8.5	3.32	0.58	29.8	9.8	18.3
41	127.1	0.247	75.4	11.4	6.41	4.391	20.625	19.719	39.7	20.0	28.2	8.5	3.31	0.58	29.8	9.9	18.4
42	127.4	0.253	75.3	11.3	6.42	4.498	20.679	19.749	39.7	20.0	28.4	8.6	3.29	0.57	29.8	9.9	18.5
43	128.0	0.259	75.2	11.3	6.43	4.605	20.773	19.816	39.8	20.0	28.5	8.7	3.28	0.57	29.9	9.9	18.6
44	128.4	0.265	75.3	11.3	6.43	4.712	20.840	19.858	39.8	20.0	28.5	8.6	3.31	0.57	29.9	9.9	18.5
45	129.1	0.271	75.5	11.6	6.44	4.819	20.947	19.938	39.9	20.0	28.3	8.4	3.38	0.58	29.9	10.0	18.3
46	129.6	0.277	75.5	11.5	6.45	4.926	21.028	19.992	39.9	20.0	28.4	8.4	3.37	0.58	30.0	10.0	18.4
47	130.0	0.283	75.4	11.4	6.46	5.033	21.095	20.033	40.0	20.0	28.6	8.5	3.35	0.57	30.0	10.0	18.5
48	130.3	0.289	75.3	11.4	6.46	5.140	21.148	20.061	40.0	20.0	28.6	8.6	3.34	0.57	30.0	10.0	18.6
49	130.7	0.295	75.3	11.3	6.47	5.247	21.215	20.102	40.1	20.0	28.8	8.6	3.32	0.56	30.0	10.1	18.7
50	131.1	0.301	75.2	11.2	6.48	5.354	21.269	20.130	40.1	20.0	28.9	8.7	3.31	0.56	30.0	10.1	18.8
51	131.6	0.307	75.3	11.3	6.49	5.461	21.350	20.184	40.1	20.0	28.8	8.6	3.34	0.56	30.0	10.1	18.7
52	132.1	0.313	75.5	11.6	6.49	5.568	21.443	20.249	40.2	20.0	28.6	8.4	3.42	0.57	30.1	10.1	18.5
53	132.5	0.319	75.5	11.5	6.50	5.676	21.497	20.277	40.2	20.0	28.7	8.4	3.40	0.57	30.1	10.1	18.6
54	132.9	0.325	75.4	11.4	6.51	5.783	21.564	20.317	40.3	20.0	28.8	8.5	3.38	0.56	30.1	10.2	18.7
55	133.2	0.331	75.3	11.4	6.51	5.890	21.618	20.345	40.3	20.0	28.9	8.6	3.37	0.56	30.1	10.2	18.7
56	133.7	0.337	75.3	11.3	6.52	5.997	21.698	20.397	40.4	20.0	29.0	8.6	3.36	0.55	30.2	10.2	18.8
57	134.0	0.343	75.2	11.2	6.53	6.104	21.752	20.424	40.4	20.0	29.2	8.7	3.34	0.55	30.2	10.2	18.9
58	134.6	0.349	75.3	11.4	6.54	6.211	21.846	20.489	40.4	20.0	29.1	8.6	3.39	0.56	30.2	10.2	18.8
59	135.2	0.355	75.5	11.5	6.54	6.318	21.940	20.554	40.5	20.0	29.0	8.4	3.44	0.56	30.2	10.3	18.7



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	135.5	0.361	75.4	11.5	6.55	6.425	21.994	20.581	40.5	20.0	29.1	8.5	3.42	0.56	30.2	10.3	18.8
61	136.2	0.367	75.3	11.4	6.56	6.532	22.101	20.657	40.6	20.0	29.2	8.6	3.41	0.55	30.3	10.3	18.9
62	136.4	0.373	75.3	11.3	6.57	6.639	22.141	20.671	40.6	20.0	29.3	8.6	3.39	0.55	30.3	10.3	19.0
63	137.0	0.379	75.2	11.3	6.57	6.746	22.235	20.735	40.7	20.0	29.4	8.7	3.39	0.54	30.3	10.4	19.1
64	137.3	0.385	75.2	11.3	6.58	6.853	22.289	20.761	40.7	20.0	29.5	8.7	3.39	0.54	30.3	10.4	19.1
65	138.1	0.391	75.5	11.5	6.59	6.961	22.410	20.850	40.8	20.0	29.3	8.4	3.48	0.55	30.4	10.4	18.8
66	138.4	0.397	75.4	11.5	6.60	7.068	22.463	20.876	40.8	20.0	29.4	8.5	3.46	0.55	30.4	10.4	18.9
67	138.8	0.403	75.3	11.4	6.61	7.175	22.530	20.914	40.9	20.0	29.5	8.6	3.44	0.54	30.4	10.5	19.0
68	139.3	0.409	75.3	11.3	6.61	7.282	22.611	20.964	40.9	20.0	29.6	8.6	3.42	0.54	30.4	10.5	19.1
69	139.6	0.415	75.2	11.2	6.62	7.389	22.665	20.990	40.9	20.0	29.7	8.7	3.40	0.53	30.5	10.5	19.2
70	140.0	0.421	75.1	11.2	6.63	7.496	22.732	21.028	41.0	20.0	29.8	8.8	3.40	0.53	30.5	10.5	19.3
71	140.5	0.427	75.1	11.2	6.64	7.603	22.812	21.078	41.0	20.0	29.8	8.8	3.40	0.53	30.5	10.5	19.3
72	141.2	0.433	75.5	11.5	6.64	7.710	22.920	21.152	41.1	20.0	29.6	8.4	3.50	0.54	30.5	10.6	19.0
73	141.6	0.439	75.3	11.4	6.65	7.817	22.987	21.190	41.1	20.0	29.8	8.6	3.47	0.54	30.6	10.6	19.2
74	141.9	0.445	75.3	11.3	6.66	7.924	23.040	21.215	41.2	20.0	29.9	8.6	3.45	0.53	30.6	10.6	19.3
75	142.3	0.451	75.2	11.2	6.67	8.031	23.107	21.252	41.2	20.0	30.0	8.7	3.43	0.53	30.6	10.6	19.4
76	142.8	0.457	75.1	11.1	6.67	8.139	23.188	21.301	41.3	20.0	30.2	8.8	3.41	0.52	30.6	10.7	19.5
77	143.2	0.463	74.9	11.0	6.68	8.246	23.255	21.338	41.3	20.0	30.3	9.0	3.38	0.51	30.6	10.7	19.6
78	143.7	0.469	75.1	11.1	6.69	8.353	23.322	21.374	41.3	20.0	30.2	8.8	3.43	0.52	30.6	10.7	19.5
79	144.3	0.475	75.2	11.3	6.70	8.460	23.430	21.447	41.4	20.0	30.1	8.7	3.47	0.53	30.7	10.7	19.4
80	144.6	0.481	75.1	11.1	6.71	8.567	23.483	21.471	41.4	20.0	30.3	8.8	3.44	0.52	30.7	10.7	19.5
81	145.0	0.487	75.1	11.1	6.71	8.674	23.550	21.508	41.5	20.0	30.4	8.8	3.43	0.52	30.7	10.8	19.6
82	145.5	0.493	75.0	11.0	6.72	8.781	23.617	21.544	41.5	20.0	30.5	8.9	3.41	0.51	30.7	10.8	19.7
83	145.8	0.499	74.9	10.9	6.73	8.888	23.671	21.567	41.5	20.0	30.6	9.0	3.39	0.51	30.7	10.8	19.8
84	146.2	0.505	75.1	11.1	6.74	8.995	23.738	21.603	41.6	20.0	30.5	8.8	3.44	0.51	30.8	10.8	19.7
85	146.9	0.511	75.2	11.3	6.75	9.102	23.845	21.675	41.6	20.0	30.4	8.7	3.49	0.52	30.8	10.8	19.5
86	147.1	0.517	75.1	11.2	6.75	9.209	23.886	21.686	41.6	20.0	30.5	8.8	3.47	0.52	30.8	10.8	19.6
87	147.5	0.523	75.1	11.1	6.76	9.316	23.953	21.721	41.7	20.0	30.6	8.8	3.45	0.51	30.8	10.9	19.7
88	147.8	0.529	75.0	11.1	6.77	9.424	24.007	21.744	41.7	20.0	30.6	8.9	3.45	0.51	30.8	10.9	19.8
89	148.3	0.535	74.9	11.0	6.78	9.531	24.074	21.779	41.7	20.0	30.7	9.0	3.43	0.50	30.8	10.9	19.9
90	148.8	0.541	74.8	10.9	6.79	9.638	24.154	21.826	41.8	20.0	30.9	9.1	3.41	0.50	30.9	10.9	20.0
91	149.4	0.547	75.1	11.1	6.79	9.745	24.261	21.897	41.9	20.0	30.7	8.8	3.47	0.51	30.9	10.9	19.8
92	150.0	0.553	75.2	11.2	6.80	9.852	24.355	21.956	41.9	20.0	30.7	8.7	3.52	0.51	30.9	11.0	19.7
93	150.5	0.559	75.1	11.1	6.81	9.959	24.436	22.002	42.0	20.0	30.8	8.8	3.50	0.51	31.0	11.0	19.8
94	151.0	0.565	75.0	11.1	6.82	10.066	24.516	22.049	42.0	20.0	30.9	8.9	3.48	0.50	31.0	11.0	19.9
95	151.3	0.571	75.0	11.0	6.83	10.173	24.570	22.071	42.0	20.0	31.0	8.9	3.47	0.50	31.0	11.0	20.0
96	151.7	0.577	74.9	10.9	6.83	10.280	24.637	22.104	42.1	20.0	31.1	9.0	3.45	0.50	31.0	11.1	20.1
97	152.1	0.583	74.8	10.9	6.84	10.387	24.704	22.138	42.1	20.0	31.2	9.1	3.44	0.49	31.0	11.1	20.2
98	152.8	0.589	75.0	11.1	6.85	10.494	24.812	22.208	42.2	20.0	31.1	8.9	3.50	0.50	31.1	11.1	20.0
99	153.2	0.595	75.1	11.2	6.86	10.601	24.879	22.241	42.2	20.0	31.0	8.8	3.54	0.50	31.1	11.1	19.9
100	153.7	0.601	75.1	11.1	6.87	10.709	24.959	22.286	42.2	20.0	31.1	8.8	3.52	0.50	31.1	11.1	20.0



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	153.9	0.607	75.0	11.0	6.87	10.816	25.000	22.296	42.3	20.0	31.2	8.9	3.50	0.49	31.1	11.1	20.1
102	154.4	0.613	74.9	10.9	6.88	10.923	25.080	22.341	42.3	20.0	31.4	9.0	3.48	0.49	31.1	11.2	20.2
103	154.8	0.619	74.8	10.9	6.89	11.030	25.147	22.373	42.3	20.0	31.4	9.1	3.47	0.49	31.1	11.2	20.2
104	155.2	0.625	74.8	10.9	6.90	11.137	25.201	22.394	42.4	20.0	31.4	9.1	3.47	0.49	31.2	11.2	20.2
105	156.2	0.631	75.1	11.2	6.91	11.244	25.362	22.510	42.5	20.0	31.3	8.8	3.57	0.50	31.2	11.3	20.0
106	156.5	0.637	75.0	11.1	6.92	11.351	25.416	22.531	42.5	20.0	31.4	8.9	3.53	0.49	31.2	11.3	20.2
107	156.9	0.643	74.9	11.0	6.92	11.458	25.483	22.563	42.5	20.0	31.5	9.0	3.52	0.49	31.2	11.3	20.3
108	157.4	0.649	74.8	10.9	6.93	11.565	25.563	22.607	42.6	20.0	31.7	9.1	3.50	0.48	31.3	11.3	20.4
109	157.7	0.655	74.8	10.8	6.94	11.672	25.617	22.627	42.6	20.0	31.8	9.1	3.48	0.48	31.3	11.3	20.4
110	158.2	0.661	74.7	10.7	6.95	11.779	25.697	22.670	42.6	20.0	31.9	9.2	3.46	0.47	31.3	11.3	20.5
111	158.8	0.667	74.7	10.8	6.96	11.887	25.791	22.726	42.7	20.0	31.9	9.2	3.48	0.47	31.3	11.4	20.5
112	159.3	0.673	75.0	11.1	6.97	11.994	25.872	22.769	42.7	20.0	31.7	8.9	3.56	0.49	31.3	11.4	20.3
113	159.8	0.679	74.9	11.0	6.98	12.101	25.952	22.812	42.8	20.0	31.8	9.0	3.54	0.48	31.4	11.4	20.4
114	160.0	0.685	74.8	10.9	6.98	12.208	25.993	22.819	42.8	20.0	31.9	9.1	3.52	0.48	31.4	11.4	20.5
115	160.4	0.691	74.8	10.8	6.99	12.315	26.046	22.839	42.8	20.0	32.0	9.1	3.50	0.47	31.4	11.4	20.6
116	160.7	0.697	74.7	10.7	7.00	12.422	26.100	22.858	42.8	20.0	32.1	9.2	3.48	0.47	31.4	11.4	20.6
117	161.0	0.703	74.6	10.7	7.01	12.529	26.154	22.877	42.8	20.0	32.1	9.3	3.47	0.47	31.4	11.4	20.7
118	161.4	0.709	74.6	10.7	7.02	12.636	26.221	22.907	42.9	20.0	32.2	9.3	3.48	0.47	31.4	11.5	20.7
119	162.1	0.715	75.0	11.0	7.03	12.743	26.328	22.973	42.9	20.0	31.9	8.9	3.57	0.48	31.4	11.5	20.4
120	162.3	0.721	74.9	10.9	7.04	12.850	26.368	22.980	42.9	20.0	32.0	9.0	3.55	0.48	31.4	11.5	20.5
121	162.8	0.727	74.8	10.9	7.04	12.957	26.449	23.022	43.0	20.0	32.1	9.1	3.53	0.47	31.5	11.5	20.6
122	163.1	0.733	74.7	10.8	7.05	13.064	26.502	23.040	43.0	20.0	32.2	9.2	3.51	0.47	31.5	11.5	20.7
123	163.6	0.739	74.6	10.7	7.06	13.172	26.583	23.082	43.0	20.0	32.3	9.3	3.49	0.46	31.5	11.5	20.8
124	164.0	0.745	74.5	10.6	7.07	13.279	26.637	23.100	43.1	20.0	32.5	9.4	3.46	0.46	31.5	11.5	20.9
125	164.6	0.751	74.9	10.9	7.08	13.386	26.744	23.164	43.1	20.0	32.2	9.0	3.57	0.47	31.5	11.6	20.6
126	165.1	0.757	74.8	10.9	7.09	13.493	26.825	23.205	43.2	20.0	32.3	9.1	3.55	0.47	31.6	11.6	20.7
127	165.5	0.763	74.7	10.8	7.10	13.600	26.892	23.234	43.2	20.0	32.4	9.2	3.53	0.46	31.6	11.6	20.8
128	165.9	0.769	74.6	10.7	7.11	13.707	26.945	23.252	43.2	20.0	32.5	9.3	3.51	0.46	31.6	11.6	20.9
129	166.5	0.775	74.6	10.6	7.11	13.814	27.053	23.316	43.3	20.0	32.6	9.3	3.50	0.46	31.6	11.7	21.0
130	166.9	0.781	74.5	10.5	7.12	13.921	27.120	23.344	43.3	20.0	32.8	9.4	3.48	0.45	31.6	11.7	21.1
131	167.2	0.787	74.4	10.5	7.13	14.028	27.160	23.350	43.3	20.0	32.8	9.5	3.46	0.45	31.6	11.7	21.2
132	167.7	0.793	74.6	10.7	7.14	14.135	27.240	23.390	43.3	20.0	32.6	9.3	3.53	0.46	31.7	11.7	20.9
133	168.2	0.799	74.7	10.8	7.15	14.242	27.321	23.430	43.4	20.0	32.6	9.2	3.55	0.46	31.7	11.7	20.9
134	168.7	0.805	74.6	10.7	7.16	14.349	27.402	23.470	43.4	20.0	32.7	9.3	3.54	0.46	31.7	11.7	21.0
135	168.9	0.811	74.6	10.6	7.17	14.457	27.442	23.475	43.4	20.0	32.8	9.3	3.52	0.45	31.7	11.7	21.1
136	169.3	0.817	74.5	10.5	7.18	14.564	27.509	23.503	43.5	20.0	32.9	9.4	3.50	0.45	31.7	11.8	21.2
137	169.6	0.823	74.4	10.5	7.19	14.671	27.563	23.519	43.5	20.0	33.0	9.5	3.48	0.44	31.7	11.8	21.3
138	169.9	0.829	74.3	10.4	7.19	14.778	27.603	23.524	43.5	20.0	33.1	9.6	3.46	0.44	31.7	11.8	21.3
139	170.7	0.835	74.5	10.5	7.20	14.885	27.737	23.608	43.6	20.0	33.0	9.4	3.51	0.45	31.8	11.8	21.2
140	171.2	0.841	74.6	10.7	7.21	14.992	27.818	23.647	43.6	20.0	32.9	9.3	3.56	0.45	31.8	11.8	21.1
141	171.5	0.847	74.5	10.6	7.22	15.099	27.871	23.663	43.6	20.0	33.0	9.4	3.52	0.45	31.8	11.8	21.2



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142	172.1	0.853	74.5	10.5	7.23	15.206	27.965	23.713	43.7	20.0	33.1	9.4	3.52	0.44	31.8	11.9	21.3
143	172.6	0.859	74.4	10.5	7.24	15.313	28.046	23.751	43.7	20.0	33.2	9.5	3.50	0.44	31.8	11.9	21.4
144	173.0	0.865	74.2	10.3	7.25	15.420	28.113	23.778	43.7	20.0	33.4	9.7	3.46	0.43	31.8	11.9	21.5
145	173.8	0.871	74.6	10.6	7.26	15.527	28.233	23.850	43.8	20.0	33.2	9.3	3.56	0.45	31.9	11.9	21.3
146	174.2	0.877	74.5	10.6	7.27	15.635	28.301	23.876	43.8	20.0	33.2	9.4	3.55	0.44	31.9	11.9	21.3
147	174.4	0.883	74.4	10.5	7.28	15.742	28.341	23.880	43.8	20.0	33.4	9.5	3.52	0.44	31.9	11.9	21.4
148	174.7	0.889	74.3	10.4	7.29	15.849	28.381	23.883	43.8	20.0	33.5	9.6	3.49	0.43	31.9	11.9	21.5
149	175.1	0.895	74.2	10.3	7.30	15.956	28.448	23.909	43.9	20.0	33.6	9.7	3.47	0.43	31.9	12.0	21.6
150	175.5	0.901	74.1	10.2	7.30	16.063	28.515	23.935	43.9	20.0	33.7	9.8	3.45	0.43	31.9	12.0	21.7
151	175.9	0.907	74.0	10.1	7.31	16.170	28.582	23.961	43.9	20.0	33.8	9.9	3.43	0.42	31.9	12.0	21.8
152	176.6	0.913	74.4	10.5	7.32	16.277	28.690	24.020	44.0	20.0	33.5	9.5	3.53	0.44	32.0	12.0	21.5
153	176.7	0.919	74.3	10.4	7.33	16.384	28.717	24.012	44.0	20.0	33.6	9.6	3.51	0.43	32.0	12.0	21.6
154	177.2	0.925	74.2	10.3	7.34	16.491	28.797	24.048	44.0	20.0	33.7	9.7	3.49	0.43	32.0	12.0	21.7
155	177.5	0.931	74.2	10.2	7.35	16.598	28.851	24.062	44.0	20.0	33.8	9.7	3.47	0.42	32.0	12.0	21.8
156	178.0	0.937	74.1	10.1	7.36	16.705	28.931	24.098	44.1	20.0	33.9	9.8	3.46	0.42	32.0	12.0	21.9
157	178.3	0.943	74.0	10.1	7.37	16.812	28.972	24.101	44.1	20.0	34.0	9.9	3.44	0.42	32.0	12.1	21.9
158	178.7	0.949	73.9	10.0	7.38	16.920	29.039	24.125	44.1	20.0	34.1	10.0	3.42	0.41	32.0	12.1	22.0
159	179.3	0.955	74.2	10.2	7.39	17.027	29.133	24.172	44.1	20.0	33.9	9.7	3.48	0.42	32.0	12.1	21.8
160	179.9	0.961	74.2	10.3	7.40	17.134	29.240	24.230	44.2	20.0	33.9	9.7	3.50	0.42	32.1	12.1	21.8
161	180.4	0.967	74.1	10.2	7.41	17.241	29.320	24.265	44.2	20.0	34.0	9.8	3.48	0.42	32.1	12.1	21.9
162	180.6	0.973	74.0	10.1	7.42	17.348	29.347	24.256	44.2	20.0	34.1	9.9	3.46	0.42	32.1	12.1	22.0
163	181.1	0.979	74.0	10.0	7.43	17.455	29.428	24.291	44.2	20.0	34.2	9.9	3.44	0.41	32.1	12.1	22.1
164	181.4	0.985	73.8	9.9	7.44	17.562	29.481	24.304	44.3	20.0	34.4	10.1	3.41	0.41	32.1	12.2	22.2
165	182.2	0.991	74.1	10.1	7.45	17.669	29.602	24.372	44.3	20.0	34.2	9.8	3.48	0.42	32.1	12.2	22.0
166	182.4	0.997	74.1	10.1	7.46	17.776	29.642	24.373	44.3	20.0	34.2	9.8	3.48	0.42	32.1	12.2	22.0
167	182.7	1.003	74.0	10.1	7.47	17.883	29.696	24.385	44.3	20.0	34.3	9.9	3.46	0.41	32.1	12.2	22.1
168	183.1	1.009	73.9	10.0	7.48	17.990	29.763	24.409	44.4	20.0	34.4	10.0	3.45	0.41	32.2	12.2	22.2
169	183.6	1.015	73.8	9.9	7.49	18.097	29.844	24.443	44.4	20.0	34.5	10.1	3.43	0.41	32.2	12.2	22.3
170	184.0	1.021	73.8	9.8	7.50	18.205	29.911	24.466	44.4	20.0	34.6	10.1	3.41	0.40	32.2	12.2	22.4
171	184.4	1.027	73.7	9.7	7.51	18.312	29.965	24.478	44.4	20.0	34.7	10.2	3.40	0.40	32.2	12.2	22.5
172	184.9	1.033	73.9	10.0	7.52	18.419	30.045	24.511	44.5	20.0	34.5	10.0	3.46	0.41	32.2	12.3	22.2
173	185.4	1.039	74.0	10.0	7.53	18.526	30.139	24.555	44.5	20.0	34.5	9.9	3.47	0.41	32.2	12.3	22.2
174	185.9	1.045	73.9	9.9	7.54	18.633	30.206	24.578	44.5	20.0	34.6	10.0	3.45	0.40	32.2	12.3	22.3
175	186.4	1.051	73.8	9.9	7.55	18.740	30.287	24.611	44.6	20.0	34.7	10.1	3.44	0.40	32.3	12.3	22.4
176	186.7	1.057	73.8	9.8	7.56	18.847	30.340	24.622	44.6	20.0	34.8	10.1	3.43	0.40	32.3	12.3	22.4
177	187.0	1.063	73.6	9.7	7.57	18.954	30.394	24.633	44.6	20.0	34.9	10.3	3.40	0.39	32.3	12.3	22.6
178	187.5	1.069	73.6	9.6	7.58	19.061	30.474	24.666	44.6	20.0	35.0	10.3	3.39	0.39	32.3	12.3	22.7
179	187.9	1.075	73.8	9.9	7.59	19.168	30.542	24.687	44.6	20.0	34.8	10.1	3.44	0.40	32.3	12.3	22.4
180	188.4	1.081	73.8	9.9	7.60	19.275	30.622	24.720	44.7	20.0	34.8	10.1	3.46	0.40	32.3	12.4	22.4
181	188.7	1.087	73.8	9.8	7.61	19.383	30.662	24.719	44.7	20.0	34.9	10.1	3.44	0.40	32.3	12.4	22.5
182	189.1	1.093	73.7	9.8	7.62	19.490	30.729	24.740	44.7	20.0	34.9	10.2	3.43	0.40	32.3	12.4	22.5



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	189.4	1.099	73.6	9.7	7.63	19.597	30.783	24.751	44.7	20.0	35.0	10.3	3.40	0.39	32.3	12.4	22.7
184	189.6	1.105	73.4	9.5	7.64	19.704	30.823	24.750	44.7	20.0	35.2	10.5	3.37	0.38	32.3	12.4	22.8
185	190.2	1.111	73.8	9.9	7.65	19.811	30.917	24.792	44.7	20.0	34.9	10.1	3.46	0.40	32.4	12.4	22.5
186	190.6	1.117	73.8	9.8	7.66	19.918	30.984	24.813	44.8	20.0	35.0	10.1	3.45	0.40	32.4	12.4	22.5
187	190.9	1.122	73.7	9.7	7.66	20.000	31.025	24.820	44.8	20.0	35.0	10.2	3.43	0.39	32.4	12.4	22.6



File Location
B-51 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-51
Sample Description: Brown & Red Silty Sand
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 33.000
PL: 24.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.810	2.721	
Height (in)	5.650	5.608	
Weight (grams)	1079.80		1149.41
Moisture (%)	15.65		23.10
Dry Density (pcf)	101.51	109.04	
Saturation (%)	65.86	100.00	
Void Ratio	0.626	0.517	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 67.300
Effective Confining Stress (psi): 10.0
Corrected Peak Deviator Stress (psi): 16.450 at reading number: 186

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	20.0	0.001	57.3	0.0	5.82	0.000	0.000	0.000	10.0	10.0	10.0	10.0	1.00	0.00	10.0	0.0	10.0
1	35.0	0.006	59.0	1.6	5.82	0.099	2.573	2.570	12.5	10.0	10.9	8.3	1.31	0.63	11.3	1.3	9.6
2	45.3	0.012	59.9	2.5	5.83	0.206	4.355	4.346	14.3	10.0	11.8	7.4	1.58	0.58	12.1	2.2	9.6
3	52.0	0.018	60.4	3.1	5.84	0.313	5.501	5.484	15.4	10.0	12.4	6.9	1.79	0.56	12.7	2.7	9.7
4	57.3	0.024	60.7	3.4	5.84	0.420	6.406	6.379	16.3	10.0	13.0	6.6	1.97	0.53	13.2	3.2	9.8
5	61.5	0.030	61.0	3.7	5.85	0.527	7.142	7.104	17.1	10.0	13.4	6.3	2.13	0.52	13.5	3.6	9.8
6	65.2	0.036	61.2	3.9	5.85	0.634	7.764	7.715	17.7	10.0	13.8	6.1	2.27	0.50	13.8	3.9	10.0
7	68.5	0.042	61.3	4.0	5.86	0.741	8.330	8.268	18.2	10.0	14.2	6.0	2.38	0.48	14.1	4.1	10.1
8	71.2	0.048	61.5	4.1	5.87	0.848	8.796	8.722	18.7	10.0	14.6	5.8	2.49	0.47	14.3	4.4	10.2
9	73.7	0.055	61.5	4.2	5.87	0.955	9.235	9.147	19.1	10.0	14.9	5.8	2.59	0.46	14.5	4.6	10.3
10	75.7	0.061	61.6	4.2	5.88	1.062	9.574	9.473	19.4	10.0	15.2	5.7	2.65	0.45	14.7	4.7	10.5
11	77.6	0.067	61.6	4.3	5.89	1.170	9.900	9.784	19.7	10.0	15.5	5.7	2.72	0.44	14.9	4.9	10.6
12	79.1	0.073	61.7	4.3	5.89	1.277	10.154	10.025	20.0	10.0	15.7	5.6	2.78	0.43	15.0	5.0	10.7
13	80.5	0.079	61.7	4.4	5.90	1.384	10.395	10.251	20.2	10.0	15.9	5.6	2.83	0.43	15.1	5.1	10.7
14	81.6	0.085	61.7	4.4	5.90	1.491	10.593	10.435	20.4	10.0	16.0	5.6	2.86	0.42	15.2	5.2	10.8
15	82.8	0.091	61.7	4.4	5.91	1.598	10.791	10.618	20.6	10.0	16.2	5.6	2.91	0.41	15.3	5.3	10.9
16	83.6	0.097	61.7	4.4	5.92	1.705	10.932	10.746	20.7	10.0	16.3	5.6	2.93	0.41	15.3	5.4	10.9
17	84.6	0.103	61.7	4.4	5.92	1.812	11.102	10.901	20.9	10.0	16.5	5.6	2.96	0.40	15.4	5.5	11.0
18	85.2	0.109	61.7	4.4	5.93	1.919	11.215	11.000	21.0	10.0	16.6	5.6	2.98	0.40	15.5	5.5	11.1



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	86.1	0.115	61.7	4.4	5.94	2.026	11.357	11.127	21.1	10.0	16.7	5.6	3.00	0.40	15.5	5.6	11.1
20	86.6	0.121	61.7	4.4	5.94	2.133	11.456	11.211	21.2	10.0	16.8	5.6	3.01	0.39	15.6	5.6	11.2
21	87.4	0.127	61.8	4.5	5.95	2.240	11.583	11.323	21.3	10.0	16.8	5.5	3.07	0.40	15.6	5.7	11.1
22	87.9	0.133	61.9	4.5	5.96	2.347	11.668	11.394	21.4	10.0	16.8	5.4	3.09	0.40	15.7	5.7	11.1
23	88.4	0.139	61.9	4.5	5.96	2.454	11.767	11.478	21.4	10.0	16.9	5.4	3.11	0.39	15.7	5.7	11.2
24	89.0	0.145	61.9	4.6	5.97	2.562	11.866	11.562	21.5	10.0	17.0	5.4	3.14	0.39	15.7	5.8	11.2
25	89.5	0.151	61.9	4.6	5.98	2.669	11.951	11.632	21.6	10.0	17.0	5.4	3.15	0.39	15.8	5.8	11.2
26	89.8	0.157	61.9	4.5	5.98	2.776	12.007	11.674	21.6	10.0	17.1	5.4	3.15	0.39	15.8	5.8	11.3
27	90.3	0.163	61.9	4.5	5.99	2.883	12.092	11.744	21.7	10.0	17.2	5.4	3.16	0.39	15.8	5.9	11.3
28	90.7	0.169	61.9	4.5	6.00	2.990	12.149	11.785	21.8	10.0	17.2	5.4	3.17	0.38	15.9	5.9	11.3
29	91.1	0.175	61.9	4.5	6.00	3.097	12.219	11.841	21.8	10.0	17.3	5.4	3.18	0.38	15.9	5.9	11.4
30	91.3	0.181	61.9	4.5	6.01	3.204	12.262	11.869	21.8	10.0	17.3	5.4	3.18	0.38	15.9	5.9	11.4
31	91.7	0.187	61.9	4.5	6.02	3.311	12.318	11.911	21.9	10.0	17.4	5.4	3.19	0.38	15.9	6.0	11.4
32	92.1	0.193	61.9	4.6	6.02	3.418	12.389	11.966	21.9	10.0	17.4	5.4	3.22	0.38	15.9	6.0	11.4
33	92.4	0.199	61.9	4.6	6.03	3.525	12.446	12.007	22.0	10.0	17.4	5.4	3.24	0.38	16.0	6.0	11.4
34	92.7	0.205	61.9	4.6	6.04	3.632	12.502	12.048	22.0	10.0	17.4	5.4	3.25	0.38	16.0	6.0	11.4
35	93.1	0.211	61.9	4.6	6.04	3.739	12.573	12.103	22.1	10.0	17.5	5.4	3.26	0.38	16.0	6.1	11.4
36	93.4	0.217	61.9	4.6	6.05	3.846	12.615	12.130	22.1	10.0	17.5	5.4	3.26	0.38	16.0	6.1	11.4
37	93.7	0.223	61.9	4.6	6.06	3.953	12.672	12.171	22.1	10.0	17.5	5.4	3.27	0.38	16.1	6.1	11.4
38	94.0	0.229	61.9	4.6	6.06	4.061	12.714	12.198	22.2	10.0	17.6	5.4	3.28	0.38	16.1	6.1	11.5
39	94.3	0.235	61.9	4.6	6.07	4.168	12.771	12.239	22.2	10.0	17.6	5.4	3.28	0.38	16.1	6.1	11.5
40	94.4	0.241	61.9	4.6	6.08	4.275	12.785	12.239	22.2	10.0	17.6	5.4	3.28	0.38	16.1	6.1	11.5
41	94.7	0.247	61.9	4.6	6.08	4.382	12.842	12.279	22.2	10.0	17.6	5.4	3.29	0.38	16.1	6.1	11.5
42	94.9	0.253	61.9	4.6	6.09	4.489	12.870	12.292	22.3	10.0	17.7	5.4	3.28	0.37	16.1	6.1	11.5
43	95.3	0.259	61.9	4.6	6.10	4.596	12.941	12.346	22.3	10.0	17.7	5.4	3.29	0.37	16.1	6.2	11.6
44	95.5	0.265	61.9	4.5	6.10	4.703	12.983	12.373	22.3	10.0	17.8	5.4	3.27	0.37	16.2	6.2	11.6
45	95.8	0.271	61.8	4.5	6.11	4.810	13.040	12.413	22.4	10.0	17.9	5.5	3.26	0.36	16.2	6.2	11.7
46	96.3	0.277	61.9	4.6	6.12	4.917	13.111	12.466	22.4	10.0	17.9	5.4	3.31	0.37	16.2	6.2	11.6
47	96.8	0.283	61.9	4.6	6.12	5.024	13.195	12.532	22.5	10.0	17.9	5.4	3.32	0.36	16.2	6.3	11.7
48	97.1	0.289	61.9	4.6	6.13	5.131	13.252	12.572	22.5	10.0	18.0	5.4	3.33	0.36	16.3	6.3	11.7
49	97.4	0.295	61.9	4.6	6.14	5.238	13.309	12.611	22.6	10.0	18.0	5.4	3.33	0.36	16.3	6.3	11.7
50	97.7	0.301	61.9	4.6	6.15	5.345	13.351	12.637	22.6	10.0	18.0	5.4	3.34	0.36	16.3	6.3	11.7
51	98.1	0.307	61.9	4.6	6.15	5.452	13.422	12.690	22.7	10.0	18.1	5.4	3.35	0.36	16.3	6.3	11.7
52	98.5	0.313	61.9	4.6	6.16	5.560	13.492	12.742	22.7	10.0	18.1	5.4	3.36	0.36	16.3	6.4	11.8
53	98.6	0.319	61.9	4.5	6.17	5.667	13.521	12.755	22.7	10.0	18.2	5.4	3.34	0.35	16.3	6.4	11.8
54	98.9	0.325	61.9	4.5	6.17	5.774	13.563	12.780	22.7	10.0	18.2	5.4	3.35	0.35	16.4	6.4	11.8
55	99.2	0.331	61.8	4.5	6.18	5.881	13.620	12.819	22.8	10.0	18.3	5.5	3.34	0.35	16.4	6.4	11.9
56	99.5	0.337	61.8	4.5	6.19	5.988	13.662	12.844	22.8	10.0	18.3	5.5	3.34	0.35	16.4	6.4	11.9
57	100.0	0.343	61.8	4.4	6.19	6.095	13.747	12.909	22.9	10.0	18.4	5.5	3.34	0.34	16.4	6.5	12.0
58	100.3	0.349	61.8	4.4	6.20	6.202	13.804	12.947	22.9	10.0	18.5	5.5	3.34	0.34	16.4	6.5	12.0
59	100.5	0.355	61.7	4.4	6.21	6.309	13.832	12.959	22.9	10.0	18.5	5.6	3.33	0.34	16.4	6.5	12.0



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	100.9	0.361	61.8	4.5	6.22	6.416	13.903	13.011	23.0	10.0	18.5	5.5	3.37	0.34	16.5	6.5	12.0
61	101.2	0.367	61.9	4.5	6.22	6.523	13.959	13.049	23.0	10.0	18.5	5.4	3.40	0.35	16.5	6.5	12.0
62	101.5	0.373	61.9	4.5	6.23	6.630	14.016	13.086	23.1	10.0	18.5	5.4	3.40	0.35	16.5	6.5	12.0
63	101.9	0.379	61.9	4.5	6.24	6.737	14.072	13.124	23.1	10.0	18.6	5.4	3.41	0.34	16.5	6.6	12.0
64	102.1	0.385	61.8	4.5	6.24	6.844	14.115	13.149	23.1	10.0	18.6	5.5	3.40	0.34	16.5	6.6	12.1
65	102.4	0.391	61.8	4.5	6.25	6.951	14.171	13.186	23.2	10.0	18.7	5.5	3.41	0.34	16.6	6.6	12.1
66	102.6	0.397	61.7	4.4	6.26	7.059	14.200	13.197	23.2	10.0	18.8	5.6	3.37	0.33	16.6	6.6	12.2
67	102.8	0.403	61.7	4.4	6.27	7.166	14.228	13.208	23.2	10.0	18.8	5.6	3.36	0.33	16.6	6.6	12.2
68	103.0	0.409	61.7	4.4	6.27	7.273	14.270	13.233	23.2	10.0	18.8	5.6	3.36	0.33	16.6	6.6	12.2
69	103.4	0.415	61.7	4.4	6.28	7.380	14.341	13.283	23.2	10.0	18.8	5.6	3.39	0.33	16.6	6.6	12.2
70	103.7	0.421	61.7	4.4	6.29	7.487	14.398	13.320	23.3	10.0	18.9	5.6	3.39	0.33	16.6	6.7	12.2
71	104.0	0.427	61.7	4.4	6.29	7.594	14.440	13.344	23.3	10.0	18.9	5.6	3.40	0.33	16.6	6.7	12.2
72	104.2	0.433	61.7	4.4	6.30	7.701	14.483	13.367	23.3	10.0	18.9	5.6	3.40	0.33	16.6	6.7	12.2
73	104.6	0.439	61.7	4.4	6.31	7.808	14.539	13.404	23.4	10.0	19.0	5.6	3.39	0.33	16.7	6.7	12.3
74	104.8	0.445	61.7	4.4	6.32	7.915	14.582	13.427	23.4	10.0	19.0	5.6	3.40	0.32	16.7	6.7	12.3
75	105.1	0.451	61.7	4.4	6.32	8.022	14.638	13.464	23.4	10.0	19.1	5.6	3.40	0.32	16.7	6.7	12.3
76	105.5	0.457	61.7	4.3	6.33	8.129	14.695	13.500	23.5	10.0	19.1	5.6	3.39	0.32	16.7	6.8	12.4
77	105.8	0.463	61.6	4.3	6.34	8.236	14.751	13.536	23.5	10.0	19.2	5.7	3.38	0.32	16.7	6.8	12.5
78	106.1	0.469	61.6	4.3	6.35	8.343	14.794	13.559	23.5	10.0	19.2	5.7	3.38	0.32	16.7	6.8	12.5
79	106.4	0.475	61.6	4.3	6.35	8.450	14.850	13.595	23.6	10.0	19.3	5.7	3.39	0.31	16.8	6.8	12.5
80	106.7	0.481	61.6	4.2	6.36	8.558	14.907	13.631	23.6	10.0	19.4	5.7	3.38	0.31	16.8	6.8	12.5
81	107.1	0.487	61.7	4.3	6.37	8.665	14.978	13.680	23.6	10.0	19.3	5.6	3.42	0.32	16.8	6.8	12.5
82	107.5	0.493	61.7	4.3	6.38	8.772	15.048	13.728	23.7	10.0	19.4	5.6	3.43	0.31	16.8	6.9	12.5
83	107.8	0.499	61.7	4.3	6.38	8.879	15.091	13.751	23.7	10.0	19.4	5.6	3.44	0.31	16.8	6.9	12.5
84	108.2	0.505	61.7	4.3	6.39	8.986	15.161	13.799	23.8	10.0	19.4	5.6	3.44	0.31	16.9	6.9	12.5
85	108.5	0.511	61.7	4.3	6.40	9.093	15.218	13.834	23.8	10.0	19.5	5.6	3.45	0.31	16.9	6.9	12.6
86	108.9	0.517	61.6	4.3	6.41	9.200	15.289	13.882	23.8	10.0	19.6	5.7	3.44	0.31	16.9	6.9	12.6
87	109.2	0.523	61.6	4.2	6.41	9.307	15.331	13.904	23.9	10.0	19.6	5.7	3.43	0.30	16.9	7.0	12.7
88	109.6	0.529	61.7	4.3	6.42	9.414	15.402	13.952	23.9	10.0	19.6	5.6	3.47	0.31	16.9	7.0	12.6
89	110.0	0.535	61.6	4.3	6.43	9.521	15.473	13.999	24.0	10.0	19.7	5.7	3.46	0.31	17.0	7.0	12.7
90	110.3	0.541	61.7	4.3	6.44	9.628	15.529	14.034	24.0	10.0	19.7	5.6	3.49	0.31	17.0	7.0	12.7
91	110.7	0.547	61.6	4.3	6.44	9.735	15.586	14.068	24.0	10.0	19.8	5.7	3.47	0.30	17.0	7.0	12.7
92	111.0	0.553	61.6	4.3	6.45	9.842	15.642	14.103	24.1	10.0	19.8	5.7	3.48	0.30	17.0	7.1	12.7
93	111.3	0.559	61.6	4.3	6.46	9.949	15.699	14.137	24.1	10.0	19.8	5.7	3.49	0.30	17.0	7.1	12.8
94	111.6	0.565	61.6	4.2	6.47	10.057	15.741	14.158	24.1	10.0	19.9	5.7	3.47	0.30	17.0	7.1	12.8
95	111.8	0.571	61.6	4.2	6.47	10.164	15.784	14.180	24.1	10.0	19.9	5.7	3.48	0.30	17.1	7.1	12.8
96	112.1	0.577	61.5	4.2	6.48	10.271	15.826	14.201	24.2	10.0	20.0	5.8	3.46	0.30	17.1	7.1	12.9
97	112.6	0.589	61.5	4.2	6.50	10.485	15.911	14.243	24.2	10.0	20.0	5.8	3.47	0.29	17.1	7.1	12.9
98	113.0	0.595	61.6	4.2	6.51	10.592	15.982	14.289	24.3	10.0	20.0	5.7	3.50	0.30	17.1	7.1	12.9
99	113.1	0.601	61.6	4.2	6.51	10.699	16.010	14.297	24.3	10.0	20.0	5.7	3.50	0.30	17.1	7.1	12.9
100	113.5	0.607	61.6	4.2	6.52	10.806	16.067	14.330	24.3	10.0	20.1	5.7	3.50	0.30	17.1	7.2	12.9



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	113.7	0.613	61.6	4.2	6.53	10.913	16.109	14.351	24.3	10.0	20.1	5.7	3.51	0.30	17.1	7.2	12.9
102	113.8	0.619	61.5	4.2	6.54	11.020	16.123	14.346	24.3	10.0	20.1	5.8	3.49	0.29	17.1	7.2	12.9
103	114.4	0.625	61.5	4.2	6.55	11.127	16.222	14.417	24.4	10.0	20.2	5.8	3.50	0.29	17.2	7.2	13.0
104	114.4	0.631	61.5	4.2	6.55	11.234	16.236	14.412	24.4	10.0	20.2	5.8	3.48	0.29	17.2	7.2	13.0
105	114.8	0.637	61.5	4.2	6.56	11.341	16.293	14.445	24.4	10.0	20.3	5.8	3.49	0.29	17.2	7.2	13.0
106	115.0	0.643	61.5	4.2	6.57	11.449	16.335	14.465	24.4	10.0	20.3	5.8	3.49	0.29	17.2	7.2	13.0
107	115.3	0.649	61.5	4.2	6.58	11.556	16.378	14.485	24.5	10.0	20.3	5.8	3.49	0.29	17.2	7.2	13.1
108	115.7	0.655	61.5	4.2	6.58	11.663	16.449	14.530	24.5	10.0	20.3	5.8	3.50	0.29	17.2	7.3	13.1
109	116.1	0.661	61.5	4.2	6.59	11.770	16.519	14.575	24.5	10.0	20.4	5.8	3.51	0.29	17.3	7.3	13.1
110	116.3	0.667	61.5	4.2	6.60	11.877	16.548	14.582	24.5	10.0	20.4	5.8	3.51	0.29	17.3	7.3	13.1
111	116.7	0.673	61.5	4.1	6.61	11.984	16.618	14.627	24.6	10.0	20.5	5.8	3.50	0.28	17.3	7.3	13.2
112	116.8	0.679	61.4	4.1	6.62	12.091	16.647	14.634	24.6	10.0	20.5	5.9	3.48	0.28	17.3	7.3	13.2
113	117.2	0.685	61.4	4.1	6.62	12.198	16.703	14.666	24.6	10.0	20.6	5.9	3.49	0.28	17.3	7.3	13.2
114	117.4	0.691	61.4	4.0	6.63	12.305	16.746	14.685	24.7	10.0	20.6	5.9	3.48	0.27	17.3	7.3	13.3
115	117.7	0.697	61.5	4.1	6.64	12.412	16.802	14.717	24.7	10.0	20.6	5.8	3.52	0.28	17.3	7.4	13.2
116	118.3	0.703	61.5	4.1	6.65	12.519	16.901	14.785	24.8	10.0	20.6	5.8	3.53	0.28	17.4	7.4	13.2
117	118.5	0.709	61.5	4.1	6.66	12.626	16.929	14.792	24.8	10.0	20.6	5.8	3.53	0.28	17.4	7.4	13.2
118	119.0	0.715	61.4	4.1	6.67	12.733	17.014	14.848	24.8	10.0	20.7	5.9	3.52	0.27	17.4	7.4	13.3
119	119.0	0.721	61.4	4.1	6.67	12.840	17.014	14.830	24.8	10.0	20.7	5.9	3.52	0.27	17.4	7.4	13.3
120	119.5	0.727	61.4	4.1	6.68	12.948	17.099	14.885	24.9	10.0	20.8	5.9	3.53	0.27	17.4	7.4	13.3
121	119.9	0.733	61.4	4.0	6.69	13.055	17.170	14.928	24.9	10.0	20.9	5.9	3.52	0.27	17.4	7.5	13.4
122	120.0	0.739	61.3	4.0	6.70	13.162	17.184	14.922	24.9	10.0	20.9	6.0	3.50	0.27	17.4	7.5	13.4
123	120.2	0.745	61.3	4.0	6.71	13.269	17.227	14.941	24.9	10.0	21.0	6.0	3.49	0.26	17.4	7.5	13.5
124	120.4	0.751	61.3	4.0	6.71	13.376	17.269	14.959	24.9	10.0	21.0	6.0	3.49	0.26	17.4	7.5	13.5
125	120.9	0.757	61.3	4.0	6.72	13.483	17.340	15.002	25.0	10.0	21.0	6.0	3.51	0.27	17.5	7.5	13.5
126	121.3	0.763	61.3	4.0	6.73	13.590	17.410	15.044	25.0	10.0	21.0	6.0	3.52	0.27	17.5	7.5	13.5
127	121.4	0.769	61.3	4.0	6.74	13.697	17.439	15.050	25.0	10.0	21.0	6.0	3.52	0.27	17.5	7.5	13.5
128	121.7	0.775	61.3	4.0	6.75	13.804	17.481	15.068	25.0	10.0	21.0	6.0	3.52	0.27	17.5	7.5	13.5
129	122.2	0.781	61.3	4.0	6.76	13.911	17.566	15.122	25.1	10.0	21.1	6.0	3.52	0.26	17.5	7.6	13.6
130	122.3	0.787	61.2	3.9	6.77	14.018	17.580	15.116	25.1	10.0	21.2	6.1	3.50	0.26	17.5	7.6	13.6
131	122.6	0.793	61.2	3.9	6.77	14.125	17.637	15.145	25.1	10.0	21.2	6.1	3.50	0.26	17.5	7.6	13.6
132	122.8	0.799	61.2	3.9	6.78	14.232	17.679	15.163	25.1	10.0	21.3	6.1	3.49	0.26	17.5	7.6	13.7
133	123.2	0.805	61.3	4.0	6.79	14.339	17.736	15.192	25.2	10.0	21.2	6.0	3.53	0.26	17.6	7.6	13.6
134	123.6	0.811	61.2	3.9	6.80	14.447	17.806	15.234	25.2	10.0	21.3	6.1	3.52	0.26	17.6	7.6	13.7
135	123.9	0.817	61.2	3.9	6.81	14.554	17.863	15.263	25.2	10.0	21.3	6.1	3.52	0.26	17.6	7.6	13.7
136	124.1	0.823	61.2	3.9	6.82	14.661	17.891	15.268	25.2	10.0	21.3	6.1	3.52	0.26	17.6	7.6	13.7
137	124.6	0.829	61.2	3.9	6.82	14.768	17.976	15.321	25.3	10.0	21.4	6.1	3.53	0.26	17.6	7.7	13.7
138	124.8	0.835	61.2	3.9	6.83	14.875	18.019	15.338	25.3	10.0	21.4	6.1	3.52	0.25	17.6	7.7	13.8
139	125.1	0.841	61.2	3.9	6.84	14.982	18.075	15.367	25.3	10.0	21.5	6.1	3.52	0.25	17.6	7.7	13.8
140	125.4	0.847	61.2	3.8	6.85	15.089	18.118	15.384	25.3	10.0	21.5	6.1	3.51	0.25	17.7	7.7	13.8
141	125.6	0.853	61.1	3.8	6.86	15.196	18.146	15.388	25.4	10.0	21.6	6.2	3.49	0.25	17.7	7.7	13.9



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	126.0	0.859	61.1	3.8	6.87	15.303	18.231	15.441	25.4	10.0	21.6	6.2	3.50	0.25	17.7	7.7	13.9
143	126.4	0.865	61.2	3.9	6.88	15.410	18.287	15.469	25.4	10.0	21.6	6.1	3.54	0.25	17.7	7.7	13.8
144	126.7	0.871	61.2	3.9	6.89	15.517	18.344	15.497	25.5	10.0	21.6	6.1	3.54	0.25	17.7	7.7	13.8
145	126.9	0.877	61.2	3.8	6.89	15.624	18.386	15.514	25.5	10.0	21.6	6.1	3.53	0.25	17.7	7.8	13.9
146	127.3	0.883	61.1	3.8	6.90	15.731	18.443	15.542	25.5	10.0	21.7	6.2	3.52	0.24	17.7	7.8	13.9
147	127.6	0.889	61.1	3.7	6.91	15.838	18.499	15.569	25.5	10.0	21.8	6.2	3.50	0.24	17.7	7.8	14.0
148	127.9	0.895	61.1	3.7	6.92	15.946	18.556	15.597	25.6	10.0	21.8	6.2	3.51	0.24	17.8	7.8	14.0
149	128.3	0.901	61.1	3.7	6.93	16.053	18.613	15.625	25.6	10.0	21.8	6.2	3.51	0.24	17.8	7.8	14.0
150	128.7	0.907	61.1	3.8	6.94	16.160	18.683	15.664	25.6	10.0	21.8	6.2	3.54	0.24	17.8	7.8	14.0
151	129.1	0.913	61.1	3.8	6.95	16.267	18.754	15.703	25.7	10.0	21.9	6.2	3.54	0.24	17.8	7.9	14.0
152	129.3	0.919	61.1	3.8	6.96	16.374	18.782	15.707	25.7	10.0	21.9	6.2	3.54	0.24	17.8	7.9	14.0
153	129.5	0.925	61.1	3.8	6.96	16.481	18.825	15.722	25.7	10.0	21.9	6.2	3.55	0.24	17.8	7.9	14.0
154	129.7	0.931	61.1	3.7	6.97	16.588	18.867	15.738	25.7	10.0	22.0	6.2	3.53	0.24	17.8	7.9	14.1
155	130.2	0.937	61.1	3.7	6.98	16.695	18.938	15.776	25.7	10.0	22.0	6.2	3.54	0.24	17.9	7.9	14.1
156	130.5	0.943	61.0	3.7	6.99	16.802	18.995	15.803	25.8	10.0	22.1	6.3	3.53	0.23	17.9	7.9	14.2
157	130.7	0.949	61.0	3.7	7.00	16.909	19.037	15.818	25.8	10.0	22.1	6.3	3.51	0.23	17.9	7.9	14.2
158	131.0	0.955	61.0	3.7	7.01	17.016	19.079	15.833	25.8	10.0	22.1	6.3	3.51	0.23	17.9	7.9	14.2
159	131.3	0.961	61.1	3.7	7.02	17.123	19.136	15.859	25.8	10.0	22.1	6.2	3.55	0.24	17.9	7.9	14.1
160	131.6	0.967	61.1	3.7	7.03	17.230	19.178	15.874	25.8	10.0	22.1	6.2	3.55	0.24	17.9	7.9	14.2
161	131.8	0.973	61.0	3.7	7.04	17.337	19.221	15.888	25.9	10.0	22.1	6.3	3.54	0.23	17.9	7.9	14.2
162	132.2	0.979	61.0	3.7	7.05	17.445	19.292	15.926	25.9	10.0	22.2	6.3	3.55	0.23	17.9	8.0	14.2
163	132.5	0.985	61.0	3.7	7.06	17.552	19.334	15.941	25.9	10.0	22.2	6.3	3.55	0.23	17.9	8.0	14.2
164	132.5	0.991	61.0	3.6	7.06	17.659	19.348	15.932	25.9	10.0	22.3	6.3	3.51	0.23	17.9	8.0	14.3
165	133.0	0.997	60.9	3.6	7.07	17.766	19.419	15.969	25.9	10.0	22.3	6.4	3.50	0.22	17.9	8.0	14.4
166	133.4	1.003	61.0	3.7	7.08	17.873	19.490	16.006	26.0	10.0	22.3	6.3	3.54	0.23	18.0	8.0	14.3
167	133.9	1.009	61.0	3.7	7.09	17.980	19.574	16.055	26.0	10.0	22.4	6.3	3.55	0.23	18.0	8.0	14.3
168	134.2	1.015	61.0	3.7	7.10	18.087	19.631	16.080	26.0	10.0	22.4	6.3	3.55	0.23	18.0	8.0	14.3
169	134.5	1.021	61.0	3.6	7.11	18.194	19.688	16.106	26.1	10.0	22.4	6.3	3.54	0.23	18.0	8.1	14.4
170	134.8	1.027	61.0	3.6	7.12	18.301	19.744	16.131	26.1	10.0	22.5	6.3	3.54	0.22	18.0	8.1	14.4
171	135.2	1.033	60.9	3.6	7.13	18.408	19.801	16.156	26.1	10.0	22.5	6.4	3.53	0.22	18.0	8.1	14.5
172	135.4	1.039	60.9	3.5	7.14	18.515	19.843	16.169	26.1	10.0	22.6	6.4	3.52	0.22	18.0	8.1	14.5
173	135.8	1.045	60.9	3.5	7.15	18.622	19.914	16.205	26.2	10.0	22.6	6.4	3.52	0.22	18.1	8.1	14.5
174	136.1	1.051	60.8	3.5	7.16	18.729	19.956	16.219	26.2	10.0	22.7	6.5	3.51	0.22	18.1	8.1	14.6
175	136.3	1.057	60.9	3.6	7.17	18.837	19.999	16.232	26.2	10.0	22.6	6.4	3.54	0.22	18.1	8.1	14.5
176	136.6	1.063	60.9	3.6	7.18	18.944	20.041	16.245	26.2	10.0	22.6	6.4	3.55	0.22	18.1	8.1	14.5
177	136.9	1.069	60.9	3.5	7.19	19.051	20.098	16.269	26.2	10.0	22.7	6.4	3.53	0.22	18.1	8.1	14.6
178	137.1	1.075	60.9	3.5	7.20	19.158	20.126	16.270	26.2	10.0	22.7	6.4	3.53	0.22	18.1	8.1	14.6
179	137.2	1.081	60.8	3.5	7.20	19.265	20.154	16.272	26.2	10.0	22.7	6.5	3.52	0.22	18.1	8.1	14.6
180	137.6	1.087	60.8	3.5	7.21	19.372	20.211	16.296	26.3	10.0	22.8	6.5	3.52	0.22	18.1	8.1	14.6
181	137.8	1.093	60.8	3.5	7.22	19.479	20.253	16.308	26.3	10.0	22.8	6.5	3.51	0.21	18.1	8.2	14.7
182	138.3	1.099	60.8	3.5	7.23	19.586	20.338	16.355	26.3	10.0	22.9	6.5	3.52	0.21	18.1	8.2	14.7



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	138.6	1.105	60.8	3.4	7.24	19.693	20.395	16.378	26.3	10.0	22.9	6.5	3.50	0.21	18.2	8.2	14.7
184	138.9	1.111	60.8	3.5	7.25	19.800	20.437	16.391	26.4	10.0	22.9	6.5	3.52	0.21	18.2	8.2	14.7
185	139.2	1.117	60.8	3.5	7.26	19.907	20.494	16.414	26.4	10.0	22.9	6.5	3.52	0.21	18.2	8.2	14.7
186	139.6	1.123	60.8	3.5	7.27	20.006	20.565	16.450	26.4	10.0	23.0	6.5	3.53	0.21	18.2	8.2	14.7

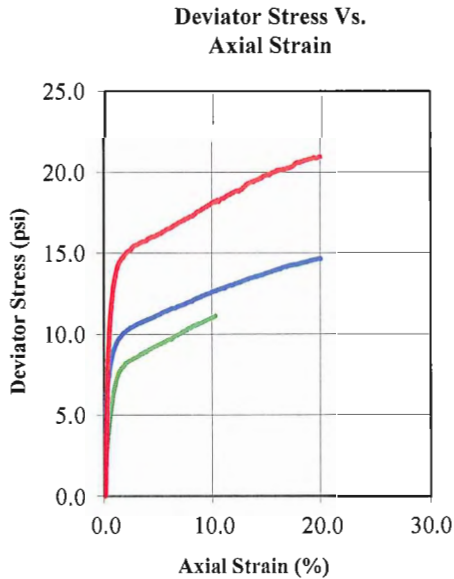


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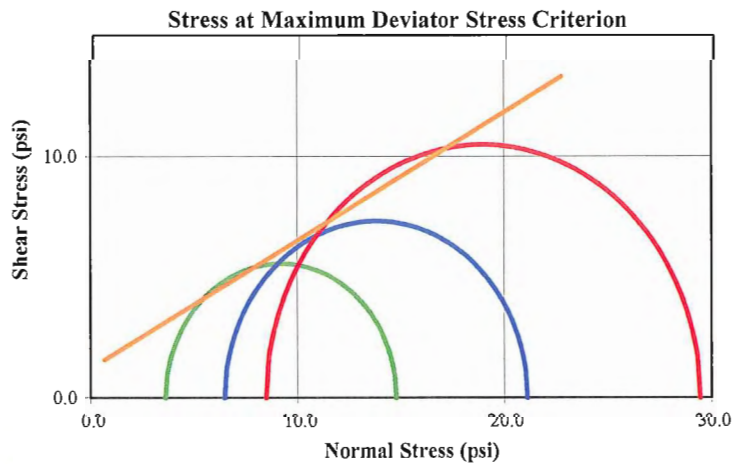
Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME : I-85/I-385 Interchange	SAMPLE NO. : Bag #1
PROJECT NO. : 08195-01	SAMPLE DEPTH : 0.0' to 41.0'
PROJECT LOCATION : B-54	SAMPLE TYPE : Remolded
BORING NUMBER : B-54	DESCRIPTION : Red, Brown & Gray Silty Sand
REMARKS :	TEST TYPE : Consolidated Undrained



Initial	Specimen			
	A	B	C	D
Water Content (%)	18.6	18.1	17.8	
Dry Density (pcf)	100.2	99.5	100.0	
Saturation (%)	75.71	72.62	72.02	
Void Ratio	0.647	0.659	0.650	
Diameter (in)	2.801	2.800	2.803	
Height (in)	5.616	5.645	5.643	
Specific Gravity	2.65	2.65	2.65	
Liquid Limit	46	46	46	
Plastic Limit	30	30	30	
After Consolidation	A	B	C	D
B-Value	1.00	0.95	0.95	
Water Content (%)	25.1	24.6	23.4	
Dry Density (pcf)	100.76	99.78	100.13	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.642	0.658	0.652	
Effective Stress (psi)	5.0	10.0	20.0	
Back Press. (psi)	51.2	63.7	72.4	
Rate of Strain	0.002	0.0020	0.002	

Maximum Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	3.0	σ'_1 at Failure (psi)	14.76	21.13	29.44	
ϕ (deg)	14.6	σ'_3 at Failure (psi)	3.62	6.47	8.46	
C' (psi)	1.2					
ϕ' (deg)	28.0					

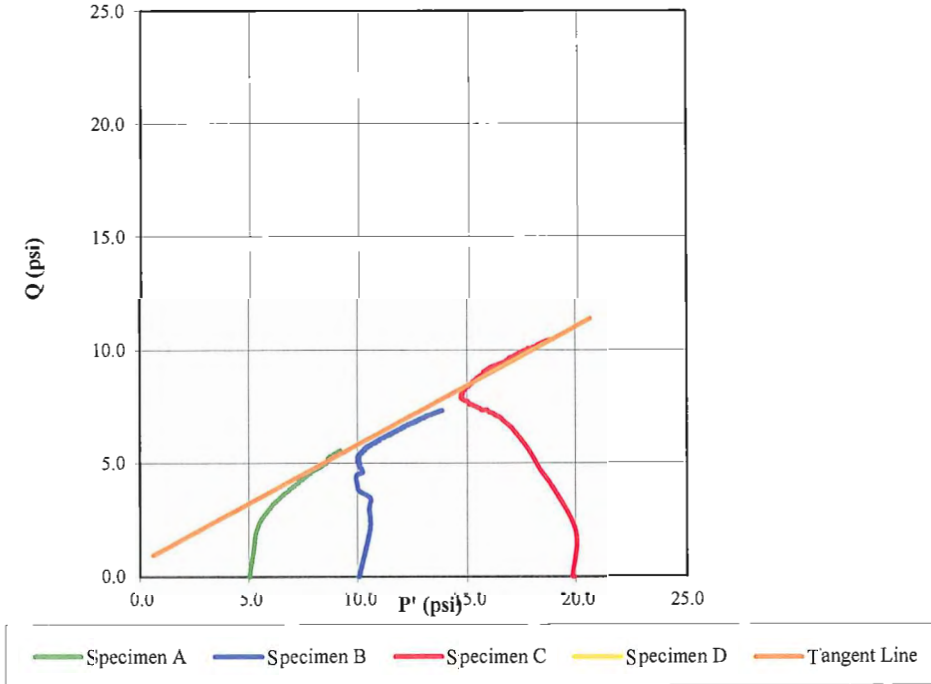


Tested By: [Signature]
 Date: 12-11-12

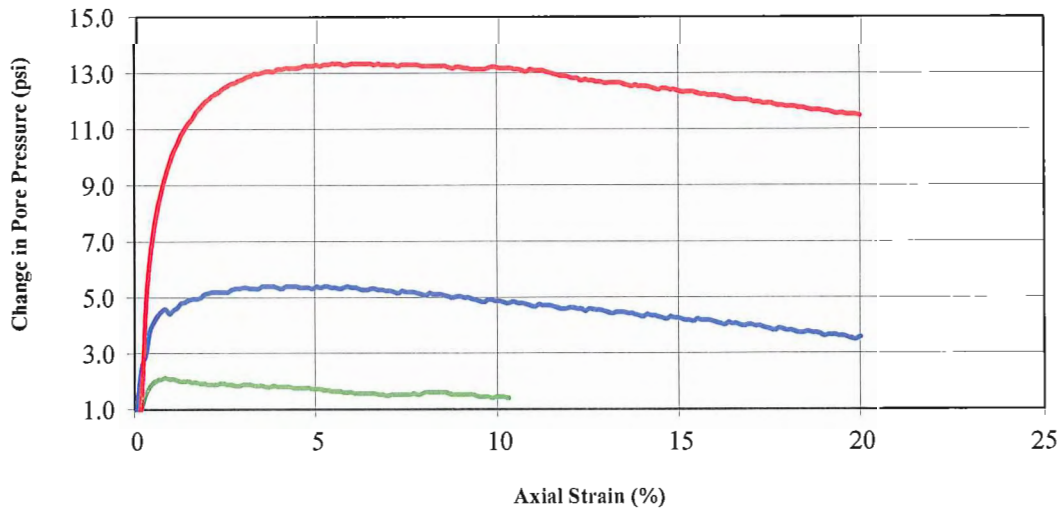
Approved By: SKB
 Date: 12-11-12



Stress Paths (Effective)
($a = 0.6$ $\alpha = 27.5$)



Change in Pore Pressure vs. Axial Strain





File Location
B-54 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-54
Sample Description: Red, Brown & Gray Silty Sand
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 46.000
PL: 30.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.801	2.798	
Height (in)	5.616	5.601	
Weight (grams)	1079.80		1139.05
Moisture (%)	18.59		25.09
Dry Density (pcf)	100.22	100.76	
Saturation (%)	75.71	100.00	
Void Ratio	0.647	0.642	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 56.200
Effective Confining Stress (psi): 5.0
Corrected Peak Deviator Stress (psi): 11.140 at reading number: 97

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	4.1	0.018	51.2	0.0	6.15	0.000	0.000	0.000	5.0	5.0	5.0	5.0	1.00	0.00	5.0	0.0	5.0
1	11.2	0.024	51.7	0.5	6.15	0.107	1.143	1.141	6.2	5.0	5.7	4.5	1.25	0.42	5.6	0.6	5.1
2	20.7	0.030	52.3	1.1	6.16	0.214	2.688	2.683	7.7	5.0	6.6	3.9	1.69	0.42	6.4	1.3	5.2
3	26.9	0.036	52.7	1.6	6.17	0.321	3.697	3.685	8.7	5.0	7.1	3.5	2.06	0.43	6.9	1.8	5.3
4	31.2	0.042	53.0	1.8	6.17	0.429	4.409	4.390	9.4	5.0	7.6	3.2	2.36	0.41	7.2	2.2	5.4
5	35.0	0.048	53.1	2.0	6.18	0.536	5.014	4.987	10.0	5.0	8.0	3.1	2.63	0.39	7.5	2.5	5.6
6	38.6	0.054	53.2	2.1	6.19	0.643	5.605	5.569	10.6	5.0	8.5	3.0	2.87	0.37	7.8	2.8	5.8
7	41.5	0.060	53.3	2.1	6.19	0.750	6.076	6.030	11.1	5.0	9.0	2.9	3.05	0.35	8.0	3.0	6.0
8	44.1	0.066	53.3	2.1	6.20	0.857	6.506	6.450	11.5	5.0	9.3	2.9	3.23	0.33	8.3	3.2	6.1
9	46.4	0.072	53.3	2.1	6.21	0.964	6.869	6.803	11.8	5.0	9.7	2.9	3.32	0.31	8.4	3.4	6.3
10	48.3	0.078	53.3	2.1	6.21	1.071	7.191	7.114	12.1	5.0	10.1	2.9	3.42	0.29	8.6	3.6	6.5
11	49.9	0.084	53.2	2.1	6.22	1.179	7.447	7.359	12.4	5.0	10.3	3.0	3.47	0.28	8.7	3.7	6.7
12	51.1	0.090	53.2	2.0	6.23	1.286	7.648	7.550	12.6	5.0	10.6	3.0	3.50	0.27	8.8	3.8	6.8
13	52.1	0.096	53.2	2.0	6.23	1.393	7.810	7.701	12.7	5.0	10.7	3.0	3.55	0.26	8.9	3.9	6.9
14	53.0	0.102	53.2	2.0	6.24	1.500	7.944	7.825	12.9	5.0	10.8	3.0	3.59	0.26	8.9	3.9	6.9
15	53.6	0.108	53.1	2.0	6.25	1.607	8.052	7.922	13.0	5.0	11.0	3.1	3.59	0.25	9.0	4.0	7.0
16	54.1	0.114	53.1	2.0	6.25	1.714	8.132	7.993	13.0	5.0	11.1	3.1	3.61	0.25	9.0	4.0	7.1
17	54.6	0.120	53.1	1.9	6.26	1.821	8.213	8.063	13.1	5.0	11.2	3.1	3.60	0.24	9.1	4.0	7.1
18	55.4	0.126	53.1	1.9	6.27	1.928	8.334	8.173	13.2	5.0	11.3	3.1	3.64	0.24	9.1	4.1	7.2



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	55.7	0.132	53.1	1.9	6.27	2.036	8.388	8.217	13.2	5.0	11.4	3.1	3.62	0.23	9.1	4.1	7.2
20	56.1	0.138	53.1	1.9	6.28	2.143	8.455	8.274	13.3	5.0	11.4	3.1	3.64	0.23	9.2	4.1	7.3
21	56.4	0.144	53.1	1.9	6.29	2.250	8.509	8.317	13.3	5.0	11.5	3.1	3.65	0.23	9.2	4.2	7.3
22	56.9	0.150	53.1	1.9	6.30	2.357	8.589	8.387	13.4	5.0	11.5	3.1	3.71	0.23	9.2	4.2	7.3
23	57.2	0.156	53.1	1.9	6.30	2.464	8.630	8.417	13.4	5.0	11.5	3.1	3.72	0.23	9.2	4.2	7.3
24	57.5	0.162	53.1	1.9	6.31	2.571	8.683	8.460	13.5	5.0	11.6	3.1	3.70	0.22	9.3	4.2	7.4
25	57.8	0.168	53.1	1.9	6.32	2.678	8.737	8.503	13.5	5.0	11.6	3.1	3.71	0.22	9.3	4.3	7.4
26	58.2	0.174	53.0	1.8	6.32	2.786	8.791	8.546	13.6	5.0	11.7	3.2	3.69	0.22	9.3	4.3	7.5
27	58.3	0.180	53.0	1.8	6.33	2.893	8.804	8.550	13.6	5.0	11.7	3.2	3.69	0.22	9.3	4.3	7.5
28	58.7	0.186	53.1	1.9	6.34	3.000	8.872	8.606	13.6	5.0	11.7	3.1	3.74	0.22	9.3	4.3	7.4
29	58.9	0.192	53.1	1.9	6.34	3.107	8.912	8.635	13.7	5.0	11.8	3.1	3.75	0.22	9.3	4.3	7.5
30	59.3	0.198	53.1	1.9	6.35	3.214	8.979	8.691	13.7	5.0	11.8	3.1	3.77	0.22	9.4	4.3	7.5
31	59.7	0.204	53.0	1.8	6.36	3.321	9.046	8.746	13.8	5.0	11.9	3.2	3.75	0.21	9.4	4.4	7.6
32	60.1	0.210	53.0	1.8	6.36	3.428	9.100	8.788	13.8	5.0	12.0	3.2	3.76	0.21	9.4	4.4	7.6
33	60.3	0.216	53.0	1.8	6.37	3.536	9.141	8.817	13.8	5.0	12.0	3.2	3.77	0.21	9.4	4.4	7.6
34	60.6	0.222	53.0	1.8	6.38	3.643	9.194	8.859	13.9	5.0	12.1	3.2	3.75	0.20	9.5	4.4	7.6
35	61.0	0.228	53.0	1.8	6.39	3.750	9.248	8.901	13.9	5.0	12.1	3.2	3.77	0.20	9.5	4.5	7.7
36	61.1	0.234	53.0	1.8	6.39	3.857	9.275	8.917	13.9	5.0	12.1	3.2	3.81	0.21	9.5	4.5	7.6
37	61.6	0.240	53.0	1.8	6.40	3.964	9.342	8.972	14.0	5.0	12.2	3.2	3.79	0.20	9.5	4.5	7.7
38	62.0	0.246	53.0	1.8	6.41	4.071	9.409	9.026	14.1	5.0	12.2	3.2	3.80	0.20	9.5	4.5	7.7
39	62.3	0.252	53.0	1.8	6.41	4.178	9.463	9.068	14.1	5.0	12.3	3.2	3.82	0.20	9.6	4.5	7.8
40	62.5	0.258	53.0	1.8	6.42	4.286	9.503	9.096	14.1	5.0	12.3	3.2	3.83	0.20	9.6	4.5	7.8
41	63.0	0.264	52.9	1.8	6.43	4.393	9.571	9.150	14.2	5.0	12.4	3.3	3.81	0.19	9.6	4.6	7.8
42	63.3	0.270	52.9	1.8	6.44	4.500	9.624	9.191	14.2	5.0	12.5	3.3	3.82	0.19	9.6	4.6	7.9
43	63.5	0.276	52.9	1.8	6.44	4.607	9.665	9.219	14.2	5.0	12.5	3.3	3.83	0.19	9.6	4.6	7.9
44	64.0	0.282	52.9	1.8	6.45	4.714	9.732	9.273	14.3	5.0	12.5	3.3	3.85	0.19	9.7	4.6	7.9
45	64.1	0.288	52.9	1.8	6.46	4.821	9.759	9.288	14.3	5.0	12.5	3.3	3.85	0.19	9.7	4.6	7.9
46	64.4	0.294	52.9	1.7	6.47	4.928	9.799	9.316	14.3	5.0	12.6	3.3	3.82	0.19	9.7	4.7	8.0
47	64.8	0.300	52.9	1.7	6.47	5.035	9.866	9.370	14.4	5.0	12.7	3.3	3.84	0.18	9.7	4.7	8.0
48	64.9	0.306	52.9	1.7	6.48	5.143	9.893	9.384	14.4	5.0	12.7	3.3	3.84	0.18	9.7	4.7	8.0
49	65.3	0.312	52.9	1.7	6.49	5.250	9.947	9.425	14.5	5.0	12.8	3.3	3.82	0.18	9.7	4.7	8.1
50	65.6	0.318	52.9	1.7	6.49	5.357	10.001	9.465	14.5	5.0	12.8	3.3	3.83	0.18	9.8	4.7	8.1
51	65.8	0.324	52.8	1.6	6.50	5.464	10.028	9.480	14.5	5.0	12.9	3.4	3.80	0.17	9.8	4.7	8.1
52	66.1	0.330	52.8	1.6	6.51	5.571	10.081	9.520	14.5	5.0	12.9	3.4	3.82	0.17	9.8	4.8	8.1
53	66.5	0.336	52.8	1.6	6.52	5.678	10.149	9.572	14.6	5.0	13.0	3.4	3.83	0.17	9.8	4.8	8.2
54	66.8	0.342	52.8	1.6	6.52	5.785	10.202	9.612	14.6	5.0	13.0	3.4	3.81	0.17	9.8	4.8	8.2
55	67.2	0.348	52.8	1.6	6.53	5.893	10.256	9.652	14.7	5.0	13.1	3.4	3.82	0.17	9.9	4.8	8.2
56	67.3	0.354	52.8	1.6	6.54	6.000	10.283	9.666	14.7	5.0	13.1	3.4	3.83	0.17	9.9	4.8	8.3
57	67.5	0.360	52.7	1.6	6.55	6.107	10.310	9.680	14.7	5.0	13.1	3.5	3.80	0.16	9.9	4.8	8.3
58	67.8	0.366	52.7	1.6	6.55	6.214	10.364	9.720	14.7	5.0	13.2	3.5	3.81	0.16	9.9	4.9	8.3
59	68.2	0.372	52.7	1.6	6.56	6.321	10.431	9.772	14.8	5.0	13.2	3.5	3.82	0.16	9.9	4.9	8.3



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	68.7	0.378	52.7	1.6	6.57	6.428	10.498	9.823	14.9	5.0	13.3	3.5	3.84	0.16	9.9	4.9	8.4
61	69.2	0.384	52.7	1.6	6.58	6.535	10.592	9.900	14.9	5.0	13.4	3.5	3.86	0.16	10.0	4.9	8.4
62	69.5	0.390	52.7	1.6	6.58	6.643	10.633	9.926	15.0	5.0	13.4	3.5	3.87	0.16	10.0	5.0	8.4
63	69.7	0.396	52.7	1.5	6.59	6.750	10.673	9.953	15.0	5.0	13.5	3.5	3.84	0.15	10.0	5.0	8.5
64	70.1	0.402	52.7	1.5	6.60	6.857	10.727	9.991	15.0	5.0	13.5	3.5	3.85	0.15	10.0	5.0	8.5
65	70.4	0.408	52.7	1.5	6.61	6.964	10.780	10.030	15.1	5.0	13.6	3.5	3.83	0.15	10.0	5.0	8.6
66	70.7	0.414	52.7	1.5	6.61	7.071	10.834	10.068	15.1	5.0	13.6	3.5	3.88	0.15	10.1	5.0	8.5
67	71.2	0.420	52.7	1.5	6.62	7.178	10.915	10.131	15.2	5.0	13.6	3.5	3.89	0.15	10.1	5.1	8.6
68	71.6	0.426	52.7	1.5	6.63	7.285	10.969	10.170	15.2	5.0	13.7	3.5	3.91	0.15	10.1	5.1	8.6
69	71.8	0.432	52.7	1.5	6.64	7.393	11.009	10.195	15.2	5.0	13.7	3.5	3.91	0.15	10.1	5.1	8.6
70	72.1	0.438	52.7	1.5	6.65	7.500	11.063	10.233	15.3	5.0	13.7	3.5	3.92	0.15	10.1	5.1	8.6
71	72.5	0.444	52.7	1.5	6.65	7.607	11.116	10.271	15.3	5.0	13.8	3.5	3.93	0.15	10.2	5.1	8.6
72	73.0	0.450	52.7	1.6	6.66	7.714	11.197	10.333	15.4	5.0	13.8	3.5	3.99	0.15	10.2	5.2	8.6
73	73.3	0.456	52.7	1.5	6.67	7.821	11.251	10.371	15.4	5.0	13.9	3.5	3.96	0.15	10.2	5.2	8.7
74	73.5	0.462	52.7	1.6	6.68	7.928	11.291	10.396	15.4	5.0	13.9	3.5	4.00	0.15	10.2	5.2	8.7
75	73.9	0.468	52.8	1.6	6.68	8.035	11.345	10.433	15.5	5.0	13.9	3.4	4.05	0.15	10.2	5.2	8.6
76	74.4	0.474	52.8	1.6	6.69	8.142	11.426	10.495	15.5	5.0	13.9	3.4	4.07	0.15	10.3	5.2	8.7
77	74.5	0.480	52.8	1.6	6.70	8.250	11.453	10.508	15.5	5.0	13.9	3.4	4.07	0.15	10.3	5.3	8.7
78	74.9	0.486	52.8	1.6	6.71	8.357	11.506	10.545	15.6	5.0	14.0	3.4	4.08	0.15	10.3	5.3	8.7
79	75.0	0.492	52.8	1.6	6.72	8.464	11.533	10.557	15.6	5.0	14.0	3.4	4.09	0.15	10.3	5.3	8.7
80	75.4	0.498	52.8	1.6	6.72	8.571	11.600	10.606	15.6	5.0	14.0	3.4	4.10	0.15	10.3	5.3	8.7
81	75.8	0.505	52.7	1.6	6.73	8.678	11.654	10.643	15.7	5.0	14.1	3.5	4.08	0.15	10.3	5.3	8.8
82	76.0	0.511	52.7	1.5	6.74	8.785	11.694	10.667	15.7	5.0	14.2	3.5	4.05	0.14	10.4	5.3	8.8
83	76.3	0.517	52.7	1.5	6.75	8.892	11.735	10.691	15.7	5.0	14.2	3.5	4.05	0.14	10.4	5.3	8.8
84	76.6	0.523	52.7	1.5	6.75	9.000	11.789	10.728	15.8	5.0	14.2	3.5	4.06	0.14	10.4	5.4	8.9
85	76.8	0.529	52.7	1.5	6.76	9.107	11.815	10.739	15.8	5.0	14.2	3.5	4.07	0.14	10.4	5.4	8.9
86	77.2	0.535	52.7	1.5	6.77	9.214	11.883	10.788	15.8	5.0	14.3	3.5	4.08	0.14	10.4	5.4	8.9
87	77.5	0.541	52.7	1.5	6.78	9.321	11.936	10.824	15.9	5.0	14.3	3.5	4.09	0.14	10.4	5.4	8.9
88	77.7	0.547	52.7	1.5	6.79	9.428	11.977	10.848	15.9	5.0	14.4	3.5	4.06	0.14	10.5	5.4	9.0
89	78.2	0.553	52.6	1.4	6.79	9.535	12.044	10.896	15.9	5.0	14.5	3.6	4.04	0.13	10.5	5.4	9.0
90	78.3	0.559	52.6	1.4	6.80	9.642	12.071	10.907	15.9	5.0	14.5	3.6	4.05	0.13	10.5	5.5	9.0
91	78.7	0.565	52.6	1.4	6.81	9.750	12.138	10.955	16.0	5.0	14.5	3.6	4.06	0.13	10.5	5.5	9.1
92	79.1	0.571	52.6	1.4	6.82	9.857	12.192	10.990	16.0	5.0	14.6	3.6	4.03	0.13	10.5	5.5	9.1
93	79.3	0.577	52.6	1.4	6.83	9.964	12.232	11.013	16.0	5.0	14.6	3.6	4.08	0.13	10.5	5.5	9.1
94	79.6	0.583	52.6	1.4	6.84	10.071	12.286	11.049	16.1	5.0	14.6	3.6	4.09	0.13	10.6	5.5	9.1
95	79.9	0.589	52.6	1.4	6.84	10.178	12.326	11.072	16.1	5.0	14.7	3.6	4.09	0.13	10.6	5.5	9.1
96	80.3	0.595	52.6	1.4	6.85	10.285	12.393	11.119	16.1	5.0	14.7	3.6	4.07	0.13	10.6	5.6	9.2
97	80.5	0.596	52.6	1.4	6.85	10.310	12.420	11.140	16.2	5.0	14.8	3.6	4.08	0.13	10.6	5.6	9.2



File Location
B-54 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: 1-85/I-385 Interchange
Client:
Sample Location: B-54
Sample Description: Red, Brown & Gray Silty Sand
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 46.000
PL: 30.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.800	2.806	
Height (in)	5.645	5.605	
Weight (grams)	1072.90		1131.89
Moisture (%)	18.15		24.65
Dry Density (pcf)	99.52	99.78	
Saturation (%)	72.62	100.00	
Void Ratio	0.659	0.658	

Test Data

Rate of Strain: 0
Cell Pressure (psi): 73.700
Effective Confining Stress (psi): 10.0
Corrected Peak Deviator Stress (psi): 14.662 at reading number: 186

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	1.8	0.000	63.7	0.0	6.18	0.000	0.000	0.000	10.0	10.0	10.0	10.0	1.00	0.00	10.0	0.0	10.0
1	27.8	0.006	65.3	1.6	6.19	0.107	4.208	4.204	14.3	10.0	12.6	8.4	1.50	0.38	12.1	2.1	10.5
2	39.6	0.012	66.2	2.6	6.20	0.214	6.105	6.092	16.1	10.0	13.6	7.5	1.82	0.42	13.1	3.0	10.5
3	45.1	0.018	66.6	3.0	6.20	0.321	7.000	6.978	17.0	10.0	14.0	7.1	1.99	0.43	13.5	3.5	10.6
4	49.0	0.024	67.4	3.8	6.21	0.428	7.628	7.595	17.6	10.0	13.9	6.3	2.21	0.50	13.8	3.8	10.1
5	52.1	0.030	67.8	4.1	6.22	0.535	8.136	8.092	18.1	10.0	14.0	5.9	2.36	0.51	14.1	4.0	10.0
6	54.6	0.036	68.0	4.3	6.22	0.642	8.536	8.481	18.5	10.0	14.2	5.7	2.49	0.51	14.3	4.2	9.9
7	56.4	0.042	68.2	4.5	6.23	0.749	8.830	8.764	18.8	10.0	14.3	5.5	2.58	0.51	14.4	4.4	9.9
8	58.2	0.048	68.2	4.6	6.24	0.856	9.111	9.033	19.1	10.0	14.5	5.5	2.65	0.51	14.6	4.5	10.0
9	59.2	0.054	68.1	4.4	6.25	0.963	9.284	9.195	19.2	10.0	14.8	5.6	2.64	0.48	14.6	4.6	10.2
10	60.5	0.060	68.2	4.5	6.25	1.070	9.485	9.383	19.4	10.0	14.9	5.5	2.71	0.48	14.7	4.7	10.2
11	61.5	0.066	68.3	4.6	6.26	1.178	9.645	9.531	19.6	10.0	15.0	5.4	2.76	0.49	14.8	4.8	10.2
12	62.4	0.072	68.4	4.8	6.27	1.285	9.792	9.666	19.7	10.0	14.9	5.3	2.84	0.50	14.9	4.8	10.1
13	63.0	0.078	68.5	4.8	6.27	1.392	9.899	9.761	19.8	10.0	15.0	5.2	2.87	0.49	14.9	4.9	10.1
14	63.5	0.084	68.6	4.9	6.28	1.499	9.979	9.829	19.9	10.0	15.0	5.1	2.91	0.50	15.0	4.9	10.1
15	64.2	0.090	68.6	4.9	6.29	1.606	10.086	9.924	20.0	10.0	15.0	5.1	2.95	0.50	15.0	5.0	10.1
16	64.8	0.096	68.6	4.9	6.29	1.713	10.179	10.005	20.1	10.0	15.1	5.1	2.96	0.49	15.1	5.0	10.1
17	65.4	0.102	68.6	5.0	6.30	1.820	10.273	10.086	20.1	10.0	15.1	5.1	2.99	0.49	15.1	5.0	10.1
18	65.7	0.108	68.8	5.1	6.31	1.927	10.326	10.127	20.2	10.0	15.1	4.9	3.05	0.50	15.1	5.1	10.0



Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	66.2	0.114	68.8	5.2	6.31	2.034	10.407	10.195	20.2	10.0	15.1	4.9	3.08	0.51	15.1	5.1	10.0
20	66.7	0.120	68.8	5.2	6.32	2.141	10.487	10.262	20.3	10.0	15.1	4.9	3.11	0.51	15.2	5.1	10.0
21	66.9	0.126	68.8	5.2	6.33	2.248	10.527	10.290	20.3	10.0	15.1	4.9	3.12	0.50	15.2	5.1	10.0
22	67.5	0.132	68.8	5.2	6.33	2.355	10.620	10.370	20.4	10.0	15.2	4.9	3.13	0.50	15.2	5.2	10.0
23	67.8	0.138	68.8	5.2	6.34	2.462	10.674	10.411	20.5	10.0	15.3	4.9	3.14	0.50	15.3	5.2	10.1
24	68.1	0.144	68.8	5.2	6.35	2.569	10.714	10.439	20.5	10.0	15.3	4.9	3.15	0.50	15.3	5.2	10.1
25	68.3	0.150	68.9	5.3	6.36	2.676	10.754	10.466	20.5	10.0	15.2	4.8	3.19	0.50	15.3	5.2	10.0
26	68.7	0.156	69.0	5.3	6.36	2.783	10.821	10.519	20.6	10.0	15.3	4.7	3.22	0.50	15.3	5.3	10.0
27	69.1	0.162	69.0	5.3	6.37	2.890	10.874	10.560	20.6	10.0	15.3	4.7	3.23	0.50	15.3	5.3	10.0
28	69.4	0.168	69.0	5.4	6.38	2.997	10.928	10.600	20.6	10.0	15.3	4.7	3.26	0.50	15.3	5.3	10.0
29	69.7	0.174	69.0	5.4	6.38	3.104	10.981	10.640	20.7	10.0	15.3	4.7	3.27	0.50	15.4	5.3	10.0
30	70.0	0.180	69.0	5.3	6.39	3.211	11.021	10.667	20.7	10.0	15.4	4.7	3.25	0.50	15.4	5.3	10.1
31	70.2	0.186	69.0	5.3	6.40	3.319	11.061	10.694	20.7	10.0	15.4	4.7	3.26	0.50	15.4	5.3	10.1
32	70.6	0.192	69.0	5.3	6.40	3.426	11.115	10.734	20.8	10.0	15.5	4.7	3.27	0.49	15.4	5.4	10.1
33	70.7	0.198	69.0	5.4	6.41	3.533	11.141	10.748	20.8	10.0	15.4	4.7	3.31	0.50	15.4	5.4	10.0
34	71.1	0.204	69.0	5.4	6.42	3.640	11.208	10.800	20.8	10.0	15.5	4.7	3.32	0.50	15.4	5.4	10.1
35	71.4	0.210	69.0	5.4	6.43	3.747	11.248	10.827	20.9	10.0	15.5	4.7	3.33	0.50	15.5	5.4	10.1
36	71.6	0.216	69.0	5.4	6.43	3.854	11.288	10.853	20.9	10.0	15.5	4.7	3.33	0.50	15.5	5.4	10.1
37	72.0	0.222	69.0	5.4	6.44	3.961	11.342	10.892	20.9	10.0	15.6	4.7	3.32	0.49	15.5	5.4	10.1
38	72.2	0.228	69.0	5.3	6.45	4.068	11.382	10.919	21.0	10.0	15.7	4.7	3.31	0.49	15.5	5.5	10.2
39	72.5	0.234	69.0	5.4	6.45	4.175	11.422	10.945	21.0	10.0	15.6	4.7	3.35	0.49	15.5	5.5	10.1
40	72.8	0.240	69.0	5.4	6.46	4.282	11.475	10.984	21.0	10.0	15.6	4.7	3.36	0.49	15.5	5.5	10.1
41	73.0	0.246	69.0	5.4	6.47	4.389	11.515	11.010	21.1	10.0	15.7	4.7	3.36	0.49	15.6	5.5	10.2
42	73.3	0.252	69.0	5.4	6.48	4.496	11.555	11.036	21.1	10.0	15.7	4.7	3.37	0.49	15.6	5.5	10.2
43	73.5	0.258	69.0	5.4	6.48	4.603	11.595	11.062	21.1	10.0	15.8	4.7	3.36	0.48	15.6	5.5	10.2
44	73.9	0.264	69.0	5.4	6.49	4.710	11.662	11.113	21.2	10.0	15.8	4.7	3.37	0.48	15.6	5.6	10.3
45	74.3	0.270	69.0	5.4	6.50	4.817	11.716	11.151	21.2	10.0	15.8	4.7	3.37	0.48	15.6	5.6	10.3
46	74.5	0.276	69.0	5.3	6.51	4.924	11.756	11.177	21.2	10.0	15.9	4.7	3.36	0.48	15.6	5.6	10.3
47	74.8	0.282	69.0	5.4	6.51	5.031	11.796	11.202	21.3	10.0	15.9	4.7	3.41	0.48	15.6	5.6	10.3
48	75.1	0.288	69.0	5.4	6.52	5.138	11.849	11.240	21.3	10.0	15.9	4.7	3.39	0.48	15.7	5.6	10.3
49	75.4	0.294	69.0	5.4	6.53	5.245	11.903	11.278	21.3	10.0	15.9	4.7	3.42	0.48	15.7	5.6	10.3
50	75.8	0.300	69.0	5.4	6.53	5.352	11.969	11.329	21.4	10.0	16.0	4.7	3.43	0.48	15.7	5.7	10.3
51	76.1	0.306	69.0	5.4	6.54	5.460	12.010	11.354	21.4	10.0	16.1	4.7	3.42	0.47	15.7	5.7	10.4
52	76.4	0.312	69.0	5.4	6.55	5.567	12.063	11.392	21.4	10.0	16.1	4.7	3.43	0.47	15.7	5.7	10.4
53	76.6	0.318	69.0	5.3	6.56	5.674	12.090	11.404	21.5	10.0	16.1	4.7	3.41	0.47	15.7	5.7	10.4
54	76.8	0.324	69.0	5.4	6.56	5.781	12.116	11.416	21.5	10.0	16.1	4.7	3.43	0.47	15.8	5.7	10.4
55	77.3	0.330	69.0	5.4	6.57	5.888	12.197	11.478	21.5	10.0	16.1	4.7	3.47	0.47	15.8	5.7	10.4
56	77.5	0.336	69.0	5.4	6.58	5.995	12.237	11.503	21.6	10.0	16.2	4.7	3.45	0.47	15.8	5.8	10.4
57	77.7	0.342	69.0	5.4	6.59	6.102	12.277	11.528	21.6	10.0	16.2	4.7	3.45	0.46	15.8	5.8	10.5
58	78.2	0.348	69.0	5.3	6.59	6.209	12.344	11.577	21.6	10.0	16.3	4.7	3.44	0.46	15.8	5.8	10.5
59	78.2	0.354	68.9	5.3	6.60	6.316	12.357	11.576	21.6	10.0	16.4	4.8	3.42	0.46	15.8	5.8	10.6



Florence & Hutcheson

CONSULTING ENGINEERS

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	78.5	0.360	68.9	5.3	6.61	6.423	12.397	11.601	21.6	10.0	16.4	4.8	3.43	0.45	15.8	5.8	10.6
61	78.6	0.366	69.0	5.3	6.62	6.530	12.410	11.600	21.6	10.0	16.3	4.7	3.45	0.46	15.8	5.8	10.5
62	79.0	0.372	69.0	5.3	6.62	6.637	12.477	11.649	21.7	10.0	16.4	4.7	3.46	0.46	15.9	5.8	10.6
63	79.4	0.378	68.9	5.3	6.63	6.744	12.544	11.698	21.7	10.0	16.5	4.8	3.45	0.45	15.9	5.8	10.6
64	79.6	0.384	68.9	5.3	6.64	6.851	12.584	11.722	21.8	10.0	16.5	4.8	3.45	0.45	15.9	5.9	10.6
65	79.9	0.390	68.9	5.2	6.65	6.958	12.624	11.746	21.8	10.0	16.6	4.8	3.44	0.45	15.9	5.9	10.7
66	80.1	0.396	68.9	5.2	6.66	7.065	12.664	11.769	21.8	10.0	16.6	4.8	3.44	0.44	15.9	5.9	10.7
67	80.4	0.402	68.8	5.2	6.66	7.172	12.704	11.793	21.8	10.0	16.7	4.9	3.43	0.44	15.9	5.9	10.8
68	80.7	0.408	68.8	5.2	6.67	7.279	12.758	11.829	21.9	10.0	16.7	4.9	3.42	0.44	16.0	5.9	10.8
69	80.9	0.414	68.9	5.2	6.68	7.386	12.784	11.840	21.9	10.0	16.7	4.8	3.46	0.44	16.0	5.9	10.7
70	81.3	0.420	68.8	5.2	6.69	7.493	12.851	11.888	21.9	10.0	16.7	4.9	3.45	0.44	16.0	5.9	10.8
71	81.6	0.426	68.8	5.2	6.69	7.601	12.905	11.924	22.0	10.0	16.8	4.9	3.45	0.44	16.0	6.0	10.8
72	81.9	0.432	68.8	5.2	6.70	7.708	12.945	11.947	22.0	10.0	16.8	4.9	3.46	0.43	16.0	6.0	10.8
73	82.2	0.438	68.8	5.2	6.71	7.815	12.998	11.982	22.0	10.0	16.9	4.9	3.45	0.43	16.0	6.0	10.9
74	82.5	0.444	68.8	5.1	6.72	7.922	13.052	12.018	22.1	10.0	17.0	4.9	3.43	0.43	16.1	6.0	10.9
75	82.5	0.450	68.7	5.1	6.72	8.029	13.052	12.004	22.1	10.0	17.0	5.0	3.41	0.42	16.0	6.0	11.0
76	82.9	0.456	68.8	5.2	6.73	8.136	13.105	12.039	22.1	10.0	16.9	4.9	3.46	0.43	16.1	6.0	10.9
77	83.5	0.462	68.8	5.1	6.74	8.243	13.199	12.111	22.2	10.0	17.0	4.9	3.45	0.42	16.1	6.1	11.0
78	83.9	0.468	68.8	5.1	6.75	8.350	13.265	12.158	22.2	10.0	17.1	4.9	3.46	0.42	16.1	6.1	11.0
79	84.2	0.474	68.8	5.1	6.76	8.457	13.319	12.192	22.2	10.0	17.1	4.9	3.47	0.42	16.1	6.1	11.0
80	84.4	0.480	68.7	5.1	6.76	8.564	13.359	12.215	22.3	10.0	17.2	5.0	3.45	0.42	16.2	6.1	11.1
81	84.7	0.486	68.7	5.0	6.77	8.671	13.399	12.237	22.3	10.0	17.3	5.0	3.44	0.41	16.2	6.1	11.1
82	84.9	0.492	68.6	5.0	6.78	8.778	13.439	12.259	22.3	10.0	17.3	5.1	3.42	0.41	16.2	6.1	11.2
83	85.2	0.498	68.7	5.0	6.79	8.885	13.479	12.281	22.3	10.0	17.3	5.0	3.45	0.41	16.2	6.1	11.2
84	85.7	0.505	68.7	5.0	6.80	8.992	13.559	12.340	22.4	10.0	17.4	5.0	3.46	0.41	16.2	6.2	11.2
85	86.0	0.511	68.6	5.0	6.80	9.099	13.613	12.374	22.4	10.0	17.4	5.1	3.45	0.40	16.2	6.2	11.2
86	86.3	0.517	68.6	5.0	6.81	9.206	13.653	12.396	22.4	10.0	17.5	5.1	3.45	0.40	16.2	6.2	11.3
87	86.6	0.523	68.6	4.9	6.82	9.313	13.706	12.430	22.5	10.0	17.5	5.1	3.44	0.40	16.3	6.2	11.3
88	86.9	0.529	68.6	4.9	6.83	9.420	13.760	12.463	22.5	10.0	17.6	5.1	3.43	0.39	16.3	6.2	11.4
89	87.2	0.535	68.5	4.9	6.84	9.527	13.800	12.485	22.5	10.0	17.7	5.2	3.41	0.39	16.3	6.2	11.4
90	87.4	0.541	68.5	4.8	6.84	9.634	13.840	12.506	22.6	10.0	17.7	5.2	3.40	0.39	16.3	6.3	11.5
91	87.6	0.547	68.6	4.9	6.85	9.742	13.866	12.516	22.6	10.0	17.7	5.1	3.44	0.39	16.3	6.3	11.4
92	88.1	0.553	68.6	4.9	6.86	9.849	13.947	12.573	22.6	10.0	17.7	5.1	3.45	0.39	16.3	6.3	11.4
93	88.4	0.559	68.5	4.9	6.87	9.956	14.000	12.606	22.7	10.0	17.8	5.2	3.43	0.39	16.4	6.3	11.5
94	88.7	0.565	68.5	4.9	6.88	10.063	14.040	12.627	22.7	10.0	17.8	5.2	3.44	0.39	16.4	6.3	11.5
95	88.9	0.571	68.5	4.8	6.89	10.170	14.080	12.648	22.7	10.0	17.9	5.2	3.42	0.38	16.4	6.3	11.5
96	89.0	0.577	68.4	4.8	6.89	10.277	14.094	12.645	22.7	10.0	17.9	5.3	3.40	0.38	16.4	6.3	11.6
97	89.5	0.583	68.5	4.8	6.90	10.384	14.174	12.702	22.7	10.0	17.9	5.2	3.43	0.38	16.4	6.4	11.6
98	89.8	0.589	68.5	4.8	6.91	10.491	14.227	12.735	22.8	10.0	18.0	5.2	3.44	0.38	16.4	6.4	11.6
99	90.0	0.595	68.4	4.8	6.92	10.598	14.254	12.743	22.8	10.0	18.0	5.3	3.42	0.38	16.4	6.4	11.6
100	90.3	0.601	68.4	4.8	6.93	10.705	14.307	12.776	22.8	10.0	18.0	5.3	3.43	0.37	16.4	6.4	11.6



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	90.6	0.607	68.4	4.7	6.93	10.812	14.361	12.808	22.9	10.0	18.1	5.3	3.42	0.37	16.5	6.4	11.7
102	90.7	0.613	68.4	4.7	6.94	10.919	14.374	12.805	22.9	10.0	18.1	5.3	3.40	0.37	16.5	6.4	11.7
103	91.2	0.619	68.3	4.7	6.95	11.026	14.454	12.860	22.9	10.0	18.2	5.4	3.39	0.36	16.5	6.4	11.8
104	91.1	0.625	68.4	4.7	6.96	11.133	14.441	12.833	22.9	10.0	18.1	5.3	3.42	0.37	16.5	6.4	11.7
105	91.7	0.631	68.4	4.7	6.97	11.240	14.534	12.901	22.9	10.0	18.2	5.3	3.42	0.36	16.5	6.5	11.8
106	92.0	0.637	68.4	4.7	6.98	11.347	14.588	12.933	23.0	10.0	18.3	5.3	3.42	0.36	16.5	6.5	11.8
107	92.4	0.643	68.4	4.7	6.99	11.454	14.641	12.964	23.0	10.0	18.3	5.3	3.43	0.36	16.5	6.5	11.8
108	92.7	0.649	68.3	4.7	6.99	11.561	14.695	12.996	23.0	10.0	18.4	5.4	3.42	0.36	16.5	6.5	11.9
109	92.9	0.655	68.3	4.6	7.00	11.668	14.721	13.004	23.1	10.0	18.4	5.4	3.40	0.36	16.5	6.5	11.9
110	93.0	0.661	68.2	4.6	7.01	11.775	14.748	13.011	23.1	10.0	18.5	5.5	3.38	0.35	16.6	6.5	12.0
111	93.3	0.667	68.2	4.6	7.02	11.883	14.788	13.031	23.1	10.0	18.5	5.5	3.39	0.35	16.6	6.5	12.0
112	93.8	0.673	68.3	4.6	7.03	11.990	14.868	13.086	23.1	10.0	18.5	5.4	3.41	0.35	16.6	6.5	12.0
113	94.1	0.679	68.3	4.6	7.04	12.097	14.922	13.117	23.2	10.0	18.5	5.4	3.42	0.35	16.6	6.6	12.0
114	94.4	0.685	68.2	4.6	7.04	12.204	14.962	13.136	23.2	10.0	18.6	5.5	3.41	0.35	16.6	6.6	12.0
115	94.6	0.691	68.2	4.6	7.05	12.311	15.002	13.155	23.2	10.0	18.6	5.5	3.41	0.35	16.6	6.6	12.0
116	94.9	0.697	68.2	4.5	7.06	12.418	15.055	13.186	23.2	10.0	18.7	5.5	3.38	0.34	16.6	6.6	12.1
117	95.1	0.703	68.2	4.6	7.07	12.525	15.082	13.193	23.2	10.0	18.7	5.5	3.42	0.35	16.6	6.6	12.1
118	95.8	0.715	68.2	4.5	7.09	12.739	15.202	13.266	23.3	10.0	18.8	5.5	3.41	0.34	16.7	6.6	12.1
119	96.2	0.721	68.2	4.5	7.10	12.846	15.256	13.296	23.3	10.0	18.8	5.5	3.42	0.34	16.7	6.6	12.1
120	96.4	0.727	68.2	4.5	7.11	12.953	15.296	13.315	23.4	10.0	18.9	5.5	3.40	0.34	16.7	6.7	12.2
121	96.8	0.733	68.1	4.5	7.11	13.060	15.349	13.345	23.4	10.0	18.9	5.6	3.39	0.33	16.7	6.7	12.3
122	97.1	0.739	68.1	4.4	7.12	13.167	15.403	13.375	23.4	10.0	19.0	5.6	3.38	0.33	16.7	6.7	12.3
123	97.2	0.745	68.1	4.5	7.13	13.274	15.429	13.381	23.4	10.0	19.0	5.6	3.40	0.33	16.7	6.7	12.3
124	97.7	0.751	68.1	4.5	7.14	13.381	15.510	13.434	23.5	10.0	19.0	5.6	3.41	0.33	16.8	6.7	12.3
125	98.0	0.757	68.1	4.5	7.15	13.488	15.550	13.452	23.5	10.0	19.0	5.6	3.41	0.33	16.8	6.7	12.3
126	98.2	0.763	68.1	4.4	7.16	13.595	15.590	13.470	23.5	10.0	19.1	5.6	3.40	0.33	16.8	6.7	12.4
127	98.5	0.769	68.1	4.4	7.17	13.702	15.630	13.488	23.5	10.0	19.1	5.6	3.40	0.33	16.8	6.7	12.4
128	98.7	0.775	68.0	4.4	7.18	13.809	15.670	13.506	23.6	10.0	19.2	5.7	3.39	0.32	16.8	6.8	12.4
129	99.1	0.781	68.0	4.3	7.18	13.916	15.723	13.535	23.6	10.0	19.2	5.7	3.37	0.32	16.8	6.8	12.5
130	99.3	0.787	68.0	4.3	7.19	14.024	15.763	13.553	23.6	10.0	19.3	5.7	3.36	0.32	16.8	6.8	12.5
131	99.4	0.793	68.0	4.4	7.20	14.131	15.777	13.547	23.6	10.0	19.2	5.7	3.39	0.32	16.8	6.8	12.4
132	99.9	0.799	68.0	4.3	7.21	14.238	15.857	13.599	23.6	10.0	19.3	5.7	3.38	0.32	16.8	6.8	12.5
133	100.1	0.805	68.0	4.3	7.22	14.345	15.884	13.605	23.7	10.0	19.3	5.7	3.39	0.32	16.9	6.8	12.5
134	100.4	0.811	68.0	4.3	7.23	14.452	15.937	13.634	23.7	10.0	19.4	5.7	3.37	0.32	16.9	6.8	12.6
135	100.6	0.817	67.9	4.3	7.24	14.559	15.977	13.651	23.7	10.0	19.4	5.8	3.36	0.31	16.9	6.8	12.6
136	100.8	0.823	67.9	4.2	7.25	14.666	16.004	13.657	23.7	10.0	19.5	5.8	3.35	0.31	16.9	6.8	12.7
137	101.3	0.829	68.0	4.3	7.26	14.773	16.084	13.708	23.8	10.0	19.5	5.7	3.39	0.31	16.9	6.9	12.6
138	101.6	0.835	67.9	4.3	7.27	14.880	16.137	13.736	23.8	10.0	19.5	5.8	3.38	0.31	16.9	6.9	12.7
139	101.9	0.841	67.9	4.3	7.28	14.987	16.178	13.753	23.8	10.0	19.5	5.8	3.38	0.31	16.9	6.9	12.7
140	102.2	0.847	67.9	4.2	7.28	15.094	16.231	13.781	23.8	10.0	19.6	5.8	3.37	0.31	16.9	6.9	12.7
141	102.5	0.853	67.8	4.2	7.29	15.201	16.284	13.809	23.9	10.0	19.7	5.9	3.36	0.30	17.0	6.9	12.8



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142	102.8	0.859	67.8	4.2	7.30	15.308	16.324	13.825	23.9	10.0	19.7	5.9	3.36	0.30	17.0	6.9	12.8
143	103.0	0.865	67.8	4.1	7.31	15.415	16.365	13.842	23.9	10.0	19.7	5.9	3.34	0.30	17.0	6.9	12.8
144	103.4	0.871	67.9	4.2	7.32	15.522	16.418	13.870	23.9	10.0	19.7	5.8	3.38	0.30	17.0	6.9	12.8
145	103.9	0.877	67.8	4.2	7.33	15.629	16.498	13.920	24.0	10.0	19.8	5.9	3.37	0.30	17.0	7.0	12.8
146	104.0	0.883	67.8	4.2	7.34	15.736	16.525	13.924	24.0	10.0	19.8	5.9	3.37	0.30	17.0	7.0	12.8
147	104.4	0.889	67.8	4.2	7.35	15.843	16.578	13.952	24.0	10.0	19.8	5.9	3.38	0.30	17.0	7.0	12.8
148	104.6	0.895	67.8	4.1	7.36	15.950	16.618	13.968	24.0	10.0	19.9	5.9	3.37	0.30	17.0	7.0	12.9
149	104.9	0.901	67.8	4.1	7.37	16.057	16.658	13.984	24.0	10.0	19.9	5.9	3.35	0.29	17.0	7.0	12.9
150	105.3	0.907	67.7	4.1	7.38	16.165	16.725	14.022	24.1	10.0	20.0	6.0	3.34	0.29	17.1	7.0	13.0
151	105.3	0.913	67.7	4.0	7.39	16.272	16.725	14.004	24.1	10.0	20.0	6.0	3.32	0.29	17.0	7.0	13.0
152	105.8	0.919	67.8	4.1	7.40	16.379	16.819	14.064	24.1	10.0	20.0	5.9	3.37	0.29	17.1	7.0	13.0
153	106.3	0.925	67.7	4.1	7.41	16.486	16.886	14.102	24.1	10.0	20.1	6.0	3.36	0.29	17.1	7.1	13.0
154	106.5	0.931	67.7	4.1	7.42	16.593	16.926	14.117	24.2	10.0	20.1	6.0	3.36	0.29	17.1	7.1	13.0
155	106.8	0.937	67.7	4.0	7.42	16.700	16.979	14.144	24.2	10.0	20.2	6.0	3.35	0.28	17.1	7.1	13.1
156	107.0	0.943	67.6	4.0	7.43	16.807	17.006	14.148	24.2	10.0	20.2	6.1	3.33	0.28	17.1	7.1	13.1
157	107.2	0.949	67.7	4.0	7.44	16.914	17.046	14.163	24.2	10.0	20.2	6.0	3.35	0.28	17.1	7.1	13.1
158	107.7	0.955	67.7	4.0	7.45	17.021	17.126	14.211	24.3	10.0	20.2	6.0	3.36	0.28	17.2	7.1	13.1
159	108.0	0.961	67.6	4.0	7.46	17.128	17.166	14.226	24.3	10.0	20.3	6.1	3.35	0.28	17.2	7.1	13.2
160	108.2	0.967	67.6	4.0	7.47	17.235	17.206	14.241	24.3	10.0	20.3	6.1	3.35	0.28	17.2	7.1	13.2
161	108.4	0.973	67.6	3.9	7.48	17.342	17.233	14.244	24.3	10.0	20.3	6.1	3.33	0.28	17.2	7.1	13.2
162	108.7	0.979	67.6	3.9	7.49	17.449	17.286	14.270	24.3	10.0	20.4	6.1	3.32	0.27	17.2	7.1	13.3
163	109.0	0.985	67.5	3.9	7.50	17.556	17.326	14.285	24.3	10.0	20.5	6.2	3.31	0.27	17.2	7.1	13.3
164	109.2	0.991	67.5	3.8	7.51	17.663	17.366	14.299	24.3	10.0	20.5	6.2	3.30	0.27	17.2	7.1	13.4
165	109.2	0.997	67.6	3.9	7.52	17.770	17.366	14.280	24.3	10.0	20.4	6.1	3.32	0.27	17.2	7.1	13.3
166	109.6	1.003	67.5	3.9	7.53	17.877	17.433	14.317	24.4	10.0	20.5	6.2	3.31	0.27	17.2	7.2	13.3
167	110.0	1.009	67.5	3.8	7.54	17.993	17.487	14.340	24.4	10.0	20.6	6.2	3.30	0.27	17.2	7.2	13.4
168	110.2	1.015	67.5	3.8	7.55	18.108	17.527	14.353	24.4	10.0	20.6	6.2	3.31	0.27	17.2	7.2	13.4
169	110.6	1.022	67.4	3.8	7.56	18.223	17.594	14.387	24.4	10.0	20.7	6.3	3.30	0.26	17.2	7.2	13.5
170	110.9	1.028	67.4	3.7	7.57	18.338	17.634	14.400	24.4	10.0	20.7	6.3	3.28	0.26	17.2	7.2	13.5
171	111.2	1.035	67.4	3.7	7.58	18.454	17.687	14.423	24.5	10.0	20.7	6.3	3.29	0.26	17.3	7.2	13.5
172	111.4	1.041	67.4	3.8	7.60	18.569	17.714	14.425	24.5	10.0	20.7	6.3	3.30	0.26	17.3	7.2	13.5
173	111.8	1.048	67.4	3.7	7.61	18.684	17.781	14.458	24.5	10.0	20.8	6.3	3.29	0.26	17.3	7.2	13.5
174	112.0	1.054	67.4	3.7	7.62	18.791	17.821	14.472	24.5	10.0	20.8	6.3	3.29	0.26	17.3	7.2	13.5
175	112.4	1.060	67.4	3.7	7.63	18.898	17.874	14.496	24.5	10.0	20.8	6.3	3.28	0.26	17.3	7.2	13.6
176	112.7	1.066	67.3	3.6	7.64	19.005	17.928	14.520	24.6	10.0	20.9	6.4	3.26	0.25	17.3	7.3	13.7
177	112.9	1.072	67.3	3.7	7.65	19.113	17.954	14.523	24.6	10.0	20.9	6.4	3.27	0.25	17.3	7.3	13.6
178	113.3	1.078	67.3	3.7	7.66	19.220	18.021	14.557	24.6	10.0	20.9	6.4	3.28	0.25	17.3	7.3	13.7
179	113.6	1.084	67.3	3.7	7.67	19.327	18.074	14.581	24.6	10.0	21.0	6.4	3.28	0.25	17.3	7.3	13.7
180	113.9	1.090	67.3	3.6	7.68	19.434	18.115	14.594	24.6	10.0	21.0	6.4	3.27	0.25	17.3	7.3	13.7
181	114.1	1.096	67.3	3.6	7.69	19.541	18.155	14.607	24.7	10.0	21.0	6.4	3.27	0.25	17.4	7.3	13.7
182	114.4	1.102	67.2	3.6	7.70	19.648	18.208	14.631	24.7	10.0	21.1	6.5	3.26	0.24	17.4	7.3	13.8



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	114.7	1.108	67.2	3.5	7.71	19.755	18.248	14.643	24.7	10.0	21.2	6.5	3.25	0.24	17.4	7.3	13.8
184	114.9	1.114	67.2	3.5	7.72	19.870	18.288	14.654	24.7	10.0	21.2	6.5	3.24	0.24	17.4	7.3	13.9
185	115.0	1.121	67.2	3.6	7.73	19.985	18.302	14.644	24.7	10.0	21.1	6.5	3.26	0.24	17.4	7.3	13.8
186	115.2	1.122	67.2	3.6	7.73	20.002	18.328	14.662	24.7	10.0	21.1	6.5	3.27	0.24	17.4	7.3	13.8



File Location
B-54 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-54
Sample Description: Red, Brown & Gray Silty Sand
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 46.000
PL: 30.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.803	2.811	
Height (in)	5.643	5.605	
Weight (grams)	1076.70		1128.33
Moisture (%)	17.77		23.42
Dry Density (pcf)	100.03	100.13	
Saturation (%)	72.02	100.00	
Void Ratio	0.650	0.652	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 92.400
Effective Confining Stress (psi): 20.0
Corrected Peak Deviator Stress (psi): 20.976 at reading number: 187

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	2.9	0.000	72.4	0.0	6.21	0.000	0.000	0.000	20.0	20.0	20.0	20.0	1.00	0.00	20.0	0.0	20.0
1	3.6	0.006	72.6	0.2	6.21	0.107	0.107	0.106	20.1	20.0	19.9	19.8	1.01	1.51	20.0	0.1	19.8
2	27.3	0.012	74.3	1.9	6.22	0.214	3.928	3.920	23.9	20.0	22.0	18.1	1.22	0.48	21.9	2.0	20.0
3	50.5	0.018	77.2	4.7	6.23	0.321	7.670	7.645	27.6	20.0	22.9	15.2	1.50	0.62	23.8	3.8	19.0
4	61.9	0.024	78.8	6.3	6.23	0.428	9.507	9.466	29.4	20.0	23.1	13.6	1.69	0.67	24.7	4.7	18.4
5	70.1	0.030	79.8	7.3	6.24	0.535	10.839	10.781	30.7	20.0	23.4	12.6	1.86	0.68	25.3	5.4	18.0
6	76.1	0.036	80.6	8.2	6.25	0.642	11.797	11.722	31.7	20.0	23.5	11.8	1.99	0.70	25.8	5.9	17.7
7	80.6	0.042	81.2	8.8	6.25	0.749	12.516	12.423	32.4	20.0	23.6	11.2	2.11	0.71	26.2	6.2	17.4
8	84.2	0.048	81.8	9.3	6.26	0.856	13.102	12.990	32.9	20.0	23.6	10.6	2.22	0.72	26.4	6.5	17.1
9	87.0	0.054	82.2	9.8	6.27	0.963	13.555	13.424	33.4	20.0	23.6	10.2	2.32	0.73	26.7	6.7	16.9
10	89.3	0.060	82.6	10.2	6.27	1.070	13.928	13.779	33.7	20.0	23.6	9.8	2.41	0.74	26.8	6.9	16.7
11	91.1	0.066	82.9	10.4	6.28	1.178	14.221	14.053	34.0	20.0	23.6	9.5	2.48	0.74	27.0	7.0	16.5
12	92.6	0.072	83.2	10.8	6.29	1.285	14.460	14.275	34.2	20.0	23.5	9.2	2.55	0.75	27.1	7.1	16.3
13	93.9	0.078	83.5	11.0	6.29	1.392	14.660	14.456	34.4	20.0	23.4	8.9	2.62	0.76	27.2	7.2	16.2
14	94.5	0.084	83.7	11.2	6.30	1.499	14.767	14.545	34.5	20.0	23.3	8.7	2.66	0.77	27.2	7.3	16.0
15	95.6	0.090	83.8	11.4	6.31	1.606	14.940	14.700	34.7	20.0	23.3	8.6	2.71	0.77	27.3	7.3	15.9
16	95.8	0.096	84.1	11.6	6.31	1.713	14.966	14.710	34.7	20.0	23.1	8.3	2.76	0.79	27.3	7.4	15.7
17	96.8	0.102	84.2	11.8	6.32	1.820	15.126	14.851	34.8	20.0	23.0	8.2	2.81	0.79	27.4	7.4	15.6
18	97.4	0.108	84.4	11.9	6.33	1.927	15.233	14.939	34.9	20.0	23.0	8.0	2.86	0.80	27.4	7.5	15.5



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	98.0	0.114	84.5	12.0	6.33	2.034	15.326	15.014	35.0	20.0	22.9	7.9	2.90	0.80	27.5	7.5	15.4
20	98.6	0.120	84.6	12.2	6.34	2.141	15.419	15.089	35.0	20.0	22.9	7.8	2.94	0.81	27.5	7.5	15.3
21	98.9	0.126	84.7	12.2	6.35	2.248	15.472	15.125	35.1	20.0	22.8	7.7	2.96	0.81	27.5	7.6	15.3
22	99.4	0.132	84.8	12.3	6.35	2.355	15.552	15.186	35.1	20.0	22.8	7.6	2.99	0.81	27.5	7.6	15.2
23	99.6	0.138	84.9	12.4	6.36	2.462	15.592	15.208	35.2	20.0	22.7	7.5	3.03	0.82	27.6	7.6	15.1
24	100.6	0.144	85.0	12.5	6.37	2.569	15.739	15.334	35.3	20.0	22.8	7.4	3.07	0.82	27.6	7.7	15.1
25	101.1	0.150	85.1	12.6	6.38	2.676	15.832	15.408	35.4	20.0	22.7	7.3	3.10	0.82	27.7	7.7	15.0
26	101.6	0.156	85.1	12.7	6.38	2.783	15.912	15.469	35.4	20.0	22.8	7.3	3.12	0.82	27.7	7.7	15.0
27	102.0	0.162	85.2	12.7	6.39	2.890	15.965	15.504	35.5	20.0	22.7	7.2	3.15	0.82	27.7	7.8	15.0
28	102.2	0.168	85.2	12.8	6.40	2.997	16.005	15.525	35.5	20.0	22.7	7.2	3.16	0.82	27.7	7.8	14.9
29	102.5	0.174	85.3	12.9	6.40	3.104	16.045	15.547	35.5	20.0	22.6	7.1	3.19	0.83	27.7	7.8	14.9
30	102.9	0.180	85.3	12.9	6.41	3.211	16.125	15.607	35.6	20.0	22.7	7.1	3.21	0.83	27.8	7.8	14.9
31	103.3	0.186	85.4	13.0	6.42	3.318	16.178	15.641	35.6	20.0	22.6	7.0	3.24	0.83	27.8	7.8	14.8
32	103.5	0.192	85.4	13.0	6.43	3.426	16.218	15.663	35.6	20.0	22.6	7.0	3.24	0.83	27.8	7.8	14.8
33	104.0	0.198	85.5	13.0	6.43	3.533	16.298	15.722	35.7	20.0	22.7	6.9	3.27	0.83	27.8	7.9	14.8
34	104.2	0.204	85.5	13.1	6.44	3.640	16.325	15.730	35.7	20.0	22.6	6.9	3.28	0.83	27.8	7.9	14.8
35	104.4	0.210	85.5	13.1	6.45	3.747	16.365	15.751	35.7	20.0	22.6	6.9	3.28	0.83	27.8	7.9	14.8
36	104.6	0.216	85.5	13.1	6.45	3.854	16.391	15.760	35.7	20.0	22.7	6.9	3.28	0.83	27.8	7.9	14.8
37	105.2	0.222	85.6	13.1	6.46	3.961	16.484	15.831	35.8	20.0	22.6	6.8	3.32	0.83	27.9	7.9	14.7
38	105.8	0.228	85.6	13.1	6.47	4.068	16.578	15.903	35.9	20.0	22.7	6.8	3.33	0.83	27.9	8.0	14.8
39	106.1	0.234	85.6	13.2	6.48	4.175	16.631	15.937	35.9	20.0	22.7	6.8	3.35	0.83	27.9	8.0	14.7
40	106.4	0.240	85.6	13.2	6.48	4.282	16.684	15.970	35.9	20.0	22.7	6.8	3.36	0.82	27.9	8.0	14.8
41	106.8	0.246	85.6	13.2	6.49	4.389	16.737	16.003	36.0	20.0	22.8	6.8	3.36	0.82	28.0	8.0	14.8
42	107.1	0.252	85.6	13.2	6.50	4.496	16.791	16.036	36.0	20.0	22.8	6.8	3.37	0.82	28.0	8.0	14.8
43	107.2	0.258	85.7	13.2	6.50	4.603	16.804	16.030	36.0	20.0	22.8	6.7	3.38	0.82	28.0	8.0	14.8
44	107.6	0.264	85.7	13.3	6.51	4.710	16.871	16.076	36.0	20.0	22.8	6.7	3.40	0.82	28.0	8.0	14.7
45	108.0	0.270	85.7	13.3	6.52	4.817	16.937	16.121	36.1	20.0	22.8	6.7	3.41	0.82	28.0	8.1	14.8
46	108.3	0.276	85.7	13.3	6.53	4.924	16.990	16.154	36.1	20.0	22.9	6.7	3.41	0.82	28.0	8.1	14.8
47	108.7	0.282	85.7	13.3	6.53	5.031	17.057	16.199	36.1	20.0	22.9	6.7	3.43	0.82	28.0	8.1	14.8
48	109.1	0.288	85.7	13.3	6.54	5.138	17.110	16.231	36.2	20.0	22.9	6.7	3.42	0.82	28.1	8.1	14.8
49	109.1	0.294	85.7	13.3	6.55	5.245	17.124	16.225	36.2	20.0	22.9	6.7	3.44	0.82	28.1	8.1	14.8
50	109.8	0.300	85.7	13.3	6.56	5.352	17.230	16.308	36.3	20.0	23.0	6.7	3.45	0.82	28.1	8.2	14.8
51	110.1	0.306	85.8	13.3	6.56	5.459	17.283	16.340	36.3	20.0	23.0	6.6	3.47	0.82	28.1	8.2	14.8
52	110.5	0.312	85.8	13.3	6.57	5.566	17.337	16.372	36.3	20.0	23.0	6.6	3.47	0.81	28.1	8.2	14.8
53	111.0	0.318	85.8	13.3	6.58	5.674	17.416	16.428	36.4	20.0	23.0	6.6	3.48	0.81	28.2	8.2	14.8
54	111.4	0.324	85.7	13.3	6.59	5.781	17.483	16.472	36.4	20.0	23.1	6.7	3.47	0.81	28.2	8.2	14.9
55	111.8	0.330	85.7	13.3	6.59	5.888	17.550	16.516	36.5	20.0	23.2	6.7	3.48	0.80	28.2	8.3	14.9
56	112.0	0.336	85.8	13.3	6.60	5.995	17.576	16.523	36.5	20.0	23.1	6.6	3.50	0.81	28.2	8.3	14.9
57	112.3	0.342	85.8	13.3	6.61	6.102	17.629	16.554	36.5	20.0	23.2	6.6	3.50	0.81	28.2	8.3	14.9
58	112.8	0.348	85.8	13.3	6.62	6.209	17.709	16.610	36.6	20.0	23.2	6.6	3.51	0.80	28.3	8.3	14.9
59	113.1	0.354	85.8	13.3	6.62	6.316	17.763	16.641	36.6	20.0	23.3	6.6	3.51	0.80	28.3	8.3	14.9



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	113.7	0.360	85.8	13.3	6.63	6.423	17.856	16.709	36.7	20.0	23.3	6.6	3.53	0.80	28.3	8.4	15.0
61	114.1	0.366	85.8	13.3	6.64	6.530	17.922	16.752	36.7	20.0	23.4	6.6	3.53	0.80	28.3	8.4	15.0
62	114.4	0.372	85.7	13.3	6.65	6.637	17.976	16.783	36.7	20.0	23.4	6.7	3.52	0.79	28.3	8.4	15.0
63	114.7	0.378	85.8	13.3	6.65	6.744	18.016	16.801	36.8	20.0	23.4	6.6	3.54	0.79	28.4	8.4	15.0
64	115.3	0.384	85.7	13.3	6.66	6.851	18.122	16.881	36.8	20.0	23.5	6.7	3.54	0.79	28.4	8.4	15.1
65	115.8	0.390	85.7	13.3	6.67	6.958	18.189	16.923	36.9	20.0	23.6	6.7	3.54	0.79	28.4	8.5	15.1
66	116.1	0.396	85.7	13.3	6.68	7.065	18.242	16.953	36.9	20.0	23.6	6.7	3.55	0.78	28.4	8.5	15.1
67	116.5	0.402	85.7	13.3	6.68	7.172	18.309	16.995	36.9	20.0	23.7	6.7	3.55	0.78	28.4	8.5	15.2
68	116.9	0.408	85.7	13.3	6.69	7.279	18.375	17.038	37.0	20.0	23.7	6.7	3.54	0.78	28.5	8.5	15.2
69	117.1	0.414	85.7	13.3	6.70	7.386	18.402	17.043	37.0	20.0	23.7	6.7	3.56	0.78	28.5	8.5	15.2
70	117.7	0.420	85.7	13.3	6.71	7.493	18.508	17.121	37.1	20.0	23.8	6.7	3.57	0.78	28.5	8.6	15.2
71	118.0	0.426	85.7	13.3	6.72	7.600	18.548	17.139	37.1	20.0	23.8	6.7	3.57	0.78	28.5	8.6	15.2
72	118.4	0.432	85.7	13.3	6.72	7.707	18.615	17.180	37.1	20.0	23.8	6.7	3.58	0.77	28.5	8.6	15.2
73	118.8	0.438	85.7	13.3	6.73	7.814	18.681	17.222	37.2	20.0	23.9	6.7	3.59	0.77	28.6	8.6	15.3
74	119.2	0.444	85.7	13.3	6.74	7.922	18.748	17.263	37.2	20.0	24.0	6.7	3.58	0.77	28.6	8.6	15.3
75	119.6	0.450	85.7	13.3	6.75	8.029	18.801	17.292	37.2	20.0	24.0	6.7	3.58	0.77	28.6	8.6	15.3
76	119.6	0.456	85.7	13.3	6.75	8.136	18.815	17.284	37.2	20.0	24.0	6.7	3.58	0.77	28.6	8.6	15.3
77	120.3	0.462	85.7	13.3	6.76	8.243	18.921	17.361	37.3	20.0	24.1	6.7	3.59	0.76	28.6	8.7	15.4
78	120.7	0.468	85.7	13.3	6.77	8.350	18.988	17.402	37.4	20.0	24.1	6.7	3.60	0.76	28.7	8.7	15.4
79	121.3	0.474	85.7	13.3	6.78	8.457	19.081	17.467	37.4	20.0	24.2	6.7	3.61	0.76	28.7	8.7	15.4
80	122.0	0.480	85.7	13.3	6.79	8.564	19.201	17.556	37.5	20.0	24.3	6.7	3.62	0.75	28.7	8.8	15.5
81	122.4	0.486	85.7	13.2	6.79	8.671	19.254	17.584	37.5	20.0	24.3	6.7	3.61	0.75	28.7	8.8	15.5
82	122.7	0.492	85.6	13.2	6.80	8.778	19.307	17.612	37.6	20.0	24.4	6.8	3.60	0.75	28.8	8.8	15.6
83	123.0	0.498	85.7	13.2	6.81	8.885	19.360	17.640	37.6	20.0	24.4	6.7	3.62	0.75	28.8	8.8	15.6
84	123.6	0.505	85.7	13.2	6.82	8.992	19.454	17.704	37.7	20.0	24.4	6.7	3.63	0.75	28.8	8.9	15.6
85	124.1	0.511	85.6	13.2	6.83	9.099	19.534	17.756	37.7	20.0	24.5	6.8	3.62	0.74	28.8	8.9	15.7
86	124.4	0.517	85.6	13.2	6.83	9.206	19.587	17.784	37.7	20.0	24.6	6.8	3.62	0.74	28.8	8.9	15.7
87	124.9	0.523	85.6	13.1	6.84	9.313	19.667	17.835	37.8	20.0	24.7	6.8	3.62	0.74	28.9	8.9	15.7
88	125.4	0.529	85.6	13.1	6.85	9.420	19.747	17.886	37.8	20.0	24.7	6.8	3.62	0.73	28.9	8.9	15.8
89	125.6	0.535	85.6	13.1	6.86	9.527	19.773	17.889	37.8	20.0	24.7	6.8	3.62	0.73	28.9	8.9	15.8
90	126.2	0.541	85.6	13.1	6.87	9.634	19.880	17.965	37.9	20.0	24.8	6.8	3.63	0.73	28.9	9.0	15.8
91	126.6	0.547	85.6	13.2	6.87	9.741	19.933	17.991	37.9	20.0	24.8	6.8	3.65	0.73	28.9	9.0	15.8
92	127.1	0.553	85.7	13.2	6.88	9.848	20.013	18.042	38.0	20.0	24.8	6.7	3.68	0.73	29.0	9.0	15.8
93	127.7	0.559	85.7	13.2	6.89	9.955	20.119	18.116	38.1	20.0	24.9	6.7	3.69	0.73	29.0	9.1	15.8
94	128.1	0.565	85.6	13.2	6.90	10.063	20.173	18.143	38.1	20.0	24.9	6.8	3.68	0.73	29.0	9.1	15.8
95	128.6	0.571	85.6	13.2	6.91	10.170	20.253	18.193	38.1	20.0	25.0	6.8	3.68	0.72	29.0	9.1	15.9
96	128.5	0.577	85.6	13.2	6.92	10.277	20.239	18.159	38.1	20.0	24.9	6.8	3.68	0.73	29.0	9.1	15.9
97	129.3	0.583	85.6	13.2	6.92	10.384	20.372	18.257	38.2	20.0	25.0	6.8	3.69	0.72	29.1	9.1	15.9
98	129.6	0.589	85.6	13.1	6.93	10.491	20.426	18.283	38.2	20.0	25.1	6.8	3.68	0.72	29.1	9.1	16.0
99	129.1	0.595	85.6	13.1	6.94	10.598	20.346	18.190	38.1	20.0	25.0	6.8	3.67	0.72	29.0	9.1	15.9
100	130.1	0.601	85.5	13.1	6.95	10.705	20.506	18.311	38.3	20.0	25.2	6.9	3.67	0.72	29.1	9.2	16.0



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	130.5	0.607	85.5	13.1	6.96	10.812	20.559	18.336	38.3	20.0	25.2	6.9	3.66	0.71	29.1	9.2	16.1
102	131.0	0.613	85.6	13.1	6.97	10.919	20.652	18.397	38.3	20.0	25.2	6.8	3.70	0.71	29.1	9.2	16.0
103	131.1	0.619	85.5	13.1	6.97	11.026	20.665	18.387	38.3	20.0	25.2	6.9	3.68	0.71	29.1	9.2	16.1
104	131.7	0.625	85.5	13.1	6.98	11.133	20.759	18.448	38.4	20.0	25.3	6.9	3.69	0.71	29.2	9.2	16.1
105	132.2	0.631	85.5	13.1	6.99	11.240	20.838	18.496	38.4	20.0	25.4	6.9	3.70	0.71	29.2	9.2	16.1
106	132.7	0.637	85.5	13.1	7.00	11.347	20.918	18.545	38.5	20.0	25.4	6.9	3.69	0.70	29.2	9.3	16.2
107	133.1	0.643	85.5	13.0	7.01	11.454	20.985	18.581	38.5	20.0	25.5	6.9	3.68	0.70	29.2	9.3	16.2
108	133.6	0.649	85.4	13.0	7.02	11.561	21.065	18.630	38.6	20.0	25.6	7.0	3.67	0.70	29.3	9.3	16.3
109	133.8	0.655	85.4	12.9	7.02	11.668	21.091	18.630	38.6	20.0	25.6	7.0	3.65	0.69	29.3	9.3	16.3
110	134.5	0.661	85.3	12.9	7.03	11.775	21.211	18.714	38.7	20.0	25.8	7.1	3.65	0.69	29.3	9.4	16.4
111	134.8	0.667	85.3	12.9	7.04	11.882	21.251	18.726	38.7	20.0	25.8	7.1	3.65	0.69	29.3	9.4	16.4
112	135.2	0.673	85.3	12.9	7.05	11.989	21.318	18.762	38.7	20.0	25.9	7.1	3.64	0.68	29.3	9.4	16.5
113	135.8	0.679	85.3	12.8	7.06	12.096	21.411	18.821	38.8	20.0	26.0	7.1	3.64	0.68	29.4	9.4	16.5
114	136.0	0.685	85.3	12.8	7.07	12.203	21.451	18.833	38.8	20.0	26.0	7.1	3.64	0.68	29.4	9.4	16.6
115	136.4	0.691	85.2	12.7	7.08	12.311	21.518	18.869	38.8	20.0	26.1	7.2	3.61	0.67	29.4	9.4	16.7
116	136.3	0.697	85.2	12.8	7.08	12.418	21.504	18.834	38.8	20.0	26.0	7.2	3.62	0.68	29.4	9.4	16.6
117	136.9	0.703	85.2	12.7	7.09	12.525	21.597	18.892	38.8	20.0	26.1	7.2	3.62	0.67	29.4	9.4	16.7
118	137.4	0.709	85.2	12.7	7.10	12.632	21.677	18.939	38.9	20.0	26.2	7.2	3.62	0.67	29.4	9.5	16.7
119	137.7	0.715	85.1	12.7	7.11	12.739	21.717	18.951	38.9	20.0	26.2	7.3	3.61	0.67	29.4	9.5	16.7
120	138.6	0.721	85.1	12.7	7.12	12.846	21.864	19.055	39.0	20.0	26.3	7.3	3.62	0.67	29.5	9.5	16.8
121	139.1	0.727	85.1	12.7	7.13	12.953	21.957	19.113	39.1	20.0	26.4	7.3	3.62	0.66	29.5	9.6	16.9
122	139.7	0.733	85.1	12.7	7.14	13.060	22.050	19.170	39.1	20.0	26.5	7.3	3.63	0.66	29.5	9.6	16.9
123	140.5	0.739	85.1	12.7	7.15	13.167	22.183	19.262	39.2	20.0	26.6	7.3	3.64	0.66	29.6	9.6	16.9
124	140.9	0.745	85.1	12.7	7.15	13.274	22.237	19.285	39.2	20.0	26.6	7.3	3.64	0.66	29.6	9.6	16.9
125	141.5	0.751	85.1	12.7	7.16	13.381	22.330	19.342	39.3	20.0	26.6	7.3	3.65	0.65	29.6	9.7	17.0
126	141.8	0.757	85.1	12.6	7.17	13.488	22.383	19.364	39.3	20.0	26.7	7.3	3.64	0.65	29.6	9.7	17.0
127	142.2	0.763	85.0	12.6	7.18	13.595	22.450	19.398	39.3	20.0	26.8	7.4	3.63	0.65	29.6	9.7	17.1
128	142.5	0.769	85.0	12.5	7.19	13.702	22.503	19.420	39.4	20.0	26.8	7.4	3.62	0.65	29.7	9.7	17.1
129	142.6	0.775	85.0	12.6	7.20	13.809	22.516	19.407	39.4	20.0	26.8	7.4	3.63	0.65	29.7	9.7	17.1
130	143.4	0.781	85.0	12.5	7.21	13.916	22.636	19.486	39.4	20.0	26.9	7.4	3.63	0.64	29.7	9.7	17.2
131	143.6	0.787	85.0	12.5	7.22	14.023	22.676	19.496	39.4	20.0	26.9	7.4	3.63	0.64	29.7	9.7	17.2
132	144.0	0.793	85.0	12.5	7.23	14.130	22.743	19.529	39.5	20.0	26.9	7.4	3.63	0.64	29.7	9.8	17.2
133	144.4	0.799	84.9	12.5	7.24	14.237	22.809	19.562	39.5	20.0	27.0	7.5	3.62	0.64	29.7	9.8	17.2
134	144.8	0.805	84.9	12.4	7.24	14.344	22.862	19.583	39.5	20.0	27.1	7.5	3.61	0.64	29.7	9.8	17.3
135	145.3	0.811	84.9	12.4	7.25	14.451	22.942	19.627	39.6	20.0	27.2	7.5	3.60	0.63	29.8	9.8	17.4
136	145.5	0.817	84.9	12.4	7.26	14.559	22.982	19.636	39.6	20.0	27.1	7.5	3.62	0.63	29.8	9.8	17.3
137	146.3	0.823	84.9	12.4	7.27	14.666	23.115	19.725	39.7	20.0	27.2	7.5	3.63	0.63	29.8	9.9	17.4
138	146.8	0.829	84.9	12.4	7.28	14.773	23.195	19.769	39.7	20.0	27.3	7.5	3.62	0.63	29.8	9.9	17.4
139	147.2	0.835	84.9	12.4	7.29	14.880	23.249	19.789	39.7	20.0	27.3	7.5	3.62	0.63	29.8	9.9	17.4
140	147.6	0.841	84.8	12.4	7.30	14.987	23.328	19.832	39.8	20.0	27.4	7.6	3.62	0.62	29.9	9.9	17.5
141	147.9	0.847	84.8	12.3	7.31	15.094	23.368	19.841	39.8	20.0	27.5	7.6	3.60	0.62	29.9	9.9	17.5



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	148.0	0.853	84.8	12.3	7.32	15.201	23.382	19.828	39.8	20.0	27.4	7.6	3.60	0.62	29.9	9.9	17.5
143	148.2	0.859	84.8	12.3	7.33	15.308	23.422	19.836	39.8	20.0	27.5	7.6	3.60	0.62	29.9	9.9	17.5
144	148.8	0.865	84.8	12.3	7.34	15.415	23.515	19.890	39.8	20.0	27.5	7.6	3.61	0.62	29.9	9.9	17.6
145	149.5	0.871	84.7	12.3	7.35	15.522	23.621	19.955	39.9	20.0	27.6	7.7	3.60	0.62	29.9	10.0	17.6
146	150.0	0.877	84.7	12.2	7.35	15.629	23.701	19.997	39.9	20.0	27.7	7.7	3.60	0.61	29.9	10.0	17.7
147	150.2	0.883	84.7	12.2	7.36	15.736	23.741	20.005	40.0	20.0	27.7	7.7	3.60	0.61	30.0	10.0	17.7
148	150.8	0.889	84.7	12.2	7.37	15.843	23.834	20.058	40.0	20.0	27.8	7.7	3.59	0.61	30.0	10.0	17.8
149	151.0	0.895	84.7	12.2	7.38	15.950	23.861	20.055	40.0	20.0	27.8	7.7	3.59	0.61	30.0	10.0	17.8
150	151.9	0.901	84.7	12.2	7.39	16.057	24.008	20.153	40.1	20.0	27.9	7.7	3.60	0.61	30.0	10.1	17.8
151	151.8	0.907	84.6	12.2	7.40	16.164	23.994	20.116	40.1	20.0	27.9	7.8	3.59	0.60	30.0	10.1	17.8
152	152.3	0.913	84.6	12.2	7.41	16.271	24.074	20.157	40.1	20.0	27.9	7.8	3.59	0.60	30.0	10.1	17.9
153	152.4	0.919	84.6	12.1	7.42	16.378	24.101	20.153	40.1	20.0	28.0	7.8	3.58	0.60	30.0	10.1	17.9
154	152.8	0.925	84.5	12.1	7.43	16.485	24.154	20.172	40.1	20.0	28.0	7.9	3.57	0.60	30.0	10.1	17.9
155	153.2	0.931	84.5	12.0	7.44	16.592	24.221	20.202	40.2	20.0	28.1	7.9	3.56	0.60	30.1	10.1	18.0
156	153.2	0.937	84.5	12.0	7.45	16.699	24.221	20.176	40.1	20.0	28.1	7.9	3.55	0.60	30.0	10.1	18.0
157	153.7	0.943	84.5	12.0	7.46	16.807	24.300	20.216	40.2	20.0	28.1	7.9	3.56	0.60	30.1	10.1	18.0
158	154.2	0.949	84.5	12.0	7.47	16.914	24.380	20.257	40.2	20.0	28.2	7.9	3.56	0.59	30.1	10.1	18.0
159	154.3	0.955	84.5	12.0	7.48	17.021	24.407	20.253	40.2	20.0	28.2	7.9	3.55	0.59	30.1	10.1	18.1
160	154.8	0.961	84.4	12.0	7.49	17.128	24.474	20.282	40.2	20.0	28.3	8.0	3.54	0.59	30.1	10.1	18.1
161	155.2	0.967	84.4	12.0	7.50	17.235	24.540	20.311	40.3	20.0	28.3	8.0	3.54	0.59	30.1	10.2	18.1
162	155.5	0.973	84.4	11.9	7.51	17.342	24.593	20.328	40.3	20.0	28.4	8.0	3.53	0.59	30.1	10.2	18.2
163	156.0	0.979	84.4	11.9	7.52	17.449	24.673	20.368	40.3	20.0	28.4	8.0	3.54	0.59	30.1	10.2	18.2
164	156.6	0.985	84.4	11.9	7.53	17.556	24.767	20.419	40.4	20.0	28.4	8.0	3.55	0.58	30.2	10.2	18.2
165	157.5	0.991	84.3	11.9	7.54	17.663	24.913	20.513	40.5	20.0	28.6	8.1	3.54	0.58	30.2	10.3	18.3
166	158.1	0.997	84.3	11.8	7.55	17.770	25.020	20.574	40.5	20.0	28.7	8.1	3.54	0.58	30.2	10.3	18.4
167	158.6	1.003	84.3	11.8	7.56	17.877	25.086	20.601	40.6	20.0	28.7	8.1	3.54	0.58	30.3	10.3	18.4
168	158.9	1.009	84.3	11.8	7.57	17.992	25.139	20.616	40.6	20.0	28.8	8.1	3.53	0.57	30.3	10.3	18.5
169	159.1	1.015	84.3	11.8	7.58	18.108	25.166	20.609	40.6	20.0	28.8	8.1	3.53	0.57	30.3	10.3	18.4
170	159.6	1.022	84.3	11.8	7.59	18.223	25.259	20.656	40.6	20.0	28.8	8.1	3.54	0.57	30.3	10.3	18.5
171	160.0	1.028	84.2	11.8	7.60	18.338	25.312	20.671	40.6	20.0	28.9	8.2	3.53	0.57	30.3	10.3	18.5
172	160.5	1.035	84.2	11.8	7.61	18.453	25.392	20.707	40.7	20.0	28.9	8.2	3.53	0.57	30.3	10.4	18.5
173	161.0	1.041	84.2	11.7	7.62	18.569	25.472	20.742	40.7	20.0	29.0	8.2	3.52	0.57	30.3	10.4	18.6
174	161.3	1.048	84.1	11.7	7.63	18.684	25.525	20.756	40.7	20.0	29.0	8.3	3.51	0.56	30.3	10.4	18.6
175	161.7	1.054	84.1	11.7	7.64	18.791	25.592	20.783	40.7	20.0	29.0	8.3	3.52	0.56	30.3	10.4	18.7
176	162.1	1.060	84.1	11.7	7.65	18.898	25.659	20.810	40.8	20.0	29.1	8.3	3.52	0.56	30.4	10.4	18.7
177	162.4	1.066	84.1	11.6	7.66	19.005	25.712	20.825	40.8	20.0	29.1	8.3	3.51	0.56	30.4	10.4	18.7
178	162.8	1.072	84.1	11.6	7.67	19.112	25.765	20.841	40.8	20.0	29.1	8.3	3.51	0.56	30.4	10.4	18.7
179	163.1	1.078	84.1	11.6	7.68	19.219	25.818	20.856	40.8	20.0	29.2	8.3	3.50	0.56	30.4	10.4	18.8
180	163.6	1.084	84.0	11.6	7.69	19.326	25.898	20.893	40.8	20.0	29.3	8.4	3.49	0.55	30.4	10.4	18.8
181	164.0	1.090	84.0	11.6	7.70	19.433	25.965	20.919	40.9	20.0	29.3	8.4	3.50	0.55	30.4	10.5	18.8
182	164.0	1.096	84.0	11.6	7.71	19.540	25.965	20.891	40.8	20.0	29.3	8.4	3.49	0.55	30.4	10.4	18.8



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	164.2	1.102	84.0	11.5	7.72	19.647	25.992	20.885	40.8	20.0	29.3	8.4	3.48	0.55	30.4	10.4	18.9
184	164.6	1.108	84.0	11.5	7.73	19.754	26.058	20.910	40.9	20.0	29.3	8.4	3.48	0.55	30.4	10.5	18.9
185	165.2	1.114	84.0	11.5	7.74	19.870	26.151	20.955	40.9	20.0	29.4	8.4	3.49	0.55	30.4	10.5	18.9
186	165.5	1.121	83.9	11.5	7.76	19.985	26.205	20.968	40.9	20.0	29.4	8.5	3.48	0.55	30.4	10.5	18.9
187	165.6	1.121	83.9	11.5	7.76	19.993	26.218	20.976	40.9	20.0	29.4	8.5	3.48	0.55	30.4	10.5	19.0

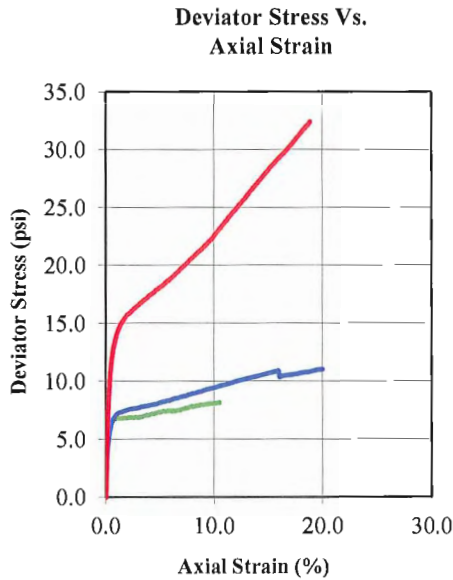


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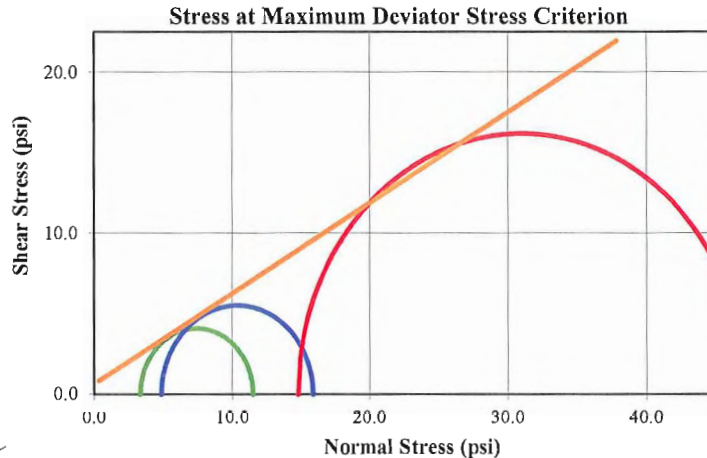
Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME : I-85/I-385 Interchange	SAMPLE NO. : Bag #1
PROJECT NO. : 08195-01	SAMPLE DEPTH : 0.0' to 10.0'
PROJECT LOCATION : B-56	SAMPLE TYPE : Remolded
BORING NUMBER : B-56	DESCRIPTION : Red, Tan & White Sandy Lean Clay
REMARKS :	TEST TYPE : Consolidated Undrained



Initial	Specimen			D
	A	B	C	
Water Content (%)	15.7	15.9	15.5	
Dry Density (pcf)	101.5	100.6	102.6	
Saturation (%)	66.19	65.61	67.19	
Void Ratio	0.626	0.640	0.610	
Diameter (in)	2.802	2.810	2.805	
Height (in)	5.610	5.612	5.547	
Specific Gravity	2.65	2.65	2.65	
Liquid Limit	40	40	40	
Plastic Limit	24	24	24	
After Consolidation	A	B	C	D
B-Value	0.98	0.95	0.95	
Water Content (%)	23.4	22.6	18.9	
Dry Density (pcf)	101.51	100.64	114.54	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.630	0.644	0.444	
Effective Stress (psi)	5.0	10.0	20.0	
Back Press. (psi)	87.4	76.5	65.2	
Rate of Strain	0.002	0.002	0.002	

Maximum Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	2.2	σ'_1 at Failure (psi)	11.51	15.89	47.18	
ϕ (deg)	13.5	σ'_3 at Failure (psi)	3.32	4.84	14.78	
C' (psi)	0.7					
ϕ' (deg)	29.4					

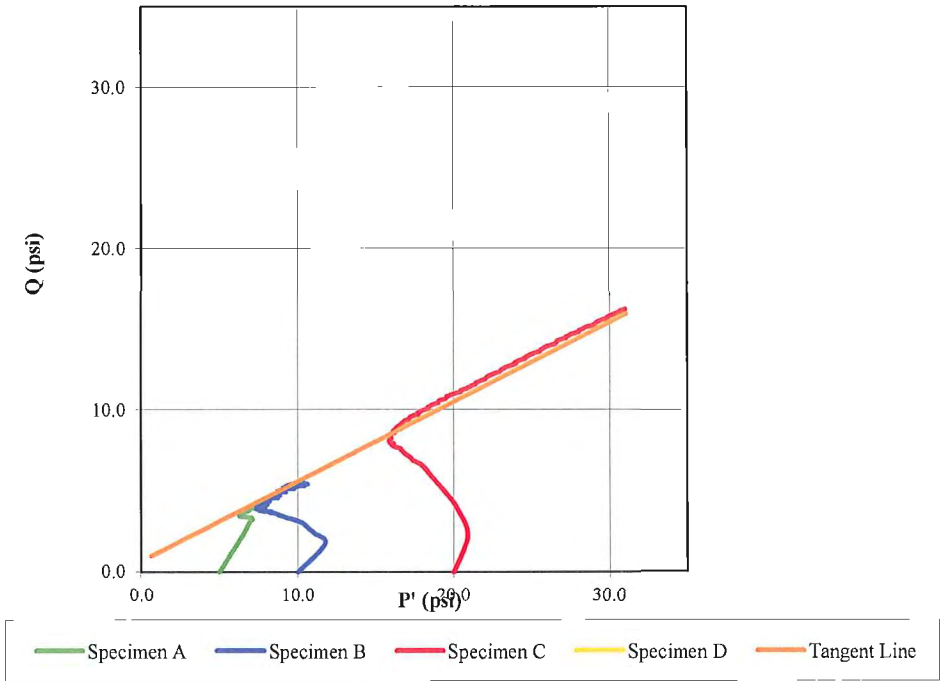


Tested By: [Signature]
 Date: 12-19-12

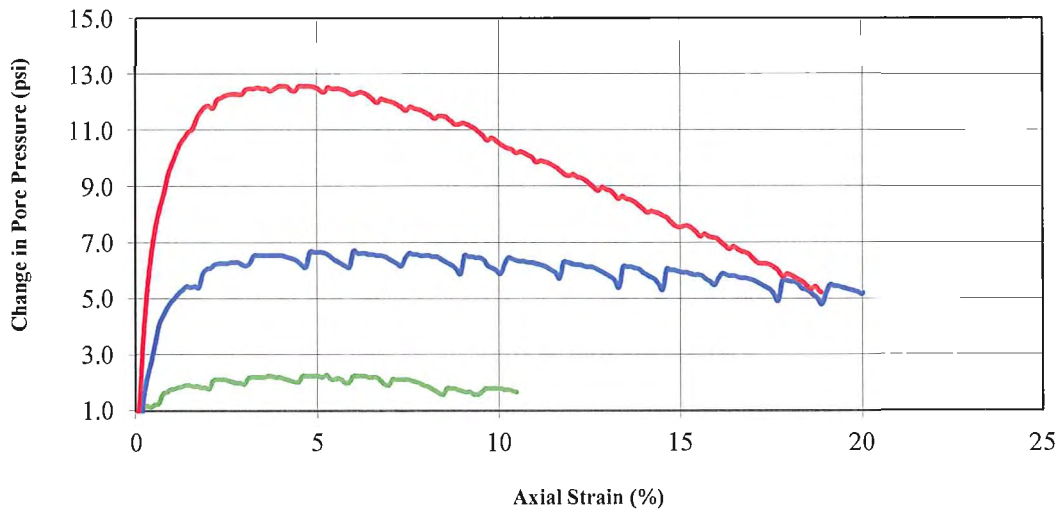
Approved By: SKB
 Date: 12/19/12



Stress Paths (Effective)
($a = 0.7$ $\alpha = 26.2$)



Change in Pore Pressure vs. Axial Strain





File Location
B-56 Bag 1 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-56
Sample Description: Red, Tan & White Sandy Lean Clay
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.650001
LL: 40.000
PL: 24.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.802	2.803	
Height (in)	5.610	5.609	
Weight (grams)	1066.90		1137.80
Moisture (%)	15.73		23.42
Dry Density (pcf)	101.51	101.51	
Saturation (%)	66.19	100.00	
Void Ratio	0.626	0.630	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 92.400
Effective Confining Stress (psi): 5.0
Corrected Peak Deviator Stress (psi): 8.187 at reading number: 98

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	-5.0	0.000	87.4	0.0	6.17	0.000	0.000	0.000	5.0	5.0	5.0	5.0	1.00	0.00	5.0	0.0	5.0
1	23.4	0.006	88.2	0.8	6.18	0.107	4.612	4.607	9.6	5.0	8.8	4.2	2.10	0.18	7.3	2.3	6.5
2	31.3	0.012	88.5	1.1	6.18	0.214	5.879	5.866	10.9	5.0	9.8	3.9	2.51	0.19	7.9	2.9	6.8
3	34.1	0.018	88.6	1.2	6.19	0.321	6.345	6.325	11.3	5.0	10.1	3.8	2.66	0.19	8.2	3.2	7.0
4	35.4	0.024	88.5	1.1	6.20	0.428	6.546	6.518	11.5	5.0	10.4	3.9	2.69	0.18	8.3	3.3	7.1
5	36.0	0.030	88.6	1.2	6.20	0.535	6.652	6.617	11.6	5.0	10.4	3.8	2.76	0.18	8.3	3.3	7.1
6	36.4	0.036	88.7	1.3	6.21	0.642	6.719	6.676	11.7	5.0	10.4	3.7	2.79	0.19	8.3	3.3	7.1
7	36.9	0.042	89.0	1.6	6.22	0.749	6.799	6.748	11.7	5.0	10.2	3.4	2.98	0.24	8.4	3.4	6.8
8	37.1	0.048	89.1	1.7	6.22	0.856	6.826	6.767	11.8	5.0	10.1	3.3	3.04	0.25	8.4	3.4	6.7
9	37.3	0.055	89.2	1.8	6.23	0.964	6.852	6.786	11.8	5.0	10.0	3.2	3.09	0.26	8.4	3.4	6.6
10	37.4	0.061	89.2	1.8	6.24	1.071	6.879	6.805	11.8	5.0	10.0	3.2	3.13	0.26	8.4	3.4	6.6
11	37.4	0.067	89.2	1.8	6.24	1.178	6.879	6.798	11.8	5.0	10.0	3.2	3.15	0.27	8.4	3.4	6.6
12	37.6	0.073	89.3	1.9	6.25	1.285	6.906	6.817	11.8	5.0	9.9	3.1	3.19	0.27	8.4	3.4	6.5
13	37.5	0.079	89.3	1.9	6.26	1.392	6.892	6.796	11.8	5.0	9.9	3.1	3.21	0.28	8.4	3.4	6.5
14	37.8	0.085	89.3	1.9	6.26	1.499	6.932	6.828	11.8	5.0	9.9	3.1	3.22	0.28	8.4	3.4	6.5
15	37.9	0.091	89.3	1.9	6.27	1.606	6.959	6.847	11.8	5.0	10.0	3.1	3.20	0.27	8.4	3.4	6.5
16	37.9	0.097	89.3	1.9	6.28	1.713	6.959	6.840	11.8	5.0	10.0	3.1	3.19	0.27	8.4	3.4	6.5
17	38.0	0.103	89.2	1.8	6.28	1.820	6.972	6.845	11.8	5.0	10.0	3.2	3.17	0.27	8.4	3.4	6.6
18	38.1	0.109	89.2	1.8	6.29	1.927	6.986	6.851	11.8	5.0	10.0	3.2	3.17	0.27	8.4	3.4	6.6



Florence & Hutcheson

CONSULTING ENGINEERS

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	38.2	0.115	89.2	1.8	6.30	2.034	6.999	6.857	11.8	5.0	10.1	3.2	3.14	0.26	8.4	3.4	6.6
20	38.3	0.121	89.5	2.1	6.30	2.141	7.012	6.862	11.9	5.0	9.8	2.9	3.36	0.30	8.4	3.4	6.3
21	38.4	0.127	89.5	2.1	6.31	2.248	7.039	6.881	11.9	5.0	9.8	2.9	3.40	0.31	8.4	3.4	6.3
22	38.4	0.133	89.5	2.1	6.32	2.355	7.039	6.873	11.9	5.0	9.7	2.9	3.39	0.31	8.4	3.4	6.3
23	38.4	0.139	89.5	2.1	6.32	2.462	7.039	6.866	11.9	5.0	9.7	2.9	3.39	0.31	8.4	3.4	6.3
24	38.6	0.145	89.5	2.1	6.33	2.569	7.066	6.884	11.9	5.0	9.8	2.9	3.36	0.30	8.4	3.4	6.4
25	38.7	0.151	89.4	2.0	6.34	2.676	7.079	6.890	11.9	5.0	9.8	3.0	3.33	0.30	8.4	3.4	6.4
26	38.8	0.157	89.4	2.0	6.35	2.784	7.092	6.895	11.9	5.0	9.9	3.0	3.30	0.29	8.4	3.4	6.4
27	38.8	0.163	89.4	2.0	6.35	2.891	7.092	6.887	11.9	5.0	9.9	3.0	3.30	0.29	8.4	3.4	6.4
28	38.8	0.169	89.4	2.0	6.36	2.998	7.106	6.893	11.9	5.0	9.9	3.0	3.27	0.28	8.4	3.4	6.5
29	39.0	0.175	89.6	2.2	6.37	3.105	7.132	6.911	11.9	5.0	9.7	2.8	3.44	0.31	8.4	3.5	6.3
30	39.2	0.181	89.6	2.2	6.37	3.212	7.159	6.929	11.9	5.0	9.7	2.8	3.48	0.32	8.5	3.5	6.3
31	39.3	0.187	89.6	2.2	6.38	3.319	7.186	6.947	11.9	5.0	9.7	2.8	3.49	0.32	8.5	3.5	6.3
32	39.7	0.193	89.6	2.2	6.39	3.426	7.239	6.991	12.0	5.0	9.8	2.8	3.50	0.31	8.5	3.5	6.3
33	39.8	0.199	89.6	2.2	6.39	3.533	7.266	7.009	12.0	5.0	9.8	2.8	3.51	0.31	8.5	3.5	6.3
34	40.1	0.205	89.6	2.2	6.40	3.640	7.306	7.040	12.0	5.0	9.8	2.8	3.56	0.32	8.5	3.5	6.3
35	40.3	0.211	89.6	2.2	6.41	3.747	7.346	7.071	12.1	5.0	9.8	2.8	3.57	0.32	8.5	3.5	6.3
36	40.4	0.217	89.6	2.2	6.42	3.854	7.359	7.075	12.1	5.0	9.9	2.8	3.53	0.31	8.5	3.5	6.3
37	40.6	0.223	89.6	2.2	6.42	3.961	7.399	7.106	12.1	5.0	9.9	2.8	3.55	0.31	8.5	3.6	6.3
38	40.9	0.229	89.6	2.2	6.43	4.068	7.439	7.136	12.1	5.0	10.0	2.8	3.52	0.30	8.6	3.6	6.4
39	41.1	0.235	89.5	2.1	6.44	4.175	7.466	7.154	12.1	5.0	10.0	2.9	3.49	0.30	8.6	3.6	6.4
40	41.4	0.241	89.5	2.1	6.44	4.282	7.519	7.197	12.2	5.0	10.1	2.9	3.47	0.29	8.6	3.6	6.5
41	41.4	0.247	89.4	2.0	6.45	4.389	7.519	7.189	12.2	5.0	10.1	3.0	3.43	0.28	8.6	3.6	6.5
42	41.6	0.253	89.4	2.0	6.46	4.496	7.559	7.219	12.2	5.0	10.2	3.0	3.44	0.28	8.6	3.6	6.6
43	42.0	0.259	89.6	2.2	6.47	4.604	7.613	7.262	12.3	5.0	10.0	2.8	3.64	0.31	8.6	3.6	6.4
44	42.1	0.265	89.6	2.2	6.47	4.711	7.639	7.279	12.3	5.0	10.0	2.8	3.65	0.31	8.6	3.6	6.4
45	42.5	0.271	89.6	2.2	6.48	4.818	7.693	7.322	12.3	5.0	10.1	2.8	3.66	0.31	8.7	3.7	6.4
46	42.5	0.277	89.6	2.2	6.49	4.925	7.706	7.326	12.3	5.0	10.1	2.8	3.66	0.31	8.7	3.7	6.4
47	42.9	0.283	89.6	2.2	6.50	5.032	7.759	7.369	12.4	5.0	10.1	2.8	3.68	0.30	8.7	3.7	6.4
48	42.9	0.289	89.6	2.2	6.50	5.139	7.759	7.360	12.4	5.0	10.2	2.8	3.64	0.30	8.7	3.7	6.5
49	43.4	0.295	89.7	2.3	6.51	5.246	7.839	7.428	12.4	5.0	10.1	2.7	3.74	0.31	8.7	3.7	6.4
50	43.4	0.301	89.6	2.2	6.52	5.353	7.839	7.420	12.4	5.0	10.3	2.8	3.62	0.29	8.7	3.7	6.5
51	43.3	0.307	89.5	2.1	6.53	5.460	7.826	7.399	12.4	5.0	10.3	2.9	3.58	0.29	8.7	3.7	6.6
52	43.5	0.313	89.6	2.2	6.53	5.567	7.866	7.428	12.4	5.0	10.3	2.8	3.62	0.29	8.7	3.7	6.5
53	43.7	0.319	89.5	2.1	6.54	5.674	7.893	7.445	12.4	5.0	10.3	2.9	3.59	0.28	8.7	3.7	6.6
54	43.8	0.325	89.4	2.0	6.55	5.781	7.906	7.449	12.4	5.0	10.4	3.0	3.49	0.27	8.7	3.7	6.7
55	43.9	0.331	89.4	2.0	6.55	5.888	7.919	7.453	12.4	5.0	10.4	3.0	3.52	0.27	8.7	3.7	6.7
56	43.7	0.337	89.6	2.2	6.56	5.995	7.893	7.419	12.4	5.0	10.2	2.8	3.70	0.30	8.7	3.7	6.5
57	44.1	0.343	89.6	2.2	6.57	6.102	7.959	7.474	12.5	5.0	10.2	2.8	3.72	0.30	8.7	3.7	6.5
58	43.9	0.349	89.6	2.2	6.58	6.209	7.919	7.428	12.4	5.0	10.2	2.8	3.70	0.30	8.7	3.7	6.5
59	44.0	0.355	89.6	2.2	6.58	6.316	7.946	7.444	12.4	5.0	10.2	2.8	3.71	0.30	8.7	3.7	6.5



Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	44.2	0.361	89.6	2.2	6.59	6.424	7.973	7.460	12.5	5.0	10.3	2.8	3.67	0.29	8.7	3.7	6.5
61	44.3	0.367	89.6	2.2	6.60	6.531	7.986	7.464	12.5	5.0	10.3	2.8	3.67	0.29	8.7	3.7	6.5
62	44.4	0.373	89.6	2.2	6.61	6.638	8.013	7.481	12.5	5.0	10.3	2.8	3.68	0.29	8.7	3.7	6.5
63	44.7	0.379	89.5	2.1	6.61	6.745	8.053	7.510	12.5	5.0	10.4	2.9	3.58	0.28	8.7	3.8	6.7
64	44.8	0.385	89.4	2.0	6.62	6.852	8.079	7.526	12.5	5.0	10.6	3.0	3.48	0.26	8.8	3.8	6.8
65	45.3	0.391	89.3	1.9	6.63	6.959	8.146	7.579	12.6	5.0	10.7	3.1	3.46	0.25	8.8	3.8	6.9
66	45.4	0.397	89.5	2.1	6.64	7.066	8.173	7.595	12.6	5.0	10.5	2.9	3.64	0.28	8.8	3.8	6.7
67	45.6	0.403	89.5	2.1	6.65	7.173	8.199	7.611	12.6	5.0	10.5	2.9	3.65	0.28	8.8	3.8	6.7
68	45.9	0.409	89.5	2.1	6.65	7.280	8.253	7.652	12.6	5.0	10.5	2.9	3.66	0.28	8.8	3.8	6.7
69	46.3	0.415	89.5	2.1	6.66	7.387	8.319	7.705	12.7	5.0	10.6	2.9	3.68	0.28	8.8	3.9	6.7
70	46.3	0.421	89.5	2.1	6.67	7.494	8.319	7.696	12.7	5.0	10.6	2.9	3.68	0.28	8.8	3.8	6.7
71	46.6	0.427	89.5	2.1	6.68	7.601	8.373	7.736	12.7	5.0	10.6	2.9	3.66	0.27	8.9	3.9	6.8
72	47.0	0.433	89.4	2.0	6.68	7.708	8.426	7.777	12.8	5.0	10.7	3.0	3.63	0.26	8.9	3.9	6.8
73	47.1	0.439	89.4	2.0	6.69	7.815	8.453	7.792	12.8	5.0	10.8	3.0	3.60	0.26	8.9	3.9	6.9
74	47.5	0.445	89.3	1.9	6.70	7.922	8.506	7.832	12.8	5.0	10.9	3.1	3.55	0.24	8.9	3.9	7.0
75	47.4	0.451	89.3	1.9	6.71	8.029	8.493	7.811	12.8	5.0	10.9	3.1	3.51	0.24	8.9	3.9	7.0
76	47.6	0.457	89.2	1.8	6.72	8.136	8.533	7.839	12.8	5.0	11.0	3.2	3.45	0.23	8.9	3.9	7.1
77	48.0	0.463	89.1	1.7	6.72	8.244	8.586	7.878	12.9	5.0	11.2	3.3	3.40	0.22	8.9	3.9	7.2
78	48.0	0.469	89.0	1.6	6.73	8.351	8.599	7.881	12.9	5.0	11.2	3.4	3.34	0.21	8.9	3.9	7.3
79	48.2	0.475	89.0	1.6	6.74	8.458	8.626	7.897	12.9	5.0	11.3	3.4	3.32	0.20	8.9	3.9	7.4
80	48.5	0.481	89.2	1.8	6.75	8.565	8.666	7.924	12.9	5.0	11.1	3.2	3.48	0.23	9.0	4.0	7.2
81	48.8	0.487	89.2	1.8	6.75	8.672	8.720	7.963	13.0	5.0	11.2	3.2	3.49	0.23	9.0	4.0	7.2
82	48.9	0.493	89.2	1.8	6.76	8.779	8.733	7.966	13.0	5.0	11.2	3.2	3.49	0.23	9.0	4.0	7.2
83	48.9	0.499	89.2	1.8	6.77	8.886	8.733	7.957	12.9	5.0	11.2	3.2	3.46	0.22	9.0	4.0	7.2
84	49.0	0.505	89.1	1.7	6.78	8.993	8.760	7.972	13.0	5.0	11.3	3.3	3.43	0.21	9.0	4.0	7.3
85	49.4	0.511	89.1	1.7	6.79	9.100	8.813	8.011	13.0	5.0	11.3	3.3	3.41	0.21	9.0	4.0	7.3
86	49.4	0.517	89.1	1.7	6.79	9.207	8.826	8.014	13.0	5.0	11.3	3.3	3.41	0.21	9.0	4.0	7.3
87	49.7	0.523	89.0	1.6	6.80	9.314	8.866	8.040	13.0	5.0	11.4	3.4	3.36	0.20	9.0	4.0	7.4
88	49.8	0.529	89.0	1.6	6.81	9.421	8.880	8.043	13.0	5.0	11.4	3.4	3.36	0.20	9.0	4.0	7.4
89	49.9	0.535	89.1	1.7	6.82	9.528	8.906	8.058	13.0	5.0	11.4	3.3	3.43	0.21	9.0	4.0	7.3
90	50.0	0.541	89.2	1.8	6.83	9.635	8.920	8.060	13.1	5.0	11.3	3.2	3.52	0.22	9.0	4.0	7.2
91	50.3	0.547	89.2	1.8	6.83	9.742	8.960	8.087	13.1	5.0	11.3	3.2	3.53	0.22	9.0	4.0	7.2
92	50.4	0.553	89.2	1.8	6.84	9.849	8.973	8.089	13.1	5.0	11.3	3.2	3.53	0.22	9.0	4.0	7.2
93	50.6	0.559	89.2	1.8	6.85	9.956	9.013	8.116	13.1	5.0	11.3	3.2	3.54	0.22	9.0	4.1	7.3
94	50.7	0.565	89.2	1.8	6.86	10.064	9.026	8.118	13.1	5.0	11.3	3.2	3.54	0.22	9.1	4.1	7.3
95	50.8	0.571	89.2	1.8	6.87	10.171	9.053	8.132	13.1	5.0	11.4	3.2	3.51	0.22	9.1	4.1	7.3
96	51.0	0.577	89.2	1.8	6.88	10.278	9.080	8.146	13.1	5.0	11.4	3.2	3.51	0.22	9.1	4.1	7.3
97	51.2	0.583	89.1	1.7	6.88	10.385	9.106	8.161	13.2	5.0	11.4	3.3	3.49	0.21	9.1	4.1	7.4
98	51.4	0.588	89.1	1.7	6.89	10.484	9.146	8.187	13.2	5.0	11.5	3.3	3.47	0.20	9.1	4.1	7.4
99	51.3	0.588	89.1	1.7	6.89	10.484	9.120	8.164	13.2	5.0	11.5	3.3	3.46	0.20	9.1	4.1	7.4



File Location
B-56 Bag 1 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-56
Sample Description: Red, Tan & White Sandy Lean Clay
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 40.000
PL: 24.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.810	2.815	
Height (in)	5.612	5.593	
Weight (grams)	1065.90		1127.18
Moisture (%)	15.94		22.60
Dry Density (pcf)	100.64	100.64	
Saturation (%)	65.61	100.00	
Void Ratio	0.640	0.644	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 86.500
Effective Confining Stress (psi): 10.0
Corrected Peak Deviator Stress (psi): 11.046 at reading number: 183

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	0.0	0.000	76.5	0.0	6.22	0.000	0.000	0.000	10.0	10.0	10.0	10.0	1.00	0.00	10.0	0.0	10.0
1	21.9	0.007	76.5	0.0	6.23	0.109	3.515	3.511	13.5	10.0	13.5	10.0	1.35	0.01	11.8	1.8	11.7
2	29.9	0.013	77.9	1.4	6.24	0.218	4.810	4.800	14.8	10.0	13.4	8.6	1.56	0.28	12.4	2.4	11.0
3	34.6	0.019	78.7	2.2	6.24	0.327	5.563	5.545	15.5	10.0	13.4	7.8	1.71	0.39	12.8	2.8	10.6
4	37.9	0.025	79.2	2.7	6.25	0.437	6.092	6.065	16.1	10.0	13.3	7.3	1.83	0.45	13.0	3.0	10.3
5	40.1	0.031	79.9	3.4	6.26	0.546	6.449	6.414	16.4	10.0	13.0	6.6	1.97	0.53	13.2	3.2	9.8
6	41.9	0.037	80.6	4.1	6.26	0.655	6.739	6.695	16.7	10.0	12.6	5.9	2.13	0.61	13.3	3.3	9.3
7	43.1	0.043	80.9	4.4	6.27	0.764	6.924	6.872	16.9	10.0	12.5	5.6	2.22	0.64	13.4	3.4	9.0
8	44.0	0.049	81.2	4.7	6.28	0.873	7.070	7.008	17.0	10.0	12.3	5.3	2.32	0.67	13.5	3.5	8.8
9	44.8	0.055	81.4	4.9	6.28	0.982	7.202	7.131	17.1	10.0	12.3	5.1	2.39	0.68	13.6	3.6	8.7
10	45.4	0.062	81.5	5.0	6.29	1.092	7.294	7.215	17.2	10.0	12.2	5.0	2.45	0.70	13.6	3.6	8.6
11	45.8	0.068	81.7	5.2	6.30	1.201	7.361	7.272	17.3	10.0	12.1	4.8	2.51	0.71	13.6	3.6	8.4
12	46.0	0.074	81.8	5.3	6.31	1.310	7.387	7.290	17.3	10.0	12.0	4.7	2.56	0.73	13.6	3.6	8.3
13	46.3	0.080	81.9	5.4	6.31	1.419	7.440	7.334	17.3	10.0	11.9	4.6	2.61	0.74	13.7	3.7	8.2
14	46.6	0.086	81.9	5.4	6.32	1.528	7.493	7.378	17.4	10.0	12.0	4.6	2.60	0.73	13.7	3.7	8.3
15	47.0	0.092	81.9	5.4	6.33	1.637	7.546	7.422	17.4	10.0	12.0	4.6	2.63	0.73	13.7	3.7	8.3
16	47.1	0.098	81.9	5.4	6.33	1.746	7.572	7.440	17.4	10.0	12.0	4.6	2.62	0.73	13.7	3.7	8.3
17	47.4	0.104	82.4	5.9	6.34	1.856	7.625	7.483	17.5	10.0	11.6	4.1	2.82	0.79	13.7	3.7	7.9
18	47.8	0.110	82.5	6.0	6.35	1.965	7.678	7.527	17.5	10.0	11.5	4.0	2.90	0.80	13.8	3.8	7.7



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	47.9	0.116	82.6	6.1	6.35	2.074	7.704	7.544	17.5	10.0	11.5	3.9	2.93	0.81	13.8	3.8	7.7
20	48.3	0.123	82.7	6.2	6.36	2.183	7.757	7.588	17.6	10.0	11.4	3.8	3.00	0.82	13.8	3.8	7.6
21	48.4	0.129	82.7	6.2	6.37	2.292	7.770	7.592	17.6	10.0	11.3	3.8	3.02	0.82	13.8	3.8	7.5
22	48.4	0.135	82.7	6.2	6.38	2.401	7.783	7.596	17.6	10.0	11.3	3.8	3.02	0.82	13.8	3.8	7.6
23	48.7	0.141	82.7	6.2	6.38	2.511	7.823	7.627	17.6	10.0	11.4	3.8	3.03	0.82	13.8	3.8	7.6
24	48.8	0.147	82.8	6.3	6.39	2.620	7.849	7.644	17.6	10.0	11.4	3.7	3.06	0.82	13.8	3.8	7.5
25	49.0	0.153	82.8	6.3	6.40	2.729	7.876	7.661	17.7	10.0	11.4	3.7	3.06	0.82	13.8	3.8	7.5
26	49.0	0.159	82.8	6.3	6.40	2.838	7.876	7.652	17.7	10.0	11.4	3.7	3.06	0.82	13.8	3.8	7.5
27	49.4	0.165	82.7	6.2	6.41	2.947	7.942	7.708	17.7	10.0	11.5	3.8	3.03	0.81	13.9	3.9	7.6
28	49.4	0.171	82.7	6.2	6.42	3.056	7.942	7.699	17.7	10.0	11.5	3.8	3.01	0.80	13.8	3.8	7.7
29	49.7	0.178	82.8	6.3	6.43	3.165	7.995	7.742	17.7	10.0	11.5	3.7	3.09	0.81	13.9	3.9	7.6
30	50.2	0.184	83.0	6.5	6.43	3.275	8.061	7.797	17.8	10.0	11.3	3.5	3.25	0.84	13.9	3.9	7.4
31	50.2	0.190	83.0	6.5	6.44	3.384	8.061	7.788	17.8	10.0	11.3	3.5	3.24	0.84	13.9	3.9	7.4
32	50.4	0.196	83.0	6.5	6.45	3.493	8.101	7.818	17.8	10.0	11.3	3.5	3.25	0.84	13.9	3.9	7.4
33	50.7	0.202	83.0	6.5	6.46	3.602	8.140	7.847	17.8	10.0	11.3	3.5	3.26	0.83	13.9	3.9	7.4
34	50.7	0.208	83.0	6.5	6.46	3.711	8.153	7.851	17.9	10.0	11.3	3.5	3.26	0.83	13.9	3.9	7.4
35	50.9	0.214	83.0	6.5	6.47	3.820	8.180	7.867	17.9	10.0	11.3	3.5	3.27	0.83	13.9	3.9	7.4
36	51.1	0.220	83.0	6.5	6.48	3.930	8.219	7.896	17.9	10.0	11.4	3.5	3.28	0.83	13.9	3.9	7.4
37	51.3	0.226	83.0	6.5	6.48	4.039	8.246	7.913	17.9	10.0	11.4	3.5	3.28	0.83	14.0	4.0	7.4
38	51.6	0.232	83.0	6.5	6.49	4.148	8.286	7.942	17.9	10.0	11.5	3.5	3.26	0.82	14.0	4.0	7.5
39	51.7	0.239	82.9	6.4	6.50	4.257	8.312	7.958	18.0	10.0	11.5	3.6	3.24	0.81	14.0	4.0	7.5
40	52.0	0.245	82.9	6.4	6.51	4.366	8.352	7.987	18.0	10.0	11.6	3.6	3.22	0.80	14.0	4.0	7.6
41	52.1	0.251	82.8	6.3	6.51	4.475	8.378	8.003	18.0	10.0	11.7	3.7	3.18	0.79	14.0	4.0	7.7
42	52.3	0.257	82.7	6.2	6.52	4.585	8.404	8.019	18.0	10.0	11.8	3.8	3.11	0.77	14.0	4.0	7.8
43	52.5	0.263	82.6	6.1	6.53	4.694	8.444	8.048	18.0	10.0	11.9	3.9	3.08	0.76	14.0	4.0	7.9
44	52.9	0.269	83.2	6.7	6.54	4.803	8.497	8.089	18.1	10.0	11.4	3.3	3.42	0.82	14.0	4.0	7.4
45	53.2	0.275	83.2	6.7	6.54	4.912	8.550	8.130	18.1	10.0	11.5	3.3	3.43	0.82	14.1	4.1	7.4
46	53.4	0.281	83.2	6.7	6.55	5.021	8.576	8.146	18.1	10.0	11.5	3.3	3.43	0.82	14.1	4.1	7.4
47	53.7	0.287	83.2	6.7	6.56	5.130	8.629	8.186	18.2	10.0	11.5	3.3	3.44	0.81	14.1	4.1	7.4
48	54.0	0.293	83.1	6.6	6.57	5.239	8.682	8.227	18.2	10.0	11.6	3.4	3.43	0.80	14.1	4.1	7.5
49	54.1	0.300	83.0	6.5	6.57	5.349	8.695	8.230	18.2	10.0	11.7	3.5	3.37	0.79	14.1	4.1	7.6
50	54.3	0.306	82.9	6.4	6.58	5.458	8.722	8.246	18.2	10.0	11.8	3.6	3.30	0.78	14.1	4.1	7.7
51	54.7	0.312	82.8	6.3	6.59	5.567	8.788	8.299	18.3	10.0	12.0	3.7	3.26	0.76	14.1	4.1	7.8
52	54.8	0.318	82.7	6.2	6.60	5.676	8.801	8.301	18.3	10.0	12.1	3.8	3.21	0.75	14.2	4.2	7.9
53	55.0	0.324	82.7	6.2	6.60	5.785	8.841	8.329	18.3	10.0	12.2	3.8	3.17	0.74	14.2	4.2	8.0
54	55.1	0.330	82.6	6.1	6.61	5.894	8.854	8.332	18.3	10.0	12.2	3.9	3.15	0.74	14.2	4.2	8.0
55	55.6	0.336	83.2	6.7	6.62	6.004	8.933	8.397	18.4	10.0	11.7	3.3	3.54	0.80	14.2	4.2	7.5
56	55.9	0.342	83.1	6.6	6.63	6.113	8.986	8.437	18.4	10.0	11.8	3.4	3.49	0.78	14.2	4.2	7.6
57	56.2	0.348	83.1	6.6	6.64	6.222	9.039	8.476	18.5	10.0	11.9	3.4	3.50	0.78	14.2	4.2	7.6
58	56.6	0.355	83.1	6.6	6.64	6.331	9.092	8.516	18.5	10.0	11.9	3.4	3.51	0.78	14.3	4.3	7.6
59	56.7	0.361	83.1	6.6	6.65	6.440	9.105	8.518	18.5	10.0	11.9	3.4	3.48	0.77	14.3	4.3	7.7



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	56.8	0.367	83.1	6.6	6.66	6.549	9.131	8.533	18.5	10.0	12.0	3.4	3.49	0.77	14.3	4.3	7.7
61	57.0	0.373	83.0	6.5	6.67	6.658	9.158	8.548	18.5	10.0	12.0	3.5	3.46	0.76	14.3	4.3	7.7
62	57.3	0.379	83.0	6.5	6.67	6.768	9.211	8.587	18.6	10.0	12.1	3.5	3.47	0.76	14.3	4.3	7.8
63	57.6	0.385	83.0	6.5	6.68	6.877	9.263	8.626	18.6	10.0	12.1	3.5	3.46	0.75	14.3	4.3	7.8
64	57.8	0.391	82.9	6.4	6.69	6.986	9.290	8.641	18.6	10.0	12.2	3.6	3.41	0.74	14.3	4.3	7.9
65	58.1	0.397	82.8	6.3	6.70	7.095	9.343	8.680	18.7	10.0	12.4	3.7	3.36	0.73	14.3	4.3	8.0
66	58.4	0.403	82.7	6.2	6.71	7.204	9.382	8.706	18.7	10.0	12.5	3.8	3.32	0.72	14.4	4.4	8.1
67	58.5	0.409	82.7	6.2	6.71	7.313	9.396	8.708	18.7	10.0	12.5	3.8	3.27	0.71	14.4	4.4	8.2
68	58.7	0.416	82.9	6.4	6.72	7.423	9.435	8.735	18.7	10.0	12.3	3.6	3.46	0.74	14.4	4.4	7.9
69	59.3	0.422	83.1	6.6	6.73	7.532	9.528	8.810	18.8	10.0	12.2	3.4	3.60	0.75	14.4	4.4	7.8
70	59.5	0.428	83.1	6.6	6.74	7.641	9.554	8.824	18.8	10.0	12.3	3.4	3.57	0.74	14.4	4.4	7.8
71	59.8	0.434	83.1	6.6	6.75	7.750	9.607	8.862	18.9	10.0	12.3	3.4	3.58	0.74	14.4	4.4	7.9
72	60.0	0.440	83.0	6.5	6.75	7.859	9.647	8.889	18.9	10.0	12.4	3.5	3.56	0.73	14.4	4.4	7.9
73	60.4	0.446	83.0	6.5	6.76	7.968	9.700	8.927	18.9	10.0	12.4	3.5	3.57	0.73	14.5	4.5	7.9
74	60.5	0.452	83.0	6.5	6.77	8.077	9.726	8.940	18.9	10.0	12.4	3.5	3.58	0.73	14.5	4.5	7.9
75	60.8	0.458	83.0	6.5	6.78	8.187	9.766	8.966	19.0	10.0	12.5	3.5	3.55	0.72	14.5	4.5	8.0
76	61.0	0.464	83.0	6.5	6.79	8.296	9.805	8.992	19.0	10.0	12.5	3.5	3.56	0.72	14.5	4.5	8.0
77	61.3	0.471	82.9	6.4	6.79	8.405	9.858	9.030	19.0	10.0	12.6	3.6	3.51	0.71	14.5	4.5	8.1
78	61.6	0.477	82.8	6.3	6.80	8.514	9.898	9.055	19.1	10.0	12.7	3.7	3.47	0.70	14.5	4.5	8.2
79	61.8	0.483	82.7	6.2	6.81	8.623	9.937	9.080	19.1	10.0	12.8	3.8	3.42	0.69	14.5	4.5	8.3
80	62.1	0.489	82.7	6.2	6.82	8.732	9.977	9.106	19.1	10.0	12.9	3.8	3.38	0.68	14.6	4.6	8.4
81	62.3	0.495	82.5	6.0	6.83	8.842	10.017	9.131	19.1	10.0	13.1	4.0	3.31	0.66	14.6	4.6	8.5
82	62.6	0.501	82.4	5.9	6.83	8.951	10.056	9.156	19.2	10.0	13.3	4.1	3.22	0.64	14.6	4.6	8.7
83	63.1	0.507	83.0	6.5	6.84	9.060	10.136	9.217	19.2	10.0	12.7	3.5	3.66	0.71	14.6	4.6	8.1
84	63.4	0.513	83.0	6.5	6.85	9.169	10.188	9.254	19.3	10.0	12.8	3.5	3.64	0.70	14.6	4.6	8.1
85	63.7	0.519	83.0	6.5	6.86	9.278	10.241	9.291	19.3	10.0	12.8	3.5	3.65	0.70	14.6	4.6	8.2
86	63.9	0.525	82.9	6.4	6.87	9.387	10.268	9.304	19.3	10.0	12.9	3.6	3.62	0.69	14.7	4.7	8.2
87	64.2	0.532	82.9	6.4	6.88	9.496	10.321	9.341	19.3	10.0	12.9	3.6	3.63	0.69	14.7	4.7	8.2
88	64.4	0.538	82.9	6.4	6.88	9.606	10.347	9.353	19.4	10.0	13.0	3.6	3.58	0.68	14.7	4.7	8.3
89	64.6	0.544	82.7	6.2	6.89	9.715	10.387	9.378	19.4	10.0	13.2	3.8	3.45	0.66	14.7	4.7	8.5
90	64.8	0.550	82.6	6.1	6.90	9.824	10.413	9.390	19.4	10.0	13.3	3.9	3.40	0.65	14.7	4.7	8.6
91	65.0	0.556	82.5	6.0	6.91	9.933	10.453	9.414	19.4	10.0	13.4	4.0	3.36	0.64	14.7	4.7	8.7
92	65.4	0.562	82.4	5.9	6.92	10.042	10.506	9.451	19.5	10.0	13.6	4.1	3.30	0.62	14.7	4.7	8.8
93	65.6	0.568	82.7	6.2	6.93	10.151	10.545	9.475	19.5	10.0	13.3	3.8	3.50	0.66	14.7	4.7	8.5
94	65.9	0.574	82.9	6.4	6.93	10.261	10.598	9.511	19.5	10.0	13.1	3.6	3.68	0.68	14.8	4.8	8.3
95	66.4	0.580	82.9	6.4	6.94	10.370	10.664	9.558	19.6	10.0	13.1	3.6	3.66	0.67	14.8	4.8	8.4
96	66.6	0.587	82.9	6.4	6.95	10.479	10.704	9.582	19.6	10.0	13.2	3.6	3.64	0.66	14.8	4.8	8.4
97	66.8	0.593	82.8	6.3	6.96	10.588	10.730	9.594	19.6	10.0	13.3	3.7	3.61	0.66	14.8	4.8	8.5
98	67.2	0.599	82.8	6.3	6.97	10.697	10.796	9.641	19.6	10.0	13.3	3.7	3.63	0.66	14.8	4.8	8.5
99	67.3	0.605	82.8	6.3	6.98	10.806	10.823	9.653	19.7	10.0	13.4	3.7	3.60	0.65	14.8	4.8	8.5
100	67.7	0.611	82.8	6.3	6.99	10.916	10.876	9.688	19.7	10.0	13.4	3.7	3.61	0.65	14.8	4.8	8.6



Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	67.9	0.617	82.7	6.2	6.99	11.025	10.915	9.712	19.7	10.0	13.5	3.8	3.59	0.64	14.9	4.9	8.6
102	68.2	0.623	82.7	6.2	7.00	11.134	10.955	9.735	19.7	10.0	13.5	3.8	3.57	0.64	14.9	4.9	8.7
103	68.5	0.629	82.7	6.2	7.01	11.243	11.008	9.770	19.8	10.0	13.6	3.8	3.55	0.63	14.9	4.9	8.7
104	68.6	0.635	82.6	6.1	7.02	11.352	11.021	9.770	19.8	10.0	13.7	3.9	3.50	0.62	14.9	4.9	8.8
105	69.0	0.641	82.5	6.0	7.03	11.461	11.087	9.816	19.8	10.0	13.8	4.0	3.46	0.61	14.9	4.9	8.9
106	69.3	0.648	82.4	5.9	7.04	11.570	11.140	9.851	19.9	10.0	13.9	4.1	3.42	0.60	14.9	4.9	9.0
107	69.4	0.654	82.2	5.7	7.05	11.680	11.153	9.850	19.9	10.0	14.1	4.3	3.30	0.58	14.9	4.9	9.2
108	69.9	0.660	82.8	6.3	7.05	11.789	11.232	9.908	19.9	10.0	13.6	3.7	3.67	0.63	15.0	5.0	8.7
109	70.3	0.666	82.8	6.3	7.06	11.898	11.298	9.954	20.0	10.0	13.7	3.7	3.68	0.63	15.0	5.0	8.7
110	70.5	0.672	82.7	6.2	7.07	12.007	11.325	9.965	20.0	10.0	13.7	3.8	3.66	0.63	15.0	5.0	8.7
111	70.9	0.678	82.7	6.2	7.08	12.116	11.391	10.011	20.0	10.0	13.8	3.8	3.64	0.62	15.0	5.0	8.8
112	71.1	0.684	82.7	6.2	7.09	12.225	11.431	10.033	20.0	10.0	13.8	3.8	3.65	0.62	15.0	5.0	8.8
113	71.5	0.690	82.7	6.2	7.10	12.335	11.483	10.067	20.1	10.0	13.9	3.8	3.63	0.61	15.0	5.0	8.9
114	71.6	0.696	82.6	6.1	7.11	12.444	11.510	10.078	20.1	10.0	14.0	3.9	3.60	0.61	15.0	5.0	8.9
115	72.0	0.703	82.6	6.1	7.12	12.553	11.576	10.123	20.1	10.0	14.0	3.9	3.61	0.61	15.1	5.1	8.9
116	72.3	0.709	82.6	6.1	7.12	12.662	11.616	10.145	20.1	10.0	14.1	3.9	3.59	0.60	15.1	5.1	9.0
117	72.4	0.715	82.5	6.0	7.13	12.771	11.642	10.155	20.2	10.0	14.2	4.0	3.54	0.59	15.1	5.1	9.1
118	72.9	0.721	82.4	5.9	7.14	12.880	11.708	10.200	20.2	10.0	14.3	4.1	3.50	0.58	15.1	5.1	9.2
119	73.0	0.727	82.3	5.8	7.15	12.989	11.735	10.210	20.2	10.0	14.4	4.2	3.46	0.57	15.1	5.1	9.3
120	73.4	0.733	82.3	5.8	7.16	13.099	11.801	10.255	20.3	10.0	14.5	4.2	3.42	0.56	15.1	5.1	9.4
121	73.6	0.739	82.1	5.6	7.17	13.208	11.827	10.265	20.3	10.0	14.6	4.4	3.36	0.55	15.1	5.1	9.5
122	73.7	0.745	81.9	5.4	7.18	13.317	11.840	10.264	20.3	10.0	14.9	4.6	3.23	0.53	15.1	5.1	9.7
123	74.2	0.751	82.6	6.1	7.19	13.426	11.920	10.319	20.3	10.0	14.2	3.9	3.66	0.59	15.2	5.2	9.0
124	74.5	0.757	82.6	6.1	7.20	13.535	11.972	10.352	20.4	10.0	14.2	3.9	3.67	0.59	15.2	5.2	9.0
125	74.6	0.764	82.6	6.1	7.21	13.644	11.986	10.350	20.4	10.0	14.2	3.9	3.67	0.59	15.2	5.2	9.0
126	74.9	0.770	82.6	6.1	7.21	13.754	12.039	10.383	20.4	10.0	14.3	3.9	3.65	0.59	15.2	5.2	9.1
127	75.2	0.776	82.5	6.0	7.22	13.863	12.091	10.415	20.4	10.0	14.4	4.0	3.63	0.58	15.2	5.2	9.2
128	75.5	0.782	82.4	5.9	7.23	13.972	12.131	10.436	20.4	10.0	14.5	4.1	3.56	0.57	15.2	5.2	9.3
129	75.7	0.788	82.3	5.8	7.24	14.081	12.171	10.457	20.5	10.0	14.6	4.2	3.52	0.56	15.2	5.2	9.4
130	76.1	0.794	82.3	5.8	7.25	14.190	12.224	10.489	20.5	10.0	14.7	4.2	3.48	0.55	15.2	5.2	9.5
131	76.3	0.800	82.2	5.7	7.26	14.299	12.263	10.510	20.5	10.0	14.8	4.3	3.43	0.54	15.3	5.3	9.6
132	76.6	0.806	82.0	5.5	7.27	14.408	12.316	10.541	20.5	10.0	15.0	4.5	3.35	0.52	15.3	5.3	9.8
133	76.8	0.812	81.8	5.3	7.28	14.518	12.342	10.551	20.6	10.0	15.2	4.7	3.25	0.50	15.3	5.3	10.0
134	77.1	0.819	82.5	6.0	7.29	14.627	12.395	10.582	20.6	10.0	14.5	4.0	3.68	0.57	15.3	5.3	9.2
135	77.5	0.825	82.5	6.0	7.30	14.736	12.461	10.625	20.6	10.0	14.6	4.0	3.66	0.57	15.3	5.3	9.3
136	77.7	0.831	82.5	6.0	7.31	14.845	12.488	10.634	20.6	10.0	14.6	4.0	3.66	0.56	15.3	5.3	9.3
137	78.0	0.837	82.5	6.0	7.32	14.954	12.541	10.665	20.7	10.0	14.7	4.0	3.64	0.56	15.3	5.3	9.4
138	78.4	0.843	82.4	5.9	7.33	15.063	12.594	10.697	20.7	10.0	14.8	4.1	3.62	0.55	15.3	5.3	9.4
139	78.7	0.849	82.4	5.9	7.34	15.173	12.646	10.728	20.7	10.0	14.8	4.1	3.63	0.55	15.4	5.4	9.4
140	78.9	0.855	82.4	5.9	7.35	15.282	12.673	10.736	20.7	10.0	14.9	4.1	3.61	0.55	15.4	5.4	9.5
141	79.2	0.861	82.3	5.8	7.35	15.391	12.726	10.767	20.8	10.0	14.9	4.2	3.59	0.54	15.4	5.4	9.5



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	79.5	0.867	82.3	5.8	7.36	15.500	12.779	10.798	20.8	10.0	15.0	4.2	3.60	0.54	15.4	5.4	9.6
143	79.8	0.873	82.3	5.8	7.37	15.609	12.818	10.817	20.8	10.0	15.0	4.2	3.58	0.54	15.4	5.4	9.6
144	80.1	0.880	82.2	5.7	7.38	15.718	12.871	10.848	20.8	10.0	15.2	4.3	3.51	0.52	15.4	5.4	9.7
145	80.4	0.886	82.1	5.6	7.39	15.827	12.924	10.878	20.9	10.0	15.3	4.4	3.47	0.51	15.4	5.4	9.8
146	80.7	0.892	82.0	5.5	7.40	15.937	12.964	10.898	20.9	10.0	15.4	4.5	3.41	0.50	15.4	5.4	10.0
147	81.0	0.898	82.2	5.7	7.41	16.046	13.016	10.381	20.4	10.0	14.7	4.3	3.43	0.55	15.2	5.2	9.5
148	81.5	0.904	82.4	5.9	7.42	16.155	13.096	10.429	20.4	10.0	14.5	4.1	3.53	0.56	15.2	5.2	9.3
149	81.7	0.910	82.3	5.8	7.43	16.264	13.135	10.444	20.4	10.0	14.6	4.2	3.51	0.56	15.2	5.2	9.4
150	82.0	0.916	82.3	5.8	7.44	16.373	13.175	10.459	20.5	10.0	14.7	4.2	3.49	0.55	15.2	5.2	9.4
151	82.3	0.922	82.3	5.8	7.45	16.482	13.228	10.485	20.5	10.0	14.7	4.2	3.50	0.55	15.2	5.2	9.4
152	82.5	0.928	82.3	5.8	7.46	16.592	13.254	10.489	20.5	10.0	14.7	4.2	3.48	0.55	15.2	5.2	9.5
153	82.7	0.934	82.2	5.7	7.47	16.701	13.294	10.504	20.5	10.0	14.8	4.3	3.46	0.54	15.3	5.3	9.5
154	83.1	0.941	82.2	5.7	7.48	16.810	13.360	10.541	20.5	10.0	14.8	4.3	3.46	0.54	15.3	5.3	9.5
155	83.1	0.947	82.2	5.7	7.49	16.919	13.347	10.512	20.5	10.0	14.8	4.3	3.43	0.54	15.3	5.3	9.6
156	83.5	0.953	82.1	5.6	7.50	17.028	13.426	10.559	20.6	10.0	14.9	4.4	3.42	0.53	15.3	5.3	9.6
157	83.5	0.959	82.1	5.6	7.51	17.137	13.413	10.530	20.5	10.0	15.0	4.4	3.37	0.53	15.3	5.3	9.7
158	84.0	0.965	82.0	5.5	7.52	17.247	13.492	10.577	20.6	10.0	15.1	4.5	3.34	0.52	15.3	5.3	9.8
159	84.2	0.971	81.9	5.4	7.53	17.356	13.532	10.591	20.6	10.0	15.2	4.6	3.30	0.51	15.3	5.3	9.9
160	84.5	0.977	81.8	5.3	7.54	17.465	13.571	10.606	20.6	10.0	15.3	4.7	3.27	0.50	15.3	5.3	10.0
161	84.7	0.983	81.7	5.2	7.55	17.574	13.611	10.620	20.6	10.0	15.5	4.8	3.19	0.49	15.3	5.3	10.2
162	84.8	0.989	81.4	4.9	7.56	17.683	13.624	10.612	20.6	10.0	15.7	5.1	3.09	0.46	15.3	5.3	10.4
163	85.3	0.996	82.1	5.6	7.57	17.792	13.704	10.659	20.7	10.0	15.1	4.4	3.42	0.53	15.3	5.3	9.7
164	85.8	1.002	82.1	5.6	7.58	17.901	13.783	10.705	20.7	10.0	15.1	4.4	3.46	0.53	15.4	5.4	9.7
165	85.8	1.008	82.1	5.6	7.59	18.011	13.796	10.697	20.7	10.0	15.1	4.4	3.43	0.52	15.3	5.3	9.7
166	86.1	1.014	82.1	5.6	7.60	18.120	13.836	10.711	20.7	10.0	15.1	4.4	3.43	0.52	15.4	5.4	9.8
167	86.5	1.020	82.0	5.5	7.61	18.229	13.902	10.746	20.7	10.0	15.2	4.5	3.40	0.51	15.4	5.4	9.9
168	86.8	1.026	81.9	5.4	7.62	18.338	13.941	10.759	20.8	10.0	15.4	4.6	3.32	0.50	15.4	5.4	10.0
169	86.9	1.032	81.8	5.3	7.63	18.447	13.968	10.762	20.8	10.0	15.4	4.7	3.30	0.49	15.4	5.4	10.1
170	87.2	1.038	81.7	5.2	7.64	18.556	14.021	10.786	20.8	10.0	15.5	4.8	3.26	0.49	15.4	5.4	10.2
171	87.3	1.044	81.6	5.1	7.65	18.666	14.034	10.778	20.8	10.0	15.7	4.9	3.21	0.47	15.4	5.4	10.3
172	87.7	1.050	81.5	5.0	7.66	18.775	14.100	10.812	20.8	10.0	15.8	5.0	3.16	0.46	15.4	5.4	10.4
173	88.1	1.057	81.3	4.8	7.67	18.884	14.153	10.836	20.8	10.0	16.0	5.2	3.08	0.44	15.4	5.4	10.6
174	88.4	1.063	81.7	5.2	7.68	18.993	14.206	10.860	20.9	10.0	15.7	4.8	3.26	0.48	15.4	5.4	10.2
175	88.8	1.069	82.0	5.5	7.69	19.102	14.272	10.894	20.9	10.0	15.4	4.5	3.41	0.50	15.4	5.4	10.0
176	89.1	1.075	81.9	5.4	7.70	19.211	14.325	10.917	20.9	10.0	15.5	4.6	3.39	0.50	15.5	5.5	10.0
177	89.3	1.081	81.9	5.4	7.71	19.320	14.351	10.919	20.9	10.0	15.5	4.6	3.39	0.50	15.5	5.5	10.0
178	89.8	1.087	81.9	5.4	7.72	19.430	14.430	10.964	21.0	10.0	15.6	4.6	3.38	0.49	15.5	5.5	10.1
179	90.1	1.093	81.9	5.4	7.73	19.539	14.483	10.987	21.0	10.0	15.6	4.6	3.37	0.49	15.5	5.5	10.1
180	90.3	1.099	81.8	5.3	7.74	19.648	14.510	10.989	21.0	10.0	15.7	4.7	3.35	0.48	15.5	5.5	10.2
181	90.5	1.105	81.8	5.3	7.75	19.757	14.549	11.001	21.0	10.0	15.7	4.7	3.33	0.48	15.5	5.5	10.2
182	90.9	1.112	81.7	5.2	7.77	19.866	14.602	11.024	21.0	10.0	15.8	4.8	3.31	0.48	15.5	5.5	10.3



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	91.2	1.118	81.7	5.2	7.78	19.975	14.655	11.046	21.0	10.0	15.9	4.8	3.28	0.47	15.5	5.5	10.4
184	91.2	1.120	81.7	5.2	7.78	20.009	14.655	11.040	21.0	10.0	15.8	4.8	3.30	0.47	15.5	5.5	10.3



File Location
B-56 Bag 1 5PSLHSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-56
Sample Description: Red, Tan & White Sandy Lean Clay
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.650001
LL: 40.000
PL: 24.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.805	2.708	
Height (in)	5.547	5.331	
Weight (grams)	1066.30		1097.50
Moisture (%)	15.54		18.92
Dry Density (pcf)	102.57	114.54	
Saturation (%)	67.19	100.00	
Void Ratio	0.610	0.444	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 85.200
Effective Confining Stress (psi): 20.0
Corrected Peak Deviator Stress (psi): 32.391 at reading number: 167

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	0.0	0.061	65.2	0.0	5.76	0.000	0.000	0.000	20.0	20.0	20.0	20.0	1.00	0.00	20.0	0.0	20.0
1	26.2	0.067	66.6	1.4	5.76	0.113	4.558	4.553	24.6	20.0	23.2	18.6	1.24	0.30	22.3	2.3	20.9
2	45.7	0.073	68.9	3.7	5.77	0.225	7.944	7.927	27.9	20.0	24.2	16.3	1.49	0.47	24.0	4.0	20.2
3	56.9	0.079	70.7	5.5	5.78	0.338	9.888	9.854	29.9	20.0	24.4	14.5	1.68	0.55	24.9	4.9	19.5
4	64.3	0.085	71.9	6.7	5.78	0.451	11.174	11.123	31.1	20.0	24.4	13.3	1.84	0.60	25.6	5.6	18.9
5	69.9	0.091	72.8	7.6	5.79	0.563	12.131	12.063	32.1	20.0	24.5	12.4	1.97	0.63	26.0	6.0	18.5
6	74.1	0.097	73.4	8.2	5.80	0.676	12.874	12.787	32.8	20.0	24.6	11.8	2.09	0.64	26.4	6.4	18.2
7	77.2	0.103	74.0	8.8	5.80	0.788	13.403	13.297	33.3	20.0	24.5	11.2	2.18	0.66	26.6	6.6	17.9
8	79.8	0.109	74.6	9.4	5.81	0.901	13.860	13.735	33.7	20.0	24.3	10.6	2.30	0.69	26.9	6.9	17.5
9	82.1	0.115	75.0	9.8	5.82	1.014	14.260	14.115	34.1	20.0	24.3	10.2	2.39	0.70	27.1	7.1	17.2
10	84.0	0.121	75.4	10.2	5.82	1.126	14.589	14.424	34.4	20.0	24.2	9.8	2.47	0.71	27.2	7.2	17.0
11	85.6	0.127	75.7	10.5	5.83	1.239	14.860	14.676	34.7	20.0	24.2	9.5	2.55	0.72	27.3	7.3	16.8
12	87.0	0.133	75.9	10.7	5.84	1.352	15.103	14.899	34.9	20.0	24.2	9.3	2.60	0.72	27.4	7.4	16.7
13	88.1	0.139	76.1	10.9	5.84	1.464	15.303	15.079	35.1	20.0	24.2	9.1	2.66	0.72	27.5	7.5	16.6
14	89.2	0.145	76.2	11.0	5.85	1.577	15.489	15.244	35.2	20.0	24.2	9.0	2.70	0.72	27.6	7.6	16.6
15	90.2	0.151	76.6	11.4	5.86	1.690	15.660	15.396	35.4	20.0	24.0	8.6	2.79	0.74	27.7	7.7	16.3
16	91.2	0.157	76.9	11.7	5.86	1.802	15.832	15.546	35.5	20.0	23.9	8.3	2.86	0.75	27.8	7.8	16.1
17	92.1	0.163	77.0	11.8	5.87	1.915	16.003	15.697	35.7	20.0	23.9	8.2	2.92	0.75	27.8	7.8	16.0
18	92.7	0.169	77.1	11.9	5.88	2.028	16.103	15.777	35.8	20.0	23.9	8.1	2.94	0.75	27.9	7.9	16.0



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	93.3	0.175	77.0	11.8	5.88	2.140	16.203	15.856	35.9	20.0	24.1	8.2	2.93	0.74	27.9	7.9	16.2
20	94.0	0.181	77.3	12.1	5.89	2.253	16.317	15.950	36.0	20.0	23.9	7.9	3.01	0.76	28.0	8.0	15.9
21	94.8	0.187	77.3	12.1	5.90	2.365	16.460	16.071	36.1	20.0	23.9	7.9	3.05	0.76	28.0	8.0	15.9
22	95.4	0.193	77.4	12.2	5.90	2.478	16.560	16.150	36.2	20.0	23.9	7.8	3.08	0.76	28.1	8.1	15.9
23	96.2	0.199	77.5	12.3	5.91	2.591	16.703	16.271	36.3	20.0	24.0	7.7	3.10	0.75	28.1	8.1	15.9
24	96.7	0.205	77.5	12.3	5.92	2.703	16.789	16.335	36.3	20.0	24.1	7.7	3.11	0.75	28.2	8.2	15.9
25	97.4	0.211	77.5	12.3	5.92	2.816	16.918	16.441	36.4	20.0	24.2	7.7	3.13	0.75	28.2	8.2	16.0
26	98.1	0.217	77.5	12.3	5.93	2.929	17.032	16.533	36.5	20.0	24.3	7.7	3.14	0.74	28.3	8.3	16.0
27	98.6	0.223	77.6	12.4	5.94	3.041	17.118	16.597	36.6	20.0	24.2	7.6	3.19	0.75	28.3	8.3	15.9
28	99.5	0.229	77.7	12.5	5.95	3.154	17.275	16.730	36.7	20.0	24.3	7.5	3.22	0.75	28.4	8.4	15.9
29	99.9	0.235	77.7	12.5	5.95	3.267	17.346	16.780	36.8	20.0	24.3	7.5	3.23	0.74	28.4	8.4	15.9
30	100.6	0.241	77.7	12.5	5.96	3.379	17.475	16.884	36.9	20.0	24.4	7.5	3.25	0.74	28.4	8.4	15.9
31	101.4	0.247	77.7	12.5	5.97	3.492	17.603	16.989	37.0	20.0	24.5	7.5	3.26	0.73	28.5	8.5	16.0
32	101.9	0.253	77.7	12.5	5.97	3.605	17.689	17.052	37.1	20.0	24.6	7.5	3.26	0.73	28.5	8.5	16.1
33	102.5	0.259	77.6	12.4	5.98	3.717	17.803	17.142	37.1	20.0	24.8	7.6	3.25	0.72	28.6	8.6	16.2
34	103.1	0.265	77.7	12.5	5.99	3.830	17.903	17.218	37.2	20.0	24.7	7.5	3.29	0.72	28.6	8.6	16.1
35	103.9	0.271	77.8	12.6	5.99	3.942	18.046	17.335	37.3	20.0	24.8	7.4	3.33	0.72	28.7	8.7	16.1
36	104.6	0.277	77.8	12.6	6.00	4.055	18.161	17.424	37.4	20.0	24.9	7.4	3.34	0.72	28.7	8.7	16.2
37	105.1	0.283	77.8	12.6	6.01	4.168	18.246	17.486	37.5	20.0	24.9	7.4	3.35	0.72	28.7	8.7	16.2
38	105.6	0.289	77.6	12.4	6.02	4.280	18.346	17.561	37.6	20.0	25.1	7.6	3.32	0.71	28.8	8.8	16.4
39	106.2	0.295	77.6	12.4	6.02	4.393	18.446	17.636	37.6	20.0	25.2	7.6	3.32	0.70	28.8	8.8	16.4
40	106.9	0.301	77.8	12.6	6.03	4.506	18.561	17.724	37.7	20.0	25.2	7.4	3.38	0.71	28.9	8.9	16.3
41	107.8	0.307	77.8	12.6	6.04	4.618	18.718	17.853	37.9	20.0	25.3	7.4	3.40	0.70	28.9	8.9	16.4
42	108.2	0.313	77.8	12.6	6.04	4.731	18.789	17.900	37.9	20.0	25.3	7.4	3.40	0.70	29.0	9.0	16.4
43	109.0	0.319	77.8	12.6	6.05	4.844	18.932	18.015	38.0	20.0	25.5	7.4	3.42	0.70	29.0	9.0	16.5
44	109.6	0.325	77.7	12.5	6.06	4.956	19.032	18.089	38.1	20.0	25.6	7.5	3.42	0.69	29.0	9.0	16.5
45	110.1	0.331	77.6	12.4	6.07	5.069	19.118	18.149	38.1	20.0	25.7	7.6	3.40	0.68	29.1	9.1	16.6
46	110.7	0.337	77.5	12.3	6.07	5.182	19.218	18.222	38.2	20.0	25.9	7.7	3.38	0.68	29.1	9.1	16.8
47	111.3	0.343	77.7	12.5	6.08	5.294	19.332	18.309	38.3	20.0	25.8	7.5	3.44	0.68	29.2	9.2	16.6
48	112.1	0.349	77.7	12.5	6.09	5.407	19.475	18.422	38.4	20.0	26.0	7.5	3.45	0.68	29.2	9.2	16.7
49	113.0	0.355	77.7	12.5	6.09	5.519	19.618	18.535	38.5	20.0	26.1	7.5	3.46	0.67	29.3	9.3	16.8
50	113.7	0.361	77.7	12.5	6.10	5.632	19.747	18.635	38.6	20.0	26.2	7.5	3.47	0.67	29.3	9.3	16.8
51	114.0	0.367	77.6	12.4	6.11	5.745	19.804	18.666	38.7	20.0	26.2	7.6	3.47	0.67	29.3	9.3	16.9
52	114.8	0.373	77.5	12.3	6.12	5.857	19.932	18.765	38.8	20.0	26.4	7.7	3.45	0.66	29.4	9.4	17.0
53	115.5	0.379	77.5	12.3	6.12	5.970	20.061	18.863	38.9	20.0	26.6	7.7	3.44	0.65	29.4	9.4	17.2
54	116.1	0.385	77.5	12.3	6.13	6.083	20.161	18.935	38.9	20.0	26.6	7.7	3.46	0.65	29.5	9.5	17.2
55	117.0	0.391	77.5	12.3	6.14	6.195	20.318	19.059	39.1	20.0	26.7	7.7	3.49	0.65	29.5	9.5	17.2
56	117.7	0.397	77.5	12.3	6.15	6.308	20.433	19.144	39.1	20.0	26.8	7.7	3.49	0.64	29.6	9.6	17.3
57	118.6	0.403	77.4	12.2	6.15	6.421	20.590	19.268	39.3	20.0	27.0	7.8	3.48	0.63	29.6	9.6	17.4
58	119.1	0.409	77.3	12.1	6.16	6.533	20.690	19.338	39.3	20.0	27.2	7.9	3.45	0.63	29.7	9.7	17.6
59	120.0	0.415	77.2	12.0	6.17	6.646	20.833	19.448	39.4	20.0	27.5	8.0	3.42	0.62	29.7	9.7	17.7



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	120.7	0.421	77.3	12.1	6.18	6.759	20.961	19.545	39.5	20.0	27.4	7.9	3.47	0.62	29.8	9.8	17.7
61	121.6	0.427	77.3	12.1	6.18	6.871	21.118	19.667	39.7	20.0	27.6	7.9	3.48	0.61	29.8	9.8	17.8
62	123.2	0.439	77.2	12.0	6.20	7.096	21.390	19.872	39.9	20.0	27.9	8.0	3.48	0.60	29.9	9.9	18.0
63	123.8	0.445	77.1	11.9	6.21	7.209	21.504	19.954	40.0	20.0	28.1	8.1	3.46	0.60	30.0	10.0	18.1
64	124.6	0.451	77.0	11.8	6.21	7.322	21.633	20.049	40.0	20.0	28.2	8.2	3.45	0.59	30.0	10.0	18.2
65	125.4	0.457	76.9	11.7	6.22	7.434	21.776	20.157	40.2	20.0	28.5	8.3	3.43	0.58	30.1	10.1	18.4
66	126.1	0.463	77.0	11.8	6.23	7.547	21.904	20.251	40.3	20.0	28.4	8.2	3.47	0.58	30.1	10.1	18.3
67	127.0	0.469	77.0	11.8	6.24	7.660	22.061	20.372	40.4	20.0	28.6	8.2	3.48	0.58	30.2	10.2	18.4
68	127.9	0.475	76.9	11.7	6.24	7.772	22.219	20.492	40.5	20.0	28.8	8.3	3.48	0.57	30.2	10.2	18.5
69	128.6	0.481	76.9	11.7	6.25	7.885	22.333	20.572	40.6	20.0	28.9	8.3	3.48	0.57	30.3	10.3	18.6
70	129.3	0.487	76.8	11.6	6.26	7.998	22.462	20.665	40.7	20.0	29.1	8.4	3.46	0.56	30.3	10.3	18.7
71	130.2	0.493	76.7	11.5	6.27	8.110	22.604	20.771	40.8	20.0	29.2	8.5	3.45	0.56	30.4	10.4	18.9
72	130.8	0.499	76.6	11.4	6.27	8.223	22.719	20.851	40.9	20.0	29.4	8.6	3.43	0.55	30.4	10.4	19.0
73	131.7	0.505	76.7	11.5	6.28	8.336	22.876	20.969	41.0	20.0	29.5	8.5	3.46	0.55	30.5	10.5	19.0
74	132.5	0.511	76.7	11.5	6.29	8.448	23.019	21.074	41.1	20.0	29.6	8.5	3.48	0.55	30.5	10.5	19.0
75	133.3	0.517	76.7	11.5	6.30	8.561	23.147	21.166	41.2	20.0	29.7	8.5	3.48	0.54	30.6	10.6	19.1
76	134.0	0.523	76.5	11.3	6.30	8.673	23.276	21.257	41.3	20.0	29.9	8.7	3.45	0.53	30.6	10.6	19.3
77	134.8	0.529	76.4	11.2	6.31	8.786	23.405	21.348	41.3	20.0	30.1	8.8	3.43	0.52	30.7	10.7	19.5
78	135.6	0.535	76.4	11.2	6.32	8.899	23.547	21.452	41.5	20.0	30.2	8.8	3.44	0.52	30.7	10.7	19.5
79	136.5	0.541	76.4	11.2	6.33	9.011	23.705	21.569	41.6	20.0	30.3	8.8	3.46	0.52	30.8	10.8	19.5
80	137.3	0.547	76.4	11.2	6.34	9.124	23.848	21.672	41.7	20.0	30.5	8.8	3.46	0.52	30.8	10.8	19.6
81	138.1	0.553	76.3	11.1	6.34	9.237	23.990	21.774	41.8	20.0	30.7	8.9	3.45	0.51	30.9	10.9	19.8
82	139.0	0.559	76.2	11.0	6.35	9.349	24.133	21.877	41.9	20.0	30.8	9.0	3.44	0.50	30.9	10.9	19.9
83	139.9	0.565	76.1	10.9	6.36	9.462	24.305	22.005	42.0	20.0	31.1	9.1	3.42	0.50	31.0	11.0	20.1
84	140.8	0.571	76.0	10.8	6.37	9.575	24.448	22.107	42.1	20.0	31.3	9.2	3.40	0.49	31.1	11.1	20.3
85	141.5	0.577	75.8	10.6	6.38	9.687	24.576	22.195	42.2	20.0	31.6	9.4	3.37	0.48	31.1	11.1	20.5
86	142.6	0.583	75.9	10.7	6.38	9.800	24.762	22.335	42.3	20.0	31.6	9.3	3.41	0.48	31.2	11.2	20.5
87	143.6	0.589	75.8	10.6	6.39	9.913	24.933	22.462	42.5	20.0	31.8	9.4	3.40	0.47	31.2	11.2	20.6
88	144.6	0.595	75.7	10.5	6.40	10.025	25.105	22.588	42.6	20.0	32.1	9.5	3.38	0.47	31.3	11.3	20.8
89	145.7	0.601	75.6	10.4	6.41	10.138	25.305	22.740	42.7	20.0	32.3	9.6	3.38	0.46	31.4	11.4	20.9
90	146.6	0.607	75.6	10.4	6.42	10.250	25.462	22.852	42.9	20.0	32.5	9.6	3.37	0.45	31.4	11.4	21.1
91	147.7	0.613	75.5	10.3	6.42	10.363	25.648	22.990	43.0	20.0	32.7	9.7	3.37	0.45	31.5	11.5	21.2
92	148.8	0.619	75.4	10.2	6.43	10.476	25.848	23.140	43.1	20.0	33.0	9.8	3.36	0.44	31.6	11.6	21.4
93	149.5	0.625	75.4	10.2	6.44	10.588	25.962	23.213	43.2	20.0	33.0	9.8	3.38	0.44	31.6	11.6	21.4
94	150.9	0.631	75.4	10.2	6.45	10.701	26.205	23.401	43.4	20.0	33.2	9.8	3.38	0.44	31.7	11.7	21.5
95	151.7	0.637	75.3	10.1	6.46	10.814	26.348	23.499	43.5	20.0	33.4	9.9	3.37	0.43	31.7	11.7	21.6
96	152.7	0.643	75.2	10.0	6.46	10.926	26.519	23.622	43.6	20.0	33.6	10.0	3.37	0.42	31.8	11.8	21.8
97	153.9	0.649	75.1	9.9	6.47	11.039	26.734	23.783	43.8	20.0	33.9	10.1	3.35	0.41	31.9	11.9	22.0
98	154.6	0.655	75.1	9.9	6.48	11.152	26.848	23.854	43.9	20.0	34.0	10.1	3.36	0.42	31.9	11.9	22.0
99	155.9	0.661	75.1	9.9	6.49	11.264	27.077	24.027	44.0	20.0	34.2	10.1	3.37	0.41	32.0	12.0	22.2
100	157.1	0.667	75.0	9.8	6.50	11.377	27.277	24.174	44.2	20.0	34.4	10.2	3.37	0.41	32.1	12.1	22.3



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101	158.0	0.673	74.9	9.7	6.51	11.490	27.434	24.282	44.3	20.0	34.5	10.3	3.37	0.40	32.1	12.1	22.4
102	159.0	0.679	74.9	9.7	6.51	11.602	27.605	24.403	44.4	20.0	34.7	10.3	3.36	0.40	32.2	12.2	22.5
103	160.1	0.685	74.7	9.5	6.52	11.715	27.805	24.548	44.5	20.0	35.0	10.5	3.35	0.39	32.3	12.3	22.7
104	160.9	0.691	74.6	9.4	6.53	11.827	27.948	24.643	44.6	20.0	35.2	10.6	3.33	0.38	32.3	12.3	22.9
105	161.9	0.697	74.6	9.4	6.54	11.940	28.120	24.762	44.8	20.0	35.4	10.6	3.33	0.38	32.4	12.4	23.0
106	163.1	0.703	74.6	9.4	6.55	12.053	28.320	24.907	44.9	20.0	35.5	10.6	3.35	0.38	32.5	12.5	23.0
107	164.1	0.709	74.5	9.3	6.56	12.165	28.491	25.025	45.0	20.0	35.7	10.7	3.35	0.37	32.5	12.5	23.2
108	165.3	0.715	74.5	9.3	6.56	12.278	28.706	25.181	45.2	20.0	35.9	10.7	3.35	0.37	32.6	12.6	23.3
109	166.2	0.721	74.4	9.2	6.57	12.391	28.863	25.286	45.3	20.0	36.1	10.8	3.34	0.36	32.6	12.6	23.4
110	167.1	0.727	74.3	9.1	6.58	12.503	29.020	25.392	45.4	20.0	36.3	10.9	3.33	0.36	32.7	12.7	23.6
111	168.3	0.733	74.2	9.0	6.59	12.616	29.234	25.546	45.5	20.0	36.6	11.0	3.31	0.35	32.8	12.8	23.8
112	169.2	0.739	74.0	8.8	6.60	12.729	29.391	25.650	45.7	20.0	36.8	11.2	3.30	0.34	32.8	12.8	24.0
113	170.1	0.745	74.2	9.0	6.61	12.841	29.549	25.754	45.8	20.0	36.8	11.0	3.33	0.35	32.9	12.9	23.9
114	171.4	0.751	74.1	8.9	6.61	12.954	29.763	25.908	45.9	20.0	37.0	11.1	3.33	0.34	33.0	13.0	24.1
115	172.5	0.757	74.0	8.8	6.62	13.066	29.963	26.048	46.0	20.0	37.2	11.2	3.33	0.34	33.0	13.0	24.2
116	173.6	0.763	73.9	8.7	6.63	13.179	30.149	26.175	46.2	20.0	37.5	11.3	3.32	0.33	33.1	13.1	24.4
117	174.8	0.769	73.8	8.6	6.64	13.292	30.349	26.315	46.3	20.0	37.8	11.4	3.30	0.33	33.2	13.2	24.6
118	175.7	0.775	73.8	8.6	6.65	13.404	30.520	26.429	46.4	20.0	37.8	11.4	3.33	0.33	33.2	13.2	24.6
119	176.9	0.781	73.8	8.6	6.66	13.517	30.720	26.568	46.6	20.0	38.0	11.4	3.32	0.32	33.3	13.3	24.7
120	178.1	0.787	73.7	8.5	6.67	13.630	30.935	26.718	46.7	20.0	38.2	11.5	3.33	0.32	33.4	13.4	24.8
121	179.1	0.793	73.6	8.4	6.68	13.742	31.106	26.831	46.8	20.0	38.4	11.6	3.32	0.31	33.4	13.4	25.0
122	180.3	0.799	73.5	8.3	6.68	13.855	31.306	26.969	47.0	20.0	38.7	11.7	3.31	0.31	33.5	13.5	25.2
123	181.2	0.805	73.4	8.2	6.69	13.968	31.478	27.081	47.1	20.0	38.9	11.8	3.29	0.30	33.5	13.5	25.4
124	182.4	0.811	73.3	8.1	6.70	14.080	31.678	27.217	47.2	20.0	39.1	11.9	3.28	0.30	33.6	13.6	25.5
125	183.4	0.817	73.3	8.1	6.71	14.193	31.849	27.329	47.3	20.0	39.2	11.9	3.30	0.30	33.7	13.7	25.6
126	184.5	0.823	73.3	8.1	6.72	14.306	32.035	27.452	47.5	20.0	39.4	11.9	3.30	0.29	33.7	13.7	25.7
127	185.5	0.829	73.2	8.0	6.73	14.418	32.221	27.575	47.6	20.0	39.5	12.0	3.30	0.29	33.8	13.8	25.8
128	186.8	0.835	73.1	7.9	6.74	14.531	32.449	27.734	47.7	20.0	39.8	12.1	3.30	0.29	33.9	13.9	25.9
129	187.7	0.841	73.1	7.9	6.75	14.643	32.606	27.832	47.8	20.0	40.0	12.1	3.29	0.28	33.9	13.9	26.1
130	188.9	0.847	72.9	7.7	6.75	14.756	32.806	27.965	48.0	20.0	40.3	12.3	3.27	0.28	34.0	14.0	26.3
131	190.0	0.853	72.8	7.6	6.76	14.869	32.992	28.087	48.1	20.0	40.5	12.4	3.26	0.27	34.0	14.0	26.5
132	190.9	0.859	72.7	7.5	6.77	14.981	33.149	28.183	48.2	20.0	40.6	12.5	3.26	0.27	34.1	14.1	26.6
133	192.4	0.865	72.8	7.6	6.78	15.094	33.407	28.364	48.4	20.0	40.8	12.4	3.28	0.27	34.2	14.2	26.6
134	193.4	0.871	72.8	7.6	6.79	15.207	33.592	28.484	48.5	20.0	40.9	12.4	3.29	0.27	34.2	14.2	26.7
135	194.4	0.877	72.7	7.5	6.80	15.319	33.764	28.591	48.6	20.0	41.1	12.5	3.29	0.26	34.3	14.3	26.8
136	195.4	0.883	72.6	7.4	6.81	15.432	33.935	28.698	48.7	20.0	41.3	12.6	3.27	0.26	34.3	14.3	27.0
137	196.3	0.889	72.4	7.2	6.82	15.545	34.092	28.793	48.8	20.0	41.6	12.8	3.25	0.25	34.4	14.4	27.2
138	197.5	0.895	72.5	7.3	6.83	15.657	34.307	28.935	48.9	20.0	41.6	12.7	3.28	0.25	34.5	14.5	27.2
139	198.5	0.901	72.4	7.2	6.84	15.770	34.478	29.041	49.0	20.0	41.8	12.8	3.27	0.25	34.5	14.5	27.3
140	199.7	0.907	72.4	7.2	6.85	15.883	34.678	29.170	49.2	20.0	42.0	12.8	3.27	0.25	34.6	14.6	27.4
141	200.7	0.913	72.3	7.1	6.85	15.995	34.850	29.275	49.3	20.0	42.1	12.9	3.27	0.24	34.6	14.6	27.5



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	201.7	0.919	72.2	7.0	6.86	16.108	35.021	29.380	49.4	20.0	42.4	13.0	3.26	0.24	34.7	14.7	27.7
143	202.7	0.925	72.1	6.9	6.87	16.220	35.207	29.496	49.5	20.0	42.6	13.1	3.25	0.23	34.7	14.7	27.9
144	203.6	0.931	72.0	6.8	6.88	16.333	35.364	29.588	49.6	20.0	42.8	13.2	3.24	0.23	34.8	14.8	28.0
145	204.8	0.937	72.0	6.8	6.89	16.446	35.564	29.715	49.7	20.0	42.9	13.2	3.26	0.23	34.9	14.9	28.0
146	205.8	0.943	72.0	6.8	6.90	16.558	35.736	29.818	49.8	20.0	43.1	13.2	3.25	0.23	34.9	14.9	28.1
147	207.0	0.949	71.9	6.7	6.91	16.671	35.950	29.957	50.0	20.0	43.3	13.3	3.25	0.22	35.0	15.0	28.3
148	207.9	0.955	71.8	6.6	6.92	16.784	36.107	30.047	50.0	20.0	43.4	13.4	3.25	0.22	35.0	15.0	28.4
149	209.2	0.961	71.8	6.6	6.93	16.896	36.336	30.196	50.2	20.0	43.6	13.4	3.25	0.22	35.1	15.1	28.5
150	210.2	0.967	71.6	6.4	6.94	17.009	36.507	30.298	50.3	20.0	43.9	13.6	3.23	0.21	35.1	15.1	28.8
151	211.4	0.973	71.5	6.3	6.95	17.122	36.707	30.422	50.4	20.0	44.1	13.7	3.22	0.21	35.2	15.2	28.9
152	212.4	0.979	71.4	6.2	6.96	17.234	36.893	30.535	50.5	20.0	44.3	13.8	3.22	0.20	35.3	15.3	29.0
153	213.8	0.985	71.4	6.2	6.97	17.347	37.136	30.694	50.7	20.0	44.5	13.8	3.23	0.20	35.3	15.3	29.1
154	214.8	0.991	71.4	6.2	6.98	17.460	37.307	30.794	50.8	20.0	44.6	13.8	3.23	0.20	35.4	15.4	29.2
155	216.3	0.997	71.3	6.1	6.99	17.572	37.564	30.964	51.0	20.0	44.9	13.9	3.23	0.20	35.5	15.5	29.4
156	217.5	1.003	71.2	6.0	7.00	17.685	37.765	31.086	51.1	20.0	45.1	14.0	3.22	0.19	35.5	15.5	29.6
157	218.5	1.009	71.0	5.8	7.00	17.797	37.950	31.196	51.2	20.0	45.4	14.2	3.19	0.19	35.6	15.6	29.8
158	219.7	1.015	71.1	5.9	7.01	17.910	38.150	31.318	51.3	20.0	45.4	14.1	3.22	0.19	35.7	15.7	29.8
159	220.8	1.021	71.0	5.8	7.02	18.023	38.350	31.439	51.4	20.0	45.6	14.2	3.22	0.19	35.7	15.7	29.9
160	222.1	1.027	70.9	5.7	7.03	18.135	38.579	31.583	51.6	20.0	45.8	14.3	3.22	0.18	35.8	15.8	30.0
161	223.3	1.033	70.9	5.7	7.04	18.248	38.779	31.703	51.7	20.0	46.0	14.3	3.21	0.18	35.9	15.9	30.2
162	224.4	1.039	70.8	5.6	7.05	18.361	38.965	31.811	51.8	20.0	46.2	14.4	3.21	0.18	35.9	15.9	30.3
163	225.8	1.045	70.7	5.5	7.06	18.473	39.208	31.965	52.0	20.0	46.5	14.5	3.20	0.17	36.0	16.0	30.5
164	226.7	1.051	70.5	5.3	7.07	18.586	39.365	32.049	52.0	20.0	46.7	14.7	3.19	0.17	36.0	16.0	30.7
165	227.8	1.057	70.6	5.4	7.08	18.699	39.565	32.167	52.2	20.0	46.7	14.6	3.21	0.17	36.1	16.1	30.7
166	229.2	1.063	70.5	5.3	7.09	18.811	39.808	32.319	52.3	20.0	47.1	14.7	3.19	0.16	36.2	16.2	30.9
167	229.9	1.066	70.4	5.2	7.10	18.863	39.922	32.391	52.4	20.0	47.2	14.8	3.19	0.16	36.2	16.2	31.0

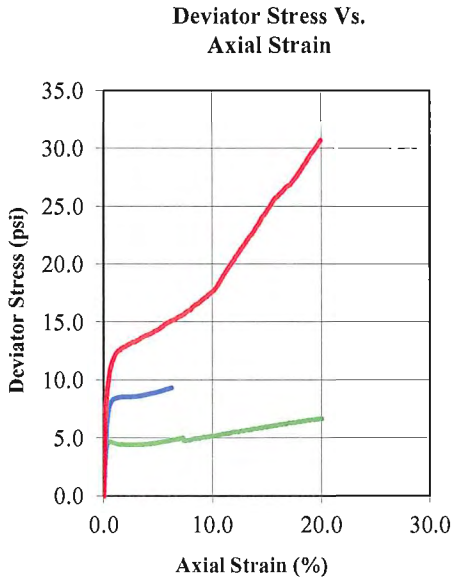


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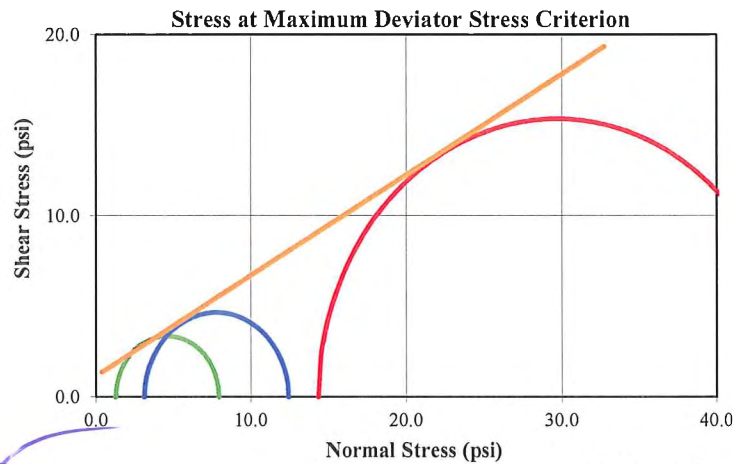
Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME : I-85/I-385 Interchange	SAMPLE NO. : Bag #2
PROJECT NO. : 08195-01	SAMPLE DEPTH : 10.0' to 35.0'
PROJECT LOCATION : B-56	SAMPLE TYPE : Remolded
BORING NUMBER : B-56	DESCRIPTION : White & Tan Silty Sand
REMARKS :	TEST TYPE : Consolidated Undrained



Initial	Specimen			
	A	B	C	D
Water Content (%)	15.1	14.7	15.0	
Dry Density (pcf)	105.5	105.0	105.4	
Saturation (%)	70.70	67.63	69.85	
Void Ratio	0.564	0.572	0.566	
Diameter (in)	2.802	2.800	2.805	
Height (in)	5.621	5.647	5.617	
Specific Gravity	2.65	2.65	2.65	
Liquid Limit	34	34	34	
Plastic Limit	24	24	24	
After Consolidation	A	B	C	D
B-Value	0.95	1.00	0.98	
Water Content (%)	21.6	20.8	18.9	
Dry Density (pcf)	105.54	105.39	105.60	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.568	0.570	0.567	
Effective Stress (psi)	5.0	10.0	20.0	
Back Press. (psi)	71.5	78.4	62.5	
Rate of Strain	0.002	0.002	0.002	

Maximum Deviator Stress Criterion	After Shear	A	B	C	D
C (psi)	0.0	σ'_1 at Failure (psi)	7.93	12.43	45.03
ϕ (deg)	28.9	σ'_3 at Failure (psi)	1.23	3.09	14.35
C' (psi)	1.2				
ϕ' (deg)	29.0				



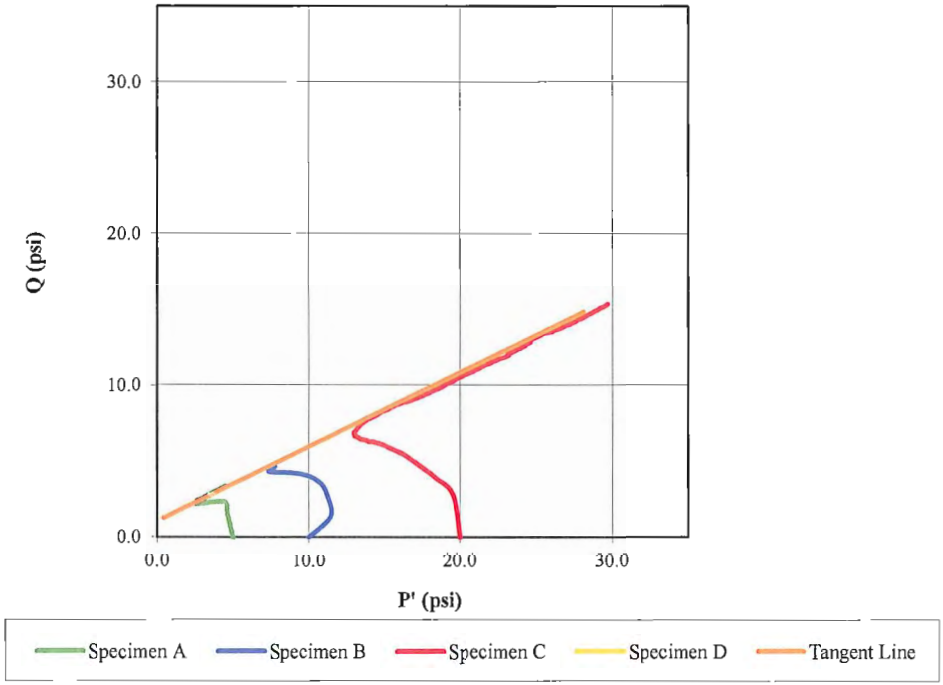
Tested By: [Signature]
 Date: 12-11-12

Approved By: SKB
 Date: 12-11-12

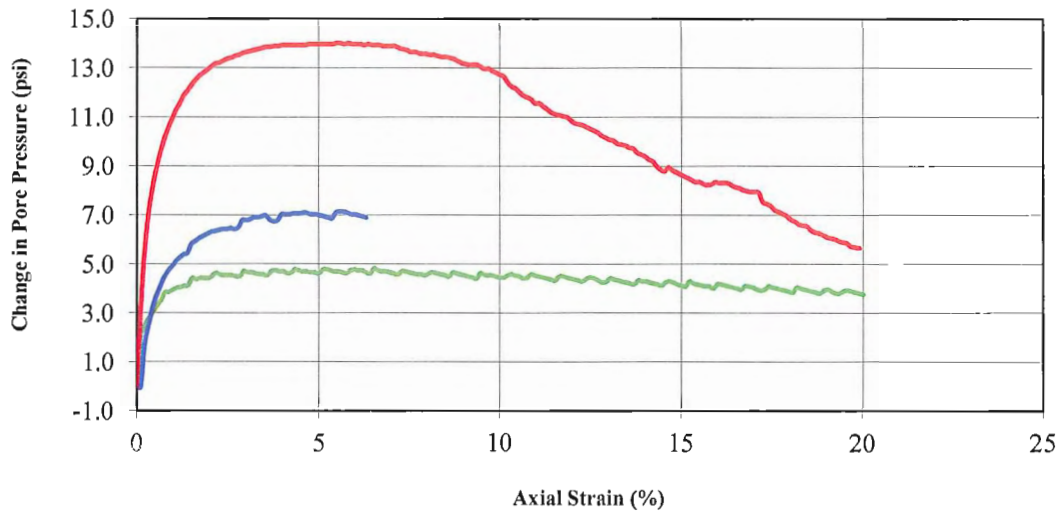


Consolidated Undrained Triaxial Test (ASTM D4767)

Stress Paths (Effective)
($a = 1.1$ $\alpha = 26.0$)



Change in Pore Pressure vs. Axial Strain





File Location
B-56 Bag 2 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: Bag #2
Sample Description: White & Tan Silty Sand
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 34.000
PL: 24.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.802	2.803	
Height (in)	5.621	5.616	
Weight (grams)	1105.70		1167.40
Moisture (%)	15.14		21.57
Dry Density (pcf)	105.54	105.54	
Saturation (%)	70.70	100.00	
Void Ratio	0.564	0.568	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 76.500
Effective Confining Stress (psi): 5.0
Corrected Peak Deviator Stress (psi): 6.702 at reading number: 184

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	0.0	0.000	71.5	0.0	6.17	0.000	0.000	0.000	5.0	5.0	5.0	5.0	1.00	0.00	5.0	0.0	5.0
1	20.4	0.007	73.5	2.0	6.18	0.109	3.304	3.301	8.3	5.0	6.3	3.0	2.11	0.62	6.7	1.7	4.6
2	25.7	0.013	74.0	2.5	6.19	0.217	4.170	4.161	9.2	5.0	6.7	2.5	2.65	0.60	7.1	2.1	4.6
3	28.4	0.019	74.3	2.8	6.19	0.326	4.597	4.582	9.6	5.0	6.8	2.2	3.05	0.60	7.3	2.3	4.5
4	29.1	0.025	74.5	3.0	6.20	0.435	4.717	4.696	9.7	5.0	6.7	2.0	3.35	0.64	7.3	2.3	4.3
5	29.0	0.031	74.8	3.3	6.21	0.543	4.703	4.678	9.7	5.0	6.4	1.7	3.73	0.70	7.3	2.3	4.1
6	29.0	0.037	75.0	3.5	6.21	0.652	4.703	4.673	9.7	5.0	6.2	1.5	4.09	0.75	7.3	2.3	3.8
7	28.8	0.043	75.3	3.8	6.22	0.761	4.663	4.628	9.6	5.0	5.8	1.2	4.90	0.82	7.3	2.3	3.5
8	28.7	0.049	75.4	3.9	6.23	0.870	4.650	4.609	9.6	5.0	5.8	1.1	5.02	0.84	7.3	2.3	3.5
9	28.5	0.055	75.4	3.9	6.23	0.978	4.623	4.578	9.6	5.0	5.6	1.1	5.30	0.86	7.3	2.3	3.4
10	28.4	0.062	75.5	4.0	6.24	1.087	4.597	4.547	9.5	5.0	5.5	1.0	5.62	0.88	7.3	2.3	3.3
11	28.3	0.068	75.6	4.1	6.25	1.196	4.583	4.528	9.5	5.0	5.5	0.9	5.79	0.90	7.3	2.3	3.2
12	28.1	0.074	75.6	4.1	6.25	1.304	4.557	4.497	9.5	5.0	5.4	0.9	5.97	0.91	7.2	2.2	3.2
13	28.0	0.080	75.6	4.1	6.26	1.413	4.530	4.466	9.5	5.0	5.3	0.9	6.17	0.93	7.2	2.2	3.1
14	27.9	0.086	75.9	4.4	6.27	1.522	4.517	4.448	9.4	5.0	5.0	0.6	8.66	0.99	7.2	2.2	2.8
15	28.0	0.092	75.9	4.4	6.27	1.630	4.530	4.456	9.5	5.0	5.1	0.6	8.17	0.98	7.2	2.2	2.8
16	28.0	0.098	75.9	4.4	6.28	1.739	4.530	4.451	9.5	5.0	5.0	0.6	8.66	0.99	7.2	2.2	2.8
17	28.0	0.104	75.9	4.4	6.29	1.848	4.530	4.446	9.4	5.0	5.0	0.6	8.66	0.99	7.2	2.2	2.8
18	27.9	0.110	75.9	4.4	6.29	1.957	4.517	4.428	9.4	5.0	5.0	0.6	8.62	1.00	7.2	2.2	2.8



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	27.9	0.116	76.0	4.5	6.30	2.065	4.517	4.423	9.4	5.0	4.9	0.5	9.85	1.02	7.2	2.2	2.7
20	27.9	0.123	76.1	4.6	6.31	2.174	4.517	4.418	9.4	5.0	4.8	0.4	12.66	1.05	7.2	2.2	2.6
21	28.0	0.129	76.1	4.6	6.32	2.283	4.530	4.427	9.4	5.0	4.8	0.4	11.56	1.03	7.2	2.2	2.6
22	28.0	0.135	76.0	4.5	6.32	2.391	4.543	4.435	9.4	5.0	4.9	0.5	10.65	1.02	7.2	2.2	2.7
23	28.0	0.141	76.0	4.5	6.33	2.500	4.543	4.430	9.4	5.0	4.9	0.5	10.64	1.02	7.2	2.2	2.7
24	28.1	0.147	76.0	4.5	6.34	2.609	4.557	4.438	9.4	5.0	4.9	0.5	10.66	1.02	7.2	2.2	2.7
25	28.0	0.153	76.0	4.5	6.34	2.717	4.543	4.420	9.4	5.0	4.9	0.5	9.84	1.02	7.2	2.2	2.7
26	28.1	0.159	76.0	4.5	6.35	2.826	4.557	4.428	9.4	5.0	4.9	0.5	9.86	1.02	7.2	2.2	2.7
27	28.2	0.165	76.2	4.7	6.36	2.935	4.570	4.436	9.4	5.0	4.7	0.3	15.89	1.06	7.2	2.2	2.5
28	28.3	0.171	76.2	4.7	6.37	3.044	4.583	4.444	9.4	5.0	4.8	0.3	14.13	1.05	7.2	2.2	2.6
29	28.3	0.178	76.2	4.7	6.37	3.152	4.583	4.439	9.4	5.0	4.8	0.3	14.12	1.05	7.2	2.2	2.6
30	28.5	0.184	76.1	4.6	6.38	3.261	4.610	4.460	9.5	5.0	4.8	0.4	12.77	1.04	7.2	2.2	2.6
31	28.4	0.190	76.1	4.6	6.39	3.370	4.597	4.442	9.4	5.0	4.9	0.4	11.60	1.03	7.2	2.2	2.6
32	28.5	0.196	76.1	4.6	6.39	3.478	4.623	4.462	9.5	5.0	4.9	0.4	11.65	1.03	7.2	2.2	2.7
33	28.5	0.202	76.0	4.5	6.40	3.587	4.623	4.457	9.5	5.0	4.9	0.5	10.70	1.02	7.2	2.2	2.7
34	28.7	0.208	76.2	4.7	6.41	3.696	4.650	4.478	9.5	5.0	4.8	0.3	16.03	1.05	7.2	2.2	2.5
35	28.8	0.214	76.2	4.7	6.42	3.804	4.663	4.486	9.5	5.0	4.7	0.3	18.42	1.06	7.2	2.2	2.5
36	28.8	0.220	76.2	4.7	6.42	3.913	4.663	4.481	9.5	5.0	4.8	0.3	16.04	1.05	7.2	2.2	2.5
37	28.9	0.226	76.2	4.7	6.43	4.022	4.690	4.501	9.5	5.0	4.8	0.3	16.11	1.04	7.3	2.3	2.5
38	29.0	0.232	76.1	4.6	6.44	4.130	4.703	4.509	9.5	5.0	4.9	0.4	12.90	1.02	7.3	2.3	2.6
39	29.1	0.239	76.2	4.7	6.45	4.239	4.717	4.517	9.5	5.0	4.9	0.3	14.35	1.03	7.3	2.3	2.6
40	29.3	0.245	76.3	4.8	6.45	4.348	4.743	4.537	9.5	5.0	4.8	0.2	21.89	1.05	7.3	2.3	2.5
41	29.4	0.251	76.2	4.7	6.46	4.457	4.756	4.545	9.5	5.0	4.8	0.3	18.64	1.04	7.3	2.3	2.5
42	29.5	0.257	76.2	4.7	6.47	4.565	4.783	4.565	9.6	5.0	4.9	0.3	16.32	1.03	7.3	2.3	2.6
43	29.6	0.263	76.2	4.7	6.47	4.674	4.796	4.572	9.6	5.0	4.9	0.3	16.34	1.03	7.3	2.3	2.6
44	29.7	0.269	76.2	4.7	6.48	4.783	4.810	4.580	9.6	5.0	4.9	0.3	14.53	1.02	7.3	2.3	2.6
45	29.8	0.275	76.2	4.7	6.49	4.891	4.836	4.600	9.6	5.0	4.9	0.3	14.59	1.01	7.3	2.3	2.6
46	30.0	0.281	76.1	4.6	6.50	5.000	4.863	4.620	9.6	5.0	5.0	0.4	13.20	1.00	7.3	2.3	2.7
47	30.2	0.287	76.3	4.8	6.50	5.109	4.890	4.640	9.6	5.0	4.9	0.2	22.37	1.03	7.3	2.3	2.5
48	30.3	0.293	76.3	4.8	6.51	5.217	4.903	4.647	9.6	5.0	4.9	0.2	22.40	1.03	7.3	2.3	2.5
49	30.4	0.300	76.2	4.7	6.52	5.326	4.930	4.667	9.7	5.0	4.9	0.3	19.12	1.02	7.3	2.3	2.6
50	30.7	0.306	76.2	4.7	6.53	5.435	4.970	4.700	9.7	5.0	5.0	0.3	16.77	1.00	7.3	2.3	2.6
51	30.8	0.312	76.2	4.7	6.53	5.544	4.983	4.707	9.7	5.0	5.0	0.3	16.80	1.00	7.4	2.4	2.7
52	30.9	0.318	76.2	4.7	6.54	5.652	5.010	4.726	9.7	5.0	5.1	0.3	14.97	0.99	7.4	2.4	2.7
53	30.9	0.324	76.1	4.6	6.55	5.761	5.010	4.721	9.7	5.0	5.1	0.4	13.46	0.98	7.4	2.4	2.7
54	31.2	0.330	76.2	4.7	6.56	5.870	5.050	4.753	9.8	5.0	5.0	0.3	19.45	1.00	7.4	2.4	2.6
55	31.3	0.336	76.3	4.8	6.56	5.978	5.076	4.773	9.8	5.0	5.0	0.2	22.98	1.00	7.4	2.4	2.6
56	31.6	0.342	76.2	4.7	6.57	6.087	5.116	4.805	9.8	5.0	5.1	0.3	19.65	0.99	7.4	2.4	2.7
57	31.7	0.348	76.2	4.7	6.58	6.196	5.143	4.824	9.8	5.0	5.1	0.3	19.73	0.98	7.4	2.4	2.7
58	31.9	0.355	76.2	4.7	6.59	6.304	5.170	4.844	9.8	5.0	5.2	0.3	15.31	0.96	7.4	2.4	2.8
59	32.1	0.361	76.1	4.6	6.59	6.413	5.196	4.863	9.9	5.0	5.2	0.4	13.84	0.95	7.4	2.4	2.8



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CONSULTING ENGINEERS

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ ₁ (psi)	σ ₃ (psi)	σ' ₁ (psi)	σ' ₃ (psi)	σ' ₁ /σ' ₃	Abar	P (psi)	Q (psi)	P' (psi)
60	32.2	0.367	76.3	4.8	6.60	6.522	5.209	4.870	9.9	5.0	5.0	0.2	28.55	0.99	7.4	2.4	2.6
61	32.4	0.373	76.2	4.7	6.61	6.630	5.249	4.901	9.9	5.0	5.2	0.3	20.03	0.97	7.5	2.5	2.7
62	32.4	0.379	76.2	4.7	6.62	6.739	5.249	4.896	9.9	5.0	5.2	0.3	17.43	0.96	7.4	2.4	2.7
63	32.7	0.385	76.2	4.7	6.63	6.848	5.303	4.940	9.9	5.0	5.2	0.3	17.58	0.95	7.5	2.5	2.8
64	32.9	0.391	76.2	4.7	6.63	6.957	5.329	4.959	10.0	5.0	5.3	0.3	15.65	0.94	7.5	2.5	2.8
65	33.1	0.397	76.1	4.6	6.64	7.065	5.356	4.978	10.0	5.0	5.4	0.4	14.14	0.93	7.5	2.5	2.9
66	33.3	0.403	76.1	4.6	6.65	7.174	5.396	5.009	10.0	5.0	5.4	0.4	12.95	0.91	7.5	2.5	2.9
67	33.5	0.409	76.2	4.7	6.66	7.283	5.423	5.028	10.0	5.0	5.3	0.3	17.87	0.94	7.5	2.5	2.8
68	33.6	0.416	76.2	4.7	6.66	7.391	5.449	4.793	9.8	5.0	5.1	0.3	17.09	0.98	7.4	2.4	2.7
69	33.9	0.422	76.2	4.7	6.67	7.500	5.489	4.821	9.8	5.0	5.2	0.3	15.25	0.97	7.4	2.4	2.7
70	34.0	0.428	76.1	4.6	6.68	7.609	5.503	4.823	9.8	5.0	5.2	0.4	13.73	0.96	7.4	2.4	2.8
71	34.0	0.434	76.1	4.6	6.69	7.717	5.516	4.826	9.8	5.0	5.2	0.4	12.51	0.95	7.4	2.4	2.8
72	34.2	0.440	76.1	4.6	6.70	7.826	5.543	4.841	9.8	5.0	5.3	0.4	12.55	0.95	7.4	2.4	2.8
73	34.4	0.446	76.0	4.5	6.70	7.935	5.569	4.856	9.9	5.0	5.3	0.5	11.56	0.94	7.4	2.4	2.9
74	34.5	0.452	76.1	4.6	6.71	8.044	5.596	4.870	9.9	5.0	5.2	0.4	13.86	0.95	7.4	2.4	2.8
75	34.9	0.458	76.2	4.7	6.72	8.152	5.662	4.922	9.9	5.0	5.3	0.3	15.54	0.95	7.5	2.5	2.8
76	35.0	0.464	76.1	4.6	6.73	8.261	5.676	4.924	9.9	5.0	5.3	0.4	14.00	0.94	7.5	2.5	2.8
77	35.3	0.471	76.1	4.6	6.74	8.370	5.716	4.951	10.0	5.0	5.4	0.4	12.81	0.93	7.5	2.5	2.9
78	35.4	0.477	76.0	4.5	6.74	8.478	5.742	4.965	10.0	5.0	5.4	0.5	11.80	0.91	7.5	2.5	2.9
79	35.6	0.483	76.0	4.5	6.75	8.587	5.769	4.980	10.0	5.0	5.5	0.5	10.96	0.90	7.5	2.5	3.0
80	35.8	0.489	76.2	4.7	6.76	8.696	5.796	4.994	10.0	5.0	5.3	0.3	15.76	0.93	7.5	2.5	2.8
81	35.9	0.495	76.1	4.6	6.77	8.804	5.822	5.008	10.0	5.0	5.4	0.4	14.22	0.92	7.5	2.5	2.9
82	36.1	0.501	76.1	4.6	6.78	8.913	5.849	5.022	10.0	5.0	5.4	0.4	12.98	0.91	7.5	2.5	2.9
83	36.4	0.507	76.0	4.5	6.78	9.022	5.902	5.061	10.1	5.0	5.5	0.5	12.01	0.90	7.5	2.5	3.0
84	36.5	0.513	76.0	4.5	6.79	9.131	5.916	5.063	10.1	5.0	5.6	0.5	11.13	0.89	7.5	2.5	3.0
85	36.8	0.519	76.0	4.5	6.80	9.239	5.969	5.101	10.1	5.0	5.6	0.5	10.44	0.87	7.6	2.6	3.1
86	36.8	0.525	75.9	4.4	6.81	9.348	5.969	5.091	10.1	5.0	5.7	0.6	9.77	0.87	7.5	2.5	3.1
87	37.1	0.532	76.1	4.6	6.82	9.457	6.009	5.117	10.1	5.0	5.5	0.4	14.51	0.90	7.6	2.6	2.9
88	37.3	0.538	76.1	4.6	6.82	9.565	6.036	5.131	10.1	5.0	5.5	0.4	13.24	0.89	7.6	2.6	3.0
89	37.4	0.544	76.0	4.5	6.83	9.674	6.062	5.144	10.1	5.0	5.6	0.5	12.19	0.88	7.6	2.6	3.0
90	37.7	0.550	76.0	4.5	6.84	9.783	6.102	5.170	10.2	5.0	5.6	0.5	12.25	0.88	7.6	2.6	3.0
91	37.7	0.556	76.0	4.5	6.85	9.891	6.115	5.172	10.2	5.0	5.7	0.5	11.34	0.87	7.6	2.6	3.1
92	38.0	0.562	76.0	4.5	6.86	10.000	6.155	5.197	10.2	5.0	5.7	0.5	10.62	0.86	7.6	2.6	3.1
93	37.9	0.568	76.0	4.5	6.87	10.109	6.142	5.175	10.2	5.0	5.7	0.5	10.58	0.86	7.6	2.6	3.1
94	38.2	0.574	76.0	4.5	6.87	10.217	6.195	5.212	10.2	5.0	5.7	0.5	12.34	0.87	7.6	2.6	3.1
95	38.6	0.580	76.1	4.6	6.88	10.326	6.262	5.262	10.3	5.0	5.7	0.4	13.55	0.87	7.6	2.6	3.1
96	38.6	0.587	76.0	4.5	6.89	10.435	6.262	5.251	10.3	5.0	5.7	0.5	12.43	0.86	7.6	2.6	3.1
97	39.0	0.593	76.0	4.5	6.90	10.544	6.315	5.288	10.3	5.0	5.8	0.5	11.58	0.85	7.6	2.6	3.1
98	39.1	0.599	75.9	4.4	6.91	10.652	6.329	5.290	10.3	5.0	5.9	0.6	10.11	0.84	7.6	2.6	3.2
99	39.1	0.605	76.0	4.5	6.92	10.761	6.342	5.291	10.3	5.0	5.8	0.5	10.79	0.84	7.6	2.6	3.2
100	39.6	0.611	76.1	4.6	6.92	10.870	6.409	5.340	10.3	5.0	5.8	0.4	13.74	0.86	7.7	2.7	3.1



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	39.8	0.617	76.0	4.5	6.93	10.978	6.449	5.365	10.4	5.0	5.8	0.5	12.67	0.85	7.7	2.7	3.1
102	39.9	0.623	76.0	4.5	6.94	11.087	6.462	5.366	10.4	5.0	5.9	0.5	11.73	0.84	7.7	2.7	3.2
103	40.1	0.629	76.0	4.5	6.95	11.196	6.502	5.391	10.4	5.0	5.9	0.5	10.97	0.83	7.7	2.7	3.2
104	40.2	0.635	75.9	4.4	6.96	11.304	6.515	5.392	10.4	5.0	6.0	0.6	10.28	0.82	7.7	2.7	3.3
105	40.5	0.641	75.9	4.4	6.97	11.413	6.555	5.416	10.4	5.0	6.0	0.6	9.72	0.81	7.7	2.7	3.3
106	40.5	0.648	75.8	4.3	6.98	11.522	6.555	5.405	10.4	5.0	6.1	0.7	9.17	0.80	7.7	2.7	3.4
107	40.8	0.654	76.0	4.5	6.98	11.631	6.608	5.442	10.4	5.0	5.9	0.5	11.88	0.83	7.7	2.7	3.2
108	41.0	0.660	76.0	4.5	6.99	11.739	6.648	5.466	10.5	5.0	6.0	0.5	11.93	0.82	7.7	2.7	3.2
109	41.4	0.666	76.0	4.5	7.00	11.848	6.715	5.514	10.5	5.0	6.1	0.5	11.20	0.81	7.8	2.8	3.3
110	41.6	0.672	75.9	4.4	7.01	11.957	6.742	5.526	10.5	5.0	6.1	0.6	10.51	0.80	7.8	2.8	3.3
111	41.7	0.678	75.9	4.4	7.02	12.065	6.755	5.527	10.5	5.0	6.1	0.6	9.90	0.79	7.8	2.8	3.4
112	41.8	0.684	75.8	4.3	7.03	12.174	6.768	5.527	10.5	5.0	6.2	0.7	9.35	0.78	7.8	2.8	3.4
113	42.0	0.690	75.8	4.3	7.04	12.283	6.808	5.551	10.6	5.0	6.3	0.7	8.91	0.77	7.8	2.8	3.5
114	42.3	0.696	75.9	4.4	7.04	12.391	6.848	5.575	10.6	5.0	6.2	0.6	10.60	0.79	7.8	2.8	3.4
115	42.5	0.703	76.0	4.5	7.05	12.500	6.888	5.599	10.6	5.0	6.1	0.5	11.36	0.80	7.8	2.8	3.3
116	42.8	0.709	75.9	4.4	7.06	12.609	6.928	5.623	10.6	5.0	6.2	0.6	10.68	0.79	7.8	2.8	3.4
117	42.8	0.715	75.8	4.3	7.07	12.717	6.928	5.612	10.6	5.0	6.3	0.7	9.48	0.77	7.8	2.8	3.5
118	43.1	0.721	75.8	4.3	7.08	12.826	6.981	5.647	10.6	5.0	6.4	0.7	8.61	0.75	7.8	2.8	3.6
119	43.3	0.727	75.8	4.3	7.09	12.935	7.008	5.659	10.7	5.0	6.4	0.7	9.06	0.76	7.8	2.8	3.5
120	43.7	0.733	75.9	4.4	7.10	13.044	7.075	5.705	10.7	5.0	6.3	0.6	10.82	0.77	7.9	2.9	3.4
121	43.7	0.739	75.9	4.4	7.11	13.152	7.075	5.694	10.7	5.0	6.3	0.6	10.17	0.77	7.8	2.8	3.5
122	43.9	0.745	75.8	4.3	7.12	13.261	7.115	5.717	10.7	5.0	6.4	0.7	9.64	0.76	7.9	2.9	3.5
123	44.0	0.751	75.8	4.3	7.12	13.370	7.128	5.717	10.7	5.0	6.4	0.7	9.14	0.75	7.9	2.9	3.6
124	44.2	0.757	75.8	4.3	7.13	13.478	7.168	5.740	10.7	5.0	6.5	0.7	8.73	0.74	7.9	2.9	3.6
125	44.5	0.764	75.7	4.2	7.14	13.587	7.208	5.763	10.8	5.0	6.5	0.8	8.36	0.73	7.9	2.9	3.7
126	44.8	0.770	75.7	4.2	7.15	13.696	7.261	5.798	10.8	5.0	6.6	0.8	8.04	0.72	7.9	2.9	3.7
127	45.0	0.776	75.8	4.3	7.16	13.804	7.288	5.809	10.8	5.0	6.5	0.7	9.78	0.75	7.9	2.9	3.6
128	45.1	0.782	75.8	4.3	7.17	13.913	7.315	5.820	10.8	5.0	6.5	0.7	9.29	0.74	7.9	2.9	3.6
129	45.2	0.788	75.8	4.3	7.18	14.022	7.328	5.820	10.8	5.0	6.5	0.7	9.29	0.74	7.9	2.9	3.6
130	45.5	0.794	75.8	4.3	7.19	14.131	7.368	5.843	10.8	5.0	6.6	0.7	8.87	0.73	7.9	2.9	3.7
131	45.8	0.800	75.7	4.2	7.20	14.239	7.421	5.877	10.9	5.0	6.7	0.8	8.51	0.72	7.9	2.9	3.7
132	45.9	0.806	75.7	4.2	7.21	14.348	7.434	5.876	10.9	5.0	6.7	0.8	8.14	0.71	7.9	2.9	3.8
133	46.0	0.812	75.6	4.1	7.21	14.457	7.461	5.887	10.9	5.0	6.8	0.9	7.82	0.70	7.9	2.9	3.8
134	46.3	0.819	75.8	4.3	7.22	14.565	7.501	5.910	10.9	5.0	6.7	0.7	8.96	0.72	8.0	3.0	3.7
135	46.5	0.825	75.8	4.3	7.23	14.674	7.528	5.921	10.9	5.0	6.6	0.7	9.43	0.73	8.0	3.0	3.7
136	46.8	0.831	75.8	4.3	7.24	14.783	7.581	5.954	11.0	5.0	6.7	0.7	9.02	0.72	8.0	3.0	3.7
137	46.9	0.837	75.7	4.2	7.25	14.891	7.594	5.953	11.0	5.0	6.8	0.8	8.23	0.70	8.0	3.0	3.8
138	47.1	0.843	75.6	4.1	7.26	15.000	7.634	5.975	11.0	5.0	6.8	0.9	7.92	0.69	8.0	3.0	3.9
139	47.3	0.849	75.6	4.1	7.27	15.109	7.661	5.986	11.0	5.0	6.9	0.9	7.62	0.68	8.0	3.0	3.9
140	47.4	0.855	75.8	4.3	7.28	15.218	7.688	5.997	11.0	5.0	6.7	0.7	9.54	0.72	8.0	3.0	3.7
141	47.9	0.861	75.7	4.2	7.29	15.326	7.754	6.041	11.0	5.0	6.8	0.8	8.72	0.70	8.0	3.0	3.8



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	48.1	0.867	75.7	4.2	7.30	15.435	7.794	6.063	11.1	5.0	6.9	0.8	8.36	0.69	8.0	3.0	3.9
143	48.2	0.873	75.6	4.1	7.31	15.544	7.808	6.062	11.1	5.0	6.9	0.9	8.02	0.68	8.0	3.0	3.9
144	48.4	0.880	75.6	4.1	7.32	15.652	7.848	6.083	11.1	5.0	7.0	0.9	7.73	0.67	8.0	3.0	3.9
145	48.6	0.886	75.6	4.1	7.33	15.761	7.874	6.093	11.1	5.0	7.0	0.9	7.74	0.67	8.0	3.0	4.0
146	48.9	0.892	75.5	4.0	7.34	15.870	7.927	6.126	11.1	5.0	7.1	1.0	7.22	0.66	8.1	3.1	4.0
147	49.1	0.898	75.7	4.2	7.35	15.978	7.954	6.136	11.1	5.0	7.0	0.8	8.45	0.68	8.1	3.1	3.9
148	49.4	0.904	75.7	4.2	7.36	16.087	8.007	6.168	11.2	5.0	7.0	0.8	8.49	0.68	8.1	3.1	3.9
149	49.6	0.910	75.6	4.1	7.36	16.196	8.034	6.178	11.2	5.0	7.0	0.9	8.15	0.67	8.1	3.1	4.0
150	49.7	0.916	75.6	4.1	7.37	16.304	8.047	6.177	11.2	5.0	7.1	0.9	7.83	0.66	8.1	3.1	4.0
151	50.0	0.922	75.6	4.1	7.38	16.413	8.101	6.209	11.2	5.0	7.2	0.9	7.57	0.65	8.1	3.1	4.0
152	50.1	0.928	75.5	4.0	7.39	16.522	8.114	6.208	11.2	5.0	7.2	1.0	7.30	0.65	8.1	3.1	4.1
153	50.3	0.934	75.5	4.0	7.40	16.631	8.154	6.228	11.2	5.0	7.3	1.0	7.07	0.64	8.1	3.1	4.1
154	50.4	0.941	75.6	4.1	7.41	16.739	8.167	6.227	11.2	5.0	7.1	0.9	7.89	0.66	8.1	3.1	4.0
155	51.0	0.947	75.6	4.1	7.42	16.848	8.261	6.292	11.3	5.0	7.2	0.9	7.96	0.65	8.1	3.1	4.0
156	51.1	0.953	75.6	4.1	7.43	16.957	8.287	6.301	11.3	5.0	7.2	0.9	7.67	0.64	8.2	3.2	4.1
157	51.3	0.959	75.5	4.0	7.44	17.065	8.314	6.311	11.3	5.0	7.3	1.0	7.16	0.63	8.2	3.2	4.2
158	51.5	0.965	75.4	3.9	7.45	17.174	8.340	6.320	11.3	5.0	7.4	1.1	6.93	0.62	8.2	3.2	4.2
159	51.7	0.971	75.5	4.0	7.46	17.283	8.380	6.340	11.3	5.0	7.4	1.0	7.18	0.63	8.2	3.2	4.2
160	51.8	0.977	75.6	4.1	7.47	17.391	8.394	6.338	11.3	5.0	7.2	0.9	8.01	0.65	8.2	3.2	4.1
161	52.1	0.983	75.6	4.1	7.48	17.500	8.434	6.359	11.4	5.0	7.3	0.9	7.73	0.64	8.2	3.2	4.1
162	52.3	0.989	75.5	4.0	7.49	17.609	8.474	6.379	11.4	5.0	7.4	1.0	7.48	0.63	8.2	3.2	4.2
163	52.5	0.996	75.5	4.0	7.50	17.718	8.500	6.388	11.4	5.0	7.4	1.0	7.23	0.62	8.2	3.2	4.2
164	52.6	1.002	75.4	3.9	7.51	17.826	8.527	6.396	11.4	5.0	7.5	1.1	7.00	0.62	8.2	3.2	4.3
165	53.0	1.008	75.4	3.9	7.52	17.935	8.580	6.427	11.4	5.0	7.5	1.1	6.81	0.61	8.2	3.2	4.3
166	53.0	1.014	75.4	3.9	7.53	18.044	8.594	6.425	11.4	5.0	7.6	1.1	6.60	0.60	8.2	3.2	4.4
167	53.2	1.020	75.6	4.1	7.54	18.152	8.620	6.434	11.4	5.0	7.4	0.9	7.81	0.63	8.2	3.2	4.2
168	53.5	1.026	75.5	4.0	7.55	18.261	8.674	6.464	11.5	5.0	7.4	1.0	7.56	0.62	8.2	3.2	4.2
169	53.8	1.032	75.5	4.0	7.56	18.370	8.714	6.484	11.5	5.0	7.5	1.0	7.32	0.61	8.2	3.2	4.3
170	54.1	1.038	75.4	3.9	7.57	18.478	8.767	6.514	11.5	5.0	7.6	1.1	7.11	0.60	8.3	3.3	4.3
171	54.4	1.044	75.4	3.9	7.58	18.587	8.807	6.533	11.5	5.0	7.6	1.1	6.91	0.60	8.3	3.3	4.4
172	54.4	1.050	75.4	3.9	7.59	18.696	8.820	6.531	11.5	5.0	7.7	1.1	6.70	0.59	8.3	3.3	4.4
173	54.8	1.057	75.3	3.8	7.60	18.804	8.873	6.561	11.6	5.0	7.7	1.2	6.53	0.58	8.3	3.3	4.5
174	54.8	1.063	75.4	3.9	7.61	18.913	8.873	6.547	11.5	5.0	7.6	1.1	7.14	0.60	8.3	3.3	4.3
175	55.1	1.069	75.5	4.0	7.62	19.022	8.927	6.577	11.6	5.0	7.6	1.0	7.42	0.60	8.3	3.3	4.3
176	55.3	1.075	75.4	3.9	7.63	19.131	8.967	6.596	11.6	5.0	7.7	1.1	6.96	0.59	8.3	3.3	4.4
177	55.4	1.081	75.3	3.8	7.64	19.239	8.980	6.593	11.6	5.0	7.8	1.2	6.56	0.58	8.3	3.3	4.5
178	55.7	1.087	75.3	3.8	7.65	19.348	9.020	6.612	11.6	5.0	7.8	1.2	6.57	0.58	8.3	3.3	4.5
179	55.8	1.093	75.4	3.9	7.66	19.457	9.047	6.620	11.6	5.0	7.7	1.1	6.99	0.59	8.3	3.3	4.4
180	56.1	1.099	75.4	3.9	7.67	19.565	9.087	6.639	11.6	5.0	7.7	1.1	7.23	0.59	8.3	3.3	4.4
181	56.5	1.105	75.4	3.9	7.68	19.674	9.153	6.679	11.7	5.0	7.8	1.1	7.04	0.58	8.3	3.3	4.4
182	56.7	1.112	75.4	3.9	7.69	19.783	9.180	6.686	11.7	5.0	7.8	1.1	6.83	0.58	8.3	3.3	4.5



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	56.7	1.118	75.3	3.8	7.70	19.891	9.193	6.683	11.7	5.0	7.9	1.2	6.63	0.57	8.3	3.3	4.5
184	57.0	1.124	75.3	3.8	7.71	20.000	9.233	6.702	11.7	5.0	7.9	1.2	6.46	0.56	8.4	3.4	4.6
185	57.0	1.124	75.3	3.8	7.71	20.000	9.233	6.702	11.7	5.0	7.9	1.2	6.46	0.56	8.4	3.4	4.6



File Location
B-56 Bag 2 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: Bag #2
Sample Description: White & Tan Silty Sand
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.650001
LL: 34.000
PL: 24.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.800	2.807	
Height (in)	5.647	5.599	
Weight (grams)	1099.30		1157.70
Moisture (%)	14.69		20.78
Dry Density (pcf)	105.00	105.39	
Saturation (%)	67.63	100.00	
Void Ratio	0.572	0.570	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 88.400
Effective Confining Stress (psi): 10.0
Corrected Peak Deviator Stress (psi): 9.335 at reading number: 59

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	1.2	0.000	78.4	0.0	6.19	0.000	0.000	0.000	10.0	10.0	10.0	10.0	1.00	0.00	10.0	0.0	10.0
1	18.6	0.006	78.4	0.0	6.20	0.107	2.811	2.808	12.8	10.0	12.8	10.0	1.28	-0.01	11.4	1.4	11.4
2	36.3	0.012	80.0	1.6	6.20	0.215	5.669	5.657	15.7	10.0	14.0	8.4	1.68	0.29	12.8	2.8	11.2
3	43.4	0.018	80.9	2.5	6.21	0.322	6.826	6.804	16.8	10.0	14.3	7.5	1.91	0.37	13.4	3.4	10.9
4	47.6	0.024	81.6	3.2	6.22	0.429	7.504	7.471	17.5	10.0	14.3	6.8	2.09	0.42	13.7	3.7	10.6
5	50.0	0.030	82.1	3.7	6.22	0.536	7.889	7.847	17.8	10.0	14.2	6.3	2.24	0.47	13.9	3.9	10.2
6	51.7	0.036	82.5	4.1	6.23	0.644	8.155	8.103	18.1	10.0	14.0	5.9	2.37	0.51	14.1	4.1	10.0
7	52.5	0.042	82.9	4.5	6.24	0.751	8.288	8.226	18.2	10.0	13.8	5.5	2.48	0.54	14.1	4.1	9.7
8	53.2	0.048	83.1	4.7	6.24	0.858	8.408	8.336	18.3	10.0	13.6	5.3	2.57	0.56	14.2	4.2	9.5
9	53.6	0.055	83.3	4.9	6.25	0.965	8.461	8.379	18.4	10.0	13.5	5.1	2.64	0.58	14.2	4.2	9.3
10	53.9	0.061	83.5	5.1	6.26	1.073	8.514	8.423	18.4	10.0	13.3	4.9	2.72	0.61	14.2	4.2	9.1
11	54.1	0.067	83.7	5.3	6.26	1.180	8.541	8.440	18.4	10.0	13.2	4.7	2.78	0.62	14.2	4.2	9.0
12	54.3	0.073	83.8	5.4	6.27	1.287	8.580	8.470	18.5	10.0	13.1	4.6	2.83	0.64	14.2	4.2	8.9
13	54.4	0.079	83.9	5.5	6.28	1.394	8.594	8.474	18.5	10.0	13.0	4.5	2.87	0.64	14.2	4.2	8.8
14	54.7	0.085	84.2	5.8	6.28	1.502	8.647	8.517	18.5	10.0	12.7	4.2	3.04	0.68	14.3	4.3	8.4
15	54.8	0.091	84.3	5.9	6.29	1.609	8.660	8.521	18.5	10.0	12.6	4.1	3.10	0.70	14.3	4.3	8.3
16	54.9	0.097	84.5	6.1	6.30	1.716	8.674	8.525	18.5	10.0	12.5	3.9	3.17	0.71	14.3	4.3	8.2
17	55.0	0.103	84.5	6.1	6.30	1.823	8.700	8.542	18.5	10.0	12.4	3.9	3.22	0.72	14.3	4.3	8.1
18	55.0	0.109	84.6	6.2	6.31	1.931	8.700	8.532	18.5	10.0	12.3	3.8	3.26	0.73	14.3	4.3	8.0



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	55.1	0.115	84.7	6.3	6.32	2.038	8.713	8.536	18.5	10.0	12.2	3.7	3.31	0.74	14.3	4.3	8.0
20	55.2	0.121	84.7	6.3	6.32	2.145	8.727	8.540	18.5	10.0	12.2	3.7	3.34	0.74	14.3	4.3	7.9
21	55.4	0.127	84.8	6.4	6.33	2.252	8.753	8.556	18.6	10.0	12.2	3.6	3.37	0.75	14.3	4.3	7.9
22	55.4	0.133	84.8	6.4	6.34	2.360	8.753	8.547	18.5	10.0	12.1	3.6	3.39	0.75	14.3	4.3	7.8
23	55.4	0.139	84.8	6.4	6.35	2.467	8.753	8.537	18.5	10.0	12.1	3.6	3.39	0.75	14.3	4.3	7.8
24	55.5	0.145	84.9	6.5	6.35	2.574	8.780	8.554	18.6	10.0	12.1	3.5	3.42	0.76	14.3	4.3	7.8
25	55.6	0.151	84.8	6.4	6.36	2.681	8.793	8.557	18.6	10.0	12.1	3.6	3.39	0.75	14.3	4.3	7.9
26	55.6	0.157	84.9	6.5	6.37	2.789	8.793	8.548	18.5	10.0	12.0	3.5	3.45	0.76	14.3	4.3	7.8
27	55.9	0.163	85.2	6.8	6.37	2.896	8.833	8.577	18.6	10.0	11.8	3.2	3.67	0.79	14.3	4.3	7.5
28	56.0	0.169	85.2	6.8	6.38	3.003	8.860	8.594	18.6	10.0	11.8	3.2	3.67	0.79	14.3	4.3	7.5
29	56.2	0.175	85.2	6.8	6.39	3.110	8.886	8.610	18.6	10.0	11.8	3.2	3.71	0.79	14.3	4.3	7.5
30	56.4	0.181	85.3	6.9	6.39	3.218	8.913	8.626	18.6	10.0	11.7	3.1	3.79	0.80	14.3	4.3	7.4
31	56.4	0.187	85.3	6.9	6.40	3.325	8.926	8.629	18.6	10.0	11.7	3.1	3.79	0.80	14.3	4.3	7.4
32	56.6	0.193	85.3	6.9	6.41	3.432	8.953	8.645	18.6	10.0	11.7	3.1	3.83	0.80	14.3	4.3	7.4
33	56.9	0.199	85.4	7.0	6.42	3.539	8.993	8.674	18.7	10.0	11.7	3.0	3.88	0.81	14.3	4.3	7.3
34	57.0	0.205	85.2	6.8	6.42	3.647	9.019	8.690	18.7	10.0	11.9	3.2	3.74	0.79	14.3	4.3	7.5
35	57.1	0.211	85.1	6.7	6.43	3.754	9.033	8.693	18.7	10.0	11.9	3.3	3.67	0.78	14.3	4.3	7.6
36	57.3	0.217	85.2	6.8	6.44	3.861	9.072	8.722	18.7	10.0	11.9	3.2	3.71	0.78	14.4	4.4	7.6
37	57.7	0.223	85.4	7.0	6.44	3.968	9.126	8.763	18.8	10.0	11.7	3.0	3.95	0.80	14.4	4.4	7.4
38	57.8	0.229	85.4	7.0	6.45	4.076	9.152	8.779	18.8	10.0	11.8	3.0	3.95	0.80	14.4	4.4	7.4
39	57.9	0.235	85.4	7.0	6.46	4.183	9.165	8.782	18.8	10.0	11.8	3.0	3.95	0.80	14.4	4.4	7.4
40	58.3	0.241	85.5	7.1	6.47	4.290	9.232	8.836	18.8	10.0	11.8	2.9	4.01	0.80	14.4	4.4	7.4
41	58.4	0.247	85.5	7.1	6.47	4.397	9.245	8.839	18.8	10.0	11.8	2.9	4.01	0.80	14.4	4.4	7.4
42	58.6	0.253	85.5	7.1	6.48	4.505	9.272	8.854	18.9	10.0	11.8	2.9	4.02	0.80	14.4	4.4	7.4
43	58.7	0.259	85.5	7.1	6.49	4.612	9.298	8.870	18.9	10.0	11.8	2.9	4.07	0.80	14.4	4.4	7.3
44	59.1	0.265	85.5	7.1	6.50	4.719	9.352	8.910	18.9	10.0	11.8	2.9	4.04	0.79	14.5	4.5	7.4
45	59.3	0.271	85.4	7.0	6.50	4.826	9.391	8.938	18.9	10.0	11.9	3.0	4.01	0.79	14.5	4.5	7.4
46	59.6	0.277	85.4	7.0	6.51	4.934	9.431	8.966	19.0	10.0	11.9	3.0	4.02	0.78	14.5	4.5	7.5
47	59.8	0.283	85.4	7.0	6.52	5.041	9.471	8.994	19.0	10.0	12.0	3.0	3.99	0.78	14.5	4.5	7.5
48	60.0	0.289	85.3	6.9	6.52	5.148	9.498	9.009	19.0	10.0	12.1	3.1	3.95	0.77	14.5	4.5	7.6
49	60.2	0.295	85.3	6.9	6.53	5.255	9.538	9.036	19.0	10.0	12.1	3.1	3.92	0.76	14.5	4.5	7.6
50	60.6	0.301	85.3	6.9	6.54	5.363	9.591	9.077	19.1	10.0	12.2	3.1	3.90	0.76	14.5	4.5	7.7
51	60.8	0.307	85.5	7.1	6.55	5.470	9.631	9.104	19.1	10.0	12.0	2.9	4.15	0.78	14.6	4.6	7.4
52	61.0	0.313	85.5	7.1	6.55	5.577	9.671	9.131	19.1	10.0	12.0	2.9	4.20	0.78	14.6	4.6	7.4
53	61.5	0.319	85.5	7.1	6.56	5.684	9.737	9.184	19.2	10.0	12.0	2.9	4.22	0.78	14.6	4.6	7.4
54	61.6	0.325	85.5	7.1	6.57	5.792	9.764	9.198	19.2	10.0	12.1	2.9	4.18	0.77	14.6	4.6	7.5
55	61.9	0.331	85.4	7.0	6.58	5.899	9.804	9.225	19.2	10.0	12.2	3.0	4.10	0.76	14.6	4.6	7.6
56	62.1	0.337	85.4	7.0	6.58	6.006	9.843	9.252	19.3	10.0	12.2	3.0	4.11	0.76	14.6	4.6	7.6
57	62.4	0.343	85.4	7.0	6.59	6.113	9.883	9.279	19.3	10.0	12.3	3.0	4.08	0.75	14.6	4.6	7.7
58	62.6	0.349	85.3	6.9	6.60	6.221	9.923	9.306	19.3	10.0	12.4	3.1	4.05	0.75	14.7	4.7	7.7
59	62.9	0.353	85.3	6.9	6.60	6.303	9.963	9.335	19.3	10.0	12.4	3.1	4.02	0.74	14.7	4.7	7.8



File Location
B-56 Bag 2 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: Bag #2
Sample Description: White & Tan Silty Sand
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 34.000
PL: 24.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.805	2.814	
Height (in)	5.617	5.573	
Weight (grams)	1104.90		1142.02
Moisture (%)	15.00		18.86
Dry Density (pcf)	105.43	105.60	
Saturation (%)	69.85	100.00	
Void Ratio	0.566	0.567	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 82.500
Effective Confining Stress (psi): 20.0
Corrected Peak Deviator Stress (psi): 30.686 at reading number: 184

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	0.0	0.006	62.5	0.0	6.22	0.000	0.000	0.000	20.0	20.0	20.0	20.0	1.00	0.00	20.0	0.0	20.0
1	35.0	0.012	65.8	3.3	6.23	0.108	5.633	5.626	25.6	20.0	22.3	16.7	1.34	0.59	22.8	2.8	19.5
2	49.2	0.018	68.1	5.6	6.23	0.215	7.917	7.900	27.9	20.0	22.3	14.4	1.55	0.71	24.0	4.0	18.3
3	57.4	0.024	69.6	7.1	6.24	0.323	9.233	9.203	29.2	20.0	22.1	12.9	1.71	0.77	24.6	4.6	17.5
4	62.8	0.030	70.6	8.1	6.25	0.431	10.096	10.053	30.1	20.0	22.0	11.9	1.84	0.81	25.0	5.0	16.9
5	66.9	0.036	71.4	8.9	6.25	0.538	10.760	10.702	30.7	20.0	21.8	11.1	1.96	0.83	25.4	5.4	16.4
6	69.8	0.042	72.0	9.6	6.26	0.646	11.225	11.153	31.2	20.0	21.6	10.5	2.07	0.86	25.6	5.6	16.0
7	72.1	0.048	72.6	10.1	6.27	0.754	11.597	11.510	31.5	20.0	21.4	9.9	2.16	0.88	25.8	5.8	15.6
8	73.9	0.054	73.1	10.6	6.27	0.861	11.876	11.774	31.8	20.0	21.2	9.4	2.25	0.90	25.9	5.9	15.3
9	75.4	0.060	73.4	10.9	6.28	0.969	12.129	12.011	32.0	20.0	21.1	9.1	2.32	0.91	26.0	6.0	15.1
10	76.8	0.066	73.8	11.3	6.29	1.077	12.354	12.221	32.2	20.0	20.9	8.7	2.40	0.92	26.1	6.1	14.8
11	77.7	0.072	74.1	11.6	6.29	1.184	12.487	12.339	32.3	20.0	20.8	8.4	2.46	0.94	26.2	6.2	14.6
12	78.6	0.078	74.4	11.9	6.30	1.292	12.633	12.470	32.5	20.0	20.6	8.1	2.54	0.95	26.2	6.2	14.4
13	79.2	0.084	74.6	12.1	6.31	1.400	12.740	12.561	32.6	20.0	20.5	7.9	2.59	0.96	26.3	6.3	14.2
14	79.3	0.090	74.8	12.3	6.31	1.507	12.753	12.561	32.6	20.0	20.2	7.7	2.64	0.98	26.3	6.3	14.0
15	80.4	0.096	75.0	12.5	6.32	1.615	12.926	12.717	32.7	20.0	20.2	7.5	2.70	0.99	26.4	6.4	13.8
16	80.8	0.102	75.2	12.7	6.33	1.723	12.992	12.768	32.8	20.0	20.1	7.3	2.74	0.99	26.4	6.4	13.7
17	81.3	0.108	75.3	12.8	6.34	1.830	13.072	12.832	32.8	20.0	20.0	7.2	2.78	1.00	26.4	6.4	13.6
18	81.6	0.114	75.4	12.9	6.34	1.938	13.112	12.857	32.9	20.0	19.9	7.1	2.82	1.01	26.4	6.4	13.5



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	82.0	0.120	75.5	13.1	6.35	2.046	13.191	12.921	32.9	20.0	19.9	7.0	2.86	1.01	26.5	6.5	13.4
20	82.5	0.126	75.7	13.2	6.36	2.154	13.271	12.985	33.0	20.0	19.8	6.8	2.90	1.01	26.5	6.5	13.3
21	82.9	0.132	75.7	13.2	6.36	2.261	13.324	13.023	33.0	20.0	19.8	6.8	2.92	1.01	26.5	6.5	13.3
22	83.5	0.138	75.8	13.3	6.37	2.369	13.430	13.112	33.1	20.0	19.8	6.7	2.95	1.01	26.6	6.6	13.3
23	83.8	0.144	75.9	13.4	6.38	2.477	13.470	13.137	33.1	20.0	19.8	6.6	2.98	1.02	26.6	6.6	13.2
24	84.4	0.150	75.9	13.4	6.38	2.584	13.563	13.213	33.2	20.0	19.8	6.6	3.00	1.02	26.6	6.6	13.2
25	84.8	0.156	76.0	13.5	6.39	2.692	13.630	13.263	33.3	20.0	19.8	6.5	3.04	1.02	26.6	6.6	13.1
26	84.9	0.162	76.0	13.5	6.40	2.800	13.643	13.261	33.3	20.0	19.7	6.5	3.05	1.02	26.6	6.6	13.1
27	85.1	0.168	76.1	13.6	6.41	2.907	13.683	13.285	33.3	20.0	19.7	6.4	3.08	1.02	26.7	6.6	13.0
28	85.8	0.174	76.1	13.7	6.41	3.015	13.789	13.373	33.4	20.0	19.7	6.4	3.10	1.02	26.7	6.7	13.0
29	86.3	0.180	76.2	13.7	6.42	3.123	13.869	13.436	33.4	20.0	19.8	6.3	3.13	1.02	26.7	6.7	13.0
30	86.7	0.186	76.2	13.7	6.43	3.230	13.935	13.485	33.5	20.0	19.8	6.3	3.15	1.02	26.8	6.7	13.0
31	87.1	0.192	76.3	13.8	6.43	3.338	14.002	13.534	33.5	20.0	19.8	6.2	3.17	1.02	26.8	6.8	13.0
32	87.8	0.198	76.3	13.8	6.44	3.446	14.121	13.635	33.6	20.0	19.8	6.2	3.20	1.01	26.8	6.8	13.0
33	88.2	0.204	76.3	13.9	6.45	3.553	14.174	13.671	33.7	20.0	19.8	6.2	3.22	1.01	26.8	6.8	13.0
34	88.7	0.210	76.3	13.9	6.46	3.661	14.254	13.732	33.7	20.0	19.9	6.2	3.23	1.01	26.9	6.9	13.0
35	89.1	0.216	76.4	13.9	6.46	3.769	14.320	13.781	33.8	20.0	19.9	6.1	3.25	1.01	26.9	6.9	13.0
36	89.6	0.222	76.4	13.9	6.47	3.876	14.400	13.842	33.9	20.0	20.0	6.1	3.26	1.00	26.9	6.9	13.0
37	89.6	0.228	76.4	13.9	6.48	3.984	14.413	13.839	33.8	20.0	19.9	6.1	3.28	1.01	26.9	6.9	13.0
38	90.3	0.234	76.4	13.9	6.49	4.092	14.520	13.926	33.9	20.0	20.0	6.1	3.29	1.00	27.0	7.0	13.0
39	90.6	0.240	76.4	13.9	6.49	4.199	14.560	13.948	34.0	20.0	20.0	6.1	3.30	1.00	27.0	7.0	13.0
40	90.9	0.246	76.4	13.9	6.50	4.307	14.613	13.983	34.0	20.0	20.1	6.1	3.30	1.00	27.0	7.0	13.1
41	91.4	0.252	76.4	13.9	6.51	4.415	14.692	14.044	34.1	20.0	20.1	6.1	3.31	0.99	27.0	7.0	13.1
42	91.8	0.258	76.4	13.9	6.51	4.522	14.759	14.091	34.1	20.0	20.2	6.1	3.32	0.99	27.1	7.0	13.1
43	92.5	0.264	76.4	13.9	6.52	4.630	14.865	14.177	34.2	20.0	20.3	6.1	3.33	0.98	27.1	7.1	13.2
44	92.9	0.270	76.5	14.0	6.53	4.738	14.932	14.224	34.2	20.0	20.3	6.0	3.36	0.98	27.1	7.1	13.1
45	93.2	0.276	76.5	14.0	6.54	4.845	14.985	14.259	34.3	20.0	20.3	6.0	3.36	0.98	27.1	7.1	13.2
46	93.7	0.282	76.5	14.0	6.54	4.953	15.064	14.318	34.3	20.0	20.4	6.0	3.37	0.98	27.2	7.2	13.2
47	94.2	0.288	76.5	14.0	6.55	5.061	15.144	14.378	34.4	20.0	20.4	6.0	3.38	0.97	27.2	7.2	13.2
48	94.8	0.294	76.5	14.0	6.56	5.168	15.237	14.450	34.5	20.0	20.5	6.0	3.39	0.97	27.2	7.2	13.3
49	95.4	0.300	76.5	14.0	6.57	5.276	15.343	14.534	34.5	20.0	20.6	6.0	3.41	0.96	27.3	7.3	13.3
50	96.0	0.306	76.5	14.0	6.57	5.384	15.436	14.605	34.6	20.0	20.6	6.0	3.42	0.96	27.3	7.3	13.3
51	96.3	0.312	76.5	14.0	6.58	5.491	15.489	14.639	34.6	20.0	20.6	6.0	3.44	0.96	27.3	7.3	13.3
52	97.3	0.318	76.5	14.0	6.59	5.599	15.649	14.773	34.8	20.0	20.8	6.0	3.46	0.95	27.4	7.4	13.4
53	97.8	0.324	76.5	14.0	6.60	5.707	15.729	14.831	34.8	20.0	20.9	6.0	3.46	0.94	27.4	7.4	13.4
54	98.3	0.330	76.5	14.0	6.60	5.815	15.808	14.889	34.9	20.0	20.9	6.0	3.48	0.94	27.5	7.4	13.4
55	98.7	0.336	76.5	14.0	6.61	5.922	15.875	14.935	34.9	20.0	21.0	6.0	3.48	0.94	27.5	7.5	13.5
56	99.2	0.342	76.5	14.0	6.62	6.030	15.954	14.992	35.0	20.0	21.0	6.0	3.48	0.93	27.5	7.5	13.5
57	99.8	0.348	76.5	14.0	6.63	6.138	16.047	15.063	35.1	20.0	21.1	6.0	3.50	0.93	27.5	7.5	13.6
58	100.2	0.354	76.4	13.9	6.63	6.245	16.114	15.107	35.1	20.0	21.2	6.1	3.49	0.92	27.6	7.6	13.6
59	100.6	0.360	76.5	14.0	6.64	6.353	16.167	15.140	35.1	20.0	21.2	6.0	3.51	0.92	27.6	7.6	13.6



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	101.0	0.366	76.4	13.9	6.65	6.461	16.247	15.197	35.2	20.0	21.3	6.1	3.50	0.92	27.6	7.6	13.7
61	101.0	0.372	76.4	13.9	6.66	6.568	16.247	15.180	35.2	20.0	21.3	6.1	3.50	0.92	27.6	7.6	13.7
62	101.9	0.378	76.4	13.9	6.66	6.676	16.380	15.286	35.3	20.0	21.4	6.1	3.52	0.91	27.7	7.6	13.7
63	102.5	0.384	76.4	13.9	6.67	6.784	16.473	15.355	35.4	20.0	21.5	6.1	3.51	0.90	27.7	7.7	13.8
64	103.1	0.390	76.4	13.9	6.68	6.891	16.579	15.436	35.4	20.0	21.6	6.1	3.52	0.90	27.7	7.7	13.8
65	103.4	0.396	76.4	13.9	6.69	6.999	16.632	15.468	35.5	20.0	21.6	6.1	3.53	0.90	27.7	7.7	13.8
66	104.0	0.402	76.4	13.9	6.70	7.107	16.725	15.536	35.5	20.0	21.7	6.1	3.54	0.89	27.8	7.8	13.9
67	104.5	0.408	76.3	13.8	6.70	7.214	16.805	15.592	35.6	20.0	21.8	6.2	3.52	0.89	27.8	7.8	14.0
68	105.0	0.414	76.3	13.8	6.71	7.322	16.884	15.648	35.7	20.0	21.9	6.2	3.51	0.88	27.8	7.8	14.1
69	105.8	0.420	76.2	13.7	6.72	7.430	17.004	15.741	35.8	20.0	22.0	6.3	3.51	0.87	27.9	7.9	14.1
70	106.5	0.426	76.1	13.7	6.73	7.537	17.123	15.833	35.8	20.0	22.2	6.4	3.49	0.86	27.9	7.9	14.3
71	107.2	0.432	76.1	13.7	6.73	7.645	17.230	15.913	35.9	20.0	22.3	6.4	3.50	0.86	28.0	8.0	14.3
72	107.6	0.438	76.1	13.6	6.74	7.753	17.296	15.955	36.0	20.0	22.4	6.4	3.49	0.85	28.0	8.0	14.4
73	108.2	0.444	76.1	13.6	6.75	7.860	17.389	16.022	36.0	20.0	22.5	6.4	3.49	0.85	28.0	8.0	14.4
74	108.3	0.450	76.1	13.6	6.76	7.968	17.416	16.028	36.0	20.0	22.5	6.4	3.49	0.85	28.0	8.0	14.4
75	109.5	0.456	76.0	13.5	6.77	8.076	17.602	16.180	36.2	20.0	22.7	6.5	3.50	0.84	28.1	8.1	14.6
76	110.3	0.462	76.0	13.5	6.77	8.183	17.735	16.283	36.3	20.0	22.8	6.5	3.51	0.83	28.2	8.1	14.6
77	111.1	0.468	76.0	13.5	6.78	8.291	17.867	16.386	36.4	20.0	22.9	6.5	3.51	0.82	28.2	8.2	14.7
78	111.8	0.474	75.9	13.5	6.79	8.399	17.974	16.464	36.5	20.0	23.0	6.6	3.51	0.82	28.2	8.2	14.8
79	112.2	0.480	75.9	13.5	6.80	8.506	18.040	16.506	36.5	20.0	23.1	6.6	3.52	0.82	28.3	8.3	14.8
80	112.9	0.486	75.9	13.4	6.81	8.614	18.146	16.583	36.6	20.0	23.2	6.6	3.51	0.81	28.3	8.3	14.9
81	113.3	0.492	75.9	13.4	6.81	8.722	18.213	16.624	36.6	20.0	23.3	6.6	3.50	0.80	28.3	8.3	14.9
82	114.1	0.498	75.8	13.3	6.82	8.829	18.346	16.726	36.7	20.0	23.4	6.7	3.49	0.79	28.4	8.4	15.1
83	114.8	0.505	75.7	13.2	6.83	8.937	18.465	16.815	36.8	20.0	23.6	6.8	3.47	0.79	28.4	8.4	15.2
84	115.6	0.511	75.7	13.2	6.84	9.045	18.585	16.904	36.9	20.0	23.7	6.8	3.47	0.78	28.5	8.5	15.3
85	116.3	0.517	75.6	13.1	6.85	9.152	18.691	16.980	37.0	20.0	23.9	6.9	3.47	0.77	28.5	8.5	15.4
86	117.0	0.523	75.6	13.1	6.85	9.260	18.811	17.069	37.1	20.0	23.9	6.9	3.48	0.77	28.5	8.5	15.4
87	117.7	0.529	75.6	13.1	6.86	9.368	18.917	17.145	37.2	20.0	24.0	6.9	3.49	0.77	28.6	8.6	15.4
88	118.0	0.535	75.5	13.1	6.87	9.475	18.970	17.172	37.2	20.0	24.1	7.0	3.47	0.76	28.6	8.6	15.5
89	119.1	0.541	75.5	13.0	6.88	9.583	19.156	17.320	37.3	20.0	24.4	7.0	3.46	0.75	28.7	8.7	15.7
90	119.7	0.547	75.5	13.0	6.89	9.691	19.249	17.384	37.4	20.0	24.4	7.0	3.47	0.75	28.7	8.7	15.7
91	120.6	0.553	75.4	12.9	6.90	9.799	19.395	17.495	37.5	20.0	24.6	7.1	3.46	0.74	28.8	8.7	15.9
92	121.3	0.559	75.3	12.8	6.90	9.906	19.501	17.569	37.6	20.0	24.8	7.2	3.44	0.73	28.8	8.8	16.0
93	121.9	0.565	75.2	12.7	6.91	10.014	19.594	17.632	37.6	20.0	24.9	7.3	3.42	0.72	28.8	8.8	16.1
94	122.7	0.571	75.1	12.7	6.92	10.122	19.727	17.730	37.7	20.0	25.1	7.4	3.41	0.71	28.9	8.9	16.2
95	123.9	0.577	74.9	12.4	6.93	10.229	19.913	17.876	37.9	20.0	25.5	7.6	3.35	0.69	28.9	8.9	16.5
96	124.9	0.583	74.7	12.2	6.94	10.337	20.086	18.010	38.0	20.0	25.8	7.8	3.32	0.68	29.0	9.0	16.8
97	125.9	0.589	74.7	12.2	6.95	10.445	20.245	18.131	38.1	20.0	26.0	7.8	3.31	0.67	29.1	9.1	16.9
98	127.4	0.595	74.5	12.0	6.95	10.552	20.484	18.323	38.3	20.0	26.3	8.0	3.29	0.66	29.2	9.2	17.2
99	128.6	0.601	74.4	11.9	6.96	10.660	20.670	18.467	38.5	20.0	26.6	8.1	3.27	0.64	29.2	9.2	17.4
100	130.0	0.607	74.3	11.8	6.97	10.768	20.896	18.646	38.7	20.0	26.8	8.2	3.27	0.63	29.3	9.3	17.5



Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	131.2	0.613	74.2	11.7	6.98	10.875	21.095	18.801	38.8	20.0	27.1	8.3	3.27	0.62	29.4	9.4	17.7
102	132.7	0.619	74.1	11.6	6.99	10.983	21.335	18.991	39.0	20.0	27.4	8.4	3.25	0.61	29.5	9.5	17.9
103	134.0	0.625	74.1	11.6	7.00	11.091	21.547	19.157	39.2	20.0	27.6	8.4	3.27	0.60	29.6	9.6	18.0
104	135.1	0.631	73.9	11.4	7.00	11.198	21.720	19.288	39.3	20.0	27.9	8.6	3.25	0.59	29.7	9.6	18.2
105	136.3	0.637	73.8	11.3	7.01	11.306	21.919	19.441	39.5	20.0	28.1	8.7	3.24	0.58	29.7	9.7	18.4
106	137.7	0.643	73.7	11.2	7.02	11.414	22.145	19.617	39.6	20.0	28.4	8.8	3.23	0.57	29.8	9.8	18.6
107	138.8	0.649	73.6	11.1	7.03	11.521	22.318	19.746	39.8	20.0	28.6	8.9	3.22	0.56	29.9	9.9	18.8
108	140.0	0.655	73.6	11.1	7.04	11.629	22.504	19.887	39.9	20.0	28.8	8.9	3.23	0.56	30.0	9.9	18.9
109	142.6	0.667	73.5	11.0	7.06	11.844	22.929	20.213	40.2	20.0	29.2	9.0	3.24	0.54	30.1	10.1	19.1
110	143.4	0.673	73.4	10.9	7.06	11.952	23.062	20.305	40.3	20.0	29.4	9.1	3.22	0.54	30.2	10.2	19.3
111	145.3	0.679	73.3	10.8	7.07	12.060	23.354	20.537	40.5	20.0	29.8	9.2	3.22	0.52	30.3	10.3	19.5
112	146.4	0.685	73.2	10.7	7.08	12.167	23.540	20.676	40.7	20.0	30.0	9.3	3.23	0.52	30.3	10.3	19.6
113	147.6	0.691	73.2	10.7	7.09	12.275	23.726	20.813	40.8	20.0	30.1	9.3	3.23	0.51	30.4	10.4	19.7
114	149.0	0.697	73.1	10.6	7.10	12.383	23.952	20.986	41.0	20.0	30.4	9.4	3.23	0.51	30.5	10.5	19.9
115	150.0	0.703	73.0	10.5	7.11	12.490	24.124	21.111	41.1	20.0	30.6	9.5	3.23	0.50	30.6	10.6	20.0
116	151.6	0.709	72.9	10.4	7.12	12.598	24.377	21.306	41.3	20.0	30.9	9.6	3.23	0.49	30.7	10.7	20.2
117	152.8	0.715	72.9	10.4	7.12	12.706	24.563	21.442	41.5	20.0	31.1	9.6	3.22	0.48	30.7	10.7	20.4
118	154.0	0.721	72.7	10.2	7.13	12.813	24.762	21.589	41.6	20.0	31.4	9.8	3.21	0.47	30.8	10.8	20.6
119	155.3	0.727	72.7	10.2	7.14	12.921	24.961	21.736	41.7	20.0	31.6	9.8	3.21	0.47	30.9	10.9	20.7
120	156.2	0.733	72.6	10.1	7.15	13.029	25.121	21.848	41.9	20.0	31.8	9.9	3.20	0.46	30.9	10.9	20.9
121	157.9	0.739	72.5	10.0	7.16	13.136	25.386	22.051	42.1	20.0	32.0	10.0	3.21	0.46	31.0	11.0	21.0
122	158.8	0.745	72.4	9.9	7.17	13.244	25.532	22.151	42.2	20.0	32.2	10.1	3.20	0.45	31.1	11.1	21.2
123	160.2	0.751	72.4	9.9	7.18	13.352	25.758	22.319	42.3	20.0	32.4	10.1	3.20	0.44	31.2	11.2	21.3
124	161.2	0.757	72.3	9.8	7.19	13.460	25.918	22.429	42.4	20.0	32.6	10.2	3.21	0.44	31.2	11.2	21.4
125	162.3	0.763	72.2	9.8	7.20	13.567	26.090	22.551	42.6	20.0	32.8	10.3	3.20	0.43	31.3	11.3	21.5
126	163.4	0.769	72.2	9.7	7.20	13.675	26.276	22.683	42.7	20.0	33.0	10.3	3.20	0.43	31.4	11.3	21.6
127	164.6	0.775	72.0	9.6	7.21	13.783	26.462	22.815	42.8	20.0	33.3	10.5	3.18	0.42	31.4	11.4	21.9
128	166.1	0.781	72.0	9.5	7.22	13.890	26.701	22.993	43.0	20.0	33.5	10.5	3.18	0.41	31.5	11.5	22.0
129	167.4	0.787	71.9	9.4	7.23	13.998	26.914	23.147	43.2	20.0	33.8	10.6	3.18	0.41	31.6	11.6	22.2
130	168.6	0.793	71.8	9.3	7.24	14.106	27.113	23.289	43.3	20.0	34.0	10.7	3.17	0.40	31.7	11.6	22.4
131	170.0	0.799	71.7	9.2	7.25	14.213	27.326	23.442	43.5	20.0	34.3	10.8	3.17	0.39	31.7	11.7	22.5
132	171.5	0.805	71.5	9.0	7.26	14.321	27.578	23.629	43.6	20.0	34.6	11.0	3.15	0.38	31.8	11.8	22.8
133	172.8	0.811	71.4	8.9	7.27	14.429	27.791	23.781	43.8	20.0	34.9	11.1	3.14	0.37	31.9	11.9	23.0
134	174.8	0.817	71.3	8.8	7.28	14.536	28.096	24.012	44.0	20.0	35.2	11.2	3.14	0.37	32.0	12.0	23.2
135	176.0	0.823	71.4	9.0	7.29	14.644	28.296	24.152	44.2	20.0	35.2	11.1	3.18	0.37	32.1	12.1	23.1
136	176.9	0.829	71.3	8.8	7.30	14.752	28.442	24.246	44.3	20.0	35.4	11.2	3.17	0.36	32.1	12.1	23.3
137	178.1	0.835	71.2	8.8	7.31	14.859	28.641	24.385	44.4	20.0	35.6	11.3	3.17	0.36	32.2	12.2	23.4
138	179.5	0.841	71.2	8.7	7.31	14.967	28.853	24.535	44.5	20.0	35.9	11.3	3.16	0.35	32.3	12.3	23.6
139	181.1	0.847	71.1	8.6	7.32	15.075	29.119	24.730	44.7	20.0	36.1	11.4	3.17	0.35	32.4	12.4	23.8
140	182.3	0.853	71.0	8.5	7.33	15.182	29.305	24.856	44.9	20.0	36.4	11.5	3.16	0.34	32.4	12.4	23.9
141	183.7	0.859	70.9	8.4	7.34	15.290	29.531	25.016	45.0	20.0	36.6	11.6	3.16	0.34	32.5	12.5	24.1



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	185.1	0.865	70.8	8.4	7.35	15.398	29.757	25.175	45.2	20.0	36.8	11.7	3.16	0.33	32.6	12.6	24.2
143	186.6	0.871	70.8	8.4	7.36	15.505	30.009	25.356	45.4	20.0	37.0	11.7	3.18	0.33	32.7	12.7	24.3
144	188.1	0.877	70.8	8.3	7.37	15.613	30.248	25.526	45.5	20.0	37.3	11.7	3.17	0.32	32.8	12.8	24.5
145	189.1	0.883	70.7	8.2	7.38	15.721	30.408	25.627	45.6	20.0	37.4	11.8	3.18	0.32	32.8	12.8	24.6
146	190.3	0.889	70.8	8.3	7.39	15.828	30.594	25.751	45.8	20.0	37.5	11.7	3.19	0.32	32.9	12.9	24.6
147	190.8	0.895	70.8	8.4	7.40	15.936	30.673	25.785	45.8	20.0	37.4	11.7	3.21	0.32	32.9	12.9	24.5
148	192.1	0.901	70.8	8.3	7.41	16.044	30.886	25.931	45.9	20.0	37.6	11.7	3.22	0.32	33.0	13.0	24.7
149	193.1	0.907	70.8	8.3	7.42	16.151	31.045	26.031	46.0	20.0	37.7	11.7	3.23	0.32	33.0	13.0	24.7
150	194.1	0.913	70.8	8.3	7.43	16.259	31.205	26.131	46.1	20.0	37.8	11.7	3.23	0.32	33.1	13.1	24.8
151	195.0	0.919	70.7	8.2	7.44	16.367	31.351	26.220	46.2	20.0	38.0	11.8	3.23	0.31	33.1	13.1	24.9
152	196.0	0.925	70.6	8.2	7.45	16.474	31.510	26.319	46.3	20.0	38.2	11.9	3.22	0.31	33.2	13.2	25.0
153	197.1	0.931	70.6	8.1	7.46	16.582	31.696	26.440	46.5	20.0	38.3	11.9	3.22	0.31	33.2	13.2	25.1
154	198.2	0.937	70.5	8.0	7.47	16.690	31.869	26.550	46.6	20.0	38.5	12.0	3.22	0.30	33.3	13.3	25.3
155	199.4	0.943	70.5	8.0	7.48	16.797	32.055	26.671	46.7	20.0	38.7	12.0	3.22	0.30	33.3	13.3	25.4
156	199.9	0.949	70.4	8.0	7.49	16.905	32.135	26.702	46.7	20.0	38.8	12.1	3.21	0.30	33.4	13.4	25.4
157	200.9	0.955	70.4	8.0	7.49	17.013	32.294	26.800	46.8	20.0	38.9	12.1	3.22	0.30	33.4	13.4	25.5
158	201.4	0.961	70.4	7.9	7.50	17.120	32.374	26.831	46.8	20.0	38.9	12.1	3.22	0.29	33.4	13.4	25.5
159	202.6	0.967	70.0	7.6	7.51	17.228	32.573	26.961	47.0	20.0	39.4	12.5	3.16	0.28	33.5	13.5	25.9
160	204.0	0.973	70.0	7.5	7.52	17.336	32.799	27.113	47.1	20.0	39.7	12.5	3.16	0.28	33.6	13.6	26.1
161	205.2	0.979	69.9	7.4	7.53	17.444	32.998	27.242	47.3	20.0	39.9	12.6	3.16	0.27	33.6	13.6	26.2
162	206.5	0.985	69.7	7.2	7.54	17.551	33.197	27.371	47.4	20.0	40.2	12.8	3.14	0.26	33.7	13.7	26.5
163	207.8	0.991	69.6	7.1	7.55	17.659	33.410	27.510	47.5	20.0	40.4	12.9	3.14	0.26	33.8	13.8	26.6
164	209.3	0.997	69.6	7.1	7.56	17.767	33.649	27.671	47.7	20.0	40.6	12.9	3.14	0.26	33.8	13.8	26.8
165	210.8	1.003	69.5	7.0	7.57	17.874	33.888	27.831	47.8	20.0	40.9	13.0	3.14	0.25	33.9	13.9	26.9
166	212.2	1.009	69.3	6.8	7.58	17.990	34.114	27.977	48.0	20.0	41.2	13.2	3.12	0.24	34.0	14.0	27.2
167	213.8	1.015	69.2	6.7	7.59	18.106	34.380	28.155	48.2	20.0	41.4	13.3	3.12	0.24	34.1	14.1	27.3
168	215.6	1.022	69.1	6.6	7.61	18.222	34.659	28.343	48.4	20.0	41.7	13.4	3.12	0.23	34.2	14.2	27.6
169	217.3	1.028	69.1	6.6	7.62	18.338	34.938	28.531	48.5	20.0	42.0	13.4	3.13	0.23	34.3	14.3	27.7
170	218.5	1.035	69.0	6.5	7.63	18.454	35.137	28.653	48.7	20.0	42.1	13.5	3.13	0.23	34.3	14.3	27.8
171	220.3	1.041	68.9	6.4	7.64	18.570	35.416	28.839	48.8	20.0	42.5	13.6	3.12	0.22	34.4	14.4	28.0
172	222.2	1.048	68.8	6.3	7.65	18.686	35.721	29.047	49.1	20.0	42.8	13.7	3.12	0.22	34.5	14.5	28.2
173	223.7	1.054	68.8	6.3	7.66	18.794	35.961	29.202	49.2	20.0	42.9	13.7	3.12	0.21	34.6	14.6	28.3
174	225.3	1.060	68.7	6.2	7.67	18.901	36.226	29.379	49.4	20.0	43.2	13.8	3.13	0.21	34.7	14.7	28.5
175	226.8	1.066	68.6	6.1	7.68	19.009	36.465	29.534	49.5	20.0	43.4	13.9	3.12	0.21	34.8	14.8	28.7
176	228.0	1.072	68.6	6.1	7.69	19.117	36.665	29.656	49.7	20.0	43.6	13.9	3.13	0.20	34.8	14.8	28.8
177	229.3	1.078	68.5	6.0	7.70	19.224	36.864	29.777	49.8	20.0	43.8	14.0	3.13	0.20	34.9	14.9	28.9
178	230.6	1.084	68.4	5.9	7.71	19.332	37.076	29.909	49.9	20.0	44.0	14.1	3.13	0.20	35.0	15.0	29.0
179	231.8	1.090	68.4	5.9	7.72	19.440	37.276	30.029	50.0	20.0	44.1	14.1	3.13	0.20	35.0	15.0	29.1
180	233.2	1.096	68.4	5.9	7.73	19.547	37.502	30.171	50.2	20.0	44.3	14.1	3.13	0.19	35.1	15.1	29.2
181	234.9	1.102	68.2	5.7	7.74	19.655	37.767	30.344	50.4	20.0	44.6	14.3	3.13	0.19	35.2	15.2	29.4
182	236.4	1.108	68.2	5.7	7.75	19.763	38.006	30.495	50.5	20.0	44.8	14.3	3.13	0.19	35.3	15.2	29.6



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	237.9	1.114	68.2	5.7	7.76	19.879	38.245	30.643	50.7	20.0	45.0	14.3	3.14	0.18	35.3	15.3	29.7
184	238.3	1.116	68.2	5.7	7.77	19.903	38.312	30.686	50.7	20.0	45.0	14.3	3.14	0.18	35.4	15.3	29.7

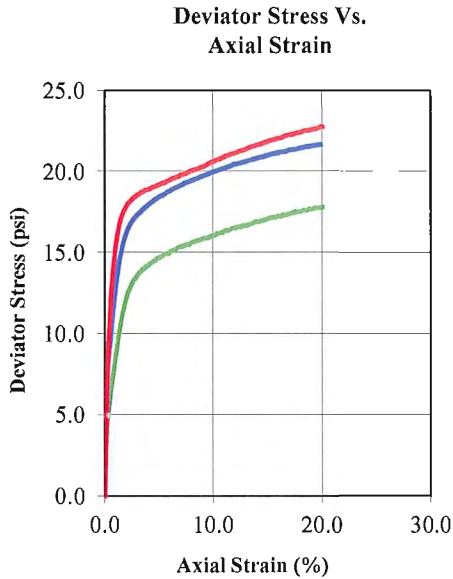


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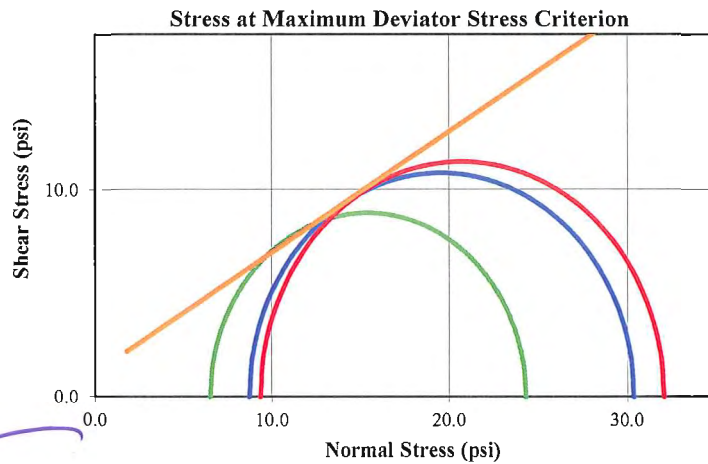
Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME : I-85/I-385 Interchange	SAMPLE NO. : Bag #1
PROJECT NO. : 08195-01	SAMPLE DEPTH : 0.0'- 40.0'
PROJECT LOCATION : B-59	SAMPLE TYPE : Remolded
BORING NUMBER : B-59	DESCRIPTION : Brown, Gray, Tan, Red & White Silty Sand
REMARKS :	TEST TYPE : Consolidated Undrained



Initial	Specimen			
	A	B	C	D
Water Content (%)	11.9	11.9	11.7	
Dry Density (pcf)	105.7	108.0	108.0	
Saturation (%)	56.06	59.30	58.36	
Void Ratio	0.561	0.528	0.528	
Diameter (in)	2.833	2.810	2.807	
Height (in)	5.691	5.692	5.688	
Specific Gravity	2.65	2.65	2.65	
Liquid Limit	32	32	32	
Plastic Limit	27	27	27	
After Consolidation	A	B	C	D
B-Value	0.95	0.96	0.95	
Water Content (%)	21.4	20.8	20.6	
Dry Density (pcf)	105.86	108.20	110.92	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.563	0.529	0.491	
Effective Stress (psi)	5.0	10.0	20.0	
Back Press. (psi)	83.2	73.0	73.0	
Rate of Strain	0.002	0.0020	0.002	

Maximum Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	1.4	σ'_1 at Failure (psi)	24.30	30.36	32.06	
ϕ (deg)	28.2	σ'_3 at Failure (psi)	6.51	8.71	9.34	
C' (psi)	1.1					
ϕ' (deg)	30.3					

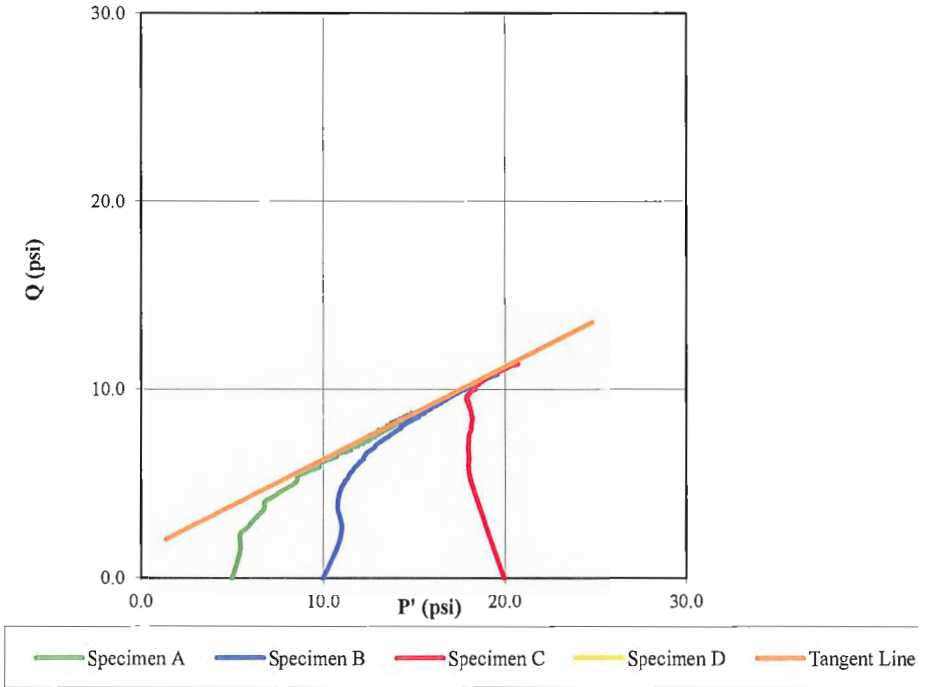


Tested By: [Signature]
 Date: 12-11-12

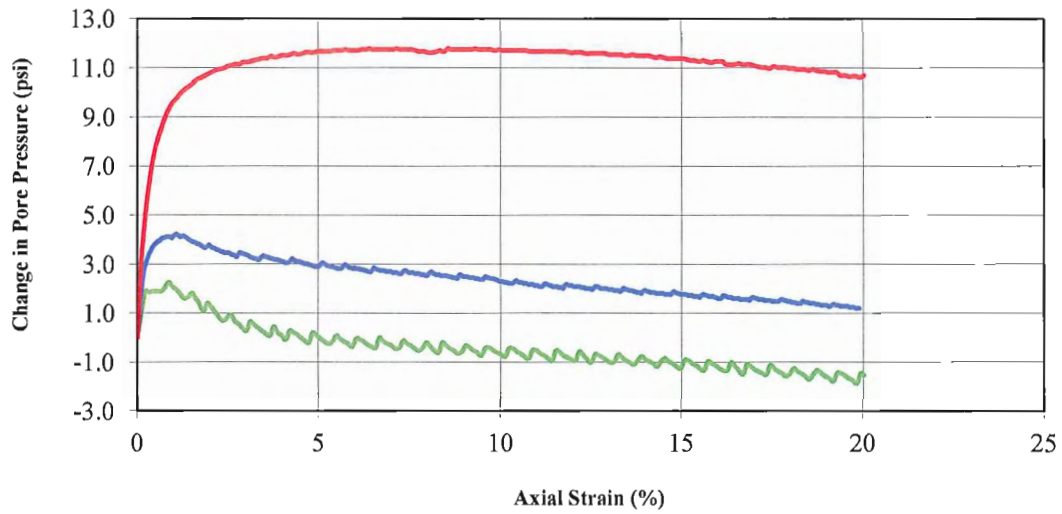
Approved By: SKB
 Date: 12-11-12



Stress Paths (Effective)
($a = 1.4$ $\alpha = 26.2$)



Change in Pore Pressure vs. Axial Strain





File Location
B-59 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-59
Sample Description: Brown, Gray, Tan, Red & White Silty Sand
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 32.000
PL: 27.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.833	2.837	
Height (in)	5.691	5.669	
Weight (grams)	1114.50		1208.93
Moisture (%)	11.94		21.42
Dry Density (pcf)	105.75	105.86	
Saturation (%)	56.06	100.00	
Void Ratio	0.561	0.563	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 88.200
Effective Confining Stress (psi): 5.0
Corrected Peak Deviator Stress (psi): 17.788 at reading number: 186

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	0.7	0.000	83.2	0.0	6.32	0.000	0.000	0.000	5.0	5.0	5.0	5.0	1.00	0.00	5.0	0.0	5.0
1	19.6	0.007	84.3	1.0	6.33	0.108	2.980	2.976	8.0	5.0	6.9	3.9	1.76	0.35	6.5	1.5	5.4
2	30.2	0.013	85.1	1.9	6.33	0.215	4.658	4.648	9.6	5.0	7.7	3.1	2.50	0.41	7.3	2.3	5.4
3	34.7	0.019	85.1	1.9	6.34	0.323	5.374	5.356	10.3	5.0	8.5	3.1	2.71	0.35	7.7	2.7	5.8
4	38.7	0.025	85.1	1.9	6.35	0.431	6.011	5.985	11.0	5.0	9.1	3.1	2.94	0.32	8.0	3.0	6.1
5	42.1	0.031	85.1	1.9	6.35	0.538	6.545	6.509	11.5	5.0	9.6	3.1	3.11	0.29	8.2	3.3	6.3
6	45.6	0.037	85.1	1.9	6.36	0.646	7.104	7.058	12.0	5.0	10.1	3.1	3.28	0.27	8.5	3.5	6.6
7	49.0	0.043	85.2	2.0	6.37	0.754	7.638	7.580	12.6	5.0	10.5	3.0	3.55	0.27	8.8	3.8	6.8
8	52.4	0.049	85.5	2.3	6.37	0.861	8.171	8.101	13.1	5.0	10.8	2.7	3.97	0.28	9.0	4.1	6.8
9	55.6	0.055	85.3	2.1	6.38	0.969	8.678	8.594	13.6	5.0	11.5	2.9	3.98	0.24	9.3	4.3	7.2
10	58.8	0.062	85.2	2.0	6.39	1.077	9.186	9.087	14.1	5.0	12.1	3.0	4.02	0.22	9.5	4.5	7.6
11	61.7	0.068	85.0	1.8	6.40	1.184	9.641	9.527	14.5	5.0	12.7	3.2	4.01	0.19	9.7	4.8	7.9
12	64.7	0.074	84.8	1.6	6.40	1.292	10.123	9.992	15.0	5.0	13.4	3.4	3.96	0.16	10.0	5.0	8.4
13	67.6	0.080	84.9	1.6	6.41	1.400	10.578	10.430	15.4	5.0	13.8	3.3	4.13	0.16	10.2	5.2	8.5
14	70.2	0.086	85.0	1.8	6.42	1.508	10.994	10.829	15.8	5.0	14.0	3.2	4.42	0.17	10.4	5.4	8.6
15	72.4	0.092	84.8	1.6	6.42	1.615	11.346	11.162	16.1	5.0	14.5	3.4	4.31	0.14	10.6	5.6	9.0
16	74.6	0.098	84.6	1.4	6.43	1.723	11.684	11.483	16.5	5.0	15.1	3.6	4.18	0.12	10.7	5.7	9.4
17	76.5	0.104	84.3	1.1	6.44	1.831	11.983	11.764	16.7	5.0	15.7	3.9	4.02	0.09	10.9	5.9	9.8
18	78.5	0.110	84.6	1.4	6.44	1.938	12.309	12.070	17.1	5.0	15.6	3.6	4.38	0.12	11.0	6.0	9.6



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	80.1	0.116	84.5	1.2	6.45	2.046	12.556	12.299	17.3	5.0	16.0	3.7	4.29	0.10	11.1	6.1	9.9
20	81.6	0.123	84.3	1.0	6.46	2.154	12.790	12.514	17.5	5.0	16.4	3.9	4.18	0.08	11.2	6.3	10.2
21	82.8	0.129	84.1	0.8	6.47	2.261	12.985	12.691	17.7	5.0	16.8	4.1	4.07	0.07	11.3	6.3	10.5
22	84.0	0.135	83.9	0.7	6.47	2.369	13.167	12.855	17.8	5.0	17.2	4.3	3.99	0.05	11.4	6.4	10.7
23	85.0	0.141	84.0	0.8	6.48	2.477	13.336	13.006	18.0	5.0	17.2	4.2	4.11	0.06	11.5	6.5	10.7
24	86.2	0.147	84.1	0.9	6.49	2.584	13.519	13.169	18.1	5.0	17.2	4.1	4.25	0.07	11.6	6.6	10.6
25	87.0	0.153	83.9	0.7	6.49	2.692	13.649	13.281	18.3	5.0	17.6	4.3	4.09	0.05	11.6	6.6	10.9
26	87.6	0.159	83.8	0.6	6.50	2.800	13.740	13.355	18.3	5.0	17.8	4.4	4.02	0.04	11.7	6.7	11.1
27	88.4	0.165	83.6	0.4	6.51	2.907	13.870	13.467	18.4	5.0	18.0	4.6	3.94	0.03	11.7	6.7	11.3
28	89.3	0.171	83.5	0.3	6.52	3.015	14.013	13.590	18.6	5.0	18.3	4.7	3.89	0.02	11.8	6.8	11.5
29	90.0	0.178	83.9	0.6	6.52	3.123	14.130	13.689	18.7	5.0	18.0	4.3	4.16	0.05	11.8	6.8	11.2
30	90.7	0.184	83.7	0.5	6.53	3.230	14.234	13.774	18.8	5.0	18.2	4.5	4.09	0.04	11.9	6.9	11.3
31	91.1	0.190	83.6	0.4	6.54	3.338	14.299	13.822	18.8	5.0	18.4	4.6	4.02	0.03	11.9	6.9	11.5
32	91.9	0.196	83.5	0.3	6.55	3.446	14.416	13.920	18.9	5.0	18.6	4.7	3.96	0.02	11.9	7.0	11.7
33	92.3	0.202	83.4	0.2	6.55	3.553	14.494	13.979	19.0	5.0	18.8	4.8	3.90	0.01	12.0	7.0	11.8
34	92.6	0.208	83.3	0.1	6.56	3.661	14.533	14.001	19.0	5.0	18.9	4.9	3.86	0.01	12.0	7.0	11.9
35	93.5	0.214	83.7	0.4	6.57	3.769	14.677	14.123	19.1	5.0	18.7	4.5	4.11	0.03	12.0	7.1	11.6
36	93.8	0.220	83.4	0.2	6.57	3.876	14.729	14.158	19.1	5.0	18.9	4.8	3.96	0.01	12.1	7.1	11.9
37	94.2	0.226	83.3	0.1	6.58	3.984	14.781	14.192	19.2	5.0	19.1	4.9	3.90	0.01	12.1	7.1	12.0
38	94.6	0.232	83.1	-0.1	6.59	4.092	14.859	14.251	19.2	5.0	19.3	5.1	3.82	-0.01	12.1	7.1	12.2
39	95.3	0.239	83.5	0.3	6.60	4.200	14.963	14.334	19.3	5.0	19.0	4.7	4.05	0.02	12.1	7.2	11.9
40	95.6	0.245	83.4	0.2	6.60	4.307	15.015	14.368	19.3	5.0	19.1	4.8	4.01	0.01	12.2	7.2	12.0
41	96.0	0.251	83.3	0.1	6.61	4.415	15.080	14.414	19.4	5.0	19.3	4.9	3.97	0.01	12.2	7.2	12.1
42	96.5	0.257	83.2	0.0	6.62	4.523	15.158	14.472	19.5	5.0	19.5	5.0	3.91	0.00	12.2	7.2	12.2
43	96.8	0.263	83.1	-0.1	6.63	4.630	15.197	14.493	19.5	5.0	19.6	5.1	3.84	-0.01	12.2	7.2	12.3
44	97.2	0.269	83.0	-0.2	6.63	4.738	15.262	14.539	19.5	5.0	19.7	5.2	3.81	-0.01	12.3	7.3	12.5
45	97.9	0.275	83.4	0.2	6.64	4.846	15.379	14.634	19.6	5.0	19.4	4.8	4.06	0.01	12.3	7.3	12.1
46	98.0	0.281	83.3	0.1	6.65	4.953	15.392	14.630	19.6	5.0	19.5	4.9	3.99	0.01	12.3	7.3	12.2
47	98.5	0.287	83.2	0.0	6.66	5.061	15.470	14.687	19.7	5.0	19.7	5.0	3.93	0.00	12.3	7.3	12.4
48	98.8	0.293	83.1	-0.2	6.66	5.169	15.522	14.720	19.7	5.0	19.9	5.1	3.86	-0.01	12.3	7.4	12.5
49	99.2	0.300	83.0	-0.2	6.67	5.276	15.574	14.753	19.7	5.0	20.0	5.2	3.83	-0.02	12.4	7.4	12.6
50	99.5	0.306	83.1	-0.2	6.68	5.384	15.626	14.785	19.8	5.0	19.9	5.1	3.88	-0.01	12.4	7.4	12.5
51	100.1	0.312	83.3	0.1	6.69	5.492	15.717	14.854	19.8	5.0	19.8	4.9	4.03	0.01	12.4	7.4	12.3
52	100.4	0.318	83.2	0.0	6.69	5.599	15.769	14.886	19.9	5.0	19.9	5.0	3.96	0.00	12.4	7.4	12.5
53	100.6	0.324	83.1	-0.2	6.70	5.707	15.809	14.906	19.9	5.0	20.0	5.1	3.90	-0.01	12.4	7.5	12.6
54	100.9	0.330	83.0	-0.2	6.71	5.815	15.848	14.926	19.9	5.0	20.1	5.2	3.86	-0.02	12.4	7.5	12.7
55	101.1	0.336	82.9	-0.4	6.72	5.922	15.874	14.933	19.9	5.0	20.3	5.3	3.80	-0.02	12.4	7.5	12.8
56	101.7	0.342	83.2	0.0	6.73	6.030	15.978	15.014	20.0	5.0	20.0	5.0	3.99	0.00	12.5	7.5	12.5
57	102.1	0.348	83.1	-0.1	6.73	6.138	16.043	15.058	20.0	5.0	20.1	5.1	3.98	-0.01	12.5	7.5	12.6
58	102.5	0.355	83.1	-0.2	6.74	6.245	16.095	15.090	20.1	5.0	20.2	5.1	3.93	-0.01	12.5	7.5	12.7
59	102.6	0.361	82.9	-0.3	6.75	6.353	16.121	15.097	20.1	5.0	20.4	5.3	3.87	-0.02	12.5	7.5	12.8



Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	103.1	0.367	82.9	-0.4	6.76	6.461	16.199	15.152	20.1	5.0	20.5	5.3	3.84	-0.02	12.6	7.6	12.9
61	103.5	0.373	82.8	-0.4	6.76	6.568	16.264	15.196	20.2	5.0	20.6	5.4	3.82	-0.03	12.6	7.6	13.0
62	103.9	0.379	83.2	0.0	6.77	6.676	16.329	15.239	20.2	5.0	20.2	5.0	4.06	0.00	12.6	7.6	12.6
63	104.4	0.385	83.1	-0.2	6.78	6.784	16.407	15.294	20.3	5.0	20.4	5.1	3.97	-0.01	12.6	7.6	12.8
64	104.8	0.391	83.0	-0.2	6.79	6.892	16.459	15.325	20.3	5.0	20.5	5.2	3.93	-0.02	12.6	7.7	12.9
65	104.9	0.397	82.9	-0.3	6.80	6.999	16.485	15.331	20.3	5.0	20.6	5.3	3.89	-0.02	12.6	7.7	13.0
66	105.3	0.403	82.8	-0.4	6.80	7.107	16.537	15.362	20.3	5.0	20.8	5.4	3.83	-0.03	12.7	7.7	13.1
67	105.4	0.409	82.8	-0.4	6.81	7.215	16.563	15.368	20.3	5.0	20.8	5.4	3.85	-0.03	12.7	7.7	13.1
68	106.0	0.416	83.1	-0.1	6.82	7.322	16.654	15.435	20.4	5.0	20.5	5.1	4.03	-0.01	12.7	7.7	12.8
69	106.2	0.422	83.0	-0.2	6.83	7.430	16.680	15.441	20.4	5.0	20.7	5.2	3.96	-0.02	12.7	7.7	12.9
70	106.6	0.428	82.9	-0.3	6.84	7.538	16.745	15.483	20.5	5.0	20.8	5.3	3.92	-0.02	12.7	7.7	13.0
71	106.7	0.434	82.8	-0.4	6.84	7.645	16.758	15.477	20.5	5.0	20.9	5.4	3.85	-0.03	12.7	7.7	13.2
72	106.7	0.440	82.7	-0.5	6.85	7.753	16.771	15.471	20.5	5.0	21.0	5.5	3.81	-0.03	12.7	7.7	13.2
73	107.3	0.446	82.8	-0.4	6.86	7.861	16.862	15.537	20.5	5.0	20.9	5.4	3.89	-0.03	12.7	7.8	13.2
74	107.9	0.452	83.0	-0.2	6.87	7.968	16.953	15.603	20.6	5.0	20.8	5.2	4.01	-0.01	12.8	7.8	13.0
75	108.2	0.458	82.9	-0.4	6.88	8.076	17.006	15.632	20.6	5.0	21.0	5.3	3.93	-0.02	12.8	7.8	13.2
76	108.3	0.464	82.7	-0.5	6.88	8.184	17.019	15.626	20.6	5.0	21.1	5.5	3.84	-0.03	12.8	7.8	13.3
77	108.6	0.471	82.6	-0.6	6.89	8.291	17.071	15.655	20.6	5.0	21.2	5.6	3.80	-0.04	12.8	7.8	13.4
78	109.0	0.477	83.0	-0.2	6.90	8.399	17.136	15.696	20.7	5.0	20.9	5.2	4.03	-0.01	12.8	7.8	13.0
79	109.4	0.483	82.9	-0.3	6.91	8.507	17.188	15.726	20.7	5.0	21.0	5.3	3.97	-0.02	12.8	7.9	13.2
80	109.6	0.489	82.8	-0.4	6.92	8.614	17.227	15.743	20.7	5.0	21.2	5.4	3.90	-0.03	12.9	7.9	13.3
81	109.9	0.495	82.7	-0.5	6.92	8.722	17.266	15.760	20.7	5.0	21.3	5.5	3.86	-0.03	12.9	7.9	13.4
82	110.0	0.501	82.6	-0.6	6.93	8.830	17.292	15.765	20.7	5.0	21.4	5.6	3.80	-0.04	12.9	7.9	13.5
83	110.4	0.507	82.7	-0.6	6.94	8.937	17.344	15.794	20.8	5.0	21.3	5.5	3.85	-0.04	12.9	7.9	13.4
84	110.8	0.513	82.9	-0.3	6.95	9.045	17.422	15.846	20.8	5.0	21.1	5.3	3.99	-0.02	12.9	7.9	13.2
85	111.0	0.519	82.8	-0.4	6.96	9.153	17.448	15.851	20.8	5.0	21.2	5.4	3.94	-0.03	12.9	7.9	13.3
86	111.2	0.525	82.7	-0.5	6.96	9.261	17.474	15.856	20.8	5.0	21.4	5.5	3.88	-0.03	12.9	7.9	13.4
87	111.4	0.532	82.6	-0.6	6.97	9.368	17.513	15.872	20.9	5.0	21.5	5.6	3.84	-0.04	12.9	7.9	13.5
88	111.6	0.538	82.5	-0.7	6.98	9.476	17.539	15.877	20.9	5.0	21.6	5.7	3.78	-0.05	12.9	7.9	13.6
89	111.9	0.544	82.8	-0.4	6.99	9.584	17.591	15.905	20.9	5.0	21.3	5.4	3.93	-0.03	12.9	8.0	13.4
90	112.3	0.550	82.8	-0.4	7.00	9.691	17.656	15.945	20.9	5.0	21.3	5.4	3.96	-0.03	13.0	8.0	13.4
91	112.7	0.556	82.7	-0.5	7.01	9.799	17.708	15.973	21.0	5.0	21.5	5.5	3.90	-0.03	13.0	8.0	13.5
92	113.1	0.562	82.6	-0.6	7.01	9.907	17.786	16.024	21.0	5.0	21.6	5.6	3.87	-0.04	13.0	8.0	13.6
93	113.3	0.568	82.5	-0.7	7.02	10.014	17.812	16.028	21.0	5.0	21.7	5.7	3.83	-0.04	13.0	8.0	13.7
94	113.6	0.574	82.5	-0.8	7.03	10.122	17.864	16.056	21.0	5.0	21.8	5.7	3.79	-0.05	13.0	8.0	13.8
95	114.1	0.580	82.8	-0.4	7.04	10.230	17.942	16.107	21.1	5.0	21.5	5.4	3.97	-0.03	13.0	8.1	13.5
96	114.6	0.587	82.8	-0.4	7.05	10.337	18.020	16.158	21.1	5.0	21.6	5.4	3.98	-0.03	13.1	8.1	13.5
97	114.8	0.593	82.7	-0.6	7.06	10.445	18.046	16.161	21.1	5.0	21.7	5.5	3.92	-0.03	13.1	8.1	13.6
98	115.0	0.599	82.6	-0.6	7.07	10.553	18.072	16.165	21.1	5.0	21.8	5.6	3.87	-0.04	13.1	8.1	13.7
99	115.4	0.605	82.5	-0.8	7.07	10.660	18.138	16.204	21.2	5.0	21.9	5.7	3.82	-0.05	13.1	8.1	13.8
100	115.4	0.611	82.4	-0.8	7.08	10.768	18.138	16.184	21.2	5.0	22.0	5.8	3.78	-0.05	13.1	8.1	13.9



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	115.9	0.617	82.7	-0.5	7.09	10.876	18.229	16.246	21.2	5.0	21.7	5.5	3.95	-0.03	13.1	8.1	13.6
102	116.4	0.623	82.7	-0.5	7.10	10.983	18.294	16.284	21.3	5.0	21.8	5.5	3.96	-0.03	13.1	8.1	13.6
103	116.7	0.629	82.6	-0.6	7.11	11.091	18.346	16.311	21.3	5.0	21.9	5.6	3.90	-0.04	13.1	8.2	13.8
104	117.1	0.635	82.5	-0.7	7.12	11.199	18.411	16.349	21.3	5.0	22.1	5.7	3.87	-0.04	13.2	8.2	13.9
105	117.1	0.641	82.4	-0.8	7.13	11.306	18.411	16.329	21.3	5.0	22.2	5.8	3.80	-0.05	13.1	8.2	14.0
106	117.4	0.648	82.3	-0.9	7.13	11.414	18.463	16.355	21.3	5.0	22.3	5.9	3.77	-0.06	13.2	8.2	14.1
107	118.1	0.654	82.7	-0.5	7.14	11.522	18.567	16.428	21.4	5.0	21.9	5.5	3.98	-0.03	13.2	8.2	13.7
108	118.3	0.660	82.6	-0.6	7.15	11.629	18.606	16.442	21.4	5.0	22.0	5.6	3.94	-0.04	13.2	8.2	13.8
109	118.7	0.666	82.5	-0.7	7.16	11.737	18.658	16.468	21.4	5.0	22.2	5.7	3.89	-0.04	13.2	8.2	13.9
110	118.9	0.672	82.4	-0.8	7.17	11.845	18.697	16.482	21.5	5.0	22.3	5.8	3.85	-0.05	13.2	8.2	14.0
111	119.1	0.678	82.3	-0.9	7.18	11.953	18.723	16.485	21.5	5.0	22.4	5.9	3.81	-0.05	13.2	8.2	14.1
112	119.4	0.684	82.3	-0.9	7.19	12.060	18.775	16.511	21.5	5.0	22.4	5.9	3.80	-0.06	13.2	8.3	14.2
113	120.0	0.690	82.7	-0.6	7.20	12.168	18.866	16.571	21.6	5.0	22.1	5.5	3.99	-0.03	13.3	8.3	13.8
114	120.0	0.696	82.5	-0.7	7.20	12.276	18.866	16.550	21.5	5.0	22.3	5.7	3.90	-0.04	13.3	8.3	14.0
115	120.1	0.703	82.3	-0.9	7.21	12.383	18.892	16.553	21.5	5.0	22.4	5.9	3.82	-0.05	13.3	8.3	14.1
116	120.4	0.709	82.2	-1.0	7.22	12.491	18.931	16.567	21.5	5.0	22.6	6.0	3.77	-0.06	13.3	8.3	14.3
117	120.9	0.715	82.5	-0.7	7.23	12.599	19.009	16.614	21.6	5.0	22.3	5.7	3.93	-0.04	13.3	8.3	14.0
118	121.1	0.721	82.5	-0.7	7.24	12.706	19.048	16.628	21.6	5.0	22.3	5.7	3.91	-0.04	13.3	8.3	14.0
119	121.5	0.727	82.4	-0.8	7.25	12.814	19.113	16.664	21.6	5.0	22.4	5.8	3.88	-0.05	13.3	8.3	14.1
120	121.5	0.733	82.3	-0.9	7.26	12.922	19.100	16.632	21.6	5.0	22.5	5.9	3.82	-0.06	13.3	8.3	14.2
121	121.7	0.739	82.2	-1.0	7.27	13.029	19.139	16.646	21.6	5.0	22.6	6.0	3.78	-0.06	13.3	8.3	14.3
122	122.1	0.745	82.3	-1.0	7.28	13.137	19.204	16.682	21.7	5.0	22.6	5.9	3.81	-0.06	13.3	8.3	14.3
123	122.4	0.751	82.5	-0.7	7.28	13.245	19.256	16.706	21.7	5.0	22.4	5.7	3.95	-0.04	13.3	8.4	14.0
124	122.8	0.757	82.4	-0.8	7.29	13.352	19.309	16.730	21.7	5.0	22.5	5.8	3.89	-0.05	13.3	8.4	14.2
125	123.0	0.764	82.3	-0.9	7.30	13.460	19.348	16.743	21.7	5.0	22.6	5.9	3.83	-0.06	13.4	8.4	14.3
126	123.6	0.770	82.2	-1.0	7.31	13.568	19.439	16.801	21.8	5.0	22.8	6.0	3.81	-0.06	13.4	8.4	14.4
127	123.8	0.776	82.1	-1.1	7.32	13.675	19.465	16.803	21.8	5.0	22.9	6.1	3.77	-0.06	13.4	8.4	14.5
128	124.2	0.782	82.3	-0.9	7.33	13.783	19.530	16.838	21.8	5.0	22.7	5.9	3.85	-0.05	13.4	8.4	14.3
129	124.7	0.788	82.5	-0.8	7.34	13.891	19.608	16.884	21.9	5.0	22.6	5.7	3.94	-0.05	13.4	8.4	14.2
130	124.7	0.794	82.3	-0.9	7.35	13.998	19.621	16.874	21.9	5.0	22.7	5.9	3.88	-0.05	13.4	8.4	14.3
131	125.1	0.800	82.3	-1.0	7.36	14.106	19.673	16.898	21.9	5.0	22.8	5.9	3.84	-0.06	13.4	8.4	14.4
132	125.2	0.806	82.2	-1.0	7.37	14.214	19.686	16.888	21.9	5.0	22.9	6.0	3.80	-0.06	13.4	8.4	14.5
133	125.5	0.812	82.1	-1.2	7.38	14.321	19.738	16.911	21.9	5.0	23.1	6.1	3.75	-0.07	13.4	8.5	14.6
134	125.9	0.819	82.3	-1.0	7.39	14.429	19.803	16.946	21.9	5.0	22.9	5.9	3.85	-0.06	13.5	8.5	14.4
135	126.1	0.825	82.4	-0.8	7.39	14.537	19.842	16.958	21.9	5.0	22.8	5.8	3.91	-0.05	13.5	8.5	14.3
136	126.6	0.831	82.3	-1.0	7.40	14.645	19.907	16.992	22.0	5.0	22.9	5.9	3.86	-0.06	13.5	8.5	14.4
137	126.8	0.837	82.2	-1.0	7.41	14.752	19.946	17.004	22.0	5.0	23.0	6.0	3.82	-0.06	13.5	8.5	14.5
138	127.0	0.843	82.1	-1.2	7.42	14.860	19.985	17.015	22.0	5.0	23.2	6.1	3.77	-0.07	13.5	8.5	14.7
139	127.4	0.849	82.0	-1.2	7.43	14.968	20.037	17.038	22.0	5.0	23.3	6.2	3.74	-0.07	13.5	8.5	14.7
140	127.8	0.855	82.3	-0.9	7.44	15.075	20.102	17.072	22.1	5.0	23.0	5.9	3.89	-0.05	13.5	8.5	14.4
141	128.2	0.861	82.3	-0.9	7.45	15.183	20.167	17.105	22.1	5.0	23.0	5.9	3.90	-0.05	13.5	8.6	14.5



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	128.5	0.867	82.2	-1.0	7.46	15.291	20.219	17.128	22.1	5.0	23.2	6.0	3.84	-0.06	13.5	8.6	14.6
143	128.9	0.873	82.1	-1.1	7.47	15.398	20.271	17.150	22.1	5.0	23.3	6.1	3.81	-0.07	13.6	8.6	14.7
144	128.9	0.880	82.0	-1.2	7.48	15.506	20.284	17.139	22.1	5.0	23.4	6.2	3.75	-0.07	13.6	8.6	14.8
145	129.2	0.886	81.9	-1.3	7.49	15.614	20.323	17.150	22.1	5.0	23.5	6.3	3.72	-0.08	13.6	8.6	14.9
146	129.4	0.892	82.3	-1.0	7.50	15.721	20.362	17.161	22.1	5.0	23.1	5.9	3.89	-0.06	13.6	8.6	14.5
147	129.9	0.898	82.2	-1.0	7.51	15.829	20.440	17.205	22.2	5.0	23.2	6.0	3.85	-0.06	13.6	8.6	14.6
148	130.2	0.904	82.1	-1.1	7.52	15.937	20.480	17.216	22.2	5.0	23.3	6.1	3.82	-0.07	13.6	8.6	14.7
149	130.3	0.910	82.0	-1.2	7.53	16.044	20.493	17.205	22.2	5.0	23.4	6.2	3.76	-0.07	13.6	8.6	14.8
150	130.6	0.916	81.9	-1.3	7.54	16.152	20.545	17.226	22.2	5.0	23.5	6.3	3.73	-0.08	13.6	8.6	14.9
151	130.8	0.922	81.9	-1.3	7.55	16.260	20.584	17.237	22.2	5.0	23.5	6.3	3.73	-0.08	13.6	8.6	14.9
152	131.4	0.928	82.2	-1.0	7.56	16.367	20.675	17.291	22.3	5.0	23.3	6.0	3.89	-0.06	13.6	8.6	14.6
153	131.6	0.934	82.1	-1.2	7.57	16.475	20.701	17.290	22.3	5.0	23.4	6.1	3.81	-0.07	13.6	8.6	14.8
154	131.7	0.941	81.9	-1.3	7.58	16.583	20.714	17.279	22.3	5.0	23.6	6.3	3.74	-0.08	13.6	8.6	14.9
155	132.0	0.947	81.7	-1.5	7.59	16.690	20.766	17.300	22.3	5.0	23.8	6.5	3.67	-0.09	13.6	8.6	15.1
156	132.4	0.953	82.1	-1.1	7.60	16.798	20.831	17.332	22.3	5.0	23.4	6.1	3.86	-0.06	13.6	8.7	14.7
157	132.8	0.959	82.1	-1.2	7.61	16.906	20.896	17.363	22.3	5.0	23.5	6.1	3.82	-0.07	13.7	8.7	14.8
158	133.0	0.965	81.9	-1.3	7.62	17.013	20.935	17.373	22.4	5.0	23.6	6.3	3.77	-0.07	13.7	8.7	15.0
159	133.4	0.971	81.9	-1.4	7.63	17.121	20.987	17.394	22.4	5.0	23.7	6.3	3.74	-0.08	13.7	8.7	15.0
160	133.7	0.977	81.8	-1.4	7.64	17.229	21.039	17.414	22.4	5.0	23.8	6.4	3.71	-0.08	13.7	8.7	15.1
161	133.9	0.983	81.7	-1.5	7.65	17.337	21.065	17.413	22.4	5.0	23.9	6.5	3.69	-0.09	13.7	8.7	15.2
162	134.6	0.989	82.1	-1.1	7.66	17.444	21.182	17.487	22.5	5.0	23.6	6.1	3.86	-0.06	13.7	8.7	14.9
163	134.9	0.996	82.0	-1.2	7.67	17.552	21.221	17.496	22.5	5.0	23.7	6.2	3.81	-0.07	13.7	8.7	15.0
164	134.9	1.002	81.9	-1.4	7.68	17.660	21.221	17.474	22.5	5.0	23.8	6.3	3.75	-0.08	13.7	8.7	15.1
165	135.2	1.008	81.8	-1.4	7.69	17.767	21.273	17.494	22.5	5.0	23.9	6.4	3.72	-0.08	13.7	8.7	15.2
166	135.4	1.014	81.6	-1.6	7.70	17.875	21.299	17.492	22.5	5.0	24.0	6.6	3.67	-0.09	13.7	8.7	15.3
167	135.6	1.020	81.8	-1.4	7.71	17.983	21.338	17.501	22.5	5.0	23.9	6.4	3.72	-0.08	13.7	8.8	15.2
168	136.2	1.026	82.0	-1.2	7.72	18.090	21.429	17.553	22.5	5.0	23.8	6.2	3.82	-0.07	13.8	8.8	15.0
169	136.5	1.032	81.9	-1.4	7.73	18.198	21.481	17.572	22.6	5.0	23.9	6.3	3.77	-0.08	13.8	8.8	15.1
170	136.7	1.038	81.8	-1.4	7.74	18.306	21.507	17.570	22.6	5.0	24.0	6.4	3.73	-0.08	13.8	8.8	15.2
171	137.0	1.044	81.6	-1.6	7.75	18.413	21.559	17.590	22.6	5.0	24.1	6.6	3.69	-0.09	13.8	8.8	15.3
172	137.0	1.050	81.5	-1.7	7.76	18.521	21.559	17.566	22.5	5.0	24.2	6.7	3.63	-0.10	13.8	8.8	15.5
173	137.5	1.057	81.7	-1.5	7.77	18.629	21.637	17.607	22.6	5.0	24.1	6.5	3.72	-0.08	13.8	8.8	15.3
174	138.1	1.063	81.9	-1.3	7.78	18.736	21.742	17.668	22.6	5.0	24.0	6.3	3.80	-0.08	13.8	8.8	15.1
175	138.2	1.069	81.8	-1.4	7.79	18.844	21.755	17.655	22.6	5.0	24.1	6.4	3.75	-0.08	13.8	8.8	15.3
176	138.4	1.075	81.6	-1.6	7.80	18.952	21.781	17.653	22.6	5.0	24.2	6.6	3.70	-0.09	13.8	8.8	15.4
177	138.8	1.081	81.6	-1.6	7.81	19.059	21.846	17.682	22.7	5.0	24.3	6.6	3.67	-0.09	13.8	8.8	15.5
178	138.9	1.087	81.4	-1.8	7.82	19.167	21.859	17.669	22.6	5.0	24.4	6.8	3.62	-0.10	13.8	8.8	15.6
179	139.4	1.093	81.8	-1.4	7.83	19.275	21.937	17.708	22.7	5.0	24.1	6.4	3.75	-0.08	13.8	8.9	15.3
180	139.7	1.099	81.8	-1.4	7.84	19.382	21.989	17.727	22.7	5.0	24.2	6.4	3.76	-0.08	13.8	8.9	15.3
181	139.9	1.105	81.7	-1.5	7.85	19.490	22.015	17.724	22.7	5.0	24.2	6.5	3.72	-0.09	13.8	8.9	15.4
182	140.0	1.112	81.6	-1.6	7.86	19.598	22.041	17.721	22.7	5.0	24.4	6.6	3.67	-0.09	13.8	8.9	15.5



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	140.4	1.118	81.5	-1.7	7.87	19.705	22.093	17.739	22.7	5.0	24.5	6.7	3.64	-0.10	13.9	8.9	15.6
184	140.6	1.124	81.4	-1.9	7.88	19.813	22.132	17.747	22.7	5.0	24.6	6.8	3.60	-0.10	13.9	8.9	15.7
185	141.1	1.130	81.8	-1.4	7.89	19.921	22.210	17.786	22.8	5.0	24.2	6.4	3.77	-0.08	13.9	8.9	15.3
186	141.3	1.135	81.7	-1.5	7.90	20.004	22.236	17.788	22.8	5.0	24.3	6.5	3.73	-0.09	13.9	8.9	15.4



File Location
B-59 5PSLHSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-59
Sample Description: Brown, Gray, Tan, Red & White Silty Sand
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.650001
LL: 32.000
PL: 27.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.810	2.818	
Height (in)	5.692	5.649	
Weight (grams)	1120.10		1209.50
Moisture (%)	11.89		20.82
Dry Density (pcf)	108.03	108.20	
Saturation (%)	59.30	100.00	
Void Ratio	0.528	0.529	

Test Data

Rate of Strain: 0
Cell Pressure (psi): 83.000
Effective Confining Stress (psi): 10.0
Corrected Peak Deviator Stress (psi): 21.643 at reading number: 475

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	0.0	0.008	73.0	0.0	6.24	0.000	0.000	0.000	10.0	10.0	10.0	10.0	1.00	0.00	10.0	0.0	10.0
1	20.3	0.010	73.9	0.8	6.24	0.042	3.255	3.254	13.2	10.0	12.4	9.1	1.36	0.26	11.6	1.6	10.7
2	32.6	0.012	74.6	1.6	6.24	0.083	5.219	5.215	15.2	10.0	13.6	8.4	1.62	0.30	12.6	2.6	11.0
3	39.4	0.015	75.2	2.2	6.25	0.125	6.313	6.305	16.3	10.0	14.1	7.8	1.81	0.34	13.1	3.2	10.9
4	43.6	0.017	75.7	2.6	6.25	0.166	6.985	6.974	16.9	10.0	14.3	7.3	1.95	0.38	13.4	3.5	10.8
5	46.5	0.019	75.9	2.9	6.25	0.208	7.460	7.444	17.4	10.0	14.5	7.1	2.05	0.39	13.7	3.7	10.8
6	49.0	0.022	76.1	3.1	6.25	0.249	7.855	7.836	17.8	10.0	14.7	6.9	2.14	0.40	13.9	3.9	10.8
7	51.2	0.024	76.3	3.3	6.26	0.291	8.211	8.187	18.1	10.0	14.9	6.7	2.22	0.40	14.1	4.1	10.8
8	53.5	0.026	76.5	3.4	6.26	0.332	8.580	8.552	18.5	10.0	15.1	6.5	2.31	0.40	14.2	4.3	10.8
9	55.5	0.029	76.6	3.5	6.26	0.374	8.897	8.863	18.8	10.0	15.3	6.4	2.38	0.40	14.4	4.4	10.9
10	57.6	0.031	76.7	3.7	6.26	0.416	9.226	9.188	19.1	10.0	15.5	6.3	2.46	0.40	14.6	4.6	10.9
11	59.5	0.033	76.8	3.7	6.27	0.457	9.529	9.486	19.4	10.0	15.7	6.2	2.53	0.39	14.7	4.7	11.0
12	61.3	0.036	76.9	3.8	6.27	0.499	9.819	9.770	19.7	10.0	15.9	6.1	2.59	0.39	14.8	4.9	11.0
13	63.1	0.038	76.9	3.9	6.27	0.540	10.109	10.055	20.0	10.0	16.2	6.1	2.65	0.38	15.0	5.0	11.1
14	64.9	0.040	77.0	3.9	6.28	0.582	10.399	10.339	20.3	10.0	16.4	6.0	2.72	0.38	15.1	5.2	11.2
15	66.6	0.043	77.0	3.9	6.28	0.623	10.676	10.609	20.6	10.0	16.6	6.0	2.76	0.37	15.3	5.3	11.3
16	68.4	0.045	77.1	4.0	6.28	0.665	10.966	10.893	20.9	10.0	16.8	5.9	2.83	0.37	15.4	5.4	11.4
17	70.1	0.047	77.1	4.1	6.28	0.707	11.229	11.150	21.1	10.0	17.0	5.9	2.89	0.36	15.5	5.6	11.5
18	71.8	0.050	77.1	4.1	6.29	0.748	11.506	11.420	21.4	10.0	17.3	5.9	2.94	0.36	15.7	5.7	11.6



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	73.3	0.052	77.1	4.1	6.29	0.790	11.744	11.651	21.6	10.0	17.5	5.9	2.99	0.35	15.8	5.8	11.7
20	75.0	0.054	77.1	4.1	6.29	0.831	12.020	11.920	21.9	10.0	17.8	5.9	3.04	0.34	15.9	6.0	11.8
21	76.5	0.057	77.1	4.1	6.29	0.873	12.258	12.151	22.1	10.0	18.0	5.9	3.07	0.34	16.0	6.1	11.9
22	78.1	0.059	77.1	4.1	6.30	0.914	12.521	12.407	22.4	10.0	18.3	5.9	3.12	0.33	16.2	6.2	12.1
23	79.7	0.062	77.1	4.1	6.30	0.956	12.772	12.649	22.6	10.0	18.5	5.9	3.14	0.32	16.3	6.3	12.2
24	80.9	0.064	77.2	4.1	6.30	0.997	12.969	12.840	22.8	10.0	18.7	5.8	3.21	0.32	16.4	6.4	12.2
25	82.5	0.066	77.2	4.2	6.30	1.039	13.220	13.082	23.0	10.0	18.9	5.8	3.26	0.32	16.5	6.5	12.3
26	83.9	0.069	77.3	4.2	6.31	1.081	13.444	13.298	23.3	10.0	19.0	5.7	3.32	0.32	16.6	6.6	12.4
27	85.2	0.071	77.2	4.2	6.31	1.122	13.655	13.501	23.5	10.0	19.3	5.8	3.34	0.31	16.7	6.8	12.5
28	86.4	0.073	77.2	4.1	6.31	1.164	13.852	13.691	23.7	10.0	19.5	5.8	3.35	0.30	16.8	6.8	12.7
29	87.6	0.076	77.1	4.1	6.32	1.205	14.037	13.868	23.8	10.0	19.7	5.9	3.37	0.30	16.9	6.9	12.8
30	88.8	0.078	77.2	4.1	6.32	1.247	14.235	14.057	24.0	10.0	19.9	5.8	3.42	0.29	17.0	7.0	12.8
31	90.0	0.080	77.2	4.1	6.32	1.288	14.419	14.233	24.2	10.0	20.1	5.8	3.45	0.29	17.1	7.1	12.9
32	91.2	0.083	77.1	4.1	6.32	1.330	14.617	14.422	24.4	10.0	20.3	5.9	3.46	0.28	17.2	7.2	13.1
33	92.0	0.085	77.1	4.1	6.33	1.372	14.749	14.546	24.5	10.0	20.4	5.9	3.47	0.28	17.2	7.3	13.2
34	93.2	0.087	77.1	4.0	6.33	1.413	14.933	14.722	24.7	10.0	20.7	5.9	3.48	0.27	17.3	7.4	13.3
35	94.0	0.090	77.0	4.0	6.33	1.455	15.065	14.846	24.8	10.0	20.8	6.0	3.48	0.27	17.4	7.4	13.4
36	94.8	0.092	77.0	3.9	6.33	1.496	15.197	14.969	24.9	10.0	21.0	6.0	3.49	0.26	17.4	7.5	13.5
37	95.6	0.094	76.9	3.9	6.34	1.538	15.329	15.093	25.1	10.0	21.2	6.1	3.49	0.26	17.5	7.5	13.6
38	96.3	0.097	76.9	3.9	6.34	1.579	15.434	15.190	25.2	10.0	21.2	6.1	3.51	0.26	17.6	7.6	13.7
39	97.3	0.099	76.9	3.9	6.34	1.621	15.592	15.339	25.3	10.0	21.4	6.1	3.52	0.25	17.6	7.7	13.8
40	98.0	0.101	76.9	3.8	6.34	1.662	15.711	15.450	25.4	10.0	21.6	6.1	3.52	0.25	17.7	7.7	13.9
41	98.8	0.104	76.9	3.8	6.35	1.704	15.843	15.573	25.5	10.0	21.7	6.1	3.54	0.25	17.7	7.8	13.9
42	99.5	0.106	76.8	3.8	6.35	1.746	15.948	15.670	25.6	10.0	21.8	6.2	3.54	0.24	17.8	7.8	14.0
43	100.2	0.108	76.8	3.7	6.35	1.787	16.053	15.767	25.7	10.0	22.0	6.2	3.54	0.24	17.8	7.9	14.1
44	100.7	0.111	76.7	3.7	6.36	1.829	16.146	15.850	25.8	10.0	22.1	6.3	3.53	0.23	17.9	7.9	14.2
45	101.4	0.113	76.7	3.7	6.36	1.870	16.251	15.947	25.9	10.0	22.2	6.3	3.53	0.23	17.9	8.0	14.3
46	101.9	0.116	76.7	3.7	6.36	1.912	16.330	16.018	26.0	10.0	22.3	6.3	3.56	0.23	18.0	8.0	14.3
47	102.5	0.118	76.8	3.7	6.36	1.953	16.422	16.102	26.1	10.0	22.3	6.2	3.59	0.23	18.0	8.1	14.3
48	102.9	0.120	76.8	3.8	6.37	1.995	16.488	16.159	26.1	10.0	22.3	6.2	3.62	0.23	18.0	8.1	14.3
49	103.4	0.123	76.7	3.7	6.37	2.037	16.581	16.243	26.2	10.0	22.5	6.3	3.59	0.23	18.1	8.1	14.4
50	104.0	0.125	76.7	3.7	6.37	2.078	16.673	16.326	26.3	10.0	22.6	6.3	3.59	0.22	18.1	8.2	14.5
51	104.5	0.127	76.7	3.7	6.37	2.120	16.752	16.397	26.4	10.0	22.7	6.3	3.60	0.22	18.2	8.2	14.5
52	104.9	0.130	76.7	3.6	6.38	2.161	16.818	16.454	26.4	10.0	22.8	6.3	3.60	0.22	18.2	8.2	14.6
53	105.3	0.132	76.6	3.6	6.38	2.203	16.884	16.512	26.5	10.0	22.9	6.4	3.59	0.22	18.2	8.3	14.6
54	105.7	0.134	76.6	3.6	6.38	2.244	16.950	16.569	26.5	10.0	22.9	6.4	3.60	0.22	18.2	8.3	14.7
55	106.2	0.137	76.6	3.5	6.38	2.286	17.016	16.627	26.6	10.0	23.0	6.4	3.59	0.21	18.3	8.3	14.7
56	106.6	0.139	76.5	3.5	6.39	2.327	17.081	16.684	26.6	10.0	23.1	6.5	3.58	0.21	18.3	8.3	14.8
57	107.1	0.141	76.5	3.5	6.39	2.369	17.161	16.754	26.7	10.0	23.2	6.5	3.59	0.21	18.3	8.4	14.8
58	107.2	0.144	76.5	3.5	6.39	2.411	17.187	16.773	26.7	10.0	23.3	6.5	3.58	0.21	18.3	8.4	14.9
59	107.6	0.146	76.5	3.5	6.40	2.452	17.240	16.817	26.8	10.0	23.3	6.5	3.59	0.21	18.4	8.4	14.9



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	108.0	0.148	76.5	3.5	6.40	2.494	17.306	16.874	26.8	10.0	23.4	6.5	3.60	0.21	18.4	8.4	14.9
61	108.3	0.151	76.5	3.5	6.40	2.535	17.358	16.918	26.9	10.0	23.4	6.5	3.60	0.20	18.4	8.5	15.0
62	108.5	0.153	76.5	3.4	6.40	2.577	17.385	16.937	26.9	10.0	23.5	6.5	3.59	0.20	18.4	8.5	15.0
63	108.6	0.155	76.4	3.4	6.41	2.618	17.411	16.955	26.9	10.0	23.5	6.6	3.58	0.20	18.4	8.5	15.1
64	109.2	0.158	76.4	3.4	6.41	2.660	17.503	17.038	27.0	10.0	23.6	6.6	3.59	0.20	18.5	8.5	15.1
65	109.4	0.160	76.4	3.3	6.41	2.702	17.530	17.056	27.0	10.0	23.7	6.6	3.58	0.20	18.5	8.5	15.1
66	109.6	0.162	76.3	3.3	6.41	2.743	17.569	17.087	27.0	10.0	23.7	6.7	3.56	0.19	18.5	8.5	15.2
67	109.9	0.165	76.4	3.4	6.42	2.785	17.622	17.131	27.1	10.0	23.7	6.6	3.60	0.20	18.5	8.6	15.1
68	110.2	0.167	76.5	3.5	6.42	2.826	17.661	17.162	27.1	10.0	23.7	6.5	3.64	0.20	18.5	8.6	15.1
69	110.5	0.170	76.5	3.5	6.42	2.868	17.714	17.206	27.2	10.0	23.7	6.5	3.65	0.20	18.6	8.6	15.1
70	110.7	0.172	76.5	3.4	6.43	2.909	17.740	17.224	27.2	10.0	23.8	6.5	3.63	0.20	18.6	8.6	15.2
71	111.0	0.174	76.5	3.4	6.43	2.951	17.793	17.268	27.2	10.0	23.8	6.5	3.64	0.20	18.6	8.6	15.2
72	111.2	0.177	76.4	3.4	6.43	2.992	17.820	17.286	27.2	10.0	23.9	6.6	3.63	0.20	18.6	8.6	15.2
73	111.4	0.179	76.4	3.4	6.43	3.034	17.859	17.317	27.3	10.0	23.9	6.6	3.63	0.20	18.6	8.7	15.2
74	111.7	0.181	76.4	3.3	6.44	3.076	17.899	17.348	27.3	10.0	24.0	6.6	3.62	0.19	18.6	8.7	15.3
75	111.9	0.184	76.3	3.3	6.44	3.117	17.938	17.379	27.3	10.0	24.0	6.7	3.61	0.19	18.7	8.7	15.4
76	112.2	0.186	76.3	3.3	6.44	3.159	17.978	17.410	27.4	10.0	24.1	6.7	3.60	0.19	18.7	8.7	15.4
77	112.3	0.188	76.3	3.3	6.45	3.200	18.004	17.428	27.4	10.0	24.1	6.7	3.60	0.19	18.7	8.7	15.4
78	112.4	0.191	76.3	3.2	6.45	3.242	18.017	17.433	27.4	10.0	24.2	6.7	3.59	0.18	18.7	8.7	15.5
79	112.7	0.193	76.3	3.2	6.45	3.283	18.070	17.477	27.4	10.0	24.2	6.7	3.59	0.18	18.7	8.7	15.5
80	112.9	0.195	76.2	3.2	6.45	3.325	18.096	17.495	27.5	10.0	24.3	6.8	3.58	0.18	18.7	8.7	15.5
81	113.1	0.198	76.2	3.2	6.46	3.367	18.136	17.525	27.5	10.0	24.3	6.8	3.58	0.18	18.7	8.8	15.5
82	113.4	0.200	76.3	3.3	6.46	3.408	18.175	17.556	27.5	10.0	24.3	6.7	3.62	0.19	18.7	8.8	15.5
83	113.6	0.202	76.3	3.3	6.46	3.450	18.215	17.587	27.5	10.0	24.2	6.7	3.64	0.19	18.8	8.8	15.5
84	114.1	0.205	76.4	3.3	6.46	3.491	18.281	17.643	27.6	10.0	24.3	6.6	3.66	0.19	18.8	8.8	15.4
85	114.1	0.207	76.3	3.3	6.47	3.533	18.294	17.648	27.6	10.0	24.3	6.7	3.65	0.19	18.8	8.8	15.5
86	114.2	0.209	76.3	3.3	6.47	3.574	18.307	17.653	27.6	10.0	24.3	6.7	3.65	0.19	18.8	8.8	15.5
87	114.4	0.212	76.3	3.3	6.47	3.616	18.334	17.671	27.6	10.0	24.4	6.7	3.64	0.18	18.8	8.8	15.5
88	114.7	0.214	76.3	3.3	6.48	3.657	18.386	17.714	27.7	10.0	24.4	6.7	3.64	0.18	18.8	8.9	15.6
89	115.2	0.216	76.3	3.2	6.48	3.699	18.465	17.782	27.7	10.0	24.5	6.7	3.64	0.18	18.9	8.9	15.6
90	115.2	0.219	76.3	3.2	6.48	3.741	18.465	17.775	27.7	10.0	24.5	6.7	3.64	0.18	18.8	8.9	15.6
91	115.4	0.221	76.2	3.2	6.48	3.782	18.492	17.792	27.8	10.0	24.6	6.8	3.62	0.18	18.9	8.9	15.7
92	115.6	0.224	76.2	3.2	6.49	3.824	18.531	17.823	27.8	10.0	24.6	6.8	3.63	0.18	18.9	8.9	15.7
93	115.8	0.226	76.2	3.2	6.49	3.865	18.558	17.840	27.8	10.0	24.6	6.8	3.63	0.18	18.9	8.9	15.7
94	116.1	0.228	76.2	3.1	6.49	3.907	18.610	17.883	27.8	10.0	24.7	6.8	3.62	0.18	18.9	8.9	15.8
95	116.1	0.231	76.2	3.1	6.50	3.948	18.610	17.876	27.8	10.0	24.7	6.8	3.62	0.18	18.9	8.9	15.8
96	116.4	0.233	76.1	3.1	6.50	3.990	18.663	17.918	27.9	10.0	24.8	6.9	3.61	0.17	18.9	9.0	15.8
97	116.6	0.235	76.1	3.1	6.50	4.032	18.689	17.936	27.9	10.0	24.8	6.9	3.61	0.17	18.9	9.0	15.8
98	116.8	0.238	76.1	3.1	6.50	4.073	18.729	17.966	27.9	10.0	24.9	6.9	3.60	0.17	18.9	9.0	15.9
99	116.9	0.240	76.1	3.1	6.51	4.115	18.742	17.971	27.9	10.0	24.9	6.9	3.60	0.17	18.9	9.0	15.9
100	117.2	0.242	76.1	3.1	6.51	4.156	18.782	18.001	28.0	10.0	24.9	6.9	3.61	0.17	19.0	9.0	15.9



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	117.4	0.245	76.1	3.1	6.51	4.198	18.821	18.031	28.0	10.0	24.9	6.9	3.63	0.17	19.0	9.0	15.9
102	117.5	0.247	76.2	3.2	6.52	4.239	18.834	18.036	28.0	10.0	24.8	6.8	3.66	0.18	19.0	9.0	15.8
103	117.8	0.249	76.3	3.2	6.52	4.281	18.887	18.079	28.0	10.0	24.8	6.7	3.68	0.18	19.0	9.0	15.8
104	118.0	0.252	76.2	3.1	6.52	4.322	18.914	18.096	28.1	10.0	24.9	6.8	3.65	0.17	19.0	9.0	15.9
105	118.2	0.254	76.2	3.1	6.52	4.364	18.940	18.113	28.1	10.0	24.9	6.8	3.65	0.17	19.0	9.1	15.9
106	118.4	0.256	76.1	3.1	6.53	4.406	18.979	18.143	28.1	10.0	25.0	6.9	3.64	0.17	19.0	9.1	15.9
107	118.4	0.259	76.1	3.1	6.53	4.447	18.979	18.135	28.1	10.0	25.0	6.9	3.64	0.17	19.0	9.1	15.9
108	118.9	0.261	76.1	3.1	6.53	4.489	19.059	18.203	28.2	10.0	25.1	6.9	3.65	0.17	19.1	9.1	16.0
109	118.8	0.263	76.1	3.1	6.53	4.530	19.045	18.183	28.1	10.0	25.1	6.9	3.63	0.17	19.1	9.1	16.0
110	119.2	0.266	76.1	3.1	6.54	4.572	19.098	18.225	28.2	10.0	25.1	6.9	3.64	0.17	19.1	9.1	16.0
111	119.3	0.268	76.1	3.0	6.54	4.613	19.124	18.242	28.2	10.0	25.2	6.9	3.63	0.17	19.1	9.1	16.1
112	119.4	0.270	76.1	3.0	6.54	4.655	19.138	18.247	28.2	10.0	25.2	6.9	3.63	0.17	19.1	9.1	16.1
113	119.5	0.273	76.1	3.0	6.55	4.697	19.151	18.251	28.2	10.0	25.2	6.9	3.63	0.17	19.1	9.1	16.1
114	119.6	0.275	76.0	3.0	6.55	4.738	19.177	18.268	28.2	10.0	25.3	7.0	3.62	0.16	19.1	9.1	16.1
115	120.1	0.278	76.0	3.0	6.55	4.780	19.243	18.323	28.3	10.0	25.3	7.0	3.62	0.16	19.1	9.2	16.1
116	120.0	0.280	76.0	2.9	6.55	4.821	19.230	18.303	28.3	10.0	25.3	7.0	3.61	0.16	19.1	9.2	16.2
117	120.2	0.282	76.0	2.9	6.56	4.863	19.269	18.332	28.3	10.0	25.4	7.0	3.61	0.16	19.1	9.2	16.2
118	120.4	0.285	75.9	2.9	6.56	4.904	19.296	18.349	28.3	10.0	25.4	7.1	3.60	0.16	19.1	9.2	16.2
119	120.6	0.287	75.9	2.9	6.56	4.946	19.335	18.379	28.3	10.0	25.4	7.1	3.60	0.16	19.2	9.2	16.3
120	120.8	0.289	75.9	2.9	6.57	4.987	19.362	18.396	28.4	10.0	25.5	7.1	3.60	0.16	19.2	9.2	16.3
121	121.0	0.292	76.0	2.9	6.57	5.029	19.388	18.413	28.4	10.0	25.4	7.0	3.62	0.16	19.2	9.2	16.2
122	121.0	0.294	76.1	3.0	6.57	5.071	19.401	18.417	28.4	10.0	25.4	6.9	3.65	0.16	19.2	9.2	16.2
123	121.4	0.296	76.1	3.1	6.58	5.112	19.454	18.459	28.4	10.0	25.4	6.9	3.67	0.17	19.2	9.2	16.1
124	121.5	0.299	76.1	3.0	6.58	5.154	19.467	18.464	28.4	10.0	25.4	6.9	3.66	0.16	19.2	9.2	16.2
125	121.5	0.301	76.0	3.0	6.58	5.195	19.480	18.468	28.4	10.0	25.5	7.0	3.64	0.16	19.2	9.2	16.2
126	121.8	0.303	76.0	2.9	6.58	5.237	19.520	18.498	28.5	10.0	25.5	7.0	3.63	0.16	19.2	9.2	16.3
127	121.8	0.306	76.0	2.9	6.59	5.278	19.520	18.489	28.5	10.0	25.5	7.0	3.63	0.16	19.2	9.2	16.3
128	121.9	0.308	75.9	2.9	6.59	5.320	19.546	18.506	28.5	10.0	25.6	7.1	3.62	0.16	19.2	9.3	16.3
129	121.9	0.310	75.9	2.9	6.59	5.362	19.546	18.498	28.5	10.0	25.6	7.1	3.62	0.16	19.2	9.2	16.3
130	122.3	0.313	75.9	2.9	6.60	5.403	19.599	18.540	28.5	10.0	25.6	7.1	3.62	0.16	19.2	9.3	16.3
131	122.4	0.315	75.9	2.9	6.60	5.445	19.625	18.557	28.5	10.0	25.7	7.1	3.61	0.15	19.2	9.3	16.4
132	122.6	0.317	75.9	2.9	6.60	5.486	19.652	18.573	28.5	10.0	25.7	7.1	3.61	0.15	19.2	9.3	16.4
133	122.8	0.320	75.9	2.8	6.60	5.528	19.678	18.590	28.6	10.0	25.7	7.1	3.60	0.15	19.3	9.3	16.4
134	122.9	0.322	75.9	2.8	6.61	5.569	19.691	18.594	28.6	10.0	25.7	7.1	3.60	0.15	19.3	9.3	16.4
135	122.9	0.324	75.9	2.8	6.61	5.611	19.704	18.599	28.6	10.0	25.7	7.1	3.60	0.15	19.3	9.3	16.4
136	123.3	0.327	75.9	2.9	6.61	5.652	19.757	18.640	28.6	10.0	25.7	7.1	3.62	0.15	19.3	9.3	16.4
137	123.4	0.329	76.0	2.9	6.62	5.694	19.783	18.657	28.6	10.0	25.7	7.0	3.66	0.16	19.3	9.3	16.4
138	123.6	0.332	76.0	3.0	6.62	5.736	19.810	18.674	28.6	10.0	25.7	7.0	3.67	0.16	19.3	9.3	16.3
139	123.8	0.334	76.0	2.9	6.62	5.777	19.836	18.690	28.7	10.0	25.7	7.0	3.66	0.16	19.3	9.3	16.4
140	124.0	0.336	75.9	2.9	6.62	5.819	19.876	18.719	28.7	10.0	25.8	7.1	3.65	0.15	19.3	9.4	16.4
141	124.1	0.339	75.9	2.9	6.63	5.860	19.889	18.723	28.7	10.0	25.8	7.1	3.64	0.15	19.3	9.4	16.5



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	124.2	0.341	75.9	2.9	6.63	5.902	19.902	18.727	28.7	10.0	25.8	7.1	3.64	0.15	19.3	9.4	16.5
143	124.3	0.343	75.9	2.8	6.63	5.943	19.928	18.744	28.7	10.0	25.9	7.1	3.62	0.15	19.3	9.4	16.5
144	124.5	0.346	75.9	2.9	6.64	5.985	19.955	18.760	28.7	10.0	25.9	7.1	3.64	0.15	19.3	9.4	16.5
145	124.8	0.348	75.9	2.8	6.64	6.027	20.007	18.802	28.8	10.0	25.9	7.1	3.63	0.15	19.4	9.4	16.5
146	124.9	0.350	75.9	2.8	6.64	6.068	20.021	18.806	28.8	10.0	26.0	7.1	3.63	0.15	19.4	9.4	16.5
147	125.2	0.353	75.9	2.8	6.64	6.110	20.060	18.835	28.8	10.0	26.0	7.1	3.64	0.15	19.4	9.4	16.6
148	125.2	0.355	75.8	2.8	6.65	6.151	20.073	18.839	28.8	10.0	26.0	7.2	3.62	0.15	19.4	9.4	16.6
149	125.3	0.357	75.8	2.8	6.65	6.193	20.087	18.843	28.8	10.0	26.0	7.2	3.62	0.15	19.4	9.4	16.6
150	125.5	0.360	75.8	2.8	6.65	6.234	20.113	18.859	28.8	10.0	26.0	7.2	3.62	0.15	19.4	9.4	16.6
151	125.7	0.362	75.8	2.7	6.66	6.276	20.152	18.888	28.8	10.0	26.1	7.2	3.61	0.14	19.4	9.4	16.7
152	125.9	0.364	75.8	2.7	6.66	6.317	20.179	18.904	28.9	10.0	26.1	7.2	3.62	0.14	19.4	9.5	16.7
153	126.0	0.367	75.7	2.7	6.66	6.359	20.192	18.908	28.9	10.0	26.2	7.3	3.60	0.14	19.4	9.5	16.7
154	126.1	0.369	75.7	2.7	6.67	6.401	20.218	18.924	28.9	10.0	26.2	7.3	3.60	0.14	19.4	9.5	16.7
155	126.3	0.371	75.7	2.7	6.67	6.442	20.245	18.941	28.9	10.0	26.2	7.3	3.61	0.14	19.4	9.5	16.7
156	126.5	0.374	75.8	2.8	6.67	6.484	20.271	18.957	28.9	10.0	26.1	7.2	3.64	0.15	19.4	9.5	16.7
157	126.6	0.376	75.9	2.9	6.67	6.525	20.297	18.973	28.9	10.0	26.1	7.1	3.67	0.15	19.4	9.5	16.6
158	126.7	0.378	75.9	2.8	6.68	6.567	20.311	18.977	28.9	10.0	26.1	7.1	3.66	0.15	19.5	9.5	16.6
159	126.8	0.381	75.8	2.8	6.68	6.608	20.324	18.981	28.9	10.0	26.2	7.2	3.64	0.15	19.5	9.5	16.7
160	127.0	0.383	75.8	2.8	6.68	6.650	20.350	18.997	29.0	10.0	26.2	7.2	3.64	0.15	19.5	9.5	16.7
161	127.0	0.386	75.8	2.7	6.69	6.692	20.363	19.001	29.0	10.0	26.2	7.2	3.63	0.14	19.5	9.5	16.7
162	127.4	0.388	75.8	2.7	6.69	6.733	20.416	19.041	29.0	10.0	26.3	7.2	3.64	0.14	19.5	9.5	16.7
163	127.4	0.390	75.8	2.7	6.69	6.775	20.416	19.033	29.0	10.0	26.3	7.2	3.63	0.14	19.5	9.5	16.7
164	127.6	0.393	75.8	2.7	6.70	6.816	20.456	19.061	29.0	10.0	26.3	7.2	3.64	0.14	19.5	9.5	16.8
165	127.7	0.395	75.7	2.7	6.70	6.858	20.469	19.065	29.0	10.0	26.3	7.3	3.62	0.14	19.5	9.5	16.8
166	127.8	0.397	75.7	2.7	6.70	6.899	20.482	19.069	29.0	10.0	26.3	7.3	3.62	0.14	19.5	9.5	16.8
167	128.0	0.400	75.7	2.7	6.70	6.941	20.522	19.097	29.1	10.0	26.4	7.3	3.63	0.14	19.5	9.5	16.8
168	128.1	0.402	75.7	2.7	6.71	6.982	20.535	19.101	29.1	10.0	26.4	7.3	3.63	0.14	19.5	9.6	16.8
169	128.4	0.404	75.7	2.7	6.71	7.024	20.587	19.141	29.1	10.0	26.4	7.3	3.62	0.14	19.5	9.6	16.9
170	128.5	0.407	75.7	2.7	6.71	7.066	20.601	19.145	29.1	10.0	26.5	7.3	3.62	0.14	19.5	9.6	16.9
171	128.6	0.409	75.7	2.7	6.72	7.107	20.614	19.149	29.1	10.0	26.5	7.3	3.62	0.14	19.5	9.6	16.9
172	128.8	0.411	75.7	2.7	6.72	7.149	20.640	19.165	29.1	10.0	26.5	7.3	3.62	0.14	19.5	9.6	16.9
173	128.8	0.414	75.7	2.6	6.72	7.190	20.640	19.156	29.1	10.0	26.5	7.3	3.61	0.14	19.5	9.6	16.9
174	129.1	0.416	75.7	2.6	6.73	7.232	20.693	19.196	29.2	10.0	26.5	7.3	3.61	0.14	19.6	9.6	16.9
175	129.3	0.418	75.7	2.6	6.73	7.273	20.719	19.212	29.2	10.0	26.6	7.3	3.62	0.14	19.6	9.6	17.0
176	129.6	0.421	75.7	2.7	6.73	7.315	20.772	19.252	29.2	10.0	26.5	7.3	3.65	0.14	19.6	9.6	16.9
177	129.7	0.423	75.8	2.7	6.73	7.356	20.785	19.256	29.2	10.0	26.5	7.2	3.67	0.14	19.6	9.6	16.9
178	129.8	0.425	75.8	2.7	6.74	7.398	20.798	19.260	29.2	10.0	26.5	7.2	3.67	0.14	19.6	9.6	16.9
179	129.9	0.428	75.7	2.7	6.74	7.440	20.825	19.275	29.2	10.0	26.5	7.3	3.65	0.14	19.6	9.6	16.9
180	130.0	0.430	75.7	2.7	6.74	7.481	20.838	19.279	29.2	10.0	26.6	7.3	3.64	0.14	19.6	9.6	16.9
181	130.2	0.432	75.7	2.7	6.75	7.523	20.864	19.295	29.3	10.0	26.6	7.3	3.64	0.14	19.6	9.6	17.0
182	130.3	0.435	75.7	2.7	6.75	7.564	20.891	19.310	29.3	10.0	26.6	7.3	3.64	0.14	19.6	9.7	17.0



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	130.4	0.437	75.7	2.7	6.75	7.606	20.904	19.314	29.3	10.0	26.6	7.3	3.64	0.14	19.6	9.7	17.0
184	130.7	0.440	75.7	2.6	6.76	7.647	20.943	19.342	29.3	10.0	26.7	7.3	3.63	0.14	19.6	9.7	17.0
185	130.7	0.442	75.7	2.6	6.76	7.689	20.943	19.333	29.3	10.0	26.7	7.3	3.63	0.14	19.6	9.7	17.0
186	130.7	0.444	75.7	2.6	6.76	7.731	20.956	19.336	29.3	10.0	26.7	7.3	3.63	0.14	19.6	9.7	17.0
187	131.0	0.447	75.7	2.6	6.76	7.772	20.996	19.364	29.3	10.0	26.7	7.3	3.64	0.14	19.6	9.7	17.0
188	131.0	0.449	75.6	2.6	6.77	7.814	20.996	19.355	29.3	10.0	26.7	7.4	3.62	0.13	19.6	9.7	17.1
189	131.2	0.451	75.6	2.6	6.77	7.855	21.036	19.383	29.3	10.0	26.8	7.4	3.62	0.13	19.7	9.7	17.1
190	131.4	0.454	75.6	2.6	6.77	7.897	21.062	19.399	29.4	10.0	26.8	7.4	3.63	0.13	19.7	9.7	17.1
191	131.4	0.456	75.6	2.5	6.78	7.938	21.062	19.390	29.4	10.0	26.8	7.4	3.61	0.13	19.7	9.7	17.1
192	131.7	0.458	75.6	2.5	6.78	7.980	21.101	19.418	29.4	10.0	26.8	7.4	3.61	0.13	19.7	9.7	17.1
193	131.7	0.461	75.7	2.6	6.78	8.021	21.115	19.421	29.4	10.0	26.8	7.3	3.64	0.13	19.7	9.7	17.1
194	131.9	0.463	75.7	2.7	6.79	8.063	21.141	19.436	29.4	10.0	26.7	7.3	3.66	0.14	19.7	9.7	17.0
195	132.2	0.465	75.7	2.7	6.79	8.105	21.194	19.476	29.4	10.0	26.7	7.3	3.68	0.14	19.7	9.7	17.0
196	132.1	0.468	75.7	2.6	6.79	8.146	21.181	19.455	29.4	10.0	26.8	7.3	3.65	0.13	19.7	9.7	17.1
197	132.1	0.470	75.7	2.6	6.80	8.188	21.181	19.446	29.4	10.0	26.8	7.3	3.65	0.13	19.7	9.7	17.1
198	132.4	0.472	75.6	2.6	6.80	8.229	21.220	19.474	29.4	10.0	26.9	7.4	3.64	0.13	19.7	9.7	17.1
199	132.6	0.475	75.6	2.6	6.80	8.271	21.246	19.489	29.5	10.0	26.9	7.4	3.64	0.13	19.7	9.7	17.1
200	132.8	0.477	75.6	2.6	6.80	8.312	21.286	19.517	29.5	10.0	26.9	7.4	3.64	0.13	19.7	9.8	17.1
201	132.9	0.479	75.6	2.5	6.81	8.354	21.299	19.520	29.5	10.0	26.9	7.4	3.63	0.13	19.7	9.8	17.2
202	133.0	0.482	75.6	2.5	6.81	8.396	21.312	19.523	29.5	10.0	26.9	7.4	3.63	0.13	19.7	9.8	17.2
203	133.1	0.484	75.6	2.5	6.81	8.437	21.339	19.538	29.5	10.0	27.0	7.4	3.63	0.13	19.7	9.8	17.2
204	133.2	0.486	75.6	2.5	6.82	8.479	21.352	19.542	29.5	10.0	27.0	7.4	3.63	0.13	19.7	9.8	17.2
205	133.3	0.489	75.6	2.5	6.82	8.520	21.365	19.545	29.5	10.0	27.0	7.4	3.63	0.13	19.7	9.8	17.2
206	133.5	0.491	75.5	2.5	6.82	8.562	21.391	19.560	29.5	10.0	27.0	7.5	3.62	0.13	19.7	9.8	17.2
207	133.6	0.494	75.5	2.5	6.83	8.603	21.418	19.575	29.5	10.0	27.0	7.5	3.62	0.13	19.7	9.8	17.3
208	133.7	0.496	75.5	2.5	6.83	8.645	21.431	19.578	29.5	10.0	27.0	7.5	3.62	0.13	19.8	9.8	17.3
209	134.0	0.498	75.5	2.5	6.83	8.686	21.484	19.617	29.6	10.0	27.1	7.5	3.61	0.13	19.8	9.8	17.3
210	134.0	0.501	75.5	2.5	6.84	8.728	21.484	19.609	29.6	10.0	27.1	7.5	3.61	0.13	19.8	9.8	17.3
211	134.2	0.503	75.5	2.5	6.84	8.770	21.510	19.624	29.6	10.0	27.1	7.5	3.61	0.13	19.8	9.8	17.3
212	134.3	0.505	75.5	2.4	6.84	8.811	21.523	19.627	29.6	10.0	27.2	7.5	3.60	0.12	19.8	9.8	17.4
213	134.5	0.508	75.6	2.5	6.84	8.853	21.563	19.654	29.6	10.0	27.1	7.4	3.65	0.13	19.8	9.8	17.3
214	134.7	0.510	75.6	2.6	6.85	8.894	21.589	19.669	29.6	10.0	27.1	7.4	3.66	0.13	19.8	9.8	17.2
215	134.7	0.512	75.6	2.5	6.85	8.936	21.589	19.660	29.6	10.0	27.1	7.4	3.65	0.13	19.8	9.8	17.3
216	135.0	0.515	75.5	2.5	6.85	8.977	21.642	19.699	29.7	10.0	27.2	7.5	3.64	0.13	19.8	9.8	17.3
217	135.0	0.517	75.5	2.5	6.86	9.019	21.642	19.690	29.7	10.0	27.2	7.5	3.64	0.13	19.8	9.8	17.3
218	135.3	0.519	75.5	2.5	6.86	9.061	21.681	19.717	29.7	10.0	27.2	7.5	3.64	0.13	19.8	9.9	17.3
219	135.4	0.522	75.5	2.5	6.86	9.102	21.695	19.720	29.7	10.0	27.2	7.5	3.64	0.13	19.8	9.9	17.3
220	135.4	0.524	75.5	2.5	6.87	9.144	21.708	19.723	29.7	10.0	27.2	7.5	3.63	0.12	19.8	9.9	17.4
221	135.6	0.526	75.5	2.5	6.87	9.185	21.734	19.738	29.7	10.0	27.2	7.5	3.63	0.12	19.8	9.9	17.4
222	135.8	0.529	75.5	2.5	6.87	9.227	21.760	19.753	29.7	10.0	27.3	7.5	3.63	0.12	19.8	9.9	17.4
223	135.9	0.531	75.5	2.5	6.88	9.268	21.787	19.768	29.7	10.0	27.3	7.5	3.63	0.12	19.8	9.9	17.4



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
224	135.9	0.533	75.5	2.4	6.88	9.310	21.787	19.758	29.7	10.0	27.3	7.5	3.62	0.12	19.8	9.9	17.4
225	136.1	0.536	75.5	2.4	6.88	9.351	21.813	19.773	29.7	10.0	27.3	7.5	3.62	0.12	19.8	9.9	17.4
226	136.3	0.538	75.5	2.4	6.89	9.393	21.840	19.788	29.7	10.0	27.3	7.5	3.62	0.12	19.9	9.9	17.4
227	136.3	0.541	75.4	2.4	6.89	9.435	21.853	19.791	29.8	10.0	27.4	7.6	3.61	0.12	19.9	9.9	17.5
228	136.4	0.543	75.4	2.4	6.89	9.476	21.866	19.794	29.8	10.0	27.4	7.6	3.61	0.12	19.9	9.9	17.5
229	136.7	0.545	75.4	2.4	6.90	9.518	21.905	19.821	29.8	10.0	27.4	7.6	3.61	0.12	19.9	9.9	17.5
230	136.8	0.548	75.5	2.5	6.90	9.559	21.932	19.835	29.8	10.0	27.3	7.5	3.64	0.12	19.9	9.9	17.4
231	136.8	0.550	75.5	2.5	6.90	9.601	21.932	19.826	29.8	10.0	27.3	7.5	3.66	0.13	19.9	9.9	17.4
232	137.2	0.552	75.5	2.5	6.90	9.642	21.984	19.865	29.8	10.0	27.4	7.5	3.65	0.12	19.9	9.9	17.4
233	137.2	0.555	75.5	2.5	6.91	9.684	21.998	19.867	29.8	10.0	27.4	7.5	3.65	0.12	19.9	9.9	17.4
234	137.4	0.557	75.5	2.4	6.91	9.726	22.024	19.882	29.8	10.0	27.4	7.5	3.63	0.12	19.9	9.9	17.5
235	137.7	0.559	75.5	2.4	6.91	9.767	22.064	19.909	29.9	10.0	27.5	7.5	3.64	0.12	19.9	10.0	17.5
236	137.7	0.562	75.5	2.4	6.92	9.809	22.064	19.899	29.9	10.0	27.4	7.5	3.64	0.12	19.9	9.9	17.5
237	138.0	0.564	75.4	2.4	6.92	9.850	22.116	19.938	29.9	10.0	27.5	7.6	3.63	0.12	19.9	10.0	17.6
238	137.9	0.566	75.4	2.4	6.92	9.892	22.103	19.917	29.9	10.0	27.5	7.6	3.62	0.12	19.9	10.0	17.5
239	138.1	0.569	75.4	2.3	6.93	9.933	22.143	19.943	29.9	10.0	27.6	7.6	3.61	0.12	19.9	10.0	17.6
240	138.3	0.571	75.3	2.3	6.93	9.975	22.169	19.958	29.9	10.0	27.6	7.7	3.60	0.11	19.9	10.0	17.6
241	138.2	0.573	75.3	2.3	6.93	10.016	22.156	19.937	29.9	10.0	27.6	7.7	3.60	0.12	19.9	10.0	17.6
242	138.5	0.576	75.3	2.3	6.94	10.058	22.195	19.963	29.9	10.0	27.6	7.7	3.60	0.11	19.9	10.0	17.6
243	138.6	0.578	75.3	2.3	6.94	10.100	22.222	19.977	29.9	10.0	27.7	7.7	3.59	0.11	20.0	10.0	17.7
244	138.9	0.580	75.3	2.3	6.94	10.141	22.261	20.004	30.0	10.0	27.7	7.7	3.60	0.11	20.0	10.0	17.7
245	138.9	0.583	75.3	2.3	6.95	10.183	22.261	19.994	30.0	10.0	27.7	7.7	3.59	0.11	20.0	10.0	17.7
246	138.9	0.585	75.3	2.2	6.95	10.224	22.261	19.985	29.9	10.0	27.7	7.7	3.58	0.11	20.0	10.0	17.7
247	139.1	0.587	75.3	2.2	6.95	10.266	22.288	20.000	30.0	10.0	27.7	7.7	3.58	0.11	20.0	10.0	17.7
248	139.2	0.590	75.3	2.2	6.96	10.307	22.314	20.014	30.0	10.0	27.8	7.7	3.58	0.11	20.0	10.0	17.8
249	139.4	0.592	75.3	2.3	6.96	10.349	22.340	20.028	30.0	10.0	27.7	7.7	3.60	0.11	20.0	10.0	17.7
250	139.6	0.595	75.3	2.3	6.96	10.391	22.380	20.055	30.0	10.0	27.7	7.7	3.62	0.11	20.0	10.0	17.7
251	139.6	0.597	75.4	2.3	6.97	10.432	22.380	20.045	30.0	10.0	27.7	7.6	3.63	0.12	20.0	10.0	17.7
252	139.8	0.599	75.3	2.3	6.97	10.474	22.406	20.060	30.0	10.0	27.7	7.7	3.62	0.11	20.0	10.0	17.7
253	140.0	0.602	75.3	2.3	6.97	10.515	22.433	20.074	30.0	10.0	27.8	7.7	3.60	0.11	20.0	10.0	17.7
254	140.1	0.604	75.3	2.3	6.98	10.557	22.459	20.088	30.0	10.0	27.8	7.7	3.61	0.11	20.0	10.0	17.8
255	140.1	0.606	75.3	2.3	6.98	10.598	22.459	20.079	30.0	10.0	27.8	7.7	3.60	0.11	20.0	10.0	17.7
256	140.2	0.609	75.3	2.2	6.98	10.640	22.472	20.081	30.0	10.0	27.8	7.7	3.59	0.11	20.0	10.0	17.8
257	140.4	0.611	75.3	2.2	6.99	10.681	22.499	20.095	30.1	10.0	27.8	7.7	3.59	0.11	20.0	10.0	17.8
258	140.5	0.613	75.3	2.2	6.99	10.723	22.525	20.110	30.1	10.0	27.9	7.7	3.60	0.11	20.0	10.1	17.8
259	140.6	0.616	75.2	2.2	6.99	10.765	22.538	20.112	30.1	10.0	27.9	7.8	3.58	0.11	20.0	10.1	17.8
260	140.9	0.618	75.2	2.2	6.99	10.806	22.591	20.150	30.1	10.0	27.9	7.8	3.59	0.11	20.0	10.1	17.9
261	140.9	0.620	75.2	2.2	7.00	10.848	22.591	20.140	30.1	10.0	27.9	7.8	3.59	0.11	20.0	10.1	17.9
262	141.1	0.623	75.2	2.2	7.00	10.889	22.617	20.154	30.1	10.0	27.9	7.8	3.59	0.11	20.0	10.1	17.9
263	141.4	0.625	75.2	2.1	7.00	10.931	22.657	20.180	30.1	10.0	28.0	7.8	3.58	0.11	20.1	10.1	17.9
264	141.4	0.627	75.2	2.1	7.01	10.972	22.657	20.171	30.1	10.0	28.0	7.8	3.58	0.11	20.0	10.1	17.9



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
265	141.4	0.630	75.2	2.1	7.01	11.014	22.670	20.173	30.1	10.0	28.0	7.8	3.58	0.11	20.0	10.1	17.9
266	141.6	0.632	75.1	2.1	7.01	11.056	22.696	20.187	30.1	10.0	28.1	7.9	3.57	0.10	20.1	10.1	18.0
267	141.7	0.634	75.1	2.1	7.02	11.097	22.709	20.189	30.2	10.0	28.1	7.9	3.57	0.10	20.1	10.1	18.0
268	141.9	0.637	75.1	2.1	7.02	11.139	22.749	20.215	30.2	10.0	28.1	7.9	3.57	0.10	20.1	10.1	18.0
269	142.1	0.639	75.2	2.2	7.02	11.180	22.775	20.229	30.2	10.0	28.0	7.8	3.60	0.11	20.1	10.1	17.9
270	142.3	0.641	75.3	2.2	7.03	11.222	22.815	20.255	30.2	10.0	28.0	7.7	3.61	0.11	20.1	10.1	17.9
271	142.3	0.644	75.2	2.2	7.03	11.263	22.802	20.233	30.2	10.0	28.0	7.8	3.60	0.11	20.1	10.1	17.9
272	142.4	0.646	75.2	2.2	7.03	11.305	22.828	20.247	30.2	10.0	28.0	7.8	3.60	0.11	20.1	10.1	17.9
273	142.7	0.649	75.2	2.1	7.04	11.346	22.868	20.273	30.2	10.0	28.1	7.8	3.59	0.11	20.1	10.1	18.0
274	142.7	0.651	75.2	2.1	7.04	11.388	22.868	20.263	30.2	10.0	28.1	7.8	3.59	0.11	20.1	10.1	18.0
275	142.8	0.653	75.1	2.1	7.04	11.430	22.894	20.277	30.2	10.0	28.1	7.9	3.58	0.10	20.1	10.1	18.0
276	142.9	0.656	75.1	2.1	7.05	11.471	22.907	20.279	30.2	10.0	28.1	7.9	3.58	0.10	20.1	10.1	18.0
277	143.2	0.658	75.1	2.1	7.05	11.513	22.960	20.317	30.3	10.0	28.2	7.9	3.58	0.10	20.1	10.2	18.0
278	143.2	0.660	75.1	2.1	7.05	11.554	22.960	20.307	30.3	10.0	28.2	7.9	3.58	0.10	20.1	10.2	18.0
279	143.4	0.663	75.1	2.1	7.06	11.596	22.986	20.321	30.3	10.0	28.2	7.9	3.57	0.10	20.1	10.2	18.1
280	143.5	0.665	75.1	2.1	7.06	11.637	22.999	20.323	30.3	10.0	28.2	7.9	3.57	0.10	20.1	10.2	18.1
281	143.6	0.667	75.1	2.1	7.06	11.679	23.013	20.325	30.3	10.0	28.2	7.9	3.57	0.10	20.1	10.2	18.1
282	144.0	0.670	75.1	2.0	7.07	11.721	23.078	20.374	30.3	10.0	28.3	7.9	3.56	0.10	20.1	10.2	18.1
283	143.9	0.672	75.2	2.1	7.07	11.762	23.065	20.352	30.3	10.0	28.2	7.8	3.60	0.10	20.1	10.2	18.0
284	144.2	0.674	75.2	2.2	7.07	11.804	23.118	20.389	30.4	10.0	28.2	7.8	3.62	0.11	20.2	10.2	18.0
285	144.6	0.677	75.2	2.2	7.08	11.845	23.171	20.426	30.4	10.0	28.2	7.8	3.62	0.11	20.2	10.2	18.0
286	144.6	0.679	75.2	2.1	7.08	11.887	23.171	20.416	30.4	10.0	28.2	7.8	3.61	0.10	20.2	10.2	18.0
287	144.7	0.681	75.2	2.1	7.08	11.928	23.197	20.430	30.4	10.0	28.3	7.8	3.61	0.10	20.2	10.2	18.0
288	144.7	0.684	75.2	2.1	7.09	11.970	23.197	20.420	30.4	10.0	28.2	7.8	3.61	0.10	20.2	10.2	18.0
289	144.8	0.686	75.1	2.1	7.09	12.011	23.210	20.422	30.4	10.0	28.3	7.9	3.60	0.10	20.2	10.2	18.1
290	145.1	0.688	75.1	2.1	7.09	12.053	23.250	20.447	30.4	10.0	28.3	7.9	3.60	0.10	20.2	10.2	18.1
291	145.0	0.691	75.1	2.1	7.10	12.095	23.237	20.426	30.4	10.0	28.3	7.9	3.60	0.10	20.2	10.2	18.1
292	145.2	0.693	75.1	2.1	7.10	12.136	23.276	20.451	30.4	10.0	28.3	7.9	3.60	0.10	20.2	10.2	18.1
293	145.2	0.695	75.1	2.1	7.10	12.178	23.276	20.442	30.4	10.0	28.3	7.9	3.60	0.10	20.2	10.2	18.1
294	145.5	0.698	75.1	2.1	7.11	12.219	23.316	20.467	30.4	10.0	28.4	7.9	3.59	0.10	20.2	10.2	18.1
295	145.5	0.700	75.1	2.1	7.11	12.261	23.329	20.469	30.4	10.0	28.4	7.9	3.59	0.10	20.2	10.2	18.1
296	145.5	0.703	75.1	2.1	7.11	12.302	23.329	20.459	30.4	10.0	28.4	7.9	3.59	0.10	20.2	10.2	18.1
297	145.7	0.705	75.1	2.0	7.12	12.344	23.355	20.472	30.4	10.0	28.4	7.9	3.58	0.10	20.2	10.2	18.2
298	145.8	0.707	75.1	2.0	7.12	12.386	23.368	20.474	30.4	10.0	28.4	7.9	3.58	0.10	20.2	10.2	18.2
299	145.9	0.710	75.1	2.0	7.12	12.427	23.382	20.476	30.4	10.0	28.4	7.9	3.58	0.10	20.2	10.2	18.2
300	146.0	0.712	75.1	2.0	7.13	12.469	23.395	20.478	30.4	10.0	28.4	7.9	3.58	0.10	20.2	10.2	18.2
301	146.1	0.714	75.0	2.0	7.13	12.510	23.421	20.491	30.5	10.0	28.5	8.0	3.56	0.10	20.2	10.2	18.2
302	146.4	0.717	75.1	2.0	7.13	12.552	23.461	20.516	30.5	10.0	28.5	7.9	3.58	0.10	20.2	10.3	18.2
303	146.6	0.719	75.1	2.1	7.14	12.593	23.500	20.541	30.5	10.0	28.4	7.9	3.61	0.10	20.2	10.3	18.1
304	146.5	0.721	75.1	2.1	7.14	12.635	23.487	20.519	30.5	10.0	28.4	7.9	3.61	0.10	20.2	10.3	18.1
305	146.8	0.724	75.1	2.1	7.14	12.676	23.527	20.544	30.5	10.0	28.4	7.9	3.61	0.10	20.2	10.3	18.1



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
306	146.8	0.726	75.1	2.1	7.15	12.718	23.527	20.534	30.5	10.0	28.4	7.9	3.60	0.10	20.2	10.3	18.2
307	147.1	0.728	75.1	2.0	7.15	12.760	23.579	20.571	30.5	10.0	28.5	7.9	3.59	0.10	20.2	10.3	18.2
308	147.2	0.731	75.1	2.0	7.15	12.801	23.592	20.572	30.5	10.0	28.5	7.9	3.59	0.10	20.2	10.3	18.2
309	147.1	0.733	75.1	2.0	7.16	12.843	23.579	20.551	30.5	10.0	28.5	7.9	3.59	0.10	20.2	10.3	18.2
310	147.4	0.735	75.1	2.0	7.16	12.884	23.619	20.576	30.5	10.0	28.5	7.9	3.59	0.10	20.2	10.3	18.2
311	147.4	0.738	75.1	2.0	7.17	12.926	23.632	20.577	30.5	10.0	28.5	7.9	3.59	0.10	20.3	10.3	18.2
312	147.7	0.740	75.0	2.0	7.17	12.967	23.672	20.602	30.6	10.0	28.6	8.0	3.58	0.10	20.3	10.3	18.3
313	147.7	0.742	75.0	2.0	7.17	13.009	23.672	20.592	30.6	10.0	28.6	8.0	3.58	0.10	20.3	10.3	18.3
314	147.9	0.745	75.0	2.0	7.18	13.051	23.711	20.617	30.6	10.0	28.6	8.0	3.58	0.10	20.3	10.3	18.3
315	148.0	0.747	75.0	2.0	7.18	13.092	23.724	20.618	30.6	10.0	28.6	8.0	3.58	0.10	20.3	10.3	18.3
316	148.1	0.749	75.0	1.9	7.18	13.134	23.737	20.620	30.6	10.0	28.7	8.0	3.57	0.09	20.3	10.3	18.3
317	148.3	0.752	75.0	1.9	7.19	13.175	23.764	20.633	30.6	10.0	28.7	8.0	3.57	0.09	20.3	10.3	18.3
318	148.3	0.754	75.0	1.9	7.19	13.217	23.777	20.634	30.6	10.0	28.7	8.0	3.57	0.09	20.3	10.3	18.3
319	148.4	0.757	75.0	1.9	7.19	13.258	23.790	20.636	30.6	10.0	28.7	8.0	3.57	0.09	20.3	10.3	18.3
320	148.6	0.759	74.9	1.9	7.20	13.300	23.817	20.649	30.6	10.0	28.7	8.1	3.56	0.09	20.3	10.3	18.4
321	148.7	0.761	75.0	1.9	7.20	13.341	23.830	20.650	30.6	10.0	28.7	8.0	3.57	0.09	20.3	10.3	18.4
322	148.8	0.764	75.1	2.0	7.20	13.383	23.856	20.663	30.6	10.0	28.6	7.9	3.60	0.10	20.3	10.3	18.3
323	149.1	0.766	75.1	2.0	7.21	13.425	23.896	20.688	30.6	10.0	28.6	7.9	3.60	0.10	20.3	10.3	18.3
324	149.2	0.768	75.0	2.0	7.21	13.466	23.909	20.689	30.7	10.0	28.7	8.0	3.59	0.10	20.3	10.3	18.3
325	149.4	0.771	75.0	2.0	7.21	13.508	23.948	20.713	30.7	10.0	28.7	8.0	3.59	0.10	20.3	10.4	18.3
326	149.5	0.773	75.0	1.9	7.22	13.549	23.962	20.715	30.7	10.0	28.7	8.0	3.58	0.09	20.3	10.4	18.4
327	149.5	0.775	75.0	1.9	7.22	13.591	23.962	20.705	30.7	10.0	28.7	8.0	3.58	0.09	20.3	10.4	18.4
328	149.8	0.778	75.0	1.9	7.22	13.632	24.014	20.741	30.7	10.0	28.8	8.0	3.58	0.09	20.3	10.4	18.4
329	149.8	0.780	74.9	1.9	7.23	13.674	24.014	20.731	30.7	10.0	28.8	8.1	3.57	0.09	20.3	10.4	18.4
330	150.1	0.782	74.9	1.9	7.23	13.715	24.054	20.755	30.7	10.0	28.8	8.1	3.57	0.09	20.3	10.4	18.4
331	150.0	0.785	74.9	1.9	7.23	13.757	24.041	20.733	30.7	10.0	28.8	8.1	3.56	0.09	20.3	10.4	18.5
332	150.2	0.787	74.9	1.9	7.24	13.799	24.067	20.746	30.7	10.0	28.9	8.1	3.56	0.09	20.3	10.4	18.5
333	150.3	0.789	74.9	1.9	7.24	13.840	24.093	20.759	30.7	10.0	28.9	8.1	3.56	0.09	20.3	10.4	18.5
334	150.5	0.792	74.8	1.8	7.24	13.882	24.120	20.771	30.7	10.0	28.9	8.2	3.55	0.09	20.3	10.4	18.5
335	150.7	0.794	74.9	1.9	7.25	13.923	24.159	20.795	30.8	10.0	28.9	8.1	3.58	0.09	20.4	10.4	18.5
336	150.8	0.796	75.0	1.9	7.25	13.965	24.172	20.797	30.8	10.0	28.8	8.0	3.59	0.09	20.4	10.4	18.4
337	150.8	0.799	75.0	1.9	7.26	14.006	24.172	20.787	30.7	10.0	28.8	8.0	3.59	0.09	20.4	10.4	18.4
338	151.1	0.801	74.9	1.9	7.26	14.048	24.212	20.811	30.8	10.0	28.9	8.1	3.58	0.09	20.4	10.4	18.5
339	151.1	0.803	74.9	1.9	7.26	14.090	24.212	20.801	30.8	10.0	28.9	8.1	3.58	0.09	20.4	10.4	18.5
340	151.3	0.806	74.9	1.9	7.27	14.131	24.251	20.824	30.8	10.0	28.9	8.1	3.57	0.09	20.4	10.4	18.5
341	151.5	0.808	74.9	1.9	7.27	14.173	24.278	20.837	30.8	10.0	28.9	8.1	3.57	0.09	20.4	10.4	18.5
342	151.6	0.811	74.9	1.9	7.27	14.214	24.291	20.838	30.8	10.0	28.9	8.1	3.57	0.09	20.4	10.4	18.5
343	151.7	0.813	74.9	1.9	7.28	14.256	24.317	20.851	30.8	10.0	29.0	8.1	3.57	0.09	20.4	10.4	18.5
344	151.7	0.815	74.8	1.8	7.28	14.297	24.317	20.841	30.8	10.0	29.0	8.2	3.56	0.09	20.4	10.4	18.6
345	152.0	0.818	74.8	1.8	7.28	14.339	24.357	20.864	30.8	10.0	29.0	8.2	3.56	0.09	20.4	10.4	18.6
346	152.0	0.820	74.8	1.8	7.29	14.380	24.370	20.866	30.8	10.0	29.0	8.2	3.56	0.09	20.4	10.4	18.6



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
347	152.0	0.822	74.8	1.8	7.29	14.422	24.370	20.855	30.8	10.0	29.0	8.2	3.56	0.09	20.4	10.4	18.6
348	152.2	0.825	74.8	1.8	7.29	14.464	24.396	20.868	30.8	10.0	29.0	8.2	3.56	0.09	20.4	10.4	18.6
349	152.4	0.827	74.8	1.8	7.30	14.505	24.423	20.880	30.8	10.0	29.0	8.2	3.56	0.09	20.4	10.4	18.6
350	152.4	0.829	74.8	1.8	7.30	14.547	24.423	20.870	30.8	10.0	29.1	8.2	3.55	0.08	20.4	10.4	18.6
351	152.6	0.832	74.8	1.8	7.30	14.588	24.462	20.894	30.9	10.0	29.1	8.2	3.55	0.08	20.4	10.4	18.6
352	152.7	0.834	74.8	1.8	7.31	14.630	24.476	20.895	30.9	10.0	29.1	8.2	3.55	0.08	20.4	10.4	18.6
353	152.9	0.836	74.8	1.8	7.31	14.671	24.502	20.907	30.9	10.0	29.1	8.2	3.55	0.08	20.4	10.5	18.6
354	153.0	0.839	74.8	1.8	7.32	14.713	24.528	20.919	30.9	10.0	29.1	8.2	3.55	0.08	20.4	10.5	18.7
355	153.0	0.841	74.9	1.9	7.32	14.755	24.528	20.909	30.9	10.0	29.0	8.1	3.58	0.09	20.4	10.5	18.6
356	153.4	0.843	74.9	1.9	7.32	14.796	24.594	20.955	30.9	10.0	29.0	8.1	3.60	0.09	20.4	10.5	18.5
357	153.4	0.846	74.9	1.9	7.33	14.838	24.594	20.945	30.9	10.0	29.1	8.1	3.58	0.09	20.4	10.5	18.6
358	153.7	0.848	74.8	1.8	7.33	14.879	24.634	20.968	30.9	10.0	29.1	8.2	3.57	0.09	20.4	10.5	18.6
359	153.6	0.850	74.8	1.8	7.33	14.921	24.621	20.947	30.9	10.0	29.1	8.2	3.57	0.09	20.4	10.5	18.6
360	153.7	0.853	74.8	1.8	7.34	14.962	24.634	20.948	30.9	10.0	29.1	8.2	3.56	0.08	20.4	10.5	18.7
361	153.9	0.855	74.8	1.8	7.34	15.004	24.673	20.971	30.9	10.0	29.2	8.2	3.56	0.08	20.4	10.5	18.7
362	154.2	0.857	74.8	1.8	7.34	15.045	24.713	20.995	31.0	10.0	29.2	8.2	3.56	0.08	20.5	10.5	18.7
363	154.3	0.860	74.8	1.8	7.35	15.087	24.726	20.996	31.0	10.0	29.2	8.2	3.56	0.08	20.5	10.5	18.7
364	154.3	0.862	74.8	1.8	7.35	15.129	24.739	20.996	31.0	10.0	29.2	8.2	3.56	0.08	20.5	10.5	18.7
365	154.4	0.865	74.8	1.7	7.35	15.170	24.752	20.997	31.0	10.0	29.2	8.2	3.55	0.08	20.5	10.5	18.7
366	154.7	0.867	74.8	1.7	7.36	15.212	24.792	21.021	31.0	10.0	29.3	8.2	3.55	0.08	20.5	10.5	18.7
367	154.8	0.869	74.8	1.7	7.36	15.253	24.805	21.021	31.0	10.0	29.3	8.2	3.55	0.08	20.5	10.5	18.7
368	155.0	0.872	74.8	1.7	7.37	15.295	24.845	21.045	31.0	10.0	29.3	8.2	3.56	0.08	20.5	10.5	18.8
369	155.1	0.874	74.7	1.7	7.37	15.336	24.858	21.045	31.0	10.0	29.3	8.3	3.54	0.08	20.5	10.5	18.8
370	155.2	0.876	74.7	1.7	7.37	15.378	24.871	21.046	31.0	10.0	29.3	8.3	3.54	0.08	20.5	10.5	18.8
371	155.4	0.879	74.7	1.7	7.38	15.420	24.910	21.069	31.0	10.0	29.3	8.3	3.55	0.08	20.5	10.5	18.8
372	155.4	0.881	74.7	1.7	7.38	15.461	24.910	21.059	31.0	10.0	29.3	8.3	3.55	0.08	20.5	10.5	18.8
373	155.4	0.883	74.7	1.6	7.38	15.503	24.910	21.049	31.0	10.0	29.4	8.3	3.53	0.08	20.5	10.5	18.8
374	155.7	0.886	74.8	1.7	7.39	15.544	24.950	21.072	31.0	10.0	29.3	8.2	3.56	0.08	20.5	10.5	18.8
375	155.9	0.888	74.8	1.8	7.39	15.586	24.990	21.095	31.1	10.0	29.3	8.2	3.58	0.08	20.5	10.5	18.7
376	156.0	0.890	74.8	1.8	7.39	15.627	25.003	21.095	31.1	10.0	29.3	8.2	3.58	0.08	20.5	10.5	18.7
377	156.0	0.893	74.8	1.7	7.40	15.669	25.003	21.085	31.0	10.0	29.3	8.2	3.56	0.08	20.5	10.5	18.8
378	156.0	0.895	74.8	1.7	7.40	15.710	25.003	21.075	31.0	10.0	29.3	8.2	3.56	0.08	20.5	10.5	18.8
379	156.3	0.897	74.7	1.7	7.41	15.752	25.055	21.109	31.1	10.0	29.4	8.3	3.55	0.08	20.5	10.6	18.8
380	156.4	0.900	74.7	1.7	7.41	15.794	25.069	21.109	31.1	10.0	29.4	8.3	3.55	0.08	20.5	10.6	18.8
381	156.6	0.902	74.7	1.7	7.41	15.835	25.108	21.132	31.1	10.0	29.4	8.3	3.55	0.08	20.5	10.6	18.8
382	156.7	0.904	74.7	1.7	7.42	15.877	25.121	21.133	31.1	10.0	29.4	8.3	3.55	0.08	20.5	10.6	18.8
383	156.9	0.907	74.7	1.6	7.42	15.918	25.148	21.145	31.1	10.0	29.5	8.3	3.54	0.08	20.5	10.6	18.9
384	157.0	0.909	74.7	1.6	7.42	15.960	25.161	21.145	31.1	10.0	29.5	8.3	3.54	0.08	20.5	10.6	18.9
385	156.8	0.911	74.6	1.6	7.43	16.001	25.135	21.113	31.1	10.0	29.5	8.4	3.53	0.08	20.5	10.6	18.9
386	157.1	0.914	74.6	1.6	7.43	16.043	25.187	21.146	31.1	10.0	29.5	8.4	3.53	0.08	20.5	10.6	18.9
387	157.2	0.916	74.6	1.6	7.43	16.085	25.200	21.147	31.1	10.0	29.5	8.4	3.53	0.08	20.5	10.6	18.9



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
388	157.5	0.919	74.7	1.7	7.44	16.126	25.240	21.170	31.1	10.0	29.4	8.3	3.56	0.08	20.5	10.6	18.9
389	157.5	0.921	74.8	1.7	7.44	16.168	25.240	21.159	31.1	10.0	29.4	8.2	3.57	0.08	20.5	10.6	18.8
390	157.6	0.923	74.7	1.7	7.45	16.209	25.266	21.171	31.1	10.0	29.4	8.3	3.56	0.08	20.5	10.6	18.9
391	157.8	0.926	74.7	1.7	7.45	16.251	25.293	21.182	31.1	10.0	29.5	8.3	3.56	0.08	20.6	10.6	18.9
392	157.8	0.928	74.7	1.6	7.45	16.292	25.293	21.172	31.1	10.0	29.5	8.3	3.55	0.08	20.5	10.6	18.9
393	157.9	0.930	74.7	1.6	7.46	16.334	25.306	21.172	31.1	10.0	29.5	8.3	3.55	0.08	20.5	10.6	18.9
394	158.0	0.933	74.7	1.6	7.46	16.375	25.332	21.184	31.1	10.0	29.5	8.3	3.55	0.08	20.6	10.6	18.9
395	158.2	0.935	74.6	1.6	7.46	16.417	25.359	21.195	31.2	10.0	29.5	8.4	3.54	0.08	20.6	10.6	18.9
396	158.4	0.937	74.6	1.6	7.47	16.459	25.385	21.207	31.2	10.0	29.6	8.4	3.54	0.08	20.6	10.6	19.0
397	158.5	0.940	74.6	1.6	7.47	16.500	25.398	21.207	31.2	10.0	29.6	8.4	3.54	0.08	20.6	10.6	19.0
398	158.5	0.942	74.6	1.6	7.48	16.542	25.411	21.208	31.2	10.0	29.6	8.4	3.54	0.08	20.6	10.6	19.0
399	158.5	0.944	74.6	1.6	7.48	16.583	25.411	21.197	31.2	10.0	29.5	8.4	3.54	0.08	20.6	10.6	19.0
400	158.6	0.947	74.6	1.6	7.48	16.625	25.425	21.198	31.2	10.0	29.6	8.4	3.53	0.07	20.6	10.6	19.0
401	158.9	0.949	74.6	1.6	7.49	16.666	25.464	21.220	31.2	10.0	29.6	8.4	3.53	0.07	20.6	10.6	19.0
402	158.9	0.951	74.6	1.6	7.49	16.708	25.464	21.210	31.2	10.0	29.6	8.4	3.53	0.07	20.6	10.6	19.0
403	159.1	0.954	74.6	1.6	7.49	16.750	25.504	21.232	31.2	10.0	29.6	8.4	3.53	0.07	20.6	10.6	19.0
404	159.4	0.956	74.6	1.6	7.50	16.791	25.543	21.254	31.2	10.0	29.6	8.4	3.53	0.07	20.6	10.6	19.0
405	159.5	0.958	74.6	1.6	7.50	16.833	25.570	21.265	31.2	10.0	29.7	8.4	3.53	0.07	20.6	10.6	19.0
406	159.6	0.961	74.6	1.5	7.51	16.874	25.583	21.266	31.2	10.0	29.7	8.4	3.52	0.07	20.6	10.6	19.1
407	159.8	0.963	74.6	1.6	7.51	16.916	25.609	21.277	31.2	10.0	29.6	8.4	3.55	0.08	20.6	10.6	19.0
408	159.9	0.965	74.7	1.6	7.51	16.957	25.635	21.288	31.3	10.0	29.6	8.3	3.56	0.08	20.6	10.6	19.0
409	160.2	0.968	74.7	1.6	7.52	16.999	25.675	21.310	31.3	10.0	29.6	8.3	3.56	0.08	20.6	10.7	19.0
410	160.3	0.970	74.6	1.6	7.52	17.040	25.701	21.322	31.3	10.0	29.7	8.4	3.55	0.08	20.6	10.7	19.0
411	160.3	0.973	74.6	1.6	7.52	17.082	25.688	21.300	31.3	10.0	29.7	8.4	3.55	0.08	20.6	10.7	19.0
412	160.5	0.975	74.6	1.6	7.53	17.124	25.728	21.322	31.3	10.0	29.7	8.4	3.54	0.07	20.6	10.7	19.1
413	160.5	0.977	74.6	1.6	7.53	17.165	25.728	21.311	31.3	10.0	29.7	8.4	3.54	0.07	20.6	10.7	19.0
414	160.6	0.980	74.6	1.6	7.54	17.207	25.741	21.312	31.3	10.0	29.7	8.4	3.54	0.07	20.6	10.7	19.0
415	160.8	0.982	74.6	1.6	7.54	17.248	25.767	21.323	31.3	10.0	29.7	8.4	3.54	0.07	20.6	10.7	19.1
416	160.8	0.984	74.6	1.5	7.54	17.290	25.767	21.312	31.3	10.0	29.7	8.4	3.53	0.07	20.6	10.7	19.1
417	161.0	0.987	74.6	1.5	7.55	17.331	25.807	21.334	31.3	10.0	29.8	8.4	3.53	0.07	20.6	10.7	19.1
418	161.0	0.989	74.6	1.5	7.55	17.373	25.807	21.323	31.3	10.0	29.8	8.4	3.53	0.07	20.6	10.7	19.1
419	161.2	0.991	74.6	1.5	7.55	17.415	25.833	21.334	31.3	10.0	29.8	8.4	3.53	0.07	20.6	10.7	19.1
420	161.3	0.994	74.6	1.5	7.56	17.456	25.846	21.335	31.3	10.0	29.8	8.4	3.53	0.07	20.6	10.7	19.1
421	161.3	0.996	74.5	1.5	7.56	17.498	25.859	21.335	31.3	10.0	29.8	8.5	3.52	0.07	20.6	10.7	19.1
422	161.6	0.998	74.5	1.5	7.57	17.539	25.899	21.357	31.3	10.0	29.8	8.5	3.52	0.07	20.6	10.7	19.2
423	161.7	1.001	74.5	1.5	7.57	17.581	25.912	21.357	31.3	10.0	29.8	8.5	3.52	0.07	20.6	10.7	19.2
424	161.7	1.003	74.5	1.5	7.57	17.622	25.925	21.357	31.3	10.0	29.8	8.5	3.52	0.07	20.6	10.7	19.2
425	161.8	1.005	74.5	1.5	7.58	17.664	25.939	21.357	31.3	10.0	29.8	8.5	3.52	0.07	20.6	10.7	19.2
426	162.0	1.008	74.6	1.5	7.58	17.705	25.965	21.368	31.3	10.0	29.8	8.4	3.53	0.07	20.6	10.7	19.1
427	162.2	1.010	74.6	1.6	7.59	17.747	25.991	21.379	31.3	10.0	29.8	8.4	3.55	0.07	20.7	10.7	19.1
428	162.3	1.012	74.6	1.6	7.59	17.789	26.018	21.389	31.4	10.0	29.8	8.4	3.55	0.07	20.7	10.7	19.1



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
429	162.6	1.015	74.6	1.5	7.59	17.830	26.057	21.411	31.4	10.0	29.8	8.4	3.54	0.07	20.7	10.7	19.1
430	162.7	1.017	74.6	1.5	7.60	17.872	26.070	21.411	31.4	10.0	29.8	8.4	3.54	0.07	20.7	10.7	19.1
431	162.7	1.019	74.5	1.5	7.60	17.913	26.070	21.400	31.4	10.0	29.9	8.5	3.53	0.07	20.7	10.7	19.2
432	162.9	1.022	74.5	1.5	7.60	17.955	26.110	21.422	31.4	10.0	29.9	8.5	3.53	0.07	20.7	10.7	19.2
433	163.1	1.024	74.5	1.5	7.61	17.996	26.136	21.433	31.4	10.0	29.9	8.5	3.53	0.07	20.7	10.7	19.2
434	163.1	1.027	74.5	1.4	7.61	18.038	26.136	21.422	31.4	10.0	29.9	8.5	3.52	0.07	20.7	10.7	19.2
435	163.2	1.029	74.5	1.4	7.62	18.080	26.163	21.433	31.4	10.0	29.9	8.5	3.52	0.07	20.7	10.7	19.2
436	163.3	1.031	74.5	1.4	7.62	18.121	26.176	21.432	31.4	10.0	29.9	8.5	3.52	0.07	20.7	10.7	19.2
437	163.6	1.034	74.4	1.4	7.62	18.163	26.215	21.454	31.4	10.0	30.0	8.6	3.51	0.07	20.7	10.7	19.3
438	163.6	1.036	74.4	1.4	7.63	18.204	26.215	21.443	31.4	10.0	30.0	8.6	3.51	0.07	20.7	10.7	19.3
439	163.8	1.038	74.4	1.4	7.63	18.246	26.255	21.464	31.4	10.0	30.0	8.6	3.51	0.07	20.7	10.7	19.3
440	163.9	1.041	74.4	1.4	7.64	18.287	26.268	21.464	31.4	10.0	30.0	8.6	3.51	0.07	20.7	10.7	19.3
441	164.0	1.043	74.5	1.5	7.64	18.329	26.281	21.464	31.4	10.0	29.9	8.5	3.53	0.07	20.7	10.7	19.2
442	164.0	1.045	74.5	1.5	7.64	18.370	26.294	21.464	31.4	10.0	29.9	8.5	3.53	0.07	20.7	10.7	19.2
443	164.2	1.048	74.5	1.4	7.65	18.412	26.321	21.475	31.4	10.0	30.0	8.5	3.52	0.07	20.7	10.7	19.3
444	164.4	1.050	74.5	1.4	7.65	18.454	26.347	21.485	31.4	10.0	30.0	8.5	3.52	0.07	20.7	10.7	19.3
445	164.5	1.052	74.5	1.4	7.65	18.495	26.373	21.496	31.5	10.0	30.0	8.5	3.53	0.07	20.7	10.7	19.3
446	164.9	1.055	74.4	1.4	7.66	18.537	26.426	21.528	31.5	10.0	30.1	8.6	3.52	0.07	20.7	10.8	19.3
447	165.0	1.057	74.4	1.4	7.66	18.578	26.439	21.527	31.5	10.0	30.1	8.6	3.52	0.07	20.7	10.8	19.3
448	164.9	1.059	74.4	1.4	7.67	18.620	26.426	21.506	31.5	10.0	30.1	8.6	3.51	0.07	20.7	10.8	19.3
449	165.1	1.062	74.4	1.4	7.67	18.661	26.466	21.527	31.5	10.0	30.1	8.6	3.52	0.07	20.7	10.8	19.3
450	165.1	1.064	74.4	1.4	7.67	18.703	26.466	21.516	31.5	10.0	30.1	8.6	3.50	0.06	20.7	10.8	19.4
451	165.3	1.066	74.4	1.4	7.68	18.745	26.492	21.526	31.5	10.0	30.1	8.6	3.50	0.06	20.7	10.8	19.4
452	165.4	1.069	74.4	1.4	7.68	18.786	26.505	21.526	31.5	10.0	30.1	8.6	3.50	0.06	20.7	10.8	19.4
453	165.4	1.071	74.4	1.3	7.69	18.828	26.505	21.515	31.5	10.0	30.1	8.6	3.49	0.06	20.7	10.8	19.4
454	165.6	1.073	74.4	1.3	7.69	18.869	26.545	21.536	31.5	10.0	30.2	8.6	3.49	0.06	20.7	10.8	19.4
455	165.6	1.076	74.4	1.3	7.69	18.911	26.545	21.525	31.5	10.0	30.2	8.6	3.49	0.06	20.7	10.8	19.4
456	165.9	1.078	74.4	1.3	7.70	18.952	26.598	21.557	31.5	10.0	30.2	8.6	3.50	0.06	20.7	10.8	19.4
457	165.9	1.081	74.4	1.3	7.70	18.994	26.584	21.535	31.5	10.0	30.2	8.6	3.49	0.06	20.7	10.8	19.4
458	166.0	1.083	74.3	1.3	7.71	19.035	26.611	21.545	31.5	10.0	30.2	8.7	3.48	0.06	20.7	10.8	19.4
459	166.1	1.085	74.3	1.3	7.71	19.077	26.624	21.545	31.5	10.0	30.2	8.7	3.48	0.06	20.7	10.8	19.4
460	166.3	1.088	74.4	1.3	7.71	19.119	26.650	21.555	31.5	10.0	30.2	8.6	3.50	0.06	20.7	10.8	19.4
461	166.4	1.090	74.4	1.4	7.72	19.160	26.663	21.555	31.5	10.0	30.1	8.6	3.51	0.06	20.7	10.8	19.4
462	166.7	1.092	74.4	1.4	7.72	19.202	26.716	21.586	31.5	10.0	30.2	8.6	3.51	0.06	20.8	10.8	19.4
463	166.8	1.095	74.4	1.3	7.73	19.243	26.729	21.586	31.5	10.0	30.2	8.6	3.50	0.06	20.8	10.8	19.4
464	166.8	1.097	74.4	1.3	7.73	19.285	26.729	21.575	31.5	10.0	30.2	8.6	3.50	0.06	20.7	10.8	19.4
465	167.0	1.099	74.4	1.3	7.73	19.326	26.769	21.595	31.6	10.0	30.2	8.6	3.50	0.06	20.8	10.8	19.4
466	167.1	1.102	74.3	1.3	7.74	19.368	26.782	21.595	31.6	10.0	30.3	8.7	3.49	0.06	20.8	10.8	19.5
467	167.3	1.104	74.3	1.3	7.74	19.410	26.822	21.616	31.6	10.0	30.3	8.7	3.49	0.06	20.8	10.8	19.5
468	167.3	1.106	74.3	1.3	7.75	19.451	26.822	21.605	31.6	10.0	30.3	8.7	3.49	0.06	20.8	10.8	19.5
469	167.3	1.109	74.3	1.3	7.75	19.493	26.822	21.593	31.6	10.0	30.3	8.7	3.49	0.06	20.8	10.8	19.5



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
470	167.4	1.111	74.3	1.3	7.75	19.534	26.835	21.593	31.6	10.0	30.3	8.7	3.49	0.06	20.8	10.8	19.5
471	167.6	1.113	74.3	1.3	7.76	19.576	26.861	21.603	31.6	10.0	30.3	8.7	3.49	0.06	20.8	10.8	19.5
472	167.9	1.116	74.3	1.2	7.76	19.617	26.914	21.634	31.6	10.0	30.3	8.7	3.48	0.06	20.8	10.8	19.5
473	167.9	1.118	74.3	1.2	7.77	19.659	26.914	21.623	31.6	10.0	30.3	8.7	3.48	0.06	20.8	10.8	19.5
474	167.9	1.120	74.3	1.2	7.77	19.700	26.914	21.612	31.6	10.0	30.3	8.7	3.48	0.06	20.8	10.8	19.5
475	168.2	1.123	74.3	1.2	7.77	19.742	26.967	21.643	31.6	10.0	30.4	8.7	3.48	0.06	20.8	10.8	19.5
476	168.2	1.125	74.2	1.2	7.78	19.784	26.967	21.632	31.6	10.0	30.4	8.8	3.47	0.06	20.8	10.8	19.6
477	168.3	1.127	74.2	1.2	7.78	19.825	26.980	21.631	31.6	10.0	30.4	8.8	3.47	0.06	20.8	10.8	19.6
478	168.4	1.130	74.2	1.2	7.79	19.867	26.993	21.630	31.6	10.0	30.4	8.8	3.47	0.06	20.8	10.8	19.6
479	168.5	1.131	74.2	1.2	7.79	19.883	27.006	21.636	31.6	10.0	30.4	8.8	3.47	0.06	20.8	10.8	19.6



File Location
B-59 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-59
Sample Description: Brown, Gray, Tan, Red & White Silty Sand
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.650001
LL: 32.000
PL: 27.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.807	2.782	
Height (in)	5.688	5.638	
Weight (grams)	1115.00		1204.15
Moisture (%)	11.71		20.65
Dry Density (pcf)	108.00	110.92	
Saturation (%)	58.36	100.00	
Void Ratio	0.528	0.491	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 93.000
Effective Confining Stress (psi): 20.0
Corrected Peak Deviator Stress (psi): 22.724 at reading number: 184

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	30.0	0.000	73.0	0.0	6.08	0.000	0.000	0.000	20.0	20.0	20.0	20.0	1.00	0.00	20.0	0.0	20.0
1	57.1	0.007	76.1	3.1	6.09	0.108	4.452	4.447	24.4	20.0	21.4	16.9	1.26	0.69	22.2	2.2	19.1
2	73.8	0.013	77.9	4.9	6.09	0.217	7.211	7.195	27.2	20.0	22.2	15.1	1.48	0.68	23.6	3.6	18.7
3	85.4	0.019	79.2	6.2	6.10	0.325	9.118	9.088	29.1	20.0	22.9	13.8	1.66	0.68	24.5	4.5	18.3
4	94.8	0.025	80.2	7.2	6.11	0.433	10.660	10.614	30.6	20.0	23.4	12.8	1.83	0.68	25.3	5.3	18.1
5	102.5	0.031	81.0	7.9	6.11	0.541	11.931	11.867	31.8	20.0	23.9	12.0	1.99	0.67	25.9	5.9	18.0
6	109.3	0.037	81.5	8.5	6.12	0.650	13.040	12.956	32.9	20.0	24.5	11.5	2.13	0.65	26.4	6.5	18.0
7	114.9	0.043	82.0	8.9	6.13	0.758	13.960	13.854	33.8	20.0	24.9	11.0	2.26	0.64	26.9	6.9	18.0
8	119.6	0.049	82.3	9.3	6.13	0.866	14.731	14.603	34.6	20.0	25.3	10.7	2.37	0.64	27.3	7.3	18.0
9	123.5	0.055	82.6	9.6	6.14	0.975	15.380	15.230	35.2	20.0	25.6	10.4	2.47	0.63	27.6	7.6	18.0
10	126.9	0.062	82.8	9.7	6.15	1.083	15.935	15.762	35.7	20.0	26.0	10.2	2.54	0.62	27.8	7.9	18.1
11	129.7	0.068	83.0	9.9	6.15	1.191	16.394	16.199	36.2	20.0	26.2	10.0	2.62	0.61	28.1	8.1	18.1
12	132.1	0.074	83.1	10.1	6.16	1.299	16.787	16.569	36.5	20.0	26.4	9.9	2.68	0.61	28.2	8.3	18.1
13	134.0	0.080	83.3	10.2	6.17	1.408	17.098	16.857	36.8	20.0	26.6	9.7	2.73	0.61	28.4	8.4	18.2
14	135.6	0.086	83.4	10.3	6.17	1.516	17.368	17.105	37.1	20.0	26.7	9.6	2.78	0.60	28.5	8.6	18.2
15	137.0	0.092	83.5	10.5	6.18	1.624	17.598	17.312	37.3	20.0	26.8	9.5	2.83	0.61	28.6	8.7	18.1
16	138.2	0.098	83.6	10.6	6.19	1.732	17.801	17.493	37.5	20.0	26.9	9.4	2.87	0.61	28.7	8.7	18.1
17	139.1	0.104	83.7	10.7	6.19	1.841	17.950	17.619	37.6	20.0	26.9	9.3	2.90	0.61	28.8	8.8	18.1
18	140.1	0.110	83.8	10.7	6.20	1.949	18.112	17.759	37.7	20.0	27.0	9.2	2.93	0.61	28.8	8.9	18.1



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	140.9	0.116	83.9	10.8	6.21	2.057	18.247	17.872	37.8	20.0	27.0	9.1	2.96	0.61	28.9	8.9	18.1
20	141.9	0.123	83.9	10.9	6.21	2.166	18.410	18.011	38.0	20.0	27.1	9.1	2.99	0.61	29.0	9.0	18.1
21	142.3	0.129	84.0	10.9	6.22	2.274	18.477	18.057	38.0	20.0	27.1	9.0	3.00	0.61	29.0	9.0	18.0
22	142.9	0.135	84.0	11.0	6.23	2.382	18.572	18.130	38.1	20.0	27.1	9.0	3.02	0.61	29.0	9.1	18.0
23	143.6	0.141	84.1	11.1	6.24	2.490	18.680	18.215	38.2	20.0	27.1	8.9	3.05	0.61	29.1	9.1	18.0
24	144.1	0.147	84.1	11.1	6.24	2.599	18.775	18.287	38.2	20.0	27.1	8.9	3.07	0.61	29.1	9.1	18.0
25	144.7	0.153	84.2	11.1	6.25	2.707	18.870	18.359	38.3	20.0	27.2	8.8	3.08	0.61	29.1	9.2	18.0
26	145.1	0.159	84.2	11.1	6.26	2.815	18.937	18.404	38.4	20.0	27.2	8.8	3.09	0.61	29.2	9.2	18.0
27	145.7	0.165	84.3	11.2	6.26	2.924	19.032	18.475	38.4	20.0	27.2	8.7	3.12	0.61	29.2	9.2	18.0
28	146.1	0.171	84.3	11.2	6.27	3.032	19.099	18.520	38.5	20.0	27.3	8.7	3.12	0.61	29.2	9.3	18.0
29	146.6	0.178	84.3	11.3	6.28	3.140	19.181	18.578	38.5	20.0	27.3	8.7	3.14	0.61	29.3	9.3	18.0
30	146.9	0.184	84.3	11.3	6.28	3.248	19.235	18.610	38.6	20.0	27.3	8.7	3.15	0.61	29.3	9.3	18.0
31	147.5	0.190	84.4	11.3	6.29	3.357	19.329	18.681	38.6	20.0	27.3	8.6	3.17	0.61	29.3	9.3	18.0
32	147.8	0.196	84.4	11.4	6.30	3.465	19.370	18.699	38.7	20.0	27.3	8.6	3.18	0.61	29.3	9.3	17.9
33	148.1	0.202	84.4	11.4	6.31	3.573	19.424	18.730	38.7	20.0	27.3	8.6	3.18	0.61	29.3	9.4	17.9
34	148.7	0.208	84.5	11.5	6.31	3.681	19.519	18.800	38.8	20.0	27.3	8.5	3.21	0.61	29.4	9.4	17.9
35	148.9	0.214	84.5	11.4	6.32	3.790	19.559	18.818	38.8	20.0	27.4	8.5	3.21	0.61	29.4	9.4	17.9
36	149.2	0.220	84.5	11.5	6.33	3.898	19.600	18.836	38.8	20.0	27.3	8.5	3.22	0.61	29.4	9.4	17.9
37	149.6	0.226	84.5	11.5	6.33	4.006	19.668	18.880	38.8	20.0	27.3	8.5	3.23	0.61	29.4	9.4	17.9
38	149.7	0.232	84.5	11.5	6.34	4.115	19.681	18.871	38.8	20.0	27.3	8.5	3.23	0.61	29.4	9.4	17.9
39	150.2	0.239	84.6	11.5	6.35	4.223	19.762	18.928	38.9	20.0	27.3	8.4	3.25	0.61	29.4	9.5	17.9
40	150.6	0.245	84.6	11.6	6.36	4.331	19.830	18.971	38.9	20.0	27.3	8.4	3.27	0.61	29.4	9.5	17.9
41	150.8	0.251	84.6	11.5	6.36	4.439	19.870	18.988	39.0	20.0	27.4	8.4	3.26	0.61	29.5	9.5	17.9
42	151.1	0.257	84.6	11.6	6.37	4.548	19.925	19.018	39.0	20.0	27.4	8.4	3.27	0.61	29.5	9.5	17.9
43	151.5	0.263	84.7	11.6	6.38	4.656	19.979	19.048	39.0	20.0	27.4	8.3	3.29	0.61	29.5	9.5	17.9
44	151.8	0.269	84.7	11.6	6.38	4.764	20.033	19.078	39.0	20.0	27.4	8.3	3.29	0.61	29.5	9.5	17.9
45	152.2	0.275	84.7	11.6	6.39	4.873	20.100	19.121	39.1	20.0	27.5	8.3	3.29	0.61	29.5	9.6	17.9
46	152.5	0.281	84.7	11.7	6.40	4.981	20.154	19.151	39.1	20.0	27.4	8.3	3.31	0.61	29.5	9.6	17.9
47	152.8	0.287	84.7	11.7	6.41	5.089	20.195	19.167	39.1	20.0	27.5	8.3	3.31	0.61	29.5	9.6	17.9
48	153.2	0.293	84.7	11.7	6.41	5.197	20.263	19.210	39.2	20.0	27.5	8.3	3.32	0.61	29.6	9.6	17.9
49	153.6	0.300	84.7	11.7	6.42	5.306	20.330	19.252	39.2	20.0	27.5	8.3	3.32	0.61	29.6	9.6	17.9
50	153.9	0.306	84.7	11.7	6.43	5.414	20.371	19.268	39.2	20.0	27.5	8.3	3.34	0.61	29.6	9.6	17.9
51	153.9	0.312	84.7	11.7	6.44	5.522	20.384	19.259	39.2	20.0	27.5	8.3	3.33	0.61	29.6	9.6	17.9
52	154.4	0.318	84.7	11.7	6.44	5.630	20.465	19.313	39.3	20.0	27.6	8.3	3.34	0.61	29.6	9.7	17.9
53	154.8	0.324	84.8	11.8	6.45	5.739	20.533	19.355	39.3	20.0	27.6	8.2	3.36	0.61	29.6	9.7	17.9
54	155.2	0.330	84.7	11.7	6.46	5.847	20.587	19.383	39.3	20.0	27.6	8.3	3.35	0.60	29.7	9.7	17.9
55	155.6	0.336	84.7	11.7	6.46	5.955	20.655	19.425	39.4	20.0	27.7	8.3	3.35	0.60	29.7	9.7	18.0
56	155.9	0.342	84.7	11.7	6.47	6.064	20.709	19.453	39.4	20.0	27.7	8.3	3.36	0.60	29.7	9.7	18.0
57	156.2	0.348	84.8	11.8	6.48	6.172	20.763	19.482	39.4	20.0	27.7	8.2	3.37	0.60	29.7	9.7	18.0
58	156.8	0.355	84.8	11.8	6.49	6.280	20.858	19.548	39.5	20.0	27.8	8.2	3.38	0.60	29.7	9.8	18.0
59	157.0	0.361	84.8	11.8	6.49	6.388	20.885	19.551	39.5	20.0	27.7	8.2	3.39	0.60	29.7	9.8	17.9



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	157.3	0.367	84.8	11.8	6.50	6.497	20.939	19.579	39.5	20.0	27.8	8.2	3.38	0.60	29.8	9.8	18.0
61	157.7	0.373	84.8	11.8	6.51	6.605	21.006	19.619	39.6	20.0	27.8	8.2	3.39	0.60	29.8	9.8	18.0
62	157.9	0.379	84.8	11.8	6.52	6.713	21.034	19.622	39.6	20.0	27.8	8.2	3.39	0.60	29.8	9.8	18.0
63	158.3	0.385	84.8	11.8	6.52	6.822	21.101	19.662	39.6	20.0	27.9	8.2	3.39	0.60	29.8	9.8	18.0
64	158.8	0.391	84.8	11.8	6.53	6.930	21.182	19.714	39.7	20.0	27.9	8.2	3.40	0.60	29.8	9.9	18.1
65	159.2	0.397	84.8	11.8	6.54	7.038	21.250	19.754	39.7	20.0	28.0	8.2	3.41	0.59	29.8	9.9	18.1
66	159.4	0.403	84.8	11.8	6.55	7.146	21.291	19.769	39.7	20.0	27.9	8.2	3.42	0.60	29.8	9.9	18.1
67	159.7	0.409	84.8	11.8	6.56	7.255	21.331	19.784	39.7	20.0	28.0	8.2	3.41	0.59	29.9	9.9	18.1
68	160.1	0.416	84.8	11.8	6.56	7.363	21.399	19.823	39.8	20.0	28.0	8.2	3.41	0.59	29.9	9.9	18.1
69	160.3	0.422	84.8	11.8	6.57	7.471	21.426	19.825	39.8	20.0	28.0	8.2	3.41	0.59	29.9	9.9	18.1
70	160.8	0.428	84.8	11.8	6.58	7.579	21.520	19.889	39.9	20.0	28.1	8.2	3.42	0.59	29.9	9.9	18.2
71	161.2	0.434	84.7	11.7	6.59	7.688	21.575	19.916	39.9	20.0	28.2	8.3	3.41	0.59	29.9	10.0	18.2
72	161.5	0.440	84.7	11.7	6.59	7.796	21.629	19.942	39.9	20.0	28.2	8.3	3.41	0.59	29.9	10.0	18.3
73	162.0	0.446	84.7	11.7	6.60	7.904	21.710	19.994	40.0	20.0	28.3	8.3	3.41	0.58	30.0	10.0	18.3
74	162.2	0.452	84.7	11.6	6.61	8.013	21.737	19.995	40.0	20.0	28.3	8.3	3.40	0.58	30.0	10.0	18.3
75	162.6	0.458	84.7	11.6	6.62	8.121	21.804	20.034	40.0	20.0	28.4	8.3	3.40	0.58	30.0	10.0	18.3
76	163.0	0.464	84.7	11.7	6.63	8.229	21.872	20.072	40.0	20.0	28.4	8.3	3.42	0.58	30.0	10.0	18.3
77	163.1	0.471	84.7	11.7	6.63	8.337	21.899	20.073	40.0	20.0	28.3	8.3	3.43	0.58	30.0	10.0	18.3
78	163.6	0.477	84.7	11.7	6.64	8.446	21.967	20.112	40.1	20.0	28.4	8.3	3.43	0.58	30.0	10.1	18.3
79	163.9	0.483	84.8	11.8	6.65	8.554	22.021	20.137	40.1	20.0	28.3	8.2	3.46	0.59	30.0	10.1	18.2
80	164.2	0.489	84.8	11.8	6.66	8.662	22.075	20.163	40.1	20.0	28.4	8.2	3.46	0.58	30.0	10.1	18.3
81	164.6	0.495	84.8	11.8	6.66	8.771	22.143	20.201	40.2	20.0	28.4	8.2	3.46	0.58	30.1	10.1	18.3
82	165.0	0.501	84.8	11.8	6.67	8.879	22.197	20.226	40.2	20.0	28.4	8.2	3.46	0.58	30.1	10.1	18.3
83	165.3	0.507	84.8	11.8	6.68	8.987	22.251	20.251	40.2	20.0	28.5	8.2	3.47	0.58	30.1	10.1	18.3
84	165.4	0.513	84.8	11.8	6.69	9.095	22.278	20.252	40.2	20.0	28.5	8.2	3.47	0.58	30.1	10.1	18.3
85	166.0	0.519	84.8	11.8	6.70	9.204	22.373	20.313	40.3	20.0	28.5	8.2	3.47	0.58	30.1	10.2	18.4
86	166.4	0.525	84.8	11.8	6.70	9.312	22.427	20.338	40.3	20.0	28.5	8.2	3.49	0.58	30.1	10.2	18.3
87	166.8	0.532	84.8	11.8	6.71	9.420	22.508	20.387	40.3	20.0	28.6	8.2	3.48	0.58	30.2	10.2	18.4
88	167.3	0.538	84.8	11.8	6.72	9.528	22.589	20.437	40.4	20.0	28.6	8.2	3.49	0.57	30.2	10.2	18.4
89	167.7	0.544	84.8	11.8	6.73	9.637	22.657	20.473	40.4	20.0	28.7	8.2	3.49	0.57	30.2	10.2	18.4
90	168.0	0.550	84.8	11.8	6.74	9.745	22.697	20.485	40.4	20.0	28.7	8.2	3.49	0.57	30.2	10.2	18.5
91	168.6	0.556	84.7	11.7	6.74	9.853	22.792	20.546	40.5	20.0	28.8	8.3	3.49	0.57	30.2	10.3	18.5
92	168.7	0.562	84.8	11.8	6.75	9.962	22.819	20.546	40.5	20.0	28.8	8.2	3.50	0.57	30.2	10.3	18.5
93	169.2	0.568	84.7	11.7	6.76	10.070	22.900	20.594	40.6	20.0	28.8	8.3	3.50	0.57	30.3	10.3	18.5
94	169.7	0.574	84.7	11.7	6.77	10.178	22.981	20.642	40.6	20.0	28.9	8.3	3.50	0.57	30.3	10.3	18.6
95	170.1	0.580	84.7	11.7	6.78	10.286	23.035	20.666	40.6	20.0	28.9	8.3	3.50	0.57	30.3	10.3	18.6
96	170.4	0.587	84.7	11.7	6.79	10.395	23.089	20.689	40.7	20.0	28.9	8.3	3.51	0.57	30.3	10.3	18.6
97	170.8	0.593	84.7	11.7	6.79	10.503	23.157	20.725	40.7	20.0	29.0	8.3	3.51	0.57	30.3	10.4	18.6
98	171.0	0.599	84.7	11.7	6.80	10.611	23.184	20.724	40.7	20.0	29.0	8.3	3.51	0.57	30.3	10.4	18.6
99	171.5	0.605	84.7	11.7	6.81	10.720	23.279	20.783	40.7	20.0	29.0	8.3	3.52	0.56	30.4	10.4	18.6
100	171.9	0.611	84.7	11.7	6.82	10.828	23.346	20.818	40.8	20.0	29.1	8.3	3.51	0.56	30.4	10.4	18.7



Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	172.2	0.617	84.7	11.7	6.83	10.936	23.387	20.829	40.8	20.0	29.1	8.3	3.51	0.56	30.4	10.4	18.7
102	172.8	0.623	84.7	11.7	6.83	11.044	23.495	20.900	40.9	20.0	29.2	8.3	3.52	0.56	30.4	10.5	18.7
103	173.0	0.629	84.7	11.7	6.84	11.153	23.522	20.899	40.9	20.0	29.2	8.3	3.52	0.56	30.4	10.4	18.7
104	173.5	0.635	84.7	11.7	6.85	11.261	23.603	20.945	40.9	20.0	29.2	8.3	3.53	0.56	30.4	10.5	18.8
105	173.8	0.641	84.7	11.7	6.86	11.369	23.657	20.968	40.9	20.0	29.3	8.3	3.53	0.56	30.4	10.5	18.8
106	174.1	0.648	84.7	11.7	6.87	11.477	23.698	20.978	40.9	20.0	29.3	8.3	3.53	0.56	30.5	10.5	18.8
107	174.6	0.654	84.7	11.7	6.88	11.586	23.779	21.024	41.0	20.0	29.3	8.3	3.54	0.56	30.5	10.5	18.8
108	175.0	0.660	84.7	11.7	6.89	11.694	23.847	21.058	41.0	20.0	29.3	8.3	3.54	0.55	30.5	10.5	18.8
109	175.2	0.666	84.7	11.7	6.89	11.802	23.887	21.068	41.0	20.0	29.4	8.3	3.54	0.55	30.5	10.5	18.8
110	175.4	0.672	84.7	11.6	6.90	11.911	23.914	21.066	41.0	20.0	29.4	8.3	3.53	0.55	30.5	10.5	18.9
111	175.9	0.678	84.7	11.6	6.91	12.019	23.996	21.112	41.1	20.0	29.4	8.3	3.53	0.55	30.5	10.6	18.9
112	176.1	0.684	84.7	11.6	6.92	12.127	24.036	21.121	41.1	20.0	29.5	8.3	3.53	0.55	30.5	10.6	18.9
113	176.6	0.690	84.7	11.6	6.93	12.235	24.117	21.166	41.1	20.0	29.5	8.3	3.54	0.55	30.5	10.6	18.9
114	177.1	0.696	84.6	11.6	6.94	12.344	24.198	21.211	41.2	20.0	29.6	8.4	3.53	0.55	30.6	10.6	19.0
115	177.4	0.703	84.6	11.6	6.94	12.452	24.239	21.221	41.2	20.0	29.6	8.4	3.53	0.55	30.6	10.6	19.0
116	177.5	0.709	84.6	11.6	6.95	12.560	24.266	21.218	41.2	20.0	29.6	8.4	3.53	0.55	30.6	10.6	19.0
117	178.0	0.715	84.6	11.6	6.96	12.669	24.347	21.263	41.2	20.0	29.6	8.4	3.54	0.55	30.6	10.6	19.0
118	178.4	0.721	84.6	11.6	6.97	12.777	24.401	21.284	41.2	20.0	29.7	8.4	3.54	0.54	30.6	10.6	19.0
119	178.7	0.727	84.6	11.6	6.98	12.885	24.455	21.304	41.3	20.0	29.7	8.4	3.54	0.54	30.6	10.7	19.0
120	179.2	0.733	84.6	11.5	6.99	12.993	24.536	21.348	41.3	20.0	29.8	8.4	3.54	0.54	30.6	10.7	19.1
121	179.6	0.739	84.6	11.5	7.00	13.102	24.604	21.381	41.3	20.0	29.8	8.4	3.54	0.54	30.7	10.7	19.1
122	180.0	0.745	84.6	11.5	7.01	13.210	24.672	21.413	41.4	20.0	29.8	8.4	3.55	0.54	30.7	10.7	19.1
123	180.4	0.751	84.6	11.5	7.01	13.318	24.739	21.445	41.4	20.0	29.9	8.4	3.55	0.54	30.7	10.7	19.1
124	180.7	0.757	84.5	11.5	7.02	13.426	24.793	21.465	41.4	20.0	29.9	8.5	3.54	0.54	30.7	10.7	19.2
125	181.2	0.764	84.5	11.5	7.03	13.535	24.875	21.508	41.5	20.0	30.0	8.5	3.54	0.54	30.7	10.8	19.2
126	181.4	0.770	84.6	11.5	7.04	13.643	24.902	21.504	41.5	20.0	29.9	8.4	3.56	0.54	30.7	10.8	19.2
127	181.8	0.776	84.5	11.5	7.05	13.751	24.969	21.536	41.5	20.0	30.0	8.5	3.55	0.53	30.7	10.8	19.2
128	182.2	0.782	84.5	11.5	7.06	13.860	25.037	21.567	41.5	20.0	30.0	8.5	3.55	0.53	30.7	10.8	19.2
129	182.6	0.788	84.5	11.5	7.07	13.968	25.105	21.598	41.6	20.0	30.1	8.5	3.56	0.53	30.8	10.8	19.3
130	182.9	0.794	84.5	11.5	7.08	14.076	25.145	21.606	41.6	20.0	30.1	8.5	3.56	0.53	30.8	10.8	19.3
131	183.4	0.800	84.5	11.5	7.08	14.184	25.226	21.648	41.6	20.0	30.1	8.5	3.55	0.53	30.8	10.8	19.3
132	183.5	0.806	84.5	11.4	7.09	14.293	25.253	21.644	41.6	20.0	30.2	8.5	3.54	0.53	30.8	10.8	19.4
133	183.9	0.812	84.5	11.5	7.10	14.401	25.321	21.674	41.6	20.0	30.2	8.5	3.55	0.53	30.8	10.8	19.3
134	184.4	0.819	84.5	11.4	7.11	14.509	25.389	21.705	41.7	20.0	30.2	8.5	3.54	0.53	30.8	10.9	19.4
135	184.8	0.825	84.4	11.4	7.12	14.618	25.456	21.735	41.7	20.0	30.3	8.6	3.54	0.52	30.8	10.9	19.4
136	185.3	0.831	84.4	11.4	7.13	14.726	25.537	21.777	41.7	20.0	30.4	8.6	3.54	0.52	30.9	10.9	19.5
137	185.3	0.837	84.4	11.4	7.14	14.834	25.551	21.761	41.7	20.0	30.3	8.6	3.54	0.52	30.8	10.9	19.5
138	185.8	0.843	84.4	11.4	7.15	14.942	25.632	21.802	41.8	20.0	30.4	8.6	3.54	0.52	30.9	10.9	19.5
139	186.3	0.849	84.4	11.4	7.16	15.051	25.700	21.832	41.8	20.0	30.4	8.6	3.55	0.52	30.9	10.9	19.5
140	186.7	0.855	84.4	11.3	7.17	15.159	25.781	21.873	41.8	20.0	30.5	8.6	3.54	0.52	30.9	10.9	19.6
141	187.0	0.861	84.3	11.3	7.18	15.267	25.821	21.879	41.8	20.0	30.5	8.7	3.53	0.52	30.9	10.9	19.6



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	187.2	0.867	84.3	11.3	7.18	15.375	25.862	21.886	41.8	20.0	30.5	8.7	3.53	0.52	30.9	10.9	19.6
143	187.7	0.873	84.3	11.3	7.19	15.484	25.943	21.926	41.9	20.0	30.6	8.7	3.52	0.51	30.9	11.0	19.7
144	188.1	0.880	84.3	11.3	7.20	15.592	25.997	21.944	41.9	20.0	30.6	8.7	3.54	0.52	30.9	11.0	19.6
145	188.4	0.886	84.3	11.3	7.21	15.700	26.051	21.961	41.9	20.0	30.7	8.7	3.53	0.51	30.9	11.0	19.7
146	188.8	0.892	84.3	11.2	7.22	15.809	26.119	21.990	42.0	20.0	30.7	8.7	3.52	0.51	31.0	11.0	19.7
147	189.1	0.898	84.3	11.3	7.23	15.917	26.173	22.007	42.0	20.0	30.7	8.7	3.53	0.51	31.0	11.0	19.7
148	189.5	0.904	84.3	11.3	7.24	16.025	26.227	22.024	42.0	20.0	30.7	8.7	3.53	0.51	31.0	11.0	19.7
149	189.7	0.910	84.3	11.3	7.25	16.133	26.268	22.030	42.0	20.0	30.7	8.7	3.53	0.51	31.0	11.0	19.7
150	190.0	0.916	84.2	11.1	7.26	16.242	26.322	22.047	42.0	20.0	30.9	8.8	3.50	0.51	31.0	11.0	19.8
151	190.5	0.922	84.2	11.1	7.27	16.350	26.403	22.086	42.0	20.0	30.9	8.8	3.51	0.50	31.0	11.0	19.9
152	190.9	0.928	84.2	11.1	7.28	16.458	26.471	22.114	42.1	20.0	30.9	8.8	3.51	0.50	31.0	11.1	19.9
153	191.3	0.934	84.2	11.2	7.29	16.567	26.538	22.142	42.1	20.0	30.9	8.8	3.52	0.51	31.0	11.1	19.8
154	191.8	0.941	84.2	11.1	7.30	16.675	26.619	22.181	42.1	20.0	31.0	8.8	3.52	0.50	31.1	11.1	19.9
155	192.2	0.947	84.2	11.1	7.31	16.783	26.673	22.197	42.2	20.0	31.0	8.8	3.52	0.50	31.1	11.1	19.9
156	192.6	0.953	84.2	11.1	7.32	16.891	26.741	22.224	42.2	20.0	31.0	8.8	3.52	0.50	31.1	11.1	19.9
157	192.9	0.959	84.1	11.1	7.33	17.000	26.795	22.240	42.2	20.0	31.1	8.9	3.51	0.50	31.1	11.1	20.0
158	193.2	0.965	84.1	11.1	7.33	17.108	26.836	22.245	42.2	20.0	31.1	8.9	3.50	0.50	31.1	11.1	20.0
159	193.3	0.971	84.1	11.0	7.34	17.216	26.863	22.238	42.2	20.0	31.2	8.9	3.49	0.50	31.1	11.1	20.1
160	193.9	0.977	84.1	11.0	7.35	17.324	26.957	22.287	42.2	20.0	31.2	8.9	3.49	0.49	31.1	11.1	20.1
161	194.2	0.983	84.0	11.0	7.36	17.433	27.012	22.303	42.3	20.0	31.3	9.0	3.48	0.49	31.1	11.2	20.1
162	194.6	0.989	84.1	11.1	7.37	17.541	27.066	22.318	42.3	20.0	31.2	8.9	3.51	0.50	31.1	11.2	20.1
163	195.0	0.996	84.1	11.0	7.38	17.649	27.133	22.344	42.3	20.0	31.3	8.9	3.50	0.49	31.1	11.2	20.1
164	195.2	1.002	84.1	11.0	7.39	17.758	27.174	22.348	42.3	20.0	31.3	8.9	3.50	0.49	31.1	11.2	20.1
165	195.5	1.008	84.1	11.0	7.40	17.866	27.214	22.352	42.3	20.0	31.3	8.9	3.50	0.49	31.1	11.2	20.1
166	195.9	1.014	84.0	11.0	7.41	17.974	27.282	22.378	42.3	20.0	31.4	9.0	3.49	0.49	31.2	11.2	20.2
167	196.3	1.020	84.0	11.0	7.42	18.082	27.350	22.404	42.4	20.0	31.4	9.0	3.50	0.49	31.2	11.2	20.2
168	196.7	1.026	84.0	10.9	7.43	18.191	27.417	22.430	42.4	20.0	31.4	9.0	3.49	0.49	31.2	11.2	20.2
169	197.3	1.032	84.0	10.9	7.44	18.299	27.512	22.478	42.4	20.0	31.5	9.0	3.49	0.49	31.2	11.2	20.3
170	197.5	1.038	84.0	10.9	7.45	18.407	27.553	22.481	42.4	20.0	31.5	9.0	3.49	0.49	31.2	11.2	20.3
171	197.8	1.044	83.9	10.9	7.46	18.516	27.607	22.495	42.5	20.0	31.6	9.1	3.48	0.48	31.2	11.2	20.3
172	198.0	1.050	84.0	10.9	7.47	18.624	27.634	22.487	42.4	20.0	31.5	9.0	3.49	0.49	31.2	11.2	20.3
173	198.3	1.057	83.9	10.9	7.48	18.732	27.674	22.490	42.5	20.0	31.5	9.1	3.48	0.48	31.2	11.2	20.3
174	198.8	1.063	83.9	10.9	7.49	18.840	27.755	22.526	42.5	20.0	31.6	9.1	3.48	0.48	31.2	11.3	20.4
175	199.2	1.069	83.9	10.9	7.50	18.949	27.823	22.551	42.5	20.0	31.6	9.1	3.48	0.48	31.2	11.3	20.4
176	199.3	1.075	83.9	10.8	7.51	19.057	27.850	22.543	42.5	20.0	31.7	9.1	3.47	0.48	31.2	11.3	20.4
177	199.8	1.081	83.9	10.8	7.52	19.165	27.931	22.578	42.5	20.0	31.7	9.1	3.47	0.48	31.3	11.3	20.4
178	200.1	1.087	83.9	10.8	7.53	19.274	27.972	22.581	42.5	20.0	31.7	9.1	3.47	0.48	31.3	11.3	20.4
179	200.4	1.093	83.7	10.7	7.54	19.382	28.026	22.594	42.6	20.0	31.9	9.3	3.44	0.47	31.3	11.3	20.6
180	200.7	1.099	83.7	10.7	7.55	19.490	28.080	22.607	42.6	20.0	31.9	9.3	3.44	0.47	31.3	11.3	20.6
181	201.2	1.105	83.7	10.7	7.56	19.598	28.161	22.642	42.6	20.0	31.9	9.3	3.44	0.47	31.3	11.3	20.6
182	201.7	1.112	83.7	10.7	7.57	19.707	28.242	22.677	42.6	20.0	32.0	9.3	3.44	0.47	31.3	11.3	20.6



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	202.2	1.118	83.7	10.7	7.58	19.815	28.323	22.711	42.7	20.0	32.0	9.3	3.44	0.47	31.3	11.4	20.7
184	202.5	1.124	83.7	10.6	7.59	19.923	28.378	22.724	42.7	20.0	32.1	9.3	3.43	0.47	31.3	11.4	20.7
185	202.7	1.129	83.7	10.7	7.60	20.015	28.405	22.719	42.7	20.0	32.0	9.3	3.45	0.47	31.3	11.4	20.6

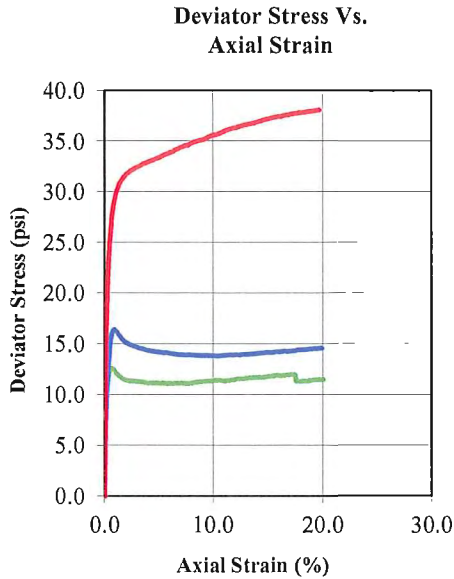


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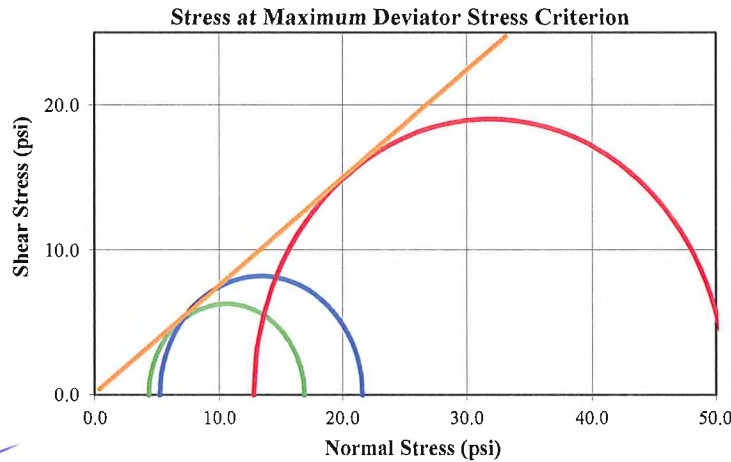
Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME : I-85/I-385 Interchange	SAMPLE NO. : Bag #1
PROJECT NO. : 08195-01	SAMPLE DEPTH : 0.0' to 15.0'
PROJECT LOCATION : B-65	SAMPLE TYPE : Remolded
BORING NUMBER : B-65	DESCRIPTION : Red & Brown Silty Sand
REMARKS :	TEST TYPE : Consolidated Undrained



Initial	Specimen			
	A	B	C	D
Water Content (%)	18.1	18.2	19.6	
Dry Density (pcf)	99.8	99.5	100.8	
Saturation (%)	72.73	72.85	80.92	
Void Ratio	0.655	0.658	0.638	
Diameter (in)	2.803	2.802	2.797	
Height (in)	5.618	5.634	5.559	
Specific Gravity	2.65	2.65	2.65	
Liquid Limit	36	36	36	
Plastic Limit	26	26	26	
After Consolidation	A	B	C	D
B-Value	0.95	0.95	0.97	
Water Content (%)	24.1	24.3	20.9	
Dry Density (pcf)	99.75	99.91	116.59	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.658	0.656	0.419	
Effective Stress (psi)	5.0	10.0	20.0	
Back Press. (psi)	89.2	88.2	44.4	
Rate of Strain	0.002	0.002	0.002	

Maximum Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	0.0	σ'_1 at Failure (psi)	16.92	21.59	50.86	
ϕ' (deg)	31.6	σ'_3 at Failure (psi)	4.31	5.19	12.78	
C' (psi)	0.1					
ϕ' (deg)	36.6					

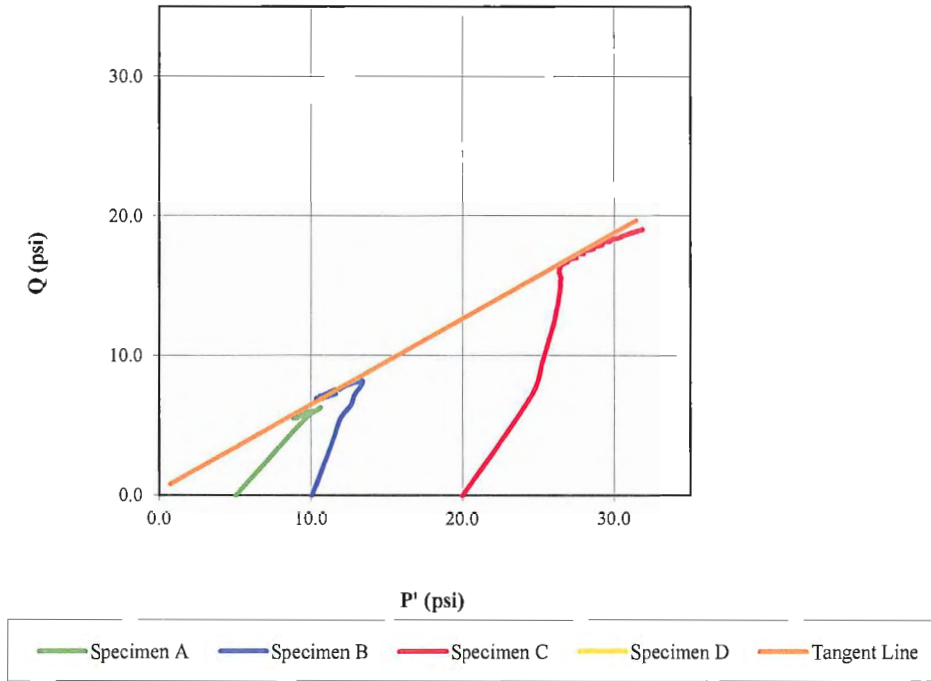


Tested By: [Signature]
 Date: 12-11-12

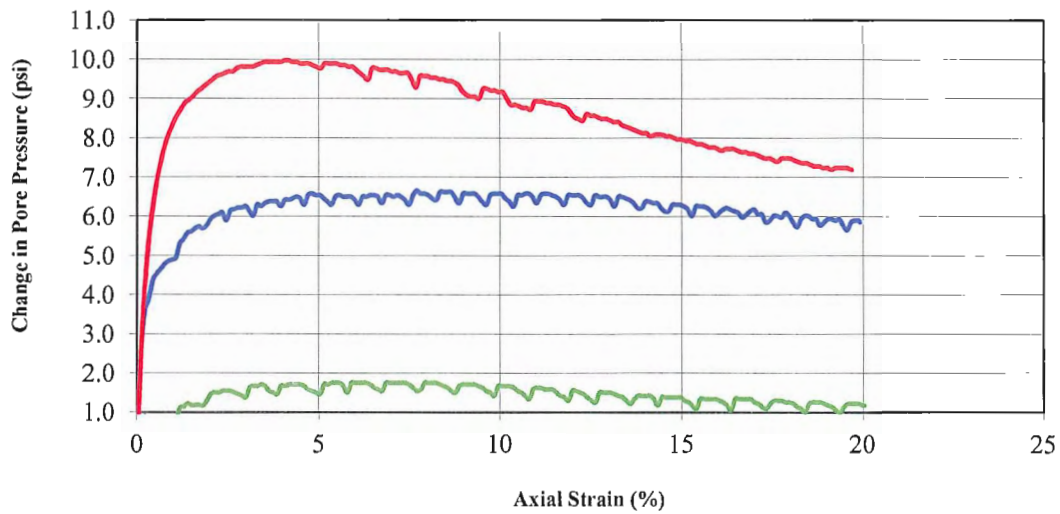
Approved By: SKB
 Date: 12-11-12



Stress Paths (Effective)
($a = 0.4$ $\alpha = 31.6$)



Change in Pore Pressure vs. Axial Strain





File Location
B-65 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-65
Sample Description: Red & Brown Silty Sand
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.650001
LL: 36.000
PL: 26.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.803	2.803	
Height (in)	5.618	5.618	
Weight (grams)	1072.10		1127.30
Moisture (%)	18.07		24.15
Dry Density (pcf)	99.76	99.75	
Saturation (%)	72.73	100.00	
Void Ratio	0.655	0.658	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 94.200
Effective Confining Stress (psi): 5.0
Corrected Peak Deviator Stress (psi): 12.610 at reading number: 6

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	-20.0	0.000	89.2	0.0	6.17	0.000	0.000	0.000	5.0	5.0	5.0	5.0	1.00	0.00	5.0	0.0	5.0
1	38.3	0.006	90.0	0.8	6.18	0.107	9.439	9.429	14.4	5.0	13.6	4.2	3.25	0.09	9.7	4.7	8.9
2	46.9	0.012	90.1	0.9	6.19	0.214	10.839	10.815	15.8	5.0	14.9	4.1	3.64	0.08	10.4	5.4	9.5
3	52.7	0.018	90.1	0.9	6.19	0.321	11.785	11.747	16.7	5.0	15.9	4.1	3.84	0.07	10.9	5.9	10.0
4	56.1	0.024	90.0	0.8	6.20	0.428	12.332	12.279	17.3	5.0	16.5	4.2	3.91	0.06	11.1	6.1	10.4
5	57.9	0.030	89.9	0.7	6.21	0.534	12.625	12.557	17.6	5.0	16.8	4.3	3.94	0.06	11.3	6.3	10.5
6	58.3	0.036	89.9	0.7	6.21	0.641	12.691	12.610	17.6	5.0	16.9	4.3	3.93	0.05	11.3	6.3	10.6
7	58.1	0.042	89.9	0.7	6.22	0.748	12.651	12.557	17.6	5.0	16.9	4.3	3.92	0.06	11.3	6.3	10.6
8	57.4	0.048	89.9	0.7	6.23	0.855	12.545	12.438	17.4	5.0	16.7	4.3	3.89	0.06	11.2	6.2	10.5
9	56.5	0.055	89.9	0.7	6.23	0.962	12.398	12.279	17.3	5.0	16.5	4.3	3.88	0.06	11.1	6.1	10.4
10	55.7	0.061	90.0	0.8	6.24	1.069	12.265	12.134	17.1	5.0	16.4	4.2	3.87	0.06	11.1	6.1	10.3
11	55.0	0.067	90.3	1.1	6.25	1.176	12.158	12.015	17.0	5.0	15.9	3.9	4.08	0.09	11.0	6.0	9.9
12	54.5	0.073	90.3	1.1	6.25	1.283	12.065	11.910	16.9	5.0	15.8	3.9	4.09	0.10	11.0	6.0	9.8
13	54.1	0.079	90.4	1.2	6.26	1.389	11.998	11.832	16.8	5.0	15.6	3.8	4.13	0.10	10.9	5.9	9.7
14	53.6	0.085	90.4	1.2	6.27	1.496	11.918	11.740	16.7	5.0	15.6	3.8	4.08	0.10	10.9	5.9	9.7
15	53.1	0.091	90.4	1.2	6.27	1.603	11.838	11.649	16.6	5.0	15.5	3.8	4.05	0.10	10.8	5.8	9.6
16	52.7	0.097	90.4	1.2	6.28	1.710	11.772	11.570	16.6	5.0	15.4	3.8	4.03	0.10	10.8	5.8	9.6
17	52.4	0.103	90.4	1.2	6.29	1.817	11.732	11.519	16.5	5.0	15.3	3.8	4.02	0.10	10.8	5.8	9.6
18	52.1	0.109	90.5	1.3	6.29	1.924	11.678	11.454	16.5	5.0	15.1	3.7	4.10	0.11	10.7	5.7	9.4



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	52.0	0.115	90.7	1.5	6.30	2.031	11.665	11.428	16.4	5.0	15.0	3.5	4.24	0.13	10.7	5.7	9.2
20	52.0	0.121	90.7	1.5	6.31	2.138	11.665	11.416	16.4	5.0	14.9	3.5	4.27	0.13	10.7	5.7	9.2
21	51.9	0.127	90.7	1.5	6.31	2.244	11.652	11.390	16.4	5.0	14.9	3.5	4.26	0.13	10.7	5.7	9.2
22	51.8	0.133	90.7	1.5	6.32	2.351	11.625	11.352	16.4	5.0	14.8	3.5	4.29	0.14	10.7	5.7	9.1
23	51.9	0.139	90.7	1.5	6.33	2.458	11.652	11.365	16.4	5.0	14.8	3.5	4.29	0.14	10.7	5.7	9.1
24	51.9	0.145	90.7	1.5	6.33	2.565	11.652	11.353	16.4	5.0	14.8	3.5	4.29	0.14	10.7	5.7	9.1
25	52.1	0.151	90.7	1.5	6.34	2.672	11.678	11.366	16.4	5.0	14.9	3.5	4.26	0.13	10.7	5.7	9.2
26	52.1	0.157	90.7	1.5	6.35	2.779	11.678	11.354	16.4	5.0	14.9	3.5	4.21	0.13	10.7	5.7	9.2
27	51.9	0.163	90.6	1.4	6.36	2.886	11.652	11.315	16.3	5.0	14.9	3.6	4.17	0.13	10.7	5.7	9.2
28	52.0	0.169	90.6	1.4	6.36	2.993	11.665	11.316	16.3	5.0	14.9	3.6	4.13	0.12	10.7	5.7	9.3
29	51.9	0.175	90.8	1.6	6.37	3.099	11.652	11.291	16.3	5.0	14.7	3.4	4.35	0.14	10.6	5.6	9.0
30	52.1	0.181	90.9	1.7	6.38	3.206	11.678	11.304	16.3	5.0	14.6	3.3	4.40	0.15	10.7	5.7	9.0
31	51.9	0.187	90.9	1.7	6.38	3.313	11.652	11.266	16.3	5.0	14.6	3.3	4.39	0.15	10.6	5.6	9.0
32	52.0	0.193	90.9	1.7	6.39	3.420	11.665	11.266	16.3	5.0	14.6	3.3	4.43	0.15	10.6	5.6	8.9
33	52.0	0.199	90.9	1.7	6.40	3.527	11.665	11.254	16.3	5.0	14.6	3.3	4.38	0.15	10.6	5.6	9.0
34	51.9	0.205	90.7	1.5	6.40	3.634	11.652	11.228	16.2	5.0	14.7	3.5	4.25	0.14	10.6	5.6	9.1
35	51.9	0.211	90.7	1.5	6.41	3.741	11.652	11.216	16.2	5.0	14.7	3.5	4.21	0.13	10.6	5.6	9.1
36	51.8	0.217	90.7	1.5	6.42	3.848	11.625	11.178	16.2	5.0	14.7	3.5	4.16	0.13	10.6	5.6	9.1
37	51.6	0.223	90.9	1.7	6.43	3.954	11.598	11.140	16.1	5.0	14.5	3.3	4.35	0.15	10.6	5.6	8.9
38	51.9	0.229	90.9	1.7	6.43	4.061	11.652	11.178	16.2	5.0	14.5	3.3	4.36	0.15	10.6	5.6	8.9
39	51.8	0.235	90.9	1.7	6.44	4.168	11.638	11.153	16.2	5.0	14.4	3.3	4.39	0.15	10.6	5.6	8.9
40	51.9	0.241	90.9	1.7	6.45	4.275	11.652	11.154	16.2	5.0	14.4	3.3	4.39	0.15	10.6	5.6	8.9
41	51.8	0.247	90.9	1.7	6.45	4.382	11.638	11.128	16.1	5.0	14.4	3.3	4.39	0.15	10.6	5.6	8.9
42	52.2	0.253	90.9	1.7	6.46	4.489	11.692	11.167	16.2	5.0	14.5	3.3	4.40	0.15	10.6	5.6	8.9
43	52.2	0.259	90.9	1.7	6.47	4.596	11.705	11.167	16.2	5.0	14.5	3.3	4.36	0.15	10.6	5.6	8.9
44	52.2	0.265	90.8	1.6	6.48	4.703	11.705	11.155	16.2	5.0	14.6	3.4	4.27	0.14	10.6	5.6	9.0
45	52.3	0.271	90.7	1.5	6.48	4.809	11.718	11.155	16.2	5.0	14.6	3.5	4.23	0.14	10.6	5.6	9.0
46	52.4	0.277	90.7	1.5	6.49	4.916	11.732	11.155	16.2	5.0	14.6	3.5	4.20	0.14	10.6	5.6	9.1
47	52.3	0.283	90.7	1.5	6.50	5.023	11.718	11.130	16.1	5.0	14.7	3.5	4.15	0.13	10.6	5.6	9.1
48	52.3	0.289	90.9	1.7	6.51	5.130	11.718	11.117	16.1	5.0	14.4	3.3	4.38	0.15	10.6	5.6	8.8
49	52.7	0.295	90.9	1.7	6.51	5.237	11.772	11.155	16.2	5.0	14.4	3.3	4.39	0.15	10.6	5.6	8.9
50	52.7	0.301	91.0	1.8	6.52	5.344	11.785	11.155	16.2	5.0	14.4	3.2	4.44	0.16	10.6	5.6	8.8
51	52.6	0.307	91.0	1.8	6.53	5.451	11.758	11.117	16.1	5.0	14.4	3.2	4.42	0.16	10.6	5.6	8.8
52	52.8	0.313	91.0	1.8	6.54	5.558	11.798	11.143	16.1	5.0	14.4	3.2	4.43	0.16	10.6	5.6	8.8
53	52.6	0.319	90.9	1.7	6.54	5.664	11.758	11.092	16.1	5.0	14.4	3.3	4.33	0.15	10.5	5.5	8.9
54	52.5	0.325	90.7	1.5	6.55	5.771	11.745	11.067	16.1	5.0	14.6	3.5	4.17	0.14	10.5	5.5	9.0
55	53.0	0.331	91.0	1.8	6.56	5.878	11.825	11.130	16.1	5.0	14.4	3.2	4.43	0.16	10.6	5.6	8.8
56	53.0	0.337	91.0	1.8	6.56	5.985	11.825	11.117	16.1	5.0	14.4	3.2	4.42	0.16	10.6	5.6	8.8
57	53.1	0.343	91.0	1.8	6.57	6.092	11.838	11.117	16.1	5.0	14.4	3.2	4.42	0.16	10.6	5.6	8.8
58	53.1	0.349	91.0	1.8	6.58	6.199	11.838	11.104	16.1	5.0	14.4	3.2	4.42	0.16	10.6	5.6	8.8
59	53.1	0.355	91.0	1.8	6.59	6.306	11.838	11.092	16.1	5.0	14.3	3.2	4.42	0.16	10.5	5.5	8.8



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	53.3	0.361	90.9	1.7	6.59	6.413	11.878	11.117	16.1	5.0	14.4	3.3	4.38	0.15	10.6	5.6	8.8
61	53.4	0.367	90.8	1.6	6.60	6.519	11.892	11.116	16.1	5.0	14.5	3.4	4.30	0.15	10.6	5.6	8.9
62	53.6	0.373	90.8	1.6	6.61	6.626	11.932	11.141	16.1	5.0	14.6	3.4	4.27	0.14	10.6	5.6	9.0
63	53.7	0.379	90.7	1.5	6.62	6.733	11.945	11.141	16.1	5.0	14.6	3.5	4.23	0.14	10.6	5.6	9.0
64	53.6	0.385	91.0	1.8	6.63	6.840	11.932	11.115	16.1	5.0	14.4	3.2	4.42	0.16	10.6	5.6	8.8
65	53.9	0.391	91.0	1.8	6.63	6.947	11.972	11.140	16.1	5.0	14.4	3.2	4.43	0.16	10.6	5.6	8.8
66	54.1	0.397	91.0	1.8	6.64	7.054	12.012	11.164	16.2	5.0	14.4	3.2	4.44	0.16	10.6	5.6	8.8
67	54.1	0.403	91.0	1.8	6.65	7.161	11.998	11.139	16.1	5.0	14.4	3.2	4.43	0.16	10.6	5.6	8.8
68	54.1	0.409	91.0	1.8	6.66	7.268	12.012	11.139	16.1	5.0	14.4	3.2	4.43	0.16	10.6	5.6	8.8
69	54.0	0.415	91.0	1.8	6.66	7.374	11.985	11.101	16.1	5.0	14.3	3.2	4.42	0.16	10.5	5.6	8.8
70	54.2	0.421	90.9	1.7	6.67	7.481	12.025	11.125	16.1	5.0	14.4	3.3	4.38	0.15	10.6	5.6	8.8
71	54.2	0.427	90.8	1.6	6.68	7.588	12.025	11.112	16.1	5.0	14.5	3.4	4.30	0.15	10.6	5.6	8.9
72	54.2	0.433	90.7	1.5	6.69	7.695	12.025	11.100	16.1	5.0	14.5	3.5	4.22	0.14	10.5	5.5	9.0
73	54.4	0.439	90.8	1.6	6.69	7.802	12.052	11.111	16.1	5.0	14.5	3.4	4.26	0.14	10.6	5.6	9.0
74	54.5	0.445	91.0	1.8	6.70	7.909	12.078	11.123	16.1	5.0	14.4	3.2	4.43	0.16	10.6	5.6	8.8
75	54.9	0.451	91.0	1.8	6.71	8.016	12.132	11.159	16.2	5.0	14.4	3.2	4.44	0.16	10.6	5.6	8.8
76	55.2	0.457	91.0	1.8	6.72	8.123	12.185	11.195	16.2	5.0	14.4	3.2	4.45	0.16	10.6	5.6	8.8
77	55.5	0.463	91.0	1.8	6.73	8.229	12.238	11.231	16.2	5.0	14.5	3.2	4.46	0.16	10.6	5.6	8.9
78	55.5	0.469	90.9	1.7	6.73	8.336	12.238	11.218	16.2	5.0	14.5	3.3	4.41	0.15	10.6	5.6	8.9
79	55.6	0.475	90.9	1.7	6.74	8.443	12.252	11.217	16.2	5.0	14.5	3.3	4.37	0.15	10.6	5.6	8.9
80	56.1	0.481	90.8	1.6	6.75	8.550	12.332	11.277	16.3	5.0	14.6	3.4	4.35	0.14	10.6	5.6	9.0
81	56.1	0.487	90.7	1.5	6.76	8.657	12.332	11.264	16.3	5.0	14.7	3.5	4.26	0.14	10.6	5.6	9.1
82	56.4	0.493	90.7	1.5	6.76	8.764	12.372	11.287	16.3	5.0	14.8	3.5	4.23	0.13	10.6	5.6	9.1
83	56.4	0.499	90.9	1.7	6.77	8.871	12.385	11.286	16.3	5.0	14.6	3.3	4.39	0.15	10.6	5.6	9.0
84	56.5	0.505	90.9	1.7	6.78	8.978	12.398	11.285	16.3	5.0	14.6	3.3	4.43	0.15	10.6	5.6	8.9
85	56.8	0.511	90.9	1.7	6.79	9.084	12.438	11.308	16.3	5.0	14.6	3.3	4.44	0.15	10.7	5.7	8.9
86	56.9	0.517	90.9	1.7	6.80	9.191	12.451	11.307	16.3	5.0	14.6	3.3	4.44	0.15	10.7	5.7	8.9
87	56.9	0.523	90.9	1.7	6.80	9.298	12.465	11.306	16.3	5.0	14.6	3.3	4.44	0.15	10.7	5.7	8.9
88	57.1	0.529	90.9	1.7	6.81	9.405	12.491	11.317	16.3	5.0	14.6	3.3	4.40	0.15	10.7	5.7	9.0
89	57.4	0.535	90.8	1.6	6.82	9.512	12.545	11.352	16.4	5.0	14.7	3.4	4.37	0.14	10.7	5.7	9.0
90	57.5	0.541	90.7	1.5	6.83	9.619	12.558	11.350	16.3	5.0	14.8	3.5	4.29	0.14	10.7	5.7	9.1
91	57.6	0.547	90.7	1.5	6.84	9.726	12.571	11.349	16.3	5.0	14.8	3.5	4.25	0.13	10.7	5.7	9.2
92	57.7	0.553	90.6	1.4	6.85	9.833	12.585	11.347	16.3	5.0	14.9	3.6	4.18	0.13	10.7	5.7	9.2
93	57.9	0.559	90.9	1.7	6.85	9.939	12.625	11.370	16.4	5.0	14.7	3.3	4.42	0.15	10.7	5.7	9.0
94	58.4	0.565	90.9	1.7	6.86	10.046	12.705	11.428	16.4	5.0	14.8	3.3	4.43	0.15	10.7	5.7	9.0
95	58.4	0.571	90.9	1.7	6.87	10.153	12.705	11.415	16.4	5.0	14.7	3.3	4.43	0.15	10.7	5.7	9.0
96	58.5	0.577	90.9	1.7	6.88	10.260	12.718	11.413	16.4	5.0	14.7	3.3	4.43	0.15	10.7	5.7	9.0
97	58.7	0.583	90.8	1.6	6.89	10.367	12.745	11.424	16.4	5.0	14.8	3.4	4.39	0.14	10.7	5.7	9.1
98	58.8	0.589	90.7	1.5	6.89	10.474	12.771	11.434	16.4	5.0	14.9	3.5	4.31	0.14	10.7	5.7	9.2
99	58.8	0.595	90.7	1.5	6.90	10.581	12.771	11.420	16.4	5.0	14.9	3.5	4.27	0.13	10.7	5.7	9.2
100	58.8	0.601	90.6	1.4	6.91	10.688	12.771	11.406	16.4	5.0	15.0	3.6	4.19	0.13	10.7	5.7	9.3



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	58.8	0.607	90.5	1.3	6.92	10.794	12.771	11.393	16.4	5.0	15.0	3.7	4.12	0.12	10.7	5.7	9.4
102	58.7	0.613	90.8	1.6	6.93	10.901	12.745	11.355	16.4	5.0	14.8	3.4	4.33	0.14	10.7	5.7	9.1
103	58.9	0.619	90.8	1.6	6.94	11.008	12.785	11.377	16.4	5.0	14.7	3.4	4.38	0.14	10.7	5.7	9.1
104	58.8	0.625	90.8	1.6	6.94	11.115	12.771	11.352	16.4	5.0	14.7	3.4	4.37	0.14	10.7	5.7	9.0
105	59.1	0.631	90.8	1.6	6.95	11.222	12.811	11.374	16.4	5.0	14.8	3.4	4.34	0.14	10.7	5.7	9.1
106	59.2	0.637	90.8	1.6	6.96	11.329	12.838	11.384	16.4	5.0	14.8	3.4	4.34	0.14	10.7	5.7	9.1
107	59.5	0.643	90.8	1.6	6.97	11.436	12.878	11.405	16.4	5.0	14.8	3.4	4.35	0.14	10.7	5.7	9.1
108	59.7	0.649	90.7	1.5	6.98	11.543	12.918	11.427	16.4	5.0	14.9	3.5	4.27	0.13	10.7	5.7	9.2
109	59.8	0.655	90.6	1.4	6.99	11.649	12.931	11.425	16.4	5.0	15.0	3.6	4.20	0.12	10.7	5.7	9.3
110	60.1	0.661	90.6	1.4	6.99	11.756	12.985	11.458	16.5	5.0	15.1	3.6	4.17	0.12	10.7	5.7	9.3
111	60.3	0.667	90.5	1.3	7.00	11.863	13.011	11.468	16.5	5.0	15.2	3.7	4.10	0.11	10.7	5.7	9.4
112	60.6	0.673	90.7	1.5	7.01	11.970	13.051	11.489	16.5	5.0	14.9	3.5	4.33	0.13	10.7	5.7	9.2
113	61.0	0.679	90.7	1.5	7.02	12.077	13.118	11.534	16.5	5.0	15.0	3.5	4.34	0.13	10.8	5.8	9.2
114	61.2	0.685	90.7	1.5	7.03	12.184	13.158	11.555	16.6	5.0	15.0	3.5	4.31	0.13	10.8	5.8	9.3
115	61.5	0.691	90.7	1.5	7.04	12.291	13.198	11.576	16.6	5.0	15.1	3.5	4.28	0.13	10.8	5.8	9.3
116	61.5	0.697	90.6	1.4	7.05	12.398	13.198	11.562	16.6	5.0	15.2	3.6	4.20	0.12	10.8	5.8	9.4
117	61.7	0.703	90.5	1.3	7.05	12.505	13.238	11.583	16.6	5.0	15.3	3.7	4.13	0.11	10.8	5.8	9.5
118	61.7	0.709	90.5	1.3	7.06	12.611	13.238	11.568	16.6	5.0	15.3	3.7	4.10	0.11	10.8	5.8	9.5
119	61.7	0.715	90.7	1.5	7.07	12.718	13.238	11.554	16.6	5.0	15.0	3.5	4.31	0.13	10.8	5.8	9.3
120	62.0	0.721	90.7	1.5	7.08	12.825	13.278	11.575	16.6	5.0	15.1	3.5	4.32	0.13	10.8	5.8	9.3
121	62.4	0.727	90.7	1.5	7.09	12.932	13.345	11.619	16.6	5.0	15.1	3.5	4.33	0.13	10.8	5.8	9.3
122	62.5	0.733	90.7	1.5	7.10	13.039	13.371	11.628	16.6	5.0	15.1	3.5	4.33	0.13	10.8	5.8	9.3
123	62.7	0.739	90.7	1.5	7.11	13.146	13.398	11.637	16.6	5.0	15.2	3.5	4.29	0.13	10.8	5.8	9.4
124	63.1	0.745	90.6	1.4	7.11	13.253	13.465	11.680	16.7	5.0	15.3	3.6	4.27	0.12	10.8	5.8	9.4
125	63.1	0.751	90.6	1.4	7.12	13.360	13.465	11.666	16.7	5.0	15.3	3.6	4.23	0.12	10.8	5.8	9.4
126	63.2	0.757	90.5	1.3	7.13	13.466	13.478	11.663	16.7	5.0	15.4	3.7	4.16	0.11	10.8	5.8	9.5
127	63.4	0.763	90.4	1.2	7.14	13.573	13.518	11.683	16.7	5.0	15.5	3.8	4.09	0.10	10.8	5.8	9.6
128	63.5	0.769	90.5	1.3	7.15	13.680	13.531	11.680	16.7	5.0	15.3	3.7	4.20	0.12	10.8	5.8	9.5
129	63.8	0.775	90.6	1.4	7.16	13.787	13.585	11.712	16.7	5.0	15.3	3.6	4.28	0.12	10.9	5.9	9.4
130	64.0	0.781	90.6	1.4	7.17	13.894	13.611	11.720	16.7	5.0	15.3	3.6	4.28	0.12	10.9	5.9	9.4
131	63.9	0.787	90.6	1.4	7.18	14.001	13.598	11.694	16.7	5.0	15.3	3.6	4.27	0.12	10.8	5.8	9.4
132	64.3	0.793	90.6	1.4	7.19	14.108	13.665	11.737	16.7	5.0	15.3	3.6	4.29	0.12	10.9	5.9	9.4
133	64.5	0.799	90.5	1.3	7.19	14.215	13.691	11.745	16.7	5.0	15.4	3.7	4.21	0.11	10.9	5.9	9.5
134	64.3	0.805	90.4	1.2	7.20	14.321	13.665	11.708	16.7	5.0	15.5	3.8	4.07	0.10	10.9	5.9	9.7
135	64.3	0.811	90.6	1.4	7.21	14.428	13.665	11.693	16.7	5.0	15.3	3.6	4.24	0.12	10.8	5.8	9.5
136	64.4	0.817	90.6	1.4	7.22	14.535	13.678	11.690	16.7	5.0	15.3	3.6	4.24	0.12	10.8	5.8	9.5
137	64.9	0.823	90.6	1.4	7.23	14.642	13.758	11.743	16.7	5.0	15.4	3.6	4.25	0.12	10.9	5.9	9.5
138	65.2	0.829	90.6	1.4	7.24	14.749	13.811	11.774	16.8	5.0	15.4	3.6	4.26	0.12	10.9	5.9	9.5
139	65.2	0.835	90.6	1.4	7.25	14.856	13.798	11.748	16.7	5.0	15.4	3.6	4.25	0.12	10.9	5.9	9.5
140	65.6	0.841	90.6	1.4	7.26	14.963	13.864	11.790	16.8	5.0	15.4	3.6	4.26	0.12	10.9	5.9	9.5
141	65.8	0.847	90.5	1.3	7.27	15.070	13.904	11.809	16.8	5.0	15.5	3.7	4.20	0.11	10.9	5.9	9.6



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CONSULTING ENGINEERS

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	66.1	0.853	90.5	1.3	7.28	15.176	13.958	11.839	16.8	5.0	15.6	3.7	4.17	0.11	10.9	5.9	9.7
143	66.1	0.859	90.4	1.2	7.29	15.283	13.944	11.813	16.8	5.0	15.6	3.8	4.09	0.10	10.9	5.9	9.7
144	66.1	0.865	90.3	1.1	7.29	15.390	13.958	11.810	16.8	5.0	15.7	3.9	4.03	0.09	10.9	5.9	9.8
145	66.7	0.871	90.5	1.3	7.30	15.497	14.051	11.874	16.9	5.0	15.5	3.7	4.25	0.11	10.9	5.9	9.6
146	66.9	0.877	90.5	1.3	7.31	15.604	14.078	11.881	16.9	5.0	15.5	3.7	4.25	0.11	10.9	5.9	9.6
147	67.2	0.883	90.5	1.3	7.32	15.711	14.131	11.911	16.9	5.0	15.6	3.7	4.26	0.11	11.0	6.0	9.6
148	67.5	0.889	90.5	1.3	7.33	15.818	14.171	11.930	16.9	5.0	15.6	3.7	4.26	0.11	11.0	6.0	9.6
149	67.5	0.895	90.5	1.3	7.34	15.925	14.184	11.926	16.9	5.0	15.6	3.7	4.26	0.11	11.0	6.0	9.6
150	67.4	0.901	90.5	1.3	7.35	16.031	14.158	11.888	16.9	5.0	15.6	3.7	4.22	0.11	10.9	5.9	9.6
151	67.4	0.907	90.5	1.3	7.36	16.138	14.158	11.873	16.9	5.0	15.6	3.7	4.18	0.11	10.9	5.9	9.7
152	67.4	0.913	90.4	1.2	7.37	16.245	14.158	11.858	16.9	5.0	15.7	3.8	4.11	0.10	10.9	5.9	9.7
153	67.8	0.919	90.3	1.1	7.38	16.352	14.224	11.898	16.9	5.0	15.8	3.9	4.02	0.09	10.9	5.9	9.9
154	68.0	0.925	90.5	1.3	7.39	16.459	14.251	11.905	16.9	5.0	15.6	3.7	4.26	0.11	11.0	6.0	9.6
155	68.3	0.931	90.5	1.3	7.40	16.566	14.304	11.935	16.9	5.0	15.6	3.7	4.27	0.11	11.0	6.0	9.6
156	68.5	0.937	90.5	1.3	7.41	16.673	14.344	11.953	17.0	5.0	15.6	3.7	4.27	0.11	11.0	6.0	9.6
157	68.7	0.943	90.5	1.3	7.42	16.780	14.371	11.960	17.0	5.0	15.6	3.7	4.27	0.11	11.0	6.0	9.6
158	68.9	0.949	90.5	1.3	7.43	16.886	14.411	11.978	17.0	5.0	15.6	3.7	4.28	0.11	11.0	6.0	9.6
159	69.1	0.955	90.5	1.3	7.44	16.993	14.438	11.984	17.0	5.0	15.7	3.7	4.21	0.11	11.0	6.0	9.7
160	69.1	0.961	90.4	1.2	7.45	17.100	14.438	11.969	17.0	5.0	15.7	3.8	4.17	0.10	11.0	6.0	9.8
161	69.2	0.967	90.3	1.1	7.45	17.207	14.451	11.964	17.0	5.0	15.8	3.9	4.10	0.10	11.0	6.0	9.8
162	69.4	0.973	90.3	1.1	7.46	17.314	14.478	11.971	17.0	5.0	15.9	3.9	4.07	0.09	11.0	6.0	9.9
163	69.4	0.979	90.4	1.2	7.47	17.421	14.491	11.967	17.0	5.0	15.7	3.8	4.17	0.10	11.0	6.0	9.8
164	69.7	0.985	90.5	1.3	7.48	17.528	14.531	11.384	16.4	5.0	15.1	3.7	4.08	0.11	10.7	5.7	9.4
165	69.4	0.991	90.5	1.3	7.49	17.635	14.491	11.332	16.3	5.0	15.0	3.7	4.07	0.12	10.7	5.7	9.4
166	69.6	0.997	90.5	1.3	7.50	17.741	14.518	11.334	16.3	5.0	15.0	3.7	4.07	0.12	10.7	5.7	9.4
167	69.6	1.003	90.5	1.3	7.51	17.848	14.518	11.315	16.3	5.0	15.1	3.7	4.03	0.11	10.7	5.7	9.4
168	69.8	1.009	90.5	1.3	7.52	17.955	14.544	11.318	16.3	5.0	15.1	3.7	4.03	0.11	10.7	5.7	9.4
169	70.3	1.015	90.4	1.2	7.53	18.062	14.624	11.364	16.4	5.0	15.1	3.8	4.01	0.11	10.7	5.7	9.5
170	70.3	1.021	90.3	1.1	7.54	18.169	14.624	11.345	16.3	5.0	15.2	3.9	3.94	0.10	10.7	5.7	9.5
171	70.3	1.027	90.3	1.1	7.55	18.276	14.638	11.337	16.3	5.0	15.2	3.9	3.91	0.10	10.7	5.7	9.6
172	70.6	1.033	90.2	1.0	7.56	18.383	14.678	11.350	16.3	5.0	15.3	4.0	3.85	0.09	10.7	5.7	9.7
173	70.7	1.039	90.4	1.2	7.57	18.490	14.691	11.341	16.3	5.0	15.1	3.8	4.00	0.11	10.7	5.7	9.4
174	70.8	1.045	90.5	1.3	7.58	18.596	14.718	11.344	16.3	5.0	15.1	3.7	4.04	0.11	10.7	5.7	9.4
175	71.6	1.051	90.5	1.3	7.59	18.703	14.838	11.422	16.4	5.0	15.2	3.7	4.06	0.11	10.7	5.7	9.4
176	71.6	1.057	90.5	1.3	7.60	18.810	14.838	11.402	16.4	5.0	15.1	3.7	4.05	0.11	10.7	5.7	9.4
177	71.9	1.063	90.4	1.2	7.61	18.917	14.891	11.426	16.4	5.0	15.2	3.8	4.03	0.11	10.7	5.7	9.5
178	72.2	1.069	90.4	1.2	7.62	19.024	14.944	11.450	16.4	5.0	15.3	3.8	4.00	0.10	10.7	5.7	9.5
179	72.4	1.075	90.3	1.1	7.63	19.131	14.971	11.452	16.5	5.0	15.3	3.9	3.97	0.10	10.7	5.7	9.6
180	72.8	1.081	90.3	1.1	7.64	19.238	15.038	11.486	16.5	5.0	15.4	3.9	3.92	0.09	10.7	5.7	9.7
181	72.9	1.087	90.2	1.0	7.65	19.345	15.051	11.477	16.5	5.0	15.5	4.0	3.88	0.09	10.7	5.7	9.7
182	73.1	1.093	90.3	1.1	7.66	19.451	15.078	11.479	16.5	5.0	15.3	3.9	3.98	0.10	10.7	5.7	9.6



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	73.1	1.099	90.4	1.2	7.67	19.558	15.091	11.470	16.5	5.0	15.2	3.8	4.04	0.11	10.7	5.7	9.5
184	73.5	1.105	90.4	1.2	7.68	19.665	15.144	11.493	16.5	5.0	15.3	3.8	4.04	0.11	10.7	5.7	9.5
185	73.6	1.111	90.4	1.2	7.69	19.772	15.157	11.483	16.5	5.0	15.3	3.8	4.04	0.11	10.7	5.7	9.5
186	73.7	1.117	90.4	1.2	7.70	19.879	15.184	11.485	16.5	5.0	15.3	3.8	4.04	0.11	10.7	5.7	9.5
187	74.0	1.123	90.4	1.2	7.71	19.986	15.237	11.508	16.5	5.0	15.3	3.8	4.01	0.10	10.8	5.8	9.6
188	74.1	1.125	90.4	1.2	7.72	20.010	15.251	11.514	16.5	5.0	15.3	3.8	4.02	0.10	10.8	5.8	9.6



File Location
B-65 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-65
Sample Description: Red & Brown Silty Sand
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.650001
LL: 36.000
PL: 26.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.802	2.800	
Height (in)	5.634	5.623	
Weight (grams)	1073.10		1128.70
Moisture (%)	18.20		24.32
Dry Density (pcf)	99.54	99.91	
Saturation (%)	72.85	100.00	
Void Ratio	0.658	0.656	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 98.200
Effective Confining Stress (psi): 10.0
Corrected Peak Deviator Stress (psi): 16.410 at reading number: 8

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	-10.0	0.006	88.2	0.0	6.16	0.000	0.000	0.000	10.0	10.0	10.0	10.0	1.00	0.00	10.0	0.0	10.0
1	38.4	0.012	90.7	2.5	6.16	0.107	7.865	7.857	17.9	10.0	15.4	7.5	2.05	0.32	14.0	3.9	11.4
2	57.5	0.018	91.7	3.6	6.17	0.214	10.965	10.942	21.0	10.0	17.4	6.5	2.69	0.33	15.5	5.5	11.9
3	69.8	0.024	92.1	3.9	6.18	0.320	12.956	12.915	23.0	10.0	19.1	6.1	3.10	0.30	16.5	6.5	12.6
4	78.7	0.030	92.5	4.4	6.18	0.427	14.400	14.338	24.4	10.0	20.0	5.7	3.53	0.31	17.2	7.2	12.8
5	85.0	0.036	92.7	4.5	6.19	0.534	15.429	15.346	25.4	10.0	20.9	5.5	3.79	0.30	17.7	7.7	13.2
6	89.0	0.042	92.8	4.7	6.20	0.641	16.083	15.980	26.0	10.0	21.4	5.4	3.97	0.29	18.0	8.0	13.4
7	91.1	0.048	92.9	4.8	6.20	0.748	16.418	16.295	26.3	10.0	21.6	5.3	4.09	0.29	18.2	8.1	13.4
8	91.9	0.055	93.0	4.9	6.21	0.854	16.551	16.410	26.5	10.0	21.6	5.2	4.16	0.30	18.2	8.2	13.4
9	91.7	0.061	93.1	4.9	6.22	0.961	16.511	16.352	26.4	10.0	21.5	5.1	4.18	0.30	18.2	8.2	13.3
10	91.1	0.067	93.1	4.9	6.22	1.068	16.418	16.242	26.3	10.0	21.3	5.1	4.18	0.30	18.2	8.1	13.2
11	90.3	0.073	93.5	5.3	6.23	1.175	16.284	16.093	26.1	10.0	20.8	4.7	4.39	0.33	18.1	8.0	12.8
12	89.3	0.079	93.6	5.4	6.24	1.282	16.137	15.930	26.0	10.0	20.6	4.6	4.45	0.34	18.0	8.0	12.6
13	88.5	0.085	93.7	5.6	6.24	1.388	16.003	15.781	25.8	10.0	20.2	4.5	4.54	0.35	17.9	7.9	12.4
14	88.0	0.091	93.8	5.6	6.25	1.495	15.910	15.672	25.7	10.0	20.1	4.4	4.54	0.36	17.9	7.8	12.3
15	87.0	0.097	93.9	5.7	6.26	1.602	15.749	15.497	25.5	10.0	19.8	4.3	4.57	0.37	17.8	7.7	12.1
16	86.4	0.103	93.9	5.7	6.26	1.709	15.656	15.388	25.4	10.0	19.7	4.3	4.58	0.37	17.7	7.7	12.0
17	85.7	0.109	93.9	5.7	6.27	1.815	15.549	15.267	25.3	10.0	19.6	4.3	4.52	0.37	17.7	7.6	12.0
18	85.1	0.115	93.9	5.8	6.28	1.922	15.442	15.145	25.2	10.0	19.4	4.3	4.55	0.38	17.6	7.6	11.8



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	85.0	0.121	94.1	5.9	6.28	2.029	15.429	15.116	25.2	10.0	19.2	4.1	4.69	0.39	17.6	7.6	11.7
20	84.7	0.127	94.2	6.0	6.29	2.136	15.389	15.060	25.1	10.0	19.1	4.0	4.75	0.40	17.6	7.5	11.6
21	84.4	0.133	94.2	6.1	6.30	2.243	15.335	14.991	25.0	10.0	19.0	4.0	4.77	0.40	17.5	7.5	11.5
22	84.2	0.139	94.3	6.1	6.30	2.349	15.295	14.936	25.0	10.0	18.9	3.9	4.79	0.41	17.5	7.5	11.4
23	83.9	0.145	94.1	5.9	6.31	2.456	15.255	14.880	24.9	10.0	19.0	4.1	4.59	0.40	17.5	7.4	11.6
24	83.8	0.151	94.3	6.1	6.32	2.563	15.242	14.851	24.9	10.0	18.8	3.9	4.81	0.41	17.5	7.4	11.3
25	83.7	0.157	94.3	6.2	6.33	2.670	15.215	14.809	24.9	10.0	18.7	3.9	4.84	0.42	17.4	7.4	11.3
26	83.5	0.163	94.4	6.2	6.33	2.777	15.188	14.766	24.8	10.0	18.6	3.8	4.87	0.42	17.4	7.4	11.2
27	83.4	0.169	94.4	6.2	6.34	2.883	15.175	14.737	24.8	10.0	18.6	3.8	4.86	0.42	17.4	7.4	11.2
28	83.3	0.175	94.4	6.3	6.35	2.990	15.148	14.695	24.7	10.0	18.5	3.8	4.89	0.43	17.4	7.3	11.1
29	82.9	0.181	94.3	6.1	6.35	3.097	15.095	14.627	24.7	10.0	18.5	3.9	4.75	0.42	17.4	7.3	11.2
30	82.7	0.187	94.2	6.0	6.36	3.204	15.054	14.572	24.6	10.0	18.6	4.0	4.62	0.41	17.3	7.3	11.3
31	82.7	0.193	94.5	6.3	6.37	3.311	15.054	14.556	24.6	10.0	18.3	3.7	4.89	0.43	17.3	7.3	11.0
32	82.7	0.199	94.4	6.3	6.37	3.417	15.054	14.540	24.6	10.0	18.3	3.8	4.85	0.43	17.3	7.3	11.1
33	82.5	0.205	94.5	6.3	6.38	3.524	15.028	14.498	24.5	10.0	18.2	3.7	4.92	0.44	17.3	7.2	10.9
34	82.4	0.211	94.5	6.4	6.39	3.631	15.014	14.469	24.5	10.0	18.1	3.7	4.95	0.44	17.3	7.2	10.9
35	82.2	0.217	94.5	6.4	6.40	3.738	14.974	14.415	24.5	10.0	18.1	3.7	4.94	0.44	17.2	7.2	10.9
36	82.1	0.223	94.5	6.4	6.40	3.845	14.961	14.386	24.4	10.0	18.0	3.7	4.93	0.44	17.2	7.2	10.9
37	81.9	0.229	94.4	6.3	6.41	3.951	14.934	14.344	24.4	10.0	18.1	3.8	4.79	0.44	17.2	7.2	11.0
38	81.9	0.235	94.6	6.4	6.42	4.058	14.934	14.328	24.4	10.0	17.9	3.6	4.96	0.45	17.2	7.2	10.8
39	82.0	0.241	94.6	6.4	6.42	4.165	14.948	14.325	24.4	10.0	17.9	3.6	4.96	0.45	17.2	7.2	10.8
40	81.9	0.247	94.6	6.5	6.43	4.272	14.934	14.296	24.3	10.0	17.9	3.6	4.99	0.45	17.2	7.1	10.7
41	81.9	0.253	94.7	6.5	6.44	4.378	14.934	14.280	24.3	10.0	17.8	3.5	5.03	0.46	17.2	7.1	10.7
42	81.9	0.259	94.6	6.5	6.45	4.485	14.934	14.264	24.3	10.0	17.8	3.6	4.99	0.45	17.2	7.1	10.7
43	81.9	0.265	94.5	6.3	6.45	4.592	14.921	14.236	24.3	10.0	18.0	3.7	4.81	0.44	17.2	7.1	10.9
44	81.8	0.271	94.7	6.5	6.46	4.699	14.907	14.207	24.2	10.0	17.7	3.5	5.06	0.46	17.1	7.1	10.6
45	81.9	0.277	94.7	6.6	6.47	4.806	14.934	14.216	24.3	10.0	17.7	3.5	5.11	0.46	17.2	7.1	10.6
46	81.9	0.283	94.7	6.5	6.47	4.912	14.934	14.201	24.2	10.0	17.7	3.5	5.06	0.46	17.1	7.1	10.6
47	81.9	0.289	94.7	6.5	6.48	5.019	14.934	14.185	24.2	10.0	17.7	3.5	5.05	0.46	17.1	7.1	10.6
48	81.9	0.295	94.6	6.5	6.49	5.126	14.934	14.169	24.2	10.0	17.7	3.6	4.96	0.46	17.1	7.1	10.7
49	81.9	0.301	94.5	6.4	6.50	5.233	14.921	14.140	24.2	10.0	17.8	3.7	4.86	0.45	17.1	7.1	10.7
50	82.0	0.307	94.5	6.3	6.50	5.340	14.948	14.149	24.2	10.0	17.9	3.7	4.78	0.45	17.1	7.1	10.8
51	81.9	0.313	94.7	6.5	6.51	5.446	14.934	14.121	24.2	10.0	17.7	3.5	4.99	0.46	17.1	7.1	10.6
52	82.1	0.319	94.7	6.5	6.52	5.553	14.961	14.130	24.2	10.0	17.6	3.5	5.04	0.46	17.1	7.1	10.6
53	82.3	0.325	94.7	6.5	6.53	5.660	14.988	14.139	24.2	10.0	17.7	3.5	5.00	0.46	17.1	7.1	10.6
54	82.2	0.331	94.7	6.5	6.53	5.767	14.974	14.111	24.2	10.0	17.6	3.5	4.99	0.46	17.1	7.1	10.6
55	82.3	0.337	94.7	6.5	6.54	5.874	14.988	14.107	24.1	10.0	17.6	3.5	4.99	0.46	17.1	7.1	10.6
56	82.1	0.343	94.6	6.4	6.55	5.980	14.961	14.066	24.1	10.0	17.7	3.6	4.89	0.46	17.1	7.0	10.7
57	82.1	0.349	94.5	6.3	6.56	6.087	14.961	14.050	24.1	10.0	17.8	3.7	4.76	0.45	17.1	7.0	10.8
58	82.1	0.355	94.7	6.5	6.56	6.194	14.961	14.034	24.1	10.0	17.6	3.5	4.97	0.46	17.1	7.0	10.6
59	82.2	0.361	94.7	6.5	6.57	6.301	14.974	14.031	24.1	10.0	17.6	3.5	4.96	0.46	17.1	7.0	10.6



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	82.1	0.367	94.7	6.5	6.58	6.408	14.961	14.002	24.0	10.0	17.5	3.5	5.00	0.47	17.0	7.0	10.5
61	82.2	0.373	94.7	6.5	6.59	6.514	14.974	13.999	24.0	10.0	17.5	3.5	5.00	0.47	17.0	7.0	10.5
62	82.0	0.379	94.7	6.5	6.59	6.621	14.948	13.958	24.0	10.0	17.5	3.5	4.94	0.47	17.0	7.0	10.5
63	82.1	0.385	94.5	6.3	6.60	6.728	14.961	13.954	24.0	10.0	17.7	3.7	4.77	0.45	17.0	7.0	10.7
64	82.0	0.391	94.7	6.5	6.61	6.835	14.948	13.926	24.0	10.0	17.4	3.5	4.98	0.47	17.0	7.0	10.5
65	82.1	0.397	94.7	6.5	6.62	6.942	14.961	13.922	24.0	10.0	17.4	3.5	4.98	0.47	17.0	7.0	10.5
66	82.3	0.403	94.7	6.5	6.62	7.048	14.988	13.931	24.0	10.0	17.5	3.5	4.94	0.47	17.0	7.0	10.5
67	82.4	0.409	94.7	6.5	6.63	7.155	15.001	13.928	24.0	10.0	17.4	3.5	4.98	0.47	17.0	7.0	10.5
68	82.4	0.415	94.7	6.5	6.64	7.262	15.001	13.912	24.0	10.0	17.5	3.5	4.93	0.47	17.0	7.0	10.5
69	82.4	0.421	94.6	6.4	6.65	7.369	15.014	13.908	24.0	10.0	17.5	3.6	4.84	0.46	17.0	7.0	10.6
70	82.5	0.427	94.5	6.3	6.65	7.475	15.028	13.904	23.9	10.0	17.6	3.7	4.72	0.45	17.0	7.0	10.7
71	82.7	0.433	94.7	6.5	6.66	7.582	15.054	13.913	24.0	10.0	17.4	3.5	4.98	0.47	17.0	7.0	10.5
72	82.8	0.439	94.8	6.7	6.67	7.689	15.068	13.909	24.0	10.0	17.3	3.4	5.12	0.48	17.0	7.0	10.3
73	82.9	0.445	94.7	6.6	6.68	7.796	15.095	13.918	24.0	10.0	17.4	3.5	5.02	0.47	17.0	7.0	10.4
74	82.9	0.451	94.7	6.6	6.68	7.903	15.095	13.902	23.9	10.0	17.4	3.5	5.02	0.47	17.0	7.0	10.4
75	83.0	0.457	94.7	6.5	6.69	8.009	15.108	13.898	23.9	10.0	17.4	3.5	4.97	0.47	17.0	6.9	10.4
76	83.2	0.463	94.6	6.5	6.70	8.116	15.135	13.906	23.9	10.0	17.5	3.6	4.89	0.46	17.0	7.0	10.5
77	83.1	0.469	94.6	6.4	6.71	8.223	15.121	13.878	23.9	10.0	17.5	3.6	4.83	0.46	17.0	6.9	10.6
78	83.2	0.475	94.8	6.6	6.72	8.330	15.135	13.874	23.9	10.0	17.3	3.4	5.06	0.48	17.0	6.9	10.4
79	83.3	0.481	94.8	6.6	6.72	8.437	15.148	13.870	23.9	10.0	17.3	3.4	5.06	0.48	17.0	6.9	10.4
80	83.4	0.487	94.8	6.6	6.73	8.543	15.175	13.878	23.9	10.0	17.3	3.4	5.06	0.48	17.0	6.9	10.4
81	83.3	0.493	94.8	6.6	6.74	8.650	15.161	13.850	23.9	10.0	17.3	3.4	5.05	0.48	17.0	6.9	10.3
82	83.5	0.499	94.7	6.5	6.75	8.757	15.188	13.858	23.9	10.0	17.4	3.5	4.92	0.47	17.0	6.9	10.5
83	83.4	0.505	94.5	6.3	6.76	8.864	15.175	13.830	23.9	10.0	17.5	3.7	4.74	0.46	17.0	6.9	10.6
84	83.6	0.511	94.7	6.6	6.76	8.971	15.201	13.838	23.9	10.0	17.3	3.5	5.00	0.48	17.0	6.9	10.4
85	83.8	0.517	94.7	6.6	6.77	9.077	15.242	13.858	23.9	10.0	17.3	3.5	5.01	0.48	17.0	6.9	10.4
86	83.8	0.523	94.7	6.6	6.78	9.184	15.242	13.842	23.9	10.0	17.3	3.5	5.00	0.48	17.0	6.9	10.4
87	84.0	0.529	94.7	6.6	6.79	9.291	15.268	13.850	23.9	10.0	17.3	3.5	5.00	0.48	17.0	6.9	10.4
88	84.2	0.535	94.7	6.5	6.80	9.398	15.295	13.858	23.9	10.0	17.4	3.5	4.92	0.47	17.0	6.9	10.5
89	84.2	0.541	94.5	6.4	6.80	9.505	15.295	13.841	23.9	10.0	17.5	3.7	4.78	0.46	17.0	6.9	10.6
90	84.2	0.547	94.5	6.3	6.81	9.611	15.308	13.837	23.9	10.0	17.6	3.7	4.70	0.46	17.0	6.9	10.7
91	84.2	0.553	94.7	6.5	6.82	9.718	15.308	13.821	23.9	10.0	17.3	3.5	4.95	0.47	17.0	6.9	10.4
92	84.4	0.559	94.7	6.6	6.83	9.825	15.335	13.828	23.9	10.0	17.3	3.5	5.00	0.48	17.0	6.9	10.4
93	84.5	0.565	94.7	6.6	6.84	9.932	15.348	13.824	23.9	10.0	17.3	3.5	5.00	0.48	17.0	6.9	10.4
94	84.6	0.571	94.7	6.6	6.84	10.038	15.362	13.820	23.9	10.0	17.3	3.5	5.00	0.48	17.0	6.9	10.4
95	84.7	0.577	94.6	6.5	6.85	10.145	15.375	13.815	23.9	10.0	17.4	3.6	4.86	0.47	17.0	6.9	10.5
96	84.7	0.583	94.5	6.4	6.86	10.252	15.389	13.811	23.9	10.0	17.5	3.7	4.77	0.46	16.9	6.9	10.6
97	84.8	0.589	94.4	6.3	6.87	10.359	15.402	13.806	23.8	10.0	17.6	3.8	4.65	0.45	16.9	6.9	10.7
98	85.0	0.595	94.7	6.5	6.88	10.466	15.429	13.814	23.9	10.0	17.3	3.5	4.95	0.47	16.9	6.9	10.4
99	85.2	0.601	94.7	6.5	6.88	10.572	15.469	13.833	23.9	10.0	17.3	3.5	4.95	0.47	17.0	6.9	10.4
100	85.4	0.607	94.7	6.6	6.89	10.679	15.495	13.841	23.9	10.0	17.3	3.5	5.00	0.48	17.0	6.9	10.4



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	85.5	0.613	94.7	6.6	6.90	10.786	15.509	13.836	23.9	10.0	17.3	3.5	5.00	0.48	17.0	6.9	10.4
102	85.7	0.619	94.7	6.5	6.91	10.893	15.549	13.855	23.9	10.0	17.4	3.5	4.91	0.47	17.0	6.9	10.5
103	85.8	0.625	94.5	6.3	6.92	11.000	15.562	13.850	23.9	10.0	17.6	3.7	4.74	0.46	17.0	6.9	10.6
104	86.0	0.631	94.7	6.5	6.93	11.106	15.589	13.858	23.9	10.0	17.4	3.5	4.96	0.47	17.0	6.9	10.4
105	86.2	0.637	94.7	6.6	6.93	11.213	15.629	13.877	23.9	10.0	17.3	3.5	5.01	0.47	17.0	6.9	10.4
106	86.4	0.643	94.7	6.6	6.94	11.320	15.656	13.884	23.9	10.0	17.3	3.5	5.01	0.47	17.0	6.9	10.4
107	86.6	0.649	94.7	6.5	6.95	11.427	15.683	13.891	23.9	10.0	17.4	3.5	4.97	0.47	17.0	6.9	10.4
108	86.8	0.655	94.7	6.5	6.96	11.534	15.723	13.909	24.0	10.0	17.4	3.5	4.93	0.47	17.0	7.0	10.5
109	86.9	0.661	94.6	6.4	6.97	11.640	15.736	13.904	23.9	10.0	17.5	3.6	4.84	0.46	17.0	7.0	10.6
110	87.0	0.667	94.5	6.3	6.98	11.747	15.749	13.899	23.9	10.0	17.6	3.7	4.72	0.45	17.0	6.9	10.7
111	87.0	0.673	94.7	6.5	6.98	11.854	15.763	13.894	23.9	10.0	17.4	3.5	4.97	0.47	17.0	6.9	10.4
112	87.4	0.679	94.7	6.5	6.99	11.961	15.816	13.924	24.0	10.0	17.4	3.5	4.98	0.47	17.0	7.0	10.5
113	87.4	0.685	94.7	6.5	7.00	12.068	15.816	13.908	24.0	10.0	17.4	3.5	4.97	0.47	17.0	7.0	10.5
114	87.6	0.691	94.7	6.5	7.01	12.174	15.856	13.926	24.0	10.0	17.4	3.5	4.98	0.47	17.0	7.0	10.5
115	87.6	0.697	94.6	6.5	7.02	12.281	15.856	13.909	24.0	10.0	17.5	3.6	4.89	0.46	17.0	7.0	10.5
116	87.7	0.703	94.5	6.3	7.03	12.388	15.870	13.904	23.9	10.0	17.6	3.7	4.76	0.46	17.0	7.0	10.7
117	88.0	0.709	94.5	6.3	7.04	12.495	15.910	13.922	24.0	10.0	17.7	3.7	4.72	0.45	17.0	7.0	10.7
118	88.2	0.715	94.7	6.5	7.04	12.602	15.950	13.940	24.0	10.0	17.4	3.5	4.98	0.47	17.0	7.0	10.5
119	88.4	0.721	94.7	6.5	7.05	12.708	15.990	13.958	24.0	10.0	17.5	3.5	4.94	0.47	17.0	7.0	10.5
120	88.5	0.727	94.7	6.5	7.06	12.815	16.003	13.952	24.0	10.0	17.5	3.5	4.94	0.47	17.0	7.0	10.5
121	88.8	0.733	94.7	6.5	7.07	12.922	16.043	13.970	24.0	10.0	17.5	3.5	4.95	0.47	17.0	7.0	10.5
122	88.9	0.739	94.6	6.4	7.08	13.029	16.057	13.965	24.0	10.0	17.6	3.6	4.86	0.46	17.0	7.0	10.6
123	88.9	0.745	94.4	6.3	7.09	13.135	16.070	13.959	24.0	10.0	17.7	3.8	4.69	0.45	17.0	7.0	10.8
124	89.2	0.751	94.7	6.5	7.10	13.242	16.110	13.977	24.0	10.0	17.5	3.5	4.95	0.47	17.0	7.0	10.5
125	89.3	0.757	94.7	6.5	7.11	13.349	16.137	13.983	24.0	10.0	17.5	3.5	4.95	0.47	17.0	7.0	10.5
126	89.6	0.763	94.6	6.5	7.11	13.456	16.177	14.000	24.0	10.0	17.6	3.6	4.91	0.46	17.0	7.0	10.6
127	89.7	0.769	94.6	6.4	7.12	13.563	16.190	13.994	24.0	10.0	17.6	3.6	4.87	0.46	17.0	7.0	10.6
128	90.0	0.775	94.5	6.3	7.13	13.669	16.244	14.023	24.1	10.0	17.7	3.7	4.79	0.45	17.1	7.0	10.7
129	90.0	0.781	94.4	6.2	7.14	13.776	16.244	14.006	24.0	10.0	17.8	3.8	4.67	0.44	17.0	7.0	10.8
130	90.2	0.787	94.4	6.2	7.15	13.883	16.271	14.012	24.1	10.0	17.8	3.8	4.67	0.44	17.0	7.0	10.8
131	90.6	0.793	94.5	6.4	7.16	13.990	16.337	14.052	24.1	10.0	17.7	3.7	4.84	0.45	17.1	7.0	10.7
132	90.7	0.799	94.5	6.4	7.17	14.097	16.351	14.046	24.1	10.0	17.7	3.7	4.84	0.45	17.1	7.0	10.7
133	91.0	0.805	94.5	6.3	7.18	14.203	16.404	14.074	24.1	10.0	17.8	3.7	4.80	0.45	17.1	7.0	10.7
134	91.2	0.811	94.5	6.3	7.18	14.310	16.431	14.080	24.1	10.0	17.8	3.7	4.81	0.45	17.1	7.0	10.7
135	91.4	0.817	94.4	6.2	7.19	14.417	16.471	14.096	24.1	10.0	17.9	3.8	4.69	0.44	17.1	7.0	10.9
136	91.6	0.823	94.3	6.1	7.20	14.524	16.498	14.102	24.1	10.0	18.0	3.9	4.62	0.44	17.1	7.1	11.0
137	91.8	0.829	94.3	6.1	7.21	14.631	16.538	14.118	24.2	10.0	18.0	3.9	4.62	0.44	17.1	7.1	11.0
138	92.1	0.835	94.5	6.3	7.22	14.737	16.578	14.135	24.2	10.0	17.9	3.7	4.78	0.45	17.1	7.1	10.8
139	92.2	0.841	94.5	6.3	7.23	14.844	16.605	14.140	24.2	10.0	17.9	3.7	4.78	0.45	17.1	7.1	10.8
140	92.4	0.847	94.5	6.3	7.24	14.951	16.631	14.145	24.2	10.0	17.9	3.7	4.78	0.45	17.1	7.1	10.8
141	92.6	0.853	94.4	6.3	7.25	15.058	16.658	14.150	24.2	10.0	17.9	3.8	4.74	0.44	17.1	7.1	10.9



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	92.7	0.859	94.3	6.2	7.26	15.165	16.685	14.155	24.2	10.0	18.0	3.9	4.67	0.44	17.1	7.1	10.9
143	92.7	0.865	94.2	6.0	7.27	15.271	16.685	14.137	24.2	10.0	18.2	4.0	4.52	0.43	17.1	7.1	11.1
144	93.0	0.871	94.4	6.3	7.28	15.378	16.725	14.153	24.2	10.0	17.9	3.8	4.74	0.44	17.1	7.1	10.9
145	93.2	0.877	94.4	6.3	7.28	15.485	16.765	14.169	24.2	10.0	17.9	3.8	4.75	0.44	17.1	7.1	10.9
146	93.5	0.883	94.4	6.3	7.29	15.592	16.805	14.185	24.2	10.0	18.0	3.8	4.75	0.44	17.1	7.1	10.9
147	93.7	0.889	94.4	6.2	7.30	15.698	16.845	14.201	24.2	10.0	18.0	3.8	4.72	0.44	17.1	7.1	10.9
148	93.8	0.895	94.3	6.1	7.31	15.805	16.859	14.194	24.2	10.0	18.1	3.9	4.64	0.43	17.1	7.1	11.0
149	94.1	0.901	94.2	6.0	7.32	15.912	16.912	14.221	24.3	10.0	18.2	4.0	4.54	0.42	17.2	7.1	11.1
150	94.0	0.907	94.3	6.1	7.33	16.019	16.899	14.192	24.2	10.0	18.1	3.9	4.60	0.43	17.1	7.1	11.0
151	94.5	0.913	94.3	6.2	7.34	16.126	16.979	14.241	24.3	10.0	18.1	3.9	4.69	0.43	17.2	7.1	11.0
152	94.7	0.919	94.4	6.2	7.35	16.232	17.005	14.245	24.3	10.0	18.1	3.8	4.73	0.44	17.2	7.1	10.9
153	94.9	0.925	94.3	6.2	7.36	16.339	17.032	14.249	24.3	10.0	18.1	3.9	4.69	0.43	17.2	7.1	11.0
154	95.3	0.931	94.3	6.1	7.37	16.446	17.099	14.287	24.3	10.0	18.2	3.9	4.66	0.43	17.2	7.1	11.0
155	95.2	0.937	94.3	6.1	7.38	16.553	17.086	14.258	24.3	10.0	18.2	3.9	4.62	0.43	17.2	7.1	11.1
156	95.4	0.943	94.1	6.0	7.39	16.660	17.112	14.262	24.3	10.0	18.3	4.1	4.51	0.42	17.2	7.1	11.2
157	95.4	0.949	94.2	6.1	7.40	16.766	17.112	14.243	24.3	10.0	18.2	4.0	4.58	0.43	17.2	7.1	11.1
158	95.7	0.955	94.3	6.1	7.41	16.873	17.166	14.269	24.3	10.0	18.2	3.9	4.66	0.43	17.2	7.1	11.0
159	95.9	0.961	94.3	6.2	7.42	16.980	17.206	14.284	24.3	10.0	18.1	3.9	4.70	0.43	17.2	7.1	11.0
160	96.1	0.967	94.2	6.1	7.43	17.087	17.233	14.288	24.3	10.0	18.3	4.0	4.59	0.42	17.2	7.1	11.1
161	96.3	0.973	94.2	6.1	7.44	17.194	17.259	14.292	24.3	10.0	18.3	4.0	4.59	0.42	17.2	7.1	11.1
162	96.5	0.979	94.0	5.9	7.44	17.300	17.299	14.307	24.3	10.0	18.5	4.2	4.42	0.41	17.2	7.2	11.3
163	96.8	0.985	94.1	5.9	7.45	17.407	17.340	14.321	24.4	10.0	18.5	4.1	4.46	0.41	17.2	7.2	11.3
164	97.2	0.991	94.2	6.0	7.46	17.514	17.406	14.358	24.4	10.0	18.4	4.0	4.57	0.42	17.2	7.2	11.2
165	97.6	0.997	94.2	6.0	7.47	17.621	17.473	14.394	24.4	10.0	18.4	4.0	4.58	0.42	17.2	7.2	11.2
166	97.7	1.003	94.1	6.0	7.48	17.728	17.500	14.398	24.4	10.0	18.5	4.1	4.55	0.42	17.2	7.2	11.3
167	98.0	1.009	94.3	6.1	7.49	17.834	17.540	14.412	24.5	10.0	18.4	3.9	4.66	0.42	17.2	7.2	11.1
168	98.2	1.015	94.2	6.0	7.50	17.941	17.567	14.415	24.5	10.0	18.4	4.0	4.58	0.42	17.3	7.2	11.2
169	98.3	1.021	94.0	5.9	7.51	18.048	17.593	14.418	24.5	10.0	18.6	4.2	4.45	0.41	17.3	7.2	11.4
170	98.4	1.027	93.9	5.7	7.52	18.155	17.607	14.410	24.5	10.0	18.7	4.3	4.35	0.40	17.2	7.2	11.5
171	98.7	1.033	94.1	5.9	7.53	18.262	17.660	14.435	24.5	10.0	18.5	4.1	4.52	0.41	17.3	7.2	11.3
172	98.8	1.039	94.2	6.0	7.54	18.368	17.674	14.427	24.5	10.0	18.4	4.0	4.59	0.42	17.3	7.2	11.2
173	99.1	1.045	94.2	6.0	7.55	18.475	17.727	14.452	24.5	10.0	18.5	4.0	4.59	0.42	17.3	7.2	11.2
174	99.5	1.051	94.1	5.9	7.56	18.582	17.781	14.477	24.5	10.0	18.6	4.1	4.53	0.41	17.3	7.2	11.3
175	99.6	1.057	94.1	5.9	7.57	18.689	17.807	14.479	24.5	10.0	18.6	4.1	4.53	0.41	17.3	7.2	11.3
176	100.0	1.063	93.9	5.8	7.58	18.795	17.861	14.504	24.5	10.0	18.8	4.3	4.40	0.40	17.3	7.3	11.5
177	100.0	1.069	94.0	5.9	7.59	18.902	17.874	14.496	24.5	10.0	18.7	4.2	4.47	0.40	17.3	7.2	11.4
178	100.3	1.075	94.1	5.9	7.60	19.009	17.914	14.509	24.6	10.0	18.6	4.1	4.54	0.41	17.3	7.3	11.4
179	100.6	1.081	94.1	5.9	7.61	19.116	17.968	14.533	24.6	10.0	18.6	4.1	4.54	0.41	17.3	7.3	11.4
180	100.7	1.087	94.1	5.9	7.62	19.223	17.981	14.525	24.6	10.0	18.7	4.1	4.51	0.41	17.3	7.3	11.4
181	101.0	1.093	94.1	5.9	7.63	19.329	18.021	14.538	24.6	10.0	18.6	4.1	4.54	0.41	17.3	7.3	11.4
182	101.1	1.099	93.9	5.8	7.64	19.436	18.048	14.540	24.6	10.0	18.8	4.3	4.41	0.40	17.3	7.3	11.5



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	101.3	1.105	93.8	5.7	7.65	19.543	18.075	14.542	24.6	10.0	18.9	4.4	4.32	0.39	17.3	7.3	11.7
184	101.5	1.111	94.0	5.9	7.66	19.650	18.115	14.555	24.6	10.0	18.7	4.2	4.48	0.40	17.3	7.3	11.5
185	101.9	1.117	94.1	5.9	7.67	19.757	18.168	14.579	24.6	10.0	18.7	4.1	4.52	0.40	17.3	7.3	11.4
186	102.0	1.123	94.1	5.9	7.68	19.863	18.195	14.581	24.6	10.0	18.7	4.1	4.52	0.40	17.3	7.3	11.4
187	102.1	1.125	94.0	5.9	7.69	19.896	18.208	14.585	24.6	10.0	18.8	4.2	4.49	0.40	17.3	7.3	11.5



File Location
B-65 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-65
Sample Description: Red & Brown Silty Sand
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.650001
LL: 36.000
PL: 26.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.797	2.619	
Height (in)	5.559	5.481	
Weight (grams)	1080.70		1092.51
Moisture (%)	19.58		20.89
Dry Density (pcf)	100.80	116.59	
Saturation (%)	80.92	100.00	
Void Ratio	0.638	0.419	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 64.400
Effective Confining Stress (psi): 20.0
Corrected Peak Deviator Stress (psi): 38.078 at reading number: 180

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	0.0	0.018	44.4	0.0	5.39	0.000	0.000	0.000	20.0	20.0	20.0	20.0	1.00	0.00	20.0	0.0	20.0
1	76.0	0.024	47.0	2.6	5.39	0.109	14.109	14.094	34.1	20.0	31.5	17.4	1.81	0.18	27.0	7.0	24.5
2	103.0	0.030	48.7	4.3	5.40	0.219	19.124	19.082	39.1	20.0	34.8	15.7	2.22	0.23	29.5	9.5	25.2
3	121.2	0.036	49.9	5.5	5.41	0.328	22.498	22.424	42.4	20.0	36.9	14.5	2.55	0.25	31.2	11.2	25.7
4	133.4	0.042	50.7	6.3	5.41	0.438	24.767	24.659	44.6	20.0	38.3	13.7	2.80	0.26	32.3	12.3	26.0
5	142.2	0.048	51.4	7.0	5.42	0.547	26.393	26.249	46.2	20.0	39.3	13.0	3.02	0.27	33.1	13.1	26.1
6	149.1	0.054	51.9	7.4	5.42	0.657	27.666	27.484	47.5	20.0	40.0	12.5	3.19	0.27	33.7	13.7	26.3
7	154.1	0.060	52.3	7.8	5.43	0.766	28.601	28.382	48.4	20.0	40.5	12.1	3.34	0.28	34.2	14.2	26.3
8	158.1	0.066	52.5	8.1	5.44	0.876	29.337	29.081	49.1	20.0	40.9	11.9	3.45	0.28	34.5	14.5	26.4
9	161.1	0.072	52.8	8.4	5.44	0.985	29.905	29.610	49.6	20.0	41.2	11.6	3.55	0.28	34.8	14.8	26.4
10	163.8	0.078	53.0	8.6	5.45	1.095	30.396	30.063	50.0	20.0	41.5	11.4	3.63	0.29	35.0	15.0	26.4
11	165.7	0.084	53.2	8.7	5.45	1.204	30.748	30.378	50.4	20.0	41.6	11.2	3.70	0.29	35.2	15.2	26.4
12	167.5	0.090	53.3	8.9	5.46	1.314	31.086	30.677	50.7	20.0	41.8	11.1	3.77	0.29	35.3	15.3	26.4
13	169.0	0.096	53.4	9.0	5.47	1.423	31.362	30.915	50.9	20.0	41.9	11.0	3.81	0.29	35.4	15.5	26.5
14	170.2	0.102	53.5	9.1	5.47	1.533	31.592	31.108	51.1	20.0	42.0	10.9	3.85	0.29	35.5	15.6	26.5
15	171.3	0.108	53.6	9.2	5.48	1.642	31.791	31.269	51.2	20.0	42.1	10.8	3.89	0.29	35.6	15.6	26.4
16	172.4	0.114	53.7	9.3	5.48	1.752	31.991	31.430	51.4	20.0	42.2	10.7	3.93	0.29	35.7	15.7	26.4
17	173.1	0.120	53.8	9.3	5.49	1.861	32.129	31.531	51.5	20.0	42.2	10.6	3.96	0.30	35.7	15.8	26.4
18	174.3	0.126	53.8	9.4	5.50	1.971	32.343	31.706	51.7	20.0	42.3	10.6	4.00	0.30	35.8	15.9	26.4



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	174.9	0.132	53.9	9.5	5.50	2.080	32.466	31.791	51.8	20.0	42.3	10.5	4.03	0.30	35.9	15.9	26.4
20	175.6	0.138	54.0	9.6	5.51	2.190	32.589	31.875	51.9	20.0	42.3	10.4	4.06	0.30	35.9	15.9	26.3
21	176.4	0.144	54.0	9.6	5.51	2.299	32.742	31.989	52.0	20.0	42.4	10.4	4.09	0.30	36.0	16.0	26.4
22	177.1	0.150	54.1	9.7	5.52	2.409	32.865	32.073	52.1	20.0	42.4	10.3	4.11	0.30	36.0	16.0	26.4
23	177.6	0.156	54.1	9.7	5.53	2.518	32.957	32.127	52.1	20.0	42.4	10.3	4.12	0.30	36.0	16.1	26.3
24	178.2	0.162	54.1	9.7	5.53	2.627	33.079	32.210	52.2	20.0	42.5	10.3	4.13	0.30	36.1	16.1	26.4
25	178.8	0.168	54.2	9.8	5.54	2.737	33.187	32.278	52.3	20.0	42.5	10.2	4.16	0.30	36.1	16.1	26.3
26	179.5	0.174	54.2	9.8	5.55	2.846	33.309	32.361	52.3	20.0	42.5	10.2	4.18	0.30	36.2	16.2	26.3
27	180.0	0.180	54.2	9.8	5.55	2.956	33.401	32.414	52.4	20.0	42.6	10.2	4.19	0.30	36.2	16.2	26.4
28	180.5	0.186	54.2	9.8	5.56	3.065	33.493	32.467	52.4	20.0	42.6	10.2	4.19	0.30	36.2	16.2	26.4
29	180.9	0.192	54.2	9.8	5.56	3.175	33.585	32.519	52.5	20.0	42.7	10.2	4.20	0.30	36.2	16.3	26.4
30	181.5	0.198	54.3	9.9	5.57	3.284	33.693	32.586	52.6	20.0	42.7	10.1	4.22	0.30	36.3	16.3	26.4
31	182.1	0.204	54.3	9.9	5.58	3.394	33.800	32.653	52.6	20.0	42.7	10.1	4.24	0.30	36.3	16.3	26.4
32	182.8	0.210	54.4	9.9	5.58	3.503	33.923	32.734	52.7	20.0	42.8	10.0	4.26	0.30	36.3	16.4	26.4
33	183.3	0.216	54.4	9.9	5.59	3.613	34.015	32.786	52.8	20.0	42.8	10.0	4.26	0.30	36.4	16.4	26.4
34	183.6	0.222	54.4	9.9	5.60	3.722	34.076	32.808	52.8	20.0	42.9	10.0	4.27	0.30	36.4	16.4	26.4
35	184.3	0.228	54.4	9.9	5.60	3.832	34.199	32.889	52.9	20.0	42.9	10.0	4.28	0.30	36.4	16.4	26.5
36	184.6	0.234	54.4	9.9	5.61	3.941	34.260	32.910	52.9	20.0	43.0	10.0	4.28	0.30	36.4	16.5	26.5
37	185.2	0.240	54.4	10.0	5.62	4.051	34.383	32.990	53.0	20.0	43.0	10.0	4.30	0.30	36.5	16.5	26.5
38	185.7	0.246	54.4	10.0	5.62	4.160	34.460	33.026	53.0	20.0	43.0	10.0	4.30	0.30	36.5	16.5	26.5
39	186.2	0.252	54.4	9.9	5.63	4.270	34.552	33.076	53.1	20.0	43.1	10.0	4.29	0.30	36.5	16.5	26.6
40	186.6	0.258	54.4	9.9	5.63	4.379	34.628	33.112	53.1	20.0	43.2	10.0	4.30	0.30	36.5	16.6	26.6
41	186.9	0.264	54.3	9.9	5.64	4.489	34.690	33.133	53.1	20.0	43.2	10.1	4.29	0.30	36.5	16.6	26.6
42	187.5	0.270	54.3	9.9	5.65	4.598	34.797	33.197	53.2	20.0	43.3	10.1	4.29	0.30	36.6	16.6	26.7
43	188.1	0.276	54.3	9.9	5.65	4.708	34.904	33.261	53.2	20.0	43.3	10.1	4.30	0.30	36.6	16.6	26.7
44	188.4	0.282	54.3	9.9	5.66	4.817	34.966	33.281	53.3	20.0	43.4	10.1	4.29	0.30	36.6	16.6	26.8
45	189.0	0.288	54.2	9.8	5.67	4.926	35.088	33.360	53.3	20.0	43.5	10.2	4.28	0.29	36.7	16.7	26.8
46	189.3	0.294	54.2	9.8	5.67	5.036	35.134	33.365	53.3	20.0	43.6	10.2	4.27	0.29	36.7	16.7	26.9
47	190.0	0.300	54.3	9.9	5.68	5.145	35.257	33.443	53.4	20.0	43.5	10.1	4.32	0.30	36.7	16.7	26.8
48	190.7	0.306	54.3	9.9	5.69	5.255	35.395	33.535	53.5	20.0	43.6	10.1	4.33	0.30	36.7	16.8	26.9
49	191.0	0.312	54.3	9.9	5.69	5.364	35.456	33.554	53.5	20.0	43.6	10.1	4.33	0.29	36.8	16.8	26.9
50	191.8	0.318	54.3	9.9	5.70	5.474	35.594	33.646	53.6	20.0	43.7	10.1	4.34	0.29	36.8	16.8	26.9
51	192.2	0.324	54.3	9.9	5.71	5.583	35.671	33.680	53.7	20.0	43.8	10.1	4.33	0.29	36.8	16.8	27.0
52	192.7	0.330	54.3	9.9	5.71	5.693	35.763	33.727	53.7	20.0	43.8	10.1	4.33	0.29	36.8	16.9	27.0
53	193.2	0.336	54.2	9.8	5.72	5.802	35.855	33.775	53.8	20.0	43.9	10.2	4.32	0.29	36.9	16.9	27.1
54	193.7	0.342	54.2	9.8	5.73	5.912	35.947	33.822	53.8	20.0	44.0	10.2	4.33	0.29	36.9	16.9	27.1
55	194.2	0.348	54.2	9.7	5.73	6.021	36.055	33.884	53.9	20.0	44.1	10.2	4.31	0.29	36.9	16.9	27.2
56	194.5	0.354	54.1	9.7	5.74	6.131	36.101	33.887	53.9	20.0	44.2	10.3	4.28	0.28	36.9	16.9	27.3
57	195.1	0.360	54.0	9.6	5.75	6.240	36.208	33.948	53.9	20.0	44.4	10.4	4.26	0.28	37.0	17.0	27.4
58	195.5	0.366	53.9	9.5	5.75	6.350	36.285	33.981	54.0	20.0	44.5	10.5	4.24	0.28	37.0	17.0	27.5
59	196.4	0.372	54.2	9.8	5.76	6.459	36.453	34.099	54.1	20.0	44.3	10.2	4.34	0.29	37.0	17.0	27.3



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	197.0	0.378	54.2	9.8	5.77	6.569	36.561	34.159	54.1	20.0	44.4	10.2	4.35	0.29	37.1	17.1	27.3
61	197.5	0.384	54.2	9.7	5.77	6.678	36.653	34.205	54.2	20.0	44.4	10.2	4.34	0.28	37.1	17.1	27.3
62	198.0	0.390	54.2	9.7	5.78	6.788	36.745	34.251	54.2	20.0	44.5	10.2	4.34	0.28	37.1	17.1	27.4
63	198.5	0.396	54.2	9.7	5.79	6.897	36.852	34.310	54.3	20.0	44.6	10.2	4.35	0.28	37.1	17.2	27.4
64	199.2	0.402	54.1	9.7	5.79	7.007	36.975	34.384	54.4	20.0	44.7	10.3	4.34	0.28	37.2	17.2	27.5
65	199.5	0.408	54.1	9.7	5.80	7.116	37.036	34.401	54.4	20.0	44.7	10.3	4.35	0.28	37.2	17.2	27.5
66	200.1	0.414	54.1	9.7	5.81	7.226	37.143	34.460	54.4	20.0	44.8	10.3	4.34	0.28	37.2	17.2	27.6
67	200.7	0.420	54.1	9.7	5.81	7.335	37.251	34.518	54.5	20.0	44.8	10.3	4.34	0.28	37.2	17.3	27.6
68	201.2	0.426	54.1	9.7	5.82	7.444	37.343	34.563	54.5	20.0	44.9	10.3	4.35	0.28	37.3	17.3	27.6
69	201.4	0.432	53.9	9.5	5.83	7.554	37.389	34.564	54.5	20.0	45.0	10.5	4.30	0.27	37.3	17.3	27.8
70	201.7	0.438	53.7	9.3	5.83	7.663	37.435	34.566	54.5	20.0	45.3	10.7	4.23	0.27	37.3	17.3	28.0
71	202.5	0.444	54.0	9.6	5.84	7.773	37.588	34.666	54.6	20.0	45.1	10.4	4.33	0.28	37.3	17.3	27.7
72	203.2	0.450	54.0	9.6	5.85	7.882	37.711	34.738	54.7	20.0	45.1	10.4	4.34	0.28	37.3	17.4	27.8
73	203.8	0.456	54.0	9.6	5.86	7.992	37.834	34.810	54.8	20.0	45.2	10.4	4.35	0.28	37.4	17.4	27.8
74	204.3	0.462	54.0	9.5	5.86	8.101	37.926	34.853	54.8	20.0	45.3	10.4	4.34	0.27	37.4	17.4	27.9
75	204.9	0.468	54.0	9.5	5.87	8.211	38.033	34.910	54.9	20.0	45.4	10.4	4.34	0.27	37.4	17.5	27.9
76	205.2	0.474	53.9	9.5	5.88	8.320	38.079	34.911	54.9	20.0	45.4	10.5	4.33	0.27	37.4	17.5	27.9
77	205.8	0.480	53.9	9.5	5.88	8.430	38.202	34.981	55.0	20.0	45.5	10.5	4.34	0.27	37.5	17.5	28.0
78	206.1	0.486	53.9	9.5	5.89	8.539	38.263	34.996	55.0	20.0	45.5	10.5	4.32	0.27	37.5	17.5	28.0
79	206.6	0.492	53.9	9.5	5.90	8.649	38.340	35.024	55.0	20.0	45.5	10.5	4.33	0.27	37.5	17.5	28.0
80	207.2	0.498	53.8	9.4	5.90	8.758	38.462	35.094	55.1	20.0	45.7	10.6	4.32	0.27	37.5	17.5	28.1
81	207.3	0.505	53.8	9.3	5.91	8.868	38.478	35.066	55.0	20.0	45.7	10.6	4.29	0.27	37.5	17.5	28.2
82	208.0	0.511	53.6	9.2	5.92	8.977	38.600	35.135	55.1	20.0	45.9	10.8	4.25	0.26	37.5	17.6	28.4
83	208.2	0.517	53.5	9.1	5.93	9.087	38.646	35.135	55.1	20.0	46.0	10.9	4.23	0.26	37.5	17.6	28.5
84	208.8	0.523	53.5	9.1	5.93	9.196	38.754	35.190	55.2	20.0	46.1	10.9	4.22	0.26	37.6	17.6	28.5
85	209.4	0.529	53.5	9.1	5.94	9.306	38.861	35.245	55.2	20.0	46.2	10.9	4.23	0.26	37.6	17.6	28.5
86	209.9	0.535	53.4	9.0	5.95	9.415	38.953	35.286	55.3	20.0	46.3	11.0	4.22	0.26	37.6	17.6	28.6
87	210.7	0.541	53.7	9.3	5.95	9.525	39.106	35.382	55.4	20.0	46.1	10.7	4.30	0.26	37.7	17.7	28.4
88	211.4	0.547	53.7	9.3	5.96	9.634	39.229	35.450	55.4	20.0	46.2	10.7	4.30	0.26	37.7	17.7	28.5
89	211.8	0.553	53.6	9.2	5.97	9.743	39.321	35.490	55.5	20.0	46.3	10.8	4.30	0.26	37.7	17.7	28.5
90	212.4	0.559	53.6	9.2	5.98	9.853	39.428	35.544	55.5	20.0	46.3	10.8	4.30	0.26	37.8	17.8	28.5
91	212.8	0.565	53.6	9.2	5.98	9.962	39.490	35.556	55.5	20.0	46.4	10.8	4.29	0.26	37.8	17.8	28.6
92	213.4	0.571	53.6	9.2	5.99	10.072	39.612	35.623	55.6	20.0	46.4	10.8	4.30	0.26	37.8	17.8	28.6
93	213.7	0.577	53.4	9.0	6.00	10.181	39.658	35.621	55.6	20.0	46.6	11.0	4.25	0.25	37.8	17.8	28.8
94	214.1	0.583	53.3	8.9	6.01	10.291	39.735	35.646	55.6	20.0	46.8	11.1	4.20	0.25	37.8	17.8	29.0
95	214.7	0.589	53.3	8.9	6.01	10.400	39.843	35.699	55.7	20.0	46.8	11.1	4.21	0.25	37.8	17.8	29.0
96	215.2	0.595	53.2	8.8	6.02	10.510	39.950	35.751	55.7	20.0	46.9	11.2	4.20	0.25	37.9	17.9	29.0
97	215.6	0.601	53.2	8.8	6.03	10.619	40.027	35.776	55.8	20.0	47.0	11.2	4.19	0.25	37.9	17.9	29.1
98	216.3	0.607	53.2	8.8	6.04	10.729	40.149	35.842	55.8	20.0	47.1	11.2	4.20	0.24	37.9	17.9	29.1
99	216.7	0.613	53.2	8.7	6.04	10.838	40.226	35.866	55.8	20.0	47.1	11.2	4.19	0.24	37.9	17.9	29.2
100	217.5	0.619	53.4	8.9	6.05	10.948	40.379	35.959	55.9	20.0	47.0	11.0	4.25	0.25	38.0	18.0	29.0



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101	218.0	0.625	53.4	8.9	6.06	11.057	40.471	35.996	56.0	20.0	47.0	11.0	4.26	0.25	38.0	18.0	29.0
102	218.7	0.631	53.4	8.9	6.06	11.167	40.594	36.061	56.0	20.0	47.1	11.0	4.26	0.25	38.0	18.0	29.1
103	219.2	0.637	53.3	8.9	6.07	11.276	40.686	36.098	56.1	20.0	47.2	11.1	4.26	0.25	38.0	18.0	29.1
104	219.5	0.643	53.3	8.9	6.08	11.386	40.747	36.108	56.1	20.0	47.2	11.1	4.26	0.25	38.0	18.1	29.1
105	220.2	0.649	53.3	8.9	6.09	11.495	40.870	36.172	56.2	20.0	47.3	11.1	4.25	0.24	38.1	18.1	29.2
106	220.6	0.655	53.3	8.9	6.09	11.605	40.947	36.195	56.2	20.0	47.3	11.1	4.25	0.24	38.1	18.1	29.2
107	221.2	0.661	53.2	8.8	6.10	11.714	41.054	36.245	56.2	20.0	47.4	11.2	4.25	0.24	38.1	18.1	29.3
108	221.7	0.667	53.2	8.8	6.11	11.824	41.146	36.281	56.3	20.0	47.5	11.2	4.24	0.24	38.1	18.1	29.3
109	221.9	0.673	53.1	8.7	6.12	11.933	41.192	36.277	56.3	20.0	47.6	11.3	4.20	0.24	38.1	18.1	29.5
110	222.3	0.679	52.9	8.5	6.13	12.043	41.269	36.299	56.3	20.0	47.7	11.5	4.17	0.23	38.1	18.1	29.6
111	222.8	0.685	52.9	8.5	6.13	12.152	41.361	36.335	56.3	20.0	47.8	11.5	4.16	0.23	38.1	18.2	29.7
112	223.6	0.691	52.9	8.4	6.14	12.261	41.499	36.410	56.4	20.0	47.9	11.5	4.16	0.23	38.2	18.2	29.7
113	223.8	0.697	53.0	8.6	6.15	12.371	41.545	36.405	56.4	20.0	47.8	11.4	4.20	0.24	38.2	18.2	29.6
114	224.6	0.703	53.0	8.6	6.16	12.480	41.683	36.481	56.5	20.0	47.9	11.4	4.20	0.23	38.2	18.2	29.7
115	225.0	0.709	53.0	8.6	6.16	12.590	41.759	36.502	56.5	20.0	47.9	11.4	4.20	0.23	38.2	18.3	29.7
116	225.4	0.715	52.9	8.5	6.17	12.699	41.836	36.523	56.5	20.0	48.0	11.5	4.19	0.23	38.2	18.3	29.7
117	226.1	0.721	52.9	8.5	6.18	12.809	41.959	36.584	56.6	20.0	48.1	11.5	4.18	0.23	38.3	18.3	29.8
118	226.4	0.727	52.9	8.5	6.19	12.918	42.020	36.592	56.6	20.0	48.1	11.5	4.18	0.23	38.3	18.3	29.8
119	226.9	0.733	52.9	8.4	6.19	13.028	42.112	36.626	56.6	20.0	48.2	11.5	4.18	0.23	38.3	18.3	29.8
120	227.5	0.739	52.8	8.4	6.20	13.137	42.220	36.673	56.7	20.0	48.2	11.6	4.17	0.23	38.3	18.3	29.9
121	227.9	0.745	52.8	8.4	6.21	13.247	42.296	36.693	56.7	20.0	48.3	11.6	4.17	0.23	38.3	18.3	29.9
122	228.2	0.751	52.7	8.3	6.22	13.356	42.358	36.700	56.7	20.0	48.4	11.7	4.15	0.23	38.3	18.4	30.0
123	228.7	0.757	52.7	8.3	6.23	13.466	42.450	36.733	56.7	20.0	48.4	11.7	4.14	0.23	38.3	18.4	30.1
124	229.1	0.763	52.7	8.2	6.23	13.575	42.526	36.753	56.7	20.0	48.5	11.7	4.13	0.22	38.4	18.4	30.1
125	229.4	0.769	52.6	8.2	6.24	13.685	42.572	36.746	56.7	20.0	48.5	11.8	4.12	0.22	38.4	18.4	30.1
126	230.1	0.775	52.6	8.2	6.25	13.794	42.710	36.819	56.8	20.0	48.6	11.8	4.12	0.22	38.4	18.4	30.2
127	230.7	0.781	52.5	8.1	6.26	13.904	42.818	36.864	56.8	20.0	48.7	11.9	4.11	0.22	38.4	18.4	30.3
128	231.2	0.787	52.5	8.1	6.27	14.013	42.910	36.897	56.9	20.0	48.7	11.9	4.11	0.22	38.4	18.4	30.3
129	231.7	0.793	52.5	8.0	6.27	14.123	43.002	36.929	56.9	20.0	48.9	11.9	4.09	0.22	38.4	18.5	30.4
130	232.1	0.799	52.5	8.1	6.28	14.232	43.078	36.947	56.9	20.0	48.8	11.9	4.11	0.22	38.5	18.5	30.4
131	232.7	0.805	52.5	8.1	6.29	14.342	43.186	36.992	57.0	20.0	48.9	11.9	4.11	0.22	38.5	18.5	30.4
132	233.2	0.811	52.5	8.1	6.30	14.451	43.293	37.037	57.0	20.0	48.9	11.9	4.11	0.22	38.5	18.5	30.4
133	233.8	0.817	52.5	8.0	6.31	14.561	43.400	37.081	57.1	20.0	49.0	11.9	4.11	0.22	38.5	18.5	30.5
134	234.3	0.823	52.5	8.0	6.31	14.670	43.492	37.112	57.1	20.0	49.0	11.9	4.11	0.22	38.5	18.6	30.5
135	234.7	0.829	52.4	8.0	6.32	14.779	43.554	37.117	57.1	20.0	49.1	12.0	4.10	0.22	38.5	18.6	30.5
136	235.2	0.835	52.4	8.0	6.33	14.889	43.661	37.160	57.1	20.0	49.2	12.0	4.09	0.21	38.6	18.6	30.6
137	235.6	0.841	52.4	8.0	6.34	14.998	43.738	37.178	57.2	20.0	49.2	12.0	4.09	0.21	38.6	18.6	30.6
138	236.2	0.847	52.3	7.9	6.35	15.108	43.845	37.221	57.2	20.0	49.3	12.1	4.09	0.21	38.6	18.6	30.7
139	236.8	0.853	52.3	7.9	6.35	15.217	43.953	37.264	57.2	20.0	49.3	12.1	4.09	0.21	38.6	18.6	30.7
140	237.2	0.859	52.3	7.9	6.36	15.327	44.029	37.281	57.3	20.0	49.4	12.1	4.08	0.21	38.6	18.6	30.7
141	237.6	0.865	52.3	7.8	6.37	15.436	44.106	37.298	57.3	20.0	49.4	12.1	4.07	0.21	38.6	18.6	30.8



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	238.2	0.871	52.3	7.8	6.38	15.546	44.213	37.340	57.3	20.0	49.5	12.1	4.08	0.21	38.7	18.7	30.8
143	238.5	0.877	52.2	7.8	6.39	15.655	44.275	37.343	57.3	20.0	49.5	12.2	4.07	0.21	38.7	18.7	30.8
144	239.1	0.883	52.2	7.8	6.40	15.765	44.382	37.385	57.4	20.0	49.6	12.2	4.06	0.21	38.7	18.7	30.9
145	239.6	0.889	52.2	7.8	6.40	15.874	44.474	37.414	57.4	20.0	49.6	12.2	4.06	0.21	38.7	18.7	30.9
146	240.0	0.895	52.1	7.7	6.41	15.984	44.551	37.430	57.4	20.0	49.7	12.3	4.05	0.21	38.7	18.7	31.0
147	240.4	0.901	52.1	7.7	6.42	16.093	44.612	37.432	57.4	20.0	49.7	12.3	4.04	0.21	38.7	18.7	31.0
148	240.6	0.907	52.1	7.7	6.43	16.203	44.658	37.422	57.4	20.0	49.7	12.3	4.05	0.21	38.7	18.7	31.0
149	241.3	0.913	52.1	7.7	6.44	16.312	44.796	37.489	57.5	20.0	49.7	12.3	4.06	0.21	38.7	18.7	31.0
150	241.9	0.919	52.1	7.7	6.45	16.422	44.903	37.529	57.5	20.0	49.8	12.3	4.06	0.21	38.7	18.8	31.0
151	242.4	0.925	52.1	7.7	6.45	16.531	44.995	37.557	57.5	20.0	49.9	12.3	4.05	0.20	38.8	18.8	31.1
152	242.8	0.931	52.1	7.6	6.46	16.641	45.072	37.572	57.6	20.0	49.9	12.3	4.05	0.20	38.8	18.8	31.1
153	243.2	0.937	52.1	7.6	6.47	16.750	45.149	37.586	57.6	20.0	49.9	12.3	4.05	0.20	38.8	18.8	31.1
154	243.6	0.943	52.0	7.6	6.48	16.860	45.210	37.588	57.6	20.0	50.0	12.4	4.04	0.20	38.8	18.8	31.2
155	244.2	0.949	52.0	7.6	6.49	16.969	45.333	37.640	57.6	20.0	50.0	12.4	4.04	0.20	38.8	18.8	31.2
156	244.8	0.955	52.0	7.6	6.50	17.078	45.440	37.680	57.7	20.0	50.1	12.4	4.03	0.20	38.8	18.8	31.3
157	245.1	0.961	51.9	7.5	6.51	17.188	45.486	37.668	57.6	20.0	50.1	12.5	4.02	0.20	38.8	18.8	31.3
158	245.6	0.967	51.9	7.5	6.51	17.297	45.593	37.707	57.7	20.0	50.2	12.5	4.02	0.20	38.8	18.9	31.4
159	246.1	0.973	51.9	7.5	6.52	17.407	45.670	37.720	57.7	20.0	50.2	12.5	4.02	0.20	38.8	18.9	31.4
160	246.5	0.979	51.9	7.4	6.53	17.516	45.747	37.734	57.7	20.0	50.3	12.5	4.01	0.20	38.8	18.9	31.4
161	246.9	0.985	51.8	7.4	6.54	17.626	45.823	37.747	57.7	20.0	50.3	12.6	4.00	0.20	38.9	18.9	31.5
162	247.6	0.991	51.9	7.5	6.55	17.735	45.962	37.810	57.8	20.0	50.3	12.5	4.03	0.20	38.9	18.9	31.4
163	248.0	0.997	51.9	7.5	6.56	17.845	46.023	37.810	57.8	20.0	50.3	12.5	4.03	0.20	38.9	18.9	31.4
164	248.2	1.003	51.9	7.5	6.57	17.954	46.069	37.798	57.8	20.0	50.3	12.5	4.02	0.20	38.9	18.9	31.4
165	248.8	1.009	51.9	7.4	6.58	18.072	46.176	37.831	57.8	20.0	50.4	12.5	4.02	0.20	38.9	18.9	31.5
166	249.2	1.015	51.8	7.4	6.59	18.190	46.253	37.839	57.8	20.0	50.4	12.6	4.01	0.20	38.9	18.9	31.5
167	249.7	1.022	51.8	7.4	6.60	18.308	46.345	37.860	57.8	20.0	50.5	12.6	4.00	0.19	38.9	18.9	31.5
168	250.4	1.028	51.8	7.4	6.60	18.426	46.468	37.906	57.9	20.0	50.5	12.6	4.00	0.19	38.9	19.0	31.6
169	250.7	1.035	51.7	7.3	6.61	18.544	46.529	37.901	57.9	20.0	50.6	12.7	3.99	0.19	38.9	19.0	31.6
170	251.3	1.041	51.7	7.3	6.62	18.662	46.636	37.933	57.9	20.0	50.6	12.7	3.99	0.19	38.9	19.0	31.7
171	251.6	1.048	51.7	7.3	6.63	18.780	46.698	37.928	57.9	20.0	50.6	12.7	3.99	0.19	38.9	19.0	31.7
172	252.1	1.054	51.7	7.2	6.64	18.889	46.790	37.952	57.9	20.0	50.7	12.7	3.98	0.19	39.0	19.0	31.7
173	252.4	1.060	51.7	7.2	6.65	18.999	46.851	37.950	57.9	20.0	50.7	12.7	3.98	0.19	39.0	19.0	31.7
174	253.0	1.066	51.6	7.2	6.66	19.108	46.958	37.986	58.0	20.0	50.8	12.8	3.97	0.19	39.0	19.0	31.8
175	253.3	1.072	51.7	7.2	6.67	19.218	47.020	37.984	58.0	20.0	50.7	12.7	3.98	0.19	39.0	19.0	31.7
176	253.7	1.078	51.7	7.2	6.68	19.327	47.096	37.994	58.0	20.0	50.7	12.7	3.98	0.19	39.0	19.0	31.7
177	254.3	1.084	51.7	7.2	6.69	19.436	47.204	38.029	58.0	20.0	50.8	12.7	3.99	0.19	39.0	19.0	31.8
178	254.7	1.090	51.7	7.2	6.70	19.546	47.280	38.039	58.0	20.0	50.8	12.7	3.99	0.19	39.0	19.0	31.8
179	255.3	1.096	51.6	7.2	6.71	19.655	47.388	38.073	58.1	20.0	50.9	12.8	3.98	0.19	39.0	19.0	31.8
180	255.4	1.097	51.6	7.2	6.71	19.672	47.403	38.078	58.1	20.0	50.9	12.8	3.98	0.19	39.0	19.0	31.8

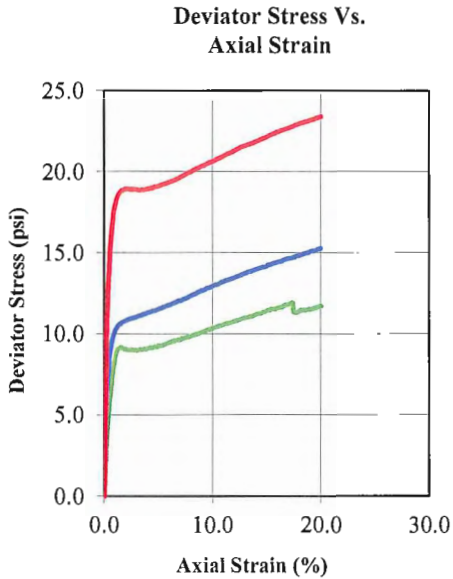


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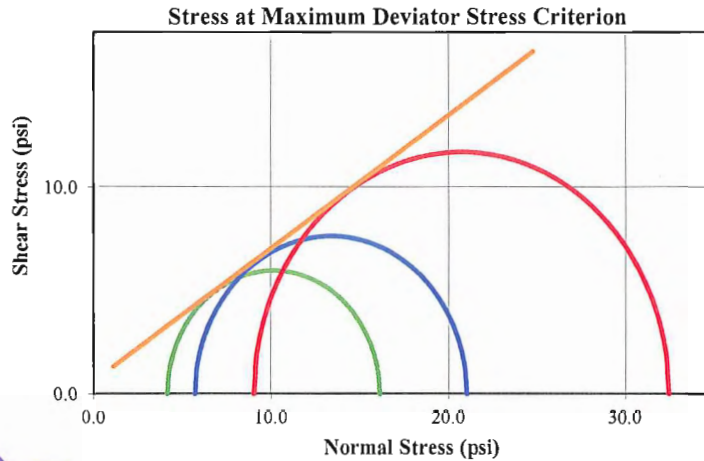
Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME : I-85/I-385 Interchange	SAMPLE NO. : Bag #1
PROJECT NO. : 08195-01	SAMPLE DEPTH : 0.0' to 16.0'
PROJECT LOCATION : B-68	SAMPLE TYPE : Remolded
BORING NUMBER : B-68	DESCRIPTION : Red Elastic Silt
REMARKS :	TEST TYPE : Consolidated Undrained



Initial	Specimen			
	A	B	C	D
Water Content (%)	22.4	22.8	22.3	
Dry Density (pcf)	95.3	95.0	96.3	
Saturation (%)	80.62	81.38	82.25	
Void Ratio	0.732	0.737	0.714	
Diameter (in)	2.799	2.807	2.800	
Height (in)	5.674	5.643	5.647	
Specific Gravity	2.65	2.65	2.65	
Liquid Limit	52	52	52	
Plastic Limit	33	33	33	
After Consolidation	A	B	C	D
B-Value	0.96	1.03	0.97	
Water Content (%)	28.6	28.4	26.2	
Dry Density (pcf)	95.35	95.62	98.10	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.735	0.730	0.686	
Effective Stress (psi)	5.0	10.0	20.0	
Back Press. (psi)	87.0	74.1	82.0	
Rate of Strain	0.002	0.002	0.002	

Maximum Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	2.8	σ'_1 at Failure (psi)	16.08	21.01	32.42	
ϕ (deg)	16.4	σ'_3 at Failure (psi)	4.16	5.72	9.02	
C' (psi)	0.6					
ϕ' (deg)	32.8					

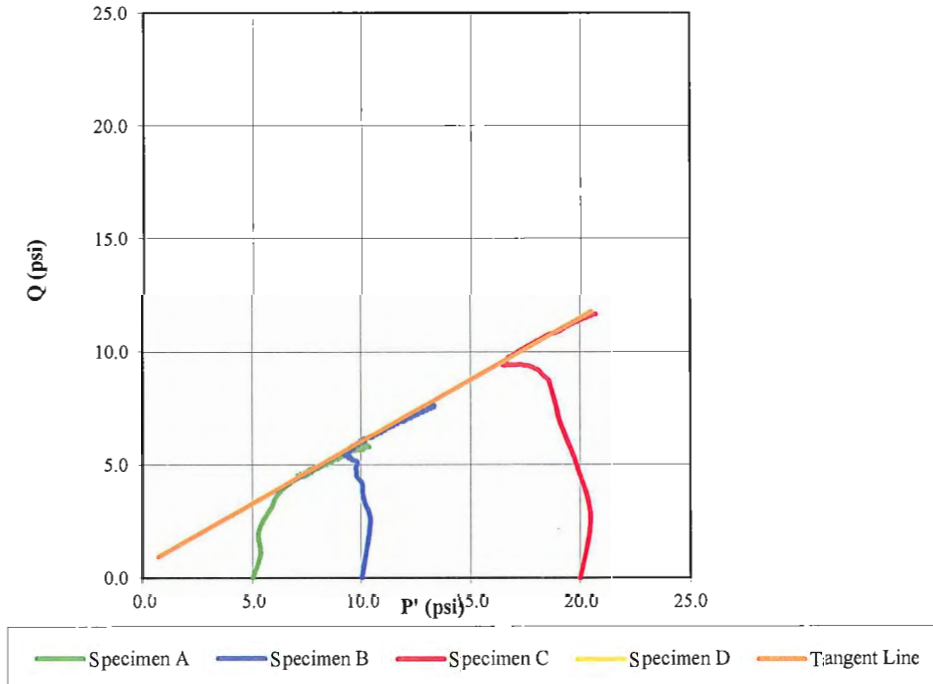


Tested By: [Signature]
 Date: 12-11-12

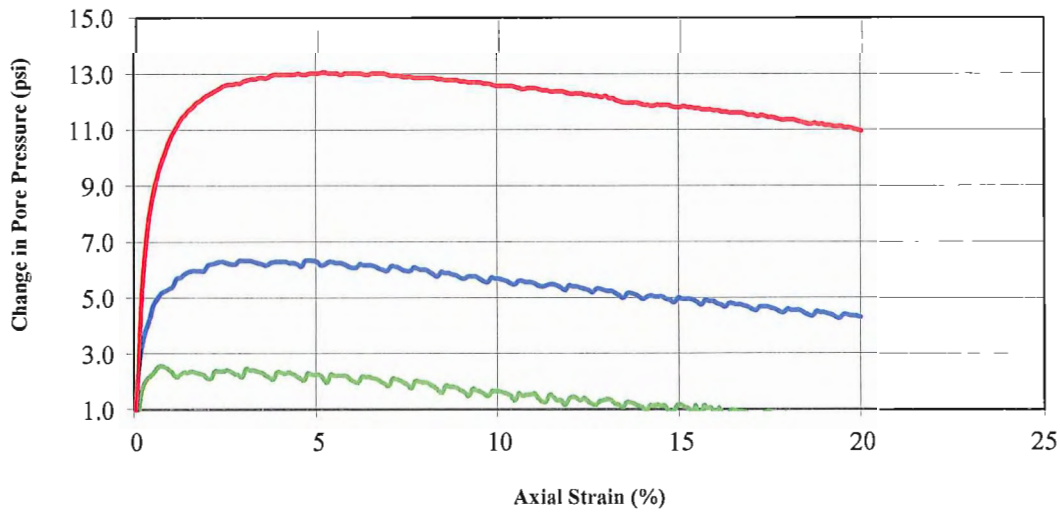
Approved By: SKB
 Date: 12-11-12



Stress Paths (Effective)
($a = 0.6$ $\alpha = 28.7$)



Change in Pore Pressure vs. Axial Strain





File Location
B-68 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-68
Sample Description: Red Elastic Silt
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 52.000
PL: 33.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.799	2.800	
Height (in)	5.674	5.669	
Weight (grams)	1069.20		1123.50
Moisture (%)	22.39		28.61
Dry Density (pcf)	95.30	95.35	
Saturation (%)	80.62	100.00	
Void Ratio	0.732	0.735	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 92.000
Effective Confining Stress (psi): 5.0
Corrected Peak Deviator Stress (psi): 11.919 at reading number: 163

Specimen A

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	0.8	0.000	87.0	0.0	6.16	0.000	0.000	0.000	5.0	5.0	5.0	5.0	1.00	0.00	5.0	0.0	5.0
1	14.1	0.006	87.7	0.7	6.16	0.106	2.152	2.149	7.2	5.0	6.4	4.3	1.50	0.34	6.1	1.1	5.4
2	24.4	0.012	88.6	1.6	6.17	0.212	3.822	3.814	8.8	5.0	7.2	3.4	2.13	0.43	6.9	1.9	5.3
3	30.7	0.018	89.0	2.0	6.18	0.318	4.851	4.836	9.8	5.0	7.8	3.0	2.61	0.42	7.4	2.4	5.4
4	35.5	0.024	89.2	2.2	6.18	0.424	5.639	5.616	10.6	5.0	8.5	2.8	2.98	0.39	7.8	2.8	5.6
5	39.9	0.030	89.3	2.3	6.19	0.530	6.348	6.314	11.3	5.0	9.0	2.7	3.32	0.36	8.2	3.2	5.9
6	44.1	0.036	89.5	2.5	6.20	0.635	7.029	6.985	12.0	5.0	9.5	2.5	3.77	0.36	8.5	3.5	6.0
7	48.0	0.042	89.6	2.6	6.20	0.741	7.657	7.601	12.6	5.0	10.0	2.4	4.12	0.34	8.8	3.8	6.2
8	51.1	0.048	89.5	2.5	6.21	0.847	8.165	8.096	13.1	5.0	10.6	2.5	4.27	0.31	9.1	4.0	6.5
9	53.8	0.055	89.4	2.4	6.22	0.953	8.606	8.524	13.5	5.0	11.1	2.6	4.33	0.29	9.3	4.3	6.8
10	55.7	0.061	89.3	2.3	6.22	1.059	8.913	8.819	13.8	5.0	11.5	2.7	4.29	0.26	9.4	4.4	7.1
11	57.1	0.067	89.2	2.2	6.23	1.165	9.141	9.034	14.0	5.0	11.9	2.8	4.18	0.24	9.5	4.5	7.4
12	57.6	0.073	89.2	2.2	6.24	1.271	9.221	9.104	14.1	5.0	11.9	2.8	4.30	0.25	9.6	4.6	7.3
13	57.9	0.079	89.3	2.3	6.24	1.377	9.274	9.147	14.2	5.0	11.8	2.7	4.41	0.25	9.6	4.6	7.3
14	58.1	0.085	89.3	2.3	6.25	1.483	9.301	9.163	14.2	5.0	11.8	2.7	4.42	0.25	9.6	4.6	7.3
15	58.2	0.091	89.4	2.4	6.26	1.589	9.314	9.166	14.2	5.0	11.8	2.6	4.47	0.26	9.6	4.6	7.2
16	57.9	0.097	89.3	2.3	6.26	1.695	9.274	9.117	14.1	5.0	11.8	2.7	4.40	0.26	9.6	4.6	7.2
17	57.7	0.103	89.3	2.3	6.27	1.801	9.234	9.068	14.1	5.0	11.8	2.7	4.34	0.25	9.5	4.5	7.3
18	57.8	0.109	89.2	2.2	6.28	1.906	9.248	9.071	14.1	5.0	11.8	2.8	4.29	0.25	9.5	4.5	7.3



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	57.7	0.115	89.1	2.1	6.28	2.012	9.234	9.048	14.1	5.0	11.9	2.9	4.14	0.24	9.5	4.5	7.4
20	57.6	0.121	89.1	2.1	6.29	2.118	9.221	9.025	14.0	5.0	11.9	2.9	4.13	0.24	9.5	4.5	7.4
21	57.6	0.127	89.4	2.4	6.30	2.224	9.221	9.016	14.0	5.0	11.7	2.6	4.42	0.26	9.5	4.5	7.1
22	57.7	0.133	89.4	2.4	6.30	2.330	9.234	9.019	14.0	5.0	11.7	2.6	4.42	0.26	9.5	4.5	7.1
23	57.8	0.139	89.4	2.4	6.31	2.436	9.248	9.022	14.0	5.0	11.7	2.6	4.42	0.26	9.5	4.5	7.1
24	57.8	0.145	89.4	2.4	6.32	2.542	9.261	9.026	14.0	5.0	11.6	2.6	4.47	0.27	9.5	4.5	7.1
25	57.8	0.151	89.4	2.4	6.32	2.648	9.261	9.016	14.0	5.0	11.7	2.6	4.42	0.26	9.5	4.5	7.1
26	57.8	0.157	89.3	2.3	6.33	2.754	9.248	8.993	14.0	5.0	11.7	2.7	4.31	0.25	9.5	4.5	7.2
27	58.0	0.163	89.2	2.2	6.34	2.860	9.288	9.022	14.0	5.0	11.8	2.8	4.27	0.25	9.5	4.5	7.3
28	57.8	0.169	89.2	2.2	6.34	2.966	9.261	8.986	14.0	5.0	11.8	2.8	4.17	0.24	9.5	4.5	7.3
29	58.2	0.175	89.4	2.4	6.35	3.072	9.314	9.028	14.0	5.0	11.6	2.6	4.53	0.27	9.5	4.5	7.1
30	58.3	0.181	89.4	2.4	6.36	3.177	9.328	9.031	14.0	5.0	11.6	2.6	4.48	0.27	9.5	4.5	7.1
31	58.3	0.187	89.4	2.4	6.37	3.283	9.341	9.034	14.0	5.0	11.6	2.6	4.48	0.27	9.5	4.5	7.1
32	58.5	0.193	89.4	2.4	6.37	3.389	9.368	9.050	14.1	5.0	11.7	2.6	4.43	0.26	9.5	4.5	7.2
33	58.6	0.199	89.3	2.3	6.38	3.495	9.381	9.053	14.1	5.0	11.7	2.7	4.38	0.26	9.5	4.5	7.2
34	58.7	0.205	89.2	2.2	6.39	3.601	9.395	9.056	14.1	5.0	11.8	2.8	4.28	0.25	9.5	4.5	7.3
35	58.7	0.211	89.2	2.2	6.39	3.707	9.408	9.059	14.1	5.0	11.9	2.8	4.19	0.24	9.5	4.5	7.4
36	59.0	0.217	89.1	2.1	6.40	3.813	9.448	9.088	14.1	5.0	12.0	2.9	4.11	0.23	9.6	4.5	7.5
37	59.3	0.223	89.3	2.3	6.41	3.919	9.501	9.129	14.1	5.0	11.8	2.7	4.41	0.26	9.6	4.6	7.2
38	59.3	0.229	89.3	2.3	6.41	4.025	9.501	9.119	14.1	5.0	11.8	2.7	4.40	0.26	9.6	4.6	7.2
39	59.6	0.235	89.3	2.3	6.42	4.131	9.542	9.147	14.2	5.0	11.9	2.7	4.36	0.25	9.6	4.6	7.3
40	59.6	0.241	89.3	2.3	6.43	4.237	9.555	9.150	14.2	5.0	11.8	2.7	4.42	0.25	9.6	4.6	7.3
41	59.8	0.247	89.3	2.3	6.44	4.343	9.582	9.166	14.2	5.0	11.9	2.7	4.37	0.25	9.6	4.6	7.3
42	60.0	0.253	89.2	2.2	6.44	4.448	9.608	9.181	14.2	5.0	12.0	2.8	4.28	0.24	9.6	4.6	7.4
43	60.1	0.259	89.1	2.1	6.45	4.554	9.635	9.196	14.2	5.0	12.1	2.9	4.19	0.23	9.6	4.6	7.5
44	60.2	0.265	89.0	2.0	6.46	4.660	9.648	9.199	14.2	5.0	12.2	3.0	4.11	0.22	9.6	4.6	7.6
45	60.3	0.271	89.3	2.3	6.46	4.766	9.662	9.201	14.2	5.0	11.9	2.7	4.38	0.25	9.6	4.6	7.3
46	60.7	0.277	89.2	2.2	6.47	4.872	9.729	9.255	14.3	5.0	12.0	2.8	4.35	0.24	9.6	4.6	7.4
47	61.0	0.283	89.2	2.2	6.48	4.978	9.782	9.295	14.3	5.0	12.1	2.8	4.37	0.24	9.7	4.6	7.4
48	60.9	0.289	89.2	2.2	6.49	5.084	9.755	9.259	14.3	5.0	12.0	2.8	4.36	0.24	9.6	4.6	7.4
49	61.1	0.295	89.1	2.1	6.49	5.190	9.795	9.287	14.3	5.0	12.2	2.9	4.23	0.23	9.7	4.6	7.5
50	61.3	0.301	89.0	2.0	6.50	5.296	9.822	9.302	14.3	5.0	12.3	3.0	4.06	0.21	9.7	4.7	7.7
51	61.6	0.307	89.2	2.2	6.51	5.402	9.876	9.342	14.3	5.0	12.1	2.8	4.39	0.24	9.7	4.7	7.4
52	61.7	0.313	89.2	2.2	6.52	5.508	9.889	9.344	14.4	5.0	12.1	2.8	4.34	0.24	9.7	4.7	7.5
53	62.0	0.319	89.2	2.2	6.52	5.613	9.942	9.384	14.4	5.0	12.2	2.8	4.35	0.24	9.7	4.7	7.5
54	62.3	0.325	89.2	2.2	6.53	5.719	9.983	9.412	14.4	5.0	12.2	2.8	4.36	0.23	9.7	4.7	7.5
55	62.6	0.331	89.2	2.2	6.54	5.825	10.036	9.451	14.5	5.0	12.3	2.8	4.38	0.23	9.7	4.7	7.5
56	62.7	0.337	89.1	2.1	6.54	5.931	10.049	9.453	14.5	5.0	12.4	2.9	4.24	0.22	9.7	4.7	7.6
57	63.0	0.343	89.0	2.0	6.55	6.037	10.103	9.493	14.5	5.0	12.5	3.0	4.16	0.21	9.8	4.7	7.7
58	63.3	0.349	89.0	2.0	6.56	6.143	10.143	9.520	14.5	5.0	12.6	3.0	4.13	0.21	9.8	4.8	7.8
59	63.5	0.355	89.2	2.2	6.57	6.249	10.183	9.547	14.6	5.0	12.4	2.8	4.36	0.23	9.8	4.8	7.6



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	63.8	0.361	89.2	2.2	6.57	6.355	10.223	9.573	14.6	5.0	12.4	2.8	4.37	0.23	9.8	4.8	7.6
61	64.0	0.367	89.2	2.2	6.58	6.461	10.263	9.600	14.6	5.0	12.4	2.8	4.38	0.23	9.8	4.8	7.6
62	64.2	0.373	89.1	2.1	6.59	6.567	10.290	9.614	14.6	5.0	12.5	2.9	4.34	0.22	9.8	4.8	7.7
63	64.4	0.379	89.1	2.1	6.60	6.673	10.330	9.641	14.6	5.0	12.6	2.9	4.30	0.22	9.8	4.8	7.7
64	64.4	0.385	89.0	2.0	6.60	6.779	10.330	9.630	14.6	5.0	12.6	3.0	4.21	0.21	9.8	4.8	7.8
65	64.6	0.391	88.9	1.9	6.61	6.884	10.357	9.644	14.7	5.0	12.7	3.1	4.13	0.20	9.8	4.8	7.9
66	64.8	0.397	88.8	1.8	6.62	6.990	10.397	9.670	14.7	5.0	12.8	3.2	4.06	0.19	9.8	4.8	8.0
67	65.2	0.403	89.1	2.1	6.63	7.096	10.464	9.721	14.7	5.0	12.6	2.9	4.33	0.21	9.9	4.9	7.8
68	65.4	0.409	89.1	2.1	6.63	7.202	10.490	9.735	14.7	5.0	12.7	2.9	4.33	0.21	9.9	4.9	7.8
69	65.7	0.415	89.0	2.0	6.64	7.308	10.530	9.761	14.8	5.0	12.7	3.0	4.30	0.21	9.9	4.9	7.8
70	65.7	0.421	89.0	2.0	6.65	7.414	10.544	9.762	14.8	5.0	12.8	3.0	4.21	0.20	9.9	4.9	7.9
71	66.0	0.427	88.9	1.9	6.66	7.520	10.584	9.788	14.8	5.0	12.9	3.1	4.14	0.19	9.9	4.9	8.0
72	66.2	0.433	88.8	1.8	6.66	7.626	10.624	9.814	14.8	5.0	13.1	3.2	4.03	0.18	9.9	4.9	8.1
73	66.3	0.439	89.0	2.0	6.67	7.732	10.637	9.815	14.8	5.0	12.8	3.0	4.27	0.20	9.9	4.9	7.9
74	66.6	0.445	89.0	2.0	6.68	7.838	10.677	9.841	14.8	5.0	12.8	3.0	4.28	0.20	9.9	4.9	7.9
75	66.8	0.451	89.0	2.0	6.69	7.944	10.718	9.866	14.9	5.0	12.9	3.0	4.25	0.20	9.9	4.9	8.0
76	67.1	0.457	89.0	2.0	6.70	8.050	10.771	9.904	14.9	5.0	12.9	3.0	4.26	0.20	10.0	5.0	8.0
77	67.4	0.463	88.9	1.9	6.70	8.155	10.811	9.929	14.9	5.0	13.0	3.1	4.18	0.19	10.0	5.0	8.1
78	67.6	0.469	88.8	1.8	6.71	8.261	10.851	9.955	15.0	5.0	13.2	3.2	4.11	0.18	10.0	5.0	8.2
79	67.9	0.475	88.7	1.7	6.72	8.367	10.891	9.980	15.0	5.0	13.3	3.3	4.01	0.17	10.0	5.0	8.3
80	68.0	0.481	88.6	1.6	6.73	8.473	10.918	9.993	15.0	5.0	13.4	3.4	3.94	0.16	10.0	5.0	8.4
81	68.3	0.487	88.8	1.8	6.73	8.579	10.958	10.018	15.0	5.0	13.2	3.2	4.17	0.18	10.0	5.0	8.2
82	68.6	0.493	88.8	1.8	6.74	8.685	11.012	10.055	15.1	5.0	13.3	3.2	4.14	0.18	10.0	5.0	8.2
83	68.9	0.499	88.8	1.8	6.75	8.791	11.052	10.080	15.1	5.0	13.3	3.2	4.15	0.18	10.0	5.0	8.2
84	69.1	0.505	88.8	1.8	6.76	8.897	11.092	10.105	15.1	5.0	13.3	3.2	4.12	0.17	10.1	5.1	8.3
85	69.4	0.511	88.7	1.7	6.77	9.003	11.132	10.130	15.1	5.0	13.5	3.3	4.05	0.17	10.1	5.1	8.4
86	69.8	0.517	88.6	1.6	6.77	9.109	11.199	10.179	15.2	5.0	13.6	3.4	3.99	0.16	10.1	5.1	8.5
87	69.9	0.523	88.5	1.5	6.78	9.215	11.212	10.179	15.2	5.0	13.7	3.5	3.89	0.15	10.1	5.1	8.6
88	69.9	0.529	88.7	1.7	6.79	9.320	11.225	10.179	15.2	5.0	13.5	3.3	4.10	0.17	10.1	5.1	8.4
89	70.5	0.535	88.7	1.7	6.80	9.426	11.319	10.252	15.3	5.0	13.6	3.3	4.09	0.16	10.1	5.1	8.4
90	70.7	0.541	88.6	1.6	6.81	9.532	11.346	10.264	15.3	5.0	13.6	3.4	4.05	0.16	10.1	5.1	8.5
91	70.8	0.547	88.6	1.6	6.81	9.638	11.372	10.276	15.3	5.0	13.7	3.4	3.99	0.15	10.1	5.1	8.6
92	71.2	0.553	88.5	1.5	6.82	9.744	11.426	10.312	15.3	5.0	13.8	3.5	3.93	0.14	10.2	5.2	8.7
93	71.5	0.559	88.6	1.6	6.83	9.850	11.479	10.349	15.4	5.0	13.7	3.4	4.08	0.16	10.2	5.2	8.5
94	71.7	0.565	88.6	1.6	6.84	9.956	11.506	10.360	15.4	5.0	13.7	3.4	4.08	0.16	10.2	5.2	8.5
95	72.0	0.571	88.6	1.6	6.85	10.062	11.559	10.396	15.4	5.0	13.8	3.4	4.09	0.16	10.2	5.2	8.6
96	72.2	0.577	88.6	1.6	6.85	10.168	11.586	10.408	15.4	5.0	13.8	3.4	4.06	0.15	10.2	5.2	8.6
97	72.5	0.583	88.6	1.6	6.86	10.274	11.640	10.444	15.5	5.0	13.9	3.4	4.03	0.15	10.2	5.2	8.7
98	72.6	0.589	88.5	1.5	6.87	10.380	11.666	10.455	15.5	5.0	14.0	3.5	3.97	0.14	10.2	5.2	8.7
99	73.0	0.595	88.3	1.3	6.88	10.486	11.720	10.491	15.5	5.0	14.2	3.7	3.85	0.13	10.3	5.2	8.9
100	73.2	0.601	88.6	1.6	6.89	10.591	11.760	10.514	15.5	5.0	14.0	3.4	4.06	0.15	10.3	5.3	8.7



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	73.5	0.607	88.5	1.5	6.89	10.697	11.800	10.538	15.5	5.0	14.1	3.5	3.99	0.14	10.3	5.3	8.8
102	73.7	0.613	88.5	1.5	6.90	10.803	11.840	10.561	15.6	5.0	14.0	3.5	4.03	0.14	10.3	5.3	8.8
103	74.0	0.619	88.5	1.5	6.91	10.909	11.880	10.584	15.6	5.0	14.1	3.5	4.04	0.14	10.3	5.3	8.8
104	74.1	0.625	88.6	1.6	6.92	11.015	11.907	10.595	15.6	5.0	14.0	3.4	4.08	0.15	10.3	5.3	8.7
105	74.5	0.631	88.4	1.4	6.93	11.121	11.960	10.630	15.6	5.0	14.2	3.6	3.95	0.13	10.3	5.3	8.9
106	74.6	0.637	88.3	1.3	6.94	11.227	11.987	10.641	15.6	5.0	14.4	3.7	3.86	0.12	10.3	5.3	9.0
107	74.7	0.643	88.3	1.3	6.94	11.333	12.000	10.640	15.6	5.0	14.4	3.7	3.86	0.12	10.3	5.3	9.0
108	75.1	0.649	88.5	1.5	6.95	11.439	12.067	10.687	15.7	5.0	14.2	3.5	4.07	0.14	10.4	5.3	8.8
109	75.2	0.655	88.4	1.4	6.96	11.545	12.081	10.686	15.7	5.0	14.2	3.6	4.00	0.14	10.3	5.3	8.9
110	75.4	0.661	88.3	1.3	6.97	11.651	12.121	10.709	15.7	5.0	14.4	3.7	3.91	0.12	10.4	5.4	9.0
111	75.8	0.667	88.3	1.3	6.98	11.757	12.174	10.743	15.7	5.0	14.4	3.7	3.92	0.12	10.4	5.4	9.1
112	75.9	0.673	88.2	1.2	6.99	11.862	12.201	10.754	15.8	5.0	14.6	3.8	3.80	0.11	10.4	5.4	9.2
113	76.3	0.679	88.4	1.4	6.99	11.968	12.254	10.788	15.8	5.0	14.4	3.6	3.96	0.13	10.4	5.4	9.0
114	76.6	0.685	88.4	1.4	7.00	12.074	12.308	10.822	15.8	5.0	14.4	3.6	4.04	0.13	10.4	5.4	9.0
115	76.7	0.691	88.4	1.4	7.01	12.180	12.321	10.820	15.8	5.0	14.4	3.6	4.00	0.13	10.4	5.4	9.0
116	77.1	0.697	88.3	1.3	7.02	12.286	12.388	10.866	15.9	5.0	14.5	3.7	3.95	0.12	10.4	5.4	9.1
117	77.2	0.703	88.4	1.4	7.03	12.392	12.401	10.865	15.9	5.0	14.5	3.6	4.02	0.13	10.4	5.4	9.0
118	77.5	0.709	88.3	1.3	7.04	12.498	12.455	10.898	15.9	5.0	14.6	3.7	3.93	0.12	10.5	5.4	9.2
119	77.8	0.715	88.2	1.2	7.04	12.604	12.508	10.932	15.9	5.0	14.7	3.8	3.87	0.11	10.5	5.5	9.3
120	78.1	0.721	88.2	1.2	7.05	12.710	12.548	10.953	16.0	5.0	14.8	3.8	3.85	0.11	10.5	5.5	9.3
121	78.2	0.727	88.3	1.3	7.06	12.816	12.575	10.963	16.0	5.0	14.7	3.7	3.95	0.12	10.5	5.5	9.2
122	78.6	0.733	88.3	1.3	7.07	12.922	12.629	10.997	16.0	5.0	14.7	3.7	3.99	0.12	10.5	5.5	9.2
123	78.8	0.739	88.4	1.4	7.08	13.028	12.669	11.018	16.0	5.0	14.7	3.6	4.03	0.12	10.5	5.5	9.2
124	78.9	0.745	88.3	1.3	7.09	13.133	12.682	11.016	16.0	5.0	14.7	3.7	3.99	0.12	10.5	5.5	9.2
125	79.1	0.751	88.2	1.2	7.10	13.239	12.722	11.038	16.0	5.0	14.8	3.8	3.90	0.11	10.5	5.5	9.3
126	79.5	0.757	88.2	1.2	7.10	13.345	12.776	11.071	16.1	5.0	14.9	3.8	3.88	0.11	10.5	5.5	9.4
127	79.7	0.763	88.1	1.1	7.11	13.451	12.816	11.092	16.1	5.0	15.0	3.9	3.83	0.10	10.6	5.5	9.5
128	79.8	0.769	88.2	1.2	7.12	13.557	12.829	11.090	16.1	5.0	14.9	3.8	3.95	0.11	10.6	5.5	9.3
129	80.2	0.775	88.2	1.2	7.13	13.663	12.896	11.134	16.1	5.0	14.9	3.8	3.96	0.11	10.6	5.6	9.3
130	80.5	0.781	88.2	1.2	7.14	13.769	12.936	11.155	16.2	5.0	15.0	3.8	3.93	0.11	10.6	5.6	9.4
131	80.8	0.787	88.1	1.1	7.15	13.875	12.989	11.187	16.2	5.0	15.1	3.9	3.88	0.10	10.6	5.6	9.5
132	81.1	0.793	88.1	1.1	7.16	13.981	13.043	11.219	16.2	5.0	15.1	3.9	3.86	0.10	10.6	5.6	9.5
133	81.3	0.799	88.0	1.0	7.17	14.087	13.070	11.228	16.2	5.0	15.3	4.0	3.78	0.09	10.6	5.6	9.7
134	81.5	0.805	88.1	1.1	7.17	14.193	13.110	11.249	16.3	5.0	15.1	3.9	3.90	0.10	10.6	5.6	9.5
135	81.8	0.811	88.1	1.1	7.18	14.298	13.150	11.269	16.3	5.0	15.2	3.9	3.90	0.10	10.6	5.6	9.5
136	81.9	0.817	88.2	1.2	7.19	14.404	13.163	11.267	16.3	5.0	15.1	3.8	3.93	0.10	10.6	5.6	9.5
137	82.3	0.823	88.1	1.1	7.20	14.510	13.230	11.310	16.3	5.0	15.2	3.9	3.91	0.10	10.7	5.7	9.5
138	82.8	0.829	88.1	1.1	7.21	14.616	13.310	11.365	16.4	5.0	15.2	3.9	3.93	0.10	10.7	5.7	9.6
139	82.8	0.835	88.0	1.0	7.22	14.722	13.323	11.362	16.4	5.0	15.4	4.0	3.81	0.08	10.7	5.7	9.7
140	83.1	0.841	87.9	0.9	7.23	14.828	13.364	11.382	16.4	5.0	15.5	4.1	3.76	0.08	10.7	5.7	9.8
141	83.5	0.847	88.1	1.1	7.24	14.934	13.430	11.425	16.4	5.0	15.3	3.9	3.94	0.10	10.7	5.7	9.6



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	83.9	0.853	88.2	1.2	7.25	15.040	13.497	11.467	16.5	5.0	15.3	3.8	3.98	0.10	10.7	5.7	9.6
143	83.9	0.859	88.1	1.1	7.26	15.146	13.497	11.453	16.5	5.0	15.4	3.9	3.92	0.09	10.7	5.7	9.6
144	84.2	0.865	88.0	1.0	7.26	15.252	13.537	11.473	16.5	5.0	15.4	4.0	3.89	0.09	10.7	5.7	9.7
145	84.7	0.871	87.9	0.9	7.27	15.358	13.617	11.526	16.5	5.0	15.6	4.1	3.82	0.08	10.8	5.8	9.8
146	84.7	0.877	88.1	1.1	7.28	15.464	13.631	11.523	16.5	5.0	15.4	3.9	3.97	0.10	10.8	5.8	9.6
147	84.9	0.883	87.7	0.7	7.29	15.569	13.658	11.531	16.5	5.0	15.9	4.3	3.67	0.06	10.8	5.8	10.1
148	85.1	0.889	88.1	1.1	7.30	15.675	13.684	11.539	16.5	5.0	15.4	3.9	3.97	0.10	10.8	5.8	9.7
149	85.3	0.895	88.0	1.0	7.31	15.781	13.724	11.558	16.6	5.0	15.5	4.0	3.92	0.09	10.8	5.8	9.7
150	85.6	0.901	88.0	1.0	7.32	15.887	13.778	11.589	16.6	5.0	15.6	4.0	3.92	0.09	10.8	5.8	9.8
151	86.0	0.907	87.8	0.8	7.33	15.993	13.831	11.619	16.6	5.0	15.8	4.2	3.76	0.07	10.8	5.8	10.0
152	86.1	0.913	88.0	1.0	7.34	16.099	13.858	11.627	16.6	5.0	15.6	4.0	3.93	0.09	10.8	5.8	9.8
153	86.2	0.919	87.8	0.8	7.35	16.205	13.871	11.623	16.6	5.0	15.8	4.2	3.76	0.07	10.8	5.8	10.0
154	86.6	0.925	87.8	0.8	7.36	16.311	13.925	11.654	16.7	5.0	15.9	4.2	3.75	0.07	10.8	5.8	10.1
155	86.8	0.931	88.0	1.0	7.37	16.417	13.965	11.672	16.7	5.0	15.7	4.0	3.89	0.08	10.8	5.8	9.9
156	87.3	0.937	88.0	1.0	7.38	16.523	14.045	11.724	16.7	5.0	15.8	4.0	3.90	0.08	10.9	5.9	9.9
157	87.7	0.943	87.9	0.9	7.38	16.629	14.112	11.765	16.8	5.0	15.8	4.1	3.88	0.08	10.9	5.9	10.0
158	88.0	0.949	87.9	0.9	7.39	16.735	14.165	11.795	16.8	5.0	15.9	4.1	3.89	0.08	10.9	5.9	10.0
159	88.3	0.955	87.9	0.9	7.40	16.840	14.205	11.813	16.8	5.0	15.9	4.1	3.86	0.07	10.9	5.9	10.0
160	88.5	0.961	87.8	0.8	7.41	16.946	14.246	11.831	16.8	5.0	16.0	4.2	3.81	0.07	10.9	5.9	10.1
161	88.7	0.967	87.7	0.7	7.42	17.052	14.272	11.838	16.8	5.0	16.2	4.3	3.74	0.06	10.9	5.9	10.2
162	89.2	0.973	87.8	0.8	7.43	17.158	14.352	11.890	16.9	5.0	16.1	4.2	3.83	0.07	11.0	5.9	10.1
163	89.5	0.979	87.8	0.8	7.44	17.264	14.406	11.919	16.9	5.0	16.1	4.2	3.86	0.07	11.0	6.0	10.1
164	89.6	0.985	87.9	0.9	7.45	17.370	14.419	11.915	16.9	5.0	16.0	4.1	3.89	0.07	11.0	6.0	10.1
165	90.0	0.991	87.9	0.9	7.46	17.476	14.486	11.355	16.4	5.0	15.4	4.1	3.78	0.08	10.7	5.7	9.8
166	90.0	0.997	87.8	0.8	7.47	17.582	14.486	11.336	16.3	5.0	15.5	4.2	3.70	0.07	10.7	5.7	9.9
167	90.0	1.003	87.7	0.7	7.48	17.688	14.486	11.317	16.3	5.0	15.6	4.3	3.64	0.06	10.7	5.7	9.9
168	90.5	1.009	87.6	0.6	7.49	17.794	14.566	11.364	16.4	5.0	15.8	4.4	3.58	0.05	10.7	5.7	10.1
169	90.9	1.015	87.8	0.8	7.50	17.900	14.633	11.400	16.4	5.0	15.6	4.2	3.74	0.07	10.7	5.7	9.9
170	91.3	1.021	87.8	0.8	7.51	18.005	14.700	11.436	16.4	5.0	15.6	4.2	3.72	0.07	10.7	5.7	9.9
171	91.7	1.027	87.7	0.7	7.52	18.111	14.767	11.471	16.5	5.0	15.8	4.3	3.68	0.06	10.7	5.7	10.0
172	92.0	1.033	87.8	0.8	7.53	18.217	14.807	11.485	16.5	5.0	15.7	4.2	3.73	0.07	10.7	5.7	9.9
173	92.0	1.039	87.7	0.7	7.54	18.323	14.807	11.465	16.5	5.0	15.7	4.3	3.68	0.06	10.7	5.7	10.0
174	92.3	1.045	87.7	0.7	7.55	18.429	14.860	11.490	16.5	5.0	15.8	4.3	3.66	0.06	10.8	5.7	10.1
175	92.4	1.051	87.6	0.6	7.56	18.535	14.874	11.481	16.5	5.0	15.9	4.4	3.58	0.05	10.7	5.7	10.2
176	92.6	1.057	87.6	0.6	7.57	18.641	14.914	11.494	16.5	5.0	15.9	4.4	3.61	0.05	10.8	5.7	10.2
177	92.9	1.063	87.8	0.8	7.58	18.747	14.954	11.508	16.5	5.0	15.8	4.2	3.71	0.07	10.8	5.8	10.0
178	93.2	1.069	87.8	0.8	7.59	18.853	15.007	11.532	16.5	5.0	15.8	4.2	3.72	0.07	10.8	5.8	10.0
179	93.3	1.075	87.8	0.8	7.60	18.959	15.021	11.523	16.5	5.0	15.7	4.2	3.74	0.07	10.8	5.8	10.0
180	93.5	1.081	87.7	0.7	7.61	19.065	15.061	11.536	16.5	5.0	15.9	4.3	3.67	0.06	10.8	5.8	10.1
181	93.8	1.087	87.6	0.6	7.62	19.171	15.101	11.549	16.6	5.0	15.9	4.4	3.65	0.06	10.8	5.8	10.1
182	94.2	1.093	87.5	0.5	7.63	19.276	15.168	11.583	16.6	5.0	16.1	4.5	3.58	0.05	10.8	5.8	10.3



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	94.5	1.099	87.4	0.4	7.64	19.382	15.221	11.606	16.6	5.0	16.2	4.6	3.54	0.04	10.8	5.8	10.4
184	94.8	1.105	87.8	0.8	7.65	19.488	15.261	11.619	16.6	5.0	15.9	4.2	3.74	0.07	10.8	5.8	10.1
185	95.3	1.111	87.6	0.6	7.66	19.594	15.341	11.663	16.7	5.0	16.0	4.4	3.67	0.06	10.8	5.8	10.2
186	95.6	1.117	87.7	0.7	7.67	19.700	15.395	11.686	16.7	5.0	16.0	4.3	3.70	0.06	10.9	5.8	10.2
187	95.9	1.123	87.6	0.6	7.68	19.806	15.448	11.709	16.7	5.0	16.2	4.4	3.63	0.05	10.9	5.9	10.3
188	96.3	1.129	87.6	0.6	7.69	19.912	15.502	11.732	16.7	5.0	16.1	4.4	3.66	0.05	10.9	5.9	10.3
189	96.4	1.134	87.7	0.7	7.70	20.002	15.528	11.737	16.7	5.0	16.1	4.3	3.71	0.06	10.9	5.9	10.2



File Location
B-68 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-68
Sample Description: Red Elastic Silt
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 52.000
PL: 33.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.807	2.807	
Height (in)	5.643	5.606	
Weight (grams)	1068.90		1117.84
Moisture (%)	22.76		28.38
Dry Density (pcf)	95.01	95.62	
Saturation (%)	81.38	100.00	
Void Ratio	0.737	0.730	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 84.100
Effective Confining Stress (psi): 10.0
Corrected Peak Deviator Stress (psi): 15.285 at reading number: 186

Specimen B

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	1.5	0.000	74.1	0.0	6.19	0.000	0.000	0.000	10.0	10.0	10.0	10.0	1.00	0.00	10.0	0.0	10.0
1	32.7	0.006	76.2	2.1	6.19	0.107	5.047	5.042	15.1	10.0	12.9	7.9	1.64	0.42	12.5	2.5	10.4
2	42.8	0.012	77.3	3.2	6.20	0.214	6.676	6.662	16.7	10.0	13.5	6.8	1.97	0.48	13.4	3.3	10.2
3	49.0	0.018	77.9	3.8	6.21	0.321	7.677	7.653	17.7	10.0	13.9	6.2	2.23	0.49	13.9	3.8	10.1
4	53.7	0.024	78.3	4.2	6.21	0.428	8.438	8.402	18.4	10.0	14.2	5.8	2.44	0.50	14.2	4.2	10.0
5	57.3	0.030	78.8	4.7	6.22	0.535	9.026	8.978	19.0	10.0	14.3	5.3	2.69	0.52	14.5	4.5	9.8
6	60.2	0.036	79.0	4.9	6.23	0.642	9.493	9.432	19.5	10.0	14.5	5.1	2.86	0.52	14.7	4.7	9.8
7	62.4	0.042	79.2	5.2	6.23	0.749	9.840	9.767	19.8	10.0	14.6	4.9	3.00	0.53	14.9	4.9	9.8
8	64.0	0.048	79.3	5.2	6.24	0.856	10.107	10.021	20.0	10.0	14.8	4.8	3.09	0.52	15.0	5.0	9.8
9	65.3	0.054	79.4	5.3	6.25	0.963	10.308	10.208	20.2	10.0	14.9	4.7	3.16	0.52	15.1	5.1	9.8
10	66.2	0.060	79.5	5.4	6.26	1.070	10.455	10.343	20.4	10.0	15.0	4.6	3.23	0.52	15.2	5.2	9.8
11	66.9	0.066	79.7	5.7	6.26	1.177	10.575	10.450	20.5	10.0	14.8	4.4	3.40	0.54	15.3	5.2	9.6
12	67.6	0.072	79.8	5.7	6.27	1.285	10.682	10.544	20.6	10.0	14.9	4.3	3.44	0.54	15.3	5.3	9.6
13	68.1	0.078	79.9	5.8	6.28	1.392	10.762	10.612	20.6	10.0	14.8	4.2	3.53	0.55	15.3	5.3	9.5
14	68.2	0.084	80.0	5.9	6.28	1.499	10.788	10.627	20.7	10.0	14.7	4.1	3.58	0.56	15.3	5.3	9.4
15	68.8	0.090	80.0	6.0	6.29	1.606	10.882	10.707	20.7	10.0	14.8	4.1	3.63	0.56	15.4	5.4	9.4
16	69.2	0.096	80.0	6.0	6.30	1.713	10.935	10.748	20.8	10.0	14.8	4.1	3.64	0.55	15.4	5.4	9.4
17	69.4	0.102	80.0	6.0	6.30	1.820	10.975	10.776	20.8	10.0	14.8	4.1	3.65	0.55	15.4	5.4	9.5
18	69.7	0.108	80.0	6.0	6.31	1.927	11.015	10.803	20.8	10.0	14.9	4.1	3.65	0.55	15.4	5.4	9.5



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	70.0	0.114	80.2	6.2	6.32	2.034	11.069	10.844	20.9	10.0	14.7	3.9	3.80	0.57	15.4	5.4	9.3
20	70.3	0.120	80.3	6.2	6.32	2.141	11.122	10.884	20.9	10.0	14.7	3.8	3.84	0.57	15.5	5.4	9.3
21	70.6	0.126	80.3	6.2	6.33	2.248	11.162	10.911	20.9	10.0	14.7	3.8	3.88	0.57	15.5	5.5	9.2
22	70.8	0.132	80.3	6.3	6.34	2.355	11.202	10.939	21.0	10.0	14.7	3.8	3.92	0.57	15.5	5.5	9.2
23	71.1	0.138	80.3	6.3	6.34	2.462	11.242	10.966	21.0	10.0	14.7	3.8	3.92	0.57	15.5	5.5	9.2
24	71.2	0.144	80.3	6.2	6.35	2.569	11.269	10.980	21.0	10.0	14.8	3.8	3.90	0.57	15.5	5.5	9.3
25	71.4	0.150	80.3	6.2	6.36	2.676	11.296	10.994	21.0	10.0	14.8	3.8	3.87	0.56	15.5	5.5	9.3
26	71.6	0.156	80.3	6.2	6.37	2.783	11.323	11.007	21.0	10.0	14.8	3.8	3.87	0.56	15.5	5.5	9.3
27	71.7	0.162	80.4	6.3	6.37	2.890	11.349	11.021	21.0	10.0	14.7	3.7	3.97	0.57	15.5	5.5	9.2
28	72.1	0.168	80.4	6.3	6.38	2.997	11.416	11.074	21.1	10.0	14.8	3.7	3.98	0.57	15.6	5.5	9.2
29	72.4	0.174	80.4	6.3	6.39	3.104	11.456	11.100	21.1	10.0	14.8	3.7	3.99	0.57	15.6	5.6	9.3
30	72.6	0.180	80.4	6.3	6.39	3.211	11.496	11.127	21.2	10.0	14.8	3.7	4.00	0.57	15.6	5.6	9.3
31	72.8	0.186	80.3	6.3	6.40	3.318	11.523	11.140	21.2	10.0	14.9	3.8	3.97	0.56	15.6	5.6	9.3
32	73.0	0.192	80.3	6.2	6.41	3.425	11.563	11.167	21.2	10.0	15.0	3.8	3.95	0.56	15.6	5.6	9.4
33	73.4	0.198	80.3	6.2	6.41	3.532	11.616	11.206	21.2	10.0	15.0	3.8	3.93	0.55	15.6	5.6	9.4
34	73.6	0.204	80.2	6.2	6.42	3.639	11.656	11.232	21.3	10.0	15.1	3.9	3.90	0.55	15.6	5.6	9.5
35	73.7	0.210	80.3	6.2	6.43	3.746	11.670	11.232	21.3	10.0	15.0	3.8	3.96	0.56	15.6	5.6	9.4
36	74.1	0.216	80.3	6.3	6.44	3.854	11.736	11.284	21.3	10.0	15.0	3.8	4.01	0.56	15.7	5.6	9.4
37	74.4	0.222	80.3	6.3	6.44	3.961	11.790	11.323	21.3	10.0	15.1	3.8	4.02	0.55	15.7	5.7	9.4
38	74.5	0.228	80.3	6.3	6.45	4.068	11.803	11.323	21.4	10.0	15.1	3.8	4.02	0.55	15.7	5.7	9.4
39	74.9	0.234	80.3	6.3	6.46	4.175	11.857	11.362	21.4	10.0	15.1	3.8	4.03	0.55	15.7	5.7	9.4
40	75.0	0.240	80.3	6.2	6.46	4.282	11.883	11.374	21.4	10.0	15.2	3.8	4.00	0.55	15.7	5.7	9.5
41	75.4	0.246	80.3	6.2	6.47	4.389	11.937	11.413	21.4	10.0	15.2	3.8	4.01	0.55	15.7	5.7	9.5
42	75.5	0.252	80.3	6.2	6.48	4.496	11.963	11.426	21.5	10.0	15.3	3.8	3.98	0.54	15.7	5.7	9.5
43	75.7	0.258	80.2	6.1	6.49	4.603	11.990	11.438	21.5	10.0	15.3	3.9	3.92	0.53	15.7	5.7	9.6
44	75.9	0.264	80.4	6.3	6.49	4.710	12.030	11.464	21.5	10.0	15.2	3.7	4.09	0.55	15.8	5.7	9.4
45	76.5	0.276	80.4	6.3	6.51	4.924	12.124	11.527	21.6	10.0	15.2	3.7	4.11	0.55	15.8	5.8	9.5
46	76.8	0.282	80.3	6.3	6.52	5.031	12.177	11.564	21.6	10.0	15.3	3.8	4.08	0.54	15.8	5.8	9.5
47	77.0	0.288	80.2	6.2	6.52	5.138	12.204	11.577	21.6	10.0	15.4	3.9	3.99	0.53	15.8	5.8	9.7
48	77.2	0.294	80.3	6.2	6.53	5.245	12.230	11.589	21.6	10.0	15.4	3.8	4.03	0.53	15.8	5.8	9.6
49	77.7	0.300	80.3	6.3	6.54	5.352	12.311	11.652	21.7	10.0	15.4	3.8	4.11	0.54	15.9	5.8	9.6
50	77.8	0.306	80.3	6.3	6.55	5.459	12.337	11.664	21.7	10.0	15.4	3.8	4.11	0.54	15.9	5.8	9.6
51	78.1	0.312	80.3	6.2	6.55	5.566	12.377	11.688	21.7	10.0	15.5	3.8	4.08	0.53	15.9	5.8	9.6
52	78.4	0.318	80.3	6.2	6.56	5.673	12.431	11.726	21.8	10.0	15.5	3.8	4.09	0.53	15.9	5.9	9.7
53	78.7	0.324	80.3	6.2	6.57	5.780	12.471	11.750	21.8	10.0	15.6	3.8	4.07	0.53	15.9	5.9	9.7
54	78.9	0.330	80.2	6.1	6.58	5.887	12.511	11.774	21.8	10.0	15.7	3.9	4.01	0.52	15.9	5.9	9.8
55	79.1	0.336	80.1	6.1	6.58	5.994	12.538	11.786	21.8	10.0	15.7	4.0	3.98	0.52	15.9	5.9	9.8
56	79.3	0.342	80.1	6.1	6.59	6.101	12.578	11.810	21.8	10.0	15.8	4.0	3.99	0.51	15.9	5.9	9.9
57	79.7	0.348	80.3	6.2	6.60	6.208	12.644	11.859	21.9	10.0	15.7	3.8	4.10	0.52	16.0	5.9	9.8
58	80.0	0.354	80.2	6.2	6.61	6.315	12.684	11.883	21.9	10.0	15.8	3.9	4.07	0.52	16.0	5.9	9.8
59	80.3	0.360	80.2	6.2	6.61	6.423	12.738	11.920	21.9	10.0	15.8	3.9	4.08	0.52	16.0	6.0	9.8



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	80.6	0.366	80.2	6.2	6.62	6.530	12.778	11.944	22.0	10.0	15.8	3.9	4.09	0.52	16.0	6.0	9.8
61	80.9	0.372	80.2	6.1	6.63	6.637	12.831	11.980	22.0	10.0	15.9	3.9	4.06	0.51	16.0	6.0	9.9
62	81.2	0.378	80.1	6.0	6.64	6.744	12.885	12.016	22.0	10.0	16.0	4.0	4.01	0.50	16.0	6.0	10.0
63	81.6	0.384	80.1	6.0	6.64	6.851	12.938	12.052	22.1	10.0	16.1	4.0	3.99	0.50	16.1	6.0	10.1
64	81.6	0.390	80.0	6.0	6.65	6.958	12.951	12.050	22.1	10.0	16.1	4.1	3.96	0.49	16.1	6.0	10.1
65	81.8	0.396	80.2	6.1	6.66	7.065	12.978	12.061	22.1	10.0	16.0	3.9	4.08	0.51	16.1	6.0	9.9
66	82.3	0.402	80.2	6.1	6.67	7.172	13.058	12.122	22.1	10.0	16.0	3.9	4.10	0.50	16.1	6.1	10.0
67	82.5	0.408	80.1	6.1	6.67	7.279	13.098	12.145	22.2	10.0	16.1	4.0	4.07	0.50	16.1	6.1	10.0
68	82.8	0.414	80.1	6.0	6.68	7.386	13.138	12.168	22.2	10.0	16.2	4.0	4.02	0.49	16.1	6.1	10.1
69	83.0	0.420	80.0	6.0	6.69	7.493	13.178	12.191	22.2	10.0	16.3	4.1	3.99	0.49	16.1	6.1	10.2
70	83.4	0.426	80.0	6.0	6.70	7.600	13.232	12.226	22.3	10.0	16.3	4.1	4.00	0.49	16.1	6.1	10.2
71	83.7	0.432	80.1	6.1	6.70	7.707	13.285	12.261	22.3	10.0	16.2	4.0	4.10	0.50	16.2	6.1	10.1
72	84.1	0.438	80.1	6.0	6.71	7.814	13.352	12.309	22.3	10.0	16.3	4.0	4.08	0.49	16.2	6.2	10.1
73	84.4	0.444	80.1	6.0	6.72	7.921	13.405	12.344	22.4	10.0	16.4	4.0	4.06	0.49	16.2	6.2	10.2
74	84.8	0.450	80.1	6.0	6.73	8.028	13.459	12.378	22.4	10.0	16.4	4.0	4.07	0.48	16.2	6.2	10.2
75	85.1	0.456	80.0	5.9	6.74	8.135	13.512	12.413	22.4	10.0	16.5	4.1	4.02	0.48	16.2	6.2	10.3
76	85.4	0.462	79.9	5.8	6.74	8.242	13.552	12.435	22.5	10.0	16.6	4.2	3.97	0.47	16.2	6.2	10.4
77	85.7	0.468	79.8	5.8	6.75	8.349	13.606	12.470	22.5	10.0	16.7	4.3	3.92	0.46	16.3	6.2	10.5
78	85.9	0.474	80.0	5.9	6.76	8.456	13.646	12.492	22.5	10.0	16.6	4.1	4.04	0.47	16.3	6.2	10.4
79	86.4	0.480	79.9	5.9	6.77	8.563	13.726	12.550	22.6	10.0	16.7	4.2	4.02	0.47	16.3	6.3	10.4
80	86.8	0.486	79.9	5.9	6.78	8.670	13.779	12.585	22.6	10.0	16.7	4.2	4.03	0.47	16.3	6.3	10.4
81	87.0	0.492	79.9	5.8	6.78	8.777	13.819	12.606	22.6	10.0	16.8	4.2	4.01	0.46	16.3	6.3	10.5
82	87.5	0.498	79.9	5.8	6.79	8.884	13.899	12.665	22.7	10.0	16.9	4.2	3.99	0.46	16.4	6.3	10.6
83	87.7	0.505	79.8	5.7	6.80	8.992	13.926	12.674	22.7	10.0	17.0	4.3	3.94	0.45	16.4	6.3	10.7
84	87.9	0.511	79.7	5.7	6.81	9.099	13.966	12.695	22.7	10.0	17.0	4.4	3.92	0.45	16.4	6.3	10.7
85	88.2	0.517	79.8	5.8	6.82	9.206	14.020	12.729	22.8	10.0	17.0	4.3	3.98	0.45	16.4	6.4	10.6
86	88.7	0.523	79.8	5.8	6.82	9.313	14.086	12.775	22.8	10.0	17.0	4.3	3.99	0.45	16.4	6.4	10.7
87	89.1	0.529	79.8	5.8	6.83	9.420	14.153	12.820	22.8	10.0	17.1	4.3	4.00	0.45	16.4	6.4	10.7
88	89.3	0.535	79.7	5.7	6.84	9.527	14.193	12.841	22.9	10.0	17.2	4.4	3.95	0.44	16.4	6.4	10.8
89	89.5	0.541	79.7	5.6	6.85	9.634	14.220	12.850	22.9	10.0	17.3	4.4	3.90	0.44	16.5	6.4	10.9
90	89.8	0.547	79.6	5.6	6.86	9.741	14.273	12.883	22.9	10.0	17.4	4.5	3.88	0.43	16.5	6.4	10.9
91	90.1	0.553	79.8	5.7	6.86	9.848	14.327	12.916	22.9	10.0	17.2	4.3	3.99	0.44	16.5	6.5	10.8
92	90.6	0.559	79.7	5.7	6.87	9.955	14.393	12.961	23.0	10.0	17.3	4.4	3.98	0.44	16.5	6.5	10.8
93	90.9	0.565	79.7	5.7	6.88	10.062	14.447	12.993	23.0	10.0	17.3	4.4	3.98	0.44	16.5	6.5	10.9
94	91.2	0.571	79.7	5.6	6.89	10.169	14.500	13.026	23.1	10.0	17.4	4.4	3.96	0.43	16.5	6.5	10.9
95	91.4	0.577	79.7	5.6	6.90	10.276	14.527	13.034	23.1	10.0	17.5	4.4	3.94	0.43	16.5	6.5	11.0
96	91.5	0.583	79.6	5.5	6.91	10.383	14.554	13.043	23.1	10.0	17.6	4.5	3.89	0.42	16.5	6.5	11.0
97	91.9	0.589	79.5	5.5	6.91	10.490	14.607	13.075	23.1	10.0	17.6	4.6	3.87	0.42	16.6	6.5	11.1
98	92.3	0.595	79.7	5.6	6.92	10.597	14.674	13.119	23.1	10.0	17.6	4.4	3.96	0.43	16.6	6.6	11.0
99	92.6	0.601	79.7	5.6	6.93	10.704	14.727	13.151	23.2	10.0	17.6	4.4	3.97	0.43	16.6	6.6	11.0
100	93.1	0.607	79.6	5.6	6.94	10.811	14.807	13.207	23.2	10.0	17.7	4.5	3.95	0.42	16.6	6.6	11.1



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in2)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	93.3	0.613	79.6	5.6	6.95	10.918	14.834	13.214	23.2	10.0	17.7	4.5	3.95	0.42	16.6	6.6	11.1
102	93.6	0.619	79.6	5.5	6.95	11.025	14.887	13.246	23.3	10.0	17.8	4.5	3.93	0.42	16.7	6.6	11.1
103	93.9	0.625	79.5	5.4	6.96	11.132	14.941	13.278	23.3	10.0	17.9	4.6	3.89	0.41	16.7	6.6	11.2
104	94.3	0.631	79.5	5.4	6.97	11.239	14.994	13.309	23.3	10.0	17.9	4.6	3.87	0.41	16.7	6.7	11.3
105	94.4	0.637	79.5	5.4	6.98	11.346	15.008	13.305	23.3	10.0	17.9	4.6	3.90	0.41	16.7	6.7	11.2
106	94.8	0.643	79.5	5.5	6.99	11.454	15.074	13.348	23.4	10.0	17.9	4.6	3.93	0.41	16.7	6.7	11.2
107	95.0	0.649	79.5	5.5	7.00	11.561	15.114	13.367	23.4	10.0	17.9	4.6	3.93	0.41	16.7	6.7	11.2
108	95.3	0.655	79.5	5.4	7.01	11.668	15.168	13.398	23.4	10.0	18.0	4.6	3.92	0.41	16.7	6.7	11.3
109	95.6	0.661	79.4	5.4	7.01	11.775	15.208	13.417	23.4	10.0	18.1	4.7	3.87	0.40	16.7	6.7	11.4
110	95.9	0.667	79.3	5.3	7.02	11.882	15.261	13.448	23.5	10.0	18.2	4.8	3.83	0.39	16.8	6.7	11.5
111	96.3	0.673	79.5	5.4	7.03	11.989	15.315	13.479	23.5	10.0	18.1	4.6	3.93	0.40	16.8	6.7	11.3
112	96.6	0.679	79.5	5.4	7.04	12.096	15.368	13.509	23.5	10.0	18.1	4.6	3.91	0.40	16.8	6.8	11.4
113	96.9	0.685	79.5	5.4	7.05	12.203	15.422	13.540	23.6	10.0	18.2	4.6	3.92	0.40	16.8	6.8	11.4
114	97.2	0.691	79.4	5.4	7.06	12.310	15.462	13.558	23.6	10.0	18.2	4.7	3.90	0.39	16.8	6.8	11.5
115	97.5	0.697	79.4	5.3	7.07	12.417	15.515	13.589	23.6	10.0	18.3	4.7	3.88	0.39	16.8	6.8	11.5
116	97.7	0.703	79.3	5.3	7.07	12.524	15.555	13.607	23.6	10.0	18.4	4.8	3.86	0.39	16.8	6.8	11.6
117	98.2	0.709	79.3	5.2	7.08	12.631	15.622	13.649	23.7	10.0	18.5	4.8	3.82	0.38	16.9	6.8	11.7
118	98.5	0.715	79.4	5.3	7.09	12.738	15.675	13.679	23.7	10.0	18.4	4.7	3.90	0.39	16.9	6.8	11.6
119	98.8	0.721	79.4	5.3	7.10	12.845	15.729	13.708	23.7	10.0	18.4	4.7	3.91	0.39	16.9	6.9	11.6
120	99.1	0.727	79.3	5.3	7.11	12.952	15.782	13.738	23.8	10.0	18.5	4.8	3.89	0.38	16.9	6.9	11.6
121	99.3	0.733	79.3	5.2	7.12	13.059	15.809	13.744	23.8	10.0	18.5	4.8	3.87	0.38	16.9	6.9	11.7
122	99.8	0.739	79.3	5.2	7.13	13.166	15.889	13.797	23.8	10.0	18.6	4.8	3.88	0.38	16.9	6.9	11.7
123	100.1	0.745	79.2	5.2	7.14	13.273	15.942	13.826	23.9	10.0	18.7	4.9	3.84	0.37	16.9	6.9	11.8
124	100.4	0.751	79.1	5.1	7.14	13.380	15.982	13.844	23.9	10.0	18.8	5.0	3.79	0.37	16.9	6.9	11.9
125	100.6	0.757	79.1	5.0	7.15	13.487	16.022	13.861	23.9	10.0	18.9	5.0	3.75	0.36	17.0	6.9	12.0
126	100.9	0.763	79.2	5.2	7.16	13.594	16.062	13.879	23.9	10.0	18.8	4.9	3.85	0.37	17.0	6.9	11.8
127	101.3	0.769	79.2	5.2	7.17	13.701	16.129	13.919	23.9	10.0	18.8	4.9	3.85	0.37	17.0	7.0	11.8
128	101.6	0.775	79.2	5.1	7.18	13.808	16.183	13.948	24.0	10.0	18.9	4.9	3.84	0.37	17.0	7.0	11.9
129	101.8	0.781	79.1	5.0	7.19	13.915	16.209	13.954	24.0	10.0	19.0	5.0	3.79	0.36	17.0	7.0	12.0
130	102.2	0.787	79.0	4.9	7.20	14.023	16.276	13.994	24.0	10.0	19.1	5.1	3.76	0.35	17.0	7.0	12.1
131	102.4	0.793	79.1	5.0	7.21	14.130	16.303	13.999	24.0	10.0	19.0	5.0	3.80	0.36	17.0	7.0	12.0
132	102.8	0.799	79.1	5.1	7.22	14.237	16.370	14.039	24.1	10.0	19.0	5.0	3.83	0.36	17.0	7.0	12.0
133	103.0	0.805	79.1	5.0	7.22	14.344	16.410	14.056	24.1	10.0	19.1	5.0	3.81	0.36	17.1	7.0	12.0
134	103.4	0.811	79.1	5.0	7.23	14.451	16.463	14.084	24.1	10.0	19.1	5.0	3.82	0.36	17.1	7.0	12.0
135	103.7	0.817	79.1	5.0	7.24	14.558	16.516	14.112	24.1	10.0	19.1	5.0	3.82	0.36	17.1	7.1	12.1
136	103.9	0.823	79.0	4.9	7.25	14.665	16.543	14.117	24.1	10.0	19.2	5.1	3.78	0.35	17.1	7.1	12.1
137	104.1	0.829	79.0	4.9	7.26	14.772	16.583	14.134	24.2	10.0	19.3	5.1	3.76	0.35	17.1	7.1	12.2
138	104.4	0.835	78.9	4.8	7.27	14.879	16.623	14.150	24.2	10.0	19.3	5.2	3.72	0.34	17.1	7.1	12.3
139	104.7	0.841	79.1	5.0	7.28	14.986	16.677	14.178	24.2	10.0	19.2	5.0	3.81	0.35	17.1	7.1	12.1
140	105.3	0.847	79.0	4.9	7.29	15.093	16.783	14.250	24.3	10.0	19.3	5.1	3.81	0.35	17.2	7.1	12.2
141	105.5	0.853	79.0	4.9	7.30	15.200	16.810	14.255	24.3	10.0	19.3	5.1	3.81	0.35	17.2	7.1	12.2



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	105.8	0.859	79.0	4.9	7.31	15.307	16.850	14.271	24.3	10.0	19.3	5.1	3.81	0.35	17.2	7.1	12.2
143	106.1	0.865	79.0	4.9	7.32	15.414	16.904	14.298	24.3	10.0	19.4	5.1	3.79	0.34	17.2	7.1	12.3
144	106.4	0.871	78.9	4.8	7.33	15.521	16.957	14.325	24.4	10.0	19.5	5.2	3.76	0.34	17.2	7.2	12.4
145	106.8	0.877	78.8	4.7	7.33	15.628	17.024	14.363	24.4	10.0	19.6	5.3	3.72	0.33	17.2	7.2	12.5
146	107.1	0.883	79.0	4.9	7.34	15.735	17.064	14.379	24.4	10.0	19.5	5.1	3.81	0.34	17.2	7.2	12.3
147	107.3	0.889	78.9	4.9	7.35	15.842	17.104	14.394	24.4	10.0	19.6	5.2	3.79	0.34	17.2	7.2	12.4
148	107.6	0.895	78.9	4.9	7.36	15.949	17.144	14.410	24.4	10.0	19.6	5.2	3.79	0.34	17.2	7.2	12.4
149	108.0	0.901	78.9	4.8	7.37	16.056	17.211	14.447	24.5	10.0	19.7	5.2	3.76	0.33	17.3	7.2	12.5
150	108.2	0.907	78.8	4.7	7.38	16.163	17.251	14.462	24.5	10.0	19.7	5.3	3.74	0.33	17.3	7.2	12.5
151	108.5	0.913	78.7	4.7	7.39	16.270	17.291	14.478	24.5	10.0	19.8	5.4	3.70	0.32	17.3	7.2	12.6
152	108.7	0.919	78.9	4.8	7.40	16.377	17.318	14.481	24.5	10.0	19.7	5.2	3.76	0.33	17.3	7.2	12.5
153	109.2	0.925	78.9	4.8	7.41	16.484	17.411	14.541	24.6	10.0	19.8	5.2	3.78	0.33	17.3	7.3	12.5
154	109.6	0.931	78.8	4.7	7.42	16.592	17.478	14.578	24.6	10.0	19.9	5.3	3.76	0.33	17.3	7.3	12.6
155	109.9	0.937	78.8	4.7	7.43	16.699	17.518	14.593	24.6	10.0	19.9	5.3	3.76	0.33	17.3	7.3	12.6
156	110.1	0.943	78.8	4.7	7.44	16.806	17.558	14.607	24.6	10.0	19.9	5.3	3.75	0.32	17.3	7.3	12.6
157	110.6	0.949	78.7	4.7	7.45	16.913	17.625	14.644	24.7	10.0	20.0	5.4	3.73	0.32	17.3	7.3	12.7
158	110.7	0.955	78.7	4.6	7.46	17.020	17.651	14.647	24.7	10.0	20.1	5.4	3.69	0.31	17.4	7.3	12.8
159	111.0	0.961	78.6	4.5	7.47	17.127	17.691	14.661	24.7	10.0	20.1	5.5	3.68	0.31	17.4	7.3	12.8
160	111.2	0.967	78.7	4.7	7.48	17.234	17.731	14.676	24.7	10.0	20.0	5.4	3.74	0.32	17.4	7.3	12.7
161	111.5	0.973	78.7	4.7	7.49	17.341	17.772	14.690	24.7	10.0	20.0	5.4	3.74	0.32	17.4	7.3	12.7
162	111.9	0.979	78.7	4.7	7.50	17.448	17.838	14.726	24.8	10.0	20.1	5.4	3.75	0.32	17.4	7.4	12.7
163	112.0	0.985	78.7	4.6	7.51	17.555	17.865	14.729	24.8	10.0	20.1	5.4	3.73	0.31	17.4	7.4	12.8
164	112.6	0.991	78.7	4.6	7.52	17.662	17.958	14.787	24.8	10.0	20.2	5.4	3.72	0.31	17.4	7.4	12.8
165	112.9	0.997	78.6	4.5	7.53	17.769	18.012	14.811	24.8	10.0	20.3	5.5	3.68	0.30	17.4	7.4	12.9
166	113.2	1.003	78.5	4.5	7.54	17.876	18.052	14.825	24.9	10.0	20.4	5.6	3.67	0.30	17.4	7.4	13.0
167	113.4	1.009	78.7	4.6	7.55	17.991	18.092	14.837	24.9	10.0	20.3	5.4	3.73	0.31	17.4	7.4	12.9
168	113.9	1.015	78.6	4.5	7.56	18.107	18.159	14.871	24.9	10.0	20.4	5.5	3.71	0.31	17.5	7.4	12.9
169	114.3	1.022	78.6	4.5	7.57	18.222	18.226	14.904	24.9	10.0	20.4	5.5	3.72	0.31	17.5	7.5	12.9
170	114.7	1.028	78.6	4.5	7.58	18.337	18.292	14.938	25.0	10.0	20.4	5.5	3.73	0.30	17.5	7.5	12.9
171	114.9	1.035	78.5	4.5	7.59	18.452	18.332	14.950	25.0	10.0	20.5	5.6	3.69	0.30	17.5	7.5	13.0
172	115.3	1.041	78.5	4.4	7.60	18.568	18.399	14.983	25.0	10.0	20.6	5.6	3.66	0.29	17.5	7.5	13.1
173	115.7	1.048	78.4	4.3	7.61	18.683	18.452	15.005	25.0	10.0	20.7	5.7	3.64	0.29	17.5	7.5	13.2
174	115.8	1.054	78.6	4.5	7.62	18.790	18.479	15.007	25.0	10.0	20.5	5.5	3.72	0.30	17.5	7.5	13.0
175	116.3	1.060	78.5	4.5	7.63	18.897	18.546	15.041	25.1	10.0	20.6	5.6	3.70	0.30	17.5	7.5	13.1
176	116.8	1.066	78.5	4.5	7.64	19.004	18.639	15.097	25.1	10.0	20.7	5.6	3.71	0.30	17.6	7.5	13.1
177	117.0	1.072	78.5	4.4	7.65	19.111	18.666	15.099	25.1	10.0	20.7	5.6	3.70	0.29	17.6	7.5	13.2
178	117.2	1.078	78.5	4.4	7.66	19.218	18.693	15.100	25.1	10.0	20.7	5.6	3.68	0.29	17.6	7.6	13.2
179	117.4	1.084	78.4	4.3	7.67	19.325	18.733	15.113	25.1	10.0	20.8	5.7	3.64	0.28	17.6	7.6	13.3
180	117.7	1.090	78.3	4.3	7.68	19.432	18.773	15.125	25.2	10.0	20.9	5.8	3.62	0.28	17.6	7.6	13.3
181	118.1	1.096	78.5	4.4	7.69	19.539	18.840	15.159	25.2	10.0	20.8	5.6	3.69	0.29	17.6	7.6	13.2
182	118.6	1.102	78.5	4.4	7.70	19.646	18.933	15.213	25.2	10.0	20.9	5.6	3.70	0.29	17.6	7.6	13.2



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	118.9	1.108	78.4	4.3	7.71	19.753	18.973	15.225	25.3	10.0	20.9	5.7	3.68	0.29	17.6	7.6	13.3
184	119.2	1.114	78.4	4.3	7.72	19.869	19.027	15.246	25.3	10.0	20.9	5.7	3.68	0.29	17.7	7.6	13.3
185	119.6	1.121	78.4	4.3	7.73	19.984	19.093	15.278	25.3	10.0	21.0	5.7	3.67	0.28	17.7	7.6	13.4
186	119.7	1.122	78.4	4.3	7.74	20.000	19.107	15.285	25.3	10.0	21.0	5.7	3.67	0.28	17.7	7.6	13.4



File Location
B-68 5PSI.HSD

Project Information

Project No. 08195-01
Project Name: I-85/I-385 Interchange
Client:
Sample Location: B-68
Sample Description: Red Elastic Silt
Remarks:

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 52.000
PL: 33.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.800	2.788	
Height (in)	5.647	5.594	
Weight (grams)	1074.90		1109.15
Moisture (%)	22.27		26.16
Dry Density (pcf)	96.32	98.10	
Saturation (%)	82.25	100.00	
Void Ratio	0.714	0.686	

Test Data

Rate of Strain: 0.002
Cell Pressure (psi): 102.000
Effective Confining Stress (psi): 20.0
Corrected Peak Deviator Stress (psi): 23.400 at reading number: 186

Specimen C

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
0	1.0	0.000	82.0	0.0	6.10	0.000	0.000	0.000	20.0	20.0	20.0	20.0	1.00	0.00	20.0	0.0	20.0
1	34.9	0.006	84.3	2.3	6.11	0.107	5.550	5.544	25.5	20.0	23.2	17.7	1.31	0.41	22.8	2.8	20.5
2	62.5	0.012	87.2	5.2	6.12	0.215	10.071	10.050	30.0	20.0	24.9	14.8	1.68	0.52	25.0	5.0	19.8
3	77.4	0.018	88.9	6.9	6.12	0.322	12.522	12.481	32.5	20.0	25.6	13.1	1.95	0.55	26.2	6.2	19.4
4	87.5	0.024	90.0	8.0	6.13	0.429	14.173	14.112	34.1	20.0	26.1	12.0	2.18	0.57	27.1	7.1	19.1
5	95.2	0.030	90.8	8.8	6.14	0.536	15.432	15.349	35.3	20.0	26.6	11.2	2.37	0.57	27.7	7.7	18.9
6	101.0	0.036	91.4	9.4	6.14	0.644	16.393	16.288	36.3	20.0	26.9	10.6	2.53	0.58	28.1	8.1	18.8
7	105.8	0.042	91.9	9.8	6.15	0.751	17.165	17.036	37.0	20.0	27.2	10.1	2.68	0.58	28.5	8.5	18.7
8	109.1	0.048	92.2	10.2	6.16	0.858	17.720	17.568	37.6	20.0	27.4	9.8	2.80	0.58	28.8	8.8	18.6
9	111.5	0.054	92.6	10.6	6.16	0.965	18.112	17.938	37.9	20.0	27.3	9.4	2.91	0.59	29.0	9.0	18.4
10	113.4	0.060	92.9	10.9	6.17	1.073	18.424	18.226	38.2	20.0	27.3	9.1	3.00	0.60	29.1	9.1	18.2
11	115.0	0.066	93.1	11.1	6.18	1.180	18.681	18.461	38.5	20.0	27.3	8.9	3.08	0.60	29.2	9.2	18.1
12	116.0	0.072	93.4	11.4	6.18	1.287	18.843	18.601	38.6	20.0	27.2	8.6	3.16	0.61	29.3	9.3	17.9
13	116.8	0.078	93.5	11.5	6.19	1.395	18.979	18.714	38.7	20.0	27.2	8.5	3.21	0.62	29.4	9.4	17.8
14	117.4	0.084	93.7	11.7	6.20	1.502	19.074	18.787	38.8	20.0	27.1	8.3	3.26	0.62	29.4	9.4	17.7
15	117.9	0.090	93.8	11.8	6.20	1.609	19.155	18.847	38.8	20.0	27.0	8.2	3.30	0.63	29.4	9.4	17.6
16	118.0	0.096	94.0	12.0	6.21	1.716	19.168	18.839	38.8	20.0	26.9	8.0	3.35	0.64	29.4	9.4	17.4
17	118.5	0.102	94.1	12.1	6.22	1.824	19.250	18.898	38.9	20.0	26.8	7.9	3.38	0.64	29.4	9.4	17.4
18	118.7	0.108	94.2	12.2	6.22	1.931	19.290	18.918	38.9	20.0	26.7	7.8	3.42	0.64	29.5	9.5	17.3



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
19	118.9	0.114	94.3	12.3	6.23	2.038	19.317	18.924	38.9	20.0	26.7	7.7	3.45	0.65	29.5	9.5	17.2
20	119.0	0.120	94.3	12.3	6.24	2.145	19.331	18.916	38.9	20.0	26.6	7.7	3.47	0.65	29.5	9.5	17.1
21	119.1	0.126	94.4	12.4	6.24	2.253	19.344	18.909	38.9	20.0	26.5	7.6	3.50	0.66	29.5	9.5	17.0
22	119.1	0.132	94.5	12.5	6.25	2.360	19.344	18.888	38.9	20.0	26.4	7.5	3.52	0.66	29.4	9.4	16.9
23	119.4	0.138	94.6	12.6	6.26	2.467	19.398	18.920	38.9	20.0	26.3	7.4	3.55	0.67	29.5	9.5	16.9
24	119.3	0.144	94.6	12.6	6.26	2.575	19.385	18.886	38.9	20.0	26.3	7.4	3.56	0.67	29.4	9.4	16.8
25	119.6	0.150	94.6	12.6	6.27	2.682	19.426	18.905	38.9	20.0	26.3	7.4	3.56	0.67	29.4	9.5	16.8
26	119.6	0.156	94.7	12.7	6.28	2.789	19.439	18.897	38.9	20.0	26.2	7.3	3.58	0.67	29.4	9.4	16.8
27	119.7	0.162	94.7	12.7	6.29	2.896	19.453	18.889	38.9	20.0	26.2	7.3	3.58	0.67	29.4	9.4	16.8
28	119.8	0.168	94.7	12.7	6.29	3.004	19.466	18.881	38.9	20.0	26.1	7.3	3.60	0.67	29.4	9.4	16.7
29	119.9	0.174	94.8	12.8	6.30	3.111	19.480	18.874	38.9	20.0	26.1	7.2	3.62	0.68	29.4	9.4	16.7
30	120.0	0.180	94.8	12.8	6.31	3.218	19.493	18.866	38.9	20.0	26.0	7.2	3.63	0.68	29.4	9.4	16.6
31	120.1	0.186	94.8	12.8	6.31	3.325	19.520	18.871	38.9	20.0	26.0	7.2	3.63	0.68	29.4	9.4	16.6
32	120.4	0.192	94.9	12.9	6.32	3.433	19.561	18.889	38.9	20.0	26.0	7.1	3.65	0.68	29.4	9.4	16.6
33	120.4	0.198	94.9	12.9	6.33	3.540	19.561	18.868	38.9	20.0	26.0	7.1	3.65	0.68	29.4	9.4	16.6
34	120.6	0.204	94.9	12.9	6.33	3.647	19.601	18.887	38.9	20.0	26.0	7.1	3.65	0.68	29.4	9.4	16.6
35	120.8	0.210	94.9	12.9	6.34	3.755	19.629	18.892	38.9	20.0	25.9	7.1	3.68	0.69	29.4	9.4	16.5
36	121.0	0.216	95.0	13.0	6.35	3.862	19.669	18.910	38.9	20.0	25.9	7.0	3.70	0.69	29.5	9.5	16.5
37	121.4	0.222	95.0	13.0	6.36	3.969	19.723	18.940	38.9	20.0	26.0	7.0	3.70	0.69	29.5	9.5	16.5
38	121.5	0.228	95.0	13.0	6.36	4.076	19.750	18.945	38.9	20.0	26.0	7.0	3.70	0.69	29.5	9.5	16.5
39	121.8	0.234	95.0	13.0	6.37	4.184	19.791	18.963	39.0	20.0	26.0	7.0	3.70	0.68	29.5	9.5	16.5
40	122.1	0.240	95.0	13.0	6.38	4.291	19.845	18.994	39.0	20.0	26.0	7.0	3.71	0.68	29.5	9.5	16.5
41	122.2	0.246	95.0	13.0	6.38	4.398	19.859	18.985	39.0	20.0	26.0	7.0	3.71	0.68	29.5	9.5	16.5
42	122.6	0.252	95.0	13.0	6.39	4.505	19.926	19.029	39.0	20.0	26.0	7.0	3.73	0.68	29.5	9.5	16.5
43	122.9	0.258	95.0	13.0	6.40	4.613	19.981	19.059	39.1	20.0	26.1	7.0	3.72	0.68	29.5	9.5	16.5
44	123.1	0.264	95.0	13.0	6.41	4.720	20.008	19.063	39.1	20.0	26.1	7.0	3.72	0.68	29.5	9.5	16.5
45	123.4	0.270	95.0	13.0	6.41	4.827	20.048	19.080	39.1	20.0	26.1	7.0	3.74	0.68	29.5	9.5	16.5
46	123.7	0.276	95.0	13.0	6.42	4.935	20.102	19.110	39.1	20.0	26.1	7.0	3.74	0.68	29.6	9.6	16.5
47	123.9	0.282	95.0	13.0	6.43	5.042	20.143	19.127	39.1	20.0	26.1	7.0	3.74	0.68	29.6	9.6	16.5
48	124.3	0.288	95.1	13.1	6.43	5.149	20.197	19.157	39.2	20.0	26.1	6.9	3.76	0.68	29.6	9.6	16.5
49	124.7	0.294	95.1	13.1	6.44	5.256	20.265	19.200	39.2	20.0	26.1	6.9	3.77	0.68	29.6	9.6	16.5
50	124.8	0.300	95.0	13.0	6.45	5.364	20.292	19.204	39.2	20.0	26.2	7.0	3.75	0.68	29.6	9.6	16.6
51	125.2	0.306	95.0	13.0	6.46	5.471	20.346	19.233	39.2	20.0	26.2	7.0	3.76	0.68	29.6	9.6	16.6
52	125.4	0.312	95.0	13.0	6.46	5.578	20.387	19.249	39.2	20.0	26.2	7.0	3.76	0.68	29.6	9.6	16.6
53	125.8	0.318	95.0	13.0	6.47	5.685	20.441	19.279	39.3	20.0	26.3	7.0	3.75	0.67	29.6	9.6	16.7
54	126.1	0.324	95.0	13.0	6.48	5.793	20.495	19.308	39.3	20.0	26.3	7.0	3.77	0.67	29.7	9.7	16.6
55	126.4	0.330	95.0	13.0	6.49	5.900	20.549	19.337	39.3	20.0	26.3	7.0	3.77	0.67	29.7	9.7	16.6
56	126.7	0.336	95.0	13.0	6.49	6.007	20.590	19.353	39.3	20.0	26.3	7.0	3.78	0.67	29.7	9.7	16.6
57	127.1	0.342	95.0	13.0	6.50	6.114	20.657	19.394	39.4	20.0	26.4	7.0	3.78	0.67	29.7	9.7	16.7
58	127.3	0.348	95.0	13.0	6.51	6.222	20.698	19.410	39.4	20.0	26.4	7.0	3.78	0.67	29.7	9.7	16.7
59	127.7	0.354	95.0	13.0	6.52	6.329	20.752	19.439	39.4	20.0	26.5	7.0	3.77	0.67	29.7	9.7	16.7



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Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
60	128.1	0.360	95.0	13.0	6.52	6.436	20.820	19.480	39.5	20.0	26.5	7.0	3.78	0.67	29.7	9.7	16.8
61	128.4	0.366	95.0	13.0	6.53	6.544	20.874	19.508	39.5	20.0	26.5	7.0	3.80	0.67	29.8	9.8	16.7
62	128.7	0.372	95.0	13.0	6.54	6.651	20.928	19.536	39.5	20.0	26.5	7.0	3.80	0.67	29.8	9.8	16.7
63	129.1	0.378	95.0	13.0	6.55	6.758	20.996	19.577	39.6	20.0	26.5	7.0	3.81	0.67	29.8	9.8	16.8
64	129.5	0.384	95.0	13.0	6.55	6.865	21.050	19.605	39.6	20.0	26.6	7.0	3.81	0.66	29.8	9.8	16.8
65	129.9	0.390	95.0	13.0	6.56	6.973	21.118	19.645	39.6	20.0	26.7	7.0	3.80	0.66	29.8	9.8	16.8
66	130.3	0.396	94.9	12.9	6.57	7.080	21.185	19.685	39.7	20.0	26.7	7.1	3.79	0.66	29.8	9.8	16.9
67	130.7	0.402	94.9	12.9	6.58	7.187	21.253	19.726	39.7	20.0	26.8	7.1	3.80	0.66	29.9	9.9	16.9
68	131.1	0.408	94.9	12.9	6.58	7.294	21.321	19.765	39.8	20.0	26.8	7.1	3.80	0.65	29.9	9.9	16.9
69	131.5	0.414	94.9	12.9	6.59	7.402	21.388	19.805	39.8	20.0	26.9	7.1	3.79	0.65	29.9	9.9	17.0
70	132.0	0.420	94.9	12.9	6.60	7.509	21.456	19.845	39.8	20.0	26.9	7.1	3.80	0.65	29.9	9.9	17.0
71	132.4	0.426	94.9	12.9	6.61	7.616	21.524	19.884	39.9	20.0	27.0	7.1	3.80	0.65	29.9	9.9	17.0
72	132.8	0.432	94.9	12.9	6.61	7.724	21.591	19.924	39.9	20.0	27.1	7.1	3.79	0.65	30.0	10.0	17.1
73	133.1	0.438	94.9	12.9	6.62	7.831	21.646	19.951	39.9	20.0	27.1	7.1	3.80	0.64	30.0	10.0	17.1
74	133.4	0.444	94.9	12.9	6.63	7.938	21.686	19.965	40.0	20.0	27.1	7.1	3.80	0.64	30.0	10.0	17.1
75	133.9	0.450	94.9	12.9	6.64	8.045	21.781	20.029	40.0	20.0	27.2	7.1	3.81	0.64	30.0	10.0	17.1
76	134.4	0.456	94.9	12.9	6.65	8.153	21.862	20.080	40.1	20.0	27.2	7.1	3.82	0.64	30.0	10.0	17.2
77	134.8	0.462	94.9	12.9	6.65	8.260	21.916	20.106	40.1	20.0	27.2	7.1	3.82	0.64	30.0	10.1	17.2
78	135.1	0.468	94.8	12.8	6.66	8.367	21.970	20.132	40.1	20.0	27.3	7.2	3.81	0.64	30.1	10.1	17.2
79	135.5	0.474	94.8	12.8	6.67	8.474	22.038	20.171	40.2	20.0	27.3	7.2	3.81	0.64	30.1	10.1	17.3
80	135.9	0.480	94.8	12.8	6.68	8.582	22.106	20.209	40.2	20.0	27.4	7.2	3.80	0.63	30.1	10.1	17.3
81	136.2	0.486	94.8	12.8	6.68	8.689	22.146	20.222	40.2	20.0	27.4	7.2	3.80	0.63	30.1	10.1	17.3
82	136.7	0.492	94.8	12.8	6.69	8.796	22.241	20.285	40.3	20.0	27.5	7.2	3.81	0.63	30.1	10.1	17.4
83	137.2	0.498	94.8	12.8	6.70	8.904	22.309	20.323	40.3	20.0	27.5	7.2	3.82	0.63	30.2	10.2	17.4
84	137.5	0.505	94.7	12.7	6.71	9.011	22.363	20.348	40.3	20.0	27.6	7.3	3.81	0.63	30.2	10.2	17.4
85	137.7	0.511	94.7	12.7	6.72	9.118	22.404	20.361	40.4	20.0	27.6	7.3	3.81	0.63	30.2	10.2	17.4
86	138.1	0.517	94.7	12.7	6.72	9.225	22.471	20.398	40.4	20.0	27.7	7.3	3.80	0.62	30.2	10.2	17.5
87	138.6	0.523	94.7	12.7	6.73	9.333	22.539	20.436	40.4	20.0	27.7	7.3	3.80	0.62	30.2	10.2	17.5
88	139.0	0.529	94.7	12.7	6.74	9.440	22.607	20.473	40.5	20.0	27.8	7.3	3.81	0.62	30.2	10.2	17.5
89	139.5	0.535	94.7	12.7	6.75	9.547	22.688	20.522	40.5	20.0	27.8	7.3	3.81	0.62	30.3	10.3	17.6
90	139.8	0.541	94.7	12.7	6.76	9.654	22.742	20.546	40.5	20.0	27.9	7.3	3.80	0.62	30.3	10.3	17.6
91	140.2	0.547	94.7	12.7	6.76	9.762	22.810	20.583	40.6	20.0	27.9	7.3	3.81	0.62	30.3	10.3	17.6
92	140.5	0.553	94.6	12.6	6.77	9.869	22.850	20.595	40.6	20.0	28.0	7.4	3.79	0.61	30.3	10.3	17.7
93	140.9	0.559	94.6	12.6	6.78	9.976	22.918	20.632	40.6	20.0	28.0	7.4	3.78	0.61	30.3	10.3	17.7
94	141.2	0.565	94.6	12.6	6.79	10.084	22.972	20.656	40.7	20.0	28.1	7.4	3.79	0.61	30.3	10.3	17.7
95	141.7	0.571	94.6	12.6	6.80	10.191	23.053	20.704	40.7	20.0	28.1	7.4	3.79	0.61	30.3	10.4	17.8
96	142.2	0.577	94.6	12.6	6.80	10.298	23.135	20.752	40.7	20.0	28.2	7.4	3.80	0.61	30.4	10.4	17.8
97	142.6	0.583	94.6	12.6	6.81	10.405	23.202	20.788	40.8	20.0	28.2	7.4	3.80	0.61	30.4	10.4	17.8
98	142.9	0.589	94.5	12.5	6.82	10.513	23.256	20.812	40.8	20.0	28.3	7.5	3.79	0.60	30.4	10.4	17.9
99	143.4	0.595	94.5	12.5	6.83	10.620	23.324	20.847	40.8	20.0	28.3	7.5	3.78	0.60	30.4	10.4	17.9
100	143.8	0.601	94.5	12.5	6.84	10.727	23.392	20.883	40.9	20.0	28.4	7.5	3.77	0.60	30.4	10.4	18.0



Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
101	144.1	0.607	94.5	12.5	6.85	10.834	23.446	20.906	40.9	20.0	28.4	7.5	3.79	0.60	30.4	10.5	17.9
102	144.6	0.613	94.5	12.5	6.85	10.942	23.527	20.953	40.9	20.0	28.4	7.5	3.80	0.60	30.5	10.5	18.0
103	145.0	0.619	94.5	12.5	6.86	11.049	23.595	20.988	41.0	20.0	28.5	7.5	3.80	0.60	30.5	10.5	18.0
104	145.4	0.625	94.5	12.5	6.87	11.156	23.663	21.023	41.0	20.0	28.6	7.5	3.79	0.59	30.5	10.5	18.0
105	145.8	0.631	94.4	12.4	6.88	11.264	23.730	21.057	41.1	20.0	28.6	7.6	3.78	0.59	30.5	10.5	18.1
106	146.3	0.637	94.4	12.4	6.89	11.371	23.811	21.104	41.1	20.0	28.7	7.6	3.79	0.59	30.5	10.6	18.1
107	146.6	0.643	94.4	12.4	6.90	11.478	23.852	21.114	41.1	20.0	28.7	7.6	3.77	0.59	30.6	10.6	18.2
108	147.1	0.649	94.4	12.4	6.90	11.585	23.933	21.161	41.2	20.0	28.8	7.6	3.78	0.59	30.6	10.6	18.2
109	147.4	0.655	94.4	12.4	6.91	11.693	23.987	21.183	41.2	20.0	28.8	7.6	3.78	0.58	30.6	10.6	18.2
110	147.8	0.661	94.4	12.4	6.92	11.800	24.055	21.217	41.2	20.0	28.8	7.6	3.79	0.58	30.6	10.6	18.2
111	148.3	0.667	94.3	12.3	6.93	11.907	24.136	21.262	41.3	20.0	28.9	7.7	3.78	0.58	30.6	10.6	18.3
112	148.7	0.673	94.3	12.3	6.94	12.014	24.204	21.296	41.3	20.0	29.0	7.7	3.77	0.58	30.6	10.6	18.3
113	149.1	0.679	94.3	12.3	6.95	12.122	24.272	21.330	41.3	20.0	29.0	7.7	3.77	0.58	30.7	10.7	18.4
114	149.7	0.685	94.3	12.3	6.95	12.229	24.366	21.387	41.4	20.0	29.1	7.7	3.78	0.58	30.7	10.7	18.4
115	150.1	0.691	94.3	12.3	6.96	12.336	24.434	21.420	41.4	20.0	29.1	7.7	3.78	0.57	30.7	10.7	18.4
116	150.5	0.697	94.3	12.3	6.97	12.444	24.502	21.453	41.4	20.0	29.2	7.7	3.77	0.57	30.7	10.7	18.5
117	151.1	0.703	94.3	12.3	6.98	12.551	24.597	21.510	41.5	20.0	29.2	7.7	3.78	0.57	30.8	10.8	18.5
118	151.4	0.709	94.2	12.2	6.99	12.658	24.637	21.519	41.5	20.0	29.3	7.8	3.77	0.57	30.8	10.8	18.5
119	151.8	0.715	94.2	12.2	7.00	12.765	24.705	21.551	41.5	20.0	29.3	7.8	3.77	0.57	30.8	10.8	18.6
120	152.2	0.721	94.2	12.2	7.01	12.873	24.773	21.584	41.6	20.0	29.4	7.8	3.76	0.56	30.8	10.8	18.6
121	152.4	0.727	94.2	12.2	7.01	12.980	24.813	21.592	41.6	20.0	29.4	7.8	3.78	0.57	30.8	10.8	18.6
122	152.9	0.733	94.1	12.1	7.02	13.087	24.894	21.636	41.6	20.0	29.5	7.9	3.75	0.56	30.8	10.8	18.7
123	153.3	0.739	94.1	12.1	7.03	13.194	24.949	21.657	41.7	20.0	29.5	7.9	3.76	0.56	30.8	10.8	18.7
124	153.6	0.745	94.1	12.1	7.04	13.302	25.003	21.677	41.7	20.0	29.6	7.9	3.73	0.56	30.8	10.8	18.8
125	154.0	0.751	94.0	12.0	7.05	13.409	25.070	21.709	41.7	20.0	29.7	8.0	3.72	0.55	30.9	10.9	18.8
126	154.4	0.757	94.0	12.0	7.06	13.516	25.138	21.740	41.7	20.0	29.8	8.0	3.71	0.55	30.9	10.9	18.9
127	154.7	0.763	94.0	12.0	7.07	13.624	25.179	21.748	41.7	20.0	29.8	8.0	3.71	0.55	30.9	10.9	18.9
128	155.2	0.769	94.0	12.0	7.08	13.731	25.260	21.792	41.8	20.0	29.8	8.0	3.72	0.55	30.9	10.9	18.9
129	155.5	0.775	94.0	12.0	7.08	13.838	25.314	21.811	41.8	20.0	29.8	8.0	3.72	0.55	30.9	10.9	18.9
130	156.0	0.781	93.9	11.9	7.09	13.945	25.395	21.854	41.9	20.0	29.9	8.1	3.71	0.55	30.9	10.9	19.0
131	156.3	0.787	93.9	11.9	7.10	14.053	25.449	21.873	41.9	20.0	30.0	8.1	3.70	0.54	30.9	10.9	19.0
132	156.7	0.793	93.9	11.9	7.11	14.160	25.517	21.904	41.9	20.0	30.0	8.1	3.70	0.54	30.9	11.0	19.0
133	157.2	0.799	93.9	11.9	7.12	14.267	25.585	21.935	41.9	20.0	30.1	8.1	3.70	0.54	31.0	11.0	19.1
134	157.6	0.805	93.9	11.9	7.13	14.374	25.666	21.977	42.0	20.0	30.1	8.1	3.71	0.54	31.0	11.0	19.1
135	158.0	0.811	93.9	11.9	7.14	14.482	25.720	21.995	42.0	20.0	30.1	8.1	3.72	0.54	31.0	11.0	19.1
136	158.5	0.817	93.9	11.9	7.15	14.589	25.801	22.037	42.0	20.0	30.1	8.1	3.72	0.54	31.0	11.0	19.1
137	158.8	0.823	93.9	11.9	7.16	14.696	25.856	22.056	42.1	20.0	30.2	8.1	3.72	0.54	31.0	11.0	19.1
138	159.2	0.829	93.9	11.9	7.16	14.804	25.923	22.086	42.1	20.0	30.2	8.1	3.71	0.54	31.0	11.0	19.2
139	159.6	0.835	93.8	11.8	7.17	14.911	25.991	22.115	42.1	20.0	30.3	8.2	3.70	0.53	31.1	11.1	19.2
140	160.1	0.841	93.8	11.8	7.18	15.018	26.072	22.157	42.2	20.0	30.3	8.2	3.71	0.53	31.1	11.1	19.3
141	160.5	0.847	93.9	11.9	7.19	15.125	26.140	22.186	42.2	20.0	30.3	8.1	3.73	0.53	31.1	11.1	19.2



Florence & Hutcheson

CONSULTING ENGINEERS

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
142	161.0	0.853	93.8	11.8	7.20	15.233	26.221	22.227	42.2	20.0	30.4	8.2	3.72	0.53	31.1	11.1	19.3
143	161.4	0.859	93.8	11.8	7.21	15.340	26.289	22.256	42.3	20.0	30.4	8.2	3.72	0.53	31.1	11.1	19.3
144	161.9	0.865	93.8	11.8	7.22	15.447	26.356	22.285	42.3	20.0	30.5	8.2	3.71	0.53	31.1	11.1	19.4
145	162.4	0.871	93.8	11.8	7.23	15.554	26.438	22.325	42.3	20.0	30.5	8.2	3.72	0.53	31.2	11.2	19.4
146	162.6	0.877	93.7	11.7	7.24	15.662	26.478	22.331	42.3	20.0	30.6	8.3	3.70	0.53	31.2	11.2	19.4
147	163.1	0.883	93.7	11.7	7.25	15.769	26.559	22.371	42.4	20.0	30.6	8.3	3.71	0.52	31.2	11.2	19.4
148	163.8	0.889	93.7	11.7	7.26	15.876	26.668	22.434	42.4	20.0	30.7	8.3	3.72	0.52	31.2	11.2	19.5
149	164.0	0.895	93.7	11.7	7.26	15.983	26.708	22.439	42.4	20.0	30.7	8.3	3.70	0.52	31.2	11.2	19.5
150	164.4	0.901	93.7	11.7	7.27	16.091	26.776	22.468	42.5	20.0	30.8	8.3	3.71	0.52	31.2	11.2	19.5
151	164.9	0.907	93.7	11.7	7.28	16.198	26.857	22.507	42.5	20.0	30.8	8.3	3.70	0.52	31.2	11.3	19.6
152	165.3	0.913	93.7	11.7	7.29	16.305	26.925	22.535	42.5	20.0	30.9	8.3	3.70	0.52	31.3	11.3	19.6
153	165.7	0.919	93.6	11.6	7.30	16.413	26.993	22.562	42.6	20.0	30.9	8.4	3.69	0.51	31.3	11.3	19.7
154	166.1	0.925	93.6	11.6	7.31	16.520	27.047	22.579	42.6	20.0	31.0	8.4	3.69	0.51	31.3	11.3	19.7
155	166.5	0.931	93.6	11.6	7.32	16.627	27.115	22.606	42.6	20.0	31.0	8.4	3.70	0.51	31.3	11.3	19.7
156	166.9	0.937	93.6	11.6	7.33	16.734	27.182	22.633	42.6	20.0	31.0	8.4	3.70	0.51	31.3	11.3	19.7
157	167.2	0.943	93.6	11.6	7.34	16.842	27.236	22.649	42.6	20.0	31.1	8.4	3.69	0.51	31.3	11.3	19.7
158	167.6	0.949	93.5	11.5	7.35	16.949	27.304	22.676	42.7	20.0	31.1	8.5	3.68	0.51	31.3	11.3	19.8
159	168.1	0.955	93.5	11.5	7.36	17.056	27.372	22.703	42.7	20.0	31.2	8.5	3.68	0.51	31.3	11.4	19.8
160	168.5	0.961	93.5	11.5	7.37	17.163	27.439	22.730	42.7	20.0	31.2	8.5	3.67	0.51	31.4	11.4	19.9
161	168.9	0.967	93.5	11.5	7.38	17.271	27.507	22.756	42.8	20.0	31.2	8.5	3.69	0.51	31.4	11.4	19.8
162	169.4	0.973	93.5	11.5	7.39	17.378	27.588	22.794	42.8	20.0	31.3	8.5	3.68	0.50	31.4	11.4	19.9
163	169.9	0.979	93.5	11.5	7.40	17.485	27.670	22.831	42.8	20.0	31.4	8.5	3.67	0.50	31.4	11.4	20.0
164	170.4	0.985	93.5	11.5	7.41	17.593	27.751	22.869	42.9	20.0	31.4	8.5	3.68	0.50	31.4	11.4	20.0
165	170.7	0.991	93.4	11.4	7.42	17.700	27.805	22.883	42.9	20.0	31.5	8.6	3.67	0.50	31.4	11.4	20.0
166	171.1	0.997	93.4	11.4	7.43	17.807	27.873	22.909	42.9	20.0	31.5	8.6	3.66	0.50	31.5	11.5	20.1
167	171.6	1.003	93.4	11.4	7.44	17.914	27.954	22.946	42.9	20.0	31.6	8.6	3.66	0.50	31.5	11.5	20.1
168	172.0	1.009	93.4	11.4	7.45	18.030	28.021	22.969	43.0	20.0	31.6	8.6	3.66	0.50	31.5	11.5	20.1
169	172.5	1.015	93.4	11.4	7.46	18.145	28.103	23.003	43.0	20.0	31.6	8.6	3.67	0.49	31.5	11.5	20.1
170	172.8	1.022	93.3	11.3	7.47	18.261	28.157	23.015	43.0	20.0	31.7	8.7	3.66	0.49	31.5	11.5	20.2
171	173.3	1.028	93.3	11.3	7.48	18.376	28.238	23.049	43.0	20.0	31.7	8.7	3.65	0.49	31.5	11.5	20.2
172	173.8	1.035	93.3	11.3	7.49	18.492	28.306	23.071	43.1	20.0	31.8	8.7	3.64	0.49	31.5	11.5	20.3
173	174.2	1.041	93.2	11.2	7.50	18.608	28.373	23.094	43.1	20.0	31.9	8.8	3.63	0.49	31.5	11.5	20.3
174	174.6	1.048	93.3	11.3	7.51	18.723	28.441	23.116	43.1	20.0	31.9	8.7	3.64	0.49	31.6	11.6	20.3
175	174.9	1.054	93.2	11.2	7.52	18.830	28.495	23.130	43.1	20.0	31.9	8.8	3.63	0.48	31.6	11.6	20.3
176	175.4	1.060	93.2	11.2	7.53	18.938	28.576	23.165	43.2	20.0	31.9	8.8	3.64	0.48	31.6	11.6	20.4
177	175.7	1.066	93.2	11.2	7.54	19.045	28.631	23.178	43.2	20.0	32.0	8.8	3.63	0.48	31.6	11.6	20.4
178	176.2	1.072	93.2	11.2	7.55	19.152	28.698	23.202	43.2	20.0	32.0	8.8	3.63	0.48	31.6	11.6	20.4
179	176.6	1.078	93.1	11.1	7.56	19.259	28.766	23.226	43.2	20.0	32.1	8.9	3.62	0.48	31.6	11.6	20.5
180	176.9	1.084	93.1	11.1	7.57	19.367	28.820	23.239	43.2	20.0	32.1	8.9	3.62	0.48	31.6	11.6	20.5
181	177.6	1.090	93.1	11.1	7.58	19.474	28.928	23.295	43.3	20.0	32.2	8.9	3.63	0.48	31.6	11.6	20.5
182	177.8	1.096	93.1	11.1	7.59	19.581	28.969	23.297	43.3	20.0	32.2	8.9	3.62	0.48	31.6	11.6	20.5



Florence & Hutcheson

CONSULTING ENGINEERS

Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
183	178.3	1.102	93.1	11.1	7.60	19.688	29.050	23.331	43.3	20.0	32.2	8.9	3.62	0.48	31.7	11.7	20.6
184	178.8	1.108	93.1	11.1	7.61	19.796	29.132	23.365	43.4	20.0	32.3	8.9	3.61	0.47	31.7	11.7	20.6
185	179.1	1.114	93.0	11.0	7.62	19.911	29.186	23.374	43.4	20.0	32.4	9.0	3.60	0.47	31.7	11.7	20.7
186	179.5	1.120	93.0	11.0	7.63	20.010	29.253	23.400	43.4	20.0	32.4	9.0	3.59	0.47	31.7	11.7	20.7



Florence & Hutcheson

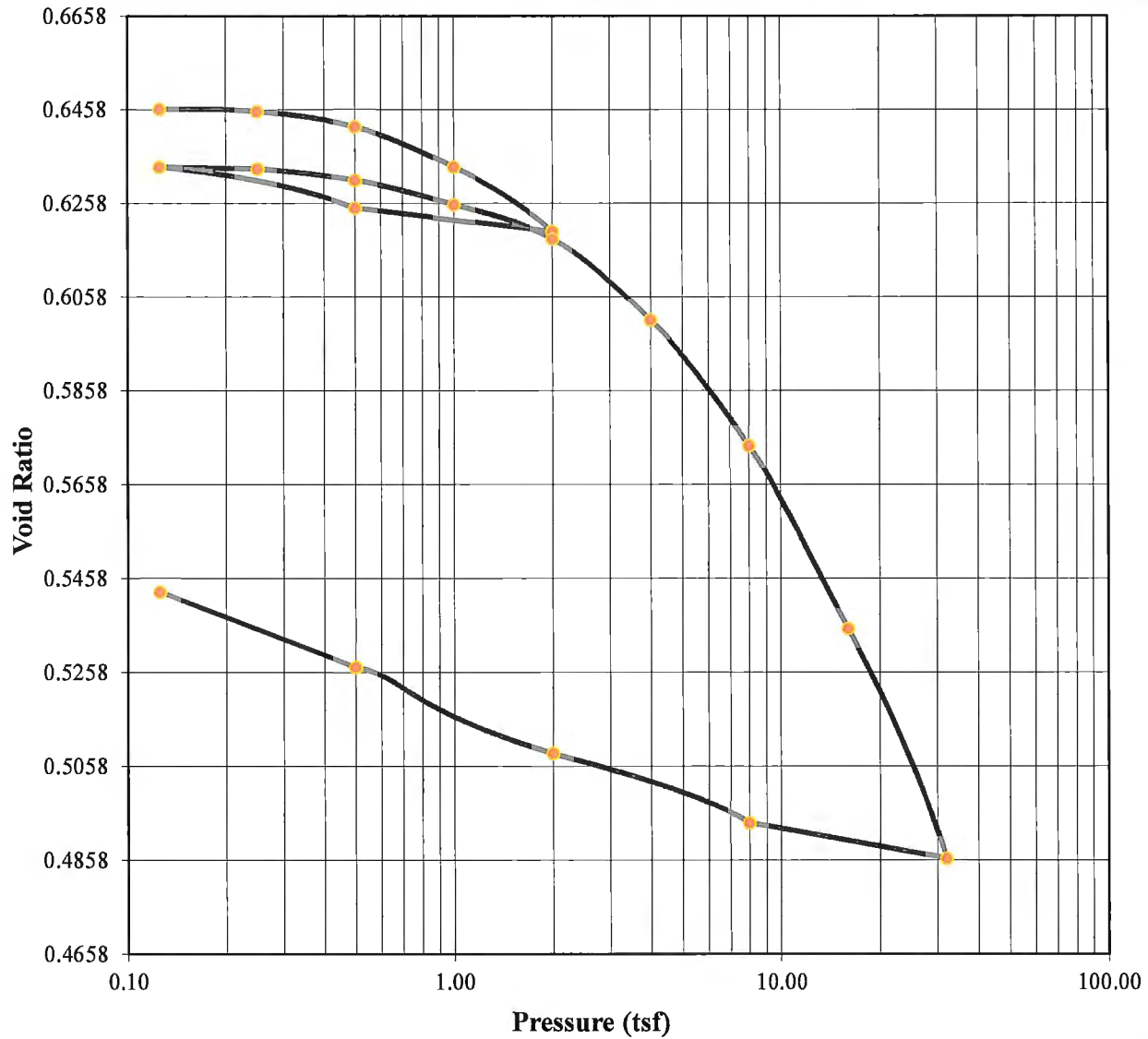
An **ICA** Company

Project Name : I-85/I-385 Interchange
Location : Greenville County, South Carolina
Job Number : 08195-01
Project Job No. : 08195-01

Consolidation Summary

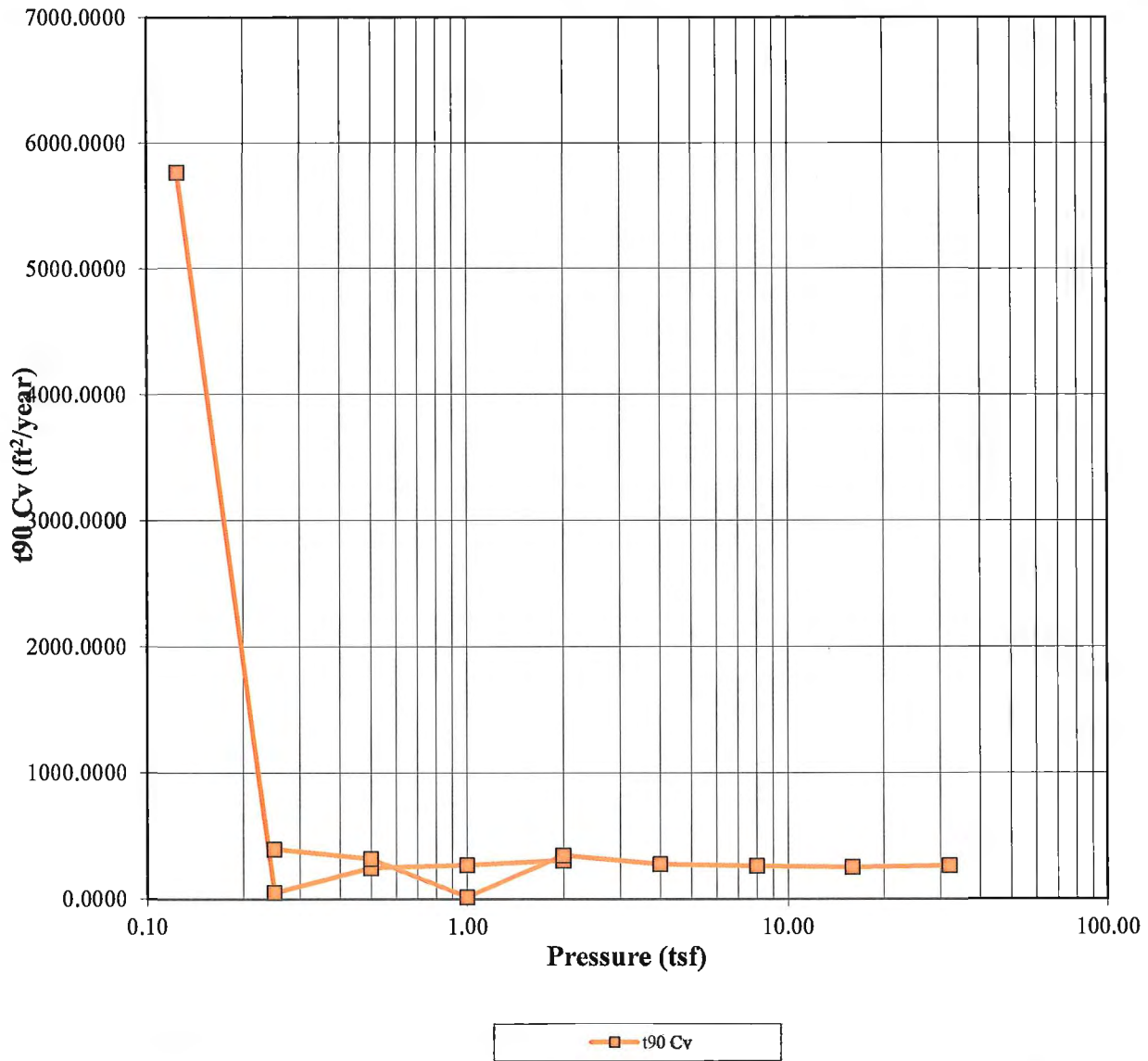
Boring Number	Sample Number	Depth (ft)	ASTM Classification	Overburden Pressure (tsf)	Preconsol. Pressure (tsf)	OCR	Compression Index, C_c	Rebound Index, C_r
B-39	ST-2	9-9.2	CL	0.47	3.4	7.23	0.15	0.12
B-40	St-1	6-6.5	SM	0.27	4.5	16.48	0.2	0.01
B-61	ST-1	2.5-3	SM	0.14	3.6	25.71	0.11	0.01
B-65	ST-2	11-11.4	SM	0.42	1.9	4.55	0.47	0.04
B-67	ST-1	4.5-4.7	SM	0.22	3.2	14.86	0.13	0.01
B-74	ST-1	5-5.3	ML	0.2	0.69	3.43	0.34	0.02

Consolidation Test Test Results



Summary of Consoliation Test Results				Test Date: 10/26/12
Overburden Pressure (tsf)	0.47	Compression Index, Cc	0.15	
Preconsol. Pressure (tsf)	3.40	Rebound Index, Cr	0.12	
Over Consolidation Ratio	7.23			
Soil Description: Red & Yellow Sandy Lean Clay				
Project Number:	08195-01	Depth:	9.0' to 9.2'	
Sample Number:	ST-2	Boring Number:	B-39	
Project:	I-85/ I 385 Interchange			
Client:				
Location:	B-39 ST-2 9.0' to 9.2'			
Remarks:				

Consolidation Test Test Results



	Before	After	Liquid Limits:	47	Test Date:	10/26/12
Moisture (%):	18.19	18.97	Plastic Limits:	25		
Dry Density (pcf):	102.53	114.07	Plasticity Index (%):	22		
Saturation (%):	76.44	107.56				
Void Ratio:	0.6410	0.4680	Specific Gravity:	2.696	Measured	
Soil Description:	Red & Yellow Sandy Lean Clay					
Project Number:	08195-01		Depth:	9.0' to 9.2'		
Sample Number:	ST-2		Boring Number:	B-39		
Project:	I-85/ I 385 Interchange					
Client:						
Location:	B-39 ST-2 9.0' to 9.2'					
					Remarks:	

Consolidation Test Results Summary

Project: I-85/1385 Interchange
 Location: B-39 ST-2 9.0' to 9.2'
 Job Number: 08195-01

Project Number: 08195-01

Sample Number: ST-2
 Boring Number: B-39
 Depth: 9.0' to 9.2'
 Sample Type: Undisturbed

Sample Description:
 Red & Yellow Sandy Lean Clay
 Remarks:

Test Number:
 Test Date: 10/26/12

Index	Load Sequence (tsf)	Cumulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft ² /year)	t50 Cv (ft ² /year)
0	0.000	0.0000	0.9995	0.3895	0.00	0.6386	0.000	0.000	0.000	0.000
1	0.125	-0.0045	1.0040	0.3940	-0.45	0.6460	0.135	* 0.0752	5761.453	2409.621
2	0.250	-0.0042	1.0037	0.3937	-0.42	0.6455	14.858	* 8.2542	52.467	21.940
3	0.500	-0.0022	1.0017	0.3917	-0.22	0.6422	3.106	* 1.7254	250.000	104.541
4	1.000	0.0031	0.9964	0.3864	0.31	0.6336	2.822	* 1.5677	272.252	113.842
5	2.000	0.0114	0.9881	0.3781	1.14	0.6199	2.446	* 1.3586	308.937	129.184
6	0.500	0.0084	0.9911	0.3811	0.84	0.6249	0.000	0.000	0.000	0.000
7	0.125	0.0031	0.9964	0.3864	0.31	0.6336	0.000	0.000	0.000	0.000
8	0.250	0.0033	0.9962	0.3862	0.33	0.6332	1.927	* 1.0706	398.506	166.634
9	0.500	0.0048	0.9947	0.3847	0.48	0.6308	2.384	* 1.3246	321.108	134.276
10	1.000	0.0079	0.9916	0.3816	0.79	0.6257	39.018	* 21.6769	19.500	8.154
11	2.000	0.0124	0.9871	0.3771	1.24	0.6183	2.158	* 1.1988	349.415	146.108
12	4.000	0.0230	0.9765	0.3665	2.30	0.6009	2.656	* 1.4756	277.795	116.165
13	8.000	0.0393	0.9602	0.3502	3.93	0.5742	2.700	* 1.5002	264.200	110.477
14	16.000	0.0631	0.9364	0.3264	6.31	0.5352	2.652	* 1.4730	255.898	107.009
15	32.000	0.0930	0.9065	0.2965	9.30	0.4862	2.381	* 1.3225	267.104	111.696
16	8.000	0.0883	0.9112	0.3012	8.83	0.4939	0.000	0.000	0.000	0.000
17	2.000	0.0793	0.9202	0.3102	7.93	0.5086	0.000	0.000	0.000	0.000
18	0.500	0.0681	0.9314	0.3214	6.81	0.5270	0.000	0.000	0.000	0.000
19	0.125	0.1054	0.8941	0.2841	5.97	0.5430	0.000	0.000	0.000	0.000

Predicted value indicated with *

Tested By: MR

Checked By: JS

Consolidation Test
Consolidation Specimen Information

Project: I-85/ I 385 Interchange
Location: B-39 ST-2 9.0' to 9.2'
Job Number: 08195-01

Project Number: 08195-01
Test Date: 10/26/12

Sample Number: ST-2
Boring Number: B-39
Depth: 9.0' to 9.2'
Sample Type: Undisturbed

Sample Description:
Red & Yellow Sandy Lean Clay
Remarks:

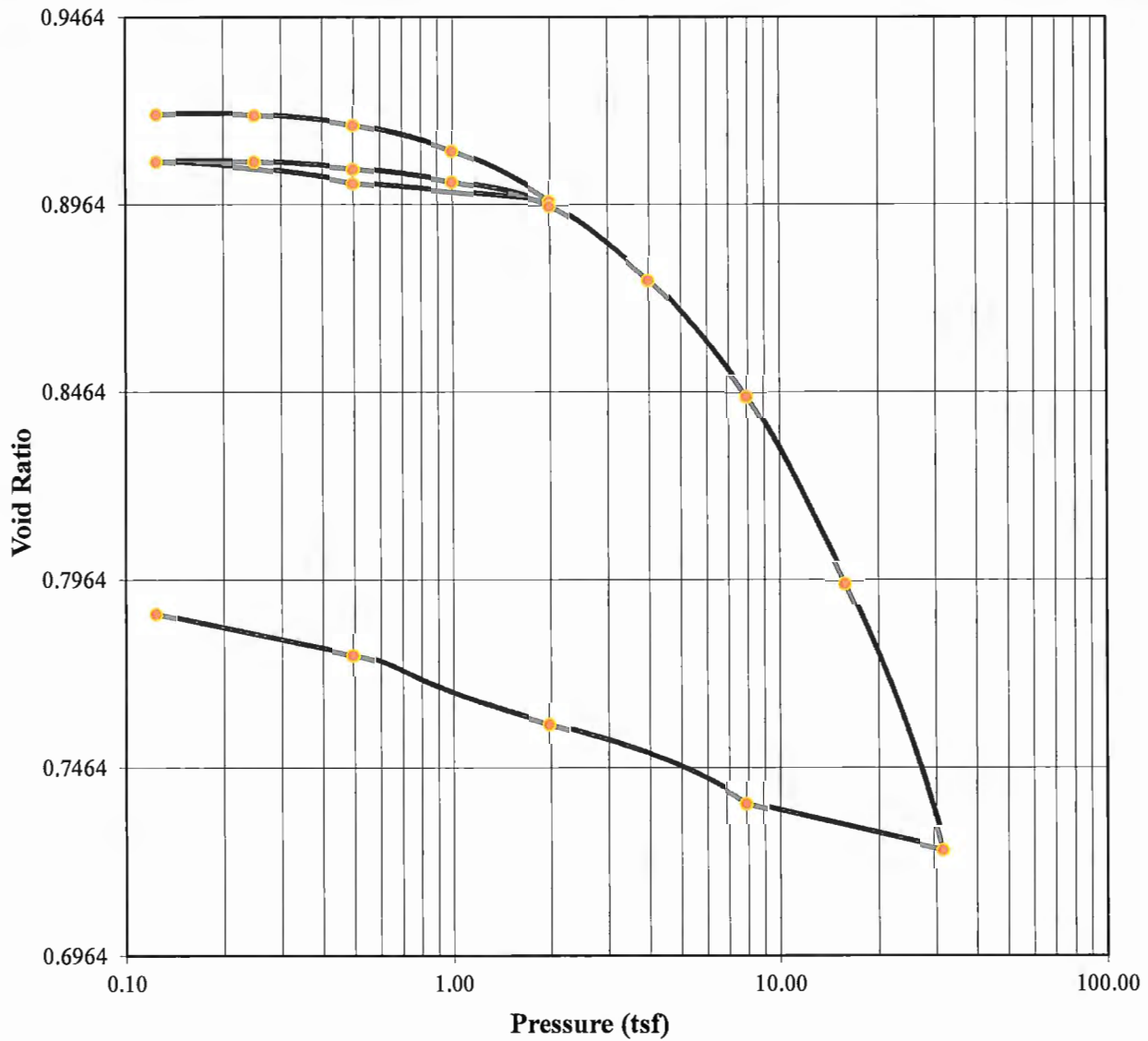
Test Number:
Liquid Limit: 47.0000 **Initial Void Ratio:** 0.6410 **Initial Height (in):** 0.9995
Plastic Limit: 25.0000 **Plasticity Index (%):** 22.0000 **Initial Diameter (in):** 2.4983
Specific Gravity: 2.6960 **Weight of Ring (g):** 109.6000
Measured

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	331.13	232.26
Dry Soil + Container (g)	291.61	207.40
Weight of Container (g)	74.40	76.38
Moisture Content (%)	18.19	18.97
Void Ratio	0.6410	0.4680
Saturation (%)	76.44	107.56
Dry Density (pcf)	102.53	114.07

Tested By: MR

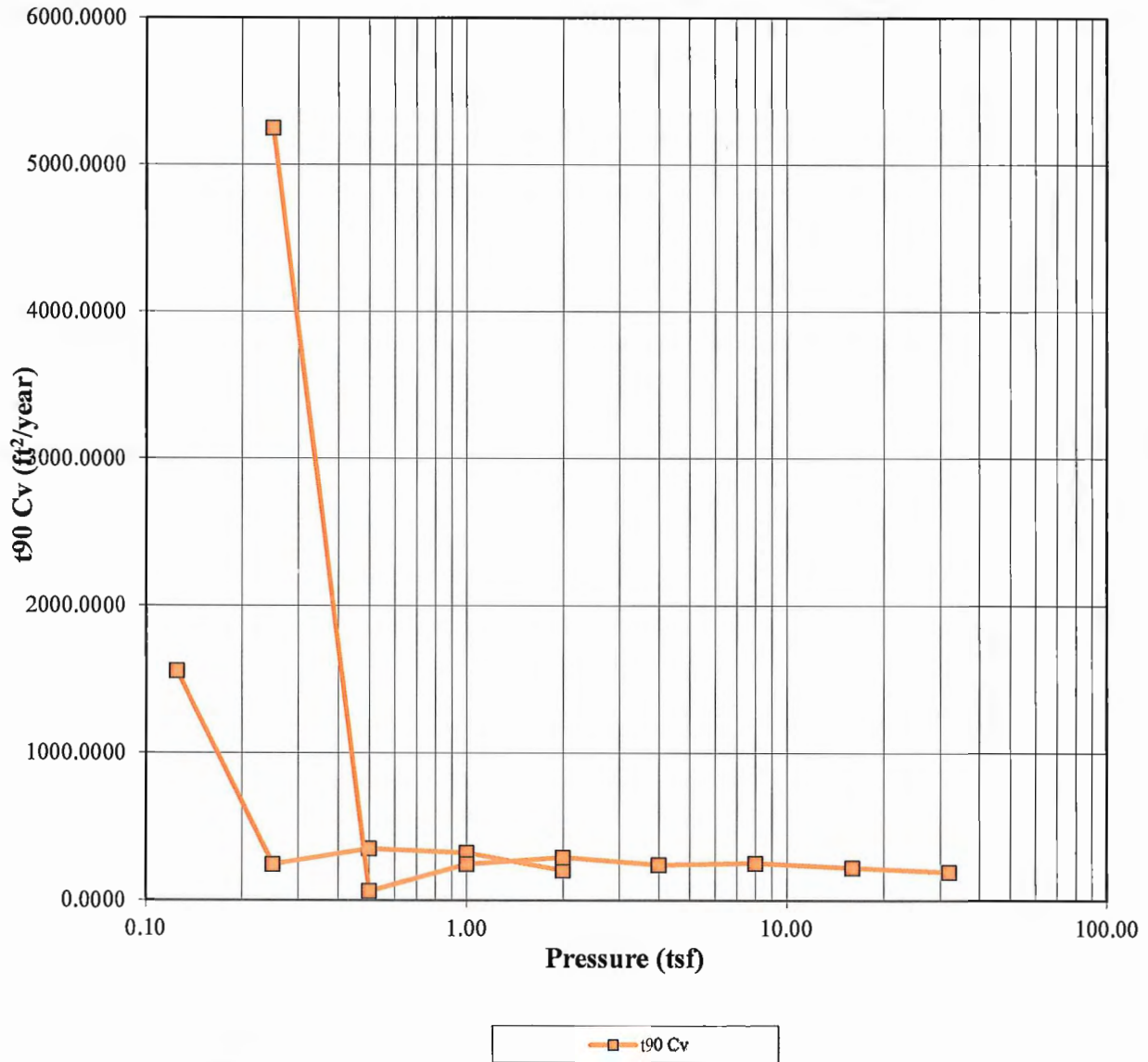
Checked By: JS

Consolidation Test Test Results



Summary of Consoliation Test Results				Test Date: 11/19/12
Overburden Pressure (tsf)	0.27	Compression Index, Cc	0.20	
Preconsol. Pressure (tsf)	4.50	Rebound Index, Cr	0.01	
Over Consolidation Ratio	16.48			
Soil Description: Red Silty Sand				
Project Number:	08195-01	Depth:	6.0' to 6.5'	
Sample Number:	ST-1	Boring Number:	B-40	
Project:	I-85/I-385 Interchange			
Client:				
Location:	B-40 ST-1 6.0' to 6.5'			
Remarks:				

Consolidation Test Test Results



	Before	After	Liquid Limits:	59	Test Date:	11/19/12
Moisture (%):	30.42	29.10	Plastic Limits:	41		
Dry Density (pcf):	87.49	98.91	Plasticity Index (%):	18		
Saturation (%):	89.15	112.42				
Void Ratio:	0.9160	0.6990	Specific Gravity:	2.686	Measured	
Soil Description:	Red Silty Sand					
Project Number:	08195-01	Depth: 6.0' to 6.5'	Remarks:			
Sample Number:	ST-1	Boring Number: B-40				
Project:	I-85/I-385 Interchange					
Client:						
Location:	B-40 ST-1 6.0' to 6.5'					

Consolidation Test Results Summary

Project: I-85/I-385 Interchange
 Location: B-40 ST-1 6.0' to 6.5'
 Job Number: 08195-01

Project Number: 08195-01

Sample Number: ST-1
 Boring Number: B-40
 Depth: 6.0' to 6.5'
 Sample Type: Undisturbed

Sample Description:
 Red Silty Sand
 Remarks:

Test Number:
 Test Date: 11/19/12

Index	Load Sequence (tsf)	Cumulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft ² /year)	t50 Cv (ft ² /year)
0	0.000	0.0000	1.0020	0.4783	0.00	0.9132	0.000	0.000	0.000	0.000
1	0.125	-0.0040	1.0060	0.4823	-0.40	0.9208	0.502	* 0.2791	1558.923	651.831
2	0.250	-0.0039	1.0059	0.4822	-0.39	0.9206	3.177	* 1.7650	246.442	103.054
3	0.500	-0.0025	1.0045	0.4808	-0.25	0.9179	2.215	* 1.2303	352.572	147.431
4	1.000	0.0011	1.0009	0.4772	0.11	0.9111	2.397	* 1.3314	323.462	135.261
5	2.000	0.0081	0.9939	0.4702	0.81	0.8977	3.726	* 2.0699	205.158	85.790
6	0.500	0.0056	0.9964	0.4727	0.56	0.9025	0.000	0.000	0.000	0.000
7	0.125	0.0026	0.9994	0.4757	0.26	0.9082	0.000	0.000	0.000	0.000
8	0.250	0.0026	0.9994	0.4757	0.26	0.9082	0.147	* 0.0818	5247.203	2194.949
9	0.500	0.0036	0.9984	0.4747	0.36	0.9063	12.087	* 6.7148	63.817	26.685
10	1.000	0.0054	0.9966	0.4729	0.54	0.9028	3.105	* 1.7252	247.492	103.491
11	2.000	0.0088	0.9932	0.4695	0.88	0.8964	2.606	* 1.4476	292.934	122.497
12	4.000	0.0191	0.9829	0.4592	1.91	0.8767	3.077	* 1.7093	242.977	101.601
13	8.000	0.0354	0.9666	0.4429	3.53	0.8456	2.839	* 1.5774	254.627	106.476
14	16.000	0.0614	0.9406	0.4169	6.13	0.7959	3.079	* 1.7106	222.338	92.974
15	32.000	0.0985	0.9035	0.3798	9.83	0.7251	3.240	* 1.8001	194.949	81.519
16	8.000	0.0921	0.9099	0.3862	9.19	0.7373	0.000	0.000	0.000	0.000
17	2.000	0.0811	0.9209	0.3972	8.09	0.7583	0.000	0.000	0.000	0.000
18	0.500	0.0715	0.9305	0.4068	7.14	0.7766	0.000	0.000	0.000	0.000
19	0.125	0.1135	0.8885	0.3648	6.71	0.7875	0.000	0.000	0.000	0.000

Predicted value indicated with *

Tested By: *MTC*

Checked By: *JS*

Consolidation Test Consolidation Specimen Information

Project: I-85/I-385 Interchange
 Location: B-40 ST-1 6.0' to 6.5'
 Job Number: 08195-01

Project Number: 08195-01

Test Date: 11/19/12

Sample Number: ST-1
 Boring Number: B-40
 Depth: 6.0' to 6.5'
 Sample Type: Undisturbed

Sample Description:
 Red Silty Sand
 Remarks:

Test Number:

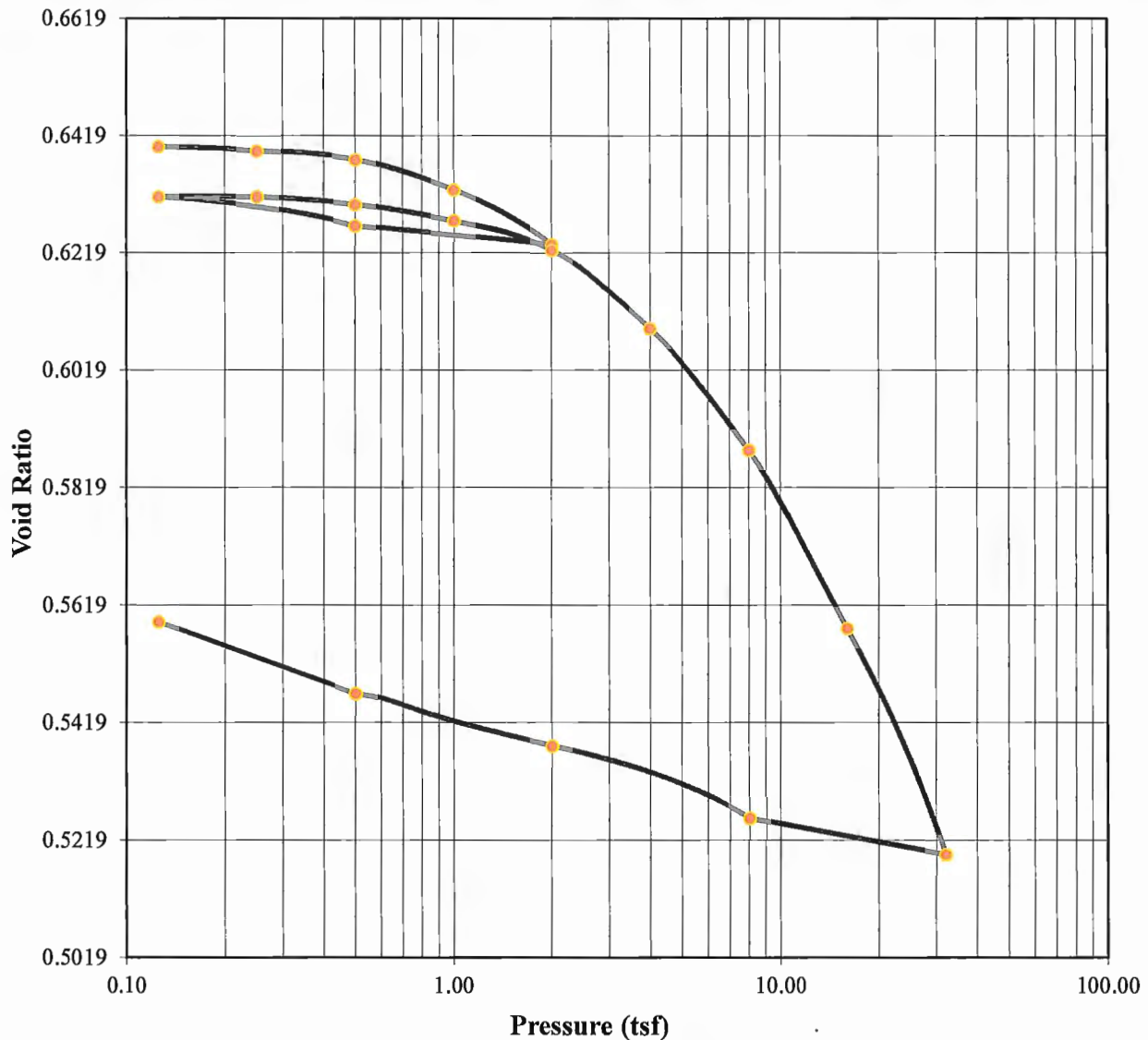
Liquid Limit:	59.0000	Initial Void Ratio:	0.9160	Initial Height (in):	1.0020
Plastic Limit:	41.0000	Plasticity Index (%):	18.0000	Initial Diameter (in):	2.4983
Specific Gravity:	2.6860	Weight of Ring (g):	109.5800		
	Measured				

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	1403.00	218.51
Dry Soil + Container (g)	1124.70	185.65
Weight of Container (g)	209.80	72.72
Moisture Content (%)	30.42	29.10
Void Ratio	0.9160	0.6990
Saturation (%)	89.15	112.42
Dry Density (pcf)	87.49	98.91

Tested By: MR

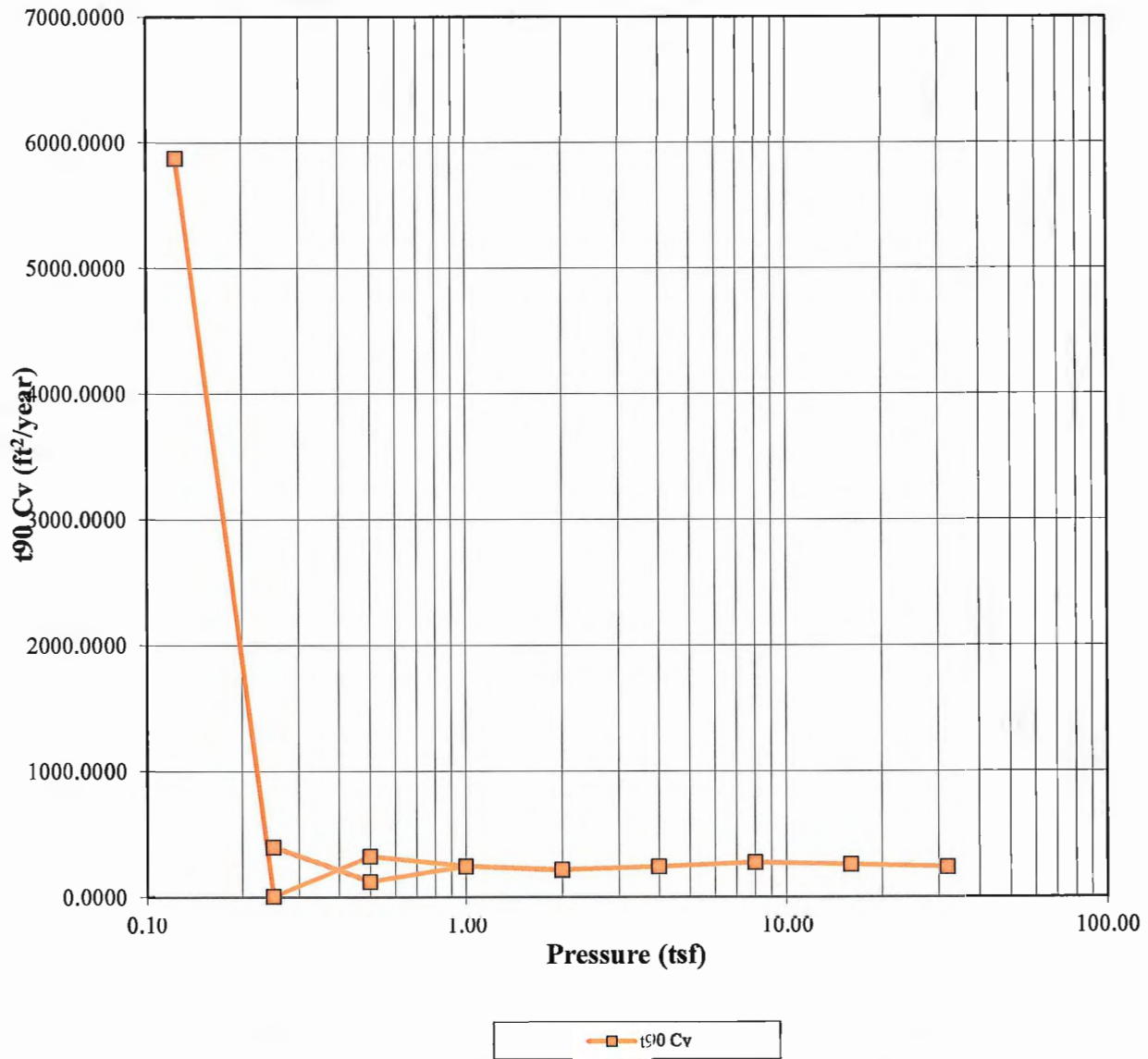
Checked By: JS

Consolidation Test Test Results



Summary of Consoliation Test Results				Test Date: 10/26/12
Overburden Pressure (tsf)	0.14	Compression Index, Cc	0.11	
Preconsol. Pressure (tsf)	3.60	Rebound Index, Cr	0.01	
Over Consolidation Ratio	25.71			
Soil Description: Red Silty Sand				
Project Number:	08195-01	Depth:	2.5' to 3.0'	
Sample Number:	ST-1	Boring Number:	B-61	
Project:	I-85/I-385 Interchange			
Client:				
Location:	B-61 ST-1 2.5' to 3.0'			
Remarks:				

Consolidation Test Test Results



	Before	After	Liquid Limits:	39	Test Date:	10/26/12	
Moisture (%):	22.96	18.51	Plastic Limits:	34			
Dry Density (pcf):	102.70	116.37	Plasticity Index (%):	5			
Saturation (%):	96.79	111.62					
Void Ratio:	0.6389	0.5035	Specific Gravity:	2.698	Measured		
Soil Description:	Red Silty Sand						
Project Number:	08195-01		Depth: 2.5' to 3.0'		Remarks:		
Sample Number:	ST-1		Boring Number: B-61				
Project:	I-85/I-385 Interchange						
Client:							
Location:	B-61 ST-1 2.5' to 3.0'						

Consolidation Test Results Summary

Project: I-85/I-385 Interchange
 Location: B-61 ST-1 2.5' to 3.0'
 Job Number: 08195-01

Project Number: 08195-01

Sample Number: ST-1
 Boring Number: B-61
 Depth: 2.5' to 3.0'
 Sample Type: Undisturbed

Sample Description:
 Red Silty Sand
 Remarks:

Test Number:
 Test Date: 10/26/12

Index	Load Sequence (tsf)	Cumulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft ² /year)	t50 Cv (ft ² /year)
0	0.000	0.0000	1.0025	0.3901	0.00	0.6371	0.000	0.000	0.000	0.000
1	0.125	-0.0018	1.0043	0.3919	-0.18	0.6400	0.133	* 0.0738	5875.937	2456.799
2	0.250	-0.0014	1.0039	0.3915	-0.14	0.6394	86.092	* 47.8290	9.058	3.788
3	0.500	-0.0005	1.0030	0.3906	-0.05	0.6379	2.384	* 1.3246	326.491	136.526
4	1.000	0.0027	0.9998	0.3874	0.27	0.6327	3.106	* 1.7254	249.054	104.144
5	2.000	0.0084	0.9941	0.3817	0.84	0.6234	3.550	* 1.9720	215.434	90.085
6	0.500	0.0064	0.9961	0.3837	0.64	0.6266	0.000	0.000	0.000	0.000
7	0.125	0.0034	0.9991	0.3867	0.34	0.6315	0.000	0.000	0.000	0.000
8	0.250	0.0034	0.9991	0.3867	0.34	0.6315	1.927	* 1.0706	400.829	167.606
9	0.500	0.0042	0.9983	0.3859	0.42	0.6302	6.155	* 3.4196	125.286	52.390
10	1.000	0.0059	0.9966	0.3842	0.59	0.6274	3.106	* 1.7254	247.461	103.479
11	2.000	0.0090	0.9935	0.3811	0.90	0.6224	3.488	* 1.9379	218.961	91.560
12	4.000	0.0172	0.9853	0.3729	1.72	0.6090	3.079	* 1.7105	243.992	102.027
13	8.000	0.0299	0.9726	0.3602	2.98	0.5882	2.656	* 1.4756	275.582	115.239
14	16.000	0.0484	0.9541	0.3417	4.83	0.5580	2.709	* 1.5049	260.039	108.737
15	32.000	0.0720	0.9305	0.3181	7.18	0.5195	2.783	* 1.5461	240.745	100.669
16	8.000	0.0682	0.9343	0.3219	6.80	0.5257	0.000	0.000	0.000	0.000
17	2.000	0.0607	0.9418	0.3294	6.05	0.5380	0.000	0.000	0.000	0.000
18	0.500	0.0552	0.9473	0.3349	5.51	0.5469	0.000	0.000	0.000	0.000
19	0.125	0.0828	0.9197	0.3073	4.87	0.5591	0.000	0.000	0.000	0.000

Predicted value indicated with *

Tested By: MR

Checked By: JS

Consolidation Test
Consolidation Specimen Information

Project: I-85/I-385 Interchange
Location: B-61 ST-1 2.5' to 3.0'
Job Number: 08195-01

Project Number: 08195-01

Test Date: 10/26/12

Sample Number: ST-1
Boring Number: B-61
Depth: 2.5' to 3.0'
Sample Type: Undisturbed

Sample Description:
Red Silty Sand
Remarks:

Test Number:

Liquid Limit: 39.0000

Initial Void Ratio: 0.6389

Initial Height (in): 1.0025

Plastic Limit: 34.0000

Plasticity Index (%): 5.0000

Initial Diameter (in): 2.4953

Specific Gravity: 2.6980
Measured

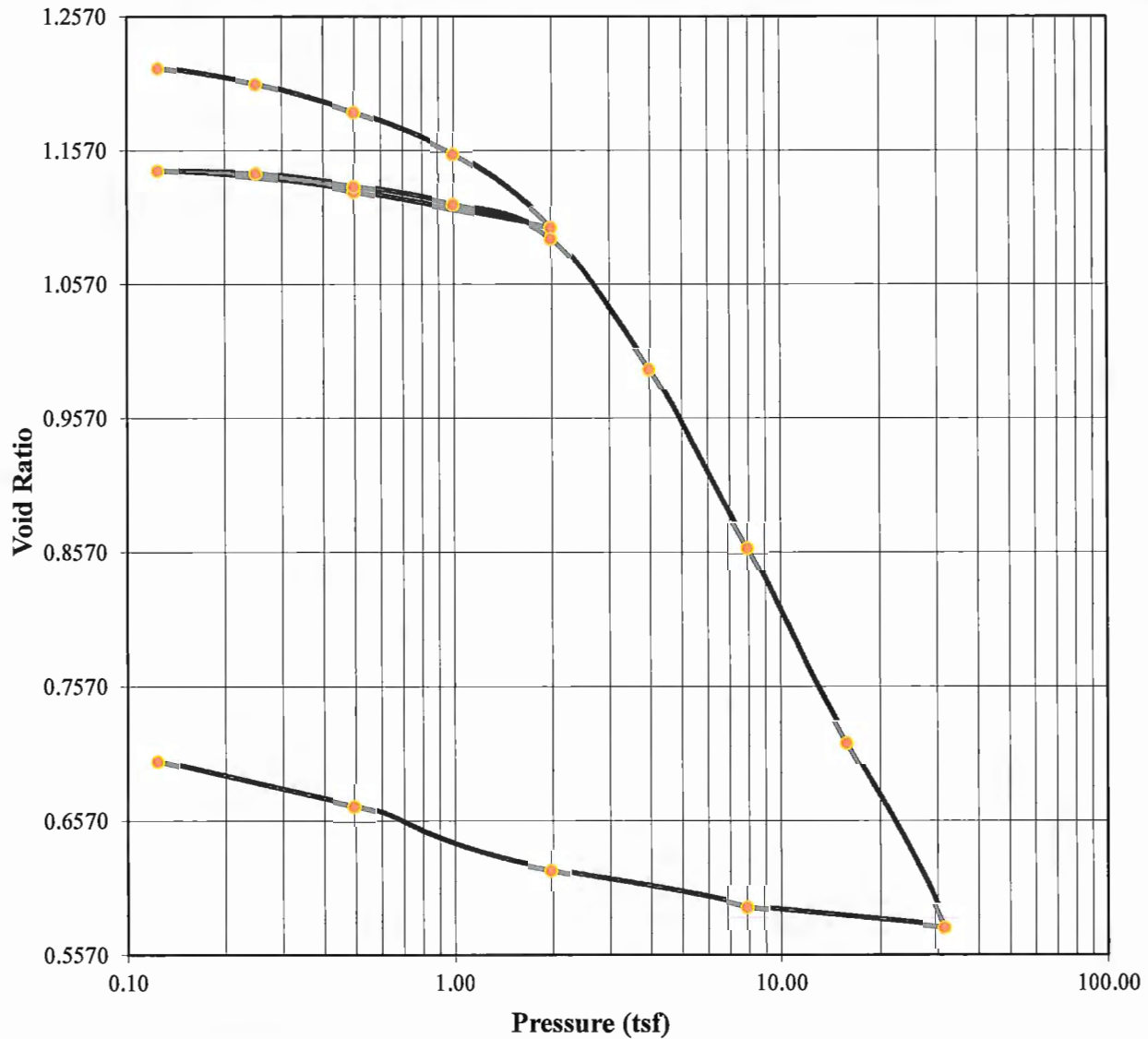
Weight of Ring (g): 110.8600

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	412.12	235.99
Dry Soil + Container (g)	349.10	210.58
Weight of Container (g)	74.59	73.30
Moisture Content (%)	22.96	18.51
Void Ratio	0.6389	0.5035
Saturation (%)	96.79	111.62
Dry Density (pcf)	102.70	116.37

Tested By: MTR

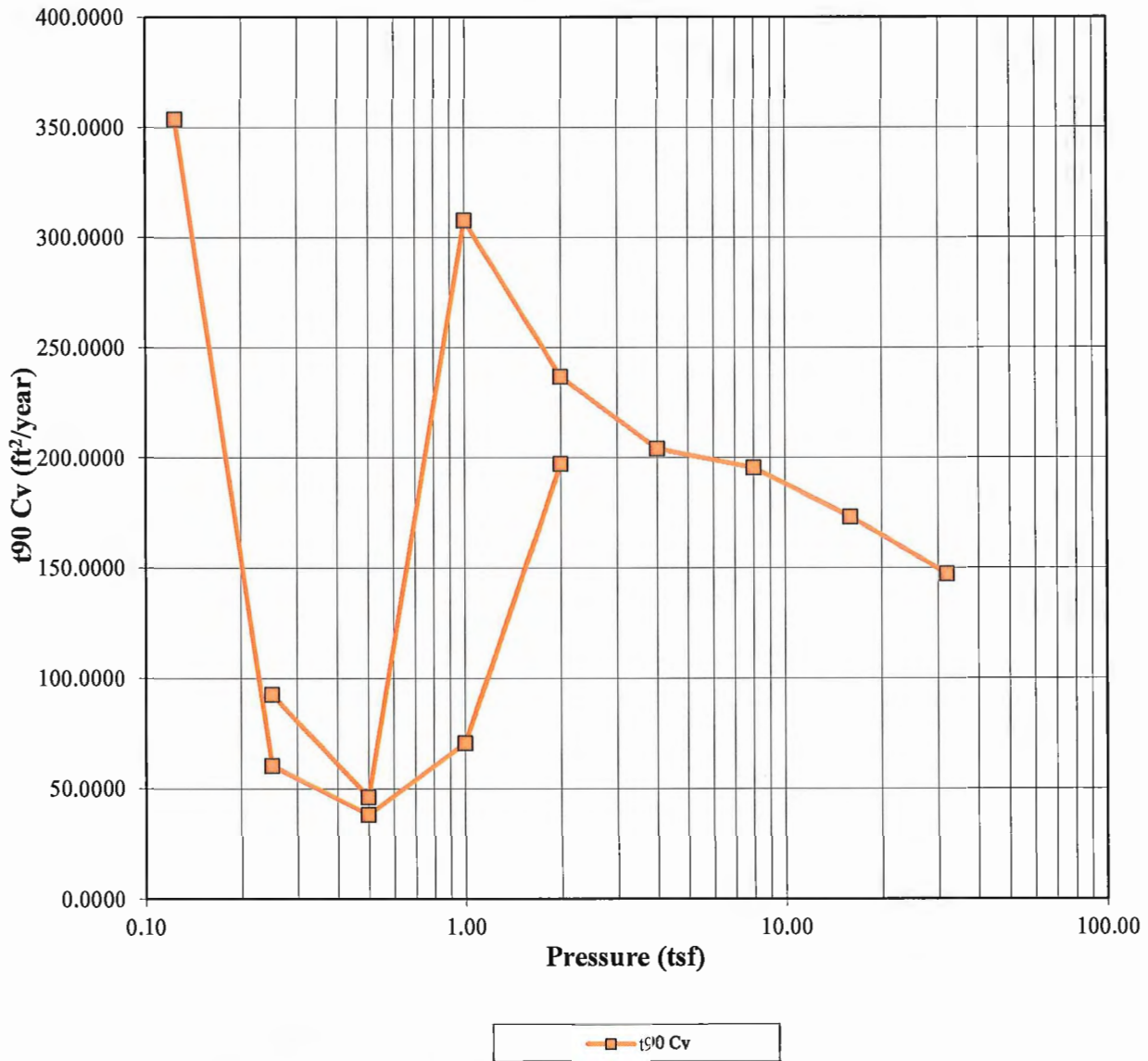
Checked By: JS

Consolidation Test Test Results



Summary of Consoliation Test Results				Test Date: 11/01/12
Overburden Pressure (tsf)	0.42	Compression Index, Cc	0.47	
Preconsol. Pressure (tsf)	1.90	Rebound Index, Cr	0.04	
Over Consolidation Ratio	4.55			
Soil Description: Gray, Black & Yellow Silty Sand				
Project Number:	08195-01	Depth:	11.0' to 11.4'	
Sample Number:	ST-2	Boring Number:	B-65	
Project:	I-85/I-385 Interchange			
Client:				
Location:	B-65 ST-2 11.0' to 11.4'			
Remarks:				

Consolidation Test Test Results



	Before	After	Liquid Limits:	45	Test Date:	11/01/12
Moisture (%):	36.00	29.62	Plastic Limits:	42		
Dry Density (pcf):	74.60	105.07	Plasticity Index (%):	3		
Saturation (%):	78.08	135.65				
Void Ratio:	1.2238	0.5576	Specific Gravity:	2.661	Measured	
Soil Description:	Gray, Black & Yellow Silty Sand					
Project Number:	08195-01		Depth:	11.0' to 11.4'		Remarks:
Sample Number:	ST-2		Boring Number:	B-65		
Project:	I-85/I-385 Interchange					
Client:						
Location:	B-65 ST-2 11.0' to 11.4'					

Consolidation Test Results Summary

Project: I-85/I-385 Interchange
 Location: B-65 ST-2 11.0' to 11.4'
 Job Number: 08195-01

Project Number: 08195-01

Sample Number: ST-2
 Boring Number: B-65
 Depth: 11.0' to 11.4'
 Sample Type: Undisturbed

Sample Description:
 Gray, Black & Yellow Silty Sand
 Remarks:

Test Number:
 Test Date: 11/01/12

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft ² /year)	t50 Cv (ft ² /year)
0	0.000	0.0000	0.9980	0.5490	0.00	1.2229	0.000	0.000	0.000	0.000
1	0.125	0.0017	0.9963	0.5473	0.17	1.2192	2.171	* 1.2063	353.752	147.919
2	0.250	0.0071	0.9909	0.5419	0.71	1.2071	12.549	* 6.9718	60.544	25.317
3	0.500	0.0165	0.9815	0.5325	1.65	1.1862	19.425	* 10.7914	38.376	16.047
4	1.000	0.0303	0.9677	0.5187	3.04	1.1555	10.239	* 5.6881	70.774	29.595
5	2.000	0.0551	0.9429	0.4939	5.52	1.1002	3.486	* 1.9365	197.363	82.530
6	0.500	0.0430	0.9550	0.5060	4.31	1.1272	0.000	0.000	0.000	0.000
7	0.125	0.0362	0.9618	0.5128	3.63	1.1423	0.000	0.000	0.000	0.000
8	0.250	0.0371	0.9609	0.5119	3.72	1.1403	7.699	* 4.2771	92.804	38.807
9	0.500	0.0413	0.9567	0.5077	4.14	1.1310	15.291	* 8.4950	46.318	19.368
10	1.000	0.0474	0.9506	0.5016	4.75	1.1174	2.272	* 1.2620	307.811	128.717
11	2.000	0.0588	0.9392	0.4902	5.89	1.0920	2.883	* 1.6014	236.793	99.018
12	4.000	0.1026	0.8954	0.4464	10.28	0.9944	3.039	* 1.6884	204.138	85.361
13	8.000	0.1623	0.8357	0.3867	16.26	0.8614	2.764	* 1.5355	195.525	81.762
14	16.000	0.2275	0.7705	0.3215	22.80	0.7162	2.652	* 1.4730	173.255	72.451
15	32.000	0.2891	0.7089	0.2599	28.97	0.5790	2.637	* 1.4650	147.465	61.664
16	8.000	0.2826	0.7154	0.2664	28.32	0.5935	0.000	0.000	0.000	0.000
17	2.000	0.2702	0.7278	0.2788	27.07	0.6211	0.000	0.000	0.000	0.000
18	0.500	0.2490	0.7490	0.3000	24.95	0.6683	0.000	0.000	0.000	0.000
19	0.125	0.2990	0.6990	0.2500	23.47	0.7020	0.000	0.000	0.000	0.000

Predicted value indicated with *

Tested By: *MP*

Checked By: *JS*

Consolidation Test
Consolidation Specimen Information

Project: I-85/I-385 Interchange
Location: B-65 ST-2 11.0' to 11.4'
Job Number: 08195-01

Project Number: 08195-01

Test Date: 11/01/12

Sample Number: ST-2
Boring Number: B-65
Depth: 11.0' to 11.4'
Sample Type: Undisturbed

Sample Description:
Gray, Black & Yellow Silty Sand
Remarks:

Test Number:

Liquid Limit: 45.0000

Initial Void Ratio: 1.2238

Initial Height (in): 0.9980

Plastic Limit: 42.0000

Plasticity Index (%): 3.0000

Initial Diameter (in): 2.4973

Specific Gravity: 2.6610
Measured

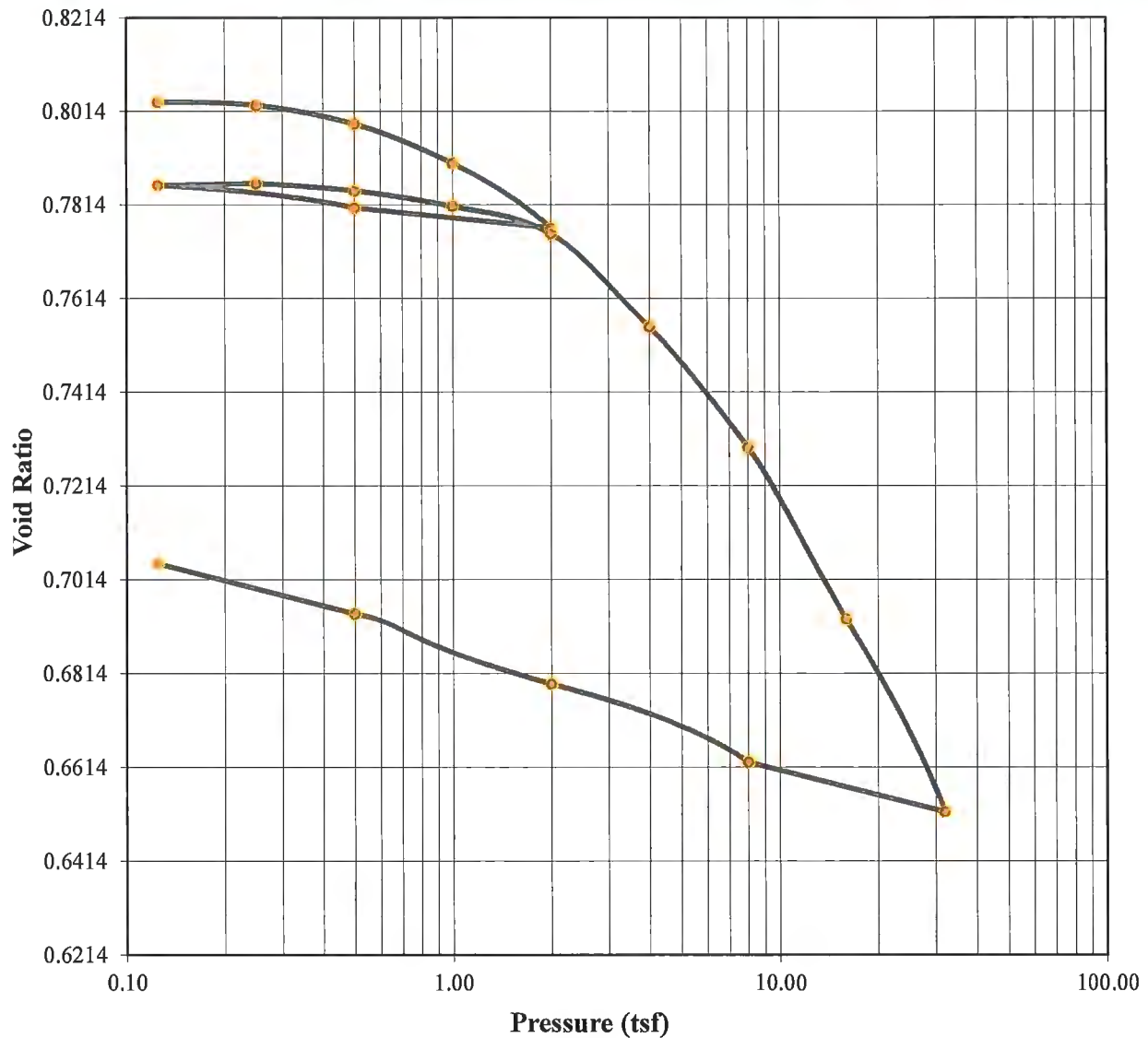
Weight of Ring (g): 110.1700

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	272.98	195.85
Dry Soil + Container (g)	219.70	167.90
Weight of Container (g)	71.72	73.54
Moisture Content (%)	36.00	29.62
Void Ratio	1.2238	0.5576
Saturation (%)	78.08	135.65
Dry Density (pcf)	74.60	105.07

Tested By: MR

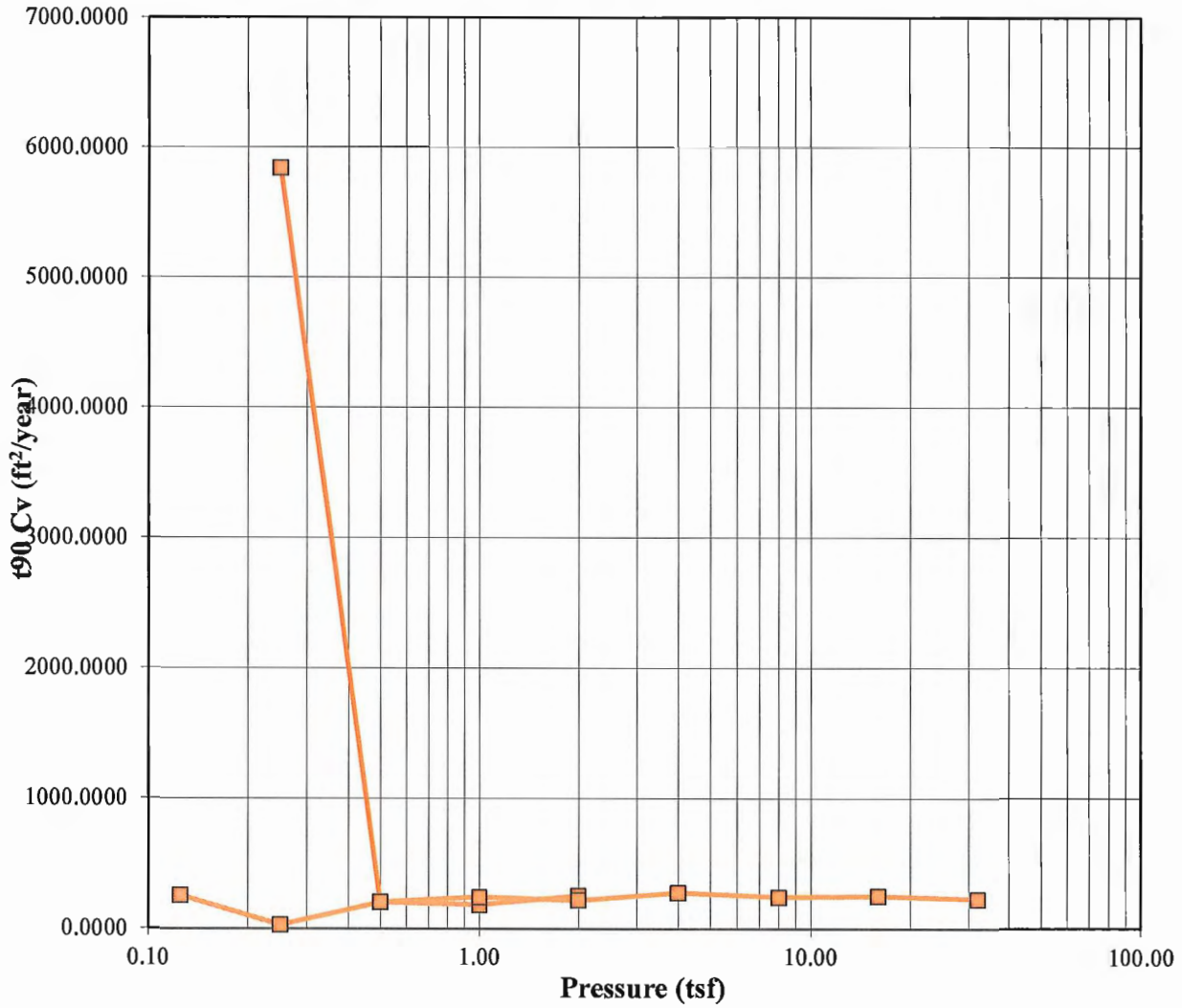
Checked By: JS

Consolidation Test Test Results



Summary of Consoliation Test Results			Test Date:
Overburden Pressure (tsf)	0.22	Compression Index, Cc	0.13
Preconsol. Pressure (tsf)	3.20	Rebound Index, Cr	0.01
Over Consolidation Ratio	14.86		
Soil Description: Orange, Red & White Silty Sand			
Project Number:	08195-01	Depth:	4.5' to 4.7'
Sample Number:	ST-1	Boring Number:	B-67
Project:	I-85/I-385 Interchange		
Client:			
Location:	B-67 ST-1 4.5' to 4.7'		
			Remarks:

Consolidation Test Test Results



—■— t_{90,Cv}

	Before	After	Liquid Limits:	39	Test Date:
Moisture (%):	23.65	27.50	Plastic Limits:	34	
Dry Density (pcf):	93.64	100.76	Plasticity Index (%):	5	
Saturation (%):	80.00	110.65			
Void Ratio:	0.7971	0.6246	Specific Gravity:	2.695	Measured
Soil Description:	Orange, Red & White Silty Sand				
Project Number:	08195-01		Depth:	4.5' to 4.7'	
Sample Number:	ST-1		Boring Number:	B-67	
Project:	I-85/I-385 Interchange				
Client:					
Location:	B-67 ST-1 4.5' to 4.7'				
					Remarks:

Consolidation Test Results Summary

Project: I-85/I-385 Interchange
 Location: B-67 ST-1 4.5' to 4.7'
 Job Number: 08195-01

Project Number: 08195-01

Sample Number: ST-1
 Boring Number: B-67
 Depth: 4.5' to 4.7'
 Sample Type: Undisturbed

Sample Description:
 Orange, Red & White Silty Sand
 Remarks:

Test Number:
 Test Date:

Index	Load Sequence (tsf)	Cumulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft ² /year)	t50 Cv (ft ² /year)
0	0.000	0.0000	0.9993	0.4421	0.00	0.7935	0.000	0.000	0.000	0.000
1	0.125	-0.0055	1.0048	0.4476	-0.55	0.8034	3.029	* 1.6826	257.956	107.864
2	0.250	-0.0051	1.0044	0.4472	-0.51	0.8027	24.360	* 13.5336	32.045	13.400
3	0.500	-0.0029	1.0022	0.4450	-0.29	0.7987	3.775	* 2.0969	205.910	86.105
4	1.000	0.0018	0.9975	0.4403	0.18	0.7903	4.127	* 2.2930	186.543	78.005
5	2.000	0.0095	0.9898	0.4326	0.95	0.7765	2.959	* 1.6440	256.181	107.125
6	0.500	0.0071	0.9922	0.4350	0.71	0.7808	0.000	0.000	0.000	0.000
7	0.125	0.0044	0.9949	0.4377	0.44	0.7856	0.000	0.000	0.000	0.000
8	0.250	0.0042	0.9951	0.4379	0.42	0.7860	0.131	* 0.0729	5839.553	2441.771
9	0.500	0.0051	0.9942	0.4370	0.51	0.7844	3.684	* 2.0467	207.610	86.815
10	1.000	0.0069	0.9924	0.4352	0.69	0.7811	3.105	* 1.7252	245.410	102.620
11	2.000	0.0102	0.9891	0.4319	1.02	0.7752	3.426	* 1.9032	220.978	92.405
12	4.000	0.0213	0.9780	0.4208	2.13	0.7553	2.664	* 1.4798	277.870	116.191
13	8.000	0.0356	0.9637	0.4065	3.56	0.7296	2.933	* 1.6295	245.008	102.454
14	16.000	0.0560	0.9433	0.3861	5.60	0.6930	2.714	* 1.5078	253.691	106.085
15	32.000	0.0789	0.9204	0.3632	7.90	0.6519	2.860	* 1.5889	229.202	95.842
16	8.000	0.0730	0.9263	0.3691	7.31	0.6625	0.000	0.000	0.000	0.000
17	2.000	0.0637	0.9356	0.3784	6.37	0.6792	0.000	0.000	0.000	0.000
18	0.500	0.0554	0.9439	0.3867	5.54	0.6941	0.000	0.000	0.000	0.000
19	0.125	0.0959	0.9034	0.3462	5.13	0.7048	0.000	0.000	0.000	0.000

Predicted value indicated with *

Tested By: MR

Checked By: JS

Consolidation Test

Consolidation Specimen Information

Project: I-85/I-385 Interchange
Location: B-67 ST-1 4.5' to 4.7'
Job Number: 08195-01

Project Number: 08195-01

Test Date:

Sample Number: ST-1
Boring Number: B-67
Depth: 4.5' to 4.7'
Sample Type: Undisturbed

Sample Description:
 Orange, Red & White Silty Sand
Remarks:

Test Number:

Liquid Limit: 39.0000

Initial Void Ratio: 0.7971

Initial Height (in): 0.9993

Plastic Limit: 34.0000

Plasticity Index (%): 5.0000

Initial Diameter (in): 2.4955

Specific Gravity: 2.6950
 Measured

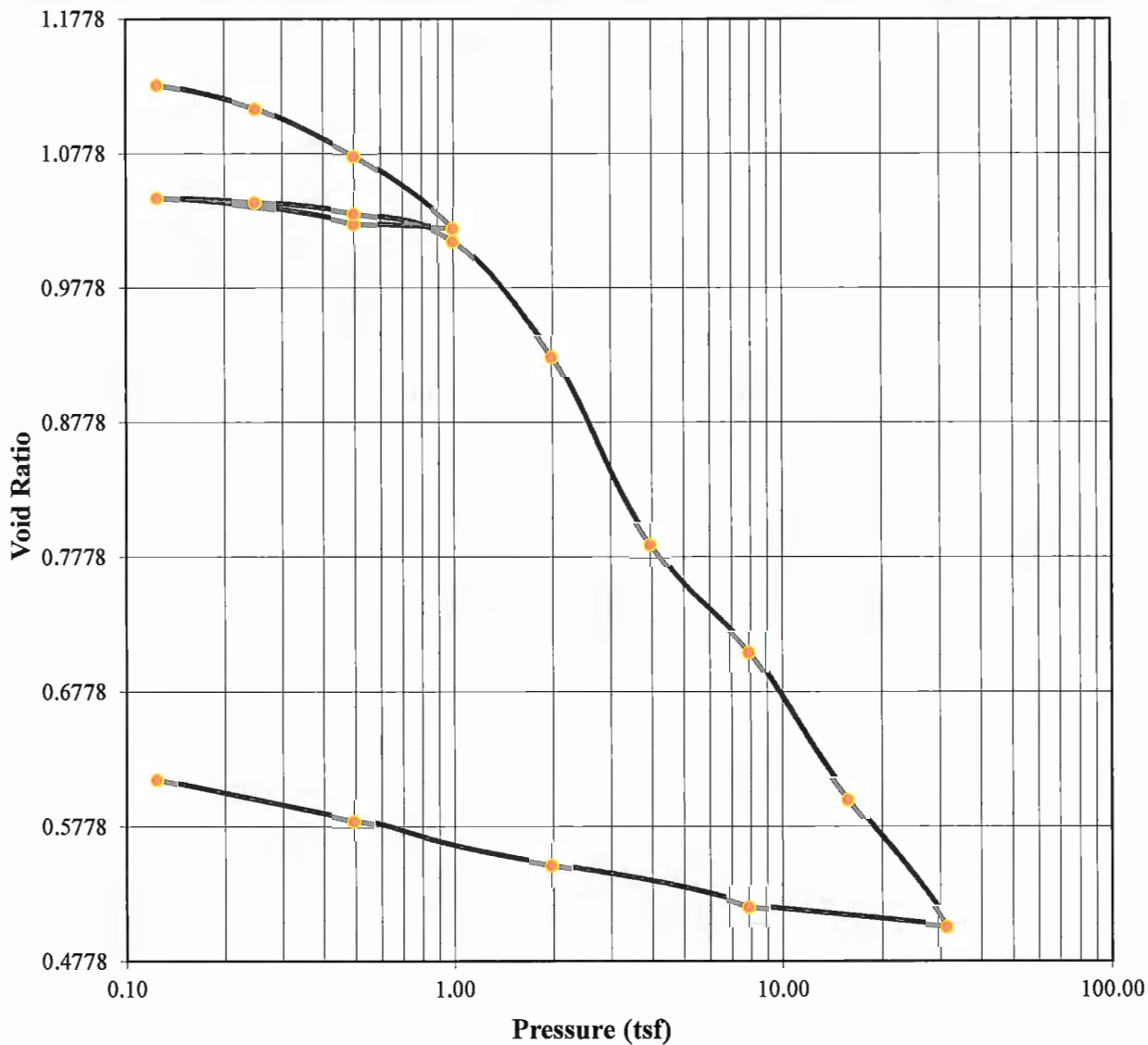
Weight of Ring (g): 109.2200

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	384.24	223.25
Dry Soil + Container (g)	325.04	191.14
Weight of Container (g)	74.76	74.39
Moisture Content (%)	23.65	27.50
Void Ratio	0.7971	0.6246
Saturation (%)	80.00	110.65
Dry Density (pcf)	93.64	100.76

Tested By: MR

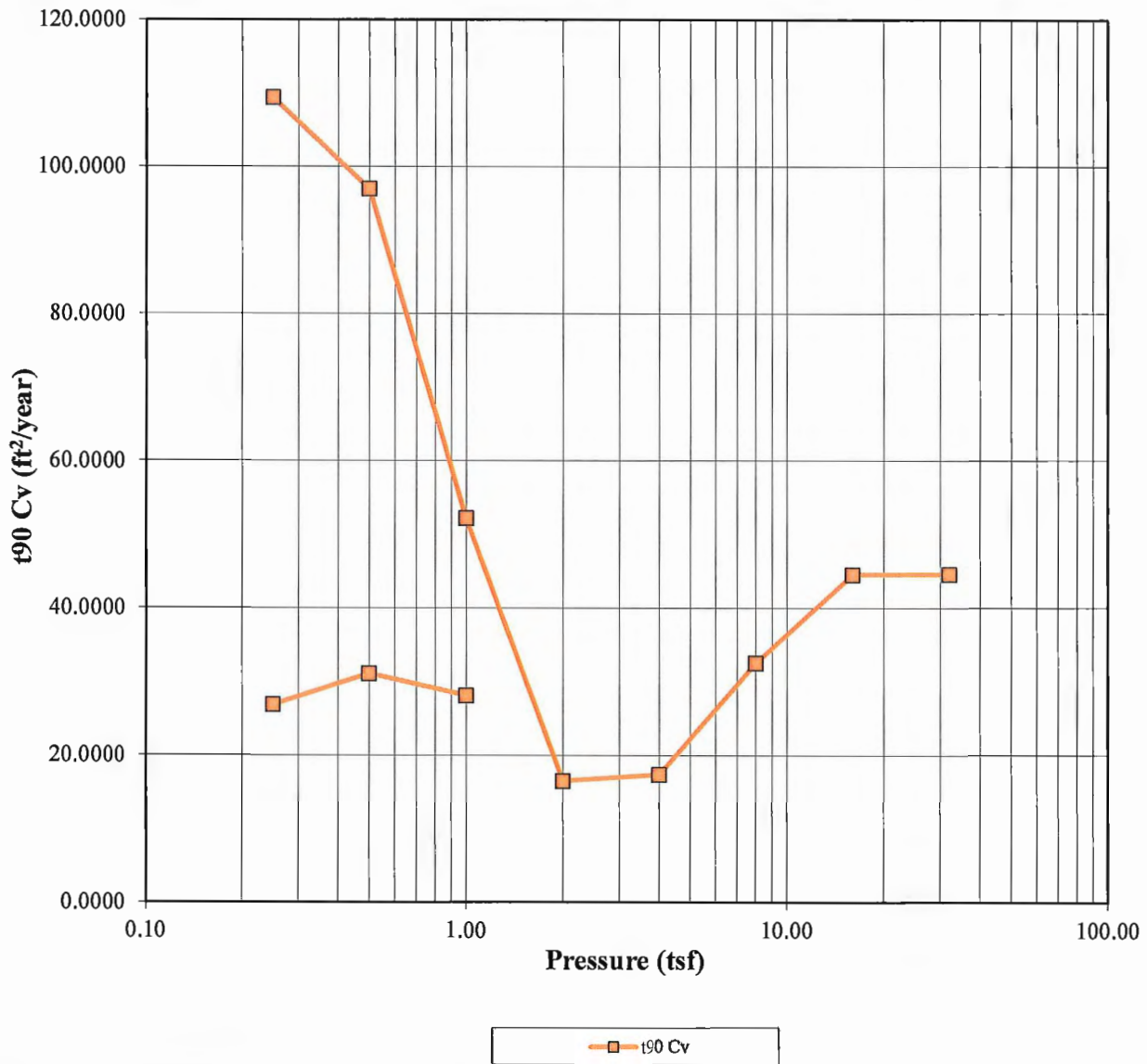
Checked By: JS

Consolidation Test Test Results



Summary of Consoliation Test Results				Test Date: 11/05/12
Overburden Pressure (tsf)	0.20	Compression Index, Cc	0.34	
Preconsol. Pressure (tsf)	0.69	Rebound Index, Cr	0.02	
Over Consolidation Ratio	3.43			
Soil Description:	Brown Sandy Silt			
Project Number:	08195-01	Depth:	5.0' to 5.3'	
Sample Number:	ST-1	Boring Number:	B-74	
Project:	I-85/I-385 Interchange			
Client:				
Location:	B-74 ST-1 5.0' to 5.3'			
				Remarks:

Consolidation Test Test Results



	Before	After	Liquid Limits:	30	Test Date:	11/05/12
Moisture (%):	33.07	31.59	Plastic Limits:	23		
Dry Density (pcf):	78.14	97.39	Plasticity Index (%):	7		
Saturation (%):	77.89	118.50				
Void Ratio:	1.1323	0.4793	Specific Gravity:	2.671	Measured	
Soil Description:	Brown Sandy Silt					
Project Number:	08195-01		Depth:	5.0' to 5.3'		
Sample Number:	ST-1		Boring Number:	B-74		
Project:	I-85/I-385 Interchange					
Client:						
Location:	B-74 ST-1 5.0' to 5.3'					
			Remarks:			

Consolidation Test Results Summary

Project: I-85/I-385 Interchange
 Location: B-74 ST-1 5.0' to 5.3'
 Job Number: 08195-01

Project Number: 08195-01

Sample Number: ST-1
 Boring Number: B-74
 Depth: 5.0' to 5.3'
 Sample Type: Undisturbed

Sample Description:
 Brown Sandy Silt
 Remarks:

Test Number:
 Test Date: 11/05/12

Index	Load Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Void (in)	Vertical Strain (%)	Void Ratio	t90 Fitting Time (min)	t50 Fitting Time (min)	t90 Cv (ft ² /year)	t50 Cv (ft ² /year)
0	0.000	0.0000	1.0145	0.5382	0.00	1.1302	0.000	0.000	0.000	0.000
1	0.125	0.0004	1.0141	0.5378	0.04	1.1293	0.000	0.000	0.000	0.000
2	0.250	0.0089	1.0056	0.5293	0.88	1.1115	29.083	* 16.1569	26.906	11.251
3	0.500	0.0257	0.9888	0.5125	2.53	1.0762	24.299	* 13.4992	31.136	13.020
4	1.000	0.0511	0.9634	0.4871	5.04	1.0229	25.499	* 14.1663	28.165	11.778
5	0.500	0.0496	0.9649	0.4886	4.89	1.0260	0.000	0.000	0.000	0.000
6	0.125	0.0405	0.9740	0.4977	3.99	1.0451	0.000	0.000	0.000	0.000
7	0.250	0.0420	0.9725	0.4962	4.14	1.0420	6.691	* 3.7169	109.383	45.740
8	0.500	0.0460	0.9685	0.4922	4.53	1.0336	7.485	* 4.1581	96.975	40.551
9	1.000	0.0556	0.9589	0.4826	5.48	1.0134	13.635	* 7.5752	52.181	21.820
10	2.000	0.0965	0.9180	0.4417	9.51	0.9275	39.294	* 21.8297	16.596	6.940
11	4.000	0.1630	0.8515	0.3752	16.07	0.7879	32.188	* 17.8823	17.430	7.289
12	8.000	0.2009	0.8136	0.3373	19.80	0.7083	15.730	* 8.7389	32.563	13.616
13	16.000	0.2528	0.7617	0.2854	24.92	0.5994	10.075	* 5.5972	44.561	18.634
14	32.000	0.2979	0.7166	0.2403	29.36	0.5047	8.897	* 4.9425	44.664	18.677
15	8.000	0.2909	0.7236	0.2473	28.67	0.5194	0.000	0.000	0.000	0.000
16	2.000	0.2764	0.7381	0.2618	27.24	0.5498	0.000	0.000	0.000	0.000
17	0.500	0.2608	0.7537	0.2774	25.71	0.5826	0.000	0.000	0.000	0.000
18	0.125	0.3107	0.7038	0.2275	24.35	0.6131	0.000	0.000	0.000	0.000

Predicted value indicated with *

Tested By: *MTC*

Checked By: *JS*

Consolidation Test
Consolidation Specimen Information

Project: I-85/I-385 Interchange
Location: B-74 ST-1 5.0' to 5.3'
Job Number: 08195-01

Project Number: 08195-01
Test Date: 11/05/12

Sample Number: ST-1
Boring Number: B-74
Depth: 5.0' to 5.3'
Sample Type: Undisturbed

Sample Description:
Brown Sandy Silt
Remarks:

Test Number:
Liquid Limit: 30.0000 **Initial Void Ratio:** 1.1323 **Initial Height (in):** 1.0145
Plastic Limit: 23.0000 **Plasticity Index (%):** 7.0000 **Initial Diameter (in):** 2.4965
Specific Gravity: 2.6710 **Weight of Ring (g):** 110.8600
Measured

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	1309.50	192.68
Dry Soil + Container (g)	1036.50	164.90
Weight of Container (g)	210.90	76.95
Moisture Content (%)	33.07	31.59
Void Ratio	1.1323	0.4793
Saturation (%)	77.89	118.50
Dry Density (pcf)	78.14	97.39

Tested By: MR

Checked By: JS

Appendix Section IV MASW Results



Florence & Hutcheson

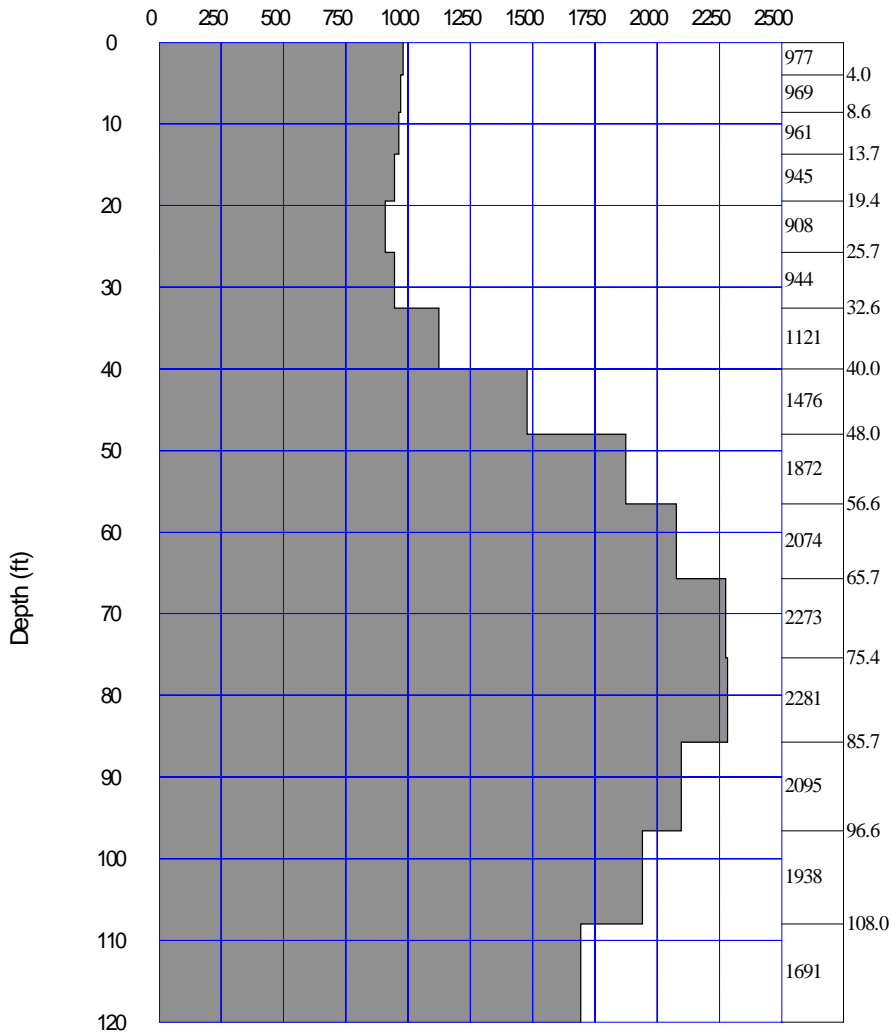
An **ICA** Company

Project Name : I-85/I-385 Interchange
Location : Greenville County, South Carolina
Job Number : 08195-01
Project Job No. : 08195-01

MASW Summary

MASW Analysis No.	Alignment	Station	Offset (ft)	Average Shear Wave Velocity in Top 100 feet (ft/sec)
MASW-1	I-385 NB C/D	359+39	17' RT	1405.6
MASW-2	I-385	393+66	115' RT	1034.8
MASW-3	Ramp 4B	408+70	102' RT	1081.5
MASW-4	Roper Mt. Rd.	36+15	25' LT	1060.2

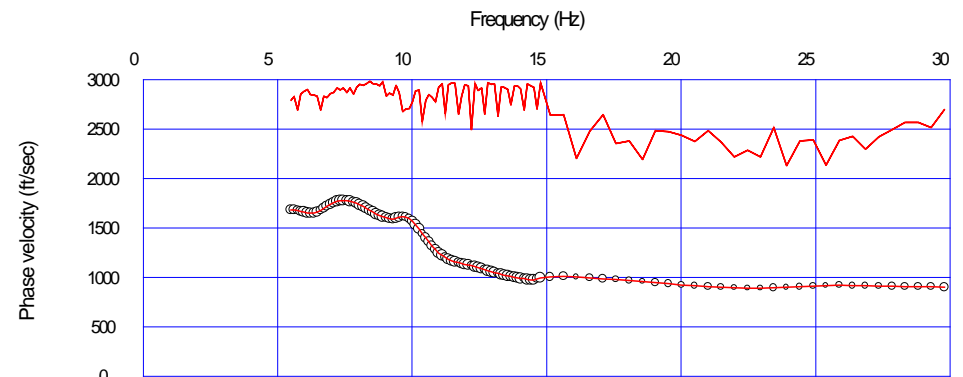
S-wave velocity (ft/s)



S-wave velocity model (inverted): I85-I385 MASW 1 Active Passive Combined.rst

Average Vs 100ft = 1405.6 ft/sec

Testing Results	
Depth(ft)	S-wave velocity(ft/s)
0.0	978.0
4.0	969.3
8.6	961.7
13.7	945.1
19.4	908.4
25.7	944.2
32.6	1121.6
40.0	1476.1
48.0	1872.5
56.6	2074.3
65.7	2273.2
75.4	2281.4
85.7	2095.7
96.6	1938.6
108.0	1691.2



Dispersion curve : I85-I385 MASW 1 Active Passive Combined.rst

Project Mgr:	WL
Prepared by:	BTS
Checked by:	WL
Approved by:	GL

Project No.	EN105084
Scale:	NA
Date:	12/7/2011

Terracon

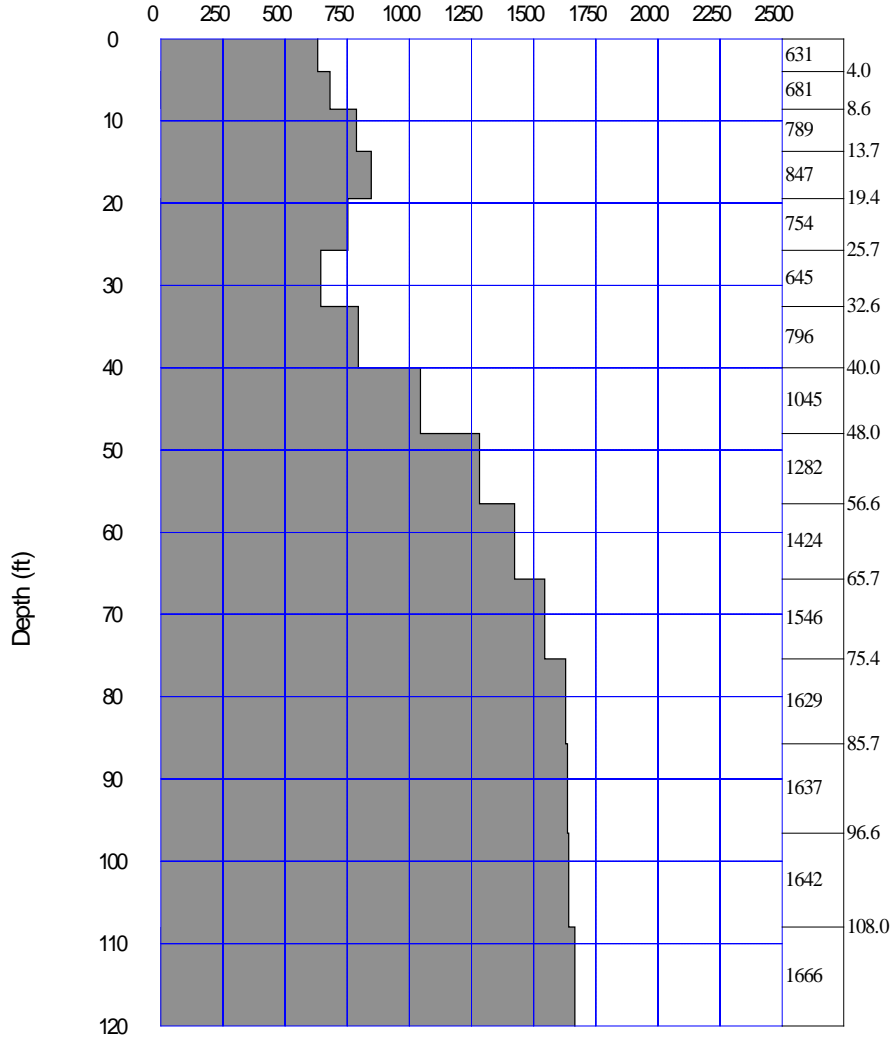
1450 FIFTH STREET WEST NORTH CHARLESTON, SC
PH: (843) 884-1234 FAX: (843) 884-9234

GEOPHYSICAL TESTING RESULTS
MASW SHEAR WAVE VELOCITY

I85 and I385 Interchange
Greenville County, SC

TEST NO
MASW1

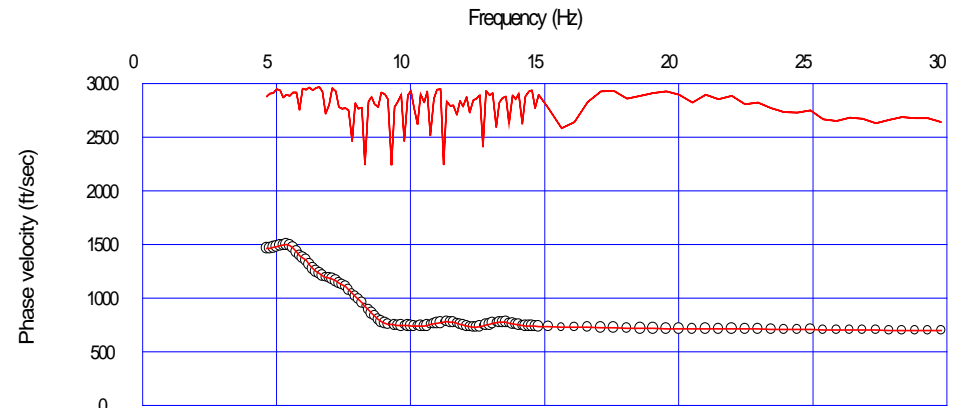
S-wave velocity (ft/s)



S-wave velocity model (inverted): 385 85 MASW2 Active Passive Combined.rst

Average Vs 100ft = 1034.8 ft/sec

Testing Results	
Depth(ft)	S-wave velocity(ft/s)
0.0	631.3
4.0	681.8
8.6	789.1
13.7	847.7
19.4	754.4
25.7	645.9
32.6	796.9
40.0	1045.9
48.0	1282.7
56.6	1424.0
65.7	1546.4
75.4	1629.8
85.7	1637.7
96.6	1642.6
108.0	1666.9



Dispersion curve : 385 85 MASW 2 Active Passive Combined.rst

Project Mgr:	WL
Prepared by:	BTS
Checked by:	WL
Approved by:	GL

Project No.	EN105084
Scale:	NA
Date:	12/7/2011

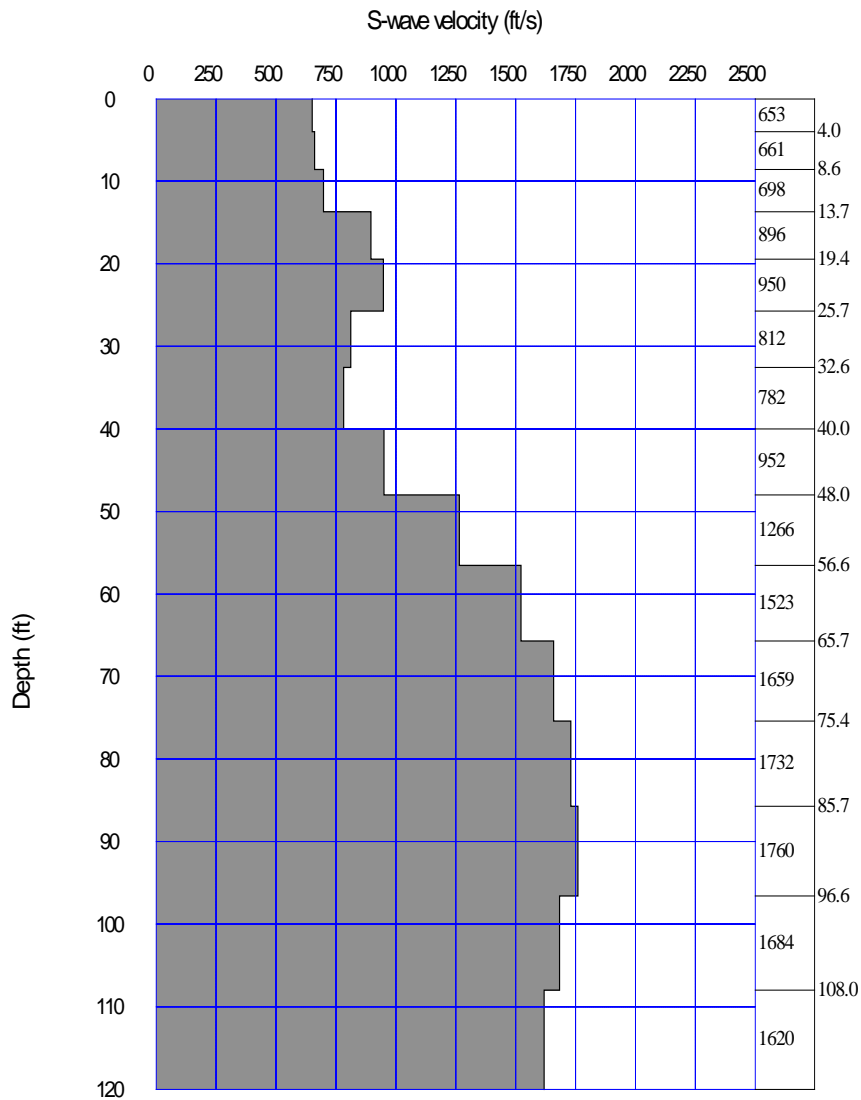
Terracon

1450 FIFTH STREET WEST NORTH CHARLESTON, SC
 PH: (843) 884-1234 Fax: (843) 884-9234

GEOPHYSICAL TESTING RESULTS
MASW SHEAR WAVE VELOCITY

185 and I385 Interchange
Greenville County, SC

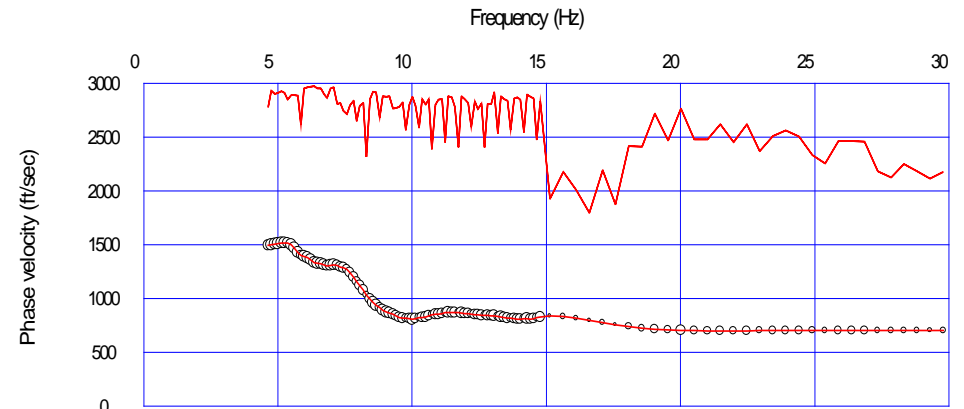
TEST NO
MASW2



S-wave velocity model (inverted): 385 85 MASW3 Active Passive Combined.rst

Average Vs 100ft = 1081.5 ft/sec

Testing Results	
Depth(ft)	S-wave velocity(ft/s)
0.0	653.3
4.0	661.7
8.6	698.7
13.7	897.0
19.4	950.0
25.7	812.5
32.6	782.9
40.0	952.8
48.0	1266.2
56.6	1523.1
65.7	1659.9
75.4	1732.3
85.7	1760.4
96.6	1684.9
108.0	1620.0



Dispersion curve : 385 85 MASW 3 Active Passive Combined.rst

Project Mgr:	WL
Prepared by:	BTS
Checked by:	WL
Approved by:	GL

Project No.	EN105084
Scale:	NA
Date:	12/7/2011

Terracon

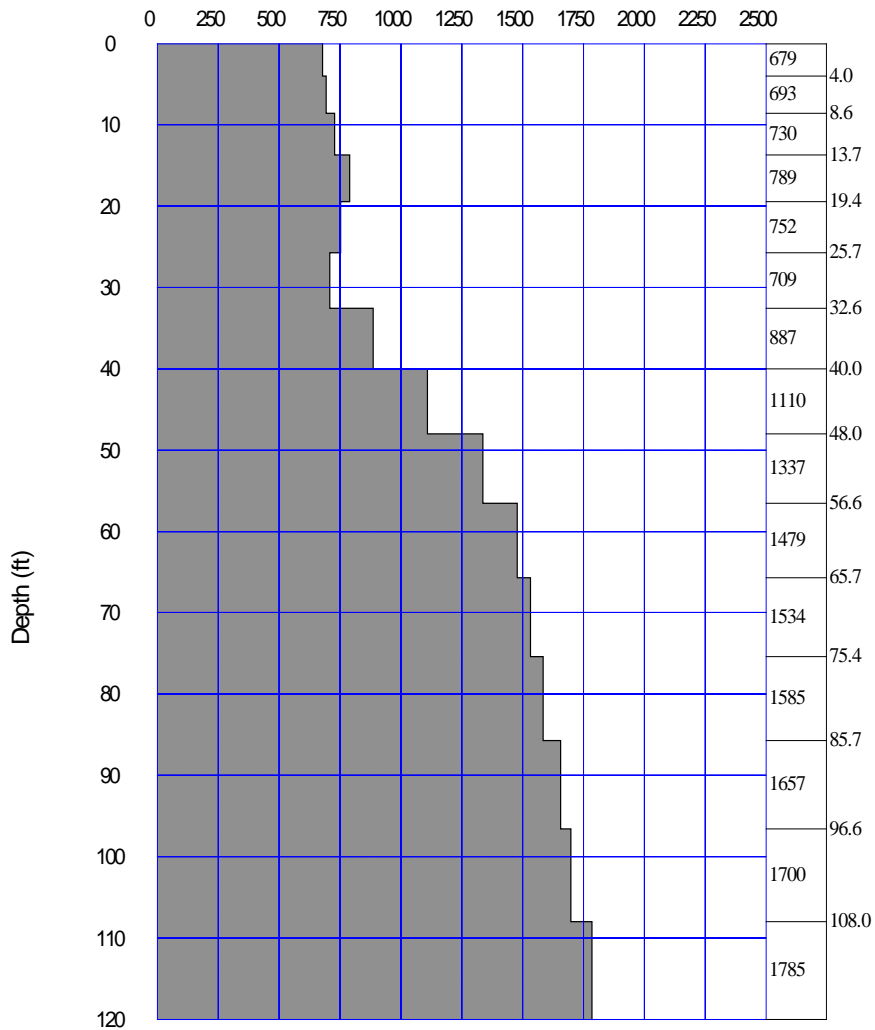
1450 FIFTH STREET WEST NORTH CHARLESTON, SC
 PH: (843) 884-1234 Fax: (843) 884-9234

GEOPHYSICAL TESTING RESULTS
MASW SHEAR WAVE VELOCITY

185 and I385 Interchange
Greenville County, SC

TEST NO
MASW3

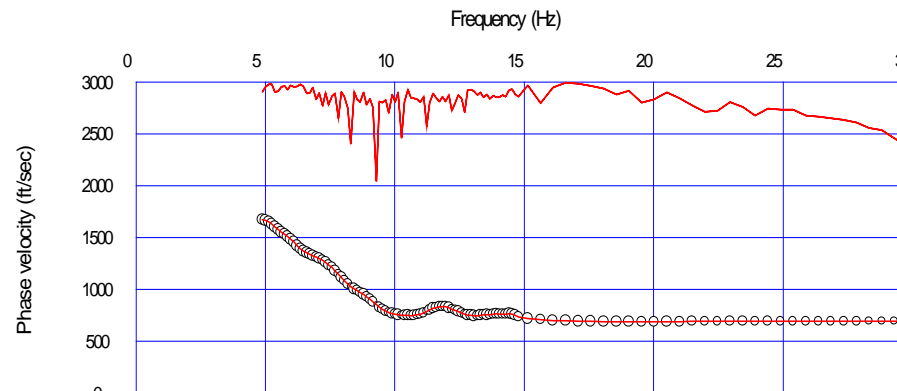
S-wave velocity (ft/s)



S-wave velocity model (inverted): 385 85 MASW4 Active Passive Combined.rst

Average Vs 100ft = 1060.2 ft/sec

Testing Results	
Depth(ft)	S-wave velocity(ft/s)
0.0	679.3
4.0	694.0
8.6	730.0
13.7	789.8
19.4	752.7
25.7	709.4
32.6	887.2
40.0	1110.1
48.0	1337.1
56.6	1479.8
65.7	1534.6
75.4	1585.6
85.7	1657.5
96.6	1700.0
108.0	1785.1



Dispersion curve : 385 85 MASW 4 Active Passive Combined.rst

Project Mgr:	WL
Prepared by:	BTS
Checked by:	WL
Approved by:	GL

Project No.	EN105084
Scale:	NA
Date:	12/7/2011

Terracon

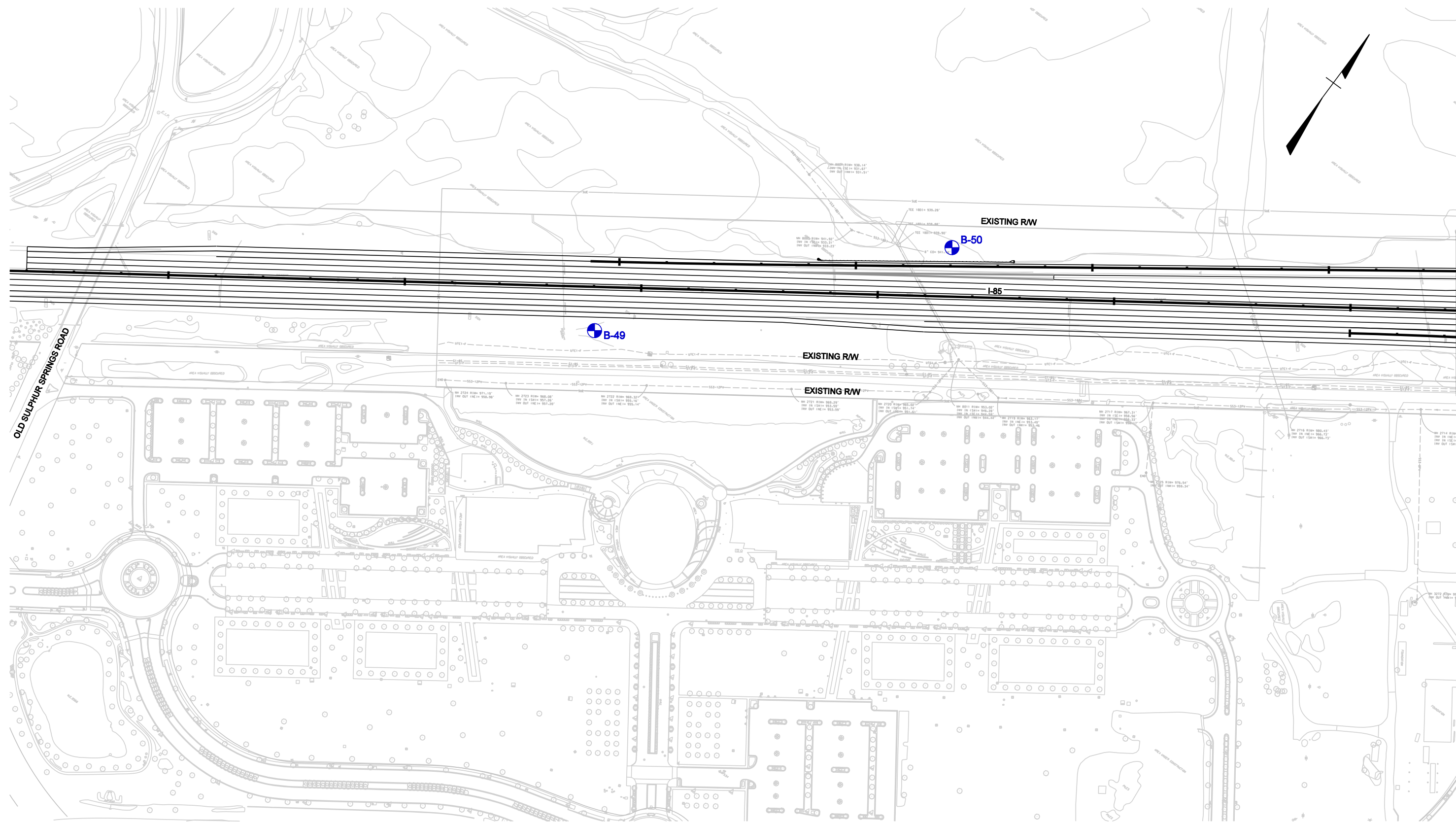
1450 FIFTH STREET WEST NORTH CHARLESTON, SC
 PH: (843) 894-1234 Fax: (843) 894-9234

GEOPHYSICAL TESTING RESULTS
MASW SHEAR WAVE VELOCITY

185 and I385 Interchange
Greenville County, SC

TEST NO
MASW4

Appendix Section V Test Location Plans



ROADWAY/CULVERT BORINGS			
BORING	ALIGNMENT	STATION	OFFSET
B-48		OMITTED	
B-49	I-85	224+04	92' RT.
B-50	RAMP 5	137+97	40' RT.

- LEGEND**
- DENOTES BRIDGE BORINGS, DRILLING COMPLETE
 - DENOTES PROPOSED RETAINING WALL, ROADWAY, AND CULVERT BORINGS
 - DENOTES RETAINING WALLS AND CULVERT EXTENSIONS

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PLAN SCALE 1" = 100'

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 COLUMBIA, S.C.
 I-85/I-385 INTERCHANGE
 IMPROVEMENTS

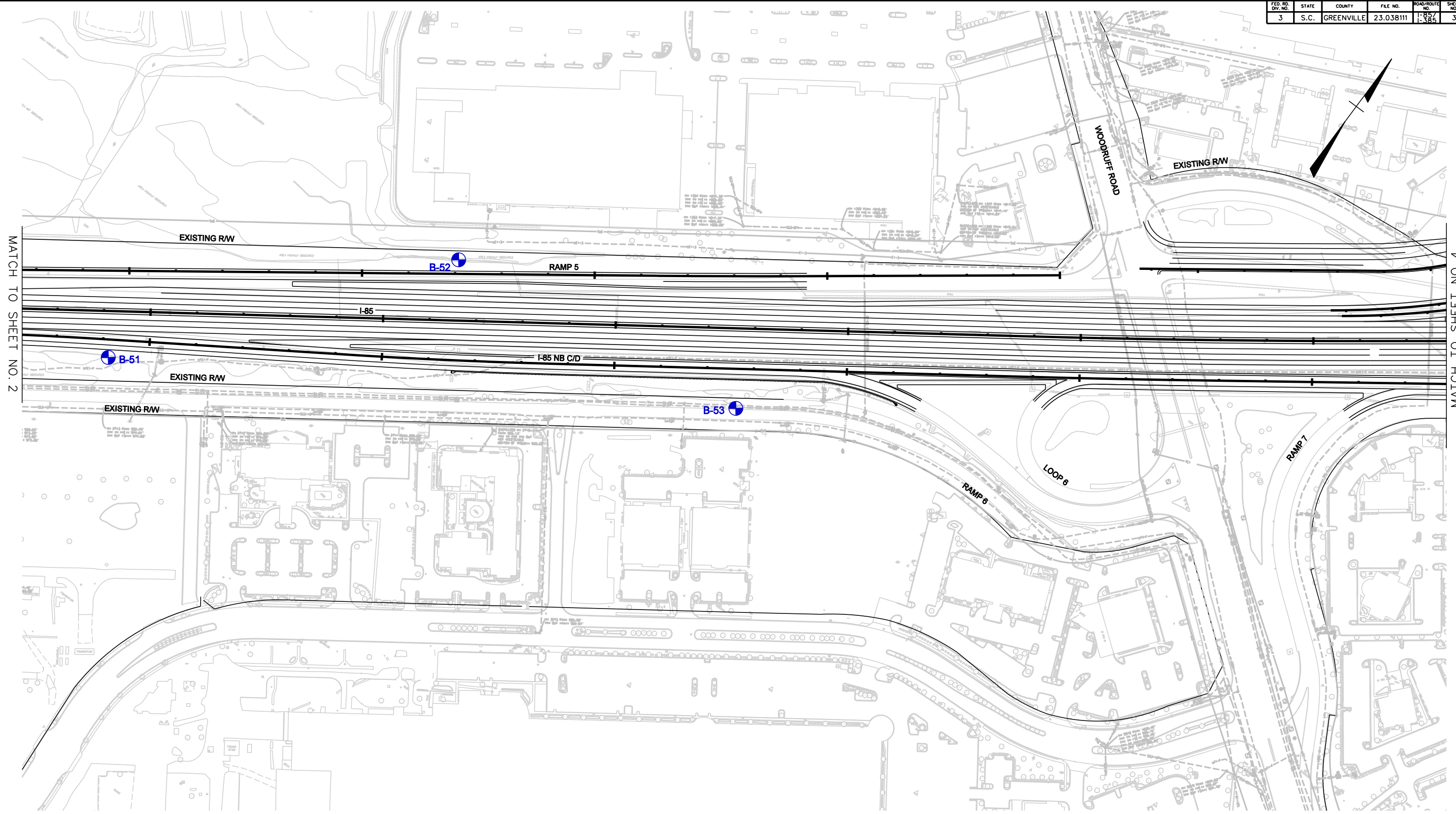
BORING PLAN (1 of 14)

RT. 85/385 DWG. NO. 2



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ROADWAY/CULVERT BORINGS			
BORING	ALIGNMENT	STATION	OFFSET
B-51	I-85NBCD	244+13	39' RT.
B-52	RAMP 5	117+93	30' RT.
B-53	I-85NBCD	257+64	85' RT.

- LEGEND**
- DENOTES BRIDGE BORINGS, DRILLING COMPLETE
 - DENOTES PROPOSED RETAINING WALL, ROADWAY, AND CULVERT BORINGS
 - DENOTES RETAINING WALLS AND CULVERT EXTENSIONS

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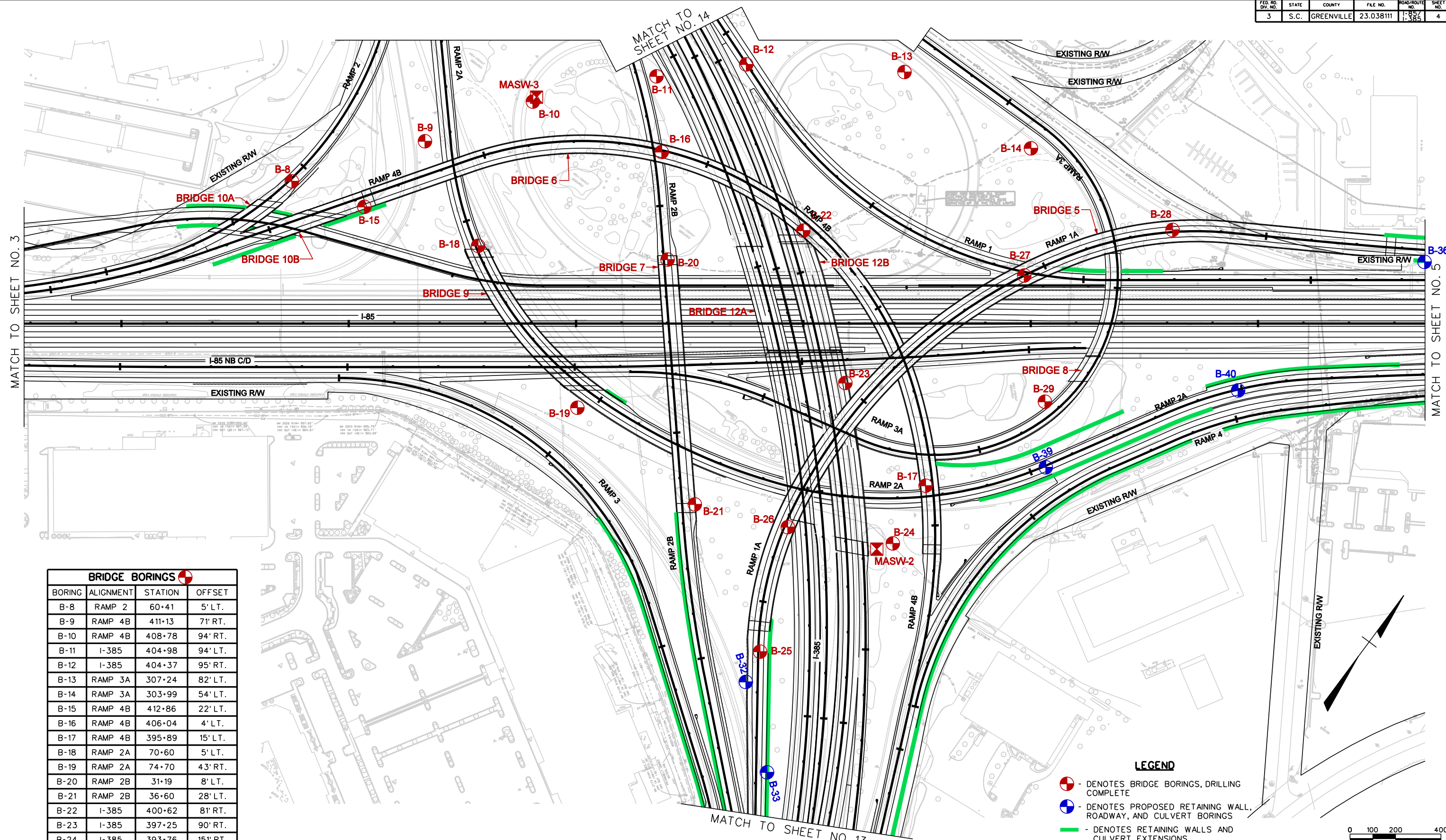
PLAN SCALE 1" = 100'

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BORING PLAN (2 of 14)

RTE. 85/385 DWG. NO. 3

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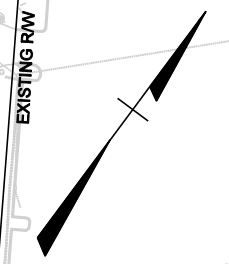
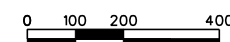
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BRIDGE BORINGS			
BORING	ALIGNMENT	STATION	OFFSET
B-8	RAMP 2	60+41	5' LT.
B-9	RAMP 4B	411+13	71' RT.
B-10	RAMP 4B	408+78	94' RT.
B-11	I-385	404+98	94' LT.
B-12	I-385	404+37	95' RT.
B-13	RAMP 3A	307+24	82' LT.
B-14	RAMP 3A	303+99	54' LT.
B-15	RAMP 4B	412+86	22' LT.
B-16	RAMP 4B	406+04	4' LT.
B-17	RAMP 4B	395+89	15' LT.
B-18	RAMP 2A	70+60	5' LT.
B-19	RAMP 2A	74+70	43' RT.
B-20	RAMP 2B	31+19	8' LT.
B-21	RAMP 2B	36+60	28' LT.
B-22	I-385	400+62	81' RT.
B-23	I-385	397+25	90' RT.
B-24	I-385	393+76	15' RT.
B-25	RAMP 1A	86+11	4' LT.
B-26	RAMP 1A	83+26	7' LT.
B-27	RAMP 1A	75+49	℄
B-28	RAMP 1A	72+06	5' RT.
B-29	RAMP 3A	296+84	30' LT.
MASW-2	I-385	393+66	115' RT.
MASW-3	RAMP 4B	408+70	102' RT.

RETAINING WALL BORINGS			
BORING	ALIGNMENT	STATION	OFFSET
B-32	RAMP 2B	40+70	87' LT.
B-33	RAMP 1A	88+76	24' LT.
B-36	RAMP 1A	66+49	26' LT.
B-39	RAMP 2A	85+35	3' RT.
B-40	RAMP 2A	89+91	2' RT.

- LEGEND**
- ⊕ - DENOTES BRIDGE BORINGS, DRILLING COMPLETE
 - ⊕ - DENOTES PROPOSED RETAINING WALL, ROADWAY, AND CULVERT BORINGS
 - - DENOTES RETAINING WALLS AND CULVERT EXTENSIONS

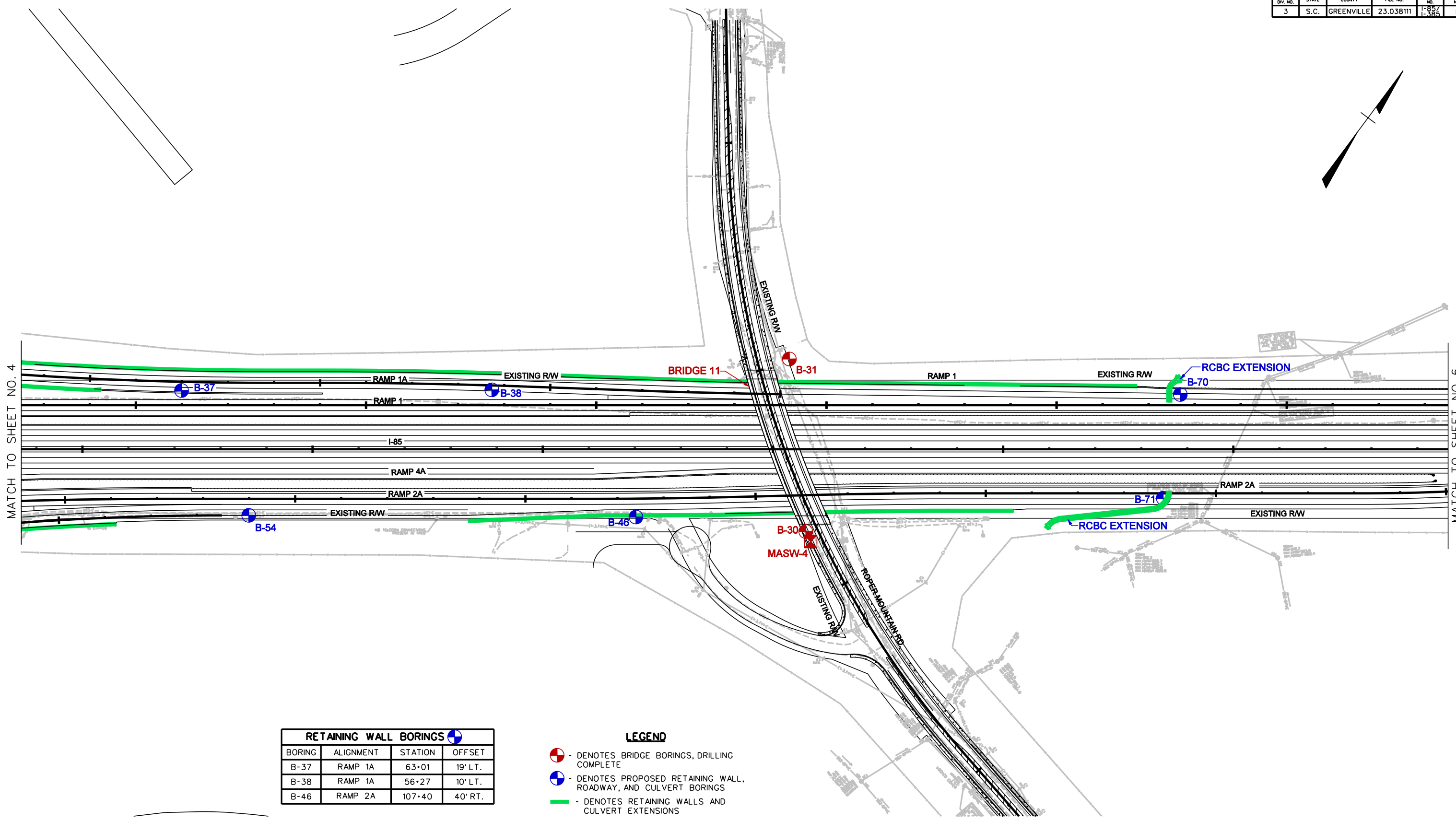
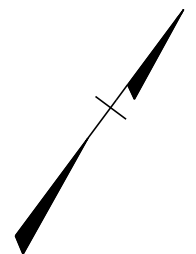


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 BORING PLAN (3 of 14)
 RTE. 85/385 DWG. NO. 4



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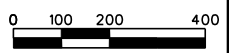
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RETAINING WALL BORINGS			
BORING	ALIGNMENT	STATION	OFFSET
B-37	RAMP 1A	63+01	19' LT.
B-38	RAMP 1A	56+27	10' LT.
B-46	RAMP 2A	107+40	40' RT.

- LEGEND**
- ⊕ - DENOTES BRIDGE BORINGS, DRILLING COMPLETE
 - ⊕ - DENOTES PROPOSED RETAINING WALL, ROADWAY, AND CULVERT BORINGS
 - - DENOTES RETAINING WALLS AND CULVERT EXTENSIONS

BRIDGE BORINGS			
BORING	ALIGNMENT	STATION	OFFSET
B-30	ROPER MT. RD.	36+39	25' LT.
B-31	ROPER MT. RD.	40+08	69' RT.
MASW-4	ROPER MT. RD.	36+15	25' LT.

ROADWAY/CULVERT BORINGS			
BORING	ALIGNMENT	STATION	OFFSET
B-54	RAMP 2A	98+99	36' RT.
B-70	RAMP 1	72+31	23' RT.
B-71	RAMP 2A	118+86	11' RT.

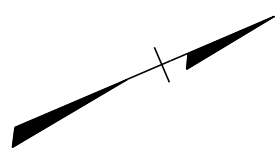
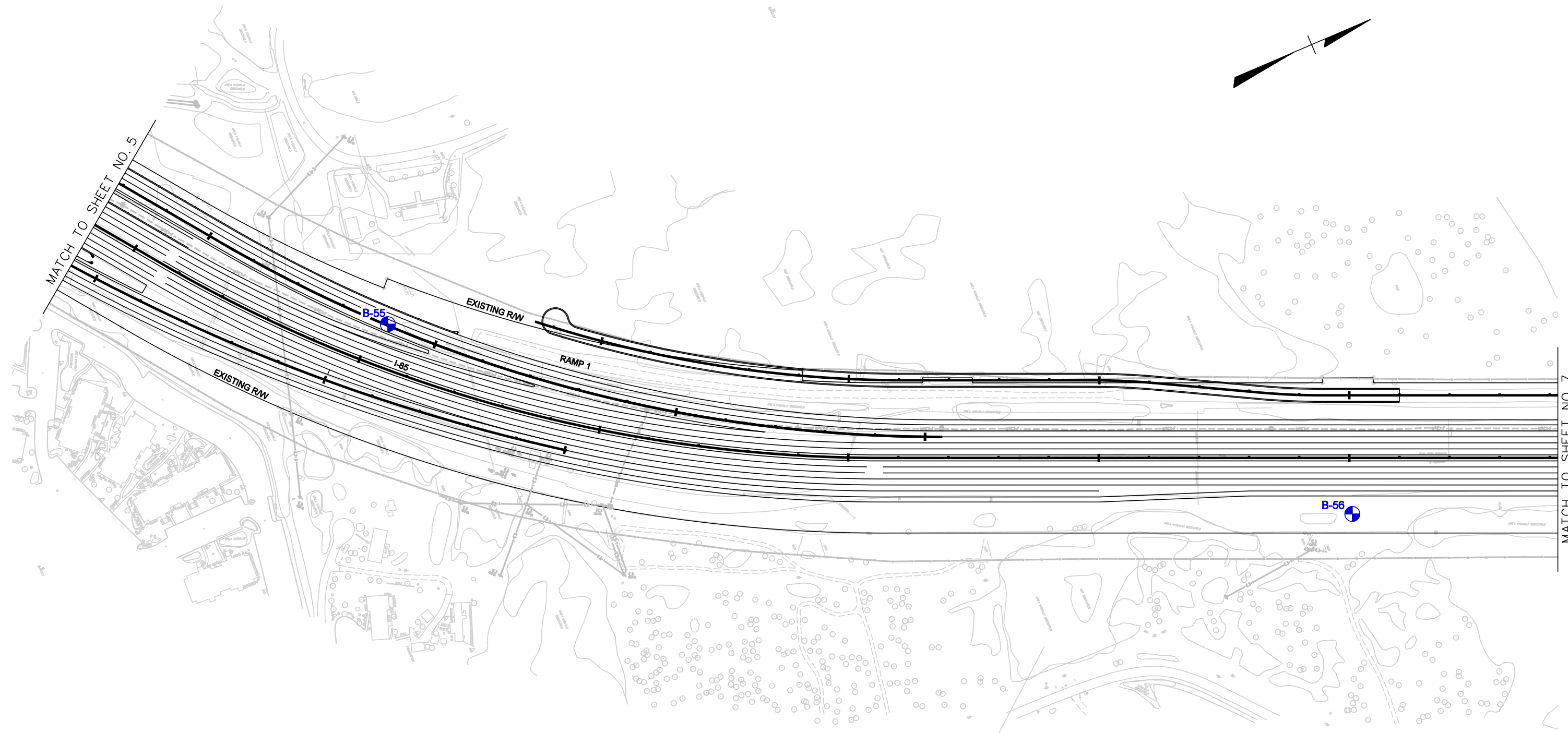


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IMPROVEMENTS
BORING PLAN (4 of 14)
RTE. 85/385 DWG. NO. 5

DATES & FILES



MATCH TO SHEET NO. 5

MATCH TO SHEET NO. 7

LEGEND

- DENOTES BRIDGE BORINGS, DRILLING COMPLETE
- DENOTES PROPOSED RETAINING WALL, ROADWAY, AND CULVERT BORINGS
- DENOTES RETAINING WALLS AND CULVERT EXTENSIONS

ROADWAY/CULVERT BORINGS			
BORING	ALIGNMENT	STATION	OFFSET
B-55	RAMP 1	61+03	3' RT.
B-56	I-85	360+06	112' RT.



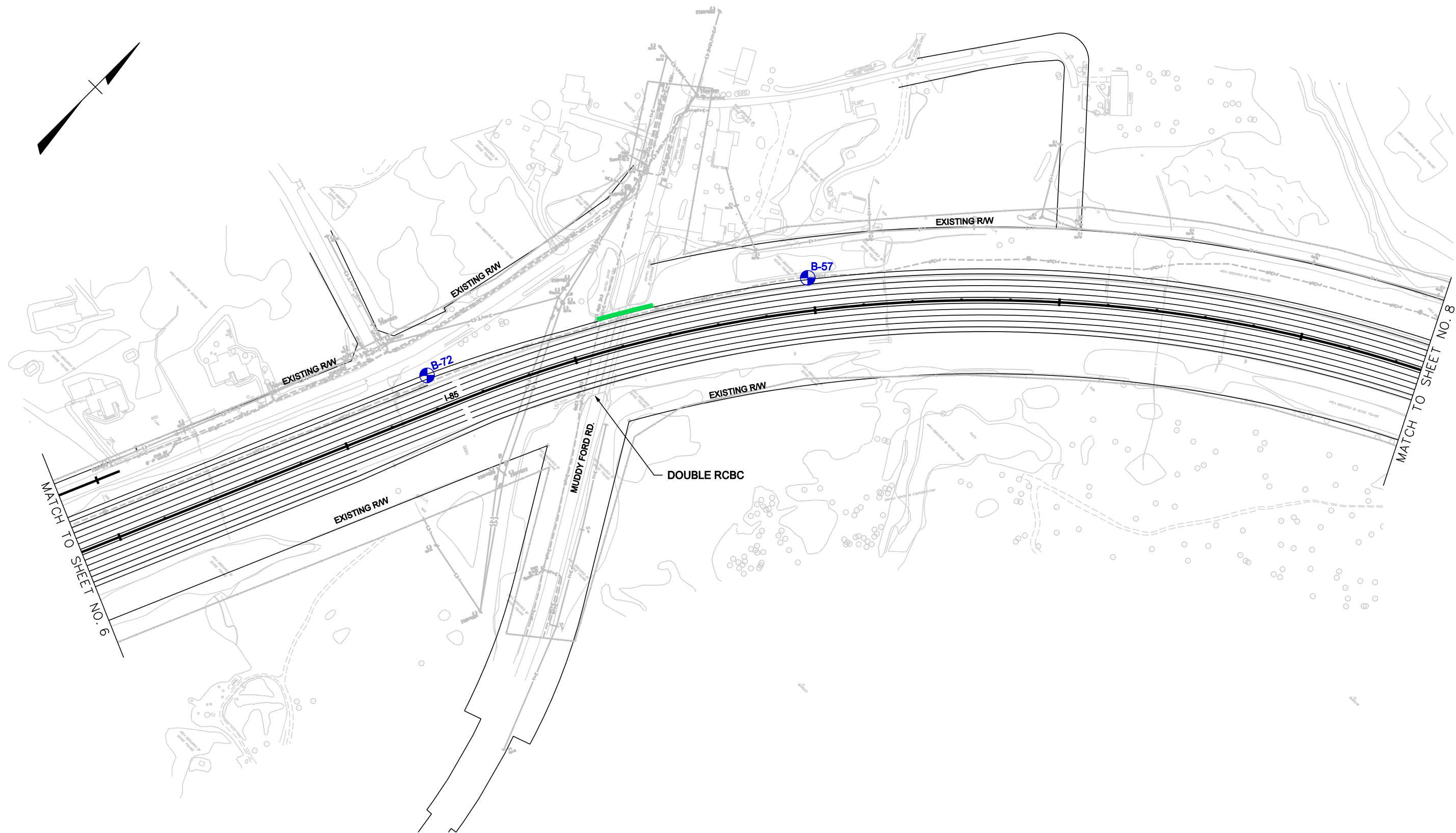
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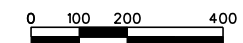
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 IMPROVEMENTS**
 BORING PLAN (5 of 14)
 RTE. 85/385 DWG. NO. 6

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MATCH TO SHEET NO. 6

MATCH TO SHEET NO. 8



LEGEND

- DENOTES BRIDGE BORINGS, DRILLING COMPLETE
- DENOTES PROPOSED RETAINING WALL, ROADWAY, AND CULVERT BORINGS
- DENOTES RETAINING WALLS AND CULVERT EXTENSIONS

ROADWAY/CULVERT BORINGS			
BORING	ALIGNMENT	STATION	OFFSET
B-57	I-85	379+93	68' LT.
B-72	I-85	372+06	73' LT.

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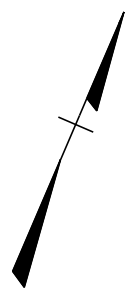
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I-85/1-385 INTERCHANGE
 IMPROVEMENTS

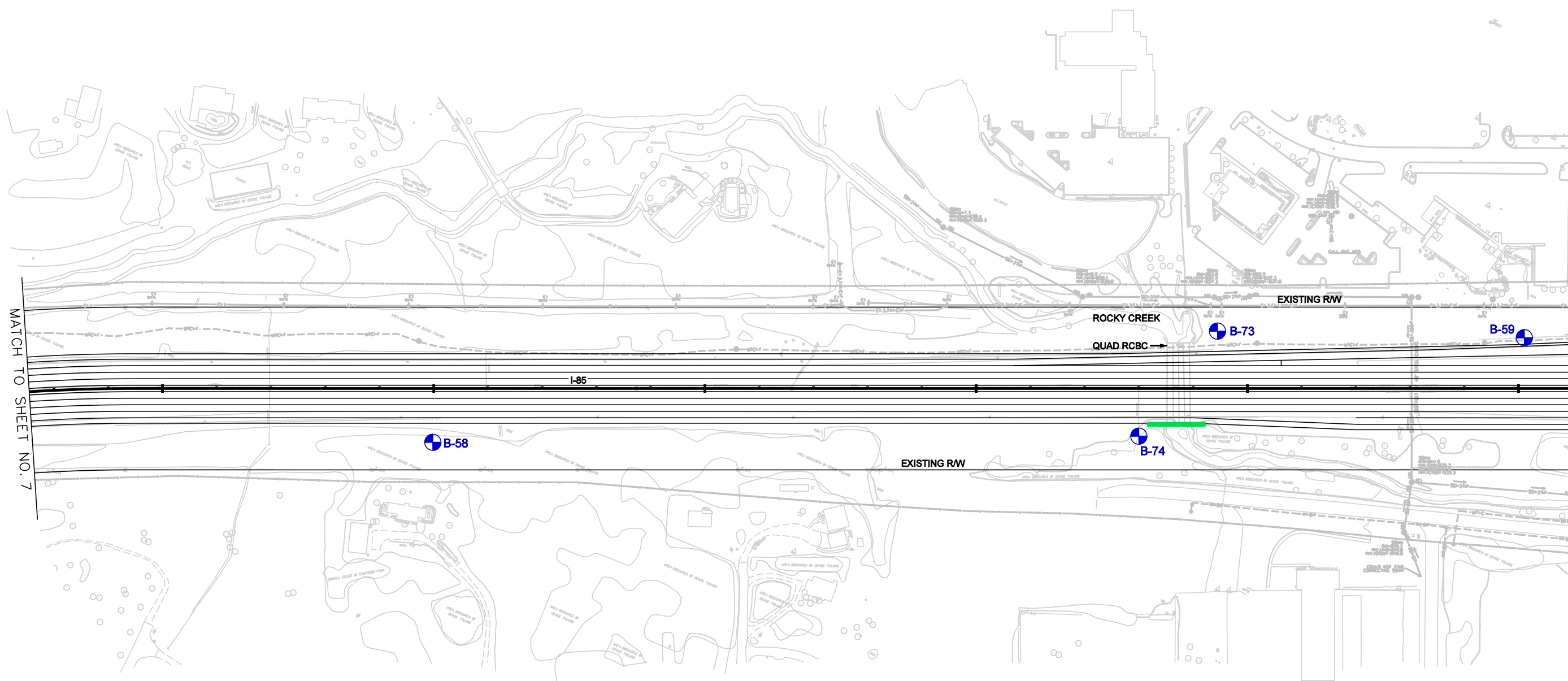
BORING PLAN (6 of 14)

RTE. 85/385 DWG. NO. 7



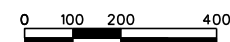
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ROADWAY/CULVERT BORINGS			
BORING	ALIGNMENT	STATION	OFFSET
B-58	I-85	399+98	99' RT.
B-59	I-85	420+11	94' LT.
B-73	I-85	414+45	106' LT.
B-74	I-85	413+00	88' RT.

- LEGEND**
- DENOTES BRIDGE BORINGS, DRILLING COMPLETE
 - DENOTES PROPOSED RETAINING WALL, ROADWAY, AND CULVERT BORINGS
 - DENOTES RETAINING WALLS AND CULVERT EXTENSIONS



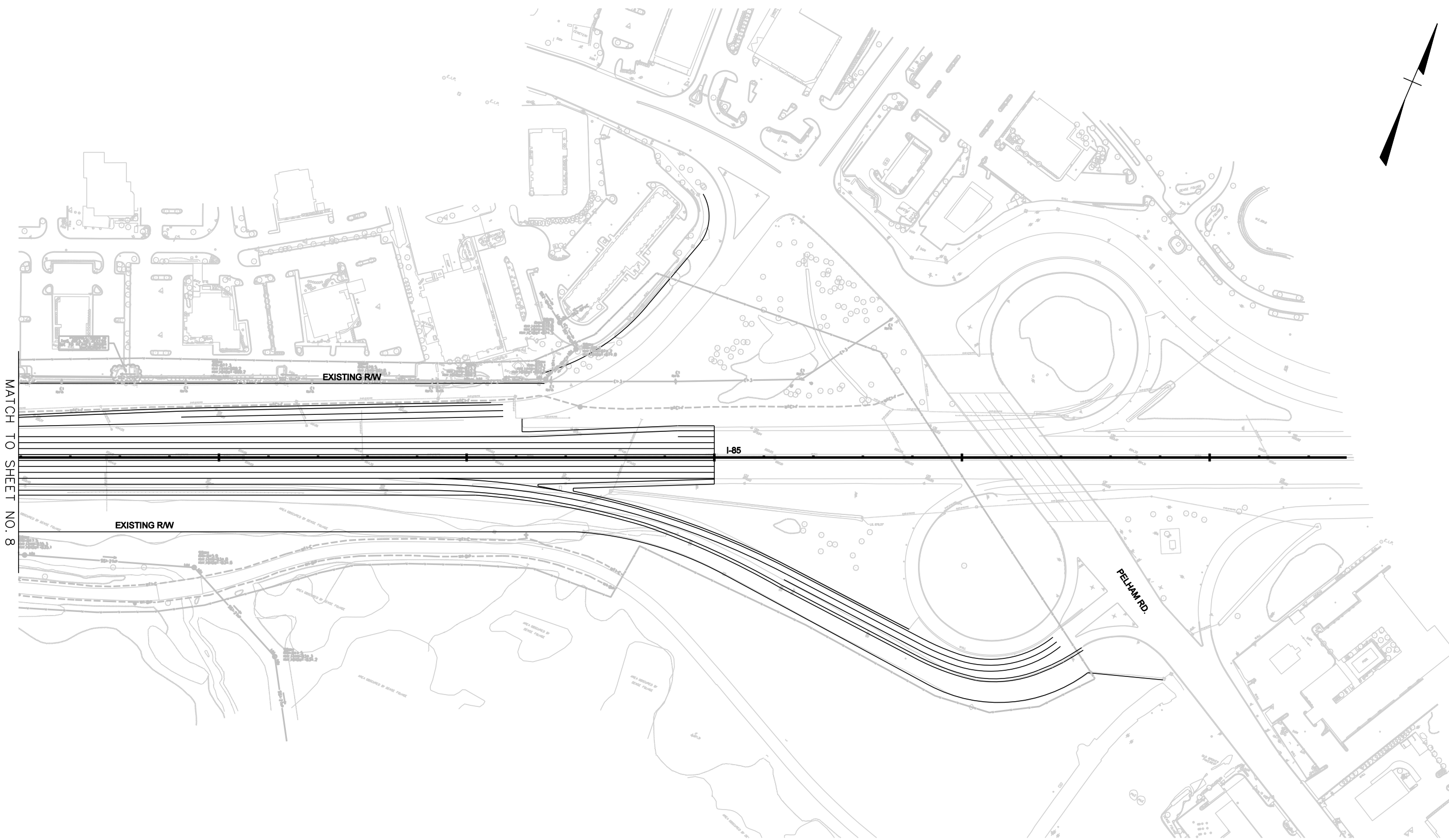
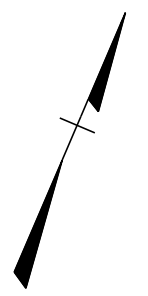
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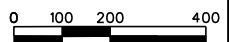
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 IMPROVEMENTS
 BORING PLAN (7 of 14)
 RTE. 85/385 DWG. NO. 8

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MATCH TO SHEET NO. 8



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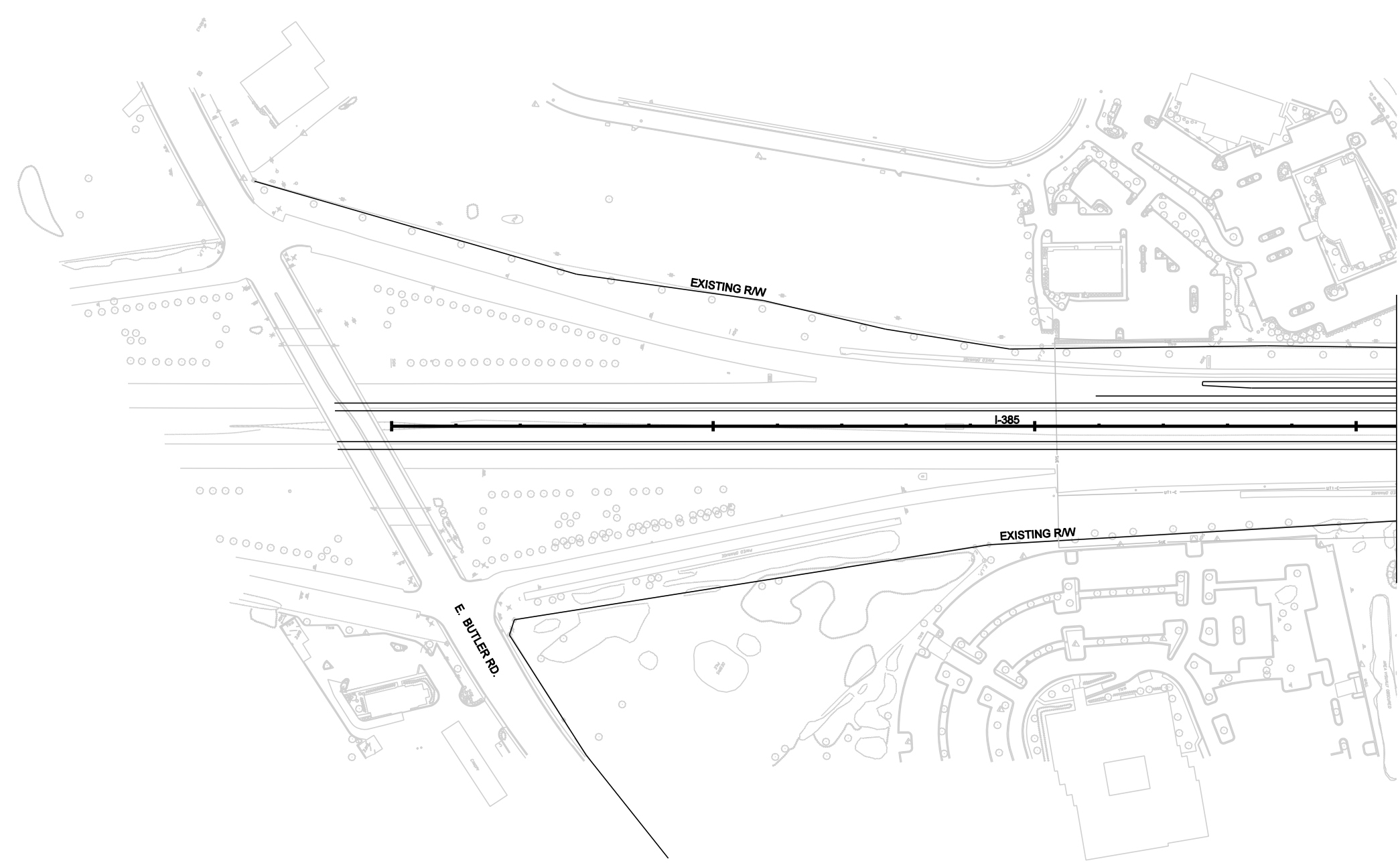
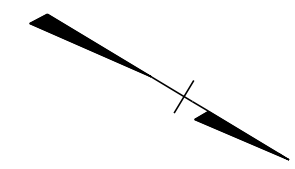
- DENOTES BRIDGE BORINGS, DRILLING COMPLETE
- DENOTES PROPOSED RETAINING WALL, ROADWAY, AND CULVERT BORINGS
- DENOTES RETAINING WALLS AND CULVERT EXTENSIONS

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PLAN SCALE 1" = 100'

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**I-85/I-385 INTERCHANGE
 IMPROVEMENTS**
 BORING PLAN (8 of 14)
 RTE. 85/385 DWG. NO. 9



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- LEGEND**
- DENOTES BRIDGE BORINGS, DRILLING COMPLETE
 - DENOTES PROPOSED RETAINING WALL, ROADWAY, AND CULVERT BORINGS
 - DENOTES RETAINING WALLS AND CULVERT EXTENSIONS

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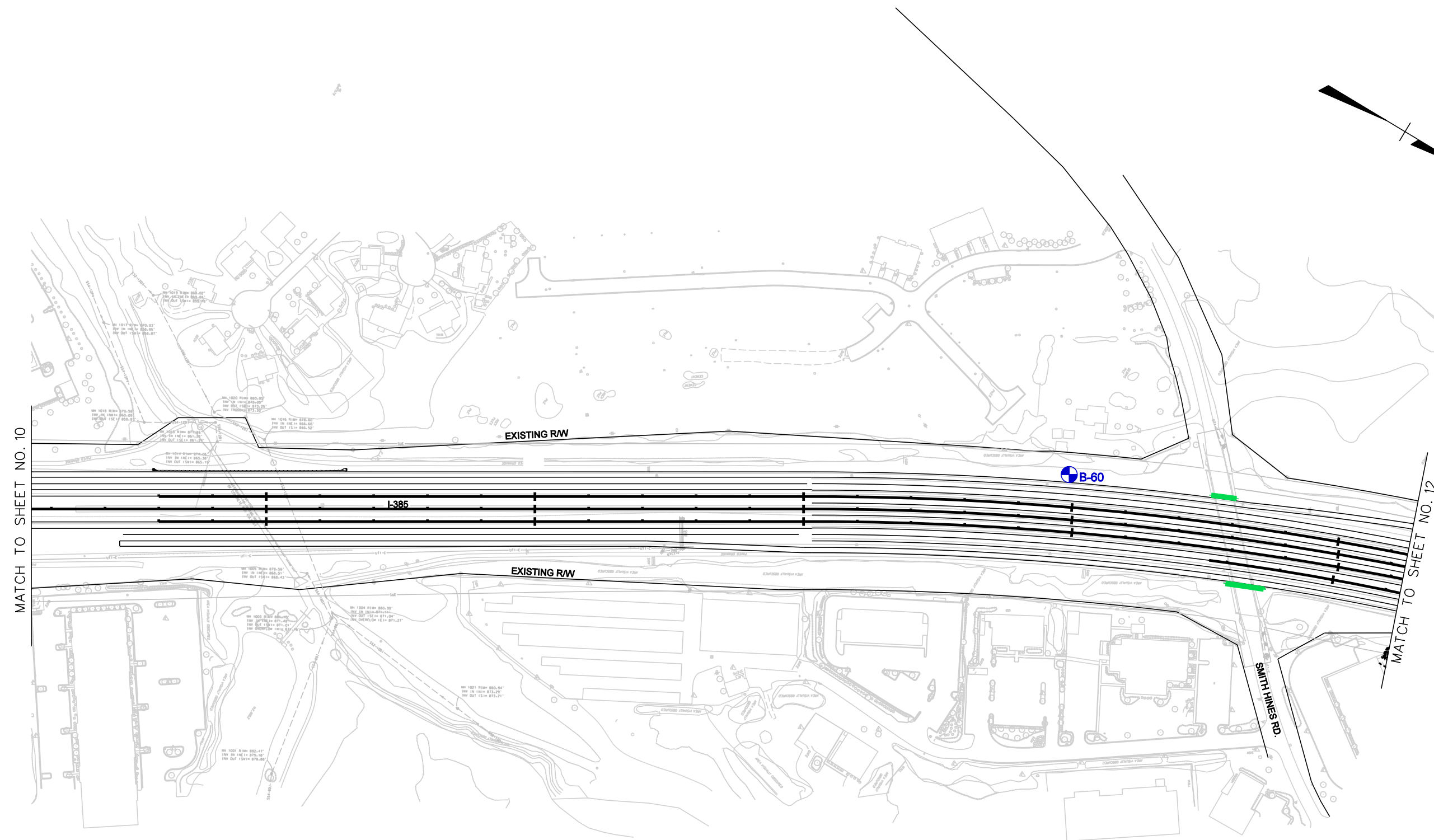
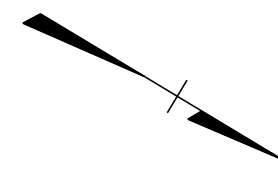
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BORING PLAN (9 of 14)

RTS. 85/385DWG. NO. 10

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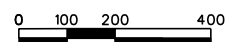
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LEGEND

- DENOTES BRIDGE BORINGS, DRILLING COMPLETE
- DENOTES PROPOSED RETAINING WALL, ROADWAY, AND CULVERT BORINGS
- DENOTES RETAINING WALLS AND CULVERT EXTENSIONS

ROADWAY/CULVERT BORINGS			
BORING	ALIGNMENT	STATION	OFFSET
B-60	I-385	324+88	84' LT.

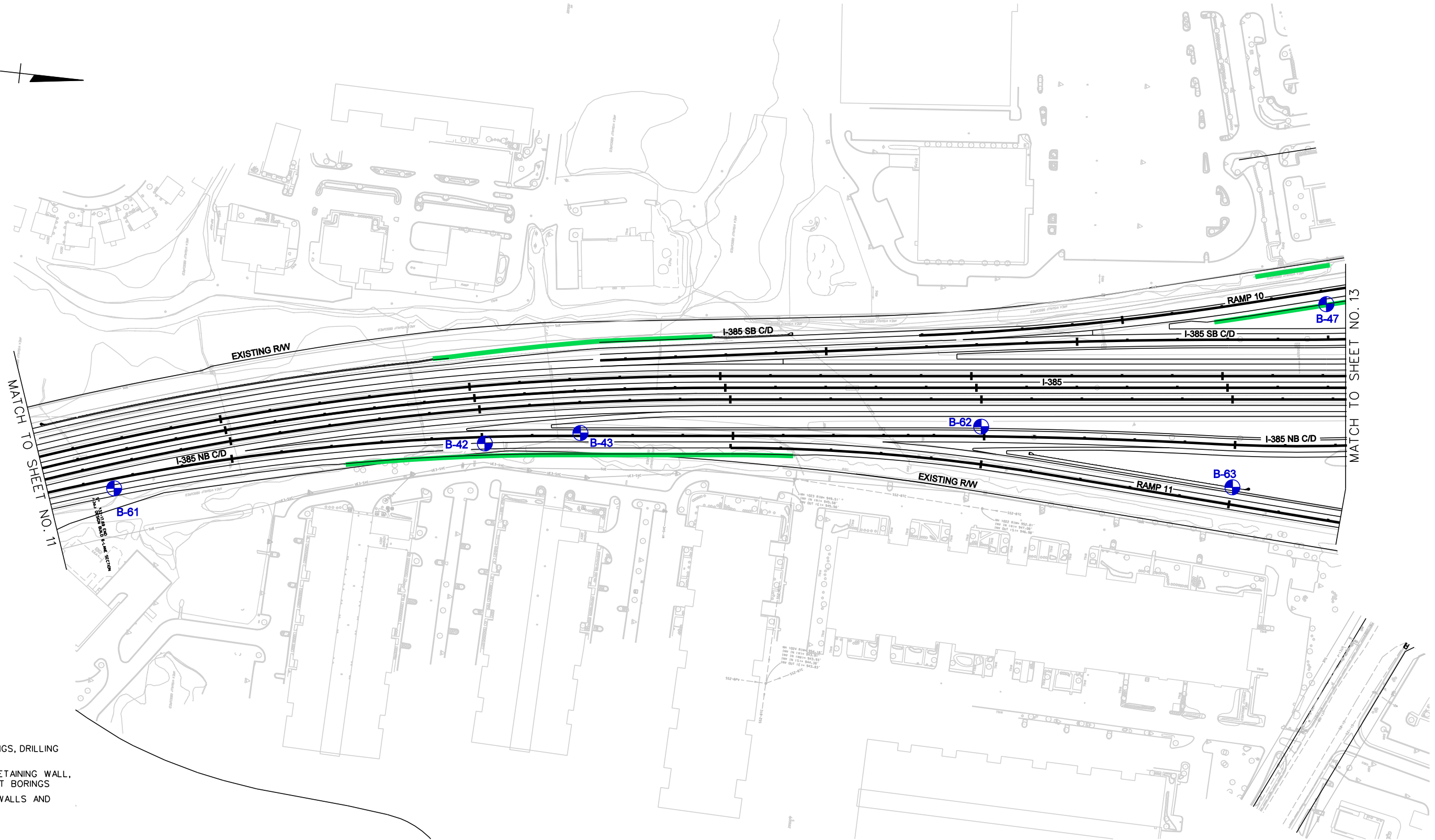


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 BORING PLAN (10 of 14)
 PLAN SCALE 1" = 100'

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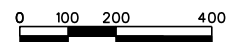


LEGEND

- DENOTES BRIDGE BORINGS, DRILLING COMPLETE
- DENOTES PROPOSED RETAINING WALL, ROADWAY, AND CULVERT BORINGS
- DENOTES RETAINING WALLS AND CULVERT EXTENSIONS

RETAINING WALL BORINGS			
BORING	ALIGNMENT	STATION	OFFSET
B-42	I-385NBCD	340+05	13' RT.
B-43	I-385NBCD	341+96	6' LT.
B-47	I-385SBCD	120+03	70' RT.

ROADWAY/CULVERT BORINGS			
BORING	ALIGNMENT	STATION	OFFSET
B-61	I-385NBCD	332+58	20' RT.
B-62	I-385NBCD	349+94	19' LT.
B-63	I-385NBCD	354+98	85' RT.

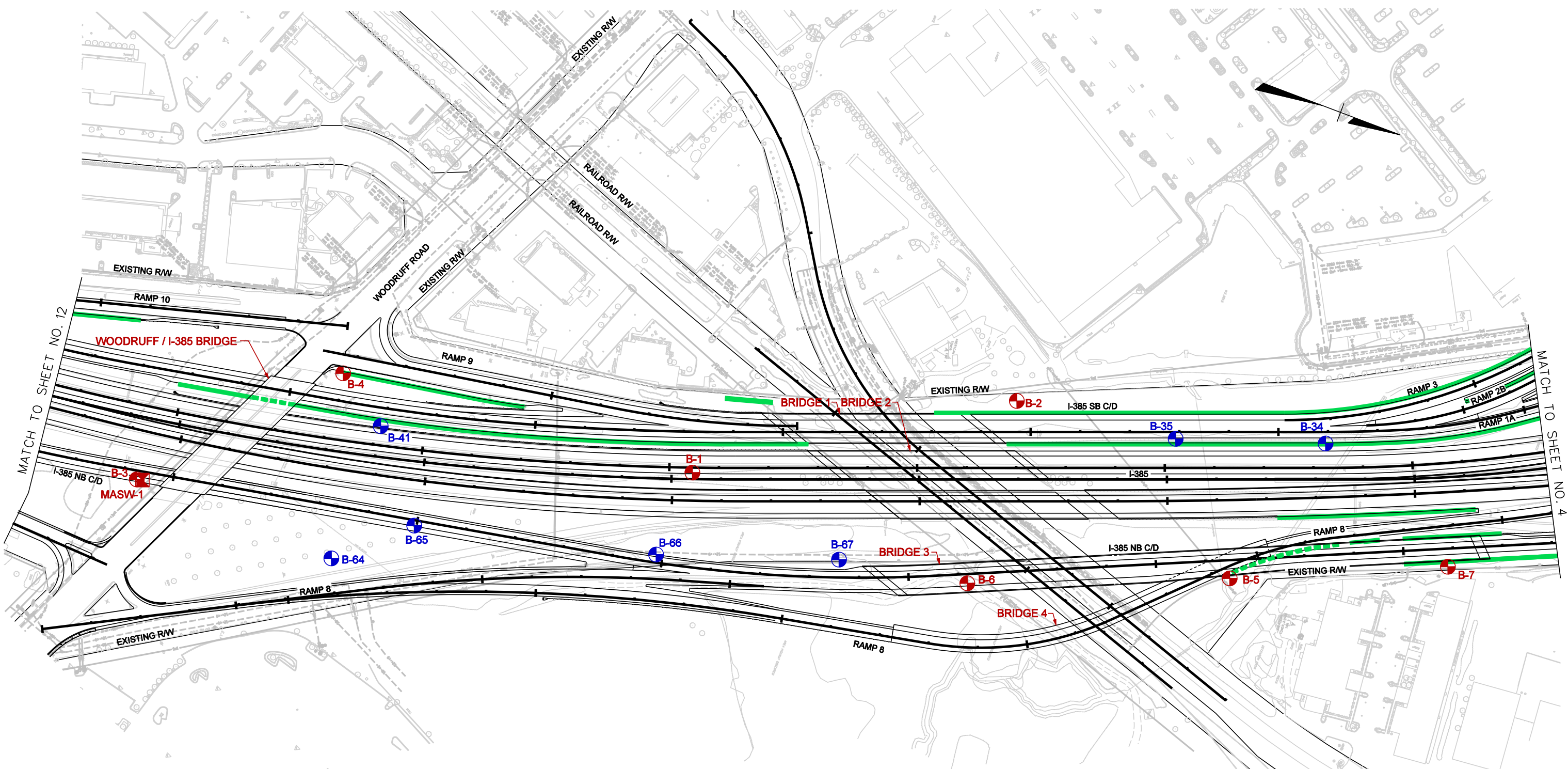


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 IMPROVEMENTS
 BORING PLAN (11 of 14)
 RTE. 85/385 DWG. NO. 12

DATES & FILES



LEGEND

- - DENOTES BRIDGE BORINGS, DRILLING COMPLETE
- - DENOTES PROPOSED RETAINING WALL, ROADWAY, AND CULVERT BORINGS
- - DENOTES RETAINING WALLS AND CULVERT EXTENSIONS

BRIDGE BORINGS			
BORING	ALIGNMENT	STATION	OFFSET
B-1	I-385SBCD	106+81	83' LT.
B-2	I-385SBCD	100+28	63' RT.
B-3	I-385NBCD	359+28	18' RT.
B-4	I-385SBCD	114+01	56' RT.
B-5	I-385NBCD	381+47	37' RT.
B-6	I-385NBCD	376+18	19' RT.
B-7	I-385NBCD	385+88	37' RT.
MASW-1	I-385NBCD	359+39	17' RT.

ROADWAY/CULVERT BORINGS			
BORING	ALIGNMENT	STATION	OFFSET
B-64	RAMP 8	55+93	76' LT.
B-65	I-385NBCD	364+95	11' RT.
B-66	I-385NBCD	369+87	16' LT.
B-67	RAMP 8	65+94	137' LT.

RETAINING WALL BORINGS			
BORING	ALIGNMENT	STATION	OFFSET
B-34	I-385SBCD	94+10	23' LT.
B-35	I-385SBCD	97+07	14' LT.
B-41	I-385SBCD	113+09	37' LT.



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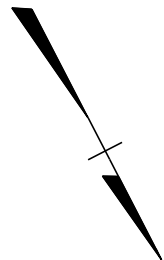
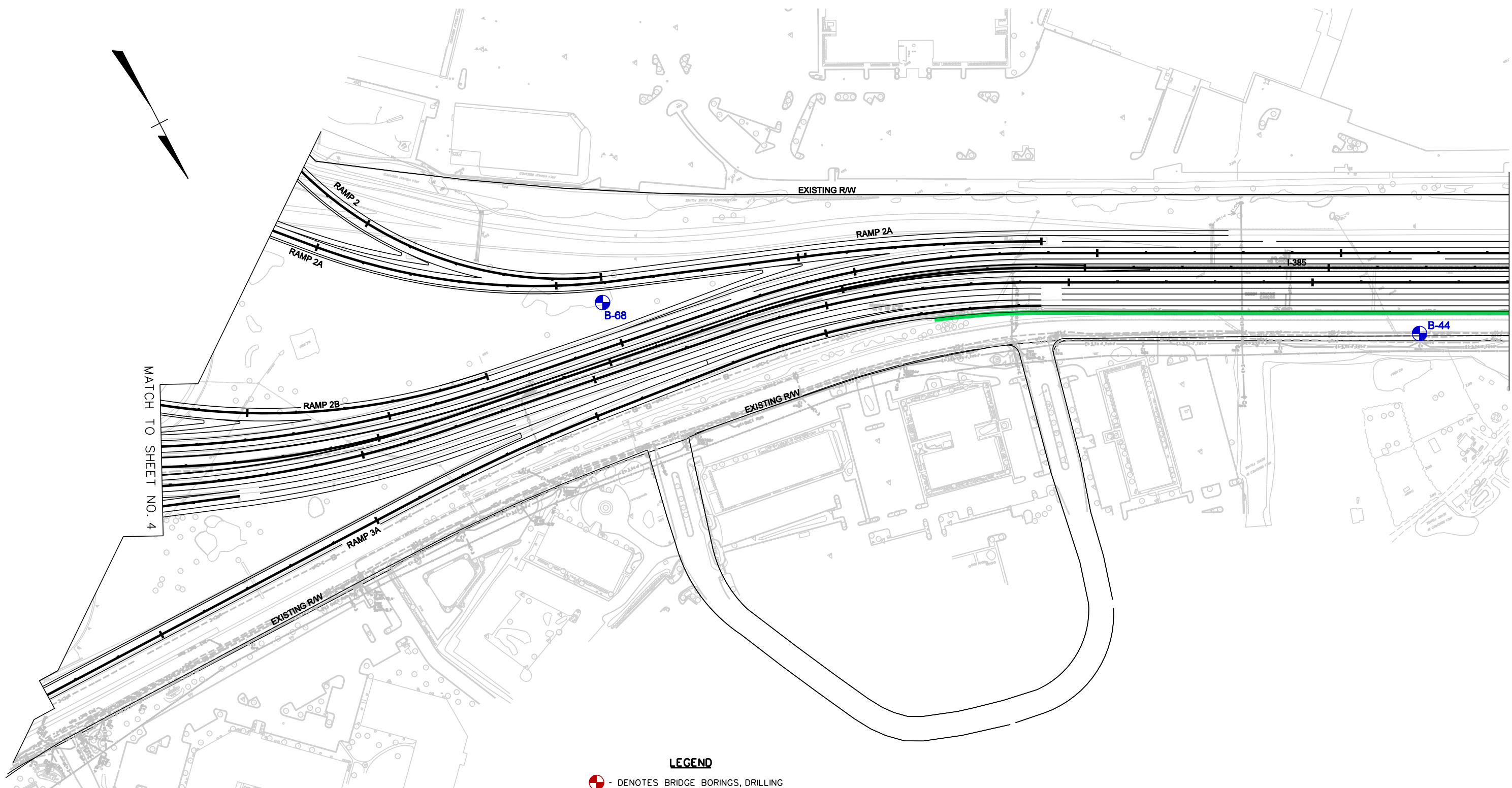
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I-85/I-385 INTERCHANGE IMPROVEMENTS

BORING PLAN (12 OF 14)

RTE. 85/385 DWG. NO. 13

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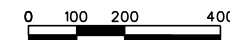
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LEGEND


- - DENOTES BRIDGE BORINGS, DRILLING COMPLETE
- - DENOTES PROPOSED RETAINING WALL, ROADWAY, AND CULVERT BORINGS
- - DENOTES RETAINING WALLS AND CULVERT EXTENSIONS

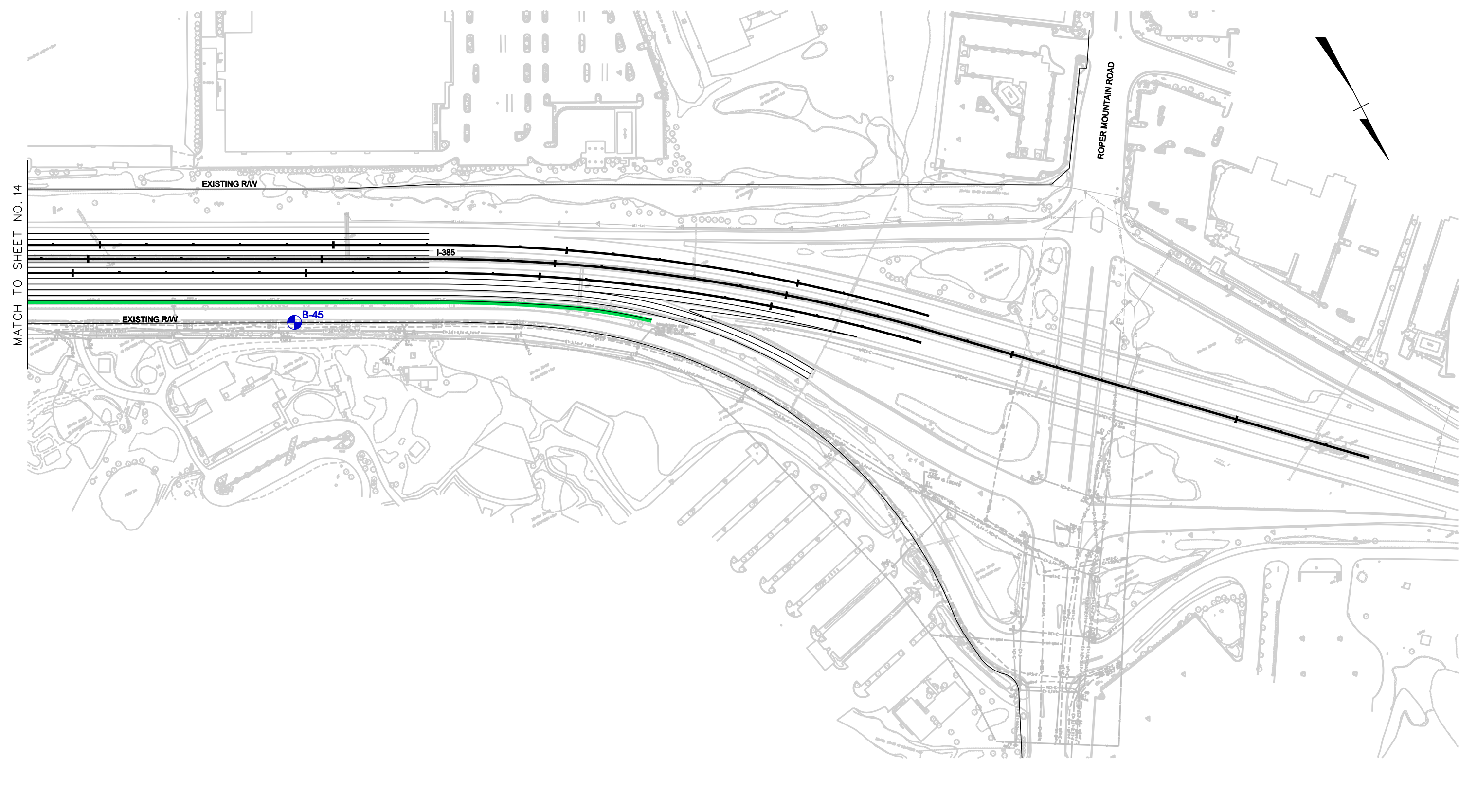
ROADWAY/CULVERT BORINGS ●			
BORING	ALIGNMENT	STATION	OFFSET
B-68	RAMP 2A	59+09	41' LT.
B-69	OMITTED		

RETAINING WALL BORINGS ●			
BORING	ALIGNMENT	STATION	OFFSET
B-44	I-385	431+86	135' RT.

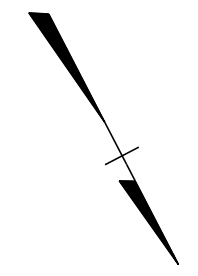


DATES & FILES




 <p>Florence & Hutcheson CONSULTING ENGINEERS <small>P.O. Box 50800 • Columbia, SC 29250 • 501 Huger Street • Columbia, SC 29201</small></p>								SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION COLUMBIA, S.C. I-85/I-385 INTERCHANGE IMPROVEMENTS BORING PLAN (13 of 14) RTE. 85/385 DWG. NO. 14
	4							
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1								
REV. NO.	BY	DATE	DESCRIPTION OF REVISION					
TOPO.	DATE	DATE	PLAN SCALE 1" = 100'					
DWG.	DATE	DATE						
R/W	DATE	DATE						



MATCH TO SHEET NO. 14



LEGEND

-  - DENOTES BRIDGE BORINGS, DRILLING COMPLETE
-  - DENOTES PROPOSED RETAINING WALL, ROADWAY, AND CULVERT BORINGS
-  - DENOTES RETAINING WALLS AND CULVERT EXTENSIONS

ROADWAY/CULVERT BORINGS			
BORING	ALIGNMENT	STATION	OFFSET
B-45	I-385	439+42	136' RT.

Florence & Hutcheson
 CONSULTING ENGINEERS
 P.O. Box 50800 • Columbia, SC 29250 • 501 Huger Street • Columbia, SC 29201

4			
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REV. NO.	BY	DATE	DESCRIPTION OF REVISION
TOPO:		DATE	
DWG.		DATE	
R/W		DATE	

SOUTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 COLUMBIA, S.C.
I-85/I-385 INTERCHANGE IMPROVEMENTS
 BORING PLAN (14 of 14)
 RTE. 85/385 DWG. NO. 15

\$DATES\$
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Appendix Section VI Hammer Efficiency Reports

DRILL RIG SPT HAMMER ENERGY CALIBRATION REPORT

Florence & Hutcheson Drill Rig
Model CME-45C SN 365794
Land Between the Lakes
National Recreational Area, KY

August 15, 2011
Project No. N1115097

Prepared for:
Terracon Consultants, Inc.
Cincinnati, Ohio

Prepared by:
WPC, A Terracon Company
Charleston, South Carolina



Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

August 15, 2011

Terracon Consultants, Inc.
611 Lunken Park Drive
Cincinnati, OH 45226



Attn: Ronald J. Ebelhar, P.E., D. GE
Senior Principal
P: [513] 321-5816

Re: Drill Rig Standard Penetration Test (SPT)
Hammer Energy Calibration Report
CME-45C Serial Number 365794
Terracon Project No.: N1115097

Dear Mr. Ebelhar:


WPC has completed the Standard Penetration Test (SPT) hammer energy calibration (i.e. determined the hammer Energy Transfer Ratio (ETR), a.k.a. drill rod energy ratio or energy transfer efficiency) for the Model CME-45C drill rig (Serial Number 365794). This drill rig has an automatic hammer lifted by a hydraulic chain system and AWJ drill rods were used during the SPT. The hammer ETR was determined from data collected during a test boring with SPT on August 4th, 2011. The dynamic testing was conducted using the Pile Driving Analyzer™ (PDA) Model PAK, which records, digitizes, and processes the force and acceleration signals. The SPT energy measurement testing was carried out in accordance with ASTM D4945 *Standard Test Method for High Strain Dynamic Testing of Piles* and ASTM D4633 *Standard Test Method for Energy Measurement for Dynamic Penetrometers*.

Based on our testing and subsequent analysis, drill rig CME-45C (Serial Number 365794) has an **Energy Transfer Ratio (ETR)** of **93.1% ± 2.5%**. Based on this ETR, the hammer efficiency correction (**C_E**) is **1.55**. The following paragraphs of this report contain a brief drill rig description, discuss the SPT energy measurement background and results, and provide our conclusions based on the SPT energy measurement testing data and analysis.

Sincerely,
WPC, A Terracon Company



Craig Skiles
Project Professional



Edward L. Hajduk, D.Eng., P.E.
Senior Engineer

Enclosures
cc: 1 – Client (PDF)
1 – File



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APPENDIX A – CME-45C Drill Rig Manufacturer Specifications

APPENDIX B – PDA Model PAK Literature

APPENDIX C – PDA Equipment Calibrations

APPENDIX D – Representative Blow (Blow 56)

APPENDIX E – PDA Quantity Output File (CD-ROM)

**DRILL RIG SPT HAMMER
ENERGY CALIBRATION REPORT
Florence & Hutcheson
Drill Rig Model CME-45C SN 365794
Land Between the Lakes
National Recreational Area, KY
Project No. N1115097
August 15, 2011**

1.0 BACKGROUND

The Standard Penetration Test (SPT) consists of a drive weight assembly (i.e. hammer and anvil), split spoon sampler, and drill rods. The drive weight system consists of a 140 lb hammer raised by a number of mechanical means. The split spoon sampler is placed at the end of the drill rods in a borehole. The 140 lb hammer is raised 30 inches and then dropped to impact the drill rods. This procedure is repeated until the sampler has penetrated 18 inches into the underlying soil. The number of blows required to advance the split spoon sampler the final 12 inches is recorded as the “N” value for the test. Typically, the test is performed every 2½ ft for the upper 10 ft of a boring and then at 5 ft intervals thereafter. The test should be performed in accordance with ASTM D1586 *Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils*.

A number of factors can influence the Standard Penetration Test (SPT) and the subsequent N value. These include but are not limited to the following:

- Hammer
- Hammer Lifting System
- Operator Field Procedures
- Drill Rod Diameter and Length
- Borehole Drilling Method and Size
- Split Spoon Sampler

In order to account for these system variables, standardized SPT corrections have been developed. The corrected blow count is referred to as the N_{60} value. The N_{60} value is derived from the assumed efficiency of the original SPT (Mohr) hammer (Rogers, 2004)¹. For routine engineering practice in the United States, correlations for engineering properties are based on SPT N values measured based on a system that is 60 percent efficient (i.e. N_{60}) (FHWA, 2002)². The following equation defines N_{60} values:

¹ Rogers, J.D. (2004). Notes on the Standard Penetration Test, Course Material for GE 441 Advanced Engineering Geology & Geotechnics, University of Missouri-Rolla, Rolla, MO

² US Department of Transportation Federal Highway Administration (FHWA) Report No. FHWA-IF-02-034 *Evaluation of Soil and Rock Properties* (2002).

$$N_{60} = N_{\text{meas}} C_E C_B C_S C_R \quad (\text{FHWA, 2002})$$

Where:

N_{60} = SPT N Value corrected for field procedures and apparatus

N_{meas} = Measured SPT value during testing

C_E = Hammer Efficiency Correction

C_B = Borehole Diameter Correction

C_S = Sample Barrel Correction

C_R = Rod Length Correction

In addition, the N value is influenced by the overburden pressure. Therefore, the N value is typically normalized to account for energy, overburden, and other factors. ASTM D6060 *Standard Practice for Determining the Normalized Penetration Resistance of Sands for Evaluation of Liquefaction Potential* defines $(N_1)_{60}$ as the penetration resistance adjusted for energy and overburden stress. $(N_1)_{60}$ is defined by the following equation:

$$(N_1)_{60} = C_N \times N_{60}$$

Where:

$(N_1)_{60}$ = Penetration resistance normalized to a 1 ton/ft² stress level

C_N = Stress Correction Factor for overburden. C_N is a function of effective vertical stress (σ'_v). Refer to ASTM D6066 for additional details on C_N .

The hammer efficiency correction (C_E) is based on the Energy Transfer Ratio (ETR, a.k.a. drill rod energy ratio or energy transfer efficiency) and 60% of the theoretical maximum potential energy of the SPT hammer (i.e. 350 ft-lbs, which is 140 lb weight multiplied by a 30 inch drop). The following equations show the derivation of C_E :

$$ETR = \frac{EFV}{PE} \times 100$$

Where:

ETR = Energy Transfer Ratio (referred to as drill rod energy ratio (ER_i) in ASTM D6066)

EFV = Measured Transferred Energy from SPT Hammer to drill rods (known as EMX within the Pile Driving Analyzer™ software)

PE = Theoretical Maximum Potential Energy of SPT Hammer (i.e. 350 ft-lb)

and

$$C_E = \frac{ETR}{60\%}$$

Transferred (i.e. delivered) energy measurements of SPT testing (i.e. the energy delivered by the hammer to the drill rods) are commonly taken in engineering practice through the use of several types of instruments. The most common of these is the Pile Driving Analyzer (PDA), developed and marketed by Pile Dynamics Inc. of Cleveland, Ohio. The PDA is a computer fitted with a data acquisition and a signal conditioning system and is typically used to conduct high strain dynamic load testing of driven piles, which is analogous to the SPT test. Strain gages and accelerometers which are connected to the PDA are attached to the pile or drill rods (for SPT testing). During pile driving or SPT testing, the strain and acceleration signals are recorded and processed for each hammer blow. The strain signal is converted to a force record and the acceleration signal is converted to a velocity record. The PDA saves selected hammer blows containing this information to a disk and determines the compressive stresses, displacement, and energy at the point of measurement (i.e. the pile or drill rod top). The energy transferred to the drill rod during the impact event (i.e. the maximum transferred energy, defined as EFV) is derived from the dynamic measurements using the following equation:

$$EFV = \int_b^a F(t)V(t)dt$$

Where:

EFV = Measured Transferred Energy from SPT Hammer to drill rods (known as EMX within the Pile Driving Analyzer™ software)

a = Time Energy Transfer Begins

b = Time Energy Transfer End

F = Force

V = Velocity

t = Time

Refer to Abou-matar and Goble (1997)³ for additional details of SPT energy measurements using the PDA.

³ Abou-matar, H., and Goble, G. G. (1997). SPT Dynamic Analysis and Measurements. *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, October 1997; 921-926.

2.0 PROJECT INFORMATION

2.1 Overview

The drill rig SPT hammer calibration testing was performed within one test boring (TB-1) at Land Between the Lakes National Recreational Area, KY on August 4th, 2011 between 2:00 pm and 4:00 pm near boring location B4001. SPT hammer energy measurements were performed at starting depths of 14.5 feet, 19.5 feet, 24.5 feet, 29.5 feet, 34.5 feet, 39.5 feet, 44.5 feet and 49.5 feet.

2.2 Drill Rig and Drilling Equipment

The tested drill rig CME-45C (SN 365794) is a track carrier mounted drill rig with an automatic hammer lifted by a hydraulic chain system. This drill rig was built in 2009. The drill rig and SPT hammer operator during the SPT hammer energy calibration testing was Mr. Fred Woodard. Based on observations by WPC personnel during the SPT energy measurements, this hammer appeared to be properly lubricated and well maintained. A photograph of this drill rig during the time of SPT energy calibration testing is presented in Figure 1. Manufacturer specifications for this drill rig are provided in the report Appendix.



Figure 1. CME-45C (SN 365794) Track Carrier Mounted Drill Rig.

The method of drilling the borehole during SPT energy testing was hollow stem augers with Standard Penetration Testing being performed with AWJ drill rods. AWJ drill rod sections have nominal outside diameter of 1¾ inches and wall thickness of 3/16 inches. The instrumented sub-assembly (i.e. where gages were attached) consisted of a two feet long section of AWJ rod that was threaded into the top drill rod at each testing interval.

2.3 Energy Measurement Instrumentation

The SPT Energy measurement instrumentation consisted of a 2 feet long AWJ instrumented drill rod which is fitted with two strain gages by Pile Dynamic Inc., in addition two (2) accelerometer transducers are attached a distance of approximately 1 foot below the top (i.e. in the center of the rod). This instrumented rod has a cross-sectional area of 1.18 square inches (in²) at the strain gauge locations. One strain gage and one accelerometer are on opposite faces of the AWJ drill rod to minimize the effects of uneven hammer impact and rod bending.

A Model 586 PAK Pile Driving Analyzer™ (PDA), manufactured by Pile Dynamics Inc., was used to collect the instrumentation data. The PDA is a computer fitted with a data acquisition and a signal conditioning system. During driving, the strain and acceleration signals are recorded and processed for each hammer blow. The strain signal is converted to a force record and the acceleration signal is converted to a velocity record. The sampling frequency used during the SPT Energy Measurement Testing was 20,000 hertz (20 kHz). The PDA saves selected hammer blows containing this information to disk and determines the energy at the point of measurement. Literature regarding the PDA Model PAK is provided in the report Appendix. The equipment calibrations for the strain gauges, accelerometers, and Model PAK PDA used for the SPT energy measurements are provided in the report Appendix.

3.0 TEST RESULTS

3.1 Testing Summary

SPT energy measurements were performed on eight (8) sampling tests within the test boring by Mr. Craig Skiles. Mr. Skiles has passed the Foundations QA High Strain Dynamic Pile Testing (HSDPT) examination with a Basic level certification. A summary of these sampling tests is provided in Table 1. No unusual operating conditions regarding the drilling or hammer operations were observed during the SPT energy measurements.

Table 1. SPT Hammer Energy Calibration Testing Summary.

Boring	Start Depth ¹ (ft)	Rod Length ² (ft)	Rod Sections ³			Measured Blow Counts ⁴ (blows/6 inches)				SPT N _{meas} (bpf)	Soil Type ⁵
			2ft	5ft	10ft	1 st Inc.	2 nd Inc.	3 rd Inc.	4 th Inc.		
TB-1	14.5	18.83	1	3	0	6	6	9	--	15	Clay
	19.5	23.83	1	4	0	0	1	1	--	2	Clay
	24.5	28.83	1	5	0	1	2	2	--	4	Clay
	29.5	33.83	1	6	0	5	7	8	--	15	Clay
	34.5	38.83	1	7	0	3	3	4	--	7	Clay
	39.5	43.83	1	8	0	3	5	6	--	11	Clay
	44.5	48.83	1	9	0	3	5	7	--	12	Clay
	49.5	53.8	1	10	0	5	10	8	--	18	Clay

NOTES:

1. Depth from existing ground surface (i.e. top of borehole) to start of SPT.
2. Total rod length from instrumentation to bottom of sampler.
3. 2ft section is instrumented and is located at top of drill rods.
4. SPT Hammer Calibration Field Data Sheet with SPT blow count and soil data is provided in report Appendix.
5. Soil type provided by Terracon, Cincinnati, OH.

A representative blow during SPT energy measurement testing (i.e. Blow 56) showing Force, Velocity*Impedance, and the two (2) individual strain gauge measurements with time is presented in the report Appendix. Also provided in the report Appendix is a .txt file with a summary of selected PDA measurement data (i.e. EMX, FMX, BPM, etc.) on a CD-ROM.

3.2 Hammer Energy Calibration

The measured transferred energies (EFV) and Energy Transfer Ratios (ETR) determined from the testing results are summarized in Table 2. Note that the EFV's and ETR's shown in Table 2 are determined from measurements recorded during the second and third 6-inch sampling intervals at each depth or during the 1st increment where refusal conditions (i.e. 50 blows recorded in less than 6 inches penetration) were encountered. The Energy Transfer Ratio (ETR) is based on measured

transferred energy (EFV) divided by the theoretical potential energy of the SPT hammer (i.e. 0.350 kip-ft generated by a 140 pound hammer dropping 30 inches).

Table 2. Energy Measurement and Analysis Summary.

Boring	Start Depth ¹ (ft)	SPT N _m (bpf)	No. of Blows ²	EFV (kip-ft)				ETR (%)	
				Max.	Min.	Ave.	Std. Dev.	Ave.	Std. Dev.
TB-1	14.5	15	15	0.336	0.312	0.323	0.008	92.4	2.2
	19.5	2	2	0.299	0.291	0.295	0.006	84.3	NA
	24.5	4	4	0.311	0.299	0.306	0.005	87.3	1.4
	29.5	15	15	0.336	0.317	0.327	0.005	93.4	1.4
	34.5	7	7	0.335	0.324	0.329	0.004	94.0	1.2
	39.5	11	11	0.330	0.319	0.324	0.003	92.5	0.8
	44.5	12	12	0.334	0.32	0.328	0.004	93.8	1.2
	49.5	18	18	0.337	0.33	0.333	0.002	95.1	0.5
TOTAL:			84	0.337	0.291	0.326	0.009	93.1	2.5

NOTES:

1. Boring ID and depth from existing ground surface (i.e. top of borehole) to start of SPT.
2. Number of blows used in energy calibration analysis. Limited to measurements recorded during the second and third 6-inch sampling intervals at each depth or during the 1st increment if refusal conditions (i.e. 50 blows recorded in less than 6 inches penetration) were encountered.

3.3 Hammer Operating Rate

The hammer operating rates (BPM, in units of blows per minute (bpm) determined from the testing results are summarized in Table 3. Note that the BPM values provided in Table 3 are determined from measurements recorded during the second and third 6-inch sampling intervals at each depth or during the 1st increment if refusal conditions (i.e. 50 blows recorded in less than 6 inches penetration) were encountered. As shown in Table 3, the automatic hammer operated at an average rate ~54 ± <1 bpm.

Table 3. Hammer Blow Rate Summary.

Boring	Start Depth ¹ (ft)	SPT N _{meas} (bpf)	No. of Blows ²	BPM (bpm)			
				Max.	Min.	Ave.	Std. Dev.
TB-1	14.5	15	15	53.8	53.5	53.6	0.1
	19.5	2	0	0.0	0.0	0.0	0.0
	24.5	4	4	53.8	53.2	53.6	0.3
	29.5	15	15	54.6	54.2	54.4	0.1
	34.5	7	7	54.8	54.4	54.6	0.2
	39.5	11	11	54.4	54.0	54.2	0.1
	44.5	12	12	54.8	54.3	54.5	0.2
	49.5	18	18	54.1	53.2	53.9	0.2
TOTAL:			82	54.8	53.2	54.1	0.4

NOTES:

1. Boring ID and depth from existing ground surface (i.e. top of borehole) to start of SPT.
2. Number of blows used in energy calibration analysis. Limited to measurements recorded during the second and third 6-inch sampling intervals at each depth or during the 1st increment if refusal conditions (i.e. 50 blows recorded in less than 6 inches penetration) were encountered.

4.0 CONCLUSIONS

4.1 Energy Transfer Ratio (ETR) and Hammer Efficiency Correction (C_E)

Based on our testing and subsequent analysis, drill rig CME-45C (Serial Number 365794) has an **Energy Transfer Ratio (ETR)** of **93.1% ± 2.5%**. Based on this ETR, the hammer efficiency correction (C_E) is **1.55**.

5.0 GENERAL COMMENTS

WPC appreciates the opportunity to provide this report. This report is for the sole use of this project and should not be relied upon otherwise. Should the project change significantly, we can review and modify our recommendations as needed. If you have questions concerning the contents herein, please contact us.

APPENDIX A
CME-45C Drill Rig Manufacturer Specifications

CME-45C Tuck Mounted Drill

Engine

- Deutz F3L914, 197 cubic inch [3.2 L] 61 gross horsepower [46kW] air-cooled 3 cylinder diesel engine.

Rotary drive

- Standard
 - Rotary Torque
 - 3,380 foot pounds [4,597 Nm]
 - Rotary Speed
 - up to 698 rpm max
- High torque
 - Rotary Torque
 - 4,800 foot pounds [6,507 Nm]
 - Rotary Speed
 - up to 492 rpm max
- High speed
 - Rotary Torque
 - 3,100 foot pounds [4,216 Nm]
 - Rotary Speed
 - up to 760 rpm max
- Clutch, heavy duty
 - 13 inch [33 cm]
- Transmission
 - 4 speed forward, 1 speed reverse

Hydraulic feed system

- Retract force
 - 19,600 pounds [8,891 kg]
- Pulldown force
 - 13,650 pounds [6,192 kg]
- Retract rate (max)
 - 55 feet [17 m] per minute
- Feed Rate (max)
 - 79 feet [24 m] per minute
- Stroke
 - 68 inch [173 cm]

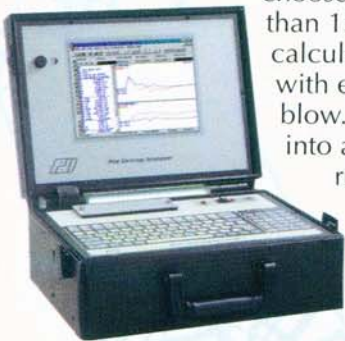
Performance ratings are based on engineering specifications, calculations and accepted industry standards. Capacities may vary according to drilling conditions. CME reserves the right to amend these specifications at any time, without notice.

To comment on or to report a problem with this page, please contact our [Webmaster](#)

APPENDIX B
PDA Model PAK Literature

Pile Driving Analyzer® Model PAK

This model provides the user with the broadest range of parameters to verify the integrity and condition of deep foundations. The PAK operator may



choose nine out of more than 150 parameters for calculation and display with each hammer blow. The PAK is built into a light, yet rugged, field-tested enclosure. It collects and analyzes eight channels of data simultaneously.

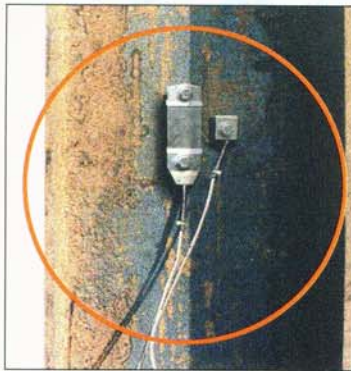


Real time analysis, post processing and printing are performed by the PDA-W software. This Windows®-based software runs on either the PAK or an office computer. CAPWAP analysis may be run in the PAK unit itself.

Due to its superior data-collection speed, the PDA Model PAK is particularly useful for testing a large number of piles and recording a large number of hammer blows on a site. The eight

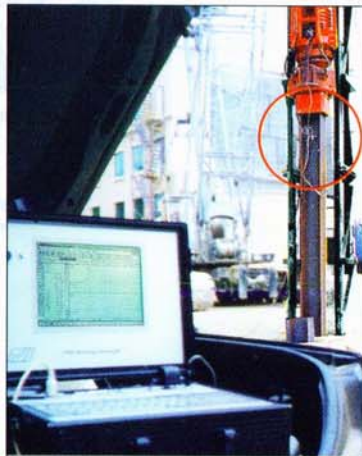
channels of strain-data acquisition are essential for large-diameter drilled shafts and spiral-welded pipe or where measurements are required at two different locations along the length of the pile.

The PAK is the only PDA with the capability of monitoring pile installation with a vibratory hammer.



Accelerometers and strain transducers are attached to a foundation shaft . . .

. . . and connected by cable to the PDA.



Accelerometers and strain transducers manufactured by Pile Dynamics conform to ASTM D4945.

SPECIFICATIONS: Model PAK

- Four channels of strain data acquisition
- Four channels of acceleration data acquisition and four integrators of acceleration to velocity
- Impact and vibratory hammer monitoring modes
- PC-compatible Pentium processor/ Windows® interface
- 256MB RAM minimum
- 40 GB hard disk minimum
- 8 x 4 x 24 CD-RW
- 3.5" 1.4MB floppy drive
- High-visibility transreflective color LCD for outdoor viewing
- Built-in VGA external monitor port
- Built-in water-resistant membrane keyboard
- Additional external keyboard included
- Built-in mouse
- Serial, USB, Network, and Parallel Ports
- 12-bit A/D converter with 8 channels at up to 20KHZ each
- Size: 155mm by 320mm by 385mm
- Weight: 8kg
- Powered in the field by 12 VDC car battery
- Powered in the office by 100-240 VAC with 12 VDC converter
- 30 minutes internal battery backup

PDA Standard Features:

(Applies to both PAK and PAL Pile Driving Analyzer models)

- Self-checking set-up feature
- Automatic balancing of signals and signal conditioning
- Automatic data storage
- Wide temperature operating range:
Operating Range: 0 to 40° C
Storage Range: -20 to 65° C
- Includes both softside carry-on luggage and hard transit case
- Full one-year warranty
- English, SI or Metric units
- PDA-W software for data processing and analysis
- PDILOT software for report quality data summary
- GRLWEAP software for pile driving simulation
- Direct interface to optional CAPWAP software
- Optional transducer systems for underwater testing
- Training, technical manuals and support

APPENDIX C

PDA Equipment Calibrations

Certificate of Compliance

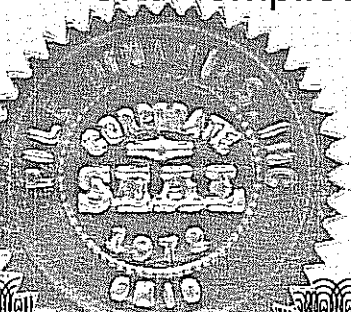
Pile Dynamics, Inc. certifies that the

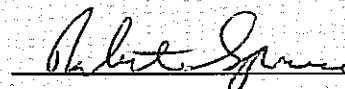

Pile Driving Analyzer®, Model PAK

Serial Number: 1469K

**has been tested with equipment traceable to NIST
and passed all final test procedures on October 2, 2007**

and complies with the criteria as set forth in ASTM Standard D-4945



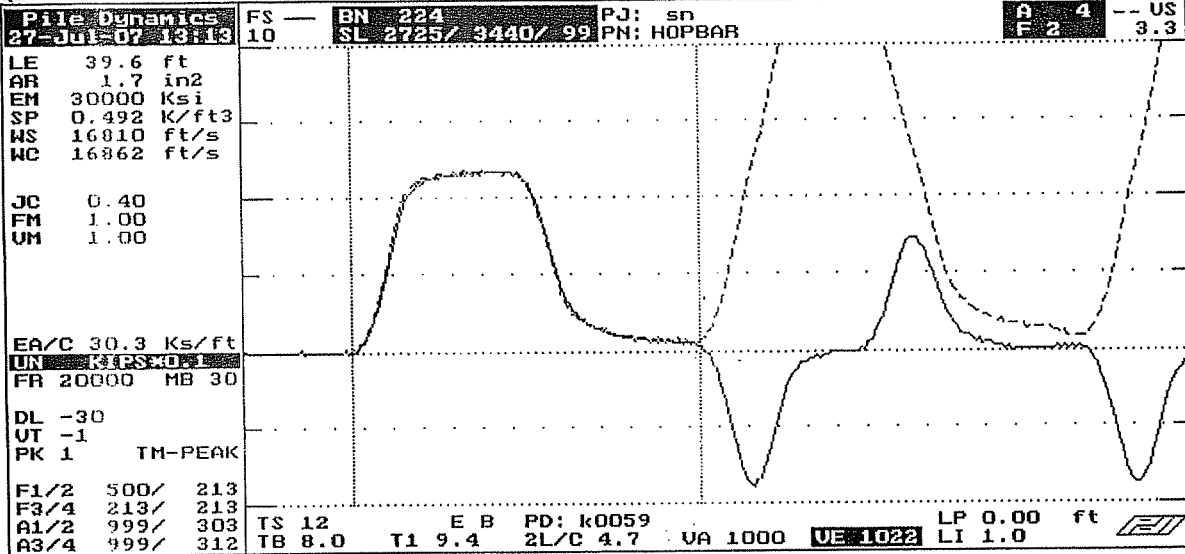



Pile Dynamics, Inc.
4535 Renaissance Parkway
Cleveland, Ohio 44128 USA

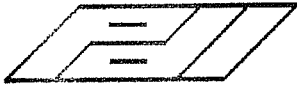
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File Dynamics, Inc.

TG F2 DPF



AREA SQ-OFF FL-OFF PR-OFF	UMX= 3.9	FMX= 59	AMX= 120
	EMX= 0.2	MEX= 115	FVP= 0.99



contact File Dynamics USA
with your questions
tel USA - 216 - 831- 6131
fax USA - 216 - 831- 0916

ACCELEROMETER CALIBRATION N.I.S.T. Traceable
SERIAL NUMBER: K0059
CALIBRATION FACTOR: 0.0624 mv/g
PAK (*5000): 312 DATE: 27-Jul-07
PDA OPERATOR: [Signature]

←-AT-PIEZORESISTIVE OP: alex [ver:4.05] AT-PIEZOELECTRIC->



QDATA: DN [ALT-F1/BB=60]

File Dynamics, Inc.

TG F2 DPF

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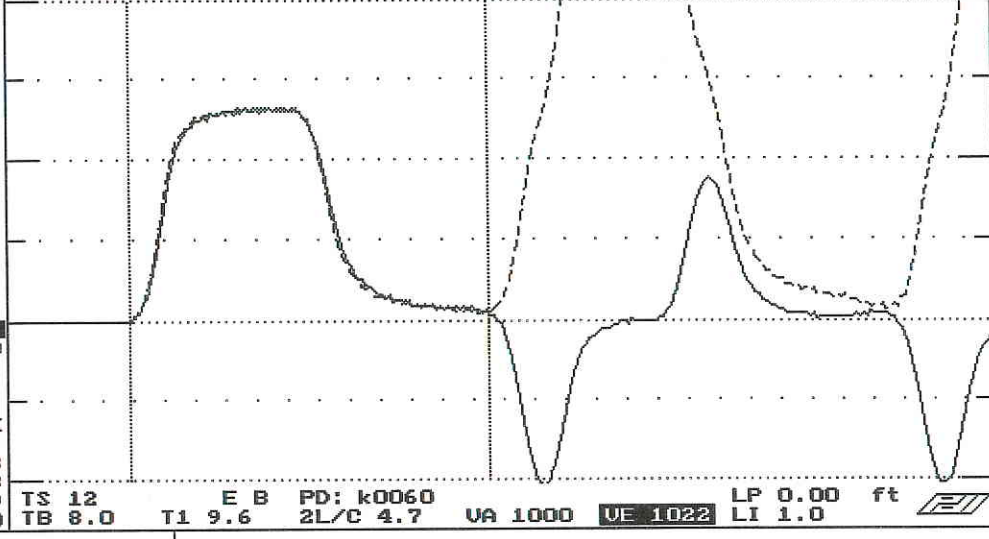
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AR 1.7 in2
EM 30000 Ksi
SP 0.492 K/ft3
WS 16810 ft/s
WC 17043 ft/s

JC 0.40
FM 1.00
UM 1.00

EA/C 30.3 Ks/ft
UN KIPS=0.1
FR 20000 MB 30

DL -23
UT -1
PK 1 TM-PEAK

F1/2 500/ 213
F3/4 213/ 213
A1/2 999/ 999
A3/4 999/ 290



TS 12 E B PD: k0060 LP 0.00 ft
TB 8.0 T1 9.6 2L/C 4.7 VA 1000 UE 1022 LI 1.0

ACCEPT SQ-OFF FL-OFF PR-OFF	VMX= 4.3 FMX= 66 AMX= 169
	EMX= 0.3 MEX= 129 FUP= 0.99



contact File Dynamics USA
with your questions
tel USA - 216 - 831- 6131
fax USA - 216 - 831- 0916

ACCELEROMETER CALIBRATION N.I.S.T. Traceable
SERIAL NUMBER: K0060
CALIBRATION FACTOR: .058 mv/G
PAK (*5000): 290 DATE: 14-APR-10
PDA OPERATOR: Dale Burrell

<-AT:PIEZORESISTIVE OP: dale [ver:4.05] AT:PIEZOELECTRIC->

Calibration Data Sheet for SPT rod #:267AWJ

Calibrated: 24-Nov-09

Page 1 of 2

Cycle No. 1			Bridge 1	Bridge 2
Sample No.	lbs	ME	Volts	Volts
1	-4.35	-.07	.00	.00
2	1036.58	28.04	.14	.14
3	2002.91	54.74	.27	.27
4	3027.30	82.98	.40	.40
5	4087.39	112.10	.54	.54
6	5036.89	138.62	.66	.67
7	6013.67	166.16	.79	.80
8	7127.76	197.59	.94	.94
9	8003.52	222.94	1.05	1.06
10	9024.43	251.79	1.19	1.19
11	10058.98	281.14	1.32	1.33

Bridge 1	Force Cal	Strain Cal	Bridge 2	Force Cal	Strain Cal
Cal Factor	7615.20 lbs/V	213.07 ME/V		7565.97 lbs/V	211.69 ME/V
Offset	-13.17	-1.68		-18.93	-1.84
Corr Coe	.999994	.999960		.999996	.999947
Force Strain Calibration					
EA Factor	35738.38 Kips				
Offset	47.28				
Corr Coe	.999963				

Cycle No. 2			Bridge 1	Bridge 2
Sample No.	lbs	ME	Volts	Volts
1	-.29	-.12	.00	.00
2	1049.44	28.62	.14	.14
3	2041.98	56.59	.27	.27
4	3009.84	83.61	.39	.39
5	4083.66	113.80	.53	.53
6	5039.91	140.85	.66	.66
7	6034.77	168.64	.79	.79
8	7053.44	197.44	.92	.92
9	8077.62	226.12	1.06	1.05
10	9125.02	255.70	1.19	1.19
11	10033.67	281.33	1.31	1.31

Bridge 1	Force Cal	Strain Cal	Bridge 2	Force Cal	Strain Cal
Cal Factor	7649.38 lbs/V	214.83 ME/V		7666.80 lbs/V	215.32 ME/V
Offset	-7.13	-.88		4.92	-.54
Corr Coe	.999999	.999996		.999999	.999996
Force Strain Calibration					
EA Factor	35606.57 Kips				
Offset	24.30				
Corr Coe	.999997				

Calibration Data Sheet for SPT rod #:267AWJ

Calibrated: 24-Nov-09

Page 2 of 2

Cycle No. 3			Bridge 1	Bridge 2
Sample No.	lbs	ME	Volts	Volts
1	.29	.03	.00	.00
2	1019.74	30.60	-.14	.14
3	2005.81	58.58	.26	.27
4	3033.68	88.25	.40	.40
5	4049.93	117.43	.53	.54
6	5022.07	145.35	.67	.67
7	6054.29	174.55	.80	.80
8	7049.94	202.88	.93	.93
9	8054.87	231.36	1.06	1.06
10	9015.40	258.57	1.19	1.19
11	10032.52	287.44	1.32	1.32

Bridge 1	Force Cal	Strain Cal	Bridge 2	Force Cal	Strain Cal
Cal Factor	7577.41 lbs/V	216.60 ME/V		7579.45 lbs/V	216.66 ME/V
Offset	-4.10	1.08		-12.15	.85
Corr Coe	.999995	.999987		.999995	.999995
Force Strain Calibration					
EA Factor	34982.57 Kips				
Offset	-41.86				
Corr Coe	.999985				

Bridge Excitation: 6.4 Volts
 A 60.4K Ohm shunt resistor produces 5.0 Volts output.

	Bridge 1	Bridge 2
Calibration Factor:	214.83 ME/V	214.55 ME/V
EA Factor	: 35442.51 Kips	

Calibrated by: 

Pile Dynamics, Inc.
 Calibrated on: 24-Nov-09
 Traceable to N.I.S.T.

267 AWJ - 1
267 AWJ - 2

35442.51
214.83
214.55
24-Nov-09

SPT Rod Calibration		Pile Dynamics, Inc. Made in USA	
	English	SI	
EA Product	35,442.51 kips E 30,000 ksi A 1.18 in ²	157.72 MN 207,000 MPa 7.6 cm ²	
Rod Serial #:	267 AWJ - 1		
Calibration Factor (me/V):	214.83		
Calibration Date:	24-Nov-09		
Calibration Due:	24-Nov-11		

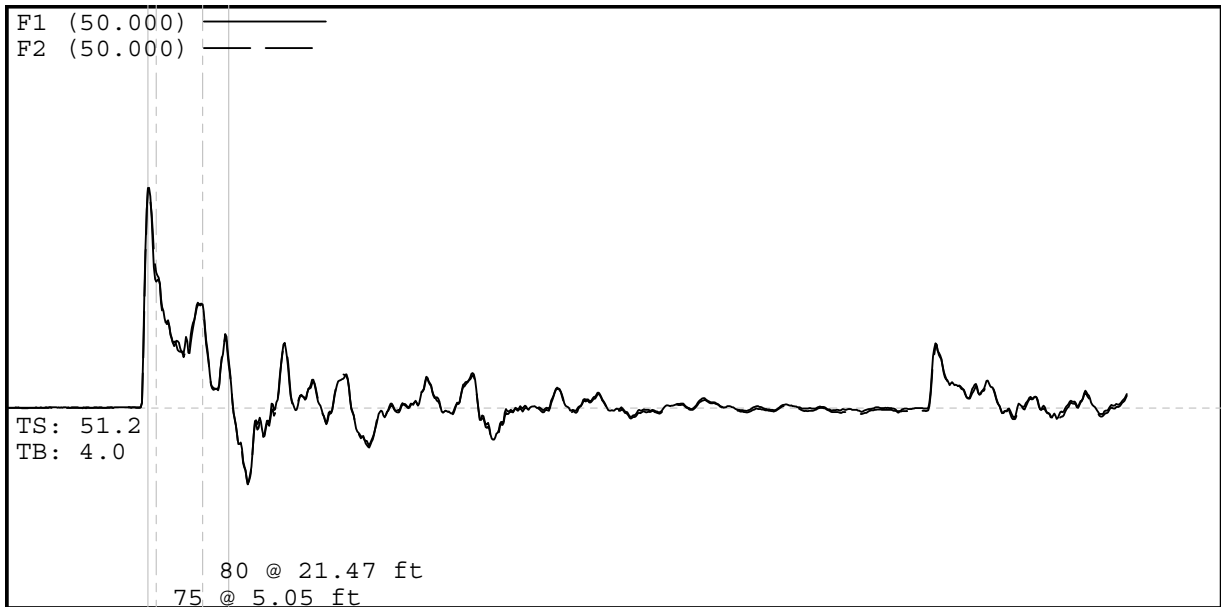
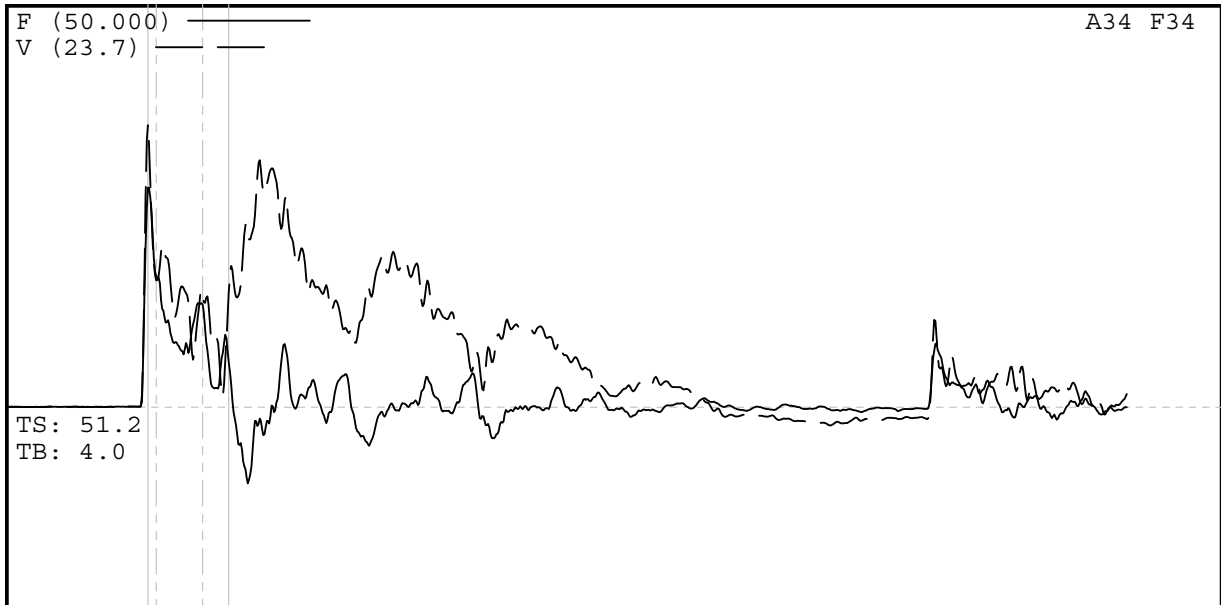
Print to fit and it looks okay!

SPT Rod Calibration		Pile Dynamics, Inc. Made in USA	
	English	SI	
EA Product	35,442.51 kips E 30,000 ksi A 1.18 in ²	157.72 MN 207,000 MPa 7.6 cm ²	
Rod Serial #:	267 AWJ - 2		
Calibration Factor (me/V):	214.55		
Calibration Date:	24-Nov-09		
Calibration Due:	24-Nov-11		

Bridge 1	267 AWJ - 1
Bridge 2	267 AWJ - 2
EA Factor	35442.51
Calibration 1	214.83
Calibration 2	214.55
Date Cal	24-Nov-09

<-- ente

APPENDIX D
Representative Blow (Blow 56)



Project Information

PROJECT: N1115097 LBL National Rec. Area
 PILE NAME: CME-45C SN 365794
 DESCR: AUTO, HYD CHAIN,AWJ RDS
 OPERATOR: CS
 FILE: CME-45C SN 365794 Automatic hydraulic
 8/4/2011 2:21:04 PM
 Blow Number 56

Quantity Results

EMX 0.307 k-ft
 EF2 0.249 k-ft
 BPM 53.8 bpm
 FMX 27.251 kips
 VMXI 2016.63f/s.W01
 AMX 2717 g's
 DMX 1.56 in
 DFN 1.55 in
 TSX 10.5 ksi

Pile Properties

LE 28.83 ft
 AR 1.18 in^2
 EM 30008 ksi
 SP 0.492 k/ft3
 WS 16810.0 f/s
 EA/C 2.1 ksec/ft
 2L/C 3.42 ms
 JC 0.60 []

Sensors

F3: [AWJ-1] 214.83 (1)
 F4: [AWJ-2] 214.55 (1)
 A3: [K0060] 290 mv/5000g's (1)
 A4: [K0059] 312 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 0.99
 V3/V4: OK 1.15

APPENDIX E
PDA Quantity Output File (CD-ROM)



SPT HAMMER EFFICIENCY

Drill Rig: SCI CME 850
 Hammer: Automatic
 Rig Operator: Benbow
 Engineer: Henderson

Test Date: 8/22/11
 Project No. : _____
 Location: SCI Yard
 Drilling Method: Mud Rotary

Boring ID: TB-1
 Rod Type: BW
 Analyzer ID: 216BW
 Rod Area: 1.81 in²

Depth: 40 ft
 LE: 43 ft
 Blow Count: 1, 2, 3

Depth: 45 ft
 LE: 48 ft
 Blow Count: 32, 26, 42

Depth: 50 ft
 LE: 53 ft
 Blow Count: 4, 12, 14

Blow No.	Energy
1	0.246
2	0.266
3	0.240
4	0.260
5	0.257
6	0.247
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	

Blow No.	Energy	Blow No.	Energy	Blow No.	Energy	Blow No.	Energy
1	0.265	26	0.254	51	0.258	76	0.256
2	0.257	27	0.258	52	0.261	77	0.254
3	0.248	28	0.257	53	0.255	78	0.254
4	0.250	29	0.258	54	0.259	79	0.256
5	0.257	30	0.256	55	0.251	80	0.252
6	0.254	31	0.256	56	0.253	81	0.247
7	0.257	32	0.267	57	0.263	82	0.248
8	0.255	33	0.263	58	0.252	83	0.243
9	0.257	34	0.261	59	0.258	84	0.254
10	0.259	35	0.264	60	0.253	85	0.252
11	0.257	36	0.266	61	0.259	86	0.256
12	0.267	37	0.264	62	0.258	87	0.251
13	0.258	38	0.269	63	0.258	88	0.260
14	0.263	39	0.261	64	0.259	89	0.258
15	0.256	40	0.266	65	0.258	90	0.257
16	0.262	41	0.267	66	0.260	91	0.260
17	0.267	42	0.263	67	0.255	92	0.258
18	0.259	43	0.272	68	0.245	93	0.257
19	0.259	44	0.264	69	0.258	94	0.253
20	0.259	45	0.261	70	0.248	95	0.258
21	0.260	46	0.254	71	0.249	96	0.254
22	0.260	47	0.262	72	0.253	97	0.258
23	0.261	48	0.262	73	0.257	98	0.257
24	0.257	49	0.260	74	0.249	99	0.258
25	0.258	50	0.256	75	0.257	100	0.255

Blow No.	Energy	Blow No.	Energy
1	0.265	26	0.271
2	0.252	27	0.271
3	0.266	28	0.276
4	0.260	29	0.277
5	0.258	30	0.274
6	0.266	31	
7	0.262	32	
8	0.270	33	
9	0.265	34	
10	0.269	35	
11	0.270	36	
12	0.266	37	
13	0.269	38	
14	0.269	39	
15	0.265	40	
16	0.268	41	
17	0.262	42	
18	0.260	43	
19	0.265	44	
20	0.266	45	
21	0.266	46	
22	0.268	47	
23	0.265	48	
24	0.264	49	
25	0.266	50	

Average Energy: 0.253 kip-ft
 Max. Rated Energy: 0.350 kip-ft
 Efficiency: 72%
 Std. Deviation: 0.010 kip-ft

Average Energy: 0.258 kip-ft
 Max. Rated Energy: 0.350 kip-ft
 Efficiency: 74%
 Std. Deviation: 0.005 kip-ft

Average Energy: 0.266 kip-ft
 Max. Rated Energy: 0.350 kip-ft
 Efficiency: 76%
 Std. Deviation: 0.005 kip-ft

Average efficiency from all tests: 74%

Comments: LE = length of rod from below gages to bottom of sampler.
 Maximum rated energy based on a hammer weight of 0.14 kips and a drop height of 2.5 feet.



SPT HAMMER EFFICIENCY

Drill Rig: SCI CME 550
 Hammer: Automatic
 Rig Operator: Benbow
 Engineer: Henderson

Test Date: 9/6/11
 Project No. : _____
 Location: SCI Yard
 Drilling Method: Mud Rotary

Boring ID: TB-1
 Rod Type: BW
 Analyzer ID: 216BW
 Rod Area: 1.81 in²

Depth: 40 ft
 LE: 43 ft
 Blow Count: 2, 3, 4

Depth: 45 ft
 LE: 48 ft
 Blow Count: 12, 17, 23

Depth: 50 ft
 LE: 53 ft
 Blow Count: 6, 11, 17

Blow No.	Energy	Blow No.	Energy
1	0.262	26	
2	0.248	27	
3	0.259	28	
4	0.267	29	
5	0.261	30	
6	0.265	31	
7	0.263	32	
8	0.263	33	
9	0.261	34	
10		35	
11		36	
12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

Blow No.	Energy	Blow No.	Energy	Blow No.	Energy
1	0.264	26	0.263	51	0.264
2	0.288	27	0.264	52	0.264
3	0.290	28	0.264	53	
4	0.298	29	0.265	54	
5	0.299	30	0.256	55	
6	0.304	31	0.260	56	
7	0.303	32	0.268	57	
8	0.302	33	0.256	58	
9	0.296	34	0.260	59	
10	0.291	35	0.299	60	
11	0.282	36	0.271	61	
12	0.280	37	0.260	62	
13	0.269	38	0.268	63	
14	0.273	39	0.265	64	
15	0.262	40	0.263	65	
16	0.262	41	0.265	66	
17	0.264	42	0.261	67	
18	0.268	43	0.265	68	
19	0.266	44	0.265	69	
20	0.268	45	0.268	70	
21	0.270	46	0.261	71	
22	0.266	47	0.263	72	
23	0.261	48	0.267	73	
24	0.267	49	0.264	74	
25	0.264	50	0.267	75	

Blow No.	Energy	Blow No.	Energy
1	0.270	26	0.267
2	0.272	27	0.266
3	0.270	28	0.273
4	0.266	29	0.268
5	0.265	30	0.270
6	0.271	31	0.266
7	0.272	32	0.265
8	0.261	33	0.269
9	0.261	34	0.269
10	0.263	35	
11	0.267	36	
12	0.267	37	
13	0.262	38	
14	0.262	39	
15	0.267	40	
16	0.267	41	
17	0.265	42	
18	0.264	43	
19	0.268	44	
20	0.264	45	
21	0.267	46	
22	0.270	47	
23	0.268	48	
24	0.270	49	
25	0.270	50	

Average Energy: 0.261 kip-ft
 Max. Rated Energy: 0.350 kip-ft
 Efficiency: 75%
 Std. Deviation: 0.005 kip-ft

Average Energy: 0.271 kip-ft
 Max. Rated Energy: 0.350 kip-ft
 Efficiency: 78%
 Std. Deviation: 0.014 kip-ft

Average Energy: 0.267 kip-ft
 Max. Rated Energy: 0.350 kip-ft
 Efficiency: 76%
 Std. Deviation: 0.003 kip-ft

Average efficiency from all tests: 77%

Comments: LE = length of rod from below gages to bottom of sampler.
 Maximum rated energy based on a hammer weight of 0.14 kips and a drop height of 2.5 feet.



SPT HAMMER EFFICIENCY

Drill Rig: SCI CME 55
 Hammer: Automatic
 Rig Operator: Benbow
 Engineer: Henderson

Test Date: 9/7/11
 Project No. : _____
 Location: SCI Yard
 Drilling Method: Mud Rotary

Boring ID: TB-1
 Rod Type: BW
 Analyzer ID: 216BW
 Rod Area: 1.81 in²

Depth: 35 ft
 LE: 38 ft
 Blow Count: 1, 2, 2

Depth: 40 ft
 LE: 43 ft
 Blow Count: 1, 2, 3

Depth: 45 ft
 LE: 48 ft
 Blow Count: 13, 18, 17

Blow No.	Energy	Blow No.	Energy
1	0.266	26	
2	0.254	27	
3	0.272	28	
4	0.262	29	
5	0.253	30	
6		31	
7		32	
8		33	
9		34	
10		35	
11		36	
12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

Blow No.	Energy	Blow No.	Energy
1	0.262	26	
2	0.246	27	
3	0.268	28	
4	0.252	29	
5	0.250	30	
6	0.271	31	
7		32	
8		33	
9		34	
10		35	
11		36	
12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

Blow No.	Energy	Blow No.	Energy
1	0.222	26	0.267
2	0.258	27	0.246
3	0.255	28	0.245
4	0.247	29	0.259
5	0.263	30	0.250
6	0.252	31	0.256
7	0.255	32	0.239
8	0.250	33	0.259
9	0.251	34	0.262
10	0.264	35	0.245
11	0.251	36	0.256
12	0.257	37	0.250
13	0.258	38	0.263
14	0.244	39	0.259
15	0.255	40	0.257
16	0.256	41	0.243
17	0.258	42	0.253
18	0.252	43	0.247
19	0.250	44	0.249
20	0.264	45	0.250
21	0.254	46	0.252
22	0.254	47	0.254
23	0.252	48	0.252
24	0.245	49	
25	0.250	50	

Average Energy: 0.261 kip-ft
 Max. Rated Energy: 0.350 kip-ft
 Efficiency: 75%
 Std. Deviation: 0.008 kip-ft

Average Energy: 0.258 kip-ft
 Max. Rated Energy: 0.350 kip-ft
 Efficiency: 74%
 Std. Deviation: 0.010 kip-ft

Average Energy: 0.253 kip-ft
 Max. Rated Energy: 0.350 kip-ft
 Efficiency: 72%
 Std. Deviation: 0.008 kip-ft

Average efficiency from all tests: 73%

Comments: LE = length of rod from below gages to bottom of sampler.
 Maximum rated energy based on a hammer weight of 0.14 kips and a drop height of 2.5 feet.



GRL Dynamic
Measurements
and Analyses
engineers, inc.

Job No. 129057-1

Report on: Standard Penetration Test
Energy Measurements
CME 45-C Track Drill Rig
Pageland, SC

Prepared for Florence & Hutcheson
By Karen Webster and Scott D. Webster, P.E.

August 20, 2012



August 20, 2012

Devin L. Chittenden, P.E.
Florence & Hutcheson - Consulting Engineers
2550 Irvin Cobb Drive
Paducah, KY 42003

Re: Standard Penetration Test Energy Measurements
CME 45-C Track Drill Rig – Pageland, SC
GRL Job No. 129057-1

Dear Mr. Chittenden,

This report presents results of energy measurements obtained on August 8, 2012 during Standard Penetration Tests (SPT) sampling. One automatic hammer, mounted on a CME 45-C track drill rig was tested. All dynamic tests were performed on AWJ drill rod. GRL Engineers, Inc. obtained the dynamic measurements with an instrumented AWJ subsection and a Model PAX Pile Driving Analyzer®. This report describes the testing procedures and summarizes the test results. Appendix A describes our measurement and analysis methods while Appendix B contains a summary of the test data.

PURPOSE AND SCOPE OF WORK

At the request of Florence & Hutcheson, GRL conducted SPT energy measurements at boring B-12 of the Taxahaw Highway project near Pageland, SC, according to ASTM D4633-10. Specifically, we provided SPT energy measurements at varying sample intervals, between approximately 10 and 30 feet below the existing ground surface. In general, drilling and sampling was performed to a depth of approximately 10 feet, where the first sample tested was collected. SPT samples were then generally collected at five foot intervals until a boring depth of approximately 30 feet where refusal blow counts were encountered. All SPT samples were driven for a total of 3 six-inch increments (1.5 feet) in residual sandy clays and fine to coarse sands typical of the Piedmont region of South Carolina.

EQUIPMENT

Drilling and SPT Hammer Equipment

CME 45-C Track (Serial # 300404)

SPT energy measurements were made on an automatic hammer mounted on a CME 45-C track drill rig. The drilling method used to advance the boring was the rotary mud drilling. Energy measurements, for the above stated drill rig, were collected at Boring B-12 to a boring termination depth of approximately 30 feet below grade. SPT energy measurement tests were performed at varying sampling penetrations, starting at 10 feet. Five energy measurement events were monitored for this drill rig.

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Instrumentation

A Model PAX Pile Driving Analyzer (PDA) data acquisition system was used to collect and process the dynamic measurements of force and velocity. The data was collected using a two foot long section of AWJ rod subsection with a cross sectional area on 1.17 square inches and instrumented with two full bridge foil resistance strain gages and two piezoresistive accelerometers mounted in the midpoint location of the instrumented rod.

Analog signals from the strain gages and accelerometers were conditioned, digitized, stored and processed with the PDA. The sampling frequency used during the SPT testing was 50 kHz. Selected output from the PDA for each recorded impact included the maximum calculated rod displacement (DMX), maximum rod top velocity (VMX), maximum energy transfer (EFV), maximum rod top force (FMX), and the hammer operating rate (BPM).

MEASUREMENTS AND CALCULATIONS

FV Method (EFV)

Energy transfer to the PDA gage location, EFV, was computed by the PDA using force, $F(t)$, and velocity, $v(t)$, records as follows:

$$EFV = \int_a^b F(t) \cdot v(t) dt$$

The time "a" corresponds to the start of the record when the energy transfer begins, and "b" is the time at which energy transferred to the rod reaches a maximum value. The FV Method is currently recognized in ASTM D4633-10, and is the theoretically correct result; therefore, no other energy calculation methods are reported.

Corrected SPT number (N_{60})

While the primary purpose of SPT energy testing is to calculate the maximum transfer energy (ETR) of each hammer blow, the overall average EFV value can be used to calculate the corrected SPT number (N_{60}). To adjust the SPT N-values for hammer performance the following correction, as suggested by Seed for N-value adjustment to 60% transfer efficiency (e.g. 210 ft-pounds), was used:

$$N_{60} = \left(\frac{E_m}{210} \right) N_m$$

Where:

N_{60} = Corrected N-value

E_m = overall average measured energy transfer (EFV)

N_m = number of blows for last 12 inches of sampler penetration

A general introduction to dynamic SPT testing methods is included in this report as Appendix A. References for more detailed descriptions of our testing and analysis methods are available upon request.

Any cross-sectional area difference between the GRL rod subsection and the drill rods, any loose connections or changes in area at section joints, or any cross-sectional area differences between the individual drill rod sections will result in stress wave reflections that can potentially influence the energy transfer. The EFV transferred energy calculation method, utilizing both force and velocity records, is theoretically correct and gives energy transfer results that are not adversely affected by cross-sectional area changes or loose connectors. The EFV results are included in Appendix B for all records collected.

RESULTS

Upon return to the office, the records collected by the PDA were checked for consistency and accuracy. For example, records from very weak startup or final impacts were not included in average results. Appendix B contains a representative plot of force and normalized velocity versus time, as well as plots and tables of PDA results for all hammer blows at each dynamically monitored sampling depth. The results include the EFV (transferred energy by the FV method, as recommended by ASTM D4633-10), ETR (energy transfer efficiency for the EFV method), BPM (hammer operating rate), DMX (maximum rod displacement), and VMX (maximum rod top velocity). The plots show each calculated PDA result versus split-spoon penetration, while the tables show statistical summaries for each 6 inch increment. At the end of each table is a statistical evaluation of the results which includes the average and standard deviation of the entire measurement sample.

The table below and table 1 summarize the average transferred energy values calculated by the EFV method. The records consist of averaged hammer blows from the last 12 inches (i.e. N value) at each dynamically monitored sampling depth. The “energy transfer ratio” (ETR) is defined as the ratio of maximum transferred energy EFV divided by the theoretical hammer potential energy of 350 ft-lbs (i.e., computed per the 140 lb SPT hammer and the standard 30 inch drop as specified by ASTM D1586-99). The average hammer operating rate is reported in blows per minute (BPM). A summary of the dynamic measurements of the energy transfer to the drill rods using the EFV equation for each drill rig is provided in the table below.

Drill Rig	Avg. EFV (ft-lbs)	Avg ETR (%)	Range of EFV (ft-lbs)	Range of ETR (%)
CME 45-C track	277	79	261 – 302	75 – 86

CONCLUSIONS

Based upon the dynamic test data obtained, the following conclusions are presented:

1. Loose connections in the drill string were sometimes observed in the force and velocity records. However, energy transfer values calculated using the EFV equation are not adversely affected by the connectors and therefore are considered a better indication of transferred energy.
2. Dynamic measurements of the transferred energy to the drill rods using the EFV equation ranged from 261 to 302 ft-lbs for CME 45-C track drill rig. This corresponds to a transfer efficiency ranging from 75 to 86% of the SPT hammer energy of 350 ft-lbs.
3. The average transferred energy to the drill rods using the EFV equation for all samples was 277 ft-lbs for CME 45-C track drill rig. This corresponds to a transfer efficiency of 79% of the SPT hammer energy of 350 ft-lbs.

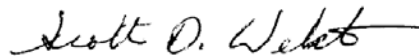
Please review both ASTM D4633-10 and ASTM D1586-99 prior to applying these test results. The energy calibrations reported herein are valid for the same hammer/drill rig, with the same drill operator, same anvil dimensions, and same drilling methods.

We appreciate the opportunity to be of assistance to you on this project. Please contact our office should you have any questions regarding this submittal, require additional information, or if we may be of further service.

Sincerely,
GRL Engineers, Inc.



Karen Webster



Scott Webster, P.E.

KW:SW:dms

TABLE 1: Summary of SPT Energy Measurements
Florence & Hutcheson, Inc. SPT Calibration August 8, 2012
CME-45C Track Serial # 300404

Boring B-12 Soil Sample	Reported Sample Depth	Reported Rod Length	Reported Blow Count	SPT Field N Value	Avg. Energy Transferred FV Method	Energy Transfer Efficiency ¹	Blow per Minute	N ₆₀
	(feet)	(feet)	(blows/6")		(ft-lbs)	(%)	(bpm)	
SS-5	10.0 - 11.5	14.9	2, 3, 5	8	266	76	52	10
SS-6	15.0 - 16.5	19.9	1, 2, 4	6	271	77	53	8
SS-7	20.0 - 21.5	24.9	3, 3, 5	8	285	81	52	11
SS-8	25.0 - 26.5	29.9	2, 2, 2	4	261	75	52	5
SS-9	28.2 - 29.5	31.3	42, 24, 50/0.3'	74/0.9'	302	86	52	---
Average⁽²⁾					277	79	52	
Standard Dev.⁽²⁾					17	5	0	

- Notes: 1 - Energy transfer efficiency is the energy calculated by the FV method divided by the SPT hammer potential energy of 140 lbs times 2.5 foot drop height or 350 ft-lbs.
2 - Average and standard deviation are calculated using averaged data from SPT hammer blows from the last two six inch increments (i.e. N value) from all sampling depths tested.
3 - Drill rig operators during calibration testing were Freddie Woodard, Mike Morgan and Eric Davis.

Appendix A

An Introduction into SPT Dynamic Pile Testing

APPENDIX A

AN INTRODUCTION INTO SPT DYNAMIC PILE TESTING

The following has been written by GRL Engineers, Inc. and may only be copied with its written permission.

1. BACKGROUND

The Standard Penetration Test is frequently conducted as an in-situ assessment of soil strength. This test requires that a 140 lb weight is dropped 30 inches onto a drive rod at whose bottom a sampler is usually installed. The sampler is driven for 18 inches; the number of blows required for the last 12 inches of driving is the so-called N-value. The N-value may be used as a strength indicator for foundation design or as a means of assessing the liquefaction potential of soils.

Obviously, the SPT hammer efficiency is an important consideration when using the N-values for design purposes. Measurements have indicated that the energy in the drive rod is sometimes only 30% and may reach 90% of the potential or rated energy of the SPT hammer (E-rated = 0.35 kip-ft or 0.475 kJ). The type of hammer used to drive the rod is the main reason for these variations. On the average, the energy in the drive rod is 60% of the standard rated energy.

Because of the variability of energy, methods based on N-values are considered unreliable. However, measurements during SPT testing using the Case Method can be done on a routine basis and these measurements yield the transferred energy values. With measured energy, E_m , known, an adjustment of the measured N-value, N_m , can be made as follows.

$$N_{60} = N_m [E_m / (0.6E_r)] \quad (1)$$

Thus, if the measured energy value is equal to the normally expected transferred energy of 60% of E-rated then the adjusted and measured N-values are identical. On the other hand, if the measured energy is only 30% then the adjusted blow count will be reduced by 50%.

2. DYNAMIC TESTING AND ANALYSIS METHODS APPLIED TO SPT

The Case Method of dynamic pile testing, named after the Case Institute of Technology where it was

developed between 1964 and 1975, requires that a substantial ram mass (e.g. a pile driving hammer) impacts the pile top such that the pile undergoes at least a small permanent set. Thus, the method is also referred to as a "High Strain Method". The Case Method requires dynamic measurements on the pile or shaft under the ram impact and then a calculation of various quantities. Conveniently, for SPT applications, the measurements and analyses are done by a single piece of equipment: the SPT Analyzer. The Pile Driving Analyzer® (PDA) is also suitable to perform these measurements and data processing.

A related analysis method is the "Wave Equation Analysis" which calculates a relationship between bearing capacity, pile stresses, transferred energy and field blow count. The GRLWEAP™ program performs this analysis and provides a complete set of helpful information and input data. This program can be used very effectively to simulate the SPT driving process.

3. MEASUREMENTS

GRL uses equipment manufactured by Pile Dynamics, Inc. The system includes either an SPT-Analyzer™ (SPTA) or a Pile Driving Analyzer® (PDA), an instrumented rod section and two accelerometers. SPT energy testing is very closely related to and borrows procedures from dynamic pile testing. Those interested in the basis of the SPT energy testing method may obtain extensive literature on dynamic pile testing from GRL Engineers, Inc.

3.1 SPT Analyzer or Pile Driving Analyzer

The basis for the results calculated by the SPTA or PDA are strain and acceleration measured in an instrumented rod section. These signals are converted to rod top force, $F(t)$, and rod top velocity, $v(t)$. The SPTA or PDA conditions, calibrates and displays these signals and immediately computes average pile force and velocity thereby eliminating bending effects. The product of these two

measurements is then integrated over time which yields the energy transferred to the instrumented section as a function of time (see Section 4.1).

For convenience and accuracy, strain measurements are usually taken on an instrumented section of SPT drive rod. Ideally, the section properties of the instrumented rod and those of the drive rod are the same, however, using subs, other sections can also be utilized.

For the instrumented section, PDI provides a force calibration in such a way that the output of the instrumented rod is directly calculated without the need for an accurate elastic modulus or cross sectional area of the rod section.

The acceleration measurements are often demanding in the SPT environment, because of high frequency and high acceleration motion components. An experienced measurement engineer, therefore, has to evaluate the quality of this data before final conclusions are drawn from the numerical results calculated by SPTA or PDA.

SPTA or PDA records are taken while the standard N-value is acquired in the conventional manner. This then allows a direct correlation between N-value and average transferred energy.

3.2 HPA

The SPT hammer's ram velocity may be directly obtained using radar technology in the Hammer Performance Analyzer™. The impact velocity results can be automatically processed with a PC or recorded on a strip chart. HPA measurements yield a hammer kinetic energy, but not the energy transferred to the drive rod.

4 RECORD EVALUATION BY SPTA OR PDA

4.1 HAMMER PERFORMANCE

The PDA calculates the energy transferred to the pile top from:

$$E(t) = \int_0^t F(\tau)v(\tau) d\tau \quad (2)$$

The maximum of the $E(t)$ curve is often called **ENTHRU or EMX**; it is the most important quantity for an overall evaluation of the performance of a hammer

and driving system. **EMX** allows for a classification of the hammer's performance when presented as, e_T , the rated transfer efficiency, also called energy transfer ratio (**ETR**) or global efficiency.

$$e_T = EMX/E_R \quad (3)$$

where E_R is the hammer manufacturer's rated energy value or 0.35 kip-ft (0.475 kJ) in the case of the SPT hammer.

Often in the SPT literature one finds also reference to the EF2 energy. This evaluation is based on assumed proportionality between force and velocity (see also Section 5):

$$v(t) = F(t) / Z \quad (4)$$

where $Z = EA/c$ is the pile impedance, E is the elastic modulus, A is the cross sectional area and c is the speed of the stress wave in the pile material..

Combining equations 2 and 4 leads to

$$EF(t) = \int_0^t F(\tau)^2 / Z d\tau \quad (5)$$

The EF2 transferred energy value is the EF-value at the time $t = 2L/c$, where L is the drive rod length and c is the stress wave speed in steel (16,800 ft/s or 5,124 m/s). Since the force is easier to measure than both force and velocity, Equation 5 is preferred by some test engineers. However, the EF method is fraught with errors and certain correction factors have to be applied to make it approximately correct. Among the error sources are the following:

- Proportionality is often violated prior to time $2L/c$. The proportionality between force and velocity in a downward traveling wave only holds if the wave does not encounter a disturbance prior to reflecting off the pile toe. Such disturbances include a change in cross sectional area, an open or loose splice or joint, or resistance along the shaft.
- Using only one force measurement precludes a data quality check based on the proportionality between force and velocity. Thus, a force measurement that is for some reason in error may not be detectable, which will lead to errors in the EF2 value. Data quality checks will be discussed further in Section 5.

The use of EF2 is therefore not recommended but it is often included in result presentations for the sake of completeness.

4.2 STRESSES

During SPT monitoring, it is also of interest to monitor compressive stresses at both the top of the drive rod and at its bottom.

At the pile top (location of sensors) the maximum compression stress averaged over the rod's cross section, **CSX**, is directly obtained from the measurements. Note that this stress value refers to the instrumented section. If the rod has a different cross sectional area then the stress in the rod will be different from CSX.

The SPTA or PDA can also calculate, in an approximate manner, the force at the rod bottom, **CFB**. To obtain the corresponding stress, this force value should be divided by the appropriate cross sectional area, e.g. by the rod area just above the sampler or by the sampler area itself. Of course, non-uniform stress components as they might occur at the sampler tip due to a sloping rock are not considered in this calculation.

5. DATA QUALITY CHECKS

Quality data is the first and foremost requirement for accurate dynamic testing results. It is therefore important that the measurement engineer performing SPTA or PDA tests has the experience necessary to recognize measurement problems and take appropriate corrective action should problems develop. Fortunately, dynamic pile testing allows for certain data quality checks because two independent measurements are taken that have to conform to the so-called proportionality relationship.

As long as there is only a wave traveling in one direction, as is the case during impact when only a downward traveling wave exists in the rod, force and velocity measured at its top are proportional

$$F = v Z \quad (5)$$

where Z is again the pile impedance, $Z = EA/c$. This relationship can also be expressed in terms of stress

$$\sigma = F/A = v (E/c) \quad (6)$$

or strain

$$\epsilon = \sigma/E = v / c \quad (7)$$

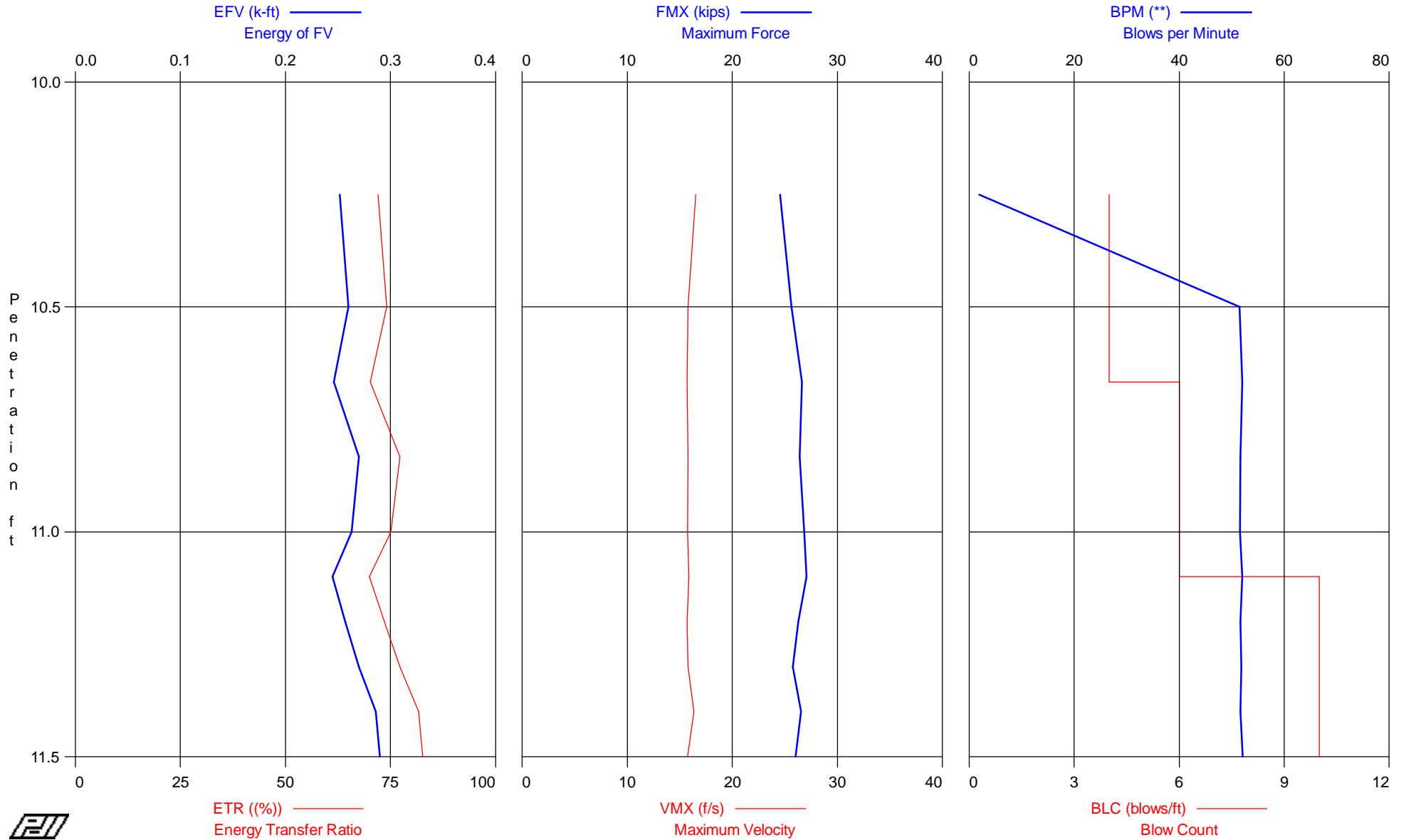
This means that the early portion of strain times wave speed must be equal to the velocity unless the proportionality is affected by high friction near the pile top or by a pile cross sectional change not far below the sensors. Checking the proportionality is an excellent means of assuring meaningful measurements but is only truly meaningful for perfectly uniform rods. Open or loose splices, for example, will lead to a non-proportionality. For SPT rods it is fortunate that usually no soil resistance acts along the shaft and for that reason, proportionality can exist until the stress wave returns from sampler top or rod bottom unless connectors are not sufficiently tightened or have a significant mass.

Velocity data quality can also be checked by looking at the final displacement, DFN, which is calculated from the acceleration by double integration. If the calculated final displacement is much higher or lower than indicated by the N-value, the accelerometer attachment may be loose or the sensor may be faulty. If major drift in the velocity is observed, the EMX value may be in error, even though proportionality from impact to time $2L/c$ exists. In this case, it may be useful to evaluate the energy transferred to the drill rod at time $2L/c$, which is calculated by the PDA or SPTA as the E2E quantity.

Appendix B

SPT Calibration Results

PAGELAND SC - B-12 SS-5



PAGELAND SC - B-12 SS-5
OP: KW

CME 45C TR SN 300404
Test date: 8-Aug-2012

AR: 1.17 in²
LE: 14.90 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

EFV: Energy of FV
ETR: Energy Transfer Ratio
FMX: Maximum Force
VMX: Maximum Velocity
BPM: Blows per Minute

EF2: Energy of F²
DFN: Final Displacement
FVP: Force/Velocity proportionality
FVP: Force/Velocity proportionality

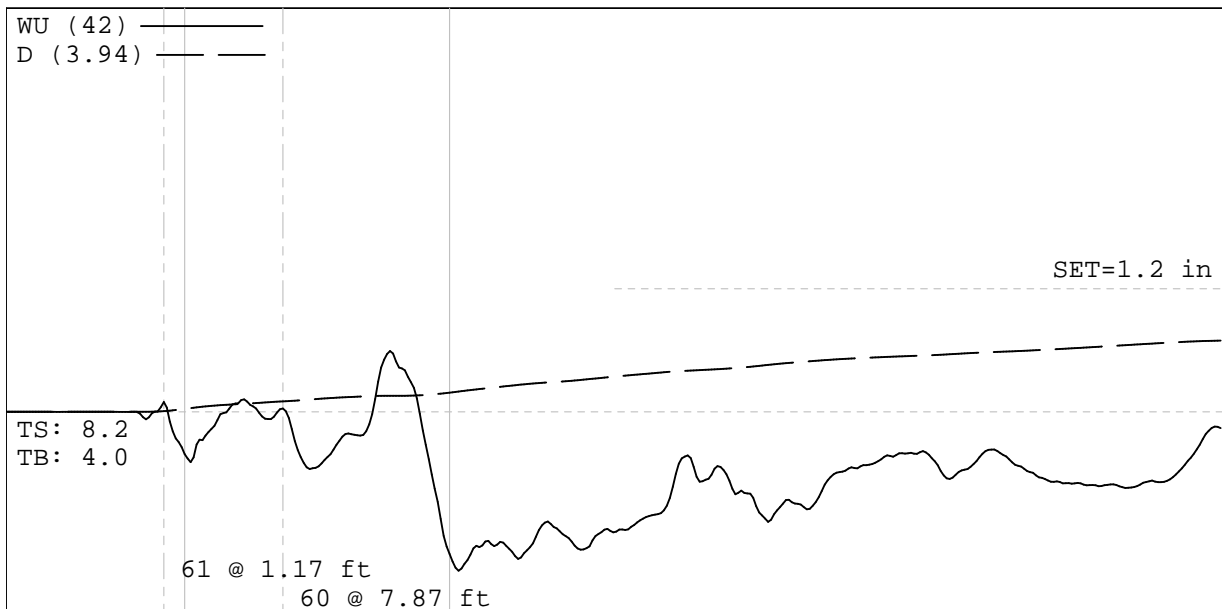
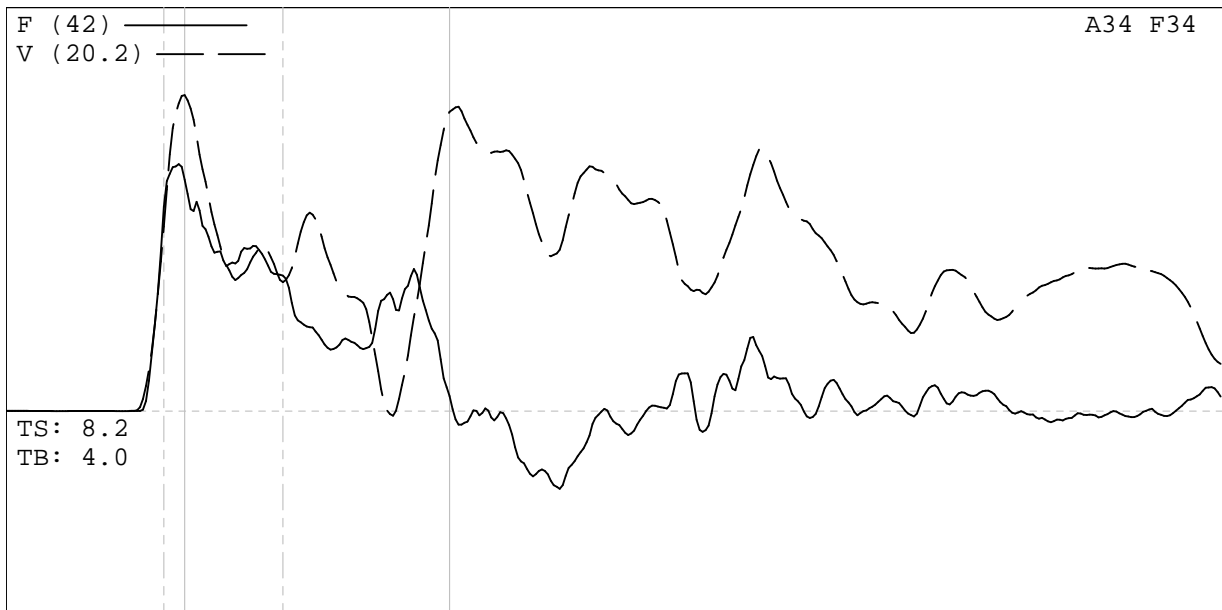
BL#	depth end ft	BLC bl/ft	TYPE	EFV k-ft	ETR (%)	FMX kips	VMX f/s	BPM **	EF2 k-ft	DFN in	FVP []	FVP []
2	10.50	4	AV2	0.256	73	25	16.1	26.7	0.188	2.99	0.84	0.84
			STD	0.004	1	1	0.4	24.8	0.002	0.01	0.03	0.03
			MAX	0.260	74	26	16.5	51.5	0.190	3.00	0.86	0.86
5	11.00	6	AV3	0.260	74	27	15.7	51.8	0.192	2.00	0.78	0.78
			STD	0.010	3	0	0.0	0.2	0.002	0.00	0.02	0.02
			MAX	0.270	77	27	15.8	52.0	0.194	2.00	0.81	0.81
10	11.50	10	AV5	0.270	77	26	15.9	51.9	0.192	1.20	0.76	0.76
			STD	0.017	5	0	0.2	0.2	0.001	0.00	0.02	0.02
			MAX	0.290	83	27	16.4	52.1	0.194	1.20	0.79	0.79
Average				0.264	75	26	15.9	46.8	0.191	1.80	0.78	0.78
Std. Dev.				0.015	4	1	0.3	15.0	0.002	0.69	0.04	0.04
Maximum				0.290	83	27	16.5	52.1	0.194	3.00	0.86	0.86

Total number of blows analyzed: 10

Time Summary

Drive 10 seconds

3:07:12 PM - 3:07:22 PM (8/8/2012) BN 1 - 10



Project Information

PROJECT: PAGELAND SC
 PILE NAME: B-12 SS-5
 DESCR: CME 45C TR SN 300404
 OPERATOR: KW
 FILE: B-12 SS-5.W01
 8/8/2012 3:07:20 PM
 Blow Number 8

Quantity Results

EFV 0.270 k-ft
 ETR 77 (%)
 FMX 26 kips
 VMX 15.8 f/s
 BPM 51.8 bpm
 EF2 0.193 k-ft
 DFN 1.20 in
 FVP 0.73 []
 FVP 0.73 []

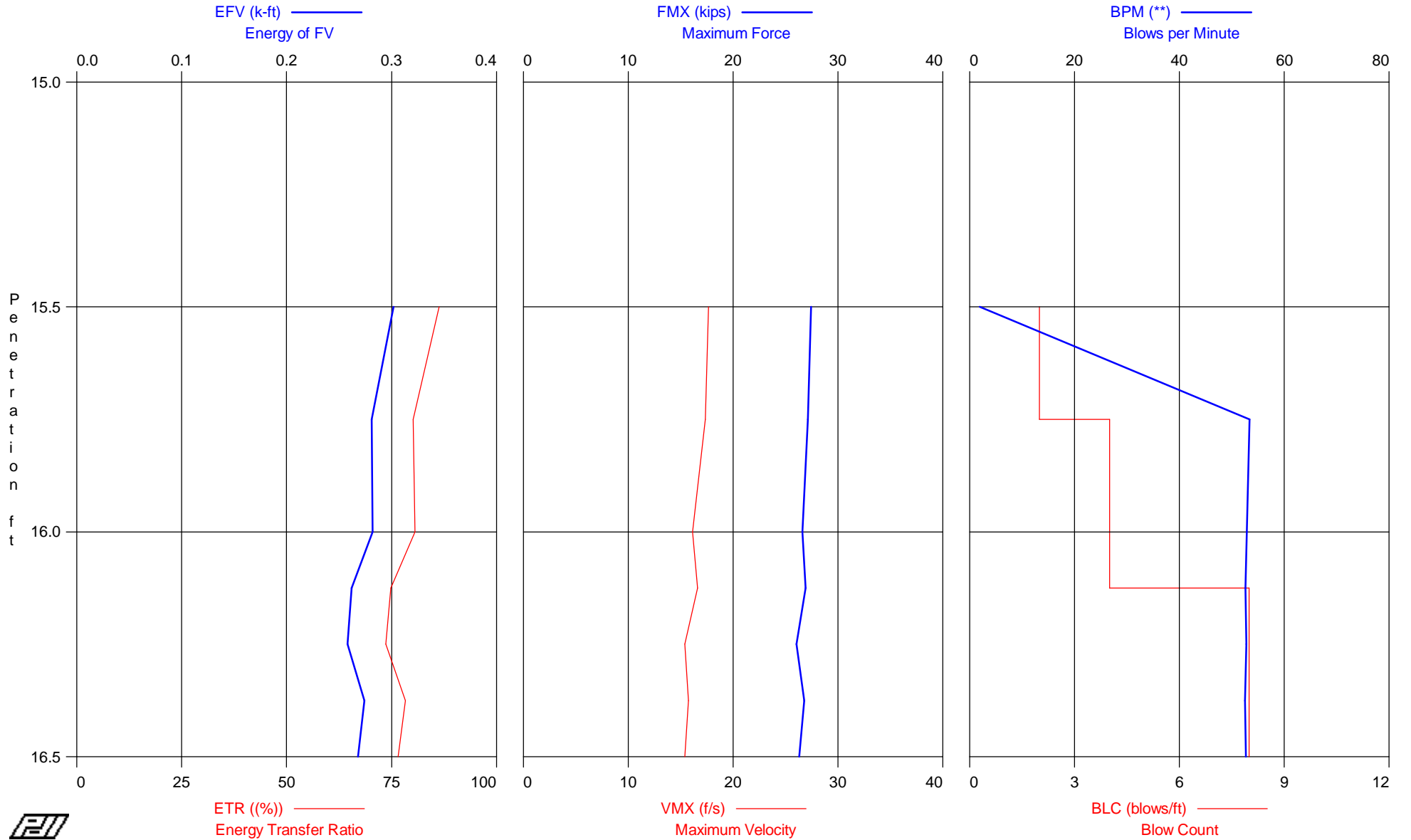
Pile Properties

LE 14.90 ft
 AR 1.17 in²
 EM 30000 ksi
 SP 0.492 k/ft³
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 1.78 ms
 JC []
 LP 11.30 ft

Sensors

F3: [168 AWJ-1] 214.08 (1)
 F4: [168 AWJ-2] 216.93 (1)
 A3: [K0286] 345 mv/5000g's (1)
 A4: [K0410] 373 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 1.06
 V3/V4: OK 1.03

PAGELAND SC - B-12 SS-6



PAGELAND SC - B-12 SS-6
OP: KW

CME 45C TR SN 300404
Test date: 8-Aug-2012

AR: 1.17 in²
LE: 19.90 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

EFV: Energy of FV
ETR: Energy Transfer Ratio
FMX: Maximum Force
VMX: Maximum Velocity
BPM: Blows per Minute

EF2: Energy of F²
DFN: Final Displacement
FVP: Force/Velocity proportionality
FVP: Force/Velocity proportionality

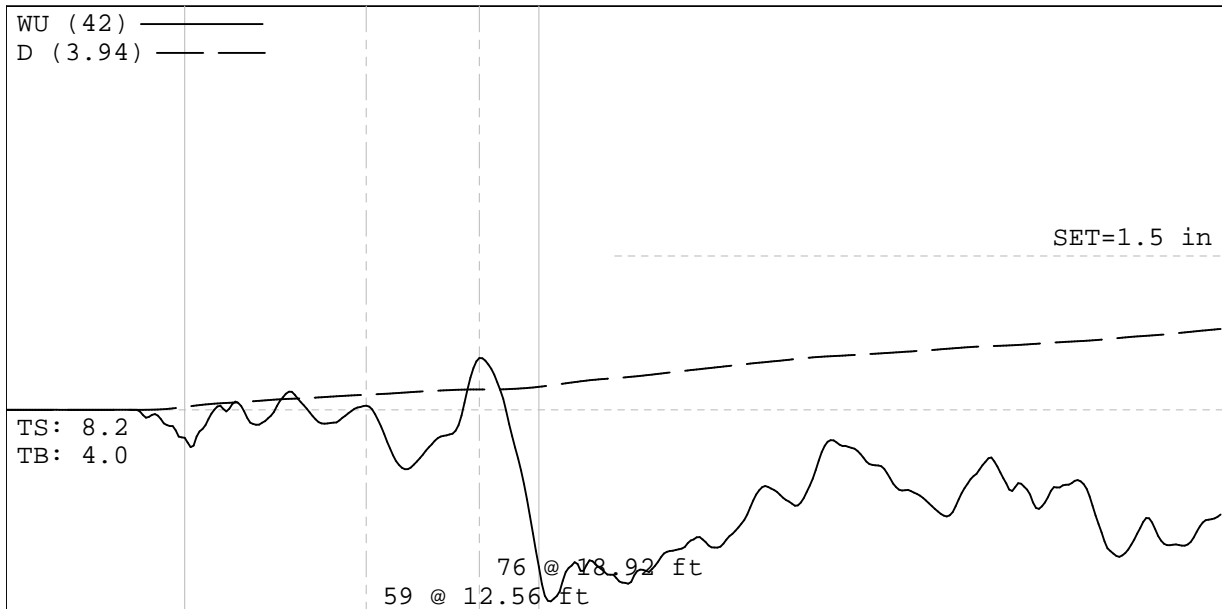
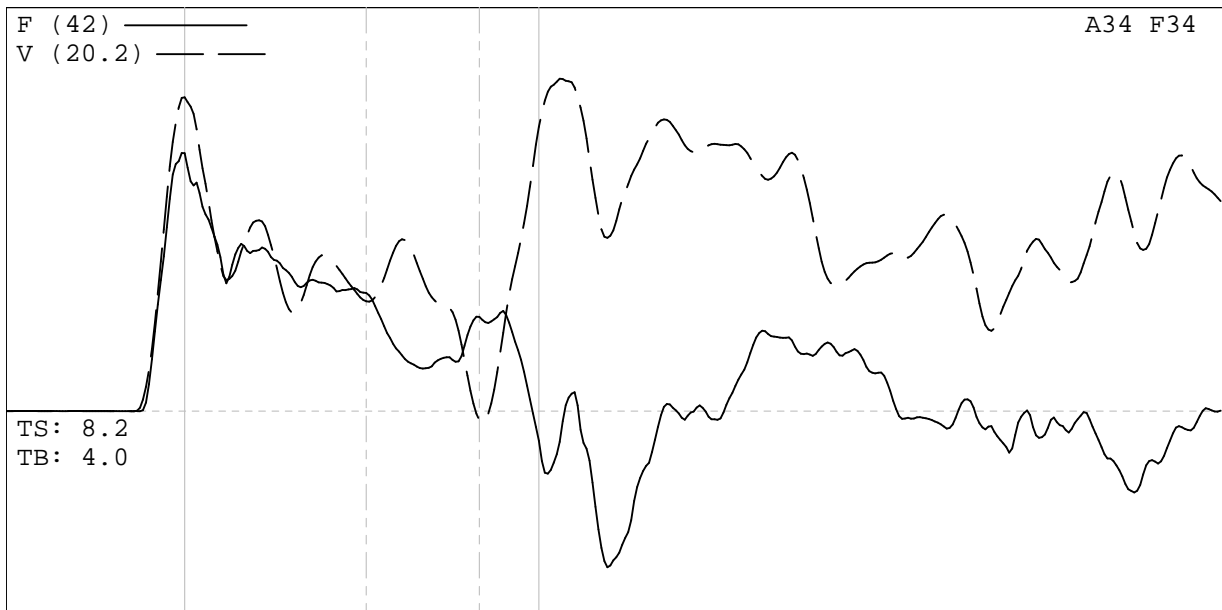
BL#	depth	BLC	TYPE	EFV	ETR	FMX	VMX	BPM	EF2	DFN	FVP	FVP
end	ft	bl/ft		k-ft	(%)	kips	f/s	**	k-ft	in	[]	[]
1	15.50	2	AV1	0.302	86	27	17.7	1.9	0.234	6.00	0.79	0.79
			MAX	0.302	86	27	17.7	1.9	0.234	6.00	0.79	0.79
3	16.00	4	AV2	0.281	80	27	16.8	53.2	0.229	3.00	0.76	0.76
			STD	0.001	0	0	0.6	0.2	0.001	0.00	0.02	0.02
			MAX	0.282	81	27	17.4	53.4	0.230	3.00	0.77	0.77
7	16.50	8	AV4	0.266	76	27	15.8	52.6	0.226	1.50	0.75	0.75
			STD	0.006	2	0	0.5	0.1	0.001	0.00	0.01	0.01
			MAX	0.274	78	27	16.6	52.8	0.227	1.50	0.77	0.77
Average				0.275	79	27	16.3	45.5	0.228	2.57	0.76	0.76
Std. Dev.				0.014	4	0	0.8	17.8	0.003	1.55	0.02	0.02
Maximum				0.302	86	27	17.7	53.4	0.234	6.00	0.79	0.79

Total number of blows analyzed: 7

Time Summary

Drive 7 seconds

3:21:02 PM - 3:21:09 PM (8/8/2012) BN 1 - 7



Project Information

PROJECT: PAGELAND SC
 PILE NAME: B-12 SS-6
 DESCR: CME 45C TR SN 300404
 OPERATOR: KW
 FILE: B-12 SS-6.W01
 8/8/2012 3:21:05 PM
 Blow Number 4

Quantity Results

EFV 0.265 k-ft
 ETR 76 (%)
 FMX 27 kips
 VMX 16.6 f/s
 BPM 52.6 bpm
 EF2 0.227 k-ft
 DFN 1.50 in
 FVP 0.82 []
 FVP 0.82 []

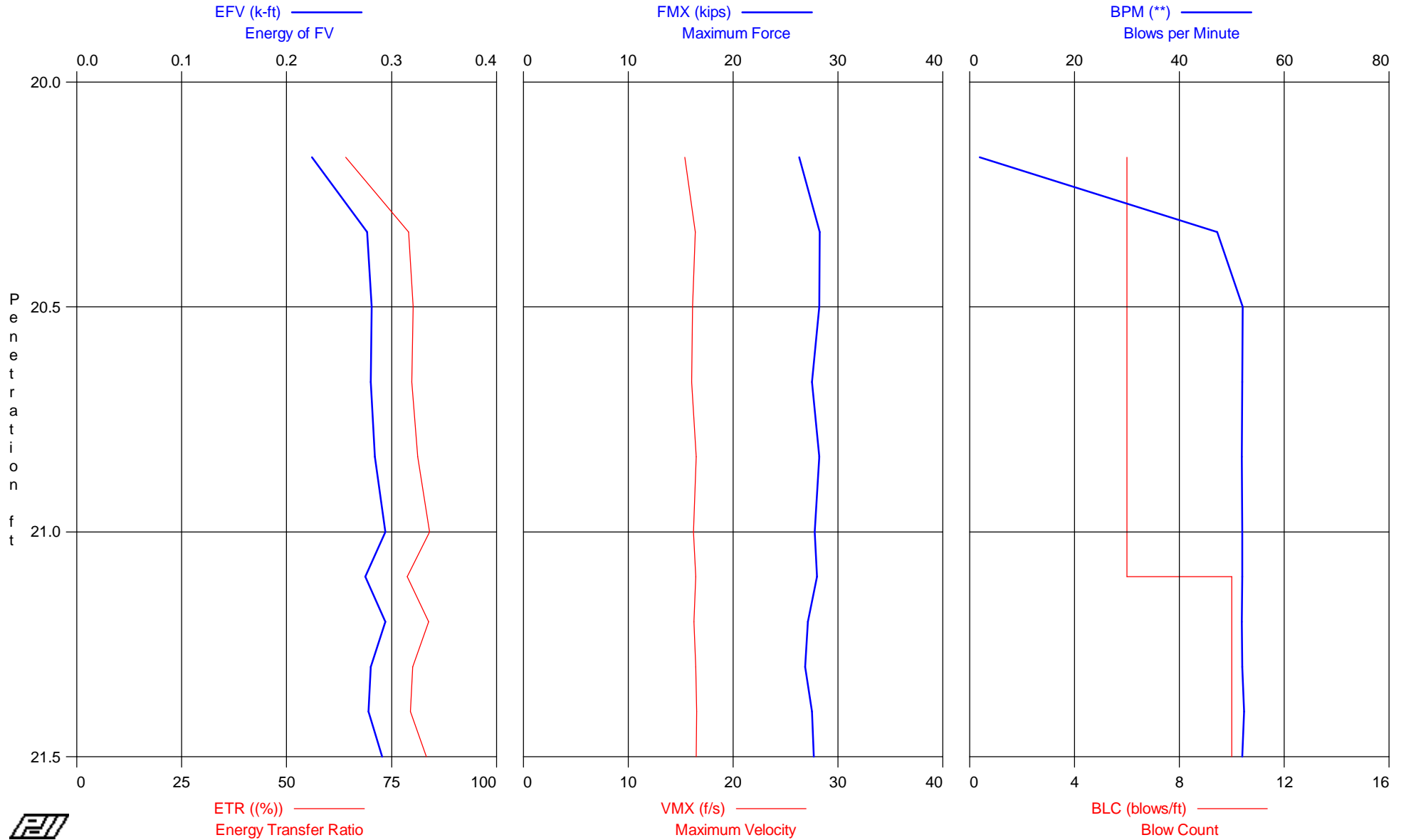
Pile Properties

LE 19.90 ft
 AR 1.17 in²
 EM 30000 ksi
 SP 0.492 k/ft³
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 2.38 ms
 JC []
 LP 16.13 ft

Sensors

F3: [168 AWJ-1] 214.08 (1)
 F4: [168 AWJ-2] 216.93 (1)
 A3: [K0286] 345 mv/5000g's (1)
 A4: [K0410] 373 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 0.95
 V3/V4: OK 0.83

PAGELAND SC - B-12 SS-7



PAGELAND SC - B-12 SS-7
OP: KW

CME 45C TR SN 300404
Test date: 8-Aug-2012

AR: 1.17 in²
LE: 24.90 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

EFV: Energy of FV
ETR: Energy Transfer Ratio
FMX: Maximum Force
VMX: Maximum Velocity
BPM: Blows per Minute

EF2: Energy of F²
DFN: Final Displacement
FVP: Force/Velocity proportionality
FVP: Force/Velocity proportionality

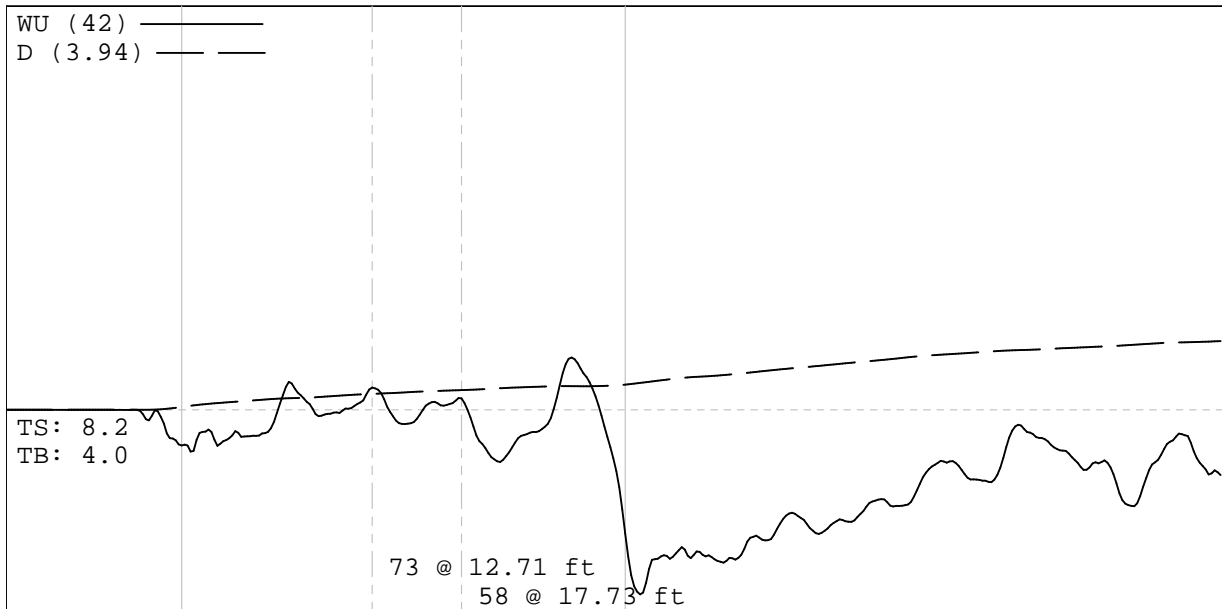
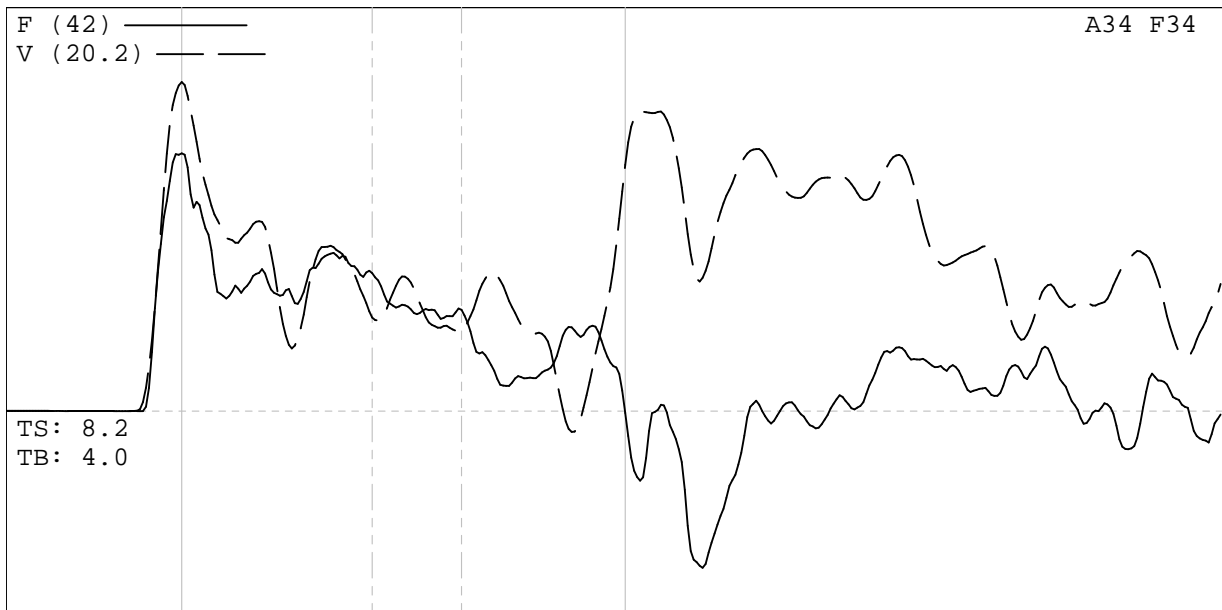
BL#	depth	BLC	TYPE	EFV	ETR	FMX	VMX	BPM	EF2	DFN	FVP	FVP
end	ft	bl/ft		k-ft	(%)	kips	f/s	**	k-ft	in	[]	[]
3	20.50	6	AV3	0.261	74	28	16.0	33.7	0.231	2.00	0.82	0.82
			STD	0.026	7	1	0.4	22.6	0.022	0.00	0.02	0.02
			MAX	0.281	80	28	16.4	52.1	0.248	2.00	0.85	0.85
6	21.00	6	AV3	0.286	82	28	16.3	52.0	0.246	2.00	0.81	0.81
			STD	0.006	2	0	0.2	0.1	0.002	0.00	0.00	0.00
			MAX	0.294	84	28	16.5	52.0	0.248	2.00	0.82	0.82
11	21.50	10	AV5	0.284	81	27	16.4	52.0	0.246	1.20	0.79	0.79
			STD	0.007	2	0	0.1	0.1	0.002	0.00	0.01	0.01
			MAX	0.294	84	28	16.5	52.3	0.250	1.20	0.81	0.81
Average				0.278	79	28	16.3	47.0	0.242	1.64	0.81	0.81
Std. Dev.				0.018	5	1	0.3	14.3	0.013	0.40	0.02	0.02
Maximum				0.294	84	28	16.5	52.3	0.250	2.00	0.85	0.85

Total number of blows analyzed: 11

Time Summary

Drive 12 seconds

3:30:51 PM - 3:31:03 PM (8/8/2012) BN 1 - 11



Project Information

PROJECT: PAGELAND SC
 PILE NAME: B-12 SS-7
 DESCR: CME 45C TR SN 300404
 OPERATOR: KW
 FILE: B-12 SS-7.W01
 8/8/2012 3:31:00 PM
 Blow Number 9

Quantity Results

EFV 0.280 k-ft
 ETR 80 (%)
 FMX 27 kips
 VMX 16.4 f/s
 BPM 52.0 bpm
 EF2 0.245 k-ft
 DFN 1.09 in
 FVP 0.78 []
 FVP 0.78 []

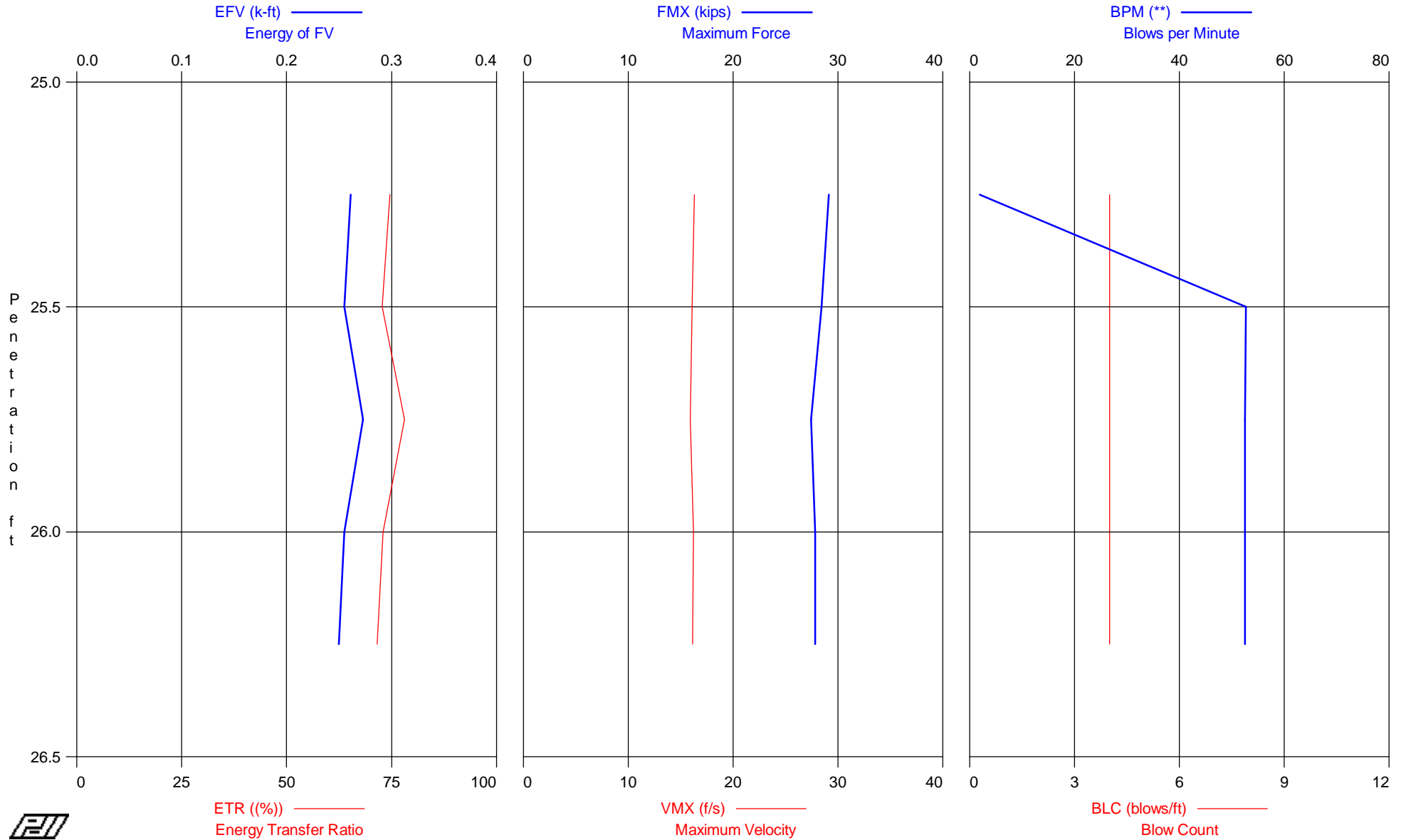
Pile Properties

LE 24.90 ft
 AR 1.17 in²
 EM 30000 ksi
 SP 0.492 k/ft³
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 2.98 ms
 JC []

Sensors

F3: [168 AWJ-1] 214.08 (1)
 F4: [168 AWJ-2] 216.93 (1)
 A3: [K0286] 345 mv/5000g's (1)
 A4: [K0410] 373 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 0.94
 V3/V4: OK 1.08

PAGELAND SC - B-12 SS-8



PAGELAND SC - B-12 SS-8
OP: KW

CME 45C TR SN 300404
Test date: 8-Aug-2012

AR: 1.17 in²
LE: 29.90 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

EFV: Energy of FV
ETR: Energy Transfer Ratio
FMX: Maximum Force
VMX: Maximum Velocity
BPM: Blows per Minute

EF2: Energy of F²
DFN: Final Displacement
FVP: Force/Velocity proportionality
FVP: Force/Velocity proportionality

BL#	depth end ft	BLC bl/ft	TYPE	EFV k-ft	ETR (%)	FMX kips	VMX f/s	BPM **	EF2 k-ft	DFN in	FVP []	FVP []
2	25.50	4	AV2	0.258	74	29	16.2	27.3	0.248	3.00	0.79	0.79
			STD	0.003	1	0	0.1	25.4	0.002	0.00	0.03	0.03
			MAX	0.261	75	29	16.3	52.7	0.250	3.00	0.82	0.82
4	26.00	4	AV2	0.264	76	28	16.1	52.5	0.246	3.00	0.79	0.79
			STD	0.009	3	0	0.1	0.0	0.006	0.00	0.02	0.02
			MAX	0.273	78	28	16.2	52.5	0.252	3.00	0.81	0.81
6	26.50	4	AV2	0.258	74	28	16.2	52.3	0.244	3.00	0.79	0.79
			STD	0.008	2	0	0.1	0.3	0.001	0.00	0.00	0.00
			MAX	0.266	76	28	16.4	52.5	0.245	3.00	0.79	0.79
Average				0.260	74	28	16.2	44.0	0.246	3.00	0.79	0.79
Std. Dev.				0.008	2	1	0.1	18.8	0.004	0.00	0.02	0.02
Maximum				0.273	78	29	16.4	52.7	0.252	3.00	0.82	0.82

Total number of blows analyzed: 6

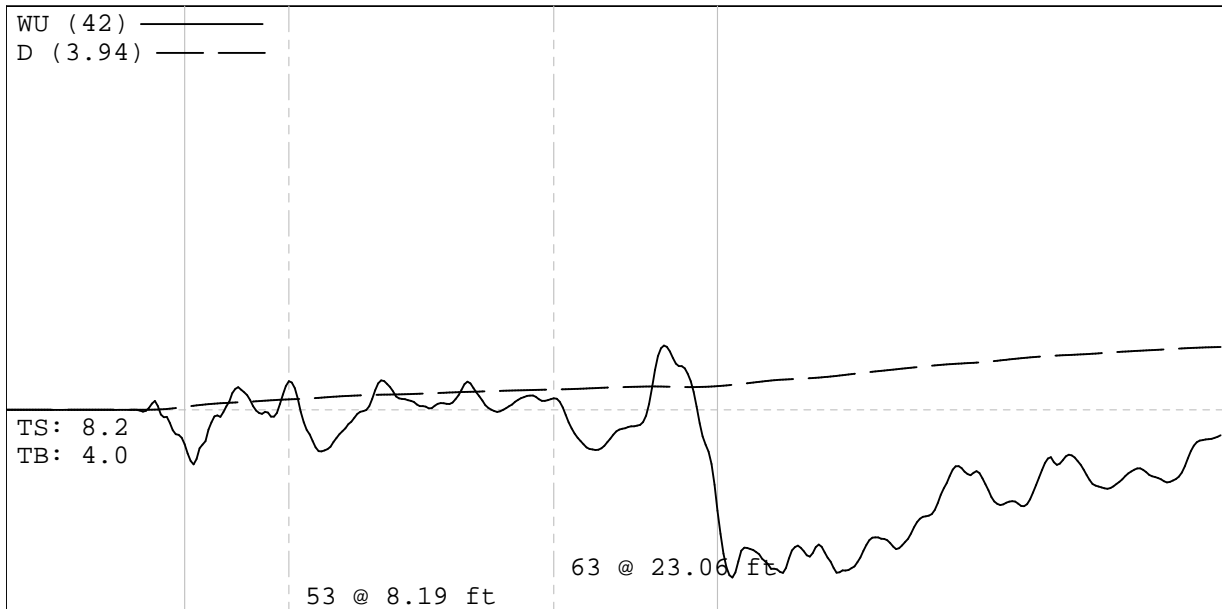
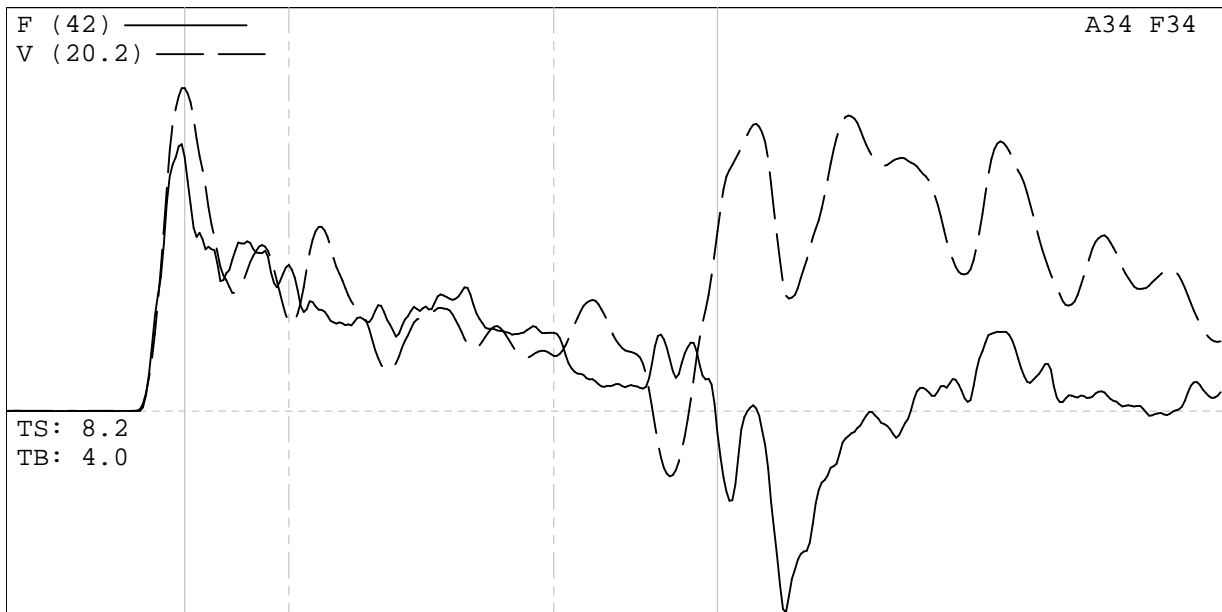
Time Summary

Drive 6 seconds

3:40:06 PM - 3:40:12 PM (8/8/2012) BN 1 - 6

PAGELAND SC

B-12 SS-8



Project Information

PROJECT: PAGELAND SC
 PILE NAME: B-12 SS-8
 DESCR: CME 45C TR SN 300404
 OPERATOR: KW
 FILE: B-12 SS-8.W01
 8/8/2012 3:40:11 PM
 Blow Number 5

Quantity Results

EFV 0.250 k-ft
 ETR 72 (%)
 FMX 28 kips
 VMX 16.1 f/s
 BPM 52.5 bpm
 EF2 0.243 k-ft
 DFN 1.69 in
 FVP 0.79 []
 FVP 0.79 []

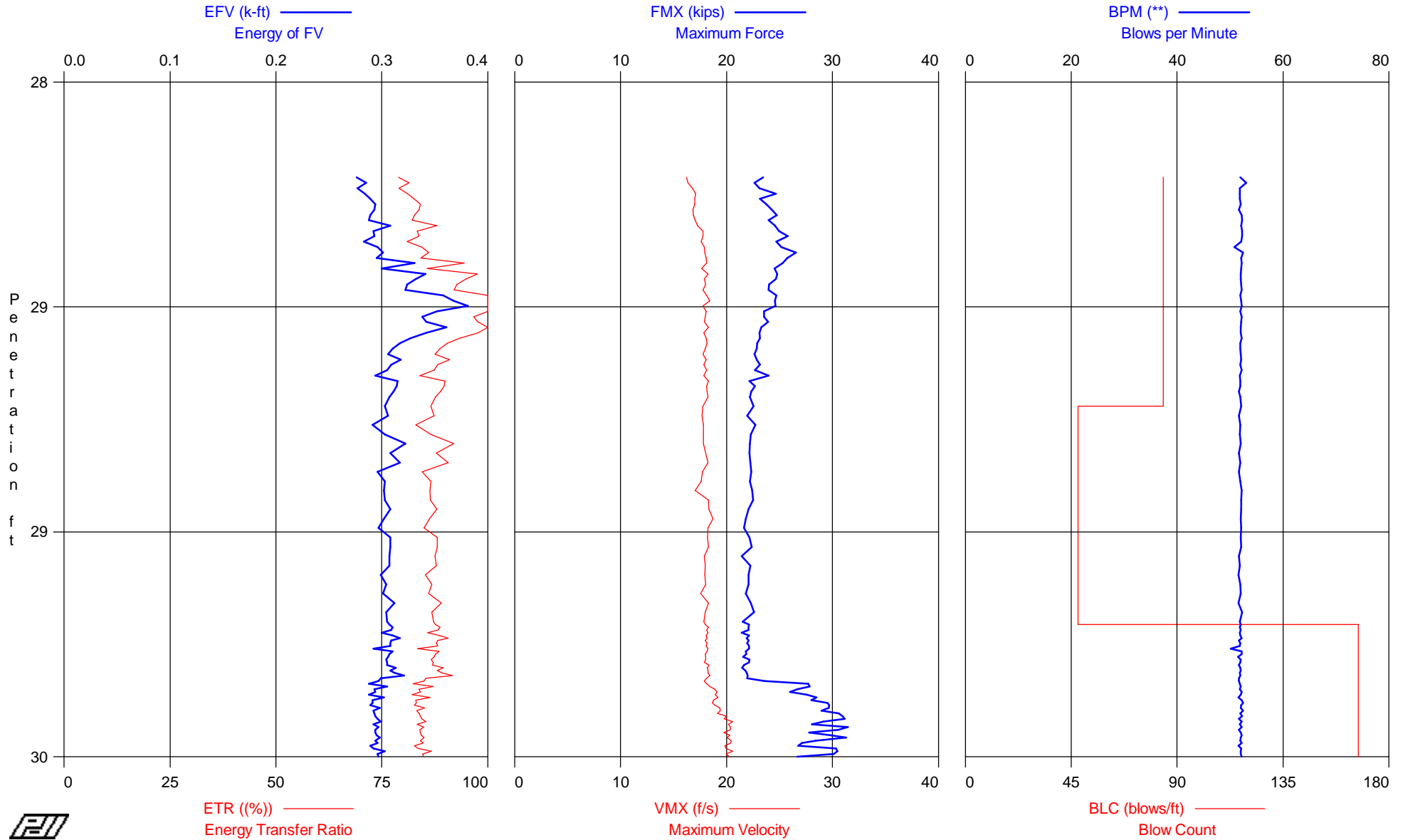
Pile Properties

LE 29.90 ft
 AR 1.17 in^2
 EM 30000 ksi
 SP 0.492 k/ft3
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 3.58 ms
 JC []

Sensors

F3: [168 AWJ-1] 214.08 (1)
 F4: [168 AWJ-2] 216.93 (1)
 A3: [K0286] 345 mv/5000g's (1)
 A4: [K0410] 373 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 0.89
 V3/V4: OK 0.93

PAGELAND SC - B-12 SS-9



PAGELAND SC - B-12 SS-9
OP: KW

CME 45C TR SN 300404
Test date: 8-Aug-2012

AR: 1.17 in² SP: 0.492 k/ft³
LE: 31.30 ft EM: 30,000 ksi
WS: 16,807.9 f/s JC: 0.00

EFV: Energy of FV EF2: Energy of F²
ETR: Energy Transfer Ratio DFN: Final Displacement
FMX: Maximum Force FVP: Force/Velocity proportionality
VMX: Maximum Velocity FVP: Force/Velocity proportionality
BPM: Blows per Minute

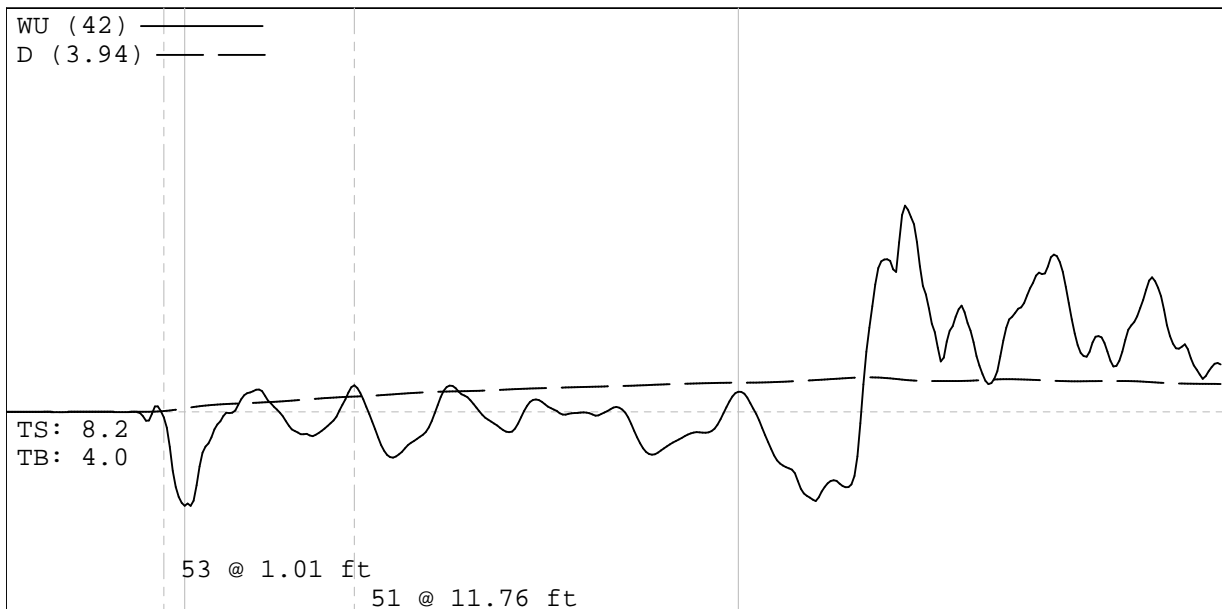
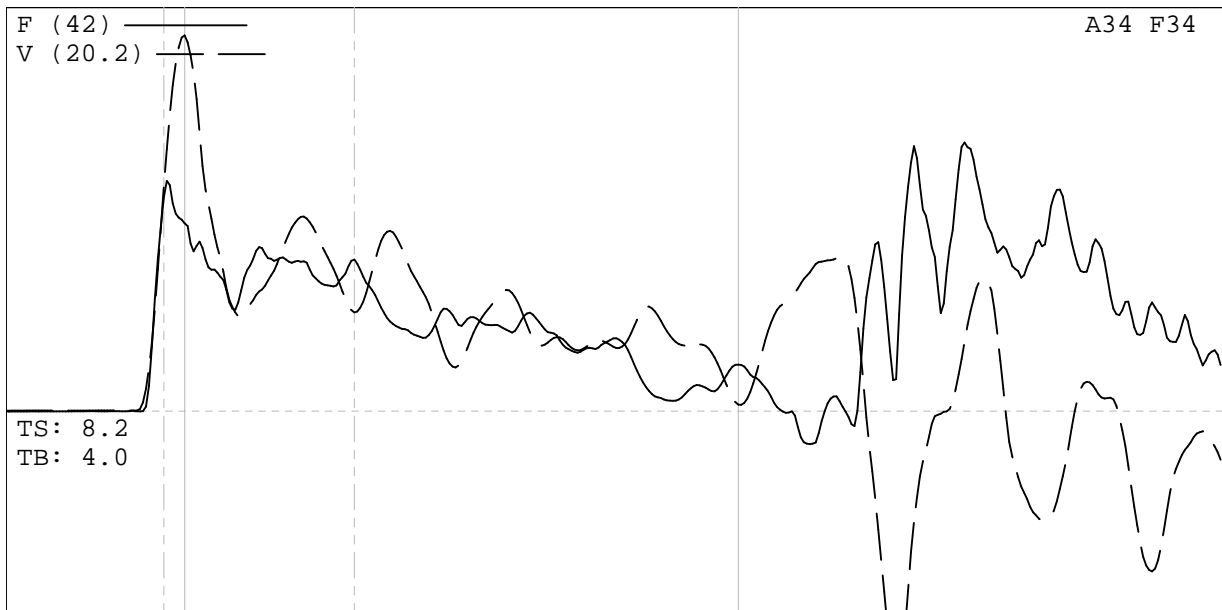
BL#	depth	BLC	TYPE	EFV	ETR	FMX	VMX	BPM	EF2	DFN	FVP	FVP
end	ft	bl/ft		k-ft	(%)	kips	f/s	**	k-ft	in	[]	[]
42	28.70	84	AV42	0.314	90	24	17.7	52.0	0.249	0.14	0.62	0.62
			STD	0.026	7	1	0.5	0.3	0.005	0.00	0.04	0.04
			MAX	0.381	109	27	18.4	53.0	0.259	0.14	0.70	0.70
66	29.20	48	AV24	0.305	87	22	18.0	51.9	0.242	0.25	0.54	0.54
			STD	0.006	2	0	0.3	0.2	0.004	0.00	0.03	0.03
			MAX	0.322	92	23	18.7	52.3	0.251	0.25	0.63	0.63
116	29.50	167	AV50	0.300	86	26	19.0	51.9	0.250	0.07	0.48	0.48
			STD	0.008	2	4	0.9	0.3	0.051	0.00	0.04	0.04
			MAX	0.321	92	31	20.6	52.4	0.604	0.07	0.55	0.55
Average				0.306	87	24	18.3	52.0	0.248	0.13	0.54	0.54
Std. Dev.				0.018	5	3	0.9	0.3	0.034	0.07	0.07	0.07
Maximum				0.381	109	31	20.6	53.0	0.604	0.25	0.70	0.70

Total number of blows analyzed: 116

Time Summary

Drive 2 minutes 13 seconds

4:06:40 PM - 4:08:53 PM (8/8/2012) BN 1 - 116



Project Information

PROJECT: PAGELAND SC
 PILE NAME: B-12 SS-9
 DESCR: CME 45C TR SN 300404
 OPERATOR: KW
 FILE: B-12 SS-9.W01
 8/8/2012 4:08:29 PM
 Blow Number 97/95

Quantity Results

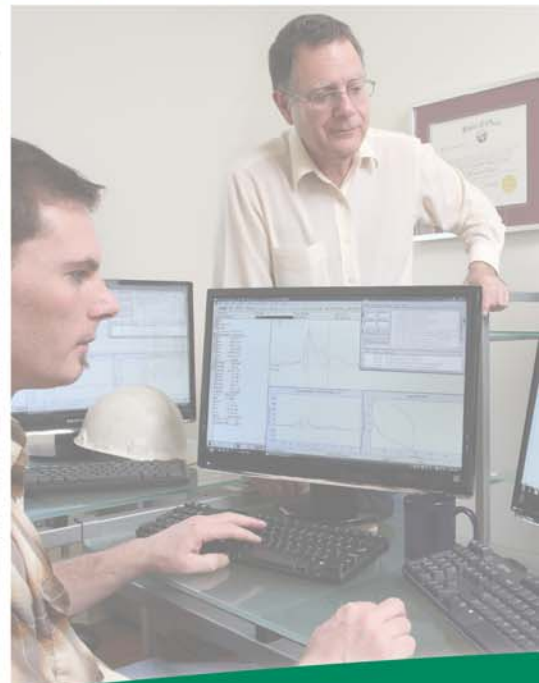
EFV 0.291 k-ft
 ETR 83 (%)
 FMX 28 kips
 VMX 18.8 f/s
 BPM 52.2 bpm
 EF2 0.242 k-ft
 DFN 0.27 in
 FVP 0.50 []
 FVP 0.50 []

Pile Properties

LE 31.30 ft
 AR 1.17 in²
 EM 30000 ksi
 SP 0.492 k/ft³
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 3.73 ms
 JC []

Sensors

F3: [168 AWJ-1] 214.08 (1)
 F4: [168 AWJ-2] 216.93 (1)
 A3: [K0286] 345 mv/5000g's (1)
 A4: [K0410] 373 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 1.01
 V3/V4: OK 0.99



GRL
engineers, inc.

**Dynamic
Measurements
and Analyses**

Job No. 129057-1

Report on: Standard Penetration Test
Energy Measurements
CME 45-C Trailer & CME 45-C ATV

Prepared for Florence & Hutcheson
By Darrell Fortune and Brent Robinson
August 16, 2012

www.GRLengineers.com

info@GRLengineers.com



August 17, 2012

Devin L. Chittenden, P.E.
Florence & Hutcheson - Consulting Engineers
2550 Irvin Cobb Drive
Paducah, KY 42003

Re: Standard Penetration Test Energy Measurements
CME 45-C Trailer & CME 45-C Track
GRL Job No. 129057-1

Dear Mr. Chittenden,

This report presents results of energy measurements obtained on August 9, 2012 during Standard Penetration Tests (SPT) sampling. Two automatic hammers, one mounted on a CME 45-C trailer drill rig, and one mounted on a CME 45-C track drill rig were tested. All dynamic tests were performed on AWJ drill rod. GRL Engineers, Inc. obtained the dynamic measurements with an instrumented AWJ subsection and a Model PAX Pile Driving Analyzer®. This report describes the testing procedures and summarizes the test results. Appendix A describes our measurement and analysis methods, Appendix B contains calibration information for the gages and equipment used, and Appendix C is a summary of the field data.

PURPOSE AND SCOPE OF WORK

At the request of Florence & Hutcheson, GRL conducted SPT energy measurements at a vacant lot near Batesville, Mississippi according to ASTM D4633-10. Specifically, we provided SPT energy measurements at varying sample intervals, between approximately 29 and 40 feet below the existing ground surface. In general, blank drilling was performed to a depth of approximately 28.5 feet, where the first sample was collected. SPT samples were then generally collected at depths until the boring depth of approximately 40.0 feet was reached. All SPT samples were driven for a total of 3 six-inch increments (1.5 feet) in residual silts/sands typical of the Mississippi region.

EQUIPMENT

Drilling and SPT Hammer Equipment

CME 45-C Trailer (Serial # 189274)

SPT energy measurements were made on an automatic hammer mounted on a CME 45-C trailer drill rig. The drilling method used to advance the boring was the flight auger method and it was observed by GRL that all boring holes used the same method. Energy measurements, for the above stated drill rig, were collected at a dummy borehole location to a boring termination depth of 40.0 feet below grade. SPT energy measurement tests were performed at varying sampling penetrations, starting at 28.5

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feet, to a boring termination of 40.0 feet below grade. Four energy measurement events were monitored for this drill rig.

CME 45-C Track (Serial # 365794)

SPT energy measurements were made on an automatic hammer mounted on a CME 45-C track drill rig. Energy measurements, for the above stated drill rig, were collected at a dummy borehole location to a boring termination depth of 40.0 feet. SPT energy measurement tests were performed at varying sampling penetrations, starting at 30.0 feet to a boring termination of 40.0 feet below grade. Four energy measurement events were monitored for this drill rig.

Instrumentation

A Model PAX Pile Driving Analyzer (PDA) data acquisition system was used to collect and process the dynamic measurements of force and velocity. The data was collected using a two foot long section of AWJ rod subsection with a cross sectional area on 1.19 square inches and instrumented with two full bridge foil resistance strain gages and two piezoresistive accelerometers mounted in the midpoint location of the instrumented rod.

Analog signals from the strain gages and accelerometers were conditioned, digitized, stored and processed with the PDA. The sampling frequency used during the SPT testing was 50 kHz. Selected output from the PDA for each recorded impact included the maximum calculated rod displacement (DMX), maximum rod top velocity (VMX), maximum energy transfer (EFV), maximum rod top force (FMX), and the hammer operating rate (BPM).

MEASUREMENTS AND CALCULATIONS

FV Method (EFV)

Energy transfer to the PDA gage location, EFV, was computed by the PDA using force, $F(t)$, and velocity, $v(t)$, records as follows:

$$EFV = \int_a^b F(t) \cdot v(t) dt$$

The time "a" corresponds to the start of the record when the energy transfer begins, and "b" is the time at which energy transferred to the rod reaches a maximum value. The FV Method is currently recognized in ASTM D4633-10, and is the theoretically correct result; therefore, no other energy calculation methods are reported.

Corrected SPT number (N_{60})

While the primary purpose of SPT energy testing is to calculate the maximum transfer energy (ETR) of each hammer blow, the overall average EFV value can be used to

calculate the corrected SPT number (N_{60}). To adjust the SPT N-values for hammer performance, the following correction as suggested by Seed for N-value adjustment to 60% transfer efficiency (e.g. 210 ft-pounds) was used:

$$N_{60} = \left(\frac{E_m}{210} \right) N_m$$

Where:

- N_{60} = Corrected N-value
- E_m = overall average measured energy transfer (EFV)
- N_m = number of blows for last 12 inches of sampler penetration

A general introduction to dynamic SPT testing methods is included in this report as Appendix A. References for more detailed descriptions of our testing and analysis methods are available upon request.

Any cross-sectional area difference between the GRL rod subsection and the drill rods, any loose connections or changes in area at section joints, or any cross-sectional area differences between the individual drill rod sections will result in stress wave reflections that can potentially influence the energy transfer. The EFV transferred energy calculation method, utilizing both force and velocity records, is theoretically correct and gives energy transfer results that are not adversely affected by cross-sectional area changes or loose connectors. The EFV results are included in Appendix C for all records collected and accepted after checking them for consistency.

RESULTS

Upon return to the office, the records collected by the PDA were checked for consistency and accuracy. For example, records from very weak startup or final impacts were not included in average results. Appendix B contains a representative plot of force and normalized velocity versus time, as well as plots and tables of PDA results for all hammer blows at each dynamically monitored sampling depth. The results include the EFV (transferred energy by the FV method, as recommended by ASTM D4633-10), ETR (energy transfer efficiency for the EFV method), BPM (hammer operating rate), DMX (maximum rod displacement), and VMX (maximum rod top velocity). The plots show each calculated PDA result versus split-spoon penetration, while the tables show statistical summaries for each 6 inch increment. At the end of each table is a statistical evaluation of the results which include the average and standard deviation of the entire measurement sample.

The table below and tables 1 and 2 summarize the average transferred energy values calculated by the EFV method. The records consist of averaged hammer blows from the last 12 inches (i.e. N value) at each dynamically monitored sampling depth. The “energy transfer ratio” (ETR) is defined as the ratio of maximum transferred energy EFV divided

by the theoretical hammer potential energy of 350 ft-lbs (i.e., computed per the 140 lb SPT hammer and the standard 30 inch drop as specified by ASTM D1586-99). The average hammer operating rate is reported in blows per minute (BPM). A summary of the dynamic measurements of the energy transfer to the drill rods using the EFV equation for each drill rig is provided in the table below.

Drill Rig	Avg. EFV (ft-lbs)	Avg ETR (%)	Range of EFV (ft-lbs)	Range of ETR (%)
CME 45-C trailer	278	79	270 – 286	77 - 82
CME 45-C track	301	86	290 – 327	83 - 94

CONCLUSIONS

Based upon the dynamic test data obtained, the following conclusions are presented:

1. Loose connections in the drill string were sometimes observed in the force and velocity records. However, energy transfer values calculated using the EFV equation are not adversely affected by the connectors and therefore are considered a better indication of transferred energy.
2. Dynamic measurements of the transferred energy to the drill rods using the EFV equation ranged from 270 to 286 ft-lbs for CME 45-C trailer drill rig. This corresponds to a transfer efficiency ranging from 77 to 82% of the SPT hammer energy of 350 ft-lbs.
3. Dynamic measurements of the transferred energy to the drill rods using the EFV equation ranged from 290 to 327 ft-lbs for CME 45-C track drill rig. This corresponds to a transfer efficiency ranging from 83 to 94% of the SPT hammer energy of 350 ft-lbs.

Please review both ASTM D4633-10 and ASTM D1586-99 prior to applying these test results. The energy calibrations reported herein are valid for the same hammer/drill rig, with the same drill operator, same anvil dimensions, and same drilling methods.

We appreciate the opportunity to be of assistance to you on this project. Please contact our office should you have any questions regarding this submittal, require additional information, or if we may be of further service.

Sincerely,

GRL Engineers, Inc.



Darrell Fortune



Brent Robinson

DF:BRR:dms

**TABLE 1: Summary of SPT Energy Measurements
F & H SPT Calibration August 9, 2012
CME 45 Trailer Serial # 189274**

Boring/Soil Sample	Reported Sample Depth	Reported Rod Length	Reported Blow Count	SPT Field N Value	Avg. Energy Transferred FV Method	Energy Transfer Efficiency ¹	Blow per Minute	N ₆₀
	(feet)	(feet)	(blows/6")		(ft-lbs)	(%)	(bpm)	
SS-1	28.5 - 30.0	34	10,8,12	20	270	77	49	26
SS-2	30.0 - 31.5	34	6,8,12	20	276	79	51	26
SS-3	33.0 - 34.5	39	8,10,11	21	278	79	50	28
SS-4	38.5 - 40.0	44	8,9,10	19	286	82	52	26
Average⁽²⁾					278	79	51	
Standard Dev.⁽²⁾					7	2	1	

Notes: 1 - Energy transfer efficiency is the energy calculated by the FV method divided by the SPT hammer potential energy of 140 lbs times 2.5 foot drop height or 350 ft-lbs.

2 - Average and standard deviation are calculated using averaged data from SPT hammer blows from the last two six inch increments (i.e. N value)

**TABLE 2: Summary of SPT Energy Measurements
F & H SPT Calibration August 9, 2012
CME 45-C Track Serial # 365794**

Boring/Soil Sample	Reported Sample Depth	Reported Rod Length	Reported Blow Count	SPT Field N Value	Avg. Energy Transferred FV Method	Energy Transfer Efficiency ¹	Blow per Minute	N ₆₀
	(feet)	(feet)	(blows/6")		(ft-lbs)	(%)	(bpm)	
SS-1	30.0 - 31.5	34	10,11,10	21	311	89	52	31
SS-2	31.5 - 33.0	38	12,8,6	14	294	84	53	20
SS-3	35.0 - 36.5	39	8,6,5	11	327	94	54	17
SS-4	38.5 - 40.0	44	21,15,25	40	290	83	54	55
Average⁽²⁾					301	86	53	
Standard Dev.⁽²⁾					17	5	1	

Notes: 1 - Energy transfer efficiency is the energy calculated by the FV method divided by the SPT hammer potential energy of 140 lbs times 2.5 foot drop height or 350 ft-lbs.

2 - Average and standard deviation are calculated using averaged data from SPT hammer blows from the last two six inch increments (i.e. N value)

Appendix A

An Introduction into SPT Dynamic Pile Testing

APPENDIX A

AN INTRODUCTION INTO SPT DYNAMIC PILE TESTING

The following has been written by GRL Engineers, Inc. and may only be copied with its written permission.

1. BACKGROUND

The Standard Penetration Test is frequently conducted as an in-situ assessment of soil strength. This test requires that a 140 lb weight is dropped 30 inches onto a drive rod at whose bottom a sampler is usually installed. The sampler is driven for 18 inches; the number of blows required for the last 12 inches of driving is the so-called N-value. The N-value may be used as a strength indicator for foundation design or as a means of assessing the liquefaction potential of soils.

Obviously, the SPT hammer efficiency is an important consideration when using the N-values for design purposes. Measurements have indicated that the energy in the drive rod is sometimes only 30% and may reach 90% of the potential or rated energy of the SPT hammer (E-rated = 0.35 kip-ft or 0.475 kJ). The type of hammer used to drive the rod is the main reason for these variations. On the average, the energy in the drive rod is 60% of the standard rated energy.

Because of the variability of energy, methods based on N-values are considered unreliable. However, measurements during SPT testing using the Case Method can be done on a routine basis and these measurements yield the transferred energy values. With measured energy, E_m , known, an adjustment of the measured N-value, N_m , can be made as follows.

$$N_{60} = N_m [E_m / (0.6E_r)] \quad (1)$$

Thus, if the measured energy value is equal to the normally expected transferred energy of 60% of E-rated then the adjusted and measured N-values are identical. On the other hand, if the measured energy is only 30% then the adjusted blow count will be reduced by 50%.

2. DYNAMIC TESTING AND ANALYSIS METHODS APPLIED TO SPT

The Case Method of dynamic pile testing, named after the Case Institute of Technology where it was

developed between 1964 and 1975, requires that a substantial ram mass (e.g. a pile driving hammer) impacts the pile top such that the pile undergoes at least a small permanent set. Thus, the method is also referred to as a "High Strain Method". The Case Method requires dynamic measurements on the pile or shaft under the ram impact and then a calculation of various quantities. Conveniently, for SPT applications, the measurements and analyses are done by a single piece of equipment: the SPT Analyzer. The Pile Driving Analyzer® (PDA) is also suitable to perform these measurements and data processing.

A related analysis method is the "Wave Equation Analysis" which calculates a relationship between bearing capacity, pile stresses, transferred energy and field blow count. The GRLWEAP™ program performs this analysis and provides a complete set of helpful information and input data. This program can be used very effectively to simulate the SPT driving process.

3. MEASUREMENTS

GRL uses equipment manufactured by Pile Dynamics, Inc. The system includes either an SPT-Analyzer™ (SPTA) or a Pile Driving Analyzer® (PDA), an instrumented rod section and two accelerometers. SPT energy testing is very closely related to and borrows procedures from dynamic pile testing. Those interested in the basis of the SPT energy testing method may obtain extensive literature on dynamic pile testing from GRL Engineers, Inc.

3.1 SPT Analyzer or Pile Driving Analyzer

The basis for the results calculated by the SPTA or PDA are strain and acceleration measured in an instrumented rod section. These signals are converted to rod top force, $F(t)$, and rod top velocity, $v(t)$. The SPTA or PDA conditions, calibrates and displays these signals and immediately computes average pile force and velocity thereby eliminating bending effects. The product of these two

measurements is then integrated over time which yields the energy transferred to the instrumented section as a function of time (see Section 4.1).

For convenience and accuracy, strain measurements are usually taken on an instrumented section of SPT drive rod. Ideally, the section properties of the instrumented rod and those of the drive rod are the same, however, using subs, other sections can also be utilized.

For the instrumented section, PDI provides a force calibration in such a way that the output of the instrumented rod is directly calculated without the need for an accurate elastic modulus or cross sectional area of the rod section.

The acceleration measurements are often demanding in the SPT environment, because of high frequency and high acceleration motion components. An experienced measurement engineer, therefore, has to evaluate the quality of this data before final conclusions are drawn from the numerical results calculated by SPTA or PDA.

SPTA or PDA records are taken while the standard N-value is acquired in the conventional manner. This then allows a direct correlation between N-value and average transferred energy.

3.2 HPA

The SPT hammer's ram velocity may be directly obtained using radar technology in the Hammer Performance Analyzer™. The impact velocity results can be automatically processed with a PC or recorded on a strip chart. HPA measurements yield a hammer kinetic energy, but not the energy transferred to the drive rod.

4 RECORD EVALUATION BY SPTA OR PDA

4.1 HAMMER PERFORMANCE

The PDA calculates the energy transferred to the pile top from:

$$E(t) = \int_0^t F(\tau)v(\tau) d\tau \quad (2)$$

The maximum of the $E(t)$ curve is often called **ENTHRU** or **EMX**; it is the most important quantity for an overall evaluation of the performance of a hammer

and driving system. **EMX** allows for a classification of the hammer's performance when presented as, e_T , the rated transfer efficiency, also called energy transfer ratio (**ETR**) or global efficiency.

$$e_T = EMX/E_R \quad (3)$$

where E_R is the hammer manufacturer's rated energy value or 0.35 kip-ft (0.475 kJ) in the case of the SPT hammer.

Often in the SPT literature one finds also reference to the EF2 energy. This evaluation is based on assumed proportionality between force and velocity (see also Section 5):

$$v(t) = F(t) / Z \quad (4)$$

where $Z = EA/c$ is the pile impedance, E is the elastic modulus, A is the cross sectional area and c is the speed of the stress wave in the pile material..

Combining equations 2 and 4 leads to

$$EF(t) = \int_0^t F(\tau)^2 / Z d\tau \quad (5)$$

The EF2 transferred energy value is the EF-value at the time $t = 2L/c$, where L is the drive rod length and c is the stress wave speed in steel (16,800 ft/s or 5,124 m/s). Since the force is easier to measure than both force and velocity, Equation 5 is preferred by some test engineers. However, the EF method is fraught with errors and certain correction factors have to be applied to make it approximately correct. Among the error sources are the following:

- Proportionality is often violated prior to time $2L/c$. The proportionality between force and velocity in a downward traveling wave only holds if the wave does not encounter a disturbance prior to reflecting off the pile toe. Such disturbances include a change in cross sectional area, an open or loose splice or joint, or resistance along the shaft.
- Using only one force measurement precludes a data quality check based on the proportionality between force and velocity. Thus, a force measurement that is for some reason in error may not be detectable, which will lead to errors in the EF2 value. Data quality checks will be discussed further in Section 5.

The use of EF2 is therefore not recommended but it is often included in result presentations for the sake of completeness.

4.2 STRESSES

During SPT monitoring, it is also of interest to monitor compressive stresses at both the top of the drive rod and at its bottom.

At the pile top (location of sensors) the maximum compression stress averaged over the rod's cross section, **CSX**, is directly obtained from the measurements. Note that this stress value refers to the instrumented section. If the rod has a different cross sectional area then the stress in the rod will be different from CSX.

The SPTA or PDA can also calculate, in an approximate manner, the force at the rod bottom, **CFB**. To obtain the corresponding stress, this force value should be divided by the appropriate cross sectional area, e.g. by the rod area just above the sampler or by the sampler area itself. Of course, non-uniform stress components as they might occur at the sampler tip due to a sloping rock are not considered in this calculation.

5. DATA QUALITY CHECKS

Quality data is the first and foremost requirement for accurate dynamic testing results. It is therefore important that the measurement engineer performing SPTA or PDA tests has the experience necessary to recognize measurement problems and take appropriate corrective action should problems develop. Fortunately, dynamic pile testing allows for certain data quality checks because two independent measurements are taken that have to conform to the so-called proportionality relationship.

As long as there is only a wave traveling in one direction, as is the case during impact when only a downward traveling wave exists in the rod, force and velocity measured at its top are proportional

$$F = v Z \quad (5)$$

where Z is again the pile impedance, $Z = EA/c$. This relationship can also be expressed in terms of stress

$$\sigma = F/A = v (E/c) \quad (6)$$

or strain

$$\epsilon = \sigma/E = v / c \quad (7)$$

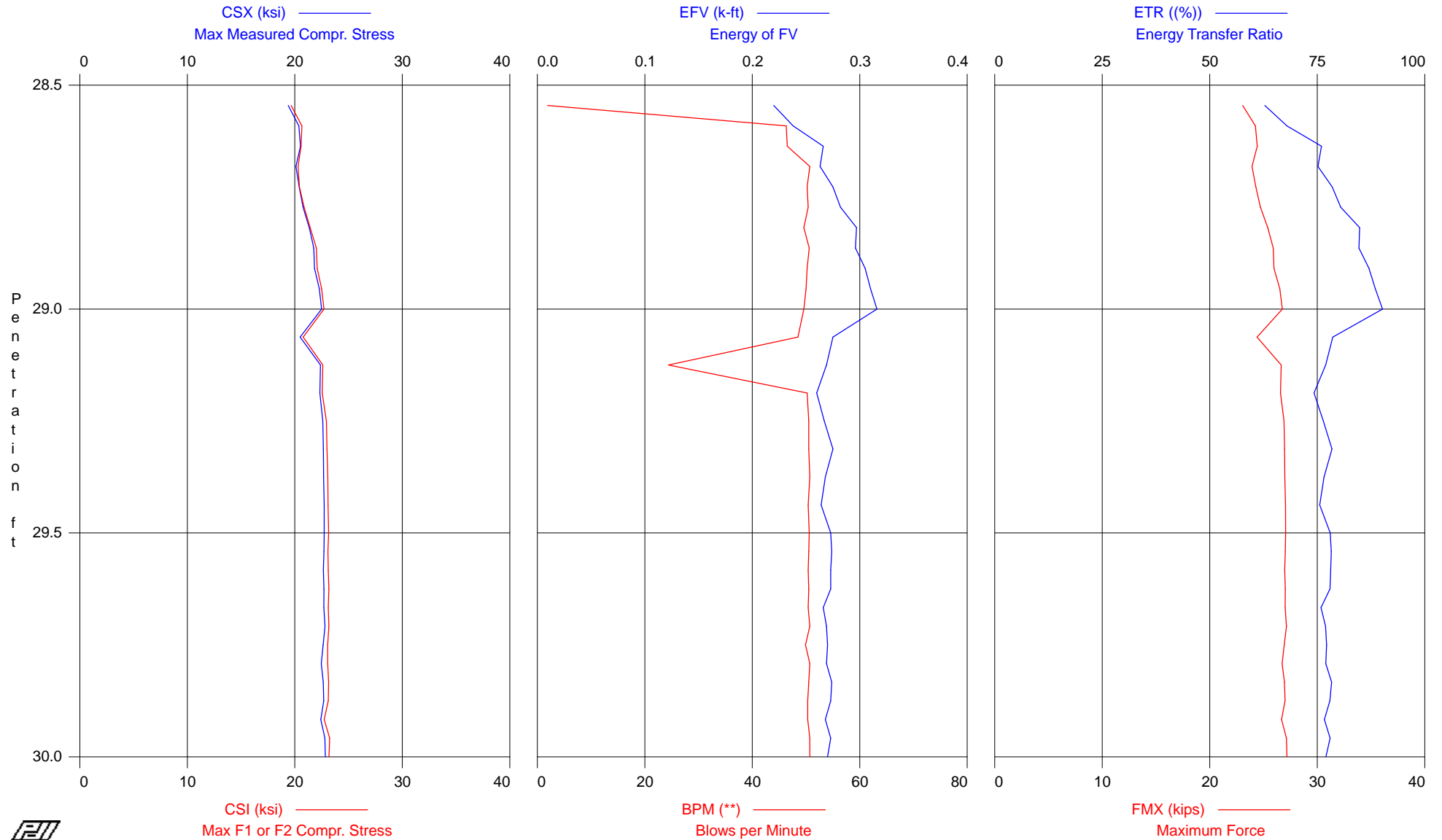
This means that the early portion of strain times wave speed must be equal to the velocity unless the proportionality is affected by high friction near the pile top or by a pile cross sectional change not far below the sensors. Checking the proportionality is an excellent means of assuring meaningful measurements but is only truly meaningful for perfectly uniform rods. Open or loose splices, for example, will lead to a non-proportionality. For SPT rods it is fortunate that usually no soil resistance acts along the shaft and for that reason, proportionality can exist until the stress wave returns from sampler top or rod bottom unless connectors are not sufficiently tightened or have a significant mass.

Velocity data quality can also be checked by looking at the final displacement, DFN, which is calculated from the acceleration by double integration. If the calculated final displacement is much higher or lower than indicated by the N-value, the accelerometer attachment may be loose or the sensor may be faulty. If major drift in the velocity is observed, the EMX value may be in error, even though proportionality from impact to time $2L/c$ exists. In this case, it may be useful to evaluate the energy transferred to the drill rod at time $2L/c$, which is calculated by the PDA or SPTA as the E2E quantity.

Appendix B

SPT Calibration Results

F&H CME 45-C SN#189274 - SS-1 28.5 - 30.0
CME 45-C TRAILER



F&H CME 45-C SN#189274 - SS-1 28.5 - 30.0
OP: DJF

CME 45-C TRAILER
Test date: 9-Aug-2012

AR: 1.19 in² SP: 0.492 k/ft³
LE: 33.80 ft EM: 30,000 ksi
WS: 16,807.9 f/s JC: 0.00

CSX: Max Measured Compr. Stress ETR: Energy Transfer Ratio
CSI: Max F1 or F2 Compr. Stress FMX: Maximum Force
BPM: Blows per Minute DMX: Maximum Displacement
EFV: Energy of FV VMX: Maximum Velocity

BL#	depth ft	BLC bl/ft	TYPE	CSX ksi	CSI ksi	BPM **	EFV k-ft	ETR (%)	FMX kips	DMX in	VMX f/s
11	29.00	22	AV11	21.0	21.2	45	0.279	80	25.0	0.9	16.1
			STD	0.9	1.0	14	0.029	8	1.1	0.0	1.3
19	29.50	16	AV8	22.3	22.6	47	0.269	77	26.6	0.8	16.6
			STD	0.7	0.7	9	0.005	1	0.8	0.0	0.2
31	30.00	24	AV12	22.7	23.1	50	0.271	77	27.0	0.6	16.7
			STD	0.1	0.1	0	0.003	1	0.1	0.0	0.1
			Average	22.0	22.3	48	0.273	78	26.2	0.8	16.5
			Std. Dev.	1.0	1.1	10	0.018	5	1.2	0.1	0.8

Total number of blows analyzed: 31

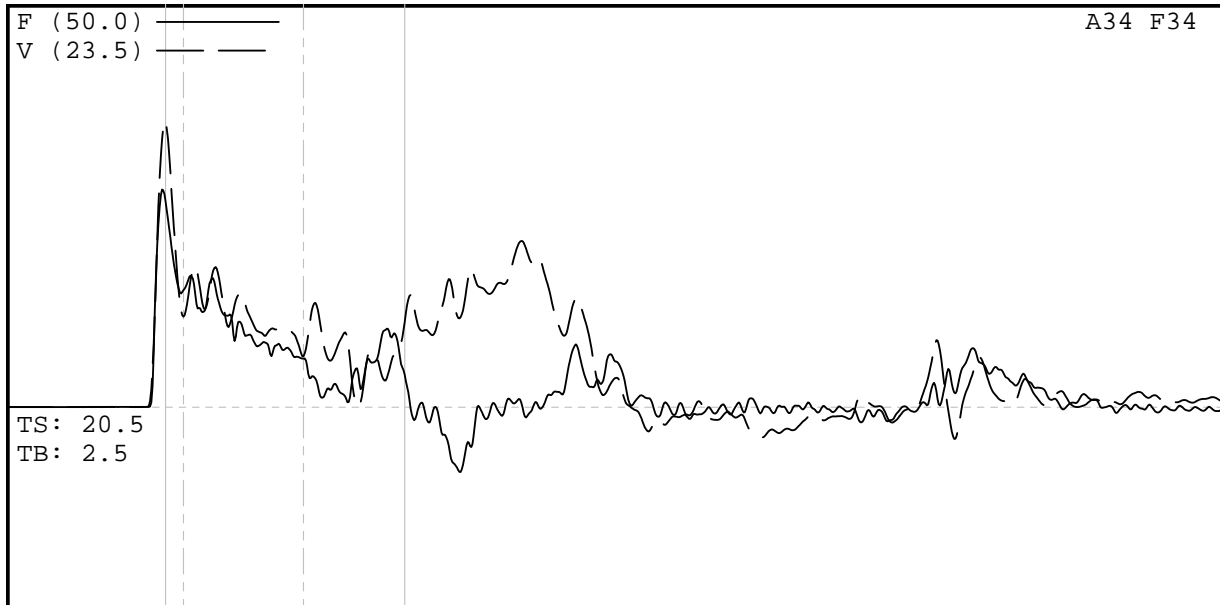
Time Summary

Drive 37 seconds

12:10:48 PM - 12:11:25 PM (8/9/2012) BN 1 - 31

F&H CME 45-C SN#189274

SS-1 28.5 - 30.0



Project Information

PROJECT: F&H CME 45-C SN#189274
 PILE NAME: SS-1 28.5 - 30.0
 DESCR: CME 45-C TRAILER
 OPERATOR: DJF
 FILE: SS-1 28.5 - 30.0
 8/9/2012 12:11:21 PM
 Blow Number 28

Quantity Results

CSX 22.7 ksi
 CSI 23.1 ksi
 BPM 50.3 bpm
 EFV 0.273 k-ft
 ETR 77.9 (%)
 FMX 27.0 kips
 DMX 0.59 in
 VMX 16.6 f/s
 FVP 0.72 []

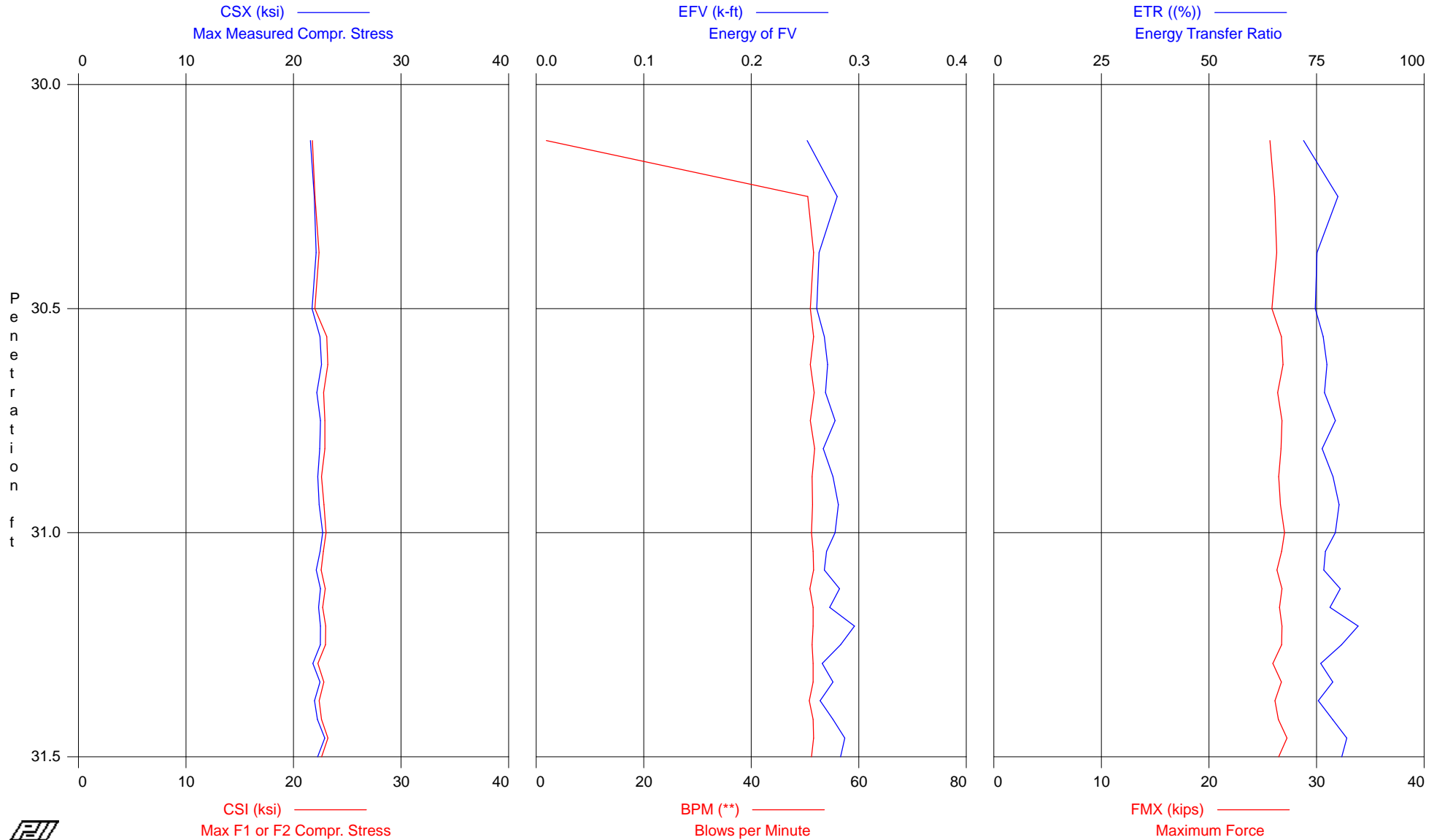
Pile Properties

LE 33.80 ft
 AR 1.19 in^2
 EM 30000 ksi
 SP 0.492 k/ft3
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 4.02 ms
 JC []
 LP 29.88 ft

Sensors

F3: [338AWJ-1] 210.02 (1)
 F4: [338AWJ-2] 210.19 (1)
 A3: [K0241] 385 mv/5000g's (1)
 A4: [K877] 320 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 1.04
 V3/V4: OK 1.11

F&H CME 45-C SN#189274 - SS-2 30.0 - 31.5
CME 45-C TRAILER



F&H CME 45-C SN#189274 - SS-2 30.0 - 31.5
OP: DJF

CME 45-C TRAILER
Test date: 9-Aug-2012

AR: 1.19 in² SP: 0.492 k/ft³
LE: 33.80 ft EM: 30,000 ksi
WS: 16,807.9 f/s JC: 0.00

CSX: Max Measured Compr. Stress ETR: Energy Transfer Ratio
CSI: Max F1 or F2 Compr. Stress FMX: Maximum Force
BPM: Blows per Minute DMX: Maximum Displacement
EFV: Energy of FV VMX: Maximum Velocity

BL#	depth ft	BLC bl/ft	TYPE	CSX ksi	CSI ksi	BPM **	EFV k-ft	ETR (%)	FMX kips	DMX in	VMX f/s
4	30.50	8	AV4	21.8	22.0	39	0.264	75	26.0	1.7	16.6
			STD	0.2	0.2	21	0.010	3	0.2	0.1	0.3
12	31.00	16	AV8	22.4	22.9	51	0.273	78	26.7	1.0	16.8
			STD	0.2	0.2	0	0.005	1	0.2	0.2	0.1
24	31.50	24	AV12	22.3	22.7	51	0.277	79	26.6	0.6	16.8
			STD	0.3	0.3	0	0.009	3	0.3	0.0	0.3
			Average	22.3	22.7	49	0.274	78	26.5	0.9	16.8
			Std. Dev.	0.3	0.4	10	0.009	3	0.4	0.4	0.3

Total number of blows analyzed: 24

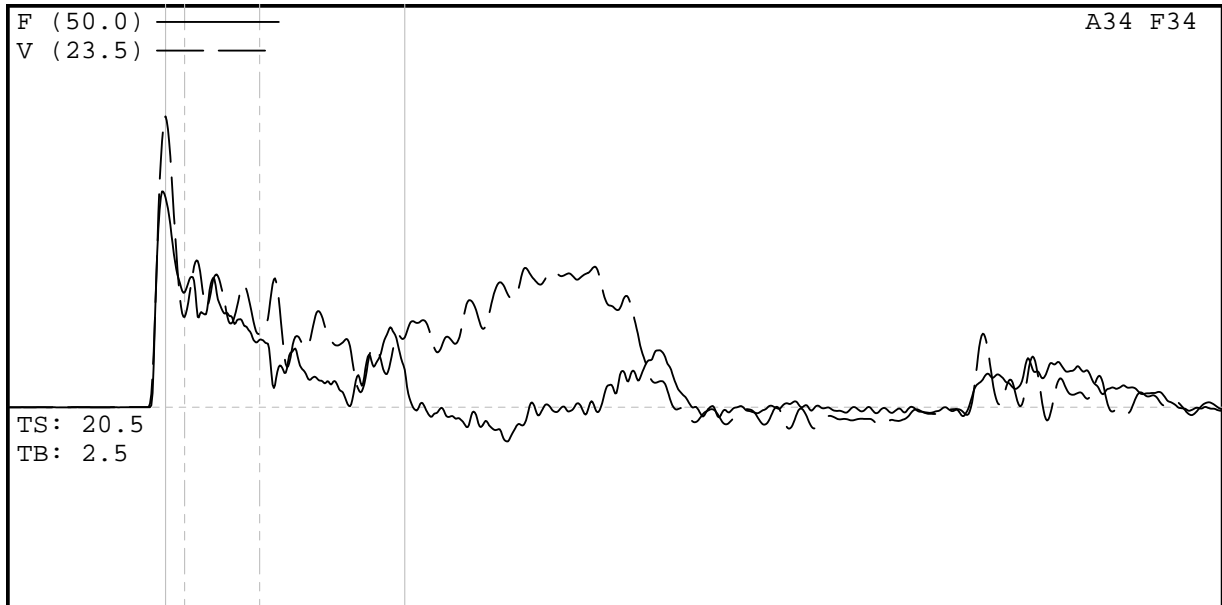
Time Summary

Drive 27 seconds

12:23:00 PM - 12:23:27 PM (8/9/2012) BN 1 - 24

F&H CME 45-C SN#189274

SS-2 30.0 - 31.5



Project Information

PROJECT: F&H CME 45-C SN#189274
 PILE NAME: SS-2 30.0 - 31.5
 DESCR: CME 45-C TRAILER
 OPERATOR: DJF
 FILE: SS-2 30.0 - 31.5
 8/9/2012 12:23:16 PM
 Blow Number 15

Quantity Results

CSX 22.5 ksi
 CSI 23.0 ksi
 BPM 50.9 bpm
 EFV 0.282 k-ft
 ETR 80.5 (%)
 FMX 26.8 kips
 DMX 0.61 in
 VMX 17.0 f/s
 FVP 0.72 []

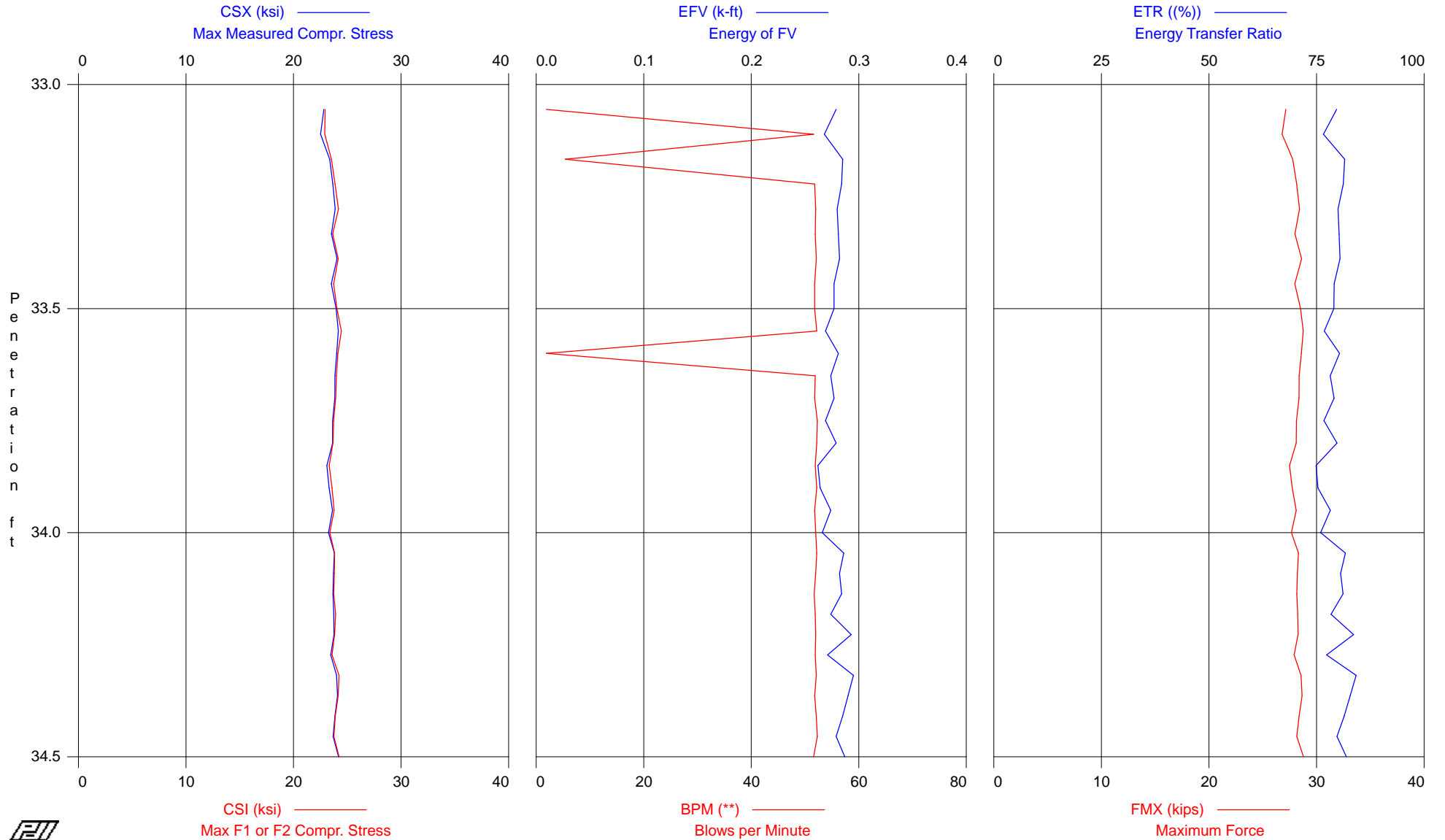
Pile Properties

LE 33.80 ft
 AR 1.19 in^2
 EM 30000 ksi
 SP 0.492 k/ft3
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 4.02 ms
 JC []
 LP 31.13 ft

Sensors

F3: [338AWJ-1] 210.02 (1)
 F4: [338AWJ-2] 210.19 (1)
 A3: [K0241] 385 mv/5000g's (1)
 A4: [K877] 320 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 1.00
 V3/V4: OK 1.20

F&H CME 45-C SN#189274 - SS-3 33.0 - 34.5
CME 45-C TRAILER



F&H CME 45-C SN#189274 - SS-3 33.0 - 34.5
OP: DJF

CME 45-C TRAILER
Test date: 9-Aug-2012

AR: 1.19 in² SP: 0.492 k/ft³
LE: 38.80 ft EM: 30,000 ksi
WS: 16,807.9 f/s JC: 0.00

CSX: Max Measured Compr. Stress ETR: Energy Transfer Ratio
CSI: Max F1 or F2 Compr. Stress FMX: Maximum Force
BPM: Blows per Minute DMX: Maximum Displacement
EFV: Energy of FV VMX: Maximum Velocity

BL#	depth	BLC	TYPE	CSX	CSI	BPM	EFV	ETR	FMX	DMX	VMX
end	ft	bl/ft		ksi	ksi	**	k-ft	(%)	kips	in	f/s
9	33.50	18	AV9	23.5	23.7	41	0.279	80	27.9	0.9	17.6
			STD	0.5	0.4	20	0.005	1	0.6	0.1	0.1
19	34.00	20	AV10	23.6	23.8	47	0.271	78	28.1	0.7	17.4
			STD	0.3	0.3	15	0.006	2	0.4	0.0	0.2
30	34.50	22	AV11	23.8	23.9	52	0.284	81	28.3	0.7	17.9
			STD	0.2	0.2	0	0.007	2	0.2	0.1	0.2
			Average	23.7	23.8	47	0.278	80	28.1	0.8	17.6
			Std. Dev.	0.4	0.3	15	0.008	2	0.4	0.1	0.3

Total number of blows analyzed: 30

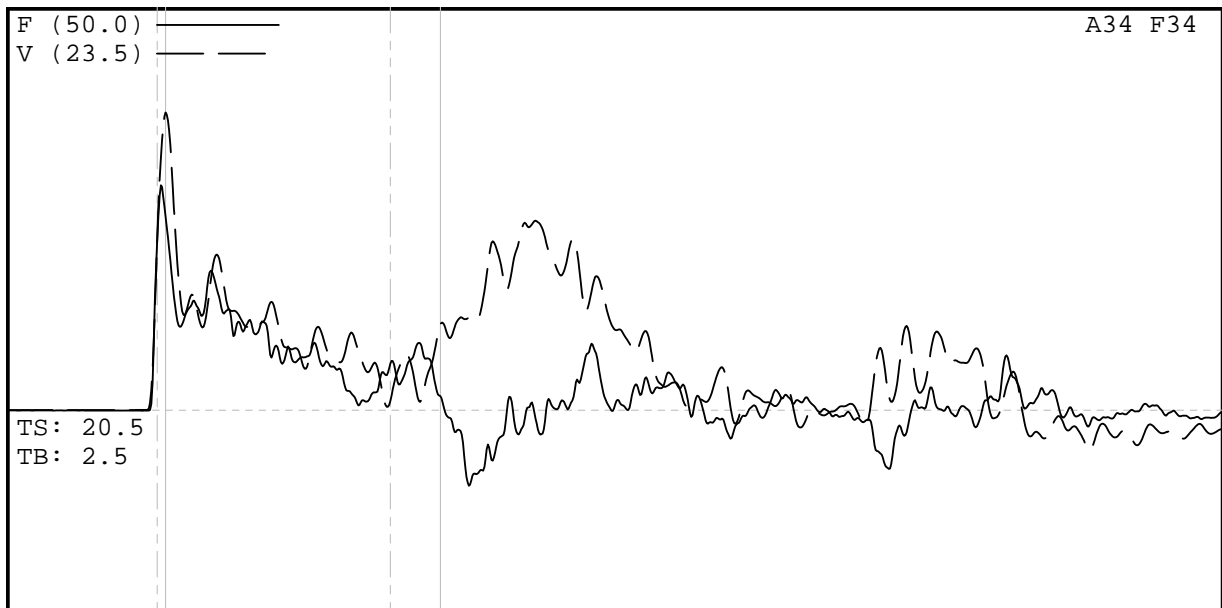
Time Summary

Drive 48 seconds

12:40:43 PM - 12:41:31 PM (8/9/2012) BN 1 - 30

F&H CME 45-C SN#189274

SS-3 33.0 - 34.5



Project Information

PROJECT: F&H CME 45-C SN#189274
 PILE NAME: SS-3 33.0 - 34.5
 DESCR: CME 45-C TRAILER
 OPERATOR: DJF
 FILE: SS-3 33.0 - 34.5
 8/9/2012 12:41:24 PM
 Blow Number 25

Quantity Results

CSX 23.5 ksi
 CSI 23.6 ksi
 BPM 51.9 bpm
 EFV 0.271 k-ft
 ETR 77.3 (%)
 FMX 27.9 kips
 DMX 0.68 in
 VMX 17.4 f/s
 FVP 0.65 []

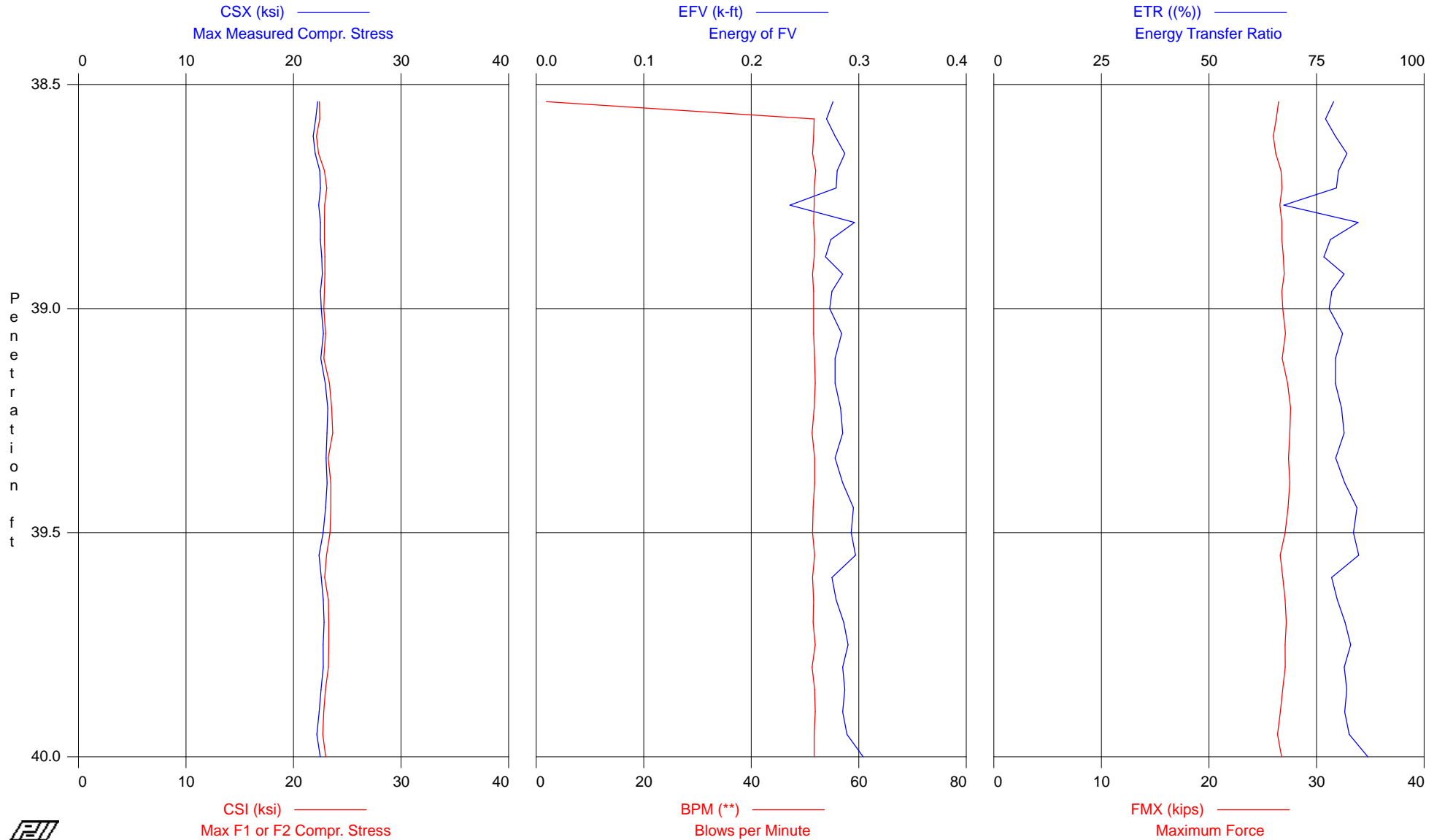
Pile Properties

LE 38.80 ft
 AR 1.19 in^2
 EM 30000 ksi
 SP 0.492 k/ft3
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 4.62 ms
 JC []
 LP 34.27 ft

Sensors

F3: [338AWJ-1] 210.02 (1)
 F4: [338AWJ-2] 210.19 (1)
 A3: [K0241] 385 mv/5000g's (1)
 A4: [K877] 320 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 1.00
 V3/V4: OK 1.20

F&H CME 45-C SN#189274 - SS-4 38.5 - 40.0
CME 45-C TRAILER



F&H CME 45-C SN#189274 - SS-4 38.5 - 40.0
OP: DJF

CME 45-C TRAILER
Test date: 9-Aug-2012

AR: 1.19 in² SP: 0.492 k/ft³
LE: 38.80 ft EM: 30,000 ksi
WS: 16,807.9 f/s JC: 0.00

CSX: Max Measured Compr. Stress ETR: Energy Transfer Ratio
CSI: Max F1 or F2 Compr. Stress FMX: Maximum Force
BPM: Blows per Minute DMX: Maximum Displacement
EFV: Energy of FV VMX: Maximum Velocity

BL#	depth ft	BLC bl/ft	TYPE	CSX ksi	CSI ksi	BPM **	EFV k-ft	ETR (%)	FMX kips	DMX in	VMX f/s
13	39.00	26	AV13	22.4	22.7	48	0.275	79	26.6	1.2	17.1
			STD	0.2	0.3	13	0.013	4	0.3	0.5	0.2
22	39.50	18	AV9	22.9	23.3	52	0.284	81	27.3	0.7	17.3
			STD	0.2	0.3	0	0.006	2	0.2	0.0	0.1
32	40.00	20	AV10	22.6	23.1	52	0.288	82	26.9	0.6	17.5
			STD	0.2	0.2	0	0.008	2	0.2	0.0	0.3
			Average	22.6	23.0	50	0.282	80	26.9	0.9	17.3
			Std. Dev.	0.3	0.3	9	0.011	3	0.4	0.4	0.3

Total number of blows analyzed: 32

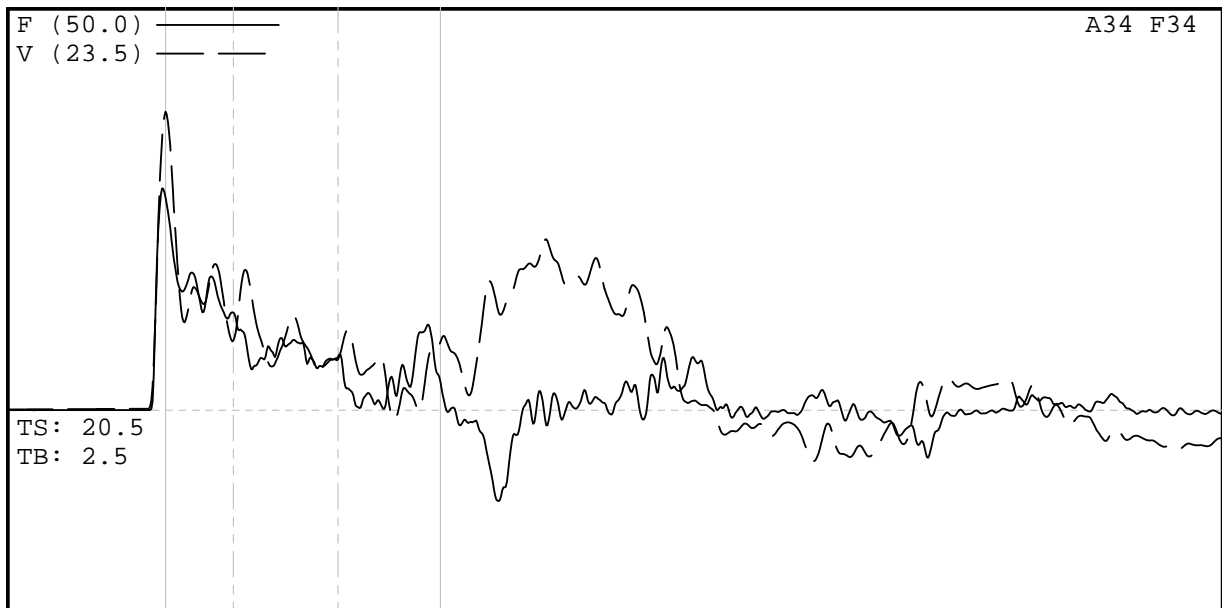
Time Summary

Drive 36 seconds

12:49:08 PM - 12:49:44 PM (8/9/2012) BN 1 - 32

F&H CME 45-C SN#189274

SS-4 38.5 - 40.0



Project Information

PROJECT: F&H CME 45-C SN#189274
 PILE NAME: SS-4 38.5 - 40.0
 DESCR: CME 45-C TRAILER
 OPERATOR: DJF
 FILE: SS-4 38.5 - 40.0
 8/9/2012 12:49:28 PM
 Blow Number 18

Quantity Results

CSX 23.1 ksi
 CSI 23.6 ksi
 BPM 51.3 bpm
 EFV 0.285 k-ft
 ETR 81.4 (%)
 FMX 27.5 kips
 DMX 0.67 in
 VMX 17.4 f/s
 FVP 0.71 []

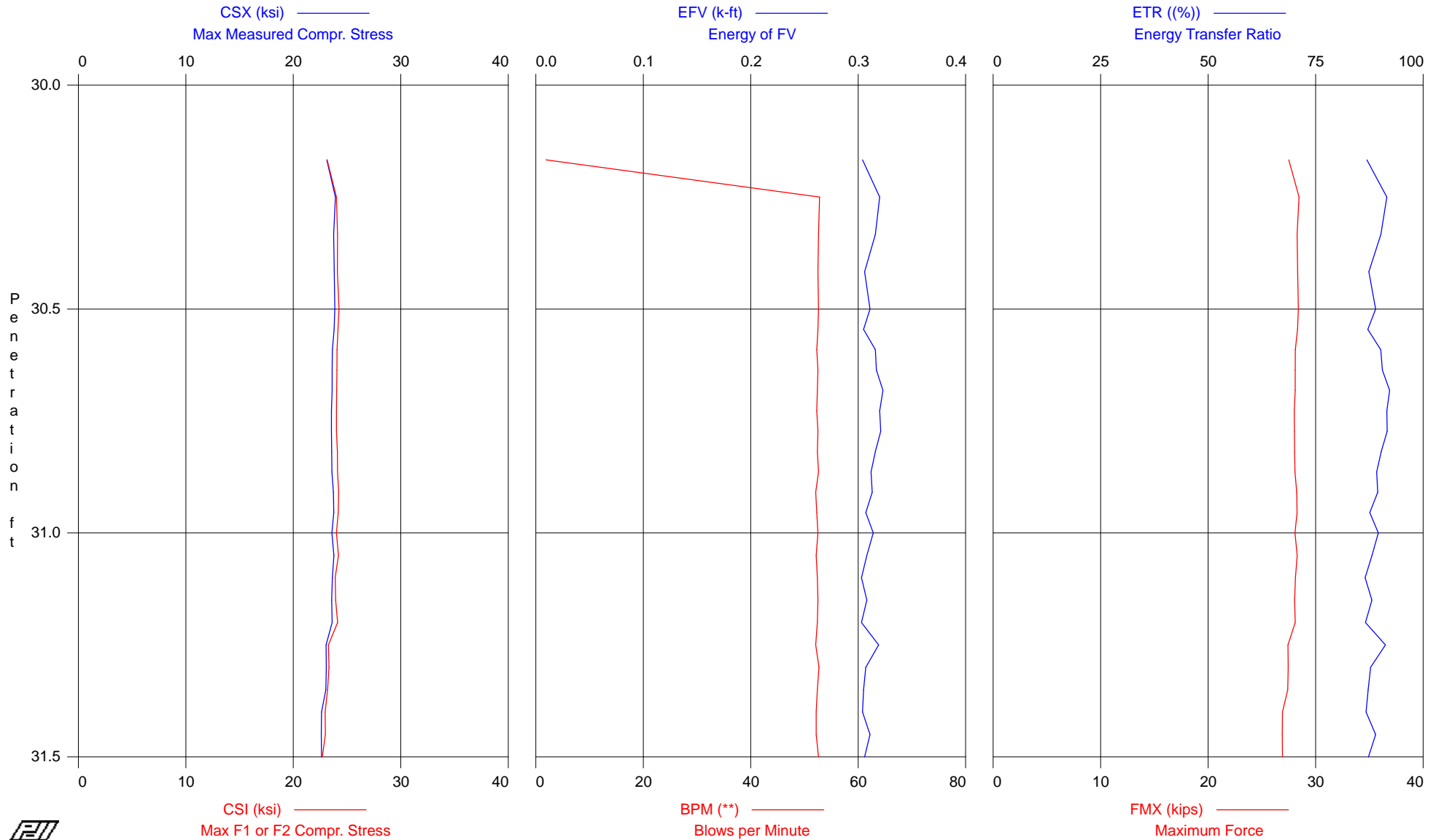
Pile Properties

LE 38.80 ft
 AR 1.19 in^2
 EM 30000 ksi
 SP 0.492 k/ft^3
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 4.62 ms
 JC []
 LP 39.28 ft

Sensors

F3: [338AWJ-1] 210.02 (1)
 F4: [338AWJ-2] 210.19 (1)
 A3: [K0241] 385 mv/5000g's (1)
 A4: [K877] 320 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 1.04
 V3/V4: OK 1.15

F & H CME 45-C SN#365794 - SS-1 30.0 - 31.5
CME 45-C ATV



F & H CME 45-C SN#365794 - SS-1 30.0 - 31.5
OP: DJF

CME 45-C ATV
Test date: 9-Aug-2012

AR: 1.19 in²
LE: 33.80 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

CSX: Max Measured Compr. Stress
CSI: Max F1 or F2 Compr. Stress
BPM: Blows per Minute
EFV: Energy of FV

ETR: Energy Transfer Ratio
FMX: Maximum Force
DMX: Maximum Displacement
VMX: Maximum Velocity

BL#	depth ft	BLC bl/ft	TYPE	CSX ksi	CSI ksi	BPM **	EFV k-ft	ETR (%)	FMX kips	DMX in	VMX f/s
6	30.50	12	AV5 STD	23.7 0.3	23.9 0.4	42 20	0.311 0.006	89 2	28.2 0.4	1.7 0.7	18.1 0.2
17	31.00	22	AV11 STD	23.6 0.1	24.1 0.1	52 0	0.315 0.005	90 2	28.1 0.1	0.7 0.1	17.9 0.1
27	31.50	20	AV10 STD	23.2 0.4	23.5 0.5	52 0	0.307 0.005	88 1	27.6 0.5	0.8 0.0	17.8 0.3
Average				23.5	23.8	50	0.311	89	27.9	0.9	17.9
Std. Dev.				0.4	0.5	10	0.006	2	0.5	0.5	0.2

Total number of blows analyzed: 26

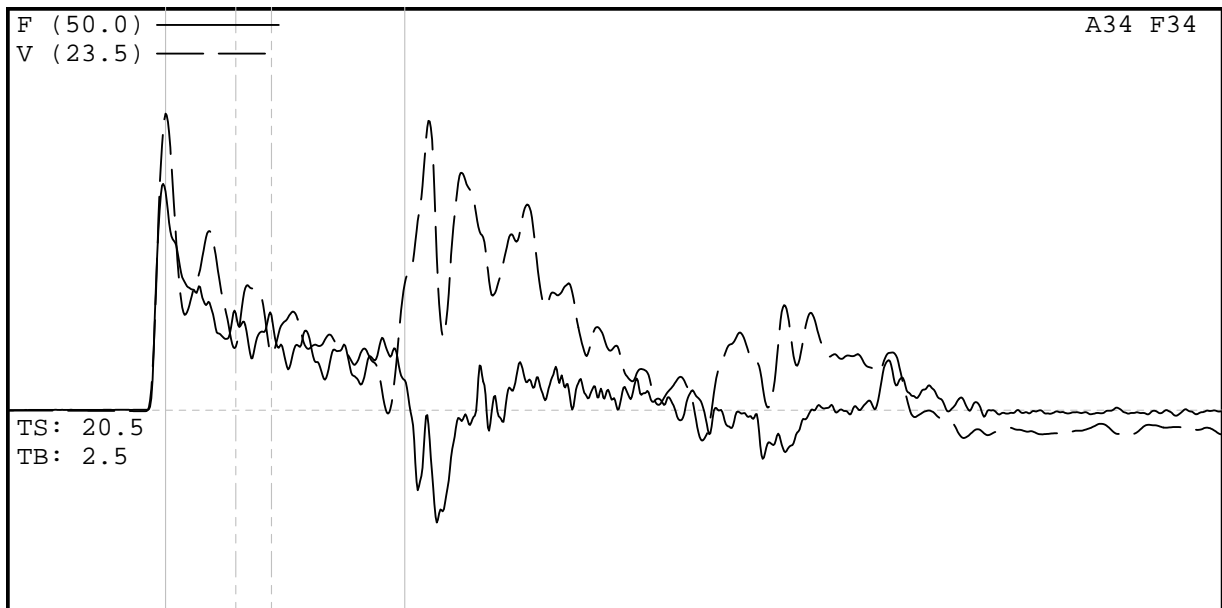
Time Summary

Drive 29 seconds

1:06:32 PM - 1:07:01 PM (8/9/2012) BN 2 - 27

F & H CME 45-C SN#365794

SS-1 30.0 - 31.5



Project Information

PROJECT: F & H CME 45-C SN#365794
 PILE NAME: SS-1 30.0 - 31.5
 DESCR: CME 45-C ATV
 OPERATOR: DJF
 FILE: SS-1 30.0 - 31.5
 8/9/2012 1:06:53 PM
 Blow Number 21

Quantity Results

CSX 23.6 ksi
 CSI 24.1 ksi
 BPM 52.4 bpm
 EFV 0.303 k-ft
 ETR 86.6 (%)
 FMX 28.1 kips
 DMX 0.80 in
 VMX 17.3 f/s
 FVP 0.73 []

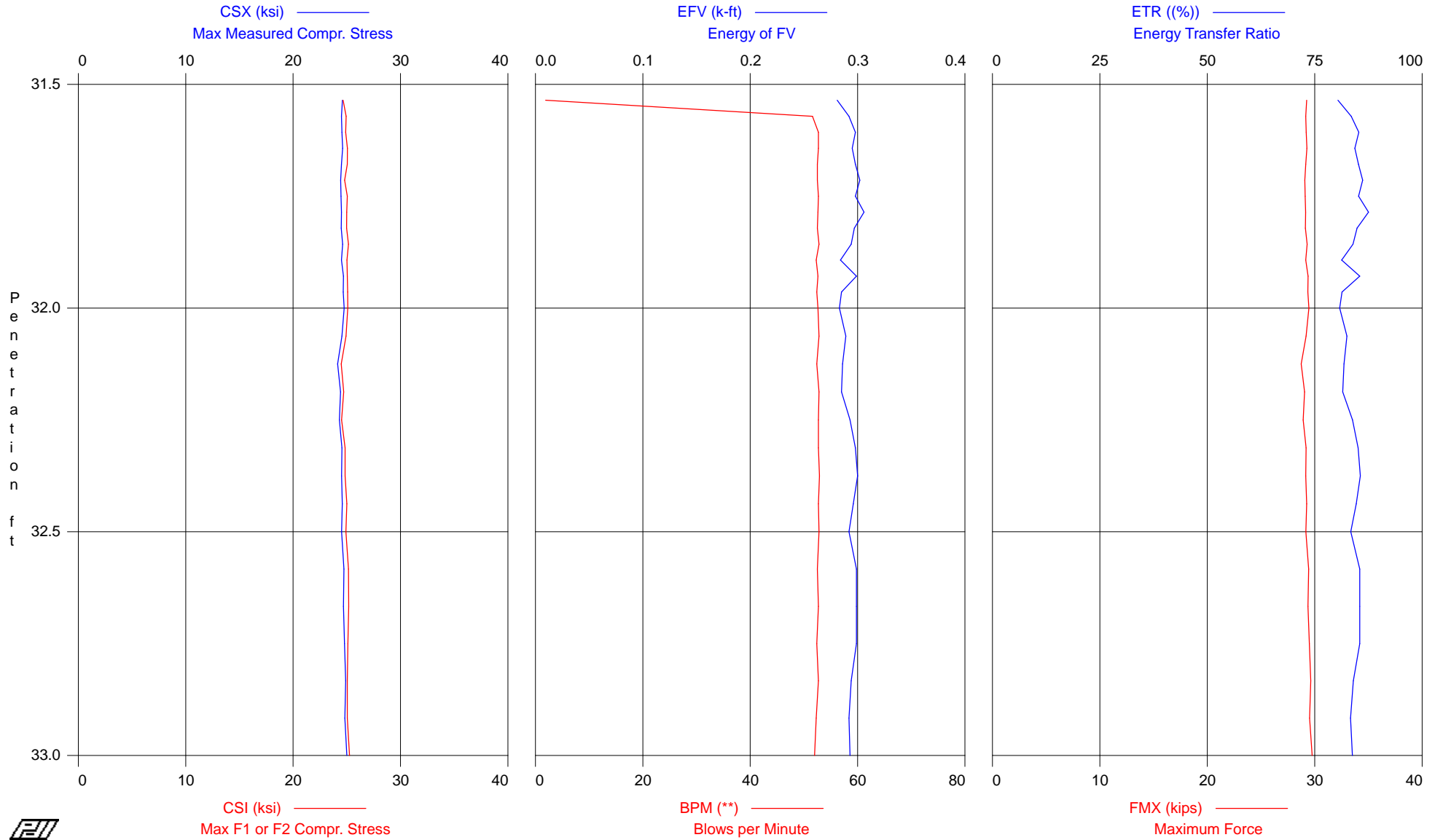
Pile Properties

LE 33.80 ft
 AR 1.19 in^2
 EM 30000 ksi
 SP 0.492 k/ft3
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 4.02 ms
 JC []
 LP 31.20 ft

Sensors

F3: [338AWJ-1] 210.02 (1)
 F4: [338AWJ-2] 210.19 (1)
 A3: [K0241] 385 mv/5000g's (1)
 A4: [K877] 320 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 1.01
 V3/V4: OK 1.03

F & H CME 45-C SN#365794 - SS-2 31.5 - 33.0
CME 45-C ATV



F & H CME 45-C SN#365794 - SS-2 31.5 - 33.0
OP: DJF

CME 45-C ATV
Test date: 9-Aug-2012

AR: 1.19 in²
LE: 37.80 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

CSX: Max Measured Compr. Stress
CSI: Max F1 or F2 Compr. Stress
BPM: Blows per Minute
EFV: Energy of FV

ETR: Energy Transfer Ratio
FMX: Maximum Force
DMX: Maximum Displacement
VMX: Maximum Velocity

BL#	depth ft	BLC bl/ft	TYPE	CSX ksi	CSI ksi	BPM **	EFV k-ft	ETR (%)	FMX kips	DMX in	VMX f/s
14	32.00	28	AV14 STD	24.6 0.1	25.0 0.1	49 13	0.294 0.007	84 2	29.2 0.1	0.6 0.1	17.7 0.2
22	32.50	16	AV8 STD	24.4 0.1	24.8 0.2	53 0	0.292 0.005	84 1	29.1 0.2	0.8 0.1	17.7 0.1
28	33.00	12	AV6 STD	24.8 0.1	25.1 0.1	52 0	0.296 0.003	85 1	29.5 0.1	1.1 0.0	17.6 0.1
Average				24.6	25.0	51	0.294	84	29.3	0.8	17.7
Std. Dev.				0.2	0.2	9	0.006	2	0.2	0.2	0.2

Total number of blows analyzed: 28

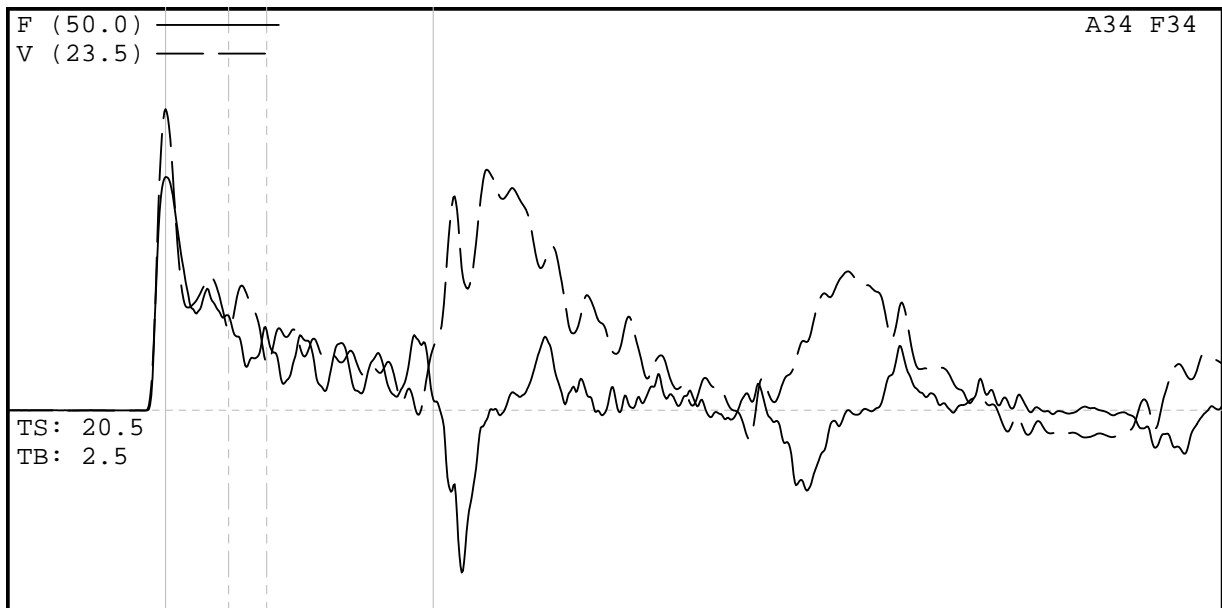
Time Summary

Drive 30 seconds

1:20:32 PM - 1:21:02 PM (8/9/2012) BN 1 - 28

F & H CME 45-C SN#365794

SS-2 31.5 - 33.0



Project Information

PROJECT: F & H CME 45-C SN#365794
 PILE NAME: SS-2 31.5 - 33.0
 DESCR: CME 45-C ATV
 OPERATOR: DJF
 FILE: SS-2 31.5 - 33.0
 8/9/2012 1:20:51 PM
 Blow Number 18

Quantity Results

CSX 24.3 ksi
 CSI 24.5 ksi
 BPM 52.7 bpm
 EFV 0.293 k-ft
 ETR 83.8 (%)
 FMX 28.9 kips
 DMX 0.84 in
 VMX 17.6 f/s
 FVP 0.77 []

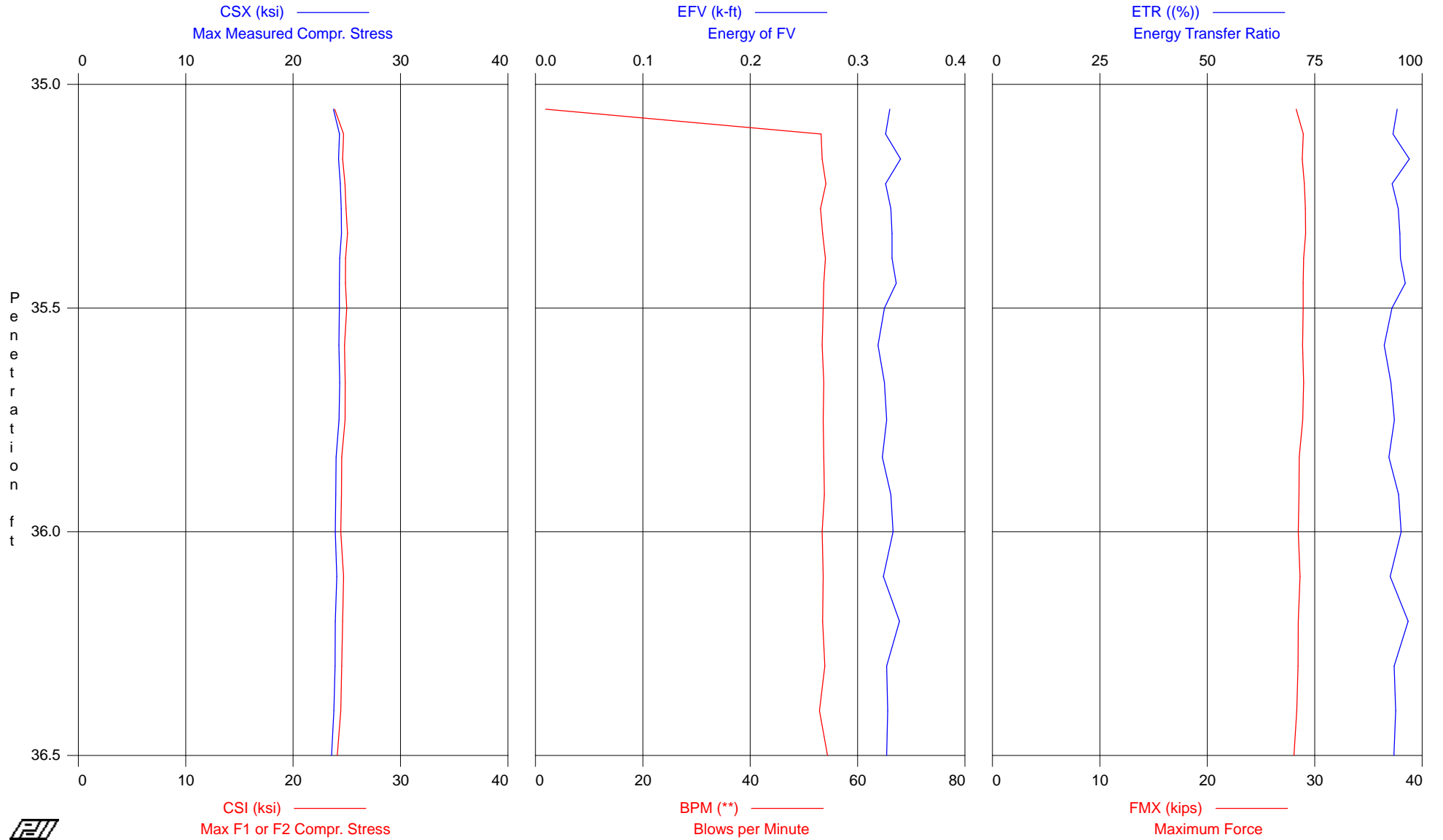
Pile Properties

LE 37.80 ft
 AR 1.19 in²
 EM 30000 ksi
 SP 0.492 k/ft³
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 4.50 ms
 JC []
 LP 32.25 ft

Sensors

F3: [338AWJ-1] 210.02 (1)
 F4: [338AWJ-2] 210.19 (1)
 A3: [K0241] 385 mv/5000g's (1)
 A4: [K877] 320 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 1.02
 V3/V4: OK 1.14

F & H CME 45-C SN#365794 - SS-3 35.0 - 36.0
CME 45-C ATV



F & H CME 45-C SN#365794 - SS-3 35.0 - 36.0
OP: DJF

CME 45-C ATV
Test date: 9-Aug-2012

AR: 1.19 in²
LE: 38.80 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

CSX: Max Measured Compr. Stress
CSI: Max F1 or F2 Compr. Stress
BPM: Blows per Minute
EFV: Energy of FV

ETR: Energy Transfer Ratio
FMX: Maximum Force
DMX: Maximum Displacement
VMX: Maximum Velocity

BL#	depth	BLC	TYPE	CSX	CSI	BPM	EFV	ETR	FMX	DMX	VMX
end	ft	bl/ft		ksi	ksi	**	k-ft	(%)	kips	in	f/s
9	35.50	18	AV9	24.3	24.8	48	0.331	95	28.9	1.0	19.4
			STD	0.2	0.3	16	0.005	1	0.2	0.3	0.2
15	36.00	12	AV6	24.1	24.7	54	0.326	93	28.7	1.3	19.3
			STD	0.2	0.2	0	0.005	1	0.2	0.1	0.2
20	36.50	10	AV5	23.9	24.5	54	0.329	94	28.4	1.3	19.4
			STD	0.2	0.2	0	0.005	1	0.2	0.1	0.1
			Average	24.1	24.7	51	0.329	94	28.7	1.2	19.4
			Std. Dev.	0.3	0.3	11	0.005	1	0.3	0.2	0.2

Total number of blows analyzed: 20

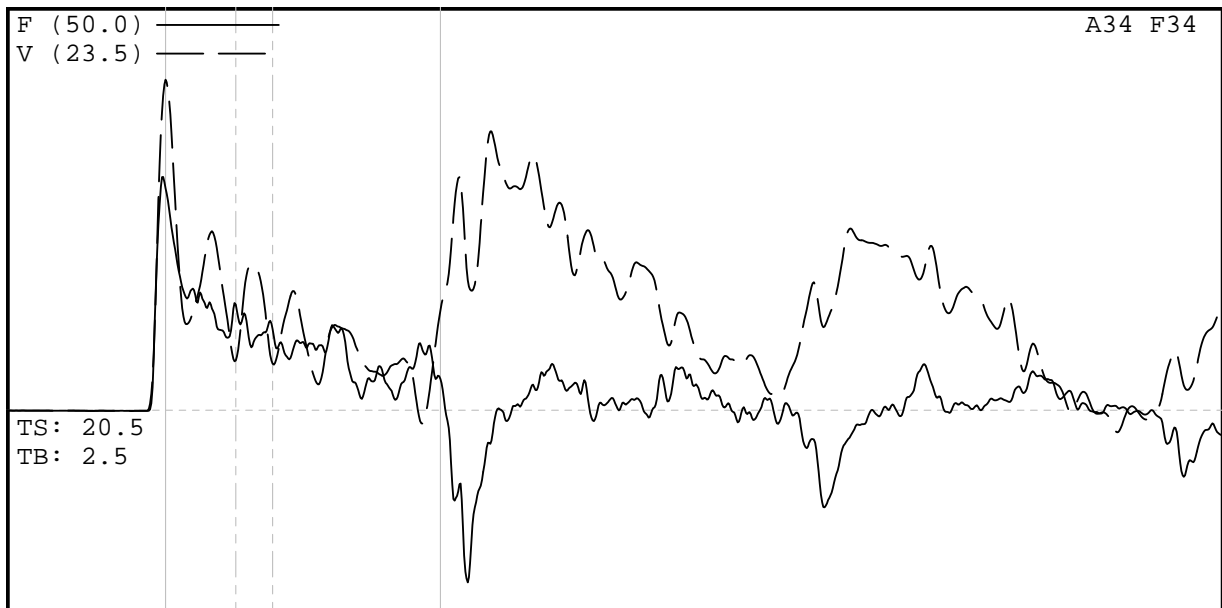
Time Summary

Drive 21 seconds

1:32:34 PM - 1:32:55 PM (8/9/2012) BN 1 - 20

F & H CME 45-C SN#365794

SS-3 35.0 - 36.0



Project Information

PROJECT: F & H CME 45-C SN#365794
 PILE NAME: SS-3 35.0 - 36.0
 DESCR: CME 45-C ATV
 OPERATOR: DJF
 FILE: SS-3 35.0 - 36.0
 8/9/2012 1:32:43 PM
 Blow Number 9

Quantity Results

CSX 24.3 ksi
 CSI 25.0 ksi
 BPM 53.6 bpm
 EFV 0.325 k-ft
 ETR 93.0 (%)
 FMX 28.9 kips
 DMX 1.43 in
 VMX 19.3 f/s
 FVP 0.67 []

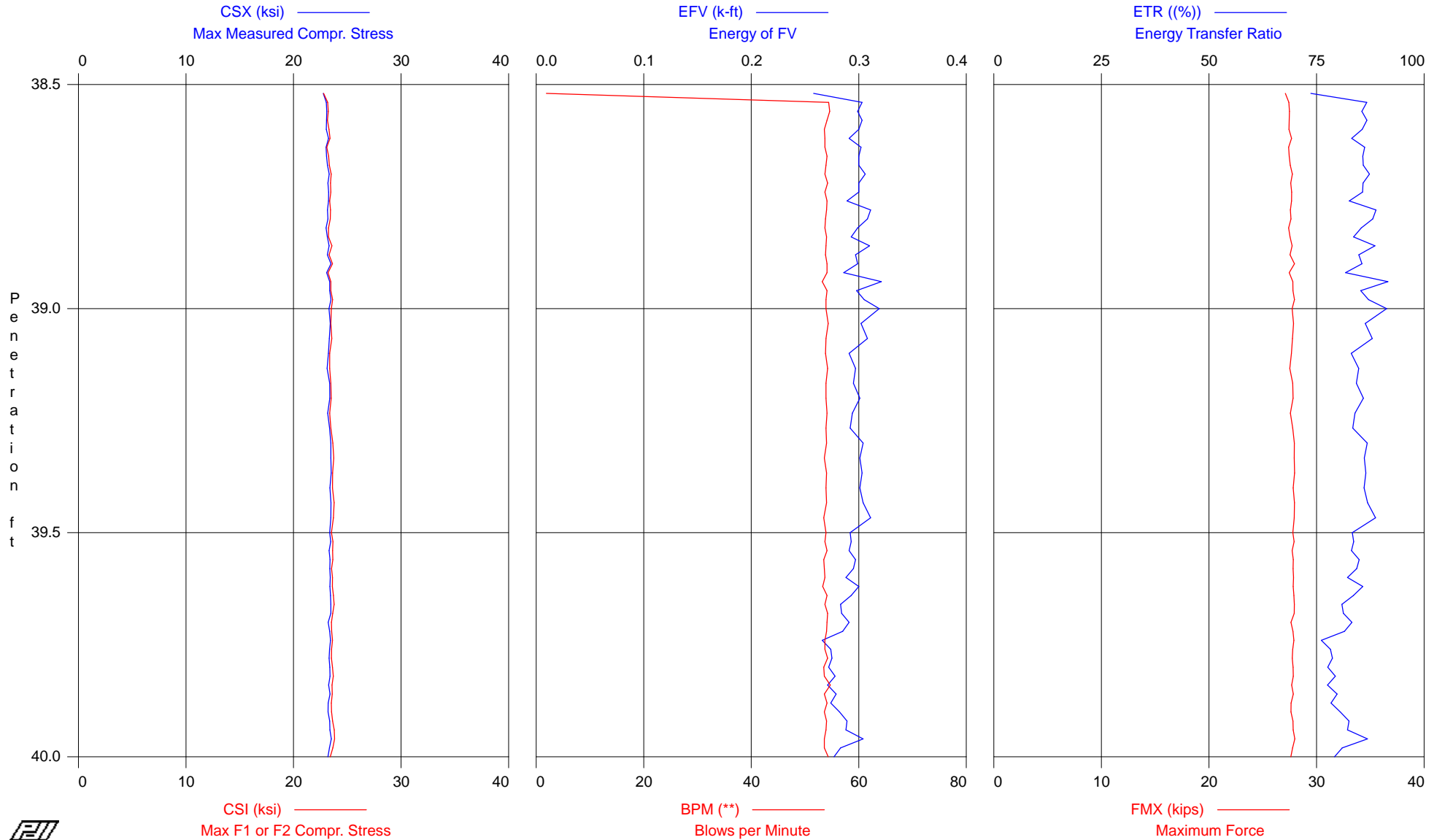
Pile Properties

LE 38.80 ft
 AR 1.19 in^2
 EM 30000 ksi
 SP 0.492 k/ft3
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 4.62 ms
 JC []
 LP 35.50 ft

Sensors

F3: [338AWJ-1] 210.02 (1)
 F4: [338AWJ-2] 210.19 (1)
 A3: [K0241] 385 mv/5000g's (1)
 A4: [K877] 320 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 1.02
 V3/V4: HIGH 1.25

F & H CME 45-C SN#365794 - SS-4 38.5 - 40.0
CME 45-C ATV



F & H CME 45-C SN#365794 - SS-4 38.5 - 40.0
OP: DJF

CME 45-C ATV
Test date: 9-Aug-2012

AR: 1.19 in²
LE: 43.80 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

CSX: Max Measured Compr. Stress
CSI: Max F1 or F2 Compr. Stress
BPM: Blows per Minute
EFV: Energy of FV

ETR: Energy Transfer Ratio
FMX: Maximum Force
DMX: Maximum Displacement
VMX: Maximum Velocity

BL#	depth ft	BLC bl/ft	TYPE	CSX ksi	CSI ksi	BPM **	EFV k-ft	ETR (%)	FMX kips	DMX in	VMX f/s
25	39.00	50	AV25	23.2	23.3	52	0.300	86	27.6	0.5	19.1
			STD	0.2	0.2	10	0.012	3	0.2	0.1	0.2
40	39.50	30	AV15	23.4	23.5	54	0.300	86	27.8	0.5	19.1
			STD	0.1	0.1	0	0.006	2	0.1	0.0	0.2
65	40.00	50	AV25	23.4	23.6	54	0.284	81	27.8	0.4	19.2
			STD	0.1	0.1	0	0.010	3	0.1	0.0	0.2
			Average	23.3	23.5	53	0.294	84	27.7	0.4	19.1
			Std. Dev.	0.2	0.2	6	0.012	4	0.2	0.1	0.2

Total number of blows analyzed: 65

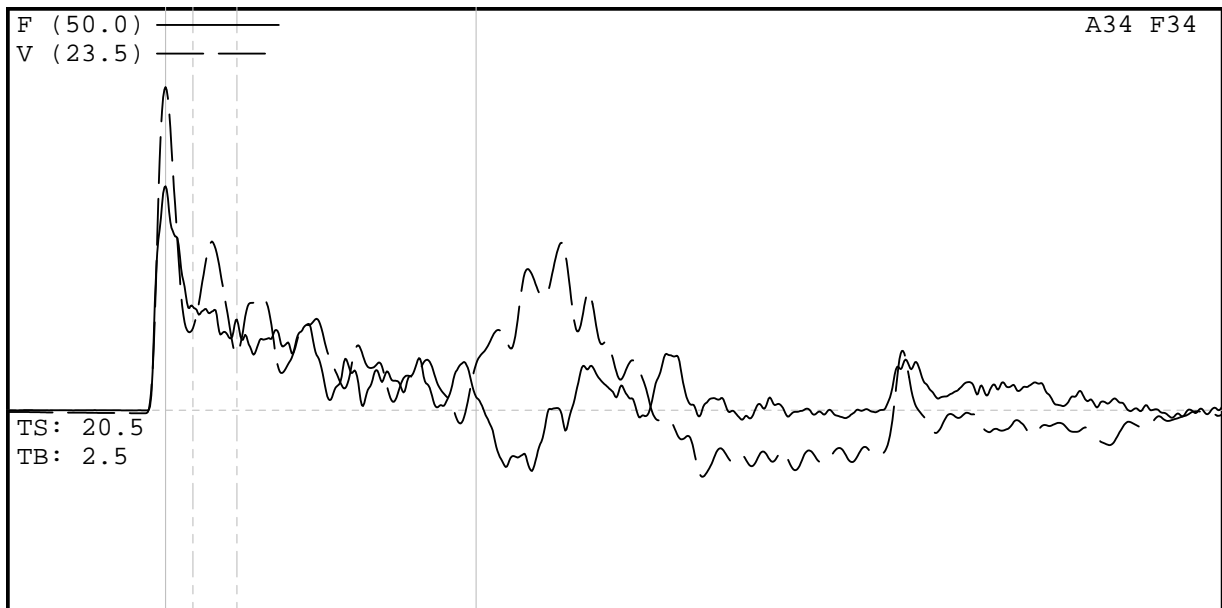
Time Summary

Drive 1 minute 12 seconds

1:47:22 PM - 1:48:34 PM (8/9/2012) BN 1 - 65

F & H CME 45-C SN#365794

SS-4 38.5 - 40.0



Project Information

PROJECT: F & H CME 45-C SN#365794
 PILE NAME: SS-4 38.5 - 40.0
 DESCR: CME 45-C ATV
 OPERATOR: DJF
 FILE: SS-4 38.5 - 40.0
 8/9/2012 1:47:58 PM
 Blow Number 33

Quantity Results

CSX 23.4 ksi
 CSI 23.5 ksi
 BPM 53.9 bpm
 EFV 0.292 k-ft
 ETR 83.4 (%)
 FMX 27.8 kips
 DMX 0.46 in
 VMX 18.9 f/s
 FVP 0.69 []

Pile Properties

LE 43.80 ft
 AR 1.19 in^2
 EM 30000 ksi
 SP 0.492 k/ft3
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 5.21 ms
 JC []
 LP 39.27 ft

Sensors

F3: [338AWJ-1] 210.02 (1)
 F4: [338AWJ-2] 210.19 (1)
 A3: [K0241] 385 mv/5000g's (1)
 A4: [K877] 320 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 0.99
 V3/V4: OK 1.15



October 27, 2011

Kenneth R. Bussey, Jr., P.E.
Florence & Hutcheson - Consulting Engineers
1321 Murfreesboro Road, Suite 325
Nashville, TN 37217

Re: Standard Penetration Test Energy Measurements
Cullowhee/Brevard, NC
GRL Job No. 119072-1

Dear Mr. Bussey,

This report presents results of energy measurements obtained on October 18 and 21, 2011 during Standard Penetration Tests (SPT) sampling. Two automatic hammers, one mounted on a CME 45-C trailer drill rig, and one mounted on a CME 55 ATV drill rig were tested. The dynamic tests were performed on AWJ and AW drill rods for the CME 45-C and CME 55, respectively. GRL Engineers, Inc. obtained the dynamic measurements with instrumented AW & AWJ subsections and a Model PAX Pile Driving Analyzer®. This report describes the testing procedures and summarizes the test results. Appendix A describes our measurement and analysis methods and Appendix B is a summary of the field data.

PURPOSE AND SCOPE OF WORK

At the request of Florence & Hutcheson Consulting Engineers, GRL conducted SPT energy measurements at a bridge located in Cullowhee, NC and Brevard, NC according to ASTM D4633-10. Specifically, we provided SPT energy measurements at varying sample intervals between 14.5 and 40.0 feet below the existing ground surface. In general, drilling was performed to depths ranging from 14.5 to 18.5 feet where the first sample was collected. SPT samples were then collected every five feet until boring depths ranging from 36.0 to 40.0 feet were reached. All SPT samples were driven for a total of 3 six-inch increments (1.5 feet).

EQUIPMENT

Drilling and SPT Hammer Equipment

CME 45-C (Serial # 225404)

SPT energy measurements were made on an automatic hammer mounted on a CME 45-C trailer drill rig. The drilling method used to advance the boring was the hollow stem auger method. Energy measurements, for the above stated drill rig, were collected at a dummy borehole location in Brevard, NC to a boring termination depth of 36.0 feet. SPT energy measurement tests were performed at 5 foot sampling penetrations, starting at 14.5 feet, to a boring termination of 36.0 feet below grade. In total, 5 energy

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Corporate Office: 30725 Aurora Road • Cleveland, OH 44139 USA • 216.831.6131 • fax 216.831.0916 • www.pile.com

California
323.441.0965

Colorado
303.666.6127

Florida
407.826.9539

Illinois
847.221.2750

Louisiana
985.640.7961

Ohio
216.831.6131

Pennsylvania
610.459.0278

measurement events were monitored for this drill rig, but only 4 were reported due to low blow counts on soil sample number 1.

CME 55 (Serial # 170055)

SPT energy measurements were made on an automatic hammer mounted on a CME 55 ATV drill rig. The drilling method used to advance the boring was the flight auger method. Energy measurements, for the above stated drill rig, were collected at borehole location EB2B in Cullowhee, NC to a depth of 40.0 feet. SPT energy measurement tests were performed at 5 foot sampling penetrations, starting at 18.5 feet, to a depth of 40.0 feet below grade. In total, 5 energy measurement events were monitored for this drill rig.

Instrumentation

A Model PAX Pile Driving Analyzer (PDA) data acquisition system was used to collect and process the dynamic measurements of force and velocity. A two foot long section of AWJ and AW rod subsection was instrumented with two full bridge foil resistance strain gages and two piezoresistive accelerometers mounted in the midpoint location of the instrumented rod.

Analog signals from the strain gages and accelerometers were conditioned, digitized, stored and processed with the PDA. The sampling frequency used during the SPT testing was 50 kHz. Selected output from the PDA for each recorded impact included the maximum calculated rod displacement (DMX), maximum rod top velocity (VMX), maximum energy transfer (EFV), and the hammer operating rate (BPM).

MEASUREMENTS AND CALCULATIONS

FV Method (EFV)

Energy transfer to the PDA gage location, EFV, was computed by the PDA using force, $F(t)$, and velocity, $v(t)$, records as follows:

$$EFV = \int_a^b F(t) \cdot v(t) dt$$

The time "a" corresponds to the start of the record when the energy transfer begins, and "b" is the time at which energy transferred to the rod reaches a maximum value. The FV Method is currently recognized in ASTM D4633-10, and is the theoretically correct result; therefore, no other energy calculation methods are reported.

Corrected SPT number (N_{60})

While the primary purpose of SPT energy testing is to calculate the maximum transfer energy (ETR) of each hammer blow, the overall average EFV value can be used to calculate the corrected SPT number (N_{60}). To adjust the SPT N-values for hammer

performance, the following correction as suggested by Seed for N-value adjustment to 60% transfer efficiency (e.g. 210 ft-pounds) was used:

$$N_{60} = \left(\frac{E_m}{210} \right) N_m$$

Where:

N_{60} = Corrected N-value

E_m = overall average measured energy transfer (EFV)

N_m = number of blows for last 12 inches of sampler penetration

A general introduction to dynamic SPT testing methods is included in this report as Appendix A. References for more detailed descriptions of our testing and analysis methods are available upon request.

Any cross-sectional area difference between the GRL rod subsection and the drill rods, any loose connections or changes in area at section joints, or any cross-sectional area differences between the individual drill rod sections will result in stress wave reflections that can influence the energy transfer. The EFV transferred energy calculation method, utilizing both force and velocity records, is theoretically correct and gives energy transfer results that are not adversely affected by cross-sectional area changes or loose connectors. The EFV results are included in Appendix B for all records collected and accepted after checking them for consistency.

RESULTS

Upon return to the office, the records collected by the PDA were checked for consistency and accuracy. For example, records from very weak startup or final impacts were not included in average results. Appendix B contains a representative plot of force and normalized velocity versus time, as well as plots and tables of PDA results for all hammer blows at each dynamically monitored sampling depth. The PDA results include the EFV (transferred energy by the FV method, as recommended by ASTM D4633-10), ETR (energy transfer efficiency for the EFV method), BPM (hammer operating rate), DMX (maximum rod displacement), and VMX (maximum rod top velocity). The plots show each calculated PDA results versus split-spoon penetration, while the tables show statistical summaries for each 6 inch increment. At the end of each table is a statistical evaluation of the results which include the average and standard deviation of the entire measurement sample.

The table below and tables 1 and 2 summarize the average transferred energy values calculated by the EFV method. The records consist of averaged hammer blows from the last 12 inches (i.e. N value) at each dynamically monitored sampling depth. The "energy transfer ratio" (ETR) is defined as the ratio of maximum transferred energy EFV divided by the theoretical hammer potential energy of 350 ft-lbs (i.e., computed per the 140 lb SPT hammer and the standard 30 inch drop as specified by ASTM D1586-99). The

average hammer operating rate is reported in blows per minute (BPM). A summary of the dynamic measurements of the energy transfer to the drill rods using the EFV equation for each drill rig is provided in the table below.

Drill Rig	Avg. EFV (ft-lbs)	Avg ETR (%)	Range of EFV (ft-lbs)	Range of ETR (%)
CME 45-C Trailer	288	82	285 - 296	81 - 85
CME 55 ATV	247	70	227 - 266	65 - 76

CONCLUSIONS

Based upon the dynamic test data obtained, the following conclusions are presented:

1. Loose connections in the drill string were sometimes observed in the force and velocity records. However, energy transfer values calculated using the EFV equation are not adversely affected by the connectors and therefore are considered a better indication of transferred energy.
2. Dynamic measurements of the transferred energy to the drill rods using the EFV equation ranged from 285 to 296 ft-lbs for CME 45-C drill rig. This corresponds to a transfer efficiency ranging from 81 to 85% of the SPT hammer energy of 350 ft-lbs.
3. Dynamic measurements of the transferred energy to the drill rods using the EFV equation ranged from 227 to 266 ft-lbs for CME 55 drill rig. This corresponds to a transfer efficiency ranging from 65 to 76% of the SPT hammer energy of 350 ft-lbs.

Please review both ASTM D4633-10 and ASTM D1586-99 prior to applying these test results. The energy calibrations reported herein are valid for the same hammer/drill rig, with the same drill operator, same anvil dimensions, and same drilling methods.

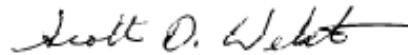
We appreciate the opportunity to be of assistance to you on this project. Please contact our office should you have any questions regarding this submittal, require additional information, or if we may be of further service.

Sincerely,

GRL Engineers, Inc.



Darrell Fortune, E.I.



Scott Webster, P.E.



DF:SW:dms

**TABLE 1: Summary of SPT Energy Measurements
F & H SPT Calibration October 21, 2011
CME 45-C Trailer Serial # 225404**

Boring/Soil Sample	Reported Sample Depth	Reported Rod Length	Reported Blow Count	SPT Field N Value	Avg. Energy Transferred FV Method	Energy Transfer Efficiency ¹	Blow per Minute	N ₆₀
	(feet)	(feet)	(blows/6")		(ft-lbs)	(%)	(bpm)	
SS-2	19.5 - 21.0	25	4,6,5	11	285	81	57	15
SS-3	24.5 - 26.0	30	5,8,9	17	296	85	56	24
SS-4	29.5 - 31.0	35	8,10,9	19	287	82	56	26
SS-5	34.5 - 36.0	40	9,14,15	29	285	81	56	39
Average⁽²⁾					288	82	56	
Standard Dev.⁽²⁾					5	2	1	

Notes: 1 - Energy transfer efficiency is the energy calculated by the FV method divided by the SPT hammer potential energy of 140 lbs times 2.5 foot drop height or 350 ft-lbs.

2 - Average and standard deviation are calculated using averaged data from SPT hammer blows from the last two six inch increments (i.e. N value) from all sampling depths tested. or from last 50 blows over indicated penetration

**TABLE 2: Summary of SPT Energy Measurements
F & H SPT Calibration October 18, 2011
CME 55 ATV Serial # 170055**

Boring/Soil Sample	Reported Sample Depth	Reported Rod Length	Reported Blow Count	SPT Field N Value	Avg. Energy Transferred FV Method	Energy Transfer Efficiency¹	Blow per Minute	N₆₀
	(feet)	(feet)	(blows/6")		(ft-lbs)	(%)	(bpm)	
SS-1	18.5 - 20.0	24	6,6,10	16	233	66	50	18
SS-2	23.5 - 25.0	29	3,4,7	11	227	65	51	12
SS-3	28.5 - 30.0	34	3,5,8	13	249	71	51	15
SS-4	33.5 - 35.0	39	4,7,10	17	258	74	51	21
SS-5	38.5 - 40.0	44	5,9,13	22	266	76	50	28
Average⁽²⁾					247	70	51	
Standard Dev.⁽²⁾					16	5	1	

Notes: 1 - Energy transfer efficiency is the energy calculated by the FV method divided by the SPT hammer potential energy of 140 lbs times 2.5 foot drop height or 350 ft-lbs.

2 - Average and standard deviation are calculated using averaged data from SPT hammer blows from the last two six inch increments (i.e. N value) from all sampling depths tested.
or from last 50 blows over indicated penetration

3- SS-2 and SS-4 were not reported due to poor data

Appendix A

An Introduction into SPT Dynamic Pile Testing

APPENDIX A

AN INTRODUCTION INTO SPT DYNAMIC PILE TESTING

The following has been written by GRL Engineers, Inc. and may only be copied with its written permission.

1. BACKGROUND

The Standard Penetration Test is frequently conducted as an in-situ assessment of soil strength. This test requires that a 140 lb weight is dropped 30 inches onto a drive rod at whose bottom a sampler is usually installed. The sampler is driven for 18 inches; the number of blows required for the last 12 inches of driving is the so-called N-value. The N-value may be used as a strength indicator for foundation design or as a means of assessing the liquefaction potential of soils.

Obviously, the SPT hammer efficiency is an important consideration when using the N-values for design purposes. Measurements have indicated that the energy in the drive rod is sometimes only 30% and may reach 90% of the potential or rated energy of the SPT hammer (E-rated = 0.35 kip-ft or 0.475 kJ). The type of hammer used to drive the rod is the main reason for these variations. On the average, the energy in the drive rod is 60% of the standard rated energy.

Because of the variability of energy, methods based on N-values are considered unreliable. However, measurements during SPT testing using the Case Method can be done on a routine basis and these measurements yield the transferred energy values. With measured energy, E_m , known, an adjustment of the measured N-value, N_m , can be made as follows.

$$N_{60} = N_m [E_m / (0.6E_r)] \quad (1)$$

Thus, if the measured energy value is equal to the normally expected transferred energy of 60% of E-rated then the adjusted and measured N-values are identical. On the other hand, if the measured energy is only 30% then the adjusted blow count will be reduced by 50%.

2. DYNAMIC TESTING AND ANALYSIS METHODS APPLIED TO SPT

The Case Method of dynamic pile testing, named after the Case Institute of Technology where it was

developed between 1964 and 1975, requires that a substantial ram mass (e.g. a pile driving hammer) impacts the pile top such that the pile undergoes at least a small permanent set. Thus, the method is also referred to as a "High Strain Method". The Case Method requires dynamic measurements on the pile or shaft under the ram impact and then a calculation of various quantities. Conveniently, for SPT applications, the measurements and analyses are done by a single piece of equipment: the SPT Analyzer. The Pile Driving Analyzer® (PDA) is also suitable to perform these measurements and data processing.

A related analysis method is the "Wave Equation Analysis" which calculates a relationship between bearing capacity, pile stresses, transferred energy and field blow count. The GRLWEAP™ program performs this analysis and provides a complete set of helpful information and input data. This program can be used very effectively to simulate the SPT driving process.

3. MEASUREMENTS

GRL uses equipment manufactured by Pile Dynamics, Inc. The system includes either an SPT-Analyzer™ (SPTA) or a Pile Driving Analyzer® (PDA), an instrumented rod section and two accelerometers. SPT energy testing is very closely related to and borrows procedures from dynamic pile testing. Those interested in the basis of the SPT energy testing method may obtain extensive literature on dynamic pile testing from GRL Engineers, Inc.

3.1 SPT Analyzer or Pile Driving Analyzer

The basis for the results calculated by the SPTA or PDA are strain and acceleration measured in an instrumented rod section. These signals are converted to rod top force, $F(t)$, and rod top velocity, $v(t)$. The SPTA or PDA conditions, calibrates and displays these signals and immediately computes average pile force and velocity thereby eliminating bending effects. The product of these two

measurements is then integrated over time which yields the energy transferred to the instrumented section as a function of time (see Section 4.1).

For convenience and accuracy, strain measurements are usually taken on an instrumented section of SPT drive rod. Ideally, the section properties of the instrumented rod and those of the drive rod are the same, however, using subs, other sections can also be utilized.

For the instrumented section, PDI provides a force calibration in such a way that the output of the instrumented rod is directly calculated without the need for an accurate elastic modulus or cross sectional area of the rod section.

The acceleration measurements are often demanding in the SPT environment, because of high frequency and high acceleration motion components. An experienced measurement engineer, therefore, has to evaluate the quality of this data before final conclusions are drawn from the numerical results calculated by SPTA or PDA.

SPTA or PDA records are taken while the standard N-value is acquired in the conventional manner. This then allows a direct correlation between N-value and average transferred energy.

3.2 HPA

The SPT hammer's ram velocity may be directly obtained using radar technology in the Hammer Performance Analyzer™. The impact velocity results can be automatically processed with a PC or recorded on a strip chart. HPA measurements yield a hammer kinetic energy, but not the energy transferred to the drive rod.

4 RECORD EVALUATION BY SPTA OR PDA

4.1 HAMMER PERFORMANCE

The PDA calculates the energy transferred to the pile top from:

$$E(t) = \int_0^t F(\tau)v(\tau) d\tau \quad (2)$$

The maximum of the $E(t)$ curve is often called **ENTHRU or EMX**; it is the most important quantity for an overall evaluation of the performance of a hammer

and driving system. **EMX** allows for a classification of the hammer's performance when presented as, e_T , the rated transfer efficiency, also called energy transfer ratio (**ETR**) or global efficiency.

$$e_T = EMX/E_R \quad (3)$$

where E_R is the hammer manufacturer's rated energy value or 0.35 kip-ft (0.475 kJ) in the case of the SPT hammer.

Often in the SPT literature one finds also reference to the EF2 energy. This evaluation is based on assumed proportionality between force and velocity (see also Section 5):

$$v(t) = F(t) / Z \quad (4)$$

where $Z = EA/c$ is the pile impedance, E is the elastic modulus, A is the cross sectional area and c is the speed of the stress wave in the pile material..

Combining equations 2 and 4 leads to

$$EF(t) = \int_0^t F(\tau)^2 / Z d\tau \quad (5)$$

The EF2 transferred energy value is the EF-value at the time $t = 2L/c$, where L is the drive rod length and c is the stress wave speed in steel (16,800 ft/s or 5,124 m/s). Since the force is easier to measure than both force and velocity, Equation 5 is preferred by some test engineers. However, the EF method is fraught with errors and certain correction factors have to be applied to make it approximately correct. Among the error sources are the following:

- Proportionality is often violated prior to time $2L/c$. The proportionality between force and velocity in a downward traveling wave only holds if the wave does not encounter a disturbance prior to reflecting off the pile toe. Such disturbances include a change in cross sectional area, an open or loose splice or joint, or resistance along the shaft.
- Using only one force measurement precludes a data quality check based on the proportionality between force and velocity. Thus, a force measurement that is for some reason in error may not be detectable, which will lead to errors in the EF2 value. Data quality checks will be discussed further in Section 5.

The use of EF2 is therefore not recommended but it is often included in result presentations for the sake of completeness.

4.2 STRESSES

During SPT monitoring, it is also of interest to monitor compressive stresses at both the top of the drive rod and at its bottom.

At the pile top (location of sensors) the maximum compression stress averaged over the rod's cross section, **CSX**, is directly obtained from the measurements. Note that this stress value refers to the instrumented section. If the rod has a different cross sectional area then the stress in the rod will be different from CSX.

The SPTA or PDA can also calculate, in an approximate manner, the force at the rod bottom, **CFB**. To obtain the corresponding stress, this force value should be divided by the appropriate cross sectional area, e.g. by the rod area just above the sampler or by the sampler area itself. Of course, non-uniform stress components as they might occur at the sampler tip due to a sloping rock are not considered in this calculation.

5. DATA QUALITY CHECKS

Quality data is the first and foremost requirement for accurate dynamic testing results. It is therefore important that the measurement engineer performing SPTA or PDA tests has the experience necessary to recognize measurement problems and take appropriate corrective action should problems develop. Fortunately, dynamic pile testing allows for certain data quality checks because two independent measurements are taken that have to conform to the so-called proportionality relationship.

As long as there is only a wave traveling in one direction, as is the case during impact when only a downward traveling wave exists in the rod, force and velocity measured at its top are proportional

$$F = v Z \quad (5)$$

where Z is again the pile impedance, $Z = EA/c$. This relationship can also be expressed in terms of stress

$$\sigma = F/A = v (E/c) \quad (6)$$

or strain

$$\epsilon = \sigma/E = v / c \quad (7)$$

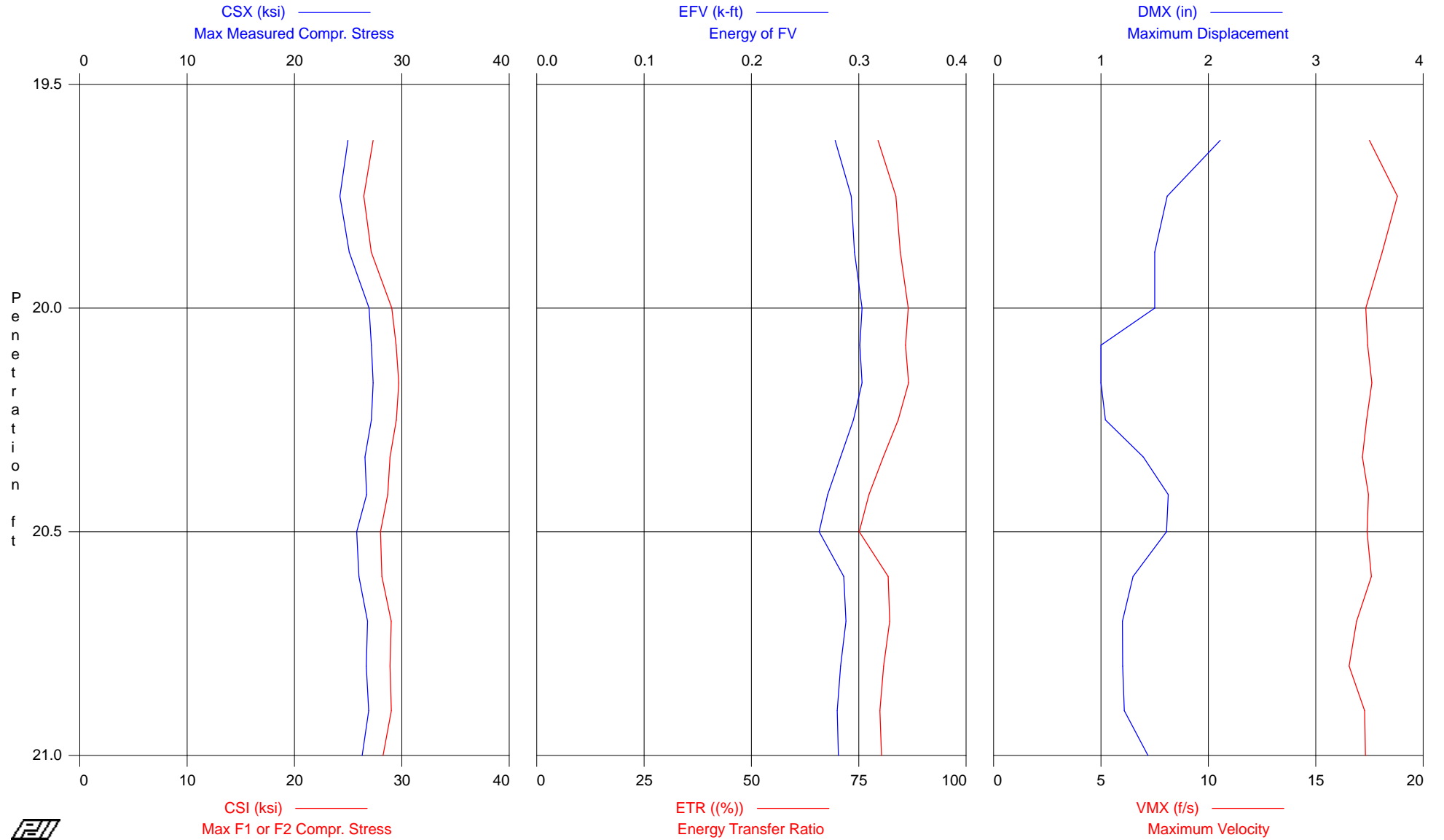
This means that the early portion of strain times wave speed must be equal to the velocity unless the proportionality is affected by high friction near the pile top or by a pile cross sectional change not far below the sensors. Checking the proportionality is an excellent means of assuring meaningful measurements but is only truly meaningful for perfectly uniform rods. Open or loose splices, for example, will lead to a non-proportionality. For SPT rods it is fortunate that usually no soil resistance acts along the shaft and for that reason, proportionality can exist until the stress wave returns from sampler top or rod bottom unless connectors are not sufficiently tightened or have a significant mass.

Velocity data quality can also be checked by looking at the final displacement, DFN, which is calculated from the acceleration by double integration. If the calculated final displacement is much higher or lower than indicated by the N-value, the accelerometer attachment may be loose or the sensor may be faulty. If major drift in the velocity is observed, the EMX value may be in error, even though proportionality from impact to time $2L/c$ exists. In this case, it may be useful to evaluate the energy transferred to the drill rod at time $2L/c$, which is calculated by the PDA or SPTA as the E2E quantity.

Appendix B

SPT Energy Measurements

CME 45-C AWJ ROD - SS-2 19.5 - 21.0
SN 225404



CME 45-C AWJ ROD - SS-2 19.5 - 21.0
OP: DJF

SN 225404
Test date: 21-Oct-2011

AR: 1.17 in² SP: 0.492 k/ft³
LE: 24.80 ft EM: 30,000 ksi
WS: 16,807.9 f/s JC: 0.00

CSX: Max Measured Compr. Stress ETR: Energy Transfer Ratio
CSI: Max F1 or F2 Compr. Stress BPM: Blows per Minute
CSB: Compression Stress at Bottom DMX: Maximum Displacement
EFV: Energy of FV VMX: Maximum Velocity

BL#	depth ft	BLC bl/ft	TYPE	CSX ksi	CSI ksi	CSB ksi	EFV k-ft	ETR (%)	BPM **	DMX in	VMX f/s
4	20.00	8	AV4	25.3	27.5	14.9	0.292	84	44	1.7	17.9
			STD	1.0	1.0	0.7	0.009	3	24	0.3	0.6
10	20.50	12	AV6	26.8	29.0	16.4	0.286	82	57	1.3	17.4
			STD	0.5	0.6	0.6	0.015	4	0	0.3	0.1
15	21.00	10	AV5	26.5	28.7	16.0	0.284	81	57	1.3	17.1
			STD	0.3	0.4	0.4	0.003	1	0	0.1	0.4
Average				26.3	28.5	15.8	0.287	82	53	1.4	17.5
Std. Dev.				0.9	0.9	0.8	0.011	3	14	0.3	0.5

Total number of blows analyzed: 15

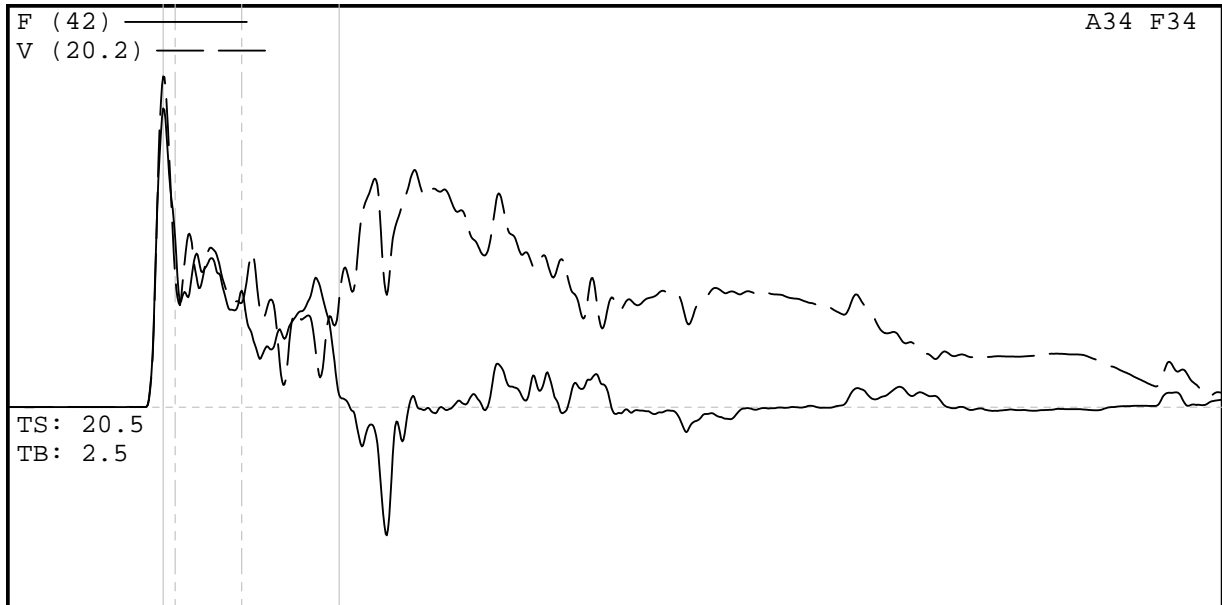
Time Summary

Drive 15 seconds

9:40:19 AM - 9:40:34 AM (10/21/2011) BN 1 - 15

CME 45-C RECALIBRATION

SS-2 19.5 - 21.0



Project Information

PROJECT: CME 45-C RECALIBRATION
 PILE NAME: SS-2 19.5 - 21.0
 DESCR: SN 225404
 OPERATOR: DJF
 FILE: SS-2 19.5 - 21.0.W01
 10/21/2011 9:40:32 AM
 Blow Number 14/13

Quantity Results

CSX 26.7 ksi
 CSI 28.9 ksi
 CSB 15.7 ksi
 EFV 0.283 k-ft
 ETR 80.8 (%)
 BPM 56.9 bpm
 DMX 1.20 in
 VMX 16.6 f/s
 FVP 0.90 []

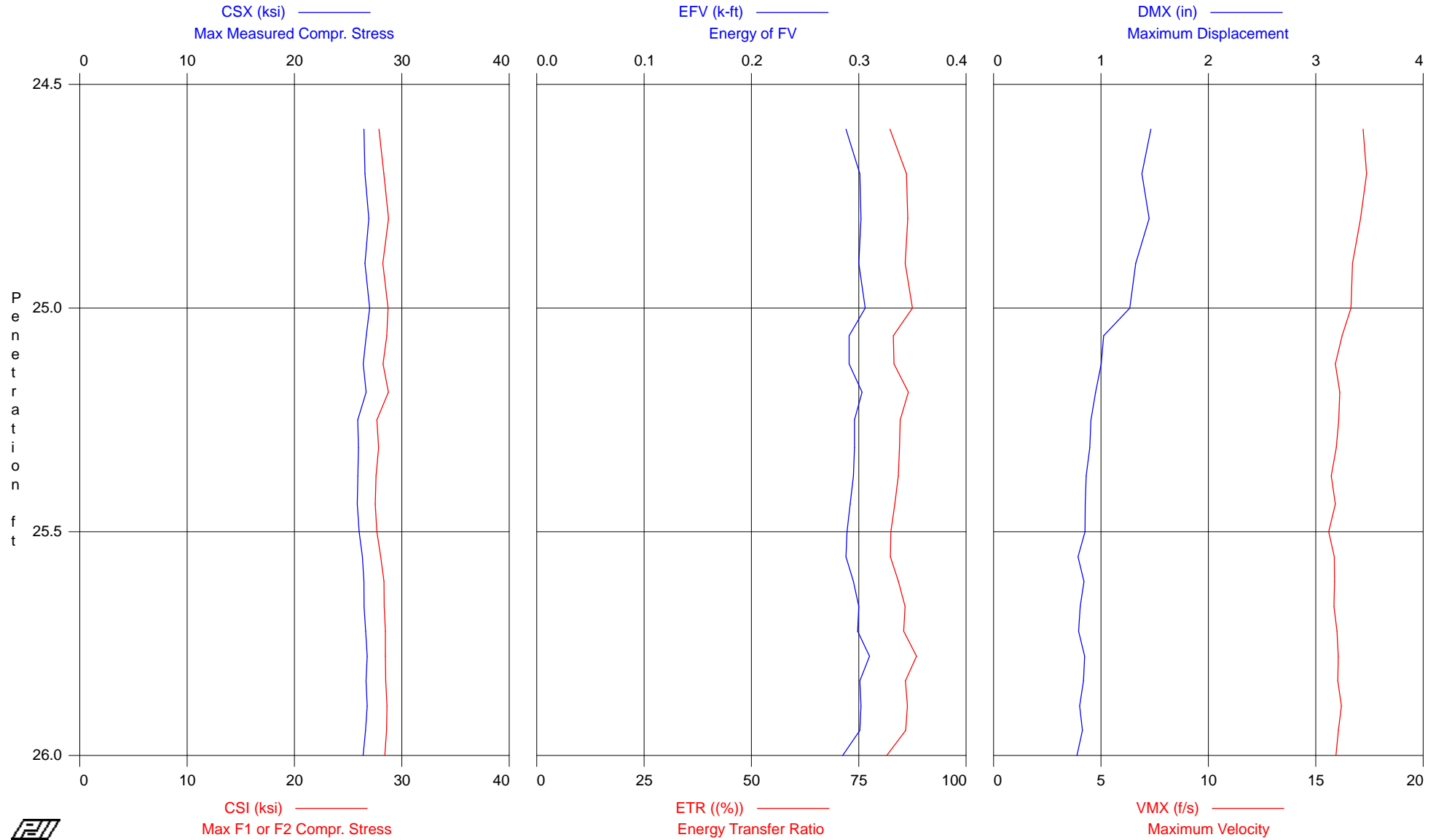
Pile Properties

LE 24.80 ft
 AR 1.17 in^2
 EM 30000 ksi
 SP 0.492 k/ft3
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 2.95 ms
 JC []
 LP 20.80 ft

Sensors

F3: [168AWJ-1] 214.08 (1)
 F4: [168AWJ-2] 216.93 (1)
 A3: [K1201] 345 mv/5000g's (1)
 A4: [K877] 320 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 1.17
 V3/V4: OK 0.85

CME 45-C AWJ ROD - SS-3 24.5 - 26.0
SN 225404



CME 45-C AWJ ROD - SS-3 24.5 - 26.0
OP: DJF

SN 225404
Test date: 21-Oct-2011

AR: 1.17 in²
LE: 29.80 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

CSX: Max Measured Compr. Stress
CSI: Max F1 or F2 Compr. Stress
CSB: Compression Stress at Bottom
EFV: Energy of FV

ETR: Energy Transfer Ratio
BPM: Blows per Minute
DMX: Maximum Displacement
VMX: Maximum Velocity

BL#	depth ft	BLC bl/ft	TYPE	CSX ksi	CSI ksi	CSB ksi	EFV k-ft	ETR (%)	BPM **	DMX in	VMX f/s
5	25.00	10	AV5	26.7	28.4	11.3	0.299	86	46	1.4	17.0
			STD	0.2	0.3	1.0	0.006	2	22	0.1	0.3
13	25.50	16	AV8	26.2	28.0	10.1	0.294	84	56	0.9	15.9
			STD	0.3	0.4	0.8	0.004	1	1	0.1	0.2
22	26.00	18	AV9	26.6	28.4	11.3	0.298	85	56	0.8	16.0
			STD	0.1	0.2	0.8	0.007	2	1	0.0	0.1
Average				26.5	28.3	10.9	0.297	85	54	1.0	16.2
Std. Dev.				0.3	0.4	1.0	0.006	2	11	0.2	0.5

Total number of blows analyzed: 22

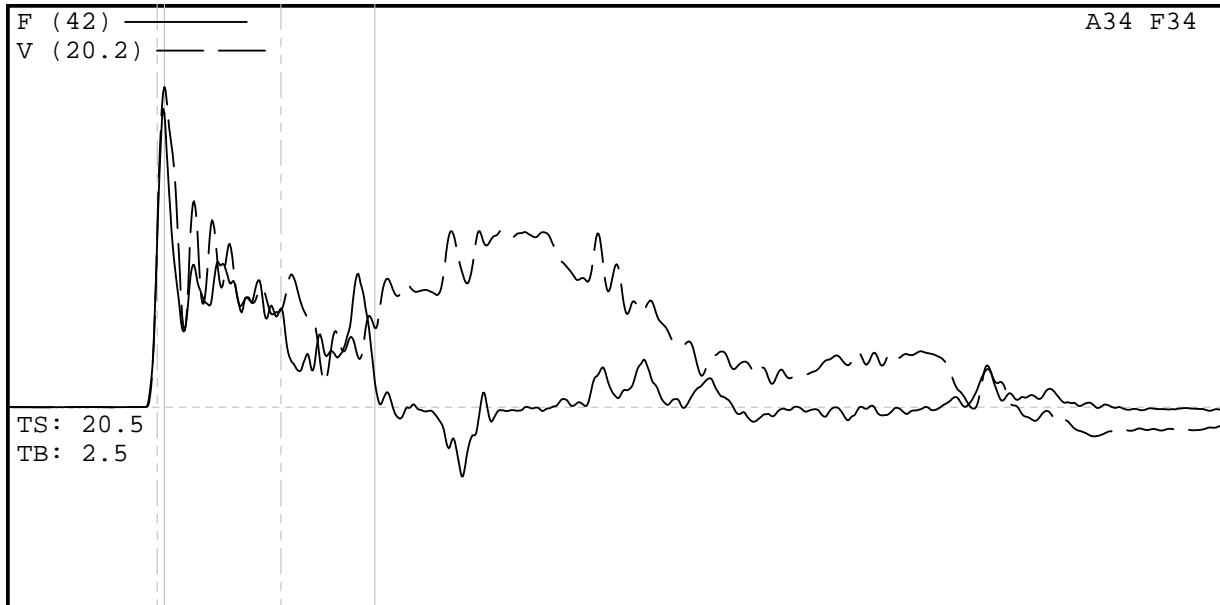
Time Summary

Drive 22 seconds

9:52:27 AM - 9:52:49 AM (10/21/2011) BN 1 - 22

CME 45-C RECALIBRATION

SS-3 24.5 - 26.0



Project Information

PROJECT: CME 45-C RECALIBRATION
 PILE NAME: SS-3 24.5 - 26.0
 DESCR: SN 225404
 OPERATOR: DJF
 FILE: SS-3 24.5 - 26.0.W01
 10/21/2011 9:52:46 AM
 Blow Number 20/19

Quantity Results

CSX 26.7 ksi
 CSI 28.5 ksi
 CSB 12.4 ksi
 EFV 0.301 k-ft
 ETR 85.9 (%)
 BPM 56.2 bpm
 DMX 0.84 in
 VMX 16.0 f/s
 FVP 0.92 []

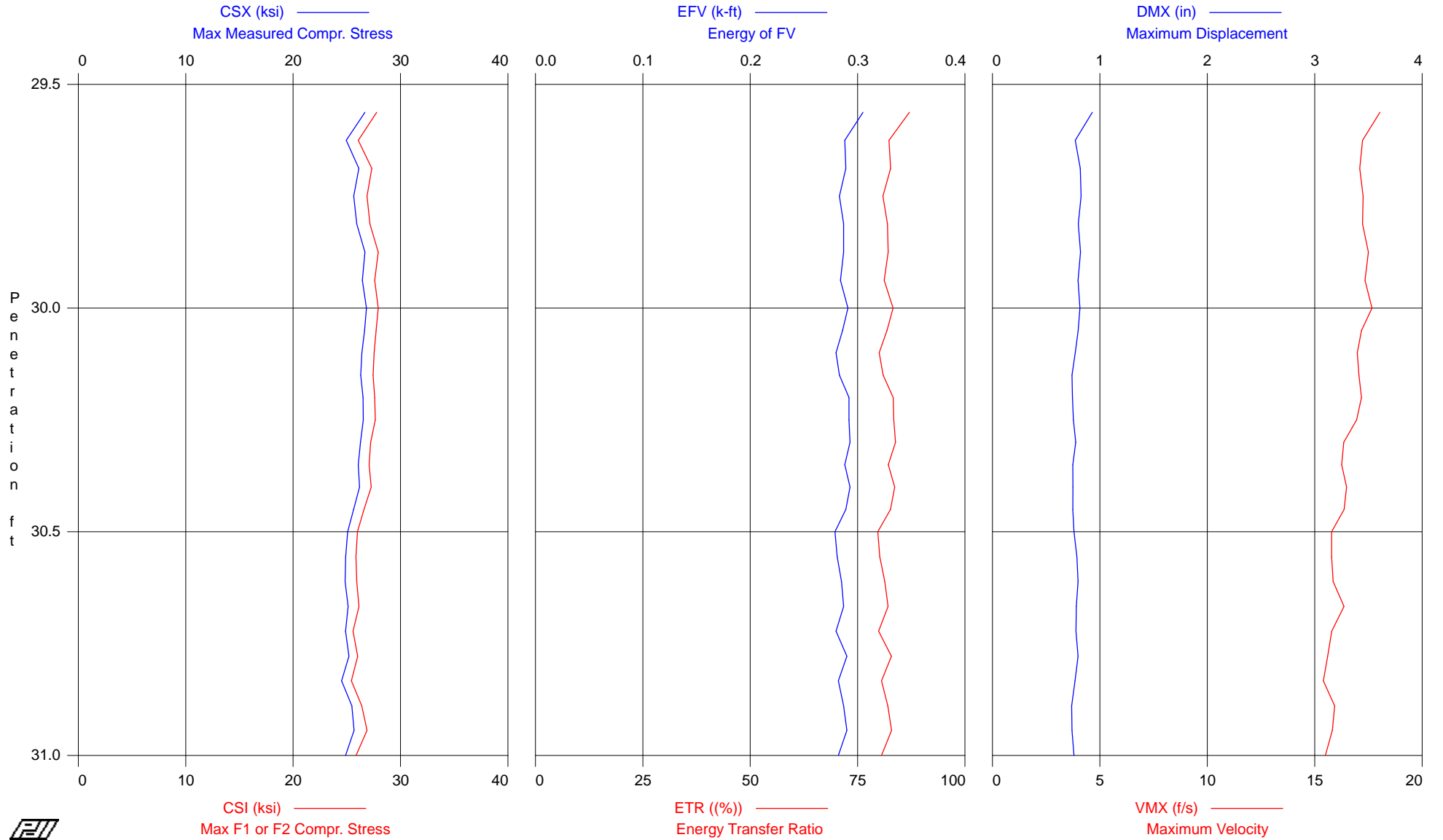
Pile Properties

LE 29.80 ft
 AR 1.17 in^2
 EM 30000 ksi
 SP 0.492 k/ft3
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 3.55 ms
 JC []
 LP 25.83 ft

Sensors

F3: [168AWJ-1] 214.08 (1)
 F4: [168AWJ-2] 216.93 (1)
 A3: [K1201] 345 mv/5000g's (1)
 A4: [K877] 320 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 1.15
 V3/V4: OK 1.17

CME 45-C AWJ ROD - SS-4 29.5 - 31.0
CME 45-C SN 225404



CME 45-C AWJ ROD - SS-4 29.5 - 31.0
OP: DJF

CME 45-C SN 225404
Test date: 21-Oct-2011

AR: 1.17 in² SP: 0.492 k/ft³
LE: 34.80 ft EM: 30,000 ksi
WS: 16,807.9 f/s JC: 0.00

CSX: Max Measured Compr. Stress ETR: Energy Transfer Ratio
CSI: Max F1 or F2 Compr. Stress BPM: Blows per Minute
CSB: Compression Stress at Bottom DMX: Maximum Displacement
EFV: Energy of FV VMX: Maximum Velocity

BL#	depth	BLC	TYPE	CSX	CSI	CSB	EFV	ETR	BPM	DMX	VMX
end	ft	bl/ft		ksi	ksi	ksi	k-ft	(%)	**	in	f/s
8	30.00	16	AV8	26.2	27.3	11.0	0.289	83	50	0.8	17.4
			STD	0.6	0.6	1.0	0.006	2	18	0.0	0.3
18	30.50	20	AV10	26.2	27.2	12.1	0.288	82	56	0.8	16.7
			STD	0.5	0.5	1.7	0.005	1	0	0.0	0.4
27	31.00	18	AV9	25.1	26.0	13.1	0.285	81	56	0.8	15.8
			STD	0.3	0.4	1.1	0.004	1	1	0.0	0.3
			Average	25.8	26.8	12.1	0.287	82	54	0.8	16.6
			Std. Dev.	0.7	0.8	1.6	0.005	2	10	0.0	0.7

Total number of blows analyzed: 27

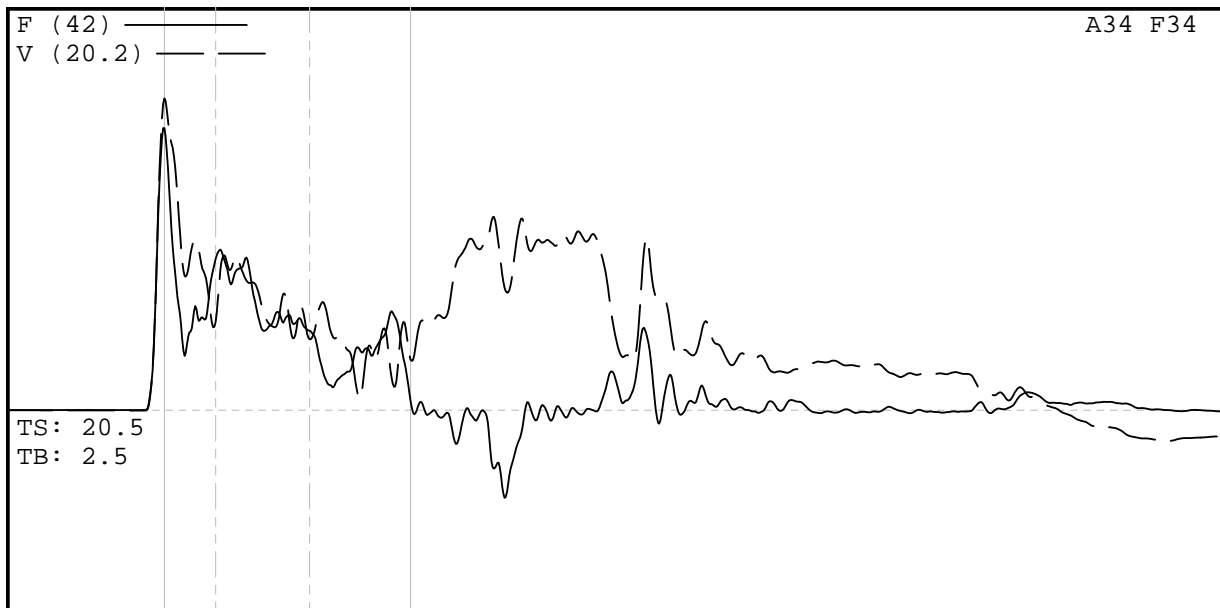
Time Summary

Drive 28 seconds

10:11:45 AM - 10:12:13 AM (10/21/2011) BN 1 - 27

CME 45-C RECALIBRATION

SS-4 29.5 - 31.0



Project Information

PROJECT: CME 45-C RECALIBRATION
 PILE NAME: SS-4 29.5 - 31.0
 DESCR: SN 225404
 OPERATOR: DJF
 FILE: SS-4 29.5 - 31.0.W01
 10/21/2011 10:12:08 AM
 Blow Number 24/23

Quantity Results

CSX 25.2 ksi
 CSI 26.0 ksi
 CSB 13.2 ksi
 EFV 0.290 k-ft
 ETR 82.9 (%)
 BPM 55.0 bpm
 DMX 0.80 in
 VMX 15.6 f/s
 FVP 0.90 []

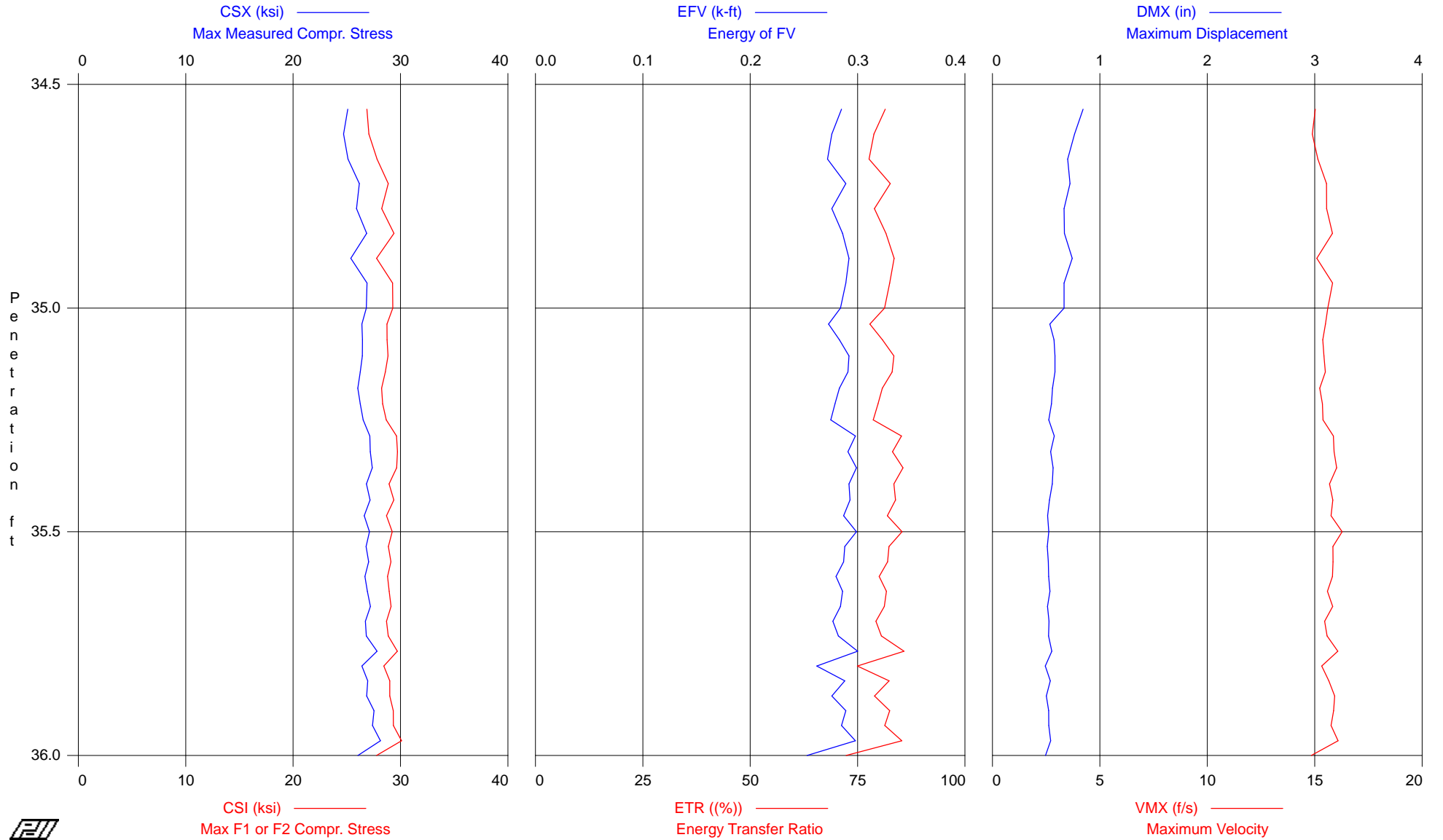
Pile Properties

LE 34.80 ft
 AR 1.17 in^2
 EM 30000 ksi
 SP 0.492 k/ft³
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 4.14 ms
 JC []
 LP 30.78 ft

Sensors

F3: [168AWJ-1] 214.08 (1)
 F4: [168AWJ-2] 216.93 (1)
 A3: [K1201] 345 mv/5000g's (1)
 A4: [K877] 320 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 1.04
 V3/V4: OK 1.06

CME 45-C AWJ ROD - SS-5 34.5 - 36.0
CME 45-C SN 225404



CME 45-C AWJ ROD - SS-5 34.5 - 36.0
OP: DJF

CME 45-C SN 225404
Test date: 21-Oct-2011

AR: 1.17 in²
LE: 39.80 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

CSX: Max Measured Compr. Stress
CSI: Max F1 or F2 Compr. Stress
CSB: Compression Stress at Bottom
EFV: Energy of FV

ETR: Energy Transfer Ratio
BPM: Blows per Minute
DMX: Maximum Displacement
VMX: Maximum Velocity

BL#	depth	BLC	TYPE	CSX	CSI	CSB	EFV	ETR	BPM	DMX	VMX
end	ft	bl/ft		ksi	ksi	ksi	k-ft	(%)	**	in	f/s
9	35.00	18	AV9	25.9	28.3	16.3	0.283	81	50	0.7	15.4
			STD	0.8	0.9	4.0	0.007	2	17	0.1	0.3
23	35.50	28	AV14	26.7	29.0	20.3	0.288	82	56	0.6	15.7
			STD	0.4	0.5	0.4	0.008	2	0	0.0	0.3
38	36.00	30	AV15	27.0	29.0	20.8	0.282	81	56	0.5	15.7
			STD	0.5	0.5	0.5	0.012	3	0	0.0	0.3
			Average	26.6	28.8	19.5	0.285	81	55	0.6	15.6
			Std. Dev.	0.7	0.7	2.7	0.010	3	9	0.1	0.3

Total number of blows analyzed: 38

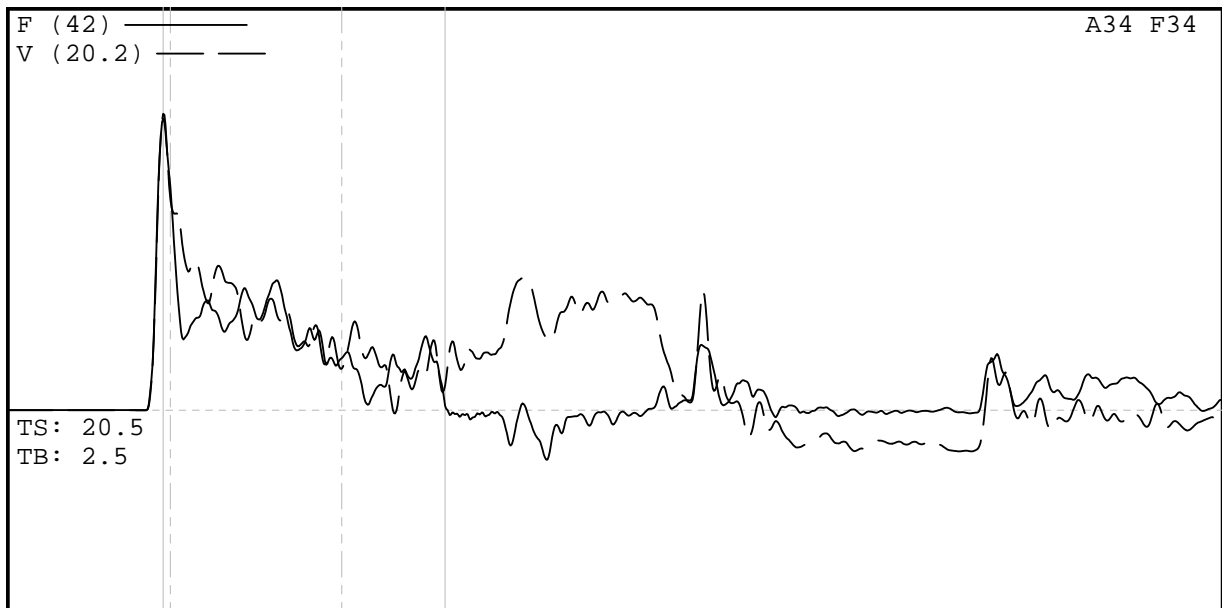
Time Summary

Drive 39 seconds

10:30:38 AM - 10:31:17 AM (10/21/2011) BN 1 - 38

CME 45-C RECALIBRATION

SS-5 34.5 - 36.0



Project Information

PROJECT: CME 45-C RECALIBRATION
 PILE NAME: SS-5 34.5 - 36.0
 DESCR: SN 225404
 OPERATOR: DJF
 FILE: SS-5 34.5 - 36.0.W01
 10/21/2011 10:31:17 AM
 Blow Number 39/38

Quantity Results

CSX 26.0 ksi
 CSI 27.8 ksi
 CSB 20.2 ksi
 EFV 0.253 k-ft
 ETR 72.3 (%)
 BPM 55.9 bpm
 DMX 0.49 in
 VMX 14.8 f/s
 FVP 0.98 []

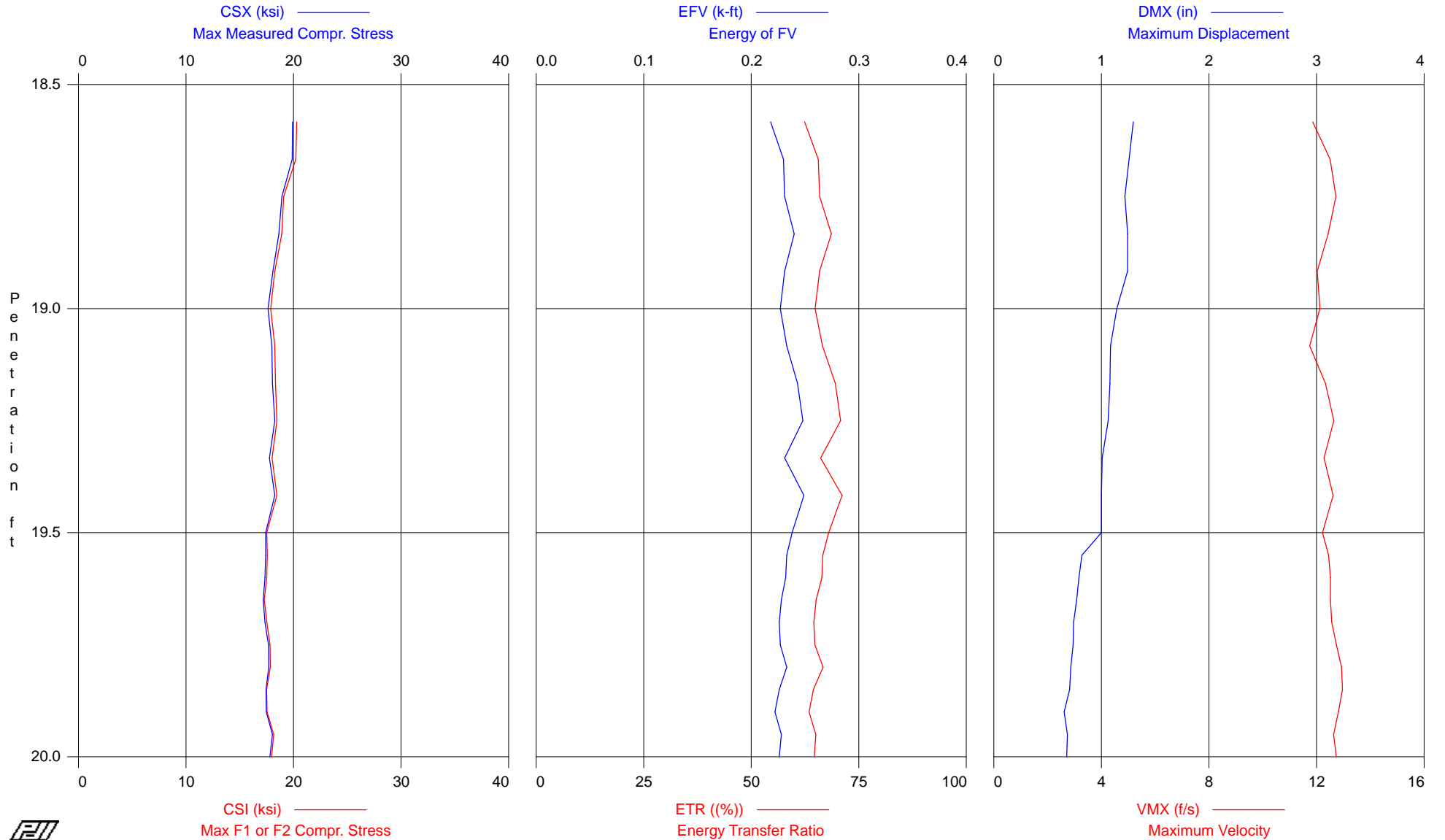
Pile Properties

LE 39.80 ft
 AR 1.17 in^2
 EM 30000 ksi
 SP 0.492 k/ft3
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 4.74 ms
 JC []
 LP 36.00 ft

Sensors

F3: [168AWJ-1] 214.08 (1)
 F4: [168AWJ-2] 216.93 (1)
 A3: [K1201] 345 mv/5000g's (1)
 A4: [K877] 320 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 1.14
 V3/V4: OK 1.15

CME 55 AW ROD - SS-1 18.5 - 20.0
SN 170055



CME 55 AW ROD - SS-1 18.5 - 20.0
OP: DJF

SN 170055
Test date: 18-Oct-2011

AR: 1.20 in²
LE: 23.80 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

CSX: Max Measured Compr. Stress
CSI: Max F1 or F2 Compr. Stress
CSB: Compression Stress at Bottom
EFV: Energy of FV

ETR: Energy Transfer Ratio
BPM: Blows per Minute
DMX: Maximum Displacement
VMX: Maximum Velocity

BL#	depth ft	BLC bl/ft	TYPE	CSX ksi	CSI ksi	CSB ksi	EFV k-ft	ETR (%)	BPM **	DMX in	VMX f/s
6	19.00	12	AV6	18.8	19.1	3.2	0.230	66	41	1.2	12.3
			STD	0.8	0.9	0.6	0.006	2	17	0.0	0.3
12	19.50	12	AV6	18.0	18.2	4.4	0.240	69	50	1.0	12.3
			STD	0.3	0.3	0.7	0.007	2	0	0.0	0.3
22	20.00	20	AV10	17.5	17.7	4.9	0.228	65	50	0.7	12.7
			STD	0.2	0.3	0.5	0.003	1	0	0.0	0.2
Average				18.0	18.2	4.3	0.232	66	48	1.0	12.5
Std. Dev.				0.7	0.8	1.0	0.008	2	10	0.2	0.3

Total number of blows analyzed: 22

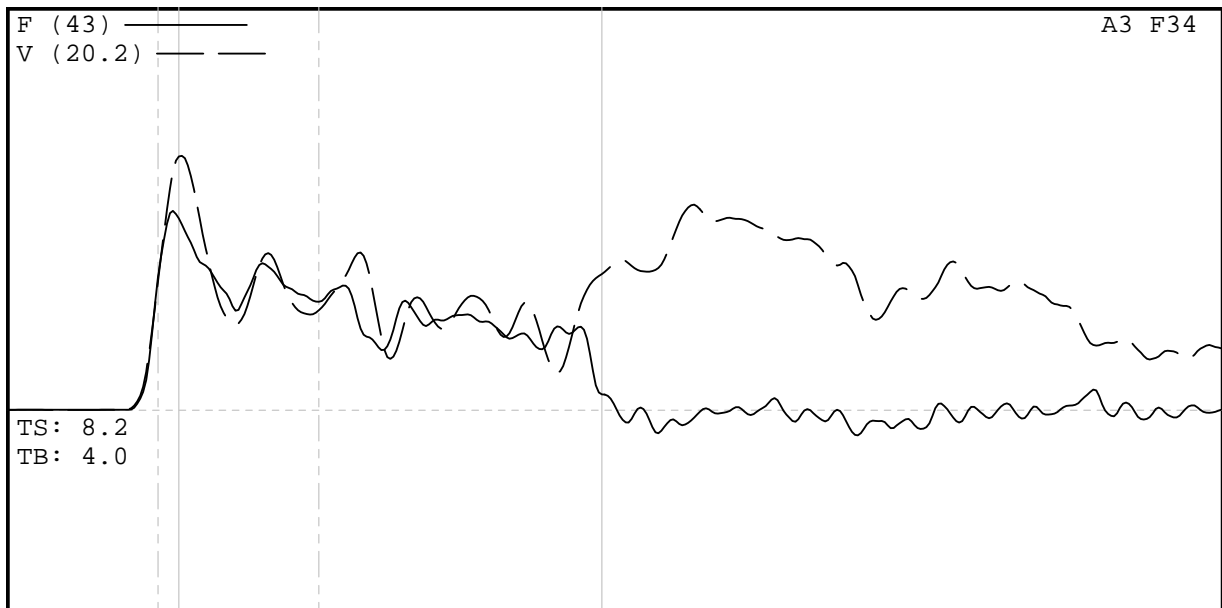
Time Summary

Drive 25 seconds

9:30:31 AM - 9:30:56 AM (10/18/2011) BN 1 - 22

F & H SPT CALIBRATION

SS-1 18.5 - 20.0



Project Information

PROJECT: F & H SPT CALIBRATION
 PILE NAME: SS-1 18.5 - 20.0
 DESCR: CME 55 SN 170055
 OPERATOR: DJF
 FILE: SS-1 18.5 - 20.0.W01
 10/18/2011 9:30:56 AM
 Blow Number 45/22

Quantity Results

CSX 17.8 ksi
 CSI 18.0 ksi
 CSB 4.8 ksi
 EFV 0.226 k-ft
 ETR 64.6 (%)
 BPM 50.1 bpm
 DMX 0.68 in
 VMX 12.7 f/s
 FVP 0.73 []

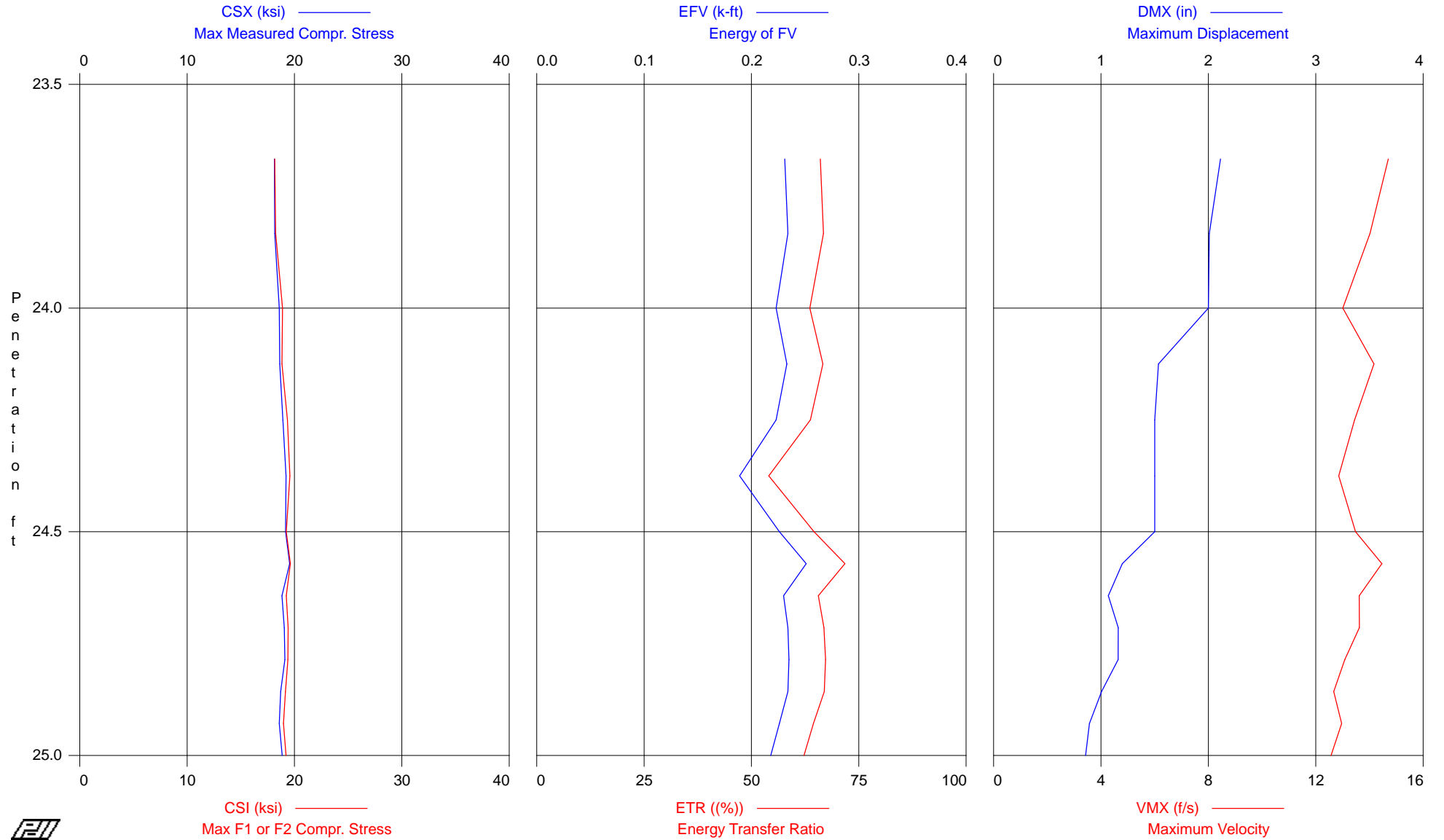
Pile Properties

LE 23.80 ft
 AR 1.20 in^2
 EM 30000 ksi
 SP 0.492 k/ft3
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 2.84 ms
 JC []
 LP 20.00 ft

Sensors

F3: [246 AW-1] 216.36 (1)
 F4: [246 AW-2] 217.94 (1)
 A3: [K1201] 345 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 1.03
 V1/V2: USE 2 ACCELS

CME 55 AW ROD - SS-2 23.5 - 25.0
SN 170055



CME 55 AW ROD - SS-2 23.5 - 25.0
OP: DJF

SN 170055
Test date: 18-Oct-2011

AR: 1.20 in²
LE: 28.80 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

CSX: Max Measured Compr. Stress
CSI: Max F1 or F2 Compr. Stress
CSB: Compression Stress at Bottom
EFV: Energy of FV

ETR: Energy Transfer Ratio
BPM: Blows per Minute
DMX: Maximum Displacement
VMX: Maximum Velocity

BL#	depth ft	BLC bl/ft	TYPE	CSX ksi	CSI ksi	CSB ksi	EFV k-ft	ETR (%)	BPM **	DMX in	VMX f/s
3	24.00	6	AV3	18.3	18.4	8.5	0.229	65	34	2.0	13.9
			STD	0.2	0.3	2.1	0.005	1	23	0.1	0.7
7	24.50	8	AV4	19.0	19.2	9.8	0.218	62	51	1.5	13.5
			STD	0.2	0.3	1.1	0.017	5	0	0.0	0.5
14	25.00	14	AV7	19.0	19.3	11.0	0.233	66	51	1.0	13.3
			STD	0.3	0.2	1.3	0.009	3	0	0.1	0.6
			Average	18.8	19.1	10.1	0.228	65	47	1.4	13.5
			Std. Dev.	0.4	0.4	1.7	0.013	4	13	0.4	0.6

Total number of blows analyzed: 14

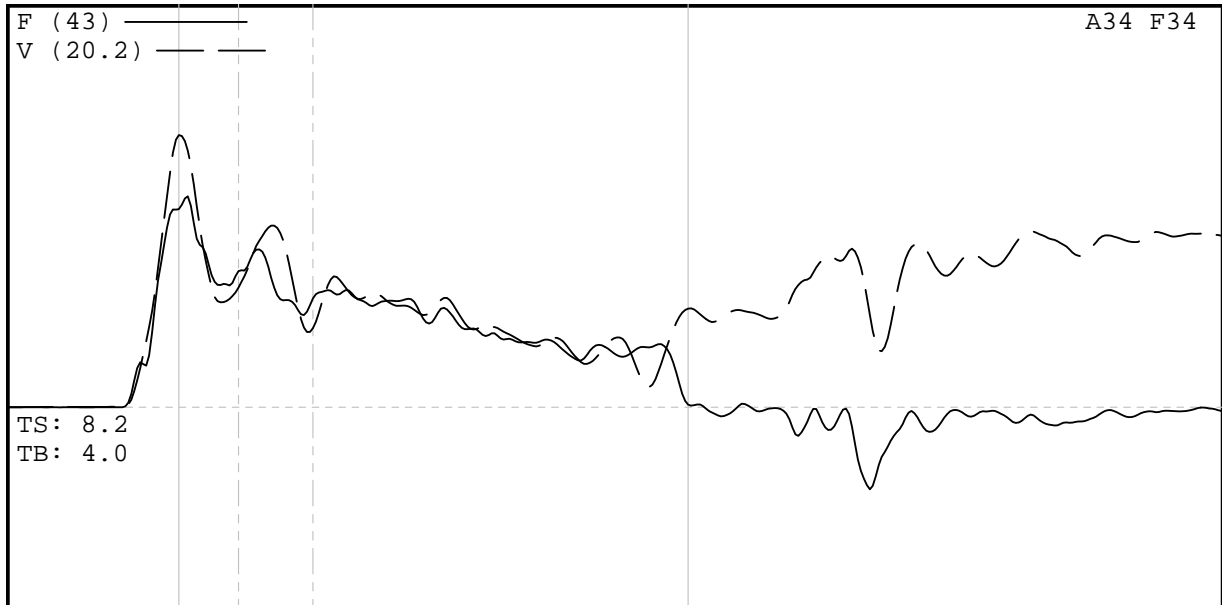
Time Summary

Drive 15 seconds

9:40:16 AM - 9:40:31 AM (10/18/2011) BN 1 - 14

F & H SPT CALIBRATION

SS-2 23.5 - 25.0



Project Information

PROJECT: F & H SPT CALIBRATION
 PILE NAME: SS-2 23.5 - 25.0
 DESCR: CME 55 SN 170055
 OPERATOR: DJF
 FILE: SS-2 23.5 - 25.0.W01
 10/18/2011 9:40:25 AM
 Blow Number 12/9

Quantity Results

CSX 18.8 ksi
 CSI 19.2 ksi
 CSB 12.7 ksi
 EFV 0.230 k-ft
 ETR 65.6 (%)
 BPM 51.3 bpm
 DMX 1.07 in
 VMX 13.6 f/s
 FVP 0.73 []

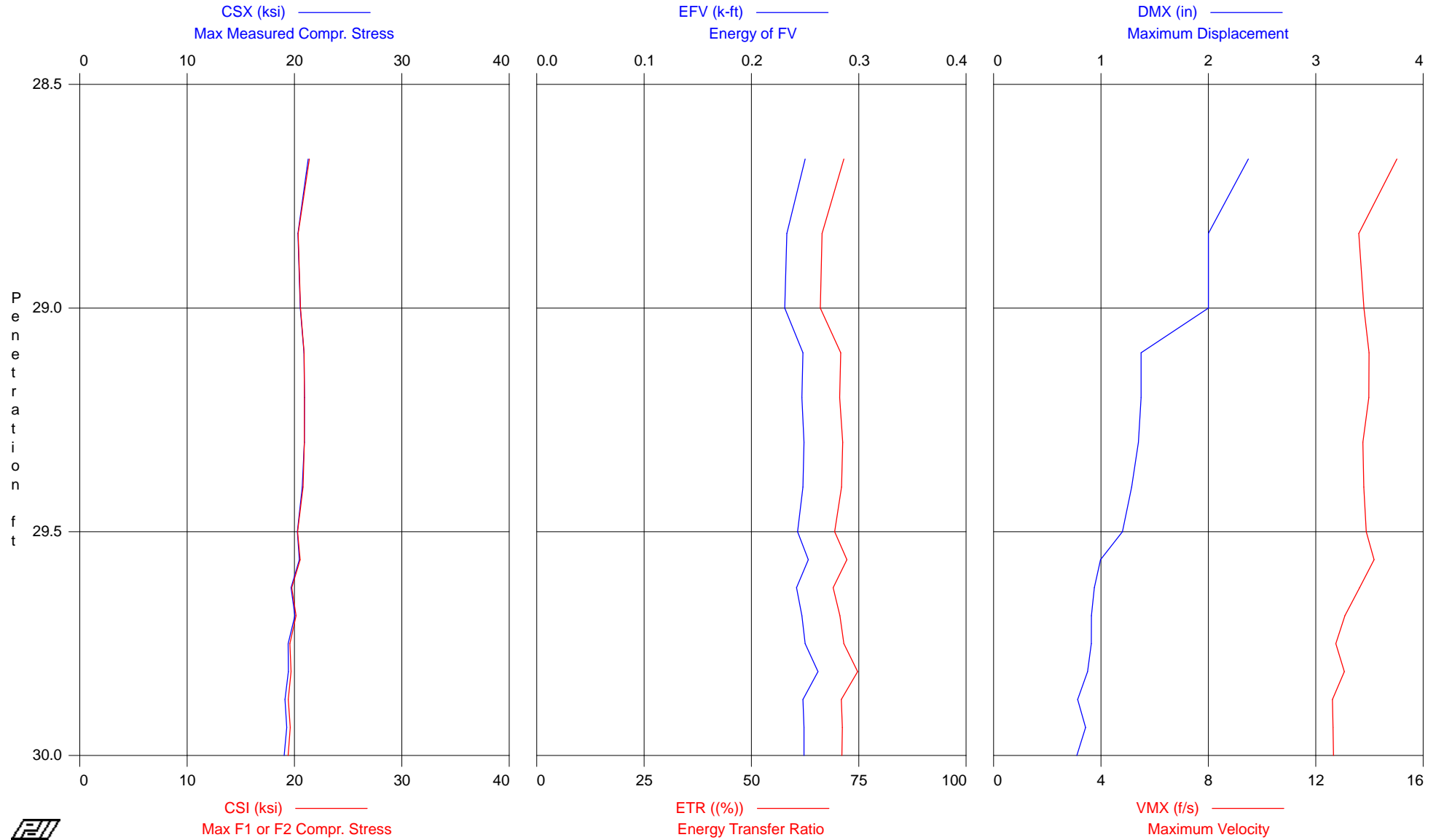
Pile Properties

LE 28.80 ft
 AR 1.20 in^2
 EM 30000 ksi
 SP 0.492 k/ft3
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 3.43 ms
 JC []
 LP 24.64 ft

Sensors

F3: [246 AW-1] 216.36 (1)
 F4: [246 AW-2] 217.94 (1)
 A3: [K1201] 345 mv/5000g's (1)
 A4: [K877] 320 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 0.99
 V3/V4: OK 0.89

CME 55 AW ROD - SS-3 28.5 - 30.0
SN 170055



CME 55 AW ROD - SS-3 28.5 - 30.0
OP: DJF

SN 170055
Test date: 18-Oct-2011

AR: 1.20 in²
LE: 33.80 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

CSX: Max Measured Compr. Stress
CSI: Max F1 or F2 Compr. Stress
CSB: Compression Stress at Bottom
EFV: Energy of FV

ETR: Energy Transfer Ratio
BPM: Blows per Minute
DMX: Maximum Displacement
VMX: Maximum Velocity

BL#	depth ft	BLC bl/ft	TYPE	CSX ksi	CSI ksi	CSB ksi	EFV k-ft	ETR (%)	BPM **	DMX in	VMX f/s
3	29.00	6	AV3	20.7	20.8	7.1	0.238	68	34	2.1	14.1
			STD	0.4	0.5	0.9	0.009	2	23	0.2	0.6
8	29.50	10	AV5	20.7	20.8	7.1	0.247	71	51	1.3	13.9
			STD	0.3	0.2	0.6	0.002	1	0	0.1	0.1
16	30.00	16	AV8	19.6	19.8	7.2	0.250	71	51	0.9	13.1
			STD	0.5	0.4	1.2	0.005	2	0	0.1	0.5
			Average	20.1	20.3	7.2	0.247	71	48	1.2	13.5
			Std. Dev.	0.7	0.6	1.0	0.007	2	12	0.5	0.7

Total number of blows analyzed: 16

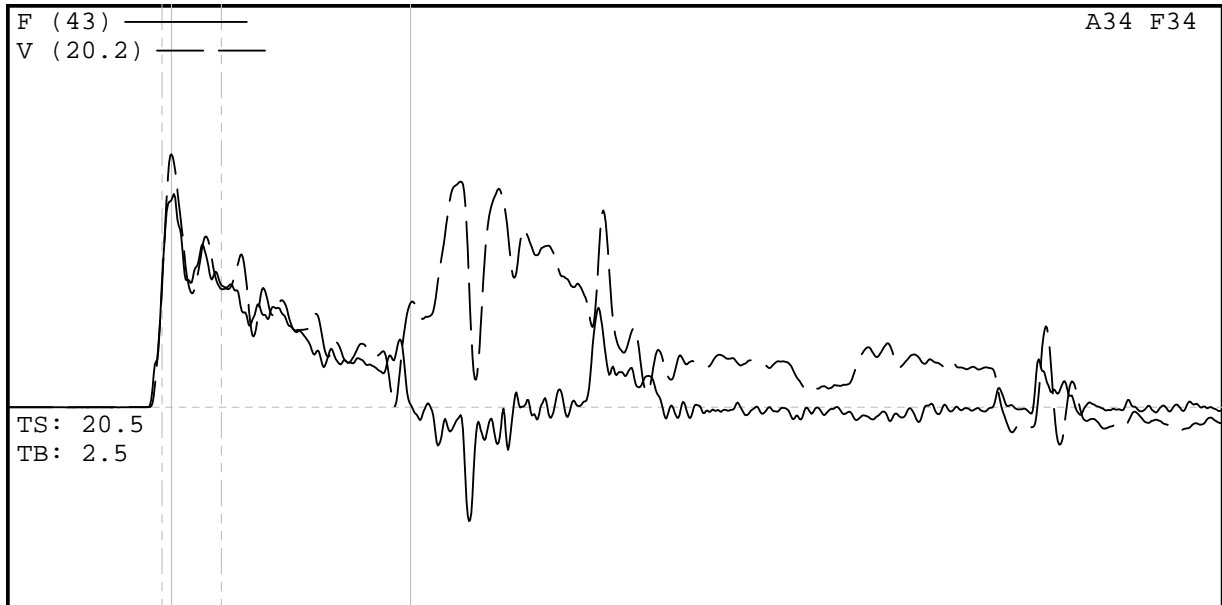
Time Summary

Drive 18 seconds

9:48:53 AM - 9:49:11 AM (10/18/2011) BN 1 - 16

F & H SPT CALIBRATION

SS-3 28.5 - 30.0



Project Information

PROJECT: F & H SPT CALIBRATION
 PILE NAME: SS-3 28.5 - 30.0
 DESCR: CME 55 SN 170055
 OPERATOR: DJF
 FILE: SS-3 28.5 - 30.0.W01
 10/18/2011 9:49:11 AM
 Blow Number 17/16

Quantity Results

CSX 19.0 ksi
 CSI 19.4 ksi
 CSB 9.5 ksi
 EFV 0.249 k-ft
 ETR 71.1 (%)
 BPM 50.7 bpm
 DMX 0.78 in
 VMX 12.7 f/s
 FVP 0.82 []

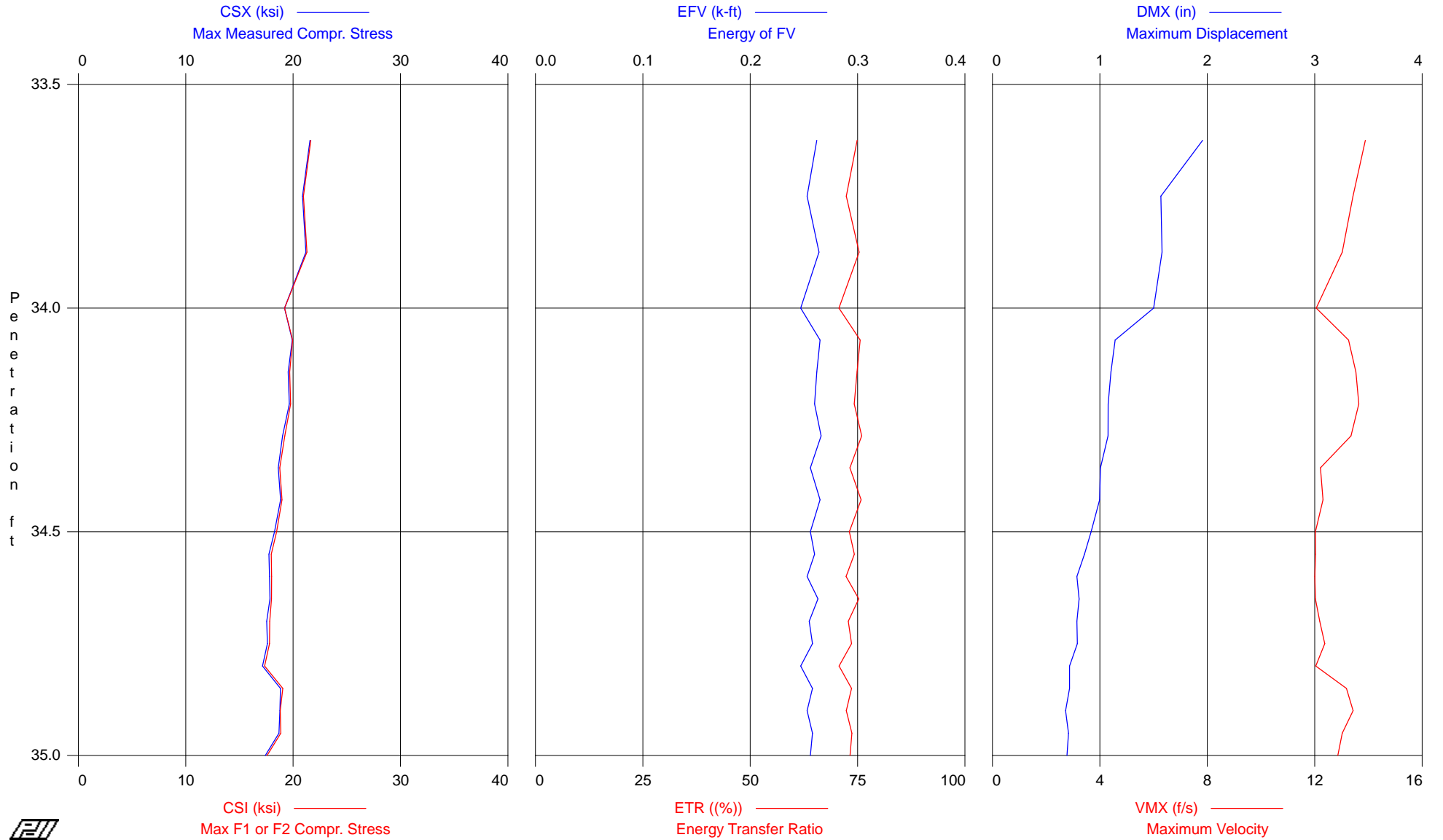
Pile Properties

LE 33.80 ft
 AR 1.20 in^2
 EM 30000 ksi
 SP 0.492 k/ft3
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 4.02 ms
 JC []
 LP 30.00 ft

Sensors

F3: [246 AW-1] 216.36 (1)
 F4: [246 AW-2] 217.94 (1)
 A3: [K1201] 345 mv/5000g's (1)
 A4: [K877] 320 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 1.03
 V3/V4: OK 0.83

CME 55 AW ROD - SS-4 33.5 - 35.0
SN 170055



CME 55 AW ROD - SS-4 33.5 - 35.0
OP: DJF

SN 170055
Test date: 18-Oct-2011

AR: 1.20 in² SP: 0.492 k/ft³
LE: 38.80 ft EM: 30,000 ksi
WS: 16,807.9 f/s JC: 0.00

CSX: Max Measured Compr. Stress ETR: Energy Transfer Ratio
CSI: Max F1 or F2 Compr. Stress BPM: Blows per Minute
CSB: Compression Stress at Bottom DMX: Maximum Displacement
EFV: Energy of FV VMX: Maximum Velocity

BL#	depth ft	BLC bl/ft	TYPE	CSX ksi	CSI ksi	CSB ksi	EFV k-ft	ETR (%)	BPM **	DMX in	VMX f/s
4	34.00	8	AV4	20.7	20.8	8.6	0.257	73	38	1.7	13.1
			STD	0.9	0.9	1.5	0.007	2	21	0.2	0.7
11	34.50	14	AV7	19.1	19.3	12.5	0.261	75	51	1.0	12.9
			STD	0.6	0.5	1.7	0.004	1	0	0.1	0.6
21	35.00	20	AV10	17.9	18.1	12.6	0.256	73	51	0.8	12.5
			STD	0.6	0.5	2.4	0.004	1	0	0.1	0.5
			Average	18.9	19.0	11.8	0.258	74	48	1.0	12.8
			Std. Dev.	1.2	1.2	2.6	0.005	1	10	0.3	0.6

Total number of blows analyzed: 21

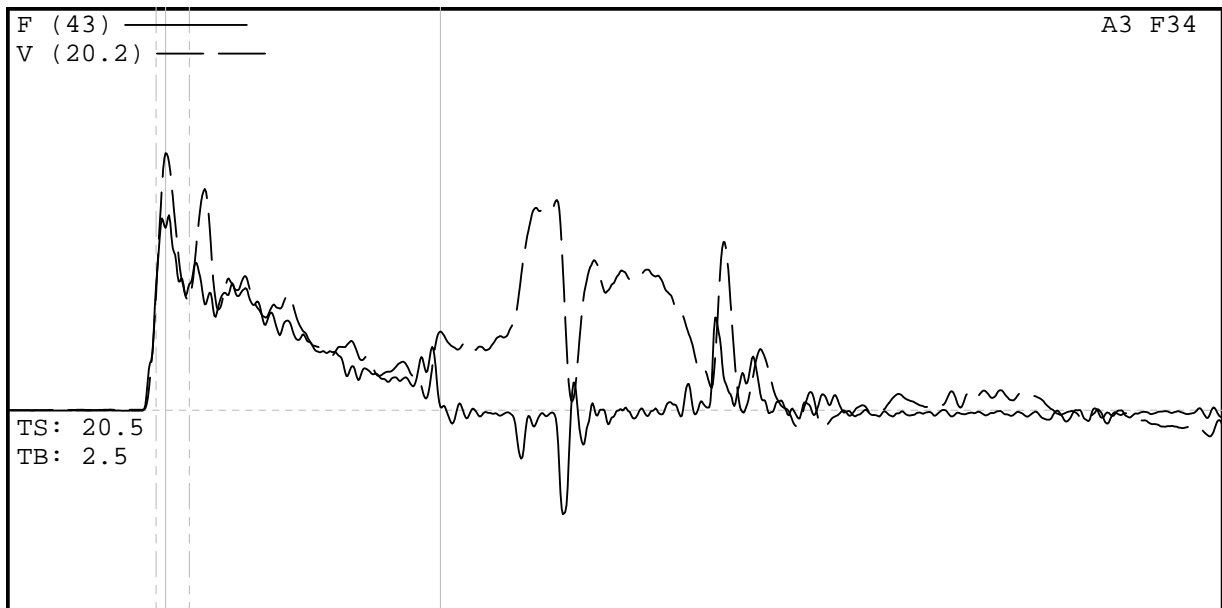
Time Summary

Drive 24 seconds

10:01:02 AM - 10:01:26 AM (10/18/2011) BN 1 - 21

F & H SPT CALIBRATION

SS-4 33.5 - 35.0



Project Information

PROJECT: F & H SPT CALIBRATION
 PILE NAME: SS-4 33.5 - 35.0
 DESCR: CME 55 SN 170055
 OPERATOR: DJF
 FILE: SS-4 33.5 - 35.0.W01
 10/18/2011 10:01:26 AM
 Blow Number 22/21

Quantity Results

CSX 17.4 ksi
 CSI 17.6 ksi
 CSB 9.9 ksi
 EFV 0.256 k-ft
 ETR 73.2 (%)
 BPM 50.4 bpm
 DMX 0.69 in
 VMX 12.9 f/s
 FVP 0.71 []

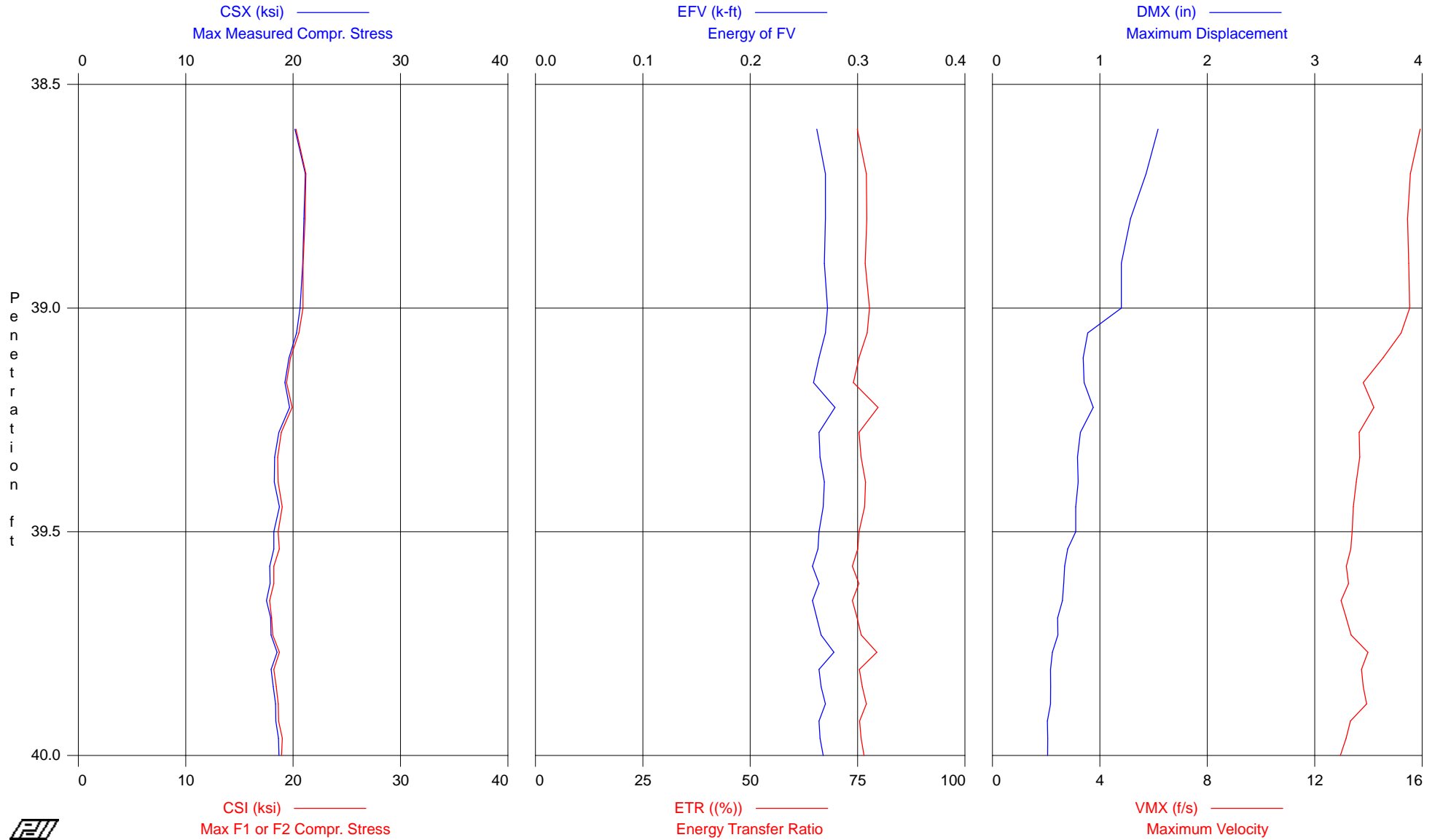
Pile Properties

LE 38.80 ft
 AR 1.20 in^2
 EM 30000 ksi
 SP 0.492 k/ft^3
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 4.62 ms
 JC []
 LP 35.00 ft

Sensors

F3: [246 AW-1] 216.36 (1)
 F4: [246 AW-2] 217.94 (1)
 A3: [K1201] 345 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 1.02
 V1/V2: USE 2 ACCELS

CME 55 AW ROD - SS-5 38.5 - 40.0
SN 170055



CME 55 AW ROD - SS-5 38.5 - 40.0
OP: DJF

SN 170055
Test date: 18-Oct-2011

AR: 1.20 in²
LE: 43.80 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00

CSX: Max Measured Compr. Stress
CSI: Max F1 or F2 Compr. Stress
CSB: Compression Stress at Bottom
EFV: Energy of FV

ETR: Energy Transfer Ratio
BPM: Blows per Minute
DMX: Maximum Displacement
VMX: Maximum Velocity

BL#	depth ft	BLC bl/ft	TYPE	CSX ksi	CSI ksi	CSB ksi	EFV k-ft	ETR (%)	BPM **	DMX in	VMX f/s
5	39.00	10	AV5	20.8	20.9	12.0	0.269	77	39	1.3	15.6
			STD	0.3	0.3	0.4	0.003	1	18	0.1	0.2
14	39.50	18	AV9	19.0	19.2	13.9	0.267	76	50	0.8	13.9
			STD	0.7	0.7	0.9	0.005	2	0	0.1	0.6
27	40.00	26	AV13	18.2	18.4	12.8	0.265	76	50	0.6	13.4
			STD	0.3	0.4	1.3	0.005	1	0	0.1	0.3
			Average	18.9	19.2	13.0	0.266	76	48	0.8	14.0
			Std. Dev.	1.1	1.0	1.2	0.005	1	9	0.3	0.9

Total number of blows analyzed: 27

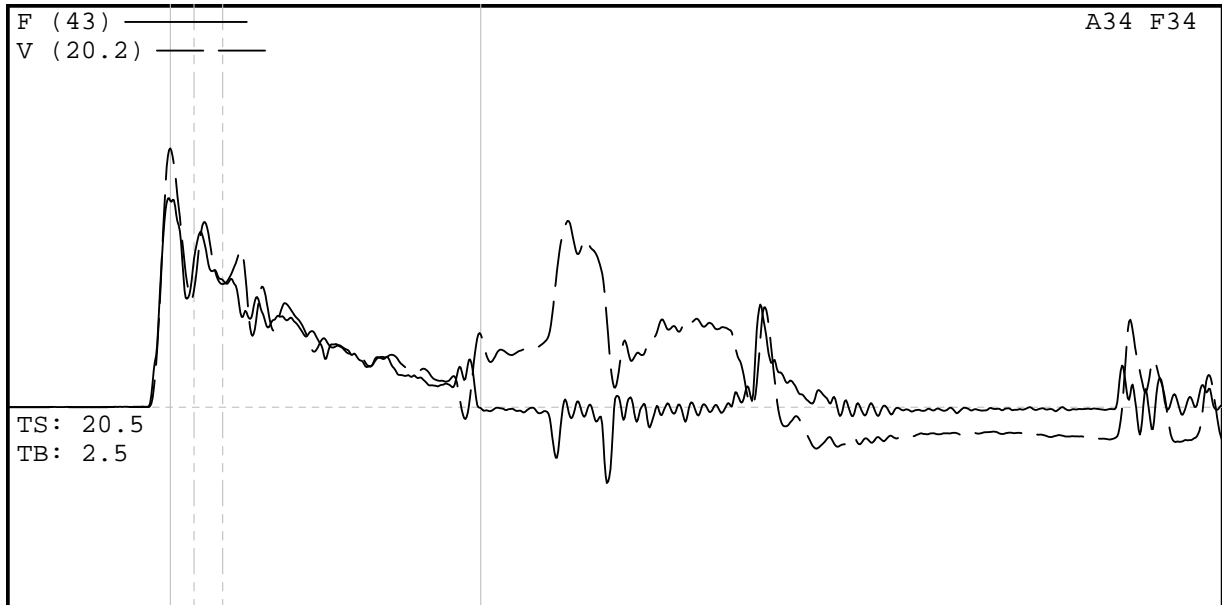
Time Summary

Drive 32 seconds

10:13:10 AM - 10:13:42 AM (10/18/2011) BN 1 - 27

F & H SPT CALIBRATION

SS-5 38.5 - 40.0



Project Information

PROJECT: F & H SPT CALIBRATION
 PILE NAME: SS-5 38.5 - 40.0
 DESCR: CME 55 SN 170055
 OPERATOR: DJF
 FILE: SS-5 38.5 - 40.0.W01
 10/18/2011 10:13:42 AM
 Blow Number 34/27

Quantity Results

CSX 18.7 ksi
 CSI 18.9 ksi
 CSB 10.3 ksi
 EFV 0.268 k-ft
 ETR 76.5 (%)
 BPM 49.4 bpm
 DMX 0.51 in
 VMX 13.0 f/s
 FVP 0.80 []

Pile Properties

LE 43.80 ft
 AR 1.20 in^2
 EM 30000 ksi
 SP 0.492 k/ft3
 WS 16807.9 f/s
 EA/C 2.1 ksec/ft
 2L/C 5.21 ms
 JC []
 LP 40.00 ft

Sensors

F3: [246 AW-1] 216.36 (1)
 F4: [246 AW-2] 217.94 (1)
 A3: [K1201] 345 mv/5000g's (1)
 A4: [K877] 320 mv/5000g's (1)
 CLIP: OK
 F3/F4: OK 1.02
 V3/V4: OK 1.02