



August 25, 2015

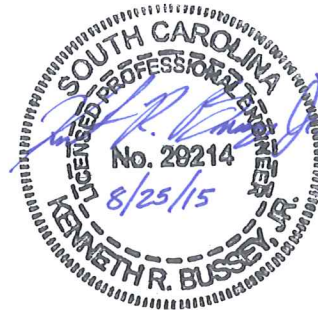
Mr. Greg Schuch, P.E.
Design Manager
501 Huger Street
Columbia, South Carolina 29201

Dear Mr. Schuch,

We have completed the Geotechnical Base Line Report associated with the Interstate 20 roadway improvements in Lexington County, South Carolina. Please call at your convenience if you have questions or comments. HDR | ICA appreciates the opportunity to provide geotechnical engineering services to the South Carolina Department of Transportation.

Sincerely,
HDR | ICA

Kenneth R. Bussey, Jr., P.E.
Geotechnical Engineer



Brian Edwards, E.I.T.





Geotechnical Base Line Report

I-20 Widening Design-Build Preparation

Lexington County, South Carolina

August 25, 2015

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1 Project Information

This Geotechnical Base Line Report (GBLR) provides a characterization of subsurface conditions and preliminary geotechnical information to the design team for the I-20 roadway improvements in Lexington County, South Carolina. The geotechnical data presented herein includes standard penetration testing, bulk samples, Shelby tube sampling, a Multichannel Analysis of Surface Waves (MASW) survey, and laboratory testing results. The subsurface information provides correlation with regional geological stratigraphy and site specific strata conditions to aid the South Carolina Department of Transportation (SCDOT) with information pertaining to future design-build letting process. A site vicinity map is included in Appendix A.

2 General Project Information

The SCDOT proposes to widen I-20 from near mile point 60.2 (West of US-378) on the eastern terminus to approximately mile point 49 (West of Longs Pond Road) on the western terminus. The project includes adding a travel lane in each direction, improving various exit ramps, adding a noise wall structure, and replacing or widening the parallel mainline bridges over Norfolk Southern Railroad and Meat Plant (Frontage) Road near mile point 57.

This report presents the results of the subsurface exploration program along I-20 and summarizes the laboratory testing program to provide geotechnical baseline data to be utilized for the preliminary design and estimating as part of a future design-build letting process.

This report presents a general discussion of preliminary design and construction issues anticipated for the proposed roadway widening and bridge construction. As of completing this report, the subsurface and laboratory information pertaining to the noise wall have not been finalized and will be submitted as an addendum at a later date.

2.1 Regional Geology

The proposed preliminary boring alignment passes over undifferentiated Cretaceous sands and kaolin clays progressing from southwest to northeast. The sands are typically poorly to well sorted, micaceous, subangular, fine grain to gravelly and contain variable fractions of silt and clay. Thin accumulations of angular to subangular quartz sand, tentatively identified as Pinehurst Formation, may be encountered at the SC6/South Lake Drive interchange. Upland elevations near the southeastern end of the alignment are reported to be underlain by fine to coarse sands and thinly interbedded kaolin clays of the Tertiary Huber Formation and fine to coarse grain sands of the Tertiary Barnwell Group. Isolated exposures of Quaternary-Tertiary quartz sands are indicated within the northeastern half of the proposed alignment. Undifferentiated Paleozoic crystalline rock composed of metamorphosed, foliated volcanic deposits and/or granite and exhibiting vertical to steeply dipping to the southeast foliation may be encountered from the Augusta Road (US 1) interchange northeastward to the end of proposed alignment. The

crystalline rock is overlain by relatively thin residual silts and clays with interlayered fine to medium grain sands. Alluvium composed of sands and clays may be anticipated within creek floodplain crossings. Roadway embankment materials may be anticipated at bridge approaches.

2.2 Site Geology

Geotechnical borings advanced within the limits of the proposed widening alignment recovered samples suggesting two distinct soil profiles extending from the beginning of the project to immediately north of the US 1 and I-20 interchange and from that position to the end of the project.

Recovered soils from US 1/I-20 northeastward were primarily composed of silt and clay with some fine grain sand exhibiting low to medium plasticity characteristics. Consistency ranged from very soft to hard. Interlayered silty to occasionally clayey, fine to medium grain sand was also encountered. These sands exhibited non-plastic, low plasticity, and medium plasticity characteristics based upon laboratory testing and loose to very dense compaction resulting from SPT (standard penetration test) drives. Collectively, these soils are interpreted as residual in origin. Advanced borings penetrated 26.8 feet to 30.1 feet without auger refusal interception. Refusal during SPT sampling was intercepted within borings B-1, B-4, and B-5. Borings B-6A, B-6B, and B-7A were advanced to collect bulk samples and Shelby tube samples. Published mapping suggests rock underlying these soils is crystalline, felsic to mafic, metamorphosed volcanic tuff, mudstones, and quartzite of the Carolina Slate Group (Paleozoic) with the potential for intrusive bodies of Columbia metagranite.

Recovered soils from US 1/I-20 southwestward were primarily composed of fine and medium grain sand with secondary fractions of silt, clay, and coarse grain sand. Sands were typically subangular, non-reactive, weakly cemented, and poorly to well graded. Compaction, determined by SPT drives, varied from loose to dense. Interbedded low to medium plasticity clay and silt with secondary fractions of fine grain sand and traces of gravel (cemented fragments) were also encountered. Consistency varied from soft to hard based upon SPT drives. Collectively, these soils are interpreted as residual in origin. Advanced borings penetrated 29.7 feet to 30.6 feet without auger or SPT refusal. Borings B-15A, B-27A, and B-27B were advanced to collect bulk samples and Shelby tube samples. Published mapping suggests rock underlying these soils is crystalline, felsic to mafic, metamorphosed volcanic tuff, mudstones, and quartzite of the Carolina Slate Group (Paleozoic) with the potential for intrusive bodies of Columbia metagranite.

Recovered soils from preliminary bridge borings at I-20 over the railroad and Meat Plant (Frontage) Road were primarily composed of clayey, medium plasticity, fine and medium grain sand, and non-plastic fine to medium grain sand with silt interpreted as roadway embankment fill. Compaction, determined by SPT drives, varied from very loose to medium dense. Residual soils, underlying the fill, were composed primarily of clayey, medium plasticity, fine and medium grain sand, non-plastic fine to medium grain sand with silt, non-plastic fine and medium grain sand with varying silt fractions and medium grain sand with clay exhibiting medium to high plasticity. Compaction varied from very loose to dense. Interbedded low plasticity, finely sandy silt and medium to high plasticity clay with fine grain sand were also encountered within the advanced preliminary bridge

borings. Consistency varied from stiff to hard based upon SPT drives. Advanced borings penetrated 99.3 feet and 99.7 feet, respectively, without auger refusal prior to termination. Refusal was encountered during SPT sampling within boring B-31 leading to boring termination. Published mapping suggests rock underlying these soils is crystalline, felsic to mafic, metamorphosed volcanic tuff, mudstones, and quartzite of the Carolina Slate Group (Paleozoic) with the potential for intrusive bodies of Columbia metagranite.

Bridge boring B-31 encountered an interval producing flowing water from 60.5 feet to 64.0 feet (elevation range 341.9–338.4). Review of the recovered samples at 59.0' -60.5' and 64.0'-65.5' and discussions with the driller suggest the actual water bearing strata may be thin sand seams rather than the entire 3.5 foot thick interval. Water flow to the surface, upon initial penetration produced flow over the top of a two (2) foot casing stickup. This flow during drilling operations was minimized and ultimately stopped by 1) the introduction of barite drilling mud replacing the potable water/native cuttings initially used and 2) time for the water flow to out pace recharge. The thickened and more dense (per gallon) fluid and time successfully diminished then contained water flow from the subject strata interval overnight enabling completion of the boring and immediate backfill due to boring location along the roadside. A similar interval was not encountered within bridge boring B-32 as indicated on the interpreted subsurface bridge profile in Appendix A. The lack of recovery within sample interval 69.0'-70.5', boring B-31, is interpreted to be unrelated to the water bearing seams rather a mechanical issue with the sampling rods. For roadway borings static (24 hour) water level measurements throughout the proposed widening alignment varied from elevation 415.6 to elevation 256.9.

3 Field Exploration Program

HDR | ICA conducted a preliminary geotechnical subsurface site exploration in January and February 2015. The subsurface investigation consisted of forty (40) SPT borings, four (4) Shelby tube sample borings and two (2) bag sample borings. Two (2) borings (B-31 and B-32) were performed at the proposed bridge site. Termination depths for the borings ranged from 26.3 feet to 99.7 feet below the ground surface. Borings were advanced by CME-55 and CME-45C track-mounted drill rigs using rotary wash and 3¼” hollow-stem auger techniques. In addition, a shear wave velocity measurement (MASW-1) was obtained by Terracon near the bridge location using Multi-channel Analysis of Surface Waves (MASW) methods.

A boring location plan showing the preliminary test boring locations is located in Appendix A. Boring logs and the MASW profiles from the preliminary investigation are included in Appendix B. The test locations and pertinent information are summarized below in Table 3-1 below.

Table 3-1. Subsurface Testing Locations

Test Hole No.	Station	Offset (ft)	Surface Elevation	Soil Depth (ft)
B-1	226+34	1' LT	316.2	28.6
B-2	250+56	6' RT	281.8	29.9

Table 3-1. Subsurface Testing Locations

Test Hole No.	Station	Offset (ft)	Surface Elevation	Soil Depth (ft)
B-3	267+91	6' LT	254.5	26.3
B-4	288+48	11' RT	329.6	30.0
B-5	307+65	12' LT	366.6	30.0
B-6	327+66	9' RT	355.9	29.8
B-6A	327+59	10' RT	356.2	10.0
B-6B	327+67	10' RT	355.8	6.0
B-7	343+67	14' LT	332.5	30.1
B-7A	343+68	14' LT	332.6	10.0
B-8	367+54	4' RT	354.2	29.8
B-9	389+12	13' LT	418.4	30.1
B-10	409+93	CL	377.0	29.9
B-11	428+32	CL	393.8	29.8
B-12	448+59	4' LT	403.8	29.8
B-13	468+94	4' LT	423.7	29.9
B-14	488+23	5' LT	427.5	30.2
B-15	509+10	9' RT	394.2	30.1
B-15A	509+90	8' RT	394.4	8.0
B-16	531+66	7' RT	424.8	29.9
B-17	549+68	20' LT	416.9	30.5
B-18	569+05	1' RT	391.9	30.0
B-19	590+67	20' LT	393.7	30.5
B-20	609+70	9' LT	385.4	30.0
B-21	624+93	19' LT	375.9	30.5
B-22	648+71	11' LT	395.0	30.1
B-23	667+55	22' LT	368.1	30.5
B-24	692+48	3' LT	424.6	30.0
B-25	710+26	27' LT	431.4	30.2
B-26	729+82	7' LT	396.2	30.3
B-27	749+49	9' LT	362.2	30.1

Table 3-1. Subsurface Testing Locations

Test Hole No.	Station	Offset (ft)	Surface Elevation	Soil Depth (ft)
B-27A	749+41	9' LT	362.3	30.0
B-27B	749+66	10' LT	362.2	10.9
B-28	771+17	6' RT	424.7	30.5
B-29	790+50	15' LT	441.0	30.3
B-30	810+89	31' RT	428.9	30.6
B-31	382+53	21' LT	402.4	99.3
B-32	385+10	16' RT	411.1	99.7
B-33	208+33	46' RT	281.4	24.7
B-34	216+35	69' RT	295.7	49.8
B-35	224+36	72' RT	316.1	42.3
B-36	231+98	70' RT	308.3	50.0
B-37	240+41	65' RT	299.8	49.6
B-38	247+86	47' RT	289.4	49.6
B-39	256+24	126' RT	273.4	50.0
B-40	262+81	59' RT	254.5	50.0
MASW-1	385+08	14' LT	411.0	n/a

3.1 Standard Penetration Testing

In the preliminary borings, SPTs were typically conducted at 2-foot intervals in the top 10 feet of each boring and at 5-foot intervals thereafter until termination depth. It should be noted that the N-values presented on the boring logs are the uncorrected, field N-values. Blow counts recorded at these intervals were produced from SPT hammers with energy ratios of 90% for the CME-55 and 90.1% for the CME-45C. The hammer energy ratio is identified on each boring log and the hammer reports are included in Appendix E.

3.2 MASW Survey

Multi-channel Analysis of Surface Waves (MASW) is a seismic method that uses the dispersive characteristics of Rayleigh-type surface waves to determine the variation of the shear wave velocity of layered systems with depth. Unlike spectral analysis of surface waves (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, it 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 alone and the advantages offered through their combined use, Terracon used MAM in conjunction with MASW for the development of this survey.

The one (1) MASW, MASW-1, was performed at the southern embankment near the proposed bridge structure. Since the test was performed through roughly 30 feet of existing fill material, the calculation for the shear wave velocity only considered the depth interval from 30 feet to 130 feet in order to neglect the shear wave measurements within the fill. The result of the survey is an average shear wave velocity of 1,511 feet per second (ft/sec) in the 100 feet of residual soil below the existing embankment.

Therefore, based on this result, we would recommend that the site would classify as Site Class C in accordance with Table 12-22 in the SCDOT Geotechnical Design Manual (GDM). The result of the MASW test is shown Appendix B and the location of MASW-1 can be found on the test location plans in Appendix B.

4 Laboratory Testing Program

Laboratory tests performed on representative samples were selected by SCDOT. Procedures included natural moisture content of soils, Atterberg limits, sieve analysis, AASHTO and ASTM soil classification, standard proctor, corrosion series testing, organic content testing, consolidation testing, unconfined compressive (UC) triaxial testing, unconsolidated undrained (UU) triaxial testing, consolidated-undrained (CU) triaxial testing, and direct shear testing. Table 4-1 summarizes the testing performed and quantity of each test. Laboratory results are presented in Appendix C.

Table 4-1. Laboratory Testing Summary

Test Type	Quantity
Natural Moisture Content	109
Atterberg Limits	102
Sieve Analysis/Soil Classification	113
Standard Proctor	4
Corrosion Series	4
Organic Content	1
Consolidation	2
UC Triaxial	4
UU Triaxial	2
CU Triaxial	3
Direct Shear	1

5 Seismic Considerations

A MASW test was performed by Terracon near the bridge location utilizing MASW methods and is included in Appendix B. The seismic site class was based on the data obtained from the boring logs, MASW testing, and the Site Class definitions given in Table 12-22 of the SCDOT GDM. For the proposed replacement bridge, the 100 feet of residual soils below the existing embankment classify as Site Class C with a characteristic average shear velocity of 1,511 ft/sec. The proposed bridge is classified as OC I and the proposed approach embankments within 150 feet of the bridge are classified as ROC I. Roadway embankments beyond 150 feet of the bridge are classified as ROC IV, in accordance with the Bridge Design Memorandum DM0211 dated July 7, 2011.

5.1 Acceleration Design Response Spectrum (ADRS)

The SCDOT Design-Build Group provided pseudo spectral accelerations (PSA) for the Safety Evaluation Earthquake (SEE) (3% probability of exceedance in 75 years) and the Functional Evaluation Earthquake (FEE) (15% probability of exceedance in 75 years). Under the geologically realistic condition, these values were provided for 5% critical damping and the peak ground acceleration (PGA) at the B-C boundary. The acceleration design response spectra (ADRS) curves were provided and the seismic design parameters derived from these curves include the FEE PGA (PGA_{FEE}), the FEE short period (0.2 second) Acceleration (S_{DS-FEE}), the FEE one second Acceleration (S_{D1-FEE}), the SEE PGA (PGA_{SEE}), the SEE short period Acceleration (S_{DS-SEE}), and the SEE one second Acceleration (S_{D1-SEE}). The seismic design parameters are summarized in Table 5-1 and the results of the ADRS analysis are presented in Appendix D.

Table 5-1. Seismic Design Parameters for Site Class C

Seismic Design Parameter	Value
PGA_{FEE}	0.11
S_{DS-FEE}	0.18
S_{D1-FEE}	0.08
PGA_{SEE}	0.29
S_{DS-SEE}	0.47
S_{D1-SEE}	0.23

5.2 Preliminary Geotechnical Seismic Hazard Screening

Sediments penetrated by the borings suggested residual soil profiles composed of undifferentiated Cretaceous sands and kaolin clays progressing from southwest to northeast, with thin accumulations of sands tentatively identified as Pinehurst Formation, kaolin clays of the Tertiary Huber Formation, and fine to coarse grain sands of the Tertiary Barnwell Group.

Due to the bridge being classified as OC I, only the soils within 150 feet of the proposed bridge location (B-31 and B-32) were screened for SSL. Roadway alignment beyond 150 feet of the bridge is classified as ROC IV and will not be designed for the extreme limit state. Section 7 provides a more detailed explanation.

Based on the geotechnical seismic hazard screening guidelines in Chapter 13 of the SCDOT GDM, the probability of seismic induced cyclic liquefaction or cyclic softening is low. However, liquefaction susceptibility is dependent on the long term elevation of the water table. The borings at the bridge were advanced using rotary wash drilling techniques and backfilled immediately after completion; therefore, 24-hour water table measurements were not obtained.

6 Preliminary Bridge Foundations

According to the SCDOT GDM, the GBLR is to contain limited geotechnical information and not provide engineering interpretations or recommendations. Therefore, only a brief discussion of possible foundation types and their feasibility will be discussed in this section of the report.

6.1 Allowable Foundation Types

Bridge foundation types including end bearing piles, friction piles, micropiles, or drilled shafts would be allowable given the subsurface profiles in the borings advanced near the proposed bridge site (B-31 and B-32).

Advanced borings penetrated 99.3 feet and 99.7 feet, respectively, without auger refusal prior to termination. Refusal was encountered during SPT sampling within boring B-31 leading to boring termination. As discussed in Section 2.2 of this report, published mapping suggests rock underlying these soils is crystalline, felsic to mafic, metamorphosed volcanic tuff, mudstones, and quartzite of the Carolina Slate Group with the potential for intrusive bodies of Columbia metagranite. Due to this preliminary subsurface investigation not including rock coring, bedrock depths and properties cannot be estimated and must be confirmed prior to considering rock bearing foundations.

Bridge Boring B-31 encountered an interval producing flowing water from 60.5 feet to 64.0 feet (elevation range 341.9–338.4) which was identified as an artesian aquifer on the soil test boring log in Appendix B. However, a similar interval was not encountered within the other bridge boring, B-32. Refer to Section 2.2 for further discussion of drilling techniques and subsurface conditions at bridge borings. If the final bridge subsurface investigation confirms the presence of an aquifer, the feasibility and constructability of drilled shafts will need to be thoroughly evaluated.

6.2 Corrosion and Deterioration Protection

The purpose of corrosion and deterioration testing is to provide soils data for use by a structural engineer to provide any necessary protection to the piling, concrete, reinforcing steel, etc. Corrosion and deterioration protection requirements and guidelines for piling are set forth in LRFD Section 10.7.5. Site-specific laboratory testing selected were pH, resistivity, chlorides, and sulfates. HDR|ICA completed pH and resistivity testing, and

Microbac Laboratories, Inc. completed water soluble chloride and sulfate testing. The full corrosion and deterioration testing results are summarized in Table 6-1 below and are included in Appendix C.

Table 6-1. Corrosion and Deterioration Test Summary

Test Hole No.	Bag Number	Station	Offset	Sample Depth	Chloride (ppm)	Sulfate (ppm)	pH	Restivity (ohm-cm)
B-6A	Bag-5	32+759	10' RT	0.3-4.5'	6.36	18.7	6.3	15,072
B-6A	Bag-6	32+759	10' RT	4.5-10.0'	18.4	154.0	5.5	33,912
B-27A	Bag-2	74+941	9' LT	5.3-7.3'	3.94	22.1	6.4	23,550
B-27A	Bag-3	74+941	9' LT	7.3-26.5'	5.24	32.2	5.7	39,564

The following soil conditions should be considered as indicative of a potential pile corrosion or deterioration situation:

- Resistivity less than 2,000 ohm-cm
- pH less than 5.5
- pH between 5.5 and 8.5 in soils with high organic content
- Sulfate concentrations greater than 1,000 ppm

Results of the corrosion and deterioration testing indicated that the site has low potential for pile deterioration based on the sulfate concentration, resistivity, pH, and the geographical location of the project site. However, interpretation of the data and corrosion protection of the bridge structural components shall be provided by the structural engineer for the project.

6.3 Vibration Monitoring

Given the proximity to an existing railroad which will be in operation during construction, vibration monitoring will likely be necessary during pile driving.

7 Preliminary Bridge Approach and Roadway Embankments

Placement of new approach embankments will be required to achieve the proposed grades for the proposed bridge construction. The proposed bridge is classified as OC I and, in accordance with SCDOT Bridge Design Memorandum DM0211, the proposed bridge approach embankments within 150 feet of the bridge are classified as ROC I. Roadway embankments beyond 150 feet of the bridge are classified as ROC IV. In accordance with the SCDOT GDM, the approach embankments shall be designed and evaluated for the SLS and EE I limit states and roadway beyond 150 feet of the bridge

will be designed for SLS using resistance factors in Chapter 9 and performance limits in Chapter 10 of the SCDOT GDM.

As of completing this report, embankment cross-sections and bridge profiles were not available; however, slope stability and settlement analyses shall be completed at critical roadway and approach embankment sections during the final design in accordance with the SCDOT GDM.

8 Limitations to Report

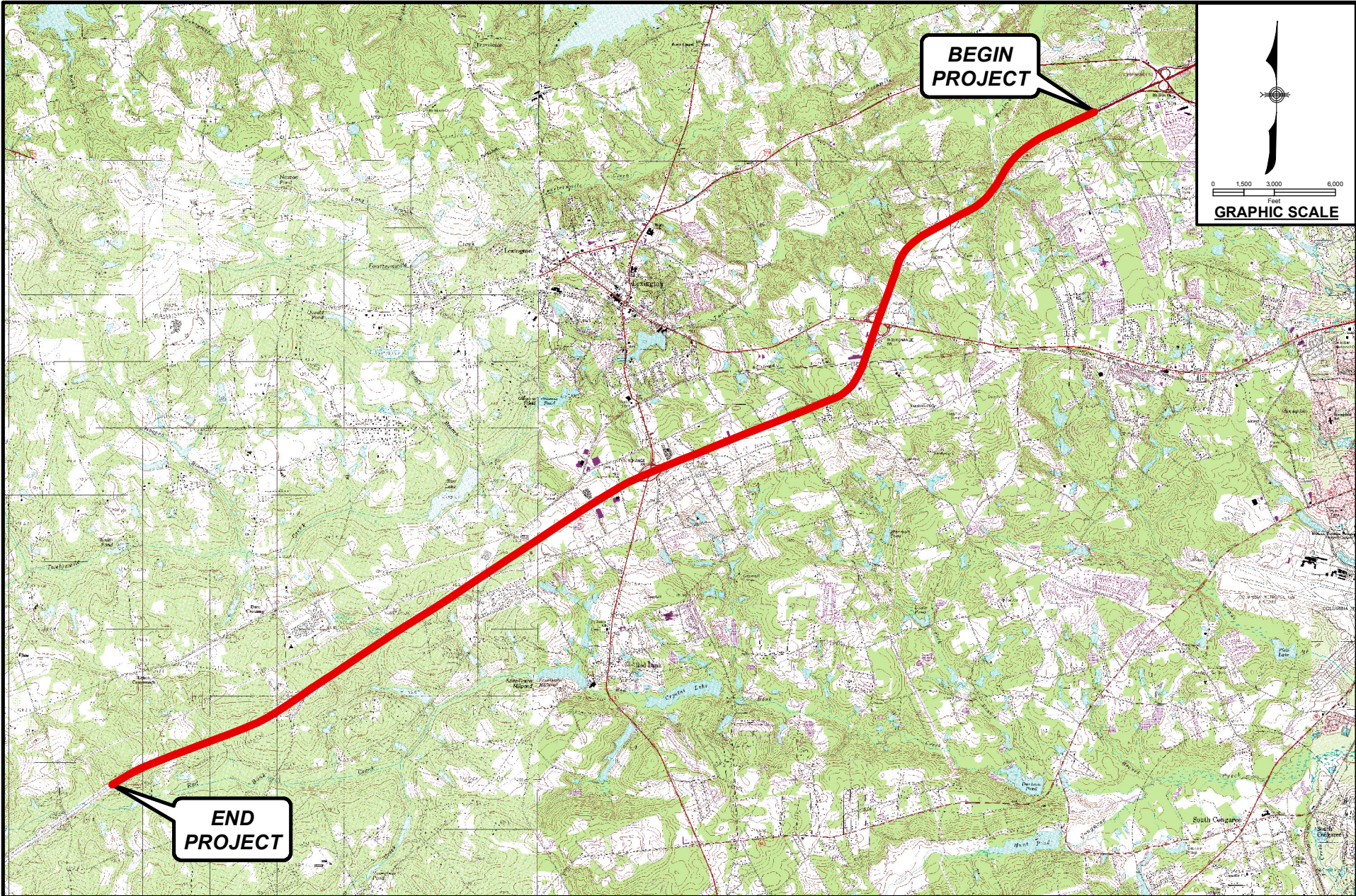
Discussion of geologic and geotechnical conditions observed in the field, observed from field sample recovery, observed in laboratory examination of samples and computed data analysis, which are all quantified in this data report, should be considered preliminary investigation and are subject to change upon the acquisition of additional data during the final investigation. More detailed subsurface investigation including additional borings and laboratory testing for the purposes of evaluating cut slopes, embankment slopes, embankment settlements, retaining walls and bridge foundation types and capacities will be required to ensure a sufficient confidence in selected design parameters. 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.

Bridge foundation recommendations shall be considered preliminary and subject to change upon the acquisition of additional data from the final subsurface investigation and structural design loading information. The preliminary recommendations in this report are meant to provide the designers and SCDOT with information to compare and analyze potential design recommendations and alternatives which might be proposed in a final, detailed design for the proposed bridge of I-20 over Norfolk Southern Railroad tracks and Meat Plant (Frontage) Road Lexington County, South Carolina. In addition, the preliminary design and recommendations discussed in this report shall not be a substitute for final design and recommendations for the proposed structure.

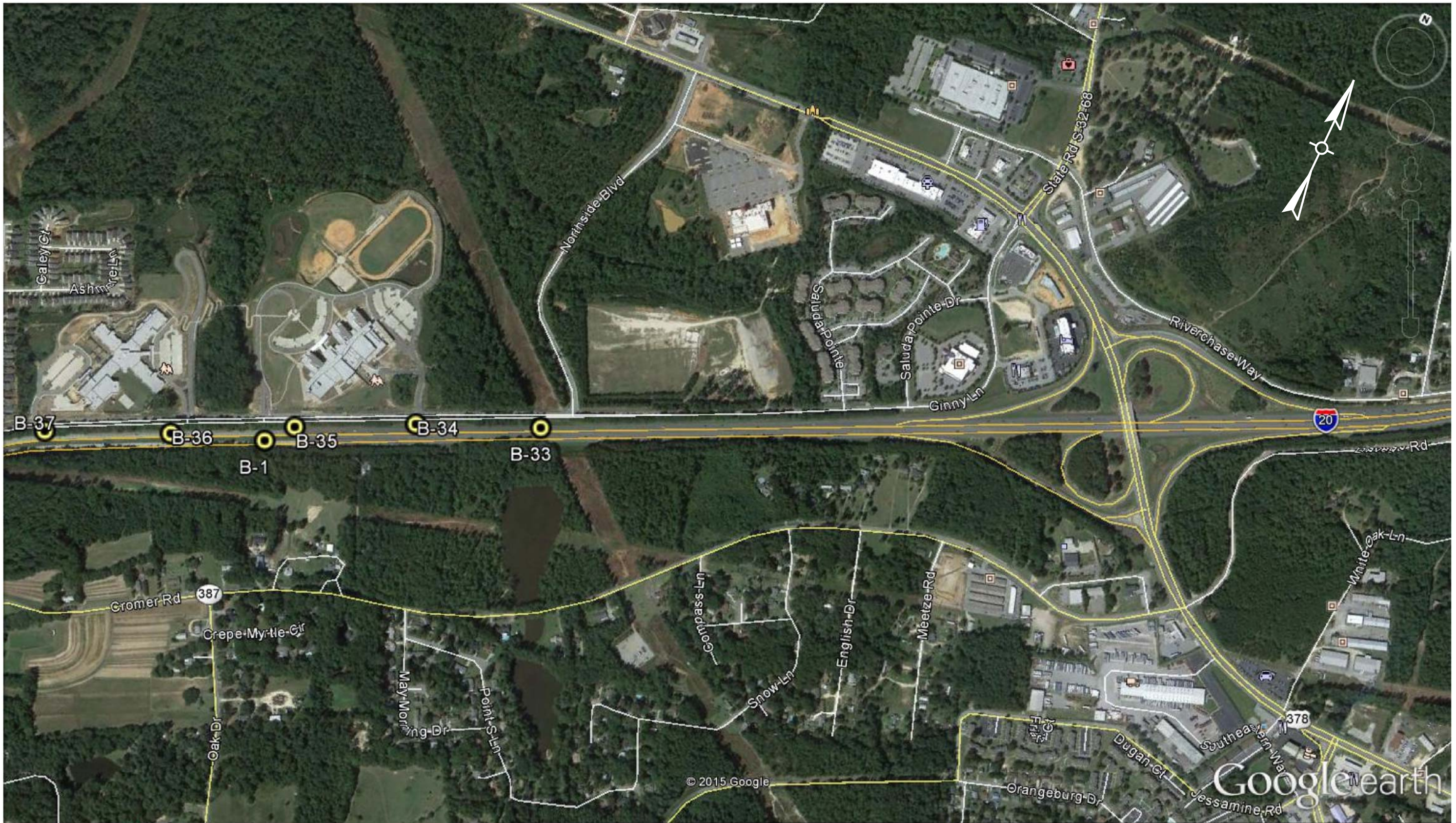
9 References

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Appendix A. Site Vicinity Map and Test Location Plans

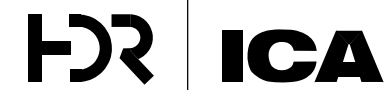


I-20 Roadway Improvements
IRMO, LEXINGTON & BARR LAKE QUADRANGLES
7.5 MINUTE SERIES (TOPOGRAPHIC)
SOUTH CAROLINA - LEXINGTON COUNTY



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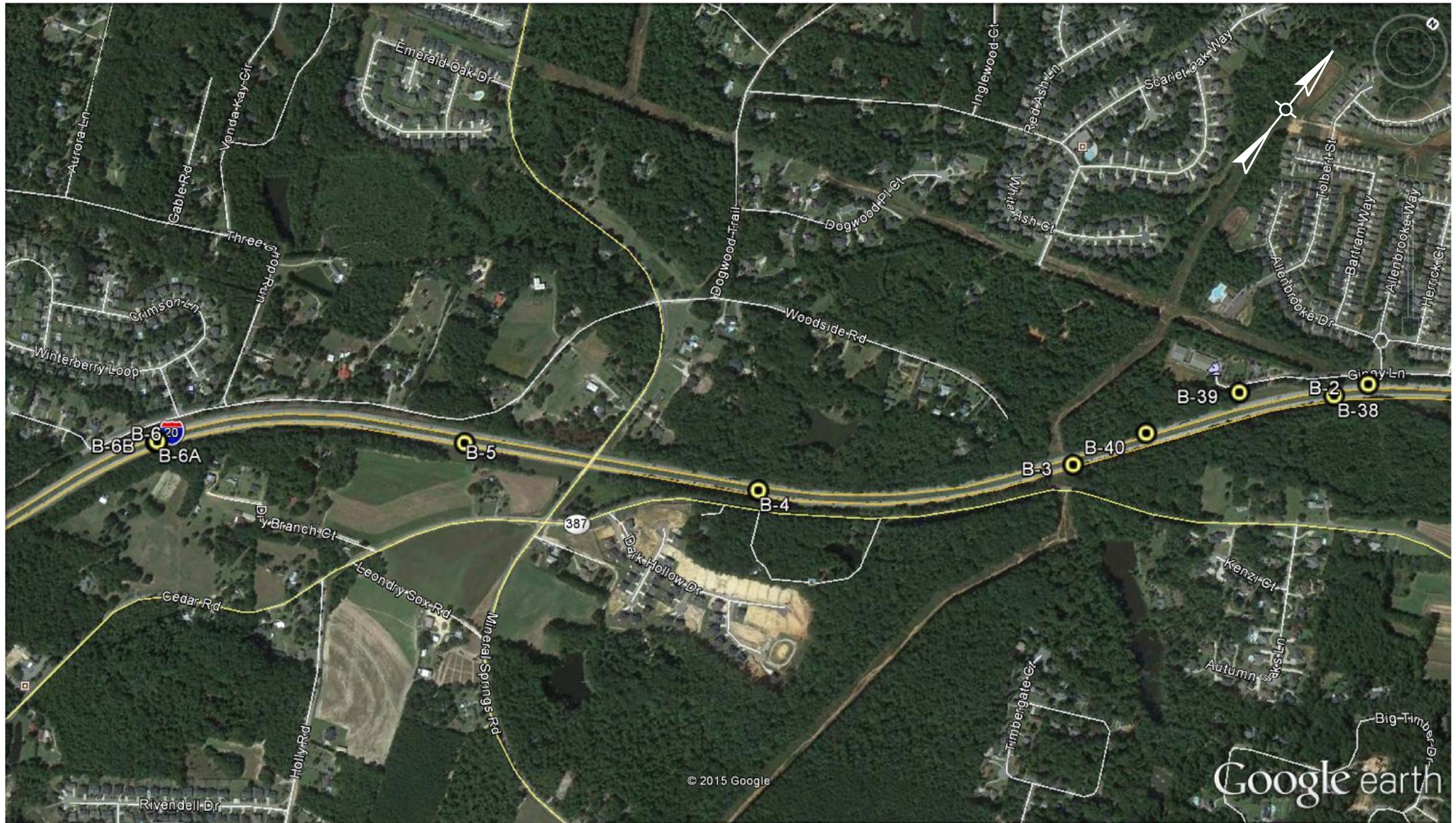
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**BORING LOCATION PLAN
I-20 ROADWAY IMPROVEMENTS
LEXINGTON COUNTY**

DRAWING No. :

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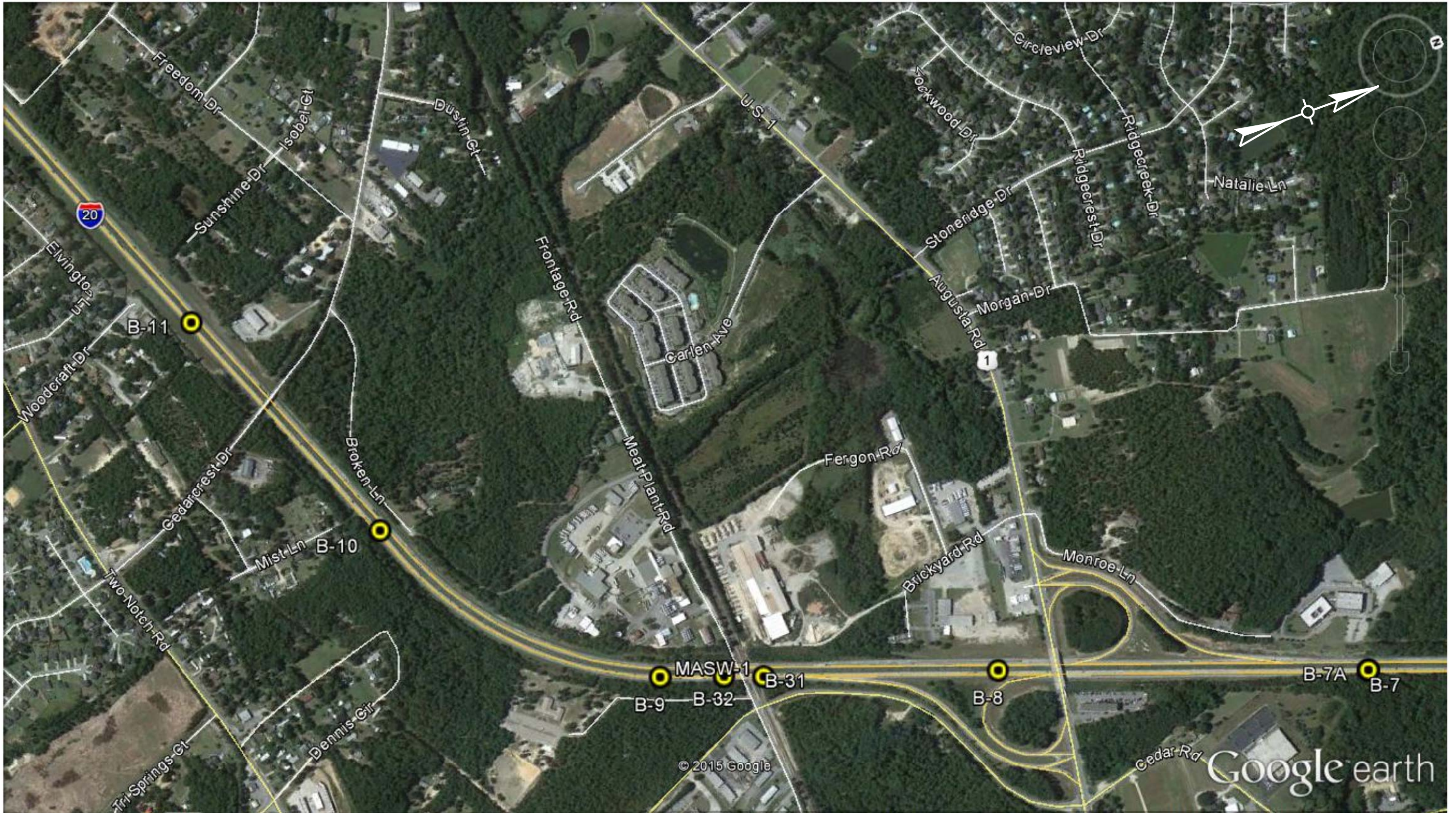
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**BORING LOCATION PLAN
I-20 ROADWAY IMPROVEMENTS
LEXINGTON COUNTY**

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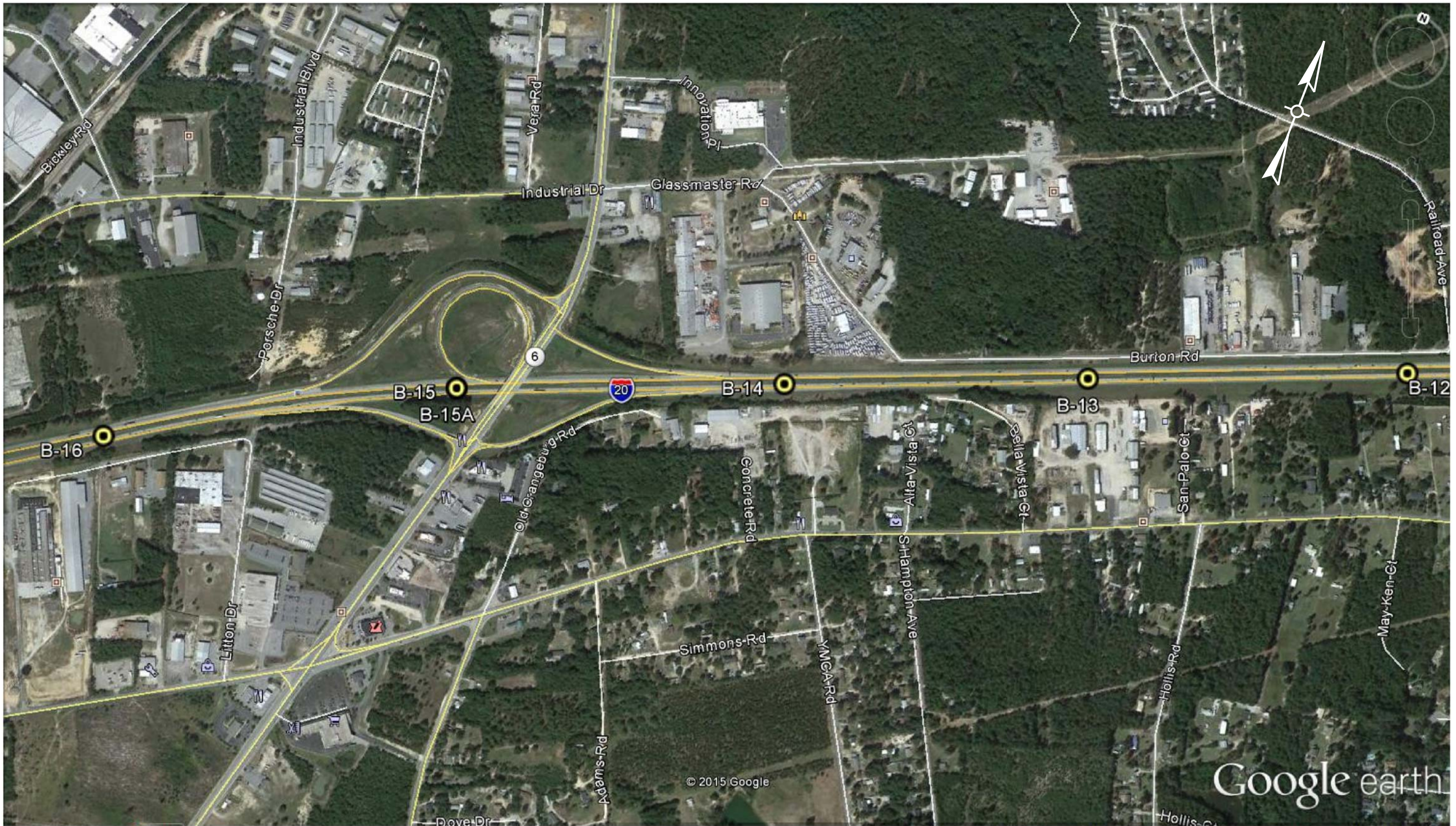
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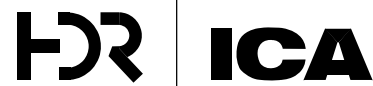
**BORING LOCATION PLAN
I-20 ROADWAY IMPROVEMENTS
LEXINGTON COUNTY**

DRAWING No. :
3



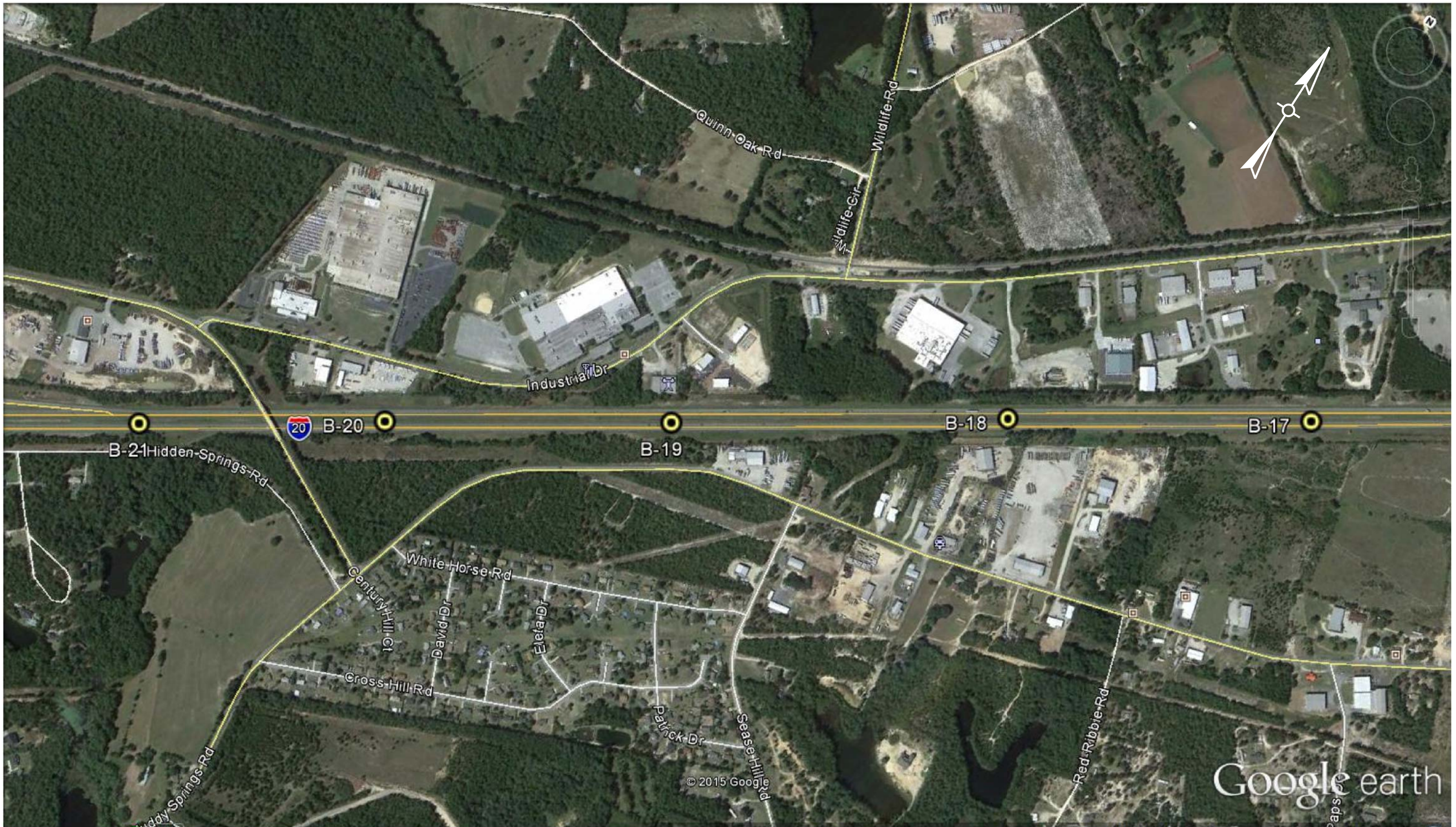
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PROJECT No. :	251829	DESIGNED BY :	DLC
DATE :	7-29-2015	DRAWN BY :	TAR
SCALE :	1" = 600'	CHECKED BY :	WDS



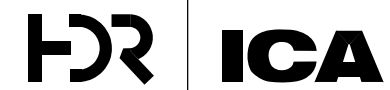
**BORING LOCATION PLAN
I-20 ROADWAY IMPROVEMENTS
LEXINGTON COUNTY**

DRAWING No. :
4



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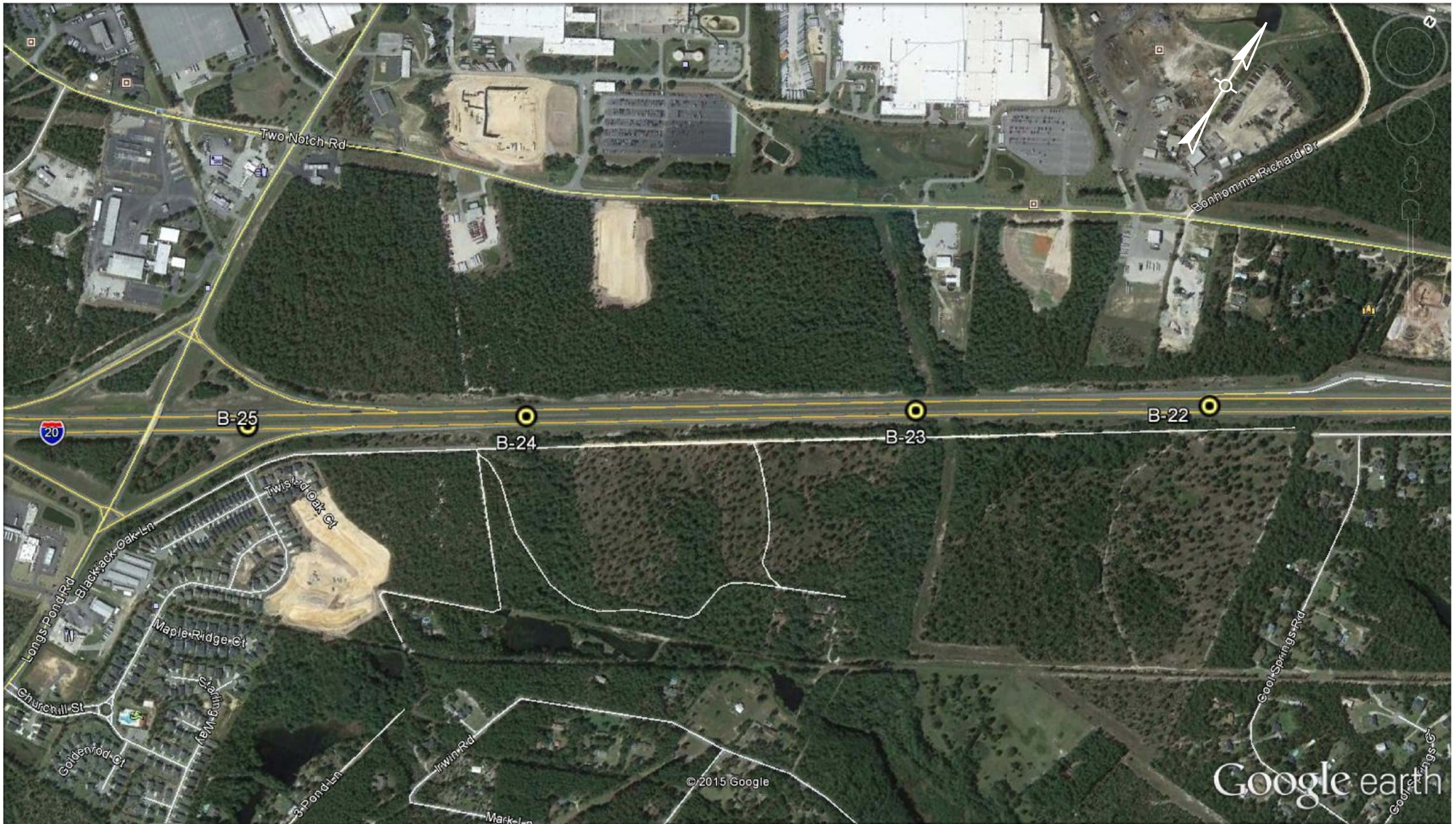
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SCALE :	1" = 600'	CHECKED BY :	WDS



**BORING LOCATION PLAN
I-20 ROADWAY IMPROVEMENTS
LEXINGTON COUNTY**

DRAWING No. :

5



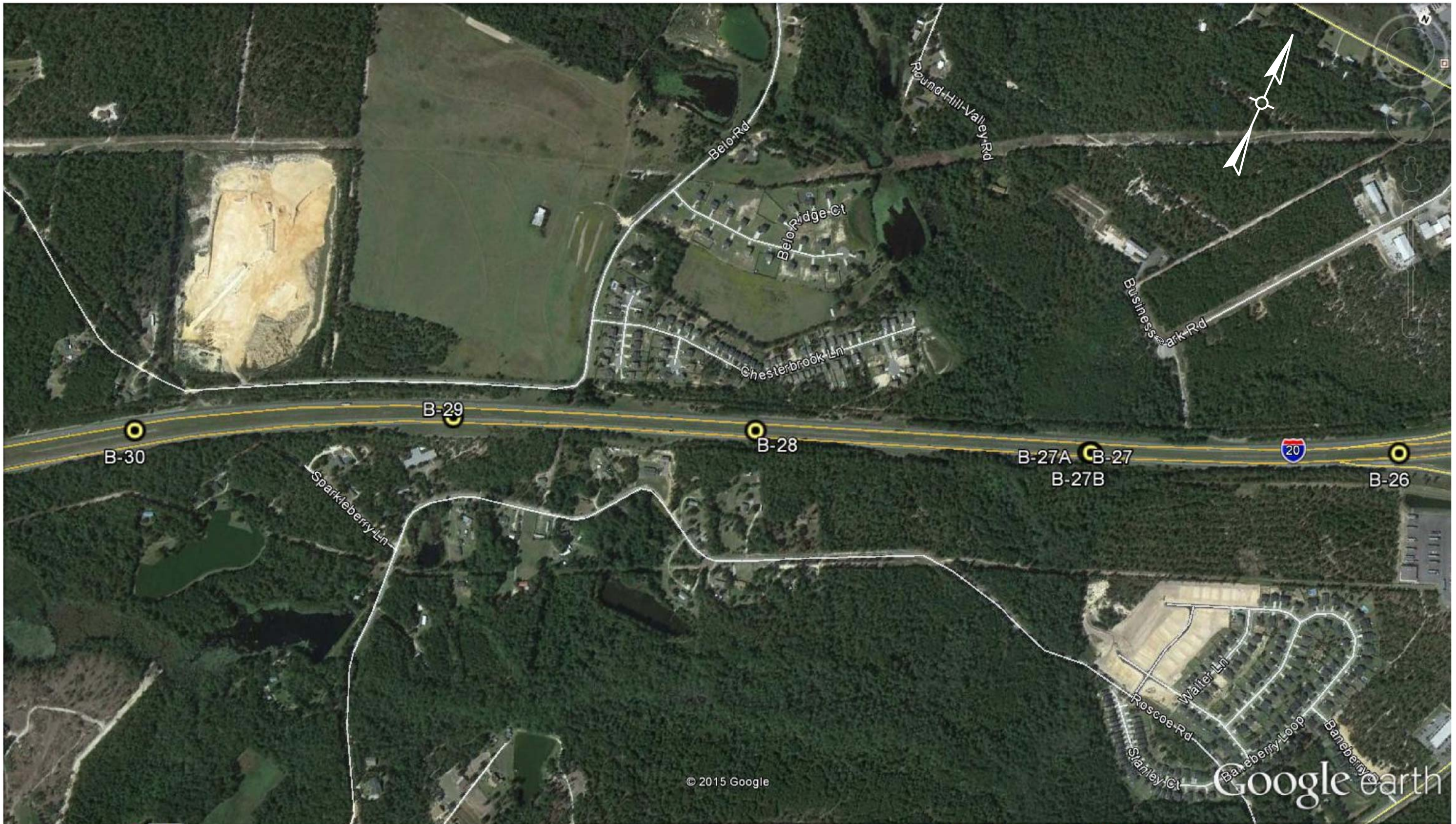
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PROJECT No. :	251829	DESIGNED BY :	DLC
DATE :	7-29-2015	DRAWN BY :	TAR
SCALE :	1" = 600'	CHECKED BY :	WDS



**BORING LOCATION PLAN
I-20 ROADWAY IMPROVEMENTS
LEXINGTON COUNTY**

DRAWING No. :
6



\$\$\$\$date\$\$\$ \$\$\$dgnspc\$\$\$\$\$*

PROJECT No. :	251829	DESIGNED BY :	DLC
DATE :	7-29-2015	DRAWN BY :	TAR
SCALE :	1" = 600'	CHECKED BY :	WDS

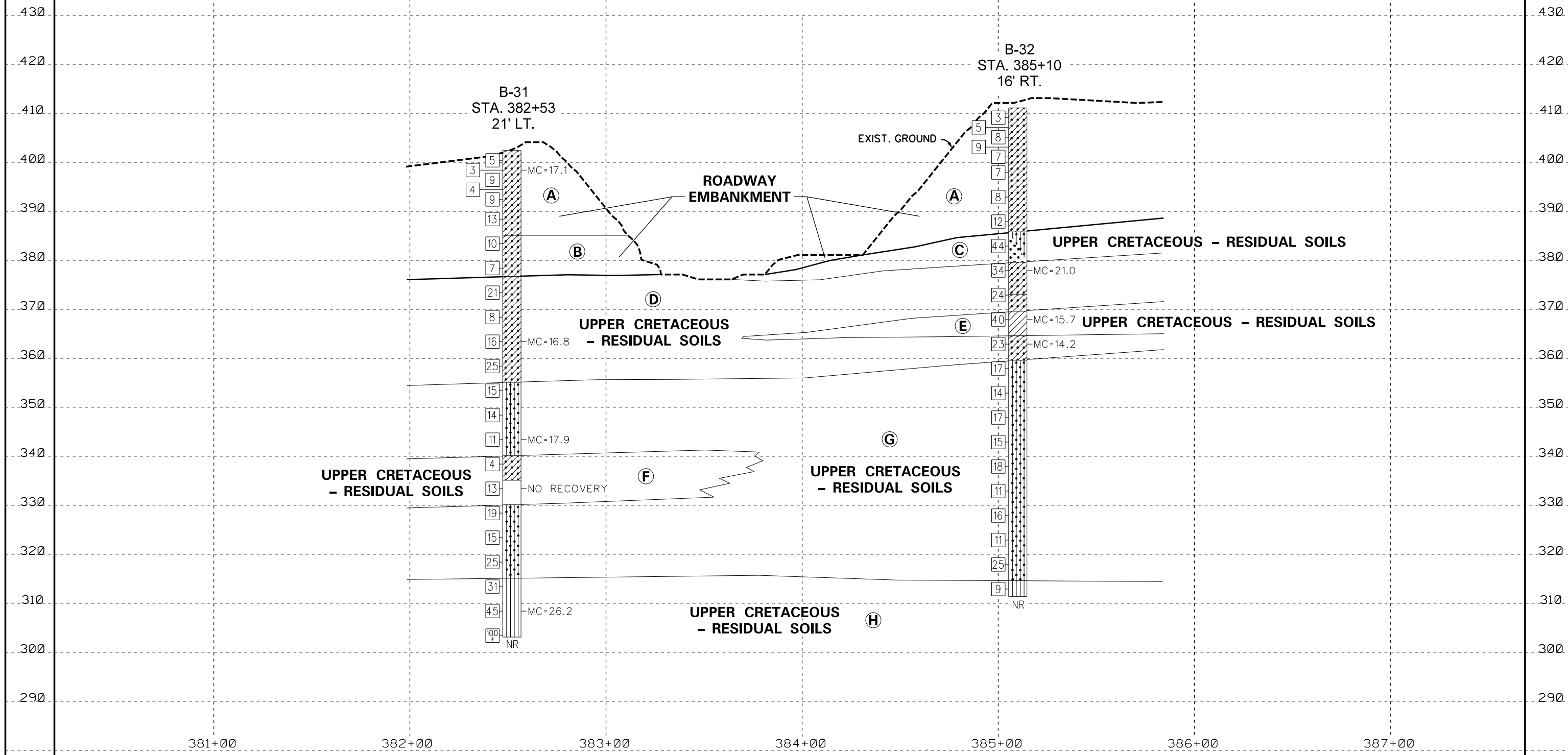


**BORING LOCATION PLAN
I-20 ROADWAY IMPROVEMENTS
LEXINGTON COUNTY**

DRAWING No. :

7

I-20 BRIDGE AT CENTERLINE



MATERIAL DESCRIPTIONS

- (A)** Very loose to medium dense, medium grain, clayey SAND.
- (B)** Loose to medium dense, fine to medium grain, clayey SAND.
- (C)** Dense, poorly graded, fine to medium grain SAND w/trc. silt.
- (D)** Loose to dense, fine to medium grain, clayey SAND.
- (E)** Hard, high plasticity, sandy, lean CLAY.
- (F)** Very loose to medium dense, fine to medium grain, clayey SAND.
- (G)** Medium dense, medium grain, silty SAND.
- (H)** Hard, low to medium plasticity, sandy SILT.

LEGEND OF MATERIAL GRAPHICS FOR SOIL TEST BORINGS

SP		POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES	ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK, FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
SM		SILTY SANDS, SAND-SILT MIXTURE	CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
SC		CLAYEY SANDS, SAND CLAY MIXTURE			

MISCELLANEOUS SYMBOLS

	STANDARD PENETRATION RESISTANCE
NR	BORING TERMINATED WITHOUT REFUSAL

4			
3			
2			
1			
REV. NO.	BY	DATE	DESCRIPTION OF REVISION
TOPO.		DATE	SCALE
DWG.		DATE	1" = 50' HORIZ.
R/W		DATE	1" = 20' VERT.

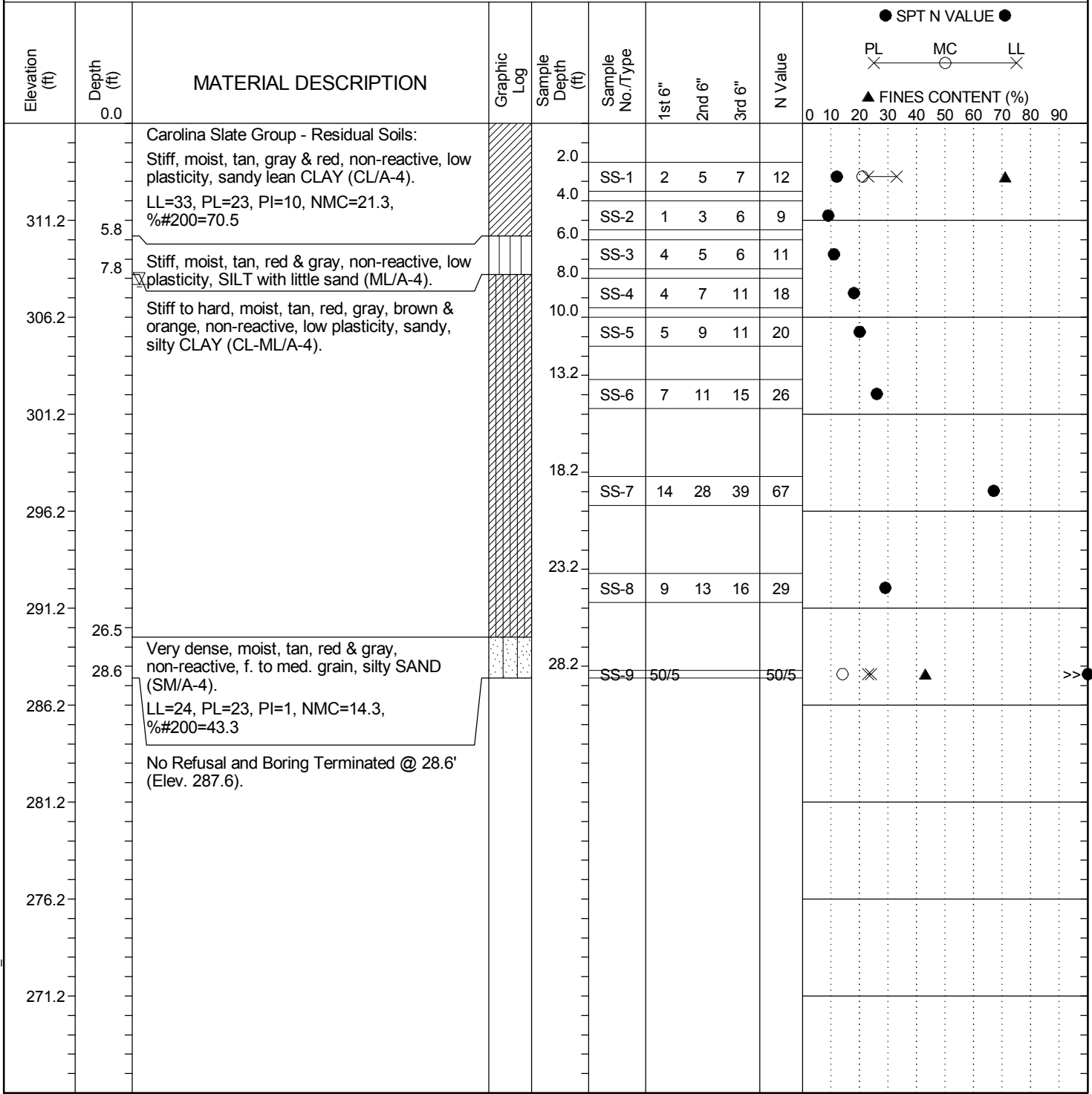


LEXINGTON COUNTY
SOUTH CAROLINA
I-20 BRIDGE OVER
NORFOLK SOUTHERN RAILROAD
BRIDGE PROFILE

Appendix B. Soil Test Boring Logs & MASW Profile

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-1	Boring Location: 226+34	Offset: 1' Lt.	Alignment: Existing
Elev.: 316.2 ft	Latitude: 34.00465	Longitude: 81.16507	Date Started: 2/6/2015
Total Depth: 28.6 ft	Soil Depth: 28.6 ft	Core Depth: 0.0 ft	Date Completed: 2/6/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 8.3 ft.	24HR: Dry



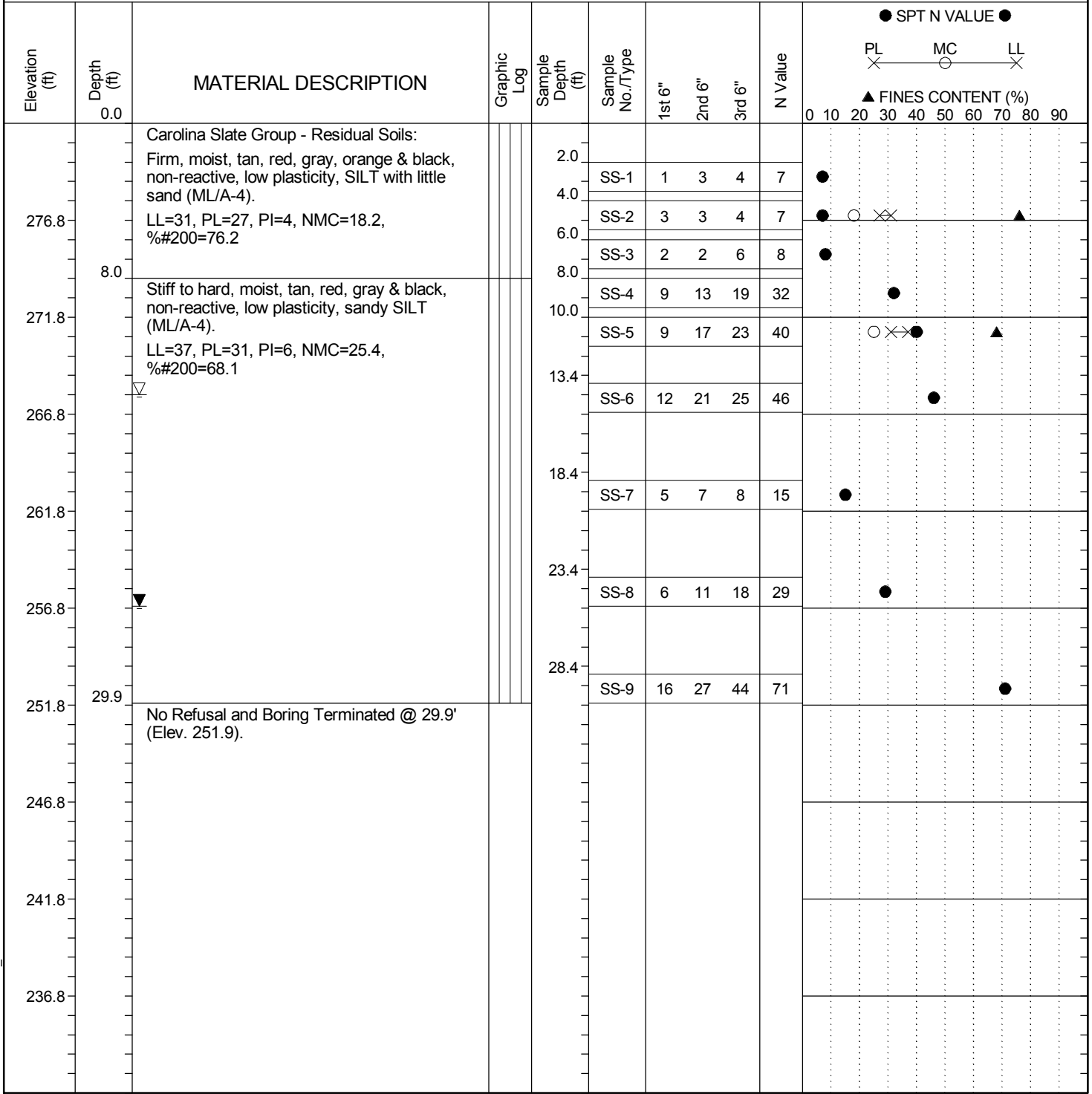
LEGEND

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

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-2	Boring Location: 250+56	Offset: 6' Rt.	Alignment: Existing
Elev.: 281.8 ft	Latitude: 34.00125	Longitude: 81.1719	Date Started: 2/7/2015
Total Depth: 29.9 ft	Soil Depth: 29.9 ft	Core Depth: 0.0 ft	Date Completed: 2/7/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 14.0 ft.	24HR: 24.9 ft.



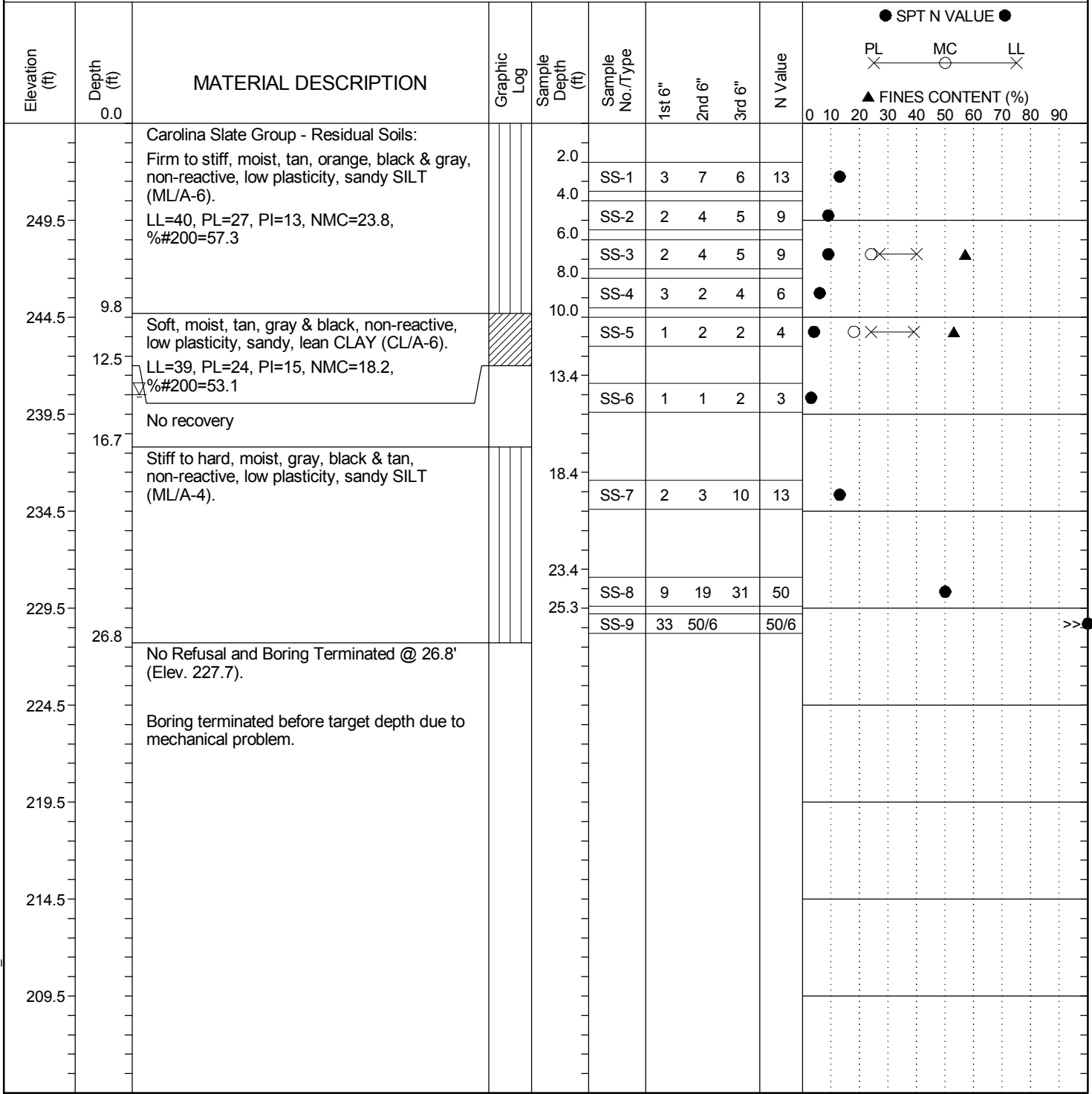
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-3	Boring Location: 267+91	Offset: 6' Lt.	Alignment: Existing
Elev.: 254.5 ft	Latitude: 33.99741	Longitude: 81.17528	Date Started: 2/5/2015
Total Depth: 26.8 ft	Soil Depth: 26.8 ft	Core Depth: 0.0 ft	Date Completed: 2/5/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 14.0 ft.	24HR: NA



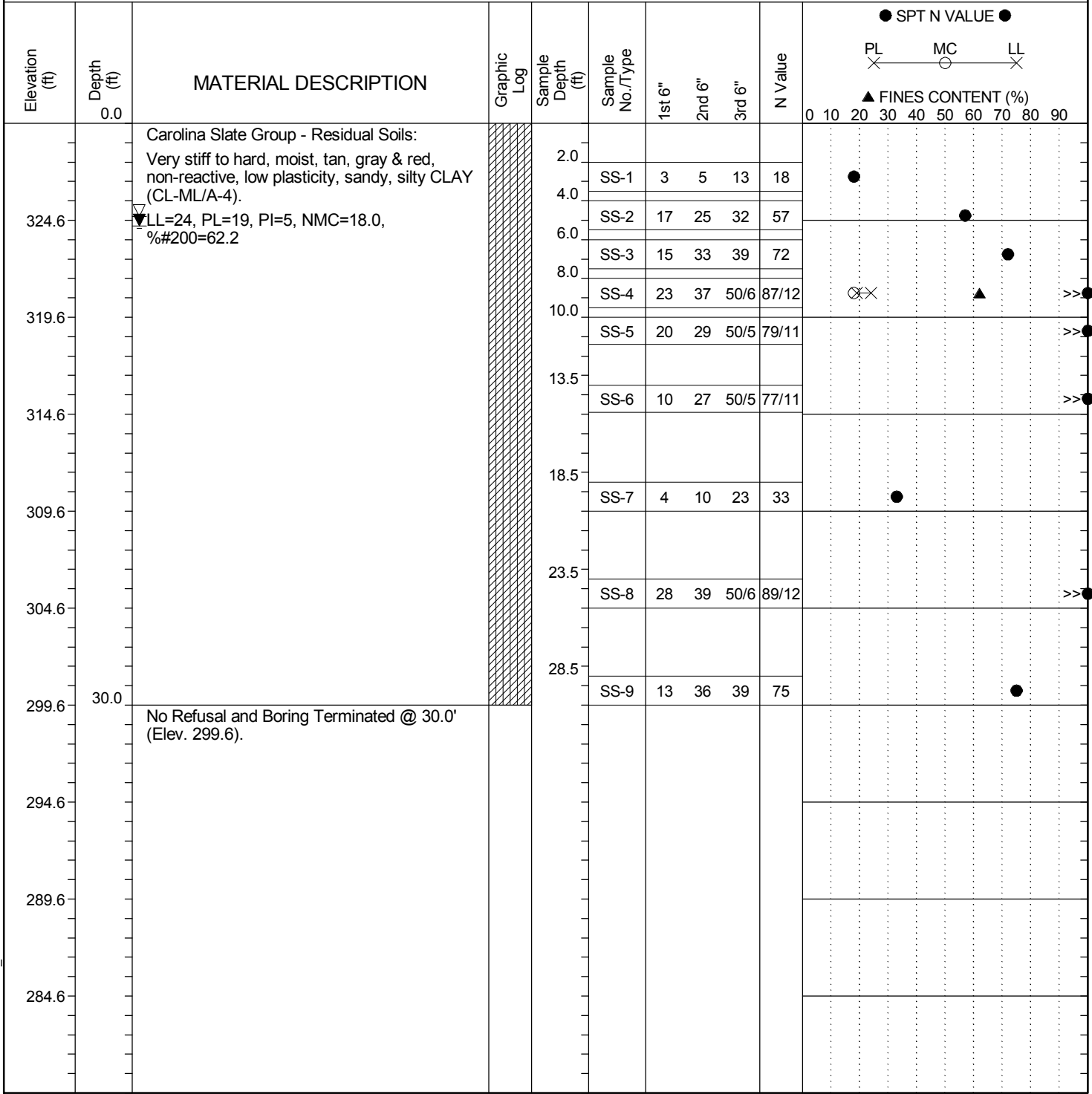
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-4	Boring Location: 288+48	Offset: 11' Rt.	Alignment: Existing
Elev.: 329.6 ft	Latitude: 33.99355	Longitude: 81.1802	Date Started: 2/7/2015
Total Depth: 30 ft	Soil Depth: 30 ft	Core Depth: 0.0 ft	Date Completed: 2/7/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 4.8 ft.	24HR: 5.3 ft.



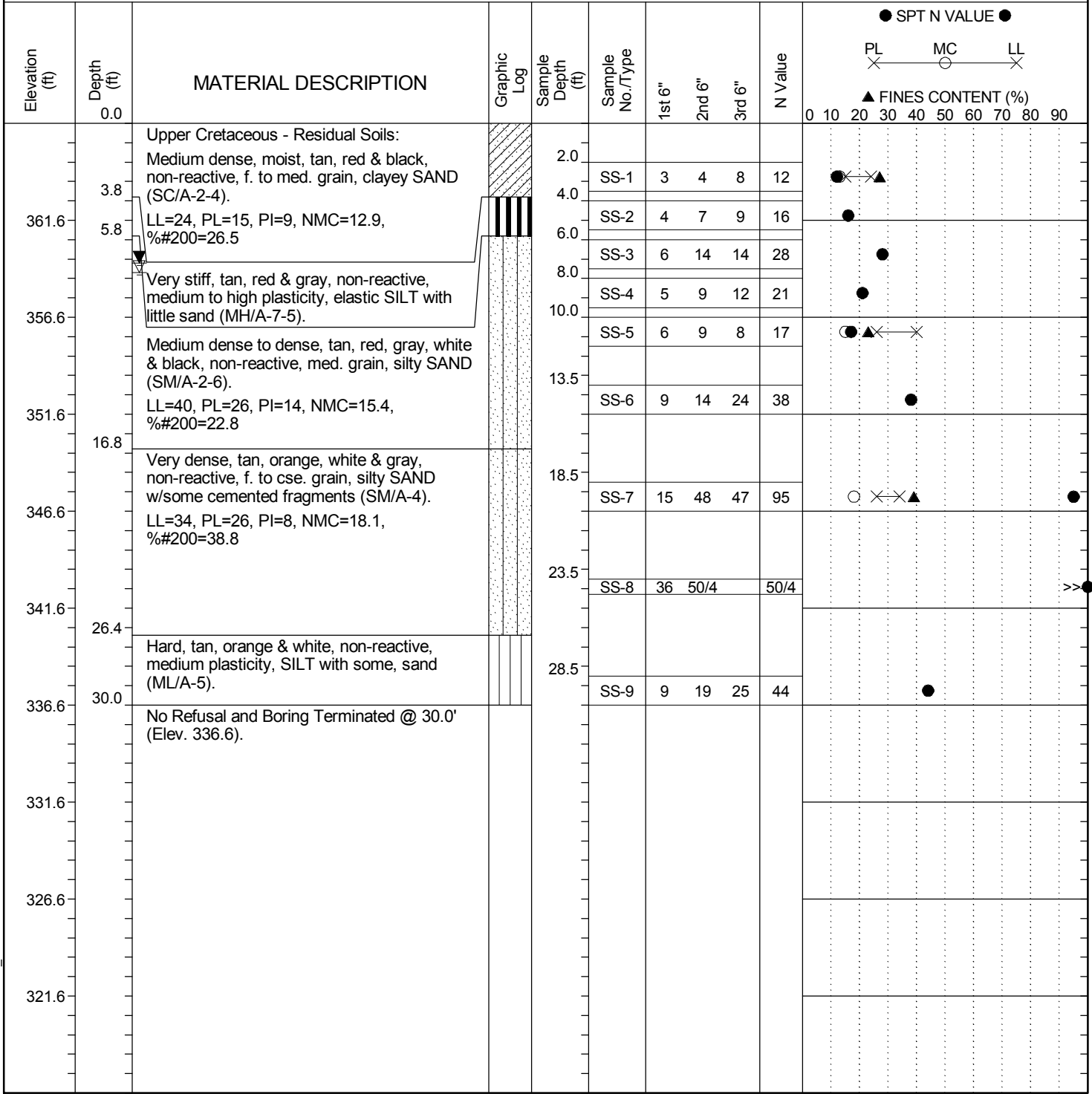
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-5	Boring Location: 307+65	Offset: 12' Lt.	Alignment: Existing
Elev.: 366.6 ft	Latitude: 33.99097	Longitude: 81.18566	Date Started: 2/4/2015
Total Depth: 30 ft	Soil Depth: 30 ft	Core Depth: 0.0 ft	Date Completed: 2/4/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 7.7 ft.	24HR: 7.2 ft.



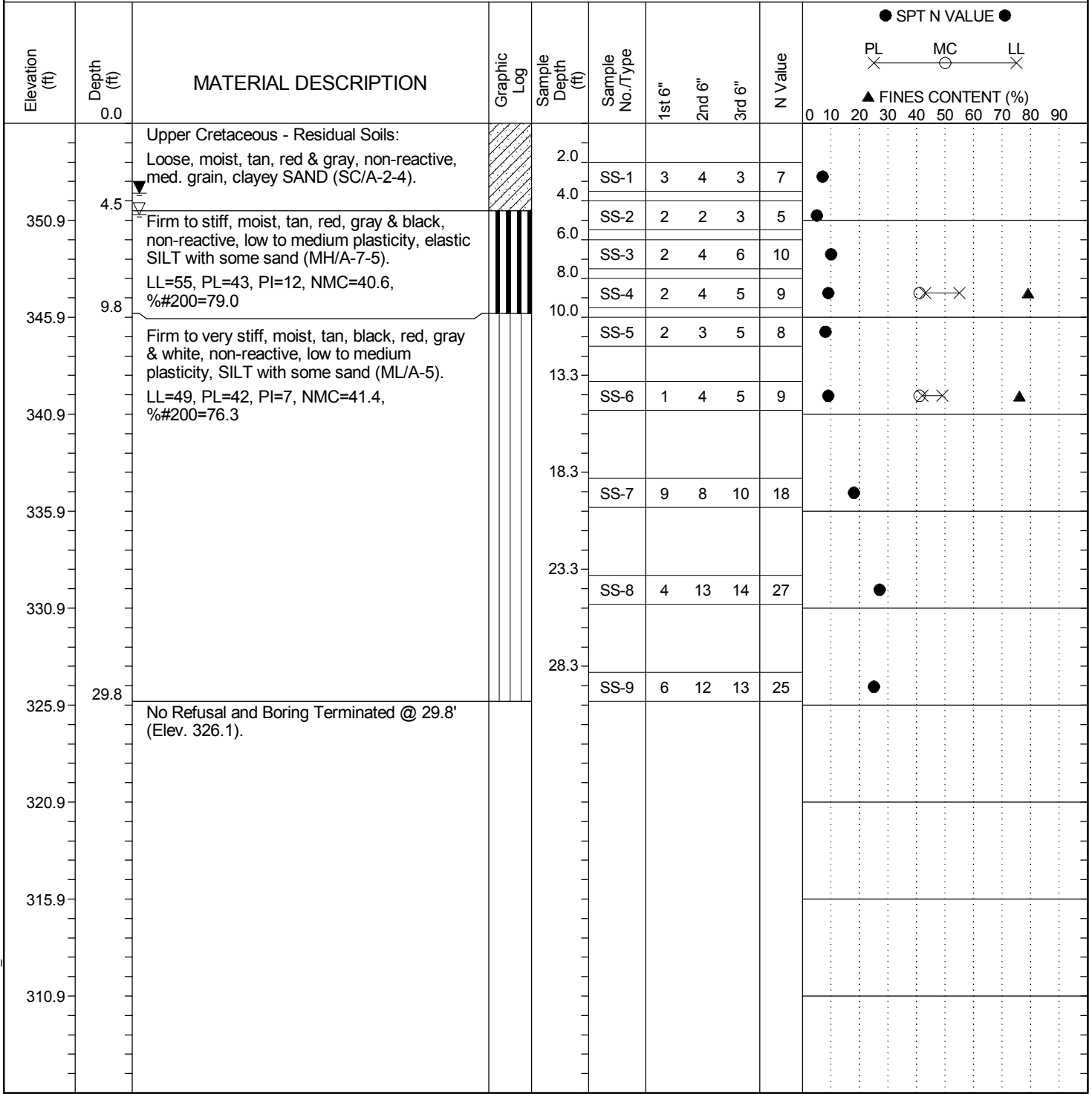
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-6	Boring Location: 327+66	Offset: 9' Rt.	Alignment: Existing
Elev.: 355.9 ft	Latitude: 33.98759	Longitude: 81.19076	Date Started: 2/7/2015
Total Depth: 29.8 ft	Soil Depth: 29.8 ft	Core Depth: 0.0 ft	Date Completed: 2/7/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 4.7 ft.	24HR: 3.6 ft.



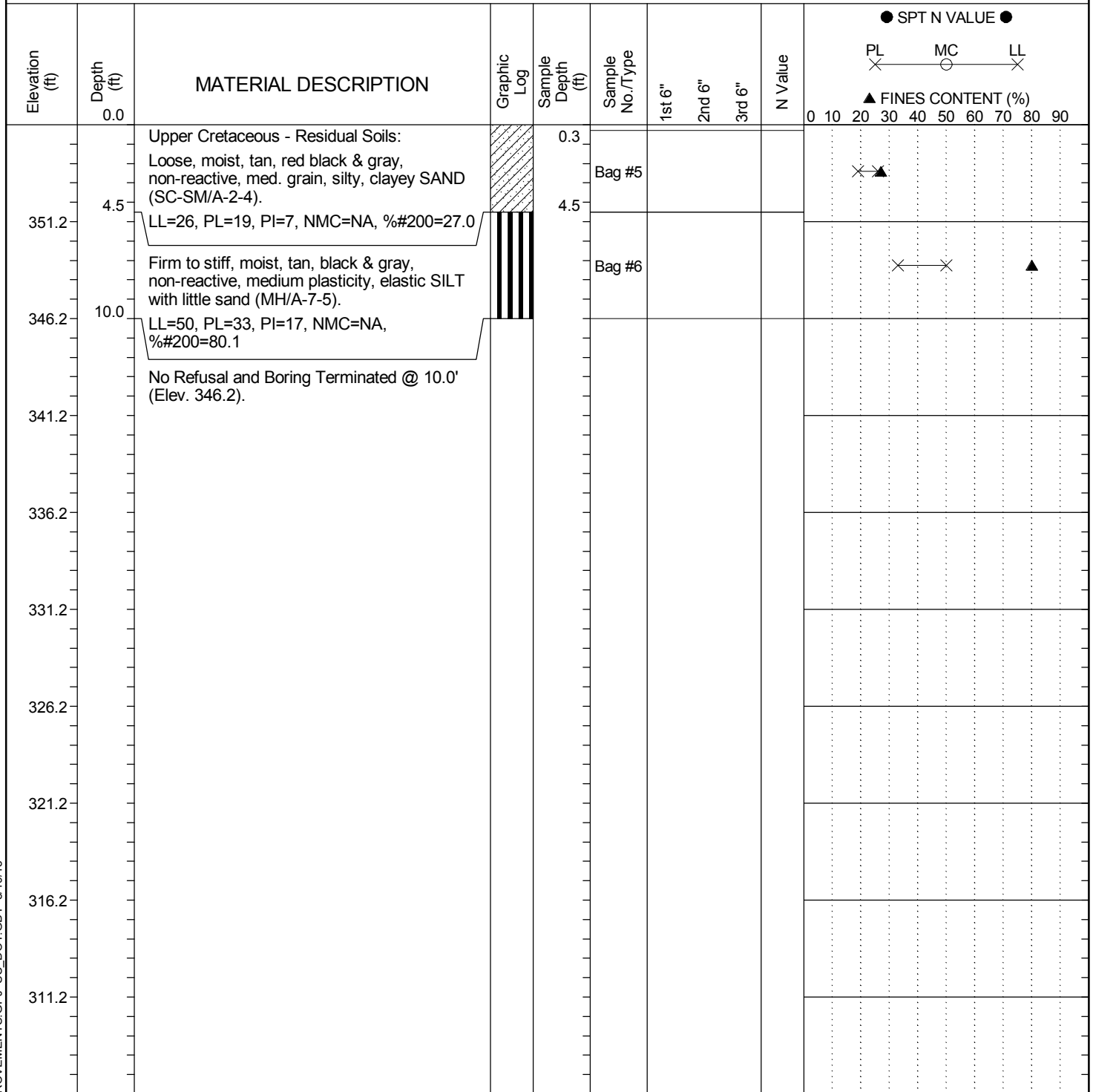
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-6A	Boring Location: 327+59	Offset: 10' Rt.	Alignment: Existing
Elev.: 356.2 ft	Latitude: 33.9876	Longitude: 81.19075	Date Started: 2/7/2015
Total Depth: 10 ft	Soil Depth: 10 ft	Core Depth: 0.0 ft	Date Completed: 2/7/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB NA	24HR: NA



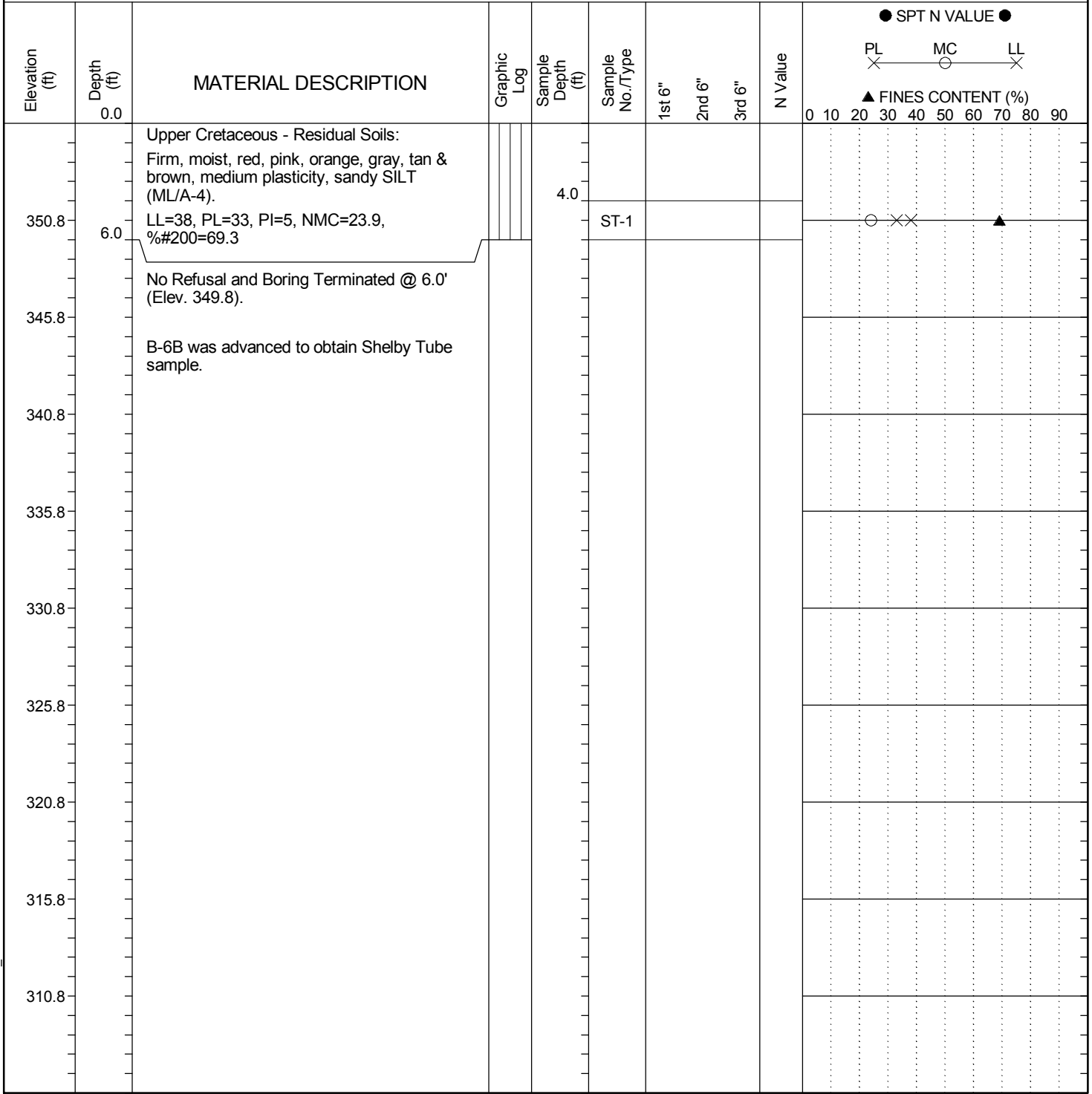
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-6B	Boring Location: 327+67	Offset: 10' Rt.	Alignment: Existing
Elev.: 355.8 ft	Latitude: 33.98759	Longitude: 81.19076	Date Started: 2/8/2015
Total Depth: 6 ft	Soil Depth: 6 ft	Core Depth: 0.0 ft	Date Completed: 2/8/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB NA	24HR: NA



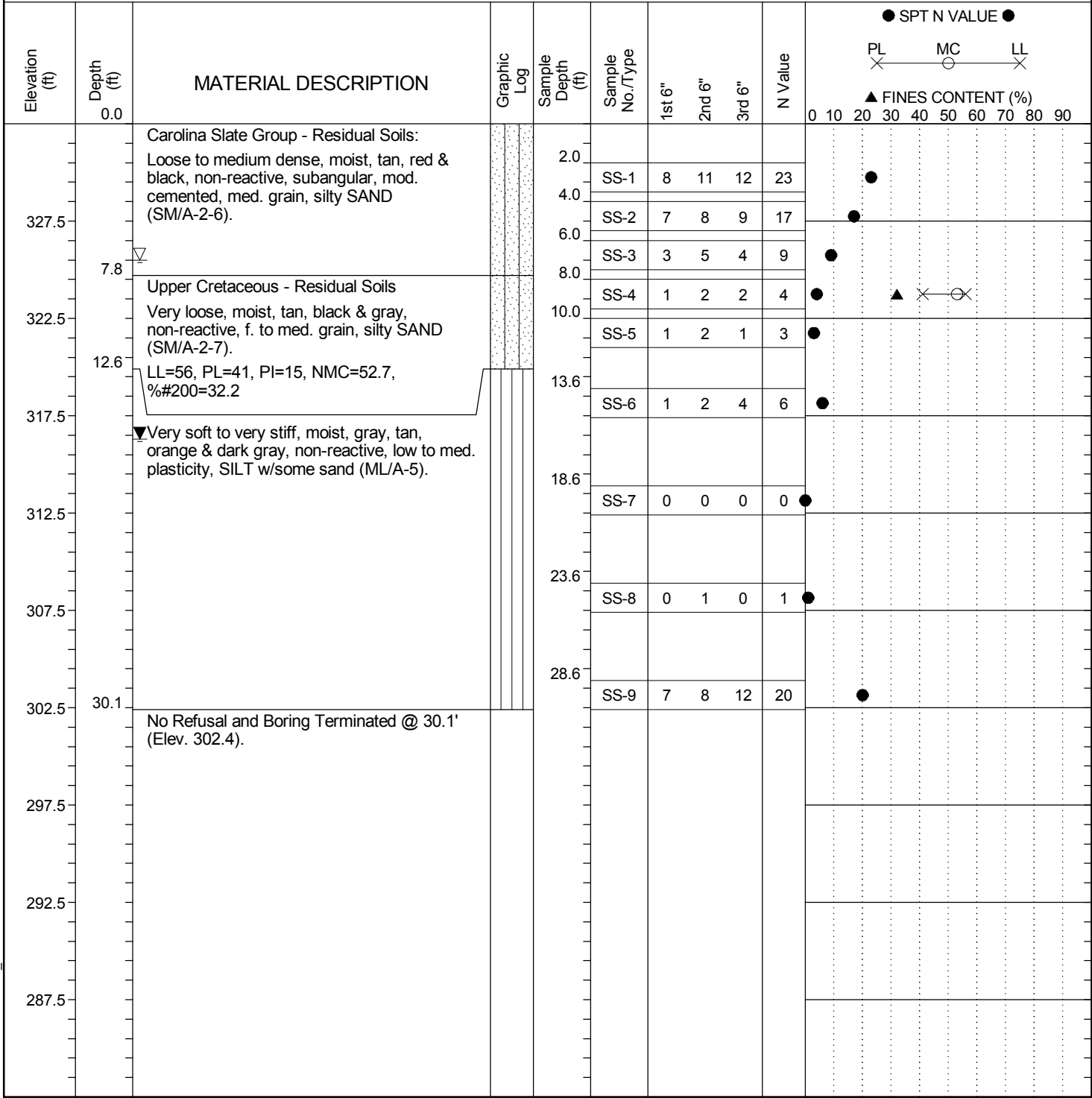
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-7	Boring Location: 343+67	Offset: 14' Lt.	Alignment: Existing
Elev.: 332.5 ft	Latitude: 33.9835	Longitude: 81.19268	Date Started: 2/4/2015
Total Depth: 30.1 ft	Soil Depth: 30.1 ft	Core Depth: 0.0 ft	Date Completed: 2/4/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 7.0 ft.	24HR: 16.2 ft.



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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-7A	Boring Location: 343+68	Offset: 14' Lt.	Alignment: Existing
Elev.: 332.6 ft	Latitude: 33.98349	Longitude: 81.19268	Date Started: 2/4/2015
Total Depth: 10 ft	Soil Depth: 10 ft	Core Depth: 0.0 ft	Date Completed: 2/4/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB NA	24HR: NA

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 (%)									
327.6	0.0	Carolina Slate Group - Residual Soils: Very loose to medium dense, moist, brown, tan & gray, non-reactive, f. to med. grain, silty SAND (SM/A-7-5). LL=60, PL=48, PI=12, NMC=55.6, % _{#200} =40.6																				
322.6	10.0	No Refusal and Boring Terminated @ 10.0' (Elev. 322.6). B-7A was advanced to obtain Shelby Tube sample.		8.0	ST-1																	
317.6																						
312.6																						
307.6																						
302.6																						
297.6																						
292.6																						
287.6																						

LEGEND

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

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-8	Boring Location: 367+54	Offset: 4' Rt.	Alignment: Existing
Elev.: 354.2 ft	Latitude: 33.97733	Longitude: 81.19537	Date Started: 2/8/2015
Total Depth: 29.8 ft	Soil Depth: 29.8 ft	Core Depth: 0.0 ft	Date Completed: 2/8/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 6.1 ft.	24HR: 6.0 ft.

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											
										0	10	20	30	40	50	60	70	80	90		
349.2	0.0	Upper Cretaceous - Residual Soils: Loose to medium dense, moist, tan, orange, gray & white, non-reactive, subangular, weakly cemented, med. grain, silty SAND (SM/A-2-6). ▼ LL=39, PL=28, PI=11, NMC=22.6, % #200=18.3		2.0	SS-1	3	3	4	7	●											
				4.0	SS-2	2	3	7	10	●											
				6.0	SS-3	6	5	5	10	●											
				8.0	SS-4	3	4	4	8	●											
344.2				10.0	SS-5	3	4	5	9	●	▲	○	×	×							
				13.3	SS-6	3	3	4	7	●											
339.2				18.3	SS-7	4	3	5	8	●											
334.2				23.3	SS-8	3	4	6	10	●											
329.2				28.3	SS-9	5	6	6	12	●											
324.2	29.8	No Refusal and Boring Terminated @ 29.8' (Elev. 324.4).																			

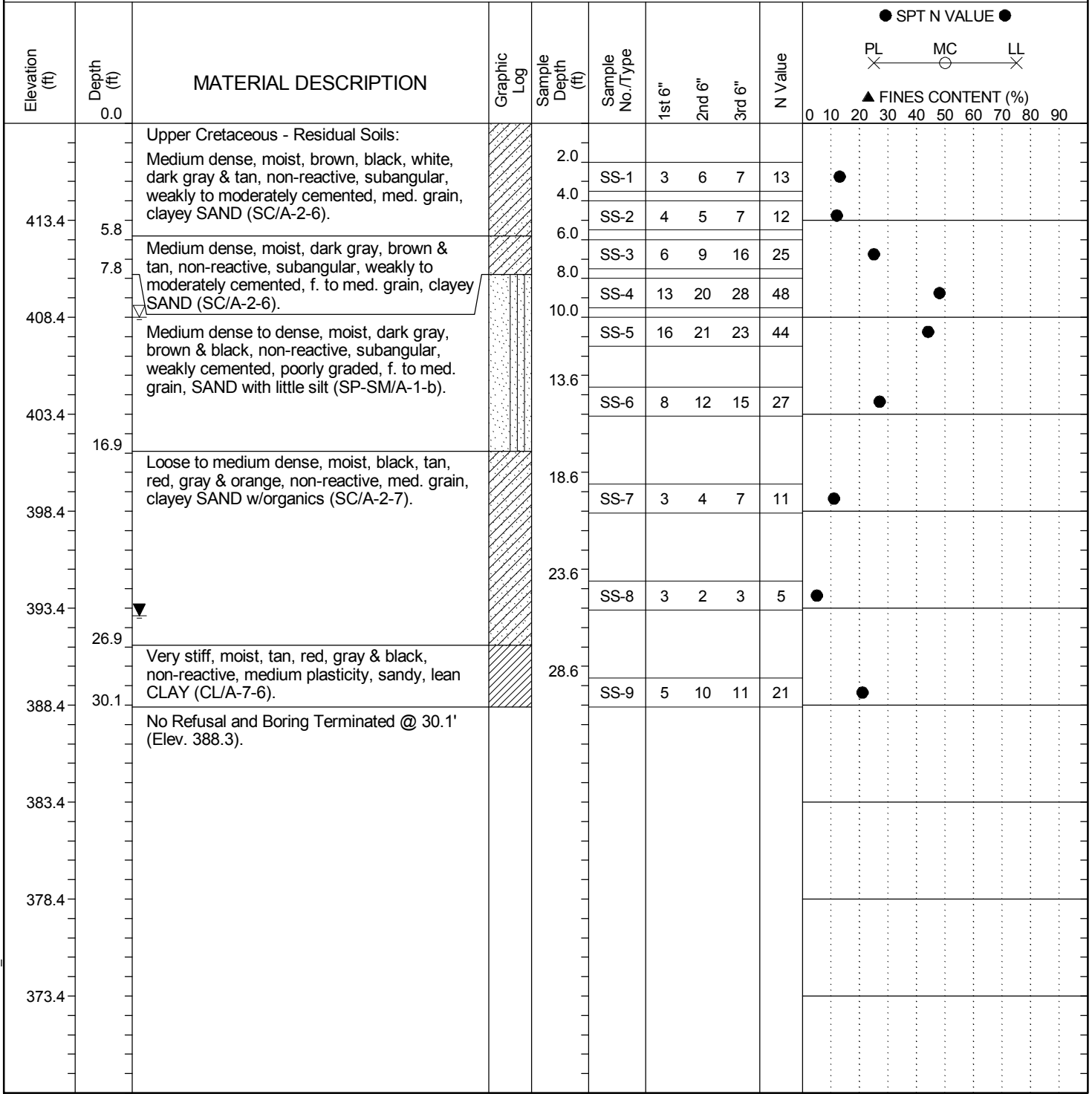
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-9	Boring Location: 389+12	Offset: 13' Lt.	Alignment: Existing
Elev.: 418.4 ft	Latitude: 33.97173	Longitude: 81.19771	Date Started: 2/3/2015
Total Depth: 30.1 ft	Soil Depth: 30.1 ft	Core Depth: 0.0 ft	Date Completed: 2/3/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 10.0 ft.	24HR: 25.4 ft.



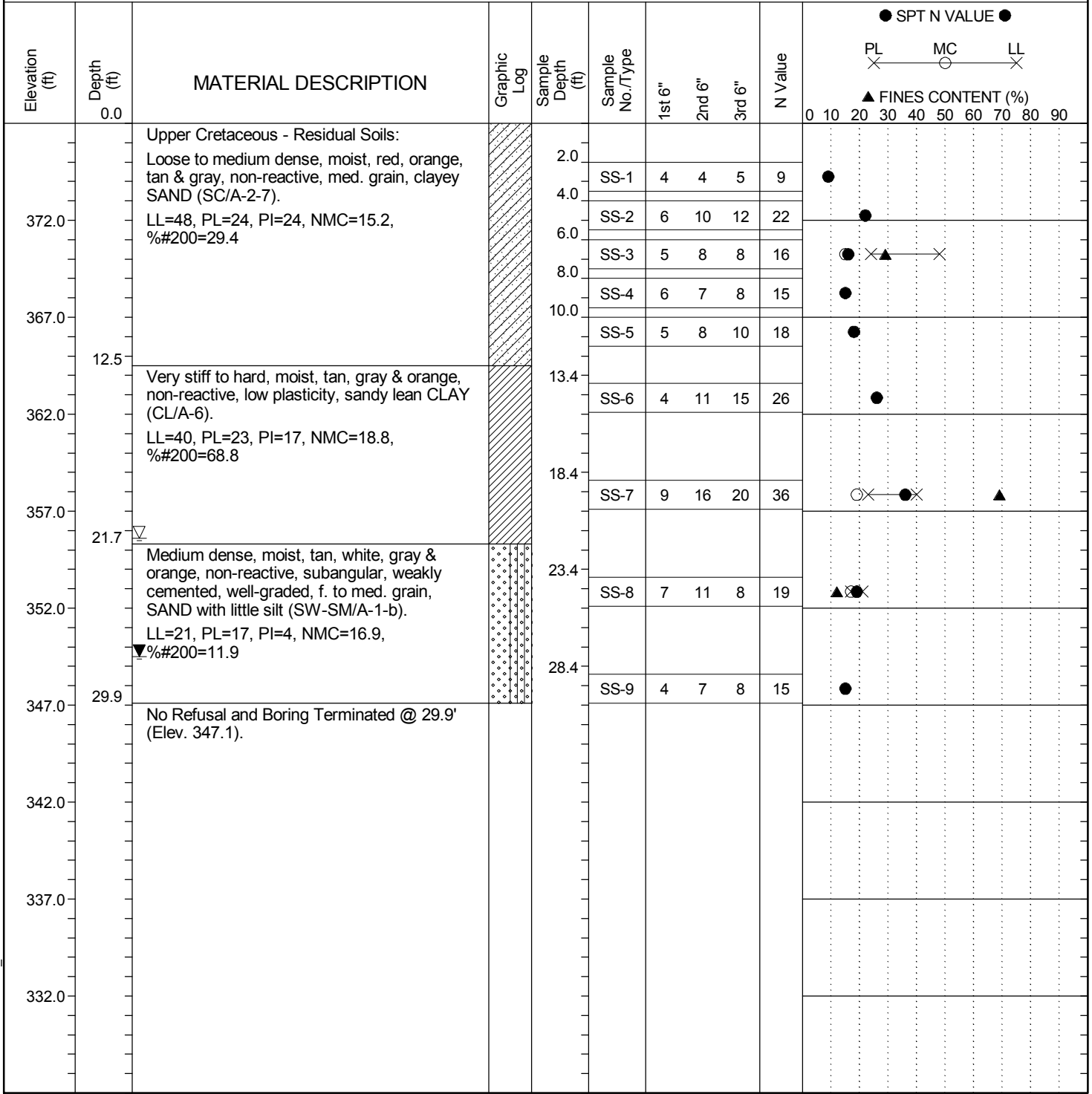
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-10	Boring Location: 409+93	Offset: CL	Alignment: Existing
Elev.: 377.0 ft	Latitude: 33.96797	Longitude: 81.20262	Date Started: 2/3/2015
Total Depth: 29.9 ft	Soil Depth: 29.9 ft	Core Depth: 0.0 ft	Date Completed: 2/3/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 21.4 ft.	24HR: 27.5 ft.



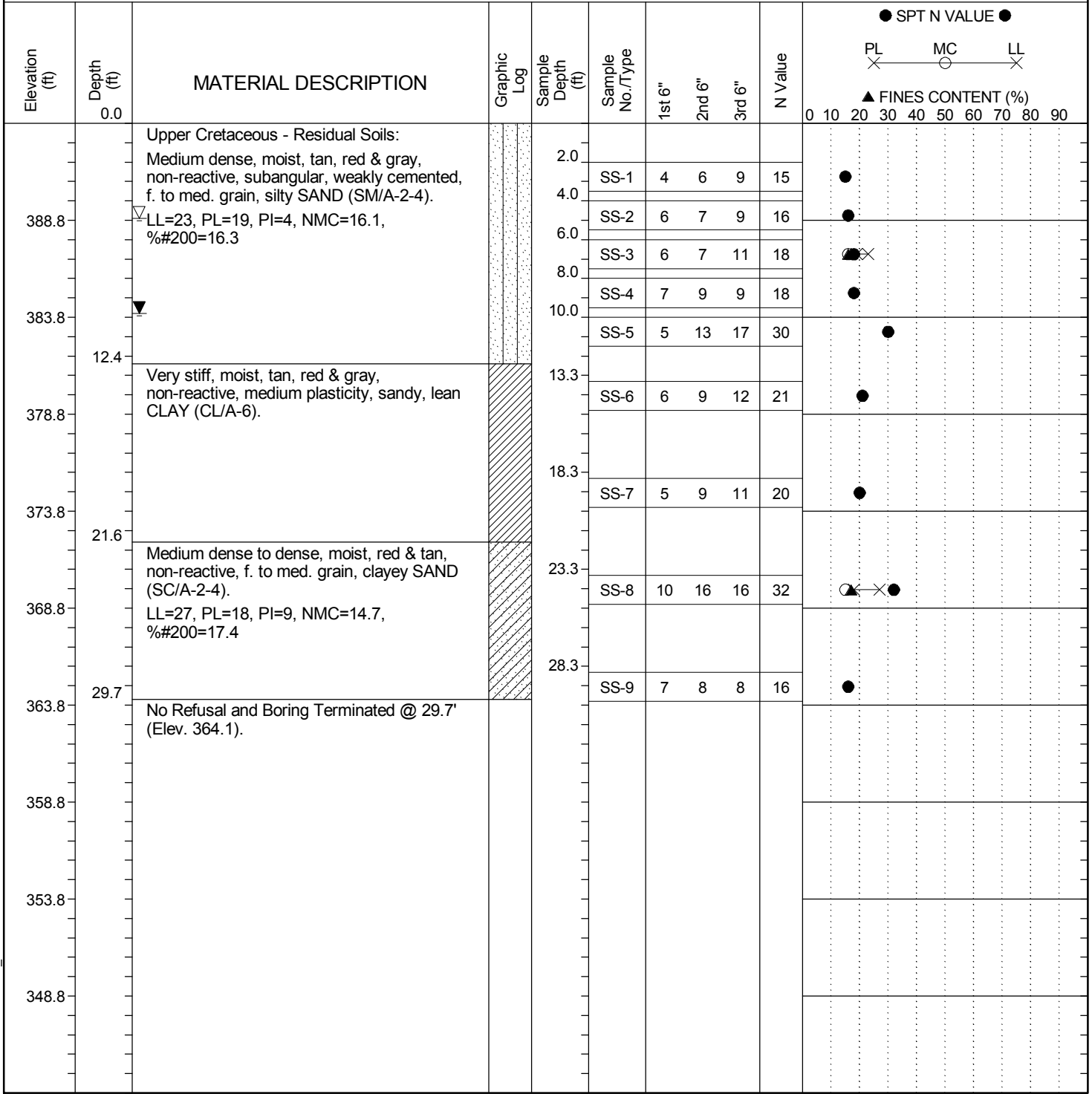
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-11	Boring Location: 428+32	Offset: CL	Alignment: Existing
Elev.: 393.8 ft	Latitude: 33.96611	Longitude: 81.2081	Date Started: 2/9/2015
Total Depth: 29.7 ft	Soil Depth: 29.7 ft	Core Depth: 0.0 ft	Date Completed: 2/9/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 4.9 ft.	24HR: 9.8 ft.



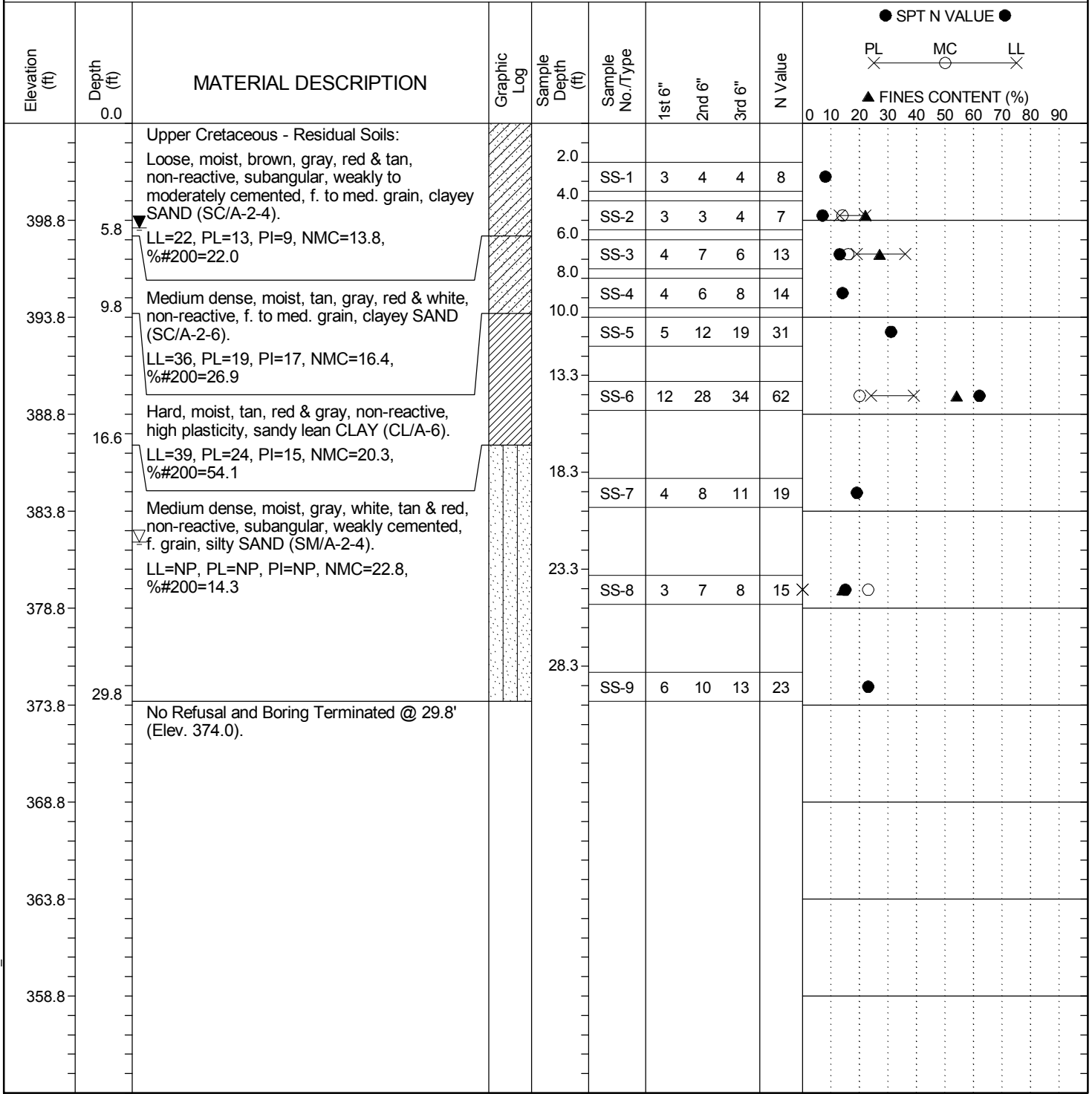
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-12	Boring Location: 448+59	Offset: 4' Lt.	Alignment: Existing
Elev.: 403.8 ft	Latitude: 33.96401	Longitude: 81.21429	Date Started: 1/27/2016
Total Depth: 29.8 ft	Soil Depth: 29.8 ft	Core Depth: 0.0 ft	Date Completed: 1/27/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 21.6 ft.	24HR: 5.4 ft.



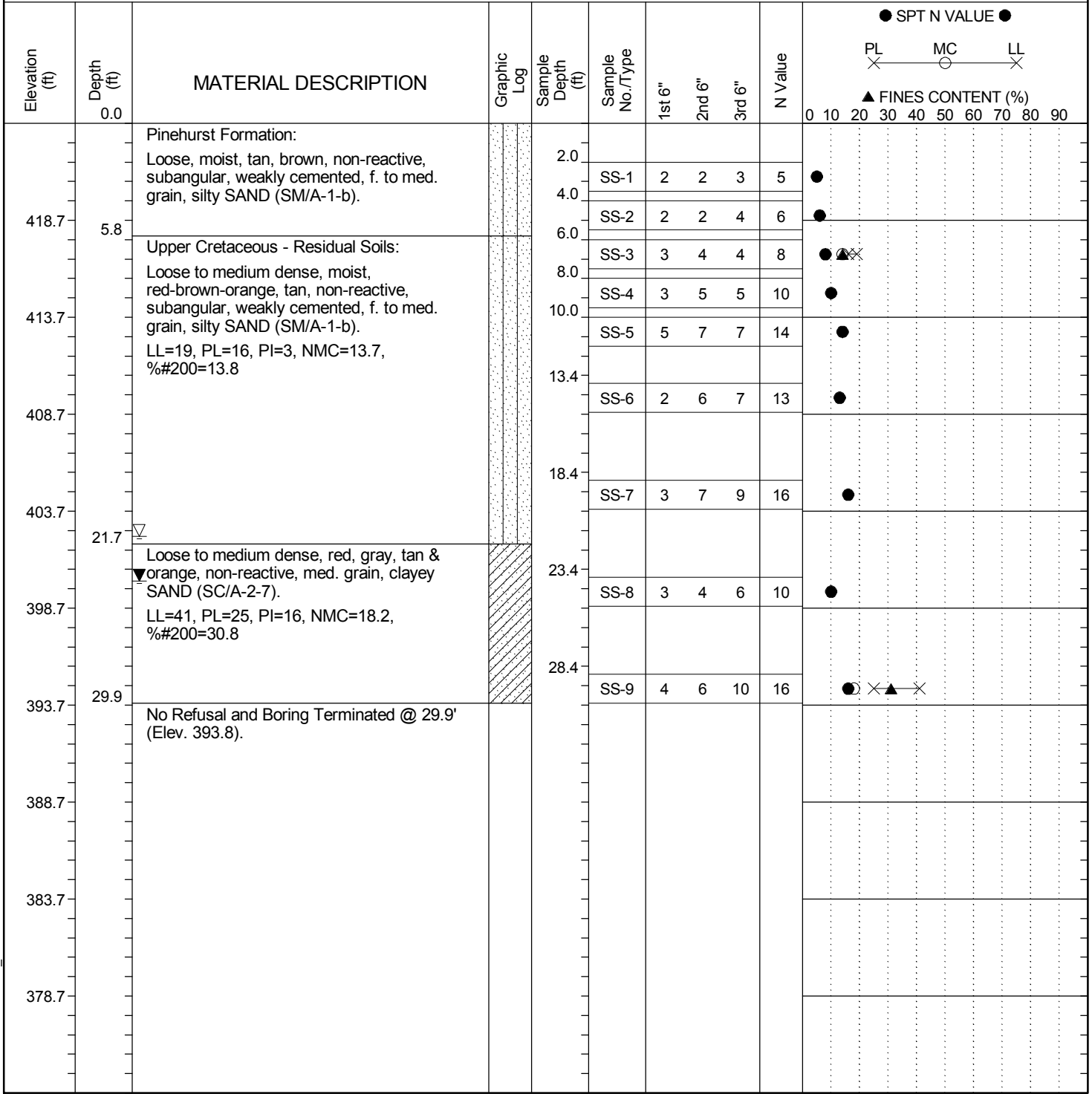
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-13	Boring Location: 468+94	Offset: 4' Lt.	Alignment: Existing
Elev.: 423.7 ft	Latitude: 33.9619	Longitude: 81.2205	Date Started: 1/27/2015
Total Depth: 29.9 ft	Soil Depth: 29.9 ft	Core Depth: 0.0 ft	Date Completed: 1/27/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 21.3 ft.	24HR: 23.6 ft.



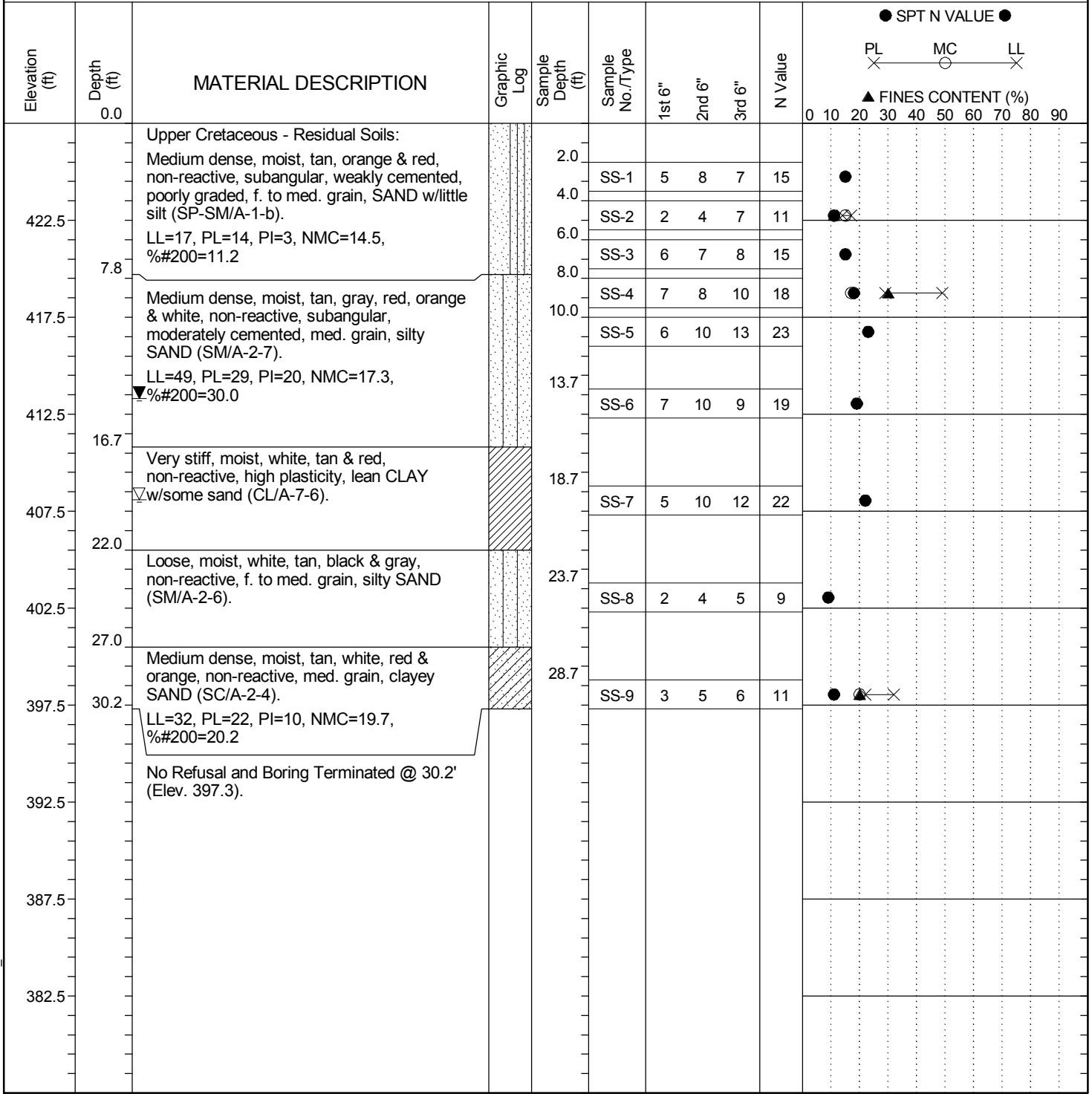
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-14	Boring Location: 488+23	Offset: 5' Lt.	Alignment: Existing
Elev.: 427.5 ft	Latitude: 33.9599	Longitude: 81.22639	Date Started: 1/27/2015
Total Depth: 30.2 ft	Soil Depth: 30.2 ft	Core Depth: 0.0 ft	Date Completed: 1/27/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 19.4 ft.	24HR: 14.2 ft.



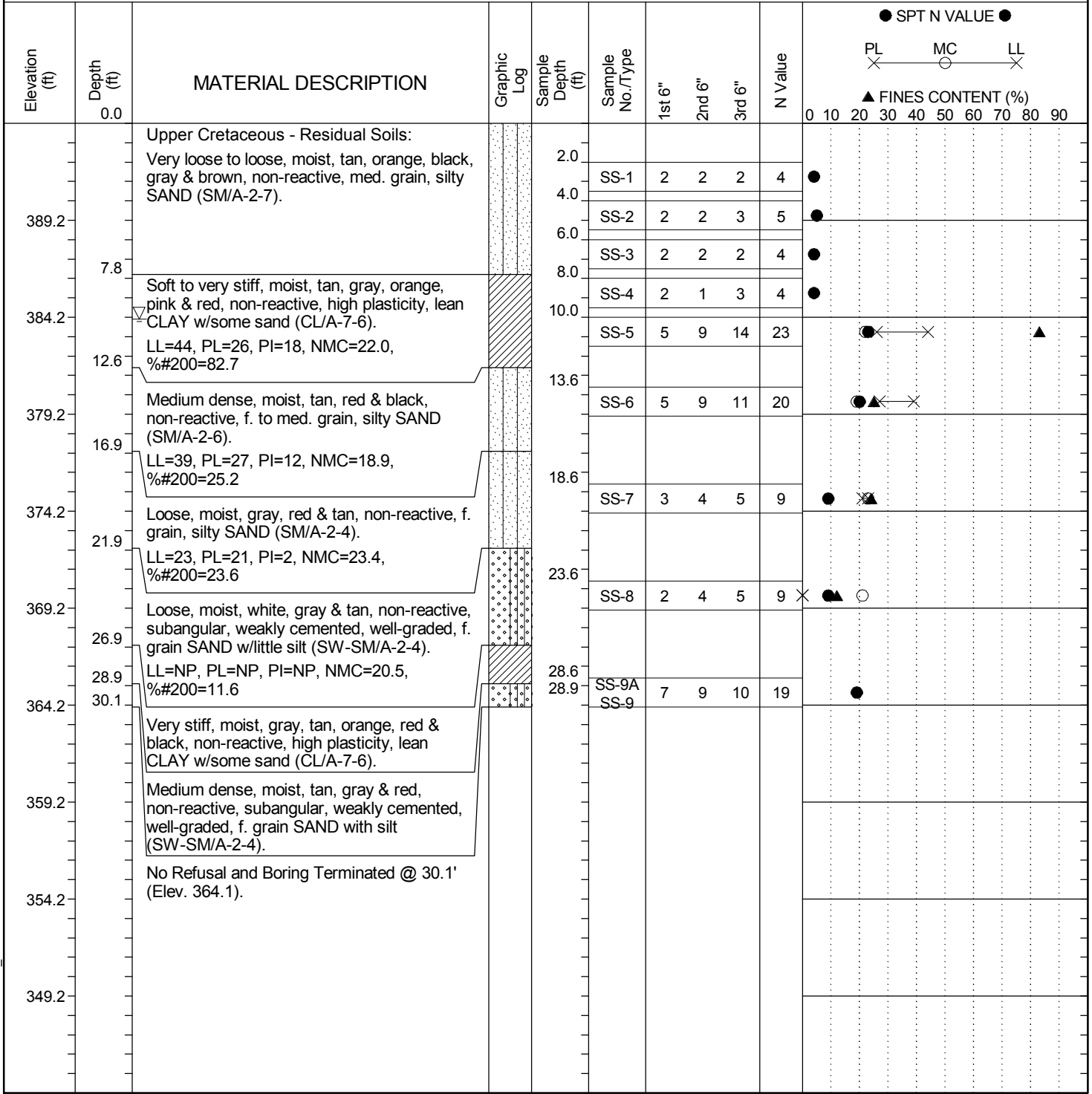
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-15	Boring Location: 509+10	Offset: 9' Rt.	Alignment: Existing
Elev.: 394.2 ft	Latitude: 33.95776	Longitude: 81.23278	Date Started: 1/24/2015
Total Depth: 30.1 ft	Soil Depth: 30.1 ft	Core Depth: 0.0 ft	Date Completed: 1/24/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 10.1 ft.	24HR: Dry



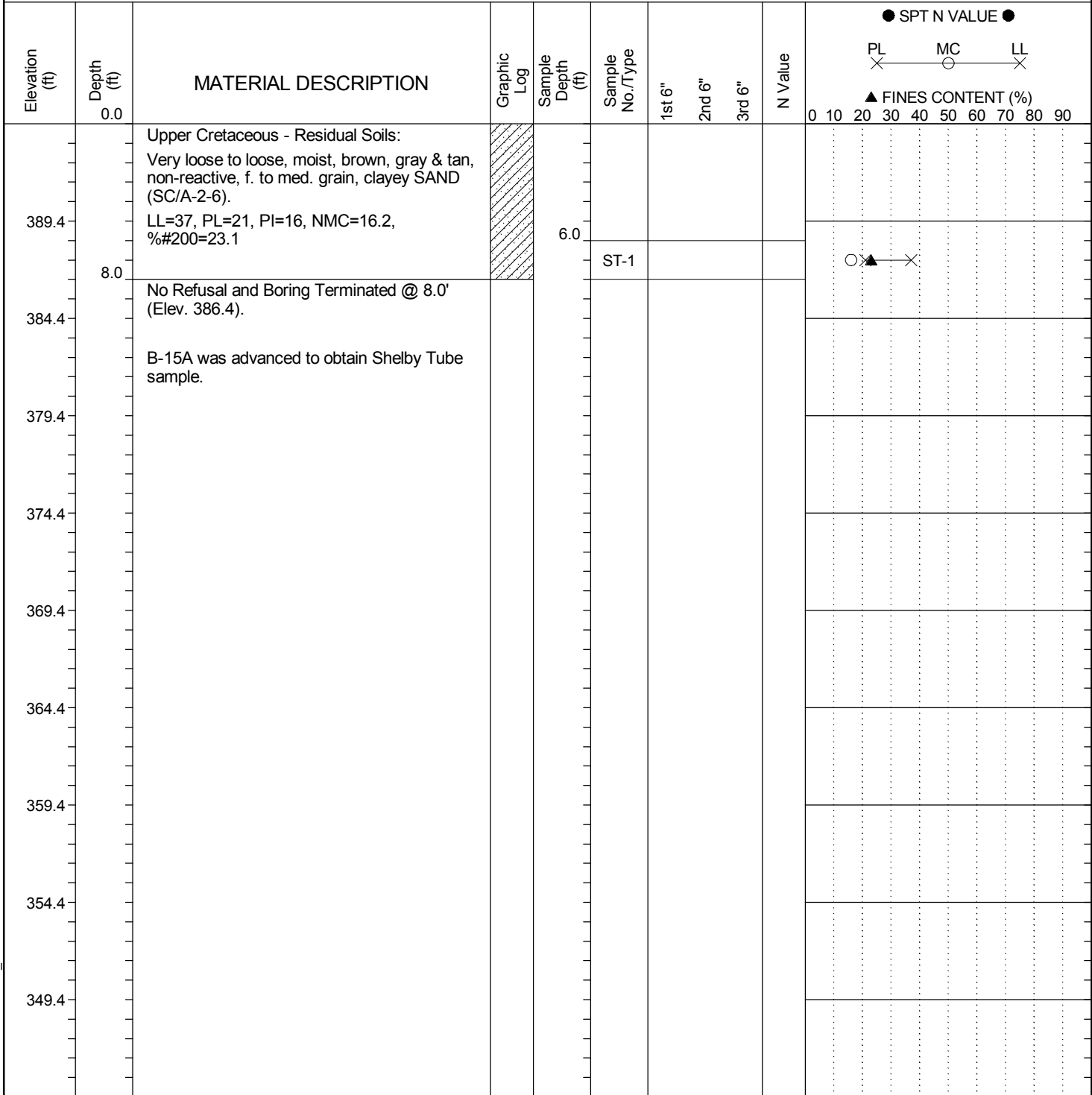
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-15A	Boring Location: 509+09	Offset: 8' Rt.	Alignment: Existing
Elev.: 394.4 ft	Latitude: 33.95776	Longitude: 81.23278	Date Started: 1/24/2015
Total Depth: 8 ft	Soil Depth: 8 ft	Core Depth: 0.0 ft	Date Completed: 1/24/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB NA	24HR: NA



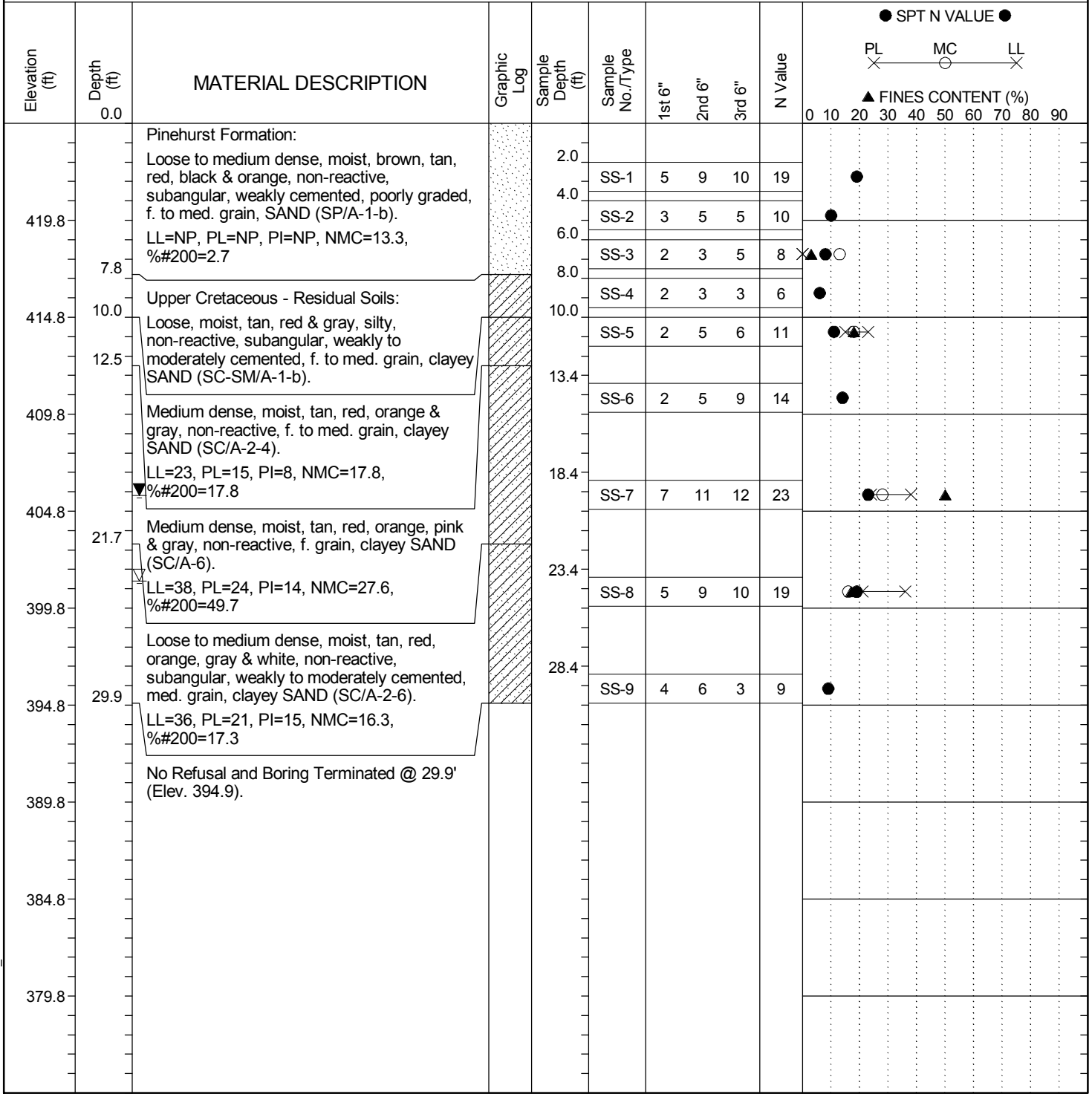
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-16	Boring Location: 531+66	Offset: 7' Rt.	Alignment: Existing
Elev.: 424.8 ft	Latitude: 33.95477	Longitude: 81.23929	Date Started: 1/24/2015
Total Depth: 29.9 ft	Soil Depth: 29.9 ft	Core Depth: 0.0 ft	Date Completed: 1/24/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 23.6 ft.	24HR: 19.2 ft.



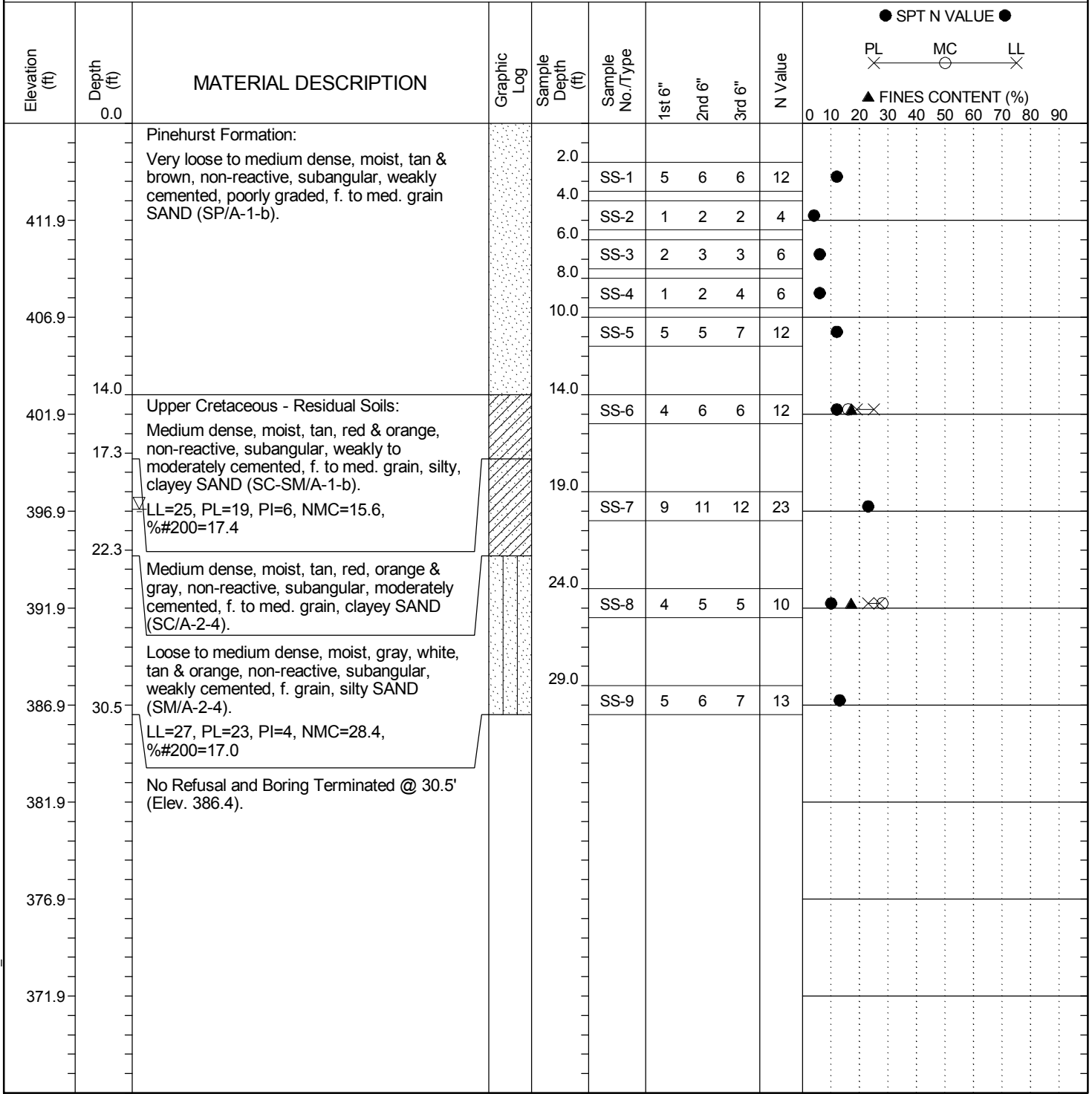
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-17	Boring Location: 549+68	Offset: 20' Lt.	Alignment: Existing
Elev.: 416.9 ft	Latitude: 33.95208	Longitude: 81.2441	Date Started: 1/24/2015
Total Depth: 30.5 ft	Soil Depth: 30.5 ft	Core Depth: 0.0 ft	Date Completed: 1/24/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 19.9 ft.	24HR: Dry



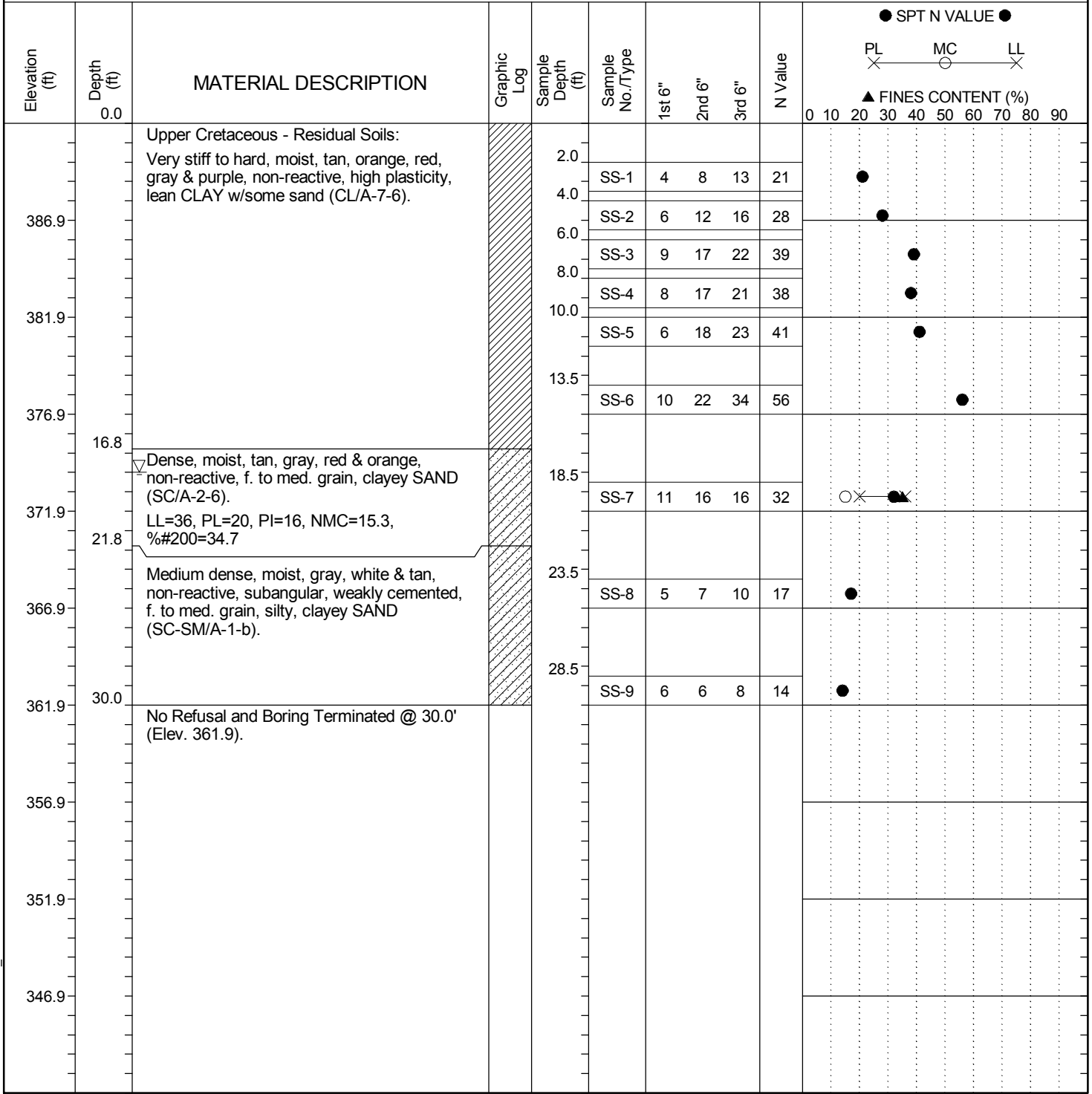
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-18	Boring Location: 569+05	Offset: 1' Rt.	Alignment: Existing
Elev.: 391.9 ft	Latitude: 33.94923	Longitude: 81.2495	Date Started: 1/24/2015
Total Depth: 30 ft	Soil Depth: 30 ft	Core Depth: 0.0 ft	Date Completed: 1/24/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 18.0 ft.	24HR: Dry



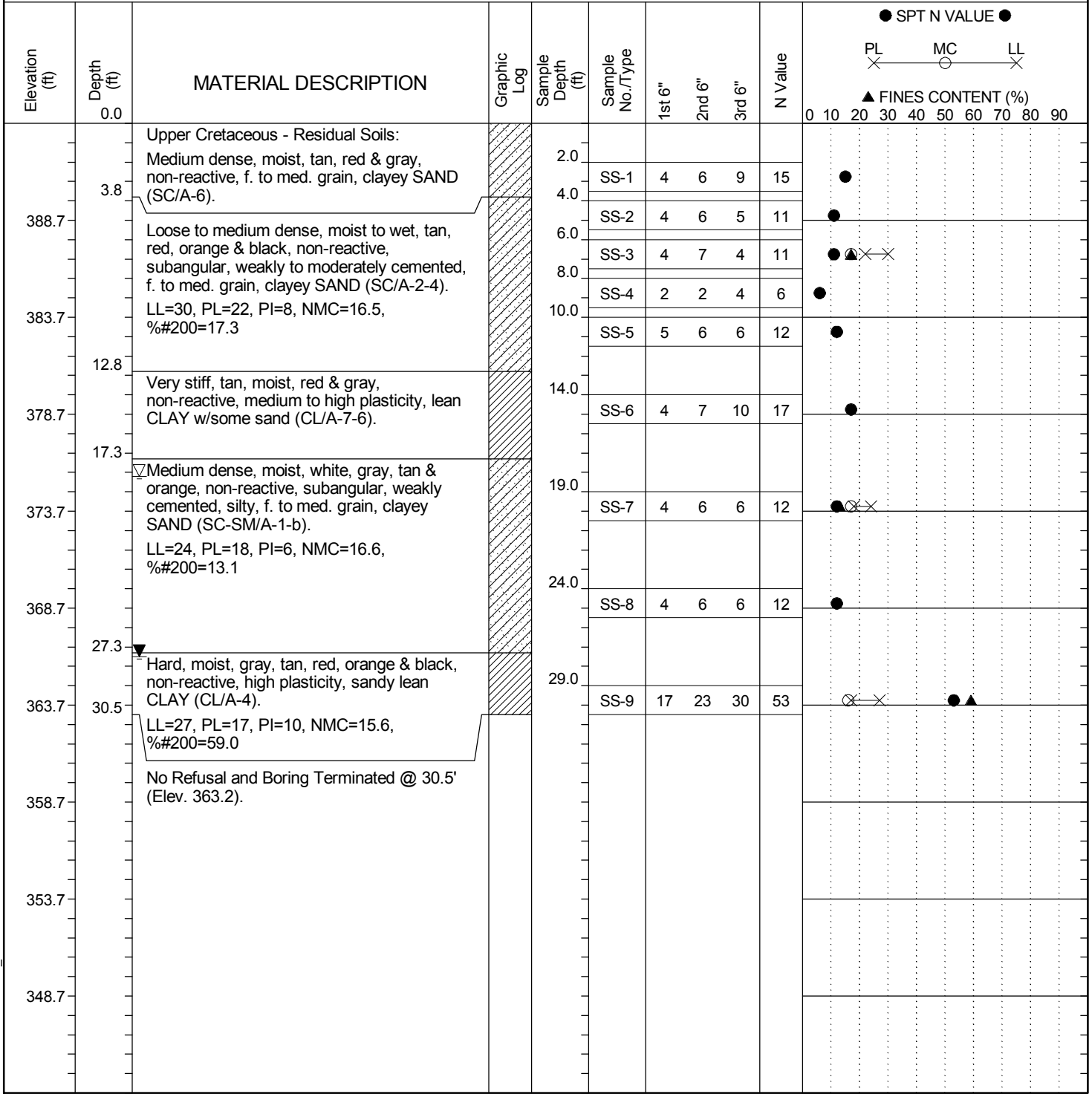
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-19	Boring Location: 590+67	Offset: 20' Lt.	Alignment: Existing
Elev.: 393.7 ft	Latitude: 33.94594	Longitude: 81.25544	Date Started: 1/25/2015
Total Depth: 30.5 ft	Soil Depth: 30.5 ft	Core Depth: 0.0 ft	Date Completed: 1/25/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 18.2 ft.	24HR: 27.5 ft



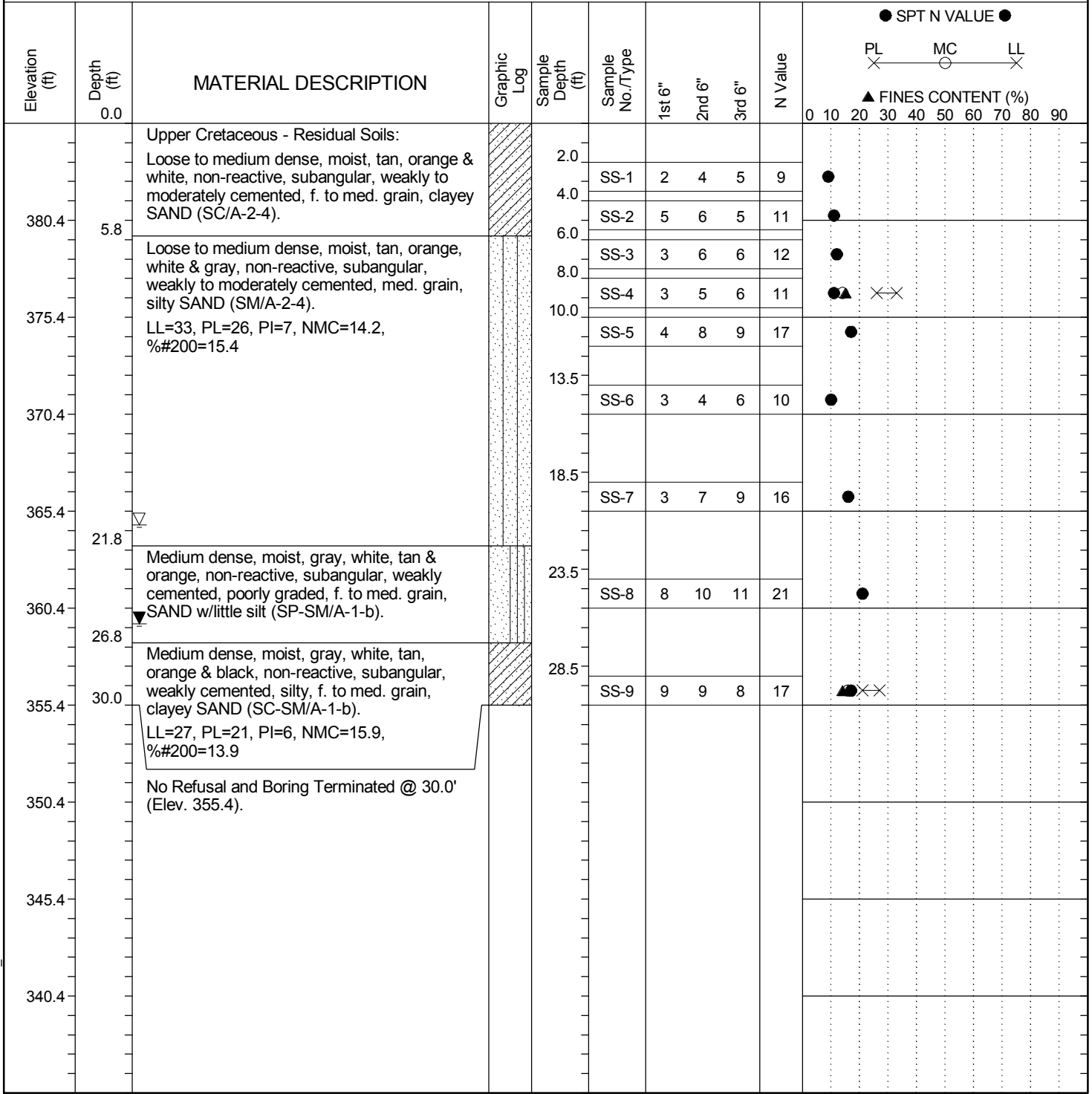
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC.DOT I-20 IMPROVEMENTS.GPJ SC.DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-20	Boring Location: 609+07	Offset: 9' Lt.	Alignment: Existing
Elev.: 385.4 ft	Latitude: 33.94322	Longitude: 81.26055	Date Started: 1/25/2015
Total Depth: 30 ft	Soil Depth: 30 ft	Core Depth: 0.0 ft	Date Completed: 1/25/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 20.7 ft.	24HR: 25.8 ft.



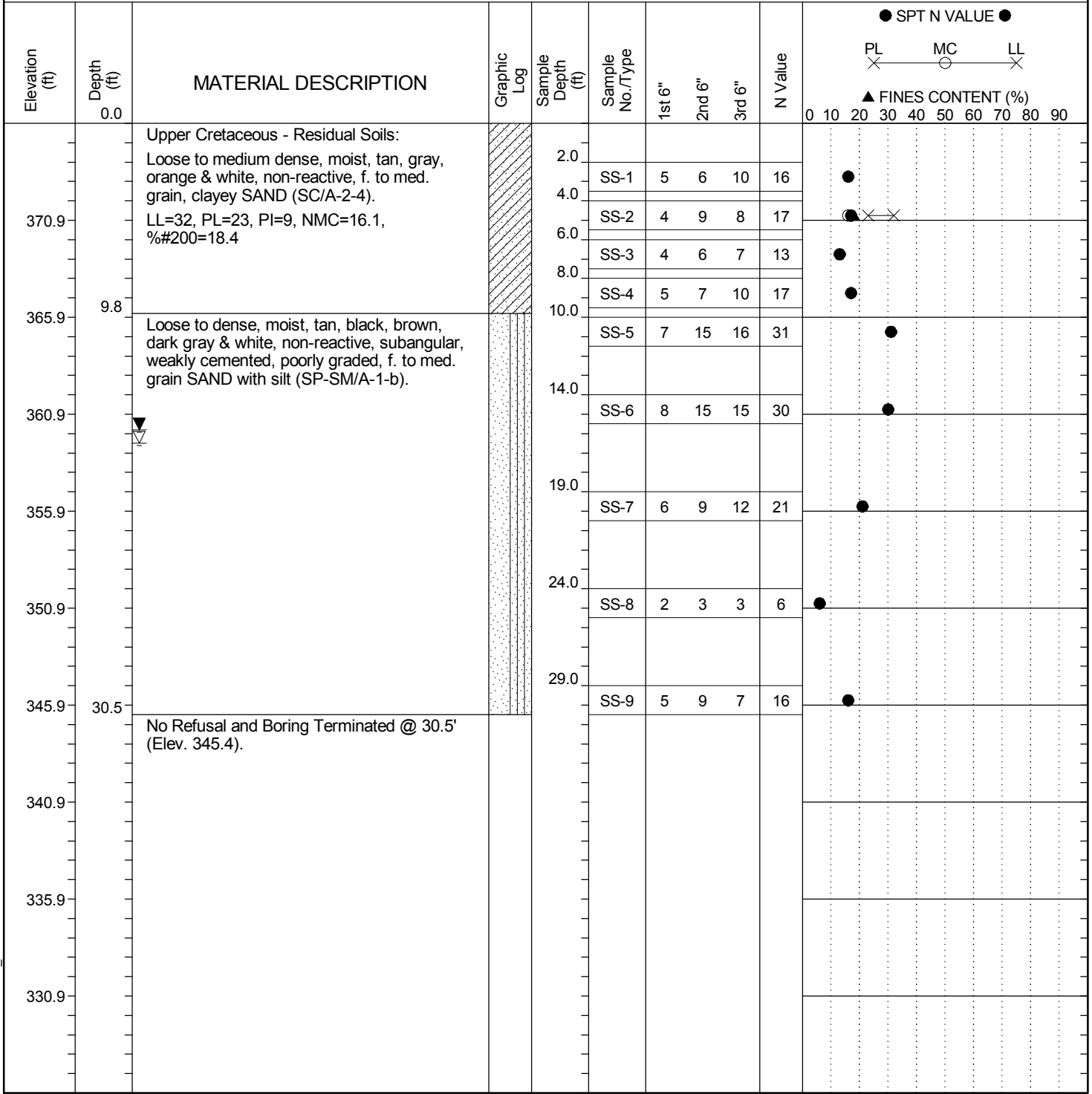
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-21	Boring Location: 624+93	Offset: 19' Lt.	Alignment: Existing
Elev.: 375.9 ft	Latitude: 33.94082	Longitude: 81.26492	Date Started: 1/25/2015
Total Depth: 30.5 ft	Soil Depth: 30.5 ft	Core Depth: 0.0 ft	Date Completed: 1/25/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 16.5 ft.	24HR: 15.8 ft.



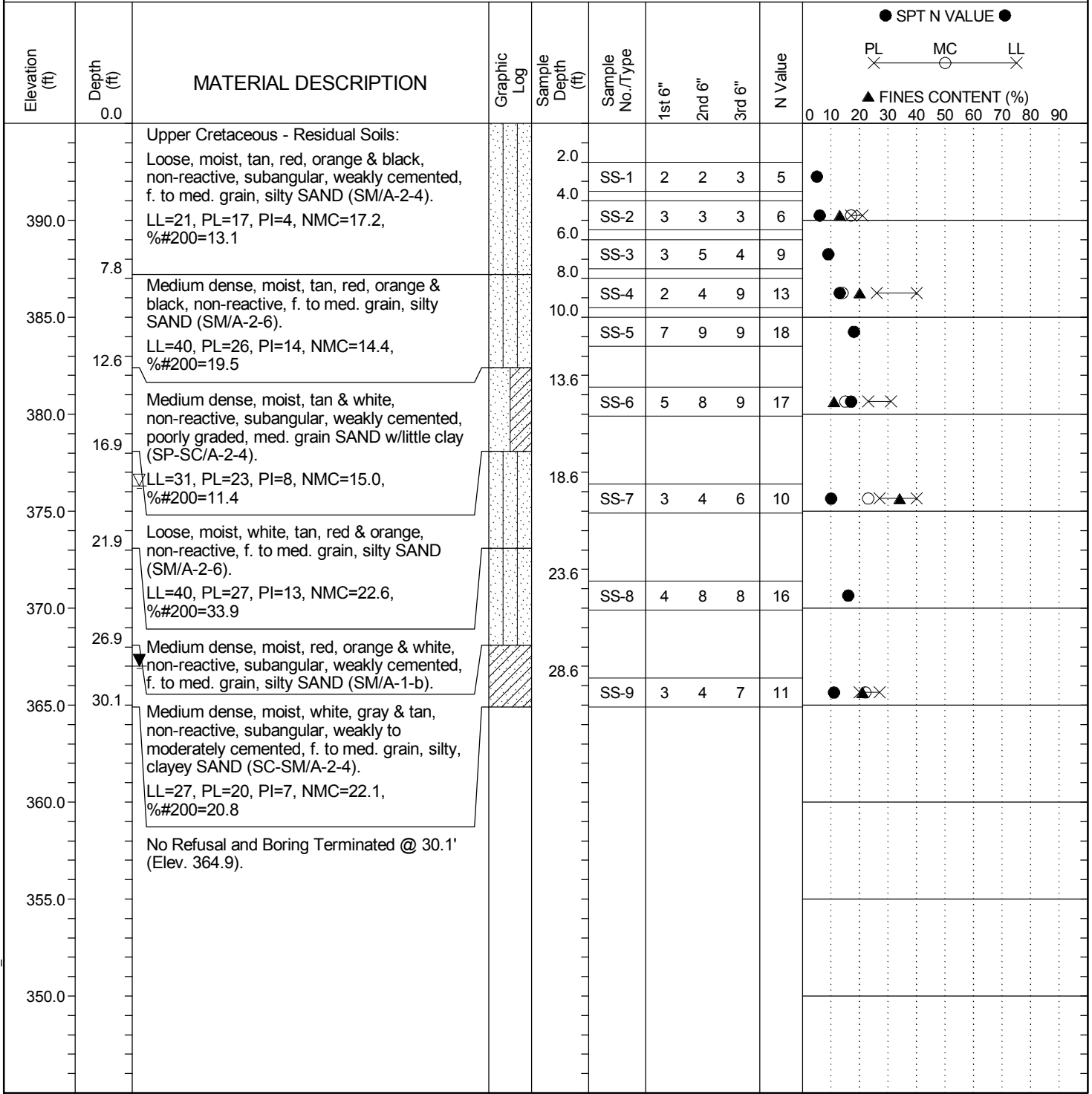
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-22	Boring Location: 648+71	Offset: 11' Lt.	Alignment: Existing
Elev.: 395.0 ft	Latitude: 33.93728	Longitude: 81.27151	Date Started: 1/25/2015
Total Depth: 30.1 ft	Soil Depth: 30.1 ft	Core Depth: 0.0 ft	Date Completed: 1/25/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 18.7 ft.	24HR: 28.0 ft.



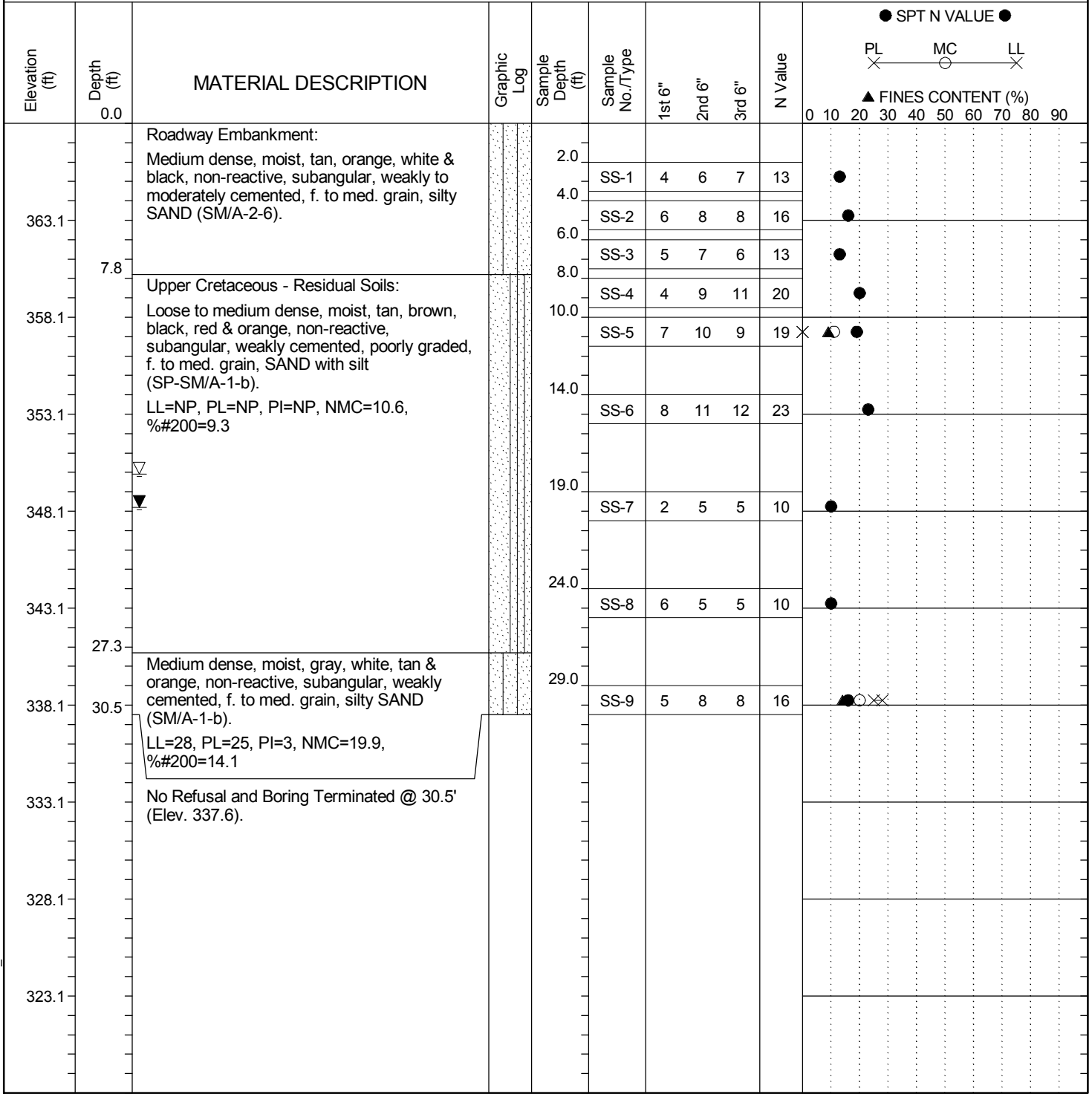
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC.DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-23	Boring Location: 667+55	Offset: 22' Lt.	Alignment: Existing
Elev.: 368.1 ft	Latitude: 33.9344	Longitude: 81.27666	Date Started: 1/26/2015
Total Depth: 30.5 ft	Soil Depth: 30.5 ft	Core Depth: 0.0 ft	Date Completed: 1/26/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 18.1 ft.	24HR: 19.8 ft.



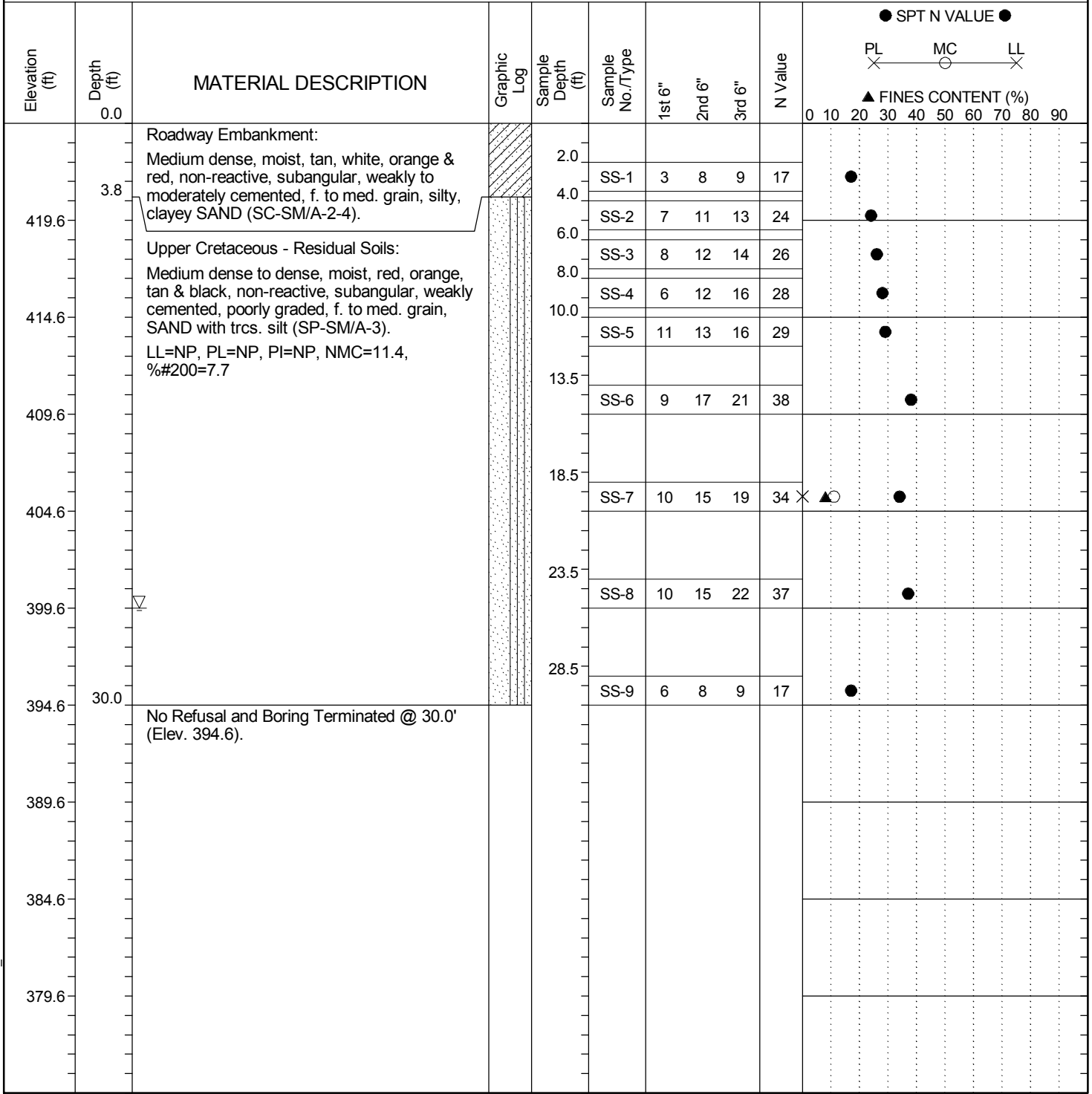
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-24	Boring Location: 692+48	Offset: 3' Lt.	Alignment: Existing
Elev.: 424.6 ft	Latitude: 33.93059	Longitude: 81.28351	Date Started: 1/26/2015
Total Depth: 30 ft	Soil Depth: 30 ft	Core Depth: 0.0 ft	Date Completed: 1/26/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 25.0 ft.	24HR: Dry



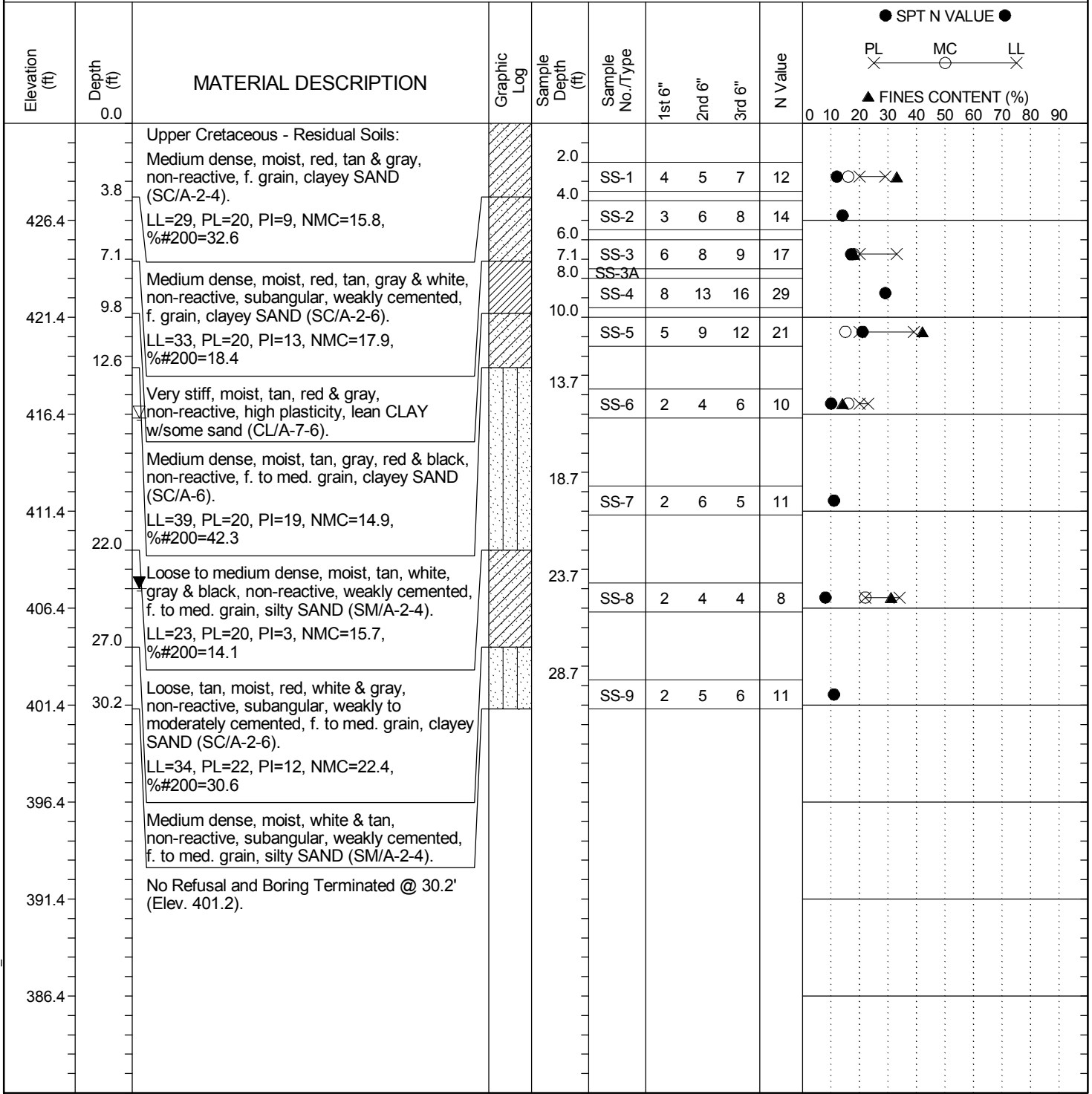
LEGEND

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

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-25	Boring Location: 710+26	Offset: 27' Lt.	Alignment: Existing
Elev.: 431.4 ft	Latitude: 33.9278	Longitude: 81.28831	Date Started: 1/22/2015
Total Depth: 30.2 ft	Soil Depth: 30.2 ft	Core Depth: 0.0 ft	Date Completed: 1/22/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 15.2 ft.	24HR: 24.0 ft.



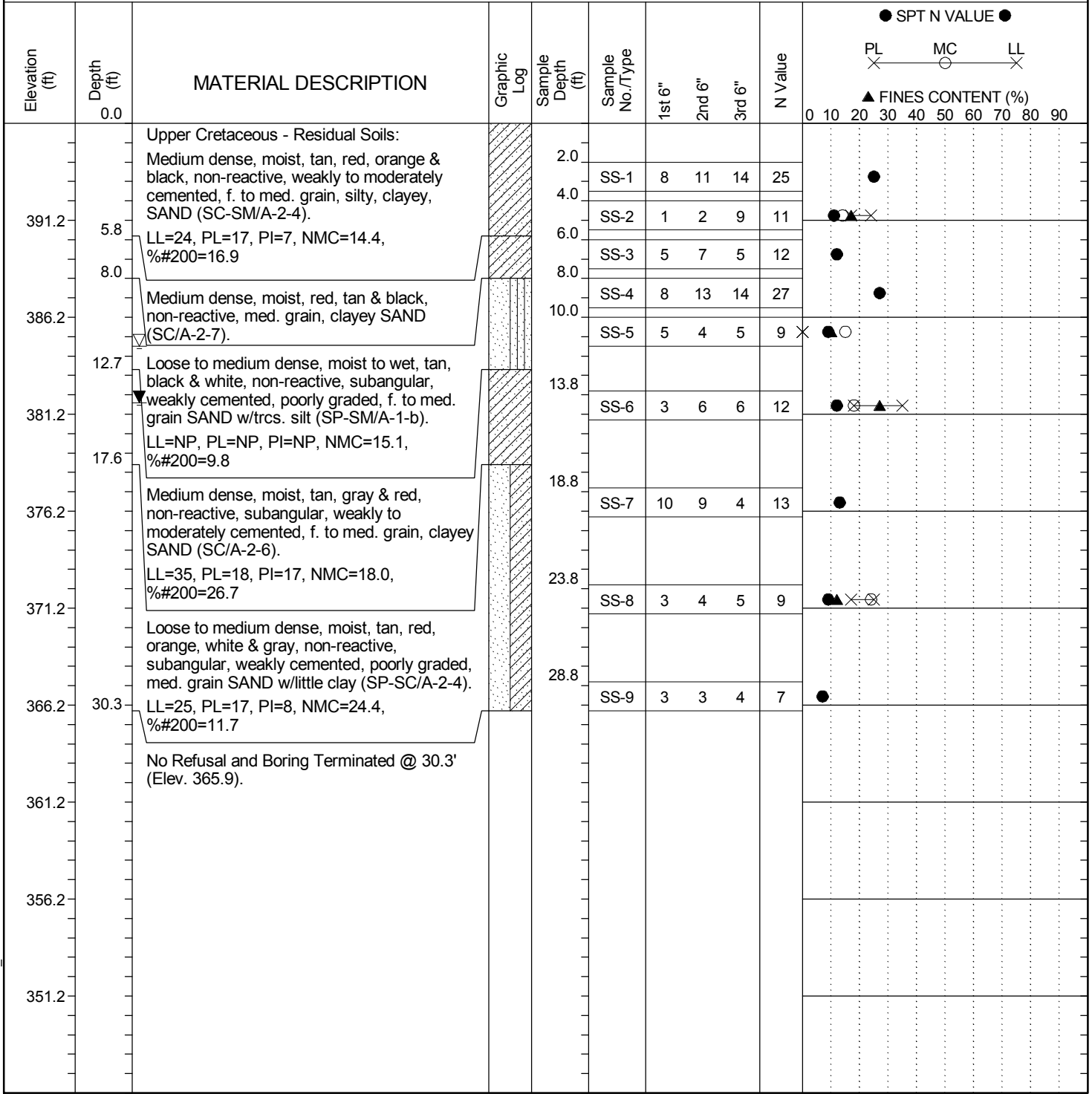
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-26	Boring Location: 729+82	Offset: 7' Lt.	Alignment: Existing
Elev.: 396.2 ft	Latitude: 33.92492	Longitude: 81.29377	Date Started: 1/22/2015
Total Depth: 30.3 ft	Soil Depth: 30.3 ft	Core Depth: 0.0 ft	Date Completed: 1/22/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 11.5 ft.	24HR: 14.4 ft.



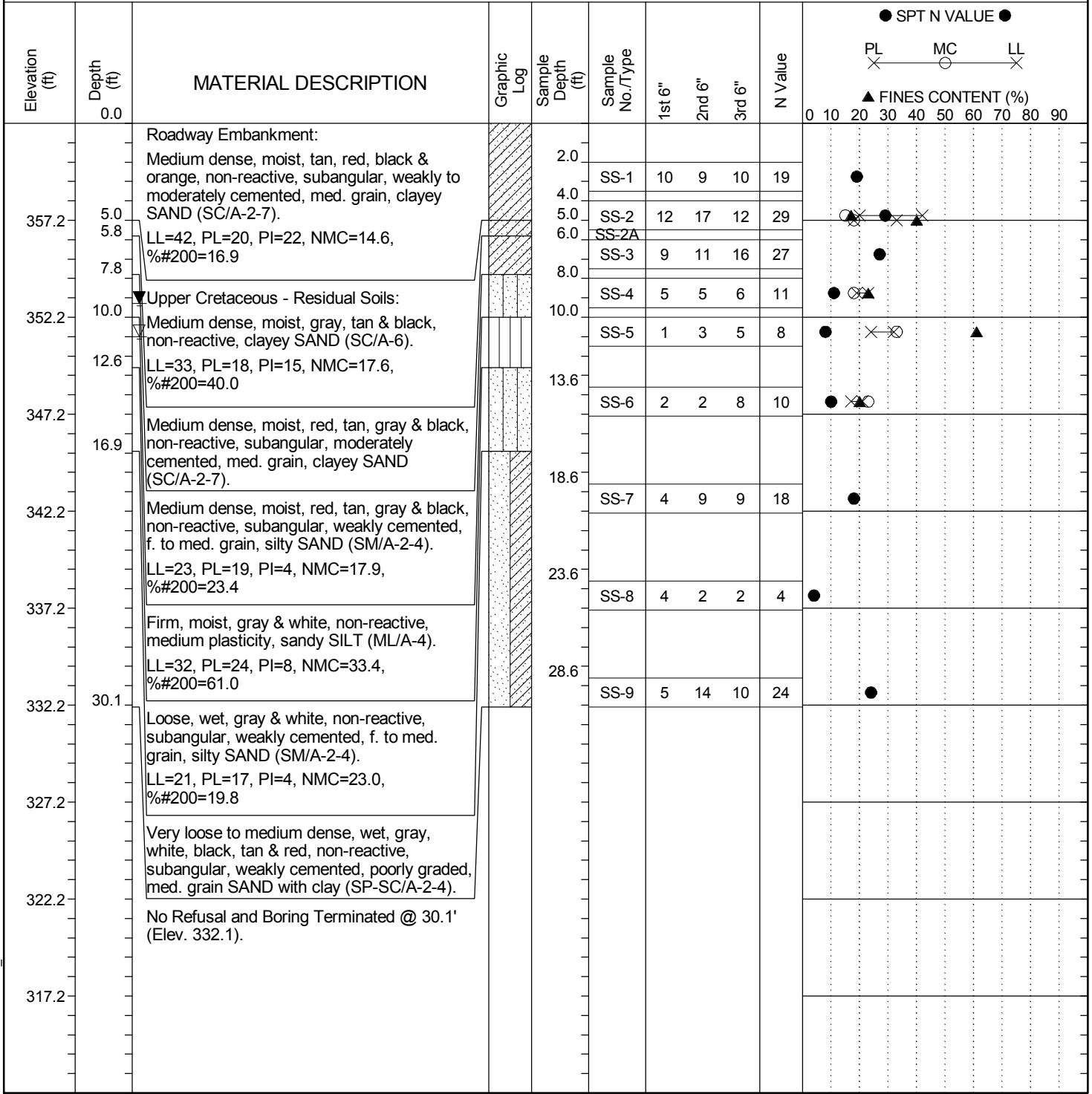
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-27	Boring Location: 749+49	Offset: 9' Lt.	Alignment: Existing
Elev.: 362.2 ft	Latitude: 33.9227	Longitude: 81.29967	Date Started: 1/21/2015
Total Depth: 30.1 ft	Soil Depth: 30.1 ft	Core Depth: 0.0 ft	Date Completed: 1/21/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 11.0 ft.	24HR: 9.3 ft.



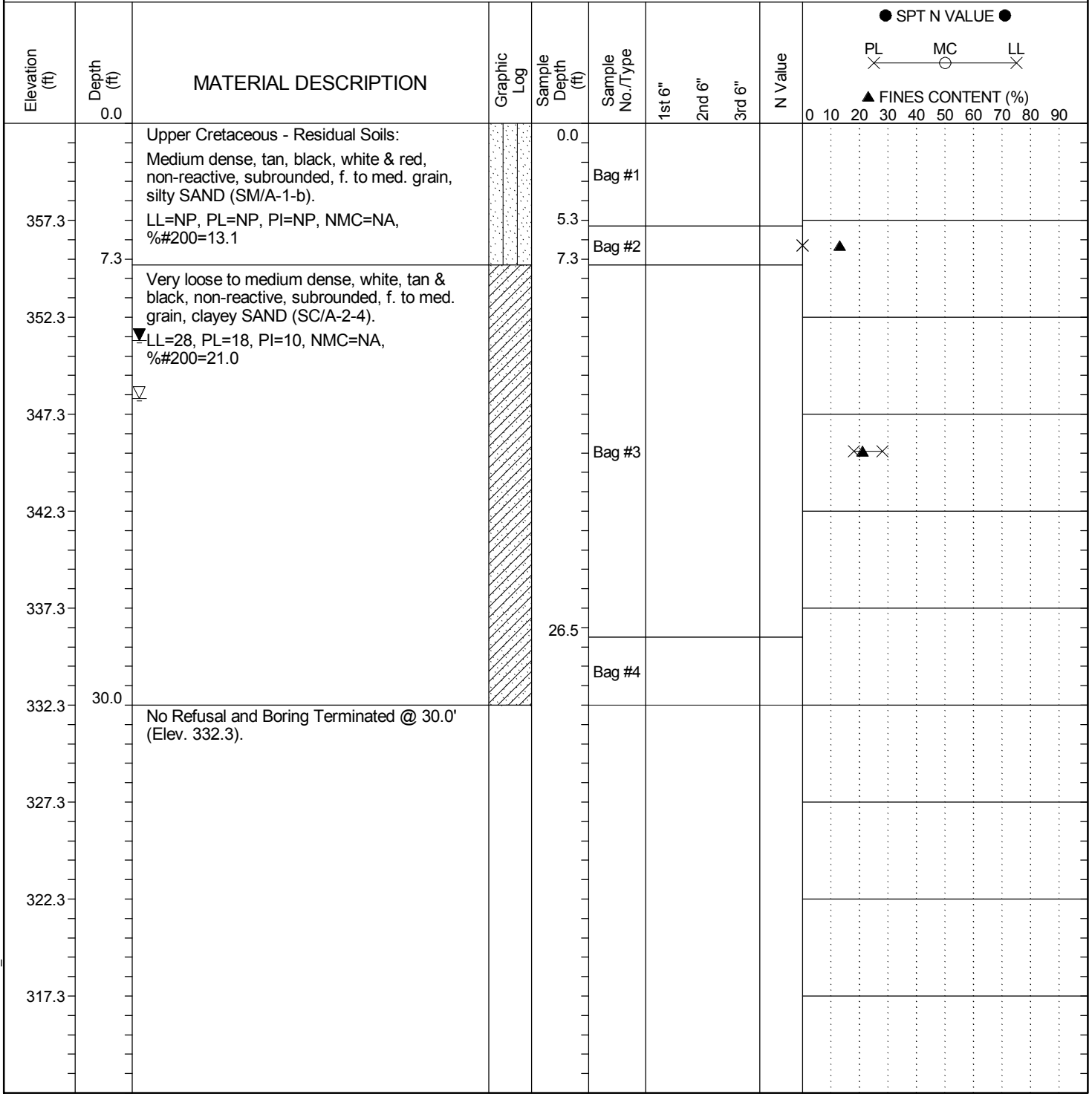
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-27A	Boring Location: 749+41	Offset: 9' Lt.	Alignment: Existing
Elev.: 362.3 ft	Latitude: 33.9227	Longitude: 81.29964	Date Started: 1/21/2015
Total Depth: 30 ft	Soil Depth: 30 ft	Core Depth: 0.0 ft	Date Completed: 1/21/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 14.2 ft.	24HR: 11.2 ft.



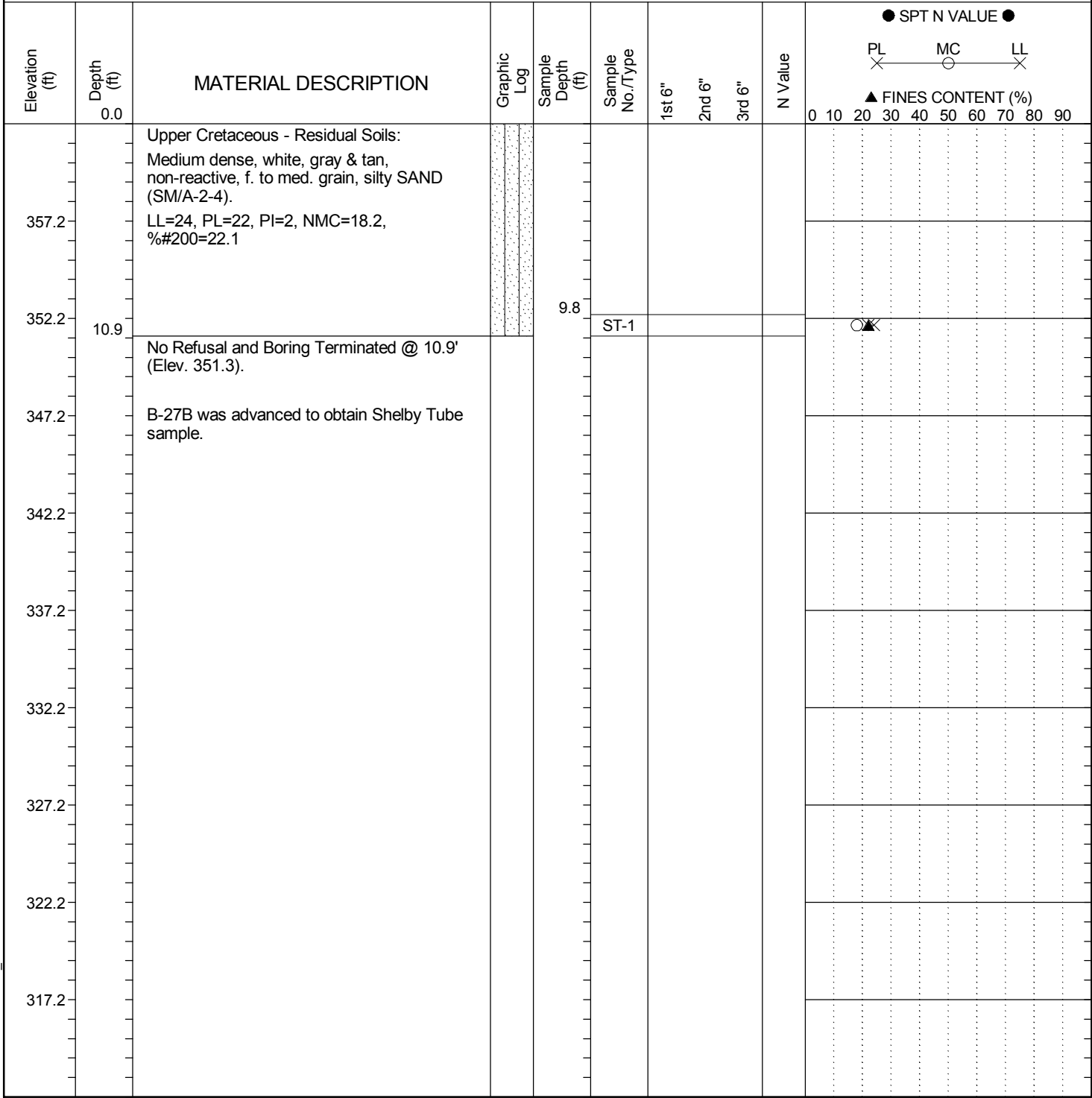
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-27B	Boring Location: 749+66	Offset: 10' Lt.	Alignment: Existing
Elev.: 362.2 ft	Latitude: 33.92268	Longitude: 81.29972	Date Started: 1/22/2015
Total Depth: 10.9 ft	Soil Depth: 10.9 ft	Core Depth: 0.0 ft	Date Completed: 1/22/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB NA	24HR: NA



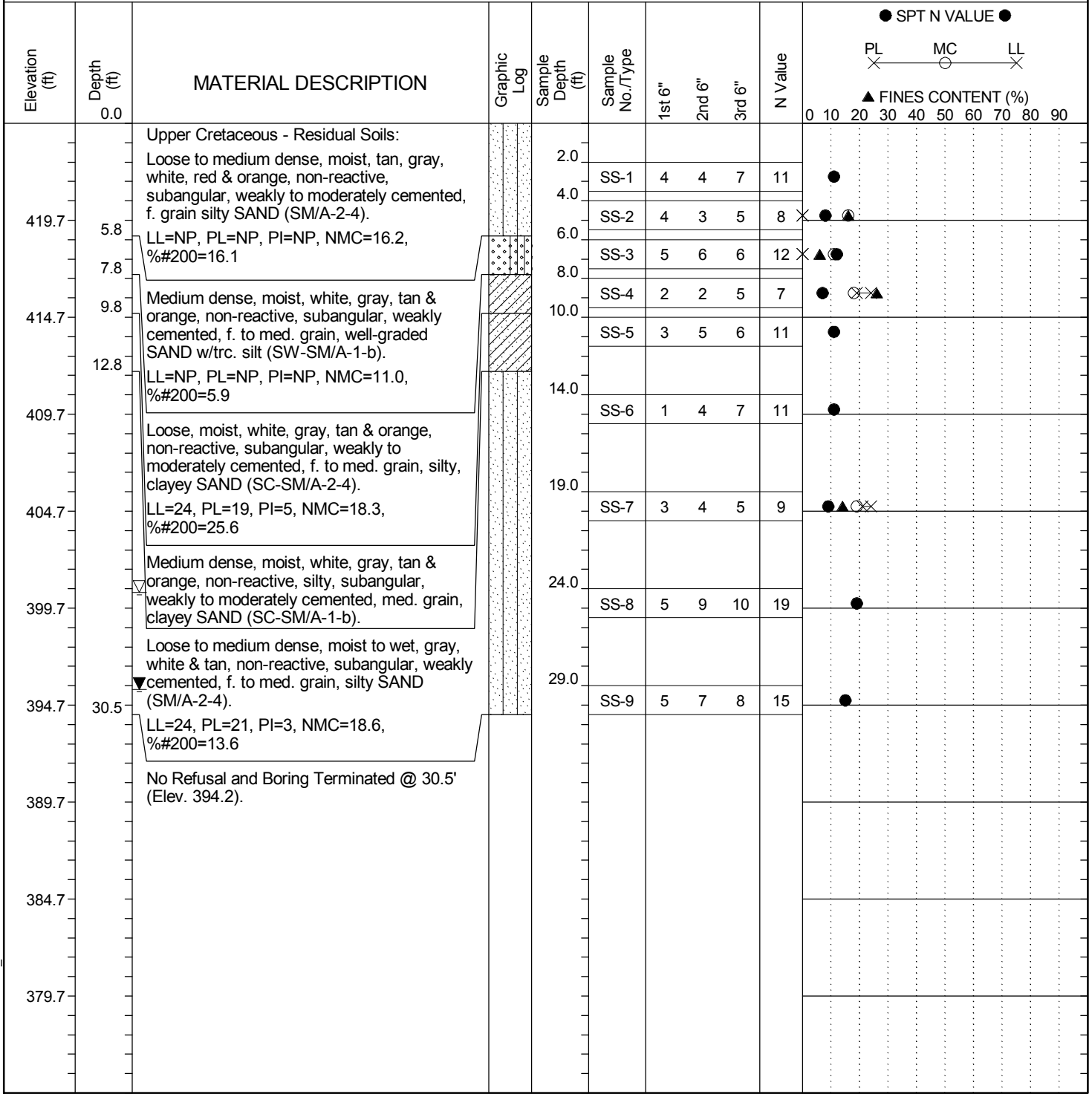
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-28	Boring Location: 771+17	Offset: 6' Rt.	Alignment: Existing
Elev.: 424.7 ft	Latitude: 33.92059	Longitude: 81.30636	Date Started: 1/22/2015
Total Depth: 30.5 ft	Soil Depth: 30.5 ft	Core Depth: 0.0 ft	Date Completed: 1/22/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 24.2 ft.	24HR: 29.2 ft.



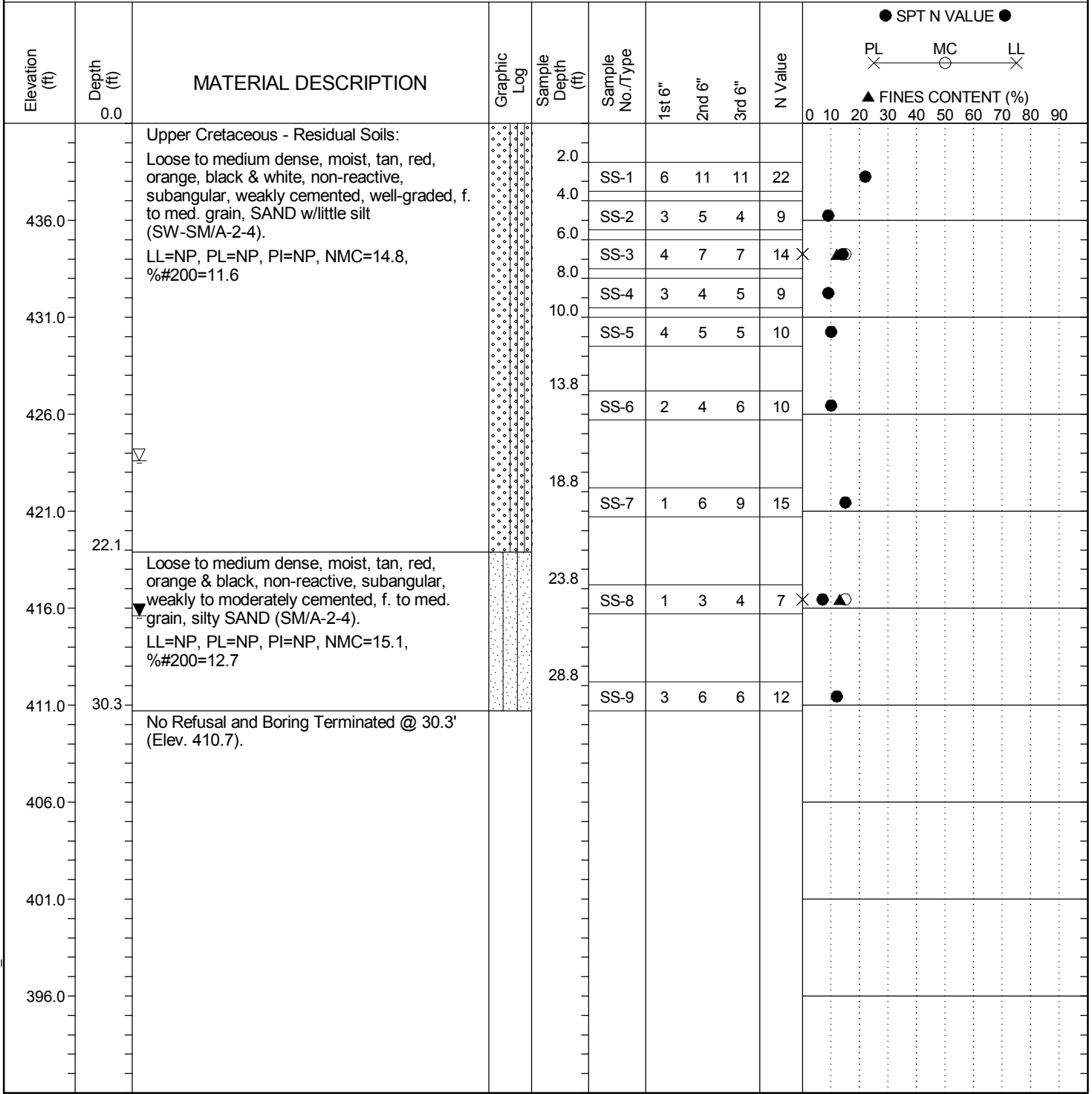
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County:	Lexington	Eng./Geo.:	Z. Bruce			
Site Description:			I-20 Roadway Improvements		Route:	I-20		
Boring No.:	B-29	Boring Location:	790+50	Offset:	15' Lt.	Alignment:	Existing	
Elev.:	441.0 ft	Latitude:	33.91861	Longitude:	81.31227	Date Started:	1/22/2015	
Total Depth:	30.3 ft	Soil Depth:	30.3 ft	Core Depth:	0.0 ft	Date Completed:	1/22/2015	
Bore Hole Diameter (in):	4	Sampler Configuration	Liner Required:	Y (N)	Liner Used:	Y (N)		
Drill Machine:	CME55	Drill Method:	DC	Hammer Type:	Automatic	Energy Ratio:	90%	
Core Size:	NA	Driller:	B. Cayton	Groundwater:	TOB	17.4 ft.	24HR	25.4 ft.



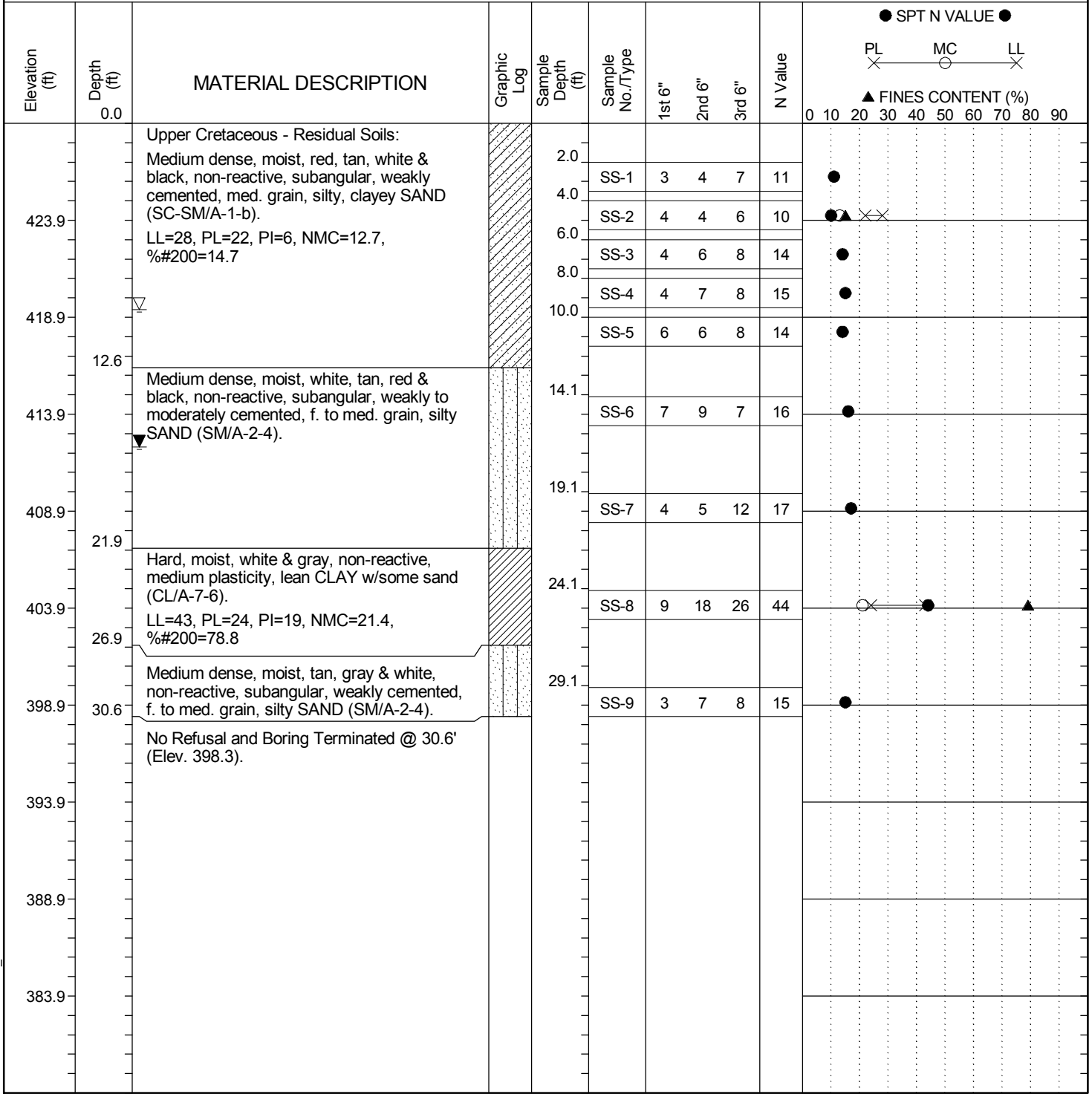
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-30	Boring Location: 810+89	Offset: 31' Rt.	Alignment: Existing
Elev.: 428.9 ft	Latitude: 33.91609	Longitude: 81.31827	Date Started: 1/21/2015
Total Depth: 30.6 ft	Soil Depth: 30.6 ft	Core Depth: 0.0 ft	Date Completed: 1/21/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 9.6 ft.	24HR: 16.7 ft.



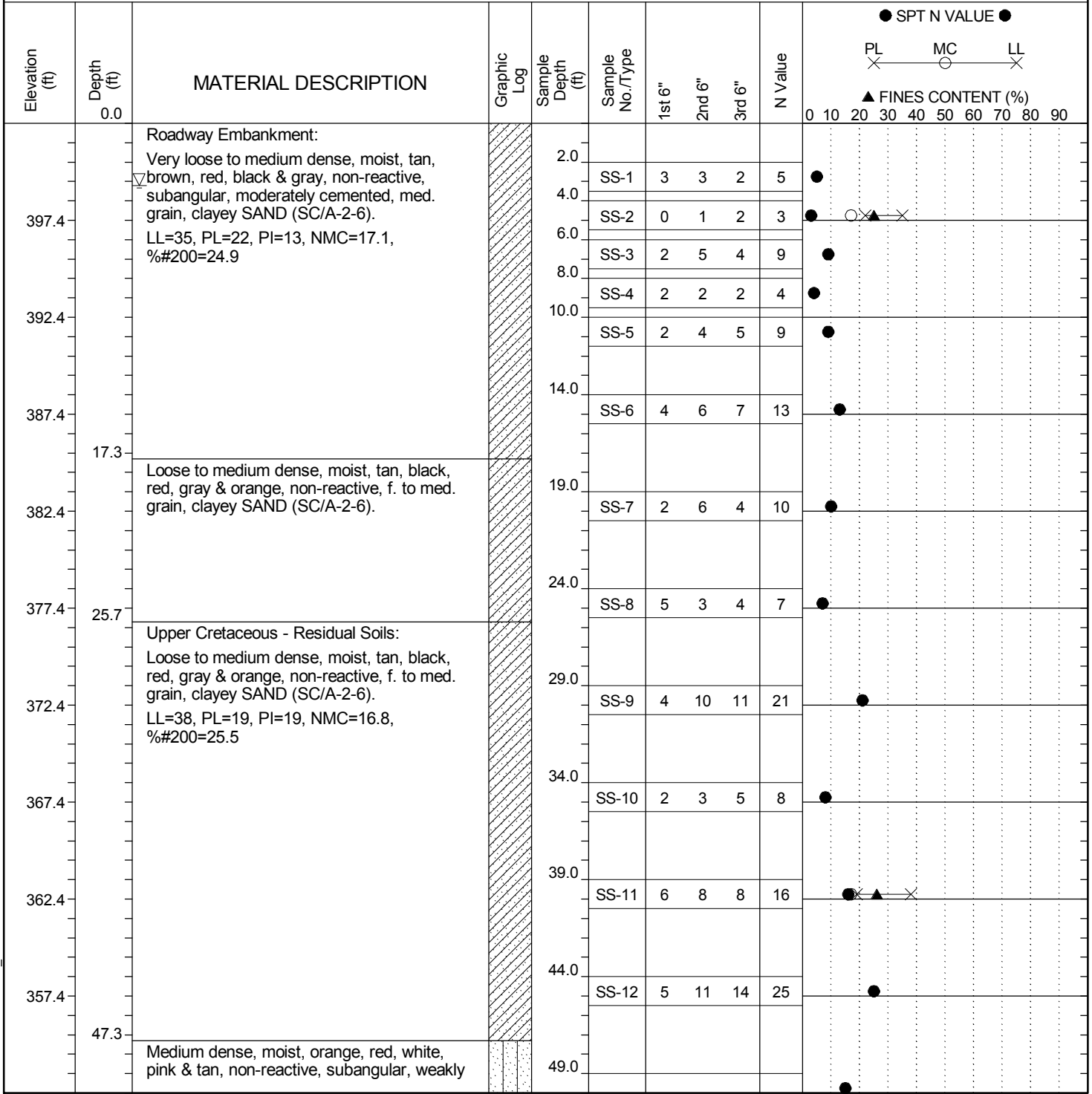
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-31	Boring Location: 382+53	Offset: 21' Lt.	Alignment: Existing
Elev.: 402.4 ft	Latitude: 33.97343	Longitude: 81.19696	Date Started: 2/4/2015
Total Depth: 99.3 ft	Soil Depth: 99.3 ft	Core Depth: 0.0 ft	Date Completed: 2/6/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 3.2 ft.	24HR: NA



LEGEND

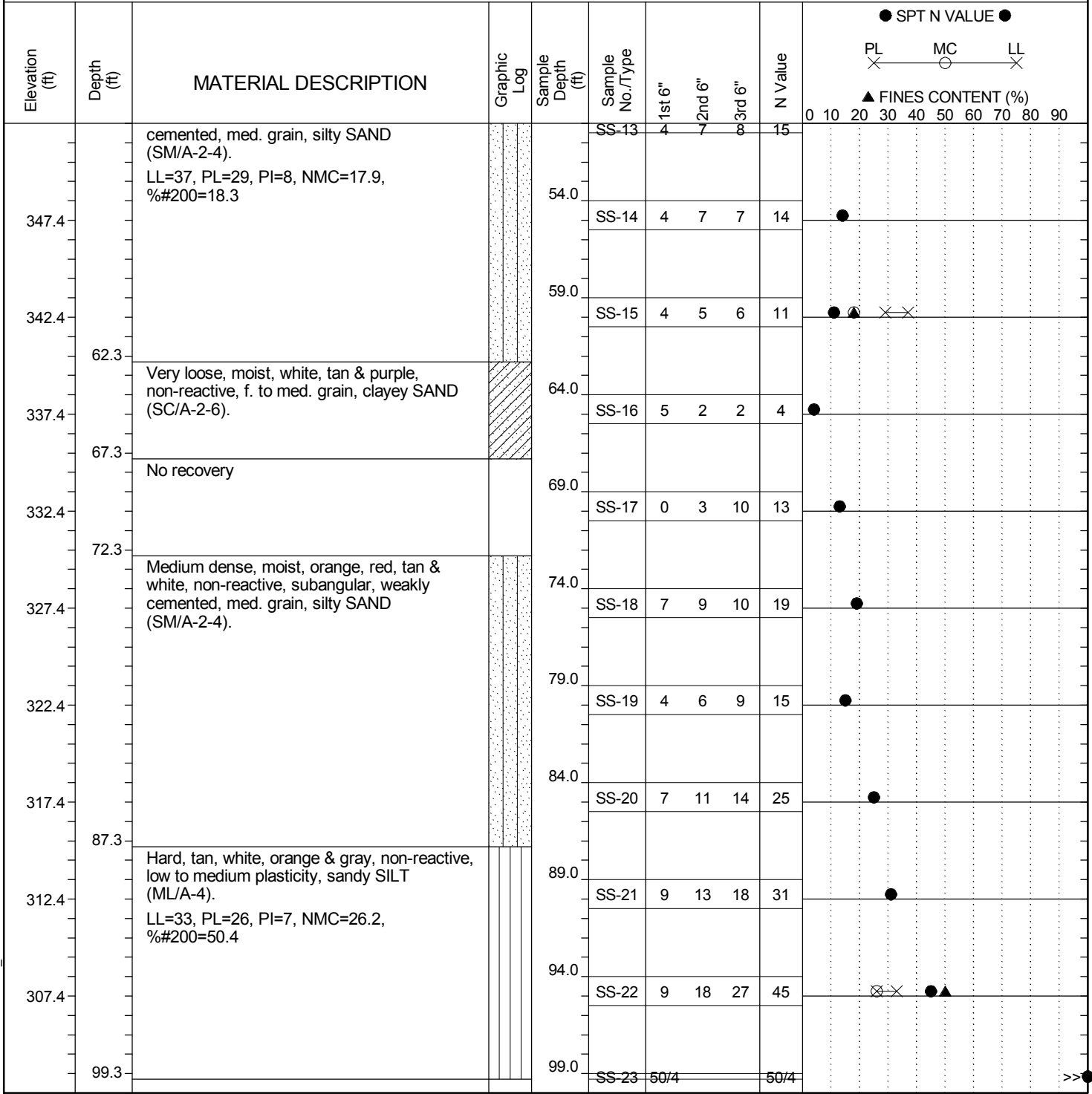
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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-31	Boring Location: 382+53	Offset: 21' Lt.	Alignment: Existing
Elev.: 402.4 ft	Latitude: 33.97343	Longitude: 81.19696	Date Started: 2/4/2015
Total Depth: 99.3 ft	Soil Depth: 99.3 ft	Core Depth: 0.0 ft	Date Completed: 2/6/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 3.2 ft.	24HR: NA



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-20 IMPROVEMENTS.GPJ SC.DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-31	Boring Location: 382+53	Offset: 21' Lt.	Alignment: Existing
Elev.: 402.4 ft	Latitude: 33.97343	Longitude: 81.19696	Date Started: 2/4/2015
Total Depth: 99.3 ft	Soil Depth: 99.3 ft	Core Depth: 0.0 ft	Date Completed: 2/6/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB 3.2 ft.	24HR: NA

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		
		No Refusal and Boring Terminated @ 99.3' (Elev. 303.1).																			
297.4		Boring relocated to edge of pavement due to guardrail. Boring backfilled immediately after completion, therefore, 24hr water table measurement was not obtained. Encountered artesian aquifer between 60.5' & 64.0'.																			
292.4																					
287.4																					
282.4																					
277.4																					
272.4																					
267.4																					
262.4																					
257.4																					

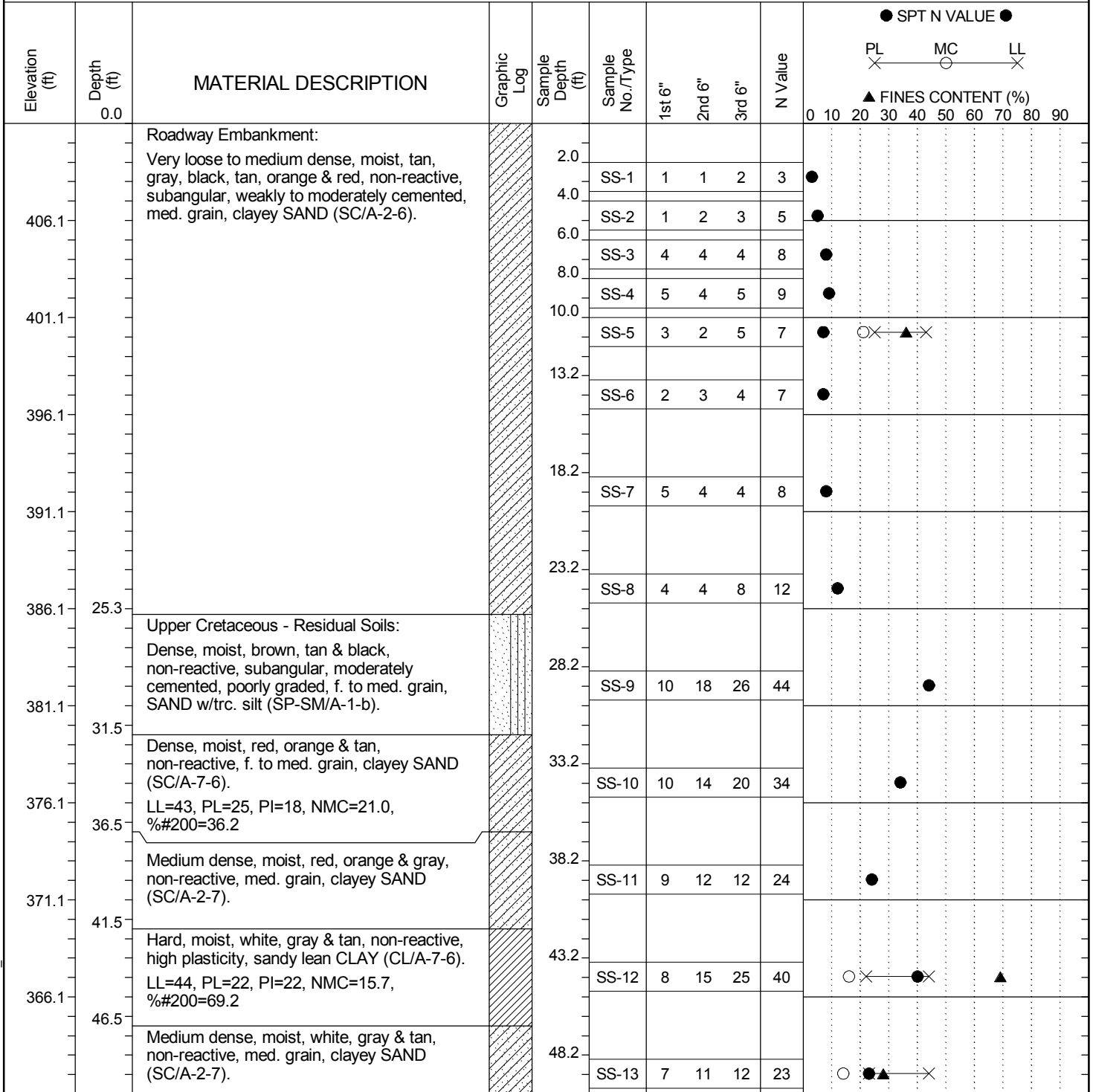
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-32	Boring Location: 385+10	Offset: 16' Rt.	Alignment: Existing
Elev.: 411.1 ft	Latitude: 33.9728	Longitude: 81.19736	Date Started: 2/8/2015
Total Depth: 99.7 ft	Soil Depth: 99.7 ft	Core Depth: 0.0 ft	Date Completed: 2/9/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB NA	24HR: NA



LEGEND

Continued Next Page

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

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.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-32	Boring Location: 385+10	Offset: 16' Rt.	Alignment: Existing
Elev.: 411.1 ft	Latitude: 33.9728	Longitude: 81.19736	Date Started: 2/8/2015
Total Depth: 99.7 ft	Soil Depth: 99.7 ft	Core Depth: 0.0 ft	Date Completed: 2/9/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB NA	24HR: NA

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 (%)								
51.5		LL=44, PL=23, PI=21, NMC=14.2, % #200=28.2																			
356.1		Medium dense, moist, tan, orange, white, pink, red & gray, non-reactive, subangular, weakly cemented, med. grain, silty SAND (SM/A-2-4).		53.2	SS-14	7	9	8	17												
351.1				58.2	SS-15	6	7	7	14												
346.1				63.2	SS-16	6	9	8	17												
341.1				68.2	SS-17	5	7	8	15												
336.1				73.2	SS-18	5	9	9	18												
331.1				78.2	SS-19	1	4	7	11												
326.1				83.2	SS-20	5	7	9	16												
321.1				88.2	SS-21	5	7	4	11												
316.1				93.2	SS-22	13	15	10	25												
96.5																					
99.7		Stiff, moist, white & gray, non-reactive, medium plasticity, sandy SILT (ML/A-4).		98.2	SS-23	2	4	5	9												

LEGEND Continued Next Page

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

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: Z. Bruce
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-32	Boring Location: 385+10	Offset: 16' Rt.	Alignment: Existing
Elev.: 411.1 ft	Latitude: 33.9728	Longitude: 81.19736	Date Started: 2/8/2015
Total Depth: 99.7 ft	Soil Depth: 99.7 ft	Core Depth: 0.0 ft	Date Completed: 2/9/2015
Bore Hole Diameter (in): 4	Sampler Configuration	Liner Required: Y (N)	Liner Used: Y (N)
Drill Machine: CME55	Drill Method: DC	Hammer Type: Automatic	Energy Ratio: 90%
Core Size: NA	Driller: B. Cayton	Groundwater: TOB NA	24HR: NA

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													
										[Grid for SPT N Value and Fines Content]													
306.1		No Refusal and Boring Terminated @ 99.7' (Elev. 311.4). Boring relocated to edge of pavement due to guardrail. Boring backfilled immediately after completion, therefore, 24hr water table measurement was not obtained.																					
301.1																							
296.1																							
291.1																							
286.1																							
281.1																							
276.1																							
271.1																							
266.1																							

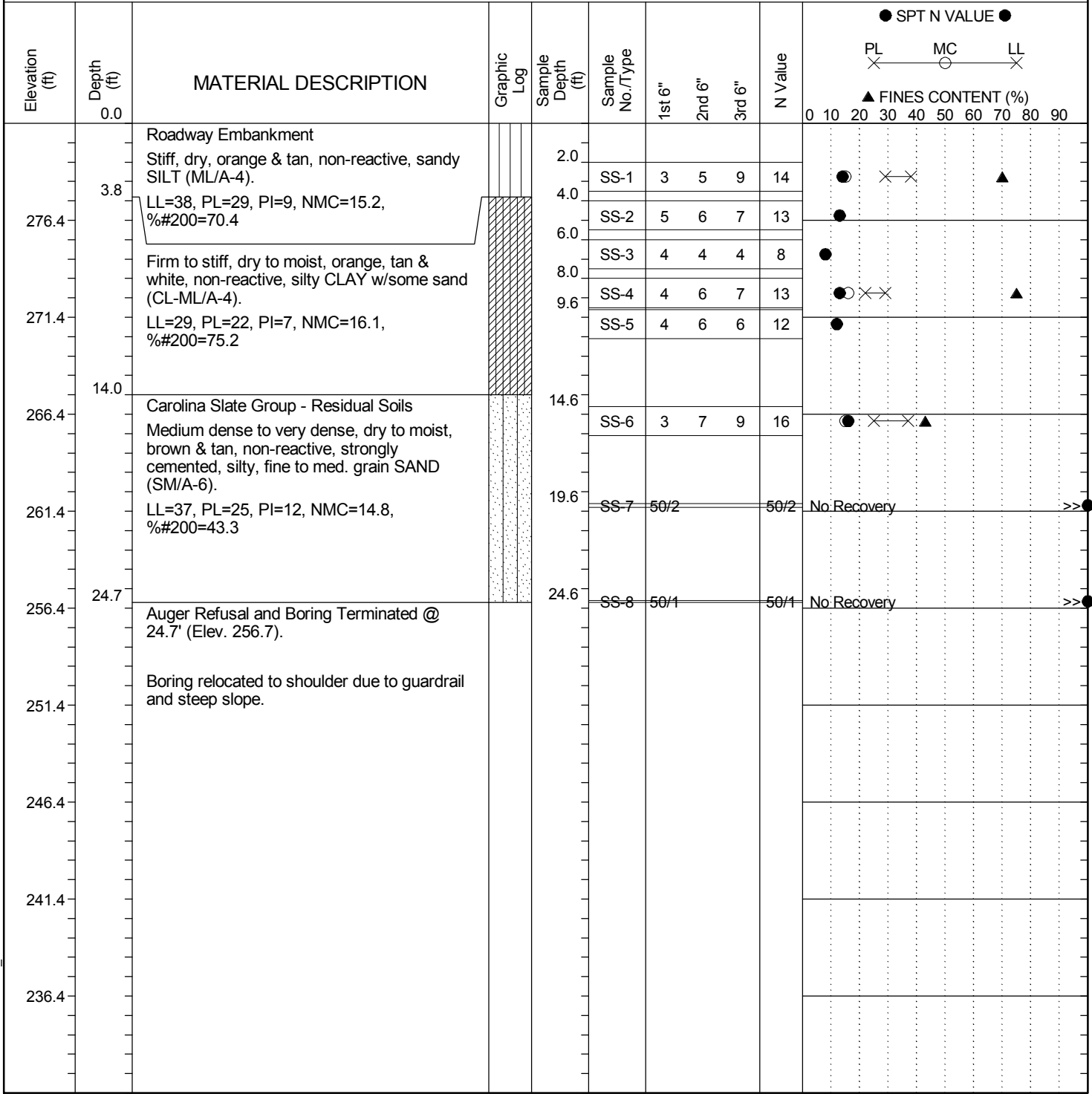
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: R. DeLost
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-33	Boring Location: 208+33	Offset: 46' Rt	Alignment: Existing
Elev.: 281.4 ft	Latitude: 34.0069	Longitude: 81.1599	Date Started: 7/21/2015
Total Depth: 24.7 ft	Soil Depth: 24.7 ft	Core Depth: 0.0 ft	Date Completed: 7/21/2015
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: 90.1%
Core Size: NA	Driller: M. Morgan	Groundwater: TOB Dry	24HR: NA



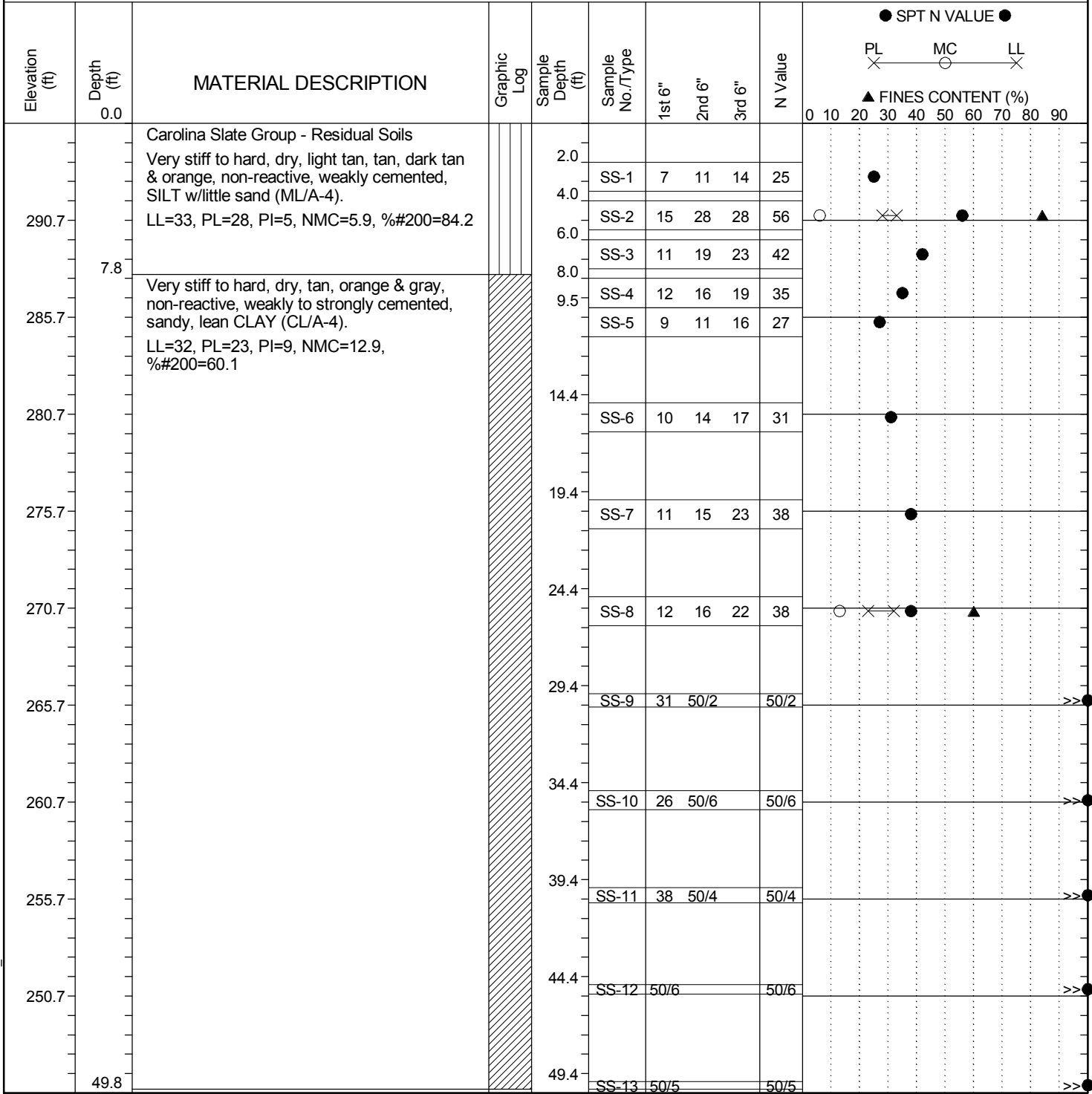
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: R. DeLost
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-34	Boring Location: 216+35	Offset: 69' Rt.	Alignment: Existing
Elev.: 295.7 ft	Latitude: 34.00599	Longitude: 81.1623	Date Started: 7/16/15
Total Depth: 49.8 ft	Soil Depth: 49.8 ft	Core Depth: 0.0 ft	Date Completed: 7/16/2015
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: 90.1%
Core Size: NA	Driller: M. Morgan	Groundwater: TOB 34.0 ft.	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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: R. DeLost
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-34	Boring Location: 216+35	Offset: 69' Rt.	Alignment: Existing
Elev.: 295.7 ft	Latitude: 34.00599	Longitude: 81.1623	Date Started: 7/16/15
Total Depth: 49.8 ft	Soil Depth: 49.8 ft	Core Depth: 0.0 ft	Date Completed: 7/16/2015
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: 90.1%
Core Size: NA	Driller: M. Morgan	Groundwater: TOB 34.0 ft.	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 and Boring Terminated @ 49.8' (Elev. 245.9).																				
240.7																						
235.7																						
230.7																						
225.7																						
220.7																						
215.7																						
210.7																						
205.7																						
200.7																						

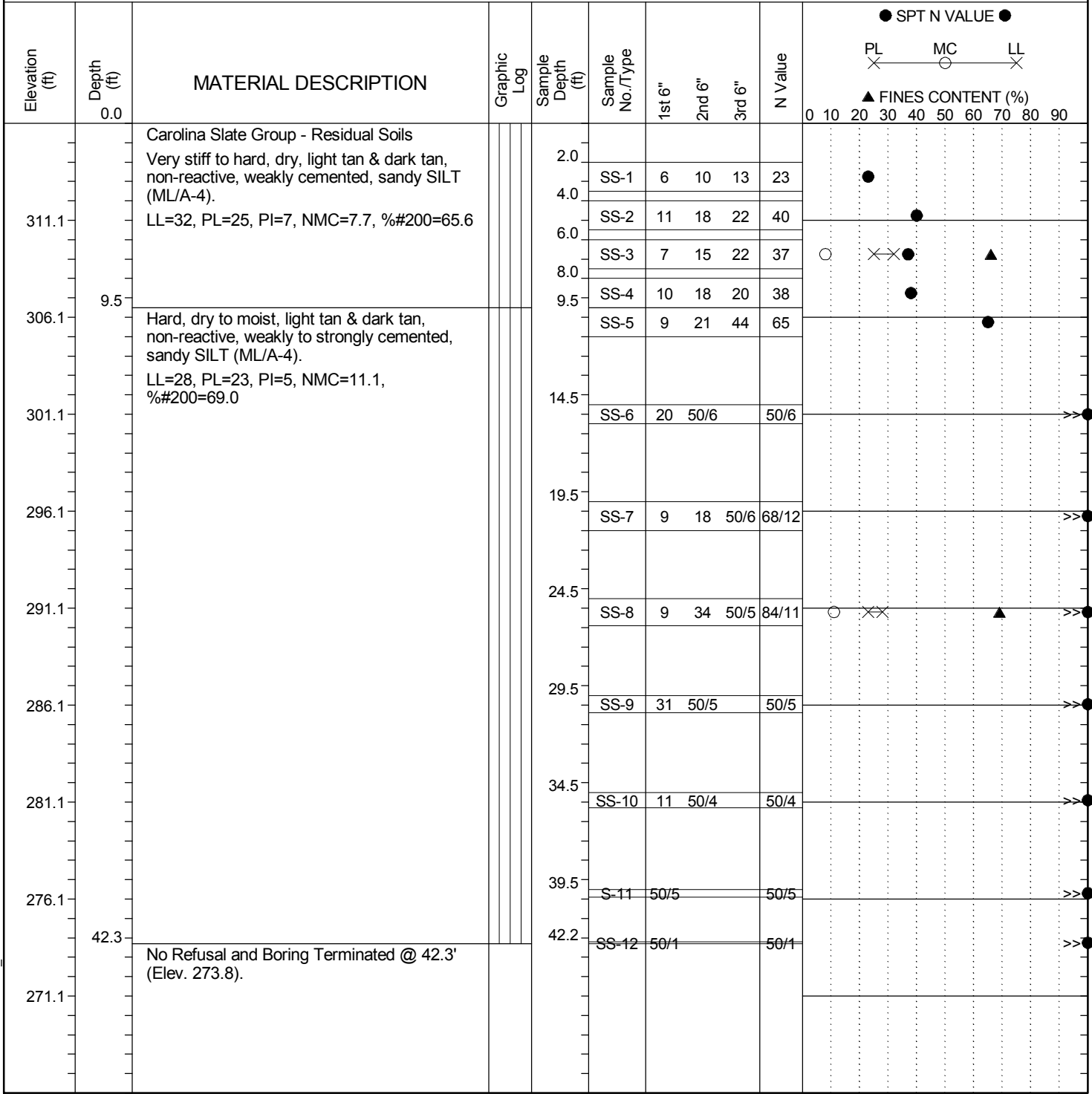
LEGEND

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

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: R. DeLost
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-35	Boring Location: 224+36	Offset: 72' Rt.	Alignment: Existing
Elev.: 316.1 ft	Latitude: 34.0051	Longitude: 81.16459	Date Started: 7/16/15
Total Depth: 42.3 ft	Soil Depth: 42.3 ft	Core Depth: 0.0 ft	Date Completed: 7/16/2015
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: 90.1%
Core Size: NA	Driller: M. Morgan	Groundwater: TOB 26.7 ft.	24HR



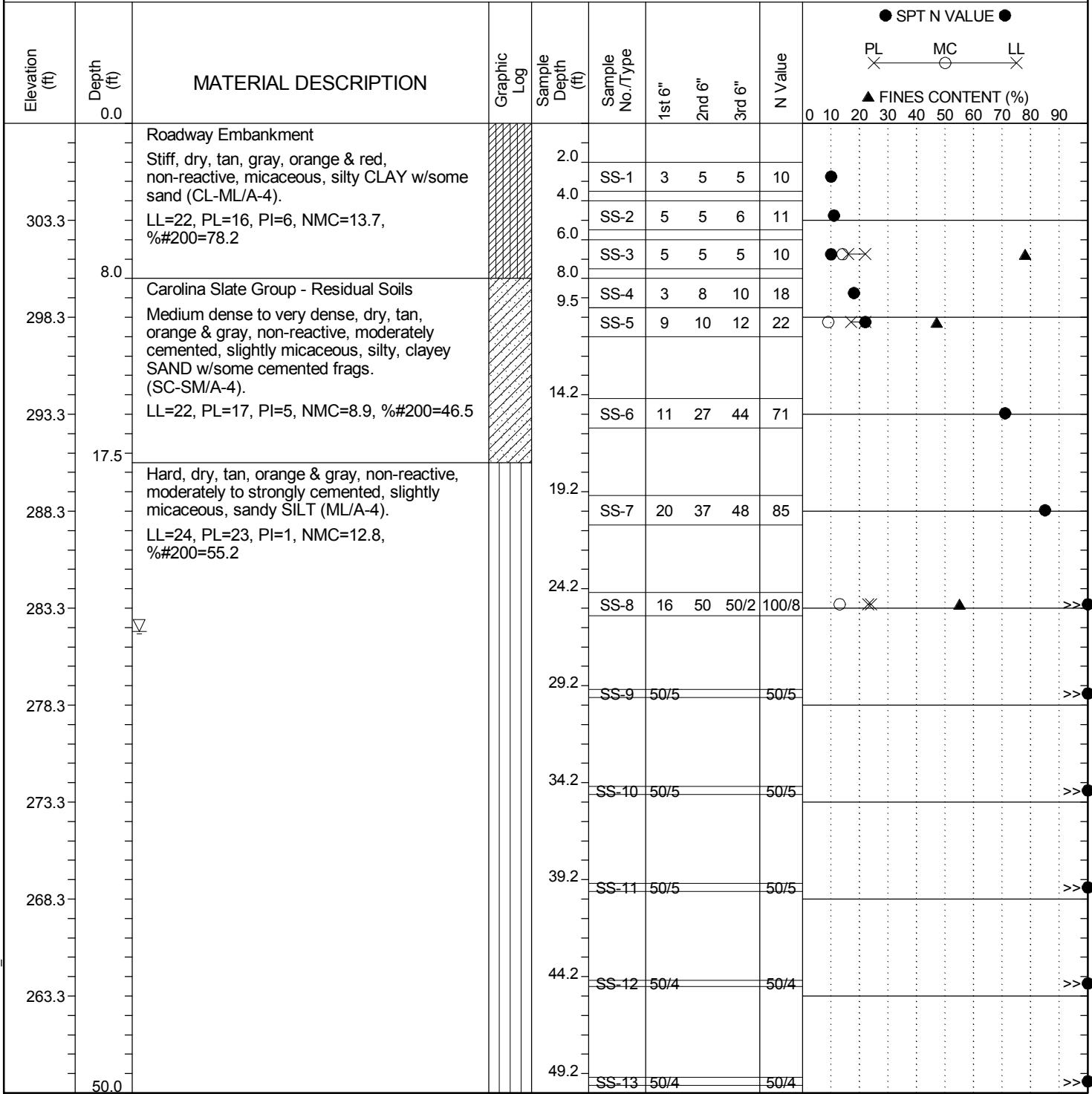
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: R. DeLost
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-36	Boring Location: 231+98	Offset: 70' Rt.	Alignment: Existing
Elev.: 308.3 ft	Latitude: 34.0041	Longitude: 81.1668	Date Started: 7/23/2015
Total Depth: 50 ft	Soil Depth: 50 ft	Core Depth: 0.0 ft	Date Completed: 7/23/2015
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: 90.1%
Core Size: NA	Driller: M. Morgan	Groundwater: TOB 26.2 ft.	24HR: NA



LEGEND

Continued Next Page

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

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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SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):		County: Lexington		Eng./Geo.:	R. DeLost	
Site Description:		I-20 Roadway Improvements				Route:	I-20
Boring No.:	B-36	Boring Location:	231+98	Offset:	70' Rt.	Alignment:	Existing
Elev.:	308.3 ft	Latitude:	34.0041	Longitude:	81.1668	Date Started:	7/23/2015
Total Depth:	50 ft	Soil Depth:	50 ft	Core Depth:	0.0 ft	Date Completed:	7/23/2015
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:	90.1%
Core Size:	NA	Driller:	M. Morgan	Groundwater:	TOB	26.2 ft.	24HR NA

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	
		No Refusal and Boring Terminated @ 50.0' (Elev. 258.3).																		
253.3		Boring relocated to low lying area to check for groundwater.																		
248.3																				
243.3																				
238.3																				
233.3																				
228.3																				
223.3																				
218.3																				
213.3																				

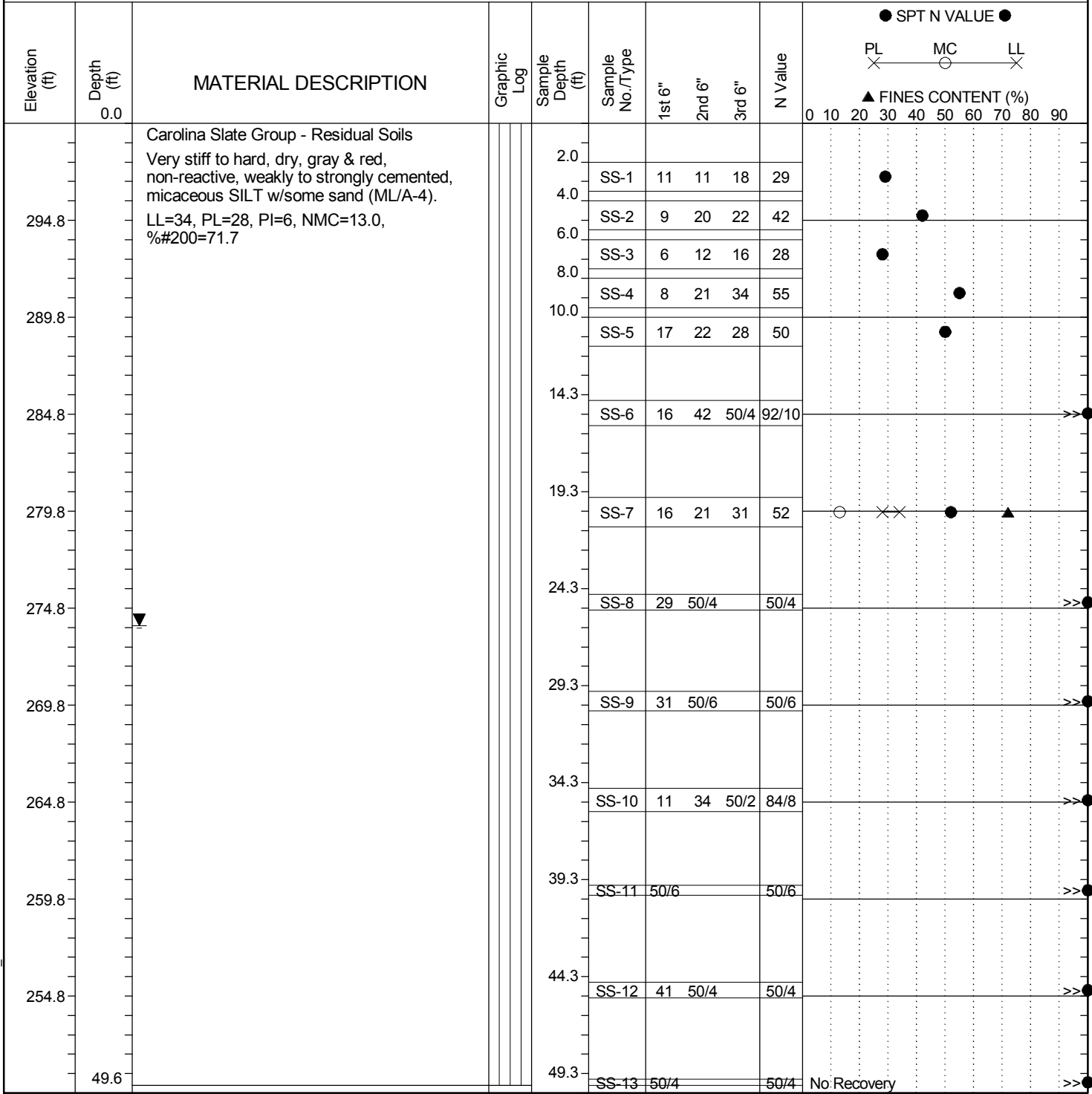
LEGEND

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	

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County:	Lexington	Eng./Geo.:	R. DeLost		
Site Description:			I-20 Roadway Improvements		Route:	I-20	
Boring No.:	B-37	Boring Location:	240+41	Offset:	65' Rt.	Alignment:	Existing
Elev.:	299.8 ft	Latitude:	34.0031	Longitude:	81.16934	Date Started:	7/22/2015
Total Depth:	49.6 ft	Soil Depth:	49.6 ft	Core Depth:	0.0 ft	Date Completed:	7/22/2015
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:	90.1%
Core Size:	NA	Driller:	M. Morgan	Groundwater:	TOB Dry	24HR	25.9 ft.



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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: R. DeLost
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-37	Boring Location: 240+41	Offset: 65' Rt.	Alignment: Existing
Elev.: 299.8 ft	Latitude: 34.0031	Longitude: 81.16934	Date Started: 7/22/2015
Total Depth: 49.6 ft	Soil Depth: 49.6 ft	Core Depth: 0.0 ft	Date Completed: 7/22/2015
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: 90.1%
Core Size: NA	Driller: M. Morgan	Groundwater: TOB Dry	24HR: 25.9 ft.

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		
		No Refusal and Boring Terminated @ 49.6' (Elev. 250.2).																			
		Boring relocated due to steep slope.																			
244.8																					
239.8																					
234.8																					
229.8																					
224.8																					
219.8																					
214.8																					
209.8																					
204.8																					

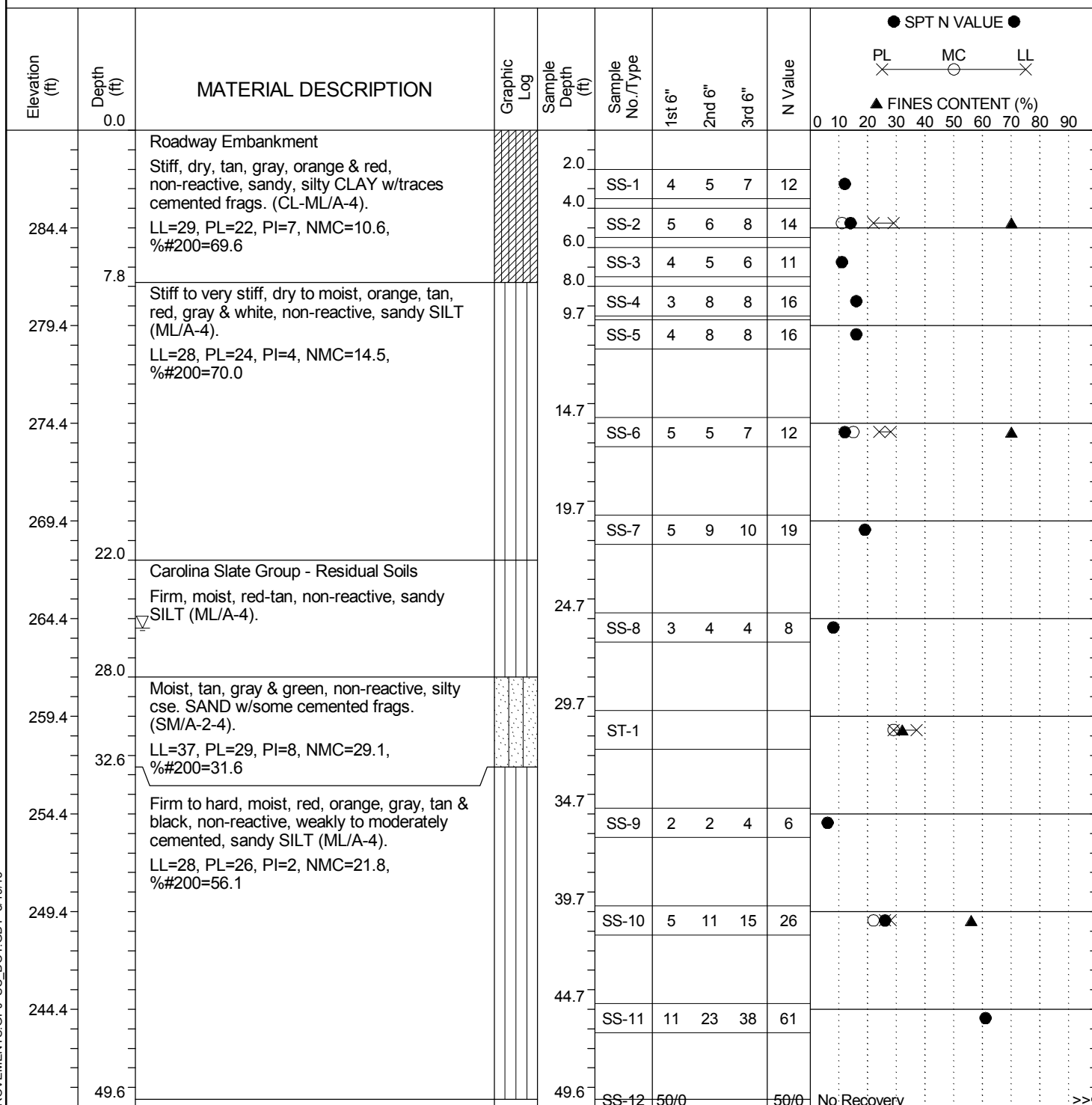
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: R. DeLost
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-38	Boring Location: 247+86	Offset: 47' Rt.	Alignment: Existing
Elev.: 289.4 ft	Latitude: 34.0018	Longitude: 81.17134	Date Started: 7/21/2015
Total Depth: 49.6 ft	Soil Depth: 49.6 ft	Core Depth: 0.0 ft	Date Completed: 7/21/2015
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: 90.1%
Core Size: NA	Driller: M. Morgan	Groundwater: TOB 25.5 ft.	24HR: NA



LEGEND

Continued Next Page

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

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.:	Project No. (PIN):	County: Lexington	Eng./Geo.: R. DeLost
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-38	Boring Location: 247+86	Offset: 47' Rt.	Alignment: Existing
Elev.: 289.4 ft	Latitude: 34.0018	Longitude: 81.17134	Date Started: 7/21/2015
Total Depth: 49.6 ft	Soil Depth: 49.6 ft	Core Depth: 0.0 ft	Date Completed: 7/21/2015
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: 90.1%
Core Size: NA	Driller: M. Morgan	Groundwater: TOB 25.5 ft.	24HR: NA

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 (%)										
234.4		Auger Refusal and Boring Terminated @ 49.6' (Elev. 239.8). Boring relocated to shoulder due to guardrail, steep slope and overhead utilities.																					
229.4																							
224.4																							
219.4																							
214.4																							
209.4																							
204.4																							
199.4																							
194.4																							

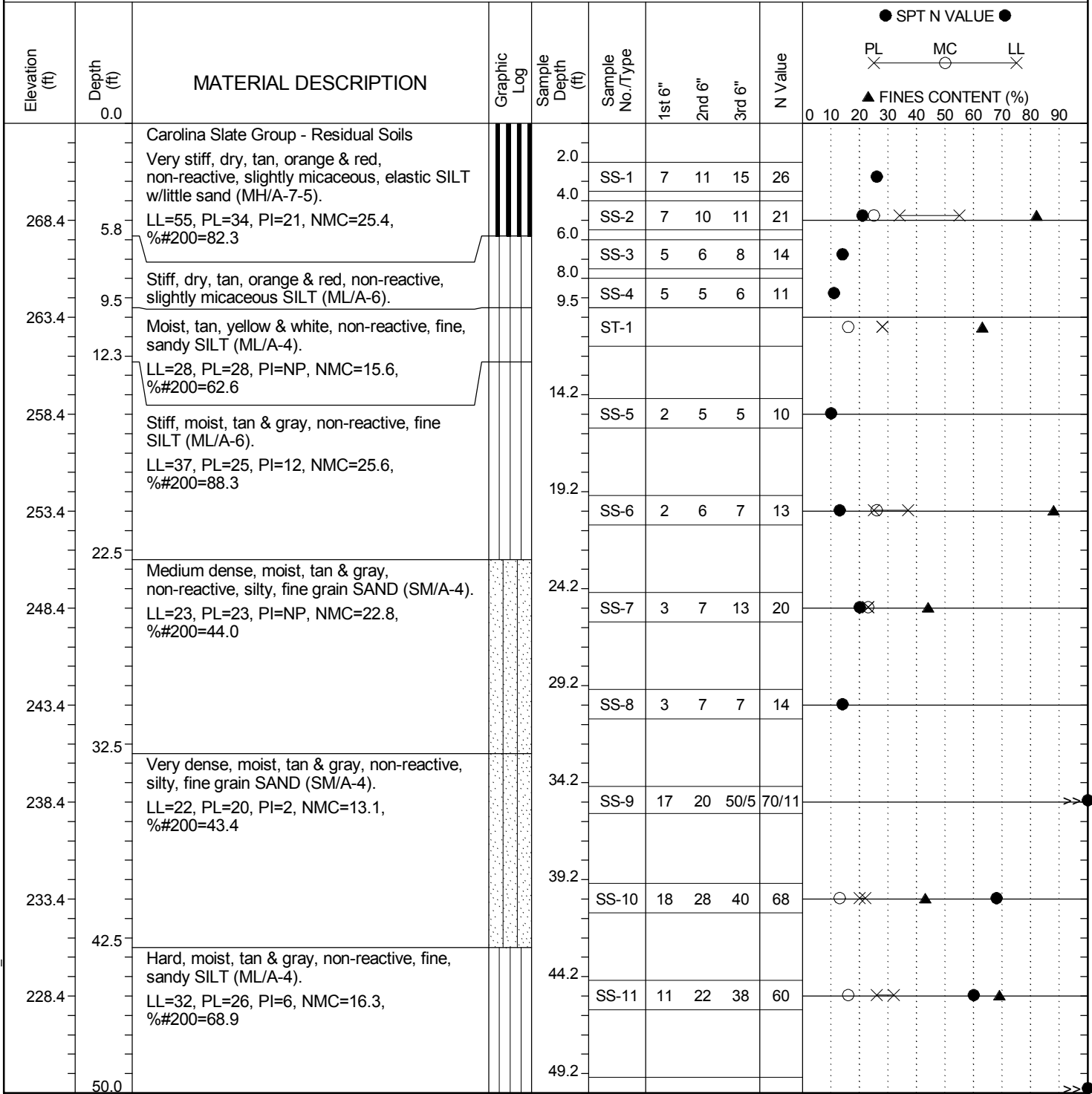
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: R. DeLost
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-39	Boring Location: 256+24	Offset: 126' Rt.	Alignment: Existing
Elev.: 273.4 ft	Latitude: 34.00259	Longitude: 81.1734	Date Started: 7/24/2015
Total Depth: 50 ft	Soil Depth: 50.0 ft	Core Depth: 0.0 ft	Date Completed: 7/24/2015
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: 90.1%
Core Size: NA	Driller: M. Morgan	Groundwater: TOB Dry	24HR: NA



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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: R. DeLost
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-39	Boring Location: 256+24	Offset: 126' Rt.	Alignment: Existing
Elev.: 273.4 ft	Latitude: 34.00259	Longitude: 81.1734	Date Started: 7/24/2015
Total Depth: 50 ft	Soil Depth: 50.0 ft	Core Depth: 0.0 ft	Date Completed: 7/24/2015
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: 90.1%
Core Size: NA	Driller: M. Morgan	Groundwater: TOB Dry	24HR: NA

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		
		No Refusal and Boring Terminated @ 50.0' (Elev. 223.4).			SS-12	18	50	50/1	100/7												
218.4																					
213.4																					
208.4																					
203.4																					
198.4																					
193.4																					
188.4																					
183.4																					
178.4																					

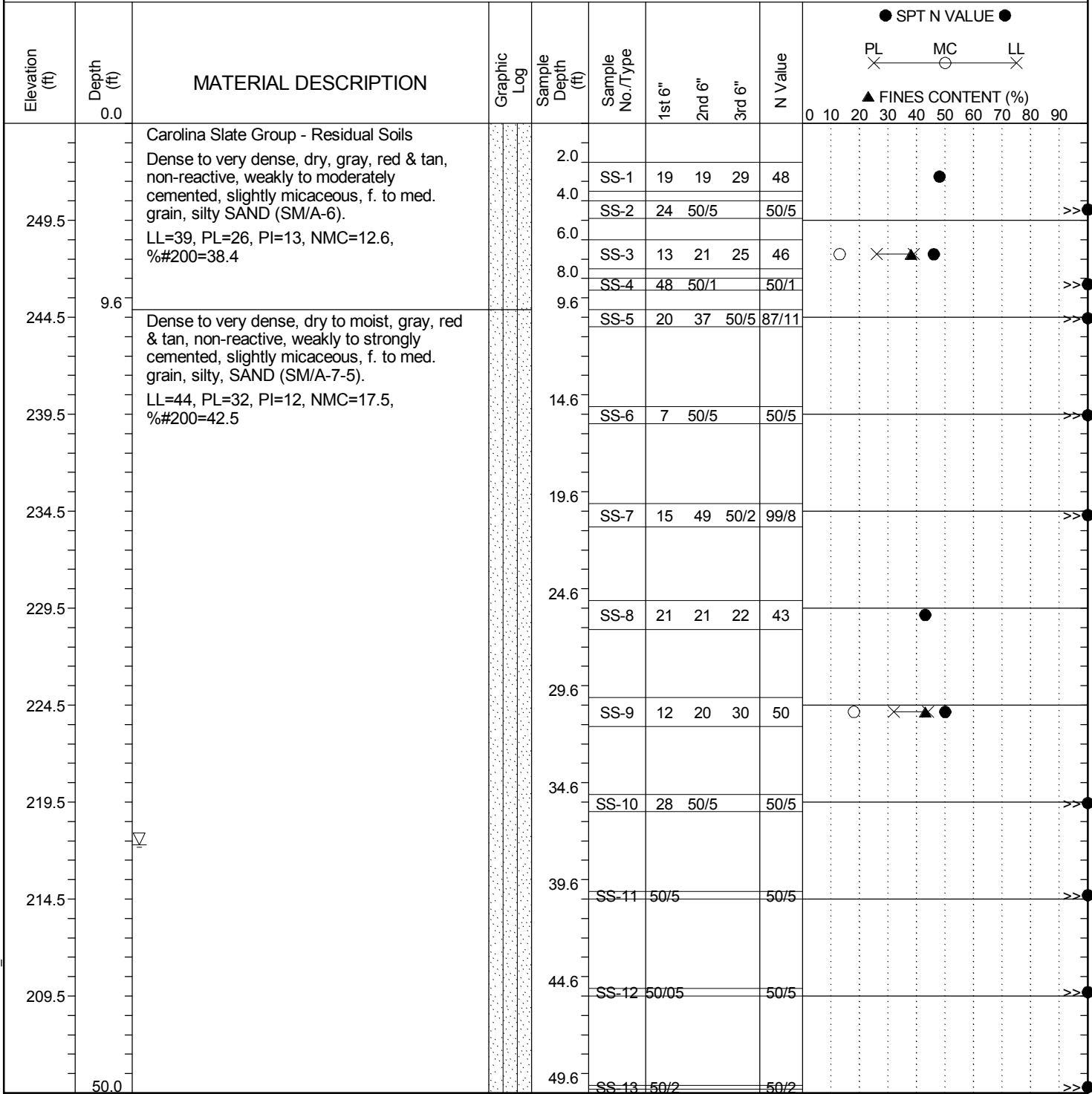
LEGEND

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

SCDOT Soil Test Boring Log

File No.:	Project No. (PIN):	County: Lexington	Eng./Geo.: R. DeLost
Site Description: I-20 Roadway Improvements		Route: I-20	
Boring No.: B-40	Boring Location: 262+81	Offset: 59' Rt.	Alignment: Existing
Elev.: 254.5 ft	Latitude: 33.9987	Longitude: 81.1745	Date Started: 7/31/2015
Total Depth: 50 ft	Soil Depth: 50.0 ft	Core Depth: 0.0 ft	Date Completed: 7/31/2015
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: 90.1%
Core Size: NA	Driller: M. Morgan	Groundwater: TOB 37.2 ft.	24HR: NA



LEGEND

Continued Next Page

SC_DOT I-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15

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

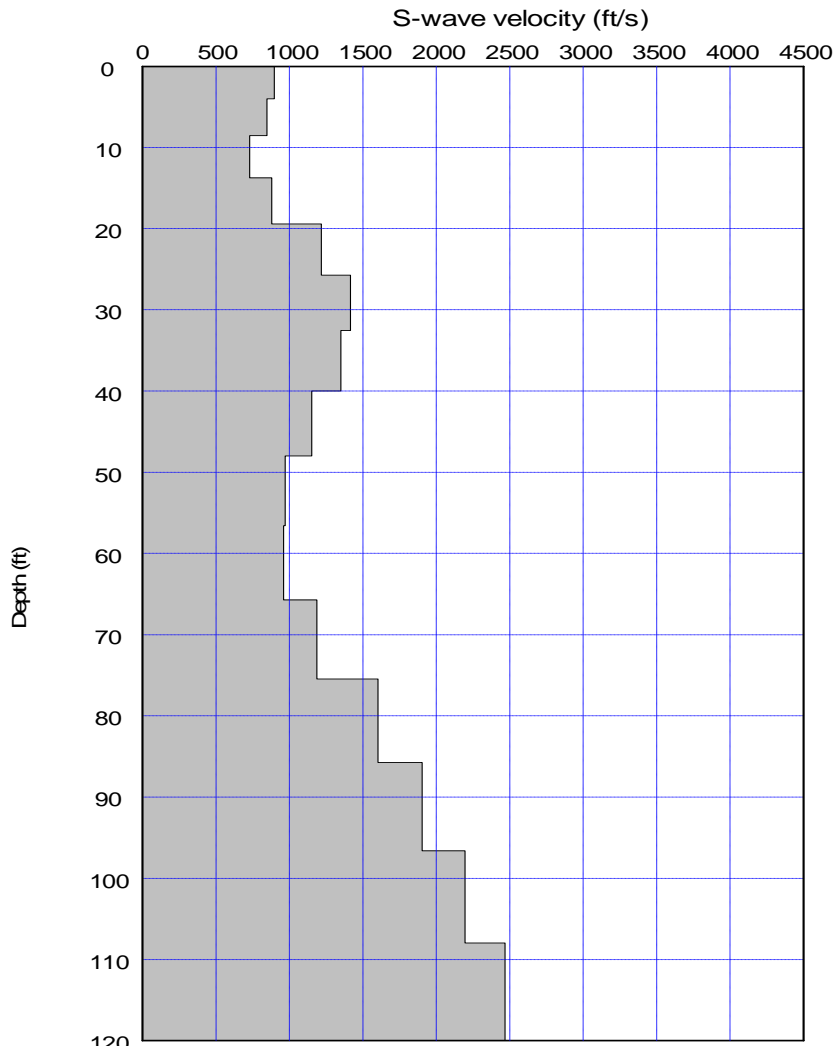
File No.:	Project No. (PIN):	County: Lexington			Eng./Geo.: R. DeLost
Site Description: I-20 Roadway Improvements				Route: I-20	
Boring No.: B-40	Boring Location: 262+81		Offset: 59' Rt.	Alignment: Existing	
Elev.: 254.5 ft	Latitude: 33.9987	Longitude: 81.1745	Date Started: 7/31/2015		
Total Depth: 50 ft	Soil Depth: 50.0 ft	Core Depth: 0.0 ft	Date Completed: 7/31/2015		
Bore Hole Diameter (in): 4		Sampler Configuration	Liner Required: Y $\text{\textcircled{N}}$	Liner Used: Y $\text{\textcircled{N}}$	
Drill Machine: CME 45C	Drill Method: HSA	Hammer Type: Automatic	Energy Ratio: 90.1%		
Core Size: NA	Driller: M. Morgan	Groundwater: TOB	37.2 ft.	24HR	NA

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<p align="center">● SPT N VALUE ●</p> <p align="center"> PL \times MC \circ LL \times </p> <p align="center">▲ FINES CONTENT (%)</p> <p align="center">0 10 20 30 40 50 60 70 80 90</p>												
										0	10	20	30	40	50	60	70	80	90			
		No Refusal and Boring Terminated @ 50.0' (Elev. 204.5).																				
199.5																						
194.5																						
189.5																						
184.5																						
179.5																						
174.5																						
169.5																						
164.5																						
159.5																						

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-20 IMPROVEMENTS.GPJ SC_DOT.GDT 8/19/15



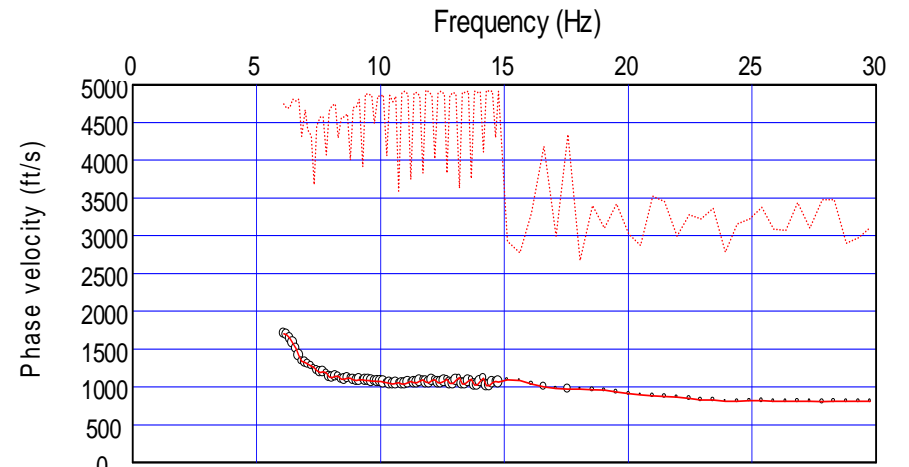
S-wave velocity model : Combined.rst

Average Weighted Shear Wave Velocity (ft/s)¹ = **1511**

Seismic Site Classification = **C**

1. Between 30 ft and 130 ft.

Testing Results	
Depth(ft)	S-wave velocity(ft/s)
0.0	898.7
4.0	849.1
8.6	731.5
13.7	879.0
19.4	1220.4
25.7	1416.1
32.6	1351.1
40.0	1153.8
48.0	973.1
56.6	962.6
65.7	1189.1
75.4	1605.0
85.7	1906.2
96.6	2196.8
108.0	2468.5
144.0	2616.3



Dispersion curve : Combined.rst

Project Mgr:	BTS
Prepared by:	BTS
Checked by:	BTS
Approved by:	WB

Project No.	EN155008
Scale:	NA
Date:	4/29/2015

Terracon

1450 FIFTH STREET WEST NORTH CHARLESTON, SC
 PH: (843) 884-1234 Fax: (843) 884-9234

GEOPHYSICAL TESTING RESULTS
MASW SHEAR WAVE VELOCITY
 I-20 D/B Roadway Improvements
 Columbia, SC

TEST N0
MASW-1

Appendix C. Laboratory Testing Results



Soil Classifications Summary

Boring No.	Soil No.	Sample No.	Depth (ft)	Natural Moisture (%)	%< #4 Sieve	%< #10 Sieve	%< #40 Sieve	%< #200 Sieve	LL	PL	PI	ASTM	AASHTO
B-1	62	SS-1	2.0' to 3.5'	21.3	97.9	96.0	89.7	70.5	33	23	10	CL	A-4 (6)
B-1	68	SS-9	28.2' to 28.6'	14.3	98.5	92.9	70.5	43.3	24	23	1	SM	A-4 (0)
B-2	63	SS-2	4.0' to 5.5'	18.2	96.5	94.3	89.3	76.2	31	27	4	ML	A-4 (3)
B-2	66	SS-5	10.0' to 11.5'	25.4	97.0	94.1	85.0	68.1	37	31	6	ML	A-4 (4)
B-3	64	SS-3	6.0' to 7.5'	23.8	92.6	84.0	70.7	57.3	40	27	13	ML	A-6 (6)
B-3	65	SS-5	10.0' to 11.5'	18.2	88.8	81.6	67.9	53.1	39	24	15	CL	A-6 (5)
B-4	67	SS-4	8.0' to 9.5'	18.0	97.7	95.2	92.0	62.2	24	19	5	CL-ML	A-4 (1)
B-5	69	SS-1	2.0' to 3.5'	12.9	98.0	93.8	52.5	26.5	24	15	9	SC	A-2-4 (0)
B-5	71	SS-5	10.0' to 11.5'	15.4	93.1	83.3	35.5	22.8	40	26	14	SM	A-2-6 (1)
B-5	74	SS-7	18.5' to 20.0'	18.1	75.6	62.5	48.3	38.8	34	26	8	SM	A-4 (0)
B-6	70	SS-4	8.0' to 9.5'	40.6	99.7	98.1	91.9	79.0	55	43	12	MH	A-7-5 (13)
B-6	75	SS-6	13.3' to 14.8'	41.4	100.0	97.2	89.1	76.3	49	42	7	ML	A-5 (8)
B-6A	28	Bag-5	0.3' to 4.5'	NA	99.2	95.1	50.0	27.0	26	19	7	SC-SM	A-2-4 (0)
B-6A	37	Bag-6	4.5' to 10.0'	NA	99.0	96.4	89.3	80.1	50	33	17	MH	A-7-5 (16)
B-6B	41	ST-1	4.0' to 5.5'	23.9	99.3	96.5	87.1	69.3	38	33	5	ML	A-4 (4)
B-7	72	SS-4	8.0' to 9.5'	52.7	96.3	85.1	57.8	32.2	56	41	15	SM	A-2-7 (1)
B-7A	78	ST-1	8.0' to 9.0'	55.6	99.9	99.4	79.2	40.6	60	48	12	SM	A-7-5 (2)
B-8	73	SS-5	10.0' to 11.5'	22.6	100.0	98.9	35.3	18.3	39	28	11	SM	A-2-6 (0)
B-10	84	SS-3	6.0' to 7.5'	15.2	99.9	95.8	46.6	29.4	48	24	24	SC	A-2-7 (3)
B-10	86	SS-7	18.4' to 19.9'	18.8	100.0	99.8	91.2	68.8	40	23	17	CL	A-6 (11)
B-10	87	SS-8	23.4' to 24.9'	16.9	100.0	97.7	41.0	11.9	21	17	4	SW-SM	A-1-b (0)
B-11	85	SS-3	6.0' to 7.5'	16.1	100.0	99.9	63.4	16.3	23	19	4	SM	A-2-4 (0)
B-11	88	SS-8	23.3' to 24.8'	14.7	100.0	99.1	55.7	17.4	27	18	9	SC	A-2-4 (0)
B-12	1	SS-2	4.0' to 5.5'	13.8	100.0	99.7	58.8	22.0	22	13	9	SC	A-2-4 (0)
B-12	2	SS-3	6.0' to 7.5'	16.4	100.0	99.3	52.2	26.9	36	19	17	SC	A-2-6 (1)
B-12	3	SS-6	13.3' to 14.8'	20.3	86.8	85.8	82.6	54.1	39	24	15	CL	A-6 (6)
B-12	4	SS-8	23.3' to 24.8'	22.8	100.0	100.0	94.8	14.3	NP	NP	NP	SM	A-2-4 (0)
B-13	5	SS-3	6.0' to 7.5'	13.7	100.0	99.7	48.7	13.8	19	16	3	SM	A-1-b (0)
B-13	6	SS-9	28.4' to 29.9'	18.2	97.2	87.8	47.1	30.8	41	25	16	SC	A-2-7 (1)
B-14	7	SS-2	4.0' to 5.5'	14.5	100.0	98.9	34.5	11.2	17	14	3	SP-SM	A-1-b (0)
B-14	8	SS-4	8.0' to 9.5'	17.3	99.9	98.0	44.0	30.0	49	29	20	SM	A-2-7 (2)
B-14	13	SS-9	28.7' to 30.2'	19.7	99.8	97.8	46.3	20.2	32	22	10	SC	A-2-4 (0)
B-15	9	SS-5	10.0' to 11.5'	22.0	100.0	100.0	96.7	82.7	44	26	18	CL	A-7-6 (16)
B-15	10	SS-6	13.6' to 15.1'	18.9	100.0	99.9	70.3	25.2	39	27	12	SM	A-2-6 (0)
B-15	11	SS-7	18.6' to 20.1'	23.4	100.0	99.7	84.0	23.6	23	21	2	SM	A-2-4 (0)
B-15	12	SS-8	23.6' to 25.1'	20.5	100.0	99.9	76.7	11.6	NP	NP	NP	SW-SM	A-2-4 (0)
B-15A	89	ST-1	6.0' to 6.9'	16.2	99.9	98.7	49.9	23.1	37	21	16	SC	A-2-6 (1)
B-16	14	SS-3	6.0' to 7.5'	13.3	100.0	99.8	38.9	2.7	NP	NP	NP	SP	A-1-b (0)
B-16	16	SS-5	10.0' to 11.5'	17.8	99.6	99.0	54.8	17.8	23	15	8	SC	A-2-4 (0)
B-16	17	SS-7	18.4' to 19.9'	27.6	100.0	100.0	85.9	49.7	38	24	14	SC	A-6 (4)
B-16	18	SS-8	23.4' to 24.9'	16.3	100.0	99.0	32.8	17.3	36	21	15	SC	A-2-6 (1)
B-17	15	SS-6	14.0' to 15.5'	15.6	99.9	98.6	48.9	17.4	25	19	6	SC-SM	A-1-b (0)
B-17	19	SS-8	24.0' to 25.5'	28.4	100.0	99.8	74.0	17.0	27	23	4	SM	A-2-4 (0)



Soil Classifications Summary

Boring No.	Soil No.	Sample No.	Depth (ft)	Natural Moisture (%)	% < #4 Sieve	% < #10 Sieve	% < #40 Sieve	% < #200 Sieve	LL	PL	PI	ASTM	AASHTO
B-18	23	SS-7	18.5' to 20.0'	15.3	100.0	98.5	58.0	34.7	36	20	16	SC	A-2-6 (1)
B-19	21	SS-3	6.0' to 7.5'	16.5	99.6	95.7	47.0	17.3	30	22	8	SC	A-2-4 (0)
B-19	24	SS-7	19.0' to 20.5'	16.6	99.9	98.6	36.9	13.1	24	18	6	SC-SM	A-1-b (0)
B-19	25	SS-9	29.0' to 30.5'	15.6	100.0	99.8	86.4	59.0	27	17	10	CL	A-4 (3)
B-20	27	SS-4	8.0' to 9.5'	14.2	100.0	96.4	28.6	15.4	33	26	7	SM	A-2-4 (0)
B-20	29	SS-9	28.5' to 30.0'	15.9	100.0	91.3	34.9	13.9	27	21	6	SC-SM	A-1-b (0)
B-21	26	SS-2	4.0' to 5.5'	16.1	99.8	95.9	41.4	18.4	32	23	9	SC	A-2-4 (0)
B-22	30	SS-2	4.0' to 5.5'	17.2	99.9	99.3	60.5	13.1	21	17	4	SM	A-2-4 (0)
B-22	31	SS-4	8.0' to 9.5'	14.4	99.3	91.9	36.0	19.5	40	26	14	SM	A-2-6 (1)
B-22	32	SS-6	13.6' to 15.1'	15.0	99.9	93.8	23.3	11.4	31	23	8	SP-SC	A-2-4 (0)
B-22	34	SS-7	18.6' to 20.1'	22.6	100.0	97.6	52.7	33.9	40	27	13	SM	A-2-6 (1)
B-22	36	SS-9	28.6' to 30.1'	22.1	100.0	98.0	57.9	20.8	27	20	7	SC-SM	A-2-4 (0)
B-23	33	SS-5	10.0' to 11.5'	10.6	99.9	99.7	45.6	9.3	NP	NP	NP	SP-SM	A-1-b (0)
B-23	35	SS-9	29.0' to 30.5'	19.9	99.9	99.3	38.1	14.1	28	25	3	SM	A-1-b (0)
B-24	38	SS-7	18.5' to 20.0'	11.4	100.0	99.7	51.9	7.7	NP	NP	NP	SP-SM	A-3 (0)
B-25	39	SS-1	2.0' to 3.5'	15.8	100.0	99.7	87.2	32.6	29	20	9	SC	A-2-4 (0)
B-25	40	SS-3	6.0' to 7.1'	17.9	99.6	97.1	38.2	18.4	33	20	13	SC	A-2-6 (1)
B-25	42	SS-5	10.0' to 11.5'	14.9	100.0	99.2	76.6	42.3	39	20	19	SC	A-6 (4)
B-25	43	SS-6	13.7' to 15.2'	15.7	100.0	96.6	51.7	14.1	23	20	3	SM	A-2-4 (0)
B-25	44	SS-8	23.7' to 25.2'	22.4	100.0	99.0	59.2	30.6	34	22	12	SC	A-2-6 (0)
B-26	45	SS-2	4.0' to 5.5'	14.4	100.0	98.3	43.7	16.9	24	17	7	SC-SM	A-2-4 (0)
B-26	51	SS-5	10.0' to 11.5'	15.1	100.0	99.4	44.4	9.8	NP	NP	NP	SP-SM	A-1-b (0)
B-26	52	SS-6	13.8' to 15.3'	18.0	100.0	99.9	65.5	26.7	35	18	17	SC	A-2-6 (1)
B-26	53	SS-8	23.8' to 25.3'	24.4	99.8	97.1	32.6	11.7	25	17	8	SP-SC	A-2-4 (0)
B-27	46	SS-2	4.0' to 5.0'	14.6	96.6	88.4	27.8	16.9	42	20	22	SC	A-2-7 (2)
B-27	47	SS-2A	5.0' to 5.5'	17.6	99.7	98.6	81.5	40.0	33	18	15	SC	A-6 (2)
B-27	48	SS-4	8.0' to 9.5'	17.9	100.0	97.4	69.2	23.4	23	19	4	SM	A-2-4 (0)
B-27	49	SS-5	10.0' to 11.5'	33.4	99.9	99.3	90.3	61.0	32	24	8	ML	A-4 (3)
B-27	50	SS-6	13.6' to 15.1'	23.0	100.0	98.8	68.3	19.8	21	17	4	SM	A-2-4 (0)
B-27A	20	Bag-2	5.3' to 7.3'	NA	99.0	94.9	45.3	13.1	NP	NP	NP	SM	A-1-b (0)
B-27A	22	Bag-3	7.3' to 26.5'	NA	97.7	94.2	45.7	21.0	28	18	10	SC	A-2-4 (0)
B-27B	90	ST-1	9.8' to 10.8'	18.2	98.9	96.5	71.9	22.1	24	22	2	SM	A-2-4 (0)
B-28	54	SS-2	4.0' to 5.5'	16.2	99.5	98.7	81.7	16.1	NP	NP	NP	SM	A-2-4 (0)
B-28	55	SS-3	6.0' to 7.5'	11.0	100.0	99.6	36.1	5.9	NP	NP	NP	SW-SM	A-1-b (0)
B-28	56	SS-4	8.0' to 9.5'	18.3	100.0	98.3	61.3	25.6	24	19	5	SC-SM	A-2-4 (0)
B-28	61	SS-7	19.0' to 20.5'	18.6	100.0	99.9	60.5	13.6	24	21	3	SM	A-2-4 (0)
B-29	58	SS-3	6.0' to 7.5'	14.8	100.0	100.0	67.2	11.6	NP	NP	NP	SW-SM	A-2-4 (0)
B-29	59	SS-8	23.8' to 25.3'	15.1	100.0	99.8	53.0	12.7	NP	NP	NP	SM	A-2-4 (0)
B-30	57	SS-2	4.0' to 5.5'	12.7	100.0	88.3	31.6	14.7	28	22	6	SC-SM	A-1-b (0)
B-30	60	SS-8	24.1' to 25.6'	21.4	100.0	99.8	95.1	78.8	43	24	19	CL	A-7-6 (15)
B-31	76	SS-2	4.0' to 5.5'	17.1	93.6	90.4	45.0	24.9	35	22	13	SC	A-2-6 (1)
B-31	77	SS-11	39.0' to 40.5'	16.8	99.8	97.7	53.9	25.5	38	19	19	SC	A-2-6 (2)
B-31	80	SS-15	59.0' to 60.5'	17.9	95.1	82.9	28.5	18.3	37	29	8	SM	A-2-4 (0)



Soil Classifications Summary

Boring No.	Soil No.	Sample No.	Depth (ft)	Natural Moisture (%)	% < #4 Sieve	% < #10 Sieve	% < #40 Sieve	% < #200 Sieve	LL	PL	PI	ASTM	AASHTO
B-31	83	SS-22	94.0' to 95.5'	26.2	100.0	97.8	72.3	50.4	33	26	7	ML	A-4 (1)
B-32	79	SS-10	32.2' to 34.7'	21.0	100.0	98.9	74.9	36.2	43	25	18	SC	A-7-6 (2)
B-32	82	SS-12	43.2' to 44.7'	15.7	100.0	99.7	88.0	69.2	44	22	22	CL	A-7-6 (14)
B-32	81	SS-13	48.2' to 49.7'	14.2	99.8	95.8	47.9	28.2	44	23	21	SC	A-2-7 (2)
B-33	91	SS-1	2.0' to 3.5'	15.2	92.5	88.6	83.1	70.4	38	29	9	ML	A-4 (6)
B-33	92	SS-4	8.0' to 9.5'	16.1	96.8	94.4	91.0	75.2	29	22	7	CL-ML	A-4 (4)
B-33	93	SS-6	14.6' to 16.1'	14.8	89.4	82.7	61.2	43.3	37	25	12	SM	A-6 (2)
B-34	94	SS-2	4.0' to 5.5'	5.9	99.5	97.5	94.8	84.2	33	28	5	ML	A-4 (5)
B-34	95	SS-8	24.4' to 25.9'	12.9	88.0	83.8	78.5	60.1	32	23	9	CL	A-4 (4)
B-35	96	SS-3	6.0' to 7.5'	7.7	95.5	87.8	77.5	65.6	32	25	7	ML	A-4 (3)
B-35	97	SS-8	24.5' to 25.9'	11.1	97.0	93.1	87.5	69.0	28	23	5	ML	A-4 (2)
B-36	98	SS-3	6.0' to 7.5'	13.7	100.0	99.6	97.2	78.2	22	16	6	CL-ML	A-4 (2)
B-36	99	SS-5	9.5' to 11.0'	8.9	84.7	81.0	73.8	46.5	22	17	5	SC-SM	A-4 (0)
B-36	100	SS-8	24.2' to 25.4'	12.8	99.4	96.1	84.6	55.2	24	23	1	ML	A-4 (0)
B-37	101	SS-7	19.3' to 20.8'	13.0	89.9	94.6	82.8	71.7	34	28	6	ML	A-4 (4)
B-38	102	SS-2	4.0' to 5.5'	10.6	89.9	88.1	84.4	69.6	29	22	7	CL-ML	A-4 (3)
B-38	103	SS-6	14.7' to 16.2'	14.5	96.6	92.9	87.7	70.0	28	24	4	ML	A-4 (2)
B-38	112	ST-1	29.7' to 30.5'	29.1	66.3	52.3	41.4	31.6	37	29	8	SM	A-2-4 (0)
B-38	104	SS-10	39.7' to 41.2'	21.8	98.3	96.6	91.3	56.1	28	26	2	ML	A-4 (0)
B-39	105	SS-2	4.0' to 5.5'	25.4	96.9	95.7	94.0	82.3	55	34	21	MH	A-7-5 (20)
B-39	113	ST-1	9.5' to 10.3'	15.6	100.0	99.6	98.7	62.6	28	28	NP	ML	A-4 (0)
B-39	106	SS-6	19.2' to 20.7'	25.6	100.0	99.9	99.2	88.3	37	25	12	ML	A-6 (11)
B-39	107	SS-7	24.2' to 25.7'	22.8	98.3	97.4	94.0	44.0	23	23	NP	SM	A-4 (0)
B-39	108	SS-10	39.2' to 40.7'	13.1	96.4	92.5	85.3	43.4	22	20	2	SM	A-4 (0)
B-39	109	SS-11	44.2' to 45.7'	16.3	97.3	93.1	90.7	68.9	32	26	6	ML	A-4 (3)
B-40	110	SS-3	6.0' to 7.5'	12.6	96.1	86.5	63.2	38.4	39	26	13	SM	A-6 (1)
B-40	111	SS-9	29.6' to 31.1'	17.5	98.3	88.9	66.6	42.5	44	32	12	SM	A-7-5 (2)



Moisture-Density Test Summary (AASHTO T-99; Method C)

Boring No.	Soil No.	Sample No.	Depth (ft)	ASTM	AASHTO	γ_{max} (pcf)	Optimum Moisture (%)
B-6A	28	Bag-5	0.3' to 4.5'	SC-SM	A-2-4 (0)	123.0	10.5
B-6A	37	Bag-6	4.5' to 10.0'	MH	A-7-5 (16)	100.5	20.6
B-27A	20	Bag-2	5.3' to 7.3'	SM	A-1-b (0)	122.5	7.3
B-27A	22	Bag-3	7.3' to 26.5'	SC	A-2-4 (0)	120.8	8.8



Corrosion and Deterioration Testing Summary

Boring No.	Soil No.	Sample No.	Depth (ft)	ASTM	AASHTO	pH	Resistivity (Ω -cm)	Chloride Content (mg/kg)	Sulfate Content (mg/kg)
B-6A	28	Bag-5	0.3' to 4.5'	SC-SM	A-2-4 (0)	6.3	15072.0	6.36	18.7
B-6A	37	Bag-6	4.5' to 10.0'	MH	A-7-5 (16)	5.5	33912.0	18.4	154.0
B-27A	20	Bag-2	5.3' to 7.3'	SM	A-1-b (0)	6.4	23550.0	3.94	22.1
B-27A	22	Bag-3	7.3' to 26.5'	SC	A-2-4 (0)	5.7	39564.0	5.24	32.2



Moisture, Ash, and Organic Matter Testing Summary (ASTM D 2974-00)

Boring No.	Sample No.	Depth (ft)	ASTM	AASHTO	Moisture Content (%)	Ash Content (%)	Organic Matter (%)
B-6A	Bag-5	0.3' to 4.5'	SC-SM	A-2-4 (0)	20.0	99.0	0.97



Direct Shear Test Summary (ASTM D 3080-72)

Boring Number	Sample Number	Depth (ft)	ASTM	AASHTO	C (psi)	ϕ (°)
B-27A	Bag-1	5.3' to 7.3'	SM	A-1-b (0)	1.2	26.7



Consolidated Undrained Triaxial Summary (ASTM D4767)

Boring Number	Sample Number	Depth (ft)	ASTM	AASHTO	C (psi)	ϕ (°)	C' (psi)	ϕ' (°)
B-6A	Bag-5	0.3' to 4.5'	SC-SM	A-2-4 (0)	2.9	12.1	1.9	28.2
B-6A	Bag-6	4.5' to 10.0'	MH	A-7-5 (16)	3.2	16.6	0.5	25.6
B-27A	Bag-3	7.3' to 26.5'	SC	A-2-4 (0)	1.2	14.0	0.1	33.0



Consolidation Summary

Boring Number	Sample Number	Depth (ft)	ASTM	AASHTO	Overburden Pressure (tsf)	Preconsolidation Pressure (tsf)	OCR	Compression Index, C_c	Rebound Index, C_r
B-7A	ST-1	8.5' to 9.0'	SM	A-7-5 (2)	0.53	3.1	5.9	0.545	0.026
B-15A	ST-1	6.0' to 6.3'	SC	A-2-6 (1)	0.37	1.8	4.9	0.153	0.004



Unconsolidated Undrained Strength Summary

Boring Number	Sample Number	Depth (ft)	Natural Moisture (%)	ASTM	AASHTO	Wet Density (pcf)	Dry Density (pcf)	q _u (ksf)	Cohesion (psf)
B-38	ST-1	29.7' to 30.2'	29.1	SM	A-2-4	132.2	102.4	2.94	1469
B-39	ST-1	9.5' to 10.0'	15.6	ML	A-4	116.1	110.5	5.22	2609



Unconfined Compressive Strength Summary

Boring Number	Sample Number	Depth (ft)	Natural Moisture (%)	ASTM	AASHTO	Wet Density (pcf)	Dry Density (pcf)	q _u (ksf)	Cohesion (psf)
B-6B	ST-1	5.0' to 5.5'	23.9	ML	A-4 (4)	119.9	96.7	1.59	795
B-7A	ST-1	8.0' to 8.5'	55.6	SM	A-7-5 (2)	106.9	68.7	2.47	1235
B-15A	ST-1	6.3' to 6.9'	16.2	SC	A-2-6 (1)	133.4	114.9	1.08	540
B-27B	ST-1	9.8' to 10.8'	18.2	SM	A-2-4 (0)	131.7	111.4	0.86	430



Project Name : I-20 D/B Roadway Improvement

Location : Lexington County, South Carolina

Job Number : 14046-01

Project Job No. : 14046-01

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Natural
Moisture
Content

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	HCL	(%)
62	B-1		SS-1	2.0	3.5	Tan, Gray & Red Sandy Lean Clay	N	21.3
62			SS-2	4.0	5.5	Tan, Gray & Red Sandy Lean Clay	N	
63			SS-3	6.0	7.5	Tan, Red & Gray Silt with Sand	N	
67			SS-4	8.0	9.5	Tan, Red & Gray Sandy Silty Clay	N	
67			SS-5	10.0	11.5	Tan, Red & Gray Sandy Silty Clay	N	
67			SS-6	13.2	14.7	Tan, Red & Gray Sandy Silty Clay	N	
67			SS-7	18.2	19.7	Tan, Brown, Red & Orange Sandy Silty Clay	N	
67			SS-8	23.2	24.7	Tan, Brown, Red & Orange Sandy Silty Clay	N	
68			SS-9	28.2	28.6	Tan, Red & Gray Silty Sand	N	14.3
63	B-2		SS-1	2.0	3.5	Tan, Red & Gray Silt with Sand	N	
63			SS-2	4.0	5.5	Red, Orange, Tan & Black Silt with Sand	N	18.2
63			SS-3	6.0	7.5	Red, Orange, Tan & Black Silt with Sand	N	
66			SS-4	8.0	9.5	Tan, Red & Gray Sandy Silt	N	
66			SS-5	10.0	11.5	Tan, Red & Gray Sandy Silt	N	25.4
66			SS-6	13.4	14.9	Tan, Red & Gray Sandy Silt	N	
66			SS-7	18.4	19.9	Tan, Red, Gray & Black Sandy Silt	N	
66			SS-8	23.4	24.9	Tan, Red, Gray & Black Sandy Silt	N	
66			SS-9	28.4	29.9	Tan, Gray, Black & Red Sandy Silt	N	
64	B-3		SS-1	2.0	3.5	Tan, Orange, Black & Gray Sandy Silt	N	
64			SS-2	4.0	5.5	Tan, Orange, Black & Gray Sandy Silt	N	
64			SS-3	6.0	7.5	Tan, Orange, Black & Gray Sandy Silt	N	23.8
64			SS-4	8.0	9.5	Tan, Gray & Black Sandy Silt	N	
65			SS-5	10.0	11.5	Tan, Gray & Black Sandy Lean Clay	N	18.2
			SS-6	13.4	14.9	No Recovery		
66			SS-7	18.4	19.9	Gray, Black & Tan Sandy Silt	N	
66			SS-8	23.4	24.9	Brown, Tan, Black & Gray Sandy Silt	N	
66			SS-9	25.3	26.8	Brown, Tan, Black & Gray Sandy Silt	N	
67	B-4		SS-1	2.0	3.5	Tan & Gray Sandy Silty Clay	N	
67			SS-2	4.0	5.5	Tan & Gray Sandy Silty Clay	N	
67			SS-3	6.0	7.5	Tan & Gray Sandy Silty Clay	N	
67			SS-4	8.0	9.5	Tan & Gray Sandy Silty Clay	N	18.0
67			SS-5	10.0	11.5	Tan, Gray & Red Sandy Silty Clay	N	
67			SS-6	13.5	15.0	Tan, Gray & Red Sandy Silty Clay	N	
67			SS-7	18.5	20.0	Tan, Red & Gray Sandy Silty Clay	N	
67			SS-8	23.5	25.0	Tan, Red & Gray Sandy Silty Clay	N	
67			SS-9	28.5	30.0	Tan, Red & Gray Sandy Silty Clay	N	
69	B-5		SS-1	2.0	3.5	Tan, Red & Black Clayey Sand	N	12.9
70			SS-2	4.0	5.5	Tan, Red & Gray Elastic Silt with Sand	N	
71			SS-3	6.0	7.5	Tan, Red, Gray & White Silty Sand	N	
71			SS-4	8.0	9.5	Tan, Gray & Red Silty Sand	N	
71			SS-5	10.0	11.5	Tan, Red & Gray Silty Sand	N	15.4
71			SS-6	13.5	15.0	Tan, Orange, White & Black Silty Sand	N	
74			SS-7	18.5	20.0	Tan, Orange, White & Gray Silty Sand with Gravel	N	18.1
74			SS-8	23.5	24.3	Gray, Tan & White Silty Sand with Gravel	N	
75			SS-9	28.5	30.0	Tan, Orange & White Silt with Sand	N	
69	B-6		SS-1	2.0	3.5	Tan, Red & Gray Clayey Sand	N	
70			SS-2	4.0	5.5	Tan, Red & Gray Elastic Silt with Sand	N	
70			SS-3	6.0	7.5	Tan, Red & Gray Elastic Silt with Sand	N	
70			SS-4	8.0	9.5	Tan, Gray & Black Elastic Silt with Sand	N	40.6
75			SS-5	10.0	11.5	Tan, Black & Red Silt with Sand	N	
75			SS-6	13.3	14.8	Tan, Black & Red Silt with Sand	N	41.4
75			SS-7	18.3	19.8	Black, Red, Tan & Gray Silt with Sand	N	

Project Name : I-20 D/B Roadway Improvement
Location : Lexington County, South Carolina
Job Number : 14046-01
Project Job No. : 14046-01

Moisture Data
(AASHTO T255-T265 / ASTM C566-D2216)

Natural
Moisture
Content
(%)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	HCL	Natural Moisture Content (%)
75			SS-8	23.3	24.8	Tan, Red, Black & Gray Silt with Sand	N	
75			SS-9	28.3	29.8	Gray, Red & White Silt with Sand	N	
							N	
28	B-6A		Bag-5	0.3	4.5	Tan, Red, Black & Gray Silty, Clayey Sand	N	
37			Bag-6	4.5	10.0	Tan, Black & Gray Elastic Silt with Sand	N	
41	B-6B		ST-1	4.0	5.5	Red, Pink, Orange, Gray, Tan & Brown Sandy Silt	N	23.9
71	B-7		SS-1	2.0	3.5	Tan, Red & Black Silty Sand	N	
71			SS-2	4.0	5.5	Tan, Red & Black Silty Sand	N	
71			SS-3	6.0	7.5	Tan, Black & Red Silty Sand	N	
72			SS-4	8.0	9.5	Tan, Black & Gray Silty Sand	N	52.7
72			SS-5	10.0	11.5	Tan, Black & Gray Silty Sand	N	
75			SS-6	13.6	15.1	Gray, Tan & Orange Silt with Sand	N	
75			SS-7	18.6	20.1	Gray, Tan & Orange Silt with Sand	N	
75			SS-8	23.6	25.1	Dark Gray Silt with Sand	N	
75			SS-9	28.6	30.1	Dark Gray Silt with Sand	N	
78	B-7A		ST-1	8.0	9.0	Brown, Tan & Gray Silty Sand	N	55.6
73	B-8		SS-1	2.0	3.5	Tan & Orange Silty Sand	N	
73			SS-2	4.0	5.5	Tan & Orange Silty Sand	N	
73			SS-3	6.0	7.5	Tan & Orange Silty Sand	N	
73			SS-4	8.0	9.5	Tan Silty Sand	N	
73			SS-5	10.0	11.5	Tan, Orange & Gray Silty Sand	N	22.6
73			SS-6	13.3	14.8	White, Tan & Orange Silty Sand	N	
73			SS-7	18.3	19.8	White, Tan & Orange Silty Sand	N	
73			SS-8	23.3	24.8	White & Tan Silty Sand	N	
73			SS-9	28.3	29.8	White & Tan Silty Sand	N	
76	B-9		SS-1	2.0	3.5	Brown, Black & White Clayey Sand	N	
76			SS-2	4.0	5.5	Dark Gray, Brown & Tan Clayey Sand	N	
77			SS-3	6.0	7.5	Dark Gray, Brown & Tan Clayey Sand	N	
33			SS-4	8.0	9.5	Dark Gray, Brown & Black Poorly Graded Sand with Silt	N	
33			SS-5	10.0	11.5	Dark Gray, Brown & Black Poorly Graded Sand with Silt	N	
33			SS-6	13.6	15.1	Dark Gray, Brown & Black Poorly Graded Sand with Silt	N	
81			SS-7	18.6	20.1	Black, Tan & Red Clayey Sand	N	
81			SS-8	23.6	25.1	Tan, Gray & Orange Clayey Sand	N	
82			SS-9	28.6	30.1	Tan, Red, Gray & Black Sandy Lean Clay	N	
84	B-10		SS-1	2.0	3.5	Red & Orange Clayey Sand	N	
84			SS-2	4.0	5.5	Red & Orange Clayey Sand	N	
84			SS-3	6.0	7.5	Red & Orange Clayey Sand	N	15.2
84			SS-4	8.0	9.5	Tan, Red, Orange & Gray Clayey Sand	N	
84			SS-5	10.0	11.5	Tan, Red, Orange & Gray Clayey Sand	N	
86			SS-6	13.4	14.9	Tan, Gray & Orange Sandy Lean Clay	N	
86			SS-7	18.4	19.9	Tan & Gray Sandy Lean Clay	N	18.8
87			SS-8	23.4	24.9	Tan, White & Gray Well-Graded Sand with Silt	N	16.9
87			SS-9	28.4	29.9	Tan, Orange, Gray & White Well-Graded Sand with Silt	N	
85	B-11		SS-1	2.0	3.5	Tan Silty Sand	N	
85			SS-2	4.0	5.5	Tan & Red Silty Sand	N	
85			SS-3	6.0	7.5	Tan & Red Silty Sand	N	16.1
85			SS-4	8.0	9.5	Tan & Red Silty Sand	N	
85			SS-5	10.0	11.5	Tan, Red & Gray Silty Sand	N	
86			SS-6	13.3	14.8	Tan, Red & Gray Sandy Lean Clay	N	
86			SS-7	18.3	19.8	Tan, Red & Gray Sandy Lean Clay	N	
88			SS-8	23.3	24.8	Red & Tan Clayey Sand	N	14.7
88			SS-9	28.3	29.8	Red & Tan Clayey Sand	N	
1	B-12		SS-1	2.0	3.5	Brown, Gray & Red Clayey Sand	N	
1			SS-2	4.0	5.5	Tan, Gray & Red Clayey Sand	N	13.8

Project Name : I-20 D/B Roadway Improvement
Location : Lexington County, South Carolina
Job Number : 14046-01
Project Job No. : 14046-01

Moisture Data
(AASHTO T255-T265 / ASTM C566-D2216)

Natural
Moisture
Content
(%)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	HCL	Natural Moisture Content (%)
2			SS-3	6.0	7.5	Tan, Gray & Red Clayey Sand	N	16.4
2			SS-4	8.0	9.5	Gray, White & Tan Clayey Sand	N	
3			SS-5	10.0	11.5	Tan, Red & Gray Sandy Lean Clay	N	
3			SS-6	13.3	14.8	Tan, Red & Gray Sandy Lean Clay	N	20.3
4			SS-7	18.3	19.8	Gray, White, Tan & Red Silty Sand	N	
4			SS-8	23.3	24.8	Gray, White & Tan Silty Sand	N	22.8
4			SS-9	28.3	29.8	Gray, White & Tan Silty Sand	N	
5	B-13		SS-1	2.0	3.5	Tan & Brown Silty Sand	N	
5			SS-2	4.0	5.5	Tan & Brown Silty Sand	N	
5			SS-3	6.0	7.5	Red, Brown & Tan Silty Sand	N	13.7
5			SS-4	8.0	9.5	Red, Brown & Tan Silty Sand	N	
5			SS-5	10.0	11.5	Red, Brown & Tan Silty Sand	N	
5			SS-6	13.4	14.9	Red, Brown & Tan Silty Sand	N	
5			SS-7	18.4	19.9	Red, Orange & Tan Silty Sand	N	
6			SS-8	23.4	24.9	Red, Gray & Tan Clayey Sand	N	
6			SS-9	28.4	29.9	Tan, Red, Orange & Gray Clayey Sand	N	18.2
7	B-14		SS-1	2.0	3.5	Tan, Orange & Red Poorly Graded Sand with Silt	N	
7			SS-2	4.0	5.5	Tan, Orange & Red Poorly Graded Sand with Silt	N	14.5
7			SS-3	6.0	7.5	Tan, Orange & Red Poorly Graded Sand with Silt	N	
8			SS-4	8.0	9.5	Tan, Gray, Red & Orange Silty Sand	N	17.3
			SS-5	10.0	11.5	No Recovery		
8			SS-6	13.7	15.2	Red, Orange, White & Gray Silty Sand	N	
9			SS-7	18.7	20.2	White, Tan & Red Lean Clay with Sand	N	
10			SS-8	23.7	25.2	White, Tan, Black & Gray Silty Sand	N	
13			SS-9	28.7	30.2	Tan, White, Red & Orange Clayey Sand	N	19.7
8	B-15		SS-1	2.0	3.5	Tan, Orange & Black Silty Sand	N	
8			SS-2	4.0	5.5	Gray, Black & Orange Silty Sand	N	
8			SS-3	6.0	7.5	Gray, Brown & Orange Silty Sand	N	
9			SS-4	8.0	9.5	Tan, Gray & Orange Lean Clay with Sand	N	
9			SS-5	10.0	11.5	Gray, Pink, Orange, Red & Tan Lean Clay with Sand	N	22.0
10			SS-6	13.6	15.1	Tan, Red & Black Silty Sand	N	18.9
11			SS-7	18.6	20.1	Gray, Red & Tan Silty Sand	N	23.4
12			SS-8	23.6	25.1	White, Gray & Tan Well-Graded Sand with Silt	N	20.5
9			SS-9	28.6	28.9	Gray, Tan, Orange, Red & Black Lean Clay with Sand	N	
12			SS-9A	28.9	30.1	Tan, Gray & Red Well-Graded Sand with Silt	N	
89	B-15A		ST-1	6.0	6.9	Brown, Gray & Tan Clayey Sand	N	16.2
14	B-16		SS-1	2.0	3.5	Brown, Tan, Red & Black Poorly Graded Sand	N	
14			SS-2	4.0	5.5	Brown, Tan, Red & Black Poorly Graded Sand	N	
14			SS-3	6.0	7.5	Tan & Orange Poorly Graded Sand	N	13.3
15			SS-4	8.0	9.5	Tan, Red & Gray Silty, Clayey Sand	N	
16			SS-5	10.0	11.5	Tan, Red, Orange & Gray Clayey Sand	N	17.8
17			SS-6	13.4	14.9	Tan, Red, Orange, Pink & Gray Clayey Sand	N	
17			SS-7	18.4	19.9	Tan, Red, Orange & Gray Clayey Sand	N	27.6
18			SS-8	23.4	24.9	Tan, Red, Orange & Gray Clayey Sand	N	16.3
18			SS-9	28.4	29.9	Tan, Red, Orange & White Clayey Sand	N	
14	B-17		SS-1	2.0	3.5	Tan & Brown Poorly Graded Sand	N	
14			SS-2	4.0	5.5	Tan & Brown Poorly Graded Sand	N	
14			SS-3	6.0	7.5	Tan & Brown Poorly Graded Sand	N	
14			SS-4	8.0	9.5	Tan & Brown Poorly Graded Sand	N	
14			SS-5	10.0	11.5	Tan & Brown Poorly Graded Sand	N	
15			SS-6	14.0	15.5	Tan, Red & Orange Silty, Clayey Sand	N	15.6
16			SS-7	19.0	20.5	Tan, Red, Orange & Gray Clayey Sand	N	
19			SS-8	24.0	25.5	Gray, White & Tan Silty Sand	N	28.4
19			SS-9	29.0	30.5	Tan, White & Orange Silty Sand	N	
60	B-18		SS-1	2.0	3.5	Tan, Orange, Red & Gray Lean Clay with Sand	N	

Project Name : I-20 D/B Roadway Improvement
Location : Lexington County, South Carolina
Job Number : 14046-01
Project Job No. : 14046-01

Moisture Data
 (AASHTO T255-T265 / ASTM C566-D2216)

Natural
Moisture
Content
(%)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	HCL	Natural Moisture Content (%)
60			SS-2	4.0	5.5	Tan, Orange, Red & Gray Lean Clay with Sand	N	
60			SS-3	6.0	7.5	Tan, White, Red, Orange & Purple Lean Clay with Sand	N	
60			SS-4	8.0	9.5	Tan, White, Red, Orange & Purple Lean Clay with Sand	N	
60			SS-5	10.0	11.5	Tan, White, Red, Orange & Purple Lean Clay with Sand	N	
60			SS-6	13.5	15.0	Tan, White, Red, Orange & Purple Lean Clay with Sand	N	
23			SS-7	18.5	20.0	Tan, Gray, Red & Orange Clayey Sand	N	15.3
24			SS-8	23.5	25.0	Gray, White & Tan Silty, Clayey Sand	N	
24			SS-9	28.5	30.0	Gray, White & Tan Silty, Clayey Sand	N	
42	B-19		SS-1	2.0	3.5	Tan, Red & Gray Clayey Sand	N	
21			SS-2	4.0	5.5	Tan, Red & Orange Clayey Sand	N	
21			SS-3	6.0	7.5	Tan, Red & Orange Clayey Sand	N	16.5
21			SS-4	8.0	9.5	Tan, Orange & Black Clayey Sand	N	
21			SS-5	10.0	11.5	Tan & Red Clayey Sand	N	
60			SS-6	14.0	15.5	Tan, Red & Gray Lean Clay with Sand	N	
24			SS-7	19.0	20.5	White, Gray, Tan & Orange Silty, Clayey Sand	N	16.6
24			SS-8	24.0	25.5	White, Gray, Tan & Orange Silty, Clayey Sand	N	
25			SS-9	29.0	30.5	Gray, Tan, Red, Orange & Black Sandy Lean Clay	N	15.6
26	B-20		SS-1	2.0	3.5	Tan, Orange & White Clayey Sand	N	
26			SS-2	4.0	5.5	Tan, Orange & White Clayey Sand	N	
27			SS-3	6.0	7.5	Tan, Orange & White Silty Sand	N	
27			SS-4	8.0	9.5	Tan, Orange & White Silty Sand	N	14.2
27			SS-5	10.0	11.5	Gray, White, Tan, Red & Orange Silty Sand	N	
27			SS-6	13.5	15.0	Gray, White, Tan & Orange Silty Sand	N	
27			SS-7	18.5	20.0	Gray, White, Tan & Orange Silty Sand	N	
33			SS-8	23.5	25.0	Gray, White, Tan & Orange Poorly Graded Sand with Silt	N	
29			SS-9	28.5	30.0	Gray, White, Tan, Orange & Black Silty, Clayey Sand	N	15.9
26	B-21		SS-1	2.0	3.5	Tan, Gray, Orange & White Clayey Sand	N	
26			SS-2	4.0	5.5	Tan, Gray, Orange & White Clayey Sand	N	16.1
26			SS-3	6.0	7.5	Tan, Gray, Orange & White Clayey Sand	N	
26			SS-4	8.0	9.5	Tan, Gray, Orange & White Clayey Sand	N	
33			SS-5	10.0	11.5	Tan & Black Poorly Graded Sand with Silt	N	
33			SS-6	14.0	15.5	Tan & Black Poorly Graded Sand with Silt	N	
33			SS-7	19.0	20.5	Tan & Black Poorly Graded Sand with Silt	N	
33			SS-8	24.0	25.5	Brown Poorly Graded Sand with Silt	N	
33			SS-9	29.0	30.5	Dark Gray, Black, White & Tan Poorly Graded Sand with Silt	N	
30	B-22		SS-1	2.0	3.5	Tan, Red, Orange & Black Silty Sand	N	
30			SS-2	4.0	5.5	Red, Orange & Tan Silty Sand	N	17.2
30			SS-3	6.0	7.5	Red, Orange & Tan Silty Sand	N	
31			SS-4	8.0	9.5	Tan, Red, Orange & Black Silty Sand	N	14.4
31			SS-5	10.0	11.5	Tan, Red, Orange & Black Silty Sand	N	
32			SS-6	13.6	15.1	Tan & White Poorly Graded Sand with Clay (and/or Silty Clay)	N	15.0
34			SS-7	18.6	20.1	White, Tan, Red & Orange Silty Sand	N	22.6
35			SS-8	23.6	25.1	Red, Orange & White Silty Sand	N	
36			SS-9	28.6	30.1	White, Gray & Tan Silty, Clayey Sand	N	22.1
31	B-23		SS-1	2.0	3.5	Tan, Orange & White Silty Sand	N	
31			SS-2	4.0	5.5	Tan, Orange & Black Silty Sand	N	
31			SS-3	6.0	7.5	Tan, Orange & Black Silty Sand	N	
33			SS-4	8.0	9.5	Tan, Brown & Black Poorly Graded Sand with Silt	N	
33			SS-5	10.0	11.5	Tan, Brown & Black Poorly Graded Sand with Silt	N	10.6
33			SS-6	14.0	15.5	Tan, Brown & Black Poorly Graded Sand with Silt	N	
33			SS-7	19.0	20.5	Tan, Brown & Black Poorly Graded Sand with Silt	N	
33			SS-8	24.0	25.5	Tan, Red, Orange & Black Poorly Graded Sand with Silt	N	
35			SS-9	29.0	30.5	Gray, White, Tan & Orange Silty Sand	N	19.9
45	B-24		SS-1	2.0	3.5	Tan, White, Orange & Red Silty, Clayey Sand	N	
38			SS-2	4.0	5.5	Red, Orange & Tan Poorly Graded Sand with Silt	N	
38			SS-3	6.0	7.5	Red, Orange & Tan Poorly Graded Sand with Silt	N	

Project Name : I-20 D/B Roadway Improvement
Location : Lexington County, South Carolina
Job Number : 14046-01
Project Job No. : 14046-01

Moisture Data
(AASHTO T255-T265 / ASTM C566-D2216)

Natural
Moisture
Content
(%)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	HCL	Natural Moisture Content (%)
38			SS-4	8.0	9.5	Red, Orange & Tan Poorly Graded Sand with Silt	N	
38			SS-5	10.0	11.5	Red, Orange & Tan Poorly Graded Sand with Silt	N	
38			SS-6	13.5	15.0	Red, Orange & Tan Poorly Graded Sand with Silt	N	
38			SS-7	18.5	20.0	Red, Orange & Tan Poorly Graded Sand with Silt	N	11.4
38			SS-8	23.5	25.0	Red, Orange & Tan Poorly Graded Sand with Silt	N	
38			SS-9	28.5	30.0	Tan & Black Poorly Graded Sand with Silt	N	
39	B-25		SS-1	2.0	3.5	Red, Tan & Gray Clayey Sand	N	15.8
40			SS-2	4.0	5.5	Red, Tan & Gray Clayey Sand	N	
40			SS-3	6.0	7.1	Red, Tan & White Clayey Sand	N	17.9
60			SS-3A	7.1	7.5	Tan, Red & Gray Lean Clay with Sand	N	
60			SS-4	8.0	9.5	Tan & Gray Lean Clay with Sand	N	
42			SS-5	10.0	11.5	Tan, Gray, Red & Black Clayey Sand	N	14.9
43			SS-6	13.7	15.2	Tan & White Silty Sand	N	15.7
43			SS-7	18.7	20.2	Gray, White & Black Silty Sand	N	
44			SS-8	23.7	25.2	Tan, Red, White & Gray Clayey Sand	N	22.4
43			SS-9	28.7	30.2	White & Tan Silty Sand	N	
45	B-26		SS-1	2.0	3.5	Tan, Red, Orange & Black Silty, Clayey Sand	N	
45			SS-2	4.0	5.5	Red & Tan Silty, Clayey Sand	N	14.4
46			SS-3	6.0	7.5	Red, Tan & Black Clayey Sand	N	
51			SS-4	8.0	9.5	Tan & Black Poorly Graded Sand with Silt	N	
51			SS-5	10.0	11.5	Tan, White & Black Poorly Graded Sand with Silt	N	15.1
52			SS-6	13.8	16.3	Tan, Gray & Red Clayey Sand	N	18.0
53			SS-7	18.8	20.3	Tan, Red, Orange & White Poorly Graded Sand with Clay (and/or Silty Cl	N	
53			SS-8	23.8	25.3	Gray, White & Tan Poorly Graded Sand with Clay (and/or Silty Clay)	N	24.4
53			SS-9	28.8	30.3	Gray, White & Tan Poorly Graded Sand with Clay (and/or Silty Clay)	N	
46	B-27		SS-1	2.0	3.5	Tan, Black & Red Clayey Sand	N	
46			SS-2	4.0	5.0	Tan, Orange & Black Clayey Sand	N	14.6
47			SS-2A	5.0	5.5	Gray, Tan & Black Clayey Sand	N	17.6
46			SS-3	6.0	7.5	Red, Tan, Gray & Black Clayey Sand	N	
48			SS-4	8.0	9.5	Red, Tan, Gray & Black Silty Sand	N	17.9
49			SS-5	10.0	11.5	Gray & White Sandy Silt	N	33.4
50			SS-6	13.6	15.1	Gray & White Silty Sand	N	23.0
53			SS-7	18.6	20.1	Gray, White & Black Poorly Graded Sand with Clay (and/or Silty Clay)	N	
53			SS-8	23.6	25.1	Tan, Red & Black Poorly Graded Sand with Clay (and/or Silty Clay)	N	
53			SS-9	28.6	30.1	Tan, Red & White Poorly Graded Sand with Clay (and/or Silty Clay)	N	
20	B-27A		Bag-1	0.0	5.3	Tan, Black & White Silty Sand	N	
20			Bag-2	5.3	7.3	Red, Tan & Black Silty Sand	N	
22			Bag-3	7.3	26.5	White, Tan & Black Clayey Sand	N	
22			Bag-4	26.5	30.0	Tan, White & Black Clayey Sand	N	
90	B-27B		ST-1	9.8	10.8	White, Gray & Tan Silty Sand	N	18.2
54	B-28		SS-1	2.0	3.5	Tan, Gray, White, Red & Orange Silty Sand	N	
54			SS-2	4.0	5.5	Gray, White, Tan, Red & Orange Silty Sand	N	16.2
55			SS-3	6.0	7.5	White, Gray, Tan & Orange Well-Graded Sand with Silt	N	11.0
56			SS-4	8.0	9.5	White, Gray, Tan & Orange Silty, Clayey Sand	N	18.3
57			SS-5	10.0	11.5	White, Gray, Tan & Orange Silty, Clayey Sand	N	
61			SS-6	14.0	15.5	Gray, White & Tan Silty Sand	N	
61			SS-7	19.0	20.5	White, Gray & Tan Silty Sand	N	18.6
61			SS-8	24.0	25.5	White, Gray & Tan Silty Sand	N	
61			SS-9	29.0	30.5	White & Tan Silty Sand	N	
58	B-29		SS-1	2.0	3.5	Tan, Red & Orange Well-Graded Sand with Silt	N	
58			SS-2	4.0	5.5	Tan, Black, Red & Orange Well-Graded Sand with Silt	N	
58			SS-3	6.0	7.5	Tan, Black, Red & Orange Well-Graded Sand with Silt	N	14.8
58			SS-4	8.0	9.5	Tan, Red, Orange & Black Well-Graded Sand with Silt	N	
58			SS-5	10.0	11.5	Tan, Red, Orange & Black Well-Graded Sand with Silt	N	
58			SS-6	13.8	16.3	Tan, Red, Orange & Black Well-Graded Sand with Silt	N	

Project Name : I-20 D/B Roadway Improvement
Location : Lexington County, South Carolina
Job Number : 14046-01
Project Job No. : 14046-01

Moisture Data
(AASHTO T255-T265 / ASTM C566-D2216)

Natural
Moisture
Content
(%)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	HCL	Natural Moisture Content (%)
58			SS-7	18.8	20.3	Tan, White & Black Well-Graded Sand with Silt	N	
59			SS-8	23.8	25.3	Tan, Red & Orange Silty Sand	N	15.1
59			SS-9	28.8	30.3	Tan, Red, Orange & Black Silty Sand	N	
57	B-30		SS-1	2.0	3.5	Red, Tan, White & Black Silty, Clayey Sand	N	
57			SS-2	4.0	5.5	Red, Tan, White & Black Silty, Clayey Sand	N	12.7
57			SS-3	6.0	7.5	Red, Tan, White & Black Silty, Clayey Sand	N	
57			SS-4	8.0	9.5	Red, Tan, White & Black Silty, Clayey Sand	N	
57			SS-5	10.0	11.5	Red, Tan, White & Black Silty, Clayey Sand	N	
59			SS-6	13.6	15.1	White, Tan, Red & Black Silty Sand	N	
59			SS-7	18.6	20.1	White, Tan, Red & Black Silty Sand	N	
60			SS-8	23.6	25.1	White & Gray Lean Clay with Sand	N	21.4
61			SS-9	28.6	30.1	Tan, Gray & White Silty Sand	N	
76	B-31		SS-1	2.0	3.5	Tan, Brown, Red & Black Clayey Sand	N	
76			SS-2	4.0	5.5	Tan, Brown, Red & Black Clayey Sand	N	17.1
76			SS-3	6.0	7.5	Tan, Red & Black Clayey Sand	N	
76			SS-4	8.0	9.5	Tan, Brown & Red Clayey Sand	N	
76			SS-5	10.0	11.5	Brown, Red, Gray & Black Clayey Sand	N	
76			SS-6	14.0	15.5	Tan, Gray & Black Clayey Sand	N	
77			SS-7	19.0	20.5	Tan, Black & Red Clayey Sand	N	
77			SS-8	24.0	25.5	Tan, Black & Red Clayey Sand	N	
77			SS-9	29.0	30.5	Tan, Gray, Black & Orange Clayey Sand	N	
77			SS-10	34.0	35.5	Tan, Black & Gray Clayey Sand	N	
77			SS-11	39.0	40.5	Tan & Orange Clayey Sand	N	16.8
77			SS-12	44.0	45.5	Red, Orange & Gray Clayey Sand	N	
80			SS-13	49.0	50.5	Orange, Red & White Silty Sand	N	
80			SS-14	54.0	55.5	Orange, Red & White Silty Sand	N	
80			SS-15	59.0	60.5	White, Pink & Tan Silty Sand	N	17.9
77			SS-16	64.0	65.5	White, Tan & Purple Clayey Sand	N	
			SS-17	69.0	70.5	No Recovery		
80			SS-18	74.0	75.5	Orange, Red & Tan Silty Sand	N	
80			SS-19	79.0	80.5	White & Tan Silty Sand	N	
80			SS-20	84.0	85.5	White & Tan Silty Sand	N	
83			SS-21	89.0	90.5	Tan, White & Orange Sandy Silt	N	
83			SS-22	94.0	95.5	White, Gray & Tan Sandy Silt	N	26.2
83			SS-23	99.0	99.3	White, Gray & Tan Sandy Silt	N	
	B-32		SS-1	2.0	3.5	No Recovery		
76			SS-2	4.0	5.5	Tan & Gray Clayey Sand	N	
76			SS-3	6.0	7.5	Tan & Gray Clayey Sand	N	
76			SS-4	8.0	9.5	Black, Gray & Tan Clayey Sand	N	
76			SS-5	10.0	11.5	Brown, Orange & Black Clayey Sand	N	
76			SS-6	13.2	14.7	Tan, Orange & Gray Clayey Sand	N	
76			SS-7	18.2	19.7	Tan, Black & Red Clayey Sand	N	
76			SS-8	23.2	24.7	Tan, Red, Black & Gray Clayey Sand	N	
33			SS-9	28.2	29.7	Brown, Tan & Black Poorly Graded Sand with Silt	N	
79			SS-10	33.2	34.7	Red, Orange & Tan Clayey Sand	N	21.0
81			SS-11	38.2	39.7	Red, Orange & Gray Clayey Sand	N	
82			SS-12	43.2	44.7	White, Gray & Tan Sandy Lean Clay	N	15.7
81			SS-13	48.2	49.7	White, Gray & Tan Clayey Sand	N	14.2
80			SS-14	53.2	54.7	Tan, Orange & White Silty Sand	N	
80			SS-15	58.2	59.7	Pink, Tan & White Silty Sand	N	
80			SS-16	63.2	64.7	Pink, Tan & White Silty Sand	N	
80			SS-17	68.2	69.7	Pink, Tan & White Silty Sand	N	
80			SS-18	73.2	74.7	Red, Tan & White Silty Sand	N	
80			SS-19	78.2	79.7	Tan, White & Red Silty Sand	N	
80			SS-20	83.2	84.7	Tan & White Silty Sand	N	
80			SS-21	88.2	89.7	Tan, Red & White Silty Sand	N	
80			SS-22	93.2	94.7	Tan, Orange & Gray Silty Sand	N	
83			SS-23	98.2	99.7	White & Gray Sandy Silt	N	

Project Name : I-20 D/B Roadway Improvement
Location : Lexington County, South Carolina
Job Number : 14046-01
Project Job No. : 14046-01

Moisture Data
(AASHTO T255-T265 / ASTM C566-D2216)

Natural
Moisture
Content
(%)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	HCL	(%)
91	B-33		SS-1	2.0	3.5	#N/A	N	15.2
92			SS-2	4.0	5.5	Orange & Tan Silty Clay with Sand	N	
92			SS-3	6.0	7.5	White, Tan & Orange Silty Clay with Sand	N	
92			SS-4	8.0	9.5	White, Tan & Orange Silty Clay with Sand	N	16.1
92			SS-5	9.6	11.1	White, Tan & Orange Silty Clay with Sand	N	
93			SS-6	14.6	16.1	Brown & Tan Silty Sand	N	14.8
94	B-34		SS-1	2.0	3.5	Light and Dark Tan Silt with Sand	N	
94			SS-2	4.0	5.5	Tan & Orange Silt with Sand	N	5.9
94			SS-3	6.0	7.5	Tan & Orange Silt with Sand	N	
95			SS-4	8.0	9.5	Tan & Orange Sandy Lean Clay	N	
95			SS-5	9.5	11.0	Tan & Orange Sandy Lean Clay	N	
95			SS-6	14.4	15.9	Tan & Orange Sandy Lean Clay	N	
95			SS-7	19.4	20.9	Tan & Orange Sandy Lean Clay	N	
95			SS-8	24.4	25.9	Tan & Orange Sandy Lean Clay	N	12.9
95			SS-9	29.4	30.1	Gray, Tan & Orange Sandy Lean Clay	N	
95			SS-10	34.4	35.4	Gray & Tan Sandy Lean Clay	N	
95			SS-11	39.4	40.2	Gray & Tan Sandy Lean Clay	N	
95			SS-12	44.4	44.9	Gray Sandy Lean Clay	N	
96	B-35		SS-1	2.0	3.5	Light & Dark Tan Sandy Silt	N	
96			SS-2	4.0	5.5	Light & Dark Tan Sandy Silt	N	
96			SS-3	6.0	7.5	Light & Dark Tan Sandy Silt	N	7.7
96			SS-4	8.0	9.5	Light & Dark Tan Sandy Silt	N	
97			SS-5	9.5	11.0	Light & Dark Tan Sandy Silt	N	
97			SS-6	14.5	15.5	Light & Dark Tan Sandy Silt	N	
97			SS-7	19.5	21.0	Light & Dark Tan Sandy Silt	N	
97			SS-8	24.5	25.9	Light & Dark Tan Sandy Silt	N	11.1
97			SS-9	29.5	30.4	Light & Dark Tan Sandy Silt	N	
97			SS-10	34.5	35.3	Light & Dark Tan Sandy Silt	N	
97			SS-11	39.5	39.9	Light & Dark Tan Sandy Silt	N	
98	B-36		SS-1	2.0	3.5	Tan, Gray & Orange Silty Clay with Sand	N	
98			SS-2	4.0	5.5	Red, Tan & Gray Silty Clay with Sand	N	
98			SS-3	6.0	7.5	Tan Silty Clay with Sand	N	13.7
99			SS-4	8.0	9.5	Tan, Orange & Gray Silty, Clayey Sand with Gravel	N	
99			SS-5	9.5	11.0	Tan, Orange & Gray Silty, Clayey Sand with Gravel	N	8.9
99			SS-6	14.2	15.7	Tan, Orange & Gray Silty, Clayey Sand with Gravel	N	
100			SS-7	19.2	20.7	Tan, Orange & Gray Sandy Silt	N	
100			SS-8	24.2	25.4	Tan, Orange & Gray Sandy Silt	N	12.8
100			SS-9	29.2	29.6	Tan, Orange & Gray Sandy Silt	N	
100			SS-10	34.2	34.6	No Recovery	N	
100			SS-11	39.2	39.6	Tan, Orange & Gray Sandy Silt	N	
101	B-37		SS-1	2.0	3.5	Gray & Red Silt with Sand	N	
101			SS-2	4.0	5.5	Gray & Red Silt with Sand	N	
101			SS-3	6.0	7.5	Gray & Red Silt with Sand	N	
101			SS-4	8.0	9.5	Gray & Red Silt with Sand	N	
101			SS-5	10.0	11.5	Gray & Red Silt with Sand	N	
101			SS-6	14.3	15.8	Gray & Red Silt with Sand	N	
101			SS-7	19.3	20.8	Gray & Red Silt with Sand	N	13.0
101			SS-8	24.3	25.1	Gray & Red Silt with Sand	N	
101			SS-9	29.3	30.3	Gray & Red Silt with Sand	N	
101			SS-10	34.3	35.8	Gray & Red Silt with Sand	N	
101			SS-11	39.3	39.8	Gray & Red Silt with Sand	N	
101			SS-12	44.3	45.1	Gray & Red Silt with Sand	N	
102	B-38		SS-1	2.0	3.5	Tan & Gray Sandy Silty Clay	N	
102			SS-2	4.0	5.5	Tan & Gray Sandy Silty Clay	N	10.6
102			SS-3	6.0	7.5	Orange, Tan & Red Sandy Silty Clay	N	
103			SS-4	8.0	9.5	Orange, Tan & Red Sandy Silt	N	
103			SS-5	9.7	11.2	Gray, White & Tan Sandy Silt	N	

Project Name : I-20 D/B Roadway Improvement

Location : Lexington County, South Carolina

Job Number : 14046-01

Project Job No. : 14046-01

Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

Natural
Moisture
Content
(%)

Soil No.	Boring No.	Station & Offset	Sample No.	Depth		Description of Soil	HCL	Natural Moisture Content (%)
103			SS-6	14.7	16.2	Gray, White & Tan Sandy Silt	N	14.5
103			SS-7	19.7	21.2	Gray, White & Tan Sandy Silt	N	
103			SS-8	24.7	26.2	Red & Tan Sandy Silt	N	
112			ST-1	29.7	30.5	Tan, Gray & Green Silty Sand with Gravel	N	29.1
104			SS-9	34.7	36.2	Red, Orange & Gray Sandy Silt	N	
104			SS-10	39.7	41.2	Gray, Tan & Black Sandy Silt	N	21.8
104			SS-11	44.7	46.2	Gray, Tan & Black Sandy Silt	N	
105	B-39		SS-1	2.0	3.5	Tan, Orange & Red Elastic Silt with Sand	N	
105			SS-2	4.0	5.5	Tan, Orange & Red Elastic Silt with Sand	N	25.4
106			SS-3	6.0	7.5	Tan, Orange & Red Silt	N	
106			SS-4	8.0	9.5	Tan, Orange & Red Silt	N	
113			ST-1	9.5	10.3	Tan, Yellow & White Sandy Silt	N	15.6
106			SS-5	14.2	15.7	Tan & Gray Silt	N	
106			SS-6	19.2	20.7	Tan & Gray Silt	N	25.6
107			SS-7	24.2	25.7	Tan & Gray Silty Sand	N	22.8
107			SS-8	29.2	30.7	Tan & Gray Silty Sand	N	
108			SS-9	34.2	35.6	Tan & Gray Silty Sand	N	
108			SS-10	39.2	40.7	Tan & Gray Silty Sand	N	13.1
109			SS-11	44.2	45.7	Tan & Gray Sandy Silt	N	16.3
109			SS-12	49.2	49.8	Tan & Gray Sandy Silt	N	
110	B-40		SS-1	2.0	3.5	Gray, Red & Tan Silty Sand	N	
110			SS-2	4.0	5.5	Gray, Red & Tan Silty Sand	N	
110			SS-3	6.0	7.5	Gray, Red & Tan Silty Sand	N	12.6
110			SS-4	8.0	9.5	Gray, Red & Tan Silty Sand	N	
111			SS-5	9.6	11.1	Gray, Red & Tan Silty Sand	N	
111			SS-6	14.6	15.5	Gray, Red & Tan Silty Sand	N	
111			SS-7	19.6	20.8	Gray, Red & Tan Silty Sand	N	
111			SS-8	24.6	26.1	Gray, Red & Tan Silty Sand	N	
111			SS-9	29.6	31.1	Gray Silty Sand	N	17.5
111			SS-10	34.6	35.5	Gray Silty Sand	N	

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan, Gray & Red Clayey Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-12
 Sample Depth : 4.0' to 5.5'
 Date Tested : 02/06/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	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	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	

D₅₀ = 0.2807 mm

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

Natural Moisture (%) (AASHTO T265) : 13.8
 Liquid Limit (AASHTO T89) : 22
 Plastic Limit (AASHTO T90) : 13
 Plasticity Index : 9
 Liquidity Index : 0.05

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.3
 Coarse Sand (-No.10 + No.40) : 40.9
 Fine Sand (-No.40 + No.200) : 36.8
 Silt + Clay (-No.200) : 22.0

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

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) : 40.9
 Fine Sand (-No.40 + No.200) : 36.8
 Silt + Clay (-No.200) : 22.0

Approved By : J.S.

Soil No. 1

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan, Gray & Red Clayey Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-12
 Sample Depth : 6.0' to 7.5'
 Date Tested : 02/06/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	52.2
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	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	

$D_{50} = 0.3655 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 16.4
 Liquid Limit (AASHTO T89) : 36
 Plastic Limit (AASHTO T90) : 19
 Plasticity Index : 17
 Liquidity Index : -0.14
 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) : 0.7
 Coarse Sand (-No.10 + No.40) : 47.1
 Fine Sand (-No.40 + No.200) : 25.3
 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) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.7
 Medium Sand (-No.10 + No.40) : 47.1
 Fine Sand (-No.40 + No.200) : 25.3
 Silt + Clay (-No.200) : 26.9

Approved By : J.S.

Soil No. 2

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan, Red & Gray Sandy Lean Clay

Sample No. : SS-6
 Sample Loc. : Boring No. B-12
 Sample Depth : 13.3' to 14.8'
 Date Tested : 02/06/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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	89.2	
1/2	in.	12.5	mm		
3/8	in.	9.5	mm	88.6	
1/4		6.3	mm		
No.4		4.75	mm	86.8	
No.6		3.35	mm		
No.10		2	mm	85.8	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	82.6	
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	54.1	
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 = 0.0454 mm

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

Natural Moisture (%) (AASHTO T265) : 20.3
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 24
 Plasticity Index : 15
 Liquidity Index : -0.26
 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) : 14.2
 Coarse Sand (-No.10 + No.40) : 3.2
 Fine Sand (-No.40 + No.200) : 28.5
 Silt + Clay (-No.200) : 54.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 10.8
 Fine Gravel (-3/4in. + No.4) : 2.4
 Coarse Sand (-No.4 + No.10) : 1.0
 Medium Sand (-No.10 + No.40) : 3.2
 Fine Sand (-No.40 + No.200) : 28.5
 Silt + Clay (-No.200) : 54.1

Approved By : J.S.

Soil No. 3

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Gray, White & Tan Silty Sand

Sample No. : SS-8
 Sample Loc. : Boring No. B-12
 Sample Depth : 23.3' to 24.8'
 Date Tested : 02/06/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	94.8
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	14.3
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 = 0.1619 mm

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

Natural Moisture (%) (AASHTO T265) : 22.8
 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) : 0.0
 Coarse Sand (-No.10 + No.40) : 5.2
 Fine Sand (-No.40 + No.200) : 80.5
 Silt + Clay (-No.200) : 14.3

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) : 5.2
 Fine Sand (-No.40 + No.200) : 80.5
 Silt + Clay (-No.200) : 14.3

Approved By : J.S.

Soil No. 4

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Red, Brown & Tan Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-13
 Sample Depth : 6.0' to 7.5'
 Date Tested : 02/06/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	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	13.8
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	

$D_{50} = 0.4421 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 13.7
 Liquid Limit (AASHTO T89) : 19
 Plastic Limit (AASHTO T90) : 16
 Plasticity Index : 3
 Liquidity Index : -0.67
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.3
 Coarse Sand (-No.10 + No.40) : 51.0
 Fine Sand (-No.40 + No.200) : 34.9
 Silt + Clay (-No.200) : 13.8

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) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.3
 Medium Sand (-No.10 + No.40) : 51.0
 Fine Sand (-No.40 + No.200) : 34.9
 Silt + Clay (-No.200) : 13.8

Approved By : J.S.

Soil No. 5

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-9
Project No. : 14046-01	Sample Loc. : Boring No. B-13
Project County : Lexington	Sample Depth : 28.4' to 29.9'
Project State : South Carolina	Date Tested : 02/06/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Red, Orange & Gray Clayey 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	97.2
No.6		3.35	mm	
No.10		2	mm	87.8

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	47.1
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	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 = 0.4746 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 12.2 Coarse Sand (-No.10 + No.40) : 40.7 Fine Sand (-No.40 + No.200) : 16.3 Silt + Clay (-No.200) : 30.8	Natural Moisture (%) (AASHTO T265) : 18.2 Liquid Limit (AASHTO T89) : 41 Plastic Limit (AASHTO T90) : 25 Plasticity Index : 16 Liquidity Index : -0.41 Activity : NA Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-2-7 (1) ASTM Classification: D2487 : SC
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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) : 9.4
Medium Sand (-No.10 + No.40) : 40.7
Fine Sand (-No.40 + No.200) : 16.3
Silt + Clay (-No.200) : 30.8

Approved By : J.S.

Soil No. 6

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-2
Project No. : 14046-01	Sample Loc. : Boring No. B-14
Project County : Lexington	Sample Depth : 4.0' to 5.5'
Project State : South Carolina	Date Tested : 02/06/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Orange & Red Poorly Graded Sand with Silt	

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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	98.9	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	34.5	
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	11.2	
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 = 0.617 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 1.1 Coarse Sand (-No.10 + No.40) : 64.4 Fine Sand (-No.40 + No.200) : 23.3 Silt + Clay (-No.200) : 11.2	Natural Moisture (%) (AASHTO T265) : 14.5 Liquid Limit (AASHTO T89) : 17 Plastic Limit (AASHTO T90) : 14 Plasticity Index : 3 Liquidity Index : 0.15 Activity : NA Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-1-b (0) ASTM Classification: D2487 : SP-SM
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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) : 1.1
Medium Sand (-No.10 + No.40) : 64.4
Fine Sand (-No.40 + No.200) : 23.3
Silt + Clay (-No.200) : 11.2

Approved By : J.S. Soil No. 7

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-4
Project No. : 14046-01	Sample Loc. : Boring No. B-14
Project County : Lexington	Sample Depth : 8.0' to 9.5'
Project State : South Carolina	Date Tested : 02/06/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Gray, Red & Orange 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	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	44.0
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 = 0.5048 mm

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

Natural Moisture (%) (AASHTO T265) : 17.3
 Liquid Limit (AASHTO T89) : 49
 Plastic Limit (AASHTO T90) : 29
 Plasticity Index : 20
 Liquidity Index : -0.58
 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) : 2.0
 Coarse Sand (-No.10 + No.40) : 54.0
 Fine Sand (-No.40 + No.200) : 14.0
 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) : 0.1
 Coarse Sand (-No.4 + No.10) : 1.9
 Medium Sand (-No.10 + No.40) : 54.0
 Fine Sand (-No.40 + No.200) : 14.0
 Silt + Clay (-No.200) : 30.0

Approved By : J.S.

Soil No. 8

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-5
Project No. : 14046-01	Sample Loc. : Boring No. B-15
Project County : Lexington	Sample Depth : 10.0' to 11.5'
Project State : South Carolina	Date Tested : 02/06/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Gray, Pink, Red, Orange & Tan Lean Clay with 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		100.0

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		96.7
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		82.7
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 = 0.0055 mm

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

Natural Moisture (%) (AASHTO T265) : 22
 Liquid Limit (AASHTO T89) : 44
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 18
 Liquidity Index : -0.21
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-6 (16)
 ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.0
 Coarse Sand (-No.10 + No.40) : 3.3
 Fine Sand (-No.40 + No.200) : 14.0
 Silt + Clay (-No.200) : 82.7

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) : 0.0
 Medium Sand (-No.10 + No.40) : 3.3
 Fine Sand (-No.40 + No.200) : 14.0
 Silt + Clay (-No.200) : 82.7

Approved By : J.S.

Soil No. 9

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan, Red & Black Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-15
 Sample Depth : 13.6' to 15.1'
 Date Tested : 02/06/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	70.3
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	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	

$D_{50} = 0.1947 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 18.9
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : 12
 Liquidity Index : -0.70
 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) : 0.1
 Coarse Sand (-No.10 + No.40) : 29.6
 Fine Sand (-No.40 + No.200) : 45.1
 Silt + Clay (-No.200) : 25.2

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) : 29.6
 Fine Sand (-No.40 + No.200) : 45.1
 Silt + Clay (-No.200) : 25.2

Approved By : J.S.

Soil No. 10

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Gray, Red & Tan Silty Sand

Sample No. : SS-7
 Sample Loc. : Boring No. B-15
 Sample Depth : 18.6' to 20.1'
 Date Tested : 02/06/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	84.0
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	23.6
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	

$D_{50} = 0.1601 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 23.4
 Liquid Limit (AASHTO T89) : 23
 Plastic Limit (AASHTO T90) : 21
 Plasticity Index : 2
 Liquidity Index : 1.34
 Activity : NA

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.3
 Coarse Sand (-No.10 + No.40) : 15.7
 Fine Sand (-No.40 + No.200) : 60.4
 Silt + Clay (-No.200) : 23.6

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) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.3
 Medium Sand (-No.10 + No.40) : 15.7
 Fine Sand (-No.40 + No.200) : 60.4
 Silt + Clay (-No.200) : 23.6

Approved By : J.S.

Soil No. 11

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-8
Project No. : 14046-01	Sample Loc. : Boring No. B-15
Project County : Lexington	Sample Depth : 23.6' to 25.1'
Project State : South Carolina	Date Tested : 02/06/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : White, Gray & Tan Well-Graded Sand with Silt	

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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	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	11.6	
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 = 0.2087 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 0.1 Coarse Sand (-No.10 + No.40) : 23.2 Fine Sand (-No.40 + No.200) : 65.1 Silt + Clay (-No.200) : 11.6	Natural Moisture (%) (AASHTO T265) : 20.5 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 : SW-SM
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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) : 23.2
Fine Sand (-No.40 + No.200) : 65.1
Silt + Clay (-No.200) : 11.6

Approved By : J.S. Soil No. 12

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-9
Project No. : 14046-01	Sample Loc. : Boring No. B-14
Project County : Lexington	Sample Depth : 28.7' to 30.2'
Project State : South Carolina	Date Tested : 02/06/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, White, Red & Orange Clayey 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	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	46.3
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	20.2
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 = 0.475 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 2.2 Coarse Sand (-No.10 + No.40) : 51.5 Fine Sand (-No.40 + No.200) : 26.1 Silt + Clay (-No.200) : 20.2	Natural Moisture (%) (AASHTO T265) : 19.7 Liquid Limit (AASHTO T89) : 32 Plastic Limit (AASHTO T90) : 22 Plasticity Index : 10 Liquidity Index : -0.22 Activity : NA Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-2-4 (0) ASTM Classification: D2487 : SC
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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) : 51.5
Fine Sand (-No.40 + No.200) : 26.1
Silt + Clay (-No.200) : 20.2

Approved By : J.S.

Soil No. 13

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan & Orange Poorly Graded Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-16
 Sample Depth : 6.0' to 7.5'
 Date Tested : 02/06/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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	38.9	
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	2.7	
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 = 0.5636 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
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SP

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.2
 Coarse Sand (-No.10 + No.40) : 60.9
 Fine Sand (-No.40 + No.200) : 36.2
 Silt + Clay (-No.200) : 2.7

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) : 0.2
 Medium Sand (-No.10 + No.40) : 60.9
 Fine Sand (-No.40 + No.200) : 36.2
 Silt + Clay (-No.200) : 2.7

Approved By : J.S.

Soil No. 14

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-6
Project No. : 14046-01	Sample Loc. : Boring No. B-17
Project County : Lexington	Sample Depth : 14.0' to 15.5'
Project State : South Carolina	Date Tested : 02/06/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Red & Orange Silty, Clayey 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
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	48.9
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	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 = 0.4398 mm

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

Natural Moisture (%) (AASHTO T265) : 15.6
 Liquid Limit (AASHTO T89) : 25
 Plastic Limit (AASHTO T90) : 19
 Plasticity Index : 6
 Liquidity Index : -0.57
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SC-SM

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.4
 Coarse Sand (-No.10 + No.40) : 49.7
 Fine Sand (-No.40 + No.200) : 31.5
 Silt + Clay (-No.200) : 17.4

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) : 1.3
 Medium Sand (-No.10 + No.40) : 49.7
 Fine Sand (-No.40 + No.200) : 31.5
 Silt + Clay (-No.200) : 17.4

Approved By : J.S.

Soil No. 15

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-5
Project No. : 14046-01	Sample Loc. : Boring No. B-16
Project County : Lexington	Sample Depth : 10.0' to 11.5'
Project State : South Carolina	Date Tested : 02/06/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Red, Orange & Gray Clayey 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.6
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	54.8
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	17.8
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 = 0.3394 mm

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

Natural Moisture (%) (AASHTO T265) : 17.8
 Liquid Limit (AASHTO T89) : 23
 Plastic Limit (AASHTO T90) : 15
 Plasticity Index : 8
 Liquidity Index : 0.35

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 1.0
 Coarse Sand (-No.10 + No.40) : 44.2
 Fine Sand (-No.40 + No.200) : 37.0
 Silt + Clay (-No.200) : 17.8

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

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) : 0.6
 Medium Sand (-No.10 + No.40) : 44.2
 Fine Sand (-No.40 + No.200) : 37.0
 Silt + Clay (-No.200) : 17.8

Approved By : J.S.

Soil No. 16

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-7
Project No. : 14046-01	Sample Loc. : Boring No. B-16
Project County : Lexington	Sample Depth : 18.4' to 19.9'
Project State : South Carolina	Date Tested : 02/06/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Red, Orange & Gray Clayey 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		100.0

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		85.9
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		49.7
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 = 0.0761 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 0.0 Coarse Sand (-No.10 + No.40) : 14.1 Fine Sand (-No.40 + No.200) : 36.2 Silt + Clay (-No.200) : 49.7	Natural Moisture (%) (AASHTO T265) : 27.6 Liquid Limit (AASHTO T89) : 38 Plastic Limit (AASHTO T90) : 24 Plasticity Index : 14 Liquidity Index : 0.25 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) : 0.0
Coarse Sand (-No.4 + No.10) : 0.0
Medium Sand (-No.10 + No.40) : 14.1
Fine Sand (-No.40 + No.200) : 36.2
Silt + Clay (-No.200) : 49.7

Approved By : J.S.

Soil No. 17

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-8
Project No. : 14046-01	Sample Loc. : Boring No. B-16
Project County : Lexington	Sample Depth : 23.4' to 24.9'
Project State : South Carolina	Date Tested : 02/06/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Red, Orange & Gray Clayey 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	99.0	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	32.8	
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	17.3	
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 = 0.6356 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 1.0 Coarse Sand (-No.10 + No.40) : 66.2 Fine Sand (-No.40 + No.200) : 15.5 Silt + Clay (-No.200) : 17.3	Natural Moisture (%) (AASHTO T265) : 16.3 Liquid Limit (AASHTO T89) : 36 Plastic Limit (AASHTO T90) : 21 Plasticity Index : 15 Liquidity Index : -0.33 Activity : NA 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) : 0.0
Coarse Sand (-No.4 + No.10) : 1.0
Medium Sand (-No.10 + No.40) : 66.2
Fine Sand (-No.40 + No.200) : 15.5
Silt + Clay (-No.200) : 17.3

Approved By : J.S. Soil No. 18

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Gray, White & Tan Silty Sand

Sample No. : SS-8
 Sample Loc. : Boring No. B-17
 Sample Depth : 24.0' to 25.5'
 Date Tested : 02/06/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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		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		17.0
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 = 0.2047 mm

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

Natural Moisture (%) (AASHTO T265) : 28.4
 Liquid Limit (AASHTO T89) : 27
 Plastic Limit (AASHTO T90) : 23
 Plasticity Index : 4
 Liquidity Index : 1.39
 Activity : NA

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.2
 Coarse Sand (-No.10 + No.40) : 25.8
 Fine Sand (-No.40 + No.200) : 57.0
 Silt + Clay (-No.200) : 17.0

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) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.2
 Medium Sand (-No.10 + No.40) : 25.8
 Fine Sand (-No.40 + No.200) : 57.0
 Silt + Clay (-No.200) : 17.0

Approved By : J.S.

Soil No. 19

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Red, Tan & Black Silty Sand

Sample No. : Bag-2
 Sample Loc. : Boring No. B-27A
 Sample Depth : 5.3' to 7.3'
 Date Tested : 02/06/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	94.9

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	45.3
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	13.1
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 = 0.4922 mm

CBR (AASHTO: T-193) : NA
 Dry Dens. (AASHTO: T-99; Method (C)) : 122.5 pcf
 Opt. Moist. (AASHTO: T-99; Method (C)) : 7.3 %

Natural Moisture (%) (AASHTO T265) : NA
 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) : 5.1
 Coarse Sand (-No.10 + No.40) : 49.6
 Fine Sand (-No.40 + No.200) : 32.2
 Silt + Clay (-No.200) : 13.1

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.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 1.0
 Coarse Sand (-No.4 + No.10) : 4.1
 Medium Sand (-No.10 + No.40) : 49.6
 Fine Sand (-No.40 + No.200) : 32.2
 Silt + Clay (-No.200) : 13.1

pH : 6.38
 Soil Resistivity : 23550.0 Ω •cm

Approved By : J.S.

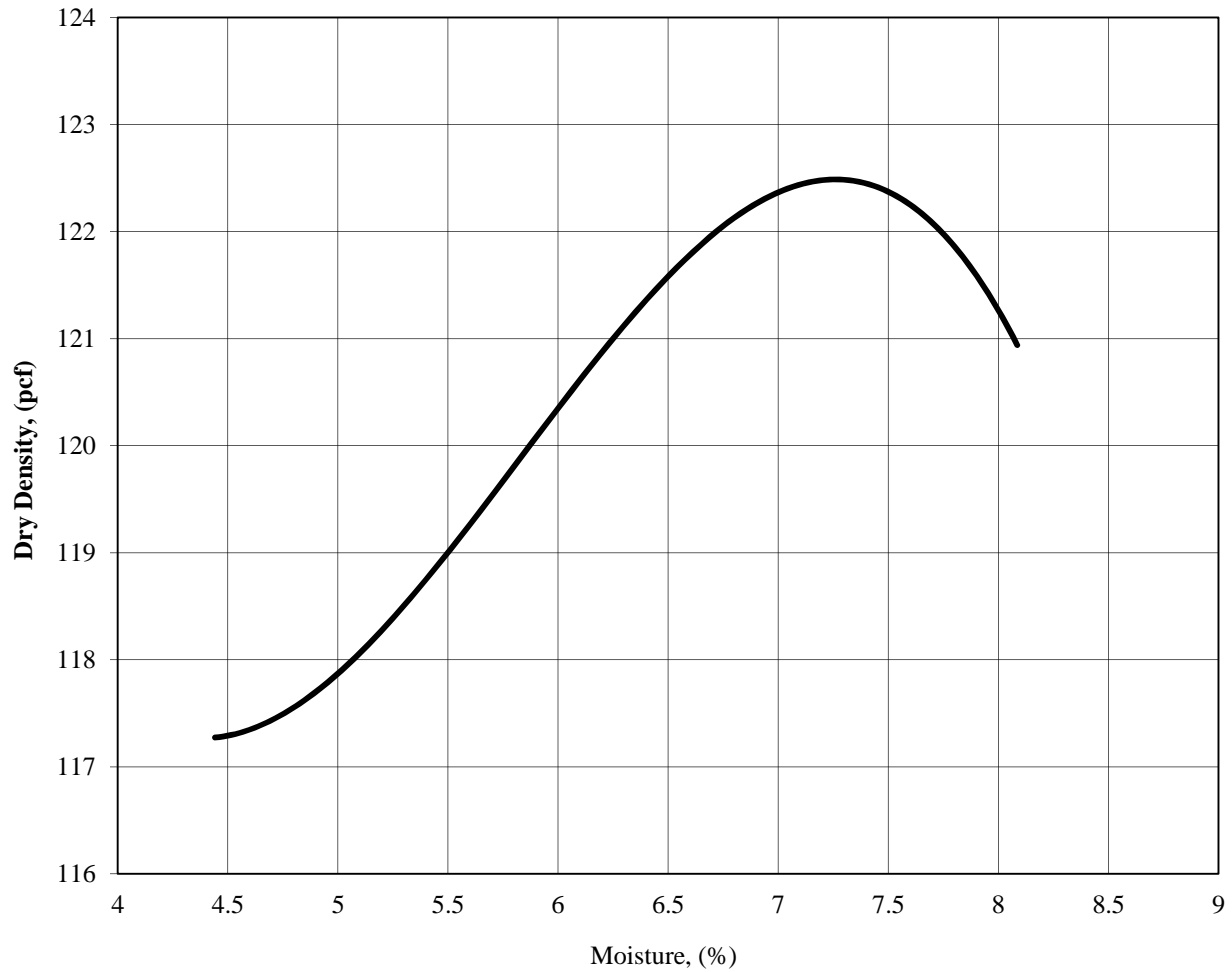
Soil No. 20



MOISTURE-DENSITY RELATIONSHIP

Project Name : I-20 D/B Roadway Improvement
Project No. : 14046-01
Project County : Lexington
Project State : South Carolina
Laboratory No. : 14046-01
Submitted By : HDR | ICA
Soil Type : Red, Tan & Black Silty Sand

Sample No. : Bag-2
Sample Loc. : Boring No. B-27A
Sample Depth : 5.3' to 7.3'
Date Tested : 02/06/15
Date Reported : 02/25/15



MAXIMUM DENSITY: 122.5 pcf

OPTIMUM MOISTURE: 7.3 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan, Red & Orange Clayey Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-19
 Sample Depth : 6.0' to 7.5'
 Date Tested : 02/06/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	95.7

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	47.0
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	17.3
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 = 0.4675 mm

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

Natural Moisture (%) (AASHTO T265) : 16.5
 Liquid Limit (AASHTO T89) : 30
 Plastic Limit (AASHTO T90) : 22
 Plasticity Index : 8
 Liquidity Index : -0.68
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.3
 Coarse Sand (-No.10 + No.40) : 48.7
 Fine Sand (-No.40 + No.200) : 29.7
 Silt + Clay (-No.200) : 17.3

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) : 3.9
 Medium Sand (-No.10 + No.40) : 48.7
 Fine Sand (-No.40 + No.200) : 29.7
 Silt + Clay (-No.200) : 17.3

Approved By : J.S.

Soil No. 21

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : White, Tan & Black Clayey Sand

Sample No. : Bag-3
 Sample Loc. : Boring No. B-27A
 Sample Depth : 7.3' to 26.5'
 Date Tested : 02/06/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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	97.7	
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	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	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 = 0.4876 mm

CBR (AASHTO: T-193) : NA
 Dry Dens. (AASHTO: T-99; Method (C)) : 120.8 pcf
 Opt. Moist. (AASHTO: T-99; Method (C)) : 8.8 %

Natural Moisture (%) (AASHTO T265) : NA

Liquid Limit (AASHTO T89) : 28

Plastic Limit (AASHTO T90) : 18

Plasticity Index : 10

Liquidity Index : NA

Activity : NA

Sp. Gr. (AASHTO T100) : NA

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

ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 5.8

Coarse Sand (-No.10 + No.40) : 48.5

Fine Sand (-No.40 + No.200) : 24.7

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) : 2.3

Coarse Sand (-No.4 + No.10) : 3.5

Medium Sand (-No.10 + No.40) : 48.5

Fine Sand (-No.40 + No.200) : 24.7

Silt + Clay (-No.200) : 21.0

pH : 5.68

Soil Resistivity : 39564.0 Ω •cm

Approved By : J.S.

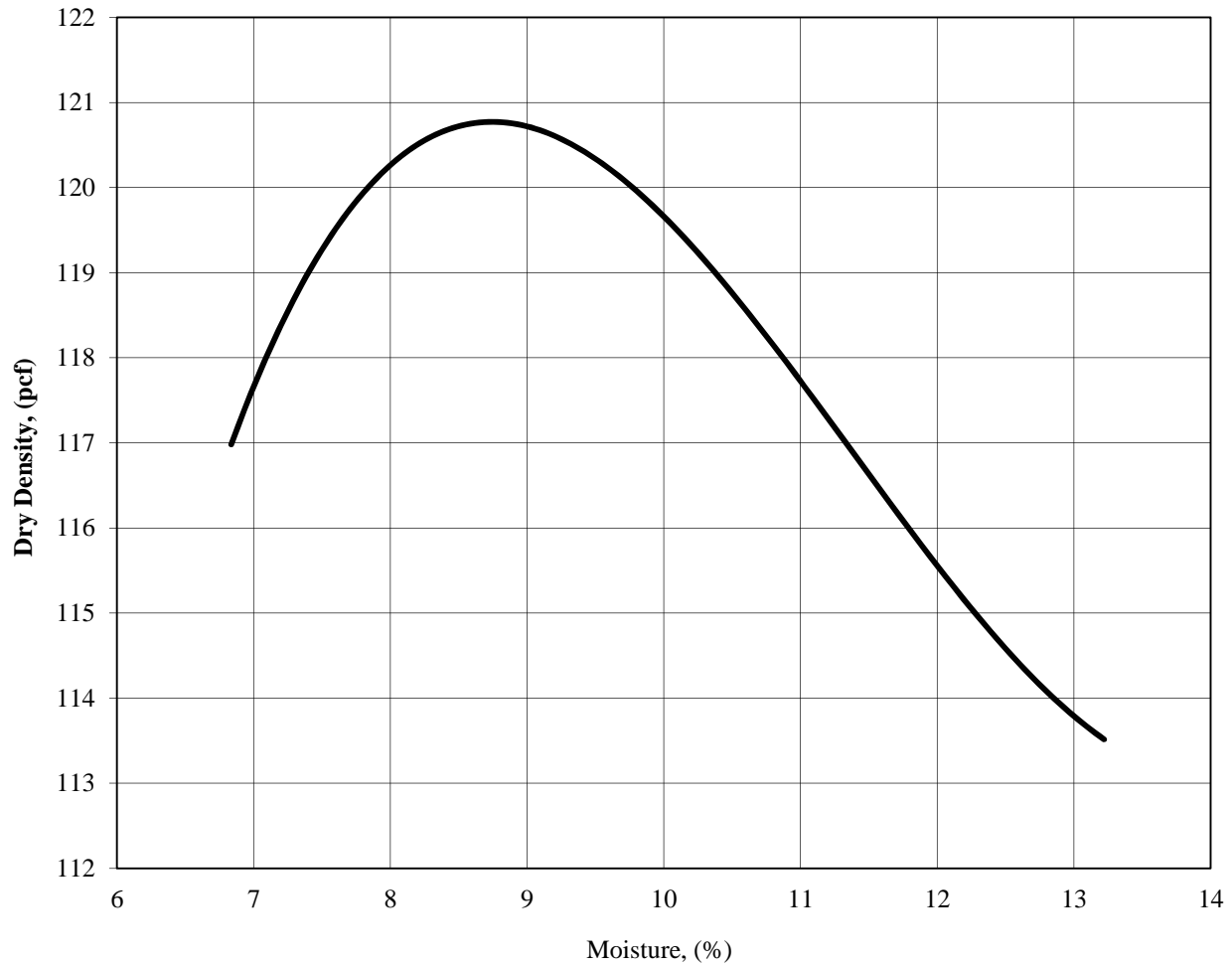
Soil No. 22



MOISTURE-DENSITY RELATIONSHIP

Project Name : I-20 D/B Roadway Improvement
Project No. : 14046-01
Project County : Lexington
Project State : South Carolina
Laboratory No. : 14046-01
Submitted By : HDR | ICA
Soil Type : White, Tan & Black Clayey Sand

Sample No. : Bag-3
Sample Loc. : Boring No. B-27A
Sample Depth : 7.3' to 26.5'
Date Tested : 02/06/15
Date Reported : 02/25/15



MAXIMUM DENSITY: 120.8 pcf

OPTIMUM MOISTURE: 8.8 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-7
Project No. : 14046-01	Sample Loc. : Boring No. B-18
Project County : Lexington	Sample Depth : 18.5' to 20.0'
Project State : South Carolina	Date Tested : 02/06/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Gray, Red & Orange Clayey 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		98.5

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		58.0
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		34.7
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 = 0.2343 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 1.5 Coarse Sand (-No.10 + No.40) : 40.5 Fine Sand (-No.40 + No.200) : 23.3 Silt + Clay (-No.200) : 34.7	Natural Moisture (%) (AASHTO T265) : 15.3 Liquid Limit (AASHTO T89) : 36 Plastic Limit (AASHTO T90) : 20 Plasticity Index : 16 Liquidity Index : -0.31 Activity : NA Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-2-6 (1) ASTM Classification: D2487 : SC
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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) : 40.5
Fine Sand (-No.40 + No.200) : 23.3
Silt + Clay (-No.200) : 34.7

Approved By : J.S. Soil No. 23

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-7
Project No. : 14046-01	Sample Loc. : Boring No. B-19
Project County : Lexington	Sample Depth : 19.0' to 20.5'
Project State : South Carolina	Date Tested : 02/06/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : White, Gray, Tan & Orange Silty, Clayey 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		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.9
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		36.9
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		13.1
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 = 0.5905 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 16.6
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 24
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 18
	Plasticity Index : 6
	Liquidity Index : -0.20
	Activity : NA
	Sp. Gr. (AASHTO T100) : NA
AASHTO Composition of Total Sample: M145	AASHTO Classification: M145 : A-1-b (0)
Gravel (3in. + No.10) : 1.4	ASTM Classification: D2487 : SC-SM
Coarse Sand (-No.10 + No.40) : 61.7	
Fine Sand (-No.40 + No.200) : 23.8	
Silt + Clay (-No.200) : 13.1	

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) : 1.3
Medium Sand (-No.10 + No.40) : 61.7
Fine Sand (-No.40 + No.200) : 23.8
Silt + Clay (-No.200) : 13.1

Approved By : J.S. Soil No. 24

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-9
Project No. : 14046-01	Sample Loc. : Boring No. B-19
Project County : Lexington	Sample Depth : 29.0' to 30.5'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Gray, Tan, Red, Orange & Black Sandy Lean Clay	

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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		86.4
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		59.0
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 = 0.0273 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 0.2 Coarse Sand (-No.10 + No.40) : 13.4 Fine Sand (-No.40 + No.200) : 27.4 Silt + Clay (-No.200) : 59.0	Natural Moisture (%) (AASHTO T265) : 15.6 Liquid Limit (AASHTO T89) : 27 Plastic Limit (AASHTO T90) : 17 Plasticity Index : 10 Liquidity Index : -0.17 Activity : NA Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-4 (3) ASTM Classification: D2487 : CL
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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) : 13.4
Fine Sand (-No.40 + No.200) : 27.4
Silt + Clay (-No.200) : 59.0

Approved By : J.S. Soil No. 25

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-2
Project No. : 14046-01	Sample Loc. : Boring No. B-21
Project County : Lexington	Sample Depth : 4.0' to 5.5'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Gray, Orange & White Clayey 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.8
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	41.4
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	18.4
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 = 0.5427 mm

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

Natural Moisture (%) (AASHTO T265) : 16.1
 Liquid Limit (AASHTO T89) : 32
 Plastic Limit (AASHTO T90) : 23
 Plasticity Index : 9
 Liquidity Index : -0.76
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.1
 Coarse Sand (-No.10 + No.40) : 54.5
 Fine Sand (-No.40 + No.200) : 23.0
 Silt + Clay (-No.200) : 18.4

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) : 3.9
 Medium Sand (-No.10 + No.40) : 54.5
 Fine Sand (-No.40 + No.200) : 23.0
 Silt + Clay (-No.200) : 18.4

Approved By : J.S.

Soil No. 26

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan, Orange & White Silty Sand

Sample No. : SS-4
 Sample Loc. : Boring No. B-20
 Sample Depth : 8.0' to 9.5'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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	96.4	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	28.6	
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	15.4	
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 = 0.6929 mm

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

Natural Moisture (%) (AASHTO T265) : 14.2
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 7
 Liquidity Index : -1.64
 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) : 3.6
 Coarse Sand (-No.10 + No.40) : 67.8
 Fine Sand (-No.40 + No.200) : 13.2
 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) : 0.0
 Coarse Sand (-No.4 + No.10) : 3.6
 Medium Sand (-No.10 + No.40) : 67.8
 Fine Sand (-No.40 + No.200) : 13.2
 Silt + Clay (-No.200) : 15.4

Approved By : J.S.

Soil No. 27

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : Bag-5
Project No. : 14046-01	Sample Loc. : Boring No. B-6A
Project County : Lexington	Sample Depth : 0.3' to 4.5'
Project State : South Carolina	Date Tested : 02/19/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Red, Black & Gray Silty, Clayey 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		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		99.2
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		50.0
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		27.0
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		

AASHTO T88

D₅₀ = 0.425 mm

CBR (AASHTO: T-193) : NA Dry Dens. (AASHTO: T-99; Method (C)) : 123 pcf Opt. Moist. (AASHTO: T-99; Method (C)) : 10.5 % AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 4.9 Coarse Sand (-No.10 + No.40) : 45.1 Fine Sand (-No.40 + No.200) : 23.0 Silt + Clay (-No.200) : 27.0	Natural Moisture (%) (AASHTO T265) : NA Liquid Limit (AASHTO T89) : 26 Plastic Limit (AASHTO T90) : 19 Plasticity Index : 7 Liquidity Index : NA Activity : NA Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-2-4 (0) ASTM Classification: D2487 : SC-SM
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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) : 4.1
Medium Sand (-No.10 + No.40) : 45.1
Fine Sand (-No.40 + No.200) : 23.0
Silt + Clay (-No.200) : 27.0

pH : 6.29
Soil Resistivity : 15072.0 Ω •cm

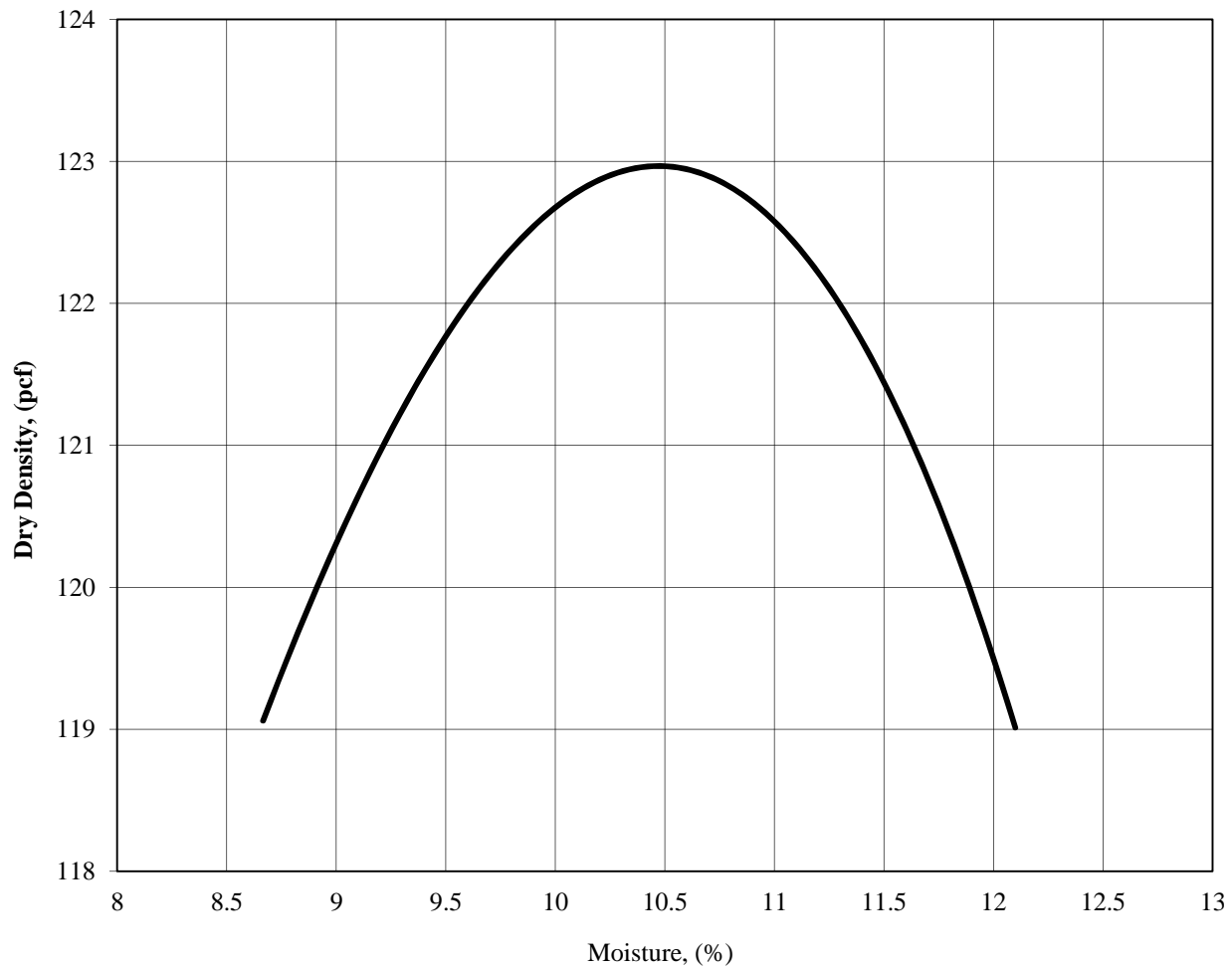
Approved By : J.S. Soil No. 28



MOISTURE-DENSITY RELATIONSHIP

Project Name : I-20 D/B Roadway Improvement
Project No. : 14046-01
Project County : Lexington
Project State : South Carolina
Laboratory No. : 14046-01
Submitted By : HDR | ICA
Soil Type : Tan, Red, Black & Gray Silty, Clayey Sand

Sample No. : Bag-5
Sample Loc. : Boring No. B-6A
Sample Depth : 0.3' to 4.5'
Date Tested : 02/19/15
Date Reported : 02/25/15



MAXIMUM DENSITY: 123 pcf

OPTIMUM MOISTURE: 10.5 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.



**MOISTURE, ASH, AND ORGANIC MATTER OF PEAT AND OTHER ORGANIC SOILS
ASTM: D 2974-00**

Project Name : I-20 D/B Roadway Improvements
Project No.: 14046-01
Project County: Lexington
Project State: South Carolina
Soil Type: Tan, Gray & Red Clayey Sand

Date : 2/19/2015
Sample No.: Bag-5
Sample Location: Boring B-6A
Sample Depth: 0.3' to 4.5'
Submitted By: ICA Engineering

Moisture Content Determination

Method A

Evaporating Dish (≥ 100 mL) + Aluminum Foil Cover : 72.52 (A)
Sample (as Received ≥ 50 g) + Dish + Cover : 122.57 (B)
Oven-Dried wt. (after 16 h at 105 °C) : 122.47 (C)
Moisture Content (oven-dried), % : $[(B - C) \times 100]/(C - A)$ 20.0 %

Ash Content Determination

Evaporating Dish + (Oven dry sample from above) + Aluminum Foil Cover : 112.53 (A)

Method C

Sample after 440 °C muffle furnace : 112.14 (B)
Ash Content, % $[(B - A') \times 100]/(A - A')$ 99.0 %
Organic matter, % (100 - Ash Content, %) 0.97 %

Soil No. : 28

Tested By : E. Doreza

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-9
Project No. : 14046-01	Sample Loc. : Boring No. B-20
Project County : Lexington	Sample Depth : 28.5' to 30.0'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Gray, White, Tan, Orange & Black Silty, Clayey 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		91.3

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		34.9
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		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 = 0.6434 mm

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

Natural Moisture (%) (AASHTO T265) : 15.9
 Liquid Limit (AASHTO T89) : 27
 Plastic Limit (AASHTO T90) : 21
 Plasticity Index : 6
 Liquidity Index : -0.80
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (0)
 ASTM Classification: D2487 : SC-SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 8.7
 Coarse Sand (-No.10 + No.40) : 56.4
 Fine Sand (-No.40 + No.200) : 21.0
 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) : 0.0
 Coarse Sand (-No.4 + No.10) : 8.7
 Medium Sand (-No.10 + No.40) : 56.4
 Fine Sand (-No.40 + No.200) : 21.0
 Silt + Clay (-No.200) : 13.9

Approved By : J.S.

Soil No. 29

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Red, Orange & Tan Silty Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-22
 Sample Depth : 4.0' to 5.5'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	99.3

				% 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	13.1
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	

$D_{50} = 0.2894 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 17.2
 Liquid Limit (AASHTO T89) : 21
 Plastic Limit (AASHTO T90) : 17
 Plasticity Index : 4
 Liquidity Index : 0.03
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.7
 Coarse Sand (-No.10 + No.40) : 38.8
 Fine Sand (-No.40 + No.200) : 47.4
 Silt + Clay (-No.200) : 13.1

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) : 0.1
 Coarse Sand (-No.4 + No.10) : 0.6
 Medium Sand (-No.10 + No.40) : 38.8
 Fine Sand (-No.40 + No.200) : 47.4
 Silt + Clay (-No.200) : 13.1

Approved By : J.S.

Soil No. 30

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-4
Project No. : 14046-01	Sample Loc. : Boring No. B-22
Project County : Lexington	Sample Depth : 8.0' to 9.5'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Red, Orange & 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.3
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	36.0
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	19.5
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 = 0.6264 mm

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

Natural Moisture (%) (AASHTO T265) : 14.4
 Liquid Limit (AASHTO T89) : 40
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 14
 Liquidity Index : -0.80
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-6 (1)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 8.1
 Coarse Sand (-No.10 + No.40) : 55.9
 Fine Sand (-No.40 + No.200) : 16.5
 Silt + Clay (-No.200) : 19.5

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) : 7.4
 Medium Sand (-No.10 + No.40) : 55.9
 Fine Sand (-No.40 + No.200) : 16.5
 Silt + Clay (-No.200) : 19.5

Approved By : J.S.

Soil No. 31

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-6
Project No. : 14046-01	Sample Loc. : Boring No. B-22
Project County : Lexington	Sample Depth : 13.6' to 15.1'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan & White Poorly Graded Sand with Clay (and/or Silty Clay)	

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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		93.8

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		23.3
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		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		

$D_{50} = 0.7641 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 15
 Liquid Limit (AASHTO T89) : 31
 Plastic Limit (AASHTO T90) : 23
 Plasticity Index : 8
 Liquidity Index : -1.00
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SP-SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 6.2
 Coarse Sand (-No.10 + No.40) : 70.5
 Fine Sand (-No.40 + No.200) : 11.9
 Silt + Clay (-No.200) : 11.4

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) : 6.1
 Medium Sand (-No.10 + No.40) : 70.5
 Fine Sand (-No.40 + No.200) : 11.9
 Silt + Clay (-No.200) : 11.4

Approved By : J.S.

Soil No. 32

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-5
Project No. : 14046-01	Sample Loc. : Boring No. B-23
Project County : Lexington	Sample Depth : 10.0' to 11.5'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Brown & Black Poorly Graded Sand with Silt	

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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		99.7

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		45.6
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		9.3
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 = 0.4821 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 0.3 Coarse Sand (-No.10 + No.40) : 54.1 Fine Sand (-No.40 + No.200) : 36.3 Silt + Clay (-No.200) : 9.3	Natural Moisture (%) (AASHTO T265) : 10.6 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-1-b (0) ASTM Classification: D2487 : SP-SM
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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) : 0.2
Medium Sand (-No.10 + No.40) : 54.1
Fine Sand (-No.40 + No.200) : 36.3
Silt + Clay (-No.200) : 9.3

Approved By : J.S. Soil No. 33

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-7
Project No. : 14046-01	Sample Loc. : Boring No. B-22
Project County : Lexington	Sample Depth : 18.6' to 20.1'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : White, Tan, Red & Orange 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	97.6	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	52.7	
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	33.9	
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 = 0.3313 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 2.4 Coarse Sand (-No.10 + No.40) : 44.9 Fine Sand (-No.40 + No.200) : 18.8 Silt + Clay (-No.200) : 33.9	Natural Moisture (%) (AASHTO T265) : 22.6 Liquid Limit (AASHTO T89) : 40 Plastic Limit (AASHTO T90) : 27 Plasticity Index : 13 Liquidity Index : -0.31 Activity : NA Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-2-6 (1) ASTM Classification: D2487 : SM
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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) : 44.9
Fine Sand (-No.40 + No.200) : 18.8
Silt + Clay (-No.200) : 33.9

Approved By : J.S. Soil No. 34

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-9
Project No. : 14046-01	Sample Loc. : Boring No. B-23
Project County : Lexington	Sample Depth : 29.0' to 30.5'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Gray, White, Tan & Orange 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	99.9
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	38.1
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	14.1
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 = 0.5744 mm

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

Natural Moisture (%) (AASHTO T265) : 19.9
 Liquid Limit (AASHTO T89) : 28
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 3
 Liquidity Index : -1.56
 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) : 0.7
 Coarse Sand (-No.10 + No.40) : 61.2
 Fine Sand (-No.40 + No.200) : 24.0
 Silt + Clay (-No.200) : 14.1

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) : 0.6
 Medium Sand (-No.10 + No.40) : 61.2
 Fine Sand (-No.40 + No.200) : 24.0
 Silt + Clay (-No.200) : 14.1

Approved By : J.S.

Soil No. 35

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-9
Project No. : 14046-01	Sample Loc. : Boring No. B-22
Project County : Lexington	Sample Depth : 28.6' to 30.1'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : White, Gray & Tan Silty, Clayey 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	98.0

				% 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	20.8
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 = 0.2937 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA	Natural Moisture (%) (AASHTO T265) : 22.1 Liquid Limit (AASHTO T89) : 27 Plastic Limit (AASHTO T90) : 20 Plasticity Index : 7 Liquidity Index : 0.32 Activity : NA Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-2-4 (0) ASTM Classification: D2487 : SC-SM
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AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.0 Coarse Sand (-No.10 + No.40) : 40.1 Fine Sand (-No.40 + No.200) : 37.1 Silt + Clay (-No.200) : 20.8	
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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) : 40.1 Fine Sand (-No.40 + No.200) : 37.1 Silt + Clay (-No.200) : 20.8	
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Approved By : J.S.

Soil No. 36

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : Bag-6
Project No. : 14046-01	Sample Loc. : Boring No. B-6A
Project County : Lexington	Sample Depth : 4.5' to 10.0'
Project State : South Carolina	Date Tested : 02/19/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Black & Gray Elastic Silt with 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		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.0
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		89.3
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		80.1
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 = 0.0062 mm

CBR (AASHTO: T-193) : NA	Natural Moisture (%) (AASHTO T265) : NA
Dry Dens. (AASHTO: T-99; Method (C)) : 100.5 pcf	Liquid Limit (AASHTO T89) : 50
Opt. Moist. (AASHTO: T-99; Method (C)) : 20.6 %	Plastic Limit (AASHTO T90) : 33
	Plasticity Index : 17
AASHTO Composition of Total Sample: M145	Liquidity Index : NA
Gravel (3in. + No.10) : 3.6	Activity : NA
Coarse Sand (-No.10 + No.40) : 7.1	Sp. Gr. (AASHTO T100) : NA
Fine Sand (-No.40 + No.200) : 9.2	AASHTO Classification: M145 : A-7-5 (16)
Silt + Clay (-No.200) : 80.1	ASTM Classification: D2487 : MH

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) : 2.6
Medium Sand (-No.10 + No.40) : 7.1
Fine Sand (-No.40 + No.200) : 9.2
Silt + Clay (-No.200) : 80.1

pH : 5.46
Soil Resistivity : 33912.0 Ω •cm

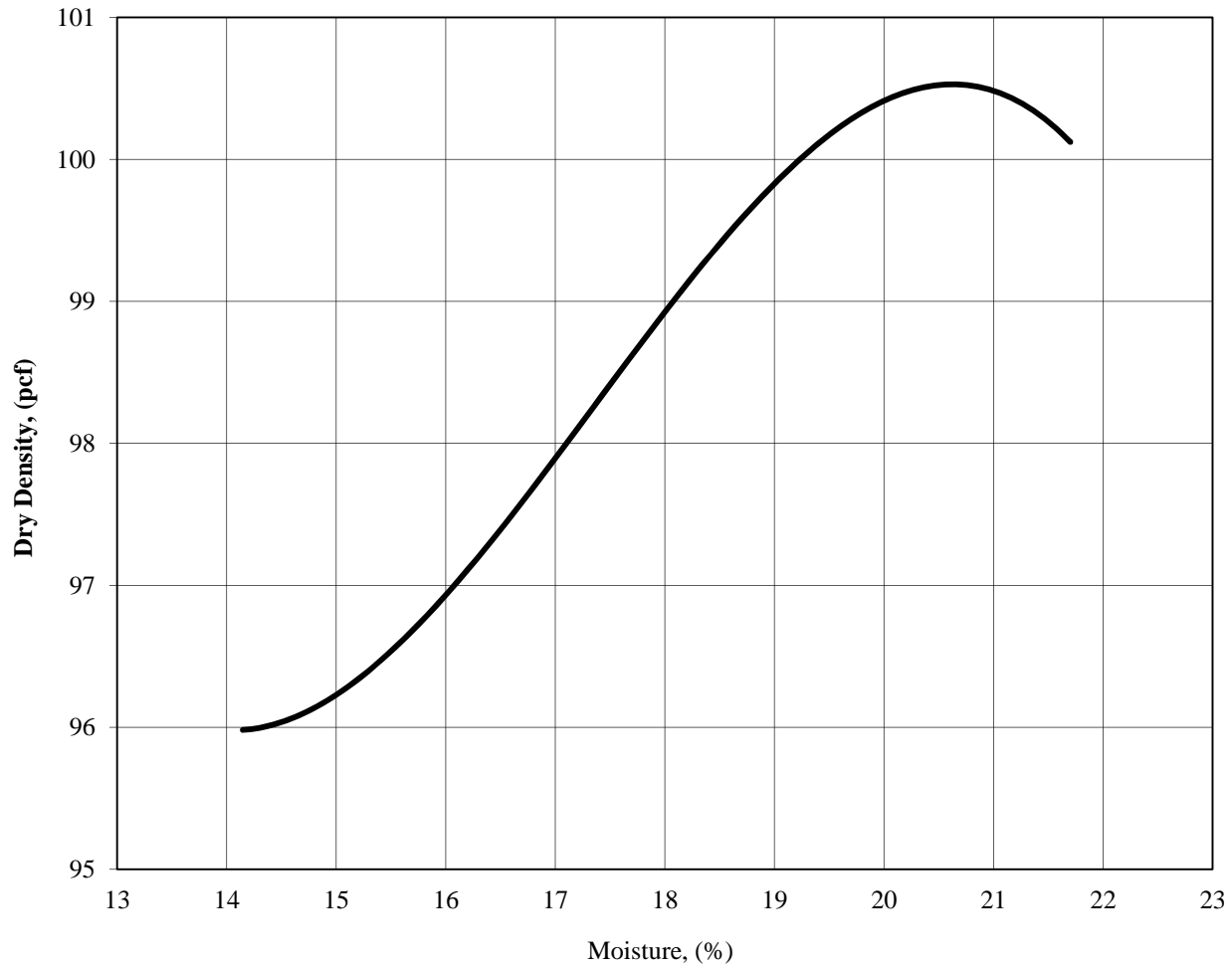
Approved By : J.S. Soil No. 37



MOISTURE-DENSITY RELATIONSHIP

Project Name : I-20 D/B Roadway Improvement
Project No. : 14046-01
Project County : Lexington
Project State : South Carolina
Laboratory No. : 14046-01
Submitted By : HDR | ICA
Soil Type : Tan, Black & Gray Elastic Silt with Sand

Sample No. : Bag-6
Sample Loc. : Boring No. B-6A
Sample Depth : 4.5' to 10.0'
Date Tested : 02/19/15
Date Reported : 02/25/15



MAXIMUM DENSITY: 100.5 pcf

OPTIMUM MOISTURE: 20.6 %

COMMENTS: AASHTO: T-99; Method (C)

APPROVED BY: J.S.

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-7
Project No. : 14046-01	Sample Loc. : Boring No. B-24
Project County : Lexington	Sample Depth : 18.5' to 20.0'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Red, Orange & Tan Poorly Graded Sand with Silt	

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	51.9
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	7.7
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 = 0.3945 mm

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

Natural Moisture (%) (AASHTO T265) : 11.4
 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-3 (0)
 ASTM Classification: D2487 : SP-SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.3
 Coarse Sand (-No.10 + No.40) : 47.8
 Fine Sand (-No.40 + No.200) : 44.2
 Silt + Clay (-No.200) : 7.7

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) : 47.8
 Fine Sand (-No.40 + No.200) : 44.2
 Silt + Clay (-No.200) : 7.7

Approved By : J.S.

Soil No. 38

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Red, Tan & Gray Clayey Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-25
 Sample Depth : 2.0' to 3.5'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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	87.2	
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 = 0.1304 mm

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

Natural Moisture (%) (AASHTO T265) : 15.8
 Liquid Limit (AASHTO T89) : 29
 Plastic Limit (AASHTO T90) : 20
 Plasticity Index : 9
 Liquidity Index : -0.47
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.3
 Coarse Sand (-No.10 + No.40) : 12.5
 Fine Sand (-No.40 + No.200) : 54.6
 Silt + Clay (-No.200) : 32.6

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) : 0.3
 Medium Sand (-No.10 + No.40) : 12.5
 Fine Sand (-No.40 + No.200) : 54.6
 Silt + Clay (-No.200) : 32.6

Approved By : J.S.

Soil No. 39

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Red, Tan & White Clayey Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-25
 Sample Depth : 6.0' to 7.1'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	97.1

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	38.2
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	18.4
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	

$D_{50} = 0.5796 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 17.9
 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-2-6 (1)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.9
 Coarse Sand (-No.10 + No.40) : 58.9
 Fine Sand (-No.40 + No.200) : 19.8
 Silt + Clay (-No.200) : 18.4

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) : 2.5
 Medium Sand (-No.10 + No.40) : 58.9
 Fine Sand (-No.40 + No.200) : 19.8
 Silt + Clay (-No.200) : 18.4

Approved By : J.S.

Soil No. 40

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : ST-1
Project No. : 14046-01	Sample Loc. : Boring No. B-6B
Project County : Lexington	Sample Depth : 4.0' to 5.5'
Project State : South Carolina	Date Tested : 02/19/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Red, Pink, Orange, Gray, Tan & Brown Sandy Silt	

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	96.5

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	87.1
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	69.3
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 = 0.0119 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 : -1.82
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (4)
 ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 3.5
 Coarse Sand (-No.10 + No.40) : 9.4
 Fine Sand (-No.40 + No.200) : 17.8
 Silt + Clay (-No.200) : 69.3

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) : 2.8
 Medium Sand (-No.10 + No.40) : 9.4
 Fine Sand (-No.40 + No.200) : 17.8
 Silt + Clay (-No.200) : 69.3

Approved By : J.S.

Soil No. 41

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-5
Project No. : 14046-01	Sample Loc. : Boring No. B-25
Project County : Lexington	Sample Depth : 10.0' to 11.5'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Gray, Red & Black Clayey 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	99.2

				% 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	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 = 0.1107 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 0.8 Coarse Sand (-No.10 + No.40) : 22.6 Fine Sand (-No.40 + No.200) : 34.3 Silt + Clay (-No.200) : 42.3	Natural Moisture (%) (AASHTO T265) : 14.9 Liquid Limit (AASHTO T89) : 39 Plastic Limit (AASHTO T90) : 20 Plasticity Index : 19 Liquidity Index : -0.26 Activity : NA Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-6 (4) ASTM Classification: D2487 : SC
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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) : 22.6
Fine Sand (-No.40 + No.200) : 34.3
Silt + Clay (-No.200) : 42.3

Approved By : J.S.

Soil No. 42

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan & White Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-25
 Sample Depth : 13.7' to 15.2'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	96.6

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	51.7
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	14.1
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	

$D_{50} = 0.3929 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 15.7
 Liquid Limit (AASHTO T89) : 23
 Plastic Limit (AASHTO T90) : 20
 Plasticity Index : 3
 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) : 3.4
 Coarse Sand (-No.10 + No.40) : 44.9
 Fine Sand (-No.40 + No.200) : 37.6
 Silt + Clay (-No.200) : 14.1

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) : 3.4
 Medium Sand (-No.10 + No.40) : 44.9
 Fine Sand (-No.40 + No.200) : 37.6
 Silt + Clay (-No.200) : 14.1

Approved By : J.S.

Soil No. 43

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-8
Project No. : 14046-01	Sample Loc. : Boring No. B-25
Project County : Lexington	Sample Depth : 23.7' to 25.2'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Red, White & Gray Clayey 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	99.0

		% Passing		
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	59.2
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	30.6
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 = 0.2433 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 1.0 Coarse Sand (-No.10 + No.40) : 39.8 Fine Sand (-No.40 + No.200) : 28.6 Silt + Clay (-No.200) : 30.6	Natural Moisture (%) (AASHTO T265) : 22.4 Liquid Limit (AASHTO T89) : 34 Plastic Limit (AASHTO T90) : 22 Plasticity Index : 12 Liquidity Index : 0.02 Activity : NA Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-2-6 (0) ASTM Classification: D2487 : SC
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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) : 39.8
Fine Sand (-No.40 + No.200) : 28.6
Silt + Clay (-No.200) : 30.6

Approved By : J.S. Soil No. 44

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Red & Tan Silty, Clayey Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-26
 Sample Depth : 4.0' to 5.5'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	98.3

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	43.7
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 = 0.5082 mm

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

Natural Moisture (%) (AASHTO T265) : 14.4
 Liquid Limit (AASHTO T89) : 24
 Plastic Limit (AASHTO T90) : 17
 Plasticity Index : 7
 Liquidity Index : -0.35
 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) : 1.7
 Coarse Sand (-No.10 + No.40) : 54.6
 Fine Sand (-No.40 + No.200) : 26.8
 Silt + Clay (-No.200) : 16.9

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) : 1.7
 Medium Sand (-No.10 + No.40) : 54.6
 Fine Sand (-No.40 + No.200) : 26.8
 Silt + Clay (-No.200) : 16.9

Approved By : J.S.

Soil No. 45

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan, Orange & Black Clayey Sand

Sample No. : SS-2
 Sample Loc. : Boring No. B-27
 Sample Depth : 4.0' to 5.0'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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	96.6	
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	27.8	
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	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 = 0.7496 mm

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

Natural Moisture (%) (AASHTO T265) : 14.6
 Liquid Limit (AASHTO T89) : 42
 Plastic Limit (AASHTO T90) : 20
 Plasticity Index : 22
 Liquidity Index : -0.26
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-7 (2)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 11.6
 Coarse Sand (-No.10 + No.40) : 60.6
 Fine Sand (-No.40 + No.200) : 10.9
 Silt + Clay (-No.200) : 16.9

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) : 8.2
 Medium Sand (-No.10 + No.40) : 60.6
 Fine Sand (-No.40 + No.200) : 10.9
 Silt + Clay (-No.200) : 16.9

Approved By : J.S.

Soil No. 46

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Gray, Tan & Black Clayey Sand

Sample No. : SS-2A
 Sample Loc. : Boring No. B-27
 Sample Depth : 5.0' to 5.5'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	98.6

				% 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	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 = 0.1139 mm

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

Natural Moisture (%) (AASHTO T265) : 17.6
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 18
 Plasticity Index : 15
 Liquidity Index : -0.04
 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) : 1.4
 Coarse Sand (-No.10 + No.40) : 17.1
 Fine Sand (-No.40 + No.200) : 41.5
 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) : 0.3
 Coarse Sand (-No.4 + No.10) : 1.1
 Medium Sand (-No.10 + No.40) : 17.1
 Fine Sand (-No.40 + No.200) : 41.5
 Silt + Clay (-No.200) : 40.0

Approved By : J.S.

Soil No. 47

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Red, Tan, Gray & Black Silty Sand

Sample No. : SS-4
 Sample Loc. : Boring No. B-27
 Sample Depth : 8.0' to 9.5'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	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	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 = 0.2054 mm

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

Natural Moisture (%) (AASHTO T265) : 17.9
 Liquid Limit (AASHTO T89) : 23
 Plastic Limit (AASHTO T90) : 19
 Plasticity Index : 4
 Liquidity Index : -0.26
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 2.6
 Coarse Sand (-No.10 + No.40) : 28.2
 Fine Sand (-No.40 + No.200) : 45.8
 Silt + Clay (-No.200) : 23.4

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) : 0.0
 Coarse Sand (-No.4 + No.10) : 2.6
 Medium Sand (-No.10 + No.40) : 28.2
 Fine Sand (-No.40 + No.200) : 45.8
 Silt + Clay (-No.200) : 23.4

Approved By : J.S.

Soil No. 48

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Gray & White Sandy Silt

Sample No. : SS-5
 Sample Loc. : Boring No. B-27
 Sample Depth : 10.0' to 11.5'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	99.3

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	90.3
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	61.0
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 = 0.0227 mm

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

Natural Moisture (%) (AASHTO T265) : 33.4
 Liquid Limit (AASHTO T89) : 32
 Plastic Limit (AASHTO T90) : 24
 Plasticity Index : 8
 Liquidity Index : 1.19
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (3)
 ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.7
 Coarse Sand (-No.10 + No.40) : 9.0
 Fine Sand (-No.40 + No.200) : 29.3
 Silt + Clay (-No.200) : 61.0

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) : 0.6
 Medium Sand (-No.10 + No.40) : 9.0
 Fine Sand (-No.40 + No.200) : 29.3
 Silt + Clay (-No.200) : 61.0

Approved By : J.S.

Soil No. 49

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Gray & White Silty Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-27
 Sample Depth : 13.6' to 15.1'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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	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	19.8	
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		

$D_{50} = 0.2209 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 23
 Liquid Limit (AASHTO T89) : 21
 Plastic Limit (AASHTO T90) : 17
 Plasticity Index : 4
 Liquidity Index : 1.52
 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) : 30.5
 Fine Sand (-No.40 + No.200) : 48.5
 Silt + Clay (-No.200) : 19.8

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) : 1.2
 Medium Sand (-No.10 + No.40) : 30.5
 Fine Sand (-No.40 + No.200) : 48.5
 Silt + Clay (-No.200) : 19.8

Approved By : J.S.

Soil No. 50

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-5
Project No. : 14046-01	Sample Loc. : Boring No. B-26
Project County : Lexington	Sample Depth : 10.0' to 11.5'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, White & Black Poorly Graded Sand with Silt	

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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		44.4
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		9.8
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 = 0.4976 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

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.6
 Coarse Sand (-No.10 + No.40) : 55.0
 Fine Sand (-No.40 + No.200) : 34.6
 Silt + Clay (-No.200) : 9.8

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-1-b (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) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.6
 Medium Sand (-No.10 + No.40) : 55.0
 Fine Sand (-No.40 + No.200) : 34.6
 Silt + Clay (-No.200) : 9.8

Approved By : J.S.

Soil No. 51

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan, Gray & Red Clayey Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-26
 Sample Depth : 13.8' to 15.3'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	65.5
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	26.7
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 = 0.2125 mm

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

Natural Moisture (%) (AASHTO T265) : 18
 Liquid Limit (AASHTO T89) : 35
 Plastic Limit (AASHTO T90) : 18
 Plasticity Index : 17
 Liquidity Index : 0.00
 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) : 0.1
 Coarse Sand (-No.10 + No.40) : 34.4
 Fine Sand (-No.40 + No.200) : 38.8
 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) : 0.0
 Coarse Sand (-No.4 + No.10) : 0.1
 Medium Sand (-No.10 + No.40) : 34.4
 Fine Sand (-No.40 + No.200) : 38.8
 Silt + Clay (-No.200) : 26.7

Approved By : J.S.

Soil No. 52

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-8
Project No. : 14046-01	Sample Loc. : Boring No. B-26
Project County : Lexington	Sample Depth : 23.8' to 25.3'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Gray, White & Tan Poorly Graded Sand with Clay (and/or Silty Clay)	

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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		97.1

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		32.6
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		11.7
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 = 0.6454 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 2.9 Coarse Sand (-No.10 + No.40) : 64.5 Fine Sand (-No.40 + No.200) : 20.9 Silt + Clay (-No.200) : 11.7	Natural Moisture (%) (AASHTO T265) : 24.4 Liquid Limit (AASHTO T89) : 25 Plastic Limit (AASHTO T90) : 17 Plasticity Index : 8 Liquidity Index : 0.92 Activity : NA Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-2-4 (0) ASTM Classification: D2487 : SP-SC
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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) : 2.7
Medium Sand (-No.10 + No.40) : 64.5
Fine Sand (-No.40 + No.200) : 20.9
Silt + Clay (-No.200) : 11.7

Approved By : J.S. Soil No. 53

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-2
Project No. : 14046-01	Sample Loc. : Boring No. B-28
Project County : Lexington	Sample Depth : 4.0' to 5.5'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Gray, White, Tan, Red & Orange 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		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.5
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		81.7
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		16.1
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 = 0.1838 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 1.3 Coarse Sand (-No.10 + No.40) : 17.0 Fine Sand (-No.40 + No.200) : 65.6 Silt + Clay (-No.200) : 16.1	Natural Moisture (%) (AASHTO T265) : 16.2 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
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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) : 0.8
Medium Sand (-No.10 + No.40) : 17.0
Fine Sand (-No.40 + No.200) : 65.6
Silt + Clay (-No.200) : 16.1

Approved By : J.S. Soil No. 54

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-3
Project No. : 14046-01	Sample Loc. : Boring No. B-28
Project County : Lexington	Sample Depth : 6.0' to 7.5'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : White, Gray, Tan & Orange Well-Graded Sand with Silt	

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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		99.6

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm		36.1
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		5.9
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 = 0.5965 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 0.4 Coarse Sand (-No.10 + No.40) : 63.5 Fine Sand (-No.40 + No.200) : 30.2 Silt + Clay (-No.200) : 5.9	Natural Moisture (%) (AASHTO T265) : 11 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
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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) : 63.5
Fine Sand (-No.40 + No.200) : 30.2
Silt + Clay (-No.200) : 5.9

Approved By : J.S. Soil No. 55

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-4
Project No. : 14046-01	Sample Loc. : Boring No. B-28
Project County : Lexington	Sample Depth : 8.0' to 9.5'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : White, Gray, Tan & Orange Silty, Clayey 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	98.3	

				% 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	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 = 0.2454 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 1.7 Coarse Sand (-No.10 + No.40) : 37.0 Fine Sand (-No.40 + No.200) : 35.7 Silt + Clay (-No.200) : 25.6	Natural Moisture (%) (AASHTO T265) : 18.3 Liquid Limit (AASHTO T89) : 24 Plastic Limit (AASHTO T90) : 19 Plasticity Index : 5 Liquidity Index : -0.04 Activity : NA Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-2-4 (0) ASTM Classification: D2487 : SC-SM
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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) : 37.0
Fine Sand (-No.40 + No.200) : 35.7
Silt + Clay (-No.200) : 25.6

Approved By : J.S.

Soil No. 56

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-2
Project No. : 14046-01	Sample Loc. : Boring No. B-30
Project County : Lexington	Sample Depth : 4.0' to 5.5'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Red, Tan, White & Black Silty, Clayey 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	88.3	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	31.6	
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	14.7	
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 = 0.7025 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 11.7 Coarse Sand (-No.10 + No.40) : 56.7 Fine Sand (-No.40 + No.200) : 16.9 Silt + Clay (-No.200) : 14.7	Natural Moisture (%) (AASHTO T265) : 12.7 Liquid Limit (AASHTO T89) : 28 Plastic Limit (AASHTO T90) : 22 Plasticity Index : 6 Liquidity Index : -1.59 Activity : NA Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-1-b (0) ASTM Classification: D2487 : SC-SM
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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) : 11.7
Medium Sand (-No.10 + No.40) : 56.7
Fine Sand (-No.40 + No.200) : 16.9
Silt + Clay (-No.200) : 14.7

Approved By : J.S. Soil No. 57

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-3
Project No. : 14046-01	Sample Loc. : Boring No. B-29
Project County : Lexington	Sample Depth : 6.0' to 7.5'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Black, Red & Orange Well-Graded Sand with Silt	

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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		67.2
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		11.6
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 = 0.2485 mm

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

Natural Moisture (%) (AASHTO T265) : 14.8
 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 : SW-SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.0
 Coarse Sand (-No.10 + No.40) : 32.8
 Fine Sand (-No.40 + No.200) : 55.6
 Silt + Clay (-No.200) : 11.6

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) : 32.8
 Fine Sand (-No.40 + No.200) : 55.6
 Silt + Clay (-No.200) : 11.6

Approved By : J.S.

Soil No. 58

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan, Red & Orange Silty Sand

Sample No. : SS-8
 Sample Loc. : Boring No. B-29
 Sample Depth : 23.8' to 25.3'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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	53.0	
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	12.7	
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		

$D_{50} = 0.3735 \text{ mm}$

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

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.2
 Coarse Sand (-No.10 + No.40) : 46.8
 Fine Sand (-No.40 + No.200) : 40.3
 Silt + Clay (-No.200) : 12.7

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) : 0.2
 Medium Sand (-No.10 + No.40) : 46.8
 Fine Sand (-No.40 + No.200) : 40.3
 Silt + Clay (-No.200) : 12.7

Approved By : J.S.

Soil No. 59

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : White & Gray Lean Clay with Sand

Sample No. : SS-8
 Sample Loc. : Boring No. B-30
 Sample Depth : 24.1' to 25.6'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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	95.1	
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	78.8	
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 = 0.0067 mm

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

Natural Moisture (%) (AASHTO T265) : 21.4
 Liquid Limit (AASHTO T89) : 43
 Plastic Limit (AASHTO T90) : 24
 Plasticity Index : 19
 Liquidity Index : -0.16
 Activity : NA

AASHTO Composition of Total Sample: M145
 Gravel (3in. + No.10) : 0.2
 Coarse Sand (-No.10 + No.40) : 4.7
 Fine Sand (-No.40 + No.200) : 16.3
 Silt + Clay (-No.200) : 78.8

Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-6 (15)
 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) : 0.2
 Medium Sand (-No.10 + No.40) : 4.7
 Fine Sand (-No.40 + No.200) : 16.3
 Silt + Clay (-No.200) : 78.8

Approved By : J.S.

Soil No. 60

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : White, Gray & Tan Silty Sand

Sample No. : SS-7
 Sample Loc. : Boring No. B-28
 Sample Depth : 19.0' to 20.5'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	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	13.6
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	

$D_{50} = 0.2882 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 18.6
 Liquid Limit (AASHTO T89) : 24
 Plastic Limit (AASHTO T90) : 21
 Plasticity Index : 3
 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) : 0.1
 Coarse Sand (-No.10 + No.40) : 39.4
 Fine Sand (-No.40 + No.200) : 46.9
 Silt + Clay (-No.200) : 13.6

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) : 0.1
 Medium Sand (-No.10 + No.40) : 39.4
 Fine Sand (-No.40 + No.200) : 46.9
 Silt + Clay (-No.200) : 13.6

Approved By : J.S.

Soil No. 61

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan, Gray & Red Sandy Lean Clay

Sample No. : SS-1
 Sample Loc. : Boring No. B-1
 Sample Depth : 2.0' to 3.5'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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		97.9
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		89.7
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		70.5
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 = 0.0109 mm

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

Natural Moisture (%) (AASHTO T265) : 21.3
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 23
 Plasticity Index : 10
 Liquidity Index : -0.14
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (6)
 ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.0
 Coarse Sand (-No.10 + No.40) : 6.3
 Fine Sand (-No.40 + No.200) : 19.2
 Silt + Clay (-No.200) : 70.5

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) : 1.9
 Medium Sand (-No.10 + No.40) : 6.3
 Fine Sand (-No.40 + No.200) : 19.2
 Silt + Clay (-No.200) : 70.5

Approved By : J.S.

Soil No. 62

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-2
Project No. : 14046-01	Sample Loc. : Boring No. B-2
Project County : Lexington	Sample Depth : 4.0' to 5.5'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Red, Orange, Tan & Black Silt with 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	100.0
1/4		6.3	mm	
No.4		4.75	mm	96.5
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	89.3
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	76.2
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 = 0.0077 mm

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

Natural Moisture (%) (AASHTO T265) : 18.2
 Liquid Limit (AASHTO T89) : 31
 Plastic Limit (AASHTO T90) : 27
 Plasticity Index : 4
 Liquidity Index : -2.10
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (3)
 ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 5.7
 Coarse Sand (-No.10 + No.40) : 5.0
 Fine Sand (-No.40 + No.200) : 13.1
 Silt + Clay (-No.200) : 76.2

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) : 2.2
 Medium Sand (-No.10 + No.40) : 5.0
 Fine Sand (-No.40 + No.200) : 13.1
 Silt + Clay (-No.200) : 76.2

Approved By : J.S.

Soil No. 63

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-3
Project No. : 14046-01	Sample Loc. : Boring No. B-3
Project County : Lexington	Sample Depth : 6.0' to 7.5'
Project State : South Carolina	Date Tested : 02/11/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Orange, Black & Gray Sandy Silt	

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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	97.5	
1/4		6.3	mm		
No.4		4.75	mm	92.6	
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	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	57.3	
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 = 0.0323 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 16.0 Coarse Sand (-No.10 + No.40) : 13.3 Fine Sand (-No.40 + No.200) : 13.4 Silt + Clay (-No.200) : 57.3	Natural Moisture (%) (AASHTO T265) : 23.8 Liquid Limit (AASHTO T89) : 40 Plastic Limit (AASHTO T90) : 27 Plasticity Index : 13 Liquidity Index : -0.26 Activity : NA Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-6 (6) ASTM Classification: D2487 : ML
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ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 7.4
Coarse Sand (-No.4 + No.10) : 8.6
Medium Sand (-No.10 + No.40) : 13.3
Fine Sand (-No.40 + No.200) : 13.4
Silt + Clay (-No.200) : 57.3

Approved By : J.S.

Soil No. 64

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan, Gray & Black Sandy Lean Clay

Sample No. : SS-5
 Sample Loc. : Boring No. B-3
 Sample Depth : 10.0' to 11.5'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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		94.7
1/4		6.3	mm		
No.4		4.75	mm		88.8
No.6		3.35	mm		
No.10		2	mm		81.6

				% 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		53.1
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 = 0.051 mm

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

Natural Moisture (%) (AASHTO T265) : 18.2
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 24
 Plasticity Index : 15
 Liquidity Index : -0.35
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (5)
 ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 18.4
 Coarse Sand (-No.10 + No.40) : 13.7
 Fine Sand (-No.40 + No.200) : 14.8
 Silt + Clay (-No.200) : 53.1

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 11.2
 Coarse Sand (-No.4 + No.10) : 7.2
 Medium Sand (-No.10 + No.40) : 13.7
 Fine Sand (-No.40 + No.200) : 14.8
 Silt + Clay (-No.200) : 53.1

Approved By : J.S.

Soil No. 65

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan, Red & Gray Sandy Silt

Sample No. : SS-5
 Sample Loc. : Boring No. B-2
 Sample Depth : 10.0' to 11.5'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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		97.0
No.6		3.35	mm		
No.10		2	mm		94.1

				% 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		68.1
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 = 0.0129 mm

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

Natural Moisture (%) (AASHTO T265) : 25.4
 Liquid Limit (AASHTO T89) : 37
 Plastic Limit (AASHTO T90) : 31
 Plasticity Index : 6
 Liquidity Index : -0.95
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (4)
 ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 5.9
 Coarse Sand (-No.10 + No.40) : 9.1
 Fine Sand (-No.40 + No.200) : 16.9
 Silt + Clay (-No.200) : 68.1

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) : 2.9
 Medium Sand (-No.10 + No.40) : 9.1
 Fine Sand (-No.40 + No.200) : 16.9
 Silt + Clay (-No.200) : 68.1

Approved By : J.S.

Soil No. 66

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan & Gray Sandy Silty Clay

Sample No. : SS-4
 Sample Loc. : Boring No. B-4
 Sample Depth : 8.0' to 9.5'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	97.7
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	92.0
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	62.2
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	

$D_{50} = 0.0205 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 18
 Liquid Limit (AASHTO T89) : 24
 Plastic Limit (AASHTO T90) : 19
 Plasticity Index : 5
 Liquidity Index : -0.21
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (1)
 ASTM Classification: D2487 : CL-ML

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.8
 Coarse Sand (-No.10 + No.40) : 3.2
 Fine Sand (-No.40 + No.200) : 29.8
 Silt + Clay (-No.200) : 62.2

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) : 2.5
 Medium Sand (-No.10 + No.40) : 3.2
 Fine Sand (-No.40 + No.200) : 29.8
 Silt + Clay (-No.200) : 62.2

Approved By : J.S.

Soil No. 67

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan, Red & Gray Silty Sand

Sample No. : SS-9
 Sample Loc. : Boring No. B-1
 Sample Depth : 28.2' to 28.6'
 Date Tested : 02/11/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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		92.9

				% 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		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 = 0.115 mm

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

Natural Moisture (%) (AASHTO T265) : 14.3
 Liquid Limit (AASHTO T89) : 24
 Plastic Limit (AASHTO T90) : 23
 Plasticity Index : 1
 Liquidity Index : -8.72
 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) : 7.1
 Coarse Sand (-No.10 + No.40) : 22.4
 Fine Sand (-No.40 + No.200) : 27.2
 Silt + Clay (-No.200) : 43.3

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) : 5.6
 Medium Sand (-No.10 + No.40) : 22.4
 Fine Sand (-No.40 + No.200) : 27.2
 Silt + Clay (-No.200) : 43.3

Approved By : J.S.

Soil No. 68

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan, Red & Black Clayey Sand

Sample No. : SS-1
 Sample Loc. : Boring No. B-5
 Sample Depth : 2.0' to 3.5'
 Date Tested : 02/19/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	98.0
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	52.5
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 = 0.3597 mm

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

Natural Moisture (%) (AASHTO T265) : 12.9
 Liquid Limit (AASHTO T89) : 24
 Plastic Limit (AASHTO T90) : 15
 Plasticity Index : 9
 Liquidity Index : -0.25
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 6.2
 Coarse Sand (-No.10 + No.40) : 41.3
 Fine Sand (-No.40 + No.200) : 26.0
 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) : 2.0
 Coarse Sand (-No.4 + No.10) : 4.2
 Medium Sand (-No.10 + No.40) : 41.3
 Fine Sand (-No.40 + No.200) : 26.0
 Silt + Clay (-No.200) : 26.5

Approved By : J.S.

Soil No. 69

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-4
Project No. : 14046-01	Sample Loc. : Boring No. B-6
Project County : Lexington	Sample Depth : 8.0' to 9.5'
Project State : South Carolina	Date Tested : 02/19/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Gray & Black Elastic Silt with 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		100.0
1/4		6.3	mm		
No.4		4.75	mm		99.7
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		91.9
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		79.0
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 = 0.0066 mm

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

Natural Moisture (%) (AASHTO T265) : 40.6
 Liquid Limit (AASHTO T89) : 55
 Plastic Limit (AASHTO T90) : 43
 Plasticity Index : 12
 Liquidity Index : -0.18
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-5 (13)
 ASTM Classification: D2487 : MH

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.9
 Coarse Sand (-No.10 + No.40) : 6.2
 Fine Sand (-No.40 + No.200) : 12.9
 Silt + Clay (-No.200) : 79.0

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) : 1.6
 Medium Sand (-No.10 + No.40) : 6.2
 Fine Sand (-No.40 + No.200) : 12.9
 Silt + Clay (-No.200) : 79.0

Approved By : J.S.

Soil No. 70

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan, Red & Gray Silty Sand

Sample No. : SS-5
 Sample Loc. : Boring No. B-5
 Sample Depth : 10.0' to 11.5'
 Date Tested : 02/19/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	93.1
No.6		3.35	mm	
No.10		2	mm	83.3

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	35.5
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	22.8
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	

$D_{50} = 0.6799 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 15.4
 Liquid Limit (AASHTO T89) : 40
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 14
 Liquidity Index : -0.75
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-6 (1)
 ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 16.7
 Coarse Sand (-No.10 + No.40) : 47.8
 Fine Sand (-No.40 + No.200) : 12.7
 Silt + Clay (-No.200) : 22.8

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 6.9
 Coarse Sand (-No.4 + No.10) : 9.8
 Medium Sand (-No.10 + No.40) : 47.8
 Fine Sand (-No.40 + No.200) : 12.7
 Silt + Clay (-No.200) : 22.8

Approved By : J.S.

Soil No. 71

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan, Black & Gray Silty Sand

Sample No. : SS-4
 Sample Loc. : Boring No. B-7
 Sample Depth : 8.0' to 9.5'
 Date Tested : 02/19/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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	96.3	
No.6		3.35	mm		
No.10		2	mm	85.1	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	57.8	
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	32.2	
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 = 0.2505 mm

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

Natural Moisture (%) (AASHTO T265) : 52.7
 Liquid Limit (AASHTO T89) : 56
 Plastic Limit (AASHTO T90) : 41
 Plasticity Index : 15
 Liquidity Index : 0.78

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 14.9
 Coarse Sand (-No.10 + No.40) : 27.3
 Fine Sand (-No.40 + No.200) : 25.6
 Silt + Clay (-No.200) : 32.2

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) : 3.7
 Coarse Sand (-No.4 + No.10) : 11.2
 Medium Sand (-No.10 + No.40) : 27.3
 Fine Sand (-No.40 + No.200) : 25.6
 Silt + Clay (-No.200) : 32.2

Approved By : J.S.

Soil No. 72

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan, Orange & Gray Silty Sand

Sample No. : SS-5
 Sample Loc. : Boring No. B-8
 Sample Depth : 10.0' to 11.5'
 Date Tested : 02/19/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	98.9

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	35.3
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	18.3
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	

$D_{50} = 0.6079 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 22.6
 Liquid Limit (AASHTO T89) : 39
 Plastic Limit (AASHTO T90) : 28
 Plasticity Index : 11
 Liquidity Index : -0.51
 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) : 1.1
 Coarse Sand (-No.10 + No.40) : 63.6
 Fine Sand (-No.40 + No.200) : 17.0
 Silt + Clay (-No.200) : 18.3

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) : 1.1
 Medium Sand (-No.10 + No.40) : 63.6
 Fine Sand (-No.40 + No.200) : 17.0
 Silt + Clay (-No.200) : 18.3

Approved By : J.S.

Soil No. 73

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-7
Project No. : 14046-01	Sample Loc. : Boring No. B-5
Project County : Lexington	Sample Depth : 18.5' to 20.0'
Project State : South Carolina	Date Tested : 02/19/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Orange, White & Gray Silty Sand with 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		
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	90.3	
1/4		6.3	mm		
No.4		4.75	mm	75.6	
No.6		3.35	mm		
No.10		2	mm	62.5	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	48.3	
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	38.8	
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 = 0.5116 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 37.5 Coarse Sand (-No.10 + No.40) : 14.2 Fine Sand (-No.40 + No.200) : 9.5 Silt + Clay (-No.200) : 38.8	Natural Moisture (%) (AASHTO T265) : 18.1 Liquid Limit (AASHTO T89) : 34 Plastic Limit (AASHTO T90) : 26 Plasticity Index : 8 Liquidity Index : -1.03 Activity : NA Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-4 (0) ASTM Classification: D2487 : SM
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ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 24.4
Coarse Sand (-No.4 + No.10) : 13.1
Medium Sand (-No.10 + No.40) : 14.2
Fine Sand (-No.40 + No.200) : 9.5
Silt + Clay (-No.200) : 38.8

Approved By : J.S.

Soil No. 74

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan, Black & Red Silt with Sand

Sample No. : SS-6
 Sample Loc. : Boring No. B-6
 Sample Depth : 13.3' to 14.8'
 Date Tested : 02/19/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	97.2

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	89.1
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	76.3
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	

$D_{50} = 0.0077 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 41.4
 Liquid Limit (AASHTO T89) : 49
 Plastic Limit (AASHTO T90) : 42
 Plasticity Index : 7
 Liquidity Index : -0.06
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-5 (8)
 ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.8
 Coarse Sand (-No.10 + No.40) : 8.1
 Fine Sand (-No.40 + No.200) : 12.8
 Silt + Clay (-No.200) : 76.3

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) : 2.8
 Medium Sand (-No.10 + No.40) : 8.1
 Fine Sand (-No.40 + No.200) : 12.8
 Silt + Clay (-No.200) : 76.3

Approved By : J.S.

Soil No. 75

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-2
Project No. : 14046-01	Sample Loc. : Boring No. B-31
Project County : Lexington	Sample Depth : 4.0' to 5.5'
Project State : South Carolina	Date Tested : 02/19/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, Brown, Red & Black Clayey 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		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		93.6
No.6		3.35	mm		
No.10		2	mm		90.4

				% 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		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 = 0.504 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 9.6 Coarse Sand (-No.10 + No.40) : 45.4 Fine Sand (-No.40 + No.200) : 20.1 Silt + Clay (-No.200) : 24.9	Natural Moisture (%) (AASHTO T265) : 17.1 Liquid Limit (AASHTO T89) : 35 Plastic Limit (AASHTO T90) : 22 Plasticity Index : 13 Liquidity Index : -0.36 Activity : NA Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-2-6 (1) ASTM Classification: D2487 : SC
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ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
Fine Gravel (-3/4in. + No.4) : 6.4
Coarse Sand (-No.4 + No.10) : 3.2
Medium Sand (-No.10 + No.40) : 45.4
Fine Sand (-No.40 + No.200) : 20.1
Silt + Clay (-No.200) : 24.9

Approved By : J.S. Soil No. 76

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan & Orange Clayey Sand

Sample No. : SS-11
 Sample Loc. : Boring No. B-31
 Sample Depth : 39.0' to 40.5'
 Date Tested : 02/19/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	97.7

				% 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	25.5
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	

$D_{50} = 0.3349 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 16.8
 Liquid Limit (AASHTO T89) : 38
 Plastic Limit (AASHTO T90) : 19
 Plasticity Index : 19
 Liquidity Index : -0.14
 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) : 2.3
 Coarse Sand (-No.10 + No.40) : 43.8
 Fine Sand (-No.40 + No.200) : 28.4
 Silt + Clay (-No.200) : 25.5

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) : 2.1
 Medium Sand (-No.10 + No.40) : 43.8
 Fine Sand (-No.40 + No.200) : 28.4
 Silt + Clay (-No.200) : 25.5

Approved By : J.S.

Soil No. 77

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Brown, Tan & Gray Silty Sand

Sample No. : ST-1
 Sample Loc. : Boring No. B-7A
 Sample Depth : 8.0' to 9.0'
 Date Tested : 02/19/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	99.4

				% 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	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	

$D_{50} = 0.1144 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 55.6
 Liquid Limit (AASHTO T89) : 60
 Plastic Limit (AASHTO T90) : 48
 Plasticity Index : 12
 Liquidity Index : 0.62
 Activity : NA

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.6
 Coarse Sand (-No.10 + No.40) : 20.2
 Fine Sand (-No.40 + No.200) : 38.6
 Silt + Clay (-No.200) : 40.6

Sp. Gr. (AASHTO T100) : 2.689
 AASHTO Classification: M145 : A-7-5 (2)
 ASTM Classification: D2487 : SM

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 0.0
 Fine Gravel (-3/4in. + No.4) : 0.1
 Coarse Sand (-No.4 + No.10) : 0.5
 Medium Sand (-No.10 + No.40) : 20.2
 Fine Sand (-No.40 + No.200) : 38.6
 Silt + Clay (-No.200) : 40.6

Approved By : J.S.

Soil No. 78

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Red, Orange & Tan Clayey Sand

Sample No. : SS-10
 Sample Loc. : Boring No. B-32
 Sample Depth : 32.2' to 34.7'
 Date Tested : 02/19/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	98.9

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	74.9
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	36.2
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 = 0.1392 mm

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

Natural Moisture (%) (AASHTO T265) : 21
 Liquid Limit (AASHTO T89) : 43
 Plastic Limit (AASHTO T90) : 25
 Plasticity Index : 18
 Liquidity Index : -0.22
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-7-6 (2)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.1
 Coarse Sand (-No.10 + No.40) : 24.0
 Fine Sand (-No.40 + No.200) : 38.7
 Silt + Clay (-No.200) : 36.2

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) : 1.1
 Medium Sand (-No.10 + No.40) : 24.0
 Fine Sand (-No.40 + No.200) : 38.7
 Silt + Clay (-No.200) : 36.2

Approved By : J.S.

Soil No. 79

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : White, Pink & Tan Silty Sand

Sample No. : SS-15
 Sample Loc. : Boring No. B-31
 Sample Depth : 59.0' to 60.5'
 Date Tested : 02/19/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	95.1
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	28.5
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	18.3
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	

$D_{50} = 0.7838 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 17.9
 Liquid Limit (AASHTO T89) : 37
 Plastic Limit (AASHTO T90) : 29
 Plasticity Index : 8
 Liquidity Index : -1.34
 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) : 54.4
 Fine Sand (-No.40 + No.200) : 10.2
 Silt + Clay (-No.200) : 18.3

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) : 12.2
 Medium Sand (-No.10 + No.40) : 54.4
 Fine Sand (-No.40 + No.200) : 10.2
 Silt + Clay (-No.200) : 18.3

Approved By : J.S.

Soil No. 80

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : White, Gray & Tan Clayey Sand

Sample No. : SS-13
 Sample Loc. : Boring No. B-32
 Sample Depth : 48.2' to 49.7'
 Date Tested : 02/19/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	95.8

				% Passing
No.16		1.18	mm	
No.30		0.6	mm	
No.40		0.425	mm	47.9
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	28.2
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	

$D_{50} = 0.4549 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 14.2
 Liquid Limit (AASHTO T89) : 44
 Plastic Limit (AASHTO T90) : 23
 Plasticity Index : 21
 Liquidity Index : -0.41
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-7 (2)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 4.2
 Coarse Sand (-No.10 + No.40) : 47.9
 Fine Sand (-No.40 + No.200) : 19.7
 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) : 0.2
 Coarse Sand (-No.4 + No.10) : 4.0
 Medium Sand (-No.10 + No.40) : 47.9
 Fine Sand (-No.40 + No.200) : 19.7
 Silt + Clay (-No.200) : 28.2

Approved By : J.S.

Soil No. 81

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-12
Project No. : 14046-01	Sample Loc. : Boring No. B-32
Project County : Lexington	Sample Depth : 43.2' to 44.7'
Project State : South Carolina	Date Tested : 02/19/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : White, Gray & Tan Sandy Lean Clay	

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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	88.0	
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	69.2	
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 = 0.0119 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 0.3 Coarse Sand (-No.10 + No.40) : 11.7 Fine Sand (-No.40 + No.200) : 18.8 Silt + Clay (-No.200) : 69.2	Natural Moisture (%) (AASHTO T265) : 15.7 Liquid Limit (AASHTO T89) : 44 Plastic Limit (AASHTO T90) : 22 Plasticity Index : 22 Liquidity Index : -0.28 Activity : NA Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-7-6 (14) ASTM Classification: D2487 : CL
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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) : 11.7
Fine Sand (-No.40 + No.200) : 18.8
Silt + Clay (-No.200) : 69.2

Approved By : J.S. Soil No. 82

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : White, Gray & Tan Sandy Silt

Sample No. : SS-22
 Sample Loc. : Boring No. B-31
 Sample Depth : 94.0' to 95.5'
 Date Tested : 02/19/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	97.8

				% 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	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) : 26.2
 Liquid Limit (AASHTO T89) : 33
 Plastic Limit (AASHTO T90) : 26
 Plasticity Index : 7
 Liquidity Index : 0.01
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-4 (1)
 ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 2.2
 Coarse Sand (-No.10 + No.40) : 25.5
 Fine Sand (-No.40 + No.200) : 21.9
 Silt + Clay (-No.200) : 50.4

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) : 2.2
 Medium Sand (-No.10 + No.40) : 25.5
 Fine Sand (-No.40 + No.200) : 21.9
 Silt + Clay (-No.200) : 50.4

Approved By : J.S.

Soil No. 83

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Red & Orange Clayey Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-10
 Sample Depth : 6.0' to 7.5'
 Date Tested : 02/19/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	95.8

				% 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	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 = 0.473 mm

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

Natural Moisture (%) (AASHTO T265) : 15.2
 Liquid Limit (AASHTO T89) : 48
 Plastic Limit (AASHTO T90) : 24
 Plasticity Index : 24
 Liquidity Index : -0.38
 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) : 4.2
 Coarse Sand (-No.10 + No.40) : 49.2
 Fine Sand (-No.40 + No.200) : 17.2
 Silt + Clay (-No.200) : 29.4

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) : 4.1
 Medium Sand (-No.10 + No.40) : 49.2
 Fine Sand (-No.40 + No.200) : 17.2
 Silt + Clay (-No.200) : 29.4

Approved By : J.S.

Soil No. 84

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan & Red Silty Sand

Sample No. : SS-3
 Sample Loc. : Boring No. B-11
 Sample Depth : 6.0' to 7.5'
 Date Tested : 02/19/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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	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	16.3	
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		

$D_{50} = 0.2595 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 16.1
 Liquid Limit (AASHTO T89) : 23
 Plastic Limit (AASHTO T90) : 19
 Plasticity Index : 4
 Liquidity Index : -0.65
 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) : 36.5
 Fine Sand (-No.40 + No.200) : 47.1
 Silt + Clay (-No.200) : 16.3

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) : 0.1
 Medium Sand (-No.10 + No.40) : 36.5
 Fine Sand (-No.40 + No.200) : 47.1
 Silt + Clay (-No.200) : 16.3

Approved By : J.S.

Soil No. 85

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Tan & Gray Sandy Lean Clay

Sample No. : SS-7
 Sample Loc. : Boring No. B-10
 Sample Depth : 18.4' to 19.9'
 Date Tested : 02/19/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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	91.2	
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	68.8	
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 = 0.0123 mm

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

Natural Moisture (%) (AASHTO T265) : 18.8
 Liquid Limit (AASHTO T89) : 40
 Plastic Limit (AASHTO T90) : 23
 Plasticity Index : 17
 Liquidity Index : -0.26
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-6 (11)
 ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.2
 Coarse Sand (-No.10 + No.40) : 8.6
 Fine Sand (-No.40 + No.200) : 22.4
 Silt + Clay (-No.200) : 68.8

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) : 0.2
 Medium Sand (-No.10 + No.40) : 8.6
 Fine Sand (-No.40 + No.200) : 22.4
 Silt + Clay (-No.200) : 68.8

Approved By : J.S.

Soil No. 86

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement	Sample No. : SS-8
Project No. : 14046-01	Sample Loc. : Boring No. B-10
Project County : Lexington	Sample Depth : 23.4' to 24.9'
Project State : South Carolina	Date Tested : 02/19/15
Laboratory No. : 14046-01	Date Reported : 02/25/15
Submitted By : HDR ICA	
Soil Type : Tan, White & Gray Well-Graded Sand with Silt	

AASHTO T27 :

				% Passing	
4	in.	101.6	mm		
3.5	in.	88.9	mm		
3	in.	76.2	mm		
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	97.7	

				% Passing	
No.16		1.18	mm		
No.30		0.6	mm		
No.40		0.425	mm	41.0	
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	11.9	
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 = 0.5434 mm

CBR : NA Dry Dens. : NA Opt. Moist. : NA AASHTO Composition of Total Sample: M145 Gravel (3in. + No.10) : 2.3 Coarse Sand (-No.10 + No.40) : 56.7 Fine Sand (-No.40 + No.200) : 29.1 Silt + Clay (-No.200) : 11.9	Natural Moisture (%) (AASHTO T265) : 16.9 Liquid Limit (AASHTO T89) : 21 Plastic Limit (AASHTO T90) : 17 Plasticity Index : 4 Liquidity Index : -0.12 Activity : NA Sp. Gr. (AASHTO T100) : NA AASHTO Classification: M145 : A-1-b (0) ASTM Classification: D2487 : SW-SM
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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) : 2.3
Medium Sand (-No.10 + No.40) : 56.7
Fine Sand (-No.40 + No.200) : 29.1
Silt + Clay (-No.200) : 11.9

Approved By : J.S.

Soil No. 87

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Red & Tan Clayey Sand

Sample No. : SS-8
 Sample Loc. : Boring No. B-11
 Sample Depth : 23.3' to 24.8'
 Date Tested : 02/19/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	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	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	

$D_{50} = 0.3283 \text{ mm}$

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

Natural Moisture (%) (AASHTO T265) : 14.7
 Liquid Limit (AASHTO T89) : 27
 Plastic Limit (AASHTO T90) : 18
 Plasticity Index : 9
 Liquidity Index : -0.40
 Activity : NA
 Sp. Gr. (AASHTO T100) : NA
 AASHTO Classification: M145 : A-2-4 (0)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 0.9
 Coarse Sand (-No.10 + No.40) : 43.4
 Fine Sand (-No.40 + No.200) : 38.3
 Silt + Clay (-No.200) : 17.4

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) : 0.9
 Medium Sand (-No.10 + No.40) : 43.4
 Fine Sand (-No.40 + No.200) : 38.3
 Silt + Clay (-No.200) : 17.4

Approved By : J.S.

Soil No. 88

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : Brown, Gray & Tan Clayey Sand

Sample No. : ST-1
 Sample Loc. : Boring No. B-15A
 Sample Depth : 6.0' to 6.9'
 Date Tested : 02/19/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	98.7

				% 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	23.1
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 = 0.4264 mm

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

Natural Moisture (%) (AASHTO T265) : 16.2
 Liquid Limit (AASHTO T89) : 37
 Plastic Limit (AASHTO T90) : 21
 Plasticity Index : 16
 Liquidity Index : -0.33
 Activity : NA
 Sp. Gr. (AASHTO T100) : 2.704
 AASHTO Classification: M145 : A-2-6 (1)
 ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 1.3
 Coarse Sand (-No.10 + No.40) : 48.8
 Fine Sand (-No.40 + No.200) : 26.8
 Silt + Clay (-No.200) : 23.1

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) : 1.2
 Medium Sand (-No.10 + No.40) : 48.8
 Fine Sand (-No.40 + No.200) : 26.8
 Silt + Clay (-No.200) : 23.1

Approved By : J.S.

Soil No. 89

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement
 Project No. : 14046-01
 Project County : Lexington
 Project State : South Carolina
 Laboratory No. : 14046-01
 Submitted By : HDR | ICA
 Soil Type : White, Gray & Tan Silty Sand

Sample No. : ST-1
 Sample Loc. : Boring No. B-27B
 Sample Depth : 9.8' to 10.8'
 Date Tested : 02/19/15
 Date Reported : 02/25/15

AASHTO T27 :

				% Passing
4	in.	101.6	mm	
3.5	in.	88.9	mm	
3	in.	76.2	mm	
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	98.9
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	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	22.1
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 = 0.1982 mm

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

Natural Moisture (%) (AASHTO T265) : 18.2
 Liquid Limit (AASHTO T89) : 24
 Plastic Limit (AASHTO T90) : 22
 Plasticity Index : 2
 Liquidity Index : -1.84
 Activity : NA

AASHTO Composition of Total Sample: M145

Gravel (3in. + No.10) : 3.5
 Coarse Sand (-No.10 + No.40) : 24.6
 Fine Sand (-No.40 + No.200) : 49.8
 Silt + Clay (-No.200) : 22.1

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) : 1.1
 Coarse Sand (-No.4 + No.10) : 2.4
 Medium Sand (-No.10 + No.40) : 24.6
 Fine Sand (-No.40 + No.200) : 49.8
 Silt + Clay (-No.200) : 22.1

Approved By : J.S.

Soil No. 90

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-1
Project No. : 251829	Sample Loc. : Boring No. B-33
Project County : Lexington	Sample Depth : 2.0' to 3.5'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Orange & Tan Sandy Silt	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm		No.16	1.18	mm
3.5	in.	88.9	mm		No.30	0.6	mm
3	in.	76.2	mm		No.40	0.425	mm
2.5	in.	63.5	mm		No.50	0.3	mm
2	in.	50.8	mm		No.60	0.25	mm
1 3/4	in.	45	mm		No.80	0.18	mm
1 1/2	in.	38.1	mm		No.100	0.15	mm
1 1/4	in.	31.5	mm		No.200	0.075	mm
1	in.	25	mm		No.270	0.053	mm
3/4	in.	19	mm	100.0	Hyd. Rd. # 1		mm
1/2	in.	12.5	mm		Hyd. Rd. # 2		mm
3/8	in.	9.5	mm	98.4	Hyd. Rd. # 3		mm
1/4		6.3	mm		Hyd. Rd. # 4		mm
No.4		4.75	mm	92.5	Hyd. Rd. # 5		mm
No.6		3.35	mm		Hyd. Rd. # 6		mm
No.10		2	mm	88.6	Hyd. Rd. # 7		mm

D₅₀ = 0.011 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 15	
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 38	
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 29	
	Plasticity Index : 9	
	Liquidity Index : -1.54	
	Activity : NA	
	Sp. Gr. (AASHTO T100) : NA	
AASHTO Composition of Total Sample: M145	AASHTO Classification: M145 : A-4 (6)	
Gravel (3in. + No.10) : 11.4	ASTM Classification: D2487 : ML	
Coarse Sand (-No.10 + No.40) : 5.5		
Fine Sand (-No.40 + No.200) : 12.7		
Silt + Clay (-No.200) : 70.4		

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) : 3.9
Medium Sand (-No.10 + No.40) : 5.5
Fine Sand (-No.40 + No.200) : 12.7
Silt + Clay (-No.200) : 70.4

Approved By : J.S.

Soil No. 91

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-4
Project No. : 251829	Sample Loc. : Boring No. B-33
Project County : Lexington	Sample Depth : 8.0' to 9.5'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : White, Tan & Orange Silty Clay with Sand	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm		No.16	1.18	mm
3.5	in.	88.9	mm		No.30	0.6	mm
3	in.	76.2	mm		No.40	0.425	mm
2.5	in.	63.5	mm		No.50	0.3	mm
2	in.	50.8	mm		No.60	0.25	mm
1 3/4	in.	45	mm		No.80	0.18	mm
1 1/2	in.	38.1	mm		No.100	0.15	mm
1 1/4	in.	31.5	mm		No.200	0.075	mm
1	in.	25	mm		No.270	0.053	mm
3/4	in.	19	mm		Hyd. Rd. # 1		mm
1/2	in.	12.5	mm		Hyd. Rd. # 2		mm
3/8	in.	9.5	mm	100.0	Hyd. Rd. # 3		mm
1/4		6.3	mm		Hyd. Rd. # 4		mm
No.4		4.75	mm	96.8	Hyd. Rd. # 5		mm
No.6		3.35	mm		Hyd. Rd. # 6		mm
No.10		2	mm	94.4	Hyd. Rd. # 7		mm

D₅₀ = 0.0082 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 16	
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 29	
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 22	
	Plasticity Index : 7	
	Liquidity Index : -0.87	
	Activity : NA	
	Sp. Gr. (AASHTO T100) : NA	
AASHTO Composition of Total Sample: M145	AASHTO Classification: M145 : A-4 (4)	
Gravel (3in. + No.10) : 5.6	ASTM Classification: D2487 : CL-ML	
Coarse Sand (-No.10 + No.40) : 3.4		
Fine Sand (-No.40 + No.200) : 15.8		
Silt + Clay (-No.200) : 75.2		

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) : 2.4
Medium Sand (-No.10 + No.40) : 3.4
Fine Sand (-No.40 + No.200) : 15.8
Silt + Clay (-No.200) : 75.2

Approved By : J.S.

Soil No. 92

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-6
Project No. : 251829	Sample Loc. : Boring No. B-33
Project County : Lexington	Sample Depth : 14.6' to 16.1'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Brown & Tan Silty Sand	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm	No.16		1.18	mm
3.5	in.	88.9	mm	No.30		0.6	mm
3	in.	76.2	mm	No.40		0.425	mm
2.5	in.	63.5	mm	No.50		0.3	mm
2	in.	50.8	mm	No.60		0.25	mm
1 3/4	in.	45	mm	No.80		0.18	mm
1 1/2	in.	38.1	mm	No.100		0.15	mm
1 1/4	in.	31.5	mm	No.200		0.075	mm
1	in.	25	mm	No.270		0.053	mm
3/4	in.	19	mm	Hyd. Rd. # 1			mm
1/2	in.	12.5	mm	Hyd. Rd. # 2			mm
3/8	in.	9.5	mm	Hyd. Rd. # 3			mm
1/4		6.3	mm	Hyd. Rd. # 4			mm
No.4		4.75	mm	Hyd. Rd. # 5			mm
No.6		3.35	mm	Hyd. Rd. # 6			mm
No.10		2	mm	Hyd. Rd. # 7			mm

D₅₀ = 0.1436 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 15	
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 37	
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 25	
	Plasticity Index : 12	
	Liquidity Index : -0.82	
	Activity : NA	
	Sp. Gr. (AASHTO T100) : NA	
AASHTO Composition of Total Sample: M145	AASHTO Classification: M145 : A-6 (2)	
Gravel (3in. + No.10) : 17.3	ASTM Classification: D2487 : SM	
Coarse Sand (-No.10 + No.40) : 21.5		
Fine Sand (-No.40 + No.200) : 17.9		
Silt + Clay (-No.200) : 43.3		

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) : 6.7
Medium Sand (-No.10 + No.40) : 21.5
Fine Sand (-No.40 + No.200) : 17.9
Silt + Clay (-No.200) : 43.3

Approved By : J.S.

Soil No. 93

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-2
Project No. : 251829	Sample Loc. : Boring No. B-34
Project County : Lexington	Sample Depth : 4.0' to 5.5'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Tan & Orange Silt with Sand	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm	No.16		1.18	mm
3.5	in.	88.9	mm	No.30		0.6	mm
3	in.	76.2	mm	No.40		0.425	mm
2.5	in.	63.5	mm	No.50		0.3	mm
2	in.	50.8	mm	No.60		0.25	mm
1 3/4	in.	45	mm	No.80		0.18	mm
1 1/2	in.	38.1	mm	No.100		0.15	mm
1 1/4	in.	31.5	mm	No.200		0.075	mm
1	in.	25	mm	No.270		0.053	mm
3/4	in.	19	mm	Hyd. Rd. # 1			mm
1/2	in.	12.5	mm	Hyd. Rd. # 2			mm
3/8	in.	9.5	mm	Hyd. Rd. # 3			mm
1/4		6.3	mm	Hyd. Rd. # 4			mm
No.4		4.75	mm	Hyd. Rd. # 5			mm
No.6		3.35	mm	Hyd. Rd. # 6			mm
No.10		2	mm	Hyd. Rd. # 7			mm

D₅₀ = 0.0051 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 5.9
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 33
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 28
	Plasticity Index : 5
AASHTO Composition of Total Sample: M145	Liquidity Index : -4.33
Gravel (3in. + No.10) : 2.5	Activity : NA
Coarse Sand (-No.10 + No.40) : 2.7	Sp. Gr. (AASHTO T100) : NA
Fine Sand (-No.40 + No.200) : 10.6	AASHTO Classification: M145 : A-4 (5)
Silt + Clay (-No.200) : 84.2	ASTM Classification: D2487 : ML

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) : 2.0
- Medium Sand (-No.10 + No.40) : 2.7
- Fine Sand (-No.40 + No.200) : 10.6
- Silt + Clay (-No.200) : 84.2

Approved By : J.S.

Soil No. 94

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-8
Project No. : 251829	Sample Loc. : Boring No. B-34
Project County : Lexington	Sample Depth : 24.4' to 25.9'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Tan & Orange Sandy Lean Clay	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm	No.16		1.18	mm
3.5	in.	88.9	mm	No.30		0.6	mm
3	in.	76.2	mm	No.40		0.425	mm
2.5	in.	63.5	mm	No.50		0.3	mm
2	in.	50.8	mm	No.60		0.25	mm
1 3/4	in.	45	mm	No.80		0.18	mm
1 1/2	in.	38.1	mm	No.100		0.15	mm
1 1/4	in.	31.5	mm	No.200		0.075	mm
1	in.	25	mm	No.270		0.053	mm
3/4	in.	19	mm	Hyd. Rd. # 1			mm
1/2	in.	12.5	mm	Hyd. Rd. # 2			mm
3/8	in.	9.5	mm	Hyd. Rd. # 3			mm
1/4		6.3	mm	Hyd. Rd. # 4			mm
No.4		4.75	mm	Hyd. Rd. # 5			mm
No.6		3.35	mm	Hyd. Rd. # 6			mm
No.10		2	mm	Hyd. Rd. # 7			mm

D₅₀ = 0.0247 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 13
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 32
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 23
	Plasticity Index : 9
AASHTO Composition of Total Sample: M145	Liquidity Index : -1.13
Gravel (3in. + No.10) : 16.2	Activity : NA
Coarse Sand (-No.10 + No.40) : 5.3	Sp. Gr. (AASHTO T100) : NA
Fine Sand (-No.40 + No.200) : 18.4	AASHTO Classification: M145 : A-4 (4)
Silt + Clay (-No.200) : 60.1	ASTM Classification: D2487 : CL

ASTM Composition of Total Sample: D2487

- Coarse Gravel (3in. + 3/4in.) : 0.0
- Fine Gravel (-3/4in. + No.4) : 12.0
- Coarse Sand (-No.4 + No.10) : 4.2
- Medium Sand (-No.10 + No.40) : 5.3
- Fine Sand (-No.40 + No.200) : 18.4
- Silt + Clay (-No.200) : 60.1

Approved By : J.S.

Soil No. 95

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-3
Project No. : 251829	Sample Loc. : Boring No. B-35
Project County : Lexington	Sample Depth : 6.0' to 7.5'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Light & Dark Tan Sandy Silt	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm	No.16		1.18	mm
3.5	in.	88.9	mm	No.30		0.6	mm
3	in.	76.2	mm	No.40		0.425	mm
2.5	in.	63.5	mm	No.50		0.3	mm
2	in.	50.8	mm	No.60		0.25	mm
1 3/4	in.	45	mm	No.80		0.18	mm
1 1/2	in.	38.1	mm	No.100		0.15	mm
1 1/4	in.	31.5	mm	No.200		0.075	mm
1	in.	25	mm	No.270		0.053	mm
3/4	in.	19	mm	Hyd. Rd. # 1			mm
1/2	in.	12.5	mm	Hyd. Rd. # 2			mm
3/8	in.	9.5	mm	Hyd. Rd. # 3			mm
1/4		6.3	mm	Hyd. Rd. # 4			mm
No.4		4.75	mm	Hyd. Rd. # 5			mm
No.6		3.35	mm	Hyd. Rd. # 6			mm
No.10		2	mm	Hyd. Rd. # 7			mm

D₅₀ = 0.0155 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 7.7	
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 32	
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 25	
	Plasticity Index : 7	
	Liquidity Index : -2.42	
	Activity : NA	
	Sp. Gr. (AASHTO T100) : NA	
AASHTO Composition of Total Sample: M145	AASHTO Classification: M145 : A-4 (3)	
Gravel (3in. + No.10) : 12.2	ASTM Classification: D2487 : ML	
Coarse Sand (-No.10 + No.40) : 10.3		
Fine Sand (-No.40 + No.200) : 11.9		
Silt + Clay (-No.200) : 65.6		

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) : 7.7
Medium Sand (-No.10 + No.40) : 10.3
Fine Sand (-No.40 + No.200) : 11.9
Silt + Clay (-No.200) : 65.6

Approved By : J.S.

Soil No. 96

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-8
Project No. : 251829	Sample Loc. : Boring No. B-35
Project County : Lexington	Sample Depth : 24.5' to 25.9'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Light & Dark Tan Sandy Silt	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm		No.16	1.18	mm
3.5	in.	88.9	mm		No.30	0.6	mm
3	in.	76.2	mm		No.40	0.425	mm
2.5	in.	63.5	mm		No.50	0.3	mm
2	in.	50.8	mm		No.60	0.25	mm
1 3/4	in.	45	mm		No.80	0.18	mm
1 1/2	in.	38.1	mm		No.100	0.15	mm
1 1/4	in.	31.5	mm		No.200	0.075	mm
1	in.	25	mm		No.270	0.053	mm
3/4	in.	19	mm		Hyd. Rd. # 1		mm
1/2	in.	12.5	mm		Hyd. Rd. # 2		mm
3/8	in.	9.5	mm	100.0	Hyd. Rd. # 3		mm
1/4		6.3	mm		Hyd. Rd. # 4		mm
No.4		4.75	mm	97.0	Hyd. Rd. # 5		mm
No.6		3.35	mm		Hyd. Rd. # 6		mm
No.10		2	mm	93.1	Hyd. Rd. # 7		mm

D₅₀ = 0.0121 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 11	
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 28	
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 23	
	Plasticity Index : 5	
AASHTO Composition of Total Sample: M145	Liquidity Index : -2.39	
Gravel (3in. + No.10) : 6.9	Activity : NA	
Coarse Sand (-No.10 + No.40) : 5.6	Sp. Gr. (AASHTO T100) : NA	
Fine Sand (-No.40 + No.200) : 18.5	AASHTO Classification: M145 : A-4 (2)	
Silt + Clay (-No.200) : 69.0	ASTM Classification: D2487 : ML	

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) : 3.9
Medium Sand (-No.10 + No.40) : 5.6
Fine Sand (-No.40 + No.200) : 18.5
Silt + Clay (-No.200) : 69.0

Approved By : J.S.

Soil No. 97

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-3
Project No. : 251829	Sample Loc. : Boring No. B-36
Project County : Lexington	Sample Depth : 6.0' to 7.5'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Tan Silty Clay with Sand	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm	No.16		1.18	mm
3.5	in.	88.9	mm	No.30		0.6	mm
3	in.	76.2	mm	No.40		0.425	mm
2.5	in.	63.5	mm	No.50		0.3	mm
2	in.	50.8	mm	No.60		0.25	mm
1 3/4	in.	45	mm	No.80		0.18	mm
1 1/2	in.	38.1	mm	No.100		0.15	mm
1 1/4	in.	31.5	mm	No.200		0.075	mm
1	in.	25	mm	No.270		0.053	mm
3/4	in.	19	mm	Hyd. Rd. # 1			mm
1/2	in.	12.5	mm	Hyd. Rd. # 2			mm
3/8	in.	9.5	mm	Hyd. Rd. # 3			mm
1/4		6.3	mm	Hyd. Rd. # 4			mm
No.4		4.75	mm	Hyd. Rd. # 5			mm
No.6		3.35	mm	Hyd. Rd. # 6			mm
No.10		2	mm	Hyd. Rd. # 7			mm

D₅₀ = 0.0069 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 14
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 22
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 16
	Plasticity Index : 6
AASHTO Composition of Total Sample: M145	Liquidity Index : -0.30
Gravel (3in. + No.10) : 0.4	Activity : NA
Coarse Sand (-No.10 + No.40) : 2.4	Sp. Gr. (AASHTO T100) : NA
Fine Sand (-No.40 + No.200) : 19.0	AASHTO Classification: M145 : A-4 (2)
Silt + Clay (-No.200) : 78.2	ASTM Classification: D2487 : CL-ML

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) : 2.4
Fine Sand (-No.40 + No.200) : 19.0
Silt + Clay (-No.200) : 78.2

Approved By : J.S.

Soil No. 98

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-5
Project No. : 251829	Sample Loc. : Boring No. B-36
Project County : Lexington	Sample Depth : 9.5' to 11.0'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Tan, Orange & Gray Silty, Clayey Sand with Gravel	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm		No.16	1.18	mm
3.5	in.	88.9	mm		No.30	0.6	mm
3	in.	76.2	mm		No.40	0.425	mm
2.5	in.	63.5	mm		No.50	0.3	mm
2	in.	50.8	mm		No.60	0.25	mm
1 3/4	in.	45	mm		No.80	0.18	mm
1 1/2	in.	38.1	mm		No.100	0.15	mm
1 1/4	in.	31.5	mm		No.200	0.075	mm
1	in.	25	mm	100.0	No.270	0.053	mm
3/4	in.	19	mm	89.4	Hyd. Rd. # 1		mm
1/2	in.	12.5	mm		Hyd. Rd. # 2		mm
3/8	in.	9.5	mm	86.9	Hyd. Rd. # 3		mm
1/4		6.3	mm		Hyd. Rd. # 4		mm
No.4		4.75	mm	84.7	Hyd. Rd. # 5		mm
No.6		3.35	mm		Hyd. Rd. # 6		mm
No.10		2	mm	81.0	Hyd. Rd. # 7		mm

D₅₀ = 0.0937 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 8.9
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 22
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 17
	Plasticity Index : 5
	Liquidity Index : -1.64
	Activity : NA
	Sp. Gr. (AASHTO T100) : NA
AASHTO Composition of Total Sample: M145	AASHTO Classification: M145 : A-4 (0)
Gravel (3in. + No.10) : 19.0	ASTM Classification: D2487 : SC-SM
Coarse Sand (-No.10 + No.40) : 7.2	
Fine Sand (-No.40 + No.200) : 27.3	
Silt + Clay (-No.200) : 46.5	

ASTM Composition of Total Sample: D2487

Coarse Gravel (3in. + 3/4in.) : 10.6
Fine Gravel (-3/4in. + No.4) : 4.7
Coarse Sand (-No.4 + No.10) : 3.7
Medium Sand (-No.10 + No.40) : 7.2
Fine Sand (-No.40 + No.200) : 27.3
Silt + Clay (-No.200) : 46.5

Approved By : J.S.

Soil No. 99

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-8
Project No. : 251829	Sample Loc. : Boring No. B-36
Project County : Lexington	Sample Depth : 24.2' to 25.4'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Tan, Orange & Gray Sandy Silt	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm	No.16		1.18	mm
3.5	in.	88.9	mm	No.30		0.6	mm
3	in.	76.2	mm	No.40		0.425	mm
2.5	in.	63.5	mm	No.50		0.3	mm
2	in.	50.8	mm	No.60		0.25	mm
1 3/4	in.	45	mm	No.80		0.18	mm
1 1/2	in.	38.1	mm	No.100		0.15	mm
1 1/4	in.	31.5	mm	No.200		0.075	mm
1	in.	25	mm	No.270		0.053	mm
3/4	in.	19	mm	Hyd. Rd. # 1			mm
1/2	in.	12.5	mm	Hyd. Rd. # 2			mm
3/8	in.	9.5	mm	Hyd. Rd. # 3			mm
1/4		6.3	mm	Hyd. Rd. # 4			mm
No.4		4.75	mm	Hyd. Rd. # 5			mm
No.6		3.35	mm	Hyd. Rd. # 6			mm
No.10		2	mm	Hyd. Rd. # 7			mm

D₅₀ = 0.0402 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 13
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 24
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 23
	Plasticity Index : 1
AASHTO Composition of Total Sample: M145	Liquidity Index : -9.96
Gravel (3in. + No.10) : 3.9	Activity : NA
Coarse Sand (-No.10 + No.40) : 11.5	Sp. Gr. (AASHTO T100) : NA
Fine Sand (-No.40 + No.200) : 29.4	AASHTO Classification: M145 : A-4 (0)
Silt + Clay (-No.200) : 55.2	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) : 3.3
- Medium Sand (-No.10 + No.40) : 11.5
- Fine Sand (-No.40 + No.200) : 29.4
- Silt + Clay (-No.200) : 55.2

Approved By : J.S.

Soil No. 100

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-7
Project No. : 251829	Sample Loc. : Boring No. B-37
Project County : Lexington	Sample Depth : 19.3' to 20.8'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Gray & Red Silt with Sand	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm		No.16	1.18	mm
3.5	in.	88.9	mm		No.30	0.6	mm
3	in.	76.2	mm		No.40	0.425	mm
2.5	in.	63.5	mm		No.50	0.3	mm
2	in.	50.8	mm		No.60	0.25	mm
1 3/4	in.	45	mm		No.80	0.18	mm
1 1/2	in.	38.1	mm		No.100	0.15	mm
1 1/4	in.	31.5	mm		No.200	0.075	mm
1	in.	25	mm		No.270	0.053	mm
3/4	in.	19	mm		Hyd. Rd. # 1		mm
1/2	in.	12.5	mm		Hyd. Rd. # 2		mm
3/8	in.	9.5	mm	100.0	Hyd. Rd. # 3		mm
1/4		6.3	mm		Hyd. Rd. # 4		mm
No.4		4.75	mm	98.9	Hyd. Rd. # 5		mm
No.6		3.35	mm		Hyd. Rd. # 6		mm
No.10		2	mm	94.6	Hyd. Rd. # 7		mm

D₅₀ = 0.0101 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 13
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 34
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 28
	Plasticity Index : 6
AASHTO Composition of Total Sample: M145	Liquidity Index : -2.58
Gravel (3in. + No.10) : 5.4	Activity : NA
Coarse Sand (-No.10 + No.40) : 11.8	Sp. Gr. (AASHTO T100) : NA
Fine Sand (-No.40 + No.200) : 11.1	AASHTO Classification: M145 : A-4 (4)
Silt + Clay (-No.200) : 71.7	ASTM Classification: D2487 : ML

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) : 4.3
Medium Sand (-No.10 + No.40) : 11.8
Fine Sand (-No.40 + No.200) : 11.1
Silt + Clay (-No.200) : 71.7

Approved By : J.S.

Soil No. 101

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-2
Project No. : 251829	Sample Loc. : Boring No. B-38
Project County : Lexington	Sample Depth : 4.0' to 5.5'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Tan & Gray Sandy Silty Clay	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm		No.16	1.18	mm
3.5	in.	88.9	mm		No.30	0.6	mm
3	in.	76.2	mm		No.40	0.425	mm
2.5	in.	63.5	mm		No.50	0.3	mm
2	in.	50.8	mm		No.60	0.25	mm
1 3/4	in.	45	mm		No.80	0.18	mm
1 1/2	in.	38.1	mm		No.100	0.15	mm
1 1/4	in.	31.5	mm		No.200	0.075	mm
1	in.	25	mm		No.270	0.053	mm
3/4	in.	19	mm	100.0	Hyd. Rd. # 1		mm
1/2	in.	12.5	mm		Hyd. Rd. # 2		mm
3/8	in.	9.5	mm	91.5	Hyd. Rd. # 3		mm
1/4		6.3	mm		Hyd. Rd. # 4		mm
No.4		4.75	mm	89.9	Hyd. Rd. # 5		mm
No.6		3.35	mm		Hyd. Rd. # 6		mm
No.10		2	mm	88.1	Hyd. Rd. # 7		mm

D₅₀ = 0.0116 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 11	
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 29	
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 22	
	Plasticity Index : 7	
	Liquidity Index : -1.59	
	Activity : NA	
	Sp. Gr. (AASHTO T100) : NA	
AASHTO Composition of Total Sample: M145	AASHTO Classification: M145 : A-4 (3)	
Gravel (3in. + No.10) : 11.9	ASTM Classification: D2487 : CL-ML	
Coarse Sand (-No.10 + No.40) : 3.7		
Fine Sand (-No.40 + No.200) : 14.8		
Silt + Clay (-No.200) : 69.6		

ASTM Composition of Total Sample: D2487

- Coarse Gravel (3in. + 3/4in.) : 0.0
- Fine Gravel (-3/4in. + No.4) : 10.1
- Coarse Sand (-No.4 + No.10) : 1.8
- Medium Sand (-No.10 + No.40) : 3.7
- Fine Sand (-No.40 + No.200) : 14.8
- Silt + Clay (-No.200) : 69.6

Approved By : J.S. Soil No. 102

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-6
Project No. : 251829	Sample Loc. : Boring No. B-38
Project County : Lexington	Sample Depth : 14.7' to 16.2'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Gray, White & Tan Sandy Silt	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm	No.16		1.18	mm
3.5	in.	88.9	mm	No.30		0.6	mm
3	in.	76.2	mm	No.40		0.425	mm
2.5	in.	63.5	mm	No.50		0.3	mm
2	in.	50.8	mm	No.60		0.25	mm
1 3/4	in.	45	mm	No.80		0.18	mm
1 1/2	in.	38.1	mm	No.100		0.15	mm
1 1/4	in.	31.5	mm	No.200		0.075	mm
1	in.	25	mm	No.270		0.053	mm
3/4	in.	19	mm	Hyd. Rd. # 1			mm
1/2	in.	12.5	mm	Hyd. Rd. # 2			mm
3/8	in.	9.5	mm	Hyd. Rd. # 3			mm
1/4		6.3	mm	Hyd. Rd. # 4			mm
No.4		4.75	mm	Hyd. Rd. # 5			mm
No.6		3.35	mm	Hyd. Rd. # 6			mm
No.10		2	mm	Hyd. Rd. # 7			mm

D₅₀ = 0.0113 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 15	
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 28	
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 24	
	Plasticity Index : 4	
AASHTO Composition of Total Sample: M145	Liquidity Index : -2.35	
Gravel (3in. + No.10) : 7.1	Activity : NA	
Coarse Sand (-No.10 + No.40) : 5.2	Sp. Gr. (AASHTO T100) : NA	
Fine Sand (-No.40 + No.200) : 17.7	AASHTO Classification: M145 : A-4 (2)	
Silt + Clay (-No.200) : 70.0	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) : 3.7
Medium Sand (-No.10 + No.40) : 5.2
Fine Sand (-No.40 + No.200) : 17.7
Silt + Clay (-No.200) : 70.0

Approved By : J.S.

Soil No. 103

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-10
Project No. : 251829	Sample Loc. : Boring No. B-38
Project County : Lexington	Sample Depth : 39.7' to 41.2'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Gray, Tan & Black Sandy Silt	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm	No.16		1.18	mm
3.5	in.	88.9	mm	No.30		0.6	mm
3	in.	76.2	mm	No.40		0.425	mm
2.5	in.	63.5	mm	No.50		0.3	mm
2	in.	50.8	mm	No.60		0.25	mm
1 3/4	in.	45	mm	No.80		0.18	mm
1 1/2	in.	38.1	mm	No.100		0.15	mm
1 1/4	in.	31.5	mm	No.200		0.075	mm
1	in.	25	mm	No.270		0.053	mm
3/4	in.	19	mm	Hyd. Rd. # 1			mm
1/2	in.	12.5	mm	Hyd. Rd. # 2			mm
3/8	in.	9.5	mm	Hyd. Rd. # 3			mm
1/4		6.3	mm	Hyd. Rd. # 4			mm
No.4		4.75	mm	Hyd. Rd. # 5			mm
No.6		3.35	mm	Hyd. Rd. # 6			mm
No.10		2	mm	Hyd. Rd. # 7			mm

D₅₀ = 0.0365 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 22	
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 28	
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 26	
	Plasticity Index : 2	
AASHTO Composition of Total Sample: M145	Liquidity Index : -2.15	
Gravel (3in. + No.10) : 3.4	Activity : NA	
Coarse Sand (-No.10 + No.40) : 5.3	Sp. Gr. (AASHTO T100) : NA	
Fine Sand (-No.40 + No.200) : 35.2	AASHTO Classification: M145 : A-4 (0)	
Silt + Clay (-No.200) : 56.1	ASTM Classification: D2487 : ML	

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) : 1.7
Medium Sand (-No.10 + No.40) : 5.3
Fine Sand (-No.40 + No.200) : 35.2
Silt + Clay (-No.200) : 56.1

Approved By : J.S.

Soil No. 104

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-2
Project No. : 251829	Sample Loc. : Boring No. B-39
Project County : Lexington	Sample Depth : 4.0' to 5.5'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Tan, Orange & Red Elastic Silt with Sand	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm	No.16		1.18	mm
3.5	in.	88.9	mm	No.30		0.6	mm
3	in.	76.2	mm	No.40		0.425	mm
2.5	in.	63.5	mm	No.50		0.3	mm
2	in.	50.8	mm	No.60		0.25	mm
1 3/4	in.	45	mm	No.80		0.18	mm
1 1/2	in.	38.1	mm	No.100		0.15	mm
1 1/4	in.	31.5	mm	No.200		0.075	mm
1	in.	25	mm	No.270		0.053	mm
3/4	in.	19	mm	Hyd. Rd. # 1			mm
1/2	in.	12.5	mm	Hyd. Rd. # 2			mm
3/8	in.	9.5	mm	Hyd. Rd. # 3			mm
1/4		6.3	mm	Hyd. Rd. # 4			mm
No.4		4.75	mm	Hyd. Rd. # 5			mm
No.6		3.35	mm	Hyd. Rd. # 6			mm
No.10		2	mm	Hyd. Rd. # 7			mm

D₅₀ = 0.0056 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 25
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 55
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 34
	Plasticity Index : 21
AASHTO Composition of Total Sample: M145	Liquidity Index : -0.41
Gravel (3in. + No.10) : 4.3	Activity : NA
Coarse Sand (-No.10 + No.40) : 1.7	Sp. Gr. (AASHTO T100) : NA
Fine Sand (-No.40 + No.200) : 11.7	AASHTO Classification: M145 : A-7-5 (20)
Silt + Clay (-No.200) : 82.3	ASTM Classification: D2487 : MH

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) : 1.2
Medium Sand (-No.10 + No.40) : 1.7
Fine Sand (-No.40 + No.200) : 11.7
Silt + Clay (-No.200) : 82.3

Approved By : J.S.

Soil No. 105

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-6
Project No. : 251829	Sample Loc. : Boring No. B-39
Project County : Lexington	Sample Depth : 19.2' to 20.7'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Tan & Gray Silt	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm		No.16	1.18	mm
3.5	in.	88.9	mm		No.30	0.6	mm
3	in.	76.2	mm		No.40	0.425	mm
2.5	in.	63.5	mm		No.50	0.3	mm
2	in.	50.8	mm		No.60	0.25	mm
1 3/4	in.	45	mm		No.80	0.18	mm
1 1/2	in.	38.1	mm		No.100	0.15	mm
1 1/4	in.	31.5	mm		No.200	0.075	mm
1	in.	25	mm		No.270	0.053	mm
3/4	in.	19	mm		Hyd. Rd. # 1		mm
1/2	in.	12.5	mm		Hyd. Rd. # 2		mm
3/8	in.	9.5	mm		Hyd. Rd. # 3		mm
1/4		6.3	mm		Hyd. Rd. # 4		mm
No.4		4.75	mm	100.0	Hyd. Rd. # 5		mm
No.6		3.35	mm		Hyd. Rd. # 6		mm
No.10		2	mm	99.9	Hyd. Rd. # 7		mm

D₅₀ = 0.0042 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 26	
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 37	
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 25	
	Plasticity Index : 12	
	Liquidity Index : 0.07	
	Activity : NA	
	Sp. Gr. (AASHTO T100) : NA	
AASHTO Composition of Total Sample: M145	AASHTO Classification: M145 : A-6 (11)	
Gravel (3in. + No.10) : 0.1	ASTM Classification: D2487 : ML	
Coarse Sand (-No.10 + No.40) : 0.7		
Fine Sand (-No.40 + No.200) : 10.9		
Silt + Clay (-No.200) : 88.3		

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) : 0.1
- Medium Sand (-No.10 + No.40) : 0.7
- Fine Sand (-No.40 + No.200) : 10.9
- Silt + Clay (-No.200) : 88.3

Approved By : J.S.

Soil No. 106

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-7
Project No. : 251829	Sample Loc. : Boring No. B-39
Project County : Lexington	Sample Depth : 24.2' to 25.7'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Tan & Gray Silty Sand	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm	No.16		1.18	mm
3.5	in.	88.9	mm	No.30		0.6	mm
3	in.	76.2	mm	No.40		0.425	mm
2.5	in.	63.5	mm	No.50		0.3	mm
2	in.	50.8	mm	No.60		0.25	mm
1 3/4	in.	45	mm	No.80		0.18	mm
1 1/2	in.	38.1	mm	No.100		0.15	mm
1 1/4	in.	31.5	mm	No.200		0.075	mm
1	in.	25	mm	No.270		0.053	mm
3/4	in.	19	mm	Hyd. Rd. # 1			mm
1/2	in.	12.5	mm	Hyd. Rd. # 2			mm
3/8	in.	9.5	mm	Hyd. Rd. # 3			mm
1/4		6.3	mm	Hyd. Rd. # 4			mm
No.4		4.75	mm	Hyd. Rd. # 5			mm
No.6		3.35	mm	Hyd. Rd. # 6			mm
No.10		2	mm	Hyd. Rd. # 7			mm

D₅₀ = 0.0924 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 23	
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 23	
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 23	
	Plasticity Index : NP	
	Liquidity Index : NA	
	Activity : NA	
	Sp. Gr. (AASHTO T100) : NA	
AASHTO Composition of Total Sample: M145	AASHTO Classification: M145 : A-4 (0)	
Gravel (3in. + No.10) : 2.6	ASTM Classification: D2487 : SM	
Coarse Sand (-No.10 + No.40) : 3.4		
Fine Sand (-No.40 + No.200) : 50.0		
Silt + Clay (-No.200) : 44.0		

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) : 0.9
Medium Sand (-No.10 + No.40) : 3.4
Fine Sand (-No.40 + No.200) : 50.0
Silt + Clay (-No.200) : 44.0

Approved By : J.S.

Soil No. 107

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-10
Project No. : 251829	Sample Loc. : Boring No. B-39
Project County : Lexington	Sample Depth : 39.2' to 40.7'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Tan & Gray Silty Sand	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm	No.16		1.18	mm
3.5	in.	88.9	mm	No.30		0.6	mm
3	in.	76.2	mm	No.40		0.425	mm
2.5	in.	63.5	mm	No.50		0.3	mm
2	in.	50.8	mm	No.60		0.25	mm
1 3/4	in.	45	mm	No.80		0.18	mm
1 1/2	in.	38.1	mm	No.100		0.15	mm
1 1/4	in.	31.5	mm	No.200		0.075	mm
1	in.	25	mm	No.270		0.053	mm
3/4	in.	19	mm	Hyd. Rd. # 1			mm
1/2	in.	12.5	mm	Hyd. Rd. # 2			mm
3/8	in.	9.5	mm	Hyd. Rd. # 3			mm
1/4		6.3	mm	Hyd. Rd. # 4			mm
No.4		4.75	mm	Hyd. Rd. # 5			mm
No.6		3.35	mm	Hyd. Rd. # 6			mm
No.10		2	mm	Hyd. Rd. # 7			mm

D₅₀ = 0.0986 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 13
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 22
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 20
	Plasticity Index : 2
AASHTO Composition of Total Sample: M145	Liquidity Index : -3.38
Gravel (3in. + No.10) : 7.5	Activity : NA
Coarse Sand (-No.10 + No.40) : 7.2	Sp. Gr. (AASHTO T100) : NA
Fine Sand (-No.40 + No.200) : 41.9	AASHTO Classification: M145 : A-4 (0)
Silt + Clay (-No.200) : 43.4	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) : 3.9
Medium Sand (-No.10 + No.40) : 7.2
Fine Sand (-No.40 + No.200) : 41.9
Silt + Clay (-No.200) : 43.4

Approved By : J.S.

Soil No. 108

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-11
Project No. : 251829	Sample Loc. : Boring No. B-39
Project County : Lexington	Sample Depth : 44.2' to 45.7'
Project State : South Carolina	Date Tested : 08/05/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Tan & Gray Sandy Silt	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm	No.16		1.18	mm
3.5	in.	88.9	mm	No.30		0.6	mm
3	in.	76.2	mm	No.40		0.425	mm
2.5	in.	63.5	mm	No.50		0.3	mm
2	in.	50.8	mm	No.60		0.25	mm
1 3/4	in.	45	mm	No.80		0.18	mm
1 1/2	in.	38.1	mm	No.100		0.15	mm
1 1/4	in.	31.5	mm	No.200		0.075	mm
1	in.	25	mm	No.270		0.053	mm
3/4	in.	19	mm	Hyd. Rd. # 1			mm
1/2	in.	12.5	mm	Hyd. Rd. # 2			mm
3/8	in.	9.5	mm	Hyd. Rd. # 3			mm
1/4		6.3	mm	Hyd. Rd. # 4			mm
No.4		4.75	mm	Hyd. Rd. # 5			mm
No.6		3.35	mm	Hyd. Rd. # 6			mm
No.10		2	mm	Hyd. Rd. # 7			mm

D₅₀ = 0.0122 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 16	
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 32	
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 26	
	Plasticity Index : 6	
AASHTO Composition of Total Sample: M145	Liquidity Index : -1.62	
Gravel (3in. + No.10) : 6.9	Activity : NA	
Coarse Sand (-No.10 + No.40) : 2.4	Sp. Gr. (AASHTO T100) : NA	
Fine Sand (-No.40 + No.200) : 21.8	AASHTO Classification: M145 : A-4 (3)	
Silt + Clay (-No.200) : 68.9	ASTM Classification: D2487 : ML	

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) : 4.2
Medium Sand (-No.10 + No.40) : 2.4
Fine Sand (-No.40 + No.200) : 21.8
Silt + Clay (-No.200) : 68.9

Approved By : J.S.

Soil No. 109

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-3
Project No. : 251829	Sample Loc. : Boring No. B-40
Project County : Lexington	Sample Depth : 6.0' to 7.5'
Project State : South Carolina	Date Tested : 08/07/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Gray, Red & Tan Silty Sand	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm		No.16	1.18	mm
3.5	in.	88.9	mm		No.30	0.6	mm
3	in.	76.2	mm		No.40	0.425	mm
2.5	in.	63.5	mm		No.50	0.3	mm
2	in.	50.8	mm		No.60	0.25	mm
1 3/4	in.	45	mm		No.80	0.18	mm
1 1/2	in.	38.1	mm		No.100	0.15	mm
1 1/4	in.	31.5	mm		No.200	0.075	mm
1	in.	25	mm		No.270	0.053	mm
3/4	in.	19	mm		Hyd. Rd. # 1		mm
1/2	in.	12.5	mm		Hyd. Rd. # 2		mm
3/8	in.	9.5	mm	100.0	Hyd. Rd. # 3		mm
1/4		6.3	mm		Hyd. Rd. # 4		mm
No.4		4.75	mm	96.1	Hyd. Rd. # 5		mm
No.6		3.35	mm		Hyd. Rd. # 6		mm
No.10		2	mm	86.5	Hyd. Rd. # 7		mm

D₅₀ = 0.1688 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 13	
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 39	
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 26	
	Plasticity Index : 13	
	Liquidity Index : -1.07	
	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) : 13.5
 Coarse Sand (-No.10 + No.40) : 23.3
 Fine Sand (-No.40 + No.200) : 24.8
 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) : 3.9
 Coarse Sand (-No.4 + No.10) : 9.6
 Medium Sand (-No.10 + No.40) : 23.3
 Fine Sand (-No.40 + No.200) : 24.8
 Silt + Clay (-No.200) : 38.4

Approved By : J.S.

Soil No. 110

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : SS-9
Project No. : 251829	Sample Loc. : Boring No. B-40
Project County : Lexington	Sample Depth : 29.6' to 31.1'
Project State : South Carolina	Date Tested : 08/07/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Gray Silty Sand	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm		No.16	1.18	mm
3.5	in.	88.9	mm		No.30	0.6	mm
3	in.	76.2	mm		No.40	0.425	mm
2.5	in.	63.5	mm		No.50	0.3	mm
2	in.	50.8	mm		No.60	0.25	mm
1 3/4	in.	45	mm		No.80	0.18	mm
1 1/2	in.	38.1	mm		No.100	0.15	mm
1 1/4	in.	31.5	mm		No.200	0.075	mm
1	in.	25	mm		No.270	0.053	mm
3/4	in.	19	mm		Hyd. Rd. # 1		mm
1/2	in.	12.5	mm		Hyd. Rd. # 2		mm
3/8	in.	9.5	mm	100.0	Hyd. Rd. # 3		mm
1/4		6.3	mm		Hyd. Rd. # 4		mm
No.4		4.75	mm	98.3	Hyd. Rd. # 5		mm
No.6		3.35	mm		Hyd. Rd. # 6		mm
No.10		2	mm	88.9	Hyd. Rd. # 7		mm

D₅₀ = 0.1287 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 18
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 44
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 32
	Plasticity Index : 12
AASHTO Composition of Total Sample: M145	Liquidity Index : -1.18
Gravel (3in. + No.10) : 11.1	Activity : NA
Coarse Sand (-No.10 + No.40) : 22.3	Sp. Gr. (AASHTO T100) : NA
Fine Sand (-No.40 + No.200) : 24.1	AASHTO Classification: M145 : A-7-5 (2)
Silt + Clay (-No.200) : 42.5	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) : 9.4
Medium Sand (-No.10 + No.40) : 22.3
Fine Sand (-No.40 + No.200) : 24.1
Silt + Clay (-No.200) : 42.5

Approved By : J.S.

Soil No. 111

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : ST-1
Project No. : 251829	Sample Loc. : Boring No. B-38
Project County : Lexington	Sample Depth : 29.7' to 30.5'
Project State : South Carolina	Date Tested : 08/07/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Tan, Gray & Green Silty Sand with Gravel	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm		No.16	1.18	mm
3.5	in.	88.9	mm		No.30	0.6	mm
3	in.	76.2	mm		No.40	0.425	mm
2.5	in.	63.5	mm		No.50	0.3	mm
2	in.	50.8	mm		No.60	0.25	mm
1 3/4	in.	45	mm		No.80	0.18	mm
1 1/2	in.	38.1	mm		No.100	0.15	mm
1 1/4	in.	31.5	mm		No.200	0.075	mm
1	in.	25	mm	100.0	No.270	0.053	mm
3/4	in.	19	mm	94.4	Hyd. Rd. # 1		mm
1/2	in.	12.5	mm		Hyd. Rd. # 2		mm
3/8	in.	9.5	mm	80.5	Hyd. Rd. # 3		mm
1/4		6.3	mm		Hyd. Rd. # 4		mm
No.4		4.75	mm	66.3	Hyd. Rd. # 5		mm
No.6		3.35	mm		Hyd. Rd. # 6		mm
No.10		2	mm	52.3	Hyd. Rd. # 7		mm

D₅₀ = 1.4424 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 29	
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 37	
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 29	
	Plasticity Index : 8	
	Liquidity Index : -0.03	
	Activity : NA	
	Sp. Gr. (AASHTO T100) : NA	
AASHTO Composition of Total Sample: M145	AASHTO Classification: M145 : A-2-4 (0)	
Gravel (3in. + No.10) : 47.7	ASTM Classification: D2487 : SM	
Coarse Sand (-No.10 + No.40) : 10.9		
Fine Sand (-No.40 + No.200) : 9.8		
Silt + Clay (-No.200) : 31.6		

ASTM Composition of Total Sample: D2487

- Coarse Gravel (3in. + 3/4in.) : 5.6
- Fine Gravel (-3/4in. + No.4) : 28.1
- Coarse Sand (-No.4 + No.10) : 14.0
- Medium Sand (-No.10 + No.40) : 10.9
- Fine Sand (-No.40 + No.200) : 9.8
- Silt + Clay (-No.200) : 31.6

Approved By : J.S.

Soil No. 112

SOIL CLASSIFICATION

Project Name : I-20 D/B Roadway Improvement-Noise Walls	Sample No. : ST-1
Project No. : 251829	Sample Loc. : Boring No. B-39
Project County : Lexington	Sample Depth : 9.5' to 10.3'
Project State : South Carolina	Date Tested : 08/07/15
Laboratory No. : 251829	Date Reported : 08/12/15
Submitted By : HDR ICA	
Soil Type : Tan, Yellow & White Sandy Silt	

AASHTO T27 :

% Passing				% Passing			
4	in.	101.6	mm		No.16	1.18	mm
3.5	in.	88.9	mm		No.30	0.6	mm
3	in.	76.2	mm		No.40	0.425	mm
2.5	in.	63.5	mm		No.50	0.3	mm
2	in.	50.8	mm		No.60	0.25	mm
1 3/4	in.	45	mm		No.80	0.18	mm
1 1/2	in.	38.1	mm		No.100	0.15	mm
1 1/4	in.	31.5	mm		No.200	0.075	mm
1	in.	25	mm		No.270	0.053	mm
3/4	in.	19	mm		Hyd. Rd. # 1		mm
1/2	in.	12.5	mm		Hyd. Rd. # 2		mm
3/8	in.	9.5	mm		Hyd. Rd. # 3		mm
1/4		6.3	mm		Hyd. Rd. # 4		mm
No.4		4.75	mm	100.0	Hyd. Rd. # 5		mm
No.6		3.35	mm		Hyd. Rd. # 6		mm
No.10		2	mm	99.6	Hyd. Rd. # 7		mm

D₅₀ = 0.0198 mm

CBR : NA	Natural Moisture (%) (AASHTO T265) : 16	
Dry Dens. : NA	Liquid Limit (AASHTO T89) : 28	
Opt. Moist. : NA	Plastic Limit (AASHTO T90) : 28	
	Plasticity Index : NP	
	Liquidity Index : NA	
	Activity : NA	
	Sp. Gr. (AASHTO T100) : NA	
AASHTO Composition of Total Sample: M145	AASHTO Classification: M145 : A-4 (0)	
Gravel (3in. + No.10) : 0.4	ASTM Classification: D2487 : ML	
Coarse Sand (-No.10 + No.40) : 0.9		
Fine Sand (-No.40 + No.200) : 36.1		
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) : 0.0
Coarse Sand (-No.4 + No.10) : 0.4
Medium Sand (-No.10 + No.40) : 0.9
Fine Sand (-No.40 + No.200) : 36.1
Silt + Clay (-No.200) : 62.6

Approved By : J.S.

Soil No. 113



CERTIFICATE OF ANALYSIS

Devin Chittenden
ICA Engineering
2550 Irvin Cobb Drive
Paducah, KY 42003

Date Reported: 2/28/2015
Date Received: 2/18/2015
Cust #: RF027
PO#:

Workorder: 1502680 Project: 14046-01 I-20 Roadway Improvements

Table with 9 columns: Analyte, Result, Units, Dil, Qualifier, RL, Analyst, Analyzed, Method

B-27A Bag-2 5.3' to 7.3' Sampled: 01/21/2015 00:00

1502680-01 (Soil)

Wet Chemistry

Analyzed By: Microbac Knoxville Division

Table with 2 rows: Chloride, Water Soluble (3.94 mg/kg) and Sulfate, Water Soluble (22.1 mg/kg)

B-27A Bag-3 7.3' to 26.5' Sampled: 01/21/2015 00:00

1502680-02 (Soil)

Wet Chemistry

Analyzed By: Microbac Knoxville Division

Table with 2 rows: Chloride, Water Soluble (5.24 mg/kg) and Sulfate, Water Soluble (32.2 mg/kg)

B-6A Bag-5 0.3' to 4.5' Sampled: 02/07/2015 00:00

1502680-03 (Soil)

Wet Chemistry

Analyzed By: Microbac Knoxville Division

Table with 2 rows: Chloride, Water Soluble (6.36 mg/kg) and Sulfate, Water Soluble (18.7 mg/kg)

B-6A Bag-6 4.5' to 10.0' Sampled: 02/07/2015 00:00

1502680-04 (Soil)

Wet Chemistry

Analyzed By: Microbac Knoxville Division

Table with 1 row: Chloride, Water Soluble (18.4 mg/kg)

B-6A Bag-6 4.5' to 10.0' Sampled: 02/07/2015 00:00

1502680-04RE1 (Soil)

Wet Chemistry

Analyzed By: Microbac Knoxville Division

Table with 1 row: Sulfate, Water Soluble (154 mg/kg)

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2631 Grandview Avenue Nashville, TN 37211 | 615.242.1480 p | 612.242.5522 f | www.microbac.com



CERTIFICATE OF ANALYSIS

Devin Chittenden
ICA Engineering
2550 Irvin Cobb Drive
Paducah, KY 42003

Date Reported: 2/28/2015
Date Received: 2/18/2015
Cust #: RF027
PO#:

Workorder: 1502680 **Project:** 14046-01 I-20 Roadway Improvements

Certifications

Code	Description	Number	Expires
A2LAB-KNX	ISO 17025 KNX food	3131.01	05/31/2015
A2LAB-NSH	ISO 17025 NSH food	3131.02	06/30/2016
AL	Alabama Department of Environmental Mgmt	41780	12/31/2015
FL	State of Florida NELAC	E87966	06/30/2015
GA	Georgia Dept Natural Resources	980	04/30/2017
KY	Commonwealth of Kentucky	98025	12/31/2015
NCENV	NC Environmental	678	12/31/2015
TN_DW	State of Tennessee	TN02017	04/30/2017
USDA	US Department of Agriculture		12/31/2014

Notes and Definitions

- M1 Matrix spike recovery is outside of acceptance limits, biased high.
- H1 Sample was received past holding time.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

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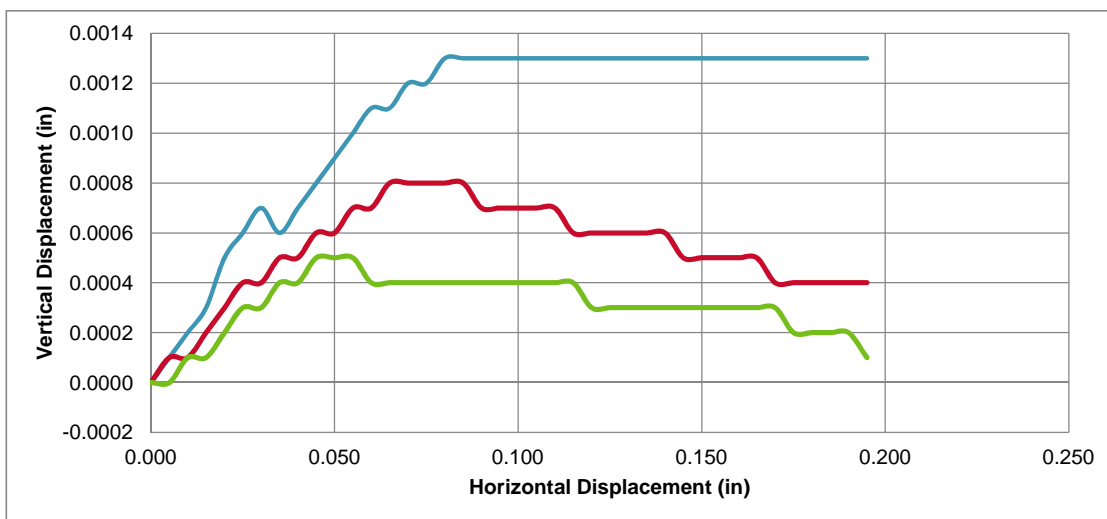
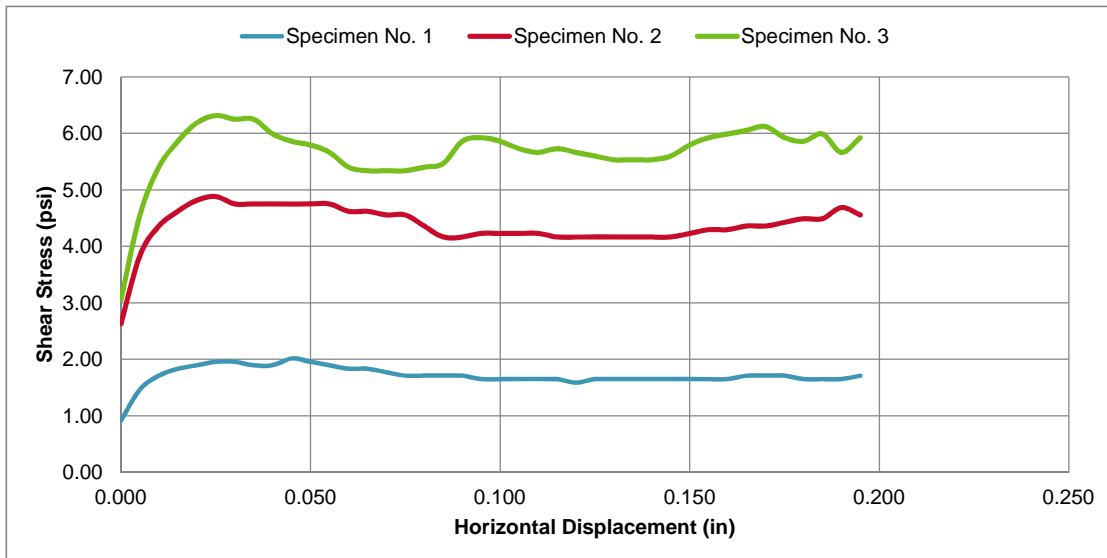


DIRECT SHEAR TEST (ASTM D 3080-72)

PROJECT NAME :	I-20 D/B Roadway Improvement	SAMPLE # :	Bag-2
PROJECT # :	14046-01	SAMPLE LOC. :	B-27A
PROJECT COUNTY :	Lexington	SAMPLE DEPTH :	5.3' to 7.3'
PROJECT STATE :	South Carolina	DATE TESTED :	3/27/15
LABORATORY # :	14046-01	DATE REPORTED :	3/27/15
SUBMITTED BY :	HDR ICA		
SOIL TYPE :	Red, Tan & Black Silty Sand		
TYPE OF SPECIMEN :	Remolded		

SPECIMEN INFORMATION

	INITIAL			AFTER CONSOLIDATION		
	1	2	3	1	2	3
Height (in)	1.00	1.00	1.00	0.99	1.00	1.00
Area (in ²)	4.9087	4.909	4.9087	4.9087	4.9087	4.9087
Wet Unit Weight (pcf)	124.8	124.8	124.8	126.6	125.3	125.0
Dry Unit Weight (pcf)	117.4	117.4	117.4	119.1	117.8	117.5
Void Ratio	0.41	0.41	0.41	0.39	0.40	0.41
Degree of Saturation	41%	41%	41%	43%	42%	41%

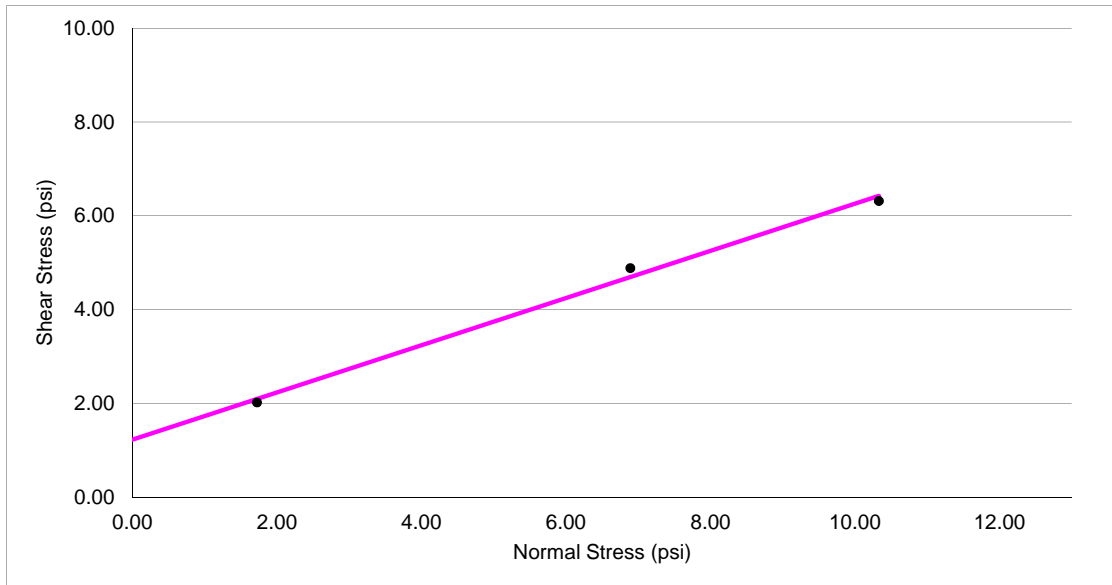




DIRECT SHEAR TEST (ASTM D 3080-72)

PROJECT NAME : I-20 D/B Roadway Improvement
PROJECT # : 14046-01
PROJECT COUNTY : Lexington
PROJECT STATE : South Carolina
LABORATORY # : 14046-01
SUBMITTED BY : HDR | ICA

SAMPLE # : Bag-2
SAMPLE LOC : B-27A
SAMPLE DEPTH : 5.3' to 7.3'
DATE TESTED : 3/27/15
DATE REPORTED : 3/27/15



Summary of Results:

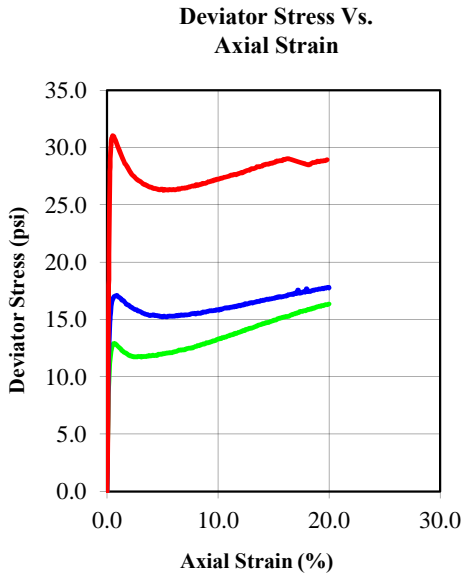
	Specimen		
	1	2	3
Normal Stress (psi)	1.72	6.89	10.33
Maximum Shear Stress (psi)	2.02	4.88	6.32

Phi Angle = 26.74°
Cohesion = 1.22 psi

APPROVED BY:

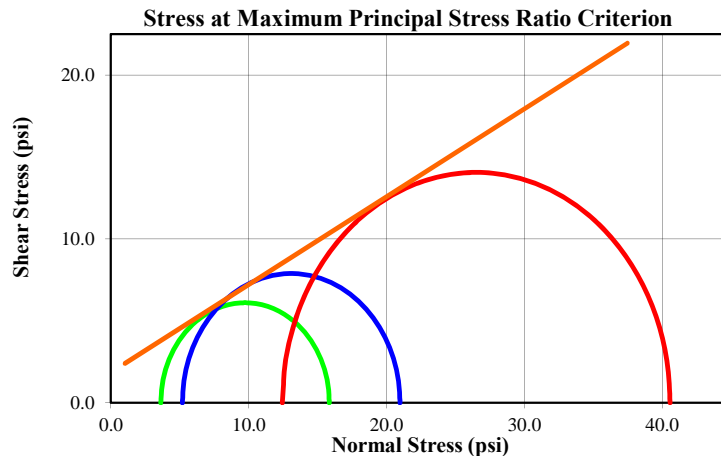
Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME : I-20 D/B Roadway Improvement	Mohr Str€ NO. : Bag-5
PROJECT NO. : 14046-01	SAMPLE DEPTH : 0.3' to 4.5'
PROJECT LOCATION : B-6A Bag-5 0.3' to 4.5'	SAMPLE TYPE : Remolded
BORING NUMBER : B-6A	DESCRIPTION : Tan, Red, Black & Gray Clayey Sand
REMARKS : 3 Point Remolded	TEST TYPE : Consolidated Undrained



	Specimen				
	Initial	A	B	C	D
Water Content (%)	10.3	10.3	10.6		
Dry Density (pcf)	117.7	118.2	117.8		
Saturation (%)	67.34	68.14	69.42		
Void Ratio	0.403	0.396	0.402		
Diameter (in)	2.795	2.793	2.795		
Height (in)	5.530	5.508	5.511		
Specific Gravity	2.65	2.65	2.65		
Liquid Limit	26	26	26		
Plastic Limit	19	19	19		
After Consolidation	A	B	C	D	
B-Value	0.97	0.96	0.97		
Water Content (%)	13.7	14.2	13.4		
Dry Density (pcf)	117.69	118.21	117.83		
Saturation (%)	100.00	100.00	100.00		
Void Ratio	0.406	0.399	0.404		
Effective Stress (psi)	10.0	20.0	40.0		
Back Press. (psi)	76.6	78.1	79.9		
Rate of Strain	0.005	0.005	0.005		

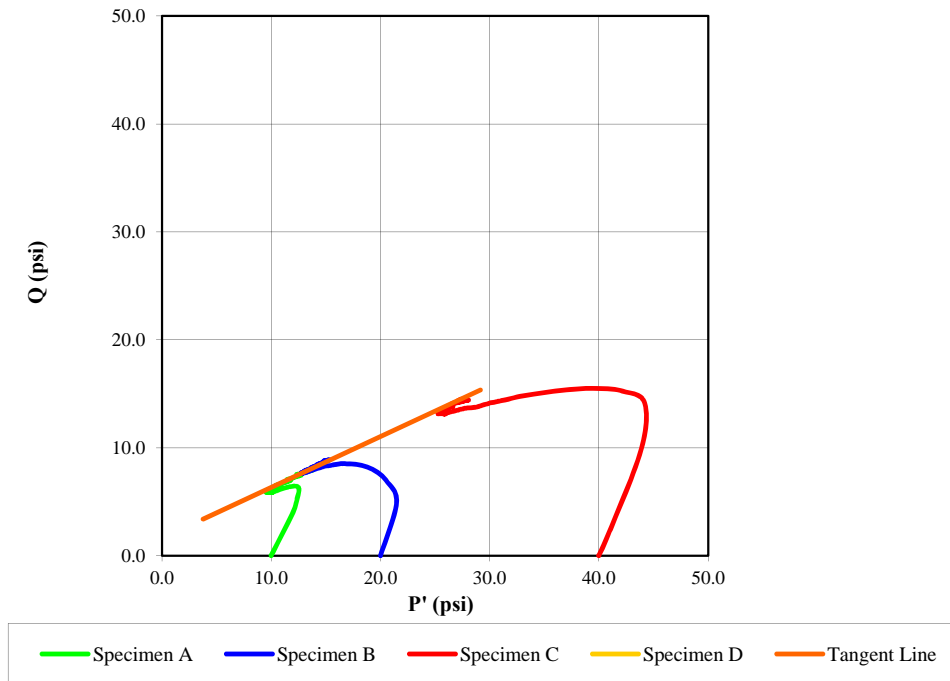
Maximum Principal Stress Ratio Criterion		After Shear	A	B	C	D
C (psi)	2.9	σ'_1 at Failure (psi)	15.85	20.97	40.56	
ϕ (deg)	12.1	σ'_3 at Failure (psi)	3.62	5.18	12.43	
C' (psi)	1.9					
ϕ' (deg)	28.2					



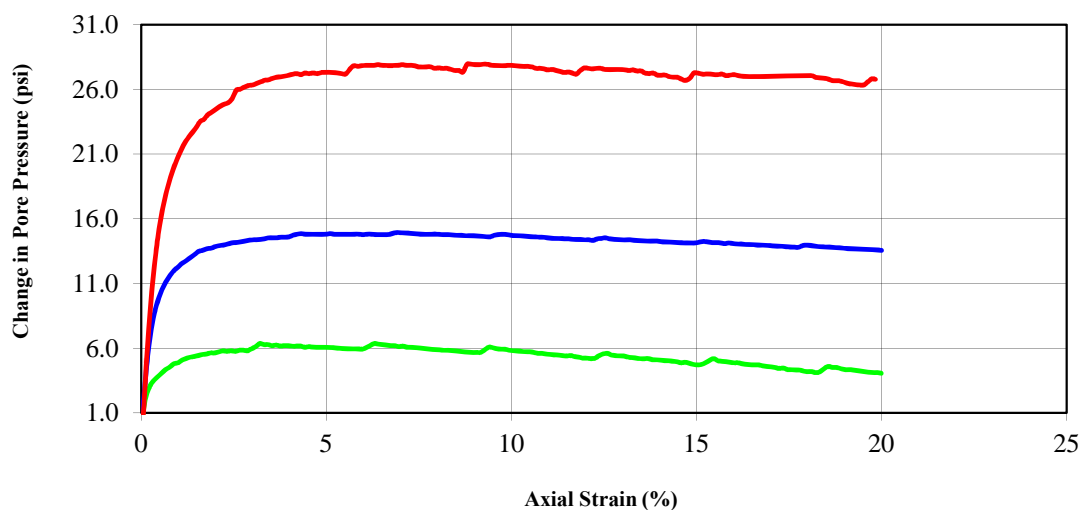
Tested By: JS
 Date: 3-3-15

Approved By: SKB
 Date: 3-4-15

Stress Paths (Effective)
 (a = 1.6 alpha = 25.2)



Change in Pore Pressure vs. Axial Strain



File Location

B-6A Bag-5 0.3-4.5 Remolded.HSD

Project Information

Project No. 14046-01
 Project Name: I-20 D/B Roadway Improvement
 Client:
 Sample Location: B-6A Bag-5 0.3' to 4.5'
 Sample Description: Tan, Red, Black & Gray Clayey Sand
 Remarks: 3 Point Remolded

Sample Data

Sample Type: Remolded
 Specific Gravity: 2.6500001
 LL: 26.000
 PL: 19.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.795	2.796	
Height (in)	5.530	5.525	
Weight (grams)	1155.90		1191.60
Moisture (%)	10.31		13.71
Dry Density (pcf)	117.69	117.69	
Saturation (%)	67.34	100.00	
Void Ratio	0.403	0.406	

Test Data

Rate of Strain: 0.005
 Cell Pressure (psi): 86.600
 Effective Confining Stress (psi): 10.0
 Corrected Peak Deviator Stress (psi): 16.341 at reading number: 181

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	0.5	0.000	76.6	0.0	6.14	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	50.0	0.007	78.6	2.0	6.15	0.110	8.063	8.054	18.0	10.0	16.0	8.0	2.01	0.25	14.0	4.0	12.0
2	66.9	0.013	79.6	3.0	6.15	0.221	10.808	10.784	20.8	10.0	17.8	7.0	2.54	0.28	15.4	5.4	12.4
3	74.7	0.019	80.1	3.5	6.16	0.331	12.080	12.040	22.0	10.0	18.6	6.5	2.85	0.29	16.0	6.0	12.5
4	78.3	0.025	80.4	3.8	6.17	0.442	12.670	12.614	22.6	10.0	18.8	6.2	3.04	0.30	16.3	6.3	12.5
5	79.8	0.031	80.7	4.1	6.17	0.552	12.924	12.853	22.8	10.0	18.8	5.9	3.17	0.32	16.4	6.4	12.3
6	80.3	0.037	81.0	4.3	6.18	0.663	12.991	12.905	22.9	10.0	18.5	5.6	3.29	0.34	16.4	6.5	12.1
7	79.9	0.043	81.2	4.5	6.19	0.773	12.938	12.838	22.8	10.0	18.3	5.4	3.36	0.35	16.4	6.4	11.9
8	79.5	0.049	81.4	4.8	6.19	0.884	12.871	12.757	22.7	10.0	17.9	5.2	3.46	0.38	16.4	6.4	11.6
9	78.9	0.055	81.5	4.9	6.20	0.994	12.777	12.650	22.6	10.0	17.8	5.1	3.47	0.38	16.3	6.3	11.4
10	78.4	0.062	81.7	5.1	6.21	1.105	12.683	12.543	22.5	10.0	17.5	4.9	3.55	0.40	16.3	6.3	11.2
11	77.9	0.068	81.8	5.2	6.22	1.215	12.603	12.450	22.4	10.0	17.2	4.8	3.60	0.42	16.2	6.2	11.0
12	77.0	0.074	81.9	5.3	6.22	1.326	12.469	12.304	22.3	10.0	17.0	4.7	3.64	0.43	16.1	6.2	10.8
13	76.6	0.080	82.0	5.4	6.23	1.436	12.402	12.224	22.2	10.0	16.9	4.6	3.64	0.44	16.1	6.1	10.7
14	76.1	0.086	82.1	5.4	6.24	1.547	12.322	12.131	22.1	10.0	16.7	4.5	3.67	0.45	16.0	6.1	10.6
15	75.9	0.092	82.1	5.5	6.24	1.657	12.281	12.078	22.1	10.0	16.5	4.5	3.70	0.46	16.0	6.0	10.5
16	75.7	0.098	82.2	5.6	6.25	1.768	12.241	12.025	22.0	10.0	16.5	4.4	3.72	0.46	16.0	6.0	10.4
17	75.2	0.104	82.3	5.6	6.26	1.878	12.174	11.946	21.9	10.0	16.3	4.3	3.75	0.47	16.0	6.0	10.3
18	74.8	0.110	82.3	5.6	6.26	1.989	12.107	11.866	21.8	10.0	16.2	4.3	3.73	0.47	15.9	5.9	10.3
19	74.7	0.116	82.3	5.7	6.27	2.099	12.094	11.840	21.8	10.0	16.1	4.3	3.78	0.48	15.9	5.9	10.2

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)
20	74.5	0.123	82.4	5.8	6.28	2.210	12.054	11.787	21.8	10.0	16.0	4.2	3.82	0.49	15.9	5.9	10.1
21	74.4	0.129	82.4	5.8	6.29	2.320	12.040	11.761	21.7	10.0	16.0	4.2	3.78	0.49	15.9	5.9	10.1
22	74.3	0.135	82.4	5.8	6.29	2.431	12.027	11.735	21.7	10.0	15.9	4.2	3.80	0.49	15.8	5.9	10.1
23	74.4	0.141	82.4	5.8	6.30	2.541	12.040	11.734	21.7	10.0	16.0	4.2	3.78	0.49	15.8	5.9	10.1
24	74.5	0.147	82.5	5.8	6.31	2.652	12.054	11.734	21.7	10.0	15.9	4.1	3.83	0.50	15.8	5.9	10.0
25	74.7	0.153	82.5	5.8	6.31	2.762	12.094	11.760	21.7	10.0	15.9	4.1	3.84	0.50	15.9	5.9	10.0
26	74.8	0.159	82.4	5.8	6.32	2.873	12.107	11.759	21.7	10.0	15.9	4.2	3.81	0.49	15.9	5.9	10.1
27	75.0	0.165	82.6	6.0	6.33	2.983	12.134	11.772	21.8	10.0	15.8	4.0	3.93	0.51	15.9	5.9	9.9
28	74.7	0.171	82.7	6.1	6.34	3.094	12.094	11.720	21.7	10.0	15.6	3.9	4.03	0.52	15.8	5.9	9.7
29	75.2	0.178	83.0	6.4	6.34	3.204	12.161	11.771	21.8	10.0	15.4	3.6	4.25	0.54	15.9	5.9	9.5
30	75.2	0.184	82.9	6.3	6.35	3.315	12.161	11.758	21.7	10.0	15.5	3.7	4.18	0.53	15.9	5.9	9.6
31	75.2	0.190	82.9	6.3	6.36	3.425	12.174	11.757	21.7	10.0	15.5	3.7	4.18	0.53	15.9	5.9	9.6
32	75.5	0.196	82.8	6.2	6.36	3.536	12.214	11.782	21.8	10.0	15.6	3.8	4.11	0.53	15.9	5.9	9.7
33	75.6	0.202	82.9	6.2	6.37	3.646	12.228	11.782	21.8	10.0	15.5	3.7	4.15	0.53	15.9	5.9	9.6
34	76.1	0.208	82.8	6.2	6.38	3.757	12.308	11.846	21.8	10.0	15.7	3.8	4.10	0.52	15.9	5.9	9.7
35	76.1	0.214	82.8	6.2	6.39	3.867	12.308	11.832	21.8	10.0	15.6	3.8	4.13	0.52	15.9	5.9	9.7
36	76.1	0.220	82.8	6.2	6.39	3.978	12.322	11.831	21.8	10.0	15.6	3.8	4.13	0.52	15.9	5.9	9.7
37	76.5	0.226	82.8	6.2	6.40	4.088	12.375	11.869	21.8	10.0	15.7	3.8	4.10	0.52	15.9	5.9	9.8
38	76.5	0.232	82.8	6.2	6.41	4.199	12.375	11.855	21.8	10.0	15.7	3.8	4.10	0.52	15.9	5.9	9.8
39	76.6	0.239	82.8	6.2	6.42	4.309	12.389	11.855	21.8	10.0	15.7	3.8	4.10	0.52	15.9	5.9	9.8
40	76.7	0.245	82.7	6.1	6.42	4.420	12.415	11.867	21.8	10.0	15.8	3.9	4.04	0.51	15.9	5.9	9.8
41	76.8	0.251	82.7	6.1	6.43	4.530	12.429	11.866	21.8	10.0	15.7	3.9	4.07	0.52	15.9	5.9	9.8
42	77.5	0.257	82.7	6.1	6.44	4.641	12.549	11.967	21.9	10.0	15.9	3.9	4.07	0.51	16.0	6.0	9.9
43	77.6	0.263	82.7	6.1	6.45	4.751	12.563	11.966	21.9	10.0	15.9	3.9	4.07	0.51	16.0	6.0	9.9
44	77.6	0.269	82.7	6.1	6.45	4.862	12.563	11.952	21.9	10.0	15.9	3.9	4.06	0.51	16.0	6.0	9.9
45	77.9	0.275	82.7	6.1	6.46	4.972	12.603	11.976	22.0	10.0	15.9	3.9	4.07	0.51	16.0	6.0	9.9
46	78.3	0.281	82.7	6.0	6.47	5.083	12.670	12.026	22.0	10.0	16.0	3.9	4.05	0.50	16.0	6.0	10.0
47	78.4	0.287	82.7	6.0	6.48	5.193	12.683	12.024	22.0	10.0	16.0	3.9	4.05	0.50	16.0	6.0	10.0
48	78.6	0.293	82.6	6.0	6.48	5.304	12.723	12.048	22.0	10.0	16.0	4.0	4.02	0.50	16.0	6.0	10.0
49	78.9	0.300	82.6	6.0	6.49	5.414	12.764	12.072	22.1	10.0	16.1	4.0	4.03	0.50	16.0	6.0	10.0
50	79.0	0.306	82.6	6.0	6.50	5.525	12.790	12.084	22.1	10.0	16.1	4.0	4.00	0.49	16.0	6.0	10.1
51	79.2	0.312	82.6	6.0	6.51	5.635	12.817	12.095	22.1	10.0	16.1	4.0	4.01	0.49	16.0	6.0	10.1
52	79.3	0.318	82.6	6.0	6.51	5.746	12.830	12.093	22.1	10.0	16.1	4.0	4.00	0.49	16.0	6.0	10.1
53	79.4	0.324	82.6	6.0	6.52	5.856	12.844	12.092	22.1	10.0	16.1	4.0	4.00	0.49	16.0	6.0	10.1
54	79.8	0.330	82.5	5.9	6.53	5.967	12.924	12.153	22.1	10.0	16.2	4.1	3.99	0.49	16.1	6.1	10.1
55	80.1	0.336	82.7	6.0	6.54	6.077	12.964	12.176	22.2	10.0	16.1	3.9	4.09	0.50	16.1	6.1	10.0
56	80.3	0.342	82.8	6.2	6.54	6.188	13.005	12.200	22.2	10.0	16.0	3.8	4.22	0.51	16.1	6.1	9.9
57	80.6	0.348	83.0	6.4	6.55	6.298	13.045	12.223	22.2	10.0	15.8	3.6	4.37	0.52	16.1	6.1	9.7
58	81.2	0.355	82.9	6.3	6.56	6.409	13.139	12.296	22.3	10.0	16.0	3.7	4.36	0.51	16.1	6.1	9.8
59	81.5	0.361	82.9	6.3	6.57	6.519	13.192	12.332	22.3	10.0	16.0	3.7	4.33	0.51	16.1	6.2	9.9
60	81.5	0.367	82.9	6.2	6.58	6.630	13.192	12.317	22.3	10.0	16.1	3.7	4.29	0.51	16.1	6.2	9.9
61	81.7	0.373	82.8	6.2	6.58	6.740	13.232	12.340	22.3	10.0	16.1	3.8	4.26	0.50	16.2	6.2	10.0
62	82.0	0.379	82.8	6.2	6.59	6.851	13.272	12.363	22.3	10.0	16.1	3.8	4.27	0.50	16.2	6.2	10.0
63	82.0	0.385	82.7	6.1	6.60	6.961	13.272	12.348	22.3	10.0	16.2	3.9	4.20	0.50	16.2	6.2	10.0
64	82.4	0.391	82.8	6.2	6.61	7.072	13.339	12.396	22.4	10.0	16.2	3.8	4.24	0.50	16.2	6.2	10.0

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)
65	82.8	0.397	82.7	6.1	6.61	7.182	13.406	12.443	22.4	10.0	16.3	3.9	4.19	0.49	16.2	6.2	10.1
66	83.1	0.403	82.7	6.1	6.62	7.293	13.460	12.478	22.5	10.0	16.4	3.9	4.20	0.49	16.2	6.2	10.1
67	83.3	0.409	82.7	6.0	6.63	7.403	13.487	12.488	22.5	10.0	16.4	3.9	4.17	0.48	16.2	6.2	10.2
68	83.5	0.416	82.6	6.0	6.64	7.514	13.514	12.498	22.5	10.0	16.5	4.0	4.14	0.48	16.2	6.2	10.2
69	83.7	0.422	82.6	6.0	6.65	7.624	13.554	12.520	22.5	10.0	16.5	4.0	4.14	0.48	16.2	6.3	10.2
70	83.9	0.428	82.6	6.0	6.65	7.735	13.580	12.530	22.5	10.0	16.6	4.0	4.11	0.48	16.2	6.3	10.3
71	84.4	0.434	82.5	5.9	6.66	7.845	13.661	12.589	22.6	10.0	16.7	4.1	4.10	0.47	16.3	6.3	10.4
72	84.8	0.440	82.5	5.9	6.67	7.956	13.728	12.636	22.6	10.0	16.7	4.1	4.08	0.46	16.3	6.3	10.4
73	85.0	0.446	82.5	5.9	6.68	8.066	13.768	12.657	22.6	10.0	16.8	4.1	4.08	0.46	16.3	6.3	10.4
74	85.6	0.452	82.5	5.8	6.69	8.177	13.862	12.728	22.7	10.0	16.9	4.1	4.07	0.46	16.3	6.4	10.5
75	85.6	0.458	82.5	5.8	6.69	8.287	13.862	12.713	22.7	10.0	16.9	4.1	4.07	0.46	16.3	6.4	10.5
76	86.0	0.464	82.4	5.8	6.70	8.398	13.929	12.759	22.7	10.0	16.9	4.2	4.05	0.45	16.4	6.4	10.6
77	86.4	0.471	82.4	5.8	6.71	8.508	13.996	12.805	22.8	10.0	17.0	4.2	4.06	0.45	16.4	6.4	10.6
78	86.8	0.477	82.4	5.8	6.72	8.619	14.063	12.851	22.8	10.0	17.1	4.2	4.04	0.45	16.4	6.4	10.7
79	86.9	0.483	82.3	5.7	6.73	8.729	14.076	12.847	22.8	10.0	17.1	4.3	4.01	0.44	16.4	6.4	10.7
80	87.2	0.489	82.3	5.7	6.74	8.840	14.130	12.881	22.9	10.0	17.2	4.3	3.99	0.44	16.4	6.4	10.7
81	87.9	0.495	82.3	5.7	6.74	8.950	14.237	12.962	22.9	10.0	17.3	4.3	4.01	0.44	16.5	6.5	10.8
82	88.0	0.501	82.3	5.7	6.75	9.061	14.250	12.959	22.9	10.0	17.3	4.3	4.01	0.44	16.5	6.5	10.8
83	88.3	0.507	82.3	5.7	6.76	9.171	14.304	12.992	23.0	10.0	17.3	4.3	4.02	0.44	16.5	6.5	10.8
84	88.6	0.513	82.5	5.9	6.77	9.282	14.357	13.025	23.0	10.0	17.1	4.1	4.17	0.45	16.5	6.5	10.6
85	88.9	0.519	82.7	6.1	6.78	9.392	14.397	13.045	23.0	10.0	16.9	3.9	4.34	0.47	16.5	6.5	10.4
86	89.4	0.525	82.7	6.0	6.78	9.503	14.478	13.102	23.1	10.0	17.0	3.9	4.32	0.46	16.5	6.6	10.5
87	89.7	0.532	82.6	6.0	6.79	9.613	14.531	13.134	23.1	10.0	17.2	4.0	4.26	0.45	16.5	6.6	10.6
88	90.0	0.538	82.5	5.9	6.80	9.724	14.572	13.155	23.1	10.0	17.2	4.1	4.24	0.45	16.6	6.6	10.6
89	90.5	0.544	82.5	5.9	6.81	9.834	14.652	13.211	23.2	10.0	17.3	4.1	4.25	0.45	16.6	6.6	10.7
90	90.9	0.550	82.5	5.8	6.82	9.945	14.732	13.267	23.2	10.0	17.4	4.1	4.20	0.44	16.6	6.6	10.8
91	91.3	0.556	82.4	5.8	6.83	10.055	14.786	13.299	23.3	10.0	17.5	4.2	4.18	0.44	16.6	6.6	10.8
92	91.6	0.562	82.4	5.8	6.83	10.166	14.839	13.331	23.3	10.0	17.5	4.2	4.19	0.43	16.6	6.7	10.9
93	91.7	0.568	82.4	5.8	6.84	10.276	14.853	13.326	23.3	10.0	17.6	4.2	4.15	0.43	16.6	6.7	10.9
94	92.4	0.574	82.3	5.7	6.85	10.387	14.973	13.418	23.4	10.0	17.7	4.3	4.15	0.43	16.7	6.7	11.0
95	92.5	0.580	82.3	5.7	6.86	10.497	14.987	13.414	23.4	10.0	17.7	4.3	4.14	0.43	16.7	6.7	11.0
96	92.9	0.587	82.3	5.7	6.87	10.608	15.054	13.457	23.4	10.0	17.8	4.3	4.12	0.42	16.7	6.7	11.0
97	93.2	0.593	82.2	5.6	6.88	10.718	15.094	13.476	23.5	10.0	17.9	4.4	4.07	0.42	16.7	6.7	11.1
98	93.7	0.599	82.2	5.6	6.89	10.829	15.174	13.531	23.5	10.0	17.9	4.4	4.08	0.41	16.7	6.8	11.2
99	94.0	0.605	82.2	5.6	6.89	10.939	15.228	13.562	23.5	10.0	18.0	4.4	4.06	0.41	16.8	6.8	11.2
100	94.3	0.611	82.1	5.5	6.90	11.050	15.281	13.593	23.6	10.0	18.1	4.5	4.04	0.41	16.8	6.8	11.3
101	94.8	0.617	82.1	5.5	6.91	11.160	15.362	13.647	23.6	10.0	18.2	4.5	4.03	0.40	16.8	6.8	11.3
102	95.1	0.623	82.1	5.5	6.92	11.271	15.415	13.678	23.7	10.0	18.2	4.5	4.03	0.40	16.8	6.8	11.3
103	95.3	0.629	82.1	5.4	6.93	11.381	15.442	13.685	23.7	10.0	18.2	4.5	4.01	0.40	16.8	6.8	11.4
104	96.0	0.635	82.0	5.4	6.94	11.492	15.563	13.774	23.8	10.0	18.4	4.6	4.00	0.39	16.9	6.9	11.5
105	96.2	0.641	82.1	5.4	6.95	11.602	15.589	13.781	23.8	10.0	18.3	4.5	4.03	0.39	16.9	6.9	11.4
106	96.5	0.648	82.0	5.4	6.95	11.713	15.643	13.811	23.8	10.0	18.4	4.6	3.98	0.39	16.9	6.9	11.5
107	97.0	0.654	81.9	5.3	6.96	11.823	15.723	13.864	23.8	10.0	18.5	4.7	3.97	0.38	16.9	6.9	11.6
108	97.4	0.660	81.9	5.2	6.97	11.934	15.777	13.894	23.9	10.0	18.6	4.7	3.93	0.38	16.9	6.9	11.7
109	97.8	0.666	81.9	5.2	6.98	12.044	15.844	13.936	23.9	10.0	18.7	4.7	3.93	0.38	16.9	7.0	11.7

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)
110	98.1	0.672	81.8	5.2	6.99	12.155	15.897	13.965	23.9	10.0	18.8	4.8	3.92	0.37	17.0	7.0	11.8
111	98.7	0.678	81.9	5.2	7.00	12.265	15.991	14.030	24.0	10.0	18.8	4.7	3.95	0.37	17.0	7.0	11.8
112	98.8	0.684	82.1	5.4	7.01	12.376	16.005	14.024	24.0	10.0	18.6	4.5	4.08	0.39	17.0	7.0	11.6
113	99.5	0.690	82.2	5.6	7.02	12.486	16.125	14.112	24.1	10.0	18.5	4.4	4.19	0.39	17.0	7.1	11.5
114	99.8	0.696	82.2	5.6	7.02	12.597	16.179	14.141	24.1	10.0	18.5	4.4	4.22	0.40	17.1	7.1	11.5
115	100.1	0.703	82.1	5.5	7.03	12.707	16.219	14.158	24.1	10.0	18.7	4.5	4.14	0.39	17.1	7.1	11.6
116	100.6	0.709	82.1	5.4	7.04	12.818	16.313	14.222	24.2	10.0	18.8	4.5	4.13	0.38	17.1	7.1	11.7
117	100.8	0.715	82.0	5.4	7.05	12.928	16.339	14.227	24.2	10.0	18.8	4.6	4.10	0.38	17.1	7.1	11.7
118	101.1	0.721	82.0	5.4	7.06	13.039	16.393	14.256	24.2	10.0	18.8	4.6	4.11	0.38	17.1	7.1	11.7
119	101.5	0.727	81.9	5.3	7.07	13.149	16.447	14.284	24.3	10.0	19.0	4.7	4.06	0.37	17.1	7.1	11.8
120	102.0	0.733	81.9	5.3	7.08	13.260	16.527	14.335	24.3	10.0	19.0	4.7	4.04	0.37	17.1	7.2	11.9
121	102.4	0.739	81.9	5.2	7.09	13.370	16.594	14.375	24.4	10.0	19.1	4.7	4.03	0.36	17.2	7.2	11.9
122	102.8	0.745	81.8	5.2	7.10	13.481	16.661	14.415	24.4	10.0	19.2	4.8	4.01	0.36	17.2	7.2	12.0
123	103.4	0.751	81.8	5.2	7.11	13.591	16.755	14.477	24.5	10.0	19.3	4.8	4.02	0.36	17.2	7.2	12.0
124	103.8	0.757	81.8	5.2	7.11	13.702	16.822	14.517	24.5	10.0	19.3	4.8	4.03	0.36	17.2	7.3	12.0
125	104.1	0.764	81.7	5.1	7.12	13.812	16.875	14.544	24.5	10.0	19.4	4.9	3.99	0.35	17.3	7.3	12.1
126	104.4	0.770	81.7	5.1	7.13	13.923	16.929	14.572	24.6	10.0	19.4	4.9	3.99	0.35	17.3	7.3	12.2
127	104.9	0.776	81.7	5.1	7.14	14.033	17.009	14.622	24.6	10.0	19.5	4.9	3.98	0.35	17.3	7.3	12.2
128	105.3	0.782	81.6	5.0	7.15	14.144	17.063	14.649	24.6	10.0	19.6	5.0	3.96	0.34	17.3	7.3	12.3
129	105.7	0.788	81.6	5.0	7.16	14.254	17.130	14.688	24.7	10.0	19.6	5.0	3.97	0.34	17.3	7.3	12.3
130	106.1	0.794	81.6	5.0	7.17	14.365	17.197	14.726	24.7	10.0	19.7	5.0	3.95	0.34	17.3	7.4	12.4
131	106.2	0.800	81.6	4.9	7.18	14.475	17.210	14.719	24.7	10.0	19.7	5.0	3.93	0.34	17.3	7.4	12.4
132	106.5	0.806	81.5	4.9	7.19	14.586	17.264	14.746	24.7	10.0	19.9	5.1	3.89	0.33	17.4	7.4	12.5
133	107.1	0.812	81.5	4.9	7.20	14.696	17.357	14.806	24.8	10.0	19.9	5.1	3.92	0.33	17.4	7.4	12.5
134	107.4	0.819	81.4	4.8	7.21	14.807	17.411	14.833	24.8	10.0	20.0	5.2	3.88	0.33	17.4	7.4	12.6
135	107.9	0.825	81.4	4.7	7.22	14.917	17.491	14.882	24.9	10.0	20.1	5.2	3.84	0.32	17.4	7.4	12.7
136	108.3	0.831	81.3	4.7	7.23	15.028	17.558	14.920	24.9	10.0	20.2	5.3	3.83	0.32	17.4	7.5	12.7
137	108.6	0.837	81.4	4.7	7.24	15.138	17.612	14.946	24.9	10.0	20.2	5.2	3.86	0.32	17.5	7.5	12.7
138	109.0	0.843	81.5	4.9	7.24	15.249	17.665	14.972	25.0	10.0	20.1	5.1	3.93	0.33	17.5	7.5	12.6
139	109.7	0.849	81.7	5.1	7.25	15.359	17.786	15.054	25.0	10.0	20.0	4.9	4.07	0.34	17.5	7.5	12.4
140	110.0	0.855	81.8	5.2	7.26	15.470	17.839	15.080	25.1	10.0	19.9	4.8	4.15	0.34	17.5	7.5	12.3
141	110.4	0.861	81.6	5.0	7.27	15.580	17.906	15.117	25.1	10.0	20.1	5.0	4.05	0.33	17.5	7.6	12.5
142	110.7	0.867	81.6	5.0	7.28	15.691	17.947	15.131	25.1	10.0	20.1	5.0	4.03	0.33	17.5	7.6	12.6
143	111.2	0.873	81.6	4.9	7.29	15.801	18.027	15.178	25.2	10.0	20.2	5.0	4.02	0.33	17.6	7.6	12.6
144	111.5	0.880	81.5	4.9	7.30	15.912	18.081	15.204	25.2	10.0	20.3	5.1	4.00	0.32	17.6	7.6	12.7
145	111.8	0.886	81.5	4.9	7.31	16.022	18.134	15.229	25.2	10.0	20.3	5.1	3.98	0.32	17.6	7.6	12.7
146	112.2	0.892	81.5	4.9	7.32	16.133	18.201	15.265	25.2	10.0	20.4	5.1	3.99	0.32	17.6	7.6	12.7
147	112.4	0.898	81.4	4.8	7.33	16.243	18.228	15.267	25.2	10.0	20.5	5.2	3.94	0.31	17.6	7.6	12.8
148	112.6	0.904	81.4	4.7	7.34	16.354	18.255	15.269	25.2	10.0	20.5	5.2	3.92	0.31	17.6	7.6	12.9
149	113.1	0.910	81.3	4.7	7.35	16.464	18.348	15.327	25.3	10.0	20.6	5.3	3.91	0.31	17.6	7.7	12.9
150	113.7	0.916	81.3	4.7	7.36	16.575	18.442	15.385	25.4	10.0	20.7	5.3	3.92	0.31	17.7	7.7	13.0
151	114.1	0.922	81.3	4.7	7.37	16.685	18.509	15.421	25.4	10.0	20.7	5.3	3.93	0.31	17.7	7.7	13.0
152	114.5	0.928	81.2	4.6	7.38	16.796	18.576	15.456	25.4	10.0	20.8	5.4	3.89	0.30	17.7	7.7	13.1
153	115.0	0.934	81.2	4.6	7.39	16.906	18.656	15.502	25.5	10.0	20.9	5.4	3.87	0.30	17.7	7.8	13.1
154	115.4	0.941	81.2	4.5	7.40	17.017	18.710	15.526	25.5	10.0	21.0	5.4	3.86	0.29	17.7	7.8	13.2

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)
155	115.9	0.947	81.1	4.5	7.41	17.127	18.790	15.572	25.6	10.0	21.0	5.5	3.85	0.29	17.8	7.8	13.3
156	116.1	0.953	81.0	4.4	7.42	17.238	18.831	15.585	25.6	10.0	21.1	5.6	3.81	0.28	17.8	7.8	13.3
157	116.9	0.959	81.1	4.5	7.43	17.348	18.964	15.674	25.7	10.0	21.2	5.5	3.84	0.28	17.8	7.8	13.4
158	117.3	0.965	81.0	4.3	7.44	17.459	19.018	15.698	25.7	10.0	21.3	5.6	3.79	0.28	17.8	7.8	13.5
159	117.4	0.971	81.0	4.3	7.45	17.569	19.045	15.699	25.7	10.0	21.3	5.6	3.79	0.28	17.8	7.8	13.5
160	117.9	0.977	80.9	4.3	7.46	17.680	19.125	15.744	25.7	10.0	21.4	5.7	3.77	0.27	17.9	7.9	13.5
161	118.2	0.983	80.9	4.3	7.47	17.790	19.179	15.767	25.7	10.0	21.4	5.7	3.78	0.27	17.9	7.9	13.6
162	118.4	0.989	80.8	4.2	7.48	17.901	19.206	15.768	25.7	10.0	21.5	5.8	3.74	0.27	17.9	7.9	13.6
163	119.0	0.996	80.8	4.2	7.49	18.011	19.299	15.823	25.8	10.0	21.6	5.8	3.73	0.26	17.9	7.9	13.7
164	119.6	1.002	80.8	4.2	7.50	18.122	19.393	15.879	25.9	10.0	21.7	5.8	3.74	0.26	17.9	7.9	13.7
165	119.6	1.008	80.7	4.1	7.51	18.232	19.406	15.868	25.8	10.0	21.7	5.9	3.70	0.26	17.9	7.9	13.8
166	120.2	1.014	80.8	4.2	7.52	18.343	19.500	15.923	25.9	10.0	21.7	5.8	3.75	0.26	17.9	8.0	13.8
167	120.4	1.020	81.0	4.4	7.53	18.453	19.527	15.924	25.9	10.0	21.5	5.6	3.87	0.28	17.9	8.0	13.5
168	121.0	1.026	81.2	4.6	7.54	18.564	19.634	15.989	26.0	10.0	21.4	5.4	3.96	0.29	18.0	8.0	13.4
169	121.2	1.032	81.1	4.5	7.55	18.674	19.661	15.989	26.0	10.0	21.5	5.5	3.92	0.28	18.0	8.0	13.5
170	121.9	1.038	81.1	4.5	7.56	18.785	19.768	16.055	26.0	10.0	21.5	5.5	3.93	0.28	18.0	8.0	13.5
171	122.2	1.044	81.0	4.4	7.57	18.895	19.822	16.076	26.1	10.0	21.6	5.6	3.89	0.28	18.0	8.0	13.6
172	122.7	1.050	81.0	4.3	7.58	19.006	19.902	16.119	26.1	10.0	21.8	5.6	3.86	0.27	18.0	8.1	13.7
173	123.1	1.057	81.0	4.3	7.59	19.116	19.969	16.152	26.1	10.0	21.8	5.6	3.87	0.27	18.1	8.1	13.7
174	123.2	1.063	80.9	4.3	7.60	19.227	19.982	16.140	26.1	10.0	21.8	5.7	3.84	0.27	18.1	8.1	13.7
175	123.8	1.069	80.9	4.3	7.61	19.337	20.089	16.205	26.2	10.0	21.9	5.7	3.84	0.26	18.1	8.1	13.8
176	124.0	1.075	80.8	4.2	7.62	19.448	20.116	16.204	26.2	10.0	22.0	5.8	3.82	0.26	18.1	8.1	13.9
177	124.3	1.081	80.8	4.2	7.63	19.558	20.170	16.225	26.2	10.0	22.0	5.8	3.80	0.26	18.1	8.1	13.9
178	124.9	1.087	80.8	4.1	7.64	19.669	20.264	16.278	26.3	10.0	22.1	5.8	3.79	0.25	18.1	8.1	14.0
179	125.2	1.093	80.7	4.1	7.65	19.779	20.317	16.299	26.3	10.0	22.2	5.9	3.77	0.25	18.1	8.1	14.0
180	125.4	1.099	80.7	4.1	7.66	19.890	20.344	16.298	26.3	10.0	22.2	5.9	3.77	0.25	18.1	8.1	14.0
181	125.9	1.105	80.7	4.1	7.67	19.992	20.424	16.341	26.3	10.0	22.3	5.9	3.76	0.25	18.2	8.2	14.1

File Location

B-6A Bag-5 0.3-4.5 Remolded.HSD

Project Information

Project No. 14046-01
 Project Name: I-20 D/B Roadway Improvement
 Client:
 Sample Location: B-6A Bag-5 0.3' to 4.5'
 Sample Description: Tan, Red, Black & Gray Clayey Sand
 Remarks: 3 Point Remolded

Sample Data

Sample Type: Remolded
 Specific Gravity: 2.6500001
 LL: 26.000
 PL: 19.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.793	2.796	
Height (in)	5.508	5.499	
Weight (grams)	1155.00		1196.40
Moisture (%)	10.27		14.23
Dry Density (pcf)	118.22	118.21	
Saturation (%)	68.14	100.00	
Void Ratio	0.396	0.399	

Test Data

Rate of Strain: 0.005
 Cell Pressure (psi): 98.100
 Effective Confining Stress (psi): 20.0
 Corrected Peak Deviator Stress (psi): 17.805 at reading number: 180

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	0.6	0.000	78.1	0.0	6.14	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	60.9	0.007	81.5	3.4	6.14	0.111	9.820	9.809	29.8	20.0	26.4	16.6	1.59	0.35	24.9	4.9	21.5
2	86.3	0.013	84.5	6.4	6.15	0.222	13.973	13.942	33.9	20.0	27.5	13.6	2.03	0.46	27.0	7.0	20.5
3	97.5	0.019	86.5	8.4	6.16	0.333	15.795	15.742	35.7	20.0	27.4	11.6	2.35	0.53	27.9	7.9	19.5
4	102.5	0.025	87.7	9.6	6.17	0.444	16.598	16.525	36.5	20.0	26.9	10.4	2.59	0.58	28.3	8.3	18.7
5	104.7	0.031	88.6	10.5	6.17	0.555	16.960	16.866	36.9	20.0	26.4	9.5	2.77	0.62	28.4	8.4	18.0
6	105.7	0.037	89.2	11.1	6.18	0.666	17.121	17.007	37.0	20.0	25.9	8.9	2.91	0.65	28.5	8.5	17.4
7	106.0	0.043	89.7	11.6	6.19	0.777	17.174	17.041	37.0	20.0	25.4	8.4	3.03	0.68	28.5	8.5	16.9
8	106.4	0.049	90.1	12.0	6.19	0.888	17.241	17.088	37.1	20.0	25.1	8.0	3.14	0.70	28.5	8.5	16.5
9	106.0	0.055	90.4	12.3	6.20	0.999	17.174	17.003	37.0	20.0	24.7	7.7	3.20	0.72	28.5	8.5	16.2
10	105.6	0.062	90.7	12.6	6.21	1.110	17.107	16.918	36.9	20.0	24.4	7.4	3.28	0.74	28.5	8.5	15.9
11	105.2	0.068	90.9	12.8	6.21	1.221	17.040	16.832	36.8	20.0	24.1	7.2	3.33	0.76	28.4	8.4	15.7
12	104.4	0.074	91.1	13.0	6.22	1.332	16.920	16.694	36.7	20.0	23.7	7.0	3.39	0.78	28.3	8.3	15.3
13	104.3	0.080	91.3	13.2	6.23	1.443	16.906	16.663	36.7	20.0	23.4	6.8	3.47	0.79	28.3	8.3	15.1
14	103.8	0.086	91.6	13.5	6.24	1.554	16.813	16.551	36.5	20.0	23.1	6.5	3.54	0.81	28.3	8.3	14.8
15	103.1	0.092	91.7	13.6	6.24	1.665	16.706	16.427	36.4	20.0	22.9	6.4	3.55	0.83	28.2	8.2	14.6
16	102.5	0.098	91.8	13.7	6.25	1.776	16.598	16.304	36.3	20.0	22.6	6.3	3.58	0.84	28.1	8.2	14.5
17	102.4	0.104	91.8	13.7	6.26	1.887	16.585	16.272	36.3	20.0	22.5	6.3	3.60	0.84	28.1	8.1	14.4
18	102.1	0.110	92.0	13.8	6.26	1.998	16.545	16.214	36.2	20.0	22.4	6.1	3.64	0.85	28.1	8.1	14.3

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)
19	101.6	0.116	92.0	13.9	6.27	2.109	16.451	16.104	36.1	20.0	22.2	6.1	3.65	0.86	28.0	8.1	14.1
20	101.4	0.123	92.1	14.0	6.28	2.220	16.424	16.060	36.1	20.0	22.1	6.0	3.66	0.87	28.0	8.0	14.1
21	101.0	0.129	92.2	14.0	6.28	2.331	16.357	15.976	36.0	20.0	21.9	5.9	3.69	0.88	28.0	8.0	13.9
22	100.6	0.135	92.2	14.1	6.29	2.442	16.304	15.905	35.9	20.0	21.8	5.9	3.71	0.89	27.9	8.0	13.8
23	100.5	0.141	92.3	14.2	6.30	2.553	16.277	15.861	35.9	20.0	21.7	5.8	3.72	0.89	27.9	7.9	13.8
24	100.5	0.147	92.3	14.2	6.31	2.664	16.277	15.843	35.8	20.0	21.6	5.8	3.74	0.90	27.9	7.9	13.7
25	100.0	0.153	92.4	14.2	6.31	2.775	16.196	15.747	35.7	20.0	21.5	5.7	3.74	0.90	27.9	7.9	13.6
26	100.0	0.159	92.4	14.3	6.32	2.886	16.196	15.729	35.7	20.0	21.4	5.7	3.78	0.91	27.9	7.9	13.5
27	99.8	0.165	92.5	14.4	6.33	2.997	16.170	15.685	35.7	20.0	21.3	5.6	3.79	0.92	27.8	7.8	13.5
28	99.6	0.171	92.5	14.4	6.34	3.108	16.129	15.628	35.6	20.0	21.3	5.6	3.78	0.92	27.8	7.8	13.4
29	99.3	0.178	92.5	14.4	6.34	3.219	16.076	15.558	35.5	20.0	21.2	5.6	3.78	0.92	27.8	7.8	13.4
30	99.1	0.184	92.6	14.4	6.35	3.330	16.049	15.515	35.5	20.0	21.1	5.5	3.80	0.93	27.7	7.8	13.3
31	98.9	0.190	92.6	14.5	6.36	3.441	16.022	15.471	35.5	20.0	20.9	5.5	3.83	0.94	27.7	7.7	13.2
32	98.8	0.196	92.6	14.5	6.36	3.552	16.009	15.440	35.4	20.0	20.9	5.5	3.83	0.94	27.7	7.7	13.2
33	98.8	0.202	92.6	14.5	6.37	3.663	16.009	15.422	35.4	20.0	20.9	5.5	3.82	0.94	27.7	7.7	13.2
34	98.6	0.208	92.7	14.6	6.38	3.775	15.969	15.366	35.4	20.0	20.8	5.4	3.83	0.95	27.7	7.7	13.1
35	98.6	0.214	92.7	14.6	6.39	3.886	15.969	15.348	35.3	20.0	20.8	5.4	3.83	0.95	27.7	7.7	13.1
36	98.8	0.220	92.7	14.6	6.39	3.997	16.009	15.369	35.4	20.0	20.8	5.4	3.85	0.95	27.7	7.7	13.1
37	99.0	0.226	92.8	14.7	6.40	4.108	16.036	15.377	35.4	20.0	20.6	5.3	3.92	0.96	27.7	7.7	13.0
38	99.3	0.232	92.9	14.8	6.41	4.219	16.076	15.398	35.4	20.0	20.6	5.2	3.97	0.96	27.7	7.7	12.9
39	98.9	0.239	93.0	14.8	6.42	4.330	16.022	15.329	35.3	20.0	20.5	5.1	3.98	0.97	27.7	7.7	12.8
40	99.2	0.245	92.9	14.8	6.42	4.441	16.063	15.349	35.3	20.0	20.5	5.2	3.96	0.96	27.7	7.7	12.9
41	99.1	0.251	92.9	14.8	6.43	4.552	16.049	15.319	35.3	20.0	20.5	5.2	3.96	0.97	27.7	7.7	12.8
42	99.2	0.257	92.9	14.8	6.44	4.663	16.063	15.314	35.3	20.0	20.5	5.2	3.95	0.97	27.6	7.7	12.8
43	98.9	0.263	92.9	14.8	6.45	4.774	16.022	15.257	35.2	20.0	20.4	5.2	3.94	0.97	27.6	7.6	12.8
44	99.1	0.269	92.9	14.8	6.45	4.885	16.049	15.265	35.3	20.0	20.4	5.2	3.95	0.97	27.6	7.6	12.8
45	98.9	0.275	92.9	14.8	6.46	4.996	16.022	15.222	35.2	20.0	20.4	5.2	3.94	0.97	27.6	7.6	12.8
46	99.4	0.281	93.0	14.8	6.47	5.107	16.103	15.280	35.3	20.0	20.4	5.1	3.97	0.97	27.6	7.6	12.8
47	99.4	0.287	92.9	14.8	6.48	5.218	16.103	15.263	35.3	20.0	20.4	5.2	3.95	0.97	27.6	7.6	12.8
48	99.3	0.293	92.9	14.8	6.48	5.329	16.089	15.232	35.2	20.0	20.4	5.2	3.94	0.97	27.6	7.6	12.8
49	99.5	0.300	92.9	14.8	6.49	5.440	16.116	15.239	35.2	20.0	20.4	5.2	3.94	0.97	27.6	7.6	12.8
50	99.9	0.306	92.9	14.8	6.50	5.551	16.183	15.285	35.3	20.0	20.5	5.2	3.95	0.97	27.6	7.6	12.8
51	100.0	0.312	92.9	14.8	6.51	5.662	16.196	15.279	35.3	20.0	20.5	5.2	3.95	0.97	27.6	7.6	12.8
52	100.2	0.318	92.9	14.8	6.51	5.773	16.223	15.287	35.3	20.0	20.5	5.2	3.95	0.97	27.6	7.6	12.8
53	100.3	0.324	92.9	14.8	6.52	5.884	16.250	15.294	35.3	20.0	20.5	5.2	3.95	0.97	27.6	7.6	12.8
54	100.3	0.330	92.9	14.8	6.53	5.995	16.250	15.276	35.3	20.0	20.5	5.2	3.92	0.97	27.6	7.6	12.9
55	100.6	0.336	92.9	14.8	6.54	6.106	16.304	15.308	35.3	20.0	20.5	5.2	3.95	0.97	27.6	7.7	12.8
56	101.0	0.342	92.9	14.8	6.55	6.217	16.357	15.340	35.3	20.0	20.5	5.2	3.96	0.97	27.7	7.7	12.9
57	100.9	0.348	92.9	14.8	6.55	6.328	16.344	15.310	35.3	20.0	20.5	5.2	3.93	0.96	27.6	7.7	12.9
58	101.4	0.355	92.9	14.8	6.56	6.439	16.424	15.367	35.4	20.0	20.6	5.2	3.94	0.96	27.7	7.7	12.9
59	101.3	0.361	92.9	14.8	6.57	6.550	16.411	15.336	35.3	20.0	20.6	5.2	3.94	0.96	27.7	7.7	12.9
60	101.8	0.367	92.9	14.8	6.58	6.661	16.491	15.393	35.4	20.0	20.6	5.2	3.95	0.96	27.7	7.7	12.9
61	101.8	0.373	93.0	14.8	6.58	6.772	16.491	15.374	35.4	20.0	20.5	5.1	3.99	0.97	27.7	7.7	12.8
62	101.9	0.379	93.0	14.9	6.59	6.883	16.505	15.369	35.4	20.0	20.4	5.1	4.04	0.97	27.7	7.7	12.7
63	102.2	0.385	93.0	14.9	6.60	6.994	16.558	15.400	35.4	20.0	20.5	5.1	4.04	0.97	27.7	7.7	12.8

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)
64	102.2	0.391	93.0	14.9	6.61	7.105	16.558	15.382	35.4	20.0	20.5	5.1	4.01	0.97	27.7	7.7	12.8
65	102.4	0.397	93.0	14.9	6.62	7.216	16.585	15.388	35.4	20.0	20.5	5.1	4.02	0.97	27.7	7.7	12.8
66	102.6	0.403	93.0	14.8	6.62	7.327	16.625	15.407	35.4	20.0	20.5	5.1	4.00	0.96	27.7	7.7	12.8
67	102.9	0.409	93.0	14.8	6.63	7.438	16.665	15.426	35.4	20.0	20.6	5.1	4.00	0.96	27.7	7.7	12.9
68	103.4	0.416	92.9	14.8	6.64	7.549	16.746	15.482	35.5	20.0	20.7	5.2	3.99	0.96	27.7	7.7	12.9
69	103.6	0.422	92.9	14.8	6.65	7.660	16.786	15.500	35.5	20.0	20.7	5.2	3.99	0.96	27.7	7.8	12.9
70	103.8	0.428	92.9	14.8	6.66	7.771	16.813	15.506	35.5	20.0	20.7	5.2	3.99	0.96	27.7	7.8	12.9
71	104.0	0.434	92.9	14.8	6.66	7.882	16.853	15.525	35.5	20.0	20.7	5.2	4.00	0.95	27.8	7.8	12.9
72	103.9	0.440	92.9	14.8	6.67	7.993	16.826	15.481	35.5	20.0	20.7	5.2	3.99	0.96	27.7	7.7	12.9
73	104.3	0.446	92.9	14.8	6.68	8.104	16.906	15.536	35.5	20.0	20.8	5.2	3.97	0.95	27.8	7.8	13.0
74	104.6	0.452	92.9	14.8	6.69	8.215	16.947	15.554	35.5	20.0	20.8	5.2	3.98	0.95	27.8	7.8	13.0
75	104.5	0.458	92.9	14.8	6.70	8.326	16.933	15.523	35.5	20.0	20.7	5.2	3.97	0.95	27.8	7.8	13.0
76	104.8	0.464	92.8	14.7	6.70	8.437	16.987	15.554	35.5	20.0	20.8	5.3	3.96	0.95	27.8	7.8	13.0
77	105.1	0.471	92.8	14.7	6.71	8.548	17.027	15.572	35.6	20.0	20.8	5.3	3.96	0.95	27.8	7.8	13.0
78	105.7	0.477	92.8	14.7	6.72	8.659	17.134	15.651	35.6	20.0	20.9	5.3	3.97	0.94	27.8	7.8	13.1
79	105.8	0.483	92.8	14.7	6.73	8.770	17.148	15.644	35.6	20.0	20.9	5.3	3.95	0.94	27.8	7.8	13.1
80	105.9	0.489	92.8	14.7	6.74	8.881	17.161	15.637	35.6	20.0	20.9	5.3	3.95	0.94	27.8	7.8	13.1
81	106.3	0.495	92.8	14.7	6.74	8.992	17.228	15.679	35.7	20.0	21.0	5.3	3.96	0.94	27.8	7.8	13.1
82	106.7	0.501	92.8	14.6	6.75	9.103	17.282	15.708	35.7	20.0	21.1	5.3	3.94	0.93	27.8	7.9	13.2
83	107.0	0.507	92.8	14.6	6.76	9.214	17.335	15.738	35.7	20.0	21.1	5.3	3.95	0.93	27.9	7.9	13.2
84	107.3	0.513	92.7	14.6	6.77	9.325	17.389	15.767	35.8	20.0	21.2	5.4	3.93	0.93	27.9	7.9	13.3
85	107.4	0.519	92.7	14.6	6.78	9.436	17.402	15.760	35.8	20.0	21.1	5.4	3.93	0.93	27.9	7.9	13.3
86	107.6	0.525	92.8	14.7	6.79	9.547	17.429	15.765	35.8	20.0	21.0	5.3	4.00	0.93	27.9	7.9	13.1
87	107.8	0.532	92.9	14.8	6.79	9.658	17.469	15.782	35.8	20.0	21.0	5.2	4.02	0.94	27.9	7.9	13.1
88	108.0	0.538	92.9	14.8	6.80	9.769	17.496	15.787	35.8	20.0	21.0	5.2	4.05	0.94	27.9	7.9	13.1
89	108.5	0.544	92.9	14.8	6.81	9.880	17.590	15.852	35.8	20.0	21.1	5.2	4.04	0.93	27.9	7.9	13.1
90	108.6	0.550	92.8	14.7	6.82	9.991	17.603	15.844	35.8	20.0	21.1	5.3	4.01	0.93	27.9	7.9	13.2
91	108.5	0.556	92.8	14.7	6.83	10.102	17.590	15.813	35.8	20.0	21.1	5.3	3.98	0.93	27.9	7.9	13.2
92	109.2	0.562	92.8	14.7	6.84	10.213	17.697	15.889	35.9	20.0	21.2	5.3	4.00	0.92	27.9	7.9	13.2
93	109.3	0.568	92.8	14.6	6.84	10.324	17.710	15.882	35.9	20.0	21.2	5.3	3.97	0.92	27.9	7.9	13.3
94	109.7	0.574	92.8	14.6	6.85	10.435	17.777	15.922	35.9	20.0	21.3	5.3	3.98	0.92	28.0	8.0	13.3
95	110.2	0.580	92.7	14.6	6.86	10.546	17.858	15.974	36.0	20.0	21.4	5.4	3.97	0.91	28.0	8.0	13.4
96	110.5	0.587	92.7	14.6	6.87	10.657	17.911	16.002	36.0	20.0	21.4	5.4	3.97	0.91	28.0	8.0	13.4
97	110.6	0.593	92.7	14.6	6.88	10.768	17.925	15.994	36.0	20.0	21.4	5.4	3.95	0.91	28.0	8.0	13.4
98	110.9	0.599	92.7	14.6	6.89	10.879	17.978	16.022	36.0	20.0	21.4	5.4	3.95	0.91	28.0	8.0	13.4
99	110.9	0.605	92.6	14.5	6.90	10.990	17.978	16.002	36.0	20.0	21.5	5.5	3.93	0.91	28.0	8.0	13.5
100	111.4	0.611	92.6	14.5	6.90	11.102	18.059	16.054	36.0	20.0	21.6	5.5	3.92	0.90	28.0	8.0	13.5
101	111.6	0.617	92.6	14.5	6.91	11.213	18.085	16.058	36.0	20.0	21.6	5.5	3.92	0.90	28.0	8.0	13.5
102	112.0	0.623	92.6	14.5	6.92	11.324	18.152	16.097	36.1	20.0	21.6	5.5	3.92	0.90	28.0	8.0	13.6
103	112.1	0.629	92.6	14.4	6.93	11.435	18.166	16.089	36.1	20.0	21.6	5.5	3.90	0.90	28.0	8.0	13.6
104	112.7	0.635	92.6	14.4	6.94	11.546	18.260	16.151	36.1	20.0	21.7	5.5	3.91	0.89	28.1	8.1	13.6
105	112.7	0.641	92.5	14.4	6.95	11.657	18.260	16.131	36.1	20.0	21.7	5.6	3.89	0.89	28.1	8.1	13.7
106	113.0	0.648	92.5	14.4	6.96	11.768	18.313	16.158	36.1	20.0	21.7	5.6	3.89	0.89	28.1	8.1	13.7
107	113.6	0.654	92.5	14.4	6.97	11.879	18.420	16.232	36.2	20.0	21.8	5.6	3.91	0.89	28.1	8.1	13.7
108	113.5	0.660	92.5	14.4	6.97	11.990	18.394	16.188	36.2	20.0	21.8	5.6	3.88	0.89	28.1	8.1	13.7

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)
109	114.1	0.666	92.5	14.4	6.98	12.101	18.487	16.250	36.2	20.0	21.9	5.6	3.89	0.88	28.1	8.1	13.8
110	114.3	0.672	92.4	14.3	6.99	12.212	18.527	16.265	36.3	20.0	21.9	5.7	3.87	0.88	28.1	8.1	13.8
111	114.5	0.678	92.6	14.4	7.00	12.323	18.554	16.268	36.3	20.0	21.8	5.5	3.93	0.89	28.1	8.1	13.7
112	115.3	0.684	92.6	14.5	7.01	12.434	18.688	16.365	36.4	20.0	21.9	5.5	3.97	0.89	28.2	8.2	13.7
113	115.2	0.690	92.6	14.5	7.02	12.545	18.675	16.332	36.3	20.0	21.8	5.5	3.99	0.89	28.2	8.2	13.6
114	115.5	0.696	92.6	14.4	7.03	12.656	18.728	16.358	36.3	20.0	21.9	5.5	3.95	0.88	28.2	8.2	13.7
115	115.9	0.703	92.5	14.4	7.04	12.767	18.782	16.384	36.4	20.0	22.0	5.6	3.93	0.88	28.2	8.2	13.8
116	116.4	0.709	92.5	14.4	7.05	12.878	18.876	16.445	36.4	20.0	22.0	5.6	3.94	0.88	28.2	8.2	13.8
117	116.8	0.715	92.5	14.4	7.05	12.989	18.929	16.471	36.5	20.0	22.1	5.6	3.93	0.87	28.2	8.2	13.9
118	116.7	0.721	92.5	14.4	7.06	13.100	18.916	16.438	36.4	20.0	22.1	5.6	3.92	0.87	28.2	8.2	13.8
119	117.0	0.727	92.5	14.4	7.07	13.211	18.970	16.464	36.5	20.0	22.1	5.6	3.93	0.87	28.2	8.2	13.9
120	117.4	0.733	92.4	14.3	7.08	13.322	19.037	16.501	36.5	20.0	22.2	5.7	3.91	0.87	28.2	8.3	13.9
121	117.8	0.739	92.4	14.3	7.09	13.433	19.104	16.537	36.5	20.0	22.2	5.7	3.92	0.87	28.3	8.3	13.9
122	118.2	0.745	92.4	14.3	7.10	13.544	19.157	16.563	36.6	20.0	22.3	5.7	3.90	0.86	28.3	8.3	14.0
123	118.3	0.751	92.4	14.3	7.11	13.655	19.184	16.564	36.6	20.0	22.3	5.7	3.90	0.86	28.3	8.3	14.0
124	118.7	0.757	92.4	14.3	7.12	13.766	19.238	16.589	36.6	20.0	22.3	5.7	3.91	0.86	28.3	8.3	14.0
125	119.3	0.764	92.4	14.3	7.13	13.877	19.345	16.660	36.7	20.0	22.4	5.7	3.92	0.86	28.3	8.3	14.0
126	119.3	0.770	92.4	14.2	7.14	13.988	19.345	16.639	36.6	20.0	22.4	5.7	3.90	0.86	28.3	8.3	14.1
127	119.8	0.776	92.3	14.2	7.15	14.099	19.425	16.686	36.7	20.0	22.5	5.8	3.88	0.85	28.3	8.3	14.1
128	120.0	0.782	92.3	14.2	7.15	14.210	19.452	16.688	36.7	20.0	22.5	5.8	3.88	0.85	28.3	8.3	14.1
129	120.5	0.788	92.3	14.2	7.16	14.321	19.532	16.735	36.7	20.0	22.5	5.8	3.89	0.85	28.4	8.4	14.2
130	120.9	0.794	92.3	14.2	7.17	14.432	19.599	16.771	36.8	20.0	22.6	5.8	3.88	0.84	28.4	8.4	14.2
131	120.9	0.800	92.3	14.2	7.18	14.543	19.599	16.749	36.7	20.0	22.6	5.8	3.87	0.85	28.4	8.4	14.2
132	121.3	0.806	92.2	14.1	7.19	14.654	19.666	16.784	36.8	20.0	22.7	5.9	3.86	0.84	28.4	8.4	14.3
133	121.5	0.812	92.2	14.1	7.20	14.765	19.706	16.797	36.8	20.0	22.7	5.9	3.86	0.84	28.4	8.4	14.3
134	121.9	0.819	92.2	14.1	7.21	14.876	19.760	16.820	36.8	20.0	22.7	5.9	3.87	0.84	28.4	8.4	14.3
135	122.1	0.825	92.2	14.1	7.22	14.987	19.800	16.833	36.8	20.0	22.7	5.9	3.87	0.84	28.4	8.4	14.3
136	122.5	0.831	92.3	14.2	7.23	15.098	19.867	16.868	36.9	20.0	22.7	5.8	3.92	0.84	28.4	8.4	14.2
137	122.9	0.837	92.4	14.2	7.24	15.209	19.921	16.891	36.9	20.0	22.6	5.7	3.94	0.84	28.4	8.4	14.2
138	123.4	0.843	92.3	14.2	7.25	15.320	20.015	16.948	36.9	20.0	22.7	5.8	3.93	0.84	28.5	8.5	14.3
139	123.4	0.849	92.3	14.2	7.26	15.431	20.015	16.926	36.9	20.0	22.8	5.8	3.91	0.84	28.5	8.5	14.3
140	124.1	0.855	92.3	14.2	7.27	15.542	20.122	16.994	37.0	20.0	22.8	5.8	3.92	0.83	28.5	8.5	14.3
141	124.0	0.861	92.2	14.1	7.28	15.653	20.108	16.961	37.0	20.0	22.8	5.9	3.89	0.83	28.5	8.5	14.3
142	124.2	0.867	92.2	14.1	7.29	15.764	20.148	16.972	37.0	20.0	22.9	5.9	3.87	0.83	28.5	8.5	14.4
143	124.7	0.873	92.2	14.1	7.30	15.875	20.215	17.006	37.0	20.0	22.9	5.9	3.90	0.83	28.5	8.5	14.4
144	125.0	0.880	92.2	14.1	7.31	15.986	20.269	17.029	37.0	20.0	22.9	5.9	3.88	0.83	28.5	8.5	14.4
145	125.2	0.886	92.2	14.0	7.32	16.097	20.309	17.040	37.0	20.0	23.0	5.9	3.87	0.82	28.5	8.5	14.5
146	125.6	0.892	92.2	14.0	7.33	16.208	20.363	17.062	37.1	20.0	23.0	5.9	3.87	0.82	28.5	8.5	14.5
147	126.4	0.898	92.1	14.0	7.34	16.319	20.497	17.152	37.1	20.0	23.1	6.0	3.86	0.82	28.6	8.6	14.6
148	126.6	0.904	92.1	14.0	7.34	16.430	20.524	17.152	37.1	20.0	23.1	6.0	3.86	0.82	28.6	8.6	14.6
149	127.0	0.910	92.1	14.0	7.35	16.541	20.591	17.185	37.2	20.0	23.2	6.0	3.87	0.81	28.6	8.6	14.6
150	127.3	0.916	92.1	14.0	7.36	16.652	20.644	17.206	37.2	20.0	23.2	6.0	3.85	0.81	28.6	8.6	14.6
151	127.2	0.922	92.1	14.0	7.37	16.763	20.631	17.172	37.2	20.0	23.2	6.0	3.85	0.81	28.6	8.6	14.6
152	128.1	0.928	92.1	14.0	7.38	16.874	20.778	17.272	37.3	20.0	23.3	6.0	3.87	0.81	28.6	8.6	14.7
153	128.4	0.934	92.0	13.9	7.39	16.985	20.818	17.282	37.3	20.0	23.4	6.1	3.85	0.81	28.6	8.6	14.7

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)
154	128.4	0.941	92.0	13.9	7.40	17.096	20.832	17.270	37.3	20.0	23.4	6.1	3.83	0.80	28.6	8.6	14.7
155	130.8	0.947	92.0	13.9	7.41	17.207	21.220	17.569	37.6	20.0	23.7	6.1	3.88	0.79	28.8	8.8	14.9
156	129.1	0.953	92.0	13.9	7.42	17.318	20.939	17.313	37.3	20.0	23.4	6.1	3.83	0.80	28.6	8.7	14.8
157	129.3	0.959	92.0	13.8	7.43	17.429	20.979	17.323	37.3	20.0	23.5	6.1	3.82	0.80	28.7	8.7	14.8
158	129.6	0.965	91.9	13.8	7.44	17.540	21.019	17.332	37.3	20.0	23.5	6.2	3.80	0.80	28.7	8.7	14.9
159	130.3	0.971	91.9	13.8	7.45	17.651	21.126	17.397	37.4	20.0	23.6	6.2	3.81	0.79	28.7	8.7	14.9
160	130.4	0.977	91.9	13.8	7.46	17.762	21.153	17.396	37.4	20.0	23.6	6.2	3.81	0.79	28.7	8.7	14.9
161	130.7	0.983	92.0	13.9	7.47	17.873	21.193	17.405	37.4	20.0	23.5	6.1	3.87	0.80	28.7	8.7	14.8
162	132.9	0.989	92.1	14.0	7.48	17.984	21.555	17.679	37.7	20.0	23.7	6.0	3.93	0.79	28.8	8.8	14.9
163	131.3	0.996	92.0	13.9	7.49	18.095	21.301	17.446	37.4	20.0	23.5	6.1	3.88	0.80	28.7	8.7	14.8
164	131.6	1.002	92.0	13.9	7.50	18.206	21.341	17.455	37.4	20.0	23.6	6.1	3.86	0.80	28.7	8.7	14.8
165	131.7	1.008	92.0	13.8	7.51	18.317	21.354	17.443	37.4	20.0	23.6	6.1	3.84	0.79	28.7	8.7	14.9
166	132.2	1.014	92.0	13.8	7.52	18.429	21.448	17.495	37.5	20.0	23.6	6.1	3.85	0.79	28.7	8.7	14.9
167	132.7	1.020	91.9	13.8	7.54	18.540	21.528	17.537	37.5	20.0	23.7	6.2	3.83	0.79	28.8	8.8	15.0
168	133.0	1.026	91.9	13.8	7.55	18.651	21.569	17.546	37.5	20.0	23.7	6.2	3.84	0.79	28.8	8.8	15.0
169	133.4	1.032	91.9	13.8	7.56	18.759	21.635	17.577	37.6	20.0	23.8	6.2	3.82	0.78	28.8	8.8	15.0
170	133.8	1.038	91.9	13.8	7.57	18.873	21.702	17.607	37.6	20.0	23.8	6.2	3.83	0.78	28.8	8.8	15.0
171	134.0	1.044	91.8	13.7	7.58	18.984	21.743	17.615	37.6	20.0	23.9	6.3	3.81	0.78	28.8	8.8	15.1
172	134.5	1.050	91.8	13.7	7.59	19.095	21.823	17.656	37.6	20.0	24.0	6.3	3.80	0.77	28.8	8.8	15.1
173	134.8	1.057	91.8	13.7	7.60	19.206	21.863	17.664	37.7	20.0	24.0	6.3	3.80	0.77	28.8	8.8	15.1
174	135.0	1.063	91.8	13.7	7.61	19.317	21.903	17.672	37.7	20.0	24.0	6.3	3.80	0.77	28.8	8.8	15.1
175	135.5	1.069	91.8	13.6	7.62	19.428	21.984	17.713	37.7	20.0	24.1	6.3	3.79	0.77	28.8	8.9	15.2
176	135.5	1.075	91.8	13.6	7.63	19.539	21.984	17.688	37.7	20.0	24.0	6.3	3.79	0.77	28.8	8.8	15.2
177	136.2	1.081	91.8	13.6	7.64	19.650	22.091	17.750	37.7	20.0	24.1	6.3	3.80	0.77	28.9	8.9	15.2
178	136.3	1.087	91.7	13.6	7.65	19.761	22.118	17.747	37.7	20.0	24.1	6.4	3.78	0.77	28.9	8.9	15.3
179	136.9	1.093	91.7	13.6	7.66	19.872	22.212	17.798	37.8	20.0	24.2	6.4	3.79	0.76	28.9	8.9	15.3
180	137.2	1.099	91.7	13.6	7.67	19.983	22.252	17.805	37.8	20.0	24.2	6.4	3.77	0.76	28.9	8.9	15.3
181	136.7	1.100	91.7	13.6	7.67	20.000	22.185	17.748	37.7	20.0	24.2	6.4	3.76	0.76	28.9	8.9	15.3

File Location
B-6A Bag-5 0.3-4.5 Remolded.HSD

Project Information

Project No. 14046-01
Project Name: I-20 D/B Roadway Improvement
Client:
Sample Location: B-6A Bag-5 0.3' to 4.5'
Sample Description: Tan, Red, Black & Gray Clayey Sand
Remarks: 3 Point Remolded

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 26.000
PL: 19.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.795	2.800	
Height (in)	5.511	5.486	
Weight (grams)	1155.90		1184.60
Moisture (%)	10.60		13.35
Dry Density (pcf)	117.77	117.83	
Saturation (%)	69.42	100.00	
Void Ratio	0.402	0.404	

Test Data

Rate of Strain: 0.005
Cell Pressure (psi): 119.900
Effective Confining Stress (psi): 40.0
Corrected Peak Deviator Stress (psi): 30.999 at reading number: 5

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	4.7	0.000	79.9	0.0	6.16	0.000	0.000	0.000	40.0	40.0	40.0	40.0	1.00	0.00	40.0	0.0	40.0
1	20.3	0.003	80.6	0.7	6.16	0.055	2.538	2.537	42.5	40.0	41.8	39.3	1.06	0.27	41.2	1.3	40.6
2	123.9	0.009	85.7	5.8	6.17	0.164	19.357	19.325	59.3	40.0	53.5	34.2	1.57	0.30	49.6	9.7	43.8
3	179.3	0.015	89.8	9.9	6.18	0.273	28.347	28.270	68.2	40.0	58.3	30.1	1.94	0.35	54.1	14.1	44.2
4	193.2	0.021	92.9	13.0	6.18	0.383	30.605	30.488	70.5	40.0	57.5	27.0	2.13	0.43	55.2	15.2	42.2
5	196.6	0.027	95.3	15.3	6.19	0.492	31.152	30.999	71.0	40.0	55.6	24.6	2.26	0.49	55.5	15.5	40.1
6	196.6	0.033	97.0	17.1	6.20	0.602	31.152	30.965	70.9	40.0	53.9	22.9	2.35	0.55	55.5	15.5	38.4
7	195.2	0.039	98.3	18.4	6.20	0.711	30.939	30.719	70.7	40.0	52.3	21.6	2.42	0.60	55.3	15.4	36.9
8	194.0	0.045	99.4	19.4	6.21	0.820	30.738	30.486	70.5	40.0	51.0	20.5	2.48	0.64	55.2	15.2	35.8
9	192.2	0.051	100.2	20.3	6.22	0.930	30.444	30.161	70.1	40.0	49.8	19.7	2.53	0.67	55.1	15.1	34.7
10	190.7	0.057	101.0	21.0	6.22	1.039	30.204	29.890	69.9	40.0	48.8	18.9	2.58	0.70	54.9	14.9	33.9
11	189.2	0.063	101.6	21.7	6.23	1.148	29.964	29.619	69.6	40.0	47.9	18.3	2.62	0.73	54.8	14.8	33.1
12	188.1	0.069	102.1	22.2	6.24	1.258	29.777	29.402	69.4	40.0	47.2	17.8	2.65	0.76	54.7	14.7	32.5
13	186.6	0.075	102.5	22.6	6.24	1.367	29.536	29.132	69.1	40.0	46.5	17.4	2.68	0.78	54.5	14.6	31.9
14	185.3	0.081	102.9	23.0	6.25	1.476	29.322	28.889	68.9	40.0	45.9	17.0	2.70	0.80	54.4	14.4	31.4
15	183.8	0.087	103.4	23.5	6.26	1.586	29.082	28.621	68.6	40.0	45.1	16.5	2.74	0.82	54.3	14.3	30.8
16	183.2	0.093	103.6	23.7	6.27	1.695	28.988	28.497	68.5	40.0	44.8	16.3	2.75	0.83	54.2	14.2	30.5
17	182.5	0.099	104.0	24.0	6.27	1.805	28.868	28.347	68.3	40.0	44.3	15.9	2.78	0.85	54.1	14.2	30.1
18	181.4	0.105	104.2	24.2	6.28	1.914	28.694	28.145	68.1	40.0	43.9	15.7	2.79	0.86	54.0	14.1	29.8
19	180.6	0.111	104.4	24.5	6.29	2.023	28.561	27.983	68.0	40.0	43.5	15.5	2.81	0.88	54.0	14.0	29.5
20	179.6	0.117	104.6	24.7	6.29	2.133	28.401	27.795	67.8	40.0	43.1	15.3	2.82	0.89	53.9	13.9	29.2

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)
21	178.8	0.123	104.8	24.8	6.30	2.242	28.267	27.633	67.6	40.0	42.8	15.1	2.83	0.90	53.8	13.8	28.9
22	178.4	0.129	104.9	25.0	6.31	2.351	28.200	27.537	67.5	40.0	42.5	15.0	2.84	0.91	53.7	13.8	28.8
23	178.0	0.135	105.2	25.3	6.31	2.461	28.133	27.441	67.4	40.0	42.1	14.7	2.87	0.92	53.7	13.7	28.4
24	177.5	0.141	105.9	25.9	6.32	2.570	28.053	27.332	67.3	40.0	41.4	14.0	2.95	0.95	53.6	13.7	27.7
25	177.0	0.147	105.9	26.0	6.33	2.680	27.973	27.224	67.2	40.0	41.2	14.0	2.95	0.96	53.6	13.6	27.6
26	176.7	0.153	106.1	26.2	6.34	2.789	27.933	27.154	67.1	40.0	41.0	13.8	2.97	0.96	53.5	13.6	27.4
27	176.5	0.159	106.2	26.3	6.34	2.898	27.893	27.085	67.1	40.0	40.8	13.7	2.98	0.97	53.5	13.5	27.2
28	176.3	0.165	106.3	26.3	6.35	3.008	27.866	27.028	67.0	40.0	40.7	13.6	2.98	0.97	53.5	13.5	27.2
29	176.0	0.171	106.4	26.5	6.36	3.117	27.813	26.946	66.9	40.0	40.5	13.5	2.99	0.98	53.4	13.5	27.0
30	175.6	0.177	106.5	26.6	6.36	3.226	27.746	26.851	66.8	40.0	40.2	13.4	3.00	0.99	53.4	13.4	26.8
31	175.2	0.183	106.6	26.7	6.37	3.336	27.693	26.769	66.7	40.0	40.0	13.3	3.02	1.00	53.4	13.4	26.7
32	175.4	0.189	106.7	26.7	6.38	3.445	27.719	26.764	66.7	40.0	40.0	13.2	3.02	1.00	53.4	13.4	26.6
33	175.1	0.195	106.8	26.9	6.39	3.555	27.666	26.682	66.7	40.0	39.8	13.1	3.03	1.01	53.3	13.3	26.5
34	175.1	0.201	106.9	26.9	6.39	3.664	27.666	26.652	66.6	40.0	39.7	13.0	3.04	1.01	53.3	13.3	26.4
35	174.8	0.207	106.9	27.0	6.40	3.773	27.612	26.571	66.5	40.0	39.6	13.0	3.04	1.02	53.3	13.3	26.3
36	174.8	0.213	106.9	27.0	6.41	3.883	27.612	26.540	66.5	40.0	39.5	13.0	3.05	1.02	53.2	13.3	26.2
37	174.9	0.219	107.0	27.1	6.41	3.992	27.639	26.536	66.5	40.0	39.4	12.9	3.06	1.02	53.2	13.3	26.1
38	174.6	0.225	107.1	27.2	6.42	4.101	27.586	26.454	66.4	40.0	39.2	12.8	3.07	1.03	53.2	13.2	26.0
39	174.6	0.231	107.1	27.2	6.43	4.211	27.586	26.424	66.4	40.0	39.2	12.8	3.07	1.03	53.2	13.2	26.0
40	174.8	0.237	107.1	27.1	6.44	4.320	27.626	26.432	66.4	40.0	39.3	12.8	3.06	1.03	53.2	13.2	26.1
41	174.8	0.243	107.2	27.3	6.44	4.429	27.612	26.389	66.4	40.0	39.1	12.7	3.08	1.03	53.2	13.2	25.9
42	174.8	0.249	107.1	27.2	6.45	4.539	27.626	26.372	66.3	40.0	39.1	12.8	3.07	1.03	53.2	13.2	25.9
43	174.7	0.255	107.2	27.3	6.46	4.648	27.599	26.316	66.3	40.0	39.0	12.7	3.07	1.04	53.1	13.2	25.9
44	174.8	0.261	107.1	27.2	6.47	4.758	27.612	26.299	66.3	40.0	39.1	12.8	3.06	1.03	53.1	13.1	25.9
45	175.3	0.267	107.2	27.3	6.47	4.867	27.706	26.357	66.3	40.0	39.0	12.7	3.08	1.04	53.2	13.2	25.9
46	175.6	0.273	107.2	27.3	6.48	4.976	27.746	26.365	66.3	40.0	39.0	12.7	3.08	1.04	53.2	13.2	25.9
47	175.1	0.279	107.2	27.3	6.49	5.086	27.666	26.259	66.2	40.0	38.9	12.7	3.07	1.04	53.1	13.1	25.8
48	175.7	0.285	107.2	27.3	6.50	5.195	27.773	26.330	66.3	40.0	39.0	12.7	3.08	1.04	53.1	13.2	25.8
49	175.7	0.291	107.2	27.3	6.50	5.304	27.773	26.300	66.3	40.0	39.0	12.7	3.07	1.04	53.1	13.1	25.9
50	176.0	0.297	107.1	27.2	6.51	5.414	27.813	26.307	66.3	40.0	39.1	12.8	3.06	1.03	53.1	13.2	25.9
51	176.1	0.303	107.1	27.2	6.52	5.523	27.826	26.289	66.3	40.0	39.1	12.8	3.05	1.03	53.1	13.1	25.9
52	176.5	0.309	107.5	27.5	6.53	5.633	27.893	26.322	66.3	40.0	38.8	12.4	3.12	1.05	53.1	13.2	25.6
53	176.6	0.315	107.7	27.8	6.53	5.742	27.920	26.317	66.3	40.0	38.5	12.2	3.17	1.06	53.1	13.2	25.3
54	176.8	0.321	107.7	27.8	6.54	5.851	27.946	26.311	66.3	40.0	38.5	12.2	3.16	1.06	53.1	13.2	25.3
55	177.1	0.327	107.7	27.8	6.55	5.961	28.000	26.331	66.3	40.0	38.5	12.2	3.17	1.06	53.1	13.2	25.3
56	177.2	0.333	107.8	27.9	6.56	6.070	28.013	26.313	66.3	40.0	38.4	12.1	3.17	1.06	53.1	13.2	25.3
57	177.4	0.339	107.8	27.9	6.56	6.179	28.040	26.307	66.3	40.0	38.4	12.1	3.17	1.06	53.1	13.2	25.3
58	177.8	0.345	107.8	27.9	6.57	6.289	28.107	26.339	66.3	40.0	38.5	12.1	3.17	1.06	53.1	13.2	25.3
59	178.4	0.351	107.8	27.9	6.58	6.398	28.200	26.396	66.4	40.0	38.5	12.1	3.19	1.06	53.2	13.2	25.3
60	178.4	0.357	107.8	27.9	6.59	6.507	28.200	26.365	66.3	40.0	38.5	12.1	3.18	1.06	53.2	13.2	25.3
61	178.9	0.363	107.8	27.9	6.60	6.617	28.280	26.409	66.4	40.0	38.5	12.1	3.18	1.05	53.2	13.2	25.3
62	179.3	0.369	107.7	27.8	6.60	6.726	28.347	26.440	66.4	40.0	38.6	12.2	3.18	1.05	53.2	13.2	25.4
63	179.5	0.375	107.8	27.9	6.61	6.836	28.387	26.447	66.4	40.0	38.6	12.1	3.18	1.05	53.2	13.2	25.3
64	179.7	0.381	107.8	27.9	6.62	6.945	28.414	26.441	66.4	40.0	38.6	12.1	3.18	1.05	53.2	13.2	25.3
65	180.1	0.387	107.8	27.9	6.63	7.054	28.481	26.472	66.4	40.0	38.5	12.1	3.19	1.05	53.2	13.2	25.3
66	180.3	0.393	107.8	27.9	6.63	7.164	28.507	26.465	66.4	40.0	38.6	12.1	3.19	1.05	53.2	13.2	25.3

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)
67	180.8	0.399	107.8	27.9	6.64	7.273	28.588	26.508	66.5	40.0	38.6	12.1	3.19	1.05	53.2	13.3	25.4
68	181.3	0.405	107.7	27.8	6.65	7.382	28.681	26.564	66.5	40.0	38.7	12.2	3.19	1.05	53.3	13.3	25.4
69	181.6	0.411	107.7	27.7	6.66	7.492	28.721	26.569	66.5	40.0	38.8	12.2	3.17	1.04	53.3	13.3	25.5
70	182.1	0.417	107.7	27.7	6.67	7.601	28.801	26.612	66.6	40.0	38.8	12.2	3.18	1.04	53.3	13.3	25.5
71	182.5	0.423	107.7	27.7	6.67	7.711	28.868	26.642	66.6	40.0	38.9	12.2	3.18	1.04	53.3	13.3	25.6
72	182.7	0.429	107.7	27.7	6.68	7.820	28.908	26.648	66.6	40.0	38.9	12.2	3.18	1.04	53.3	13.3	25.6
73	182.9	0.435	107.5	27.6	6.69	7.929	28.935	26.641	66.6	40.0	39.0	12.4	3.16	1.04	53.3	13.3	25.7
74	183.9	0.441	107.6	27.7	6.70	8.039	29.095	26.756	66.7	40.0	39.1	12.3	3.17	1.03	53.4	13.4	25.7
75	183.7	0.447	107.5	27.6	6.71	8.148	29.069	26.700	66.7	40.0	39.1	12.4	3.16	1.03	53.3	13.4	25.7
76	184.0	0.453	107.5	27.6	6.71	8.257	29.122	26.717	66.7	40.0	39.1	12.4	3.16	1.03	53.3	13.4	25.7
77	184.6	0.459	107.5	27.5	6.72	8.367	29.215	26.771	66.7	40.0	39.2	12.4	3.15	1.03	53.4	13.4	25.8
78	185.0	0.465	107.4	27.5	6.73	8.476	29.269	26.788	66.8	40.0	39.3	12.5	3.14	1.03	53.4	13.4	25.9
79	185.6	0.471	107.4	27.5	6.74	8.585	29.376	26.854	66.8	40.0	39.4	12.5	3.15	1.02	53.4	13.4	25.9
80	185.8	0.477	107.3	27.3	6.75	8.695	29.402	26.846	66.8	40.0	39.5	12.6	3.12	1.02	53.4	13.4	26.1
81	186.2	0.483	107.9	27.9	6.75	8.804	29.469	26.875	66.8	40.0	38.9	12.0	3.23	1.04	53.4	13.4	25.5
82	186.4	0.489	107.9	27.9	6.76	8.914	29.509	26.879	66.9	40.0	38.9	12.0	3.23	1.04	53.4	13.4	25.5
83	187.2	0.495	107.8	27.9	6.77	9.023	29.630	26.956	66.9	40.0	39.0	12.1	3.23	1.04	53.5	13.5	25.5
84	187.7	0.501	107.8	27.9	6.78	9.132	29.723	27.009	67.0	40.0	39.1	12.1	3.24	1.03	53.5	13.5	25.6
85	188.0	0.507	107.9	27.9	6.79	9.242	29.763	27.013	67.0	40.0	39.0	12.0	3.25	1.03	53.5	13.5	25.5
86	188.5	0.513	107.9	27.9	6.79	9.351	29.843	27.053	67.0	40.0	39.1	12.0	3.25	1.03	53.5	13.5	25.6
87	189.0	0.519	107.8	27.9	6.80	9.460	29.923	27.093	67.1	40.0	39.2	12.1	3.24	1.03	53.5	13.5	25.7
88	189.2	0.525	107.8	27.9	6.81	9.570	29.964	27.096	67.1	40.0	39.2	12.1	3.24	1.03	53.5	13.5	25.7
89	190.0	0.531	107.7	27.8	6.82	9.679	30.084	27.172	67.1	40.0	39.3	12.2	3.24	1.02	53.6	13.6	25.7
90	190.1	0.537	107.7	27.8	6.83	9.789	30.110	27.163	67.1	40.0	39.3	12.2	3.24	1.02	53.6	13.6	25.7
91	190.8	0.543	107.8	27.9	6.84	9.898	30.217	27.226	67.2	40.0	39.3	12.1	3.25	1.02	53.6	13.6	25.7
92	191.0	0.549	107.8	27.9	6.84	10.007	30.257	27.229	67.2	40.0	39.3	12.1	3.25	1.02	53.6	13.6	25.7
93	191.5	0.555	107.7	27.8	6.85	10.117	30.324	27.256	67.2	40.0	39.4	12.2	3.24	1.02	53.6	13.6	25.8
94	192.0	0.561	107.7	27.8	6.86	10.226	30.418	27.307	67.3	40.0	39.5	12.2	3.24	1.02	53.6	13.7	25.8
95	192.3	0.567	107.7	27.8	6.87	10.335	30.458	27.310	67.3	40.0	39.5	12.2	3.24	1.02	53.6	13.7	25.8
96	192.9	0.573	107.7	27.8	6.88	10.445	30.551	27.360	67.3	40.0	39.6	12.2	3.24	1.02	53.7	13.7	25.9
97	193.3	0.579	107.7	27.7	6.89	10.554	30.618	27.387	67.4	40.0	39.6	12.2	3.24	1.01	53.7	13.7	25.9
98	193.7	0.585	107.5	27.6	6.89	10.664	30.685	27.413	67.4	40.0	39.8	12.4	3.22	1.01	53.7	13.7	26.1
99	194.1	0.591	107.5	27.6	6.90	10.773	30.752	27.439	67.4	40.0	39.8	12.4	3.22	1.01	53.7	13.7	26.1
100	194.5	0.597	107.5	27.6	6.91	10.882	30.819	27.465	67.4	40.0	39.9	12.4	3.22	1.00	53.7	13.7	26.1
101	195.0	0.603	107.4	27.5	6.92	10.992	30.899	27.502	67.5	40.0	40.0	12.5	3.20	1.00	53.7	13.8	26.2
102	195.6	0.609	107.5	27.5	6.93	11.101	30.992	27.552	67.5	40.0	40.0	12.4	3.22	1.00	53.7	13.8	26.2
103	196.1	0.615	107.4	27.5	6.94	11.210	31.072	27.589	67.6	40.0	40.1	12.5	3.20	1.00	53.8	13.8	26.3
104	196.3	0.621	107.3	27.4	6.94	11.320	31.112	27.591	67.6	40.0	40.2	12.6	3.19	0.99	53.8	13.8	26.4
105	196.8	0.627	107.2	27.3	6.95	11.429	31.193	27.628	67.6	40.0	40.3	12.7	3.18	0.99	53.8	13.8	26.5
106	197.2	0.633	107.3	27.3	6.96	11.538	31.259	27.652	67.6	40.0	40.3	12.6	3.19	0.99	53.8	13.8	26.5
107	197.3	0.639	107.2	27.3	6.97	11.648	31.273	27.630	67.6	40.0	40.3	12.7	3.17	0.99	53.8	13.8	26.5
108	198.0	0.645	107.1	27.2	6.98	11.757	31.380	27.690	67.7	40.0	40.5	12.8	3.16	0.98	53.8	13.8	26.6
109	198.4	0.651	107.4	27.5	6.99	11.867	31.446	27.715	67.7	40.0	40.2	12.5	3.21	0.99	53.8	13.9	26.4
110	198.9	0.657	107.6	27.7	7.00	11.976	31.540	27.763	67.7	40.0	40.1	12.3	3.25	1.00	53.9	13.9	26.2
111	199.5	0.663	107.5	27.6	7.01	12.085	31.633	27.810	67.8	40.0	40.2	12.4	3.25	0.99	53.9	13.9	26.3
112	199.6	0.669	107.5	27.6	7.01	12.195	31.647	27.788	67.8	40.0	40.2	12.4	3.24	0.99	53.9	13.9	26.3

Specimen C

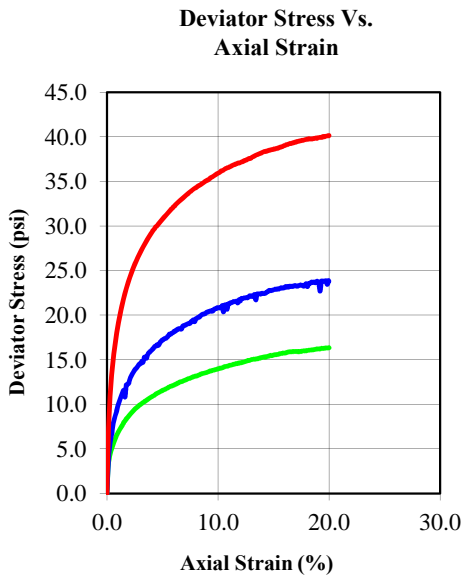
Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
113	200.3	0.675	107.5	27.6	7.02	12.304	31.767	27.858	67.8	40.0	40.2	12.4	3.26	0.99	53.9	13.9	26.3
114	200.8	0.681	107.5	27.6	7.03	12.413	31.847	27.894	67.9	40.0	40.2	12.4	3.26	0.99	53.9	13.9	26.3
115	201.5	0.687	107.5	27.5	7.04	12.523	31.954	27.952	67.9	40.0	40.4	12.4	3.25	0.99	53.9	14.0	26.4
116	202.1	0.693	107.5	27.5	7.05	12.632	32.048	27.999	68.0	40.0	40.4	12.4	3.25	0.98	54.0	14.0	26.4
117	202.5	0.699	107.5	27.5	7.06	12.742	32.114	28.022	68.0	40.0	40.5	12.4	3.25	0.98	54.0	14.0	26.4
118	202.7	0.705	107.5	27.5	7.07	12.851	32.154	28.022	68.0	40.0	40.5	12.4	3.25	0.98	54.0	14.0	26.4
119	203.7	0.711	107.5	27.5	7.08	12.960	32.315	28.127	68.1	40.0	40.6	12.4	3.26	0.98	54.0	14.1	26.5
120	204.1	0.717	107.4	27.5	7.08	13.070	32.381	28.149	68.1	40.0	40.6	12.5	3.26	0.98	54.0	14.1	26.5
121	204.3	0.723	107.4	27.5	7.09	13.179	32.408	28.137	68.1	40.0	40.7	12.5	3.25	0.98	54.0	14.1	26.6
122	204.9	0.729	107.4	27.5	7.10	13.288	32.502	28.183	68.2	40.0	40.7	12.5	3.26	0.98	54.1	14.1	26.6
123	205.4	0.735	107.3	27.4	7.11	13.398	32.595	28.228	68.2	40.0	40.8	12.6	3.25	0.97	54.1	14.1	26.7
124	206.3	0.741	107.3	27.4	7.12	13.507	32.742	28.320	68.3	40.0	40.9	12.6	3.26	0.97	54.1	14.2	26.7
125	206.5	0.747	107.2	27.3	7.13	13.616	32.769	28.307	68.3	40.0	41.0	12.7	3.23	0.96	54.1	14.2	26.9
126	206.8	0.753	107.1	27.2	7.14	13.726	32.822	28.317	68.3	40.0	41.1	12.8	3.22	0.96	54.1	14.2	26.9
127	207.3	0.759	107.2	27.3	7.15	13.835	32.902	28.350	68.3	40.0	41.1	12.7	3.23	0.96	54.1	14.2	26.9
128	207.7	0.765	107.0	27.1	7.16	13.945	32.969	28.372	68.3	40.0	41.2	12.9	3.20	0.96	54.2	14.2	27.1
129	208.6	0.771	107.0	27.1	7.17	14.054	33.116	28.462	68.4	40.0	41.3	12.9	3.21	0.95	54.2	14.2	27.1
130	209.0	0.777	107.0	27.1	7.18	14.163	33.170	28.472	68.4	40.0	41.3	12.9	3.21	0.95	54.2	14.2	27.1
131	209.6	0.783	106.9	27.0	7.18	14.273	33.277	28.527	68.5	40.0	41.5	13.0	3.20	0.95	54.2	14.3	27.3
132	210.0	0.789	106.9	26.9	7.19	14.382	33.330	28.536	68.5	40.0	41.6	13.0	3.19	0.94	54.2	14.3	27.3
133	210.2	0.795	106.9	26.9	7.20	14.491	33.370	28.534	68.5	40.0	41.6	13.0	3.19	0.94	54.2	14.3	27.3
134	210.6	0.801	106.7	26.8	7.21	14.601	33.437	28.555	68.5	40.0	41.8	13.2	3.16	0.94	54.2	14.3	27.5
135	211.4	0.807	106.6	26.7	7.22	14.710	33.557	28.621	68.6	40.0	41.9	13.3	3.16	0.93	54.3	14.3	27.6
136	211.6	0.813	106.8	26.9	7.23	14.820	33.597	28.618	68.6	40.0	41.7	13.1	3.18	0.94	54.3	14.3	27.4
137	212.1	0.819	107.2	27.3	7.24	14.929	33.677	28.650	68.6	40.0	41.4	12.7	3.25	0.95	54.3	14.3	27.0
138	212.7	0.825	107.2	27.3	7.25	15.038	33.771	28.692	68.7	40.0	41.4	12.7	3.26	0.95	54.3	14.3	27.1
139	213.1	0.831	107.1	27.2	7.26	15.148	33.838	28.712	68.7	40.0	41.5	12.8	3.24	0.95	54.3	14.4	27.2
140	214.1	0.837	107.1	27.2	7.27	15.257	33.998	28.811	68.8	40.0	41.6	12.8	3.25	0.94	54.4	14.4	27.2
141	214.2	0.843	107.1	27.2	7.28	15.366	34.025	28.796	68.8	40.0	41.6	12.8	3.25	0.94	54.4	14.4	27.2
142	214.7	0.849	107.1	27.1	7.29	15.476	34.105	28.827	68.8	40.0	41.7	12.8	3.25	0.94	54.4	14.4	27.2
143	215.1	0.855	107.1	27.1	7.30	15.585	34.172	28.846	68.8	40.0	41.7	12.8	3.25	0.94	54.4	14.4	27.3
144	215.4	0.861	107.1	27.2	7.31	15.694	34.212	28.842	68.8	40.0	41.6	12.8	3.25	0.94	54.4	14.4	27.2
145	215.8	0.867	107.0	27.1	7.31	15.804	34.278	28.861	68.8	40.0	41.8	12.9	3.23	0.94	54.4	14.4	27.3
146	216.8	0.873	107.0	27.1	7.32	15.913	34.439	28.958	68.9	40.0	41.8	12.9	3.25	0.94	54.5	14.5	27.4
147	217.0	0.879	107.1	27.1	7.33	16.023	34.465	28.943	68.9	40.0	41.8	12.8	3.26	0.94	54.4	14.5	27.3
148	217.6	0.885	107.0	27.1	7.34	16.132	34.572	28.995	69.0	40.0	41.9	12.9	3.25	0.93	54.5	14.5	27.4
149	217.9	0.891	106.9	27.0	7.35	16.241	34.626	29.002	69.0	40.0	42.0	13.0	3.24	0.93	54.5	14.5	27.5
150	218.4	0.897	106.9	27.0	7.36	16.351	34.693	29.020	69.0	40.0	42.0	13.0	3.23	0.93	54.5	14.5	27.5
151	218.9	0.993	107.0	27.1	7.52	18.101	34.786	28.490	68.5	40.0	41.4	12.9	3.21	0.95	54.2	14.2	27.2
152	219.3	0.999	106.9	26.9	7.53	18.210	34.853	28.506	68.5	40.0	41.5	13.0	3.19	0.94	54.2	14.3	27.3
153	219.8	1.005	106.8	26.9	7.54	18.319	34.933	28.533	68.5	40.0	41.6	13.1	3.18	0.94	54.2	14.3	27.3
154	220.7	1.011	106.8	26.9	7.55	18.429	35.080	28.615	68.6	40.0	41.7	13.1	3.18	0.94	54.3	14.3	27.4
155	221.5	1.017	106.7	26.8	7.56	18.538	35.200	28.675	68.6	40.0	41.8	13.2	3.18	0.94	54.3	14.3	27.5
156	221.9	1.023	106.6	26.7	7.57	18.647	35.267	28.691	68.7	40.0	42.0	13.3	3.16	0.93	54.3	14.3	27.6
157	222.3	1.029	106.6	26.7	7.58	18.757	35.334	28.706	68.7	40.0	42.0	13.3	3.16	0.93	54.3	14.4	27.7
158	222.7	1.035	106.6	26.7	7.59	18.866	35.401	28.722	68.7	40.0	42.0	13.3	3.16	0.93	54.3	14.4	27.7

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)
159	223.6	1.041	106.5	26.6	7.60	18.976	35.547	28.802	68.8	40.0	42.2	13.4	3.15	0.92	54.4	14.4	27.8
160	223.6	1.047	106.4	26.5	7.61	19.085	35.547	28.763	68.7	40.0	42.3	13.5	3.13	0.92	54.4	14.4	27.9
161	224.1	1.053	106.3	26.4	7.62	19.194	35.628	28.789	68.8	40.0	42.3	13.6	3.12	0.92	54.4	14.4	28.0
162	224.6	1.059	106.3	26.4	7.63	19.304	35.708	28.815	68.8	40.0	42.4	13.6	3.12	0.92	54.4	14.4	28.0
163	225.0	1.065	106.3	26.3	7.64	19.413	35.775	28.830	68.8	40.0	42.5	13.6	3.11	0.91	54.4	14.4	28.1
164	225.4	1.071	106.3	26.3	7.65	19.522	35.841	28.844	68.8	40.0	42.5	13.6	3.12	0.91	54.4	14.4	28.1
165	225.7	1.077	106.5	26.6	7.66	19.632	35.881	28.837	68.8	40.0	42.2	13.4	3.15	0.92	54.4	14.4	27.8
166	226.3	1.083	106.7	26.8	7.67	19.741	35.988	28.884	68.9	40.0	42.0	13.2	3.20	0.93	54.4	14.4	27.6
167	226.9	1.088	106.7	26.8	7.68	19.832	36.082	28.926	68.9	40.0	42.1	13.2	3.19	0.93	54.4	14.5	27.7

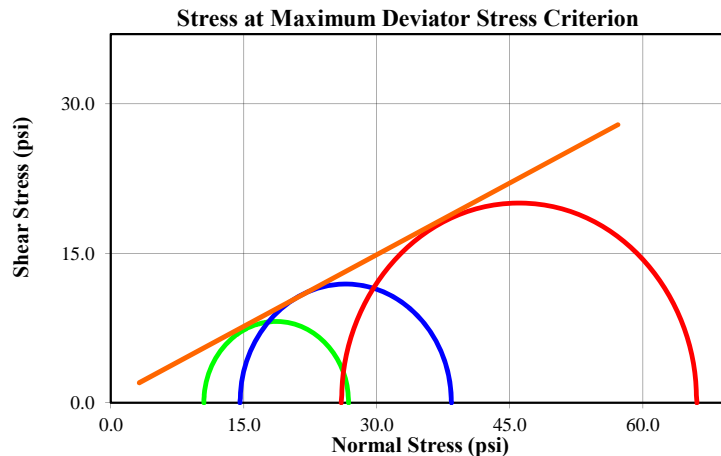
Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME : I-20 D/B Roadway Improvement	SAMPLE NO. : Bag-6
PROJECT NO. : 14046-01	SAMPLE DEPTH : 4.5' to 10.0'
PROJECT LOCATION : B-6A Bag-6 4.5' to 10.0'	SAMPLE TYPE : Remolded
BORING NUMBER : B-6A	DESCRIPTION : Tan, Black & Gray Elastic Silt with Sand
REMARKS : 3 Point Remolded	TEST TYPE : Consolidated Undrained



Initial	Specimen			
	A	B	C	D
Water Content (%)	20.5	20.4	20.5	
Dry Density (pcf)	94.1	93.6	94.0	
Saturation (%)	71.79	70.54	71.45	
Void Ratio	0.754	0.763	0.755	
Diameter (in)	2.806	2.808	2.807	
Height (in)	5.593	5.621	5.598	
Specific Gravity	2.65	2.65	2.65	
Liquid Limit	50	50	50	
Plastic Limit	33	33	33	
After Consolidation	A	B	C	D
B-Value	0.96	0.96	0.96	
Water Content (%)	32.8	30.8	28.5	
Dry Density (pcf)	95.21	94.60	95.27	
Saturation (%)	100.00	100.00	100.00	
Void Ratio	0.738	0.749	0.736	
Effective Stress (psi)	10.0	20.0	40.0	
Back Press. (psi)	62.3	63.3	65.2	
Rate of Strain	0.0015	0.0015	0.0015	

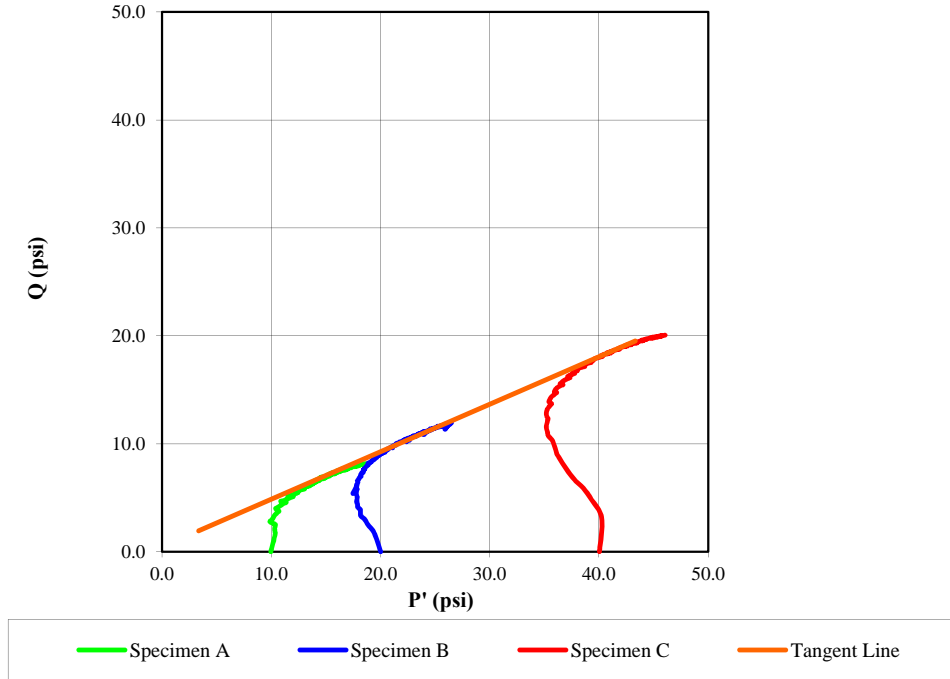
Maximum Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	3.2	σ'_1 at Failure (psi)	26.82	38.42	66.11	
ϕ (deg)	16.6	σ'_3 at Failure (psi)	10.48	14.56	25.98	
C' (psi)	0.5					
ϕ' (deg)	25.6					



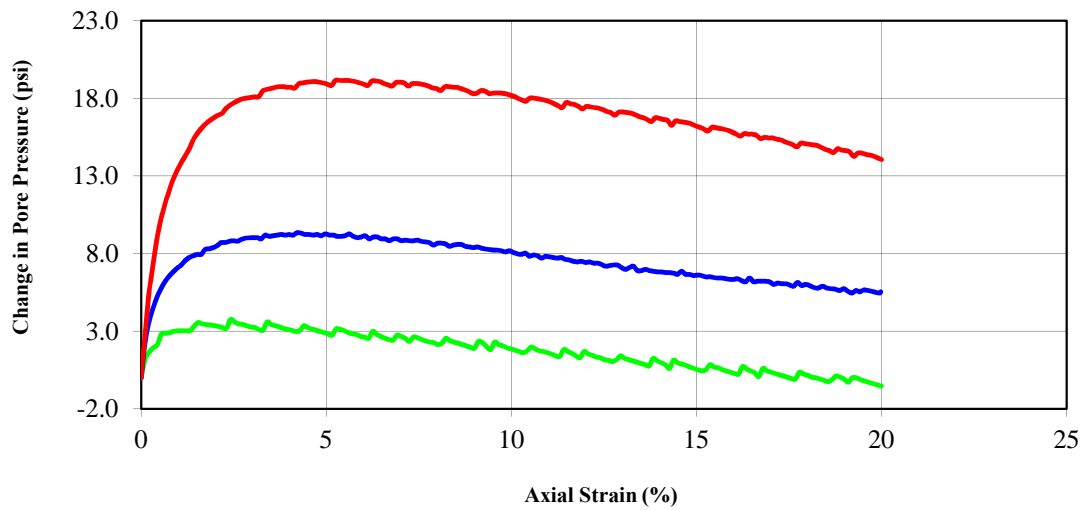
Tested By: JS
Date: 3-6-15

Approved By: SKB
Date: 3-6-15

Stress Paths (Effective)
 (a = 0.5 alpha = 23.7)



Change in Pore Pressure vs. Axial Strain



File Location

B-6A Bag-6 4.5-10.0 Remolded.HSD

Project Information

Project No. 14046-01
 Project Name: I-20 D/B Roadway Improvement
 Client:
 Sample Location: B-6A Bag-6 4.5' to 10.0'
 Sample Description: Tan, Black & Gray Elastic Silt with Sand
 Remarks: 3 Point Remolded

Sample Data

Sample Type: Remolded
 Specific Gravity: 2.6500001
 LL: 50.000
 PL: 33.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.806	2.798	
Height (in)	5.593	5.561	
Weight (grams)	1030.00		1135.20
Moisture (%)	20.52		32.83
Dry Density (pcf)	94.13	95.21	
Saturation (%)	71.79	100.00	
Void Ratio	0.754	0.738	

Test Data

Rate of Strain: 0.0015
 Cell Pressure (psi): 72.300
 Effective Confining Stress (psi): 10.0
 Corrected Peak Deviator Stress (psi): 16.339 at reading number: 182

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	0.7	0.000	62.3	0.0	6.15	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	20.5	0.007	63.6	1.2	6.16	0.110	3.223	3.219	13.2	10.0	12.0	8.7	1.37	0.38	11.6	1.6	10.4
2	25.5	0.013	64.0	1.7	6.16	0.220	4.038	4.029	14.0	10.0	12.3	8.3	1.49	0.41	12.0	2.0	10.3
3	29.2	0.019	64.3	1.9	6.17	0.329	4.640	4.625	14.6	10.0	12.6	8.0	1.58	0.42	12.3	2.3	10.3
4	32.1	0.025	64.5	2.1	6.18	0.439	5.108	5.086	15.0	10.0	12.9	7.8	1.65	0.42	12.5	2.5	10.4
5	34.9	0.031	65.2	2.8	6.18	0.549	5.563	5.532	15.5	10.0	12.7	7.1	1.78	0.51	12.7	2.8	9.9
6	37.0	0.037	65.2	2.9	6.19	0.659	5.910	5.871	15.8	10.0	13.0	7.1	1.83	0.49	12.9	2.9	10.0
7	39.1	0.043	65.3	2.9	6.20	0.768	6.245	6.197	16.2	10.0	13.2	7.0	1.88	0.47	13.1	3.1	10.1
8	41.4	0.049	65.3	3.0	6.20	0.878	6.619	6.561	16.5	10.0	13.5	7.0	1.94	0.46	13.2	3.3	10.2
9	42.9	0.055	65.4	3.0	6.21	0.988	6.873	6.805	16.8	10.0	13.7	6.9	1.98	0.45	13.4	3.4	10.3
10	44.6	0.062	65.4	3.0	6.22	1.098	7.141	7.062	17.0	10.0	14.0	6.9	2.02	0.43	13.5	3.5	10.5
11	46.2	0.068	65.4	3.0	6.22	1.208	7.408	7.319	17.3	10.0	14.2	6.9	2.06	0.41	13.6	3.7	10.6
12	47.7	0.074	65.4	3.0	6.23	1.317	7.649	7.548	17.5	10.0	14.5	6.9	2.09	0.40	13.7	3.8	10.7
13	49.1	0.080	65.7	3.3	6.24	1.427	7.876	7.764	17.7	10.0	14.4	6.6	2.17	0.43	13.8	3.9	10.5
14	50.7	0.086	65.9	3.6	6.25	1.537	8.130	8.005	18.0	10.0	14.4	6.4	2.25	0.44	14.0	4.0	10.4
15	51.9	0.092	65.8	3.5	6.25	1.647	8.331	8.193	18.2	10.0	14.7	6.5	2.26	0.42	14.1	4.1	10.6
16	53.1	0.098	65.8	3.4	6.26	1.756	8.531	8.381	18.3	10.0	14.9	6.5	2.29	0.41	14.1	4.2	10.7
17	54.2	0.104	65.7	3.4	6.27	1.866	8.705	8.543	18.5	10.0	15.1	6.6	2.30	0.40	14.2	4.3	10.8
18	55.3	0.110	65.7	3.4	6.27	1.976	8.892	8.717	18.7	10.0	15.3	6.6	2.32	0.38	14.3	4.4	11.0
19	56.5	0.116	65.7	3.3	6.28	2.086	9.079	8.890	18.8	10.0	15.5	6.6	2.34	0.37	14.4	4.4	11.1

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)
20	57.4	0.123	65.6	3.2	6.29	2.196	9.227	9.024	19.0	10.0	15.7	6.7	2.34	0.36	14.5	4.5	11.2
21	58.5	0.129	65.5	3.2	6.29	2.305	9.400	9.184	19.1	10.0	15.9	6.8	2.36	0.35	14.5	4.6	11.4
22	59.5	0.135	66.1	3.8	6.30	2.415	9.574	9.343	19.3	10.0	15.5	6.2	2.51	0.40	14.6	4.7	10.9
23	60.4	0.141	65.9	3.6	6.31	2.525	9.708	9.463	19.4	10.0	15.8	6.4	2.49	0.38	14.7	4.7	11.1
24	61.3	0.147	65.8	3.5	6.32	2.635	9.855	9.595	19.6	10.0	16.1	6.5	2.48	0.36	14.8	4.8	11.3
25	62.0	0.153	65.8	3.4	6.32	2.744	9.975	9.702	19.7	10.0	16.2	6.5	2.49	0.35	14.8	4.9	11.4
26	62.8	0.159	65.7	3.4	6.33	2.854	10.109	9.821	19.8	10.0	16.4	6.6	2.49	0.34	14.9	4.9	11.5
27	63.6	0.165	65.6	3.3	6.34	2.964	10.243	9.939	19.9	10.0	16.6	6.7	2.49	0.33	14.9	5.0	11.7
28	64.2	0.171	65.6	3.2	6.34	3.074	10.336	10.019	20.0	10.0	16.7	6.7	2.49	0.32	15.0	5.0	11.7
29	65.1	0.178	65.5	3.1	6.35	3.184	10.484	10.150	20.1	10.0	17.0	6.8	2.48	0.31	15.0	5.1	11.9
30	65.7	0.184	65.4	3.1	6.36	3.293	10.577	10.229	20.2	10.0	17.1	6.9	2.49	0.30	15.1	5.1	12.0
31	66.4	0.190	65.9	3.6	6.37	3.403	10.684	10.321	20.3	10.0	16.7	6.4	2.62	0.35	15.1	5.2	11.5
32	67.0	0.196	65.8	3.4	6.37	3.513	10.791	10.412	20.4	10.0	16.9	6.5	2.60	0.33	15.2	5.2	11.7
33	67.7	0.202	65.7	3.4	6.38	3.623	10.898	10.503	20.5	10.0	17.1	6.6	2.59	0.32	15.2	5.3	11.9
34	68.3	0.208	65.6	3.3	6.39	3.732	11.005	10.594	20.6	10.0	17.3	6.7	2.59	0.31	15.3	5.3	12.0
35	69.1	0.214	65.5	3.2	6.40	3.842	11.125	10.698	20.7	10.0	17.5	6.8	2.58	0.30	15.3	5.3	12.1
36	69.6	0.220	65.5	3.1	6.40	3.952	11.219	10.776	20.7	10.0	17.6	6.8	2.57	0.29	15.3	5.4	12.2
37	70.2	0.226	65.4	3.1	6.41	4.062	11.313	10.853	20.8	10.0	17.7	6.9	2.58	0.28	15.4	5.4	12.3
38	70.9	0.232	65.3	3.0	6.42	4.172	11.420	10.943	20.9	10.0	17.9	7.0	2.57	0.27	15.4	5.5	12.4
39	71.5	0.239	65.4	3.0	6.42	4.281	11.513	11.020	21.0	10.0	17.9	6.9	2.59	0.27	15.5	5.5	12.4
40	72.4	0.245	65.7	3.4	6.43	4.391	11.660	11.148	21.1	10.0	17.8	6.6	2.69	0.30	15.5	5.6	12.2
41	72.9	0.251	65.6	3.2	6.44	4.501	11.754	11.225	21.2	10.0	17.9	6.7	2.67	0.29	15.6	5.6	12.3
42	73.4	0.257	65.5	3.2	6.45	4.611	11.834	11.288	21.2	10.0	18.1	6.8	2.66	0.28	15.6	5.6	12.4
43	74.0	0.263	65.4	3.1	6.45	4.720	11.928	11.365	21.3	10.0	18.3	6.9	2.65	0.27	15.6	5.7	12.6
44	74.5	0.269	65.3	3.0	6.46	4.830	12.008	11.428	21.4	10.0	18.4	7.0	2.64	0.26	15.7	5.7	12.7
45	75.2	0.275	65.3	2.9	6.47	4.940	12.115	11.516	21.5	10.0	18.6	7.0	2.63	0.25	15.7	5.8	12.8
46	75.6	0.281	65.2	2.8	6.48	5.050	12.182	11.567	21.5	10.0	18.7	7.1	2.62	0.24	15.7	5.8	12.9
47	76.1	0.287	65.1	2.7	6.48	5.160	12.275	11.642	21.6	10.0	18.9	7.2	2.61	0.24	15.8	5.8	13.0
48	76.6	0.293	65.5	3.2	6.49	5.269	12.342	11.692	21.6	10.0	18.5	6.8	2.72	0.27	15.8	5.8	12.7
49	77.2	0.300	65.5	3.1	6.50	5.379	12.449	11.780	21.7	10.0	18.6	6.8	2.72	0.26	15.8	5.9	12.7
50	77.7	0.306	65.4	3.0	6.51	5.489	12.529	11.842	21.8	10.0	18.8	6.9	2.71	0.26	15.9	5.9	12.8
51	78.4	0.312	65.3	2.9	6.51	5.599	12.650	11.942	21.9	10.0	19.0	7.0	2.69	0.24	15.9	6.0	13.0
52	78.9	0.318	65.2	2.8	6.52	5.708	12.730	12.003	22.0	10.0	19.1	7.1	2.68	0.24	16.0	6.0	13.1
53	79.3	0.324	65.1	2.8	6.53	5.818	12.783	12.040	22.0	10.0	19.2	7.2	2.68	0.23	16.0	6.0	13.2
54	79.8	0.330	65.0	2.7	6.54	5.928	12.864	12.101	22.1	10.0	19.4	7.3	2.66	0.22	16.0	6.1	13.3
55	80.2	0.336	65.0	2.6	6.54	6.038	12.931	12.150	22.1	10.0	19.5	7.3	2.66	0.22	16.0	6.1	13.4
56	80.7	0.342	64.9	2.5	6.55	6.148	13.024	12.224	22.2	10.0	19.6	7.4	2.65	0.21	16.1	6.1	13.5
57	81.2	0.348	65.3	3.0	6.56	6.257	13.091	12.272	22.2	10.0	19.2	7.0	2.76	0.24	16.1	6.1	13.1
58	81.9	0.355	65.1	2.8	6.57	6.367	13.211	12.370	22.3	10.0	19.5	7.2	2.73	0.23	16.1	6.2	13.4
59	82.3	0.361	65.0	2.7	6.58	6.477	13.278	12.418	22.4	10.0	19.7	7.3	2.70	0.21	16.2	6.2	13.5
60	83.0	0.367	64.9	2.5	6.58	6.587	13.385	12.504	22.5	10.0	19.9	7.4	2.69	0.20	16.2	6.3	13.7
61	83.2	0.373	64.8	2.5	6.59	6.696	13.425	12.526	22.5	10.0	20.0	7.5	2.67	0.20	16.2	6.3	13.8
62	83.6	0.379	64.8	2.4	6.60	6.806	13.492	12.574	22.5	10.0	20.1	7.5	2.67	0.19	16.2	6.3	13.8
63	84.2	0.385	65.1	2.7	6.61	6.916	13.586	12.646	22.6	10.0	19.9	7.2	2.75	0.22	16.3	6.3	13.5
64	84.6	0.391	65.0	2.7	6.61	7.026	13.653	12.693	22.7	10.0	20.0	7.3	2.74	0.21	16.3	6.3	13.6

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)
65	85.1	0.397	64.9	2.5	6.62	7.136	13.733	12.753	22.7	10.0	20.2	7.4	2.72	0.20	16.3	6.4	13.8
66	85.7	0.403	64.7	2.3	6.63	7.245	13.826	12.825	22.8	10.0	20.4	7.6	2.68	0.18	16.4	6.4	14.0
67	86.1	0.409	65.0	2.6	6.64	7.355	13.893	12.871	22.8	10.0	20.2	7.3	2.76	0.20	16.4	6.4	13.8
68	86.4	0.416	64.9	2.6	6.65	7.465	13.947	12.906	22.9	10.0	20.3	7.4	2.75	0.20	16.4	6.5	13.8
69	87.0	0.422	64.8	2.5	6.65	7.575	14.040	12.977	22.9	10.0	20.5	7.5	2.73	0.19	16.4	6.5	14.0
70	87.5	0.428	64.7	2.4	6.66	7.684	14.121	13.036	23.0	10.0	20.6	7.6	2.72	0.18	16.5	6.5	14.1
71	87.9	0.434	64.6	2.3	6.67	7.794	14.188	13.082	23.0	10.0	20.7	7.7	2.71	0.18	16.5	6.5	14.2
72	88.4	0.440	64.6	2.3	6.68	7.904	14.268	13.140	23.1	10.0	20.8	7.7	2.71	0.17	16.5	6.6	14.3
73	88.6	0.446	64.5	2.1	6.69	8.014	14.295	13.149	23.1	10.0	21.0	7.8	2.68	0.16	16.5	6.6	14.4
74	88.9	0.452	64.6	2.2	6.69	8.124	14.348	13.182	23.1	10.0	20.9	7.7	2.70	0.17	16.5	6.6	14.3
75	89.5	0.458	64.9	2.5	6.70	8.233	14.442	13.253	23.2	10.0	20.7	7.4	2.79	0.19	16.6	6.6	14.0
76	90.0	0.464	64.7	2.4	6.71	8.343	14.522	13.310	23.3	10.0	20.9	7.6	2.76	0.18	16.6	6.7	14.2
77	90.6	0.471	64.6	2.3	6.72	8.453	14.629	13.392	23.3	10.0	21.0	7.7	2.75	0.17	16.7	6.7	14.3
78	91.0	0.477	64.6	2.2	6.73	8.563	14.696	13.437	23.4	10.0	21.2	7.7	2.74	0.17	16.7	6.7	14.5
79	91.3	0.483	64.5	2.1	6.73	8.672	14.736	13.458	23.4	10.0	21.3	7.8	2.72	0.16	16.7	6.7	14.5
80	91.6	0.489	64.4	2.1	6.74	8.782	14.789	13.490	23.4	10.0	21.4	7.9	2.71	0.15	16.7	6.7	14.6
81	92.0	0.495	64.3	2.0	6.75	8.892	14.856	13.535	23.5	10.0	21.5	8.0	2.70	0.15	16.7	6.8	14.7
82	92.4	0.501	64.2	1.9	6.76	9.002	14.923	13.580	23.5	10.0	21.6	8.1	2.69	0.14	16.7	6.8	14.8
83	92.8	0.507	64.7	2.3	6.77	9.112	14.990	13.624	23.6	10.0	21.2	7.6	2.79	0.17	16.8	6.8	14.4
84	93.5	0.513	64.6	2.3	6.77	9.221	15.097	13.705	23.7	10.0	21.4	7.7	2.78	0.17	16.8	6.9	14.5
85	93.8	0.519	64.4	2.0	6.78	9.331	15.150	13.737	23.7	10.0	21.7	7.9	2.73	0.15	16.8	6.9	14.8
86	94.2	0.525	64.2	1.8	6.79	9.441	15.204	13.768	23.7	10.0	21.9	8.1	2.69	0.13	16.8	6.9	15.0
87	94.6	0.532	64.6	2.3	6.80	9.551	15.271	13.812	23.8	10.0	21.5	7.7	2.80	0.17	16.9	6.9	14.6
88	94.9	0.538	64.5	2.1	6.81	9.660	15.324	13.844	23.8	10.0	21.7	7.8	2.77	0.15	16.9	6.9	14.7
89	95.3	0.544	64.4	2.1	6.82	9.770	15.391	13.887	23.8	10.0	21.8	7.9	2.76	0.15	16.9	6.9	14.8
90	95.6	0.550	64.3	1.9	6.82	9.880	15.444	13.919	23.9	10.0	21.9	8.0	2.74	0.14	16.9	7.0	15.0
91	96.1	0.556	64.2	1.9	6.83	9.990	15.525	13.974	23.9	10.0	22.1	8.1	2.73	0.13	16.9	7.0	15.1
92	96.5	0.562	64.1	1.8	6.84	10.100	15.578	14.005	24.0	10.0	22.2	8.2	2.71	0.13	17.0	7.0	15.2
93	96.9	0.568	64.0	1.7	6.85	10.209	15.658	14.060	24.0	10.0	22.3	8.3	2.70	0.12	17.0	7.0	15.3
94	97.1	0.574	64.0	1.6	6.86	10.319	15.685	14.067	24.0	10.0	22.4	8.3	2.69	0.11	17.0	7.0	15.4
95	97.4	0.580	64.1	1.7	6.87	10.429	15.739	14.097	24.1	10.0	22.3	8.2	2.72	0.12	17.0	7.0	15.3
96	98.2	0.587	64.3	2.0	6.87	10.539	15.859	14.188	24.1	10.0	22.2	8.0	2.78	0.14	17.1	7.1	15.1
97	98.5	0.593	64.2	1.9	6.88	10.648	15.913	14.218	24.2	10.0	22.3	8.1	2.76	0.13	17.1	7.1	15.2
98	98.8	0.599	64.1	1.7	6.89	10.758	15.966	14.248	24.2	10.0	22.5	8.2	2.73	0.12	17.1	7.1	15.3
99	99.1	0.605	64.0	1.7	6.90	10.868	16.006	14.267	24.2	10.0	22.5	8.3	2.73	0.12	17.1	7.1	15.4
100	99.7	0.611	64.0	1.6	6.91	10.978	16.100	14.332	24.3	10.0	22.7	8.3	2.72	0.11	17.1	7.2	15.5
101	100.0	0.617	63.9	1.5	6.92	11.088	16.153	14.362	24.3	10.0	22.8	8.4	2.71	0.11	17.1	7.2	15.6
102	100.3	0.623	63.8	1.4	6.92	11.197	16.207	14.392	24.3	10.0	22.9	8.5	2.68	0.10	17.2	7.2	15.7
103	100.7	0.629	63.7	1.4	6.93	11.307	16.274	14.433	24.4	10.0	23.0	8.6	2.68	0.10	17.2	7.2	15.8
104	101.2	0.635	64.2	1.8	6.94	11.417	16.354	14.487	24.4	10.0	22.6	8.1	2.78	0.13	17.2	7.2	15.4
105	101.5	0.641	64.0	1.7	6.95	11.527	16.394	14.504	24.5	10.0	22.8	8.3	2.76	0.12	17.2	7.3	15.5
106	102.0	0.648	63.9	1.6	6.96	11.636	16.474	14.557	24.5	10.0	22.9	8.4	2.74	0.11	17.2	7.3	15.7
107	102.0	0.654	63.8	1.4	6.97	11.746	16.487	14.551	24.5	10.0	23.1	8.5	2.70	0.10	17.2	7.3	15.8
108	102.7	0.660	63.6	1.3	6.98	11.856	16.594	14.627	24.6	10.0	23.3	8.7	2.69	0.09	17.3	7.3	16.0
109	102.9	0.666	64.0	1.7	6.99	11.966	16.621	14.632	24.6	10.0	22.9	8.3	2.77	0.12	17.3	7.3	15.6

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)
110	103.2	0.672	63.9	1.5	6.99	12.076	16.675	14.661	24.6	10.0	23.1	8.4	2.74	0.10	17.3	7.3	15.8
111	103.5	0.678	63.8	1.5	7.00	12.185	16.728	14.690	24.6	10.0	23.2	8.5	2.73	0.10	17.3	7.3	15.8
112	103.9	0.684	63.7	1.3	7.01	12.295	16.782	14.718	24.7	10.0	23.3	8.6	2.71	0.09	17.3	7.4	16.0
113	104.3	0.690	63.6	1.3	7.02	12.405	16.849	14.759	24.7	10.0	23.4	8.7	2.70	0.09	17.3	7.4	16.0
114	104.8	0.696	63.5	1.2	7.03	12.515	16.929	14.810	24.8	10.0	23.6	8.8	2.69	0.08	17.4	7.4	16.2
115	105.3	0.703	63.5	1.1	7.04	12.624	17.009	14.862	24.8	10.0	23.7	8.8	2.68	0.08	17.4	7.4	16.3
116	105.8	0.709	63.4	1.1	7.05	12.734	17.103	14.925	24.9	10.0	23.8	8.9	2.68	0.07	17.4	7.5	16.4
117	105.9	0.715	63.5	1.2	7.06	12.844	17.116	14.918	24.9	10.0	23.7	8.8	2.70	0.08	17.4	7.5	16.2
118	106.5	0.721	63.8	1.4	7.06	12.954	17.210	14.980	24.9	10.0	23.5	8.5	2.75	0.09	17.4	7.5	16.0
119	106.8	0.727	63.6	1.3	7.07	13.064	17.263	15.008	25.0	10.0	23.7	8.7	2.72	0.08	17.5	7.5	16.2
120	107.1	0.733	63.5	1.2	7.08	13.173	17.317	15.035	25.0	10.0	23.8	8.8	2.71	0.08	17.5	7.5	16.3
121	107.6	0.739	63.4	1.1	7.09	13.283	17.383	15.074	25.0	10.0	23.9	8.9	2.70	0.07	17.5	7.5	16.4
122	107.6	0.745	63.4	1.0	7.10	13.393	17.397	15.067	25.0	10.0	24.0	8.9	2.68	0.07	17.5	7.5	16.5
123	108.0	0.751	63.3	0.9	7.11	13.503	17.450	15.094	25.1	10.0	24.1	9.0	2.67	0.06	17.5	7.5	16.6
124	108.4	0.757	63.2	0.8	7.12	13.612	17.517	15.133	25.1	10.0	24.2	9.1	2.66	0.06	17.5	7.6	16.7
125	108.6	0.764	63.1	0.8	7.13	13.722	17.557	15.148	25.1	10.0	24.3	9.2	2.65	0.05	17.5	7.6	16.8
126	109.2	0.770	63.6	1.3	7.14	13.832	17.651	15.209	25.2	10.0	23.9	8.7	2.75	0.08	17.6	7.6	16.3
127	109.5	0.776	63.4	1.1	7.15	13.942	17.704	15.236	25.2	10.0	24.1	8.9	2.72	0.07	17.6	7.6	16.5
128	109.9	0.782	63.3	1.0	7.15	14.052	17.758	15.263	25.2	10.0	24.2	9.0	2.70	0.06	17.6	7.6	16.6
129	110.3	0.788	63.2	0.8	7.16	14.161	17.825	15.300	25.3	10.0	24.4	9.1	2.68	0.06	17.6	7.7	16.8
130	110.2	0.794	62.9	0.6	7.17	14.271	17.811	15.269	25.2	10.0	24.6	9.4	2.63	0.04	17.6	7.6	17.0
131	110.8	0.800	63.5	1.1	7.18	14.381	17.918	15.341	25.3	10.0	24.2	8.8	2.74	0.07	17.6	7.7	16.5
132	111.2	0.806	63.3	1.0	7.19	14.491	17.972	15.368	25.3	10.0	24.4	9.0	2.71	0.06	17.6	7.7	16.7
133	111.7	0.812	63.2	0.9	7.20	14.600	18.052	15.416	25.4	10.0	24.5	9.1	2.70	0.06	17.7	7.7	16.8
134	112.2	0.819	63.2	0.8	7.21	14.710	18.146	15.476	25.4	10.0	24.6	9.1	2.69	0.05	17.7	7.7	16.9
135	112.2	0.825	63.0	0.7	7.22	14.820	18.146	15.456	25.4	10.0	24.7	9.3	2.67	0.04	17.7	7.7	17.0
136	112.6	0.831	62.9	0.6	7.23	14.930	18.199	15.482	25.4	10.0	24.8	9.4	2.66	0.04	17.7	7.7	17.1
137	113.1	0.837	62.9	0.5	7.24	15.039	18.279	15.530	25.5	10.0	25.0	9.4	2.65	0.03	17.7	7.8	17.2
138	113.4	0.843	62.8	0.4	7.25	15.149	18.333	15.556	25.5	10.0	25.1	9.5	2.64	0.03	17.7	7.8	17.3
139	113.6	0.849	62.9	0.5	7.26	15.259	18.373	15.569	25.5	10.0	25.0	9.4	2.65	0.03	17.7	7.8	17.2
140	113.9	0.855	63.2	0.8	7.27	15.369	18.413	15.583	25.5	10.0	24.7	9.1	2.71	0.05	17.7	7.8	16.9
141	114.3	0.861	63.0	0.7	7.28	15.479	18.480	15.619	25.6	10.0	24.9	9.3	2.69	0.04	17.8	7.8	17.1
142	114.9	0.867	63.0	0.6	7.29	15.588	18.574	15.678	25.6	10.0	25.0	9.3	2.68	0.04	17.8	7.8	17.1
143	115.1	0.873	62.9	0.5	7.29	15.698	18.614	15.692	25.6	10.0	25.1	9.4	2.66	0.03	17.8	7.8	17.3
144	115.5	0.880	62.8	0.4	7.30	15.808	18.680	15.727	25.7	10.0	25.2	9.5	2.65	0.03	17.8	7.9	17.4
145	115.8	0.886	62.7	0.4	7.31	15.918	18.721	15.741	25.7	10.0	25.3	9.6	2.64	0.02	17.8	7.9	17.5
146	116.0	0.892	62.6	0.3	7.32	16.027	18.761	15.754	25.7	10.0	25.4	9.7	2.63	0.02	17.8	7.9	17.6
147	116.4	0.898	62.6	0.2	7.33	16.137	18.814	15.778	25.7	10.0	25.5	9.7	2.62	0.02	17.8	7.9	17.6
148	116.9	0.904	63.1	0.7	7.34	16.247	18.908	15.836	25.8	10.0	25.1	9.2	2.72	0.05	17.9	7.9	17.1
149	117.3	0.910	62.9	0.6	7.35	16.357	18.961	15.860	25.8	10.0	25.3	9.4	2.69	0.04	17.9	7.9	17.3
150	117.7	0.916	62.8	0.4	7.36	16.467	19.028	15.895	25.9	10.0	25.4	9.5	2.67	0.03	17.9	7.9	17.5
151	117.8	0.922	62.7	0.3	7.37	16.576	19.042	15.885	25.8	10.0	25.5	9.6	2.65	0.02	17.9	7.9	17.6
152	118.0	0.928	62.4	0.1	7.38	16.686	19.082	15.898	25.9	10.0	25.8	9.9	2.61	0.01	17.9	7.9	17.8
153	118.3	0.934	62.9	0.6	7.39	16.796	19.135	15.921	25.9	10.0	25.3	9.4	2.70	0.04	17.9	8.0	17.3
154	118.3	0.941	62.8	0.4	7.40	16.906	19.135	15.900	25.9	10.0	25.4	9.5	2.67	0.03	17.9	8.0	17.5

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)
155	118.6	0.947	62.7	0.4	7.41	17.015	19.175	15.912	25.9	10.0	25.5	9.6	2.66	0.02	17.9	8.0	17.5
156	118.8	0.953	62.6	0.3	7.42	17.125	19.215	15.925	25.9	10.0	25.6	9.7	2.65	0.02	17.9	8.0	17.6
157	118.7	0.959	62.5	0.2	7.43	17.235	19.202	15.893	25.8	10.0	25.6	9.8	2.63	0.01	17.9	7.9	17.7
158	119.2	0.965	62.5	0.1	7.44	17.345	19.269	15.927	25.9	10.0	25.8	9.8	2.62	0.01	17.9	8.0	17.8
159	119.2	0.971	62.4	0.0	7.45	17.455	19.269	15.906	25.9	10.0	25.8	9.9	2.60	0.00	17.9	8.0	17.9
160	119.7	0.977	62.3	0.0	7.46	17.564	19.362	15.962	25.9	10.0	26.0	10.0	2.60	0.00	17.9	8.0	18.0
161	120.0	0.983	62.3	-0.1	7.47	17.674	19.403	15.973	25.9	10.0	26.0	10.0	2.59	-0.01	17.9	8.0	18.0
162	120.3	0.989	62.7	0.4	7.48	17.784	19.456	15.996	26.0	10.0	25.6	9.6	2.67	0.02	18.0	8.0	17.6
163	120.4	0.996	62.6	0.2	7.49	17.894	19.469	15.986	25.9	10.0	25.7	9.7	2.65	0.02	17.9	8.0	17.7
164	120.8	1.002	62.5	0.2	7.50	18.003	19.536	16.019	26.0	10.0	25.8	9.8	2.64	0.01	18.0	8.0	17.8
165	121.1	1.008	62.4	0.0	7.51	18.113	19.590	16.041	26.0	10.0	26.0	9.9	2.62	0.00	18.0	8.0	17.9
166	121.4	1.014	62.3	0.0	7.52	18.223	19.630	16.053	26.0	10.0	26.0	10.0	2.61	0.00	18.0	8.0	18.0
167	121.8	1.020	62.3	-0.1	7.53	18.333	19.697	16.086	26.0	10.0	26.1	10.0	2.60	-0.01	18.0	8.0	18.1
168	122.1	1.026	62.2	-0.2	7.54	18.443	19.750	16.108	26.1	10.0	26.2	10.1	2.59	-0.01	18.0	8.1	18.2
169	122.3	1.032	62.1	-0.2	7.55	18.552	19.777	16.108	26.1	10.0	26.3	10.2	2.58	-0.02	18.0	8.1	18.3
170	122.6	1.038	62.2	-0.1	7.56	18.662	19.830	16.130	26.1	10.0	26.2	10.1	2.60	-0.01	18.0	8.1	18.1
171	122.9	1.044	62.5	0.1	7.57	18.772	19.884	16.151	26.1	10.0	26.0	9.8	2.64	0.01	18.0	8.1	17.9
172	123.4	1.050	62.4	0.0	7.58	18.882	19.964	16.195	26.2	10.0	26.1	9.9	2.63	0.00	18.1	8.1	18.0
173	123.6	1.057	62.3	-0.1	7.59	18.991	19.991	16.194	26.2	10.0	26.2	10.0	2.61	0.00	18.1	8.1	18.1
174	123.9	1.063	62.1	-0.3	7.60	19.101	20.044	16.216	26.2	10.0	26.5	10.2	2.58	-0.02	18.1	8.1	18.3
175	124.1	1.069	62.3	0.0	7.61	19.211	20.071	16.215	26.2	10.0	26.2	10.0	2.63	0.00	18.1	8.1	18.1
176	124.7	1.075	62.3	0.0	7.62	19.321	20.165	16.269	26.2	10.0	26.2	10.0	2.63	0.00	18.1	8.1	18.1
177	124.7	1.081	62.2	-0.1	7.63	19.431	20.178	16.257	26.2	10.0	26.3	10.1	2.61	-0.01	18.1	8.1	18.2
178	125.0	1.087	62.1	-0.2	7.64	19.540	20.218	16.268	26.2	10.0	26.4	10.2	2.60	-0.01	18.1	8.1	18.3
179	125.4	1.093	62.1	-0.3	7.65	19.650	20.285	16.299	26.3	10.0	26.5	10.2	2.59	-0.02	18.1	8.1	18.4
180	125.6	1.099	62.0	-0.4	7.66	19.760	20.312	16.298	26.3	10.0	26.6	10.3	2.58	-0.02	18.1	8.1	18.5
181	125.8	1.105	61.9	-0.4	7.67	19.870	20.352	16.308	26.3	10.0	26.7	10.4	2.57	-0.03	18.1	8.2	18.6
182	126.2	1.112	61.8	-0.5	7.68	19.979	20.419	16.339	26.3	10.0	26.8	10.5	2.56	-0.03	18.1	8.2	18.7
183	126.2	1.112	61.8	-0.5	7.69	19.996	20.419	16.336	26.3	10.0	26.8	10.5	2.56	-0.03	18.1	8.2	18.6

File Location

B-6A Bag-6 4.5-10.0 Remolded.HSD

Project Information

Project No. 14046-01
 Project Name: I-20 D/B Roadway Improvement
 Client:
 Sample Location: B-6A Bag-6 4.5' to 10.0'
 Sample Description: Tan, Black & Gray Elastic Silt with Sand
 Remarks: 3 Point Remolded

Sample Data

Sample Type: Remolded
 Specific Gravity: 2.6500001
 LL: 50.000
 PL: 33.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.808	2.812	
Height (in)	5.621	5.549	
Weight (grams)	1030.20		1119.20
Moisture (%)	20.41		30.81
Dry Density (pcf)	93.64	94.60	
Saturation (%)	70.54	100.00	
Void Ratio	0.763	0.749	

Test Data

Rate of Strain: 0.0015
 Cell Pressure (psi): 83.300
 Effective Confining Stress (psi): 20.0
 Corrected Peak Deviator Stress (psi): 23.858 at reading number: 184

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	6.4	0.000	63.3	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	27.9	0.006	65.6	2.3	6.22	0.108	3.473	3.469	23.5	20.0	21.2	17.7	1.20	0.67	21.8	1.7	19.4
2	37.3	0.012	66.9	3.7	6.22	0.216	4.990	4.979	25.0	20.0	21.3	16.4	1.30	0.73	22.5	2.5	18.9
3	44.0	0.018	67.8	4.5	6.23	0.324	6.054	6.035	26.1	20.0	21.6	15.5	1.39	0.74	23.0	3.0	18.5
4	48.4	0.024	68.5	5.2	6.24	0.433	6.773	6.743	26.8	20.0	21.5	14.8	1.46	0.77	23.4	3.4	18.2
5	54.9	0.030	69.0	5.7	6.24	0.541	7.811	7.768	27.8	20.0	22.0	14.3	1.54	0.74	23.9	3.9	18.2
6	57.9	0.036	69.5	6.2	6.25	0.649	8.303	8.249	28.3	20.0	22.0	13.8	1.60	0.75	24.1	4.1	17.9
7	61.6	0.042	69.8	6.5	6.26	0.757	8.902	8.834	28.9	20.0	22.3	13.5	1.66	0.74	24.4	4.4	17.9
8	64.3	0.048	70.1	6.8	6.26	0.865	9.328	9.247	29.3	20.0	22.4	13.2	1.70	0.74	24.6	4.6	17.8
9	67.8	0.054	70.3	7.1	6.27	0.973	9.900	9.803	29.8	20.0	22.8	13.0	1.76	0.72	24.9	4.9	17.9
10	70.5	0.060	70.5	7.3	6.28	1.081	10.325	10.214	30.2	20.0	23.0	12.8	1.80	0.71	25.1	5.1	17.9
11	73.3	0.066	70.8	7.5	6.28	1.189	10.778	10.650	30.7	20.0	23.1	12.5	1.85	0.71	25.3	5.3	17.8
12	75.5	0.072	71.0	7.7	6.29	1.298	11.137	10.993	31.0	20.0	23.3	12.3	1.90	0.70	25.5	5.5	17.8
13	77.6	0.078	71.1	7.9	6.30	1.406	11.470	11.309	31.3	20.0	23.5	12.2	1.93	0.70	25.7	5.7	17.8
14	79.2	0.084	71.2	7.9	6.30	1.514	11.736	11.558	31.6	20.0	23.6	12.1	1.96	0.69	25.8	5.8	17.9
15	74.6	0.090	71.2	7.9	6.31	1.622	10.991	10.813	30.8	20.0	22.9	12.1	1.90	0.73	25.4	5.4	17.5
16	83.0	0.096	71.5	8.3	6.32	1.730	12.348	12.134	32.2	20.0	23.9	11.8	2.03	0.68	26.1	6.1	17.8
17	83.9	0.102	71.6	8.3	6.33	1.838	12.481	12.252	32.3	20.0	24.0	11.7	2.05	0.68	26.1	6.1	17.8
18	84.5	0.108	71.7	8.4	6.33	1.946	12.588	12.343	32.4	20.0	24.0	11.6	2.06	0.68	26.2	6.2	17.8

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)
19	87.7	0.114	71.8	8.5	6.34	2.055	13.093	12.824	32.8	20.0	24.3	11.5	2.11	0.66	26.4	6.4	17.9
20	89.8	0.120	72.0	8.7	6.35	2.163	13.439	13.148	33.2	20.0	24.5	11.3	2.16	0.66	26.6	6.6	17.9
21	91.5	0.126	72.0	8.7	6.35	2.271	13.705	13.394	33.4	20.0	24.7	11.3	2.18	0.65	26.7	6.7	18.0
22	92.8	0.132	72.1	8.8	6.36	2.379	13.918	13.587	33.6	20.0	24.8	11.2	2.21	0.65	26.8	6.8	18.0
23	94.5	0.138	72.1	8.8	6.37	2.487	14.198	13.844	33.9	20.0	25.0	11.2	2.24	0.64	26.9	6.9	18.1
24	95.5	0.144	72.1	8.8	6.37	2.595	14.357	13.985	34.0	20.0	25.2	11.2	2.25	0.63	27.0	7.0	18.2
25	96.7	0.150	72.2	8.9	6.38	2.703	14.544	14.150	34.2	20.0	25.3	11.1	2.27	0.63	27.1	7.1	18.2
26	98.0	0.156	72.3	9.0	6.39	2.812	14.756	14.342	34.4	20.0	25.4	11.0	2.30	0.63	27.2	7.2	18.2
27	99.2	0.162	72.3	9.0	6.40	2.920	14.956	14.519	34.5	20.0	25.5	11.0	2.32	0.62	27.3	7.3	18.2
28	99.6	0.168	72.3	9.0	6.40	3.028	15.009	14.555	34.6	20.0	25.5	11.0	2.32	0.62	27.3	7.3	18.3
29	101.4	0.174	72.3	9.0	6.41	3.136	15.302	14.822	34.8	20.0	25.8	11.0	2.35	0.61	27.4	7.4	18.4
30	100.7	0.180	72.2	8.9	6.42	3.244	15.196	14.703	34.7	20.0	25.8	11.1	2.33	0.61	27.4	7.4	18.4
31	104.4	0.186	72.5	9.2	6.42	3.352	15.781	15.252	35.3	20.0	26.1	10.8	2.41	0.60	27.6	7.6	18.5
32	104.8	0.192	72.4	9.1	6.43	3.460	15.848	15.299	35.3	20.0	26.2	10.9	2.40	0.60	27.7	7.6	18.6
33	104.0	0.198	72.4	9.1	6.44	3.568	15.728	15.167	35.2	20.0	26.0	10.9	2.40	0.60	27.6	7.6	18.5
34	106.9	0.204	72.5	9.2	6.45	3.677	16.193	15.598	35.6	20.0	26.4	10.8	2.44	0.59	27.8	7.8	18.6
35	108.3	0.210	72.5	9.2	6.45	3.785	16.420	15.798	35.8	20.0	26.6	10.8	2.46	0.58	27.9	7.9	18.7
36	109.1	0.216	72.5	9.2	6.46	3.893	16.539	15.896	35.9	20.0	26.7	10.8	2.47	0.58	28.0	7.9	18.8
37	110.2	0.222	72.5	9.2	6.47	4.001	16.726	16.057	36.1	20.0	26.8	10.8	2.49	0.57	28.0	8.0	18.8
38	111.0	0.228	72.5	9.2	6.48	4.109	16.845	16.153	36.2	20.0	27.0	10.8	2.49	0.57	28.1	8.1	18.9
39	112.5	0.234	72.6	9.3	6.48	4.217	17.098	16.377	36.4	20.0	27.0	10.7	2.54	0.57	28.2	8.2	18.9
40	113.5	0.240	72.6	9.3	6.49	4.325	17.258	16.511	36.5	20.0	27.2	10.7	2.54	0.56	28.3	8.3	19.0
41	113.8	0.246	72.5	9.2	6.50	4.434	17.298	16.531	36.5	20.0	27.3	10.8	2.53	0.56	28.3	8.3	19.1
42	114.9	0.252	72.5	9.2	6.50	4.542	17.484	16.690	36.7	20.0	27.5	10.8	2.55	0.55	28.4	8.3	19.1
43	114.6	0.258	72.5	9.2	6.51	4.650	17.431	16.620	36.6	20.0	27.4	10.8	2.53	0.55	28.3	8.3	19.1
44	116.6	0.264	72.5	9.2	6.52	4.758	17.750	16.906	36.9	20.0	27.7	10.8	2.57	0.55	28.5	8.5	19.2
45	117.6	0.270	72.4	9.1	6.53	4.866	17.910	17.038	37.1	20.0	27.9	10.9	2.57	0.54	28.5	8.5	19.4
46	118.7	0.276	72.6	9.3	6.53	4.974	18.096	17.196	37.2	20.0	27.9	10.7	2.60	0.54	28.6	8.6	19.3
47	119.2	0.282	72.5	9.2	6.54	5.082	18.176	17.252	37.3	20.0	28.1	10.8	2.59	0.53	28.6	8.6	19.5
48	120.1	0.288	72.5	9.2	6.55	5.191	18.322	17.371	37.4	20.0	28.2	10.8	2.60	0.53	28.7	8.7	19.5
49	120.4	0.294	72.4	9.1	6.56	5.299	18.362	17.389	37.4	20.0	28.3	10.9	2.59	0.52	28.7	8.7	19.6
50	121.4	0.300	72.4	9.1	6.56	5.407	18.522	17.521	37.5	20.0	28.4	10.9	2.61	0.52	28.8	8.8	19.7
51	122.3	0.306	72.4	9.1	6.57	5.515	18.668	17.639	37.7	20.0	28.5	10.9	2.62	0.52	28.8	8.8	19.7
52	123.9	0.312	72.6	9.3	6.58	5.623	18.935	17.870	37.9	20.0	28.6	10.7	2.66	0.52	29.0	8.9	19.7
53	123.9	0.318	72.4	9.1	6.59	5.731	18.935	17.849	37.9	20.0	28.8	10.9	2.64	0.51	28.9	8.9	19.8
54	124.8	0.324	72.3	9.0	6.59	5.839	19.068	17.954	38.0	20.0	28.9	11.0	2.63	0.50	29.0	9.0	20.0
55	125.4	0.330	72.4	9.1	6.60	5.947	19.174	18.034	38.1	20.0	29.0	10.9	2.65	0.50	29.0	9.0	20.0
56	126.6	0.336	72.4	9.1	6.61	6.056	19.360	18.188	38.2	20.0	29.1	10.9	2.67	0.50	29.1	9.1	20.0
57	126.8	0.342	72.2	8.9	6.62	6.164	19.400	18.204	38.2	20.0	29.3	11.1	2.64	0.49	29.1	9.1	20.2
58	127.9	0.348	72.4	9.1	6.63	6.272	19.573	18.346	38.4	20.0	29.3	10.9	2.68	0.49	29.2	9.2	20.1
59	128.7	0.354	72.4	9.1	6.63	6.380	19.706	18.449	38.5	20.0	29.4	10.9	2.69	0.49	29.2	9.2	20.2
60	128.8	0.360	72.2	8.9	6.64	6.488	19.720	18.440	38.5	20.0	29.5	11.1	2.67	0.49	29.2	9.2	20.3
61	129.3	0.366	72.2	8.9	6.65	6.596	19.799	18.493	38.5	20.0	29.6	11.1	2.67	0.48	29.3	9.2	20.3
62	129.0	0.372	72.1	8.8	6.66	6.704	19.746	18.422	38.4	20.0	29.6	11.2	2.65	0.48	29.2	9.2	20.4
63	131.3	0.378	72.2	8.9	6.66	6.813	20.119	18.748	38.8	20.0	29.8	11.1	2.69	0.48	29.4	9.4	20.4

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)
64	132.0	0.384	72.2	8.9	6.67	6.921	20.225	18.825	38.8	20.0	29.9	11.1	2.70	0.48	29.4	9.4	20.5
65	132.2	0.390	72.1	8.8	6.68	7.029	20.265	18.841	38.9	20.0	30.0	11.2	2.68	0.47	29.4	9.4	20.6
66	133.0	0.396	72.2	8.9	6.69	7.137	20.398	18.942	39.0	20.0	30.1	11.1	2.70	0.47	29.5	9.5	20.6
67	133.5	0.402	72.1	8.8	6.69	7.245	20.478	18.994	39.0	20.0	30.2	11.2	2.70	0.46	29.5	9.5	20.7
68	134.1	0.408	72.1	8.8	6.70	7.353	20.571	19.059	39.1	20.0	30.2	11.2	2.70	0.46	29.5	9.5	20.7
69	134.3	0.414	72.2	8.9	6.71	7.461	20.598	19.061	39.1	20.0	30.2	11.1	2.71	0.47	29.5	9.5	20.7
70	135.7	0.420	72.1	8.8	6.72	7.570	20.824	19.248	39.3	20.0	30.5	11.2	2.71	0.46	29.6	9.6	20.9
71	136.5	0.426	72.0	8.7	6.73	7.678	20.957	19.348	39.4	20.0	30.6	11.3	2.72	0.45	29.7	9.7	20.9
72	137.4	0.432	72.0	8.7	6.73	7.786	21.103	19.460	39.5	20.0	30.8	11.3	2.72	0.45	29.7	9.7	21.0
73	136.2	0.438	71.8	8.5	6.74	7.894	20.904	19.254	39.3	20.0	30.7	11.5	2.68	0.44	29.6	9.6	21.1
74	138.4	0.444	72.0	8.7	6.75	8.002	21.263	19.562	39.6	20.0	30.9	11.3	2.72	0.44	29.8	9.8	21.1
75	139.3	0.450	72.0	8.7	6.76	8.110	21.409	19.673	39.7	20.0	31.0	11.3	2.73	0.44	29.9	9.8	21.2
76	140.0	0.456	71.9	8.6	6.77	8.218	21.516	19.748	39.8	20.0	31.1	11.4	2.73	0.44	29.9	9.9	21.3
77	140.3	0.462	71.7	8.5	6.77	8.326	21.569	19.773	39.8	20.0	31.3	11.6	2.71	0.43	29.9	9.9	21.4
78	141.5	0.468	71.8	8.5	6.78	8.435	21.769	19.933	40.0	20.0	31.4	11.5	2.74	0.43	30.0	10.0	21.4
79	142.4	0.474	71.9	8.6	6.79	8.543	21.915	20.043	40.1	20.0	31.5	11.4	2.75	0.43	30.0	10.0	21.5
80	143.0	0.480	71.9	8.6	6.80	8.651	22.008	20.104	40.1	20.0	31.5	11.4	2.76	0.43	30.1	10.1	21.5
81	143.2	0.486	71.7	8.5	6.81	8.759	22.035	20.105	40.1	20.0	31.7	11.6	2.74	0.42	30.1	10.1	21.6
82	143.9	0.492	71.7	8.4	6.81	8.867	22.155	20.190	40.2	20.0	31.8	11.6	2.74	0.42	30.1	10.1	21.7
83	144.9	0.498	71.7	8.4	6.82	8.975	22.314	20.311	40.3	20.0	31.9	11.6	2.75	0.41	30.2	10.2	21.8
84	145.4	0.505	71.7	8.4	6.83	9.083	22.394	20.360	40.4	20.0	32.0	11.6	2.76	0.41	30.2	10.2	21.8
85	145.8	0.511	71.6	8.3	6.84	9.192	22.461	20.396	40.4	20.0	32.1	11.7	2.75	0.41	30.2	10.2	21.9
86	146.2	0.517	71.6	8.3	6.85	9.300	22.527	20.432	40.4	20.0	32.1	11.7	2.74	0.41	30.2	10.2	21.9
87	146.8	0.523	71.5	8.3	6.85	9.408	22.620	20.492	40.5	20.0	32.2	11.8	2.74	0.40	30.3	10.2	22.0
88	146.7	0.529	71.5	8.2	6.86	9.516	22.594	20.444	40.5	20.0	32.2	11.8	2.73	0.40	30.2	10.2	22.0
89	148.1	0.535	71.5	8.2	6.87	9.624	22.820	20.624	40.6	20.0	32.4	11.8	2.75	0.40	30.3	10.3	22.1
90	148.8	0.541	71.5	8.2	6.88	9.732	22.940	20.707	40.7	20.0	32.5	11.8	2.75	0.40	30.4	10.4	22.2
91	149.1	0.547	71.4	8.1	6.89	9.840	22.980	20.718	40.7	20.0	32.6	11.9	2.74	0.39	30.4	10.4	22.3
92	150.0	0.553	71.5	8.2	6.90	9.949	23.139	20.837	40.9	20.0	32.7	11.8	2.76	0.39	30.4	10.4	22.2
93	150.2	0.559	71.3	8.1	6.90	10.057	23.166	20.836	40.9	20.0	32.8	12.0	2.74	0.39	30.4	10.4	22.4
94	150.1	0.565	71.3	8.0	6.91	10.165	23.153	20.799	40.8	20.0	32.8	12.0	2.73	0.38	30.4	10.4	22.4
95	150.7	0.571	71.2	7.9	6.92	10.273	23.246	20.858	40.9	20.0	32.9	12.1	2.73	0.38	30.4	10.4	22.5
96	152.1	0.577	71.3	8.0	6.93	10.381	23.472	21.035	41.1	20.0	33.0	12.0	2.75	0.38	30.5	10.5	22.5
97	147.6	0.583	71.1	7.8	6.94	10.489	22.740	20.355	40.4	20.0	32.5	12.2	2.67	0.38	30.2	10.2	22.4
98	153.0	0.589	71.2	7.9	6.95	10.597	23.618	21.115	41.1	20.0	33.2	12.1	2.74	0.37	30.6	10.6	22.7
99	153.4	0.595	71.1	7.9	6.95	10.705	23.671	21.137	41.2	20.0	33.3	12.2	2.74	0.37	30.6	10.6	22.7
100	150.1	0.601	71.0	7.7	6.96	10.814	23.153	20.649	40.7	20.0	33.0	12.3	2.68	0.37	30.3	10.3	22.6
101	154.4	0.607	71.1	7.8	6.97	10.922	23.844	21.240	41.3	20.0	33.4	12.2	2.74	0.37	30.6	10.6	22.8
102	154.8	0.613	71.1	7.8	6.98	11.030	23.911	21.274	41.3	20.0	33.5	12.2	2.74	0.37	30.7	10.6	22.9
103	155.8	0.619	71.0	7.7	6.99	11.138	24.071	21.390	41.4	20.0	33.7	12.3	2.74	0.36	30.7	10.7	23.0
104	156.1	0.625	71.0	7.7	7.00	11.246	24.111	21.399	41.4	20.0	33.7	12.3	2.74	0.36	30.7	10.7	23.0
105	156.9	0.631	71.0	7.7	7.00	11.354	24.244	21.491	41.5	20.0	33.8	12.3	2.75	0.36	30.8	10.7	23.0
106	157.2	0.637	70.9	7.6	7.01	11.462	24.297	21.512	41.5	20.0	33.9	12.4	2.74	0.35	30.8	10.8	23.1
107	157.5	0.643	70.9	7.6	7.02	11.571	24.337	21.521	41.5	20.0	34.0	12.4	2.73	0.35	30.8	10.8	23.2
108	157.8	0.649	70.8	7.5	7.03	11.679	24.390	21.542	41.6	20.0	34.1	12.5	2.72	0.35	30.8	10.8	23.3

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)
109	156.7	0.655	70.7	7.5	7.04	11.787	24.217	21.363	41.4	20.0	33.9	12.6	2.70	0.35	30.7	10.7	23.2
110	159.5	0.661	70.8	7.5	7.05	11.895	24.656	21.723	41.7	20.0	34.2	12.5	2.74	0.35	30.9	10.9	23.4
111	158.6	0.667	70.7	7.4	7.06	12.003	24.523	21.580	41.6	20.0	34.2	12.6	2.71	0.34	30.8	10.8	23.4
112	160.8	0.673	70.7	7.5	7.07	12.111	24.869	21.857	41.9	20.0	34.4	12.6	2.74	0.34	30.9	10.9	23.5
113	161.2	0.679	70.7	7.4	7.07	12.219	24.936	21.889	41.9	20.0	34.5	12.6	2.73	0.34	31.0	10.9	23.6
114	161.4	0.685	70.7	7.4	7.08	12.327	24.975	21.897	41.9	20.0	34.5	12.6	2.73	0.34	31.0	10.9	23.6
115	161.9	0.691	70.6	7.3	7.09	12.436	25.055	21.940	42.0	20.0	34.7	12.7	2.73	0.33	31.0	11.0	23.7
116	162.1	0.697	70.5	7.2	7.10	12.544	25.082	21.936	42.0	20.0	34.8	12.8	2.71	0.33	31.0	11.0	23.8
117	162.3	0.703	70.5	7.2	7.11	12.652	25.109	21.932	41.9	20.0	34.7	12.8	2.71	0.33	31.0	11.0	23.8
118	163.3	0.709	70.5	7.3	7.12	12.760	25.268	22.044	42.1	20.0	34.8	12.8	2.73	0.33	31.0	11.0	23.8
119	164.4	0.715	70.5	7.3	7.13	12.868	25.454	22.179	42.2	20.0	34.9	12.8	2.74	0.33	31.1	11.1	23.8
120	164.3	0.721	70.4	7.1	7.14	12.976	25.428	22.128	42.1	20.0	35.0	12.9	2.71	0.32	31.1	11.1	24.0
121	164.1	0.727	70.3	7.0	7.14	13.084	25.401	22.078	42.1	20.0	35.1	13.0	2.69	0.32	31.1	11.0	24.1
122	165.2	0.733	70.4	7.1	7.15	13.193	25.588	22.212	42.2	20.0	35.1	12.9	2.72	0.32	31.1	11.1	24.0
123	165.9	0.739	70.5	7.2	7.16	13.301	25.694	22.276	42.3	20.0	35.1	12.8	2.74	0.32	31.2	11.1	24.0
124	161.9	0.745	70.2	6.9	7.17	13.409	25.055	21.696	41.7	20.0	34.8	13.1	2.65	0.32	30.9	10.8	24.0
125	166.7	0.751	70.2	6.9	7.18	13.517	25.827	22.336	42.4	20.0	35.5	13.1	2.70	0.31	31.2	11.2	24.3
126	167.2	0.757	70.3	7.0	7.19	13.625	25.907	22.377	42.4	20.0	35.4	13.0	2.72	0.31	31.2	11.2	24.2
127	167.4	0.763	70.2	6.9	7.20	13.733	25.933	22.372	42.4	20.0	35.5	13.1	2.71	0.31	31.2	11.2	24.3
128	167.5	0.769	70.1	6.9	7.21	13.841	25.947	22.355	42.4	20.0	35.5	13.2	2.70	0.31	31.2	11.2	24.3
129	168.3	0.775	70.1	6.8	7.22	13.950	26.080	22.442	42.5	20.0	35.6	13.2	2.70	0.30	31.2	11.2	24.4
130	168.3	0.781	70.1	6.8	7.23	14.058	26.080	22.414	42.4	20.0	35.6	13.2	2.70	0.30	31.2	11.2	24.4
131	168.6	0.787	70.1	6.8	7.23	14.166	26.120	22.420	42.4	20.0	35.7	13.2	2.69	0.30	31.2	11.2	24.4
132	169.0	0.793	70.1	6.8	7.24	14.274	26.186	22.448	42.5	20.0	35.7	13.2	2.70	0.30	31.2	11.2	24.5
133	170.1	0.799	70.0	6.7	7.25	14.382	26.373	22.580	42.6	20.0	35.9	13.3	2.70	0.30	31.3	11.3	24.6
134	170.6	0.805	69.9	6.7	7.26	14.490	26.452	22.619	42.6	20.0	36.0	13.4	2.69	0.29	31.3	11.3	24.7
135	171.9	0.811	70.1	6.9	7.27	14.598	26.652	22.761	42.8	20.0	35.9	13.2	2.73	0.30	31.4	11.4	24.5
136	171.8	0.817	69.9	6.7	7.28	14.706	26.639	22.721	42.7	20.0	36.1	13.4	2.70	0.29	31.4	11.4	24.7
137	172.3	0.823	69.9	6.7	7.29	14.815	26.719	22.760	42.8	20.0	36.1	13.4	2.70	0.29	31.4	11.4	24.7
138	172.7	0.829	69.9	6.6	7.30	14.923	26.785	22.788	42.8	20.0	36.2	13.4	2.70	0.29	31.4	11.4	24.8
139	173.3	0.835	69.9	6.6	7.31	15.031	26.892	22.849	42.9	20.0	36.2	13.4	2.71	0.29	31.4	11.4	24.8
140	173.9	0.841	69.9	6.6	7.32	15.139	26.985	22.899	42.9	20.0	36.3	13.4	2.70	0.29	31.5	11.4	24.9
141	174.1	0.847	69.8	6.5	7.33	15.247	27.011	22.893	42.9	20.0	36.4	13.5	2.69	0.28	31.5	11.4	25.0
142	174.6	0.853	69.8	6.5	7.34	15.355	27.091	22.931	42.9	20.0	36.4	13.5	2.70	0.28	31.5	11.5	25.0
143	174.6	0.859	69.7	6.5	7.35	15.463	27.091	22.902	42.9	20.0	36.5	13.6	2.69	0.28	31.5	11.5	25.0
144	175.5	0.865	69.7	6.4	7.35	15.572	27.237	22.996	43.0	20.0	36.6	13.6	2.69	0.28	31.5	11.5	25.1
145	176.2	0.871	69.7	6.4	7.36	15.680	27.344	23.056	43.1	20.0	36.7	13.6	2.70	0.28	31.5	11.5	25.1
146	176.2	0.877	69.7	6.4	7.37	15.788	27.344	23.027	43.0	20.0	36.7	13.6	2.69	0.28	31.5	11.5	25.2
147	176.7	0.883	69.6	6.3	7.38	15.896	27.424	23.064	43.1	20.0	36.7	13.7	2.69	0.27	31.5	11.5	25.2
148	176.9	0.889	69.6	6.3	7.39	16.004	27.464	23.068	43.1	20.0	36.7	13.7	2.69	0.27	31.6	11.5	25.2
149	178.2	0.895	69.7	6.4	7.40	16.112	27.677	23.217	43.2	20.0	36.9	13.6	2.70	0.27	31.6	11.6	25.2
150	178.1	0.901	69.5	6.3	7.41	16.220	27.650	23.165	43.2	20.0	36.9	13.8	2.68	0.27	31.6	11.6	25.3
151	177.9	0.907	69.5	6.2	7.42	16.329	27.623	23.113	43.1	20.0	37.0	13.8	2.67	0.27	31.6	11.6	25.4
152	179.0	0.913	69.7	6.4	7.43	16.437	27.810	23.239	43.3	20.0	36.8	13.6	2.71	0.28	31.6	11.6	25.2
153	179.0	0.919	69.5	6.2	7.44	16.545	27.810	23.209	43.2	20.0	37.0	13.8	2.68	0.27	31.6	11.6	25.4

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)
154	179.4	0.925	69.5	6.2	7.45	16.653	27.863	23.223	43.2	20.0	37.0	13.8	2.68	0.27	31.6	11.6	25.4
155	179.5	0.931	69.5	6.2	7.46	16.761	27.889	23.215	43.2	20.0	37.0	13.8	2.68	0.27	31.6	11.6	25.4
156	180.4	0.937	69.5	6.2	7.47	16.869	28.023	23.295	43.3	20.0	37.1	13.8	2.69	0.27	31.7	11.6	25.4
157	180.7	0.943	69.5	6.2	7.48	16.977	28.076	23.309	43.3	20.0	37.1	13.8	2.68	0.27	31.7	11.7	25.5
158	180.4	0.949	69.3	6.0	7.49	17.085	28.023	23.235	43.3	20.0	37.2	14.0	2.66	0.26	31.6	11.6	25.6
159	180.5	0.955	69.4	6.1	7.50	17.194	28.049	23.226	43.2	20.0	37.1	13.9	2.67	0.26	31.6	11.6	25.5
160	181.4	0.961	69.3	6.1	7.51	17.302	28.182	23.306	43.3	20.0	37.3	14.0	2.67	0.26	31.7	11.7	25.6
161	182.0	0.967	69.3	6.1	7.52	17.410	28.289	23.364	43.4	20.0	37.3	14.0	2.67	0.26	31.7	11.7	25.6
162	182.2	0.973	69.3	6.0	7.53	17.518	28.315	23.355	43.4	20.0	37.4	14.0	2.66	0.26	31.7	11.7	25.7
163	182.0	0.979	69.2	5.9	7.54	17.626	28.289	23.302	43.3	20.0	37.4	14.1	2.65	0.25	31.7	11.7	25.8
164	181.8	0.985	69.4	6.1	7.55	17.734	28.249	23.239	43.3	20.0	37.1	13.9	2.67	0.26	31.6	11.6	25.5
165	183.3	0.991	69.2	5.9	7.56	17.842	28.502	23.416	43.4	20.0	37.5	14.1	2.66	0.25	31.7	11.7	25.8
166	184.3	0.997	69.3	6.0	7.57	17.951	28.648	23.505	43.5	20.0	37.5	14.0	2.68	0.26	31.8	11.8	25.8
167	182.1	1.003	69.2	5.9	7.58	18.059	28.302	23.191	43.2	20.0	37.3	14.1	2.65	0.26	31.6	11.6	25.7
168	184.9	1.009	69.1	5.8	7.59	18.175	28.754	23.528	43.5	20.0	37.7	14.2	2.66	0.25	31.8	11.8	26.0
169	185.3	1.015	69.1	5.8	7.60	18.292	28.821	23.549	43.6	20.0	37.8	14.2	2.65	0.25	31.8	11.8	26.0
170	186.6	1.022	69.2	5.9	7.61	18.408	29.034	23.689	43.7	20.0	37.8	14.1	2.68	0.25	31.9	11.8	26.0
171	186.7	1.028	69.1	5.8	7.62	18.525	29.047	23.666	43.7	20.0	37.9	14.2	2.66	0.24	31.9	11.8	26.1
172	187.2	1.035	69.0	5.7	7.63	18.641	29.127	23.697	43.7	20.0	38.0	14.3	2.66	0.24	31.9	11.8	26.1
173	186.9	1.041	69.0	5.7	7.64	18.757	29.074	23.620	43.6	20.0	37.9	14.3	2.65	0.24	31.8	11.8	26.1
174	188.3	1.048	68.9	5.6	7.65	18.874	29.300	23.770	43.8	20.0	38.2	14.4	2.65	0.24	31.9	11.9	26.3
175	188.5	1.054	69.0	5.7	7.66	18.982	29.340	23.771	43.8	20.0	38.0	14.3	2.66	0.24	31.9	11.9	26.2
176	186.4	1.060	68.9	5.6	7.67	19.090	28.994	23.459	43.5	20.0	37.9	14.4	2.62	0.24	31.7	11.7	26.2
177	180.7	1.066	68.7	5.5	7.68	19.198	28.076	22.686	42.7	20.0	37.2	14.6	2.56	0.24	31.4	11.3	25.9
178	189.5	1.072	68.9	5.6	7.70	19.306	29.500	23.804	43.8	20.0	38.2	14.4	2.65	0.24	31.9	11.9	26.3
179	189.7	1.078	68.8	5.5	7.71	19.415	29.526	23.794	43.8	20.0	38.3	14.5	2.64	0.23	31.9	11.9	26.4
180	190.0	1.084	68.9	5.7	7.72	19.523	29.579	23.805	43.8	20.0	38.2	14.4	2.66	0.24	31.9	11.9	26.3
181	190.4	1.090	68.9	5.6	7.73	19.631	29.646	23.826	43.8	20.0	38.2	14.4	2.65	0.24	31.9	11.9	26.3
182	190.7	1.096	68.9	5.6	7.74	19.739	29.686	23.826	43.8	20.0	38.3	14.4	2.65	0.23	31.9	11.9	26.4
183	188.0	1.102	68.8	5.5	7.75	19.847	29.247	23.442	43.5	20.0	38.0	14.5	2.61	0.23	31.7	11.7	26.2
184	191.4	1.108	68.7	5.5	7.76	19.955	29.806	23.858	43.9	20.0	38.4	14.6	2.64	0.23	31.9	11.9	26.5
185	190.9	1.109	68.8	5.5	7.76	19.980	29.712	23.776	43.8	20.0	38.3	14.5	2.64	0.23	31.9	11.9	26.4

File Location

B-6A Bag-6 4.5-10.0 Remolded.HSD

Project Information

Project No. 14046-01
 Project Name: I-20 D/B Roadway Improvement
 Client:
 Sample Location: B-6A Bag-6 4.5' to 10.0'
 Sample Description: Tan, Black & Gray Elastic Silt with Sand
 Remarks: 3 Point Remolded

Sample Data

Sample Type: Remolded
 Specific Gravity: 2.6500001
 LL: 50.000
 PL: 33.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.807	2.816	
Height (in)	5.598	5.490	
Weight (grams)	1030.10		1099.10
Moisture (%)	20.47		28.53
Dry Density (pcf)	94.04	95.27	
Saturation (%)	71.45	100.00	
Void Ratio	0.755	0.736	

Test Data

Rate of Strain: 0.0015
 Cell Pressure (psi): 105.200
 Effective Confining Stress (psi): 40.0
 Corrected Peak Deviator Stress (psi): 40.128 at reading number: 183

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	0.2	0.000	65.2	0.0	6.23	0.000	0.000	0.000	40.0	40.0	40.0	40.0	1.00	0.00	40.0	0.0	40.0
1	39.0	0.006	68.1	2.9	6.24	0.109	6.229	6.222	46.3	40.0	43.4	37.1	1.17	0.47	43.2	3.1	40.3
2	60.7	0.012	70.7	5.6	6.24	0.219	9.716	9.694	49.7	40.0	44.2	34.5	1.28	0.58	44.9	4.8	39.3
3	73.9	0.018	72.5	7.4	6.25	0.328	11.829	11.790	51.8	40.0	44.5	32.7	1.36	0.63	45.9	5.9	38.6
4	84.8	0.024	74.3	9.1	6.26	0.438	13.586	13.526	53.6	40.0	44.4	30.9	1.44	0.67	46.8	6.8	37.7
5	93.5	0.030	75.5	10.3	6.26	0.547	14.973	14.891	54.9	40.0	44.6	29.7	1.50	0.69	47.5	7.4	37.2
6	100.7	0.036	76.4	11.3	6.27	0.656	16.135	16.029	56.1	40.0	44.8	28.8	1.56	0.70	48.1	8.0	36.8
7	107.4	0.042	77.3	12.1	6.28	0.766	17.205	17.073	57.1	40.0	45.0	27.9	1.61	0.71	48.6	8.5	36.5
8	113.1	0.048	78.0	12.8	6.28	0.875	18.129	17.971	58.0	40.0	45.2	27.2	1.66	0.71	49.0	9.0	36.2
9	118.6	0.055	78.6	13.4	6.29	0.984	19.001	18.814	58.9	40.0	45.4	26.6	1.71	0.71	49.4	9.4	36.0
10	123.3	0.061	79.1	13.9	6.30	1.094	19.767	19.551	59.6	40.0	45.7	26.1	1.75	0.71	49.8	9.8	35.9
11	127.9	0.067	79.5	14.3	6.30	1.203	20.494	20.247	60.3	40.0	45.9	25.7	1.79	0.71	50.2	10.1	35.8
12	131.6	0.073	80.0	14.8	6.31	1.313	21.101	20.824	60.9	40.0	46.1	25.2	1.82	0.71	50.5	10.4	35.7
13	135.8	0.079	80.6	15.4	6.32	1.422	21.762	21.452	61.5	40.0	46.1	24.6	1.87	0.72	50.8	10.7	35.4
14	139.6	0.085	80.9	15.8	6.33	1.531	22.382	22.040	62.1	40.0	46.3	24.3	1.91	0.72	51.1	11.0	35.3
15	143.1	0.091	81.3	16.1	6.33	1.641	22.937	22.561	62.6	40.0	46.5	23.9	1.94	0.71	51.3	11.3	35.2
16	146.2	0.097	81.5	16.4	6.34	1.750	23.439	23.029	63.1	40.0	46.7	23.7	1.97	0.71	51.6	11.5	35.2
17	149.2	0.103	81.7	16.6	6.35	1.859	23.928	23.483	63.5	40.0	46.9	23.5	2.00	0.71	51.8	11.7	35.2
18	152.2	0.109	81.9	16.7	6.35	1.969	24.403	23.923	64.0	40.0	47.2	23.3	2.03	0.70	52.0	12.0	35.3
19	154.8	0.115	82.1	16.9	6.36	2.078	24.826	24.310	64.4	40.0	47.4	23.1	2.05	0.70	52.2	12.2	35.3
20	157.3	0.121	82.2	17.0	6.37	2.188	25.222	24.670	64.7	40.0	47.7	23.0	2.07	0.69	52.4	12.3	35.3

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)
21	160.1	0.127	82.5	17.4	6.38	2.297	25.671	25.082	65.1	40.0	47.8	22.7	2.11	0.69	52.6	12.5	35.2
22	162.5	0.133	82.7	17.6	6.38	2.406	26.054	25.427	65.5	40.0	47.9	22.5	2.13	0.69	52.8	12.7	35.2
23	164.8	0.139	82.9	17.7	6.39	2.516	26.424	25.759	65.8	40.0	48.1	22.3	2.15	0.69	52.9	12.9	35.2
24	166.9	0.145	83.0	17.8	6.40	2.625	26.754	26.052	66.1	40.0	48.2	22.2	2.17	0.69	53.1	13.0	35.2
25	169.0	0.151	83.1	18.0	6.40	2.734	27.098	26.357	66.4	40.0	48.4	22.1	2.19	0.68	53.2	13.2	35.2
26	171.1	0.157	83.2	18.0	6.41	2.844	27.441	26.661	66.7	40.0	48.7	22.0	2.21	0.68	53.4	13.3	35.4
27	172.9	0.163	83.2	18.1	6.42	2.953	27.732	26.913	67.0	40.0	48.9	22.0	2.22	0.67	53.5	13.5	35.4
28	174.9	0.169	83.3	18.1	6.43	3.063	28.049	27.190	67.2	40.0	49.1	21.9	2.24	0.67	53.6	13.6	35.5
29	176.6	0.175	83.3	18.1	6.43	3.172	28.326	27.428	67.5	40.0	49.4	21.9	2.25	0.66	53.8	13.7	35.7
30	178.7	0.181	83.6	18.5	6.44	3.281	28.656	27.716	67.8	40.0	49.3	21.6	2.28	0.67	53.9	13.9	35.4
31	180.3	0.187	83.7	18.6	6.45	3.391	28.921	27.940	68.0	40.0	49.4	21.5	2.30	0.67	54.0	14.0	35.4
32	182.1	0.193	83.8	18.6	6.45	3.500	29.198	28.176	68.2	40.0	49.6	21.4	2.32	0.66	54.1	14.1	35.5
33	184.0	0.199	83.9	18.7	6.46	3.610	29.502	28.437	68.5	40.0	49.8	21.3	2.33	0.66	54.3	14.2	35.6
34	185.7	0.205	83.9	18.7	6.47	3.719	29.779	28.672	68.7	40.0	50.0	21.3	2.35	0.65	54.4	14.3	35.6
35	187.1	0.211	83.9	18.7	6.48	3.828	30.004	28.855	68.9	40.0	50.2	21.3	2.35	0.65	54.5	14.4	35.7
36	188.8	0.217	83.9	18.7	6.48	3.938	30.281	29.089	69.1	40.0	50.4	21.3	2.36	0.64	54.6	14.5	35.9
37	190.3	0.223	83.9	18.7	6.49	4.047	30.519	29.284	69.3	40.0	50.6	21.3	2.37	0.64	54.7	14.6	36.0
38	191.9	0.229	83.8	18.7	6.50	4.156	30.783	29.503	69.5	40.0	50.9	21.4	2.38	0.63	54.8	14.8	36.1
39	193.2	0.235	84.1	18.9	6.51	4.266	30.981	29.659	69.7	40.0	50.8	21.1	2.41	0.64	54.9	14.8	35.9
40	194.8	0.241	84.1	19.0	6.51	4.375	31.245	29.878	69.9	40.0	50.9	21.1	2.42	0.64	55.0	14.9	36.0
41	195.7	0.247	84.2	19.0	6.52	4.485	31.391	29.983	70.0	40.0	51.0	21.0	2.43	0.63	55.0	15.0	36.0
42	197.0	0.253	84.2	19.1	6.53	4.594	31.589	30.138	70.2	40.0	51.1	21.0	2.44	0.63	55.1	15.1	36.0
43	198.4	0.259	84.2	19.1	6.54	4.703	31.826	30.330	70.4	40.0	51.3	21.0	2.45	0.63	55.2	15.2	36.1
44	199.8	0.265	84.2	19.0	6.54	4.813	32.038	30.496	70.5	40.0	51.5	21.0	2.45	0.62	55.3	15.2	36.3
45	200.9	0.271	84.1	19.0	6.55	4.922	32.223	30.637	70.7	40.0	51.7	21.1	2.46	0.62	55.4	15.3	36.4
46	202.3	0.277	84.1	18.9	6.56	5.031	32.447	30.815	70.9	40.0	51.9	21.1	2.46	0.61	55.4	15.4	36.5
47	203.5	0.283	84.0	18.8	6.57	5.141	32.645	30.967	71.0	40.0	52.2	21.2	2.46	0.61	55.5	15.5	36.7
48	204.7	0.289	84.3	19.2	6.57	5.250	32.830	31.107	71.1	40.0	52.0	20.9	2.49	0.62	55.6	15.6	36.4
49	206.0	0.295	84.3	19.2	6.58	5.360	33.042	31.271	71.3	40.0	52.2	20.9	2.50	0.61	55.7	15.6	36.5
50	207.2	0.301	84.3	19.2	6.59	5.469	33.240	31.422	71.5	40.0	52.3	20.9	2.50	0.61	55.8	15.7	36.6
51	208.4	0.307	84.3	19.2	6.60	5.578	33.425	31.560	71.6	40.0	52.4	20.9	2.51	0.61	55.8	15.8	36.7
52	209.8	0.313	84.3	19.1	6.60	5.688	33.649	31.735	71.8	40.0	52.7	20.9	2.52	0.60	55.9	15.9	36.8
53	211.1	0.319	84.2	19.1	6.61	5.797	33.861	31.898	71.9	40.0	52.9	21.0	2.52	0.60	56.0	15.9	36.9
54	212.0	0.325	84.1	19.0	6.62	5.907	34.006	31.997	72.0	40.0	53.0	21.1	2.52	0.59	56.0	16.0	37.1
55	213.4	0.331	84.1	18.9	6.63	6.016	34.230	32.171	72.2	40.0	53.3	21.1	2.52	0.59	56.1	16.1	37.2
56	214.4	0.337	84.0	18.8	6.64	6.125	34.389	32.282	72.3	40.0	53.5	21.2	2.52	0.58	56.2	16.1	37.4
57	215.6	0.343	84.3	19.1	6.64	6.235	34.587	32.431	72.5	40.0	53.4	20.9	2.55	0.59	56.3	16.2	37.1
58	216.8	0.349	84.3	19.1	6.65	6.344	34.772	32.566	72.6	40.0	53.5	20.9	2.56	0.59	56.3	16.3	37.2
59	218.0	0.355	84.2	19.1	6.66	6.453	34.970	32.713	72.8	40.0	53.7	21.0	2.56	0.58	56.4	16.4	37.3
60	219.1	0.361	84.1	18.9	6.67	6.563	35.142	32.835	72.9	40.0	53.9	21.1	2.56	0.58	56.5	16.4	37.5
61	220.1	0.367	84.0	18.9	6.67	6.672	35.300	32.945	73.0	40.0	54.1	21.2	2.56	0.57	56.5	16.5	37.6
62	221.2	0.373	83.9	18.8	6.68	6.782	35.472	33.066	73.1	40.0	54.3	21.3	2.56	0.57	56.6	16.5	37.8
63	222.2	0.379	84.2	19.0	6.69	6.891	35.644	33.187	73.2	40.0	54.2	21.0	2.58	0.57	56.6	16.6	37.6
64	223.2	0.385	84.2	19.0	6.70	7.000	35.802	33.296	73.3	40.0	54.3	21.0	2.58	0.57	56.7	16.6	37.7
65	224.4	0.391	84.1	19.0	6.71	7.110	35.987	33.428	73.5	40.0	54.5	21.1	2.59	0.57	56.8	16.7	37.8
66	225.3	0.397	83.9	18.8	6.71	7.219	36.146	33.536	73.6	40.0	54.8	21.3	2.58	0.56	56.8	16.8	38.0

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)
67	226.4	0.403	84.1	18.9	6.72	7.328	36.317	33.656	73.7	40.0	54.7	21.1	2.60	0.56	56.9	16.8	37.9
68	227.5	0.409	84.1	18.9	6.73	7.438	36.489	33.775	73.8	40.0	54.9	21.1	2.60	0.56	56.9	16.9	38.0
69	228.5	0.415	84.1	18.9	6.74	7.547	36.647	33.882	73.9	40.0	55.0	21.1	2.60	0.56	57.0	16.9	38.1
70	229.5	0.421	84.0	18.9	6.75	7.657	36.819	34.000	74.0	40.0	55.2	21.2	2.61	0.55	57.0	17.0	38.2
71	230.5	0.427	83.9	18.8	6.75	7.766	36.978	34.106	74.1	40.0	55.4	21.3	2.60	0.55	57.1	17.1	38.3
72	231.4	0.433	83.8	18.7	6.76	7.875	37.123	34.199	74.2	40.0	55.6	21.4	2.60	0.55	57.1	17.1	38.5
73	232.2	0.439	83.8	18.6	6.77	7.985	37.242	34.268	74.3	40.0	55.7	21.4	2.60	0.54	57.2	17.1	38.6
74	233.0	0.445	83.7	18.5	6.78	8.094	37.374	34.349	74.4	40.0	55.9	21.5	2.59	0.54	57.2	17.2	38.7
75	234.1	0.451	83.9	18.7	6.79	8.203	37.546	34.466	74.5	40.0	55.8	21.3	2.62	0.54	57.3	17.2	38.5
76	234.9	0.457	83.9	18.7	6.79	8.313	37.678	34.546	74.6	40.0	55.8	21.3	2.62	0.54	57.3	17.3	38.6
77	235.8	0.463	83.9	18.7	6.80	8.422	37.823	34.637	74.7	40.0	56.0	21.3	2.62	0.54	57.4	17.3	38.7
78	236.7	0.469	83.9	18.7	6.81	8.532	37.968	34.729	74.8	40.0	56.1	21.3	2.63	0.54	57.4	17.4	38.7
79	237.5	0.475	83.8	18.6	6.82	8.641	38.100	34.808	74.8	40.0	56.2	21.4	2.63	0.54	57.4	17.4	38.8
80	238.5	0.481	83.7	18.5	6.83	8.750	38.259	34.911	75.0	40.0	56.4	21.5	2.62	0.53	57.5	17.5	39.0
81	239.3	0.487	83.6	18.4	6.83	8.860	38.391	34.990	75.0	40.0	56.6	21.6	2.62	0.53	57.5	17.5	39.1
82	240.2	0.493	83.5	18.3	6.84	8.969	38.523	35.068	75.1	40.0	56.8	21.7	2.61	0.52	57.6	17.5	39.3
83	241.1	0.499	83.5	18.3	6.85	9.079	38.668	35.158	75.2	40.0	56.9	21.7	2.62	0.52	57.6	17.6	39.3
84	241.7	0.505	83.7	18.5	6.86	9.188	38.774	35.211	75.3	40.0	56.8	21.5	2.63	0.53	57.6	17.6	39.1
85	243.0	0.511	83.6	18.5	6.87	9.297	38.985	35.361	75.4	40.0	56.9	21.6	2.64	0.52	57.7	17.7	39.3
86	243.9	0.517	83.5	18.3	6.88	9.407	39.117	35.438	75.5	40.0	57.2	21.7	2.63	0.52	57.8	17.7	39.5
87	244.7	0.523	83.5	18.3	6.88	9.516	39.250	35.515	75.6	40.0	57.2	21.7	2.64	0.52	57.8	17.8	39.5
88	245.6	0.529	83.5	18.3	6.89	9.625	39.395	35.603	75.6	40.0	57.3	21.7	2.64	0.52	57.8	17.8	39.5
89	246.6	0.535	83.5	18.3	6.90	9.735	39.553	35.703	75.7	40.0	57.4	21.7	2.65	0.51	57.9	17.9	39.6
90	247.5	0.541	83.5	18.3	6.91	9.844	39.699	35.791	75.8	40.0	57.5	21.7	2.65	0.51	57.9	17.9	39.6
91	248.3	0.547	83.4	18.2	6.92	9.954	39.831	35.866	75.9	40.0	57.7	21.8	2.64	0.51	58.0	17.9	39.8
92	249.1	0.553	83.3	18.1	6.93	10.063	39.963	35.941	76.0	40.0	57.8	21.9	2.64	0.50	58.0	18.0	39.9
93	250.0	0.559	83.2	18.0	6.93	10.172	40.108	36.028	76.1	40.0	58.1	22.0	2.64	0.50	58.1	18.0	40.0
94	251.3	0.565	83.0	17.9	6.94	10.282	40.306	36.162	76.2	40.0	58.3	22.2	2.63	0.49	58.1	18.1	40.2
95	251.8	0.571	83.0	17.8	6.95	10.391	40.399	36.201	76.2	40.0	58.4	22.2	2.63	0.49	58.1	18.1	40.3
96	252.7	0.577	83.2	18.0	6.96	10.500	40.544	36.287	76.3	40.0	58.3	22.0	2.65	0.50	58.2	18.1	40.2
97	253.6	0.583	83.2	18.0	6.97	10.610	40.676	36.360	76.4	40.0	58.4	22.0	2.65	0.50	58.2	18.2	40.2
98	254.5	0.589	83.1	18.0	6.98	10.719	40.821	36.446	76.5	40.0	58.5	22.1	2.65	0.49	58.3	18.2	40.3
99	255.3	0.595	83.1	17.9	6.99	10.829	40.953	36.519	76.6	40.0	58.6	22.1	2.65	0.49	58.3	18.3	40.4
100	255.8	0.601	83.0	17.8	6.99	10.938	41.033	36.545	76.6	40.0	58.7	22.2	2.65	0.49	58.3	18.3	40.5
101	256.7	0.607	82.9	17.8	7.00	11.047	41.178	36.629	76.7	40.0	58.9	22.3	2.64	0.49	58.4	18.3	40.6
102	257.3	0.613	82.8	17.6	7.01	11.157	41.270	36.666	76.7	40.0	59.1	22.4	2.64	0.48	58.4	18.3	40.7
103	258.3	0.619	82.7	17.5	7.02	11.266	41.429	36.761	76.8	40.0	59.3	22.5	2.63	0.48	58.4	18.4	40.9
104	259.0	0.625	82.6	17.4	7.03	11.375	41.548	36.822	76.9	40.0	59.5	22.6	2.63	0.47	58.5	18.4	41.1
105	259.7	0.631	82.9	17.7	7.04	11.485	41.653	36.870	76.9	40.0	59.2	22.3	2.65	0.48	58.5	18.4	40.7
106	260.6	0.637	82.8	17.6	7.05	11.594	41.799	36.952	77.0	40.0	59.3	22.4	2.65	0.48	58.5	18.5	40.9
107	261.0	0.643	82.8	17.6	7.05	11.704	41.865	36.965	77.0	40.0	59.4	22.4	2.65	0.48	58.5	18.5	40.9
108	261.9	0.649	82.6	17.5	7.06	11.813	42.010	37.047	77.1	40.0	59.6	22.6	2.64	0.47	58.6	18.5	41.1
109	262.3	0.655	82.5	17.3	7.07	11.922	42.076	37.060	77.1	40.0	59.8	22.7	2.63	0.47	58.6	18.5	41.3
110	263.0	0.661	82.6	17.5	7.08	12.032	42.195	37.118	77.2	40.0	59.7	22.6	2.65	0.47	58.6	18.6	41.1
111	263.8	0.667	82.6	17.4	7.09	12.141	42.314	37.176	77.2	40.0	59.8	22.6	2.64	0.47	58.6	18.6	41.2
112	264.4	0.673	82.6	17.4	7.10	12.251	42.420	37.223	77.3	40.0	59.9	22.6	2.64	0.47	58.7	18.6	41.3

Specimen C

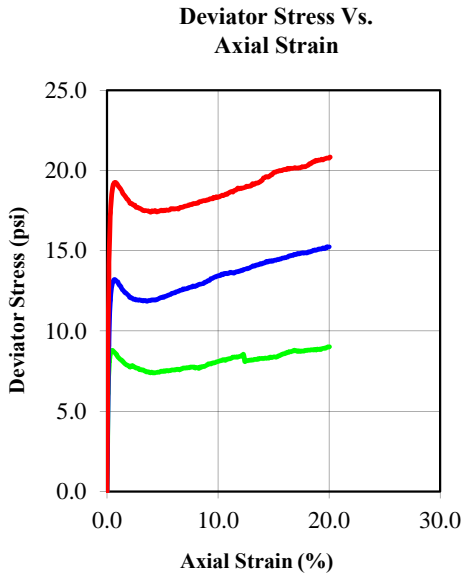
Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
113	265.4	0.679	82.5	17.4	7.11	12.360	42.578	37.315	77.4	40.0	60.0	22.7	2.65	0.47	58.7	18.7	41.3
114	266.1	0.685	82.4	17.3	7.12	12.469	42.684	37.361	77.4	40.0	60.1	22.8	2.64	0.46	58.7	18.7	41.4
115	266.7	0.691	82.3	17.2	7.13	12.579	42.776	37.395	77.4	40.0	60.3	22.9	2.63	0.46	58.7	18.7	41.6
116	267.6	0.697	82.2	17.1	7.13	12.688	42.921	37.476	77.5	40.0	60.4	23.0	2.63	0.46	58.8	18.7	41.7
117	268.5	0.703	82.1	16.9	7.14	12.797	43.067	37.555	77.6	40.0	60.7	23.1	2.62	0.45	58.8	18.8	41.9
118	268.9	0.709	82.3	17.1	7.15	12.907	43.133	37.566	77.6	40.0	60.5	22.9	2.64	0.46	58.8	18.8	41.7
119	269.9	0.715	82.3	17.1	7.16	13.016	43.291	37.656	77.7	40.0	60.6	22.9	2.64	0.45	58.9	18.8	41.8
120	270.8	0.721	82.2	17.1	7.17	13.126	43.450	37.747	77.8	40.0	60.7	23.0	2.64	0.45	58.9	18.9	41.8
121	271.6	0.727	82.2	17.0	7.18	13.235	43.569	37.802	77.8	40.0	60.8	23.0	2.64	0.45	58.9	18.9	41.9
122	272.5	0.733	82.1	17.0	7.19	13.344	43.714	37.881	77.9	40.0	61.0	23.1	2.64	0.45	59.0	18.9	42.0
123	273.3	0.739	82.0	16.8	7.20	13.454	43.846	37.947	78.0	40.0	61.2	23.2	2.63	0.44	59.0	19.0	42.2
124	274.1	0.745	81.9	16.7	7.21	13.563	43.965	38.002	78.0	40.0	61.3	23.3	2.63	0.44	59.0	19.0	42.3
125	274.9	0.751	81.8	16.6	7.22	13.672	44.097	38.068	78.1	40.0	61.5	23.4	2.63	0.44	59.1	19.0	42.4
126	275.6	0.757	81.7	16.5	7.22	13.782	44.216	38.122	78.2	40.0	61.7	23.5	2.62	0.43	59.1	19.1	42.6
127	276.3	0.763	81.9	16.7	7.23	13.891	44.322	38.165	78.2	40.0	61.5	23.3	2.64	0.44	59.1	19.1	42.4
128	277.1	0.769	81.9	16.7	7.24	14.001	44.454	38.230	78.3	40.0	61.6	23.3	2.64	0.44	59.2	19.1	42.4
129	278.0	0.775	81.8	16.6	7.25	14.110	44.599	38.306	78.3	40.0	61.7	23.4	2.64	0.43	59.2	19.2	42.6
130	278.7	0.781	81.7	16.6	7.26	14.219	44.718	38.359	78.4	40.0	61.8	23.5	2.64	0.43	59.2	19.2	42.6
131	279.1	0.787	81.4	16.3	7.27	14.329	44.771	38.356	78.4	40.0	62.1	23.8	2.61	0.42	59.2	19.2	43.0
132	279.8	0.793	81.7	16.5	7.28	14.438	44.889	38.408	78.4	40.0	61.9	23.5	2.63	0.43	59.2	19.2	42.7
133	280.5	0.799	81.7	16.5	7.29	14.548	44.995	38.449	78.5	40.0	62.0	23.5	2.63	0.43	59.3	19.2	42.8
134	281.2	0.805	81.6	16.5	7.30	14.657	45.114	38.502	78.5	40.0	62.1	23.6	2.63	0.43	59.3	19.3	42.8
135	281.7	0.811	81.6	16.4	7.31	14.766	45.193	38.520	78.6	40.0	62.1	23.6	2.63	0.43	59.3	19.3	42.9
136	282.3	0.817	81.5	16.3	7.32	14.876	45.286	38.549	78.6	40.0	62.2	23.7	2.63	0.42	59.3	19.3	43.0
137	282.9	0.823	81.4	16.2	7.33	14.985	45.378	38.578	78.6	40.0	62.4	23.8	2.62	0.42	59.3	19.3	43.1
138	283.7	0.829	81.3	16.1	7.34	15.094	45.510	38.641	78.7	40.0	62.5	23.9	2.62	0.42	59.4	19.3	43.2
139	284.1	0.835	81.2	16.0	7.35	15.204	45.576	38.647	78.7	40.0	62.7	24.0	2.61	0.41	59.4	19.3	43.3
140	284.8	0.841	81.1	15.9	7.36	15.313	45.695	38.698	78.7	40.0	62.8	24.1	2.60	0.41	59.4	19.3	43.5
141	285.3	0.847	81.3	16.1	7.36	15.423	45.774	38.715	78.8	40.0	62.6	23.9	2.62	0.42	59.4	19.4	43.3
142	286.2	0.853	81.3	16.1	7.37	15.532	45.920	38.788	78.8	40.0	62.7	23.9	2.62	0.41	59.4	19.4	43.3
143	287.1	0.859	81.2	16.1	7.38	15.641	46.052	38.849	78.9	40.0	62.8	24.0	2.62	0.41	59.5	19.4	43.4
144	287.5	0.865	81.2	16.0	7.39	15.751	46.131	38.865	78.9	40.0	62.9	24.0	2.62	0.41	59.5	19.4	43.5
145	288.5	0.871	81.1	15.9	7.40	15.860	46.276	38.937	79.0	40.0	63.0	24.1	2.62	0.41	59.5	19.5	43.6
146	289.3	0.877	81.0	15.8	7.41	15.969	46.408	38.997	79.0	40.0	63.2	24.2	2.61	0.41	59.5	19.5	43.7
147	290.0	0.883	80.8	15.7	7.42	16.079	46.527	39.046	79.1	40.0	63.4	24.4	2.60	0.40	59.6	19.5	43.9
148	290.9	0.889	80.7	15.6	7.43	16.188	46.673	39.117	79.2	40.0	63.6	24.5	2.60	0.40	59.6	19.6	44.0
149	291.4	0.895	80.9	15.7	7.44	16.298	46.752	39.132	79.2	40.0	63.4	24.3	2.61	0.40	59.6	19.6	43.9
150	292.3	0.901	80.8	15.7	7.45	16.407	46.897	39.203	79.2	40.0	63.6	24.4	2.61	0.40	59.6	19.6	44.0
151	293.1	0.907	80.8	15.7	7.46	16.516	47.016	39.251	79.3	40.0	63.6	24.4	2.61	0.40	59.7	19.6	44.0
152	293.5	0.913	80.8	15.6	7.47	16.626	47.082	39.254	79.3	40.0	63.7	24.4	2.61	0.40	59.7	19.6	44.1
153	294.2	0.919	80.6	15.4	7.48	16.735	47.201	39.302	79.3	40.0	63.9	24.6	2.60	0.39	59.7	19.7	44.3
154	295.0	0.925	80.6	15.5	7.49	16.844	47.320	39.349	79.4	40.0	63.9	24.6	2.60	0.39	59.7	19.7	44.2
155	295.5	0.931	80.6	15.4	7.50	16.954	47.412	39.374	79.4	40.0	64.0	24.6	2.60	0.39	59.7	19.7	44.3
156	296.4	0.937	80.6	15.4	7.51	17.063	47.558	39.443	79.5	40.0	64.0	24.6	2.60	0.39	59.8	19.7	44.3
157	296.9	0.943	80.5	15.4	7.52	17.173	47.637	39.456	79.5	40.0	64.1	24.7	2.60	0.39	59.8	19.7	44.4
158	297.7	0.949	80.5	15.3	7.53	17.282	47.769	39.513	79.6	40.0	64.2	24.7	2.60	0.39	59.8	19.8	44.5

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)
159	298.3	0.955	80.4	15.2	7.54	17.391	47.861	39.538	79.6	40.0	64.4	24.8	2.59	0.38	59.8	19.8	44.6
160	298.9	0.961	80.3	15.1	7.55	17.501	47.954	39.562	79.6	40.0	64.5	24.9	2.59	0.38	59.8	19.8	44.7
161	299.6	0.967	80.2	15.0	7.56	17.610	48.059	39.596	79.6	40.0	64.6	25.0	2.58	0.38	59.8	19.8	44.8
162	300.1	0.973	80.0	14.9	7.57	17.720	48.139	39.609	79.6	40.0	64.8	25.2	2.57	0.38	59.8	19.8	45.0
163	300.8	0.979	80.3	15.1	7.58	17.829	48.258	39.654	79.7	40.0	64.6	24.9	2.59	0.38	59.9	19.8	44.7
164	301.5	0.985	80.2	15.1	7.59	17.938	48.376	39.699	79.7	40.0	64.7	25.0	2.59	0.38	59.9	19.8	44.8
165	301.9	0.991	80.2	15.0	7.60	18.048	48.443	39.700	79.7	40.0	64.7	25.0	2.59	0.38	59.9	19.8	44.9
166	302.9	0.997	80.2	15.0	7.61	18.157	48.601	39.777	79.8	40.0	64.8	25.0	2.59	0.38	59.9	19.9	44.9
167	303.2	1.003	80.1	15.0	7.62	18.266	48.641	39.756	79.8	40.0	64.8	25.1	2.58	0.38	59.9	19.9	45.0
168	303.6	1.009	80.0	14.8	7.63	18.376	48.707	39.756	79.8	40.0	65.0	25.2	2.58	0.37	59.9	19.9	45.1
169	303.9	1.015	79.9	14.7	7.64	18.485	48.760	39.746	79.8	40.0	65.1	25.3	2.57	0.37	59.9	19.9	45.2
170	304.6	1.021	79.8	14.6	7.65	18.595	48.865	39.779	79.8	40.0	65.2	25.4	2.57	0.37	59.9	19.9	45.3
171	305.4	1.027	79.7	14.5	7.66	18.704	48.997	39.833	79.9	40.0	65.4	25.5	2.56	0.36	60.0	19.9	45.5
172	305.9	1.033	79.9	14.8	7.67	18.813	49.077	39.844	79.9	40.0	65.1	25.3	2.58	0.37	60.0	19.9	45.2
173	306.1	1.039	79.8	14.7	7.68	18.923	49.116	39.822	79.9	40.0	65.2	25.4	2.57	0.37	60.0	19.9	45.3
174	307.1	1.045	79.8	14.6	7.69	19.032	49.275	39.897	79.9	40.0	65.3	25.4	2.57	0.37	60.0	19.9	45.4
175	307.6	1.051	79.7	14.5	7.70	19.141	49.354	39.907	79.9	40.0	65.4	25.5	2.57	0.36	60.0	20.0	45.4
176	308.3	1.057	79.4	14.3	7.71	19.251	49.460	39.938	80.0	40.0	65.7	25.8	2.55	0.36	60.0	20.0	45.7
177	308.7	1.063	79.6	14.5	7.72	19.360	49.526	39.937	80.0	40.0	65.5	25.6	2.56	0.36	60.0	20.0	45.5
178	309.8	1.069	79.6	14.5	7.73	19.470	49.697	40.021	80.1	40.0	65.6	25.6	2.56	0.36	60.1	20.0	45.6
179	309.9	1.075	79.5	14.4	7.75	19.579	49.724	39.988	80.0	40.0	65.6	25.7	2.56	0.36	60.0	20.0	45.7
180	310.8	1.081	79.5	14.3	7.76	19.688	49.869	40.051	80.1	40.0	65.7	25.7	2.56	0.36	60.1	20.0	45.7
181	311.5	1.087	79.4	14.3	7.77	19.798	49.975	40.081	80.1	40.0	65.9	25.8	2.55	0.36	60.1	20.0	45.8
182	312.0	1.093	79.3	14.1	7.78	19.907	50.054	40.090	80.1	40.0	66.0	25.9	2.55	0.35	60.1	20.0	45.9
183	312.6	1.098	79.2	14.1	7.79	20.000	50.160	40.128	80.2	40.0	66.1	26.0	2.54	0.35	60.1	20.1	46.0

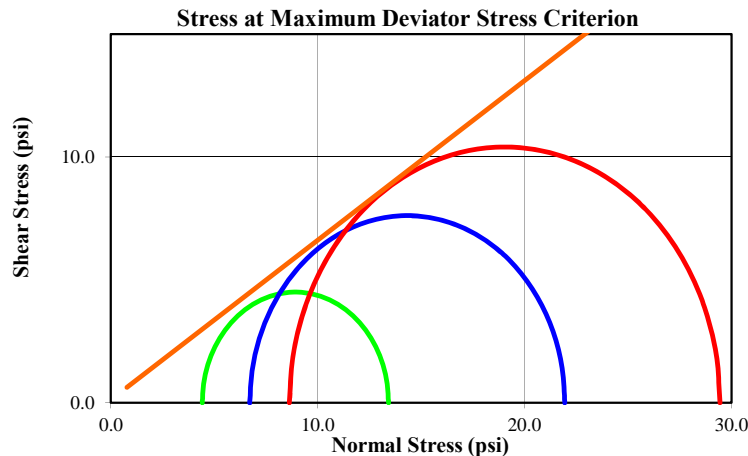
Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME : I-20 D/B Roadway Improvement	SAMPLE NO. : Bag-3
PROJECT NO. : 14046-01	SAMPLE DEPTH : 7.3' to 26.5'
PROJECT LOCATION : B-27A Bag-3 7.3' to 26.5'	SAMPLE TYPE : Remolded
BORING NUMBER : B-27A	DESCRIPTION : White, Tan & Black Clayey Sand
REMARKS : 3 Point Remolded	TEST TYPE : Consolidated Undrained



	Specimen				
	Initial	A	B	C	D
Water Content (%)	8.7	8.6	8.9		
Dry Density (pcf)	116.3	114.6	115.4		
Saturation (%)	54.81	51.23	54.70		
Void Ratio	0.419	0.440	0.430		
Diameter (in)	2.782	2.799	2.788		
Height (in)	5.535	5.552	5.540		
Specific Gravity	2.65	2.65	2.65		
Liquid Limit	28	28	28		
Plastic Limit	18	18	18		
After Consolidation	A	B	C	D	
B-Value	0.96	0.96	0.96		
Water Content (%)	15.6	15.3	14.8		
Dry Density (pcf)	116.64	115.81	116.40		
Saturation (%)	100.00	100.00	100.00		
Void Ratio	0.418	0.428	0.421		
Effective Stress (psi)	10.0	20.0	40.0		
Back Press. (psi)	79.0	99.2	78.9		
Rate of Strain	0.006	0.006	0.006		

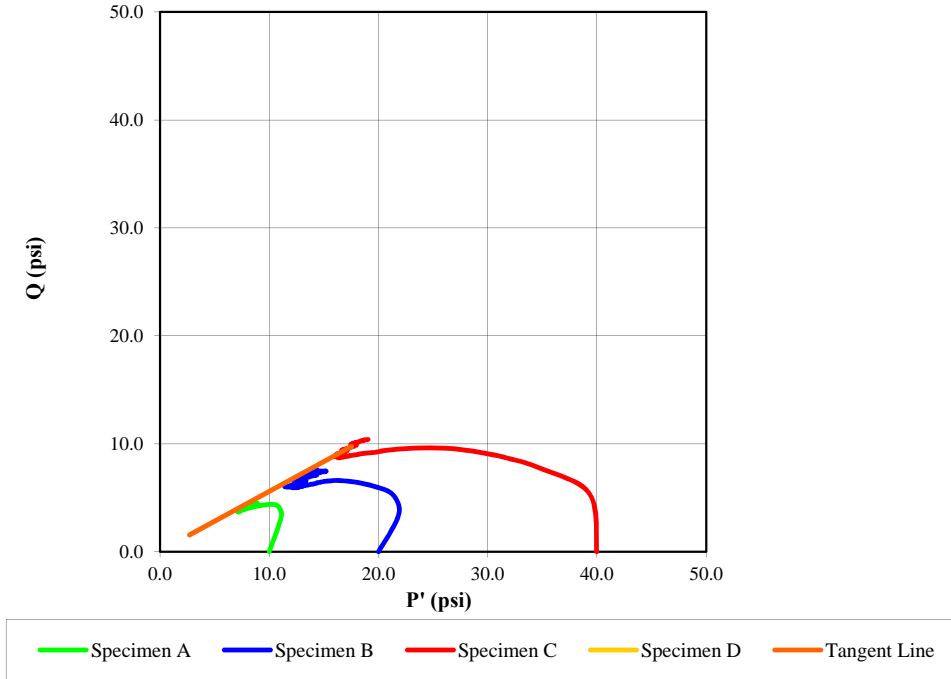
Maximum Deviator Stress Criterion		After Shear	A	B	C	D
C (psi)	1.2	σ'_1 at Failure (psi)	13.43	21.95	29.45	
ϕ (deg)	14.0	σ'_3 at Failure (psi)	4.42	6.72	8.63	
C' (psi)	0.1					
ϕ' (deg)	33.0					



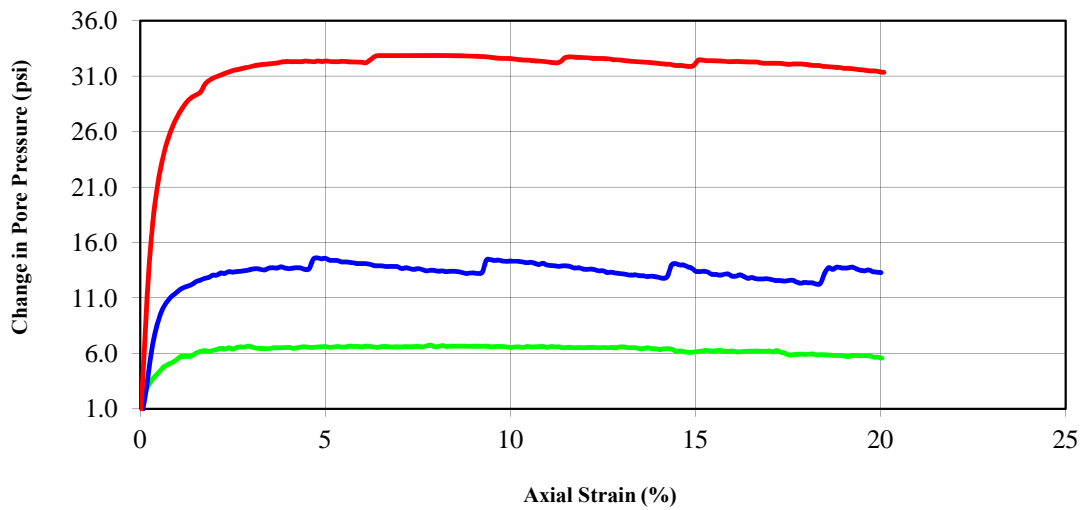
Tested By: JS
Date: 3-25-15

Approved By: SKB
Date: 3-27-15

Stress Paths (Effective)
 (a = 0.1 alpha = 29.0)



Change in Pore Pressure vs. Axial Strain



File Location

B-27A Bag-3 7.3-26.5 Remolded.HSD

Project Information

Project No. 14046-01
 Project Name: I-20 D/B Roadway Improvement
 Client:
 Sample Location: B-27A Bag-3 7.3' to 26.5'
 Sample Description: White, Tan & Black Clayey Sand
 Remarks: 3 Point Remolded

Sample Data

Sample Type: Remolded
 Specific Gravity: 2.6500001
 LL: 28.000
 PL: 18.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.782	2.783	
Height (in)	5.535	5.515	
Weight (grams)	1116.90		1187.50
Moisture (%)	8.73		15.61
Dry Density (pcf)	116.33	116.64	
Saturation (%)	54.81	100.00	
Void Ratio	0.419	0.418	

Test Data

Rate of Strain: 0.006
 Cell Pressure (psi): 89.000
 Effective Confining Stress (psi): 10.0
 Corrected Peak Deviator Stress (psi): 9.011 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	6.8	0.000	79.0	0.0	6.08	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	45.7	0.006	81.1	2.1	6.09	0.109	6.384	6.377	16.4	10.0	14.3	7.9	1.81	0.33	13.2	3.2	11.1
2	55.8	0.012	82.1	3.1	6.10	0.218	8.048	8.030	18.0	10.0	15.0	6.9	2.16	0.38	14.0	4.0	11.0
3	59.5	0.018	82.7	3.7	6.10	0.327	8.656	8.628	18.6	10.0	15.0	6.3	2.36	0.42	14.3	4.3	10.7
4	60.5	0.024	83.1	4.1	6.11	0.435	8.819	8.780	18.8	10.0	14.7	5.9	2.48	0.46	14.4	4.4	10.3
5	60.4	0.030	83.5	4.5	6.12	0.544	8.805	8.757	18.8	10.0	14.3	5.5	2.58	0.51	14.4	4.4	9.9
6	60.0	0.036	83.8	4.8	6.12	0.653	8.738	8.680	18.7	10.0	13.9	5.2	2.68	0.55	14.3	4.3	9.5
7	59.6	0.042	84.0	5.0	6.13	0.762	8.670	8.604	18.6	10.0	13.6	5.0	2.73	0.58	14.3	4.3	9.3
8	59.1	0.048	84.2	5.2	6.14	0.871	8.589	8.514	18.5	10.0	13.3	4.8	2.77	0.61	14.3	4.3	9.1
9	58.3	0.055	84.4	5.4	6.14	0.980	8.467	8.384	18.4	10.0	13.0	4.6	2.83	0.65	14.2	4.2	8.8
10	57.8	0.061	84.7	5.7	6.15	1.089	8.386	8.295	18.3	10.0	12.6	4.3	2.93	0.69	14.1	4.1	8.4
11	57.4	0.067	84.7	5.7	6.16	1.198	8.318	8.219	18.2	10.0	12.5	4.3	2.93	0.70	14.1	4.1	8.4
12	57.3	0.073	84.7	5.7	6.16	1.306	8.291	8.183	18.2	10.0	12.4	4.3	2.92	0.70	14.1	4.1	8.3
13	56.8	0.079	84.8	5.8	6.17	1.415	8.210	8.094	18.1	10.0	12.3	4.2	2.94	0.72	14.0	4.0	8.2
14	56.4	0.085	85.1	6.1	6.18	1.524	8.142	8.018	18.0	10.0	12.0	3.9	3.04	0.76	14.0	4.0	7.9
15	55.9	0.091	85.2	6.2	6.18	1.633	8.075	7.943	17.9	10.0	11.8	3.8	3.08	0.78	14.0	4.0	7.8
16	55.7	0.097	85.3	6.3	6.19	1.742	8.034	7.894	17.9	10.0	11.6	3.7	3.11	0.79	13.9	3.9	7.7
17	55.5	0.103	85.2	6.2	6.20	1.851	8.007	7.859	17.9	10.0	11.7	3.8	3.06	0.79	13.9	3.9	7.7
18	55.4	0.109	85.3	6.3	6.20	1.960	7.980	7.824	17.8	10.0	11.6	3.7	3.10	0.80	13.9	3.9	7.6
19	55.0	0.115	85.3	6.3	6.21	2.069	7.913	7.749	17.7	10.0	11.4	3.7	3.12	0.82	13.9	3.9	7.5

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)
20	55.4	0.121	85.5	6.5	6.22	2.177	7.980	7.806	17.8	10.0	11.3	3.5	3.21	0.83	13.9	3.9	7.4
21	55.6	0.127	85.4	6.4	6.23	2.286	8.021	7.837	17.8	10.0	11.4	3.6	3.17	0.81	13.9	3.9	7.5
22	55.3	0.133	85.5	6.5	6.23	2.395	7.967	7.776	17.8	10.0	11.3	3.5	3.23	0.84	13.9	3.9	7.4
23	55.1	0.139	85.4	6.4	6.24	2.504	7.940	7.741	17.7	10.0	11.4	3.6	3.14	0.82	13.9	3.9	7.5
24	54.9	0.145	85.5	6.5	6.25	2.613	7.899	7.693	17.7	10.0	11.1	3.5	3.23	0.85	13.8	3.8	7.3
25	54.9	0.151	85.6	6.6	6.25	2.722	7.899	7.684	17.7	10.0	11.1	3.4	3.25	0.86	13.8	3.8	7.3
26	54.8	0.157	85.6	6.6	6.26	2.831	7.885	7.662	17.7	10.0	11.1	3.4	3.25	0.86	13.8	3.8	7.2
27	54.4	0.163	85.7	6.7	6.27	2.940	7.818	7.588	17.6	10.0	10.9	3.3	3.28	0.88	13.8	3.8	7.1
28	54.5	0.169	85.5	6.5	6.27	3.048	7.831	7.593	17.6	10.0	11.0	3.5	3.20	0.86	13.8	3.8	7.2
29	54.3	0.175	85.5	6.5	6.28	3.157	7.804	7.558	17.6	10.0	11.1	3.5	3.14	0.86	13.8	3.8	7.3
30	54.4	0.181	85.5	6.5	6.29	3.266	7.818	7.562	17.6	10.0	11.1	3.5	3.14	0.85	13.8	3.8	7.3
31	54.1	0.187	85.4	6.4	6.30	3.375	7.777	7.515	17.5	10.0	11.1	3.6	3.10	0.85	13.8	3.8	7.3
32	54.0	0.193	85.4	6.4	6.30	3.484	7.750	7.480	17.5	10.0	11.1	3.6	3.09	0.86	13.7	3.7	7.3
33	53.8	0.199	85.5	6.5	6.31	3.593	7.723	7.446	17.4	10.0	10.9	3.5	3.13	0.87	13.7	3.7	7.2
34	53.9	0.205	85.5	6.5	6.32	3.702	7.737	7.450	17.4	10.0	10.9	3.5	3.13	0.87	13.7	3.7	7.2
35	53.7	0.211	85.5	6.5	6.32	3.811	7.710	7.416	17.4	10.0	10.9	3.5	3.12	0.88	13.7	3.7	7.2
36	53.6	0.217	85.5	6.5	6.33	3.919	7.696	7.394	17.4	10.0	10.8	3.5	3.14	0.88	13.7	3.7	7.1
37	53.9	0.223	85.5	6.5	6.34	4.028	7.737	7.425	17.4	10.0	10.9	3.5	3.15	0.88	13.7	3.7	7.2
38	53.7	0.229	85.5	6.5	6.35	4.137	7.710	7.391	17.4	10.0	10.9	3.5	3.09	0.87	13.7	3.7	7.2
39	53.7	0.235	85.5	6.5	6.35	4.246	7.710	7.382	17.4	10.0	10.9	3.5	3.11	0.88	13.7	3.7	7.2
40	53.9	0.241	85.6	6.6	6.36	4.355	7.737	7.400	17.4	10.0	10.8	3.4	3.17	0.89	13.7	3.7	7.1
41	54.1	0.247	85.6	6.6	6.37	4.464	7.764	7.417	17.4	10.0	10.8	3.4	3.17	0.89	13.7	3.7	7.1
42	54.1	0.253	85.5	6.5	6.37	4.573	7.777	7.422	17.4	10.0	10.9	3.5	3.15	0.88	13.7	3.7	7.2
43	54.2	0.259	85.5	6.5	6.38	4.681	7.791	7.426	17.4	10.0	10.9	3.5	3.15	0.88	13.7	3.7	7.2
44	54.5	0.265	85.6	6.6	6.39	4.790	7.831	7.456	17.5	10.0	10.9	3.4	3.19	0.88	13.7	3.7	7.1
45	54.7	0.271	85.6	6.6	6.40	4.899	7.872	7.486	17.5	10.0	10.9	3.4	3.19	0.88	13.7	3.7	7.2
46	54.7	0.277	85.6	6.6	6.40	5.008	7.872	7.478	17.5	10.0	10.8	3.4	3.22	0.89	13.7	3.7	7.1
47	55.0	0.283	85.5	6.5	6.41	5.117	7.913	7.508	17.5	10.0	11.0	3.5	3.17	0.87	13.7	3.8	7.2
48	54.9	0.289	85.6	6.6	6.42	5.226	7.899	7.486	17.5	10.0	10.9	3.4	3.19	0.88	13.7	3.7	7.2
49	55.1	0.295	85.6	6.6	6.43	5.335	7.940	7.516	17.5	10.0	10.9	3.4	3.23	0.88	13.8	3.8	7.1
50	55.3	0.301	85.6	6.6	6.43	5.444	7.967	7.533	17.5	10.0	10.9	3.4	3.21	0.87	13.8	3.8	7.2
51	55.2	0.307	85.6	6.6	6.44	5.552	7.953	7.511	17.5	10.0	10.9	3.4	3.20	0.88	13.8	3.8	7.2
52	55.4	0.313	85.7	6.7	6.45	5.661	7.980	7.528	17.5	10.0	10.9	3.3	3.26	0.89	13.8	3.8	7.1
53	55.6	0.319	85.6	6.6	6.46	5.770	8.021	7.558	17.6	10.0	10.9	3.4	3.24	0.88	13.8	3.8	7.2
54	55.7	0.325	85.6	6.6	6.46	5.879	8.034	7.562	17.6	10.0	10.9	3.4	3.24	0.88	13.8	3.8	7.2
55	55.8	0.331	85.6	6.6	6.47	5.988	8.048	7.566	17.6	10.0	11.0	3.4	3.22	0.87	13.8	3.8	7.2
56	55.9	0.337	85.7	6.7	6.48	6.097	8.061	7.570	17.6	10.0	10.9	3.3	3.27	0.88	13.8	3.8	7.1
57	56.0	0.343	85.6	6.6	6.49	6.206	8.088	7.586	17.6	10.0	11.0	3.4	3.25	0.87	13.8	3.8	7.2
58	56.2	0.349	85.6	6.6	6.49	6.315	8.115	7.603	17.6	10.0	11.0	3.4	3.23	0.87	13.8	3.8	7.2
59	56.3	0.355	85.5	6.5	6.50	6.423	8.129	7.607	17.6	10.0	11.1	3.5	3.20	0.86	13.8	3.8	7.3
60	56.1	0.361	85.6	6.6	6.51	6.532	8.102	7.573	17.6	10.0	10.9	3.4	3.25	0.87	13.8	3.8	7.2
61	56.4	0.367	85.6	6.6	6.52	6.641	8.156	7.614	17.6	10.0	11.0	3.4	3.26	0.87	13.8	3.8	7.2
62	56.7	0.373	85.6	6.6	6.52	6.750	8.197	7.643	17.6	10.0	11.1	3.4	3.24	0.86	13.8	3.8	7.2
63	57.0	0.379	85.6	6.6	6.53	6.859	8.251	7.685	17.7	10.0	11.1	3.4	3.25	0.86	13.8	3.8	7.3
64	57.1	0.385	85.6	6.6	6.54	6.968	8.264	7.688	17.7	10.0	11.1	3.4	3.25	0.86	13.8	3.8	7.3

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)
65	57.1	0.391	85.6	6.6	6.55	7.077	8.264	7.679	17.7	10.0	11.1	3.4	3.25	0.86	13.8	3.8	7.3
66	57.3	0.397	85.6	6.6	6.55	7.186	8.305	7.708	17.7	10.0	11.1	3.4	3.29	0.86	13.8	3.9	7.2
67	57.4	0.403	85.6	6.6	6.56	7.294	8.318	7.712	17.7	10.0	11.1	3.4	3.26	0.85	13.9	3.9	7.3
68	57.4	0.409	85.6	6.6	6.57	7.403	8.318	7.702	17.7	10.0	11.1	3.4	3.28	0.86	13.8	3.9	7.2
69	57.8	0.415	85.6	6.6	6.58	7.512	8.372	7.743	17.7	10.0	11.1	3.4	3.30	0.86	13.9	3.9	7.2
70	57.8	0.421	85.6	6.6	6.58	7.621	8.386	7.747	17.7	10.0	11.2	3.4	3.27	0.85	13.9	3.9	7.3
71	57.9	0.427	85.7	6.7	6.59	7.730	8.399	7.750	17.7	10.0	11.1	3.3	3.33	0.86	13.9	3.9	7.2
72	58.0	0.433	85.7	6.7	6.60	7.839	8.413	7.753	17.7	10.0	11.0	3.3	3.38	0.87	13.9	3.9	7.1
73	57.7	0.439	85.6	6.6	6.61	7.948	8.359	7.695	17.7	10.0	11.1	3.4	3.28	0.86	13.8	3.8	7.2
74	57.8	0.445	85.6	6.6	6.62	8.057	8.386	7.710	17.7	10.0	11.1	3.4	3.29	0.86	13.9	3.9	7.2
75	57.9	0.451	85.7	6.7	6.62	8.165	8.399	7.714	17.7	10.0	11.0	3.3	3.34	0.87	13.9	3.9	7.1
76	57.7	0.457	85.6	6.6	6.63	8.274	8.359	7.667	17.7	10.0	11.0	3.4	3.27	0.86	13.8	3.8	7.2
77	58.3	0.463	85.7	6.7	6.64	8.383	8.454	7.745	17.7	10.0	11.1	3.3	3.32	0.86	13.9	3.9	7.2
78	58.3	0.469	85.7	6.7	6.65	8.492	8.454	7.736	17.7	10.0	11.1	3.3	3.32	0.86	13.9	3.9	7.2
79	58.6	0.475	85.7	6.7	6.66	8.601	8.508	7.776	17.8	10.0	11.1	3.3	3.33	0.86	13.9	3.9	7.2
80	58.7	0.481	85.7	6.7	6.66	8.710	8.535	7.791	17.8	10.0	11.1	3.3	3.34	0.86	13.9	3.9	7.2
81	58.8	0.487	85.6	6.6	6.67	8.819	8.548	7.794	17.8	10.0	11.2	3.4	3.31	0.85	13.9	3.9	7.3
82	59.2	0.493	85.6	6.6	6.68	8.928	8.616	7.847	17.8	10.0	11.2	3.4	3.33	0.84	13.9	3.9	7.3
83	59.6	0.499	85.7	6.7	6.69	9.036	8.670	7.886	17.9	10.0	11.2	3.3	3.37	0.84	13.9	3.9	7.3
84	60.1	0.505	85.7	6.7	6.70	9.145	8.751	7.951	17.9	10.0	11.3	3.3	3.39	0.84	14.0	4.0	7.3
85	60.1	0.511	85.6	6.6	6.70	9.254	8.751	7.941	17.9	10.0	11.3	3.4	3.36	0.83	14.0	4.0	7.3
86	60.1	0.517	85.7	6.7	6.71	9.363	8.765	7.944	17.9	10.0	11.3	3.3	3.38	0.84	14.0	4.0	7.3
87	60.6	0.523	85.6	6.6	6.72	9.472	8.832	7.996	18.0	10.0	11.4	3.4	3.34	0.82	14.0	4.0	7.4
88	60.6	0.529	85.6	6.6	6.73	9.581	8.846	7.998	18.0	10.0	11.4	3.4	3.37	0.83	14.0	4.0	7.4
89	60.8	0.535	85.6	6.6	6.74	9.690	8.873	8.013	18.0	10.0	11.4	3.4	3.38	0.83	14.0	4.0	7.4
90	61.1	0.541	85.6	6.6	6.74	9.798	8.927	8.052	18.0	10.0	11.4	3.4	3.39	0.82	14.0	4.0	7.4
91	61.4	0.547	85.6	6.6	6.75	9.907	8.968	8.079	18.1	10.0	11.5	3.4	3.37	0.81	14.0	4.0	7.5
92	61.5	0.553	85.5	6.5	6.76	10.016	8.995	8.094	18.1	10.0	11.5	3.5	3.34	0.81	14.0	4.0	7.5
93	61.8	0.559	85.6	6.6	6.77	10.125	9.035	8.120	18.1	10.0	11.5	3.4	3.38	0.81	14.1	4.1	7.5
94	62.0	0.565	85.6	6.6	6.78	10.234	9.076	8.147	18.1	10.0	11.6	3.4	3.39	0.81	14.1	4.1	7.5
95	62.2	0.571	85.5	6.5	6.78	10.343	9.103	8.161	18.2	10.0	11.6	3.5	3.36	0.80	14.1	4.1	7.5
96	62.6	0.577	85.6	6.6	6.79	10.452	9.170	8.212	18.2	10.0	11.6	3.4	3.44	0.81	14.1	4.1	7.5
97	62.6	0.583	85.6	6.6	6.80	10.561	9.170	8.202	18.2	10.0	11.6	3.4	3.40	0.80	14.1	4.1	7.5
98	62.4	0.589	85.6	6.6	6.81	10.669	9.143	8.168	18.2	10.0	11.6	3.4	3.39	0.81	14.1	4.1	7.5
99	62.9	0.595	85.6	6.6	6.82	10.778	9.211	8.218	18.2	10.0	11.6	3.4	3.44	0.81	14.1	4.1	7.5
100	63.1	0.601	85.6	6.6	6.83	10.887	9.252	8.244	18.2	10.0	11.6	3.4	3.45	0.80	14.1	4.1	7.5
101	63.4	0.607	85.5	6.5	6.83	10.996	9.292	8.270	18.3	10.0	11.7	3.5	3.40	0.79	14.1	4.1	7.6
102	63.4	0.613	85.6	6.6	6.84	11.105	9.306	8.272	18.3	10.0	11.6	3.4	3.45	0.80	14.1	4.1	7.5
103	63.8	0.619	85.6	6.6	6.85	11.214	9.360	8.310	18.3	10.0	11.7	3.4	3.44	0.79	14.2	4.2	7.6
104	64.2	0.625	85.6	6.6	6.86	11.323	9.427	8.360	18.4	10.0	11.8	3.4	3.45	0.79	14.2	4.2	7.6
105	64.3	0.631	85.5	6.5	6.87	11.432	9.441	8.362	18.4	10.0	11.9	3.5	3.39	0.78	14.2	4.2	7.7
106	64.3	0.637	85.5	6.5	6.88	11.540	9.454	8.363	18.4	10.0	11.8	3.5	3.42	0.78	14.2	4.2	7.6
107	64.5	0.643	85.5	6.5	6.88	11.649	9.481	8.377	18.4	10.0	11.8	3.5	3.43	0.78	14.2	4.2	7.6
108	64.5	0.649	85.5	6.5	6.89	11.758	9.481	8.367	18.4	10.0	11.9	3.5	3.40	0.78	14.2	4.2	7.7
109	64.7	0.655	85.5	6.5	6.90	11.867	9.522	8.392	18.4	10.0	11.8	3.5	3.43	0.78	14.2	4.2	7.6

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)
110	65.0	0.661	85.5	6.5	6.91	11.976	9.563	8.417	18.4	10.0	11.9	3.5	3.41	0.77	14.2	4.2	7.7
111	65.2	0.667	85.5	6.5	6.92	12.085	9.603	8.443	18.4	10.0	11.9	3.5	3.45	0.78	14.2	4.2	7.7
112	65.7	0.673	85.5	6.5	6.93	12.194	9.671	8.492	18.5	10.0	11.9	3.5	3.46	0.77	14.2	4.2	7.7
113	66.0	0.679	85.5	6.5	6.94	12.303	9.725	8.529	18.5	10.0	12.0	3.5	3.47	0.77	14.3	4.3	7.7
114	66.1	0.685	85.5	6.5	6.94	12.411	9.738	8.102	18.1	10.0	11.6	3.5	3.32	0.80	14.0	4.1	7.5
115	66.4	0.691	85.5	6.5	6.95	12.520	9.793	8.135	18.1	10.0	11.6	3.5	3.36	0.80	14.1	4.1	7.5
116	66.6	0.697	85.5	6.5	6.96	12.629	9.820	8.144	18.1	10.0	11.6	3.5	3.33	0.80	14.1	4.1	7.6
117	66.8	0.703	85.5	6.5	6.97	12.738	9.860	8.165	18.2	10.0	11.6	3.5	3.37	0.80	14.1	4.1	7.5
118	66.9	0.709	85.5	6.5	6.98	12.847	9.874	8.162	18.2	10.0	11.7	3.5	3.34	0.80	14.1	4.1	7.6
119	67.1	0.715	85.6	6.6	6.99	12.956	9.914	8.183	18.2	10.0	11.6	3.4	3.40	0.80	14.1	4.1	7.5
120	67.2	0.721	85.6	6.6	7.00	13.065	9.928	8.180	18.2	10.0	11.6	3.4	3.40	0.80	14.1	4.1	7.5
121	67.5	0.727	85.5	6.5	7.01	13.174	9.968	8.201	18.2	10.0	11.7	3.5	3.35	0.79	14.1	4.1	7.6
122	67.7	0.733	85.5	6.5	7.01	13.282	10.009	8.221	18.2	10.0	11.7	3.5	3.35	0.79	14.1	4.1	7.6
123	67.8	0.739	85.5	6.5	7.02	13.391	10.023	8.218	18.2	10.0	11.7	3.5	3.35	0.79	14.1	4.1	7.6
124	68.0	0.745	85.4	6.4	7.03	13.500	10.063	8.239	18.2	10.0	11.8	3.6	3.31	0.78	14.1	4.1	7.7
125	68.1	0.751	85.5	6.5	7.04	13.609	10.077	8.236	18.2	10.0	11.8	3.5	3.33	0.78	14.1	4.1	7.7
126	68.5	0.757	85.5	6.5	7.05	13.718	10.144	8.279	18.3	10.0	11.8	3.5	3.37	0.79	14.1	4.1	7.6
127	68.6	0.763	85.4	6.4	7.06	13.827	10.158	8.276	18.3	10.0	11.8	3.6	3.32	0.78	14.1	4.1	7.7
128	68.8	0.769	85.4	6.4	7.07	13.936	10.185	8.285	18.3	10.0	11.9	3.6	3.32	0.78	14.1	4.1	7.7
129	68.9	0.775	85.3	6.3	7.08	14.044	10.212	8.293	18.3	10.0	11.9	3.7	3.27	0.76	14.1	4.1	7.8
130	69.0	0.781	85.4	6.4	7.09	14.153	10.225	8.290	18.3	10.0	11.9	3.6	3.32	0.77	14.1	4.1	7.7
131	69.2	0.787	85.4	6.4	7.09	14.262	10.252	8.298	18.3	10.0	11.9	3.6	3.32	0.77	14.1	4.1	7.7
132	69.3	0.793	85.4	6.4	7.10	14.371	10.266	8.295	18.3	10.0	11.9	3.6	3.30	0.77	14.1	4.1	7.8
133	69.4	0.799	85.2	6.2	7.11	14.480	10.293	8.303	18.3	10.0	12.1	3.8	3.18	0.74	14.1	4.2	8.0
134	69.6	0.805	85.2	6.2	7.12	14.589	10.320	8.311	18.3	10.0	12.1	3.8	3.20	0.75	14.2	4.2	7.9
135	70.1	0.811	85.1	6.1	7.13	14.698	10.401	8.365	18.4	10.0	12.2	3.9	3.17	0.73	14.2	4.2	8.0
136	70.0	0.817	85.1	6.1	7.14	14.807	10.388	8.339	18.3	10.0	12.2	3.9	3.14	0.73	14.2	4.2	8.1
137	70.3	0.823	85.1	6.1	7.15	14.915	10.428	8.358	18.4	10.0	12.3	3.9	3.15	0.73	14.2	4.2	8.1
138	70.5	0.829	85.1	6.1	7.16	15.024	10.469	8.378	18.4	10.0	12.2	3.9	3.17	0.73	14.2	4.2	8.0
139	70.6	0.835	85.2	6.2	7.17	15.133	10.482	8.374	18.4	10.0	12.2	3.8	3.20	0.74	14.2	4.2	8.0
140	70.7	0.841	85.3	6.3	7.18	15.242	10.496	8.370	18.4	10.0	12.1	3.7	3.24	0.75	14.2	4.2	7.9
141	71.0	0.847	85.3	6.3	7.19	15.351	10.550	8.401	18.4	10.0	12.1	3.7	3.25	0.75	14.2	4.2	7.9
142	71.4	0.853	85.2	6.2	7.20	15.460	10.618	8.443	18.4	10.0	12.3	3.8	3.21	0.73	14.2	4.2	8.0
143	71.7	0.859	85.3	6.3	7.20	15.569	10.658	8.462	18.5	10.0	12.2	3.7	3.27	0.74	14.2	4.2	8.0
144	72.1	0.865	85.3	6.3	7.21	15.678	10.726	8.503	18.5	10.0	12.2	3.7	3.28	0.74	14.2	4.3	8.0
145	72.5	0.871	85.2	6.2	7.22	15.786	10.793	8.545	18.5	10.0	12.4	3.8	3.24	0.72	14.3	4.3	8.1
146	72.8	0.877	85.2	6.2	7.23	15.895	10.848	8.575	18.6	10.0	12.4	3.8	3.25	0.72	14.3	4.3	8.1
147	73.0	0.883	85.2	6.2	7.24	16.004	10.875	8.582	18.6	10.0	12.4	3.8	3.27	0.73	14.3	4.3	8.1
148	73.3	0.889	85.1	6.1	7.25	16.113	10.929	8.612	18.6	10.0	12.5	3.9	3.23	0.71	14.3	4.3	8.2
149	73.8	0.895	85.1	6.1	7.26	16.222	11.010	8.664	18.7	10.0	12.5	3.9	3.25	0.71	14.3	4.3	8.2
150	73.9	0.901	85.2	6.2	7.27	16.331	11.023	8.660	18.7	10.0	12.5	3.8	3.27	0.71	14.3	4.3	8.1
151	74.4	0.907	85.2	6.2	7.28	16.440	11.105	8.712	18.7	10.0	12.5	3.8	3.28	0.71	14.4	4.4	8.2
152	74.4	0.913	85.2	6.2	7.29	16.549	11.105	8.696	18.7	10.0	12.5	3.8	3.30	0.72	14.3	4.3	8.1
153	74.7	0.919	85.2	6.2	7.30	16.657	11.159	8.725	18.7	10.0	12.5	3.8	3.31	0.71	14.4	4.4	8.1
154	75.0	0.925	85.2	6.2	7.31	16.766	11.213	8.754	18.8	10.0	12.6	3.8	3.30	0.71	14.4	4.4	8.2

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)
155	75.4	0.931	85.2	6.2	7.32	16.875	11.280	8.795	18.8	10.0	12.6	3.8	3.31	0.70	14.4	4.4	8.2
156	75.3	0.937	85.2	6.2	7.33	16.984	11.253	8.756	18.8	10.0	12.5	3.8	3.32	0.71	14.4	4.4	8.2
157	75.4	0.943	85.1	6.1	7.34	17.093	11.280	8.763	18.8	10.0	12.6	3.9	3.27	0.70	14.4	4.4	8.2
158	75.3	0.949	85.3	6.3	7.35	17.202	11.253	8.724	18.7	10.0	12.5	3.7	3.34	0.72	14.4	4.4	8.1
159	75.6	0.955	85.1	6.1	7.36	17.311	11.307	8.753	18.7	10.0	12.6	3.9	3.25	0.70	14.4	4.4	8.3
160	75.5	0.961	85.0	6.0	7.37	17.420	11.294	8.726	18.7	10.0	12.7	4.0	3.20	0.69	14.4	4.4	8.3
161	75.8	0.967	84.9	5.9	7.38	17.528	11.334	8.743	18.7	10.0	12.9	4.1	3.11	0.67	14.4	4.4	8.5
162	75.9	0.973	84.9	5.9	7.39	17.637	11.348	8.738	18.7	10.0	12.8	4.1	3.13	0.68	14.4	4.4	8.5
163	76.0	0.979	84.9	5.9	7.40	17.746	11.375	8.744	18.7	10.0	12.8	4.1	3.14	0.67	14.4	4.4	8.5
164	76.4	0.985	84.9	5.9	7.40	17.855	11.443	8.784	18.8	10.0	12.8	4.1	3.17	0.68	14.4	4.4	8.4
165	76.5	0.991	84.9	5.9	7.41	17.964	11.456	8.779	18.8	10.0	12.9	4.1	3.14	0.67	14.4	4.4	8.5
166	76.8	0.997	84.9	5.9	7.42	18.073	11.497	8.796	18.8	10.0	12.8	4.1	3.17	0.68	14.4	4.4	8.5
167	76.9	1.003	84.9	5.9	7.43	18.182	11.524	8.801	18.8	10.0	12.9	4.1	3.17	0.68	14.4	4.4	8.5
168	77.1	1.009	84.9	5.9	7.44	18.291	11.551	8.807	18.8	10.0	12.9	4.1	3.13	0.67	14.4	4.4	8.5
169	77.3	1.015	84.9	5.9	7.45	18.399	11.591	8.824	18.8	10.0	12.9	4.1	3.16	0.67	14.4	4.4	8.5
170	77.5	1.021	84.9	5.9	7.46	18.508	11.619	8.830	18.8	10.0	13.0	4.1	3.14	0.66	14.4	4.4	8.5
171	77.5	1.027	84.9	5.9	7.47	18.617	11.619	8.813	18.8	10.0	12.9	4.1	3.13	0.67	14.4	4.4	8.5
172	77.8	1.033	84.8	5.8	7.48	18.726	11.673	8.841	18.8	10.0	13.0	4.2	3.12	0.66	14.4	4.4	8.6
173	77.7	1.039	84.8	5.8	7.49	18.835	11.659	8.813	18.8	10.0	13.0	4.2	3.11	0.66	14.4	4.4	8.6
174	78.2	1.045	84.8	5.8	7.50	18.944	11.740	8.863	18.9	10.0	13.0	4.2	3.12	0.66	14.4	4.4	8.6
175	78.2	1.051	84.7	5.7	7.51	19.053	11.727	8.835	18.8	10.0	13.1	4.3	3.08	0.65	14.4	4.4	8.7
176	78.5	1.057	84.7	5.7	7.52	19.161	11.781	8.862	18.9	10.0	13.1	4.3	3.08	0.65	14.4	4.4	8.7
177	78.5	1.063	84.8	5.8	7.53	19.270	11.781	8.846	18.8	10.0	13.0	4.2	3.12	0.66	14.4	4.4	8.6
178	79.0	1.069	84.8	5.8	7.54	19.379	11.862	8.895	18.9	10.0	13.1	4.2	3.11	0.65	14.4	4.4	8.7
179	79.2	1.075	84.8	5.8	7.56	19.488	11.903	8.911	18.9	10.0	13.1	4.2	3.11	0.65	14.5	4.5	8.7
180	79.5	1.081	84.8	5.8	7.57	19.597	11.943	8.927	18.9	10.0	13.1	4.2	3.12	0.65	14.5	4.5	8.7
181	79.6	1.087	84.8	5.8	7.58	19.706	11.970	8.932	18.9	10.0	13.1	4.2	3.12	0.65	14.5	4.5	8.7
182	80.1	1.093	84.7	5.7	7.59	19.815	12.051	8.980	19.0	10.0	13.3	4.3	3.07	0.63	14.5	4.5	8.8
183	80.5	1.099	84.7	5.7	7.60	19.924	12.105	9.006	19.0	10.0	13.3	4.3	3.08	0.63	14.5	4.5	8.8
184	80.6	1.105	84.6	5.6	7.61	20.032	12.133	9.011	19.0	10.0	13.4	4.4	3.04	0.62	14.5	4.5	8.9

File Location
B-27A Bag-3 7.3-26.5 Remolded.HSD

Project Information

Project No. 14046-01
Project Name: I-20 D/B Roadway Improvement
Client:
Sample Location: B-27A Bag-3 7.3' to 26.5'
Sample Description: White, Tan & Black Clayey Sand
Remarks: 3 Point Remolded

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 28.000
PL: 18.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.799	2.793	
Height (in)	5.552	5.521	
Weight (grams)	1116.20		1185.00
Moisture (%)	8.57		15.26
Dry Density (pcf)	114.62	115.81	
Saturation (%)	51.23	100.00	
Void Ratio	0.440	0.428	

Test Data

Rate of Strain: 0.006
Cell Pressure (psi): 119.200
Effective Confining Stress (psi): 20.0
Corrected Peak Deviator Stress (psi): 15.234 at reading number: 184

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	1.1	0.000	99.2	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	42.9	0.006	100.8	1.6	6.13	0.109	6.823	6.816	26.8	20.0	25.3	18.4	1.37	0.23	23.4	3.4	21.8
2	66.5	0.012	103.3	4.1	6.14	0.218	10.678	10.655	30.7	20.0	26.6	15.9	1.67	0.38	25.3	5.3	21.3
3	75.9	0.018	105.8	6.6	6.15	0.326	12.209	12.169	32.2	20.0	25.6	13.4	1.91	0.54	26.1	6.1	19.5
4	80.0	0.024	107.5	8.3	6.15	0.435	12.881	12.825	32.8	20.0	24.6	11.7	2.09	0.64	26.4	6.4	18.1
5	81.7	0.030	108.7	9.5	6.16	0.544	13.163	13.091	33.1	20.0	23.6	10.5	2.24	0.72	26.5	6.5	17.1
6	82.4	0.036	109.5	10.3	6.17	0.653	13.284	13.197	33.2	20.0	22.9	9.7	2.36	0.78	26.6	6.6	16.3
7	82.4	0.042	110.0	10.8	6.17	0.761	13.270	13.169	33.2	20.0	22.4	9.2	2.43	0.82	26.6	6.6	15.8
8	81.9	0.048	110.4	11.2	6.18	0.870	13.203	13.088	33.1	20.0	21.9	8.8	2.49	0.86	26.5	6.5	15.3
9	81.8	0.055	110.7	11.5	6.19	0.979	13.176	13.047	33.1	20.0	21.6	8.5	2.53	0.88	26.5	6.5	15.0
10	80.8	0.061	111.0	11.8	6.19	1.088	13.015	12.874	32.9	20.0	21.1	8.2	2.56	0.91	26.4	6.4	14.7
11	80.5	0.067	111.2	12.0	6.20	1.196	12.961	12.806	32.8	20.0	20.8	8.0	2.59	0.93	26.4	6.4	14.4
12	79.7	0.073	111.3	12.1	6.21	1.305	12.840	12.673	32.7	20.0	20.6	7.9	2.60	0.95	26.3	6.3	14.3
13	79.1	0.079	111.4	12.2	6.21	1.414	12.733	12.553	32.6	20.0	20.3	7.8	2.62	0.98	26.3	6.3	14.0
14	78.7	0.085	111.7	12.5	6.22	1.523	12.666	12.473	32.5	20.0	20.0	7.5	2.66	1.00	26.2	6.2	13.8
15	78.2	0.091	111.8	12.6	6.23	1.631	12.585	12.380	32.4	20.0	19.8	7.4	2.67	1.02	26.2	6.2	13.6
16	78.0	0.097	112.0	12.8	6.23	1.740	12.558	12.340	32.3	20.0	19.6	7.2	2.71	1.03	26.2	6.2	13.4
17	77.6	0.103	112.0	12.8	6.24	1.849	12.491	12.260	32.3	20.0	19.4	7.2	2.71	1.05	26.1	6.1	13.3
18	77.3	0.109	112.2	13.0	6.25	1.958	12.438	12.194	32.2	20.0	19.1	7.0	2.75	1.07	26.1	6.1	13.1

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)
19	76.7	0.115	112.2	13.0	6.25	2.066	12.343	12.088	32.1	20.0	19.0	7.0	2.74	1.08	26.0	6.0	13.0
20	76.6	0.121	112.4	13.2	6.26	2.175	12.330	12.062	32.1	20.0	18.8	6.8	2.79	1.10	26.0	6.0	12.8
21	76.4	0.127	112.4	13.2	6.27	2.284	12.303	12.022	32.0	20.0	18.8	6.8	2.77	1.10	26.0	6.0	12.8
22	76.2	0.133	112.6	13.4	6.28	2.393	12.263	11.969	32.0	20.0	18.6	6.6	2.80	1.12	26.0	6.0	12.6
23	76.4	0.139	112.5	13.3	6.28	2.501	12.290	11.982	32.0	20.0	18.7	6.7	2.80	1.11	26.0	6.0	12.7
24	76.1	0.145	112.6	13.4	6.29	2.610	12.249	11.930	31.9	20.0	18.6	6.6	2.80	1.12	26.0	6.0	12.6
25	76.2	0.151	112.6	13.4	6.30	2.719	12.263	11.929	31.9	20.0	18.5	6.6	2.81	1.12	26.0	6.0	12.6
26	76.2	0.157	112.6	13.4	6.30	2.828	12.263	11.916	31.9	20.0	18.5	6.6	2.82	1.13	26.0	6.0	12.5
27	76.4	0.163	112.7	13.5	6.31	2.937	12.290	11.929	31.9	20.0	18.4	6.5	2.84	1.13	26.0	6.0	12.4
28	76.3	0.169	112.8	13.6	6.32	3.045	12.276	11.902	31.9	20.0	18.3	6.4	2.86	1.14	26.0	6.0	12.3
29	76.4	0.175	112.8	13.6	6.32	3.154	12.290	11.902	31.9	20.0	18.3	6.4	2.87	1.15	26.0	6.0	12.3
30	76.3	0.181	112.8	13.6	6.33	3.263	12.276	11.876	31.9	20.0	18.3	6.4	2.85	1.14	25.9	5.9	12.4
31	76.5	0.187	112.7	13.5	6.34	3.372	12.317	11.901	31.9	20.0	18.4	6.5	2.84	1.14	26.0	6.0	12.4
32	76.5	0.193	112.9	13.7	6.35	3.480	12.317	11.888	31.9	20.0	18.2	6.3	2.88	1.15	25.9	5.9	12.3
33	76.4	0.199	112.9	13.7	6.35	3.589	12.290	11.849	31.9	20.0	18.1	6.3	2.89	1.16	25.9	5.9	12.2
34	76.6	0.205	112.9	13.7	6.36	3.698	12.330	11.874	31.9	20.0	18.2	6.3	2.88	1.15	25.9	5.9	12.3
35	76.8	0.211	113.0	13.8	6.37	3.807	12.370	11.899	31.9	20.0	18.1	6.2	2.92	1.16	26.0	5.9	12.1
36	76.9	0.217	112.9	13.7	6.38	3.915	12.384	11.899	31.9	20.0	18.2	6.3	2.88	1.15	26.0	5.9	12.3
37	77.2	0.223	112.8	13.6	6.38	4.024	12.424	11.924	31.9	20.0	18.3	6.4	2.88	1.14	26.0	6.0	12.3
38	77.3	0.229	112.9	13.7	6.39	4.133	12.438	11.923	31.9	20.0	18.2	6.3	2.89	1.15	26.0	6.0	12.3
39	77.4	0.235	112.9	13.7	6.40	4.242	12.464	11.936	31.9	20.0	18.2	6.3	2.90	1.15	26.0	6.0	12.2
40	77.4	0.241	112.9	13.7	6.40	4.350	12.464	11.922	31.9	20.0	18.2	6.3	2.89	1.15	26.0	6.0	12.3
41	77.7	0.247	112.8	13.6	6.41	4.459	12.505	11.947	31.9	20.0	18.4	6.4	2.86	1.14	26.0	6.0	12.4
42	77.9	0.253	112.8	13.6	6.42	4.568	12.545	11.972	32.0	20.0	18.3	6.4	2.88	1.14	26.0	6.0	12.3
43	78.2	0.259	113.7	14.5	6.43	4.677	12.599	12.009	32.0	20.0	17.5	5.5	3.18	1.21	26.0	6.0	11.5
44	78.7	0.265	113.8	14.6	6.43	4.785	12.666	12.060	32.1	20.0	17.5	5.4	3.24	1.21	26.0	6.0	11.4
45	78.8	0.271	113.7	14.5	6.44	4.894	12.693	12.072	32.1	20.0	17.5	5.5	3.21	1.20	26.0	6.0	11.5
46	79.1	0.277	113.8	14.6	6.45	5.003	12.746	12.109	32.1	20.0	17.5	5.4	3.23	1.20	26.1	6.1	11.5
47	79.1	0.283	113.6	14.4	6.46	5.112	12.746	12.095	32.1	20.0	17.7	5.6	3.16	1.19	26.1	6.0	11.6
48	79.6	0.289	113.6	14.4	6.46	5.220	12.814	12.145	32.1	20.0	17.8	5.6	3.16	1.18	26.1	6.1	11.7
49	79.8	0.295	113.6	14.4	6.47	5.329	12.854	12.169	32.2	20.0	17.8	5.6	3.16	1.18	26.1	6.1	11.7
50	80.1	0.301	113.4	14.3	6.48	5.438	12.908	12.206	32.2	20.0	18.0	5.8	3.12	1.17	26.1	6.1	11.9
51	80.4	0.307	113.4	14.3	6.49	5.547	12.948	12.230	32.2	20.0	18.0	5.8	3.13	1.17	26.1	6.1	11.9
52	80.6	0.313	113.4	14.2	6.49	5.656	12.988	12.254	32.3	20.0	18.0	5.8	3.12	1.16	26.1	6.1	11.9
53	81.0	0.319	113.4	14.2	6.50	5.764	13.055	12.303	32.3	20.0	18.1	5.8	3.11	1.15	26.2	6.2	12.0
54	81.4	0.325	113.3	14.1	6.51	5.873	13.109	12.339	32.3	20.0	18.3	5.9	3.09	1.14	26.2	6.2	12.1
55	81.6	0.331	113.3	14.1	6.52	5.982	13.149	12.363	32.4	20.0	18.3	5.9	3.09	1.14	26.2	6.2	12.1
56	81.8	0.337	113.3	14.1	6.52	6.091	13.176	12.374	32.4	20.0	18.3	5.9	3.09	1.14	26.2	6.2	12.1
57	82.2	0.343	113.2	14.1	6.53	6.199	13.243	12.422	32.4	20.0	18.4	6.0	3.09	1.13	26.2	6.2	12.2
58	82.4	0.349	113.1	13.9	6.54	6.308	13.284	12.446	32.4	20.0	18.5	6.1	3.05	1.12	26.2	6.2	12.3
59	82.7	0.355	113.1	13.9	6.55	6.417	13.324	12.469	32.5	20.0	18.6	6.1	3.04	1.11	26.2	6.2	12.3
60	83.0	0.361	113.1	13.9	6.55	6.526	13.378	12.505	32.5	20.0	18.6	6.1	3.05	1.11	26.3	6.3	12.4
61	83.3	0.367	113.0	13.8	6.56	6.634	13.431	12.540	32.5	20.0	18.7	6.2	3.04	1.10	26.3	6.3	12.4
62	83.5	0.373	113.0	13.8	6.57	6.743	13.458	12.551	32.6	20.0	18.7	6.2	3.04	1.10	26.3	6.3	12.4
63	84.0	0.379	113.0	13.8	6.58	6.852	13.539	12.611	32.6	20.0	18.8	6.2	3.05	1.10	26.3	6.3	12.5

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)
64	84.0	0.385	113.0	13.8	6.58	6.961	13.539	12.596	32.6	20.0	18.8	6.2	3.03	1.10	26.3	6.3	12.5
65	84.2	0.391	112.8	13.6	6.59	7.069	13.579	12.619	32.6	20.0	19.0	6.4	2.99	1.08	26.3	6.3	12.7
66	84.4	0.397	112.9	13.7	6.60	7.178	13.606	12.629	32.6	20.0	18.9	6.3	3.01	1.09	26.3	6.3	12.6
67	84.7	0.403	112.8	13.6	6.61	7.287	13.660	12.664	32.7	20.0	19.0	6.4	2.99	1.08	26.3	6.3	12.7
68	85.1	0.409	112.8	13.6	6.61	7.396	13.713	12.699	32.7	20.0	19.1	6.4	2.97	1.07	26.4	6.3	12.8
69	85.3	0.415	112.8	13.6	6.62	7.504	13.754	12.722	32.7	20.0	19.1	6.4	3.00	1.07	26.4	6.4	12.7
70	85.5	0.421	112.8	13.6	6.63	7.613	13.781	12.732	32.7	20.0	19.2	6.4	2.98	1.07	26.4	6.4	12.8
71	86.0	0.427	112.6	13.4	6.64	7.722	13.861	12.791	32.8	20.0	19.3	6.6	2.95	1.05	26.4	6.4	12.9
72	86.0	0.433	112.7	13.5	6.65	7.831	13.861	12.776	32.8	20.0	19.3	6.5	2.96	1.06	26.4	6.4	12.9
73	86.1	0.439	112.7	13.5	6.65	7.939	13.875	12.773	32.8	20.0	19.3	6.5	2.96	1.06	26.4	6.4	12.9
74	86.5	0.445	112.6	13.4	6.66	8.048	13.942	12.820	32.8	20.0	19.4	6.6	2.94	1.05	26.4	6.4	13.0
75	86.7	0.451	112.6	13.4	6.67	8.157	13.982	12.842	32.8	20.0	19.4	6.6	2.96	1.05	26.4	6.4	13.0
76	87.1	0.457	112.6	13.4	6.68	8.266	14.049	12.888	32.9	20.0	19.5	6.6	2.94	1.04	26.4	6.4	13.1
77	87.4	0.463	112.6	13.4	6.69	8.374	14.090	12.910	32.9	20.0	19.5	6.6	2.96	1.04	26.5	6.5	13.0
78	87.5	0.469	112.6	13.4	6.69	8.483	14.116	12.919	32.9	20.0	19.5	6.6	2.96	1.04	26.5	6.5	13.1
79	87.8	0.475	112.6	13.4	6.70	8.592	14.157	12.940	32.9	20.0	19.6	6.6	2.95	1.03	26.5	6.5	13.1
80	88.0	0.481	112.5	13.3	6.71	8.701	14.197	12.962	33.0	20.0	19.7	6.7	2.93	1.03	26.5	6.5	13.2
81	88.6	0.487	112.4	13.2	6.72	8.810	14.291	13.032	33.0	20.0	19.8	6.8	2.92	1.01	26.5	6.5	13.3
82	88.9	0.493	112.4	13.2	6.73	8.918	14.331	13.053	33.1	20.0	19.8	6.8	2.93	1.01	26.5	6.5	13.3
83	89.3	0.499	112.4	13.2	6.73	9.027	14.399	13.099	33.1	20.0	19.9	6.8	2.94	1.01	26.6	6.5	13.3
84	89.6	0.505	112.4	13.2	6.74	9.136	14.452	13.132	33.1	20.0	19.9	6.8	2.93	1.01	26.6	6.6	13.4
85	89.8	0.511	112.5	13.3	6.75	9.245	14.493	13.153	33.2	20.0	19.8	6.7	2.97	1.01	26.6	6.6	13.3
86	90.6	0.517	113.6	14.4	6.76	9.353	14.613	13.247	33.2	20.0	18.8	5.6	3.37	1.09	26.6	6.6	12.2
87	90.8	0.523	113.6	14.5	6.77	9.462	14.654	13.267	33.3	20.0	18.8	5.6	3.39	1.09	26.6	6.6	12.2
88	91.2	0.529	113.6	14.4	6.77	9.571	14.721	13.312	33.3	20.0	18.9	5.6	3.36	1.08	26.7	6.7	12.3
89	91.6	0.535	113.6	14.4	6.78	9.680	14.775	13.344	33.3	20.0	18.9	5.6	3.39	1.08	26.7	6.7	12.3
90	91.8	0.541	113.5	14.3	6.79	9.788	14.815	13.365	33.4	20.0	19.0	5.7	3.36	1.07	26.7	6.7	12.4
91	92.2	0.547	113.5	14.3	6.80	9.897	14.882	13.409	33.4	20.0	19.1	5.7	3.35	1.07	26.7	6.7	12.4
92	92.5	0.553	113.5	14.3	6.81	10.006	14.922	13.429	33.4	20.0	19.1	5.7	3.37	1.07	26.7	6.7	12.4
93	92.7	0.559	113.5	14.3	6.81	10.115	14.963	13.449	33.5	20.0	19.2	5.7	3.35	1.06	26.7	6.7	12.4
94	92.9	0.565	113.5	14.3	6.82	10.223	14.989	13.457	33.5	20.0	19.2	5.7	3.36	1.06	26.7	6.7	12.4
95	93.5	0.571	113.4	14.3	6.83	10.332	15.097	13.537	33.5	20.0	19.3	5.8	3.35	1.05	26.8	6.8	12.5
96	93.4	0.577	113.4	14.2	6.84	10.441	15.070	13.497	33.5	20.0	19.3	5.8	3.31	1.05	26.8	6.7	12.6
97	94.0	0.583	113.4	14.2	6.85	10.550	15.178	13.576	33.6	20.0	19.4	5.8	3.34	1.05	26.8	6.8	12.6
98	94.0	0.589	113.3	14.1	6.86	10.658	15.178	13.560	33.6	20.0	19.4	5.9	3.31	1.04	26.8	6.8	12.7
99	94.3	0.595	113.2	14.0	6.86	10.767	15.218	13.579	33.6	20.0	19.6	6.0	3.27	1.03	26.8	6.8	12.8
100	94.4	0.601	113.3	14.1	6.87	10.876	15.231	13.575	33.6	20.0	19.4	5.9	3.31	1.04	26.8	6.8	12.7
101	94.6	0.607	113.2	14.0	6.88	10.985	15.272	13.594	33.6	20.0	19.6	6.0	3.25	1.03	26.8	6.8	12.8
102	95.1	0.613	113.1	13.9	6.89	11.093	15.352	13.649	33.7	20.0	19.7	6.1	3.25	1.02	26.8	6.8	12.9
103	95.1	0.619	113.1	13.9	6.90	11.202	15.352	13.632	33.6	20.0	19.7	6.1	3.23	1.02	26.8	6.8	12.9
104	95.2	0.625	113.0	13.8	6.91	11.311	15.366	13.628	33.6	20.0	19.8	6.2	3.21	1.02	26.8	6.8	13.0
105	95.1	0.631	113.1	13.9	6.92	11.420	15.352	13.599	33.6	20.0	19.7	6.1	3.22	1.02	26.8	6.8	12.9
106	95.5	0.637	113.1	13.9	6.92	11.529	15.419	13.642	33.6	20.0	19.8	6.1	3.23	1.02	26.8	6.8	12.9
107	95.8	0.643	113.0	13.8	6.93	11.637	15.473	13.672	33.7	20.0	19.9	6.2	3.21	1.01	26.8	6.8	13.0
108	96.1	0.649	112.9	13.7	6.94	11.746	15.513	13.691	33.7	20.0	20.0	6.3	3.17	1.00	26.8	6.8	13.2

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)
109	96.3	0.655	112.9	13.7	6.95	11.855	15.554	13.710	33.7	20.0	20.0	6.3	3.19	1.00	26.9	6.9	13.1
110	96.6	0.661	112.8	13.6	6.96	11.964	15.594	13.728	33.7	20.0	20.1	6.4	3.15	0.99	26.9	6.9	13.3
111	96.9	0.667	112.8	13.6	6.97	12.072	15.648	13.759	33.8	20.0	20.2	6.4	3.14	0.99	26.9	6.9	13.3
112	97.1	0.673	112.8	13.6	6.98	12.181	15.674	13.765	33.8	20.0	20.2	6.4	3.15	0.99	26.9	6.9	13.3
113	97.6	0.679	112.7	13.5	6.98	12.290	15.755	13.819	33.8	20.0	20.3	6.5	3.13	0.98	26.9	6.9	13.4
114	97.8	0.685	112.6	13.4	6.99	12.399	15.795	13.837	33.8	20.0	20.4	6.6	3.11	0.97	26.9	6.9	13.5
115	98.1	0.691	112.6	13.4	7.00	12.507	15.836	13.855	33.9	20.0	20.4	6.6	3.11	0.97	26.9	6.9	13.5
116	98.4	0.697	112.5	13.3	7.01	12.616	15.889	13.885	33.9	20.0	20.6	6.7	3.07	0.96	26.9	6.9	13.7
117	98.6	0.703	112.5	13.3	7.02	12.725	15.916	13.891	33.9	20.0	20.6	6.7	3.08	0.96	26.9	6.9	13.6
118	98.9	0.709	112.4	13.2	7.03	12.834	15.970	13.920	33.9	20.0	20.7	6.8	3.06	0.95	27.0	7.0	13.7
119	99.3	0.715	112.4	13.2	7.04	12.942	16.037	13.962	34.0	20.0	20.8	6.8	3.05	0.95	27.0	7.0	13.8
120	99.7	0.721	112.4	13.2	7.04	13.051	16.104	14.002	34.0	20.0	20.8	6.8	3.05	0.94	27.0	7.0	13.8
121	100.2	0.727	112.3	13.1	7.05	13.160	16.185	14.055	34.1	20.0	21.0	6.9	3.03	0.93	27.0	7.0	13.9
122	100.2	0.733	112.2	13.0	7.06	13.269	16.185	14.037	34.0	20.0	21.0	7.0	3.02	0.93	27.0	7.0	14.0
123	100.6	0.739	112.3	13.1	7.07	13.377	16.252	14.078	34.1	20.0	21.0	6.9	3.04	0.93	27.0	7.0	14.0
124	101.0	0.745	112.2	13.0	7.08	13.486	16.306	14.107	34.1	20.0	21.1	7.0	3.02	0.92	27.1	7.1	14.0
125	101.1	0.751	112.2	13.0	7.09	13.595	16.333	14.112	34.1	20.0	21.1	7.0	3.02	0.92	27.1	7.1	14.1
126	101.4	0.757	112.1	12.9	7.10	13.704	16.386	14.141	34.1	20.0	21.2	7.1	3.00	0.91	27.1	7.1	14.1
127	101.9	0.763	112.2	13.0	7.11	13.812	16.454	14.181	34.2	20.0	21.2	7.0	3.02	0.91	27.1	7.1	14.1
128	101.9	0.769	112.1	12.9	7.12	13.921	16.467	14.175	34.2	20.0	21.3	7.1	3.00	0.91	27.1	7.1	14.2
129	102.3	0.775	112.0	12.8	7.13	14.030	16.534	14.214	34.2	20.0	21.4	7.2	2.99	0.90	27.1	7.1	14.3
130	102.6	0.781	112.0	12.8	7.13	14.139	16.574	14.231	34.2	20.0	21.5	7.2	2.97	0.90	27.1	7.1	14.4
131	102.9	0.787	112.2	13.0	7.14	14.248	16.628	14.259	34.3	20.0	21.3	7.0	3.03	0.91	27.1	7.1	14.2
132	103.5	0.793	113.2	14.0	7.15	14.356	16.722	14.321	34.3	20.0	20.4	6.0	3.37	0.98	27.2	7.2	13.2
133	103.4	0.799	113.3	14.1	7.16	14.465	16.709	14.292	34.3	20.0	20.2	5.9	3.42	0.99	27.1	7.1	13.1
134	104.0	0.805	113.2	14.0	7.17	14.574	16.803	14.354	34.4	20.0	20.4	6.0	3.38	0.97	27.2	7.2	13.2
135	104.0	0.811	113.2	14.0	7.18	14.683	16.803	14.336	34.3	20.0	20.4	6.0	3.38	0.97	27.2	7.2	13.2
136	104.3	0.817	113.0	13.8	7.19	14.791	16.856	14.363	34.4	20.0	20.6	6.2	3.32	0.96	27.2	7.2	13.4
137	104.3	0.823	112.9	13.7	7.20	14.900	16.856	14.345	34.3	20.0	20.7	6.3	3.27	0.95	27.2	7.2	13.5
138	104.7	0.829	112.6	13.4	7.21	15.009	16.924	14.384	34.4	20.0	21.0	6.6	3.18	0.93	27.2	7.2	13.8
139	105.0	0.835	112.6	13.4	7.22	15.118	16.964	14.399	34.4	20.0	21.0	6.6	3.17	0.93	27.2	7.2	13.8
140	105.1	0.841	112.6	13.4	7.23	15.226	16.991	14.404	34.4	20.0	21.0	6.6	3.18	0.93	27.2	7.2	13.8
141	105.6	0.847	112.5	13.3	7.23	15.335	17.058	14.442	34.4	20.0	21.1	6.7	3.16	0.92	27.2	7.2	13.9
142	105.7	0.853	112.3	13.1	7.24	15.444	17.085	14.446	34.4	20.0	21.3	6.9	3.10	0.91	27.2	7.2	14.1
143	106.1	0.859	112.3	13.1	7.25	15.553	17.139	14.473	34.5	20.0	21.3	6.9	3.10	0.91	27.2	7.2	14.1
144	106.3	0.865	112.2	13.0	7.26	15.661	17.179	14.488	34.5	20.0	21.4	7.0	3.08	0.90	27.2	7.2	14.2
145	106.7	0.871	112.3	13.1	7.27	15.770	17.246	14.526	34.5	20.0	21.4	6.9	3.11	0.90	27.3	7.3	14.1
146	107.0	0.877	112.4	13.2	7.28	15.879	17.286	14.541	34.5	20.0	21.4	6.8	3.13	0.91	27.3	7.3	14.1
147	107.2	0.883	112.2	13.0	7.29	15.988	17.327	14.556	34.6	20.0	21.6	7.0	3.07	0.89	27.3	7.3	14.3
148	107.4	0.889	112.2	13.0	7.30	16.096	17.353	14.560	34.6	20.0	21.6	7.0	3.07	0.89	27.3	7.3	14.3
149	107.7	0.895	112.3	13.1	7.31	16.205	17.407	14.586	34.6	20.0	21.5	6.9	3.11	0.90	27.3	7.3	14.2
150	108.2	0.901	112.1	12.9	7.32	16.314	17.488	14.635	34.6	20.0	21.7	7.1	3.07	0.88	27.3	7.3	14.4
151	108.5	0.907	112.0	12.8	7.33	16.423	17.541	14.661	34.7	20.0	21.9	7.2	3.03	0.87	27.3	7.3	14.6
152	108.8	0.913	112.0	12.8	7.34	16.531	17.595	14.686	34.7	20.0	21.8	7.2	3.05	0.87	27.3	7.3	14.5
153	109.1	0.919	111.9	12.7	7.35	16.640	17.635	14.701	34.7	20.0	22.0	7.3	3.02	0.87	27.4	7.4	14.6

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)
154	109.3	0.925	111.9	12.7	7.36	16.749	17.662	14.704	34.7	20.0	22.0	7.3	3.02	0.87	27.4	7.4	14.6
155	109.8	0.931	111.9	12.7	7.37	16.858	17.756	14.763	34.8	20.0	22.0	7.3	3.03	0.86	27.4	7.4	14.7
156	109.9	0.937	111.9	12.7	7.38	16.967	17.770	14.755	34.8	20.0	22.0	7.3	3.03	0.86	27.4	7.4	14.7
157	110.2	0.943	111.8	12.6	7.39	17.075	17.810	14.769	34.8	20.0	22.1	7.4	3.01	0.86	27.4	7.4	14.7
158	110.7	0.949	111.8	12.6	7.40	17.184	17.891	14.816	34.8	20.0	22.3	7.4	2.99	0.85	27.4	7.4	14.8
159	110.7	0.955	111.8	12.6	7.41	17.293	17.904	14.808	34.8	20.0	22.2	7.4	2.99	0.85	27.4	7.4	14.8
160	111.0	0.961	111.7	12.5	7.42	17.402	17.944	14.822	34.8	20.0	22.3	7.5	2.98	0.85	27.4	7.4	14.9
161	111.3	0.967	111.8	12.6	7.43	17.510	17.998	14.847	34.8	20.0	22.3	7.4	3.00	0.85	27.4	7.4	14.9
162	111.6	0.973	111.8	12.6	7.44	17.619	18.052	14.871	34.9	20.0	22.3	7.4	3.01	0.85	27.4	7.4	14.8
163	111.6	0.979	111.6	12.4	7.45	17.728	18.052	14.852	34.9	20.0	22.4	7.6	2.97	0.84	27.4	7.4	15.0
164	111.8	0.985	111.5	12.3	7.46	17.837	18.079	14.854	34.9	20.0	22.5	7.7	2.93	0.83	27.4	7.4	15.1
165	112.1	0.991	111.6	12.4	7.47	17.945	18.119	14.867	34.9	20.0	22.5	7.6	2.96	0.83	27.4	7.4	15.0
166	112.2	0.997	111.6	12.4	7.48	18.054	18.146	14.870	34.9	20.0	22.5	7.6	2.95	0.83	27.4	7.4	15.1
167	112.8	1.003	111.6	12.4	7.48	18.163	18.240	14.927	34.9	20.0	22.6	7.6	2.95	0.83	27.5	7.5	15.1
168	112.9	1.009	111.4	12.2	7.49	18.272	18.253	14.918	34.9	20.0	22.7	7.8	2.92	0.82	27.5	7.5	15.2
169	113.3	1.015	111.5	12.3	7.50	18.380	18.320	14.953	35.0	20.0	22.6	7.7	2.95	0.82	27.5	7.5	15.2
170	113.6	1.021	112.4	13.2	7.51	18.489	18.374	14.977	35.0	20.0	21.8	6.8	3.20	0.88	27.5	7.5	14.3
171	114.1	1.027	112.9	13.7	7.52	18.598	18.455	15.023	35.0	20.0	21.3	6.3	3.39	0.91	27.5	7.5	13.8
172	114.4	1.033	112.8	13.6	7.54	18.707	18.495	15.035	35.0	20.0	21.5	6.4	3.34	0.90	27.5	7.5	14.0
173	114.4	1.039	113.0	13.8	7.55	18.815	18.509	15.026	35.0	20.0	21.3	6.2	3.41	0.92	27.5	7.5	13.7
174	114.9	1.045	112.9	13.7	7.56	18.924	18.576	15.060	35.1	20.0	21.3	6.3	3.40	0.91	27.5	7.5	13.8
175	115.2	1.051	112.9	13.7	7.57	19.033	18.629	15.084	35.1	20.0	21.4	6.3	3.39	0.91	27.5	7.5	13.9
176	115.4	1.057	112.9	13.7	7.58	19.142	18.670	15.096	35.1	20.0	21.4	6.3	3.41	0.91	27.6	7.5	13.8
177	115.6	1.063	113.0	13.8	7.59	19.250	18.697	15.097	35.1	20.0	21.3	6.2	3.42	0.91	27.6	7.5	13.8
178	115.9	1.069	112.8	13.6	7.60	19.359	18.750	15.120	35.1	20.0	21.5	6.4	3.36	0.90	27.6	7.6	14.0
179	116.4	1.075	112.7	13.5	7.61	19.468	18.831	15.165	35.2	20.0	21.7	6.5	3.33	0.89	27.6	7.6	14.1
180	116.3	1.081	112.6	13.4	7.62	19.577	18.817	15.134	35.1	20.0	21.7	6.6	3.31	0.89	27.6	7.6	14.1
181	116.6	1.087	112.7	13.5	7.63	19.685	18.858	15.145	35.1	20.0	21.6	6.5	3.34	0.89	27.6	7.6	14.0
182	117.4	1.093	112.6	13.4	7.64	19.794	18.992	15.233	35.2	20.0	21.9	6.6	3.30	0.88	27.6	7.6	14.3
183	117.5	1.099	112.5	13.3	7.65	19.903	19.005	15.223	35.2	20.0	21.9	6.7	3.28	0.88	27.6	7.6	14.3
184	117.7	1.105	112.5	13.3	7.66	20.012	19.046	15.234	35.2	20.0	21.9	6.7	3.27	0.87	27.6	7.6	14.3

File Location
B-27A Bag-3 7.3-26.5 Remolded.HSD

Project Information

Project No. 14046-01
Project Name: I-20 D/B Roadway Improvement
Client:
Sample Location: B-27A Bag-3 7.3' to 26.5'
Sample Description: White, Tan & Black Clayey Sand
Remarks: 3 Point Remolded

Sample Data

Sample Type: Remolded
Specific Gravity: 2.6500001
LL: 28.000
PL: 18.000

Sample Parameters	Initial	After Consolidation	Final
Diameter (in)	2.788	2.787	
Height (in)	5.540	5.497	
Weight (grams)	1116.40		1175.80
Moisture (%)	8.95		14.75
Dry Density (pcf)	115.40	116.40	
Saturation (%)	54.70	100.00	
Void Ratio	0.430	0.421	

Test Data

Rate of Strain: 0.006
Cell Pressure (psi): 118.900
Effective Confining Stress (psi): 40.0
Corrected Peak Deviator Stress (psi): 20.821 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	1.5	0.000	78.9	0.0	6.10	0.000	0.000	0.000	40.0	40.0	40.0	40.0	1.00	0.00	40.0	0.0	40.0
1	66.6	0.006	84.9	5.9	6.11	0.109	10.681	10.669	50.6	40.0	44.7	34.0	1.31	0.56	45.3	5.3	39.4
2	95.6	0.012	91.7	12.8	6.11	0.218	15.428	15.394	55.4	40.0	42.6	27.2	1.57	0.83	47.7	7.7	34.9
3	108.8	0.018	96.3	17.3	6.12	0.328	17.599	17.542	57.5	40.0	40.2	22.6	1.77	0.99	48.7	8.8	31.4
4	115.3	0.024	99.3	20.4	6.13	0.437	18.651	18.570	58.5	40.0	38.1	19.6	1.95	1.10	49.3	9.3	28.8
5	118.5	0.030	101.5	22.6	6.13	0.546	19.177	19.073	59.0	40.0	36.5	17.4	2.10	1.18	49.5	9.5	26.9
6	119.5	0.036	103.1	24.2	6.14	0.655	19.353	19.226	59.2	40.0	35.0	15.8	2.22	1.26	49.6	9.6	25.4
7	119.8	0.042	104.4	25.4	6.15	0.765	19.393	19.245	59.2	40.0	33.8	14.5	2.32	1.32	49.6	9.6	24.2
8	119.5	0.048	105.4	26.4	6.15	0.874	19.353	19.183	59.2	40.0	32.7	13.5	2.42	1.38	49.6	9.6	23.1
9	119.0	0.055	106.2	27.2	6.16	0.983	19.258	19.069	59.0	40.0	31.8	12.7	2.50	1.43	49.5	9.5	22.3
10	118.5	0.061	106.8	27.8	6.17	1.092	19.177	18.968	58.9	40.0	31.1	12.1	2.56	1.47	49.5	9.5	21.6
11	118.0	0.067	107.3	28.4	6.17	1.202	19.096	18.867	58.8	40.0	30.4	11.6	2.63	1.51	49.4	9.4	21.0
12	117.4	0.073	107.8	28.9	6.18	1.311	19.002	18.753	58.7	40.0	29.9	11.1	2.69	1.54	49.3	9.4	20.5
13	116.4	0.079	108.1	29.1	6.19	1.420	18.840	18.573	58.5	40.0	29.4	10.8	2.71	1.57	49.3	9.3	20.1
14	116.0	0.085	108.3	29.3	6.20	1.529	18.773	18.486	58.5	40.0	29.1	10.6	2.74	1.59	49.2	9.2	19.9
15	115.5	0.091	108.5	29.6	6.20	1.639	18.692	18.386	58.4	40.0	28.8	10.4	2.77	1.61	49.2	9.2	19.6
16	114.9	0.097	109.2	30.2	6.21	1.748	18.597	18.272	58.2	40.0	28.0	9.7	2.88	1.65	49.1	9.1	18.9
17	114.5	0.103	109.5	30.6	6.22	1.857	18.530	18.186	58.2	40.0	27.6	9.4	2.94	1.68	49.1	9.1	18.5
18	114.1	0.109	109.7	30.8	6.22	1.966	18.463	18.100	58.1	40.0	27.3	9.2	2.98	1.70	49.0	9.0	18.2
19	113.3	0.115	109.9	31.0	6.23	2.075	18.328	17.947	57.9	40.0	26.9	9.0	2.99	1.73	48.9	9.0	18.0
20	113.4	0.121	110.1	31.1	6.24	2.185	18.341	17.940	57.9	40.0	26.8	8.8	3.03	1.74	48.9	9.0	17.8

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)
21	113.1	0.127	110.2	31.3	6.24	2.294	18.301	17.881	57.8	40.0	26.6	8.7	3.05	1.75	48.9	8.9	17.7
22	113.0	0.133	110.3	31.4	6.25	2.403	18.274	17.835	57.8	40.0	26.4	8.6	3.08	1.76	48.9	8.9	17.5
23	113.0	0.139	110.4	31.5	6.26	2.512	18.287	17.828	57.8	40.0	26.3	8.5	3.11	1.77	48.9	8.9	17.4
24	112.4	0.145	110.5	31.6	6.26	2.622	18.179	17.703	57.7	40.0	26.1	8.4	3.11	1.78	48.8	8.9	17.2
25	112.5	0.151	110.6	31.7	6.27	2.731	18.193	17.696	57.7	40.0	26.0	8.3	3.13	1.79	48.8	8.8	17.2
26	112.4	0.157	110.7	31.7	6.28	2.840	18.179	17.663	57.6	40.0	25.9	8.2	3.15	1.80	48.8	8.8	17.1
27	112.3	0.163	110.8	31.8	6.29	2.949	18.166	17.630	57.6	40.0	25.8	8.1	3.17	1.81	48.8	8.8	17.0
28	112.2	0.169	110.8	31.9	6.29	3.059	18.152	17.597	57.6	40.0	25.7	8.1	3.18	1.81	48.8	8.8	16.9
29	112.0	0.175	110.9	32.0	6.30	3.168	18.112	17.538	57.5	40.0	25.5	8.0	3.20	1.82	48.7	8.8	16.7
30	111.8	0.181	111.0	32.0	6.31	3.277	18.085	17.492	57.5	40.0	25.4	7.9	3.20	1.83	48.7	8.7	16.7
31	112.0	0.187	111.0	32.1	6.31	3.386	18.112	17.499	57.5	40.0	25.4	7.9	3.22	1.83	48.7	8.7	16.6
32	112.1	0.193	111.0	32.1	6.32	3.496	18.125	17.492	57.5	40.0	25.3	7.9	3.23	1.84	48.7	8.7	16.6
33	112.1	0.199	111.1	32.2	6.33	3.605	18.139	17.485	57.5	40.0	25.3	7.8	3.24	1.84	48.7	8.7	16.6
34	112.2	0.205	111.1	32.2	6.34	3.714	18.152	17.478	57.4	40.0	25.3	7.8	3.25	1.84	48.7	8.7	16.5
35	112.1	0.211	111.2	32.3	6.34	3.823	18.125	17.432	57.4	40.0	25.1	7.7	3.27	1.85	48.7	8.7	16.4
36	112.0	0.217	111.2	32.3	6.35	3.932	18.112	17.400	57.4	40.0	25.1	7.7	3.27	1.86	48.7	8.7	16.4
37	112.6	0.223	111.2	32.3	6.36	4.042	18.206	17.470	57.4	40.0	25.1	7.7	3.28	1.85	48.7	8.7	16.4
38	112.5	0.229	111.2	32.3	6.36	4.151	18.193	17.438	57.4	40.0	25.1	7.7	3.28	1.85	48.7	8.7	16.4
39	112.9	0.235	111.2	32.3	6.37	4.260	18.260	17.482	57.4	40.0	25.1	7.7	3.28	1.85	48.7	8.7	16.4
40	113.0	0.241	111.2	32.3	6.38	4.369	18.287	17.488	57.5	40.0	25.1	7.7	3.29	1.85	48.7	8.7	16.4
41	112.7	0.247	111.3	32.4	6.39	4.479	18.233	17.417	57.4	40.0	25.0	7.6	3.29	1.86	48.7	8.7	16.3
42	113.0	0.253	111.2	32.3	6.39	4.588	18.287	17.448	57.4	40.0	25.1	7.7	3.28	1.85	48.7	8.7	16.4
43	113.2	0.259	111.2	32.3	6.40	4.697	18.314	17.454	57.4	40.0	25.1	7.7	3.28	1.85	48.7	8.7	16.4
44	113.6	0.265	111.3	32.4	6.41	4.806	18.382	17.498	57.5	40.0	25.1	7.6	3.30	1.85	48.7	8.7	16.4
45	113.9	0.271	111.2	32.3	6.42	4.916	18.422	17.517	57.5	40.0	25.2	7.7	3.29	1.84	48.7	8.8	16.4
46	113.8	0.277	111.3	32.4	6.42	5.025	18.409	17.484	57.5	40.0	25.1	7.6	3.30	1.85	48.7	8.7	16.4
47	114.1	0.283	111.2	32.3	6.43	5.134	18.463	17.515	57.5	40.0	25.2	7.7	3.29	1.85	48.7	8.8	16.4
48	114.1	0.289	111.2	32.3	6.44	5.243	18.463	17.494	57.5	40.0	25.1	7.7	3.29	1.85	48.7	8.7	16.4
49	114.4	0.295	111.2	32.3	6.45	5.352	18.516	17.525	57.5	40.0	25.2	7.7	3.29	1.84	48.7	8.8	16.4
51	114.7	0.307	111.2	32.3	6.46	5.571	18.557	17.523	57.5	40.0	25.2	7.7	3.29	1.84	48.7	8.8	16.4
52	115.0	0.313	111.2	32.3	6.47	5.680	18.611	17.554	57.5	40.0	25.2	7.7	3.28	1.84	48.7	8.8	16.5
53	115.6	0.319	111.2	32.3	6.48	5.789	18.705	17.622	57.6	40.0	25.3	7.7	3.29	1.83	48.8	8.8	16.5
54	115.6	0.325	111.2	32.3	6.48	5.899	18.705	17.602	57.6	40.0	25.3	7.7	3.29	1.83	48.8	8.8	16.5
55	115.8	0.331	111.2	32.2	6.49	6.008	18.732	17.607	57.6	40.0	25.3	7.7	3.28	1.83	48.8	8.8	16.5
56	115.8	0.337	111.2	32.2	6.50	6.117	18.746	17.599	57.6	40.0	25.3	7.7	3.28	1.83	48.8	8.8	16.5
58	116.3	0.349	111.7	32.8	6.51	6.336	18.813	17.621	57.6	40.0	24.8	7.2	3.45	1.86	48.8	8.8	16.0
59	116.3	0.355	111.8	32.8	6.52	6.445	18.813	17.601	57.6	40.0	24.7	7.1	3.47	1.87	48.8	8.8	15.9
60	116.9	0.361	111.8	32.8	6.53	6.554	18.921	17.681	57.6	40.0	24.8	7.1	3.48	1.86	48.8	8.8	16.0
61	117.1	0.367	111.8	32.8	6.54	6.663	18.948	17.685	57.7	40.0	24.8	7.1	3.48	1.86	48.8	8.8	16.0
62	117.3	0.373	111.8	32.8	6.54	6.773	18.988	17.702	57.7	40.0	24.8	7.1	3.49	1.86	48.8	8.9	16.0
64	118.0	0.385	111.8	32.8	6.56	6.991	19.096	17.761	57.7	40.0	24.9	7.1	3.49	1.85	48.8	8.9	16.0
65	118.2	0.391	111.8	32.8	6.57	7.100	19.137	17.778	57.7	40.0	24.9	7.1	3.50	1.85	48.9	8.9	16.0
67	118.7	0.403	111.8	32.8	6.58	7.319	19.218	17.811	57.8	40.0	24.9	7.1	3.50	1.84	48.9	8.9	16.0
68	119.1	0.409	111.8	32.8	6.59	7.428	19.285	17.853	57.8	40.0	25.0	7.1	3.51	1.84	48.9	8.9	16.0
69	119.4	0.415	111.8	32.8	6.60	7.537	19.326	17.869	57.8	40.0	25.0	7.1	3.51	1.84	48.9	8.9	16.1
70	119.5	0.421	111.8	32.8	6.61	7.646	19.353	17.873	57.8	40.0	25.0	7.1	3.51	1.84	48.9	8.9	16.1

Specimen C

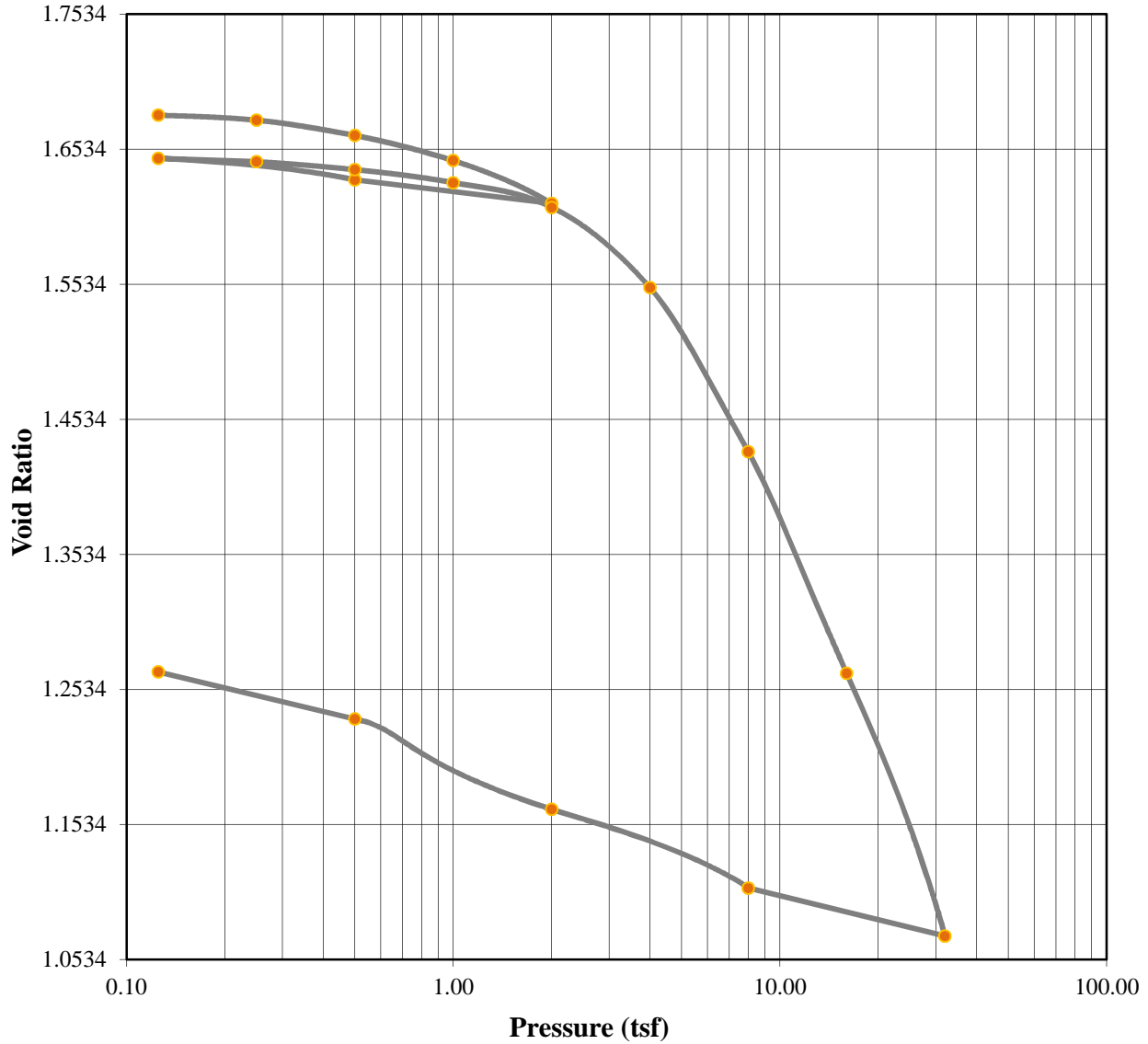
Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
71	120.0	0.427	111.8	32.8	6.61	7.756	19.434	17.926	57.9	40.0	25.0	7.1	3.52	1.83	48.9	9.0	16.1
72	120.2	0.433	111.8	32.8	6.62	7.865	19.461	17.930	57.9	40.0	25.1	7.1	3.52	1.83	48.9	9.0	16.1
73	120.4	0.439	111.8	32.8	6.63	7.974	19.487	17.934	57.9	40.0	25.1	7.1	3.52	1.83	48.9	9.0	16.1
74	120.6	0.445	111.8	32.8	6.64	8.083	19.528	17.949	57.9	40.0	25.1	7.1	3.52	1.83	48.9	9.0	16.1
75	120.9	0.451	111.8	32.8	6.65	8.193	19.568	17.965	57.9	40.0	25.1	7.1	3.52	1.83	49.0	9.0	16.1
76	121.5	0.457	111.8	32.8	6.65	8.302	19.676	18.043	58.0	40.0	25.2	7.1	3.53	1.82	49.0	9.0	16.1
77	121.7	0.463	111.8	32.8	6.66	8.411	19.703	18.046	58.0	40.0	25.2	7.1	3.53	1.82	49.0	9.0	16.1
78	121.9	0.469	111.8	32.8	6.67	8.520	19.744	18.061	58.0	40.0	25.2	7.1	3.54	1.82	49.0	9.0	16.2
79	122.3	0.475	111.8	32.8	6.68	8.630	19.811	18.102	58.1	40.0	25.2	7.1	3.54	1.81	49.0	9.1	16.2
81	122.8	0.487	111.7	32.8	6.69	8.848	19.879	18.120	58.1	40.0	25.3	7.2	3.53	1.81	49.0	9.1	16.2
82	123.1	0.493	111.7	32.8	6.70	8.957	19.933	18.147	58.1	40.0	25.3	7.2	3.53	1.81	49.0	9.1	16.2
83	123.2	0.499	111.7	32.8	6.71	9.066	19.959	18.150	58.1	40.0	25.3	7.2	3.53	1.81	49.0	9.1	16.2
84	123.7	0.505	111.7	32.8	6.72	9.176	20.027	18.189	58.2	40.0	25.4	7.2	3.52	1.80	49.1	9.1	16.3
85	124.1	0.511	111.7	32.8	6.73	9.285	20.094	18.229	58.2	40.0	25.4	7.2	3.53	1.80	49.1	9.1	16.3
86	124.2	0.517	111.7	32.7	6.73	9.394	20.121	18.231	58.2	40.0	25.5	7.2	3.52	1.79	49.1	9.1	16.4
87	124.4	0.523	111.6	32.7	6.74	9.503	20.148	18.234	58.2	40.0	25.5	7.3	3.50	1.79	49.1	9.1	16.4
88	125.1	0.529	111.6	32.6	6.75	9.613	20.270	18.321	58.3	40.0	25.6	7.3	3.50	1.78	49.1	9.2	16.5
89	125.1	0.535	111.5	32.6	6.76	9.722	20.256	18.287	58.3	40.0	25.7	7.4	3.48	1.78	49.1	9.1	16.5
90	125.6	0.541	111.5	32.6	6.77	9.831	20.351	18.350	58.3	40.0	25.7	7.4	3.49	1.78	49.1	9.2	16.5
91	125.6	0.547	111.5	32.6	6.77	9.940	20.337	18.316	58.3	40.0	25.7	7.4	3.49	1.78	49.1	9.2	16.5
92	125.9	0.553	111.5	32.6	6.78	10.050	20.391	18.342	58.3	40.0	25.8	7.4	3.48	1.78	49.1	9.2	16.6
93	126.2	0.559	111.5	32.5	6.79	10.159	20.445	18.368	58.3	40.0	25.8	7.4	3.47	1.77	49.2	9.2	16.6
95	127.1	0.571	111.4	32.4	6.81	10.377	20.593	18.456	58.4	40.0	26.0	7.5	3.45	1.76	49.2	9.2	16.8
96	127.1	0.577	111.4	32.4	6.82	10.487	20.593	18.434	58.4	40.0	26.0	7.5	3.45	1.76	49.2	9.2	16.7
98	128.0	0.589	111.3	32.4	6.83	10.705	20.742	18.521	58.5	40.0	26.1	7.6	3.43	1.75	49.2	9.3	16.9
99	128.1	0.595	111.3	32.4	6.84	10.814	20.755	18.511	58.5	40.0	26.1	7.6	3.43	1.75	49.2	9.3	16.9
100	128.7	0.601	111.2	32.3	6.85	10.923	20.850	18.572	58.5	40.0	26.2	7.7	3.43	1.74	49.3	9.3	16.9
101	129.2	0.607	111.2	32.3	6.86	11.033	20.930	18.621	58.6	40.0	26.3	7.7	3.42	1.73	49.3	9.3	17.0
103	129.9	0.619	111.1	32.2	6.87	11.251	21.052	18.683	58.7	40.0	26.5	7.8	3.40	1.72	49.3	9.3	17.1
104	129.9	0.625	111.2	32.3	6.88	11.360	21.052	18.660	58.6	40.0	26.3	7.7	3.44	1.73	49.3	9.3	17.0
105	130.7	0.631	111.6	32.6	6.89	11.470	21.173	18.745	58.7	40.0	26.1	7.3	3.56	1.74	49.3	9.4	16.7
106	131.0	0.637	111.7	32.7	6.90	11.579	21.227	18.769	58.7	40.0	26.0	7.2	3.59	1.74	49.4	9.4	16.6
107	131.4	0.643	111.7	32.7	6.91	11.688	21.295	18.806	58.8	40.0	26.1	7.2	3.60	1.74	49.4	9.4	16.6
108	132.2	0.649	111.6	32.7	6.92	11.797	21.429	18.901	58.9	40.0	26.2	7.3	3.59	1.73	49.4	9.5	16.7
109	132.0	0.655	111.6	32.7	6.93	11.907	21.403	18.854	58.8	40.0	26.1	7.3	3.59	1.73	49.4	9.4	16.7
110	132.5	0.661	111.6	32.7	6.93	12.016	21.470	18.890	58.9	40.0	26.2	7.3	3.59	1.73	49.4	9.4	16.7
111	132.5	0.667	111.6	32.6	6.94	12.125	21.483	18.879	58.8	40.0	26.2	7.3	3.58	1.73	49.4	9.4	16.8
112	132.9	0.673	111.5	32.6	6.95	12.234	21.537	18.902	58.9	40.0	26.3	7.4	3.57	1.72	49.4	9.5	16.8
113	133.2	0.679	111.5	32.6	6.96	12.343	21.591	18.926	58.9	40.0	26.3	7.4	3.57	1.72	49.4	9.5	16.8
114	133.5	0.685	111.5	32.6	6.97	12.453	21.645	18.950	58.9	40.0	26.3	7.4	3.57	1.72	49.4	9.5	16.8
115	134.1	0.691	111.5	32.6	6.98	12.562	21.740	19.009	59.0	40.0	26.4	7.4	3.57	1.71	49.5	9.5	16.9
116	134.2	0.697	111.5	32.6	6.99	12.671	21.753	18.997	59.0	40.0	26.4	7.4	3.56	1.71	49.5	9.5	16.9
117	134.4	0.703	111.4	32.5	6.99	12.780	21.794	19.008	59.0	40.0	26.5	7.5	3.54	1.71	49.5	9.5	17.0
118	134.8	0.709	111.4	32.5	7.00	12.890	21.848	19.031	59.0	40.0	26.5	7.5	3.54	1.71	49.5	9.5	17.0
119	135.0	0.715	111.4	32.4	7.01	12.999	21.888	19.043	59.0	40.0	26.6	7.5	3.53	1.70	49.5	9.5	17.1
120	136.1	0.721	111.3	32.4	7.02	13.108	22.063	19.171	59.1	40.0	26.7	7.6	3.53	1.69	49.6	9.6	17.2

Specimen C

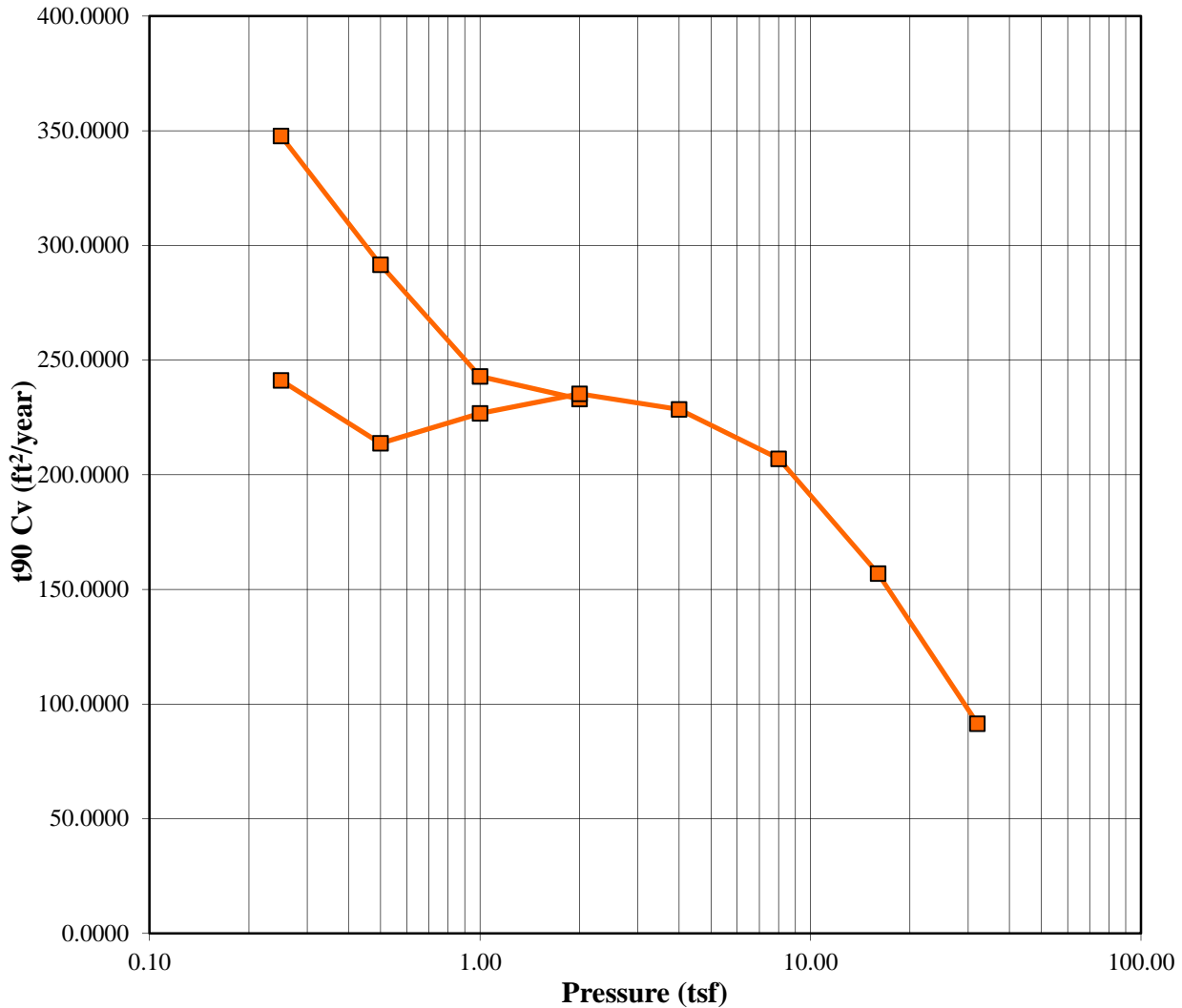
Reading No.	Deviator Load (lbs)	Axial Deformation (in)	Pore Pressure (psi)	Change in Pore Pressure (psi)	Corrected Area (in ²)	Axial Strain (%)	Deviator Stress (psi)	Corrected Deviator Stress (psi)	σ_1 (psi)	σ_3 (psi)	σ'_1 (psi)	σ'_3 (psi)	σ'_1/σ'_3	Abar	P (psi)	Q (psi)	P' (psi)
121	135.9	0.727	111.3	32.4	7.03	13.217	22.036	19.124	59.1	40.0	26.7	7.6	3.51	1.69	49.5	9.6	17.2
122	136.3	0.733	111.2	32.3	7.04	13.327	22.104	19.158	59.1	40.0	26.8	7.7	3.50	1.69	49.5	9.6	17.2
123	136.9	0.739	111.2	32.3	7.05	13.436	22.198	19.216	59.2	40.0	26.9	7.7	3.51	1.68	49.6	9.6	17.3
124	137.0	0.745	111.2	32.3	7.06	13.545	22.212	19.203	59.2	40.0	26.9	7.7	3.50	1.68	49.6	9.6	17.3
125	137.4	0.751	111.2	32.2	7.07	13.654	22.279	19.237	59.2	40.0	27.0	7.7	3.49	1.68	49.6	9.6	17.4
126	137.8	0.757	111.2	32.2	7.07	13.764	22.347	19.271	59.2	40.0	27.0	7.7	3.49	1.67	49.6	9.6	17.4
127	138.5	0.763	111.1	32.2	7.08	13.873	22.468	19.351	59.3	40.0	27.1	7.8	3.49	1.66	49.6	9.7	17.5
128	139.0	0.769	111.1	32.2	7.09	13.982	22.535	19.384	59.4	40.0	27.2	7.8	3.48	1.66	49.7	9.7	17.5
129	140.1	0.775	111.0	32.1	7.10	14.091	22.724	19.522	59.5	40.0	27.4	7.9	3.48	1.64	49.7	9.8	17.6
130	140.4	0.781	111.0	32.1	7.11	14.200	22.778	19.543	59.5	40.0	27.4	7.9	3.47	1.64	49.7	9.8	17.7
131	141.0	0.787	111.0	32.1	7.12	14.310	22.872	19.600	59.6	40.0	27.5	7.9	3.48	1.64	49.8	9.8	17.7
132	141.2	0.793	110.9	32.0	7.13	14.419	22.899	19.598	59.6	40.0	27.6	8.0	3.46	1.63	49.8	9.8	17.8
133	141.3	0.799	110.9	31.9	7.14	14.528	22.913	19.584	59.6	40.0	27.6	8.0	3.44	1.63	49.8	9.8	17.8
134	141.8	0.805	110.9	31.9	7.15	14.637	23.007	19.640	59.6	40.0	27.7	8.0	3.45	1.63	49.8	9.8	17.8
135	142.5	0.811	110.8	31.9	7.16	14.747	23.115	19.707	59.7	40.0	27.8	8.1	3.44	1.62	49.8	9.9	17.9
136	142.8	0.817	110.8	31.9	7.17	14.856	23.169	19.727	59.7	40.0	27.8	8.1	3.44	1.62	49.8	9.9	18.0
137	143.7	0.823	110.9	32.0	7.17	14.965	23.318	19.828	59.8	40.0	27.8	8.0	3.49	1.61	49.9	9.9	17.9
138	144.3	0.829	111.4	32.4	7.18	15.074	23.412	19.883	59.9	40.0	27.4	7.5	3.64	1.63	49.9	9.9	17.5
139	144.6	0.835	111.4	32.4	7.19	15.184	23.452	19.891	59.9	40.0	27.4	7.5	3.64	1.63	49.9	9.9	17.5
140	145.0	0.841	111.3	32.4	7.20	15.293	23.533	19.934	59.9	40.0	27.5	7.6	3.63	1.63	49.9	10.0	17.5
141	145.3	0.847	111.3	32.4	7.21	15.402	23.574	19.943	59.9	40.0	27.5	7.6	3.63	1.62	49.9	10.0	17.5
142	145.7	0.853	111.3	32.4	7.22	15.511	23.641	19.974	59.9	40.0	27.5	7.6	3.64	1.62	50.0	10.0	17.6
143	146.0	0.859	111.3	32.4	7.23	15.621	23.695	19.994	60.0	40.0	27.6	7.6	3.63	1.62	50.0	10.0	17.6
144	146.1	0.865	111.3	32.4	7.24	15.730	23.709	19.979	59.9	40.0	27.6	7.6	3.62	1.62	50.0	10.0	17.6
145	146.6	0.871	111.2	32.3	7.25	15.839	23.790	20.022	60.0	40.0	27.7	7.7	3.62	1.61	50.0	10.0	17.7
146	147.0	0.877	111.2	32.3	7.26	15.948	23.857	20.052	60.0	40.0	27.7	7.7	3.62	1.61	50.0	10.0	17.7
147	147.3	0.883	111.2	32.3	7.27	16.057	23.897	20.060	60.0	40.0	27.7	7.7	3.62	1.61	50.0	10.0	17.7
148	147.4	0.889	111.2	32.3	7.28	16.167	23.924	20.057	60.0	40.0	27.7	7.7	3.62	1.61	50.0	10.0	17.7
149	148.1	0.895	111.2	32.3	7.29	16.276	24.032	20.121	60.1	40.0	27.8	7.7	3.63	1.61	50.0	10.1	17.7
150	148.0	0.901	111.2	32.3	7.30	16.385	24.019	20.083	60.1	40.0	27.8	7.7	3.61	1.61	50.0	10.0	17.7
151	148.5	0.907	111.2	32.3	7.31	16.494	24.100	20.125	60.1	40.0	27.8	7.7	3.62	1.60	50.0	10.1	17.8
152	148.7	0.913	111.2	32.3	7.32	16.604	24.127	20.121	60.1	40.0	27.8	7.7	3.62	1.60	50.0	10.1	17.8
153	148.8	0.919	111.2	32.2	7.32	16.713	24.154	20.117	60.1	40.0	27.9	7.7	3.60	1.60	50.0	10.1	17.8
154	149.2	0.925	111.1	32.2	7.33	16.822	24.221	20.147	60.1	40.0	28.0	7.8	3.58	1.60	50.0	10.1	17.9
155	149.6	0.931	111.1	32.2	7.34	16.931	24.275	20.165	60.1	40.0	28.0	7.8	3.58	1.59	50.1	10.1	17.9
156	149.6	0.937	111.1	32.2	7.35	17.041	24.275	20.138	60.1	40.0	28.0	7.8	3.58	1.60	50.0	10.1	17.9
158	150.1	0.949	111.1	32.2	7.37	17.259	24.356	20.152	60.1	40.0	28.0	7.8	3.58	1.60	50.0	10.1	17.9
159	150.4	0.955	111.0	32.1	7.38	17.368	24.410	20.170	60.1	40.0	28.0	7.9	3.57	1.59	50.1	10.1	17.9
160	150.6	0.961	111.0	32.1	7.39	17.478	24.450	20.177	60.1	40.0	28.1	7.9	3.55	1.59	50.1	10.1	18.0
161	151.2	0.967	111.0	32.1	7.40	17.587	24.545	20.228	60.2	40.0	28.1	7.9	3.56	1.59	50.1	10.1	18.0
162	151.5	0.973	111.0	32.1	7.41	17.696	24.585	20.235	60.2	40.0	28.1	7.9	3.58	1.59	50.1	10.1	18.0
163	151.6	0.979	111.0	32.1	7.42	17.805	24.612	20.230	60.2	40.0	28.1	7.9	3.57	1.59	50.1	10.1	18.0
164	152.0	0.985	111.0	32.1	7.43	17.914	24.666	20.247	60.2	40.0	28.1	7.9	3.56	1.58	50.1	10.1	18.0
165	152.5	0.991	111.0	32.0	7.44	18.024	24.747	20.287	60.3	40.0	28.2	7.9	3.56	1.58	50.1	10.1	18.1
166	153.0	0.997	110.9	32.0	7.45	18.133	24.841	20.337	60.3	40.0	28.3	8.0	3.55	1.57	50.1	10.2	18.1
167	153.8	1.003	110.9	31.9	7.46	18.242	24.963	20.409	60.4	40.0	28.4	8.0	3.54	1.57	50.2	10.2	18.2

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)
168	154.0	1.009	110.9	31.9	7.47	18.351	25.003	20.415	60.4	40.0	28.4	8.0	3.55	1.56	50.2	10.2	18.2
169	154.8	1.015	110.8	31.9	7.48	18.461	25.138	20.498	60.5	40.0	28.6	8.1	3.53	1.55	50.2	10.2	18.4
170	155.3	1.021	110.8	31.9	7.49	18.570	25.206	20.525	60.5	40.0	28.6	8.1	3.53	1.55	50.2	10.3	18.4
171	155.6	1.027	110.8	31.8	7.50	18.679	25.260	20.541	60.5	40.0	28.7	8.1	3.52	1.55	50.2	10.3	18.4
172	156.4	1.033	110.7	31.8	7.51	18.788	25.394	20.623	60.6	40.0	28.8	8.2	3.52	1.54	50.3	10.3	18.5
173	156.4	1.039	110.7	31.8	7.52	18.898	25.394	20.595	60.6	40.0	28.8	8.2	3.52	1.54	50.3	10.3	18.5
174	156.9	1.045	110.6	31.7	7.53	19.007	25.475	20.633	60.6	40.0	28.9	8.3	3.50	1.54	50.3	10.3	18.6
175	157.2	1.051	110.6	31.7	7.54	19.116	25.529	20.649	60.6	40.0	28.9	8.3	3.50	1.54	50.3	10.3	18.6
176	157.4	1.057	110.6	31.7	7.55	19.225	25.556	20.643	60.6	40.0	28.9	8.3	3.49	1.53	50.3	10.3	18.6
177	158.0	1.063	110.6	31.6	7.56	19.335	25.651	20.691	60.7	40.0	29.0	8.3	3.48	1.53	50.3	10.3	18.7
178	157.9	1.069	110.5	31.6	7.57	19.444	25.637	20.652	60.6	40.0	29.0	8.4	3.46	1.53	50.3	10.3	18.7
179	158.5	1.075	110.5	31.5	7.58	19.553	25.732	20.700	60.7	40.0	29.1	8.4	3.46	1.52	50.3	10.4	18.8
181	159.3	1.087	110.4	31.5	7.60	19.771	25.866	20.752	60.7	40.0	29.3	8.5	3.44	1.52	50.3	10.4	18.9
182	159.5	1.093	110.4	31.5	7.61	19.881	25.907	20.756	60.7	40.0	29.3	8.5	3.44	1.52	50.3	10.4	18.9
183	159.8	1.099	110.3	31.4	7.62	19.990	25.947	20.760	60.7	40.0	29.4	8.6	3.42	1.51	50.3	10.4	19.0
184	160.4	1.105	110.3	31.3	7.63	20.091	26.055	20.821	60.8	40.0	29.5	8.6	3.41	1.51	50.4	10.4	19.0



Summary of Consolidation Test Results				Test Date: 2/11/2015
Overburden Press. (tsf)	0.53	Compression Index, C_c	0.545	
Preconsol. Press., P_c (tsf)	3.10	Rebound Index, C_r	0.026	
Over Consolidation Ratio	5.90			
Soil Description: Brown, Tan & Gray Silty Sand				
Project Number:	14046-01	Depth:	8.5' to 9.0'	
Sample Number:	ST-1	Boring Number:	B-7A	
Project:	I-20 D/B Roadway Improvement			
Client:				
Location:	B-7A ST-1 8.5' to 9.0'			
Remarks:				



—■— t90 Cv

	Before	After	Liquid Limits:	60	Test Date:	2/11/2015	
Moisture (%):	59.77	51.79	Plastic Limits:	48			
Dry Density (pcf):	62.51	80.98	Plasticity Index (%):	12			
Saturation (%):	95.35	129.80					
Void Ratio:	1.6815	1.0540	Specific Gravity:	2.689	Measured		
Soil Description:	Brown, Tan & Gray Silty Sand						
Project Number:	14046-01	Depth:	8.5' to 9.0'		Remarks:		
Sample Number:	ST-1	Boring Number:	B-7A				
Project:	I-20 D/B Roadway Improvement						
Client:							
Location:	B-7A ST-1 8.5' to 9.0'						

Test Summary

Project: I-20 D/B Roadway Improvement
Location: B-7A ST-1 8.5' to 9.0'
Job Number: 14046-01

Project Number: 14046-01

Sample Number: ST-1
Boring Number: B-7A
Depth: 8.5' to 9.0'
Sample Type: Undisturbed

Sample Description:
 Brown, Tan & Gray Silty Sand

Remarks:

Test Number:
Test Date: 2/11/2015

Index	Load Sequence (tsf)	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 (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	0.9973	0.6253	0.00	1.6808	0.000	0.000	0.000	0.000
1	0.125	0.0008	0.9965	0.6245	0.08	1.6786	0.000	0.000	0.000	0.000
2	0.250	0.0022	0.9951	0.6231	0.22	1.6749	2.204	* 1.2242	347.740	145.405
3	0.500	0.0064	0.9909	0.6189	0.64	1.6636	2.606	* 1.4477	291.576	121.921
4	1.000	0.0133	0.9840	0.6120	1.33	1.6450	3.085	* 1.7138	242.876	101.562
5	2.000	0.0251	0.9722	0.6002	2.52	1.6133	3.138	* 1.7436	233.041	97.446
6	0.500	0.0186	0.9787	0.6067	1.87	1.6308	0.000	0.000	0.000	0.000
7	0.125	0.0127	0.9846	0.6126	1.27	1.6467	0.000	0.000	0.000	0.000
8	0.250	0.0136	0.9837	0.6117	1.36	1.6442	3.106	* 1.7254	241.099	100.817
9	0.500	0.0158	0.9815	0.6095	1.58	1.6383	3.488	* 1.9379	213.702	89.361
10	1.000	0.0194	0.9779	0.6059	1.95	1.6287	3.262	* 1.8124	226.822	94.849
11	2.000	0.0262	0.9711	0.5991	2.63	1.6104	3.101	* 1.7228	235.314	98.399
12	4.000	0.0483	0.9490	0.5770	4.84	1.5510	3.050	* 1.6943	228.510	95.552
13	8.000	0.0935	0.9038	0.5318	9.38	1.4295	3.053	* 1.6962	207.024	86.570
14	16.000	0.1545	0.8428	0.4708	15.49	1.2655	3.501	* 1.9452	156.978	65.642
15	32.000	0.2269	0.7704	0.3984	22.75	1.0709	5.018	* 2.7877	91.526	38.272
16	8.000	0.2137	0.7836	0.4116	21.43	1.1064	0.000	0.000	0.000	0.000
17	2.000	0.1920	0.8053	0.4333	19.25	1.1647	0.000	0.000	0.000	0.000
18	0.500	0.1671	0.8302	0.4582	16.76	1.2316	0.000	0.000	0.000	0.000
19	0.125	0.2334	0.7639	0.3919	15.48	1.2664	0.000	0.000	0.000	0.000

Predicted value indicated with *

Consolidation Specimen Information

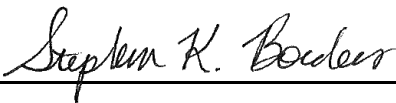
Project: I-20 D/B Roadway Improvement	Project Number: 14046-01
Location: B-7A ST-1 8.5' to 9.0'	
Job Number: 14046-01	Test Date: 2/11/2015

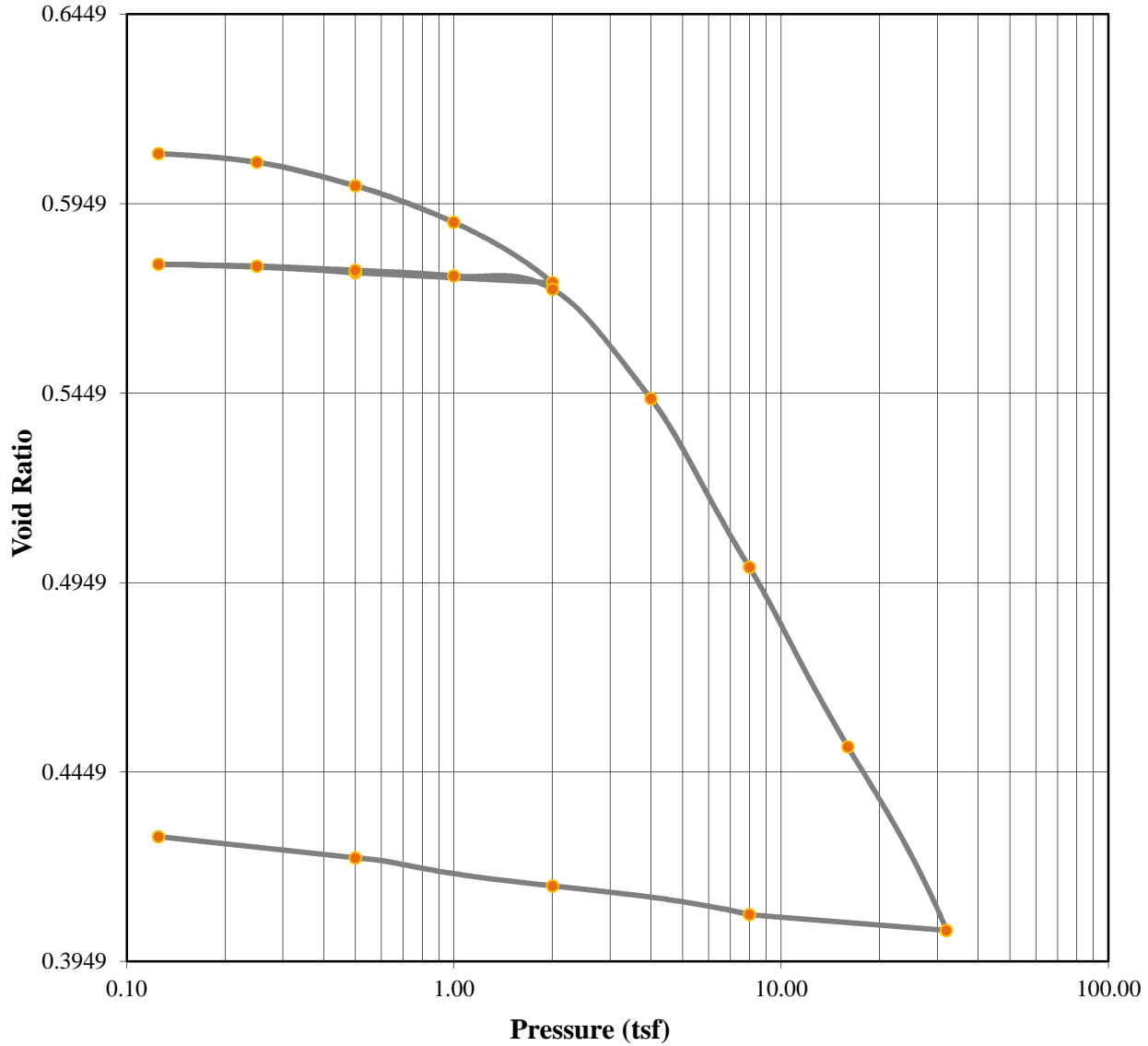
Sample Number: ST-1	Sample Description: Brown, Tan & Gray Silty Sand
Boring Number: B-7A	
Depth: 8.5' to 9.0'	Remarks:
Sample Type: Undisturbed	

Test Number:			
Liquid Limit: 60.0000	Initial Void Ratio: 1.6815	Initial Height (in): 0.9973	
Plastic Limit: 48.0000	Plasticity Index (%): 12.0000	Initial Diameter (in): 2.4983	
Specific Gravity: 2.6890	Weight of Ring (g): 109.6500		
Measured			

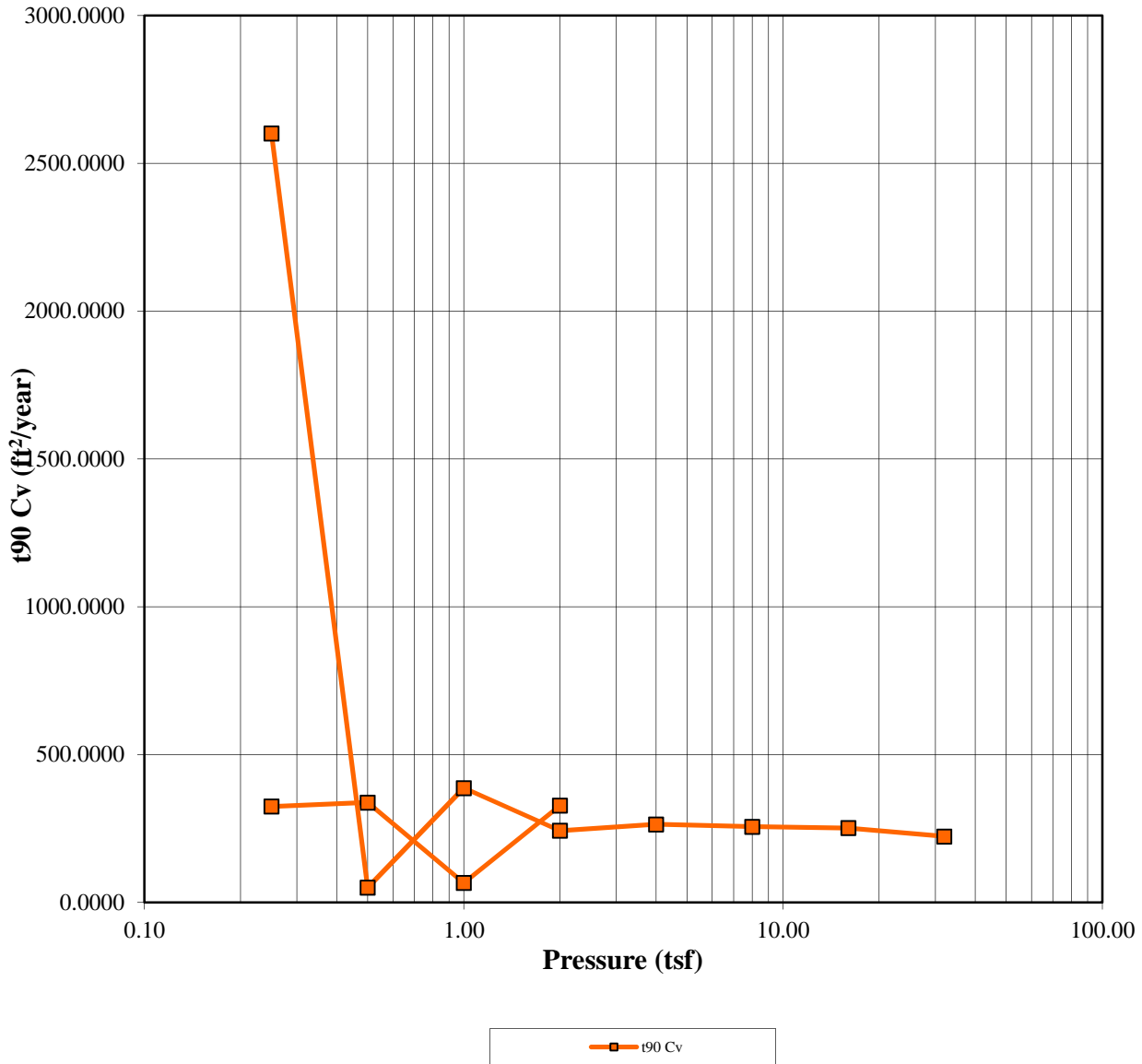
Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	228.03	197.62
Dry Soil + Container (g)	164.79	156.46
Weight of Container (g)	58.98	76.98
Moisture Content (%)	59.77	51.79
Void Ratio	1.6815	1.0540
Saturation (%)	95.35	129.80
Dry Density (pcf)	62.51	80.98

Tested By: 

Checked By: 



Summary of Consolidation Test Results				Test Date: 2/11/2015
Overburden Press. (tsf)	0.37	Compression Index, C_c	0.153	
Preconsol. Press., P_c (tsf)	1.80	Rebound Index, C_r	0.004	
Over Consolidation Ratio	4.88			
Soil Description: Brown, Gray & Tan Clayey Sand				
Project Number:	14046-01	Depth:	6.0' to 6.3'	
Sample Number:	ST-1	Boring Number:	B-15A	
Project:	I-20 D/B Roadway Improvement			
Client:				
Location:	B-15A ST-1 6.0' to 6.3'			
Remarks:				



	Before	After	Liquid Limits:	37	Test Date:	2/11/2015	
Moisture (%):	18.31	15.23	Plastic Limits:	21			
Dry Density (pcf):	104.66	120.58	Plasticity Index (%):	16			
Saturation (%):	80.78	102.98					
Void Ratio:	0.6079	0.3930	Specific Gravity:	2.704	Measured		
Soil Description:	Brown, Gray & Tan Clayey Sand						
Project Number:	14046-01	Depth:	6.0' to 6.3'		Remarks:		
Sample Number:	ST-1	Boring Number:	B-15A				
Project:	I-20 D/B Roadway Improvement						
Client:							
Location:	B-15A ST-1 6.0' to 6.3'						

Test Summary

Project: I-20 D/B Roadway Improvement
Location: B-15A ST-1 6.0' to 6.3'
Job Number: 14046-01

Project Number: 14046-01

Sample Number: ST-1
Boring Number: B-15A
Depth: 6.0' to 6.3'
Sample Type: Undisturbed

Sample Description:
 Brown, Gray & Tan Clayey Sand
Remarks:

Test Number:
Test Date: 2/11/2015

Index	Load Sequence (tsf)	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 (ft2/year)	t50 Cv (ft2/year)
0	0.000	0.0000	1.0028	0.3799	0.00	0.6100	0.000	0.000	0.000	0.000
1	0.125	0.0012	1.0016	0.3787	0.12	0.6081	0.000	0.000	0.000	0.000
2	0.250	0.0026	1.0002	0.3773	0.26	0.6058	2.384	* 1.3246	324.671	135.765
3	0.500	0.0065	0.9963	0.3734	0.65	0.5996	2.272	* 1.2620	338.120	141.390
4	1.000	0.0125	0.9903	0.3674	1.25	0.5899	11.575	* 6.4303	65.563	27.416
5	2.000	0.0224	0.9804	0.3575	2.23	0.5740	2.272	* 1.2620	327.414	136.914
6	0.500	0.0208	0.9820	0.3591	2.07	0.5766	0.000	0.000	0.000	0.000
7	0.125	0.0194	0.9834	0.3605	1.93	0.5789	0.000	0.000	0.000	0.000
8	0.250	0.0197	0.9831	0.3602	1.96	0.5784	0.288	* 0.1598	2600.660	1087.221
9	0.500	0.0204	0.9824	0.3595	2.03	0.5773	14.995	* 8.3306	49.803	20.826
10	1.000	0.0213	0.9815	0.3586	2.12	0.5758	1.927	* 1.0706	386.832	161.753
11	2.000	0.0235	0.9793	0.3564	2.34	0.5723	3.059	* 1.6992	242.628	101.458
12	4.000	0.0415	0.9613	0.3384	4.14	0.5434	2.709	* 1.5049	263.979	110.385
13	8.000	0.0692	0.9336	0.3107	6.90	0.4989	2.634	* 1.4635	256.028	107.060
14	16.000	0.0987	0.9041	0.2812	9.84	0.4515	2.512	* 1.3953	251.842	105.309
15	32.000	0.1289	0.8739	0.2510	12.85	0.4031	2.646	* 1.4699	223.347	93.397
16	8.000	0.1263	0.8765	0.2536	12.59	0.4072	0.000	0.000	0.000	0.000
17	2.000	0.1216	0.8812	0.2583	12.13	0.4148	0.000	0.000	0.000	0.000
18	0.500	0.1170	0.8858	0.2629	11.67	0.4222	0.000	0.000	0.000	0.000
19	0.125	0.1340	0.8688	0.2459	11.20	0.4278	0.000	0.000	0.000	0.000

Predicted value indicated with *

Consolidation Specimen Information

Project: I-20 D/B Roadway Improvement **Project Number:** 14046-01
Location: B-15A ST-1 6.0' to 6.3'
Job Number: 14046-01 **Test Date:** 2/11/2015

Sample Number: ST-1 **Sample Description:**
Boring Number: B-15A Brown, Gray & Tan Clayey Sand
Depth: 6.0' to 6.3' **Remarks:**
Sample Type: Undisturbed

Test Number:
Liquid Limit: 37.0000 **Initial Void Ratio:** 0.6079 **Initial Height (in):** 1.0028
Plastic Limit: 21.0000 **Plasticity Index (%):** 16.0000 **Initial Diameter (in):** 2.4955
Specific Gravity: 2.7040 **Weight of Ring (g):** 109.2800
Measured

Parameters	Initial Specimen	Final Specimen
Moist Weight + Container (g)	242.06	213.09
Dry Soil + Container (g)	213.72	192.72
Weight of Container (g)	58.90	59.00
Moisture Content (%)	18.31	15.23
Void Ratio	0.6079	0.3930
Saturation (%)	80.78	102.98
Dry Density (pcf)	104.66	120.58

Tested By: *Jenny Salo*

Checked By: *Stephen K. Borders*

TRIAxIAL COMPRESSION TEST

PROJECT NAME	: I-20 D/B Roadway Improvement-Noise Walls			POINT #	: 1
PROJECT #	: 251829			SAMPLE LOC.	: B-38
PROJECT COUNTY	: Lexington			SAMPLE DEPTH	: 29.7' to 30.2'
PROJECT STATE	: South Carolina			DATE TESTED	: 7/29/2015
LABORATORY #	: 251829			DATE REPORTED	: 8/12/2015
SUBMITTED BY	: HDR ICA				
SOIL TYPE	: Tan, Gray & Green Silty Sand with Gravel				
WET DENSITY	: 132.24 pcf	DELTA HEIGHT	: 0.45 cm	INITIAL HEIGHT	: 14.59 cm
DRY DENSITY	: 102.4 pcf	DELTA VOLUME	: NA	INITIAL DIAMETER	: 7.27 cm
MOISTURE	: 29.14 %	CHAMBER PRES.	: 23.28 psi	COMMENTS	: AASHTO T-2

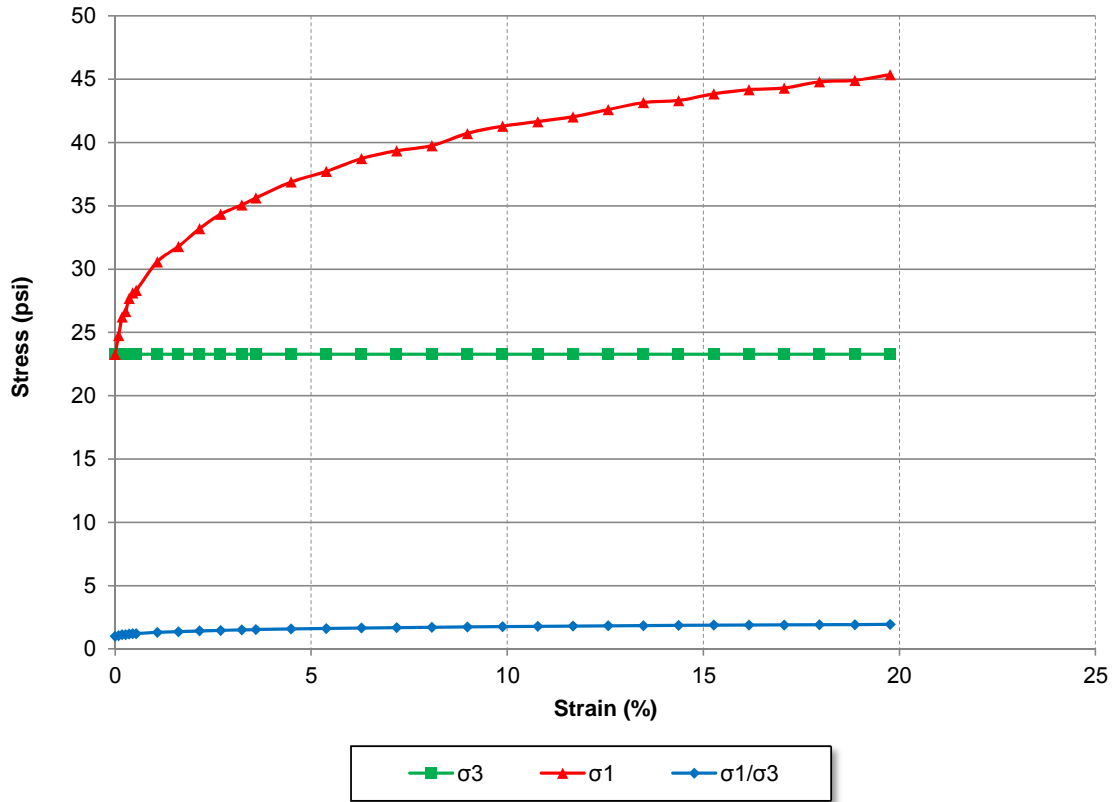
RESULTS:

	ϵ_a	σ_3 (psi)	σ_1 (psi)	σ_1/σ_3
1	0.00	23.28	23.28	1.00
2	0.09	23.28	24.76	1.06
3	0.18	23.28	26.23	1.13
4	0.27	23.28	26.65	1.14
5	0.36	23.28	27.7	1.19
6	0.45	23.28	28.11	1.21
7	0.54	23.28	28.32	1.22
8	1.08	23.28	30.59	1.31
9	1.62	23.28	31.79	1.37
10	2.16	23.28	33.19	1.43
11	2.69	23.28	34.34	1.48
12	3.23	23.28	35.08	1.51
13	3.59	23.28	35.62	1.53
14	4.49	23.28	36.88	1.58
15	5.39	23.28	37.72	1.62
16	6.29	23.28	38.74	1.66
17	7.19	23.28	39.35	1.69
18	8.08	23.28	39.76	1.71
19	8.98	23.28	40.72	1.75
20	9.88	23.28	41.28	1.77
21	10.78	23.28	41.65	1.79
22	11.68	23.28	42.03	1.81
23	12.57	23.28	42.6	1.83
24	13.47	23.28	43.15	1.85
25	14.37	23.28	43.32	1.86
26	15.27	23.28	43.84	1.88
27	16.17	23.28	44.17	1.9
28	17.06	23.28	44.31	1.9
29	17.96	23.28	44.79	1.92
30	18.86	23.28	44.91	1.93
31	19.76	23.28	45.37	1.95
32	20.66	23.28	45.81	1.97

Unconsolidated Undrained
TRIAXIAL COMPRESSION TEST

PROJECT NAME	: I-20 D/B Roadway Improvement-Noise Walls	POINT #	: 1
PROJECT #	: 251829	SAMPLE LOC.	: B-38
PROJECT COUNTY	: Lexington	SAMPLE DEPTH	: 29.7' to 30.2'
PROJECT STATE	: South Carolina	DATE TESTED	: 7/29/2015
LABORATORY #	: 251829	DATE REPORTED	: 8/12/2015
SUBMITTED BY	: HDR ICA		
FINAL MOISTURE	: 29.14 %	EFF. CONS. STRESS	: 23.28 psi
FINAL HEIGHT	: 11.22 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.13 cm	COMMENTS	: AASHTO T-296

RESULTS:



TRIAXIAL COMPRESSION TEST

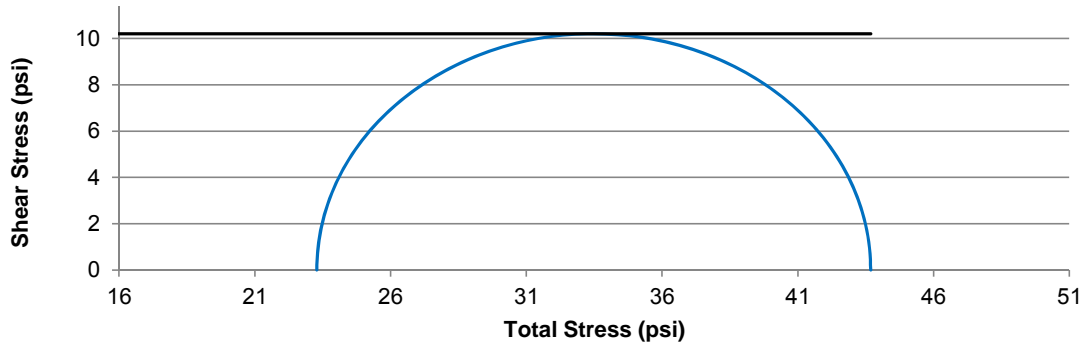
PROJECT NAME	: I-20 D/B Roadway Improvement-Noise Walls	Page 3 of 3	
PROJECT #	: 251829	COMMENTS	: AASHTO T-296
PROJECT COUNTY	: Lexington	SAMPLE LOC.	: B-38
PROJECT STATE	: South Carolina	SAMPLE DEPTH	: 29.7' to 30.2'
LABORATORY #	: 251829	DATE TESTED	: 7/29/2015
SUBMITTED BY	: HDR ICA	DATE REPORTED	: 8/12/2015

COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total	Compressive Strength =	2938 psf
1	23.28 psi	43.69 psi	Cohesion =	1469 psf
			Phi =	0 deg
			Tan (Phi) =	0

At Maximum Deviator Stress 15%

**Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test**



Approved By: *Jeung Sohn*

TRIAxIAL COMPRESSION TEST

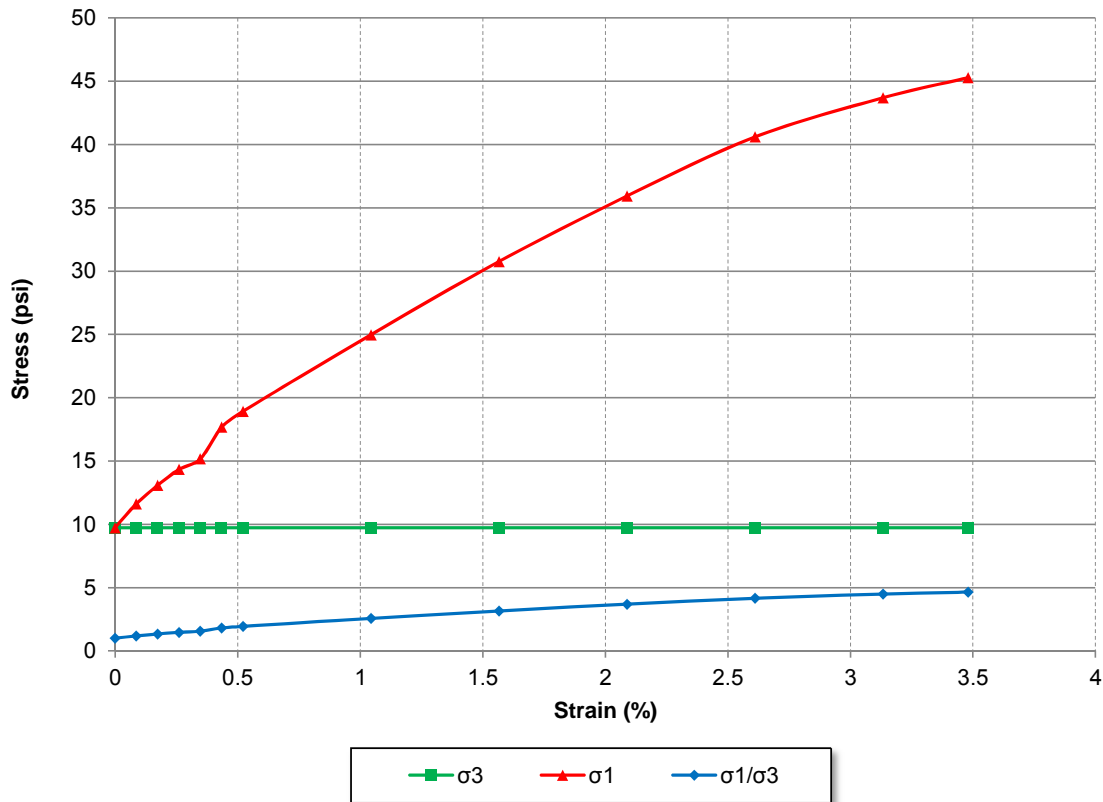
PROJECT NAME	: I-20 D/B Roadway Improvement-Noise Walls	POINT #	: 1
PROJECT #	: 251829	SAMPLE LOC.	: B-39
PROJECT COUNTY	: Lexington	SAMPLE DEPTH	: 9.5' to 10.0'
PROJECT STATE	: South Carolina	DATE TESTED	: 7/29/2015
LABORATORY #	: 251829	DATE REPORTED	: 8/12/2015
SUBMITTED BY	: HDR ICA		
SOIL TYPE	: Tan, Yellow & White Sandy Silt		
WET DENSITY	: 116.09 pcf	DELTA HEIGHT	: 0.45 cm
DRY DENSITY	: 100.46 pcf	DELTA VOLUME	: NA
MOISTURE	: 15.56 %	CHAMBER PRES.	: 9.73 psi
		INITIAL HEIGHT	: 15.05 cm
		INITIAL DIAMETER	: 7.29 cm
		COMMENTS	: AASHTO T-2

RESULTS:

	ϵ_a	σ_3 (psi)	σ_1 (psi)	σ_1/σ_3
1	0.00	9.73	9.73	1.00
2	0.09	9.73	11.62	1.19
3	0.17	9.73	13.09	1.34
4	0.26	9.73	14.34	1.47
5	0.35	9.73	15.18	1.56
6	0.44	9.73	17.68	1.82
7	0.52	9.73	18.93	1.94
8	1.04	9.73	24.98	2.57
9	1.57	9.73	30.76	3.16
10	2.09	9.73	35.93	3.69
11	2.61	9.73	40.6	4.17
12	3.13	9.73	43.69	4.49
13	3.48	9.73	45.28	4.65
14	4.35	9.73	45.97	4.72
15	5.22	9.73	45.64	4.69
16	6.09	9.73	44.48	4.57
17	6.96	9.73	44	4.52
18	7.83	9.73	43.51	4.47

PROJECT NAME	: I-20 D/B Roadway Improvement-Noise Walls	POINT #	: 1
PROJECT #	: 251829	SAMPLE LOC.	: B-39
PROJECT COUNTY	: Lexington	SAMPLE DEPTH	: 9.5' to 10.0'
PROJECT STATE	: South Carolina	DATE TESTED	: 7/29/2015
LABORATORY #	: 251829	DATE REPORTED	: 8/12/2015
SUBMITTED BY	: HDR ICA		
FINAL MOISTURE	: 15.56 %	EFF. CONS. STRESS	: 9.73 psi
FINAL HEIGHT	: 11.67 cm	SPECIFIC GRAVITY	: NA
FINAL DIAMETER	: 8.12 cm	COMMENTS	: AASHTO T-296

RESULTS:



TRIAXIAL COMPRESSION TEST

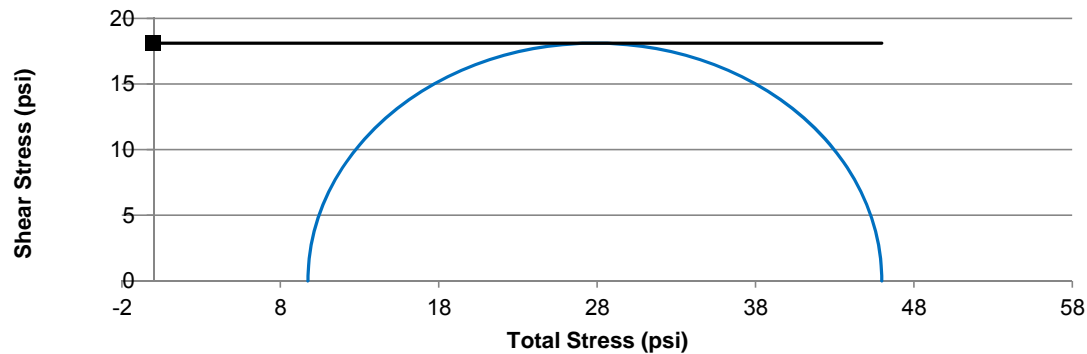
PROJECT NAME	: I-20 D/B Roadway Improvement-Noise Walls	COMMENTS	: AASHTO T-296
PROJECT #	: 251829	SAMPLE LOC.	: B-39
PROJECT COUNTY	: Lexington	SAMPLE DEPTH	: 9.5' to 10.0'
PROJECT STATE	: South Carolina	DATE TESTED	: 7/29/2015
LABORATORY #	: 251829	DATE REPORTED	: 8/12/2015
SUBMITTED BY	: HDR ICA		

COEFFICIENT OF INTERNAL FRICTION AND COHESION BY THE METHOD OF LEAST SQUARES

Test	Lateral	Total	Compressive Strength =	5219 psf
1	9.73 psi	45.97 psi	Cohesion =	2609 psf
			Phi =	0 deg
			Tan (Phi) =	0

Maximum Deviator Stress

**Triaxial Mohr's Circles
Unconsolidated Undrained Triaxial Test**



Approved By: *Jerry Soler*



UNCONFINED COMPRESSION TEST

AASHTO: T-208

Page 1 of 2

Project Name : I-20 D/B Roadway Improvement	Sample # : ST-1
Project # : 14046-01	Sample Loc. : Boring No. B-6B
Project County : Lexington	Sample Depth : 5.0' to 5.5'
Project State : South Carolina	Date Tested : 2/13/2015
Laboratory # : 14046-01	Date Reported : 2/26/2015
Submitted By : ICA Engineering	

Soil Type : Red, Pink, Orange, Gray, Tan & Brown Sandy Silt					
Wet Density :	119.9	pcf	Initial Height :	5.83	in
Dry Density :	96.7	pcf	Initial Diameter :	2.88	in
Moisture :	23.9	%	Proving Ring :	#22734	

RESULTS:	Axial Load	Corrected Area	Unit Strain	Stress
#	lbs	sf	%	Ksf
1	0.0	0.05	0.0	0.00
2	10.6	0.05	0.3	0.23
3	24.0	0.05	0.5	0.53
4	37.5	0.05	0.8	0.82
5	46.2	0.05	1.0	1.01
6	53.9	0.05	1.3	1.17
7	61.6	0.05	1.5	1.34
8	67.3	0.05	1.8	1.46
9	70.2	0.05	2.1	1.52
10	74.1	0.05	2.4	1.59
11	68.3	0.05	2.7	1.47
12	46.2	0.05	3.1	0.99
13	35.6	0.05	3.4	0.76

UNCONFINED COMPRESSION TEST

Project Name : I-20 D/B Roadway Improvement

Project # : 14046-01

Sample # : ST-1

Project County : Lexington

Sample Loc. : Boring No. B-6B

Project State : South Carolina

Sample Depth : 5.0' to 5.5'

Laboratory # : 14046-01

Date Tested : 2/13/2015

Submitted By : ICA Engineering

Date Reported : 2/26/2015

Soil Type : Red, Pink, Orange, Gray, Tan & Brown Sandy Silt

Wet Density : 119.9 pcf

Initial Height : 5.83 in

Dry Density : 96.7 pcf

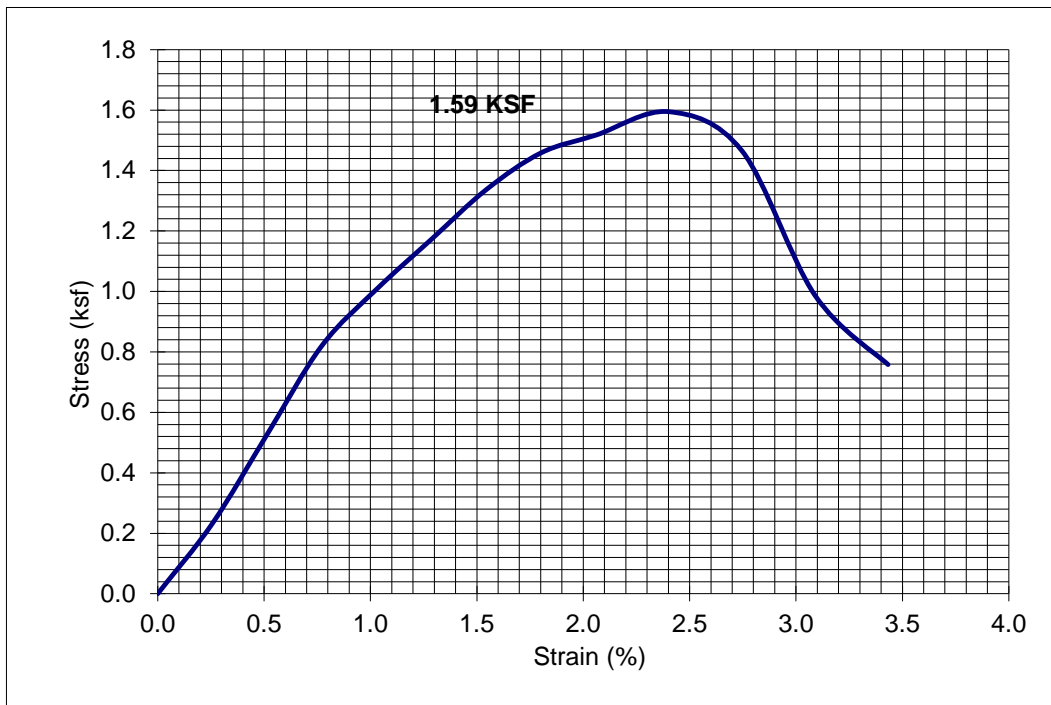
Initial Diameter : 2.88 in

Moisture : 23.9 %

Proving Ring : #22734

Deg. of Sat. : NA

Comments : AASHTO: T-208



APPROVED BY: *Jimmy Saba*



UNCONFINED COMPRESSION TEST

AASHTO: T-208

Page 1 of 2

Project Name : I-20 D/B Roadway Improvement	Sample # : ST-1
Project # : 14046-01	Sample Loc. : Boring No. B-7A
Project County : Lexington	Sample Depth : 8.0' to 8.5'
Project State : South Carolina	Date Tested : 2/13/2015
Laboratory # : 14046-01	Date Reported : 2/26/2015
Submitted By : ICA Engineering	

Soil Type : Brown, Tan & Gray Silty Sand	
Wet Density : 106.9 pcf	Initial Height : 5.84 in
Dry Density : 68.7 pcf	Initial Diameter : 2.84 in
Moisture : 55.6 %	Proving Ring : #22734

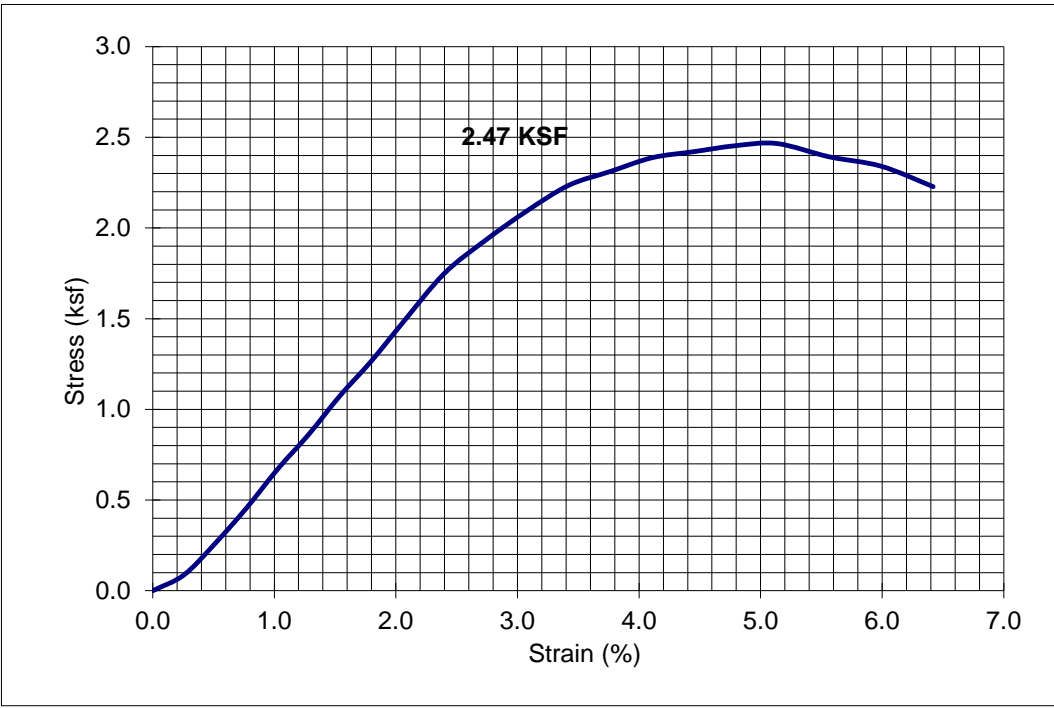
RESULTS:	Axial Load	Corrected Area	Unit Strain	Stress
#	lbs	sf	%	Ksf
1	0.0	0.04	0.0	0.00
2	3.8	0.04	0.3	0.09
3	11.5	0.04	0.5	0.26
4	20.2	0.04	0.8	0.46
5	29.8	0.04	1.0	0.67
6	38.5	0.04	1.3	0.86
7	48.1	0.04	1.5	1.08
8	56.8	0.04	1.8	1.27
9	66.4	0.04	2.1	1.48
10	78.9	0.05	2.4	1.75
11	87.5	0.05	2.7	1.93
12	95.2	0.05	3.1	2.10
13	102.0	0.05	3.4	2.24
14	105.8	0.05	3.8	2.31
15	109.7	0.05	4.1	2.39
16	111.6	0.05	4.5	2.42
17	113.5	0.05	4.8	2.45
18	114.5	0.05	5.1	2.47
19	111.6	0.05	5.6	2.39
20	109.7	0.05	6.0	2.34
21	104.8	0.05	6.4	2.23

UNCONFINED COMPRESSION TEST

Project Name : I-20 D/B Roadway Improvement	Sample # : ST-1
Project # : 14046-01	Sample Loc. : Boring No. B-7A
Project County : Lexington	Sample Depth : 8.0' to 8.5'
Project State : South Carolina	Date Tested : 2/13/2015
Laboratory # : 14046-01	Date Reported : 2/26/2015
Submitted By : ICA Engineering	

Soil Type : Brown, Tan & Gray Silty Sand	Initial Height : 5.84 in
Wet Density : 106.9 pcf	Initial Diameter : 2.84 in
Dry Density : 68.7 pcf	Proving Ring : #22734
Moisture : 55.6 %	
Deg. of Sat. : NA	

Comments : AASHTO: T-208



APPROVED BY: _____ *Jimmy Saba*



UNCONFINED COMPRESSION TEST

AASHTO: T-208

Page 1 of 2

Project Name : I-20 D/B Roadway Improvement	Sample # : ST-1
Project # : 14046-01	Sample Loc. : Boring No. B-15A
Project County : Lexington	Sample Depth : 6.3' to 6.9'
Project State : South Carolina	Date Tested : 2/13/2015
Laboratory # : 14046-01	Date Reported : 2/26/2015
Submitted By : ICA Engineering	

Soil Type : Brown, Gray & Tan Clayey Sand	
Wet Density : 133.4 pcf	Initial Height : 5.90 in
Dry Density : 114.9 pcf	Initial Diameter : 2.83 in
Moisture : 16.2 %	Proving Ring : #22734

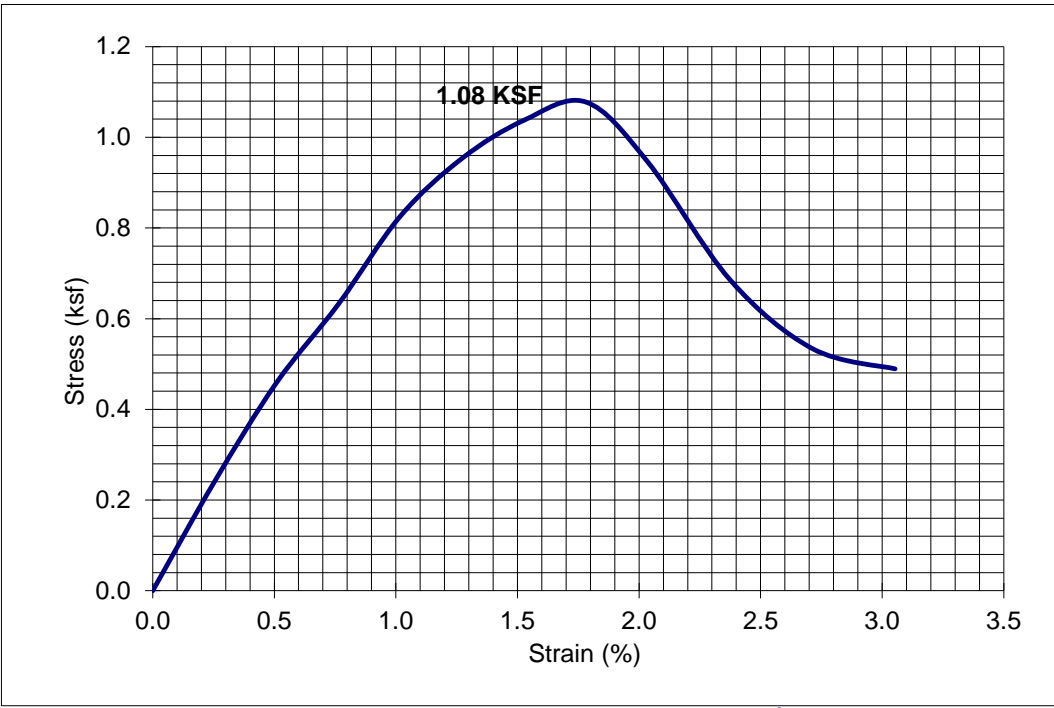
RESULTS:	Axial Load	Corrected Area	Unit Strain	Stress
#	lbs	sf	%	Ksf
1	0.0	0.04	0.0	0.00
2	10.6	0.04	0.3	0.24
3	20.2	0.04	0.5	0.46
4	27.9	0.04	0.8	0.63
5	36.6	0.04	1.0	0.83
6	42.3	0.04	1.3	0.95
7	46.2	0.04	1.5	1.04
8	48.1	0.04	1.8	1.08
9	42.3	0.04	2.0	0.95
10	30.8	0.04	2.4	0.69
11	24.0	0.05	2.7	0.53
12	22.1	0.05	3.1	0.49

UNCONFINED COMPRESSION TEST

Project Name : I-20 D/B Roadway Improvement	Sample # : ST-1
Project # : 14046-01	Sample Loc. : Boring No. B-15A
Project County : Lexington	Sample Depth : 6.3' to 6.9'
Project State : South Carolina	Date Tested : 2/13/2015
Laboratory # : 14046-01	Date Reported : 2/26/2015
Submitted By : ICA Engineering	

Soil Type : Brown, Gray & Tan Clayey Sand	Initial Height : 5.90 in
Wet Density : 133.4 pcf	Initial Diameter : 2.83 in
Dry Density : 114.9 pcf	Proving Ring : #22734
Moisture : 16.2 %	
Deg. of Sat. : NA	

Comments : AASHTO: T-208



APPROVED BY: _____ *Jeany Solo*



UNCONFINED COMPRESSION TEST

AASHTO: T-208

Page 1 of 2

Project Name : I-20 D/B Roadway Improvement	Sample # : ST-1
Project # : 14046-01	Sample Loc. : Boring No. B-27B
Project County : Lexington	Sample Depth : 9.8' to 10.8'
Project State : South Carolina	Date Tested : 2/13/2015
Laboratory # : 14046-01	Date Reported : 2/26/2015
Submitted By : ICA Engineering	

Soil Type : White, Gray & Tan Silty Sand	
Wet Density : 131.7 pcf	Initial Height : 5.85 in
Dry Density : 111.4 pcf	Initial Diameter : 2.85 in
Moisture : 18.2 %	Proving Ring : #22734

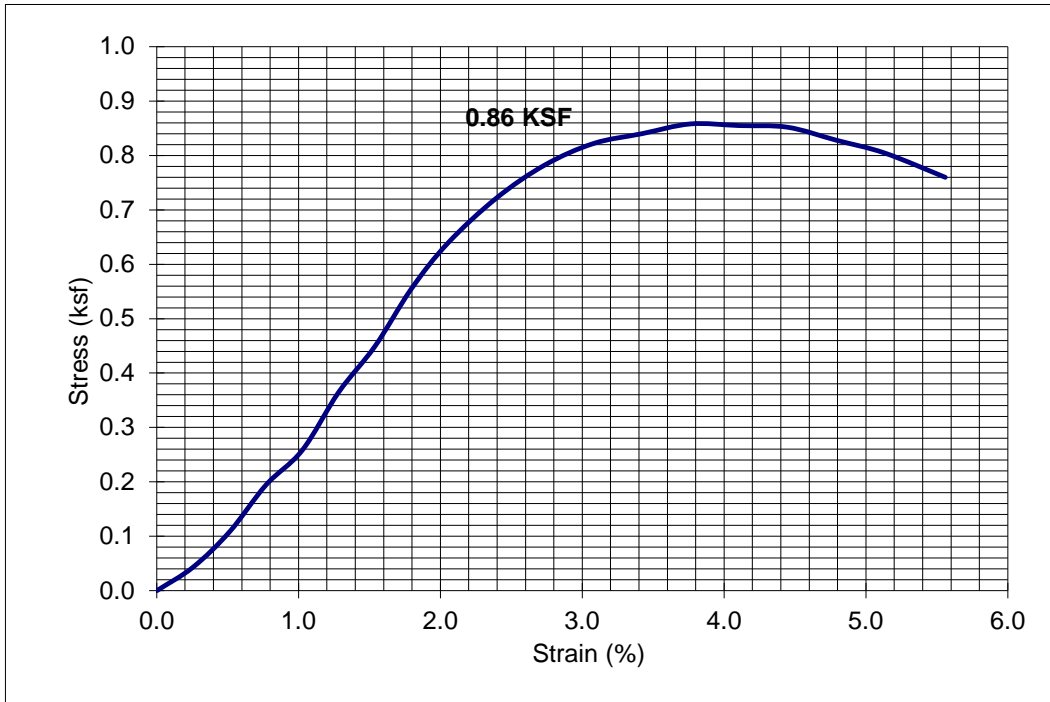
RESULTS:	Axial Load	Corrected Area	Unit Strain	Stress
#	lbs	sf	%	Ksf
1	0.0	0.04	0.0	0.00
2	1.9	0.04	0.3	0.04
3	4.8	0.04	0.5	0.11
4	8.7	0.04	0.8	0.19
5	11.5	0.04	1.0	0.26
6	16.4	0.04	1.3	0.36
7	20.2	0.04	1.5	0.45
8	25.0	0.05	1.8	0.56
9	28.9	0.05	2.1	0.64
10	32.7	0.05	2.4	0.72
11	35.6	0.05	2.7	0.78
12	37.5	0.05	3.1	0.82
13	38.5	0.05	3.4	0.84
14	39.4	0.05	3.8	0.86
15	39.4	0.05	4.1	0.85
16	39.4	0.05	4.4	0.85
17	38.5	0.05	4.8	0.83
18	37.5	0.05	5.1	0.80
19	35.6	0.05	5.6	0.76

UNCONFINED COMPRESSION TEST

Project Name : I-20 D/B Roadway Improvement	Sample # : ST-1
Project # : 14046-01	Sample Loc. : Boring No. B-27B
Project County : Lexington	Sample Depth : 9.8' to 10.8'
Project State : South Carolina	Date Tested : 2/13/2015
Laboratory # : 14046-01	Date Reported : 2/26/2015
Submitted By : ICA Engineering	

Soil Type : White, Gray & Tan Silty Sand	Initial Height : 5.85 in
Wet Density : 131.7 pcf	Initial Diameter : 2.85 in
Dry Density : 111.4 pcf	Proving Ring : #22734
Moisture : 18.2 %	
Deg. of Sat. : NA	

Comments : AASHTO: T-208



APPROVED BY: _____ *Amy Salo*

Appendix D. ADRS Curves

**SC Seismic Hazard Map
Three-Point ADRS Curves**

PIN No.:	P027003	File No.:	N/A	Latitude:	33.9734
Route:	I-20	County:	Lexington	Longitude:	81.1970
Project: I-20 Widening (MM 49 to 60)					

Designer:	T. Harris - Design Build
Date:	8/5/2015

Design EQ	PGA	S _{DS}	S _{D1}	M _w	R (km)	Geologic Condition	Site Class	Damping
FEE	0.11	0.18	0.08	7.35	132.3	Geologically Realistic (Q = 100)	C	5%
SEE	0.29	0.47	0.23	7.36	131.8	Geologically Realistic (Q = 100)	C	

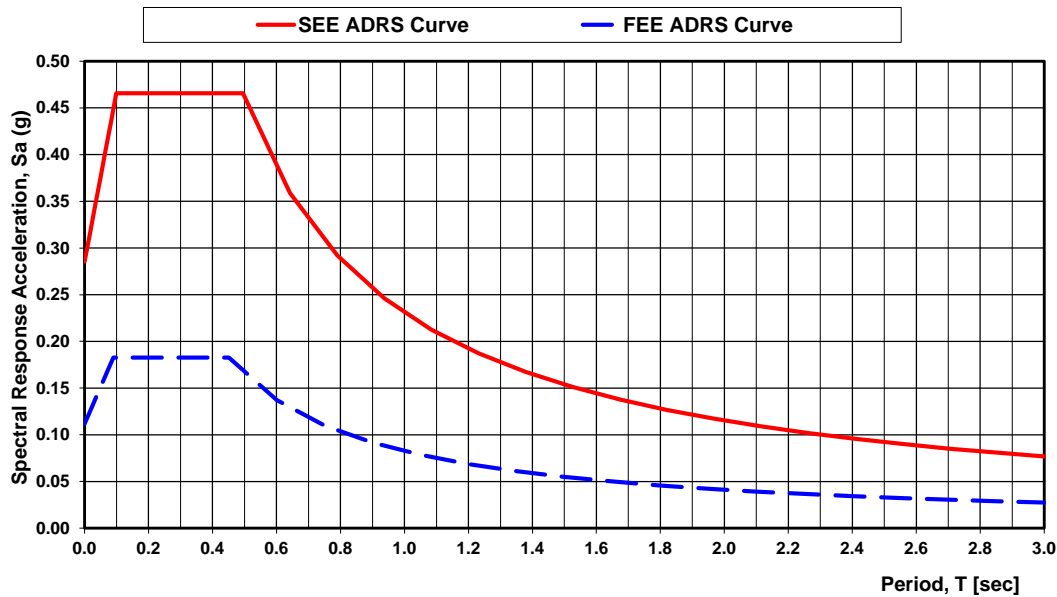
FEE ADRS Curve
Three-Point Method

SEE ADRS Curve
Three-Point Method

T	S _a
0.00	0.11
0.02	0.12
0.03	0.14
0.05	0.15
0.06	0.16
0.08	0.17
0.09	0.18
0.12	0.18
0.15	0.18
0.18	0.18
0.21	0.18
0.24	0.18
0.27	0.18
0.30	0.18
0.33	0.18
0.36	0.18
0.39	0.18
0.42	0.18
0.45	0.18
0.60	0.14
0.75	0.11
0.90	0.09
1.05	0.08
1.20	0.07
1.35	0.06
1.50	0.05
1.65	0.05
1.80	0.05
1.95	0.04
2.10	0.04
2.25	0.04
2.40	0.03
2.55	0.03
2.70	0.03
2.85	0.03
3.00	0.03

T	S _a
0.00	0.29
0.02	0.32
0.03	0.35
0.05	0.38
0.07	0.41
0.08	0.44
0.10	0.47
0.13	0.47
0.17	0.47
0.20	0.47
0.23	0.47
0.26	0.47
0.30	0.47
0.33	0.47
0.36	0.47
0.40	0.47
0.43	0.47
0.46	0.47
0.50	0.47
0.64	0.36
0.79	0.29
0.94	0.25
1.08	0.21
1.23	0.19
1.38	0.17
1.53	0.15
1.67	0.14
1.82	0.13
1.97	0.12
2.12	0.11
2.26	0.10
2.41	0.10
2.56	0.09
2.71	0.09
2.85	0.08
3.00	0.08

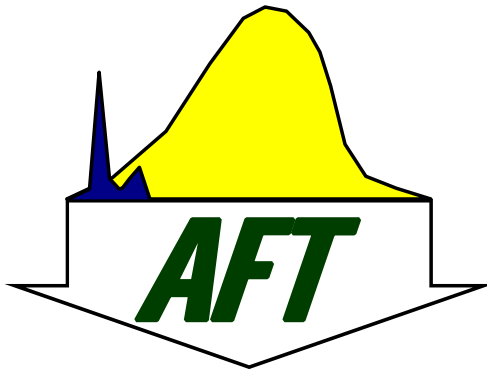
SC Seismic Hazard Map Three-Point ADRS Curve From Ground Surface



Appendix E. Hammer Energy Report

Applied Foundation Testing

North Carolina License No.: P-0294



For: Mr. Kenny Bussey, P.E.
ICA Engineering, Inc.
kbussey@icaeng.com

August 26, 2014

Report of Standard Penetration Test (SPT) Energy Measurement Testing

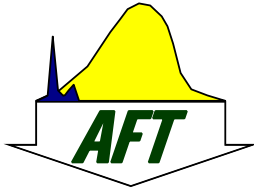
B-8 at Station 106+00, 25 Feet Right
CME Model 45C Rig with Auto
Hammer
Rig Serial No.: 300404
Aiken, South Carolina
AFT Project No.: 214053NC

Authored By:

Gerzan Nunez
Staff Geotechnical Engineer

Michael J. Simpson, P.E.
Geotechnical Engineer

Thomas G. Santee, P.E.
Chief Engineer
NC Registration No.: 029648
Certified PDA Signatory - Advanced



Applied Foundation Testing
 Specializing in STATNAMIC™ Load Testing,
 Dynamic and Static Load Testing, Instrumentation
 and Geotechnical Engineering

Report of SPT Energy Measurement Testing
In General Accordance to ASTM D 4633

General Information				
Date:	August 26, 2014			
AFT Project No.:	214053NC			
Project Description:	SPT Energy Measurement Testing of Drill Rig			
Client Name:	ICA Engineering, Inc.			
Client Address:	kbussey@icaeng.com			
Client Contact:	Mr. Kenny Bussey, P.E.			
Test Date:	August 25, 2014			
Test Equipment Manufacturer/Model:	Pile Dynamics, Inc. / Model PAX (strain and accelerometer calibrations attached in Appendix I)			
AFT Field Personnel:	Gerzan E. Nunez			
AFT Responsible Engineer:	Thomas G. Santee, P.E.			
Drill Rig Information				
Manufacturer	Model	Serial Number	Operator	Type
CME	45C	300404	Robbie	ATV (Track)
Hammer Information				
Type	Model	Serial Number		
Auto	CME	N/A		
Anvil Height (in.)	Anvil Diameter (in.)	Drop Height (in.)	Ram Weight (lb.)	Ram Serial Number
13	~2.5	30	140	N/A
Drilling Rod Information				
Type	OD (in.)	ID (in.)	Cross Sectional Area (in ²)	Typical Length (ft.)
AWJ	~1.75	~1.25	~1.20	5
Instrumented Rod Type	OD (in.)	ID (in.)	Cross Sectional Area (in ²)	Length (ft.)
AWJ	~1.75	~1.25	~1.20	2



Boring Information						
ID	Location	Reference Elevation (ft.)	Impact to Instrumentation Length (ft.)	Boring Log Attached (Y or N)		
B-8 at Station 106+00, 25 Feet Right	Near Aiken, SC	+410.6	2.3	N		
Results						
Energy Measurements						
Representative plot of force and velocity for each data set attached <input checked="" type="checkbox"/> Plots of average energy and all energy versus Rod Length attached <input checked="" type="checkbox"/> Tabular and graphical data for each blow for each data set attached <input checked="" type="checkbox"/>						
Data Set ID	Instru-mentation to Sampler Tip Length (ft.)⁽¹⁾	Blows Recorded to Drive Sampler/N-value	Soil Sample Description	Average BPM for Increment⁽²⁾	Average Maximum Energy (k-ft.)	Average Energy Transfer Ratio (percent)
1	30.83	4-4-4 / 8	Coarse Sand	51.7	0.31	90.0
2	35.83	3-5-6 / 11	Clay/Fine to Coarse Sand	51.7	0.31	89.8
3	40.83	3-4-4 / 8	Clay/Fine to Coarse Sand	52.2	0.32	91.0
4	45.83	0-3-3 / 6	Clay/Fine to Coarse Sand	51.2	0.32	92.7
5	50.83	0-3-3 / 6	Clay/Fine to Coarse Sand	52.7	0.32	92.3
6	55.83	0-4-3 / 7	Clay/Fine to Coarse Sand	52.8	0.32	91.7
7	60.83	2 ⁽³⁾ -4-7 / 11	Clay/Coarse Sand	52.8	0.30	86.7
1. Penetration below grade is approximately 3.0 to 4.5 feet less than length shown for instrumentation to sampler tip for each increment. 2. First blow for each increment ignored when computing average. 3. Driller recorded three blows for this increment for a total of 14 blows. PDA record only had 13 total blows. Applied a one blow reduction to first increment to account for discrepancy.						
Energy Measurement Interpretation						
<p>Seven increments of data were gathered. The averages for energy (EFV) and the energy transfer ratio (ETR) for each increment are tabulated in the above table. In addition, the above table includes the N-value and soil sample description for each increment.</p> <p>Plots of average ETR versus rod length below instrumentation and ETR for each blow versus rod length below instrumentation are included in Appendix A. Additional information regarding each blow recorded for each increment can be found in Appendices B through H. A plot showing representative force and velocity traces, input parameters, gage information, and output quantities is also included in Appendices B through H for a representative blow for each increment. Please note in the attached plots in Appendices B through H the penetration is estimated and based on depth of the tip of the sampler below existing ground. Refer to the LE values in the tabulated data and plots for the actual rod length below gages.</p>						



The overall average EFV and ETR values (for all recorded blows) are approximately 0.32 k-ft and 90.1 percent, respectively. The overall standard deviation for all data for EFV and ETR are 0.01 k-ft or 3.54 percent, respectively.

Limitations

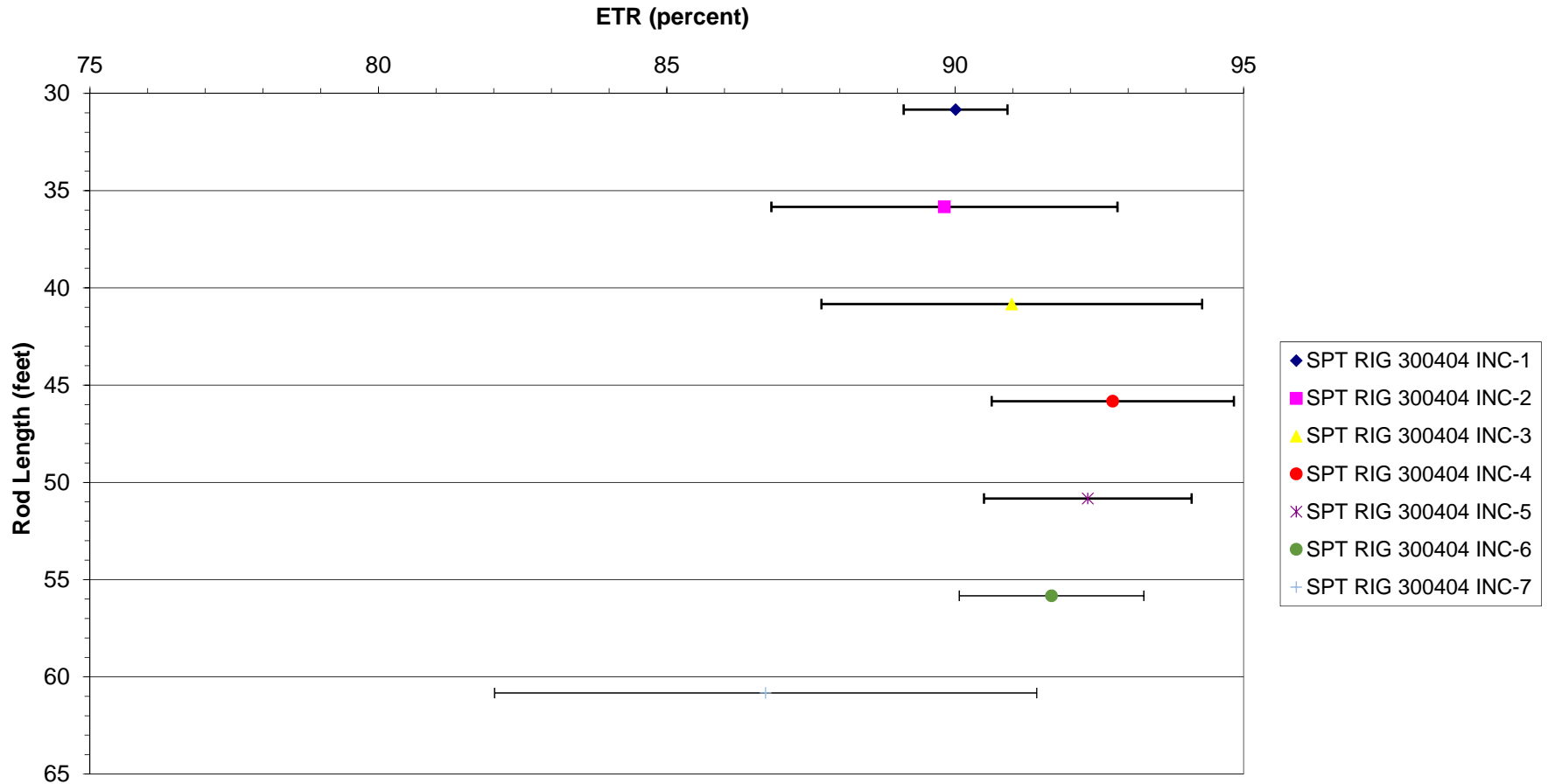
This report presents test measurements made by AFT. Interpretations were made based upon the measurements made by AFT with the latest techniques available and currently accepted standards of care recognized by Geotechnical Engineering professionals. AFT is an independent agency and is not the Geotechnical Engineer of Record. The Geotechnical Engineer of Record should ultimately make final recommendations for foundation design and construction.

Appendix A

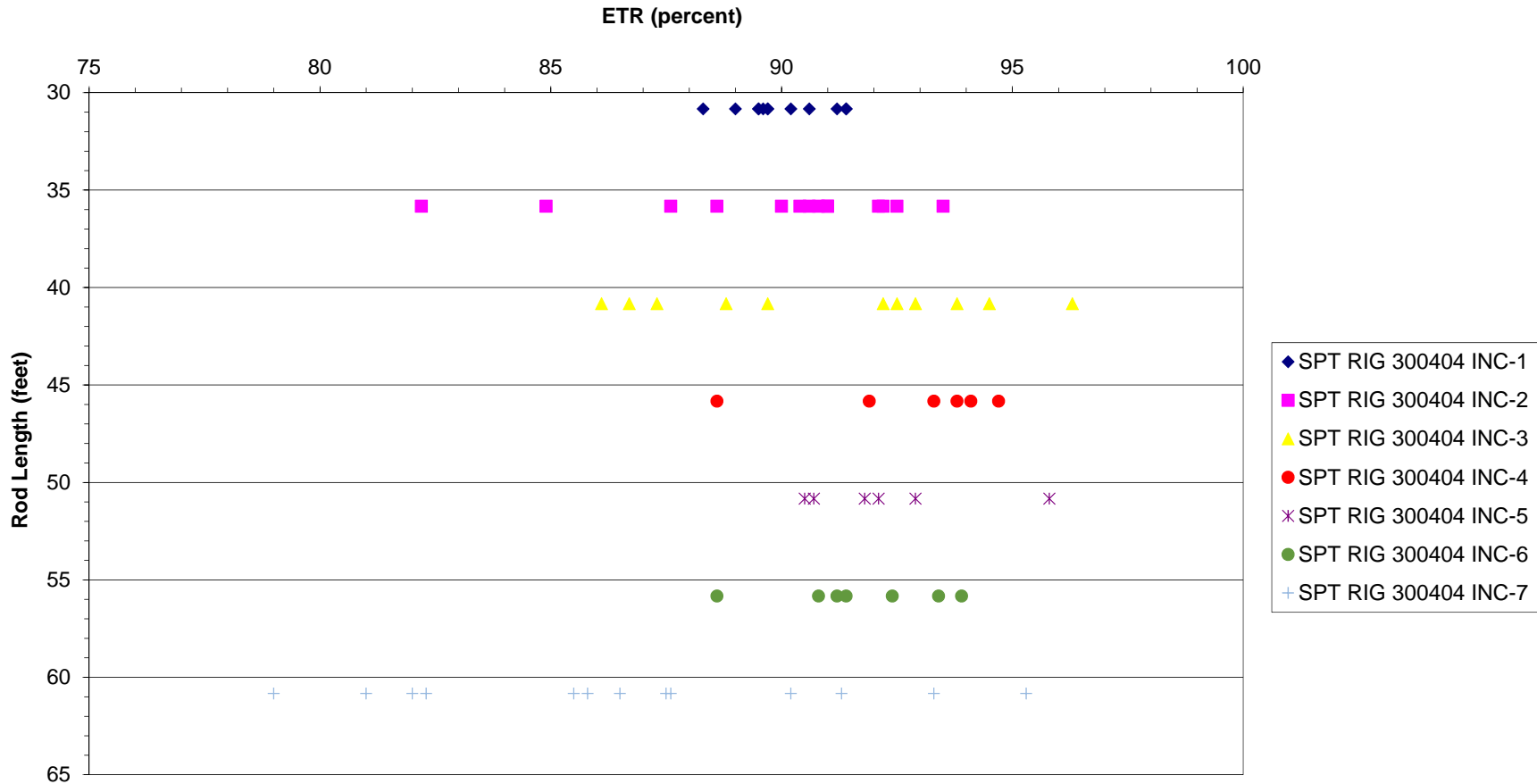
ETR and Average ETR versus Rod Length Plots

**NCDOT
SPT Calibration
CME Rig, Model 45C
Serial No. 300404**

Average ETR versus Rod Length with ± 1 Standard Deviation Shown
Rig Make and Model: CME 45C
Rig Serial # 300404
B8 at Station 106+00, 25 Feet Right
Near Aiken, South Carolina



ETR versus Rod Length
Rig Make and Model: CME 45C
Rig Serial # 300404
B8 at Station 110+00, 25 Feet Right
Near Aiken, South Carolina

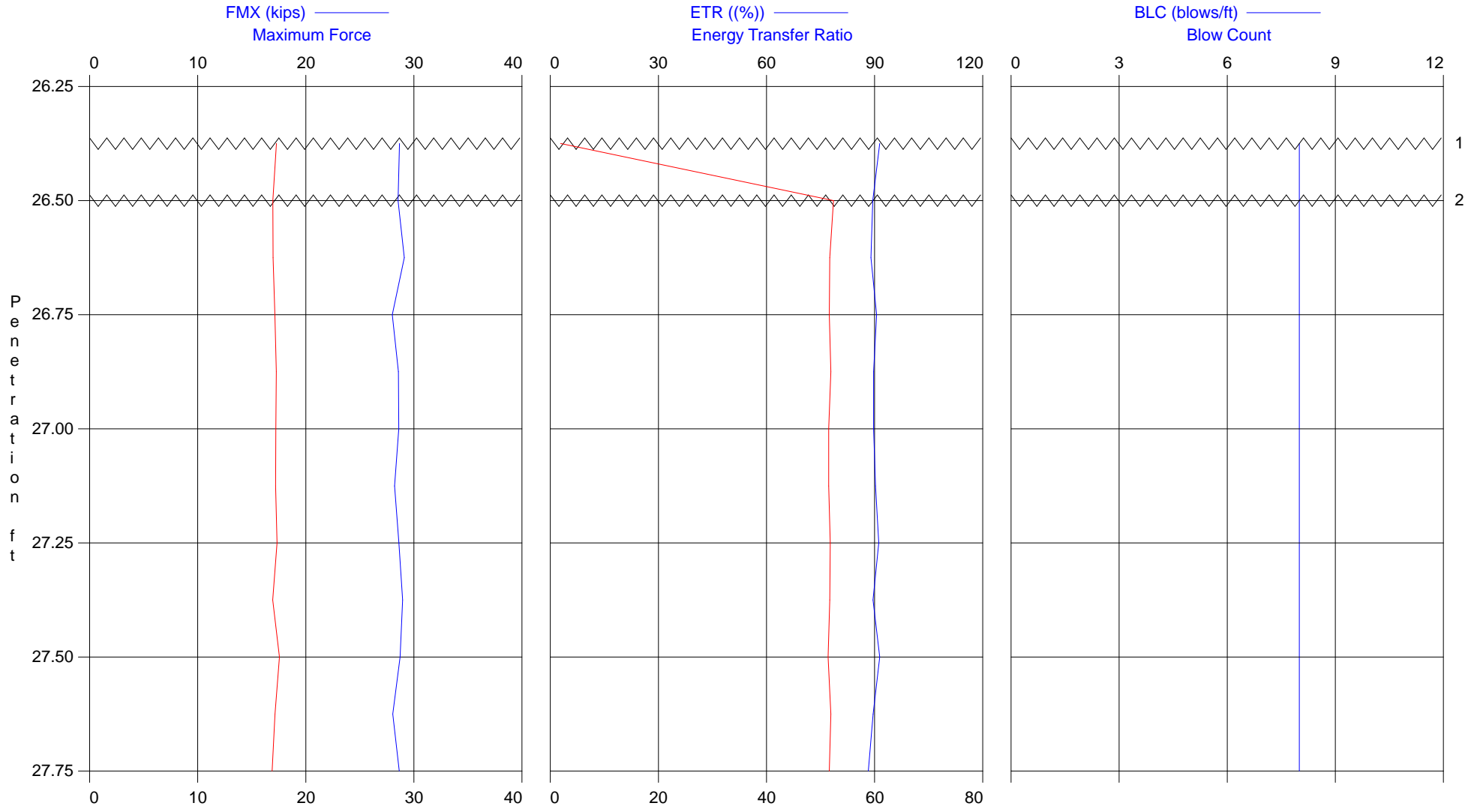


Appendix B

**Increment 1 PDILOT Data and Representative
Blow Data**

**NCDOT
SPT Calibration
CME Rig, Model 45C
Serial No. 300404**

214053NC - SPT RIG INC-1



1 - Penetration is approximate distance below ground surface.

2 - Blows recorded were 4 - 4 - 4; N-value = 8

214053NC - SPT RIG INC-1
OP: AFT

AWJ ROD
Test date: 25-Aug-2014

AR: 1.20 in²
LE: 30.83 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.60

FMX: Maximum Force
EFV: Energy of FV
ETR: Energy Transfer Ratio
BPM: Blows per Minute
VMX: Maximum Velocity

DMX: Maximum Displacement
DFN: Final Displacement
CSX: Max Measured Compr. Stress
FVP: Force/Velocity proportionality

BL#	depth ft	BLC bl/ft	FMX kips	EFV k-ft	ETR (%)	BPM **	VMX f/s	DMX in	DFN in	CSX ksi	FVP []
1	26.38	8	28.7	0.32	91.4	1.9	17.3	1.59	1.50	23.9	0.78
2	26.50	8	28.5	0.31	89.5	52.4	16.9	1.71	1.51	23.8	0.76
3	26.63	8	29.1	0.31	89.0	51.7	17.0	1.77	1.51	24.3	0.80
4	26.75	8	28.0	0.32	90.6	51.6	17.1	1.77	1.51	23.3	0.76
5	26.88	8	28.6	0.31	89.7	51.9	17.3	1.67	1.50	23.8	0.77
6	27.00	8	28.6	0.31	89.7	51.5	17.2	1.62	1.51	23.8	0.77
7	27.13	8	28.2	0.32	90.2	51.5	17.2	1.60	1.50	23.5	0.76
8	27.25	8	28.6	0.32	91.2	51.8	17.3	1.60	1.50	23.8	0.75
9	27.38	8	29.0	0.31	89.5	51.7	16.9	1.56	1.50	24.1	0.80
10	27.50	8	28.7	0.32	91.4	51.4	17.6	1.55	1.51	23.9	0.77
11	27.63	8	28.0	0.31	89.6	51.9	17.2	1.52	1.50	23.4	0.76
12	27.75	8	28.6	0.31	88.3	51.6	16.9	1.50	1.50	23.9	0.79
Average			28.6	0.31	90.0	47.6	17.2	1.62	1.50	23.8	0.77
Std. Dev.			0.3	0.00	0.9	13.8	0.2	0.09	0.00	0.3	0.01
Maximum			29.1	0.32	91.4	52.4	17.6	1.77	1.51	24.3	0.80
Minimum			28.0	0.31	88.3	1.9	16.9	1.50	1.50	23.3	0.75

Total number of blows analyzed: 12

BL#	depth (ft)	Comments
1	26.38	Penetration is approximate distance below ground surface. Blows recorded were 4 - 4 - 4; N-value = 8
2	26.50	

Time Summary

Drive 12 seconds

10:58:13 AM - 10:58:25 AM (8/25/2014) BN 1 - 12

Applied Foundation Testing, Inc.

214053NC

PDA OP: AFT

PILE DRIVING ANALYZER ®

Version 2014.118

SPT RIG INC-1

AWJ ROD

BN 10

8/25/2014 10:58:23 AM

FMX 28.7 kips

EFV 0.32 k-ft

ETR 91.4 (%)

BPM 51.4 bpm

VMX 17.6 f/s

DMX 1.55 in

DFN 1.51 in

CSX 23.9 ksi

FVP 0.77 []

LE 30.83 ft

AR 1.20 in²

EM 30000 ksi

SP 0.492 k/ft³

WS 16807.9 f/s

EA/C 2.1 ksec/ft

LP 27.50 ft

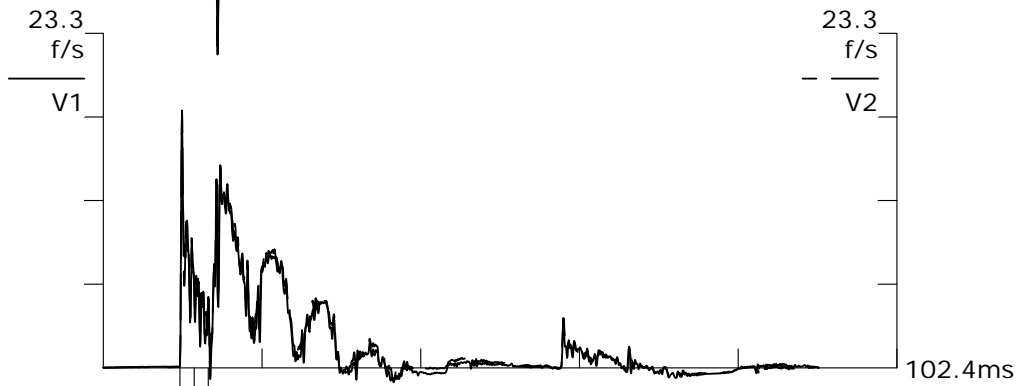
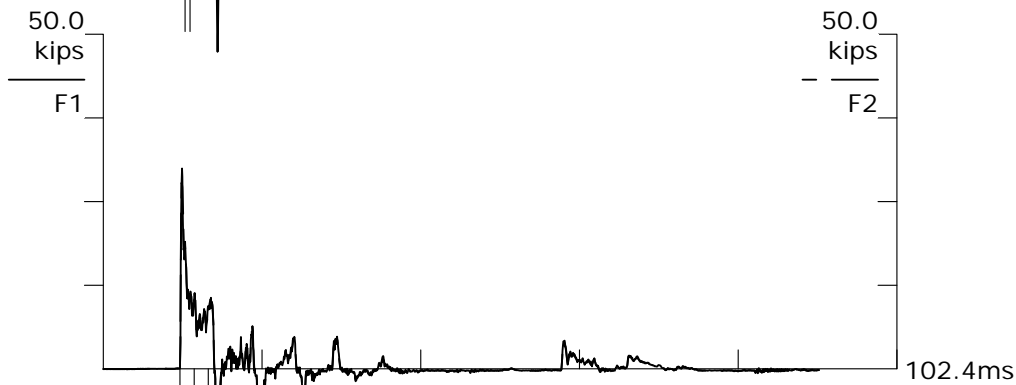
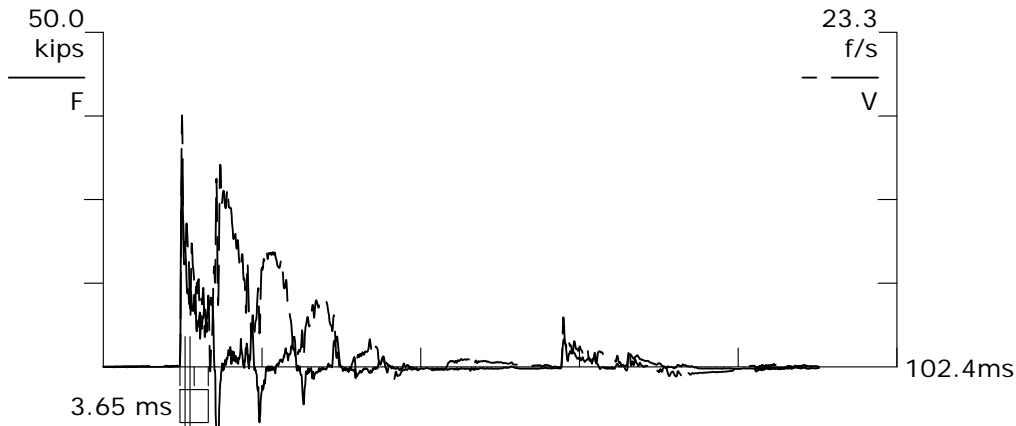
F34 A34

F3: [264 AWJ-1] 213.23 (1)

F4: [264 AWJ-2] 212.8 (1)

A3: [K3449] 345 mv/5000g's (1)

A4: [K4089] 345 mv/5000g's (1)

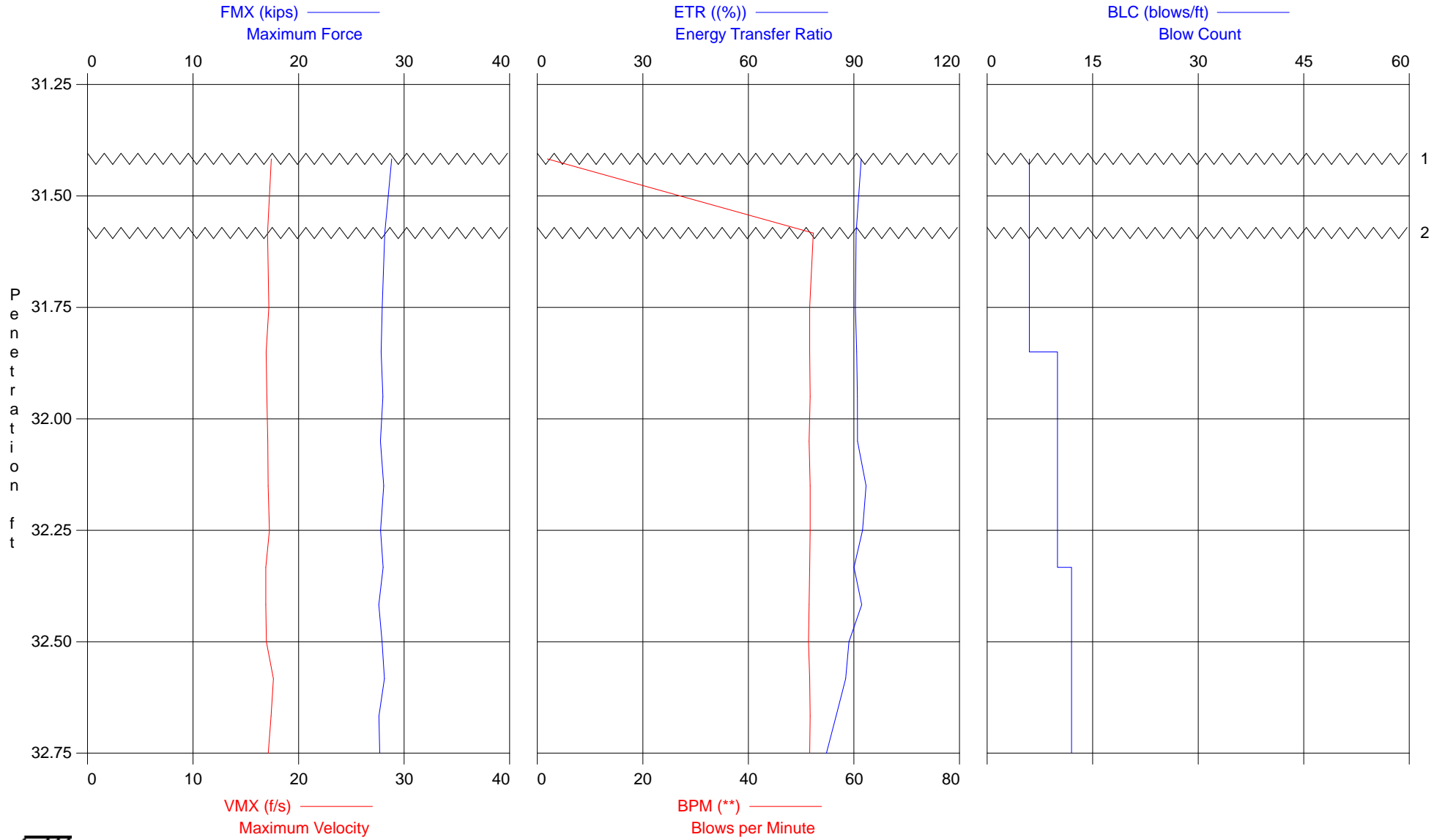


Appendix C

**Increment 2 PDILOT Data and Representative
Blow Data**

**NCDOT
SPT Calibration
CME Rig, Model 45C
Serial No. 300404**

214053NC - SPT RIG INC-2



1 - Penetration is approximate distance below ground surface.

2 - Blows recorded were 3 - 5 - 6; N-value = 11

214053NC - SPT RIG INC-2
OP: AFT

AWJ ROD
Test date: 25-Aug-2014

AR: 1.20 in²
LE: 35.83 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.60

FMX: Maximum Force
EFV: Energy of FV
ETR: Energy Transfer Ratio
BPM: Blows per Minute
VMX: Maximum Velocity

DMX: Maximum Displacement
DFN: Final Displacement
CSX: Max Measured Compr. Stress
FVP: Force/Velocity proportionality

BL#	depth ft	BLC bl/ft	FMX kips	EFV k-ft	ETR (%)	BPM **	VMX f/s	DMX in	DFN in	CSX ksi	FVP []
1	31.42	6	28.8	0.32	92.1	1.9	17.4	2.06	2.06	24.0	0.77
2	31.58	6	28.2	0.32	90.6	52.3	17.1	1.99	1.99	23.5	0.74
3	31.75	6	27.9	0.32	90.4	51.6	17.2	1.99	1.99	23.3	0.75
4	31.85	10	27.8	0.32	90.8	51.6	16.9	1.31	1.20	23.2	0.77
5	31.95	10	28.0	0.32	91.0	51.7	17.0	1.31	1.20	23.3	0.77
6	32.05	10	27.8	0.32	91.0	51.5	17.1	1.29	1.20	23.1	0.76
7	32.15	10	28.1	0.33	93.5	51.7	17.1	1.32	1.20	23.4	0.77
8	32.25	10	27.8	0.32	92.5	51.7	17.2	1.28	1.21	23.1	0.76
9	32.33	12	28.0	0.32	90.0	51.6	16.9	1.10	0.97	23.3	0.77
10	32.42	12	27.6	0.32	92.2	51.5	16.9	1.15	1.02	23.0	0.76
11	32.50	12	27.9	0.31	88.6	51.4	16.9	1.07	1.01	23.3	0.76
12	32.58	12	28.1	0.31	87.6	51.6	17.6	1.11	0.99	23.4	0.74
13	32.67	12	27.6	0.30	84.9	51.7	17.4	1.13	0.99	23.0	0.75
14	32.75	12	27.7	0.29	82.2	51.6	17.1	1.12	0.98	23.1	0.75
Average			27.9	0.31	89.8	48.1	17.1	1.37	1.29	23.3	0.76
Std. Dev.			0.3	0.01	3.0	12.8	0.2	0.35	0.39	0.2	0.01
Maximum			28.8	0.33	93.5	52.3	17.6	2.06	2.06	24.0	0.77
Minimum			27.6	0.29	82.2	1.9	16.9	1.07	0.97	23.0	0.74

Total number of blows analyzed: 14

BL#	depth (ft)	Comments
1	31.42	Penetration is approximate distance below ground surface.
2	31.58	Blows recorded were 3 - 5 - 6; N-value = 11

Time Summary

Drive 16 seconds

11:09:24 AM - 11:09:40 AM (8/25/2014) BN 1 - 14

Applied Foundation Testing, Inc.

214053NC

PDA OP: AFT

PILE DRIVING ANALYZER ®

Version 2014.118

SPT RIG INC-2

AWJ ROD

BN 7

8/25/2014 11:09:31 AM

FMX 28.1 kips

EFV 0.33 k-ft

ETR 93.5 (%)

BPM 51.7 bpm

VMX 17.1 f/s

DMX 1.32 in

DFN 1.20 in

CSX 23.4 ksi

FVP 0.77 []

LE 35.83 ft

AR 1.20 in²

EM 30000 ksi

SP 0.492 k/ft³

WS 16807.9 f/s

EA/C 2.1 ksec/ft

LP 32.15 ft

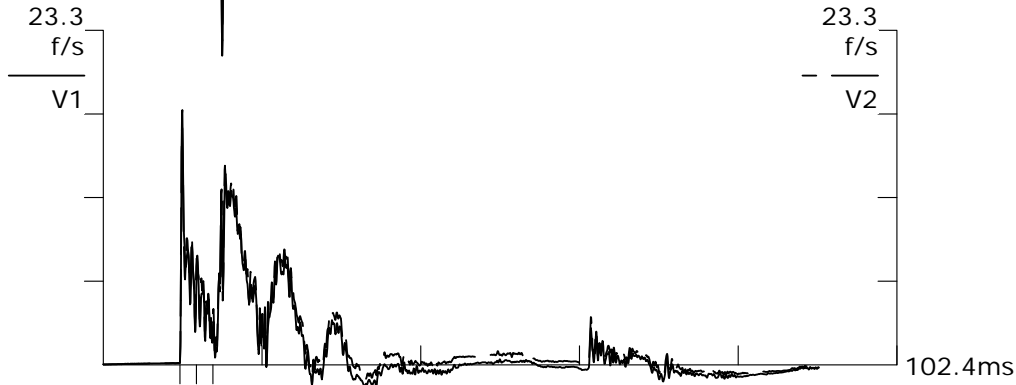
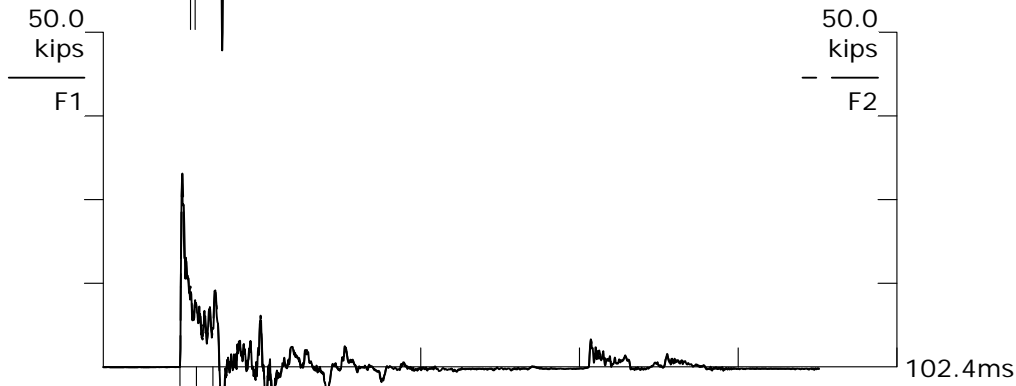
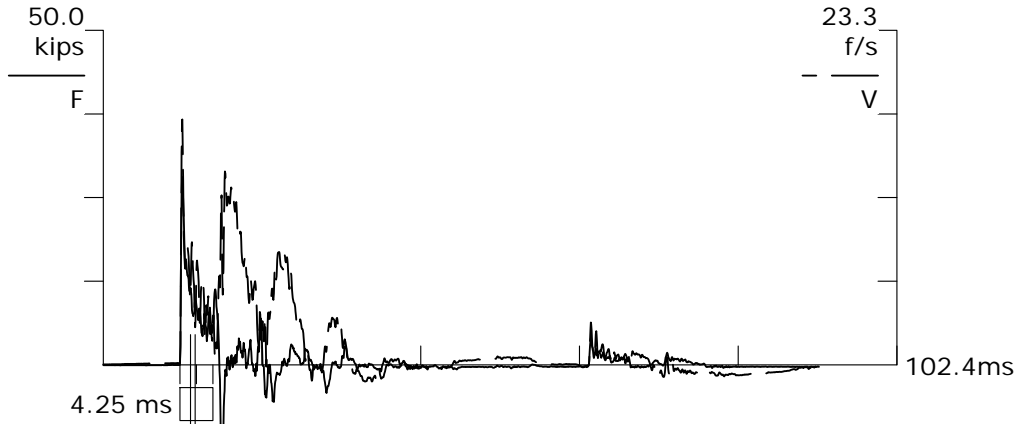
F34 A34

F3: [264 AWJ-1] 213.23 (1)

F4: [264 AWJ-2] 212.8 (1)

A3: [K3449] 345 mv/5000g's (1)

A4: [K4089] 345 mv/5000g's (1)

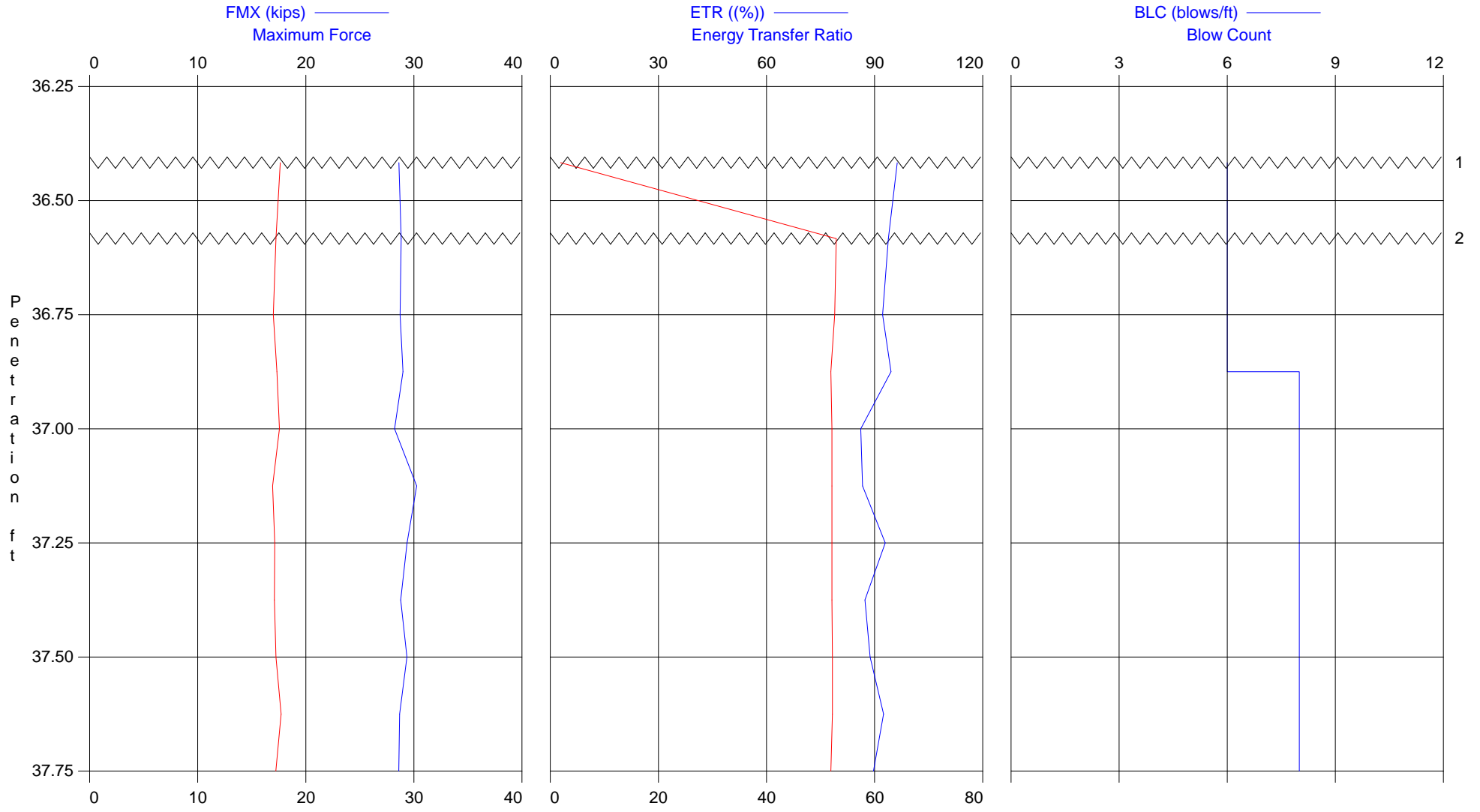


Appendix D

**Increment 3 PDILOT Data and Representative
Blow Data**

**NCDOT
SPT Calibration
CME Rig, Model 45C
Serial No. 300404**

214053NC - SPT RIG INC-3



1 - Penetration is approximate distance below ground surface.

2 - Blows recorded were 3 - 4 - 4; N-value = 8

214053NC - SPT RIG INC-3
OP: AFT

AWJ ROD
Test date: 25-Aug-2014

AR: 1.20 in²
LE: 40.83 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.60

FMX: Maximum Force
EFV: Energy of FV
ETR: Energy Transfer Ratio
BPM: Blows per Minute
VMX: Maximum Velocity

DMX: Maximum Displacement
DFN: Final Displacement
CSX: Max Measured Compr. Stress
FVP: Force/Velocity proportionality

BL#	depth ft	BLC bl/ft	FMX kips	EFV k-ft	ETR (%)	BPM **	VMX f/s	DMX in	DFN in	CSX ksi	FVP []
1	36.42	6	28.6	0.34	96.3	1.9	17.6	2.15	2.00	23.8	0.76
2	36.58	6	28.8	0.33	93.8	52.9	17.2	1.98	1.98	24.0	0.78
3	36.75	6	28.7	0.32	92.2	52.6	17.0	2.09	2.09	23.9	0.78
4	36.88	8	29.0	0.33	94.5	51.9	17.3	1.67	1.51	24.2	0.77
5	37.00	8	28.2	0.30	86.1	52.1	17.6	1.48	1.48	23.5	0.75
6	37.13	8	30.3	0.30	86.7	52.1	16.9	1.54	1.54	25.2	0.79
7	37.25	8	29.4	0.33	92.9	52.1	17.1	1.60	1.35	24.5	0.79
8	37.38	8	28.8	0.31	87.3	52.1	17.1	1.45	1.45	24.0	0.79
9	37.50	8	29.4	0.31	88.8	52.2	17.2	1.43	1.42	24.5	0.79
10	37.63	8	28.7	0.32	92.5	52.2	17.7	1.50	1.46	23.9	0.75
11	37.75	8	28.6	0.31	89.7	51.9	17.2	1.49	1.49	23.8	0.77
Average			28.9	0.32	91.0	47.6	17.3	1.67	1.62	24.1	0.77
Std. Dev.			0.5	0.01	3.3	14.5	0.2	0.26	0.26	0.4	0.01
Maximum			30.3	0.34	96.3	52.9	17.7	2.15	2.09	25.2	0.79
Minimum			28.2	0.30	86.1	1.9	16.9	1.43	1.35	23.5	0.75

Total number of blows analyzed: 11

BL#	depth (ft)	Comments
1	36.42	Penetration is approximate distance below ground surface.
2	36.58	Blows recorded were 3 - 4 - 4; N-value = 8

Time Summary

Drive 11 seconds

11:19:26 AM - 11:19:37 AM (8/25/2014) BN 1 - 11

Applied Foundation Testing, Inc.

214053NC

PDA OP: AFT

PILE DRIVING ANALYZER ®

Version 2014.118

SPT RIG INC-3

AWJ ROD

BN 9

8/25/2014 11:19:34 AM

FMX 29.4 kips

EFV 0.31 k-ft

ETR 88.8 (%)

BPM 52.2 bpm

VMX 17.2 f/s

DMX 1.43 in

DFN 1.42 in

CSX 24.5 ksi

FVP 0.79 []

LE 40.83 ft

AR 1.20 in²

EM 30000 ksi

SP 0.492 k/ft³

WS 16807.9 f/s

EA/C 2.1 ksec/ft

LP 37.50 ft

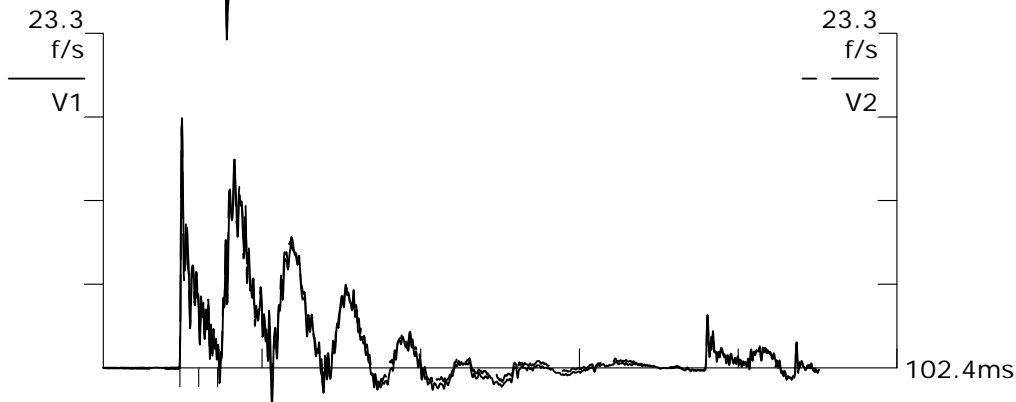
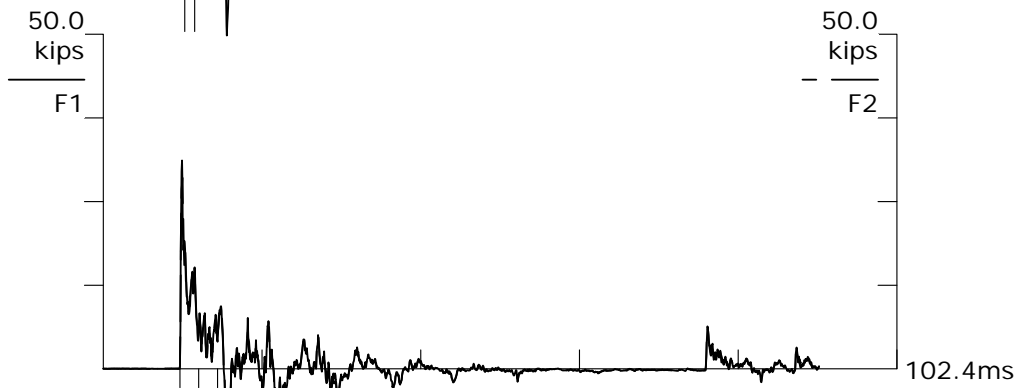
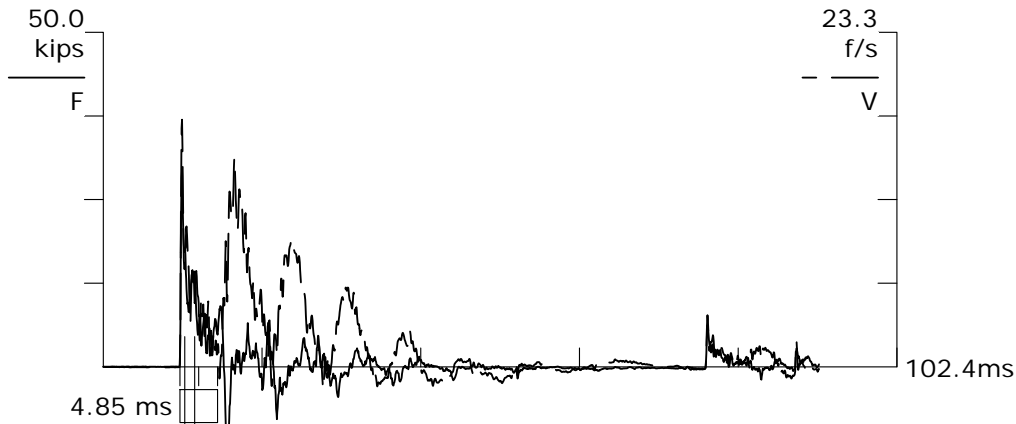
F34 A34

F3: [264 AWJ-1] 213.23 (1)

F4: [264 AWJ-2] 212.8 (1)

A3: [K3449] 345 mv/5000g's (1)

A4: [K4089] 345 mv/5000g's (1)

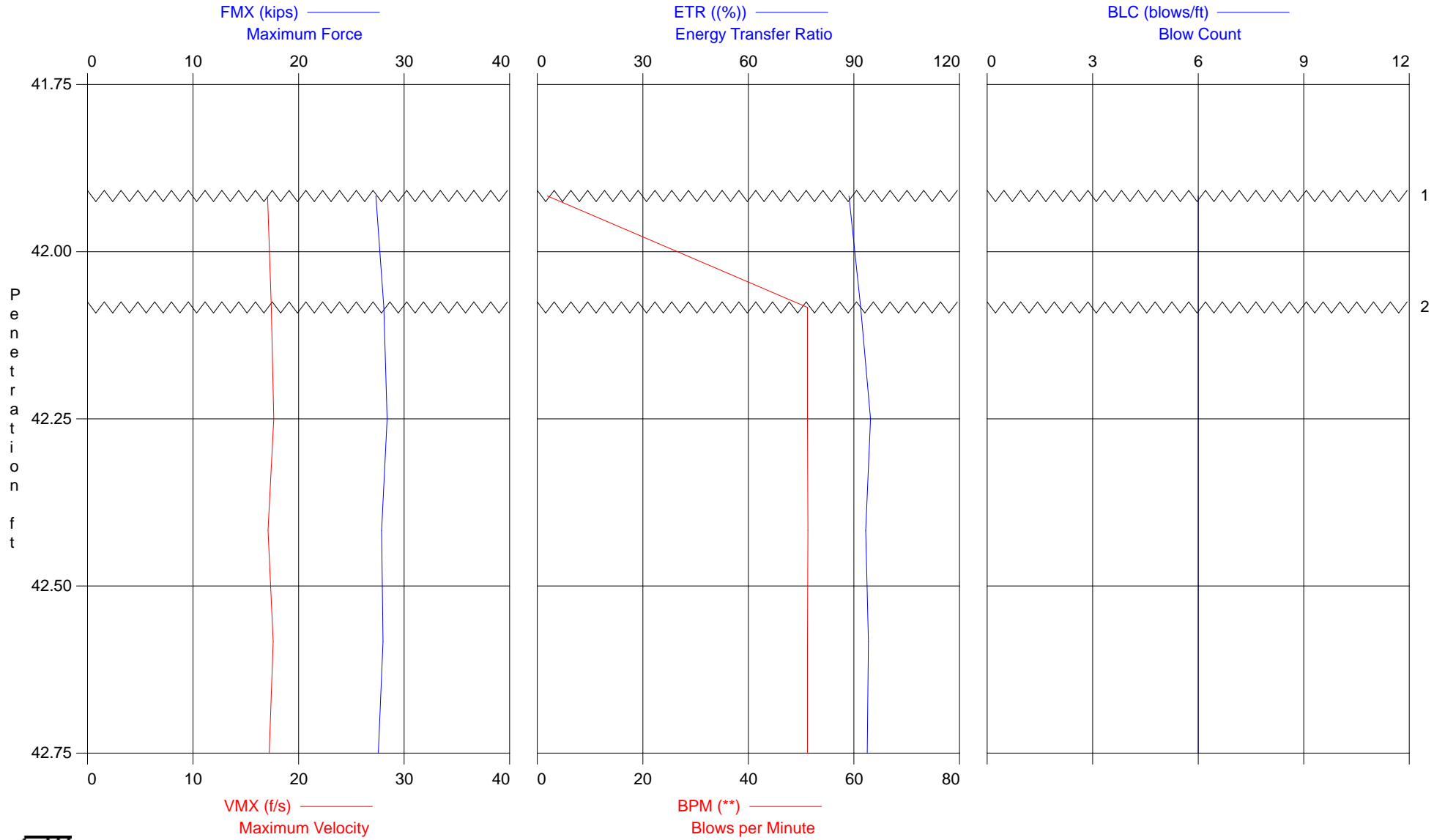


Appendix E

**Increment 4 PDILOT Data and Representative
Blow Data**

**NCDOT
SPT Calibration
CME Rig, Model 45C
Serial No. 300404**

214053NC - SPT RIG INC-4



1 - Penetration is approximate distance below ground surface.

2 - Blows recorded were 0 - 3 - 3; N-value = 6

214053NC - SPT RIG INC-4
OP: AFT

AWJ ROD
Test date: 25-Aug-2014

AR: 1.20 in²
LE: 45.83 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.60

FMX: Maximum Force
EFV: Energy of FV
ETR: Energy Transfer Ratio
BPM: Blows per Minute
VMX: Maximum Velocity

DMX: Maximum Displacement
DFN: Final Displacement
CSX: Max Measured Compr. Stress
FVP: Force/Velocity proportionality

BL#	depth ft	BLC bl/ft	FMX kips	EFV k-ft	ETR (%)	BPM **	VMX f/s	DMX in	DFN in	CSX ksi	FVP []
1	41.92	6	27.3	0.31	88.6	1.9	17.1	2.15	2.00	22.8	0.75
2	42.08	6	28.1	0.32	91.9	51.2	17.4	2.11	2.00	23.4	0.75
3	42.25	6	28.4	0.33	94.7	51.2	17.7	2.05	2.00	23.7	0.74
4	42.42	6	27.9	0.33	93.3	51.3	17.1	2.00	2.00	23.2	0.76
5	42.58	6	28.0	0.33	94.1	51.2	17.6	1.94	1.94	23.3	0.74
6	42.75	6	27.6	0.33	93.8	51.2	17.2	2.01	2.01	23.0	0.75
Average			27.9	0.32	92.7	43.0	17.3	2.04	1.99	23.2	0.75
Std. Dev.			0.3	0.01	2.1	18.4	0.2	0.07	0.02	0.3	0.01
Maximum			28.4	0.33	94.7	51.3	17.7	2.15	2.01	23.7	0.76
Minimum			27.3	0.31	88.6	1.9	17.1	1.94	1.94	22.8	0.74

Total number of blows analyzed: 6

BL#	depth (ft)	Comments
1	41.92	Penetration is approximate distance below ground surface.
2	42.08	Blows recorded were 0 - 3 - 3; N-value = 6

Time Summary

Drive 6 seconds

12:41:44 PM - 12:41:50 PM (8/25/2014) BN 1 - 6

Applied Foundation Testing, Inc.

214053NC

PDA OP: AFT

PILE DRIVING ANALYZER ®

Version 2014.118

SPT RIG INC-4

AWJ ROD

BN 3

8/25/2014 12:41:46 PM

FMX 28.4 kips

EFV 0.33 k-ft

ETR 94.7 (%)

BPM 51.2 bpm

VMX 17.7 f/s

DMX 2.04 in

DFN 2.00 in

CSX 23.7 ksi

FVP 0.74 []

LE 45.83 ft

AR 1.20 in²

EM 30000 ksi

SP 0.492 k/ft³

WS 16807.9 f/s

EA/C 2.1 ksec/ft

LP 42.25 ft

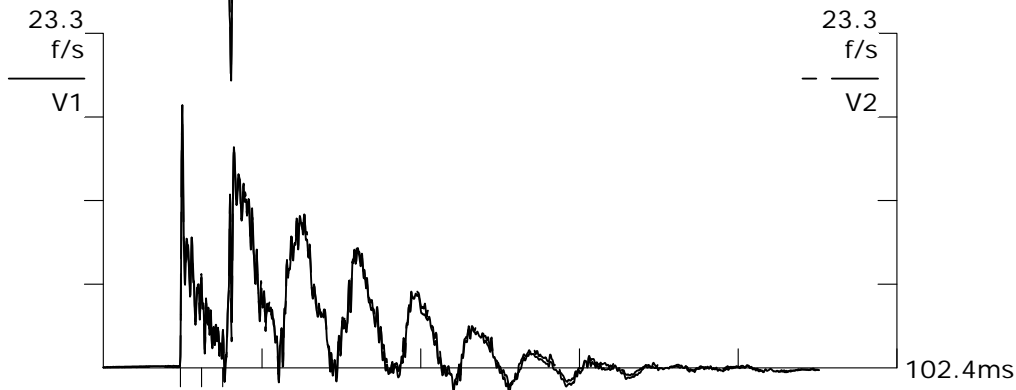
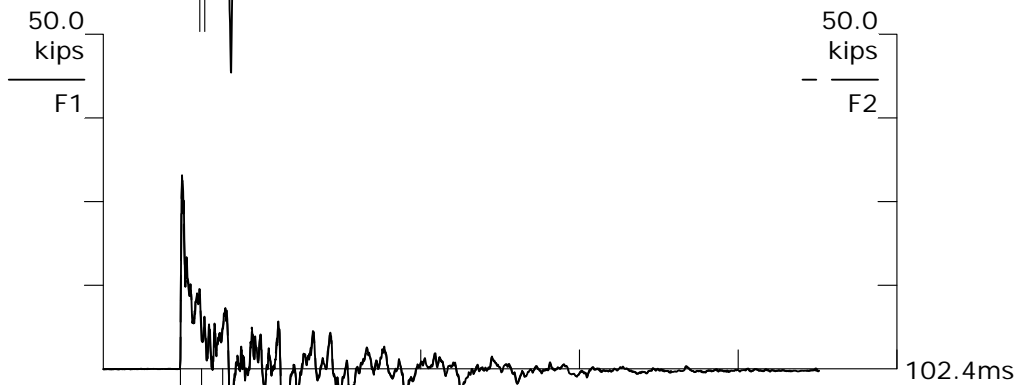
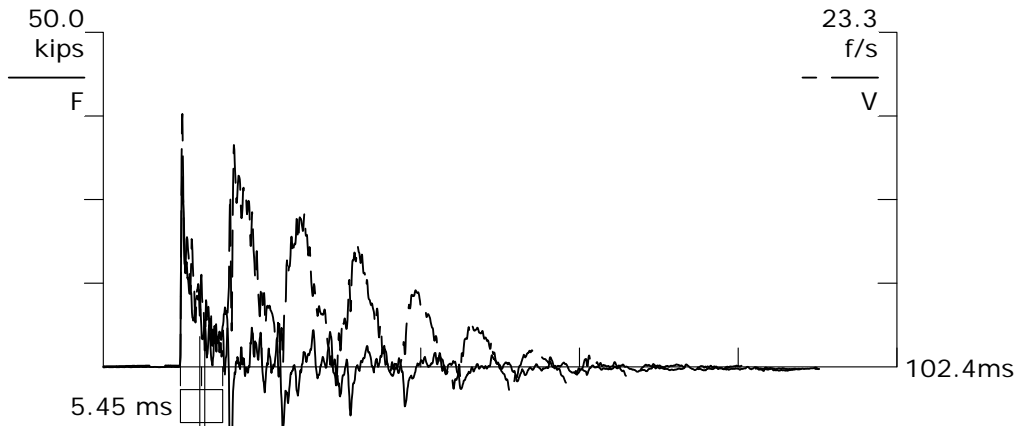
F34 A34

F3: [264 AWJ-1] 213.23 (1)

F4: [264 AWJ-2] 212.8 (1)

A3: [K3449] 345 mv/5000g's (1)

A4: [K4089] 345 mv/5000g's (1)

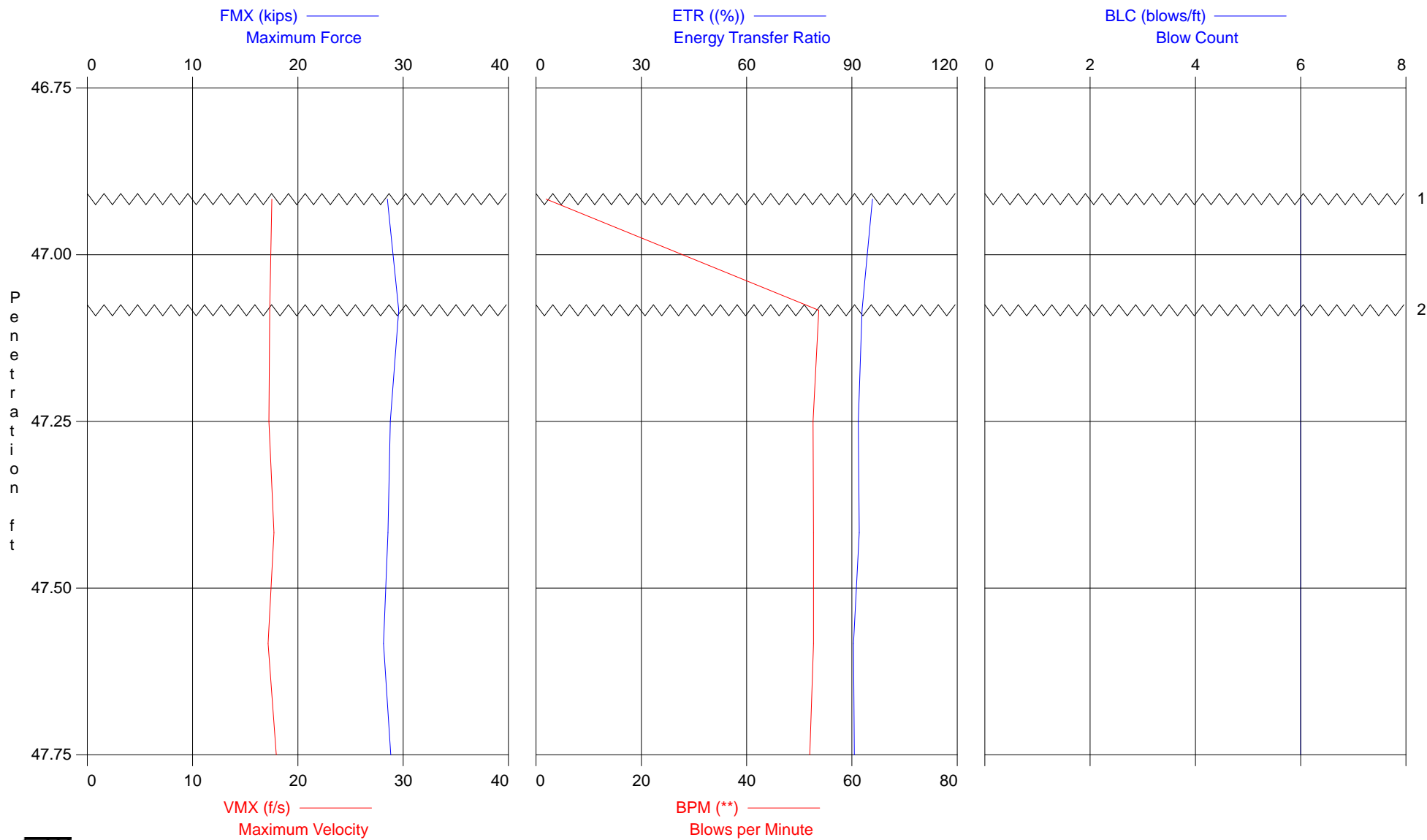


Appendix F

**Increment 5 PDILOT Data and Representative
Blow Data**

**NCDOT
SPT Calibration
CME Rig, Model 45C
Serial No. 300404**

214053NC - SPT RIG INC-5



1 - Penetration is approximate distance below ground surface.

2 - Blows recorded were 0 - 3 - 3; N-value = 6

214053NC - SPT RIG INC-5
OP: AFT

AWJ ROD
Test date: 25-Aug-2014

AR: 1.20 in²
LE: 50.83 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.60

FMX: Maximum Force

DMX: Maximum Displacement

EFV: Energy of FV

DFN: Final Displacement

ETR: Energy Transfer Ratio

CSX: Max Measured Compr. Stress

BPM: Blows per Minute

FVP: Force/Velocity proportionality

VMX: Maximum Velocity

BL#	depth ft	BLC bl/ft	FMX kips	EFV k-ft	ETR (%)	BPM **	VMX f/s	DMX in	DFN in	CSX ksi	FVP []
1	46.92	6	28.5	0.34	95.8	1.9	17.5	2.21	2.00	23.8	0.76
2	47.08	6	29.6	0.33	92.9	53.7	17.3	2.00	1.99	24.7	0.80
3	47.25	6	28.8	0.32	91.8	52.6	17.2	1.99	1.99	24.0	0.78
4	47.42	6	28.6	0.32	92.1	52.7	17.7	2.01	2.01	23.8	0.74
5	47.58	6	28.1	0.32	90.5	52.7	17.2	2.00	2.00	23.4	0.75
6	47.75	6	28.8	0.32	90.7	52.0	17.9	2.03	1.99	24.0	0.72
Average			28.7	0.32	92.3	44.3	17.5	2.04	2.00	23.9	0.76
Std. Dev.			0.4	0.01	1.8	19.0	0.3	0.08	0.01	0.4	0.02
Maximum			29.6	0.34	95.8	53.7	17.9	2.21	2.01	24.7	0.80
Minimum			28.1	0.32	90.5	1.9	17.2	1.99	1.99	23.4	0.72

Total number of blows analyzed: 6

BL#	depth (ft)	Comments
1	46.92	Penetration is approximate distance below ground surface.
2	47.08	Blows recorded were 0 - 3 - 3; N-value = 6

Time Summary

Drive 5 seconds

12:56:25 PM - 12:56:30 PM (8/25/2014) BN 1 - 6

Applied Foundation Testing, Inc.

214053NC

PDA OP: AFT

PILE DRIVING ANALYZER ®

Version 2014.118

SPT RIG INC-5

AWJ ROD

BN 4

8/25/2014 12:56:27 PM

FMX 28.6 kips

EFV 0.32 k-ft

ETR 92.1 (%)

BPM 52.7 bpm

VMX 17.7 f/s

DMX 2.01 in

DFN 2.01 in

CSX 23.8 ksi

FVP 0.74 []

LE 50.83 ft

AR 1.20 in²

EM 30000 ksi

SP 0.492 k/ft³

WS 16807.9 f/s

EA/C 2.1 ksec/ft

LP 47.42 ft

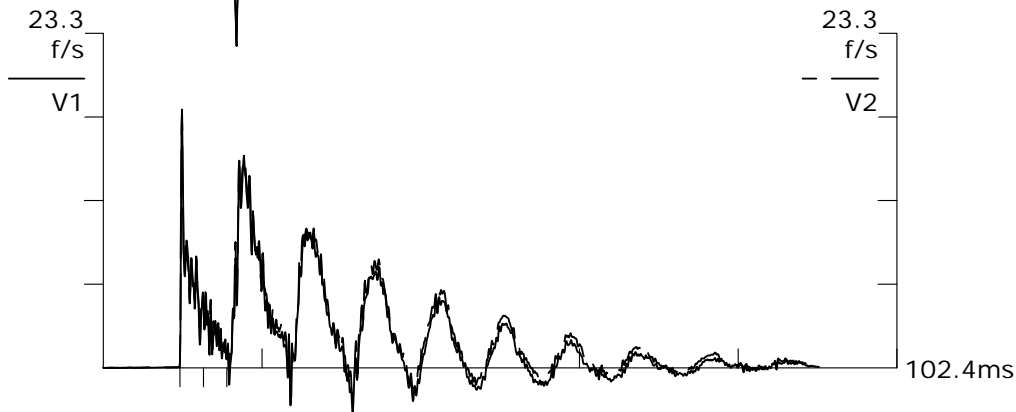
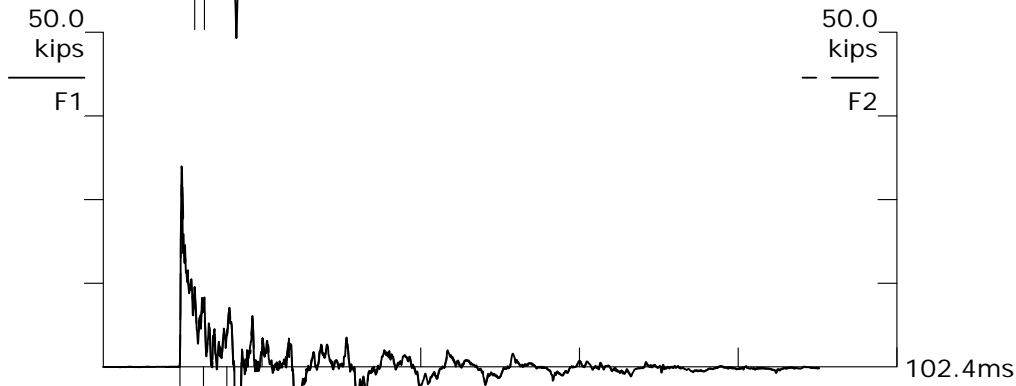
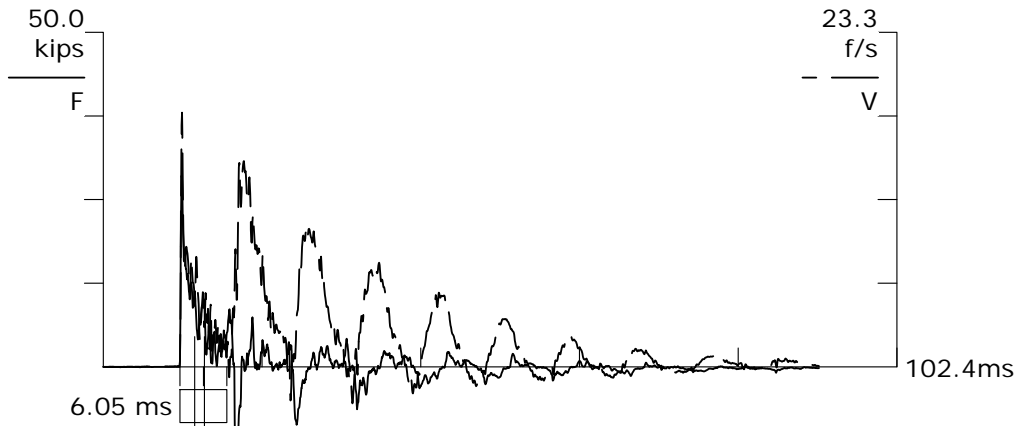
F34 A34

F3: [264 AWJ-1] 213.23 (1)

F4: [264 AWJ-2] 212.8 (1)

A3: [K3449] 345 mv/5000g's (1)

A4: [K4089] 345 mv/5000g's (1)

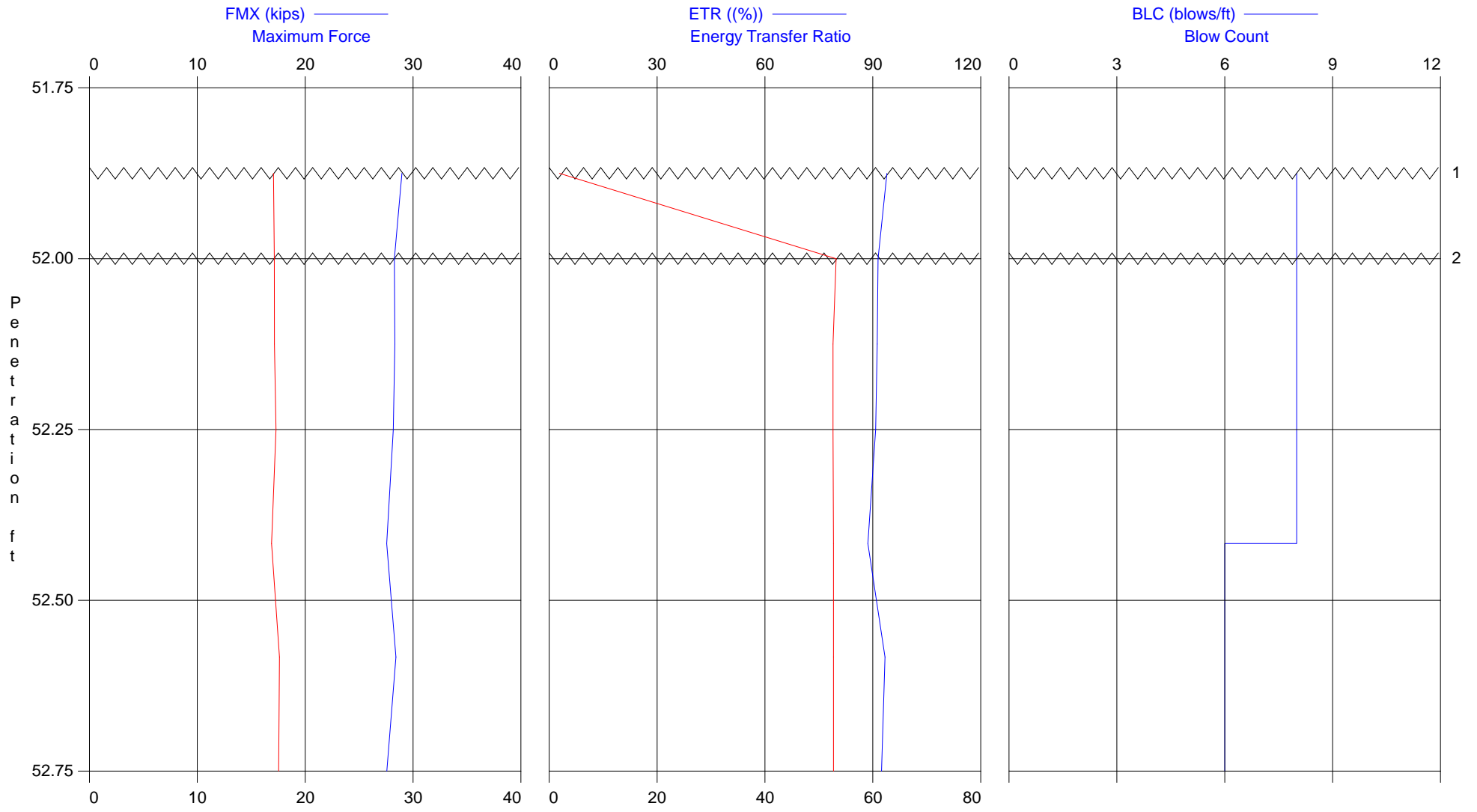


Appendix G

**Increment 6 PDILOT Data and Representative
Blow Data**

**NCDOT
SPT Calibration
CME Rig, Model 45C
Serial No. 300404**

214053NC - SPT RIG INC-6



1 - Penetration is approximate distance below ground surface.

2 - Blows recorded were 0 - 4 - 3; N-value = 7

214053NC - SPT RIG INC-6
OP: AFT

AWJ ROD
Test date: 25-Aug-2014

AR: 1.20 in²
LE: 55.83 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.60

FMX: Maximum Force
EFV: Energy of FV
ETR: Energy Transfer Ratio
BPM: Blows per Minute
VMX: Maximum Velocity

DMX: Maximum Displacement
DFN: Final Displacement
CSX: Max Measured Compr. Stress
FVP: Force/Velocity proportionality

BL#	depth ft	BLC bl/ft	FMX kips	EFV k-ft	ETR (%)	BPM **	VMX f/s	DMX in	DFN in	CSX ksi	FVP []
1	51.88	8	29.0	0.33	93.9	1.9	17.1	1.55	1.51	24.1	0.76
2	52.00	8	28.3	0.32	91.4	53.2	17.1	1.68	1.50	23.6	0.77
3	52.13	8	28.3	0.32	91.2	52.6	17.2	1.59	1.50	23.6	0.77
4	52.25	8	28.2	0.32	90.8	52.6	17.3	1.81	1.51	23.5	0.74
5	52.42	6	27.6	0.31	88.6	52.7	16.9	2.21	2.00	23.0	0.76
6	52.58	6	28.4	0.33	93.4	52.7	17.6	2.00	2.00	23.7	0.76
7	52.75	6	27.6	0.32	92.4	52.7	17.5	2.02	2.02	23.0	0.73
Average			28.2	0.32	91.7	45.5	17.2	1.84	1.72	23.5	0.75
Std. Dev.			0.5	0.01	1.6	17.8	0.2	0.23	0.25	0.4	0.01
Maximum			29.0	0.33	93.9	53.2	17.6	2.21	2.02	24.1	0.77
Minimum			27.6	0.31	88.6	1.9	16.9	1.55	1.50	23.0	0.73

Total number of blows analyzed: 7

BL#	depth (ft)	Comments
1	51.88	Penetration is approximate distance below ground surface.
2	52.00	Blows recorded were 0 - 4 - 3; N-value = 7

Time Summary

Drive 7 seconds

1:09:34 PM - 1:09:41 PM (8/25/2014) BN 1 - 7

Applied Foundation Testing, Inc.

214053NC

PDA OP: AFT

PILE DRIVING ANALYZER ®

Version 2014.118

SPT RIG INC-6

AWJ ROD

BN 2

8/25/2014 1:09:35 PM

FMX 28.3 kips

EFV 0.32 k-ft

ETR 91.4 (%)

BPM 53.2 bpm

VMX 17.1 f/s

DMX 1.68 in

DFN 1.50 in

CSX 23.6 ksi

FVP 0.77 []

LE 55.83 ft

AR 1.20 in²

EM 30000 ksi

SP 0.492 k/ft³

WS 16807.9 f/s

EA/C 2.1 ksec/ft

LP 52.00 ft

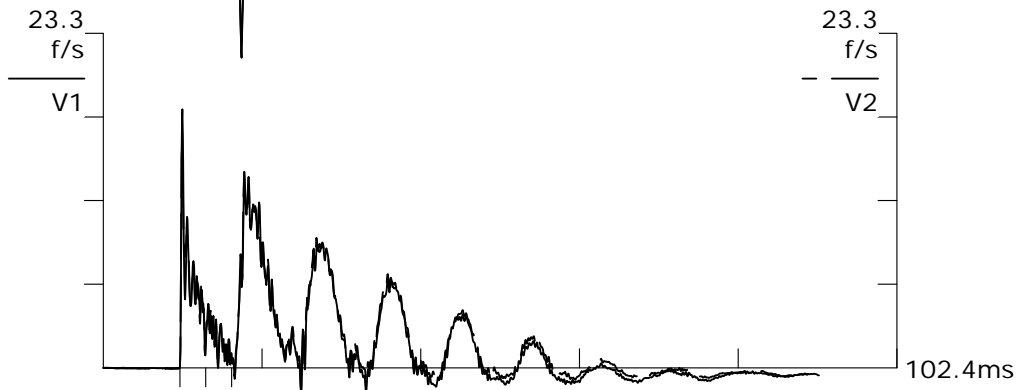
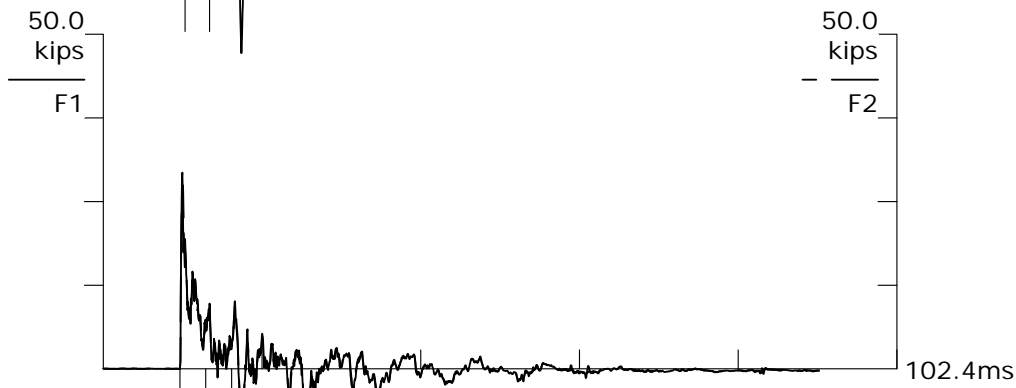
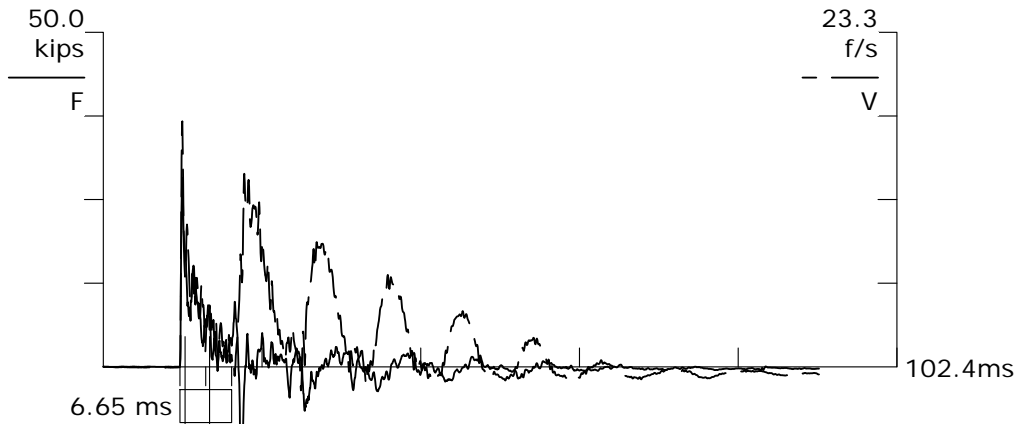
F34 A34

F3: [264 AWJ-1] 213.23 (1)

F4: [264 AWJ-2] 212.8 (1)

A3: [K3449] 345 mv/5000g's (1)

A4: [K4089] 345 mv/5000g's (1)

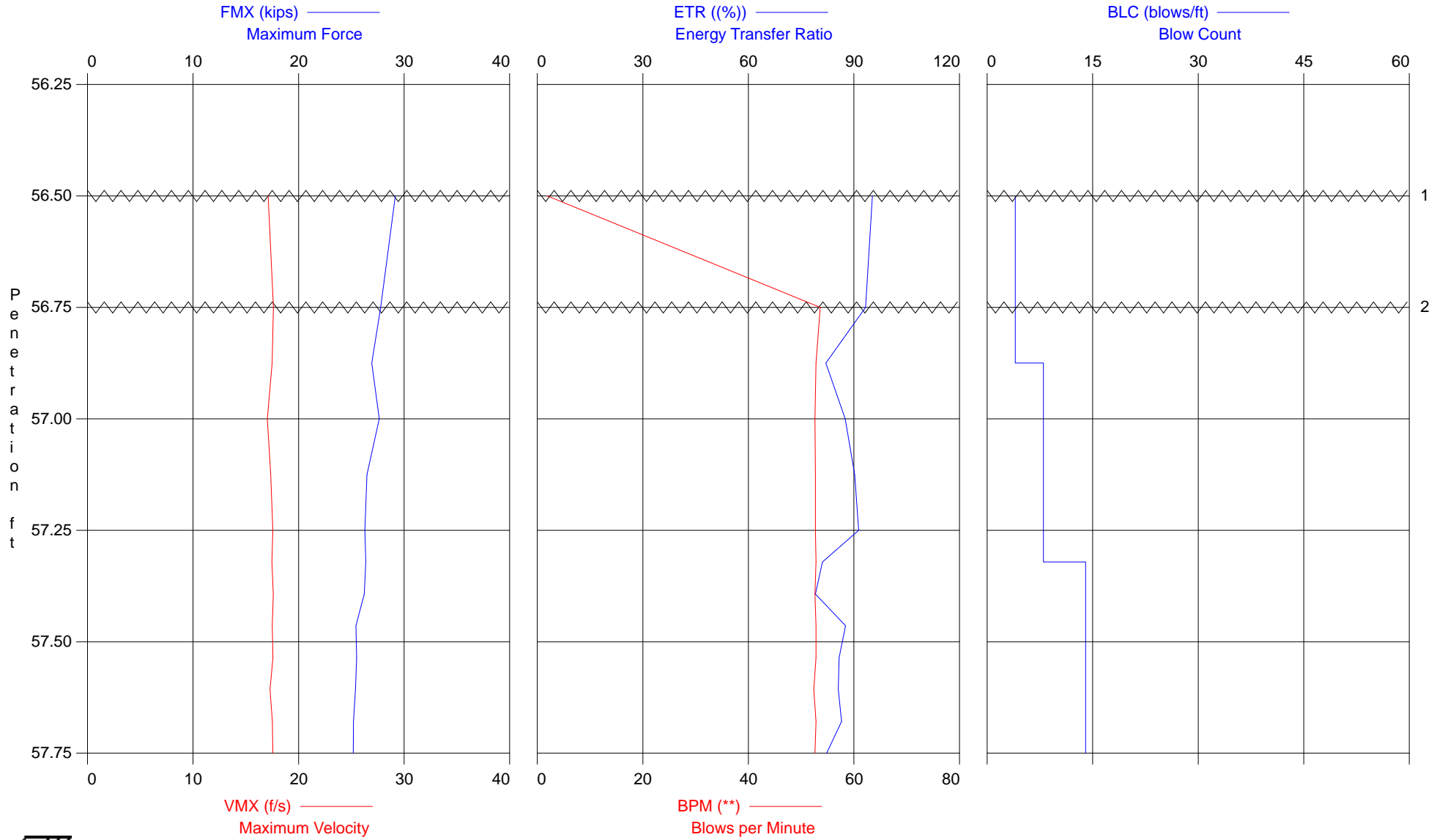


Appendix H

**Increment 7 PDILOT Data and Representative
Blow Data**

**NCDOT
SPT Calibration
CME Rig, Model 45C
Serial No. 300404**

214053NC - SPT RIG INC-7



1 - Penetration is approximate distance below ground surface.

2 - Blows recorded were 2 - 4 - 7; N-value = 11

214053NC - SPT RIG INC-7
OP: AFT

AWJ ROD
Test date: 25-Aug-2014

AR: 1.20 in²
LE: 60.83 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.60

FMX: Maximum Force
EFV: Energy of FV
ETR: Energy Transfer Ratio
BPM: Blows per Minute
VMX: Maximum Velocity

DMX: Maximum Displacement
DFN: Final Displacement
CSX: Max Measured Compr. Stress
FVP: Force/Velocity proportionality

BL#	depth ft	BLC bl/ft	FMX kips	EFV k-ft	ETR (%)	BPM **	VMX f/s	DMX in	DFN in	CSX ksi	FVP []
1	56.50	4	29.2	0.33	95.3	1.9	17.1	3.01	3.01	24.3	0.80
2	56.75	4	27.8	0.33	93.3	53.6	17.6	3.00	3.00	23.2	0.74
3	56.88	8	26.9	0.29	82.0	52.8	17.5	1.56	1.47	22.4	0.72
4	57.00	8	27.6	0.31	87.5	52.6	17.0	1.52	1.50	23.0	0.74
5	57.13	8	26.5	0.32	90.2	52.7	17.4	1.50	1.50	22.1	0.70
6	57.25	8	26.3	0.32	91.3	52.7	17.6	1.50	1.50	21.9	0.69
7	57.32	14	26.4	0.28	81.0	52.8	17.5	0.98	0.84	22.0	0.69
8	57.39	14	26.2	0.28	79.0	52.6	17.6	0.98	0.83	21.8	0.69
9	57.46	14	25.4	0.31	87.6	52.8	17.5	1.08	0.88	21.2	0.68
10	57.54	14	25.5	0.30	85.8	52.8	17.6	0.83	0.83	21.3	0.68
11	57.61	14	25.4	0.30	85.5	52.4	17.3	0.86	0.85	21.2	0.66
12	57.68	14	25.2	0.30	86.5	52.8	17.5	0.86	0.86	21.0	0.65
13	57.75	14	25.2	0.29	82.3	52.6	17.6	0.87	0.87	21.0	0.67
Average			26.4	0.30	86.7	48.9	17.4	1.43	1.38	22.0	0.70
Std. Dev.			1.1	0.02	4.7	13.6	0.2	0.73	0.75	1.0	0.04
Maximum			29.2	0.33	95.3	53.6	17.6	3.01	3.01	24.3	0.80
Minimum			25.2	0.28	79.0	1.9	17.0	0.83	0.83	21.0	0.65

Total number of blows analyzed: 13

BL#	depth (ft)	Comments
1	56.50	Penetration is approximate distance below ground surface.
2	56.75	Blows recorded were 2 - 4 - 7; N-value = 11

Time Summary

Drive 13 seconds

1:27:38 PM - 1:27:51 PM (8/25/2014) BN 1 - 13

Applied Foundation Testing, Inc.

214053NC

PDA OP: AFT

PILE DRIVING ANALYZER ®

Version 2014.118

SPT RIG INC-7

AWJ ROD

BN 11

8/25/2014 1:27:49 PM

FMX 25.4 kips

EFV 0.30 k-ft

ETR 85.5 (%)

BPM 52.4 bpm

VMX 17.3 f/s

DMX 0.86 in

DFN 0.85 in

CSX 21.2 ksi

FVP 0.66 []

LE 60.83 ft

AR 1.20 in²

EM 30000 ksi

SP 0.492 k/ft³

WS 16807.9 f/s

EA/C 2.1 ksec/ft

LP 57.61 ft

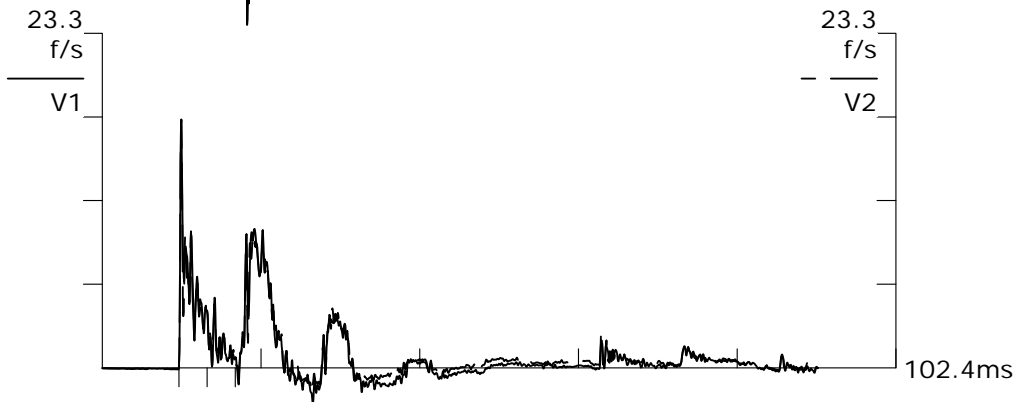
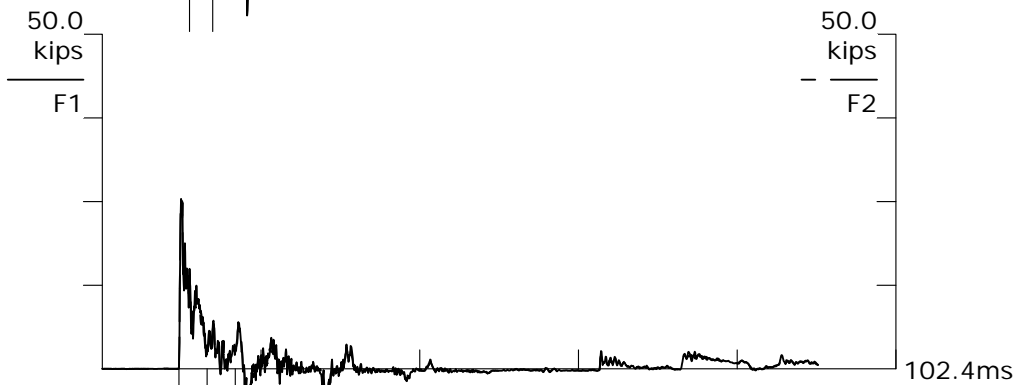
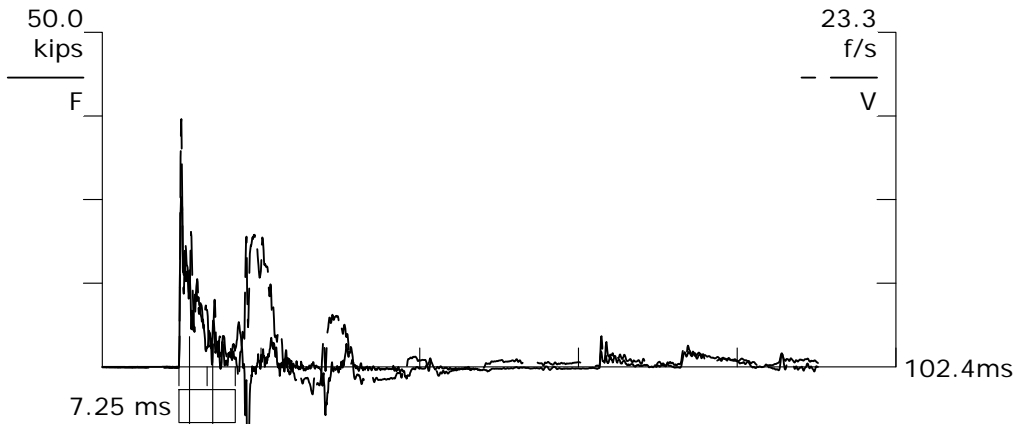
F34 A34

F3: [264 AWJ-1] 213.23 (1)

F4: [264 AWJ-2] 212.8 (1)

A3: [K3449] 345 mv/5000g's (1)

A4: [K4089] 345 mv/5000g's (1)



Appendix I

Gage Calibration Sheets

**NCDOT
SPT Calibration
CME Rig, Model 45C
Serial No. 300404**

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

Calibration Factors	264AWJ		
Bridge 1 ($\mu\text{E}/\text{V}$)	213.23	Bridge 2 ($\mu\text{E}/\text{V}$)	212.80
EA Factor (Kips)	35851.07	Area (in^2)	1.20

Calibrated by: 
Calibrated Date: 1/29/2014

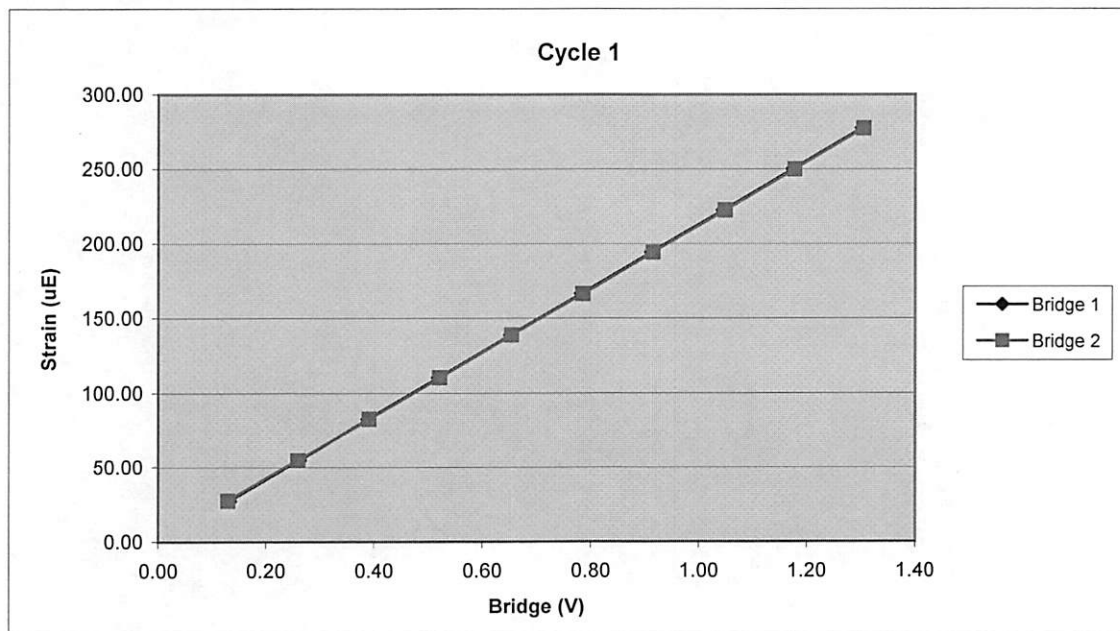
Pile Dynamics Inc
30725 Aurora Rd
Solon, OH 44139

Traceable to N.I.S.T.

264AWJ		Cycle 1		
Sample	Force (lb)	Strain (μ E)	Bridge 1 (V)	Bridge 2 (V)
1	0.00	0.00	0.00	0.00
2	990.12	27.46	0.13	0.13
3	1985.36	54.93	0.26	0.26
4	2976.47	82.47	0.39	0.39
5	3983.32	110.30	0.52	0.52
6	4988.79	138.63	0.65	0.65
7	5980.88	166.38	0.78	0.79
8	6980.45	194.34	0.91	0.92
9	7994.19	222.31	1.05	1.05
10	8992.97	249.96	1.17	1.18
11	9975.22	277.43	1.30	1.31

Bridge 1		Bridge 2	
Force Calibration (lb/V)	7666.95	Force Calibration (lb/V)	7635.35
Offset	-16.91	Offset	-3.52
Correlation	0.999996	Correlation	0.999996
Strain Calibration (μ E/V)	213.48	Strain Calibration (μ E/V)	212.60
Offset	-0.77	Offset	-0.39
Correlation	0.999998	Correlation	0.999996

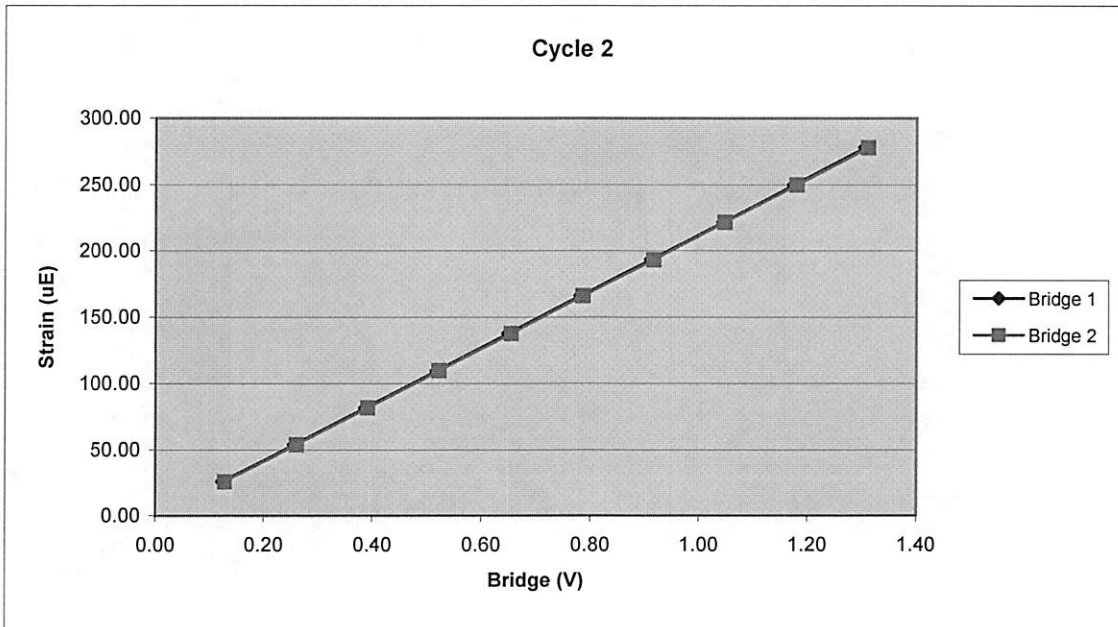
Force Strain Calibration	
EA (Kips)	35914.48
Offset	10.58
Correlation	0.999998



264AWJ		Cycle 2		
Sample	Force (lb)	Strain (μE)	Bridge 1 (V)	Bridge 2 (V)
1	0.00	0.00	0.00	0.00
2	961.19	25.64	0.12	0.13
3	1965.88	53.68	0.26	0.26
4	2961.51	81.61	0.39	0.39
5	3956.55	109.44	0.52	0.52
6	4956.51	137.43	0.65	0.66
7	5971.04	165.79	0.78	0.79
8	6959.98	193.25	0.91	0.92
9	7960.73	221.44	1.05	1.05
10	8968.96	249.75	1.18	1.18
11	9969.31	277.67	1.31	1.31

Bridge 1		Bridge 2	
Force Calibration (lb/V)	7619.47	Force Calibration (lb/V)	7615.08
Offset	7.38	Offset	-19.40
Correlation	0.999997	Correlation	0.999998
Strain Calibration ($\mu\text{E}/\text{V}$)	213.18	Strain Calibration ($\mu\text{E}/\text{V}$)	213.06
Offset	-1.08	Offset	-1.83
Correlation	0.999997	Correlation	0.999998

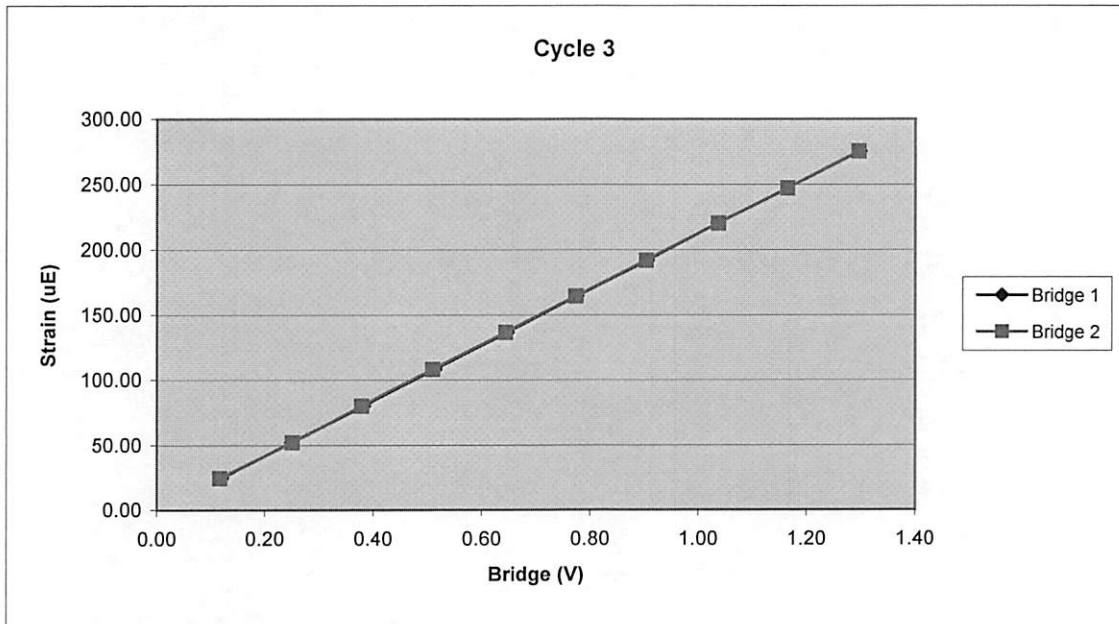
Force Strain Calibration	
EA (Kips)	35741.65
Offset	45.83
Correlation	1.000000



264AWJ		Cycle 3		
Sample	Force (lb)	Strain (μ E)	Bridge 1 (V)	Bridge 2 (V)
1	0.00	0.00	0.00	0.00
2	903.72	24.64	0.12	0.12
3	1905.46	52.24	0.25	0.25
4	2902.86	80.15	0.38	0.38
5	3902.23	108.14	0.51	0.51
6	4921.09	136.54	0.65	0.64
7	5902.75	164.12	0.78	0.77
8	6895.62	191.88	0.91	0.90
9	7920.97	220.05	1.04	1.04
10	8898.11	247.12	1.16	1.16
11	9916.76	275.45	1.30	1.30

Bridge 1		Bridge 2	
Force Calibration (lb/V)	7646.84	Force Calibration (lb/V)	7636.79
Offset	-16.23	Offset	2.70
Correlation	0.999993	Correlation	0.999996
Strain Calibration (μ E/V)	213.02	Strain Calibration (μ E/V)	212.74
Offset	-1.04	Offset	-0.51
Correlation	0.999997	Correlation	0.999996

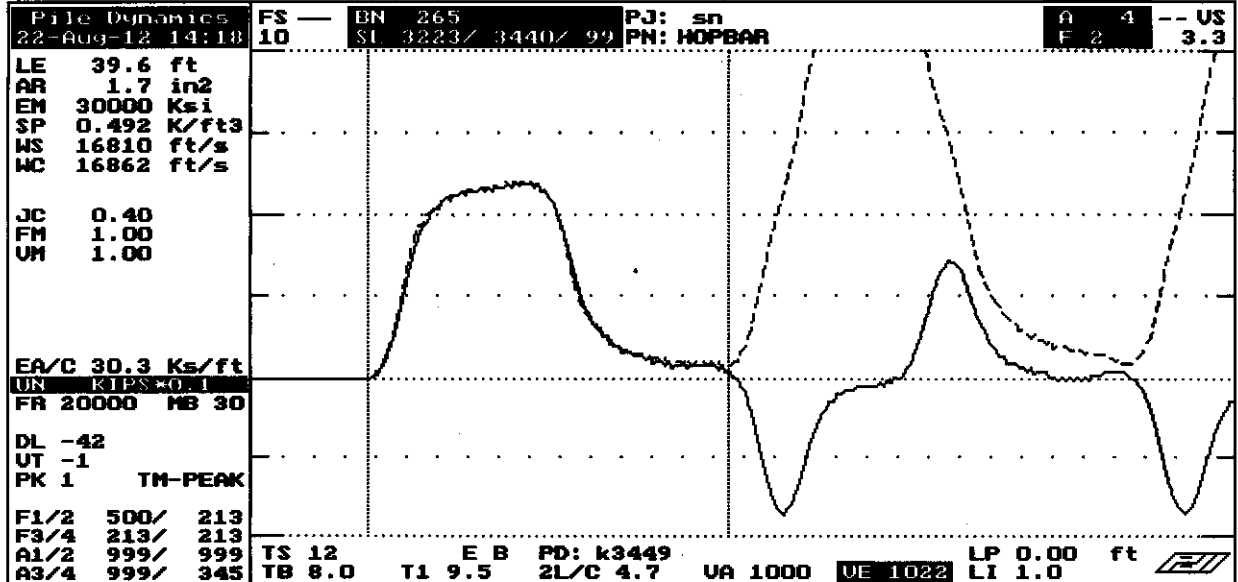
Force Strain Calibration	
EA (Kips)	35897.09
Offset	21.19
Correlation	0.999997




QBTA: ON [ALT-F1/BB=60]

Pile Dynamics, Inc.

TG F2 DPF



ACCEPT SQ-OFF FL-OFF PR-OFF	UMX= 3.9 FMX= 60 AMX= 139
	EMX= 0.2 MEX= 117 FUP= 0.99
	ACCELEROMETER CALIBRATION N.I.S.T. Traceable
contact Pile Dynamics USA with your questions tel USA - 216 - 831- 6131 fax USA - 216 - 831- 0916	SERIAL NUMBER: <u>K3449</u> <u>PR</u>
	CALIBRATION FACTOR: <u>.069 m/v</u>
	PAK (#5000): <u>395</u> DATE: <u>22-Aug-12</u>
	PDA OPERATOR: <u>[Signature]</u>
<-AT:P1/ZORE/ST/10E	OP: dale [ver:4.05] [AT:P1/ZO/ELECTRIC->

Smart Sensor

Smart Chip Programmed By DB on 23-Aug-12 CRC Value DEAD

QBTA: ON [ALT-F1/BB=60]

Pile Dynamics, Inc.

TG F2 DPF

Pile Dynamics
19-Aug-13 08:26

FS —
10

BN 45
SL 123/ 3440/ 99

PJ:
PN: HOPBAR

A 4 -- US
F 2 3.3

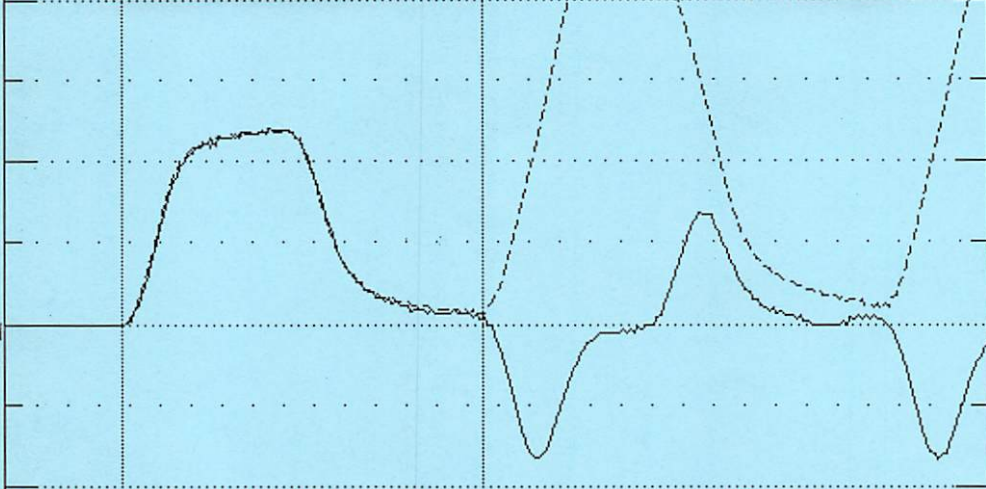
LE 39.6 ft
AR 1.7 in2
EM 30000 Ksi
SP 0.492 K/ft3
WS 16810 ft/s
WC 16862 ft/s

JC 0.40
FM 1.00
VM 1.00

EA/C 30.3 Ks/ft
UN KIPS*0.1
FR 20000 MB 30

DL -33
UT -1
PK 1 TM-PEAK

F1/2 500/ 213
F3/4 213/ 213
A1/2 999/ 999
A3/4 999/ 345



TS 12 E B PD: k4089 LP 0.00 ft
TB 8.0 T1 9.5 2L/C 4.7 VA 1000 UE 1022 LI 1.0

ACCEPT SQ-OFF FL-OFF PR-OFF

VMX= 3.9 FMX= 60 AMX= 129
EMX= 0.2 MEX= 117 FVP= 1.00



contact Pile Dynamics USA
with your questions
tel USA - 216 - 831- 6131
fax USA - 216 - 831- 0916

ACCELEROMETER CALIBRATION N.I.S.T. Traceable
SERIAL NUMBER: K4089 PR
CALIBRATION FACTOR: .069 mv/g
PAK (*5000): 345 DATE: 19-Aug-13
PDA OPERATOR: [Signature]

←-AT-PIEZORESISTIVE

OP: dale Iver:4.051

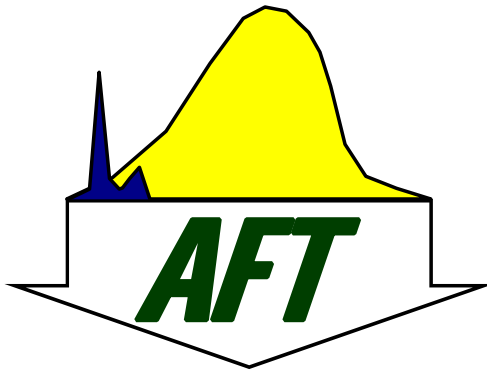
AT-PIEZOELECTRIC-→

Smart Sensor

Smart Chip Programmed By DB on 19-Aug-13 CRC Value 3430

Applied Foundation Testing

North Carolina License No.: P-0294



February 5, 2015

Report of Standard Penetration Test (SPT) Energy Measurement Testing

CME Model 55 Rig with Auto
Hammer
Rig Serial No.: 379935
Lexington, South Carolina
AFT Project No.: 215006NC

Authored By:

A handwritten signature in blue ink, appearing to read 'Thomas G. Santee', is written over a horizontal line.

Thomas G. Santee, P.E.

Chief Engineer
Certified PDA Signatory - Advanced

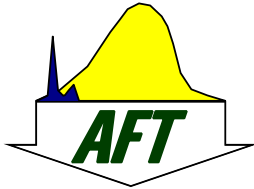
A handwritten signature in blue ink, appearing to read 'Michael J. Simpson', is written over a horizontal line.

Michael J. Simpson, P.E

Geotechnical Engineer
NC Registration No.: 032060
Certified PDA Signatory - Advanced

For: **Mr. Tom Rideout**
ICA Engineering, Inc.
trideout@icaeng.com





Applied Foundation Testing
 Specializing in STATNAMIC™ Load Testing,
 Dynamic and Static Load Testing, Instrumentation
 and Geotechnical Engineering

Report of SPT Energy Measurement Testing
In General Accordance to ASTM D 4633

General Information				
Date:	February 5, 2015			
AFT Project No.:	215006NC			
Project Description:	SPT Energy Measurement Testing of Drill Rig			
<hr/>				
Client Name:	ICA Engineering, Inc.			
Client Address:	trideout@icaeng.com			
Client Contact:	Mr. Tom Rideout			
<hr/>				
Test Date:	February 3, 2015			
Test Equipment Manufacturer/Model:	Pile Dynamics, Inc. / Model PAX (strain and accelerometer calibrations attached in Appendix F)			
<hr/>				
AFT Field Personnel:	Michael J. Simpson, P.E.			
AFT Responsible Engineer:	Michael J. Simpson, P.E.			
<hr/>				
Drill Rig Information				
Manufacturer	Model	Serial Number	Operator	Type
CME	55	379935	ICA	ATV (Track)
<hr/>				
Hammer Information				
Type	Model	Serial Number		
Auto	CME	N/A		
Anvil Height (in.)	Anvil Diameter (in.)	Drop Height (in.)	Ram Weight (lb.)	Ram Serial Number
13	~2.5	30	140	N/A
<hr/>				
Drilling Rod Information				
Type	OD (in.)	ID (in.)	Cross Sectional Area (in ²)	Typical Length (ft.)
AWJ	~1.75	~1.25	~1.20	1 to 5
Instrumented Rod Type	OD (in.)	ID (in.)	Cross Sectional Area (in ²)	Length (ft.)
AWJ	~1.75	~1.25	~1.20	2



Boring Information				
ID	Location	Reference Elevation (ft.)	Impact to Instrumentation Length (ft.)	Boring Log Attached (Y or N)
Unknown	Gore Area of I-20 Eastbound On-Ramp from Exit 51 and Eastbound I-20 Near Lexington, SC	Unknown	2.3	N

Results
Energy Measurements

Representative plot of force and velocity for each data set attached Plots of average energy and all energy versus Rod Length attached Tabular and graphical data for each blow for each data set attached

Data Set ID	Instru-mentation to Sampler Tip Length (ft.)⁽¹⁾	Blows Recorded to Drive Sampler/N-value	Soil Sample Description	Average BPM for Increment⁽²⁾	Average Maximum Energy (k-ft.)	Average Energy Transfer Ratio (percent)
1	28.5	2-5-13 / 18	Medium Dense Sand	54.9	0.31	88.9
2	33.5	3-5-6 / 11	Medium Dense Silty Sand	55.0	0.31	89.6
3	38.5	3-7-10 / 17	Medium Dense Sand with Silt	54.9	0.32	91.5
4	44.5	5-6-7 / 13	Medium Dense Silty Sand	55.3	0.32	91.2

1. Penetration below grade is approximately 4.2 feet less than length shown for instrumentation to sampler tip.
2. First blow for each increment ignored when computing average.

Energy Measurement Interpretation

Four increments of data were gathered. The averages for energy (EFV) and the energy transfer ratio (ETR) for each increment are tabulated in the above table. In addition, the above table includes the N-value and soil sample description for each increment.

Plots of average ETR versus rod length below instrumentation and ETR for each blow versus rod length below instrumentation are included in Appendix A. Additional information regarding each blow recorded for each increment can be found in Appendices B through E. A plot showing representative force and velocity traces, input parameters, gage information, and output quantities is also included in Appendices B through E for a representative blow for each increment. Please note in the attached plots in Appendices B through E the penetration is estimated and based on depth of the tip of the sampler below existing ground. Refer to the LE values in the tabulated data and plots for the actual rod length below gages.

The overall average EFV and ETR values (for all recorded blows) are approximately 0.32 k-ft and 90.3 percent, respectively. The overall standard deviation for all data for EFV and ETR are 0.01 k-ft and 1.9 percent, respectively.



Limitations

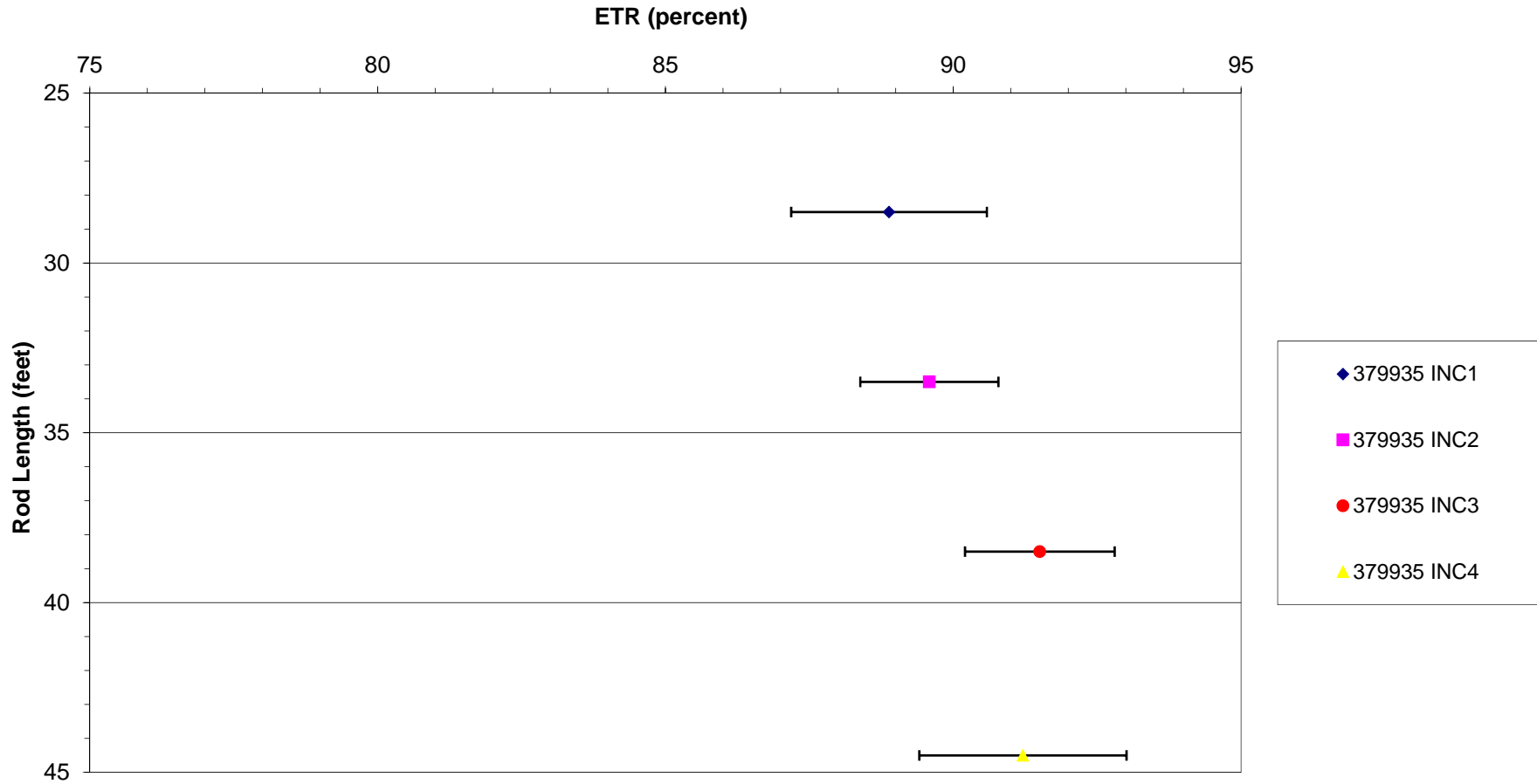
This report presents test measurements made by AFT. Interpretations were made based upon the measurements made by AFT with the latest techniques available and currently accepted standards of care recognized by Geotechnical Engineering professionals. AFT is an independent agency and is not the Geotechnical Engineer of Record. The Geotechnical Engineer of Record should ultimately make final recommendations for foundation design and construction.

Appendix A

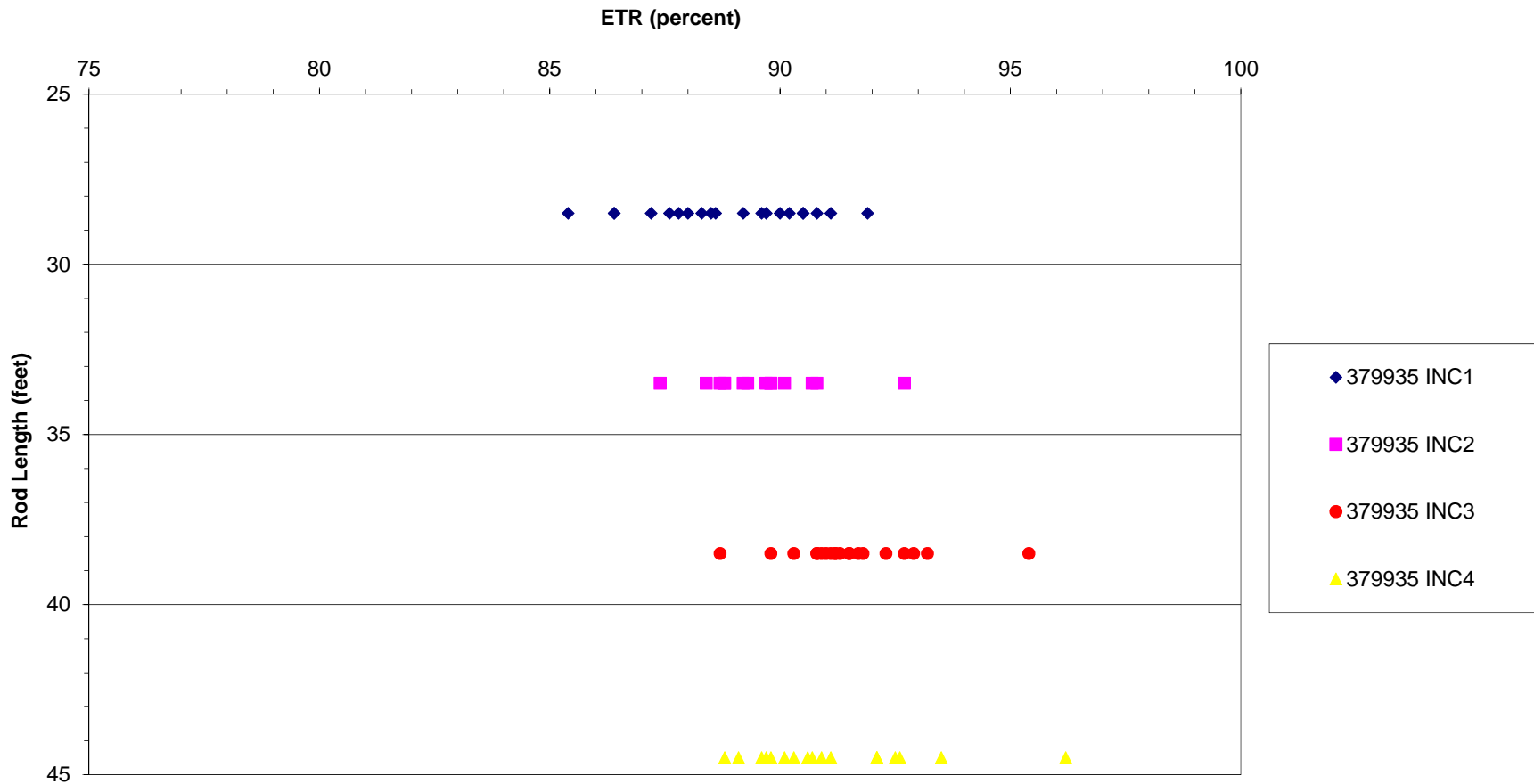
ETR and Average ETR versus Rod Length Plots

**NCDOT
SPT Calibration
CME Rig, Model 55
Serial No. 379935**

Average ETR versus Rod Length with ± 1 Standard Deviation Shown
Rig Make and Model: CME 55
Rig Serial # 379935
Near Lexington, South Carolina



ETR versus Rod Length
Rig Make and Model: CME 55
Rig Serial # 379935
Near Lexington, South Carolina



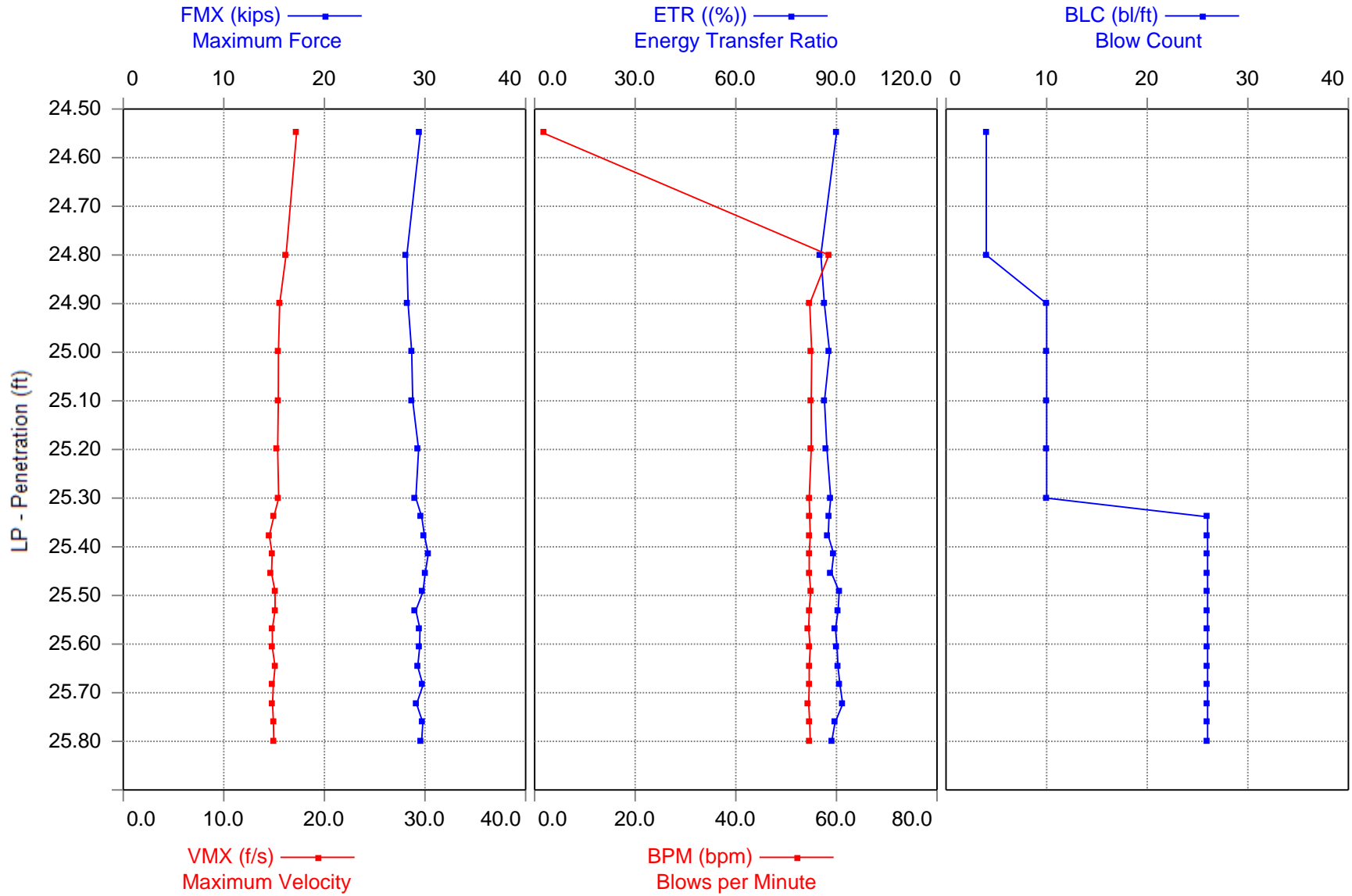
Appendix B

**Increment 1 PDILOT Data and Representative
Blow Data**

**NCDOT
SPT Calibration
CME Rig, Model 55
Serial No. 379935**



215006NC - 379935 INC1



215006NC - 379935 INC1

AWJ SPT ROD

OP: AFT

Date: 03-February-2015

AR: 1.20 in²

SP: 0.492 k/ft³

LE: 28.50 ft

EM: 30,000 ksi

WS: 16,807.9 f/s

JC: 0.70 []

FMX: Maximum Force

DMX: Maximum Displacement

EFV: Energy of FV

DFN: Final Displacement

ETR: Energy Transfer Ratio

CSX: Max Measured Compr. Stress

BPM: Blows per Minute

FVP: Force/Velocity proportionality

VMX: Maximum Velocity

BL#	depth ft	BLC bl/ft	FMX kips	EFV k-ft	ETR (%)	BPM bpm	VMX f/s	DMX in	DFN in	CSX ksi	FVP []
1	24.55	4	30	0.32	90.0	1.9	17.2	3.00	3.00	24.6	0.84
2	24.80	4	28	0.30	85.4	58.5	16.2	3.00	3.00	23.5	0.85
3	24.90	10	28	0.30	86.4	54.7	15.6	1.53	1.20	23.6	0.88
4	25.00	10	29	0.31	88.0	55.1	15.4	1.45	1.20	23.9	0.90
5	25.10	10	29	0.30	86.4	55.0	15.4	1.27	1.20	24.0	0.91
6	25.20	10	29	0.31	87.2	55.0	15.4	1.22	1.20	24.5	0.91
7	25.30	10	29	0.31	88.3	54.6	15.5	1.20	1.20	24.2	0.91
8	25.34	26	30	0.31	87.8	54.7	15.0	0.73	0.46	24.7	0.92
9	25.38	26	30	0.31	87.6	54.8	14.5	0.67	0.46	25.0	0.96
10	25.42	26	30	0.31	89.2	54.6	14.8	0.64	0.46	25.3	0.90
11	25.45	26	30	0.31	88.5	54.6	14.8	0.58	0.46	25.0	0.91
12	25.49	26	30	0.32	90.8	54.9	15.1	0.60	0.46	24.8	0.93
13	25.53	26	29	0.32	90.5	54.6	15.1	0.60	0.46	24.2	0.90
14	25.57	26	29	0.31	89.7	54.5	14.8	0.58	0.46	24.6	0.93
15	25.61	26	29	0.32	90.2	54.8	14.8	0.56	0.46	24.6	0.93
16	25.65	26	29	0.32	90.5	54.6	15.1	0.58	0.46	24.4	0.90
17	25.68	26	30	0.32	91.1	54.6	14.9	0.55	0.46	24.8	0.88
18	25.72	26	29	0.32	91.9	54.5	14.8	0.56	0.46	24.3	0.91
19	25.76	26	30	0.31	89.6	54.7	14.9	0.58	0.46	24.8	0.93
20	25.80	26	30	0.31	88.6	54.8	15.0	0.69	0.46	24.7	0.88
Average			29	0.31	88.9	52.3	15.2	1.03	0.90	24.5	0.90
Std. Dev.			1	0.01	1.7	11.6	0.6	0.73	0.77	0.5	0.03
Maximum			30	0.32	91.9	58.5	17.2	3.00	3.00	25.3	0.96
@ Blow#			10	18	18	2	1	2	2	10	9

Total number of blows analyzed: 20

BL# Sensors

1-20 F3: [264 AWJ-1] 213.2 (1.00); F4: [264 AWJ-2] 212.8 (1.00); A3: [K4089] 345.0 (1.00);
A4: [K4451] 370.0 (1.00)

Time Summary

Drive 20 seconds 2:37 PM - 2:37 PM BN 1 - 20

Applied Foundation Testing, Inc.

215006NC
PDA OP: AFT

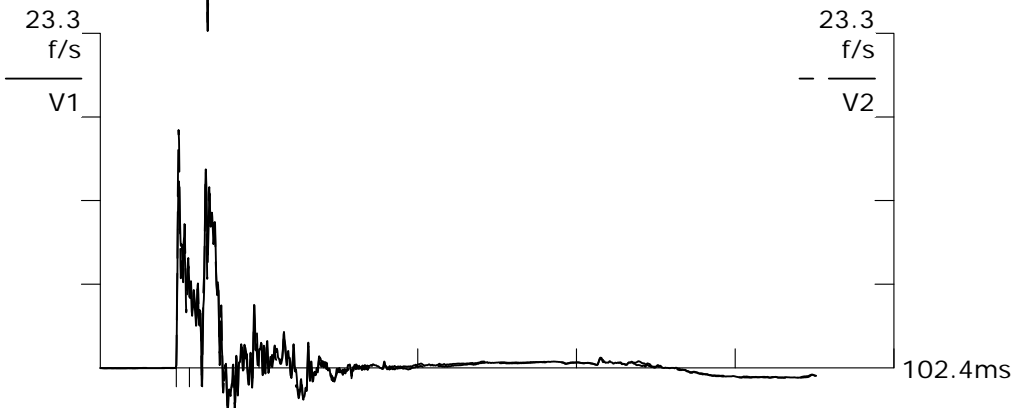
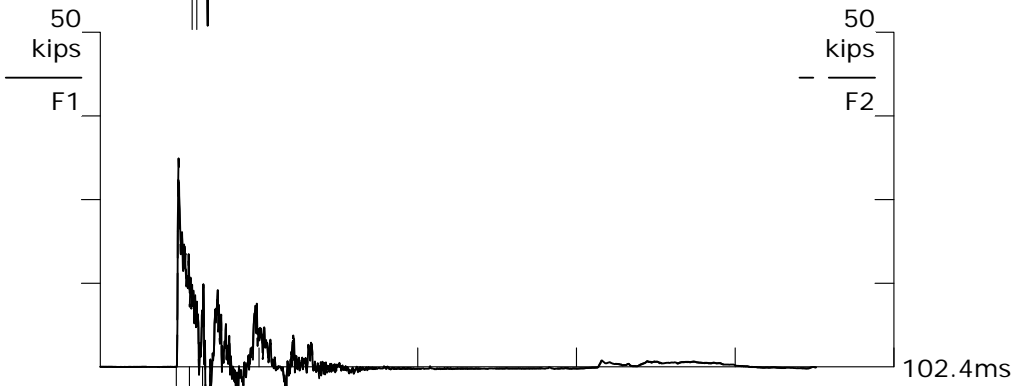
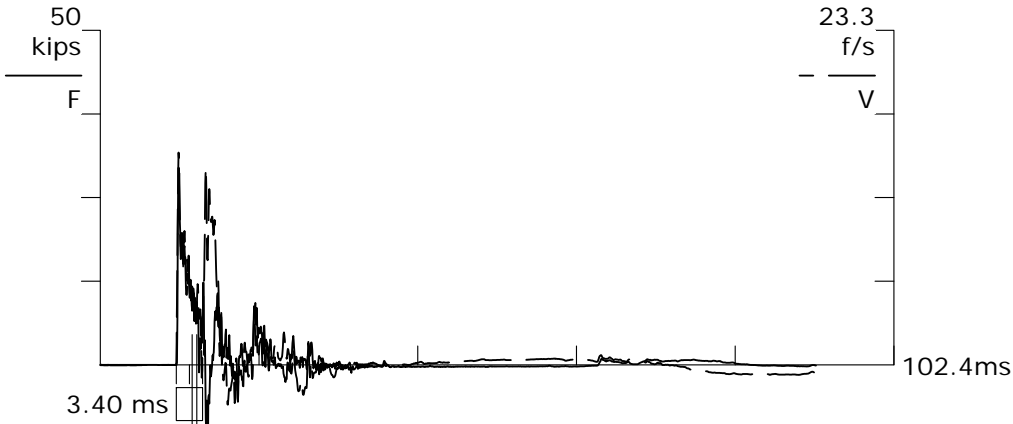
PILE DRIVING ANALYZER ®
Version 2014.118
379935 INC1
AWJ SPT ROD

BN 14
2/3/2015 2:37:42 PM
FMX 29 kips
EFV 0.31 k-ft
ETR 89.7 (%)
BPM 54.5 bpm
VMX 14.8 f/s
DMX 0.58 in
DFN 0.46 in
CSX 24.6 ksi
FVP 0.93 []

LE 28.50 ft
AR 1.20 in²
EM 30000 ksi
SP 0.492 k/ft³
WS 16807.9 f/s
EA/C 2.1 ksec/ft
LP 25.57 ft

F34 A34

F3: [264 AWJ-1] 213.23 (1)
F4: [264 AWJ-2] 212.8 (1)
A3: [K4089] 345 mv/5000g's (1)
A4: [K4451] 370 mv/5000g's (1)



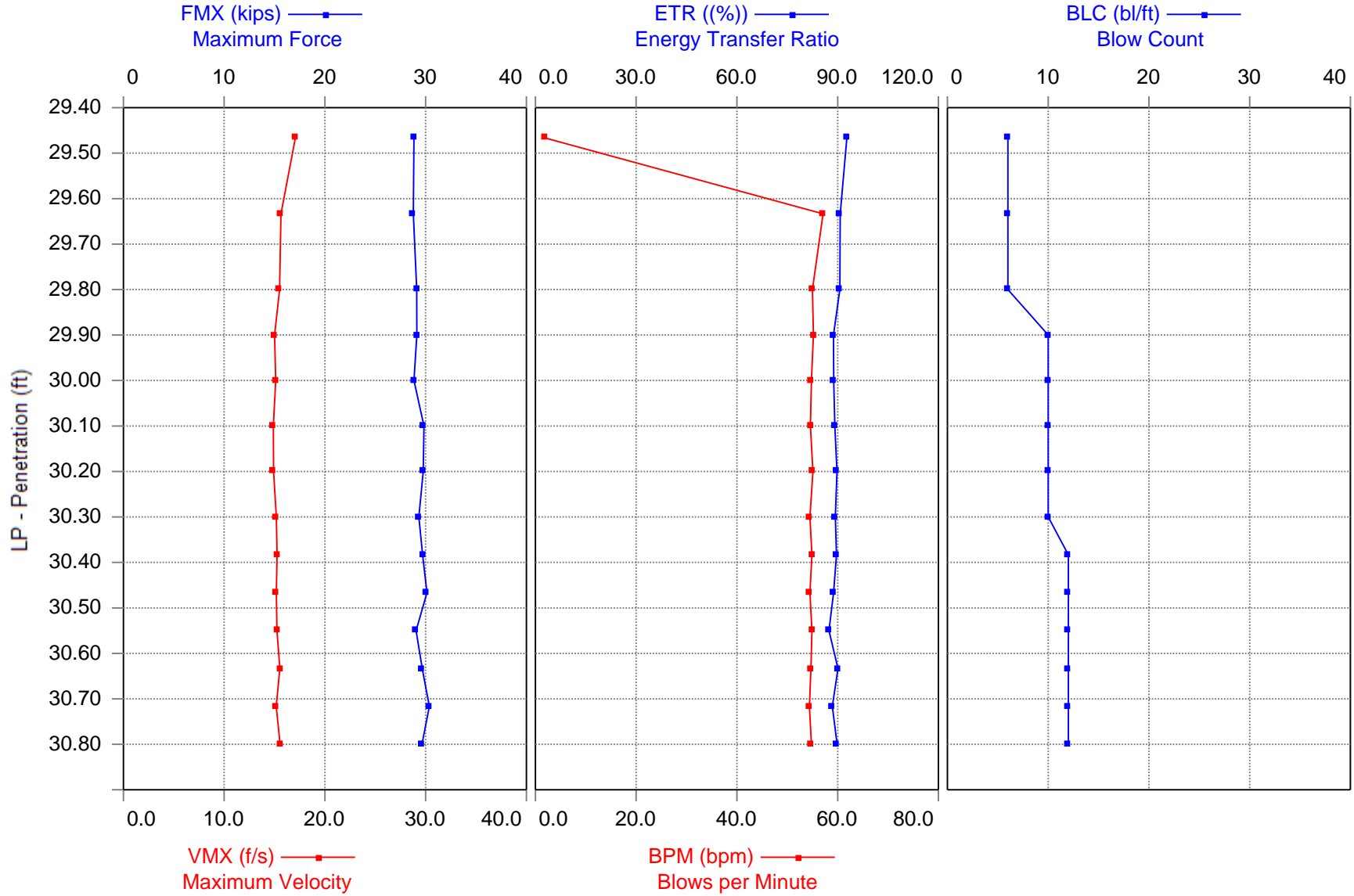
Appendix C

**Increment 2 PDILOT Data and Representative
Blow Data**

**NCDOT
SPT Calibration
CME Rig, Model 55
Serial No. 379935**



215006NC - 379935 INC2



215006NC - 379935 INC2

AWJ SPT ROD

OP: AFT

Date: 03-February-2015

AR: 1.20 in²

SP: 0.492 k/ft³

LE: 33.50 ft

EM: 30,000 ksi

WS: 16,807.9 f/s

JC: 0.70 []

FMX: Maximum Force

DMX: Maximum Displacement

EFV: Energy of FV

DFN: Final Displacement

ETR: Energy Transfer Ratio

CSX: Max Measured Compr. Stress

BPM: Blows per Minute

FVP: Force/Velocity proportionality

VMX: Maximum Velocity

BL#	depth ft	BLC bl/ft	FMX kips	EFV k-ft	ETR (%)	BPM bpm	VMX f/s	DMX in	DFN in	CSX ksi	FVP []
1	29.47	6	29	0.32	92.7	1.9	17.1	2.18	2.00	24.0	0.87
2	29.63	6	29	0.32	90.8	57.1	15.6	2.00	2.00	24.0	0.86
3	29.80	6	29	0.32	90.7	55.0	15.5	2.00	2.00	24.3	0.89
4	29.90	10	29	0.31	88.7	55.2	15.0	1.38	1.20	24.3	0.84
5	30.00	10	29	0.31	88.8	54.8	15.1	1.31	1.20	24.0	0.88
6	30.10	10	30	0.31	89.2	54.6	14.9	1.29	1.20	24.9	0.86
7	30.20	10	30	0.31	89.8	55.1	14.9	1.30	1.20	24.8	0.85
8	30.30	10	29	0.31	89.3	54.5	15.2	1.25	1.20	24.4	0.86
9	30.38	12	30	0.31	89.7	54.9	15.3	1.22	1.00	24.8	0.85
10	30.47	12	30	0.31	88.8	54.5	15.2	1.15	1.00	25.1	0.88
11	30.55	12	29	0.31	87.4	54.9	15.2	1.08	1.00	24.2	0.89
12	30.63	12	30	0.32	90.1	54.7	15.5	1.15	1.00	24.7	0.90
13	30.72	12	30	0.31	88.4	54.4	15.2	1.07	1.00	25.3	0.93
14	30.80	12	30	0.31	89.8	54.8	15.5	1.02	1.00	24.7	0.89
Average			29	0.31	89.6	51.2	15.4	1.39	1.29	24.5	0.87
Std. Dev.			0	0.00	1.2	13.7	0.5	0.37	0.38	0.4	0.02
Maximum			30	0.32	92.7	57.1	17.1	2.18	2.00	25.3	0.93
@ Blow#			13	1	1	2	1	1	2	13	13

Total number of blows analyzed: 14

BL# Sensors

1-14 F3: [264 AWJ-1] 213.2 (1.00); F4: [264 AWJ-2] 212.8 (1.00); A3: [K4089] 345.0 (1.00);
A4: [K4451] 370.0 (1.00)

Time Summary

Drive 14 seconds 2:49 PM - 2:49 PM BN 1 - 14

Applied Foundation Testing, Inc.

215006NC

PDA OP: AFT

PILE DRIVING ANALYZER ®

Version 2014.118

379935 INC2

AWJ SPT ROD

BN 9

2/3/2015 2:49:25 PM

FMX 30 kips

EFV 0.31 k-ft

ETR 89.7 (%)

BPM 54.9 bpm

VMX 15.3 f/s

DMX 1.22 in

DFN 1.00 in

CSX 24.8 ksi

FVP 0.85 []

LE 33.50 ft

AR 1.20 in²

EM 30000 ksi

SP 0.492 k/ft³

WS 16807.9 f/s

EA/C 2.1 ksec/ft

LP 30.38 ft

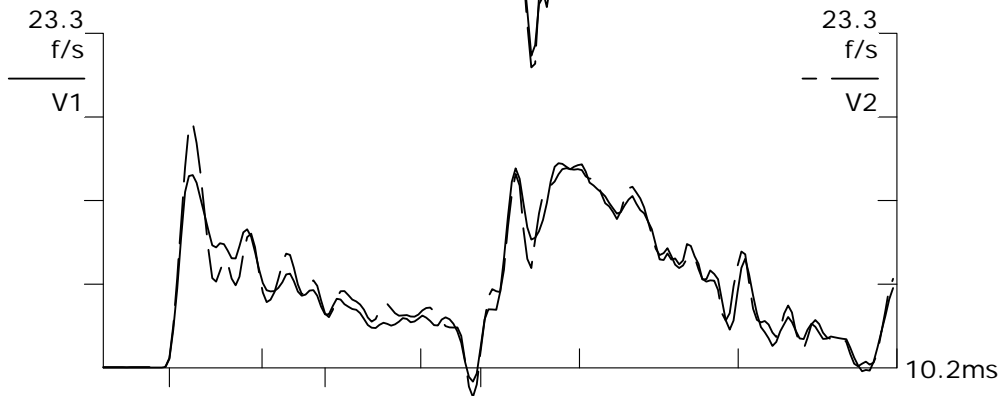
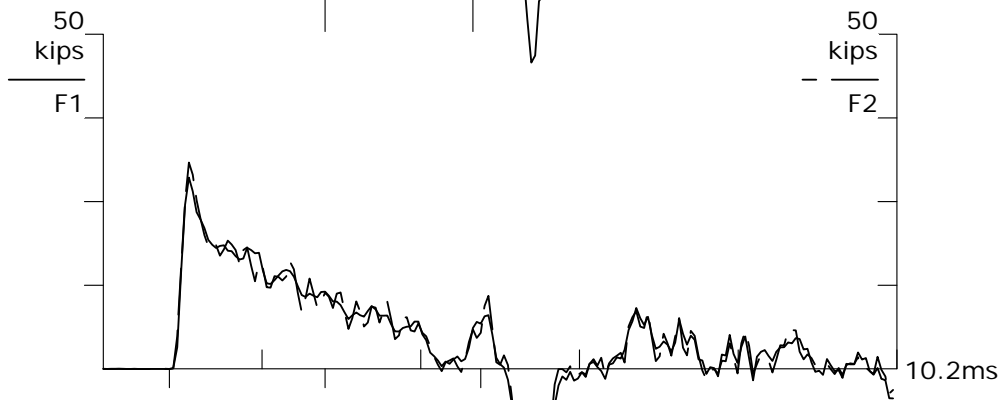
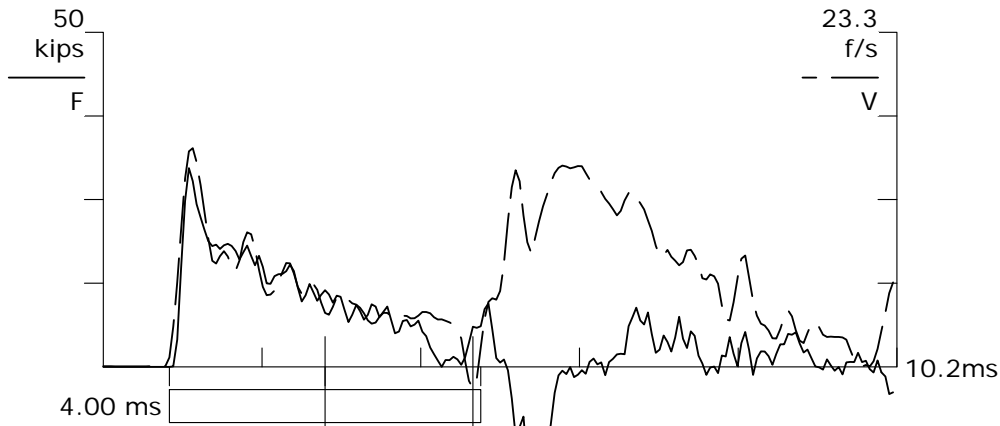
F34 A34

F3: [264 AWJ-1] 213.23 (1)

F4: [264 AWJ-2] 212.8 (1)

A3: [K4089] 345 mv/5000g's (1)

A4: [K4451] 370 mv/5000g's (1)



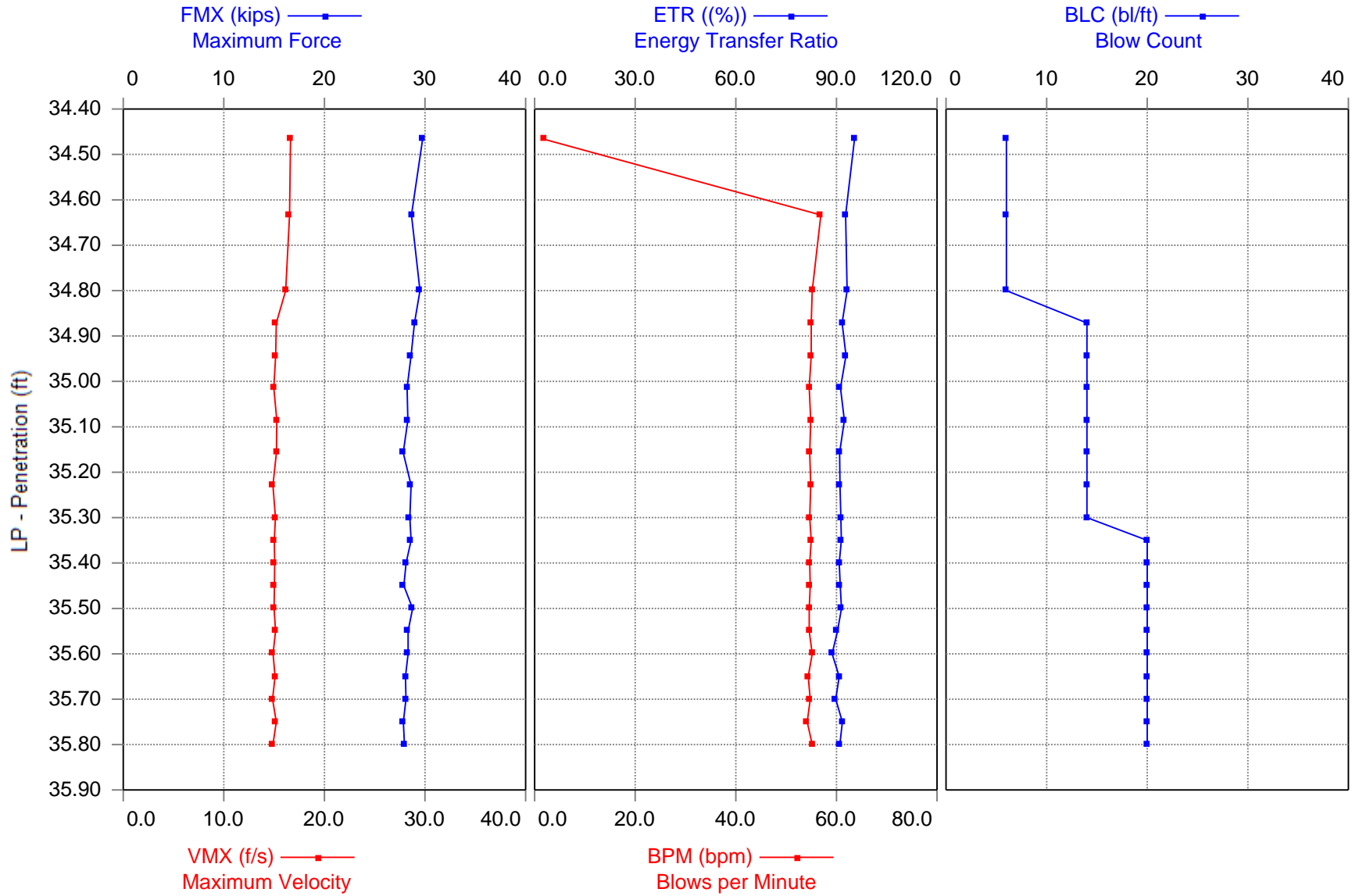
Appendix D

**Increment 3 PDILOT Data and Representative
Blow Data**

**NCDOT
SPT Calibration
CME Rig, Model 55
Serial No. 379935**



215006NC - 379935 INC3



215006NC - 379935 INC3

AWJ SPT ROD

OP: AFT

Date: 03-February-2015

AR: 1.20 in²

SP: 0.492 k/ft³

LE: 38.50 ft

EM: 30,000 ksi

WS: 16,807.9 f/s

JC: 0.70 []

FMX: Maximum Force

DMX: Maximum Displacement

EFV: Energy of FV

DFN: Final Displacement

ETR: Energy Transfer Ratio

CSX: Max Measured Compr. Stress

BPM: Blows per Minute

FVP: Force/Velocity proportionality

VMX: Maximum Velocity

BL#	depth ft	BLC bl/ft	FMX kips	EFV k-ft	ETR (%)	BPM bpm	VMX f/s	DMX in	DFN in	CSX ksi	FVP []
1	34.47	6	30	0.33	95.4	1.9	16.6	2.29	2.00	24.8	0.90
2	34.63	6	29	0.32	92.7	56.9	16.5	2.03	2.00	23.9	0.89
3	34.80	6	29	0.33	93.2	55.2	16.2	2.00	2.00	24.6	0.86
4	34.87	14	29	0.32	91.7	55.0	15.2	1.01	0.86	24.1	0.89
5	34.94	14	29	0.32	92.9	55.0	15.2	0.93	0.86	23.8	0.83
6	35.01	14	28	0.32	91.2	54.6	15.0	0.94	0.86	23.5	0.88
7	35.09	14	28	0.32	92.3	54.9	15.3	0.99	0.86	23.6	0.87
8	35.16	14	28	0.32	90.9	54.7	15.2	0.98	0.86	23.2	0.85
9	35.23	14	29	0.32	91.1	54.9	14.9	1.01	0.86	23.8	0.89
10	35.30	14	28	0.32	91.3	54.7	15.1	0.99	0.86	23.7	0.84
11	35.35	20	29	0.32	91.5	55.0	15.0	0.93	0.60	23.8	0.89
12	35.40	20	28	0.32	90.8	54.7	15.1	0.88	0.60	23.4	0.87
13	35.45	20	28	0.32	91.2	54.8	15.0	0.83	0.60	23.2	0.87
14	35.50	20	29	0.32	91.5	54.6	15.0	0.86	0.60	24.0	0.85
15	35.55	20	28	0.32	90.3	54.6	15.1	0.74	0.60	23.6	0.85
16	35.60	20	28	0.31	88.7	55.2	14.9	0.71	0.60	23.6	0.82
17	35.65	20	28	0.32	90.8	54.4	15.1	0.71	0.60	23.4	0.80
18	35.70	20	28	0.31	89.8	54.8	14.9	0.71	0.60	23.4	0.88
19	35.75	20	28	0.32	91.8	54.2	15.2	0.66	0.60	23.2	0.86
20	35.80	20	28	0.32	91.0	55.2	14.9	0.71	0.60	23.3	0.83
Average			28	0.32	91.5	52.3	15.3	1.05	0.90	23.7	0.86
Std. Dev.			1	0.00	1.3	11.6	0.5	0.46	0.48	0.4	0.03
Maximum			30	0.33	95.4	56.9	16.6	2.29	2.00	24.8	0.90
@ Blow#			1	1	1	2	1	1	3	1	1

Total number of blows analyzed: 20

BL# Sensors

1-20 F3: [264 AWJ-1] 213.2 (1.00); F4: [264 AWJ-2] 212.8 (1.00); A3: [K4089] 345.0 (1.00);
A4: [K4451] 370.0 (1.00)

Time Summary

Drive 20 seconds 2:59 PM - 2:59 PM BN 1 - 20

Applied Foundation Testing, Inc.

215006NC
PDA OP: AFT

PILE DRIVING ANALYZER ®

Version 2014.118

379935 INC3

AWJ SPT ROD

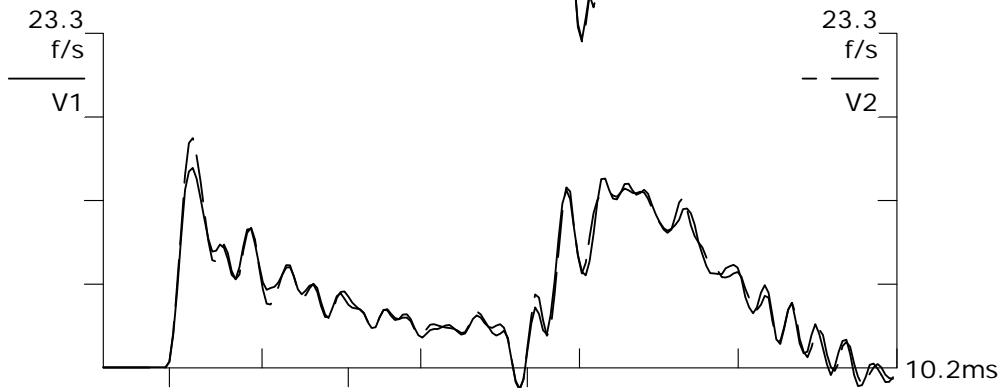
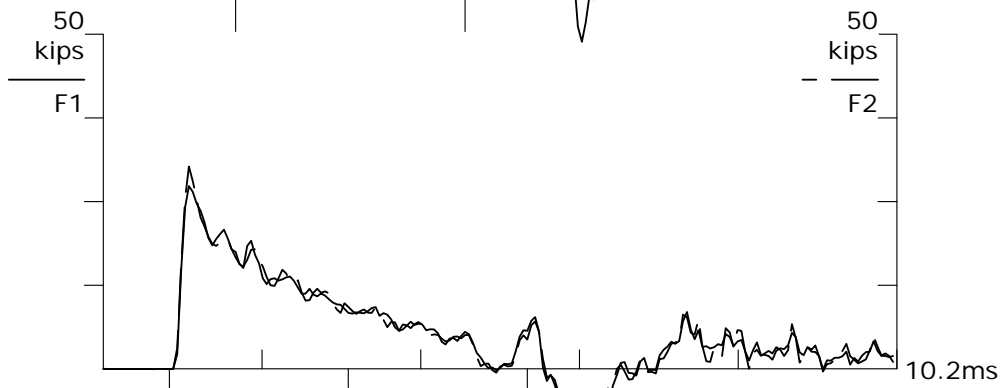
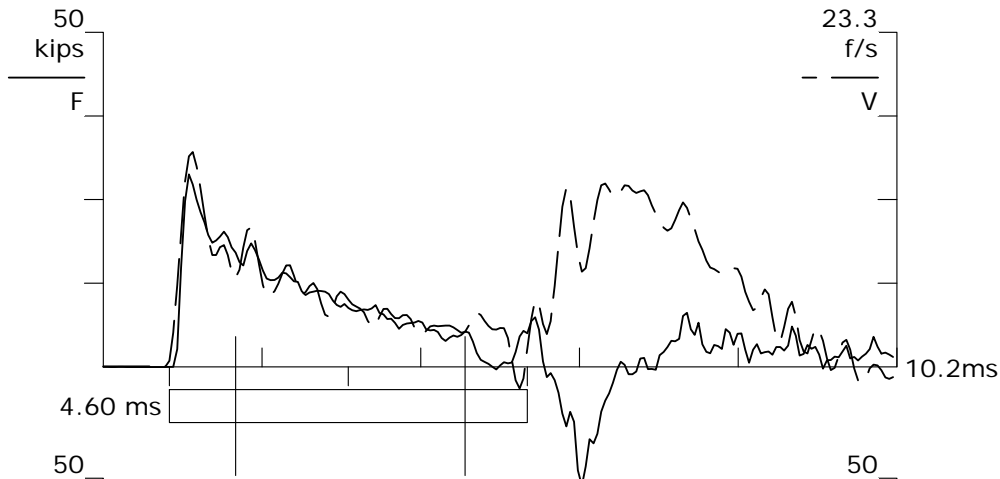
BN 14
2/3/2015 2:59:18 PM

FMX 29 kips
EFV 0.32 k-ft
ETR 91.5 (%)
BPM 54.6 bpm
VMX 15.0 f/s
DMX 0.86 in
DFN 0.60 in
CSX 24.0 ksi
FVP 0.85 []

LE 38.50 ft
AR 1.20 in²
EM 30000 ksi
SP 0.492 k/ft³
WS 16807.9 f/s
EA/C 2.1 ksec/ft
LP 35.50 ft

F34 A34

F3: [264 AWJ-1] 213.23 (1)
F4: [264 AWJ-2] 212.8 (1)
A3: [K4089] 345 mv/5000g's (1)
A4: [K4451] 370 mv/5000g's (1)



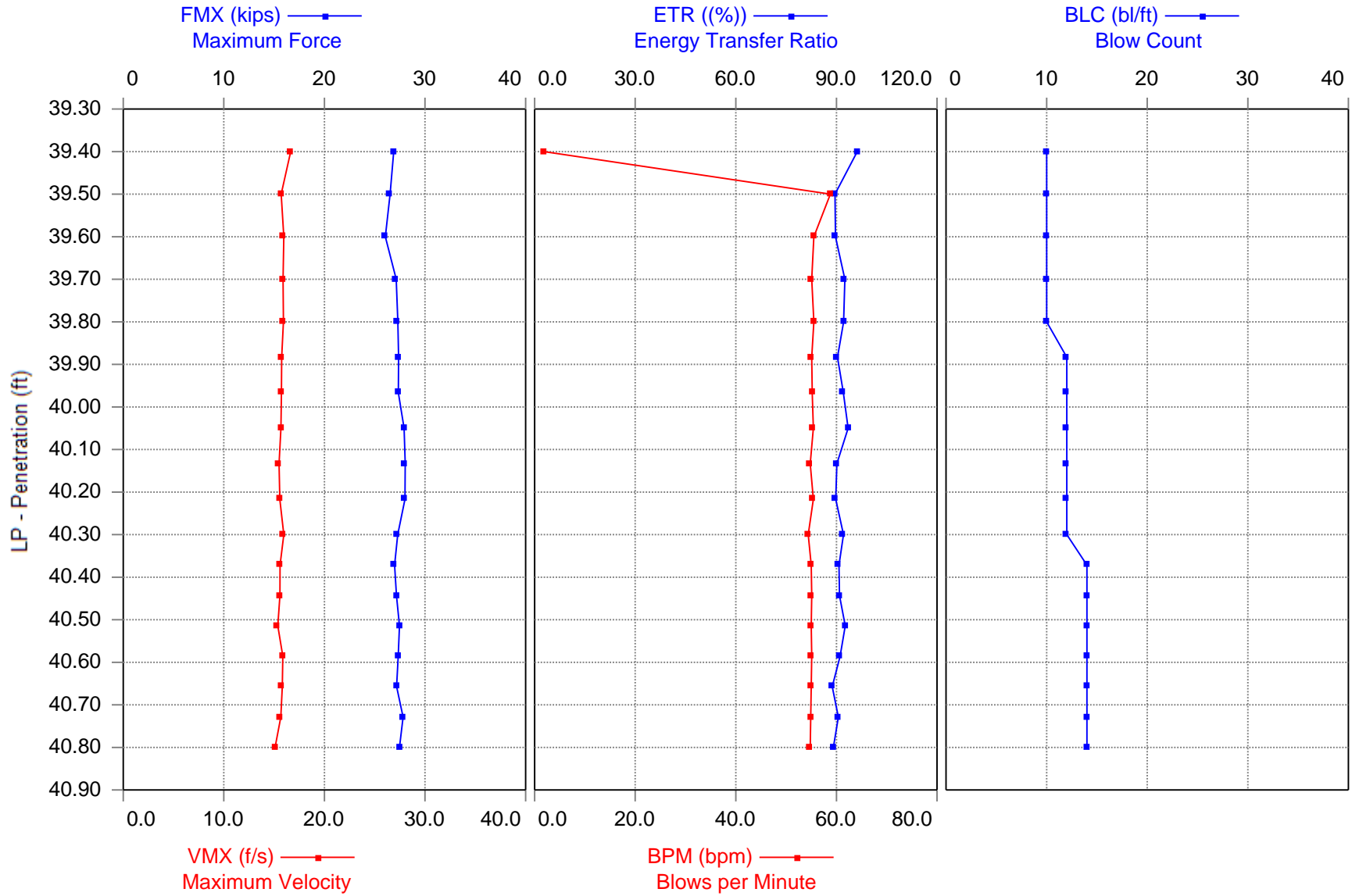
Appendix E

**Increment 4 PDILOT Data and Representative
Blow Data**

**NCDOT
SPT Calibration
CME Rig, Model 55
Serial No. 379935**



215006NC - 379935 INC4



215006NC - 379935 INC4

AWJ SPT ROD

OP: AFT

Date: 03-February-2015

AR: 1.20 in²

SP: 0.492 k/ft³

LE: 44.50 ft

EM: 30,000 ksi

WS: 16,807.9 f/s

JC: 0.70 \square

FMX: Maximum Force

DMX: Maximum Displacement

EFV: Energy of FV

DFN: Final Displacement

ETR: Energy Transfer Ratio

CSX: Max Measured Compr. Stress

BPM: Blows per Minute

FVP: Force/Velocity proportionality

VMX: Maximum Velocity

BL#	depth ft	BLC bl/ft	FMX kips	EFV k-ft	ETR (%)	BPM bpm	VMX f/s	DMX in	DFN in	CSX ksi	FVP \square
1	39.40	10	27	0.34	96.2	1.9	16.7	1.27	1.20	22.4	0.75
2	39.50	10	27	0.31	89.6	58.8	15.7	1.31	1.20	22.1	0.79
3	39.60	10	26	0.31	89.7	55.5	16.0	1.32	1.20	21.7	0.75
4	39.70	10	27	0.32	92.5	55.1	15.9	1.29	1.20	22.6	0.80
5	39.80	10	27	0.32	92.1	55.5	15.9	1.20	1.20	22.8	0.80
6	39.88	12	27	0.32	90.3	55.1	15.8	1.02	1.00	22.8	0.78
7	39.97	12	27	0.32	92.1	55.2	15.7	1.07	1.00	22.8	0.81
8	40.05	12	28	0.33	93.5	55.4	15.7	1.06	1.00	23.3	0.80
9	40.13	12	28	0.32	90.1	54.8	15.5	1.01	1.00	23.4	0.84
10	40.22	12	28	0.31	89.8	55.4	15.6	1.01	1.00	23.3	0.84
11	40.30	12	27	0.32	92.1	54.4	16.0	1.04	1.00	22.7	0.80
12	40.37	14	27	0.32	90.7	55.0	15.6	1.00	0.86	22.5	0.81
13	40.44	14	27	0.32	90.9	55.1	15.6	0.98	0.86	22.6	0.81
14	40.51	14	27	0.32	92.6	55.0	15.4	1.01	0.86	22.9	0.83
15	40.59	14	27	0.32	91.1	55.1	15.9	0.93	0.86	22.8	0.80
16	40.66	14	27	0.31	88.8	55.0	15.8	0.86	0.86	22.6	0.80
17	40.73	14	28	0.32	90.6	54.9	15.7	0.96	0.86	23.2	0.83
18	40.80	14	27	0.31	89.1	54.8	15.1	0.90	0.86	22.9	0.84

Average			27	0.32	91.2	52.3	15.7	1.07	1.00	22.7	0.81
Std. Dev.			0	0.01	1.8	12.3	0.3	0.14	0.14	0.4	0.03
Maximum			28	0.34	96.2	58.8	16.7	1.32	1.20	23.4	0.84
@ Blow#			9	1	1	2	1	3	5	9	18

Total number of blows analyzed: 18

BL# Sensors

1-18 F3: [264 AWJ-1] 213.2 (1.00); F4: [264 AWJ-2] 212.8 (1.00); A3: [K4089] 345.0 (1.00);
A4: [K4451] 370.0 (1.00)

Time Summary

Drive 18 seconds 3:30 PM - 3:30 PM BN 1 - 18

Applied Foundation Testing, Inc.

215006NC

PDA OP: AFT

PILE DRIVING ANALYZER ®

Version 2014.118

379935 INC4

AWJ SPT ROD

BN 11

2/3/2015 3:30:40 PM

FMX 27 kips

EFV 0.32 k-ft

ETR 92.1 (%)

BPM 54.4 bpm

VMX 16.0 f/s

DMX 1.04 in

DFN 1.00 in

CSX 22.7 ksi

FVP 0.80 []

LE 44.50 ft

AR 1.20 in²

EM 30000 ksi

SP 0.492 k/ft³

WS 16807.9 f/s

EA/C 2.1 ksec/ft

LP 40.30 ft

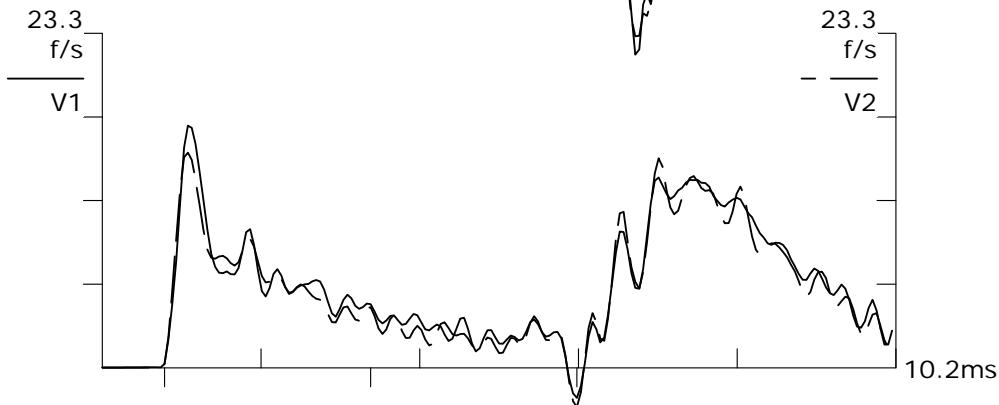
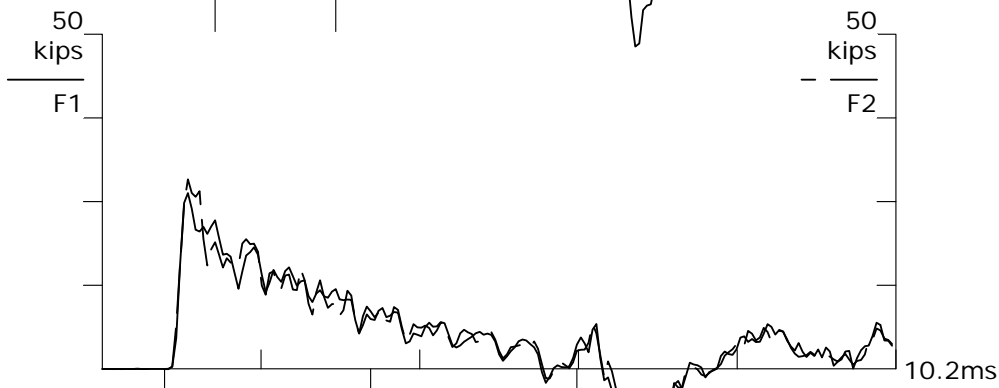
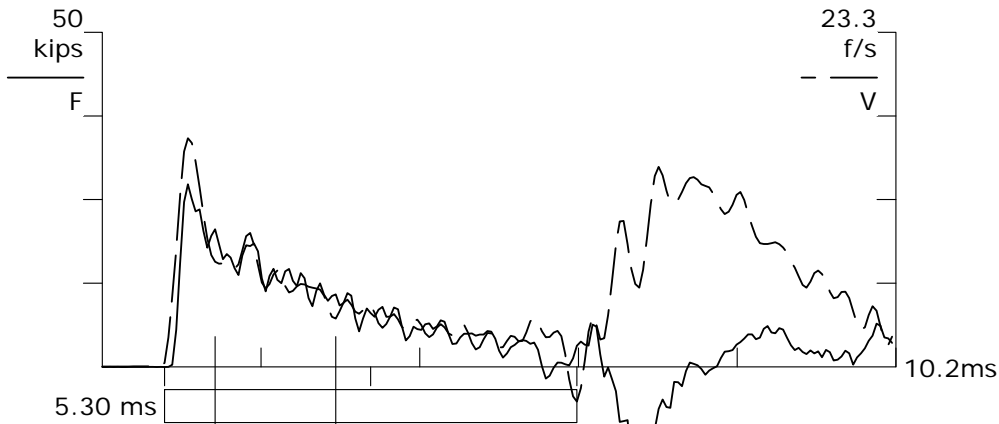
F34 A34

F3: [264 AWJ-1] 213.23 (1)

F4: [264 AWJ-2] 212.8 (1)

A3: [K4089] 345 mv/5000g's (1)

A4: [K4451] 370 mv/5000g's (1)



Appendix F

Gage Calibration Sheets

**NCDOT
SPT Calibration
CME Rig, Model 55
Serial No. 379935**

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

Calibration Factors	264AWJ		
Bridge 1 ($\mu\text{E/V}$)	213.23	Bridge 2 ($\mu\text{E/V}$)	212.80
EA Factor (Kips)	35851.07	Area (in^2)	1.20

Calibrated by: _____



Calibrated Date: 1/29/2014

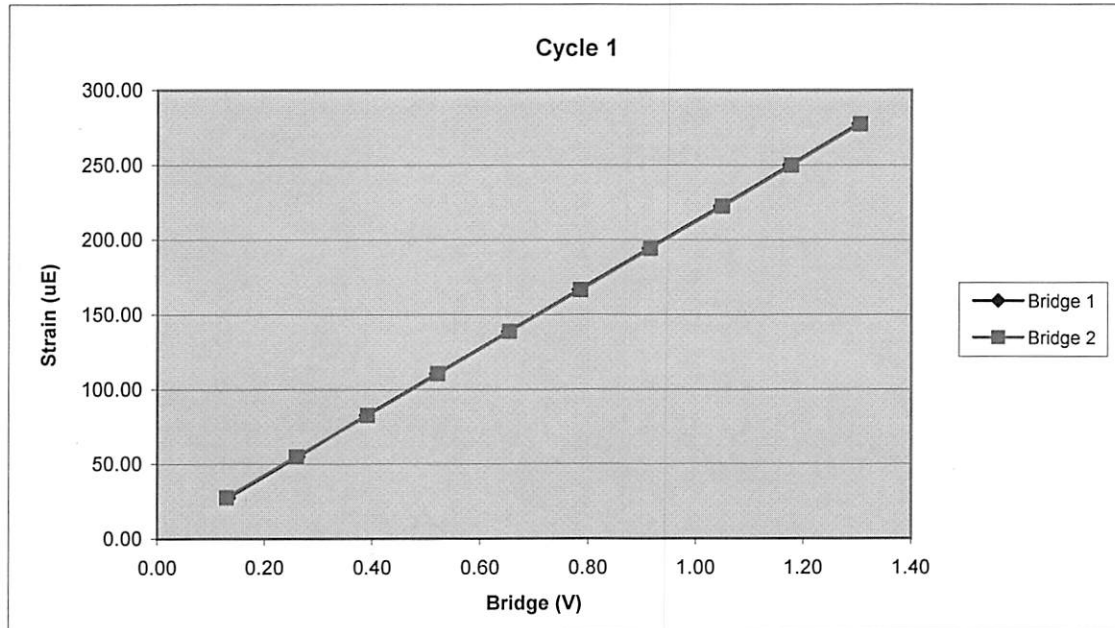
Pile Dynamics Inc
30725 Aurora Rd
Solon, OH 44139

Traceable to N.I.S.T.

264AWJ		Cycle 1		
Sample	Force (lb)	Strain (μE)	Bridge 1 (V)	Bridge 2 (V)
1	0.00	0.00	0.00	0.00
2	990.12	27.46	0.13	0.13
3	1985.36	54.93	0.26	0.26
4	2976.47	82.47	0.39	0.39
5	3983.32	110.30	0.52	0.52
6	4988.79	138.63	0.65	0.65
7	5980.88	166.38	0.78	0.79
8	6980.45	194.34	0.91	0.92
9	7994.19	222.31	1.05	1.05
10	8992.97	249.96	1.17	1.18
11	9975.22	277.43	1.30	1.31

Bridge 1		Bridge 2	
Force Calibration (lb/V)	7666.95	Force Calibration (lb/V)	7635.35
Offset	-16.91	Offset	-3.52
Correlation	0.999996	Correlation	0.999996
Strain Calibration ($\mu\text{E}/\text{V}$)	213.48	Strain Calibration ($\mu\text{E}/\text{V}$)	212.60
Offset	-0.77	Offset	-0.39
Correlation	0.999998	Correlation	0.999996

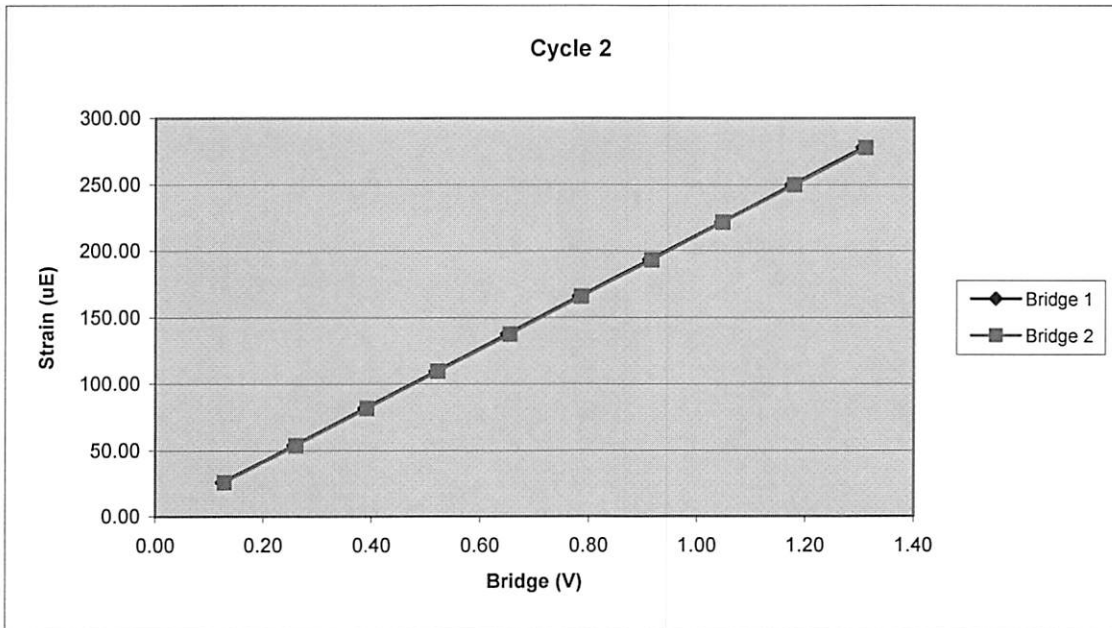
Force Strain Calibration	
EA (Kips)	35914.48
Offset	10.58
Correlation	0.999998



264AWJ		Cycle 2		
Sample	Force (lb)	Strain (μ E)	Bridge 1 (V)	Bridge 2 (V)
1	0.00	0.00	0.00	0.00
2	961.19	25.64	0.12	0.13
3	1965.88	53.68	0.26	0.26
4	2961.51	81.61	0.39	0.39
5	3956.55	109.44	0.52	0.52
6	4956.51	137.43	0.65	0.66
7	5971.04	165.79	0.78	0.79
8	6959.98	193.25	0.91	0.92
9	7960.73	221.44	1.05	1.05
10	8968.96	249.75	1.18	1.18
11	9969.31	277.67	1.31	1.31

Bridge 1		Bridge 2	
Force Calibration (lb/V)	7619.47	Force Calibration (lb/V)	7615.08
Offset	7.38	Offset	-19.40
Correlation	0.999997	Correlation	0.999998
Strain Calibration (μ E/V)	213.18	Strain Calibration (μ E/V)	213.06
Offset	-1.08	Offset	-1.83
Correlation	0.999997	Correlation	0.999998

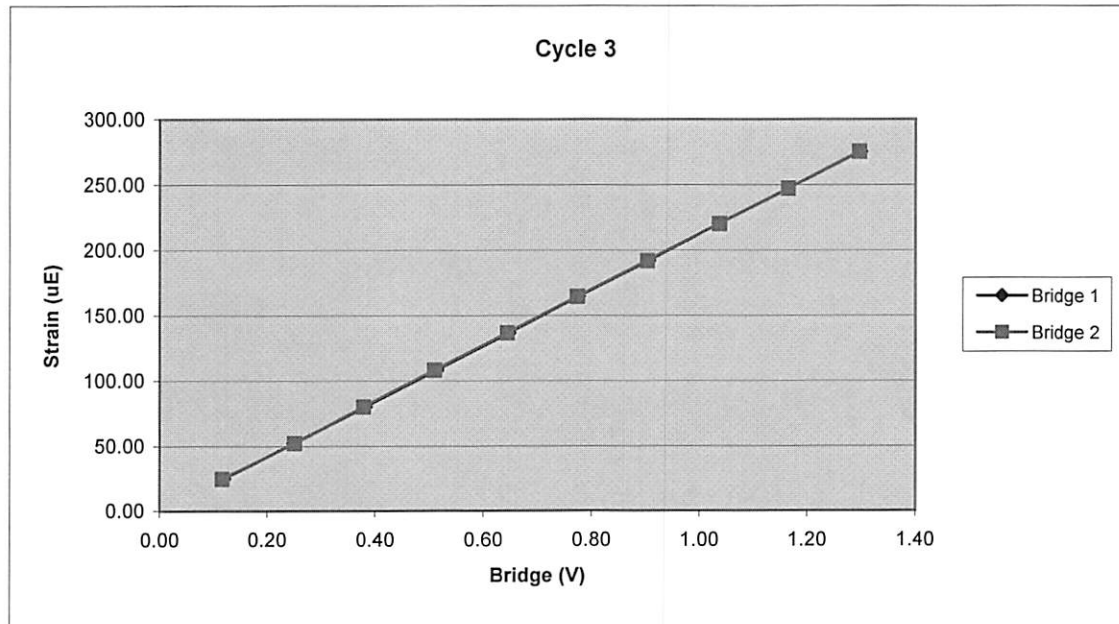
Force Strain Calibration	
EA (Kips)	35741.65
Offset	45.83
Correlation	1.000000



264AWJ		Cycle 3		
Sample	Force (lb)	Strain (μE)	Bridge 1 (V)	Bridge 2 (V)
1	0.00	0.00	0.00	0.00
2	903.72	24.64	0.12	0.12
3	1905.46	52.24	0.25	0.25
4	2902.86	80.15	0.38	0.38
5	3902.23	108.14	0.51	0.51
6	4921.09	136.54	0.65	0.64
7	5902.75	164.12	0.78	0.77
8	6895.62	191.88	0.91	0.90
9	7920.97	220.05	1.04	1.04
10	8898.11	247.12	1.16	1.16
11	9916.76	275.45	1.30	1.30

Bridge 1		Bridge 2	
Force Calibration (lb/V)	7646.84	Force Calibration (lb/V)	7636.79
Offset	-16.23	Offset	2.70
Correlation	0.999993	Correlation	0.999996
Strain Calibration ($\mu\text{E}/\text{V}$)	213.02	Strain Calibration ($\mu\text{E}/\text{V}$)	212.74
Offset	-1.04	Offset	-0.51
Correlation	0.999997	Correlation	0.999996

Force Strain Calibration	
EA (Kips)	35897.09
Offset	21.19
Correlation	0.999997



QBTA: ON [ALT-F1/BB=601

Pile Dynamics, Inc.

TG F2 DPF

File Dynamics 19-Aug-14 04:22	FS — 10	BN 6 SL 113/ 3440/ 99	PJ: PN: HOPBAR	A 4 -- US F 2 3.3
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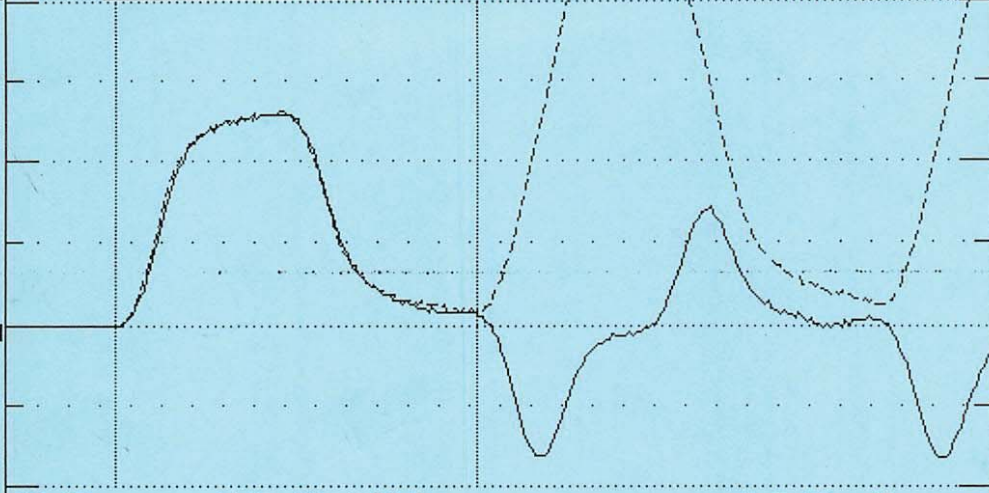
LE 39.6 ft
AR 1.7 in2
EM 30000 Ksi
SP 0.492 K/ft3
WS 16810 ft/s
WC 16862 ft/s

JC 0.40
FM 1.00
UM 1.00

EA/C 30.3 Ks/ft
UN KIPS*0.1
FR 20000 MB 30

DL -43
UT -1
PK 1 TM-PEAK

F1/2 500/ 213
F3/4 213/ 213
A1/2 999/ 999
A3/4 999/ 370



TS 12 E B PD: k4451 LP 0.00 ft
TB 8.0 T1 9.4 2L/C 4.7 UA 1000 UE 1022 LI 1.0

ACCEPT SQ-OFF FL-OFF PR-OFF
VMX= 4.2 FMX= 66 AMX= 129
EMX= 0.3 MEX= 129 FVP= 1.01



contact Pile Dynamics USA
with your questions
tel USA - 216 - 831- 6131
fax USA - 216 - 831- 0916

ACCELEROMETER CALIBRATION N.I.S.T. Traceable
SERIAL NUMBER: K4451
CALIBRATION FACTOR: .074 MV/g
PAK (*5000): _____ DATE: 19AUG14
PDA OPERATOR: [Signature]

<-AT:PIEZORESISTIVE .OP: .Iainc Iver:4.051 AT:PIEZOELECTRIC->

Smart Sensor

Smart Chip Programmed By [Signature] on 19AUG14 CRC Value CBOE

QBTA: ON [ALT-F1/BB=60]

Pile Dynamics, Inc.

TG F2 DPF

File Dynamics 19-Aug-13 08:26	FS — 10	BN 45 SL 123/ 3440/ 99	PJ: PN: HOPBAR	A 4 -- US F 2 3.3
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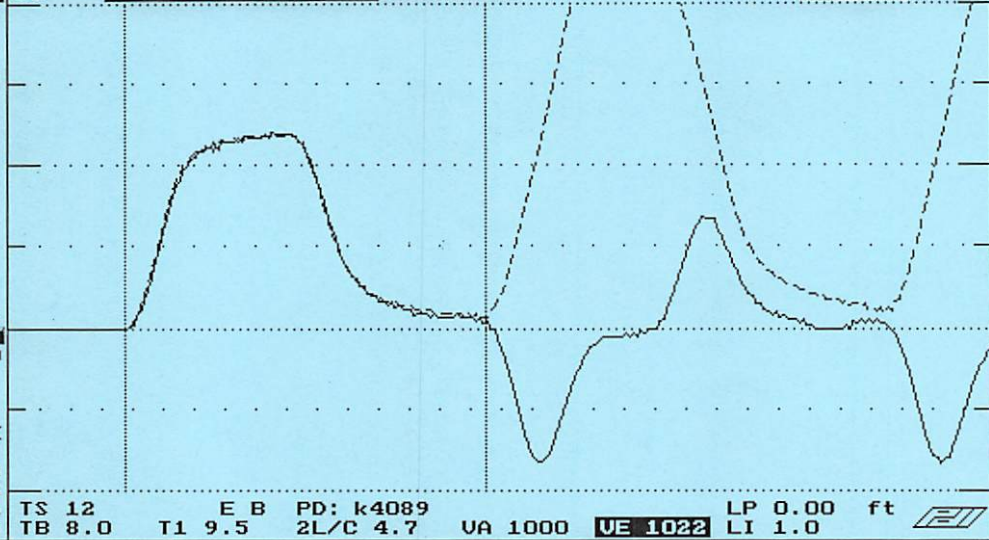
LE 39.6 ft
AR 1.7 in2
EM 30000 Ksi
SP 0.492 K/ft3
WS 16810 ft/s
WC 16862 ft/s

JC 0.40
FM 1.00
VM 1.00

EA/C 30.3 Ks/ft
UN KIPS*0.1
FR 20000 MB 30

DL -33
UT -1
PK 1 TM-PEAK

F1/2 500/ 213
F3/4 213/ 213
A1/2 999/ 999
A3/4 999/ 345



TS 12 E B PD: k4089 LP 0.00 ft
TB 8.0 T1 9.5 2L/C 4.7 VA 1000 UE 1022 LI 1.0

UMX= 3.9 FMX= 60 AMX= 129
EMX= 0.2 MEX= 117 FVP= 1.00

ACCEPT SQ-OFF FL-OFF PR-OFF

contact Pile Dynamics USA
with your questions
tel USA - 216 - 831- 6131
fax USA - 216 - 831- 0916

ACCELEROMETER CALIBRATION N.I.S.T. Traceable
SERIAL NUMBER: K4089 PR
CALIBRATION FACTOR: .069 mv/g
PAK (*5000): 345 DATE: 19-Aug-13
PDA OPERATOR: [Signature]

←-AT-PIEZORESISTIVE OP: dale lver:4.051 AT-PIEZOELECTRIC-→

Smart Sensor

Smart Chip Programmed By DB on 19-Aug-13 CRC Value 3430