# Geotechnical Base Line Report

I-85 Widening Design-Build Preparation: MM96 – MM106

*Cherokee County, South Carolina*

May 25, 2017

May 25, 2017

Mr. Bradley S. Reynolds, P.E., DBIA
Design Build Program Manager
SC Department of Transportation
955 Park Street
Columbia, SC 29201

Dear Mr. Reynolds,

We have completed the Geotechnical Baseline Report (GBLR) for the I-85 Widening Design-Build Phase III project in Cherokee 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

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# 1 Introduction

This Geotechnical Base Line Report (GBLR) provides a characterization of subsurface conditions and preliminary geotechnical information to the design team for the proposed improvements to I-85 from near mile point 96 (1 mile north of SC-18/Exit 96) on the southern terminus to approximately mile point 106 (South Carolina/North Carolina State Line) on the northern terminus in Cherokee County, South Carolina.

The geotechnical data presented herein includes standard penetration testing, bulk samples, Shelby tube sampling, Multichannel Analysis of Surface Waves (MASW) surveys, and various laboratory testing results. The intent of this report is to provide a general discussion of the geotechnical baseline data collected along the I-85 proposed improvements and summarize preliminary design and construction issues anticipated for the proposed roadway widening and bridge construction to aid the South Carolina Department of Transportation (SCDOT) as part of a future design-build letting process.

## 1.1 Project Description

The SCDOT proposes to widen I-85 from near mile point 96 (North of SC-18) to approximately mile point 106 (South Carolina/North Carolina State Line) on the northern terminus in Cherokee County, South Carolina. The existing I-85 mainline roadway section, along the limits of the project improvements, generally consists of a four-lane (two each direction) divided highway with a 30-foot depressed grassed median and 8-foot outside paved shoulders. The project includes adding a travel lane in each direction along the I-85 mainline alignment, improving various interchanges and exit ramps, and replacing five (5) overpass bridges. The planned replacement overpass bridge structures are located at the following interchanges:

- Exit 100 – S-83 (Blacksburg Highway) over I-85
- Exit 102 – SC 5/SC 198 (North Mountain Street) over I-85
- Exit 104 – S-99 (Tribal Road) over I-85
- Exit 106 – US-29 (East Cherokee Street) over I-85
- Norfolk Southern Railroad over I-85

All bridges except the *Norfolk Southern Railroad* Bridge will be widened. Other highway structures, including culvert extensions and retaining walls are planned. A Site Vicinity Map is included in Appendix A.

# 2 Investigative Procedures

HDR|ICA conducted a preliminary geotechnical subsurface investigation, along the limits of the proposed improvements, between December 2016 to March of 2017. The subsurface investigation consisted of SPT borings, bulk soil sample collection, and Multi-Channel Analysis of Surface Waves (MASW) testing following the *Attachment A – Scope of Services and Schedule I-85 Widening Project MM96 – MM106*, dated July, 2015,

document. Test locations were selected by HDR | ICA in coordination with the SCDOT Design-Build Group and established in the field within current SCDOT Right-of-Way.

A test location plan showing all field testing locations has been included in Appendix A, figures A-2 to A-10. The field testing locations are also provided in tabular form in Appendix A along with other pertinent information. Finally, figures A-11 to A-15 in Appendix A, present generalized subsurface soil profiles for the five bridge sites and figures A-16 to A-18 present generalized subsurface profiles at sections where hard excavated conditions may be anticipated.

The borings and MASWs contributing to the evaluation of soils and bedrock at each structure are shown in Table 2-1 below.

**Table 2-1. Field Testing Location by Structure**

| Structure | Borings | MASWs |
|---|---|---|
| Exit 100 – S-83 (Blacksburg Highway) over I-85 | BR-118, BR-119, BR-120, BS-110 | MASW1 |
| Exit 102 – SC 5/SC 198 (North Mountain Street) over I-85 | BR-121, BR-122, BR-123, BS-112 | MASW2 |
| Exit 104 – S-99 (Tribal Road) over I-85 | BR-124, BR-125, BR-126, BS-114 | MASW3 |
| Exit 106 – US-29 (East Cherokee Street) over I-85 | BR-127, BR-128, BR-129, BS-116, BS-117 | MASW4 |
| Norfolk Southern Railroad over I-85 | BR-155, BR-156 | MASW5 |
| Roadway Structures (Culvert crossings, retaining walls) | C-130, C-131, C-132, C-133, C-134, C-137, C-138, RW-139 to RW-149, RW-154 | - |
| Roadway (I-85 median, critical fill/cut areas) | SB-1 to SB-69, SB-79 to SB-89, NB-2 to NB-70, NB-77 to NB-90, R-91, R-95, R-99, R-104, R-150, R-153, BS-111, BS-113, BS-115 | - |

## 2.1 Drilling and Sampling

A total of one hundred-thirty-two (132) SPT borings were drilled and these included:

1. Eighty-four (84) *I-85 Median borings*: drilled along the southbound and northbound part of the median and labeled SB-1 through SB-89 (in the general north/west direction) and NB-2 through NB-90 (in the general south/east direction), respectively. The borings where staggered between the SB and NB lanes and were drilled approximately every 500 feet, on the average, using traffic control. Nineteen (19) bulk samples were collected.
2. Six (6) *Roadway borings*: drilled at critical roadway cut or fill locations and labeled R-91, R-95, R-99, R-104, R-150, and R-153. No Shelby tubes or bulk samples were collected.
3. Eight (8) Bulk Sample borings: drilled for the purpose of collecting bulk samples from the interchange improvement areas and labeled BS-110 through BS-117. Within the interchange improvement areas, except from BS-111 and BS-113 that were drilled on frontage roads, the remaining bulk sample borings encountered

the existing fill at each replacement bridge structure location excluding the Norfolk Southern Railroad Bridge.

4. Fourteen (14) *Bridge borings:* drilled at the bridge replacement over I-85 sites and labeled BR-118 through BR-129, BR-155 and BR-156. For all except the Norfolk Southern Railroad bridge site, one boring at each proposed end bent and interior bent was drilled. Traffic control was required to drill the interior bent borings. At the Norfolk Southern Railroad bridge site, one boring in the vicinity of each end bent location was drilled while staying outside the Railroad right-of-way limits. Six (6) Shelby tubes and one (1) bulk sample were collected.
5. Seven (7) *Roadway Culvert borings:* drilled at I-85 culvert crossings and labeled C-130 through C-134, C-137, and C-138. Two (2) bulk samples were collected.
6. Thirteen (13) Retaining Wall borings: drilled at potential locations for retaining walls along I-85 mainline (RW-139 through RW-149) or along frontage roads (RW-154) to minimize right-of-way impacts. No Shelby tubes or bulk samples were collected.

A number of other borings were originally planned within the project limits but were not drilled due to being off current SCDOT Right-of-Way or due to requiring access via private property.

The boring logs from the subsurface investigation are included in Appendix B. The borings were advanced by a CME 55 and a CME 550 drill rigs using rotary wash, driven casing, 2¼" and 3¼" hollow-stem auger techniques. 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. Termination (soil) depths for the borings ranged from 4.9 feet to 100.4 feet below the ground surface. Blow counts recorded at these intervals were produced from SPT hammers with energy ratios of 91.5% for the CME 55 and 81.1% for the CME 550. The hammer energy ratio is identified on each boring log and the SPT hammer energy reports are included in Appendix D.

Auger refusal was encountered in fifteen (15) borings at depths ranging between 41 feet and 81.2 feet. Advancement of all, except BR-123, bridge borings below auger refusal was accomplished with NQ rock coring techniques. These were terminated at depths ranging between 62.5 feet to 105.9 feet. The rock core samples were evaluated in the field and the percentage of core recovery (REC) and Rock Quality Designation (RQD) were recorded.

Recovered SPT, Shelby tubes, bulk samples and rock cores were sent to the HDR|ICA lab.

## 2.2 MASW Survey

Shear wave velocity ($V_s$) measurements were obtained near one end bent at each of the five (5) bridges. The geophysical technique that was used consisted of Multi-channel Analysis of Surface Waves (MASW). This 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. A total of five (5) shear wave velocity surveys, MASW1 through MASW5, were obtained by Pyramid Geophysics. The result of the each survey was an average shear wave velocity ($V_s$) in the top 100 feet that varied

from 1,261 feet per second (fps) to 1,504 feet per second (fps) among the five sites. The MASW profiles from the subsurface investigation are included in Appendix B. It must be noted that at all five sites, actual imaging depth was limited to less than 100 feet and the last interpreted $V_s$ value was extended to 100 feet to represent the remaining portion of the profile.

# 3 Laboratory Testing Program

Laboratory testing was performed on representative samples selected by HDR|ICA engineers to obtain index and engineering properties. Geotechnical index property testing included natural moisture content, Atterberg limits, and sieve analysis. Engineering property tests included consolidation, consolidated-undrained (CU) triaxial, rock unconfined compression, Standard Proctor, California Bearing Ratio, and corrosion series testing.

Laboratory testing was performed in general accordance with ASTM or AASHTO test procedures. Representative soil samples were classified in accordance with the AASHTO and Unified Soil Classification System (USCS). Table 3-1 summarizes the testing performed and quantity of each test and Table 3-2 sorts the testing by structure.

**Table 3-1. Laboratory Testing Summary**

| Test Type | Quantity |
|---|---|
| Natural Moisture Content | 268 |
| Atterberg Limits | 287 |
| Sieve Analysis with #200 Wash | 287 |
| Consolidation | 1 |
| Consolidated Undrained Triaxial – CU | 4 |
| Unconfined Compression of Rock | 26 |
| Corrosion Series | 5 |
| Standard Proctor | 30 |
| California Bearing Ratio | 20 |

**Table 3-2. Laboratory Testing by Structure**

| Structure | Index Property Tests | Engineering Property Tests | | |
|---|---|---|---|---|
| | | Strength / Deformation[a] | Compaction[b] | Corrosion[b] |
| Exit 100 – S-83 (Blacksburg Highway) over I-85 | moisture content, Atterberg, sieve analysis | CU Triaxial, Rock Unconfined | Standard Proctor | Corrosion Series |
| Exit 102 – SC 5/SC 198 (N. Mountain Street) over I-85 | moisture content, Atterberg, sieve analysis | CU Triaxial, Rock Unconfined | Standard Proctor | Corrosion Series |

**Table 3-2. Laboratory Testing by Structure**

| Structure | Index Property Tests | Engineering Property Tests | | |
|---|---|---|---|---|
| | | Strength / Deformation[a] | Compaction[b] | Corrosion[b] |
| Exit 104 – S-99 (Tribal Road) over I-85 | moisture content, Atterberg, sieve analysis | CU Triaxial, Rock Unconfined, Consolidation | Standard Proctor | Corrosion Series |
| Exit 106 – US-29 (E. Cherokee Street) over I-85 | moisture content, Atterberg, sieve analysis | Rock Unconfined, CBR | Standard Proctor | Corrosion Series |
| Norfolk Southern Railroad over I-85 | moisture content, Atterberg, sieve analysis | Rock Unconfined, CBR | Standard Proctor | Corrosion Series |
| Roadway Structures (Culvert crossings, retaining walls) | moisture content, Atterberg, sieve analysis | CU Triaxial, CBR | Standard Proctor | - |
| Roadway (I-85 median, critical fill/cut areas) | moisture content, Atterberg, sieve analysis | CBR | Standard Proctor | - |

[a] CU Triaxial tests were performed on Shelby tube samples; CBR tests were performed or bulk samples.
[b] Performed on bulk samples

The physical and engineering property test results performed on the SPT, Shelby tubes, and bulk samples are shown on the Summary of Laboratory Test Results, along with the individual test data sheets in Appendix C. Unconfined compression tests performed on intact rock cores are tabulated in Appendix C along with the individual Unconfined compression strength test result sheets and photographs of the rock core samples. Rock mass characterization, including Rock Mass Rating (RMR) and Geological Strength Index (GSI), are also tabulated in Appendix C by boring location.

# 4 Site Conditions

## 4.1 Regional Geology

The proposed project is located within the Piedmont Physiographic Province as defined in South Carolina. Published mapping suggests the proposed project alignment lies along and parallels the boundary between the Inner Piedmont and Kings Mountain Litho-tectonic Belts defined by the Kings Mountain Shear Zone. Published mapping indicates Inner Piedmont rock as predominately mica schist and biotite gneiss while Kings Mountain rock is dominantly sericite schist and/or phyllite of the Blacksburg Formation. Additionally intrusive plutonic rock of the Cherryville granite and diabase dikes may also be present. Strata units are steeply dipping to vertical and intensely folded along the shear zone. These strata are considered Proterozoic to Late Proterozoic while intrusive plutons are considered Mississippian and diabase dikes are considered Jurassic and Triassic.

Published documents suggest residual surface soils (up to 5'-6.5' below surface) composed of silty to sandy clay, and alluvial soils composed of silty to clayey sands with layers of clay also present and overlying the plutonic and metamorphosed rock. Residual soils and/or completely to partially weathered rock (PWR) are anticipated to range in

thickness from 4 feet to in excess of 80 feet, prior to the interception of competent bedrock. Alluvium is anticipated to reach 20± feet in thickness at the Broad River crossing. The interception of cobble size rock fragments within the residual soils, and gravel within the alluvial deposits, is possible. Minor, relatively thin, accumulations of alluvium, composed of sandy silts and/or sandy clays, are anticipated where alignments cross tributaries to Broad River and Buffalo Creek.

## 4.2 General

The subject roadway alignment is located within the perimeter limits of the Blacksburg South, SC, Blacksburg North, SC-NC and Grover, NC-SC 7.5 minute topographic quadrangle maps beginning approximately 3.4 miles west of Blacksburg, SC and ending at the South Carolina - North Carolina state line. Roadway alignment and associated structure sites, such as bridges, culverts, and retaining walls, are situated on terrain varying from the gently sloping to flat Buffalo Creek valley, to steeper slopes leading into hilly terrain to a relatively wide, northeast-southwest trending, topographic terrace. Elevations ascend gradually from 590± feet at the Broad River-Buffalo Creek confluence and along the Buffalo Creek valley to just west of the North Mountain Street/SC 198 interchange at 700± feet (approximate I-85 Station 2000+00). Then the alignment passes through a hilly section, elevation range 780± feet to 850± feet, to just west of the Tribal Road interchange (approximate I-85 Station 2140+00). The topographic terrace at elevations 840 feet to 860 feet extends from just west of the Tribal Road interchange to approximately I-85 Station 2197+00 with the remainder of the alignment traversing hilly terrain with elevations of 800 feet to 860 feet. The alignment parallels a series of northeast-southwest trending ridges, including Whitaker Mountain at 1160± feet, some of which have been quarried.

## 4.3 Groundwater Conditions

Groundwater conditions at each proposed bridge site are discussed in Section 4.5 of this report with the related strata descriptions. Additionally, seven (7) groundwater measurements were recorded immediately after drilling operations were completed within borings R-91, R-95, R-99, R-104, RW-143, RW-143A and R-150. Measured levels below existing grade varied from 9.3 feet to 60.7 feet equating to elevations ranging from 796.7 to 573.4 (MSL). Two (2) static (24 hour) groundwater levels were recorded within R-91 and R-104 with measurements of 62.2 feet and 20.7 feet below existing grade respectively. These measured levels correspond to elevations of 571.9 and 767.0 (MSL), respectively. Shallow borings advanced along the existing I-85 alignment and connecting ramps and side roads were reported as dry. These reported groundwater levels are interpreted to be dependent upon seasonal fluctuations, individual precipitation event intensity and/or level of the various tributaries, creeks and major streams within the immediate project area.

## 4.4 Seismic Conditions

The proposed bridge sites along the project corridor are classified as OC II and the proposed approach embankments within 150 feet of a bridge are classified as ROC II. The roadway embankments beyond 150 feet of the bridge are classified as ROC IV and

seismic loading condition is not required, in accordance with the Bridge Design Memorandum DM0211 dated July 7, 2011. However, the seismic loading condition will be considered for the roadway structures which are within 150 feet of a bridge and are classified as ROC II or are more than 150 feet of a bridge and are classified as ROC III in accordance with SCDOT Bridge Design Memorandum DM0211.

The seismic site class is determined using the five (5) MASW testing data obtained from the replacement bridge locations and following the procedure in Tables 12-20 and 12-21 and the site class definitions in Table 12-22 of the SCDOT GDM. All of the MASW surveys, indicated a Site Class C with an average shear wave velocity ($\bar{V}_s$) in the top 100 feet ranging between 1,261 and 1,504 ft/sec among the five bridge replacement locations. Table 4-1 below, summarizes the Seismic Site Class assignment based on the measured $\bar{V}_s$ by bridge structure location.

**Table 4-1. Seismic Site Class by Bridge Structure Location**

| Structure | $\bar{V}_s$ (ft/s) [a] | Site Class |
|---|---|---|
| Exit 100 – S-83 (Blacksburg Highway) over I-85 | 1,332 | C |
| Exit 102 – SC 5/SC 198 (N. Mountain Street) over I-85 | 1,438 | C |
| Exit 104 – S-99 (Tribal Road) over I-85 | 1,364 | C |
| Exit 106 – US-29 (E. Cherokee Street) over I-85 | 1,261 | C |
| Norfolk Southern Railroad over I-85 | 1,504 | C |

[a] Average Shear Wave Velocity in the top 100 feet of the respective MASW survey.

Seismic loading information, in the form of Acceleration Design Response Spectra (ADRS) curves, will be provided by the SCDOT. In accordance with the 2008 SCDOT Seismic Design Specifications, two design earthquake levels will be considered:

- Functional Evaluation Earthquake (FEE): 15% probability of exceedance in 75 years;
- Safety Evaluation Earthquake (SEE): 3% probability of exceedance in 75 years.

The seismic design parameters that will be derived from the ADRS curves will include the peak ground acceleration (PGA), the short period acceleration ($S_{DS}$), and the one-second period acceleration ($S_{D1}$) for the FEE and SEE earthquakes.

The hazard associated with soil shear strength loss (SSL), lateral spreading, and liquefaction-induced settlement, as related to the seismic loading, will have to be evaluated during the design-phase of the project in accordance with Chapter 13 of the SCDOT GDM. A preliminary screening of the susceptibility of the sand-like and the clay-like soils to liquefaction and cyclic-softening respectively indicated that such a seismic hazard is low within the bridge approach limits. Evaluation was based on seismic loading as proposed by published seismic hazard maps and previous project experience in the project area.

## 4.5 Soil and Rock Stratification

### 4.5.1 Exit 100 – S-83 (Blacksburg Highway) over I-85

Three preliminary investigation borings were advanced along the proposed alignment located adjacent to and immediately east of the existing structure. BR-118 and BR-120 intercepted roadway fill materials composed of silty fine grain to medium grain sand with traces of coarse grain sand to depths of 2.0 feet and 16.8 feet respectively. SPT drives indicate loose relatively density while lab gradations indicate a sufficient cohesive (silt) fraction to exhibit low plasticity. Underlying fill, BR-118 and BR-120 encountered residual soils as did BR-119 at existing grade. Penetration and SPT sampling of these residual soils indicated loose to very dense relative density for silty fine to medium grain sands containing trace to small fractions of coarse grain sand and fine gravel. Saprolitic structure (texture) was noted within some recovered samples. Residual soils were penetrated to depths of 35.5 feet, 30.2 feet and 44.5 feet within BR-118, BR-119 and BR-120 respectively. These depths equate to elevations of 554.1, 558.7, and 562.7 (MSL). PWR composed of sand to gravel size rock fragments were penetrated to variable depths dependent upon weathering of the underlying Cherryville Granite.

BR-118 recovered hard to very hard, slightly weathered to fresh rock with seams of moderate weathering between top of core at 41.0 feet (elevation 548.6) and bottom of core at 62.5 feet (elevation 527.1). Fracturing was typically moderate to high angle, close to very closely spaced with very narrow to tight width. One (1) high angle shear zone was noted with brecciated fragments. BR-119 recovered hard to very hard, slightly weathered to fresh rock with seams of moderate weathering between top of core at 42.6 feet (elevation 546.3) and bottom of core at 62.6 feet (elevation 526.3). Fracturing was typically moderate to high angle, close to very closely spaced with very narrow to tight width. Some horizontal discontinuities were noted with very narrow to narrow spacing. Two (2) high angle veins were noted with narrow width unidentified infill. BR-120 recovered friable to soft, completely weathered to seams of moderately weathered material with fragments of pegmatite and granitic rock between top of core at 63.6 feet (elevation 543.6) and bottom of core at 101.2 feet (elevation 506.0). Granitic rock was completely weathered with very few fragments to 75.9 feet, below which, fragments of intact rock became more frequent. Actual base of weathered rock was indicated as 99.0 feet (elevation 508.2) on the core log. Evidence of fracturing, though difficult to determine suggests high angle joints and horizontal to near horizontal discontinuities. For the entire bridge site core recovery ranged from 0% to 100% (typically above 92% for B-118 and B-119) while RQD ranged from 0% to 100% (typically 80% to 95 % for B-118 and B-119). Unconfined testing on selected granite specimens revealed values ranging from 1,524 psi (moderately to highly weathered) to 14,176 psi (slightly weathered).

Groundwater level measurements immediately after drilling indicate the water being at 10.9 feet to 21.8 feet below existing grade which equates to elevations of 578.0 to 567.8 (MSL). Boring BR-118 recorded the groundwater at 21.9 feet (elevation 567.7) 24 hours after drilling operations were completed.

Subsurface conditions are summarized in Table 4-2 below and generalized soil profiles are shown in Figure 11 in Appendix A.

**Table 4-2. Soil and Rock Stratification – S-11-83 (Blacksburg Highway) over I-85**

| Geologic Formation | Top of Layer Elevation (ft) | Depth to top of Layer (ft) | USCS Soil Type | SPT-N Values (bpf) | Shear Strength[a] | Comments |
|---|---|---|---|---|---|---|
| Roadway Fill | 589.6 (BR-118)<br>N/A (BR-119)<br>607.2 (BR-120) | 0.0 (BR-118)<br>N/A (BR-119)<br>0.0 (BR-120) | SM | N/A (BR-118)<br>N/A (BR-119)<br>5-10 (BR-120) | N/A | N/A |
| Residual Soils | 587.6 (BR-118)<br>588.9 (BR-119)<br>590.4 (BR-120) | 2.0 (BR-118)<br>0.0 (BR-119)<br>16.8 (BR-120) | SM, SC | 5-96 (BR-118)<br>7-48 (BR-119)<br>9-43 (BR-120) | c'=187 psf, φ'=29.6°<br>c=604 psf, φ=5.3°<br>(from BR-118) | Approximate Groundwater El. 568-578 ft. |
| PWR | 554.1 (BR-118)<br>558.7 (BR-119)<br>562.7 (BR-120) | 35.5 (BR-118)<br>30.2 (BR-119)<br>44.5 (BR-120) | SC, SM | 100+ | N/A | N/A |
| Auger Refusal/ Rock | 548.6 (BR-118)<br>546.3 (BR-119)<br>543.6 (BR-120) | 41.0 (BR-118)<br>42.6 (BR-119)<br>63.6 (BR-120) | N/A | N/A | 5.4-11.4 ksi (BR-118)<br>14.2 ksi (BR-119)<br>1.5 ksi (BR-120) | RMR: 48-71<br>GSI:54-78<br>(BR-118, BR-119 only) |

[a] As determined from CU Triaxial tests for soil samples and Unconfined Compressive tests for intact rock samples.

### 4.5.2 Exit 102 – SC 5/SC 198 (N. Mountain Street) over I-85

Three (3) preliminary investigation borings were advanced along the proposed alignment located adjacent to and immediately east of the existing structure. BR-121, BR-122 and BR-123 intercepted roadway embankment fill materials composed of sandy elastic high plasticity silt, low plasticity silty fine to medium grain sand and clayey sand with gravel to depths of 5.8 feet, 2.5 feet and 11.0 feet respectively. SPT drives indicate loose to medium dense relative density while lab gradations indicate a sufficient cohesive (silt/clay) fraction to exhibit low to medium plasticity. SPT drives indicate stiff to very stiff cohesive sediments. Underlying fill, BR-121, BR-122, and BR-123 encountered residual soils. Penetration and SPT sampling of these residual soils indicated soft to hard finely sandy low to high plasticity silts and interlayered loose to very dense relative density for silty fine to medium grain sands containing trace to small fractions of coarse grain sand and fine gravel or rare layers of loose to very dense coarse grain sand and gravel. Silt fractions are sufficiently present to contribute to low plasticity characteristics within granular silty soils. Saprolitic structure (texture) was noted within some recovered samples. Residual soils were penetrated to depths of 52.2 feet, 66.7 feet and 98.1 feet within BR-121, BR-122 and BR-123 respectively. These depths equate to elevations of 782.0, 756.3 and 744.9 (MSL). PWR composed of sand to gravel size fragments of mica, quartz and granite were penetrated to depths of 84.1 feet, 81.2 feet and in the case of BR-123 to termination depth of 100.4 feet (elevation 742.6). Thin PWR seams were also recognized during a few SPT drives within residual soils.

BR-121 recovered 1.4 feet of very hard quartzite underlying PWR prior to intercepting 30.0 feet of completely weathered rock and residual soils. Within this interval, fragments of weathered phyllite, and quartz vein/quartzite were recovered. This interval was followed by 12.9 feet of highly weathered schist with seams of completely weathering soil. A few fragments suggested schist with amphibole-quartz-mica mineralogy. Highly weathered Cherryville granite was intercepted between 97.0 feet and termination at 99.1 feet (elevation 735.1). The granite is composed of feldspar-quartz-mica with the interval

containing a few recognizable fragments. Evidence of fracturing, though difficult to determine, suggests moderate angle joints and horizontal to near horizontal discontinuities. For the individual boring core recovery ranged from 0% to 78% while RQD was 0% for each core run. BR-122 recovered 24.7 feet of interlayered Cherryville granite and schist underlying PWR between top of core at 81.2 feet (elevation 741.8) and bottom of core at 105.9 feet (elevation 717.1). Actual base of weathered rock was indicated as 81.3 feet (elevation 741.7) on the core log. Granite varied from medium to coarse grain exhibiting fresh to slight weathering with seams of moderate weathering and infrequent clay seams. Schist was primarily fine grain but with feldspar phenocrysts. Fracturing within B-122 was typically low angle, very closely spaced with very narrow width. Foliation discontinuities ranged from 30° to 40° with tight to very narrow spacing. Contacts between granite and schist varied from 50°-70°. For the individual boring BR-122 core recovery ranged from 94% to 100% while RQD ranged from 49% to 100%. As discussed above B-123 did not encounter competent bedrock prior to boring termination. Unconfined testing on selected granite and schist specimens revealed values of 6,468 psi (slightly weathered) and 13,735 psi (fresh) respectively.

Groundwater level measurements immediately after drilling indicate the water being at 39 feet to 60.5 feet below existing grade which equates to elevations of 795.2 to 782.5 (MSL). Boring BR-123 recorded the groundwater at 41.8 feet (elevation 801.2) 24 hours after drilling operations were completed.

Subsurface conditions are summarized in Table 4-3 below and generalized soil profiles are shown in Figure 12 in Appendix A.

**Table 4-3. Soil and Rock Stratification – SC-/198 (N. Mountain Street) over I-85**

| Geologic Formation | Top of Layer Elevation (ft) | Depth to top of Layer (ft) | USCS Soil Type | SPT-N Values (bpf) | Shear Strength[a] | Comments |
|---|---|---|---|---|---|---|
| Roadway Fill | 834.2 (BR-121)<br>823.0 (BR-122)<br>843.0 (BR-123) | 0.0 (BR-121)<br>0.0 (BR-122)<br>0.0 (BR-123) | MH, SC | 13-18 (BR-121)<br>-<br>9-20 (BR-123) | N/A | N/A |
| Residual Soils | 828.4 (BR-121)<br>820.5 (BR-122)<br>832.0 (BR-123) | 5.8 (BR-121)<br>2.5 (BR-122)<br>11.0 (BR-123) | MH, SM, SP-SM, GM, ML | 5-76 (BR-121)<br>3-100+ (BR-122)<br>9-51 (BR-123) | c'=504 psf, φ'=27.8°<br>c=864 psf, φ=14.7°<br>(from BR-121) | Approximate Groundwater El. 795-801 ft. |
| PWR | 782.0 (BR-121)<br>756.3 (BR-122)<br>744.9 (BR-123) | 52.2 (BR-121)<br>66.7 (BR-122)<br>98.1 (BR-123) | SM | 100+ | N/A | N/A |
| Rock | 750.1 (BR-121)<br>741.8 (BR-122)<br>N/A (BR-123) | 84.1 (BR-121)<br>81.2 (BR-122)<br>N/A (BR-123) | N/A | N/A | 6.5-13.7 ksi<br>(BR-122 only) | RMR: 41-58<br>GSI:42-66<br>(BR-122 only) |

[a] As determined from CU Triaxial tests for soil samples and Unconfined Compressive tests for intact rock samples.

### 4.5.3 Exit 104 – S-99 (Tribal Road) over I-85

Three (3) preliminary investigation borings were advanced along the proposed alignment located adjacent to and immediately east of the existing structure. BR-124 and BR-126 intercepted roadway embankment fill materials composed of silty fine grain to medium grain sand with traces of coarse grain sand at depth of 2.1 feet and medium plasticity, finely sandy silt to a depth of 3.8 feet respectively. SPT drives indicate very loose

relatively density and firm consistency. Underlying fill BR-124 and BR-126 encountered residual soils as did BR-125 at existing grade. Penetration and SPT sampling of these residual soils indicated very loose to medium dense (rarely dense) relative density for silty fine grain sands; very loose to medium dense relative density for silty fine to medium grain sands containing trace to small fractions of coarse grain sand to gravel and soft to firm (rarely hard) consistency for finely sandy, high plasticity clay observed in thin seams to layers. Saprolitic structure (texture), mica, feldspar and quartz fragments were individually or collectively noted within some recovered samples. Residual soils were penetrated to depths of 66.0 feet, 55.8 feet and 61.8 feet within BR-124, BR-125 and BR-126 respectively. These depths equate to elevations of 768.3, 779.5, and 775.5 (MSL). PWR composed of silty, sand to gravel size schist fragments, feldspar, mica and sand grains were penetrated to depths of 68.5 feet (elevation 765.8), 65.9 feet (elevation 769.4) and 68.6 feet (elevation 768.7) within BR-124, BR-125 and BR-126 respectively indicating PWR thickness of 2.5 feet, 10.1 feet and 6.8 feet prior to intercepting the underlying schist.

BR-124, BR-125 and BR-126 recovered hard to very hard (moderately hard at the top of BR-126), slightly weathered to fresh schist with rare seams of highly weathered rock. Schist was medium grain with pegmatite grain size intervals and pods, contained granitic layers and was very thinly to thinly foliated with isolated intervals of contorted foliation. Mineralogy includes feldspar, quartz, muscovite, sericite and traces of both disseminated pyrite and joint wall grain cluster pyrite. Fracturing was moderate to high angle with some low angle discontinuities, close to very closely spaced with very narrow to tight width. All three borings were terminated within schist (BR-124 and BR-125) or pegmatite (BR-126) at depths of 89.1 feet (elevation 745.2), 89.5 feet (elevation 745.8) and 88.6 feet (elevation 748.7). For the entire bridge site core recovery ranged from 94% to 100% (one interval of 2 feet not recovered, 0%, due to slippage) while RQD ranged from 74% to 100% (two thin runs with no RQD). Unconfined testing on selected schist specimens revealed values ranging from 2,111 psi (moderately to highly weathered) to 12,190 psi (fresh).

Groundwater level measurements immediately after drilling indicate the water being at 29.9 feet to 39.0 feet below existing grade which equates to elevations of 807.4 to 796.3 (MSL). Boring BR-124 recorded the groundwater at 30.1 feet (elevation 804.2) 24 hours after drilling operations were completed.

Subsurface conditions are summarized in Table 4-4 below and generalized soil profiles are shown in Figure 13 in Appendix A.

**Table 4-4. Soil and Rock Stratification – S-11-99 (Tribal Road) over I-85**

| Geologic Formation | Top of Layer Elevation (ft) | Depth to top of Layer (ft) | USCS Soil Type | SPT-N Values (bpf) | Shear Strength[a] | Comments |
|---|---|---|---|---|---|---|
| Roadway Fill | 834.3 (BR-124)<br>N/A (BR-125)<br>837.3 (BR-126) | 0.0 (BR-124)<br>N/A (BR-125)<br>0.0 (BR-126) | ML | N/A (BR-124)<br>N/A (BR-125)<br>5 (BR-126) | N/A | N/A |
| Residual Soils | 832.2 (BR-124)<br>835.3 (BR-125)<br>833.5 (BR-126) | 2.1 (BR-124)<br>0.0 (BR-125)<br>3.8 (BR-126) | SM, CL<br>SC-SM,<br>MH | 3-20 (BR-124)<br>8-23 (BR-125)<br>8-45 (BR-126) | c'=403 psf, φ'=28.1°<br>c=518 psf, φ=18.3°<br>(from BR-126) | Groundwater El. ~796-807 ft.<br>See Appendix C for consolidation test |

**Table 4-4. Soil and Rock Stratification – S-11-99 (Tribal Road) over I-85**

| Geologic Formation | Top of Layer Elevation (ft) | Depth to top of Layer (ft) | USCS Soil Type | SPT-N Values (bpf) | Shear Strength[a] | Comments |
|---|---|---|---|---|---|---|
| PWR | 768.3 (BR-124)<br>779.5 (BR-125)<br>775.5 (BR-126) | 66.0 (BR-124)<br>55.8 (BR-125)<br>61.8 (BR-126) | SM | 100+ | N/A | N/A |
| Rock | 765.8 (BR-124)<br>769.4 (BR-125)<br>768.7 (BR-126) | 68.5 (BR-124)<br>65.9 (BR-125)<br>68.6 (BR-126) | N/A | N/A | 7.6 ksi (BR-124)<br>11.7-12.2 ksi (BR-125)<br>2.1-8.2 ksi (BR-126) | RMR: 49-71<br>GSI:49-58 |

[a] As determined from CU Triaxial tests for soil samples and Unconfined Compressive tests for intact rock samples.

### 4.5.4 Exit 106 – US 29 (E. Cherokee Street) over I-85

Three (3) preliminary investigation borings were advanced along the proposed alignment located adjacent to and immediately west of the existing structure. BR-127, BR-128 and BR-129 intercepted residual soils at existing grade. Penetration and SPT sampling of these residual soils indicated loose to very dense relative density for silty fine grain sands and silty fine to medium grain sands exhibiting non-plastic to low plasticity characteristics. Interlayers of non-plastic to medium plasticity (rarely high plasticity), finely sandy silt with rare traces of gravel, were also penetrated with SPT drives indicating firm to hard consistency. Saprolitic structure (texture) and the presence of mica were noted within some recovered samples. Residual soils were penetrated to depths of 44.0 feet, 49.5 feet and 78.5 feet within BR-127, BR-128 and BR-129 respectively. These depths equate to elevations of 821.1, 798.2, and 782.8 (MSL). PWR composed of sand to gravel size fragments of schist, granite and meta-conglomerate were penetrated to 48.5 feet (elevation 816.6) and 49.9 feet (elevation 797.8) within B-127 and B-128 prior to interception of bedrock while residual soils lie directly upon bedrock within B-129 (Elevation 782.8). An additional PWR interval was penetrated and enclosed within residual soils at depths between 30.5 feet and 40.3 feet in BR-128.

BR-127 and BR-129 recovered soft to hard, slightly to moderately weathered schist between 48.5 feet to 52.3 feet and 78.5 feet and 85.2 feet respectively. This inferior quality rock graded downward into hard, medium grain with coarse grain phenocrysts, slightly weathered with thin seams of highly weathered rock. Schist was thinly foliated with orientations varying from 70°-90°to 30°-45°. Mineralogy includes feldspar, quartz, muscovite, sericite, amphibolite, hornblende and traces of garnet and pyrite. Fracturing was moderate to high angle with few low angle discontinuities, close to very closely spaced with typically very narrow to tight width. Both borings were terminated within schist at depths of 71.5 feet (elevation 793.6) and 79.2 feet (elevation 767.5). BR-128 recovered variable hard to very hard to soft to moderately hard, interlayered schist, granite, meta-conglomerate, amphibolite, granite and lastly again amphibolite. Recovered core varies from slightly to moderately weathered with seams highly weathered to slightly weathered to fresh and includes clay seams. Grain size ranges from fine to coarse with few pegmatite pods also included. Foliated is most prominent with schist and highly weathered amphibolite samples where orientations vary from 30°-40°. Mineralogy varies with rock type: amphibolite includes hornblende and feldspar;

granite includes feldspar, quartz, muscovite and schist includes feldspar, quartz and muscovite. Fracturing was typically high angle with few low angle discontinuities, very closely spaced with typically very narrow width. BR-128 was terminated within amphibolite at a depth of 79.2 feet (elevation 767.5). For the entire bridge site core recovery ranged from 33% to 100% while RQD ranged from 9% to 100%. Unconfined testing on selected schist, granite and amphibolite specimens revealed values ranging from 3,469 psi to 5,875 psi (fresh to slightly weathered schist); 4,372 psi (slight to moderately weathered granite) and 12,255 psi (fresh amphibolite).

Groundwater level measurements immediately after drilling at the proposed bridge site within BR-127 and BR-129 indicate water 21.3 feet and 36.4 feet below existing grade which equates to elevations of 843.8 and 824.9 (MSL). Borings BR-127 and BR-129 recorded the groundwater 38.3 feet (elevation 826.8) and 34.2 feet (elevation 827.1), respectively, 24 hours after drilling operations were completed.

Subsurface conditions are summarized in Table 4-5 below and generalized soil profiles are shown in Figure 14 in Appendix A.

**Table 4-5. Soil and Rock Stratification – US-29 (E. Cherokee Street) over I-85**

| Geologic Formation | Top of Layer Elevation (ft) | Depth to top of Layer (ft) | USCS Soil Type | SPT-N Values (bpf) | Shear Strength[a] | Comments |
|---|---|---|---|---|---|---|
| Roadway Fill | N/A | N/A | N/A | N/A | N/A | N/A |
| Residual Soils | 865.1 (BR-127)<br>847.7 (BR-128)<br>861.3 (BR-129) | 0.0 (BR-127)<br>0.0 (BR-128)<br>0.0 (BR-129) | SM, SP<br>ML, CL | 7-16 (BR-127)<br>6-10 (BR-128)<br>11-55 (BR-129) | N/A | Approximate Groundwater El. 825-844 ft. |
| PWR | 821.1 (BR-127)<br>798.2 (BR-128)<br>N/A (BR-129) | 44.0 (BR-127)<br>49.5 (BR-128)<br>N/A (BR-129) | SM | 100+ | N/A | Additional PWR interval enclosed within overlying residual soils from depth 30.5 to 40.3 ft. within BR-128 |
| Rock | 816.6 (BR-127)<br>797.8 (BR-128)<br>782.8 (BR-129) | 48.5 (BR-127)<br>49.9 (BR-128)<br>78.5 (BR-129) | N/A | N/A | 3.6-5.9 ksi (BR-127)<br>4.4-12.3 ksi (BR-128)<br>3.5-4.3 ksi (BR-129) | RMR: 23-55<br>GSI:19-66 |

[a] As determined from CU Triaxial tests for soil samples and Unconfined Compressive tests for intact rock samples.

### 4.5.5 Norfolk Southern Railroad over I-85

Two (2) preliminary investigation borings were advanced immediately adjacent to the existing structure. BR-155 intercepted roadway/railway embankment fill materials composed of silty fine grain to medium grain sand and clayey fine grain to medium grain sand to a depth of 16.7 feet. SPT drives indicate loose to dense relatively density while lab gradations indicate non-plastic to low plasticity characteristics. Underlying fill within BR-155 and at existing grade within B-156 boring advancement, encountered residual soils. Penetration and SPT sampling of these residual soils indicated loose to very dense relative density for silty fine to medium grain sands containing trace to moderate fractions of coarse grain sand and fine gravel and silty fine grain sands. Saprolitic structure (texture), loose quartz fragments and mica fragments were noted within some recovered samples. Residual soils were penetrated to depths of 58.8 feet and 40.3 feet within BR-

155 and BR-156 respectively. These depths equate to elevations of 547.7 and 573.9 (MSL). PWR composed of silty to clayey sand to gravel size quartz and mica fragments were penetrated to 63.3 feet (elevation 543.2) and 52.2 feet (elevation 562.0) prior to intercepting Cherryville Granite or schist. An additional PWR interval was intercepted between 38.3 feet and 43.3 feet within BR-155.

BR-155 recovered moderately hard to very hard, moderately to highly weathered grading to slightly weathered to fresh Cherryville Granite from top of core at 63.3 feet (elevation 543.2) to bottom of core at 91.1 feet (elevation 515.4). Fracturing within the granite mass was typically low to moderate angle with few high angle joints and close to very closely spaced with very narrow to tight width. High angle veining was noted with gypsum infill. BR-156 recovered interlayered schist and Cherryville Granite described as soft-friable grading to hard, slightly to moderately weathered with highly weathered seams grading to slightly to moderately weathered. In BR-156 top of core is at 52.2 feet (elevation 562.0) and bottom of core at 79.3 feet (elevation 534.9). Fracturing was typically moderate to low angle with very narrow to narrow infill of clay, iron, gypsum and sand grains and very closely spaced. Foliation was evident within B-156 typically ranging between 35° and 40°. For the entire bridge site core recovery ranged from 66% to 100% while RQD ranged from 13% to 94%. Unconfined testing on selected Cherryville Granite specimens revealed values ranging from 1,299 psi (moderately weathered) to 14,281 psi (fresh) while unconfined testing on a schist specimen revealed a value of 5,568 psi (slightly weathered).

Groundwater level measurements immediately after drilling at the proposed bridge site indicate water 17.0 feet to 22.1 feet below existing grade which equates to elevations of 589.5 to 592.1 (MSL).

Subsurface conditions are summarized in Table 4-6 below and generalized soil profiles are shown in Figure 15 in Appendix A.

**Table 4-6. Soil and Rock Stratification – Norfolk Southern Railroad over I-85**

| Geologic Formation | Top of Layer Elevation (ft) | Depth to top of Layer (ft) | USCS Soil Type | SPT-N Values (bpf) | Shear Strength[a] | Comments |
|---|---|---|---|---|---|---|
| Roadway Fill | 606.5 (BR-155)<br>N/A (BR-156) | 0.0 (BR-155)<br>N/A (BR-156) | SM, SC | 8-48 (BR-155)<br>N/A (BR-156) | N/A | N/A |
| Residual Soils | 589.8 (BR-155)<br>614.2 (BR-156) | 16.7 (BR-155)<br>0.0 (BR-156) | SM | 29-79 (BR-155)<br>11-37 (BR-156) | N/A | Approximate Groundwater El. 589-592 ft |
| PWR | 547.7 (BR-155)<br>573.9 (BR-156) | 58.8 (BR-155)<br>40.3 (BR-156) | SM, SW-SM | 100+ | N/A | Additional PWR interval enclosed within overlying residual soils from depth 38.3 to 43.3 ft. within BR-155 |
| Auger Refusal/ Rock | 543.2 (BR-155)<br>562.0 (BR-156) | 63.3 (BR-155)<br>52.2 (BR-156) | N/A | N/A | 1.3-14.3 ksi (BR-155)<br>2.0-12.1 ksi (BR-156) | RMR: 28-61<br>GSI:18-72 |

[a] As determined from CU Triaxial tests for soil samples and Unconfined Compressive tests for intact rock samples.

### 4.5.6 Roadway Structures

#### CULVERTS

Seven (7) borings were advanced to support culvert extension construction along the proposed mainline widening alignment. Depending upon location advanced, culvert borings intercepted varying combinations of roadway fill, alluvium, residual soils and PWR prior to boring termination or SPT/auger refusal. Roadway fill, intercepted within C-133, C-134 and C-137 was primarily composed of fine and medium grain sand with secondary fractions of silt, clay, and traces of gravel or fat clay with fine grain sand. Sands typically exhibited low to medium plasticity and loose to medium dense relative density, as determined by SPT drives. Clays exhibited high plasticity and very stiff consistency. Fill materials were interpreted to range in thickness from 5.8 feet (C-137) to 13.6 feet (C-133). SPT sampling intercepted sediments interpreted as alluvium, underlying fill within advanced borings C-133 and C-134 and from the surface in boring C-130. Alluvial sediments, varying from 9.2 feet to 15.0 feet in thickness, were composed of silty to clayey fine to medium grain sand with traces of coarse sand and gravel or fine grain sand and silt in approximately equal fractions. Plasticity ranged from low to non-plastic while SPT drives indicated very loose to loose or very soft.

Residual soils were penetrated within each of the seven (7) advanced culvert borings, underlying alluvium in C-130, C-133 and C-134, underlying fill within C-137 and penetrated from the surface within C-131, C-132 and C-138. Residual soils were composed of silty fine to coarse grain sand with traces of gravel interlayered with low plasticity silt containing fine and medium coarse sand grains and high plasticity sandy fat clay. SPT drives indicated loose to very dense relative density for sands while silts and clays indicated firm to very stiff consistency. Residual soil thickness ranged from 3.8 feet (C-132) to 40.0 feet (C-138). Borings C-134, C-137 and C-138 were terminated within residual soils without encountering SPT or auger refusal at depths ranging from 34.9 feet (elevation 563.9), 25.0 feet (elevation 780.5) and 40.0 feet (elevation 782.4) respectively. Continued advancement of the remaining borings intercepted PWR as determined by less than six (6) inches penetration after applying 50 blows during an SPT drive. PWR was typically described as sand to gravel size fragments of metamorphosed granitic and schistose rock. Penetrated PWR thickness ranged from 3.1 feet to 8.7 feet prior to boring termination or splitspoon refusal. Borings C-130, C-131 and C-132 were terminated within PWR at depths of 29.2 feet (elevation 549.4), 7.1 feet (561.4) and 10.1 feet (elevation 601.1) respectively. Boring C-133 was terminated on rock (SPT advance of zero (0) inches on application of 50 blows) at a depth of 33.5 feet (elevation 550.4). Published mapping suggests underlying rock is Cherryville Granite or schist of the Inner Piedmont Belt.

#### RETAINING WALLS

Proposed retaining walls extend from Station 2104+00 to 2130+00 along the mainline widening, near the state line border, within the Tribal Road interchange and along Henson Road (Station 12+00).

Borings advanced between Station 2104+00 and Station 2130+00 encountered roadway fill within borings RW-142, RW-143, RW 143A, RW-144, RW145, RW-146, RW-147 and RW-149. Recovered fill materials included low to medium plasticity sandy silts – some with a gravel fraction, medium plasticity sandy clays, silty fine to medium grain sands and

clayey fine to coarse grain sands with fine gravel. SPT drive advancement indicated very soft to very stiff consistency and loose relative density conditions for the roadway fill materials. Alluvial sediments were penetrated, underlying fill, within borings RW-142, RW-143, RW-143A and RW-144 at the subject site. Recovered thickness ranged from 2.7 feet to 6.7 feet of medium plasticity silty fine to medium grain sand, non-plastic silty fine to medium grain sand and low plasticity finely sandy silt with traces of gravel.

Retaining wall borings advanced between Station 2104+00 and Station 2130+00 intercepted residual soils either on the existing ground surface or underlying fill and/or alluvial deposits. Residual soils were found to be composed of sandy medium plasticity elastic silt, low to medium plasticity silty sand, non-plastic silty fine to medium grain sand, low to medium plasticity finely sandy silt with scattered traces of gravel and rarely fine sandy medium plasticity clay. Residual soils were typically described as occasionally micaceous and saprolitic while SPT drives indicated very loose to very dense sand strata and soft to very stiff silt and clay strata. Thickness of these residual soils varied widely from 4.6 feet to 24.7 within the subject mainline limits. Continued advancement of this retaining wall boring group encountered PWR within RW-142, RW-143, RW-143A, RW-144, RW-145, RW-148 and RW-149. Limited recovered samples were typically composed of crystalline and/or schistose fragments of underlying granitic rock, schist and amphibolite. Penetrated thicknesses ranged from 0.2 foot to 4.7 feet. Each of the retaining wall borings penetrating PWR were also terminated within PWR at depths of 10.1 feet to 58.7 feet equating to elevations of 798.2 to 745.1.

An additional proposed retaining wall location was investigated by RW-154 along Henson Road. RW-154 intercepted residual soils consisting of interlayered saprolitic sandy silt with traces of gravel and saprolitic silty fine grain to coarse grain sand with gravel from the existing ground surface to termination for 35.0 feet (elevation 780.4). Sandy silts exhibited low plasticity characteristics with SPT drives indicating stiff to very stiff consistency. Sands contained sufficient silt fractions to exhibit low plasticity characteristics while SPT drives indicated medium dense to very dense relative density.

### 4.5.7 Roadway

Topographic mapping covering the proposed widening alignment corridor suggests four distinct soil regions extending within the limits described in Section 4.1 of this report: (i) Broad River/Buffalo Creek confluence to just west of the North Mountain Street/SC 198 interchange (approximate I-85 Station 2000+00); (ii) I-85 Station 2000+00 to just west of the Tribal Road interchange (approximate I-85 Station 2140+00); (iii) I-85 Station 2140+00 to approximately I-85 Station 2197+00; and (iv) I-85 Station 2197+00 to the North Carolina State line.

#### BROAD RIVER/BUFFALO CREEK CONFLUENCE TO JUST WEST OF THE NORTH MOUNTAIN STREET/SC 198 INTERCHANGE (APPROXIMATE I-85 STATION 2000+00)

Recovered soils were primarily composed of silt and sand in equal to sub-equal fractions with some samples containing traces of gravel exhibiting low plasticity characteristics; finely sandy (traces of coarser fractions and gravel in few samples) silt, exhibiting non-plastic to low plasticity characteristics, and silty to occasionally clayey fine to medium grain sand with traces to some fine gravel size fragments, exhibiting low plasticity characteristics. Widely scattered accumulations of medium plasticity, finely sandy clay;

medium to coarse grain silty sand; fine to coarse grain silty sand with gravel size fragments; clayey sand with gravel; finely sandy silt; medium plasticity clayey sand with gravel and high plasticity (fat) clay with fine grain sand were also collected by SPT sampling. Relative density for sands ranged from loose to very dense with three (3) SPT drives resulting in refusal within residual silty sands and gravels (borings SB-11, NB-14 and NB-21). Consistency for silts and relatively rare clays ranged from soft to very stiff. No SPT refusal was encountered within cohesive materials. Sampled materials and sediments were interpreted as predominately fill from existing grade to depths of 1.8 feet to 8.0 feet within most mainline borings for this project interval.

Residual soils underlying the fill were interpreted within borings SB-5, SB-7, NB-10, SB-11, SB-13, NB-14, SB-15, SB-17, NB-18, SB-20, SB-25, SB-27, NB-28, SB-29, SB-31, SB-32, SB-33, and NB-34. A critical boring (R-91) was advanced within this alignment segment intercepting residual soils to a depth of 16.8 feet, consisting of medium to very dense silty sands of low plasticity. Continued penetration intercepted partially weathered rock (PWR), based upon SPT refusal, to a depth of 43.6 feet (elevation 590.5). Rock coring operations recovered highly to completely weathered schist with moderately weathered granite and schist seams and slightly weathered to moderately weathered schist to boring termination at 71.3 feet (elevation 562.8). Roadway borings terminated at 5.5 feet, 6.5 feet and 8.0 feet within the roadway segment did not intercept groundwater.

Boring R-91 intercepted groundwater at 60.7 feet (elevation 573.4) immediately after boring completion and a measured groundwater level at 62.2 feet (elevation 571.9) after 24 hours. It should be noted that during the geotechnical investigation a significant amount of erosion due to water runoff was observed nearing the Broad River Bridge adjacent to the southbound outside shoulder at approximate Station 1825+45.

#### I-85 STATION 2000+00 TO JUST WEST OF THE TRIBAL ROAD INTERCHANGE (APPROXIMATE I-85 STATION 2140+00)

Recovered soils were primarily composed of medium plasticity (elastic) finely sandy silts; silty fine to medium grain sand exhibiting low plasticity characteristics; finely sandy silt exhibiting low plasticity characteristics and finely sandy silts and clays exhibiting medium plasticity. Widely scattered accumulations of low to medium plasticity, clayey sand with gravel; silty fine to coarse grain sand; and well graded sand with silt and gravel size fragments. Consistency for silts and relatively rare clays ranged from soft to very stiff. No SPT refusal was encountered within cohesive materials. Relative density for sands ranged from very loose to medium dense with no SPT refusal recorded within sandy soils. Sampled materials and sediments were interpreted as predominately residual soils from existing grade to depths of 5.5 feet within the majority of mainline borings for this project interval. Two (2) borings (NB-56 and SB-59) recorded fill to 3.8 feet overlying residual soils, and these were eventually terminated at 5.5 feet. Fill materials intercepted from existing grade or overlying residual soils were interpreted within borings SB-37, NB-38, SB-39, NB-40, SB-41, NB-42, SB-43, SB-45, SB-49, NB-52, SB-53, NB-56, SB-59, and NB-60. Three (3) critical borings (R-95, R-104 and R-153) were advanced within this alignment segment. Boring R-95 intercepted fill consisting of finely sandy low plasticity silt to a depth of 10.3 feet. SPT drives indicate firm to stiff consistency. Alluvial deposits consisting of fine to medium grain sandy silts were intercepted underlying fill to a depth

of 16.8 feet. Alluvial deposits exhibited low plasticity characteristics very soft to soft consistency.

Underlying alluvial deposits residual soils consisting of silty fine to medium grain sand with traces coarse sand and gravel were penetrated to 33.5 feet. Sufficient silt was present to contribute to low plasticity characteristic while the samples also exhibited saprolitic features and medium dense to very dense relative density. Continued penetration intercepted partially weathered rock (PWR), based upon SPT refusal, to a depth of 44.1 feet (elevation 738.4). Boring R-104 intercepted fill, consisting of silty or clayey fine grain sand, to a depth of 19.0 feet. SPT drives indicate firm to stiff consistency. Alluvial deposits consisting of fine to medium grain silty, clayey sands with traces of gravel exhibiting very loose relative density were intercepted underlying fill to a depth of 29.0 feet (elevation 758.7). Alluvial deposits exhibited low plasticity characteristics. Underlying alluvial deposits, residual soils consisting of stiff to hard, medium plasticity clay and non-plastic saprolitic micaceous finely sandy silt overlying loose to medium dense silty fine to medium grain sand with traces coarse sand and gravel were penetrated to 85.0 feet (elevation 702.7). Sufficient silt was present to contribute to low plasticity characteristics. Boring R-153 intercepted firm to stiff, low plasticity, sandy silt interpreted as residual soils from existing grade to 12.5 feet. The silts exhibited saprolitic structure (texture) in some recovered samples. Silty fine to medium grain sands underlie sandy silts from 12.5 feet to 41.8 feet. The sands contain sufficient cohesive material to exhibit low plasticity characteristics. SPT drives indicate loose to medium dense relative density while examinations of recovered samples reveal saprolitic structure (texture) in some parts of the samples. Between 41.8 feet in depth and boring termination at 45.0 feet (elevation 793.0) an SPT drive recovered silty fine to medium grain sand exhibiting low plasticity characteristics and medium dense relative density. R-153 was terminated within this silty sand stratum. Roadway borings within this roadway segment were terminated at 5.3 to 5.5 feet and did not intercept groundwater.

Boring R-95 recorded intercepted groundwater at 16.9 feet (elevation 765.6) immediately after boring completion. Boring R-104 reported groundwater at 9.9 feet (elevation 777.8) immediately after boring completion and at 20.7 feet (elevation 767.0) after 24 hours. Boring R-153 was reported as dry to a depth of 45.0 feet (elevation 793.0).

#### I-85 STATION 2140+00 TO APPROXIMATELY I-85 STATION 2197+00

Recovered soils were primarily composed of finely sandy low plasticity silt; silty fine to medium grain sand exhibiting low plasticity characteristics and finely sandy medium plasticity silt. Consistency for silts, from SPT testing, ranged from soft to stiff. Relative density for sands was loose based upon SPT drives. Sampled soils were interpreted as predominately residual soils from existing grade to depths of 5.5 feet within all but one (1) mainline boring for this roadway segment. Fill was interpreted to overlie residual soils within boring SB-67 to a depth of 2.3 feet. No critical borings were advanced within this segment. Roadway borings terminated at 5.5 feet within this roadway segment did not intercept groundwater.

#### I-85 STATION 2197+00 TO THE NORTH CAROLINA STATE LINE

Recovered soils were primarily composed of silty fine to medium grain sand with traces of gravel, exhibiting non-plastic to low plasticity characteristics, and finely sandy (traces coarser fractions and gravel in few samples) silt, exhibiting low plasticity characteristics.

Scattered accumulations of low to medium plasticity, finely sandy elastic silt and medium plasticity finely sandy silt were also collected by SPT sampling. Relative density for sands ranged from very loose to very dense with one (1) SPT drive resulting in refusal at 4.5 feet to 4.9 feet within PWR (boring SB-81). The top of PWR elevation was 815.8 feet. Consistency for silts and clays ranged from soft to stiff. No SPT refusal was encountered within cohesive materials. Sampled materials and soils were interpreted as a combination of fill from existing grade to depths of 3.8 feet to 5.5 feet within seven (7) of the advanced mainline borings for this project interval.

Residual soils underlying the fill were interpreted within borings NB-80, SB-81, and SB-83 with 1.7 feet to 2.0 feet of thickness. The remaining borings intercepted residual soils from ground surface to 5.5 feet. Two (2) critical borings (R-99 and R-150) were advanced within this alignment segment. Boring R-99 intercepted roadway fill consisting of firm to stiff, finely sandy, medium plasticity silt to a depth of 7.8 feet. Alluvial sediments were penetrated by SPT drives underlying fill to a depth of 16.8 feet (elevation 789.2). The sediments were composed of very soft to soft, medium plasticity clay overlying loose, silty, fine to medium grain sand. Continued boring advancement revealed residual soils consisting of fine to medium grain silty sands exhibiting non-plastic to low plasticity characteristics and loose to medium dense relative density to a depth of 40.0 feet (elevation 766.0). No SPT or auger refusal was encountered within this boring. R-150 intercepted roadway fill materials from the ground surface to 26.5 feet. Fill materials were composed of low plasticity silty fine grain to medium grain sand overlying low to medium plasticity finely sandy silt. SPT drives indicate sands with loose relative density while silts indicate very soft to firm consistency. Fill materials overlie 5.0 feet of low plasticity finely to medium sandy silt sediments interpreted as alluvial deposits. SPT drives indicate very soft consistency. The base of alluvial sediments was interpreted at 31.5 feet (elevation 786.2). Alluvial sediments overlie, in turn, residual soils penetrated to a depth of 53.7 feet (elevation 764.0). Residual soils consisted of silty fine to medium grain sand exhibiting non-plastic to low plastic characteristics while PST drives indicate loose relative density. PWR was intercepted within the last SPT drive for RW-150 where 50 blows were required to advance the sampler from 53.7 feet to 54.0 feet. Termination elevation at 54.0 feet penetrated depth was 763.7. Roadway borings, terminated at 4.9 to 5.5 feet within this roadway segment, did not intercept the groundwater table.

Borings R-99 and R-150 intercepted the groundwater at 9.3 feet (elevation 796.7) and 23.9 feet (elevation 793.8), respectively, immediately after their completion.

# 5 Design and Construction Considerations

## 5.1 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. Slope stability and settlement analyses shall be performed for all approach embankment sections during the final design process. In accordance with the

SCDOT GDM, the approach embankments shall be designed and evaluated for the SLS and EE I limit states using resistance factors in Chapter 9 and performance limits in Chapter 10 of the SCDOT GDM.

### 5.1.1 Exit 100 – S-83 (Blacksburg Highway) over I-85

The soils and bedrock that comprise the generalized subsurface profile at the bridge site are shown in Figure A-11 in Appendix A. The replacement of the Blacksburg Highway bridge over I-85 will take place to the east (i.e. right) of the existing structure. Due to alignment constraints, the proposed bridge will be constructed in stages and traffic will be maintained during construction. It is assumed that the proposed bridge will be approximately 172 feet in length, with two 86-foot long spans and MSE Wall retained abutments.

Bridge foundation types including steel H-piles, steel pipe piles (open- or closed-ended), prestressed concrete piles, composite piles, or drilled shafts would be feasible given the subsurface profiles in the borings advanced at the proposed bridge site (BR-118, BR-119, BR-120). The underlying rock surface is relatively level across the site and suggests the approximate elevations where driven piles would exhibit a dramatic increase in their axial capacity. These elevations range from approximately 544 feet to 549 feet based on the preliminary subsurface investigation. The presence of gravel in the Piedmont residual soil layer immediately overlying PWR or the dense PWR zone, as encountered in all three boring locations, and the disintegrated rock encountered within a significant depth interval of boring BR-120, raise a concern for hard driving conditions and overstressing of prestressed concrete piles, that could potentially impede their driving operations. The final bridge subsurface investigation should verify the thickness of the disintegrated rock that the driven piles will need to penetrate. In the case of unacceptable disturbance to existing adjacent facilities due to pile driving vibrations, or magnitude of pier loads being such that a shaft cap is not required, drilled shafts may be considered instead of driven piles for the interior bent.

Unconfined compressive strengths of the granite rock encountered at the site, suggest that resistance to excavation for potential drilled shaft construction would range from low to high. While the discontinuities present within the poor and disintegrated rock mass zone reduce the rock's strength and therefore the energy required to excavate it, depending on their orientation they may also reduce the stability of the rock excavation.

Due to the very dense silty/clayey sand layers or PWR at depths overlying rock throughout the project site, hard driving condition will be encountered during installation of the driven piles. The Wave Equation Analysis of Piles (WEAP) can be used to help select the proper pile driving equipment and predict drivability of piles. Pre-drilling holes to minimize difficult driving conditions does not appear to be needed at this bridge site.

Placement of MSE walls is anticipated for both end bents to retain the bridge approach embankments. Foundation piles will be located within the reinforced zone of the MSE walls and if installed before the MSE wall construction, as specified in SCDOT Supplemental Technical Specification SC-M-713 (5/1/14), they must be protected from damage during the wall backfill compaction with sleeves or casings. It is anticipated that these piles, which will already be in-place when the approach embankment construction

begins, will be subjected to downdrag forces due to at least the immediate settlement of the underlying residual soils. Additional settlement due to consolidation is anticipated to develop at a relatively fast rate due to the low plasticity of the intercepted residual soils. Foundation pile design shall account for downdrag loads in addition to all normal vertical loading. Although not identified during the current subsurface investigation, potential unsuitable materials, such as soft clays or organic soils present at shallow depths under the MSE walls footprint and identified during a future geotechnical investigation, will need to be taken into consideration. External stability analysis must be performed for these walls and soil improvement measures, such as undercutting and replacement with suitable materials, cement treatment, or other mitigation actions, shall be determined. Settlement monitoring may need to be performed during construction at the end bent locations to effectively manage the settlements related to the MSE wall construction.

### 5.1.2 Exit 102 – SC 5/SC 198 (N. Mountain Street) over I-85

The soils and bedrock that comprise the generalized subsurface profile at the bridge site are shown in Figure A-12 in Appendix A. The replacement of the North Mountain Street bridge over I-85 will take place to the east (i.e. right) of the existing structure. It is assumed that the proposed bridge will be approximately 212 feet in length, with two 106-foot long spans and MSE Wall retained abutments.

Bridge foundation types including steel H-piles, steel pipe piles (open- or closed-ended), prestressed concrete piles, composite piles, or drilled shafts would be feasible given the subsurface profiles in the borings advanced at the proposed bridge site (BR-121, BR-122, BR-123). The underlying rock surface is irregular across the site and suggests the approximate elevations where driven piles would exhibit a dramatic increase in their axial capacity. These elevations range from approximately 742 feet to 750 feet based on the preliminary subsurface investigation. The presence of gravel, quartz and weathered rock fragments and PWR seams, in the Piedmont residual soil layer overlying PWR, or the dense PWR zone, as encountered in all three boring locations, and the disintegrated rock encountered within a significant depth interval of boring BR-121, raise a concern for hard driving conditions and overstressing of prestressed concrete piles, that could potentially impede their driving operations. The final bridge subsurface investigation should verify the rock surface elevation that was never encountered within borings BR-123. It should also verify the thickness of the disintegrated rock that the driven piles will need to penetrate. In the case of unacceptable disturbance to existing adjacent facilities due to pile driving vibrations, or magnitude of pier loads being such that a shaft cap is not required, drilled shafts may be considered instead of driven piles for the interior bent.

Unconfined compressive strengths of the granite rock and schist encountered at the site, suggest that resistance to excavation for potential drilled shaft construction would range from moderate to high. While the discontinuities present within the poor and disintegrated rock mass zone reduce the rock's strength and therefore the energy required to excavate it, depending on their orientation they may also reduce the stability of the rock excavation.

Due to the very dense silty sand/sandy silt layers or PWR at depths overlying rock throughout the project site, hard driving condition will be encountered during installation of the driven piles. The Wave Equation Analysis of Piles (WEAP) can be used to help

select the proper pile driving equipment and predict drivability of piles. Pre-drilling holes to minimize difficult driving conditions does not appear to be needed at this bridge site.

Placement of MSE walls is anticipated for both end bents to retain the bridge approach embankments. Foundation piles will be located within the reinforced zone of the MSE walls and if installed before the MSE wall construction, as specified in SCDOT Supplemental Technical Specification SC-M-713 (5/1/14), they must be protected from damage during the wall backfill compaction with sleeves or casings. It is anticipated that these piles, which will already be in-place when the approach embankment construction begins, will be subjected to downdrag forces due to the immediate and consolidation settlements of the underlying roadway embankment and residual soils. To effectively manage the settlements related to the MSE wall construction, a settlement monitoring program during and post-construction would be very beneficial. Foundation pile design shall account for downdrag loads in addition to all normal vertical loading. Special care should be taken when preparing the MSE Wall footprint area within the highly plastic sandy elastic silt (MH) encountered at the site. Exposing the excavation to excessive construction traffic or weather conditions over an extended period of time could potentially require overexcavation or undercutting and replacement of the elastic silt. Future geotechnical investigations will need to identify additional concerns related to unsuitable materials, such as soft clays or organic soils present at shallow depths under the MSE walls footprint. External stability analysis must be performed for these walls and soil improvement measures, such as undercutting and replacement with suitable materials, cement treatment, or other mitigation actions, shall be determined.

### 5.1.3 Exit 104 – S-99 (Tribal Road) over I-85

The soils and bedrock that comprise the generalized subsurface profile at the bridge site are shown in Figure A-13 in Appendix A. The replacement of the Tribal Road bridge over I-85 will take place to the east (i.e. right) of the existing structure. It is assumed that the proposed bridge will be approximately 182 feet in length, with two 91-foot long spans and MSE Wall retained abutments.

Bridge foundation types including steel H-piles, steel pipe piles (open- or closed-ended), prestressed concrete piles, composite piles, or drilled shafts would be feasible given the subsurface profiles in the borings advanced at the proposed bridge site (BR-124, BR-125, BR-126). The underlying rock surface is relatively level across the site and suggests the approximate elevations where driven piles would exhibit a dramatic increase in their axial capacity. These elevations range from approximately 766 feet to 769 feet based on the preliminary subsurface investigation. The presence of gravel-sized fragments of schist in the PWR overlying bedrock, as encountered in all three boring locations, raise a concern for hard driving conditions and overstressing of prestressed concrete piles, that could potentially impede their driving operations. In the case of unacceptable disturbance to existing adjacent facilities due to pile driving vibrations, or magnitude of pier loads being such that a shaft cap is not required, drilled shafts may be considered instead of driven piles for the interior bent.

Unconfined compressive strengths of the schist encountered at the site, suggest that resistance to excavation for potential drilled shaft construction would range from moderate to high. Stability of the rock excavation in the very-close discontinuity intervals present will be influenced by the orientation of these discontinuities.

Due to the very dense silty sand layers or PWR at depths overlying rock throughout the project site, hard driving condition will be encountered during installation of the driven piles. The Wave Equation Analysis of Piles (WEAP) can be used to help select the proper pile driving equipment and predict drivability of piles. Pre-drilling holes to minimize difficult driving conditions does not appear to be needed at this bridge site.

Placement of MSE walls is anticipated for both end bents to retain the bridge approach embankments. Foundation piles will be located within the reinforced zone of the MSE walls and if installed before the MSE wall construction, as specified in SCDOT Supplemental Technical Specification SC-M-713 (5/1/14), they must be protected from damage during the wall backfill compaction with sleeves or casings. It is anticipated that these piles, which will already be in-place when the approach embankment construction begins, will be subjected to downdrag forces due to the immediate and consolidation settlements of the underlying roadway embankment and residual soils. To effectively manage the settlements related to the MSE wall construction, a settlement monitoring program during and post-construction would be very beneficial. Foundation pile design shall account for downdrag loads in addition to all normal vertical loading. Special care should be taken when preparing the MSE Wall footprint area within the highly plastic sandy elastic silt (MH) encountered at the site. Exposing the excavation to excessive construction traffic or weather conditions over an extended period of time could potentially require overexcavation or undercutting and replacement of the elastic silt. Future geotechnical investigations will need to identify additional concerns related to unsuitable materials, such as soft clays or organic soils present at shallow depths under the MSE walls footprint. External stability analysis must be performed for these walls and soil improvement measures, such as undercutting and replacement with suitable materials, cement treatment, or other mitigation actions, shall be determined.

### 5.1.4 Exit 106 – US 29 (E. Cherokee Street) over I-85

The soils and bedrock that comprise the generalized subsurface profile at the bridge site are shown in Figure A-14 in Appendix A. The replacement of the East Cherokee Street bridge over I-85 will take place to the west (i.e. left) of the existing structure. It is assumed that the proposed bridge will be approximately 196 feet in length, with two 98-foot long spans and MSE Wall retained abutments.

Bridge foundation types including steel H-piles, steel pipe piles (open- or closed-ended), prestressed concrete piles, composite piles, or drilled shafts would be feasible given the subsurface profiles in the borings advanced at the proposed bridge site (BR-127, BR-128, BR-129). The underlying rock surface is irregular across the site and suggests the approximate elevations where driven piles would exhibit a dramatic increase in their axial capacity. These elevations range from approximately 783 feet to 817 feet based on the preliminary subsurface investigation. The presence of the PWR zones overlying the bedrock, as encountered in all three boring locations, and the disintegrated rock encountered within a significant depth interval of boring BR-128, raise a concern for hard driving conditions and overstressing of prestressed concrete piles, that could potentially impede their driving operations. The final bridge subsurface investigation should verify the rock surface elevation at the bridge bent locations. It should also verify the thickness of the disintegrated rock that the driven piles will need to penetrate. In the case of unacceptable disturbance to existing adjacent facilities due to pile driving

vibrations, or magnitude of pier loads being such that a shaft cap is not required, drilled shafts may be considered instead of driven piles for the interior bent.

Unconfined compressive strengths of the schist, granite, and amphibolite encountered at the site, suggest that resistance to rock excavation for potential drilled shaft construction would range from moderate to high. While the discontinuities present within the poor and disintegrated rock mass zone reduce the rock's strength and therefore the energy required to excavate it, depending on their orientation they may also reduce the stability of the rock excavation.

Due to the very dense silty sand/sandy silt layers or PWR at depths overlying rock throughout the project site, hard driving condition will be encountered during installation of the driven piles. The Wave Equation Analysis of Piles (WEAP) can be used to help select the proper pile driving equipment and predict drivability of piles. Pre-drilling holes to minimize difficult driving conditions does not appear to be needed at this bridge site.

Placement of MSE walls is anticipated for both end bents to retain the bridge approach embankments. Foundation piles will be located within the reinforced zone of the MSE walls and if installed before the MSE wall construction, as specified in SCDOT Supplemental Technical Specification SC-M-713 (5/1/14), they must be protected from damage during the wall backfill compaction with sleeves or casings. It is anticipated that these piles, which will already be in-place when the approach embankment construction begins, will be subjected to downdrag forces due to the immediate and consolidation settlements of the underlying roadway embankment and residual soils. To effectively manage the settlements related to the MSE wall construction, a settlement monitoring program during and post-construction would be very beneficial. Foundation pile design shall account for downdrag loads in addition to all normal vertical loading. Although not identified during the current subsurface investigation, potential unsuitable materials, such as soft clays or organic soils present at shallow depths under the MSE walls footprint and identified during a future geotechnical investigation, will need to be taken into consideration. External stability analysis must be performed for these walls and soil improvement measures, such as undercutting and replacement with suitable materials, cement treatment, or other mitigation actions, shall be determined.

### 5.1.5 Norfolk Southern Railroad over I-85

The soils and bedrock that comprise the generalized subsurface profile near the bridge site are shown in Figure A-15 in Appendix A. Norfolk Southern Railway tracks, and consequently the replacement bridge over I-85, will remain on the existing horizontal and vertical alignments. This bridge will not be widened and no maintenance of railway traffic will be required during the bridge replacement.

Bridge foundation types including steel H-piles, steel pipe piles, prestressed concrete piles, composite piles, or drilled shafts would be feasible given the subsurface profiles in the borings advanced near the railroad bridge site (BR-155, BR-156). The underlying rock surface is irregular between the two borings and suggests the approximate elevations where driven piles would exhibit a dramatic increase in their axial capacity. These elevations range from approximately 543 feet to 562 feet based on the preliminary subsurface investigation. The presence of the PWR zones or the dense residual soils with gravel and quartz fragments overlying the bedrock, as encountered in the two boring

locations, raise a concern for hard driving conditions and overstressing of prestressed concrete piles, that could potentially impede their driving operations. The final bridge subsurface investigation should verify the rock surface elevation at the bridge bent locations. During that phase, the feasibility of using prestressed concrete piles will be further investigated. In the case of unacceptable disturbance to existing adjacent facilities due to pile driving vibrations, or magnitude of pier loads being such that a shaft cap is not required, drilled shafts may be considered instead of driven piles for the interior bent.

Unconfined compressive strengths of the granite and schist encountered at the site, suggest that resistance to rock excavation for potential drilled shaft construction would range from low to high. While the discontinuities present within the poor and disintegrated rock mass zone reduce the rock's strength and therefore the energy required to excavate it, depending on their orientation they may also reduce the stability of the rock excavation.

Due to the very dense silty sand/sandy silt layers or PWR at depths overlying rock throughout the project site, hard driving condition will be encountered during installation of the driven piles. The Wave Equation Analysis of Piles (WEAP) can be used to help select the proper pile driving equipment and predict drivability of piles. Pre-drilling holes to minimize difficult driving conditions does not appear to be needed at this bridge site.

## 5.2 Roadway Embankments and Roadway Structures

Placement of new fill embankments will be required to achieve the proposed final roadway grades. In accordance with the SCDOT GDM, the roadway embankments (beyond 150 feet of the bridge) shall be designed and evaluated for the SLS limit state using resistance factors in Chapter 9 and performance limits in Chapter 10 of the SCDOT GDM. Slope stability and settlement analyses shall be completed at critical roadway embankment sections during the final design process in accordance with the SCDOT GDM. Potential slope stability issues may be encountered at fill locations where very loose, low plasticity, alluvial deposits are exposed beneath the toe of the new slope, such as boring location

- R-104, 102NBEX Station 2010+03, 7' LT

It should be noted that the preliminary subsurface investigation did not include locations outside of current SCDOT's Right-of-Way or locations requiring access via private property. Therefore, other critical fill sections may exist within the project limits encountering similar conditions as in R-104.

Besides the MSE walls that are anticipated for some of the bridge abutments and discussed in Section 5.1 of this report, and the median barrier walls along I-85, there are other retaining wall locations that will help accommodate changes in grade and/or reduce right-of-way requirements. Applicable retaining wall types will need to be evaluated during the design phase of the project following an additional geotechnical investigation to be carried out by the Design-Build team. All retaining wall design shall meet the requirements of the SCDOT GDM. External stability analysis must be performed for all of these walls and soil improvement measures, such as undercutting and replacement with suitable materials, cement treatment, or other mitigation actions, shall be determined. The preliminary geotechnical investigation indicated that a sandy elastic silt (MH) layer is present in the approximately top 6 feet boring RW-139. Special care should be taken

when preparing the retaining wall foundations at this location to preclude the requirement for over-excavation or undercutting and replacement of the material due to exposure of the excavation to excessive construction traffic or weather conditions over an extended period of time. Further geotechnical recommendations regarding possible undercut along the proposed retaining wall in the vicinity of RW-139 or the other retaining walls along the project alignment, will be prepared by the Design-Build team after the final subsurface investigation has been completed.

During the construction of the box culvert extensions in the vicinity of borings C-130, C-133, and C-134, very loose to loose subgrade conditions are anticipated near the invert level of the culverts. Prior to placing these extensions, subgrade conditions may need to be improved providing a stable platform to eliminate the potential of differential settlement along the culverts. The highly plastic sandy elastic silt (MH) or fat clay (CH) encountered in the vicinity of borings C-137 and C-138 near the base of two more planned culvert extensions, will likely require undercutting and replacement with a granular material for a stable platform to be established. Future culvert extension in the vicinity of borings C-131 and C-132 is expected to encounter PWR during trench excavation (see Section 5.3) with the potential of the culvert base to be built on rock.

Construction of the new embankments for this project should comply with Section 205-Embankment Construction, of the latest edition of SCDOT Standard Specifications for Highway Construction. Overall, the compacted fill should be constructed by spreading acceptable soil in loose layers of acceptable thickness. The soils used within embankments should be compacted to at least 95 percent of the standard Proctor maximum dry density (AASHTO T 99). The temporary fill surfaces must be sloped during construction to prevent water from ponding in or on the fill. If the fill materials become wet or absorb excessive moisture, construction operations should be halted, and the geotechnical engineer should be consulted for guidance. Where side-hill embankments are to be placed on existing slopes that are steeper than 3H:1V, the new embankment fill shall be “keyed” and benched into the existing ground to reduce the possibility of the formation of a failure surface between the existing soil and the new fill. Prior to placing any new fill material, existing topsoil, roots and vegetative material should be removed and existing fill should be scarified and compacted. Suitable vegetation shall be installed on the finished slope face to reduce the potential for erosion.

## 5.3 Difficult Excavation

Based on the subsurface information collected, bedrock, partially weathered rock (PWR), or dense residual soil zones could occur within the project area at depths above the plan subgrade elevation. Excavations for sloped cuts, wall foundation trenches, or other grading activities, are expected to encounter bedrock, PWR or hard strongly cemented layers within their limits, at the following boring locations:

- R-91, I-85 mainline Station 1869+11, 152’ LT
- SB-11, I-85 mainline Station 1872+06, 12’ LT
- C-131, I-85 mainline Station 1875+09, 111’ LT
- C-132, I-85 mainline Station 1890+37, 69’ LT
- NB-44, I-85 mainline Station 2036+97, 12’ RT

- RW-148, I-85 mainline Station 2128+09, 101' LT
- SB-81, I-85 mainline Station 2222+08, 2' RT

Figures A-16 to A-18 in Appendix A, present generalized subsurface profiles at selected sections where hard excavated conditions may be anticipated.

The cemented and PWR zones can be rock-like in consistency and their excavation could possibly require more than standard earth moving equipment. Selected excavation equipment should depend on the anticipated variability in those zones' thickness, hardness, and degree of cementation. The Design-Build team shall expect that relatively thin and moderately hard and/or cemented layers may be excavated using heavy-duty equipment. However, thicker, harder, and/or more strongly cemented layers may require rock excavation methods using specialized equipment.

The Contractor shall expect that difficult excavation conditions may be encountered during construction at also other than the above listed locations. This is mainly because weathered zones can be highly variable in depth, thickness, and consistency within this geologic region and therefore shallow rock/PWR may exist intermediate of the boring locations. Furthermore, within the project limits, there is a number of critical cut, retaining wall, or culvert areas, which were not included in the subsurface investigation due to their exploration locations not falling within current SCDOT Right-of-Way or due to requiring access via private property.

## 5.4 Corrosion and Deterioration

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. HDR|ICA completed pH, resistivity, chlorides and sulfates testing. The full corrosion and deterioration testing results are summarized in Table 5-1 below and are included in Appendix C.

**Table 5-1. Corrosion and Deterioration Test Summary**

| Structure | Resistivity (ohm·cm) | pH | Chloride (ppm) | Sulfate (ppm) |
|---|---|---|---|---|
| Exit 100 – S-83 (Blacksburg Highway) over I-85 | 1,400 | 6.3 | 115 | 42 |
| Exit 102 – SC 5/SC 198 (N. Mountain Street) over I-85 | 960 | 6.9 | 92 | 136 |
| Exit 104 – S-99 (Tribal Road) over I-85 | 3,640 | 7.2 | 40 | 203 |
| Exit 106 – US-29 (E. Cherokee Street) over I-85 | 2,080 | 7.1 | 105 | 218 |
| Norfolk Southern Railroad over I-85 | 1,960 | 7.2 | 76 | 2.4 |

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

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

- Resistivity less than 3,000 ohm-cm
- Sulfate concentrations greater than 200 ppm
- Chloride concentrations greater than 100 ppm
- The chloride and sulfate testing is waived if the resistivity is greater than or equal to 5000 ohm-cm

Results of the corrosion and deterioration testing indicated that the bridge sites have a low to moderate potential for pile and/or steel deterioration based on the chloride and sulfate concentration, resistivity, pH, and their geographical location. However, interpretation of the data and corrosion protection of the bridge structural components shall be provided by the structural engineers during the design phase of the project.

## 5.5 Vibration Monitoring

A number of construction activities can produce vibrations and noise raising public concerns over safety of areas surrounding the construction site. A vibration monitoring program during construction for neighboring structures shall be conducted. The objective of such a program will be to restrict vibration impacts from construction to a minimum and also provide documentation as to the relationship between construction activities (e.g. demolition, clearing, grading, compaction, and pile driving) and the surrounding structures. Vibration monitoring will likely be necessary during general construction activities in the proximity of the existing railroad which will be in operation.

The vibration monitoring program shall be included in the overall design and construction program by the Design-Build team and be performed in accordance with the specifications and all applicable regional and local regulations. It is also the Design-Build team's responsibility to perform pre-construction and post-construction condition surveys of adjacent structures and document their existing pre-construction and post-construction condition, respectively.

# 6 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 baseline 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 bridges near mile posts 100, 102, 104, and 106 over I-85 and improved ramps and frontage roads in Cherokee 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 these proposed structures.

# 7 References

Goldsmith, R.; Milton, D.J. and Horton, Jr., J.W., 1988; Geologic Map of the Charlotte 1° X 2° Quadrangle, North Carolina and South Carolina; U.S. Geological Survey, Miscellaneous Investigations Series, Map I-1251-E; scale = 1:250,000.

Horton, Jr., J.W. and Zullo, V.A., editors 1991; The Geology of the Carolinas, Carolina Geological Society Fiftieth Anniversary Volume; University of Tennessee Press, Knoxville; pages 3, 49, 60, 61, 113, 121, 132, 133, .

Horton Jr., J. Wright, 2006; Geologic Map of the Kings Mountain and Grover Quadrangles, Cleveland and Gaston Counties, North Carolina and Cherokee and York Counties, South Carolina; U.S. Department of the Interior – U.S. Geological Survey, Open File Report, 2006-1238; map scale = 1:24,000.

South Carolina Department of Transportation, 2010; SCDOT Geotechnical Design Manual, Version 1.1; South Carolina Department of Transportation

# Appendix A. Site Vicinity Map, Test Location Plans, and Generalized Subsurface Profiles

Table A-1. Field Testing Locations

Figure A-1. Site Vicinity Map

Figures A-2 to A-10. Test Location Plans

Figures A-11 to A-18. Generalized Subsurface Profiles

## Table A-1. Field Testing Locations

| Test Boring No. | Alignment | Station | Offset (ft) | Latitude | Longitude | Surface Elevation (ft) | Boring Depth (ft) | Test Category |
|---|---|---|---|---|---|---|---|---|
| SB-1 | I-85 mainline | 1825+00 | 50 LT | 35.11869 | -81.57561 | 585.7 | 8.0 | I-85 Median |
| NB-2 | I-85 mainline | 1827+04 | 60 RT | 35.11888 | -81.57486 | 583.8 | 8.0 | I-85 Median |
| SB-3 | I-85 mainline | 1832+07 | 57 LT | 35.12008 | -81.57396 | 582.4 | 8.0 | I-85 Median |
| NB-4 | I-85 mainline | 1837+04 | 4 RT | 35.12089 | -81.57159 | 580.2 | 5.5 | I-85 Median |
| SB-5 | I-85 mainline | 1842+03 | 12 RT | 35.12171 | -81.57125 | 593.3 | 5.5 | I-85 Median |
| NB-6 | I-85 mainline | 1847+08 | 12 RT | 35.12245 | -81.56983 | 609.1 | 5.5 | I-85 Median |
| SB-7 | I-85 mainline | 1852+08 | 14 RT | 35.12308 | -81.56836 | 615.1 | 5.5 | I-85 Median |
| NB-8 | I-85 mainline | 1857+11 | 13 RT | 35.12363 | -81.56681 | 609.3 | 5.5 | I-85 Median |
| SB-9 | I-85 mainline | 1862+12 | 11 RT | 35.12415 | -81.56526 | 601.3 | 5.5 | I-85 Median |
| NB-10 | I-85 mainline | 1867+11 | 12 RT | 35.12466 | -81.56371 | 593.9 | 5.5 | I-85 Median |
| SB-11 | I-85 mainline | 1872+06 | 12 LT | 35.12517 | -81.56218 | 587.5 | 5.4 | I-85 Median |
| NB-12 | I-85 mainline | 1877+09 | 12 RT | 35.12568 | -81.56062 | 592.9 | 5.5 | I-85 Median |
| SB-13 | I-85 mainline | 1882+03 | 12 RT | 35.12619 | -81.55909 | 610.5 | 5.5 | I-85 Median |
| NB-14 | I-85 mainline | 1887+08 | 12 RT | 35.12671 | -81.55752 | 616.2 | 5.5 | I-85 Median |
| SB-15 | I-85 mainline | 1892+04 | 12 RT | 35.12722 | -81.55598 | 607.9 | 5.5 | I-85 Median |
| NB-16 | I-85 mainline | 1897+04 | 12 RT | 35.12773 | -81.55443 | 598.1 | 5.5 | I-85 Median |
| SB-17 | I-85 mainline | 1902+07 | 13 RT | 35.12825 | -81.55287 | 591.9 | 5.5 | I-85 Median |
| NB-18 | I-85 mainline | 1907+07 | 13 RT | 35.12876 | -81.55132 | 588.2 | 5.5 | I-85 Median |
| NB-19 | I-85 mainline | 1912+06 | 56 RT | 35.12914 | -81.54971 | 584.8 | 8.0 | I-85 Median |
| SB-20 | I-85 mainline | 1917+00 | 51 LT | 35.12986 | -81.54827 | 584.1 | 8.0 | I-85 Median |
| NB-21 | I-85 mainline | 1922+24 | 62 RT | 35.12998 | -81.54648 | 583.0 | 8.0 | I-85 Median |
| SB-22 | I-85 mainline | 1929+03 | 44 LT | 35.13079 | -81.54441 | 584.2 | 8.0 | I-85 Median |
| NB-23 | I-85 mainline | 1931+97 | 55 RT | 35.13076 | -81.54337 | 583.0 | 8.0 | I-85 Median |
| SB-24 | I-85 mainline | 1936+99 | 44 LT | 35.13142 | -81.54186 | 583.9 | 8.0 | I-85 Median |
| SB-25 | I-85 mainline | 1941+96 | 12 RT | 35.13166 | -81.54021 | 582.9 | 5.5 | I-85 Median |
| NB-26 | I-85 mainline | 1947+08 | 10 RT | 35.13207 | -81.53857 | 582.4 | 5.5 | I-85 Median |
| SB-27 | I-85 mainline | 1952+39 | 9 RT | 35.13249 | -81.53687 | 582.0 | 5.5 | I-85 Median |
| NB-28 | I-85 mainline | 1957+01 | 11 RT | 35.13285 | -81.53539 | 582.4 | 5.5 | I-85 Median |

## Table A-1. Field Testing Locations

| Test Boring No. | Alignment | Station | Offset (ft) | Latitude | Longitude | Surface Elevation (ft) | Boring Depth (ft) | Test Category |
|---|---|---|---|---|---|---|---|---|
| SB-29 | I-85 mainline | 1962+06 | 12 RT | 35.13325 | -81.53377 | 583.7 | 5.5 | I-85 Median |
| NB-30 | I-85 mainline | 1967+11 | 5 RT | 35.13366 | -81.53216 | 590.3 | 5.5 | I-85 Median |
| SB-31 | I-85 mainline | 1971+94 | 1 LT | 35.13406 | -81.53062 | 608.2 | 8.0 | I-85 Median |
| SB-32 | I-85 mainline | 1977+10 | 3 RT | 35.13446 | -81.52896 | 628.8 | 6.5 | I-85 Median |
| SB-33 | I-85 mainline | 1982+08 | 9 RT | 35.13483 | -81.52736 | 647.7 | 5.5 | I-85 Median |
| NB-34 | I-85 mainline | 1987+07 | 10 RT | 35.13522 | -81.52576 | 664.3 | 5.5 | I-85 Median |
| SB-35 | I-85 mainline | 1992+00 | 10 RT | 35.13561 | -81.52418 | 677.9 | 5.5 | I-85 Median |
| NB-36 | I-85 mainline | 1997+03 | 11 RT | 35.13600 | -81.52257 | 691.9 | 5.5 | I-85 Median |
| SB-37 | I-85 mainline | 2002+06 | 10 RT | 35.13640 | -81.52096 | 705.6 | 5.5 | I-85 Median |
| NB-38 | I-85 mainline | 2006+95 | 10 RT | 35.13679 | -81.51939 | 719.5 | 5.5 | I-85 Median |
| SB-39 | I-85 mainline | 2012+08 | 9 RT | 35.13719 | -81.51775 | 733.9 | 5.5 | I-85 Median |
| NB-40 | I-85 mainline | 2017+02 | 7 RT | 35.13764 | -81.51619 | 747.6 | 5.5 | I-85 Median |
| SB-41 | I-85 mainline | 2021+98 | 6 RT | 35.13820 | -81.51467 | 760.6 | 5.5 | I-85 Median |
| NB-42 | I-85 mainline | 2027+03 | 15 RT | 35.13884 | -81.51317 | 775.3 | 5.5 | I-85 Median |
| SB-43 | I-85 mainline | 2032+03 | 1 LT | 35.13954 | -81.51173 | 787.6 | 5.5 | I-85 Median |
| NB-44 | I-85 mainline | 2036+97 | 12 RT | 35.14016 | -81.51027 | 803.8 | 5.3 | I-85 Median |
| SB-45 | I-85 mainline | 2042+04 | 10 RT | 35.14084 | -81.50879 | 817.8 | 5.5 | I-85 Median |
| NB-46 | I-85 mainline | 2047+05 | 5 RT | 35.14152 | -81.50733 | 831.8 | 5.5 | I-85 Median |
| SB-47 | I-85 mainline | 2052+07 | CL | 35.14219 | -81.50586 | 843.6 | 5.5 | I-85 Median |
| NB-48 | I-85 mainline | 2057+08 | 7 RT | 35.14284 | -81.50438 | 843.3 | 5.5 | I-85 Median |
| SB-49 | I-85 mainline | 2062+13 | CL | 35.14356 | -81.50293 | 824.8 | 5.5 | I-85 Median |
| NB-50 | I-85 mainline | 2067+06 | 9 RT | 35.14427 | -81.50153 | 803.8 | 5.5 | I-85 Median |
| SB-51 | I-85 mainline | 2072+09 | 1 RT | 35.14509 | -81.50018 | 785.6 | 5.5 | I-85 Median |
| NB-52 | I-85 mainline | 2077+02 | 10 RT | 35.14587 | -81.49883 | 784.9 | 5.5 | I-85 Median |
| SB-53 | I-85 mainline | 2082+02 | 2 RT | 35.14670 | -81.49750 | 795.4 | 5.5 | I-85 Median |
| NB-54 | I-85 mainline | 2087+05 | 4 RT | 35.14751 | -81.49614 | 811.6 | 5.5 | I-85 Median |
| SB-55 | I-85 mainline | 2092+07 | CL | 35.14834 | -81.49479 | 824.8 | 5.5 | I-85 Median |
| NB-56 | I-85 mainline | 2097+04 | 8 RT | 35.14913 | -81.49344 | 831.6 | 5.5 | I-85 Median |
| SB-57 | I-85 mainline | 2102+08 | 1 LT | 35.14997 | -81.49210 | 827.3 | 5.5 | I-85 Median |

## Table A-1. Field Testing Locations

| Test Boring No. | Alignment | Station | Offset (ft) | Latitude | Longitude | Surface Elevation (ft) | Boring Depth (ft) | Test Category |
|---|---|---|---|---|---|---|---|---|
| NB-58 | I-85 mainline | 2107+05 | 5 RT | 35.15077 | -81.49075 | 817.8 | 5.5 | I-85 Median |
| SB-59 | I-85 mainline | 2112+03 | CL | 35.15159 | -81.48942 | 806.8 | 5.5 | I-85 Median |
| NB-60 | I-85 mainline | 2117+04 | 7 RT | 35.15239 | -81.48805 | 803.1 | 5.5 | I-85 Median |
| SB-61 | I-85 mainline | 2122+08 | 1 LT | 35.15322 | -81.48671 | 808.4 | 5.5 | I-85 Median |
| NB-62 | I-85 mainline | 2127+06 | 11 RT | 35.15401 | -81.48534 | 815.7 | 5.5 | I-85 Median |
| SB-63 | I-85 mainline | 2132+05 | CL | 35.15485 | -81.48402 | 821.0 | 5.5 | I-85 Median |
| NB-64 | I-85 mainline | 2137+08 | 8 RT | 35.15565 | -81.48265 | 828.0 | 5.5 | I-85 Median |
| SB-65 | I-85 mainline | 2142+04 | 10 RT | 35.15645 | -81.48131 | 834.0 | 5.5 | I-85 Median |
| NB-66 | I-85 mainline | 2147+09 | 9 RT | 35.15727 | -81.47995 | 835.9 | 5.5 | I-85 Median |
| SB-67 | I-85 mainline | 2152+14 | 1 LT | 35.15811 | -81.47861 | 832.6 | 5.5 | I-85 Median |
| NB-68 | I-85 mainline | 2156+98 | 11 RT | 35.15887 | -81.47728 | 831.6 | 5.5 | I-85 Median |
| SB-69 | I-85 mainline | 2162+04 | 10 RT | 35.15957 | -81.47583 | 829.9 | 5.5 | I-85 Median |
| NB-70 | I-85 mainline | 2167+05 | 10 RT | 35.16003 | -81.47425 | 827.9 | 5.5 | I-85 Median |
| NB-77 | I-85 mainline | 2202+02 | 9 RT | 35.15913 | -81.46273 | 856.4 | 5.5 | I-85 Median |
| NB-78 | I-85 mainline | 2207+11 | 11 RT | 35.15932 | -81.46104 | 841.5 | 5.5 | I-85 Median |
| SB-79 | I-85 mainline | 2212+02 | 1 LT | 35.15977 | -81.45949 | 825.6 | 5.5 | I-85 Median |
| NB-80 | I-85 mainline | 2217+08 | 11 RT | 35.16039 | -81.45797 | 816.6 | 5.5 | I-85 Median |
| SB-81 | I-85 mainline | 2222+08 | 2 RT | 35.16122 | -81.45664 | 820.3 | 4.9 | I-85 Median |
| NB-82 | I-85 mainline | 2227+01 | 11 RT | 35.16201 | -81.45530 | 833.0 | 5.5 | I-85 Median |
| SB-83 | I-85 mainline | 2232+02 | 1 RT | 35.16286 | -81.45398 | 839.4 | 5.5 | I-85 Median |
| NB-84 | I-85 mainline | 2237+07 | 8 RT | 35.16367 | -81.45261 | 846.5 | 5.5 | I-85 Median |
| SB-85 | I-85 mainline | 2242+06 | 1 LT | 35.16452 | -81.45129 | 847.3 | 5.5 | I-85 Median |
| NB-86 | I-85 mainline | 2247+07 | 11 RT | 35.16531 | -81.44993 | 841.1 | 5.5 | I-85 Median |
| SB-87 | I-85 mainline | 2252+03 | 11 RT | 35.16607 | -81.44855 | 831.7 | 5.5 | I-85 Median |
| NB-88 | I-85 mainline | 2257+06 | 11 RT | 35.16673 | -81.44708 | 821.9 | 5.5 | I-85 Median |
| SB-89 | I-85 mainline | 2262+05 | 11 RT | 35.16728 | -81.44555 | 821.0 | 5.5 | I-85 Median |
| NB-90 | I-85 mainline | 2267+06 | 12 RT | 35.16771 | -81.44397 | 825.0 | 5.5 | I-85 Median |
| R-91 | I-85 mainline | 1869+11 | 152 LT | 35.12528 | -81.56330 | 634.1 | 71.3 | Roadway/Cut |
| R-95 | I-85 mainline | 2116+10 | 111 RT | 35.15200 | -81.48810 | 782.5 | 44.1 | Roadway/Fill |

## Table A-1. Field Testing Locations

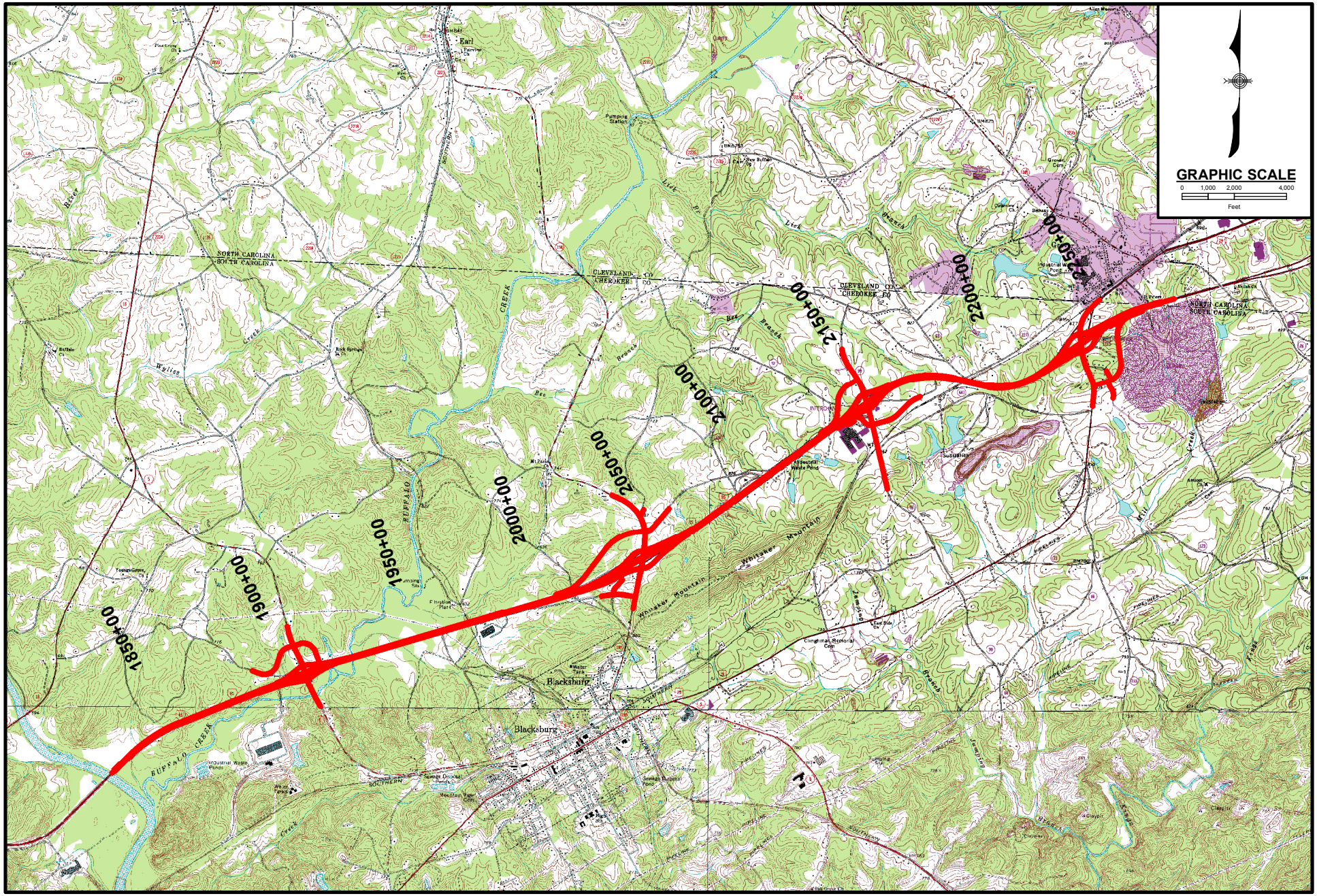
| Test Boring No. | Alignment | Station | Offset (ft) | Latitude | Longitude | Surface Elevation (ft) | Boring Depth (ft) | Test Category |
|---|---|---|---|---|---|---|---|---|
| R-99 | I-85 mainline | 2256+99 | 120 RT | 35.16645 | -81.44694 | 806.0 | 40.0 | Roadway/Fill |
| R-104 | 102NBEX | 2010+03 | 7 LT | 35.13891 | -81.51191 | 787.7 | 85.0 | Roadway/Fill |
| BS-110 | Blacksburg Road | 51+33 | 3 LT | 35.12842 | -81.55128 | 605.6 | 11.5 | Bulk Sample |
| BS-111 | 100NBEX | 1905+56 | 9 LT | 35.12802 | -81.55155 | 599.9 | 11.5 | Bulk Sample |
| BS-112 | N. Mountain Street | 48+17 | 35 RT | 35.14144 | -81.50835 | 841.9 | 11.5 | Bulk Sample |
| BS-113 | 102NBEX | 2009+58 | 11 LT | 35.13886 | -81.51205 | 785.8 | 10.0 | Bulk Sample |
| BS-114 | Tribal Road/S99 | 48+77 | 42 RT | 35.15771 | -81.48001 | 853.8 | 11.5 | Bulk Sample |
| BS-115 | Tribal Road/S99 | 56+04 | 28 RT | 35.15581 | -81.47929 | 849.6 | 11.5 | Bulk Sample |
| BS-116 | E. Cherokee Street | 48+31 | 41 LT | 35.16431 | -81.45232 | 868.0 | 11.5 | Bulk Sample |
| BS-117 | E. Cherokee/US-29 | 51+54 | 41 LT | 35.16343 | -81.45219 | 869.4 | 11.5 | Bulk Sample |
| BR-118 | Blacksburg Road | 49+21 | 8 LT | 35.12897 | -81.55148 | 589.6 | 62.5 | Bridge |
| BR-119 | Blacksburg Road | 50+09 | 10 LT | 35.12874 | -81.55139 | 588.9 | 62.6 | Bridge |
| BR-120 | Blacksburg Road | 51+10 | 2 LT | 35.12848 | -81.55131 | 607.2 | 101.2 | Bridge |
| BR-121 | N. Mountain Street | 48+28 | 5 LT | 35.14140 | -81.50822 | 834.2 | 99.1 | Bridge |
| BR-122 | N. Mountain Street | 49+36 | 12 LT | 35.14110 | -81.50824 | 823.0 | 105.9 | Bridge |
| BR-123 | N. Mountain Street | 50+73 | 5 LT | 35.14073 | -81.50833 | 843.0 | 100.4 | Bridge |
| BR-124 | Tribal Road | 49+18 | 8 LT | 35.15765 | -81.47981 | 834.3 | 89.1 | Bridge |
| BR-125 | Tribal Road | 50+06 | 10 LT | 35.15742 | -81.47972 | 835.3 | 89.5 | Bridge |
| BR-126 | Tribal Road | 51+05 | 5 LT | 35.15715 | -81.47964 | 837.3 | 88.6 | Bridge |
| BR-127 | E. Cherokee Street | 48+60 | 6 RT | 35.16422 | -81.45247 | 865.1 | 71.5 | Bridge |
| BR-128 | E. Cherokee Street | 49+99 | 19 LT | 35.16385 | -81.45233 | 847.7 | 79.2 | Bridge |
| BR-129 | E. Cherokee Street | 51+28 | 1 LT | 35.16349 | -81.45234 | 861.3 | 100.4 | Bridge |
| MASW-1 | I-85 mainline | 1906+89 | 85 LT | 35.12906 | -81.55149 | 590.7 | *66.2 | Bridge |
| MASW-2 | I-85 mainline | 2044+45 | 80 LT | 35.14145 | -81.50815 | 832.8 | *72.4 | Bridge |

## Table A-1. Field Testing Locations

| Test Boring No. | Alignment | Station | Offset (ft) | Latitude | Longitude | Surface Elevation (ft) | Boring Depth (ft) | Test Category |
|---|---|---|---|---|---|---|---|---|
| MASW-3 | I-85 mainline | 2148+16 | 78 LT | 35.15773 | -81.47985 | 836.2 | *76.6 | Bridge |
| MASW-4 | I-85 mainline | 2238+58 | 114 LT | 35.16416 | -81.45245 | 864.8 | *80.5 | Bridge |
| MASW-5 | I-85 mainline | 1971+62 | 55 LT | 35.13429 | -81.53028 | 606.7 | *80.3 | Bridge |
| C-130 | I-85 mainline | 1864+08 | 89 LT | 35.12460 | -81.56478 | 578.6 | 29.2 | Culvert |
| C-131 | I-85 mainline | 1875+09 | 111 LT | 35.12579 | -81.56139 | 568.5 | 7.1 | Culvert |
| C-132 | I-85 mainline | 1890+37 | 69 LT | 35.12725 | -81.55660 | 611.2 | 10.1 | Culvert |
| C-133 | I-85 mainline | 1945+00 | 47 LT | 35.13206 | -81.53929 | 583.9 | 33.5 | Culvert |
| C-134 | I-85 mainline | 1969+59 | 48 LT | 35.13400 | -81.53142 | 598.8 | 34.9 | Culvert |
| C-137 | I-85 mainline | 2124+59 | 99 LT | 35.15385 | -81.48623 | 805.5 | 25.0 | Culvert |
| C-138 | I-85 mainline | 2164+05 | 87 LT | 35.16003 | -81.47532 | 822.4 | 40.0 | Culvert |
| RW-139 | I-85 mainline | 2104+02 | 78 LT | 35.15046 | -81.49173 | 823.2 | 20.0 | Retain. Wall |
| RW-140 | I-85 mainline | 2106+09 | 69 LT | 35.15077 | -81.49115 | 819.6 | 20.0 | Retain. Wall |
| RW-141 | I-85 mainline | 2108+01 | 76 LT | 35.15110 | -81.49065 | 818.6 | 15.0 | Retain. Wall |
| RW-142 | I-85 mainline | 2114+09 | 101 LT | 35.15215 | -81.48906 | 789.1 | 33.7 | Retain. Wall |
| RW-143 | I-85 mainline | 2114+04 | 110 RT | 35.15167 | -81.48866 | 786.3 | 43.6 | Retain. Wall |
| RW-143A | I-85 mainline | 2114+08 | 52 RT | 35.15181 | -81.48876 | 803.8 | 58.7 | Retain. Wall |
| RW-144 | I-85 mainline | 2115+98 | 72 LT | 35.15245 | -81.48857 | 784.4 | 40.8 | Retain. Wall |
| RW-145 | I-85 mainline | 2118+15 | 101 LT | 35.15281 | -81.48797 | 788.3 | 30.4 | Retain. Wall |
| RW-146 | I-85 mainline | 2123+96 | 100 LT | 35.15375 | -81.48640 | 804.6 | 15.0 | Retain. Wall |
| RW-147 | I-85 mainline | 2126+10 | 101 LT | 35.15410 | -81.48583 | 806.7 | 20.0 | Retain. Wall |
| RW-148 | I-85 mainline | 2128+09 | 101 LT | 35.15442 | -81.48529 | 808.3 | 10.1 | Retain. Wall |
| RW-149 | I-85 mainline | 2130+01 | 102 LT | 35.15474 | -81.48477 | 811.9 | 13.4 | Retain. Wall |
| R-150 | I-85 mainline | 2258+01 | 57 RT | 35.16673 | -81.44673 | 817.7 | 54.0 | Roadway/Fill |
| R-153 | I-85 mainline | 2105+05 | 111 RT | 35.15021 | -81.49108 | 838.0 | 45.0 | Roadway/Cut |
| RW-154 | Henson Road | 12+12 | 14 LT | 35.13728 | -81.51186 | 815.4 | 35.0 | Retain. Wall |
| BR-155 | I-85 mainline | 1971+60 | 56 LT | 35.13418 | -81.53078 | 606.5 | 91.1 | Bridge |
| BR-156 | I-85 mainline | 1973+54 | 40 RT | 35.13408 | -81.53007 | 614.2 | 79.3 | Bridge |

*Actual imaging depth was limited to less than 100 feet and the last interpreted $V_s$ value was extended to 100 feet to represent the remaining portion of the profile.

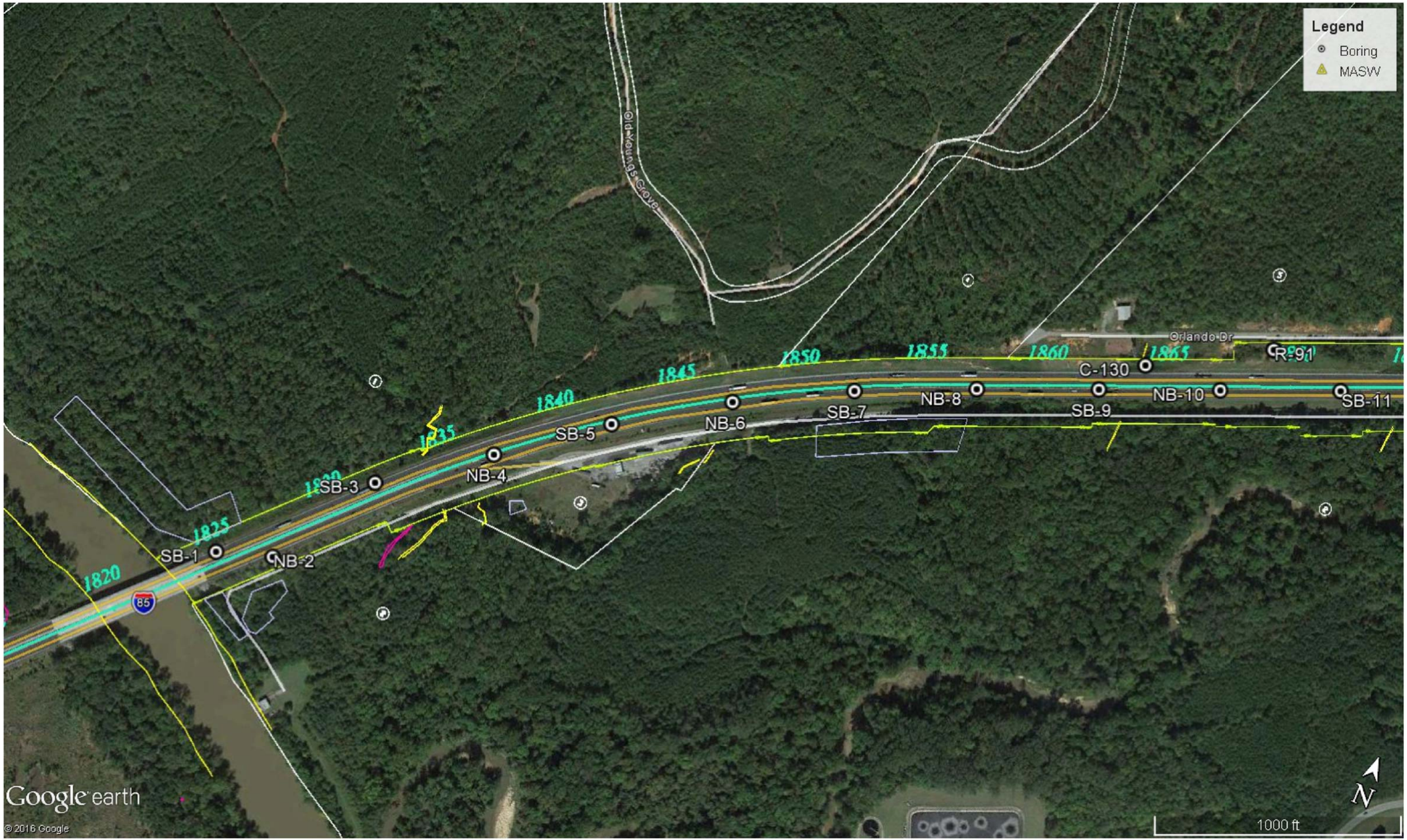
# Site Vicinity Map




BLACKSBURG SOUTH, BLACKSBURG NORTH AND GROVER QUADRANGLES
7.5 MINUTE SERIES (TOPOGRAPHIC)
SOUTH CAROLINA - CHEROKEE COUNTY

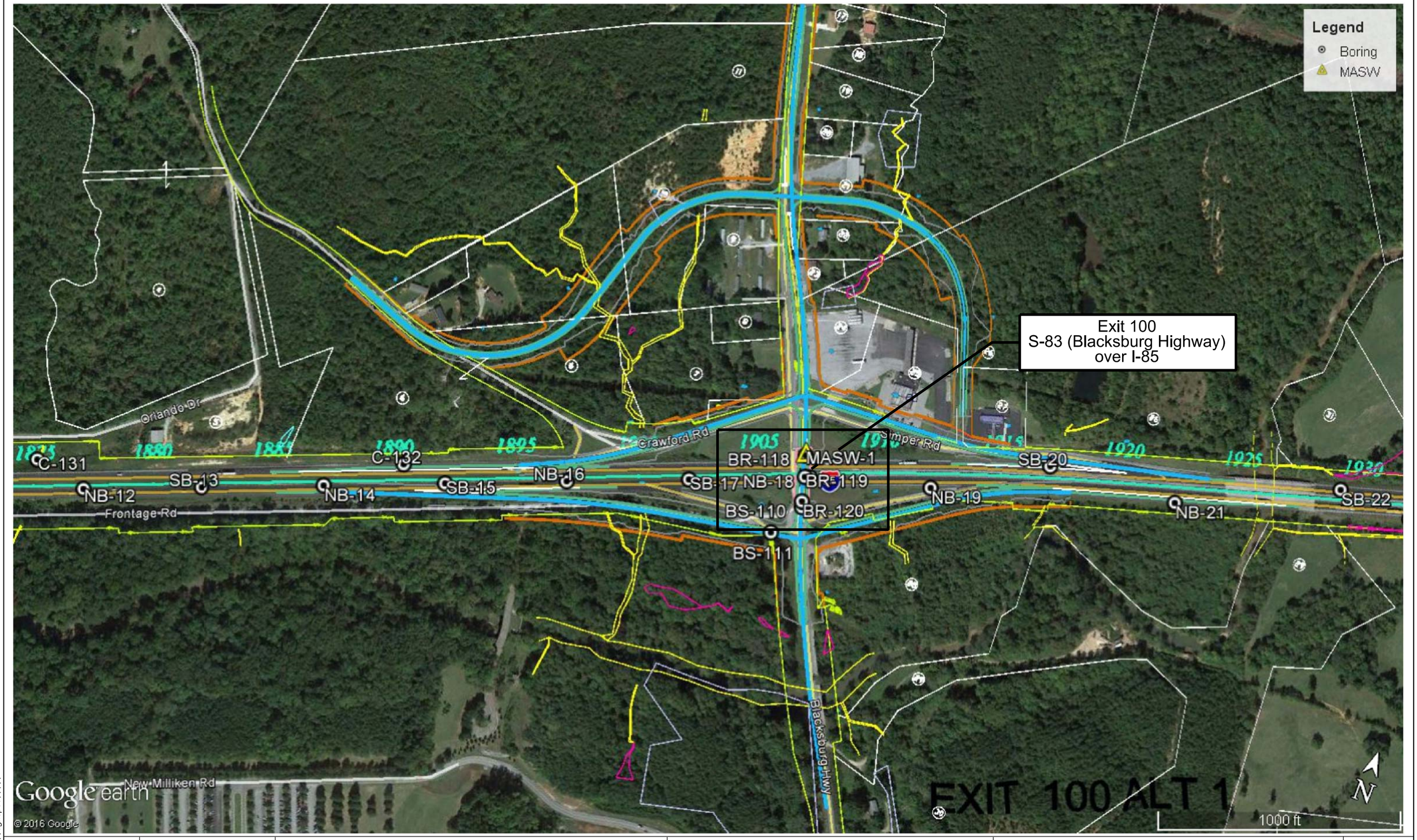
**FIGURE A-1**

**I-85 WIDENING FROM MP96-MP106**



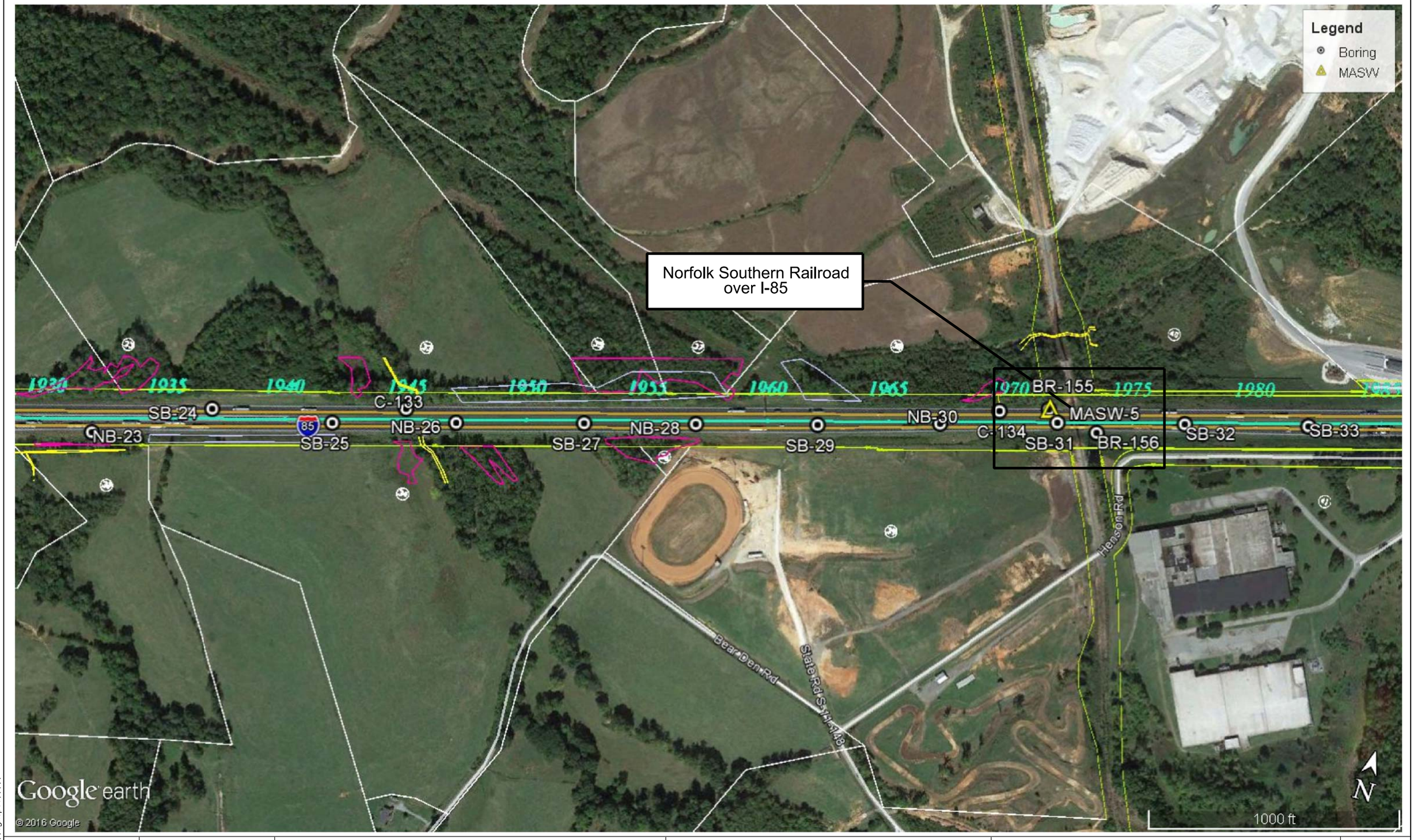

| | | | | | |
|---|---|---|---|---|---|
| PROJECT No. : | 10023919 | DESIGNED BY : | DLC | HDR \| ICA | TEST LOCATION PLAN<br>I-85 WIDENING MM96 - MM106<br>CHEROKEE COUNTY, SOUTH CAROLINA |
| DATE : | 4-5-2017 | DRAWN BY : | TSS | | FIGURE : A-2 |
| SCALE : | As Noted | CHECKED BY : | WDS | | |

$$$$dgnspec$$$$*
$$$$date$$$



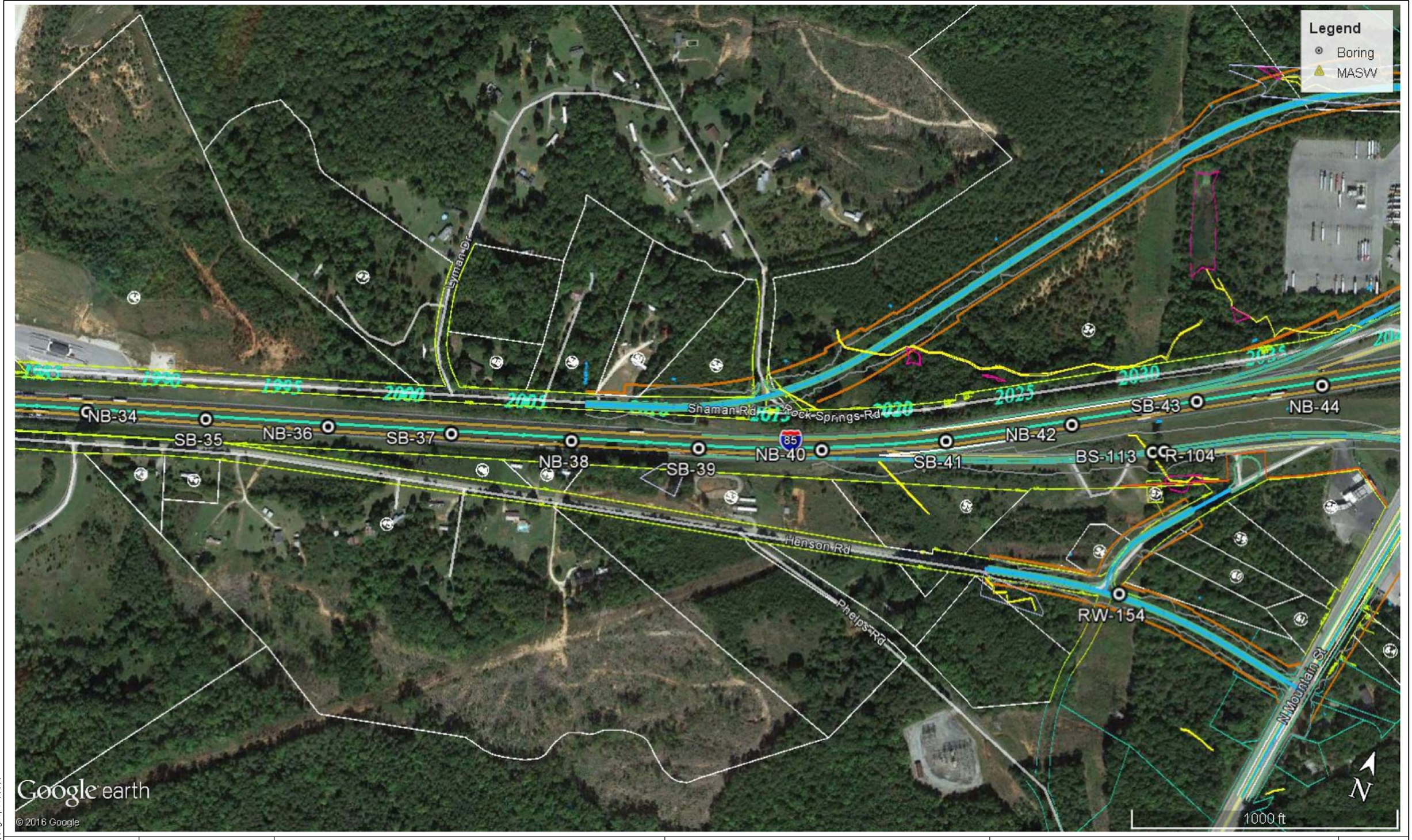

| | | | | | |
|---|---|---|---|---|---|
| PROJECT No. : | 10023919 | DESIGNED BY : | DLC | HDR \| ICA | TEST LOCATION PLAN<br>I-85 WIDENING MM96 - MM106<br>CHEROKEE COUNTY, SOUTH CAROLINA |
| DATE : | 4-5-2017 | DRAWN BY : | TSS | | FIGURE : A-3 |
| SCALE : | As Noted | CHECKED BY : | WDS | | |

$$$$date$$$ $$$$dgnspec$$$$$*




| | | | | | |
|---|---|---|---|---|---|
| PROJECT No. : | 10023919 | DESIGNED BY : | DLC | HDR \| ICA | TEST LOCATION PLAN<br>I-85 WIDENING MM96 - MM106<br>CHEROKEE COUNTY, SOUTH CAROLINA |
| DATE : | 4-5-2017 | DRAWN BY : | TSS | | FIGURE : A-4 |
| SCALE : | As Noted | CHECKED BY : | WDS | | |

$$$$date$$$ $$$$dgnspec$$$$$*

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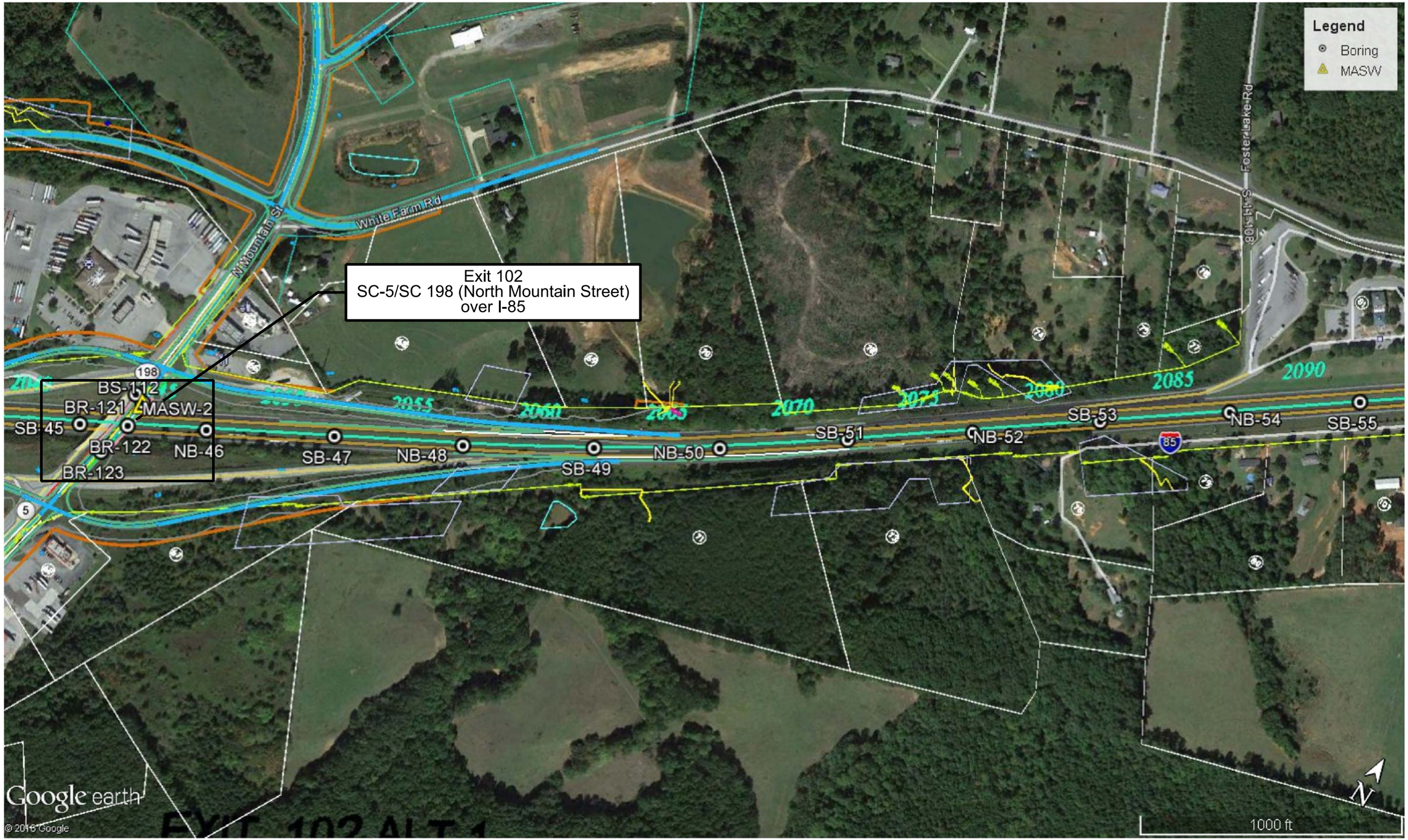
|---|---|---|---|---|---|
| PROJECT No. : | 10023919 | DESIGNED BY : | DLC | HDR \| ICA | TEST LOCATION PLAN<br>I-85 WIDENING MM96 - MM106<br>CHEROKEE COUNTY, SOUTH CAROLINA |
| DATE : | 4-5-2017 | DRAWN BY : | TSS | | FIGURE : A-5 |
| SCALE : | As Noted | CHECKED BY : | WDS | | |

$$$$date$$$ $$$$dgnspec$$$$$*

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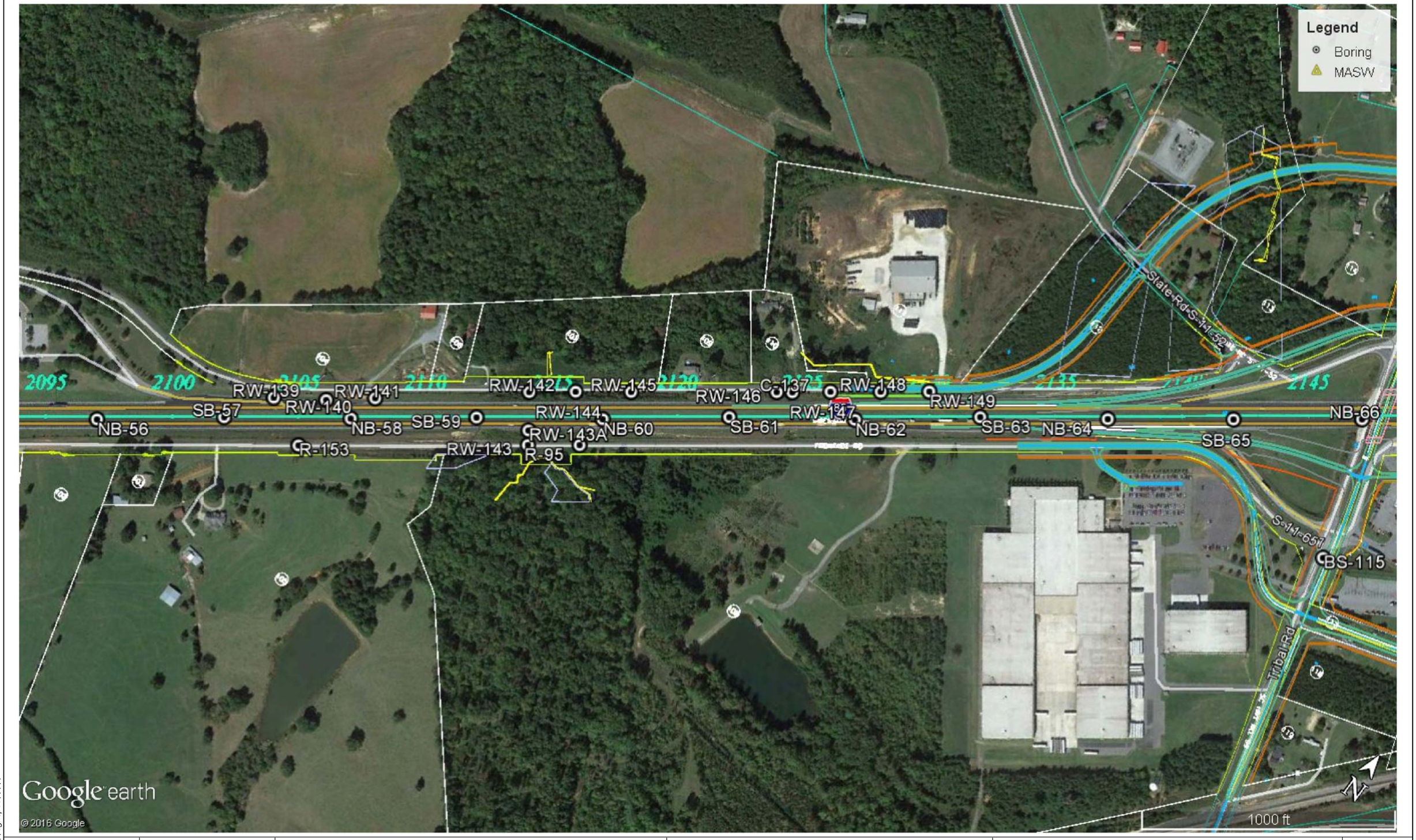
|---|---|---|---|---|---|
| PROJECT No. : | 10023919 | DESIGNED BY : | DLC | HDR \| ICA | TEST LOCATION PLAN<br>I-85 WIDENING MM96 - MM106<br>CHEROKEE COUNTY, SOUTH CAROLINA |
| DATE : | 4-5-2017 | DRAWN BY : | TSS | | FIGURE : A-6 |
| SCALE : | As Noted | CHECKED BY : | WDS | | |

$$$$dgnspec$$$$*
$$$$date$$$

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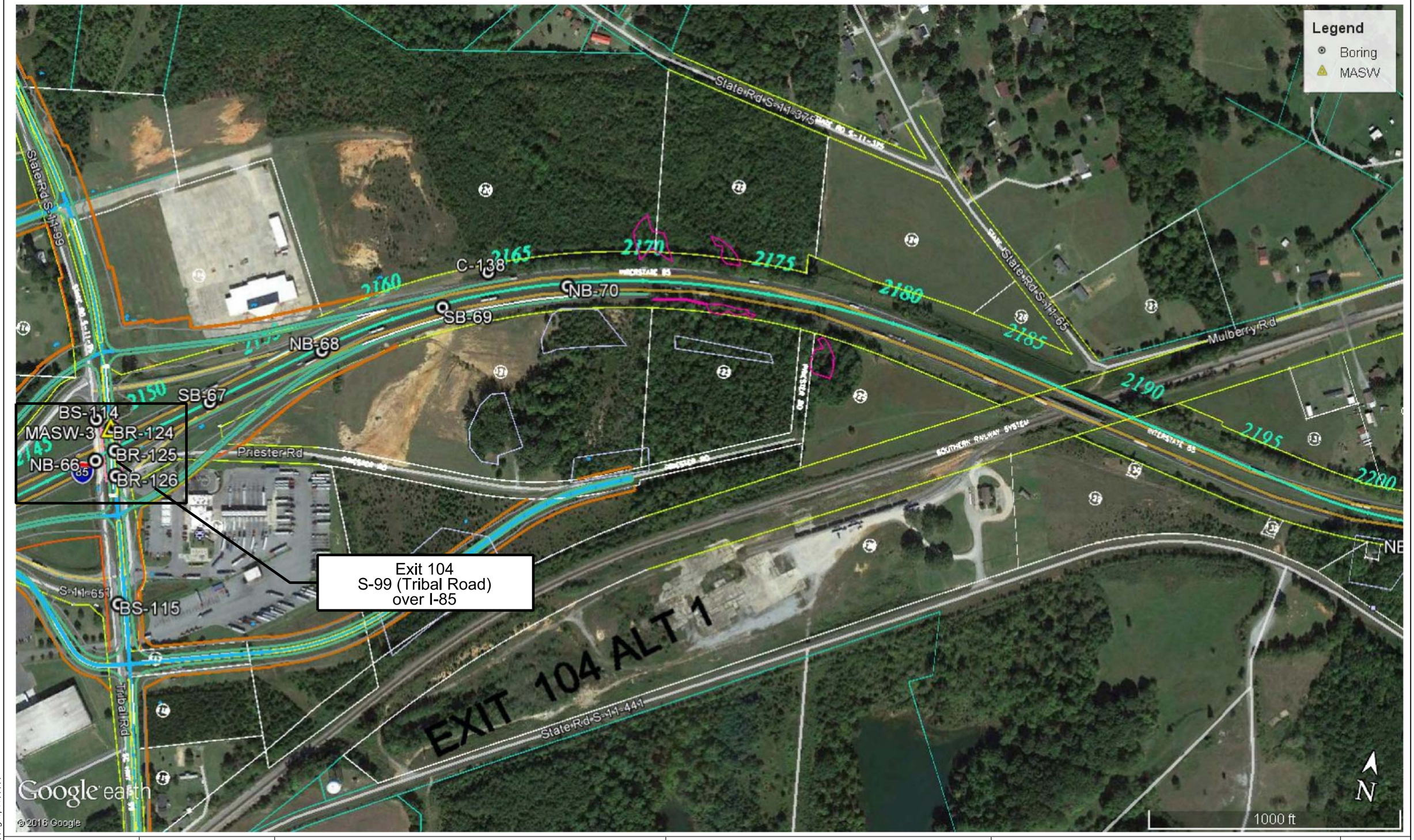
|---|---|---|---|---|---|
| PROJECT No. : | 10023919 | DESIGNED BY : | DLC | HDR \| ICA | TEST LOCATION PLAN<br>I-85 WIDENING MM96 - MM106<br>CHEROKEE COUNTY, SOUTH CAROLINA |
| DATE : | 4-5-2017 | DRAWN BY : | TSS | | FIGURE : A-7 |
| SCALE : | As Noted | CHECKED BY : | WDS | | |

$$$$date$$$ $$$$dgnspec$$$$$*

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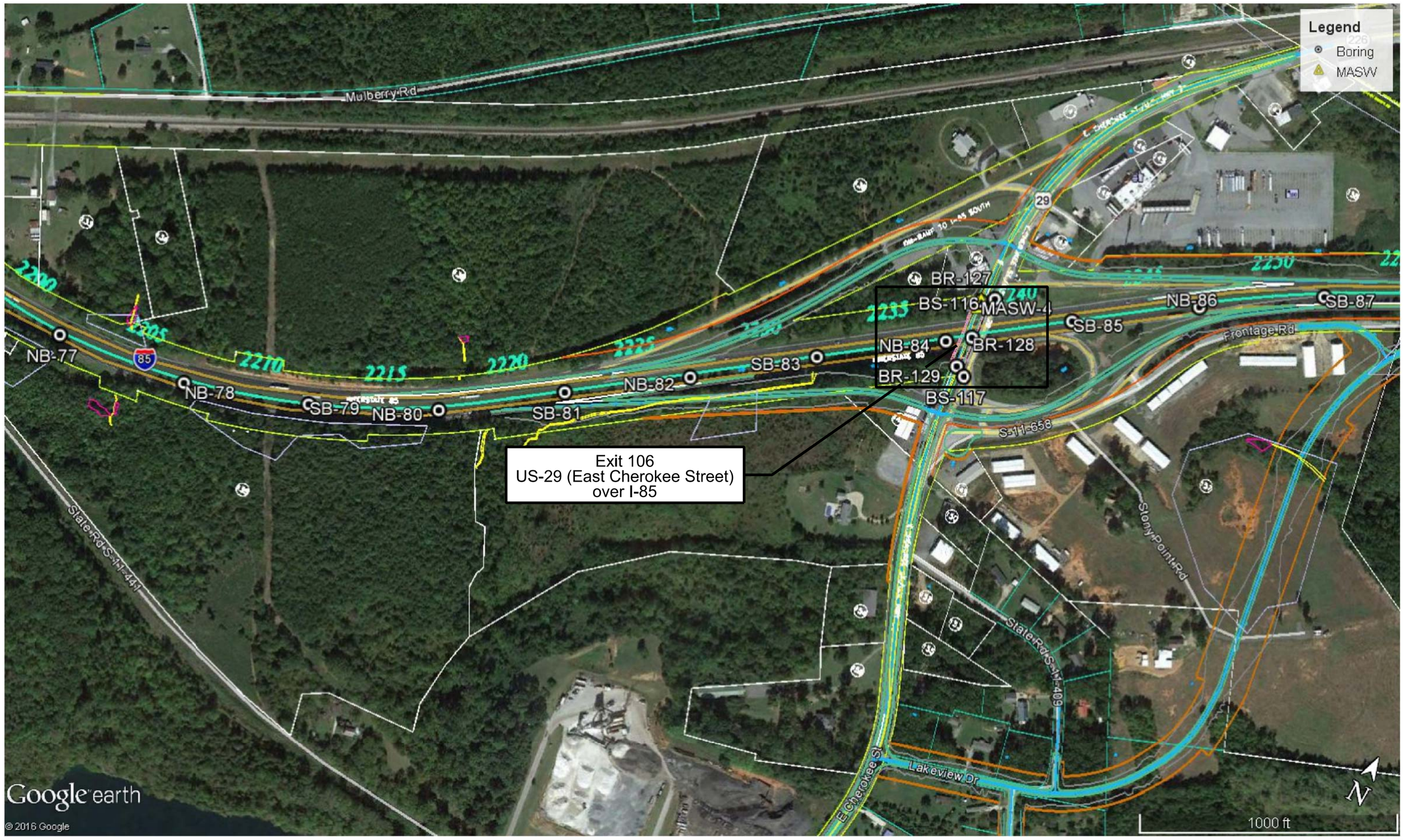
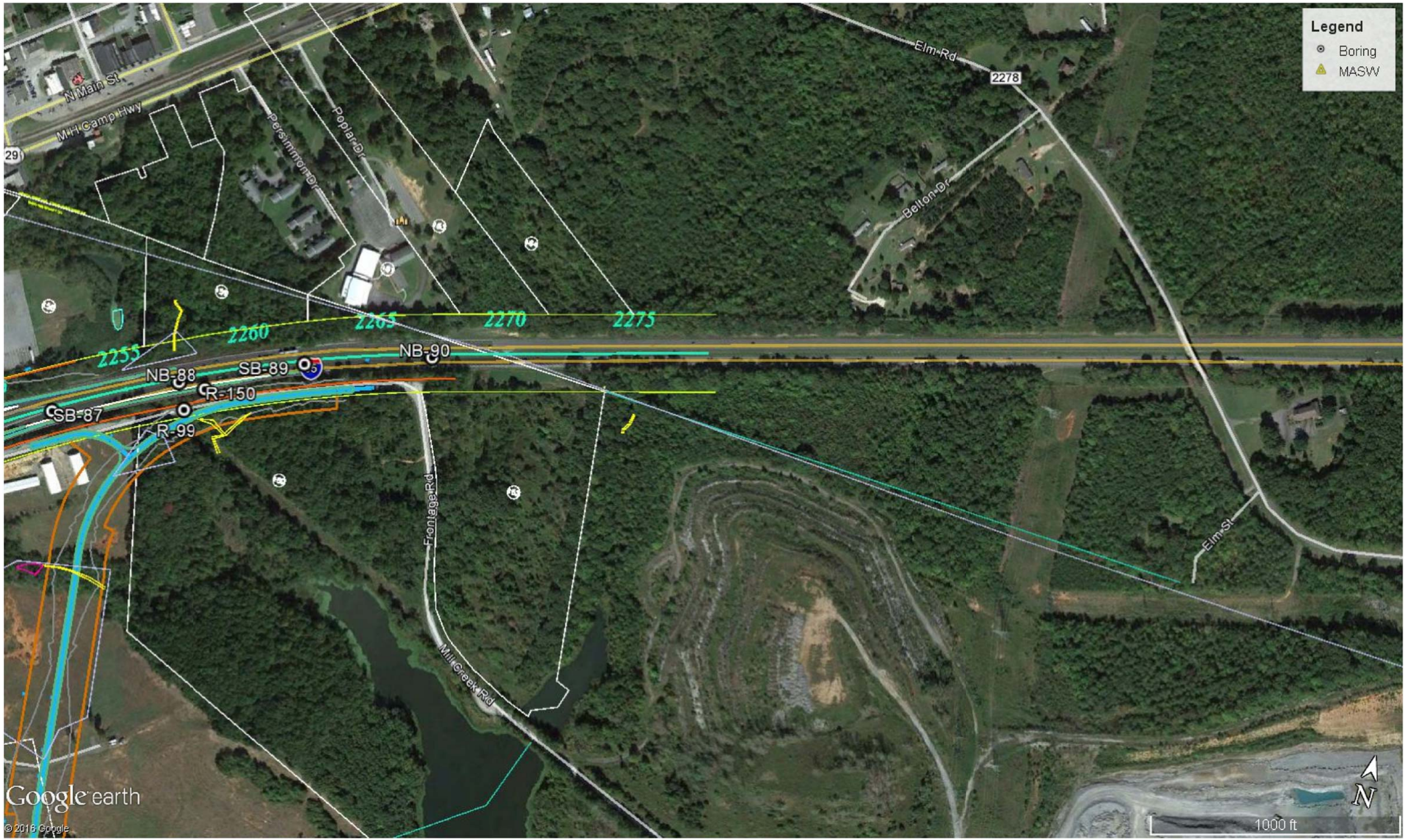
|---|---|---|---|---|---|
| PROJECT No. : | 10023919 | DESIGNED BY : | DLC | HDR \| ICA | TEST LOCATION PLAN<br>I-85 WIDENING MM96 - MM106<br>CHEROKEE COUNTY, SOUTH CAROLINA |
| DATE : | 4-5-2017 | DRAWN BY : | TSS | | FIGURE : A-8 |
| SCALE : | As Noted | CHECKED BY : | WDS | | |

$$$$dgnspec$$$$*
$$$$date$$$$




| | | | | | |
|---|---|---|---|---|---|
| PROJECT No. : | 10023919 | DESIGNED BY : | DLC | HDR \| ICA | TEST LOCATION PLAN<br>I-85 WIDENING MM96 - MM106<br>CHEROKEE COUNTY, SOUTH CAROLINA |
| DATE : | 4-5-2017 | DRAWN BY : | TSS | | FIGURE : A-9 |
| SCALE : | As Noted | CHECKED BY : | WDS | | |

$$$$date$$$ $$$$dgnspec$$$$$*

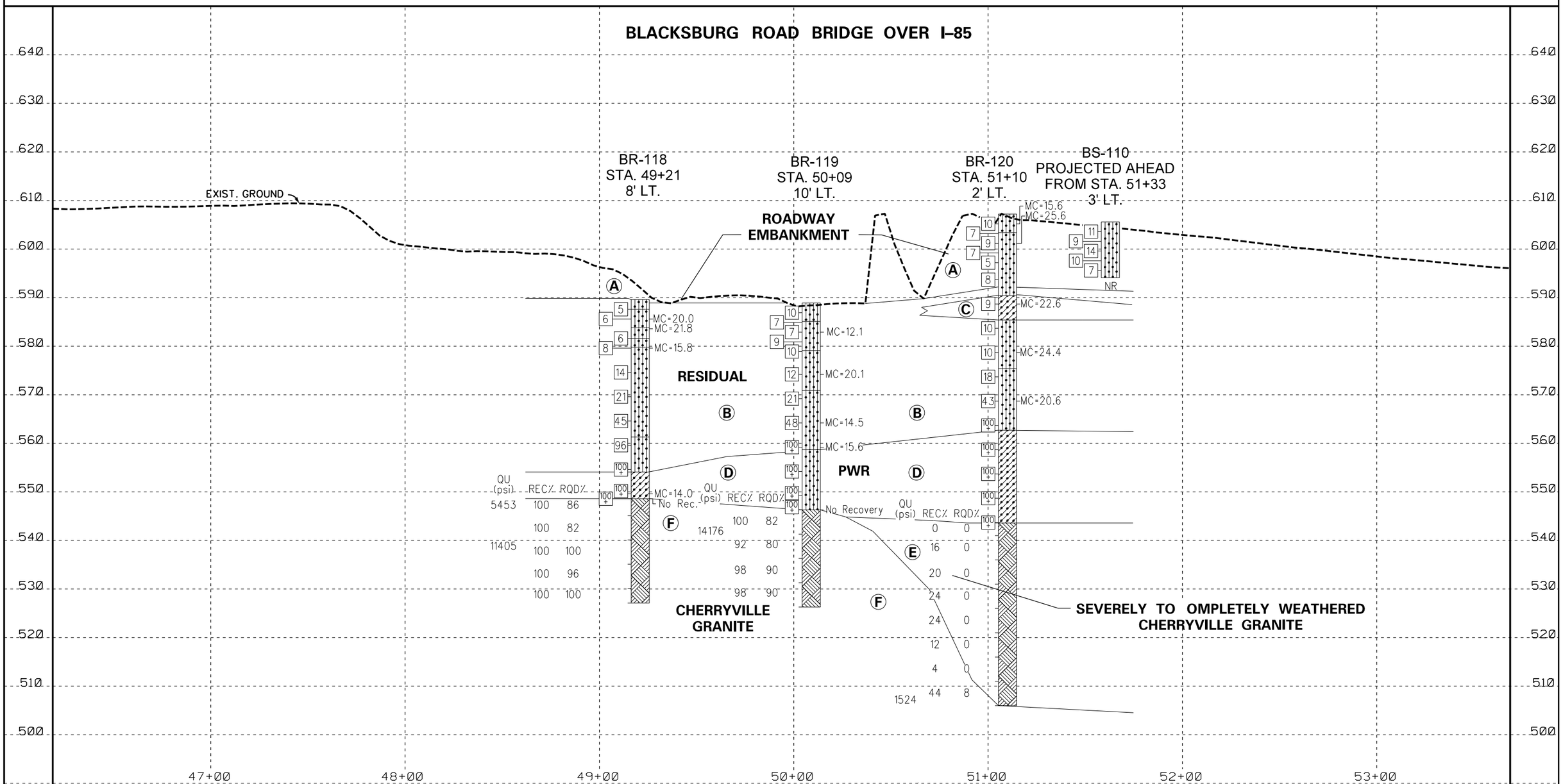



| | | | | | |
|---|---|---|---|---|---|
| PROJECT No. : | 10023919 | DESIGNED BY : | DLC | HDR \| ICA | TEST LOCATION PLAN<br>I-85 WIDENING MM96 - MM106<br>CHEROKEE COUNTY, SOUTH CAROLINA |
| DATE : | 4-5-2017 | DRAWN BY : | TSS | | FIGURE : A-10 |
| SCALE : | As Noted | CHECKED BY : | WDS | | |

$$$$date$$$ $$$$dgnspec$$$$$*

| FED. RD. DIV. NO. | STATE | COUNTY | FILE NO. | ROAD/ROUTE NO. | SHEET NO. |
|---|---|---|---|---|---|
| 3 | S.C. | CHEROKEE | | I-85 | - |

# BLACKSBURG ROAD BRIDGE OVER I-85




## MATERIAL DESCRIPTIONS

(A) Loose to medium dense, fine to coarse, silty SAND.

(B) Loose to very dense, fine to coarse, silty SAND w/ mica, feldspar and gravel size rock fragments in parts.

(C) Loose, clayey SAND.

(D) Very dense, micaceous, fine to coarse, clayey to silty SAND with silt to gravel size schist and granite fragments.

(E) Severely to completely weathered Cherryville Granite with clay, medium to coarse grain traces of pegmatite fragments and friable granite fragments.

(F) Medium to coarse grain, slightly weathered to fresh, hard to very hard, Cherryville Granite.

## LEGEND OF MATERIAL GRAPHICS FOR SOIL TEST BORINGS

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

## MISCELLANEOUS SYMBOLS

- [37] STANDARD PENETRATION RESISTANCE
- NR BORING TERMINATED WITHOUT REFUSAL

FIGURE: A-11

| REV. NO. | BY | DATE | DESCRIPTION OF REVISION |
|---|---|---|---|
| 4 | | | |
| 3 | | | |
| 2 | | | |
| 1 | | | |

TOPO. _____ DATE _____ SCALE
DWG. _____ DATE _____ 1" = 50' HORIZ.
R/W _____ DATE _____ 1" = 20' VERT.

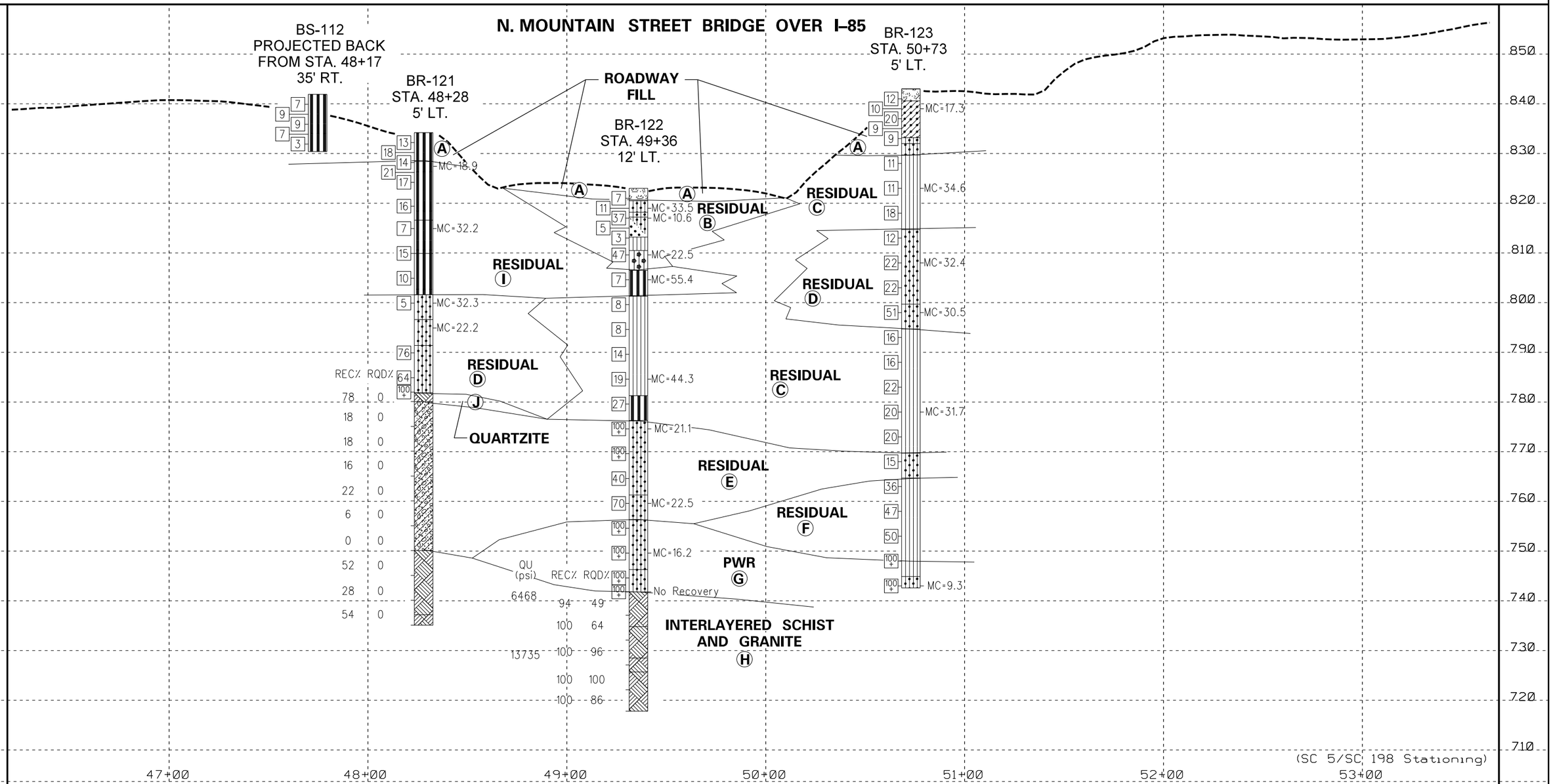
HDR | ICA

GENERALIZED SUBSURFACE PROFILE
EXIT 100 - S-83 (BLACKSBURG HIGHWAY)
BRIDGE OVER I-85
CHEROKEE COUNTY
SOUTH CAROLINA

4/18/2017
G:_EBS_HDR Projects\10023919 SC I-85 Widening DB Prep near NC State Line\6.0 CAD_BIM\6.2 Work in Progress\DWGS\Bridge Profile - I-85 over Blacksburg Road.dgn

| FED. RD. DIV. NO. | STATE | COUNTY | FILE NO. | ROAD/ROUTE NO. | SHEET NO. |
|---|---|---|---|---|---|
| 3 | S.C. | CHEROKEE | | I-85 | - |

# N. MOUNTAIN STREET BRIDGE OVER I-85




## MATERIAL DESCRIPTIONS

(A) Topsoil; soft to very stiff medium plasticity, sandy elastic SILT; loose to medium dense, clayey SAND with gravel size mica, feldspar and quartz fragments and loose silty SAND.

(B) Loose to dense, saprolitic, micaceous, silty SAND with gravel size quartz fragments and soft, clayey, silty micaceous SILT bed.

(C) Firm to very stiff, clayey and saprolitic in part, sandy SILT with mica and feldspar fragments; very stiff, clayey elastic SILT with sand bed included.

(D) Loose to very dense, saprolitic in part, clayey, silty SAND with mica and feldspar grains.

(E) Medium dense to very dense, saprolitic, clayey, silty SAND with schist, mica, quartz, feldspar fragments and thin PWR seams; includes cored completely weathered ROCK with fragments of phyllite, quartz fragments and quartz veins.

(F) Hard, clayey, sandy SILT with mica and feldspar fragments, PWR at base.

(G) Very dense, clayey, silty SAND with mica and quartz fragments & hard, clayey, sandy SILT.

(H) Fine to medium grain, thinly foliated, fresh to highly weathered, soft to hard SCHIST and medium grain to pegmatite crystals, thinly foliated in part, fresh to highly weathered, hard to very hard GRANITE; each rock type with clay seams.

(I) Firm to very stiff, clayey, sandy elastic SILT with feldspar and mica fragments.

(J) Very fine grain, faint foliation, slightly weathered, very hard.

## LEGEND OF MATERIAL GRAPHICS FOR SOIL TEST BORINGS

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

### MISCELLANEOUS SYMBOLS

- 37 — STANDARD PENETRATION RESISTANCE
- NR — BORING TERMINATED WITHOUT REFUSAL

FIGURE: A-12

| REV. NO. | BY | DATE | DESCRIPTION OF REVISION |
|---|---|---|---|
| 4 | | | |
| 3 | | | |
| 2 | | | |
| 1 | | | |

TOPO. _____ DATE _____ SCALE
DWG. _____ DATE _____ 1" = 50' HORIZ.
R/W _____ DATE _____ 1" = 20' VERT.

HDR | ICA

GENERALIZED SUBSURFACE PROFILE
EXIT 102 - SC 5/SC 198 (NORTH MOUNTAIN STREET) BRIDGE OVER I-85
CHEROKEE COUNTY
SOUTH CAROLINA

4/18/2017
G:_EBS_HDR Projects\1002399 SC I-85 Widening DB Prep near NC State Line\6.0 CAD_BIM\6.2 Work in Progress\DWGS\Bridge Profile - I-85 over N. Mountain Street.dgn

| FED. RD. DIV. NO. | STATE | COUNTY | FILE NO. | ROAD/ROUTE NO. | SHEET NO. |
|---|---|---|---|---|---|
| 3 | S.C. | CHEROKEE | | I-85 | - |

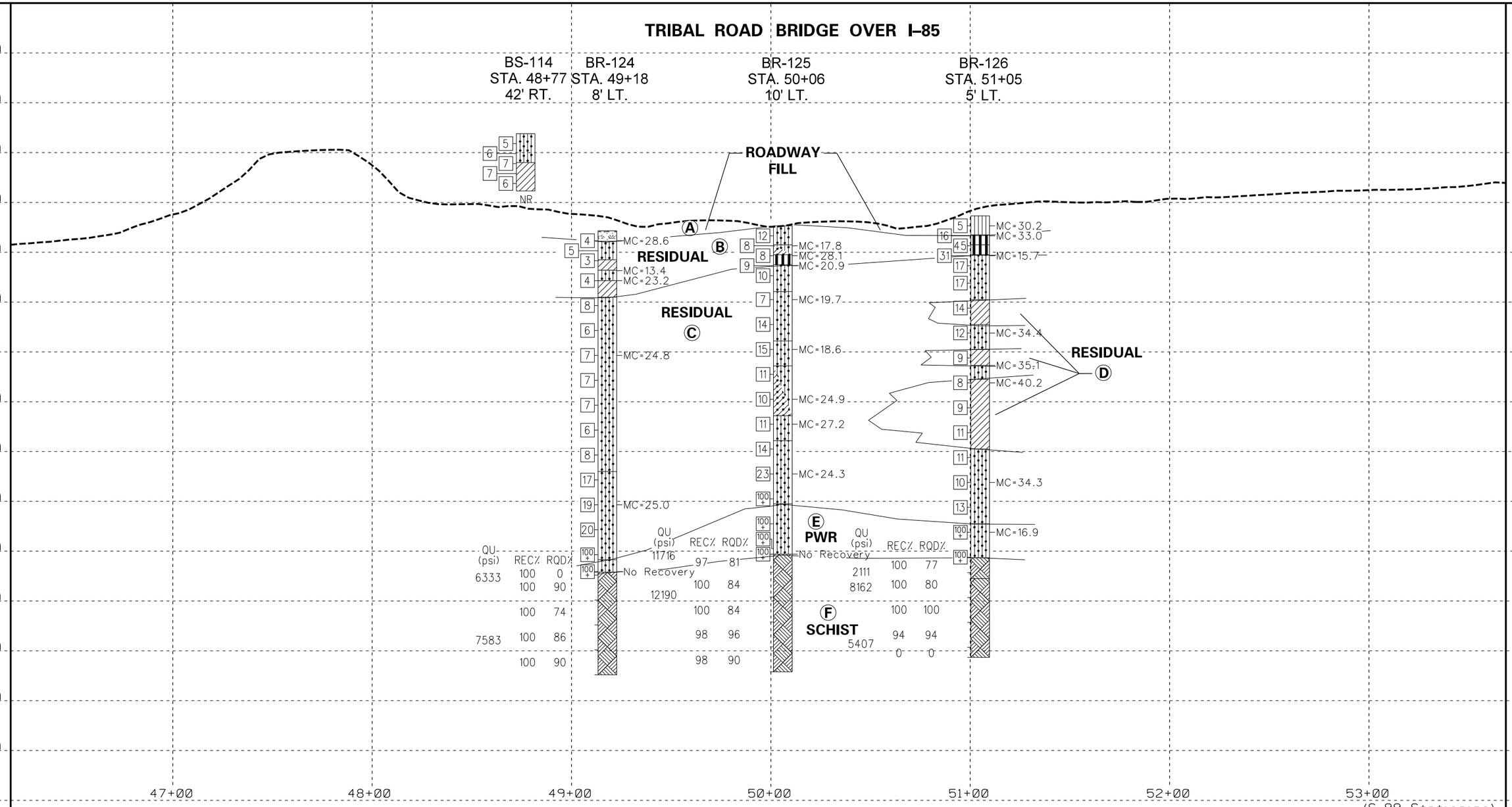
# TRIBAL ROAD BRIDGE OVER I-85

BS-114 STA. 48+77 42' RT.

BR-124 STA. 49+18 8' LT.

BR-125 STA. 50+06 10' LT.

BR-126 STA. 51+05 5' LT.




## MATERIAL DESCRIPTIONS

**A** Topsoil and firm, low to high plasticity, SILT with sand, sandy lean CLAY and loose non-plastic silty SAND.

**B** Thinly interlayered, very loose to loose, clayey, silty SAND; soft sandy lean CLAY and very stiff to hard, medium to high plasticity, saprolitic, gravelly SILT each with mica.

**C** Loose to dense (rarely very dense), non-plastic to low plasticity, saprolitic in parts, silty SAND with gravel size mica, feldspar and quartz fragments in parts.

**D** Firm to stiff, non-plastic to low plasticity, micaceous, saprolitic, sandy lean CLAY with gravel size rock fragments in parts.

**E** Very dense schist and feldspar fragments with mica, sand and silt.

**F** Fine to medium grain with layers coarse grain, pegmatite pods, contorted foliation in part, slightly weathered to fresh with seams highly weathered, moderately hard to very hard, thin granitic layers in parts.

## LEGEND OF MATERIAL GRAPHICS FOR SOIL TEST BORINGS

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

## MISCELLANEOUS SYMBOLS

- 37 — STANDARD PENETRATION RESISTANCE
- NR — BORING TERMINATED WITHOUT REFUSAL

FIGURE: A-13

| REV. NO. | BY | DATE | DESCRIPTION OF REVISION |
|---|---|---|---|
| 4 | | | |
| 3 | | | |
| 2 | | | |
| 1 | | | |

TOPO. _____ DATE _____
DWG. _____ DATE _____
R/W _____ DATE _____

SCALE
1" = 50' HORIZ.
1" = 20' VERT.

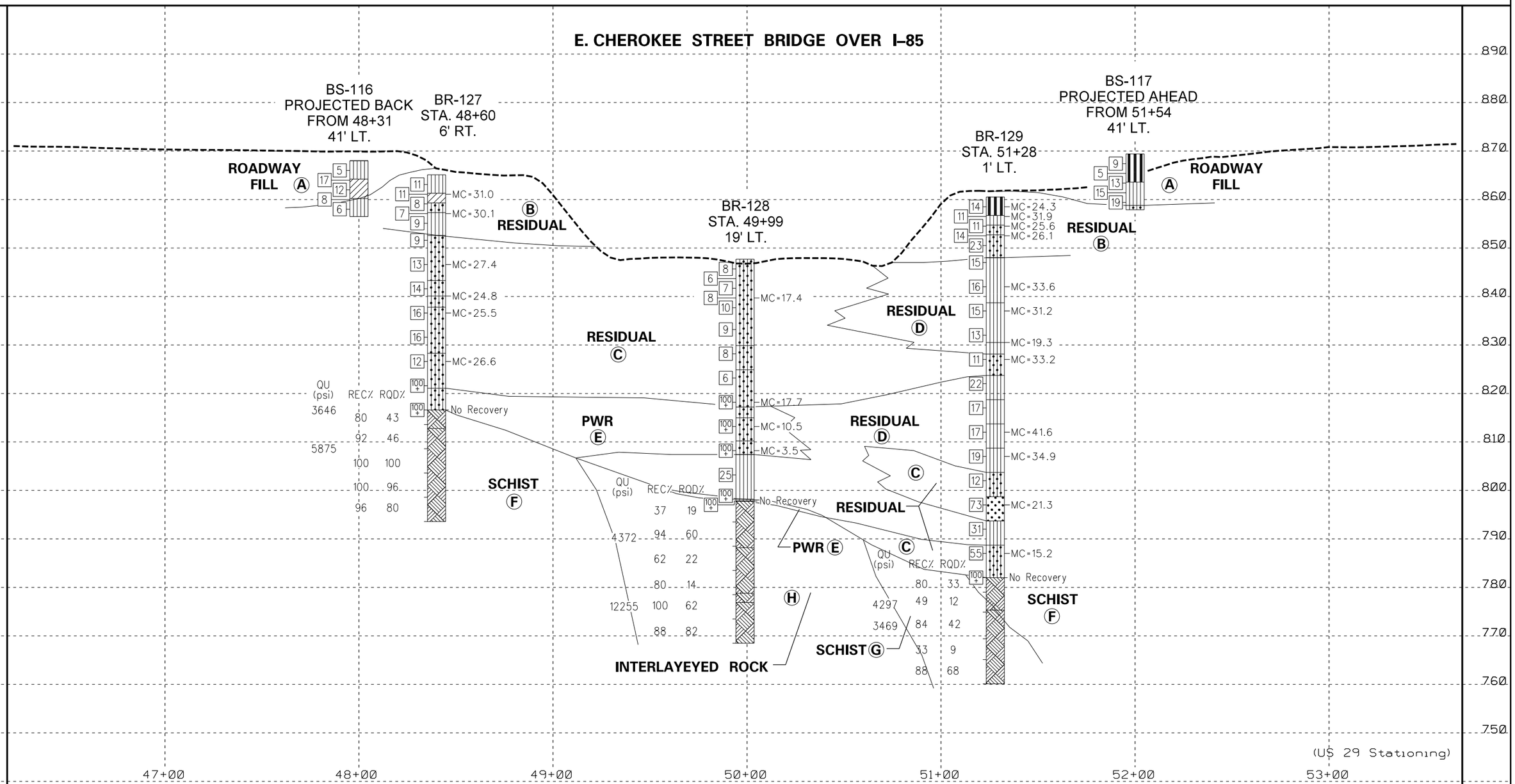
HDR | ICA

GENERALIZED SUBSURFACE PROFILE
EXIT 104 - S-99 (TRIBAL ROAD) BRIDGE OVER I-85
CHEROKEE COUNTY
SOUTH CAROLINA

4/18/2017
G:_EBS_HDR Projects\10023919 SC I-85 Widening DB Prep near NC State Line\6.0 CAD_BIM\6.2 Work in Progress\DWGS\Bridge Profile - I-85 over TribalRoad.dgn

| FED. RD. DIV. NO. | | COUNTY | FILE NO. | ROAD/ROUTE NO. | SHEET NO. |
|---|---|---|---|---|---|
| 3 | | CHEROKEE | | I-85 | - |

# E. CHEROKEE STREET BRIDGE OVER I-85




## MATERIAL DESCRIPTIONS

(A) Firm to very stiff, low to medium plasticity sandy SILT and lean CLAY.

(B) Thinly interlayered firm to stiff, low to medium plasticity sandy SILT and loose to medium dense silty SAND all saprolitic in parts.

(C) Loose to medium dense, rarely very dense, micaceous, saprolitic, non-plastic in parts, silty SAND with traces gravel size rock fragments.

(D) Very stiff to hard, saprolitic, non-plastic to low plasticity, sandy SILT w/few mica, feldspar, quartz and weathered rock fragments.

(E) Very dense, silty, sand to gravel size fragments of schist quartz, mica and feldspar.

(F) Medium to coarse grain (phenocrysts), foliated, slightly weathered to fresh w/seams moderately to completely weathered, soft to hard.

(G) Fine grain w/seams medium to coarse grain, foliated, slightly weathered w/ seams highly to completely weathered, hard.

(H) Fine grain to pegmatite crystals, foliated in parts, slightly to highly weathered w/seams completely weathered, soft to very hard, SCHIST, GRANITE, METACONGLOMERATE, AMPHIBOLITE.

## LEGEND OF MATERIAL GRAPHICS FOR SOIL TEST BORINGS

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

## MISCELLANEOUS SYMBOLS

- [37] STANDARD PENETRATION RESISTANCE
- NR BORING TERMINATED WITHOUT REFUSAL

FIGURE: A-14

| REV. NO. | BY | DATE | DESCRIPTION OF REVISION |
|---|---|---|---|
| 4 | | | |
| 3 | | | |
| 2 | | | |
| 1 | | | |

TOPO. _____ DATE _____ SCALE
DWG. _____ DATE _____ 1" = 50' HORIZ.
R/W _____ DATE _____ 1" = 20' VERT.

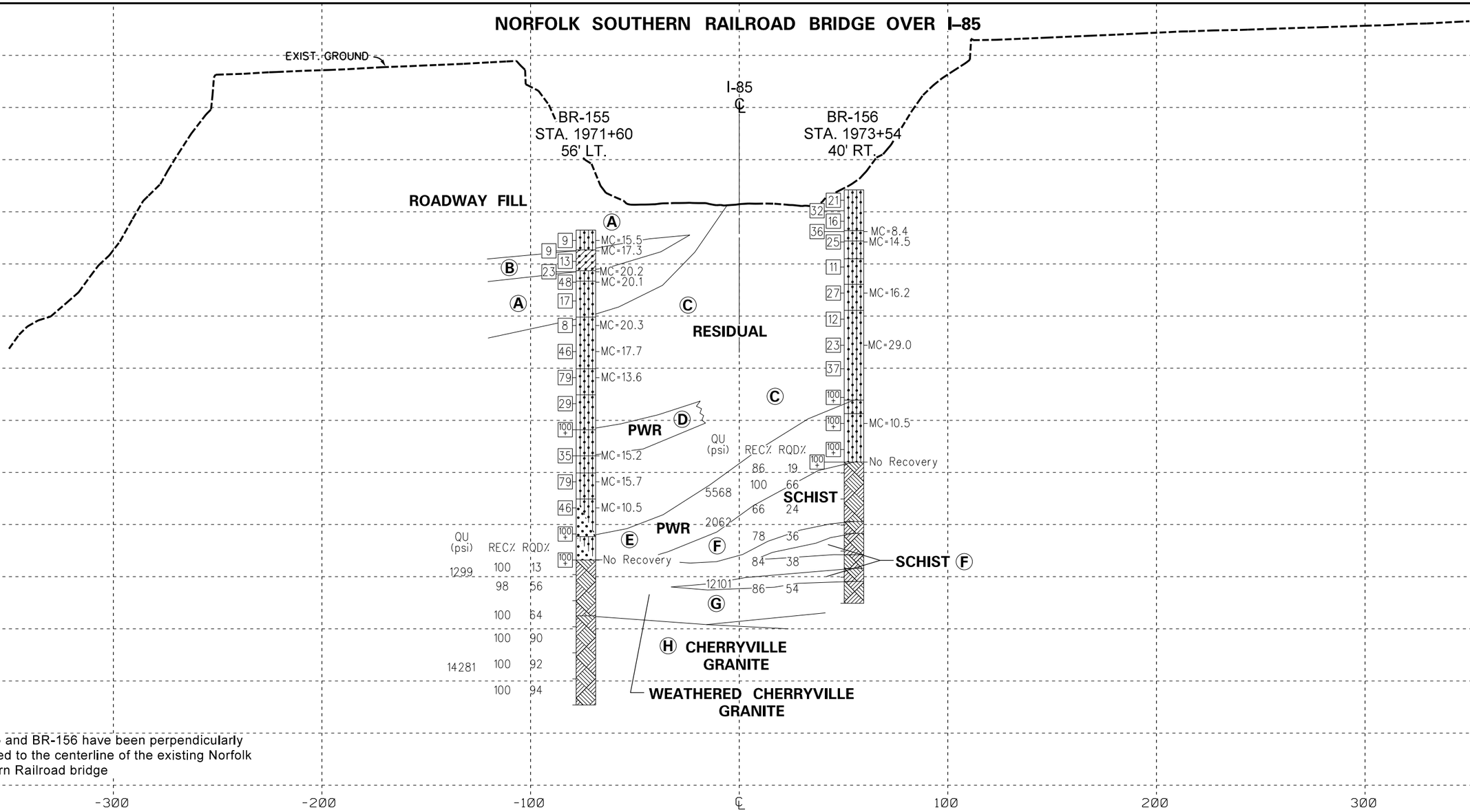
HDR | ICA

GENERALIZED SUBSURFACE PROFILE
EXIT 106 - US 29 (EAST CHEROKEE STREET) BRIDGE OVER I-85
CHEROKEE COUNTY
SOUTH CAROLINA

4/18/2017
G:_EBS_HDR Projects\10023919 SC I-85 Widening DB Prep near NC State Line\6.0 CAD_BIM\6.2 Work in Progress\DWGS\Bridge Profile - I-85 over E. Cherokee Street.dgn

| FED. RD. DIV. NO. | STATE | COUNTY | FILE NO. | ROAD/ROUTE NO. | SHEET NO. |
|---|---|---|---|---|---|
| 3 | S.C. | CHEROKEE | | I-85 | - |

# NORFOLK SOUTHERN RAILROAD BRIDGE OVER I-85




NOTE:
BR-155 and BR-156 have been perpendicularly projected to the centerline of the existing Norfolk Southern Railroad bridge

## MATERIAL DESCRIPTIONS

Ⓐ Loose to dense, silty SAND with asphalt, feldspar, mica and gravel size rock fragments.

Ⓑ Loose to medium dense, micaceous, clayey SAND.

Ⓒ Loose to very dense, saprolitic, silty SAND with feldspar, mica and quartz in up to gravel size fragments.

Ⓓ Very dense, medium to coarse grain size fragments of rock, mica and quartz.

Ⓔ Silty, medium to coarse grain size fragments of granite, mica feldspar and quartz.

Ⓕ Fine to medium grain, foliated, slightly to moderately weathered SCHIST with seams highly weathered.

Ⓖ medium to coarse grain, foliated in parts, moderately to highly weathered, moderately hard to hard, Cherryville Granite.

Ⓗ Medium grain, faintly foliated in parts, slightly weathered to fresh, very hard Cherryville Granite.

## LEGEND OF MATERIAL GRAPHICS FOR SOIL TEST BORINGS

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

## MISCELLANEOUS SYMBOLS

- [37] STANDARD PENETRATION RESISTANCE
- NR BORING TERMINATED WITHOUT REFUSAL

FIGURE: A-15

| REV. NO. | BY | DATE | DESCRIPTION OF REVISION |
|---|---|---|---|
| 4 | | | |
| 3 | | | |
| 2 | | | |
| 1 | | | |

TOPO. _____ DATE _____ SCALE
DWG. _____ DATE _____ 1" = 50' HORIZ.
R/W _____ DATE _____ 1" = 20' VERT.

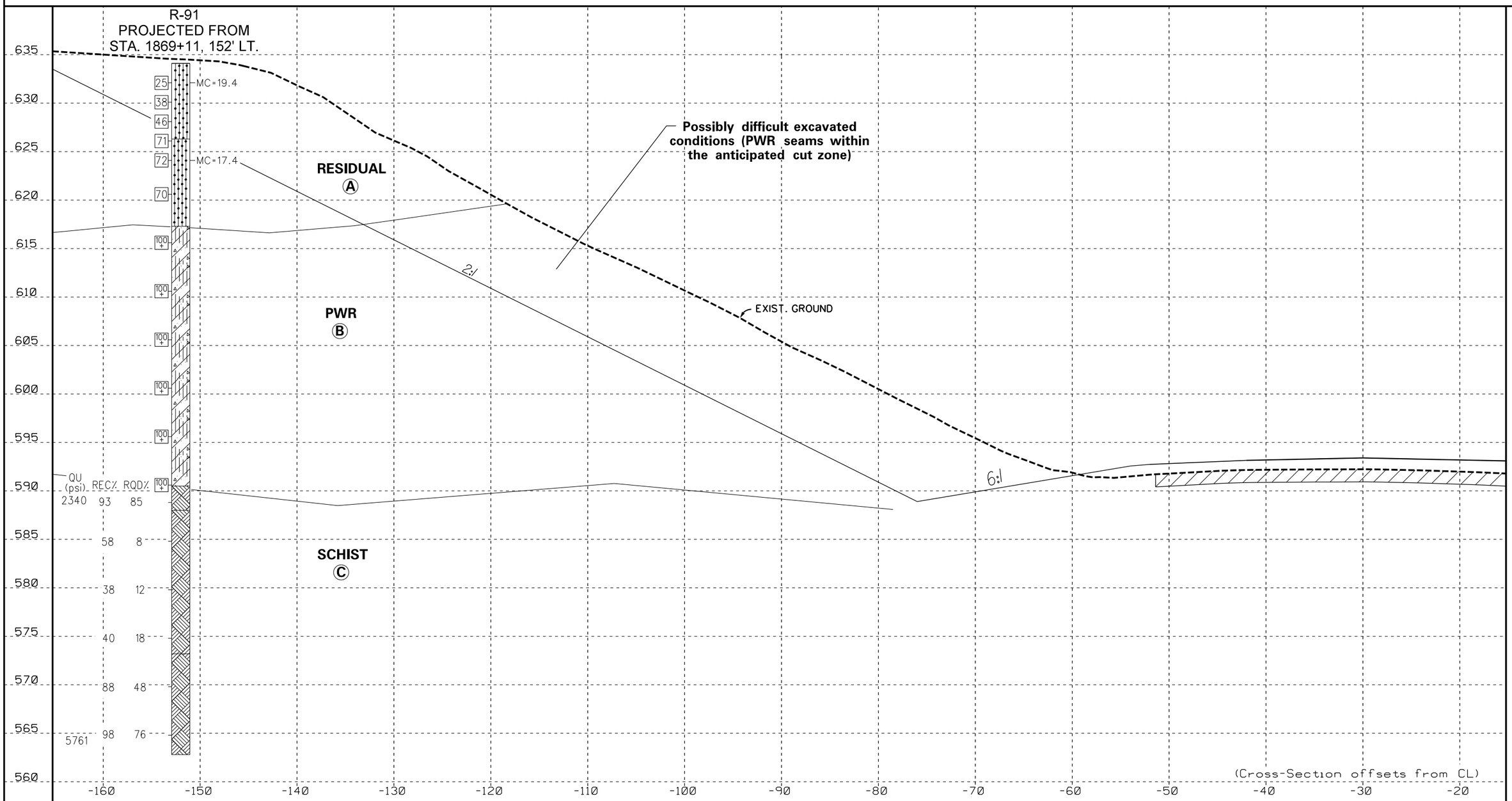
HDR | ICA

GENERALIZED SUBSURFACE PROFILE
NORFOLK SOUTHERN RAILROAD BRIDGE
OVER I-85

CHEROKEE COUNTY
SOUTH CAROLINA

4/18/2017
G:_EBS_HDR Projects\10023919 SC I-85 Widening DB Prep near NC State Line\6.0 CAD_BIM\6.2 Work in Progress\DWGS\Bridge Profile - I-85 Mainline.dgn

| FED. RD. DIV. NO. | STATE | COUNTY | FILE NO. | ROAD/ROUTE NO. | SHEET NO. |
|---|---|---|---|---|---|
| 3 | S.C. | CHEROKEE | | I-85 | - |




MATERIAL DESCRIPTIONS

Ⓐ Medium to very dense, silty SAND, non-plastic, non-reactive, saprolitic.

Ⓑ Very dense silty SAND, non-plastic, non-reactive, with gravel size schist fragmanets

Ⓒ Fine grain, thinly foliated, slightly to completely weathered, w/scattered healed to partially healed joints, soft to hard SCHIST.

LEGEND OF MATERIAL GRAPHICS FOR SOIL TEST BORINGS

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

MISCELLANEOUS SYMBOLS

- [37] STANDARD PENETRATION RESISTANCE
- NR BORING TERMINATED WITHOUT REFUSAL

FIGURE: A-16

| REV. NO. | BY | DATE | DESCRIPTION OF REVISION |
|---|---|---|---|
| 4 | | | |
| 3 | | | |
| 2 | | | |
| 1 | | | |

TOPO. _____ DATE _____ SCALE
DWG. _____ DATE _____ 1" = 10' HORIZ.
R/W _____ DATE _____ 1" = 5' VERT.

HDR | ICA

GENERALIZED SUBSURFACE PROFILE
STATION 1869+00
BORING R-91
CHEROKEE COUNTY
SOUTH CAROLINA

5/10/2017
G:_EBS_HDR Projects\10023919 SC I-85 Widening DB Prep near NC State Line\6.0 CAD_BIM\6.2 Work in Progress\DWGS\Cross Sections - Mainline.dgn

| FED. RD. DIV. NO. | STATE | COUNTY | FILE NO. | ROAD/ROUTE NO. | SHEET NO. |
|---|---|---|---|---|---|
| 3 | S.C. | CHEROKEE | | I-85 | - |

595
590
585
580
575
570
565
560

-140 -130 -120 -110 -100 -90 -80 -70 -60 -50 -40 -30 -20 -10 ℄

**Possibly difficult excavated conditions (PWR within the anticipated culvert extension zone)**

C-131
PROJECTED FROM
STA. 1875+09
111' LT.

2:1

EXIST. GROUND

**RESIDUAL**
Ⓐ

**PWR**
Ⓑ

30 MC=15.4

100+

100+

100+

NR

**Existing 4'x6' Reinforced Concrete Box Culvert (at I-85 Station 1874+88)**

MATERIAL DESCRIPTIONS

Ⓐ Medium to very dense, silty SAND with gravel, non-plastic, non-reactive.

Ⓑ Very dense, silty SAND, with rock fragments.

LEGEND OF MATERIAL GRAPHICS FOR SOIL TEST BORINGS

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

MISCELLANEOUS SYMBOLS

- 37 — STANDARD PENETRATION RESISTANCE
- NR — BORING TERMINATED WITHOUT REFUSAL

FIGURE:

A-17

| REV. NO. | BY | DATE | DESCRIPTION OF REVISION |
|---|---|---|---|
| 4 | | | |
| 3 | | | |
| 2 | | | |
| 1 | | | |

TOPO. _____ DATE _____ SCALE
DWG. _____ DATE _____ 1" = 10' HORIZ.
R/W _____ DATE _____ 1" = 5' VERT.

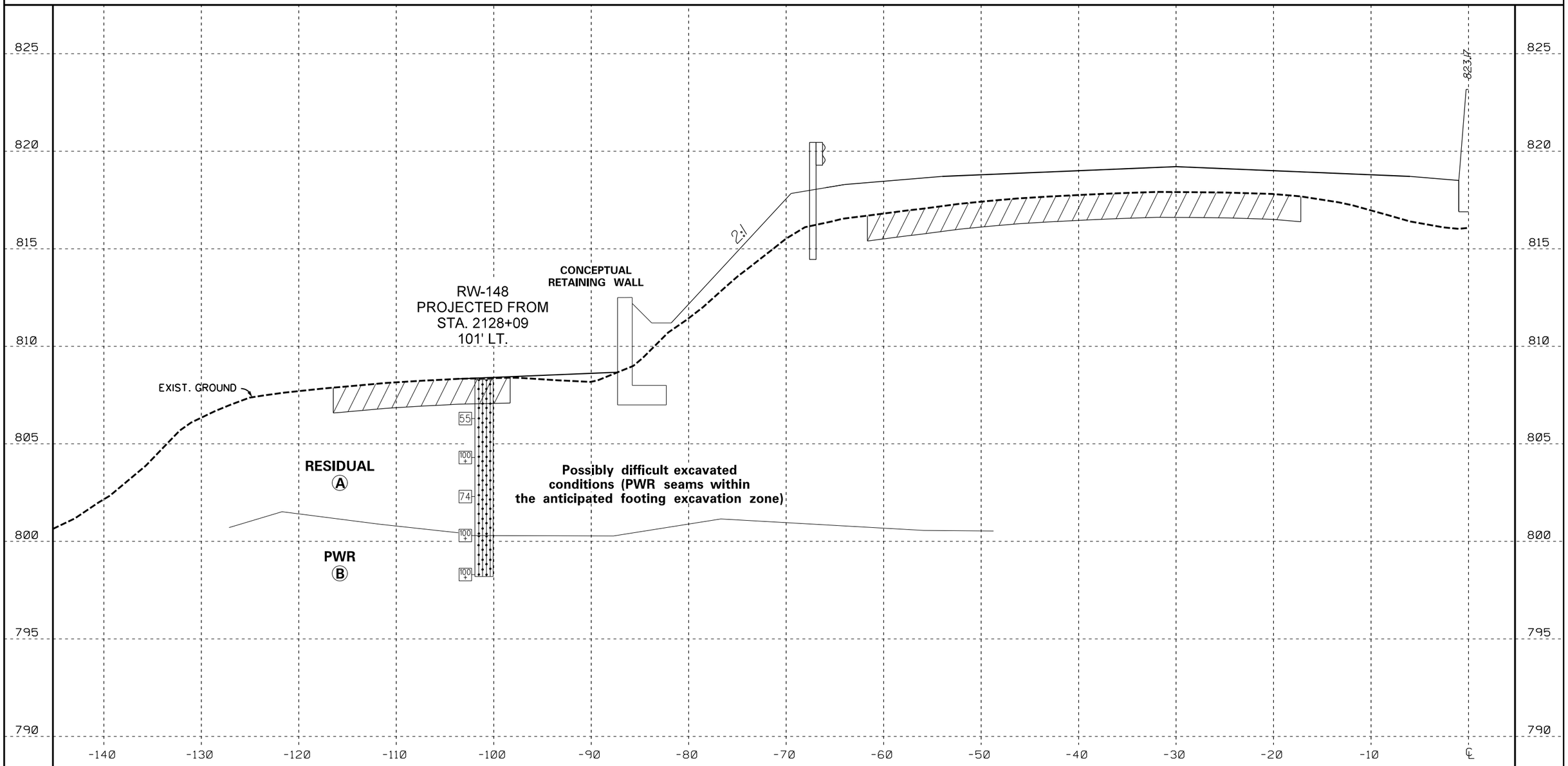
HDR | ICA

GENERALIZED SUBSURFACE PROFILE
STATION 1875+00
BORING C-131

CHEROKEE COUNTY
SOUTH CAROLINA

5/10/2017
G:_EBS_HDR Projects\10023919 SC I-85 Widening DB Prep near NC State Line\6.0 CAD_BIM\6.2 Work in Progress\DWGS\Cross Sections - Mainline.dgn

| FED. RD. DIV. NO. | STATE | COUNTY | FILE NO. | ROAD/ROUTE NO. | SHEET NO. |
|---|---|---|---|---|---|
| 3 | S.C. | CHEROKEE | | I-85 | - |




MATERIAL DESCRIPTIONS

(A) Very dense, non-plastic, non-reactive, saprolitic, silty SAND with thin PWR seams.

(B) Very dense, silty SAND with gravel size schist and mica fragments.

LEGEND OF MATERIAL GRAPHICS FOR SOIL TEST BORINGS

| | | | |
|---|---|---|---|
| SP | POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FILES | 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 | | CORED ROCK |

MISCELLANEOUS SYMBOLS

| | |
|---|---|
| 37 | STANDARD PENETRATION RESISTANCE |
| NR | BORING TERMINATED WITHOUT REFUSAL |

FIGURE:

A-18

| REV. NO. | BY | DATE | DESCRIPTION OF REVISION |
|---|---|---|---|
| 4 | | | |
| 3 | | | |
| 2 | | | |
| 1 | | | |

TOPO. _____ DATE _____ SCALE

DWG. _____ DATE _____ 1" = 10' HORIZ.

R/W _____ DATE _____ 1" = 5' VERT.

HDR | ICA

GENERALIZED SUBSURFACE PROFILE
STATION 2128+00
BORING RW-148

CHEROKEE COUNTY
SOUTH CAROLINA

5/10/2017
G:_EBS_HDR Projects\10023919 SC I-85 Widening DB Prep near NC State Line\6.0 CAD_BIM\6.2 Work in Progress\DWGS\Cross Sections - Mainline.dgn

# Appendix B. Soil Test Boring Logs & MASW Profiles

Soil Test Boring Logs

MASW Profiles

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-1 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1825+00 | **Offset:** | 50' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 585.7 ft | **Latitude:** | 35.11869 | **Longitude:** | 81.57561 | **Date Started:** | 2/15/2017 |
| **Total Depth:** | 8 ft | **Soil Depth:** | 8 ft | **Core Depth:** | ft | **Date Completed:** | 2/15/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | | Medium dense, moist, brown, non-reactive, non-plastic, silty SAND with gravel (SM/A-2-4). | | 2.5 | SS-1 | 19 | 14 | 10 | 24 |
| 580.7 | 4.3 | LL=22, PL=18, PI=4, NMC=18.8, %#200=33.8 | | 4.5 | SS-2 | 5 | 5 | 5 | 10 |
| | 8.0 | Firm to stiff, moist, brown, non-reactive, low plasticity, sandy SILT (ML/A-4). | | 6.5 | SS-3 | 3 | 3 | 3 | 6 |
| 575.7 | | LL=18, PL=16, PI=2, NMC=25.0, %#200=60.7 | | | | | | | |
| | | No Refusal & Boring Terminated at 8.0' (Elev. 577.7). | | | | | | | |
| 570.7 | | | | | | | | | |
| 565.7 | | | | | | | | | |
| 560.7 | | | | | | | | | |
| 555.7 | | | | | | | | | |
| 550.7 | | | | | | | | | |
| 545.7 | | | | | | | | | |
| 540.7 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-2 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1827+04 | **Offset:** | 60' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 583.8 ft | **Latitude:** | 35.11888 | **Longitude:** | 81.57486 | **Date Started:** | 2/15/2017 |
| **Total Depth:** | 8 ft | **Soil Depth:** | 8 ft | **Core Depth:** | ft | **Date Completed:** | 2/15/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | | Firm to stiff, moist, brown and yellowish brown, non-reactive, non-plastic, fine to coarse, sandy SILT (ML/A-4). | | 2.5 | SS-1 | 12 | 8 | 6 | 14 |
| 578.8 | | | | 4.5 | SS-2 | 5 | 4 | 4 | 8 |
| | 6.3 | | | 6.5 | | | | | |
| | | Firm, moist, red, non-reactive, medium plasticity, fat CLAY with sand (CH/A-7-6). | | | SS-3 | 3 | 3 | 4 | 7 |
| | 8.0 | LL=51, PL=24, PI=27, NMC=22.3, %#200=75.8 | | | | | | | |
| 573.8 | | No Refusal & Boring Terminated at 8.0' (Elev. 575.8). | | | | | | | |
| | | Bulk sample obtained from 2.5'-6.5'. | | | | | | | |
| 568.8 | | | | | | | | | |
| 563.8 | | | | | | | | | |
| 558.8 | | | | | | | | | |
| 553.8 | | | | | | | | | |
| 548.8 | | | | | | | | | |
| 543.8 | | | | | | | | | |
| 538.8 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

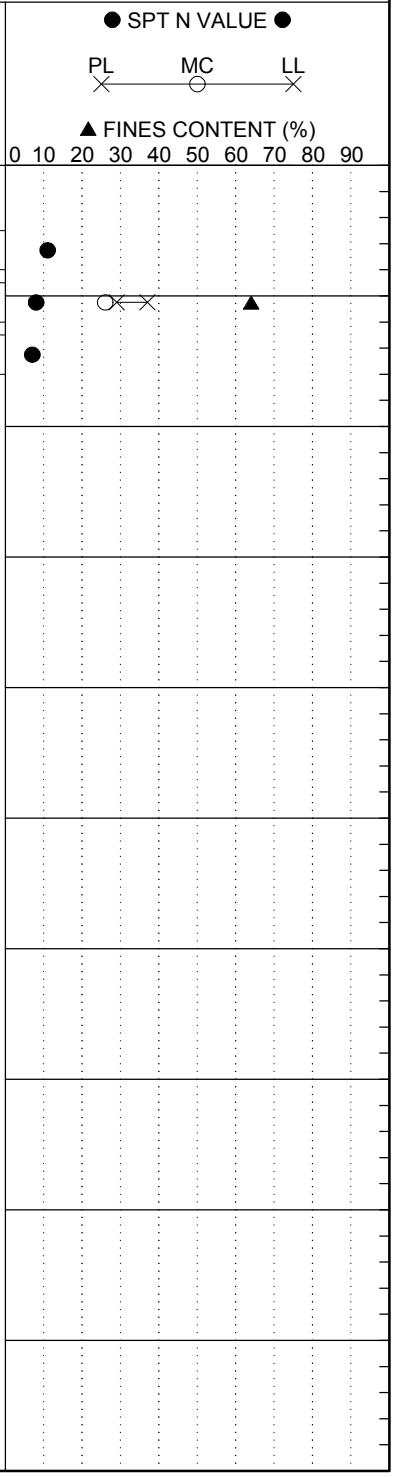
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-3 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1832+07 | **Offset:** | 57' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 582.4 ft | **Latitude:** | 35.12008 | **Longitude:** | 81.57396 | **Date Started:** | 2/15/2017 |
| **Total Depth:** | 8 ft | **Soil Depth:** | 8 ft | **Core Depth:** | ft | **Date Completed:** | 2/15/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | | Medium dense, moist, brown, non-reactive, low plasticity, silty SAND with gravel (SM/A-2-4). | | 2.5 | | | | | |
| | 4.3 | | | | SS-1 | 6 | 5 | 6 | 11 |
| 577.4 | | Firm, moist, brown, non-reactive, low plasticity, sandy SILT (ML/A-4). | | 4.5 | | | | | |
| | | | | | SS-2 | 4 | 4 | 4 | 8 |
| | | | | 6.5 | | | | | |
| | 8.0 | LL=37, PL=29, PI=8, NMC=25.5, %#200=63.7 | | | SS-3 | 4 | 3 | 4 | 7 |
| 572.4 | | No Refusal & Boring Terminated at 8.0' (Elev. 574.4). | | | | | | | |
| 567.4 | | | | | | | | | |
| 562.4 | | | | | | | | | |
| 557.4 | | | | | | | | | |
| 552.4 | | | | | | | | | |
| 547.4 | | | | | | | | | |
| 542.4 | | | | | | | | | |
| 537.4 | | | | | | | | | |




LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-4 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1837+04 | **Offset:** | 4' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 580.2 ft | **Latitude:** | 35.12089 | **Longitude:** | 81.57259 | **Date Started:** | 2/15/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/15/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 12 | 8 | 9 | 17 |
| | 3.0 | Medium dense, moist, brown, weakly reactive, non-plastic, silty SAND with gravel (SM/A-1-b). | | 2.0 | | | | | |
| 575.2 | 5.5 | LL=NP, PL=NP, PI=NP, NMC=14.5, %#200=24.8 | | | SS-2 | 6 | 4 | 3 | 7 |
| | | Loose, moist, brown and red, weakly reactive, non-plastic to medium plasticity, clayey SAND with gravel (SC/A-6). | | 4.0 | | | | | |
| 570.2 | | LL=34, PL=14, PI=20, NMC=21.5, %#200=39.3 | | | SS-3 | 2 | 3 | 7 | 10 |
| 565.2 | | No Refusal & Boring Terminated at 5.5' (Elev. 574.7). | | | | | | | |
| 560.2 | | | | | | | | | |
| 555.2 | | | | | | | | | |
| 550.2 | | | | | | | | | |
| 545.2 | | | | | | | | | |
| 540.2 | | | | | | | | | |
| 535.2 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

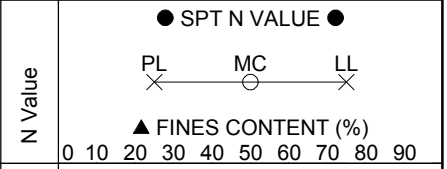
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-5 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1842+03 | **Offset:** | 12' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 593.3 ft | **Latitude:** | 35.12171 | **Longitude:** | 81.57125 | **Date Started:** | 2/15/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/15/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 2 | 5 | 4 | 9 |
| | 2.5 | Loose, moist, brown, non-reactive, non-plastic, silty, clayey SAND with gravel (SC-SM/A-2-4). | | 2.0 | | | | | |
| | 3.8 | | | | SS-2 | 4 | 5 | 4 | 9 |
| 588.3 | 5.5 | **Residual** | | 4.0 | | | | | |
| | | Loose, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | | SS-3 | 3 | 3 | 3 | 6 |
| | | LL=30, PL=26, PI=4, NMC=16.4, %#200=46.6 | | | | | | | |
| 583.3 | | | | | | | | | |
| | | Firm, moist, yellow, non-reactive, non-plastic, sandy SILT (ML/A-4). | | | | | | | |
| | | LL=NP, PL=NP, PI=NP, NMC=19.0, %#200=55.5 | | | | | | | |
| 578.3 | | | | | | | | | |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 587.8). | | | | | | | |
| 573.3 | | | | | | | | | |
| 568.3 | | | | | | | | | |
| 563.3 | | | | | | | | | |
| 558.3 | | | | | | | | | |
| 553.3 | | | | | | | | | |
| 548.3 | | | | | | | | | |




## LEGEND

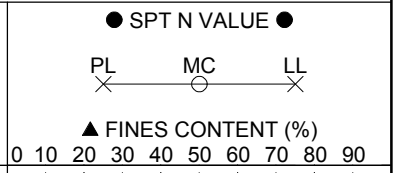
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-6 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1847+08 | **Offset:** | 12' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 609.1 ft | **Latitude:** | 35.12245 | **Longitude:** | 81.56983 | **Date Started:** | 2/15/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/15/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 4 | 4 | 5 | 9 |
| | 1.8 | Loose, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-2-4). | | 2.0 | | | | | |
| | 3.8 | LL=19, PL=18, PI=1, NMC=19.0, %#200=29.0 | | | SS-2 | 7 | 6 | 5 | 11 |
| 604.1 | 5.5 | Medium dense, moist, red, non-reactive, high plasticity, clayey SAND (SC/A-4). | | 4.0 | | | | | |
| | | LL=30, PL=22, PI=8, NMC=15.0, %#200=48.2 | | | SS-3 | 2 | 2 | 2 | 4 |
| 599.1 | | Soft, moist, brown, non-reactive, high plasticity, sandy, lean CLAY (CL/A-6). | | | | | | | |
| | | LL=34, PL=21, PI=13, NMC=23.6, %#200=61.3 | | | | | | | |
| 594.1 | | No Refusal & Boring Terminated at 5.5' (Elev. 603.6). | | | | | | | |
| 589.1 | | | | | | | | | |
| 584.1 | | | | | | | | | |
| 579.1 | | | | | | | | | |
| 574.1 | | | | | | | | | |
| 569.1 | | | | | | | | | |
| 564.1 | | | | | | | | | |




LEGEND

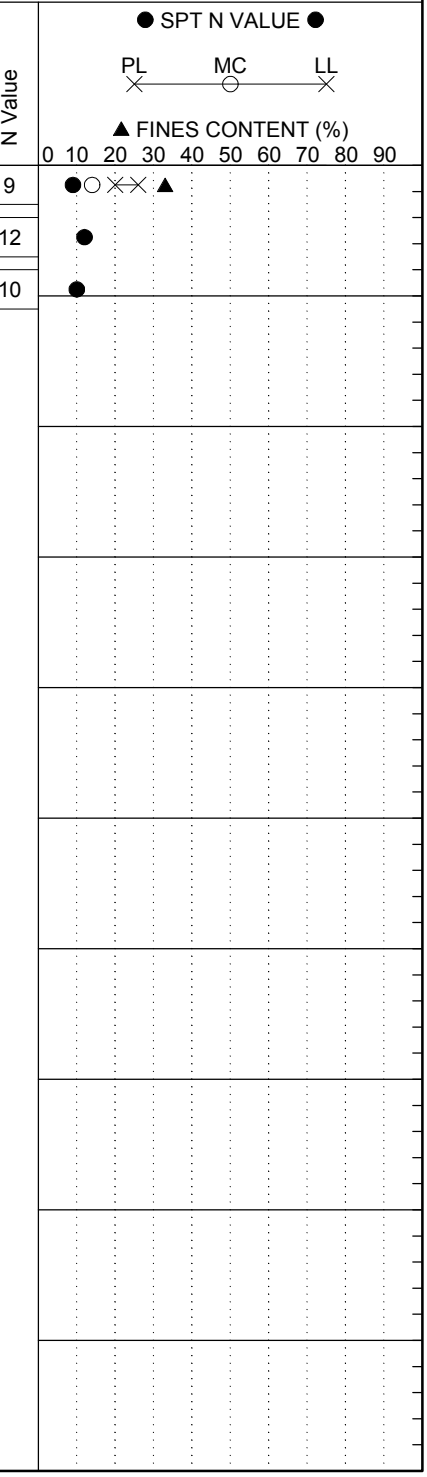
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-7 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1852+08 | **Offset:** | 14' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 615.1 ft | **Latitude:** | 35.12308 | **Longitude:** | 81.56836 | **Date Started:** | 2/15/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/15/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 3 | 4 | 5 | 9 |
| | | Loose, moist, brown, non-reactive, non-plastic, silty, clayey SAND with gravel (SC-SM/A-2-4). | | 2.0 | | | | | |
| | 3.0 | | | | SS-2 | 11 | 6 | 6 | 12 |
| | 3.8 | | | 4.0 | | | | | |
| 610.1 | 5.5 | LL=26, PL=20, PI=6, NMC=14.4, %#200=33.2 | | | SS-3 | 4 | 5 | 5 | 10 |
| | | **Residual** | | | | | | | |
| 605.1 | | Loose, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | | | | | | |
| | | Stiff, moist, yellow, non-reactive, non-plastic, sandy SILT (ML/A-4). | | | | | | | |
| 600.1 | | No Refusal & Boring Terminated at 5.5' (Elev. 609.6). | | | | | | | |
| | | Bulk sample obtained from 0.0'-4.0'. | | | | | | | |
| 595.1 | | | | | | | | | |
| 590.1 | | | | | | | | | |
| 585.1 | | | | | | | | | |
| 580.1 | | | | | | | | | |
| 575.1 | | | | | | | | | |
| 570.1 | | | | | | | | | |




## LEGEND

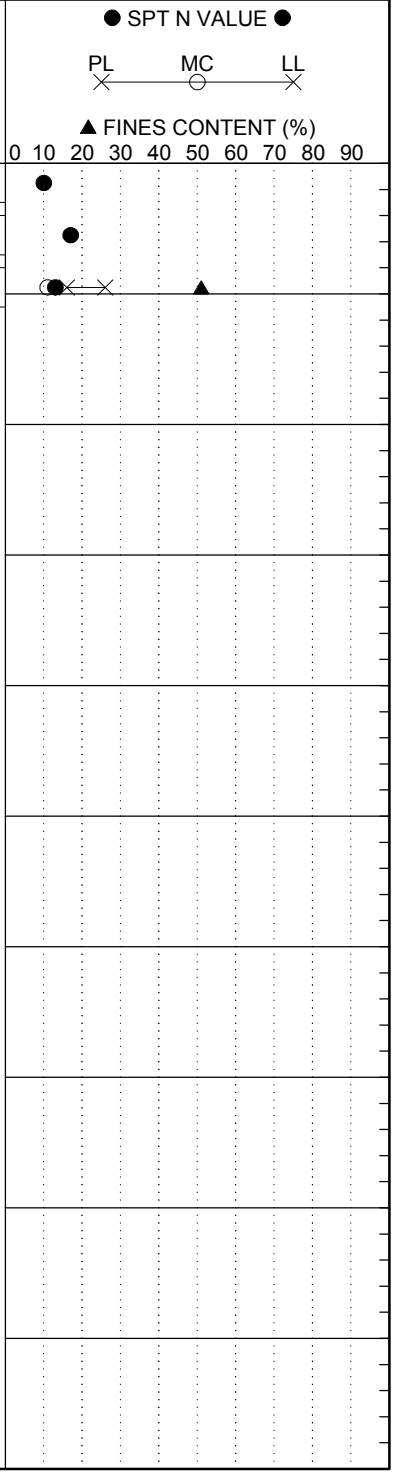
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-8 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1857+11 | **Offset:** | 13' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 609.3 ft | **Latitude:** | 35.12363 | **Longitude:** | 81.56681 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 3 | 5 | 5 | 10 |
| | 1.8 | Loose, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-2-4). | | 2.0 | | | | | |
| | 3.8 | | | | SS-2 | 5 | 8 | 9 | 17 |
| 604.3 | 5.5 | Medium dense, moist, red, non-reactive, high plasticity, clayey SAND (SC/A-4). | | 4.0 | | | | | |
| | | | | | SS-3 | 6 | 7 | 6 | 13 |
| | | Stiff, red, non-reactive, sandy, lean CLAY (CL/A-4). | | | | | | | |
| 599.3 | | LL=26, PL=16, PI=10, NMC=10.8, %#200=51.3 | | | | | | | |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 603.8). | | | | | | | |
| 594.3 | | | | | | | | | |
| 589.3 | | | | | | | | | |
| 584.3 | | | | | | | | | |
| 579.3 | | | | | | | | | |
| 574.3 | | | | | | | | | |
| 569.3 | | | | | | | | | |
| 564.3 | | | | | | | | | |




## LEGEND

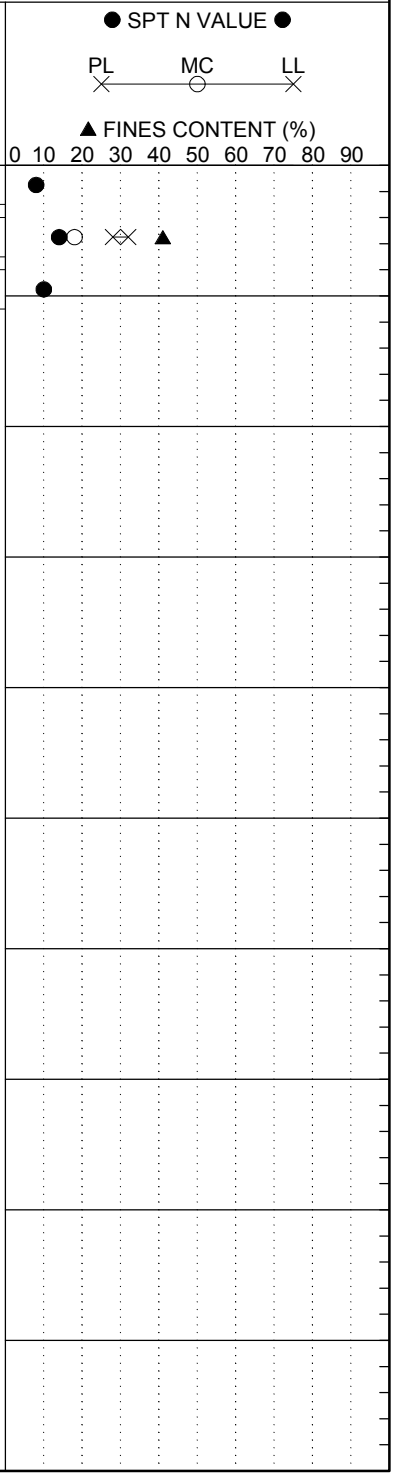
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-9 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1862+12 | **Offset:** | 11' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 601.3 ft | **Latitude:** | 35.12415 | **Longitude:** | 81.56526 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 3 | 4 | 4 | 8 |
| | 1.8 | Loose, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-2-4). | | 2.0 | | | | | |
| | 3.8 | | | | SS-2 | 4 | 6 | 8 | 14 |
| 596.3 | 5.5 | Medium dense, moist, red-brown, non-reactive, low plasticity, silty SAND (SM/A-4). LL=32, PL=28, PI=4, NMC=17.8, %#200=40.7 | | 4.0 | SS-3 | 6 | 4 | 6 | 10 |
| 591.3 | | Loose, moist, red-brown, non-reactive, low plasticity, silty SAND (SM/A-4). | | | | | | | |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 595.8). | | | | | | | |
| 586.3 | | | | | | | | | |
| 581.3 | | | | | | | | | |
| 576.3 | | | | | | | | | |
| 571.3 | | | | | | | | | |
| 566.3 | | | | | | | | | |
| 561.3 | | | | | | | | | |
| 556.3 | | | | | | | | | |




## LEGEND

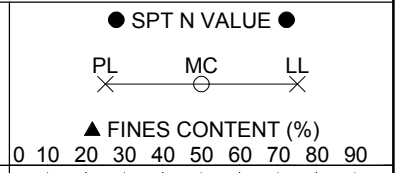
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-10 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1867+11 | **Offset:** | 12' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 593.9 ft | **Latitude:** | 35.12466 | **Longitude:** | 81.56371 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | | | 0.0 | SS-1 | 3 | 4 | 3 | 7 |
| | 1.8 | **Roadway Embankment**<br>Loose, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-2-4).<br>LL=24, PL=20, PI=4, NMC=15.1, %#200=33.0 | | 2.0 | | | | | |
| | | | | | SS-2 | 4 | 6 | 9 | 15 |
| | | | | 4.0 | | | | | |
| 588.9 | 5.5 | | | | SS-3 | 4 | 6 | 7 | 13 |
| | | **Residual**<br>Medium dense, moist, red-brown, non-reactive, non-plastic, silty SAND (SM/A-4).<br>LL=35, PL=29, PI=6, NMC=19.5, %#200=47.5 | | | | | | | |
| 583.9 | | | | | | | | | |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 588.4). | | | | | | | |
| 578.9 | | | | | | | | | |
| 573.9 | | | | | | | | | |
| 568.9 | | | | | | | | | |
| 563.9 | | | | | | | | | |
| 558.9 | | | | | | | | | |
| 553.9 | | | | | | | | | |
| 548.9 | | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-11 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1872+06 | **Offset:** | 12' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 587.5 ft | **Latitude:** | 35.12517 | **Longitude:** | 81.56218 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 5.4 ft | **Soil Depth:** | 5.4 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 2 | 4 | 4 | 8 |
| | 2.9 | Loose, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-2-4). | | 2.0 | | | | | |
| | | | | | SS-2 | 4 | 9 | 17 | 26 |
| | | | | 4.0 | | | | | |
| 582.5 | 5.4 | **Residual** | | | SS-3 | 19 | 24 | 50/0.4 | 74/0.9 |
| | | Medium dense to very dense, moist, brown and yellow-brown, non-reactive, non-plastic, silty SAND with gravel (SM/A-4). | | | | | | | |
| 577.5 | | Splitspoon Refusal & Boring Terminated at 5.4' (Elev. 582.1). | | | | | | | |
| 572.5 | | | | | | | | | |
| 567.5 | | | | | | | | | |
| 562.5 | | | | | | | | | |
| 557.5 | | | | | | | | | |
| 552.5 | | | | | | | | | |
| 547.5 | | | | | | | | | |
| 542.5 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

>>

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

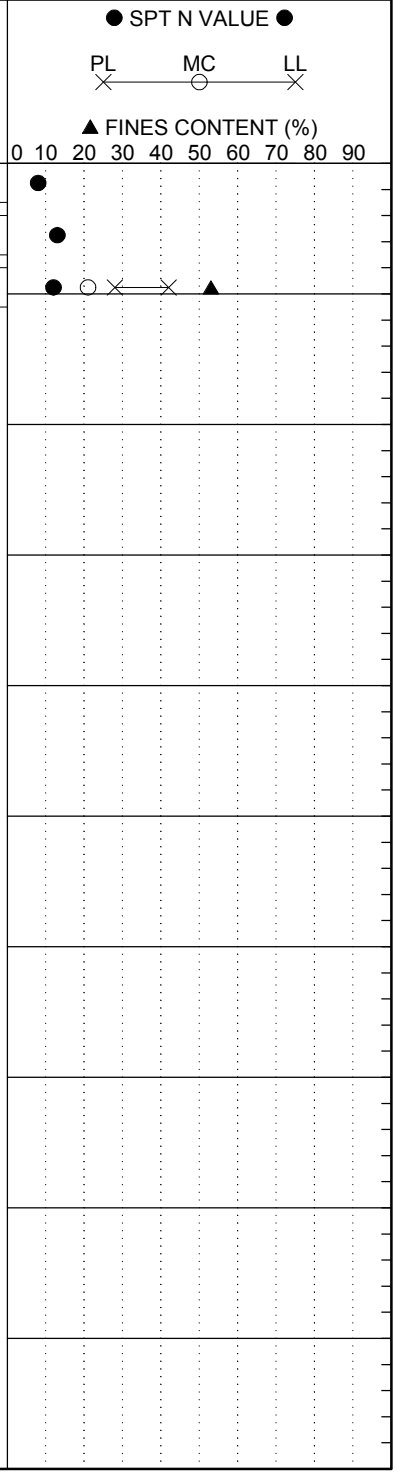
## LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-12 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1877+09 | **Offset:** | 12' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 592.9 ft | **Latitude:** | 35.12568 | **Longitude:** | 81.56062 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 4 | 4 | 4 | 8 |
| | 1.8 | Loose, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-2-4). | | 2.0 | | | | | |
| | | | | | SS-2 | 3 | 6 | 7 | 13 |
| | | | | 4.0 | | | | | |
| 587.9 | 5.5 | Stiff, moist, red-brown, non-reactive, high plasticity, sandy SILT (ML/A-7-6). LL=42, PL=28, PI=14, NMC=20.8, %#200=52.8 | | | SS-3 | 5 | 5 | 7 | 12 |
| 582.9 | | No Refusal & Boring Terminated at 5.5' (Elev. 587.4). | | | | | | | |
| | | Bulk sample obtained from 0.0'-4.0'. | | | | | | | |
| 577.9 | | | | | | | | | |
| 572.9 | | | | | | | | | |
| 567.9 | | | | | | | | | |
| 562.9 | | | | | | | | | |
| 557.9 | | | | | | | | | |
| 552.9 | | | | | | | | | |
| 547.9 | | | | | | | | | |




## LEGEND

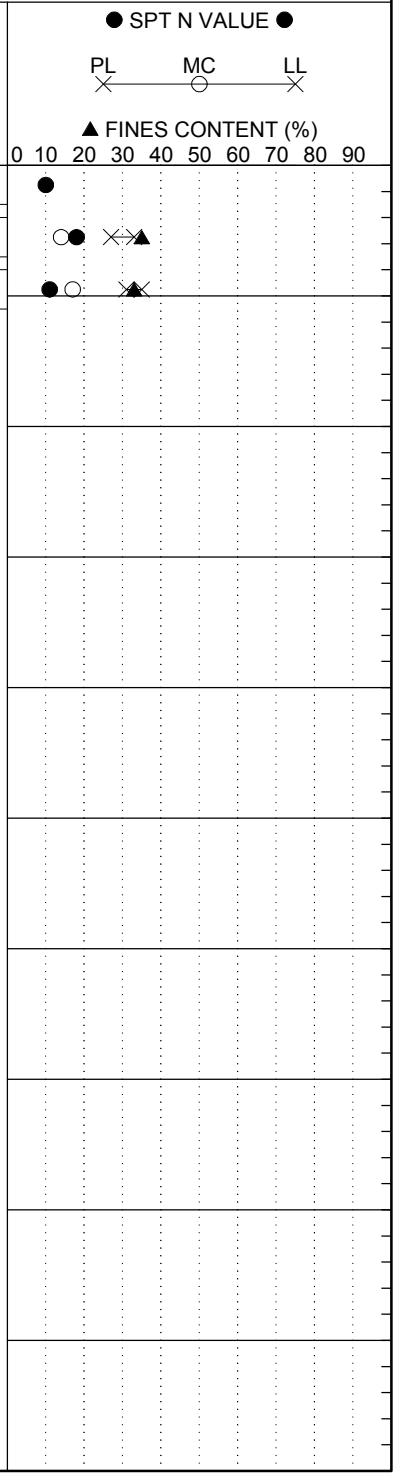
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-13 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1882+03 | **Offset:** | 12' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 610.5 ft | **Latitude:** | 35.12619 | **Longitude:** | 81.55909 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 2 | 5 | 5 | 10 |
| | 2.7 | Loose to medium dense, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | 2.0 | | | | | |
| | 3.8 | | | | SS-2 | 4 | 8 | 10 | 18 |
| 605.5 | 5.5 | **Residual** | | 4.0 | | | | | |
| | | Medium dense, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | | SS-3 | 5 | 5 | 6 | 11 |
| | | LL=33, PL=27, PI=6, NMC=14.1, %#200=35.2 | | | | | | | |
| 600.5 | | Medium dense, moist, yellow-brown, non-reactive, non-plastic, silty SAND (SM/A-2-4). | | | | | | | |
| 595.5 | | No Refusal & Boring Terminated at 5.5' (Elev. 605.0). | | | | | | | |
| 590.5 | | | | | | | | | |
| 585.5 | | | | | | | | | |
| 580.5 | | | | | | | | | |
| 575.5 | | | | | | | | | |
| 570.5 | | | | | | | | | |
| 565.5 | | | | | | | | | |




LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-14 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1887+08 | **Offset:** | 12' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 616.2 ft | **Latitude:** | 35.12671 | **Longitude:** | 81.55752 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment**<br>Loose to very dense, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | 0.0<br>2.0 | SS-1 | 2 | 6 | 4 | 10 |
| | 3.1<br>3.8 | | | | | | | | |
| 611.2 | 5.5 | LL=29, PL=24, PI=5, NMC=18.7, %#200=35.8 | | 4.0 | SS-2 | 5 | 7 | 46 | 53 |
| | | **Residual**<br>Very dense, moist, brown, non-reactive, fine to coarse, silty SAND with gravel (SM/A-2-4). | | | SS-3 | 46 | 55 | 48 | 103 |
| 606.2 | | LL=27, PL=24, PI=3, NMC=13.0, %#200=29.1 | | | | | | | |
| 601.2 | | Very dense, moist, yellow-brown, non-reactive, fine to coarse, silty SAND with gravel (SM/A-2-4). | | | | | | | |
| 596.2 | | No Refusal & Boring Terminated at 5.5' (Elev. 610.7). | | | | | | | |
| 591.2 | | | | | | | | | |
| 586.2 | | | | | | | | | |
| 581.2 | | | | | | | | | |
| 576.2 | | | | | | | | | |
| 571.2 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

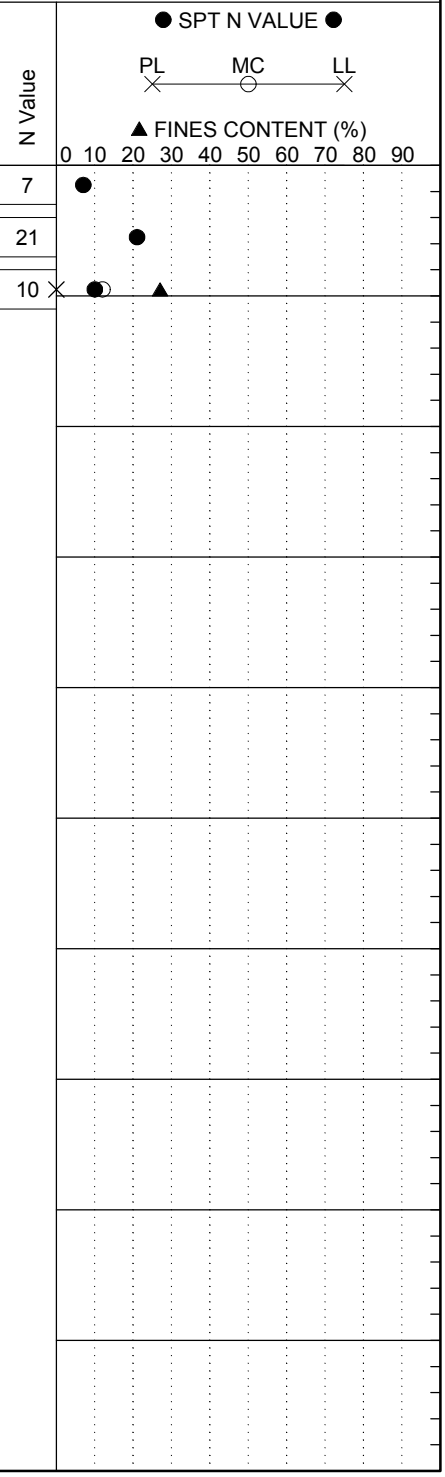
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-15 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1892+04 | **Offset:** | 12' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 607.9 ft | **Latitude:** | 35.12722 | **Longitude:** | 81.55598 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 2 | 4 | 3 | 7 |
| | 1.8 | Loose, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | 2.0 | | | | | |
| | 3.0 | | | | SS-2 | 5 | 8 | 13 | 21 |
| | | Medium dense, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-2-4). | | 4.0 | | | | | |
| 602.9 | 5.5 | | | | SS-3 | 7 | 6 | 4 | 10 |
| | | **Residual** | | | | | | | |
| 597.9 | | Loose to medium dense, moist, yellow-brown, non-reactive, non-plastic, silty SAND (SM/A-2-4). | | | | | | | |
| | | LL=NP, PL=NP, PI=NP, NMC=11.8, %#200=27.2 | | | | | | | |
| 592.9 | | No Refusal & Boring Terminated at 5.5' (Elev. 602.4). | | | | | | | |
| 587.9 | | | | | | | | | |
| 582.9 | | | | | | | | | |
| 577.9 | | | | | | | | | |
| 572.9 | | | | | | | | | |
| 567.9 | | | | | | | | | |
| 562.9 | | | | | | | | | |




LEGEND

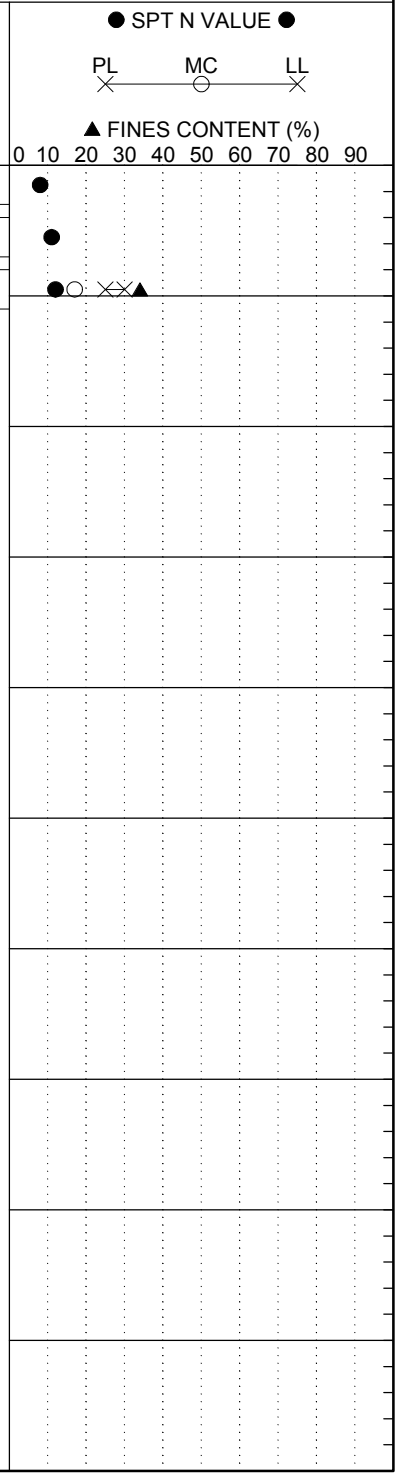
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-16 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1897+04 | **Offset:** | 12' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 598.1 ft | **Latitude:** | 35.12773 | **Longitude:** | 81.55443 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 2 | 3 | 5 | 8 |
| | 1.8 | Loose, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | 2.0 | | | | | |
| | | | | | SS-2 | 3 | 4 | 7 | 11 |
| | | | | 4.0 | | | | | |
| 593.1 | 5.5 | Medium dense, moist, yellow-brown, non-reactive, non-plastic, silty SAND (SM/A-2-4). LL=30, PL=25, PI=5, NMC=16.9, %#200=33.9 | | | SS-3 | 4 | 6 | 6 | 12 |
| 588.1 | | No Refusal & Boring Terminated at 5.5' (Elev. 592.6). | | | | | | | |
| 583.1 | | | | | | | | | |
| 578.1 | | | | | | | | | |
| 573.1 | | | | | | | | | |
| 568.1 | | | | | | | | | |
| 563.1 | | | | | | | | | |
| 558.1 | | | | | | | | | |
| 553.1 | | | | | | | | | |



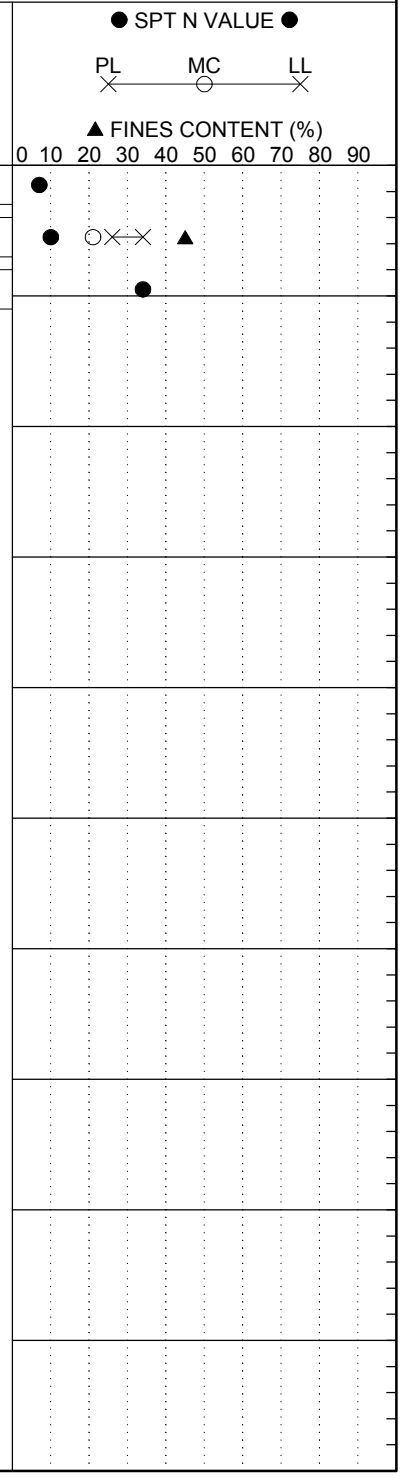

## LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-17 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1902+07 | **Offset:** | 13' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 591.9 ft | **Latitude:** | 35.12825 | **Longitude:** | 81.55287 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 2 | 4 | 3 | 7 |
| | 1.8 | Loose, moist, brown, non-reactive, non-plastic, clayey SAND with gravel (SC-SM/A-2-4). | | 2.0 | | | | | |
| | 3.8 | | | 4.0 | SS-2 | 3 | 4 | 6 | 10 |
| 586.9 | 5.5 | Loose, moist, yellow-brown, non-reactive, non-plastic, silty SAND (SM/A-4). LL=34, PL=26, PI=8, NMC=20.7, %#200=44.6 | | | SS-3 | 10 | 14 | 20 | 34 |
| 581.9 | | **Residual** Dense, moist, red and green-brown, non-reactive, non-plastic, silty, clayey SAND with gravel (SC-SM/A-2-4). | | | | | | | |
| 576.9 | | No Refusal & Boring Terminated at 5.5' (Elev. 586.4). | | | | | | | |
| | | Bulk sample obtained from 0.0'-4.0'. | | | | | | | |
| 571.9 | | | | | | | | | |
| 566.9 | | | | | | | | | |
| 561.9 | | | | | | | | | |
| 556.9 | | | | | | | | | |
| 551.9 | | | | | | | | | |
| 546.9 | | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-18 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1907+07 | **Offset:** | 13' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 588.2 ft | **Latitude:** | 35.12876 | **Longitude:** | 81.55132 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment**<br>Medium dense, moist, yellow-brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | 0.0<br>2.0 | SS-1 | 9 | 8 | 5 | 13 |
| | 3.8 | | | 4.0 | SS-2 | 6 | 6 | 7 | 13 |
| 583.2 | 5.5 | LL=29, PL=25, PI=4, NMC=19.7, %#200=43.2 | | | SS-3 | 4 | 4 | 4 | 8 |
| | | **Residual**<br>Loose, moist, yellow-brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | | | | | | |
| 578.2 | | No Refusal & Boring Terminated at 5.5' (Elev. 582.7). | | | | | | | |
| 573.2 | | | | | | | | | |
| 568.2 | | | | | | | | | |
| 563.2 | | | | | | | | | |
| 558.2 | | | | | | | | | |
| 553.2 | | | | | | | | | |
| 548.2 | | | | | | | | | |
| 543.2 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-19 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1912+06 | **Offset:** | 56' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 584.8 ft | **Latitude:** | 35.12914 | **Longitude:** | 81.54971 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 8 ft | **Soil Depth:** | 8.0 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | | Medium dense, moist, red-brown, non-reactive, non-plastic, silty, clayey SAND with gravel (SC-SM/A-2-4). | | 2.5 | SS-1 | 10 | 14 | 13 | 27 |
| 579.8 | | LL=25, PL=19, PI=6, NMC=12.7, %#200=29.7 | | 4.5 | SS-2 | 7 | 8 | 7 | 15 |
| | 6.3 | | | 6.5 | SS-3 | 4 | 5 | 5 | 10 |
| | 8.0 | Loose, moist, red-brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | | | | | | |
| 574.8 | | No Refusal & Boring Terminated at 8.0' (Elev. 576.8). | | | | | | | |
| 569.8 | | | | | | | | | |
| 564.8 | | | | | | | | | |
| 559.8 | | | | | | | | | |
| 554.8 | | | | | | | | | |
| 549.8 | | | | | | | | | |
| 544.8 | | | | | | | | | |
| 539.8 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

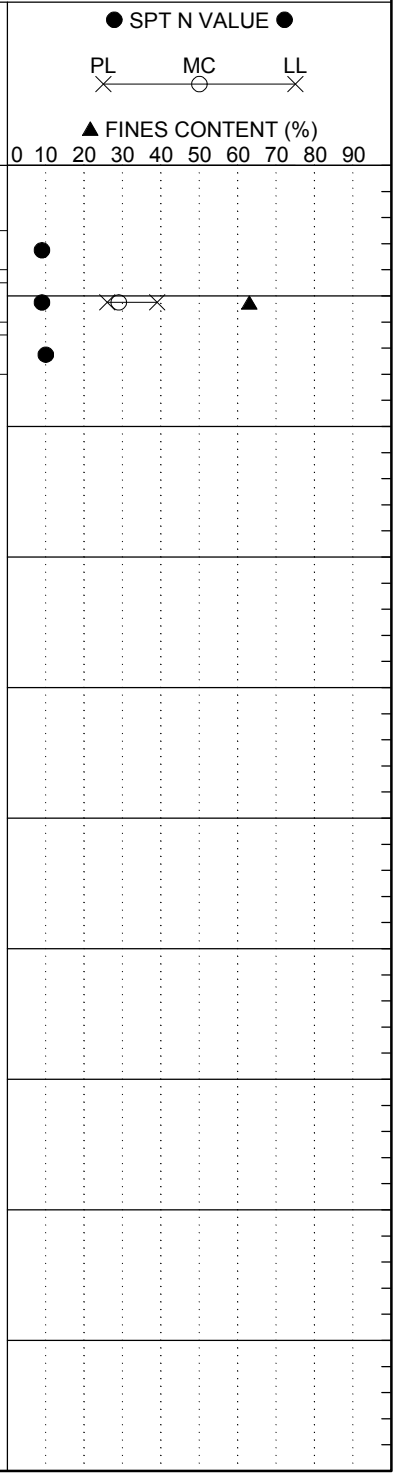
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-20 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1917+00 | **Offset:** | 51' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 584.1 ft | **Latitude:** | 35.12986 | **Longitude:** | 81.54827 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 8 ft | **Soil Depth:** | 8.0 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment**<br>Stiff, moist, brown and red, non-reactive, non-plastic, sandy SILT (ML/A-6). | | 2.5 | SS-1 | 7 | 4 | 5 | 9 |
| | 4.3 | | | 4.5 | | | | | |
| 579.1 | 6.0 | **Residual**<br>Stiff, moist, orange, non-reactive, low plasticity, sandy SILT (ML/A-6)<br>LL=39, PL=26, PI=13, NMC=28.7, %#200=62.9 | | | SS-2 | 3 | 4 | 5 | 9 |
| | | | | 6.5 | SS-3 | 3 | 4 | 6 | 10 |
| 574.1 | | No Refusal & Boring Terminated at 8.0' (Elev. 576.1). | | | | | | | |
| 569.1 | | | | | | | | | |
| 564.1 | | | | | | | | | |
| 559.1 | | | | | | | | | |
| 554.1 | | | | | | | | | |
| 549.1 | | | | | | | | | |
| 544.1 | | | | | | | | | |
| 539.1 | | | | | | | | | |




LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-21 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1922+24 | **Offset:** | 62' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 583.0 ft | **Latitude:** | 35.12998 | **Longitude:** | 81.54648 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 8 ft | **Soil Depth:** | 8.0 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | | Medium dense, moist, brown, non-reactive, non-plastic, silty, clayey SAND (SC-SM/A-4). | | 2.5 | SS-1 | 6 | 6 | 9 | 15 |
| | 4.3 | | | 4.5 | SS-2 | 34 | 50/0.2 | | 50/0.2 |
| 578.0 | | Very dense, moist, yellow and gray, non-reactive, non-plastic, silty SAND with gravel (SM/A-1-b). | | 6.5 | SS-3 | 37 | 49 | 50 | 99 |
| | 8.0 | LL=22, PL=21, PI=1, NMC=5.5, %#200=15.2 | | | | | | | |
| 573.0 | | No Refusal & Boring Terminated at 8.0' (Elev. 575.0). | | | | | | | |
| | | Bulk sample obtained from 2.5'-6.5'. | | | | | | | |
| 568.0 | | | | | | | | | |
| 563.0 | | | | | | | | | |
| 558.0 | | | | | | | | | |
| 553.0 | | | | | | | | | |
| 548.0 | | | | | | | | | |
| 543.0 | | | | | | | | | |
| 538.0 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

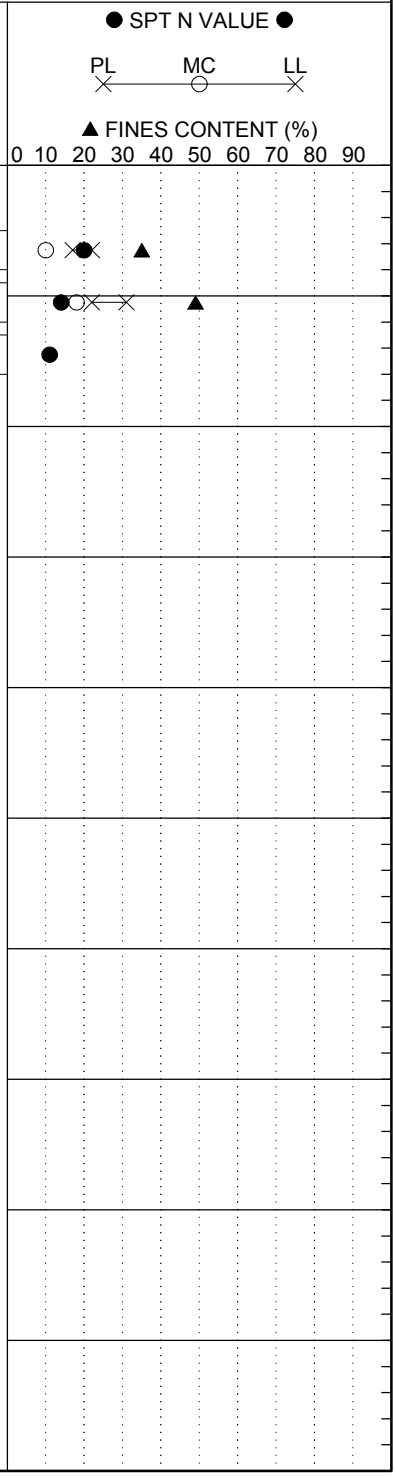
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-22 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1929+03 | **Offset:** | 44' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 584.2 ft | **Latitude:** | 35.13079 | **Longitude:** | 81.54441 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 8 ft | **Soil Depth:** | 8.0 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | | Medium dense, moist, green-brown, non-reactive, non-plastic, silty, clayey SAND with gravel (SC-SM/A-2-4). | | 2.5 | SS-1 | 8 | 9 | 11 | 20 |
| 579.2 | 4.3 | LL=22, PL=17, PI=5, NMC=10.0, %#200=34.9 | | 4.5 | SS-2 | 5 | 7 | 7 | 14 |
| | | | | 6.5 | SS-3 | 3 | 5 | 6 | 11 |
| | 8.0 | Medium dense, moist, red-orange and yellow-orange, weakly reactive, non-plastic to high plasticity, clayey SAND (SC/A-4). | | | | | | | |
| 574.2 | | LL=31, PL=22, PI=9, NMC=18.1, %#200=49.4 | | | | | | | |
| | | No Refusal & Boring Terminated at 8.0' (Elev. 576.2). | | | | | | | |
| 569.2 | | Bulk sample obtained from 2.5'-6.5'. | | | | | | | |
| 564.2 | | | | | | | | | |
| 559.2 | | | | | | | | | |
| 554.2 | | | | | | | | | |
| 549.2 | | | | | | | | | |
| 544.2 | | | | | | | | | |
| 539.2 | | | | | | | | | |




## LEGEND

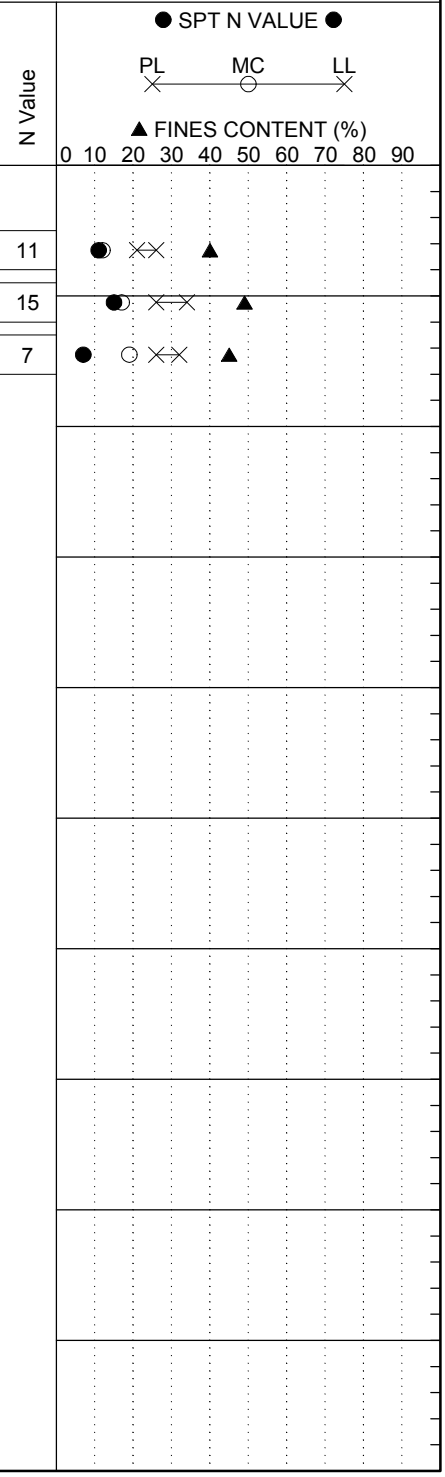
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-23 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1931+97 | **Offset:** | 55' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 583.0 ft | **Latitude:** | 35.13076 | **Longitude:** | 81.54337 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 8 ft | **Soil Depth:** | 8.0 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | | Medium dense, moist, green and brown, non-reactive, non-plastic, silty, clayey SAND (SC-SM/A-4). | | 2.5 | SS-1 | 6 | 4 | 7 | 11 |
| | 4.3 | LL=26, PL=21, PI=5, NMC=11.8, %#200=40.3 | | 4.5 | SS-2 | 6 | 7 | 8 | 15 |
| 578.0 | 6.3 | | | 6.5 | SS-3 | 3 | 3 | 4 | 7 |
| | 8.0 | Medium dense, moist, red-orange, non-reactive, low plasticity, silty SAND (SM/A-4). | | | | | | | |
| 573.0 | | LL=34, PL=26, PI=8, NMC=16.6, %#200=48.7 | | | | | | | |
| | | Loose, moist, gray, non-reactive, non-plastic, silty SAND (SM/A-4). | | | | | | | |
| 568.0 | | LL=32, PL=26, PI=6, NMC=18.9, %#200=45.0 | | | | | | | |
| | | No Refusal & Boring Terminated at 8.0' (Elev. 575.0). | | | | | | | |
| 563.0 | | | | | | | | | |
| 558.0 | | | | | | | | | |
| 553.0 | | | | | | | | | |
| 548.0 | | | | | | | | | |
| 543.0 | | | | | | | | | |
| 538.0 | | | | | | | | | |




LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-24 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1936+99 | **Offset:** | 44' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 583.9 ft | **Latitude:** | 35.13142 | **Longitude:** | 81.54186 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 8 ft | **Soil Depth:** | 8.0 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** Stiff, moist, orange and gray, non-reactive, non-plastic, sandy SILT with gravel in part (ML/A-4). | | 2.5 | SS-1 | 5 | 7 | 6 | 13 | |
| 578.9 | | LL=30, PL=24, PI=6, NMC=24.1, %#200=62.7 | | 4.5 | SS-2 | 5 | 6 | 8 | 14 | |
| | 8.0 | | | 6.5 | SS-3 | 4 | 5 | 9 | 14 | |
| 573.9 | | No Refusal & Boring Terminated at 8.0' (Elev. 575.9). | | | | | | | | |
| 568.9 | | | | | | | | | | |
| 563.9 | | | | | | | | | | |
| 558.9 | | | | | | | | | | |
| 553.9 | | | | | | | | | | |
| 548.9 | | | | | | | | | | |
| 543.9 | | | | | | | | | | |
| 538.9 | | | | | | | | | | |

LEGEND

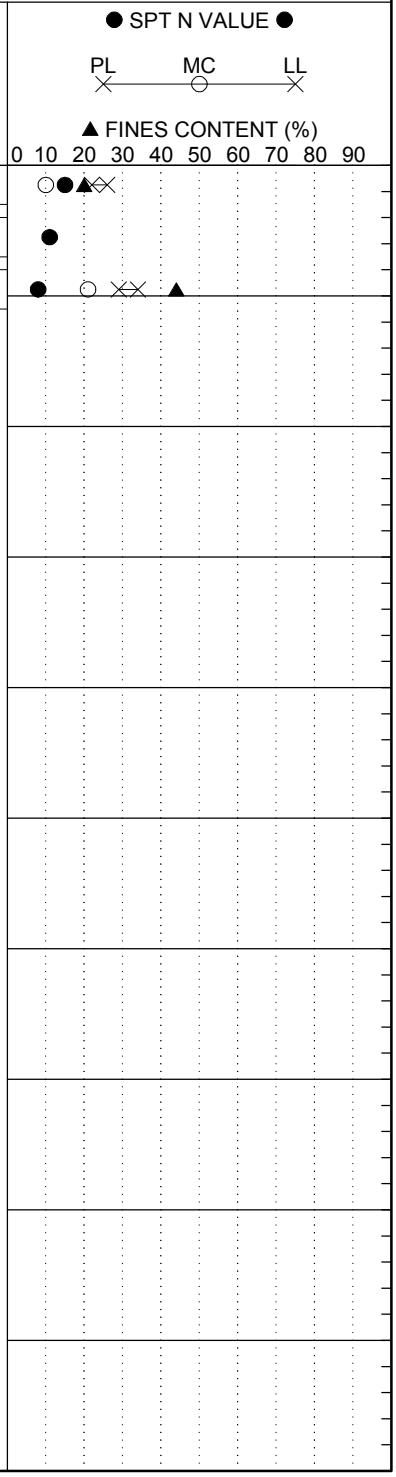
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-25 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1941+96 | **Offset:** | 12' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 582.9 ft | **Latitude:** | 35.13166 | **Longitude:** | 81.54021 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 7 | 7 | 8 | 15 |
| | 1.8 | Medium dense, moist, brown, non-reactive, non-plastic, silty SAND with gravel (SM/A-1-b). | | 2.0 | | | | | |
| | | LL=26, PL=22, PI=4, NMC=9.9, %#200=20.4 | | | SS-2 | 5 | 5 | 6 | 11 |
| 577.9 | 5.5 | **Residual** | | 4.0 | | | | | |
| | | Loose to medium dense, moist, orange, weakly reactive, non-plastic, silty SAND (SM/A-4). | | | SS-3 | 4 | 4 | 4 | 8 |
| 572.9 | | LL=34, PL=29, PI=5, NMC=20.9, %#200=43.5 | | | | | | | |
| 567.9 | | No Refusal & Boring Terminated at 5.5' (Elev. 577.4). | | | | | | | |
| 562.9 | | | | | | | | | |
| 557.9 | | | | | | | | | |
| 552.9 | | | | | | | | | |
| 547.9 | | | | | | | | | |
| 542.9 | | | | | | | | | |
| 537.9 | | | | | | | | | |




LEGEND

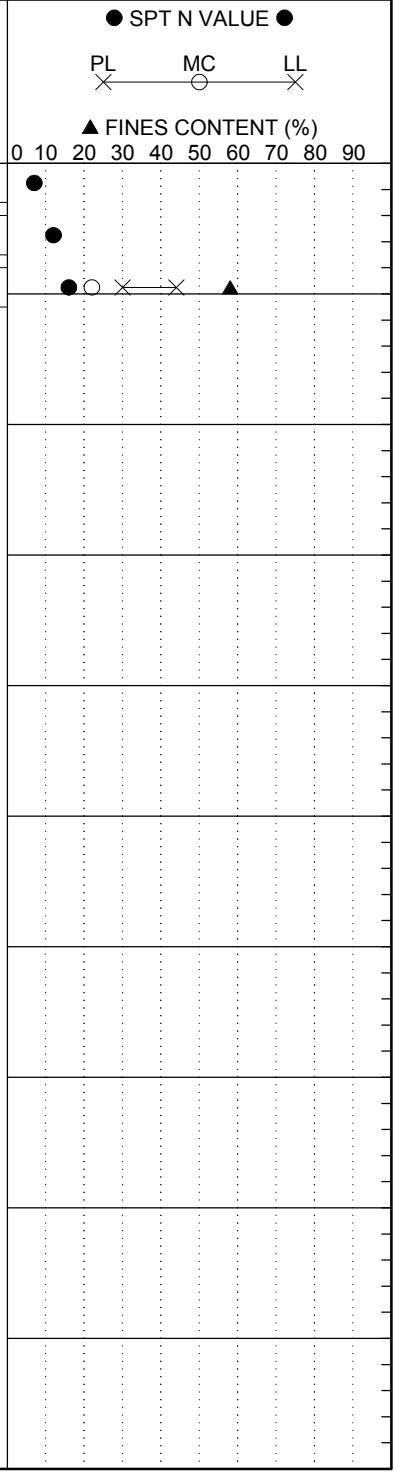
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-26 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1947+08 | **Offset:** | 10' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 582.4 ft | **Latitude:** | 35.13207 | **Longitude:** | 81.53857 | **Date Started:** | 2/16/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 2 | 2 | 5 | 7 |
| | 1.8 | Loose, moist, orange, weakly reactive, low plasticity, silty SAND (SM/A-4). | | 2.0 | | | | | |
| | | | | | SS-2 | 4 | 5 | 7 | 12 |
| | | | | 4.0 | | | | | |
| 577.4 | 5.5 | Stiff to very stiff, moist, orange, non-reactive, high plasticity, sandy SILT (ML/A-7-6). LL=44, PL=30, PI=14, NMC=21.7, %#200=58.1 | | | SS-3 | 4 | 7 | 9 | 16 |
| 572.4 | | No Refusal & Boring Terminated at 5.5' (Elev. 576.9). | | | | | | | |
| 567.4 | | | | | | | | | |
| 562.4 | | | | | | | | | |
| 557.4 | | | | | | | | | |
| 552.4 | | | | | | | | | |
| 547.4 | | | | | | | | | |
| 542.4 | | | | | | | | | |
| 537.4 | | | | | | | | | |




LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-27 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1952+39 | **Offset:** | 9' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 582.0 ft | **Latitude:** | 35.13249 | **Longitude:** | 81.53687 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 3 | 4 | 6 | 10 |
| | 1.8 | Loose, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-2-4). | | 2.0 | | | | | |
| | 3.8 | LL=24, PL=20, PI=4, NMC=15.6, %#200=34.7 | | | SS-2 | 5 | 5 | 5 | 10 |
| 577.0 | 5.5 | | | 4.0 | | | | | |
| | | Loose, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | | SS-3 | 5 | 5 | 7 | 12 |
| | | LL=35, PL=29, PI=6, NMC=20.7, %#200=48.2 | | | | | | | |
| 572.0 | | **Residual** | | | | | | | |
| | | Inferred as stiff, moist, black, non-plastic, SILT (OL/A-5). | | | | | | | |
| 567.0 | | No Refusal & Boring Terminated at 5.5' (Elev. 576.5). | | | | | | | |
| | | Split spoon attempted at depth 4.0'-5.5' and resulted in low recovery. | | | | | | | |
| 562.0 | | | | | | | | | |
| 557.0 | | | | | | | | | |
| 552.0 | | | | | | | | | |
| 547.0 | | | | | | | | | |
| 542.0 | | | | | | | | | |
| 537.0 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

LEGEND

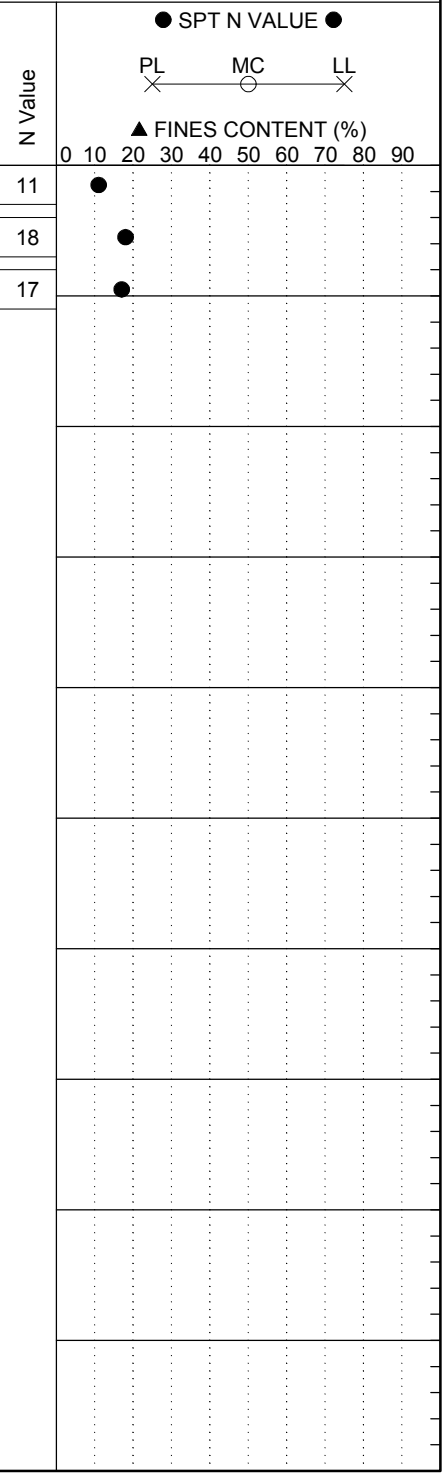
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-28 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1957+01 | **Offset:** | 11' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 582.4 ft | **Latitude:** | 35.13285 | **Longitude:** | 81.53539 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 3 | 5 | 6 | 11 |
| | 1.8 | Medium dense, moist, orange and brown, non-reactive, non-plastic, silty SAND (SM/A-2-4). | | 2.0 | | | | | |
| | 3.8 | | | | SS-2 | 4 | 7 | 11 | 18 |
| 577.4 | 5.5 | Very stiff, moist, orange and brown, non-reactive, non-plastic, sandy SILT (ML/A-7-6). | | 4.0 | | | | | |
| | | | | | SS-3 | 6 | 7 | 10 | 17 |
| | | **Residual** | | | | | | | |
| 572.4 | | Medium dense, moist, brown, non-plastic, silty SAND (SM/A-2-4). | | | | | | | |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 576.9). | | | | | | | |
| 567.4 | | Bulk sample obtained from 0.0'-4.0'. | | | | | | | |
| 562.4 | | | | | | | | | |
| 557.4 | | | | | | | | | |
| 552.4 | | | | | | | | | |
| 547.4 | | | | | | | | | |
| 542.4 | | | | | | | | | |
| 537.4 | | | | | | | | | |




## LEGEND

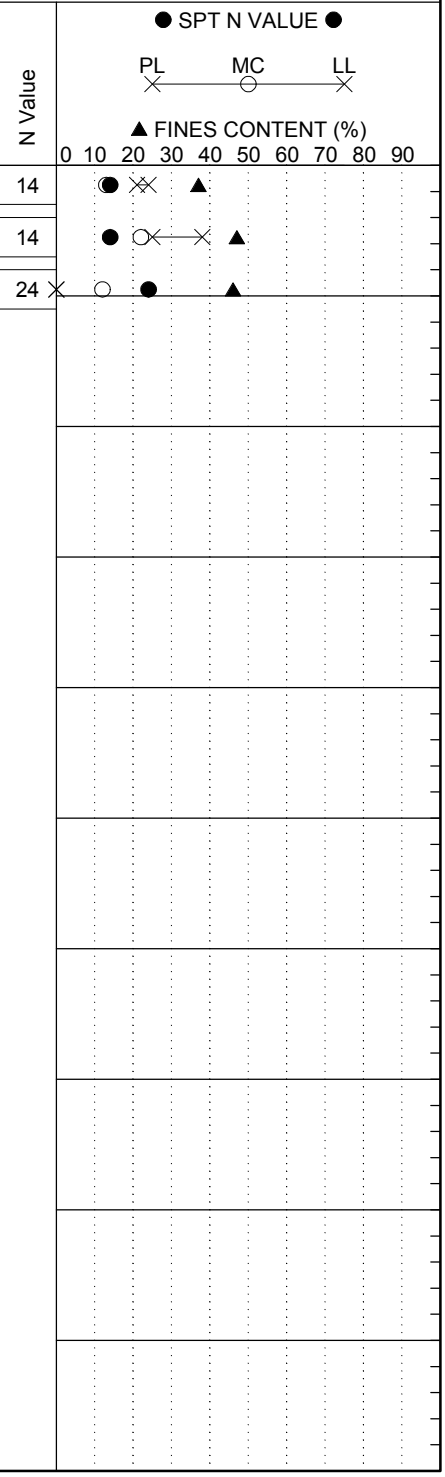
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-29 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1962+06 | **Offset:** | 12' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 583.7 ft | **Latitude:** | 35.13325 | **Longitude:** | 81.53377 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 3 | 7 | 7 | 14 |
| | 1.8 | Medium dense, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | 2.0 | | | | | |
| | | LL=24, PL=21, PI=3, NMC=12.5, %#200=37.2 | | | SS-2 | 6 | 7 | 7 | 14 |
| | 4.7 | | | 4.0 | | | | | |
| 578.7 | 5.5 | | | | SS-3 | 5 | 13 | 11 | 24 |
| | | Medium dense, moist, orange, non-reactive, high plasticity, clayey SAND with gravel (SC/A-6). | | | | | | | |
| 573.7 | | LL=38, PL=25, PI=13, NMC=22.2, %#200=47.3 | | | | | | | |
| | | **Residual** | | | | | | | |
| 568.7 | | Medium dense, moist, green-gray, non-reactive, non-plastic, silty SAND (SM/A-4). | | | | | | | |
| | | LL=30, PL=24, PI=6, NMC=24.1, %#200=62.7 | | | | | | | |
| 563.7 | | No Refusal & Boring Terminated at 5.5' (Elev. 578.2). | | | | | | | |
| 558.7 | | | | | | | | | |
| 553.7 | | | | | | | | | |
| 548.7 | | | | | | | | | |
| 543.7 | | | | | | | | | |
| 538.7 | | | | | | | | | |




LEGEND

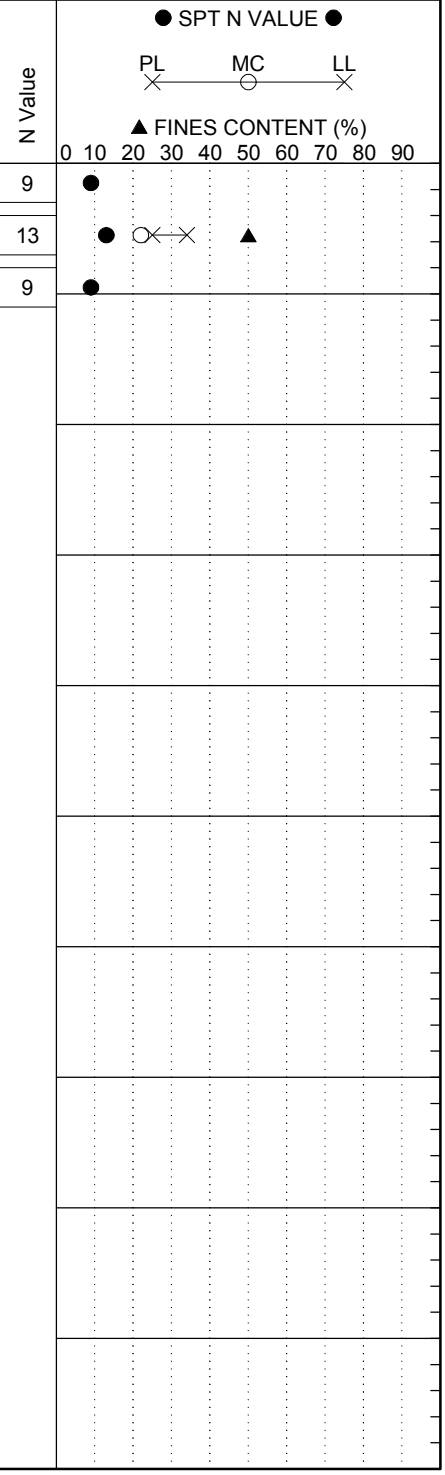
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-30 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1967+11 | **Offset:** | 5' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 590.3 ft | **Latitude:** | 35.13366 | **Longitude:** | 81.53216 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 3 | 3 | 6 | 9 |
| | 1.8 | Loose, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | 2.0 | | | | | |
| | 3.8 | | | | SS-2 | 4 | 6 | 7 | 13 |
| 585.3 | 5.5 | Stiff, moist, orange, non-reactive, high plasticity, sandy SILT (ML/A-4). LL=34, PL=25, PI=9, NMC=22.1, %#200=50.0 | | 4.0 | SS-3 | 4 | 4 | 5 | 9 |
| 580.3 | | Loose, moist, orange, non-reactive, high plasticity, clayey SAND with gravel (SC/A-6). | | | | | | | |
| 575.3 | | No Refusal & Boring Terminated at 5.5' (Elev. 584.8). | | | | | | | |
| 570.3 | | | | | | | | | |
| 565.3 | | | | | | | | | |
| 560.3 | | | | | | | | | |
| 555.3 | | | | | | | | | |
| 550.3 | | | | | | | | | |
| 545.3 | | | | | | | | | |




## LEGEND

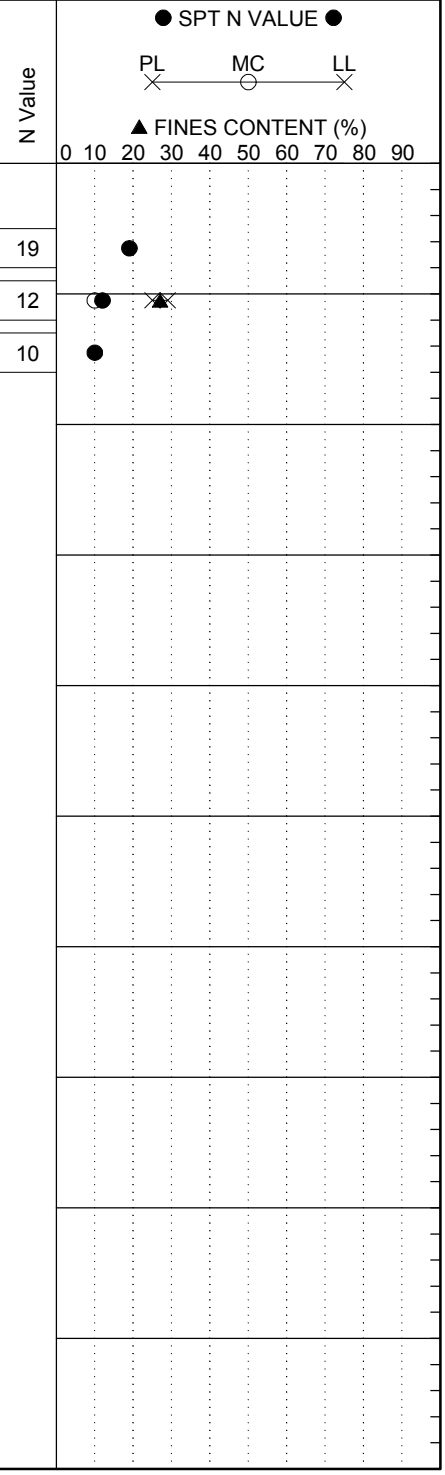
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-31 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1971+94 | **Offset:** | 1' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 608.2 ft | **Latitude:** | 35.13406 | **Longitude:** | 81.53062 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 8 ft | **Soil Depth:** | 8.0 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** Very stiff, moist, orange-brown, non-reactive, non-plastic, sandy SILT (ML/A-4). | | 2.5 | SS-1 | 6 | 9 | 10 | 19 |
| 603.2 | 3.6 | **Residual** Loose to medium dense, moist, orange and white, non-reactive, non-plastic, silty SAND (SM/A-2-4). LL=29, PL=25, PI=4, NMC=10.0, %#200=27.0 | | 4.5 | SS-2 | 5 | 7 | 5 | 12 |
| 598.2 | 8.0 | No Refusal & Boring Terminated at 8.0' (Elev. 600.2). | | 6.5 | SS-3 | 4 | 5 | 5 | 10 |
| 593.2 | | | | | | | | | |
| 588.2 | | | | | | | | | |
| 583.2 | | | | | | | | | |
| 578.2 | | | | | | | | | |
| 573.2 | | | | | | | | | |
| 568.2 | | | | | | | | | |
| 563.2 | | | | | | | | | |




LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-32 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1977+10 | **Offset:** | 3' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 628.8 ft | **Latitude:** | 35.13446 | **Longitude:** | 81.52896 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 6.5 ft | **Soil Depth:** | 6.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 1.0 | | | | | |
| | | Stiff to very stiff, moist, green and orange, non-reactive, non-plastic to high plasticity, sandy SILT (ML/A-4). | | | SS-1 | 11 | 6 | 7 | 13 |
| | | | | 3.0 | | | | | |
| | | | | | SS-2 | 6 | 8 | 10 | 18 |
| 623.8 | 4.8 | | | 5.0 | | | | | |
| | 6.5 | **Residual** | | | SS-3 | 6 | 7 | 8 | 15 |
| | | Stiff, moist, orange, non-reactive, non-plastic, sandy SILT (ML/A-4). | | | | | | | |
| | | LL=37, PL=30, PI=7, NMC=22.4, %#200=64.5 | | | | | | | |
| 618.8 | | No Refusal & Boring Terminated at 6.5' (Elev. 622.3). | | | | | | | |
| 613.8 | | | | | | | | | |
| 608.8 | | | | | | | | | |
| 603.8 | | | | | | | | | |
| 598.8 | | | | | | | | | |
| 593.8 | | | | | | | | | |
| 588.8 | | | | | | | | | |
| 583.8 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

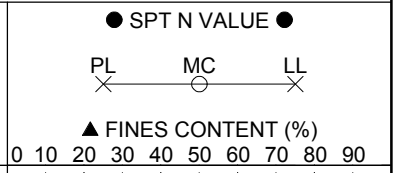
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-33 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1982+08 | **Offset:** | 9' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 647.7 ft | **Latitude:** | 35.13483 | **Longitude:** | 81.52736 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 4 | 6 | 5 | 11 |
| | 1.8 | Medium dense, moist, brown-orange, non-reactive, non-plastic, clayey SAND (SC/A-4). | | 2.0 | | | | | |
| | 3.0 | | | | SS-2 | 9 | 9 | 8 | 17 |
| 642.7 | 5.5 | LL=30, PL=22, PI=8, NMC=15.4, %#200=42.5 | | 4.0 | SS-3 | 4 | 3 | 4 | 7 |
| | | Medium dense, moist, brown-orange, non-reactive, non-plastic, silty, clayey SAND (SC-SM/A-4). | | | | | | | |
| 637.7 | | **Residual** | | | | | | | |
| | | Loose to medium dense, moist, orange and white, non-reactive, non-plastic, silty SAND with gravel (SM/A-4). | | | | | | | |
| 632.7 | | LL=31, PL=28, PI=3, NMC=19.7, %#200=38.6 | | | | | | | |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 642.2). | | | | | | | |
| 627.7 | | Bulk sample obtained from 0.0'-4.0'. | | | | | | | |
| 622.7 | | | | | | | | | |
| 617.7 | | | | | | | | | |
| 612.7 | | | | | | | | | |
| 607.7 | | | | | | | | | |
| 602.7 | | | | | | | | | |




## LEGEND

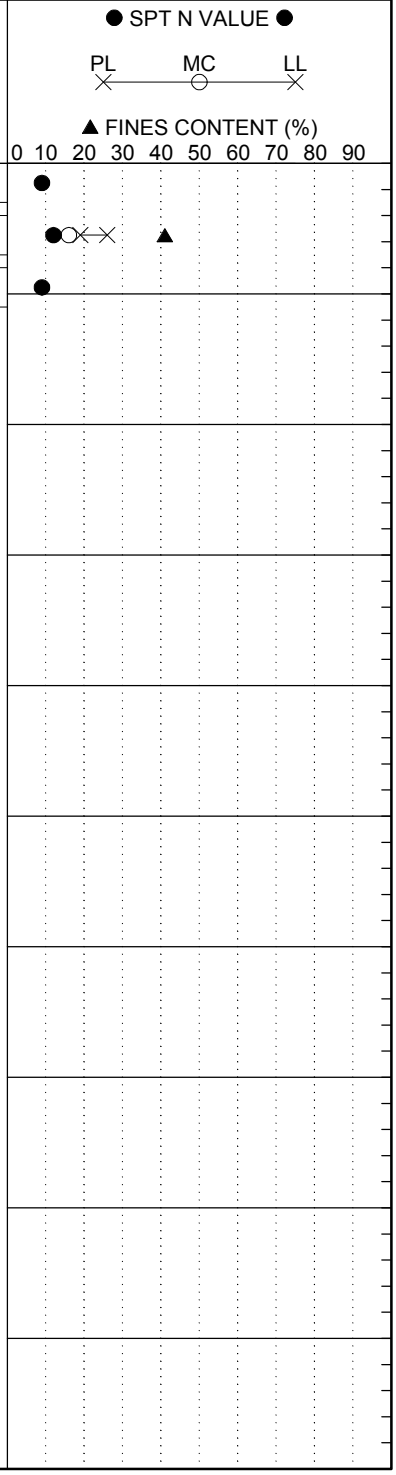
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-34 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1987+07 | **Offset:** | 10' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 664.3 ft | **Latitude:** | 35.13522 | **Longitude:** | 81.52576 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment**<br>Loose to medium dense, moist, yellow-brown, non-reactive, non-plastic, silty, clayey SAND (SC-SM/A-4). | | 0.0<br>2.0 | SS-1 | 3 | 4 | 5 | 9 |
| | 3.1 | | | | | | | | |
| 659.3 | 5.5 | LL=26, PL=19, PI=7, NMC=15.5, %#200=41.3 | | 4.0 | SS-2 | 4 | 5 | 7 | 12 |
| | | **Residual**<br>Loose to medium dense, moist, white, yellow and orange, non-reactive, non-plastic, silty SAND (SM/A-4). | | | SS-3 | 5 | 4 | 5 | 9 |
| 654.3 | | No Refusal & Boring Terminated at 5.5' (Elev. 658.8). | | | | | | | |
| 649.3 | | | | | | | | | |
| 644.3 | | | | | | | | | |
| 639.3 | | | | | | | | | |
| 634.3 | | | | | | | | | |
| 629.3 | | | | | | | | | |
| 624.3 | | | | | | | | | |
| 619.3 | | | | | | | | | |




LEGEND

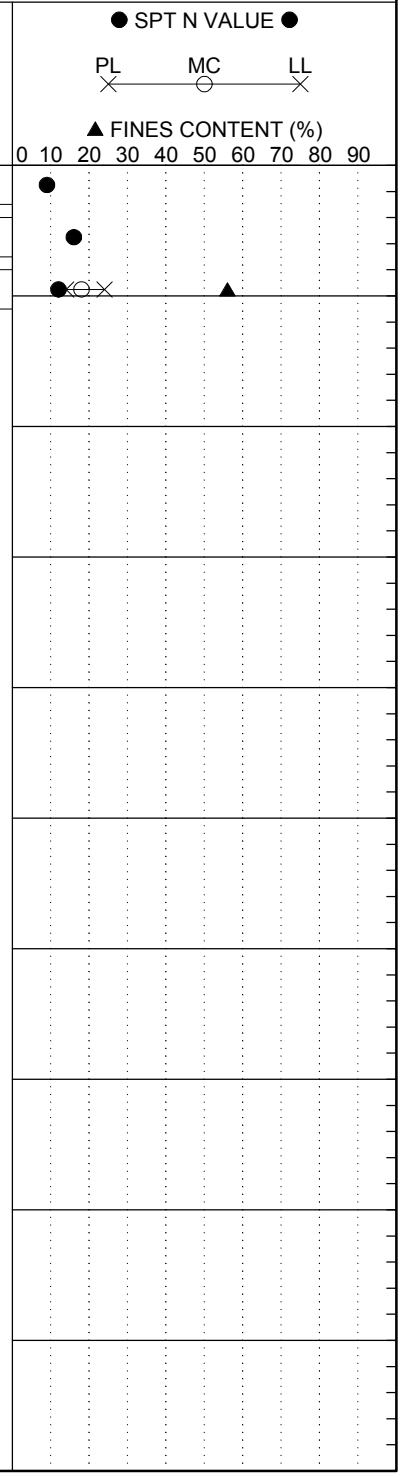
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-35 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1992+00 | **Offset:** | 10' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 677.9 ft | **Latitude:** | 35.13561 | **Longitude:** | 81.52418 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 4 | 4 | 5 | 9 |
| | 1.8 | Loose, moist, brown, non-reactive, non-plastic, clayey SAND (SC/A-4). | | 2.0 | | | | | |
| | | | | | SS-2 | 3 | 8 | 8 | 16 |
| | | | | 4.0 | | | | | |
| 672.9 | 5.5 | Stiff to very stiff, moist, red, non-reactive, high plasticity, silty, sandy lean CLAY (CL/A-4). LL=24, PL=14, PI=10, NMC=17.7, %#200=55.9 | | | SS-3 | 5 | 7 | 5 | 12 |
| 667.9 | | No Refusal & Boring Terminated at 5.5' (Elev. 672.4). | | | | | | | |
| 662.9 | | | | | | | | | |
| 657.9 | | | | | | | | | |
| 652.9 | | | | | | | | | |
| 647.9 | | | | | | | | | |
| 642.9 | | | | | | | | | |
| 637.9 | | | | | | | | | |
| 632.9 | | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-36 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1997+03 | **Offset:** | 11' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 691.9 ft | **Latitude:** | 35.136 | **Longitude:** | 81.52257 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 3 | 5 | 4 | 9 |
| | 1.8 | Loose, moist, red-brown, non-reactive, non-plastic, clayey SAND (SC/A-4). | | 2.0 | | | | | |
| | | | | | SS-2 | 4 | 6 | 8 | 14 |
| | | | | 4.0 | | | | | |
| 686.9 | 5.5 | Stiff to very stiff, moist, red, non-reactive, high plasticity, fat CLAY with sand (CH/A-7-6). LL=57, PL=29, PI=28, NMC=22.2, %#200=76.9 | | | SS-3 | 5 | 9 | 9 | 18 |
| 681.9 | | No Refusal & Boring Terminated at 5.5' (Elev. 686.4). | | | | | | | |
| 676.9 | | | | | | | | | |
| 671.9 | | | | | | | | | |
| 666.9 | | | | | | | | | |
| 661.9 | | | | | | | | | |
| 656.9 | | | | | | | | | |
| 651.9 | | | | | | | | | |
| 646.9 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

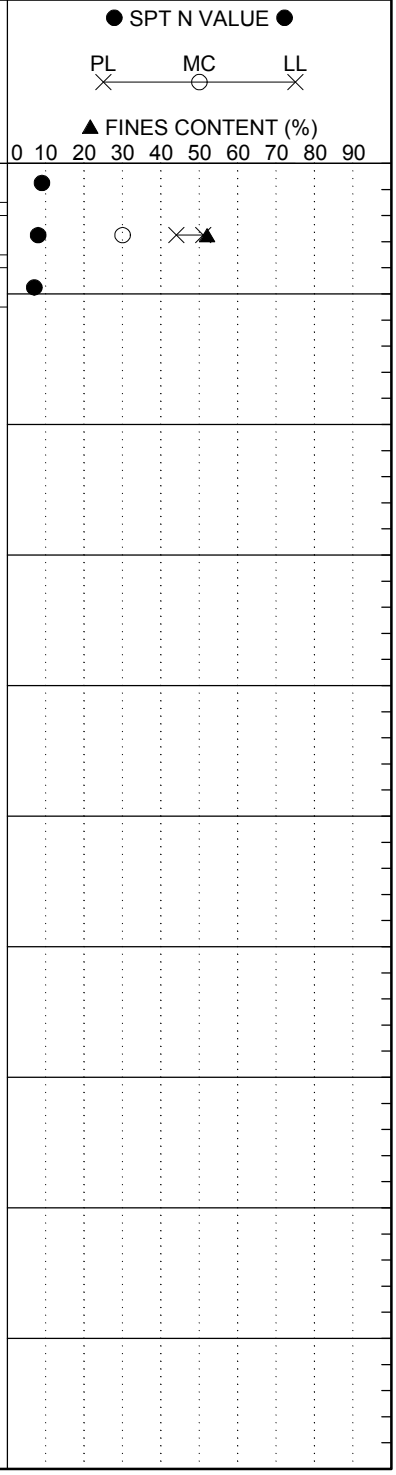
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-37 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2002+06 | **Offset:** | 10' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 705.6 ft | **Latitude:** | 35.1364 | **Longitude:** | 81.52096 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 3 | 5 | 4 | 9 |
| | 1.8 | Loose, moist, yellow-brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | 2.0 | | | | | |
| | | | | | SS-2 | 3 | 4 | 4 | 8 |
| | | | | 4.0 | | | | | |
| 700.6 | 5.5 | **Residual** | | | SS-3 | 3 | 3 | 4 | 7 |
| | | Firm, moist, orange, non-reactive, non-plastic, sandy elastic SILT (MH/A-5). | | | | | | | |
| | | LL=51, PL=44, PI=7, NMC=29.5, %#200=52.2 | | | | | | | |
| 695.6 | | No Refusal & Boring Terminated at 5.5' (Elev. 700.1). | | | | | | | |
| 690.6 | | | | | | | | | |
| 685.6 | | | | | | | | | |
| 680.6 | | | | | | | | | |
| 675.6 | | | | | | | | | |
| 670.6 | | | | | | | | | |
| 665.6 | | | | | | | | | |
| 660.6 | | | | | | | | | |




## LEGEND

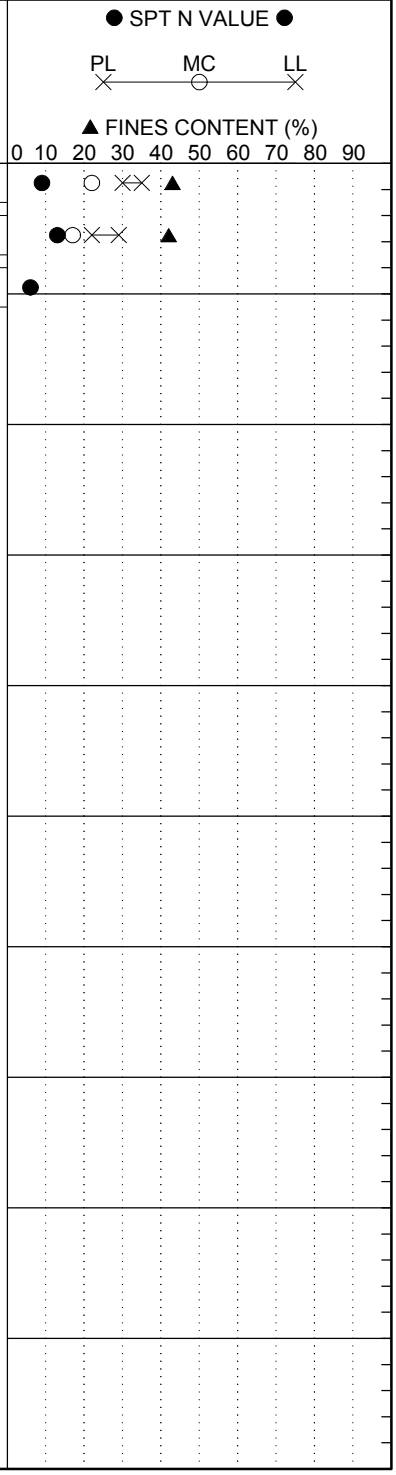
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-38 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2006+95 | **Offset:** | 10' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 719.5 ft | **Latitude:** | 35.13679 | **Longitude:** | 81.51939 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 4 | 4 | 5 | 9 |
| | 1.8 | Loose, moist, yellow-brown, non-reactive, non-plastic, silty SAND (SM/A-4). LL=35, PL=30, PI=5, NMC=22.4, %#200=42.8 | | 2.0 | | | | | |
| | | | | | SS-2 | 4 | 6 | 7 | 13 |
| | | | | 4.0 | | | | | |
| 714.5 | 5.5 | Stiff, moist, red, non-reactive, high plasticity, sandy, silty CLAY (CL-ML/A-4). LL=29, PL=22, PI=7, NMC=17.3, %#200=52.3 | | | SS-3 | 4 | 3 | 3 | 6 |
| 709.5 | | No Refusal & Boring Terminated at 5.5' (Elev. 714.0). | | | | | | | |
| 704.5 | | Bulk sample obtained from 0.0'-4.0'. | | | | | | | |
| 699.5 | | | | | | | | | |
| 694.5 | | | | | | | | | |
| 689.5 | | | | | | | | | |
| 684.5 | | | | | | | | | |
| 679.5 | | | | | | | | | |
| 674.5 | | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-39 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2012+08 | **Offset:** | 9' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 733.9 ft | **Latitude:** | 35.13719 | **Longitude:** | 81.51775 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | | | | | | | | |
| | 1.8 | **Roadway Embankment**<br>Loose, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | 0.0<br>2.0 | SS-1 | 3 | 4 | 4 | 8 |
| | | | | 4.0 | SS-2 | 5 | 7 | 6 | 12 |
| 728.9 | 5.5 | **Residual**<br>Medium dense, moist, red-brown, non-reactive, non-plastic, silty SAND (SM/A-4).<br>LL=33, PL=29, PI=4, NMC=16.3, %#200=39.1 | | | SS-3 | 8 | 8 | 9 | 17 |
| 723.9 | | No Refusal & Boring Terminated at 5.5' (Elev. 728.4). | | | | | | | |
| 718.9 | | | | | | | | | |
| 713.9 | | | | | | | | | |
| 708.9 | | | | | | | | | |
| 703.9 | | | | | | | | | |
| 698.9 | | | | | | | | | |
| 693.9 | | | | | | | | | |
| 688.9 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

## LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-40 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2017+02 | **Offset:** | 7' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 747.6 ft | **Latitude:** | 35.13764 | **Longitude:** | 81.51619 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 0.0 | SS-1 | 3 | 5 | 6 | 11 |
| | 1.8 | Medim dense, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | 2.0 | | | | | |
| | 3.8 | | | | SS-2 | 6 | 5 | 4 | 9 |
| 742.6 | 5.5 | Stiff, moist, brown, non-reactive, non-plastic, sandy, silty CLAY (CL-ML/A-4). | | 4.0 | | | | | |
| | | | | | SS-3 | 4 | 4 | 5 | 9 |
| | | Loose, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | | | | | | |
| 737.6 | | No Refusal & Boring Terminated at 5.5' (Elev. 742.1). | | | | | | | |
| 732.6 | | | | | | | | | |
| 727.6 | | | | | | | | | |
| 722.6 | | | | | | | | | |
| 717.6 | | | | | | | | | |
| 712.6 | | | | | | | | | |
| 707.6 | | | | | | | | | |
| 702.6 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-41 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2021+98 | **Offset:** | 6' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 760.6 ft | **Latitude:** | 35.1382 | **Longitude:** | 81.51467 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | | Very loose to loose, moist, orange-brown, orange and white, non-reactive, weakly to moderately cemented, silty SAND with mica (SM/A-4). | | 2.0 | | | | | |
| | | | | | SS-1 | 3 | 3 | 3 | 6 |
| | | | | 4.0 | | | | | |
| 755.6 | 5.5 | LL=36, PL=31, PI=5, NMC=24.7, %#200=42.8 | | | SS-2 | 2 | 2 | 2 | 4 |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 755.1). | | | | | | | |
| 750.6 | | | | | | | | | |
| 745.6 | | | | | | | | | |
| 740.6 | | | | | | | | | |
| 735.6 | | | | | | | | | |
| 730.6 | | | | | | | | | |
| 725.6 | | | | | | | | | |
| 720.6 | | | | | | | | | |
| 715.6 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

LEGEND

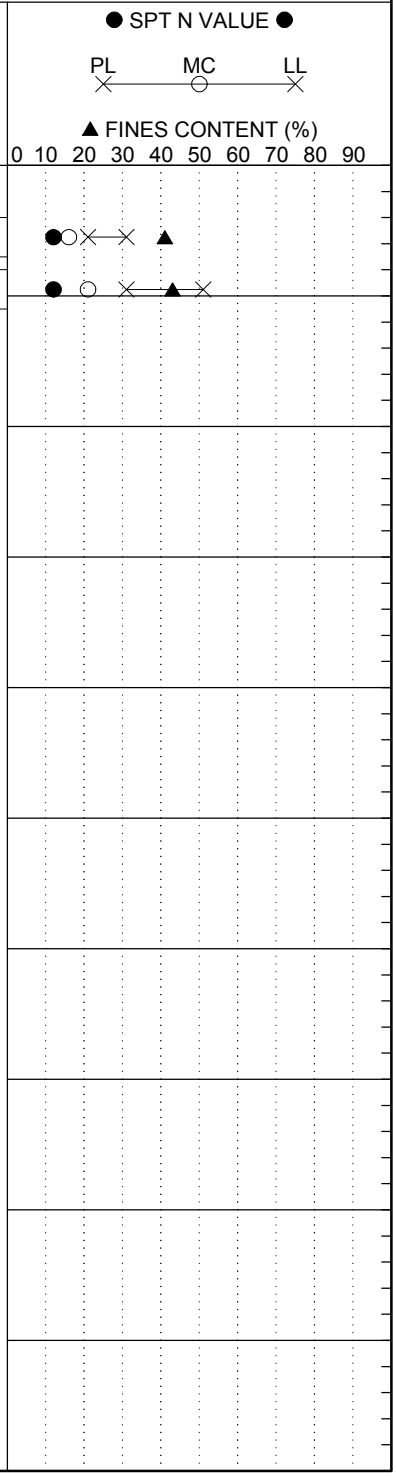
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-42 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2027+03 | **Offset:** | 15' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 775.3 ft | **Latitude:** | 35.13884 | **Longitude:** | 81.51317 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | | Medium dense, moist, red-orange, non-reactive, moderately to strongly cemented, clayey SAND with gravel and mica (SC/A-4). | | 2.0 | | | | | |
| | 3.8 | | | | SS-1 | 3 | 5 | 7 | 12 |
| | | LL=31, PL=21, PI=10, NMC=16.1, %#200=40.7 | | 4.0 | | | | | |
| 770.3 | 5.5 | | | | SS-2 | 3 | 5 | 7 | 12 |
| | | Medium dense, moist, red-orange, non-reactive, moderately to strongly cemented, silty SAND with mica (SM/A-7-5). | | | | | | | |
| 765.3 | | LL=51, PL=31, PI=20, NMC=20.8, %#200=42.9 | | | | | | | |
| 760.3 | | No Refusal & Boring Terminated at 5.5' (Elev. 769.8). | | | | | | | |
| 755.3 | | | | | | | | | |
| 750.3 | | | | | | | | | |
| 745.3 | | | | | | | | | |
| 740.3 | | | | | | | | | |
| 735.3 | | | | | | | | | |
| 730.3 | | | | | | | | | |




## LEGEND

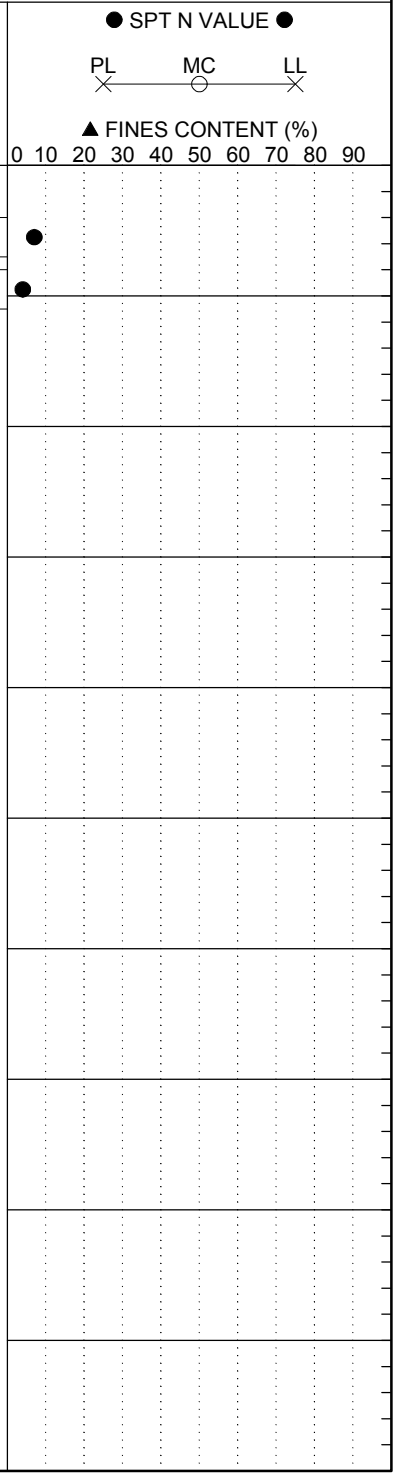
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-43 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2032+03 | **Offset:** | 1' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 787.6 ft | **Latitude:** | 35.13954 | **Longitude:** | 81.51173 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | | Very loose to loose, moist, orange-brown and brown, non-reactive, weakly to moderately cemented, clayey SAND with gravel and mica (SC/A-4). | | 2.0 | SS-1 | 3 | 3 | 4 | 7 |
| | | | | 4.0 | | | | | |
| 782.6 | 5.5 | | | | SS-2 | 2 | 2 | 2 | 4 |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 782.1). | | | | | | | |
| 777.6 | | Boring relocated due to cable guardrail. Bulk sample obtained from 0.0'-5.0'. | | | | | | | |
| 772.6 | | | | | | | | | |
| 767.6 | | | | | | | | | |
| 762.6 | | | | | | | | | |
| 757.6 | | | | | | | | | |
| 752.6 | | | | | | | | | |
| 747.6 | | | | | | | | | |
| 742.6 | | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-44 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2036+97 | **Offset:** | 12' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 803.8 ft | **Latitude:** | 35.14016 | **Longitude:** | 81.51027 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.3 ft | **Soil Depth:** | 5.3 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | | | | | | | | |
| | | Very dense, dry to moist, red-orange, brown, white, orange and dark brown to black streaks, non-reactive, weakly to moderately cemented, fine to medium grained, slightly clayey, well-graded SAND with silt, gravel, mica and quartz fragments (SW-SM/A-1-b). | | 2.0 | | | | | |
| | | LL=NP, PL=NP, PI=NP, NMC=8.8, %#200=11.0 | | 3.8 | SS-1 | 5 | 31 | 34 | 65 |
| 798.8 | 5.3 | | | | SS-2 | 43 | 31 | 20 | 51 |
| 793.8 | | Auger Refusal & Boring Terminated at 5.3' (Elev. 798.5). | | | | | | | |
| 788.8 | | | | | | | | | |
| 783.8 | | | | | | | | | |
| 778.8 | | | | | | | | | |
| 773.8 | | | | | | | | | |
| 768.8 | | | | | | | | | |
| 763.8 | | | | | | | | | |
| 758.8 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-45 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2042+04 | **Offset:** | 10' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 817.8 ft | **Latitude:** | 35.14084 | **Longitude:** | 81.50879 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | | Stiff, moist, orange-brown, orange and brown to black streaks in part, non-reactive, weakly to moderately cemented, clayey, sandy SILT with mica (ML/A-5). | | 2.0 | SS-1 | 2 | 4 | 5 | 9 |
| | | | | 4.0 | | | | | |
| 812.8 | 5.5 | LL=47, PL=39, PI=8, NMC=29.0, %#200=68.2 | | | SS-2 | 3 | 5 | 9 | 14 |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 812.3). | | | | | | | |
| | | Boring relocated due to guardrail. | | | | | | | |
| 807.8 | | | | | | | | | |
| 802.8 | | | | | | | | | |
| 797.8 | | | | | | | | | |
| 792.8 | | | | | | | | | |
| 787.8 | | | | | | | | | |
| 782.8 | | | | | | | | | |
| 777.8 | | | | | | | | | |
| 772.8 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

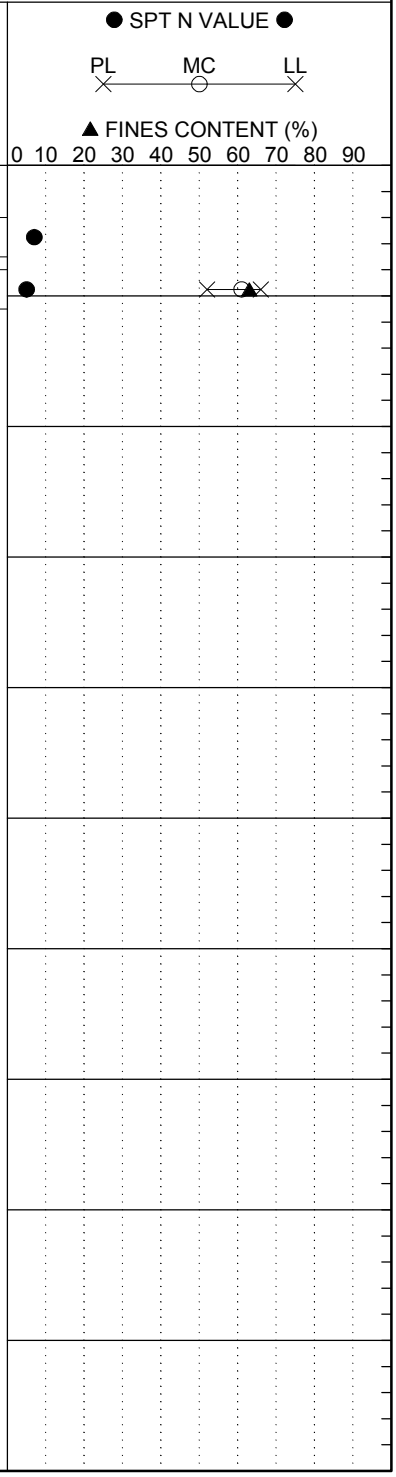
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-46 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2047+05 | **Offset:** | 5' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 831.8 ft | **Latitude:** | 35.14152 | **Longitude:** | 81.50733 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Firm, moist, red-orange, non-reactive, weakly to moderately cemented, clayey, sandy SILT (ML/A-5). | | 2.0 | SS-1 | 3 | 3 | 4 | 7 |
| | 3.8 | | | 4.0 | | | | | |
| 826.8 | 5.5 | Firm, moist, orange-brown and yellow-brown, non-reactive, weakly cemented, slightly clayey, sandy elastic SILT with mica (MH/A-7-5). | | | SS-2 | 2 | 2 | 3 | 5 |
| | | LL=66, PL=52, PI=14, NMC=61.1, %#200=62.9 | | | | | | | |
| 821.8 | | No Refusal & Boring Terminated at 5.5' (Elev. 826.3). | | | | | | | |
| 816.8 | | | | | | | | | |
| 811.8 | | | | | | | | | |
| 806.8 | | | | | | | | | |
| 801.8 | | | | | | | | | |
| 796.8 | | | | | | | | | |
| 791.8 | | | | | | | | | |
| 786.8 | | | | | | | | | |




## LEGEND

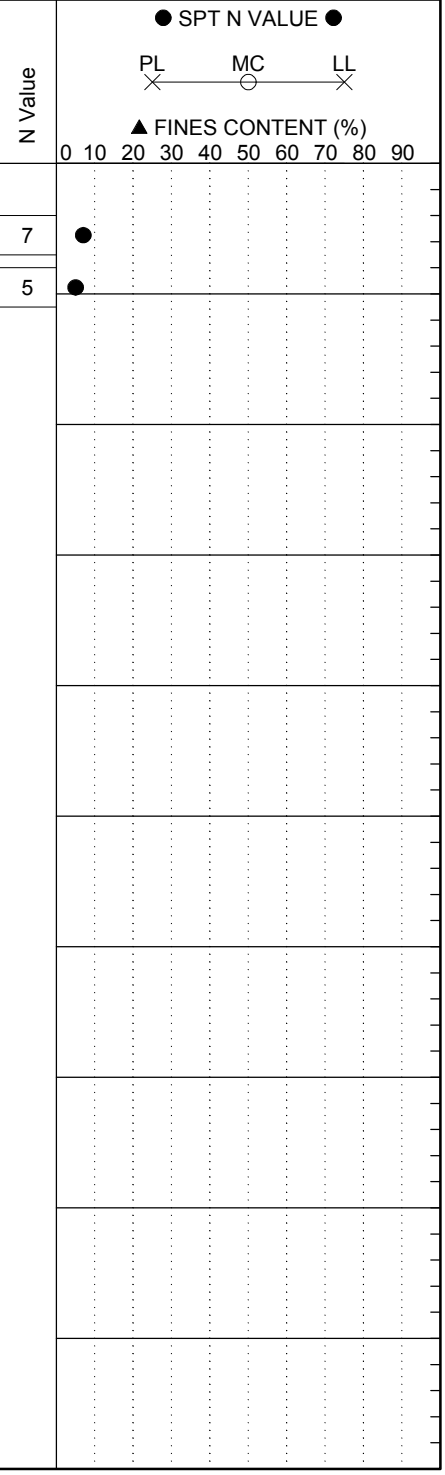
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-47 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2052+07 | **Offset:** | CL | **Alignment:** | I-85 |
| **Elev.:** | 843.6 ft | **Latitude:** | 35.14219 | **Longitude:** | 81.50586 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Firm, moist, orange-brown, light brown, white, dark brown and dark brown to black streaks in part, non-reactive, weakly cemented, clayey, sandy elastic SILT with mica (MH/A-7-5). | | 2.0 | | | | | |
| | | | | | SS-1 | 2 | 3 | 4 | 7 |
| | | | | 4.0 | | | | | |
| 838.6 | 5.5 | | | | SS-2 | 2 | 2 | 3 | 5 |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 838.1). | | | | | | | |
| 833.6 | | | | | | | | | |
| 828.6 | | | | | | | | | |
| 823.6 | | | | | | | | | |
| 818.6 | | | | | | | | | |
| 813.6 | | | | | | | | | |
| 808.6 | | | | | | | | | |
| 803.6 | | | | | | | | | |
| 798.6 | | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-48 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2057+08 | **Offset:** | 7' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 843.3 ft | **Latitude:** | 35.14284 | **Longitude:** | 81.50438 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | 2.1 | Topsoil | | 2.0 | SS-1 | 2 | 2 | 3 | 5 |
| | | Very loose to loose, moist, brown, non-reactive, weakly cemented, silty SAND with mica (SM/A-5). | | 4.0 | SS-2 | 1 | 2 | 2 | 4 |
| 838.3 | 5.5 | LL=49, PL=40, PI=9, NMC=24.4, %#200=42.1 | | | | | | | |
| 833.3 | | No Refusal & Boring Terminated at 5.5' (Elev. 837.8). | | | | | | | |
| 828.3 | | Bulk sample obtained from 0.0'-5.0'. | | | | | | | |
| 823.3 | | | | | | | | | |
| 818.3 | | | | | | | | | |
| 813.3 | | | | | | | | | |
| 808.3 | | | | | | | | | |
| 803.3 | | | | | | | | | |
| 798.3 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-49 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2062+13 | **Offset:** | CL | **Alignment:** | I-85 |
| **Elev.:** | 824.8 ft | **Latitude:** | 35.14356 | **Longitude:** | 81.50293 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | 2.3 | Topsoil | | 2.0 | | | | | |
| | | Loose, moist, brown and red-orange, weakly reactive, weakly to moderately cemented, clayey SAND with mica (SC/A-6). | | | SS-1 | 4 | 3 | 3 | 6 |
| | | | | 4.0 | | | | | |
| 819.8 | 5.5 | | | | SS-2 | 2 | 3 | 4 | 7 |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 819.3). | | | | | | | |
| 814.8 | | | | | | | | | |
| 809.8 | | | | | | | | | |
| 804.8 | | | | | | | | | |
| 799.8 | | | | | | | | | |
| 794.8 | | | | | | | | | |
| 789.8 | | | | | | | | | |
| 784.8 | | | | | | | | | |
| 779.8 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

LEGEND

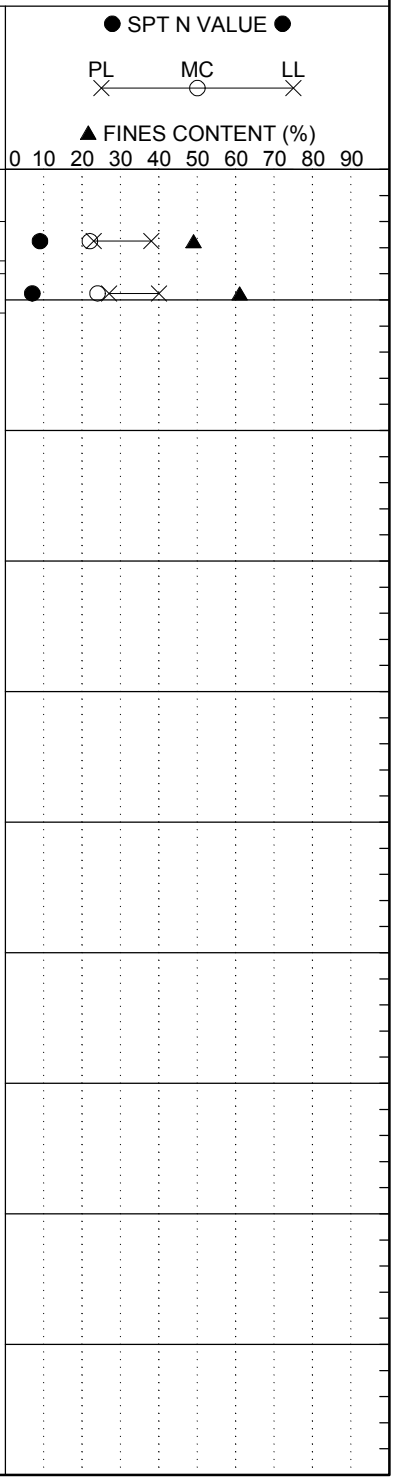
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-50 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2067+06 | **Offset:** | 9' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 803.8 ft | **Latitude:** | 35.14427 | **Longitude:** | 81.50153 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | 2.4 | Topsoil | | 2.0 | | | | | |
| | 3.8 | Loose, moist, brown and red-orange, weakly reactive, weakly to moderately cemented, silty, clayey SAND (SC/A-6). LL=38, PL=23, PI=15, NMC=21.8, %#200=49.0 | | | SS-1 | 3 | 4 | 5 | 9 |
| 798.8 | 5.5 | | | 4.0 | SS-2 | 2 | 3 | 4 | 7 |
| 793.8 | | Firm, moist, brown and red-orange, non-reactive, weakly to moderately cemented, sandy SILT (ML/A-6). LL=40, PL=27, PI=13, NMC=24.0, %#200=61.1 | | | | | | | |
| 788.8 | | No Refusal & Boring Terminated at 5.5' (Elev. 798.3). | | | | | | | |
| 783.8 | | | | | | | | | |
| 778.8 | | | | | | | | | |
| 773.8 | | | | | | | | | |
| 768.8 | | | | | | | | | |
| 763.8 | | | | | | | | | |
| 758.8 | | | | | | | | | |




## LEGEND

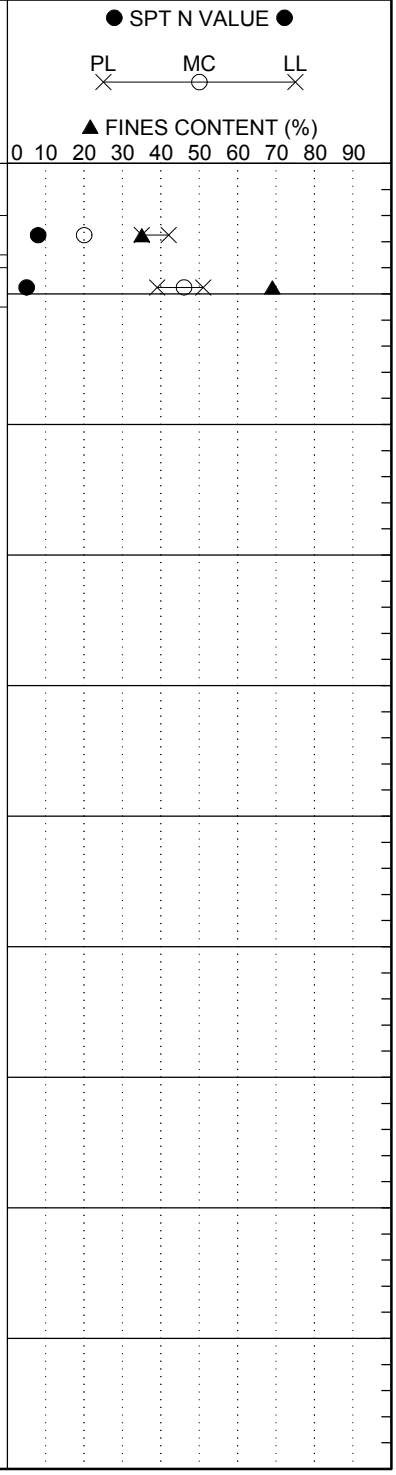
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-51 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2072+09 | **Offset:** | 1' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 785.6 ft | **Latitude:** | 35.14509 | **Longitude:** | 81.50018 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | Topsoil | | 2.0 | | | | | |
| | 2.2 | **Residual** | | | SS-1 | 3 | 4 | 4 | 8 |
| | 3.8 | Loose, moist, brown, red-orange and orange, non-reactive, weakly cemented, clayey, silty SAND with mica (SM/A-5). LL=42, PL=35, PI=7, NMC=20.3, %#200=35.2 | | 4.0 | | | | | |
| 780.6 | 5.5 | | | | SS-2 | 2 | 2 | 3 | 5 |
| 775.6 | | Firm, moist, red-orange and orange-brown, non-reactive, weakly cemented, clayey, sandy elastic SILT with mica (MH/A-7-5). LL=51, PL=39, PI=12, NMC=45.6, %#200=68.5 | | | | | | | |
| 770.6 | | No Refusal & Boring Terminated at 5.5' (Elev. 780.1). | | | | | | | |
| 765.6 | | Boring relocated due to cable guardrail. | | | | | | | |
| 760.6 | | | | | | | | | |
| 755.6 | | | | | | | | | |
| 750.6 | | | | | | | | | |
| 745.6 | | | | | | | | | |
| 740.6 | | | | | | | | | |




LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-52 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2077+02 | **Offset:** | 10' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 784.9 ft | **Latitude:** | 35.14587 | **Longitude:** | 81.49883 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | 2.2 | Topsoil | | 2.0 | | | | | |
| | | Loose, moist, red-orange and orange-brown, non-reactive, weakly cemented, clayey, silty SAND with mica (SM/A-5). | | | SS-1 | 3 | 4 | 5 | 9 |
| 779.9 | 5.5 | | | 4.0 | SS-2 | 2 | 2 | 3 | 5 |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 779.4). | | | | | | | |
| 774.9 | | | | | | | | | |
| 769.9 | | | | | | | | | |
| 764.9 | | | | | | | | | |
| 759.9 | | | | | | | | | |
| 754.9 | | | | | | | | | |
| 749.9 | | | | | | | | | |
| 744.9 | | | | | | | | | |
| 739.9 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

LEGEND

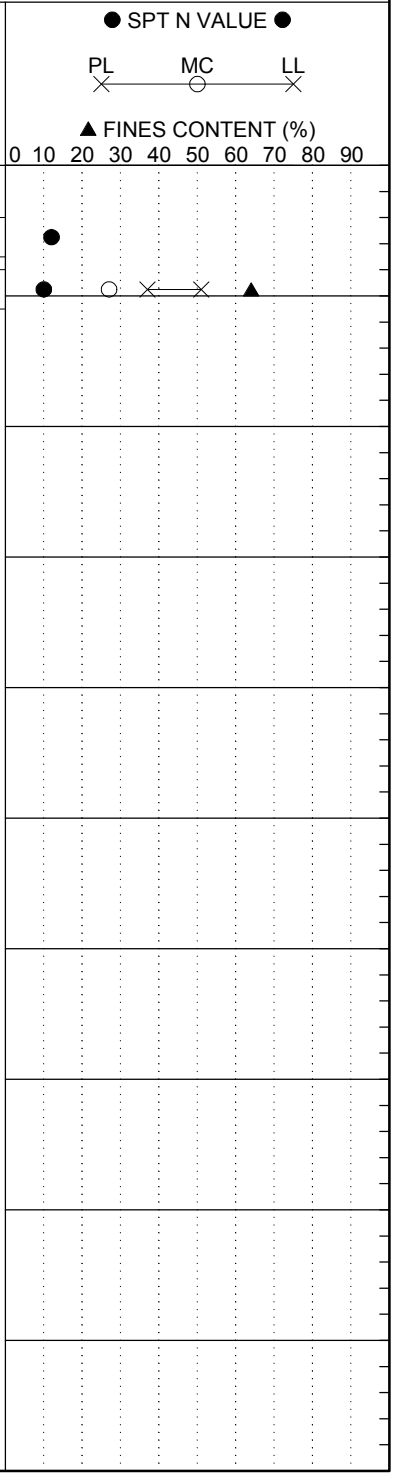
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-53 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2082+02 | **Offset:** | 2' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 795.4 ft | **Latitude:** | 35.1467 | **Longitude:** | 81.4975 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | 2.2 | Topsoil | | 2.0 | | | | | |
| | | Stiff, moist, red-orange, brown and orange-brown, non-reactive, weakly to moderately cemented, clayey, sandy elastic SILT with mica and quartz (MH/A-7-5). LL=51, PL=37, PI=14, NMC=26.8, %#200=64.4 | | | SS-1 | 3 | 6 | 6 | 12 |
| 790.4 | 5.5 | | | 4.0 | SS-2 | 2 | 4 | 6 | 10 |
| 785.4 | | No Refusal & Boring Terminated at 5.5' (Elev. 789.9). | | | | | | | |
| | | Bulk sample obtained from 0.0'-5.0'. | | | | | | | |
| 780.4 | | | | | | | | | |
| 775.4 | | | | | | | | | |
| 770.4 | | | | | | | | | |
| 765.4 | | | | | | | | | |
| 760.4 | | | | | | | | | |
| 755.4 | | | | | | | | | |
| 750.4 | | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-54 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2087+05 | **Offset:** | 4' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 811.6 ft | **Latitude:** | 35.14751 | **Longitude:** | 81.49614 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | 2.0 | | | | | |
| | 3.8 | Medium dense, moist, brown, brown-orange and dark brown to black streaks, non-reactive, weakly to moderately cemented, foliated, slightly clayey, silty SAND with mica and feldspar (SM/A-2-5). LL=41, PL=31, PI=10, NMC=18.6, %#200=25.6 | | | SS-1 | 12 | 15 | 8 | 23 |
| 806.6 | 5.5 | | | 4.0 | SS-2 | 2 | 2 | 4 | 6 |
| 801.6 | | Firm, moist, orange-brown, brown, orange and dark brown to black streaks, non-reactive, weakly cemented, clayey, sandy elastic SILT with mica (MH/A-7-5). LL=50, PL=39, PI=11, NMC=27.9, %#200=54.4 | | | | | | | |
| 796.6 | | No Refusal & Boring Terminated at 5.5' (Elev. 806.1). | | | | | | | |
| 791.6 | | | | | | | | | |
| 786.6 | | | | | | | | | |
| 781.6 | | | | | | | | | |
| 776.6 | | | | | | | | | |
| 771.6 | | | | | | | | | |
| 766.6 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-55 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2092+07 | **Offset:** | CL | **Alignment:** | I-85 |
| **Elev.:** | 824.8 ft | **Latitude:** | 35.14834 | **Longitude:** | 81.49479 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Stiff, moist, red-orange and brown-red, non-reactive, weakly to moderately cemented, saprolitic in part, clayey, sandy elastic SILT with mica (MH/A-7-5). | | 2.0 | SS-1 | 2 | 4 | 6 | 10 |
| | | | | 4.0 | | | | | |
| 819.8 | 5.5 | LL=53, PL=38, PI=15, NMC=27.5, %#200=67.7 | | | SS-2 | 4 | 5 | 5 | 10 |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 819.3). | | | | | | | |
| | | Boring relocated due to cable guardrail. | | | | | | | |
| 814.8 | | | | | | | | | |
| 809.8 | | | | | | | | | |
| 804.8 | | | | | | | | | |
| 799.8 | | | | | | | | | |
| 794.8 | | | | | | | | | |
| 789.8 | | | | | | | | | |
| 784.8 | | | | | | | | | |
| 779.8 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-56 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2097+04 | **Offset:** | 8' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 831.6 ft | **Latitude:** | 35.14913 | **Longitude:** | 81.49344 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | 2.3 | Topsoil | | 2.0 | | | | | |
| | 3.8 | Firm, moist, red-orange and brown, non-reactive, weakly to moderately cemented, clayey, sandy elastic SILT with mica (MH/A-7-5). | | | SS-1 | 3 | 2 | 3 | 5 |
| 826.6 | 5.5 | **Residual** | | 4.0 | SS-2 | 1 | 2 | 2 | 4 |
| 821.6 | | Soft, moist, red-orange and brown, non-reactive, weakly to moderately cemented, clayey, sandy SILT with mica (ML/A-7-5). LL=42, PL=31, PI=11, NMC=22.0, %#200=63.2 | | | | | | | |
| 816.6 | | No Refusal & Boring Terminated at 5.5' (Elev. 826.1). | | | | | | | |
| 811.6 | | | | | | | | | |
| 806.6 | | | | | | | | | |
| 801.6 | | | | | | | | | |
| 796.6 | | | | | | | | | |
| 791.6 | | | | | | | | | |
| 786.6 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

LEGEND

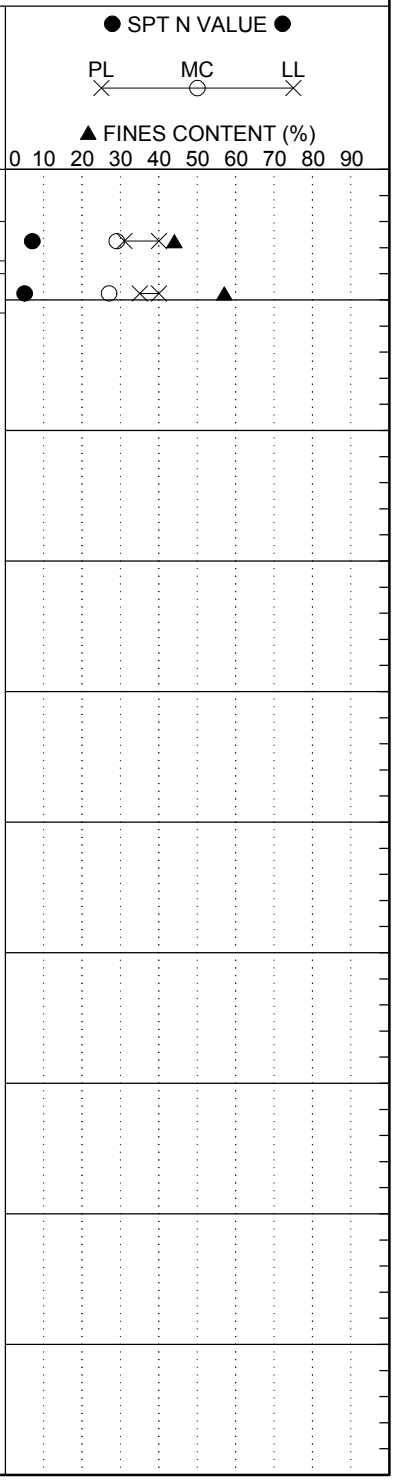
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-57 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2102+08 | **Offset:** | 1' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 827.3 ft | **Latitude:** | 35.14997 | **Longitude:** | 81.4921 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Loose, moist, orange, brown, red-orange and white, non-reactive, weakly to moderately cemented, clayey, silty SAND with gravel, mica and quartz (SM/A-4). | | 2.0 | | | | | |
| | 3.8 | LL=40, PL=31, PI=9, NMC=28.7, %#200=44.1 | | | SS-1 | 4 | 3 | 4 | 7 |
| 822.3 | 5.5 | | | 4.0 | | | | | |
| | | Firm, moist, orange, yellow-orange and dark brown to black streaks, non-reactive, weakly cemented, slightly clayey, sandy SILT with mica (ML/A-4). | | | SS-2 | 2 | 2 | 3 | 5 |
| 817.3 | | LL=40, PL=35, PI=5, NMC=27.3, %#200=56.8 | | | | | | | |
| 812.3 | | No Refusal & Boring Terminated at 5.5' (Elev. 821.8). | | | | | | | |
| 807.3 | | | | | | | | | |
| 802.3 | | | | | | | | | |
| 797.3 | | | | | | | | | |
| 792.3 | | | | | | | | | |
| 787.3 | | | | | | | | | |
| 782.3 | | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-58 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2107+05 | **Offset:** | 5' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 817.8 ft | **Latitude:** | 35.15077 | **Longitude:** | 81.49075 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Loose, moist, brown, brown-orange, orange and dark brown to black streaks, non-reactive, weakly cemented, clayey, silty SAND with mica and feldspar (SM/A-4). | | 2.0 | SS-1 | 4 | 4 | 5 | 9 |
| | 3.8 | | | 4.0 | | | | | |
| 812.8 | 5.5 | LL=34, PL=29, PI=5, NMC=27.1, %#200=44.5 | | | SS-2 | 2 | 4 | 5 | 9 |
| | | Stiff, moist, brown, brown-orange, orange and dark brown to black streaks, non-reactive, weakly cemented, clayey, sandy SILT with mica and feldspar (ML/A-4) | | | | | | | |
| 807.8 | | No Refusal & Boring Terminated at 5.5' (Elev. 812.3). | | | | | | | |
| 802.8 | | Bulk sample obtained from 0.0'-5.0'. | | | | | | | |
| 797.8 | | | | | | | | | |
| 792.8 | | | | | | | | | |
| 787.8 | | | | | | | | | |
| 782.8 | | | | | | | | | |
| 777.8 | | | | | | | | | |
| 772.8 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-59 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2112+03 | **Offset:** | CL | **Alignment:** | I-85 |
| **Elev.:** | 806.8 ft | **Latitude:** | 35.15159 | **Longitude:** | 81.48942 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment**<br>Inferred as topsoil with gravel in part. | | 2.0 | | | | | |
| | | | | | SS-1 | 7 | 8 | 8 | 16 |
| | 3.8 | **Residual** | | 4.0 | | | | | |
| 801.8 | 5.5 | Firm, moist, brown, brown-orange, orange and dark brown to black streaks, non-reactive, moderately to strongly cemented, sandy lean CLAY (CL/A-6).<br>LL=37, PL=24, PI=13, NMC=22.3, %#200=65.7 | | | SS-2 | 3 | 3 | 3 | 6 |
| 796.8 | | No Refusal & Boring Terminated at 5.5' (Elev. 801.3). | | | | | | | |
| 791.8 | | Split spoon attempted from 2.0'-3.5' which resulted in low recovery. | | | | | | | |
| 786.8 | | | | | | | | | |
| 781.8 | | | | | | | | | |
| 776.8 | | | | | | | | | |
| 771.8 | | | | | | | | | |
| 766.8 | | | | | | | | | |
| 761.8 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

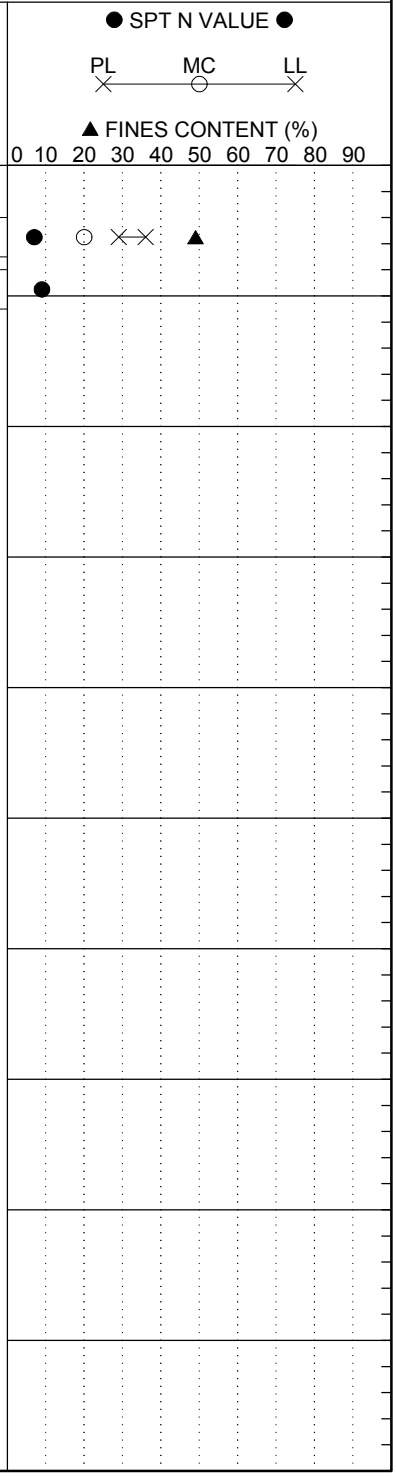
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-60 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2117+04 | **Offset:** | 7' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 803.1 ft | **Latitude:** | 35.15239 | **Longitude:** | 81.48805 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | 2.3 | Topsoil | | 2.0 | | | | | |
| | | Loose, moist, brown, red-orange and orange, non-reactive, weakly to strongly cemented, clayey, silty SAND with mica (SM/A-4). LL=36, PL=29, PI=7, NMC=20.3, %#200=49.2 | | | SS-1 | 4 | 3 | 4 | 7 |
| 798.1 | 5.5 | | | 4.0 | SS-2 | 2 | 4 | 5 | 9 |
| 793.1 | | No Refusal & Boring Terminated at 5.5' (Elev. 797.6). | | | | | | | |
| 788.1 | | | | | | | | | |
| 783.1 | | | | | | | | | |
| 778.1 | | | | | | | | | |
| 773.1 | | | | | | | | | |
| 768.1 | | | | | | | | | |
| 763.1 | | | | | | | | | |
| 758.1 | | | | | | | | | |




## LEGEND

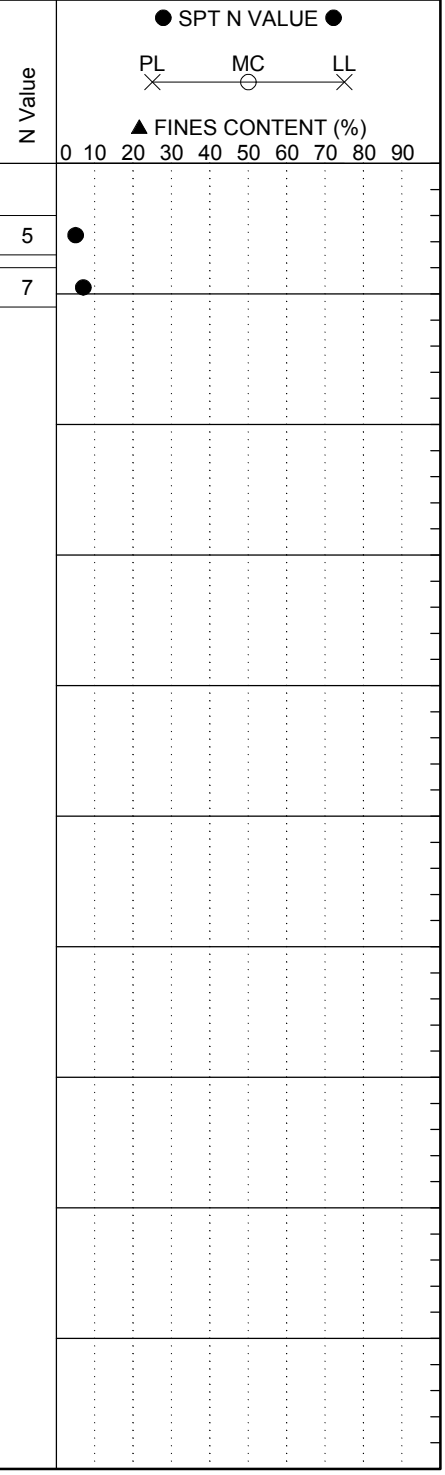
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-61 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2122+08 | **Offset:** | 1' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 808.4 ft | **Latitude:** | 35.15322 | **Longitude:** | 81.48671 | **Date Started:** | 2/17/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/17/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Firm, moist, red, brown-orange and brown, non-reactive, weakly to moderately cemented, clayey, sandy SILT with mica (ML/A-7-5). | | 2.0 | SS-1 | 3 | 2 | 3 | 5 |
| | | | | 4.0 | | | | | |
| 803.4 | 5.5 | | | | SS-2 | 3 | 3 | 4 | 7 |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 802.9). | | | | | | | |
| 798.4 | | Boring relocated due to cable guardrail. | | | | | | | |
| 793.4 | | | | | | | | | |
| 788.4 | | | | | | | | | |
| 783.4 | | | | | | | | | |
| 778.4 | | | | | | | | | |
| 773.4 | | | | | | | | | |
| 768.4 | | | | | | | | | |
| 763.4 | | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-62 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2127+06 | **Offset:** | 11' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 815.7 ft | **Latitude:** | 35.15401 | **Longitude:** | 81.48534 | **Date Started:** | 2/18/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Firm to very stiff, dry to moist, red-orange, orange-brown and brown, non-reactive, weakly to moderately cemented, saprolitic in part, sandy SILT with quartz fragments and mica (ML/A-7-5). | | 2.0 | SS-1 | 4 | 3 | 3 | 6 |
| | | | | 4.0 | | | | | |
| 810.7 | 5.5 | LL=48, PL=33, PI=15, NMC=16.8, %#200=58.6 | | | SS-2 | 2 | 8 | 11 | 19 |
| 805.7 | | No Refusal & Boring Terminated at 5.5' (Elev. 810.2). | | | | | | | |
| 800.7 | | | | | | | | | |
| 795.7 | | | | | | | | | |
| 790.7 | | | | | | | | | |
| 785.7 | | | | | | | | | |
| 780.7 | | | | | | | | | |
| 775.7 | | | | | | | | | |
| 770.7 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

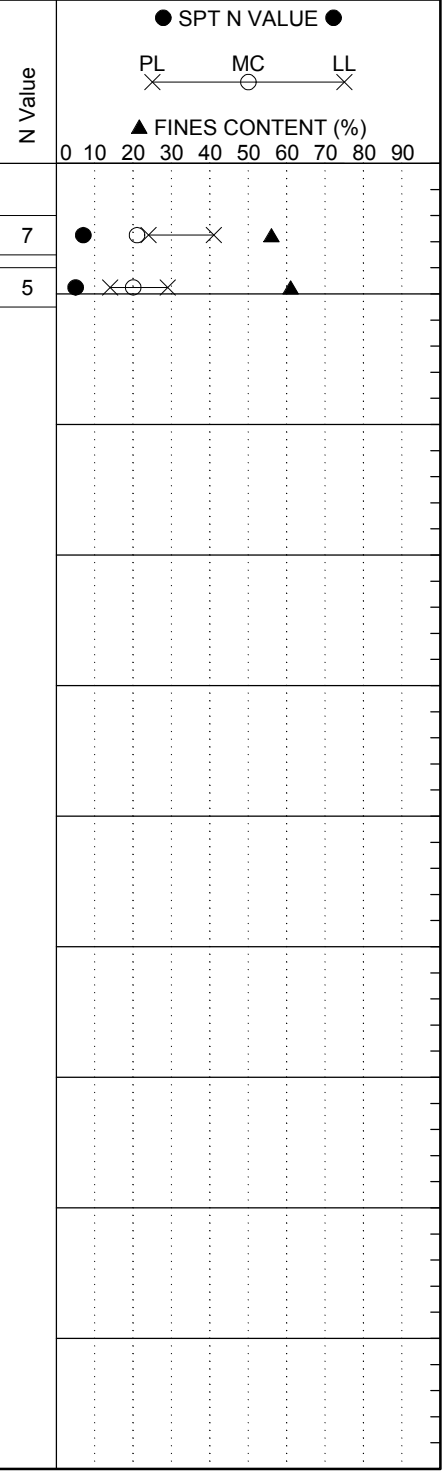
## LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-63 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2132+05 | **Offset:** | CL | **Alignment:** | I-85 |
| **Elev.:** | 821.0 ft | **Latitude:** | 35.15485 | **Longitude:** | 81.48402 | **Date Started:** | 2/18/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Firm, moist, brown-orange and orange-brown, non-reactive, strongly cemented, sandy lean CLAY with mica (CL/A-7-6). | | 2.0 | | | | | |
| | 3.8 | | | | SS-1 | 3 | 3 | 4 | 7 |
| | | LL=41, PL=24, PI=17, NMC=21.2, %#200=56.1 | | 4.0 | | | | | |
| 816.0 | 5.5 | | | | SS-2 | 2 | 2 | 3 | 5 |
| | | Firm, moist, brown-orange and orange-brown, non-reactive, weakly to moderately cemented, sandy lean CLAY with mica (CL/A-6). | | | | | | | |
| 811.0 | | LL=29, PL=14, PI=15, NMC=19.9, %#200=60.5 | | | | | | | |
| 806.0 | | No Refusal & Boring Terminated at 5.5' (Elev. 815.5). | | | | | | | |
| | | Boring relocated due to cable guardrail. | | | | | | | |
| 801.0 | | | | | | | | | |
| 796.0 | | | | | | | | | |
| 791.0 | | | | | | | | | |
| 786.0 | | | | | | | | | |
| 781.0 | | | | | | | | | |
| 776.0 | | | | | | | | | |




LEGEND

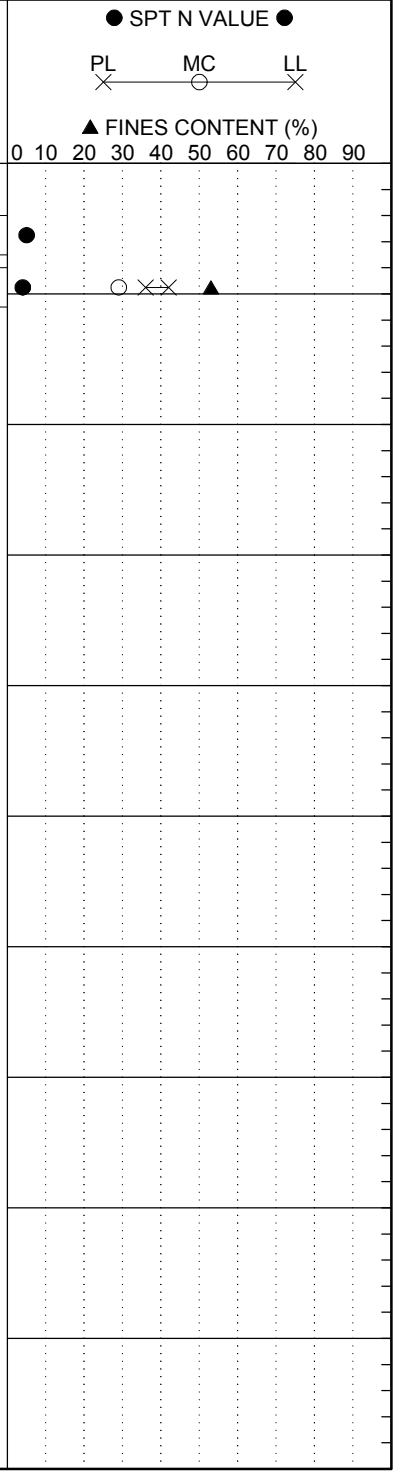
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-64 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2137+08 | **Offset:** | 8' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 828.0 ft | **Latitude:** | 35.15565 | **Longitude:** | 81.48265 | **Date Started:** | 2/18/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Soft to firm, brown-orange, brown and red-orange, non-reactive, sandy SILT (ML/A-5). | | 2.0 | SS-1 | 3 | 2 | 3 | 5 |
| | | | | 4.0 | | | | | |
| 823.0 | 5.5 | LL=42, PL=36, PI=6, NMC=28.6, %#200=53.2 | | | SS-2 | 1 | 2 | 2 | 4 |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 822.5). | | | | | | | |
| 818.0 | | | | | | | | | |
| 813.0 | | | | | | | | | |
| 808.0 | | | | | | | | | |
| 803.0 | | | | | | | | | |
| 798.0 | | | | | | | | | |
| 793.0 | | | | | | | | | |
| 788.0 | | | | | | | | | |
| 783.0 | | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-65 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2142+04 | **Offset:** | 10' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 834.0 ft | **Latitude:** | 35.15645 | **Longitude:** | 81.48131 | **Date Started:** | 2/18/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Firm to stiff, moist, light brown, orange, white and dark brown, non-reactive, moderately to strongly cemented, slightly clayey, sandy SILT with mica (ML/A-6). | | 2.0 | SS-1 | 2 | 3 | 5 | 8 |
| | | | | 4.0 | | | | | |
| 829.0 | 5.5 | LL=39, PL=26, PI=13, NMC=21.6, %#200=59.4 | | | SS-2 | 2 | 4 | 5 | 9 |
| 824.0 | | No Refusal & Boring Terminated at 5.5' (Elev. 828.5). | | | | | | | |
| | | Boring relocated due to cable guardrail and underground utilities. | | | | | | | |
| 819.0 | | | | | | | | | |
| 814.0 | | | | | | | | | |
| 809.0 | | | | | | | | | |
| 804.0 | | | | | | | | | |
| 799.0 | | | | | | | | | |
| 794.0 | | | | | | | | | |
| 789.0 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

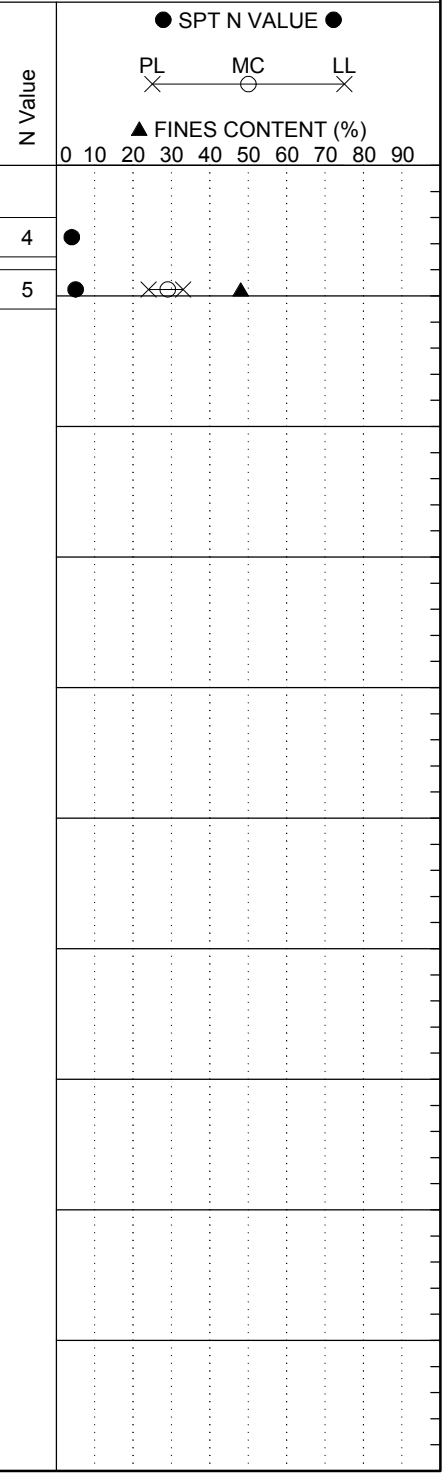
## LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-66 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2147+09 | **Offset:** | 9' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 835.9 ft | **Latitude:** | 35.15727 | **Longitude:** | 81.47995 | **Date Started:** | 2/18/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Soft, moist, brown-orange, brown and light brown, non-reactive, moderately to strongly cemented, slightly clayey, sandy SILT with mica (ML/A-4). | | 2.0 | SS-1 | 2 | 2 | 2 | 4 |
| | 3.8 | | | 4.0 | | | | | |
| 830.9 | 5.5 | | | | SS-2 | 2 | 2 | 3 | 5 |
| | | Loose, moist, brown, brown-gray and brown-orange, non-reactive, weakly to strongly cemented, clayey, silty SAND (SM/A-4). | | | | | | | |
| 825.9 | | LL=33, PL=24, PI=9, NMC=29.2, %#200=48.2 | | | | | | | |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 830.4). | | | | | | | |
| 820.9 | | | | | | | | | |
| 815.9 | | | | | | | | | |
| 810.9 | | | | | | | | | |
| 805.9 | | | | | | | | | |
| 800.9 | | | | | | | | | |
| 795.9 | | | | | | | | | |
| 790.9 | | | | | | | | | |




## LEGEND

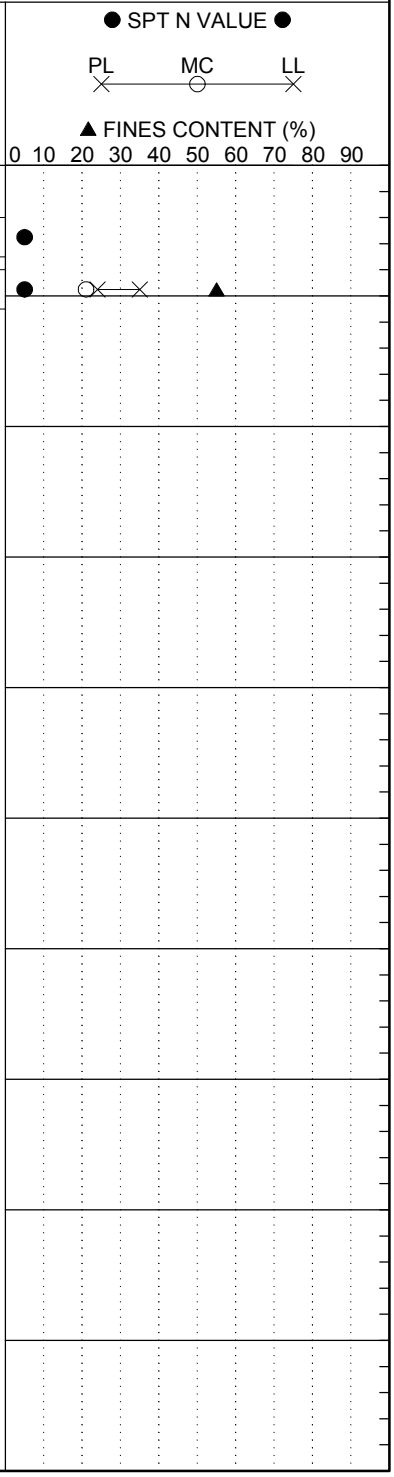
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-67 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2152+14 | **Offset:** | 1' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 832.6 ft | **Latitude:** | 35.15811 | **Longitude:** | 81.47861 | **Date Started:** | 2/18/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | 2.3 | Topsoil | | 2.0 | | | | | |
| | | **Residual** | | | SS-1 | 2 | 3 | 2 | 5 |
| | | | | 4.0 | | | | | |
| 827.6 | 5.5 | Firm, moist, light brown, brown, brown-orange and brown-gray, non-reactive, weakly to moderately cemented, clayey, sandy SILT with mica in part (ML/A-6). | | | SS-2 | 3 | 3 | 2 | 5 |
| 822.6 | | LL=35, PL=24, PI=11, NMC=21.2, %#200=55.0 | | | | | | | |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 827.1). | | | | | | | |
| 817.6 | | Boring relocated due to storm sewer inlet and culvert. | | | | | | | |
| 812.6 | | | | | | | | | |
| 807.6 | | | | | | | | | |
| 802.6 | | | | | | | | | |
| 797.6 | | | | | | | | | |
| 792.6 | | | | | | | | | |
| 787.6 | | | | | | | | | |




## LEGEND

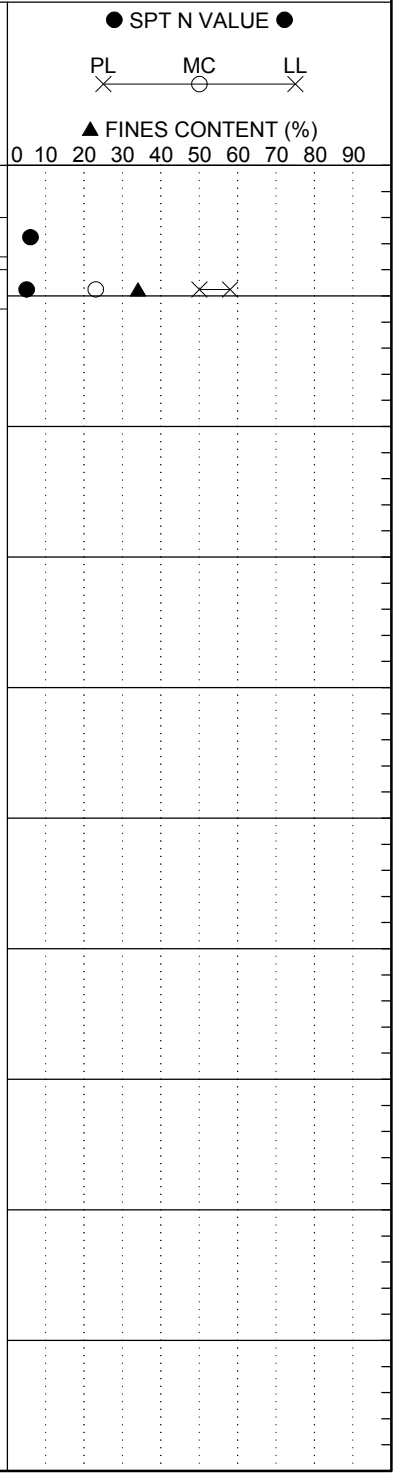
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-68 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2156+98 | **Offset:** | 11' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 831.6 ft | **Latitude:** | 35.15887 | **Longitude:** | 81.47728 | **Date Started:** | 2/18/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Loose, dry to moist, orange-brown, light brown and white, non-reactive, weakly to moderately cemented, silty SAND with mica (SM/A-2-5). | | 2.0 | SS-1 | 3 | 2 | 4 | 6 |
| | | | | 4.0 | | | | | |
| 826.6 | 5.5 | | | | SS-2 | 2 | 2 | 3 | 5 |
| | | LL=58, PL=50, PI=8, NMC=22.9, %#200=33.6 | | | | | | | |
| 821.6 | | No Refusal & Boring Terminated at 5.5' (Elev. 826.1). | | | | | | | |
| | | Bulk sample obtained from 0.0'-5.0'. | | | | | | | |
| 816.6 | | | | | | | | | |
| 811.6 | | | | | | | | | |
| 806.6 | | | | | | | | | |
| 801.6 | | | | | | | | | |
| 796.6 | | | | | | | | | |
| 791.6 | | | | | | | | | |
| 786.6 | | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-69 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2162+04 | **Offset:** | 10' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 829.9 ft | **Latitude:** | 35.15957 | **Longitude:** | 81.47583 | **Date Started:** | 2/18/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Firm, moist, brown, brown-orange and red-brown, non-reactive, weakly to moderately cemented, clayey, sandy SILT with mica (ML/A-4). | | 2.0 | SS-1 | 2 | 3 | 3 | 6 |
| | 3.8 | | | 4.0 | | | | | |
| 824.9 | 5.5 | | | | SS-2 | 2 | 2 | 3 | 5 |
| | | Loose, moist, brown, brown-orange and red-brown, non-reactive, weakly to moderately cemented, clayey, silty SAND with mica (SM/A-2-5). | | | | | | | |
| 819.9 | | No Refusal & Boring Terminated at 5.5' (Elev. 824.4). | | | | | | | |
| | | Boring relocated due to cable guardrail and underground utilities. | | | | | | | |
| 814.9 | | | | | | | | | |
| 809.9 | | | | | | | | | |
| 804.9 | | | | | | | | | |
| 799.9 | | | | | | | | | |
| 794.9 | | | | | | | | | |
| 789.9 | | | | | | | | | |
| 784.9 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-70 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2167+05 | **Offset:** | 10' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 827.9 ft | **Latitude:** | 35.16003 | **Longitude:** | 81.47425 | **Date Started:** | 2/18/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Firm, moist, brown-orange and brown, non-reactive, weakly to strongly cemented, clayey, sandy SILT with mica (ML/A-4). | | 2.0 | SS-1 | 3 | 3 | 4 | 7 |
| | | | | 4.0 | | | | | |
| 822.9 | 5.5 | LL=37, PL=29, PI=8, NMC=13.3, %#200=51.1 | | | SS-2 | 2 | 4 | 4 | 8 |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 822.4). | | | | | | | |
| 817.9 | | | | | | | | | |
| 812.9 | | | | | | | | | |
| 807.9 | | | | | | | | | |
| 802.9 | | | | | | | | | |
| 797.9 | | | | | | | | | |
| 792.9 | | | | | | | | | |
| 787.9 | | | | | | | | | |
| 782.9 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

LEGEND

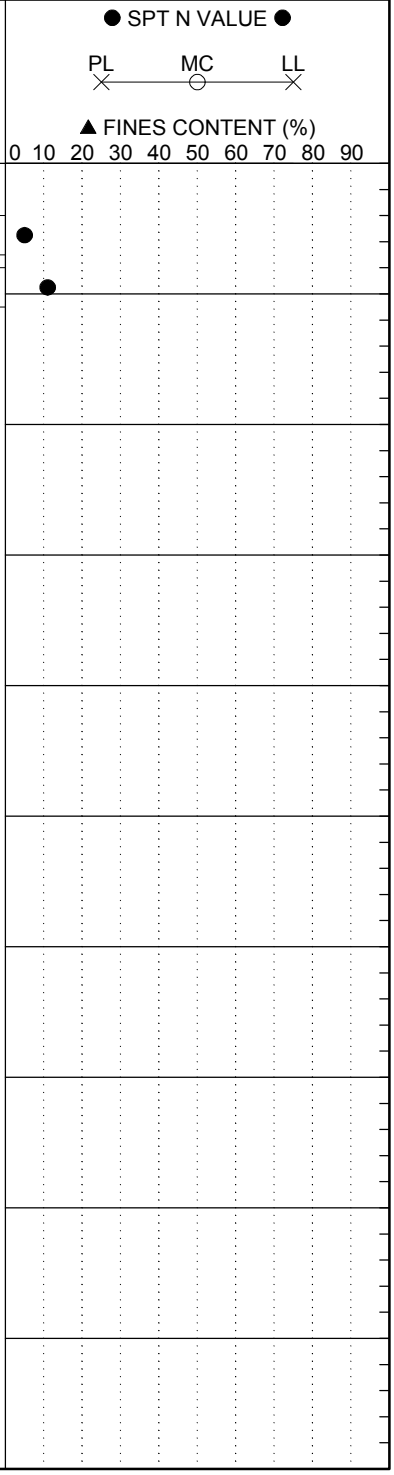
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-77 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2202+02 | **Offset:** | 9' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 856.4 ft | **Latitude:** | 35.15913 | **Longitude:** | 81.46273 | **Date Started:** | 2/18/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | | Firm to stiff, moist, orange-brown and yellow-brown, non-reactive, weakly to moderately cemented, clayey, sandy SILT with mica (ML/A-5). | | 2.0 | SS-1 | 2 | 2 | 3 | 5 |
| | | | | 4.0 | | | | | |
| 851.4 | 5.5 | | | | SS-2 | 3 | 5 | 6 | 11 |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 850.9). | | | | | | | |
| 846.4 | | | | | | | | | |
| 841.4 | | | | | | | | | |
| 836.4 | | | | | | | | | |
| 831.4 | | | | | | | | | |
| 826.4 | | | | | | | | | |
| 821.4 | | | | | | | | | |
| 816.4 | | | | | | | | | |
| 811.4 | | | | | | | | | |




LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-78 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2207+11 | **Offset:** | 11' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 841.5 ft | **Latitude:** | 35.15932 | **Longitude:** | 81.46104 | **Date Started:** | 2/18/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Firm to stiff, moist, brown, brown-orange and red-brown, non-reactive, weakly to moderately cemented, clayey, sandy elastic SILT with mica (MH/A-7-5). | | 2.0 | SS-1 | 3 | 4 | 5 | 9 |
| | | | | 4.0 | | | | | |
| 836.5 | 5.5 | LL=50, PL=38, PI=12, NMC=29.8, %#200=67.9 | | | SS-2 | 2 | 2 | 4 | 6 |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 836.0). | | | | | | | |
| | | Bulk sample obtained from 0.0'-5.0'. | | | | | | | |
| 831.5 | | | | | | | | | |
| 826.5 | | | | | | | | | |
| 821.5 | | | | | | | | | |
| 816.5 | | | | | | | | | |
| 811.5 | | | | | | | | | |
| 806.5 | | | | | | | | | |
| 801.5 | | | | | | | | | |
| 796.5 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

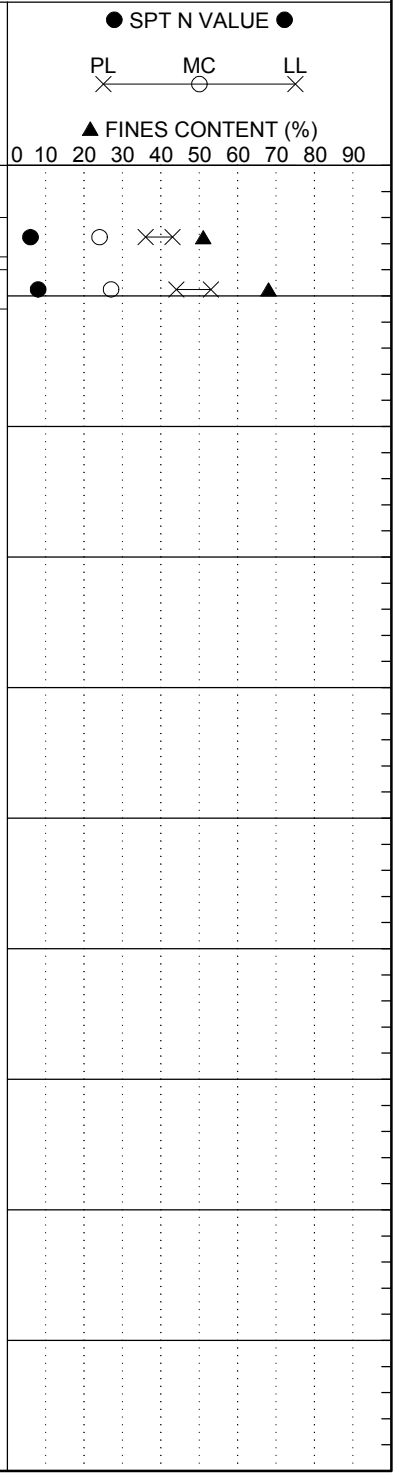
## LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-79 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2212+02 | **Offset:** | 1' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 825.6 ft | **Latitude:** | 35.15977 | **Longitude:** | 81.45949 | **Date Started:** | 2/18/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Firm, moist, brown, gray-brown and brown-orange, non-reactive, weakly cemented, sandy SILT with mica (ML/A-5). | | 2.0 | | | | | |
| | 3.8 | LL=43, PL=36, PI=7, NMC=24.2, %#200=51.1 | | | SS-1 | 1 | 3 | 3 | 6 |
| 820.6 | 5.5 | | | 4.0 | | | | | |
| | | Firm, moist, brown-orange and dark brown to black streaks, non-reactive, weakly cemented, slightly clayey, sandy elastic SILT (MH/A-5). | | | SS-2 | 2 | 3 | 5 | 8 |
| 815.6 | | LL=53, PL=44, PI=9, NMC=26.8, %#200=68.4 | | | | | | | |
| 810.6 | | No Refusal & Boring Terminated at 5.5' (Elev. 820.1). | | | | | | | |
| 805.6 | | | | | | | | | |
| 800.6 | | | | | | | | | |
| 795.6 | | | | | | | | | |
| 790.6 | | | | | | | | | |
| 785.6 | | | | | | | | | |
| 780.6 | | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-80 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2217+08 | **Offset:** | 11' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 816.6 ft | **Latitude:** | 35.16039 | **Longitude:** | 81.45797 | **Date Started:** | 2/18/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment**<br>Firm, moist, brown-orange, off-white, non-reactive, weakly cemented, clayey, sandy SILT (ML/A-5). | | 2.0 | | | | | |
| | 3.8 | | | | SS-1 | 3 | 4 | 3 | 7 |
| | | | | 4.0 | | | | | |
| 811.6 | 5.5 | **Residual**<br>Soft, moist, brown-orange, orange and white, non-reactive, weakly to moderately cemented, clayey, sandy SILT with mica and few quartz fragments in part(ML/A-5).<br>LL=43, PL=33, PI=10, NMC=28.4, %#200=55.7 | | | SS-2 | 2 | 2 | 2 | 4 |
| 806.6 | | | | | | | | | |
| 801.6 | | No Refusal & Boring Terminated at 5.5' (Elev. 811.1). | | | | | | | |
| 796.6 | | | | | | | | | |
| 791.6 | | | | | | | | | |
| 786.6 | | | | | | | | | |
| 781.6 | | | | | | | | | |
| 776.6 | | | | | | | | | |
| 771.6 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-81 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2222+08 | **Offset:** | 2' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 820.3 ft | **Latitude:** | 35.16122 | **Longitude:** | 81.45664 | **Date Started:** | 2/18/2017 |
| **Total Depth:** | 4.9 ft | **Soil Depth:** | 4.9 ft | **Core Depth:** | ft | **Date Completed:** | 2/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment**<br>Medium dense, moist, brown and orange-brown, non-reactive, moderately cemented, clayey, silty SAND with gravel (SM/A-4). | | 2.0 | SS-1 | 6 | 6 | 8 | 14 |
| | 4.5 | | | 4.0 | SS-2 | 13 | 50/0.4 | | 50/0.4 |
| 815.3 | 4.9 | LL=31, PL=31, PI=NP, NMC=16.9, %#200=36.7 | | | | | | | |
| | | **Residual**<br>Partially Weathered Rock logged as very dense, moist, brown and orange, non-reactive, moderately cemented, clayey, silty SAND with gravel, mica and feldspar (SM/A-1-b). | | | | | | | |
| 810.3 | | LL=NP, PL=NP, PI=NP, NMC=12.6, %#200=22.4 | | | | | | | |
| 805.3 | | No Refusal & Boring Terminated at 4.9' (Elev. 815.4). | | | | | | | |
| 800.3 | | Boring relocated due to cable guardrail. | | | | | | | |
| 795.3 | | | | | | | | | |
| 790.3 | | | | | | | | | |
| 785.3 | | | | | | | | | |
| 780.3 | | | | | | | | | |
| 775.3 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

SS-2 >>●

## LEGEND

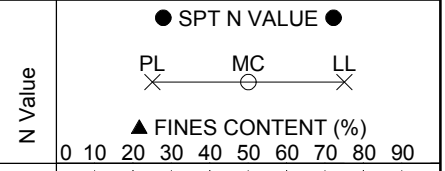
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-82 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2227+01 | **Offset:** | 11' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 833.0 ft | **Latitude:** | 35.16201 | **Longitude:** | 81.4553 | **Date Started:** | 2/18/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 2.0 | | | | | |
| | | Loose, dry to moist, light brown, brown and brown-orange, non-reactive, weakly to moderately cemented, clayey, silty SAND with mica (SM/A-4). | | | SS-1 | 3 | 3 | 4 | 7 |
| | | | | 4.0 | | | | | |
| 828.0 | 5.5 | LL=36, PL=28, PI=8, NMC=21.6, %#200=47.6 | | | SS-2 | 2 | 2 | 3 | 5 |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 827.5). | | | | | | | |
| 823.0 | | | | | | | | | |
| 818.0 | | | | | | | | | |
| 813.0 | | | | | | | | | |
| 808.0 | | | | | | | | | |
| 803.0 | | | | | | | | | |
| 798.0 | | | | | | | | | |
| 793.0 | | | | | | | | | |
| 788.0 | | | | | | | | | |




## LEGEND

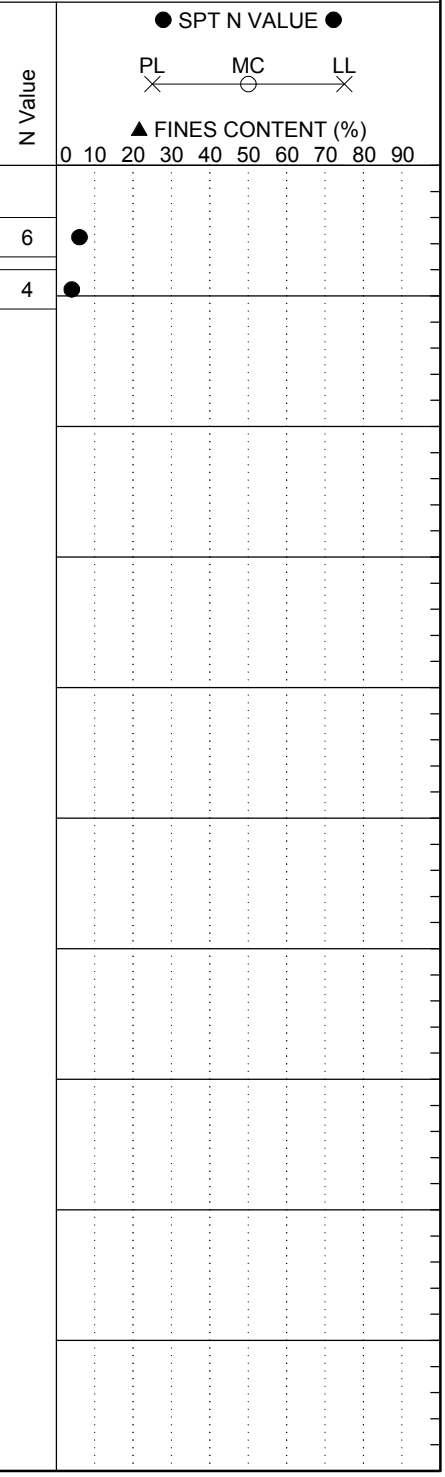
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-83 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2232+02 | **Offset:** | 1' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 839.4 ft | **Latitude:** | 35.16286 | **Longitude:** | 81.45398 | **Date Started:** | 2/18/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 2.0 | | | | | |
| | | Loose, moist, light brown, white and red-orange, non-reactive, weakly to moderately cemented, clayey, silty SAND with mica and quartz in part (SM/A-4). | | | SS-1 | 2 | 3 | 3 | 6 |
| | 3.8 | | | 4.0 | | | | | |
| 834.4 | 5.5 | | | | SS-2 | 2 | 2 | 2 | 4 |
| | | **Residual** | | | | | | | |
| 829.4 | | Loose, light brown, white and red-orange, non-reactive, weakly cemented, silty SAND with mica (SM/A-4). | | | | | | | |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 833.9). | | | | | | | |
| 824.4 | | Boring relocated due to cable guardrail. Bulk sample obtained from 0.0'-5.0'. | | | | | | | |
| 819.4 | | | | | | | | | |
| 814.4 | | | | | | | | | |
| 809.4 | | | | | | | | | |
| 804.4 | | | | | | | | | |
| 799.4 | | | | | | | | | |
| 794.4 | | | | | | | | | |




## LEGEND

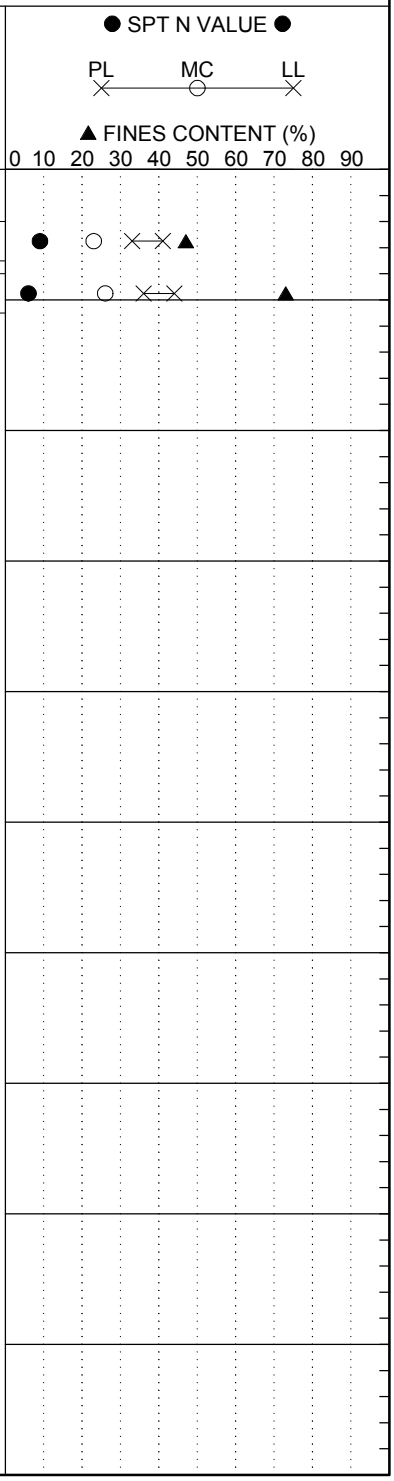
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-84 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2237+07 | **Offset:** | 8' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 846.5 ft | **Latitude:** | 35.16367 | **Longitude:** | 81.45261 | **Date Started:** | 2/18/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Loose, light brown and white, non-reactive, silty SAND (SM/A-5). | | 2.0 | SS-1 | 4 | 4 | 5 | 9 |
| | 3.8 | LL=41, PL=33, PI=8, NMC=23.3, %#200=47.6 | | 4.0 | SS-2 | 3 | 3 | 3 | 6 |
| 841.5 | 5.5 | Firm, dry to moist, brown-orange, non-reactive, weakly to moderately cemented, clayey SILT with sand and mica (ML/A-5). | | | | | | | |
| | | LL=44, PL=36, PI=8, NMC=25.7, %#200=73.2 | | | | | | | |
| 836.5 | | No Refusal & Boring Terminated at 5.5' (Elev. 841.0). | | | | | | | |
| 831.5 | | | | | | | | | |
| 826.5 | | | | | | | | | |
| 821.5 | | | | | | | | | |
| 816.5 | | | | | | | | | |
| 811.5 | | | | | | | | | |
| 806.5 | | | | | | | | | |
| 801.5 | | | | | | | | | |




## LEGEND

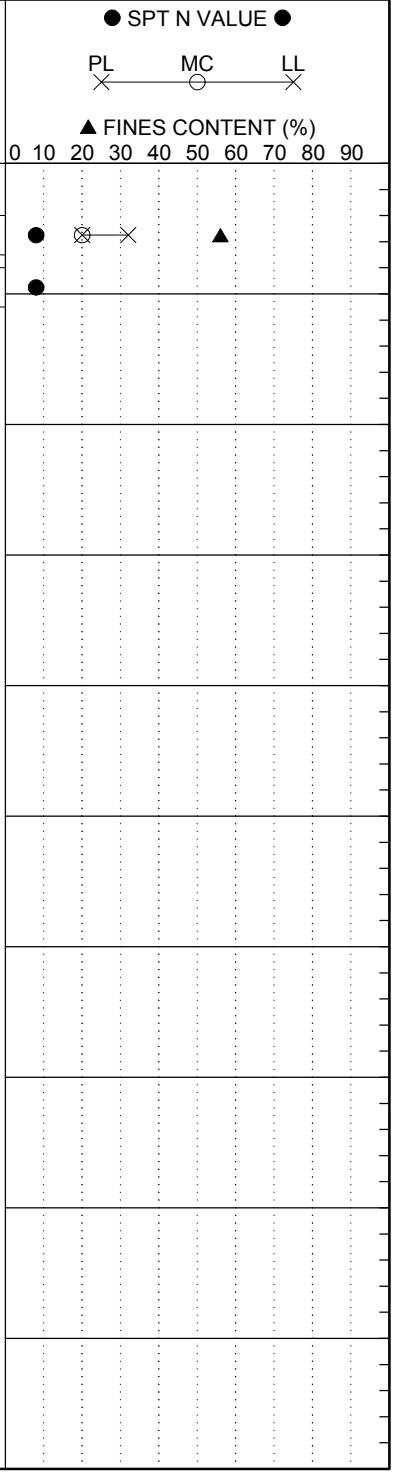
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-85 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2242+06 | **Offset:** | 1' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 847.3 ft | **Latitude:** | 35.16452 | **Longitude:** | 81.45129 | **Date Started:** | 2/19/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/19/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Firm, moist, brown, green-brown and orange-brown, non-reactive, strongly cemented, sandy lean CLAY with mica (CL/A-6). | | 2.0 | SS-1 | 3 | 3 | 5 | 8 |
| | | | | 4.0 | | | | | |
| 842.3 | 5.5 | LL=32, PL=20, PI=12, NMC=20.4, %#200=55.7 | | | SS-2 | 2 | 4 | 4 | 8 |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 841.8). | | | | | | | |
| 837.3 | | | | | | | | | |
| 832.3 | | | | | | | | | |
| 827.3 | | | | | | | | | |
| 822.3 | | | | | | | | | |
| 817.3 | | | | | | | | | |
| 812.3 | | | | | | | | | |
| 807.3 | | | | | | | | | |
| 802.3 | | | | | | | | | |




LEGEND

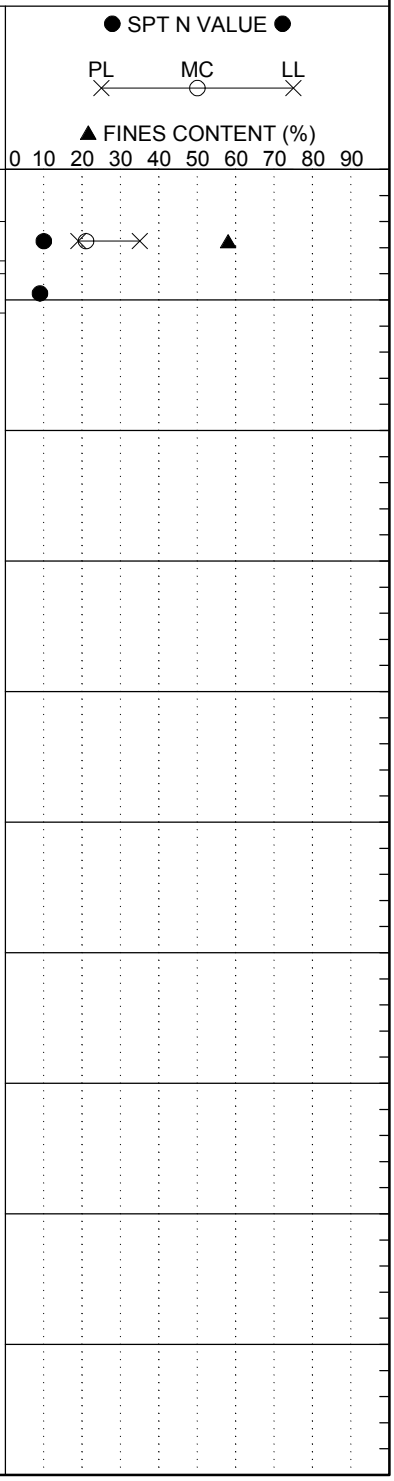
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-86 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2247+07 | **Offset:** | 11' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 841.1 ft | **Latitude:** | 35.16531 | **Longitude:** | 81.44992 | **Date Started:** | 2/19/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/19/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | 2.1 | Topsoil | | 2.0 | | | | | |
| | 3.8 | Stiff, moist, brown and orange-brown, non-reactive, strongly cemented, sandy lean CLAY with mica (CL/A-6). LL=35, PL=19, PI=16, NMC=20.6, %#200=58.4 | | 4.0 | SS-1 | 3 | 5 | 5 | 10 |
| 836.1 | 5.5 | | | | SS-2 | 2 | 4 | 5 | 9 |
| 831.1 | | Stiff, moist, light brown, brown and orange-brown, non-reactive, moderately to strongly cemented, clayey, sandy SILT with mica (ML/A-4). | | | | | | | |
| 826.1 | | No Refusal & Boring Terminated at 5.5' (Elev. 835.6). | | | | | | | |
| 821.1 | | | | | | | | | |
| 816.1 | | | | | | | | | |
| 811.1 | | | | | | | | | |
| 806.1 | | | | | | | | | |
| 801.1 | | | | | | | | | |
| 796.1 | | | | | | | | | |




LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-87 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2252+03 | **Offset:** | 11' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 831.7 ft | **Latitude:** | 35.16607 | **Longitude:** | 81.44855 | **Date Started:** | 2/19/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/19/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Loose, moist, orange-brown, light brown, brown-gray and white, non-reactive, weakly to moderately cemented, clayey, silty SAND with mica (SM/A-4). | | 2.0 | SS-1 | 3 | 4 | 4 | 8 |
| | | | | 4.0 | | | | | |
| 826.7 | 5.5 | LL=31, PL=27, PI=4, NMC=21.2, %#200=43.0 | | | SS-2 | 2 | 3 | 3 | 6 |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 826.2). | | | | | | | |
| | | Boring relocated due to cable guardrail. | | | | | | | |
| 821.7 | | | | | | | | | |
| 816.7 | | | | | | | | | |
| 811.7 | | | | | | | | | |
| 806.7 | | | | | | | | | |
| 801.7 | | | | | | | | | |
| 796.7 | | | | | | | | | |
| 791.7 | | | | | | | | | |
| 786.7 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-88 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2257+06 | **Offset:** | 11' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 821.9 ft | **Latitude:** | 35.16673 | **Longitude:** | 81.44708 | **Date Started:** | 2/19/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/19/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | | Firm to stiff, moist, brown and orange-brown, non-reactive, weakly to strongly cemented, clayey, sandy SILT with mica (ML/A-4). | | 2.0 | | | | | |
| | | | | | SS-1 | 4 | 4 | 4 | 8 |
| | | | | 4.0 | | | | | |
| 816.9 | 5.5 | LL=31, PL=23, PI=8, NMC=22.6, %#200=59.4 | | | SS-2 | 3 | 4 | 5 | 9 |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 816.4). | | | | | | | |
| | | Bulk sample obtained from 0.0'-5.0'. | | | | | | | |
| 811.9 | | | | | | | | | |
| 806.9 | | | | | | | | | |
| 801.9 | | | | | | | | | |
| 796.9 | | | | | | | | | |
| 791.9 | | | | | | | | | |
| 786.9 | | | | | | | | | |
| 781.9 | | | | | | | | | |
| 776.9 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

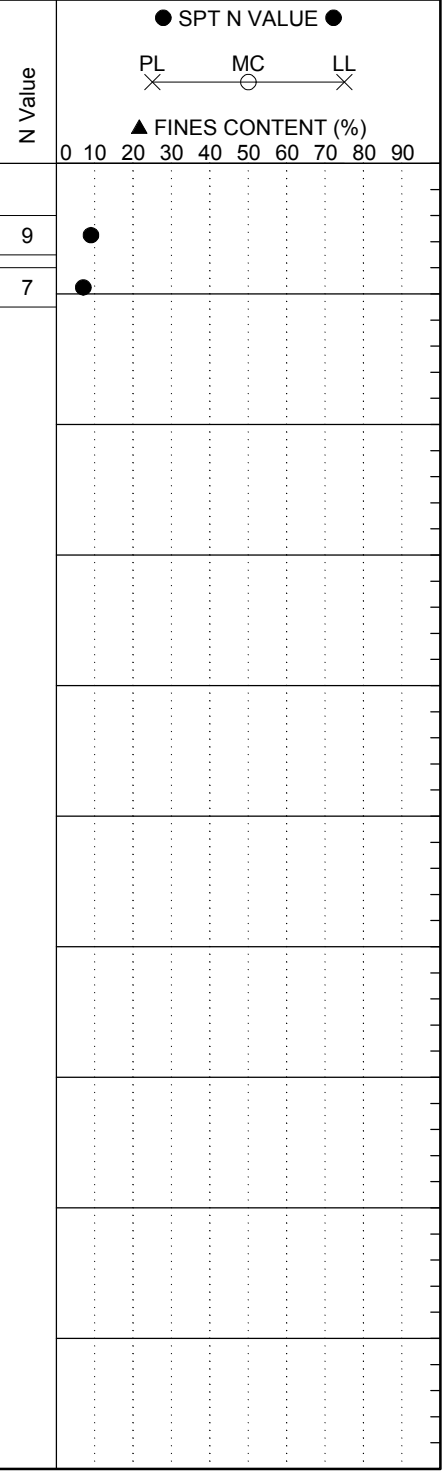
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | SB-89 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2262+05 | **Offset:** | 11' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 821.0 ft | **Latitude:** | 35.16728 | **Longitude:** | 81.44555 | **Date Started:** | 2/19/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/19/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | | Firm to stiff, moist, light brown, brown and orange-brown, non-reactive, weakly to strongly cemented, clayey, sandy SILT with mica and quartz (ML/A-4). | | 2.0 | | | | | |
| | | | | | SS-1 | 4 | 5 | 4 | 9 |
| | | | | 4.0 | | | | | |
| 816.0 | 5.5 | | | | SS-2 | 3 | 3 | 4 | 7 |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 815.5). | | | | | | | |
| 811.0 | | Boring relocated due to cable guardrail. | | | | | | | |
| 806.0 | | | | | | | | | |
| 801.0 | | | | | | | | | |
| 796.0 | | | | | | | | | |
| 791.0 | | | | | | | | | |
| 786.0 | | | | | | | | | |
| 781.0 | | | | | | | | | |
| 776.0 | | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | NB-90 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2267+06 | **Offset:** | 12' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 825.0 ft | **Latitude:** | 35.16771 | **Longitude:** | 81.44397 | **Date Started:** | 2/19/2017 |
| **Total Depth:** | 5.5 ft | **Soil Depth:** | 5.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/19/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | 2.2 | Topsoil | | 2.0 | | | | | |
| | | Firm to stiff, moist, brown, light orange, and light brown, non-reactive, weakly to moderately cemented, sandy SILT with mica and feldspar in part (ML/A-4). | | | SS-1 | 3 | 3 | 4 | 7 |
| | | | | 4.0 | | | | | |
| 820.0 | 5.5 | | | | SS-2 | 3 | 4 | 5 | 9 |
| | | No Refusal & Boring Terminated at 5.5' (Elev. 819.5). | | | | | | | |
| 815.0 | | Bulk sample obtained from 0.0'-5.0'. | | | | | | | |
| 810.0 | | | | | | | | | |
| 805.0 | | | | | | | | | |
| 800.0 | | | | | | | | | |
| 795.0 | | | | | | | | | |
| 790.0 | | | | | | | | | |
| 785.0 | | | | | | | | | |
| 780.0 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | R-91 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1869+11 | **Offset:** | 152' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 634.1 ft | **Latitude:** | 35.12528 | **Longitude:** | 81.5633 | **Date Started:** | 2/7/2017 |
| **Total Depth:** | 71.3 ft | **Soil Depth:** | 43.6 ft | **Core Depth:** | 27.7 ft | **Date Completed:** | 2/8/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | RW/DC | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NQ | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 60.7 ft. | **24HR** | 62.2 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 ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** Medium dense to dense, moist, green, yellow, orange, brown and brown-green, non-reactive, non-plastic, saprolitic, silty SAND (SM/A-4). LL=34, PL=27, PI=7, NMC=19.4, %#200=43.9 | | 2.0 | | | | | | |
| 629.1 | | | | | SS-1 | 8 | 12 | 13 | 25 | |
| | | | | 4.0 | | | | | | |
| | | | | | SS-2 | 20 | 21 | 17 | 38 | |
| | | | | 6.0 | | | | | | |
| | | | | | SS-3 | 5 | 16 | 30 | 46 | |
| | 7.8 | | | 8.0 | | | | | | |
| | | Very dense, moist, brown, white and orange, non-reactive, non-plastic, saprolitic, silty SAND (SM/A-4). LL=31, PL=25, PI=6, NMC=17.4, %#200=42.0 | | | SS-4 | 21 | 28 | 43 | 71 | |
| 624.1 | | | | 10.0 | | | | | | |
| | | | | | SS-5 | 28 | 34 | 38 | 72 | |
| | | | | 13.5 | | | | | | |
| | | | | | SS-6 | 19 | 33 | 37 | 70 | |
| 619.1 | | | | | | | | | | |
| | 16.8 | **Partially Weathered Rock** Inferred as very dense, moist to wet, brown, non-reactive, non-plastic, with hard silty layers and very dense sand and gravel size rock fragments. | | 18.5 | SS-7 | 50/0.2 | | | 50/0.2 | >> |
| 614.1 | | | | | | | | | | |
| | | | | 23.5 | SS-8 | 50/0.1 | | | 50/0.1 | >> |
| 609.1 | | | | | | | | | | |
| | | | | 28.5 | SS-9 | 50/0.1 | | | 50/0.1 | >> |
| 604.1 | | | | | | | | | | |
| | | | | 33.5 | SS-10 | 50/0.1 | | | 50/0.1 | >> |
| 599.1 | | | | | | | | | | |
| | | | | 38.5 | SS-11 | 50/0.1 | | | 50/0.1 | No recovery >> |
| 594.1 | | | | | | | | | | |
| | 43.6 | | | 43.5 | SS-12 | 50/0.1 | | | 50/0.1 | No recovery >> |
| | | Auger & Splitspoon Refusal at 43.6', Begin Coring in Schist. | | 43.6 | NQ-1 | | | | | REC%=93, RQD%=85 |
| 589.1 | 46.1 | Brown , gray, brown-orange stain, Fine grain, thinly foliated, feldspar-quartz-mica, slightly to moderately weathered, hard to moderately hard, very close discontinuity | | 46.3 | NQ-2 | | | | | REC%=58, RQD%=8 |

*Continued Next Page*

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | R-91 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1869+11 | **Offset:** | 152' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 634.1 ft | **Latitude:** | 35.12528 | **Longitude:** | 81.5633 | **Date Started:** | 2/7/2017 |
| **Total Depth:** | 71.3 ft | **Soil Depth:** | 43.6 ft | **Core Depth:** | 27.7 ft | **Date Completed:** | 2/8/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | RW/DC | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NQ | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 60.7 ft. | **24HR** | 62.2 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 ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|
| | | spacing, scattered healed to partially healed joints. 3 90° jts. VN, Fi,Ch-Fe-H, Pl,S; 4 10°, VN, Su, Fe, Ir, SR | | 51.3 | | | | |
| 579.1 | | Schist: Brown , gray to white, heavy brown-orange stain with traces black, Fine grain, thinly foliated, feldspar-quartz-mica, hightly to completely weathered, low hardness with moderately hard and soft | | | NQ-3 | | | REC%=38, RQD%=12 |
| | | | | 56.3 | | | | |
| 574.1 | 60.9 | seams, very close discontinuity spacing, scattered healed to partially healed joints with moderately weathered Granite and Schist seams. 2 70° Jts. T, Sp, Cl-Manganese, Pl, SR-S; 25+ 0°-20° VN-N, Su, Fe-Manganese, Pl, SR; 2 40° su-sp, Fe-Manganese, Pl-Ir, S-SR; Moderately weatherd Cheryville Granite 55.2'-56.3'; Moderately weathered Schist 58.8'-59.8' | | | NQ-4 | | | REC%=40, RQD%=18 |
| | | | | 61.3 | | | | |
| | | | | | NQ-5 | | | REC%=88, RQD%=48 |
| 569.1 | | | | 66.3 | | | | |
| | | | | | NQ-6 | | | REC%=98, RQD%=76 |
| 564.1 | 71.3 | Schist: Lt. brown, lt. gray, olive gray, brown-orange stain, fine grain, thinly foliated, feldspar-quartz-mica, slightly weathered, moderately hard, very close discontinuity spacing, scattered healed to partially healed joints. 8 80° jts., T-VN, Su-Fi, Fe-Manganese-Ch, Pl, SR; 6 40°, VN, Su, Fe, Pl, SR; 21 0°-20°, VN, Su, Fe-Manganese, Pl-St, SR | | | | | | |
| 559.1 | | | | | | | | |
| 554.1 | | Boring Terminated at 71.3' (Elev. 562.8). | | | | | | |
| | | 18.5'-43.5' driller noted hard and soft zones while drilling. Recovered sample was sand and gravel fragments (PWR) and unlikely to provide good recovery if cored. | | | | | | |
| 549.1 | | | | | | | | |
| 544.1 | | | | | | | | |
| 539.1 | | | | | | | | |

LEGEND

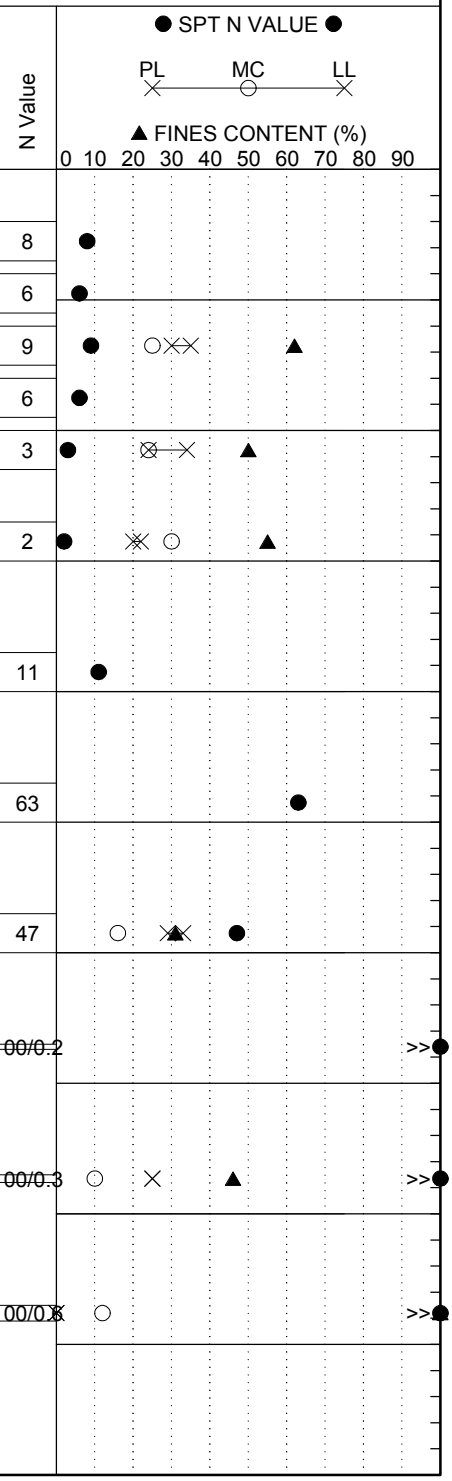
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | R-95 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2116+10 | **Offset:** | 111' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 782.5 ft | **Latitude:** | 35.152 | **Longitude:** | 81.4881 | **Date Started:** | 1/17/2017 |
| **Total Depth:** | 44.1 ft | **Soil Depth:** | 44.1 ft | **Core Depth:** | ft | **Date Completed:** | 1/17/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 16.9 ft. | **24HR** | NA |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION | Sample Depth (ft) | Sample No./Type | 1st 6" | 2nd 6" | 3rd 6" | N Value |
|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment**<br>Firm to stiff, moist, red and brown, non-reactive, low plasticity, sandy SILT (ML/A-4).<br>LL=35, PL=30, PI=5, NMC=24.8, %#200=61.9 | 2.0 | SS-1 | 6 | 4 | 4 | 8 |
| 777.5 | | | 4.0 | SS-2 | 3 | 3 | 3 | 6 |
| | | | 6.0 | SS-3 | 3 | 4 | 5 | 9 |
| | | | 8.0 | SS-4 | 3 | 3 | 3 | 6 |
| 772.5 | 9.8 | | 10.0 | SS-5 | 2 | 2 | 1 | 3 |
| | 10.3 | Soft, moist, red and brown, non-reactive, low plasticity, sandy SILT (ML/A-4). | | | | | | |
| | 11.8 | **Alluvium**<br>Soft, moist, brown and gray, non-reactive, medium plasticity, sandy SILT (ML/A-4).<br>LL=34, PL=24, PI=10, NMC=24.2, %#200=50.3 | 13.5 | SS-6 | 0 | 1 | 1 | 2 |
| 767.5 | 16.8 ▽ | | 18.5 | SS-7 | 5 | 6 | 5 | 11 |
| 762.5 | | Very soft, moist, brown and gray, non-reactive, medium plasticity, sandy SILT (ML/A-4).<br>LL=22, PL=20, PI=2, NMC=29.5, %#200=54.6 | 23.5 | SS-8 | 20 | 31 | 32 | 63 |
| 757.5 | | **Residual**<br>Medium dense to very dense, moist, brown and orange, non-reactive, non-plastic, saprolitic, silty SAND (SM/A-2-4).<br>LL=33, PL=29, PI=4, NMC=15.8, %#200=31.0 | 28.5 | SS-9 | 10 | 21 | 26 | 47 |
| 752.5 | 33.5 | | 33.5 | SS-10 | 100/0.2 | | | 100/0.2 |
| | | **Partially Weathered Rock**<br>Very dense, brown and orange, non-reactive, silty SAND (SM/A-4).<br>LL=25, PL=25, PI=NP, NMC=9.6, %#200=45.7 | 38.5 | SS-11 | 100/0.3 | | | 100/0.3 |
| 747.5 | | | | | | | | |
| 742.5 | 41.2 | | 43.5 | SS-12 | 21 | 79/0.1 | | 100/0.6 |
| | | Very dense, brown and orange, non-reactive, poorly graded GRAVEL with silt and sand (GP-GM/A-1-a).<br>LL=NP, PL=NP, PI=NP, NMC=12.3, %#200=8.2 | | | | | | |
| 737.5 | 44.1 | Splitspoon & Auger Refusal & Boring Terminated at 44.1' (Elev. 738.4). | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | R-99 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2256+99 | **Offset:** | 120' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 806.0 ft | **Latitude:** | 35.16645 | **Longitude:** | 81.44694 | **Date Started:** | 1/27/2017 |
| **Total Depth:** | 40 ft | **Soil Depth:** | 40.0 ft | **Core Depth:** | ft | **Date Completed:** | 1/27/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 9.3 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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment**<br>Firm to stiff, moist, gray, red and brown, weakly reactive, high plasticity, sandy SILT (ML/A-7-6). | | 2.0 | SS-1 | 11 | 6 | 5 | 11 |
| 801.0 | 5.8 | LL=47, PL=29, PI=18, NMC=28.5, %#200=65.7 | | 4.0 | SS-2 | 2 | 3 | 5 | 8 |
| | 7.8 | Firm, moist, brown, weakly reactive, high plasticity, sandy SILT (ML/A-7-6). | | 6.0 | SS-3 | 2 | 1 | 4 | 5 |
| 796.0 | | **Alluvium** | | 8.0 | SS-4 | 1 | 1 | 2 | 3 |
| | 12.5 | Very soft to soft, moist, brown, gray and black, non-reactive, high plasticity, fine, sandy lean CLAY (CL/A-6). | | 10.0 | SS-5 | 2 | 1 | 1 | 2 |
| 791.0 | | LL=34, PL=21, PI=13, NMC=24.7, %#200=53.1 | | 13.5 | SS-6 | 2 | 3 | 3 | 6 |
| | 16.8 | Loose, moist, gray, non-reactive, fine, clayey, silty SAND (SM/A-2-4). | | 18.5 | SS-7 | 15 | 14 | 9 | 23 |
| 786.0 | | LL=28, PL=24, PI=4, NMC=16.8, %#200=33.4 | | 23.5 | SS-8 | 3 | 3 | 4 | 7 |
| | 21.8 | **Residual** | | | | | | | |
| 781.0 | | Medium dense, wet, gray and brown, non-reactive, fine to coarse, gravelly, silty SAND (SM/A-2-4). | | 28.5 | SS-9 | 4 | 9 | 8 | 17 |
| 776.0 | | Loose to medium dense, wet, gray and brown, non-reactive, saprolitic, micaceous, fine to medium, silty SAND (SM/A-2-4). | | 33.5 | SS-10 | 3 | 5 | 5 | 10 |
| | | LL=NP, PL=NP, PI=NP, NMC=32.5, %#200=24.8 | | 38.5 | SS-11 | 3 | 2 | 4 | 6 |
| 771.0 | | | | | | | | | |
| 766.0 | 40.0 | No Refusal & Boring Terminated at 40.0' (Elev. 766.0). | | | | | | | |
| 761.0 | | | | | | | | | |

SPT N VALUE

PL MC LL

FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | R-104 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2010+03 | **Offset:** | 7' Lt. | **Alignment:** | 102 Northboun |
| **Elev.:** | 787.7 ft | **Latitude:** | 35.13891 | **Longitude:** | 81.51191 | **Date Started:** | 2/6/2017 |
| **Total Depth:** | 85 ft | **Soil Depth:** | 85.0 ft | **Core Depth:** | ft | **Date Completed:** | 2/6/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | RW | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 9.9 ft. | **24HR** | 20.7 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 / FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** Loose, moist, red, brown and orange, non-reactive, non-plastic to medium plasticity, slightly clayey in part, silty SAND with gravel (SM/A-4). LL=39, PL=29, PI=10, NMC=28.6, %#200=41.8 | | 2.0 | SS-1 | 3 | 4 | 3 | 7 | |
| 782.7 | | | | 4.0 | SS-2 | 2 | 3 | 4 | 7 | |
| | | | | 6.0 | SS-3 | 2 | 2 | 4 | 6 | |
| | | | | 8.0 | SS-4 | 3 | 3 | 3 | 6 | |
| 777.7 | 10.5 ▽ | Very loose to medium dense, moist, green, brown, red and orange, non-reactive, non-plastic to low plasticity, clayey SAND (SC/A-7-6). LL=46, PL=26, PI=20, NMC=14.7, %#200=48.5 | | 10.0 | SS-5 | 3 | 4 | 6 | 10 | |
| | | | | 13.5 | SS-6 | 4 | 5 | 9 | 14 | |
| 772.7 | | | | | | | | | | |
| | 19.0 | **Alluvium** ▼ Very loose, wet, gray, fine to coarse, silty, clayey SAND (SC-SM/A-2-4). LL=19, PL=14, PI=5, NMC=16.0, %#200=34.5 | | 18.5 | SS-7 | 3 | 2 | 1 | 3 | |
| 767.7 | | | | 23.5 | SS-8 | 3 | 0 | 1 | 1 | |
| 762.7 | | | | | | | | | | |
| | 29.0 | **Residual** Stiff, wet, orange and white, non-reactive, high plasticity, sandy lean CLAY (CL/A-6). LL=36, PL=24, PI=12, NMC=26.2, %#200=59.4 | | 28.5 | SS-9 | 3 | 5 | 8 | 13 | |
| 757.7 | 31.8 | | | 33.5 | SS-10 | 14 | 43 | 21 | 64 | |
| 752.7 | | Hard, white, non-reactive, sandy SILT with gravel (ML/A-4). LL=NP, PL=NP, PI=NP, NMC=11.4, %#200=54.6 | | | | | | | | |
| | 36.8 | | | 38.5 | SS-11 | 5 | 4 | 6 | 10 | |
| 747.7 | | Loose to medium dense, wet, white and orange, non-reactive, low plasticity, saprolitic, micaceous, fine to coarse, silty SAND with gravel in part (SM/A-2-4). LL=36, PL=30, PI=6, NMC=27.4, %#200=32.8 | | 43.5 | SS-12 | 5 | 5 | 7 | 12 | |
| 742.7 | | | | 48.5 | SS-13 | 4 | 4 | 6 | 10 | |

*Continued Next Page*

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | R-104 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2010+03 | **Offset:** | 7' Lt. | **Alignment:** | 102 Northboun |
| **Elev.:** | 787.7 ft | **Latitude:** | 35.13891 | **Longitude:** | 81.51191 | **Date Started:** | 2/6/2017 |
| **Total Depth:** | 85 ft | **Soil Depth:** | 85.0 ft | **Core Depth:** | ft | **Date Completed:** | 2/6/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | RW | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 9.9 ft. | **24HR** | 20.7 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 ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 53.5 | SS-14 | 6 | 7 | 7 | 14 | |
| 732.7 | | | | 58.5 | SS-15 | 4 | 5 | 8 | 13 | |
| 727.7 | 61.8 | Medium dense, moist to wet, white, orange and brown, non-reactive, non-plastic, saprolitic, micaceous, fine to coarse, silty SAND with gravel (SM/A-4). LL=33, PL=26, PI=7, NMC=26.3, %#200=38.7 | | 63.5 | SS-16 | 6 | 8 | 10 | 18 | |
| 722.7 | | | | 68.5 | SS-17 | 10 | 11 | 15 | 26 | |
| 717.7 | | | | 73.5 | SS-18 | 7 | 12 | 14 | 26 | |
| 712.7 | | | | 78.5 | SS-19 | 9 | 7 | 13 | 20 | |
| 707.7 | | | | 83.5 | SS-20 | 6 | 10 | 12 | 22 | |
| 702.7 | 85.0 | No Refusal & Boring Terminated at 85.0' (Elev. 702.7). Boring relocated due to underground utilities. | | | | | | | | |
| 697.7 | | | | | | | | | | |
| 692.7 | | | | | | | | | | |

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

## LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BS-110 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 51+33 | **Offset:** | 3' Lt. | **Alignment:** | Blacksburg Roa |
| **Elev.:** | 605.6 ft | **Latitude:** | 35.12842 | **Longitude:** | 81.55128 | **Date Started:** | 1/25/2017 |
| **Total Depth:** | 11.5 ft | **Soil Depth:** | 11.5 ft | **Core Depth:** | ft | **Date Completed:** | 1/25/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | | |
| | | Inferred as loose to medium dense, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | 2.0 | | | | | | |
| | | | | | SS-1 | 8 | 6 | 5 | 11 | ● |
| | | | | 4.0 | | | | | | |
| 600.6 | | | | | SS-2 | 3 | 4 | 5 | 9 | ● |
| | | | | 6.0 | | | | | | |
| | | | | | SS-3 | 5 | 6 | 8 | 14 | ● |
| | | | | 8.0 | | | | | | |
| | | | | | SS-4 | 3 | 5 | 5 | 10 | ● |
| 595.6 | | | | 10.0 | | | | | | |
| | 11.5 | | | | SS-5 | 3 | 3 | 4 | 7 | ● |
| | | No Refusal & Boring Terminated at 11.5' (Elev. 594.1). | | | | | | | | |
| 590.6 | | Classification testing was not performed. | | | | | | | | |
| 585.6 | | | | | | | | | | |
| 580.6 | | | | | | | | | | |
| 575.6 | | | | | | | | | | |
| 570.6 | | | | | | | | | | |
| 565.6 | | | | | | | | | | |
| 560.6 | | | | | | | | | | |

LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BS-111 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1905+56 | **Offset:** | 9' Lt. | **Alignment:** | 100 NB Exit |
| **Elev.:** | 599.9 ft | **Latitude:** | 35.12802 | **Longitude:** | 81.55155 | **Date Started:** | 1/25/2017 |
| **Total Depth:** | 11.5 ft | **Soil Depth:** | 11.5 ft | **Core Depth:** | ft | **Date Completed:** | 1/25/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment**<br>Inferred as loose to medium dense, moist, brown, non-reactive, low-plasticity, silty SAND (SM/A-4). | | 2.0 | | | | | |
| | | | | | SS-1 | 5 | 6 | 6 | 12 |
| | | | | 4.0 | | | | | |
| 594.9 | | | | | SS-2 | 3 | 2 | 3 | 5 |
| | | | | 6.0 | | | | | |
| | | | | | SS-3 | 3 | 3 | 4 | 7 |
| | | | | 8.0 | | | | | |
| | | | | | SS-4 | 3 | 3 | 3 | 6 |
| 589.9 | | | | 10.0 | | | | | |
| | 11.5 | | | | SS-5 | 3 | 2 | 4 | 6 |
| | | No Refusal & Boring Terminated at 11.5' (Elev. 588.4).<br><br>Boring relocated due to traffic and overhead utilities.<br>Classification testing was not performed. | | | | | | | |
| 584.9 | | | | | | | | | |
| 579.9 | | | | | | | | | |
| 574.9 | | | | | | | | | |
| 569.9 | | | | | | | | | |
| 564.9 | | | | | | | | | |
| 559.9 | | | | | | | | | |
| 554.9 | | | | | | | | | |

● SPT N VALUE ●

PL ⨯ MC ○ LL ⨯

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BS-112 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 48+17 | **Offset:** | 35' Rt. | **Alignment:** | N. Mountain St |
| **Elev.:** | 841.9 ft | **Latitude:** | 35.14144 | **Longitude:** | 81.50835 | **Date Started:** | 1/27/2017 |
| **Total Depth:** | 11.5 ft | **Soil Depth:** | 11.5 ft | **Core Depth:** | ft | **Date Completed:** | 1/27/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | | Inferred as soft to stiff, moist, red-brown, non-reactive, non-plastic, sandy elastic SILT with trace gravel in part (MH/A-7-6). | | 2.0 | | | | | |
| | | | | | SS-1 | 4 | 3 | 4 | 7 |
| 836.9 | | | | 4.0 | | | | | |
| | | | | | SS-2 | 3 | 5 | 4 | 9 |
| | | | | 6.0 | | | | | |
| | | | | | SS-3 | 3 | 5 | 4 | 9 |
| | | | | 8.0 | | | | | |
| | | | | | SS-4 | 2 | 3 | 4 | 7 |
| 831.9 | | | | 10.0 | | | | | |
| | 11.5 | | | | SS-5 | 2 | 1 | 2 | 3 |
| | | No Refusal & Boring Terminated at 11.5' (Elev. 830.4). | | | | | | | |
| 826.9 | | Classification testing was not performed. | | | | | | | |
| 821.9 | | | | | | | | | |
| 816.9 | | | | | | | | | |
| 811.9 | | | | | | | | | |
| 806.9 | | | | | | | | | |
| 801.9 | | | | | | | | | |
| 796.9 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | **County:** | Cherokee | **Boring No.:** | BS-113 | | |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | **Route:** | | | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2009+58 | **Offset:** | 11' Lt. | **Alignment:** | 102 Northboun |
| **Elev.:** | 785.8 ft | **Latitude:** | 35.13886 | **Longitude:** | 81.51205 | **Date Started:** | 2/6/2017 |
| **Total Depth:** | 10 ft | **Soil Depth:** | 10.0 ft | **Core Depth:** | ft | **Date Completed:** | 2/6/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** Inferred as moist, brown, non-reactive, low plasticity, silty SAND with gravel (SM/A-4). | | 0.0 | CU-1 | | | | | |
| 780.8 | | | | | | | | | | |
| 775.8 | 10.0 | No Refusal & Boring Terminated at 10.0' (Elev. 775.8). Classification testing was not performed. | | | | | | | | |
| 770.8 | | | | | | | | | | |
| 765.8 | | | | | | | | | | |
| 760.8 | | | | | | | | | | |
| 755.8 | | | | | | | | | | |
| 750.8 | | | | | | | | | | |
| 745.8 | | | | | | | | | | |
| 740.8 | | | | | | | | | | |

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BS-114 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 48+77 | **Offset:** | 42' Rt. | **Alignment:** | Tribal Road/S9 |
| **Elev.:** | 853.8 ft | **Latitude:** | 35.15771 | **Longitude:** | 81.48001 | **Date Started:** | 1/19/2017 |
| **Total Depth:** | 11.5 ft | **Soil Depth:** | 11.5 ft | **Core Depth:** | ft | **Date Completed:** | 1/19/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** Inferred as loose, moist, red-brown, non-reactive, non-plastic, silty SAND (SM/A-5). | | 2.0 | | | | | | |
| | | | | | SS-1 | 3 | 2 | 3 | 5 | ● |
| | | | | 4.0 | | | | | | |
| 848.8 | | | | | SS-2 | 3 | 3 | 3 | 6 | ● |
| | 5.8 | Inferred as firm, moist, red-brown and red, low to medium plasticity, sandy lean CLAY (CL/A-7-6). | | 6.0 | | | | | | |
| | | | | | SS-3 | 2 | 3 | 4 | 7 | ● |
| | | | | 8.0 | | | | | | |
| | | | | | SS-4 | 3 | 3 | 4 | 7 | ● |
| 843.8 | | | | 10.0 | | | | | | |
| | 11.5 | | | | SS-5 | 3 | 3 | 3 | 6 | ● |
| | | No Refusal & Boring Terminated at 11.5' (Elev. 842.3). | | | | | | | | |
| 838.8 | | Classification testing was not performed. | | | | | | | | |
| 833.8 | | | | | | | | | | |
| 828.8 | | | | | | | | | | |
| 823.8 | | | | | | | | | | |
| 818.8 | | | | | | | | | | |
| 813.8 | | | | | | | | | | |
| 808.8 | | | | | | | | | | |

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BS-115 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 56+04 | **Offset:** | 28' Rt. | **Alignment:** | Tribal Road/S9 |
| **Elev.:** | 849.6 ft | **Latitude:** | 35.15581 | **Longitude:** | 81.47929 | **Date Started:** | 1/19/2017 |
| **Total Depth:** | 11.5 ft | **Soil Depth:** | 11.5 ft | **Core Depth:** | ft | **Date Completed:** | 1/19/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 2.0 | | | | | |
| | 2.4 | Inferred as firm, moist, black, non-reactive, non-plastic, SILT with sand and gravel (ML/A-7-6). | | | SS-1 | 3 | 4 | 3 | 7 |
| | 3.8 | | | 4.0 | | | | | |
| 844.6 | | Inferred as firm, moist, brown, non-reactive, high plasticity, elastic SILT with gravel (MH/A-7-5). | | | SS-2 | 4 | 4 | 6 | 10 |
| | | | | 6.0 | | | | | |
| | | | | | SS-3 | 3 | 2 | 2 | 4 |
| | 8.4 | | | 8.0 | | | | | |
| | | Inferred as very loose to loose, moist, red-brown, non-reactive, low plasticity, silty SAND with clay (SM/A-2-4). | | | SS-4 | 0 | 2 | 3 | 5 |
| 839.6 | | | | 10.0 | | | | | |
| | 11.5 | | | | SS-5 | 6 | 9 | 12 | 21 |
| | | **Residual** | | | | | | | |
| 834.6 | | Inferred as firm to very stiff, moist, gray-brown and brown, non-reactive, high plasticity, sandy elastic SILT with gravel (MH/A-7-5). | | | | | | | |
| | | No Refusal & Boring Terminated at 11.5' (Elev. 838.1). | | | | | | | |
| 829.6 | | Boring relocated due to underground utilities. | | | | | | | |
| | | Classification testing was not performed. | | | | | | | |
| 824.6 | | | | | | | | | |
| 819.6 | | | | | | | | | |
| 814.6 | | | | | | | | | |
| 809.6 | | | | | | | | | |
| 804.6 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

LEGEND

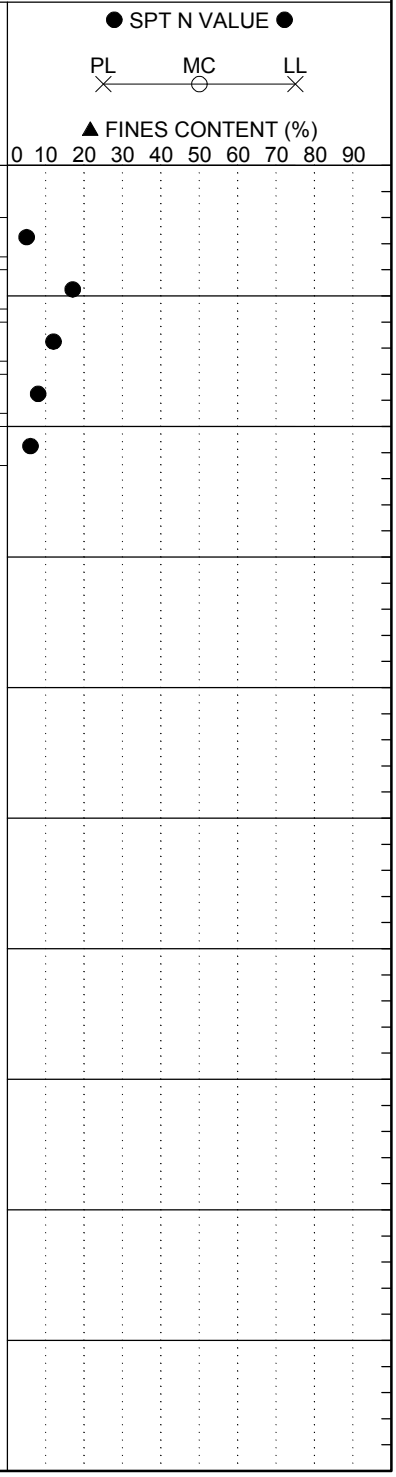
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BS-116 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 48+31 | **Offset:** | 41' Lt. | **Alignment:** | E. Cherokee St |
| **Elev.:** | 868.0 ft | **Latitude:** | 35.16431 | **Longitude:** | 81.45232 | **Date Started:** | 1/19/2017 |
| **Total Depth:** | 11.5 ft | **Soil Depth:** | 11.5 ft | **Core Depth:** | ft | **Date Completed:** | 1/19/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | | Inferred as firm, moist, red, non-reactive, medium plasticity, sandy SILT (ML/A-7-5). | | 2.0 | SS-1 | 2 | 2 | 3 | 5 |
| | 3.8 | | | 4.0 | | | | | |
| 863.0 | | Inferred as stiff to very stiff, moist, red-orange, non-reactive, high plasticity, silty, sandy lean CLAY (CL/A-7-6). | | | SS-2 | 7 | 8 | 9 | 17 |
| | 7.8 | | | 6.0 | | | | | |
| | | **Residual** | | | SS-3 | 6 | 6 | 6 | 12 |
| | | Inferred as firm, moist, orange and white, non-reactive, non-plastic, saprolitic, micaceous, sandy SILT (ML/A-5). | | 8.0 | SS-4 | 4 | 4 | 4 | 8 |
| 858.0 | | | | 10.0 | | | | | |
| | 11.5 | | | | SS-5 | 3 | 3 | 3 | 6 |
| | | No Refusal & Boring Terminated at 11.5' (Elev. 856.5). | | | | | | | |
| 853.0 | | Classification testing was not performed. | | | | | | | |
| 848.0 | | | | | | | | | |
| 843.0 | | | | | | | | | |
| 838.0 | | | | | | | | | |
| 833.0 | | | | | | | | | |
| 828.0 | | | | | | | | | |
| 823.0 | | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BS-117 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 51+54 | **Offset:** | 41' Lt. | **Alignment:** | E. Cherokee St |
| **Elev.:** | 869.4 ft | **Latitude:** | 35.16343 | **Longitude:** | 81.45219 | **Date Started:** | 1/19/2017 |
| **Total Depth:** | 11.5 ft | **Soil Depth:** | 11.5 ft | **Core Depth:** | ft | **Date Completed:** | 1/19/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment**<br>Inferred as firm to stiff, moist, red-brown, non-reactive, medium plasticity, elastic SILT with sand (MH/A-7-5). | | 2.0 | | | | | |
| | | | | | SS-1 | 3 | 5 | 4 | 9 |
| | | | | 4.0 | | | | | |
| 864.4 | 5.8 | | | | SS-2 | 3 | 2 | 3 | 5 |
| | | Inferred as stiff to very stiff, moist, red, non-reactive, high plasticity, sandy SILT (ML/A-7-5). | | 6.0 | | | | | |
| | | | | | SS-3 | 4 | 5 | 8 | 13 |
| | | | | 8.0 | | | | | |
| | | | | | SS-4 | 5 | 6 | 9 | 15 |
| 859.4 | 10.6 | | | 10.0 | | | | | |
| | 11.5 | **Residual**<br>Inferred as medium dense, moist, brown and red, non-reactive, non-plastic, saprolitic, silty SAND (SM/A-4). | | | SS-5 | 7 | 10 | 9 | 19 |
| 854.4 | | No Refusal & Boring Terminated at 11.5' (Elev. 857.9). | | | | | | | |
| | | Classification testing was not performed. | | | | | | | |
| 849.4 | | | | | | | | | |
| 844.4 | | | | | | | | | |
| 839.4 | | | | | | | | | |
| 834.4 | | | | | | | | | |
| 829.4 | | | | | | | | | |
| 824.4 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-118 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 49+21 | **Offset:** | 8' Lt. | **Alignment:** | Blacksburg Rd. |
| **Elev.:** | 589.6 ft | **Latitude:** | 35.12897 | **Longitude:** | 81.55148 | **Date Started:** | 1/19/2017 |
| **Total Depth:** | 62.5 ft | **Soil Depth:** | 41.0 ft | **Core Depth:** | 21.5 ft | **Date Completed:** | 1/20/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC/RC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 21.8 ft. | **24HR** | 21.9 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 / FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | | |
| | 2.0 | Inferred as loose, moist, silty SAND with mica (SM/A-4). | | 2.0 | SS-1 | 2 | 2 | 3 | 5 | |
| | | | | 4.0 | SS-2 | 2 | 3 | 3 | 6 | |
| 584.6 | 5.8 | **Residual** Loose, moist, brown, white, orange and dark brown to black streaks, non-reactive, weakly to moderately cemented, silty SAND with mica (SM/A-4). | | 6.0 | ST-1 | | | | | |
| | 8.0 | | | 8.0 | SS-3 | 2 | 3 | 3 | 6 | |
| 579.6 | 9.8 | LL=29, PL=26, PI=3, NMC=20.0, %#200=41.9 | | 10.0 | SS-4 | 2 | 3 | 5 | 8 | |
| 574.6 | | Loose, moist, brown, white, orange and dark brown to black streaks, non-reactive, weakly to moderately cemented, silty SAND with mica (SM/A-2-4). LL=34, PL=34, PI=NP, NMC=21.8, %#200=24.2 | | 15.0 | SS-5 | 3 | 6 | 8 | 14 | |
| 569.6 | | Loose, moist, brown, white, orange and dark brown to black streaks, non-reactive, weakly to moderately cemented, silty SAND with mica (SM/A-4). | | 20.0 | SS-6 | 4 | 9 | 12 | 21 | |
| 564.6 | | Loose to dense, moist, brown, white, orange and dark brown to black streaks, non-reactive, weakly to moderately cemented, silty SAND with mica and feldspar(SM/A-2-4). | | 25.0 | SS-7 | 9 | 20 | 25 | 45 | |
| | 28.3 | LL=31, PL=27, PI=4, NMC=15.8, %#200=32.0 | | 30.0 | SS-8 | 8 | 30 | 66 | 96 | |
| 559.6 | | Very dense, moist, brown and orange, non-reactive, weakly to moderately cemented, fine to coarse, silty SAND with quartz and mica (SM/A-2-4). | | 35.0 | SS-9 | 60 | 40/0.1 | | 100/0.6 | >> |
| 554.6 | 35.5 | **Partially Weathered Rock** Logged as very dense, brown, non-reactive, clayey SAND (SC/A-2-6). | | 40.0 | SS-10 | 100/0.4 | | | 100/0.4 | >> |
| 549.6 | 41.0 | LL=NP, PL=NP, PI=NP, NMC=14.0, %#200=19.9 | | 41.0 | SS-11 | 50/0.0 | | | 50/0.0 | No recovery >> |
| | | Splitspoon & Auger Refusal at 41.0', Begin Coring in Cherryville Granite. | | 41.0 | NQ-1 | | | | | REC%=100, RQD%=86 |
| 544.6 | | Light gray, white, traces olive green & black, brown-red-orange stain in upper parts, medium grain w/traces coarse feldspar grains, very thinly foliated in parts, feldspar-quartz-muscovite, slightly | | 44.5 | NQ-2 | | | | | REC%=100, RQD%=82 |
| | | | | 49.5 | | | | | | |

LEGEND

*Continued Next Page*

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-118 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 49+21 | **Offset:** | 8' Lt. | **Alignment:** | Blacksburg Rd. |
| **Elev.:** | 589.6 ft | **Latitude:** | 35.12897 | **Longitude:** | 81.55148 | **Date Started:** | 1/19/2017 |
| **Total Depth:** | 62.5 ft | **Soil Depth:** | 41.0 ft | **Core Depth:** | 21.5 ft | **Date Completed:** | 1/20/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC/RC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 21.8 ft. | **24HR** | 21.9 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 ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|
| 534.6 | | weathered to fresh w/moderately weathered seam, hard to very hard, very close to close discontinuity spacing, healed to partially healed joints throughout, traces vugs-1mm±. | | 54.5 | NQ-3 | | | REC%=100, RQD%=100 |
| | | 22 0°-20°, VN-T, Sp-No, Cl-Ch-Fe-No, Pl, SR-S; 6 60°-75°, T-N, Sp-Fi, Fe-Cl, Pl, S-SR; 1 70°, MW, Fi, H(breccia), Pl, SR; 8 60°-75°, T-VN, Fi, H, Pl, S; 13 20°-50°, T, Fi, H, Pl, S | | | NQ-4 | | | REC%=100, RQD%=96 |
| 529.6 | | | | 59.5 | NQ-5 | | | REC%=100, RQD%=100 |
| | 62.5 | Boring Terminated at 62.5' (Elev. 527.1). | | | | | | |
| 524.6 | | Boring relocated due to overhead utilities. | | | | | | |
| 519.6 | | | | | | | | |
| 514.6 | | | | | | | | |
| 509.6 | | | | | | | | |
| 504.6 | | | | | | | | |
| 499.6 | | | | | | | | |
| 494.6 | | | | | | | | |

LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | **County:** | Cherokee | **Boring No.:** | BR-119 | | |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | **Route:** | | | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 50+09 | **Offset:** | 10' Lt. | **Alignment:** | Blacksburg Rd. |
| **Elev.:** | 588.9 ft | **Latitude:** | 35.12874 | **Longitude:** | 81.55139 | **Date Started:** | 2/28/2017 |
| **Total Depth:** | 62.6 ft | **Soil Depth:** | 42.6 ft | **Core Depth:** | 20.0 ft | **Date Completed:** | 2/28/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 10.9 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | Loose, light brown, non-reactive, clayey, silty SAND (SM/A-4). | | 2.0 | | | | | | |
| | | | | | SS-1 | 5 | 5 | 5 | 10 | ● |
| | 3.8 | | | 4.0 | | | | | | |
| 583.9 | | Loose, light brown and white, weakly reactive, silty SAND (SM/A-2-4). LL=32, PL=29, PI=3, NMC=12.1, %#200=28.1 | | | SS-2 | 2 | 3 | 4 | 7 | ● |
| | | | | 6.0 | | | | | | |
| | | | | | SS-3 | 2 | 3 | 4 | 7 | ●○ ▲ |
| | | | | 8.0 | | | | | | |
| | | | | | SS-4 | 2 | 4 | 5 | 9 | ● |
| | 9.8 | | | 10.0 | | | | | | |
| 578.9 | | ▽Loose to medium dense, light brown, white and brown, non-reactive, silty SAND (SM/A-2-4). LL=40, PL=40, PI=NP, NMC=20.0, %#200=32.6 | | | SS-5 | 2 | 5 | 5 | 10 | ● |
| | | | | 14.7 | | | | | | |
| 573.9 | | | | | SS-6 | 3 | 5 | 7 | 12 | ● ○ ▲ × |
| | 18.0 | | | | | | | | | |
| | | Medium dense to dense, moist, brown and white, non-reactive, silty SAND with fine gravel (SM/A-1-b). LL=34, PL=30, PI=4, NMC=14.5, %#200=23.4 | | 19.7 | | | | | | |
| 568.9 | | | | | SS-7 | 3 | 8 | 13 | 21 | ● |
| | | | | 24.7 | | | | | | |
| 563.9 | | | | | SS-8 | 7 | 21 | 27 | 48 | ○ ▲ ×× ● |
| | | | | 29.7 | | | | | | |
| 558.9 | 30.2 | **Partially Weathered Rock** Very dense, wet, brown and white, weakly reactive, silty SAND with weathered schist fragments (SM/A-1-b). LL=26, PL=22, PI=4, NMC=15.6, %#200=18.1 | | | SS-9 | 21 | 62 | 38/0.1 | 100/0.6 | ▲×× >> |
| | | | | 34.7 | | | | | | |
| 553.9 | | | | | SS-10 | 13 | 87/0.3 | | 100/0.8 | >> |
| | | | | 39.7 | | | | | | |
| 548.9 | | | | | ~~SS-11~~ | ~~100/0.3~~ | | | ~~100/0.3~~ | >> |
| | 42.6 | | | 42.6 | | | | | | |
| | | Splitspoon & Auger Refusal at 42.6', Begin Coring in Cherryville Granite. | | 42.6 | ~~SS-12~~ | ~~50/0.0~~ | | | ~~50/0.0~~ | No recovery >> |
| 543.9 | | Light gray, white, traces olive green & black, brown-red-orange stain in upper parts, medium grain w/traces coarse feldspar grains, very thinly foliated in parts, feldspar-quartz-muscovite-trace garnet, | | | NQ-1 | | | | | REC%=100, RQD%=82 |
| | | | | 47.6 | | | | | | |

*Continued Next Page*

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-119 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 50+09 | **Offset:** | 10' Lt. | **Alignment:** | Blacksburg Rd. |
| **Elev.:** | 588.9 ft | **Latitude:** | 35.12874 | **Longitude:** | 81.55139 | **Date Started:** | 2/28/2017 |
| **Total Depth:** | 62.6 ft | **Soil Depth:** | 42.6 ft | **Core Depth:** | 20.0 ft | **Date Completed:** | 2/28/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 10.9 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 |
|---|---|---|---|---|---|---|---|---|
| | | slightly weathered to fresh w/moderately weathered seam, hard to very hard, very close to close discontinuity spacing, 90° healed joints throughout. | | 52.6 | NQ-2 | | | REC%=92, RQD%=80 |
| 533.9 | | highly weathered seams 44.6'-44.9' & 49.3'-49.8' (includes core loss); 2 90° J, T-VN, Su, Fe, Pl,SR; 5 60°-65°, VN, Su, Fe, Pl, SR; 19 0°, VN-N,Su-Pa, Fe-Cl-tracePy; 2 60° V, N, No, No, Pl, S; highly weathered seam 55.9'-56.1'; highly weathered seam 61.2'-61.4' | | 57.6 | NQ-3 | | | REC%=98, RQD%=90 |
| 528.9 | | | | | NQ-4 | | | REC%=98, RQD%=90 |
| | 62.6 | Boring Terminated at 62.6' (Elev. 526.3). | | | | | | |
| 523.9 | | | | | | | | |
| 518.9 | | | | | | | | |
| 513.9 | | | | | | | | |
| 508.9 | | | | | | | | |
| 503.9 | | | | | | | | |
| 498.9 | | | | | | | | |
| 493.9 | | | | | | | | |

LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-120 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 51+10 | **Offset:** | 2' Lt. | **Alignment:** | Blacksburg Roa |
| **Elev.:** | 607.2 ft | **Latitude:** | 35.12848 | **Longitude:** | 81.55131 | **Date Started:** | 1/26/2017 |
| **Total Depth:** | 101.2 ft | **Soil Depth:** | 63.6 ft | **Core Depth:** | 37.6 ft | **Date Completed:** | 1/27/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | RW/DC/RC | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NQ | **Driller:** | R. Toothman | **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 (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** Loose, moist, brown, non-reactive, non-plastic, silty SAND (SM/A-4). | | 2.0 | SS-1 | 5 | 5 | 5 | 10 | |
| 602.2 | 3.8 | LL=33, PL=27, PI=6, NMC=15.6, %#200=35.9 | | 4.0 | SS-2 | 3 | 3 | 4 | 7 | |
| | | Loose, moist, red and brown, non-reactive, fine to coarse, silty SAND (SM/A-4). | | 6.0 | SS-3 | 3 | 4 | 5 | 9 | |
| 597.2 | | LL=36, PL=31, PI=5, NMC=25.6, %#200=41.6 | | 8.0 | SS-4 | 3 | 3 | 4 | 7 | |
| | | | | 10.0 | SS-5 | 3 | 3 | 2 | 5 | |
| | | | | 13.5 | SS-6 | 3 | 2 | 6 | 8 | |
| 592.2 | 16.8 | **Residual** Loose, red and brown, non-reactive, clayey SAND (SC/A-6). | | 18.5 | SS-7 | 3 | 2 | 7 | 9 | |
| 587.2 | 21.8 | LL=31, PL=20, PI=11, NMC=22.6, %#200=43.5 | | 23.5 | SS-8 | 3 | 5 | 5 | 10 | |
| 582.2 | | Loose, moist, white, brown and yellow, non-reactive, saprolitic, micaceous, fine to coarse, silty SAND (SM/A-2-4). LL=35, PL=35, PI=NP, NMC=24.4, %#200=31.8 | | 28.5 | SS-9 | 3 | 4 | 6 | 10 | |
| 577.2 | 31.8 | Medium dense to very dense, moist, white, yellow and brown, non-reactive, saprolitic, micaceous, fine to coarse, gravelly in part, silty SAND (SM/A-1-b). | | 33.5 | SS-10 | 8 | 7 | 11 | 18 | |
| 572.2 | | | | 38.5 | SS-11 | 16 | 17 | 26 | 43 | |
| 567.2 | | | | 43.5 | SS-12 | 20 | 49 | 50/0.1 | 99/0.6 | >> |
| 562.2 | 44.5 | **Partially Weathered Rock** Logged as very dense, moist, white, yellow and brown, non-reactive, micaceous, fine to coarse, clayey SAND with silt and gravel (SC/A-2-6). | | 48.5 | SS-13 | 50/0.3 | | | 50/0.3 | >> |

*Continued Next Page*

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-120 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 51+10 | **Offset:** | 2' Lt. | **Alignment:** | Blacksburg Roa |
| **Elev.:** | 607.2 ft | **Latitude:** | 35.12848 | **Longitude:** | 81.55131 | **Date Started:** | 1/26/2017 |
| **Total Depth:** | 101.2 ft | **Soil Depth:** | 63.6 ft | **Core Depth:** | 37.6 ft | **Date Completed:** | 1/27/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | RW/DC/RC | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NQ | **Driller:** | R. Toothman | **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 (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|
| 552.2 | | | | 53.5 | SS-14 | 50/0.2 | 50/0.2 | >> |
| 547.2 | | | | 58.5 | SS-15 | 50/0.2 | 50/0.2 | >> |
| | 63.6 | | | 63.5 | SS-16 | 50/0.1 | 50/0.1 | >> |
| 542.2 | | Auger & Splitspoon Refusal at 63.6', Begin Coring in Cherryville Granite. Pale gray, white, brown-red-orange stain throughout, medium-coarse grain w/traces of pegmatitie, feldspar-quartz-muscovite, completely weathered with seams moderately to highly weathered, friable with moderately hard seams, very close discontinuity spacing. completely weathered granite 71.2'-75.9'; 4 90° jts., VN, Su, Fe, Pl-Ir, SR-R; 1 60° VN, No, No, Pl, SR; 45 0°-20° jts. T-MW, Su-Fi, Fe-Cl-Sd, Pl, SR-R | | 63.6 | NQ-1 | | | REC%=0, RQD%=0 |
| 537.2 | | | | 66.2 | NQ-2 | | | REC%=16, RQD%=0 |
| 532.2 | | | | 71.2 | NQ-3 | | | REC%=20, RQD%=0 |
| 527.2 | | | | 76.2 | NQ-4 | | | REC%=24, RQD%=0 |
| 522.2 | | | | 81.2 | NQ-5 | | | REC%=24, RQD%=0 |
| 517.2 | | | | 86.2 | NQ-6 | | | REC%=12, RQD%=0 |
| 512.2 | | | | 91.2 | NQ-7 | | | REC%=4, RQD%=0 |
| | | | | 96.2 | NQ-8 | | | REC%=44, RQD%=8 |

*Continued Next Page*

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-120 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 51+10 | **Offset:** | 2' Lt. | **Alignment:** | Blacksburg Roa |
| **Elev.:** | 607.2 ft | **Latitude:** | 35.12848 | **Longitude:** | 81.55131 | **Date Started:** | 1/26/2017 |
| **Total Depth:** | 101.2 ft | **Soil Depth:** | 63.6 ft | **Core Depth:** | 37.6 ft | **Date Completed:** | 1/27/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | RW/DC/RC | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NQ | **Driller:** | R. Toothman | **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 (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 101.2 | Boring Terminated at 101.2' (Elev. 506.0). | | | | | | | | |
| 502.2 | | | | | | | | | | |
| 497.2 | | | | | | | | | | |
| 492.2 | | | | | | | | | | |
| 487.2 | | | | | | | | | | |
| 482.2 | | | | | | | | | | |
| 477.2 | | | | | | | | | | |
| 472.2 | | | | | | | | | | |
| 467.2 | | | | | | | | | | |
| 462.2 | | | | | | | | | | |

LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-121 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 48+28 | **Offset:** | 5' Lt. | **Alignment:** | N. Mountain St |
| **Elev.:** | 834.2 ft | **Latitude:** | 35.1414 | **Longitude:** | 81.50822 | **Date Started:** | 1/17/2017 |
| **Total Depth:** | 99.1 ft | **Soil Depth:** | 52.3 ft | **Core Depth:** | 46.8 ft | **Date Completed:** | 1/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC/RC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 39.0 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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment**<br>Stiff to very stiff, moist, red-orange, pale brown, medium plasticity, clayey, sandy elastic SILT(MH/A-7-6). | | 2.0 | | | | | |
| | | | | | SS-1 | 4 | 5 | 8 | 13 |
| | | | | 4.0 | | | | | |
| | | | | | SS-2 | 3 | 7 | 11 | 18 |
| 829.2 | 5.8 | **Residual**<br>Stiff to very stiff, moist, red, orange, brown, yellow and white, non-reactive, moderately to strongly cemented, clayey, sandy elastic SILT with mica and feldspar in part (MH/A-7-6).<br>LL=52, PL=29, PI=23, NMC=18.9, %#200=61.5 | | 6.0 | | | | | |
| | | | | | SS-3 | 2 | 6 | 8 | 14 |
| | | | | 8.0 | | | | | |
| | | | | | SS-4 | 4 | 8 | 13 | 21 |
| 824.2 | | | | 10.0 | | | | | |
| | | | | | SS-5 | 3 | 7 | 10 | 17 |
| | | | | 14.8 | | | | | |
| 819.2 | | | | | SS-6 | 4 | 8 | 8 | 16 |
| | 17.6 | Firm, moist, red, orange, brown, yellow and white, non-reactive, weakly to moderately cemented, clayey, sandy elastic SILT with feldspar and mica (MH/A-7-5).<br>LL=51, PL=37, PI=14, NMC=32.2, %#200=63.4 | | 19.3 | | | | | |
| 814.2 | | | | | SS-7 | 3 | 3 | 4 | 7 |
| | 24.3 | Stiff, moist, red, orange, brown, yellow, white and dark brown to black streaks, non-reactive, weakly to moderately cemented, clayey, sandy elastic SILT with feldspar and mica (MH/A-7-5). | | 24.3 | | | | | |
| 809.2 | | | | | SS-8 | 2 | 6 | 9 | 15 |
| | | | | 29.3 | | | | | |
| 804.2 | | | | | SS-9 | 2 | 3 | 7 | 10 |
| | 32.6 | Loose, moist, orange, brown, gray and white, non-reactive, weakly cemented, silty SAND with mica and feldspar (SM/A-5).<br>LL=46, PL=36, PI=10, NMC=32.3, %#200=37.0 | | 34.3 | | | | | |
| 799.2 | | | | | SS-10 | 2 | 2 | 3 | 5 |
| | 37.6 | ▽ Loose to very dense, moist to wet, orange, brown, gray and white, non-reactive, weakly cemented, silty SAND with mica and feldspar (SM/A-4). | | 39.3 | | | | | |
| 794.2 | | | | | ST-1 | | | | |
| | 42.8 | LL=37, PL=32, PI=5, NMC=22.2, %#200=42.7 | | 44.3 | | | | | |
| 789.2 | | | | | SS-11 | 20 | 22 | 54 | 76 |
| | | Very dense, moist, brown, orange, gray, white and dark brown to black streaks, non-reactive, weakly to strongly cemented, saprolitic, clayey, silty SAND with mica (SM/A-4). | | 49.3 | | | | | |

SPT N VALUE

PL MC LL

FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

LEGEND

*Continued Next Page*

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-121 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 48+28 | **Offset:** | 5' Lt. | **Alignment:** | N. Mountain St |
| **Elev.:** | 834.2 ft | **Latitude:** | 35.1414 | **Longitude:** | 81.50822 | **Date Started:** | 1/17/2017 |
| **Total Depth:** | 99.1 ft | **Soil Depth:** | 52.3 ft | **Core Depth:** | 46.8 ft | **Date Completed:** | 1/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC/RC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 39.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | SS-12 | 20 | 30 | 34 | 64 | |
| | 52.3 | | | 52.2 | ~~SS-13~~ | ~~50/0.1~~ | | | ~~50/0.1~~ | >> |
| | 54.1 | Splitspoon & Auger Refusal at 52.3', Begin Coring in Quartzite. | | 52.3 | NQ-1 | | | | | REC%=78, RQD%=0 |
| 779.2 | | White-very light gray, brown-orange stain, traces black, very fine grain, faint foliation, slightly weathered, very hard, very close discontinuities, intersecting joints. 7 30°-35°, VN, Su, Fe-Cl, St, SR; 4 50°, VN, Su-Sp,Fe-Cl, Pl, S | | 54.1 | NQ-2 | | | | | REC%=18, RQD%=0 |
| 774.2 | | | | 59.1 | NQ-3 | | | | | REC%=18, RQD%=0 |
| | | Completely Weathered Rock to Residual Soil: Red-orange-light brown, light to dark brown, scattered light gray, clayey to silty, widely scattered saprolitic, fragments of weathered phyllite & quartz vein/quartzite. | | 64.1 | NQ-4 | | | | | REC%=16, RQD%=0 |
| 769.2 | | | | 69.1 | NQ-5 | | | | | REC%=22, RQD%=0 |
| 764.2 | | | | 74.1 | NQ-6 | | | | | REC%=6, RQD%=0 |
| 759.2 | | | | 79.1 | NQ-7 | | | | | REC%=0, RQD%=0 |
| 754.2 | 84.1 | | | 84.1 | NQ-8 | | | | | REC%=52, RQD%=0 |
| 749.2 | | Schist: Black, gray, olive gray, red-orange, fine grain to medium grain, amphibole-quartz-mica, highly weathered w/intervals completely weathered to residual soils, low hardness to soft. 7 10°, VN-N, Su, Fe, Pl, S | | 89.1 | NQ-9 | | | | | REC%=28, RQD%=0 |
| 744.2 | | | | 94.1 | NQ-10 | | | | | REC%=54, RQD%=0 |
| 739.2 | 97.0 | | | | | | | | | |
| | 99.1 | Cherryville Granite: Brown, light gray, off white, traces black, medium grain, very thinly foliated, feldspar-quartz-mica, highly | | | | | | | | |

*Continued Next Page*

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-121 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 48+28 | **Offset:** | 5' Lt. | **Alignment:** | N. Mountain St. |
| **Elev.:** | 834.2 ft | **Latitude:** | 35.1414 | **Longitude:** | 81.50822 | **Date Started:** | 1/17/2017 |
| **Total Depth:** | 99.1 ft | **Soil Depth:** | 52.3 ft | **Core Depth:** | 46.8 ft | **Date Completed:** | 1/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC/RC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 39.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | to completely weathered, soft w/moderately hard segments, very close discontinuity spacing, interstitial silt. 3 35°-50°, N, Su, Fe-Sd, Pl, SR; 1 0°, VN, Su, Fe, Pl, SR | | | | | | | | |
| 729.2 | | Boring Terminated at 99.1' (Elev. 735.1). | | | | | | | | |
| | | Boring relocated due to steep embankment. | | | | | | | | |
| 724.2 | | | | | | | | | | |
| 719.2 | | | | | | | | | | |
| 714.2 | | | | | | | | | | |
| 709.2 | | | | | | | | | | |
| 704.2 | | | | | | | | | | |
| 699.2 | | | | | | | | | | |
| 694.2 | | | | | | | | | | |
| 689.2 | | | | | | | | | | |

LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-122 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 49+36 | **Offset:** | 12' Lt. | **Alignment:** | N. Mountain St |
| **Elev.:** | 823.0 ft | **Latitude:** | 35.1411 | **Longitude:** | 81.50824 | **Date Started:** | 2/28/2017 |
| **Total Depth:** | 105.9 ft | **Soil Depth:** | 81.2 ft | **Core Depth:** | 24.7 ft | **Date Completed:** | 3/3/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | RW/DC | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NQ | **Driller:** | R. Toothman | **Groundwater:** | **TOB** NA | **24HR** | NA |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION | Sample Depth (ft) | Sample No./Type | 1st 6" | 2nd 6" | 3rd 6" | N Value |
|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | |
| | 2.5 | Topsoil | 2.0 | SS-1 | 4 | 3 | 4 | 7 |
| | 4.8 | **Residual** | 4.0 | SS-2 | 2 | 4 | 7 | 11 |
| 818.0 | 5.8 | Loose to medium dense, moist, brown and dark brown to black streaks, non-reactive, weakly to moderately cemented, saprolitic, silty SAND with mica (SM/A-5). LL=41, PL=38, PI=3, NMC=33.5, %#200=42.2 | 6.0 | SS-3 | 17 | 21 | 16 | 37 |
| | | | 8.0 | SS-4 | 7 | 3 | 2 | 5 |
| 813.0 | 9.8 | | 10.0 | SS-5 | 1 | 1 | 2 | 3 |
| | 12.5 | Medium dense, moist, brown and dark brown to black streaks, moderately cemented, saprolitic, silty SAND (SM/A-5). | 13.4 | SS-6 | 4 | 15 | 32 | 47 |
| 808.0 | 16.5 | Loose to dense, moist, brown and dark brown to black streaks, weakly cemented, saprolitic, clayey, poorly graded SAND with silt, gravel and quartz fragments (SP-SM/A-1-a). LL=23, PL=20, PI=3, NMC=10.6, %#200=10.4 | 18.4 | SS-7 | 2 | 3 | 4 | 7 |
| 803.0 | 21.7 | | 23.4 | SS-8 | 3 | 4 | 4 | 8 |
| 798.0 | | Soft, moist, brown and dark brown to black streaks, moderately cemented, clayey, sandy SILT with mica (ML/A-5). | 28.4 | SS-9 | 3 | 3 | 5 | 8 |
| 793.0 | | Dense, moist, brown and dark brown to black streaks, weakly to moderately cemented, clayey, saprolitic, silty GRAVEL with sand and quartz fragments (GM/A-5). LL=43, PL=38, PI=5, NMC=22.5, %#200=42.5 | 33.4 | SS-10 | 3 | 6 | 8 | 14 |
| 788.0 | | Firm, moist, brown and dark brown to black streaks, moderately cemented, saprolitic, clayey, elastic SILT with sand (MH/A-5). LL=60, PL=51, PI=9, NMC=55.4, %#200=71.0 | 38.4 | SS-11 | 8 | 9 | 10 | 19 |
| 783.0 | 41.7 | Firm to very stiff, moist, brown and dark brown to black streaks, weakly to moderately cemented, saprolitic, clayey, sandy SILT (ML/A-5). LL=41, PL=34, PI=7, NMC=44.3, %#200=63.5 | 43.4 | SS-12 | 11 | 14 | 13 | 27 |
| 778.0 | 46.7 | | 48.4 | SS-13 | 25 | 49 | 51/0.3 | 100/0.8 |
| | | Very stiff, moist, brown and dark brown to black streaks, moderately cemented, clayey, elastic SILT with sand (MH/A-5). | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

*Continued Next Page*

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-122 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 49+36 | **Offset:** | 12' Lt. | **Alignment:** | N. Mountain St |
| **Elev.:** | 823.0 ft | **Latitude:** | 35.1411 | **Longitude:** | 81.50824 | **Date Started:** | 2/28/2017 |
| **Total Depth:** | 105.9 ft | **Soil Depth:** | 81.2 ft | **Core Depth:** | 24.7 ft | **Date Completed:** | 3/3/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | RW/DC | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NQ | **Driller:** | R. Toothman | **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 (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| 768.0 | | Dense to very dense, moist, brown, moderately to strongly cemented, saprolitic, clayey, silty SAND with schist and mica PWR seams(SM/A-4). LL=26, PL=26, PI=NP, NMC=21.1, %#200=43.8 | | 53.4 | SS-14 | 50/0.4 | | | 50/0.4 | >> |
| 763.0 | 61.7 | | | 58.4 | SS-15 | 9 | 18 | 22 | 40 | ● |
| 758.0 | 66.7 | Very dense, moist, brown, moderately to strongly cemented, saprolitic, silty SAND with quartz and weathered rock fragments (SM/A-4). LL=32, PL=27, PI=5, NMC=22.5, %#200=38.2 | | 63.4 | SS-16 | 25 | 33 | 37 | 70 | ○ × × ▲ ● |
| 753.0 | | **Partially Weathered Rock** Logged as very dense, moist, brown, weakly to moderately cemented, clayey, silty SAND with mica and quartz fragments (SM/A-2-4). LL=32, PL=28, PI=4, NMC=16.2, %#200=26.7 | | 68.4 | SS-17 | 50/0.4 | | | 50/0.4 | >> |
| 748.0 | 76.7 | | | 73.4 | SS-18 | 50/0.3 | | | 50/0.3 | ○ ▲ × >> |
| 743.0 | 81.2 | Logged as very dense, brown and dark brown to black streaks, saprolitic, silty SAND with mica (SM/A-4). | | 78.4 | SS-19 | 44 | 56/0.3 | | 100/0.8 | >> |
| 738.0 | 88.2 | Splitspoon & Auger Refusal at 81.2', Begin Coring in Cherryville Granite. Light gray, off-white, traces orange-pink & black grading to white-light gray & dark gray-black, brown-orange stain in parts, coarse w/medium grain-fine grain layers amphibolite schist, thinly foliated in parts, feldspar-quartz-hornblende-muscovite, slightly weathered to fresh w/moderately weathered seams & clay seams, hard to very hard, very close discontinuity spacing, contacts 50°-60°. | | 81.2 | SS-20 | 50/0.0 | | | 50/0.0 | No recovery >> |
| 733.0 | 94.5 | 8 40° Fo VN, Su-Sp, Fe-Cl, Pl, S-SR; 7 10°-30° J N-MW, No-Sp, Cl, Ir, SR-R; clay seams 83.6'-85.5' | | 81.2 | NQ-1 | | | | | REC%=94, RQD%=49 |
| 728.0 | 97.3 | Schist: Dark gray-black, light gray-white, scattered green-gray & gray-brown, fine grain w/traces feldspar phenocrysts, | | 85.9 | NQ-2 | | | | | REC%=100, RQD%=64 |
| | | | | 90.9 | NQ-3 | | | | | REC%=100, RQD%=96 |
| | | | | 95.9 | NQ-4 | | | | | REC%=100, RQD%=100 |

*Continued Next Page*

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-122 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 49+36 | **Offset:** | 12' Lt. | **Alignment:** | N. Mountain St |
| **Elev.:** | 823.0 ft | **Latitude:** | 35.1411 | **Longitude:** | 81.50824 | **Date Started:** | 2/28/2017 |
| **Total Depth:** | 105.9 ft | **Soil Depth:** | 81.2 ft | **Core Depth:** | 24.7 ft | **Date Completed:** | 3/3/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | RW/DC | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NQ | **Driller:** | R. Toothman | **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 (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|
| | | interval medium to caorse grain granitic, very thinly foliated, feldspar-hornblende-mica-scattered chlorite-pyrite on joints, slightly weathered to fresh, hard, very close discontinuity spacing. | | 100.9 | | | | |
| 718.0 | 105.9 | 10 30°-40° Fo T-VN, Sp, Py-Qz, Pl, S-SR; 2 20°-30° J VN, Sp, Fe, Pl, SR; contact 70° | | | NQ-5 | | | REC%=100, RQD%=86 |
| 713.0 | | Cherryville Granite: Light gray, yellow-white, dark gray, medium to coarse grain w/pegmatitic feldspar, foliated, feldspar-quartz-muscovite, slightly weathered to fresh, very hard, very close discontinuity spacing, contacts 70° top & gradational base. | | | | | | |
| 708.0 | | 5 10°-30° J VN, No, No, Ir, R | | | | | | |
| 703.0 | | Schist: Dark gray-black, light gray, scattered green-gray & gray-brown, fine grain w/traces feldspar phenocrysts & laminations, very thinly foliated, feldspar-hornblende-mica-traces chlorite-pyrite on joints, fresh w/moderately weathered seam, hard, very close discontinuity spacing, healed joints in part. | | | | | | |
| 698.0 | | 10 30°-40° Fo T-VN, Sp, Py, Pl, S-SR; 6 10°-20° J T-VN, No, No, Ir, SR-R; 1 20° VN-N, Fi-Sp, H-Qz-Fe, Pl, S; moderately weathered seam 103.9'-104.3' | | | | | | |
| 693.0 | | Boring Terminated at 105.2' (Elev. 717.1). | | | | | | |
| 688.0 | | Boring relocated due to metal guardrail. Pump repair caused delay in finishing boring. | | | | | | |
| 683.0 | | | | | | | | |
| 678.0 | | | | | | | | |

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-123 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 50+73 | **Offset:** | 5' Lt. | **Alignment:** | N. Mountain St |
| **Elev.:** | 843.0 ft | **Latitude:** | 35.14073 | **Longitude:** | 81.50833 | **Date Started:** | 1/18/2017 |
| **Total Depth:** | 100.4 ft | **Soil Depth:** | 100.4 ft | **Core Depth:** | ft | **Date Completed:** | 1/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 60.5 ft. | **24HR** | 41.8 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 / FINES CONTENT (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | Topsoil | | | | | | | | |
| | 2.4 | **Roadway Embankment** Loose to medium dense, moist, brown, red, orange, white and yellow, non-reactive, weakly to strongly cemented, clayey SAND with gravel, mica, feldspar and quartz in part (SC/A-2-6). LL=39, PL=23, PI=16, NMC=17.3, %#200=33.5 | | 2.0 | SS-1 | 4 | 6 | 6 | 12 | |
| 838.0 | | | | 4.0 | SS-2 | 2 | 4 | 6 | 10 | |
| | | | | 6.0 | SS-3 | 4 | 10 | 10 | 20 | |
| | | | | 8.0 | SS-4 | 3 | 4 | 5 | 9 | |
| 833.0 | 9.8 | | | 10.0 | SS-5 | 4 | 4 | 5 | 9 | |
| | 11.0 | Loose, red, orange, brown, yellow, white and few dark brown to black streaks, non-reactive, weakly to moderately cemented, silty SAND (SM/A-5). | | | | | | | | |
| | 13.3 | **Residual** Loose, red, orange, brown, yellow, white and few dark brown to black streaks, non-reactive, weakly to moderately cemented, silty SAND (SM/A-5). | | 15.0 | SS-6 | 4 | 5 | 6 | 11 | |
| 828.0 | | | | | | | | | | |
| 823.0 | | | | 20.0 | SS-7 | 4 | 5 | 6 | 11 | |
| | | Stiff to very stiff, dry to moist, white, gray, red, orange and few dark brown to black streaks, non-reactive, weakly cemented, sandy SILT with mica (ML/A-5). LL=45, PL=40, PI=5, NMC=34.6, %#200=51.6 | | 25.0 | SS-8 | 4 | 5 | 13 | 18 | |
| 818.0 | 28.3 | | | | | | | | | |
| | | Medium dense, dry to wet, white, gray, red, orange, brown, black and few dark brown to black streaks, non-reactive, weakly to moderately cemented, clayey, silty SAND with mica (SM/A-5). LL=42, PL=36, PI=6, NMC=32.4, %#200=40.7 | | 30.0 | SS-9 | 4 | 5 | 7 | 12 | |
| 813.0 | | | | | | | | | | |
| 808.0 | | | | 35.0 | SS-10 | 7 | 9 | 13 | 22 | |
| 803.0 | | ▼ | | 40.0 | SS-11 | 5 | 10 | 12 | 22 | |
| | 43.3 | Very dense, moist to wet, brown, orange, white, black and dark brown to black streaks, non-reactive, weakly to moderately cemented, clayey, silty SAND with mica (SM/A-4). | | 45.0 | SS-12 | 12 | 24 | 27 | 51 | |
| 798.0 | | | | | | | | | | |
| | 48.3 | LL=39, PL=32, PI=7, NMC=30.5, | | 50.0 | | | | | | |

*Continued Next Page*

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-123 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 50+73 | **Offset:** | 5' Lt. | **Alignment:** | N. Mountain St |
| **Elev.:** | 843.0 ft | **Latitude:** | 35.14073 | **Longitude:** | 81.50833 | **Date Started:** | 1/18/2017 |
| **Total Depth:** | 100.4 ft | **Soil Depth:** | 100.4 ft | **Core Depth:** | ft | **Date Completed:** | 1/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 60.5 ft. | **24HR** | 41.8 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 / FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | %#200=41.9 | | | | | | | | |
| 788.0 | | Very stiff, moist to wet, brown, orange, white, black, gray and dark brown to black streaks, non-reactive, weakly to moderately cemented, clayey, sandy SILT with mica and feldspar in part (ML/A-4). LL=40, PL=34, PI=6, NMC=31.7, %#200=53.3 | | 55.0 | SS-13 | 2 | 7 | 9 | 16 | ● |
| | | | | | SS-14 | 2 | 6 | 10 | 16 | ● |
| 783.0 | | ▽ | | 60.0 | SS-15 | 9 | 10 | 12 | 22 | ● |
| 778.0 | | | | 65.0 | SS-16 | 4 | 7 | 13 | 20 | ● ⊗ ▲ |
| 773.0 | | | | 70.0 | SS-17 | 4 | 8 | 12 | 20 | ● |
| | 73.3 | | | | | | | | | |
| 768.0 | | Medium dense, moist, brown, orange, white, black and dark brown to black streaks, non-reactive, weakly cemented, slightly clayey, silty SAND with mica, quartz and feldspar (SM/A-5). | | 75.0 | SS-18 | 4 | 6 | 9 | 15 | ● |
| | 78.3 | | | | | | | | | |
| 763.0 | | Hard, moist, brown, orange, white, black and dark brown to black streaks, non-reactive, weakly to moderately cemented, clayey, sandy SILT with mica and feldspar PWR seams at base (ML/A-4). | | 80.0 | SS-19 | 2 | 6 | 30 | 36 | ● |
| 758.0 | | | | 85.0 | SS-20 | 11 | 19 | 28 | 47 | ● |
| 753.0 | | | | 90.0 | SS-21 | 11 | 18 | 32 | 50 | ● |
| 748.0 | | | | 95.0 | SS-22 | 19 | 61 | 39/0.1 | 100/0.6 | >>● |
| | 98.1 | | | | | | | | | |
| | | **Partially Weathered Rock** | | 100.0 | | | | | | |

LEGEND

*Continued Next Page*

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-123 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 50+73 | **Offset:** | 5' Lt. | **Alignment:** | N. Mountain St |
| **Elev.:** | 843.0 ft | **Latitude:** | 35.14073 | **Longitude:** | 81.50833 | **Date Started:** | 1/18/2017 |
| **Total Depth:** | 100.4 ft | **Soil Depth:** | 100.4 ft | **Core Depth:** | ft | **Date Completed:** | 1/18/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 60.5 ft. | **24HR** | 41.8 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 ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 100.4 | Logged as very dense, green, gray and brown, non-reactive, silty SAND (SM/A-4). LL=28, PL=25, PI=3, NMC=9.3, %#200=40.0 | | | SS-23 | 100/0.4 | | | 100/0.4 | |
| 738.0 | | No Refusal & Boring Terminated at 100.4' (Elev. 742.6). Boring relocated due to steep embankment. | | | | | | | | |
| 733.0 | | | | | | | | | | |
| 728.0 | | | | | | | | | | |
| 723.0 | | | | | | | | | | |
| 718.0 | | | | | | | | | | |
| 713.0 | | | | | | | | | | |
| 708.0 | | | | | | | | | | |
| 703.0 | | | | | | | | | | |
| 698.0 | | | | | | | | | | |

LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-124 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 49+18 | **Offset:** | 8' Lt. | **Alignment:** | Tribal Road |
| **Elev.:** | 834.3 ft | **Latitude:** | 35.15765 | **Longitude:** | 81.47981 | **Date Started:** | 1/21/2017 |
| **Total Depth:** | 89.1 ft | **Soil Depth:** | 68.5 ft | **Core Depth:** | 20.6 ft | **Date Completed:** | 1/23/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC/RC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 31.0 ft. | **24HR** | 30.1 ft. |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION | Sample Depth (ft) | Sample No./Type | 1st 6" | 2nd 6" | 3rd 6" | N Value |
|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | |
| | 2.1 | Topsoil | 2.0 | SS-1 | 2 | 2 | 2 | 4 |
| | | **Residual** | 4.0 | SS-2 | 3 | 2 | 3 | 5 |
| 829.3 | 5.8 | Very loose to loose, moist, brown, red, orange and white, non-reactive, weakly cemented, clayey, silty SAND with mica (SM/A-5). | 6.0 | SS-3 | 1 | 1 | 2 | 3 |
| | 7.8 | LL=45, PL=36, PI=9, NMC=28.6, %#200=46.1 | 8.0 | ST-1 | | | | |
| 824.3 | 10.0 | Soft, moist, brown, gray, red and orange, non-reactive, weakly cemented, sandy lean CLAY with mica (CL/A-7-6). | 10.0 | SS-4 | 1 | 1 | 3 | 4 |
| | 13.3 | Very loose, moist, brown, gray, red and orange, non-reactive, weakly cemented, clayey, silty SAND with mica (SM/A-4). | 15.0 | SS-5 | 3 | 3 | 5 | 8 |
| 819.3 | | LL=21, PL=17, PI=4, NMC=13.4, %#200=40.5 | 20.0 | SS-6 | 2 | 2 | 4 | 6 |
| 814.3 | | Soft, moist, brown, red and orange, weakly to moderately cemented, sandy lean CLAY (CL/A-7-6). | 25.0 | SS-7 | 4 | 3 | 4 | 7 |
| 809.3 | | LL=49, PL=26, PI=23, NMC=23.2, %#200=67.4 | 30.0 | SS-8 | 2 | 4 | 3 | 7 |
| 804.3 | | Loose, moist to wet, brown, red, orange, white, gray and dark brown to black streaks in part, non-reactive, weakly cemented, clayey, silty SAND with mica, feldspar in part and few quartz fragments (SM/A-4). | 35.0 | SS-9 | 2 | 3 | 4 | 7 |
| 799.3 | | LL=40, PL=32, PI=8, NMC=24.8, %#200=44.6 | 40.0 | SS-10 | 1 | 3 | 3 | 6 |
| 794.3 | | | 45.0 | SS-11 | 4 | 3 | 5 | 8 |
| 789.3 | | | 50.0 | | | | | |
| | 48.3 | Medium dense to very dense, moist to wet, | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

*Continued Next Page*

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-124 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 49+18 | **Offset:** | 8' Lt. | **Alignment:** | Tribal Road |
| **Elev.:** | 834.3 ft | **Latitude:** | 35.15765 | **Longitude:** | 81.47981 | **Date Started:** | 1/21/2017 |
| **Total Depth:** | 89.1 ft | **Soil Depth:** | 68.5 ft | **Core Depth:** | 20.6 ft | **Date Completed:** | 1/23/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC/RC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 31.0 ft. | **24HR** | 30.1 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 ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| 779.3 | | brown, white, orange and gray, non-reactive, weakly to moderately cemented, saprolitic, silty SAND with feldspar in part and mica in part (SM/A-2-4). LL=NP, PL=NP, PI=NP, NMC=25.0, %#200=28.3 | | 55.0 | SS-12 | 4 | 6 | 11 | 17 | ● |
| | | | | | SS-13 | 10 | 9 | 10 | 19 | ● ○ ▲ |
| 774.3 | | | | 60.0 | SS-14 | 6 | 8 | 12 | 20 | ● |
| 769.3 | | | | 65.0 | SS-15 | 40 | 30 | 70/0.3 | 100/0.8 | >> |
| | 66.0 | **Partially Weathered Rock** Schist and feldspar fragments with mica, sand and silt. | | | | | | | | |
| | 68.5 | | | 68.4 | ~~SS-16~~ | ~~50/0.1~~ | | | ~~50/0.1~~ | No recovery >> |
| 764.3 | | Auger & Splitspoon Refusal at 68.5', Begin Coring in Schist. | | 68.5 | NQ-1 | | | | | REC%=100, RQD%=0 |
| | | Gray, blue-gray, yellow-white-gray, trace pink, faint brown-orange stain, medium grain w/intervals & pods pegmatite, very thinly foliated, feldspar-quartz-muscovite-sericite-traces pyrite, slightly weathered to fresh, hard to very hard, very close discontinuity spacing, scattered healed to partially healed joints. | | 69.1 | NQ-2 | | | | | REC%=100, RQD%=90 |
| 759.3 | | | | 74.1 | NQ-3 | | | | | REC%=100, RQD%=74 |
| 754.3 | | pegmatite 71.9'-72.4', 75.9'-76.1', 80.0'-80.6', 83.0'-84.9', 86.0'-86.4', 87.0'-87.2'; 16 10°-20°, VN, Sp, Fe, Pl, SR; 16 30°-40° VN-T, Su, Fe, Pl-Ir, S-SR; | | 79.1 | NQ-4 | | | | | REC%=100, RQD%=86 |
| 749.3 | | | | 84.1 | NQ-5 | | | | | REC%=100, RQD%=90 |
| | 89.1 | | | | | | | | | |
| 744.3 | | Boring Terminated at 89.1' (Elev. 745.2). Boring relocated due to DOT sign and concrete footer. | | | | | | | | |
| 739.3 | | | | | | | | | | |

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

## LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-125 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 50+06 | **Offset:** | 10' Lt. | **Alignment:** | Tribal Road |
| **Elev.:** | 835.3 ft | **Latitude:** | 35.15742 | **Longitude:** | 81.47972 | **Date Started:** | 3/2/2017 |
| **Total Depth:** | 89.5 ft | **Soil Depth:** | 65.9 ft | **Core Depth:** | 23.6 ft | **Date Completed:** | 3/2/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 39.0 ft. | **24HR** | NA |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION | Sample Depth (ft) | Sample No./Type | 1st 6" | 2nd 6" | 3rd 6" | N Value |
|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** Medium dense, brown, non-reactive, silty SAND (SM/A-7-5). | 2.0 | | | | | |
| | 3.8 | | 4.0 | SS-1 | 4 | 5 | 7 | 12 |
| 830.3 | 5.8 | Loose, moist, brown, non-reactive, silty clayey SAND (SC-SM/A-4). LL=24, PL=17, PI=7, NMC=17.8, %#200=38.1 | 6.0 | SS-2 | 3 | 4 | 4 | 8 |
| | 7.8 | | 8.0 | SS-3 | 2 | 3 | 5 | 8 |
| 825.3 | | Firm, brown, non-reactive, sandy elastic SILT (MH/A-7-5). LL=72, PL=42, PI=30, NMC=28.1, %#200=52.7 | 10.0 | SS-4 | 3 | 4 | 5 | 9 |
| | 13.2 | | | SS-5 | 2 | 4 | 6 | 10 |
| 820.3 | | Loose, brown, non-reactive, silty SAND with mica in part (SM/A-7-5). LL=43, PL=32, PI=11, NMC=20.9, %#200=40.2 | 14.8 | SS-6 | 2 | 3 | 4 | 7 |
| 815.3 | | Loose to medium dense, brown, non-reactive, silty SAND with mica (SM/A-5). | 19.8 | SS-7 | 2 | 6 | 8 | 14 |
| | 23.1 | LL=41, PL=36, PI=5, NMC=19.7, %#200=45.3 | 24.8 | SS-8 | 5 | 8 | 7 | 15 |
| 810.3 | | Medium dense, brown, non-reactive, silty SAND with mica (SM/A-2-4). | | | | | | |
| | 28.1 | LL=36, PL=33, PI=3, NMC=18.6, %#200=26.4 | 29.8 | SS-9 | 2 | 5 | 6 | 11 |
| 805.3 | | Loose to medium dense, brown, non-reactive, silty SAND with fine gravel in part (SC-SM/A-2-4). LL=NP, PL=NP, PI=NP, NMC=24.9, %#200=31.1 | | | | | | |
| 800.3 | | | 34.8 | SS-10 | 3 | 4 | 6 | 10 |
| | 38.1 | ▽Medium dense, brown, non-reactive, silty SAND with small gravel (SM/A-2-4). | 39.8 | SS-11 | 3 | 6 | 5 | 11 |
| 795.3 | | LL=32, PL=31, PI=1, NMC=27.2, %#200=28.6 | | | | | | |
| | 43.1 | Medium dense to dense, wet, brown, non-reactive, silty SAND (SM/A-2-4). | 44.8 | SS-12 | 2 | 5 | 9 | 14 |
| 790.3 | | LL=31, PL=29, PI=2, NMC=24.3, %#200=33.5 | 49.8 | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

LEGEND

*Continued Next Page*

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-125 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 50+06 | **Offset:** | 10' Lt. | **Alignment:** | Tribal Road |
| **Elev.:** | 835.3 ft | **Latitude:** | 35.15742 | **Longitude:** | 81.47972 | **Date Started:** | 3/2/2017 |
| **Total Depth:** | 89.5 ft | **Soil Depth:** | 65.9 ft | **Core Depth:** | 23.6 ft | **Date Completed:** | 3/2/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 39.0 ft. | **24HR** | NA |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION | Sample Depth (ft) | Sample No./Type | 1st 6" | 2nd 6" | 3rd 6" | N Value | SPT N VALUE / FINES CONTENT (%) |
|---|---|---|---|---|---|---|---|---|---|
| | | | 54.8 | SS-13 | 6 | 10 | 13 | 23 | |
| 780.3 | 55.8 | **Partially Weathered Rock**<br>Logged as very dense, silty, sand to gravel sized fragments of schist (SM/A-2-4). | | SS-14 | 6 | 30 | 70/0.1 | 100/0.6 | >> |
| 775.3 | | | 59.8 | SS-15 | 60 | 40/0.0 | | 100/0.5 | >> |
| 770.3 | 65.9 | | 64.8 | SS-16 | 100/0.2 | | | 100/0.2 | >> |
| | | Splitspoon & Auger Refusal at 65.9', Begin Coring in Schist. | 65.9 | SS-17 | 50/0.0 | | | 50/0.0 | No recovery >> |
| | | Gray, light gray, yellow-white, olive gray-brown, traces pink, brown-orange stain in upper parts, medium grain w/layers (1/2"-3") coarse grain granitic, thinly foliated, feldspar-quartz-muscovite-sericite-traces garnet, slightly weathered to fresh w/seams highly weathered, hard to very hard, very close to close discontinuity spacing, muscovite along granitic-schist contacts. | 65.9 | NQ-1 | | | | | REC%=97, RQD%=81 |
| 765.3 | | | 69.5 | NQ-2 | | | | | REC%=100, RQD%=84 |
| 760.3 | | | 74.5 | NQ-3 | | | | | REC%=100, RQD%=84 |
| 755.3 | | highly weathered 65.9'-66.2'; granitic interval w/highly weathered contacts; granitic layers 71.8'-72.3'; 1 70° J, VN, Su-Sp, Fe, Pl, S; 7 40° T-VN, Su, Fe, Pl, SR; 7 20° VN-N, Su, Fe, Pl, SR; granitic layers 76.2'-76.8', 77.5'-77.6'; granitic layers 81.5'-82.0', 82.2', 83.2'-82.6', 86.4'-86.5', 88.7'-88.8' | 79.5 | NQ-4 | | | | | REC%=98, RQD%=96 |
| 750.3 | | | 84.5 | NQ-5 | | | | | REC%=98, RQD%=90 |
| 745.3 | 89.5 | Boring Terminated at 89.5' (Elev. 745.8).<br>Split spoon attempted at 65.9' that resulted in no recovery. | | | | | | | |
| 740.3 | | | | | | | | | |

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

## LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-126 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 51+05 | **Offset:** | 5' Lt. | **Alignment:** | Tribal Road |
| **Elev.:** | 837.3 ft | **Latitude:** | 35.15715 | **Longitude:** | 81.47964 | **Date Started:** | 1/17/2017 |
| **Total Depth:** | 88.6 ft | **Soil Depth:** | 68.6 ft | **Core Depth:** | 20 ft | **Date Completed:** | 1/19/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | RW/RC | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NQ | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 29.9 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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | | Loose, moist, red, non-reactive, medium to high plasticity, SILT with sand (ML/A-7-6). | | 2.0 | | | | | |
| | 3.8 | LL=41, PL=30, PI=11, NMC=30.2, %#200=78.8 | | | SS-1 | 3 | 2 | 3 | 5 |
| 832.3 | | | | 4.0 | | | | | |
| | 5.8 | **Residual** | | | SS-2 | 7 | 6 | 10 | 16 |
| | 7.8 | Very stiff, moist, red, non-reactive, medium to high plasticity, sandy, elastic SILT with gravel (MH/A-7-5). | | 6.0 | | | | | |
| | | LL=59, PL=35, PI=24, NMC=33.0, %#200=50.8 | | | SS-3 | 14 | 25 | 20 | 45 |
| 827.3 | | | | 8.0 | | | | | |
| | | Hard, moist, orange and brown, non-reactive, non-plastic, micaceous, saprolitic, sandy, elastic SILT with gravel (MH/A-7-5). | | | SS-4 | 10 | 14 | 17 | 31 |
| | | | | 10.0 | | | | | |
| | | | | | SS-5 | 6 | 7 | 10 | 17 |
| | | | | 13.5 | | | | | |
| 822.3 | | | | | SS-6 | 4 | 6 | 11 | 17 |
| | 16.8 | | | | | | | | |
| | | Medium dense to dense, moist, orange and brown, non-reactive, non-plastic, micaceous, saprolitic, slightly clayey in part, silty SAND (SM/A-2-4). | | 18.5 | | | | | |
| | | | | | SS-7 | 4 | 6 | 8 | 14 |
| 817.3 | | | | | | | | | |
| | 21.8 | LL=38, PL=32, PI=6, NMC=15.7, %#200=27.4 | | 23.5 | | | | | |
| | | | | | SS-8 | 4 | 6 | 6 | 12 |
| 812.3 | | | | | | | | | |
| | 26.8 | Stiff, moist, yellow and brown, non-reactive, non-plastic, micaceous, saprolitic, sandy, lean CLAY (CL/A-7-6). | | 28.5 | | | | | |
| | | | | | SS-9 | 2 | 4 | 5 | 9 |
| 807.3 | 30.0 | Medium dense, moist, yellow, brown and white, non-reactive, non-plastic, micaceous, saprolitic, silty SAND with quartz and gravel (SM/A-5). | | 30.0 | | | | | |
| | | | | | ST-1 | | | | |
| | 32.8 | LL=48, PL=42, PI=6, NMC=34.4, %#200=42.2 | | 33.5 | | | | | |
| | | | | | SS-10 | 2 | 3 | 5 | 8 |
| 802.3 | | | | | | | | | |
| | | Stiff, wet, white and orange, non-reactive, low plasticity, micaceous, saprolitic, sandy, lean CLAY with gravel size muscovite flakes (CL/A-7-6). | | 38.5 | | | | | |
| | | | | | SS-11 | 3 | 4 | 5 | 9 |
| 797.3 | | Loose, white and orange, non-reactive, silty SAND (SM/A-5). | | | | | | | |
| | | LL=50, PL=41, PI=9, NMC=35.1, %#200=45.4 | | 43.5 | | | | | |
| | | | | | SS-12 | 6 | 5 | 6 | 11 |
| 792.3 | | | | | | | | | |
| | 46.8 | Firm to stiff, wet, white and brown, non-reactive, non-plastic, micaceoul, saprolitic, gravelly, sandy, lean CLAY (CL/A-7-6). | | 48.5 | | | | | |
| | | LL=49, PL=25, PI=24, NMC=40.2, | | | SS-13 | 4 | 5 | 6 | 11 |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

LEGEND

*Continued Next Page*

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-126 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 51+05 | **Offset:** | 5' Lt. | **Alignment:** | Tribal Road |
| **Elev.:** | 837.3 ft | **Latitude:** | 35.15715 | **Longitude:** | 81.47964 | **Date Started:** | 1/17/2017 |
| **Total Depth:** | 88.6 ft | **Soil Depth:** | 68.6 ft | **Core Depth:** | 20 ft | **Date Completed:** | 1/19/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | RW/RC | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NQ | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 29.9 ft. | **24HR** | NA |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION | 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 |
|---|---|---|---|---|---|---|---|---|---|
| | | %#200=67.1 | | | | | | | |
| | | Loose to medium dense, wet, orange, brown and white, non-reactive, non-plastic, micaceous, saprolitic, silty SAND with clay (SM/A-6). | 53.5 | SS-14 | 3 | 5 | 5 | 10 | |
| 782.3 | | LL=38, PL=26, PI=12, NMC=34.3, %#200=45.1 | 58.5 | SS-15 | 5 | 5 | 8 | 13 | |
| 777.3 | 61.8 | **Partially Weathered Rock** | 63.5 | SS-16 | 90/0.3 | | | 90/0.3 | >> |
| | | Logged as very dense, gray, non-reactive, silty with sand and gravel size schist fragments (SM/A-1-b). | 68.5 | SS-17 | 50/0.1 | | | 50/0.1 | >> |
| 772.3 | | LL=NP, PL=NP, PI=NP, NMC=16.9, %#200=21.3 | 68.6 | NQ-1 | | | | | REC%=100, RQD%=77 |
| | 68.6 | Splitspoon Refusal at 68.6', Begin Coring in Schist. | 71.6 | NQ-2 | | | | | REC%=100, RQD%=80 |
| 767.3 | 72.8 | Gray-dark gray, light gray, fine grain w/some medium grain, very thinly foliated-contorted foliation, biotite-feldspar-muscovite, slightly weathered to fresh, moderately hard to hard, very close discontinuity spacing. | 76.6 | NQ-3 | | | | | REC%=100, RQD%=100 |
| 762.3 | | 8 20° J, VN, No-Sp, Fe, Py, Pl, S; 8 40°-40° Fo, T, No, No, Wa, S | 81.6 | NQ-4 | | | | | REC%=94, RQD%=94 |
| 757.3 | | Schist: Light gray, off white-pale yellow, pale olive green, traces pink-red, medium grain w/pegmatite intervals, very thinly foliated, feldspar-quartz-muscovite-traces garnet & pyrite, slightly weathered to fresh, hard, very close to close discontinuity spacing, widely scattered healed to partially healed joints. | 86.6 | NQ-5 | | | | | REC%=0, RQD%=0 |
| 752.3 | 88.6 | 10 30° J, T, No, No, Ir, R; 1 70° J, T, No, No, Ir, R; pegmatite 78.2'-78.6', 85.4'-86.3', inferred 86.3'-88.6'; core loss inferred as slipped core 86.3'-88.6' | | | | | | | |
| 747.3 | | Boring Terminated at 88.6' (Elev. 748.7). | | | | | | | |
| 742.3 | | Splitspoon attempted from 68.5'-68.6' that resulted in low recovery. | | | | | | | |
| | | NQ-5 sample slipped while attempting to | | | | | | | |

*Continued Next Page*

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-126 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 51+05 | **Offset:** | 5' Lt. | **Alignment:** | Tribal Road |
| **Elev.:** | 837.3 ft | **Latitude:** | 35.15715 | **Longitude:** | 81.47964 | **Date Started:** | 1/17/2017 |
| **Total Depth:** | 88.6 ft | **Soil Depth:** | 68.6 ft | **Core Depth:** | 20 ft | **Date Completed:** | 1/19/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | RW/RC | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NQ | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 29.9 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 |
|---|---|---|---|---|---|---|---|---|
| | | retrieve. Multiple attempts were made to retrieve but were unsuccessful. | | | | | | |
| 732.3 | | | | | | | | |
| 727.3 | | | | | | | | |
| 722.3 | | | | | | | | |
| 717.3 | | | | | | | | |
| 712.3 | | | | | | | | |
| 707.3 | | | | | | | | |
| 702.3 | | | | | | | | |
| 697.3 | | | | | | | | |
| 692.3 | | | | | | | | |

LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-127 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 48+60 | **Offset:** | 6' Rt. | **Alignment:** | E. Cherokee St |
| **Elev.:** | 865.1 ft | **Latitude:** | 35.16422 | **Longitude:** | 81.45247 | **Date Started:** | 1/30/2017 |
| **Total Depth:** | 71.5 ft | **Soil Depth:** | 48.5 ft | **Core Depth:** | 23 ft | **Date Completed:** | 1/31/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | RW/RC | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NQ | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 21.3 ft. | **24HR** | 38.3 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 ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** Stiff, moist, orange, non-reactive, medium plasticity, sandy SILT (ML/A-7-5). | | 2.0 | | | | | | |
| | 3.8 | | | 4.0 | SS-1 | 5 | 5 | 6 | 11 | |
| 860.1 | 5.8 | Stiff, moist, orange, non-reactive, medium plasticity, sandy lean CLAY (CL/A-7-6). LL=43, PL=24, PI=19, NMC=31.0, %#200=69.0 | | 6.0 | SS-2 | 4 | 5 | 6 | 11 | |
| | 7.8 | | | 8.0 | SS-3 | 3 | 4 | 4 | 8 | |
| 855.1 | | Loose, moist, white and orange, non-reactive, micaceous, saprolitic, silty SAND (SM/A-4). | | 10.0 | SS-4 | 3 | 3 | 4 | 7 | |
| | 12.5 | Firm to stiff, moist, orange, brown and white, non-reactive, micaceous, saprolitic, sandy SILT (ML/A-5). LL=41, PL=36, PI=5, NMC=30.1, %#200=50.2 | | 13.5 | SS-5 | 4 | 4 | 5 | 9 | |
| 850.1 | | | | | SS-6 | 3 | 4 | 5 | 9 | |
| | | Loose to medium dense, moist, yellow and brown, non-reactive, non-plastic, micaceous, saprolitic, silty SAND (SM/A-4). | | 18.5 | SS-7 | 4 | 6 | 7 | 13 | |
| 845.1 | 21.8 | LL=34, PL=34, PI=NP, NMC=27.4, %#200=40.0 | | 23.5 | | | | | | |
| 840.1 | 25.0 | Medium dense, moist, yellow and brown, non-reactive, non-plastic, micaceous, saprolitic, silty SAND (SM/A-4). | | 25.0 | SS-8 | 5 | 6 | 8 | 14 | |
| | 27.3 | | | | ST-1 | | | | | |
| | | Medium dense, yellow and brown, non-reactive, silty SAND (SM/A-4). LL=NP, PL=NP, PI=NP, NMC=24.8, %#200=43.6 | | 28.5 | SS-9 | 5 | 7 | 9 | 16 | |
| 835.1 | | | | | | | | | | |
| | | Medium dense, moist, yellow and brown, non-reactive, micaceous, saprolitic, fine grain, silty SAND (SM/A-4). | | 33.5 | SS-10 | 5 | 7 | 9 | 16 | |
| 830.1 | 36.8 | LL=25, PL=25, PI=NP, NMC=25.5, %#200=41.5 | | | | | | | | |
| | | Medium dense, wet, yellow and brown, non-reactive, micaceous, saprolitic, fine to medium grain, silty SAND (SM/A-2-4). LL=26, PL=26, PI=NP, NMC=26.6, %#200=30.3 | | 38.5 | SS-11 | 5 | 5 | 7 | 12 | |
| 825.1 | 44.0 | | | 43.5 | SS-12 | 28 | 50/0.1 | | 78/0.6 | >> |
| 820.1 | | **Partially Weathered Rock** Logged as very dense, silty, fine to medium grain size schist fragments. | | | | | | | | |
| | 48.5 | Splitspoon Refusal at 48.5', Begin Coring in | | 48.5 | SS-13 | 50/0.0 | | | 50/0.0 | No Recovery >> |
| | | | | 48.5 | | | | | | |

*Continued Next Page*

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-127 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 48+60 | **Offset:** | 6' Rt. | **Alignment:** | E. Cherokee St |
| **Elev.:** | 865.1 ft | **Latitude:** | 35.16422 | **Longitude:** | 81.45247 | **Date Started:** | 1/30/2017 |
| **Total Depth:** | 71.5 ft | **Soil Depth:** | 48.5 ft | **Core Depth:** | 23 ft | **Date Completed:** | 1/31/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | RW/RC | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NQ | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 21.3 ft. | **24HR** | 38.3 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 ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|
| | | Schist. | | 51.5 | NQ-1 | | | REC%=80, RQD%=43 |
| | 52.3 | Pale gray-off white-pale yellow, traces pink-red-brown, faint brown-orange stain, medium to coarse grain w/pegmatite interval, foliated, feldspar-quartz-muscovite-traces garnet & epidote, slightly weathered w/seam highly weathered, low hardness to hard, very close discontinuity spacing. | | | NQ-2 | | | REC%=92, RQD%=46 |
| 810.1 | | 7 10° jts. VN-N, Su, Fe, Pl, SR; pegmatite 51.9'-52.3' | | 56.5 | NQ-3 | | | REC%=100, RQD%=100 |
| 805.1 | | Schist: Light gray, off white-pale yellow, traces pink-red, scattered brown-orange stain, medium grain w/coarse grain phenocrysts, very thinly foliated, feldspar-quartz-muscovite-sericite, traces garnet, slightly weathered to fresh, hard, very close to close discontinuity spacing, widely scattered healed to partially healed joints. | | 61.5 | NQ-4 | | | REC%=100, RQD%=96 |
| 800.1 | | | | 66.5 | NQ-5 | | | REC%=96, RQD%=80 |
| 795.1 | 71.5 | 7 50°-65° jts., T, Su, Fe, Pl, SR; 2 40° T, Su, Fe, Pl, SR; 11 0°-10° VN, Su, Fe, Pl, SR; 10 30°-40° Fo T-VN, Su, Fe, Wa, SR; 8 75°-90° jts. T-VN, Su, Fe-H, Pl, SR-R | | | | | | |
| 790.1 | | Boring Terminated at 71.5' (Elev. 793.6). | | | | | | |
| | | Boring relocated due to steep slope and underground utilities. | | | | | | |
| 785.1 | | Shleby tube attempted from 25.0'-26.1' and refused at 26.1' | | | | | | |
| | | Splitspoon attempted at 48.5' that resulted in no recovery. | | | | | | |
| 780.1 | | | | | | | | |
| 775.1 | | | | | | | | |
| 770.1 | | | | | | | | |

LEGEND

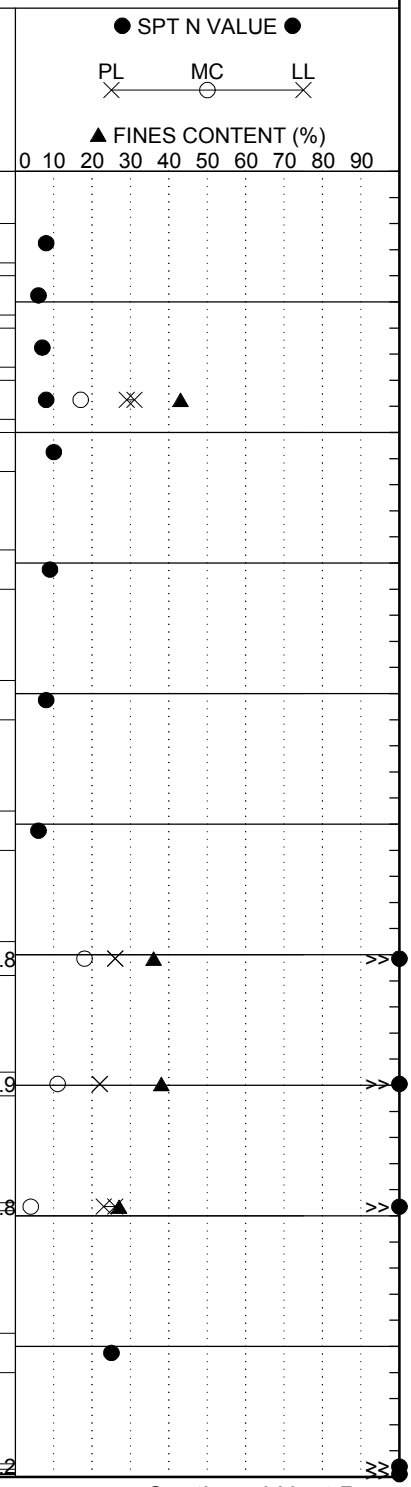
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | **County:** | Cherokee | **Boring No.:** | BR-128 | | |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | **Route:** | | | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 49+99 | **Offset:** | 19' Lt. | **Alignment:** | E. Cherokee St |
| **Elev.:** | 847.7 ft | **Latitude:** | 35.16385 | **Longitude:** | 81.45233 | **Date Started:** | 3/4/2017 |
| **Total Depth:** | 79.2 ft | **Soil Depth:** | 49.9 ft | **Core Depth:** | 29.3 ft | **Date Completed:** | 3/4/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **Groundwater:** | **TOB** NA | **24HR** | NA |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION | Sample Depth (ft) | Sample No./Type | 1st 6" | 2nd 6" | 3rd 6" | N Value |
|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** Loose, dry to moist, gray, white, brown and orange, non-reactive, weakly cemented, fine to medium grain, silty SAND with mica and few rock fragments in part(SM/A-4). LL=31, PL=29, PI=2, NMC=17.4, %#200=43.2 | 2.0 | SS-1 | 4 | 4 | 4 | 8 |
| 842.7 | | | 4.0 | SS-2 | 2 | 3 | 3 | 6 |
| | | | 6.0 | SS-3 | 1 | 3 | 4 | 7 |
| | | | 8.0 | SS-4 | 2 | 4 | 4 | 8 |
| 837.7 | | | 10.0 | SS-5 | 2 | 4 | 6 | 10 |
| 832.7 | | | 14.5 | SS-6 | 3 | 4 | 5 | 9 |
| | 17.8 | Loose, moist, brown, orange, white and gray, non-reactive, weakly cemented, silty SAND with mica (SM/A-4). | 19.5 | SS-7 | 2 | 4 | 4 | 8 |
| 827.7 | 22.8 | Loose to medium dense, moist, brown, orange, white and gray, non-reacitive, weakly cemented, silty SAND with mica (SM/A-4). | 24.5 | SS-8 | 1 | 3 | 3 | 6 |
| 822.7 | | | 29.5 | SS-9 | 4 | 18 | 50/0.3 | 68/0.8 |
| 817.7 | 30.5 | **Partially Weathered Rock** Logged as very dense, moist, orange, brown, gray and white, non-reactive, weakly cemented, saprolitic, silty SAND with quartz, mica and feldspar (SM/A-4). LL=26, PL=26, PI=NP, NMC=17.7, %#200=35.6 | 34.5 | SS-10 | 31 | 50/0.4 | | 81/0.9 |
| 812.7 | 37.5 | Logged as very dense, moist, orange, brown, gray, white and dark brown to black streaks, non-reactive, weakly cemented, silty SAND with mica and feldspar (SM/A-4). LL=22, PL=22, PI=NP, NMC=10.5, %#200=38.4 | 39.5 | SS-11 | 44 | 50/0.3 | | 94/0.8 |
| 807.7 | 40.3 | | 44.5 | SS-12 | 5 | 11 | 14 | 25 |
| 802.7 | 49.5 | Logged as very dense, moist, white, gray, orange and brown, non-reactive, weakly cemented, silty SAND with mica | 49.5 | SS-13 | 50/0.2 | | | 50/0.2 |




LEGEND

*Continued Next Page*

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-128 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 49+99 | **Offset:** | 19' Lt. | **Alignment:** | E. Cherokee St |
| **Elev.:** | 847.7 ft | **Latitude:** | 35.16385 | **Longitude:** | 81.45233 | **Date Started:** | 3/4/2017 |
| **Total Depth:** | 79.2 ft | **Soil Depth:** | 49.9 ft | **Core Depth:** | 29.3 ft | **Date Completed:** | 3/4/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **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 (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|
| | 49.9 | (SM/A-2-4).<br>LL=26, PL=23, PI=3, NMC=3.5, %#200=26.7 | | 49.9 | SS-1 | 50/0.0 | 50/0.0 | No recovery |
| | | | | 49.9 | NQ-1 | | | REC%=37, RQD%=19 |
| 792.7 | | **Residual**<br>Very stiff, moist to wet, white, brown, gray and orange, non-reactive, weakly cemented, sandy SILT with mica, feldspar, few, small quartz and weathered rock fragments (ML/A-4). | | 54.2 | | | | |
| | | | | | NQ-2 | | | REC%=94, RQD%=60 |
| 787.7 | 59.5 | **Partially Weathered Rock**<br>Logged as very dense, white, brown and orange, non-reactive, silty SAND with feldspar and quartz (SM/A-2-4). | | 59.2 | | | | |
| | | | | | NQ-3 | | | REC%=62, RQD%=22 |
| 782.7 | | Splitspoon & Auger Refusal at 49.9', Begin Coring in Interlayered Schist, Granite & Metaconglomerate: | | 64.2 | | | | |
| | | | | | NQ-4 | | | REC%=80, RQD%=14 |
| | 68.9 | | | 69.2 | | | | |
| 777.7 | 70.8 | Light gray, yellow-gray, white, medium gray, brown-orange stain, medium to coarse grain w/pegmatite feldspar crystals, foliated in parts, feldspar-quartz-muscovite, slightly to moderately weathered w/seams highly to complately weathered, hard to very hard, very close discontinuity spacing, healed & partially healed joints throughout. | | | NQ-5 | | | REC%=100, RQD%=62 |
| 772.7 | | highly weathered includes core loss 51.4'-54.4'; 9 0° J VN, Su, Fe, Pl-Ir, SR-R; 13 20°-40° T-VN, Su, Fe, Pl, Sr; 2 60°, VN, Su, Fe, Pl, SR; 2 75°, VN, Fi, Qz-Fe, Pl, SR | | 74.2 | | | | |
| | | | | | NQ-6 | | | REC%=88, RQD%=82 |
| | 79.2 | | | | | | | |
| 767.7 | | Amphibolite: Brown, dark brown, gray-brown, brown-red-orange stain heavy in parts, fine grain w/thin (5"-7") layers medium to coarse grain metaconglomerate & schist, very thinly foliated, hornblende-feldspar, moderately to highly weathered w/seams clay, soft to moderately hard, very close discontinuity spacing. | | | | | | |
| 762.7 | | clay seam w/weathered Amphibolite fragments 60.9'-63.4', includes core loss; 9 40° F T, Su, Fe, Pl,S; 1 70° J VN, Su, Fe, St, SR; 6 60° J, VN,Su,Fe,Pl-Ir,SR; 14 20° T-VN,Su,Fe,Pl,S-SR; highly weathered 65.3'-68.3'; 1 80° J VN, No, H, Pl, SR | | | | | | |
| 757.7 | | | | | | | | |
| 752.7 | | Granite: Light gray, yellow-gray-pink-white, medium gray, traces black, coarse grain w/ pegmatite feldspar crystals, foliated in parts, feldspar-quartz-muscovite, slightly | | | | | | |

LEGEND

*Continued Next Page*

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-128 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 49+99 | **Offset:** | 19' Lt. | **Alignment:** | E. Cherokee St. |
| **Elev.:** | 847.7 ft | **Latitude:** | 35.16385 | **Longitude:** | 81.45233 | **Date Started:** | 3/4/2017 |
| **Total Depth:** | 79.2 ft | **Soil Depth:** | 49.9 ft | **Core Depth:** | 29.3 ft | **Date Completed:** | 3/4/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **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 (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|
| | | weathered, very hard, very close discontinuity spacing. 1 70° J VN,Sp,Sd,Pl,R; 2 30° Fo VN-N,Su-Sp,Fe-Sd,Wa,SR | | | | | | |
| 742.7 | | Amphibolite: Dark gray, medium gray, gray-green, light brown-orange stain in upper part, fine grain w/seams very fine grain chlorite schist, thinly foliated-contorted in chlorite seams, hornblende-feldspar-chlorite, slightly weathered to fresh, hard w/moderately hard seams, very close discontinuity spacing. 1 85° J T-N ,Fi, Ca, Wa, SR; 1 85° J VN, Sp, Ca, Pl, SR; 12 20°-30° J T, Sp, Ca, Pl, S; moderately weathered 75.1'-75.3'; 2 30° Fo T, Su, Fe, Wa, S; inferred core loss 78.6'-79.2' due to slip | | | | | | |
| 737.7 | | | | | | | | |
| 732.7 | | Boring Terminated at 79.2' (Elev. 768.5). | | | | | | |
| 727.7 | | Boring relocated due to metal guardrail. Splitspoon attempted at 49.9' that resulted in no recovery. | | | | | | |
| 722.7 | | | | | | | | |
| 717.7 | | | | | | | | |
| 712.7 | | | | | | | | |
| 707.7 | | | | | | | | |
| 702.7 | | | | | | | | |

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-129 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 51+28 | **Offset:** | 1' Lt. | **Alignment:** | E. Cherokee St |
| **Elev.:** | 861.3 ft | **Latitude:** | 35.16349 | **Longitude:** | 81.45234 | **Date Started:** | 2/1/2017 |
| **Total Depth:** | 100.4 ft | **Soil Depth:** | 78.5 ft | **Core Depth:** | 21.9 ft | **Date Completed:** | 2/2/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | RW/RC | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NQ | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 36.4 ft. | **24HR** | 34.2 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 ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | | |
| | | Stiff, moist, red, non-reactive, medium plasticity, elastic SILT with sand (MH/A-7-5). | | 2.0 | | | | | | |
| | 3.8 | | | | SS-1 | 5 | 6 | 8 | 14 | |
| 856.3 | | LL=58, PL=31, PI=27, NMC=24.3, %#200=75.9 | | 4.0 | | | | | | |
| | 5.8 | | | | SS-2 | 3 | 5 | 6 | 11 | |
| | 7.8 | Stiff, moist, red, non-reactive, low plasticity, clayey, sandy SILT (ML/A-7-5). | | 6.0 | | | | | | |
| | | | | | SS-3 | 4 | 5 | 6 | 11 | |
| 851.3 | | LL=44, PL=33, PI=11, NMC=31.9, %#200=58.6 | | 8.0 | | | | | | |
| | | | | | SS-4 | 4 | 6 | 8 | 14 | |
| | 12.5 | | | 10.0 | | | | | | |
| | | Medium dense, moist, red and white, non-reactive, non-plastic, saprolitic, silty SAND (SM/A-4). | | | SS-5 | 9 | 10 | 13 | 23 | |
| | | | | 13.5 | | | | | | |
| 846.3 | | LL=37, PL=30, PI=7, NMC=25.6, %#200=47.9 | | | SS-6 | 5 | 7 | 8 | 15 | |
| | | | | 18.5 | | | | | | |
| | | Medium dense, moist, white, non-reactive, non-plastic, micaceous, saprolitic, silty SAND with gravel in part (SM/A-4). | | | SS-7 | 4 | 7 | 9 | 16 | |
| 841.3 | 21.8 | | | | | | | | | |
| | | LL=35, PL=32, PI=3, NMC=26.1, %#200=37.7 | | 23.5 | | | | | | |
| | | | | | SS-8 | 5 | 6 | 9 | 15 | |
| 836.3 | | Stiff to very stiff, moist, red and purple, non-reactive, non-plastic, saprolitic, sandy SILT (ML/A-5). | | | | | | | | |
| | | | | 28.5 | | | | | | |
| | | LL=47, PL=41, PI=6, NMC=34, %#200=70 | | | SS-9 | 5 | 5 | 8 | 13 | |
| 831.3 | 30.0 | Stiff, moist, brown, red and purple, non-reactive, non-plastic, saprolitic, SILT with sand (ML/A-4). | | 30.0 | ST-1 | | | | | |
| | 32.4 | | | | | | | | | |
| | | LL=34, PL=32, PI=2, NMC=31, %#200=73 | | 33.5 | | | | | | |
| | | | | | SS-10 | 5 | 4 | 7 | 11 | |
| 826.3 | | Stiff, brown, red and purple, non-reactive, sandy SILT (ML/A-5). | | | | | | | | |
| | 36.8 | | | 38.5 | | | | | | |
| | | LL=44, PL=36, PI=8, NMC=19.3, %#200=66.9 | | | SS-11 | 5 | 9 | 13 | 22 | |
| 821.3 | | Medium dense, moist, white and yellow, non-reactive, non-plastic, micaceous, saprolitic, silty SAND (SM/A-4). | | | | | | | | |
| | 41.8 | | | 43.5 | | | | | | |
| | | LL=NP, PL=NP, PI=NP, NMC=32.2, %#200=42.2 | | | SS-12 | 6 | 8 | 9 | 17 | |
| 816.3 | | | | | | | | | | |
| | 46.8 | Very stiff, moist, green and brown, non-reactive, non-plastic, saprolitic, sandy SILT (ML/A-5). | | 48.5 | | | | | | |
| | | Very stiff, moist, green & brown, | | | SS-13 | 3 | 6 | 11 | 17 | |

*Continued Next Page*

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-129 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 51+28 | **Offset:** | 1' Lt. | **Alignment:** | E. Cherokee St |
| **Elev.:** | 861.3 ft | **Latitude:** | 35.16349 | **Longitude:** | 81.45234 | **Date Started:** | 2/1/2017 |
| **Total Depth:** | 100.4 ft | **Soil Depth:** | 78.5 ft | **Core Depth:** | 21.9 ft | **Date Completed:** | 2/2/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | RW/RC | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NQ | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 36.4 ft. | **24HR** | 34.2 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 ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 51.8 | non-reactive, non-plastic, saprolitic, sandy SILT (ML/A-4). | | | | | | | | |
| 806.3 | | Very stiff, moist, green & brown, non-reactive, non-plastic, saprolitic, sandy SILT (ML/A-5). | | 53.5 | SS-14 | 6 | 8 | 11 | 19 | ● ×○ ▲ |
| | 56.8 | LL=41, PL=35, PI=6, NMC=41.6, %#200=64.8 | | | | | | | | |
| 801.3 | | Very stiff, moist, white & yellow, non-reactive, non-plastic, saprolitic, micaceous, sandy SILT w/trace gravel (ML/A-4). | | 58.5 | SS-15 | 4 | 5 | 7 | 12 | ● |
| | 61.8 | LL=30, PL=30, PI=NP, NMC=34.9, %#200=52.7 | | 63.5 | SS-16 | 14 | 31 | 42 | 73 | × ○▲ ● |
| 796.3 | | Medium dense, moist, white & yellow, non-reactive, saprolitic, micaceous, silty SAND (SM/A-4). | | | | | | | | |
| | 66.8 | Very dense, moist, white & yellow, non-reactive, saprolitic, micaceous, silty SAND w/trace gravel (SP/A-2-4). | | 68.5 | SS-17 | 10 | 12 | 19 | 31 | ● |
| 791.3 | | LL=NP, PL=NP, PI=NP, NMC=21.3, %#200=25.9 | | | | | | | | |
| | 71.8 | Hard, moist, white, non-reactive, non-plastic, saprolitic, micaceous, sandy SILT (ML/A-4). | | 73.5 | SS-18 | 45 | 21 | 34 | 55 | ○ ×× ▲ ● |
| 786.3 | | Very dense, moist, white & brown, non-reactive, saprolitic, micaceous, silty SAND (SM/A-4). | | 78.5 | SS-19 | 50/0.0 | | | 50/0.0 | No Recovery >>● |
| | 78.5 | LL=31, PL=28, PI=3, NMC=15.2, %#200=44.6 | | 78.5 | NQ-1 | | | | | REC%=80, RQD%=33 |
| 781.3 | | Splitspoon Refusal at 78.5', Begin Coring in Schist. | | 81.5 | NQ-2 | | | | | REC%=49, RQD%=12 |
| 776.3 | 85.2 | Off white-pale gray-pale yellow, black-gray, scattered brown-orange stain, coarse grain, foliated, feldspar-quartz-muscovite-amphibolite, slightly weathered w/seams moderately to completely weathered, soft to hard, very close discontinuity spacing. | | 85.6 | NQ-3 | | | | | REC%=84, RQD%=42 |
| 771.3 | | completely weathered 78.5'-79.6', includes core loss; interpreted core loss 81.2'-81.3', 81.5'-83.9'; 8 0°-10° jts. T-MW, Su, Fe, Pl, SR-R; 7 70°-90° Fo T-VN, Su, Fe, Pl, S-SR | | 91.1 | NQ-4 | | | | | REC%=33, RQD%=9 |
| 766.3 | | Schist: Black-gray, light gray, off white-pale gray-pale yellow, scattered brown-orange | | 95.4 | NQ-5 | | | | | REC%=88, RQD%=68 |

LEGEND

*Continued Next Page*

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-129 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 51+28 | **Offset:** | 1' Lt. | **Alignment:** | E. Cherokee St |
| **Elev.:** | 861.3 ft | **Latitude:** | 35.16349 | **Longitude:** | 81.45234 | **Date Started:** | 2/1/2017 |
| **Total Depth:** | 100.4 ft | **Soil Depth:** | 78.5 ft | **Core Depth:** | 21.9 ft | **Date Completed:** | 2/2/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | RW/RC | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NQ | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 36.4 ft. | **24HR** | 34.2 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 ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 100.4 | stain, fine grain w/seams medium to coarse grain, thinly foliated to foliated, amphibolite-feldspar-quartz-muscovite, clusters medium crystalline hornblende, traces pyrite, slightly weathered w/seams highly to completely weathered, hard, very close discontinuity spacing. 7 75°-90° jts. T-VN, Su, Fe, Pl, SR; 17 0°-40° T-VN, Su, Fe, Pl-Ir, SR-R; 6 35°-45° Fo T, Su, Fe, Pl, S; 6 50°-70° T, Su, Fe, Pl-Wa, S; inferred core loss 90.2'-94.0' & 99.8'-100.4' due to core slip | | | | | | | | |
| 756.3 | | | | | | | | | | |
| 751.3 | | Boring Terminated at 100.4' (Elev. 760.9). | | | | | | | | |
| 746.3 | | Boring relocated due to underground and overhead utilities. | | | | | | | | |
| 741.3 | | | | | | | | | | |
| 736.3 | | | | | | | | | | |
| 731.3 | | | | | | | | | | |
| 726.3 | | | | | | | | | | |
| 721.3 | | | | | | | | | | |
| 716.3 | | | | | | | | | | |

LEGEND

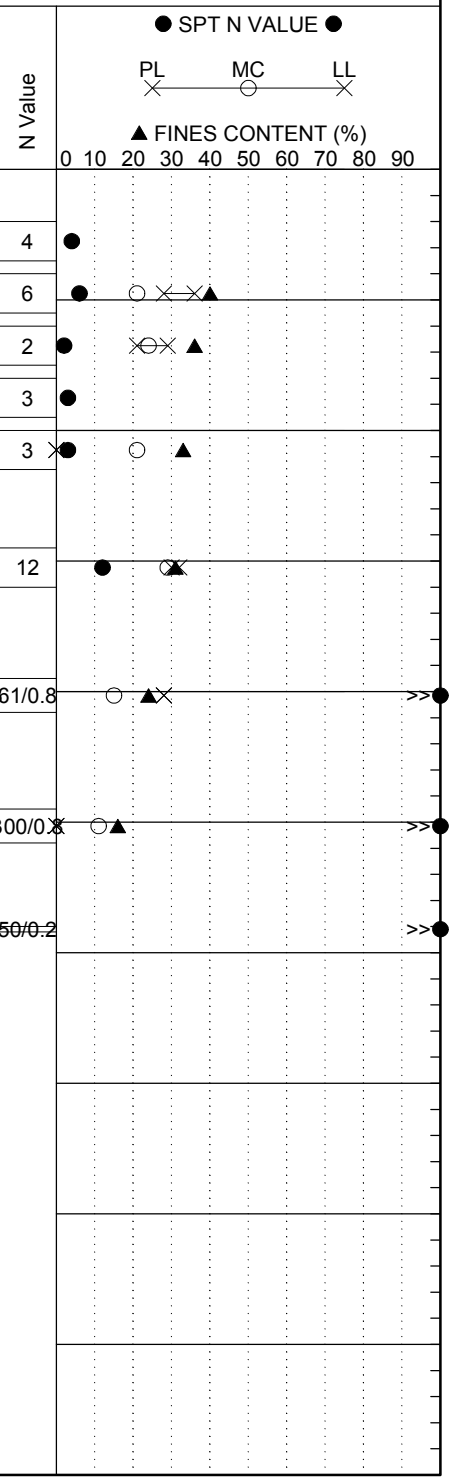
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | C-130 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 1864+08 | **Offset:** | 89' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 578.6 ft | **Latitude:** | 35.1246 | **Longitude:** | 81.56478 | **Date Started:** | 3/6/2017 |
| **Total Depth:** | 29.2 ft | **Soil Depth:** | 29.2 ft | **Core Depth:** | ft | **Date Completed:** | 3/6/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 27.9 ft. | **24HR** | NA |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION | Sample Depth (ft) | Sample No./Type | 1st 6" | 2nd 6" | 3rd 6" | N Value |
|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Alluvium** | | | | | | |
| | | Very loose to loose, red, non-reactive, silty SAND with gravel (SM/A-4). | 2.0 | SS-1 | 2 | 2 | 2 | 4 |
| | | LL=36, PL=28, PI=8, NMC=20.9, %#200=40.1 | 4.0 | SS-2 | 2 | 2 | 4 | 6 |
| 573.6 | 5.8 | | 6.0 | SS-3 | 1 | 1 | 1 | 2 |
| | | Very loose, red & gray, non-reactive, clayey SAND with gravel w/trace wood fragments (SC/A-4). | 8.0 | SS-4 | 2 | 1 | 2 | 3 |
| 568.6 | 9.8 | LL=29, PL=21, PI=8, NMC=23.6, %#200=36.0 | 10.0 | SS-5 | 1 | 2 | 1 | 3 |
| | | Very loose, brown & gray, non-reactive, silty SAND (SM/A-2-4). | 14.5 | SS-6 | 1 | 4 | 8 | 12 |
| 563.6 | 15.0 | LL=NP, PL=NP, PI=NP, NMC=20.5, %#200=33.1 | | | | | | |
| | | **Residual** | 19.5 | SS-7 | 8 | 11 | 50/0.3 | 61/0.8 |
| | | Medium dense, gray & red, non-reactive, silty SAND (SM/A-2-4). | | | | | | |
| 558.6 | 20.5 | LL=32, PL=30, PI=2, NMC=29.1, %#200=31.1 | | | | | | |
| | 22.6 | | 24.5 | SS-8 | 50 | 48 | 62/0.3 | 100/0 |
| | | **Partially Weathered Rock** | | | | | | |
| 553.6 | | Logged as very dense, brown & white, non-reactive, silty SAND (SM/A-1-b). | | | | | | |
| | | LL=28, PL=28, PI=NP, NMC=14.5, %#200=23.9 | 29.0 | SS-9 | 50/0.2 | | | 50/0.2 |
| | 29.2 | | | | | | | |
| 548.6 | | Logged as very dense, brown, white & gray, non-reactive, silty SAND w/granite fragments (SM/A-1-b). | | | | | | |
| | | LL=NP, PL=NP, PI=NP, NMC=11.2, %#200=16.1 | | | | | | |
| 543.6 | | | | | | | | |
| | | No Refusal & Boring Terminated at 29.2' (Elev. 549.4). | | | | | | |
| 538.6 | | Bulk sample obtained from 0.0'-10.0'. | | | | | | |
| 533.6 | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | C-131 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 1875+09 | **Offset:** | 111' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 568.5 ft | **Latitude:** | 35.12579 | **Longitude:** | 81.56139 | **Date Started:** | 3/6/2017 |
| **Total Depth:** | 7.1 ft | **Soil Depth:** | 7.1 ft | **Core Depth:** | ft | **Date Completed:** | 3/6/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NA | **Driller:** | F. Woodard | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Medium dense to very dense, brown, non-reactive, silty sand with gravel (SM/A-1-b). | | 2.0 | SS-1 | 6 | 12 | 18 | 30 |
| | 4.0 | | | 4.0 | SS-2 | 50/0.3 | | | 50/0.3 |
| 563.5 | | LL=22, PL=20, PI=2, NMC=15.4, %#200=23.5 | | 6.0 | | | | | |
| | 7.1 | | | 6.7 | SS-3 | 50/0.4 | | | 50/0.4 |
| | | **Partially Weathered Rock** | | | SS-4 | 50/0.4 | | | 50/0.4 |
| 558.5 | | Described as sand and rock fragments. | | | | | | | |
| | | No Refusal & Boring Terminated at 7.1' (Elev. 561.4). | | | | | | | |
| 553.5 | | Rock observed in bottom of creek at boring location. | | | | | | | |
| 548.5 | | | | | | | | | |
| 543.5 | | | | | | | | | |
| 538.5 | | | | | | | | | |
| 533.5 | | | | | | | | | |
| 528.5 | | | | | | | | | |
| 523.5 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | C-132 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 1890+37 | **Offset:** | 69' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 611.2 ft | **Latitude:** | 35.12725 | **Longitude:** | 81.5566 | **Date Started:** | 2/8/2017 |
| **Total Depth:** | 10.1 ft | **Soil Depth:** | 10.1 ft | **Core Depth:** | ft | **Date Completed:** | 2/8/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual**<br>Very dense, brown & white, non-reactive, silty SAND (SM/A-1-b). | | 2.0 | SS-1 | 20 | 14 | 37 | 51 |
| 606.2 | 3.8 | LL=NP, PL=NP, PI=NP, NMC=5.0, %#200=20.3 | | 4.0 | SS-2 | 50/0.4 | | | 50/0.4 |
| | | **Partially Weathered Rock**<br>Described as gravel and sand size rock fragments with silt. | | 6.0 | SS-3 | 50/0.5 | | | 50/0.5 |
| 601.2 | 10.1 | | | 8.0 | SS-4 | 50/0.4 | | | 50/0.4 |
| | | Splitspoon Refusal & Boring Terminated at 10.1' (Elev. 601.1). | | 10.0 | SS-5 | 50/0.1 | | | 50/0.1 |
| 596.2 | | Boring relocated due to inaccessibility. | | | | | | | |
| 591.2 | | | | | | | | | |
| 586.2 | | | | | | | | | |
| 581.2 | | | | | | | | | |
| 576.2 | | | | | | | | | |
| 571.2 | | | | | | | | | |
| 566.2 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | C-133 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 1945+00 | **Offset:** | 47' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 583.9 ft | **Latitude:** | 35.13206 | **Longitude:** | 81.53929 | **Date Started:** | 2/21/2017 |
| **Total Depth:** | 33.5 ft | **Soil Depth:** | 33.5 ft | **Core Depth:** | ft | **Date Completed:** | 2/21/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 12.1 ft. | **24HR** | NA |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION | Sample Depth (ft) | Sample No./Type | 1st 6" | 2nd 6" | 3rd 6" | N Value |
|---|---|---|---|---|---|---|---|---|
| | 0.0 | | | | | | | |
| | 1.2 | Asphalt and road base. | | | | | | |
| | | **Roadway Embankment** | 2.0 | | | | | |
| | 3.8 | Medium dense, moist, red, brown, orange & gray, non-reactive, strongly cemented, clayey SAND w/gravel & quartz fragments (SC/A-2-4). LL=31, PL=22, PI=9, NMC=14.1, %#200=34.5 | | SS-1 | 6 | 7 | 7 | 14 |
| 578.9 | | | 4.0 | SS-2 | 4 | 5 | 7 | 12 |
| | | | 6.0 | SS-3 | 3 | 6 | 5 | 11 |
| | | | 8.0 | SS-4 | 2 | 4 | 5 | 9 |
| 573.9 | | Loose to medium dense, moist, red, brown, orange & gray, non-reactive, moderately to strongly cemented, silty SAND w/few rock fragments (SM/A-4). LL=36, PL=26, PI=10, NMC=20.5, %#200=39.6 | 10.0 | SS-5 | 2 | 2 | 3 | 8 |
| | 13.6 | | 13.5 | SS-6 | 3 | 3 | 4 | 7 |
| 568.9 | | | | | | | | |
| | 16.8 | **Alluvium** Loose, moist, brown & orange, non-reactive, weakly to moderately cemented, silty SAND (SM/A-2-4). LL=NP, PL=NP, PI=NP, NMC=23.7, %#200=33.0 | 18.5 | SS-7 | 0 | 0 | 0 | 0 |
| 563.9 | | | | | | | | |
| | 23.9 | Very soft, moist, gray, non-reactive, weakly cemented, sandy SILT (ML/A-4). LL=23, PL=19, PI=4, NMC=23.9, %#200=51.5 | 23.5 | SS-8 | 4 | 7 | 5 | 12 |
| 558.9 | | | | | | | | |
| | 28.5 | | 28.5 | SS-9 | 48 | 52/0.3 | | 50/0.3 |
| | | **Residual** Medium dense, gray, non-reactive, weakly cemented, silty SAND with gravel (SM/A-1-b). LL=25, PL=22, PI=3, NMC=20.8, %#200=22.3 | | | | | | |
| 553.9 | 33.5 | | 33.5 | ~~SS-10~~ | ~~50/0.0~~ | | | ~~50/0.0~~ No recovery |
| 548.9 | | | | | | | | |
| | | **Partially Weathered Rock** Very dense, gray, weakly reactive, silty SAND with rock fragments (SM/A-1-b). LL=NP, PL=NP, PI=NP, NMC=12.2, %#200=18.7 | | | | | | |
| 543.9 | | | | | | | | |
| 538.9 | | Splitspoon Refusal & Boring Terminated at 33.5' (Elev. 550.4). | | | | | | |
| | | Bulk sample obtained from 1.2'-5.0'. | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | C-134 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 1969+59 | **Offset:** | 48' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 598.8 ft | **Latitude:** | 35.134 | **Longitude:** | 81.53142 | **Date Started:** | 3/5/2017 |
| **Total Depth:** | 34.9 ft | **Soil Depth:** | 34.9 ft | **Core Depth:** | ft | **Date Completed:** | 3/5/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 19.4 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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | | | | | | | | |
| | 0.9 | Asphalt & road base. | | | | | | | |
| | | **Roadway Embankment Fill** Loose to medium dense, moist, brown, orange & red, non-reactive, weakly to strongly cemented, clayey SAND w/few asphalt fragments in upper portion (SC/A-6). | | 2.0 | SS-1 | 3 | 5 | 6 | 11 |
| 593.8 | | | | 4.0 | SS-2 | 3 | 5 | 8 | 13 |
| | 7.8 | LL=32, PL=21, PI=11, NMC=17.6, %#200=37.8 | | 6.0 | SS-3 | 2 | 3 | 3 | 6 |
| | | | | 8.0 | SS-4 | 2 | 3 | 3 | 6 |
| 588.8 | | | | 10.0 | SS-5 | 2 | 3 | 4 | 7 |
| | | Very loose to loose, moist, brown, orange, gray & red, non-reactive, weakly to moderately cemented, clayey SAND w/wood fiber, mica & few gravel fragments (SC/A-4). | | | | | | | |
| | 12.5 | | | 13.4 | SS-6 | 2 | 1 | 1 | 2 |
| 583.8 | | | | | | | | | |
| | 16.7 | LL=29, PL=20, PI=9, NMC=17.6, %#200=41.7 | | | | | | | |
| | | **Alluvium** | | 18.4 | SS-7 | 1 | 2 | 2 | 4 |
| 578.8 | | Very loose, moist, brown-orange-red, non-reactive, weakly cemented, clayey SAND (SC/A-4). | | | | | | | |
| | 21.7 | | | | | | | | |
| | | Very loose, moist, brown & orange, non-reactive, weakly to moderately cemented, silty SAND w/mica (SM/A-5). | | 23.4 | SS-8 | 2 | 4 | 4 | 8 |
| 573.8 | | | | | | | | | |
| | 26.7 | LL=44, PL=36, PI=8, NMC=26.1, %#200=35.3 | | | | | | | |
| | | **Residual** | | 28.4 | SS-9 | 10 | 15 | 11 | 26 |
| 568.8 | | Loose, moist to wet, brown & white, non-reactive, weakly cemented, silty SAND w/quartz fragments (SM/A-2-5). | | | | | | | |
| | | | | 33.4 | SS-10 | 12 | 16 | 15 | 31 |
| | 34.9 | LL=46, PL=40, PI=6, NMC=25.8, %#200=27.4 | | | | | | | |
| 563.8 | | | | | | | | | |
| | | Medium dense to dense, moist to wet, brown, orange & white, non-reactive, weakly to moderately cemented, medium to coarse grain, silty SAND w/mica, feldspar & quartz fragments (SM/A-1-b). | | | | | | | |
| 558.8 | | LL=37, PL=34, PI=3, NMC=20.1, %#200=18.4 | | | | | | | |
| 553.8 | | No Refusal & Boring Terminated at 34.9' (Elev. 563.9). | | | | | | | |
| | | Boring relocated due to steep embankment. | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/10/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | C-137 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2124+59 | **Offset:** | 99' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 805.5 ft | **Latitude:** | 35.15385 | **Longitude:** | 81.48623 | **Date Started:** | 1/25/2017 |
| **Total Depth:** | 25 ft | **Soil Depth:** | 25.0 ft | **Core Depth:** | ft | **Date Completed:** | 1/25/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment**<br>Very stiff, moist, red, yellow & brown, non-reactive, high plasticity, sandy, fat CLAY (CH/A-7-6). | | 2.0 | | | | | |
| | | | | | SS-1 | 9 | 9 | 11 | 20 |
| | | | | 4.0 | | | | | |
| | | | | | SS-2 | 6 | 9 | 9 | 18 |
| 800.5 | 5.8 | LL=60, PL=24, PI=36, NMC=22.2, %#200=54.4 | | 6.0 | | | | | |
| | | | | | SS-3 | 4 | 4 | 4 | 8 |
| | | **Residual** | | 8.0 | | | | | |
| | | | | | SS-4 | 2 | 3 | 3 | 6 |
| 795.5 | | Firm, moist, yellow & brown, non-reactive, non-plastic, saprolitic, micaceous, sandy SILT (ML/A-5). | | 10.0 | | | | | |
| | | | | | SS-5 | 2 | 2 | 3 | 5 |
| | | LL=41, PL=36, PI=5, NMC=27.9, %#200=55.0 | | 13.5 | | | | | |
| | | | | | SS-6 | 3 | 2 | 4 | 6 |
| 790.5 | | | | 18.5 | | | | | |
| | | | | | SS-7 | 2 | 3 | 3 | 6 |
| 785.5 | | | | 23.5 | | | | | |
| | | | | | SS-8 | 2 | 3 | 3 | 6 |
| 780.5 | 25.0 | No Refusal & Boring Terminated at 25.0' (Elev. 780.5). | | | | | | | |
| | | Boring relocated due to steep slope and utilities. | | | | | | | |
| 775.5 | | | | | | | | | |
| 770.5 | | | | | | | | | |
| 765.5 | | | | | | | | | |
| 760.5 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | C-138 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2164+05 | **Offset:** | 87' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 822.4 ft | **Latitude:** | 35.16003 | **Longitude:** | 81.47532 | **Date Started:** | 2/9/2017 |
| **Total Depth:** | 40 ft | **Soil Depth:** | 40 ft | **Core Depth:** | ft | **Date Completed:** | 2/9/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 16.5 ft. | **24HR** | NA |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION | Sample Depth (ft) | Sample No./Type | 1st 6" | 2nd 6" | 3rd 6" | N Value |
|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** Stiff to very stiff, moist, yellow, brown & gray, non-reactive, low to high plasticity, sandy, fat CLAY (CH/A-7-6). LL=53, PL=24, PI=29, NMC=14.2, %#200=57.9 | 2.0 | SS-1 | 3 | 4 | 5 | 9 |
| 817.4 | 5.8 | | 4.0 | SS-2 | 4 | 6 | 12 | 18 |
| | | Firm to stiff, moist to wet, white, gray, orange & blue, non-reactive, non-plastic, saprolitic, micaceous, sandy SILT (ML/A-7-5). LL=47, PL=35, PI=12, NMC=23.0, %#200=53.6 | 6.0 | SS-3 | 5 | 6 | 8 | 14 |
| | | | 8.0 | SS-4 | 2 | 3 | 5 | 8 |
| 812.4 | | | 10.0 | SS-5 | 3 | 4 | 4 | 8 |
| | | | 13.5 | SS-6 | 2 | 2 | 4 | 6 |
| 807.4 | | ▽ | | | | | | |
| | | | 18.5 | SS-7 | 3 | 3 | 3 | 6 |
| 802.4 | 21.8 | Loose, moist, orange, non-reactive, non-plastic, saprolitic, silty SAND (SM/A-5). LL=49, PL=44, PI=5, NMC=42.0, %#200=46.7 | 23.5 | SS-8 | 2 | 3 | 6 | 9 |
| 797.4 | 26.8 | Loose to medium dense, moist, orange, non-reactive, non-plastic, saprolitic, micaceous, silty SAND (SM/A-2-4). LL=NP, PL=NP, PI=NP, NMC=20.7, %#200=23.6 | 28.5 | SS-9 | 6 | 10 | 10 | 20 |
| 792.4 | | | 33.5 | SS-10 | 4 | 6 | 8 | 13 |
| 787.4 | | | 38.5 | SS-11 | 4 | 4 | 6 | 10 |
| 782.4 | 40.0 | No Refusal & Boring Terminated at 40.0' (Elev. 782.4). | | | | | | |
| 777.4 | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | RW-139 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2104+02 | **Offset:** | 78' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 823.2 ft | **Latitude:** | 35.15046 | **Longitude:** | 81.49173 | **Date Started:** | 1/16/2017 |
| **Total Depth:** | 20 ft | **Soil Depth:** | 20.0 ft | **Core Depth:** | ft | **Date Completed:** | 1/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Soft, moist, red, non-reactive, low plasticity, saprolitic, sandy, elastic SILT with gravel (MH/A-7-5). | | 2.0 | SS-1 | 2 | 2 | 2 | 4 |
| | | | | 4.0 | SS-2 | 2 | 1 | 2 | 3 |
| 818.2 | 5.8 | LL=52, PL=41, PI=11, NMC=48.4, %#200=51.6 | | 6.0 | SS-3 | 2 | 2 | 2 | 4 |
| | | | | 8.0 | SS-4 | 2 | 2 | 2 | 4 |
| | | Very loose to loose, moist, red, brown & white, non-reactive, saprolitic, silty SAND with gravel (SM/A-5). | | 10.0 | SS-5 | 2 | 3 | 5 | 8 |
| 813.2 | | LL=49, PL=40, PI=9, NMC=42.6, %#200=49.0 | | 13.5 | SS-6 | 2 | 2 | 4 | 6 |
| 808.2 | | | | 18.5 | SS-7 | 2 | 3 | 3 | 6 |
| 803.2 | 20.0 | No Refusal & Boring Terminated at 20.0' (Elev. 803.2). | | | | | | | |
| | | Attempted Shelby Tube at 12.0' but boring caved when augers were removed, unable to collect tube. | | | | | | | |
| 798.2 | | | | | | | | | |
| 793.2 | | | | | | | | | |
| 788.2 | | | | | | | | | |
| 783.2 | | | | | | | | | |
| 778.2 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

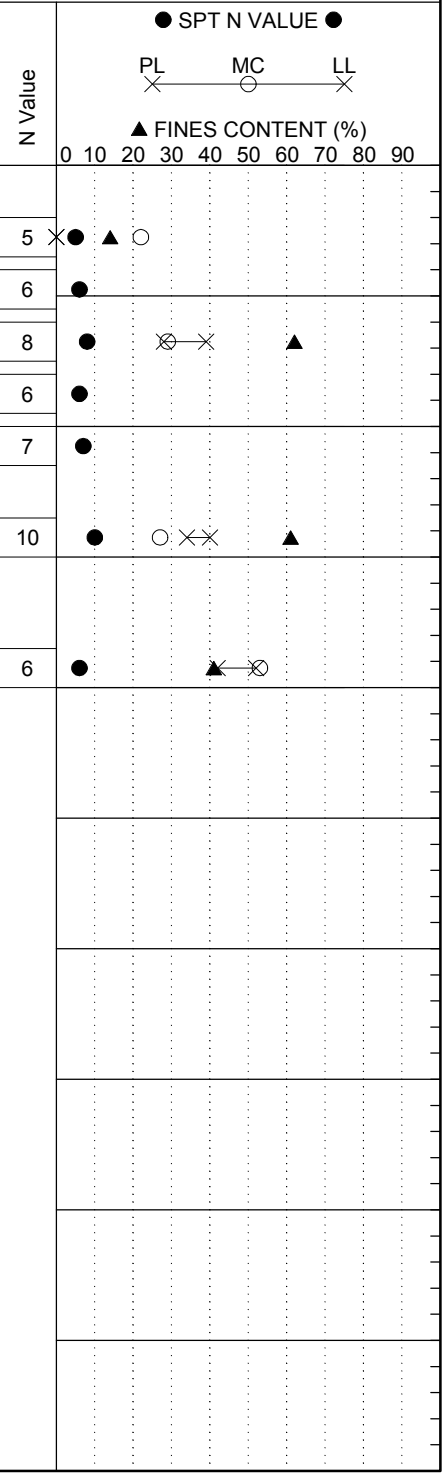
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | RW-140 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2106+09 | **Offset:** | 69' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 819.6 ft | **Latitude:** | 35.15077 | **Longitude:** | 81.49115 | **Date Started:** | 1/16/2017 |
| **Total Depth:** | 20 ft | **Soil Depth:** | 20.0 ft | **Core Depth:** | ft | **Date Completed:** | 1/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | 2.0 | | | | | |
| | | Loose, moist, white, yellow & orange, non-reactive, saprolitic, silty SAND (SM/A-1-b). | | | SS-1 | 3 | 2 | 3 | 5 |
| | 3.8 | | | 4.0 | | | | | |
| 814.6 | | LL=NP, PL=NP, PI=NP, NMC=21.8, %#200=13.7 | | | SS-2 | 3 | 3 | 3 | 6 |
| | | | | 6.0 | | | | | |
| | | | | | SS-3 | 3 | 4 | 4 | 8 |
| | | Firm, moist, brown, non-reactive, non-plastic, saprolitic, micaceous, sandy SILT (ML/A-6). | | 8.0 | | | | | |
| | | | | | SS-4 | 3 | 3 | 3 | 6 |
| 809.6 | 9.8 | LL=39, PL=28, PI=11, NMC=29.3, %#200=62.3 | | 10.0 | | | | | |
| | | | | | SS-5 | 2 | 3 | 4 | 7 |
| | | | | 13.5 | | | | | |
| | | Firm to stiff, moist, brown, non-reactive, non-plastic, saprolitic, sandy SILT (ML/A-4). | | | SS-6 | 3 | 4 | 6 | 10 |
| 804.6 | | | | | | | | | |
| | 16.8 | LL=40, PL=34, PI=6, NMC=26.7, %#200=60.6 | | 18.5 | | | | | |
| | | Loose, moist, brown, non-reactive, saprolitic, silty SAND (SM/A-5). | | | SS-7 | 3 | 3 | 3 | 6 |
| 799.6 | 20.0 | LL=52, PL=42, PI=10, NMC=52.6, %#200=40.9 | | | | | | | |
| | | No Refusal & Boring Terminated at 20.0' (Elev. 799.6). | | | | | | | |
| 794.6 | | | | | | | | | |
| 789.6 | | | | | | | | | |
| 784.6 | | | | | | | | | |
| 779.6 | | | | | | | | | |
| 774.6 | | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | RW-141 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2108+01 | **Offset:** | 76' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 818.6 ft | **Latitude:** | 35.1511 | **Longitude:** | 81.49065 | **Date Started:** | 1/16/2017 |
| **Total Depth:** | 15 ft | **Soil Depth:** | 15.0 ft | **Core Depth:** | ft | **Date Completed:** | 1/16/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Stiff, moist, red, non-reactive, non-plastic, saprolitic, micaceous, sandy SILT (ML/A-5). | | 2.0 | | | | | |
| | 3.8 | LL=45, PL=38, PI=7, NMC=19.9, %#200=56.7 | | | SS-1 | 6 | 6 | 7 | 13 |
| 813.6 | 5.8 | | | 4.0 | SS-2 | 5 | 8 | 7 | 15 |
| | | Stiff, moist, red, non-reactive, non-plastic, saprolitic, micaceous, sandy SILT (ML/A-5). | | 6.0 | SS-3 | 5 | 6 | 6 | 12 |
| | | LL=48, PL=40, PI=8, NMC=24.7, %#200=68.2 | | 8.0 | SS-4 | 3 | 6 | 6 | 12 |
| 808.6 | | | | 10.0 | SS-5 | 4 | 5 | 7 | 12 |
| | 12.5 | Stiff, moist, red & brown, non-reactive, non-plastic, saprolitic, sandy SILT (ML/A-4). | | 13.5 | | | | | |
| | 15.0 | Stiff, moist, red & brown, non-reactive, saprolitic, sandy SILT (ML/A-6). | | | SS-6 | 6 | 6 | 7 | 13 |
| 803.6 | | No Refusal & Boring Terminated at 15.0' (Elev. 803.6). | | | | | | | |
| 798.6 | | | | | | | | | |
| 793.6 | | | | | | | | | |
| 788.6 | | | | | | | | | |
| 783.6 | | | | | | | | | |
| 778.6 | | | | | | | | | |
| 773.6 | | | | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

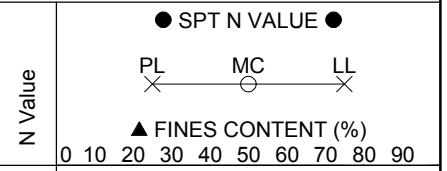
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | RW-142 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2114+09 | **Offset:** | 101' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 789.1 ft | **Latitude:** | 35.15215 | **Longitude:** | 81.48906 | **Date Started:** | 1/24/2017 |
| **Total Depth:** | 33.7 ft | **Soil Depth:** | 33.7 ft | **Core Depth:** | ft | **Date Completed:** | 1/24/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | | |
| | | Very stiff, moist, red, non-reactive, high plasticity, sandy SILT (ML/A-4). | | 2.0 | | | | | |
| | 3.8 | LL=38, PL=29, PI=9, NMC=20.4, %#200=62.4 | | | SS-1 | 6 | 8 | 8 | 16 |
| 784.1 | | | | 4.0 | | | | | |
| | | | | | SS-2 | 3 | 4 | 5 | 9 |
| | | Firm to stiff, moist, red & brown, non-reactive, non to medium plasticity, sandy SILT (ML/A-5). | | 6.0 | | | | | |
| | | | | | SS-3 | 3 | 3 | 4 | 7 |
| | | | | 8.0 | | | | | |
| | | | | | SS-4 | 2 | 3 | 5 | 8 |
| 779.1 | | LL=41, PL=31, PI=10, NMC=26.1, %#200=66.9 | | 10.0 | | | | | |
| | | | | | SS-5 | 3 | 2 | 4 | 6 |
| | | | | 13.5 | | | | | |
| | | | | | SS-6 | 2 | 3 | 5 | 8 |
| 774.1 | | | | | | | | | |
| | | | | 18.5 | | | | | |
| | | | | | SS-7 | 2 | 2 | 4 | 6 |
| 769.1 | | | | | | | | | |
| | 23.7 | | | 23.5 | | | | | |
| | | **Alluvium** | | | SS-8 | 0 | 0 | 0 | 0 |
| 764.1 | | Very loose, wet, gray & brown, non-reactive, medium plasticity, silty SAND (SM/A-7-5). | | | | | | | |
| | 26.8 | LL=50, PL=37, PI=13, NMC=38.4, %#200=43.3 | | 28.5 | | | | | |
| | | | | | SS-9 | 5 | 12 | 17 | 29 |
| 759.1 | | | | | | | | | |
| | | **Residual** | | | | | | | |
| | 33.5 | Dense, wet, green-brown, medium plasticity, silty SAND (SM/A-7-5). | | 33.5 | SS-10 | 50/0.2 | | | 50/0.2 |
| | 33.7 | | | | | | | | |
| 754.1 | | **Partially Weathered Tock** | | | | | | | |
| | | Described as very dense, silty, sand and gravel size rock fragments. | | | | | | | |
| 749.1 | | Splitspoon Refusal & Boring Terminated at 33.7' (Elev. 755.4). | | | | | | | |
| | | Boring relocated due to underground utilities. Boring collapsed at 23.0'. | | | | | | | |
| 744.1 | | | | | | | | | |




## LEGEND

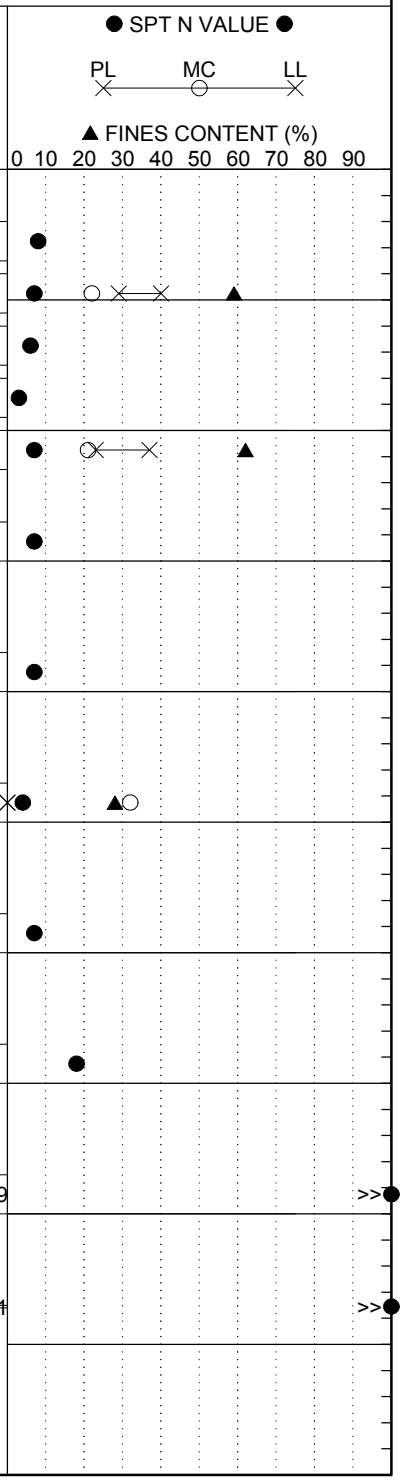
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | RW-143 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2114+04 | **Offset:** | 110' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 786.3 ft | **Latitude:** | 35.15167 | **Longitude:** | 81.48866 | **Date Started:** | 2/9/2017 |
| **Total Depth:** | 43.6 ft | **Soil Depth:** | 43.6 ft | **Core Depth:** | ft | **Date Completed:** | 2/9/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 22.2 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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment**<br>Soft to firm, moist, orange, yellow, green & gray, non-reactive, non to low plasticity, sandy SILT w/trace mica (ML/A-6). | | 2.0 | | | | | |
| | | | | | SS-1 | 5 | 4 | 4 | 8 |
| 781.3 | | LL=40, PL=29, PI=11, NMC=22.1, %#200=58.9 | | 4.0 | | | | | |
| | | | | | SS-2 | 2 | 3 | 4 | 7 |
| | | | | 6.0 | | | | | |
| | | | | | SS-3 | 3 | 3 | 3 | 6 |
| | | | | 8.0 | | | | | |
| | | | | | SS-4 | 2 | 1 | 2 | 3 |
| 776.3 | 9.8 | Firm, moist, green, gray & red, non-reactive, low plasticity, sandy lean CLAY (CL/A-6). | | 10.0 | | | | | |
| | | | | | SS-5 | 3 | 3 | 4 | 7 |
| | | LL=37, PL=23, PI=14, NMC=20.5, %#200=61.8 | | 13.5 | | | | | |
| 771.3 | | | | | SS-6 | 3 | 3 | 4 | 7 |
| | 16.8 | **Aluvium**<br>Loose, moist, gray, fine to medium grain, silty SAND w.trace gravel (SM/A-2-4). | | 18.5 | | | | | |
| | | | | | SS-7 | 3 | 4 | 3 | 7 |
| 766.3 | | ▽ | | | | | | | |
| | 23.5 | **Residual** | | 23.5 | | | | | |
| | | | | | SS-8 | 3 | 2 | 2 | 4 |
| 761.3 | | Very loose to very dense, moist to wet, green, brown & yellow, non-reactive, silty SAND (SM/A-2-4).LL=NP, PL=NP, PI=NP, NMC=31.8, %#200=28.2 | | 28.5 | | | | | |
| | | | | | SS-9 | 3 | 3 | 4 | 7 |
| 756.3 | | | | 33.5 | | | | | |
| | | | | | SS-10 | 15 | 8 | 10 | 18 |
| 751.3 | | | | 38.5 | | | | | |
| | 39.5 | | | | SS-11 | 22 | 37 | 50/0.4 | 87/0.9 |
| 746.3 | | **Partially Weathered Rock**<br>Described as silty, sand & gravel size rock fragments. | | 43.5 | | | | | |
| | 43.6 | | | | SS-12 | 50/0.1 | | | 50/0.1 |
| 741.3 | | Splitspoon Refusal & Boring Terminated at 43.6' (Elev. 742.7). | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | RW-143A |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2114+08 | **Offset:** | 52' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 803.8 ft | **Latitude:** | 35.15181 | **Longitude:** | 81.48876 | **Date Started:** | 2/20/2017 |
| **Total Depth:** | 58.7 ft | **Soil Depth:** | 58.7 ft | **Core Depth:** | ft | **Date Completed:** | 2/20/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 44.5 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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | | | | | | | | |
| | 1.3 | Asphalt and road base. | | | | | | | |
| | | **Roadway Embankment** Stiff, moist, brown & orange, non-reactive, moderately to strongly cemented, sandy SILT w/quartz & gravel fragments (ML/A-4). LL=31, PL=24, PI=7, NMC=21.1, %#200=50.4 | | 2.0 | SS-1 | 5 | 6 | 6 | 12 |
| 798.8 | | | | 4.0 | SS-2 | 4 | 4 | 5 | 9 |
| | | | | 6.0 | SS-3 | 4 | 5 | 6 | 11 |
| | | | | 8.0 | SS-4 | 3 | 5 | 5 | 10 |
| | 9.8 | | | | | | | | |
| 793.8 | | Stiff, moist, brown & orange, non-reactive, weakly to moderately cemented, sandy SILT w/mica (ML/A-4). LL=35, PL=26, PI=9, NMC=21.9, %#200=53.5 | | 10.0 | SS-5 | 5 | 5 | 6 | 11 |
| | | | | 13.5 | SS-6 | 5 | 5 | 6 | 11 |
| 788.8 | | | | | | | | | |
| | | | | 18.5 | SS-7 | 4 | 4 | 6 | 10 |
| 783.8 | | | | | | | | | |
| | | | | 23.5 | SS-8 | 6 | 7 | 8 | 15 |
| 778.8 | | | | | | | | | |
| | 26.8 | | | | | | | | |
| | | Very loose to loose, brown & orange, non-reactive, silty SAND (SM/A-7-6). LL=43, PL=30, PI=13, NMC=25.9, %#200=48.2 | | 28.5 | SS-9 | 2 | 3 | 5 | 8 |
| 773.8 | | | | | | | | | |
| | | | | 33.5 | SS-10 | 4 | 2 | 2 | 4 |
| 768.8 | | | | | | | | | |
| | 36.8 | | | | | | | | |
| | | **Alluvium** Soft, moist, brown, non-reactive, weakly to moderately cemented, sandy SILT w/quartz (ML/A-4). | | 38.5 | SS-11 | 0 | 0 | 3 | 3 |
| 763.8 | | | | | | | | | |
| | 41.8 | | | | | | | | |
| | | **Residual** ▽ Medium dense to very dense, moist to wet, gray & brown, non-reactive, weakly to moderately cemented, silty SAND (SM/A-4). LL=NP, PL=NP, PI=NP, NMC=18.9, %#200=40.5 | | 43.5 | SS-12 | 11 | 15 | 15 | 30 |
| 758.8 | | | | | | | | | |
| | | | | 48.5 | SS-13 | 22 | 43 | 41 | 84 |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

LEGEND

*Continued Next Page*

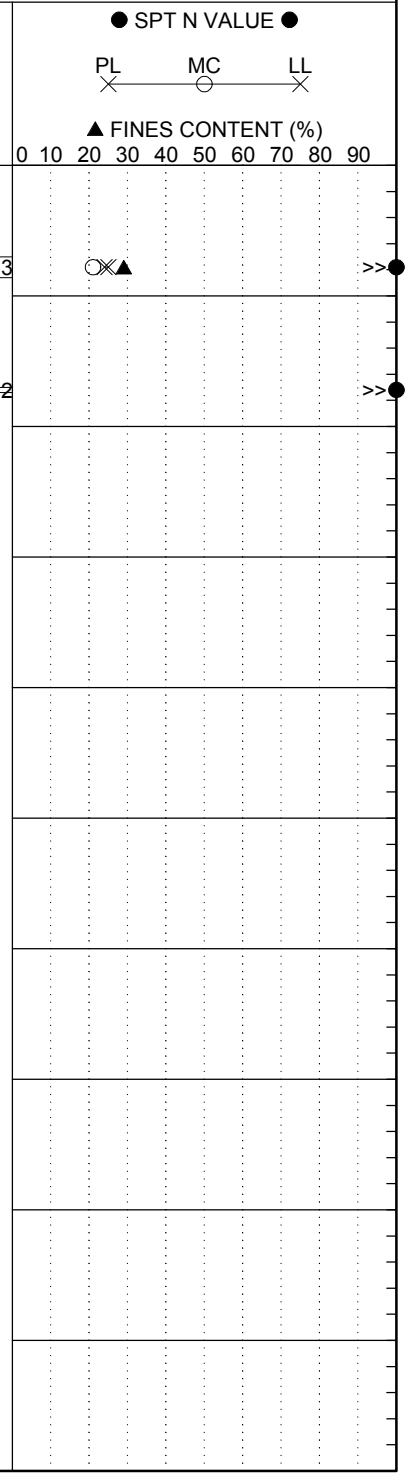
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | RW-143A |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2114+08 | **Offset:** | 52' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 803.8 ft | **Latitude:** | 35.15181 | **Longitude:** | 81.48876 | **Date Started:** | 2/20/2017 |
| **Total Depth:** | 58.7 ft | **Soil Depth:** | 58.7 ft | **Core Depth:** | ft | **Date Completed:** | 2/20/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 44.5 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 |
|---|---|---|---|---|---|---|---|---|---|
| | 54.0 | **Partially Weathered Rock** | | 53.5 | SS-14 | 43 | 50/0.3 | | 50/0.3 |
| 748.8 | | Very dense, moist to wet, gray & brown, non-reactive, weakly cemented, silty SAND (SM/A-2-4). | | | | | | | |
| | 58.7 | LL=25, PL=24, PI=1, NMC=20.9, %#200=29.0 | | 58.5 | SS-15 | 50/0.2 | | | 50/0.2 |
| 743.8 | | Splitspoon Refusal & Boring Terminated at 58.7' (Elev. 745.1). | | | | | | | |
| 738.8 | | Boring relocated due to guardrail and steep embankment. | | | | | | | |
| 733.8 | | | | | | | | | |
| 728.8 | | | | | | | | | |
| 723.8 | | | | | | | | | |
| 718.8 | | | | | | | | | |
| 713.8 | | | | | | | | | |
| 708.8 | | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | RW-144 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2115+98 | **Offset:** | 72' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 784.4 ft | **Latitude:** | 35.15245 | **Longitude:** | 81.48857 | **Date Started:** | 1/24/2017 |
| **Total Depth:** | 40.8 ft | **Soil Depth:** | 40.9 ft | **Core Depth:** | ft | **Date Completed:** | 1/24/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **Groundwater:** | **TOB** Dry | **24HR** | NA |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION | Sample Depth (ft) | Sample No./Type | 1st 6" | 2nd 6" | 3rd 6" | N Value |
|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment**<br>Soft to stiff, moist, red & brown, non-reactive, non to medium plasticity, sandy SILT (ML/A-5). | 2.0 | SS-1 | 3 | 3 | 4 | 7 |
| | | | 4.0 | SS-2 | 2 | 5 | 5 | 10 |
| 779.4 | | | 6.0 | SS-3 | 3 | 4 | 5 | 9 |
| | | | 8.0 | SS-4 | 4 | 3 | 5 | 8 |
| 774.4 | | | 10.0 | SS-5 | 2 | 2 | 3 | 5 |
| | 14.1 | | 13.5 | SS-6 | 2 | 2 | 1 | 3 |
| 769.4 | | **Alluvium**<br>Soft, moist, gray, non-reactive, low plasticity, finely sandy SILT (ML/A-4). | | | | | | |
| | 16.8 | **Residual**<br>Soft, moist, gray & green, non-reactive, non-plastic, saprolitic, micaceous, sandy SILT (ML/A-4).<br>LL=31, PL=24, PI=7, NMC=36.8, %#200=63.5 | 18.5 | SS-7 | 2 | 1 | 3 | 4 |
| 764.4 | | | | | | | | |
| | 21.8 | | 23.5 | SS-8 | 2 | 2 | 2 | 4 |
| 759.4 | | | | | | | | |
| | 26.8 | Very loose, wet, tan & white, non-reactive, non-plastic, saprolitic, micaceous, silty SAND (SM/A-2-4).<br>LL=NP, PL=NP, PI=NP, NMC=33.1, %#200=30.5 | 28.5 | SS-9 | 3 | 6 | 14 | 10 |
| 754.4 | | | | | | | | |
| | | Loose to medium dense, moist to wet, tan, white, gray & brown, non-reactive, saprolitic, micaceous, fine to coarse grain, silty SAND (SM/A-2-4).<br>LL=NP, PL=NP, PI=NP, NMC=21.5, %#200=34.3 | 33.5 | SS-10 | 43 | 16 | 10 | 26 |
| 749.4 | | | | | | | | |
| | 38.5 | **Partially Weathered Rock**<br>Described as sand and gravel size mica and schist fragments. | 38.5 | ~~SS-11~~ | ~~50/0.2~~ | | | ~~50/0.2~~ |
| 744.4 | 40.9 | | 40.8 | ~~SS-12~~ | ~~50/0.1~~ | | | ~~50/0.1~~ |
| | | Auger & Splitspoon Refusal & Boring Terminated at 40.9' (Elev. 743.5). | | | | | | |
| 739.4 | | | | | | | | |
| | | Boring relocated due to steep slope and utilities. Boring collapsed at 20.2'. | | | | | | |

● SPT N VALUE ●

PL MC LL

▲ FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

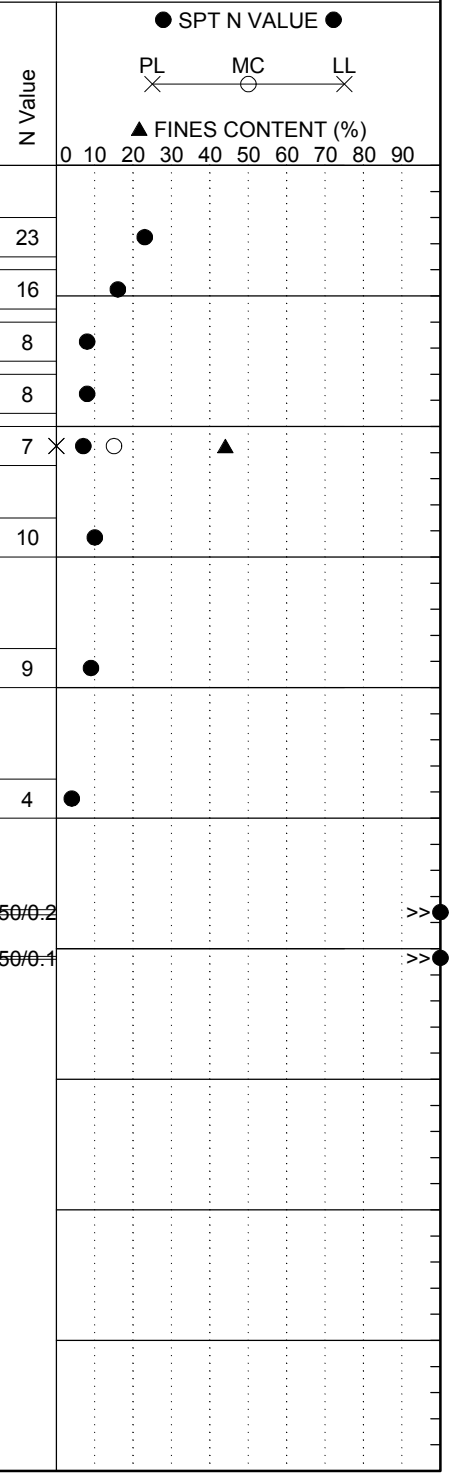
## LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | RW-145 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2118+15 | **Offset:** | 101' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 788.3 ft | **Latitude:** | 35.15281 | **Longitude:** | 81.48797 | **Date Started:** | 1/24/2017 |
| **Total Depth:** | 30.4 ft | **Soil Depth:** | 30.4 ft | **Core Depth:** | ft | **Date Completed:** | 1/24/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment**<br>Medium dense, moist, red, non-reactive, sandy SILT (ML/A-4). | | 2.0 | | | | | |
| | 3.8 | | | | SS-1 | 8 | 11 | 12 | 23 |
| 783.3 | 5.8 | **Residual**<br>Medium dense, moist, red, non-reactive, saprolitic, sandy SILT (ML/A-4). | | 4.0 | SS-2 | 5 | 6 | 10 | 16 |
| | | Loose, moist, yellow & brown, non-reactive, saprolitic, micaceous, silty SAND (SM/A-4). | | 6.0 | SS-3 | 3 | 4 | 4 | 8 |
| | | | | 8.0 | SS-4 | 3 | 4 | 4 | 8 |
| 778.3 | | LL=NP, PL=NP, PI=NP, NMC=14.6, %#200=44.2 | | 10.0 | SS-5 | 3 | 3 | 4 | 7 |
| | | | | 13.5 | SS-6 | 3 | 4 | 6 | 10 |
| 773.3 | 16.8 | Loose, moist, white & brown, non-reactive, saprolitic, micaceous, silty SAND (SM/A-2-4). | | 18.5 | SS-7 | 3 | 4 | 5 | 9 |
| 768.3 | 21.8 | Soft, moist to wet, gray & brown, non-reactive, non-plastic, saprolitic, micaceous, sandy SILT (ML/A-4). | | 23.5 | SS-8 | 0 | 2 | 2 | 4 |
| 763.3 | | | | | | | | | |
| | 28.5 | **Partially Weathered Rock** | | 28.5 | SS-9 | 50/0.2 | | | 50/0.2 |
| 758.3 | 30.4 | Described as hard SILT with gravel size schist fragments. | | 30.3 | SS-10 | 50/0.1 | | | 50/0.1 |
| | | Auger & Splitspoon Refusal & Boring Terminated at 30.4' (Elev. 757.9). | | | | | | | |
| 753.3 | | Boring relocated due to steep slope as well as underground and overhead utilities. Boring collapsed at 20.1'. | | | | | | | |
| 748.3 | | | | | | | | | |
| 743.3 | | | | | | | | | |




## LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | RW-146 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2123+96 | **Offset:** | 100' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 804.6 ft | **Latitude:** | 35.15375 | **Longitude:** | 81.4864 | **Date Started:** | 1/24/2017 |
| **Total Depth:** | 15 ft | **Soil Depth:** | 15.0 ft | **Core Depth:** | ft | **Date Completed:** | 1/24/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** Firm, moist, yellow-brown, low plasticity, finely sandy SILT (ML/A-5). | | 2.0 | | | | | | |
| | 3.8 | | | | SS-1 | 6 | 6 | 8 | 14 | ● |
| | | | | 4.0 | | | | | | |
| 799.6 | | **Residual** Firm to stiff, moist, yellow, brown & orange, non-reactive, non to medium plasticity, micaceous, saprolitic, sandy SILT (ML/A-5).LL=42, PL=38, PI=4, NMC=25.3, %#200=54.6 | | | SS-2 | 4 | 4 | 5 | 9 | ● |
| | | | | 6.0 | | | | | | |
| | | | | | SS-3 | 3 | 4 | 4 | 8 | ● ○ ▲ |
| | | | | 8.0 | | | | | | |
| | | | | | SS-4 | 3 | 3 | 4 | 7 | ● |
| 794.6 | | | | 10.0 | | | | | | |
| | | | | | SS-5 | 3 | 4 | 4 | 8 | ● |
| | | | | 13.5 | | | | | | |
| | 15.0 | | | | SS-6 | 2 | 3 | 3 | 6 | ● |
| 789.6 | | No Refusal & Boring Terminated at 15.0' (Elev. 789.6). Boring relocated due to steep slope and utilities. | | | | | | | | |
| 784.6 | | | | | | | | | | |
| 779.6 | | | | | | | | | | |
| 774.6 | | | | | | | | | | |
| 769.6 | | | | | | | | | | |
| 764.6 | | | | | | | | | | |
| 759.6 | | | | | | | | | | |

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | RW-147 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2126+10 | **Offset:** | 101' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 806.7 ft | **Latitude:** | 35.1541 | **Longitude:** | 81.48583 | **Date Started:** | 1/25/2017 |
| **Total Depth:** | 20 ft | **Soil Depth:** | 20.0 ft | **Core Depth:** | ft | **Date Completed:** | 1/25/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 2.0 | | | | | |
| | | Stiff, moist, red-brown, non-reactive, medium plasticity, finely sandy lean CLAY (CL/A-6). | | | SS-1 | 5 | 5 | 5 | 10 |
| | 4.6 | | | 4.0 | | | | | |
| 801.7 | | **Residual** | | | SS-2 | 3 | 6 | 5 | 11 |
| | | Firm to stiff, moist, red, brown, orange & gray-green, non-reactive, medium plasticity, saprolitic, lean CLAY (CL/A-6). | | 6.0 | SS-3 | 4 | 4 | 4 | 8 |
| | 9.8 | LL=36, PL=23, PI=13, NMC=18.1, %#200=56.1 | | 8.0 | SS-4 | 2 | 3 | 4 | 7 |
| 796.7 | | | | 10.0 | SS-5 | 3 | 3 | 4 | 7 |
| | | Firm, moist to wet, orange, brown & dark green, non-reactive, non-plastic, saprolitic, sandy SILT (ML/A-6). | | 13.5 | SS-6 | 2 | 3 | 3 | 6 |
| 791.7 | | LL=40, PL=28, PI=12, NMC=41.2, %#200=55.3 | | | | | | | |
| | | | | 18.5 | | | | | |
| | 20.0 | | | | SS-7 | 3 | 3 | 4 | 7 |
| 786.7 | | No Refusal & Boring Terminated at 20.0' (Elev. 786.7). | | | | | | | |
| 781.7 | | | | | | | | | |
| 776.7 | | | | | | | | | |
| 771.7 | | | | | | | | | |
| 766.7 | | | | | | | | | |
| 761.7 | | | | | | | | | |

SPT N VALUE

PL MC LL

FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

## LEGEND

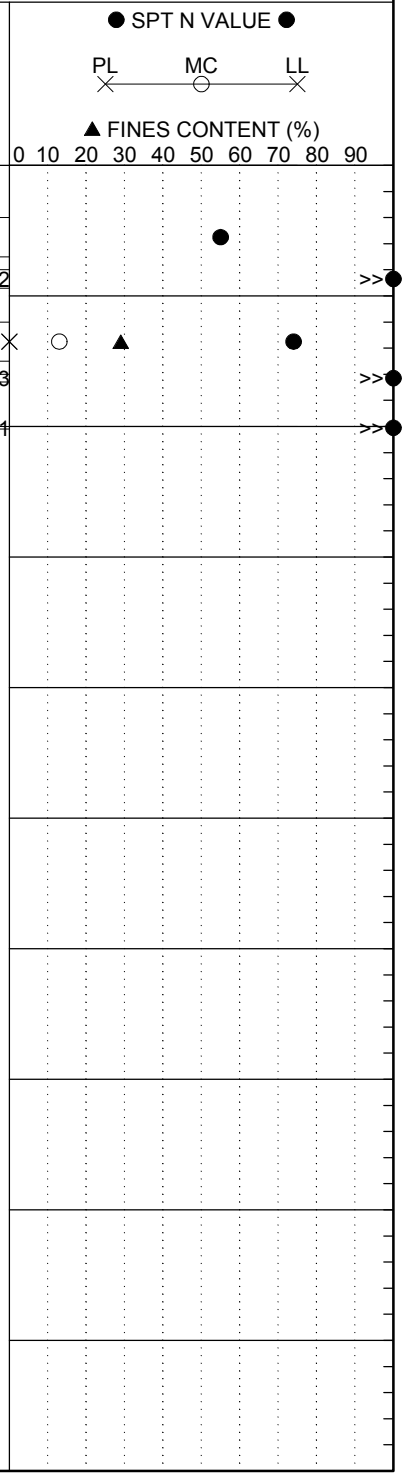
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | RW-148 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2128+09 | **Offset:** | 101' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 808.3 ft | **Latitude:** | 35.15442 | **Longitude:** | 81.48529 | **Date Started:** | 1/25/2017 |
| **Total Depth:** | 10.1 ft | **Soil Depth:** | 10.1 ft | **Core Depth:** | ft | **Date Completed:** | 1/25/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | 2.0 | | | | | |
| | | Very dense, moist, brown, white & yellow, non-reactive, saprolitic, micaceous, silty SAND w/thin PWR seams (SM/A-2-4). | | | SS-1 | 7 | 23 | 32 | 55 |
| 803.3 | | LL=NP, PL=NP, PI=NP, NMC=12.5, %#200=29.1 | | 4.0 | SS-2 | 20 | 50/0.2 | | 50/0.2 |
| | | | | 6.0 | SS-3 | 14 | 37 | 37 | 74 |
| | 8.0 | **Partially Weathered Rock** | | 8.0 | SS-4 | 50/0.3 | | | 50/0.3 |
| 798.3 | 10.1 | Described as silty sand and gravel size fragments of schist and mica. | | 10.0 | SS-5 | 50/0.1 | | | 50/0.1 |
| | | Splitspoon Refusal & Boring Terminated at 10.1' (Elev. 798.2). | | | | | | | |
| 793.3 | | | | | | | | | |
| 788.3 | | | | | | | | | |
| 783.3 | | | | | | | | | |
| 778.3 | | | | | | | | | |
| 773.3 | | | | | | | | | |
| 768.3 | | | | | | | | | |
| 763.3 | | | | | | | | | |



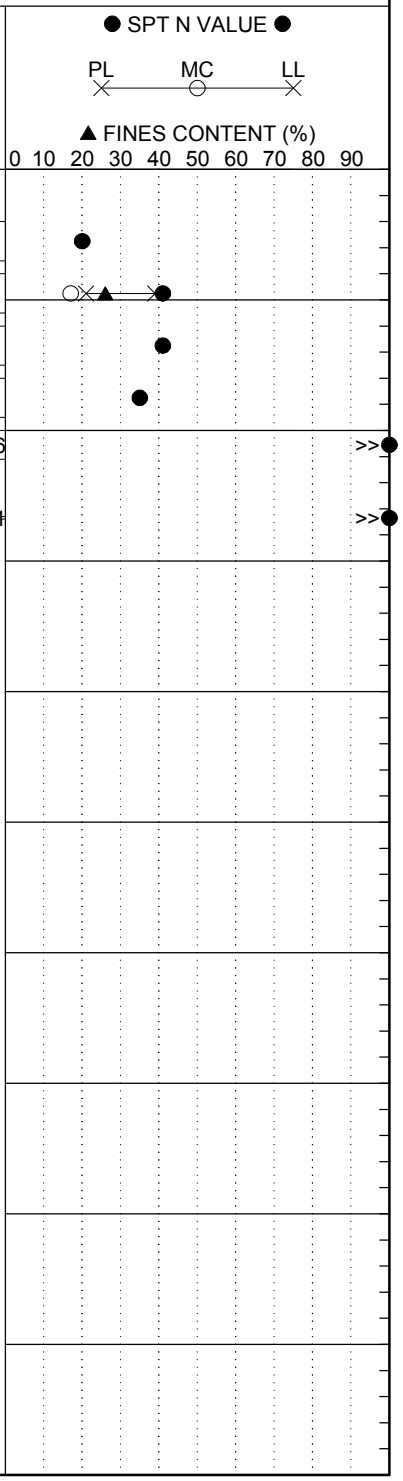

## LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | RW-149 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2130+01 | **Offset:** | 102' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 811.9 ft | **Latitude:** | 35.15474 | **Longitude:** | 81.48477 | **Date Started:** | 1/25/2017 |
| **Total Depth:** | 13.4 ft | **Soil Depth:** | 13.4 ft | **Core Depth:** | ft | **Date Completed:** | 1/25/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | 2.0 | | | | | |
| | | Medium dense to dense, moist, red, brown & yellow, non-reactive, clayey SAND (SC/A-2-6). | | | SS-1 | 4 | 8 | 12 | 20 |
| 806.9 | | LL=39, PL=21, PI=18, NMC=16.5, %#200=26.1 | | 4.0 | SS-2 | 6 | 16 | 25 | 41 |
| | 6.4 | **Residual** | | 6.0 | SS-3 | 13 | 20 | 21 | 41 |
| | | Dense, moist, brown-yellow, gray & white, non-reactive, saprolitic, micaceous, silty SAND (SM/A-2-4). | | 8.0 | SS-4 | 9 | 23 | 12 | 35 |
| 801.9 | 11.0 | | | 10.0 | SS-5 | 5 | 27 | 50/0.1 | 77/0.6 |
| | 13.4 | **Partially Weathered Rock** | | 13.3 | SS-6 | 50/0.1 | | | 50/0.1 |
| 796.9 | | Described as sand and gravel size schist and mica fragments. | | | | | | | |
| | | Auger & Splitspoon Refusal & Boring Terminated at 13.4' (Elev. 798.5). | | | | | | | |
| 791.9 | | Boring relocated due to utilities. | | | | | | | |
| 786.9 | | | | | | | | | |
| 781.9 | | | | | | | | | |
| 776.9 | | | | | | | | | |
| 771.9 | | | | | | | | | |
| 766.9 | | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | R-150 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2258+01 | **Offset:** | 57' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 817.7 ft | **Latitude:** | 35.16673 | **Longitude:** | 81.44673 | **Date Started:** | 2/21/2017 |
| **Total Depth:** | 54 ft | **Soil Depth:** | 54.0 ft | **Core Depth:** | ft | **Date Completed:** | 2/20/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 23.9 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | | | | | | | | | |
| | 1.0 | Asphalt and road base. | | | | | | | | |
| | | **Roadway Embankment** Loose, moist to dry, brown, non-reactive, weakly to strongly cemented, silty SAND w/gravel & mica (SM/A-4). | | 2.0 | SS-1 | 4 | 4 | 5 | 9 | ● |
| 812.7 | 5.8 | LL=34, PL=29, PI=5, NMC=19.8, %#200=41.3 | | 4.0 | SS-2 | 3 | 5 | 4 | 9 | ● |
| | | | | 6.0 | SS-3 | 3 | 4 | 4 | 8 | ● |
| | | | | 8.0 | SS-4 | 2 | 3 | 3 | 6 | ● |
| 807.7 | | Firm, moist, brown, weakly reactive, weakly to moderately cemented, sandy SILT w/mica (ML/A-7-5). | | 10.0 | SS-5 | 3 | 3 | 4 | 7 | ● ○ × ▲ |
| | | LL=44, PL=31, PI=13, NMC=24.0, %#200=57.5 | | 13.2 | SS-6 | 3 | 3 | 4 | 7 | ● |
| 802.7 | 16.5 | | | | | | | | | |
| | | Very soft to soft, moist, brown, gray & orange, weakly reactive, weakly to moderately cemented, sandy SILT w/mica (ML/A-4). | | 18.2 | SS-7 | 2 | 1 | 2 | 3 | ● |
| 797.7 | | LL=40, PL=32, PI=8, NMC=32.5, %#200=54.3 | | | | | | | | |
| | | ▽ | | 23.2 | SS-8 | 0 | 1 | 1 | 2 | ● ⊗ × ▲ |
| 792.7 | 26.5 | | | | | | | | | |
| | | **Alluvium** Very soft, moist, gray, gray-brown, non-reactive, weakly cemented, sandy SILT (ML/A-4). | | 28.2 | SS-9 | 0 | 1 | 0 | 1 | ● |
| 787.7 | 31.5 | | | | | | | | | |
| | | **Residual** Loose, gray & brown, non-reactive, silty SAND (SM/A-2-4). | | 33.2 | SS-10 | 2 | 2 | 4 | 6 | ● |
| 782.7 | | LL=37, PL=33, PI=4, NMC=35.1, %#200=32.8 | | 38.2 | SS-11 | 1 | 3 | 3 | 6 | ● ⊗ × |
| 777.7 | 41.5 | | | | | | | | | |
| | | Loose, moist, gray & brown, non-reactive, weakly cemented, medium to coarse grain, silty SAND w/mica (SM/A-2-4). | | 43.2 | SS-12 | 2 | 4 | 5 | 9 | × ● ▲ |
| 772.7 | | LL=NP, PL=NP, PI=NP, NMC=32.5, %#200=32.5 | | 48.2 | SS-13 | 2 | 3 | 4 | 7 | ● |

*Continued Next Page*

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | R-150 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 2258+01 | **Offset:** | 57' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 817.7 ft | **Latitude:** | 35.16673 | **Longitude:** | 81.44673 | **Date Started:** | 2/21/2017 |
| **Total Depth:** | 54 ft | **Soil Depth:** | 54.0 ft | **Core Depth:** | ft | **Date Completed:** | 2/20/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **Groundwater:** | **TOB** 23.9 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 51.5 | | | | | | | | | |
| | 54.0 | Very dense, moist, gray & brown, non-reactive, moderately cemented, medium to coarse grain, silty SAND w/PWR seams(SM/A-1-b). LL=NP, PL=NP, PI=NP, NMC=26.0, %#200=14.9 | | 53.2 | SS-14 | 15 | 50/0.3 | | 50/0.3 | |
| 762.7 | | Splitspoon Refusal & Boring Terminated at 54.0' (Elev. 763.7). | | | | | | | | |
| 757.7 | | Boring relocated due to guardrail and steep embankment. | | | | | | | | |
| 752.7 | | | | | | | | | | |
| 747.7 | | | | | | | | | | |
| 742.7 | | | | | | | | | | |
| 737.7 | | | | | | | | | | |
| 732.7 | | | | | | | | | | |
| 727.7 | | | | | | | | | | |
| 722.7 | | | | | | | | | | |

LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | R-153 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 2105+05 | **Offset:** | 111' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 838.0 ft | **Latitude:** | 35.15021 | **Longitude:** | 81.49108 | **Date Started:** | 1/23/2017 |
| **Total Depth:** | 45 ft | **Soil Depth:** | 45.0 ft | **Core Depth:** | ft | **Date Completed:** | 1/23/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** Firm to very stiff, moist, brown & red, non-reactive, non-plastic, saprolitic, sandy SILT (ML/A-4). LL=37, PL=36, PI=1, NMC=18.1, %#200=50.3 | | 2.0 | SS-1 | 5 | 5 | 5 | 10 | |
| 833.0 | | | | 4.0 | SS-2 | 4 | 3 | 4 | 7 | |
| | | | | 6.0 | SS-3 | 5 | 5 | 6 | 11 | |
| | | | | 8.0 | SS-4 | 5 | 9 | 7 | 16 | |
| 828.0 | | | | 10.0 | SS-5 | 4 | 5 | 5 | 10 | |
| | 12.5 | Loose to medium dense, moist, red, brown, white, gray & orange, non-reactive, saprolitic, silty SAND (SM/A-4). LL=36, PL=30, PI=6, NMC=30.8, %#200=44.4 | | 13.5 | SS-6 | 3 | 4 | 6 | 10 | |
| 823.0 | | | | 18.5 | SS-7 | 11 | 9 | 5 | 14 | |
| 818.0 | | | | 23.5 | SS-8 | 4 | 6 | 6 | 12 | |
| 813.0 | | | | 28.5 | SS-9 | 6 | 11 | 9 | 20 | |
| 808.0 | | | | 33.5 | SS-10 | 6 | 6 | 9 | 15 | |
| 803.0 | | | | 38.5 | SS-11 | 2 | 3 | 5 | 8 | |
| 798.0 | 41.8 | Medium dense, moist, brown, non-reactive, saprolitic, silty SAND (SM/A-2-4). | | 43.5 | SS-12 | 7 | 9 | 11 | 20 | |
| 793.0 | 45.0 | LL=31, PL=27, PI=4, NMC=19.5, %#200=32.4 No Refusal & Boring Terminated at 45.0' (Elev. 793.0). | | | | | | | | |

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

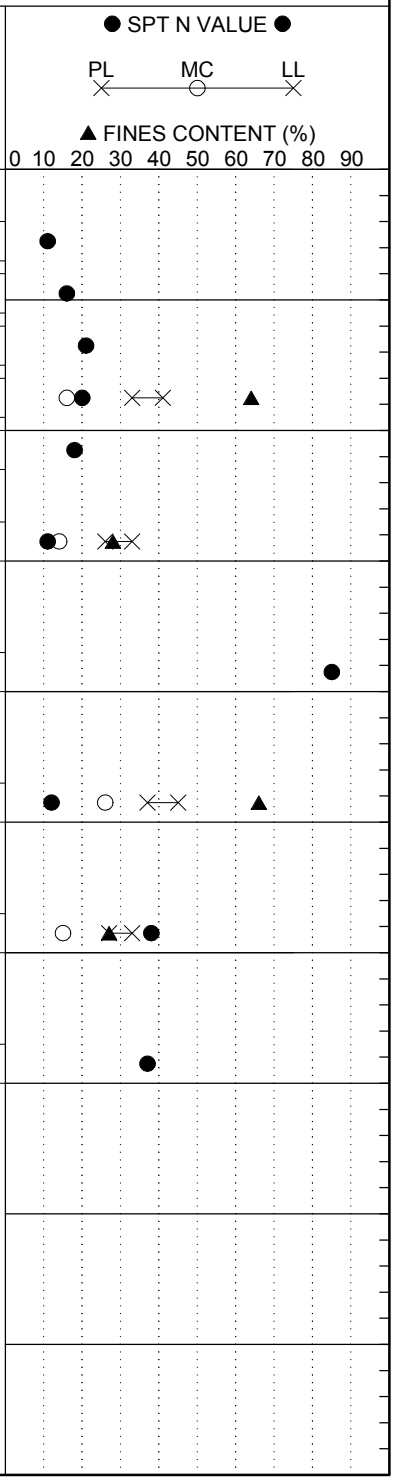
## LEGEND

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

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | RW-154 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | S. Abernathy | **Boring Location:** | 12+12 | **Offset:** | 14' Lt. | **Alignment:** | Henson Rd. |
| **Elev.:** | 815.4 ft | **Latitude:** | 35.13728 | **Longitude:** | 81.51186 | **Date Started:** | 2/3/2017 |
| **Total Depth:** | 35 ft | **Soil Depth:** | 35 ft | **Core Depth:** | ft | **Date Completed:** | 2/3/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 550 | **Drill Method:** | HSA | **Hammer Type:** | Automatic | **Energy Ratio:** | 81.1% |
| **Core Size:** | NA | **Driller:** | R. Toothman | **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 |
|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** | | | | | | | |
| | | Stiff to very stiff, moist, orange, brown & red, non-reactive, non-plastic, saprolitic, sandy SILT (ML/A-5). | | 2.0 | SS-1 | 4 | 5 | 6 | 11 |
| 810.4 | | LL=41, PL=33, PI=8, NMC=15.5, %#200=63.7 | | 4.0 | SS-2 | 6 | 7 | 9 | 16 |
| | | | | 6.0 | SS-3 | 8 | 10 | 11 | 21 |
| | | | | 8.0 | SS-4 | 8 | 9 | 11 | 20 |
| 805.4 | | | | 10.0 | SS-5 | 9 | 9 | 9 | 18 |
| | 12.5 | Medium dense to very dense, moist, white, non-reactive, saprolitic, silty fine to coarse grain SAND with gravel (SM/A-2-4). | | 13.5 | SS-6 | 12 | 7 | 4 | 11 |
| 800.4 | | LL=33, PL=26, PI=7, NMC=13.9, %#200=28.0 | | 18.5 | SS-7 | 21 | 35 | 50 | 85 |
| 795.4 | 21.8 | Stiff, moist, red & orange, non-reactive, non-plastic, saprolitic, sandy SILT (ML/A-5). | | 23.5 | SS-8 | 4 | 5 | 7 | 12 |
| 790.4 | | LL=45, PL=37, PI=8, NMC=25.8, %#200=66.2 | | | | | | | |
| | 26.8 | Dense, white, brown & orange, non-reactive, silty SAND with gravel (SM/A-2-4). | | 28.5 | SS-9 | 12 | 15 | 23 | 38 |
| 785.4 | | LL=33, PL=27, PI=6, NMC=15.0, %#200=27.2 | | 33.5 | SS-10 | 8 | 11 | 26 | 37 |
| 780.4 | 35.0 | Boring Terminated at 35.0' (Elev. 780.4). | | | | | | | |
| | | Boring relocated due to overhead utilities. | | | | | | | |
| 775.4 | | | | | | | | | |
| 770.4 | | | | | | | | | |




## LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-155 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 1971+60 | **Offset:** | 56' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 606.5 ft | **Latitude:** | 35.13418 | **Longitude:** | 81.53078 | **Date Started:** | 3/5/2017 |
| **Total Depth:** | 91.1 ft | **Soil Depth:** | 63.3 ft | **Core Depth:** | 27.8 ft | **Date Completed:** | 3/6/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 17.0 ft. | **24HR** | NA |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION | Sample Depth (ft) | Sample No./Type | 1st 6" | 2nd 6" | 3rd 6" | N Value |
|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Roadway Embankment** | | | | | | |
| | | Loose, moist, red, orange & brown, non-reactive, weakly to moderately cemented, silty SAND w/few asphalt fragments (SM/A-4). | 2.0 | | | | | |
| | 3.8 | LL=30, PL=25, PI=5, NMC=15.5, %#200=45.1 | | SS-1 | 2 | 4 | 5 | 9 |
| 601.5 | | | 4.0 | | | | | |
| | | | | SS-2 | 3 | 5 | 4 | 9 |
| | | | 6.0 | | | | | |
| | | | | SS-3 | 6 | 6 | 7 | 13 |
| | 7.8 | | 8.0 | | | | | |
| | 9.8 | Loose to medium dense, moist, red, orange, brown & white, non-reactive, weakly to moderately cemented, micaceous, clayey SAND (SC/A-6). | | SS-4 | 7 | 10 | 13 | 23 |
| 596.5 | | | 10.0 | | | | | |
| | | LL=29, PL=18, PI=11, NMC=17.3, %#200=35.9 | | SS-5 | 14 | 24 | 24 | 48 |
| | | | 13.6 | | | | | |
| | | | | SS-6 | 6 | 7 | 10 | 17 |
| 591.5 | | | | | | | | |
| | 16.7 | Medium dense, moist, brown, orange, yellow & red, non-reactive, weakly cemented, silty SAND w/felspar & gravel fragments (SM/A-4). | 18.3 | | | | | |
| | | LL=NP, PL=NP, PI=NP, NMC=20.2, %#200=35.8 | | SS-7 | 6 | 3 | 5 | 8 |
| 586.5 | | | | | | | | |
| | | Medium dense to dense, moist, brown, orange, white & black, non-reactive, weakly cemented, silty SAND w/feldspar & mica (SM/A-2-4). | 23.3 | | | | | |
| | | | | SS-8 | 9 | 24 | 22 | 46 |
| 581.5 | 26.6 | LL=NP, PL=NP, PI=NP, NMC=20.1, %#200=34.0 | | | | | | |
| | | **Residual** | 28.3 | | | | | |
| | | | | SS-9 | 27 | 49 | 30 | 79 |
| 576.5 | | | | | | | | |
| | 31.6 | Loose to dense, moist, brown, orange, white, red & black, non-reactive, weakly cemented, saprolitic, silty SAND w/feldspar, mica & quartz fragments (SM/A-2-4). | 33.3 | | | | | |
| | | | | SS-10 | 7 | 21 | 8 | 29 |
| 571.5 | | LL=25, PL=25, PI=NP, NMC=17.7, %#200=26.1 | | | | | | |
| | 38.3 | Very dense, moist to wet, brown & white, non-reactive, weakly cemented, silty SAND (SM/A-1-b). | 38.3 | SS-11 | 49 | 51/0.3 | | 100/0.8 |
| 566.5 | | | | | | | | |
| | | LL=NP, PL=NP, PI=NP, NMC=13.6, %#200=19.9 | | | | | | |
| | 43.3 | | 43.3 | | | | | |
| | | Medium dense, moist, brown, orange & white, non-reactive, weakly cemented, saprolitic, silty SAND w/feldspar & quartz fragments (SM/A-1-b). | | SS-12 | 12 | 19 | 16 | 35 |
| 561.5 | 46.6 | | | | | | | |
| | | **Partially Weathered Rock** | 48.3 | | | | | |
| | | Logged as very dense, brown & white, | | SS-13 | 29 | 45 | 34 | 79 |

SPT N VALUE

PL MC LL

FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

LEGEND

*Continued Next Page*

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-155 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 1971+60 | **Offset:** | 56' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 606.5 ft | **Latitude:** | 35.13418 | **Longitude:** | 81.53078 | **Date Started:** | 3/5/2017 |
| **Total Depth:** | 91.1 ft | **Soil Depth:** | 63.3 ft | **Core Depth:** | 27.8 ft | **Date Completed:** | 3/6/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 17.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 51.6 | non-reactive, silty, medium to coarse grain size fragments of rock, mica and quartz (SM/A-1-b). | | | | | | | | |
| | | **Residual** | | 53.3 | SS-14 | 27 | 16 | 30 | 46 | |
| 551.5 | | Dense, moist to wet, brown & white, non-reactive, weakly to moderately cemented, silty SAND (SM/A-4). | | | | | | | | |
| | 58.8 | LL=29, PL=27, PI=2, NMC=15.2, %#200=36.7 | | 58.3 | SS-15 | 22 | 50/0.1 | | 72/0.6 | >> |
| 546.5 | | Dense, moist to wet, brown & white, non-reactive, weakly to moderately cemented, silty SAND w/quartz fragments (SM/A-1-b). | | 63.3 | SS-16 | 50/0..0 | | | 50/0.0 | No Recovery >> |
| | 63.3 | LL=25, PL=22, PI=3, NMC=15.7, %#200=20.1 | | 63.3 | NQ-1 | | | | | REC%=100, RQD%=13 |
| 541.5 | | Dense to very dense, moist to wet, brown, white & gray, weakly cemented, well-graded SAND with silt and gravel (SW-SM/A-1-a). | | 66.1 | NQ-2 | | | | | REC%=98, RQD%=56 |
| 536.5 | | LL=NP, PL=NP, PI=NP, NMC=10.5, %#200=10.6 | | 71.1 | NQ-3 | | | | | REC%=100, RQD%=64 |
| | 74.0 | **Partially Weathered Rock** | | | | | | | | |
| 531.5 | | Logged as medium to coarse grain size fragments of granite, mica, feldspar and quartz (SW-SM/A-1-a). | | 76.1 | NQ-4 | | | | | REC%=100, RQD%=90 |
| 526.5 | | Splitspoon & Auger Refusal at 63.3', Begin Coring in Cherryville Granite. | | 81.1 | NQ-5 | | | | | REC%=100, RQD%=92 |
| | | Brown, light gray, off-white, faint brown-red-orange stain, medium to coarse grain, foliated in parts, feldspar-quartz-mica, moderate to highly weathered, moderately hard to hard, very close discontinuity spacing. | | 86.1 | NQ-6 | | | | | REC%=100, RQD%=94 |
| 521.5 | | broken & weathered 63.3'-63.6'; 60° V MW-W, Fi, Gy, Pl, SR; completely weathered 65.7'-66.2'; 5 60° J VN, Su-Sp, Fe-Gy,Pl, S-SR; 5 30°-45° VN, Su, Fe, Pl, SR; 35 0°-20° VN, Su-Sp, FE-Cl, Pl, SR | | | | | | | | |
| 516.5 | 91.1 | | | | | | | | | |
| 511.5 | | Cherryville Granite: Light gray-gray, off-white, black, traces blue, white veining, medium grain w/intervals fine grain, faintly foliated in parts, feldspar-quartz-muscovite-biotite-traces kyanite & garnet, slightly weathered to fresh, very hard, very close discontinuity spacing, healed joints throughout. | | | | | | | | |

*Continued Next Page*

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-155 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 1971+60 | **Offset:** | 56' Lt. | **Alignment:** | I-85 |
| **Elev.:** | 606.5 ft | **Latitude:** | 35.13418 | **Longitude:** | 81.53078 | **Date Started:** | 3/5/2017 |
| **Total Depth:** | 91.1 ft | **Soil Depth:** | 63.3 ft | **Core Depth:** | 27.8 ft | **Date Completed:** | 3/6/2017 |
| **Bore Hole Diameter (in):** | 2.25 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 17.0 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | pod quartz rich, fine grain w/trace epidote 76.8'-77.4'; 13 0°-20° J VN, No, No, Pl, SR; 9 40°-55° T-VN, No, No, Pl, SR-R; 14 70° V, VN, Fi, Ca, Pl, S; 1 25° V, VN-MW, Fi, Ca, Ir, SR-R; 1 60°-90° V VN-N, Fi, Gy, Ir, SR-R; pod quartz rich, fine grain 89.6'-90.3' | | | | | | | | |
| 501.5 | | Boring Terminated at 91.1' (Elev. 515.4). | | | | | | | | |
| 496.5 | | | | | | | | | | |
| 491.5 | | | | | | | | | | |
| 486.5 | | | | | | | | | | |
| 481.5 | | | | | | | | | | |
| 476.5 | | | | | | | | | | |
| 471.5 | | | | | | | | | | |
| 466.5 | | | | | | | | | | |
| 461.5 | | | | | | | | | | |

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-156 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 1973+54 | **Offset:** | 40' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 614.2 ft | **Latitude:** | 35.13408 | **Longitude:** | 81.53007 | **Date Started:** | 3/4/2017 |
| **Total Depth:** | 79.3 ft | **Soil Depth:** | 52.2 ft | **Core Depth:** | 27.1 ft | **Date Completed:** | 3/5/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 22.1 ft. | **24HR** | NA |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION | Sample Depth (ft) | Sample No./Type | 1st 6" | 2nd 6" | 3rd 6" | N Value |
|---|---|---|---|---|---|---|---|---|
| | 0.0 | **Residual** Medium dense to dense,moist, brown, orange, white & black, non-reactive, weakly to moderately cemented, saprolitic, silty SAND (SM/A-4). | 2.0 | | | | | |
| 609.2 | | | | SS-1 | 5 | 9 | 12 | 21 |
| | | | 4.0 | | | | | |
| | | | | SS-2 | 11 | 14 | 18 | 32 |
| | | | 6.0 | | | | | |
| | | | | SS-3 | 3 | 8 | 8 | 16 |
| | 7.8 | | 8.0 | | | | | |
| | | Dense, moist, white, brown & gray, non-reactive, weakly cemented, silty SAND (SM/A-1-b). | | SS-4 | 8 | 16 | 20 | 36 |
| 604.2 | 9.8 | LL=NP, PL=NP, PI=NP, NMC=8.4, %#200=17.4 | 10.0 | | | | | |
| | | | | SS-5 | 5 | 10 | 15 | 25 |
| | 13.2 | | | | | | | |
| | | Medium dense, moist, brown, orange, white & gray, non-reactive, weakly to moderately cemented, silty SAND w/mica, feldspar & quartz (SM/A-2-4). | 14.8 | | | | | |
| 599.2 | 18.1 | LL=27, PL=25, PI=2, NMC=14.5, %#200=29.5 | | SS-6 | 2 | 5 | 6 | 11 |
| 594.2 | | Medium dense, moist, brown, orange & white, non-reactive, weakly cemented, micaceous, silty SAND (SM/A-4). | 19.8 | SS-7 | 6 | 14 | 13 | 27 |
| | 23.1 | | | | | | | |
| 589.2 | | Medium dense, moist, brown, orange, gray & black, non-reactive, weakly cemented, micaceous, silty SAND (SM/A-4). | 24.8 | SS-8 | 3 | 5 | 7 | 12 |
| | | LL=33, PL=29, PI=4, NMC=16.2, %#200=38.4 | | | | | | |
| 584.2 | | Medium dense to dense, moist, brown, white, black, orange & gray, non-reactive, weakly to moderately cemented, micaceous, silty SAND (SM/A-4). | 29.8 | SS-9 | 4 | 9 | 14 | 23 |
| 579.2 | | LL=38, PL=35, PI=3, NMC=29.0, %#200=43.1 | 34.8 | SS-10 | 4 | 10 | 27 | 37 |
| 574.2 | 40.3 | **Partially Weathered Rock** | 39.8 | SS-11 | 9 | 42 | 50/0.2 | 92/0.7 |
| | 42.9 | Logged as very dense, moist, orange, brown & white, non-reactive, moderately to strongly cemented, micaceous, silty SAND (SM/A-1-b). | | | | | | |
| 569.2 | | | 44.8 | SS-12 | 36 | 50/0.3 | | 86/0.8 |
| | | Logged as very dense, moist, orange, brown, white & gray, non-reactive, moderately to strongly cemented, micaceous, silty SAND with gravel & quartz | 49.8 | | | | | |

SPT N VALUE

PL MC LL

FINES CONTENT (%)

0 10 20 30 40 50 60 70 80 90

*Continued Next Page*

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-156 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 1973+54 | **Offset:** | 40' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 614.2 ft | **Latitude:** | 35.13408 | **Longitude:** | 81.53007 | **Date Started:** | 3/4/2017 |
| **Total Depth:** | 79.3 ft | **Soil Depth:** | 52.2 ft | **Core Depth:** | 27.1 ft | **Date Completed:** | 3/5/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 22.1 ft. | **24HR** | NA |

| Elevation (ft) | Depth (ft) | MATERIAL DESCRIPTION | 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 |
|---|---|---|---|---|---|---|---|
| | | (SM/A-1-b). | | SS-13 | 50/0.4 | 50/0.4 | |
| | 52.2 | LL=NP, PL=NP, PI=NP, NMC=15.2, %#200=19.2 | 52.2 | SS-14 | 50/0.0 | 50/0.0 | >> |
| | | | 52.2 | NQ-1 | | | REC%=86, RQD%=19 |
| 559.2 | | Splitspoon & Auger Refusal at 52.2', Begin Coring in Schist. | 54.3 | | | | |
| | | Light gray-off white, green-gray, dark gray, scattered brown-orange stain, fine grain w/medium grain granitic layer, thinly foliated, feldspar-muscovite-biotite-chlorite-hornblende, slightly to moderately weathered w/seams highly to completely weathered, soft to hard, very close discontinuity spacing. | | NQ-2 | | | REC%=100, RQD%=66 |
| 554.2 | | | 59.3 | | | | |
| | | | | NQ-3 | | | REC%=66, RQD%=24 |
| | 63.6 | | 64.3 | | | | |
| 549.2 | | highly weathered 53.8'-54.3' w/clay seams; 18 40° Fo VN, Fi, Cl-Fe, Pl, SR; 3 50°-60°J VN, Fi, Cl-Fe, Pl, SR; 1 90° N, Fi, Gy-Cl-Fe, Pl, SR; highly to completely weathered 60.6'-63.6', includes core loss | | NQ-4 | | | REC%=78, RQD%=36 |
| | 65.9 | | | | | | |
| | 70.0 | | 69.3 | | | | |
| 544.2 | | Cherryville Granite: Brown-gray, light gray-off white, brown-red-orange stain, medium grain, foliated in parts, feldspar-quartz-mica, moderate to completely weathered, hard-friable in part, very close discontinuity spacing. | | NQ-5 | | | REC%=84, RQD%=38 |
| | 72.6 | | | | | | |
| | 75.1 | | 74.3 | | | | |
| 539.2 | | 4 0°-20° J VN, Su, Fe, Pl, R | | NQ-6 | | | REC%=86, RQD%=54 |
| | 79.3 | Schist: Gray, green-gray, off white, dark gray, scattered brown-orange stain, fine grain w/laminations medium grain quartz, thinly foliated to foliated, feldspar-chlorite-muscovite-biotite-hornblende, slightly weathered to completely weathered, hard, very close discontinuity spacing. | | | | | |
| 534.2 | | | | | | | |
| 529.2 | | 10 35°-40° Fo VN, Sp, Cl-Fe, Pl, S-SR; 5 90° J VN-N, Sp, Cl-Gy-Fe-Sd, Wa, SR-R; completely weathered 66.7'-67.9', includes core loss | | | | | |
| 524.2 | | Cherryville Granite: Light gray-off white, brown-olivegray, brown-orange stain in part, medium grain, foliated, feldspar-quartz-mica, slightly to completely weathered, hard, very close discontinuity spacing. | | | | | |
| 519.2 | | 2+ 20°-30° J VN, Su, Fe, Pl, R; broken & highly weathered 71.2'-72.6' includes core loss | | | | | |
| | | Schist: Gray, green-gray, off white, dark | | | | | |

*Continued Next Page*

LEGEND

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

SC_DOT SC I-85 WIDENING DB PREP.GPJ SCDOT DATA TEMPLATE_12_30_2014.GDT 5/3/17

# SCDOT Soil Test Log

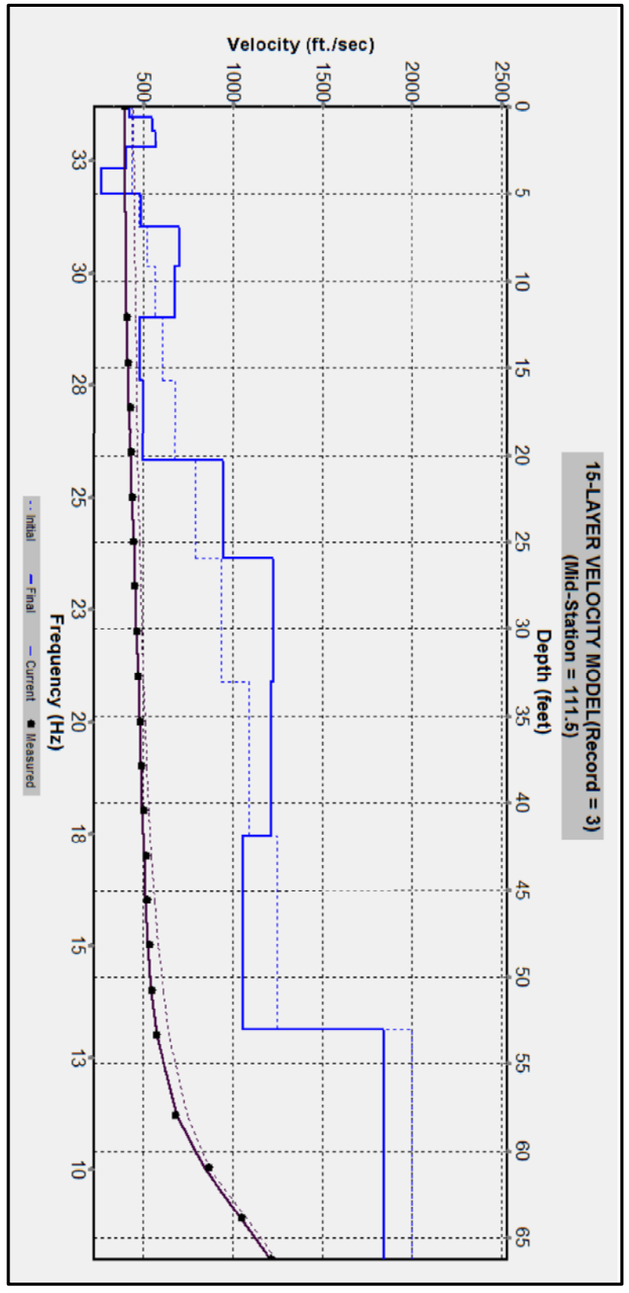
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project ID:** | P027116 | | | **County:** | Cherokee | **Boring No.:** | BR-156 |
| **Site Description:** | I-85 Widening From MP96-MP106 | | | | | **Route:** | |
| **Eng./Geo.:** | C. Taylor | **Boring Location:** | 1973+54 | **Offset:** | 40' Rt. | **Alignment:** | I-85 |
| **Elev.:** | 614.2 ft | **Latitude:** | 35.13408 | **Longitude:** | 81.53007 | **Date Started:** | 3/4/2017 |
| **Total Depth:** | 79.3 ft | **Soil Depth:** | 52.2 ft | **Core Depth:** | 27.1 ft | **Date Completed:** | 3/5/2017 |
| **Bore Hole Diameter (in):** | 4 | **Sampler Configuration** | | **Liner Required:** | Y (N) | **Liner Used:** | Y (N) |
| **Drill Machine:** | CME 55 | **Drill Method:** | HSA/DC | **Hammer Type:** | Automatic | **Energy Ratio:** | 91.5% |
| **Core Size:** | NQ | **Driller:** | F. Woodard | **Groundwater:** | **TOB** 22.1 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 |
|---|---|---|---|---|---|---|---|---|
| 509.2 | | gray, olive green, scattered brown-orange stain, fine grain w/laminations medium grain quartz, thinly foliated, feldspar-chlorite-mica, slightly to moderately weathered, hard, very close discontinuity spacing.<br>4 40° J VN-N, Su, Fe, Pl, SR; 7 0°-20° VN, Su, Fe, Ir, SR-R | | | | | | |
| 504.2 | | Cherryville Granite: Light gray-off white, brown-gray, brown-orange stain in part, medium grain w/coarse grain, foliated, feldspar-quartz-mica, slightly to completely weathered, moderately hard to hard, very close discontinuity spacing.<br>5+ 0°-20° J N, Sp, Fe-Sd, Ir, R; completely weathered 77.7'-79.3' includes core loss | | | | | | |
| 499.2 | | Boring Terminated at 79.3' (Elev. 534.9). | | | | | | |
| 494.2 | | | | | | | | |
| 489.2 | | | | | | | | |
| 484.2 | | | | | | | | |
| 479.2 | | | | | | | | |
| 474.2 | | | | | | | | |
| 469.2 | | | | | | | | |

LEGEND

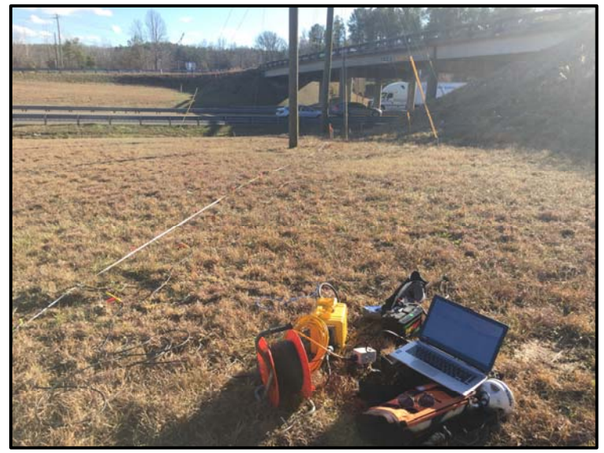
| SAMPLER TYPE | | DRILLING METHOD | |
|---|---|---|---|
| SS - Split Spoon | NQ - Rock Core, 1-7/8" | HSA - Hollow Stem Auger | RW - Rotary Wash |
| UD - Undisturbed Sample | CU - Cuttings | CFA - Continuous Flight Augers | RC - Rock Core |
| AWG - Rock Core, 1-1/8" | CT - Continuous Tube | DC - Driving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

**Shear Wave Velocity Profile**
**I-85 MASW1**




**Point Location**
**(Geographic NAD83 Decimal Degrees)**

**lat 35.12906015, long -81.551490067**



Ground-View Photo of I-85 MASW1

## I-85 MASW1 Shear Wave Velocity Results

| Depth (ft.) | Velocity (ft./sec.) | Depth Range | Weight | Weighted Value |
|---|---|---|---|---|
| -0.609 | 415.194 | 0.609 | 0.00609 | 2.53 |
| -1.371 | 541.067 | 0.762 | 0.00762 | 4.12 |
| -2.323 | 563.623 | 0.952 | 0.00952 | 5.37 |
| -3.513 | 397.268 | 1.19 | 0.0119 | 4.73 |
| -5.001 | 258.038 | 1.488 | 0.01488 | 3.84 |
| -6.861 | 478.264 | 1.86 | 0.0186 | 8.90 |
| -9.186 | 697.537 | 2.325 | 0.02325 | 16.22 |
| -12.092 | 672.652 | 2.906 | 0.02906 | 19.55 |
| -15.724 | 470.845 | 3.632 | 0.03632 | 17.10 |
| -20.264 | 494.268 | 4.54 | 0.0454 | 22.44 |
| -25.939 | 943.579 | 5.675 | 0.05675 | 53.55 |
| -33.033 | 1223.264 | 7.094 | 0.07094 | 86.78 |
| -41.9 | 1209.399 | 8.867 | 0.08867 | 107.24 |
| -52.984 | 1050.623 | 11.084 | 0.11084 | 116.45 |
| -66.23 | 1836.938 | 13.246 | 0.13246 | 243.32 |
| -100 | 1836.938 | 33.77 | 0.3377 | 620.33 |
| | Data extrapolated to -100 feet | | | |
| | **Total Weighted Velocity (ft./sec.)** | | | **1332.46** |

**= Site Class C, Very Dense Soil and Soft Rock***

*Based on SCDOT Geotechnical Design Manual Table 12-22

TITLE
I-85 MASW1: 1D SHEAR WAVE VELOCITY PROFILE AND Vs(100) VELOCITY RESULT

PROJECT
I-85 MASW SITE #1
SIMPER ROAD, BLACKSBURG, SC


Pyramid Geophysics
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

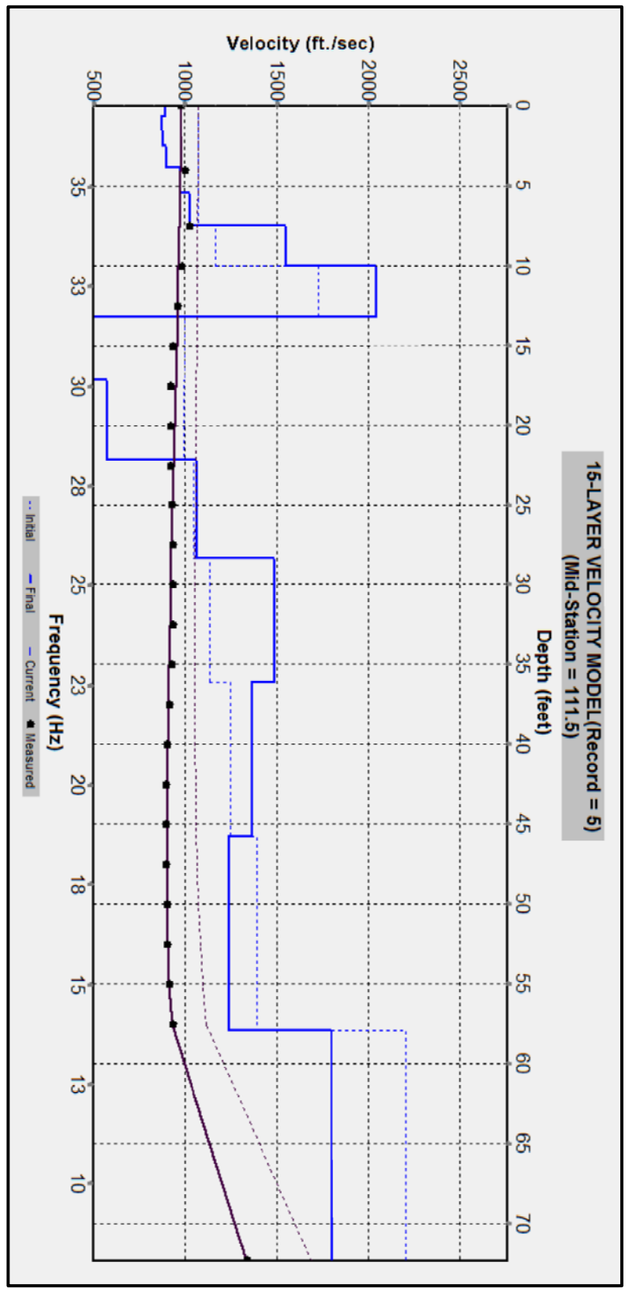

DATE 1/12/2017

CLIENT HDR

PYRAMID PROJECT #: 2017-009

**FIGURE 1**

**Shear Wave Velocity Profile**
**I-85 MASW2**




**Point Location**
**(Geographic NAD83 Decimal Degrees)**

**lat 35.141448817, long -81.508146217**

Ground-View Photo of I-85 MASW2

## I-85 MASW2 Shear Wave Velocity Results

| Depth (ft.) | Velocity (ft./sec.) | Depth Range | Weight | Weighted Value |
|---|---|---|---|---|
| -0.666 | 884.301 | 0.666 | 0.00666 | 5.89 |
| -1.498 | 863.521 | 0.832 | 0.00832 | 7.18 |
| -2.539 | 872.987 | 1.041 | 0.01041 | 9.09 |
| -3.84 | 891.162 | 1.301 | 0.01301 | 11.59 |
| -5.466 | 965.827 | 1.626 | 0.01626 | 15.70 |
| -7.498 | 1024.013 | 2.032 | 0.02032 | 20.81 |
| -10.038 | 1546.443 | 2.54 | 0.0254 | 39.28 |
| -13.214 | 2039.773 | 3.176 | 0.03176 | 64.78 |
| -17.184 | 495.01 | 3.97 | 0.0397 | 19.65 |
| -22.146 | 570.02 | 4.962 | 0.04962 | 28.28 |
| -28.348 | 1059.515 | 6.202 | 0.06202 | 65.71 |
| -36.101 | 1485.758 | 7.753 | 0.07753 | 115.19 |
| -45.792 | 1357.28 | 9.691 | 0.09691 | 131.53 |
| -57.906 | 1231.834 | 12.114 | 0.12114 | 149.22 |
| -72.383 | 1791.981 | 14.477 | 0.14477 | 259.43 |
| -100 | 1791.981 | 27.617 | 0.27617 | 494.89 |
| | Data extrapolated to -100 feet | | | |
| | **Total Weighted Velocity (ft./sec.)** | | | **1438.24** |

**= Site Class C, Very Dense Soil and Soft Rock***

*Based on SCDOT Geotechnical Design Manual Table 12-22

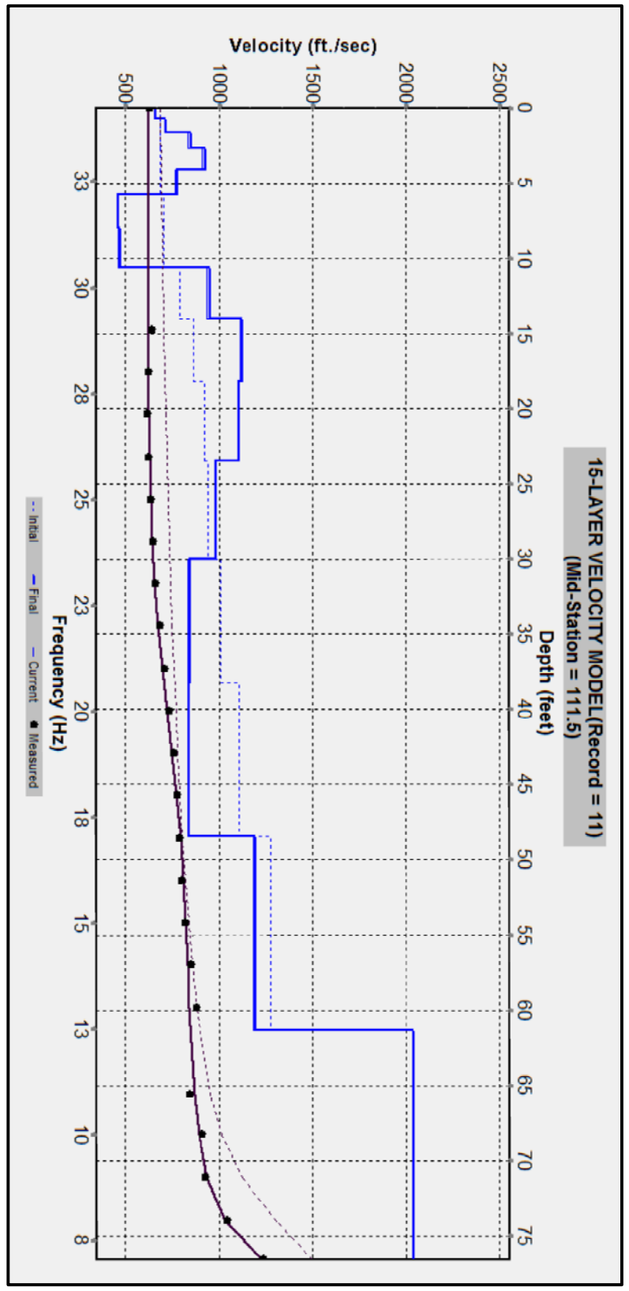
TITLE
I-85 MASW2: 1D SHEAR WAVE VELOCITY PROFILE AND Vs(100) VELOCITY RESULT

PROJECT
I-85 MASW SITE #2
N. MOUNTAIN ST., BLACKSBURG, SC

Pyramid Geophysics
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE 1/12/2017
CLIENT HDR
PYRAMID PROJECT #: 2017-009
**FIGURE 2**

**Shear Wave Velocity Profile**
**I-85 MASW3**




**Point Location**
**(Geographic NAD83 Decimal Degrees)**

**lat 35.15772585, long -81.479853183**

Ground-View Photo of I-85 MASW3

## I-85 MASW3 Shear Wave Velocity Results

| Depth (ft.) | Velocity (ft./sec.) | Depth Range | Weight | Weighted Value |
|---|---|---|---|---|
| -0.705 | 653.814 | 0.705 | 0.00705 | 4.61 |
| -1.586 | 711.154 | 0.881 | 0.00881 | 6.27 |
| -2.687 | 844.621 | 1.101 | 0.01101 | 9.30 |
| -4.064 | 923.689 | 1.377 | 0.01377 | 12.72 |
| -5.785 | 773.274 | 1.721 | 0.01721 | 13.31 |
| -7.936 | 452.957 | 2.151 | 0.02151 | 9.74 |
| -10.625 | 464.808 | 2.689 | 0.02689 | 12.50 |
| -13.986 | 949.431 | 3.361 | 0.03361 | 31.91 |
| -18.187 | 1116.276 | 4.201 | 0.04201 | 46.89 |
| -23.439 | 1098.672 | 5.252 | 0.05252 | 57.70 |
| -30.003 | 978.054 | 6.564 | 0.06564 | 64.20 |
| -38.209 | 837.926 | 8.206 | 0.08206 | 68.76 |
| -48.466 | 830.204 | 10.257 | 0.10257 | 85.15 |
| -61.287 | 1189.675 | 12.821 | 0.12821 | 152.53 |
| -76.609 | 2037.823 | 15.322 | 0.15322 | 312.24 |
| -100 | 2037.823 | 23.391 | 0.23391 | 476.67 |
| | Data extrapolated to -100 feet | | | |
| | **Total Weighted Velocity (ft./sec.)** | | | **1364.49** |

**= Site Class C, Very Dense Soil and Soft Rock***

*Based on SCDOT Geotechnical Design Manual Table 12-22

TITLE
I-85 MASW3: 1D SHEAR WAVE VELOCITY PROFILE AND Vs(100) VELOCITY RESULT

PROJECT
I-85 MASW SITE #3
TRIBAL ROAD, BLACKSBURG, SC

Pyramid Geophysics
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

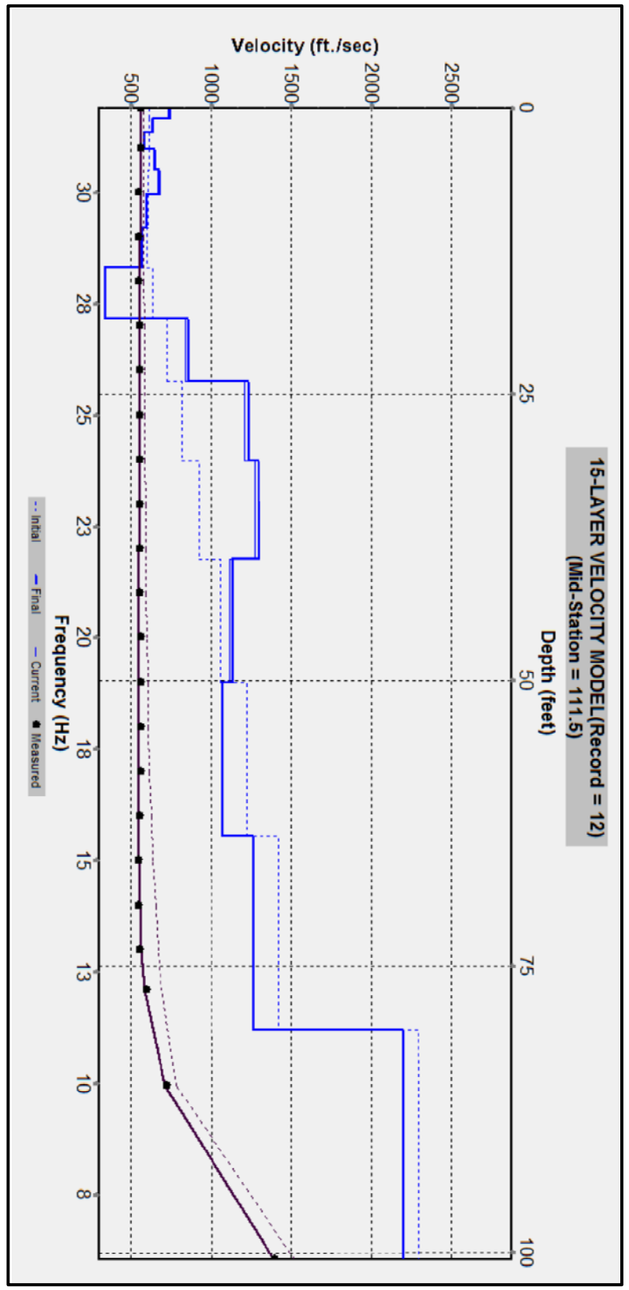
DATE 1/12/2017

CLIENT HDR

PYRAMID PROJECT #: 2017-009

**FIGURE 3**

**Shear Wave Velocity Profile**
**I-85 MASW4**




**Point Location**
**(Geographic NAD83 Decimal Degrees)**

**lat 35.1641646, long -81.452445183**

Ground-View Photo of I-85 MASW4

## I-85 MASW4 Shear Wave Velocity

| Depth (ft.) | Velocity (ft./sec.) | Depth Range | Weight | Weighted Value |
|---|---|---|---|---|
| -0.926 | 741.498 | 0.926 | 0.00926 | 6.87 |
| -2.083 | 629.461 | 1.157 | 0.01157 | 7.28 |
| -3.529 | 576.648 | 1.446 | 0.01446 | 8.34 |
| -5.337 | 644.893 | 1.808 | 0.01808 | 11.66 |
| -7.597 | 672.81 | 2.26 | 0.0226 | 15.21 |
| -10.422 | 589.835 | 2.825 | 0.02825 | 16.66 |
| -13.953 | 562.039 | 3.531 | 0.03531 | 19.85 |
| -18.367 | 332.369 | 4.414 | 0.04414 | 14.67 |
| -23.884 | 851.259 | 5.517 | 0.05517 | 46.96 |
| -30.78 | 1225.46 | 6.896 | 0.06896 | 84.51 |
| -39.4 | 1290.993 | 8.62 | 0.0862 | 111.28 |
| -50.175 | 1129.368 | 10.775 | 0.10775 | 121.69 |
| -63.644 | 1062.356 | 13.469 | 0.13469 | 143.09 |
| -80.48 | 1257.218 | 16.836 | 0.16836 | 211.67 |
| -100.6 | 2194.949 | 20.12 | 0.2012 | 441.62 |
| | | | | |
| | **Total Weighted Velocity (ft./sec.)** | | | **1261.35** |

**= Site Class C, Very Dense Soil and Soft Rock***

*Based on SCDOT Geotechnical Design Manual Table 12-22

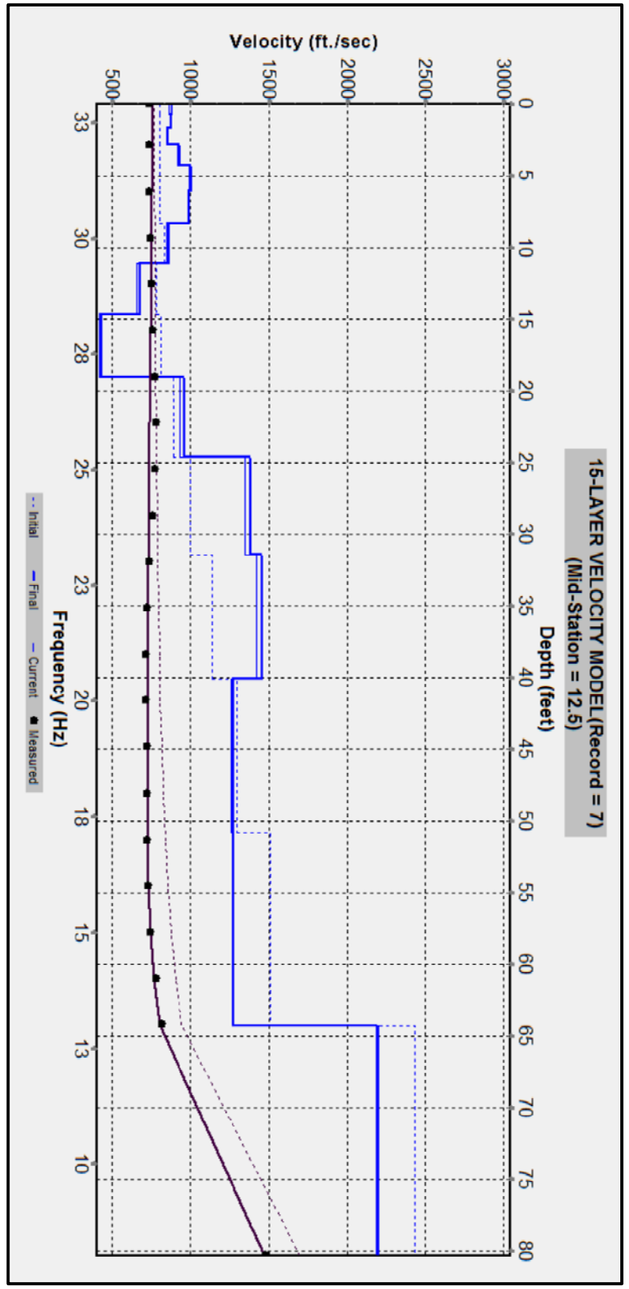
TITLE
I-85 MASW4: 1D SHEAR WAVE VELOCITY PROFILE AND Vs(100) VELOCITY RESULT

PROJECT
I-85 MASW SITE #4
E. CHEROKEE ST., BLACKSBURG, SC

Pyramid Geophysics
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE 1/12/2017
CLIENT HDR
PYRAMID PROJECT #: 2017-009
**FIGURE 4**

**Shear Wave Velocity Profile**
**I-85 MASW5**




**Point Location**
**(Geographic NAD83 Decimal Degrees)**

**lat 35.134293133, long -81.530276883**

Ground-View Photo of I-85 MASW5

## I-85 MASW5 Shear Wave Velocity Results

| Depth (ft.) | Velocity (ft./sec.) | Depth Range | Weight | Weighted Value |
|---|---|---|---|---|
| -0.739 | 871.707 | 0.739 | 0.00739 | 6.44 |
| -1.662 | 870.094 | 0.923 | 0.00923 | 8.03 |
| -2.816 | 847.693 | 1.154 | 0.01154 | 9.78 |
| -4.259 | 923.456 | 1.443 | 0.01443 | 13.33 |
| -6.062 | 996.03 | 1.803 | 0.01803 | 17.96 |
| -8.316 | 987.078 | 2.254 | 0.02254 | 22.25 |
| -11.134 | 845.308 | 2.818 | 0.02818 | 23.82 |
| -14.656 | 669.913 | 3.522 | 0.03522 | 23.59 |
| -19.059 | 418.9 | 4.403 | 0.04403 | 18.44 |
| -24.563 | 957.329 | 5.504 | 0.05504 | 52.69 |
| -31.443 | 1379.671 | 6.88 | 0.0688 | 94.92 |
| -40.043 | 1448.263 | 8.6 | 0.086 | 124.55 |
| -50.793 | 1268.77 | 10.75 | 0.1075 | 136.39 |
| -64.23 | 1269.981 | 13.437 | 0.13437 | 170.65 |
| -80.288 | 2183.343 | 16.058 | 0.16058 | 350.60 |
| -100 | 2183.343 | 19.712 | 0.19712 | 430.38 |
| | Data extrapolated to -100 feet | | | |
| | **Total Weighted Velocity (ft./sec.)** | | | **1503.83** |

**= Site Class C, Very Dense Soil and Soft Rock***

*Based on SCDOT Geotechnical Design Manual Table 12-22

TITLE
I-85 MASW5: 1D SHEAR WAVE VELOCITY PROFILE AND Vs(100) VELOCITY RESULT

PROJECT
I-85 MASW SITE #5
SHAMAN ROAD, BLACKSBURG, SC

Pyramid Geophysics
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE 1/12/2017

CLIENT HDR

PYRAMID PROJECT #: 2017-009

**FIGURE 5**

# Appendix C. Laboratory Testing Results

Table C-1. Summary of Laboratory Soil Test Results

Table C-2. Summary of Unconfined Compression Testing of Intact Rock Samples

Table C-3. Characterization of Rock Mass

Rock Core Photos

Individual Laboratory Test Sheets

# Table C-1. Summary of Laboratory Soil Test Results

| Boring Number | Sample Number | Laboratory Soil Number | Sample Depth (ft.) | | Natural Moisture Content (%) | (%) Passing No. 200 | Atterberg Limits | | AASHTO Classification | USCS Classification | Standard Proctor | | CBR (%) | | Triaxial Shear (CU/UU) | | | | Unconfined Compression (Soil) (psf) | Pre-Consolidation Pressure (from Consolidation Test) (psf) | Organic Content | | Corrosion Series | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Liquid Limit | Plasticity Index | | | MDD (pcf) | OMC (%) | CBR @ 20 blows/layer | CBR @ 40 blows/layer | c' (psf) | ϕ' (deg) | c (psf) | ϕ (deg) | | | Ash % | Organic Matter % | Resistivity (ohm-cm) | pH | Sulfate (mg/kg) | Chloride (mg/kg) |
| R-91 | SS-1 | 73 | 2.0 | 3.5 | 19.4 | 43.9 | 34.16 | 7 | A-4 (1) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 73 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 73 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 74 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 74 | 10.0 | 11.5 | 17.4 | 42.0 | 31 | 6 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-6 | 74 | 13.5 | 15.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | - | 18.5 | 18.7 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8 | - | 23.5 | 23.6 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-9 | - | 28.5 | 28.6 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-10 | - | 33.5 | 33.6 | | | | | | | | | | | | | | | | | | | | | | |
| R-95 | SS-1 | 21 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 21 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 21 | 6.0 | 7.5 | 24.8 | 61.9 | 35.29 | 5 | A-4 (2) | ML | | | | | | | | | | | | | | | | |
| | SS-4 | 21 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5A | 22 | 10.0 | 10.3 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5B | 22 | 10.3 | 11.5 | 24.2 | 50.3 | 34.31 | 10 | A-4 (3) | ML | | | | | | | | | | | | | | | | |
| | SS-6 | 23 | 13.5 | 15.0 | 29.5 | 54.6 | 22.44 | 2 | A-4 (0) | ML | | | | | | | | | | | | | | | | |
| | SS-7 | 24 | 18.5 | 20.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8 | 24 | 23.5 | 25.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-9 | 24 | 28.5 | 30.0 | 15.8 | 31.0 | 32.8 | 4 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-10 | NA | 33.5 | 33.7 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-11 | 25 | 38.5 | 38.8 | 9.6 | 45.7 | 24.78 | 0 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-12 | 26 | 43.5 | 44.1 | 12.3 | 8.2 | 22.26 | 0 | A-4 (0) | ML | | | | | | | | | | | | | | | | |
| R-99 | SS-1 | 62 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 62 | 4.0 | 5.5 | 28.5 | 65.7 | 46.52 | 18 | A-7-6 (11) | ML | | | | | | | | | | | | | | | | |
| | SS-3 | 62 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 63 | 8.0 | 9.5 | 24.7 | 53.1 | 33.83 | 13 | A-6 (4) | CL | | | | | | | | | | | | | | | | |
| | SS-5 | 63 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 64 | 13.5 | 15.0 | 16.8 | 33.4 | 27.75 | 4 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-7 | 64 | 18.5 | 20.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8 | 65 | 23.5 | 25.0 | 32.5 | 24.8 | 40 | 0 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-9 | 65 | 28.5 | 30.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-10 | 65 | 33.5 | 35.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-11 | 65 | 38.5 | 40.0 | | | | | | | | | | | | | | | | | | | | | | |
| R-104 | SS-1 | 66 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 66 | 4.0 | 5.5 | 28.6 | 41.8 | 38.77 | 10 | A-4 (1) | SM | | | | | | | | | | | | | | | | |
| | SS-3 | 66 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 66 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5A | 66 | 10.0 | 10.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5B | 67 | 10.5 | 11.1 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5C | 67 | 11.1 | 13.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 67 | 13.5 | 15.0 | 14.7 | 48.5 | 46.03 | 20 | A-7-6 (6) | SC | | | | | | | | | | | | | | | | |
| | SS-7 | 67 | 18.5 | 20.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8 | 68 | 23.5 | 25.0 | 16 | 34.5 | 19.29 | 5 | A-2-4 (0) | SC-SM | | | | | | | | | | | | | | | | |
| | SS-9 | 69 | 28.5 | 30.0 | 26.2 | 59.4 | 36.41 | 12 | A-6 (5) | CL | | | | | | | | | | | | | | | | |
| | SS-10 | 70 | 33.5 | 35.0 | 11.4 | 54.6 | 15.25 | 0 | A-4 (0) | ML | | | | | | | | | | | | | | | | |
| | SS-11 | 71 | 38.5 | 40.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-12 | 71 | 43.5 | 45.0 | 27.4 | 32.8 | 36.21 | 6 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-13 | 71 | 48.5 | 50.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-14 | 71 | 53.5 | 55.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-15 | 71 | 58.5 | 60.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-16 | 72 | 63.5 | 65.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-17 | 72 | 68.5 | 70.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-18 | 72 | 73.5 | 75.0 | 26.3 | 38.7 | 32.8 | 7 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-19 | 72 | 78.5 | 80.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-20 | 72 | 83.5 | 85.0 | | | | | | | | | | | | | | | | | | | | | | |
| R-153 | SS-1 | 42 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 42 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 42 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 42 | 8.0 | 9.5 | 18.1 | 50.3 | 37.43 | 1 | A-4 (0) | ML | | | | | | | | | | | | | | | | |
| | SS-5 | 42 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 43 | 13.5 | 15.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 43 | 18.5 | 20.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8 | 43 | 23.5 | 25.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-9 | 43 | 28.5 | 30.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-10 | 43 | 33.5 | 35.0 | 30.8 | 44.4 | 36.38 | 6 | A-4 (1) | SM | | | | | | | | | | | | | | | | |
| | SS-11 | 43 | 38.5 | 40.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-12 | 44 | 43.5 | 45.0 | 19.5 | 32.4 | 30.75 | 4 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| RW-139 | SS-1 | 27 | 2.0 | 3.5 | 48.4 | 51.6 | 52.48 | 11 | A-7-5 (5) | MH | | | | | | | | | | | | | | | | |
| | SS-2 | 27 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 28 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 28 | 8.0 | 9.5 | 42.6 | 49.0 | 49.48 | 9 | A-5 (3) | SM | | | | | | | | | | | | | | | | |
| | SS-5 | 28 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 28 | 13.5 | 15.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 28 | 18.5 | 20.0 | | | | | | | | | | | | | | | | | | | | | | |
| RW-140 | SS-1 | 29 | 2.0 | 3.5 | 21.8 | 13.7 | 37.05 | 0 | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 30 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 30 | 6.0 | 7.5 | 29.3 | 62.3 | 39.45 | 11 | A-6 (6) | ML | | | | | | | | | | | | | | | | |
| | SS-4 | 30 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 31 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 31 | 13.5 | 15.0 | 26.7 | 60.6 | 40.12 | 6 | A-4 (3) | ML | | | | | | | | | | | | | | | | |
| | SS-7 | 32 | 18.5 | 20.0 | 52.6 | 40.9 | 51.68 | 10 | A-5 (2) | SM | | | | | | | | | | | | | | | | |
| RW-141 | SS-1 | 33 | 2.0 | 3.5 | 19.9 | 56.7 | 45.06 | 7 | A-5 (4) | ML | | | | | | | | | | | | | | | | |
| | SS-2 | 34 | 4.0 | 5.5 | 24.7 | 68.2 | 47.62 | 8 | A-5 (7) | ML | | | | | | | | | | | | | | | | |
| | SS-3 | 31 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 31 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 31 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 30 | 13.5 | 15.0 | | | | | | | | | | | | | | | | | | | | | | |

# Table C-1. Summary of Laboratory Soil Test Results

| Boring Number | Sample Number | Laboratory Soil Number | Sample Depth (ft.) | | Natural Moisture Content (%) | (%) Passing No. 200 | Atterberg Limits | | AASHTO Classification | USCS Classification | Standard Proctor | | CBR (%) | | Triaxial Shear (CU/UU) | | | | Unconfined Compression (Soil) (psf) | Pre-Consolidation Pressure (from Consolidation Test) (psf) | Organic Content | | Corrosion Series | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Liquid Limit | Plasticity Index | | | MDD (pcf) | OMC (%) | CBR @ 20 blows/layer | CBR @ 40 blows/layer | c' (psf) | ϕ' (deg) | c (psf) | ϕ (deg) | | | Ash % | Organic Matter % | Resistivity (ohm-cm) | pH | Sulfate (mg/kg) | Chloride (mg/kg) |
| RW-142 | SS-1 | 45 | 2.0 | 3.5 | 20.4 | 62.4 | 38.24 | 9 | A-4 (5) | ML | | | | | | | | | | | | | | | | |
| | SS-2 | 46 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 46 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 46 | 8.0 | 9.5 | 26.1 | 66.9 | 40.82 | 10 | A-5 (7) | ML | | | | | | | | | | | | | | | | |
| | SS-5 | 46 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 46 | 13.5 | 15.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 46 | 18.5 | 20.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8A | 46 | 23.5 | 23.7 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8B | 47 | 23.7 | 25.0 | 38.4 | 43.3 | 49.63 | 13 | A-7-5 (3) | SM | | | | | | | | | | | | | | | | |
| | SS-9 | 47 | 28.5 | 30.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-10 | 47 | 33.5 | 33.7 | | | | | | | | | | | | | | | | | | | | | | |
| RW-143A | SS-1 | 266 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 266 | 4.0 | 5.5 | 21.1 | 50.4 | 31 | 7 | A-4 (1) | ML | | | | | | | | | | | | | | | | |
| | SS-3 | 266 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 266 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 267 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 267 | 13.5 | 15.0 | 21.9 | 53.5 | 35 | 9 | A-4 (3) | ML | | | | | | | | | | | | | | | | |
| | SS-7 | 267 | 18.5 | 20.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8 | 267 | 23.5 | 25.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-9 | 268 | 28.5 | 30.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-10 | 268 | 33.5 | 35.0 | 25.9 | 48.2 | 43 | 13 | A-7-6 (4) | SM | | | | | | | | | | | | | | | | |
| | SS-11 | 266 | 38.5 | 40.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-12 | 269 | 43.5 | 45.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-13 | 269 | 48.5 | 50.0 | 18.9 | 40.5 | NP | NP | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-14 | 270 | 53.5 | 54.3 | 20.9 | 29.0 | 25 | 1 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-15 | 270 | 58.5 | 58.7 | | | | | | | | | | | | | | | | | | | | | | |
| RW-143 | SS-1A | 80 | 2.0 | 2.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-1B | 80 | 2.5 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 80 | 4.0 | 5.5 | 22.1 | 58.9 | 39.76 | 11 | A-6 (5) | ML | | | | | | | | | | | | | | | | |
| | SS-3 | 80 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4A | 80 | 8.0 | 8.3 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4B | 80 | 8.3 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 81 | 10.0 | 11.5 | 20.5 | 61.8 | 36.91 | 14 | A-6 (7) | CL | | | | | | | | | | | | | | | | |
| | SS-6A | 81 | 13.5 | 13.8 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6B | 81 | 13.8 | 15.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 82 | 18.5 | 20.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8 | 82 | 23.5 | 25.0 | 31.8 | 28.2 | 35.54 | 0 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-9 | 82 | 28.5 | 30.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-10 | 82 | 33.5 | 35.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-11 | 82 | 38.5 | 39.9 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-12 | - | 43.5 | 43.6 | | | | | | | | | | | | | | | | | | | | | | |
| RW-144 | SS-1 | 46 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 46 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 46 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 46 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 46 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6A | 46 | 13.5 | 14.1 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6B | 48 | 14.1 | 15.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 48 | 18.5 | 20.0 | 36.8 | 63.5 | 31.25 | 7 | A-4 (3) | ML | | | | | | | | | | | | | | | | |
| | SS-8 | 49 | 23.5 | 25.0 | 33.1 | 30.5 | 38.2 | 0 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-9 | 50 | 28.5 | 30.0 | 21.5 | 34.3 | 33.69 | 0 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-10 | 50 | 33.5 | 35.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-11 | 50 | 38.5 | 38.7 | | | | | | | | | | | | | | | | | | | | | | |
| RW-145 | SS-1 | 45 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 45 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 51 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 51 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 51 | 10.0 | 11.5 | 14.6 | 44.2 | 34.2 | 0 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-6 | 51 | 13.5 | 15.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 50 | 18.5 | 20.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8 | 48 | 23.5 | 25.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-9 | 48 | 28.5 | 28.7 | | | | | | | | | | | | | | | | | | | | | | |
| RW-146 | SS-1 | 52 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 52 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 52 | 6.0 | 7.5 | 25.3 | 54.6 | 42.47 | 4 | A-5 (2) | ML | | | | | | | | | | | | | | | | |
| | SS-4 | 52 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 52 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 52 | 13.5 | 15.0 | | | | | | | | | | | | | | | | | | | | | | |
| RW-147 | SS-1 | 53 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2A | 53 | 4.0 | 4.6 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2B | 53 | 4.6 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 53 | 6.0 | 7.5 | 18.1 | 56.1 | 35.89 | 13 | A-6 (5) | CL | | | | | | | | | | | | | | | | |
| | SS-4 | 53 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 54 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 54 | 13.5 | 15.0 | 41.2 | 55.3 | 39.53 | 12 | A-6 (5) | ML | | | | | | | | | | | | | | | | |
| | SS-7 | 54 | 18.5 | 20.0 | | | | | | | | | | | | | | | | | | | | | | |
| RW-148 | SS-1 | 55 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 55 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 55 | 6.0 | 7.5 | 12.5 | 29.1 | 33.46 | 0 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-4 | 55 | 8.0 | 8.3 | | | | | | | | | | | | | | | | | | | | | | |
| RW-149 | SS-1 | 56 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 56 | 4.0 | 5.5 | 16.5 | 26.1 | 39.49 | 18 | A-2-6 (2) | SC | | | | | | | | | | | | | | | | |
| | SS-3A | 56 | 6.0 | 6.4 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3B | 55 | 6.4 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 55 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 55 | 10.0 | 11.1 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-1 | 271 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 271 | 4.0 | 5.5 | 19.8 | 41.3 | 34 | 5 | A-4 (0) | SM | | | | | | | | | | | | | | | | |

# Table C-1. Summary of Laboratory Soil Test Results

| Boring Number | Sample Number | Laboratory Soil Number | Sample Depth (ft.) | | Natural Moisture Content (%) | (%) Passing No. 200 | Atterberg Limits | | AASHTO Classification | USCS Classification | Standard Proctor | | CBR (%) | | Triaxial Shear (CU/UU) | | | | Unconfined Compression (Soil) (psf) | Pre-Consolidation Pressure (from Consolidation Test) (psf) | Organic Content | | Corrosion Series | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Liquid Limit | Plasticity Index | | | MDD (pcf) | OMC (%) | CBR @ 20 blows/layer | CBR @ 40 blows/layer | c' (psf) | ϕ' (deg) | c (psf) | ϕ (deg) | | | Ash % | Organic Matter % | Resistivity (ohm-cm) | pH | Sulfate (mg/kg) | Chloride (mg/kg) |
| R-150 | SS-3 | 272 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 272 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 272 | 10.0 | 11.5 | 24 | 57.5 | 44 | 13 | A-7-5 (6) | ML | | | | | | | | | | | | | | | | |
| | SS-6 | 272 | 13.2 | 14.7 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 273 | 18.2 | 19.7 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8 | 273 | 23.2 | 24.7 | 32.5 | 54.3 | 40 | 8 | A-4 (3) | ML | | | | | | | | | | | | | | | | |
| | SS-9 | 273 | 28.2 | 29.7 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-10 | 274 | 33.2 | 34.7 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-11 | 274 | 38.2 | 39.7 | 35.1 | 32.8 | 37 | 4 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-12 | 275 | 43.2 | 44.7 | 32.5 | 32.5 | NP | NP | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-13 | 275 | 48.2 | 49.7 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-14 | 276 | 53.2 | 54.0 | 26 | 14.9 | NP | NP | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| RW-154 | SS-1 | 83 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 83 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 83 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 83 | 8.0 | 9.5 | 15.5 | 63.7 | 40.58 | 8 | A-5 (5) | ML | | | | | | | | | | | | | | | | |
| | SS-5 | 83 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 84 | 13.5 | 15.0 | 13.9 | 28.0 | 32.78 | 7 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-7 | 84 | 18.5 | 20.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8 | 85 | 23.5 | 25.0 | 25.8 | 66.2 | 44.51 | 8 | A-5 (6) | ML | | | | | | | | | | | | | | | | |
| | SS-9 | 86 | 28.5 | 30.0 | 15 | 27.2 | 32.84 | 6 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-10 | 86 | 33.5 | 35.0 | | | | | | | | | | | | | | | | | | | | | | |
| C-130 | Bulk-1 | 285 | 0.0 | 10.0 | - | 55.9 | 39 | 14 | A-2-4 (0) | SM | 110.2 | 16.4 | | | 230.4 | 28.9 | 388.8 | 17.8 | | | | | | | | |
| | SS-1 | 200 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 200 | 4.0 | 5.5 | 20.9 | 40.1 | 36 | 8 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-3 | 201 | 6.0 | 7.5 | 23.6 | 36.0 | 29 | 8 | A-4 (0) | SC | | | | | | | | | | | | | | | | |
| | SS-4 | 201 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 202 | 10.0 | 11.5 | 20.5 | 33.1 | NP | NP | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-6 | 203 | 14.5 | 16.6 | 29.1 | 31.1 | 32 | 2 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-7 | 204 | 19.5 | 20.8 | 14.5 | 23.9 | NP | NP | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| | SS-8 | 205 | 24.4 | 25.8 | 11.2 | 16.1 | NP | NP | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| | SS-9 | 205 | 29.0 | 29.2 | | | | | | | | | | | | | | | | | | | | | | |
| C-131 | SS-1 | 206 | 2.0 | 3.5 | 15.4 | 23.5 | 22 | 2 | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | - | 4.0 | 4.3 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | - | 6.0 | 6.4 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | - | 6.7 | 7.1 | | | | | | | | | | | | | | | | | | | | | | |
| C-132 | SS-1 | 75 | 2.0 | 3.5 | 5 | 20.3 | 25.26 | 0 | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 75 | 4.0 | 4.4 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 75 | 6.0 | 6.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 75 | 8.0 | 8.4 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 75 | 10.0 | 10.1 | | | | | | | | | | | | | | | | | | | | | | |
| C-133 | Bulk-1 | 283 | 1.2 | 6.0 | - | 52.8 | 32 | 9 | A-4 (2) | CL | 113.1 | 15.1 | 1.9 | 3.1 | | | | | | | | | | | | |
| | SS-1 | 260 | 2.0 | 3.5 | 14.1 | 34.5 | 31 | 9 | A-2-4 (0) | SC | | | | | | | | | | | | | | | | |
| | SS-2 | 261 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 261 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 261 | 8.0 | 9.5 | 20.5 | 39.6 | 36 | 10 | A-4 (1) | SM | | | | | | | | | | | | | | | | |
| | SS-5 | 261 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 262 | 13.5 | 15.0 | 23.7 | 33.0 | NP | NP | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-7 | 263 | 18.5 | 20.0 | 23.9 | 51.5 | 23 | 4 | A-4 (0) | ML | | | | | | | | | | | | | | | | |
| | SS-8 | 264 | 23.5 | 25.0 | 20.8 | 22.3 | 25 | 3 | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| | SS-9 | 265 | 28.5 | 29.3 | 12.2 | 18.7 | NP | NP | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| | SS-10 | 265 | 33.5 | 33.5 | | | | | | | | | | | | | | | | | | | | | | |
| C-134 | SS-1 | 207 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 207 | 4.0 | 5.5 | 17.6 | 37.8 | 32 | 11 | A-6 (1) | SC | | | | | | | | | | | | | | | | |
| | SS-3 | 207 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 208 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 208 | 10.0 | 11.5 | 17.6 | 41.7 | 29 | 9 | A-4 (1) | SC | | | | | | | | | | | | | | | | |
| | SS-6 | 208 | 13.4 | 14.9 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 209 | 18.4 | 19.9 | 26.1 | 35.3 | 44 | 8 | A-5 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-8 | 210 | 23.4 | 24.9 | 25.8 | 27.4 | 46 | 50 | A-2-5 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-9 | 211 | 28.4 | 29.9 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-10 | 211 | 33.4 | 34.9 | 20.1 | 18.4 | 37 | 3 | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| C-137 | SS-1 | 57 | 2.0 | 3.5 | 22.2 | 54.4 | 60.2 | 36 | A-7-6 (16) | CH | | | | | | | | | | | | | | | | |
| | SS-2 | 57 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 58 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 58 | 8.0 | 9.5 | 27.9 | 55.0 | 40.6 | 5 | A-5 (2) | ML | | | | | | | | | | | | | | | | |
| | SS-5 | 58 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 58 | 13.5 | 15.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 58 | 18.5 | 20.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8 | 58 | 23.5 | 25.0 | | | | | | | | | | | | | | | | | | | | | | |
| C-138 | SS-1 | 76 | 2.0 | 3.5 | 14.2 | 57.9 | 53.22 | 29 | A-7-6 (14) | CH | | | | | | | | | | | | | | | | |
| | SS-2 | 76 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 77 | 6.0 | 7.5 | 23 | 53.6 | 46.69 | 12 | A-7-5 (5) | ML | | | | | | | | | | | | | | | | |
| | SS-4 | 77 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 77 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 77 | 13.5 | 15.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 77 | 18.5 | 20.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8 | 78 | 23.5 | 25.0 | 42 | 46.7 | 49.46 | 5 | A-5 (1) | SM | | | | | | | | | | | | | | | | |
| | SS-9 | 79 | 28.5 | 30.0 | 20.7 | 23.6 | 40 | 0 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-10 | 79 | 33.5 | 35.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-11 | 79 | 38.5 | 40.0 | | | | | | | | | | | | | | | | | | | | | | |
| BS-110 | Bulk-1 | 59 | | | | | | | | | 116.5 | 12.6 | | | | | | | | | | | 1400 | 6.3 | 42 | 115 |
| | SS-1 | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | Bulk-1 | 60 | | | | | | | | | 110.8 | 14.6 | 2.3 | 3.6 | | | | | | | | | | | | |

# Table C-1. Summary of Laboratory Soil Test Results

| Boring Number | Sample Number | Laboratory Soil Number | Sample Depth (ft.) | | Natural Moisture Content (%) | (%) Passing No. 200 | Atterberg Limits | | AASHTO Classification | USCS Classification | Standard Proctor | | CBR (%) | | Triaxial Shear (CU/UU) | | | | Unconfined Compression (Soil) (psf) | Pre-Consolidation Pressure (from Consolidation Test) (psf) | Organic Content | | Corrosion Series | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Liquid Limit | Plasticity Index | | | MDD (pcf) | OMC (%) | CBR @ 20 blows/layer | CBR @ 40 blows/layer | c' (psf) | ϕ' (deg) | c (psf) | ϕ (deg) | | | Ash % | Organic Matter % | Resistivity (ohm-cm) | pH | Sulfate (mg/kg) | Chloride (mg/kg) |
| BS-111 | SS-1 | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | - | | | | | | | | | | | | | | | | | | | | | | | | |
| BS-112 | Bulk-1 | 61 | | | | | | | | | 110.8 | 16.1 | | | | | | | | | | | 960 | 6.9 | 136 | 92 |
| | SS-1 | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | - | | | | | | | | | | | | | | | | | | | | | | | | |
| BS-113 | Bulk-1 | 87 | 0.0 | 10.0 | | | | | | | 109.2 | 17.3 | 2.2 | 3.1 | | | | | | | | | | | | |
| BS-114 | Bulk-1 | 41 | 0.0 | 10.0 | | | | | | | 106.8 | 17.5 | | | | | | | | | | | 3640 | 7.2 | 203 | 40 |
| | SS-1 | - | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | - | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | - | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | - | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | - | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| BS-115 | Bulk-1 | 37 | 0.0 | 10.0 | | | | | | | 114.6 | 13.4 | 3.8 | 6.5 | | | | | | | | | | | | |
| | SS-1A | - | 2.0 | 2.4 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-1B | - | 2.4 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | - | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | - | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4A | - | 8.0 | 8.4 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4B | - | 8.4 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | - | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| BS-116 | Bulk-1 | 40 | 0.0 | 10.0 | | | | | | | 103.7 | 17.1 | | | | | | | | | | | 2080 | 7.1 | 218 | 105 |
| | SS-1 | - | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | - | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | - | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | - | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | - | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| BS-117 | Bulk-1 | 38 | 0.0 | 10.0 | | | | | | | 102.5 | 20.9 | 1.3 | 3.4 | | | | | | | | | | | | |
| | SS-1 | - | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | - | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | - | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | - | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5A | - | 10.0 | 10.6 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5B | - | 10.6 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| BR-118 | SS-1 | 232 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 232 | 4.0 | 5.5 | 20 | 41.9 | 29 | 3 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | ST-1 | 88 | 6.0 | 8.0 | 21.8 | 24.2 | 34 | 0 | A-2-4 (0) | SM | | | | | 187.2 | 29.6 | 604.8 | 5.3 | | | | | | | | |
| | SS-3 | 232 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 233 | 10.0 | 11.5 | 15.8 | 32.0 | 31 | 4 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-5 | 233 | 15.0 | 16.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 233 | 20.0 | 21.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 233 | 25.0 | 26.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8 | 234 | 30.0 | 31.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-9 | 234 | 35.0 | 35.6 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-10 | 242 | 40.0 | 40.4 | 14 | 19.9 | NP | NP | A-2-6 (3) | SC | | | | | | | | | | | | | | | | |
| BR-119 | SS-1 | 243 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 236 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 236 | 6.0 | 7.5 | 12.1 | 28.1 | 32 | 3 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-4 | 236 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 234 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 234 | 14.7 | 16.2 | 20 | 32.6 | NP | NP | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-7 | 237 | 19.7 | 21.2 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8 | 237 | 24.7 | 26.2 | 14.5 | 23.4 | 34 | 4 | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| | SS-9 | 238 | 29.7 | 60.8 | 15.6 | 18.1 | 26 | 4 | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| | SS-10 | 238 | 34.7 | 35.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-11 | 238 | 39.7 | 40.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-12 | 238 | 42.6 | 42.6 | | | | | | | | | | | | | | | | | | | | | | |
| BR-120 | SS-1 | 243 | 2.0 | 3.5 | 15.6 | 35.9 | 33 | 6 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 239 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 239 | 6.0 | 7.5 | 25.6 | 41.6 | 36 | 5 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-4 | 239 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 239 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 239 | 13.5 | 15.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 235 | 18.5 | 20.0 | 22.6 | 43.5 | 31 | 11 | A-6 (2) | SC | | | | | | | | | | | | | | | | |
| | SS-8 | 240 | 23.5 | 25.0 | 24.4 | 31.8 | NP | NP | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-9 | 240 | 28.5 | 30.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-10 | 241 | 33.5 | 35.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-11 | 241 | 38.5 | 40.0 | 20.6 | 23.3 | 38 | 4 | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| | SS-12 | 241 | 43.5 | 44.6 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-13 | 242 | 48.5 | 48.8 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-14 | 242 | 53.5 | 53.7 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-15 | 242 | 58.5 | 58.7 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-16 | 242 | 63.5 | 63.6 | | | | | | | | | | | | | | | | | | | | | | |
| BR-121 | SS-1 | 1 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 1 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 1 | 6.0 | 7.5 | 18.9 | 61.5 | 52.25 | 23 | A-7-6 (13) | MH | | | | | | | | | | | | | | | | |
| | SS-4 | 1 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 1 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 1 | 14.3 | 15.8 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 5 | 19.3 | 20.8 | 32.2 | 63.4 | 51.47 | 14 | A-7-5 (9) | MH | | | | | | | | | | | | | | | | |
| | SS-8 | 5 | 24.3 | 25.8 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-9 | 5 | 29.3 | 30.8 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-10 | 2 | 34.3 | 35.8 | 32.3 | 37.0 | 46.13 | 10 | A-5 (0) | SM | | | | | | | | | | | | | | | | |

# Table C-1. Summary of Laboratory Soil Test Results

| Boring Number | Sample Number | Laboratory Soil Number | Sample Depth (ft.) | | Natural Moisture Content (%) | (%) Passing No. 200 | Atterberg Limits | | AASHTO Classification | USCS Classification | Standard Proctor | | CBR (%) | | Triaxial Shear (CU/UU) | | | | Unconfined Compression (Soil) (psf) | Pre-Consolidation Pressure (from Consolidation Test) (psf) | Organic Content | | Corrosion Series | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Liquid Limit | Plasticity Index | | | MDD (pcf) | OMC (%) | CBR @ 20 blows/layer | CBR @ 40 blows/layer | c' (psf) | ϕ' (deg) | c (psf) | ϕ (deg) | | | Ash % | Organic Matter % | Resistivity (ohm-cm) | pH | Sulfate (mg/kg) | Chloride (mg/kg) |
| | ST-1 | 35 | 39.5 | 41.3 | 22.2 | 42.7 | 36.94 | 5 | A-4 (0) | SM | | | | | 504 | 27.8 | 864 | 14.7 | | | | | | | | |
| | SS-11 | 3 | 44.3 | 45.8 | | 41.9 | 39.01 | 7 | A-4 (1) | SM | | | | | | | | | | | | | | | | |
| | SS-12 | 3 | 49.3 | 50.8 | | 41.9 | 39.01 | 7 | A-4 (1) | SM | | | | | | | | | | | | | | | | |
| | SS-13 | NA | 52.2 | 52.3 | | | | | | | | | | | | | | | | | | | | | | |
| BR-122 | SS-1 | 244 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 244 | 4.0 | 5.5 | 33.5 | 42.2 | 41 | 38 | A-5 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-3 | 245 | 6.0 | 7.5 | 10.6 | 10.4 | 23 | 3 | A-1-a (0) | SP-SM | | | | | | | | | | | | | | | | |
| | SS-4 | 245 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 248 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 247 | 13.4 | 14.9 | 22.5 | 42.5 | 43 | 5 | A-5 (0) | GM | | | | | | | | | | | | | | | | |
| | SS-7 | 246 | 18.4 | 19.9 | 55.4 | 71.0 | 60 | 9 | A-5 (10) | MH | | | | | | | | | | | | | | | | |
| | SS-8 | 248 | 23.4 | 24.9 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-9 | 248 | 28.4 | 29.9 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-10 | 248 | 33.4 | 34.9 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-11 | 248 | 38.4 | 39.9 | 44.3 | 63.5 | 41 | 7 | A-5 (4) | ML | | | | | | | | | | | | | | | | |
| | SS-12 | 246 | 43.4 | 44.9 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-13 | 251 | 48.4 | 49.9 | 21.1 | 43.8 | NP | NP | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-14 | 251 | 53.4 | 54.9 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-15 | 251 | 58.4 | 59.9 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-16 | 249 | 63.4 | 64.9 | 22.5 | 38.2 | 32 | 5 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-17 | 250 | 68.4 | 69.9 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-18 | 250 | 73.4 | 74.9 | 16.2 | 26.7 | 32 | 4 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-19 | 251 | 78.4 | 79.9 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-20 | 251 | 81.2 | 82.9 | | | | | | | | | | | | | | | | | | | | | | |
| BR-123 | SS-1 | 7 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 7 | 4.0 | 5.5 | 17.3 | 33.5 | 38.94 | 16 | A-2-6 (1) | SC | | | | | | | | | | | | | | | | |
| | SS-3 | 7 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 7 | 8.0 | 9.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-5 | 4 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 6 | 15.0 | 16.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 6 | 20.0 | 21.5 | 34.6 | 51.6 | 45.09 | 5 | A-5 (2) | ML | | | | | | | | | | | | | | | | |
| | SS-8 | 6 | 25.0 | 26.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-9 | 4 | 30.0 | 31.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-10 | 4 | 35.0 | 36.5 | 32.4 | 40.7 | 42.16 | 6 | A-5 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-11 | 4 | 40.0 | 41.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-12 | 3 | 45.0 | 46.5 | 30.5 | 41.9 | 39.01 | 7 | A-4 (1) | SM | | | | | | | | | | | | | | | | |
| | SS-13 | 8 | 50.0 | 51.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-14 | 8 | 55.0 | 56.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-15 | 8 | 60.0 | 61.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-16 | 8 | 65.0 | 66.5 | 31.7 | 53.3 | 40.4 | 6 | A-4 (2) | ML | | | | | | | | | | | | | | | | |
| | SS-17 | 8 | 70.0 | 71.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-18 | 2 | 75.0 | 76.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-19 | 8 | 80.0 | 81.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-20 | 8 | 85.0 | 86.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-21 | 8 | 90.0 | 91.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-22 | 8 | 95.0 | 96.1 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-23 | 9 | 100.0 | 100.4 | 9.3 | 40.0 | 28.24 | 3 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| BR-124 | SS-1 | 10 | 2.0 | 3.5 | 28.6 | 46.1 | 45 | 9 | A-5 (2) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 10 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 11 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | ST-1 | 36 | 8.5 | 9.0 | 13.4 | 40.5 | 21 | 4 | A-4 (0) | SM | | | | | | | | | | 4000 | | | | | | |
| | SS-4 | 11 | 10.0 | 11.5 | 23.2 | 67.4 | 49 | 23 | A-7-6 (15) | CL | | | | | | | | | | | | | | | | |
| | SS-5 | 12 | 15.0 | 16.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 12 | 20.0 | 21.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 12 | 25.0 | 26.5 | 24.8 | 44.6 | 40 | 8 | A-4 (1) | SM | | | | | | | | | | | | | | | | |
| | SS-8 | 12 | 30.0 | 31.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-9 | 12 | 35.0 | 36.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-10 | 12 | 40.0 | 41.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-11 | 12 | 45.0 | 46.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-12 | 13 | 50.0 | 51.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-13 | 13 | 55.0 | 56.5 | 25 | 28.3 | 28 | 0 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-14 | 13 | 60.0 | 61.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-15 | 13 | 65.0 | 66.3 | | | | | | | | | | | | | | | | | | | | | | |
| BR-125 | SS-1 | 254 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 252 | 4.0 | 5.5 | 17.8 | 38.1 | 24 | 7 | A-4 (0) | SC-SM | | | | | | | | | | | | | | | | |
| | SS-3 | 253 | 6.0 | 7.5 | 28.1 | 52.7 | 72 | 30 | A-7-5 (14) | MH | | | | | | | | | | | | | | | | |
| | SS-4 | 254 | 8.0 | 9.5 | 20.9 | 40.2 | 43 | 11 | A-7-5 (1) | SM | | | | | | | | | | | | | | | | |
| | SS-5 | 254 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 255 | 14.8 | 16.3 | 19.7 | 45.3 | 41 | 5 | A-5 (1) | SM | | | | | | | | | | | | | | | | |
| | SS-7 | 255 | 19.8 | 21.3 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8 | 256 | 24.8 | 26.3 | 18.6 | 26.4 | 36 | 3 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-9 | 257 | 29.8 | 31.3 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-10 | 257 | 34.8 | 36.3 | 24.9 | 31.1 | NP | NP | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-11 | 259 | 39.8 | 41.3 | 27.2 | 28.6 | 32 | 1 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-12 | 258 | 44.8 | 56.3 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-13 | 258 | 49.8 | 51.3 | 24.3 | 33.5 | 31 | 2 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-14 | 259 | 54.8 | 55.9 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-15 | 259 | 59.8 | 60.3 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-16 | 259 | 64.8 | 65.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-17 | - | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-1 | 14 | 2.0 | 3.5 | 30.2 | 78.8 | 40.65 | 11 | A-7-6 (10) | ML | | | | | | | | | | | | | | | | |
| | SS-2 | 15 | 4.0 | 5.5 | 33 | 50.8 | 58.68 | 24 | A-7-5 (10) | MH | | | | | | | | | | | | | | | | |
| | SS-3 | 15 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 16 | 8.0 | 9.5 | 15.7 | 27.4 | 37.79 | 6 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-5 | 16 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 16 | 13.5 | 15.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 17 | 18.5 | 20.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8 | 18 | 23.5 | 25.0 | 34.4 | 42.2 | 47.95 | 6 | A-5 (1) | SM | | | | | | | | | | | | | | | | |

# Table C-1. Summary of Laboratory Soil Test Results

| Boring Number | Sample Number | Laboratory Soil Number | Sample Depth (ft.) | | Natural Moisture Content (%) | (%) Passing No. 200 | Atterberg Limits | | AASHTO Classification | USCS Classification | Standard Proctor | | CBR (%) | | Triaxial Shear (CU/UU) | | | | Unconfined Compression (Soil) (psf) | Pre-Consolidation Pressure (from Consolidation Test) (psf) | Organic Content | | Corrosion Series | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Liquid Limit | Plasticity Index | | | MDD (pcf) | OMC (%) | CBR @ 20 blows/layer | CBR @ 40 blows/layer | c' (psf) | ϕ' (deg) | c (psf) | ϕ (deg) | | | Ash % | Organic Matter % | Resistivity (ohm-cm) | pH | Sulfate (mg/kg) | Chloride (mg/kg) |
| BR-126 | SS-9 | 17 | 28.5 | 30.0 | | | | | | | | | | | | | | | | | | | | | | |
| | ST-1 | NA | 30.0 | 30.5 | 35.1 | 45.4 | 49.58 | 9 | A-5 (2) | SM | | | | | 403.2 | 28.1 | 518.4 | 18.3 | | | | | | | | |
| | SS-10 | 17 | 33.5 | 35.0 | 40.2 | 67.1 | 49.48 | 24 | A-7-6 (15) | CL | | | | | | | | | | | | | | | | |
| | SS-11 | 17 | 38.5 | 40.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-12 | 17 | 43.5 | 45.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-13 | 19 | 48.5 | 50.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-14 | 19 | 53.5 | 55.0 | 34.3 | 45.1 | 38.43 | 12 | A-6 (3) | SM | | | | | | | | | | | | | | | | |
| | SS-15 | 19 | 58.5 | 60.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-16 | 20 | 63.5 | 63.8 | 16.9 | 21.3 | 24.98 | 0 | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| | SS-17 | NA | 68.5 | 68.6 | | | | | | | | | | | | | | | | | | | | | | |
| BR-127 | SS-1 | 212 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 213 | 4.0 | 5.5 | 31 | 69.0 | 43 | 19 | A-7-6 (12) | CL | | | | | | | | | | | | | | | | |
| | SS-3 | 215 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 216 | 8.0 | 9.5 | 30.1 | 50.2 | 41 | 5 | A-5 (1) | ML | | | | | | | | | | | | | | | | |
| | SS-5 | 216 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 217 | 13.5 | 15.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 217 | 18.5 | 20.0 | 27.4 | 40.0 | NP | NP | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-8 | 218 | 23.5 | 25.0 | | | | | | | | | | | | | | | | | | | | | | |
| | ST-1 | 90A | 25.0 | 26.1 | 24.8 | 43.6 | NP | NP | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-9 | 218 | 28.5 | 30.0 | 25.5 | 41.5 | NP | NP | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-10 | 218 | 33.5 | 35.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-11 | 219 | 38.5 | 40.0 | 26.6 | 30.3 | NP | NP | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-12 | 219 | 43.5 | 44.1 | | | | | | | | | | | | | | | | | | | | | | |
| BR-128 | SS-1 | 220 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 220 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 220 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 220 | 8.0 | 9.5 | 17.4 | 43.2 | 31 | 2 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-5 | 220 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 220 | 14.5 | 16.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 221 | 19.5 | 21.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8 | 218 | 24.5 | 26.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-9 | 221 | 29.5 | 30.8 | 17.7 | 35.6 | NP | NP | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-10 | 222 | 34.5 | 35.4 | 10.5 | 38.4 | NP | NP | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-11 | 214 | 39.5 | 40.3 | 3.5 | 26.7 | 26 | 3 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-12 | 223 | 44.5 | 46.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-13 | 214 | 49.5 | 49.7 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-14 | - | 49.9 | 49.9 | | | | | | | | | | | | | | | | | | | | | | |
| BR-129 | SS-1 | 224 | 2.0 | 3.5 | 24.3 | 75.9 | 58 | 27 | A-7-5 (22) | MH | | | | | | | | | | | | | | | | |
| | SS-2 | 212 | 4.0 | 5.5 | 31.9 | 58.6 | 44 | 11 | A-7-5 (6) | ML | | | | | | | | | | | | | | | | |
| | SS-3 | 215 | 6.0 | 7.5 | 25.6 | 47.9 | 37 | 7 | A-4 (1) | SM | | | | | | | | | | | | | | | | |
| | SS-4 | 225 | 8.0 | 9.5 | 26.1 | 37.7 | 35 | 3 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-5 | 225 | 10.0 | 11.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-6 | 226 | 13.5 | 15.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 226 | 18.5 | 20.0 | 33.6 | 69.7 | 47 | 6 | A-5 (6) | ML | | | | | | | | | | | | | | | | |
| | SS-8 | 227 | 23.5 | 25.0 | 31.2 | 72.5 | 34 | 2 | A-4 (2) | ML | | | | | | | | | | | | | | | | |
| | SS-9 | 227 | 28.5 | 30.0 | | | | | | | | | | | | | | | | | | | | | | |
| | ST-1 | 89A | 30.0 | 31.2 | 19.3 | 66.9 | 44 | 8 | A-5 (6) | ML | | | | | | | | | | | | | | | | |
| | SS-10 | 229 | 33.5 | 35.0 | 32.2 | 42.2 | NP | NP | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-11 | 228 | 38.5 | 40.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-12 | 223 | 43.5 | 45.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-13 | 228 | 45.5 | 50.0 | 41.6 | 64.8 | 41 | 6 | A-5 (4) | ML | | | | | | | | | | | | | | | | |
| | SS-14 | 223 | 53.5 | 55.0 | 34.9 | 52.7 | NP | NP | A-4 (0) | ML | | | | | | | | | | | | | | | | |
| | SS-15 | 229 | 58.5 | 60.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-16 | 230 | 63.5 | 65.0 | 21.3 | 25.9 | NP | NP | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-17 | 223 | 68.5 | 70.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-18 | 231 | 73.5 | 75.0 | 15.2 | 44.6 | 31 | 3 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| BR-155 | SS-1 | 194 | 2.0 | 3.5 | 15.5 | 45.1 | 30 | 5 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 186 | 4.0 | 5.5 | 17.3 | 35.9 | 29 | 11 | A-6 (0) | SC | | | | | | | | | | | | | | | | |
| | SS-3 | 186 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 196 | 8.0 | 9.5 | 20.2 | 35.8 | NP | NP | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-5 | 187 | 10.0 | 11.5 | 20.1 | 34.0 | NP | NP | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-6 | 187 | 13.6 | 15.1 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 188 | 18.3 | 19.8 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-8 | 188 | 23.3 | 24.8 | 17.7 | 26.1 | NP | NP | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-9 | 190 | 28.3 | 29.8 | 13.6 | 19.9 | NP | NP | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| | SS-10 | 191 | 33.3 | 34.8 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-11 | 189 | 38.3 | 39.1 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-12 | 199 | 43.3 | 44.8 | 15.2 | 36.7 | 29 | 2 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-13 | 191 | 48.3 | 49.8 | 15.7 | 20.1 | 25 | 3 | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| | SS-14 | 193 | 53.3 | 54.8 | 10.5 | 10.6 | NP | NP | A-1-a (0) | SW-SM | | | | | | | | | | | | | | | | |
| | SS-15 | 193 | 58.3 | 58.9 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-16 | - | 63.3 | 63.3 | | | | | | | | | | | | | | | | | | | | | | |
| BR-156 | Bulk-1 | 290 | 0.0 | 8.0 | - | 33.2 | 26 | 6 | A-2-4 (0) | SM | 120.1 | 11.5 | | | | | | | | | | | 1960 | 7.2 | 2.4 | 76 |
| | SS-1 | 194 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 194 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 194 | 6.0 | 7.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-4 | 189 | 8.0 | 9.5 | 8.4 | 17.4 | NP | NP | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| | SS-5 | 195 | 10.0 | 11.5 | 14.5 | 29.5 | 27 | 2 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-6 | 198 | 14.8 | 16.3 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-7 | 197 | 19.8 | 21.3 | 16.2 | 38.4 | 33 | 4 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-8 | 198 | 24.8 | 26.3 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-9 | 198 | 29.8 | 31.3 | 29 | 43.1 | 38 | 3 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-10 | 198 | 34.3 | 36.3 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-11 | 190 | 39.8 | 41.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-12 | 192 | 44.8 | 45.6 | 15.2 | 19.2 | NP | NP | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| | SS-13 | 192 | 49.8 | 50.2 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-14 | - | 52.2 | 52.2 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-1 | 132 | 2.5 | 4.0 | 18..8 | 33.8 | 22 | 4 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |

# Table C-1. Summary of Laboratory Soil Test Results

| Boring Number | Sample Number | Laboratory Soil Number | Sample Depth (ft.) | | Natural Moisture Content (%) | (%) Passing No. 200 | Atterberg Limits | | AASHTO Classification | USCS Classification | Standard Proctor | | CBR (%) | | Triaxial Shear (CU/UU) | | | | Unconfined Compression (Soil) (psf) | Pre-Consolidation Pressure (from Consolidation Test) (psf) | Organic Content | | Corrosion Series | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Liquid Limit | Plasticity Index | | | MDD (pcf) | OMC (%) | CBR @ 20 blows/layer | CBR @ 40 blows/layer | c' (psf) | ϕ' (deg) | c (psf) | ϕ (deg) | | | Ash % | Organic Matter % | Resistivity (ohm-cm) | pH | Sulfate (mg/kg) | Chloride (mg/kg) |
| SB-1 | SS-2 | 133 | 4.5 | 6.0 | 25 | 60.7 | 18 | 2 | A-4 (0) | ML | | | | | | | | | | | | | | | | |
| | SS-3 | 133 | 6.5 | 8.0 | | | | | | | | | | | | | | | | | | | | | | |
| NB-2 | Bulk-1 | 295 | 2.5 | 6.5 | | | | | | | 118.5 | 11.7 | 3.8 | 6.9 | | | | | | | | | | | | |
| | SS-1 | 134 | 2.5 | 4.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 134 | 4.5 | 6.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 137 | 6.5 | 8.0 | 22.3 | 75.8 | 51 | 27 | A-7-6 (21) | CH | | | | | | | | | | | | | | | | |
| SB-3 | SS-1 | 132 | 2.5 | 4.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 134 | 4.5 | 6.0 | 25.5 | 63.7 | 37 | 8 | A-4 (4) | ML | | | | | | | | | | | | | | | | |
| | SS-3 | 134 | 6.5 | 8.0 | | | | | | | | | | | | | | | | | | | | | | |
| NB-4 | SS-1 | 135 | 0 | 1.5 | 21.5 | 39.3 | 34 | 20 | A-6 (3) | SC | | | | | | | | | | | | | | | | |
| | SS-2 | 136 | 2 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 136 | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| SB-5 | SS-1 | 138 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 139 | 2 | 3.5 | 16.4 | 46.6 | 30 | 4 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-3 | 140 | 4 | 5.5 | 19 | 55.5 | NP | NP | A-4 (0) | ML | | | | | | | | | | | | | | | | |
| NB-6 | SS-1 | 141 | 0 | 1.5 | 19 | 29.0 | 19 | 1 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 142 | 2 | 3.5 | 15 | 48.2 | 30 | 8 | A-4 (1) | SC | | | | | | | | | | | | | | | | |
| | SS-3 | 143 | 4 | 5.5 | 23.6 | 61.3 | 34 | 13 | A-6 (6) | CL | | | | | | | | | | | | | | | | |
| SB-7 | Bulk-1 | 286 | 0 | 4.0 | - | 38.6 | 30 | 7 | A-1-b (0) | SM | 118.1 | 14 | | | | | | | | | | | | | | |
| | SS-1 | 138 | 0 | 1.5 | 14.4 | 33.2 | 26 | 6 | A-2-4 (0) | SC-SM | | | | | | | | | | | | | | | | |
| | SS-2 | 139 | 2 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 140 | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| NB-8 | SS-1 | 141 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 142 | 2 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 144 | 4 | 5.5 | 10.8 | 51.3 | 26 | 10 | A-4 (2) | CL | | | | | | | | | | | | | | | | |
| SB-9 | SS-1 | 145 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 146 | 2 | 3.5 | 17.8 | 40.7 | 32 | 4 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-3 | 147 | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| NB-10 | SS-1 | 145 | 0 | 1.5 | 15.1 | 33.0 | 24 | 4 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 147 | 2 | 3.5 | 47.5 | 47.5 | 35 | 6 | A-4 (1) | SM | | | | | | | | | | | | | | | | |
| | SS-3 | 147 | 4 | 5.4 | | | | | | | | | | | | | | | | | | | | | | |
| SB-11 | SS-1 | 145 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 147 | 2 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 147 | 4 | 5.4 | | | | | | | | | | | | | | | | | | | | | | |
| NB-12 | Bulk-1 | 298 | 0 | 4.0 | | | | | | | 114 | 14.1 | 1.9 | 2.8 | | | | | | | | | | | | |
| | SS-1 | 145 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 148 | 2 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 148 | 4 | 5.5 | 20.8 | 52.8 | 42 | 14 | A-7-6 (5) | ML | | | | | | | | | | | | | | | | |
| SB-13 | SS-1 | 149 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 150 | 2 | 3.5 | 14.1 | 35.2 | 33 | 6 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-3 | 152 | 4 | 5.5 | 17.1 | 33.2 | 35 | 4 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| NB-14 | SS-1 | 149 | 0 | 1.5 | 18.7 | 35.8 | 29 | 5 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 151 | 2 | 3.5 | 13 | 29.1 | 27 | 3 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-3 | 152 | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| SB-15 | SS-1 | 149 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2A | 153 | 2 | 3.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2B | 154 | 3 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 154 | 4 | 5.5 | 11.8 | 27.2 | NP | NP | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| NB-16 | SS-1 | 149 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 153 | 2 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 153 | 4 | 5.5 | 16.9 | 33.9 | 30 | 5 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| SB-17 | Bulk-1 | 293 | 0 | 4.0 | - | 49.2 | 31 | 12 | A-2-4 (0) | SM | 118.8 | 14.1 | | | | | | | | | | | | | | |
| | SS-1 | 157 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 155 | 2 | 3.5 | 20.7 | 44.6 | 34 | 8 | A-4 (1) | SM | | | | | | | | | | | | | | | | |
| | SS-3 | 157 | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| NB-18 | SS-1 | 156 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 156 | 2 | 3.5 | 19.7 | 43.2 | 29 | 4 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-3 | 156 | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| NB-19 | SS-1 | 157 | 2.5 | 4.0 | 12.7 | 29.7 | 25 | 6 | A-2-4 (0) | SC-SM | | | | | | | | | | | | | | | | |
| | SS-2 | 157 | 4.5 | 6.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 155 | 6.5 | 8.0 | | | | | | | | | | | | | | | | | | | | | | |
| SB-20 | SS-1 | 158 | 2.5 | 4.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 158 | 4.5 | 6.0 | 28.7 | 62.9 | 39 | 13 | A-6 (7) | ML | | | | | | | | | | | | | | | | |
| | SS-3 | 158 | 6.5 | 8.0 | | | | | | | | | | | | | | | | | | | | | | |
| NB-21 | Bulk-1 | 291 | 2 | 6.5 | - | 25.3 | 26 | 6 | A-2-4 (0) | SM | 119.8 | 9.5 | | | | | | | | | | | | | | |
| | SS-1 | 162 | 2.5 | 4.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 159 | 4.5 | 6.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 159 | 6.5 | 8.0 | 5.5 | 15.2 | 22 | 1 | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| SB-22 | Bulk-1 | 296 | 2.5 | 6.5 | | | | | | | 117.8 | 12.2 | 2.5 | 4.4 | | | | | | | | | | | | |
| | SS-1 | 160 | 2.5 | 4.0 | 10 | 34.9 | 22 | 5 | A-2-4 (0) | SC-SM | | | | | | | | | | | | | | | | |
| | SS-2 | 161 | 4.5 | 6.0 | 18.1 | 49.4 | 31 | 9 | A-4 (2) | SC | | | | | | | | | | | | | | | | |
| | SS-3 | 161 | 6.5 | 8.0 | | | | | | | | | | | | | | | | | | | | | | |
| NB-23 | SS-1 | 162 | 2.5 | 4.0 | 11.8 | 40.3 | 26 | 5 | A-4 (0) | SC-SM | | | | | | | | | | | | | | | | |
| | SS-2 | 163 | 4.5 | 6.0 | 16.6 | 48.7 | 34 | 8 | A-4 (2) | SM | | | | | | | | | | | | | | | | |
| | SS-3 | 164 | 6.5 | 8.0 | 18.9 | 45.0 | 32 | 6 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| SB-24 | SS-1 | 165 | 2.5 | 4.0 | 24.1 | 62.7 | 30 | 6 | A-4 (2) | ML | | | | | | | | | | | | | | | | |
| | SS-2 | 165 | 4.5 | 6.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 165 | 6.5 | 8.0 | | | | | | | | | | | | | | | | | | | | | | |
| SB-25 | SS-1 | 166 | 0 | 1.5 | 9.9 | 20.4 | 26 | 4 | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 167 | 2 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 167 | 4 | 5.5 | 20.9 | 43.5 | 34 | 5 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| NB-26 | SS-1 | 167 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 169 | 2 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 169 | 4 | 5.5 | 21.7 | 58.1 | 44 | 14 | A-7-6 (7) | ML | | | | | | | | | | | | | | | | |
| SB-27 | SS-1 | 170 | 0 | 1.5 | 15.6 | 34.7 | 24 | 4 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 168 | 2 | 3.5 | 20.7 | 48.2 | 35 | 6 | A-4 (1) | SM | | | | | | | | | | | | | | | | |
| | SS-3 | - | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| | Bulk-1 | 292 | 0 | 4.0 | - | 48.4 | 28 | 9 | A-4(1) | SM | 111.4 | 14.7 | | | | | | | | | | | | | | |

# Table C-1. Summary of Laboratory Soil Test Results

| Boring Number | Sample Number | Laboratory Soil Number | Sample Depth (ft.) | | Natural Moisture Content (%) | (%) Passing No. 200 | Atterberg Limits | | AASHTO Classification | USCS Classification | Standard Proctor | | CBR (%) | | Triaxial Shear (CU/UU) | | | | Unconfined Compression (Soil) (psf) | Pre-Consolidation Pressure (from Consolidation Test) (psf) | Organic Content | | Corrosion Series | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Liquid Limit | Plasticity Index | | | MDD (pcf) | OMC (%) | CBR @ 20 blows/layer | CBR @ 40 blows/layer | c' (psf) | ϕ' (deg) | c (psf) | ϕ (deg) | | | Ash % | Organic Matter % | Resistivity (ohm-cm) | pH | Sulfate (mg/kg) | Chloride (mg/kg) |
| NB-28 | SS-1 | 170 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 169 | 2 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 170 | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| SB-29 | SS-1 | 171 | 0 | 1.5 | 12.5 | 37.2 | 24 | 3 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 172 | 2 | 3.5 | 22.2 | 47.3 | 38 | 13 | A-6 (3) | SC | | | | | | | | | | | | | | | | |
| | SS-3 | 172 | 4 | 4.7 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3B | 173 | 4.7 | 5.5 | 11.7 | 46.2 | NP | NP | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| NB-30 | SS-1 | 171 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 174 | 2 | 3.5 | 22.1 | 50.0 | 34 | 9 | A-4 (2) | ML | | | | | | | | | | | | | | | | |
| | SS-3 | 172 | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| SB-31 | SS-1A | 176 | 2.5 | 3.6 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-1B | 175 | 3.6 | 4.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 175 | 4.5 | 6.0 | 10 | 27.0 | 29 | 4 | A-2-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-3 | 175 | 6.8 | 8.0 | | | | | | | | | | | | | | | | | | | | | | |
| SB-32 | SS-1 | 174 | 1 | 2.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 174 | 3 | 4.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 176 | 5 | 6.5 | 22.4 | 64.5 | 37 | 7 | A-4 (4) | ML | | | | | | | | | | | | | | | | |
| SB-33 | Bulk-1 | 297 | 0 | 4.0 | | | | | | | 115.5 | 13.8 | 2.3 | 4.4 | | | | | | | | | | | | |
| | SS-1 | 177 | 0 | 1.5 | 15.4 | 42.5 | 30 | 8 | A-4 (1) | SC | | | | | | | | | | | | | | | | |
| | SS-2A | 179 | 3 | 3.0 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2B | 178 | 3 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 178 | 4 | 5.5 | 19.7 | 38.6 | 31 | 3 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| NB-34 | SS-1 | 179 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2A | 179 | 2 | 3.1 | 15.5 | 41.3 | 26 | 7 | A-4 (0) | SC-SM | | | | | | | | | | | | | | | | |
| | SS-2A | 178 | 3.1 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 178 | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| SB-35 | SS-1 | 177 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 180 | 2 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 180 | 4 | 5.5 | 17.7 | 55.9 | 24 | 10 | A-4 (3) | CL | | | | | | | | | | | | | | | | |
| NB-36 | SS-1 | 177 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 181 | 2 | 3.5 | 22.2 | 76.9 | 57 | 28 | A-7-6 (23) | CH | | | | | | | | | | | | | | | | |
| | SS-3 | 181 | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| SB-37 | SS-1 | 182 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 183 | 2 | 3.5 | 29.5 | 52.2 | 51 | 7 | A-5 (3) | MH | | | | | | | | | | | | | | | | |
| | SS-3 | 183 | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| NB-38 | Bulk-1 | 299 | 0 | 4.0 | | | | | | | 114.4 | 15.8 | 2.2 | 3.1 | | | | | | | | | | | | |
| | SS-1 | 182 | 0 | 1.5 | 22.4 | 42.8 | 35 | 5 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 184 | 2 | 3.5 | 17.3 | 52.3 | 29 | 7 | A-4 (1) | CL-ML | | | | | | | | | | | | | | | | |
| | SS-3 | 184 | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| SB-39 | SS-1 | 182 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 185 | 2 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 185 | 4 | 5.5 | 16.3 | 39.1 | 33 | 4 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| NB-40 | SS-1 | 182 | 0 | 1.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 184 | 2 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-3 | 185 | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| SB-41 | SS-1 | 89 | 2.0 | 3.5 | 24.7 | 42.8 | 36 | 5 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 89 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| NB-42 | SS-1 | 90 | 2.0 | 3.5 | 16.1 | 40.7 | 31 | 10 | A-4 (1) | SC | | | | | | | | | | | | | | | | |
| | SS-2 | 91 | 4.0 | 5.5 | 20.8 | 42.9 | 51 | 20 | A-7-5 (5) | SM | | | | | | | | | | | | | | | | |
| SB-43 | Bulk-1 | 279 | 0.0 | 5.0 | - | 50.6 | 36 | 9 | A-4 (2) | ML | 110.4 | 14.1 | 2.5 | 4.1 | | | | | | | | | | | | |
| | SS-1 | 90 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 90 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| NB-44 | SS-1 | 92 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 92 | 3.8 | 5.5 | 8.8 | 11.0 | NP | NP | A-1-b (0) | SW-SM | | | | | | | | | | | | | | | | |
| NB-46 | SS-1 | 93 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 94 | 4.0 | 5.5 | 61.1 | 62.9 | 66 | 14 | A-7-5 (11) | MH | | | | | | | | | | | | | | | | |
| SB-47 | SS-1 | 94 | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 94 | | | | | | | | | | | | | | | | | | | | | | | | |
| NB-48 | Bulk-1 | 277 | 0.0 | 5.0 | - | 46.4 | 37 | 7 | A-4 (1) | SM | 112.7 | 15.2 | 2.2 | 2.8 | | | | | | | | | | | | |
| | SS-1 | 95 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 95 | 4.0 | 5.5 | 24.4 | 42.1 | 49 | 9 | A-5 (1) | SM | | | | | | | | | | | | | | | | |
| SB-49 | SS-1 | 96 | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 96 | | | | | | | | | | | | | | | | | | | | | | | | |
| NB-50 | SS-1 | 96 | 2.0 | 3.5 | 21.8 | 49.0 | 38 | 15 | A-6 (4) | SC | | | | | | | | | | | | | | | | |
| | SS-2 | 97 | 4.0 | 5.5 | 24 | 61.1 | 40 | 13 | A-6 (7) | ML | | | | | | | | | | | | | | | | |
| SB-51 | SS-1 | 98 | 2.0 | 3.5 | 20.3 | 35.2 | 42 | 7 | A-5 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 99 | 4.0 | 5.5 | 45.6 | 68.5 | 51 | 12 | A-7-5 (10) | MH | | | | | | | | | | | | | | | | |
| NB-52 | SS-1 | 98 | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 98 | | | | | | | | | | | | | | | | | | | | | | | | |
| SB-53 | Bulk-1 | 278 | 0.0 | 5.0 | - | 57.8 | 42 | 13 | A-7-6 (6) | ML | 109.2 | 17 | 2.5 | 2.8 | | | | | | | | | | | | |
| | SS-1 | 100 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 100 | 4.0 | 5.5 | 26.8 | 64.4 | 51 | 14 | A-7-5 (10) | MH | | | | | | | | | | | | | | | | |
| NB-54 | SS-1 | 101 | 2.0 | 3.5 | 18.6 | 25.6 | 41 | 10 | A-2-5 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 102 | 4.0 | 5.5 | 27.9 | 54.4 | 50 | 11 | A-7-5 (0) | MH | | | | | | | | | | | | | | | | |
| SB-55 | SS-1 | 103 | 2.0 | 3.5 | 27.5 | 67.7 | 53 | 15 | A-7-5 (11) | MH | | | | | | | | | | | | | | | | |
| | SS-2 | 103 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| SB-56 | SS-1 | 100 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 104 | 4.0 | 5.5 | 22 | 63.2 | 42 | 11 | A-7-5 (6) | ML | | | | | | | | | | | | | | | | |
| SB-57 | SS-1 | 105 | 2.0 | 3.5 | 28.7 | 44.1 | 40 | 9 | A-4 (2) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 106 | 4.0 | 5.5 | 27.3 | 56.8 | 40 | 5 | A-4 (2) | ML | | | | | | | | | | | | | | | | |
| NB-58 | Bulk-1 | 284 | 0.0 | 5.0 | - | 55.8 | 37 | 9 | A-4 (3) | ML | 107.9 | 16.4 | 2.5 | 3.8 | | | | | | | | | | | | |
| | SS-1 | 107 | 2.0 | 3.5 | 27.1 | 44.5 | 34 | 5 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 106 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| SB-59 | SS-1 | - | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 108 | 4.0 | 5.5 | 22.3 | 65.7 | 37 | 13 | A-6 (7) | CL | | | | | | | | | | | | | | | | |
| NB-60 | SS-1 | 109 | 2.0 | 3.5 | 20.3 | 49.2 | 36 | 7 | A-4 (2) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 109 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| SB-61 | SS-1 | 110 | | | | | | | | | | | | | | | | | | | | | | | | |

# Table C-1. Summary of Laboratory Soil Test Results

| Boring Number | Sample Number | Laboratory Soil Number | Sample Depth (ft.) | | Natural Moisture Content (%) | (%) Passing No. 200 | Atterberg Limits | | AASHTO Classification | USCS Classification | Standard Proctor | | CBR (%) | | Triaxial Shear (CU/UU) | | | | Unconfined Compression (Soil) (psf) | Pre-Consolidation Pressure (from Consolidation Test) (psf) | Organic Content | | Corrosion Series | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Liquid Limit | Plasticity Index | | | MDD (pcf) | OMC (%) | CBR @ 20 blows/layer | CBR @ 40 blows/layer | c' (psf) | ϕ' (deg) | c (psf) | ϕ (deg) | | | Ash % | Organic Matter % | Resistivity (ohm-cm) | pH | Sulfate (mg/kg) | Chloride (mg/kg) |
| SB-61 | SS-2 | 110 | | | | | | | | | | | | | | | | | | | | | | | | |
| NB-62 | SS-1 | 110 | 2.0 | 3.5 | 16.8 | 58.6 | 48 | 15 | A-7-5 (8) | ML | | | | | | | | | | | | | | | | |
| | SS-2 | 110 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| SB-63 | Bulk-1 | 288 | 0.0 | 5.0 | - | 39.3 | 38 | 4 | A-4 (0) | SM | 110.6 | 16.5 | 2.2 | 3.1 | | | | | | | | | | | | |
| | SS-1 | 111 | 2.0 | 3.5 | 21.2 | 56.1 | 41 | 17 | A-7-6 (7) | CL | | | | | | | | | | | | | | | | |
| | SS-2 | 112 | 4.0 | 5.5 | 19.9 | 60.5 | 29 | 15 | A-6 (6) | CL | | | | | | | | | | | | | | | | |
| NB-64 | SS-1 | 113 | 2 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 113 | 4 | 5.5 | 28.6 | 53.2 | 42 | 6 | A-5 (2) | ML | | | | | | | | | | | | | | | | |
| SB-65 | SS-1 | 114 | 2 | 3.5 | 21.6 | 59.4 | 39 | 13 | A-6 (6) | ML | | | | | | | | | | | | | | | | |
| | SS-2 | 114 | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| NB-66 | SS-1 | 115 | 2 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 116 | 4 | 5.5 | 29.2 | 48.2 | 33 | 9 | A-4 (2) | SM | | | | | | | | | | | | | | | | |
| SB-67 | SS-1 | 117 | 2 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 117 | 4 | 5.5 | 21.2 | 55.0 | 35 | 11 | A-6 (4) | ML | | | | | | | | | | | | | | | | |
| NB-68 | Bulk-1 | 282 | 0.0 | 5.0 | - | 43.1 | 39 | 8 | A-4 (1) | SM | 114.4 | 13.4 | 2.2 | 3.1 | | | | | | | | | | | | |
| | SS-1 | 118 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 118 | 4.0 | 5.5 | 22.9 | 33.6 | 58 | 8 | A-2-5 (0) | SM | | | | | | | | | | | | | | | | |
| SB-69 | SS-1 | 115 | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 118 | | | | | | | | | | | | | | | | | | | | | | | | |
| NB-70 | SS-1 | 115 | 2 | 3.5 | 13.3 | 51.1 | 37 | 8 | A-4 (2) | ML | | | | | | | | | | | | | | | | |
| | SS-2 | 115 | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| NB-77 | SS-1 | 119 | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 119 | | | | | | | | | | | | | | | | | | | | | | | | |
| NB-78 | Bulk-1 | 289 | 0.0 | 5.0 | - | 52.5 | 39 | 16 | A-6 (6) | CL | 111.1 | 16.1 | 2.2 | 4.8 | | | | | | | | | | | | |
| | SS-1 | 120 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 120 | 4.0 | 5.5 | 29.8 | 67.9 | 50 | 12 | A-7-5 (9) | MH | | | | | | | | | | | | | | | | |
| SB-79 | SS-1 | 121 | 2 | 3.5 | 24.2 | 51.1 | 43 | 7 | A-5 (2) | ML | | | | | | | | | | | | | | | | |
| | SS-2 | 122 | 4 | 5.5 | 26.8 | 68.4 | 53 | 9 | A- (8) | MH | | | | | | | | | | | | | | | | |
| NB-80 | SS-1 | 119 | 2 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 119 | 4 | 5.5 | 28.4 | 55.7 | 43 | 10 | A-5 (4) | ML | | | | | | | | | | | | | | | | |
| SB-81 | SS-1 | 123 | 2 | 3.5 | 16.9 | 36.7 | NP | NP | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 124 | 4 | 5.5 | 12.6 | 22.4 | NP | NP | A-1-b (0) | SM | | | | | | | | | | | | | | | | |
| NB-82 | SS-1 | 125 | 2 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 125 | 4 | 5.5 | 21.6 | 47.6 | 36 | 8 | A-4 (2) | SM | | | | | | | | | | | | | | | | |
| SB-83 | Bulk-1 | 281 | 0.0 | 5.0 | - | 50.7 | 33 | 7 | A-4 (2) | ML | 111.8 | 14.5 | 1.6 | 2.9 | | | | | | | | | | | | |
| | SS-1 | 125 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 126 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| NB-84 | SS-1 | 126 | 2 | 3.5 | 23.3 | 47.6 | 41 | 8 | A-5 (2) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 127 | 4 | 5.5 | 25.7 | 73.2 | 44 | 8 | A-5 (7) | ML | | | | | | | | | | | | | | | | |
| SB-85 | SS-1 | 128 | 2 | 3.5 | 20.4 | 55.7 | 32 | 12 | A-6 (4) | CL | | | | | | | | | | | | | | | | |
| | SS-2 | 128 | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| NB-86 | SS-1 | 129 | 2 | 3.5 | 20.6 | 58.4 | 35 | 16 | A-6 (7) | CL | | | | | | | | | | | | | | | | |
| | SS-2 | 130 | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| NB-87 | SS-1 | 131 | 2 | 3.5 | 21.2 | 43.0 | 31 | 4 | A-4 (0) | SM | | | | | | | | | | | | | | | | |
| | SS-2 | 131 | 4 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| NB-88 | Bulk-1 | 287 | 0.0 | 5.0 | - | 54.0 | 28 | 8 | A-4 (2) | CL | 114.8 | 13.2 | 1.9 | 2.9 | | | | | | | | | | | | |
| | SS-1 | 130 | 2.0 | 3.5 | 22.6 | 59.4 | 31 | 8 | A-4 (3) | ML | | | | | | | | | | | | | | | | |
| | SS-2 | 130 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |
| SB-89 | SS-1 | 130 | | | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 130 | | | | | | | | | | | | | | | | | | | | | | | | |
| NB-90 | Bulk-1 | 280 | 0.0 | 5.0 | - | 44.6 | 28 | 6 | A-4 (0) | SC-SM | 115.1 | 13.1 | 2.5 | 3.3 | | | | | | | | | | | | |
| | SS-1 | 130 | 2.0 | 3.5 | | | | | | | | | | | | | | | | | | | | | | |
| | SS-2 | 130 | 4.0 | 5.5 | | | | | | | | | | | | | | | | | | | | | | |

## Table C-2. Summary of Unconfined Compression Testing of Intact Rock Samples

| Test Boring No. | Sample Number | Sample Depth (ft) | Air Dry Density (pcf) | Maximum Stress (psi) | Rock Type | Weathering Condition |
|---|---|---|---|---|---|---|
| BR-118 | RC-1 | 42.4 – 42.7 | 163.6 | 5,443 | Cherryville Granite: medium grain, very thinly foliated | slightly weathered |
| BR-118 | RC-2 | 50.6 – 51.0 | 163.9 | 11,405 | Cherryville Granite: medium grain, trace pinpoint vugs | fresh |
| BR-119 | RC-26 | 46.9 – 47.2 | 164.6 | 14,176 | Cherryville Granite: medium to coarse grain, slightly foliated | slightly weathered |
| BR-120 | RC-8 | 100.0 – 100.4 | 155.7 | 1,524 | Cherryville Granite: coarse grain w/medium grain | moderately to highly weathered |
| BR-122 | RC-18 | 81.4 – 81.7 | 162.7 | 6,468 | Cherryville Granite: medium to coarse grain, foliated, healed joint | slightly weathered |
| BR-122 | RC-19 | 93.4 – 93.7 | 174.2 | 13,735 | Schist: fine grain, very thinly foliated, pyritic healed joint | fresh |
| BR-124 | RC-3 | 69.6 - 70.0 | 164.3 | 6,333 | Schist: medium grain, very thinly foliated | slightly weathered |
| BR-124 | RC-4 | 82.1 – 82.4 | 164.7 | 7,583 | Schist: medium grain, very thinly foliated | fresh |
| BR-125 | RC-20 | 66.2 – 66.6 | 163.1 | 11,716 | Schist: medium grain, thinly foliated | slightly weathered |
| BR-125 | RC-21 | 74.0 – 74.4 | 164.3 | 12,190 | Schist: medium grain, thinly foliated, healed joint | fresh |
| BR-126 | RC-5 | 71.4 – 71.8 | 172.1 | 2,111 | Schist: fine grain w/some medium grain, very thinly foliated | fresh |
| BR-126 | RC-6 | 74.5 – 74.8 | 164.4 | 8,162 | Schist: medium grain w/pegmatite vein, very thinly foliated | fresh |
| BR-126 | RC-7 | 85.9 – 86.3 | 161.6 | 5,407 | Pegmatite: traces muscovite & garnet | fresh |
| BR-127 | RC-9 | 48.5 – 48.9 | 161.7 | 3,646 | Schist: medium to coarse grain, foliated | slightly weathered |
| BR-127 | RC-10 | 56.5 – 56.9 | 162.7 | 5,875 | Schist: medium grain w/coarse grain phenocrysts | fresh |
| BR-128 | RC-24 | 57.4 – 57.7 | 162.3 | 4,372 [1] | Granite: coarse grain, healed fractures | slight to moderate weathering |
| BR-128 | RC-25 | 71.6 – 71.9 | 180.6 | 12,255 | Amphibolite: fine grain, chlorite seam, calcite vein | fresh |
| BR-129 | RC-11 | 84.0 – 84.3 | 158.6 | 4,297 | Schist: coarse grain, 90° foliation | slightly weathered |
| BR-129 | RC-12 | 88.5 – 88.8 | 172.9 | 3,469 | Schist: fine grain, high angle foliation | slightly weathered |

## Table C-2. Summary of Unconfined Compression Testing of Intact Rock Samples

| Test Boring No. | Sample Number | Sample Depth (ft) | Air Dry Density (pcf) | Maximum Stress (psi) | Rock Type | Weathering Condition |
|---|---|---|---|---|---|---|
| BR-155 | RC-22 | 65.6 – 65.9 | 157.4 | 1,299 | Cherryville Granite: medium grain w/coarse grain, foliated | moderately weathered |
| BR-155 | RC-23 | 83.9 – 84.2 | 162.2 | 14,281 | Cherryville Granite: medium grain, faintly foliated | fresh |
| BR-156 | RC-15 | 58.0 – 58.4 | 182.1 | 5,568 [2] | Schist: fine grain, thinly foliated | slightly weathered |
| BR-156 | RC-15 | 63.8 – 64.1 | 155.4 | 2,062 | Cherryville Granite: medium grain, foliated | moderately weathered |
| BR-156 | RC-16 | 75.5 – 75.8 | 162.5 | 12,101 | Cherryville Granite: medium grain, foliated | slightly weathered |
| R-91 | RC-13 | 44.4 – 44.8 | 155.1 | 2,340 [1] | Schist: fine to medium grain, thinly foliated, healed joints | slight to moderately weathered |
| R-91 | RC-14 | 69.4 – 69.7 | 160.6 | 5,761 | Schist: fine grain, thinly foliated | slightly weathered |

[1] failure along infilled & healed joint
[2] failure parallels foliation

## Table C-3. Characterization of Rock Mass

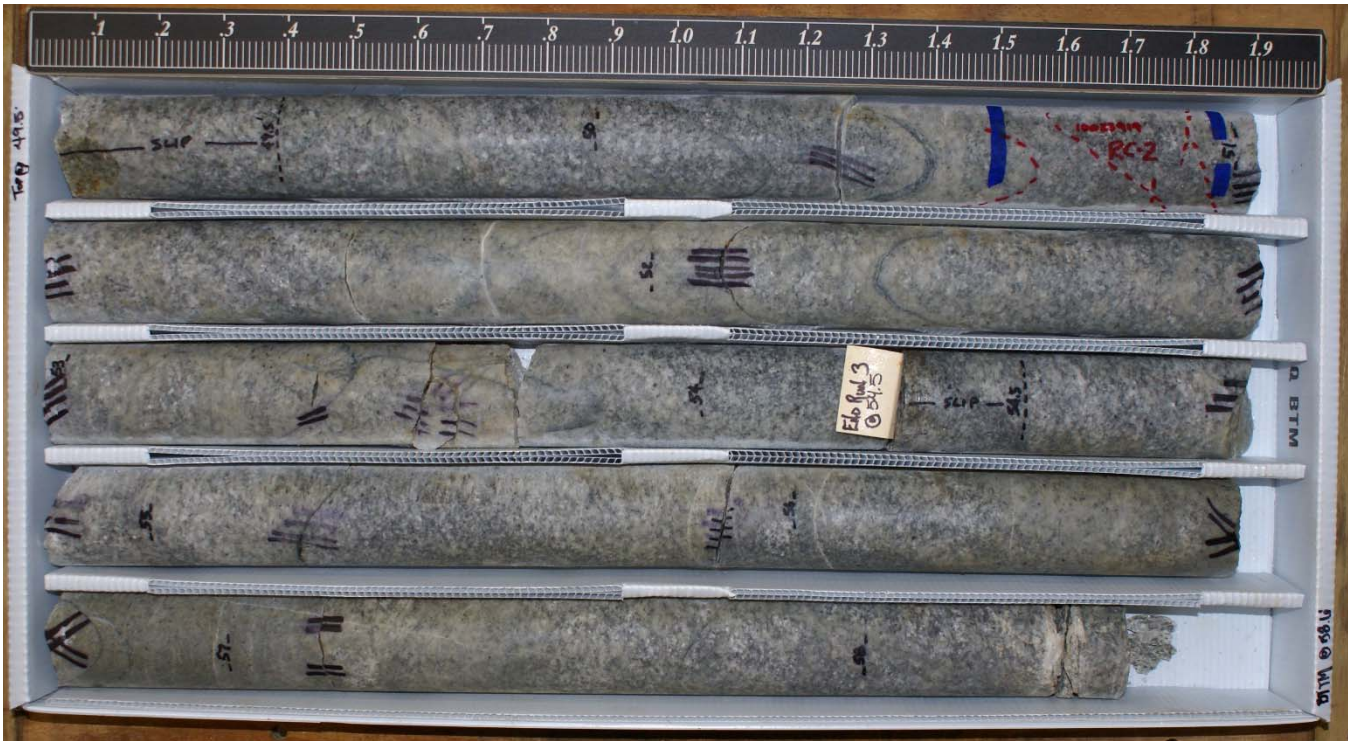
| Boring No | ROCK CORE | | | | | INTACT ROCK PROPERTIES | | | ROCK MASS RATING (RMR) | | GEOLOGICAL STRENGTH INDEX (GSI) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Core No | Sample Depth (feet) | | Rock Type | RQD (%) | Density (pcf) | $q_u$ (ksf) | Suggested $m_i$-value (Marinos and Hoek, 2001) | Rating | Classification | Rating | Classification |
| BR-118 | NQ-1 to NQ-2 | 41.0 | 49.5 | Cherryville Granite | 84 | 164 | 784 | 32 | 48 | Fair | 54 - 57 | Good/Very blocky |
| | NQ-3 to NQ-5 | 49.5 | 62.5 | Cherryville Granite | 98 | 164 | 1,642 | 35 | 71 | Good | 75 - 78 | Very good/Blocky |
| BR-119 | NQ-1 to NQ-4 | 42.6 | 62.6 | Cherryville Granite | 86 | 164 | 2,041 | 31 | 68 | Good | 63 - 66 | Good/Blocky |
| BR-120 | NQ-1 to NQ-8 | 63.6 | 101.2 | Cherryville Granite | 0 | 156 | 220 | 29 | 14 | Very poor | 20 - 22 | Poor/Disintegrated |
| BR-121 | NQ-1 to NQ-10 | 52.3 | 99.1 | Quartzite/WR/Schist/Granite | 0 | *consider as soil* | *70 | - | 13 | Very poor | - | *consider as soil* |
| BR-122 | NQ-1 to NQ-2 | 81.2 | 88.2 | Cherryville Granite | 55 | 163 | 931 | 32 | 41 | Poor to Fair | 42 - 45 | Good/Fair/Blocky/disturbed/seamy |
| | NQ-2 to NQ-5 | 88.2 | 105.9 | Schist/Granite | 83 | 174 | 1,978 | 15 | 58 | Fair | 64 - 66 | Good/Blocky |
| BR-124 | NQ-1 to NQ-5 | 68.5 | 89.1 | Schist | 85 | 164 | 1,002 | 14 | 55 | Fair | 49 - 52 | Good/Blocky/disturbed/seamy |
| BR-125 | NQ-1 to NQ-5 | 65.9 | 89.5 | Schist | 89 | 164 | 1,721 | 15 | 68 | Good | 56 - 58 | Very good/Very blocky |
| BR-126 | NQ-1 to NQ-2 | 68.6 | 72.8 | Schist | 77 | 172 | 304 | 11 | 49 | Fair | 49 - 52 | Good/Blocky/disturbed/seamy |
| | NQ-2 to NQ-5 | 72.8 | 88.6 | Schist | 91 | 164 | 1,175 | 15 | 71 | Good | 56 - 58 | Very good/Very blocky |
| BR-127 | NQ-1 to NQ-2 | 48.5 | 53.2 | Schist | 45 | 162 | 525 | 12 | 39 | Poor | 41 - 43 | Good/Fair/Blocky/disturbed/seamy |
| | NQ-2 to NQ-5 | 53.2 | 71.5 | Schist | 88 | 163 | 846 | 13 | 55 | Fair | 47 - 50 | Good/Blocky/disturbed/seamy |
| BR-128 | NQ-1 to NQ-2 | 49.9 | 59.5 | Schist/Granite/Meta-Conglomerate | 45 | 162 | 630 | 13 | 39 | Poor | 40 - 42 | Good/Fair/Blocky/disturbed/seamy |
| | NQ-3 to NQ-4 | 59.5 | 68.9 | Amphibolite | 18 | *135 | *350 | 9 | 23 | Poor | 20 - 22 | Poor/Disintegrated |
| | NQ-5 to NQ-6 | 68.9 | 79.2 | Granite/Amphibolite | 70 | *168 | 1,765 | 30 | 54 | Fair | 64 - 66 | Good/Blocky |
| BR-129 | NQ-1 to NQ-2 | 78.5 | 85.2 | Schist | 20 | 159 | 619 | 9 | 31 | Poor | 19 - 21 | Poor/Blocky/disturbed/seamy-disint. |
| | NQ-3 to NQ-5 | 85.2 | 100.4 | Schist/Amphibolite | 40 | 173 | *880 | 10 | 36 | Poor | 29 - 31 | Good/Fair/Blocky/disturbed/seamy-disint. |
| BR-155 | NQ-1 to NQ-3 | 63.3 | 74.0 | Cherryville Granite | 52 | 157 | 187 | 29 | 44 | Fair | 48 - 51 | Fair/Blocky |
| | NQ-3 to NQ-6 | 74.0 | 91.1 | Cherryville Granite | 90 | 162 | 2,056 | 33 | 61 | Fair to Good | 70 - 72 | Very Good/Good/Blocky |
| BR-156 | NQ-1 to NQ-3 | 52.2 | 63.6 | Schist | 36 | *168 | 802 | 10 | 33 | Poor | 28 - 31 | Fair/Poor/Blocky/disturbed/seamy |
| | NQ-3 to NQ-6 | 63.6 | 75.1 | Schist/Granite | 35 | 155 | 297 | 10 | 28 | Poor | 18 - 20 | Poor/Blocky/disturbed/seamy-disint. |
| | NQ-6 | 75.1 | 79.3 | Granite | 54 | 162 | 1,743 | 32 | 38 | Poor | 40 - 42 | Fair/Poor/Very blocky |

**Interpreted value*

# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106

**BR-118 - Box 1 of 3**




**BR-118 - Box 2 of 3**

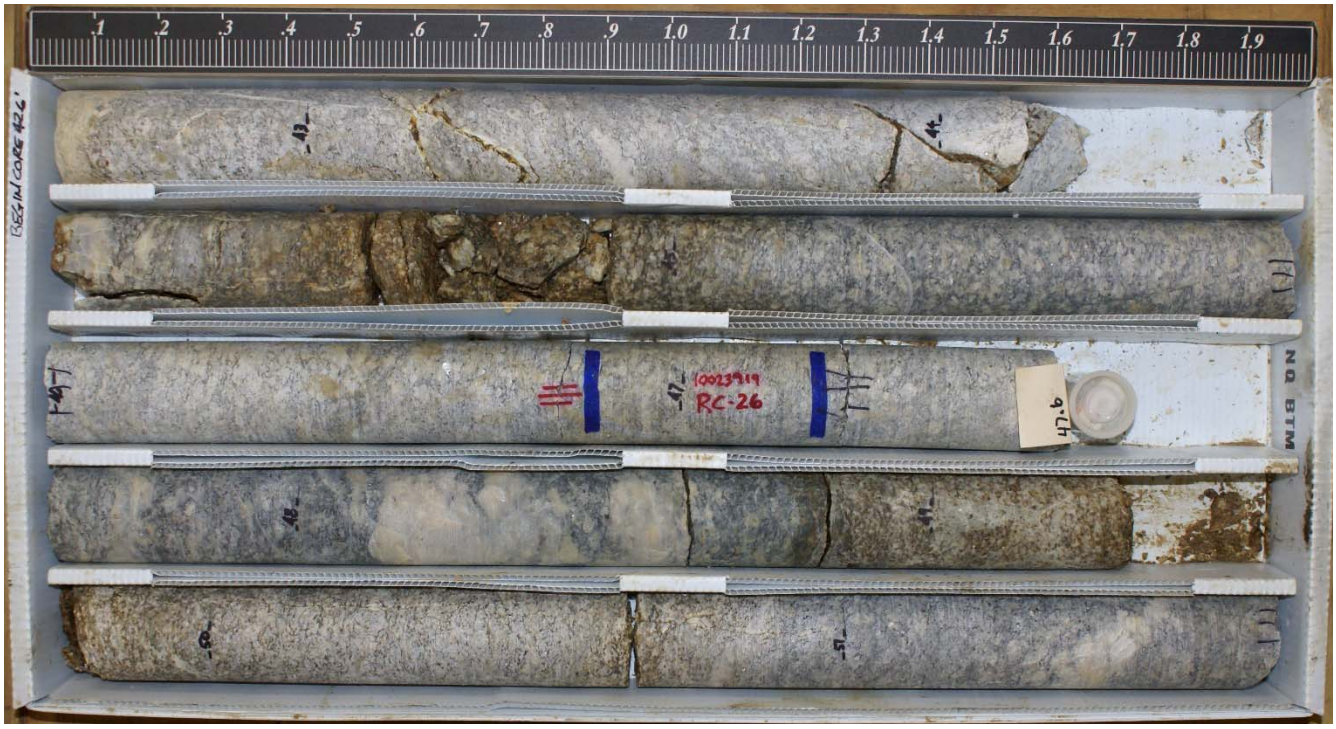
# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106

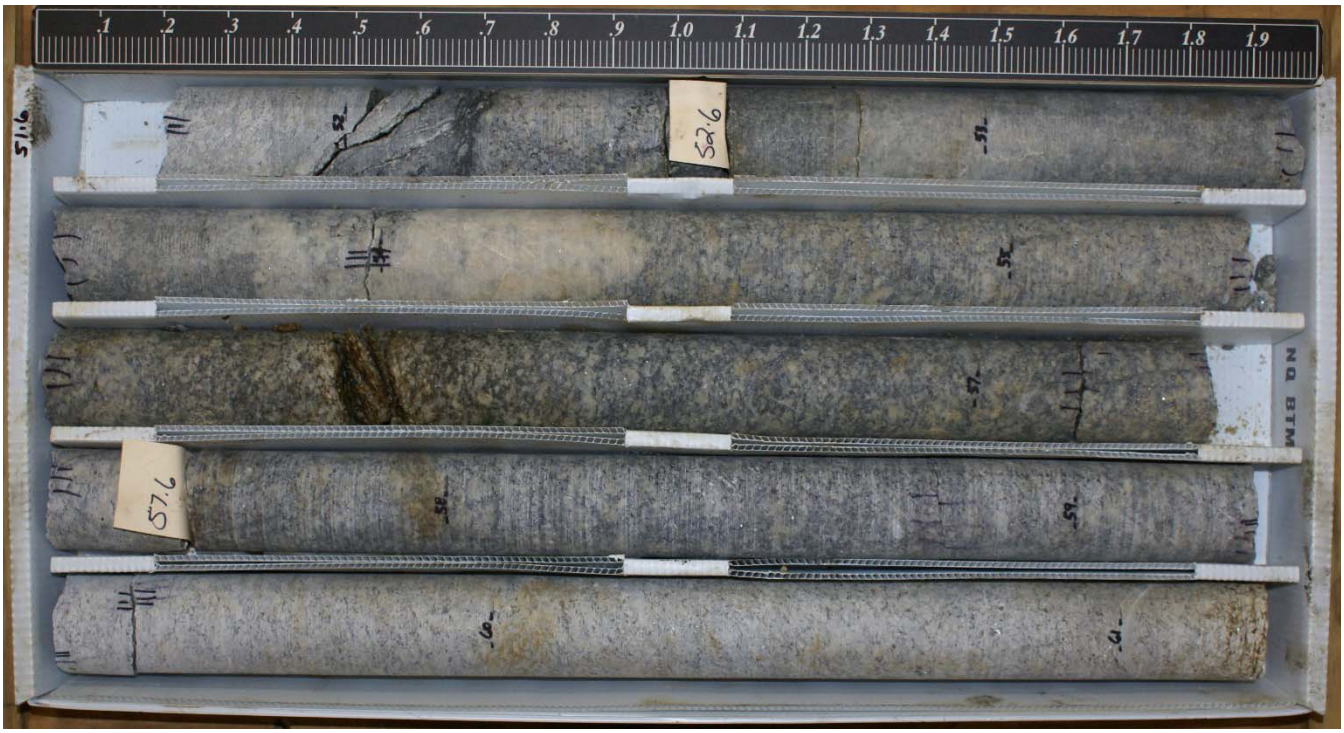
**BR-118 - Box 3 of 3**

# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106




**BR-119 - Box 1 of 3**




**BR-119 - Box 2 of 3**

# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106

**BR-119 - Box 3 of 3**

# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106

**BR-120 - Box 1 of 1**

# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106

**BR-121 - Box 1 of 2**

**BR-121 - Box 2 of 2**

# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106

**BR-122 - Box 1 of 3**

**BR-122 - Box 2 of 3**

# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106

**BR-122 - Box 3 of 3**

# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106

**BR-124 - Box 1 of 3**

**BR-124 - Box 2 of 3**

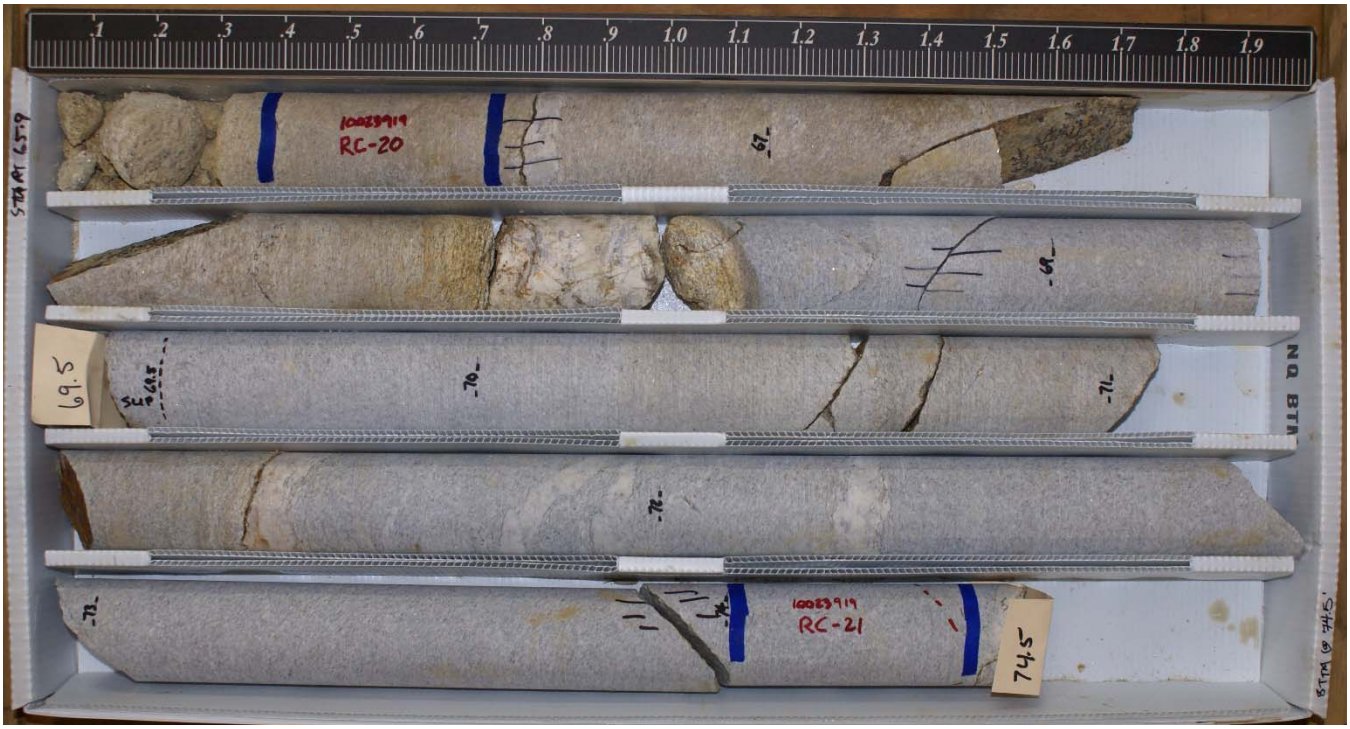
# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106

**BR-124 - Box 3 of 3**

# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106




**BR-125 - Box 1 of 3**

**BR-125 - Box 2 of 3**

# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106

**BR-125 - Box 3 of 3**

# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106

**BR-126 - Box 1 of 2**

**BR-126 - Box 2 of 2**

# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106

**BR-127 - Box 1 of 3**

**BR-127 - Box 2 of 3**

# CORE PHOTOGRAPHIC RECORD

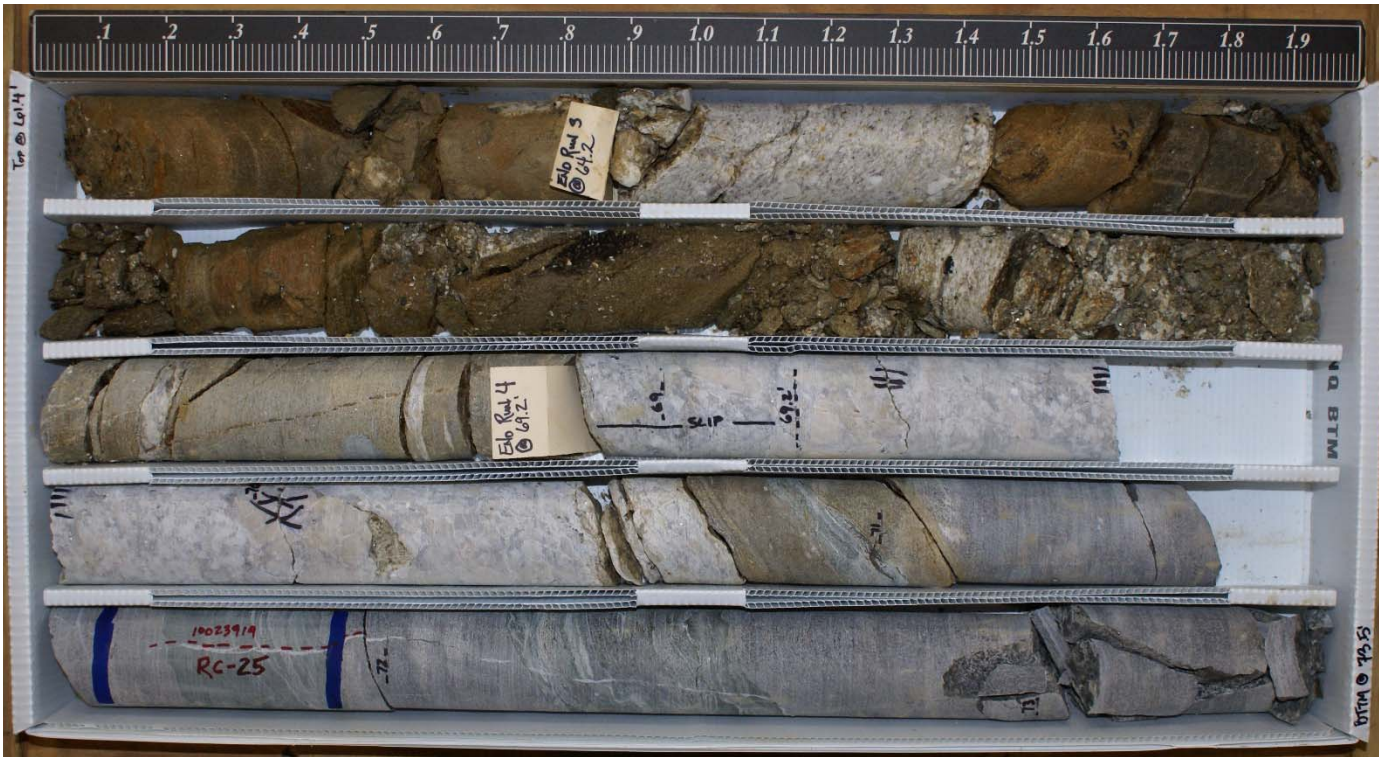
## I-85 DB Prep from MP 96 to MP 106

**BR-127 - Box 3 of 3**

# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106

**BR-128 - Box 1 of 3**




**BR-128 - Box 2 of 3**

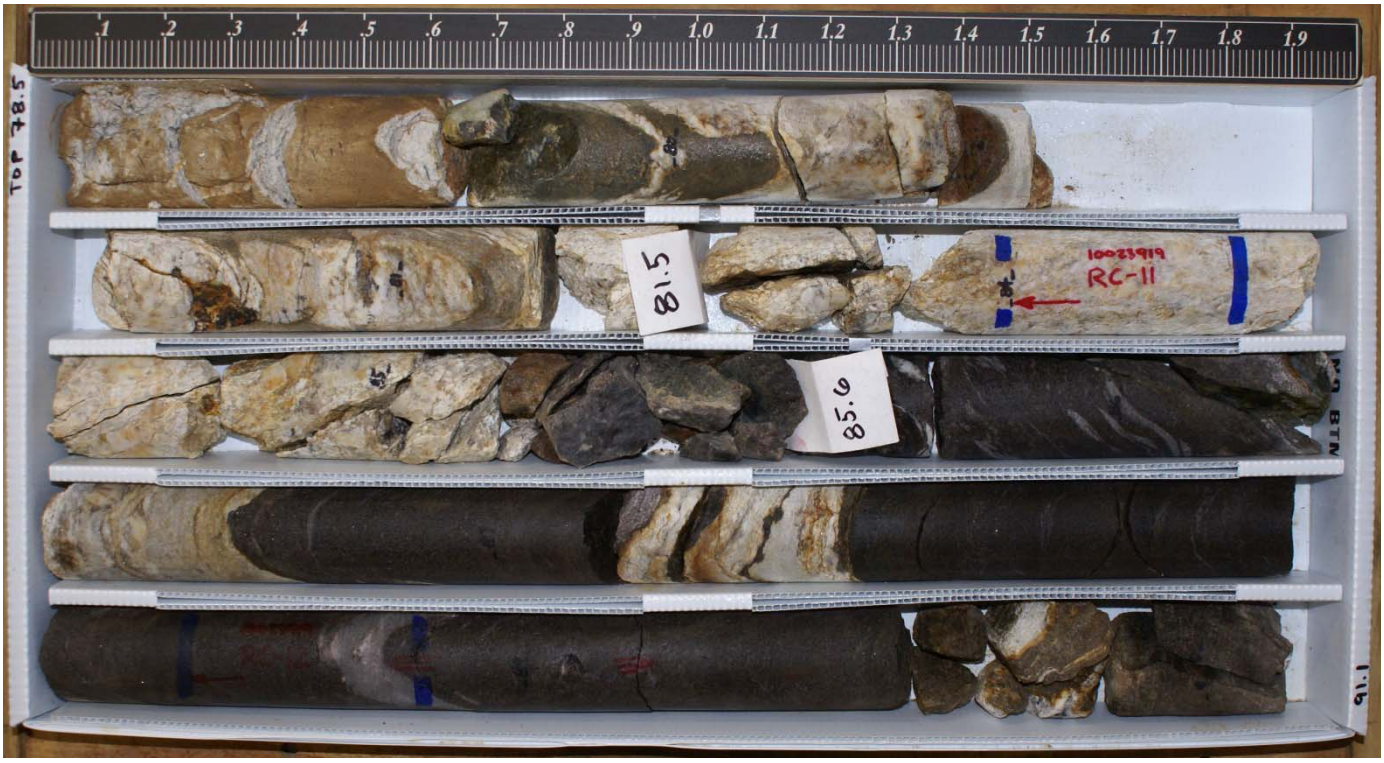
# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106

**BR-128 - Box 3 of 3**

# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106




**BR-129 - Box 1 of 2**

**BR-129 - Box 2 of 2**

# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106

**BR-155 - Box 1 of 4**

**BR-155 - Box 2 of 4**

# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106

**BR-155 - Box 3 of 4**

**BR-155 - Box 4 of 4**

# CORE PHOTOGRAPHIC RECORD

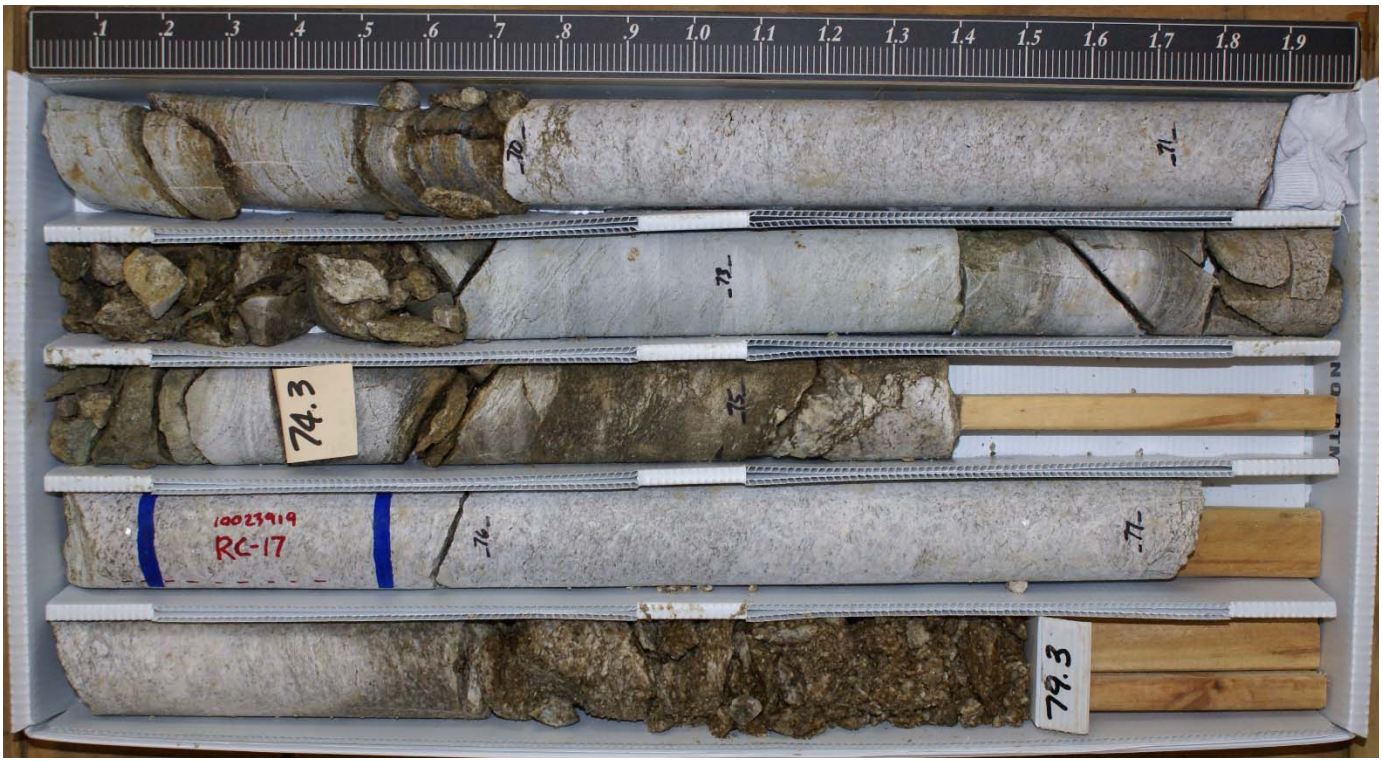
## I-85 DB Prep from MP 96 to MP 106

**BR-156 - Box 1 of 3**

**BR-156 - Box 2 of 3**

# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106




**BR-156 - Box 3 of 3**

# CORE PHOTOGRAPHIC RECORD

## I-85 DB Prep from MP 96 to MP 106

**R-91 - Box 1 of 2**

**R-91 - Box 2 of 2**

**Project Name : I-85 Widening MM96-MM106**
**Location : Cherokee County, SC**
**Job Number : 10023919**
**Project Job No. : 10023919**

# Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

| Soil No. | Boring No. | Station & Offset | Sample No. | Depth | | Description of Soil | pH | Natural Moisture Content ( % ) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| 132 | SB-1 | | SS-1 | 2.5 | 4.0 | Brown Silty Sand with Gravel | N | 18.8 |
| 133 | | | SS-2 | 4.5 | 6.0 | Brown Sandy Silt | N | 25.0 |
| 133 | | | SS-3 | 6.5 | 8.0 | Brown Sandy Silt | | |
| | | | | | | | | |
| | NB-2 | | Bulk-1 | 2.5 | 6.5 | No Classification | N | |
| 134 | | | SS-1 | 2.5 | 4.0 | Brown Sandy Silt | | |
| 134 | | | SS-2 | 4.5 | 6.0 | Yellowish Brown Sandy Silt | | |
| 137 | | | SS-3 | 6.5 | 8.0 | Red Fat Clay with Sand | N | 22.3 |
| | | | | | | | | |
| | | | | | | | | |
| 132 | SB-3 | | SS-1 | 2.5 | 4.0 | Brown Silty Sand with Gravel | | |
| 134 | | | SS-2 | 4.5 | 6.0 | Brown Sandy Silt | N | 25.5 |
| 134 | | | SS-3 | 6.5 | 8.0 | Brown Sandy Silt | | |
| | | | | | | | | |
| 135 | NB-4 | | SS-1 | 0.0 | 1.5 | Brown Silty Sand with Gravel | W | 14.5 |
| 136 | | | SS-2 | 2.0 | 3.5 | Brown Clayey Sand with Gravel | W | 21.5 |
| 136 | | | SS-3 | 4.0 | 5.5 | Red Clayey Sand with Gravel | | |
| | | | | | | | | |
| 138 | SB-5 | | SS-1 | 0.0 | 1.5 | Brown Silty, Clayey Sand with Gravel | | |
| 139 | | | SS-2 | 2.0 | 3.5 | Brown Silty Sand | N | 16.4 |
| 140 | | | SS-3 | 4.0 | 5.5 | Yellow Sandy Silt | N | 19.0 |
| | | | | | | | | |
| 141 | NB-6 | | SS-1 | 0.0 | 1.5 | Brown Silty Sand | N | 31.6 |
| 142 | | | SS-2 | 2.0 | 3.5 | Red Clayey Sand | N | 15.0 |
| 143 | | | SS-3 | 4.0 | 5.5 | Brown Sandy Lean Clay | N | 23.6 |
| | | | | | | | | |
| | SB-7 | | Bulk-1 | 0.0 | 4.0 | No Classification | N | |
| 138 | | | SS-1 | 0.0 | 1.5 | Brown Silty, Clayey Sand with Gravel | N | 14.4 |
| 139 | | | SS-2 | 2.0 | 3.5 | Brown Silty Sand | | |
| 140 | | | SS-3 | 4.0 | 5.5 | Yellow Sandy Silt | | |
| | | | | | | | | |
| 141 | NB-8 | | SS-1 | 0.0 | 1.5 | Brown Silty Sand | | |
| 142 | | | SS-2 | 2.0 | 3.5 | Red Clayey Sand | | |
| 144 | | | SS-3 | 4.0 | 5.5 | Red Sandy Lean Clay | N | 10.8 |
| | | | | | | | | |
| 145 | SB-9 | | SS-1 | 0.0 | 1.5 | Brown Silty Sand | | |
| 146 | | | SS-2 | 2.0 | 3.5 | Red-Brown Silty Sand | N | 17.8 |
| 147 | | | SS-3 | 4.0 | 5.5 | Red-Brown Silty Sand | | |
| | | | | | | | | |
| 145 | NB-10 | | SS-1 | 0.0 | 1.5 | Brown Silty Sand | N | 15.1 |
| 147 | | | SS-2 | 2.0 | 3.5 | Red-Brown Silty Sand | N | 19.5 |
| 147 | | | SS-3 | 4.0 | 5.5 | Red-Brown Silty Sand | | |
| | | | | | | | | |
| 145 | SB-11 | | SS-1 | 0.0 | 1.5 | Brown Silty Sand | | |
| 147 | | | SS-2 | 2.0 | 3.5 | Brown Silty Sand | | |
| 147 | | | SS-3 | 4.0 | 5.4 | Yellow-Brown Silty Sand | | |
| | | | | | | | | |
| | NB-12 | | Bulk-1 | 0.0 | 4.0 | No Classification | N | |
| 145 | | | SS-1 | 0.0 | 1.5 | Brown Silty Sand | | |
| 148 | | | SS-2 | 2.0 | 3.5 | Red-Brown Sandy Silt | | |
| 148 | | | SS-3 | 4.0 | 5.5 | Red-Brown Sandy Silt | N | 20.8 |
| | | | | | | | | |
| 149 | SB-13 | | SS-1 | 0.0 | 1.5 | Brown Silty Sand | | |
| 150 | | | SS-2 | 2.0 | 3.5 | Brown Silty Sand | N | 14.1 |
| 152 | | | SS-3 | 4.0 | 5.5 | Yellow-Brown Silty Sand | N | 17.1 |
| | | | | | | | | |

**Project Name : I-85 Widening MM96-MM106**
**Location : Cherokee County, SC**
**Job Number : 10023919**
**Project Job No. : 10023919**

# Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

| Soil No. | Boring No. | Station & Offset | Sample No. | Depth | | Description of Soil | pH | Natural Moisture Content ( % ) |
|---|---|---|---|---|---|---|---|---|
| 149 | NB-14 | | SS-1 | 0.0 | 1.5 | Brown Silty Sand | N | 18.7 |
| 151 | | | SS-2 | 2.0 | 3.5 | Brown Silty Sand | N | 13.0 |
| 152 | | | SS-3 | 4.0 | 5.5 | Yellow-Brown Silty Sand | | |
| | | | | | | | | |
| 149 | SB-15 | | SS-1 | 0.0 | 1.5 | Brown Silty Sand | | |
| 153 | | | SS-2A | 2.0 | 3.0 | Brown Silty Sand | | |
| 154 | | | SS-2B | 3.0 | 3.5 | Yellow-Brown Silty Sand | | |
| 154 | | | SS-3 | 4.0 | 5.5 | Yellow-Brown Silty Sand | N | 11.8 |
| | | | | | | | | |
| 149 | NB-16 | | SS-1 | 0.0 | 1.5 | Brown Silty Sand | | |
| 153 | | | SS-2 | 2.0 | 3.5 | Yellow-Brown Silty Sand | | |
| 153 | | | SS-3 | 4.0 | 5.5 | Yellow-Brown Silty Sand | N | 16.9 |
| | | | | | | | | |
| | SB-17 | | Bulk-1 | 0.0 | 4.0 | No Classification | N | |
| 157 | | | SS-1 | 0.0 | 1.5 | Brown Silty, Clayey Sand with Gravel | | |
| 155 | | | SS-2 | 2.0 | 3.5 | Yellow-Brown Silty Sand | N | 20.7 |
| 157 | | | SS-3 | 4.0 | 5.5 | Red & Green-Brown Silty, Clayey Sand with Gravel | | |
| | | | | | | | | |
| 156 | NB-18 | | SS-1 | 0.0 | 1.5 | Yellow-Brown Silty Sand | | |
| 156 | | | SS-2 | 2.0 | 3.5 | Yellow-Brown Silty Sand | N | 19.7 |
| 156 | | | SS-3 | 4.0 | 5.5 | Yellow-Brown Silty Sand | | |
| | | | | | | | | |
| 157 | NB-19 | | SS-1 | 2.5 | 4.0 | Red-Brown Silty, Clayey Sand with Gravel | N | 12.7 |
| 157 | | | SS-2 | 4.5 | 6.0 | Red-Brown Silty, Clayey Sand with Gravel | | |
| 155 | | | SS-3 | 6.5 | 8.0 | Red-Brown Silty Sand | | |
| | | | | | | | | |
| 158 | SB-20 | | SS-1 | 2.5 | 4.0 | Brown & Red Sandy Silt | | |
| 158 | | | SS-2 | 4.5 | 6.0 | Orange Sandy Silt | N | 28.7 |
| 158 | | | SS-3 | 6.5 | 8.0 | Orange Sandy Silt | | |
| | | | | | | | | |
| | NB-21 | | Bulk-1 | 2.0 | 6.5 | No Classification | N | |
| 162 | | | SS-1 | 2.5 | 4.0 | Brown Silty, Clayey Sand | | |
| 159 | | | SS-2 | 4.5 | 6.0 | Yellow Silty Sand | | |
| 159 | | | SS-3 | 6.5 | 8.0 | Gray Silty Sand | N | 5.5 |
| | | | | | | | | |
| | SB-22 | | Bulk-1 | 2.5 | 6.5 | No Classification | | |
| 160 | | | SS-1 | 2.5 | 4.0 | Green-Brown Silty, Clayey Sand with Gravel | N | 10.0 |
| 161 | | | SS-2 | 4.5 | 6.0 | Red-Orange Clayey Sand | W | 18.1 |
| 161 | | | SS-3 | 6.5 | 8.0 | Yellow-Orange Clayey Sand | | |
| | | | | | | | | |
| 162 | NB-23 | | SS-1 | 2.5 | 4.0 | Green & Brown Silty, Clayey Sand | N | 11.8 |
| 163 | | | SS-2 | 4.5 | 6.0 | Red-Orange Silty Sand | N | 16.6 |
| 164 | | | SS-3 | 6.5 | 8.0 | Gray Silty Sand | N | 18.9 |
| | | | | | | | | |
| 165 | SB-24 | | SS-1 | 2.5 | 4.0 | Orange Sandy Silt | N | 24.1 |
| 165 | | | SS-2 | 4.5 | 6.0 | Orange Sandy Silt | | |
| 165 | | | SS-3 | 6.5 | 8.0 | Gray Sandy Silt | | |
| | | | | | | | | |
| 166 | SB-25 | | SS-1 | 0.0 | 1.5 | Brown Silty Sand with Gravel | N | 9.9 |
| 167 | | | SS-2 | 2.0 | 3.5 | Orange Silty Sand | | |
| 167 | | | SS-3 | 4.0 | 5.5 | Orange Silty Sand | W | 20.9 |
| | | | | | | | | |
| 167 | NB-26 | | SS-1 | 0.0 | 1.5 | Orange Silty Sand | | |
| 169 | | | SS-2 | 2.0 | 3.5 | Orange Sandy Silt | | |
| 169 | | | SS-3 | 4.0 | 5.5 | Orange Sandy Silt | N | 21.7 |
| | | | | | | | | |
| 170 | SB-27 | | SS-1 | 0.0 | 1.5 | Brown Silty Sand | N | 15.6 |
| 168 | | | SS-2 | 2.0 | 3.5 | Brown Silty Sand | N | 20.7 |
| | | | SS-3 | 4.0 | 5.5 | Not Enough Sample | | |
| | | | | | | | | |
| | NB-28 | | Bulk-1 | 0.0 | 4.0 | No Classification | N | |
| 170 | | | SS-1 | 0.0 | 1.5 | Orange & Brown Silty Sand | | |



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**Project Name : I-85 Widening MM96-MM106**
**Location : Cherokee County, SC**
**Job Number : 10023919**
**Project Job No. : 10023919**

# Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

| Soil No. | Boring No. | Station & Offset | Sample No. | Depth | | Description of Soil | pH | Natural Moisture Content ( % ) |
|---|---|---|---|---|---|---|---|---|
| 169 | | | SS-2 | 2.0 | 3.5 | Orange & Brown Sandy Silt | | |
| 170 | | | SS-3 | 4.0 | 5.5 | Brown Silty Sand | | |
| | | | | | | | | |
| 171 | SB-29 | | SS-1 | 0.0 | 1.5 | Brown Silty Sand | N | 12.5 |
| 172 | | | SS-2 | 2.0 | 3.5 | Orange Clayey Sand with Gravel | N | 22.2 |
| 172 | | | SS-3 | 4.0 | 4.7 | Orange Clayey Sand with Gravel | | |
| 173 | | | SS-3B | 4.7 | 5.5 | Green-Gray Silty Sand | N | 11.7 |
| | | | | | | | | |
| 171 | NB-30 | | SS-1 | 0.0 | 1.5 | Brown Silty Sand | | |
| 174 | | | SS-2 | 2.0 | 3.5 | Orange Sandy Silt | N | 22.1 |
| 172 | | | SS-3 | 4.0 | 5.5 | Orange Clayey Sand with Gravel | | |
| | | | | | | | | |
| 176 | SB-31 | | SS-1A | 2.5 | 3.6 | Orange-Brown Sandy Silt | | |
| 175 | | | SS-1B | 3.6 | 4.0 | Orange Silty Sand | | |
| 175 | | | SS-2 | 4.5 | 6.0 | Orange Silty Sand | N | 10.0 |
| 175 | | | SS-3 | 6.8 | 8.0 | White Silty Sand | | |
| | | | | | | | | |
| 174 | SB-32 | | SS-1 | 1.0 | 2.5 | Green & Orange Sandy Silt | | |
| 174 | | | SS-2 | 3.0 | 4.5 | Orange Sandy Silt | | |
| 176 | | | SS-3 | 5.0 | 6.5 | Orange Sandy Silt | N | 22.4 |
| | | | | | | | | |
| | SB-33 | | Bulk-1 | 0.0 | 4.0 | No Classification | | |
| 177 | | | SS-1 | 0.0 | 1.5 | Brown-Orange Clayey Sand | N | 15.4 |
| 179 | | | SS-2A | 2.0 | 3.0 | Brown-Orange Silty, Clayey Sand | | |
| 178 | | | SS-2B | 3.0 | 3.5 | Orange & White Silty Sand | | |
| 178 | | | SS-3 | 4.0 | 5.5 | Orange & White Silty Sand | N | 19.7 |
| | | | | | | | | |
| 179 | NB-34 | | SS-1 | 0.0 | 1.5 | Yellow-Brown Silty, Clayey Sand | | |
| 179 | | | SS-2A | 2.0 | 3.1 | Yellow-Brown Silty, Clayey Sand | N | 15.5 |
| 178 | | | SS-2B | 3.1 | 3.5 | White & Yellow Silty Sand | | |
| 178 | | | SS-3 | 4.0 | 5.5 | White & Orange Silty Sand | | |
| | | | | | | | | |
| 177 | SB-35 | | SS-1 | 0.0 | 1.5 | Brown Clayey Sand | | |
| 180 | | | SS-2 | 2.0 | 3.5 | Red Sandy Lean Clay | | |
| 180 | | | SS-3 | 4.0 | 5.5 | Red Sandy Lean Clay | N | 17.7 |
| | | | | | | | | |
| 177 | NB-36 | | SS-1 | 0.0 | 1.5 | Red-Brown Clayey Sand | | |
| 181 | | | SS-2 | 2.0 | 3.5 | Red Fat Clay with Sand | N | 22.2 |
| 181 | | | SS-3 | 4.0 | 5.5 | Red Fat Clay with Sand | | |
| | | | | | | | | |
| 182 | SB-37 | | SS-1 | 0.0 | 1.5 | Yellow-Brown Silty Sand | | |
| 183 | | | SS-2 | 2.0 | 3.5 | Orange Sandy Elastic Silt | N | 29.5 |
| 183 | | | SS-3 | 4.0 | 5.5 | Orange Sandy Elastic Silt | | |
| | | | | | | | | |
| | NB-38 | | Bulk-1 | 0.0 | 4.0 | No Classification | N | |
| 182 | | | SS-1 | 0.0 | 1.5 | Yellow-Brown Silty Sand | N | 22.4 |
| 184 | | | SS-2 | 2.0 | 3.5 | Red Sandy Silty Clay | N | 17.3 |
| 184 | | | SS-3 | 4.0 | 5.5 | Red Sandy Silty Clay | | |
| | | | | | | | | |
| 182 | SB-39 | | SS-1 | 0.0 | 1.5 | Brown Silty Sand | | |
| 185 | | | SS-2 | 2.0 | 3.5 | Red-Brown Silty Sand | | |
| 185 | | | SS-3 | 4.0 | 5.5 | Red-Brown Silty Sand | N | 16.3 |
| | | | | | | | | |
| 182 | NB-40 | | SS-1 | 0.0 | 1.5 | Brown Silty Sand | | |
| 184 | | | SS-2 | 2.0 | 3.5 | Brown Sandy Silty Clay | | |
| 185 | | | SS-3 | 4.0 | 5.5 | Brown Silty Sand | | |
| | | | | | | | | |
| 89 | SB-41 | | SS-1 | 2.0 | 3.5 | Orange-Brown Silty Sand | N | 24.7 |
| 89 | | | SS-2 | 4.0 | 5.5 | Orange & White Silty Sand | | |
| | | | | | | | | |
| 90 | NB-42 | | SS-1 | 2.0 | 3.5 | Red-Orange Clayey Sand with Gravel | N | 16.1 |
| 91 | | | SS-2 | 4.0 | 5.5 | Red-Orange Silty Sand | N | 20.8 |

**Project Name : I-85 Widening MM96-MM106**
**Location : Cherokee County, SC**
**Job Number : 10023919**
**Project Job No. : 10023919**

# Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

| Soil No. | Boring No. | Station & Offset | Sample No. | Depth | | Description of Soil | pH | Natural Moisture Content ( % ) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| 279 | SB-43 | | Bulk-1 | 0.0 | 5.0 | Orange-Brown & Brown Sandy Silt | N | |
| 90 | | | SS-1 | 2.0 | 3.5 | Orange-Brown & Brown Clayey Sand with Gravel | | |
| 90 | | | SS-2 | 4.0 | 5.5 | Orange-Brown & Brown Clayey Sand with Gravel | | |
| | | | | | | | | |
| 92 | NB-44 | | SS-1 | 2.0 | 3.5 | Red-Orange & Brown Well-Graded Sand with Silt and Gravel | | |
| 92 | | | SS-2 | 3.8 | 5.5 | White, Orange & Brown Well-Graded Sand with Silt and Gravel | N | 8.8 |
| | | | | | | | | |
| 93 | SB-45 | | SS-1 | 2.0 | 3.5 | Orange-Brown & Orange Sandy Silt | N | 29.0 |
| 93 | | | SS-2 | 4.0 | 5.5 | Orange-Brown & Orange Sandy Silt | | |
| | | | | | | | | |
| 93 | NB-46 | | SS-1 | 2.0 | 3.5 | Red-Orange Sandy Silt | | |
| 94 | | | SS-2 | 4.0 | 5.5 | Orange-Brown & Yellow-Brown Sandy Elastic Silt | N | 61.1 |
| | | | | | | | | |
| 94 | SB-47 | | SS-1 | 2.0 | 3.5 | Orange-Brown, Light Brown & White Sandy Elastic Silt | | |
| 94 | | | SS-2 | 4.0 | 5.5 | Dark Brown Sandy Elastic Silt | | |
| | | | | | | | | |
| 277 | NB-48 | | Bulk-1 | 0.0 | 5.0 | Brown Silty Sand | N | |
| 95 | | | SS-1 | 2.0 | 3.5 | Brown Silty Sand | | |
| 95 | | | SS-2 | 4.0 | 5.5 | Brown Silty Sand | N | 24.4 |
| | | | | | | | | |
| 96 | SB-49 | | SS-1 | 2.0 | 3.5 | Brown & Red-Orange Clayey Sand | | |
| 96 | | | SS-2 | 4.0 | 5.5 | Brown & Red-Orange Clayey Sand | | |
| | | | | | | | | |
| 96 | NB-50 | | SS-1 | 2.0 | 3.5 | Brown & Red-Orange Clayey Sand | W | 21.8 |
| 97 | | | SS-2 | 4.0 | 5.5 | Brown & Red-Orange Sandy Silt | N | 24.0 |
| | | | | | | | | |
| 98 | SB-51 | | SS-1 | 2.0 | 3.5 | Brown,Red-Orange & Orange Silty Sand | N | 20.3 |
| 99 | | | SS-2 | 4.0 | 5.5 | Red-Orange & Orange-Brown Sandy Elastic Silt | N | 45.6 |
| | | | | | | | | |
| 98 | NB-52 | | SS-1 | 2.0 | 3.5 | Red-Orange & Orange-Brown Silty Sand | | |
| 98 | | | SS-2 | 4.0 | 5.5 | Red-Orange & Orange-Brown Silty Sand | | |
| | | | | | | | | |
| 278 | SB-53 | | Bulk-1 | 0.0 | 5.0 | Red-Orange, Brown & Orange-Brown Sandy Silt | N | |
| 100 | | | SS-1 | 2.0 | 3.5 | Red-Orange, Brown & Orange-Brown Sandy Elastic Silt | | |
| 100 | | | SS-2 | 4.0 | 5.5 | Orange-Brown Sandy Elastic Silt | N | 26.8 |
| | | | | | | | | |
| 101 | NB-54 | | SS-1 | 2.0 | 3.5 | Brown & Brown-Orange Silty Sand | N | 18.6 |
| 102 | | | SS-2 | 4.0 | 5.5 | Orange-Brown & Brown & Orange Sandy Elastic Silt | N | 27.9 |
| | | | | | | | | |
| 103 | SB-55 | | SS-1 | 2.0 | 3.5 | Red-Orange & Brown-Red Sandy Elastic Silt | N | 27.5 |
| 103 | | | SS-2 | 4.0 | 5.5 | Red-Orange & Brown-Red Sandy Elastic Silt | | |
| | | | | | | | | |
| 100 | NB-56 | | SS-1 | 2.0 | 3.5 | Red-Orange & Brown Sandy Elastic Silt | | |
| 104 | | | SS-2 | 4.0 | 5.5 | Red-Orange & Brown Sandy Silt | N | 22.0 |
| | | | | | | | | |
| 105 | SB-57 | | SS-1 | 2.0 | 3.5 | Orange,Brown,Red-Orange & White Silty Sand with Gravel | N | 28.7 |
| 106 | | | SS-2 | 4.0 | 5.5 | Orange & Yellow-Orange Sandy Silt | N | 27.3 |
| | | | | | | | | |
| 284 | NB-58 | | Bulk 1 | 0.0 | 5.0 | Brown,Brown-Orange & Orange Sandy Silt | N | |
| 107 | | | SS-1 | 2.0 | 3.5 | Brown,Brown-Orange & Orange Silty Sand | N | 27.1 |
| 106 | | | SS-2 | 4.0 | 5.5 | Brown,Brown-Orange & Orange Sandy Silt | | |
| | | | | | | | | |
| | SB-59 | | SS-1 | 2.0 | 3.5 | Not enough sample | | |
| 108 | | | SS-2 | 4.0 | 5.5 | Brown,Brown-Orange & Orange Sandy Lean Clay | N | 22.3 |
| | | | | | | | | |
| 109 | NB-60 | | SS-1 | 2.0 | 3.5 | Brown & Red-Orange Silty Sand | N | 20.3 |
| 109 | | | SS-2 | 4.0 | 5.5 | Red-Orange,Orange & Brown Silty Sand | | |
| | | | | | | | | |
| 110 | SB-61 | | SS-1 | 2.0 | 3.5 | Red, Brown-Orange & Brown Sandy Silt | | |
| 110 | | | SS-2 | 4.0 | 5.5 | Red, Brown-Orange & Brown Sandy Silt | | |
| | | | | | | | | |



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**Project Name : I-85 Widening MM96-MM106**
**Location : Cherokee County, SC**
**Job Number : 10023919**
**Project Job No. : 10023919**

# Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

| Soil No. | Boring No. | Station & Offset | Sample No. | Depth | | Description of Soil | pH | Natural Moisture Content ( % ) |
|---|---|---|---|---|---|---|---|---|
| 110 | NB-62 | | SS-1 | 2.0 | 3.5 | Red-Orange, Orange-Brown & Brown Sandy Silt | N | 16.8 |
| 110 | | | SS-2 | 4.0 | 5.5 | Red-Orange, Orange-Brown & Brown Sandy Silt | | |
| | | | | | | | | |
| 288 | SB-63 | | Bulk 1 | 0.0 | 5.0 | Brown-Orange & Orange-Brown Silty Sand | N | |
| 111 | | | SS-1 | 2.0 | 3.5 | Brown-Orange & Orange-Brown Sandy Lean Clay | N | 21.2 |
| 112 | | | SS-2 | 4.0 | 5.5 | Brown-Orange & Orange-Brown Sandy Lean Clay | N | 19.9 |
| | | | | | | | | |
| 113 | NB-64 | | SS-1 | 2.0 | 3.5 | Brown-Orange, Brown & Red-Orange Sandy Silt | | |
| 113 | | | SS-2 | 4.0 | 5.5 | Brown-Orange, Brown & Red-Orange Sandy Silt | N | 28.6 |
| | | | | | | | | |
| 114 | SB-65 | | SS-1 | 2.0 | 3.5 | Light Brown, Orange & White Sandy Silt | N | 21.6 |
| 114 | | | SS-2 | 4.0 | 5.5 | Dark Brown Sandy Silt | | |
| | | | | | | | | |
| 115 | NB-66 | | SS-1 | 2.0 | 3.5 | Brown-Orange, Brown & Light Brown Sandy Silt | | |
| 116 | | | SS-2 | 4.0 | 5.5 | Brown-Orange, Brown & Light Brown Silty Sand | N | 29.2 |
| | | | | | | | | |
| 117 | SB-67 | | SS-1 | 2.0 | 3.5 | Light Brown, Brown & Brown-Orange Sandy Silt | | |
| 117 | | | SS-2 | 4.0 | 5.5 | Brown, Brown-Gray & Brown-Orange Sandy Silt | N | 21.2 |
| | | | | | | | | |
| 282 | NB-68 | | Bulk 1 | 0.0 | 5.0 | Orange-Brown & Light Brown Silty Sand | N | |
| 118 | | | SS-1 | 2.0 | 3.5 | Orange-Brown & Light Brown Silty Sand | | |
| 118 | | | SS-2 | 4.0 | 5.5 | Orange-Brown & White Silty Sand | N | 22.9 |
| | | | | | | | | |
| 115 | SB-69 | | SS-1 | 2.0 | 3.5 | Brown,Brown-Orange & Red-Brown Sandy Silt | | |
| 118 | | | SS-2 | 4.0 | 5.5 | Brown,Brown-Orange & Red-Brown Silty Sand | | |
| | | | | | | | | |
| 115 | NB-70 | | SS-1 | 2.0 | 3.5 | Brown-Orange & Brown Sandy Silt | N | 13.3 |
| 115 | | | SS-2 | 4.0 | 5.5 | Brown-Orange & Brown Sandy Silt | | |
| | | | | | | | | |
| 119 | NB-77 | | SS-1 | 2.0 | 3.5 | Orange-Brown & Yellow-Brown Sandy Silt | | |
| 119 | | | SS-2 | 4.0 | 5.5 | Orange-Brown & Yellow-Brown Sandy Silt | | |
| | | | | | | | | |
| 289 | NB-78 | | Bulk 1 | 0.0 | 5.0 | Brown, Brown-Orange & Red-Brown Sandy Lean Clay | N | |
| 120 | | | SS-1 | 2.0 | 3.5 | Brown, Brown-Orange & Red-Brown Sandy Elastic Silt | | |
| 120 | | | SS-2 | 4.0 | 5.5 | Brown, Brown-Orange & Red-Brown Sandy Elastic Silt | N | 29.8 |
| | | | | | | | | |
| 121 | SB-79 | | SS-1 | 2.0 | 3.5 | Brown, Gray-Brown & Brown-Orange Sandy Silt | N | 24.2 |
| 122 | | | SS-2 | 4.0 | 5.5 | Brown-Orange Sandy Elastic Silt | N | 26.8 |
| | | | | | | | | |
| 119 | NB-80 | | SS-1 | 2.0 | 3.5 | Brown-Orange & Orange & White Sandy Silt | | |
| 119 | | | SS-2 | 4.0 | 5.5 | Brown-Orange & Orange & White Sandy Silt | N | 28.4 |
| | | | | | | | | |
| 123 | SB-81 | | SS-1 | 2.0 | 3.5 | Brown & Orange-Brown Silty Sand with Gravel | N | 16.9 |
| 124 | | | SS-2 | 4.0 | 5.5 | Brown & Orange Silty Sand with Gravel | N | 12.6 |
| | | | | | | | | |
| 125 | NB-82 | | SS-1 | 2.0 | 3.5 | Light Brown, Brown & Brown-Orange Silty Sand | | |
| 125 | | | SS-2 | 4.0 | 5.5 | Light Brown, Brown & Brown-Orange Silty Sand | N | 21.6 |
| | | | | | | | | |
| 281 | SB-83 | | Bulk 1 | 0.0 | 5.0 | Light Brown, White & Red-Orange Sandy Silt | N | |
| 125 | | | SS-1 | 2.0 | 3.5 | Light Brown, White & Red-Orange Silty Sand | | |
| 125 | | | SS-2 | 4.0 | 5.5 | Light Brown, White & Red-Orange Silty Sand | | |
| | | | | | | | | |
| 126 | NB-84 | | SS-1 | 2.0 | 3.5 | Light Brown & White Silty Sand | N | 23.3 |
| 127 | | | SS-2 | 4.0 | 5.5 | Brown-Orange Silt with Sand | N | 25.7 |
| | | | | | | | | |
| 128 | SB-85 | | SS-1 | 2.0 | 3.5 | Brown, Green-Brown & Orange Brown Sandy Lean Clay | N | 20.4 |
| 128 | | | SS-2 | 4.0 | 5.5 | Brown, Green-Brown & Orange Brown Sandy Lean Clay | | |
| | | | | | | | | |
| 129 | NB-86 | | SS-1 | 2.0 | 3.5 | Brown & Orange-Brown Sandy Lean Clay | N | 20.6 |
| 130 | | | SS-2 | 4.0 | 5.5 | Light Brown, Brown & Orange-Brown Sandy Silt | | |
| | | | | | | | | |
| 131 | SB-87 | | SS-1 | 2.0 | 3.5 | Orange-Brown Silty Sand | N | 24.4 |

**Project Name : I-85 Widening MM96-MM106**
**Location : Cherokee County, SC**
**Job Number : 10023919**
**Project Job No. : 10023919**

# Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

| Soil No. | Boring No. | Station & Offset | Sample No. | Depth | | Description of Soil | pH | Natural Moisture Content ( % ) |
|---|---|---|---|---|---|---|---|---|
| 131 | | | SS-2 | 4.0 | 5.5 | Light Brown, Brown-Gray & White Silty Sand | | |
| | | | | | | | | |
| 287 | NB-88 | | Bulk 1 | 0.0 | 5.0 | Brown & Orange-Brown Sandy Lean Clay | N | |
| 130 | | | SS-1 | 2.0 | 3.5 | Brown & Orange-Brown Sandy Silt | N | 22.6 |
| 130 | | | SS-2 | 4.0 | 5.5 | Brown & Orange-Brown Sandy Silt | | |
| | | | | | | | | |
| 130 | SB-89 | | SS-1 | 2.0 | 3.5 | Light Brown, Brown & Orange-Brown Sandy Silt | | |
| 130 | | | SS-2 | 4.0 | 5.5 | Light Brown, Brown & Orange-Brown Sandy Silt | | |
| | | | | | | | | |
| 280 | NB-90 | | Bulk 1 | 0.0 | 5.0 | Brown & Light Orange Silty, Clayey Sand | N | |
| 130 | | | SS-1 | 2.0 | 3.5 | Brown & Light Orange Sandy Silt | | |
| 130 | | | SS-2 | 4.0 | 5.5 | Light Brown & Light Orange Sandy Silt | | |
| | | | | | | | | |
| 73 | R-91 | | SS-1 | 2.0 | 3.5 | Green, Yellow, Orange & Brown Silty Sand | N | 19.4 |
| 73 | | | SS-2 | 4.0 | 5.5 | Orange & Brown Silty Sand | | |
| 73 | | | SS-3 | 6.0 | 7.5 | Oragne, Brown-Green & Brown Silty Sand | | |
| 74 | | | SS-4 | 8.0 | 9.5 | Brown & White Silty Sand | | |
| 74 | | | SS-5 | 10.0 | 11.5 | Brown Silty Sand | N | 17.4 |
| 74 | | | SS-6 | 13.5 | 15.0 | Orange & Brown Silty Sand | | |
| | | | SS-7 | 18.5 | 18.7 | No Recovery | | |
| | | | SS-8 | 23.5 | 23.6 | No Recovery | | |
| | | | SS-9 | 28.5 | 28.6 | No Recovery | | |
| | | | SS-10 | 33.5 | 33.6 | No Recovery | | |
| | | | | | | | | |
| 21 | R-95 | | SS-1 | 2.0 | 3.5 | Red & Brown Sandy Silt | | |
| 21 | | | SS-2 | 4.0 | 5.5 | Red & Brown Sandy Silt | | |
| 21 | | | SS-3 | 6.0 | 7.5 | Red & Brown Sandy Silt | N | 24.8 |
| 21 | | | SS-4 | 8.0 | 9.5 | Red & Brown Sandy Silt | | |
| 22 | | | SS-5A | 10.0 | 10.3 | Red & Brown Sandy Silt | | |
| 22 | | | SS-5B | 10.3 | 11.5 | Brown & Gray Sandy Silt | N | 24.2 |
| 23 | | | SS-6 | 13.5 | 15.0 | Brown & Gray Sandy Silt | N | 29.5 |
| 24 | | | SS-7 | 18.5 | 20.0 | Brown & Orange Silty Sand | | |
| 24 | | | SS-8 | 23.5 | 25.0 | Brown & Orange Silty Sand | | |
| 24 | | | SS-9 | 28.5 | 30.0 | Brown & Orange Silty Sand | N | 15.8 |
| | | | SS-10 | 33.5 | 33.7 | Weathered Rock | | |
| 25 | | | SS-11 | 38.5 | 38.8 | Brown & Orange Silty Sand | N | 9.6 |
| 26 | | | SS-12 | 43.5 | 44.1 | Brown & Orange Poorly Graded Gravel with Silt and Sand | N | 12.3 |
| | | | | | | | | |
| 62 | R-99 | | SS-1 | 2.0 | 3.5 | Gray Sandy Silt | | |
| 62 | | | SS-2 | 4.0 | 5.5 | Red & Brown Sandy Silt | W | 28.5 |
| 62 | | | SS-3 | 6.0 | 7.5 | Brown Sandy Silt | | |
| 63 | | | SS-4 | 8.0 | 9.5 | Brown Sandy Lean Clay | N | 24.7 |
| 63 | | | SS-5 | 10.0 | 11.5 | Gray & Black Sandy Lean Clay | | |
| 64 | | | SS-6 | 13.5 | 15.0 | Gray Silty Sand | N | 16.8 |
| 64 | | | SS-7 | 18.5 | 20.0 | Gray & Brown Silty Sand | | |
| 65 | | | SS-8 | 23.5 | 25.0 | Gray & Brown Silty Sand | N | 32.5 |
| 65 | | | SS-9 | 28.5 | 30.0 | Gray & Brown Silty Sand | | |
| 65 | | | SS-10 | 33.5 | 35.0 | Gray & Brown Silty Sand | | |
| 65 | | | SS-11 | 38.5 | 40.0 | Gray & Brown Silty Sand | | |
| | | | | | | | | |
| 66 | R-104 | | SS-1 | 2.0 | 3.5 | Red & Brown Silty Sand with Gravel | | |
| 66 | | | SS-2 | 4.0 | 5.5 | Red & Orange Silty Sand with Gravel | N | 28.6 |
| 66 | | | SS-3 | 6.0 | 7.5 | Red Silty Sand with Gravel | | |
| 66 | | | SS-4 | 8.0 | 9.5 | Red Silty Sand with Gravel | | |
| 66 | | | SS-5A | 10.0 | 10.5 | Brown Silty Sand with Gravel | | |
| 67 | | | SS-5B | 10.5 | 11.1 | Green & Brown Clayey Sand | | |
| 67 | | | SS-5C | 11.1 | 13.5 | Red Clayey Sand | | |
| 67 | | | SS-6 | 13.5 | 15.0 | Red Clayey Sand | N | 14.7 |
| 67 | | | SS-7 | 18.5 | 20.0 | Orange & Brown Clayey Sand | | |
| 68 | | | SS-8 | 23.5 | 25.0 | Gray Silty, Clayey Sand | N | 16.0 |
| 69 | | | SS-9 | 28.5 | 30.0 | Orange & White Sandy Lean Clay | N | 26.2 |
| 70 | | | SS-10 | 33.5 | 35.0 | White Sandy Silt with Gravel | N | 11.4 |

**Project Name : I-85 Widening MM96-MM106**
**Location : Cherokee County, SC**
**Job Number : 10023919**
**Project Job No. : 10023919**

# Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

| Soil No. | Boring No. | Station & Offset | Sample No. | Depth | | Description of Soil | pH | Natural Moisture Content ( % ) |
|---|---|---|---|---|---|---|---|---|
| 71 | | | SS-11 | 38.5 | 40.0 | White & Orange Silty Sand | | |
| 71 | | | SS-12 | 43.5 | 45.0 | White & Orange Silty Sand | N | 27.4 |
| 71 | | | SS-13 | 48.5 | 50.0 | White & Orange Silty Sand | | |
| 71 | | | SS-14 | 53.5 | 55.0 | White & Orange Silty Sand | | |
| 71 | | | SS-15 | 58.5 | 60.0 | White & Orange Silty Sand | | |
| 72 | | | SS-16 | 63.5 | 65.0 | White & Orange Silty Sand | | |
| 72 | | | SS-17 | 68.5 | 70.0 | White & Orange Silty Sand | | |
| 72 | | | SS-18 | 73.5 | 75.0 | White & Orange Silty Sand | N | 26.3 |
| 72 | | | SS-19 | 78.5 | 80.0 | Brown & White Silty Sand | | |
| 72 | | | SS-20 | 83.5 | 85.0 | Brown Silty Sand | | |
| | | | | | | | | |
| | BS-110 | | Bulk-1 | 0.0 | 10.0 | No Classification | N | |
| | | | SS-1 | 2.0 | 3.5 | No Classification | | |
| | | | SS-2 | 4.0 | 5.5 | No Classification | | |
| | | | SS-3 | 6.0 | 7.5 | No Classification | | |
| | | | SS-4 | 8.0 | 9.5 | No Classification | | |
| | | | SS-5 | 10.0 | 11.5 | No Classification | | |
| | | | | | | | | |
| | BS-111 | | Bulk-1 | 0.0 | 10.0 | No Classification | N | |
| | | | SS-1 | 2.0 | 3.5 | No Classification | | |
| | | | SS-2 | 4.0 | 5.5 | No Classification | | |
| | | | SS-3 | 6.0 | 7.5 | No Classification | | |
| | | | SS-4 | 8.0 | 9.5 | No Classification | | |
| | | | SS-5 | 10.0 | 11.5 | No Classification | | |
| | | | | | | | | |
| | BS-112 | | Bulk-1 | 0.0 | 10.0 | No Classification | N | |
| | | | SS-1 | 2.0 | 3.5 | No Classification | | |
| | | | SS-2 | 4.0 | 5.5 | No Classification | | |
| | | | SS-3 | 6.0 | 7.5 | No Classification | | |
| | | | SS-4 | 8.0 | 9.5 | No Classification | | |
| | | | SS-5 | 10.0 | 11.5 | No Classification | | |
| | | | | | | | | |
| | BS-113 | | Bulk-1 | 0.0 | 10.0 | No Classification | N | |
| | | | | | | | | |
| | BS-114 | | Bulk-1 | 0.0 | 10.0 | No Classification | N | |
| | | | SS-1 | 2.0 | 3.5 | No Classification | | |
| | | | SS-2 | 4.0 | 5.5 | No Classification | | |
| | | | SS-3 | 6.0 | 7.5 | No Classification | | |
| | | | SS-4 | 8.0 | 9.5 | No Classification | | |
| | | | SS-5 | 10.0 | 11.5 | No Classification | | |
| | | | | | | | | |
| | BS-115 | | Bulk-1 | 0.0 | 10.0 | No Classification | N | |
| | | | SS-1A | 2.0 | 2.4 | No Classification | | |
| | | | SS-1B | 2.4 | 3.5 | No Classification | | |
| | | | SS-2 | 4.0 | 5.5 | No Classification | | |
| | | | SS-3 | 6.0 | 7.5 | No Classification | | |
| | | | SS-4A | 8.0 | 8.4 | No Classification | | |
| | | | SS-4B | 8.4 | 9.5 | No Classification | | |
| | | | SS-5 | 10.0 | 11.5 | No Classification | | |
| | | | | | | | | |
| | BS-116 | | Bulk-1 | 0.0 | 10.0 | No Classification | N | |
| | | | SS-1 | 2.0 | 3.5 | No Classification | | |
| | | | SS-2 | 4.0 | 5.5 | No Classification | | |
| | | | SS-3 | 6.0 | 7.5 | No Classification | | |
| | | | SS-4 | 8.0 | 9.5 | No Classification | | |
| | | | SS-5 | 10.0 | 11.5 | No Classification | | |
| | | | | | | | | |
| | BS-117 | | Bulk-1 | 0.0 | 10.0 | No Classification | N | |
| | | | SS-1 | 2.0 | 3.5 | No Classification | | |
| | | | SS-2 | 4.0 | 5.5 | No Classification | | |
| | | | SS-3 | 6.0 | 7.5 | No Classification | | |
| | | | SS-4 | 8.0 | 9.5 | No Classification | | |

**Project Name : I-85 Widening MM96-MM106**
**Location : Cherokee County, SC**
**Job Number : 10023919**
**Project Job No. : 10023919**

# Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

| Soil No. | Boring No. | Station & Offset | Sample No. | Depth | | Description of Soil | pH | Natural Moisture Content ( % ) |
|---|---|---|---|---|---|---|---|---|
| | | | SS-5A | 10.0 | 10.6 | No Classification | | |
| | | | SS-5B | 10.6 | 11.5 | No Classification | | |
| | | | | | | | | |
| 232 | BR-118 | | SS-1 | 2.0 | 3.5 | Brown, White & Orange Silty Sand | | |
| 232 | | | SS-2 | 4.0 | 5.5 | Brown, White & Orange Silty Sand | N | 20.0 |
| 88 | | | ST-1 | 6.0 | 8.0 | Brown, White & Orange Silty Sand | N | 21.8 |
| 232 | | | SS-3 | 8.0 | 9.5 | Brown, White & Orange Silty Sand | | |
| 233 | | | SS-4 | 10.0 | 11.5 | Brown, White & Orange Silty Sand | N | 15.8 |
| 233 | | | SS-5 | 15.0 | 16.5 | Brown, White & Orange Silty Sand | | |
| 233 | | | SS-6 | 20.0 | 21.5 | Brown, White & Orange Silty Sand | | |
| 233 | | | SS-7 | 25.0 | 26.5 | Brown, White & Orange Silty Sand | | |
| 234 | | | SS-8 | 30.0 | 31.5 | Brown & Orange Silty Sand | | |
| 234 | | | SS-9 | 35.0 | 35.6 | Brown Silty Sand | | |
| 242 | | | SS-10 | 40.0 | 40.4 | Brown Clayey Sand | N | 14.0 |
| | | | SS-11 | 41.0 | 41.0 | No recovery | | |
| | | | | | | | | |
| 243 | BR-119 | | SS-1 | 2.0 | 3.5 | Light Brown Silty Sand | | |
| 236 | | | SS-2 | 4.0 | 5.5 | Light Brown & White Silty Sand | | |
| 236 | | | SS-3 | 6.0 | 7.5 | Light Brown & White Silty Sand | W | 12.1 |
| 236 | | | SS-4 | 8.0 | 9.5 | Light Brown & White Silty Sand | | |
| 234 | | | SS-5 | 10.0 | 11.5 | Light Brown & White Silty Sand | | |
| 234 | | | SS-6 | 14.7 | 16.2 | Brown & White Silty Sand | N | 20.1 |
| 237 | | | SS-7 | 19.7 | 21.2 | Brown & White Silty Sand | | |
| 237 | | | SS-8 | 24.7 | 26.2 | Brown Silty Sand | N | 14.5 |
| 238 | | | SS-9 | 29.7 | 30.8 | Brown Silty Sand | W | 15.6 |
| 238 | | | SS-10 | 34.7 | 35.5 | Brown & White Silty Sand | | |
| 238 | | | SS-11 | 39.7 | 40.0 | Brown Silty Sand | | |
| 238 | | | SS-12 | 42.6 | 42.6 | Brown Silty Sand | | |
| | | | | | | | | |
| 243 | BR-120 | | SS-1 | 2.0 | 3.5 | Brown Silty Sand | N | 15.6 |
| 239 | | | SS-2 | 4.0 | 5.5 | Red & Brown Silty Sand | | |
| 239 | | | SS-3 | 6.0 | 7.5 | Brown Silty Sand | N | 25.6 |
| 239 | | | SS-4 | 8.0 | 9.5 | Brown Silty Sand | | |
| 239 | | | SS-5 | 10.0 | 11.5 | Brown Silty Sand | | |
| 239 | | | SS-6 | 13.5 | 15.0 | Brown Silty Sand | | |
| 235 | | | SS-7 | 18.5 | 20.0 | Red & Brown Clayey Sand | N | 22.6 |
| 240 | | | SS-8 | 23.5 | 25.0 | White & Brown Silty Sand | N | 24.4 |
| 240 | | | SS-9 | 28.5 | 30.0 | White, Yellow & Brown Silty Sand | | |
| 241 | | | SS-10 | 33.5 | 35.0 | White, Yellow & Brown Silty Sand | | |
| 241 | | | SS-11 | 38.5 | 40.0 | White, Yellow & Brown Silty Sand | N | 20.6 |
| 241 | | | SS-12 | 43.5 | 44.6 | White, Yellow & Brown Silty Sand | | |
| 242 | | | SS-13 | 48.5 | 48.8 | White, Yellow & Brown Clayey Sand | | |
| 242 | | | SS-14 | 53.5 | 53.7 | White, Yellow & Brown Clayey Sand | | |
| 242 | | | SS-15 | 58.5 | 58.7 | White, Yellow & Brown Clayey Sand | | |
| 242 | | | SS-16 | 63.5 | 63.6 | Brown & White Clayey Sand | | |
| | | | | | | | | |
| 1 | BR-121 | | SS-1 | 2.0 | 3.5 | Red, Orange & Brown Sandy Elastic Silt | | |
| 1 | | | SS-2 | 4.0 | 5.5 | Red, Orange & Brown Sandy Elastic Silt | | |
| 1 | | | SS-3 | 6.0 | 7.5 | Red, Orange & Brown Sandy Elastic Silt | N | 18.9 |
| 1 | | | SS-4 | 8.0 | 9.5 | Red, Orange & Brown Sandy Elastic Silt | | |
| 1 | | | SS-5 | 10.0 | 11.5 | Red, Orange, Brown & Yellow Sandy Elastic Silt | | |
| 1 | | | SS-6 | 14.3 | 15.8 | Red, Orange, Brown, Yellow & White Sandy Elastic Silt | | |
| 5 | | | SS-7 | 19.3 | 20.8 | Red, Orange, Brown, Yellow & White Sandy Elastic Silt | N | 32.2 |
| 5 | | | SS-8 | 24.3 | 25.8 | Red, Orange, Brown, Yellow & White Sandy Elastic Silt | | |
| 5 | | | SS-9 | 29.3 | 30.8 | Red, Orange, Brown, Yellow & White Sandy Elastic Silt | | |
| 2 | | | SS-10 | 34.3 | 35.8 | Orange, Brown, Gray & White Silty Sand | N | 32.3 |
| 35 | | | ST-1 | 39.3 | 41.3 | Orange, Brown, Gray & White Silty Sand | N | 22.2 |
| 3 | | | SS-11 | 44.3 | 45.8 | Brown, Orange, Gray & White Silty Sand | | |
| 3 | | | SS-12 | 49.3 | 50.8 | Brown, Orange, Gray & White Silty Sand | | |
| | | | SS-13 | 52.2 | 52.3 | Weathered Rock | | |
| | | | | | | | | |
| 244 | BR-122 | | SS-1 | 2.0 | 3.5 | Brown Silty Sand | | |

**Project Name : I-85 Widening MM96-MM106**
**Location : Cherokee County, SC**
**Job Number : 10023919**
**Project Job No. : 10023919**

# Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

| Soil No. | Boring No. | Station & Offset | Sample No. | Depth | | Description of Soil | pH | Natural Moisture Content ( % ) |
|---|---|---|---|---|---|---|---|---|
| 244 | | | SS-2 | 4.0 | 5.5 | Brown Silty Sand | N | 33.5 |
| 245 | | | SS-3 | 6.0 | 7.5 | Brown Poorly Graded Sand with Silt and Gravel | N | 10.6 |
| 245 | | | SS-4 | 8.0 | 9.5 | Brown Poorly Graded Sand with Silt and Gravel | | |
| 248 | | | SS-5 | 10.0 | 11.5 | Brown Sandy Silt | | |
| 247 | | | SS-6 | 13.4 | 14.5 | Brown Silty Gravel with Sand | N | 22.5 |
| 246 | | | SS-7 | 18.4 | 19.9 | Brown Elastic Silt with Sand | N | 55.4 |
| 248 | | | SS-8 | 23.4 | 24.9 | Brown Sandy Silt | | |
| 248 | | | SS-9 | 28.4 | 29.9 | Brown Sandy Silt | | |
| 248 | | | SS-10 | 33.4 | 34.9 | Brown Sandy Silt | | |
| 248 | | | SS-11 | 38.4 | 39.9 | Brown Sandy Silt | N | 44.3 |
| 246 | | | SS-12 | 43.4 | 44.9 | Brown Elastic Silt with Sand | | |
| 251 | | | SS-13 | 48.4 | 49.9 | Brown Silty Sand | N | 21.1 |
| 251 | | | SS-14 | 53.4 | 54.9 | Brown Silty Sand | | |
| 251 | | | SS-15 | 58.4 | 59.9 | Brown Silty Sand | | |
| 249 | | | SS-16 | 63.4 | 64.9 | Brown Silty Sand | N | 22.5 |
| 250 | | | SS-17 | 68.4 | 69.9 | Brown Silty Sand | | |
| 250 | | | SS-18 | 73.4 | 74.9 | Brown Silty Sand | N | 16.2 |
| 251 | | | SS-19 | 78.4 | 79.9 | Brown Silty Sand | | |
| | | | SS-20 | 81.2 | 81.2 | No recovery | | |
| | | | | | | | | |
| 7 | BR-123 | | SS-1 | 2.0 | 3.5 | Brown, Red & Orange Clayey Sand with Gravel | | |
| 7 | | | SS-2 | 4.0 | 5.5 | Red, Orange, White & Brown Clayey Sand with Gravel | N | 17.3 |
| 7 | | | SS-3 | 6.0 | 7.5 | Red, Orange, White & Brown Clayey Sand with Gravel | | |
| 7 | | | SS-4 | 8.0 | 9.5 | Red, Orange, Brown, Yellow & White Clayey Sand with Gravel | | |
| 4 | | | SS-5 | 10.0 | 11.5 | Red, Orange, Brown, Yellow & White Silty Sand | | |
| 6 | | | SS-6 | 15.0 | 16.5 | White, Gray, Red & Orange Sandy Silt | | |
| 6 | | | SS-7 | 20.0 | 21.5 | White, Gray, Red & Orange Sandy Silt | N | 34.6 |
| 6 | | | SS-8 | 25.0 | 26.5 | White, Gray, Red & Orange Sandy Silt | | |
| 4 | | | SS-9 | 30.0 | 31.5 | White, Gray, Red & Orange Silty Sand | | |
| 4 | | | SS-10 | 35.0 | 36.5 | Brown, Orange, White & Black Silty Sand | N | 32.4 |
| 4 | | | SS-11 | 40.0 | 41.5 | Brown, Orange, White & Black Silty Sand | | |
| 3 | | | SS-12 | 45.0 | 46.5 | Brown, Orange, White & Black Silty Sand | N | 30.5 |
| 8 | | | SS-13 | 50.0 | 51.5 | Brown, Orange, White & Black Sandy Silt | | |
| 8 | | | SS-14 | 55.0 | 56.5 | Brown, Orange, Gray, White & Black Sandy Silt | | |
| 8 | | | SS-15 | 60.0 | 61.5 | Brown, Orange, Gray, White & Black Sandy Silt | | |
| 8 | | | SS-16 | 65.0 | 66.5 | Brown, Orange, Gray, White & Black Sandy Silt | N | 31.7 |
| 8 | | | SS-17 | 70.0 | 71.5 | Brown, Orange, Gray, White & Black Sandy Silt | | |
| 2 | | | SS-18 | 75.0 | 76.5 | Brown, Orange, White & Black Silty Sand | | |
| 8 | | | SS-19 | 80.0 | 81.5 | Brown, Orange, White & Black Sandy Silt | | |
| 8 | | | SS-20 | 85.0 | 86.5 | Brown, Orange, White & Black Sandy Silt | | |
| 8 | | | SS-21 | 90.0 | 91.5 | Brown, Orange, White & Black Sandy Silt | | |
| 8 | | | SS-22 | 95.0 | 96.1 | Brown Sandy Silt | | |
| 9 | | | SS-23 | 100.0 | 100.4 | Green, Gray & Brown Silty Sand | N | 9.3 |
| | | | | | | | | |
| 10 | BR-124 | | SS-1 | 2.0 | 3.5 | Brown, Red, Orange & White Silty Sand | N | 28.6 |
| 10 | | | SS-2 | 4.0 | 5.5 | Brown, Red, Orange & White Silty Sand | | |
| 11 | | | SS-3 | 6.0 | 7.5 | Brown, Gray, Red & Orange Sandy Lean Clay | | |
| 36 | | | ST-1 | 8.0 | 10.0 | Brown, Gray, Red & Orange Silty Sand | N | 13.4 |
| 11 | | | SS-4 | 10.0 | 11.5 | Brown, Red & Orange Sandy Lean Clay | N | 23.2 |
| 12 | | | SS-5 | 15.0 | 16.5 | Brown, Red, Orange & White Silty Sand | | |
| 12 | | | SS-6 | 20.0 | 21.5 | Brown, Red, Orange & White Silty Sand | | |
| 12 | | | SS-7 | 25.0 | 26.5 | Brown, Orange, White & Gray Silty Sand | N | 24.8 |
| 12 | | | SS-8 | 30.0 | 31.5 | Brown, Orange, White & Gray Silty Sand | | |
| 12 | | | SS-9 | 35.0 | 36.5 | Brown, Orange, White & Gray Silty Sand | | |
| 12 | | | SS-10 | 40.0 | 41.5 | Brown, Orange, White & Gray Silty Sand | | |
| 12 | | | SS-11 | 45.0 | 46.5 | Brown, Orange, White & Gray Silty Sand | | |
| 13 | | | SS-12 | 50.0 | 51.5 | Brown, White & Orange Silty Sand | | |
| 13 | | | SS-13 | 55.0 | 56.5 | Brown, White & Orange Silty Sand | N | 25.0 |
| 13 | | | SS-14 | 60.0 | 61.5 | Brown, White & Orange Silty Sand | | |
| 13 | | | SS-15 | 65.0 | 66.3 | Brown, Gray, White & Orange Silty Sand | | |
| | | | | | | | | |
| 254 | BR-125 | | SS-1 | 2.0 | 3.5 | Brown Silty Sand | | |

**Project Name : I-85 Widening MM96-MM106**
**Location : Cherokee County, SC**
**Job Number : 10023919**
**Project Job No. : 10023919**

# Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

| Soil No. | Boring No. | Station & Offset | Sample No. | Depth | | Description of Soil | pH | Natural Moisture Content ( % ) |
|---|---|---|---|---|---|---|---|---|
| 252 | | | SS-2 | 4.0 | 5.5 | Brown Silty, Clayey Sand | N | 17.8 |
| 253 | | | SS-3 | 6.0 | 7.5 | Brown Sandy Elastic Silt | N | 28.1 |
| 254 | | | SS-4 | 8.0 | 9.5 | Brown Silty Sand | N | 20.9 |
| 254 | | | SS-5 | 10.0 | 11.5 | Brown Silty Sand | | |
| 255 | | | SS-6 | 14.8 | 16.3 | Brown Silty Sand | N | 19.7 |
| 255 | | | SS-7 | 19.8 | 21.3 | Brown Silty Sand | | |
| 256 | | | SS-8 | 24.8 | 26.3 | Brown Silty Sand | N | 18.6 |
| 257 | | | SS-9 | 29.8 | 31.3 | Brown Silty Sand | | |
| 257 | | | SS-10 | 34.8 | 36.3 | Brown Silty Sand | N | 24.9 |
| 259 | | | SS-11 | 39.8 | 41.3 | Brown Silty Sand | N | 27.2 |
| 258 | | | SS-12 | 44.8 | 46.3 | Brown Silty Sand | | |
| 258 | | | SS-13 | 49.8 | 51.3 | Brown Silty Sand | N | 24.3 |
| 259 | | | SS-14 | 54.8 | 55.9 | Brown Silty Sand | | |
| 259 | | | SS-15 | 59.8 | 60.3 | Brown Silty Sand | | |
| 259 | | | SS-16 | 64.8 | 65.0 | Brown Silty Sand | | |
| | | | SS-17 | 65.9 | 65.9 | No Sample | | |
| | | | | | | | | |
| 14 | BR-126 | | SS-1 | 2.0 | 3.5 | Red Silt with Sand | N | 30.2 |
| 15 | | | SS-2 | 4.0 | 5.5 | Red Sandy Elastic Silt with Gravel | N | 33.0 |
| 15 | | | SS-3 | 6.0 | 7.5 | Orange & Brown Sandy Elastic Silt with Gravel | | |
| 16 | | | SS-4 | 8.0 | 9.5 | Orange & Brown Silty Sand | N | 15.7 |
| 16 | | | SS-5 | 10.0 | 11.5 | Orange & Brown Silty Sand | | |
| 16 | | | SS-6 | 13.5 | 15.0 | Orange & Brown Silty Sand | | |
| 17 | | | SS-7 | 18.5 | 20.0 | Yellow & Brown Sandy Lean Clay | | |
| 18 | | | SS-8 | 23.5 | 25.0 | Yellow, Brown & White Silty Sand | N | 34.4 |
| 17 | | | SS-9 | 28.5 | 30.0 | White & Orange Sandy Lean Clay | | |
| 39 | | | ST-1 | 30.0 | 32.0 | White & Orange Silty Sand | N | 35.1 |
| 17 | | | SS-10 | 33.5 | 35.0 | White Sandy Lean Clay | N | 40.2 |
| 17 | | | SS-11 | 38.5 | 40.0 | White Sandy Lean Clay | | |
| 17 | | | SS-12 | 43.5 | 45.0 | White & Brown Sandy Lean Clay | | |
| 19 | | | SS-13 | 48.5 | 50.0 | Orange, Brown & White Silty Sand | | |
| 19 | | | SS-14 | 53.5 | 55.0 | Orange, Brown & White Silty Sand | N | 34.3 |
| 19 | | | SS-15 | 58.5 | 60.0 | Brown & White Silty Sand | | |
| 20 | | | SS-16 | 63.5 | 63.8 | Gray Silty Sand with Gravel | N | 16.9 |
| | | | SS-17 | 68.5 | 68.6 | Not enough sample | | |
| | | | | | | | | |
| 212 | BR-127 | | SS-1 | 2.0 | 3.5 | Orange Sandy Silt | | |
| 213 | | | SS-2 | 4.0 | 5.5 | Orange Sandy Lean Clay | N | 31.0 |
| 215 | | | SS-3 | 6.0 | 7.5 | White & Orange Silty Sand | | |
| 216 | | | SS-4 | 8.0 | 9.5 | Orange, Brown & White Sandy Silt | N | 30.1 |
| 216 | | | SS-5 | 10.0 | 11.5 | Orange, Brown & White Sandy Silt | | |
| 217 | | | SS-6 | 13.5 | 15.0 | Yellow & Brown Silty Sand | | |
| 217 | | | SS-7 | 18.5 | 20.0 | Yellow & Brown Silty Sand | N | 27.4 |
| 218 | | | SS-8 | 23.5 | 25.0 | Yellow & Brown Silty Sand | | |
| 90A | | | ST-1 | 25.0 | 26.1 | Yellow & Brown Silty Sand | N | 24.8 |
| 218 | | | SS-9 | 28.5 | 30.0 | Yellow & Brown Silty Sand | N | 25.5 |
| 218 | | | SS-10 | 33.5 | 35.0 | Yellow & Brown Silty Sand | | |
| 219 | | | SS-11 | 38.5 | 40.0 | Yellow & Brown Silty Sand | N | 26.6 |
| 219 | | | SS-12 | 43.5 | 44.1 | Yellow & Brown Silty Sand | | |
| | | | SS-13 | 48.5 | 48.5 | No recovery | | |
| | | | | | | | | |
| 220 | BR-128 | | SS-1 | 2.0 | 3.5 | Gray, White & Brown Silty Sand | | |
| 220 | | | SS-2 | 4.0 | 5.5 | Gray, White & Brown Silty Sand | | |
| 220 | | | SS-3 | 6.0 | 7.5 | Gray, White & Brown Silty Sand | | |
| 220 | | | SS-4 | 8.0 | 9.5 | Gray, White & Brown Silty Sand | N | 17.4 |
| 220 | | | SS-5 | 10.0 | 11.5 | Brown, White & Grey Silty Sand | | |
| 220 | | | SS-6 | 14.5 | 16.0 | Brown, Orange, White & Gray Silty Sand | | |
| 221 | | | SS-7 | 19.5 | 21.0 | Brown, Orange, White & Gray Silty Sand | | |
| 218 | | | SS-8 | 24.5 | 26.0 | Brown, Orange, White & Gray Silty Sand | | |
| 221 | | | SS-9 | 29.5 | 30.8 | Orange, Brown, Gray & White Silty Sand | N | 17.7 |
| 222 | | | SS-10 | 34.5 | 35.4 | Orange, Brown, Gray & White Silty Sand | N | 10.5 |
| 214 | | | SS-11 | 39.5 | 40.3 | White, Gray, Orange & Brown Silty Sand | N | 3.5 |

**Project Name : I-85 Widening MM96-MM106**
**Location : Cherokee County, SC**
**Job Number : 10023919**
**Project Job No. : 10023919**

# Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

| Soil No. | Boring No. | Station & Offset | Sample No. | Depth | | Description of Soil | pH | Natural Moisture Content ( % ) |
|---|---|---|---|---|---|---|---|---|
| 223 | | | SS-12 | 44.5 | 46.0 | White, Brown, Gray & Orange Sandy Silt | | |
| 214 | | | SS-13 | 49.5 | 49.7 | White, Brown & Orange Silty Sand | | |
| | | | SS-14 | 49.9 | 49.9 | No Sample | | |
| | | | | | | | | |
| 224 | BR-129 | | SS-1 | 2.0 | 3.5 | Red Elastic Silt with Sand | N | 24.3 |
| 212 | | | SS-2 | 4.0 | 5.5 | Red Sandy Silt | N | 31.9 |
| 215 | | | SS-3 | 6.0 | 7.5 | Red & White Silty Sand | N | 25.6 |
| 225 | | | SS-4 | 8.0 | 9.5 | White Silty Sand | N | 26.1 |
| 225 | | | SS-5 | 10.0 | 11.5 | White Silty Sand | | |
| 226 | | | SS-6 | 13.5 | 15.0 | Red & Purple Sandy Silt | | |
| 226 | | | SS-7 | 18.5 | 20.0 | Red & Purple Sandy Silt | N | 33.6 |
| 227 | | | SS-8 | 23.5 | 25.0 | Brown, Red & Purple Silt with Sand | N | 31.2 |
| 227 | | | SS-9 | 28.5 | 30.0 | Brown, Red & Purple Silt with Sand | | |
| 89A | | | ST-1 | 30.0 | 31.2 | Brown, Red & Purple Sandy Silt | N | 19.3 |
| 229 | | | SS-10 | 33.5 | 35.0 | White & Yellow Silty Sand | N | 32.2 |
| 228 | | | SS-11 | 38.5 | 40.0 | Red & Brown Sandy Silt | | |
| 223 | | | SS-12 | 43.5 | 45.0 | Green & Brown Sandy Silt | | |
| 228 | | | SS-13 | 48.5 | 50.0 | Green & Brown Sandy Silt | N | 41.6 |
| 223 | | | SS-14 | 53.5 | 55.0 | White & Yellow Sandy Silt | N | 34.9 |
| 229 | | | SS-15 | 58.5 | 60.0 | White & Yellow Silty Sand | | |
| 230 | | | SS-16 | 63.5 | 65.0 | White & Yellow Silty Sand | N | 21.3 |
| 223 | | | SS-17 | 68.5 | 70.0 | White Sandy Silt | | |
| 231 | | | SS-18 | 73.5 | 75.0 | White & Brown Silty Sand | N | 15.2 |
| | | | | | | | | |
| | C-130 | | Bulk 1 | 0.0 | 10.0 | No Classification | N | |
| 200 | | | SS-1 | 2.0 | 3.5 | Red Silty Sand with Gravel | | |
| 200 | | | SS-2 | 4.0 | 5.5 | Red Silty Sand with Gravel | N | 20.9 |
| 201 | | | SS-3 | 6.0 | 7.5 | Red & Gray Clayey Sand | N | 23.6 |
| 201 | | | SS-4 | 8.0 | 9.5 | Red & Gray Clayey Sand | | |
| 202 | | | SS-5 | 10.0 | 11.5 | Brown & Gray Silty Sand | N | 20.5 |
| 203 | | | SS-6 | 14.5 | 16.6 | Gray & Red Silty Sand | N | 29.1 |
| 204 | | | SS-7 | 19.5 | 20.8 | Brown & White Silty Sand | N | 14.5 |
| 205 | | | SS-8 | 24.4 | 25.8 | Brown & White Silty Sand | N | 11.2 |
| 205 | | | SS-9 | 29.0 | 29.2 | White & Gray Silty Sand | | |
| | | | | | | | | |
| 206 | C-131 | | SS-1 | 2.0 | 3.5 | Brown Silty Sand with Gravel | N | 15.4 |
| | | | SS-2 | 4.0 | 4.3 | Not Enough Sample | | |
| | | | SS-3 | 6.0 | 6.4 | Not Enough Sample | | |
| | | | SS-4 | 6.7 | 7.1 | Not Enough Sample | | |
| | | | | | | | | |
| 75 | C-132 | | SS-1 | 2.0 | 3.5 | Brown Silty Sand | N | 5.0 |
| 75 | | | SS-2 | 4.0 | 4.4 | Brown Silty Sand | | |
| 75 | | | SS-3 | 6.0 | 6.5 | Brown Silty Sand | | |
| 75 | | | SS-4 | 8.0 | 8.4 | Brown Silty Sand | | |
| 75 | | | SS-5 | 10.0 | 10.1 | Brown & White Silty Sand | | |
| | | | | | | | | |
| 283 | C-133 | | Bulk-1 | 1.2 | 6.0 | Red, Brown, Orange & Gray Sandy Lean Clay | N | |
| 260 | | | SS-1 | 2.0 | 3.5 | Red, Brown, Orange & Gray Clayey Sand | N | 14.1 |
| 261 | | | SS-2 | 4.0 | 5.5 | Red & Brown Silty Sand | | |
| 261 | | | SS-3 | 6.0 | 7.5 | Red, Brown, Orange Silty Sand | | |
| 261 | | | SS-4 | 8.0 | 9.5 | Brown & Orange Silty Sand | N | 20.5 |
| 261 | | | SS-5 | 10.0 | 11.5 | Brown, Orange & Gray Silty Sand | | |
| 262 | | | SS-6 | 13.5 | 15.0 | Brown & Orange Silty Sand | N | 23.7 |
| 263 | | | SS-7 | 18.5 | 20.0 | Gray Sandy Silt | N | 23.9 |
| 264 | | | SS-8 | 23.5 | 25.0 | Gray Silty Sand with Gravel | N | 20.8 |
| 265 | | | SS-9 | 28.5 | 29.3 | Gray Silty Sand | W | 12.2 |
| 265 | | | SS-10 | 33.5 | 33.5 | Gray Silty Sand | | |
| | | | | | | | | |
| 207 | C-134 | | SS-1 | 2.0 | 3.5 | Brown & Orange Clayey Sand | | |
| 207 | | | SS-2 | 4.0 | 5.5 | Brown & Orange Clayey Sand | N | 17.6 |
| 207 | | | SS-3 | 6.0 | 7.5 | Red, Orange & Brown Clayey Sand | | |
| 208 | | | SS-4 | 8.0 | 9.5 | Brown & Orange Clayey Sand | | |

**Project Name : I-85 Widening MM96-MM106**
**Location : Cherokee County, SC**
**Job Number : 10023919**
**Project Job No. : 10023919**

# Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

| Soil No. | Boring No. | Station & Offset | Sample No. | Depth | | Description of Soil | pH | Natural Moisture Content ( % ) |
|---|---|---|---|---|---|---|---|---|
| 208 | | | SS-5 | 10.0 | 11.5 | Brown & Orange Clayey Sand | N | 17.6 |
| 208 | | | SS-6 | 13.4 | 14.9 | Brown, Gray, Red & Orange Clayey Sand | | |
| 209 | | | SS-7 | 18.4 | 19.9 | Brown & Orange Silty Sand | N | 26.1 |
| 210 | | | SS-8 | 23.4 | 24.9 | Brown & White Silty Sand | N | 25.8 |
| 211 | | | SS-9 | 28.4 | 29.9 | Brown, Orange & White Silty Sand | | |
| 211 | | | SS-10 | 33.4 | 34.9 | Brown, Orange & White Silty Sand | N | 20.1 |
| | | | | | | | | |
| 57 | C-137 | | SS-1 | 2.0 | 3.5 | Red, Yellow & Brown Sandy Fat Clay | N | 22.2 |
| 57 | | | SS-2 | 4.0 | 5.5 | Red, Yellow & Brown Sandy Fat Clay | | |
| 58 | | | SS-3 | 6.0 | 7.5 | Yellow & Brown Sandy Silt | | |
| 58 | | | SS-4 | 8.0 | 9.5 | Yellow & Brown Sandy Silt | N | 27.9 |
| 58 | | | SS-5 | 10.0 | 11.5 | Yellow & Brown Sandy Silt | | |
| 58 | | | SS-6 | 13.5 | 15.0 | Yellow & Brown Sandy Silt | | |
| 58 | | | SS-7 | 18.5 | 20.0 | Yellow & Brown Sandy Silt | | |
| 58 | | | SS-8 | 23.5 | 25.0 | Yellow & Brown Sandy Silt | | |
| | | | | | | | | |
| 76 | C-138 | | SS-1 | 2.0 | 3.5 | Yellow & Brown Sandy Fat Clay | N | 14.2 |
| 76 | | | SS-2 | 4.0 | 5.5 | Yellow, Brown & Gray Sandy Fat Clay | | |
| 77 | | | SS-3 | 6.0 | 7.5 | White Sandy Silt | N | 23.0 |
| 77 | | | SS-4 | 8.0 | 9.5 | Gray & Orange Sandy Silt | | |
| 77 | | | SS-5 | 10.0 | 11.5 | Gray & Orange Sandy Silt | | |
| 77 | | | SS-6 | 13.5 | 15.0 | White & Orange Sandy Silt | | |
| 77 | | | SS-7 | 18.5 | 20.0 | Blue & Gray Sandy Silt | | |
| 78 | | | SS-8 | 23.5 | 25.0 | Orange Silty Sand | N | 42.0 |
| 79 | | | SS-9 | 28.5 | 30.0 | Orange Silty Sand | N | 20.7 |
| 79 | | | SS-10 | 33.5 | 35.0 | Orange Silty Sand | | |
| 79 | | | SS-11 | 38.5 | 40.0 | Orange Silty Sand | | |
| | | | | | | | | |
| 27 | RW-139 | | SS-1 | 2.0 | 3.5 | Red Sandy Elastic Silt | N | 48.4 |
| 27 | | | SS-2 | 4.0 | 5.5 | Red Sandy Elastic Silt | | |
| 28 | | | SS-3 | 6.0 | 7.5 | Red Silty Sand | | |
| 28 | | | SS-4 | 8.0 | 9.5 | Red Silty Sand | N | 42.6 |
| 28 | | | SS-5 | 10.0 | 11.5 | Brown & White Silty Sand | | |
| 28 | | | SS-6 | 13.5 | 15.0 | Brown & White Silty Sand | | |
| 28 | | | SS-7 | 18.5 | 20.0 | Brown & White Silty Sand | | |
| | | | | | | | | |
| 29 | RW-140 | | SS-1 | 2.0 | 3.5 | White, Yellow & Orange Silty Sand | N | 21.8 |
| 30 | | | SS-2 | 4.0 | 5.5 | Brown Sandy Silt | | |
| 30 | | | SS-3 | 6.0 | 7.5 | Brown Sandy Silt | N | 29.3 |
| 30 | | | SS-4 | 8.0 | 9.5 | Brown Sandy Silt | | |
| 31 | | | SS-5 | 10.0 | 11.5 | Brown Sandy Silt | | |
| 31 | | | SS-6 | 13.5 | 15.0 | Brown Sandy Silt | N | 26.7 |
| 32 | | | SS-7 | 18.5 | 20.0 | Brown Silty Sand | N | 52.6 |
| | | | | | | | | |
| 33 | RW-141 | | SS-1 | 2.0 | 3.5 | Red Sandy Silt | N | 19.9 |
| 34 | | | SS-2 | 4.0 | 5.5 | Red Sandy Silt | N | 24.7 |
| 31 | | | SS-3 | 6.0 | 7.5 | Red Sandy Silt | | |
| 31 | | | SS-4 | 8.0 | 9.5 | Red & Brown Sandy Silt | | |
| 31 | | | SS-5 | 10.0 | 11.5 | Red & Brown Sandy Silt | | |
| 30 | | | SS-6 | 13.5 | 15.0 | Red & Brown Sandy Silt | | |
| | | | | | | | | |
| 45 | RW-142 | | SS-1 | 2.0 | 3.5 | Red Sandy Silt | N | 20.4 |
| 46 | | | SS-2 | 4.0 | 5.5 | Red Sandy Silt | | |
| 46 | | | SS-3 | 6.0 | 7.5 | Red & Brown Sandy Silt | | |
| 46 | | | SS-4 | 8.0 | 9.5 | Red Sandy Silt | N | 26.1 |
| 46 | | | SS-5 | 10.0 | 11.5 | Red & Brown Sandy Silt | | |
| 46 | | | SS-6 | 13.5 | 15.0 | Red & Brown Sandy Silt | | |
| 46 | | | SS-7 | 18.5 | 20.0 | Red & Brown Sandy Silt | | |
| 46 | | | SS-8A | 23.5 | 23.7 | Red & Brown Sandy Silt | | |
| 47 | | | SS-8B | 23.7 | 25.0 | Gray & Brown Silty Sand | N | 38.4 |
| 47 | | | SS-9 | 28.5 | 30.0 | Green & Brown Silty Sand | | |
| 47 | | | SS-10 | 33.5 | 33.7 | Brown Silty Sand | | |

**Project Name : I-85 Widening MM96-MM106**
**Location : Cherokee County, SC**
**Job Number : 10023919**
**Project Job No. : 10023919**

# Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

| Soil No. | Boring No. | Station & Offset | Sample No. | Depth | | Description of Soil | pH | Natural Moisture Content ( % ) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| 266 | RW 143A | | SS-1 | 2.0 | 3.5 | Brown & Orange Sandy Silt | | |
| 266 | | | SS-2 | 4.0 | 5.5 | Brown & Orange Sandy Silt | N | 21.1 |
| 266 | | | SS-3 | 6.0 | 7.5 | Brown & Orange Sandy Silt | | |
| 266 | | | SS-4 | 8.0 | 9.5 | Brown & Orange Sandy Silt | | |
| 267 | | | SS-5 | 10.0 | 11.5 | Brown & Orange Sandy Silt | | |
| 267 | | | SS-6 | 13.5 | 15.0 | Brown & Orange Sandy Silt | N | 21.9 |
| 267 | | | SS-7 | 18.5 | 20.0 | Brown & Orange Sandy Silt | | |
| 267 | | | SS-8 | 23.5 | 25.0 | Brown & Orange Sandy Silt | | |
| 268 | | | SS-9 | 28.5 | 30.0 | Brown & Orange Silty Sand | | |
| 268 | | | SS-10 | 33.5 | 35.0 | Brown & Orange Silty Sand | N | 25.9 |
| 266 | | | SS-11 | 38.5 | 40.0 | Brown Sandy Silt | | |
| 269 | | | SS-12 | 43.5 | 45.0 | Gray & Brown Silty Sand | | |
| 269 | | | SS-13 | 48.5 | 50.0 | Gray & Brown Silty Sand | N | 18.9 |
| 270 | | | SS-14 | 53.5 | 54.3 | Gray & Brown Silty Sand | N | 20.9 |
| 270 | | | SS-15 | 58.5 | 58.7 | Gray & Brown Silty Sand | | |
| | | | | | | | | |
| 80 | RW-143 | | SS-1A | 2.0 | 2.5 | Orange Sandy Silt | | |
| 80 | | | SS-1B | 2.5 | 3.5 | Orange Sandy Silt | | |
| 80 | | | SS-2 | 4.0 | 5.5 | Yellow & Orange Sandy Silt | N | 22.1 |
| 80 | | | SS-3 | 6.0 | 7.5 | Yellow & Orange Sandy Silt | | |
| 80 | | | SS-4A | 8.0 | 8.3 | Yellow & Orange Sandy Silt | | |
| 80 | | | SS-4B | 8.3 | 9.5 | Green & Gray Sandy Silt | | |
| 81 | | | SS-5 | 10.0 | 11.5 | Green & Gray Sandy Lean Clay | N | 20.5 |
| 81 | | | SS-6A | 13.5 | 13.8 | Green & Gray Sandy Lean Clay | | |
| 81 | | | SS-6B | 13.8 | 15.0 | Red Sandy Lean Clay | | |
| 82 | | | SS-7 | 18.5 | 20.0 | Gray Silty Sand | | |
| 82 | | | SS-8 | 23.5 | 25.0 | Green & Brown Silty Sand | N | 31.8 |
| 82 | | | SS-9 | 28.5 | 30.0 | Yellow & Brown Silty Sand | | |
| 82 | | | SS-10 | 33.5 | 35.0 | Yellow & Brown Silty Sand | | |
| 82 | | | SS-11 | 38.5 | 39.9 | Yellow & Brown Silty Sand | | |
| | | | SS-12 | 43.5 | 43.6 | No Recovery | | |
| | | | | | | | | |
| 46 | RW-144 | | SS-1 | 2.0 | 3.5 | Red Sandy Silt | | |
| 46 | | | SS-2 | 4.0 | 5.5 | Red & Brown Sandy Silt | | |
| 46 | | | SS-3 | 6.0 | 7.5 | Red & Brown Sandy Silt | | |
| 46 | | | SS-4 | 8.0 | 9.5 | Red & Brown Sandy Silt | | |
| 46 | | | SS-5 | 10.0 | 11.5 | Red & Brown Sandy Silt | | |
| 46 | | | SS-6A | 13.5 | 14.1 | Red & Brown Sandy Silt | | |
| 48 | | | SS-6B | 14.1 | 15.0 | Gray Sandy Silt | | |
| 48 | | | SS-7 | 18.5 | 20.0 | Green & Gray Sandy Silt | N | 36.8 |
| 49 | | | SS-8 | 23.5 | 25.0 | Tan & White Silty Sand | N | 33.1 |
| 50 | | | SS-9 | 28.5 | 30.0 | Tan & White Silty Sand | N | 21.5 |
| 50 | | | SS-10 | 33.5 | 35.0 | Gray, Brown & White Silty Sand | | |
| 50 | | | SS-11 | 38.5 | 38.7 | Gray, Brown & White Silty Sand | | |
| | | | | | | | | |
| 45 | RW-145 | | SS-1 | 2.0 | 3.5 | Red Sandy Silt | | |
| 45 | | | SS-2 | 4.0 | 5.5 | Red Sandy Silt | | |
| 51 | | | SS-3 | 6.0 | 7.5 | Yellow & Brown Silty Sand | | |
| 51 | | | SS-4 | 8.0 | 9.5 | Yellow & Brown Silty Sand | | |
| 51 | | | SS-5 | 10.0 | 11.5 | Yellow & Brown Silty Sand | N | 14.6 |
| 51 | | | SS-6 | 13.5 | 15.0 | White & Gray Silty Sand | | |
| 50 | | | SS-7 | 18.5 | 20.0 | White & Brown Silty Sand | | |
| 48 | | | SS-8 | 23.5 | 25.0 | Gray & Brown Sandy Silt | | |
| 48 | | | SS-9 | 28.5 | 28.7 | Brown Sandy Silt | | |
| | | | | | | | | |
| 52 | RW-146 | | SS-1 | 2.0 | 3.5 | Yellow & Brown Sandy Silt | | |
| 52 | | | SS-2 | 4.0 | 5.5 | Yellow & Orange Sandy Silt | | |
| 52 | | | SS-3 | 6.0 | 7.5 | Yellow & Orange Sandy Silt | N | 25.3 |
| 52 | | | SS-4 | 8.0 | 9.5 | Yellow & Orange Sandy Silt | | |
| 52 | | | SS-5 | 10.0 | 11.5 | Yellow & Orange Sandy Silt | | |
| 52 | | | SS-6 | 13.5 | 15.0 | Yellow & Orange Sandy Silt | | |



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T 270.444.9691 F 270.538.1599

**Project Name : I-85 Widening MM96-MM106**
**Location : Cherokee County, SC**
**Job Number : 10023919**
**Project Job No. : 10023919**

# Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

| Soil No. | Boring No. | Station & Offset | Sample No. | Depth | | Description of Soil | pH | Natural Moisture Content ( % ) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| 53 | RW-147 | | SS-1 | 2.0 | 3.5 | Red & Brown Sandy Lean Clay | | |
| 53 | | | SS-2A | 4.0 | 4.6 | Red & Brown Sandy Lean Clay | | |
| 53 | | | SS-2B | 4.6 | 5.5 | Orange & Gray Sandy Lean Clay | | |
| 53 | | | SS-3 | 6.0 | 7.5 | Orange & Gray Sandy Lean Clay | N | 18.1 |
| 53 | | | SS-4 | 8.0 | 9.5 | Gray & Brown Sandy Lean Clay | | |
| 54 | | | SS-5 | 10.0 | 11.5 | Orange & Brown Sandy Silt | | |
| 54 | | | SS-6 | 13.5 | 15.0 | Green & Brown Sandy Silt | N | 41.2 |
| 54 | | | SS-7 | 18.5 | 20.0 | Green & Brown Sandy Silt | | |
| | | | | | | | | |
| 55 | RW-148 | | SS-1 | 2.0 | 3.5 | Brown & White Silty Sand | | |
| 55 | | | SS-2 | 4.0 | 5.5 | Brown & White Silty Sand | | |
| 55 | | | SS-3 | 6.0 | 7.5 | Brown & White Silty Sand | N | 12.5 |
| 55 | | | SS-4 | 8.0 | 8.3 | Yellow & Brown Silty Sand | | |
| | | | | | | | | |
| 56 | RW-149 | | SS-1 | 2.0 | 3.5 | Red & Brown Clayey Sand | | |
| 56 | | | SS-2 | 4.0 | 5.5 | Red & Brown Clayey Sand | N | 16.5 |
| 56 | | | SS-3A | 6.0 | 6.4 | Yellow & Brown Clayey Sand | | |
| 55 | | | SS-3B | 6.4 | 7.5 | Brown & Gray Silty Sand | | |
| 55 | | | SS-4 | 8.0 | 9.5 | Brown & Gray Silty Sand | | |
| 55 | | | SS-5 | 10.0 | 11.1 | Brown & Gray Silty Sand | | |
| | | | | | | | | |
| 271 | RW-150 | | SS-1 | 2.0 | 3.5 | Brown Silty Sand | | |
| 271 | | | SS-2 | 4.0 | 5.5 | Brown Silty Sand | N | 19.8 |
| 272 | | | SS-3 | 6.0 | 7.5 | Brown Sandy Silt | | |
| 272 | | | SS-4 | 8.0 | 9.5 | Brown Sandy Silt | | |
| 272 | | | SS-5 | 10.0 | 11.5 | Brown Sandy Silt | W | 24.0 |
| 272 | | | SS-6 | 13.2 | 14.7 | Brown Sandy Silt | | |
| 273 | | | SS-7 | 18.2 | 19.7 | Brown & Gray Sandy Silt | | |
| 273 | | | SS-8 | 23.2 | 24.7 | Brown & Orange Sandy Silt | W | 32.5 |
| 273 | | | SS-9 | 28.2 | 29.7 | Gray & Brown Sandy Silt | | |
| 274 | | | SS-10 | 33.2 | 34.7 | Gray & Brown Silty Sand | | |
| 274 | | | SS-11 | 38.2 | 39.7 | Gray & Brown Silty Sand | N | 35.1 |
| 275 | | | SS-12 | 43.2 | 44.7 | Gray & Brown Silty Sand | N | 32.5 |
| 275 | | | SS-13 | 48.2 | 49.7 | Gray & Brown Silty Sand | | |
| 276 | | | SS-14 | 53.2 | 54.0 | Gray & Brown Silty Sand | N | 26.0 |
| | | | | | | | | |
| 42 | R-153 | | SS-1 | 2.0 | 3.5 | Brown Sandy Silt | | |
| 42 | | | SS-2 | 4.0 | 5.5 | Red & Brown Sandy Silt | | |
| 42 | | | SS-3 | 6.0 | 7.5 | Red & Brown Sandy Silt | | |
| 42 | | | SS-4 | 8.0 | 9.5 | Red & Brown Sandy Silt | N | 18.1 |
| 42 | | | SS-5 | 10.0 | 11.5 | Red & Brown Sandy Silt | | |
| 43 | | | SS-6 | 13.5 | 15.0 | Red & Brown Silty Sand | | |
| 43 | | | SS-7 | 18.5 | 20.0 | White & Gray Silty Sand | | |
| 43 | | | SS-8 | 23.5 | 25.0 | Orange & Brown Silty Sand | | |
| 43 | | | SS-9 | 28.5 | 30.0 | Brown & White Silty Sand | | |
| 43 | | | SS-10 | 33.5 | 35.0 | Brown & White Silty Sand | N | 30.8 |
| 43 | | | SS-11 | 38.5 | 40.0 | White & Tan Silty Sand | | |
| 44 | | | SS-12 | 43.5 | 45.0 | Brown Silty Sand | N | 19.5 |
| | | | | | | | | |
| 83 | RW-154 | | SS-1 | 2.0 | 3.5 | Orange & Brown Sandy Silt | | |
| 83 | | | SS-2 | 4.0 | 5.5 | Orange & Brown Sandy Silt | | |
| 83 | | | SS-3 | 6.0 | 7.5 | Orange & Brown Sandy Silt | | |
| 83 | | | SS-4 | 8.0 | 9.5 | Red & Brown Sandy Silt | N | 15.5 |
| 83 | | | SS-5 | 10.0 | 11.5 | Orange & Brown Sandy Silt | | |
| 84 | | | SS-6 | 13.5 | 15.0 | White Silty Sand with Gravel | N | 13.9 |
| 84 | | | SS-7 | 18.5 | 20.0 | White Silty Sand with Gravel | | |
| 85 | | | SS-8 | 23.5 | 25.0 | Red & Orange Sandy Silt | N | 25.8 |
| 86 | | | SS-9 | 28.5 | 30.0 | White & Brown Silty Sand with Gravel | N | 15.0 |
| 86 | | | SS-10 | 33.5 | 35.0 | Orange & Brown Silty Sand with Gravel | | |
| | | | | | | | | |
| 194 | BR-155 | | SS-1 | 2.0 | 3.5 | Red, Orange & Brown Silty Sand | N | 15.5 |

**Project Name : I-85 Widening MM96-MM106**
**Location : Cherokee County, SC**
**Job Number : 10023919**
**Project Job No. : 10023919**

# Moisture Data

(AASHTO T255-T265 / ASTM C566-D2216)

| Soil No. | Boring No. | Station & Offset | Sample No. | Depth | | Description of Soil | pH | Natural Moisture Content ( % ) |
|---|---|---|---|---|---|---|---|---|
| 186 | | | SS-2 | 4.0 | 5.5 | Red, Orange & Brown Clayey Sand | N | 17.3 |
| 186 | | | SS-3 | 6.0 | 7.5 | Orange, Brown & White Clayey Sand | | |
| 196 | | | SS-4 | 8.0 | 9.5 | Brown, Orange, Yellow & Red Silty Sand | N | 20.2 |
| 187 | | | SS-5 | 10.0 | 11.5 | Brown, Orange, White & Black Silty Sand | N | 20.1 |
| 187 | | | SS-6 | 13.6 | 15.1 | Brown, Orange, White & Black Silty Sand | | |
| 188 | | | SS-7 | 18.3 | 19.8 | Brown, Orange, White & Red Silty Sand | N | 20.3 |
| 188 | | | SS-8 | 23.3 | 24.8 | Brown, White, Orange & Black Silty Sand | N | 17.7 |
| 190 | | | SS-9 | 28.3 | 29.8 | Brown & White Silty Sand | N | 13.6 |
| 191 | | | SS-10 | 33.3 | 34.8 | Brown, Orange & White Silty Sand | | |
| 189 | | | SS-11 | 38.3 | 39.1 | Brown & White Silty Sand | | |
| 199 | | | SS-12 | 43.3 | 44.8 | Brown & White Silty Sand | N | 15.2 |
| 191 | | | SS-13 | 48.3 | 49.8 | Brown & White Silty Sand | N | 15.7 |
| 193 | | | SS-14 | 53.3 | 54.8 | Brown & White Well-Graded Sand with Silt and Gravel | N | 10.5 |
| 193 | | | SS-15 | 58.3 | 58.9 | Brown, White & Gray Well-Graded Sand with Silt and Gravel | | |
| | | | SS-16 | 63.3 | 63.3 | No Sample | | |
| | | | | | | | | |
| | BR-156 | | Bulk 1 | 0.0 | 8.0 | No Classification | N | |
| 194 | | | SS-1 | 2.0 | 3.5 | Brown, Orange & White Silty Sand | | |
| 194 | | | SS-2 | 4.0 | 5.5 | Brown Silty Sand | | |
| 194 | | | SS-3 | 6.0 | 7.5 | Brown & Black Silty Sand | | |
| 189 | | | SS-4 | 8.0 | 9.5 | White, Brown & Gray Silty Sand | N | 8.4 |
| 195 | | | SS-5 | 10.0 | 11.5 | Brown, Orange, White & Gray Silty Sand | N | 14.5 |
| 198 | | | SS-6 | 14.8 | 16.3 | Brown, Orange & White Silty Sand | | |
| 197 | | | SS-7 | 19.8 | 21.3 | Brown, Orange, White, Gray & Black Silty Sand | N | 16.2 |
| 198 | | | SS-8 | 24.8 | 26.3 | Brown, White & Black Silty Sand | | |
| 198 | | | SS-9 | 29.8 | 31.3 | Brown, White, Orange & Black Silty Sand | N | 29.0 |
| 198 | | | SS-10 | 34.3 | 36.3 | Brown, Orange, Gray & White Silty Sand | | |
| 190 | | | SS-11 | 39.8 | 41.0 | Orange, Brown & White Silty Sand | | |
| 192 | | | SS-12 | 44.8 | 45.6 | Orange, Brown & White Silty Sand with Gravel | N | 10.5 |
| 192 | | | SS-13 | 49.8 | 50.2 | Gray, Brown, Orange & White Silty Sand with Gravel | | |
| | | | SS-14 | 52.2 | 52.2 | No Sample | | |



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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-3 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-121 |
| Project State | : South Carolina | Sample Depth | : 6.0' to 7.5' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : Red, Orange & Brown Sandy Elastic Silt | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.3 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 87.9 |
| 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 | 61.5 |
| 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 | |

$D_{50}$ = 0.022 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 18.9 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 52 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 29 |
| | | Plasticity Index | : 23 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.44 |
| Gravel ( 3in. + No.10 ) | : 1.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 10.4 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 26.4 | AASHTO Classification: M145 | : A-7-6 (13) |
| Silt + Clay ( -No.200 ) | : 61.5 | ASTM Classification: D2487 | : MH |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.3 |
| Coarse Sand ( -No.4 + No.10 ) | : 1.4 |
| Medium Sand ( -No.10 + No.40 ) | : 10.4 |
| Fine Sand ( -No.40 + No.200 ) | : 26.4 |
| Silt + Clay ( -No.200 ) | : 61.5 |

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Soil No. 1

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-10 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-121 |
| Project State | : South Carolina | Sample Depth | : 34.3' to 35.8' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : Orange, Brown, Gray & White Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 |
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 70.1 |
| 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 | 37.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.148 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 32.3 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 46 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 36 |
| | | Plasticity Index | : 10 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.34 |
| Gravel ( 3in. + No.10 ) | : 1.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 28.8 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 33.1 | AASHTO Classification: M145 | : A-5 (0) |
| Silt + Clay ( -No.200 ) | : 37.0 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.0 |
| Coarse Sand ( -No.4 + No.10 ) | : 1.1 |
| Medium Sand ( -No.10 + No.40 ) | : 28.8 |
| Fine Sand ( -No.40 + No.200 ) | : 33.1 |
| Silt + Clay ( -No.200 ) | : 37.0 |

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Soil No. 2

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-12 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-123 |
| Project State | : South Carolina | Sample Depth | : 45.0' to 46.5' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : Brown, Orange, White & 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 | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.8 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 95.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 88.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 71.4 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 41.9 |
| 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 | |

$D_{50}$ = 0.121 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 30.5 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 39 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 32 |
| | | Plasticity Index | : 7 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.18 |
| Gravel ( 3in. + No.10 ) | : 11.5 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 17.1 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 29.5 | AASHTO Classification: M145 | : A-4 (1) |
| Silt + Clay ( -No.200 ) | : 41.9 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 5.0 |
| Coarse Sand ( -No.4 + No.10 ) | : 6.5 |
| Medium Sand ( -No.10 + No.40 ) | : 17.1 |
| Fine Sand ( -No.40 + No.200 ) | : 29.5 |
| Silt + Clay ( -No.200 ) | : 41.9 |

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Soil No. 3

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-10 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-123 |
| Project State | : South Carolina | Sample Depth | : 35.0' to 36.5' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : Brown, Orange, White & 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 | 99.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 93.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 75.6 |
| 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 | 40.7 |
| 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 | |

$D_{50}$ = 0.119 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 32.4 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 42 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 36 |
| | | Plasticity Index | : 6 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.66 |
| Gravel ( 3in. + No.10 ) | : 6.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 18.1 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 34.9 | AASHTO Classification: M145 | : A-5 (0) |
| Silt + Clay ( -No.200 ) | : 40.7 | 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 ) | : 5.3 |
| Medium Sand ( -No.10 + No.40 ) | : 18.1 |
| Fine Sand ( -No.40 + No.200 ) | : 34.9 |
| Silt + Clay ( -No.200 ) | : 40.7 |

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Soil No. 4

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-7 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-121 |
| Project State | : South Carolina | Sample Depth | : 19.3' to 20.8' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : Red, Orange, Brown, Yellow & White Sandy Elastic 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 | 99.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 97.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 88.8 |
| 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 | 63.4 |
| 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 | |

$D_{50}$ = 0.019 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 32.2 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 51 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 37 |
| | | Plasticity Index | : 14 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.36 |
| Gravel ( 3in. + No.10 ) | : 2.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 8.9 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 25.4 | AASHTO Classification: M145 | : A-7-5 (9) |
| Silt + Clay ( -No.200 ) | : 63.4 | ASTM Classification: D2487 | : MH |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.8 |
| Coarse Sand ( -No.4 + No.10 ) | : 1.5 |
| Medium Sand ( -No.10 + No.40 ) | : 8.9 |
| Fine Sand ( -No.40 + No.200 ) | : 25.4 |
| Silt + Clay ( -No.200 ) | : 63.4 |

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Soil No. 5

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-7 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. BR-123 |
| Project State | : | South Carolina | Sample Depth | : 20.0' to 21.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : | HDR | Date Reported | : 02/06/17 |
| Soil Type | : | White, Gray, Red & Orange 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 | 99.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 95.8 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 68.6 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 51.6 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.061 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 34.6 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 45 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 40 |
| | | | Plasticity Index | : 5 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -1.09 |
| Gravel ( 3in. + No.10 ) | : | 4.2 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 27.2 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 17.0 | AASHTO Classification: M145 | : A-5 (2) |
| Silt + Clay ( -No.200 ) | : | 51.6 | ASTM Classification: D2487 | : ML |

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 ) | : | 3.8 |
| Medium Sand ( -No.10 + No.40 ) | : | 27.2 |
| Fine Sand ( -No.40 + No.200 ) | : | 17.0 |
| Silt + Clay ( -No.200 ) | : | 51.6 |

Approved By : Kevin E. Walker

Soil No. 6

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-123 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : Red, Orange, White & Brown Clayey Sand with Gravel | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 89.7 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 79.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 69.5 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 51.8 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 33.5 |
| 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 | |

$D_{50}$ = 0.358 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 17.3 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 39 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 23 |
| | | Plasticity Index | : 16 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.35 |
| Gravel ( 3in. + No.10 ) | : 30.5 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 17.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 18.3 | AASHTO Classification: M145 | : A-2-6 (1) |
| Silt + Clay ( -No.200 ) | : 33.5 | ASTM Classification: D2487 | : SC |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 20.9 |
| Coarse Sand ( -No.4 + No.10 ) | : 9.6 |
| Medium Sand ( -No.10 + No.40 ) | : 17.7 |
| Fine Sand ( -No.40 + No.200 ) | : 18.3 |
| Silt + Clay ( -No.200 ) | : 33.5 |

Approved By : Kevin E. Walker

Soil No. 7

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-16 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-123 |
| Project State | : South Carolina | Sample Depth | : 65.0' to 66.5' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : Brown, Orange, Gray, White & Black 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 | 98.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 95.8 |

AASHTO T88

| | | | | % 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 | 53.3 |
| 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 | |

$D_{50}$ = 0.05 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 31.7 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 40 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 34 |
| | | Plasticity Index | : 6 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.30 |
| Gravel ( 3in. + No.10 ) | : 4.2 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 8.6 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 33.9 | AASHTO Classification: M145 | : A-4 (2) |
| Silt + Clay ( -No.200 ) | : 53.3 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 1.3 |
| Coarse Sand ( -No.4 + No.10 ) | : 2.9 |
| Medium Sand ( -No.10 + No.40 ) | : 8.6 |
| Fine Sand ( -No.40 + No.200 ) | : 33.9 |
| Silt + Clay ( -No.200 ) | : 53.3 |

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Soil No. 8

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Green, Gray & Brown Silty Sand

Sample No. : SS-23
Sample Loc. : Boring No. BR-123
Sample Depth : 100.0' to 100.4'
Date Tested : 02/01/17
Date Reported : 02/06/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 96.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 88.8 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 69.4 |
| 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 | 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 | |

$D_{50}$ = 0.135 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 9.3
Liquid Limit (AASHTO T89) : 28
Plastic Limit (AASHTO T90) : 25
Plasticity Index : 3
Liquidity Index : -5.29
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 ) : 11.2
Coarse Sand ( -No.10 + No.40 ) : 19.4
Fine Sand ( -No.40 + No.200 ) : 29.4
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 ) : 3.3
Coarse Sand ( -No.4 + No.10 ) : 7.9
Medium Sand ( -No.10 + No.40 ) : 19.4
Fine Sand ( -No.40 + No.200 ) : 29.4
Silt + Clay ( -No.200 ) : 40.0

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Soil No. 9

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown, Red, Orange & White Silty Sand

Sample No. : SS-1
Sample Loc. : Boring No. BR-124
Sample Depth : 2.0' to 3.5'
Date Tested : 02/01/17
Date Reported : 02/06/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.6 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 96.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 89.6 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 70.9 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 46.1 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.099 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 28.6
Liquid Limit (AASHTO T89) : 45
Plastic Limit (AASHTO T90) : 36
Plasticity Index : 9
Liquidity Index : -0.87
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-5 (2)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 10.4
Coarse Sand ( -No.10 + No.40 ) : 18.7
Fine Sand ( -No.40 + No.200 ) : 24.8
Silt + Clay ( -No.200 ) : 46.1

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 4.0
Coarse Sand ( -No.4 + No.10 ) : 6.4
Medium Sand ( -No.10 + No.40 ) : 18.7
Fine Sand ( -No.40 + No.200 ) : 24.8
Silt + Clay ( -No.200 ) : 46.1

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Soil No. 10

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown, Red & Orange Sandy Lean Clay

Sample No. : SS-4
Sample Loc. : Boring No. BR-124
Sample Depth : 10.0' to 11.5'
Date Tested : 02/01/17
Date Reported : 02/06/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.5 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 97.9 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 87.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 67.4 |
| 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 | |

$D_{50}$ = 0.014 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 23.2
Liquid Limit (AASHTO T89) : 49
Plastic Limit (AASHTO T90) : 26
Plasticity Index : 23
Liquidity Index : -0.12
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-7-6 (15)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 2.1
Coarse Sand ( -No.10 + No.40 ) : 10.9
Fine Sand ( -No.40 + No.200 ) : 19.6
Silt + Clay ( -No.200 ) : 67.4

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.5
Coarse Sand ( -No.4 + No.10 ) : 1.6
Medium Sand ( -No.10 + No.40 ) : 10.9
Fine Sand ( -No.40 + No.200 ) : 19.6
Silt + Clay ( -No.200 ) : 67.4

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Soil No. 11

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-7 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. BR-124 |
| Project State | : | South Carolina | Sample Depth | : 25.0' to 26.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : | HDR | Date Reported | : 02/06/17 |
| Soil Type | : | Brown, Orange, White & Gray 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 | 99.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 95.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 74.6 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 44.6 |
| 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 | |

$D_{50}$ = 0.102 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 24.8 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 40 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 32 |
| | | | Plasticity Index | : 8 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -0.84 |
| Gravel ( 3in. + No.10 ) | : | 4.5 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 20.9 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 30.0 | AASHTO Classification: M145 | : A-4 (1) |
| Silt + Clay ( -No.200 ) | : | 44.6 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.8 |
| Coarse Sand ( -No.4 + No.10 ) | : | 3.7 |
| Medium Sand ( -No.10 + No.40 ) | : | 20.9 |
| Fine Sand ( -No.40 + No.200 ) | : | 30.0 |
| Silt + Clay ( -No.200 ) | : | 44.6 |

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Soil No. 12

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown, White & Orange Silty Sand

Sample No. : SS-13
Sample Loc. : Boring No. BR-124
Sample Depth : 55.0' to 56.5'
Date Tested : 02/01/17
Date Reported : 02/06/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 96.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 94.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 92.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 65.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 28.3 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.209 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 25.0
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 8.0
Coarse Sand ( -No.10 + No.40 ) : 27.0
Fine Sand ( -No.40 + No.200 ) : 36.7
Silt + Clay ( -No.200 ) : 28.3

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 5.1
Coarse Sand ( -No.4 + No.10 ) : 2.9
Medium Sand ( -No.10 + No.40 ) : 27.0
Fine Sand ( -No.40 + No.200 ) : 36.7
Silt + Clay ( -No.200 ) : 28.3

Approved By : Kevin E. Walker

Soil No. 13

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-126 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : Red 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 | 99.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 99.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 91.7 |
| 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 | 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 | |

$D_{50}$ = 0.007 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 30.2 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 41 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 30 |
| | | Plasticity Index | : 11 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : 0.00 |
| Gravel ( 3in. + No.10 ) | : 0.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 7.5 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 12.9 | AASHTO Classification: M145 | : A-7-6 (10) |
| Silt + Clay ( -No.200 ) | : 78.8 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.1 |
| Coarse Sand ( -No.4 + No.10 ) | : 0.7 |
| Medium Sand ( -No.10 + No.40 ) | : 7.5 |
| Fine Sand ( -No.40 + No.200 ) | : 12.9 |
| Silt + Clay ( -No.200 ) | : 78.8 |

Approved By : Kevin E. Walker

Soil No. 14

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-2 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. BR-126 |
| Project State | : | South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : | HDR | Date Reported | : 02/06/17 |
| Soil Type | : | Red Sandy Elastic Silt 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 | 88.2 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 81.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 75.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 64.6 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 50.8 |
| 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 | |

$D_{50}$ = 0.068 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 33.0 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 59 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 35 |
| | | | Plasticity Index | : 24 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -0.10 |
| Gravel ( 3in. + No.10 ) | : | 24.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 10.6 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 13.8 | AASHTO Classification: M145 | : A-7-5 (10) |
| Silt + Clay ( -No.200 ) | : | 50.8 | ASTM Classification: D2487 | : MH |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 18.1 |
| Coarse Sand ( -No.4 + No.10 ) | : | 6.7 |
| Medium Sand ( -No.10 + No.40 ) | : | 10.6 |
| Fine Sand ( -No.40 + No.200 ) | : | 13.8 |
| Silt + Clay ( -No.200 ) | : | 50.8 |

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Soil No. 15

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-4 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-126 |
| Project State | : South Carolina | Sample Depth | : 8.0' to 9.5' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : Orange & Brown Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 90.7 |
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 61.0 |
| 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 | 27.4 |
| 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 | |

$D_{50}$ = 0.241 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 15.7 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 38 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 32 |
| | | Plasticity Index | : 6 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -2.65 |
| Gravel ( 3in. + No.10 ) | : 9.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 29.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 33.6 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 27.4 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.9 |
| Coarse Sand ( -No.4 + No.10 ) | : 8.4 |
| Medium Sand ( -No.10 + No.40 ) | : 29.7 |
| Fine Sand ( -No.40 + No.200 ) | : 33.6 |
| Silt + Clay ( -No.200 ) | : 27.4 |

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Soil No. 16

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : White Sandy Lean Clay

Sample No. : SS-10
Sample Loc. : Boring No. BR-126
Sample Depth : 33.5' to 35.0'
Date Tested : 02/01/17
Date Reported : 02/06/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 96.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 83.4 |
| 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 | 67.1 |
| 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 | |

$D_{50}$ = 0.014 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 40.2
Liquid Limit (AASHTO T89) : 49
Plastic Limit (AASHTO T90) : 25
Plasticity Index : 24
Liquidity Index : 0.64
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-7-6 (15)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 3.3
Coarse Sand ( -No.10 + No.40 ) : 13.3
Fine Sand ( -No.40 + No.200 ) : 16.3
Silt + Clay ( -No.200 ) : 67.1

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 ) : 2.9
Medium Sand ( -No.10 + No.40 ) : 13.3
Fine Sand ( -No.40 + No.200 ) : 16.3
Silt + Clay ( -No.200 ) : 67.1

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Soil No. 17

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Yellow, Brown & White Silty Sand

Sample No. : SS-8
Sample Loc. : Boring No. BR-126
Sample Depth : 23.5' to 25.0'
Date Tested : 02/01/17
Date Reported : 02/06/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 98.7 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 97.3 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 90.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 66.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 42.2 |
| 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 | |

$D_{50}$ = 0.132 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 34.4
Liquid Limit (AASHTO T89) : 48
Plastic Limit (AASHTO T90) : 42
Plasticity Index : 6
Liquidity Index : -1.21
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-5 (1)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 9.3
Coarse Sand ( -No.10 + No.40 ) : 24.7
Fine Sand ( -No.40 + No.200 ) : 23.8
Silt + Clay ( -No.200 ) : 42.2

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 2.7
Coarse Sand ( -No.4 + No.10 ) : 6.6
Medium Sand ( -No.10 + No.40 ) : 24.7
Fine Sand ( -No.40 + No.200 ) : 23.8
Silt + Clay ( -No.200 ) : 42.2

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Soil No. 18

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Orange, Brown & White Silty Sand

Sample No. : SS-14
Sample Loc. : Boring No. BR-126
Sample Depth : 53.5' to 55.0'
Date Tested : 02/01/17
Date Reported : 02/06/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 83.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 45.1 |
| 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 | |

$D_{50}$ = 0.094 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 34.3
Liquid Limit (AASHTO T89) : 38
Plastic Limit (AASHTO T90) : 26
Plasticity Index : 12
Liquidity Index : 0.72
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (3)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 2.0
Coarse Sand ( -No.10 + No.40 ) : 14.8
Fine Sand ( -No.40 + No.200 ) : 38.1
Silt + Clay ( -No.200 ) : 45.1

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.4
Coarse Sand ( -No.4 + No.10 ) : 1.6
Medium Sand ( -No.10 + No.40 ) : 14.8
Fine Sand ( -No.40 + No.200 ) : 38.1
Silt + Clay ( -No.200 ) : 45.1

Approved By : Kevin E. Walker

Soil No. 19

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Gray Silty Sand with Gravel

Sample No. : SS-16
Sample Loc. : Boring No. BR-126
Sample Depth : 63.5' to 63.8'
Date Tested : 02/01/17
Date Reported : 02/06/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 96.1 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 83.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 58.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 37.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 21.3 |
| 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 | |

$D_{50}$ = 1.097 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 16.9
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
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 ) : 41.9
Coarse Sand ( -No.10 + No.40 ) : 20.9
Fine Sand ( -No.40 + No.200 ) : 15.9
Silt + Clay ( -No.200 ) : 21.3

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 16.8
Coarse Sand ( -No.4 + No.10 ) : 25.1
Medium Sand ( -No.10 + No.40 ) : 20.9
Fine Sand ( -No.40 + No.200 ) : 15.9
Silt + Clay ( -No.200 ) : 21.3

Approved By : Kevin E. Walker

Soil No. 20

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-3 |
| Project County | : Cherokee | Sample Loc. | : Boring No. R-95 |
| Project State | : South Carolina | Sample Depth | : 6.0' to 7.5' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : Red & Brown Sandy Silt | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 |
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 87.3 |
| 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 | 61.9 |
| 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 | |

$D_{50}$ = 0.021 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 24.8 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 35 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 30 |
| | | Plasticity Index | : 5 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.11 |
| Gravel ( 3in. + No.10 ) | : 1.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 11.6 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 25.4 | AASHTO Classification: M145 | : A-4 (2) |
| Silt + Clay ( -No.200 ) | : 61.9 | ASTM Classification: D2487 | : 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 ) | : 1.1 |
| Medium Sand ( -No.10 + No.40 ) | : 11.6 |
| Fine Sand ( -No.40 + No.200 ) | : 25.4 |
| Silt + Clay ( -No.200 ) | : 61.9 |

Approved By : Kevin E. Walker

Soil No. 21

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-5B |
| Project County | : Cherokee | Sample Loc. | : Boring No. R-95 |
| Project State | : South Carolina | Sample Depth | : 10.3' to 11.5' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : Brown & 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 | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 97.9 |

AASHTO T88

| | | | | % 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 | 50.3 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.072 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 24.2 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 34 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 24 |
| | | Plasticity Index | : 10 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.01 |
| Gravel ( 3in. + No.10 ) | : 2.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 21.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 26.3 | AASHTO Classification: M145 | : A-4 (3) |
| Silt + Clay ( -No.200 ) | : 50.3 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.1 |
| Coarse Sand ( -No.4 + No.10 ) | : 2.0 |
| Medium Sand ( -No.10 + No.40 ) | : 21.3 |
| Fine Sand ( -No.40 + No.200 ) | : 26.3 |
| Silt + Clay ( -No.200 ) | : 50.3 |

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Soil No. 22

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-6 |
| Project County | : Cherokee | Sample Loc. | : Boring No. R-95 |
| Project State | : South Carolina | Sample Depth | : 13.5' to 15.0' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : Brown & 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 | 98.6 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 98.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 96.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 81.3 |
| 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 | 54.6 |
| 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 | |

$D_{50}$ = 0.043 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 29.5 |
| 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 | : 4.99 |
| Gravel ( 3in. + No.10 ) | : 4.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 14.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 26.7 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 54.6 | ASTM Classification: D2487 | : ML |

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 ) | : 2.0 |
| Medium Sand ( -No.10 + No.40 ) | : 14.7 |
| Fine Sand ( -No.40 + No.200 ) | : 26.7 |
| Silt + Clay ( -No.200 ) | : 54.6 |

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Soil No. 23

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown & Orange Silty Sand

Sample No. : SS-9
Sample Loc. : Boring No. R-95
Sample Depth : 28.5' to 30.0'
Date Tested : 02/01/17
Date Reported : 02/06/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 96.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 86.9 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 60.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 31.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.234 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 15.8
Liquid Limit (AASHTO T89) : 33
Plastic Limit (AASHTO T90) : 29
Plasticity Index : 4
Liquidity Index : -3.23
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 ) : 13.1
Coarse Sand ( -No.10 + No.40 ) : 26.9
Fine Sand ( -No.40 + No.200 ) : 29.0
Silt + Clay ( -No.200 ) : 31.0

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 3.8
Coarse Sand ( -No.4 + No.10 ) : 9.3
Medium Sand ( -No.10 + No.40 ) : 26.9
Fine Sand ( -No.40 + No.200 ) : 29.0
Silt + Clay ( -No.200 ) : 31.0

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-11 |
| Project County | : Cherokee | Sample Loc. | : Boring No. R-95 |
| Project State | : South Carolina | Sample Depth | : 38.5' to 38.8' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : Brown & 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 | 99.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 97.5 |

AASHTO T88

| | | | | % 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 | 45.7 |
| 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 | |

$D_{50}$ = 0.092 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 9.6 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 25 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 25 |
| | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 2.5 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 15.8 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 36.0 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 45.7 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.3 |
| Coarse Sand ( -No.4 + No.10 ) | : 2.2 |
| Medium Sand ( -No.10 + No.40 ) | : 15.8 |
| Fine Sand ( -No.40 + No.200 ) | : 36.0 |
| Silt + Clay ( -No.200 ) | : 45.7 |

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Soil No. 25

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-12 |
| Project County | : Cherokee | Sample Loc. | : Boring No. R-95 |
| Project State | : South Carolina | Sample Depth | : 43.5' to 44.1' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : Brown & Orange Poorly Graded Gravel with Silt and Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | 100.0 |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | 75.3 |
| 3/4 | in. | 19 | mm | 63.2 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 33.3 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 27.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 22.6 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 15.6 |
| 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 | 8.2 |
| 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 | |

$D_{50}$ = 13.991 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 12.3 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : NP |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : NP |
| | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 77.4 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 7.0 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 7.4 | AASHTO Classification: M145 | : A-1-a (0) |
| Silt + Clay ( -No.200 ) | : 8.2 | ASTM Classification: D2487 | : GP-GM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 36.8 |
| Fine Gravel ( -3/4in. + No.4 ) | : 35.8 |
| Coarse Sand ( -No.4 + No.10 ) | : 4.8 |
| Medium Sand ( -No.10 + No.40 ) | : 7.0 |
| Fine Sand ( -No.40 + No.200 ) | : 7.4 |
| Silt + Clay ( -No.200 ) | : 8.2 |

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Soil No. 26

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. RW-139 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : Red Sandy Elastic 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 | 97.4 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 92.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 83.9 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 73.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 51.6 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.061 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 48.4 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 52 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 41 |
| | | Plasticity Index | : 11 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : 0.70 |
| Gravel ( 3in. + No.10 ) | : 16.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 10.9 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 21.4 | AASHTO Classification: M145 | : A-7-5 (5) |
| Silt + Clay ( -No.200 ) | : 51.6 | ASTM Classification: D2487 | : MH |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 7.3 |
| Coarse Sand ( -No.4 + No.10 ) | : 8.8 |
| Medium Sand ( -No.10 + No.40 ) | : 10.9 |
| Fine Sand ( -No.40 + No.200 ) | : 21.4 |
| Silt + Clay ( -No.200 ) | : 51.6 |

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Soil No. 27

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Red Silty Sand

Sample No. : SS-4
Sample Loc. : Boring No. RW-139
Sample Depth : 8.0' to 9.5'
Date Tested : 02/01/17
Date Reported : 02/06/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 98.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 88.8 |

AASHTO T88

| | | | | % 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 | 49.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.08 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 42.6
Liquid Limit (AASHTO T89) : 49
Plastic Limit (AASHTO T90) : 40
Plasticity Index : 9
Liquidity Index : 0.30
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-5 (3)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 11.2
Coarse Sand ( -No.10 + No.40 ) : 14.8
Fine Sand ( -No.40 + No.200 ) : 25.0
Silt + Clay ( -No.200 ) : 49.0

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 1.9
Coarse Sand ( -No.4 + No.10 ) : 9.3
Medium Sand ( -No.10 + No.40 ) : 14.8
Fine Sand ( -No.40 + No.200 ) : 25.0
Silt + Clay ( -No.200 ) : 49.0

Approved By : Kevin E. Walker

Soil No. 28

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : White, Yellow & Orange Silty Sand

Sample No. : SS-1
Sample Loc. : Boring No. RW-140
Sample Depth : 2.0' to 3.5'
Date Tested : 02/01/17
Date Reported : 02/06/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 84.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 24.8 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 13.7 |
| 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 | |

$D_{50}$ = 0.822 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 21.8
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-1-b (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 16.0
Coarse Sand ( -No.10 + No.40 ) : 59.2
Fine Sand ( -No.40 + No.200 ) : 11.1
Silt + Clay ( -No.200 ) : 13.7

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 ) : 13.9
Medium Sand ( -No.10 + No.40 ) : 59.2
Fine Sand ( -No.40 + No.200 ) : 11.1
Silt + Clay ( -No.200 ) : 13.7

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Soil No. 29

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-3 |
| Project County | : Cherokee | Sample Loc. | : Boring No. RW-140 |
| Project State | : South Carolina | Sample Depth | : 6.0' to 7.5' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : 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 | 99.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 99.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 94.6 |
| 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 | 62.3 |
| 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 | |

$D_{50}$ = 0.02 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 29.3 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 39 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 28 |
| | | Plasticity Index | : 11 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : 0.15 |
| Gravel ( 3in. + No.10 ) | : 0.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 4.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 32.3 | AASHTO Classification: M145 | : A-6 (6) |
| Silt + Clay ( -No.200 ) | : 62.3 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.4 |
| Coarse Sand ( -No.4 + No.10 ) | : 0.3 |
| Medium Sand ( -No.10 + No.40 ) | : 4.7 |
| Fine Sand ( -No.40 + No.200 ) | : 32.3 |
| Silt + Clay ( -No.200 ) | : 62.3 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-6 |
| Project County | : Cherokee | Sample Loc. | : Boring No. RW-140 |
| Project State | : South Carolina | Sample Depth | : 13.5' to 15.0' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : 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 | 99.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 97.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 87.3 |
| 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 | 60.6 |
| 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 | |

$D_{50}$ = 0.024 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 26.7 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 40 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 34 |
| | | Plasticity Index | : 6 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.16 |
| Gravel ( 3in. + No.10 ) | : 2.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 10.0 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 26.7 | AASHTO Classification: M145 | : A-4 (3) |
| Silt + Clay ( -No.200 ) | : 60.6 | ASTM Classification: D2487 | : ML |

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 ) | : 2.3 |
| Medium Sand ( -No.10 + No.40 ) | : 10.0 |
| Fine Sand ( -No.40 + No.200 ) | : 26.7 |
| Silt + Clay ( -No.200 ) | : 60.6 |

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Soil No. 31

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-7 |
| Project County | : Cherokee | Sample Loc. | : Boring No. RW-140 |
| Project State | : South Carolina | Sample Depth | : 18.5' to 20.0' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 93.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 85.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 68.1 |
| 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 | 40.9 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.134 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 52.6 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 52 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 42 |
| | | Plasticity Index | : 10 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : 1.08 |
| Gravel ( 3in. + No.10 ) | : 14.9 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 17.0 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 27.2 | AASHTO Classification: M145 | : A-5 (2) |
| Silt + Clay ( -No.200 ) | : 40.9 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 6.2 |
| Coarse Sand ( -No.4 + No.10 ) | : 8.7 |
| Medium Sand ( -No.10 + No.40 ) | : 17.0 |
| Fine Sand ( -No.40 + No.200 ) | : 27.2 |
| Silt + Clay ( -No.200 ) | : 40.9 |

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Soil No. 32

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-1 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. RW-141 |
| Project State | : | South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : | HDR | Date Reported | : 02/06/17 |
| Soil Type | : | Red 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 | 99.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 96.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 82.8 |
| 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 | 56.7 |
| 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 | |

$D_{50}$ = 0.034 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 19.9 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 45 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 38 |
| | | | Plasticity Index | : 7 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -2.53 |
| Gravel ( 3in. + No.10 ) | : | 3.5 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 13.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 26.1 | AASHTO Classification: M145 | : A-5 (4) |
| Silt + Clay ( -No.200 ) | : | 56.7 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.3 |
| Coarse Sand ( -No.4 + No.10 ) | : | 3.2 |
| Medium Sand ( -No.10 + No.40 ) | : | 13.7 |
| Fine Sand ( -No.40 + No.200 ) | : | 26.1 |
| Silt + Clay ( -No.200 ) | : | 56.7 |

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Soil No. 33

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-2 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. RW-141 |
| Project State | : | South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : | HDR | Date Reported | : 02/06/17 |
| Soil Type | : | Red 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 | 100.0 |
| 3/4 | in. | 19 | mm | 97.3 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 97.3 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 96.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 95.5 |

AASHTO T88

| | | | | % 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 | 68.2 |
| 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 | |

$D_{50}$ = 0.013 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 24.7 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 48 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 40 |
| | | | Plasticity Index | : 8 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -1.86 |
| Gravel ( 3in. + No.10 ) | : | 4.5 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 8.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 19.0 | AASHTO Classification: M145 | : A-5 (7) |
| Silt + Clay ( -No.200 ) | : | 68.2 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 2.7 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.9 |
| Coarse Sand ( -No.4 + No.10 ) | : | 0.9 |
| Medium Sand ( -No.10 + No.40 ) | : | 8.3 |
| Fine Sand ( -No.40 + No.200 ) | : | 19.0 |
| Silt + Clay ( -No.200 ) | : | 68.2 |

Approved By : Kevin E. Walker

Soil No. 34

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : ST-1 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. BR-121 |
| Project State | : | South Carolina | Sample Depth | : 39.5' to 41.3' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : | HDR | Date Reported | : 02/06/17 |
| Soil Type | : | Orange, Brown, Gray & White 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 | 99.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 97.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 83.4 |
| 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 | 42.7 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.102 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 22.2 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 37 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 32 |
| | | | Plasticity Index | : 5 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -1.94 |
| Gravel ( 3in. + No.10 ) | : | 2.5 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 14.1 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 40.7 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : | 42.7 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.3 |
| Coarse Sand ( -No.4 + No.10 ) | : | 2.2 |
| Medium Sand ( -No.10 + No.40 ) | : | 14.1 |
| Fine Sand ( -No.40 + No.200 ) | : | 40.7 |
| Silt + Clay ( -No.200 ) | : | 42.7 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : ST-1 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. BR-124 |
| Project State | : | South Carolina | Sample Depth | : 8.5' to 9.0' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : | HDR | Date Reported | : 02/06/17 |
| Soil Type | : | Brown, Gray, Red & Orange Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 99.1 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 98.1 |
| 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 | 76.8 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 40.5 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.118 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 13.4 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 21 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 17 |
| | | | Plasticity Index | : 4 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -0.84 |
| Gravel ( 3in. + No.10 ) | : | 5.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 18.1 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 36.3 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : | 40.5 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 1.9 |
| Coarse Sand ( -No.4 + No.10 ) | : | 3.2 |
| Medium Sand ( -No.10 + No.40 ) | : | 18.1 |
| Fine Sand ( -No.40 + No.200 ) | : | 36.3 |
| Silt + Clay ( -No.200 ) | : | 40.5 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : ST-1 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. BR-126 |
| Project State | : | South Carolina | Sample Depth | : 30.0' to 30.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/09/17 |
| Submitted By | : | HDR | Date Reported | : 02/13/17 |
| Soil Type | : | White & 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 | 99.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 81.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 45.4 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.094 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 35.1 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 50 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 41 |
| | | | Plasticity Index | : 9 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -0.69 |
| Gravel ( 3in. + No.10 ) | : | 1.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 17.8 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 35.8 | AASHTO Classification: M145 | : A-5 (2) |
| Silt + Clay ( -No.200 ) | : | 45.4 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.0 |
| Coarse Sand ( -No.4 + No.10 ) | : | 1.0 |
| Medium Sand ( -No.10 + No.40 ) | : | 17.8 |
| Fine Sand ( -No.40 + No.200 ) | : | 35.8 |
| Silt + Clay ( -No.200 ) | : | 45.4 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-4 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. R-153 |
| Project State | : | South Carolina | Sample Depth | : 8.0' to 9.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/06/17 |
| Soil Type | : | Red & 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 | 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 | 97.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 93.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 83.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 50.3 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.072 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 18.1 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 37 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 36 |
| | | | Plasticity Index | : 1 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -18.34 |
| Gravel ( 3in. + No.10 ) | : | 6.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 10.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 32.7 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : | 50.3 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 2.6 |
| Coarse Sand ( -No.4 + No.10 ) | : | 3.7 |
| Medium Sand ( -No.10 + No.40 ) | : | 10.7 |
| Fine Sand ( -No.40 + No.200 ) | : | 32.7 |
| Silt + Clay ( -No.200 ) | : | 50.3 |

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Soil No. 42

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-10 |
| Project County | : Cherokee | Sample Loc. | : Boring No. R-153 |
| Project State | : South Carolina | Sample Depth | : 33.5' to 35.0' |
| Laboratory No. | : 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : HDR | Date Reported | : 03/06/17 |
| Soil Type | : Brown & White 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 | 98.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 92.8 |

AASHTO T88

| | | | | % 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 | 44.4 |
| 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 | |

$D_{50}$ = 0.113 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 30.8 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 36 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 30 |
| | | Plasticity Index | : 6 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : 0.06 |
| Gravel ( 3in. + No.10 ) | : 7.2 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 24.5 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 23.9 | AASHTO Classification: M145 | : A-4 (1) |
| Silt + Clay ( -No.200 ) | : 44.4 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 1.2 |
| Coarse Sand ( -No.4 + No.10 ) | : 6.0 |
| Medium Sand ( -No.10 + No.40 ) | : 24.5 |
| Fine Sand ( -No.40 + No.200 ) | : 23.9 |
| Silt + Clay ( -No.200 ) | : 44.4 |

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Soil No. 43

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-12 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. R-153 |
| Project State | : | South Carolina | Sample Depth | : 43.5' to 45.0' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/06/17 |
| Soil Type | : | Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 95.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 81.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 58.6 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 32.4 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.24 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 19.5 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 31 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 27 |
| | | | Plasticity Index | : 4 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -1.85 |
| Gravel ( 3in. + No.10 ) | : | 19.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 22.4 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 26.2 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : | 32.4 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 4.8 |
| Coarse Sand ( -No.4 + No.10 ) | : | 14.2 |
| Medium Sand ( -No.10 + No.40 ) | : | 22.4 |
| Fine Sand ( -No.40 + No.200 ) | : | 26.2 |
| Silt + Clay ( -No.200 ) | : | 32.4 |

Approved By : Kevin E. Walker

Soil No. 44

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Red Sandy Silt

Sample No. : SS-1
Sample Loc. : Boring No. RW-142
Sample Depth : 2.0' to 3.5'
Date Tested : 02/21/17
Date Reported : 03/06/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 98.4 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 87.8 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 62.4 |
| 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 | |

$D_{50}$ = 0.02 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 20.4
Liquid Limit (AASHTO T89) : 38
Plastic Limit (AASHTO T90) : 29
Plasticity Index : 9
Liquidity Index : -0.91
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (5)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 1.6
Coarse Sand ( -No.10 + No.40 ) : 10.6
Fine Sand ( -No.40 + No.200 ) : 25.4
Silt + Clay ( -No.200 ) : 62.4

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.3
Coarse Sand ( -No.4 + No.10 ) : 1.3
Medium Sand ( -No.10 + No.40 ) : 10.6
Fine Sand ( -No.40 + No.200 ) : 25.4
Silt + Clay ( -No.200 ) : 62.4

Approved By : Kevin E. Walker

Soil No. 45

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-4 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. RW-142 |
| Project State | : | South Carolina | Sample Depth | : 8.0' to 9.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/06/17 |
| Soil Type | : | Red 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 | 99.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 88.4 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 66.9 |
| 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 | |

$D_{50}$ = 0.014 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 26.1 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 41 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 31 |
| | | | Plasticity Index | : 10 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -0.48 |
| Gravel ( 3in. + No.10 ) | : | 1.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 9.8 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 21.5 | AASHTO Classification: M145 | : A-5 (7) |
| Silt + Clay ( -No.200 ) | : | 66.9 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.3 |
| Coarse Sand ( -No.4 + No.10 ) | : | 1.5 |
| Medium Sand ( -No.10 + No.40 ) | : | 9.8 |
| Fine Sand ( -No.40 + No.200 ) | : | 21.5 |
| Silt + Clay ( -No.200 ) | : | 66.9 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-8B |
| Project County | : | Cherokee | Sample Loc. | : Boring No. RW-142 |
| Project State | : | South Carolina | Sample Depth | : 23.7' to 25.0' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/06/17 |
| Soil Type | : | Gray & Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 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 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 79.9 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 43.3 |
| 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 | |

$D_{50}$ = 0.103 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 38.4 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 50 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 37 |
| | | | Plasticity Index | : 13 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : 0.07 |
| Gravel ( 3in. + No.10 ) | : | 2.9 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 17.2 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 36.6 | AASHTO Classification: M145 | : A-7-5 (3) |
| Silt + Clay ( -No.200 ) | : | 43.3 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.4 |
| Coarse Sand ( -No.4 + No.10 ) | : | 2.5 |
| Medium Sand ( -No.10 + No.40 ) | : | 17.2 |
| Fine Sand ( -No.40 + No.200 ) | : | 36.6 |
| Silt + Clay ( -No.200 ) | : | 43.3 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-7 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. RW-144 |
| Project State | : | South Carolina | Sample Depth | : 18.5' to 20.0' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/06/17 |
| Soil Type | : | Green & 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 | |
| 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 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 88.4 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 63.5 |
| 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 | |

$D_{50}$ = 0.018 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 36.8 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 31 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 24 |
| | | | Plasticity Index | : 7 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : 1.77 |
| Gravel ( 3in. + No.10 ) | : | 0.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 11.5 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 24.9 | AASHTO Classification: M145 | : A-4 (3) |
| Silt + Clay ( -No.200 ) | : | 63.5 | ASTM Classification: D2487 | : 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 ) | : | 0.1 |
| Medium Sand ( -No.10 + No.40 ) | : | 11.5 |
| Fine Sand ( -No.40 + No.200 ) | : | 24.9 |
| Silt + Clay ( -No.200 ) | : | 63.5 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Tan & White Silty Sand

Sample No. : SS-8
Sample Loc. : Boring No. RW-144
Sample Depth : 23.5' to 25.0'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 98.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 94.8 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 66.6 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 30.5 |
| 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 | |

$D_{50}$ = 0.191 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 33.1
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 5.2
Coarse Sand ( -No.10 + No.40 ) : 28.2
Fine Sand ( -No.40 + No.200 ) : 36.1
Silt + Clay ( -No.200 ) : 30.5

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 1.9
Coarse Sand ( -No.4 + No.10 ) : 3.3
Medium Sand ( -No.10 + No.40 ) : 28.2
Fine Sand ( -No.40 + No.200 ) : 36.1
Silt + Clay ( -No.200 ) : 30.5

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Soil No. 49

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Tan & White Silty Sand

Sample No. : SS-9
Sample Loc. : Boring No. RW-144
Sample Depth : 28.5' to 30.0'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 93.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 85.4 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 62.8 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 34.3 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.195 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 21.5
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 14.6
Coarse Sand ( -No.10 + No.40 ) : 22.6
Fine Sand ( -No.40 + No.200 ) : 28.5
Silt + Clay ( -No.200 ) : 34.3

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 6.1
Coarse Sand ( -No.4 + No.10 ) : 8.5
Medium Sand ( -No.10 + No.40 ) : 22.6
Fine Sand ( -No.40 + No.200 ) : 28.5
Silt + Clay ( -No.200 ) : 34.3

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-5 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. RW-145 |
| Project State | : | South Carolina | Sample Depth | : 10.0' to 11.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/07/17 |
| Soil Type | : | Yellow & Brown Silty Sand | | |

AASHTO T27 :

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

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 81.1 |
| 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 | 44.2 |
| 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 | |

$D_{50}$ = 0.099 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 14.6 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : NP |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : NP |
| | | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : | 0.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 18.8 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 36.9 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : | 44.2 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.0 |
| Coarse Sand ( -No.4 + No.10 ) | : | 0.1 |
| Medium Sand ( -No.10 + No.40 ) | : | 18.8 |
| Fine Sand ( -No.40 + No.200 ) | : | 36.9 |
| Silt + Clay ( -No.200 ) | : | 44.2 |

Approved By : Kevin E. Walker

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Yellow & Orange Sandy Silt

Sample No. : SS-3
Sample Loc. : Boring No. RW-146
Sample Depth : 6.0' to 7.5'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

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

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 83.5 |
| 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 | 54.6 |
| 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 | |

$D_{50}$ = 0.043 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 25.3
Liquid Limit (AASHTO T89) : 42
Plastic Limit (AASHTO T90) : 38
Plasticity Index : 4
Liquidity Index : -3.30
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-5 (2)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 0.4
Coarse Sand ( -No.10 + No.40 ) : 16.1
Fine Sand ( -No.40 + No.200 ) : 28.9
Silt + Clay ( -No.200 ) : 54.6

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 ) : 16.1
Fine Sand ( -No.40 + No.200 ) : 28.9
Silt + Clay ( -No.200 ) : 54.6

Approved By : Kevin E. Walker

Soil No. 52

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-3 |
| Project County | : Cherokee | Sample Loc. | : Boring No. RW-147 |
| Project State | : South Carolina | Sample Depth | : 6.0' to 7.5' |
| Laboratory No. | : 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : HDR | Date Reported | : 03/07/17 |
| Soil Type | : Orange & Gray 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 | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.3 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 96.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 95.4 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 82.7 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 56.1 |
| 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 | |

$D_{50}$ = 0.037 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 18.1 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 36 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 23 |
| | | Plasticity Index | : 13 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.35 |
| Gravel ( 3in. + No.10 ) | : 4.6 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 12.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 26.6 | AASHTO Classification: M145 | : A-6 (5) |
| Silt + Clay ( -No.200 ) | : 56.1 | ASTM Classification: D2487 | : CL |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 3.3 |
| Coarse Sand ( -No.4 + No.10 ) | : 1.3 |
| Medium Sand ( -No.10 + No.40 ) | : 12.7 |
| Fine Sand ( -No.40 + No.200 ) | : 26.6 |
| Silt + Clay ( -No.200 ) | : 56.1 |

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Soil No. 53

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Green & Brown Sandy Silt

Sample No. : SS-6
Sample Loc. : Boring No. RW-147
Sample Depth : 13.5' to 15.0'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 98.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 96.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 86.2 |
| 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 | 55.3 |
| 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 | |

$D_{50}$ = 0.04 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 41.2
Liquid Limit (AASHTO T89) : 40
Plastic Limit (AASHTO T90) : 28
Plasticity Index : 12
Liquidity Index : 1.12
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (5)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 3.5
Coarse Sand ( -No.10 + No.40 ) : 10.3
Fine Sand ( -No.40 + No.200 ) : 30.9
Silt + Clay ( -No.200 ) : 55.3

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 1.4
Coarse Sand ( -No.4 + No.10 ) : 2.1
Medium Sand ( -No.10 + No.40 ) : 10.3
Fine Sand ( -No.40 + No.200 ) : 30.9
Silt + Clay ( -No.200 ) : 55.3

Approved By : Kevin E. Walker

Soil No. 54

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown & White Silty Sand

Sample No. : SS-3
Sample Loc. : Boring No. RW-148
Sample Depth : 6.0' to 7.5'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 94.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 84.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 57.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 29.1 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.272 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 12.5
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 15.8
Coarse Sand ( -No.10 + No.40 ) : 27.0
Fine Sand ( -No.40 + No.200 ) : 28.1
Silt + Clay ( -No.200 ) : 29.1

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 6.0
Coarse Sand ( -No.4 + No.10 ) : 9.8
Medium Sand ( -No.10 + No.40 ) : 27.0
Fine Sand ( -No.40 + No.200 ) : 28.1
Silt + Clay ( -No.200 ) : 29.1

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Soil No. 55

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Red & Brown Clayey Sand

Sample No. : SS-2
Sample Loc. : Boring No. RW-149
Sample Depth : 4.0' to 5.5'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 97.8 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 85.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 70.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 44.6 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 26.1 |
| 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 | |

$D_{50}$ = 0.59 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 16.5
Liquid Limit (AASHTO T89) : 39
Plastic Limit (AASHTO T90) : 21
Plasticity Index : 18
Liquidity Index : -0.26
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 ) : 29.9
Coarse Sand ( -No.10 + No.40 ) : 25.5
Fine Sand ( -No.40 + No.200 ) : 18.5
Silt + Clay ( -No.200 ) : 26.1

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 14.9
Coarse Sand ( -No.4 + No.10 ) : 15.0
Medium Sand ( -No.10 + No.40 ) : 25.5
Fine Sand ( -No.40 + No.200 ) : 18.5
Silt + Clay ( -No.200 ) : 26.1

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Soil No. 56

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-1 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. C-137 |
| Project State | : | South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/07/17 |
| Soil Type | : | Red, Yellow & Brown Sandy Fat 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 | 98.9 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 84.5 |
| 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 | 54.4 |
| 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 | |

$D_{50}$ = 0.044 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 22.2 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 60 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 24 |
| | | | Plasticity Index | : 36 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -0.04 |
| Gravel ( 3in. + No.10 ) | : | 1.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 14.4 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 30.1 | AASHTO Classification: M145 | : A-7-6 (16) |
| Silt + Clay ( -No.200 ) | : | 54.4 | ASTM Classification: D2487 | : CH |

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 ) | : | 14.4 |
| Fine Sand ( -No.40 + No.200 ) | : | 30.1 |
| Silt + Clay ( -No.200 ) | : | 54.4 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-4 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. C-137 |
| Project State | : | South Carolina | Sample Depth | : 8.0' to 9.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/07/17 |
| Soil Type | : | Yellow & 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 | 99.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.9 |

AASHTO T88

| | | | | % 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 | 55.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.041 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 27.9 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 41 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 36 |
| | | | Plasticity Index | : 5 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -1.69 |
| Gravel ( 3in. + No.10 ) | : | 1.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 14.9 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 29.0 | AASHTO Classification: M145 | : A-5 (2) |
| Silt + Clay ( -No.200 ) | : | 55.0 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.2 |
| Coarse Sand ( -No.4 + No.10 ) | : | 0.9 |
| Medium Sand ( -No.10 + No.40 ) | : | 14.9 |
| Fine Sand ( -No.40 + No.200 ) | : | 29.0 |
| Silt + Clay ( -No.200 ) | : | 55.0 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Red & Brown Sandy Silt

Sample No. : SS-2
Sample Loc. : Boring No. R-99
Sample Depth : 4.0' to 5.5'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.1 |

AASHTO T88

| | | | | % 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 | 65.7 |
| 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 | |

$D_{50}$ = 0.015 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 28.5
Liquid Limit (AASHTO T89) : 47
Plastic Limit (AASHTO T90) : 29
Plasticity Index : 18
Liquidity Index : -0.01
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-7-6 (11)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 1.9
Coarse Sand ( -No.10 + No.40 ) : 10.9
Fine Sand ( -No.40 + No.200 ) : 21.5
Silt + Clay ( -No.200 ) : 65.7

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.9
Coarse Sand ( -No.4 + No.10 ) : 1.0
Medium Sand ( -No.10 + No.40 ) : 10.9
Fine Sand ( -No.40 + No.200 ) : 21.5
Silt + Clay ( -No.200 ) : 65.7

Approved By : Kevin E. Walker

Soil No. 62

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-4 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. R-99 |
| Project State | : | South Carolina | Sample Depth | : 8.0' to 9.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/07/17 |
| Soil Type | : | Brown 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 | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.1 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 97.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 95.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 80.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 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 | |

$D_{50}$ = 0.051 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 24.7 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 34 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 21 |
| | | | Plasticity Index | : 13 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : 0.28 |
| Gravel ( 3in. + No.10 ) | : | 4.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 15.0 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 27.1 | AASHTO Classification: M145 | : A-6 (4) |
| Silt + Clay ( -No.200 ) | : | 53.1 | ASTM Classification: D2487 | : CL |

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 ) | : | 1.8 |
| Medium Sand ( -No.10 + No.40 ) | : | 15.0 |
| Fine Sand ( -No.40 + No.200 ) | : | 27.1 |
| Silt + Clay ( -No.200 ) | : | 53.1 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-6 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. R-99 |
| Project State | : | South Carolina | Sample Depth | : 13.5' to 15.0' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/07/17 |
| Soil Type | : | Gray 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 | 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 | 96.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 91.4 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 66.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 33.4 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.181 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 16.8 |
| 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 | : -1.70 |
| Gravel ( 3in. + No.10 ) | : | 8.6 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 25.4 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 32.6 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : | 33.4 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 3.8 |
| Coarse Sand ( -No.4 + No.10 ) | : | 4.8 |
| Medium Sand ( -No.10 + No.40 ) | : | 25.4 |
| Fine Sand ( -No.40 + No.200 ) | : | 32.6 |
| Silt + Clay ( -No.200 ) | : | 33.4 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Gray & Brown Silty Sand

Sample No. : SS-8
Sample Loc. : Boring No. R-99
Sample Depth : 23.5' to 25.0'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 98.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 93.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 57.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 24.8 |
| 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 | |

$D_{50}$ = 0.289 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 32.5
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 6.9
Coarse Sand ( -No.10 + No.40 ) : 35.9
Fine Sand ( -No.40 + No.200 ) : 32.4
Silt + Clay ( -No.200 ) : 24.8

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 1.2
Coarse Sand ( -No.4 + No.10 ) : 5.7
Medium Sand ( -No.10 + No.40 ) : 35.9
Fine Sand ( -No.40 + No.200 ) : 32.4
Silt + Clay ( -No.200 ) : 24.8

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-2 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. R-104 |
| Project State | : | South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/07/17 |
| Soil Type | : | Red & Orange 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 | 100.0 |
| 3/4 | in. | 19 | mm | 89.9 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 83.7 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 79.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 73.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 60.4 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 41.8 |
| 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 | |

$D_{50}$ = 0.161 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 28.6 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 39 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 29 |
| | | | Plasticity Index | : 10 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -0.03 |
| Gravel ( 3in. + No.10 ) | : | 26.9 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 12.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 18.6 | AASHTO Classification: M145 | : A-4 (1) |
| Silt + Clay ( -No.200 ) | : | 41.8 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 10.1 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 10.9 |
| Coarse Sand ( -No.4 + No.10 ) | : | 5.9 |
| Medium Sand ( -No.10 + No.40 ) | : | 12.7 |
| Fine Sand ( -No.40 + No.200 ) | : | 18.6 |
| Silt + Clay ( -No.200 ) | : | 41.8 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-6 |
| Project County | : Cherokee | Sample Loc. | : Boring No. R-104 |
| Project State | : South Carolina | Sample Depth | : 13.5' to 15.5' |
| Laboratory No. | : 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : HDR | Date Reported | : 03/07/17 |
| Soil Type | : Red 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 | 96.1 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 89.5 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 85.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 73.9 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 48.5 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.083 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 14.7 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 46 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 26 |
| | | Plasticity Index | : 20 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.57 |
| Gravel ( 3in. + No.10 ) | : 14.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 11.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 25.4 | AASHTO Classification: M145 | : A-7-6 (6) |
| Silt + Clay ( -No.200 ) | : 48.5 | ASTM Classification: D2487 | : SC |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 10.5 |
| Coarse Sand ( -No.4 + No.10 ) | : 4.3 |
| Medium Sand ( -No.10 + No.40 ) | : 11.3 |
| Fine Sand ( -No.40 + No.200 ) | : 25.4 |
| Silt + Clay ( -No.200 ) | : 48.5 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Gray Silty, Clayey Sand

Sample No. : SS-8
Sample Loc. : Boring No. R-104
Sample Depth : 23.5' to 25.5'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 97.2 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 93.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 87.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 67.6 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 34.5 |
| 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 | |

$D_{50}$ = 0.169 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 16.0
Liquid Limit (AASHTO T89) : 19
Plastic Limit (AASHTO T90) : 14
Plasticity Index : 5
Liquidity Index : 0.31
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 ) : 12.9
Coarse Sand ( -No.10 + No.40 ) : 19.5
Fine Sand ( -No.40 + No.200 ) : 33.1
Silt + Clay ( -No.200 ) : 34.5

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 6.8
Coarse Sand ( -No.4 + No.10 ) : 6.1
Medium Sand ( -No.10 + No.40 ) : 19.5
Fine Sand ( -No.40 + No.200 ) : 33.1
Silt + Clay ( -No.200 ) : 34.5

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-9 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. R-104 |
| Project State | : | South Carolina | Sample Depth | : 28.5' to 30.0' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/07/17 |
| Soil Type | : | Orange & White 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 | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 99.1 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 97.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 95.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 84.5 |
| 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 | 59.4 |
| 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 | |

$D_{50}$ = 0.026 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 26.2 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 36 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 24 |
| | | | Plasticity Index | : 12 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : 0.19 |
| Gravel ( 3in. + No.10 ) | : | 4.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 10.8 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 25.1 | AASHTO Classification: M145 | : A-6 (5) |
| Silt + Clay ( -No.200 ) | : | 59.4 | ASTM Classification: D2487 | : CL |

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 ) | : | 1.9 |
| Medium Sand ( -No.10 + No.40 ) | : | 10.8 |
| Fine Sand ( -No.40 + No.200 ) | : | 25.1 |
| Silt + Clay ( -No.200 ) | : | 59.4 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : White Sandy Silt with Gravel

Sample No. : SS-10
Sample Loc. : Boring No. R-104
Sample Depth : 33.5' to 35.0'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 93.2 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 82.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 74.9 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 65.1 |
| 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 | 54.6 |
| 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 | |

$D_{50}$ = 0.043 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-4 (0)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 25.1
Coarse Sand ( -No.10 + No.40 ) : 9.8
Fine Sand ( -No.40 + No.200 ) : 10.5
Silt + Clay ( -No.200 ) : 54.6

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 17.1
Coarse Sand ( -No.4 + No.10 ) : 8.0
Medium Sand ( -No.10 + No.40 ) : 9.8
Fine Sand ( -No.40 + No.200 ) : 10.5
Silt + Clay ( -No.200 ) : 54.6

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-12 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. R-104 |
| Project State | : | South Carolina | Sample Depth | : 43.5' to 45.0' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/07/17 |
| Soil Type | : | White & 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 | 97.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 60.6 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 32.8 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.219 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 27.4 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 36 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 30 |
| | | | Plasticity Index | : 6 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -0.49 |
| Gravel ( 3in. + No.10 ) | : | 2.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 36.6 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 27.8 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : | 32.8 | 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 ) | : | 2.8 |
| Medium Sand ( -No.10 + No.40 ) | : | 36.6 |
| Fine Sand ( -No.40 + No.200 ) | : | 27.8 |
| Silt + Clay ( -No.200 ) | : | 32.8 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : White & Orange Silty Sand

Sample No. : SS-18
Sample Loc. : Boring No. R-104
Sample Depth : 73.5' to 75.0'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 96.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 86.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 62.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 38.7 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.174 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 26.3
Liquid Limit (AASHTO T89) : 33
Plastic Limit (AASHTO T90) : 26
Plasticity Index : 7
Liquidity Index : 0.07
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 13.7
Coarse Sand ( -No.10 + No.40 ) : 24.3
Fine Sand ( -No.40 + No.200 ) : 23.3
Silt + Clay ( -No.200 ) : 38.7

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 3.8
Coarse Sand ( -No.4 + No.10 ) : 9.9
Medium Sand ( -No.10 + No.40 ) : 24.3
Fine Sand ( -No.40 + No.200 ) : 23.3
Silt + Clay ( -No.200 ) : 38.7

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-1 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. R-91 |
| Project State | : | South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/07/17 |
| Soil Type | : | Green, Yellow, Orange & Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 97.3 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 91.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 79.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 62.7 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 43.9 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.132 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 19.4 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 34 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 27 |
| | | | Plasticity Index | : 7 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -1.13 |
| Gravel ( 3in. + No.10 ) | : | 21.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 16.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 18.8 | AASHTO Classification: M145 | : A-4 (1) |
| Silt + Clay ( -No.200 ) | : | 43.9 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 8.2 |
| Coarse Sand ( -No.4 + No.10 ) | : | 12.8 |
| Medium Sand ( -No.10 + No.40 ) | : | 16.3 |
| Fine Sand ( -No.40 + No.200 ) | : | 18.8 |
| Silt + Clay ( -No.200 ) | : | 43.9 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-5 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. R-91 |
| Project State | : | South Carolina | Sample Depth | : 10.0' to 11.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/07/17 |
| Soil Type | : | Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 95.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 87.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 70.4 |
| 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 | 42.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.122 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 17.4 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 31 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 25 |
| | | | Plasticity Index | : 6 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -1.28 |
| Gravel ( 3in. + No.10 ) | : | 12.9 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 16.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 28.4 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : | 42.0 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 4.9 |
| Coarse Sand ( -No.4 + No.10 ) | : | 8.0 |
| Medium Sand ( -No.10 + No.40 ) | : | 16.7 |
| Fine Sand ( -No.40 + No.200 ) | : | 28.4 |
| Silt + Clay ( -No.200 ) | : | 42.0 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-1 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. C-132 |
| Project State | : | South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/07/17 |
| Soil Type | : | Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.7 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 93.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 75.8 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 41.8 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 20.3 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.617 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 5.0 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : NP |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : NP |
| | | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : | 24.2 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 34.0 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 21.5 | AASHTO Classification: M145 | : A-1-b (0) |
| Silt + Clay ( -No.200 ) | : | 20.3 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 6.6 |
| Coarse Sand ( -No.4 + No.10 ) | : | 17.6 |
| Medium Sand ( -No.10 + No.40 ) | : | 34.0 |
| Fine Sand ( -No.40 + No.200 ) | : | 21.5 |
| Silt + Clay ( -No.200 ) | : | 20.3 |

Approved By : Kevin E. Walker

Soil No. 75

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-1 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. C-138 |
| Project State | : | South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/07/17 |
| Soil Type | : | Yellow & Brown Sandy Fat 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 | 99.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 96.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 77.6 |
| 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 | 57.9 |
| 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 | |

$D_{50}$ = 0.03 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 14.2 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 53 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 24 |
| | | | Plasticity Index | : 29 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -0.34 |
| Gravel ( 3in. + No.10 ) | : | 3.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 18.6 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 19.7 | AASHTO Classification: M145 | : A-7-6 (14) |
| Silt + Clay ( -No.200 ) | : | 57.9 | ASTM Classification: D2487 | : CH |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.9 |
| Coarse Sand ( -No.4 + No.10 ) | : | 2.9 |
| Medium Sand ( -No.10 + No.40 ) | : | 18.6 |
| Fine Sand ( -No.40 + No.200 ) | : | 19.7 |
| Silt + Clay ( -No.200 ) | : | 57.9 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-3 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. C-138 |
| Project State | : | South Carolina | Sample Depth | : 6.0' to 7.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/07/17 |
| Soil Type | : | White 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 | 97.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 90.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 68.8 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 53.6 |
| 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 | |

$D_{50}$ = 0.048 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 23.0 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 47 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 35 |
| | | | Plasticity Index | : 12 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -1.00 |
| Gravel ( 3in. + No.10 ) | : | 9.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 21.9 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 15.2 | AASHTO Classification: M145 | : A-7-5 (5) |
| Silt + Clay ( -No.200 ) | : | 53.6 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 2.4 |
| Coarse Sand ( -No.4 + No.10 ) | : | 6.9 |
| Medium Sand ( -No.10 + No.40 ) | : | 21.9 |
| Fine Sand ( -No.40 + No.200 ) | : | 15.2 |
| Silt + Clay ( -No.200 ) | : | 53.6 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Orange Silty Sand

Sample No. : SS-8
Sample Loc. : Boring No. C-138
Sample Depth : 23.5' to 25.0'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.5 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 97.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 83.7 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 46.7 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.088 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 42.0
Liquid Limit (AASHTO T89) : 49
Plastic Limit (AASHTO T90) : 44
Plasticity Index : 5
Liquidity Index : -0.30
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-5 (1)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 3.0
Coarse Sand ( -No.10 + No.40 ) : 13.3
Fine Sand ( -No.40 + No.200 ) : 37.0
Silt + Clay ( -No.200 ) : 46.7

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 ) : 2.5
Medium Sand ( -No.10 + No.40 ) : 13.3
Fine Sand ( -No.40 + No.200 ) : 37.0
Silt + Clay ( -No.200 ) : 46.7

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-9 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. C-138 |
| Project State | : | South Carolina | Sample Depth | : 28.5' to 30.0' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/07/17 |
| Soil Type | : | 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 | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 91.8 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 89.3 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 80.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 51.0 |
| 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 | |

$D_{50}$ = 0.399 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 20.7 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : NP |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : NP |
| | | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : | 20.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 29.0 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 27.4 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : | 23.6 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 10.7 |
| Coarse Sand ( -No.4 + No.10 ) | : | 9.3 |
| Medium Sand ( -No.10 + No.40 ) | : | 29.0 |
| Fine Sand ( -No.40 + No.200 ) | : | 27.4 |
| Silt + Clay ( -No.200 ) | : | 23.6 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Yellow & Orange Sandy Silt

Sample No. : SS-2
Sample Loc. : Boring No. RW-143
Sample Depth : 4.0' to 5.5'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.4 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 85.4 |
| 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 | 58.9 |
| 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 | |

$D_{50}$ = 0.028 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 22.1
Liquid Limit (AASHTO T89) : 40
Plastic Limit (AASHTO T90) : 29
Plasticity Index : 11
Liquidity Index : -0.60
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (5)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 1.6
Coarse Sand ( -No.10 + No.40 ) : 13.0
Fine Sand ( -No.40 + No.200 ) : 26.5
Silt + Clay ( -No.200 ) : 58.9

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.6
Coarse Sand ( -No.4 + No.10 ) : 1.0
Medium Sand ( -No.10 + No.40 ) : 13.0
Fine Sand ( -No.40 + No.200 ) : 26.5
Silt + Clay ( -No.200 ) : 58.9

Approved By : Kevin E. Walker

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Green & Gray Sandy Lean Clay

Sample No. : SS-5
Sample Loc. : Boring No. RW-143
Sample Depth : 10.0' to 11.5'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 97.9 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 87.4 |
| 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 | 61.8 |
| 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 | |

$D_{50}$ = 0.021 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 20.5
Liquid Limit (AASHTO T89) : 37
Plastic Limit (AASHTO T90) : 23
Plasticity Index : 14
Liquidity Index : -0.15
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (7)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 2.1
Coarse Sand ( -No.10 + No.40 ) : 10.5
Fine Sand ( -No.40 + No.200 ) : 25.6
Silt + Clay ( -No.200 ) : 61.8

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.7
Coarse Sand ( -No.4 + No.10 ) : 1.4
Medium Sand ( -No.10 + No.40 ) : 10.5
Fine Sand ( -No.40 + No.200 ) : 25.6
Silt + Clay ( -No.200 ) : 61.8

Approved By : Kevin E. Walker

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Green & Brown Silty Sand

Sample No. : SS-8
Sample Loc. : Boring No. RW-143
Sample Depth : 23.5' to 25.0'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 95.4 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 91.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 85.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 57.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 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 | |

$D_{50}$ = 0.276 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 31.8
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 14.9
Coarse Sand ( -No.10 + No.40 ) : 27.9
Fine Sand ( -No.40 + No.200 ) : 29.0
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 ) : 8.8
Coarse Sand ( -No.4 + No.10 ) : 6.1
Medium Sand ( -No.10 + No.40 ) : 27.9
Fine Sand ( -No.40 + No.200 ) : 29.0
Silt + Clay ( -No.200 ) : 28.2

Approved By : Kevin E. Walker

Soil No. 82

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Red & Brown Sandy Silt

Sample No. : SS-4
Sample Loc. : Boring No. RW-154
Sample Depth : 8.0' to 9.5'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 96.5 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 89.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 85.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 80.6 |
| 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 | 63.7 |
| 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 | |

$D_{50}$ = 0.018 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 15.5
Liquid Limit (AASHTO T89) : 41
Plastic Limit (AASHTO T90) : 33
Plasticity Index : 8
Liquidity Index : -2.18
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-5 (5)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 14.5
Coarse Sand ( -No.10 + No.40 ) : 4.9
Fine Sand ( -No.40 + No.200 ) : 16.9
Silt + Clay ( -No.200 ) : 63.7

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 11.0
Coarse Sand ( -No.4 + No.10 ) : 3.5
Medium Sand ( -No.10 + No.40 ) : 4.9
Fine Sand ( -No.40 + No.200 ) : 16.9
Silt + Clay ( -No.200 ) : 63.7

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : White Silty Sand with Gravel

Sample No. : SS-6
Sample Loc. : Boring No. RW-154
Sample Depth : 13.5' to 15.0'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 93.7 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 76.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 56.4 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 36.4 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 28.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 1.218 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 13.9
Liquid Limit (AASHTO T89) : 33
Plastic Limit (AASHTO T90) : 26
Plasticity Index : 7
Liquidity Index : -1.71
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 ) : 43.6
Coarse Sand ( -No.10 + No.40 ) : 20.0
Fine Sand ( -No.40 + No.200 ) : 8.4
Silt + Clay ( -No.200 ) : 28.0

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 24.0
Coarse Sand ( -No.4 + No.10 ) : 19.6
Medium Sand ( -No.10 + No.40 ) : 20.0
Fine Sand ( -No.40 + No.200 ) : 8.4
Silt + Clay ( -No.200 ) : 28.0

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Soil No. 84

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Red & Orange Sandy Silt

Sample No. : SS-8
Sample Loc. : Boring No. RW-154
Sample Depth : 23.5' to 25.0'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 95.8 |

AASHTO T88

| | | | | % 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 | 66.2 |
| 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 | |

$D_{50}$ = 0.015 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 25.8
Liquid Limit (AASHTO T89) : 45
Plastic Limit (AASHTO T90) : 37
Plasticity Index : 8
Liquidity Index : -1.39
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-5 (6)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 4.2
Coarse Sand ( -No.10 + No.40 ) : 7.8
Fine Sand ( -No.40 + No.200 ) : 21.8
Silt + Clay ( -No.200 ) : 66.2

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.8
Coarse Sand ( -No.4 + No.10 ) : 3.4
Medium Sand ( -No.10 + No.40 ) : 7.8
Fine Sand ( -No.40 + No.200 ) : 21.8
Silt + Clay ( -No.200 ) : 66.2

Approved By : Kevin E. Walker

Soil No. 85

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : White & Brown Silty Sand with Gravel

Sample No. : SS-9
Sample Loc. : Boring No. RW-154
Sample Depth : 28.5' to 30.0'
Date Tested : 02/21/17
Date Reported : 03/07/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 97.1 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 83.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 65.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 40.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 27.2 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.784 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 15.0
Liquid Limit (AASHTO T89) : 33
Plastic Limit (AASHTO T90) : 27
Plasticity Index : 6
Liquidity Index : -1.93
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 ) : 34.7
Coarse Sand ( -No.10 + No.40 ) : 25.3
Fine Sand ( -No.40 + No.200 ) : 12.8
Silt + Clay ( -No.200 ) : 27.2

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 16.1
Coarse Sand ( -No.4 + No.10 ) : 18.6
Medium Sand ( -No.10 + No.40 ) : 25.3
Fine Sand ( -No.40 + No.200 ) : 12.8
Silt + Clay ( -No.200 ) : 27.2

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Soil No. 86

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : ST-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-118 |
| Project State | : South Carolina | Sample Depth | : 6.8' to 7.3' |
| Laboratory No. | : 10023919 | Date Tested | : 02/14/17 |
| Submitted By | : HDR | Date Reported | : 02/17/17 |
| Soil Type | : Brown, White & 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 | 99.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 97.0 |

AASHTO T88

| | | | | % 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 | 24.2 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.283 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 21.8 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 34 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 34 |
| | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 3.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 39.1 | Sp. Gr. (AASHTO T100) | : 2.619 |
| Fine Sand ( -No.40 + No.200 ) | : 33.7 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 24.2 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.2 |
| Coarse Sand ( -No.4 + No.10 ) | : 2.8 |
| Medium Sand ( -No.10 + No.40 ) | : 39.1 |
| Fine Sand ( -No.40 + No.200 ) | : 33.7 |
| Silt + Clay ( -No.200 ) | : 24.2 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Orange-Brown Silty Sand

Sample No. : SS-1
Sample Loc. : Boring No. SB-41
Sample Depth : 2.0' to 3.5'
Date Tested : 03/09/17
Date Reported : 03/14/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 98.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 95.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 72.5 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 42.8 |
| 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 | |

$D_{50}$ = 0.114 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 24.7
Liquid Limit (AASHTO T89) : 36
Plastic Limit (AASHTO T90) : 31
Plasticity Index : 5
Liquidity Index : -1.27
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 4.9
Coarse Sand ( -No.10 + No.40 ) : 22.6
Fine Sand ( -No.40 + No.200 ) : 29.7
Silt + Clay ( -No.200 ) : 42.8

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 1.3
Coarse Sand ( -No.4 + No.10 ) : 3.6
Medium Sand ( -No.10 + No.40 ) : 22.6
Fine Sand ( -No.40 + No.200 ) : 29.7
Silt + Clay ( -No.200 ) : 42.8

Approved By : Kevin E. Walker

Soil No. 89

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : ST-1 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. BR-129 |
| Project State | : | South Carolina | Sample Depth | : 30.5' to 30.9' |
| Laboratory No. | : | 10023919 | Date Tested | : 02/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/09/17 |
| Soil Type | : | Brown, Red & Purple 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 | |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 100.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 99.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 95.9 |
| 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 | 66.9 |
| 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 | |

$D_{50}$ = 0.014 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 19.3 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 44 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 36 |
| | | | Plasticity Index | : 8 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -2.04 |
| Gravel ( 3in. + No.10 ) | : | 0.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 3.4 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 29.0 | AASHTO Classification: M145 | : A-5 (6) |
| Silt + Clay ( -No.200 ) | : | 66.9 | ASTM Classification: D2487 | : 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 ) | : | 0.7 |
| Medium Sand ( -No.10 + No.40 ) | : | 3.4 |
| Fine Sand ( -No.40 + No.200 ) | : | 29.0 |
| Silt + Clay ( -No.200 ) | : | 66.9 |

Approved By : Kevin E. Walker

Soil No. 89A

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-42 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/14/17 |
| Soil Type | : Red-Orange Clayey Sand with Gravel | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 93.3 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 84.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 76.4 |
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 62.7 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 40.7 |
| 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 | |

$D_{50}$ = 0.156 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 16.1 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 31 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 21 |
| | | Plasticity Index | : 10 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.52 |
| Gravel ( 3in. + No.10 ) | : 23.6 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 13.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 22.0 | AASHTO Classification: M145 | : A-4 (1) |
| Silt + Clay ( -No.200 ) | : 40.7 | ASTM Classification: D2487 | : SC |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 15.4 |
| Coarse Sand ( -No.4 + No.10 ) | : 8.2 |
| Medium Sand ( -No.10 + No.40 ) | : 13.7 |
| Fine Sand ( -No.40 + No.200 ) | : 22.0 |
| Silt + Clay ( -No.200 ) | : 40.7 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Yellow & Brown Silty Sand

Sample No. : ST-1
Sample Loc. : Boring No. BR-127
Sample Depth : 25.5' to 25.8'
Date Tested : 02/21/17
Date Reported : 03/09/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 85.8 |
| 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 | 43.6 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.098 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 24.8
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 0.3
Coarse Sand ( -No.10 + No.40 ) : 13.9
Fine Sand ( -No.40 + No.200 ) : 42.2
Silt + Clay ( -No.200 ) : 43.6

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 ) : 13.9
Fine Sand ( -No.40 + No.200 ) : 42.2
Silt + Clay ( -No.200 ) : 43.6

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Soil No. 90A

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-42 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/14/17 |
| Soil Type | : Red-Orange Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 94.0 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 71.6 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 42.9 |
| 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 | |

$D_{50}$ = 0.115 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 20.8 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 51 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 31 |
| | | Plasticity Index | : 20 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.53 |
| Gravel ( 3in. + No.10 ) | : 6.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 22.4 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 28.7 | AASHTO Classification: M145 | : A-7-5 (5) |
| Silt + Clay ( -No.200 ) | : 42.9 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 2.0 |
| Coarse Sand ( -No.4 + No.10 ) | : 4.0 |
| Medium Sand ( -No.10 + No.40 ) | : 22.4 |
| Fine Sand ( -No.40 + No.200 ) | : 28.7 |
| Silt + Clay ( -No.200 ) | : 42.9 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-44 |
| Project State | : South Carolina | Sample Depth | : 3.8' to 5.3' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/14/17 |
| Soil Type | : White, Orange & Brown Well-Graded Sand with Silt and Gravel | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | 100.0 |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | 94.2 |
| 3/4 | in. | 19 | mm | 91.8 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 79.5 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 67.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 50.1 |
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 25.8 |
| 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 | 11.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 1.987 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 8.8 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : NP |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : NP |
| | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 49.9 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 24.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 14.8 | AASHTO Classification: M145 | : A-1-b (0) |
| Silt + Clay ( -No.200 ) | : 11.0 | ASTM Classification: D2487 | : SW-SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 8.2 |
| Fine Gravel ( -3/4in. + No.4 ) | : 24.0 |
| Coarse Sand ( -No.4 + No.10 ) | : 17.7 |
| Medium Sand ( -No.10 + No.40 ) | : 24.3 |
| Fine Sand ( -No.40 + No.200 ) | : 14.8 |
| Silt + Clay ( -No.200 ) | : 11.0 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-45 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/14/17 |
| Soil Type | : Orange-Brown & Orange 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 | 99.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 97.6 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 87.5 |
| 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 | 68.2 |
| 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 | |

$D_{50}$ = 0.013 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 29.0 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 47 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 39 |
| | | Plasticity Index | : 8 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.21 |
| Gravel ( 3in. + No.10 ) | : 2.4 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 10.1 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 19.3 | AASHTO Classification: M145 | : A-5 (7) |
| Silt + Clay ( -No.200 ) | : 68.2 | 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 ) | : 1.8 |
| Medium Sand ( -No.10 + No.40 ) | : 10.1 |
| Fine Sand ( -No.40 + No.200 ) | : 19.3 |
| Silt + Clay ( -No.200 ) | : 68.2 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-2 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. NB-46 |
| Project State | : | South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : | HDR | Date Reported | : 03/14/17 |
| Soil Type | : | Orange-Brown & Yellow-Brown Sandy Elastic 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 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 96.5 |
| 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 | 62.9 |
| 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 | |

$D_{50}$ = 0.019 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 61.1 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 66 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 52 |
| | | | Plasticity Index | : 14 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : 0.68 |
| Gravel ( 3in. + No.10 ) | : | 0.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 3.4 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 33.6 | AASHTO Classification: M145 | : A-7-5 (11) |
| Silt + Clay ( -No.200 ) | : | 62.9 | ASTM Classification: D2487 | : MH |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.0 |
| Coarse Sand ( -No.4 + No.10 ) | : | 0.1 |
| Medium Sand ( -No.10 + No.40 ) | : | 3.4 |
| Fine Sand ( -No.40 + No.200 ) | : | 33.6 |
| Silt + Clay ( -No.200 ) | : | 62.9 |

Approved By : Kevin E. Walker

Soil No. 94

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown Silty Sand

Sample No. : SS-2
Sample Loc. : Boring No. NB-48
Sample Depth : 4.0' to 5.5'
Date Tested : 03/09/17
Date Reported : 03/14/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 66.5 |
| 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 | 42.1 |
| 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 | |

$D_{50}$ = 0.132 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 24.4
Liquid Limit (AASHTO T89) : 49
Plastic Limit (AASHTO T90) : 40
Plasticity Index : 9
Liquidity Index : -1.77
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-5 (1)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 0.9
Coarse Sand ( -No.10 + No.40 ) : 32.6
Fine Sand ( -No.40 + No.200 ) : 24.4
Silt + Clay ( -No.200 ) : 42.1

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.0
Coarse Sand ( -No.4 + No.10 ) : 0.9
Medium Sand ( -No.10 + No.40 ) : 32.6
Fine Sand ( -No.40 + No.200 ) : 24.4
Silt + Clay ( -No.200 ) : 42.1

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Soil No. 95

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-50 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/14/17 |
| Soil Type | : Brown & 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 | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 96.3 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 93.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 89.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 78.8 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 49.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.079 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 21.8 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 38 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 23 |
| | | Plasticity Index | : 15 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.11 |
| Gravel ( 3in. + No.10 ) | : 10.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 10.9 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 29.8 | AASHTO Classification: M145 | : A-6 (4) |
| Silt + Clay ( -No.200 ) | : 49.0 | ASTM Classification: D2487 | : SC |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 6.8 |
| Coarse Sand ( -No.4 + No.10 ) | : 3.5 |
| Medium Sand ( -No.10 + No.40 ) | : 10.9 |
| Fine Sand ( -No.40 + No.200 ) | : 29.8 |
| Silt + Clay ( -No.200 ) | : 49.0 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-50 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/14/17 |
| Soil Type | : Brown & Red-Orange 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 | 99.5 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 90.5 |
| 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 | 61.1 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.023 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 24.0 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 40 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 27 |
| | | Plasticity Index | : 13 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.26 |
| Gravel ( 3in. + No.10 ) | : 2.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 7.5 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 29.4 | AASHTO Classification: M145 | : A-6 (7) |
| Silt + Clay ( -No.200 ) | : 61.1 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.5 |
| Coarse Sand ( -No.4 + No.10 ) | : 1.5 |
| Medium Sand ( -No.10 + No.40 ) | : 7.5 |
| Fine Sand ( -No.40 + No.200 ) | : 29.4 |
| Silt + Clay ( -No.200 ) | : 61.1 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-51 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/14/17 |
| Soil Type | : Brown,Red-Orange & 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 | 99.3 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 93.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 64.9 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 35.2 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.178 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 20.3 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 42 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 35 |
| | | Plasticity Index | : 7 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -2.06 |
| Gravel ( 3in. + No.10 ) | : 6.9 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 28.2 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 29.7 | AASHTO Classification: M145 | : A-5 (0) |
| Silt + Clay ( -No.200 ) | : 35.2 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.7 |
| Coarse Sand ( -No.4 + No.10 ) | : 6.2 |
| Medium Sand ( -No.10 + No.40 ) | : 28.2 |
| Fine Sand ( -No.40 + No.200 ) | : 29.7 |
| Silt + Clay ( -No.200 ) | : 35.2 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-51 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/14/17 |
| Soil Type | : Red-Orange & Orange-Brown Sandy Elastic Silt | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 93.8 |
| 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 | 68.5 |
| 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 | |

$D_{50}$ = 0.013 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 45.6 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 51 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 39 |
| | | Plasticity Index | : 12 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : 0.59 |
| Gravel ( 3in. + No.10 ) | : 0.6 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 5.6 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 25.3 | AASHTO Classification: M145 | : A-7-5 (10) |
| Silt + Clay ( -No.200 ) | : 68.5 | ASTM Classification: D2487 | : MH |

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 ) | : 5.6 |
| Fine Sand ( -No.40 + No.200 ) | : 25.3 |
| Silt + Clay ( -No.200 ) | : 68.5 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | I-85 | | |
| Project No. | 10023919 | Sample No. | SS-2 |
| Project County | Cherokee | Sample Loc. | Boring No. SB-53 |
| Project State | South Carolina | Sample Depth | 4.0' to 5.5' |
| Laboratory No. | 10023919 | Date Tested | 03/09/17 |
| Submitted By | HDR | Date Reported | 03/14/17 |
| Soil Type | Orange-Brown Sandy Elastic 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 | 95.5 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 93.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 90.9 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 83.3 |
| 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 | 64.4 |
| 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 | |

$D_{50}$ = 0.017 mm

| | | | |
|---|---|---|---|
| CBR | NA | Natural Moisture ( % ) (AASHTO T265 ) | 26.8 |
| Dry Dens. | NA | Liquid Limit (AASHTO T89) | 51 |
| Opt. Moist. | NA | Plastic Limit (AASHTO T90) | 37 |
| | | Plasticity Index | 14 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | -0.72 |
| Gravel ( 3in. + No.10 ) | 9.1 | Activity | NA |
| Coarse Sand ( -No.10 + No.40 ) | 7.6 | Sp. Gr. (AASHTO T100) | NA |
| Fine Sand ( -No.40 + No.200 ) | 18.9 | AASHTO Classification: M145 | A-7-5 (10) |
| Silt + Clay ( -No.200 ) | 64.4 | ASTM Classification: D2487 | MH |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | 6.1 |
| Coarse Sand ( -No.4 + No.10 ) | 3.0 |
| Medium Sand ( -No.10 + No.40 ) | 7.6 |
| Fine Sand ( -No.40 + No.200 ) | 18.9 |
| Silt + Clay ( -No.200 ) | 64.4 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-54 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/14/17 |
| Soil Type | : Brown & Brown-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 | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 97.4 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 85.3 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 69.3 |

AASHTO T88

| | | | | % 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 | 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 | |

$D_{50}$ = 0.536 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 18.6 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 41 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 31 |
| | | Plasticity Index | : 10 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.26 |
| Gravel ( 3in. + No.10 ) | : 30.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 22.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 21.0 | AASHTO Classification: M145 | : A-2-5 (0) |
| Silt + Clay ( -No.200 ) | : 25.6 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 14.7 |
| Coarse Sand ( -No.4 + No.10 ) | : 16.0 |
| Medium Sand ( -No.10 + No.40 ) | : 22.7 |
| Fine Sand ( -No.40 + No.200 ) | : 25.6 |
| Silt + Clay ( -No.200 ) | : 25.6 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-54 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/16/17 |
| Soil Type | : Orange-Brown & Brown & Orange Sandy Elastic 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 | 96.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 90.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 79.3 |
| 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 | 54.4 |
| 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 | |

$D_{50}$ = 0.044 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 27.9 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 50 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 39 |
| | | Plasticity Index | : 11 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.03 |
| Gravel ( 3in. + No.10 ) | : 9.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 10.9 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 24.9 | AASHTO Classification: M145 | : A-7-5 (5) |
| Silt + Clay ( -No.200 ) | : 54.4 | ASTM Classification: D2487 | : MH |

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 ) | : 6.6 |
| Medium Sand ( -No.10 + No.40 ) | : 10.9 |
| Fine Sand ( -No.40 + No.200 ) | : 24.9 |
| Silt + Clay ( -No.200 ) | : 54.4 |

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Soil No. 102

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-55 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/14/17 |
| Soil Type | : Red-Orange & Brown-Red Sandy Elastic 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 | 98.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 92.1 |
| 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 | 67.7 |
| 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 | |

$D_{50}$ = 0.013 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 27.5 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 53 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 38 |
| | | Plasticity Index | : 15 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.67 |
| Gravel ( 3in. + No.10 ) | : 1.9 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 6.0 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 24.4 | AASHTO Classification: M145 | : A-7-5 (11) |
| Silt + Clay ( -No.200 ) | : 67.7 | ASTM Classification: D2487 | : MH |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.7 |
| Coarse Sand ( -No.4 + No.10 ) | : 1.2 |
| Medium Sand ( -No.10 + No.40 ) | : 6.0 |
| Fine Sand ( -No.40 + No.200 ) | : 24.4 |
| Silt + Clay ( -No.200 ) | : 67.7 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-2 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. NB-56 |
| Project State | : | South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : | HDR | Date Reported | : 03/14/17 |
| Soil Type | : | Red-Orange & 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 | 98.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 94.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 83.5 |
| 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 | 63.2 |
| 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 | |

$D_{50}$ = 0.019 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 22.0 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 42 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 31 |
| | | | Plasticity Index | : 11 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -0.79 |
| Gravel ( 3in. + No.10 ) | : | 5.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 11.2 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 20.3 | AASHTO Classification: M145 | : A-7-5 (6) |
| Silt + Clay ( -No.200 ) | : | 63.2 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 1.3 |
| Coarse Sand ( -No.4 + No.10 ) | : | 4.0 |
| Medium Sand ( -No.10 + No.40 ) | : | 11.2 |
| Fine Sand ( -No.40 + No.200 ) | : | 20.3 |
| Silt + Clay ( -No.200 ) | : | 63.2 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-57 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/14/17 |
| Soil Type | : Orange,Brown,Red-Orange & White Silty Sand with Gravel | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | 100.0 |
| 3/4 | in. | 19 | mm | 91.8 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 85.7 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 82.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 77.4 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 64.1 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 44.1 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.125 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 28.7 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 40 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 31 |
| | | Plasticity Index | : 9 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.30 |
| Gravel ( 3in. + No.10 ) | : 22.6 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 13.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 20.0 | AASHTO Classification: M145 | : A-4 (2) |
| Silt + Clay ( -No.200 ) | : 44.1 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 8.2 |
| Fine Gravel ( -3/4in. + No.4 ) | : 9.1 |
| Coarse Sand ( -No.4 + No.10 ) | : 5.3 |
| Medium Sand ( -No.10 + No.40 ) | : 13.3 |
| Fine Sand ( -No.40 + No.200 ) | : 20.0 |
| Silt + Clay ( -No.200 ) | : 44.1 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-57 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/14/17 |
| Soil Type | : Orange & Yellow-Orange 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 | 99.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 97.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 95.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 81.2 |
| 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 | 56.8 |
| 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 | |

$D_{50}$ = 0.034 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 27.3 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 40 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 35 |
| | | Plasticity Index | : 5 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.49 |
| Gravel ( 3in. + No.10 ) | : 5.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 13.8 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 24.4 | AASHTO Classification: M145 | : A-4 (2) |
| Silt + Clay ( -No.200 ) | : 56.8 | ASTM Classification: D2487 | : ML |

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 ) | : 2.7 |
| Medium Sand ( -No.10 + No.40 ) | : 13.8 |
| Fine Sand ( -No.40 + No.200 ) | : 24.4 |
| Silt + Clay ( -No.200 ) | : 56.8 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown,Brown-Orange & Orange Silty Sand

Sample No. : SS-1
Sample Loc. : Boring No. NB-58
Sample Depth : 2.0' to 3.5'
Date Tested : 03/09/17
Date Reported : 03/14/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 95.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 79.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 44.5 |
| 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 | |

$D_{50}$ = 0.099 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 27.1
Liquid Limit (AASHTO T89) : 34
Plastic Limit (AASHTO T90) : 29
Plasticity Index : 5
Liquidity Index : -0.39
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 4.3
Coarse Sand ( -No.10 + No.40 ) : 16.7
Fine Sand ( -No.40 + No.200 ) : 34.5
Silt + Clay ( -No.200 ) : 44.5

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.9
Coarse Sand ( -No.4 + No.10 ) : 3.4
Medium Sand ( -No.10 + No.40 ) : 16.7
Fine Sand ( -No.40 + No.200 ) : 34.5
Silt + Clay ( -No.200 ) : 44.5

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-59 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/14/17 |
| Soil Type | : Brown,Brown-Orange & Orange Sandy Lean Clay | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 98.4 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 88.7 |
| 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 | 65.7 |
| 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 | |

$D_{50}$ = 0.015 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 22.3 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 37 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 24 |
| | | Plasticity Index | : 13 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.11 |
| Gravel ( 3in. + No.10 ) | : 1.6 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 9.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 23.0 | AASHTO Classification: M145 | : A-6 (7) |
| Silt + Clay ( -No.200 ) | : 65.7 | ASTM Classification: D2487 | : CL |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.5 |
| Coarse Sand ( -No.4 + No.10 ) | : 1.1 |
| Medium Sand ( -No.10 + No.40 ) | : 9.7 |
| Fine Sand ( -No.40 + No.200 ) | : 23.0 |
| Silt + Clay ( -No.200 ) | : 65.7 |

Approved By : Kevin E. Walker

Soil No. 108

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-1 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. NB-60 |
| Project State | : | South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : | HDR | Date Reported | : 03/16/17 |
| Soil Type | : | Brown & 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 | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.3 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 97.3 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 94.6 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 78.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 49.2 |
| 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 | |

$D_{50}$ = 0.079 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 20.3 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 36 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 29 |
| | | | Plasticity Index | : 7 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -1.18 |
| Gravel ( 3in. + No.10 ) | : | 5.4 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 16.6 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 28.8 | AASHTO Classification: M145 | : A-4 (2) |
| Silt + Clay ( -No.200 ) | : | 49.2 | ASTM Classification: D2487 | : SM |

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 ) | : | 2.7 |
| Medium Sand ( -No.10 + No.40 ) | : | 16.6 |
| Fine Sand ( -No.40 + No.200 ) | : | 28.8 |
| Silt + Clay ( -No.200 ) | : | 49.2 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-62 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/14/17 |
| Soil Type | : Red-Orange, Orange-Brown & Brown Sandy Silt | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 97.2 |

| | | | | % 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 | 58.6 |
| 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 | |

$D_{50}$ = 0.028 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 16.8 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 48 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 33 |
| | | Plasticity Index | : 15 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.10 |
| Gravel ( 3in. + No.10 ) | : 2.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 10.1 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 28.5 | AASHTO Classification: M145 | : A-7-5 (8) |
| Silt + Clay ( -No.200 ) | : 58.6 | ASTM Classification: D2487 | : ML |

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 ) | : 2.4 |
| Medium Sand ( -No.10 + No.40 ) | : 10.1 |
| Fine Sand ( -No.40 + No.200 ) | : 28.5 |
| Silt + Clay ( -No.200 ) | : 58.6 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-63 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 02/09/17 |
| Submitted By | : HDR | Date Reported | : 03/14/17 |
| Soil Type | : Brown-Orange & Orange-Brown Sandy Lean Clay | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 97.4 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 80.8 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 56.1 |
| 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 | |

$D_{50}$ = 0.037 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 21.2 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 41 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 24 |
| | | Plasticity Index | : 17 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.16 |
| Gravel ( 3in. + No.10 ) | : 2.6 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 16.6 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 24.7 | AASHTO Classification: M145 | : A-7-6 (7) |
| Silt + Clay ( -No.200 ) | : 56.1 | ASTM Classification: D2487 | : CL |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.4 |
| Coarse Sand ( -No.4 + No.10 ) | : 2.2 |
| Medium Sand ( -No.10 + No.40 ) | : 16.6 |
| Fine Sand ( -No.40 + No.200 ) | : 24.7 |
| Silt + Clay ( -No.200 ) | : 56.1 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-63 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/16/17 |
| Soil Type | : Brown-Orange & Orange-Brown Sandy Lean Clay | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 99.6 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 92.7 |
| 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 | 60.5 |
| 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 | |

$D_{50}$ = 0.024 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 19.9 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 29 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 14 |
| | | Plasticity Index | : 15 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : 0.40 |
| Gravel ( 3in. + No.10 ) | : 0.4 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 6.9 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 32.2 | AASHTO Classification: M145 | : A-6 (6) |
| Silt + Clay ( -No.200 ) | : 60.5 | ASTM Classification: D2487 | : CL |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.1 |
| Coarse Sand ( -No.4 + No.10 ) | : 0.3 |
| Medium Sand ( -No.10 + No.40 ) | : 6.9 |
| Fine Sand ( -No.40 + No.200 ) | : 32.2 |
| Silt + Clay ( -No.200 ) | : 60.5 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-2 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. NB-64 |
| Project State | : | South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : | HDR | Date Reported | : 03/14/17 |
| Soil Type | : | Brown-Orange, Brown & Red-Orange 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 | |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 100.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 99.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 81.4 |
| 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 | 53.2 |
| 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 | |

$D_{50}$ = 0.05 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 28.6 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 42 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 36 |
| | | | Plasticity Index | : 6 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -1.25 |
| Gravel ( 3in. + No.10 ) | : | 0.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 18.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 28.2 | AASHTO Classification: M145 | : A-5 (2) |
| Silt + Clay ( -No.200 ) | : | 53.2 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.0 |
| Coarse Sand ( -No.4 + No.10 ) | : | 0.3 |
| Medium Sand ( -No.10 + No.40 ) | : | 18.3 |
| Fine Sand ( -No.40 + No.200 ) | : | 28.2 |
| Silt + Clay ( -No.200 ) | : | 53.2 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Light Brown, Orange & White Sandy Silt

Sample No. : SS-1
Sample Loc. : Boring No. SB-65
Sample Depth : 2.0' to 3.5'
Date Tested : 03/09/17
Date Reported : 03/16/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 98.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 84.8 |
| 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 | 59.4 |
| 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 | |

$D_{50}$ = 0.026 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 21.6
Liquid Limit (AASHTO T89) : 39
Plastic Limit (AASHTO T90) : 26
Plasticity Index : 13
Liquidity Index : -0.35
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (6)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 2.0
Coarse Sand ( -No.10 + No.40 ) : 13.2
Fine Sand ( -No.40 + No.200 ) : 25.4
Silt + Clay ( -No.200 ) : 59.4

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 1.1
Coarse Sand ( -No.4 + No.10 ) : 0.9
Medium Sand ( -No.10 + No.40 ) : 13.2
Fine Sand ( -No.40 + No.200 ) : 25.4
Silt + Clay ( -No.200 ) : 59.4

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown-Orange & Brown Sandy Silt

Sample No. : SS-1
Sample Loc. : Boring No. NB-70
Sample Depth : 2.0' to 3.5'
Date Tested : 03/09/17
Date Reported : 03/16/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 97.4 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 95.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 92.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 77.8 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 51.1 |
| 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 | |

$D_{50}$ = 0.065 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 13.3
Liquid Limit (AASHTO T89) : 37
Plastic Limit (AASHTO T90) : 29
Plasticity Index : 8
Liquidity Index : -1.99
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (2)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 7.8
Coarse Sand ( -No.10 + No.40 ) : 14.4
Fine Sand ( -No.40 + No.200 ) : 26.7
Silt + Clay ( -No.200 ) : 51.1

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 ) : 2.9
Medium Sand ( -No.10 + No.40 ) : 14.4
Fine Sand ( -No.40 + No.200 ) : 26.7
Silt + Clay ( -No.200 ) : 51.1

Approved By : Kevin E. Walker

Soil No. 115

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-66 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/16/17 |
| Soil Type | : Brown-Orange, Brown & Light Brown Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 99.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 97.0 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 79.7 |
| 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 | 48.2 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.083 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 29.2 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 33 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 24 |
| | | Plasticity Index | : 9 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : 0.61 |
| Gravel ( 3in. + No.10 ) | : 3.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 17.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 31.5 | AASHTO Classification: M145 | : A-4 (2) |
| Silt + Clay ( -No.200 ) | : 48.2 | 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 ) | : 2.0 |
| Medium Sand ( -No.10 + No.40 ) | : 17.3 |
| Fine Sand ( -No.40 + No.200 ) | : 31.5 |
| Silt + Clay ( -No.200 ) | : 48.2 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-67 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/16/17 |
| Soil Type | : Brown, Brown-Gray & Brown-Orange 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 | 98.7 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 98.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 96.4 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 79.9 |
| 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 | 55.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.041 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 21.2 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 35 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 24 |
| | | Plasticity Index | : 11 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.24 |
| Gravel ( 3in. + No.10 ) | : 3.6 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 16.5 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 24.9 | AASHTO Classification: M145 | : A-6 (4) |
| Silt + Clay ( -No.200 ) | : 55.0 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 1.6 |
| Coarse Sand ( -No.4 + No.10 ) | : 2.0 |
| Medium Sand ( -No.10 + No.40 ) | : 16.5 |
| Fine Sand ( -No.40 + No.200 ) | : 24.9 |
| Silt + Clay ( -No.200 ) | : 55.0 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-68 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/16/17 |
| Soil Type | : Orange-Brown & White 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 | 99.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 93.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 60.4 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 33.6 |
| 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 | |

$D_{50}$ = 0.217 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 22.9 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 58 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 50 |
| | | Plasticity Index | : 8 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -3.37 |
| Gravel ( 3in. + No.10 ) | : 6.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 32.8 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 26.8 | AASHTO Classification: M145 | : A-2-5 (0) |
| Silt + Clay ( -No.200 ) | : 33.6 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.4 |
| Coarse Sand ( -No.4 + No.10 ) | : 6.4 |
| Medium Sand ( -No.10 + No.40 ) | : 32.8 |
| Fine Sand ( -No.40 + No.200 ) | : 26.8 |
| Silt + Clay ( -No.200 ) | : 33.6 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-80 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/16/17 |
| Soil Type | : Brown-Orange & Orange & White 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 | 95.9 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 92.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 86.9 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 75.9 |
| 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 | 55.7 |
| 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 | |

$D_{50}$ = 0.038 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 28.4 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 43 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 33 |
| | | Plasticity Index | : 10 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.47 |
| Gravel ( 3in. + No.10 ) | : 13.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 11.0 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 20.2 | AASHTO Classification: M145 | : A-5 (4) |
| Silt + Clay ( -No.200 ) | : 55.7 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 7.9 |
| Coarse Sand ( -No.4 + No.10 ) | : 5.2 |
| Medium Sand ( -No.10 + No.40 ) | : 11.0 |
| Fine Sand ( -No.40 + No.200 ) | : 20.2 |
| Silt + Clay ( -No.200 ) | : 55.7 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-78 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/16/17 |
| Soil Type | : Brown, Brown-Orange & Red-Brown Sandy Elastic 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 | 99.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 99.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 95.0 |
| 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 | 67.9 |
| 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 | |

$D_{50}$ = 0.013 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 29.8 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 50 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 38 |
| | | Plasticity Index | : 12 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.71 |
| Gravel ( 3in. + No.10 ) | : 1.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 4.0 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 27.1 | AASHTO Classification: M145 | : A-7-5 (9) |
| Silt + Clay ( -No.200 ) | : 67.9 | ASTM Classification: D2487 | : MH |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.2 |
| Coarse Sand ( -No.4 + No.10 ) | : 0.8 |
| Medium Sand ( -No.10 + No.40 ) | : 4.0 |
| Fine Sand ( -No.40 + No.200 ) | : 27.1 |
| Silt + Clay ( -No.200 ) | : 67.9 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-79 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/16/17 |
| Soil Type | : Brown, Gray-Brown & Brown-Orange 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 | 99.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 95.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 77.9 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 51.1 |
| 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 | |

$D_{50}$ = 0.065 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 24.2 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 43 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 36 |
| | | Plasticity Index | : 7 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.74 |
| Gravel ( 3in. + No.10 ) | : 5.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 17.1 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 26.8 | AASHTO Classification: M145 | : A-5 (2) |
| Silt + Clay ( -No.200 ) | : 51.1 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.9 |
| Coarse Sand ( -No.4 + No.10 ) | : 4.1 |
| Medium Sand ( -No.10 + No.40 ) | : 17.1 |
| Fine Sand ( -No.40 + No.200 ) | : 26.8 |
| Silt + Clay ( -No.200 ) | : 51.1 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-79 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/16/17 |
| Soil Type | : Brown-Orange Sandy Elastic 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 | 97.6 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 95.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 94.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 91.3 |
| 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 | 68.4 |
| 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 | |

$D_{50}$ = 0.013 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 26.8 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 53 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 44 |
| | | Plasticity Index | : 9 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.90 |
| Gravel ( 3in. + No.10 ) | : 5.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 3.4 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 22.9 | AASHTO Classification: M145 | : A-5 (8) |
| Silt + Clay ( -No.200 ) | : 68.4 | ASTM Classification: D2487 | : MH |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 4.1 |
| Coarse Sand ( -No.4 + No.10 ) | : 1.2 |
| Medium Sand ( -No.10 + No.40 ) | : 3.4 |
| Fine Sand ( -No.40 + No.200 ) | : 22.9 |
| Silt + Clay ( -No.200 ) | : 68.4 |

Approved By : Kevin E. Walker

Soil No. 122

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-81 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/16/17 |
| Soil Type | : Brown & Orange-Brown Silty Sand with Gravel | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 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 | 81.3 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 73.5 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 66.8 |
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 54.9 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 36.7 |
| 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 | |

$D_{50}$ = 0.266 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 16.9 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 31 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 31 |
| | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 33.2 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 11.9 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 18.2 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 36.7 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 10.8 |
| Fine Gravel ( -3/4in. + No.4 ) | : 15.7 |
| Coarse Sand ( -No.4 + No.10 ) | : 6.7 |
| Medium Sand ( -No.10 + No.40 ) | : 11.9 |
| Fine Sand ( -No.40 + No.200 ) | : 18.2 |
| Silt + Clay ( -No.200 ) | : 36.7 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown & Orange Silty Sand with Gravel

Sample No. : SS-2
Sample Loc. : Boring No. SB-81
Sample Depth : 4.0' to 4.9'
Date Tested : 03/09/17
Date Reported : 03/16/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 89.2 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 74.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 59.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 43.5 |
| 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 | 22.4 |
| 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 | |

$D_{50}$ = 0.804 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 12.6
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 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 40.7
Coarse Sand ( -No.10 + No.40 ) : 15.8
Fine Sand ( -No.40 + No.200 ) : 21.1
Silt + Clay ( -No.200 ) : 22.4

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 25.6
Coarse Sand ( -No.4 + No.10 ) : 15.1
Medium Sand ( -No.10 + No.40 ) : 15.8
Fine Sand ( -No.40 + No.200 ) : 21.1
Silt + Clay ( -No.200 ) : 22.4

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-82 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/16/17 |
| Soil Type | : Light Brown, Brown & Brown-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 | 99.0 |

AASHTO T88

| | | | | % 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 | 47.6 |
| 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 | |

$D_{50}$ = 0.085 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 21.6 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 36 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 28 |
| | | Plasticity Index | : 8 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.79 |
| Gravel ( 3in. + No.10 ) | : 1.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 17.5 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 33.9 | AASHTO Classification: M145 | : A-4 (2) |
| Silt + Clay ( -No.200 ) | : 47.6 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.1 |
| Coarse Sand ( -No.4 + No.10 ) | : 0.9 |
| Medium Sand ( -No.10 + No.40 ) | : 17.5 |
| Fine Sand ( -No.40 + No.200 ) | : 33.9 |
| Silt + Clay ( -No.200 ) | : 47.6 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-1 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. NB-84 |
| Project State | : | South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : | HDR | Date Reported | : 03/22/17 |
| Soil Type | : | Light Brown & White 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 | 94.9 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 76.3 |
| 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 | 47.6 |
| 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 | |

$D_{50}$ = 0.087 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 23.3 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 41 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 33 |
| | | | Plasticity Index | : 8 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -1.15 |
| Gravel ( 3in. + No.10 ) | : | 5.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 18.6 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 28.7 | AASHTO Classification: M145 | : A-5 (2) |
| Silt + Clay ( -No.200 ) | : | 47.6 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.7 |
| Coarse Sand ( -No.4 + No.10 ) | : | 4.4 |
| Medium Sand ( -No.10 + No.40 ) | : | 18.6 |
| Fine Sand ( -No.40 + No.200 ) | : | 28.7 |
| Silt + Clay ( -No.200 ) | : | 47.6 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-2 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. NB-84 |
| Project State | : | South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : | HDR | Date Reported | : 03/22/17 |
| Soil Type | : | Brown-Orange 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 | 99.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 99.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 95.5 |
| 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 | 73.2 |
| 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 | |

$D_{50}$ = 0.009 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 25.7 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 44 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 36 |
| | | | Plasticity Index | : 8 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -1.33 |
| Gravel ( 3in. + No.10 ) | : | 0.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 3.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 22.3 | AASHTO Classification: M145 | : A-5 (7) |
| Silt + Clay ( -No.200 ) | : | 73.2 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.4 |
| Coarse Sand ( -No.4 + No.10 ) | : | 0.4 |
| Medium Sand ( -No.10 + No.40 ) | : | 3.7 |
| Fine Sand ( -No.40 + No.200 ) | : | 22.3 |
| Silt + Clay ( -No.200 ) | : | 73.2 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-85 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/16/17 |
| Soil Type | : Brown, Green-Brown & Orange Brown Sandy Lean Clay | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.0 |

| | | | | % 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 | 55.7 |
| 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 | |

$D_{50}$ = 0.038 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 20.4 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 32 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 20 |
| | | Plasticity Index | : 12 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : 0.00 |
| Gravel ( 3in. + No.10 ) | : 2.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 14.0 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 28.3 | AASHTO Classification: M145 | : A-6 (4) |
| Silt + Clay ( -No.200 ) | : 55.7 | ASTM Classification: D2487 | : CL |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.8 |
| Coarse Sand ( -No.4 + No.10 ) | : 1.2 |
| Medium Sand ( -No.10 + No.40 ) | : 14.0 |
| Fine Sand ( -No.40 + No.200 ) | : 28.3 |
| Silt + Clay ( -No.200 ) | : 55.7 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-86 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/09/17 |
| Submitted By | : HDR | Date Reported | : 03/16/17 |
| Soil Type | : Brown & Orange-Brown Sandy Lean Clay | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.4 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 85.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 58.4 |
| 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 | |

$D_{50}$ = 0.029 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 20.6 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 35 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 19 |
| | | Plasticity Index | : 16 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : 0.13 |
| Gravel ( 3in. + No.10 ) | : 1.6 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 13.2 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 26.8 | AASHTO Classification: M145 | : A-6 (7) |
| Silt + Clay ( -No.200 ) | : 58.4 | ASTM Classification: D2487 | : CL |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.6 |
| Coarse Sand ( -No.4 + No.10 ) | : 1.0 |
| Medium Sand ( -No.10 + No.40 ) | : 13.2 |
| Fine Sand ( -No.40 + No.200 ) | : 26.8 |
| Silt + Clay ( -No.200 ) | : 58.4 |

Approved By : Kevin E. Walker

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown & Orange-Brown Sandy Silt

Sample No. : SS-1
Sample Loc. : Boring No. NB-88
Sample Depth : 2.0' to 3.5'
Date Tested : 03/14/17
Date Reported : 03/22/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 99.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 98.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 96.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 85.2 |
| 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 | 59.4 |
| 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 | |

$D_{50}$ = 0.026 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 22.6
Liquid Limit (AASHTO T89) : 31
Plastic Limit (AASHTO T90) : 23
Plasticity Index : 8
Liquidity Index : -0.03
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 ) : 3.5
Coarse Sand ( -No.10 + No.40 ) : 11.3
Fine Sand ( -No.40 + No.200 ) : 25.8
Silt + Clay ( -No.200 ) : 59.4

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 1.6
Coarse Sand ( -No.4 + No.10 ) : 1.9
Medium Sand ( -No.10 + No.40 ) : 11.3
Fine Sand ( -No.40 + No.200 ) : 25.8
Silt + Clay ( -No.200 ) : 59.4

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-87 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : HDR | Date Reported | : 03/22/17 |
| Soil Type | : Orange-Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 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 | 98.9 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 79.7 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 43.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.104 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 21.2 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 31 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 27 |
| | | Plasticity Index | : 4 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.50 |
| Gravel ( 3in. + No.10 ) | : 1.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 19.2 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 36.7 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 43.0 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.3 |
| Coarse Sand ( -No.4 + No.10 ) | : 0.8 |
| Medium Sand ( -No.10 + No.40 ) | : 19.2 |
| Fine Sand ( -No.40 + No.200 ) | : 36.7 |
| Silt + Clay ( -No.200 ) | : 43.0 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown Silty Sand with Gravel

Sample No. : SS-1
Sample Loc. : Boring No. SB-1
Sample Depth : 2.5' to 4.0'
Date Tested : 03/14/17
Date Reported : 03/22/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 90.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 84.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 77.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 62.5 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 33.8 |
| 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 | |

$D_{50}$ = 0.2 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 18.8
Liquid Limit (AASHTO T89) : 22
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 4
Liquidity Index : 0.28
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 ) : 22.9
Coarse Sand ( -No.10 + No.40 ) : 14.6
Fine Sand ( -No.40 + No.200 ) : 28.7
Silt + Clay ( -No.200 ) : 33.8

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 15.4
Coarse Sand ( -No.4 + No.10 ) : 7.5
Medium Sand ( -No.10 + No.40 ) : 14.6
Fine Sand ( -No.40 + No.200 ) : 28.7
Silt + Clay ( -No.200 ) : 33.8

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown Sandy Silt

Sample No. : SS-2
Sample Loc. : Boring No. SB-1
Sample Depth : 4.5' to 6.0'
Date Tested : 03/14/17
Date Reported : 03/22/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.1 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 96.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 93.3 |

AASHTO T88

| | | | | % 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 | 60.7 |
| 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 | |

$D_{50}$ = 0.023 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 25.0
Liquid Limit (AASHTO T89) : 18
Plastic Limit (AASHTO T90) : 16
Plasticity Index : 2
Liquidity Index : 4.27
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 6.7
Coarse Sand ( -No.10 + No.40 ) : 9.3
Fine Sand ( -No.40 + No.200 ) : 23.3
Silt + Clay ( -No.200 ) : 60.7

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 3.8
Coarse Sand ( -No.4 + No.10 ) : 2.9
Medium Sand ( -No.10 + No.40 ) : 9.3
Fine Sand ( -No.40 + No.200 ) : 23.3
Silt + Clay ( -No.200 ) : 60.7

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-3 |
| Project State | : South Carolina | Sample Depth | : 4.5' to 6.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : HDR | Date Reported | : 03/22/17 |
| Soil Type | : 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 | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.7 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 96.5 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 93.9 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 82.5 |
| 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 | 63.7 |
| 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 | |

$D_{50}$ = 0.018 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 25.5 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 37 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 29 |
| | | Plasticity Index | : 8 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.38 |
| Gravel ( 3in. + No.10 ) | : 6.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 11.4 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 18.8 | AASHTO Classification: M145 | : A-4 (4) |
| Silt + Clay ( -No.200 ) | : 63.7 | ASTM Classification: D2487 | : ML |

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 ) | : 2.6 |
| Medium Sand ( -No.10 + No.40 ) | : 11.4 |
| Fine Sand ( -No.40 + No.200 ) | : 18.8 |
| Silt + Clay ( -No.200 ) | : 63.7 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-4 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 1.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/28/17 |
| Soil Type | : Brown 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 | 94.1 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 82.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 70.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 49.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 24.8 |
| 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 | |

$D_{50}$ = 0.451 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 14.5 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : NP |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : NP |
| | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 29.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 21.1 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 24.4 | AASHTO Classification: M145 | : A-1-b (0) |
| Silt + Clay ( -No.200 ) | : 24.8 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 17.9 |
| Coarse Sand ( -No.4 + No.10 ) | : 11.8 |
| Medium Sand ( -No.10 + No.40 ) | : 21.1 |
| Fine Sand ( -No.40 + No.200 ) | : 24.4 |
| Silt + Clay ( -No.200 ) | : 24.8 |

Approved By : Kevin E. Walker

Soil No. 135

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown Clayey Sand with Gravel

Sample No. : SS-2
Sample Loc. : Boring No. NB-4
Sample Depth : 2.0' to 3.5'
Date Tested : 03/14/17
Date Reported : 03/22/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | 100.0 |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | 78.8 |
| 3/4 | in. | 19 | mm | 78.8 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 78.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 77.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 71.6 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 55.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 39.3 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.245 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 21.5
Liquid Limit (AASHTO T89) : 34
Plastic Limit (AASHTO T90) : 14
Plasticity Index : 20
Liquidity Index : 0.38
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (3)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 28.4
Coarse Sand ( -No.10 + No.40 ) : 16.6
Fine Sand ( -No.40 + No.200 ) : 15.7
Silt + Clay ( -No.200 ) : 39.3

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 21.2
Fine Gravel ( -3/4in. + No.4 ) : 1.8
Coarse Sand ( -No.4 + No.10 ) : 5.4
Medium Sand ( -No.10 + No.40 ) : 16.6
Fine Sand ( -No.40 + No.200 ) : 15.7
Silt + Clay ( -No.200 ) : 39.3

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Red Fat Clay with Sand

Sample No. : SS-3
Sample Loc. : Boring No. NB-2
Sample Depth : 6.5' to 8.0'
Date Tested : 03/14/17
Date Reported : 03/22/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 97.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 93.4 |
| 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 | 75.8 |
| 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 | |

$D_{50}$ = 0.008 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 22.3
Liquid Limit (AASHTO T89) : 51
Plastic Limit (AASHTO T90) : 24
Plasticity Index : 27
Liquidity Index : -0.08
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-7-6 (21)
ASTM Classification: D2487 : CH

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 2.5
Coarse Sand ( -No.10 + No.40 ) : 4.1
Fine Sand ( -No.40 + No.200 ) : 17.6
Silt + Clay ( -No.200 ) : 75.8

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.9
Coarse Sand ( -No.4 + No.10 ) : 1.6
Medium Sand ( -No.10 + No.40 ) : 4.1
Fine Sand ( -No.40 + No.200 ) : 17.6
Silt + Clay ( -No.200 ) : 75.8

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-7 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 1.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/27/17 |
| Soil Type | : Brown Silty, Clayey 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 | 100.0 |
| 3/4 | in. | 19 | mm | 90.9 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 90.2 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 84.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 76.4 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 58.3 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 33.2 |
| 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 | |

$D_{50}$ = 0.239 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 14.4 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 26 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 20 |
| | | Plasticity Index | : 6 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.97 |
| Gravel ( 3in. + No.10 ) | : 23.6 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 18.1 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 25.1 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 33.2 | ASTM Classification: D2487 | : SC-SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 9.1 |
| Fine Gravel ( -3/4in. + No.4 ) | : 6.7 |
| Coarse Sand ( -No.4 + No.10 ) | : 7.8 |
| Medium Sand ( -No.10 + No.40 ) | : 18.1 |
| Fine Sand ( -No.40 + No.200 ) | : 25.1 |
| Silt + Clay ( -No.200 ) | : 33.2 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-5 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : HDR | Date Reported | : 03/22/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 97.7 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 93.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 89.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 71.7 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 46.6 |
| 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 | |

$D_{50}$ = 0.095 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 16.4 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 30 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 26 |
| | | Plasticity Index | : 4 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -2.39 |
| Gravel ( 3in. + No.10 ) | : 11.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 17.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 25.1 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 46.6 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 6.3 |
| Coarse Sand ( -No.4 + No.10 ) | : 4.7 |
| Medium Sand ( -No.10 + No.40 ) | : 17.3 |
| Fine Sand ( -No.40 + No.200 ) | : 25.1 |
| Silt + Clay ( -No.200 ) | : 46.6 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-3 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-5 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : HDR | Date Reported | : 03/22/17 |
| Soil Type | : Yellow 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 | |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 100.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 99.8 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 87.5 |
| 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 | 55.5 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.039 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 19.0 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : NP |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : NP |
| | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 0.2 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 12.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 32.0 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 55.5 | ASTM Classification: D2487 | : 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 ) | : 0.2 |
| Medium Sand ( -No.10 + No.40 ) | : 12.3 |
| Fine Sand ( -No.40 + No.200 ) | : 32.0 |
| Silt + Clay ( -No.200 ) | : 55.5 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-6 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 1.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : HDR | Date Reported | : 03/22/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 92.3 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 85.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 76.7 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 56.4 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 29.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.283 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 19.0 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 19 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 18 |
| | | Plasticity Index | : 1 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : 1.49 |
| Gravel ( 3in. + No.10 ) | : 23.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 20.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 27.4 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 29.0 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 14.6 |
| Coarse Sand ( -No.4 + No.10 ) | : 8.7 |
| Medium Sand ( -No.10 + No.40 ) | : 20.3 |
| Fine Sand ( -No.40 + No.200 ) | : 27.4 |
| Silt + Clay ( -No.200 ) | : 29.0 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-6 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : HDR | Date Reported | : 03/22/17 |
| Soil Type | : Red 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 | 94.8 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 89.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 82.7 |

AASHTO T88

| | | | | % 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 | 48.2 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.088 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 15.0 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 30 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 22 |
| | | Plasticity Index | : 8 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.85 |
| Gravel ( 3in. + No.10 ) | : 17.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 14.4 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 20.1 | AASHTO Classification: M145 | : A-4 (1) |
| Silt + Clay ( -No.200 ) | : 48.2 | ASTM Classification: D2487 | : SC |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 10.8 |
| Coarse Sand ( -No.4 + No.10 ) | : 6.5 |
| Medium Sand ( -No.10 + No.40 ) | : 14.4 |
| Fine Sand ( -No.40 + No.200 ) | : 20.1 |
| Silt + Clay ( -No.200 ) | : 48.2 |

Approved By : Kevin E. Walker

Soil No. 142

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown Sandy Lean Clay

Sample No. : SS-3
Sample Loc. : Boring No. NB-6
Sample Depth : 4.0' to 5.5'
Date Tested : 03/14/17
Date Reported : 03/22/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 98.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 96.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 87.7 |
| 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 | 61.3 |
| 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 | |

$D_{50}$ = 0.022 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 23.6
Liquid Limit (AASHTO T89) : 34
Plastic Limit (AASHTO T90) : 21
Plasticity Index : 13
Liquidity Index : 0.18
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 ) : 3.3
Coarse Sand ( -No.10 + No.40 ) : 9.0
Fine Sand ( -No.40 + No.200 ) : 26.4
Silt + Clay ( -No.200 ) : 61.3

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 1.4
Coarse Sand ( -No.4 + No.10 ) : 1.9
Medium Sand ( -No.10 + No.40 ) : 9.0
Fine Sand ( -No.40 + No.200 ) : 26.4
Silt + Clay ( -No.200 ) : 61.3

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-3 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. NB-8 |
| Project State | : | South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : | HDR | Date Reported | : 03/22/17 |
| Soil Type | : | Red 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 | 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 | 98.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 96.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 81.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 51.3 |
| 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 | |

$D_{50}$ = 0.063 mm

| | | | | |
|---|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : | 10.8 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : | 26 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : | 16 |
| | | Plasticity Index | : | 10 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : | -0.50 |
| Gravel ( 3in. + No.10 ) | : 3.5 | Activity | : | NA |
| Coarse Sand ( -No.10 + No.40 ) | : 15.5 | Sp. Gr. (AASHTO T100) | : | NA |
| Fine Sand ( -No.40 + No.200 ) | : 29.7 | AASHTO Classification: M145 | : | A-4 (2) |
| Silt + Clay ( -No.200 ) | : 51.3 | ASTM Classification: D2487 | : | CL |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 1.3 |
| Coarse Sand ( -No.4 + No.10 ) | : 2.2 |
| Medium Sand ( -No.10 + No.40 ) | : 15.5 |
| Fine Sand ( -No.40 + No.200 ) | : 29.7 |
| Silt + Clay ( -No.200 ) | : 51.3 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown Silty Sand

Sample No. : SS-1
Sample Loc. : Boring No. NB-10
Sample Depth : 0.0' to 1.5'
Date Tested : 03/14/17
Date Reported : 03/22/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.8 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 95.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 89.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 65.8 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 33.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.184 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 15.1
Liquid Limit (AASHTO T89) : 24
Plastic Limit (AASHTO T90) : 20
Plasticity Index : 4
Liquidity Index : -1.30
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 10.5
Coarse Sand ( -No.10 + No.40 ) : 23.7
Fine Sand ( -No.40 + No.200 ) : 32.8
Silt + Clay ( -No.200 ) : 33.0

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 4.9
Coarse Sand ( -No.4 + No.10 ) : 5.6
Medium Sand ( -No.10 + No.40 ) : 23.7
Fine Sand ( -No.40 + No.200 ) : 32.8
Silt + Clay ( -No.200 ) : 33.0

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-9 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/30/17 |
| Soil Type | : Red-Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.8 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 92.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 83.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 61.7 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 40.7 |
| 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 | |

$D_{50}$ = 0.162 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 17.8 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 32 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 28 |
| | | Plasticity Index | : 4 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -2.51 |
| Gravel ( 3in. + No.10 ) | : 17.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 21.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 21.0 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 40.7 | ASTM Classification: D2487 | : SM |

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 ) | : 9.6 |
| Medium Sand ( -No.10 + No.40 ) | : 21.3 |
| Fine Sand ( -No.40 + No.200 ) | : 21.0 |
| Silt + Clay ( -No.200 ) | : 40.7 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-10 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : HDR | Date Reported | : 03/22/17 |
| Soil Type | : Red-Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.8 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 97.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 92.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 73.7 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 47.5 |
| 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 | |

$D_{50}$ = 0.089 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 19.5 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 35 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 29 |
| | | Plasticity Index | : 6 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.57 |
| Gravel ( 3in. + No.10 ) | : 7.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 18.5 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 26.2 | AASHTO Classification: M145 | : A-4 (1) |
| Silt + Clay ( -No.200 ) | : 47.5 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 2.9 |
| Coarse Sand ( -No.4 + No.10 ) | : 4.9 |
| Medium Sand ( -No.10 + No.40 ) | : 18.5 |
| Fine Sand ( -No.40 + No.200 ) | : 26.2 |
| Silt + Clay ( -No.200 ) | : 47.5 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-3 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-12 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : HDR | Date Reported | : 03/22/17 |
| Soil Type | : Red & Brown Sandy Silt | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 95.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 91.0 |
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 75.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 52.8 |
| 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 | |

$D_{50}$ = 0.053 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 20.8 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 42 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 28 |
| | | Plasticity Index | : 14 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.54 |
| Gravel ( 3in. + No.10 ) | : 9.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 16.0 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 22.2 | AASHTO Classification: M145 | : A-7-6 (5) |
| Silt + Clay ( -No.200 ) | : 52.8 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 4.6 |
| Coarse Sand ( -No.4 + No.10 ) | : 4.4 |
| Medium Sand ( -No.10 + No.40 ) | : 16.0 |
| Fine Sand ( -No.40 + No.200 ) | : 22.2 |
| Silt + Clay ( -No.200 ) | : 52.8 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-14 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 1.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : HDR | Date Reported | : 03/22/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 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 | 94.2 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 92.8 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 87.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 80.5 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 61.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 35.8 |
| 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 | |

$D_{50}$ = 0.198 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 18.7 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 29 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 24 |
| | | Plasticity Index | : 5 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.10 |
| Gravel ( 3in. + No.10 ) | : 19.5 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 19.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 25.4 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 35.8 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 5.8 |
| Fine Gravel ( -3/4in. + No.4 ) | : 7.1 |
| Coarse Sand ( -No.4 + No.10 ) | : 6.6 |
| Medium Sand ( -No.10 + No.40 ) | : 19.3 |
| Fine Sand ( -No.40 + No.200 ) | : 25.4 |
| Silt + Clay ( -No.200 ) | : 35.8 |

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Soil No. 149

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-13 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : HDR | Date Reported | : 03/22/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 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 | 95.5 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 85.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 56.6 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 35.2 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.249 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 14.1 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 33 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 27 |
| | | Plasticity Index | : 6 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -2.22 |
| Gravel ( 3in. + No.10 ) | : 14.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 28.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 21.4 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 35.2 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 4.5 |
| Coarse Sand ( -No.4 + No.10 ) | : 10.2 |
| Medium Sand ( -No.10 + No.40 ) | : 28.7 |
| Fine Sand ( -No.40 + No.200 ) | : 21.4 |
| Silt + Clay ( -No.200 ) | : 35.2 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown Silty Sand

Sample No. : SS-2
Sample Loc. : Boring No. NB-14
Sample Depth : 2.0' to 3.5'
Date Tested : 03/14/17
Date Reported : 03/22/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 95.5 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 84.6 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 55.5 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 29.1 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.296 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 13.0
Liquid Limit (AASHTO T89) : 27
Plastic Limit (AASHTO T90) : 24
Plasticity Index : 3
Liquidity Index : -3.50
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 15.4
Coarse Sand ( -No.10 + No.40 ) : 29.1
Fine Sand ( -No.40 + No.200 ) : 26.4
Silt + Clay ( -No.200 ) : 29.1

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 4.5
Coarse Sand ( -No.4 + No.10 ) : 10.9
Medium Sand ( -No.10 + No.40 ) : 29.1
Fine Sand ( -No.40 + No.200 ) : 26.4
Silt + Clay ( -No.200 ) : 29.1

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-3 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-13 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : HDR | Date Reported | : 03/22/17 |
| Soil Type | : Yellow-Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 99.2 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 98.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 92.6 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 53.4 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 33.2 |
| 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 | |

$D_{50}$ = 0.317 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 17.1 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 35 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 31 |
| | | Plasticity Index | : 4 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -3.47 |
| Gravel ( 3in. + No.10 ) | : 7.4 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 39.2 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 20.2 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 33.2 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 1.6 |
| Coarse Sand ( -No.4 + No.10 ) | : 5.8 |
| Medium Sand ( -No.10 + No.40 ) | : 39.2 |
| Fine Sand ( -No.40 + No.200 ) | : 20.2 |
| Silt + Clay ( -No.200 ) | : 33.2 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Yellow-Brown Silty Sand

Sample No. : SS-3
Sample Loc. : Boring No. NB-16
Sample Depth : 4.0' to 5.5'
Date Tested : 03/14/17
Date Reported : 03/22/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 93.1 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 86.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 73.9 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 53.4 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 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 | |

$D_{50}$ = 0.314 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 16.9
Liquid Limit (AASHTO T89) : 30
Plastic Limit (AASHTO T90) : 25
Plasticity Index : 5
Liquidity Index : -1.67
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 ) : 26.1
Coarse Sand ( -No.10 + No.40 ) : 20.5
Fine Sand ( -No.40 + No.200 ) : 19.5
Silt + Clay ( -No.200 ) : 33.9

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 13.6
Coarse Sand ( -No.4 + No.10 ) : 12.5
Medium Sand ( -No.10 + No.40 ) : 20.5
Fine Sand ( -No.40 + No.200 ) : 19.5
Silt + Clay ( -No.200 ) : 33.9

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Yellow & Brown Silty Sand

Sample No. : SS-3
Sample Loc. : Boring No. SB-15
Sample Depth : 4.0' to 5.5'
Date Tested : 03/14/17
Date Reported : 03/22/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 95.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 53.1 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 27.2 |
| 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 | |

$D_{50}$ = 0.345 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 11.8
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 5.0
Coarse Sand ( -No.10 + No.40 ) : 41.9
Fine Sand ( -No.40 + No.200 ) : 25.9
Silt + Clay ( -No.200 ) : 27.2

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.1
Coarse Sand ( -No.4 + No.10 ) : 4.9
Medium Sand ( -No.10 + No.40 ) : 41.9
Fine Sand ( -No.40 + No.200 ) : 25.9
Silt + Clay ( -No.200 ) : 27.2

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Yellow & Brown Silty Sand

Sample No. : SS-2
Sample Loc. : Boring No. SB-17
Sample Depth : 2.0' to 3.5'
Date Tested : 03/21/17
Date Reported : 03/27/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 93.1 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 90.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 87.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 66.5 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 44.6 |
| 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 | |

$D_{50}$ = 0.115 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 20.7
Liquid Limit (AASHTO T89) : 34
Plastic Limit (AASHTO T90) : 26
Plasticity Index : 8
Liquidity Index : -0.72
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (1)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 12.5
Coarse Sand ( -No.10 + No.40 ) : 21.0
Fine Sand ( -No.40 + No.200 ) : 21.9
Silt + Clay ( -No.200 ) : 44.6

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 9.1
Coarse Sand ( -No.4 + No.10 ) : 3.4
Medium Sand ( -No.10 + No.40 ) : 21.0
Fine Sand ( -No.40 + No.200 ) : 21.9
Silt + Clay ( -No.200 ) : 44.6

Approved By : Kevin E. Walker

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Yellow & Brown Silty Sand

Sample No. : SS-2
Sample Loc. : Boring No. NB-18
Sample Depth : 2.0' to 3.5'
Date Tested : 03/21/17
Date Reported : 03/27/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 98.2 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 97.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 94.6 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 72.5 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 43.2 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.112 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 19.7
Liquid Limit (AASHTO T89) : 29
Plastic Limit (AASHTO T90) : 25
Plasticity Index : 4
Liquidity Index : -1.35
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 5.4
Coarse Sand ( -No.10 + No.40 ) : 22.1
Fine Sand ( -No.40 + No.200 ) : 29.3
Silt + Clay ( -No.200 ) : 43.2

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 2.9
Coarse Sand ( -No.4 + No.10 ) : 2.5
Medium Sand ( -No.10 + No.40 ) : 22.1
Fine Sand ( -No.40 + No.200 ) : 29.3
Silt + Clay ( -No.200 ) : 43.2

Approved By : Kevin E. Walker

Soil No. 156

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-1 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. NB-19 |
| Project State | : | South Carolina | Sample Depth | : 2.5' to 4.0' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : | HDR | Date Reported | : 03/22/17 |
| Soil Type | : | Red-Brown Silty, Clayey Sand with Gravel | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | 100.0 |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | 90.1 |
| 3/4 | in. | 19 | mm | 85.8 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 80.7 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 75.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 68.4 |
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 49.5 |
| 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 | 29.7 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.443 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 12.7 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 25 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 19 |
| | | | Plasticity Index | : 6 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -1.04 |
| Gravel ( 3in. + No.10 ) | : | 31.6 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 18.9 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 19.8 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : | 29.7 | ASTM Classification: D2487 | : SC-SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 14.2 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 10.0 |
| Coarse Sand ( -No.4 + No.10 ) | : | 7.4 |
| Medium Sand ( -No.10 + No.40 ) | : | 18.9 |
| Fine Sand ( -No.40 + No.200 ) | : | 19.8 |
| Silt + Clay ( -No.200 ) | : | 29.7 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-20 |
| Project State | : South Carolina | Sample Depth | : 4.5' to 6.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : HDR | Date Reported | : 03/22/17 |
| Soil Type | : Orange 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 | 98.4 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 96.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 92.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 80.7 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 62.9 |
| 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 | |

$D_{50}$ = 0.019 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 28.7 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 39 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 26 |
| | | Plasticity Index | : 13 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : 0.21 |
| Gravel ( 3in. + No.10 ) | : 8.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 11.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 17.8 | AASHTO Classification: M145 | : A-6 (7) |
| Silt + Clay ( -No.200 ) | : 62.9 | ASTM Classification: D2487 | : ML |

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 ) | : 4.8 |
| Medium Sand ( -No.10 + No.40 ) | : 11.3 |
| Fine Sand ( -No.40 + No.200 ) | : 17.8 |
| Silt + Clay ( -No.200 ) | : 62.9 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-3 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. NB-21 |
| Project State | : | South Carolina | Sample Depth | : 6.5' to 8.0' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : | HDR | Date Reported | : 03/22/17 |
| Soil Type | : | Gray Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 96.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 75.9 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 34.3 |
| 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 | 15.2 |
| 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 | |

$D_{50}$ = 0.763 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 5.5 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 22 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 21 |
| | | | Plasticity Index | : 1 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -15.98 |
| Gravel ( 3in. + No.10 ) | : | 24.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 41.6 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 19.1 | AASHTO Classification: M145 | : A-1-b (0) |
| Silt + Clay ( -No.200 ) | : | 15.2 | ASTM Classification: D2487 | : SM |

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 ) | : | 20.9 |
| Medium Sand ( -No.10 + No.40 ) | : | 41.6 |
| Fine Sand ( -No.40 + No.200 ) | : | 19.1 |
| Silt + Clay ( -No.200 ) | : | 15.2 |

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Soil No. 159

# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-1 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. SB-22 |
| Project State | : | South Carolina | Sample Depth | : 2.5' to 4.0' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : | HDR | Date Reported | : 03/22/17 |
| Soil Type | : | Green-Brown Silty, Clayey 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 | 89.2 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 84.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 79.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 61.5 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 34.9 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.201 mm

| | | | | |
|---|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : | 10.0 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : | 22 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : | 17 |
| | | Plasticity Index | : | 5 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : | -1.49 |
| Gravel ( 3in. + No.10 ) | : 20.7 | Activity | : | NA |
| Coarse Sand ( -No.10 + No.40 ) | : 17.8 | Sp. Gr. (AASHTO T100) | : | NA |
| Fine Sand ( -No.40 + No.200 ) | : 26.6 | AASHTO Classification: M145 | : | A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 34.9 | ASTM Classification: D2487 | : | SC-SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 15.9 |
| Coarse Sand ( -No.4 + No.10 ) | : 4.8 |
| Medium Sand ( -No.10 + No.40 ) | : 17.8 |
| Fine Sand ( -No.40 + No.200 ) | : 26.6 |
| Silt + Clay ( -No.200 ) | : 34.9 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Red & Orange Clayey Sand

Sample No. : SS-2
Sample Loc. : Boring No. SB-22
Sample Depth : 4.5' to 6.0'
Date Tested : 03/21/17
Date Reported : 03/27/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 97.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 91.4 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 71.8 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 49.4 |
| 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 | |

$D_{50}$ = 0.079 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 18.1
Liquid Limit (AASHTO T89) : 31
Plastic Limit (AASHTO T90) : 22
Plasticity Index : 9
Liquidity Index : -0.41
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (2)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 8.6
Coarse Sand ( -No.10 + No.40 ) : 19.6
Fine Sand ( -No.40 + No.200 ) : 22.4
Silt + Clay ( -No.200 ) : 49.4

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 2.9
Coarse Sand ( -No.4 + No.10 ) : 5.7
Medium Sand ( -No.10 + No.40 ) : 19.6
Fine Sand ( -No.40 + No.200 ) : 22.4
Silt + Clay ( -No.200 ) : 49.4

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-23 |
| Project State | : South Carolina | Sample Depth | : 2.5' to 4.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : HDR | Date Reported | : 03/22/17 |
| Soil Type | : Green & Brown 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 | 96.7 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 93.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 87.9 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 65.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 40.3 |
| 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 | |

$D_{50}$ = 0.147 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 11.8 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 26 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 21 |
| | | Plasticity Index | : 5 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.89 |
| Gravel ( 3in. + No.10 ) | : 12.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 22.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 24.9 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 40.3 | ASTM Classification: D2487 | : SC-SM |

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 ) | : 5.7 |
| Medium Sand ( -No.10 + No.40 ) | : 22.7 |
| Fine Sand ( -No.40 + No.200 ) | : 24.9 |
| Silt + Clay ( -No.200 ) | : 40.3 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-23 |
| Project State | : South Carolina | Sample Depth | : 4.5' to 6.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : HDR | Date Reported | : 03/22/17 |
| Soil Type | : Red & Orange Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 98.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 95.0 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 74.1 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 48.7 |
| 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 | |

$D_{50}$ = 0.082 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 16.6 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 34 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 26 |
| | | Plasticity Index | : 8 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.12 |
| Gravel ( 3in. + No.10 ) | : 5.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 20.9 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 25.4 | AASHTO Classification: M145 | : A-4 (2) |
| Silt + Clay ( -No.200 ) | : 48.7 | 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 ) | : 3.9 |
| Medium Sand ( -No.10 + No.40 ) | : 20.9 |
| Fine Sand ( -No.40 + No.200 ) | : 25.4 |
| Silt + Clay ( -No.200 ) | : 48.7 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-3 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-23 |
| Project State | : South Carolina | Sample Depth | : 6.5' to 8.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : HDR | Date Reported | : 03/22/17 |
| Soil Type | : Gray Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 99.6 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 97.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 93.2 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 70.9 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 45.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.105 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 18.9 |
| 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 | : -1.19 |
| Gravel ( 3in. + No.10 ) | : 6.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 22.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 25.9 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 45.0 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 3.0 |
| Coarse Sand ( -No.4 + No.10 ) | : 3.8 |
| Medium Sand ( -No.10 + No.40 ) | : 22.3 |
| Fine Sand ( -No.40 + No.200 ) | : 25.9 |
| Silt + Clay ( -No.200 ) | : 45.0 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-24 |
| Project State | : South Carolina | Sample Depth | : 2.5' to 4.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/14/17 |
| Submitted By | : HDR | Date Reported | : 03/22/17 |
| Soil Type | : Orange 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 | 99.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.8 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 85.5 |
| 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 | 62.7 |
| 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 | |

$D_{50}$ = 0.02 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 24.1 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 30 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 24 |
| | | Plasticity Index | : 6 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.02 |
| Gravel ( 3in. + No.10 ) | : 1.2 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 13.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 22.8 | AASHTO Classification: M145 | : A-4 (2) |
| Silt + Clay ( -No.200 ) | : 62.7 | ASTM Classification: D2487 | : ML |

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 ) | : 0.8 |
| Medium Sand ( -No.10 + No.40 ) | : 13.3 |
| Fine Sand ( -No.40 + No.200 ) | : 22.8 |
| Silt + Clay ( -No.200 ) | : 62.7 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown Silty Sand with Gravel

Sample No. : SS-1
Sample Loc. : Boring No. SB-25
Sample Depth : 0.0' to 1.5'
Date Tested : 03/21/17
Date Reported : 03/30/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | 100.0 |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | 73.2 |
| 3/4 | in. | 19 | mm | 73.2 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 69.5 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 62.3 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 54.9 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 37.6 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 20.4 |
| 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 | |

$D_{50}$ = 1.29 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 9.9
Liquid Limit (AASHTO T89) : 26
Plastic Limit (AASHTO T90) : 22
Plasticity Index : 4
Liquidity Index : -3.02
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 ) : 45.1
Coarse Sand ( -No.10 + No.40 ) : 17.3
Fine Sand ( -No.40 + No.200 ) : 17.2
Silt + Clay ( -No.200 ) : 20.4

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 26.8
Fine Gravel ( -3/4in. + No.4 ) : 10.9
Coarse Sand ( -No.4 + No.10 ) : 7.4
Medium Sand ( -No.10 + No.40 ) : 17.3
Fine Sand ( -No.40 + No.200 ) : 17.2
Silt + Clay ( -No.200 ) : 20.4

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-3 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-25 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/30/17 |
| Soil Type | : 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 | 99.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 72.8 |
| 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 | 43.5 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.11 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 20.9 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 34 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 29 |
| | | Plasticity Index | : 5 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.66 |
| Gravel ( 3in. + No.10 ) | : 1.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 26.2 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 29.3 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 43.5 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.0 |
| Coarse Sand ( -No.4 + No.10 ) | : 1.0 |
| Medium Sand ( -No.10 + No.40 ) | : 26.2 |
| Fine Sand ( -No.40 + No.200 ) | : 29.3 |
| Silt + Clay ( -No.200 ) | : 43.5 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-27 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/30/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 97.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 91.6 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 71.5 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 48.2 |
| 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 | |

$D_{50}$ = 0.086 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 20.7 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 35 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 29 |
| | | Plasticity Index | : 6 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.31 |
| Gravel ( 3in. + No.10 ) | : 8.4 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 20.1 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 23.3 | AASHTO Classification: M145 | : A-4 (1) |
| Silt + Clay ( -No.200 ) | : 48.2 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 2.1 |
| Coarse Sand ( -No.4 + No.10 ) | : 6.3 |
| Medium Sand ( -No.10 + No.40 ) | : 20.1 |
| Fine Sand ( -No.40 + No.200 ) | : 23.3 |
| Silt + Clay ( -No.200 ) | : 48.2 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-3 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-26 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/30/17 |
| Soil Type | : Orange 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 | 98.9 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 97.3 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 93.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 79.9 |
| 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 | 58.1 |
| 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 | |

$D_{50}$ = 0.03 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 21.7 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 44 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 30 |
| | | Plasticity Index | : 14 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.62 |
| Gravel ( 3in. + No.10 ) | : 6.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 13.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 21.8 | AASHTO Classification: M145 | : A-7-6 (7) |
| Silt + Clay ( -No.200 ) | : 58.1 | 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 ) | : 4.1 |
| Medium Sand ( -No.10 + No.40 ) | : 13.3 |
| Fine Sand ( -No.40 + No.200 ) | : 21.8 |
| Silt + Clay ( -No.200 ) | : 58.1 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-27 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 1.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/28/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 96.7 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 90.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 82.9 |
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 61.8 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 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 | |

$D_{50}$ = 0.2 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 15.6 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 24 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 20 |
| | | Plasticity Index | : 4 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.04 |
| Gravel ( 3in. + No.10 ) | : 17.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 21.1 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 27.1 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 34.7 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 10.0 |
| Coarse Sand ( -No.4 + No.10 ) | : 7.1 |
| Medium Sand ( -No.10 + No.40 ) | : 21.1 |
| Fine Sand ( -No.40 + No.200 ) | : 27.1 |
| Silt + Clay ( -No.200 ) | : 34.7 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-29 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 1.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/30/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 95.7 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 91.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 87.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 66.1 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 37.2 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.162 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 12.5 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 24 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 21 |
| | | Plasticity Index | : 3 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -2.90 |
| Gravel ( 3in. + No.10 ) | : 12.9 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 21.0 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 28.9 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 37.2 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 8.1 |
| Coarse Sand ( -No.4 + No.10 ) | : 4.8 |
| Medium Sand ( -No.10 + No.40 ) | : 21.0 |
| Fine Sand ( -No.40 + No.200 ) | : 28.9 |
| Silt + Clay ( -No.200 ) | : 37.2 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-29 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/28/17 |
| Soil Type | : Orange Clayey 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 | 87.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 83.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 79.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 66.5 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 47.3 |
| 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 | |

$D_{50}$ = 0.096 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 22.2 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 38 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 25 |
| | | Plasticity Index | : 13 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.24 |
| Gravel ( 3in. + No.10 ) | : 20.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 12.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 19.2 | AASHTO Classification: M145 | : A-6 (3) |
| Silt + Clay ( -No.200 ) | : 47.3 | ASTM Classification: D2487 | : SC |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 16.8 |
| Coarse Sand ( -No.4 + No.10 ) | : 4.0 |
| Medium Sand ( -No.10 + No.40 ) | : 12.7 |
| Fine Sand ( -No.40 + No.200 ) | : 19.2 |
| Silt + Clay ( -No.200 ) | : 47.3 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-3B |
| Project County | : | Cherokee | Sample Loc. | : Boring No. SB-29 |
| Project State | : | South Carolina | Sample Depth | : 4.7' to 5.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/30/17 |
| Soil Type | : | Green-Gray 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 | 99.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.6 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 82.3 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 46.2 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.09 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 11.7 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : NP |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : NP |
| | | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : | 1.4 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 16.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 36.1 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : | 46.2 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.2 |
| Coarse Sand ( -No.4 + No.10 ) | : | 1.2 |
| Medium Sand ( -No.10 + No.40 ) | : | 16.3 |
| Fine Sand ( -No.40 + No.200 ) | : | 36.1 |
| Silt + Clay ( -No.200 ) | : | 46.2 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Orange Sandy Silt

Sample No. : SS-2
Sample Loc. : Boring No. NB-30
Sample Depth : 2.0' to 3.5'
Date Tested : 03/21/17
Date Reported : 03/28/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 92.4 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 87.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 82.6 |

AASHTO T88

| | | | | % 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 | 50.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.075 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 22.1
Liquid Limit (AASHTO T89) : 34
Plastic Limit (AASHTO T90) : 25
Plasticity Index : 9
Liquidity Index : -0.33
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (2)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 17.4
Coarse Sand ( -No.10 + No.40 ) : 12.1
Fine Sand ( -No.40 + No.200 ) : 20.5
Silt + Clay ( -No.200 ) : 50.0

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 12.3
Coarse Sand ( -No.4 + No.10 ) : 5.1
Medium Sand ( -No.10 + No.40 ) : 12.1
Fine Sand ( -No.40 + No.200 ) : 20.5
Silt + Clay ( -No.200 ) : 50.0

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-31 |
| Project State | : South Carolina | Sample Depth | : 4.5' to 6.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/30/17 |
| Soil Type | : 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 | 98.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 86.4 |

AASHTO T88

| | | | | % 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 | 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 | |

$D_{50}$ = 0.507 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 10.0 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 29 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 25 |
| | | Plasticity Index | : 4 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -3.71 |
| Gravel ( 3in. + No.10 ) | : 13.6 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 41.1 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 18.3 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 27.0 | 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 ) | : 12.5 |
| Medium Sand ( -No.10 + No.40 ) | : 41.1 |
| Fine Sand ( -No.40 + No.200 ) | : 18.3 |
| Silt + Clay ( -No.200 ) | : 27.0 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-3 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-32 |
| Project State | : South Carolina | Sample Depth | : 5.0' to 6.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/28/17 |
| Soil Type | : Orange 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 | 99.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 87.6 |
| 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 | 64.5 |
| 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 | |

$D_{50}$ = 0.017 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 22.4 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 37 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 30 |
| | | Plasticity Index | : 7 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.01 |
| Gravel ( 3in. + No.10 ) | : 1.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 10.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 23.1 | AASHTO Classification: M145 | : A-4 (4) |
| Silt + Clay ( -No.200 ) | : 64.5 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.2 |
| Coarse Sand ( -No.4 + No.10 ) | : 1.5 |
| Medium Sand ( -No.10 + No.40 ) | : 10.7 |
| Fine Sand ( -No.40 + No.200 ) | : 23.1 |
| Silt + Clay ( -No.200 ) | : 64.5 |

Approved By : Kevin E. Walker

Soil No. 176

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown-Orange Clayey Sand

Sample No. : SS-1
Sample Loc. : Boring No. SB-33
Sample Depth : 0.0' to 1.5'
Date Tested : 03/21/17
Date Reported : 03/30/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 96.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 89.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 67.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 42.5 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.128 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 15.4
Liquid Limit (AASHTO T89) : 30
Plastic Limit (AASHTO T90) : 22
Plasticity Index : 8
Liquidity Index : -0.81
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (1)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 10.5
Coarse Sand ( -No.10 + No.40 ) : 22.5
Fine Sand ( -No.40 + No.200 ) : 24.5
Silt + Clay ( -No.200 ) : 42.5

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 3.9
Coarse Sand ( -No.4 + No.10 ) : 6.6
Medium Sand ( -No.10 + No.40 ) : 22.5
Fine Sand ( -No.40 + No.200 ) : 24.5
Silt + Clay ( -No.200 ) : 42.5

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-3 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-33 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/30/17 |
| Soil Type | : Orange-White 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 | 95.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 80.4 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 54.4 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 38.6 |
| 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 | |

$D_{50}$ = 0.262 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 19.7 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 31 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 28 |
| | | Plasticity Index | : 3 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -2.77 |
| Gravel ( 3in. + No.10 ) | : 19.6 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 26.0 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 15.8 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 38.6 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 4.3 |
| Coarse Sand ( -No.4 + No.10 ) | : 15.3 |
| Medium Sand ( -No.10 + No.40 ) | : 26.0 |
| Fine Sand ( -No.40 + No.200 ) | : 15.8 |
| Silt + Clay ( -No.200 ) | : 38.6 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2A |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-34 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.1' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/30/17 |
| Soil Type | : Yellow & Brown 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 | 97.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 92.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 70.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 41.3 |
| 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 | |

$D_{50}$ = 0.126 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 15.5 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 26 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 19 |
| | | Plasticity Index | : 7 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.47 |
| Gravel ( 3in. + No.10 ) | : 7.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 22.5 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 28.9 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 41.3 | ASTM Classification: D2487 | : SC-SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 2.1 |
| Coarse Sand ( -No.4 + No.10 ) | : 5.2 |
| Medium Sand ( -No.10 + No.40 ) | : 22.5 |
| Fine Sand ( -No.40 + No.200 ) | : 28.9 |
| Silt + Clay ( -No.200 ) | : 41.3 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Red Sandy Lean Clay

Sample No. : SS-3
Sample Loc. : Boring No. SB-35
Sample Depth : 4.0' to 5.5'
Date Tested : 03/21/17
Date Reported : 03/30/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 98.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 95.6 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 85.7 |
| 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 | 55.9 |
| 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 | |

$D_{50}$ = 0.037 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 17.7
Liquid Limit (AASHTO T89) : 24
Plastic Limit (AASHTO T90) : 14
Plasticity Index : 10
Liquidity Index : 0.40
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (3)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 4.4
Coarse Sand ( -No.10 + No.40 ) : 9.9
Fine Sand ( -No.40 + No.200 ) : 29.8
Silt + Clay ( -No.200 ) : 55.9

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 1.6
Coarse Sand ( -No.4 + No.10 ) : 2.8
Medium Sand ( -No.10 + No.40 ) : 9.9
Fine Sand ( -No.40 + No.200 ) : 29.8
Silt + Clay ( -No.200 ) : 55.9

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-36 |
| Project State | : South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/30/17 |
| Soil Type | : Red Fat 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 | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 90.2 |
| 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 | 76.9 |
| 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 | |

$D_{50}$ = 0.007 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 22.2 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 57 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 29 |
| | | Plasticity Index | : 28 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.23 |
| Gravel ( 3in. + No.10 ) | : 1.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 8.0 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 13.3 | AASHTO Classification: M145 | : A-7-6 (23) |
| Silt + Clay ( -No.200 ) | : 76.9 | ASTM Classification: D2487 | : CH |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.6 |
| Coarse Sand ( -No.4 + No.10 ) | : 1.2 |
| Medium Sand ( -No.10 + No.40 ) | : 8.0 |
| Fine Sand ( -No.40 + No.200 ) | : 13.3 |
| Silt + Clay ( -No.200 ) | : 76.9 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-38 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 1.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/30/17 |
| Soil Type | : Red-Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | 100.0 |
| 3/4 | in. | 19 | mm | 94.7 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 94.7 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 94.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 89.9 |

AASHTO T88

| | | | | % 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 | 42.8 |
| 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 | |

$D_{50}$ = 0.122 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 22.4 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 35 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 30 |
| | | Plasticity Index | : 5 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.54 |
| Gravel ( 3in. + No.10 ) | : 10.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 21.6 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 25.5 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 42.8 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 5.3 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.5 |
| Coarse Sand ( -No.4 + No.10 ) | : 4.3 |
| Medium Sand ( -No.10 + No.40 ) | : 21.6 |
| Fine Sand ( -No.40 + No.200 ) | : 25.5 |
| Silt + Clay ( -No.200 ) | : 42.8 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Orange Sandy Elastic Silt

Sample No. : SS-2
Sample Loc. : Boring No. SB-37
Sample Depth : 2.0' to 3.5'
Date Tested : 03/21/17
Date Reported : 03/27/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 99.1 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 96.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 91.8 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 81.4 |
| 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 | 52.2 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.057 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 29.5
Liquid Limit (AASHTO T89) : 51
Plastic Limit (AASHTO T90) : 44
Plasticity Index : 7
Liquidity Index : -2.06
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-5 (3)
ASTM Classification: D2487 : MH

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 8.2
Coarse Sand ( -No.10 + No.40 ) : 10.4
Fine Sand ( -No.40 + No.200 ) : 29.2
Silt + Clay ( -No.200 ) : 52.2

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 3.9
Coarse Sand ( -No.4 + No.10 ) : 4.3
Medium Sand ( -No.10 + No.40 ) : 10.4
Fine Sand ( -No.40 + No.200 ) : 29.2
Silt + Clay ( -No.200 ) : 52.2

Approved By : Kevin E. Walker

Soil No. 183

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-2 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. NB-38 |
| Project State | : | South Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/30/17 |
| Soil Type | : | Red Sandy 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 | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 97.4 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 95.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 89.8 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 76.1 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 52.3 |
| 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 | |

$D_{50}$ = 0.056 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 17.3 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 29 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 22 |
| | | | Plasticity Index | : 7 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -0.69 |
| Gravel ( 3in. + No.10 ) | : | 10.2 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 13.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 23.8 | AASHTO Classification: M145 | : A-4 (1) |
| Silt + Clay ( -No.200 ) | : | 52.3 | ASTM Classification: D2487 | : CL-ML |

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 ) | : | 5.3 |
| Medium Sand ( -No.10 + No.40 ) | : | 13.7 |
| Fine Sand ( -No.40 + No.200 ) | : | 23.8 |
| Silt + Clay ( -No.200 ) | : | 52.3 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Red-Brown Silty Sand

Sample No. : SS-3
Sample Loc. : Boring No. SB-39
Sample Depth : 4.0' to 5.5'
Date Tested : 03/21/17
Date Reported : 03/30/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 96.6 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 73.4 |
| 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 | 39.1 |
| 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 | |

$D_{50}$ = 0.13 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 16.3
Liquid Limit (AASHTO T89) : 33
Plastic Limit (AASHTO T90) : 29
Plasticity Index : 4
Liquidity Index : -3.20
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 3.4
Coarse Sand ( -No.10 + No.40 ) : 23.2
Fine Sand ( -No.40 + No.200 ) : 34.3
Silt + Clay ( -No.200 ) : 39.1

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 ) : 3.1
Medium Sand ( -No.10 + No.40 ) : 23.2
Fine Sand ( -No.40 + No.200 ) : 34.3
Silt + Clay ( -No.200 ) : 39.1

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Red, Orange & Brown Clayey Sand

Sample No. : SS-2
Sample Loc. : Boring No. BR-155
Sample Depth : 4.0' to 5.5'
Date Tested : 03/21/17
Date Reported : 03/30/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 96.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 86.8 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 57.4 |
| 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 | 35.9 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.234 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 17.3
Liquid Limit (AASHTO T89) : 29
Plastic Limit (AASHTO T90) : 18
Plasticity Index : 11
Liquidity Index : -0.07
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-6 (0)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 13.2
Coarse Sand ( -No.10 + No.40 ) : 29.4
Fine Sand ( -No.40 + No.200 ) : 21.5
Silt + Clay ( -No.200 ) : 35.9

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 3.6
Coarse Sand ( -No.4 + No.10 ) : 9.6
Medium Sand ( -No.10 + No.40 ) : 29.4
Fine Sand ( -No.40 + No.200 ) : 21.5
Silt + Clay ( -No.200 ) : 35.9

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-5 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-155 |
| Project State | : South Carolina | Sample Depth | : 10.0' to 11.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/27/17 |
| Soil Type | : Brown, Orange, White & Black Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 96.3 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 72.5 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 34.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.154 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 20.1 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : NP |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : NP |
| | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 3.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 23.8 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 38.5 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 34.0 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.2 |
| Coarse Sand ( -No.4 + No.10 ) | : 3.5 |
| Medium Sand ( -No.10 + No.40 ) | : 23.8 |
| Fine Sand ( -No.40 + No.200 ) | : 38.5 |
| Silt + Clay ( -No.200 ) | : 34.0 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-8 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-155 |
| Project State | : South Carolina | Sample Depth | : 23.3' to 24.8' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/30/17 |
| Soil Type | : Brown, White, Orange & Black Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 94.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 77.7 |
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 45.4 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 26.1 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.53 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 17.7 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 25 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 25 |
| | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 22.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 32.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 19.3 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 26.1 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 5.1 |
| Coarse Sand ( -No.4 + No.10 ) | : 17.2 |
| Medium Sand ( -No.10 + No.40 ) | : 32.3 |
| Fine Sand ( -No.40 + No.200 ) | : 19.3 |
| Silt + Clay ( -No.200 ) | : 26.1 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-4 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-156 |
| Project State | : South Carolina | Sample Depth | : 8.0' to 9.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/30/17 |
| Soil Type | : White, Brown & Gray Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 91.5 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 69.1 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 35.1 |
| 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 | 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 | |

$D_{50}$ = 0.838 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 8.4 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : NP |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : NP |
| | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 30.9 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 34.0 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 17.7 | AASHTO Classification: M145 | : A-1-b (0) |
| Silt + Clay ( -No.200 ) | : 17.4 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 8.5 |
| Coarse Sand ( -No.4 + No.10 ) | : 22.4 |
| Medium Sand ( -No.10 + No.40 ) | : 34.0 |
| Fine Sand ( -No.40 + No.200 ) | : 17.7 |
| Silt + Clay ( -No.200 ) | : 17.4 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown & White Silty Sand

Sample No. : SS-9
Sample Loc. : Boring No. BR-155
Sample Depth : 28.3' to 29.8'
Date Tested : 03/21/17
Date Reported : 03/27/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 93.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 69.4 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 36.4 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 19.9 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.805 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 13.6
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 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 30.6
Coarse Sand ( -No.10 + No.40 ) : 33.0
Fine Sand ( -No.40 + No.200 ) : 16.5
Silt + Clay ( -No.200 ) : 19.9

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 ) : 23.7
Medium Sand ( -No.10 + No.40 ) : 33.0
Fine Sand ( -No.40 + No.200 ) : 16.5
Silt + Clay ( -No.200 ) : 19.9

Approved By : Kevin E. Walker

Soil No. 190

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown & White Silty Sand

Sample No. : SS-13
Sample Loc. : Boring No. BR-155
Sample Depth : 48.3' to 49.8'
Date Tested : 03/21/17
Date Reported : 03/30/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 99.2 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 92.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 70.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 39.9 |
| 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 | 20.1 |
| 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 | |

$D_{50}$ = 0.712 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 15.7
Liquid Limit (AASHTO T89) : 25
Plastic Limit (AASHTO T90) : 22
Plasticity Index : 3
Liquidity Index : -2.20
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-1-b (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 29.8
Coarse Sand ( -No.10 + No.40 ) : 30.3
Fine Sand ( -No.40 + No.200 ) : 19.8
Silt + Clay ( -No.200 ) : 20.1

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 7.8
Coarse Sand ( -No.4 + No.10 ) : 22.0
Medium Sand ( -No.10 + No.40 ) : 30.3
Fine Sand ( -No.40 + No.200 ) : 19.8
Silt + Clay ( -No.200 ) : 20.1

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown & White Silty Sand with Gravel

Sample No. : SS-12
Sample Loc. : Boring No. BR-156
Sample Depth : 44.8' to 45.6'
Date Tested : 03/21/17
Date Reported : 03/30/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 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 | 89.9 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 77.9 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 63.5 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 51.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 35.9 |
| 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 | 19.2 |
| 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 | |

$D_{50}$ = 1.755 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 15.2
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-1-b (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 48.7
Coarse Sand ( -No.10 + No.40 ) : 15.4
Fine Sand ( -No.40 + No.200 ) : 16.7
Silt + Clay ( -No.200 ) : 19.2

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 10.1
Fine Gravel ( -3/4in. + No.4 ) : 26.4
Coarse Sand ( -No.4 + No.10 ) : 12.2
Medium Sand ( -No.10 + No.40 ) : 15.4
Fine Sand ( -No.40 + No.200 ) : 16.7
Silt + Clay ( -No.200 ) : 19.2

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-14 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-155 |
| Project State | : South Carolina | Sample Depth | : 53.3' to 54.8' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/30/17 |
| Soil Type | : Brown & White Well-Graded Sand with Silt and Gravel | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | 100.0 |
| 3/4 | in. | 19 | mm | 88.5 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 80.6 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 61.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 44.2 |
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 21.6 |
| 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 | 10.6 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 2.687 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 10.5 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : NP |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : NP |
| | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 55.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 22.6 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 11.0 | AASHTO Classification: M145 | : A-1-a (0) |
| Silt + Clay ( -No.200 ) | : 10.6 | ASTM Classification: D2487 | : SW-SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 11.5 |
| Fine Gravel ( -3/4in. + No.4 ) | : 27.3 |
| Coarse Sand ( -No.4 + No.10 ) | : 17.0 |
| Medium Sand ( -No.10 + No.40 ) | : 22.6 |
| Fine Sand ( -No.40 + No.200 ) | : 11.0 |
| Silt + Clay ( -No.200 ) | : 10.6 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Red, Orange & Brown Silty Sand

Sample No. : SS-1
Sample Loc. : Boring No. BR-155
Sample Depth : 2.0' to 3.5'
Date Tested : 03/21/17
Date Reported : 03/30/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 90.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 68.1 |
| 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 | 45.1 |
| 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 | |

$D_{50}$ = 0.109 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 15.5
Liquid Limit (AASHTO T89) : 30
Plastic Limit (AASHTO T90) : 25
Plasticity Index : 5
Liquidity Index : -1.80
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 ) : 9.7
Coarse Sand ( -No.10 + No.40 ) : 22.2
Fine Sand ( -No.40 + No.200 ) : 23.0
Silt + Clay ( -No.200 ) : 45.1

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 ) : 6.9
Medium Sand ( -No.10 + No.40 ) : 22.2
Fine Sand ( -No.40 + No.200 ) : 23.0
Silt + Clay ( -No.200 ) : 45.1

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown, Orange, White & Gray Silty Sand

Sample No. : SS-5
Sample Loc. : Boring No. BR-156
Sample Depth : 10.0' to 11.5'
Date Tested : 03/21/17
Date Reported : 03/30/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 85.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 75.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 54.1 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 29.5 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.318 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 14.5
Liquid Limit (AASHTO T89) : 27
Plastic Limit (AASHTO T90) : 25
Plasticity Index : 2
Liquidity Index : -5.19
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 ) : 24.3
Coarse Sand ( -No.10 + No.40 ) : 21.6
Fine Sand ( -No.40 + No.200 ) : 24.6
Silt + Clay ( -No.200 ) : 29.5

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 14.3
Coarse Sand ( -No.4 + No.10 ) : 10.0
Medium Sand ( -No.10 + No.40 ) : 21.6
Fine Sand ( -No.40 + No.200 ) : 24.6
Silt + Clay ( -No.200 ) : 29.5

Approved By : Kevin E. Walker

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown, Orange, Yellow & Red Silty Sand

Sample No. : SS-4
Sample Loc. : Boring No. BR-155
Sample Depth : 8.0' to 9.5'
Date Tested : 03/21/17
Date Reported : 03/30/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 97.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 90.8 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 70.1 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 35.8 |
| 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 | |

$D_{50}$ = 0.154 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 20.2
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 9.2
Coarse Sand ( -No.10 + No.40 ) : 20.7
Fine Sand ( -No.40 + No.200 ) : 34.3
Silt + Clay ( -No.200 ) : 35.8

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 2.6
Coarse Sand ( -No.4 + No.10 ) : 6.6
Medium Sand ( -No.10 + No.40 ) : 20.7
Fine Sand ( -No.40 + No.200 ) : 34.3
Silt + Clay ( -No.200 ) : 35.8

Approved By : Kevin E. Walker

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-7 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-156 |
| Project State | : South Carolina | Sample Depth | : 19.8' to 21.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/30/17 |
| Soil Type | : Brown, Orange, White, Gray & Black Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 98.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 92.3 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 68.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 38.4 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.147 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 16.2 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 33 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 29 |
| | | Plasticity Index | : 4 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -3.22 |
| Gravel ( 3in. + No.10 ) | : 7.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 24.1 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 29.8 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 38.4 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 1.3 |
| Coarse Sand ( -No.4 + No.10 ) | : 6.4 |
| Medium Sand ( -No.10 + No.40 ) | : 24.1 |
| Fine Sand ( -No.40 + No.200 ) | : 29.8 |
| Silt + Clay ( -No.200 ) | : 38.4 |

Approved By : Kevin E. Walker

Soil No. 197

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-9 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. BR-156 |
| Project State | : | South Carolina | Sample Depth | : 29.8' to 31.3' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/30/17 |
| Soil Type | : | Brown, White, 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 | |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 100.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 99.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 85.6 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 43.1 |
| 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 | |

$D_{50}$ = 0.099 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 29.0 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 38 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 35 |
| | | | Plasticity Index | : 3 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -1.93 |
| Gravel ( 3in. + No.10 ) | : | 1.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 13.4 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 42.5 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : | 43.1 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.0 |
| Coarse Sand ( -No.4 + No.10 ) | : | 1.0 |
| Medium Sand ( -No.10 + No.40 ) | : | 13.4 |
| Fine Sand ( -No.40 + No.200 ) | : | 42.5 |
| Silt + Clay ( -No.200 ) | : | 43.1 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown & White Silty Sand

Sample No. : SS-12
Sample Loc. : Boring No. BR-155
Sample Depth : 43.3' to 44.8'
Date Tested : 03/21/17
Date Reported : 03/27/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 98.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 91.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 66.9 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 36.7 |
| 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 | |

$D_{50}$ = 0.161 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 15.2
Liquid Limit (AASHTO T89) : 29
Plastic Limit (AASHTO T90) : 27
Plasticity Index : 2
Liquidity Index : -5.82
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 8.5
Coarse Sand ( -No.10 + No.40 ) : 24.6
Fine Sand ( -No.40 + No.200 ) : 30.2
Silt + Clay ( -No.200 ) : 36.7

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 1.2
Coarse Sand ( -No.4 + No.10 ) : 7.3
Medium Sand ( -No.10 + No.40 ) : 24.6
Fine Sand ( -No.40 + No.200 ) : 30.2
Silt + Clay ( -No.200 ) : 36.7

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Red Silty Sand with Gravel

Sample No. : SS-2
Sample Loc. : Boring No. C-130
Sample Depth : 4.0' to 5.5'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 85.8 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 82.3 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 75.6 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 60.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 40.1 |
| 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 | |

$D_{50}$ = 0.178 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 20.9
Liquid Limit (AASHTO T89) : 36
Plastic Limit (AASHTO T90) : 28
Plasticity Index : 8
Liquidity Index : -0.85
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 ) : 24.4
Coarse Sand ( -No.10 + No.40 ) : 15.6
Fine Sand ( -No.40 + No.200 ) : 19.9
Silt + Clay ( -No.200 ) : 40.1

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 17.7
Coarse Sand ( -No.4 + No.10 ) : 6.7
Medium Sand ( -No.10 + No.40 ) : 15.6
Fine Sand ( -No.40 + No.200 ) : 19.9
Silt + Clay ( -No.200 ) : 40.1

Approved By : Kevin E. Walker

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-3 |
| Project County | : Cherokee | Sample Loc. | : Boring No. C-130 |
| Project State | : Soute Carolina | Sample Depth | : 6.0' to 7.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Red & 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 | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 94.4 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 91.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 87.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 69.6 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 36.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.155 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 23.6 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 29 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 21 |
| | | Plasticity Index | : 8 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : 0.37 |
| Gravel ( 3in. + No.10 ) | : 12.5 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 17.9 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 33.6 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 36.0 | ASTM Classification: D2487 | : SC |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 8.1 |
| Coarse Sand ( -No.4 + No.10 ) | : 4.4 |
| Medium Sand ( -No.10 + No.40 ) | : 17.9 |
| Fine Sand ( -No.40 + No.200 ) | : 33.6 |
| Silt + Clay ( -No.200 ) | : 36.0 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-5 |
| Project County | : Cherokee | Sample Loc. | : Boring No. C-130 |
| Project State | : Soute Carolina | Sample Depth | : 10.0' to 11.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Brown & Gray 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 | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.4 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 95.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 90.7 |

AASHTO T88

| | | | | % 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 | 33.1 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.164 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 20.5 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : NP |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : NP |
| | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 9.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 20.0 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 37.6 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 33.1 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 4.2 |
| Coarse Sand ( -No.4 + No.10 ) | : 5.1 |
| Medium Sand ( -No.10 + No.40 ) | : 20.0 |
| Fine Sand ( -No.40 + No.200 ) | : 37.6 |
| Silt + Clay ( -No.200 ) | : 33.1 |

Approved By : Kevin E. Walker

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-6 |
| Project County | : Cherokee | Sample Loc. | : Boring No. C-130 |
| Project State | : Soute Carolina | Sample Depth | : 14.5' to 16.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Gray & Red Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 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 | 96.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 90.4 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 66.5 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 31.1 |
| 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 | |

$D_{50}$ = 0.189 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 29.1 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 32 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 30 |
| | | Plasticity Index | : 2 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.22 |
| Gravel ( 3in. + No.10 ) | : 9.6 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 23.9 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 35.4 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 31.1 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 3.6 |
| Coarse Sand ( -No.4 + No.10 ) | : 6.0 |
| Medium Sand ( -No.10 + No.40 ) | : 23.9 |
| Fine Sand ( -No.40 + No.200 ) | : 35.4 |
| Silt + Clay ( -No.200 ) | : 31.1 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown & White Silty Sand

Sample No. : SS-7
Sample Loc. : Boring No. C-130
Sample Depth : 19.5' to 20.8'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 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 | 95.8 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 95.6 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 90.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 75.6 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 45.9 |
| 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 | 23.9 |
| 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 | |

$D_{50}$ = 0.526 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 14.5
Liquid Limit (AASHTO T89) : 28
Plastic Limit (AASHTO T90) : 28
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-1-b (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 24.4
Coarse Sand ( -No.10 + No.40 ) : 29.7
Fine Sand ( -No.40 + No.200 ) : 22.0
Silt + Clay ( -No.200 ) : 23.9

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 4.2
Fine Gravel ( -3/4in. + No.4 ) : 4.9
Coarse Sand ( -No.4 + No.10 ) : 15.3
Medium Sand ( -No.10 + No.40 ) : 29.7
Fine Sand ( -No.40 + No.200 ) : 22.0
Silt + Clay ( -No.200 ) : 23.9

Approved By : Kevin E. Walker

Soil No. 204

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown & White Silty Sand

Sample No. : SS-8
Sample Loc. : Boring No. C-130
Sample Depth : 24.5' to 25.8'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 85.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 59.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 31.8 |
| 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 | 16.1 |
| 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 | |

$D_{50}$ = 1.193 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 11.2
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-1-b (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 40.9
Coarse Sand ( -No.10 + No.40 ) : 27.3
Fine Sand ( -No.40 + No.200 ) : 15.7
Silt + Clay ( -No.200 ) : 16.1

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 14.2
Coarse Sand ( -No.4 + No.10 ) : 26.7
Medium Sand ( -No.10 + No.40 ) : 27.3
Fine Sand ( -No.40 + No.200 ) : 15.7
Silt + Clay ( -No.200 ) : 16.1

Approved By : Kevin E. Walker

Soil No. 205

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown Silty Sand with Gravel

Sample No. : SS-1
Sample Loc. : Boring No. C-131
Sample Depth : 2.0' to 3.5'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 84.3 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 73.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 62.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 46.4 |
| 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 | 23.5 |
| 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 | |

$D_{50}$ = 0.604 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 15.4
Liquid Limit (AASHTO T89) : 22
Plastic Limit (AASHTO T90) : 20
Plasticity Index : 2
Liquidity Index : -2.18
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-1-b (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 37.7
Coarse Sand ( -No.10 + No.40 ) : 15.9
Fine Sand ( -No.40 + No.200 ) : 22.9
Silt + Clay ( -No.200 ) : 23.5

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 26.3
Coarse Sand ( -No.4 + No.10 ) : 11.4
Medium Sand ( -No.10 + No.40 ) : 15.9
Fine Sand ( -No.40 + No.200 ) : 22.9
Silt + Clay ( -No.200 ) : 23.5

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. C-134 |
| Project State | : Soute Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Brown & 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 | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 97.6 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 95.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 88.9 |

AASHTO T88

| | | | | % 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 | 37.8 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.161 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 17.6 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 32 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 21 |
| | | Plasticity Index | : 11 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.26 |
| Gravel ( 3in. + No.10 ) | : 11.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 23.4 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 27.7 | AASHTO Classification: M145 | : A-6 (1) |
| Silt + Clay ( -No.200 ) | : 37.8 | ASTM Classification: D2487 | : SC |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 4.2 |
| Coarse Sand ( -No.4 + No.10 ) | : 6.9 |
| Medium Sand ( -No.10 + No.40 ) | : 23.4 |
| Fine Sand ( -No.40 + No.200 ) | : 27.7 |
| Silt + Clay ( -No.200 ) | : 37.8 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-5 |
| Project County | : Cherokee | Sample Loc. | : Boring No. C-134 |
| Project State | : Soute Carolina | Sample Depth | : 10.0' to 11.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Brown & 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 | 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 | 95.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 87.9 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 69.3 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 41.7 |
| 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 | |

$D_{50}$ = 0.126 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 17.6 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 29 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 20 |
| | | Plasticity Index | : 9 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.29 |
| Gravel ( 3in. + No.10 ) | : 12.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 18.6 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 27.6 | AASHTO Classification: M145 | : A-4 (1) |
| Silt + Clay ( -No.200 ) | : 41.7 | ASTM Classification: D2487 | : SC |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 4.9 |
| Coarse Sand ( -No.4 + No.10 ) | : 7.2 |
| Medium Sand ( -No.10 + No.40 ) | : 18.6 |
| Fine Sand ( -No.40 + No.200 ) | : 27.6 |
| Silt + Clay ( -No.200 ) | : 41.7 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown & Orange Silty Sand

Sample No. : SS-7
Sample Loc. : Boring No. C-134
Sample Depth : 18.4' to 19.9'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 100.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 96.8 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 57.3 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 35.3 |
| 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 | |

$D_{50}$ = 0.239 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 26.1
Liquid Limit (AASHTO T89) : 44
Plastic Limit (AASHTO T90) : 36
Plasticity Index : 8
Liquidity Index : -1.26
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-5 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 3.2
Coarse Sand ( -No.10 + No.40 ) : 39.5
Fine Sand ( -No.40 + No.200 ) : 22.0
Silt + Clay ( -No.200 ) : 35.3

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.0
Coarse Sand ( -No.4 + No.10 ) : 3.2
Medium Sand ( -No.10 + No.40 ) : 39.5
Fine Sand ( -No.40 + No.200 ) : 22.0
Silt + Clay ( -No.200 ) : 35.3

Approved By : Kevin E. Walker

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown & White Silty Sand

Sample No. : SS-8
Sample Loc. : Boring No. C-134
Sample Depth : 23.4' to 24.9'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 98.7 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 98.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 86.6 |

AASHTO T88

| | | | | % 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 | 27.4 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.5 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 25.8
Liquid Limit (AASHTO T89) : 46
Plastic Limit (AASHTO T90) : 40
Plasticity Index : 6
Liquidity Index : -2.34
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-5 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 13.4
Coarse Sand ( -No.10 + No.40 ) : 40.9
Fine Sand ( -No.40 + No.200 ) : 18.3
Silt + Clay ( -No.200 ) : 27.4

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 1.9
Coarse Sand ( -No.4 + No.10 ) : 11.5
Medium Sand ( -No.10 + No.40 ) : 40.9
Fine Sand ( -No.40 + No.200 ) : 18.3
Silt + Clay ( -No.200 ) : 27.4

Approved By : Kevin E. Walker

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown, Orange & White Silty Sand

Sample No. : SS-10
Sample Loc. : Boring No. C-134
Sample Depth : 33.4' to 34.9'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 81.7 |

AASHTO T88

| | | | | % 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 | 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 | |

$D_{50}$ = 0.683 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 20.1
Liquid Limit (AASHTO T89) : 37
Plastic Limit (AASHTO T90) : 34
Plasticity Index : 3
Liquidity Index : -4.58
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 ) : 18.3
Coarse Sand ( -No.10 + No.40 ) : 45.7
Fine Sand ( -No.40 + No.200 ) : 17.6
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 ) : 0.6
Coarse Sand ( -No.4 + No.10 ) : 17.7
Medium Sand ( -No.10 + No.40 ) : 45.7
Fine Sand ( -No.40 + No.200 ) : 17.6
Silt + Clay ( -No.200 ) : 18.4

Approved By : Kevin E. Walker

Soil No. 211

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Red Sandy Silt

Sample No. : SS-2
Sample Loc. : Boring No. BR-129
Sample Depth : 4.0' to 5.5'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 99.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 90.5 |
| 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 | 58.6 |
| 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 | |

$D_{50}$ = 0.028 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 31.9
Liquid Limit (AASHTO T89) : 44
Plastic Limit (AASHTO T90) : 33
Plasticity Index : 11
Liquidity Index : -0.12
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-7-5 (6)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 0.5
Coarse Sand ( -No.10 + No.40 ) : 9.0
Fine Sand ( -No.40 + No.200 ) : 31.9
Silt + Clay ( -No.200 ) : 58.6

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.1
Coarse Sand ( -No.4 + No.10 ) : 0.4
Medium Sand ( -No.10 + No.40 ) : 9.0
Fine Sand ( -No.40 + No.200 ) : 31.9
Silt + Clay ( -No.200 ) : 58.6

Approved By : Kevin E. Walker

Soil No. 212

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Orange Sandy Lean Clay

Sample No. : SS-2
Sample Loc. : Boring No. BR-127
Sample Depth : 4.0' to 5.5'
Date Tested : 03/21/17
Date Reported : 03/30/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 98.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 89.4 |
| 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 | 69.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.012 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 31.0
Liquid Limit (AASHTO T89) : 43
Plastic Limit (AASHTO T90) : 24
Plasticity Index : 19
Liquidity Index : 0.35
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-7-6 (12)
ASTM Classification: D2487 : CL

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 2.0
Coarse Sand ( -No.10 + No.40 ) : 8.6
Fine Sand ( -No.40 + No.200 ) : 20.4
Silt + Clay ( -No.200 ) : 69.0

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 1.0
Coarse Sand ( -No.4 + No.10 ) : 1.0
Medium Sand ( -No.10 + No.40 ) : 8.6
Fine Sand ( -No.40 + No.200 ) : 20.4
Silt + Clay ( -No.200 ) : 69.0

Approved By : Kevin E. Walker

Soil No. 213

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : White, Gray, Orange & Brown Silty Sand

Sample No. : SS-11
Sample Loc. : Boring No. BR-128
Sample Depth : 39.5' to 40.3'
Date Tested : 03/21/17
Date Reported : 03/30/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 96.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 84.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 52.4 |
| 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 | 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 | |

$D_{50}$ = 0.361 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 3.5
Liquid Limit (AASHTO T89) : 26
Plastic Limit (AASHTO T90) : 23
Plasticity Index : 3
Liquidity Index : -6.37
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 15.9
Coarse Sand ( -No.10 + No.40 ) : 31.7
Fine Sand ( -No.40 + No.200 ) : 25.7
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 ) : 3.6
Coarse Sand ( -No.4 + No.10 ) : 12.3
Medium Sand ( -No.10 + No.40 ) : 31.7
Fine Sand ( -No.40 + No.200 ) : 25.7
Silt + Clay ( -No.200 ) : 26.7

Approved By : Kevin E. Walker

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-3 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-129 |
| Project State | : Soute Carolina | Sample Depth | : 6.0' to 7.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/27/17 |
| Submitted By | : HDR | Date Reported | : 03/31/17 |
| Soil Type | : Red & White 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 | 99.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 82.2 |
| 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 | 47.9 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.083 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 25.6 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 37 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 30 |
| | | Plasticity Index | : 7 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.57 |
| Gravel ( 3in. + No.10 ) | : 0.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 17.0 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 34.3 | AASHTO Classification: M145 | : A-4 (1) |
| Silt + Clay ( -No.200 ) | : 47.9 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.0 |
| Coarse Sand ( -No.4 + No.10 ) | : 0.8 |
| Medium Sand ( -No.10 + No.40 ) | : 17.0 |
| Fine Sand ( -No.40 + No.200 ) | : 34.3 |
| Silt + Clay ( -No.200 ) | : 47.9 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Orange, Brown & White Sandy Silt

Sample No. : SS-4
Sample Loc. : Boring No. BR-127
Sample Depth : 8.0' to 9.5'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 98.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 94.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 79.7 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 50.2 |
| 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 | |

$D_{50}$ = 0.073 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 30.1
Liquid Limit (AASHTO T89) : 41
Plastic Limit (AASHTO T90) : 36
Plasticity Index : 5
Liquidity Index : -1.09
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-5 (1)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 5.7
Coarse Sand ( -No.10 + No.40 ) : 14.6
Fine Sand ( -No.40 + No.200 ) : 29.5
Silt + Clay ( -No.200 ) : 50.2

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 1.2
Coarse Sand ( -No.4 + No.10 ) : 4.5
Medium Sand ( -No.10 + No.40 ) : 14.6
Fine Sand ( -No.40 + No.200 ) : 29.5
Silt + Clay ( -No.200 ) : 50.2

Approved By : Kevin E. Walker

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Yellow & Brown Silty Sand

Sample No. : SS-7
Sample Loc. : Boring No. BR-127
Sample Depth : 18.5' to 20.0'
Date Tested : 03/21/17
Date Reported : 03/30/17

AASHTO T27 :

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

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 76.8 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 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 | |

$D_{50}$ = 0.12 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 27.4
Liquid Limit (AASHTO T89) : 34
Plastic Limit (AASHTO T90) : 34
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 2.9
Coarse Sand ( -No.10 + No.40 ) : 20.3
Fine Sand ( -No.40 + No.200 ) : 36.8
Silt + Clay ( -No.200 ) : 40.0

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.0
Coarse Sand ( -No.4 + No.10 ) : 2.9
Medium Sand ( -No.10 + No.40 ) : 20.3
Fine Sand ( -No.40 + No.200 ) : 36.8
Silt + Clay ( -No.200 ) : 40.0

Approved By : Kevin E. Walker

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Yellow & Brown Silty Sand

Sample No. : SS-9
Sample Loc. : Boring No. BR-127
Sample Depth : 28.5' to 30.0'
Date Tested : 03/27/17
Date Reported : 03/31/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 83.8 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 41.5 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.106 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 25.5
Liquid Limit (AASHTO T89) : 25
Plastic Limit (AASHTO T90) : 25
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 0.0
Coarse Sand ( -No.10 + No.40 ) : 16.2
Fine Sand ( -No.40 + No.200 ) : 42.3
Silt + Clay ( -No.200 ) : 41.5

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.0
Coarse Sand ( -No.4 + No.10 ) : 0.0
Medium Sand ( -No.10 + No.40 ) : 16.2
Fine Sand ( -No.40 + No.200 ) : 42.3
Silt + Clay ( -No.200 ) : 41.5

Approved By : Kevin E. Walker

Soil No. 218

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Yellow & Brown Silty Sand

Sample No. : SS-11
Sample Loc. : Boring No. BR-127
Sample Depth : 38.5' to 40.0'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 98.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 68.4 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 30.3 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.184 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 26.6
Liquid Limit (AASHTO T89) : 26
Plastic Limit (AASHTO T90) : 26
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 1.5
Coarse Sand ( -No.10 + No.40 ) : 30.1
Fine Sand ( -No.40 + No.200 ) : 38.1
Silt + Clay ( -No.200 ) : 30.3

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.5
Coarse Sand ( -No.4 + No.10 ) : 1.0
Medium Sand ( -No.10 + No.40 ) : 30.1
Fine Sand ( -No.40 + No.200 ) : 38.1
Silt + Clay ( -No.200 ) : 30.3

Approved By : Kevin E. Walker

Soil No. 219

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-4 |
| Project County | : Cherokee | Sample Loc. | : BR-128 |
| Project State | : Soute Carolina | Sample Depth | : 8.0' to 9.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/27/17 |
| Submitted By | : HDR | Date Reported | : 03/31/17 |
| Soil Type | : Gray, White & Brown Silty Sand | | |

AASHTO T27 :

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

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 83.7 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 43.2 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.1 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 17.4 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 31 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 29 |
| | | Plasticity Index | : 2 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -5.87 |
| Gravel ( 3in. + No.10 ) | : 0.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 15.6 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 40.5 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 43.2 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.0 |
| Coarse Sand ( -No.4 + No.10 ) | : 0.7 |
| Medium Sand ( -No.10 + No.40 ) | : 15.6 |
| Fine Sand ( -No.40 + No.200 ) | : 40.5 |
| Silt + Clay ( -No.200 ) | : 43.2 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-9 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-128 |
| Project State | : Soute Carolina | Sample Depth | : 29.5' to 30.8' |
| Laboratory No. | : 10023919 | Date Tested | : 03/27/17 |
| Submitted By | : HDR | Date Reported | : 03/31/17 |
| Soil Type | : Orange, Brown, Gray & White 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 | 98.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 94.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 77.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 35.6 |
| 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 | |

$D_{50}$ = 0.137 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 17.7 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 26 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 26 |
| | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 6.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 16.8 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 41.6 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 35.6 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 1.6 |
| Coarse Sand ( -No.4 + No.10 ) | : 4.4 |
| Medium Sand ( -No.10 + No.40 ) | : 16.8 |
| Fine Sand ( -No.40 + No.200 ) | : 41.6 |
| Silt + Clay ( -No.200 ) | : 35.6 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-10 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-128 |
| Project State | : South Carolina | Sample Depth | : 34.5' to 35.4' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/30/17 |
| Soil Type | : Orange, Brown, Gray & White Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 99.2 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 80.9 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 38.4 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.12 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 10.5 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 22 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 22 |
| | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 0.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 18.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 42.5 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 38.4 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.1 |
| Coarse Sand ( -No.4 + No.10 ) | : 0.7 |
| Medium Sand ( -No.10 + No.40 ) | : 18.3 |
| Fine Sand ( -No.40 + No.200 ) | : 42.5 |
| Silt + Clay ( -No.200 ) | : 38.4 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : White & Yellow Sandy Silt

Sample No. : SS-14
Sample Loc. : Boring No. BR-129
Sample Depth : 53.5' to 55.0'
Date Tested : 03/21/17
Date Reported : 03/30/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 95.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 90.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 78.7 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 52.7 |
| 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 | |

$D_{50}$ = 0.053 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 34.9
Liquid Limit (AASHTO T89) : 30
Plastic Limit (AASHTO T90) : 30
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 9.9
Coarse Sand ( -No.10 + No.40 ) : 11.4
Fine Sand ( -No.40 + No.200 ) : 26.0
Silt + Clay ( -No.200 ) : 52.7

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 4.4
Coarse Sand ( -No.4 + No.10 ) : 5.5
Medium Sand ( -No.10 + No.40 ) : 11.4
Fine Sand ( -No.40 + No.200 ) : 26.0
Silt + Clay ( -No.200 ) : 52.7

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-129 |
| Project State | : Soute Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/27/17 |
| Submitted By | : HDR | Date Reported | : 03/31/17 |
| Soil Type | : Red 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 | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 99.1 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 98.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 97.3 |

AASHTO T88

| | | | | % 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 | 75.9 |
| 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 | |

$D_{50}$ = 0.008 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 24.3 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 58 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 31 |
| | | Plasticity Index | : 27 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.23 |
| Gravel ( 3in. + No.10 ) | : 2.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 5.4 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 16.0 | AASHTO Classification: M145 | : A-7-5 (22) |
| Silt + Clay ( -No.200 ) | : 75.9 | ASTM Classification: D2487 | : MH |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 1.9 |
| Coarse Sand ( -No.4 + No.10 ) | : 0.8 |
| Medium Sand ( -No.10 + No.40 ) | : 5.4 |
| Fine Sand ( -No.40 + No.200 ) | : 16.0 |
| Silt + Clay ( -No.200 ) | : 75.9 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-4 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. BR-129 |
| Project State | : | Soute Carolina | Sample Depth | : 8.0' to 9.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/27/17 |
| Submitted By | : | HDR | Date Reported | : 03/31/17 |
| Soil Type | : | White 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 | 99.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 97.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 75.8 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 37.7 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.131 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 26.1 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 35 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 32 |
| | | | Plasticity Index | : 3 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -1.85 |
| Gravel ( 3in. + No.10 ) | : | 2.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 21.4 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 38.1 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : | 37.7 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.8 |
| Coarse Sand ( -No.4 + No.10 ) | : | 2.0 |
| Medium Sand ( -No.10 + No.40 ) | : | 21.4 |
| Fine Sand ( -No.40 + No.200 ) | : | 38.1 |
| Silt + Clay ( -No.200 ) | : | 37.7 |

Approved By : Kevin E. Walker

Soil No. 225

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-7 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-129 |
| Project State | : Soute Carolina | Sample Depth | : 18.5' to 20.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/27/17 |
| Submitted By | : HDR | Date Reported | : 03/31/17 |
| Soil Type | : Red & Purple 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 | 99.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 99.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 95.3 |
| 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 | 69.7 |
| 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 | |

$D_{50}$ = 0.012 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 33.6 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 47 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 41 |
| | | Plasticity Index | : 6 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.30 |
| Gravel ( 3in. + No.10 ) | : 1.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 3.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 25.6 | AASHTO Classification: M145 | : A-5 (6) |
| Silt + Clay ( -No.200 ) | : 69.7 | ASTM Classification: D2487 | : ML |

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 ) | : 3.7 |
| Fine Sand ( -No.40 + No.200 ) | : 25.6 |
| Silt + Clay ( -No.200 ) | : 69.7 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown, Red & Purple Silt with Sand

Sample No. : SS-8
Sample Loc. : Boring No. BR-129
Sample Depth : 23.5' to 25.0'
Date Tested : 03/27/17
Date Reported : 03/31/17

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 99.6 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.3 |
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 94.3 |
| 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 | 72.5 |
| 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 | |

$D_{50}$ = 0.01 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 31.2
Liquid Limit (AASHTO T89) : 34
Plastic Limit (AASHTO T90) : 32
Plasticity Index : 2
Liquidity Index : -0.32
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (2)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 1.7
Coarse Sand ( -No.10 + No.40 ) : 4.0
Fine Sand ( -No.40 + No.200 ) : 21.8
Silt + Clay ( -No.200 ) : 72.5

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 ) : 0.9
Medium Sand ( -No.10 + No.40 ) : 4.0
Fine Sand ( -No.40 + No.200 ) : 21.8
Silt + Clay ( -No.200 ) : 72.5

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-13 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-129 |
| Project State | : Soute Carolina | Sample Depth | : 48.5' to 50.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/27/17 |
| Submitted By | : HDR | Date Reported | : 03/31/17 |
| Soil Type | : Green & 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 | 98.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 97.2 |

AASHTO T88

| | | | | % 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 | 64.8 |
| 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 | |

$D_{50}$ = 0.017 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 41.6 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 41 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 35 |
| | | Plasticity Index | : 6 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : 1.10 |
| Gravel ( 3in. + No.10 ) | : 2.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 6.9 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 25.5 | AASHTO Classification: M145 | : A-5 (4) |
| Silt + Clay ( -No.200 ) | : 64.8 | 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 ) | : 1.7 |
| Medium Sand ( -No.10 + No.40 ) | : 6.9 |
| Fine Sand ( -No.40 + No.200 ) | : 25.5 |
| Silt + Clay ( -No.200 ) | : 64.8 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : White & Yellow Silty Sand

Sample No. : SS-10
Sample Loc. : Boring No. BR-129
Sample Depth : 33.5' to 35.0'
Date Tested : 03/27/17
Date Reported : 03/31/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 93.9 |

AASHTO T88

| | | | | % 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 | 42.2 |
| 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 | |

$D_{50}$ = 0.111 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 32.2
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-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 6.1
Coarse Sand ( -No.10 + No.40 ) : 17.3
Fine Sand ( -No.40 + No.200 ) : 34.4
Silt + Clay ( -No.200 ) : 42.2

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 ) : 4.6
Medium Sand ( -No.10 + No.40 ) : 17.3
Fine Sand ( -No.40 + No.200 ) : 34.4
Silt + Clay ( -No.200 ) : 42.2

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : White & Yellow Silty Sand

Sample No. : SS-16
Sample Loc. : Boring No. BR-129
Sample Depth : 63.5' to 65.0'
Date Tested : 03/27/17
Date Reported : 03/31/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 95.5 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 87.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 75.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 50.1 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 25.9 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.422 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 21.3
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
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 ) : 24.3
Coarse Sand ( -No.10 + No.40 ) : 25.6
Fine Sand ( -No.40 + No.200 ) : 24.2
Silt + Clay ( -No.200 ) : 25.9

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 12.6
Coarse Sand ( -No.4 + No.10 ) : 11.7
Medium Sand ( -No.10 + No.40 ) : 25.6
Fine Sand ( -No.40 + No.200 ) : 24.2
Silt + Clay ( -No.200 ) : 25.9

Approved By : Kevin E. Walker

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-18 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-129 |
| Project State | : Soute Carolina | Sample Depth | : 73.5' to 75.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/27/17 |
| Submitted By | : HDR | Date Reported | : 03/31/17 |
| Soil Type | : White & Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 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 | 93.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 84.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 69.9 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 44.6 |
| 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 | |

$D_{50}$ = 0.109 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 15.2 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 31 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 28 |
| | | Plasticity Index | : 3 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -4.38 |
| Gravel ( 3in. + No.10 ) | : 15.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 14.8 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 25.3 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 44.6 | ASTM Classification: D2487 | : SM |

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 ) | : 8.9 |
| Medium Sand ( -No.10 + No.40 ) | : 14.8 |
| Fine Sand ( -No.40 + No.200 ) | : 25.3 |
| Silt + Clay ( -No.200 ) | : 44.6 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-118 |
| Project State | : South Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/30/17 |
| Soil Type | : Brown, White & 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 | 99.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 75.1 |
| 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 | 41.9 |
| 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 | |

$D_{50}$ = 0.115 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 20.0 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 29 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 26 |
| | | Plasticity Index | : 3 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.96 |
| Gravel ( 3in. + No.10 ) | : 0.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 24.1 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 33.2 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 41.9 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.0 |
| Coarse Sand ( -No.4 + No.10 ) | : 0.8 |
| Medium Sand ( -No.10 + No.40 ) | : 24.1 |
| Fine Sand ( -No.40 + No.200 ) | : 33.2 |
| Silt + Clay ( -No.200 ) | : 41.9 |

Approved By : Kevin E. Walker

Soil No. 232

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown, White & Orange Silty Sand

Sample No. : SS-4
Sample Loc. : Boring No. BR-118
Sample Depth : 10.0' to 11.5'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 96.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 60.9 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 32.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.221 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 15.8
Liquid Limit (AASHTO T89) : 31
Plastic Limit (AASHTO T90) : 27
Plasticity Index : 4
Liquidity Index : -2.74
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 3.7
Coarse Sand ( -No.10 + No.40 ) : 35.4
Fine Sand ( -No.40 + No.200 ) : 28.9
Silt + Clay ( -No.200 ) : 32.0

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.0
Coarse Sand ( -No.4 + No.10 ) : 3.7
Medium Sand ( -No.10 + No.40 ) : 35.4
Fine Sand ( -No.40 + No.200 ) : 28.9
Silt + Clay ( -No.200 ) : 32.0

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown & White Silty Sand

Sample No. : SS-6
Sample Loc. : Boring No. BR-119
Sample Depth : 14.7' to 16.2'
Date Tested : 03/21/17
Date Reported : 03/30/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 85.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 53.7 |
| 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 | 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 | |

$D_{50}$ = 0.314 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 20.0
Liquid Limit (AASHTO T89) : 40
Plastic Limit (AASHTO T90) : 40
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 14.5
Coarse Sand ( -No.10 + No.40 ) : 31.8
Fine Sand ( -No.40 + No.200 ) : 21.1
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 ) : 2.0
Coarse Sand ( -No.4 + No.10 ) : 12.5
Medium Sand ( -No.10 + No.40 ) : 31.8
Fine Sand ( -No.40 + No.200 ) : 21.1
Silt + Clay ( -No.200 ) : 32.6

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-7 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-120 |
| Project State | : Soute Carolina | Sample Depth | : 18.5' to 20.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/27/17 |
| Submitted By | : HDR | Date Reported | : 03/31/17 |
| Soil Type | : Red & Brown 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 | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 98.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 96.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 78.1 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 43.5 |
| 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 | |

$D_{50}$ = 0.104 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 22.6 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 31 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 20 |
| | | Plasticity Index | : 11 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : 0.22 |
| Gravel ( 3in. + No.10 ) | : 3.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 18.6 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 34.6 | AASHTO Classification: M145 | : A-6 (2) |
| Silt + Clay ( -No.200 ) | : 43.5 | ASTM Classification: D2487 | : SC |

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 ) | : 2.2 |
| Medium Sand ( -No.10 + No.40 ) | : 18.6 |
| Fine Sand ( -No.40 + No.200 ) | : 34.6 |
| Silt + Clay ( -No.200 ) | : 43.5 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-3 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. BR-119 |
| Project State | : | South Carolina | Sample Depth | : 6.0' to 7.5' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/30/17 |
| Soil Type | : | Light Brown & White Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 98.3 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 92.6 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 54.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 28.1 |
| 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 | |

$D_{50}$ = 0.321 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 12.1 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 32 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 29 |
| | | | Plasticity Index | : 3 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -5.77 |
| Gravel ( 3in. + No.10 ) | : | 7.4 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 38.4 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 26.1 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : | 28.1 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 1.7 |
| Coarse Sand ( -No.4 + No.10 ) | : | 5.7 |
| Medium Sand ( -No.10 + No.40 ) | : | 38.4 |
| Fine Sand ( -No.40 + No.200 ) | : | 26.1 |
| Silt + Clay ( -No.200 ) | : | 28.1 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown Silty Sand

Sample No. : SS-8
Sample Loc. : Boring No. BR-119
Sample Depth : 24.7' to 26.2'
Date Tested : 03/21/17
Date Reported : 03/30/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 98.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 82.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 43.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 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 | |

$D_{50}$ = 0.556 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 14.5
Liquid Limit (AASHTO T89) : 34
Plastic Limit (AASHTO T90) : 30
Plasticity Index : 4
Liquidity Index : -3.87
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-1-b (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 17.5
Coarse Sand ( -No.10 + No.40 ) : 39.3
Fine Sand ( -No.40 + No.200 ) : 19.8
Silt + Clay ( -No.200 ) : 23.4

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 1.9
Coarse Sand ( -No.4 + No.10 ) : 15.6
Medium Sand ( -No.10 + No.40 ) : 39.3
Fine Sand ( -No.40 + No.200 ) : 19.8
Silt + Clay ( -No.200 ) : 23.4

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-9 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-119 |
| Project State | : Soute Carolina | Sample Depth | : 29.7' to 31.2' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 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 | 97.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 80.9 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 40.4 |
| 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 | 18.1 |
| 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 | |

$D_{50}$ = 0.614 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 15.6 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 26 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 22 |
| | | Plasticity Index | : 4 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.65 |
| Gravel ( 3in. + No.10 ) | : 19.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 40.5 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 22.3 | AASHTO Classification: M145 | : A-1-b (0) |
| Silt + Clay ( -No.200 ) | : 18.1 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 2.6 |
| Coarse Sand ( -No.4 + No.10 ) | : 16.5 |
| Medium Sand ( -No.10 + No.40 ) | : 40.5 |
| Fine Sand ( -No.40 + No.200 ) | : 22.3 |
| Silt + Clay ( -No.200 ) | : 18.1 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-3 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-120 |
| Project State | : Soute Carolina | Sample Depth | : 6.0' to 7.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 94.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 67.4 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 41.6 |
| 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 | |

$D_{50}$ = 0.132 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 25.6 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 36 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 31 |
| | | Plasticity Index | : 5 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.04 |
| Gravel ( 3in. + No.10 ) | : 6.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 26.6 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 25.8 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 41.6 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.8 |
| Coarse Sand ( -No.4 + No.10 ) | : 5.2 |
| Medium Sand ( -No.10 + No.40 ) | : 26.6 |
| Fine Sand ( -No.40 + No.200 ) | : 25.8 |
| Silt + Clay ( -No.200 ) | : 41.6 |

Approved By : Kevin E. Walker

Soil No. 239

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : White & Brown Silty Sand

Sample No. : SS-8
Sample Loc. : Boring No. BR-120
Sample Depth : 23.5' to 25.0'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 94.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 53.6 |
| 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 | 31.8 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.319 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 24.4
Liquid Limit (AASHTO T89) : 35
Plastic Limit (AASHTO T90) : 35
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 6.0
Coarse Sand ( -No.10 + No.40 ) : 40.4
Fine Sand ( -No.40 + No.200 ) : 21.8
Silt + Clay ( -No.200 ) : 31.8

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.3
Coarse Sand ( -No.4 + No.10 ) : 5.7
Medium Sand ( -No.10 + No.40 ) : 40.4
Fine Sand ( -No.40 + No.200 ) : 21.8
Silt + Clay ( -No.200 ) : 31.8

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-11 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. BR-120 |
| Project State | : | Soute Carolina | Sample Depth | : 38.5' to 40.0' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : | HDR | Date Reported | : 04/04/17 |
| Soil Type | : | White, Yellow & Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 85.0 |

AASHTO T88

| | | | | % 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 | 23.3 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.503 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 20.6 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 38 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 34 |
| | | | Plasticity Index | : 4 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : -3.26 |
| Gravel ( 3in. + No.10 ) | : | 15.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 39.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 22.4 | AASHTO Classification: M145 | : A-1-b (0) |
| Silt + Clay ( -No.200 ) | : | 23.3 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.8 |
| Coarse Sand ( -No.4 + No.10 ) | : | 14.2 |
| Medium Sand ( -No.10 + No.40 ) | : | 39.3 |
| Fine Sand ( -No.40 + No.200 ) | : | 22.4 |
| Silt + Clay ( -No.200 ) | : | 23.3 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown Clayey Sand

Sample No. : SS-10
Sample Loc. : Boring No. BR-118
Sample Depth : 40.0' to 40.4'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 99.7 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 95.5 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 77.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 42.5 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 19.9 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.592 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 14.0
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-2-6 (3)
ASTM Classification: D2487 : SC

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 22.5
Coarse Sand ( -No.10 + No.40 ) : 35.0
Fine Sand ( -No.40 + No.200 ) : 22.6
Silt + Clay ( -No.200 ) : 19.9

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 ) : 18.0
Medium Sand ( -No.10 + No.40 ) : 35.0
Fine Sand ( -No.40 + No.200 ) : 22.6
Silt + Clay ( -No.200 ) : 19.9

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown Silty Sand

Sample No. : SS-1
Sample Loc. : Boring No. BR-120
Sample Depth : 2.0' to 3.5'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 89.4 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 59.4 |
| 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 | 35.9 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.212 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 15.6
Liquid Limit (AASHTO T89) : 33
Plastic Limit (AASHTO T90) : 27
Plasticity Index : 6
Liquidity Index : -1.84
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 10.6
Coarse Sand ( -No.10 + No.40 ) : 30.0
Fine Sand ( -No.40 + No.200 ) : 23.5
Silt + Clay ( -No.200 ) : 35.9

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.5
Coarse Sand ( -No.4 + No.10 ) : 10.1
Medium Sand ( -No.10 + No.40 ) : 30.0
Fine Sand ( -No.40 + No.200 ) : 23.5
Silt + Clay ( -No.200 ) : 35.9

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-122 |
| Project State | : Soute Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 99.5 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 96.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 89.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 68.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 42.2 |
| 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 | |

$D_{50}$ = 0.127 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 33.5 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 41 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 38 |
| | | Plasticity Index | : 3 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.66 |
| Gravel ( 3in. + No.10 ) | : 10.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 21.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 25.8 | AASHTO Classification: M145 | : A-5 (0) |
| Silt + Clay ( -No.200 ) | : 42.2 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 3.4 |
| Coarse Sand ( -No.4 + No.10 ) | : 7.3 |
| Medium Sand ( -No.10 + No.40 ) | : 21.3 |
| Fine Sand ( -No.40 + No.200 ) | : 25.8 |
| Silt + Clay ( -No.200 ) | : 42.2 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-3 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-122 |
| Project State | : Soute Carolina | Sample Depth | : 6.0' to 7.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Brown Poorly Graded Sand with Silt and Gravel | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 78.1 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 57.5 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 35.5 |
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 21.4 |
| 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 | 10.4 |
| 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 | |

$D_{50}$ = 3.537 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 10.6 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 23 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 20 |
| | | Plasticity Index | : 3 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -3.20 |
| Gravel ( 3in. + No.10 ) | : 64.5 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 14.1 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 11.0 | AASHTO Classification: M145 | : A-1-a (0) |
| Silt + Clay ( -No.200 ) | : 10.4 | ASTM Classification: D2487 | : SP-SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 42.5 |
| Coarse Sand ( -No.4 + No.10 ) | : 22.0 |
| Medium Sand ( -No.10 + No.40 ) | : 14.1 |
| Fine Sand ( -No.40 + No.200 ) | : 11.0 |
| Silt + Clay ( -No.200 ) | : 10.4 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-7 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. BR-122 |
| Project State | : | Soute Carolina | Sample Depth | : 18.4' to 19.9' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : | HDR | Date Reported | : 04/04/17 |
| Soil Type | : | Brown 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 | |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 100.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 93.1 |
| 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 | 71.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.011 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 55.4 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 60 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 51 |
| | | | Plasticity Index | : 9 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : 0.46 |
| Gravel ( 3in. + No.10 ) | : | 1.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 5.1 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 22.1 | AASHTO Classification: M145 | : A-5 (10) |
| Silt + Clay ( -No.200 ) | : | 71.0 | ASTM Classification: D2487 | : MH |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.0 |
| Coarse Sand ( -No.4 + No.10 ) | : | 1.8 |
| Medium Sand ( -No.10 + No.40 ) | : | 5.1 |
| Fine Sand ( -No.40 + No.200 ) | : | 22.1 |
| Silt + Clay ( -No.200 ) | : | 71.0 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown Silty Gravel with Sand

Sample No. : SS-6
Sample Loc. : Boring No. BR-122
Sample Depth : 13.4' to 14.9'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 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 | 94.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 75.4 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 66.5 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 60.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 54.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 42.5 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.228 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 22.5
Liquid Limit (AASHTO T89) : 43
Plastic Limit (AASHTO T90) : 38
Plasticity Index : 5
Liquidity Index : -3.15
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-5 (0)
ASTM Classification: D2487 : GM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 39.9
Coarse Sand ( -No.10 + No.40 ) : 5.9
Fine Sand ( -No.40 + No.200 ) : 11.7
Silt + Clay ( -No.200 ) : 42.5

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 6.0
Fine Gravel ( -3/4in. + No.4 ) : 27.5
Coarse Sand ( -No.4 + No.10 ) : 6.4
Medium Sand ( -No.10 + No.40 ) : 5.9
Fine Sand ( -No.40 + No.200 ) : 11.7
Silt + Clay ( -No.200 ) : 42.5

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-11 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. BR-122 |
| Project State | : | Soute Carolina | Sample Depth | : 38.4' to 39.9' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : | HDR | Date Reported | : 04/04/17 |
| Soil Type | : | 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 | |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 100.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 99.2 |

AASHTO T88

| | | | | % 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 | 63.5 |
| 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 | |

$D_{50}$ = 0.018 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 44.3 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 41 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 34 |
| | | | Plasticity Index | : 7 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : 1.47 |
| Gravel ( 3in. + No.10 ) | : | 0.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 7.2 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 28.5 | AASHTO Classification: M145 | : A-5 (4) |
| Silt + Clay ( -No.200 ) | : | 63.5 | ASTM Classification: D2487 | : 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 ) | : | 0.8 |
| Medium Sand ( -No.10 + No.40 ) | : | 7.2 |
| Fine Sand ( -No.40 + No.200 ) | : | 28.5 |
| Silt + Clay ( -No.200 ) | : | 63.5 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-16 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-122 |
| Project State | : Soute Carolina | Sample Depth | : 63.4' to 64.9' |
| Laboratory No. | : 10023919 | Date Tested | : 03/27/17 |
| Submitted By | : HDR | Date Reported | : 03/31/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 96.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 90.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 72.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 38.2 |
| 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 | |

$D_{50}$ = 0.137 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 22.5 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 32 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 27 |
| | | Plasticity Index | : 5 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.92 |
| Gravel ( 3in. + No.10 ) | : 9.5 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 18.5 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 33.8 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 38.2 | ASTM Classification: D2487 | : SM |

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 ) | : 5.6 |
| Medium Sand ( -No.10 + No.40 ) | : 18.5 |
| Fine Sand ( -No.40 + No.200 ) | : 33.8 |
| Silt + Clay ( -No.200 ) | : 38.2 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-18 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-122 |
| Project State | : Soute Carolina | Sample Depth | : 73.4' to 73.7' |
| Laboratory No. | : 10023919 | Date Tested | : 03/27/17 |
| Submitted By | : HDR | Date Reported | : 03/31/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.2 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 90.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 78.6 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 55.3 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 26.7 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.308 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 16.2 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 32 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 28 |
| | | Plasticity Index | : 4 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -3.02 |
| Gravel ( 3in. + No.10 ) | : 21.4 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 23.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 28.6 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 26.7 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 9.1 |
| Coarse Sand ( -No.4 + No.10 ) | : 12.3 |
| Medium Sand ( -No.10 + No.40 ) | : 23.3 |
| Fine Sand ( -No.40 + No.200 ) | : 28.6 |
| Silt + Clay ( -No.200 ) | : 26.7 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-13 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-122 |
| Project State | : Soute Carolina | Sample Depth | : 48.4' to 49.7' |
| Laboratory No. | : 10023919 | Date Tested | : 03/27/17 |
| Submitted By | : HDR | Date Reported | : 03/31/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 93.3 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 91.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 87.8 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 78.3 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 43.8 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.102 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 21.1 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 26 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 26 |
| | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 12.2 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 9.5 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 34.5 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 43.8 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 8.8 |
| Coarse Sand ( -No.4 + No.10 ) | : 3.4 |
| Medium Sand ( -No.10 + No.40 ) | : 9.5 |
| Fine Sand ( -No.40 + No.200 ) | : 34.5 |
| Silt + Clay ( -No.200 ) | : 43.8 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-125 |
| Project State | : Soute Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/27/17 |
| Submitted By | : HDR | Date Reported | : 03/31/17 |
| Soil Type | : Brown 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 | 100.0 |
| 3/4 | in. | 19 | mm | 94.4 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 92.7 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 88.5 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 83.8 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 67.5 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 38.1 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.151 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 17.8 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 24 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 17 |
| | | Plasticity Index | : 7 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : 0.17 |
| Gravel ( 3in. + No.10 ) | : 16.2 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 16.3 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 29.4 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 38.1 | ASTM Classification: D2487 | : SC-SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 5.6 |
| Fine Gravel ( -3/4in. + No.4 ) | : 5.9 |
| Coarse Sand ( -No.4 + No.10 ) | : 4.7 |
| Medium Sand ( -No.10 + No.40 ) | : 16.3 |
| Fine Sand ( -No.40 + No.200 ) | : 29.4 |
| Silt + Clay ( -No.200 ) | : 38.1 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-3 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-125 |
| Project State | : Soute Carolina | Sample Depth | : 6.0' to 7.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/27/17 |
| Submitted By | : HDR | Date Reported | : 03/31/17 |
| Soil Type | : Brown Sandy Elastic 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 | 98.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 91.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 75.5 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 52.7 |
| 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 | |

$D_{50}$ = 0.053 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 28.1 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 72 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 42 |
| | | Plasticity Index | : 30 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.45 |
| Gravel ( 3in. + No.10 ) | : 8.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 16.2 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 22.8 | AASHTO Classification: M145 | : A-7-5 (14) |
| Silt + Clay ( -No.200 ) | : 52.7 | ASTM Classification: D2487 | : MH |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 1.8 |
| Coarse Sand ( -No.4 + No.10 ) | : 6.5 |
| Medium Sand ( -No.10 + No.40 ) | : 16.2 |
| Fine Sand ( -No.40 + No.200 ) | : 22.8 |
| Silt + Clay ( -No.200 ) | : 52.7 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-4 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-125 |
| Project State | : Soute Carolina | Sample Depth | : 8.0' to 9.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 94.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 71.2 |
| 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 | 40.2 |
| 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 | |

$D_{50}$ = 0.13 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 20.9 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 43 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 32 |
| | | Plasticity Index | : 11 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.02 |
| Gravel ( 3in. + No.10 ) | : 5.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 23.5 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 31.0 | AASHTO Classification: M145 | : A-7-5 (1) |
| Silt + Clay ( -No.200 ) | : 40.2 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.4 |
| Coarse Sand ( -No.4 + No.10 ) | : 4.9 |
| Medium Sand ( -No.10 + No.40 ) | : 23.5 |
| Fine Sand ( -No.40 + No.200 ) | : 31.0 |
| Silt + Clay ( -No.200 ) | : 40.2 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-6 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-125 |
| Project State | : Soute Carolina | Sample Depth | : 14.8' to 16.3' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 100.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.6 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 80.5 |
| 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 | 45.3 |
| 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 | |

$D_{50}$ = 0.095 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 19.7 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 41 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 36 |
| | | Plasticity Index | : 5 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -3.28 |
| Gravel ( 3in. + No.10 ) | : 1.4 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 18.1 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 35.2 | AASHTO Classification: M145 | : A-5 (1) |
| Silt + Clay ( -No.200 ) | : 45.3 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.0 |
| Coarse Sand ( -No.4 + No.10 ) | : 1.4 |
| Medium Sand ( -No.10 + No.40 ) | : 18.1 |
| Fine Sand ( -No.40 + No.200 ) | : 35.2 |
| Silt + Clay ( -No.200 ) | : 45.3 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown Silty Sand

Sample No. : SS-8
Sample Loc. : Boring No. BR-125
Sample Depth : 24.8' to 26.3'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 95.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 84.6 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 52.3 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 26.4 |
| 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 | |

$D_{50}$ = 0.364 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 18.6
Liquid Limit (AASHTO T89) : 36
Plastic Limit (AASHTO T90) : 33
Plasticity Index : 3
Liquidity Index : -4.75
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 15.4
Coarse Sand ( -No.10 + No.40 ) : 32.3
Fine Sand ( -No.40 + No.200 ) : 25.9
Silt + Clay ( -No.200 ) : 26.4

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 4.8
Coarse Sand ( -No.4 + No.10 ) : 10.6
Medium Sand ( -No.10 + No.40 ) : 32.3
Fine Sand ( -No.40 + No.200 ) : 25.9
Silt + Clay ( -No.200 ) : 26.4

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown Silty Sand

Sample No. : SS-10
Sample Loc. : Boring No. BR-125
Sample Depth : 34.8' to 36.3'
Date Tested : 03/27/17
Date Reported : 03/31/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 93.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 65.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 31.1 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.197 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 24.9
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 6.9
Coarse Sand ( -No.10 + No.40 ) : 28.1
Fine Sand ( -No.40 + No.200 ) : 33.9
Silt + Clay ( -No.200 ) : 31.1

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 1.0
Coarse Sand ( -No.4 + No.10 ) : 5.9
Medium Sand ( -No.10 + No.40 ) : 28.1
Fine Sand ( -No.40 + No.200 ) : 33.9
Silt + Clay ( -No.200 ) : 31.1

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-13 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-125 |
| Project State | : Soute Carolina | Sample Depth | : 49.8' to 51.3' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.3 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 72.5 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 33.5 |
| 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 | |

$D_{50}$ = 0.156 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 24.3 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 31 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 29 |
| | | Plasticity Index | : 2 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -2.45 |
| Gravel ( 3in. + No.10 ) | : 1.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 25.8 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 39.0 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 33.5 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.7 |
| Coarse Sand ( -No.4 + No.10 ) | : 1.0 |
| Medium Sand ( -No.10 + No.40 ) | : 25.8 |
| Fine Sand ( -No.40 + No.200 ) | : 39.0 |
| Silt + Clay ( -No.200 ) | : 33.5 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-11 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BR-125 |
| Project State | : Soute Carolina | Sample Depth | : 39.8' to 41.3' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 99.3 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 96.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 87.9 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 61.5 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 28.6 |
| 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 | |

$D_{50}$ = 0.232 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 27.2 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 32 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 31 |
| | | Plasticity Index | : 1 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -3.32 |
| Gravel ( 3in. + No.10 ) | : 12.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 26.4 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 32.9 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 28.6 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 3.8 |
| Coarse Sand ( -No.4 + No.10 ) | : 8.3 |
| Medium Sand ( -No.10 + No.40 ) | : 26.4 |
| Fine Sand ( -No.40 + No.200 ) | : 32.9 |
| Silt + Clay ( -No.200 ) | : 28.6 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. C-133 |
| Project State | : Soute Carolina | Sample Depth | : 2.0' to 3.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Red, Brown, 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 | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 99.2 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 96.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 93.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 74.4 |
| 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 | 34.5 |
| 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 | |

$D_{50}$ = 0.147 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 14.1 |
| Dry Dens. | : 113.1 | Liquid Limit (AASHTO T89) | : 31 |
| Opt. Moist. | : 15.1 | Plastic Limit (AASHTO T90) | : 22 |
| | | Plasticity Index | : 9 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.87 |
| Gravel ( 3in. + No.10 ) | : 6.9 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 18.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 39.9 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 34.5 | ASTM Classification: D2487 | : SC |

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 ) | : 3.8 |
| Medium Sand ( -No.10 + No.40 ) | : 18.7 |
| Fine Sand ( -No.40 + No.200 ) | : 39.9 |
| Silt + Clay ( -No.200 ) | : 34.5 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-4 |
| Project County | : Cherokee | Sample Loc. | : Boring No. C-133 |
| Project State | : Soute Carolina | Sample Depth | : 8.0' to 9.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Brown & 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 | 99.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 94.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 70.8 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 39.6 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.134 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 20.5 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 36 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 26 |
| | | Plasticity Index | : 10 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.53 |
| Gravel ( 3in. + No.10 ) | : 5.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 23.5 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 31.2 | AASHTO Classification: M145 | : A-4 (1) |
| Silt + Clay ( -No.200 ) | : 39.6 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.4 |
| Coarse Sand ( -No.4 + No.10 ) | : 5.3 |
| Medium Sand ( -No.10 + No.40 ) | : 23.5 |
| Fine Sand ( -No.40 + No.200 ) | : 31.2 |
| Silt + Clay ( -No.200 ) | : 39.6 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-6 |
| Project County | : Cherokee | Sample Loc. | : Boring No. C-133 |
| Project State | : Soute Carolina | Sample Depth | : 13.5' to 15.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Brown & 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 | 98.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 96.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 89.9 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 33.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.126 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 23.7 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : NP |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : NP |
| | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 4.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 6.1 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 56.9 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 33.0 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 1.8 |
| Coarse Sand ( -No.4 + No.10 ) | : 2.2 |
| Medium Sand ( -No.10 + No.40 ) | : 6.1 |
| Fine Sand ( -No.40 + No.200 ) | : 56.9 |
| Silt + Clay ( -No.200 ) | : 33.0 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-7 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. C-133 |
| Project State | : | Soute Carolina | Sample Depth | : 18.5' to 20.0' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : | HDR | Date Reported | : 04/04/17 |
| Soil Type | : | 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 | 99.4 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 98.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 96.7 |

AASHTO T88

| | | | | % 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 | 51.5 |
| 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 | |

$D_{50}$ = 0.062 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 23.9 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : 23 |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : 19 |
| | | | Plasticity Index | : 4 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : 1.12 |
| Gravel ( 3in. + No.10 ) | : | 3.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 4.8 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 40.4 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : | 51.5 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 1.6 |
| Coarse Sand ( -No.4 + No.10 ) | : | 1.7 |
| Medium Sand ( -No.10 + No.40 ) | : | 4.8 |
| Fine Sand ( -No.40 + No.200 ) | : | 40.4 |
| Silt + Clay ( -No.200 ) | : | 51.5 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-8 |
| Project County | : Cherokee | Sample Loc. | : Boring No. C-133 |
| Project State | : Soute Carolina | Sample Depth | : 23.5' to 25.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Gray Silty Sand with Gravel | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 89.1 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 79.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 70.4 |
| 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 | 22.3 |
| 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 | |

$D_{50}$ = 0.46 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 20.8 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 25 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 22 |
| | | Plasticity Index | : 3 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.38 |
| Gravel ( 3in. + No.10 ) | : 29.6 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 21.5 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 26.6 | AASHTO Classification: M145 | : A-1-b (0) |
| Silt + Clay ( -No.200 ) | : 22.3 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 20.3 |
| Coarse Sand ( -No.4 + No.10 ) | : 9.3 |
| Medium Sand ( -No.10 + No.40 ) | : 21.5 |
| Fine Sand ( -No.40 + No.200 ) | : 26.6 |
| Silt + Clay ( -No.200 ) | : 22.3 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : SS-9 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. C-133 |
| Project State | : | Soute Carolina | Sample Depth | : 28.5' to 29.3' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : | HDR | Date Reported | : 04/04/17 |
| Soil Type | : | Gray 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 | 99.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 87.9 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 43.5 |
| 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 | 18.7 |
| 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 | |

$D_{50}$ = 0.533 mm

| | | | | |
|---|---|---|---|---|
| CBR | : | NA | Natural Moisture ( % ) (AASHTO T265 ) | : 12.2 |
| Dry Dens. | : | NA | Liquid Limit (AASHTO T89) | : NP |
| Opt. Moist. | : | NA | Plastic Limit (AASHTO T90) | : NP |
| | | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : | 12.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 44.4 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 24.8 | AASHTO Classification: M145 | : A-1-b (0) |
| Silt + Clay ( -No.200 ) | : | 18.7 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 0.3 |
| Coarse Sand ( -No.4 + No.10 ) | : | 11.8 |
| Medium Sand ( -No.10 + No.40 ) | : | 44.4 |
| Fine Sand ( -No.40 + No.200 ) | : | 24.8 |
| Silt + Clay ( -No.200 ) | : | 18.7 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown & Orange Sandy Silt

Sample No. : SS-2
Sample Loc. : Boring No. RW-143A
Sample Depth : 4.0' to 5.5'
Date Tested : 03/27/17
Date Reported : 03/31/17

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | 100.0 |
| 3/4 | in. | 19 | mm | 90.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 90.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 88.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 85.5 |
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 72.5 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 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 | |

$D_{50}$ = 0.071 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 21.1
Liquid Limit (AASHTO T89) : 31
Plastic Limit (AASHTO T90) : 24
Plasticity Index : 7
Liquidity Index : -0.48
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 ) : 14.5
Coarse Sand ( -No.10 + No.40 ) : 13.0
Fine Sand ( -No.40 + No.200 ) : 22.1
Silt + Clay ( -No.200 ) : 50.4

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 10.0
Fine Gravel ( -3/4in. + No.4 ) : 1.4
Coarse Sand ( -No.4 + No.10 ) : 3.1
Medium Sand ( -No.10 + No.40 ) : 13.0
Fine Sand ( -No.40 + No.200 ) : 22.1
Silt + Clay ( -No.200 ) : 50.4

Approved By : Kevin E. Walker

Soil No. 266

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-6 |
| Project County | : Cherokee | Sample Loc. | : Boring No. RW-143A |
| Project State | : South Carolina | Sample Depth | : 13.5' to 15.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/27/17 |
| Soil Type | : Brown & Orange Sandy Silt | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 99.2 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 97.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 92.6 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 77.7 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 53.5 |
| 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 | |

$D_{50}$ = 0.049 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 21.9 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 35 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 26 |
| | | Plasticity Index | : 9 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.48 |
| Gravel ( 3in. + No.10 ) | : 7.4 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 14.9 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 24.2 | AASHTO Classification: M145 | : A-4 (3) |
| Silt + Clay ( -No.200 ) | : 53.5 | 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 ) | : 4.4 |
| Medium Sand ( -No.10 + No.40 ) | : 14.9 |
| Fine Sand ( -No.40 + No.200 ) | : 24.2 |
| Silt + Clay ( -No.200 ) | : 53.5 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-10 |
| Project County | : Cherokee | Sample Loc. | : Boring No. RW-143A |
| Project State | : Soute Carolina | Sample Depth | : 33.5' to 35.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Brown & 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 | 100.0 |
| 3/4 | in. | 19 | mm | 90.7 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 88.3 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 85.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 83.4 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 71.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 48.2 |
| 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 | |

$D_{50}$ = 0.086 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 25.9 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 43 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 30 |
| | | Plasticity Index | : 13 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -0.34 |
| Gravel ( 3in. + No.10 ) | : 16.6 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 12.2 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 23.0 | AASHTO Classification: M145 | : A-7-6 (4) |
| Silt + Clay ( -No.200 ) | : 48.2 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 9.3 |
| Fine Gravel ( -3/4in. + No.4 ) | : 5.1 |
| Coarse Sand ( -No.4 + No.10 ) | : 2.2 |
| Medium Sand ( -No.10 + No.40 ) | : 12.2 |
| Fine Sand ( -No.40 + No.200 ) | : 23.0 |
| Silt + Clay ( -No.200 ) | : 48.2 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Gray & Brown Silty Sand

Sample No. : SS-13
Sample Loc. : Boring No. RW-143A
Sample Depth : 48.5' to 50.0'
Date Tested : 03/27/17
Date Reported : 03/31/17

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 96.4 |
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 77.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 40.5 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.118 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 18.9
Liquid Limit (AASHTO T89) : NP
Plastic Limit (AASHTO T90) : NP
Plasticity Index : NP
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 3.6
Coarse Sand ( -No.10 + No.40 ) : 19.4
Fine Sand ( -No.40 + No.200 ) : 36.5
Silt + Clay ( -No.200 ) : 40.5

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.8
Coarse Sand ( -No.4 + No.10 ) : 2.8
Medium Sand ( -No.10 + No.40 ) : 19.4
Fine Sand ( -No.40 + No.200 ) : 36.5
Silt + Clay ( -No.200 ) : 40.5

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-14 |
| Project County | : Cherokee | Sample Loc. | : Boring No. RW-143A |
| Project State | : Soute Carolina | Sample Depth | : 53.5' to 54.3' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Gray & Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 96.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 86.8 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 59.3 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 29.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.25 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 20.9 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 25 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 24 |
| | | Plasticity Index | : 1 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -3.06 |
| Gravel ( 3in. + No.10 ) | : 13.2 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 27.5 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 30.3 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 29.0 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 3.3 |
| Coarse Sand ( -No.4 + No.10 ) | : 9.9 |
| Medium Sand ( -No.10 + No.40 ) | : 27.5 |
| Fine Sand ( -No.40 + No.200 ) | : 30.3 |
| Silt + Clay ( -No.200 ) | : 29.0 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-2 |
| Project County | : Cherokee | Sample Loc. | : Boring No. RW-150 |
| Project State | : Soute Carolina | Sample Depth | : 4.0' to 5.5' |
| Laboratory No. | : 10023919 | Date Tested | : 03/28/17 |
| Submitted By | : HDR | Date Reported | : 04/04/17 |
| Soil Type | : Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 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 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 75.6 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 41.3 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.116 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 19.8 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 34 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 29 |
| | | Plasticity Index | : 5 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : -1.89 |
| Gravel ( 3in. + No.10 ) | : 3.6 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 20.8 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 34.3 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 41.3 | 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 ) | : 2.6 |
| Medium Sand ( -No.10 + No.40 ) | : 20.8 |
| Fine Sand ( -No.40 + No.200 ) | : 34.3 |
| Silt + Clay ( -No.200 ) | : 41.3 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown To Brown Orange Sandy Silt

Sample No. : SS-5
Sample Loc. : Boring No. RW-150
Sample Depth : 10.0' to 11.5'
Date Tested : 03/21/17
Date Reported : 03/27/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.8 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 98.8 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 83.3 |
| 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 | 57.5 |
| 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 | |

$D_{50}$ = 0.032 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 24.0
Liquid Limit (AASHTO T89) : 44
Plastic Limit (AASHTO T90) : 31
Plasticity Index : 13
Liquidity Index : -0.51
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-7-5 (6)
ASTM Classification: D2487 : ML

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 1.2
Coarse Sand ( -No.10 + No.40 ) : 15.5
Fine Sand ( -No.40 + No.200 ) : 25.8
Silt + Clay ( -No.200 ) : 57.5

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 ) : 1.0
Medium Sand ( -No.10 + No.40 ) : 15.5
Fine Sand ( -No.40 + No.200 ) : 25.8
Silt + Clay ( -No.200 ) : 57.5

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-8 |
| Project County | : Cherokee | Sample Loc. | : Boring No. RW-150 |
| Project State | : South Carolina | Sample Depth | : 23.2' to 24.7' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/27/17 |
| Soil Type | : Light Brown & Orange 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 | 99.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 99.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 83.3 |
| 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 | 54.3 |
| 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 | |

$D_{50}$ = 0.044 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 32.5 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 40 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 32 |
| | | Plasticity Index | : 8 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : 0.08 |
| Gravel ( 3in. + No.10 ) | : 0.9 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 15.8 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 29.0 | AASHTO Classification: M145 | : A-4 (3) |
| Silt + Clay ( -No.200 ) | : 54.3 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.1 |
| Coarse Sand ( -No.4 + No.10 ) | : 0.8 |
| Medium Sand ( -No.10 + No.40 ) | : 15.8 |
| Fine Sand ( -No.40 + No.200 ) | : 29.0 |
| Silt + Clay ( -No.200 ) | : 54.3 |

Approved By : Kevin E. Walker

Soil No. 273

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Gray & Light Brown Silty Sand

Sample No. : SS-11
Sample Loc. : Boring No. RW-150
Sample Depth : 38.2' to 39.7'
Date Tested : 03/21/17
Date Reported : 03/27/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 72.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 32.8 |
| 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 | |

$D_{50}$ = 0.161 mm

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

Natural Moisture ( % ) (AASHTO T265 ) : 35.1
Liquid Limit (AASHTO T89) : 37
Plastic Limit (AASHTO T90) : 33
Plasticity Index : 4
Liquidity Index : 0.51
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 1.3
Coarse Sand ( -No.10 + No.40 ) : 26.7
Fine Sand ( -No.40 + No.200 ) : 39.2
Silt + Clay ( -No.200 ) : 32.8

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 0.1
Coarse Sand ( -No.4 + No.10 ) : 1.2
Medium Sand ( -No.10 + No.40 ) : 26.7
Fine Sand ( -No.40 + No.200 ) : 39.2
Silt + Clay ( -No.200 ) : 32.8

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-12 |
| Project County | : Cherokee | Sample Loc. | : Boring No. RW-150 |
| Project State | : South Carolina | Sample Depth | : 43.2' to 44.7' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/30/17 |
| Soil Type | : Gray & Brown Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 88.2 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 62.3 |
| 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 | 32.5 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.208 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 32.5 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : NP |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : NP |
| | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 11.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 25.9 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 29.8 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 32.5 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 2.1 |
| Coarse Sand ( -No.4 + No.10 ) | : 9.7 |
| Medium Sand ( -No.10 + No.40 ) | : 25.9 |
| Fine Sand ( -No.40 + No.200 ) | : 29.8 |
| Silt + Clay ( -No.200 ) | : 32.5 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : SS-14 |
| Project County | : Cherokee | Sample Loc. | : Boring No. RW-150 |
| Project State | : South Carolina | Sample Depth | : 53.2' to 54.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/27/17 |
| Soil Type | : Brown & Gray 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 | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.3 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 95.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 88.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 39.6 |
| 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 | 14.9 |
| 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 | |

$D_{50}$ = 0.592 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : 26.0 |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : NP |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : NP |
| | | Plasticity Index | : NP |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 11.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 48.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 24.7 | AASHTO Classification: M145 | : A-1-b (0) |
| Silt + Clay ( -No.200 ) | : 14.9 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 5.0 |
| Coarse Sand ( -No.4 + No.10 ) | : 6.7 |
| Medium Sand ( -No.10 + No.40 ) | : 48.7 |
| Fine Sand ( -No.40 + No.200 ) | : 24.7 |
| Silt + Clay ( -No.200 ) | : 14.9 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. NB-48 |
| Project State | : | South Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/27/17 |
| Soil Type | : | Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.8 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 97.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 93.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 68.5 |
| 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 | 46.4 |
| 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 | |

$D_{50}$ = 0.099 mm

| | | | | |
|---|---|---|---|---|
| CBR (AASHTO: T-193 ) | : | 2.5 | Natural Moisture ( % ) (AASHTO T265 ) | : NA |
| Dry Dens. (AASHTO: T-99; Method (C)) | : | 112.7 pcf | Liquid Limit (AASHTO T89) | : 37 |
| Opt. Moist. (AASHTO: T-99; Method (C)) | : | 15.2 % | Plastic Limit (AASHTO T90) | : 30 |
| | | | Plasticity Index | : 7 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : | 6.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 25.2 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 22.1 | AASHTO Classification: M145 | : A-4 (1) |
| Silt + Clay ( -No.200 ) | : | 46.4 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 3.0 |
| Coarse Sand ( -No.4 + No.10 ) | : | 3.3 |
| Medium Sand ( -No.10 + No.40 ) | : | 25.2 |
| Fine Sand ( -No.40 + No.200 ) | : | 22.1 |
| Silt + Clay ( -No.200 ) | : | 46.4 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-53 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/27/17 |
| Soil Type | : Red-Orange, Brown & Orange-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 | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.2 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 97.1 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 92.5 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 79.3 |
| 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 | 57.8 |
| 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 | |

$D_{50}$ = 0.031 mm

| | | | |
|---|---|---|---|
| CBR (AASHTO: T-193 ) | : 2.7 | Natural Moisture ( % ) (AASHTO T265 ) | : NA |
| Dry Dens. (AASHTO: T-99; Method (C)) | : 109.2 pcf | Liquid Limit (AASHTO T89) | : 42 |
| Opt. Moist. (AASHTO: T-99; Method (C)) | : 17 % | Plastic Limit (AASHTO T90) | : 29 |
| | | Plasticity Index | : 13 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 7.5 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 13.2 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 21.5 | AASHTO Classification: M145 | : A-7-6 (6) |
| Silt + Clay ( -No.200 ) | : 57.8 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 2.9 |
| Coarse Sand ( -No.4 + No.10 ) | : 4.6 |
| Medium Sand ( -No.10 + No.40 ) | : 13.2 |
| Fine Sand ( -No.40 + No.200 ) | : 21.5 |
| Silt + Clay ( -No.200 ) | : 57.8 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-43 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/27/17 |
| Soil Type | : Orange-Brown & 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 | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.9 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 96.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 93.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 73.8 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 50.6 |
| 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 | |

$D_{50}$ = 0.069 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : NA |
| Dry Dens. | : NA | Liquid Limit (AASHTO T89) | : 36 |
| Opt. Moist. | : NA | Plastic Limit (AASHTO T90) | : 27 |
| | | Plasticity Index | : 9 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 7.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 19.2 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 23.2 | AASHTO Classification: M145 | : A-4 (2) |
| Silt + Clay ( -No.200 ) | : 50.6 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 3.3 |
| Coarse Sand ( -No.4 + No.10 ) | : 3.7 |
| Medium Sand ( -No.10 + No.40 ) | : 19.2 |
| Fine Sand ( -No.40 + No.200 ) | : 23.2 |
| Silt + Clay ( -No.200 ) | : 50.6 |

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# SOIL CLASSIFICATION

| | | | | |
|---|---|---|---|---|
| Project Name | : | I-85 | | |
| Project No. | : | 10023919 | Sample No. | : Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : Boring No. NB-90 |
| Project State | : | South Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : | HDR | Date Reported | : 03/27/17 |
| Soil Type | : | Brown & Light Orange Silty, Clayey Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | 100.0 |
| 3/4 | in. | 19 | mm | 93.7 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 93.7 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 92.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 90.1 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 74.5 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 44.6 |
| 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 | |

$D_{50}$ = 0.103 mm

| | | | | |
|---|---|---|---|---|
| CBR (AASHTO: T-193 ) | : | 2.9 | Natural Moisture ( % ) (AASHTO T265 ) | : NA |
| Dry Dens. (AASHTO: T-99; Method (C)) | : | 115.1 pcf | Liquid Limit (AASHTO T89) | : 28 |
| Opt. Moist. (AASHTO: T-99; Method (C)) | : | 13.1 % | Plastic Limit (AASHTO T90) | : 22 |
| | | | Plasticity Index | : 6 |
| AASHTO Composition of Total Sample: M145 | | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : | 9.9 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : | 15.6 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : | 29.9 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : | 44.6 | ASTM Classification: D2487 | : SC-SM |

ASTM Composition of Total Sample: D2487

| | | |
|---|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : | 6.3 |
| Fine Gravel ( -3/4in. + No.4 ) | : | 1.5 |
| Coarse Sand ( -No.4 + No.10 ) | : | 2.1 |
| Medium Sand ( -No.10 + No.40 ) | : | 15.6 |
| Fine Sand ( -No.40 + No.200 ) | : | 29.9 |
| Silt + Clay ( -No.200 ) | : | 44.6 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-83 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/27/17 |
| Soil Type | : Light-Brown, White & Red-Orange 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 | 98.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 96.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 95.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 79.3 |
| 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 | 50.7 |
| 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 | |

$D_{50}$ = 0.068 mm

| | | | |
|---|---|---|---|
| CBR (AASHTO: T-193 ) | : 2.5 | Natural Moisture ( % ) (AASHTO T265 ) | : NA |
| Dry Dens. (AASHTO: T-99; Method (C)) | : 111.8 pcf | Liquid Limit (AASHTO T89) | : 33 |
| Opt. Moist. (AASHTO: T-99; Method (C)) | : 14.5 % | Plastic Limit (AASHTO T90) | : 26 |
| | | Plasticity Index | : 7 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 5.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 15.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 28.6 | AASHTO Classification: M145 | : A-4 (2) |
| Silt + Clay ( -No.200 ) | : 50.7 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 3.3 |
| Coarse Sand ( -No.4 + No.10 ) | : 1.7 |
| Medium Sand ( -No.10 + No.40 ) | : 15.7 |
| Fine Sand ( -No.40 + No.200 ) | : 28.6 |
| Silt + Clay ( -No.200 ) | : 50.7 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-68 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/27/17 |
| Soil Type | : Orange-Brown & Light Brown Silty Sand | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 91.7 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 66.9 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 43.1 |
| 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 | |

$D_{50}$ = 0.124 mm

| | | | |
|---|---|---|---|
| CBR (AASHTO: T-193 ) | : 2.9 | Natural Moisture ( % ) (AASHTO T265 ) | : NA |
| Dry Dens. (AASHTO: T-99; Method (C)) | : 114.4 pcf | Liquid Limit (AASHTO T89) | : 39 |
| Opt. Moist. (AASHTO: T-99; Method (C)) | : 13.4 % | Plastic Limit (AASHTO T90) | : 31 |
| | | Plasticity Index | : 8 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 8.3 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 24.8 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 23.8 | AASHTO Classification: M145 | : A-4 (1) |
| Silt + Clay ( -No.200 ) | : 43.1 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 2.0 |
| Coarse Sand ( -No.4 + No.10 ) | : 6.3 |
| Medium Sand ( -No.10 + No.40 ) | : 24.8 |
| Fine Sand ( -No.40 + No.200 ) | : 23.8 |
| Silt + Clay ( -No.200 ) | : 43.1 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. C-133 |
| Project State | : South Carolina | Sample Depth | : 1.2' to 6.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/27/17 |
| Soil Type | : Red, Brown, Orange & Gray Sandy Lean Clay | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.8 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 97.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 93.1 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 75.9 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 52.8 |
| 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 | |

$D_{50}$ = 0.053 mm

| | | | |
|---|---|---|---|
| CBR | : NA | Natural Moisture ( % ) (AASHTO T265 ) | : NA |
| 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 | : NA |
| Gravel ( 3in. + No.10 ) | : 6.9 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 17.2 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 23.1 | AASHTO Classification: M145 | : A-4 (2) |
| Silt + Clay ( -No.200 ) | : 52.8 | ASTM Classification: D2487 | : CL |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 2.4 |
| Coarse Sand ( -No.4 + No.10 ) | : 4.5 |
| Medium Sand ( -No.10 + No.40 ) | : 17.2 |
| Fine Sand ( -No.40 + No.200 ) | : 23.1 |
| Silt + Clay ( -No.200 ) | : 52.8 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-58 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/27/17 |
| Soil Type | : Brown, Brown-Orange & Orange 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 | 99.7 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 97.2 |

AASHTO T88

| | | | | % 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 | 55.8 |
| 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 | |

$D_{50}$ = 0.038 mm

| | | | |
|---|---|---|---|
| CBR (AASHTO: T-193 ) | : 3.1 | Natural Moisture ( % ) (AASHTO T265 ) | : NA |
| Dry Dens. (AASHTO: T-99; Method (C)) | : 107.9 pcf | Liquid Limit (AASHTO T89) | : 37 |
| Opt. Moist. (AASHTO: T-99; Method (C)) | : 16.4 % | Plastic Limit (AASHTO T90) | : 28 |
| | | Plasticity Index | : 9 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 2.8 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 15.7 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 25.7 | AASHTO Classification: M145 | : A-4 (3) |
| Silt + Clay ( -No.200 ) | : 55.8 | ASTM Classification: D2487 | : ML |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.3 |
| Coarse Sand ( -No.4 + No.10 ) | : 2.5 |
| Medium Sand ( -No.10 + No.40 ) | : 15.7 |
| Fine Sand ( -No.40 + No.200 ) | : 25.7 |
| Silt + Clay ( -No.200 ) | : 55.8 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-88 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/21/17 |
| Submitted By | : HDR | Date Reported | : 03/27/17 |
| Soil Type | : Brown & Orange-Brown Sandy Lean Clay | | |

AASHTO T27 :

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 94.9 |

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 82.0 |
| 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 | 54.0 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.046 mm

| | | | |
|---|---|---|---|
| CBR (AASHTO: T-193 ) | : 2.5 | Natural Moisture ( % ) (AASHTO T265 ) | : NA |
| Dry Dens. (AASHTO: T-99; Method (C)) | : 114.8 pcf | Liquid Limit (AASHTO T89) | : 28 |
| Opt. Moist. (AASHTO: T-99; Method (C)) | : 13.2 % | Plastic Limit (AASHTO T90) | : 20 |
| | | Plasticity Index | : 8 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 5.1 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 12.9 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 28.0 | AASHTO Classification: M145 | : A-4 (2) |
| Silt + Clay ( -No.200 ) | : 54.0 | ASTM Classification: D2487 | : CL |

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 ) | : 3.1 |
| Medium Sand ( -No.10 + No.40 ) | : 12.9 |
| Fine Sand ( -No.40 + No.200 ) | : 28.0 |
| Silt + Clay ( -No.200 ) | : 54.0 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-63 |
| Project State | : Soute Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/27/17 |
| Submitted By | : HDR | Date Reported | : 03/31/17 |
| Soil Type | : Brown-Orange & Orange-Brown Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.2 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 97.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 79.1 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 39.3 |
| 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 | |

$D_{50}$ = 0.12 mm

| | | | |
|---|---|---|---|
| CBR (AASHTO: T-193 ) | : 2.9 | Natural Moisture ( % ) (AASHTO T265 ) | : NA |
| Dry Dens. (AASHTO: T-99; Method (C)) | : 110.6 pcf | Liquid Limit (AASHTO T89) | : 38 |
| Opt. Moist. (AASHTO: T-99; Method (C)) | : 16.5 % | Plastic Limit (AASHTO T90) | : 34 |
| | | Plasticity Index | : 4 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 2.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 18.2 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 39.8 | AASHTO Classification: M145 | : A-4 (0) |
| Silt + Clay ( -No.200 ) | : 39.3 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 0.8 |
| Coarse Sand ( -No.4 + No.10 ) | : 1.9 |
| Medium Sand ( -No.10 + No.40 ) | : 18.2 |
| Fine Sand ( -No.40 + No.200 ) | : 39.8 |
| Silt + Clay ( -No.200 ) | : 39.3 |

Approved By : Kevin E. Walker

Soil No. 288

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-78 |
| Project State | : Soute Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 03/27/17 |
| Submitted By | : HDR | Date Reported | : 03/31/17 |
| Soil Type | : Brown, Brown-Orange & Red-Brown 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 | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 97.3 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 93.3 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 79.8 |
| 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 | 52.5 |
| No.270 | | 0.053 | mm | |
| Hyd. Rd. | # 1 | | mm | |
| Hyd. Rd. | # 2 | | mm | |
| Hyd. Rd. | # 3 | | mm | |
| Hyd. Rd. | # 4 | | mm | |
| Hyd. Rd. | # 5 | | mm | |
| Hyd. Rd. | # 6 | | mm | |
| Hyd. Rd. | # 7 | | mm | |

$D_{50}$ = 0.055 mm

| | | | |
|---|---|---|---|
| CBR (AASHTO: T-193 ) | : 3.5 | Natural Moisture ( % ) (AASHTO T265 ) | : NA |
| Dry Dens. (AASHTO: T-99; Method (C)) | : 111.1 pcf | Liquid Limit (AASHTO T89) | : 39 |
| Opt. Moist. (AASHTO: T-99; Method (C)) | : 16.1 % | Plastic Limit (AASHTO T90) | : 23 |
| | | Plasticity Index | : 16 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 6.7 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 13.5 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 27.3 | AASHTO Classification: M145 | : A-6 (6) |
| Silt + Clay ( -No.200 ) | : 52.5 | ASTM Classification: D2487 | : CL |

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 ) | : 4.0 |
| Medium Sand ( -No.10 + No.40 ) | : 13.5 |
| Fine Sand ( -No.40 + No.200 ) | : 27.3 |
| Silt + Clay ( -No.200 ) | : 52.5 |

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# SOIL CLASSIFICATION

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. C-130 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 02/01/17 |
| Submitted By | : HDR | Date Reported | : 02/06/17 |
| Soil Type | : Red Silty Sand | | |

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.8 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 96.5 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 92.0 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 77.5 |
| 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 | 55.9 |
| 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 | |

$D_{50}$ = 0.037 mm

| | | | |
|---|---|---|---|
| CBR (AASHTO: T-193 ) | : | Natural Moisture ( % ) (AASHTO T265 ) | : NA |
| Dry Dens. (AASHTO: T-99; Method (C)) | : 110.2 pcf | Liquid Limit (AASHTO T89) | : 39 |
| Opt. Moist. (AASHTO: T-99; Method (C)) | : 16.4 % | Plastic Limit (AASHTO T90) | : 25 |
| | | Plasticity Index | : 14 |
| AASHTO Composition of Total Sample: M145 | | Liquidity Index | : NA |
| Gravel ( 3in. + No.10 ) | : 8.0 | Activity | : NA |
| Coarse Sand ( -No.10 + No.40 ) | : 14.5 | Sp. Gr. (AASHTO T100) | : NA |
| Fine Sand ( -No.40 + No.200 ) | : 21.6 | AASHTO Classification: M145 | : A-2-4 (0) |
| Silt + Clay ( -No.200 ) | : 55.9 | ASTM Classification: D2487 | : SM |

ASTM Composition of Total Sample: D2487

| | |
|---|---|
| Coarse Gravel ( 3in. + 3/4in.) | : 0.0 |
| Fine Gravel ( -3/4in. + No.4 ) | : 3.5 |
| Coarse Sand ( -No.4 + No.10 ) | : 4.5 |
| Medium Sand ( -No.10 + No.40 ) | : 14.5 |
| Fine Sand ( -No.40 + No.200 ) | : 21.6 |
| Silt + Clay ( -No.200 ) | : 55.9 |

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : South Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown Silty Sand

Sample No. : Bulk 1
Sample Loc. : Boring No. SB-7
Sample Depth : 0.0' to 5.0'
Date Tested : 03/27/17
Date Reported : 03/27/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 95.2 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 89.6 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 83.7 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 66.4 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 38.6 |
| 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 | |

$D_{50}$ = 0.153 mm

CBR (AASHTO: T-193 ) :
Dry Dens. (AASHTO: T-99; Method (C)) : 118.1 pcf
Opt. Moist. (AASHTO: T-99; Method (C)) : 14 %

Natural Moisture ( % ) (AASHTO T265 ) : NA
Liquid Limit (AASHTO T89) : 30
Plastic Limit (AASHTO T90) : 23
Plasticity Index : 7
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-1-b (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 16.3
Coarse Sand ( -No.10 + No.40 ) : 17.3
Fine Sand ( -No.40 + No.200 ) : 27.8
Silt + Clay ( -No.200 ) : 38.6

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 10.4
Coarse Sand ( -No.4 + No.10 ) : 5.9
Medium Sand ( -No.10 + No.40 ) : 17.3
Fine Sand ( -No.40 + No.200 ) : 27.8
Silt + Clay ( -No.200 ) : 38.6

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown, Orange & White Silty Sand

Sample No. : Bulk 1
Sample Loc. : Boring No. BR-156
Sample Depth : 0.0' to 8.0'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 98.1 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 93.0 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 78.1 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 57.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 33.2 |
| 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 | |

$D_{50}$ = 0.255 mm

CBR : NA
Dry Dens. : 120.1 pcf
Opt. Moist. : 11.5 %

Natural Moisture ( % ) (AASHTO T265 ) : NA
Liquid Limit (AASHTO T89) : 26
Plastic Limit (AASHTO T90) : 20
Plasticity Index : 6
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 21.9
Coarse Sand ( -No.10 + No.40 ) : 21.1
Fine Sand ( -No.40 + No.200 ) : 23.8
Silt + Clay ( -No.200 ) : 33.2

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 7.0
Coarse Sand ( -No.4 + No.10 ) : 14.9
Medium Sand ( -No.10 + No.40 ) : 21.1
Fine Sand ( -No.40 + No.200 ) : 23.8
Silt + Clay ( -No.200 ) : 33.2

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown Silty Sand

Sample No. : Bulk 1
Sample Loc. : Boring No. NB-21
Sample Depth : 0.0' to 5.0'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | 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 | 91.9 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 74.8 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 47.2 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 25.3 |
| 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 | |

$D_{50}$ = 0.497 mm

CBR : NA
Dry Dens. : 119.8 pcf
Opt. Moist. : 9.5 %

Natural Moisture ( % ) (AASHTO T265 ) : NA
Liquid Limit (AASHTO T89) : 26
Plastic Limit (AASHTO T90) : 20
Plasticity Index : 6
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 25.2
Coarse Sand ( -No.10 + No.40 ) : 27.6
Fine Sand ( -No.40 + No.200 ) : 21.9
Silt + Clay ( -No.200 ) : 25.3

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 8.1
Coarse Sand ( -No.4 + No.10 ) : 17.1
Medium Sand ( -No.10 + No.40 ) : 27.6
Fine Sand ( -No.40 + No.200 ) : 21.9
Silt + Clay ( -No.200 ) : 25.3

Approved By : Kevin E. Walker

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Orange & Brown Silty Sand

Sample No. : Bulk 1
Sample Loc. : Boring No. NB-28
Sample Depth : 0.0' to 5.0'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | 100.0 |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 97.2 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 94.4 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 90.4 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 73.0 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 48.4 |
| 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 | |

$D_{50}$ = 0.084 mm

CBR : NA
Dry Dens. : 111.4 pcf
Opt. Moist. : 14.7 %

Natural Moisture ( % ) (AASHTO T265 ) : NA
Liquid Limit (AASHTO T89) : 28
Plastic Limit (AASHTO T90) : 19
Plasticity Index : 9
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-4 (1)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 9.6
Coarse Sand ( -No.10 + No.40 ) : 17.4
Fine Sand ( -No.40 + No.200 ) : 24.6
Silt + Clay ( -No.200 ) : 48.4

ASTM Composition of Total Sample: D2487
Coarse Gravel ( 3in. + 3/4in.) : 0.0
Fine Gravel ( -3/4in. + No.4 ) : 5.6
Coarse Sand ( -No.4 + No.10 ) : 4.0
Medium Sand ( -No.10 + No.40 ) : 17.4
Fine Sand ( -No.40 + No.200 ) : 24.6
Silt + Clay ( -No.200 ) : 48.4

Approved By : Kevin E. Walker

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# SOIL CLASSIFICATION

Project Name : I-85
Project No. : 10023919
Project County : Cherokee
Project State : Soute Carolina
Laboratory No. : 10023919
Submitted By : HDR
Soil Type : Brown Silty Sand

Sample No. : Bulk 1
Sample Loc. : Boring No. SB-17
Sample Depth : 0.0' to 5.0'
Date Tested : 03/28/17
Date Reported : 04/04/17

AASHTO T27 :

| | | | | % Passing |
|---|---|---|---|---|
| 4 | in. | 101.6 | mm | |
| 3.5 | in. | 88.9 | mm | |
| 3 | in. | 76.2 | mm | |
| 2.5 | in. | 63.5 | mm | |
| 2 | in. | 50.8 | mm | |
| 1 3/4 | in. | 45 | mm | |
| 1 1/2 | in. | 38.1 | mm | |
| 1 1/4 | in. | 31.5 | mm | |
| 1 | in. | 25 | mm | |
| 3/4 | in. | 19 | mm | |
| 1/2 | in. | 12.5 | mm | |
| 3/8 | in. | 9.5 | mm | 100.0 |
| 1/4 | | 6.3 | mm | |
| No.4 | | 4.75 | mm | 99.5 |
| No.6 | | 3.35 | mm | |
| No.10 | | 2 | mm | 97.2 |

AASHTO T88

| | | | | % Passing |
|---|---|---|---|---|
| No.16 | | 1.18 | mm | |
| No.30 | | 0.6 | mm | |
| No.40 | | 0.425 | mm | 79.5 |
| No.50 | | 0.3 | mm | |
| No.60 | | 0.25 | mm | |
| No.80 | | 0.18 | mm | |
| No.100 | | 0.15 | mm | |
| No.200 | | 0.075 | mm | 49.2 |
| 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 | |

$D_{50}$ = 0.212 mm

CBR : NA
Dry Dens. : 118.8 pcf
Opt. Moist. : 14.1 %

Natural Moisture ( % ) (AASHTO T265 ) : NA
Liquid Limit (AASHTO T89) : 31
Plastic Limit (AASHTO T90) : 19
Plasticity Index : 12
Liquidity Index : NA
Activity : NA
Sp. Gr. (AASHTO T100) : NA
AASHTO Classification: M145 : A-2-4 (0)
ASTM Classification: D2487 : SM

AASHTO Composition of Total Sample: M145
Gravel ( 3in. + No.10 ) : 2.8
Coarse Sand ( -No.10 + No.40 ) : 17.7
Fine Sand ( -No.40 + No.200 ) : 30.3
Silt + Clay ( -No.200 ) : 49.2

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 ) : 2.3
Medium Sand ( -No.10 + No.40 ) : 17.7
Fine Sand ( -No.40 + No.200 ) : 30.3
Silt + Clay ( -No.200 ) : 49.2

Approved By : Kevin E. Walker

Soil No. 293

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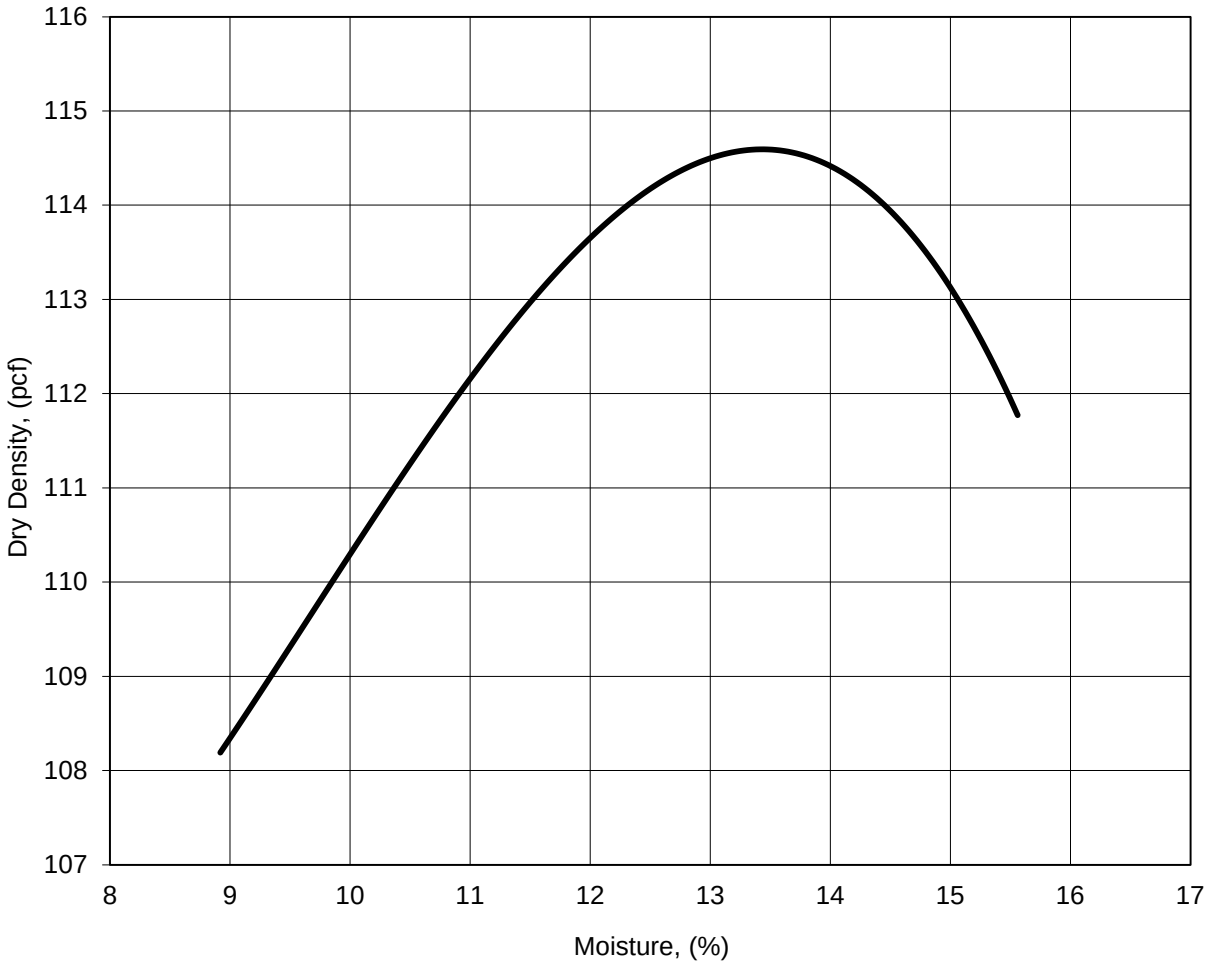
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. BS-115 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 10.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 02/10/17 |
| Submitted By | : | HDR | Date Reported | : | 02/13/17 |
| Soil Type | : | NA | | | |




MAXIMUM DENSITY: 114.6 pcf

OPTIMUM MOISTURE: 13.4 %

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

APPROVED BY: KW

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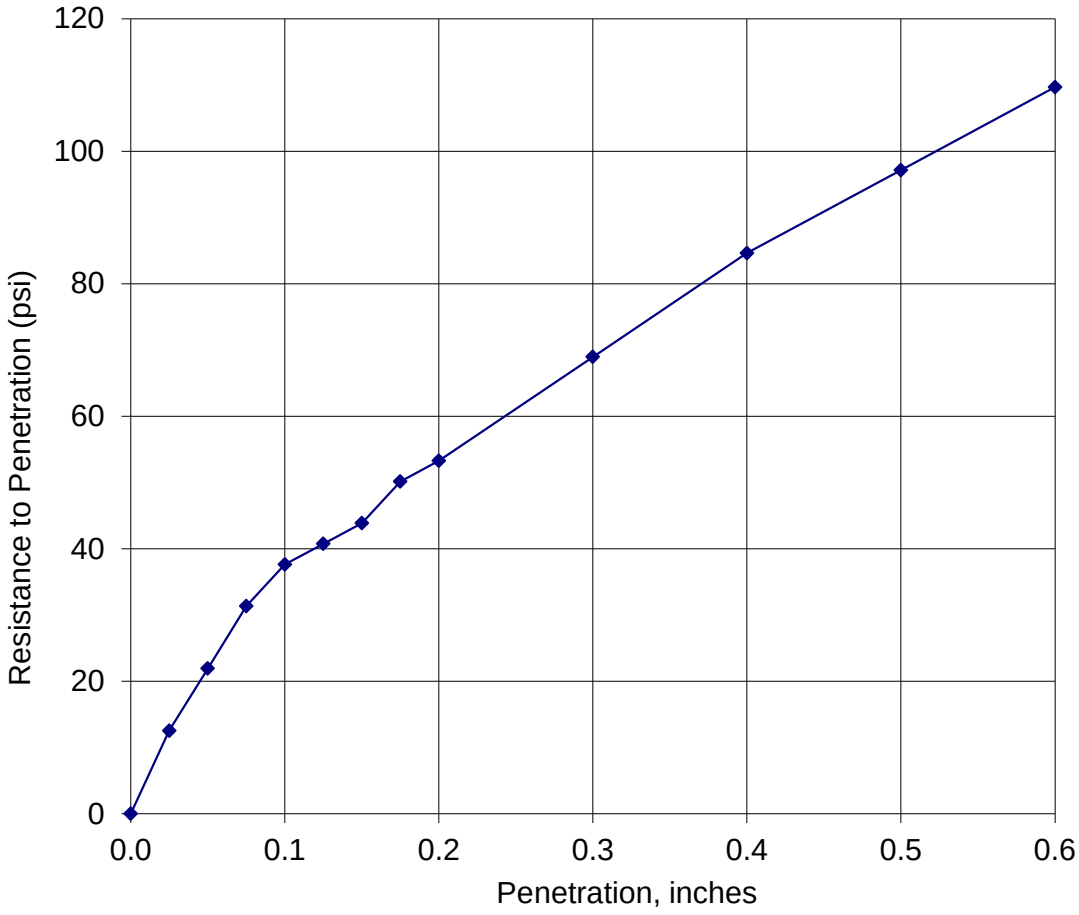
# CALIFORNIA BEARING RATIO

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BS-115 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 10.0' |
| Laboratory No. | : 10023919 | Date Tested | : 2/10/17 |
| Submitted By | : HDR | Date Reported | : 2/13/17 |
| Soil Type | : NA | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 98.1
Percent Swell = 0.72

C.B.R. @ 0.1 In. = 3.8*
C.B.R. @ 0.2 In. = 3.6

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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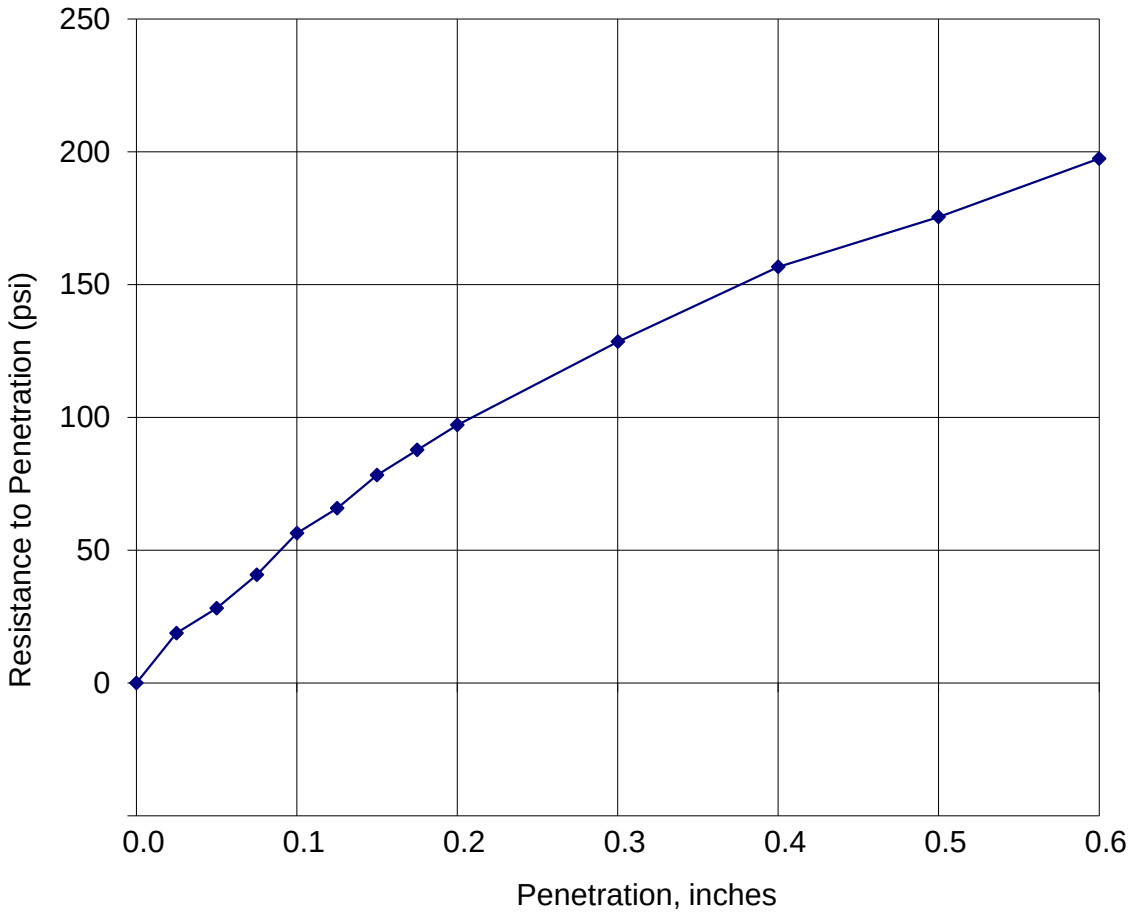
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. BS-115 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 10.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 2/10/17 |
| Submitted By | : | HDR | Date Reported | : | 2/13/17 |
| Soil Type | : | NA | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 101.5
Percent Swell = 0.33

C.B.R. @ 0.1 In. = 5.6
C.B.R. @ 0.2 In. = 6.5*

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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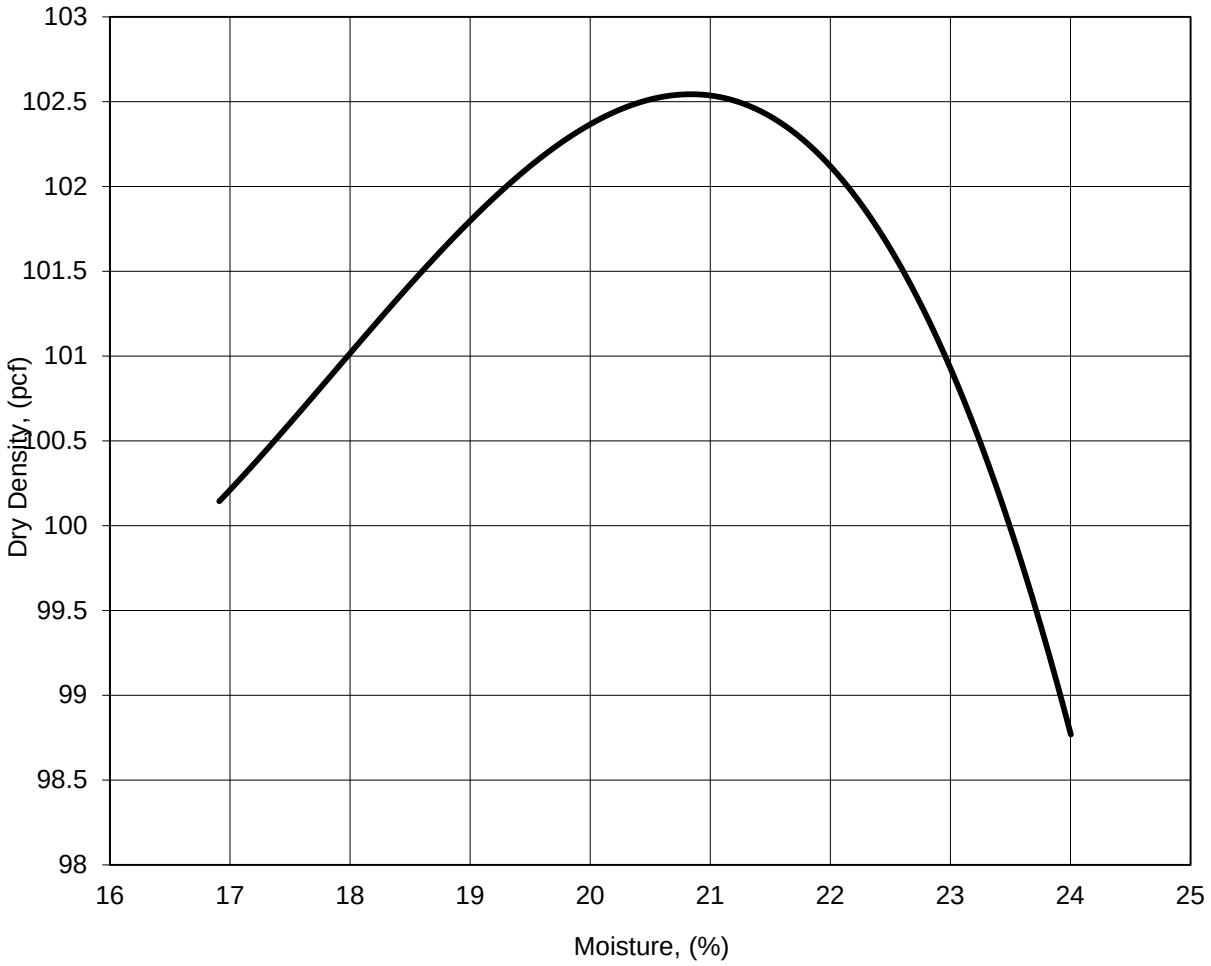
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. BS-117 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 10.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 02/10/17 |
| Submitted By | : | HDR | Date Reported | : | 02/13/17 |
| Soil Type | : | NA | | | |




MAXIMUM DENSITY: 102.5 pcf

OPTIMUM MOISTURE: 20.9 %

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

APPROVED BY: KW

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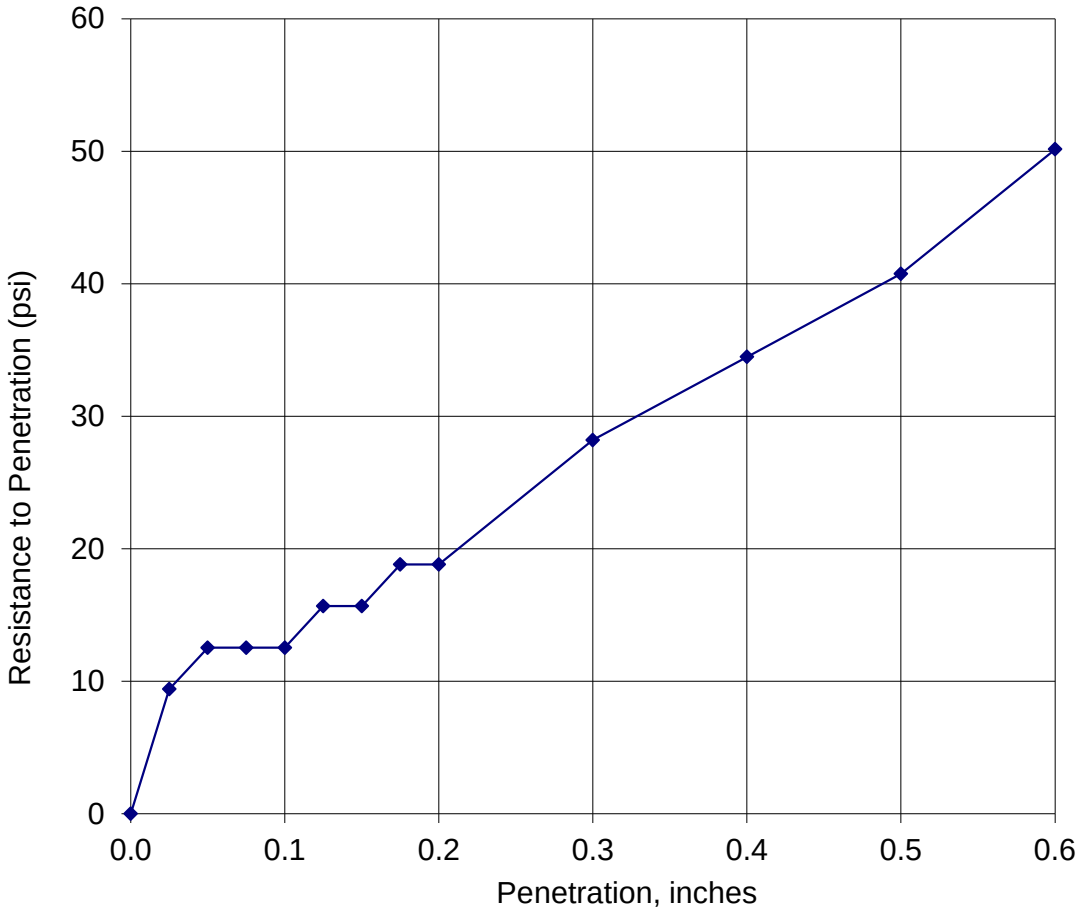
# CALIFORNIA BEARING RATIO

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BS-117 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 10.0' |
| Laboratory No. | : 10023919 | Date Tested | : 2/10/17 |
| Submitted By | : HDR | Date Reported | : 2/13/17 |
| Soil Type | : NA | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 96.7
Percent Swell = 1.25

C.B.R. @ 0.1 In. = 1.3
C.B.R. @ 0.2 In. = 1.3*

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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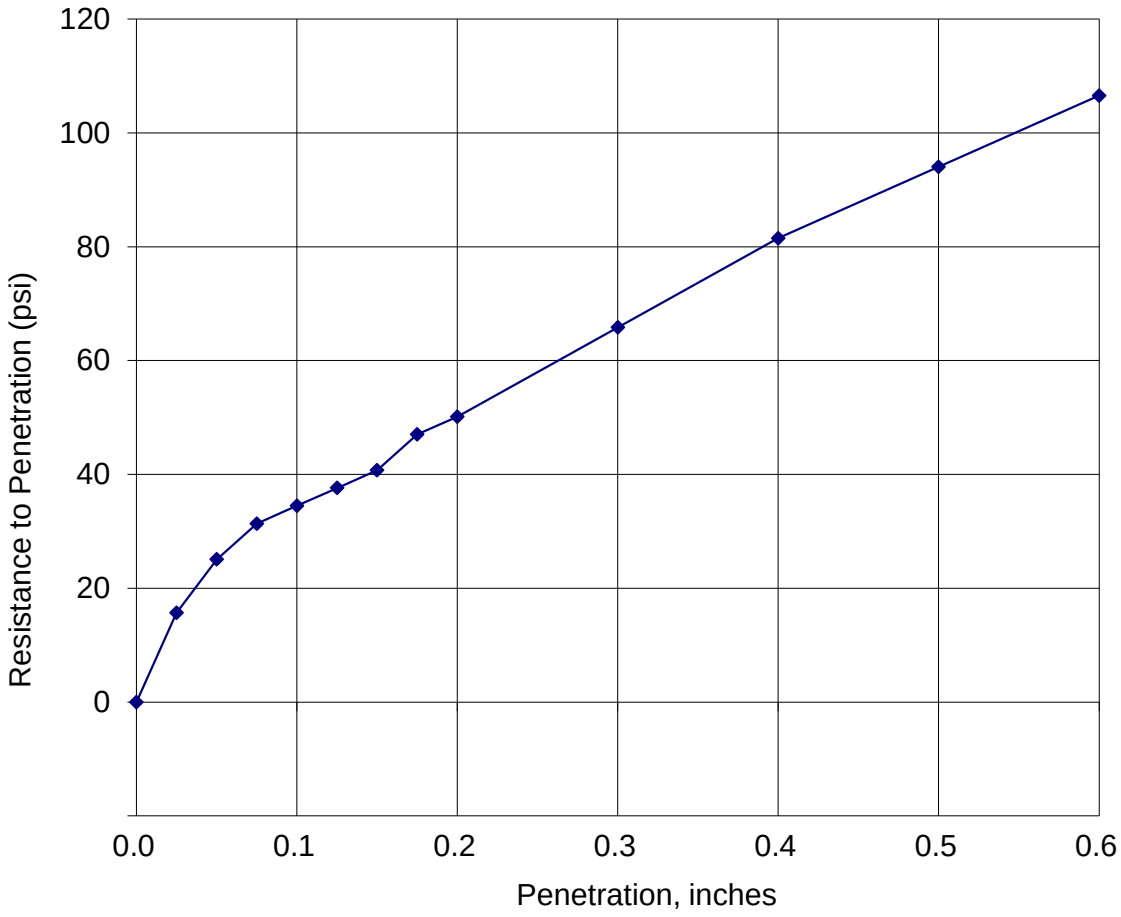
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. BS-117 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 10.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 2/10/17 |
| Submitted By | : | HDR | Date Reported | : | 2/13/17 |
| Soil Type | : | NA | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 86.7
Percent Swell = 1.07

C.B.R. @ 0.1 In. = 3.4*
C.B.R. @ 0.2 In. = 3.3

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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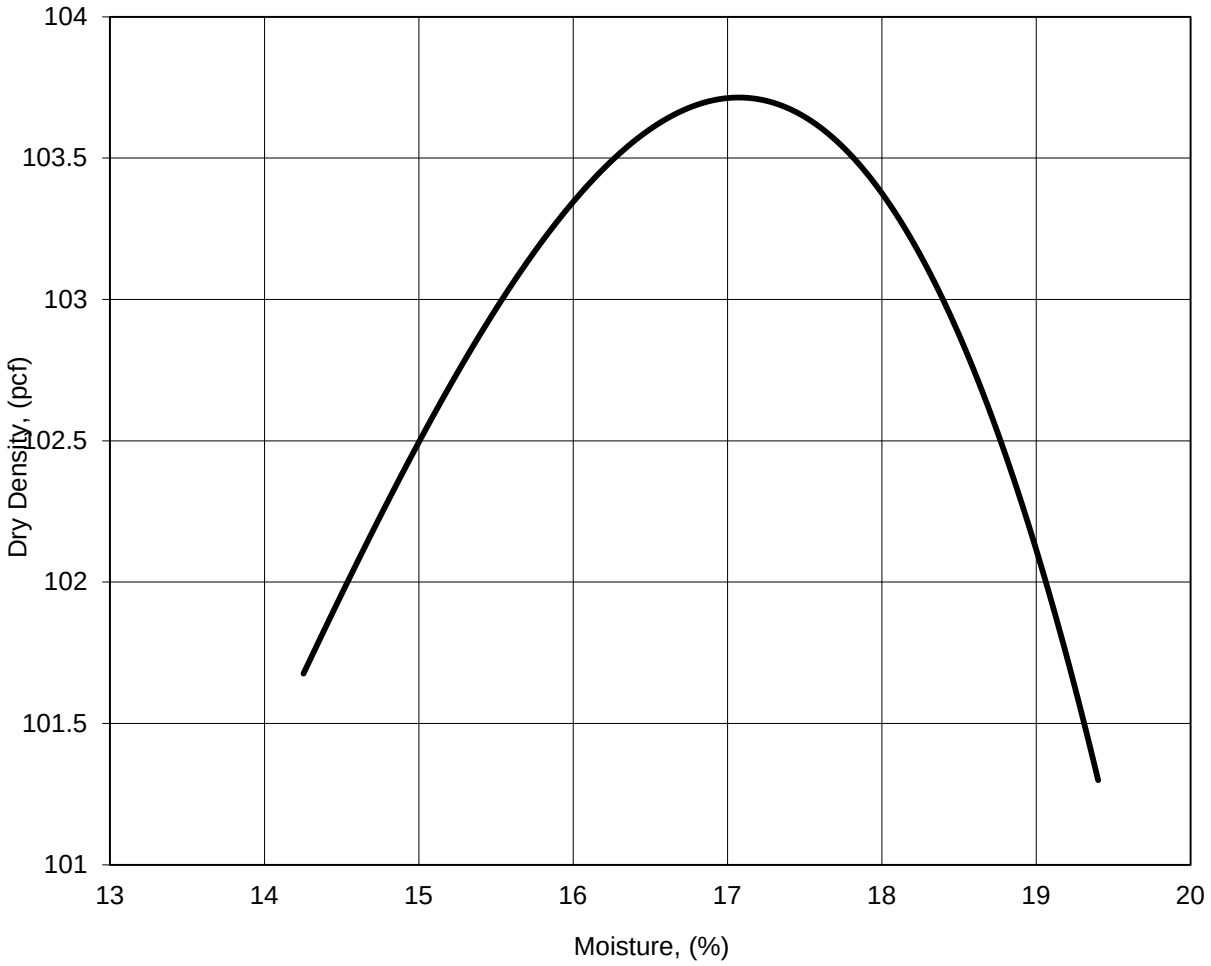
# MOISTURE-DENSITY RELATIONSHIP

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk-1 |
| Project County | : Cherokee | Sample Loc. | : Boring BR-116 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 10.0' |
| Laboratory No. | : 10023919 | Date Tested | : 02/06/17 |
| Submitted By | : HDR | Date Reported | : 02/13/17 |
| Soil Type | : NA | | |




MAXIMUM DENSITY: 103.7 pcf

OPTIMUM MOISTURE: 17.1 %

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

APPROVED BY: KW

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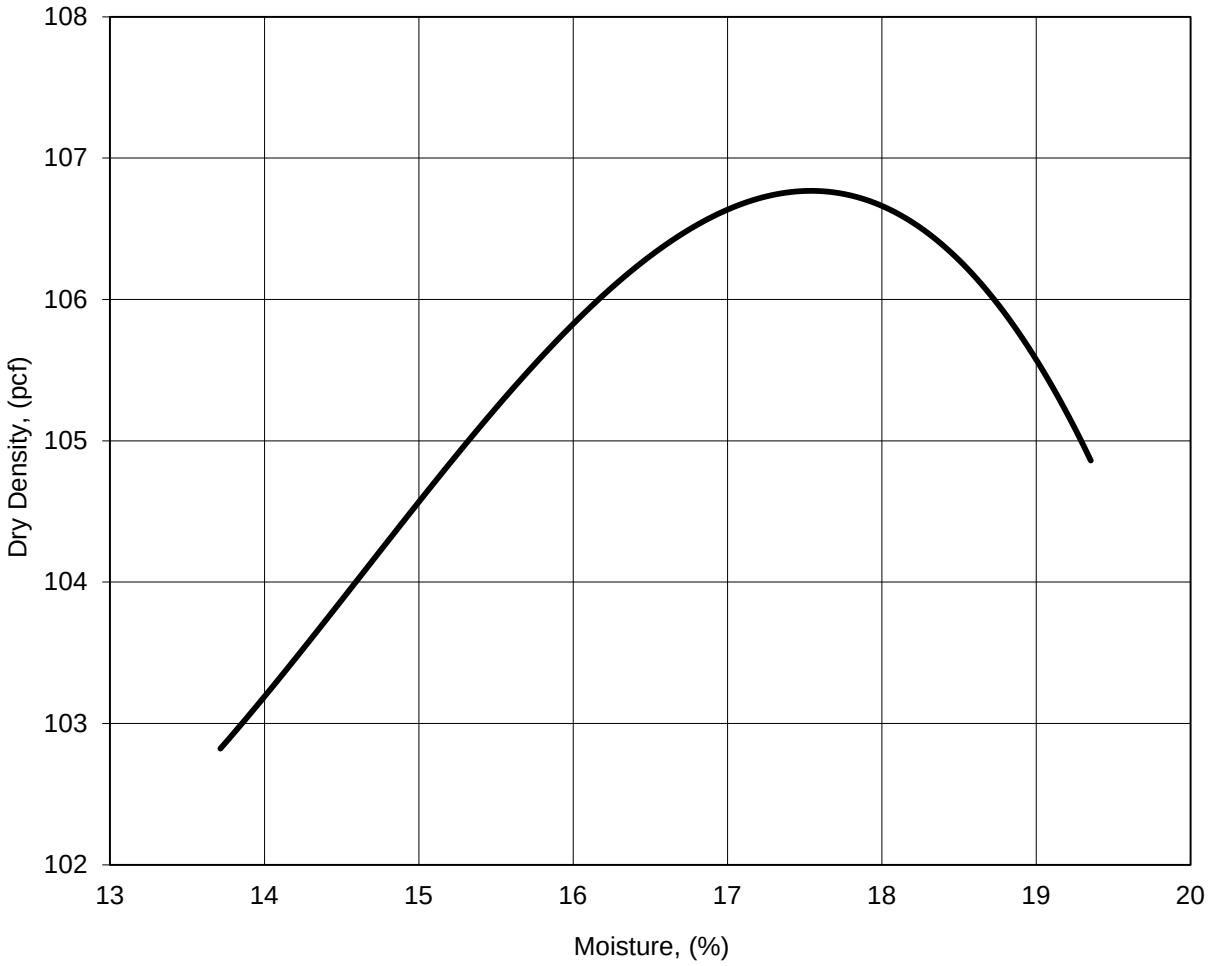
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk-1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. BS-114 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 10.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 02/06/17 |
| Submitted By | : | HDR | Date Reported | : | 02/13/17 |
| Soil Type | : | NA | | | |




MAXIMUM DENSITY: 106.8 pcf

OPTIMUM MOISTURE: 17.5 %

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

APPROVED BY: KW

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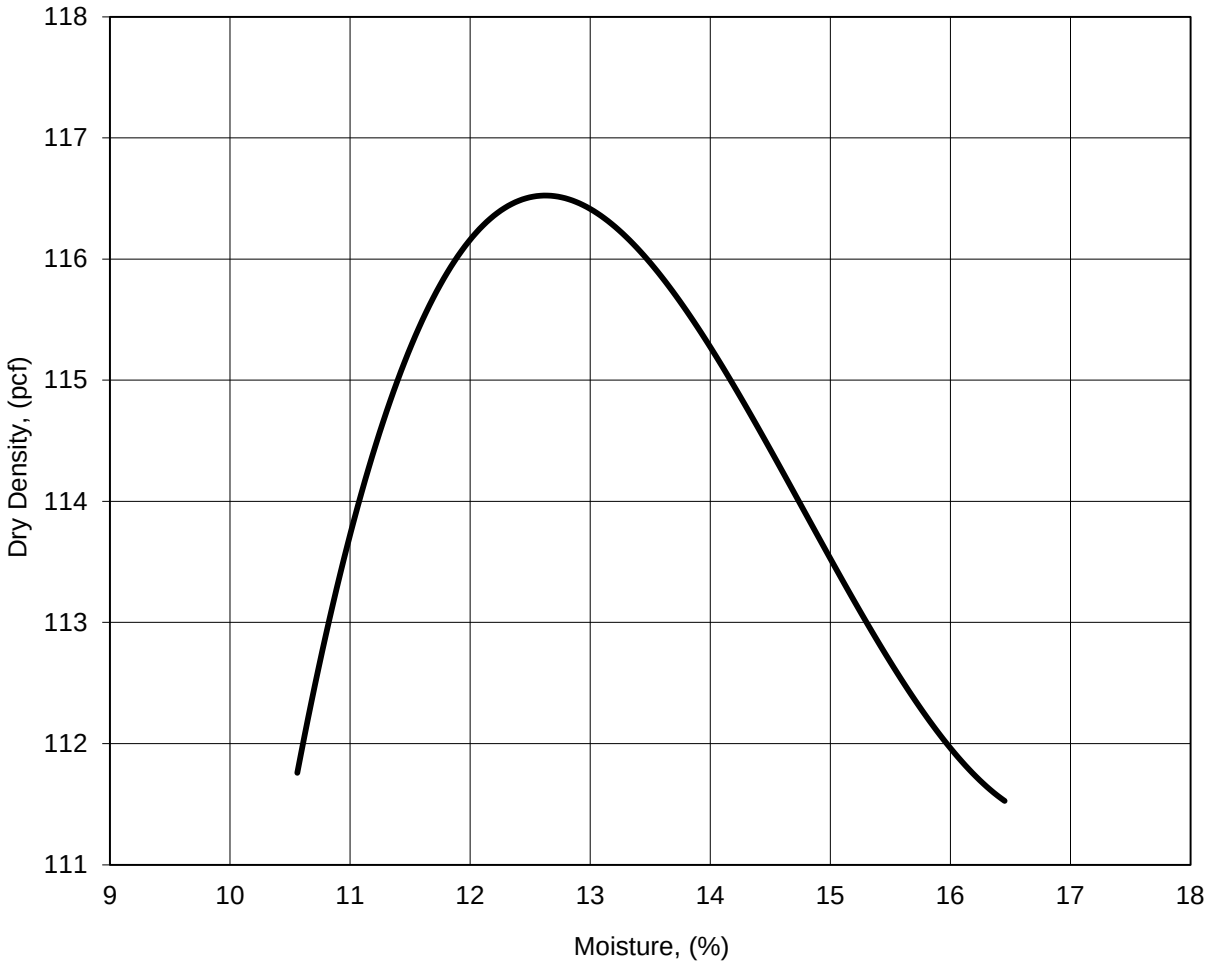
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. BS-110 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 10.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/20/17 |
| Submitted By | : | HDR | Date Reported | : | 03/28/17 |
| Soil Type | : | Brown | | | |




MAXIMUM DENSITY: 116.5 pcf

OPTIMUM MOISTURE: 12.6 %

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

APPROVED BY: KW

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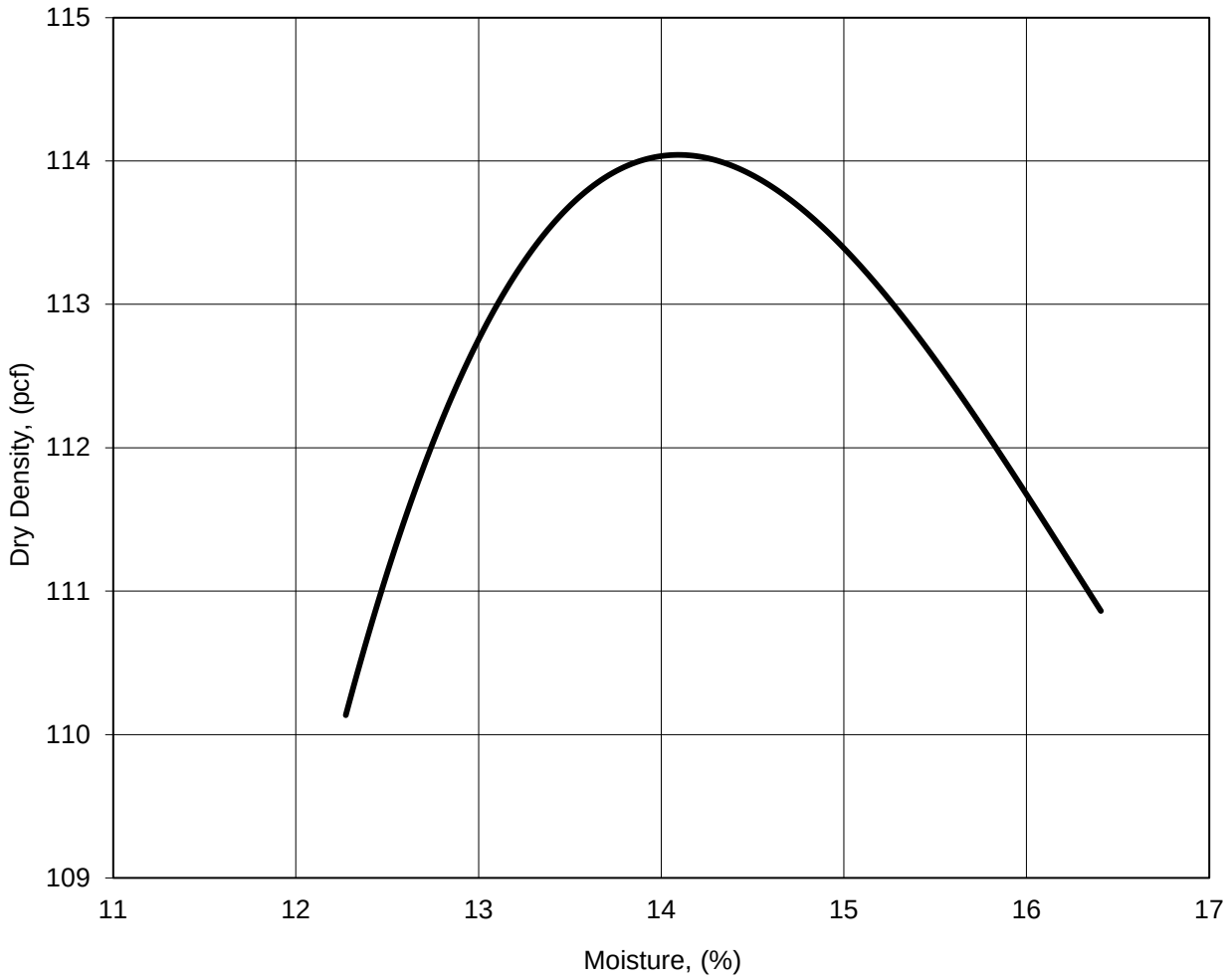
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-12 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/27/17 |
| Submitted By | : | HDR | Date Reported | : | 04/06/17 |
| Soil Type | : | Brown | | | |




MAXIMUM DENSITY: 114 pcf

OPTIMUM MOISTURE: 14.1 %

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

APPROVED BY: KW

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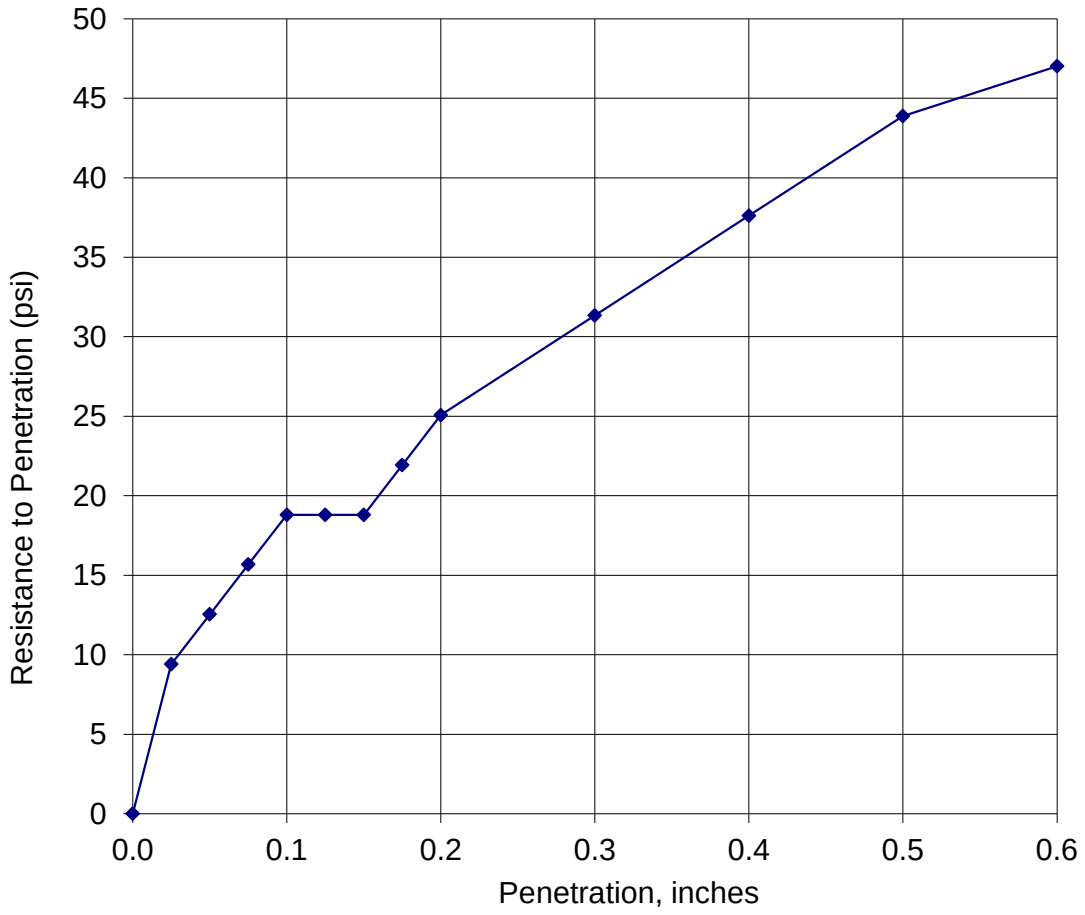
# CALIFORNIA BEARING RATIO

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-12 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 3/27/17 |
| Submitted By | : HDR | Date Reported | : 4/6/17 |
| Soil Type | : Brown | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 101.1
Percent Swell = 0.09

C.B.R. @ 0.1 In. = 1.9*
C.B.R. @ 0.2 In. = 1.7

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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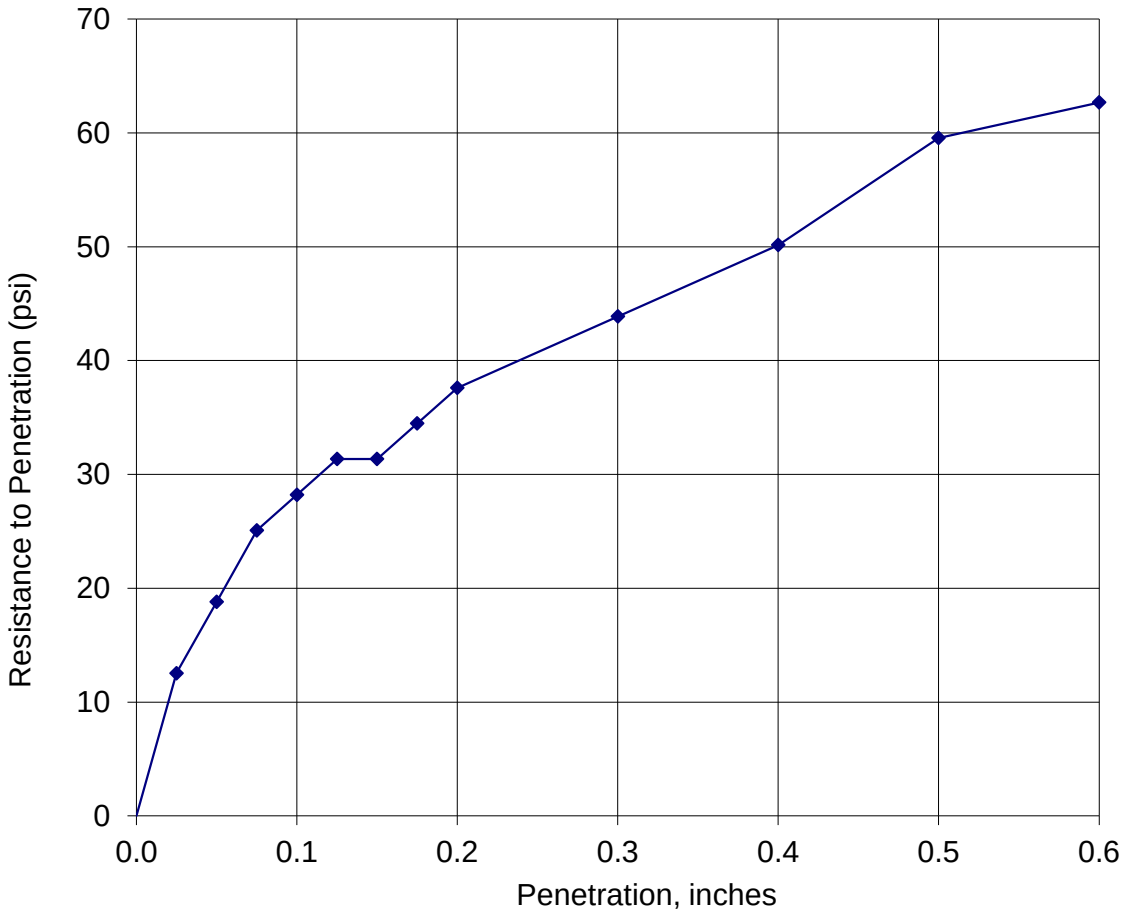
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-12 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/27/17 |
| Submitted By | : | HDR | Date Reported | : | 4/6/17 |
| Soil Type | : | Brown | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 97.9
Percent Swell = 0.04

C.B.R. @ 0.1 In. = 2.8*
C.B.R. @ 0.2 In. = 2.5

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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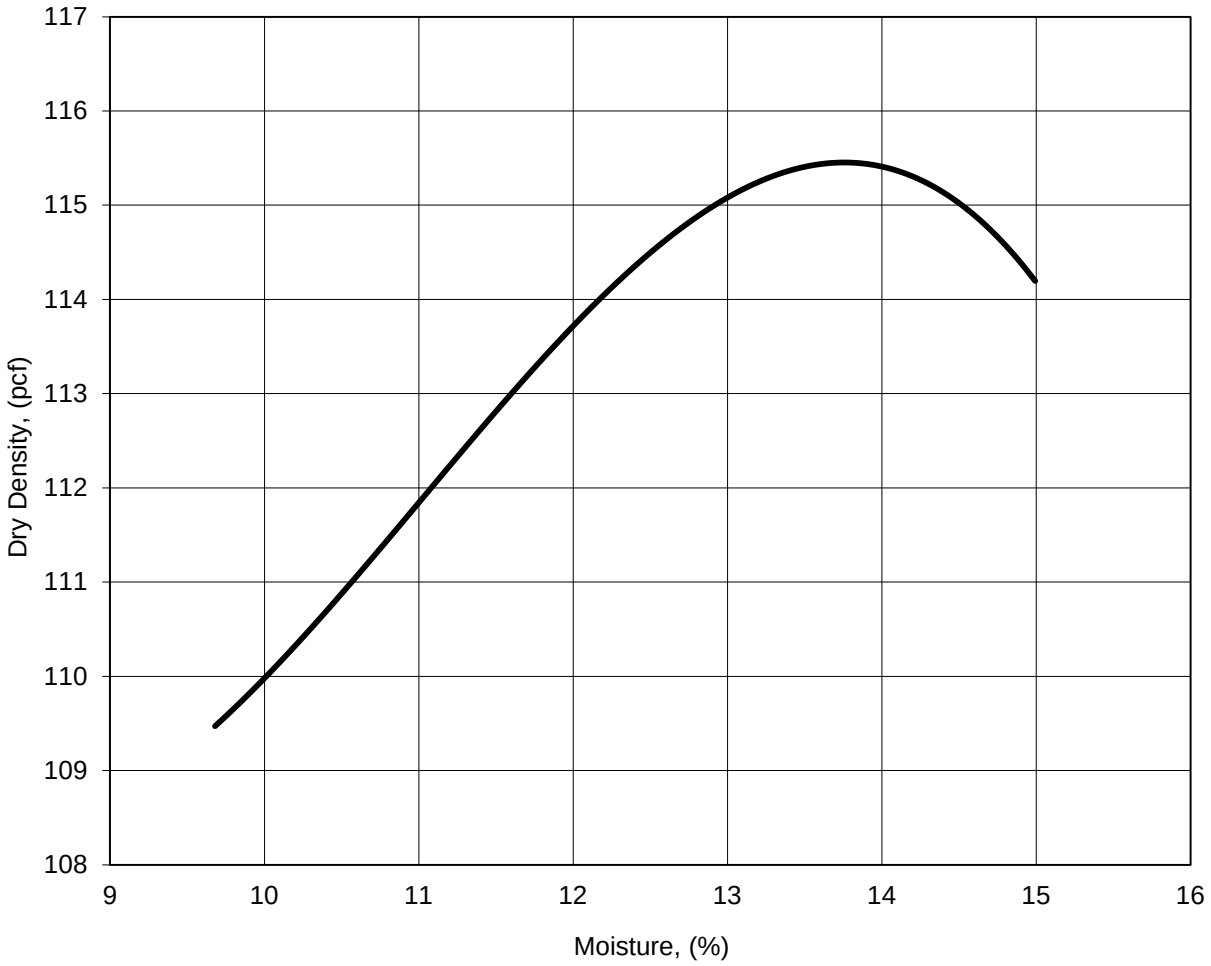
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. SB-33 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/27/17 |
| Submitted By | : | HDR | Date Reported | : | 04/06/17 |
| Soil Type | : | Brown | | | |




MAXIMUM DENSITY: 115.5 pcf

OPTIMUM MOISTURE: 13.8 %

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

APPROVED BY: KW

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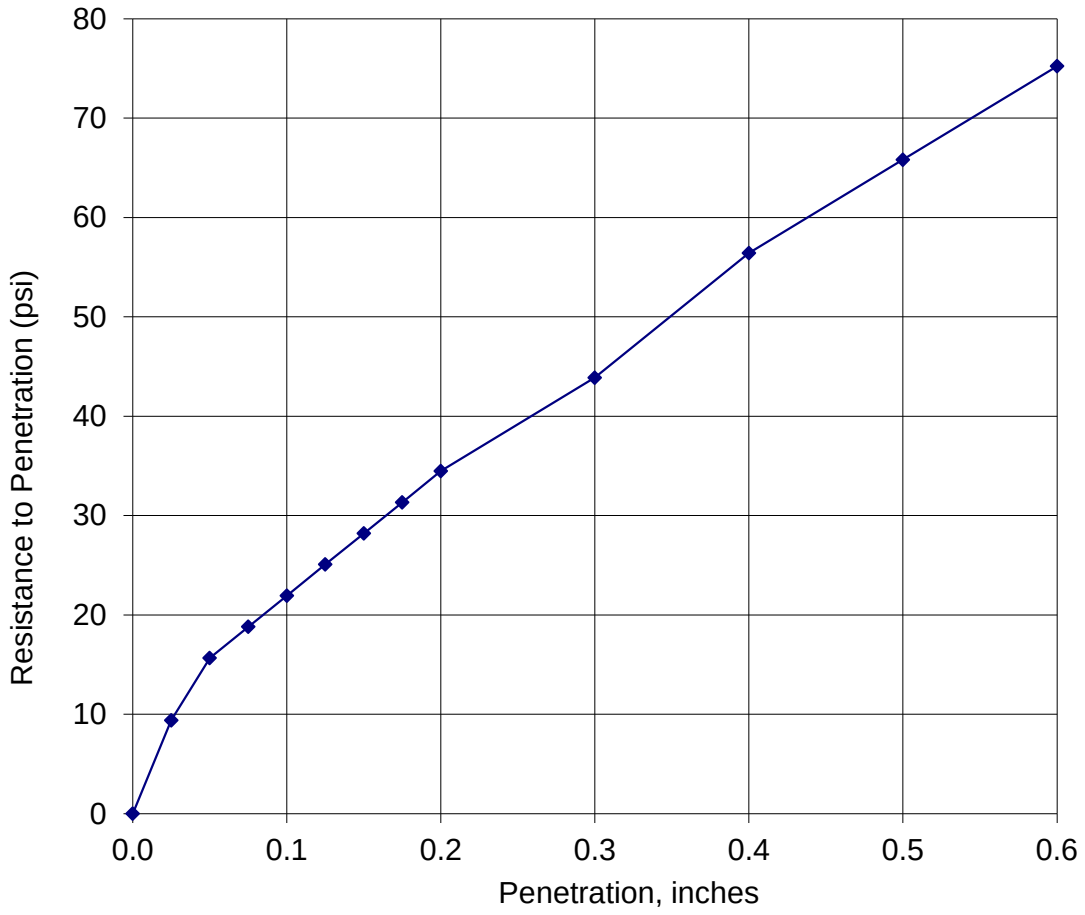
# CALIFORNIA BEARING RATIO

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-33 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 3/27/17 |
| Submitted By | : HDR | Date Reported | : 4/6/17 |
| Soil Type | : Brown | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 91.9
Percent Swell = 0.57

C.B.R. @ 0.1 In. = 2.2
C.B.R. @ 0.2 In. = 2.3*

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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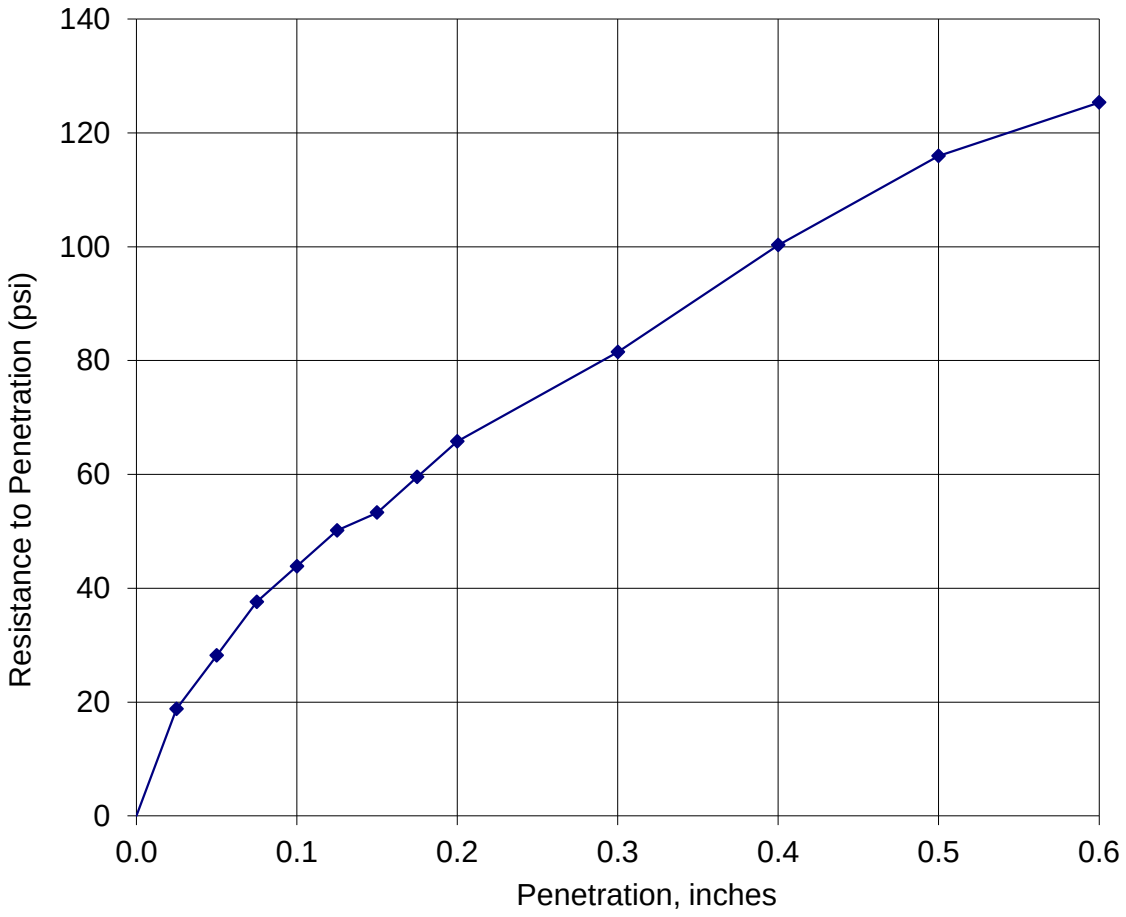
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. SB-33 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/27/17 |
| Submitted By | : | HDR | Date Reported | : | 4/6/17 |
| Soil Type | : | Brown | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 98
Percent Swell = 0.44

C.B.R. @ 0.1 In. = 4.4
C.B.R. @ 0.2 In. = 4.4*

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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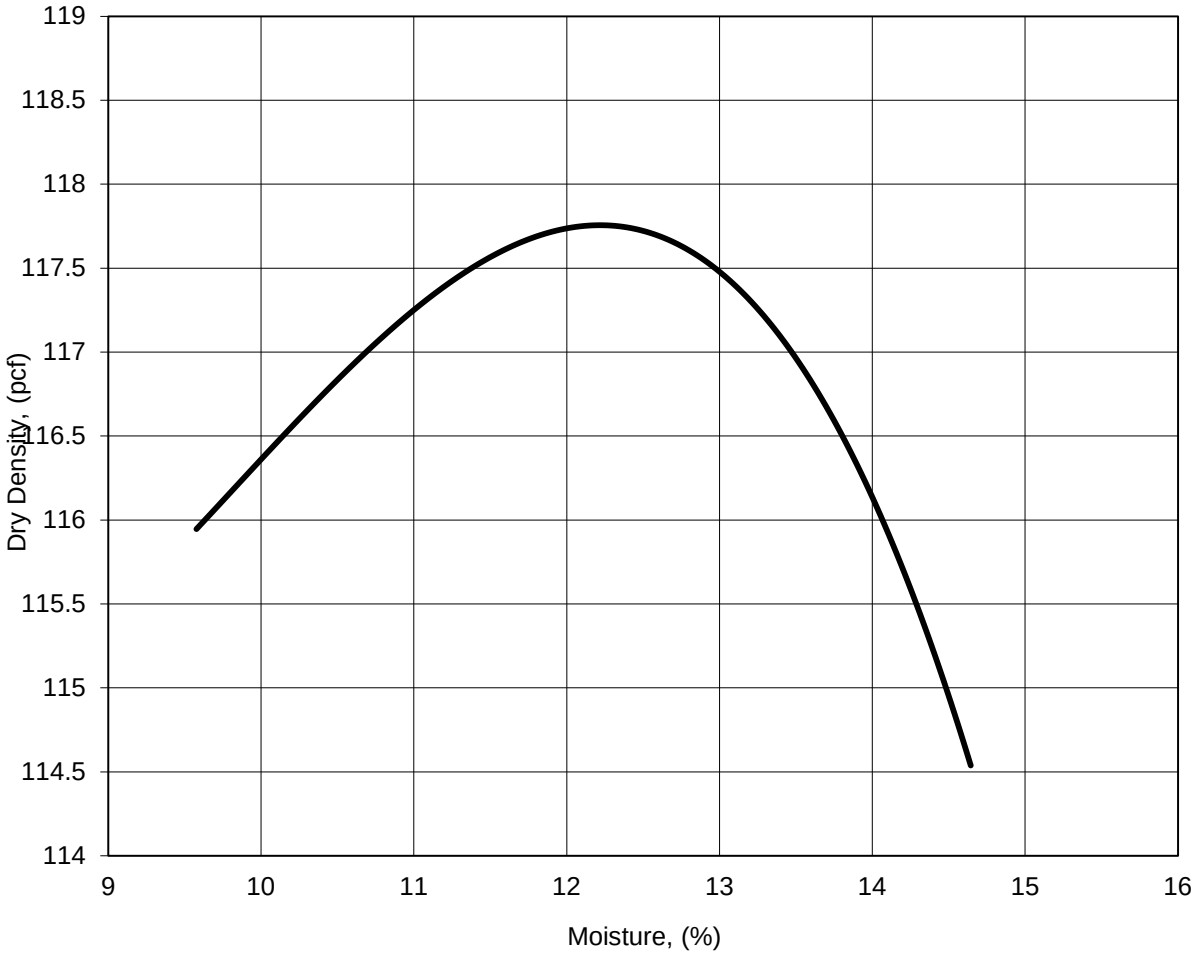
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. SB-22 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/27/17 |
| Submitted By | : | HDR | Date Reported | : | 04/06/17 |
| Soil Type | : | Brown | | | |




MAXIMUM DENSITY: 117.8 pcf

OPTIMUM MOISTURE: 12.2 %

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

APPROVED BY: KW

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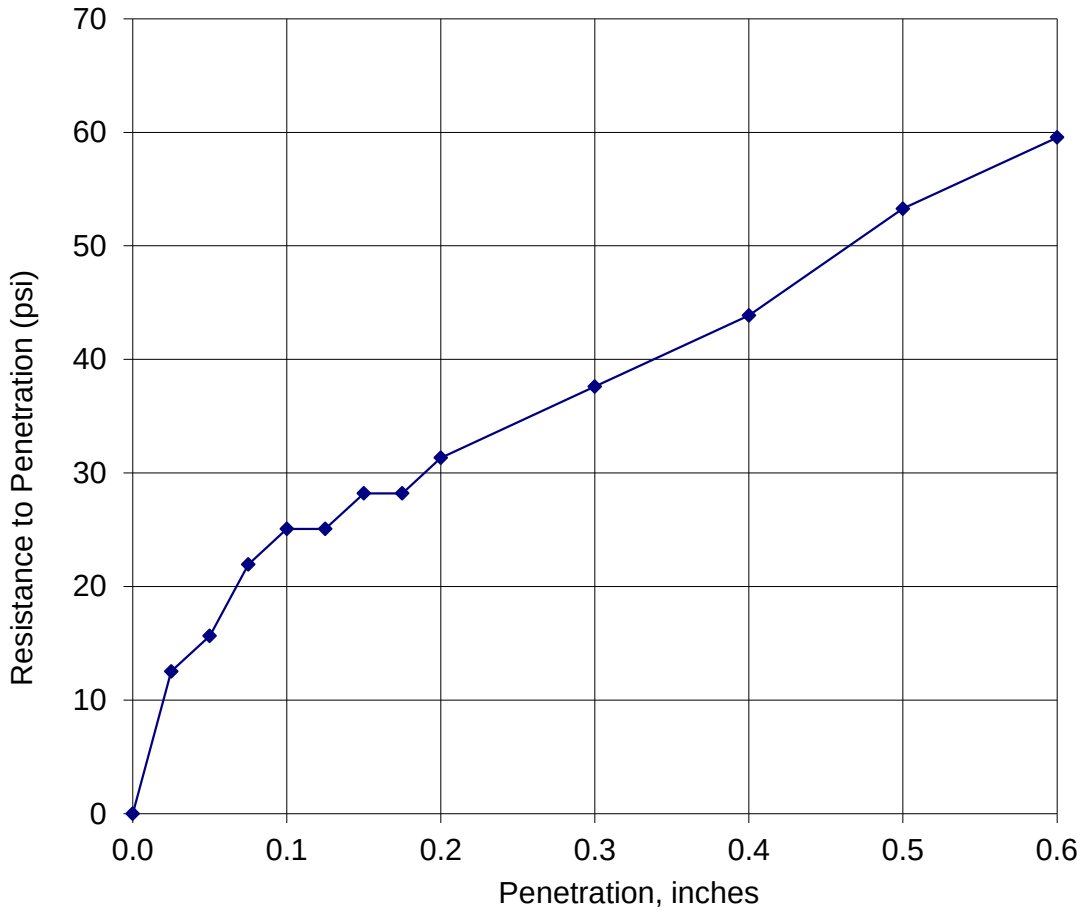
# CALIFORNIA BEARING RATIO

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-22 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 3/27/17 |
| Submitted By | : HDR | Date Reported | : 4/6/17 |
| Soil Type | : Brown | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 93.7
Percent Swell = 0.17

C.B.R. @ 0.1 In. = 2.5*
C.B.R. @ 0.2 In. = 2.1

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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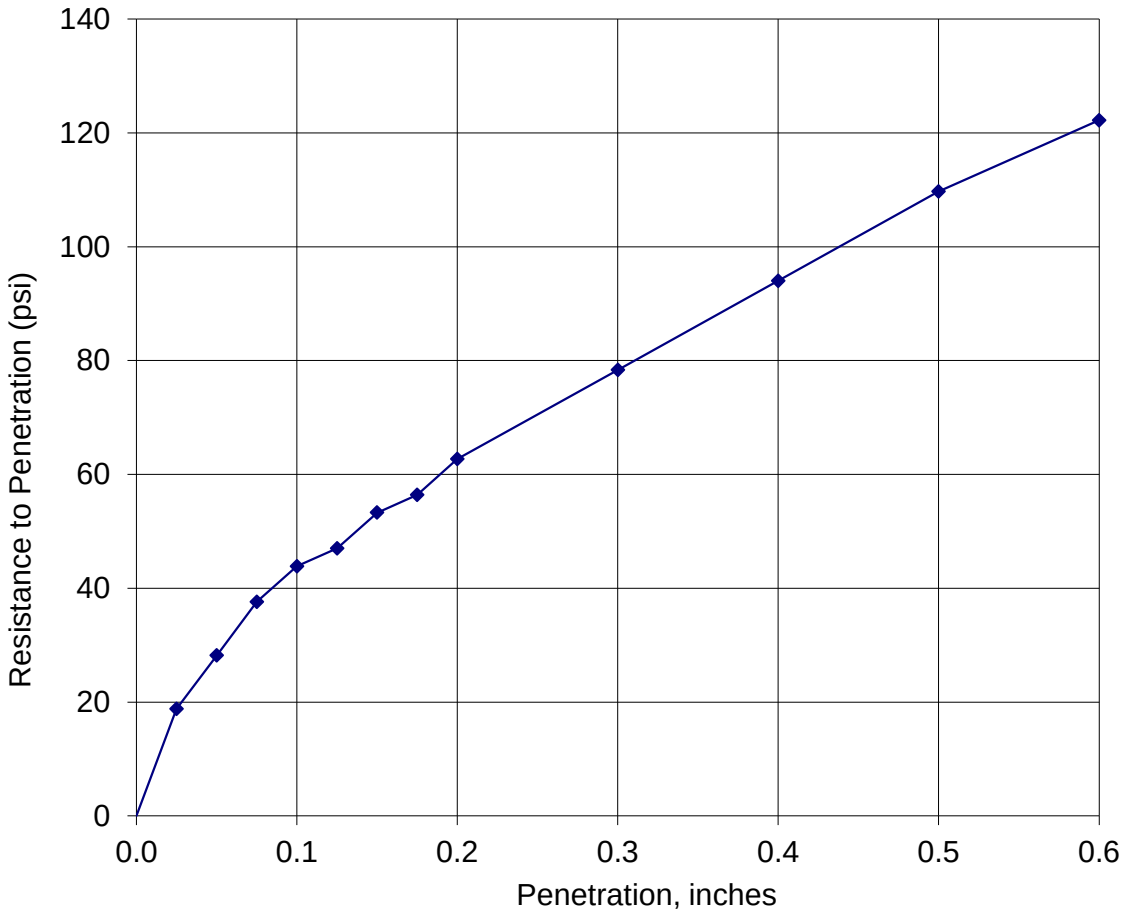
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. SB-22 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/27/17 |
| Submitted By | : | HDR | Date Reported | : | 4/6/17 |
| Soil Type | : | Brown | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 98.4
Percent Swell = 0.09

C.B.R. @ 0.1 In. = 4.4*
C.B.R. @ 0.2 In. = 4.2

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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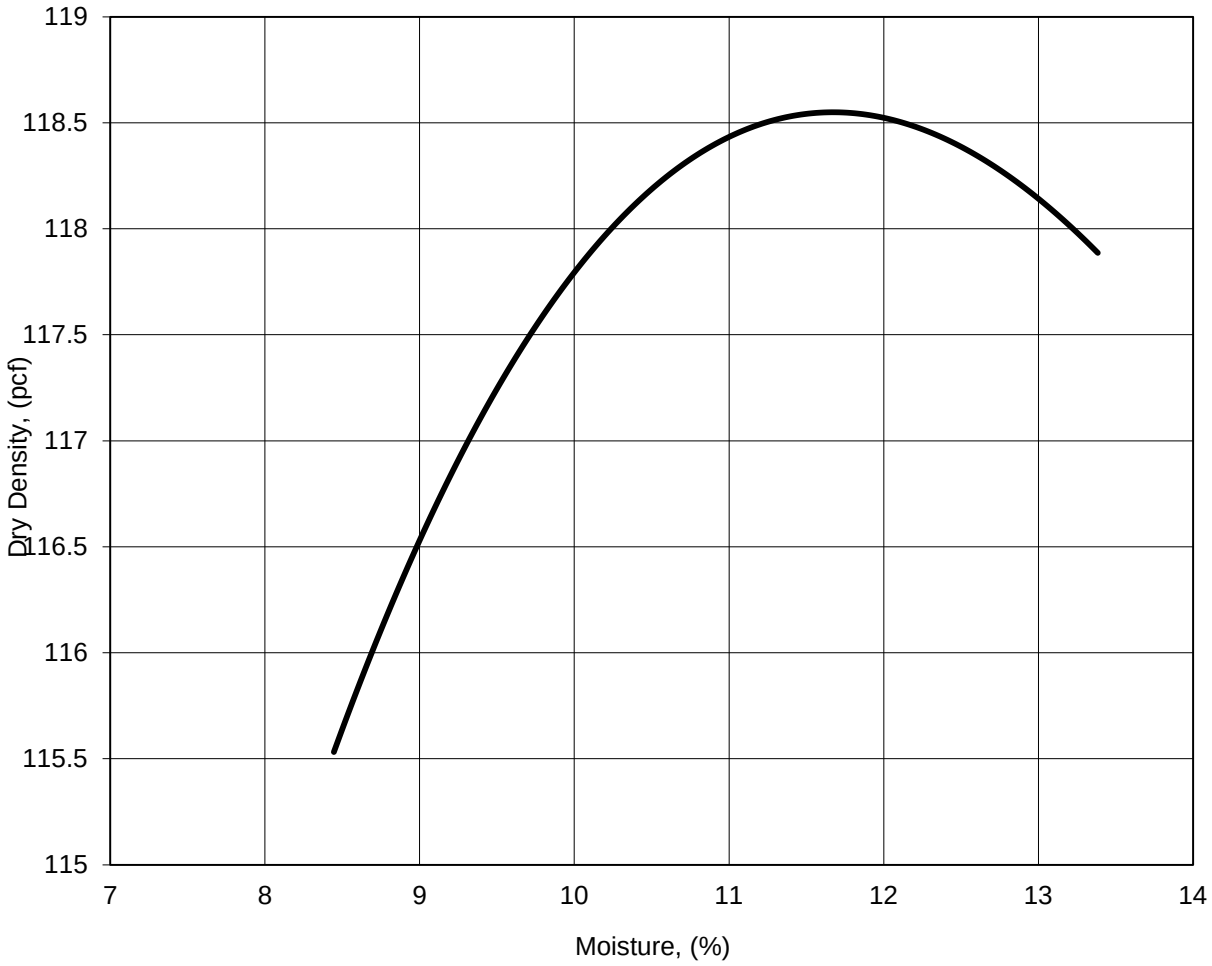
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-2 |
| Project State | : | South Carolina | Sample Depth | : | 2.5' to 6.5' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/27/17 |
| Submitted By | : | HDR | Date Reported | : | 04/06/17 |
| Soil Type | : | Brown | | | |




MAXIMUM DENSITY: 118.5 pcf

OPTIMUM MOISTURE: 11.7 %

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

APPROVED BY: KW

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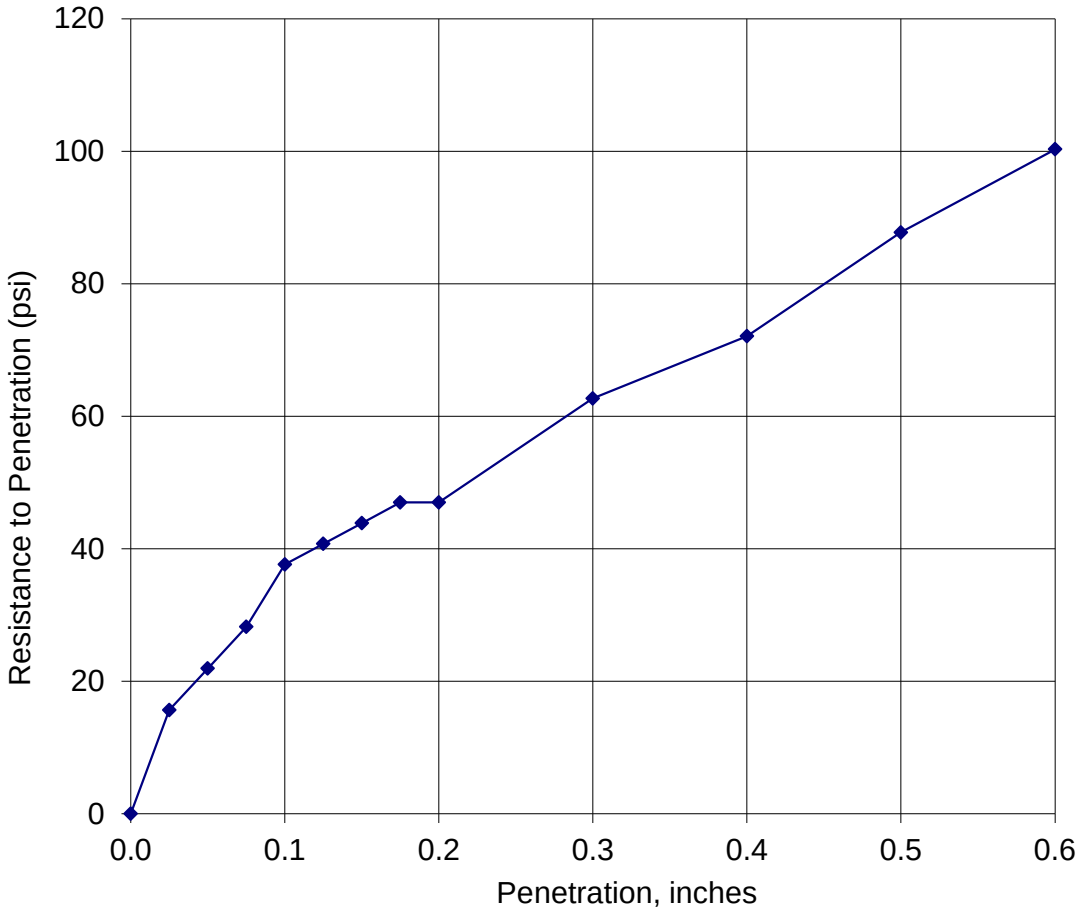
# CALIFORNIA BEARING RATIO

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-2 |
| Project State | : South Carolina | Sample Depth | : 2.5' to 6.5' |
| Laboratory No. | : 10023919 | Date Tested | : 3/27/17 |
| Submitted By | : HDR | Date Reported | : 4/6/17 |
| Soil Type | : Brown | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 94
Percent Swell = 0.2

C.B.R. @ 0.1 In. = 3.8*
C.B.R. @ 0.2 In. = 3.1

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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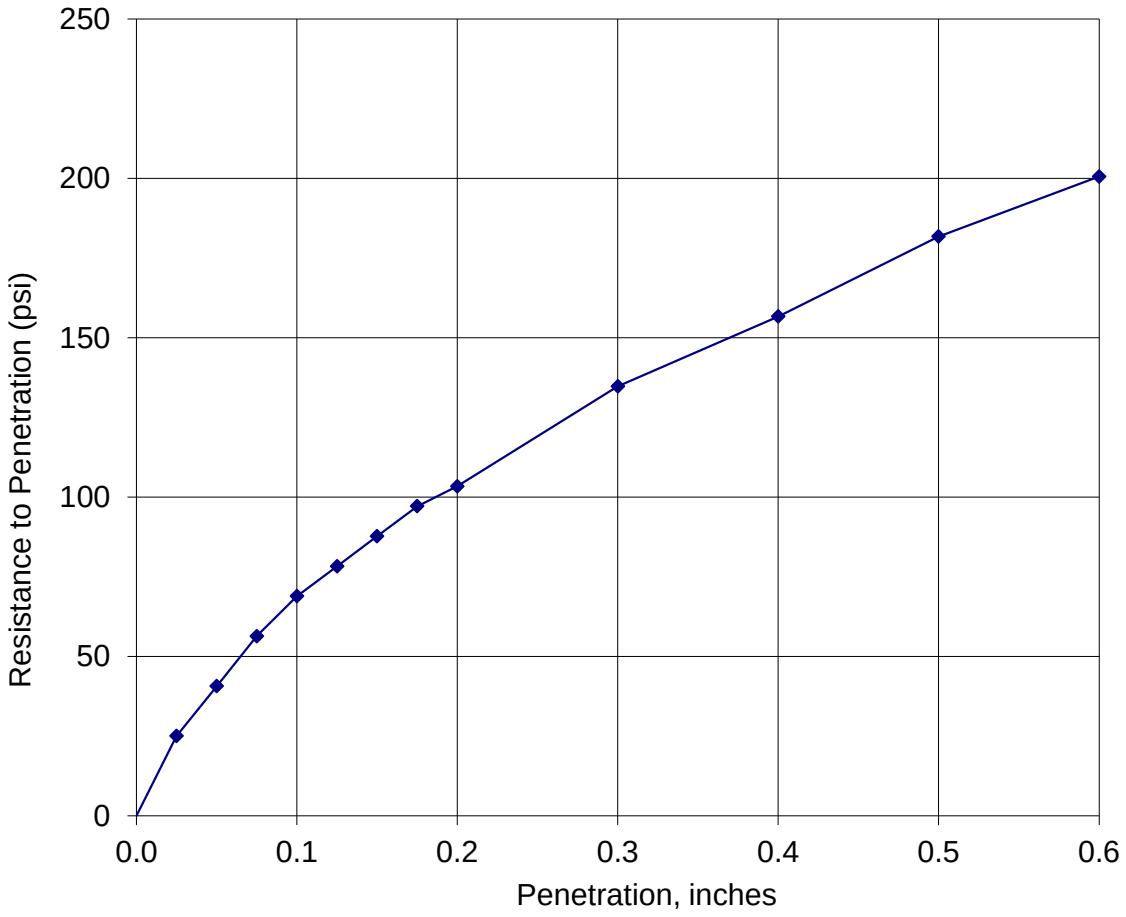
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-2 |
| Project State | : | South Carolina | Sample Depth | : | 2.5' to 6.5' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/27/17 |
| Submitted By | : | HDR | Date Reported | : | 4/6/17 |
| Soil Type | : | Brown | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 97.5
Percent Swell = 0.15

C.B.R. @ 0.1 In. = 6.9
C.B.R. @ 0.2 In. = 6.9*

COMMENTS: AASHTO: T-193

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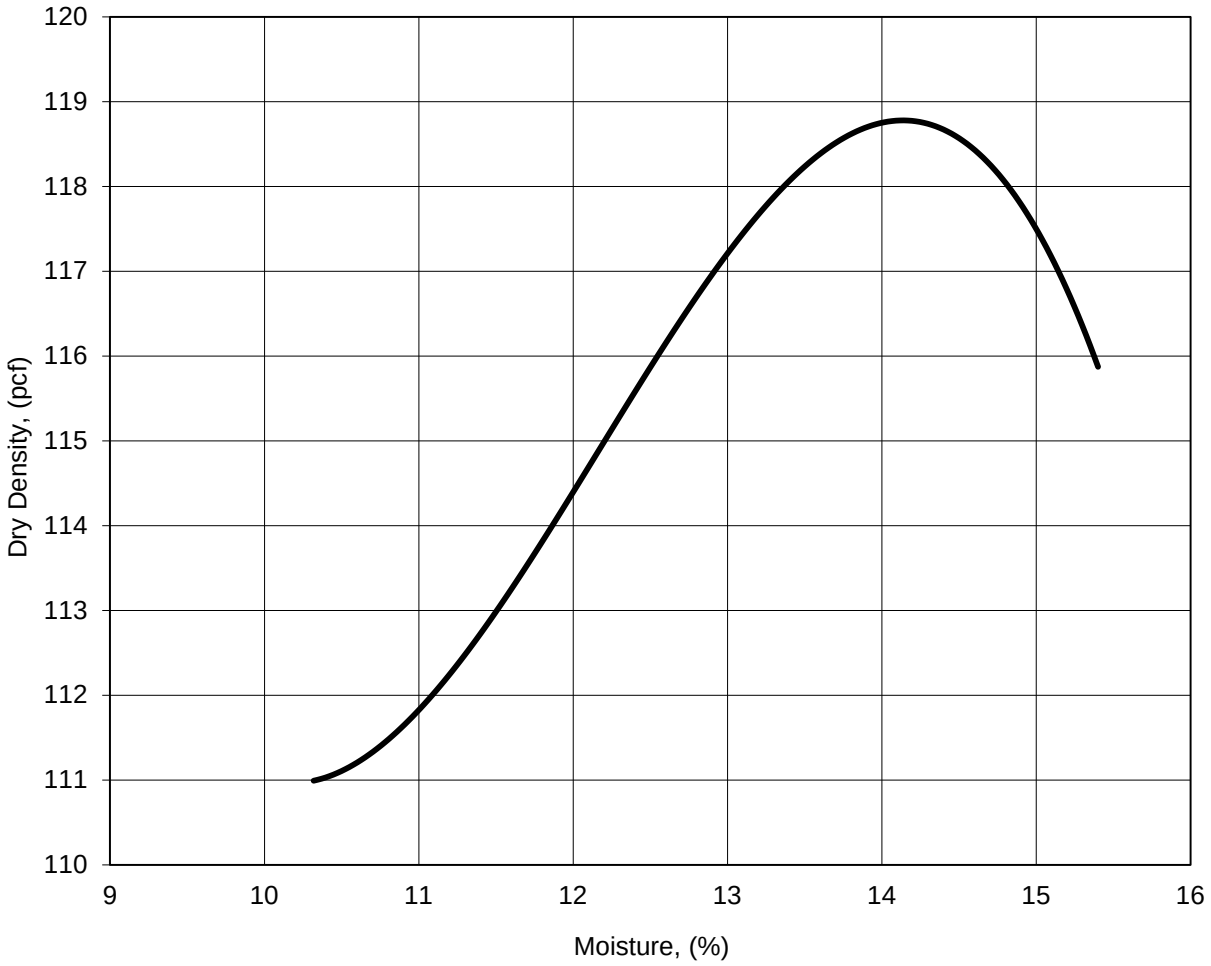
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. SB-17 |
| Project State | : | Soute Carolina | Sample Depth | : | 0.0' to 4.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/28/17 |
| Submitted By | : | HDR | Date Reported | : | 04/04/17 |
| Soil Type | : | Brown | | | |




MAXIMUM DENSITY: 118.8 pcf

OPTIMUM MOISTURE: 14.1 %

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

APPROVED BY: KW

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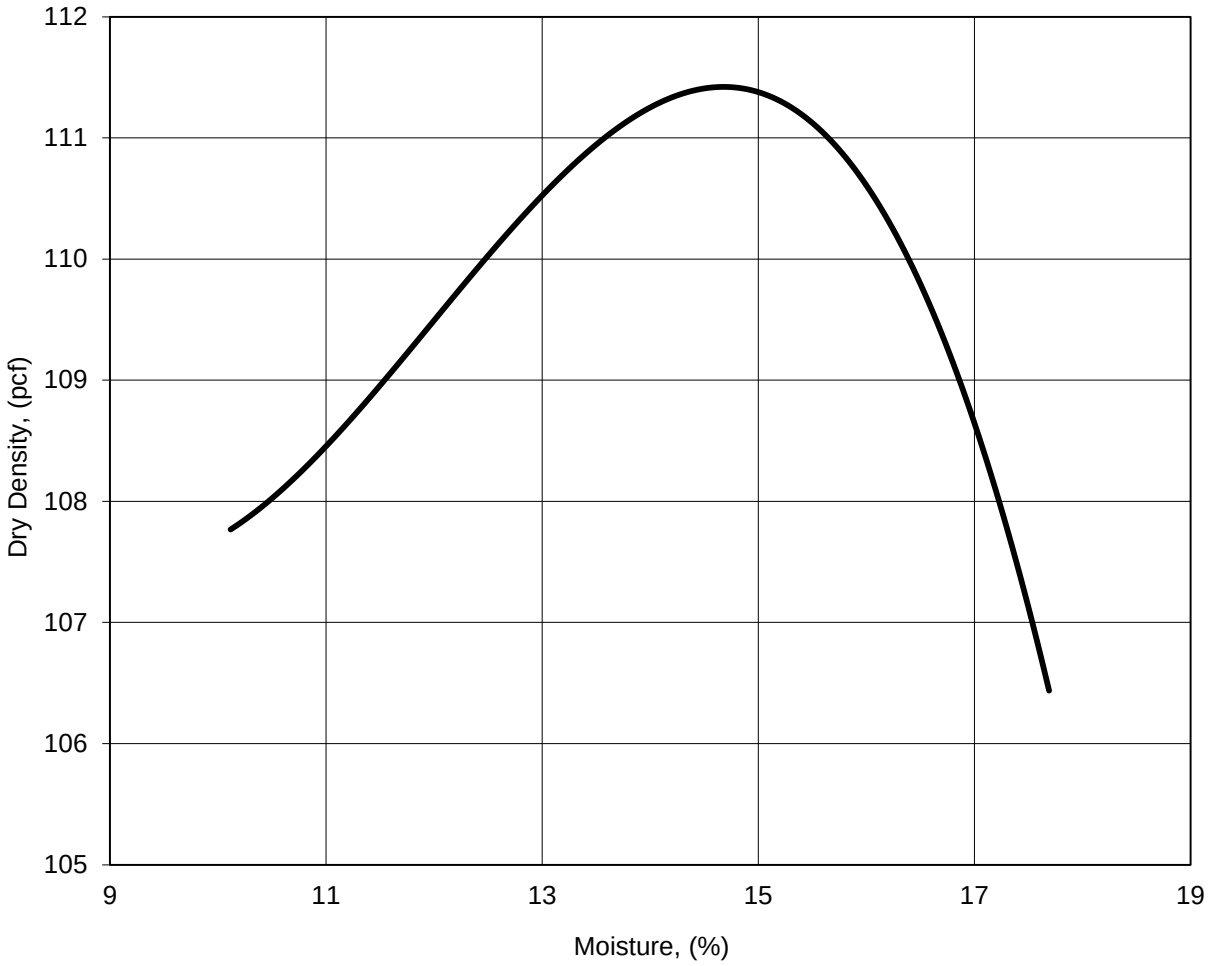
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-28 |
| Project State | : | Soute Carolina | Sample Depth | : | 0.0' to 4.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/28/17 |
| Submitted By | : | HDR | Date Reported | : | 04/04/17 |
| Soil Type | : | Orange & Brown Silty Sand | | | |




MAXIMUM DENSITY: 111.4 pcf

OPTIMUM MOISTURE: 14.7 %

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

APPROVED BY: KW

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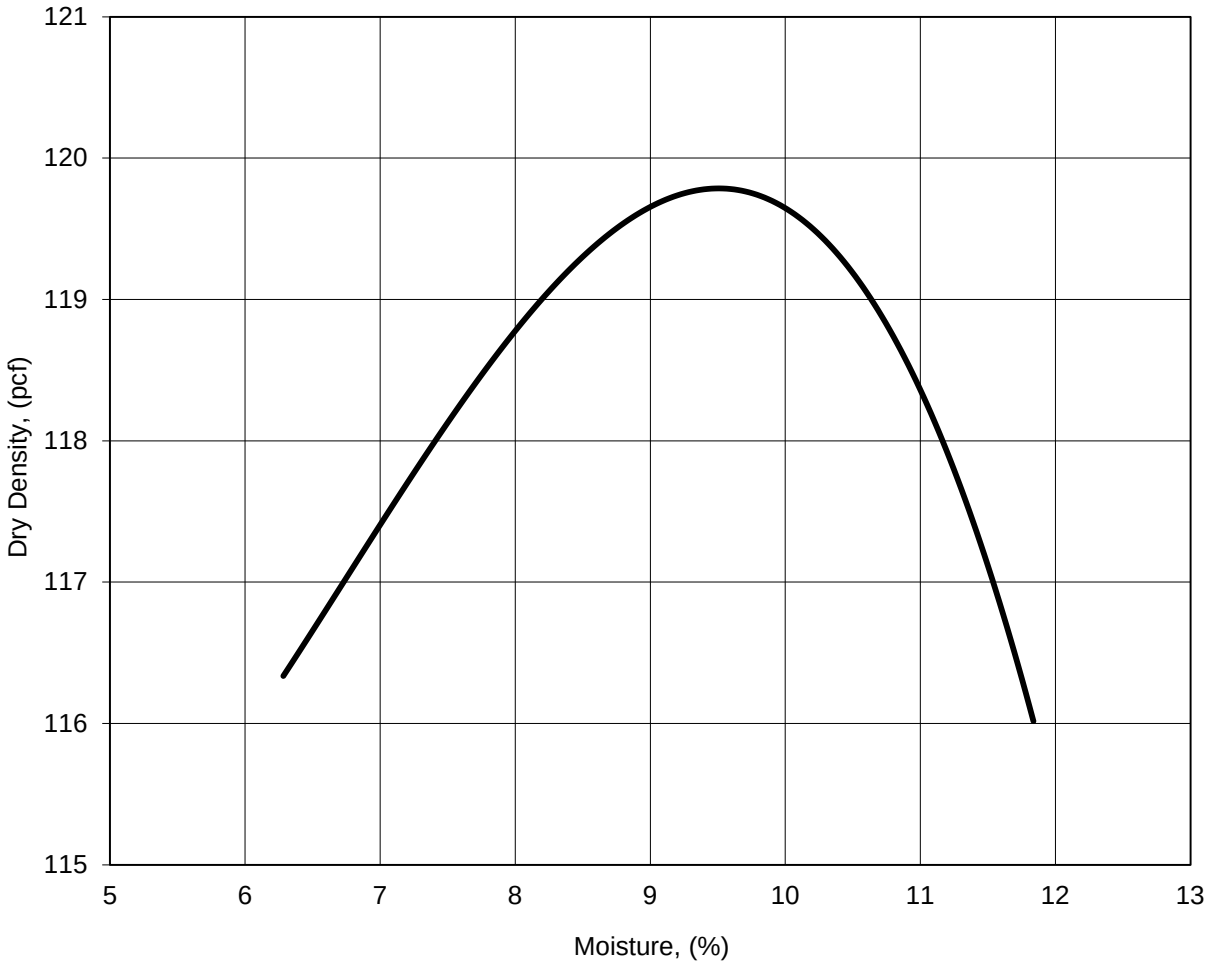
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-21 |
| Project State | : | Soute Carolina | Sample Depth | : | 2.0' to 6.5' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/28/17 |
| Submitted By | : | HDR | Date Reported | : | 04/04/17 |
| Soil Type | : | Brown | | | |




MAXIMUM DENSITY: 119.8 pcf

OPTIMUM MOISTURE: 9.5 %

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

APPROVED BY: KW

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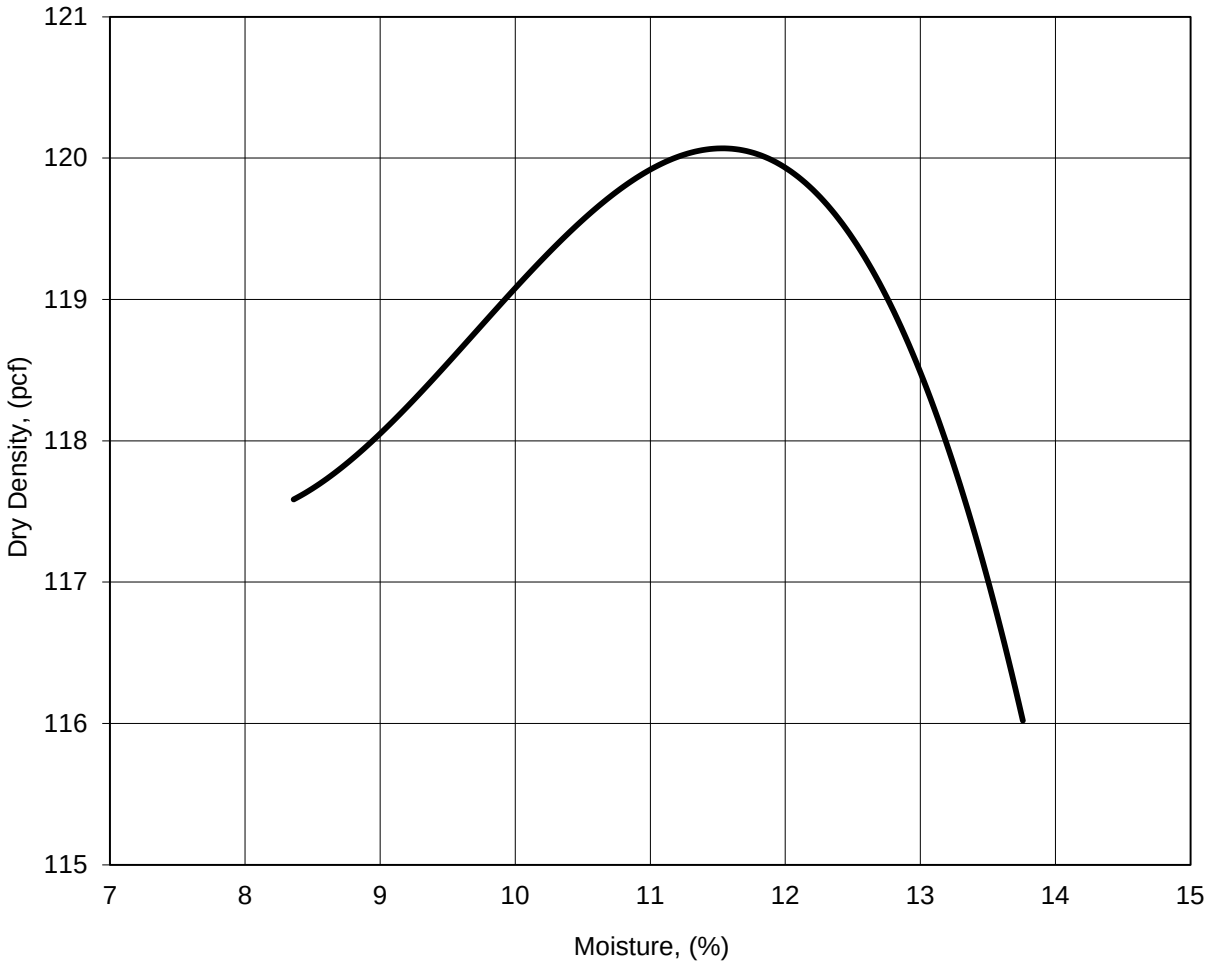
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. BR-156 |
| Project State | : | Soute Carolina | Sample Depth | : | 0.0' to 8.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/28/17 |
| Submitted By | : | HDR | Date Reported | : | 04/04/17 |
| Soil Type | : | Brown, Orange & White | | | |




MAXIMUM DENSITY: 120.1 pcf

OPTIMUM MOISTURE: 11.5 %

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

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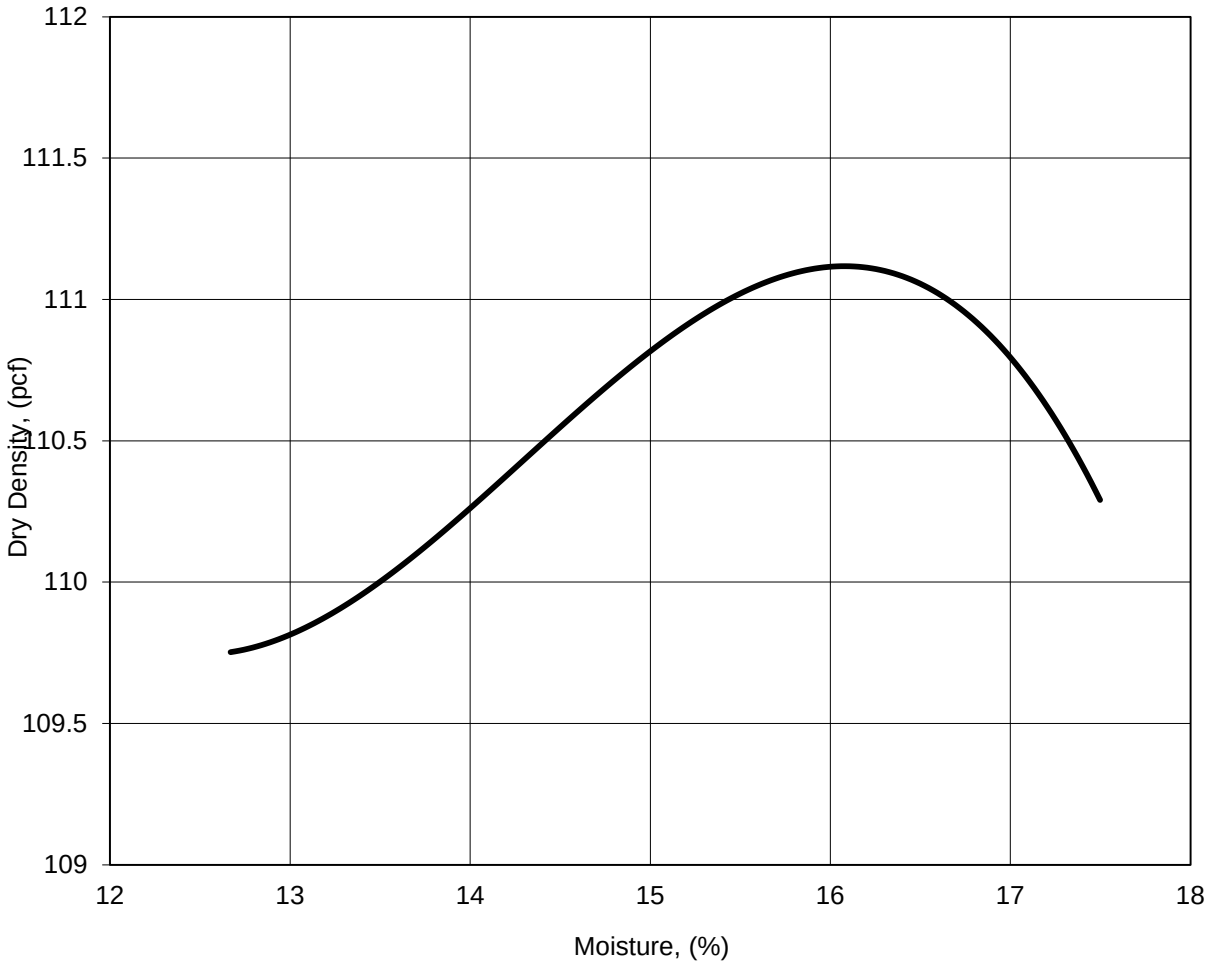
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-78 |
| Project State | : | Soute Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/27/17 |
| Submitted By | : | HDR | Date Reported | : | 03/31/17 |
| Soil Type | : | Brown, Brown-Orange & Red-Brown Sandy Lean Clay | | | |




MAXIMUM DENSITY: 111.1 pcf

OPTIMUM MOISTURE: 16.1 %

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

APPROVED BY: KW

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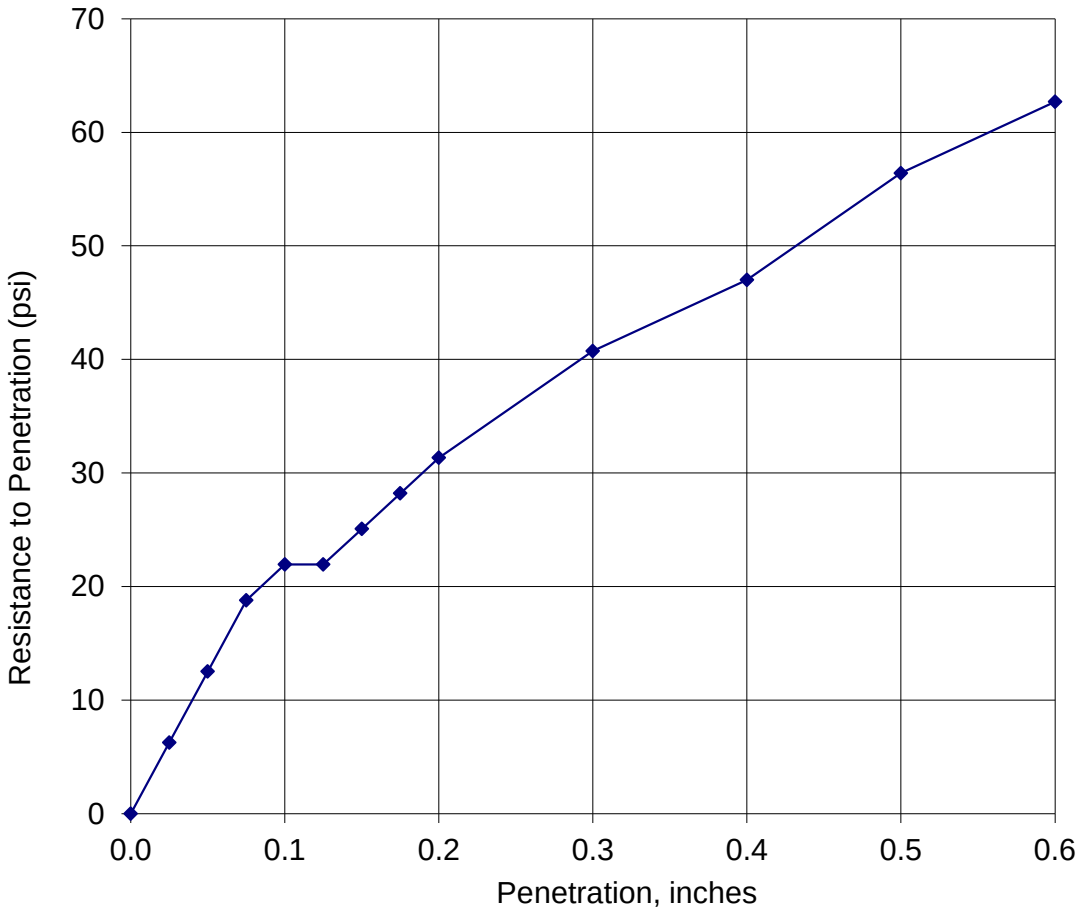
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-78 |
| Project State | : | Soute Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/27/17 |
| Submitted By | : | HDR | Date Reported | : | 3/31/17 |
| Soil Type | : | Brown, Brown-Orange & Red-Brown Sandy Lean Clay | | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 91.3
Percent Swell = 1.88

C.B.R. @ 0.1 In. = 2.2*
C.B.R. @ 0.2 In. = 2.1

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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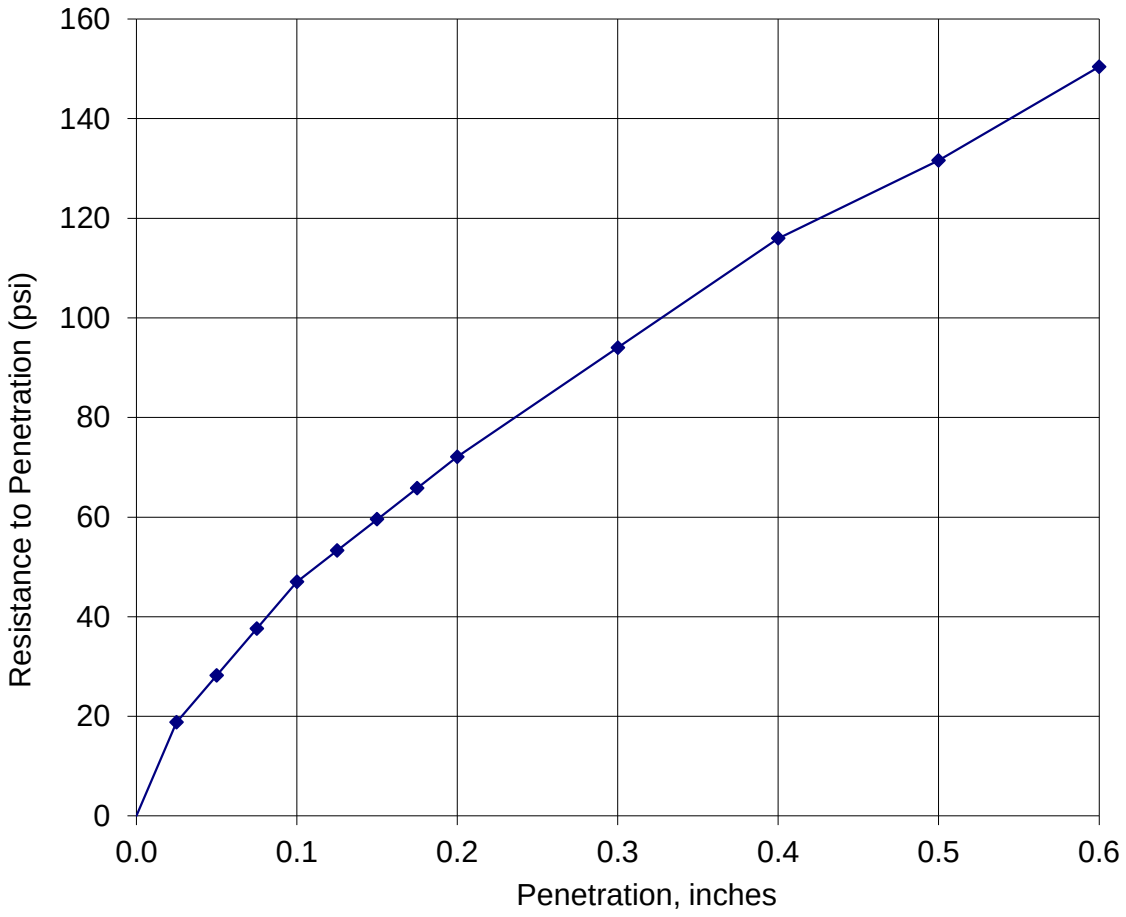
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-78 |
| Project State | : | Soute Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/27/17 |
| Submitted By | : | HDR | Date Reported | : | 3/31/17 |
| Soil Type | : | Brown, Brown-Orange & Red-Brown Sandy Lean Clay | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 99
Percent Swell = 1.53

C.B.R. @ 0.1 In. = 4.7
C.B.R. @ 0.2 In. = 4.8*

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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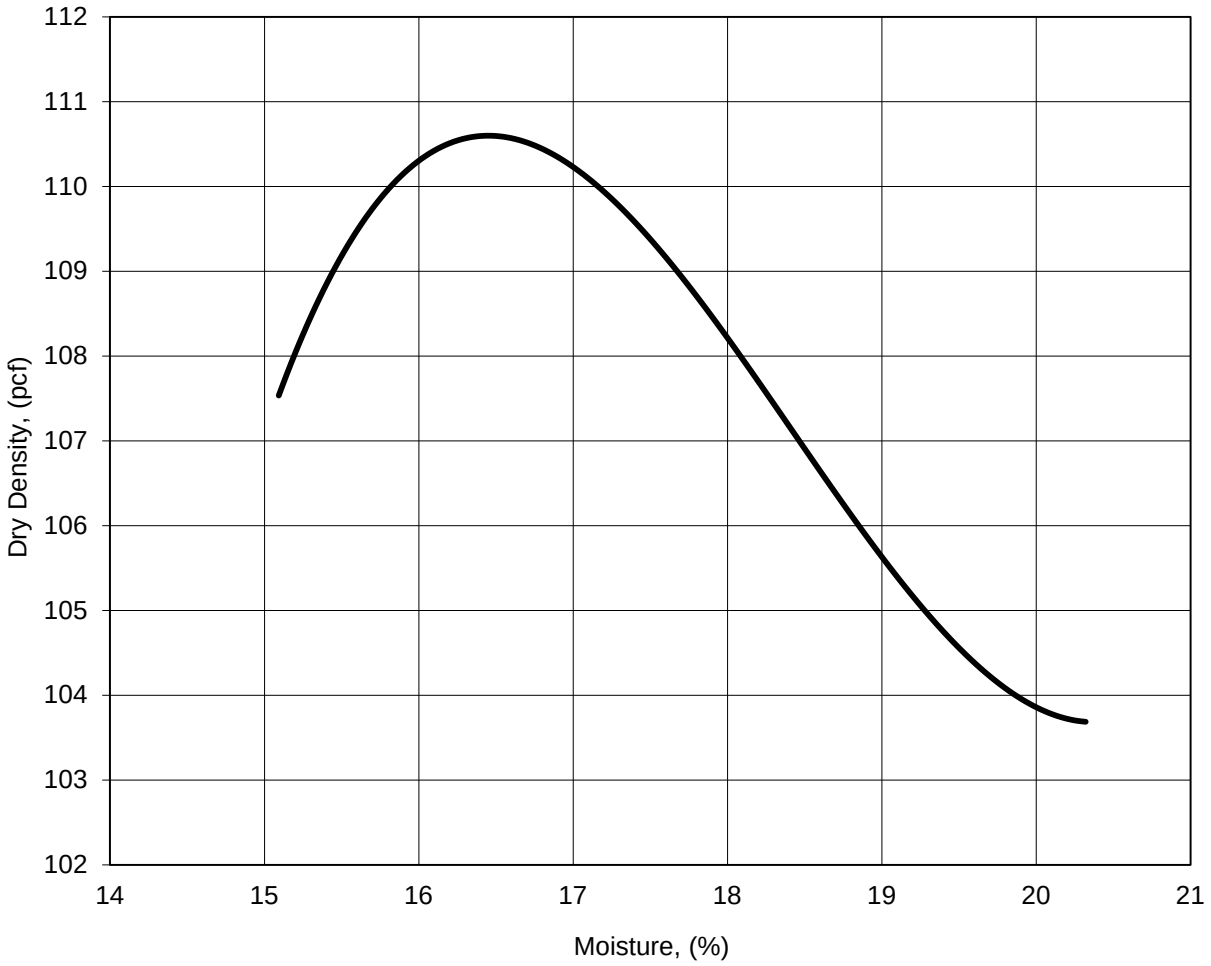
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. SB-63 |
| Project State | : | Soute Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/27/17 |
| Submitted By | : | HDR | Date Reported | : | 03/31/17 |
| Soil Type | : | Brown-Orange & Orange-Brown Silty Sand | | | |




MAXIMUM DENSITY: 110.6 pcf

OPTIMUM MOISTURE: 16.5 %

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

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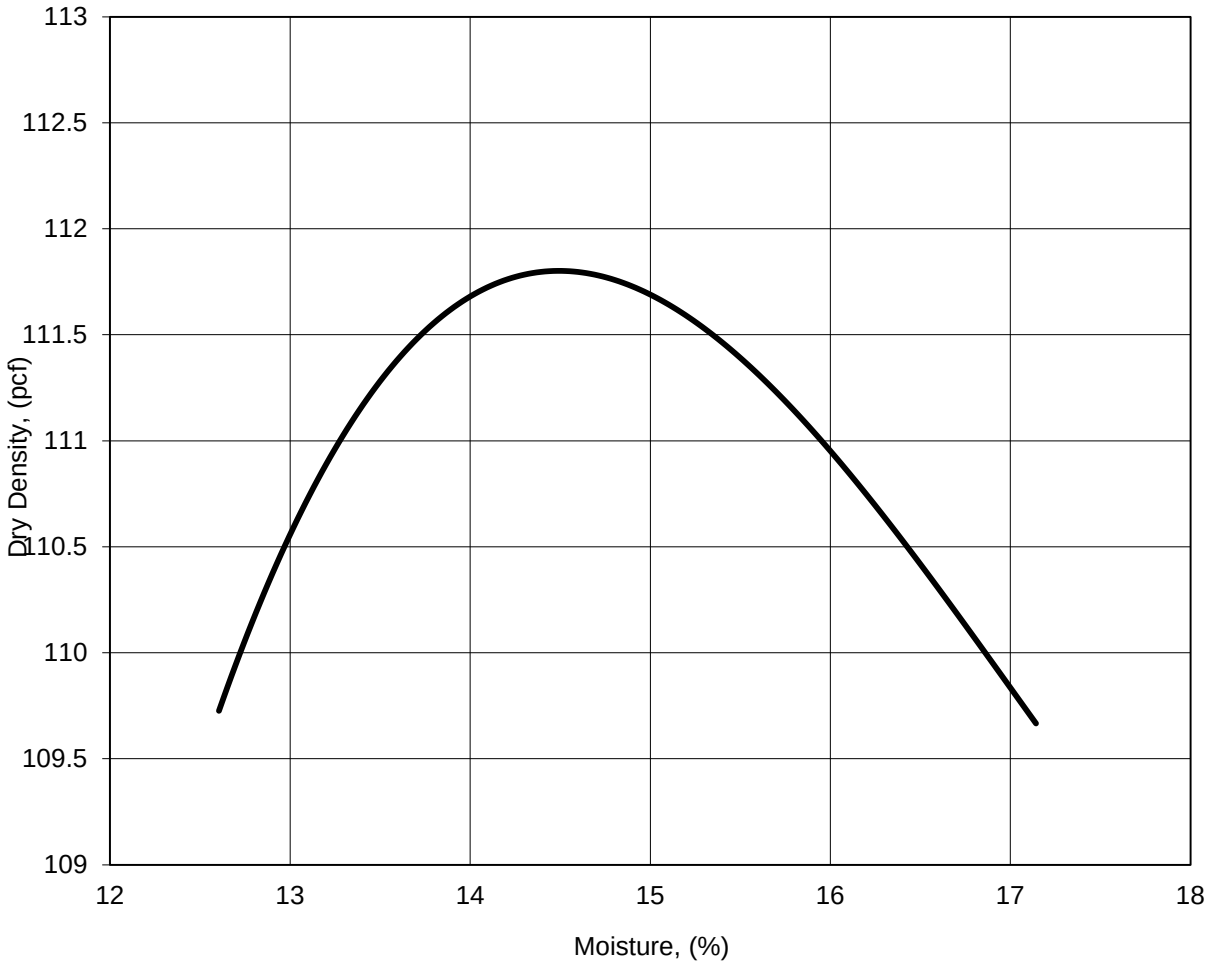
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. SB-83 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/21/17 |
| Submitted By | : | HDR | Date Reported | : | 03/27/17 |
| Soil Type | : | Light-Brown, White & Red-Orange Sandy Silt | | | |




MAXIMUM DENSITY: 111.8 pcf

OPTIMUM MOISTURE: 14.5 %

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

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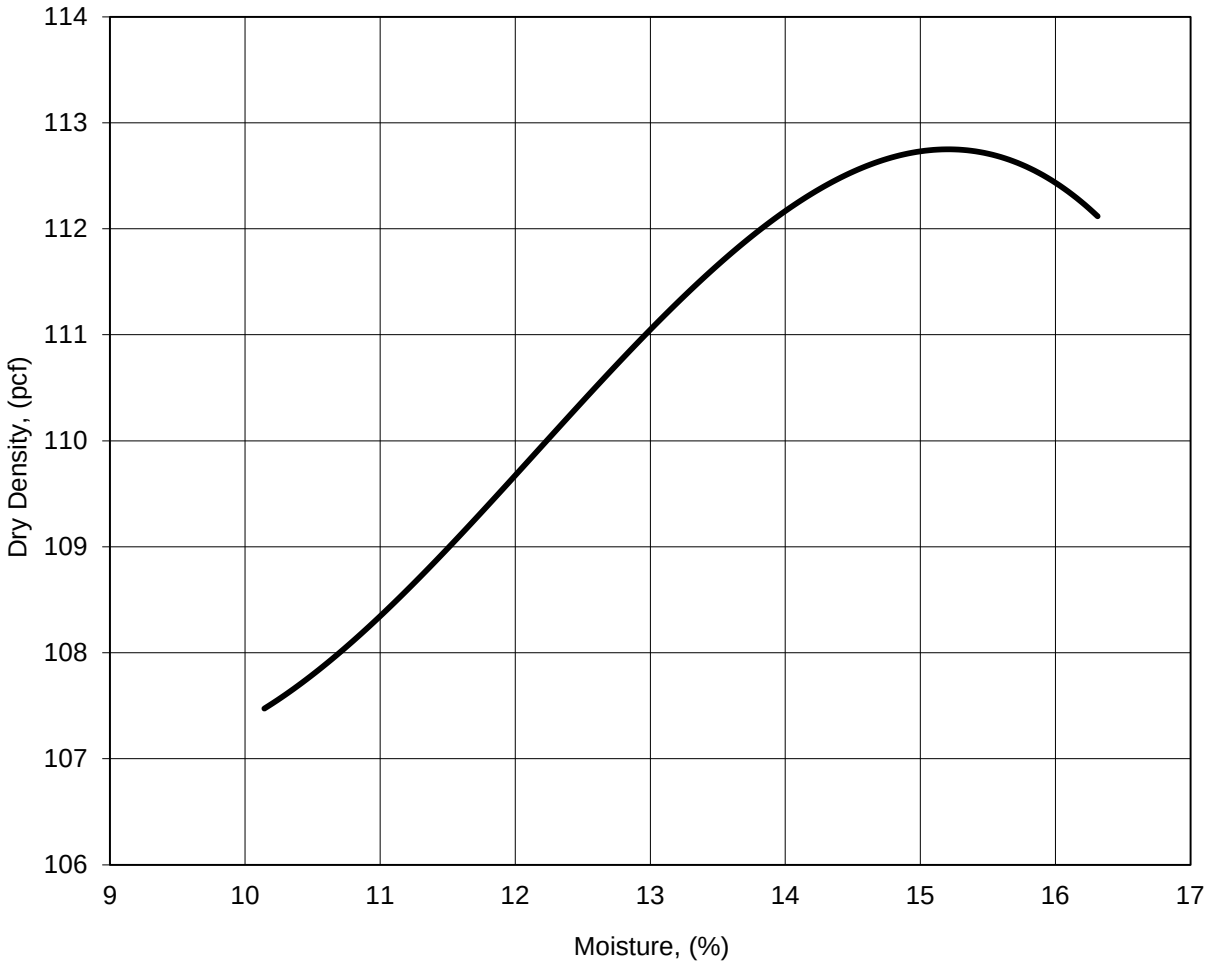
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-48 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/21/17 |
| Submitted By | : | HDR | Date Reported | : | 03/27/17 |
| Soil Type | : | Brown Silty Sand | | | |




MAXIMUM DENSITY: 112.7 pcf

OPTIMUM MOISTURE: 15.2 %

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

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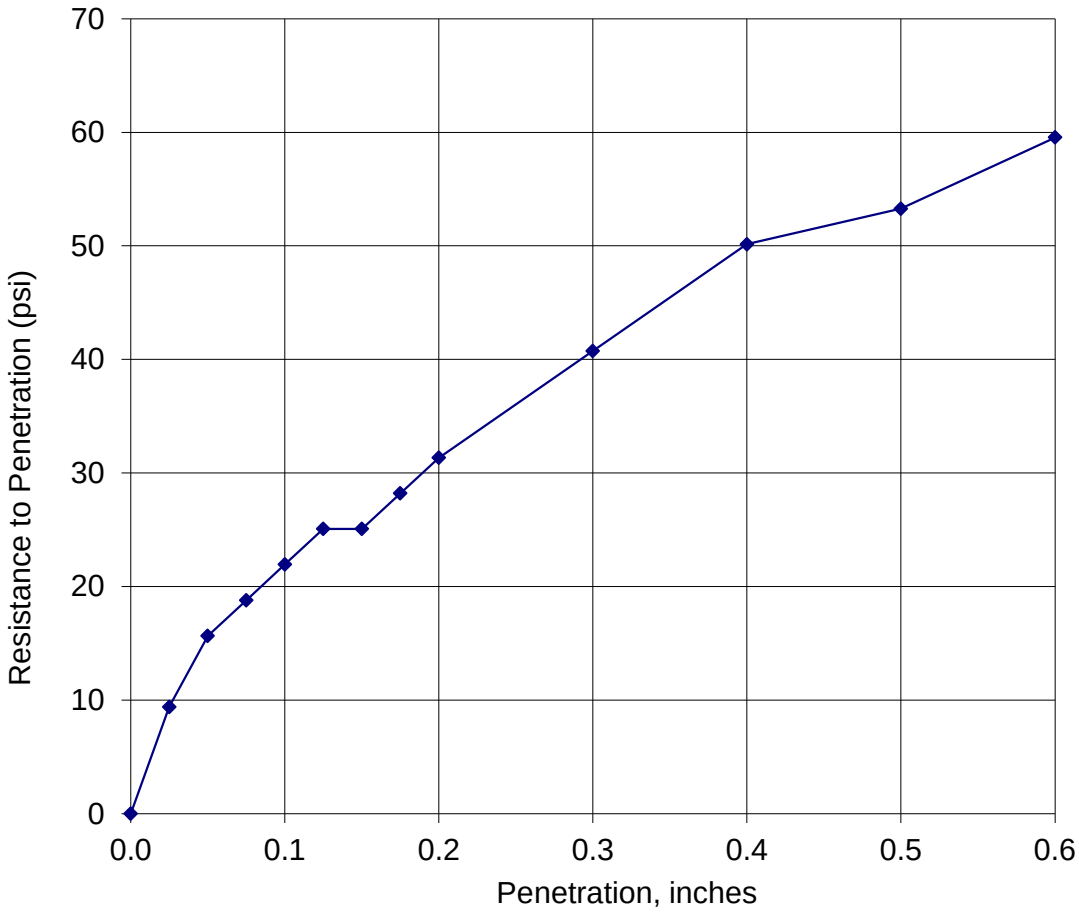
# CALIFORNIA BEARING RATIO

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-48 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 3/21/17 |
| Submitted By | : HDR | Date Reported | : 3/27/17 |
| Soil Type | : Brown Silty Sand | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 92.1
Percent Swell = 2.09

C.B.R. @ 0.1 In. = 2.2*
C.B.R. @ 0.2 In. = 2.1

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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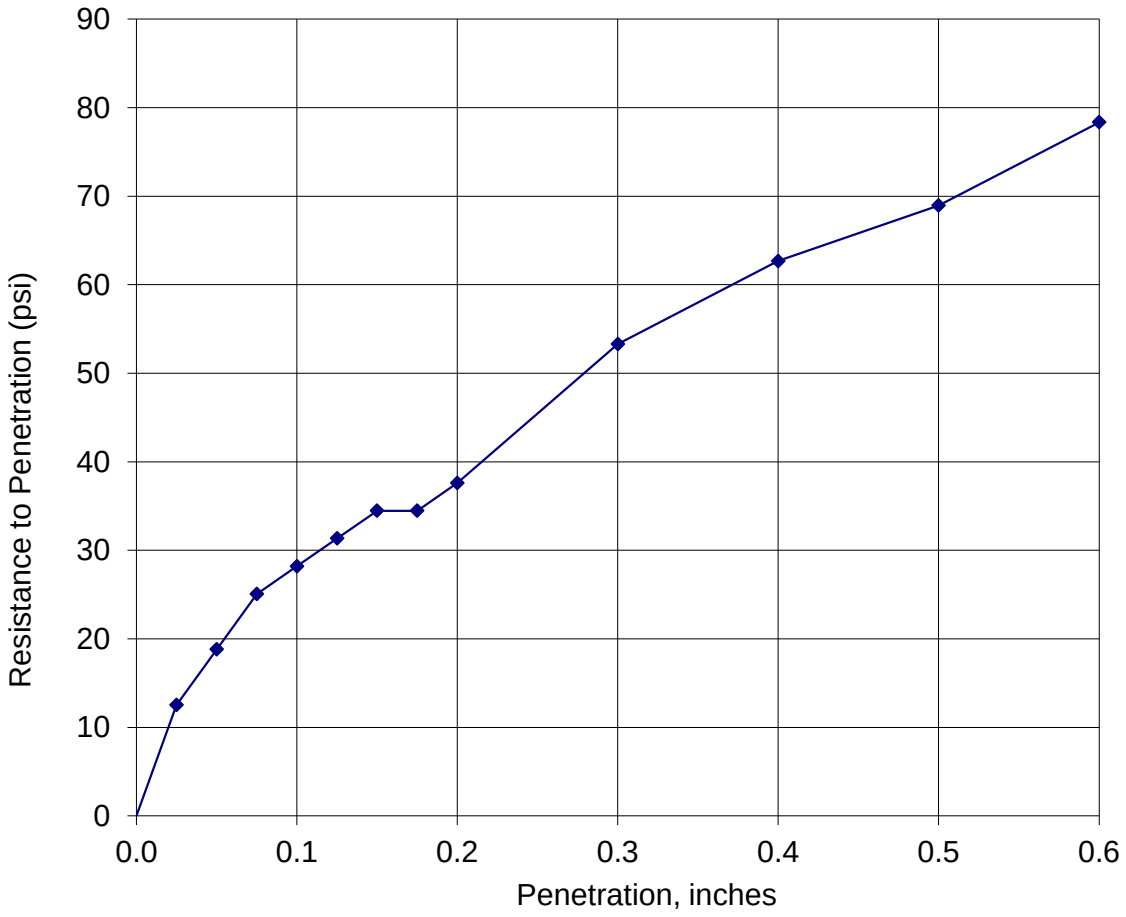
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-48 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/21/17 |
| Submitted By | : | HDR | Date Reported | : | 3/27/17 |
| Soil Type | : | Brown Silty Sand | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 98.3
Percent Swell = 1.53

C.B.R. @ 0.1 In. = 2.8*
C.B.R. @ 0.2 In. = 2.5

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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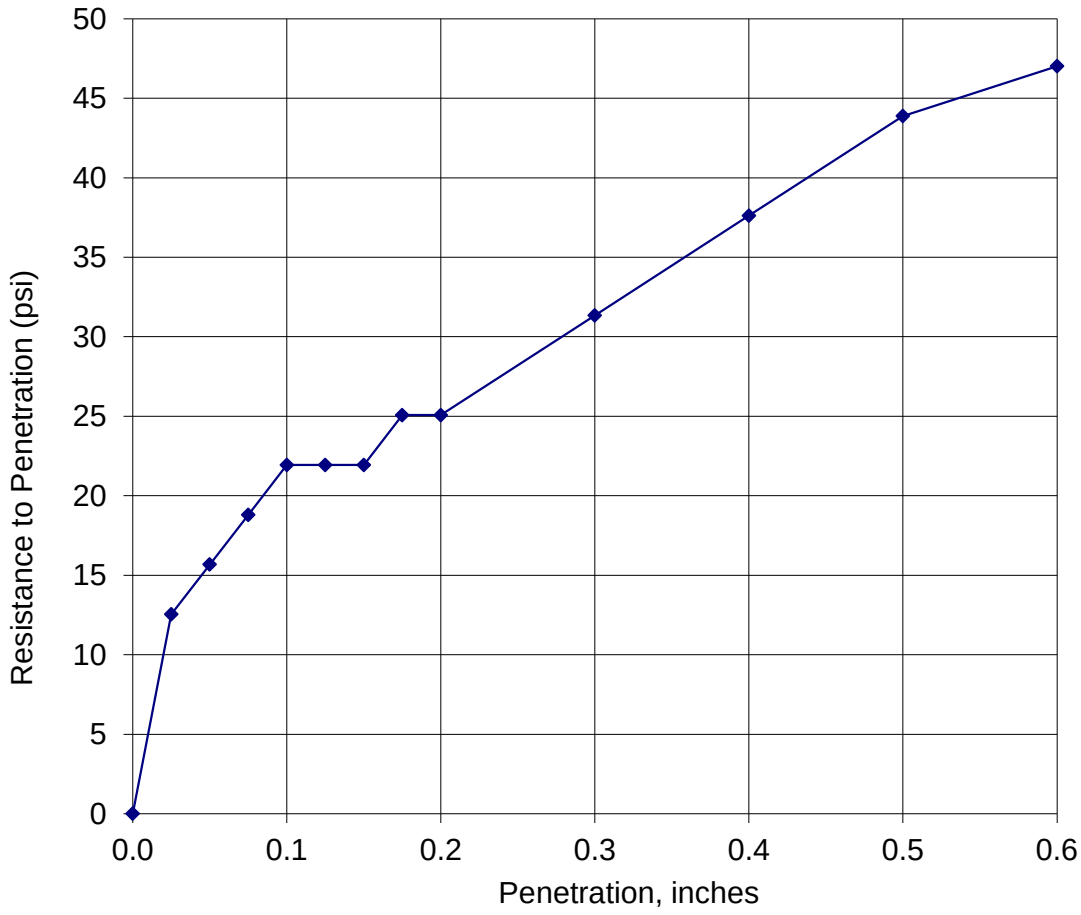
# CALIFORNIA BEARING RATIO

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-63 |
| Project State | : Soute Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 3/27/17 |
| Submitted By | : HDR | Date Reported | : 3/31/17 |
| Soil Type | : Brown-Orange & Orange-Brown Silty Sand | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 92.1
Percent Swell = 0.7

C.B.R. @ 0.1 In. = 2.2*
C.B.R. @ 0.2 In. = 1.7

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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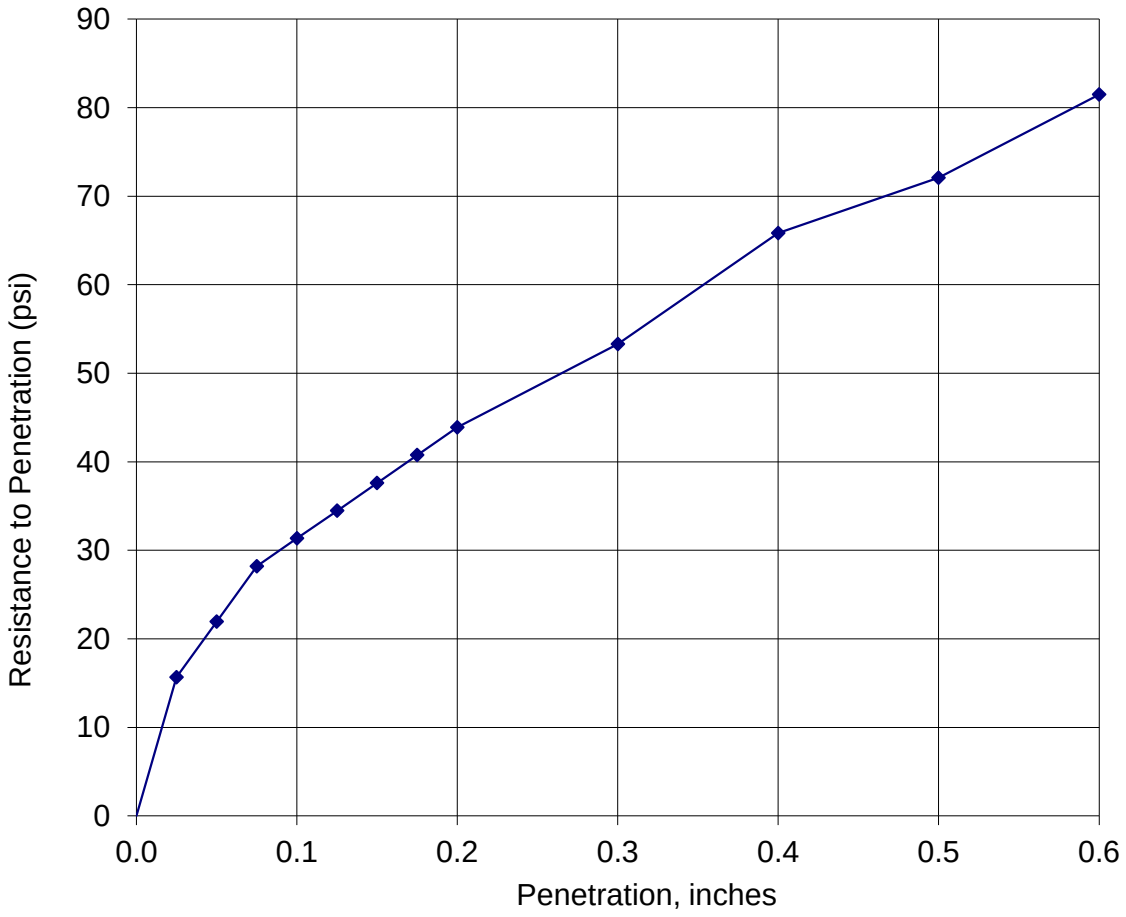
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. SB-63 |
| Project State | : | Soute Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/27/17 |
| Submitted By | : | HDR | Date Reported | : | 3/31/17 |
| Soil Type | : | Brown-Orange & Orange-Brown Silty Sand | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 95.7
Percent Swell = 0.59

C.B.R. @ 0.1 In. = 3.1*
C.B.R. @ 0.2 In. = 2.9

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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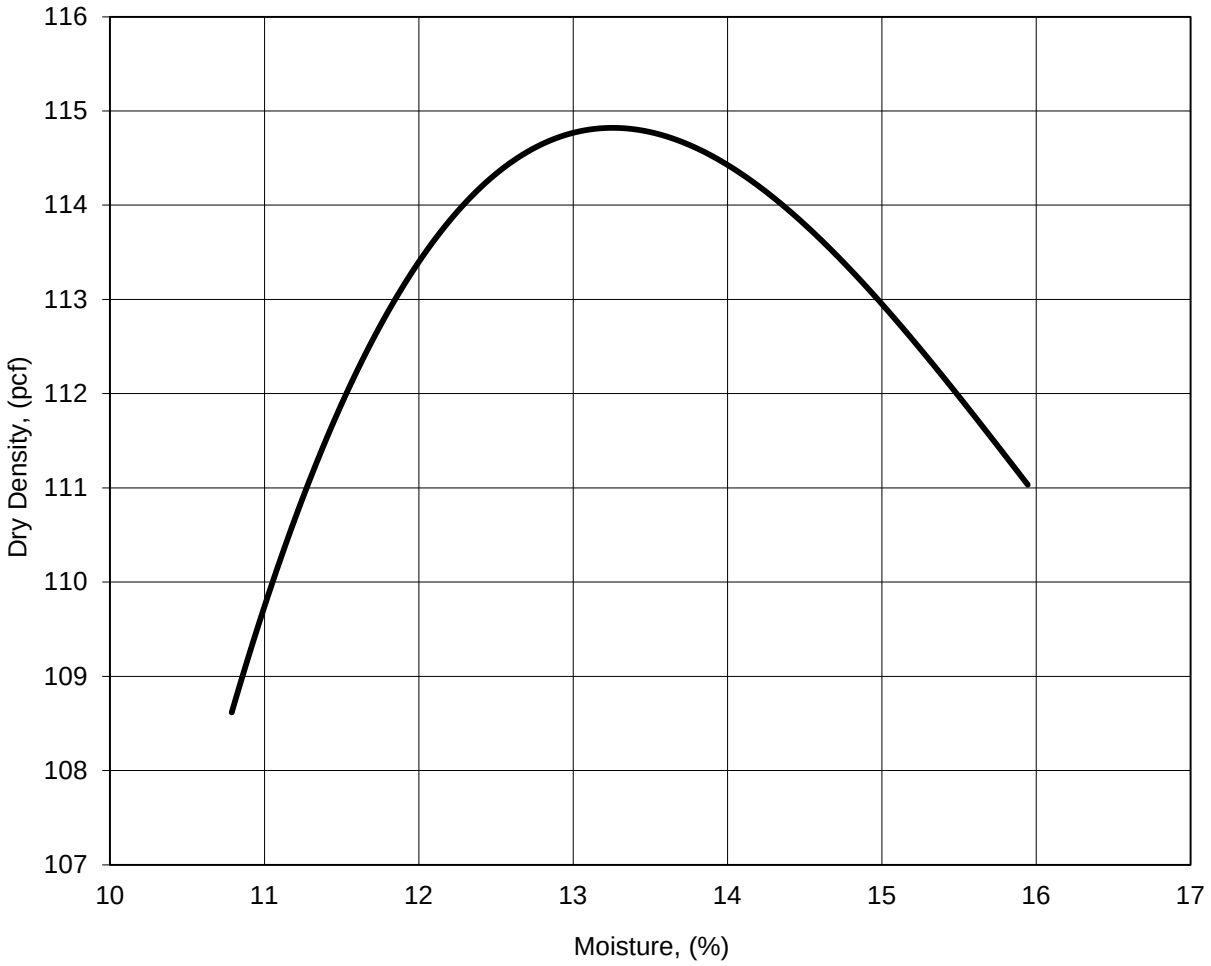
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-88 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/21/17 |
| Submitted By | : | HDR | Date Reported | : | 03/27/17 |
| Soil Type | : | Brown & Orange-Brown Sandy Lean Clay | | | |




MAXIMUM DENSITY: 114.8 pcf

OPTIMUM MOISTURE: 13.2 %

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

APPROVED BY: KW

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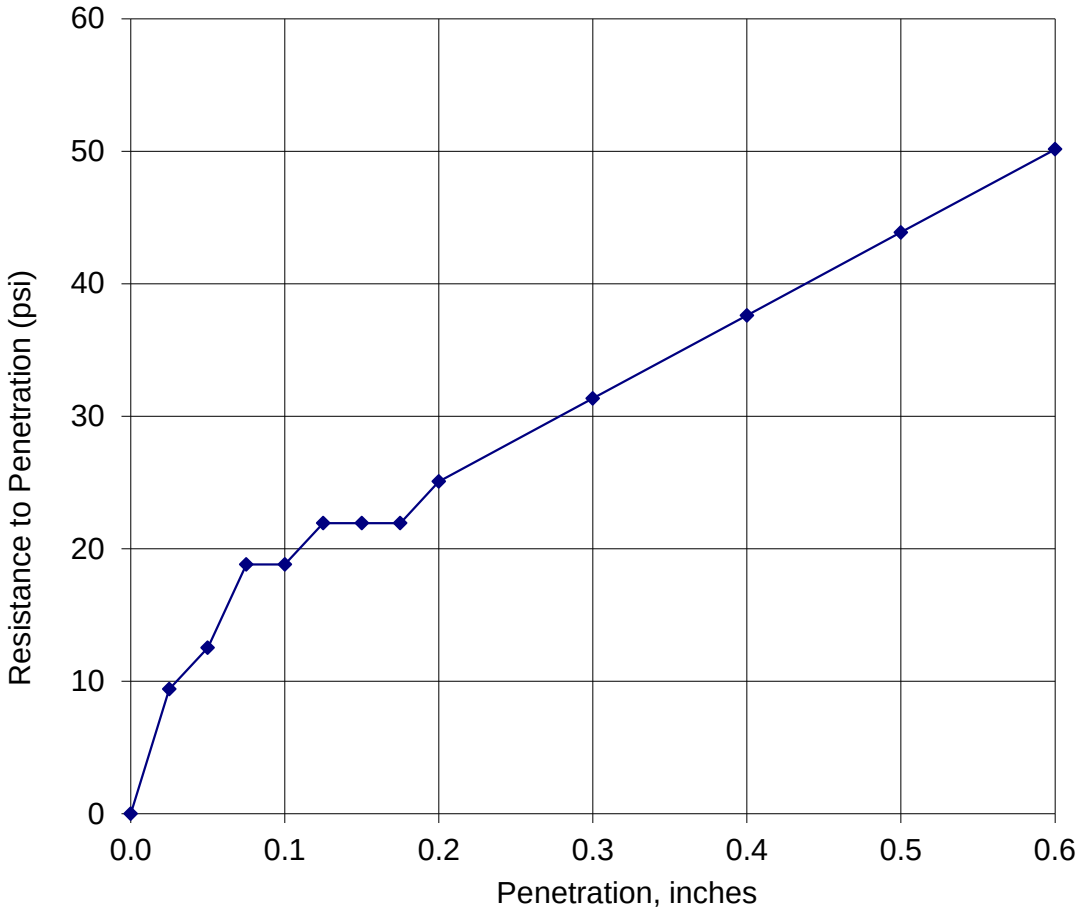
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-88 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/21/17 |
| Submitted By | : | HDR | Date Reported | : | 3/27/17 |
| Soil Type | : | Brown & Orange-Brown Sandy Lean Clay | | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 92.1
Percent Swell = 0.92

C.B.R. @ 0.1 In. = 1.9*
C.B.R. @ 0.2 In. = 1.7

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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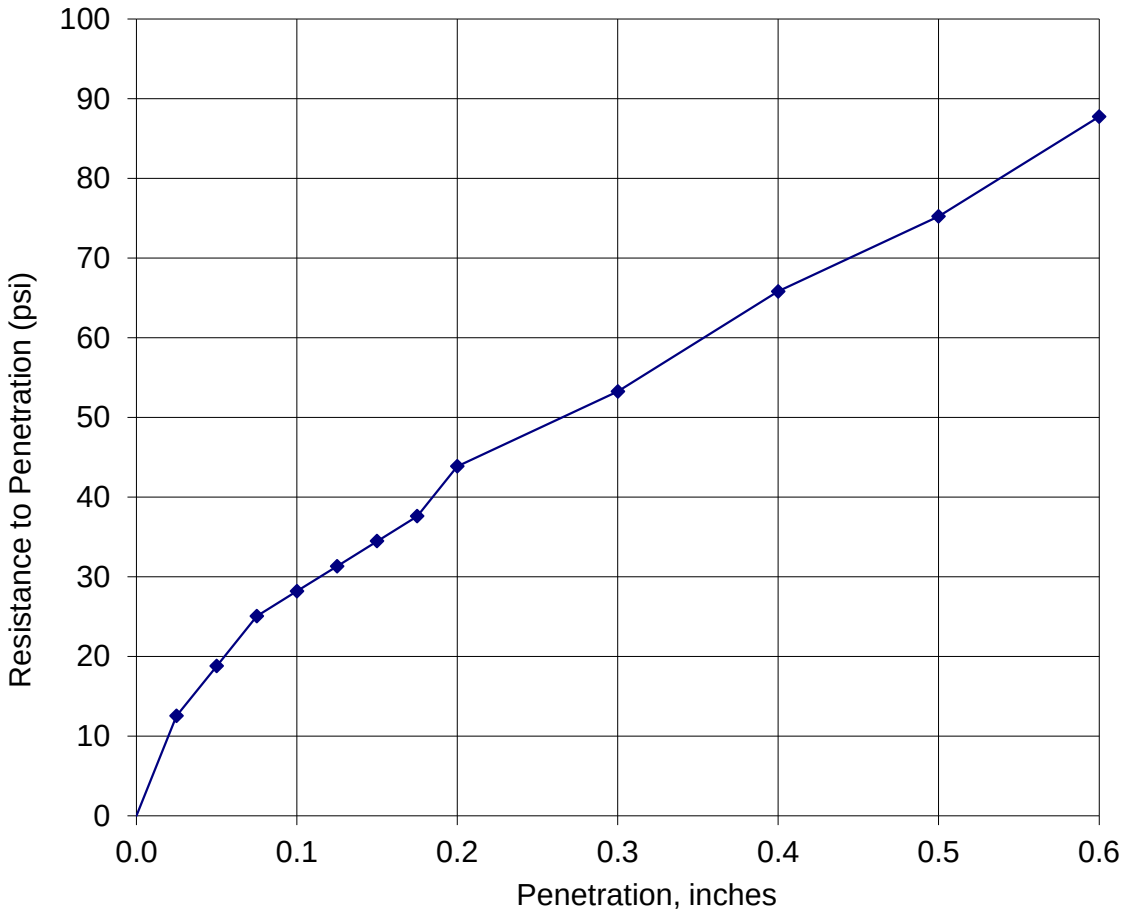
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-88 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/21/17 |
| Submitted By | : | HDR | Date Reported | : | 3/27/17 |
| Soil Type | : | Brown & Orange-Brown Sandy Lean Clay | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 97.1
Percent Swell = 0.81

C.B.R. @ 0.1 In. = 2.8
C.B.R. @ 0.2 In. = 2.9*

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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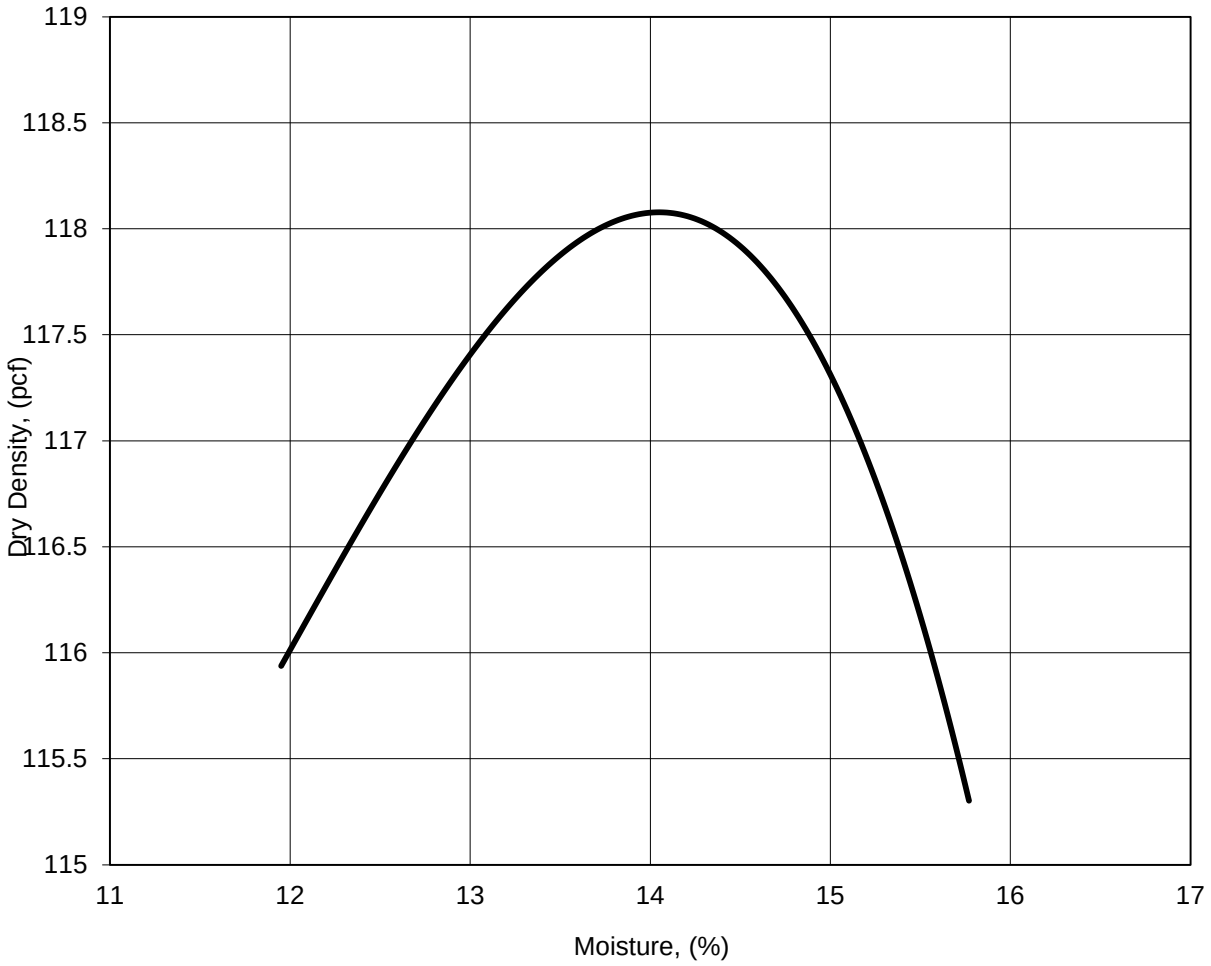
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. SB-7 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 4.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/27/17 |
| Submitted By | : | HDR | Date Reported | : | 03/27/17 |
| Soil Type | : | Brown | | | |




MAXIMUM DENSITY: 118.1 pcf

OPTIMUM MOISTURE: 14 %

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

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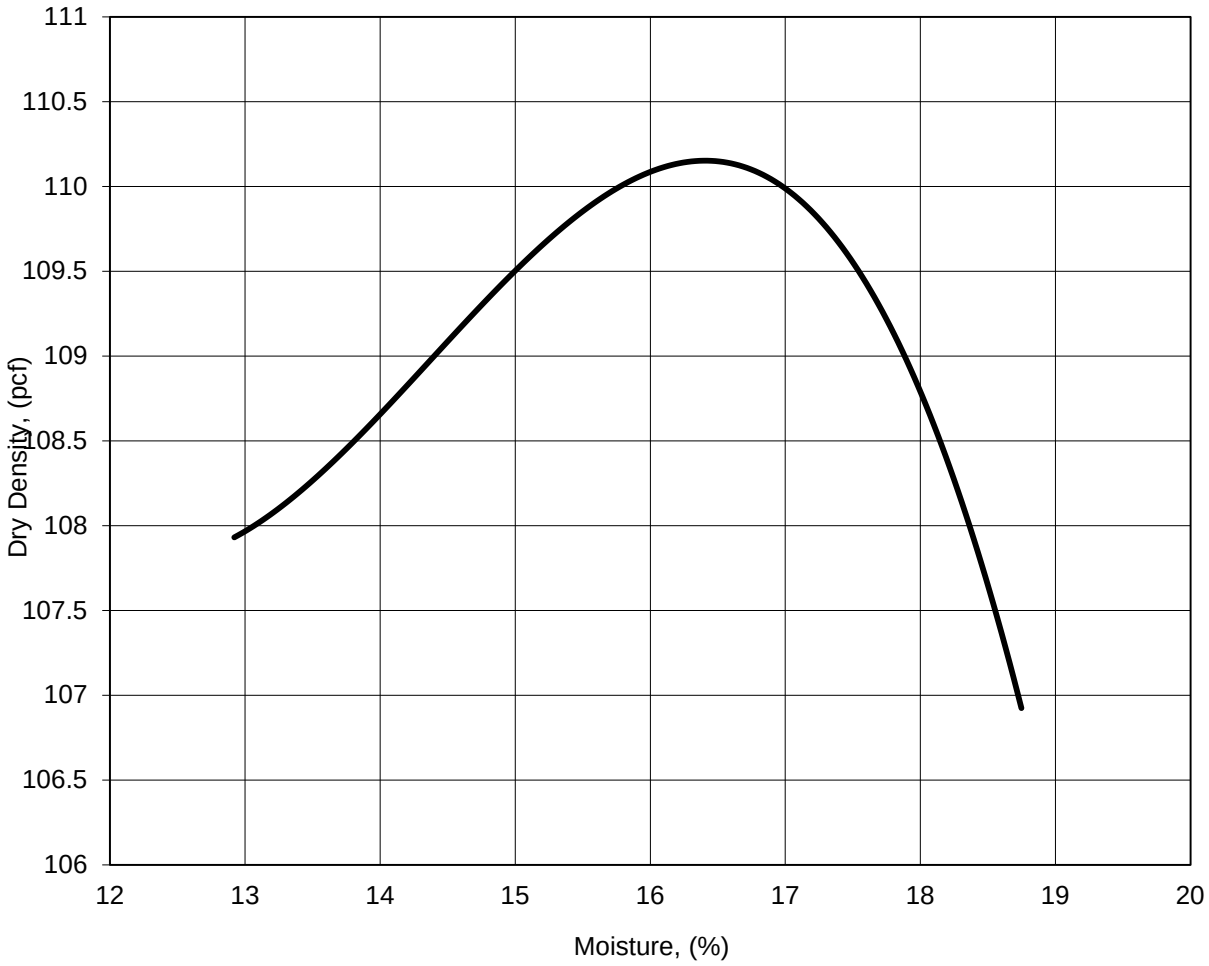
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. C-130 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 10' |
| Laboratory No. | : | 10023919 | Date Tested | : | 02/01/17 |
| Submitted By | : | HDR | Date Reported | : | 02/06/17 |
| Soil Type | : | Red | | | |




MAXIMUM DENSITY: 110.2 pcf

OPTIMUM MOISTURE: 16.4 %

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

APPROVED BY: KW

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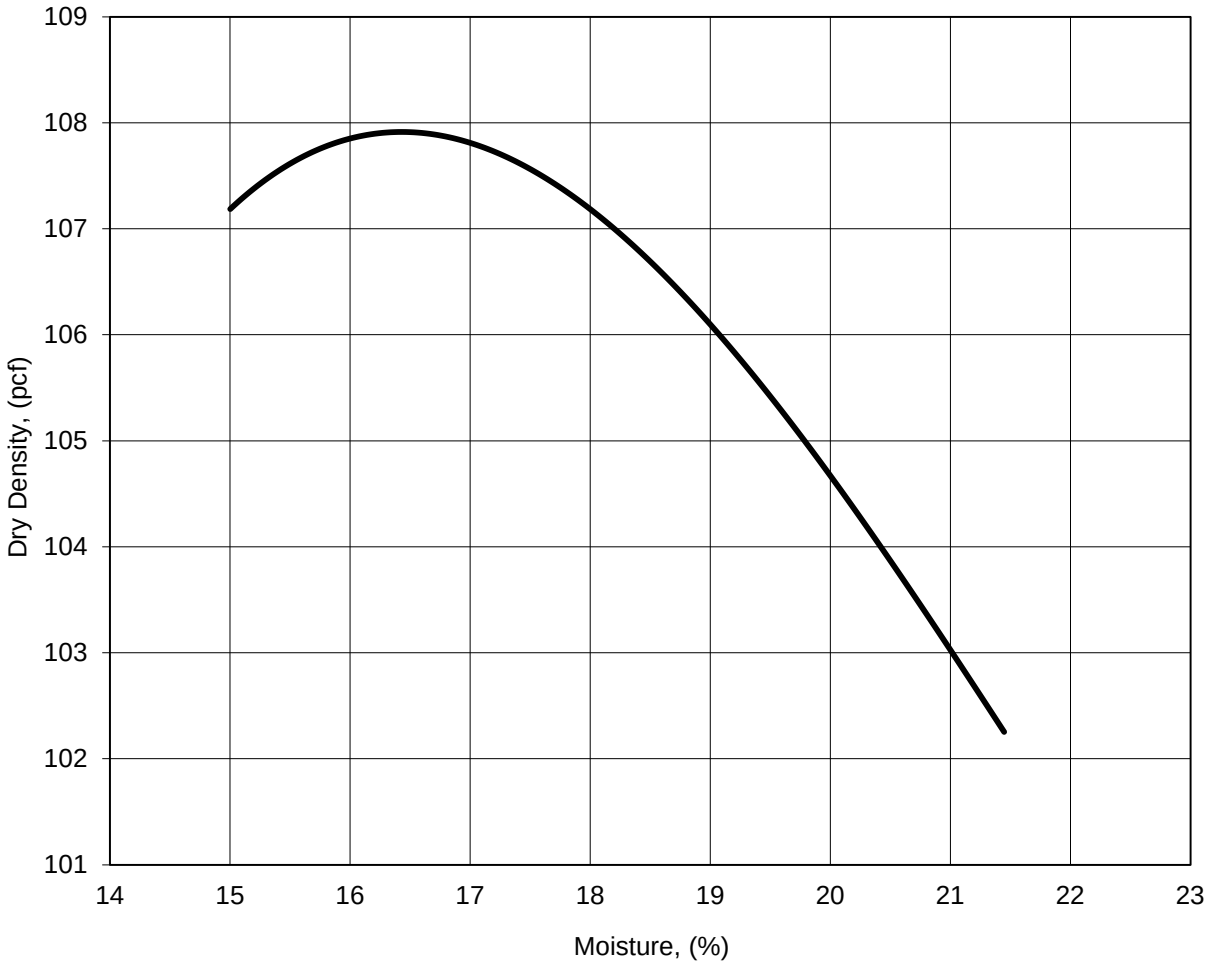
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-58 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/21/17 |
| Submitted By | : | HDR | Date Reported | : | 03/27/17 |
| Soil Type | : | Brown, Brown-Orange & Orange Sandy Silt | | | |




MAXIMUM DENSITY: 107.9 pcf

OPTIMUM MOISTURE: 16.4 %

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

APPROVED BY: KW

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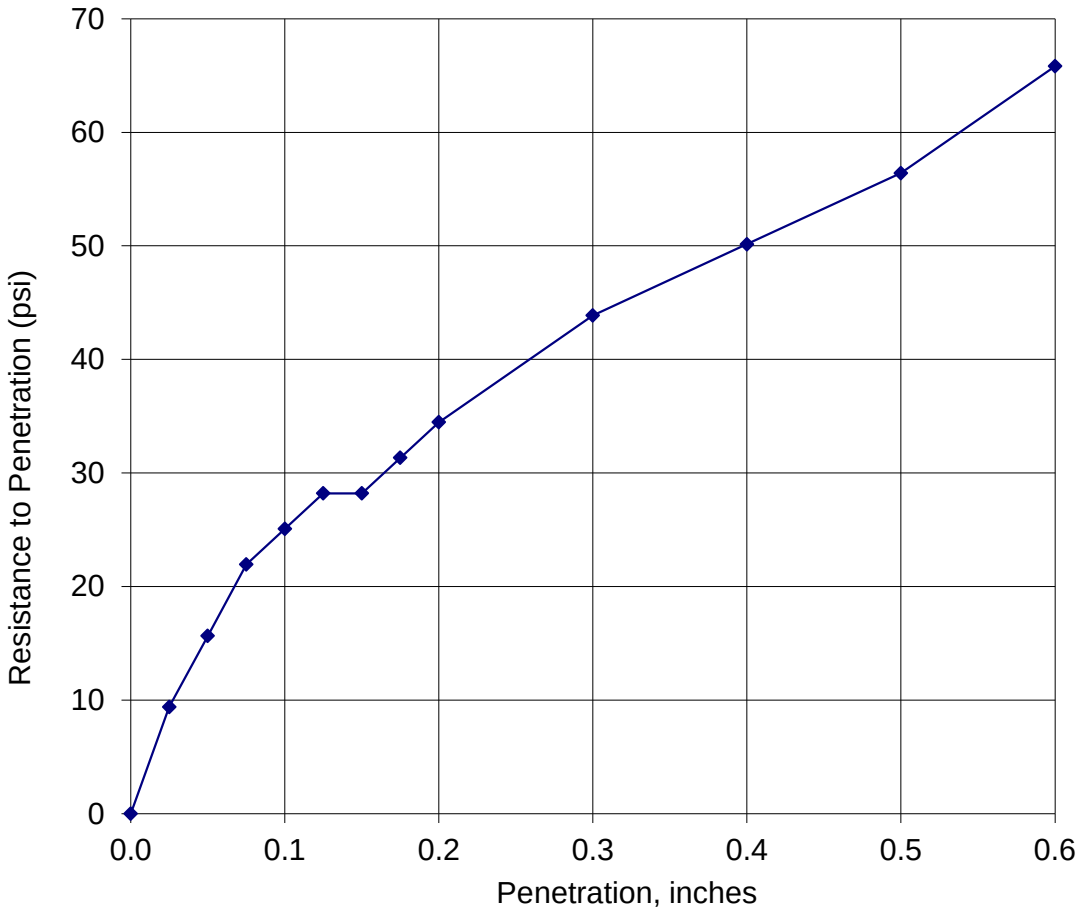
# CALIFORNIA BEARING RATIO

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-58 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 3/21/17 |
| Submitted By | : HDR | Date Reported | : 3/27/17 |
| Soil Type | : Brown, Brown-Orange & Orange Sandy Silt | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 91.8
Percent Swell = 2.25

C.B.R. @ 0.1 In. = 2.5*
C.B.R. @ 0.2 In. = 2.3

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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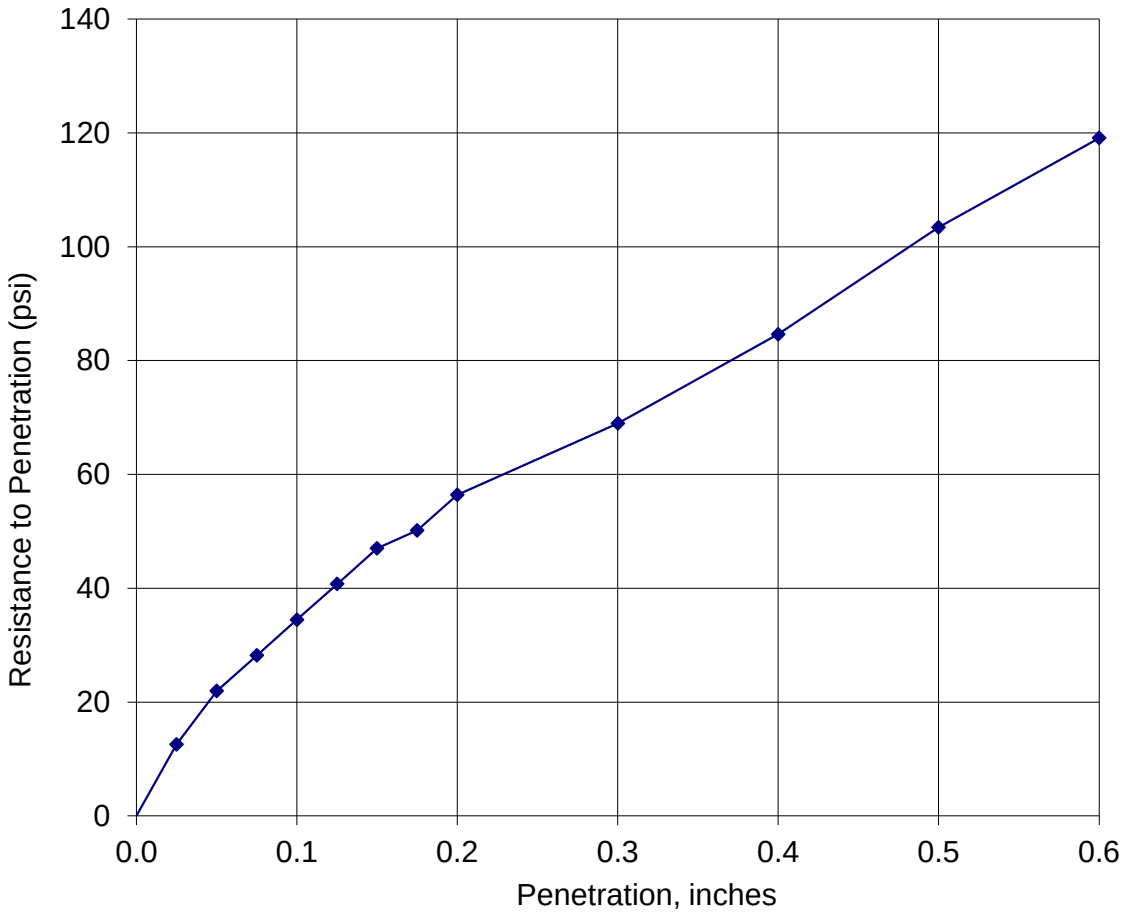
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-58 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/21/17 |
| Submitted By | : | HDR | Date Reported | : | 3/27/17 |
| Soil Type | : | Brown, Brown-Orange & Orange Sandy Silt | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 98.9
Percent Swell = 2.03

C.B.R. @ 0.1 In. = 3.4
C.B.R. @ 0.2 In. = 3.8*

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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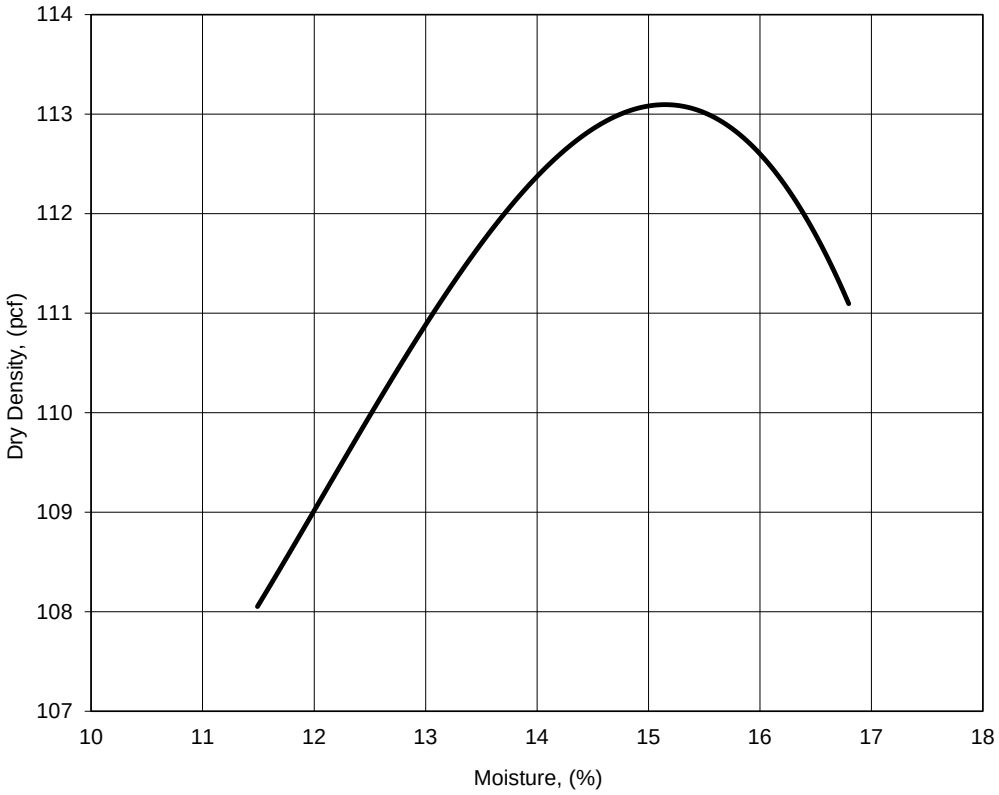
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. C-133 |
| Project State | : | South Carolina | Sample Depth | : | 1.2' to 6.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/21/17 |
| Submitted By | : | HDR | Date Reported | : | 03/27/17 |
| Soil Type | : | Red, Brown, Orange & Gray Sandy Lean Clay | | | |




MAXIMUM DENSITY: 113.1 pcf

OPTIMUM MOISTURE: 15.1 %

OPTIMUM MOISTURE:
MAXIMUM DENSITY:
COMMENTS:

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

APPROVED BY: KW

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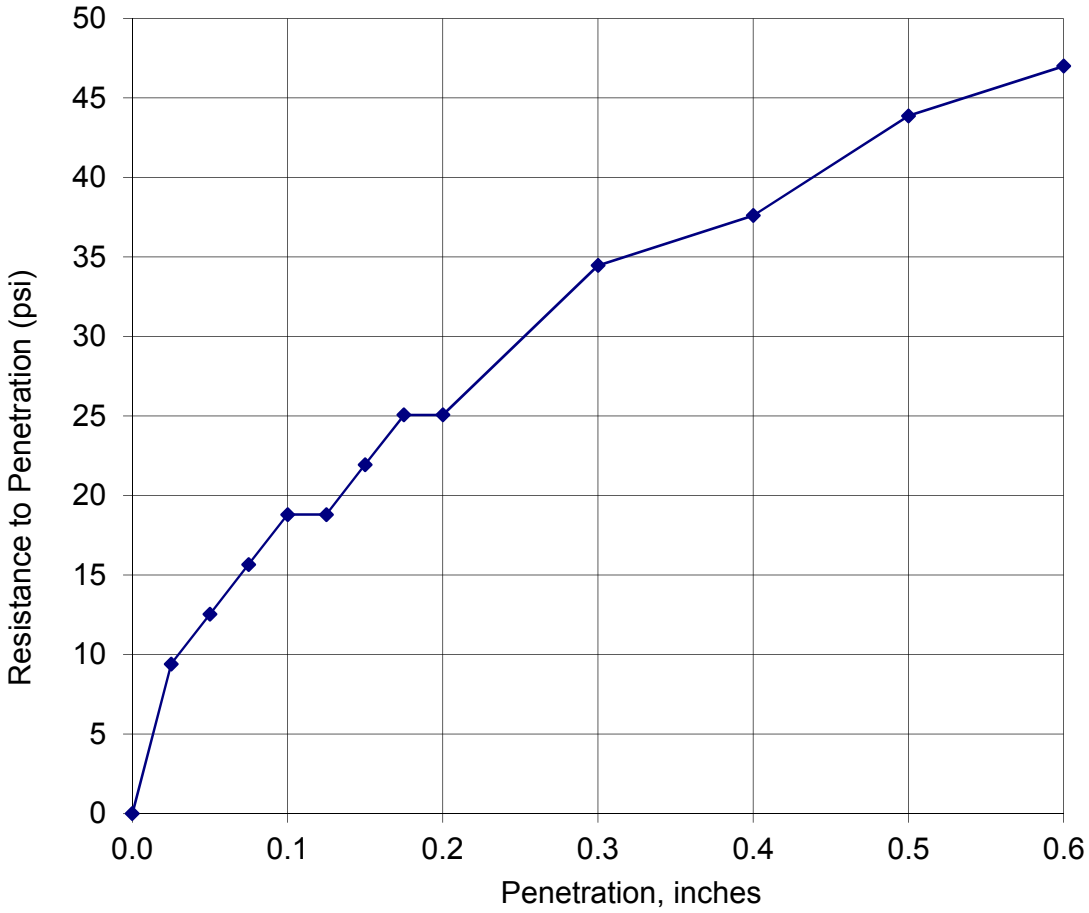
# CALIFORNIA BEARING RATIO

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. C-133 |
| Project State | : South Carolina | Sample Depth | : 1.2' to 6.0' |
| Laboratory No. | : 10023919 | Date Tested | : 3/21/17 |
| Submitted By | : HDR | Date Reported | : 3/27/17 |
| Soil Type | : Red, Brown, Orange & Gray Sandy Lean Clay | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 94.2
Percent Swell = 0.41

C.B.R. @ 0.1 In. = 1.9*
C.B.R. @ 0.2 In. = 1.7

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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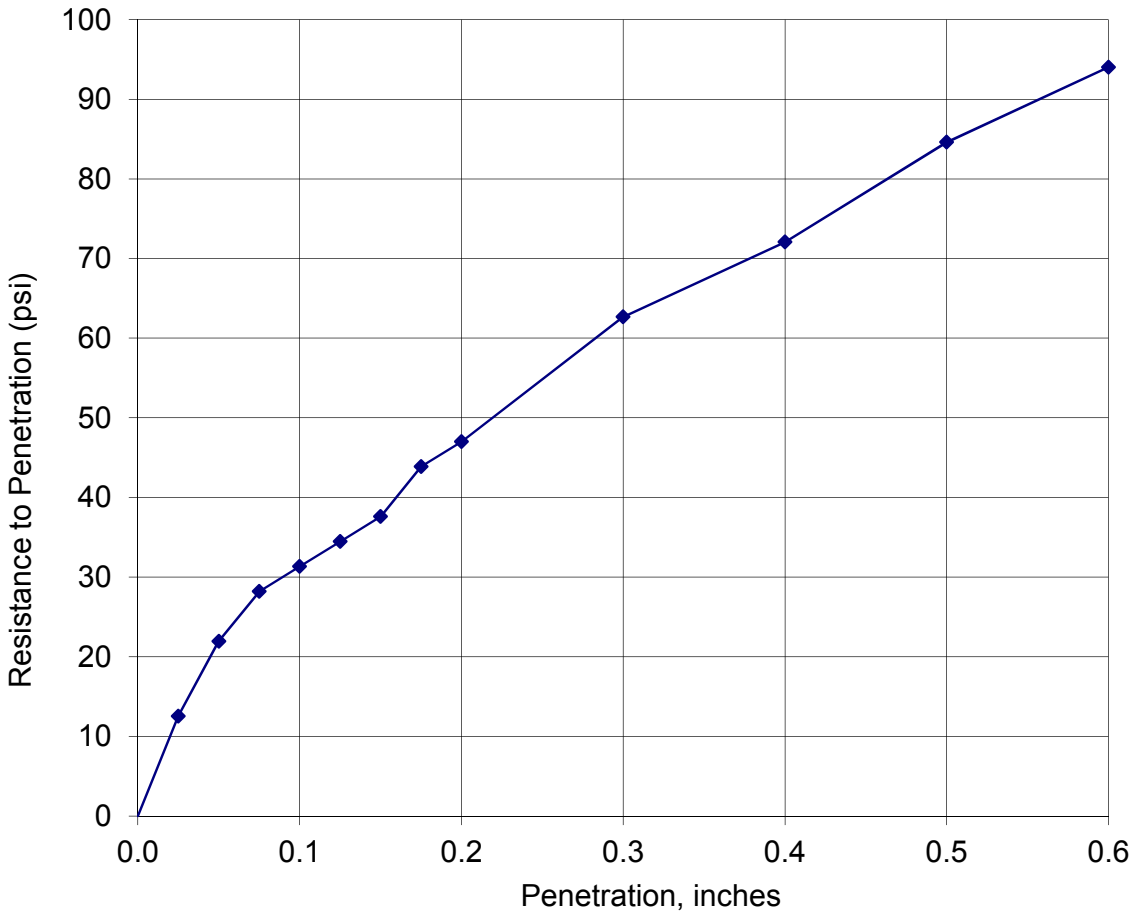
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. C-133 |
| Project State | : | South Carolina | Sample Depth | : | 1.2' to 6.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/21/17 |
| Submitted By | : | HDR | Date Reported | : | 3/27/17 |
| Soil Type | : | Red, Brown, Orange & Gray Sandy Lean Clay | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 98.6
Percent Swell = 0.04

C.B.R. @ 0.1 In. = 3.1
C.B.R. @ 0.2 In. = 3.1*

COMMENTS: AASHTO: T-193

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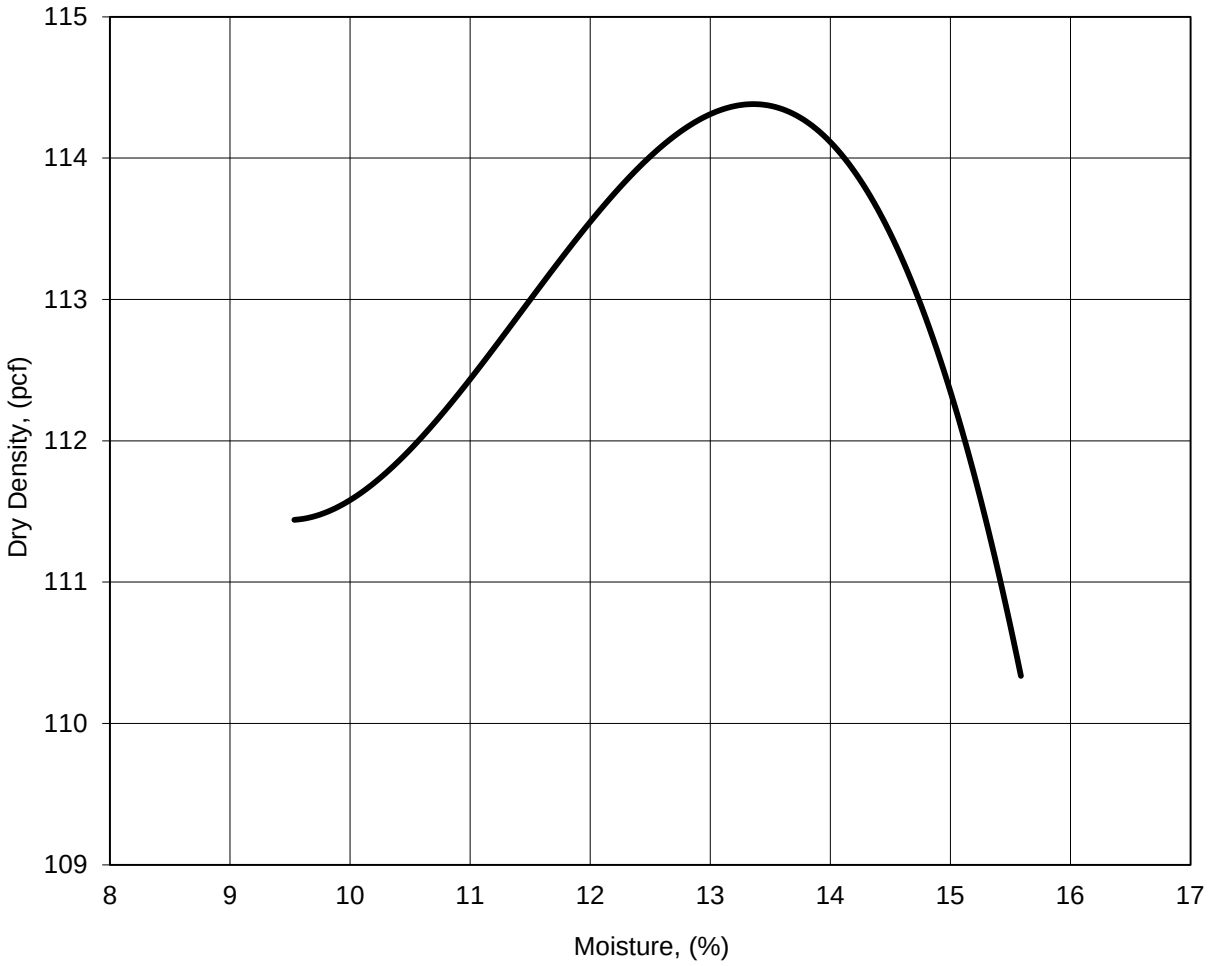
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-68 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/21/17 |
| Submitted By | : | HDR | Date Reported | : | 03/27/17 |
| Soil Type | : | Orange-Brown & Light Brown Silty Sand | | | |




MAXIMUM DENSITY: 114.4 pcf

OPTIMUM MOISTURE: 13.4 %

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

APPROVED BY: KW

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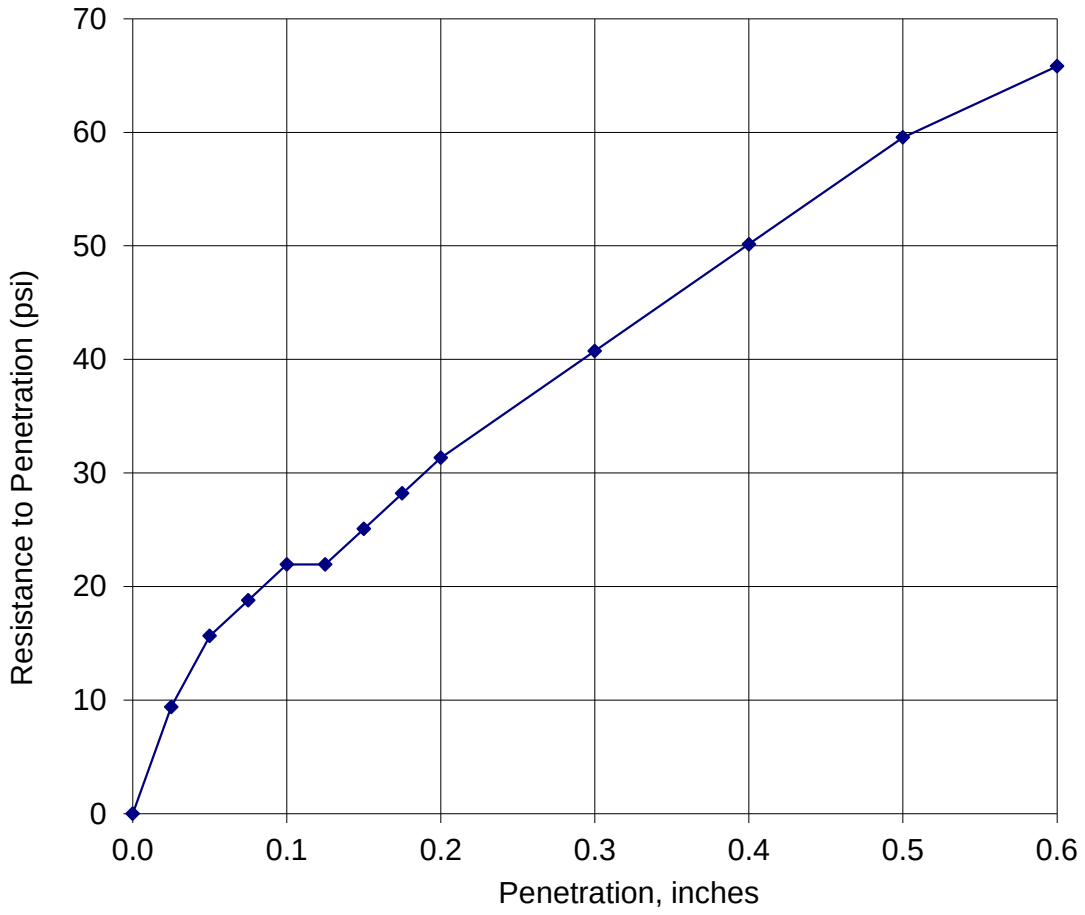
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-68 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/21/17 |
| Submitted By | : | HDR | Date Reported | : | 3/27/17 |
| Soil Type | : | Orange-Brown & Light Brown Silty Sand | | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 87
Percent Swell = 1.64

C.B.R. @ 0.1 In. = 2.2*
C.B.R. @ 0.2 In. = 2.1

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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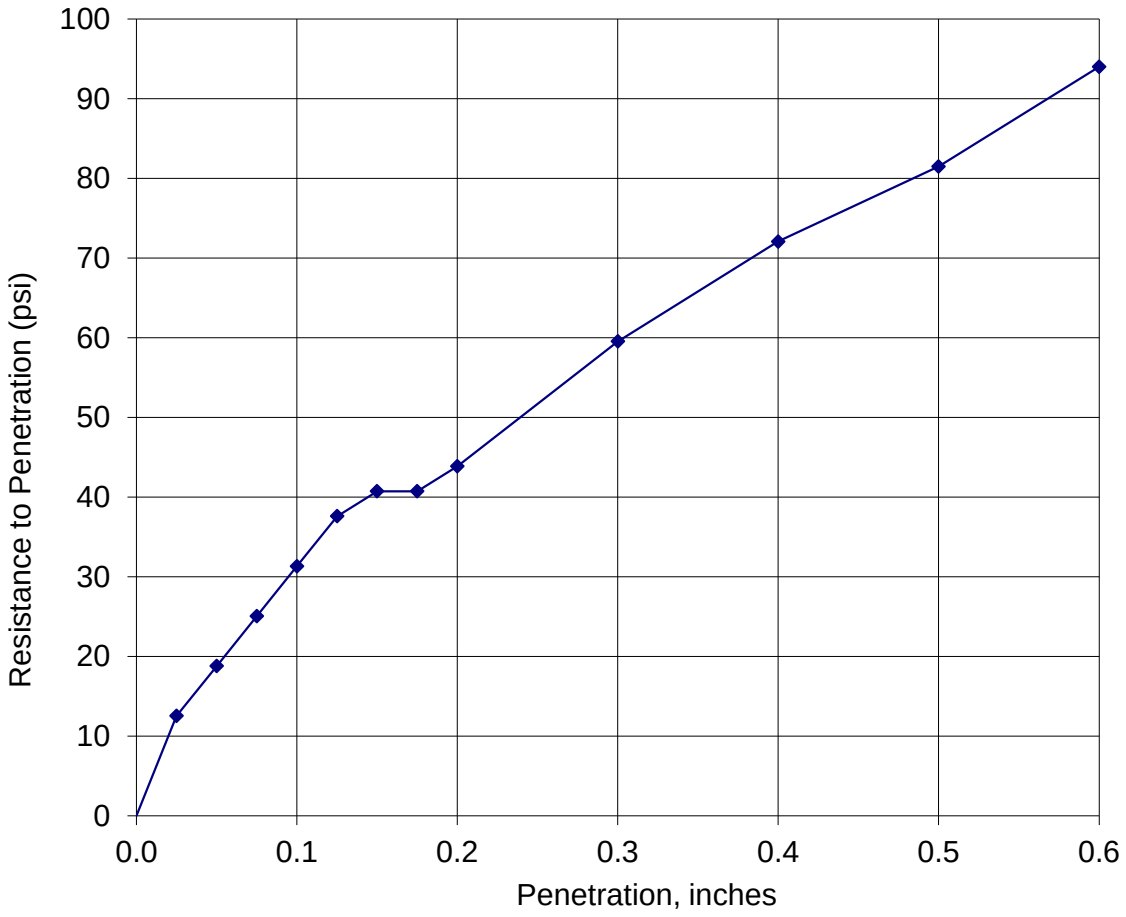
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-68 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/21/17 |
| Submitted By | : | HDR | Date Reported | : | 3/27/17 |
| Soil Type | : | Orange-Brown & Light Brown Silty Sand | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 97.5
Percent Swell = 1.31

C.B.R. @ 0.1 In. = 3.1*
C.B.R. @ 0.2 In. = 2.9

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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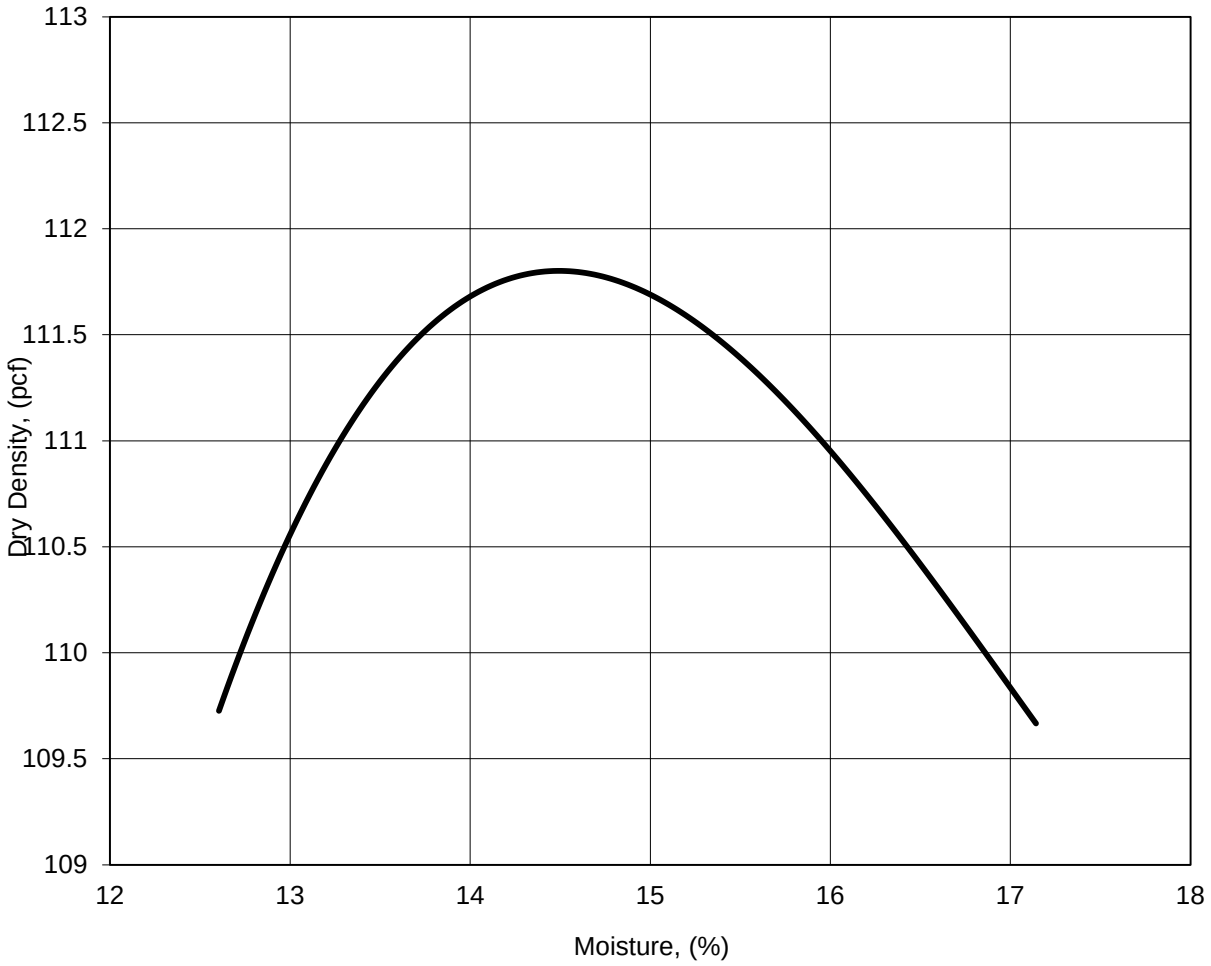
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. SB-83 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/21/17 |
| Submitted By | : | HDR | Date Reported | : | 03/27/17 |
| Soil Type | : | Light-Brown, White & Red-Orange Sandy Silt | | | |




MAXIMUM DENSITY: 111.8 pcf

OPTIMUM MOISTURE: 14.5 %

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

APPROVED BY: KW

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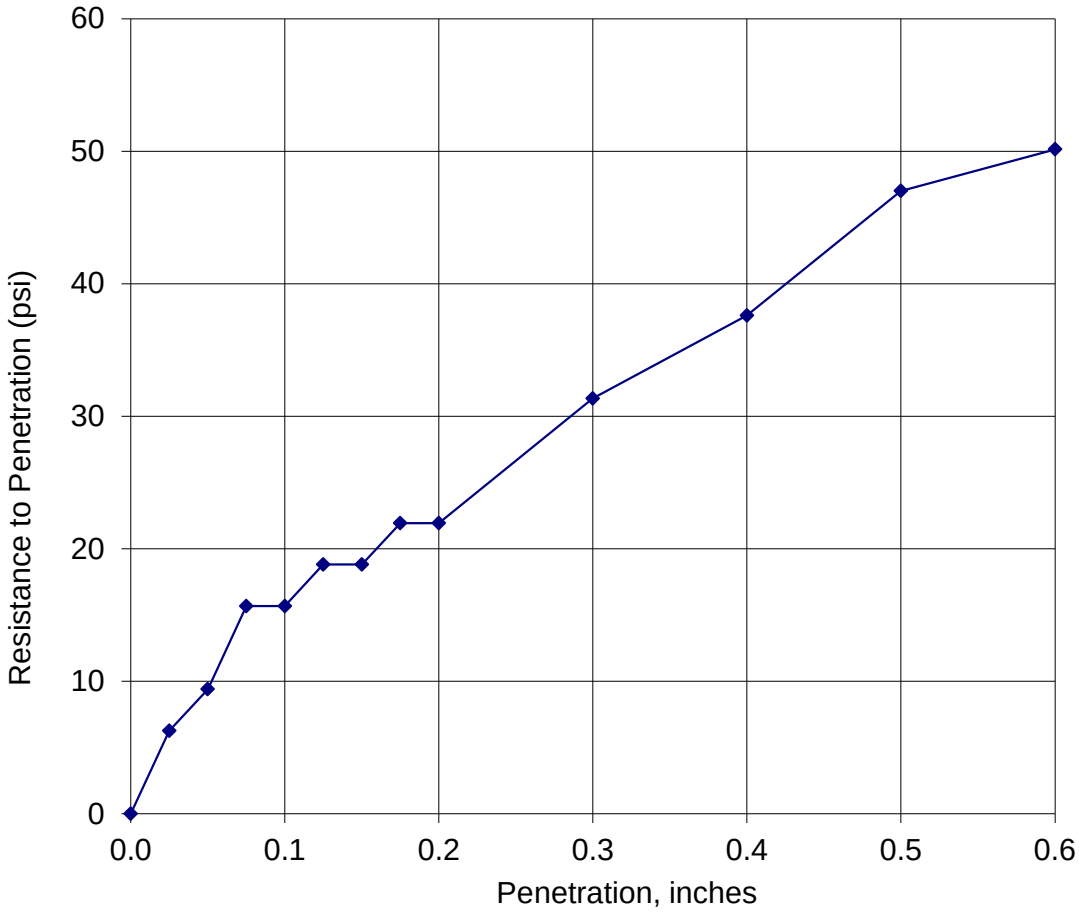
# CALIFORNIA BEARING RATIO

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-83 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 3/21/17 |
| Submitted By | : HDR | Date Reported | : 3/27/17 |
| Soil Type | : Light-Brown, White & Red-Orange Sandy Silt | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 91.7
Percent Swell = 2.18

C.B.R. @ 0.1 In. = 1.6*
C.B.R. @ 0.2 In. = 1.5

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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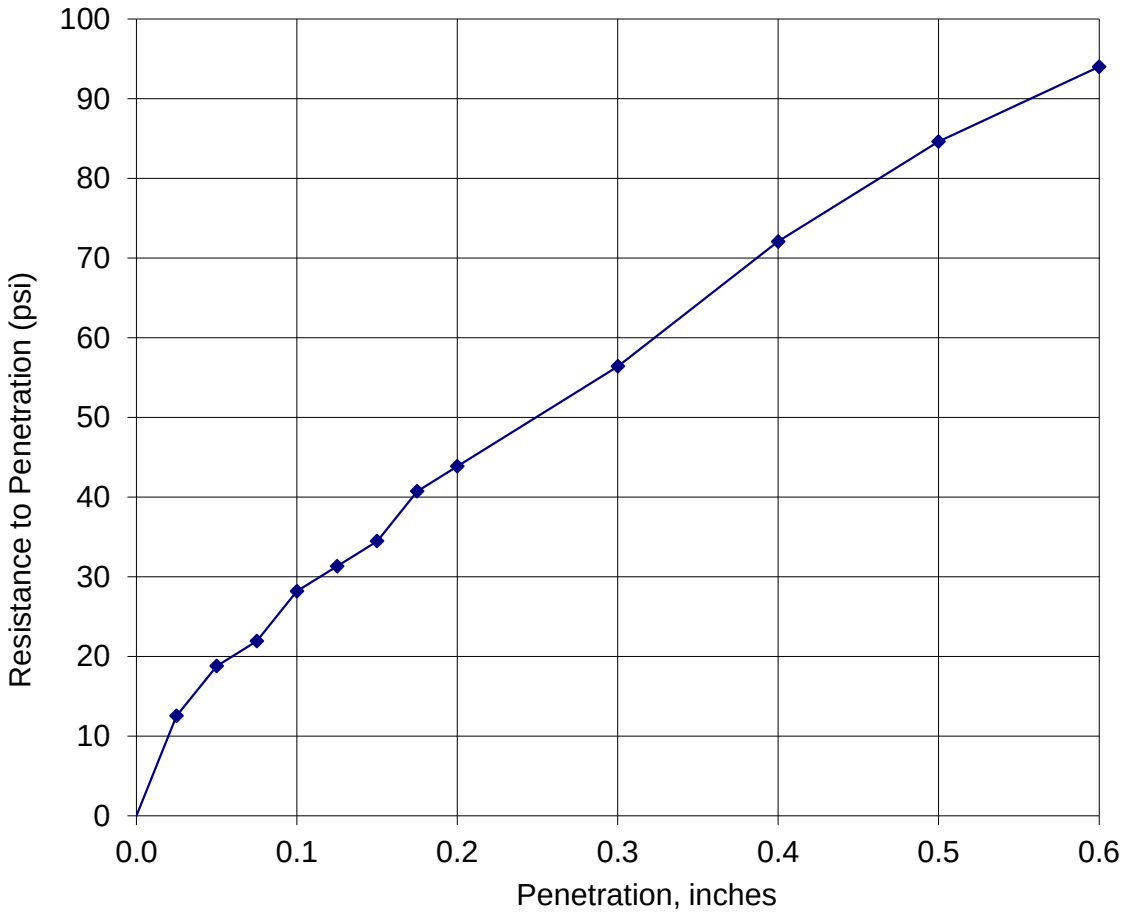
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. SB-83 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/21/17 |
| Submitted By | : | HDR | Date Reported | : | 3/27/17 |
| Soil Type | : | Light-Brown, White & Red-Orange Sandy Silt | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 96.7
Percent Swell = 1.96

C.B.R. @ 0.1 In. = 2.8
C.B.R. @ 0.2 In. = 2.9*

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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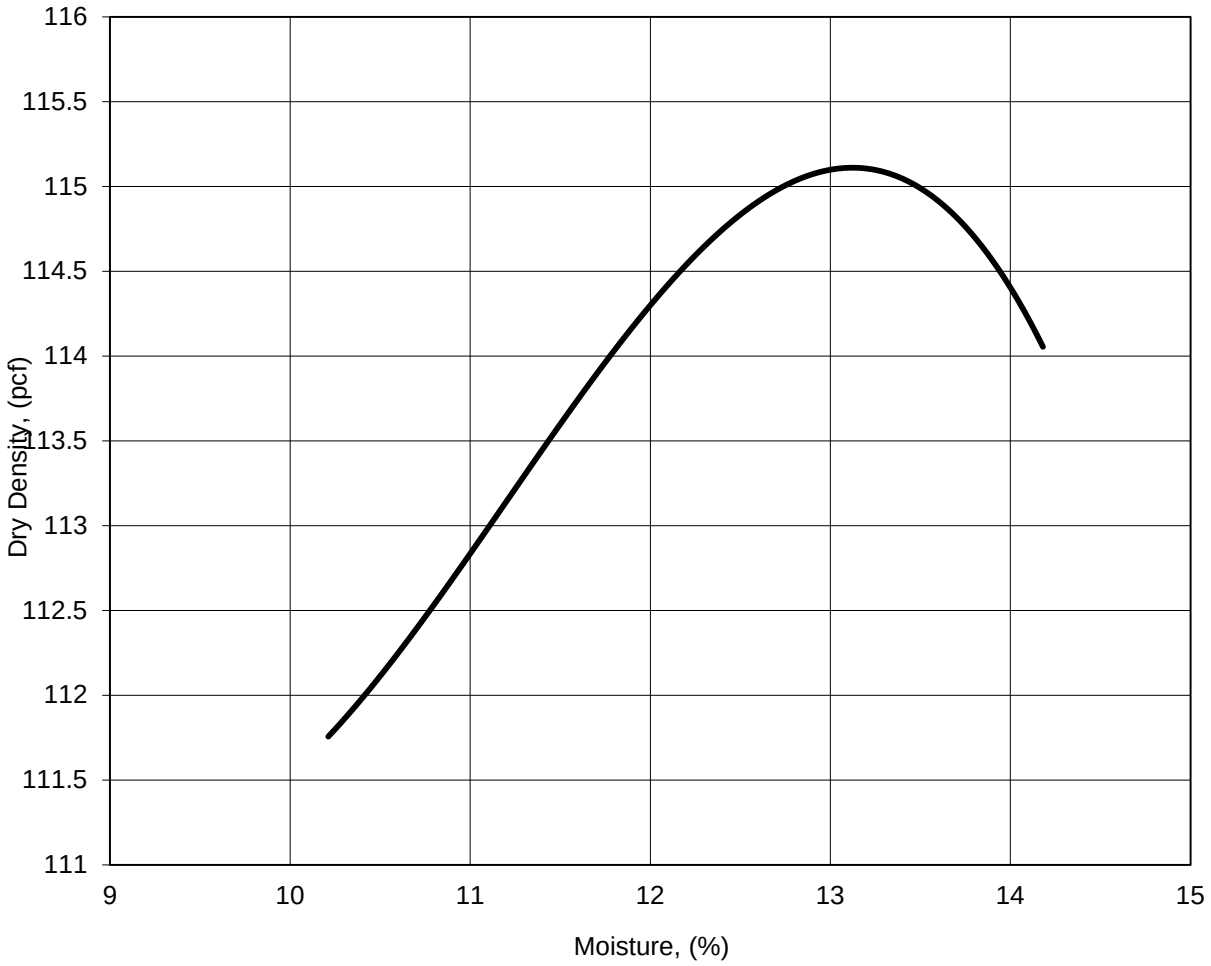
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-90 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/21/17 |
| Submitted By | : | HDR | Date Reported | : | 03/27/17 |
| Soil Type | : | Brown & Light Orange Silty, Clayey Sand | | | |




MAXIMUM DENSITY: 115.1 pcf

OPTIMUM MOISTURE: 13.1 %

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

APPROVED BY: KW

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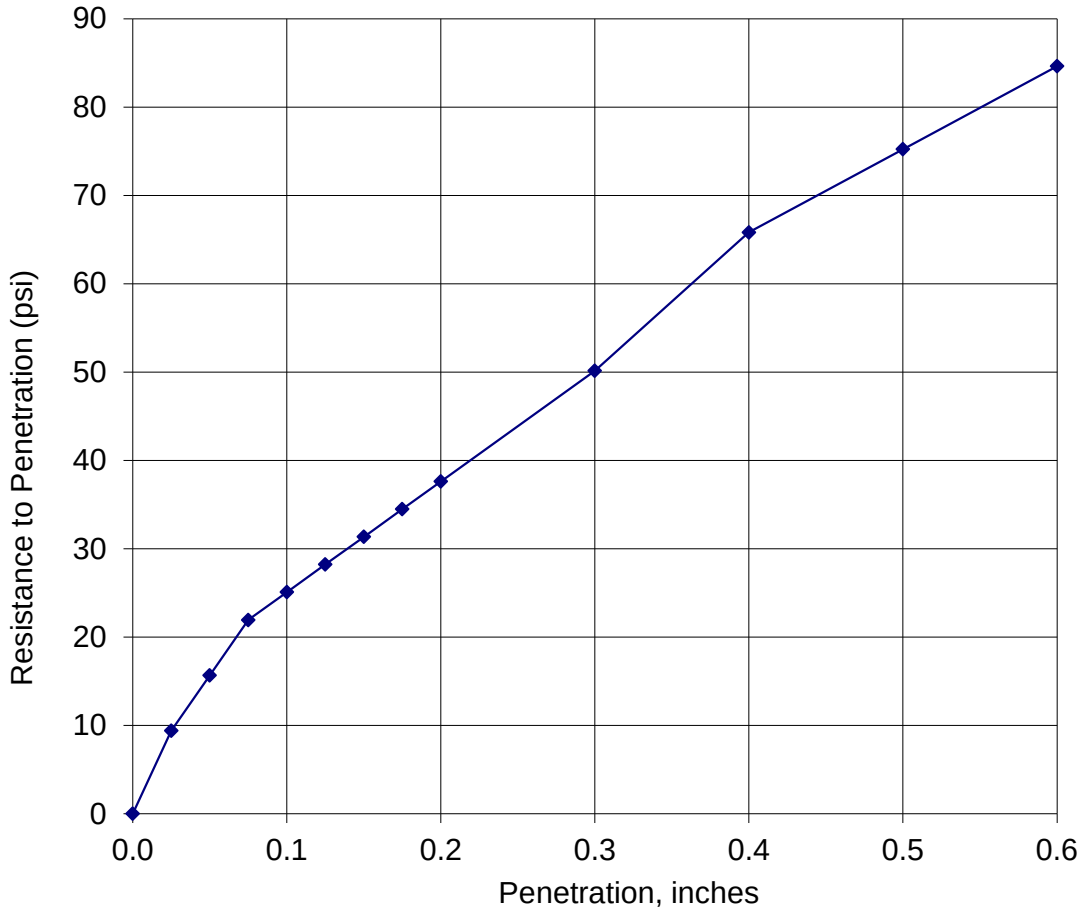
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-90 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/21/17 |
| Submitted By | : | HDR | Date Reported | : | 3/27/17 |
| Soil Type | : | Brown & Light Orange Silty, Clayey Sand | | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 91.7
Percent Swell = 2.36

C.B.R. @ 0.1 In. = 2.5
C.B.R. @ 0.2 In. = 2.5*

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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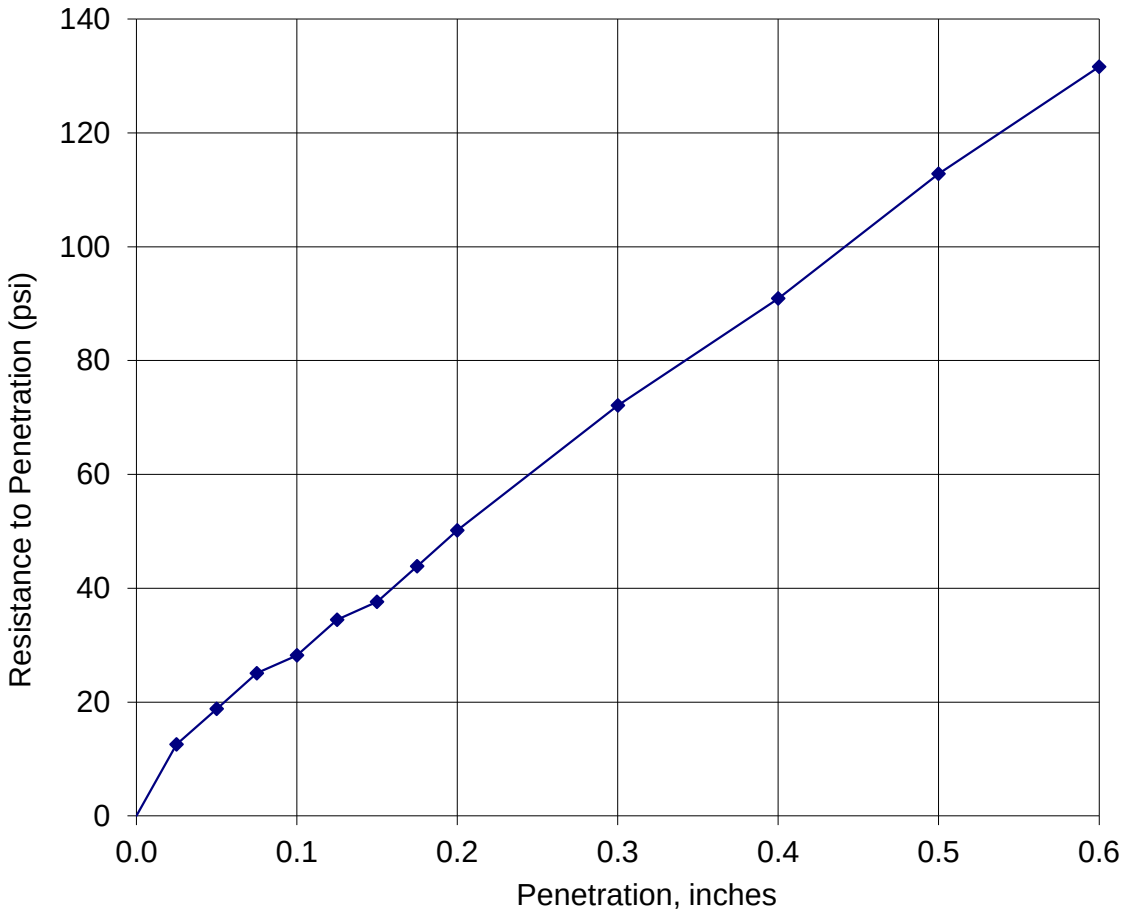
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-90 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/21/17 |
| Submitted By | : | HDR | Date Reported | : | 3/27/17 |
| Soil Type | : | Brown & Light Orange Silty, Clayey Sand | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 97.7
Percent Swell = 1.07

C.B.R. @ 0.1 In. = 2.8
C.B.R. @ 0.2 In. = 3.3*

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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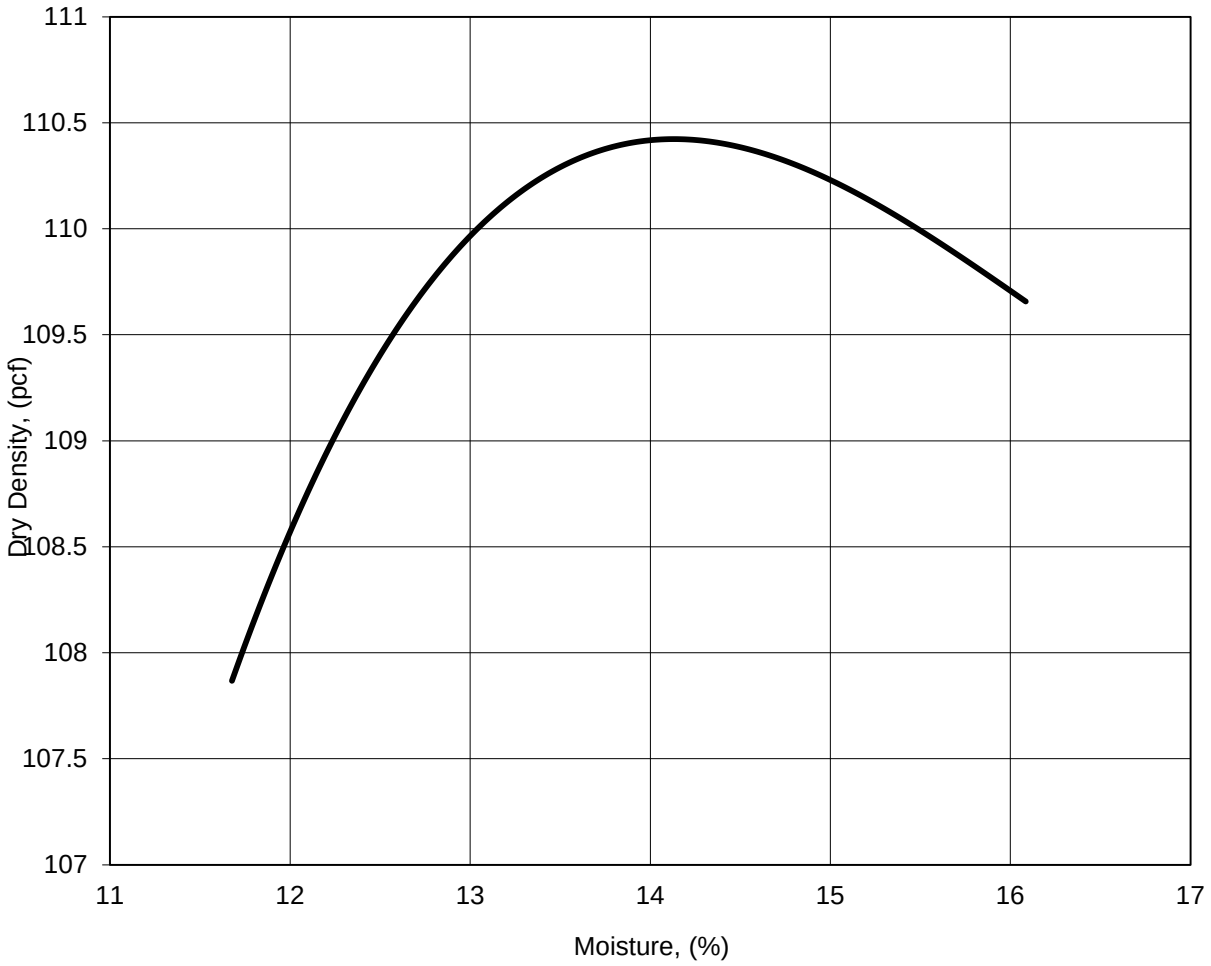
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-43 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/21/17 |
| Submitted By | : | HDR | Date Reported | : | 03/27/17 |
| Soil Type | : | Orange-Brown & Brown Sandy Silt | | | |




MAXIMUM DENSITY: 110.4 pcf

OPTIMUM MOISTURE: 14.1 %

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

APPROVED BY: KW

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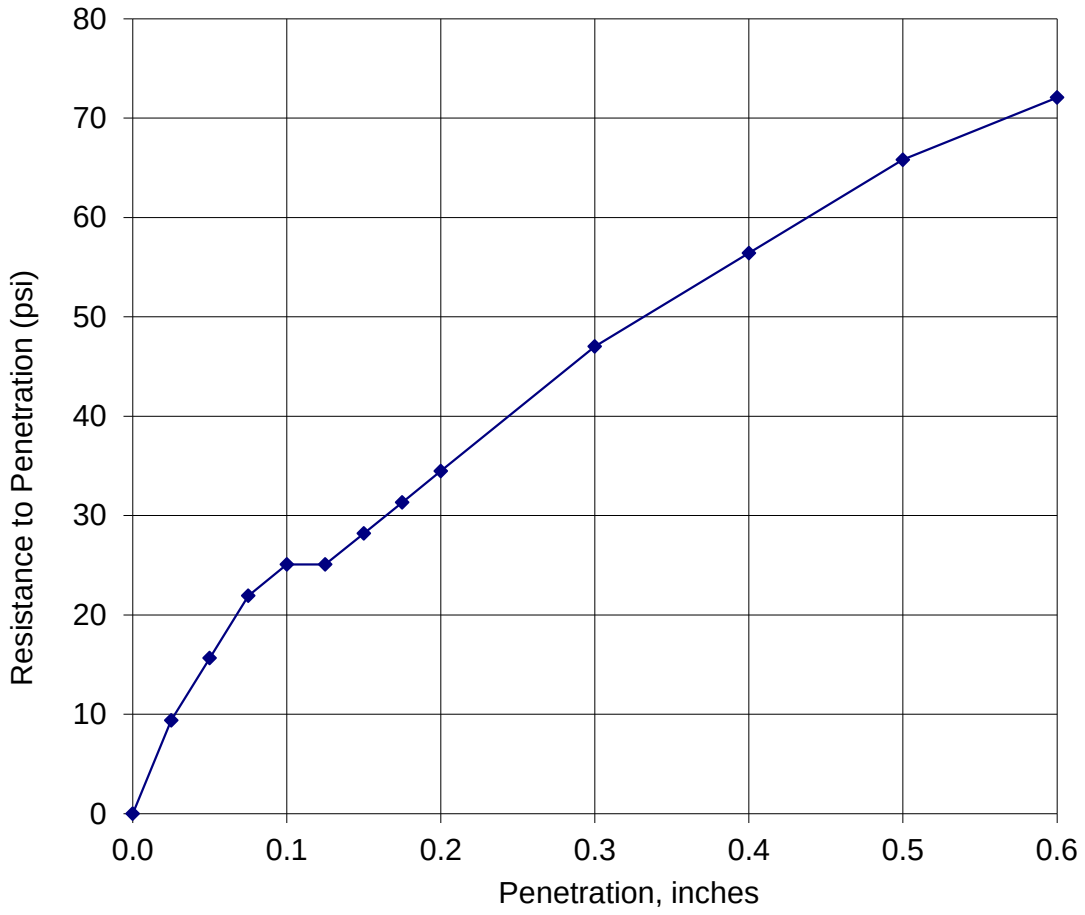
# CALIFORNIA BEARING RATIO

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-43 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 3/21/17 |
| Submitted By | : HDR | Date Reported | : 3/27/17 |
| Soil Type | : Orange-Brown & Brown Sandy Silt | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 93
Percent Swell = 1.46

C.B.R. @ 0.1 In. = 2.5*
C.B.R. @ 0.2 In. = 2.3

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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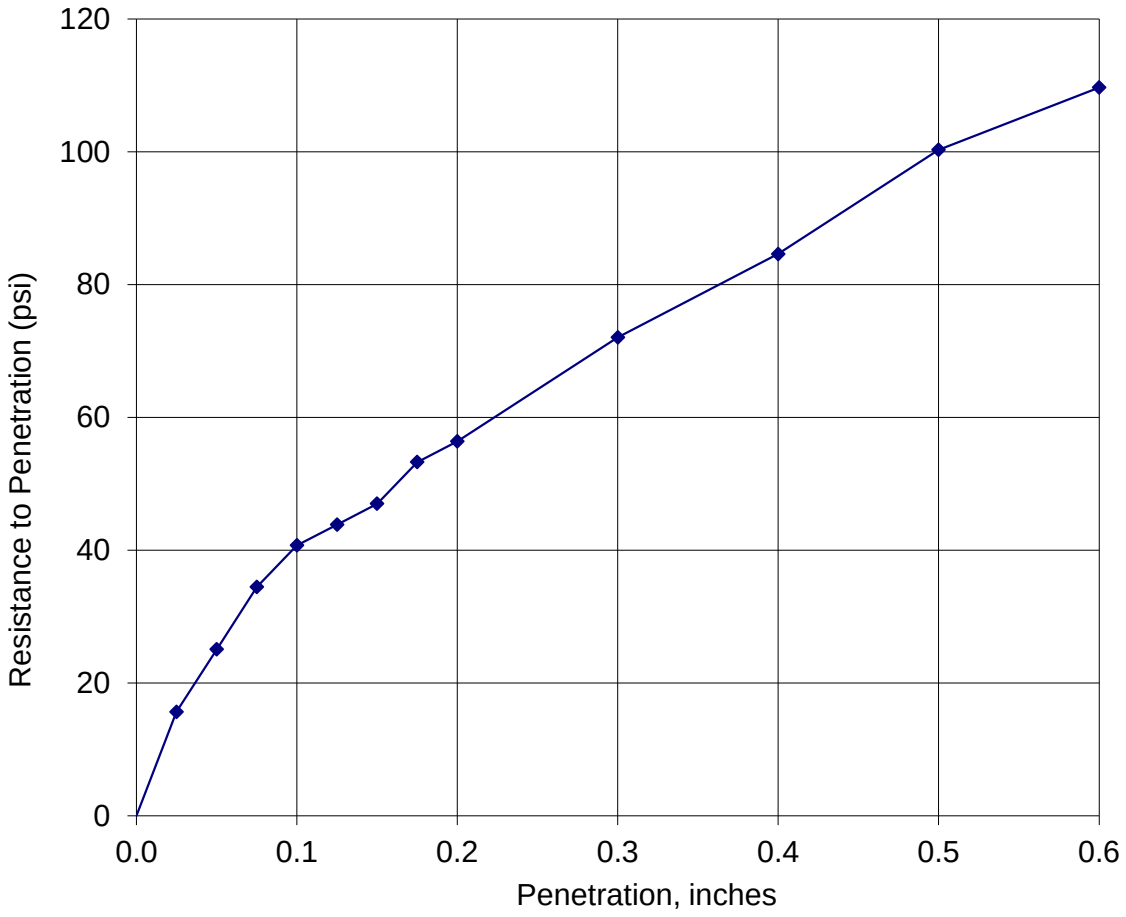
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-43 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/21/17 |
| Submitted By | : | HDR | Date Reported | : | 3/27/17 |
| Soil Type | : | Orange-Brown & Brown Sandy Silt | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 98.8
Percent Swell = 1.09

C.B.R. @ 0.1 In. = 4.1*
C.B.R. @ 0.2 In. = 3.8

COMMENTS: AASHTO: T-193

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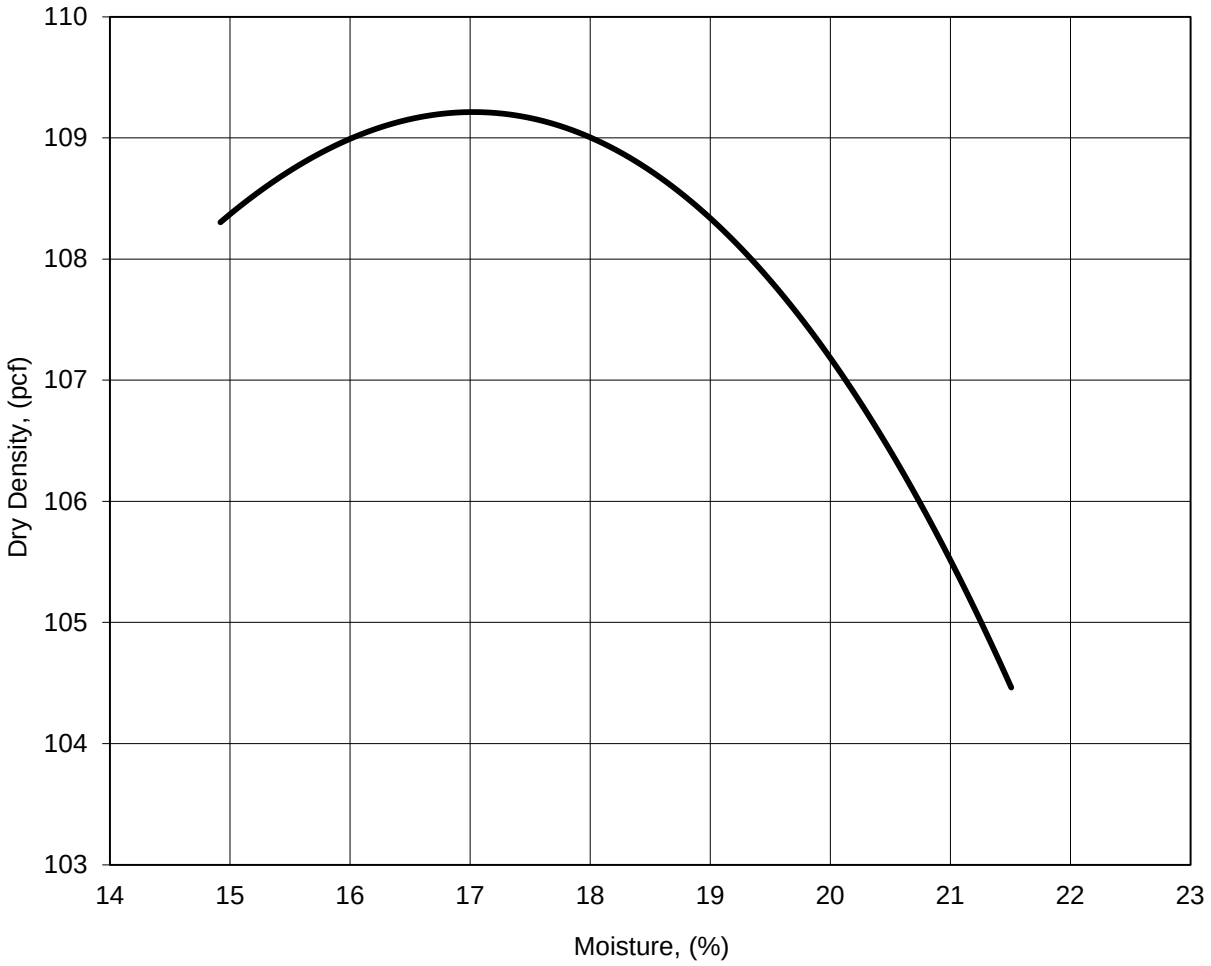
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. SB-53 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/21/17 |
| Submitted By | : | HDR | Date Reported | : | 03/27/17 |
| Soil Type | : | Red-Orange, Brown & Orange-Brown Sandy Silt | | | |




MAXIMUM DENSITY: 109.2 pcf

OPTIMUM MOISTURE: 17 %

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

APPROVED BY: KW

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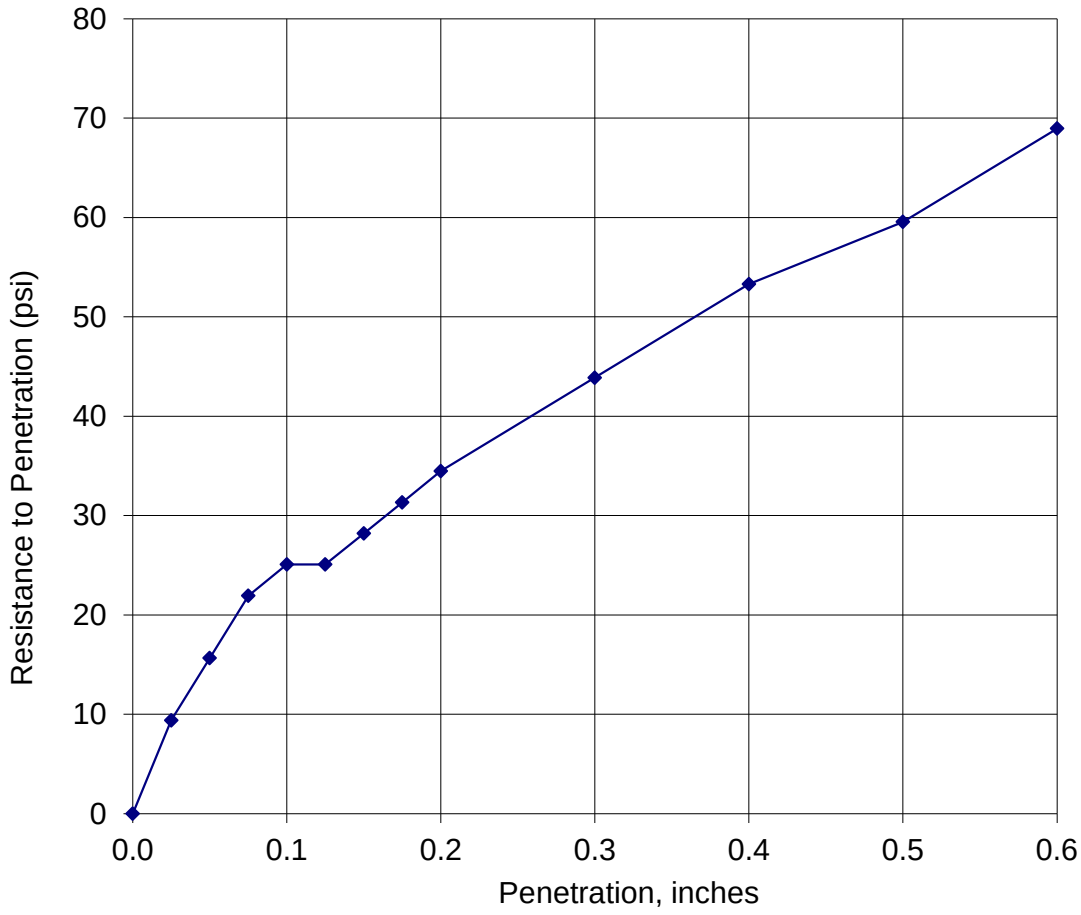
# CALIFORNIA BEARING RATIO

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. SB-53 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 3/21/17 |
| Submitted By | : HDR | Date Reported | : 3/27/17 |
| Soil Type | : Red-Orange, Brown & Orange-Brown Sandy Silt | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 92.4
Percent Swell = 1.57

C.B.R. @ 0.1 In. = 2.5*
C.B.R. @ 0.2 In. = 2.3

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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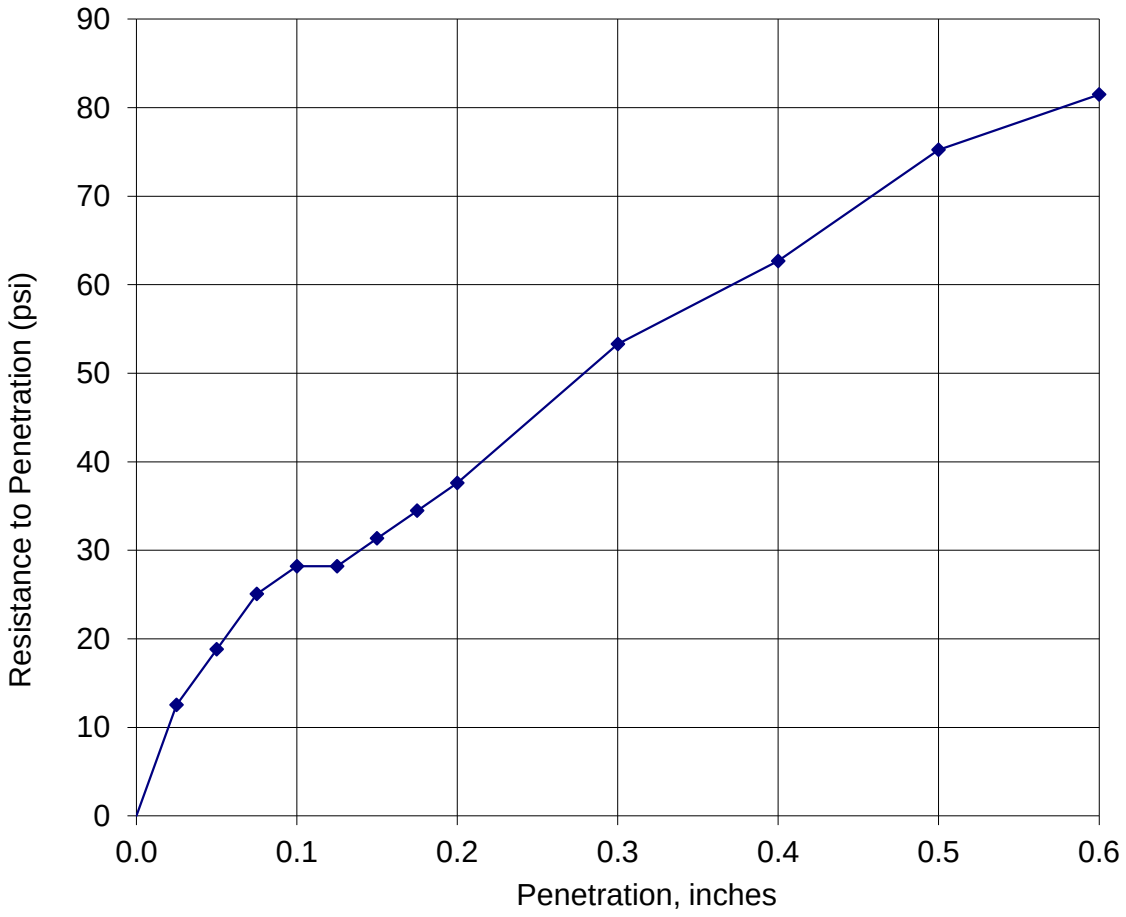
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. SB-53 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/21/17 |
| Submitted By | : | HDR | Date Reported | : | 3/27/17 |
| Soil Type | : | Red-Orange, Brown & Orange-Brown Sandy Silt | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 97.3
Percent Swell = 1.35

C.B.R. @ 0.1 In. = 2.8*
C.B.R. @ 0.2 In. = 2.5

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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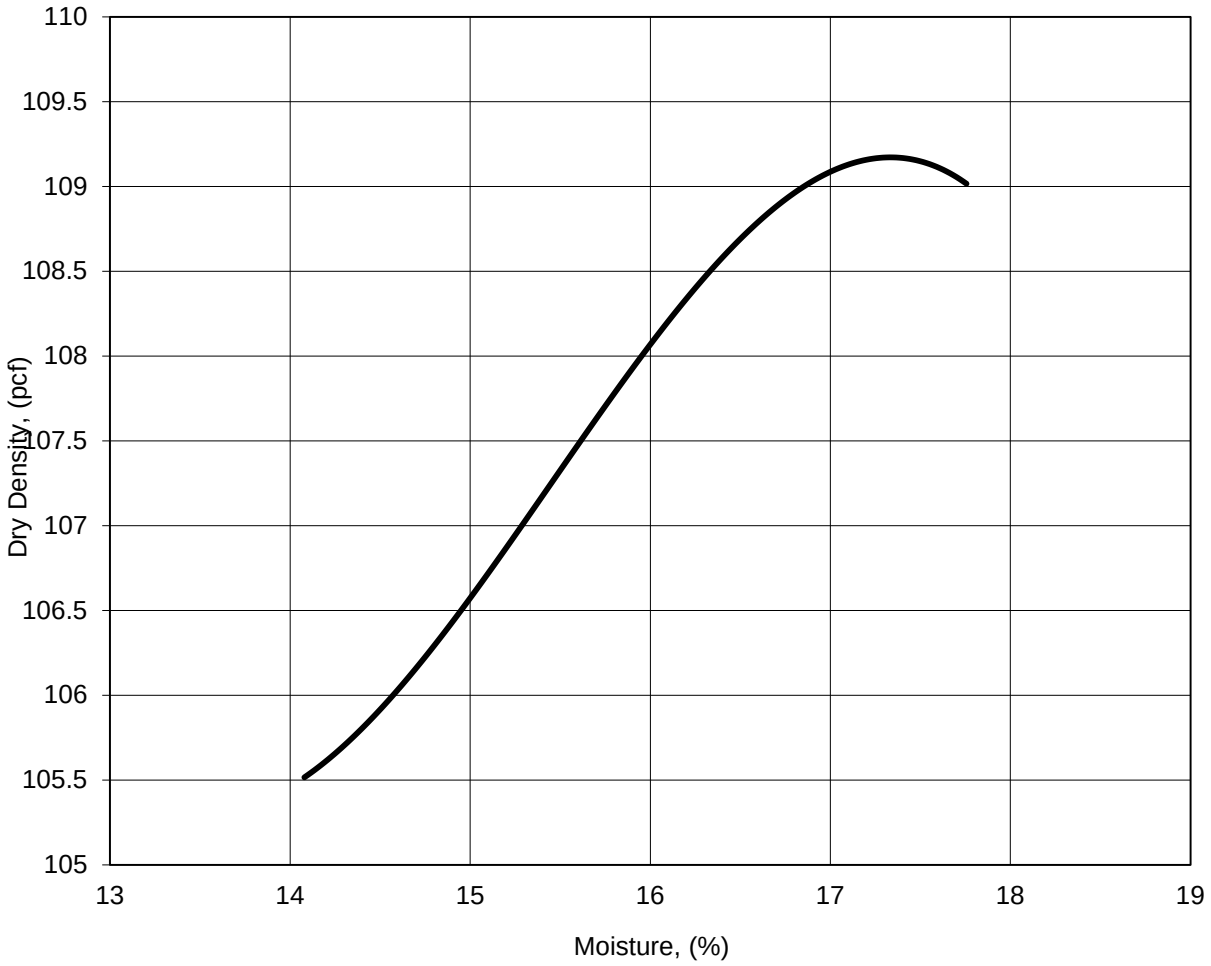
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. BS-113 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 10.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/27/17 |
| Submitted By | : | HDR | Date Reported | : | 03/28/17 |
| Soil Type | : | Brown | | | |




MAXIMUM DENSITY: 109.2 pcf

OPTIMUM MOISTURE: 17.3 %

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

APPROVED BY: KW

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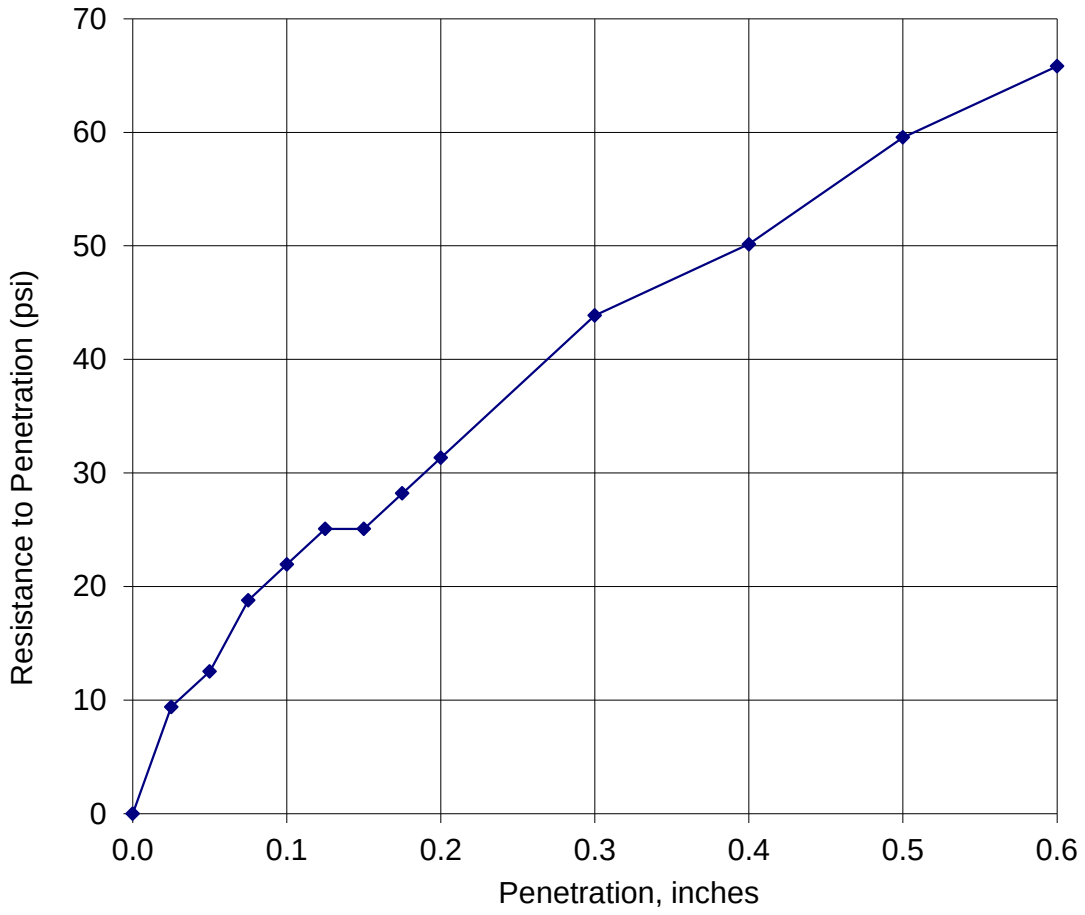
# CALIFORNIA BEARING RATIO

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BS-113 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 10.0' |
| Laboratory No. | : 10023919 | Date Tested | : 3/27/17 |
| Submitted By | : HDR | Date Reported | : 3/28/17 |
| Soil Type | : Brown | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 91.9
Percent Swell = 1.29

C.B.R. @ 0.1 In. = 2.2*
C.B.R. @ 0.2 In. = 2.1

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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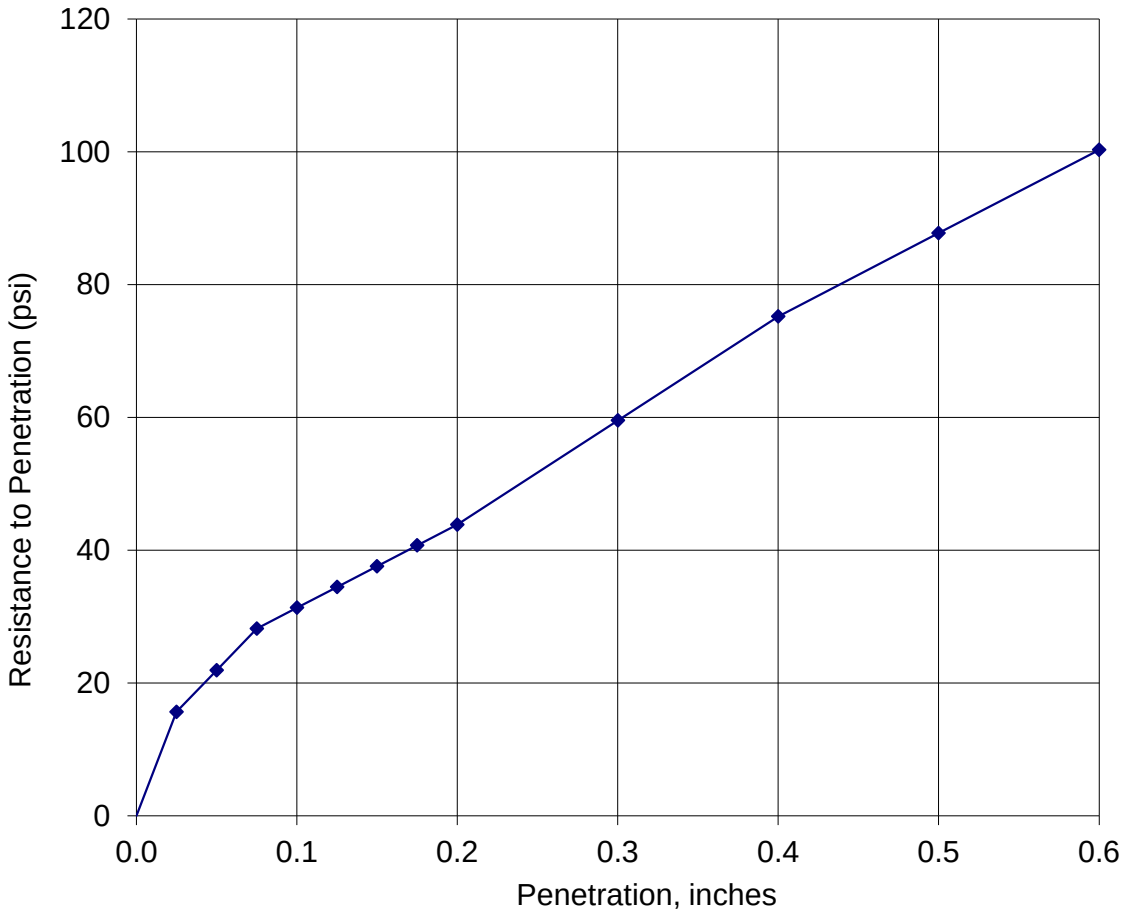
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. BS-113 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 10.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/27/17 |
| Submitted By | : | HDR | Date Reported | : | 3/28/17 |
| Soil Type | : | Brown | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 94.6
Percent Swell = 0.81

C.B.R. @ 0.1 In. = 3.1*
C.B.R. @ 0.2 In. = 2.9

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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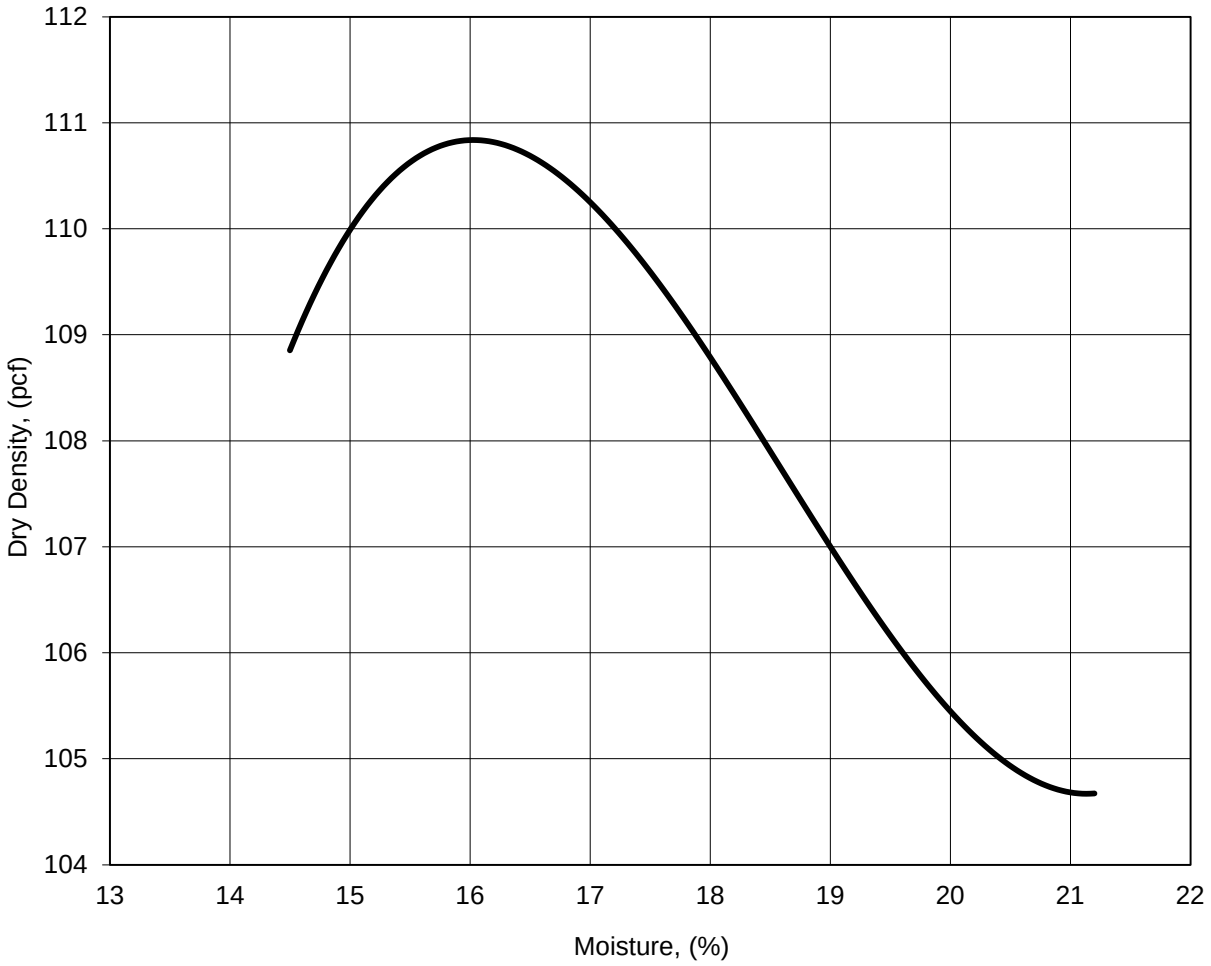
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. BS-112 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 10.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/20/17 |
| Submitted By | : | HDR | Date Reported | : | 03/28/17 |
| Soil Type | : | Red & Brown | | | |




MAXIMUM DENSITY: 110.8 pcf

OPTIMUM MOISTURE: 16.1 %

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

APPROVED BY: KW

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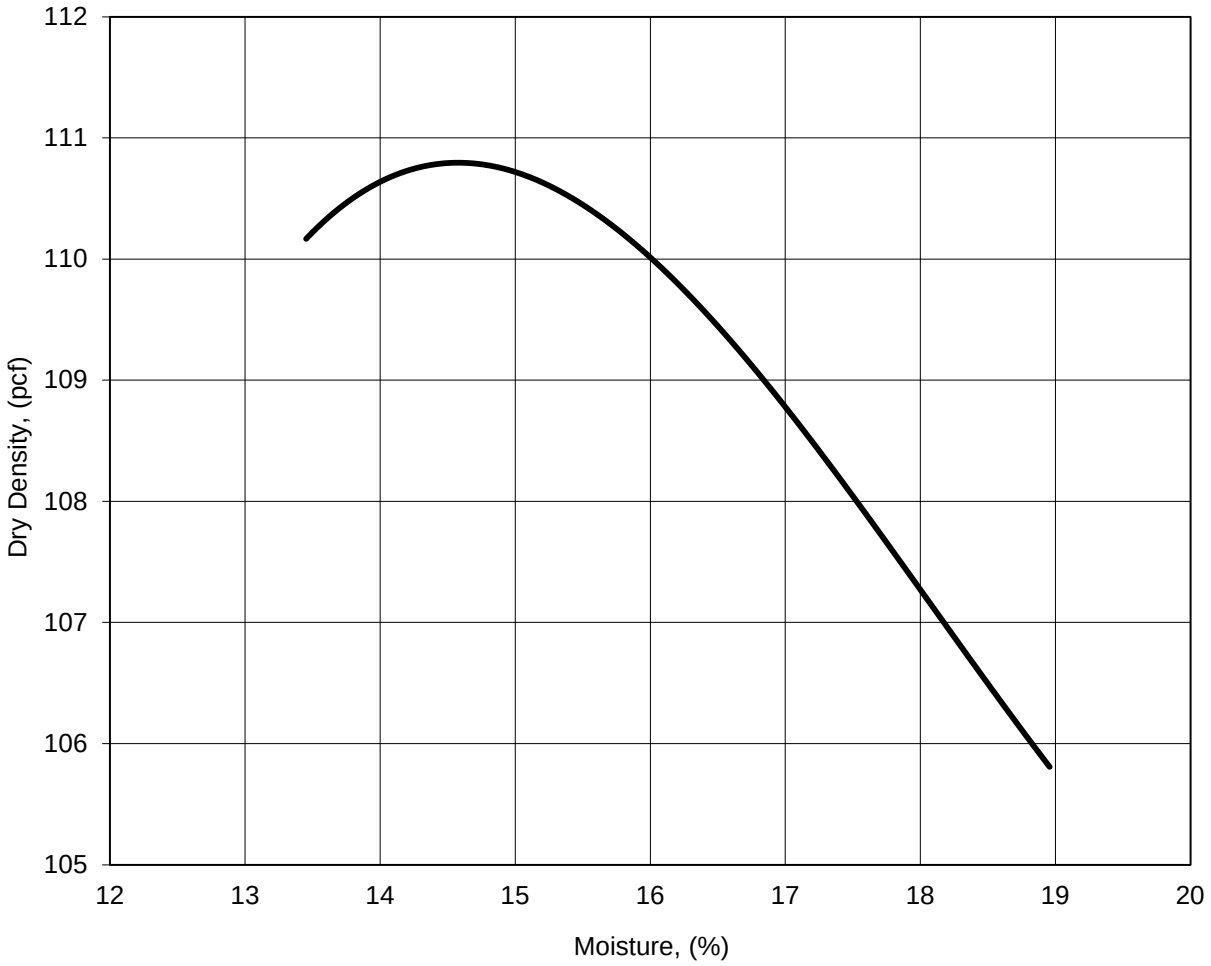
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | Sample No. | : | Bulk 1 |
| Project No. | : | 10023919 | Sample Loc. | : | Boring No. BS-111 |
| Project County | : | Cherokee | Sample Depth | : | 0.0' to 10.0' |
| Project State | : | South Carolina | Date Tested | : | 03/27/17 |
| Laboratory No. | : | 10023919 | Date Reported | : | 03/28/17 |
| Submitted By | : | HDR | | | |
| Soil Type | : | Brown | | | |




MAXIMUM DENSITY: 110.8 pcf

OPTIMUM MOISTURE: 14.6 %

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

APPROVED BY: KW

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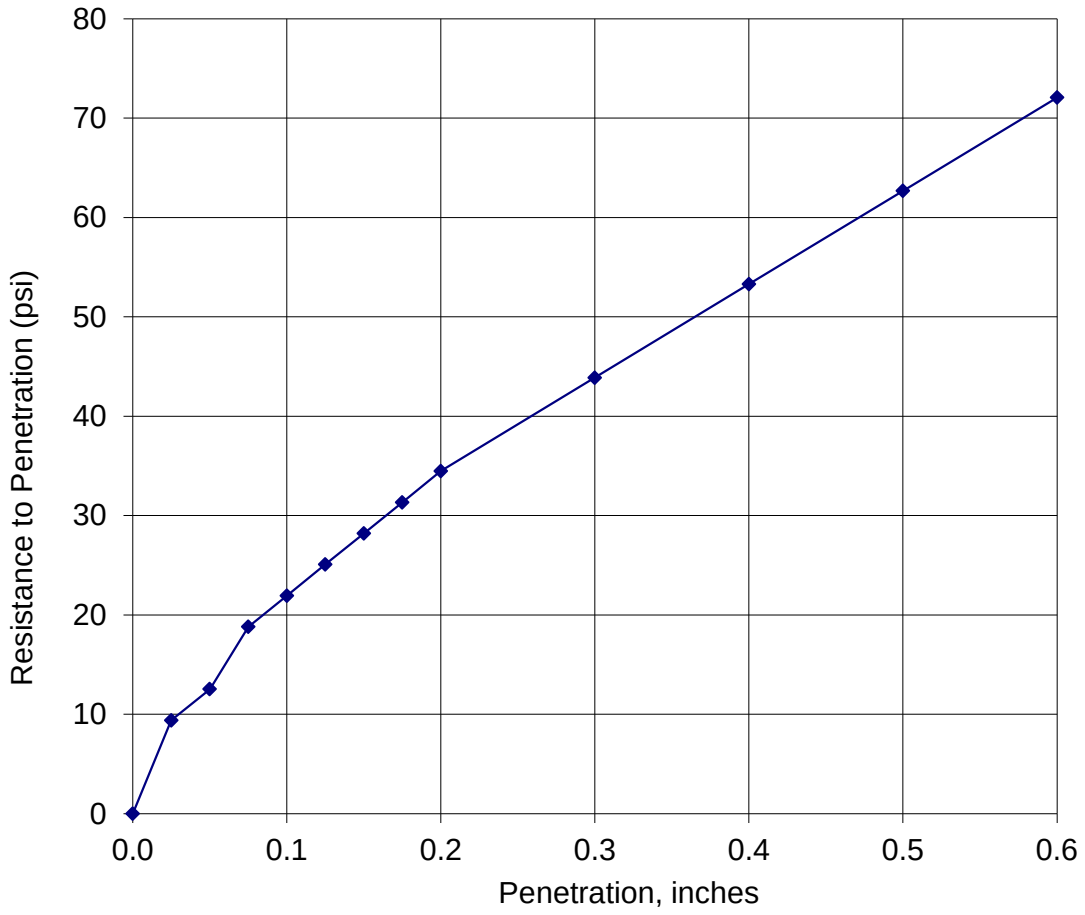
# CALIFORNIA BEARING RATIO

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. BS-111 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 10.0' |
| Laboratory No. | : 10023919 | Date Tested | : 3/27/17 |
| Submitted By | : HDR | Date Reported | : 3/28/17 |
| Soil Type | : Brown | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 94.3
Percent Swell = 1.48

C.B.R. @ 0.1 In. = 2.2
C.B.R. @ 0.2 In. = 2.3*

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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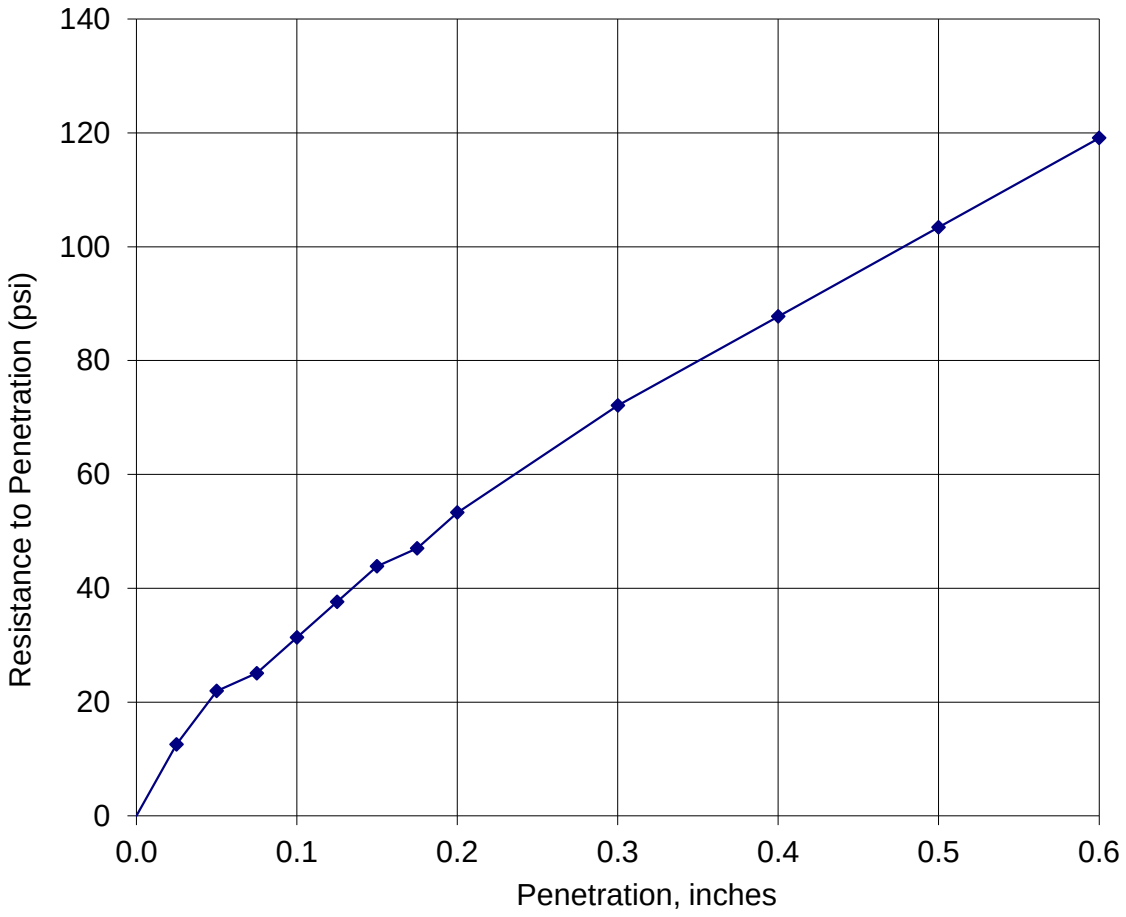
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. BS-111 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 10.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/27/17 |
| Submitted By | : | HDR | Date Reported | : | 3/28/17 |
| Soil Type | : | Brown | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 100.1
Percent Swell = 0.85

C.B.R. @ 0.1 In. = 3.1
C.B.R. @ 0.2 In. = 3.6*

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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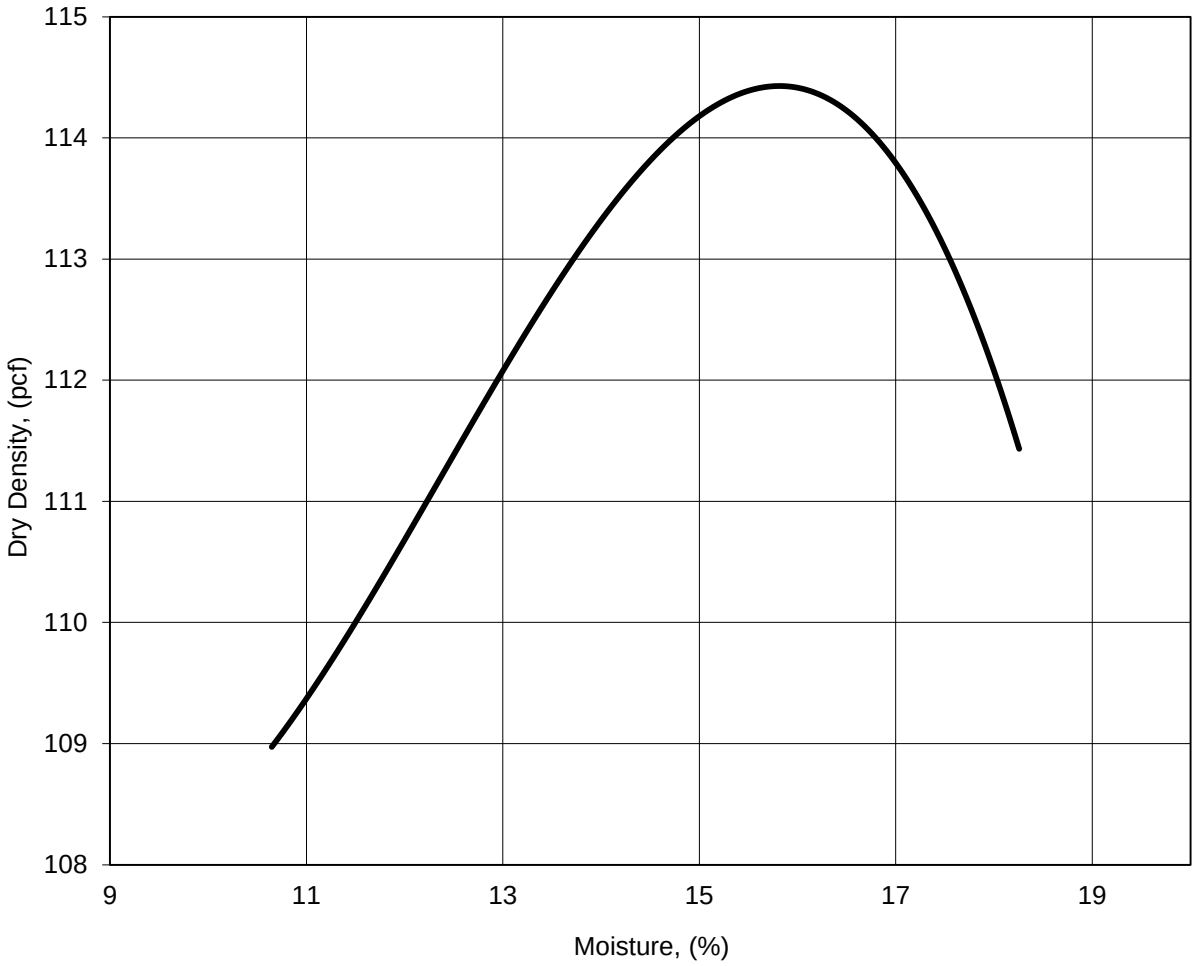
# MOISTURE-DENSITY RELATIONSHIP

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-38 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 03/27/17 |
| Submitted By | : | HDR | Date Reported | : | 04/06/17 |
| Soil Type | : | Brown | | | |




MAXIMUM DENSITY: 114.4 pcf

OPTIMUM MOISTURE: 15.8 %

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

APPROVED BY: KW

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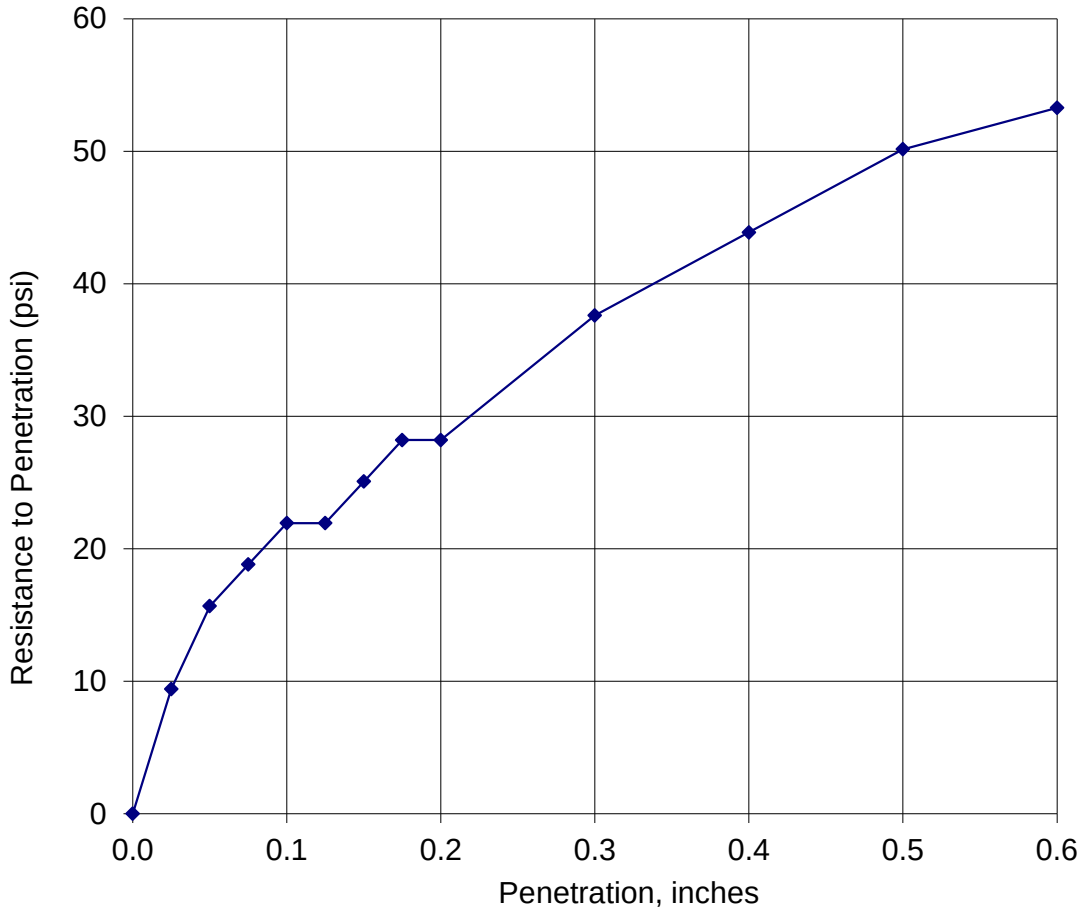
# CALIFORNIA BEARING RATIO

| | | | |
|---|---|---|---|
| Project Name | : I-85 | | |
| Project No. | : 10023919 | Sample No. | : Bulk 1 |
| Project County | : Cherokee | Sample Loc. | : Boring No. NB-38 |
| Project State | : South Carolina | Sample Depth | : 0.0' to 5.0' |
| Laboratory No. | : 10023919 | Date Tested | : 3/27/17 |
| Submitted By | : HDR | Date Reported | : 4/6/17 |
| Soil Type | : Brown | | |




Compaction Effort = 20 Blows per layer
Percent Compacted = 92.2
Percent Swell = 0.24

C.B.R. @ 0.1 In. = 2.2*
C.B.R. @ 0.2 In. = 1.9

COMMENTS: AASHTO: T-193

APPROVED BY: KW

COMMENTS:

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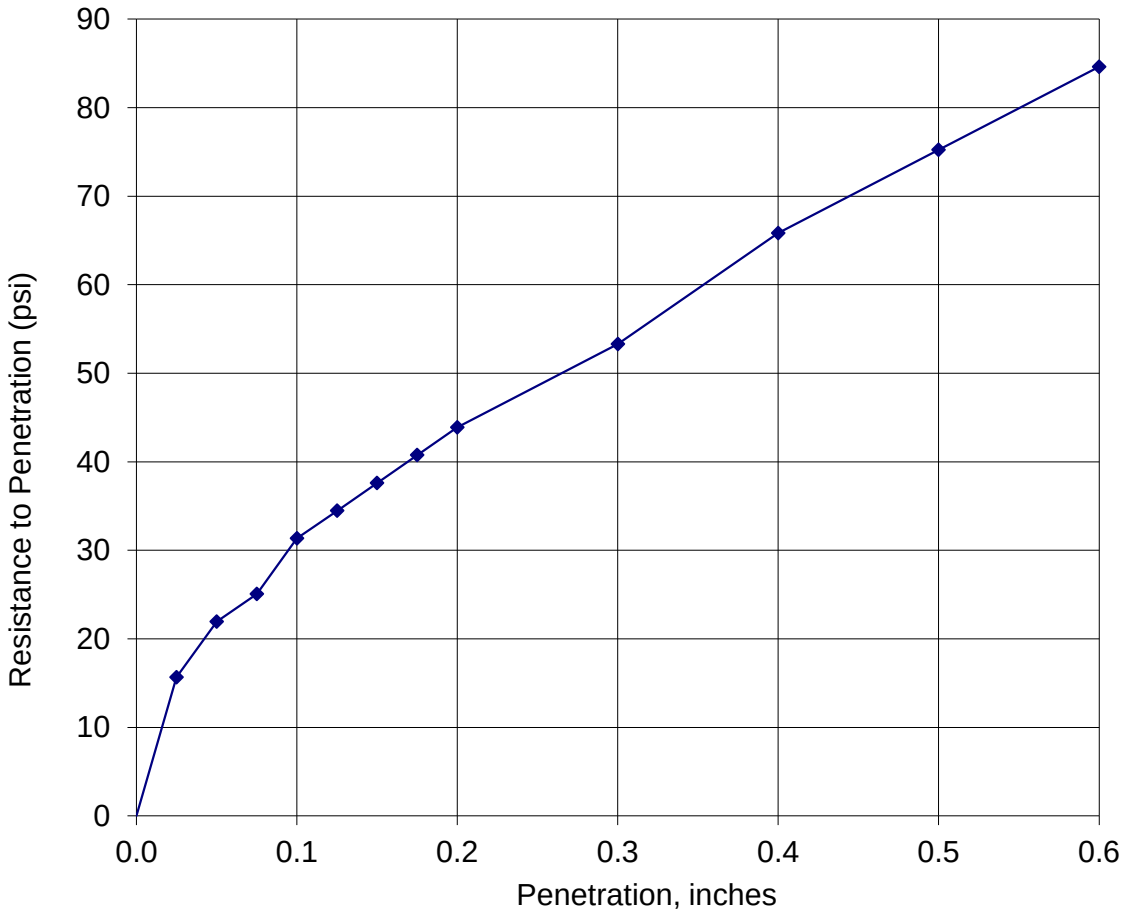
# CALIFORNIA BEARING RATIO

| | | | | | |
|---|---|---|---|---|---|
| Project Name | : | I-85 | | | |
| Project No. | : | 10023919 | Sample No. | : | Bulk 1 |
| Project County | : | Cherokee | Sample Loc. | : | Boring No. NB-38 |
| Project State | : | South Carolina | Sample Depth | : | 0.0' to 5.0' |
| Laboratory No. | : | 10023919 | Date Tested | : | 3/27/17 |
| Submitted By | : | HDR | Date Reported | : | 4/6/17 |
| Soil Type | : | Brown | | | |




Compaction Effort = 40 Blows per layer
Percent Compacted = 98.5
Percent Swell = 0.13

C.B.R. @ 0.1 In. = 3.1*
C.B.R. @ 0.2 In. = 2.9

COMMENTS: AASHTO: T-193

APPROVED BY: KW

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# TRANSMITTAL LETTER

**DATE:** March 1, 2017

**ATTENTION:** **Don Schmidt**

**TO:** HDR-ICA
2550 Irvin Cobb Drive
Paducah, KY 42003

**SUBJECT:** Laboratory Test Data
Your #10023919, HDR Lab #17-0117LAB

**COMMENTS:** Enclosed are the results for the subject project.

James T. Keegan, MD
Laboratory Services Manager

431 West Baseline Road · Claremont, CA 91711
Phone: 909.962.5485 · Fax: 909.626.3316

# Table 1 - Laboratory Tests on Soil Samples

***HDR-ICA***
***Your #10023919, HDR Lab #17-0117LAB***
***1-Mar-17***

| Sample ID | | | 10023919, BS-112 @ 0-10' | 10023919, BS-110 @ 0-10' |
|---|---|---|---|---|
| **Resistivity** | | **Units** | | |
| as-received | | ohm-cm | 38,800 | 20,000 |
| saturated | | ohm-cm | 960 | 1,400 |
| **pH** | | | 6.9 | 6.3 |
| **Electrical Conductivity** | | mS/cm | 0.15 | 0.12 |
| **Chemical Analyses** | | | | |
| **Cations** | | | | |
| calcium | $Ca^{2+}$ | mg/kg | 49 | 5.7 |
| magnesium | $Mg^{2+}$ | mg/kg | 12 | 3.5 |
| sodium | $Na^{1+}$ | mg/kg | 72 | 108 |
| potassium | $K^{1+}$ | mg/kg | 6.0 | 4.2 |
| **Anions** | | | | |
| carbonate | $CO_3^{2-}$ | mg/kg | ND | ND |
| bicarbonate | $HCO_3^{1-}$ | mg/kg | 73 | 61 |
| fluoride | $F^{1-}$ | mg/kg | 2.7 | 2.8 |
| chloride | $Cl^{1-}$ | mg/kg | 92 | 115 |
| sulfate | $SO_4^{2-}$ | mg/kg | 136 | 42 |
| phosphate | $PO_4^{3-}$ | mg/kg | ND | ND |
| **Other Tests** | | | | |
| ammonium | $NH_4^{1+}$ | mg/kg | ND | ND |
| nitrate | $NO_3^{1-}$ | mg/kg | ND | ND |
| sulfide | $S^{2-}$ | qual | na | na |
| Redox | | mV | na | na |

Resistivity per ASTM G187, Cations per ASTM D6919, Anions per ASTM D4327, and Alkalinity per APHA 2320-B.
Electrical conductivity in millisiemens/cm and chemical analyses were made on a 1:5 soil-to-water extract.
mg/kg = milligrams per kilogram (parts per million) of dry soil.
Redox = oxidation-reduction potential in millivolts
ND = not detected
na = not analyzed

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Phone: 909.962.5485 · Fax: 909.626.3316

# TRANSMITTAL LETTER

**DATE:** March 29, 2017

**ATTENTION:** **Don Schmidt**

**TO:** HDR-ICA
2550 Irvin Cobb Drive
Paducah, KY 42003

**SUBJECT:** Laboratory Test Data
I-85
Your #10023919, HDR Lab #17-0203LAB

**COMMENTS:** Enclosed are the results for the subject project.

James T. Keegan, MD
Laboratory Services Manager

431 West Baseline Road · Claremont, CA 91711
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# Table 1 - Laboratory Tests on Soil Samples

***HDR-ICA***
***I-85***
***Your #10023919, HDR Lab #17-0071SCS***
***17-Feb-17***

| Sample ID | | | B5-114 | B5-116 |
|---|---|---|---|---|
| **Resistivity** | | **Units** | | |
| as-received | | ohm-cm | 12,800 | 2,880 |
| saturated | | ohm-cm | 3,640 | 2,080 |
| **pH** | | | 7.2 | 7.1 |
| **Electrical Conductivity** | | mS/cm | 0.15 | 0.20 |
| **Chemical Analyses** | | | | |
| **Cations** | | | | |
| calcium | $Ca^{2+}$ | mg/kg | 76 | 91 |
| magnesium | $Mg^{2+}$ | mg/kg | 12 | 17 |
| sodium | $Na^{1+}$ | mg/kg | 48 | 55 |
| potassium | $K^{1+}$ | mg/kg | 11 | 17 |
| **Anions** | | | | |
| carbonate | $CO_3^{2-}$ | mg/kg | ND | ND |
| bicarbonate | $HCO_3^{1-}$ | mg/kg | 64 | 27 |
| fluoride | $F^{1-}$ | mg/kg | 24 | 32 |
| chloride | $Cl^{1-}$ | mg/kg | 40 | 105 |
| sulfate | $SO_4^{2-}$ | mg/kg | 203 | 218 |
| phosphate | $PO_4^{3-}$ | mg/kg | ND | ND |
| **Other Tests** | | | | |
| ammonium | $NH_4^{1+}$ | mg/kg | ND | 0.7 |
| nitrate | $NO_3^{1-}$ | mg/kg | ND | ND |
| sulfide | $S^{2-}$ | qual | na | na |
| Redox | | mV | na | na |

Resistivity per ASTM G187, Cations per ASTM D6919, Anions per ASTM D4327, and Alkalinity per APHA 2320-B.
Electrical conductivity in millisiemens/cm and chemical analyses were made on a 1:5 soil-to-water extract.
mg/kg = milligrams per kilogram (parts per million) of dry soil.
Redox = oxidation-reduction potential in millivolts
ND = not detected
na = not analyzed

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# Table 1 - Laboratory Tests on Soil Samples

***HDR-ICA***
***I-85***
***Your #10023919, HDR Lab #17-0203LAB***
***29-Mar-17***

| **Sample ID** | | | BR-156 @ 0-8' Sandy Silty Clay |
|---|---|---|---|
| **Resistivity** | | **Units** | |
| as-received | | ohm-cm | 9,600 |
| saturated | | ohm-cm | 1,960 |
| **pH** | | | 7.2 |
| **Electrical Conductivity** | | mS/cm | 0.08 |
| **Chemical Analyses** | | | |
| **Cations** | | | |
| calcium | $Ca^{2+}$ | mg/kg | 7.1 |
| magnesium | $Mg^{2+}$ | mg/kg | 2.2 |
| sodium | $Na^{1+}$ | mg/kg | 83 |
| potassium | $K^{1+}$ | mg/kg | 3.7 |
| **Anions** | | | |
| carbonate | $CO_3^{2-}$ | mg/kg | ND |
| bicarbonate | $HCO_3^{1-}$ | mg/kg | 110 |
| fluoride | $F^{1-}$ | mg/kg | 1.6 |
| chloride | $Cl^{1-}$ | mg/kg | 76 |
| sulfate | $SO_4^{2-}$ | mg/kg | 2.4 |
| phosphate | $PO_4^{3-}$ | mg/kg | 3.8 |
| **Other Tests** | | | |
| ammonium | $NH_4^{1+}$ | mg/kg | 1.5 |
| nitrate | $NO_3^{1-}$ | mg/kg | ND |
| sulfide | $S^{2-}$ | qual | na |
| Redox | | mV | na |

Resistivity per ASTM G187, Cations per ASTM D6919, Anions per ASTM D4327, and Alkalinity per APHA 2320-B.
Electrical conductivity in millisiemens/cm and chemical analyses were made on a 1:5 soil-to-water extract.
mg/kg = milligrams per kilogram (parts per million) of dry soil.
Redox = oxidation-reduction potential in millivolts
ND = not detected
na = not analyzed

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-1 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-118 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 42.4' to 42.7' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 2/8/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 2/8/2017 |

ROCK DESCRIPTION : Cherryville Granite: medium grain very thinly foliated sli. wthd.

| | | | |
|---|---|---|---|
| Diameter : | 1.98 in | Area : | 3.08 $in^2$ |
| Height : | 4.05 in | Volume : | 0.0072 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 163.59 | lbs/$ft.^3$ |
| Maximum Stress : | 5443 | psi |
| Elapsed Time : | 6:50 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

Approved By : _____

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-2 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-118 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 50.6' to 51.0' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 2/8/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 2/8/2017 |

ROCK DESCRIPTION : Cherryville Granite: medium grain , trace pinpoint vugs fresh

| | | | |
|---|---|---|---|
| Diameter : | 1.98 in | Area : | 3.09 $in^2$ |
| Height : | 3.93 in | Volume : | 0.007 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 163.91 | lbs/$ft.^3$ |
| Maximum Stress : | 11405 | psi |
| Elapsed Time : | 14:52 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-3 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-124 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 69.6' to 70.0' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 2/8/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 2/8/2017 |

ROCK DESCRIPTION : Schist: medium grain, very thinly foliated sli. wthd.

| | | | |
|---|---|---|---|
| Diameter : | 1.98 in | Area : | 3.09 $in^2$ |
| Height : | 3.94 in | Volume : | 0.007 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 164.27 | lbs/$ft.^3$ |
| Maximum Stress : | 6333 | psi |
| Elapsed Time : | 7:55 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-4 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-124 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 82.1' to 82.4' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 2/8/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 2/8/2017 |

ROCK DESCRIPTION : Schist: medium grain, very thinly foliated fresh

| | | | |
|---|---|---|---|
| Diameter : | 1.99 in | Area : | 3.10 $in^2$ |
| Height : | 4.06 in | Volume : | 0.0073 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 164.72 | lbs/$ft.^3$ |
| Maximum Stress : | 7583 | psi |
| Elapsed Time : | 10:07 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-5 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-126 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 71.4' to 71.8' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 2/8/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 2/8/2017 |

ROCK DESCRIPTION : Schist: fine grain w/some medium grain, very thinly foliated fresh

| | | | |
|---|---|---|---|
| Diameter : | 1.98 in | Area : | 3.08 $in^2$ |
| Height : | 4.11 in | Volume : | 0.0073 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 172.1 | lbs/$ft.^3$ |
| Maximum Stress : | 2111 | psi |
| Elapsed Time : | 3:06 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-6 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-126 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 74.5' to 74.8' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 2/8/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 2/8/2017 |

ROCK DESCRIPTION : Schist: medium grain w/pegmatie vein, very thinly foliated fresh

| | | | |
|---|---|---|---|
| Diameter : | 1.98 in | Area : | 3.09 $in^2$ |
| Height : | 4.08 in | Volume : | 0.0073 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 164.38 | lbs/$ft.^3$ |
| Maximum Stress : | 8162 | psi |
| Elapsed Time : | 13:06 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-7 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-126 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 85.9' to 86.3' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 2/8/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 2/8/2017 |

ROCK DESCRIPTION : Pegmatite: traces muscovite & garnet fresh

| | | | |
|---|---|---|---|
| Diameter : | 1.98 in | Area : | 3.09 $in^2$ |
| Height : | 4.02 in | Volume : | 0.0072 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 161.59 | lbs/$ft.^3$ |
| Maximum Stress : | 5407 | psi |
| Elapsed Time : | 7:06 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-8 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-120 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 100-100.4 |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 2/8/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 2/8/2017 |

ROCK DESCRIPTION : Cherryville Granite: coarse grain w/medium grain moderately to highly weathered

| | | | |
|---|---|---|---|
| Diameter : | 1.98 in | Area : | 3.09 $in^2$ |
| Height : | 4.31 in | Volume : | 0.0077 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 155.73 | lbs/$ft.^3$ |
| Maximum Stress : | 1524 | psi |
| Elapsed Time : | 1:25 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-9 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-127 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 48.5-48.9 |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 2/8/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 2/8/2017 |

ROCK DESCRIPTION : Schist: medium to coarse grain, foliated slightly weathered

| | | | |
|---|---|---|---|
| Diameter : | 1.98 in | Area : | 3.08 $in^2$ |
| Height : | 4.19 in | Volume : | 0.0075 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 161.68 | lbs/$ft.^3$ |
| Maximum Stress : | 3646 | psi |
| Elapsed Time : | 3:42 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-10 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-127 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 56.5-56.9 |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 2/8/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 2/8/2017 |

ROCK DESCRIPTION : Schist: medium grain w/coarse grain phenocryst fresh

| | | | |
|---|---|---|---|
| Diameter : | 1.98 in | Area : | 3.09 $in^2$ |
| Height : | 3.95 in | Volume : | 0.0071 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 162.68 | lbs/$ft.^3$ |
| Maximum Stress : | 5875 | psi |
| Elapsed Time : | 7:23 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-11 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-129 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 84.0-84.3 |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 2/8/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 2/8/2017 |

ROCK DESCRIPTION : Schist: coarse grain, 90 deg foliation slightly weathered

| | | | |
|---|---|---|---|
| Diameter : | 1.99 in | Area : | 3.11 $in^2$ |
| Height : | 4.14 in | Volume : | 0.0074 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 158.6 | lbs/$ft.^3$ |
| Maximum Stress : | 4297 | psi |
| Elapsed Time : | 5:34 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-12 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-129 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 88.5-88.8 |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 2/8/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 2/8/2017 |

ROCK DESCRIPTION : Schist: fine grain, high angle foliation slightly weathered

| | | | |
|---|---|---|---|
| Diameter : | 1.99 in | Area : | 3.10 $in^2$ |
| Height : | 4.13 in | Volume : | 0.0074 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 172.92 | lbs/$ft.^3$ |
| Maximum Stress : | 3469 | psi |
| Elapsed Time : | 4:02 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-13 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : R-91 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 44.4-44.8 |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 2/8/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 2/8/2017 |

ROCK DESCRIPTION : Schist: fine to medium grain, thinly foliated, healed joints slight to moderately weathered

| | | | |
|---|---|---|---|
| Diameter : | 1.98 in | Area : | 3.09 $in^2$ |
| Height : | 4.09 in | Volume : | 0.0073 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 155.11 | lbs/$ft.^3$ |
| Maximum Stress : | 2340 | psi |
| Elapsed Time : | 3:17 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-14 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : R-91 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 69.4-69.7 |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 2/8/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 2/8/2017 |

ROCK DESCRIPTION : Schist: fine grain, thinly foliated slightly weathered

| | | | |
|---|---|---|---|
| Diameter : | 1.99 in | Area : | 3.10 $in^2$ |
| Height : | 4.16 in | Volume : | 0.0075 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 160.56 | lbs/$ft.^3$ |
| Maximum Stress : | 5761 | psi |
| Elapsed Time : | 9:41 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-15 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-156 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 58.0' to 58.4' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 3/16/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 3/20/2017 |

ROCK DESCRIPTION : Schist: fine grain, thinly foliated slightly weathered

| | | | |
|---|---|---|---|
| Diameter : | 1.97 in | Area : | 3.06 $in^2$ |
| Height : | 4.17 in | Volume : | 0.0074 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 182.12 | lbs/$ft.^3$ |
| Maximum Stress : | 5568 | psi |
| Elapsed Time : | 7:36 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-16 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-156 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 63.8' to 64.1' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 3/16/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 3/20/2017 |

ROCK DESCRIPTION : Cherryville Granite: medium grain, foliated moderately weathered

| | | | |
|---|---|---|---|
| Diameter : | 1.98 in | Area : | 3.06 $in^2$ |
| Height : | 4.10 in | Volume : | 0.0073 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 155.37 | lbs/$ft.^3$ |
| Maximum Stress : | 2062 | psi |
| Elapsed Time : | 4:14 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

Approved By : _____

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-18 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-122 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 81.4' to 81.7' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 3/16/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 3/20/2017 |

ROCK DESCRIPTION : Cherryville Granite: medium to coarse grain, foliated, healed joint slightly weathered

| | | | |
|---|---|---|---|
| Diameter : | 1.98 in | Area : | 3.07 $in^2$ |
| Height : | 4.09 in | Volume : | 0.0073 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 162.71 | lbs/$ft.^3$ |
| Maximum Stress : | 6468 | psi |
| Elapsed Time : | 10:21 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

Approved By : _____

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-19 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-122 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 93.4' to 93.7' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 3/16/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 3/20/2017 |

ROCK DESCRIPTION : Schist: fine grain, very thinly foliated, pyritic healed joint fresh

| | | | |
|---|---|---|---|
| Diameter : | 1.98 in | Area : | 3.07 $in^2$ |
| Height : | 4.09 in | Volume : | 0.0073 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 174.19 | lbs/$ft.^3$ |
| Maximum Stress : | 13735 | psi |
| Elapsed Time : | 10:44 | min. |
| Rate of Loading : | 60 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-20 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-125 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 66.2' to 66.6' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 3/16/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 3/20/2017 |

ROCK DESCRIPTION : Schist: medium grain, thinly foliated slightly weathered

| | | | |
|---|---|---|---|
| Diameter : | 1.97 in | Area : | 3.05 $in^2$ |
| Height : | 4.12 in | Volume : | 0.0073 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 163.1 | lbs/$ft.^3$ |
| Maximum Stress : | 11716 | psi |
| Elapsed Time : | 14:53 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-21 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-125 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 74.0' to 74.4' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 3/16/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 3/20/2017 |

ROCK DESCRIPTION : Schist: medium grain, thinly foliated, healed joint fresh

| | | | |
|---|---|---|---|
| Diameter : | 1.98 in | Area : | 3.08 $in^2$ |
| Height : | 4.10 in | Volume : | 0.0073 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 164.25 | lbs/$ft.^3$ |
| Maximum Stress : | 12190 | psi |
| Elapsed Time : | 15:00 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

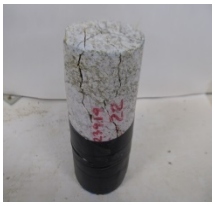
| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-22 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-155 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 65.6' to 65.9' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 3/16/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 3/20/2017 |

ROCK DESCRIPTION : Cherryville Granite: medium grain w/coarse grain, foliated moderately weathered

| | | | |
|---|---|---|---|
| Diameter : | 1.98 in | Area : | 3.07 $in^2$ |
| Height : | 4.14 in | Volume : | 0.0074 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 157.41 | lbs/$ft.^3$ |
| Maximum Stress : | 1299 | psi |
| Elapsed Time : | 4:33 | min. |
| Rate of Loading : | 40 | lb/sec |



Comments :

Approved By : _____

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-23 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-155 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 83.9' to 84.2' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 3/16/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 3/20/2017 |

ROCK DESCRIPTION : Cherryville Granite: medium grain, faintly foliated fresh

| | | | |
|---|---|---|---|
| Diameter : | 1.98 in | Area : | 3.07 $in^2$ |
| Height : | 4.11 in | Volume : | 0.0073 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 162.16 | lbs/$ft.^3$ |
| Maximum Stress : | 14281 | psi |
| Elapsed Time : | 12:43 | min. |
| Rate of Loading : | 60 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-24 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-128 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 57.4' to 57.7' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 3/16/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 3/20/2017 |

ROCK DESCRIPTION : Granite: coarse grain, healed fractures, slight to moderate weathering

| | | | |
|---|---|---|---|
| Diameter : | 1.97 in | Area : | 3.06 $in^2$ |
| Height : | 4.14 in | Volume : | 0.0073 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 162.31 | $lbs/ft.^3$ |
| Maximum Stress : | 4372 | psi |
| Elapsed Time : | 7:22 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-25 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-128 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 71.6' to 71.9' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 3/16/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 3/20/2017 |

ROCK DESCRIPTION : Amphibolite: fine grain, chlorite seam, calcite vein fresh

| | | | |
|---|---|---|---|
| Diameter : | 1.98 in | Area : | 3.07 $in^2$ |
| Height : | 4.11 in | Volume : | 0.0073 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 180.59 | lbs/$ft.^3$ |
| Maximum Stress : | 12255 | psi |
| Elapsed Time : | 14:59 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-26 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-119 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 46.9' to 47.2' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 3/16/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 3/20/2017 |

ROCK DESCRIPTION : Cherryville Granite: medium to coarse grain, slightly foliated slightly weathered

| | | | |
|---|---|---|---|
| Diameter : | 1.98 in | Area : | 3.08 $in^2$ |
| Height : | 4.09 in | Volume : | 0.0073 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 164.64 | lbs/$ft.^3$ |
| Maximum Stress : | 14176 | psi |
| Elapsed Time : | 12:52 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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**ASTM: D7012-Method C**

# UNCONFINED COMPRESSION TEST (ROCK CORE)

| | | | |
|---|---|---|---|
| PROJECT NAME | : I-85 | | |
| PROJECT NO. | : 10023919 | SAMPLE NO. | : RC-17 |
| PROJECT COUNTY | : Cherokee | SAMPLE LOC. | : BR-156 |
| PROJECT STATE | : South Carolina | SAMPLE DEPTH | : 75.5' to 75.8' |
| LABORATORY NO. | : 10023919 | DATE TESTED | : 3/16/2017 |
| SUBMITTED BY | : HDR \| ICA | DATE REPORTED | : 3/20/2017 |

ROCK DESCRIPTION : Cherryville Granite: medium grain, foliated slightly weathered

| | | | |
|---|---|---|---|
| Diameter : | 1.97 in | Area : | 3.05 $in^2$ |
| Height : | 4.08 in | Volume : | 0.0072 $ft^3$ |

**RESULTS :**

| | | |
|---|---|---|
| Moisture Air-Dry : | NA | |
| Air-Dry Density : | 162.46 | lbs/$ft.^3$ |
| Maximum Stress : | 12101 | psi |
| Elapsed Time : | 14:48 | min. |
| Rate of Loading : | 40 | lb/sec |

Comments :

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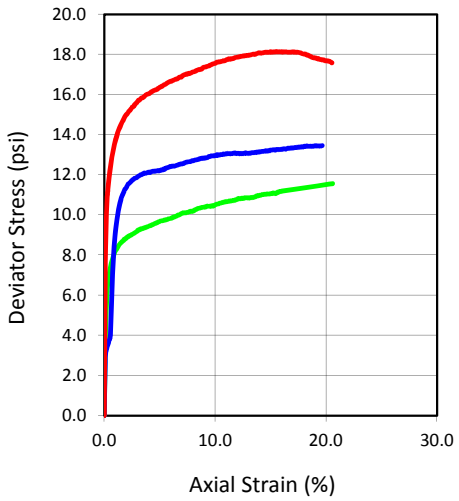
## Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME : I-85
PROJECT NO. : 10023919
PROJECT LOCATION : ST-1
BORING NUMBER : BR-118
REMARKS :

Mohr Stre NO. : BR-118
SAMPLE DEPTH : 6.3-6.8
SAMPLE TYPE : Undisturbed
DESCRIPTION : Brown, Orange & White Silty Sand
TEST TYPE : Consolidated Undrained

**Deviator Stress Vs. Axial Strain**

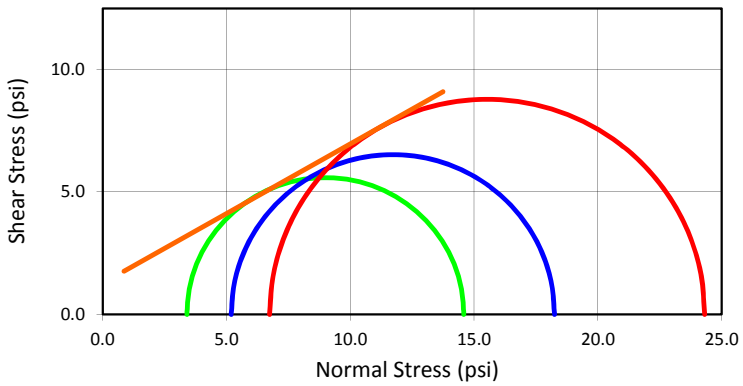



| Initial | Specimen A | B | C | D |
|---|---|---|---|---|
| Water Content (%) | 14.9 | 21.5 | 16.6 | |
| Dry Density (pcf) | 80.7 | 75.1 | 82.0 | |
| Saturation (%) | 38.01 | 47.93 | 43.73 | |
| Void Ratio | 1.022 | 1.173 | 0.991 | |
| Diameter (in) | 2.817 | 2.811 | 2.825 | |
| Height (in) | 5.560 | 5.664 | 5.586 | |
| Specific Gravity | 2.62 | 2.62 | 2.62 | |
| Liquid Limit | 34 | 34 | 34 | |
| Plastic Limit | 34 | 34 | 34 | |
| **After Consolidation** | **A** | **B** | **C** | **D** |
| B-Value | 0.96 | 0.97 | 0.97 | |
| Water Content (%) | 33.7 | 41.1 | 32.8 | |
| Dry Density (pcf) | 85.54 | 75.79 | 85.15 | |
| Saturation (%) | 100.00 | 100.00 | 100.00 | |
| Void Ratio | 0.911 | 1.157 | 0.920 | |
| Effective Stress (psi) | 10.1 | 20.0 | 40.1 | |
| Back Press. (psi) | 71.1 | 63.2 | 56.6 | |
| Rate of Strain | 0.006 | 0.006 | 0.006 | |

| Maximum Principal Stress Ratio Criterion | |
|---|---|
| C (psi) | 4.2 |
| Ø (deg) | 5.3 |
| C' (psi) | 1.3 |
| Ø' (deg) | 29.6 |

| After Shear | A | B | C | D |
|---|---|---|---|---|
| σ'1 at Failure (psi) | 14.59 | 18.25 | 24.32 | |
| σ'3 at Failure (psi) | 3.40 | 5.19 | 6.74 | |

**Stress at Maximum Deviator Stress Criterion**




Tested By: _____ Approved By: _____

Date: _____ Date: _____

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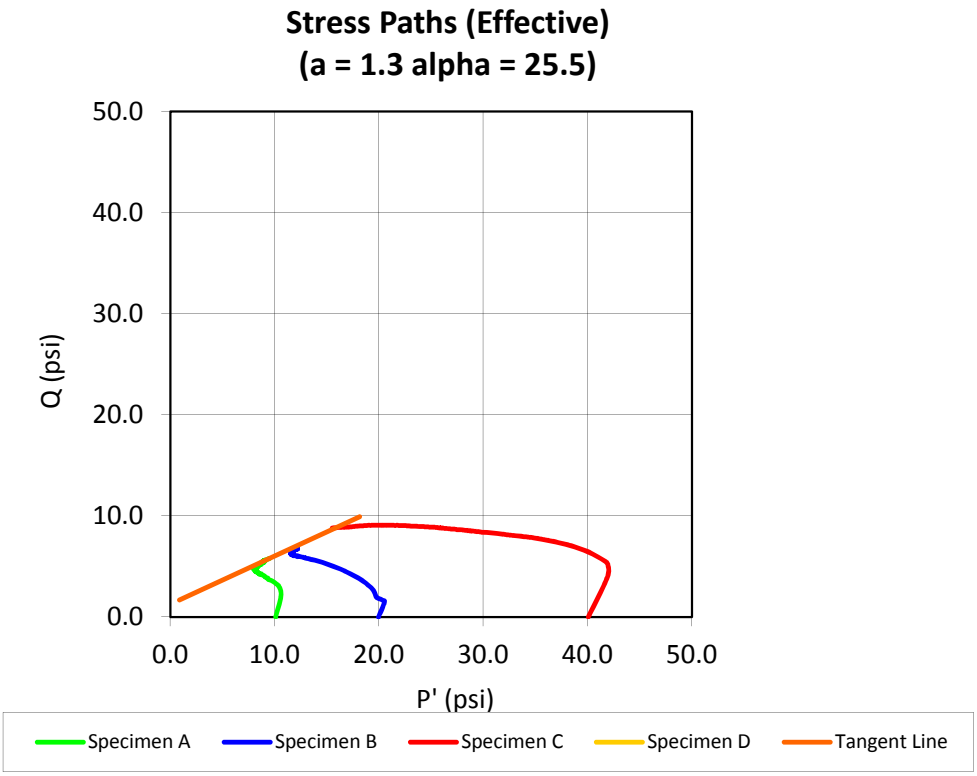


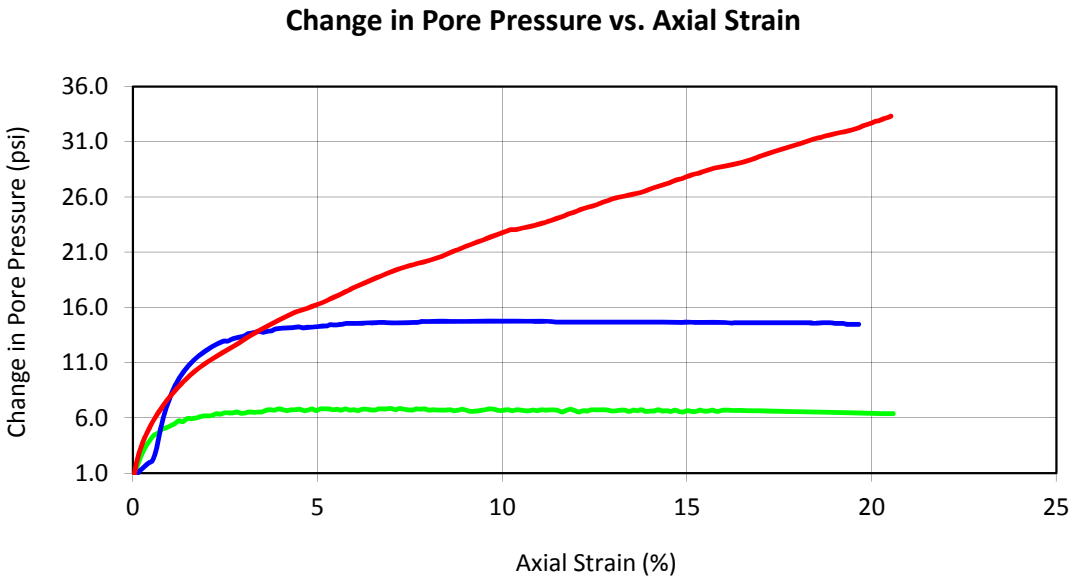


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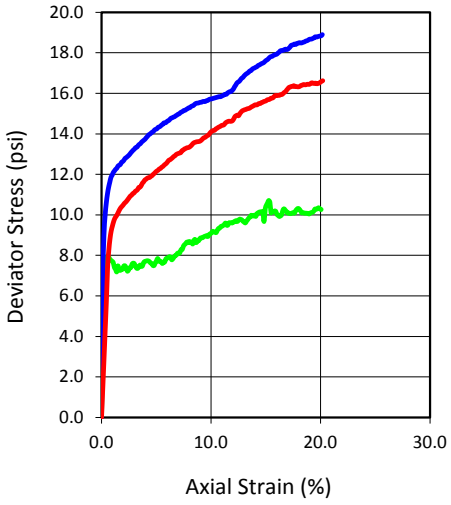
## Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME : I-85
PROJECT NO. : 10023919
PROJECT LOCATION : Bulk-1
BORING NUMBER : C-130
REMARKS :

SAMPLE NO. : C-130
SAMPLE DEPTH : 0.0-10.0
SAMPLE TYPE : Remolded
DESCRIPTION : Brown Sandy Clay
TEST TYPE : Consolidated Undrained

**Deviator Stress Vs. Axial Strain**

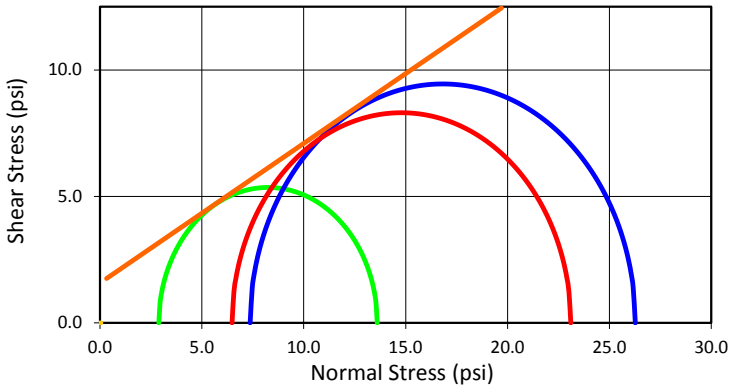



| Initial | Specimen A | B | C | D |
|---|---|---|---|---|
| Water Content (%) | 17.5 | 18.3 | 17.4 | |
| Dry Density (pcf) | 103.1 | 102.6 | 103.2 | |
| Saturation (%) | 76.63 | 78.92 | 76.54 | |
| Void Ratio | 0.601 | 0.610 | 0.600 | |
| Diameter (in) | 2.793 | 2.792 | 2.792 | |
| Height (in) | 5.629 | 5.622 | 5.625 | |
| Specific Gravity | 2.65 | 2.65 | 2.65 | |
| Liquid Limit | NA | NA | NA | |
| Plastic Limit | NA | NA | NA | |
| **After Consolidation** | **A** | **B** | **C** | **D** |
| B-Value | 0.95 | 0.98 | 0.95 | |
| Water Content (%) | 23.1 | 22.2 | 21.4 | |
| Dry Density (pcf) | 103.31 | 102.84 | 105.32 | |
| Saturation (%) | 100.00 | 100.00 | 100.00 | |
| Void Ratio | 0.601 | 0.609 | 0.571 | |
| Effective Stress (psi) | 4.1 | 8.5 | 16.7 | |
| Back Press. (psi) | 82.2 | 61.7 | 89.3 | |
| Rate of Strain | 0.005 | 0.005 | 0.005 | |

| Maximum Deviator Stress Criterion | |
|---|---|
| C (psi) | 2.7 |
| Ø (deg) | 17.8 |
| C' (psi) | 1.6 |
| Ø' (deg) | 28.9 |

| After Shear | A | B | C | D |
|---|---|---|---|---|
| σ'1 at Failure (psi) | 13.60 | 26.27 | 23.10 | |
| σ'3 at Failure (psi) | 2.89 | 7.37 | 6.48 | |

**Stress at Maximum Deviator Stress Criterion**




Tested By: _____
Date: _____

Approved By: Kevin E. Walker
Date: 4/6/17

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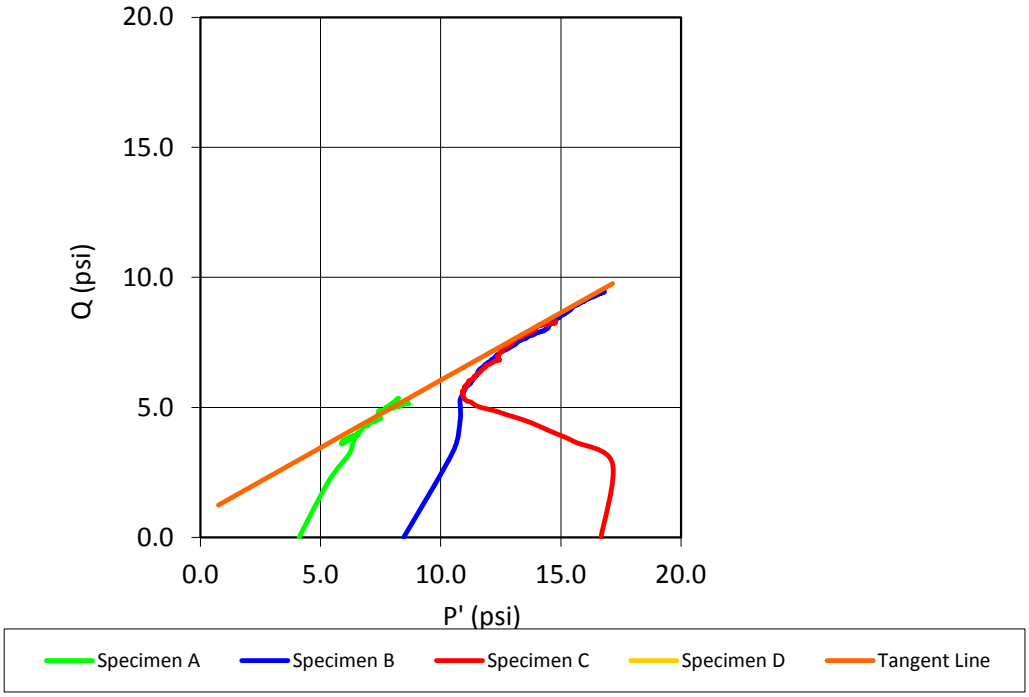
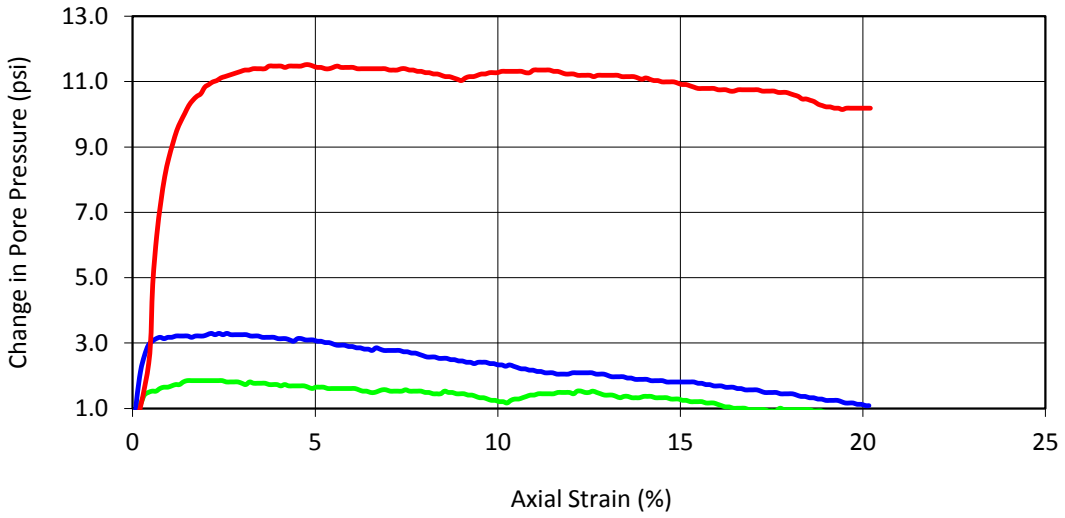
## Stress Paths (Effective)
## (a = 0.9 alpha = 27.4)




## Change in Pore Pressure vs. Axial Strain

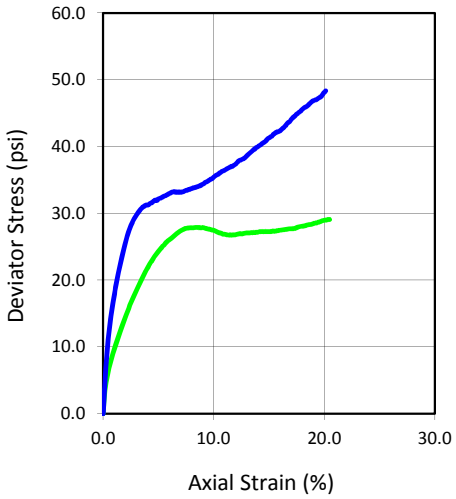


## Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME : I-85
PROJECT NO. : 10023919
PROJECT LOCATION : ST-1
BORING NUMBER : B-121
REMARKS : Two Point C.U.

Mohr Stre NO. : BR-121
SAMPLE DEPTH : 40.1-40.6
SAMPLE TYPE : Undisturbed
DESCRIPTION : Orange, Brown, Gray & White Silty Sand
TEST TYPE : Consolidated Undrained

**Deviator Stress Vs. Axial Strain**

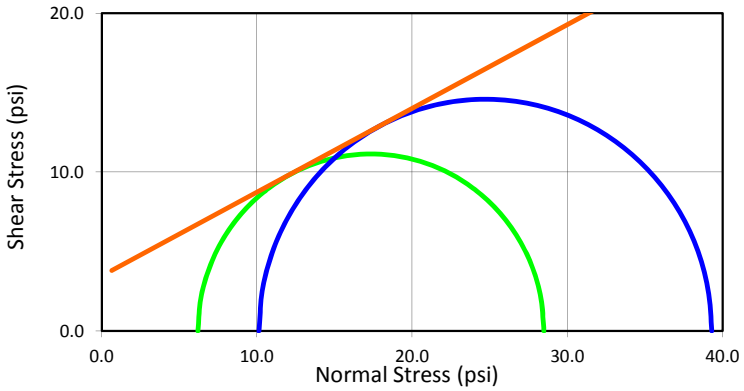



| Initial | Specimen A | B | C | D |
|---|---|---|---|---|
| Water Content (%) | 31.8 | 16.0 | | |
| Dry Density (pcf) | 89.4 | 112.1 | | |
| Saturation (%) | 99.21 | 89.28 | | |
| Void Ratio | 0.846 | 0.474 | | |
| Diameter (in) | 2.832 | 2.841 | | |
| Height (in) | 5.592 | 5.713 | | |
| Specific Gravity | 2.65 | 2.65 | | |
| Liquid Limit | 37 | 37 | | |
| Plastic Limit | 32 | 32 | | |
| **After Consolidation** | **A** | **B** | **C** | **D** |
| B-Value | 0.95 | 1.00 | | |
| Water Content (%) | 35.7 | 18.7 | | |
| Dry Density (pcf) | 89.63 | 112.94 | | |
| Saturation (%) | 100.00 | 100.00 | | |
| Void Ratio | 0.846 | 0.465 | | |
| Effective Stress (psi) | 10.0 | 19.8 | | |
| Back Press. (psi) | 33.7 | 46.9 | | |
| Rate of Strain | 0.004 | 0.004 | | |

| Maximum Principal Stress Ratio Criterion | |
|---|---|
| C (psi) | 6.0 |
| Ø (deg) | 14.7 |
| C' (psi) | 3.5 |
| Ø' (deg) | 27.8 |

| After Shear | A | B | C | D |
|---|---|---|---|---|
| σ'1 at Failure (psi) | 28.49 | 39.30 | | |
| σ'3 at Failure (psi) | 6.19 | 10.12 | | |

**Stress at Maximum Deviator Stress Criterion**




Tested By: _____
Date: _____

Approved By: Kevin E. Walker
Date: 4/4/17

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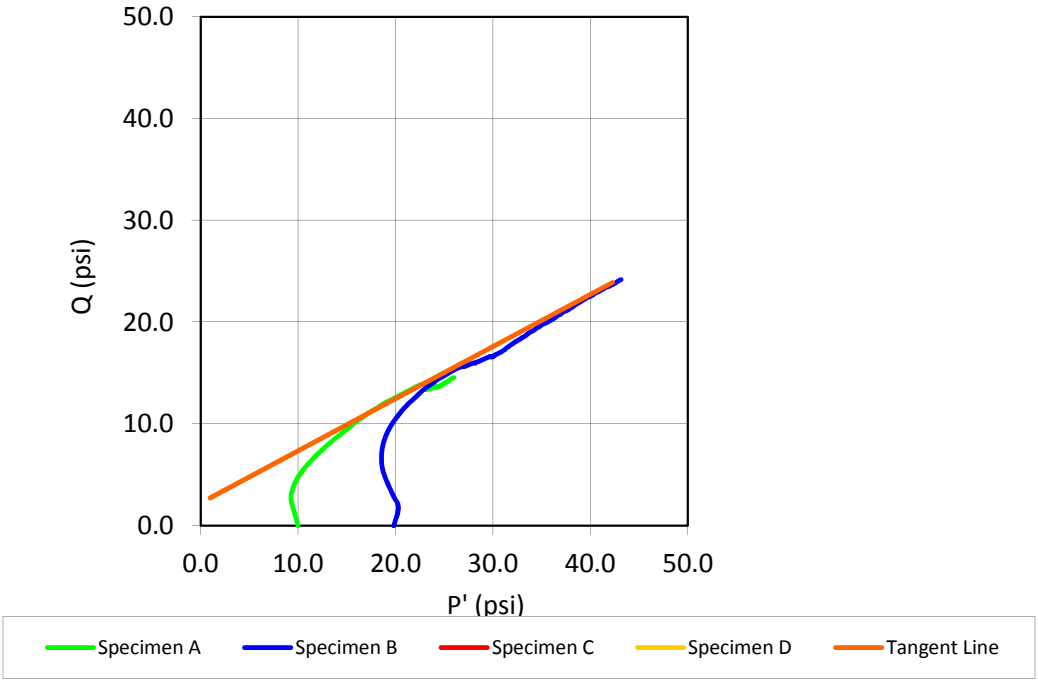
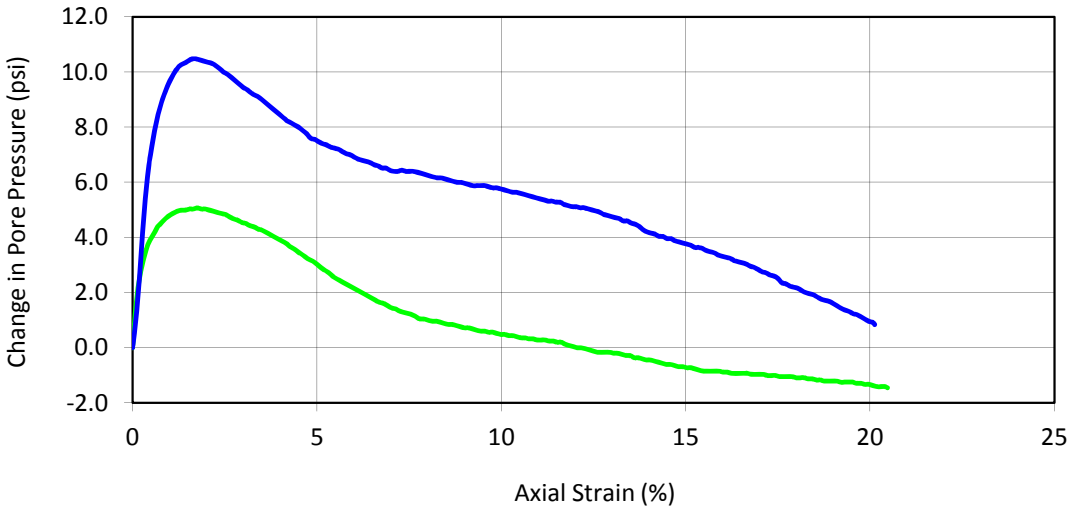
## Stress Paths (Effective)
## (a = 2.2 alpha = 27.1)




## Change in Pore Pressure vs. Axial Strain

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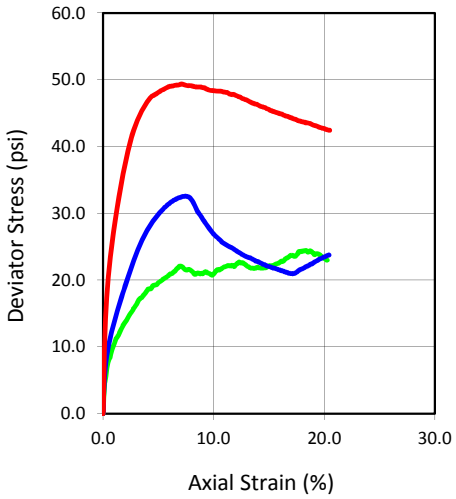
## Consolidated Undrained Triaxial Test (ASTM D4767)

PROJECT NAME : I-85
PROJECT NO. : 10023919
PROJECT LOCATION : ST-1
BORING NUMBER : BR-126
REMARKS :

Mohr Stre NO. : BR-126
SAMPLE DEPTH : 30.0-30.5
SAMPLE TYPE : Undisturbed
DESCRIPTION : White & Orange Silty Sand
TEST TYPE : Consolidated Undrained

**Deviator Stress Vs. Axial Strain**

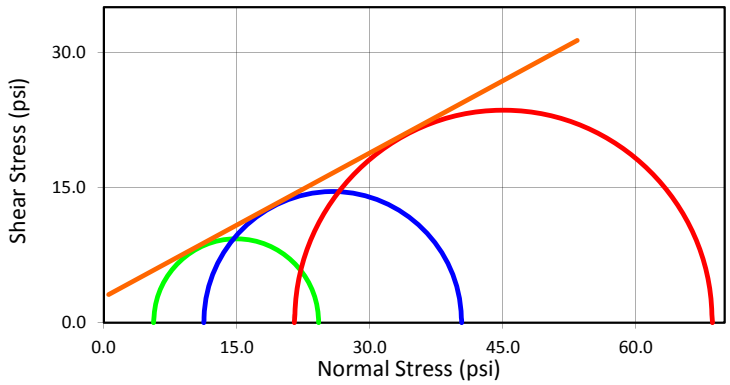



| Initial | Specimen A | B | C | D |
|---|---|---|---|---|
| Water Content (%) | 38.0 | 32.8 | 29.6 | |
| Dry Density (pcf) | 80.3 | 81.4 | 88.0 | |
| Saturation (%) | 94.87 | 84.13 | 89.26 | |
| Void Ratio | 1.057 | 1.028 | 0.877 | |
| Diameter (in) | 2.853 | 2.876 | 2.829 | |
| Height (in) | 5.733 | 5.860 | 5.267 | |
| Specific Gravity | 2.65 | 2.65 | 2.65 | |
| Liquid Limit | 50 | 50 | 50 | |
| Plastic Limit | 41 | 41 | 41 | |
| **After Consolidation** | **A** | **B** | **C** | **D** |
| B-Value | 0.95 | 0.99 | 0.97 | |
| Water Content (%) | 40.1 | 36.3 | 32.4 | |
| Dry Density (pcf) | 80.56 | 82.00 | 89.30 | |
| Saturation (%) | 100.00 | 100.00 | 100.00 | |
| Void Ratio | 1.054 | 1.017 | 0.852 | |
| Effective Stress (psi) | 10.4 | 19.9 | 42.4 | |
| Back Press. (psi) | 32.6 | 41.5 | 40.4 | |
| Rate of Strain | 0.003 | 0.003 | 0.003 | |

| Maximum Principal Stress Ratio Criterion | |
|---|---|
| C (psi) | 3.6 |
| Ø (deg) | 18.3 |
| C' (psi) | 2.8 |
| Ø' (deg) | 28.1 |

| After Shear | A | B | C | D |
|---|---|---|---|---|
| σ'1 at Failure (psi) | 24.23 | 40.36 | 68.64 | |
| σ'3 at Failure (psi) | 5.62 | 11.27 | 21.49 | |

**Stress at Maximum Deviator Stress Criterion**




Tested By: _____
Date: _____

Approved By: Kevin E. Walker
Date: 4/4/17

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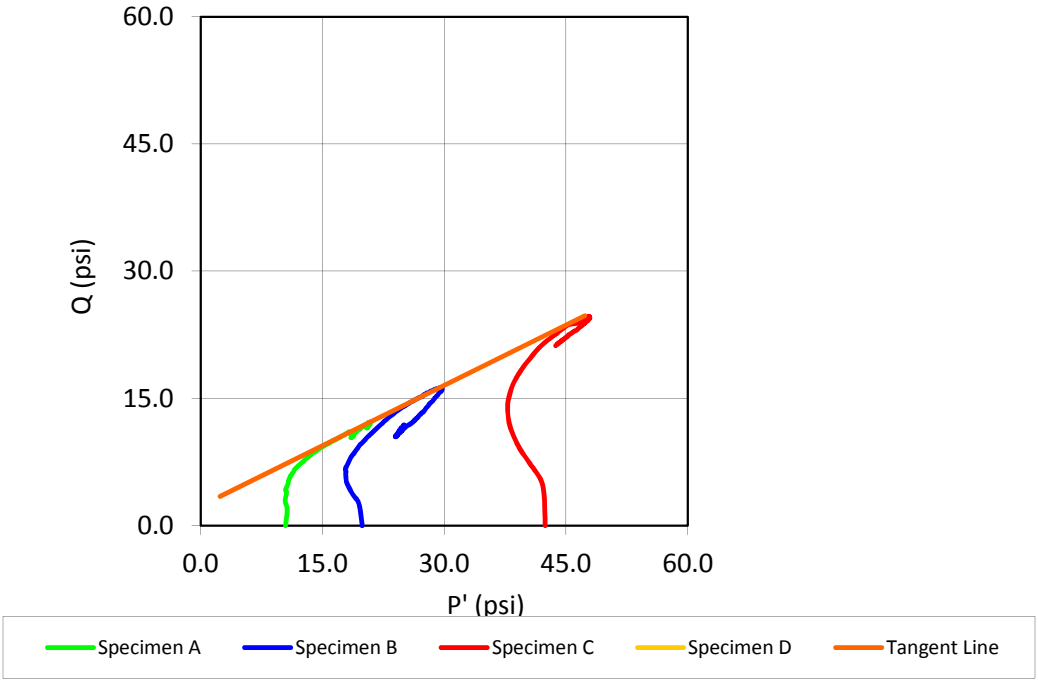
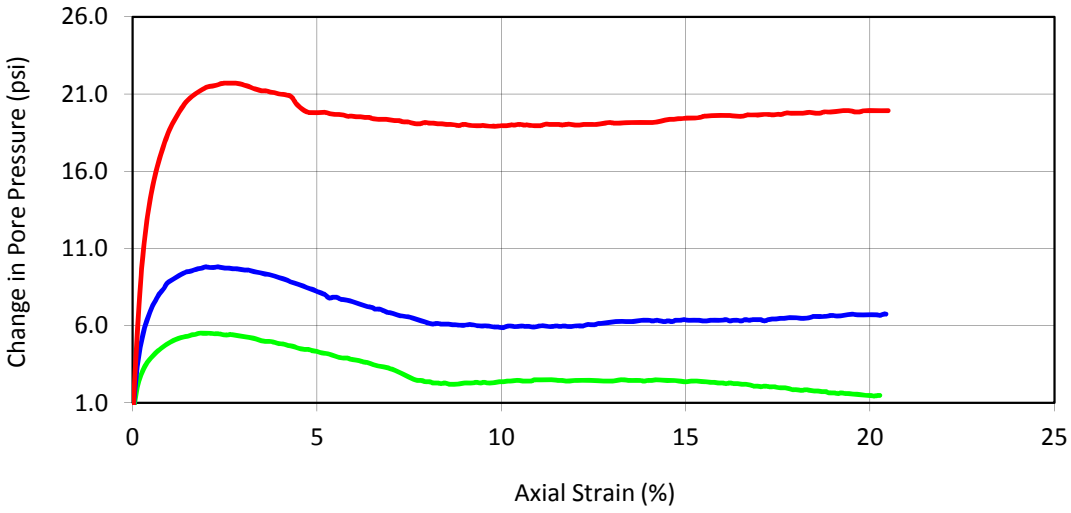
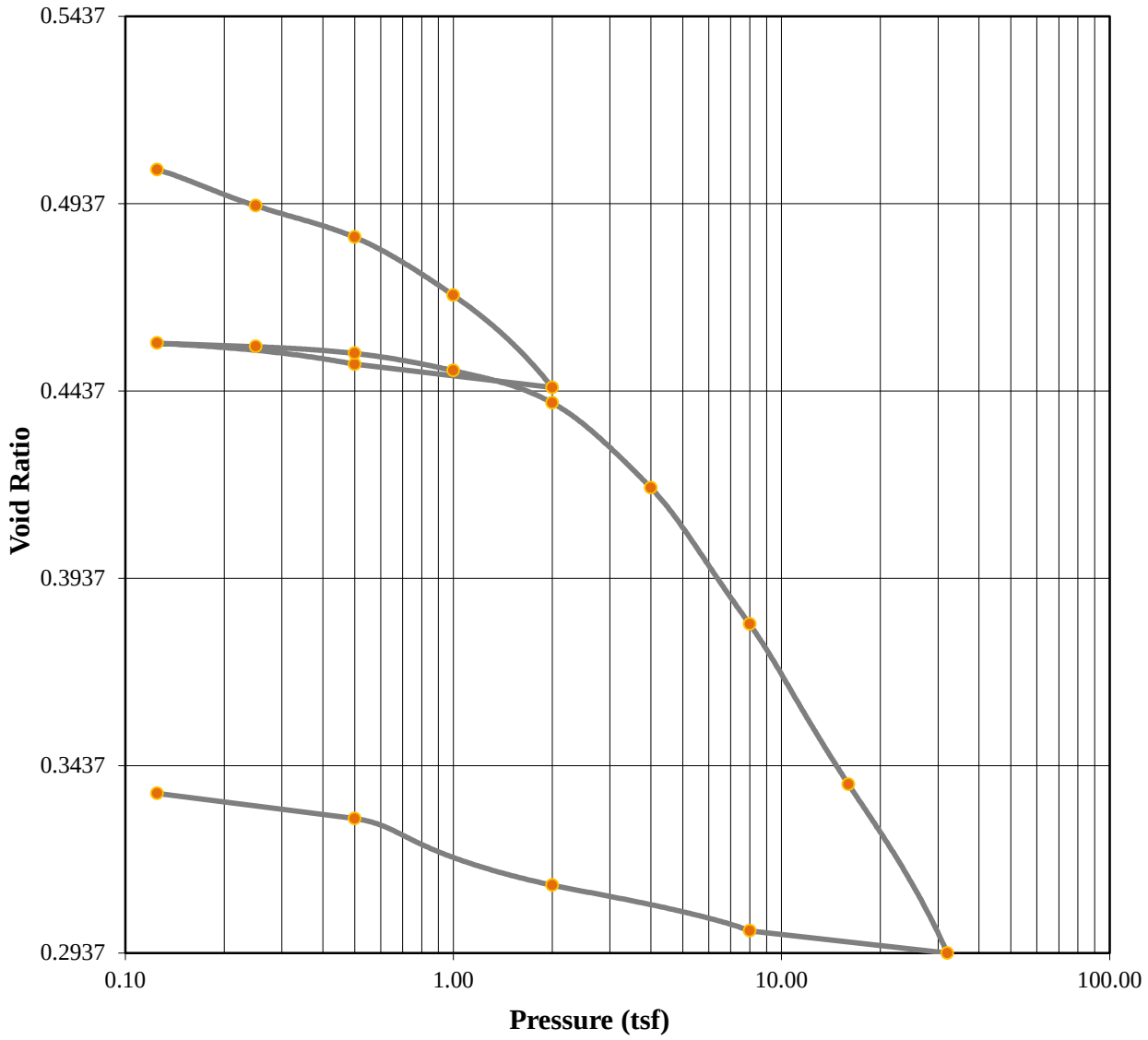
## Stress Paths (Effective)
## (a = 2.3 alpha = 25.4)




## Change in Pore Pressure vs. Axial Strain






**Test Date:** 2-3-17

## Summary of Consolidation Test Results

| | | | |
|---|---|---|---|
| **Overburden Press. (tsf)** | **0.50** | **Compression Index, $C_c$** | **0.13** |
| **Preconsol. Press., $P_c$ (tsf)** | **2.00** | **Rebound Index, $C_r$** | **0.02** |
| **Over Consolidation Ratio** | **4.00** | | |

| | | | | |
|---|---|---|---|---|
| **Soil Description:** | Brown, red, Gray & Orange Silty Sand | | | |
| **Project Number:** | 10023919 | **Depth:** | 9.0-9.5 | **Remarks:** |
| **Sample Number:** | ST-1 | **Boring Number:** | BR-124 | |
| **Project:** | I 85 Widening | | | |
| **Client:** | | | | |
| **Location:** | BR-124 | | | |



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## Test Summary

**Project:** I 85 Widening
**Location:** BR-124
**Job Number:** 10023919

**Proj**

**Sample Number:** ST-1
**Boring Number:** BR-124
**Depth:** 9.0-9.5
**Sample Type:** Undisturbed

**Sample Description:**
Brown, red, Gray & Orange Silty Sand
**Remarks:**

**T**

| 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) |
|---|---|---|---|---|---|---|---|---|
| 0 | 0.000 | 0.0000 | 0.9998 | 0.3424 | 0.00 | 0.5209 | 0.000 | 0.000 |
| 1 | 0.125 | 0.0120 | 0.9878 | 0.3304 | 1.20 | 0.5027 | 0.000 | 0.000 |
| 2 | 0.250 | 0.0183 | 0.9815 | 0.3241 | 1.83 | 0.4931 | 2.189 | * 1.2159 |
| 3 | 0.500 | 0.0238 | 0.9760 | 0.3186 | 2.38 | 0.4847 | 9.236 | * 5.1312 |
| 4 | 1.000 | 0.0340 | 0.9658 | 0.3084 | 3.40 | 0.4692 | 5.029 | * 2.7939 |
| 5 | 2.000 | 0.0502 | 0.9496 | 0.2922 | 5.02 | 0.4446 | 4.640 | * 2.5779 |
| 6 | 0.500 | 0.0461 | 0.9537 | 0.2963 | 4.61 | 0.4508 | 0.000 | 0.000 |
| 7 | 0.125 | 0.0424 | 0.9574 | 0.3000 | 4.24 | 0.4564 | 0.000 | 0.000 |
| 8 | 0.250 | 0.0430 | 0.9568 | 0.2994 | 4.30 | 0.4555 | 0.000 | 0.000 |
| 9 | 0.500 | 0.0442 | 0.9556 | 0.2982 | 4.42 | 0.4537 | 16.860 | * 9.3668 |
| 10 | 1.000 | 0.0472 | 0.9526 | 0.2952 | 4.72 | 0.4491 | 2.272 | * 1.2620 |
| 11 | 2.000 | 0.0529 | 0.9469 | 0.2895 | 5.29 | 0.4405 | 0.000 | 0.000 |
| 12 | 4.000 | 0.0678 | 0.9320 | 0.2746 | 6.78 | 0.4178 | 5.291 | * 2.9395 |
| 13 | 8.000 | 0.0917 | 0.9081 | 0.2507 | 9.17 | 0.3814 | 3.450 | * 1.9165 |
| 14 | 16.000 | 0.1198 | 0.8800 | 0.2226 | 11.98 | 0.3387 | 5.151 | * 2.8616 |
| 15 | 32.000 | 0.1494 | 0.8504 | 0.1930 | 14.94 | 0.2937 | 4.502 | * 2.5012 |
| 16 | 8.000 | 0.1455 | 0.8543 | 0.1969 | 14.55 | 0.2996 | 0.000 | 0.000 |
| 17 | 2.000 | 0.1375 | 0.8623 | 0.2049 | 13.75 | 0.3118 | 0.000 | 0.000 |
| 18 | 0.500 | 0.1258 | 0.8740 | 0.2166 | 12.58 | 0.3296 | 0.000 | 0.000 |
| 19 | 0.125 | 0.1214 | 0.8784 | 0.2210 | 12.14 | 0.3363 | 0.000 | 0.000 |

## NSOLIDATION TEST

**ject Number:** 10023919

**'est Number:**
**Test Date:** 2-3-17

| **t90 Cv** (ft2/year) | **t50 Cv** (ft2/year) |
|---|---|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 340.587 | 142.424 |
| 79.806 | 33.372 |
| 143.521 | 60.015 |
| 150.372 | 62.880 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 41.910 | 17.525 |
| 309.107 | 129.259 |
| 0.000 | 0.000 |
| 127.030 | 53.120 |
| 184.978 | 77.350 |
| 116.335 | 48.647 |
| 124.297 | 51.975 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

Predicted value indicated with *

## Test Summary

**Project:** I 85 Widening
**Location:** BR-124
**Job Number:** 10023919

**Proj**

**Sample Number:** ST-1
**Boring Number:** BR-124
**Depth:** 9.0-9.5
**Sample Type:** Undisturbed

**Sample Description:**
Brown, red, Gray & Orange Silty Sand
**Remarks:**

**T**

| 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) |
|---|---|---|---|---|---|---|---|---|
| 0 | 0.000 | 0.0000 | 0.9998 | 0.3424 | 0.00 | 0.5209 | 0.000 | 0.000 |
| 1 | 0.125 | 0.0120 | 0.9878 | 0.3304 | 1.20 | 0.5027 | 0.000 | 0.000 |
| 2 | 0.250 | 0.0183 | 0.9815 | 0.3241 | 1.83 | 0.4931 | 2.189 | * 1.2159 |
| 3 | 0.500 | 0.0238 | 0.9760 | 0.3186 | 2.38 | 0.4847 | 9.236 | * 5.1312 |
| 4 | 1.000 | 0.0340 | 0.9658 | 0.3084 | 3.40 | 0.4692 | 5.029 | * 2.7939 |
| 5 | 2.000 | 0.0502 | 0.9496 | 0.2922 | 5.02 | 0.4446 | 4.640 | * 2.5779 |
| 6 | 0.500 | 0.0461 | 0.9537 | 0.2963 | 4.61 | 0.4508 | 0.000 | 0.000 |
| 7 | 0.125 | 0.0424 | 0.9574 | 0.3000 | 4.24 | 0.4564 | 0.000 | 0.000 |
| 8 | 0.250 | 0.0430 | 0.9568 | 0.2994 | 4.30 | 0.4555 | 0.000 | 0.000 |
| 9 | 0.500 | 0.0442 | 0.9556 | 0.2982 | 4.42 | 0.4537 | 16.860 | * 9.3668 |
| 10 | 1.000 | 0.0472 | 0.9526 | 0.2952 | 4.72 | 0.4491 | 2.272 | * 1.2620 |
| 11 | 2.000 | 0.0529 | 0.9469 | 0.2895 | 5.29 | 0.4405 | 0.000 | 0.000 |
| 12 | 4.000 | 0.0678 | 0.9320 | 0.2746 | 6.78 | 0.4178 | 5.291 | * 2.9395 |
| 13 | 8.000 | 0.0917 | 0.9081 | 0.2507 | 9.17 | 0.3814 | 3.450 | * 1.9165 |
| 14 | 16.000 | 0.1198 | 0.8800 | 0.2226 | 11.98 | 0.3387 | 5.151 | * 2.8616 |
| 15 | 32.000 | 0.1494 | 0.8504 | 0.1930 | 14.94 | 0.2937 | 4.502 | * 2.5012 |
| 16 | 8.000 | 0.1455 | 0.8543 | 0.1969 | 14.55 | 0.2996 | 0.000 | 0.000 |
| 17 | 2.000 | 0.1375 | 0.8623 | 0.2049 | 13.75 | 0.3118 | 0.000 | 0.000 |
| 18 | 0.500 | 0.1258 | 0.8740 | 0.2166 | 12.58 | 0.3296 | 0.000 | 0.000 |
| 19 | 0.125 | 0.1214 | 0.8784 | 0.2210 | 12.14 | 0.3363 | 0.000 | 0.000 |

## NSOLIDATION TEST

**ject Number:** 10023919

**'est Number:**
**Test Date:** 2-3-17

| **t90 Cv** (ft2/year) | **t50 Cv** (ft2/year) |
|---|---|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 340.587 | 142.424 |
| 79.806 | 33.372 |
| 143.521 | 60.015 |
| 150.372 | 62.880 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 41.910 | 17.525 |
| 309.107 | 129.259 |
| 0.000 | 0.000 |
| 127.030 | 53.120 |
| 184.978 | 77.350 |
| 116.335 | 48.647 |
| 124.297 | 51.975 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

Predicted value indicated with *

## Test Summary

**Project:** I 85 Widening
**Location:** BR-124
**Job Number:** 10023919

**Proj**

**Sample Number:** ST-1
**Boring Number:** BR-124
**Depth:** 9.0-9.5
**Sample Type:** Undisturbed

**Sample Description:**
Brown, red, Gray & Orange Silty Sand
**Remarks:**

**T**

| 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) |
|---|---|---|---|---|---|---|---|---|
| 0 | 0.000 | 0.0000 | 0.9998 | 0.3424 | 0.00 | 0.5209 | 0.000 | 0.000 |
| 1 | 0.125 | 0.0120 | 0.9878 | 0.3304 | 1.20 | 0.5027 | 0.000 | 0.000 |
| 2 | 0.250 | 0.0183 | 0.9815 | 0.3241 | 1.83 | 0.4931 | 2.189 | * 1.2159 |
| 3 | 0.500 | 0.0238 | 0.9760 | 0.3186 | 2.38 | 0.4847 | 9.236 | * 5.1312 |
| 4 | 1.000 | 0.0340 | 0.9658 | 0.3084 | 3.40 | 0.4692 | 5.029 | * 2.7939 |
| 5 | 2.000 | 0.0502 | 0.9496 | 0.2922 | 5.02 | 0.4446 | 4.640 | * 2.5779 |
| 6 | 0.500 | 0.0461 | 0.9537 | 0.2963 | 4.61 | 0.4508 | 0.000 | 0.000 |
| 7 | 0.125 | 0.0424 | 0.9574 | 0.3000 | 4.24 | 0.4564 | 0.000 | 0.000 |
| 8 | 0.250 | 0.0430 | 0.9568 | 0.2994 | 4.30 | 0.4555 | 0.000 | 0.000 |
| 9 | 0.500 | 0.0442 | 0.9556 | 0.2982 | 4.42 | 0.4537 | 16.860 | * 9.3668 |
| 10 | 1.000 | 0.0472 | 0.9526 | 0.2952 | 4.72 | 0.4491 | 2.272 | * 1.2620 |
| 11 | 2.000 | 0.0529 | 0.9469 | 0.2895 | 5.29 | 0.4405 | 0.000 | 0.000 |
| 12 | 4.000 | 0.0678 | 0.9320 | 0.2746 | 6.78 | 0.4178 | 5.291 | * 2.9395 |
| 13 | 8.000 | 0.0917 | 0.9081 | 0.2507 | 9.17 | 0.3814 | 3.450 | * 1.9165 |
| 14 | 16.000 | 0.1198 | 0.8800 | 0.2226 | 11.98 | 0.3387 | 5.151 | * 2.8616 |
| 15 | 32.000 | 0.1494 | 0.8504 | 0.1930 | 14.94 | 0.2937 | 4.502 | * 2.5012 |
| 16 | 8.000 | 0.1455 | 0.8543 | 0.1969 | 14.55 | 0.2996 | 0.000 | 0.000 |
| 17 | 2.000 | 0.1375 | 0.8623 | 0.2049 | 13.75 | 0.3118 | 0.000 | 0.000 |
| 18 | 0.500 | 0.1258 | 0.8740 | 0.2166 | 12.58 | 0.3296 | 0.000 | 0.000 |
| 19 | 0.125 | 0.1214 | 0.8784 | 0.2210 | 12.14 | 0.3363 | 0.000 | 0.000 |

## NSOLIDATION TEST

**ject Number:** 10023919

**'est Number:**
**Test Date:** 2-3-17

| **t90 Cv** (ft2/year) | **t50 Cv** (ft2/year) |
|---|---|
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 340.587 | 142.424 |
| 79.806 | 33.372 |
| 143.521 | 60.015 |
| 150.372 | 62.880 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 41.910 | 17.525 |
| 309.107 | 129.259 |
| 0.000 | 0.000 |
| 127.030 | 53.120 |
| 184.978 | 77.350 |
| 116.335 | 48.647 |
| 124.297 | 51.975 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |
| 0.000 | 0.000 |

Predicted value indicated with *

# Table 1 - Laboratory Tests on Soil Samples

***HDR-ICA***
***Your #10023919, HDR Lab #17-0117LAB***
***1-Mar-17***

| Sample ID | | | 10023919, BS-112 @ 0-10' | 10023919, BS-110 @ 0-10' |
|---|---|---|---|---|
| **Resistivity** | | **Units** | | |
| as-received | | ohm-cm | 38,800 | 20,000 |
| saturated | | ohm-cm | 960 | 1,400 |
| **pH** | | | 6.9 | 6.3 |
| **Electrical Conductivity** | | mS/cm | 0.15 | 0.12 |
| **Chemical Analyses** | | | | |
| **Cations** | | | | |
| calcium | $Ca^{2+}$ | mg/kg | 49 | 5.7 |
| magnesium | $Mg^{2+}$ | mg/kg | 12 | 3.5 |
| sodium | $Na^{1+}$ | mg/kg | 72 | 108 |
| potassium | $K^{1+}$ | mg/kg | 6.0 | 4.2 |
| **Anions** | | | | |
| carbonate | $CO_3^{2-}$ | mg/kg | ND | ND |
| bicarbonate | $HCO_3^{1-}$ | mg/kg | 73 | 61 |
| fluoride | $F^{1-}$ | mg/kg | 2.7 | 2.8 |
| chloride | $Cl^{1-}$ | mg/kg | 92 | 115 |
| sulfate | $SO_4^{2-}$ | mg/kg | 136 | 42 |
| phosphate | $PO_4^{3-}$ | mg/kg | ND | ND |
| **Other Tests** | | | | |
| ammonium | $NH_4^{1+}$ | mg/kg | ND | ND |
| nitrate | $NO_3^{1-}$ | mg/kg | ND | ND |
| sulfide | $S^{2-}$ | qual | na | na |
| Redox | | mV | na | na |

Resistivity per ASTM G187, Cations per ASTM D6919, Anions per ASTM D4327, and Alkalinity per APHA 2320-B.
Electrical conductivity in millisiemens/cm and chemical analyses were made on a 1:5 soil-to-water extract.
mg/kg = milligrams per kilogram (parts per million) of dry soil.
Redox = oxidation-reduction potential in millivolts
ND = not detected
na = not analyzed

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# Table 1 - Laboratory Tests on Soil Samples

***HDR-ICA***
***I-85***
***Your #10023919, HDR Lab #17-0071SCS***
***17-Feb-17***

| Sample ID | | | B5-114 | B5-116 |
|---|---|---|---|---|
| **Resistivity** | | **Units** | | |
| as-received | | ohm-cm | 12,800 | 2,880 |
| saturated | | ohm-cm | 3,640 | 2,080 |
| **pH** | | | 7.2 | 7.1 |
| **Electrical Conductivity** | | mS/cm | 0.15 | 0.20 |
| **Chemical Analyses** | | | | |
| **Cations** | | | | |
| calcium | $Ca^{2+}$ | mg/kg | 76 | 91 |
| magnesium | $Mg^{2+}$ | mg/kg | 12 | 17 |
| sodium | $Na^{1+}$ | mg/kg | 48 | 55 |
| potassium | $K^{1+}$ | mg/kg | 11 | 17 |
| **Anions** | | | | |
| carbonate | $CO_3^{2-}$ | mg/kg | ND | ND |
| bicarbonate | $HCO_3^{1-}$ | mg/kg | 64 | 27 |
| fluoride | $F^{1-}$ | mg/kg | 24 | 32 |
| chloride | $Cl^{1-}$ | mg/kg | 40 | 105 |
| sulfate | $SO_4^{2-}$ | mg/kg | 203 | 218 |
| phosphate | $PO_4^{3-}$ | mg/kg | ND | ND |
| **Other Tests** | | | | |
| ammonium | $NH_4^{1+}$ | mg/kg | ND | 0.7 |
| nitrate | $NO_3^{1-}$ | mg/kg | ND | ND |
| sulfide | $S^{2-}$ | qual | na | na |
| Redox | | mV | na | na |

Resistivity per ASTM G187, Cations per ASTM D6919, Anions per ASTM D4327, and Alkalinity per APHA 2320-B.
Electrical conductivity in millisiemens/cm and chemical analyses were made on a 1:5 soil-to-water extract.
mg/kg = milligrams per kilogram (parts per million) of dry soil.
Redox = oxidation-reduction potential in millivolts
ND = not detected
na = not analyzed

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# Table 1 - Laboratory Tests on Soil Samples

***HDR-ICA***
***I-85***
***Your #10023919, HDR Lab #17-0203LAB***
***29-Mar-17***

| **Sample ID** | | | BR-156 @ 0-8' Sandy Silty Clay |
|---|---|---|---|
| **Resistivity** | | **Units** | |
| as-received | | ohm-cm | 9,600 |
| saturated | | ohm-cm | 1,960 |
| **pH** | | | 7.2 |
| **Electrical Conductivity** | | mS/cm | 0.08 |
| **Chemical Analyses** | | | |
| **Cations** | | | |
| calcium | $Ca^{2+}$ | mg/kg | 7.1 |
| magnesium | $Mg^{2+}$ | mg/kg | 2.2 |
| sodium | $Na^{1+}$ | mg/kg | 83 |
| potassium | $K^{1+}$ | mg/kg | 3.7 |
| **Anions** | | | |
| carbonate | $CO_3^{2-}$ | mg/kg | ND |
| bicarbonate | $HCO_3^{1-}$ | mg/kg | 110 |
| fluoride | $F^{1-}$ | mg/kg | 1.6 |
| chloride | $Cl^{1-}$ | mg/kg | 76 |
| sulfate | $SO_4^{2-}$ | mg/kg | 2.4 |
| phosphate | $PO_4^{3-}$ | mg/kg | 3.8 |
| **Other Tests** | | | |
| ammonium | $NH_4^{1+}$ | mg/kg | 1.5 |
| nitrate | $NO_3^{1-}$ | mg/kg | ND |
| sulfide | $S^{2-}$ | qual | na |
| Redox | | mV | na |

Resistivity per ASTM G187, Cations per ASTM D6919, Anions per ASTM D4327, and Alkalinity per APHA 2320-B.
Electrical conductivity in millisiemens/cm and chemical analyses were made on a 1:5 soil-to-water extract.
mg/kg = milligrams per kilogram (parts per million) of dry soil.
Redox = oxidation-reduction potential in millivolts
ND = not detected
na = not analyzed

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# Appendix D. SPT Hammer Energy Calibration Reports

CME 55 (Serial # 379935) – Operator: HDR/ICA Engineering, Inc.

CME 550 (Serial # 170055) – Operator: Trigon Exploration, LLC

# Appendix D. SPT Hammer Energy Calibration Reports

CME 55 (Serial # 379935) – Operator: HDR/ICA Engineering, Inc.

CME 550 (Serial # 170055) – Operator: Trigon Exploration, LLC

# Applied Foundation Testing

**North Carolina License No.: P-0294**

February 20, 2017

**Report of Standard Penetration Test (SPT) Energy Measurement Testing**

CME Model 550 Rig with Auto Hammer
Rig Serial No.: 379935
Blacksburg, South Carolina
AFT Project No.: 217008NC

**Authored By:**


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Chief Engineer
Certified PDA Signatory - Master

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NC Registration No.: 032060
Certified PDA Signatory - Advanced


**For:** **Mr. Christopher Taylor**
HDR / ICA Engineering, Inc.
christopher.taylor@hdrinc.com

NORTH CAROLINA PROFESSIONAL SEAL 032060 ENGINEER MICHAEL J. SIMPSON

# *Applied Foundation Testing*

Specializing in **STAT***NAMIC*™ 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 20, 2017 | | | |
| **AFT Project No.:** | 217008NC | | | |
| **Project Description:** | SPT Energy Measurement Testing of Drill Rig | | | |
| | | | | |
| **Client Name:** | HDR / ICA Engineering, Inc. | | | |
| **Client Email Address:** | christopher.taylor@hdrinc.com | | | |
| **Client Contact:** | Mr. Christopher Taylor | | | |
| | | | | |
| **Test Date:** | February 20, 2017 | | | |
| **Test Equipment Manufacturer/Model:** | Pile Dynamics, Inc. / Model PAX Serial Number 3907 (strain and accelerometer calibrations attached in Appendix F) | | | |
| | | | | |
| **AFT Field Personnel:** | Michael J. Simpson, P.E. (Certificate of Proficiency attached in Appendix G) | | | |
| **AFT Responsible Engineer:** | Michael J. Simpson, P.E. | | | |

| Drill Rig Information | | | | |
|---|---|---|---|---|
| **Manufacturer** | **Model** | **Serial Number** | **Operator** | **Type** |
| CME | 550 | 379935 | Freddie Woodard | Track Mounted |

| 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 | ~1.19 | 5 |
| **Instrumented Rod Type** | **OD (in.)** | **ID (in.)** | **Cross Sectional Area (in$^2$)** | **Length (ft.)** |
| AWJ | ~1.75 | ~1.25 | ~1.19 | 2 |

## Boring Information

| ID | Location | Reference Elevation (ft.) | Impact to Instrumentation Length (ft.) | Boring Log Attached (Y or N) |
|---|---|---|---|---|
| N/A | South Carolina I-85 Exit 106, between southbound off ramp and southbound I-85 | UNK | 2.0 | N |

## Results

### Energy Measurements

Representative plot of force and velocity for each data set attached [X]

Plots of average energy and all energy versus Rod Length attached [X]

Tabular and graphical data for each blow for each data set attached [X]

| 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 | Average Maximum Energy (k-ft.) | Average Energy Transfer Ratio (percent) |
|---|---|---|---|---|---|---|
| 1 | 23.8 | 10-30-24 / 54 | Sandy Silt | 54.9 | 0.32 | 91.9 |
| 2 | 28.8 | 3-3-3 / 6 | Sandy Silt | 55.6 | 0.32 | 90.4 |
| 3 | 33.8 | 4-4-6 / 10 | Sandy Silt | 54.8 | 0.32 | 90.9 |
| 4 | 38.8 | 7-14-13 / 27 | Sandy Silt | 54.6 | 0.32 | 91.4 |

1. Penetration below grade is approximately 4.3 feet less than length shown for instrumentation to sampler tip.

## 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 rod length below instrumentation versus average ETR and ETR for each blow 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 91.5 percent, respectively. The overall standard deviation for all data for EFV and ETR are 0.01 k-ft and 2.23 percent, respectively.

**Limitations**

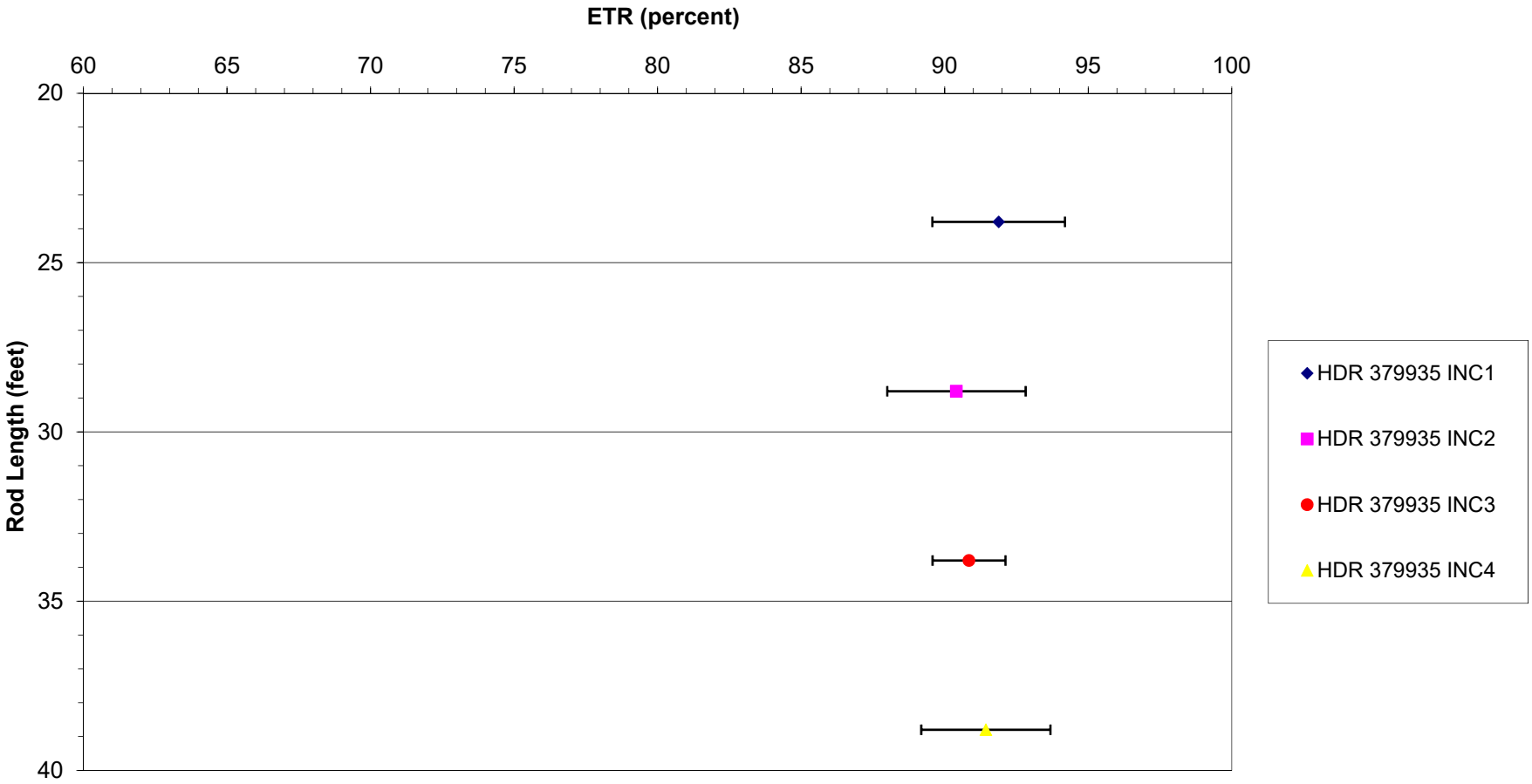
This report presents test measurements made by AFT. Interpretations were made based upon the measurements made by AFT with the latest techniques available and currently accepted standards of care recognized by Geotechnical Engineering professionals. AFT is an independent agency and is not the Geotechnical Engineer of Record. The Geotechnical Engineer of Record should ultimately make final recommendations for foundation design and construction.

# Appendix A

## Rod Length versus ETR and Average ETR Plots

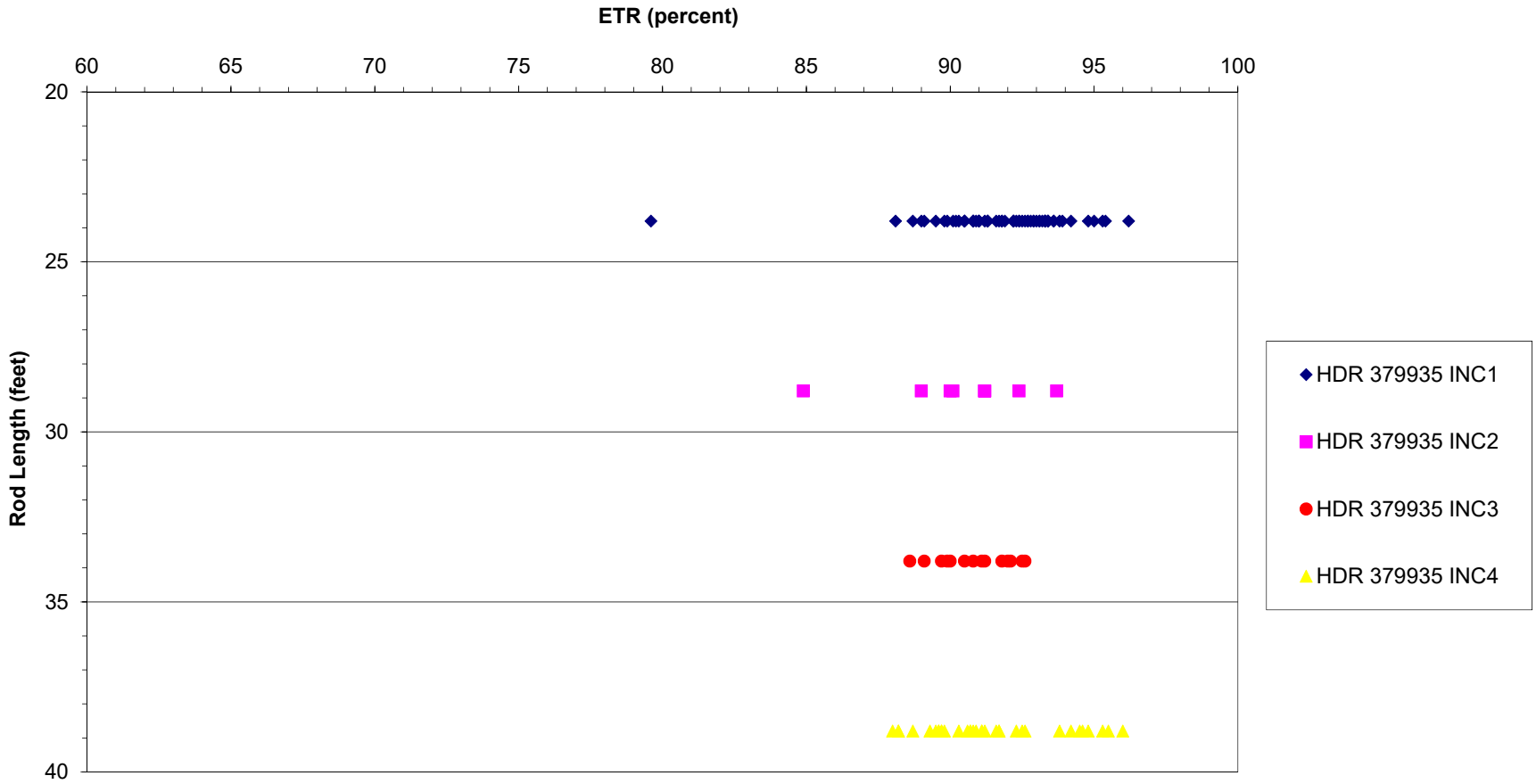
## SPT Calibration
## CME Rig, Model 550
## Serial No. 379935

**Rod Length versus Average ETR with +- 1 Standard Deviation Shown**
**Rig Make and Model: CME 550**
**Rig Serial # 379935**
**Near Blacksburg, South Carolina**




AFT Project No.: 217008NC

**Rod Length versus ETR**
**Rig Make and Model: CME 550**
**Rig Serial # 379935**
**Near Blacksburg, South Carolina**




AFT Project No.: 217008NC

# Appendix B

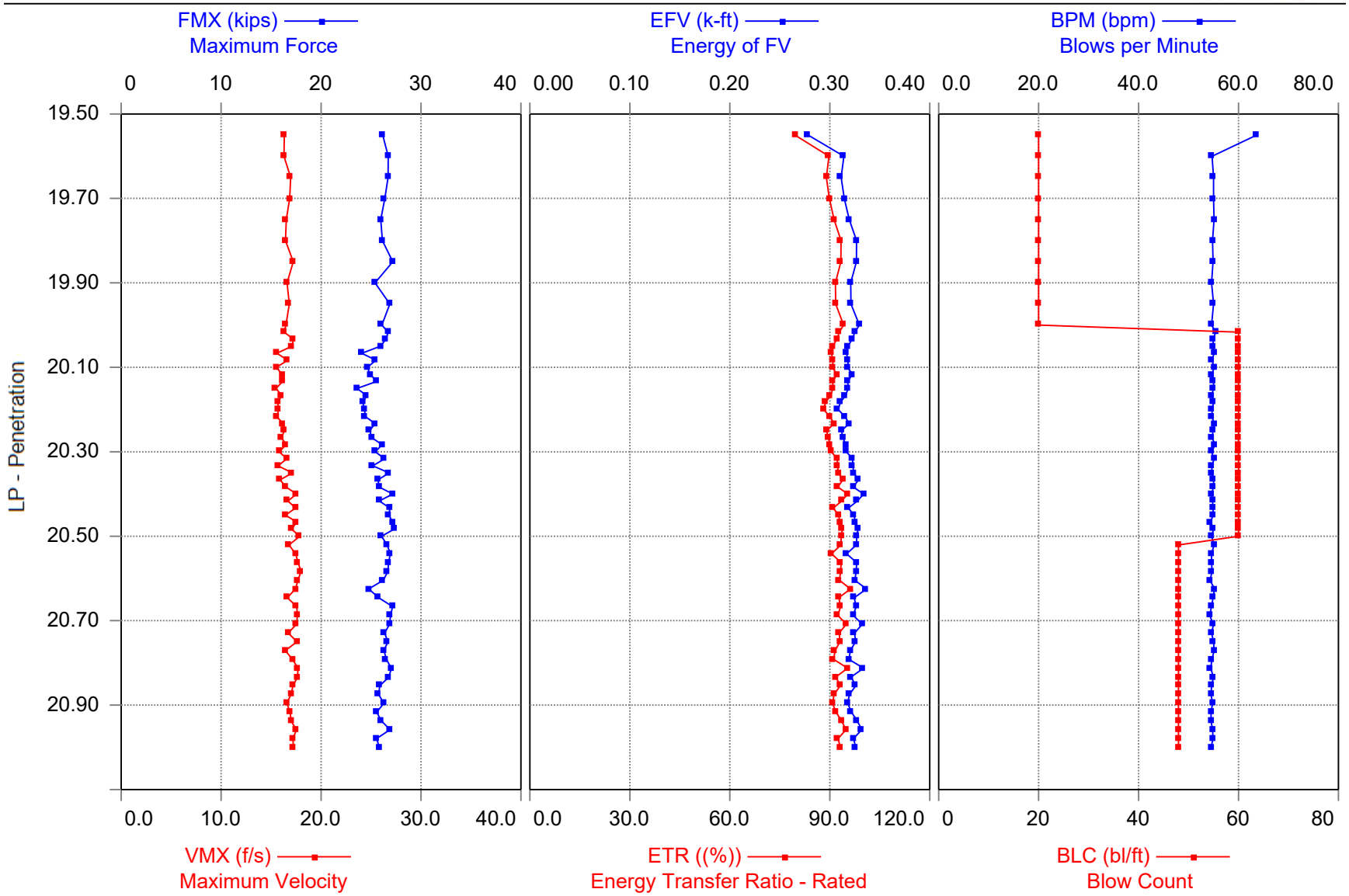
## Increment 1 PDIPLOT Data and Representative Blow Data

## SPT Calibration
## CME Rig, Model 550
## Serial No. 379935

Applied Foundation Testing, Inc. - PDIPLOT2 Ver 2016.1.56.2 - Case Method & iCAP® Results

Printed: 20-February-2017 Test started: 17-February-2017

217008NC - HDR 379935 INC1



217008NC - HDR 379935 INC1 CME 550 SPT AWJ
OP: AFT Date: 17-February-2017

AR: 1.19 in² SP: 0.492 k/ft³
LE: 23.80 ft EM: 30,000 ksi
WS: 16,807.9 f/s JC: 0.90 []

FMX: Maximum Force CSX: Max Measured Compr. Stress
VMX: Maximum Velocity DMX: Maximum Displacement
EFV: Energy of FV DFN: Final Displacement
ETR: Energy Transfer Ratio - Rated AMX: Maximum Acceleration
BPM: Blows per Minute

| BL# | Depth | BLC | FMX | VMX | EFV | ETR | BPM | CSX | DMX | DFN | AMX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | bl/ft | kips | f/s | k-ft | (%) | bpm | ksi | in | in | g's |
| 1 | 19.55 | 20 | 26 | 16.3 | 0.28 | 79.6 | 63.6 | 21.99 | 1.58 | 0.60 | 2,813 |
| 2 | 19.60 | 20 | 27 | 16.3 | 0.31 | 89.8 | 54.7 | 22.46 | 0.96 | 0.60 | 3,497 |
| 3 | 19.65 | 20 | 27 | 17.0 | 0.31 | 89.0 | 55.0 | 22.45 | 0.84 | 0.60 | 3,081 |
| 4 | 19.70 | 20 | 26 | 16.9 | 0.31 | 89.9 | 55.0 | 22.17 | 0.73 | 0.60 | 3,190 |
| 5 | 19.75 | 20 | 26 | 16.5 | 0.32 | 91.3 | 55.1 | 21.82 | 0.63 | 0.60 | 3,455 |
| 6 | 19.80 | 20 | 26 | 16.4 | 0.33 | 93.4 | 54.8 | 21.96 | 0.60 | 0.60 | 3,604 |
| 7 | 19.85 | 20 | 27 | 17.2 | 0.33 | 93.3 | 54.9 | 22.84 | 0.60 | 0.60 | 3,551 |
| 8 | 19.90 | 20 | 25 | 16.6 | 0.32 | 91.7 | 54.6 | 21.34 | 0.60 | 0.60 | 3,273 |
| 9 | 19.95 | 20 | 27 | 16.8 | 0.32 | 91.8 | 55.0 | 22.59 | 0.60 | 0.60 | 3,440 |
| 10 | 20.00 | 20 | 26 | 16.5 | 0.33 | 94.2 | 54.6 | 21.92 | 0.60 | 0.60 | 3,628 |
| 11 | 20.02 | 60 | 27 | 16.3 | 0.33 | 92.9 | 55.4 | 22.45 | 0.39 | 0.20 | 3,683 |
| 12 | 20.03 | 60 | 26 | 17.2 | 0.32 | 92.2 | 55.0 | 22.27 | 0.38 | 0.20 | 2,967 |
| 13 | 20.05 | 60 | 26 | 17.1 | 0.32 | 90.8 | 54.8 | 21.80 | 0.39 | 0.20 | 3,044 |
| 14 | 20.07 | 60 | 24 | 15.6 | 0.32 | 90.5 | 55.1 | 20.23 | 0.38 | 0.20 | 3,438 |
| 15 | 20.08 | 60 | 25 | 16.7 | 0.32 | 91.0 | 54.7 | 21.42 | 0.39 | 0.20 | 2,835 |
| 16 | 20.10 | 60 | 25 | 15.5 | 0.32 | 90.8 | 55.1 | 20.71 | 0.38 | 0.20 | 3,368 |
| 17 | 20.12 | 60 | 25 | 16.1 | 0.32 | 92.2 | 54.7 | 20.92 | 0.38 | 0.20 | 3,411 |
| 18 | 20.13 | 60 | 26 | 16.2 | 0.32 | 90.9 | 55.0 | 21.50 | 0.37 | 0.20 | 3,204 |
| 19 | 20.15 | 60 | 24 | 15.5 | 0.32 | 91.0 | 55.0 | 19.83 | 0.38 | 0.20 | 3,254 |
| 20 | 20.17 | 60 | 25 | 16.1 | 0.32 | 90.2 | 54.6 | 20.64 | 0.37 | 0.20 | 2,833 |
| 21 | 20.18 | 60 | 24 | 15.7 | 0.31 | 88.7 | 55.0 | 20.32 | 0.36 | 0.20 | 2,696 |
| 22 | 20.20 | 60 | 24 | 15.8 | 0.31 | 88.1 | 54.7 | 20.45 | 0.37 | 0.20 | 2,961 |
| 23 | 20.22 | 60 | 24 | 15.6 | 0.32 | 90.1 | 54.7 | 20.54 | 0.37 | 0.20 | 3,188 |
| 24 | 20.23 | 60 | 25 | 16.2 | 0.32 | 91.3 | 55.1 | 21.34 | 0.38 | 0.20 | 3,322 |
| 25 | 20.25 | 60 | 25 | 16.3 | 0.31 | 89.1 | 54.9 | 20.89 | 0.37 | 0.19 | 3,171 |
| 26 | 20.27 | 60 | 25 | 16.0 | 0.31 | 89.5 | 54.7 | 21.09 | 0.36 | 0.19 | 3,118 |
| 27 | 20.28 | 60 | 26 | 16.5 | 0.32 | 90.3 | 55.3 | 21.93 | 0.36 | 0.19 | 2,963 |
| 28 | 20.30 | 60 | 25 | 15.8 | 0.32 | 90.5 | 54.6 | 21.36 | 0.38 | 0.19 | 3,453 |
| 29 | 20.32 | 60 | 26 | 16.6 | 0.32 | 92.2 | 55.1 | 22.15 | 0.39 | 0.20 | 3,522 |
| 30 | 20.33 | 60 | 25 | 15.7 | 0.32 | 92.3 | 54.7 | 21.16 | 0.39 | 0.20 | 3,464 |
| 31 | 20.35 | 60 | 27 | 17.1 | 0.32 | 92.6 | 54.6 | 22.53 | 0.41 | 0.20 | 3,077 |
| 32 | 20.37 | 60 | 26 | 15.9 | 0.33 | 93.9 | 55.0 | 21.59 | 0.42 | 0.20 | 3,518 |
| 33 | 20.38 | 60 | 26 | 16.5 | 0.32 | 92.4 | 55.0 | 21.67 | 0.39 | 0.20 | 3,598 |

217008NC - HDR 379935 INC1 CME 550 SPT AWJ
OP: AFT Date: 17-February-2017

| BL# | Depth | BLC | FMX | VMX | EFV | ETR | BPM | CSX | DMX | DFN | AMX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | bl/ft | kips | f/s | k-ft | (%) | bpm | ksi | in | in | g's |
| 34 | 20.40 | 60 | 27 | 17.5 | 0.33 | 95.4 | 54.6 | 22.84 | 0.43 | 0.20 | 3,297 |
| 35 | 20.42 | 60 | 26 | 16.7 | 0.33 | 93.6 | 54.8 | 21.70 | 0.43 | 0.20 | 3,601 |
| 36 | 20.43 | 60 | 27 | 17.4 | 0.32 | 91.0 | 54.9 | 22.60 | 0.42 | 0.20 | 3,045 |
| 37 | 20.45 | 60 | 27 | 16.4 | 0.32 | 92.7 | 54.9 | 22.51 | 0.44 | 0.20 | 3,786 |
| 38 | 20.47 | 60 | 27 | 17.6 | 0.33 | 93.0 | 54.4 | 22.81 | 0.45 | 0.20 | 2,859 |
| 39 | 20.48 | 60 | 27 | 17.0 | 0.33 | 93.8 | 55.0 | 22.95 | 0.46 | 0.20 | 3,769 |
| 40 | 20.50 | 60 | 26 | 17.9 | 0.33 | 93.4 | 54.6 | 21.89 | 0.48 | 0.20 | 3,237 |
| 41 | 20.52 | 48 | 27 | 16.8 | 0.33 | 93.3 | 55.1 | 22.37 | 0.47 | 0.25 | 3,751 |
| 42 | 20.54 | 48 | 27 | 17.4 | 0.32 | 90.5 | 54.6 | 22.63 | 0.45 | 0.25 | 3,524 |
| 43 | 20.56 | 48 | 27 | 17.7 | 0.33 | 93.4 | 54.6 | 22.49 | 0.47 | 0.25 | 3,187 |
| 44 | 20.58 | 48 | 27 | 18.0 | 0.33 | 93.3 | 54.7 | 22.42 | 0.48 | 0.25 | 3,276 |
| 45 | 20.60 | 48 | 26 | 17.7 | 0.33 | 92.9 | 54.3 | 22.04 | 0.48 | 0.25 | 3,678 |
| 46 | 20.63 | 48 | 25 | 17.4 | 0.34 | 96.2 | 55.2 | 20.81 | 0.50 | 0.25 | 3,946 |
| 47 | 20.65 | 48 | 26 | 16.6 | 0.32 | 92.7 | 54.9 | 21.65 | 0.47 | 0.25 | 3,899 |
| 48 | 20.67 | 48 | 27 | 17.6 | 0.33 | 93.3 | 54.6 | 22.82 | 0.46 | 0.25 | 2,864 |
| 49 | 20.69 | 48 | 27 | 17.6 | 0.32 | 92.4 | 54.2 | 22.65 | 0.45 | 0.25 | 3,271 |
| 50 | 20.71 | 48 | 27 | 17.5 | 0.33 | 95.0 | 55.0 | 22.57 | 0.47 | 0.25 | 3,684 |
| 51 | 20.73 | 48 | 26 | 16.7 | 0.32 | 92.8 | 54.6 | 22.15 | 0.45 | 0.25 | 3,767 |
| 52 | 20.75 | 48 | 27 | 17.6 | 0.33 | 93.1 | 55.0 | 22.42 | 0.46 | 0.25 | 3,065 |
| 53 | 20.77 | 48 | 26 | 16.4 | 0.32 | 91.6 | 55.1 | 22.10 | 0.43 | 0.25 | 3,785 |
| 54 | 20.79 | 48 | 27 | 17.1 | 0.32 | 91.2 | 54.7 | 22.29 | 0.43 | 0.25 | 3,596 |
| 55 | 20.81 | 48 | 27 | 17.7 | 0.33 | 95.3 | 54.4 | 22.72 | 0.45 | 0.25 | 3,395 |
| 56 | 20.83 | 48 | 27 | 17.6 | 0.32 | 91.8 | 55.0 | 22.52 | 0.43 | 0.25 | 2,922 |
| 57 | 20.85 | 48 | 26 | 17.2 | 0.33 | 93.2 | 54.6 | 21.75 | 0.42 | 0.25 | 3,688 |
| 58 | 20.88 | 48 | 26 | 17.0 | 0.32 | 91.3 | 54.5 | 21.65 | 0.41 | 0.25 | 3,656 |
| 59 | 20.90 | 48 | 26 | 16.6 | 0.32 | 90.8 | 54.8 | 22.08 | 0.41 | 0.25 | 3,850 |
| 60 | 20.92 | 48 | 26 | 16.9 | 0.32 | 91.9 | 54.5 | 21.48 | 0.41 | 0.25 | 3,872 |
| 61 | 20.94 | 48 | 26 | 17.0 | 0.33 | 93.6 | 54.5 | 21.88 | 0.42 | 0.25 | 3,852 |
| 62 | 20.96 | 48 | 27 | 17.5 | 0.33 | 94.8 | 54.8 | 22.61 | 0.41 | 0.25 | 3,414 |
| 63 | 20.98 | 48 | 26 | 17.2 | 0.32 | 92.5 | 54.9 | 21.48 | 0.41 | 0.25 | 3,833 |
| 64 | 21.00 | 48 | 26 | 17.2 | 0.33 | 93.1 | 54.5 | 21.70 | 0.41 | 0.25 | 3,918 |
| | Average | | 26 | 16.8 | 0.32 | 91.9 | 54.9 | 21.86 | 0.47 | 0.28 | 3,389 |
| | Std. Dev. | | 1 | 0.7 | 0.01 | 2.3 | 1.1 | 0.74 | 0.18 | 0.14 | 327 |
| | Maximum | | 27 | 18.0 | 0.34 | 96.2 | 63.6 | 22.95 | 1.58 | 0.60 | 3,946 |
| | @ Blow# | | 39 | 44 | 46 | 46 | 1 | 39 | 1 | 9 | 46 |

Total number of blows analyzed: 64

BL# Sensors

1-64 F3: [264 AWJ-1] 212.8 (1.00); F4: [264 AWJ-2] 213.5 (1.00); A3: [K3179] 334.0 (1.00); A4: [K4088] 394.0 (1.00)

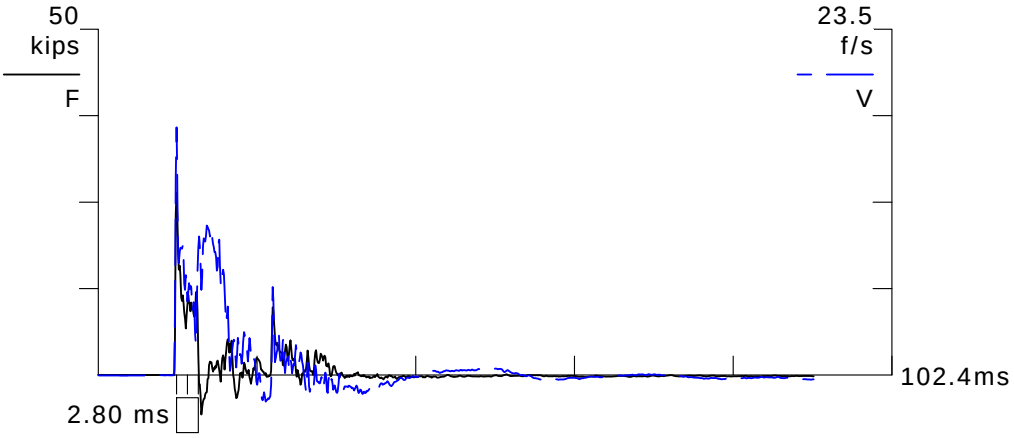
Time Summary

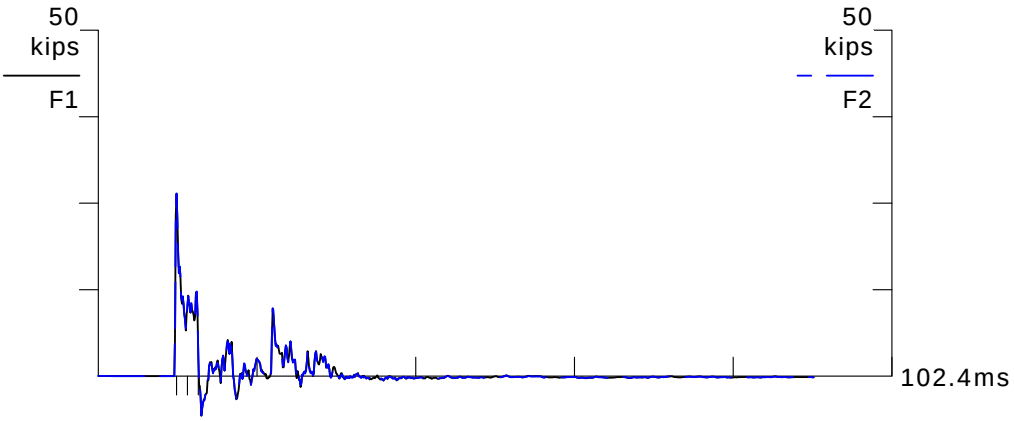
Drive 1 minute 8 seconds 5:25 PM - 5:27 PM BN 1 - 64

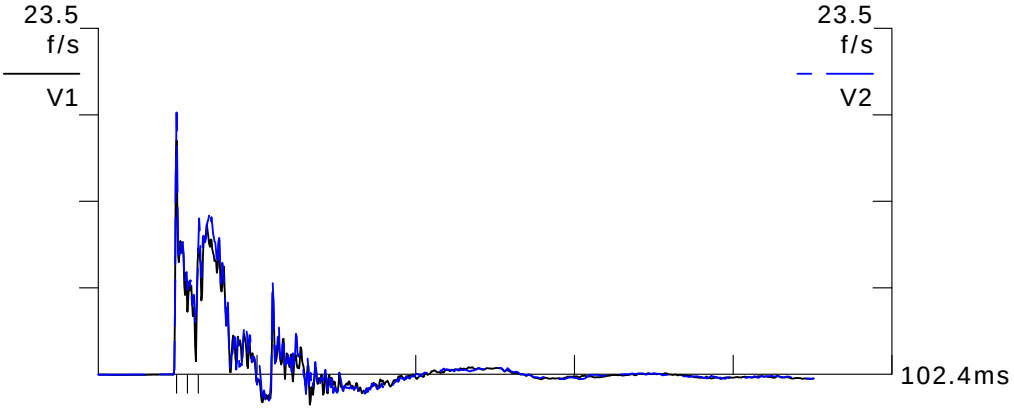
# Applied Foundation Testing, Inc.

217008NC
PDA OP: AFT

PILE DRIVING ANALYZER ®
Version 2015.124
HDR 379935 INC1
CME 550 SPT AWJ




BN 4
2/17/2017 5:26:02 PM

| | | |
|---|---|---|
| FMX | 26 | kips |
| VMX | 16.9 | f/s |
| EFV | 0.31 | k-ft |
| ETR | 89.9 | (%) |
| BPM | 55.0 | bpm |
| CSX | 22.17 | ksi |
| DMX | 0.73 | in |
| DFN | 0.60 | in |
| AMX | 3190 | g's |
| LE | 23.80 | ft |
| AR | 1.19 | in^2 |
| EM | 30000 | ksi |
| SP | 0.492 | k/ft3 |
| WS | 16807.9 | f/s |
| EA/C | 2.1 | ksec/ft |
| LP | 19.70 | ft |

F34 A34

F3: [264 AWJ-1] 212.81 (1)
F4: [264 AWJ-2] 213.48 (1)
A3: [K3179] 334 mv/5000g's (1)
A4: [K4088] 394 mv/5000g's (1)

# Appendix C

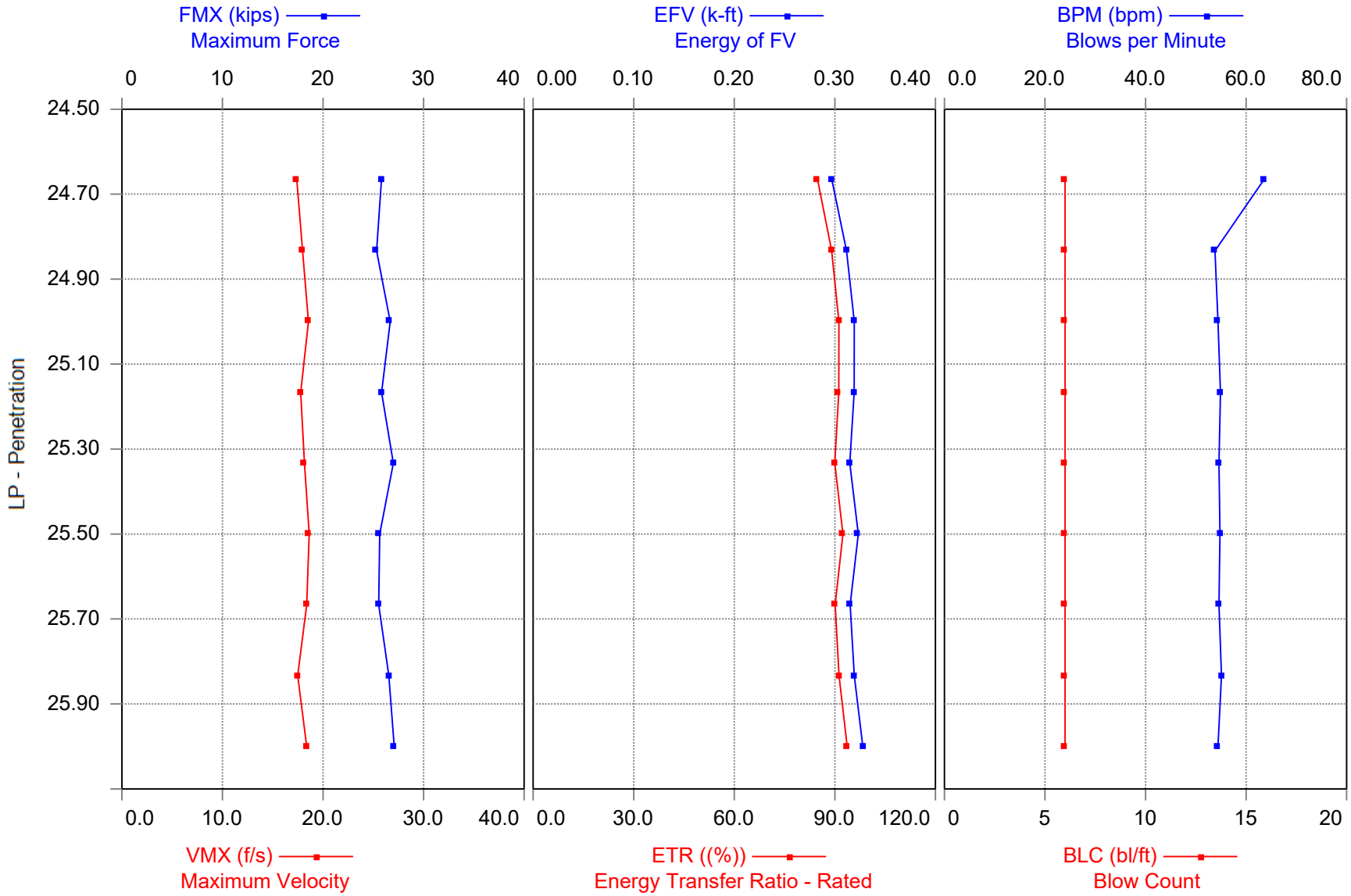
## Increment 2 PDIPLOT Data and Representative Blow Data

## SPT Calibration
## CME Rig, Model 550
## Serial No. 379935

Applied Foundation Testing, Inc. - PDIPLOT2 Ver 2016.1.56.2 - Case Method & iCAP® Results

Printed: 20-February-2017 Test started: 17-February-2017

217008NC - HDR 379935 INC2



217008NC - HDR 379935 INC2 CME 550 SPT AWJ
OP: AFT Date: 17-February-2017

AR: 1.19 in² SP: 0.492 k/ft³
LE: 28.80 ft EM: 30,000 ksi
WS: 16,807.9 f/s JC: 0.90 []

FMX: Maximum Force CSX: Max Measured Compr. Stress
VMX: Maximum Velocity DMX: Maximum Displacement
EFV: Energy of FV DFN: Final Displacement
ETR: Energy Transfer Ratio - Rated AMX: Maximum Acceleration
BPM: Blows per Minute

| BL# | Depth | BLC | FMX | VMX | EFV | ETR | BPM | CSX | DMX | DFN | AMX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | bl/ft | kips | f/s | k-ft | (%) | bpm | ksi | in | in | g's |
| 1 | 24.67 | 6 | 26 | 17.4 | 0.30 | 84.9 | 63.5 | 21.69 | 3.30 | 2.00 | 3,356 |
| 2 | 24.83 | 6 | 25 | 18.0 | 0.31 | 89.0 | 53.8 | 21.28 | 2.29 | 2.00 | 3,763 |
| 3 | 25.00 | 6 | 27 | 18.6 | 0.32 | 91.2 | 54.4 | 22.42 | 2.25 | 2.00 | 3,110 |
| 4 | 25.17 | 6 | 26 | 17.8 | 0.32 | 91.2 | 54.9 | 21.70 | 2.23 | 2.00 | 3,634 |
| 5 | 25.33 | 6 | 27 | 18.1 | 0.31 | 90.0 | 54.6 | 22.68 | 2.21 | 2.00 | 3,307 |
| 6 | 25.50 | 6 | 26 | 18.6 | 0.32 | 92.4 | 54.8 | 21.54 | 2.26 | 2.00 | 3,606 |
| 7 | 25.67 | 6 | 26 | 18.4 | 0.32 | 90.1 | 54.6 | 21.46 | 2.17 | 2.00 | 3,420 |
| 8 | 25.83 | 6 | 27 | 17.5 | 0.32 | 91.2 | 55.1 | 22.30 | 2.00 | 2.00 | 3,840 |
| 9 | 26.00 | 6 | 27 | 18.4 | 0.33 | 93.7 | 54.4 | 22.76 | 2.00 | 2.00 | 3,589 |
| | | Average | 26 | 18.1 | 0.32 | 90.4 | 55.6 | 21.98 | 2.30 | 2.00 | 3,514 |
| | | Std. Dev. | 1 | 0.4 | 0.01 | 2.3 | 2.8 | 0.53 | 0.37 | 0.00 | 220 |
| | | Maximum | 27 | 18.6 | 0.33 | 93.7 | 63.5 | 22.76 | 3.30 | 2.00 | 3,840 |
| | | @ Blow# | 9 | 6 | 9 | 9 | 1 | 9 | 1 | 9 | 8 |

Total number of blows analyzed: 9

BL# Sensors

1-9 F3: [264 AWJ-1] 212.8 (1.00); F4: [264 AWJ-2] 213.5 (1.00); A3: [K3179] 334.0 (1.00); A4: [K4088] 394.0 (1.00)

Time Summary

Drive 8 seconds 5:33 PM - 5:33 PM BN 1 - 9

# Applied Foundation Testing, Inc.

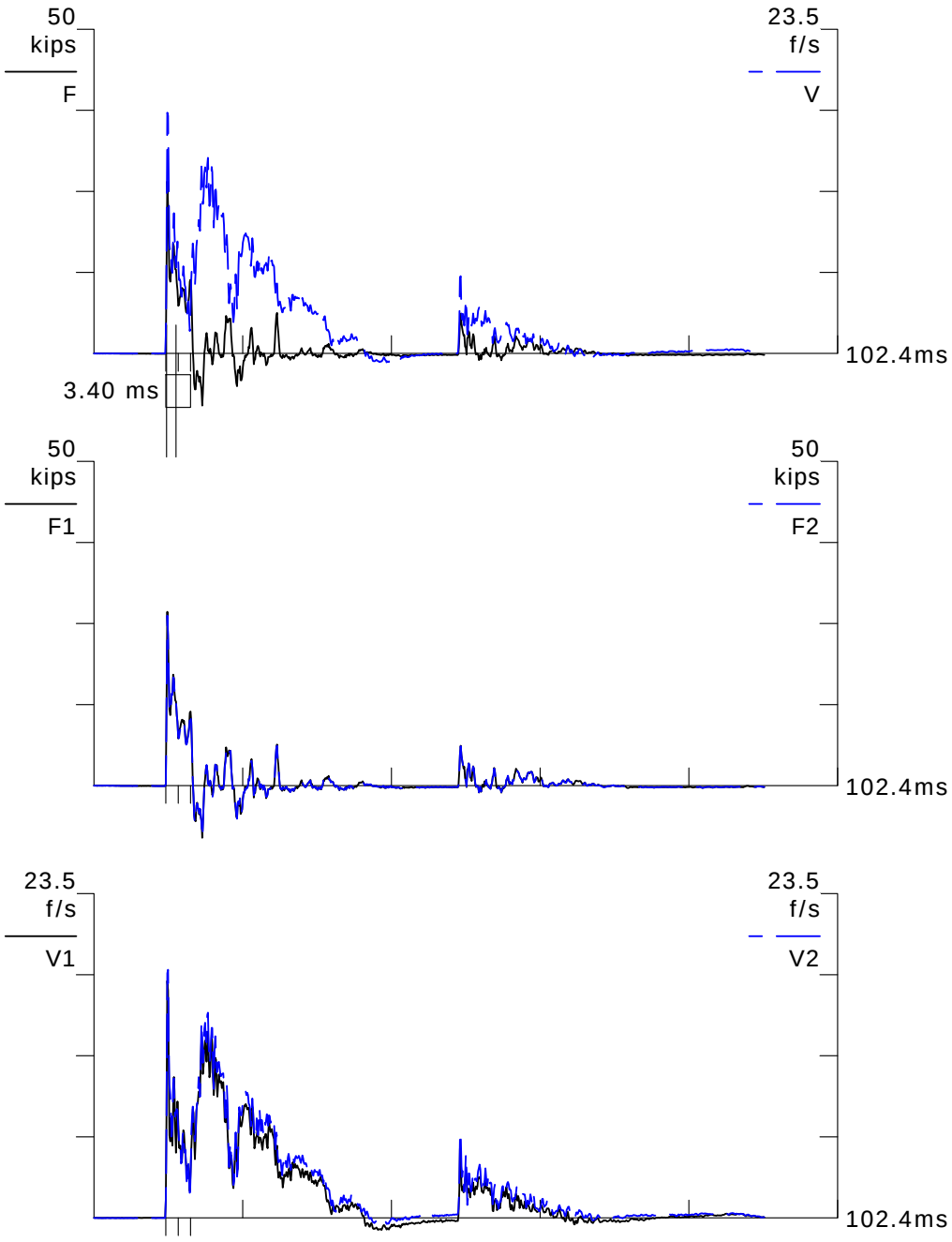
217008NC

PDA OP: AFT

PILE DRIVING ANALYZER ®
Version 2015.124

HDR 379935 INC2

CME 550 SPT AWJ




BN 8
2/17/2017 5:33:47 PM

| | | |
|---|---|---|
| FMX | 27 | kips |
| VMX | 17.5 | f/s |
| EFV | 0.32 | k-ft |
| ETR | 91.2 | (%) |
| BPM | 55.1 | bpm |
| CSX | 22.30 | ksi |
| DMX | 2.00 | in |
| DFN | 2.00 | in |
| AMX | 3840 | g's |
| LE | 28.80 | ft |
| AR | 1.19 | in^2 |
| EM | 30000 | ksi |
| SP | 0.492 | k/ft3 |
| WS | 16807.9 | f/s |
| EA/C | 2.1 | ksec/ft |
| LP | 25.83 | ft |

F34 A34

F3: [264 AWJ-1] 212.81 (1)
F4: [264 AWJ-2] 213.48 (1)
A3: [K3179] 334 mv/5000g's (1)
A4: [K4088] 394 mv/5000g's (1)

# Appendix D

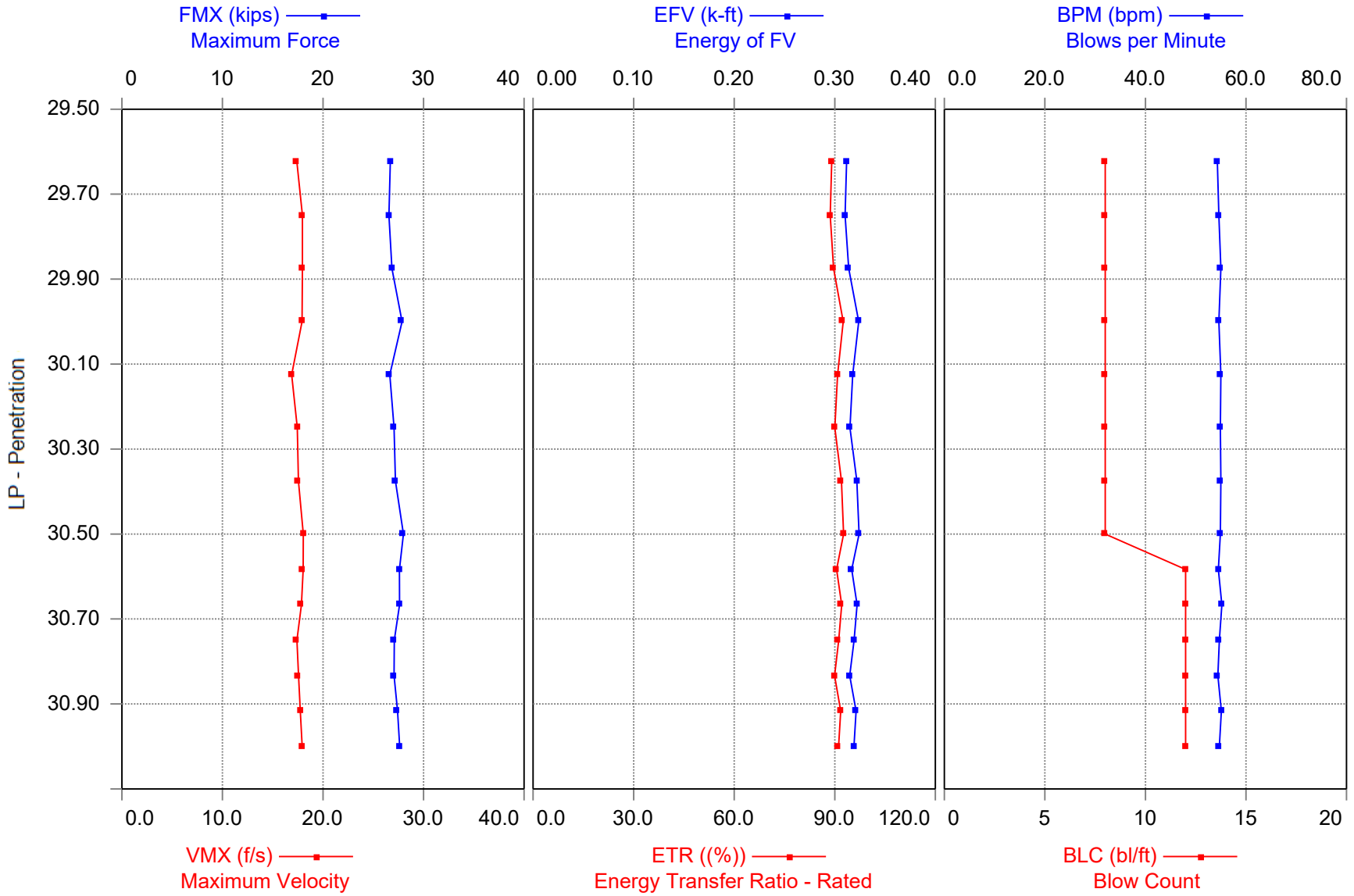
## Increment 3 PDIPLOT Data and Representative Blow Data

## SPT Calibration
## CME Rig, Model 550
## Serial No. 379935

Applied Foundation Testing, Inc. - PDIPLOT2 Ver 2016.1.56.2 - Case Method & iCAP® Results

Printed: 20-February-2017 Test started: 17-February-2017

217008NC - HDR 379935 INC3



217008NC - HDR 379935 INC3 CME 550 SPT AWJ
OP: AFT Date: 17-February-2017

AR: 1.19 in² SP: 0.492 k/ft³
LE: 33.80 ft EM: 30,000 ksi
WS: 16,807.9 f/s JC: 0.90 []

FMX: Maximum Force
VMX: Maximum Velocity
EFV: Energy of FV
ETR: Energy Transfer Ratio - Rated
BPM: Blows per Minute
CSX: Max Measured Compr. Stress
DMX: Maximum Displacement
DFN: Final Displacement
AMX: Maximum Acceleration

| BL# | Depth | BLC | FMX | VMX | EFV | ETR | BPM | CSX | DMX | DFN | AMX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | bl/ft | kips | f/s | k-ft | (%) | bpm | ksi | in | in | g's |
| 1 | 29.63 | 8 | 27 | 17.4 | 0.31 | 89.1 | 54.3 | 22.43 | 2.38 | 1.50 | 3,827 |
| 2 | 29.75 | 8 | 27 | 18.0 | 0.31 | 88.6 | 54.6 | 22.31 | 1.50 | 1.50 | 3,009 |
| 3 | 29.88 | 8 | 27 | 18.0 | 0.31 | 89.7 | 55.0 | 22.57 | 1.54 | 1.50 | 3,118 |
| 4 | 30.00 | 8 | 28 | 17.9 | 0.32 | 92.5 | 54.6 | 23.42 | 1.62 | 1.50 | 3,156 |
| 5 | 30.13 | 8 | 27 | 16.9 | 0.32 | 90.8 | 55.0 | 22.38 | 1.67 | 1.50 | 3,975 |
| 6 | 30.25 | 8 | 27 | 17.4 | 0.32 | 90.0 | 54.9 | 22.75 | 1.87 | 1.50 | 3,878 |
| 7 | 30.38 | 8 | 27 | 17.6 | 0.32 | 92.0 | 55.0 | 22.86 | 1.79 | 1.50 | 3,884 |
| 8 | 30.50 | 8 | 28 | 18.0 | 0.32 | 92.6 | 54.9 | 23.53 | 1.58 | 1.50 | 2,944 |
| 9 | 30.58 | 12 | 28 | 18.0 | 0.32 | 90.5 | 54.5 | 23.19 | 1.22 | 1.00 | 3,403 |
| 10 | 30.67 | 12 | 28 | 17.8 | 0.32 | 92.1 | 55.2 | 23.21 | 1.10 | 1.00 | 3,763 |
| 11 | 30.75 | 12 | 27 | 17.4 | 0.32 | 91.2 | 54.7 | 22.76 | 1.05 | 1.00 | 3,655 |
| 12 | 30.83 | 12 | 27 | 17.6 | 0.31 | 89.9 | 54.4 | 22.74 | 1.02 | 1.00 | 3,623 |
| 13 | 30.92 | 12 | 27 | 17.7 | 0.32 | 91.8 | 55.1 | 23.04 | 1.02 | 1.00 | 3,420 |
| 14 | 31.00 | 12 | 28 | 17.9 | 0.32 | 91.1 | 54.7 | 23.21 | 1.00 | 1.00 | 3,616 |
| | | Average | 27 | 17.7 | 0.32 | 90.9 | 54.8 | 22.89 | 1.45 | 1.29 | 3,519 |
| | | Std. Dev. | 0 | 0.3 | 0.00 | 1.2 | 0.3 | 0.37 | 0.39 | 0.25 | 335 |
| | | Maximum | 28 | 18.0 | 0.32 | 92.6 | 55.2 | 23.53 | 2.38 | 1.50 | 3,975 |
| | | @ Blow# | 8 | 8 | 8 | 8 | 10 | 8 | 1 | 2 | 5 |

Total number of blows analyzed: 14

BL# Sensors

1-14 F3: [264 AWJ-1] 212.8 (1.00); F4: [264 AWJ-2] 213.5 (1.00); A3: [K3179] 334.0 (1.00); A4: [K4088] 394.0 (1.00)

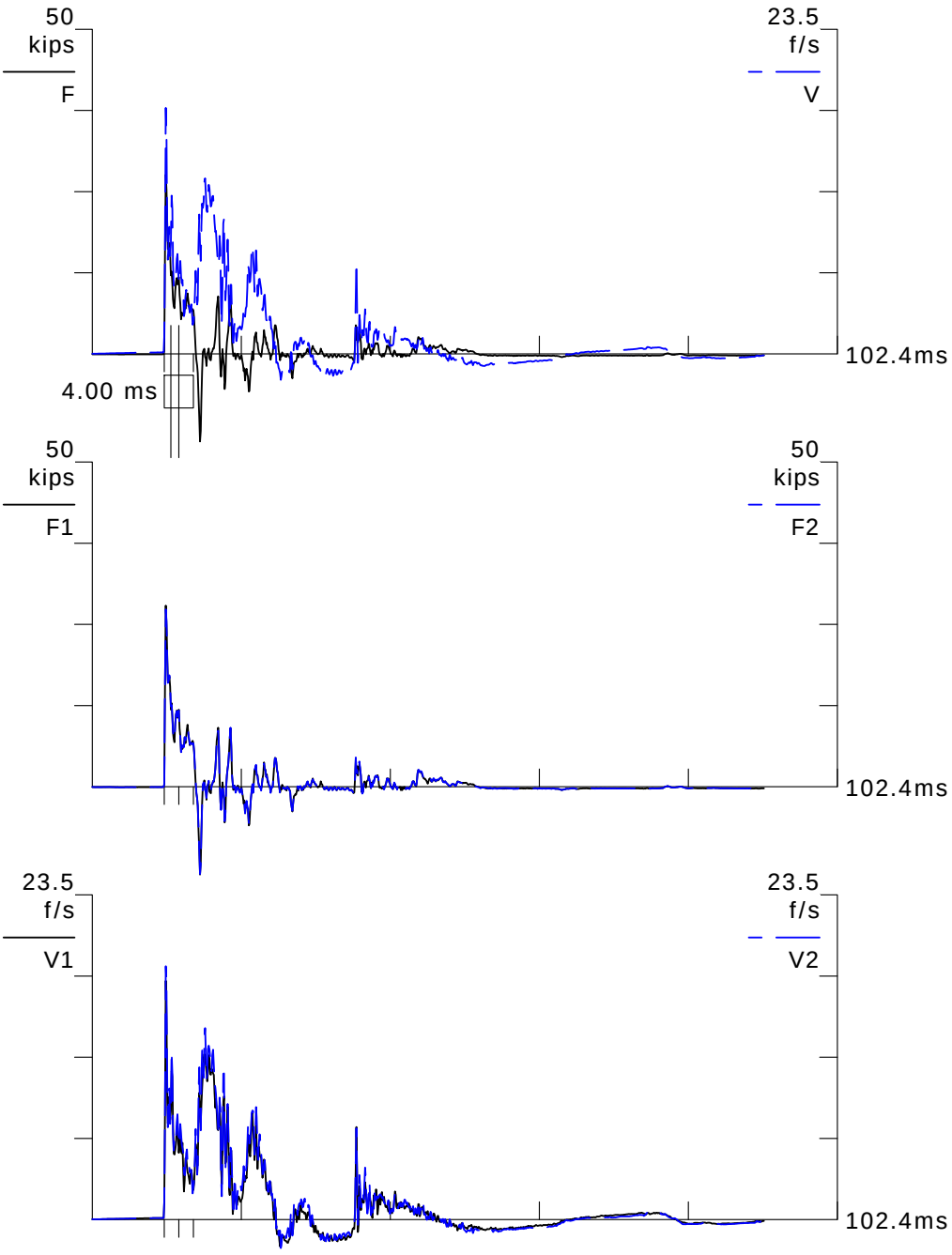
Time Summary

Drive 14 seconds 5:39 PM - 5:40 PM BN 1 - 14

# Applied Foundation Testing, Inc.

217008NC
PDA OP: AFT

PILE DRIVING ANALYZER ®
Version 2015.124
HDR 379935 INC3
CME 550 SPT AWJ




BN 10
2/17/2017 5:40:02 PM

| | | |
|---|---|---|
| FMX | 28 | kips |
| VMX | 17.8 | f/s |
| EFV | 0.32 | k-ft |
| ETR | 92.1 | (%) |
| BPM | 55.2 | bpm |
| CSX | 23.21 | ksi |
| DMX | 1.10 | in |
| DFN | 1.00 | in |
| AMX | 3763 | g's |
| LE | 33.80 | ft |
| AR | 1.19 | in^2 |
| EM | 30000 | ksi |
| SP | 0.492 | k/ft3 |
| WS | 16807.9 | f/s |
| EA/C | 2.1 | ksec/ft |
| LP | 30.67 | ft |

F34 A34

F3: [264 AWJ-1] 212.81 (1)
F4: [264 AWJ-2] 213.48 (1)
A3: [K3179] 334 mv/5000g's (1)
A4: [K4088] 394 mv/5000g's (1)

# Appendix E

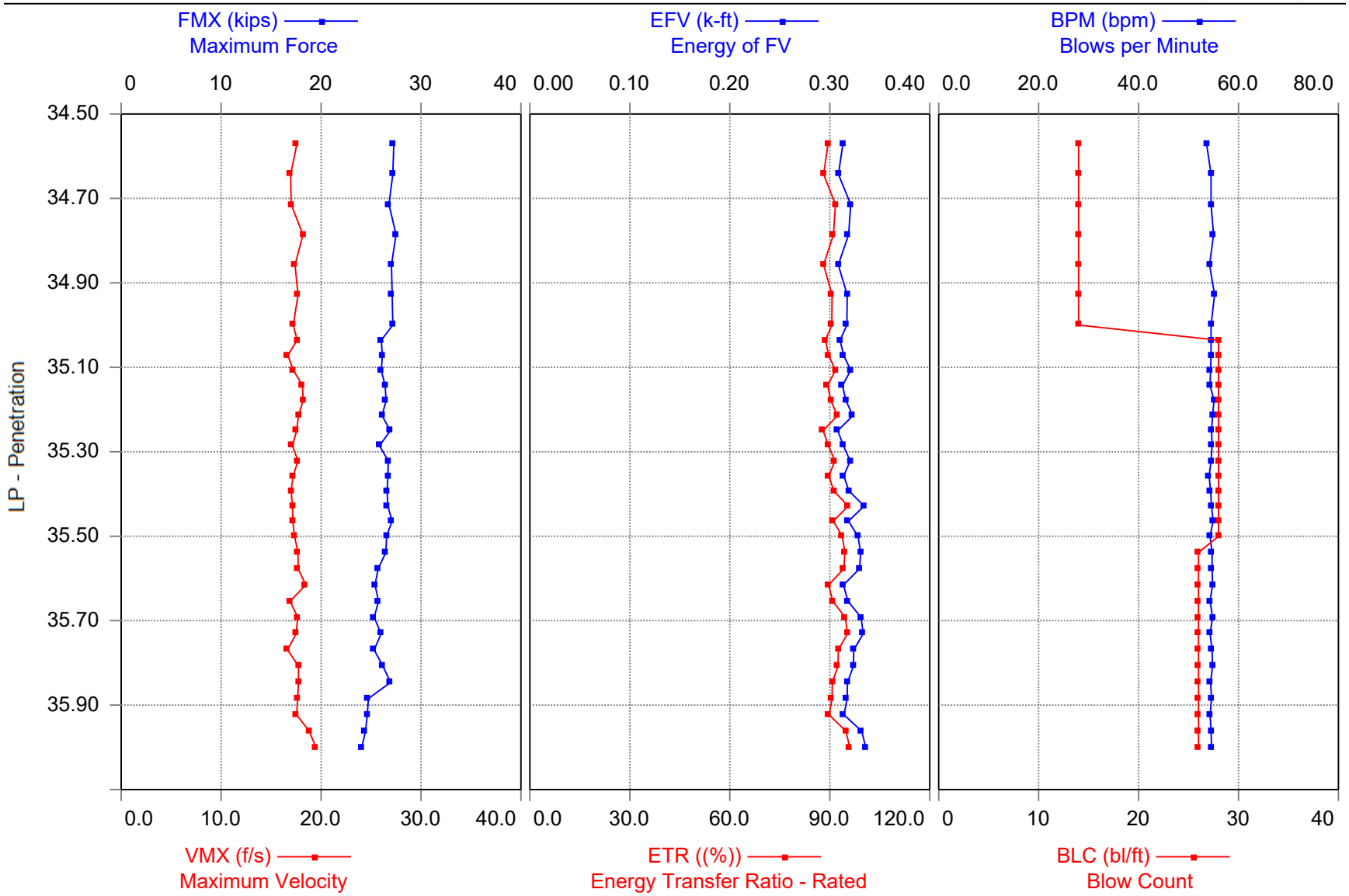
## Increment 4 PDIPLOT Data and Representative Blow Data

## SPT Calibration
## CME Rig, Model 550
## Serial No. 379935

Applied Foundation Testing, Inc. - PDIPLOT2 Ver 2016.1.56.2 - Case Method & iCAP® Results

Printed: 20-February-2017 Test started: 17-February-2017

217008NC - HDR 379935 INC4



217008NC - HDR 379935 INC4 CME 550 SPT AWJ
OP: AFT Date: 17-February-2017

AR: 1.19 in² SP: 0.492 k/ft³
LE: 38.80 ft EM: 30,000 ksi
WS: 16,807.9 f/s JC: 0.90 []

FMX: Maximum Force CSX: Max Measured Compr. Stress
VMX: Maximum Velocity DMX: Maximum Displacement
EFV: Energy of FV DFN: Final Displacement
ETR: Energy Transfer Ratio - Rated AMX: Maximum Acceleration
BPM: Blows per Minute

| BL# | Depth | BLC | FMX | VMX | EFV | ETR | BPM | CSX | DMX | DFN | AMX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | bl/ft | kips | f/s | k-ft | (%) | bpm | ksi | in | in | g's |
| 1 | 34.57 | 14 | 27 | 17.6 | 0.31 | 89.5 | 53.6 | 22.92 | 0.99 | 0.86 | 3,402 |
| 2 | 34.64 | 14 | 27 | 17.0 | 0.31 | 88.2 | 54.5 | 22.83 | 0.89 | 0.86 | 3,463 |
| 3 | 34.71 | 14 | 27 | 17.0 | 0.32 | 91.7 | 54.5 | 22.51 | 0.87 | 0.86 | 3,824 |
| 4 | 34.79 | 14 | 28 | 18.2 | 0.32 | 91.1 | 55.0 | 23.11 | 0.87 | 0.86 | 3,153 |
| 5 | 34.86 | 14 | 27 | 17.4 | 0.31 | 88.2 | 54.2 | 22.72 | 0.86 | 0.86 | 3,251 |
| 6 | 34.93 | 14 | 27 | 17.7 | 0.32 | 90.7 | 55.2 | 22.78 | 0.86 | 0.86 | 3,525 |
| 7 | 35.00 | 14 | 27 | 17.2 | 0.32 | 90.6 | 54.5 | 22.84 | 0.86 | 0.86 | 3,486 |
| 8 | 35.04 | 28 | 26 | 17.6 | 0.31 | 88.7 | 54.5 | 21.87 | 0.62 | 0.43 | 3,332 |
| 9 | 35.07 | 28 | 26 | 16.7 | 0.31 | 89.7 | 54.5 | 21.96 | 0.61 | 0.43 | 3,787 |
| 10 | 35.11 | 28 | 26 | 17.2 | 0.32 | 91.7 | 54.4 | 21.87 | 0.62 | 0.43 | 4,047 |
| 11 | 35.14 | 28 | 26 | 18.1 | 0.31 | 89.3 | 54.3 | 22.19 | 0.60 | 0.43 | 2,954 |
| 12 | 35.18 | 28 | 27 | 18.2 | 0.32 | 90.3 | 55.1 | 22.27 | 0.59 | 0.43 | 3,732 |
| 13 | 35.21 | 28 | 26 | 17.7 | 0.32 | 92.3 | 54.8 | 21.93 | 0.59 | 0.43 | 3,873 |
| 14 | 35.25 | 28 | 27 | 17.6 | 0.31 | 88.0 | 54.6 | 22.63 | 0.55 | 0.42 | 3,682 |
| 15 | 35.29 | 28 | 26 | 17.1 | 0.31 | 89.6 | 54.7 | 21.73 | 0.56 | 0.43 | 3,560 |
| 16 | 35.32 | 28 | 27 | 17.7 | 0.32 | 91.6 | 54.5 | 22.45 | 0.58 | 0.43 | 3,620 |
| 17 | 35.36 | 28 | 27 | 17.2 | 0.31 | 89.7 | 54.1 | 22.43 | 0.56 | 0.43 | 3,637 |
| 18 | 35.39 | 28 | 27 | 17.0 | 0.32 | 91.2 | 54.4 | 22.36 | 0.58 | 0.43 | 3,690 |
| 19 | 35.43 | 28 | 27 | 17.1 | 0.33 | 95.5 | 54.6 | 22.42 | 0.61 | 0.43 | 3,900 |
| 20 | 35.46 | 28 | 27 | 17.2 | 0.32 | 91.1 | 54.9 | 22.77 | 0.59 | 0.43 | 3,081 |
| 21 | 35.50 | 28 | 27 | 17.3 | 0.33 | 93.8 | 54.3 | 22.32 | 0.61 | 0.43 | 3,885 |
| 22 | 35.54 | 26 | 26 | 17.7 | 0.33 | 94.5 | 54.7 | 22.26 | 0.63 | 0.46 | 3,909 |
| 23 | 35.58 | 26 | 26 | 17.7 | 0.33 | 94.2 | 54.7 | 21.60 | 0.63 | 0.46 | 4,064 |
| 24 | 35.62 | 26 | 25 | 18.5 | 0.31 | 89.6 | 54.8 | 21.34 | 0.58 | 0.46 | 3,443 |
| 25 | 35.65 | 26 | 26 | 16.9 | 0.32 | 90.9 | 54.3 | 21.63 | 0.63 | 0.46 | 3,797 |
| 26 | 35.69 | 26 | 25 | 17.7 | 0.33 | 94.6 | 54.8 | 21.27 | 0.71 | 0.46 | 3,964 |
| 27 | 35.73 | 26 | 26 | 17.5 | 0.33 | 95.3 | 54.3 | 21.85 | 0.71 | 0.46 | 3,853 |
| 28 | 35.77 | 26 | 25 | 16.6 | 0.32 | 92.6 | 54.7 | 21.28 | 0.68 | 0.46 | 3,736 |
| 29 | 35.81 | 26 | 26 | 17.7 | 0.32 | 92.5 | 54.8 | 22.00 | 0.65 | 0.46 | 3,785 |
| 30 | 35.85 | 26 | 27 | 17.7 | 0.32 | 90.8 | 54.4 | 22.65 | 0.62 | 0.46 | 3,428 |
| 31 | 35.88 | 26 | 25 | 17.7 | 0.32 | 90.7 | 54.6 | 20.78 | 0.61 | 0.46 | 3,316 |
| 32 | 35.92 | 26 | 25 | 17.6 | 0.31 | 89.8 | 54.3 | 20.69 | 0.57 | 0.45 | 4,091 |
| 33 | 35.96 | 26 | 24 | 18.8 | 0.33 | 94.8 | 54.5 | 20.54 | 0.62 | 0.46 | 3,957 |

217008NC - HDR 379935 INC4 CME 550 SPT AWJ
OP: AFT Date: 17-February-2017

| BL# | Depth | BLC | FMX | VMX | EFV | ETR | BPM | CSX | DMX | DFN | AMX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | bl/ft | kips | f/s | k-ft | (%) | bpm | ksi | in | in | g's |
| 34 | 36.00 | 26 | 24 | 19.5 | 0.34 | 96.0 | 54.6 | 20.23 | 0.65 | 0.46 | 3,498 |
| | | Average | 26 | 17.6 | 0.32 | 91.4 | 54.6 | 22.03 | 0.67 | 0.53 | 3,639 |
| | | Std. Dev. | 1 | 0.6 | 0.01 | 2.2 | 0.3 | 0.72 | 0.12 | 0.17 | 286 |
| | | Maximum | 28 | 19.5 | 0.34 | 96.0 | 55.2 | 23.11 | 0.99 | 0.86 | 4,091 |
| | | @ Blow# | 4 | 34 | 34 | 34 | 6 | 4 | 1 | 5 | 32 |

Total number of blows analyzed: 34

BL# Sensors

1-34 F3: [264 AWJ-1] 212.8 (1.00); F4: [264 AWJ-2] 213.5 (1.00); A3: [K3179] 334.0 (1.00); A4: [K4088] 394.0 (1.00)

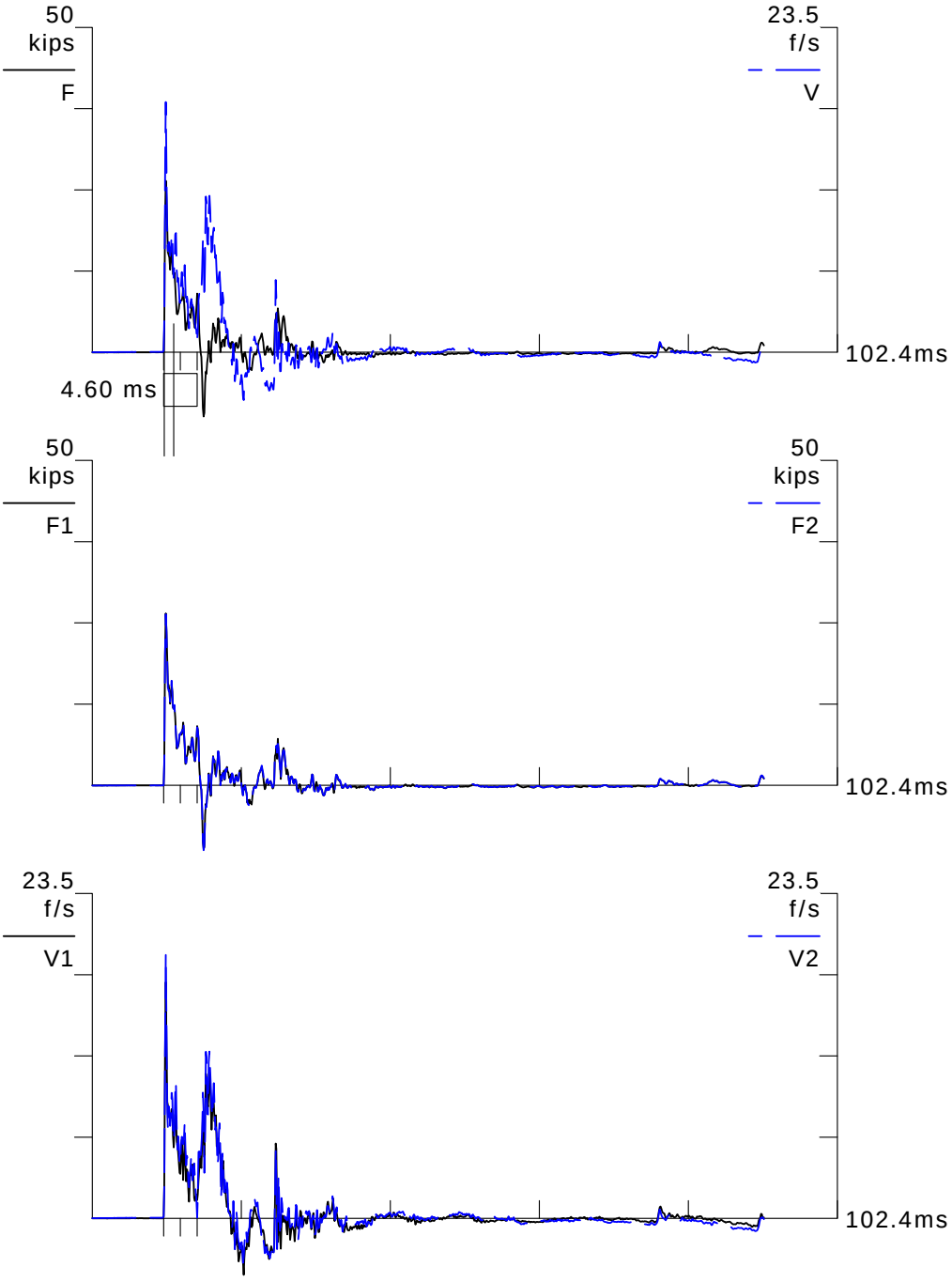
Time Summary

Drive 36 seconds 5:46 PM - 5:47 PM BN 1 - 34

# Applied Foundation Testing, Inc.

217008NC
PDA OP: AFT

PILE DRIVING ANALYZER ®
Version 2015.124
HDR 379935 INC4
CME 550 SPT AWJ




BN 11
2/17/2017 5:46:47 PM

| | | |
|---|---|---|
| FMX | 26 | kips |
| VMX | 18.1 | f/s |
| EFV | 0.31 | k-ft |
| ETR | 89.3 | (%) |
| BPM | 54.3 | bpm |
| CSX | 22.19 | ksi |
| DMX | 0.60 | in |
| DFN | 0.43 | in |
| AMX | 2954 | g's |
| LE | 38.80 | ft |
| AR | 1.19 | in^2 |
| EM | 30000 | ksi |
| SP | 0.492 | k/ft3 |
| WS | 16807.9 | f/s |
| EA/C | 2.1 | ksec/ft |
| LP | 35.14 | ft |

F34 A34

F3: [264 AWJ-1] 212.81 (1)
F4: [264 AWJ-2] 213.48 (1)
A3: [K3179] 334 mv/5000g's (1)
A4: [K4088] 394 mv/5000g's (1)

# Appendix F

## Gage Calibration Sheets

## SPT Calibration
## CME Rig, Model 550
## Serial No. 379935

| SPT Rod Calibration | | Pile Dynamics, Inc. Made in USA | | | |
|---|---|---|---|---|---|
| | | English | | SI | |
| EA Product | | 35,642.06 | kips | 158.61 | MN |
| | E | 30,000 | ksi | 207,000 | MPa |
| | A | 1.19 | in^2 | 7.7 | cm^2 |
| Rod Serial #: | | | | 264 AWJ - 1 | |
| Calibration Factor (me/V): | | | | 212.81 | |
| Calibration Date: | | | | 4-Feb-16 | |
| Calibration Due: | | | | 3-Feb-18 | |

264 AWJ - 1
264 AWJ - 2
35642.06
212.81
213.48
4-Feb-16

Print to fit and it looks okay!

| SPT Rod Calibration | | Pile Dynamics, Inc. Made in USA | | | |
|---|---|---|---|---|---|
| | | English | | SI | |
| EA Product | | 35,642.06 | kips | 158.61 | MN |
| | E | 30,000 | ksi | 207,000 | MPa |
| | A | 1.19 | in^2 | 7.7 | cm^2 |
| Rod Serial #: | | | | 264 AWJ - 2 | |
| Calibration Factor (me/V): | | | | 213.48 | |
| Calibration Date: | | | | 4-Feb-16 | |
| Calibration Due: | | | | 3-Feb-18 | |

| | |
|---|---|
| 264 | Number |
| AWJ | Type |

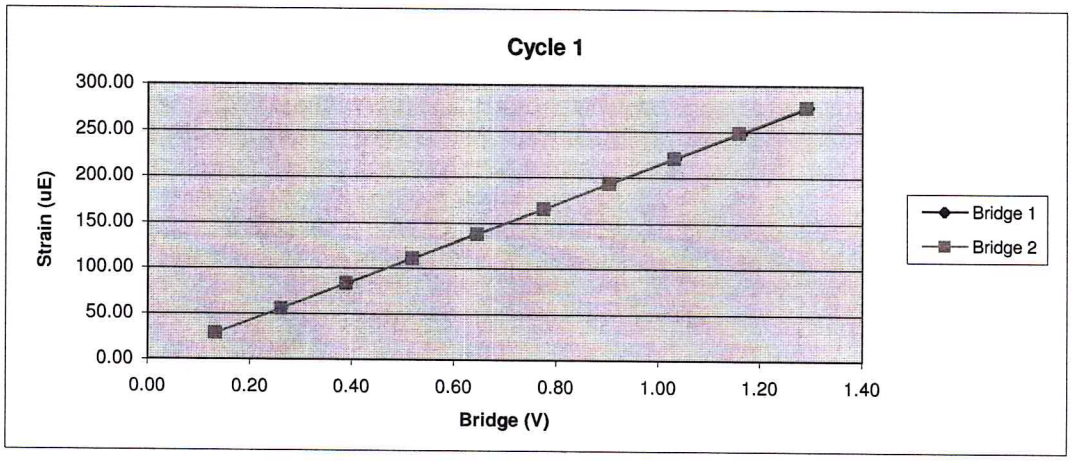
| | |
|---|---|
| Bridge 1 | 264 AWJ - 1 |
| Bridge 2 | 264 AWJ - 2 |
| EA Factor | 35642.06 |
| Calibration 1 | 212.81 |
| Calibration 2 | 213.48 |
| Date Cal | 4-Feb-16 |

<-- enter

| 264AWJ | | Cycle 1 | | |
|---|---|---|---|---|
| **Sample** | **Force (lb)** | **Strain (µE)** | **Bridge 1 (V)** | **Bridge 2 (V)** |
| 1 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | 1001.13 | 28.60 | 0.13 | 0.13 |
| 3 | 1964.68 | 55.69 | 0.26 | 0.26 |
| 4 | 2941.08 | 83.13 | 0.39 | 0.39 |
| 5 | 3911.24 | 110.71 | 0.52 | 0.52 |
| 6 | 4880.44 | 137.68 | 0.64 | 0.64 |
| 7 | 5869.11 | 165.62 | 0.78 | 0.78 |
| 8 | 6856.60 | 193.31 | 0.90 | 0.90 |
| 9 | 7828.72 | 220.93 | 1.03 | 1.03 |
| 10 | 8803.95 | 248.38 | 1.16 | 1.16 |
| 11 | 9806.83 | 276.37 | 1.29 | 1.29 |

| **Bridge 1** | | **Bridge 2** | |
|---|---|---|---|
| **Force Calibration (lb/V)** | **7591.50** | **Force Calibration (lb/V)** | **7608.96** |
| Offset | -11.92 | Offset | -18.31 |
| Correlation | 0.999999 | Correlation | 0.999996 |
| **Strain Calibration (µE/V)** | **213.72** | **Strain Calibration (µE/V)** | **214.21** |
| Offset | 0.07 | Offset | -0.11 |
| Correlation | 0.999998 | Correlation | 0.999995 |

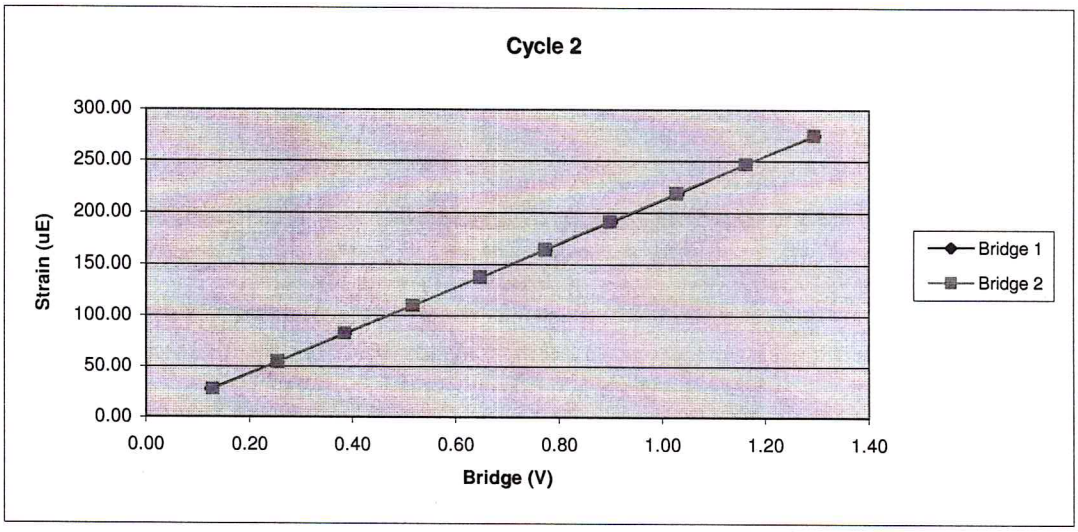
| **Force Strain Calibration** | |
|---|---|
| **EA (Kips)** | **35521.42** |
| Offset | -14.35 |
| Correlation | 0.999999 |



| 264AWJ | | Cycle 2 | | |
|---|---|---|---|---|
| **Sample** | **Force (lb)** | **Strain (µE)** | **Bridge 1 (V)** | **Bridge 2 (V)** |
| 1 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | 963.16 | 27.64 | 0.13 | 0.13 |
| 3 | 1933.52 | 54.81 | 0.25 | 0.25 |
| 4 | 2923.36 | 82.31 | 0.39 | 0.38 |
| 5 | 3916.50 | 109.78 | 0.52 | 0.52 |
| 6 | 4906.34 | 137.34 | 0.65 | 0.65 |
| 7 | 5865.02 | 164.46 | 0.77 | 0.77 |
| 8 | 6822.33 | 191.44 | 0.90 | 0.90 |
| 9 | 7813.34 | 218.71 | 1.03 | 1.03 |
| 10 | 8812.71 | 246.59 | 1.16 | 1.16 |
| 11 | 9818.71 | 274.88 | 1.29 | 1.29 |

| **Bridge 1** | | **Bridge 2** | |
|---|---|---|---|
| **Force Calibration (lb/V)** | **7582.07** | **Force Calibration (lb/V)** | **7602.95** |
| Offset | **2.50** | Offset | **-6.19** |
| Correlation | **0.999999** | Correlation | **0.999997** |
| **Strain Calibration (µE/V)** | **211.65** | **Strain Calibration (µE/V)** | **212.24** |
| Offset | **0.75** | Offset | **0.51** |
| Correlation | **0.999998** | Correlation | **0.999993** |

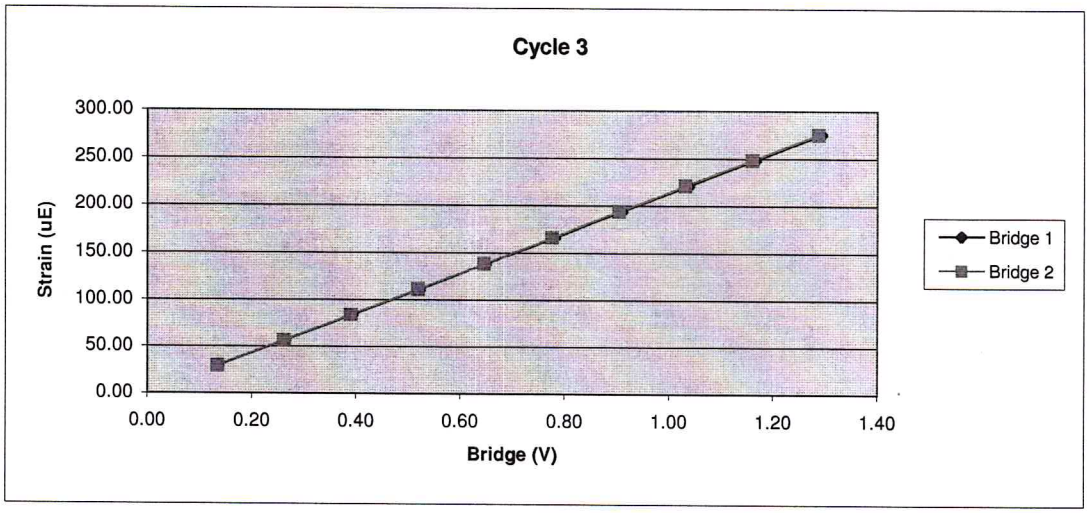
| **Force Strain Calibration** | |
|---|---|
| **EA (Kips)** | **35822.86** |
| Offset | **-24.41** |
| Correlation | **0.999998** |



| 264AWJ | | Cycle 3 | | |
|---|---|---|---|---|
| **Sample** | **Force (lb)** | **Strain (µE)** | **Bridge 1 (V)** | **Bridge 2 (V)** |
| 1 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | 1028.78 | 29.18 | 0.13 | 0.13 |
| 3 | 1998.95 | 56.25 | 0.26 | 0.26 |
| 4 | 2972.23 | 83.52 | 0.39 | 0.39 |
| 5 | 3949.41 | 111.03 | 0.52 | 0.52 |
| 6 | 4906.53 | 137.97 | 0.65 | 0.65 |
| 7 | 5912.53 | 166.04 | 0.78 | 0.78 |
| 8 | 6888.35 | 193.72 | 0.91 | 0.90 |
| 9 | 7857.54 | 221.19 | 1.04 | 1.03 |
| 10 | 8839.20 | 248.57 | 1.17 | 1.16 |
| 11 | 9805.08 | 275.56 | 1.29 | 1.29 |

| **Bridge 1** | | **Bridge 2** | |
|---|---|---|---|
| **Force Calibration (lb/V)** | **7580.78** | **Force Calibration (lb/V)** | **7614.62** |
| Offset | **3.06** | Offset | **2.46** |
| Correlation | **0.999999** | Correlation | **0.999997** |
| **Strain Calibration (µE/V)** | **213.05** | **Strain Calibration (µE/V)** | **214.00** |
| Offset | **0.18** | Offset | **0.16** |
| Correlation | **0.999998** | Correlation | **0.999995** |

| **Force Strain Calibration** | |
|---|---|
| **EA (Kips)** | **35581.90** |
| Offset | **-3.36** |
| Correlation | **0.999999** |



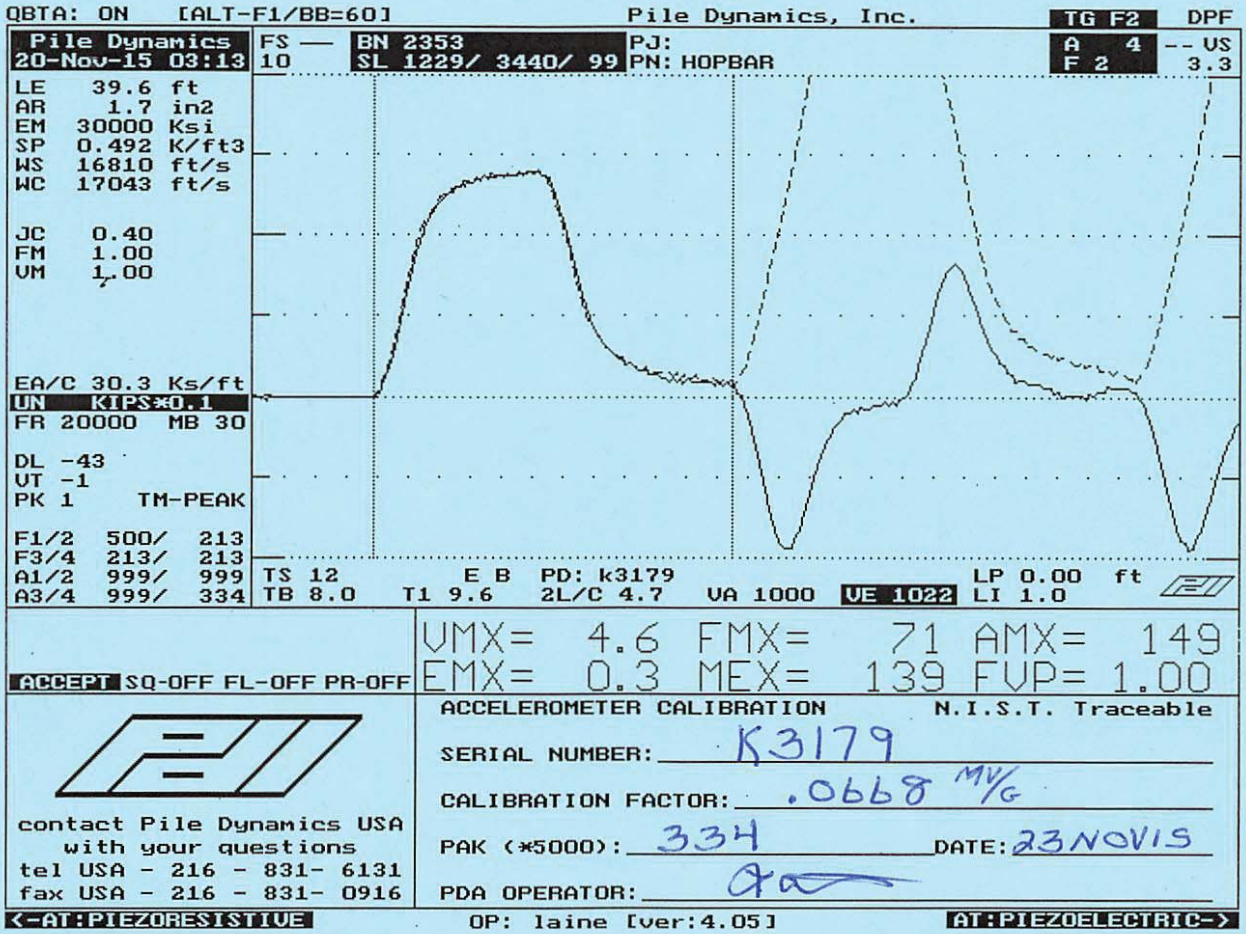
| | |
|---|---|
| Bridge Excitation (V) | 5 |
| Shunt Resitor (ohm) | 60.4k |

| | | | |
|---|---|---|---|
| **Calibration Factors** | **264AWJ** | | |
| **Bridge 1 (µE/V)** | **212.81** | **Bridge 2 (µE/V)** | **213.48** |
| **EA Factor (Kips)** | **35642.06** | **Area (in^2)** | **1.19** |

Calibrated by: David Burnell
Calibrated Date: 2/4/2016

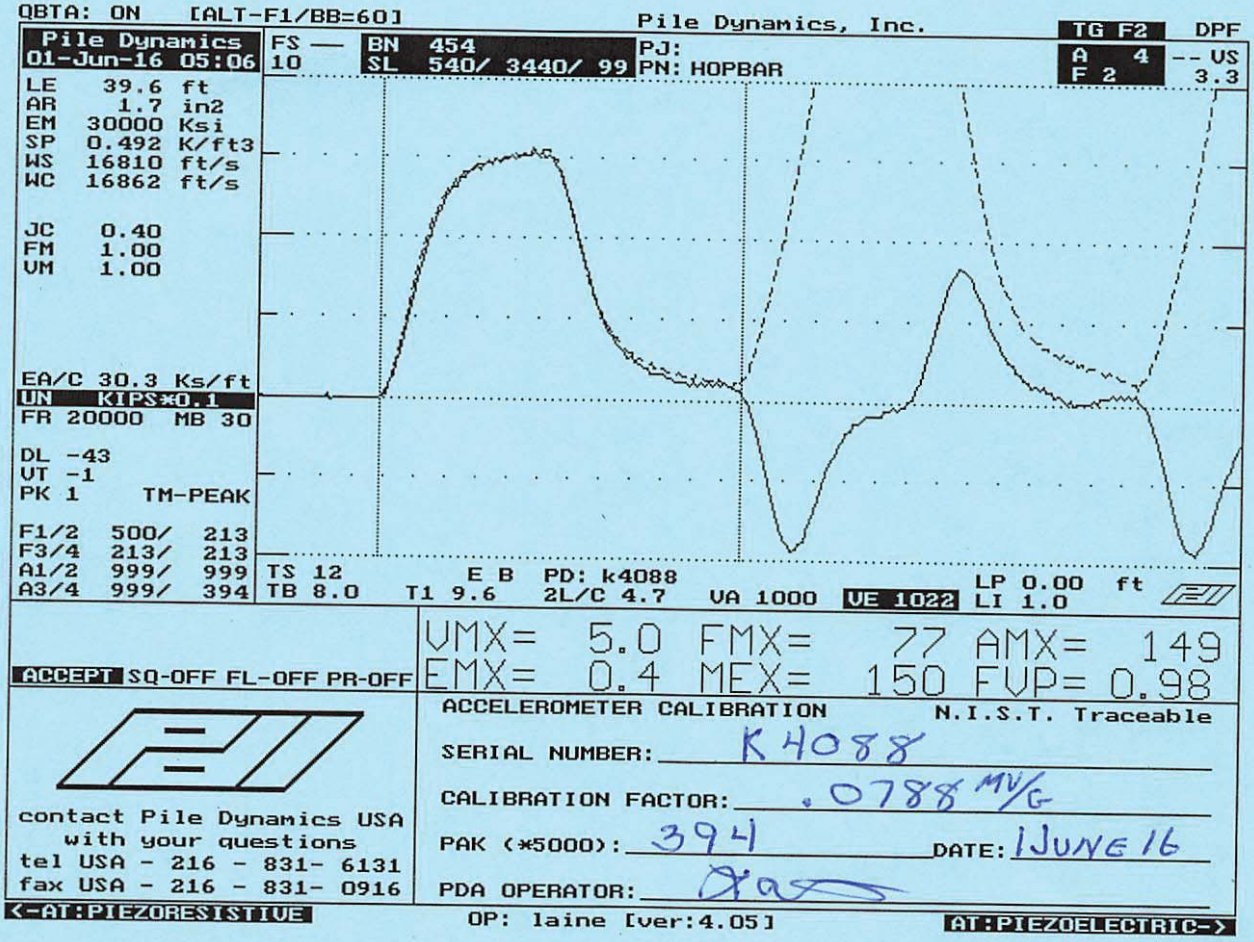
Pile Dynamics Inc
30725 Aurora Rd
Solon, OH 44139

Traceable to N.I.S.T.




**Smart Sensor**

**Smart Chip Programmed By** M.W. **on** 23NOV15 **CRC Value** B5FC




**Smart Sensor**

**Smart Chip Programmed By** J.M.W. **on** 1JUNE16 **CRC Value** 1002

# Appendix G

## Field Engineer Dynamic Measurement and Analysis Proficiency Test Certificate

## SPT Calibration
## CME Rig, Model 550
## Serial No. 379935

PDCA
PILE DRIVING CONTRACTORS ASSOCIATION

Pile Dynamics, Inc.

This documents that

**Michael Simpson**
**Applied Foundation Testing**

has on December 20, 2013 achieved the rank of

# ADVANCED

on the **Dynamic Measurement and Analysis Proficiency Test.**

The individual identified on this document demonstrated to the degree granted above an understanding of theory, data quality evaluation, interpretation and signal matching for high strain dynamic testing of deep foundations. ***It is recommended*** **that Individuals at the Advanced level seek Master or Expert levels through additional study within four years of the date of this document.**

The ability of the individual named to provide appropriate knowledge and advice on a specific project is not implied or warranted by the Pile Driving Contractors Association or Pile Dynamics, Inc. **This certificate can be verified at www.PDAproficiencytest.com.** The Pile Driving Contractors Association or Pile Dynamics, Inc. assumes no liability for foundation testing and analysis work performed by the bearer of this certificate.

Steven A. Hall, Executive Director
Pile Driving Contractors Association

Garland Likins, President
Pile Dynamics, Inc

No. 540

# Applied Foundation Testing

**North Carolina License No.: P-0294**

February 20, 2017

**Report of Standard Penetration Test (SPT) Energy Measurement Testing**

CME Model 550 Rig with Auto Hammer
Rig Serial No.: 170055
Blacksburg, South Carolina
AFT Project No.: 217008NC

**Authored By:**


**Thomas G. Santee, P.E.**
Chief Engineer
Certified PDA Signatory - Master

**Michael J. Simpson, P.E**
Geotechnical Engineer
NC Registration No.: 032060
Certified PDA Signatory - Advanced


**For:** **Mr. Jeff Vinson, PG**
Trigon Exploration, LLC
jvinson@trigonexp.com

NORTH CAROLINA PROFESSIONAL SEAL 032060 ENGINEER MICHAEL J. SIMPSON

# *Applied Foundation Testing*

Specializing in **STAT***NAMIC*™ 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 20, 2017 | | | |
| **AFT Project No.:** | 217008NC | | | |
| **Project Description:** | SPT Energy Measurement Testing of Drill Rig | | | |
| | | | | |
| **Client Name:** | Trigon Exploration, LLC | | | |
| **Client Email Address:** | jvinson@trigonexp.com | | | |
| **Client Contact:** | Mr. Jeff Vinson, PG | | | |
| | | | | |
| **Test Date:** | February 20, 2017 | | | |
| **Test Equipment Manufacturer/Model:** | Pile Dynamics, Inc. / Model PAX Serial Number 3907 (strain and accelerometer calibrations attached in Appendix F) | | | |
| | | | | |
| **AFT Field Personnel:** | Michael J. Simpson, P.E. (Certificate of Proficiency attached in Appendix G) | | | |
| **AFT Responsible Engineer:** | Michael J. Simpson, P.E. | | | |

| Drill Rig Information | | | | |
|---|---|---|---|---|
| **Manufacturer** | **Model** | **Serial Number** | **Operator** | **Type** |
| CME | 550 | 170055 | Ron / Will | Rubber Tire ATV |

| 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.)** |
| AW | ~1.75 | ~1.25 | ~1.19 | 5 and 10 |
| **Instrumented Rod Type** | **OD (in.)** | **ID (in.)** | **Cross Sectional Area (in$^2$)** | **Length (ft.)** |
| AWJ | ~1.75 | ~1.25 | ~1.19 | 2 |

## Boring Information

| ID | Location | Reference Elevation (ft.) | Impact to Instrumentation Length (ft.) | Boring Log Attached (Y or N) |
|---|---|---|---|---|
| N/A | South Carolina I-85 Exit 106, between southbound off ramp and southbound I-85 | UNK | 2.3 | N |

## Results

### Energy Measurements

Representative plot of force and velocity for each data set attached [X]

Plots of average energy and all energy versus Rod Length attached [X]

Tabular and graphical data for each blow for each data set attached [X]

| 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 | Average Maximum Energy (k-ft.) | Average Energy Transfer Ratio (percent) |
|---|---|---|---|---|---|---|
| 1 | 29.2 | 5-5-7 / 12 | Sandy Silt | 47.5 | 0.27 | 77.9 |
| 2 | 34.2 | 4-6-7 / 13 | Sandy Silt | 50.2 | 0.29 | 82.6 |
| 3 | 39.2 | 8-9-10 / 19 | Sandy Silt | 50.3 | 0.30 | 84.7 |
| 4 | 44.2 | 16-25-17 / 42 | Sandy Silt | 49.5 | 0.28 | 79.9 |

1. Penetration below grade is approximately 5.6 feet less than length shown for instrumentation to sampler tip.

## 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 rod length below instrumentation versus average ETR and ETR for each blow 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 0.28 k-ft and 81.1 percent, respectively. The overall standard deviation for all data for EFV and ETR are 0.01 k-ft and 3.00 percent, respectively.

**Limitations**

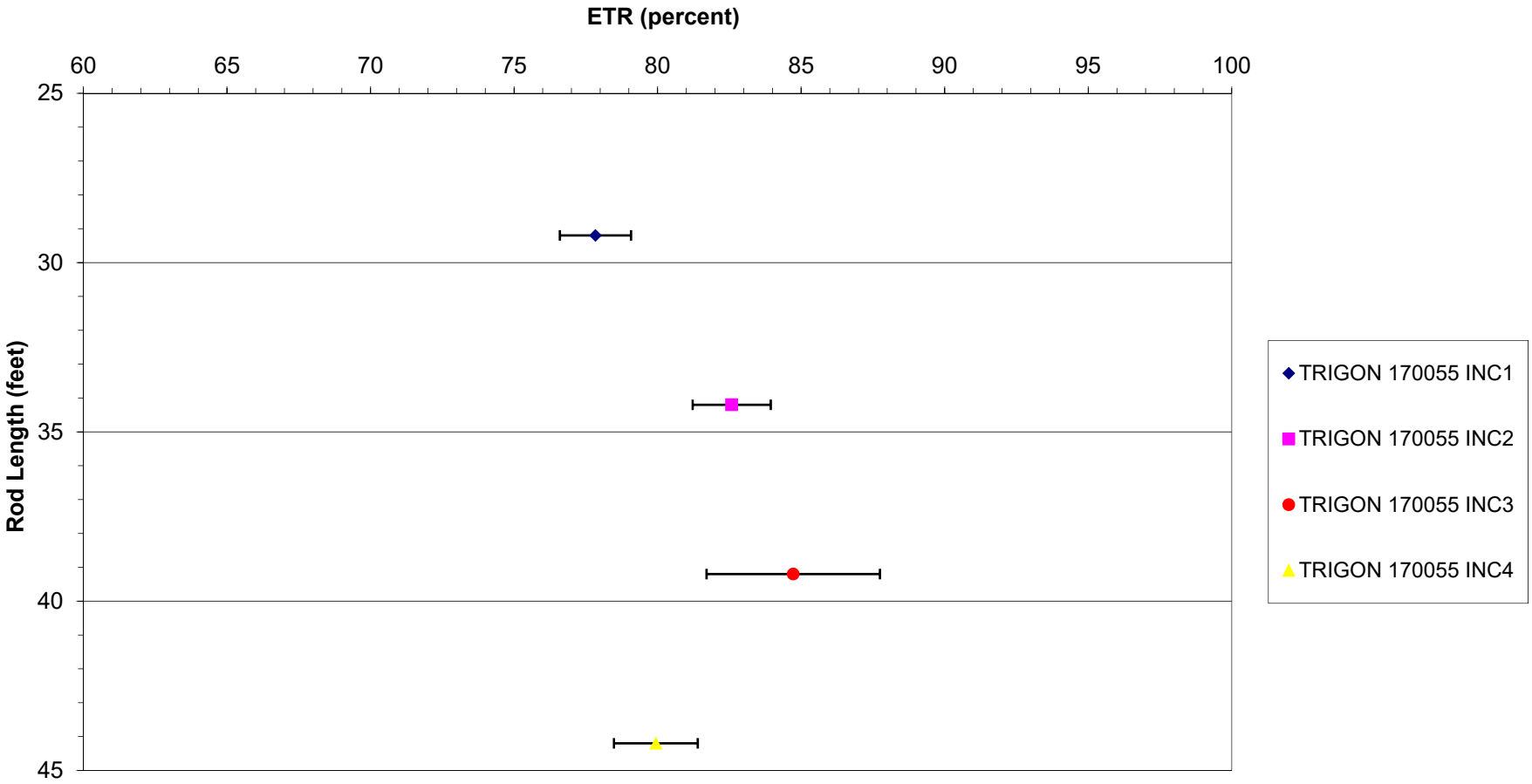
This report presents test measurements made by AFT. Interpretations were made based upon the measurements made by AFT with the latest techniques available and currently accepted standards of care recognized by Geotechnical Engineering professionals. AFT is an independent agency and is not the Geotechnical Engineer of Record. The Geotechnical Engineer of Record should ultimately make final recommendations for foundation design and construction.

# Appendix A

## Rod Length versus ETR and Average ETR Plots

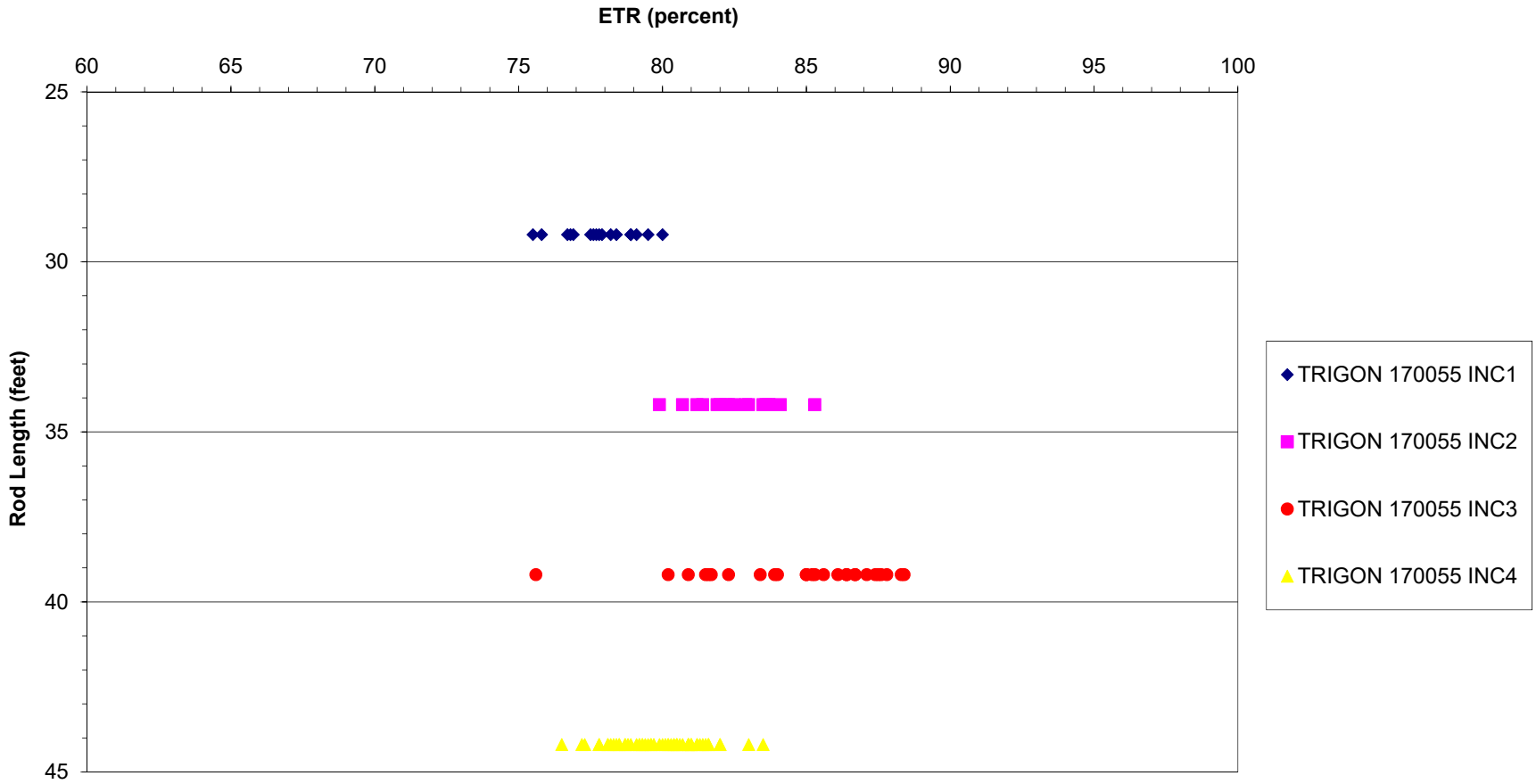
## SPT Calibration
## CME Rig, Model 550
## Serial No. 170055

**Rod Length versus Average ETR with +- 1 Standard Deviation Shown**
**Rig Make and Model: CME 550**
**Rig Serial # 170055**
**Near Blacksburg, South Carolina**




AFT Project No.: 217008NC

**Rod Length versus ETR**
**Rig Make and Model: CME 550**
**Rig Serial # 170055**
**Near Blacksburg, South Carolina**




AFT Project No.: 217008NC

# Appendix B

## Increment 1 PDIPLOT Data and Representative Blow Data

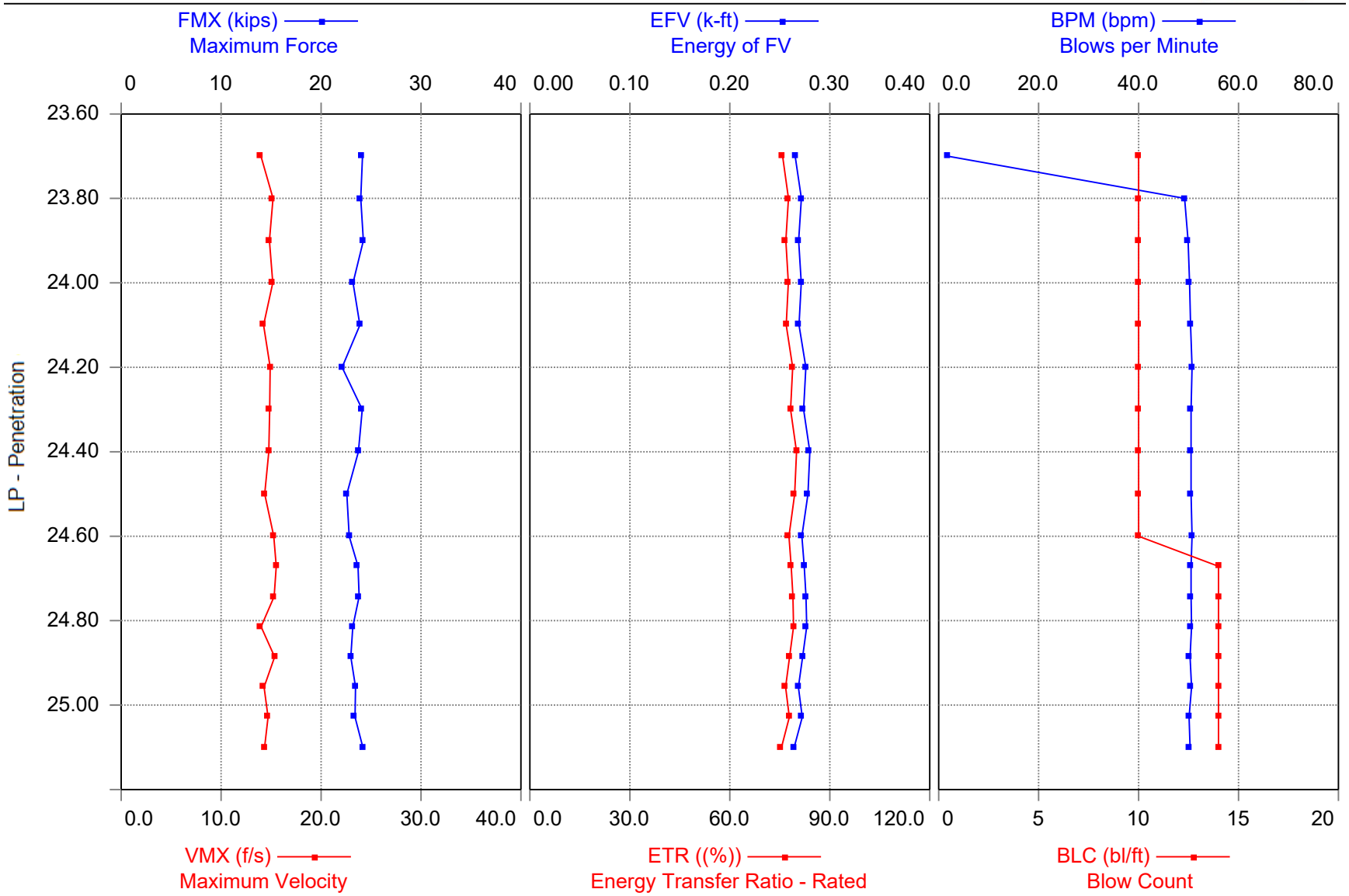
## SPT Calibration
## CME Rig, Model 550
## Serial No. 170055

Applied Foundation Testing, Inc. - PDIPLOT2 Ver 2016.1.56.2 - Case Method & iCAP® Results

Printed: 20-February-2017

Test started: 17-February-2017

217008NC - TRIGON 170055 INC1



217008NC - TRIGON 170055 INC1 CME 550 SPT AW
OP: AFT Date: 17-February-2017

AR: 1.19 in² SP: 0.492 k/ft³
LE: 29.20 ft EM: 30,000 ksi
WS: 16,807.9 f/s JC: 0.90 []

FMX: Maximum Force CSX: Max Measured Compr. Stress
VMX: Maximum Velocity DMX: Maximum Displacement
EFV: Energy of FV DFN: Final Displacement
ETR: Energy Transfer Ratio - Rated AMX: Maximum Acceleration
BPM: Blows per Minute

| BL# | Depth | BLC | FMX | VMX | EFV | ETR | BPM | CSX | DMX | DFN | AMX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | bl/ft | kips | f/s | k-ft | (%) | bpm | ksi | in | in | g's |
| 1 | 23.70 | 10 | 24 | 14.0 | 0.27 | 75.8 | 1.9 | 20.29 | 1.51 | 1.20 | 1,884 |
| 2 | 23.80 | 10 | 24 | 15.2 | 0.27 | 77.6 | 49.2 | 20.15 | 1.48 | 1.20 | 1,898 |
| 3 | 23.90 | 10 | 24 | 14.8 | 0.27 | 76.8 | 49.9 | 20.36 | 1.47 | 1.20 | 1,922 |
| 4 | 24.00 | 10 | 23 | 15.2 | 0.27 | 77.5 | 50.2 | 19.49 | 1.50 | 1.20 | 2,056 |
| 5 | 24.10 | 10 | 24 | 14.2 | 0.27 | 76.9 | 50.4 | 20.07 | 1.40 | 1.20 | 2,077 |
| 6 | 24.20 | 10 | 22 | 14.9 | 0.28 | 78.9 | 50.7 | 18.58 | 1.46 | 1.20 | 2,187 |
| 7 | 24.30 | 10 | 24 | 14.9 | 0.27 | 78.2 | 50.5 | 20.27 | 1.40 | 1.20 | 1,957 |
| 8 | 24.40 | 10 | 24 | 14.8 | 0.28 | 80.0 | 50.5 | 19.94 | 1.39 | 1.20 | 1,978 |
| 9 | 24.50 | 10 | 23 | 14.4 | 0.28 | 79.5 | 50.5 | 18.97 | 1.47 | 1.20 | 2,272 |
| 10 | 24.60 | 10 | 23 | 15.3 | 0.27 | 77.7 | 50.7 | 19.17 | 1.32 | 1.20 | 1,966 |
| 11 | 24.67 | 14 | 24 | 15.5 | 0.27 | 78.4 | 50.5 | 19.91 | 1.21 | 0.86 | 2,168 |
| 12 | 24.74 | 14 | 24 | 15.3 | 0.28 | 78.9 | 50.5 | 20.00 | 1.18 | 0.86 | 2,130 |
| 13 | 24.81 | 14 | 23 | 14.0 | 0.28 | 79.1 | 50.6 | 19.48 | 1.18 | 0.86 | 2,268 |
| 14 | 24.89 | 14 | 23 | 15.4 | 0.27 | 77.9 | 50.3 | 19.30 | 1.14 | 0.86 | 2,092 |
| 15 | 24.96 | 14 | 23 | 14.3 | 0.27 | 76.7 | 50.6 | 19.70 | 1.09 | 0.86 | 2,340 |
| 16 | 25.03 | 14 | 23 | 14.7 | 0.27 | 77.8 | 50.1 | 19.66 | 1.07 | 0.86 | 2,316 |
| 17 | 25.10 | 14 | 24 | 14.3 | 0.26 | 75.5 | 50.3 | 20.32 | 0.97 | 0.86 | 2,267 |
| | | Average | 23 | 14.8 | 0.27 | 77.9 | 47.5 | 19.74 | 1.31 | 1.06 | 2,105 |
| | | Std. Dev. | 1 | 0.5 | 0.00 | 1.2 | 11.4 | 0.50 | 0.17 | 0.17 | 149 |
| | | Maximum | 24 | 15.5 | 0.28 | 80.0 | 50.7 | 20.36 | 1.51 | 1.20 | 2,340 |
| | | @ Blow# | 3 | 11 | 8 | 8 | 6 | 3 | 1 | 10 | 15 |

Total number of blows analyzed: 17

BL# Sensors

1-17 F3: [264 AWJ-1] 212.8 (1.00); F4: [264 AWJ-2] 213.5 (1.00); A3: [K3179] 334.0 (1.00); A4: [K4088] 394.0 (1.00)

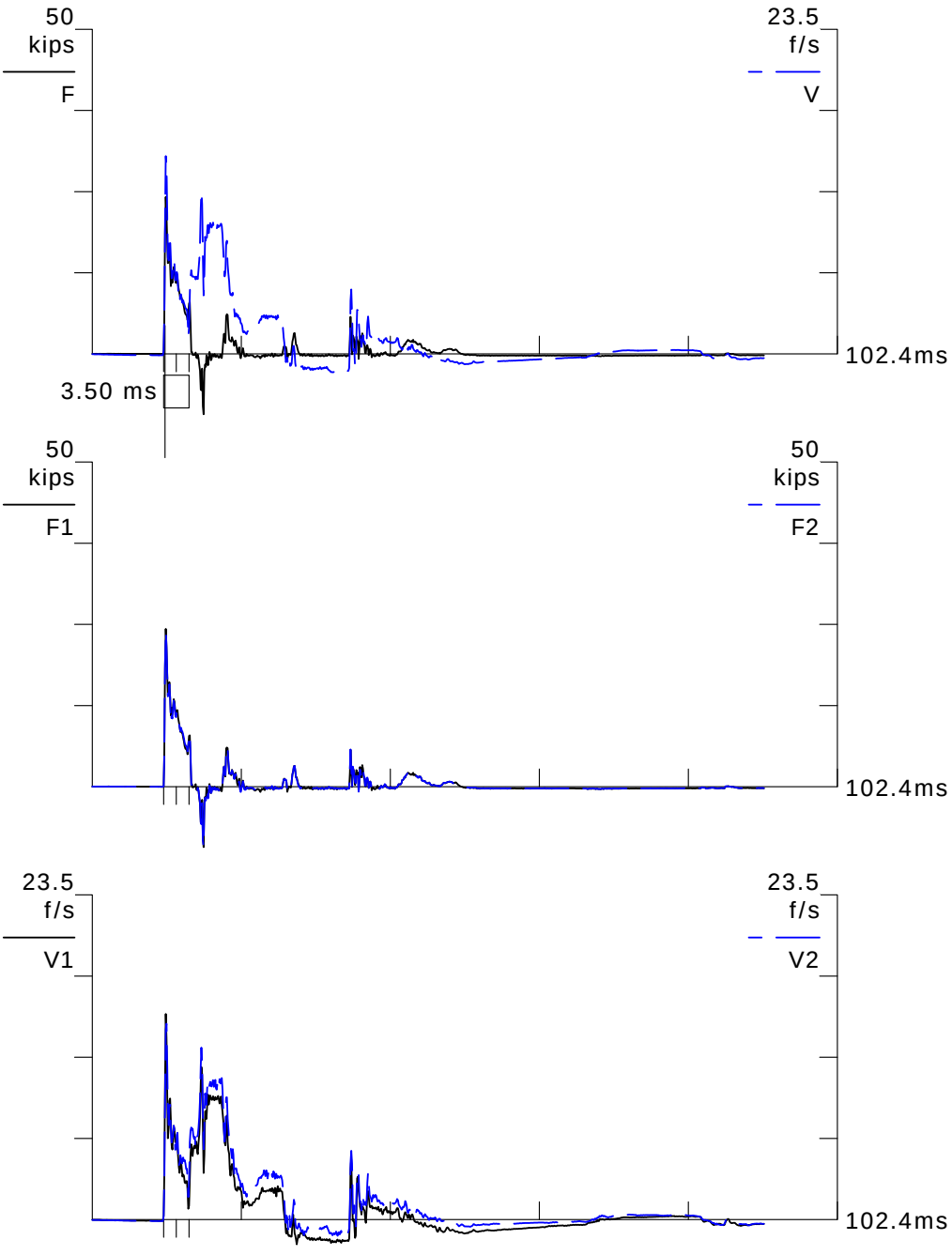
Time Summary

Drive 19 seconds 4:56 PM - 4:56 PM BN 1 - 17

# Applied Foundation Testing, Inc.

217008NC
PDA OP: AFT

PILE DRIVING ANALYZER ®
Version 2015.124
TRIGON 170055 INC1
CME 550 SPT AW




BN 17
2/17/2017 4:56:52 PM

| | | |
|---|---|---|
| FMX | 24 | kips |
| VMX | 14.3 | f/s |
| EFV | 0.26 | k-ft |
| ETR | 75.5 | (%) |
| BPM | 50.3 | bpm |
| CSX | 20.32 | ksi |
| DMX | 0.97 | in |
| DFN | 0.86 | in |
| AMX | 2267 | g's |
| LE | 29.20 | ft |
| AR | 1.19 | in^2 |
| EM | 30000 | ksi |
| SP | 0.492 | k/ft3 |
| WS | 16807.9 | f/s |
| EA/C | 2.1 | ksec/ft |
| LP | 25.10 | ft |

F34 A34

F3: [264 AWJ-1] 212.81 (1)
F4: [264 AWJ-2] 213.48 (1)
A3: [K3179] 334 mv/5000g's (1)
A4: [K4088] 394 mv/5000g's (1)

# Appendix C

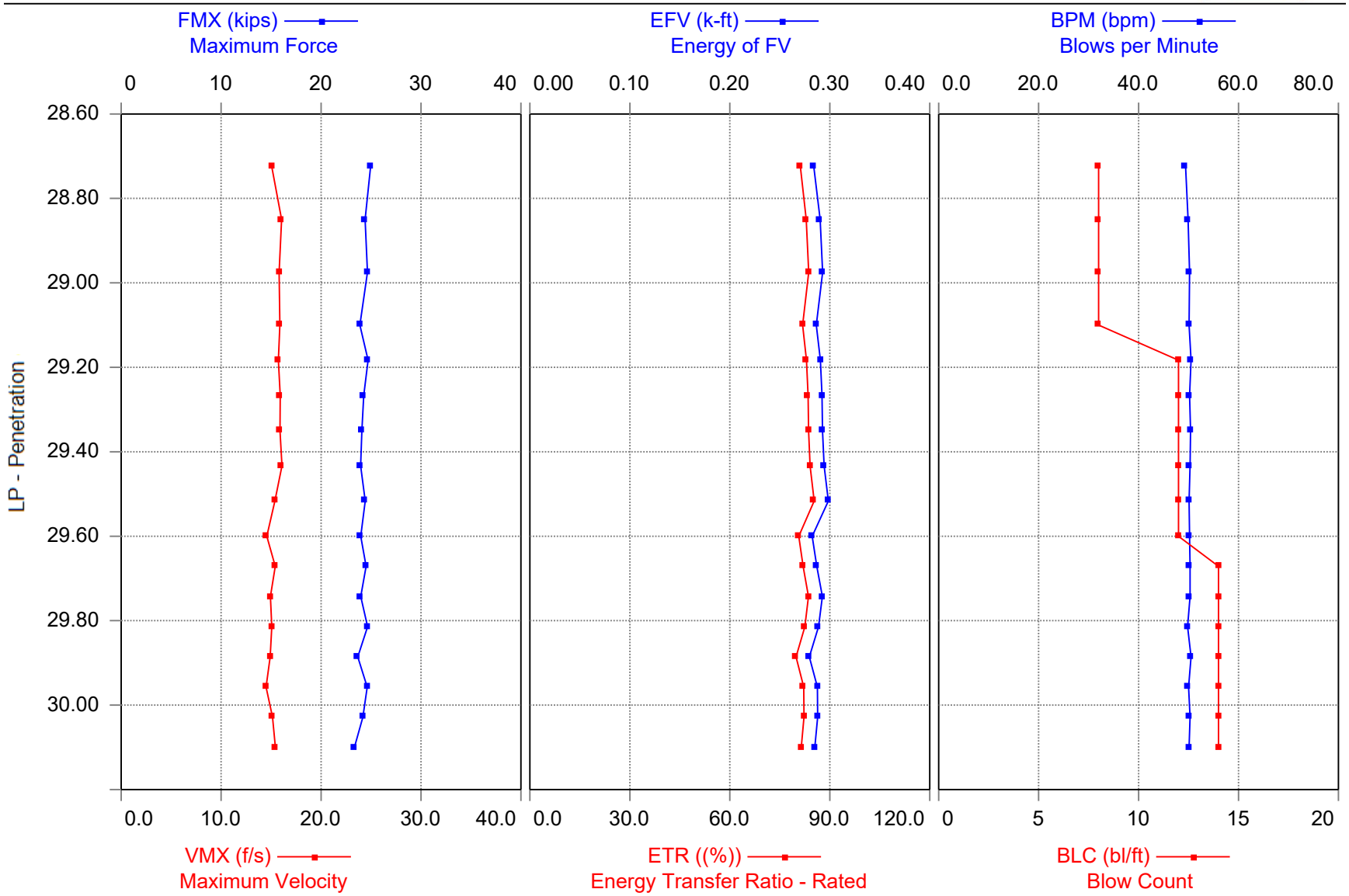
## Increment 2 PDIPLOT Data and Representative Blow Data

## SPT Calibration
## CME Rig, Model 550
## Serial No. 170055

Applied Foundation Testing, Inc. - PDIPLOT2 Ver 2016.1.56.2 - Case Method & iCAP® Results

Printed: 20-February-2017 Test started: 17-February-2017

217008NC - TRIGON 170055 INC2



217008NC - TRIGON 170055 INC2 CME 550 SPT AW
OP: AFT Date: 17-February-2017

AR: 1.19 in² SP: 0.492 k/ft³
LE: 34.20 ft EM: 30,000 ksi
WS: 16,807.9 f/s JC: 0.90 []

FMX: Maximum Force CSX: Max Measured Compr. Stress
VMX: Maximum Velocity DMX: Maximum Displacement
EFV: Energy of FV DFN: Final Displacement
ETR: Energy Transfer Ratio - Rated AMX: Maximum Acceleration
BPM: Blows per Minute

| BL# | Depth | BLC | FMX | VMX | EFV | ETR | BPM | CSX | DMX | DFN | AMX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | bl/ft | kips | f/s | k-ft | (%) | bpm | ksi | in | in | g's |
| 1 | 28.73 | 8 | 25 | 15.1 | 0.28 | 81.2 | 49.4 | 20.96 | 1.73 | 1.50 | 2,536 |
| 2 | 28.85 | 8 | 24 | 16.1 | 0.29 | 82.9 | 49.9 | 20.51 | 1.62 | 1.50 | 2,698 |
| 3 | 28.98 | 8 | 25 | 15.8 | 0.29 | 83.7 | 50.2 | 20.71 | 1.57 | 1.50 | 2,651 |
| 4 | 29.10 | 8 | 24 | 15.9 | 0.29 | 81.9 | 50.1 | 20.07 | 1.50 | 1.50 | 2,384 |
| 5 | 29.18 | 12 | 25 | 15.7 | 0.29 | 83.0 | 50.5 | 20.75 | 1.27 | 1.00 | 2,515 |
| 6 | 29.27 | 12 | 24 | 15.9 | 0.29 | 83.5 | 50.2 | 20.40 | 1.25 | 1.00 | 2,432 |
| 7 | 29.35 | 12 | 24 | 15.9 | 0.29 | 83.7 | 50.4 | 20.24 | 1.26 | 1.00 | 2,466 |
| 8 | 29.43 | 12 | 24 | 16.1 | 0.29 | 84.1 | 50.3 | 20.13 | 1.26 | 1.00 | 2,664 |
| 9 | 29.52 | 12 | 24 | 15.4 | 0.30 | 85.3 | 50.1 | 20.51 | 1.26 | 1.00 | 2,810 |
| 10 | 29.60 | 12 | 24 | 14.6 | 0.28 | 80.7 | 50.2 | 20.15 | 1.16 | 1.00 | 2,768 |
| 11 | 29.67 | 14 | 25 | 15.4 | 0.29 | 82.0 | 50.3 | 20.60 | 1.14 | 0.86 | 2,855 |
| 12 | 29.74 | 14 | 24 | 14.9 | 0.29 | 83.6 | 50.3 | 20.14 | 1.15 | 0.86 | 2,570 |
| 13 | 29.81 | 14 | 25 | 15.1 | 0.29 | 82.5 | 49.8 | 20.71 | 1.10 | 0.86 | 2,557 |
| 14 | 29.89 | 14 | 24 | 14.9 | 0.28 | 79.9 | 50.5 | 19.89 | 1.01 | 0.86 | 2,265 |
| 15 | 29.96 | 14 | 25 | 14.5 | 0.29 | 82.2 | 50.0 | 20.69 | 1.06 | 0.86 | 2,642 |
| 16 | 30.03 | 14 | 24 | 15.1 | 0.29 | 82.3 | 50.3 | 20.32 | 1.03 | 0.86 | 2,572 |
| 17 | 30.10 | 14 | 23 | 15.4 | 0.28 | 81.4 | 50.1 | 19.61 | 1.03 | 0.86 | 2,479 |
| | | Average | 24 | 15.4 | 0.29 | 82.6 | 50.2 | 20.37 | 1.26 | 1.06 | 2,580 |
| | | Std. Dev. | 0 | 0.5 | 0.00 | 1.3 | 0.3 | 0.34 | 0.21 | 0.25 | 150 |
| | | Maximum | 25 | 16.1 | 0.30 | 85.3 | 50.5 | 20.96 | 1.73 | 1.50 | 2,855 |
| | | @ Blow# | 1 | 8 | 9 | 9 | 5 | 1 | 1 | 4 | 11 |

Total number of blows analyzed: 17

BL# Sensors

1-17 F3: [264 AWJ-1] 212.8 (1.00); F4: [264 AWJ-2] 213.5 (1.00); A3: [K3179] 334.0 (1.00); A4: [K4088] 394.0 (1.00)

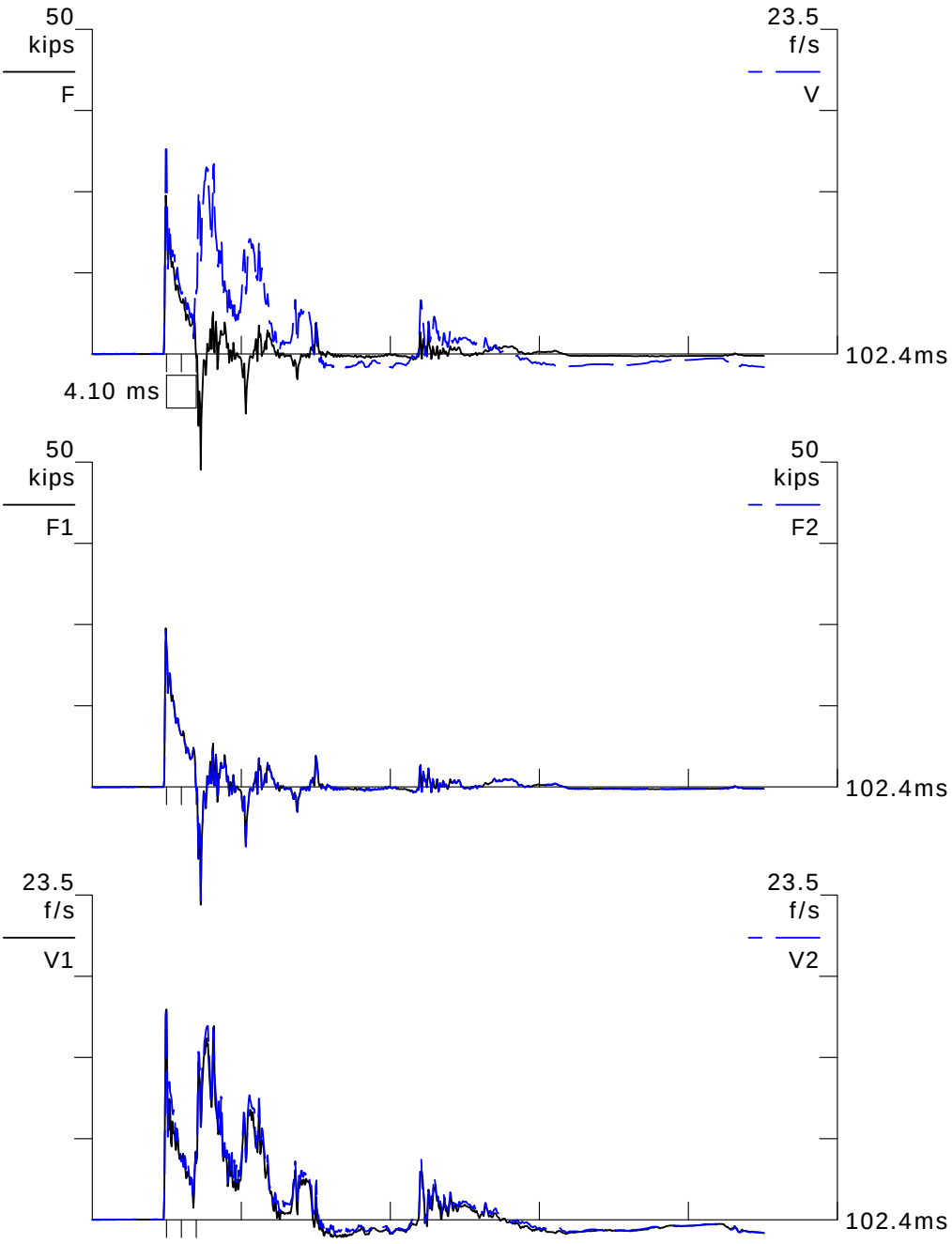
Time Summary

Drive 19 seconds 5:04 PM - 5:04 PM BN 1 - 17

# Applied Foundation Testing, Inc.

217008NC
PDA OP: AFT

PILE DRIVING ANALYZER ®
Version 2015.124
TRIGON 170055 INC2
CME 550 SPT AW




BN 9
2/17/2017 5:04:42 PM

| | |
|---|---|
| FMX | 24 kips |
| VMX | 15.4 f/s |
| EFV | 0.30 k-ft |
| ETR | 85.3 (%) |
| BPM | 50.1 bpm |
| CSX | 20.51 ksi |
| DMX | 1.26 in |
| DFN | 1.00 in |
| AMX | 2810 g's |
| LE | 34.20 ft |
| AR | 1.19 in^2 |
| EM | 30000 ksi |
| SP | 0.492 k/ft3 |
| WS | 16807.9 f/s |
| EA/C | 2.1 ksec/ft |
| LP | 29.52 ft |

F34 A34

F3: [264 AWJ-1] 212.81 (1)
F4: [264 AWJ-2] 213.48 (1)
A3: [K3179] 334 mv/5000g's (1)
A4: [K4088] 394 mv/5000g's (1)

# Appendix E

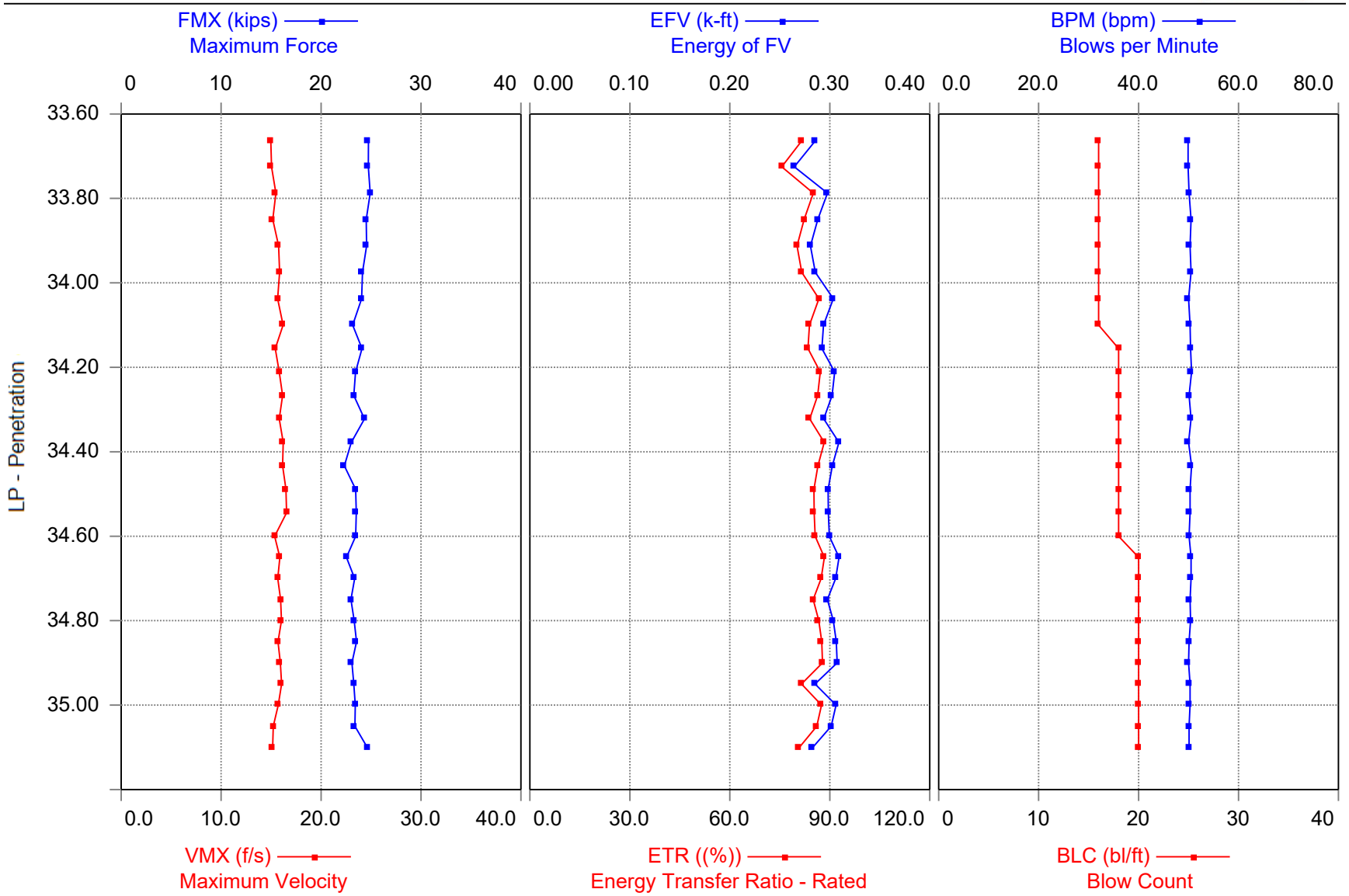
## Increment 4 PDIPLOT Data and Representative Blow Data

## SPT Calibration
## CME Rig, Model 550
## Serial No. 170055

Applied Foundation Testing, Inc. - PDIPLOT2 Ver 2016.1.56.2 - Case Method & iCAP® Results

Printed: 20-February-2017 Test started: 17-February-2017

217008NC - TRIGON 170055 INC3



217008NC - TRIGON 170055 INC3 CME 550 SPT AW
OP: AFT Date: 17-February-2017

AR: 1.19 in² SP: 0.492 k/ft³
LE: 39.20 ft EM: 30,000 ksi
WS: 16,807.9 f/s JC: 0.90 []

FMX: Maximum Force CSX: Max Measured Compr. Stress
VMX: Maximum Velocity DMX: Maximum Displacement
EFV: Energy of FV DFN: Final Displacement
ETR: Energy Transfer Ratio - Rated AMX: Maximum Acceleration
BPM: Blows per Minute

| BL# | Depth | BLC | FMX | VMX | EFV | ETR | BPM | CSX | DMX | DFN | AMX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | bl/ft | kips | f/s | k-ft | (%) | bpm | ksi | in | in | g's |
| 1 | 33.66 | 16 | 25 | 15.0 | 0.29 | 81.7 | 49.9 | 20.79 | 1.23 | 0.75 | 2,804 |
| 2 | 33.73 | 16 | 25 | 15.0 | 0.26 | 75.6 | 49.9 | 20.78 | 0.95 | 0.73 | 2,855 |
| 3 | 33.79 | 16 | 25 | 15.5 | 0.30 | 85.0 | 50.1 | 20.93 | 1.12 | 0.75 | 2,830 |
| 4 | 33.85 | 16 | 25 | 15.2 | 0.29 | 82.3 | 50.5 | 20.60 | 1.02 | 0.75 | 2,839 |
| 5 | 33.91 | 16 | 25 | 15.8 | 0.28 | 80.2 | 50.3 | 20.63 | 0.93 | 0.75 | 2,386 |
| 6 | 33.98 | 16 | 24 | 15.9 | 0.29 | 81.6 | 50.5 | 20.28 | 0.95 | 0.75 | 2,582 |
| 7 | 34.04 | 16 | 24 | 15.7 | 0.30 | 86.7 | 50.0 | 20.21 | 0.98 | 0.75 | 2,802 |
| 8 | 34.10 | 16 | 23 | 16.2 | 0.29 | 83.9 | 50.3 | 19.46 | 0.91 | 0.75 | 2,613 |
| 9 | 34.16 | 18 | 24 | 15.4 | 0.29 | 83.4 | 50.4 | 20.25 | 0.92 | 0.67 | 2,769 |
| 10 | 34.21 | 18 | 23 | 15.8 | 0.30 | 87.1 | 50.6 | 19.70 | 0.97 | 0.67 | 2,720 |
| 11 | 34.27 | 18 | 23 | 16.1 | 0.30 | 86.4 | 50.1 | 19.55 | 0.93 | 0.67 | 2,402 |
| 12 | 34.32 | 18 | 24 | 15.8 | 0.29 | 84.0 | 50.5 | 20.46 | 0.88 | 0.67 | 2,757 |
| 13 | 34.38 | 18 | 23 | 16.2 | 0.31 | 88.3 | 50.0 | 19.35 | 0.92 | 0.67 | 2,746 |
| 14 | 34.43 | 18 | 22 | 16.1 | 0.30 | 86.4 | 50.6 | 18.76 | 0.89 | 0.67 | 2,556 |
| 15 | 34.49 | 18 | 23 | 16.5 | 0.30 | 85.2 | 50.3 | 19.71 | 0.90 | 0.67 | 2,531 |
| 16 | 34.54 | 18 | 24 | 16.5 | 0.30 | 85.3 | 50.3 | 19.77 | 0.88 | 0.67 | 2,572 |
| 17 | 34.60 | 18 | 23 | 15.4 | 0.30 | 85.6 | 50.1 | 19.72 | 0.88 | 0.67 | 2,752 |
| 18 | 34.65 | 20 | 23 | 15.9 | 0.31 | 88.4 | 50.5 | 18.94 | 0.93 | 0.60 | 2,718 |
| 19 | 34.70 | 20 | 23 | 15.7 | 0.31 | 87.4 | 50.5 | 19.63 | 0.93 | 0.60 | 2,631 |
| 20 | 34.75 | 20 | 23 | 15.9 | 0.30 | 85.0 | 50.3 | 19.31 | 0.84 | 0.60 | 2,434 |
| 21 | 34.80 | 20 | 23 | 16.0 | 0.30 | 86.7 | 50.4 | 19.58 | 0.88 | 0.60 | 2,430 |
| 22 | 34.85 | 20 | 24 | 15.7 | 0.31 | 87.6 | 50.1 | 19.79 | 0.89 | 0.60 | 2,618 |
| 23 | 34.90 | 20 | 23 | 15.9 | 0.31 | 87.8 | 50.0 | 19.40 | 0.88 | 0.60 | 2,561 |
| 24 | 34.95 | 20 | 23 | 16.1 | 0.29 | 81.5 | 50.3 | 19.55 | 0.73 | 0.60 | 2,525 |
| 25 | 35.00 | 20 | 23 | 15.7 | 0.31 | 87.5 | 50.3 | 19.69 | 0.82 | 0.60 | 2,800 |
| 26 | 35.05 | 20 | 23 | 15.2 | 0.30 | 86.1 | 50.1 | 19.65 | 0.83 | 0.60 | 2,765 |
| 27 | 35.10 | 20 | 25 | 15.2 | 0.28 | 80.9 | 50.1 | 20.69 | 0.66 | 0.60 | 2,673 |
| | | Average | 24 | 15.8 | 0.30 | 84.7 | 50.3 | 19.90 | 0.91 | 0.67 | 2,654 |
| | | Std. Dev. | 1 | 0.4 | 0.01 | 3.0 | 0.2 | 0.57 | 0.10 | 0.06 | 141 |
| | | Maximum | 25 | 16.5 | 0.31 | 88.4 | 50.6 | 20.93 | 1.23 | 0.75 | 2,855 |
| | | @ Blow# | 3 | 16 | 18 | 18 | 10 | 3 | 1 | 5 | 2 |

Total number of blows analyzed: 27

| BL# | Sensors |
|---|---|
| 1-27 | F3: [264 AWJ-1] 212.8 (1.00); F4: [264 AWJ-2] 213.5 (1.00); A3: [K3179] 334.0 (1.00); A4: [K4088] 394.0 (1.00) |

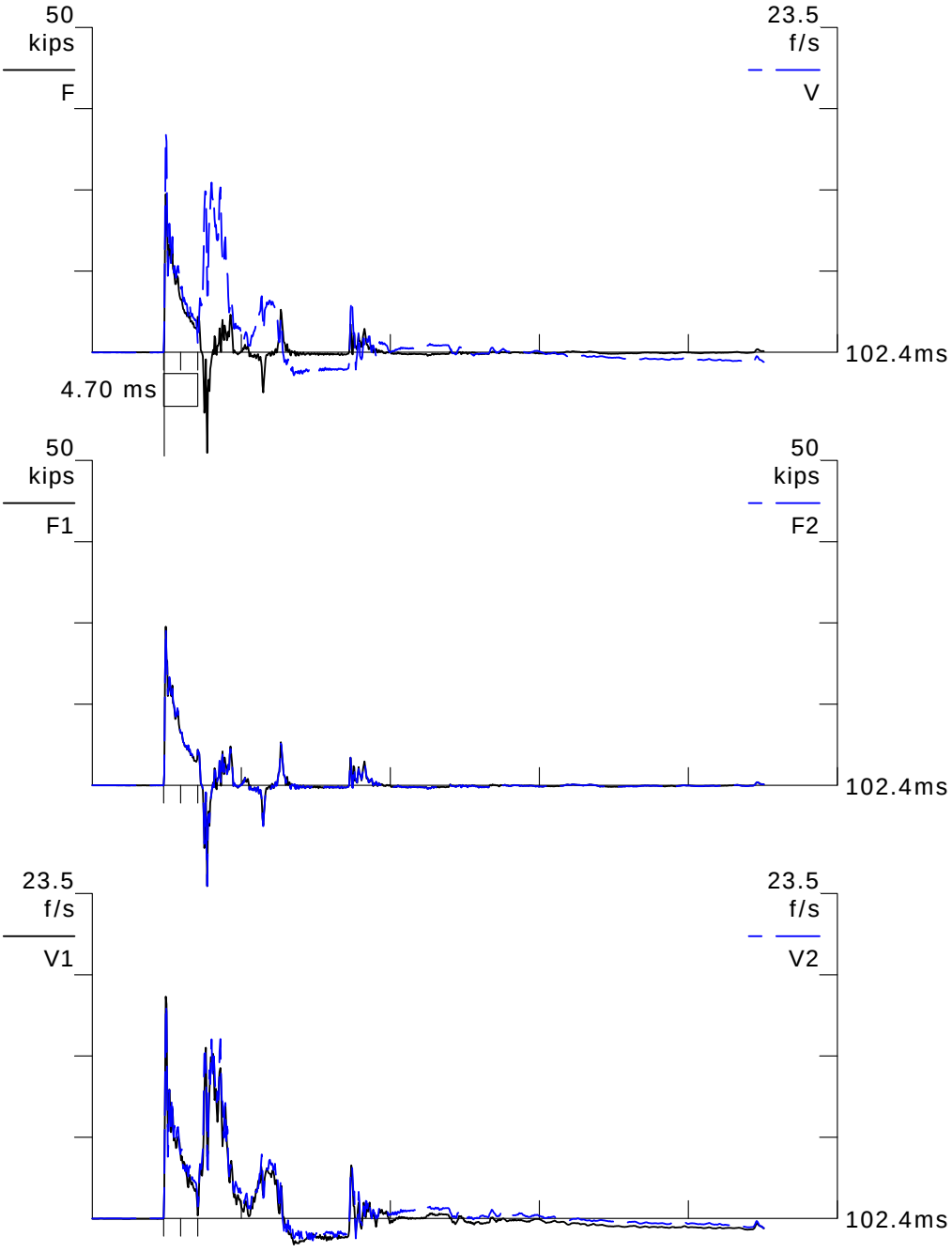
Time Summary

Drive 30 seconds 5:11 PM - 5:12 PM BN 1 - 27

# Applied Foundation Testing, Inc.

217008NC
PDA OP: AFT

PILE DRIVING ANALYZER ®
Version 2015.124
TRIGON 170055 INC3
CME 550 SPT AW




BN 12
2/17/2017 5:11:50 PM

| | | |
|---|---|---|
| FMX | 24 | kips |
| VMX | 15.8 | f/s |
| EFV | 0.29 | k-ft |
| ETR | 84.0 | (%) |
| BPM | 50.5 | bpm |
| CSX | 20.46 | ksi |
| DMX | 0.88 | in |
| DFN | 0.67 | in |
| AMX | 2757 | g's |
| LE | 39.20 | ft |
| AR | 1.19 | in^2 |
| EM | 30000 | ksi |
| SP | 0.492 | k/ft3 |
| WS | 16807.9 | f/s |
| EA/C | 2.1 | ksec/ft |
| LP | 34.32 | ft |

F34 A34

F3: [264 AWJ-1] 212.81 (1)
F4: [264 AWJ-2] 213.48 (1)
A3: [K3179] 334 mv/5000g's (1)
A4: [K4088] 394 mv/5000g's (1)

# Appendix D

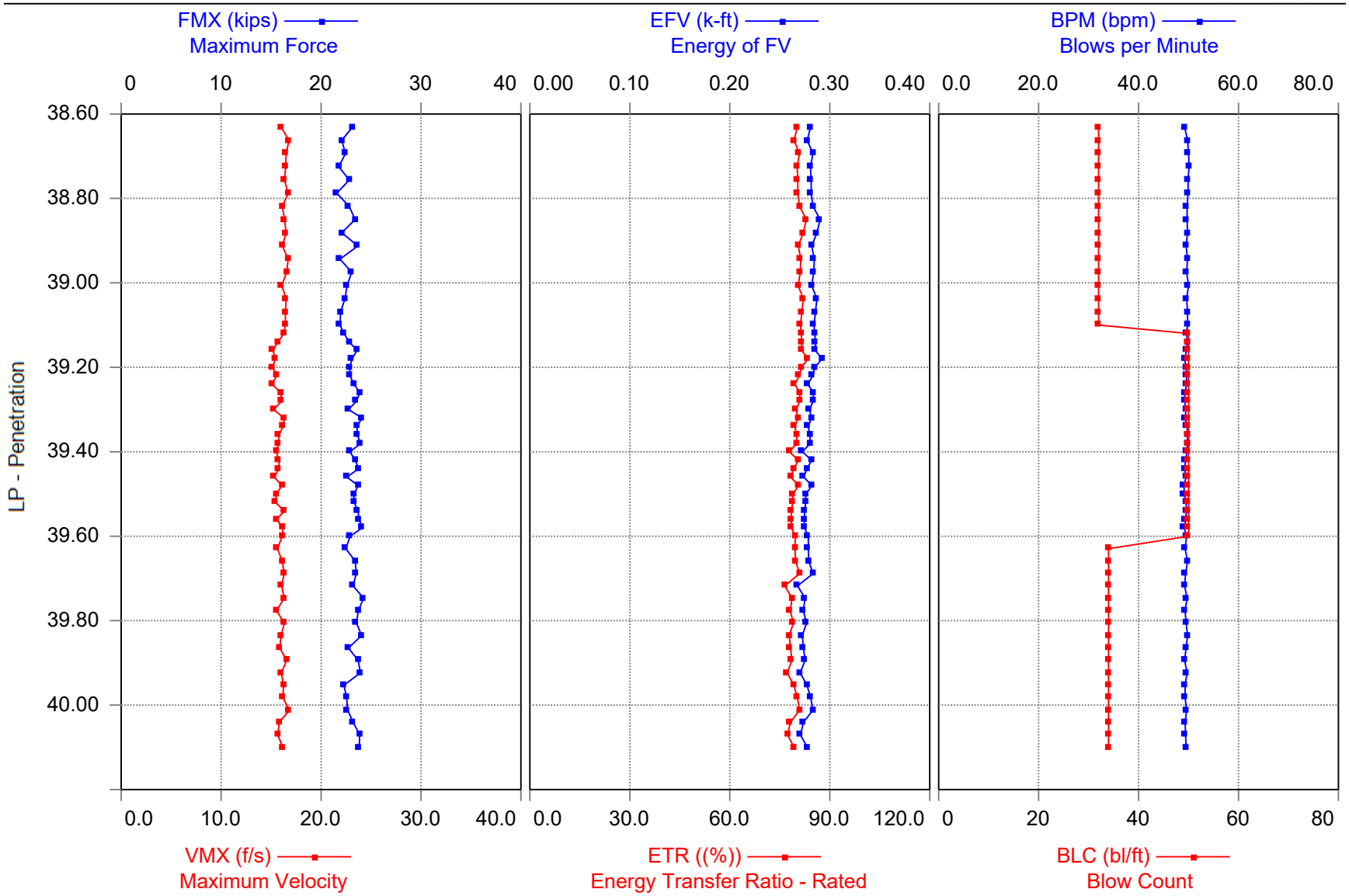
## Increment 3 PDIPLOT Data and Representative Blow Data

## SPT Calibration
## CME Rig, Model 550
## Serial No. 170055

Applied Foundation Testing, Inc. - PDIPLOT2 Ver 2016.1.56.2 - Case Method & iCAP® Results

Printed: 20-February-2017 Test started: 17-February-2017

217008NC - TRIGON 170055 INC4



217008NC - TRIGON 170055 INC4 CME 55 SPT AW
OP: AFT Date: 17-February-2017

AR: 1.19 in² SP: 0.492 k/ft³
LE: 44.20 ft EM: 30,000 ksi
WS: 16,807.9 f/s JC: 0.90 []

FMX: Maximum Force CSX: Max Measured Compr. Stress
VMX: Maximum Velocity DMX: Maximum Displacement
EFV: Energy of FV DFN: Final Displacement
ETR: Energy Transfer Ratio - Rated AMX: Maximum Acceleration
BPM: Blows per Minute

| BL# | Depth | BLC | FMX | VMX | EFV | ETR | BPM | CSX | DMX | DFN | AMX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | bl/ft | kips | f/s | k-ft | (%) | bpm | ksi | in | in | g's |
| 1 | 38.63 | 32 | 23 | 16.0 | 0.28 | 80.2 | 49.2 | 19.45 | 1.06 | 0.37 | 2,921 |
| 2 | 38.66 | 32 | 22 | 16.8 | 0.28 | 79.3 | 49.8 | 18.54 | 0.90 | 0.37 | 2,810 |
| 3 | 38.69 | 32 | 22 | 16.5 | 0.28 | 80.9 | 50.0 | 18.86 | 0.86 | 0.37 | 2,800 |
| 4 | 38.73 | 32 | 22 | 16.5 | 0.28 | 80.2 | 50.1 | 18.29 | 0.60 | 0.37 | 2,702 |
| 5 | 38.76 | 32 | 23 | 16.3 | 0.28 | 80.4 | 49.9 | 19.18 | 0.51 | 0.38 | 2,797 |
| 6 | 38.79 | 32 | 22 | 16.7 | 0.28 | 80.4 | 49.9 | 18.13 | 0.49 | 0.37 | 2,554 |
| 7 | 38.82 | 32 | 23 | 16.1 | 0.28 | 80.9 | 49.7 | 19.16 | 0.48 | 0.38 | 2,645 |
| 8 | 38.85 | 32 | 23 | 16.3 | 0.29 | 83.0 | 49.7 | 19.68 | 0.48 | 0.38 | 2,757 |
| 9 | 38.88 | 32 | 22 | 16.5 | 0.29 | 82.0 | 49.8 | 18.55 | 0.50 | 0.37 | 2,631 |
| 10 | 38.91 | 32 | 24 | 16.1 | 0.28 | 80.5 | 49.5 | 19.91 | 0.46 | 0.38 | 2,802 |
| 11 | 38.94 | 32 | 22 | 16.7 | 0.28 | 81.3 | 49.8 | 18.40 | 0.47 | 0.38 | 2,497 |
| 12 | 38.98 | 32 | 23 | 16.5 | 0.28 | 81.2 | 49.6 | 19.38 | 0.47 | 0.38 | 2,767 |
| 13 | 39.01 | 32 | 23 | 16.1 | 0.28 | 80.5 | 50.0 | 18.99 | 0.46 | 0.37 | 2,734 |
| 14 | 39.04 | 32 | 22 | 16.5 | 0.29 | 82.0 | 49.6 | 18.82 | 0.48 | 0.37 | 2,626 |
| 15 | 39.07 | 32 | 22 | 16.4 | 0.29 | 81.6 | 49.8 | 18.45 | 0.49 | 0.37 | 2,445 |
| 16 | 39.10 | 32 | 22 | 16.4 | 0.28 | 81.2 | 49.8 | 18.40 | 0.48 | 0.38 | 2,630 |
| 17 | 39.12 | 50 | 22 | 16.3 | 0.28 | 81.4 | 49.6 | 18.73 | 0.48 | 0.24 | 2,472 |
| 18 | 39.14 | 50 | 23 | 15.7 | 0.29 | 81.6 | 49.8 | 19.17 | 0.48 | 0.24 | 2,847 |
| 19 | 39.16 | 50 | 24 | 15.2 | 0.29 | 81.6 | 49.6 | 19.83 | 0.49 | 0.24 | 2,901 |
| 20 | 39.18 | 50 | 23 | 15.4 | 0.29 | 83.5 | 49.2 | 19.40 | 0.52 | 0.24 | 3,003 |
| 21 | 39.20 | 50 | 23 | 15.2 | 0.29 | 81.5 | 49.5 | 19.22 | 0.49 | 0.24 | 2,924 |
| 22 | 39.22 | 50 | 23 | 15.6 | 0.28 | 80.9 | 49.6 | 19.24 | 0.49 | 0.24 | 2,875 |
| 23 | 39.24 | 50 | 23 | 15.1 | 0.28 | 79.4 | 49.6 | 19.56 | 0.48 | 0.24 | 3,040 |
| 24 | 39.26 | 50 | 24 | 16.0 | 0.28 | 81.0 | 49.3 | 20.07 | 0.51 | 0.24 | 2,861 |
| 25 | 39.28 | 50 | 24 | 16.1 | 0.28 | 81.0 | 49.2 | 19.79 | 0.51 | 0.24 | 2,755 |
| 26 | 39.30 | 50 | 23 | 15.2 | 0.28 | 79.9 | 49.5 | 19.12 | 0.49 | 0.24 | 3,006 |
| 27 | 39.32 | 50 | 24 | 16.3 | 0.28 | 80.5 | 49.3 | 20.24 | 0.51 | 0.24 | 2,807 |
| 28 | 39.34 | 50 | 24 | 16.2 | 0.28 | 79.5 | 49.7 | 19.84 | 0.50 | 0.24 | 2,615 |
| 29 | 39.36 | 50 | 24 | 15.8 | 0.28 | 80.0 | 49.8 | 19.84 | 0.51 | 0.24 | 2,901 |
| 30 | 39.38 | 50 | 24 | 15.7 | 0.28 | 80.1 | 49.8 | 20.15 | 0.50 | 0.24 | 3,046 |
| 31 | 39.40 | 50 | 23 | 15.5 | 0.27 | 77.8 | 49.7 | 19.23 | 0.49 | 0.24 | 3,008 |
| 32 | 39.42 | 50 | 23 | 15.8 | 0.28 | 80.6 | 49.4 | 19.67 | 0.53 | 0.24 | 3,052 |
| 33 | 39.44 | 50 | 24 | 15.8 | 0.28 | 79.2 | 49.2 | 19.96 | 0.51 | 0.24 | 3,028 |

217008NC - TRIGON 170055 INC4 CME 55 SPT AW
OP: AFT Date: 17-February-2017

| BL# | Depth | BLC | FMX | VMX | EFV | ETR | BPM | CSX | DMX | DFN | AMX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | bl/ft | kips | f/s | k-ft | (%) | bpm | ksi | in | in | g's |
| 34 | 39.46 | 50 | 23 | 15.3 | 0.27 | 78.3 | 49.5 | 18.97 | 0.50 | 0.24 | 3,029 |
| 35 | 39.48 | 50 | 24 | 16.1 | 0.28 | 80.7 | 49.1 | 19.93 | 0.53 | 0.24 | 2,648 |
| 36 | 39.50 | 50 | 23 | 15.5 | 0.28 | 78.9 | 49.1 | 19.55 | 0.51 | 0.24 | 2,906 |
| 37 | 39.52 | 50 | 23 | 15.4 | 0.28 | 78.8 | 49.5 | 19.58 | 0.51 | 0.24 | 3,084 |
| 38 | 39.54 | 50 | 24 | 16.4 | 0.27 | 78.5 | 49.6 | 19.91 | 0.51 | 0.24 | 2,593 |
| 39 | 39.56 | 50 | 24 | 15.5 | 0.27 | 78.4 | 49.4 | 19.98 | 0.49 | 0.24 | 3,248 |
| 40 | 39.58 | 50 | 24 | 16.2 | 0.27 | 78.5 | 49.1 | 20.28 | 0.51 | 0.24 | 2,919 |
| 41 | 39.60 | 50 | 23 | 16.1 | 0.28 | 79.6 | 49.6 | 19.25 | 0.52 | 0.24 | 3,009 |
| 42 | 39.63 | 34 | 22 | 15.6 | 0.28 | 79.6 | 49.3 | 18.89 | 0.51 | 0.35 | 3,121 |
| 43 | 39.66 | 34 | 23 | 16.1 | 0.28 | 79.7 | 49.8 | 19.68 | 0.51 | 0.35 | 2,531 |
| 44 | 39.69 | 34 | 24 | 16.3 | 0.28 | 81.0 | 49.4 | 19.77 | 0.55 | 0.35 | 2,712 |
| 45 | 39.72 | 34 | 23 | 16.1 | 0.27 | 76.5 | 49.2 | 19.49 | 0.49 | 0.35 | 2,738 |
| 46 | 39.75 | 34 | 24 | 16.3 | 0.28 | 78.7 | 49.7 | 20.38 | 0.52 | 0.35 | 2,973 |
| 47 | 39.78 | 34 | 24 | 15.5 | 0.27 | 78.1 | 49.3 | 19.94 | 0.53 | 0.35 | 3,222 |
| 48 | 39.81 | 34 | 24 | 16.3 | 0.28 | 79.1 | 49.5 | 19.79 | 0.52 | 0.35 | 2,648 |
| 49 | 39.84 | 34 | 24 | 16.0 | 0.27 | 77.8 | 49.8 | 20.21 | 0.51 | 0.35 | 3,182 |
| 50 | 39.86 | 34 | 23 | 15.9 | 0.27 | 78.2 | 49.5 | 19.11 | 0.53 | 0.35 | 3,181 |
| 51 | 39.89 | 34 | 24 | 16.6 | 0.28 | 78.7 | 49.2 | 19.93 | 0.52 | 0.35 | 2,862 |
| 52 | 39.92 | 34 | 24 | 16.0 | 0.27 | 77.2 | 49.7 | 20.12 | 0.51 | 0.35 | 3,141 |
| 53 | 39.95 | 34 | 22 | 16.2 | 0.28 | 79.2 | 49.3 | 18.73 | 0.53 | 0.35 | 3,193 |
| 54 | 39.98 | 34 | 23 | 16.2 | 0.28 | 80.3 | 49.3 | 18.97 | 0.53 | 0.35 | 3,094 |
| 55 | 40.01 | 34 | 23 | 16.8 | 0.28 | 80.9 | 49.6 | 19.03 | 0.54 | 0.35 | 2,869 |
| 56 | 40.04 | 34 | 23 | 15.8 | 0.27 | 78.1 | 49.3 | 19.52 | 0.50 | 0.35 | 3,224 |
| 57 | 40.07 | 34 | 24 | 15.7 | 0.27 | 77.3 | 49.4 | 20.05 | 0.49 | 0.35 | 3,241 |
| 58 | 40.10 | 34 | 24 | 16.2 | 0.28 | 79.3 | 49.5 | 20.02 | 0.51 | 0.35 | 3,022 |
| | | Average | 23 | 16.0 | 0.28 | 79.9 | 49.5 | 19.42 | 0.53 | 0.31 | 2,873 |
| | | Std. Dev. | 1 | 0.4 | 0.01 | 1.4 | 0.2 | 0.57 | 0.10 | 0.06 | 213 |
| | | Maximum | 24 | 16.8 | 0.29 | 83.5 | 50.1 | 20.38 | 1.06 | 0.38 | 3,248 |
| | | @ Blow# | 46 | 55 | 20 | 20 | 4 | 46 | 1 | 7 | 39 |

Total number of blows analyzed: 58

BL# Sensors

1-58 F3: [264 AWJ-1] 212.8 (1.00); F4: [264 AWJ-2] 213.5 (1.00); A3: [K3179] 334.0 (1.00); A4: [K4088] 394.0 (1.00)

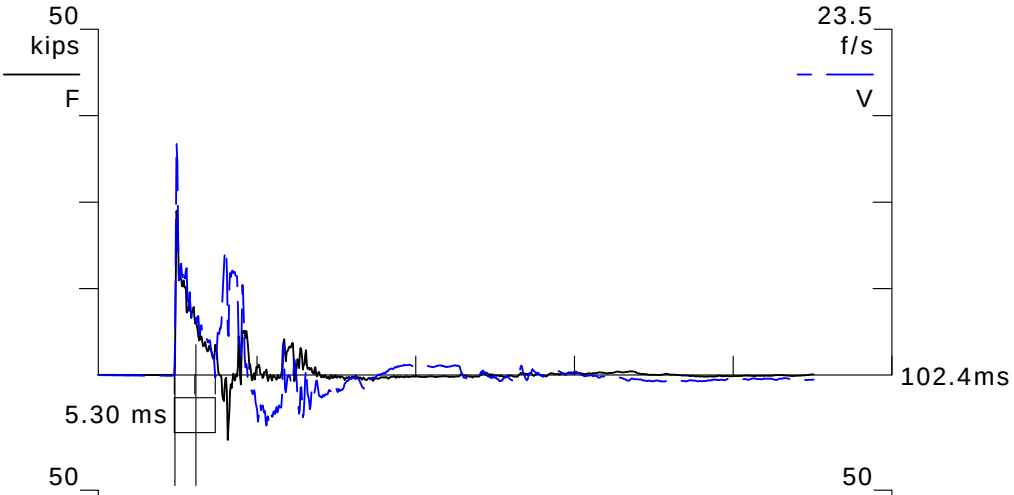
Time Summary

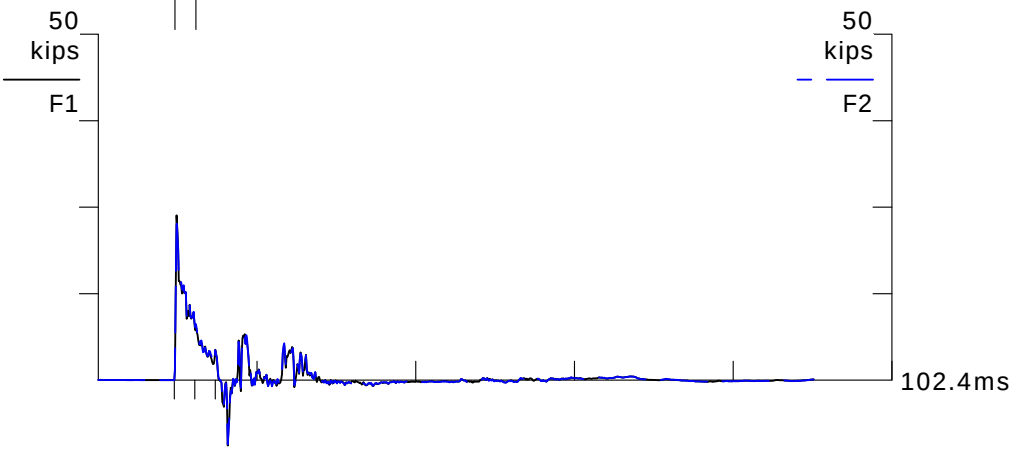
Drive 1 minute 8 seconds 5:19 PM - 5:20 PM BN 1 - 58

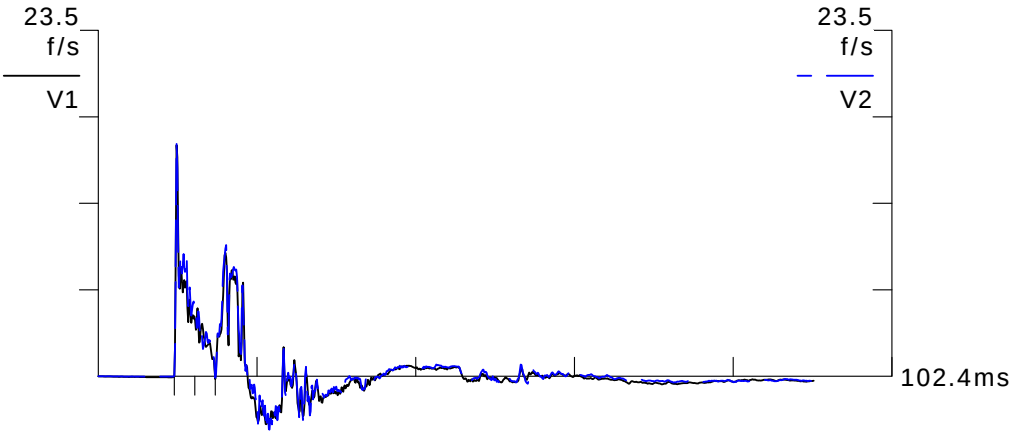
# Applied Foundation Testing, Inc.

217008NC
PDA OP: AFT

PILE DRIVING ANALYZER ®
Version 2015.124
TRIGON 170055 INC4
CME 55 SPT AW




BN 33
2/17/2017 5:20:05 PM

| | | |
|---|---|---|
| FMX | 24 | kips |
| VMX | 15.8 | f/s |
| EFV | 0.28 | k-ft |
| ETR | 79.2 | (%) |
| BPM | 49.2 | bpm |
| CSX | 19.96 | ksi |
| DMX | 0.51 | in |
| DFN | 0.24 | in |
| AMX | 3028 | g's |
| LE | 44.20 | ft |
| AR | 1.19 | in^2 |
| EM | 30000 | ksi |
| SP | 0.492 | k/ft3 |
| WS | 16807.9 | f/s |
| EA/C | 2.1 | ksec/ft |
| LP | 39.44 | ft |

F34 A34

F3: [264 AWJ-1] 212.81 (1)
F4: [264 AWJ-2] 213.48 (1)
A3: [K3179] 334 mv/5000g's (1)
A4: [K4088] 394 mv/5000g's (1)

# Appendix F

## Gage Calibration Sheets

## SPT Calibration
## CME Rig, Model 550
## Serial No. 170055

| SPT Rod Calibration | | Pile Dynamics, Inc. Made in USA | | | |
|---|---|---|---|---|---|
| | | English | | SI | |
| EA Product | | 35,642.06 | kips | 158.61 | MN |
| | E | 30,000 | ksi | 207,000 | MPa |
| | A | 1.19 | in^2 | 7.7 | cm^2 |
| Rod Serial #: | | | | 264 AWJ - 1 | |
| Calibration Factor (me/V): | | | | 212.81 | |
| Calibration Date: | | | | 4-Feb-16 | |
| Calibration Due: | | | | 3-Feb-18 | |

264 AWJ - 1
264 AWJ - 2
35642.06
212.81
213.48
4-Feb-16

Print to fit and it looks okay!

| SPT Rod Calibration | | Pile Dynamics, Inc. Made in USA | | | |
|---|---|---|---|---|---|
| | | English | | SI | |
| EA Product | | 35,642.06 | kips | 158.61 | MN |
| | E | 30,000 | ksi | 207,000 | MPa |
| | A | 1.19 | in^2 | 7.7 | cm^2 |
| Rod Serial #: | | | | 264 AWJ - 2 | |
| Calibration Factor (me/V): | | | | 213.48 | |
| Calibration Date: | | | | 4-Feb-16 | |
| Calibration Due: | | | | 3-Feb-18 | |

| | |
|---|---|
| 264 | Number |
| AWJ | Type |

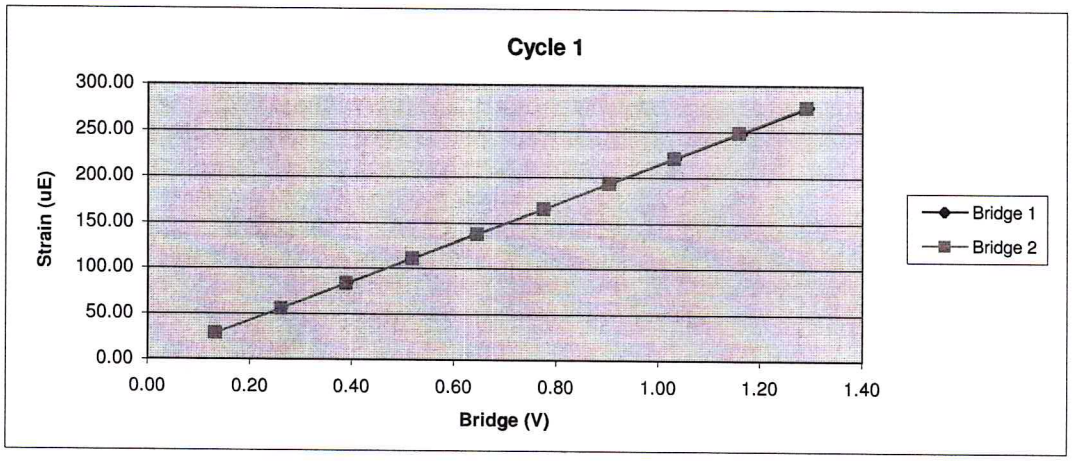
| | |
|---|---|
| Bridge 1 | 264 AWJ - 1 |
| Bridge 2 | 264 AWJ - 2 |
| EA Factor | 35642.06 |
| Calibration 1 | 212.81 |
| Calibration 2 | 213.48 |
| Date Cal | 4-Feb-16 |

<-- enter

| 264AWJ | | Cycle 1 | | |
|---|---|---|---|---|
| **Sample** | **Force (lb)** | **Strain (µE)** | **Bridge 1 (V)** | **Bridge 2 (V)** |
| 1 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | 1001.13 | 28.60 | 0.13 | 0.13 |
| 3 | 1964.68 | 55.69 | 0.26 | 0.26 |
| 4 | 2941.08 | 83.13 | 0.39 | 0.39 |
| 5 | 3911.24 | 110.71 | 0.52 | 0.52 |
| 6 | 4880.44 | 137.68 | 0.64 | 0.64 |
| 7 | 5869.11 | 165.62 | 0.78 | 0.78 |
| 8 | 6856.60 | 193.31 | 0.90 | 0.90 |
| 9 | 7828.72 | 220.93 | 1.03 | 1.03 |
| 10 | 8803.95 | 248.38 | 1.16 | 1.16 |
| 11 | 9806.83 | 276.37 | 1.29 | 1.29 |

| **Bridge 1** | | **Bridge 2** | |
|---|---|---|---|
| **Force Calibration (lb/V)** | **7591.50** | **Force Calibration (lb/V)** | **7608.96** |
| Offset | -11.92 | Offset | -18.31 |
| Correlation | 0.999999 | Correlation | 0.999996 |
| **Strain Calibration (µE/V)** | **213.72** | **Strain Calibration (µE/V)** | **214.21** |
| Offset | 0.07 | Offset | -0.11 |
| Correlation | 0.999998 | Correlation | 0.999995 |

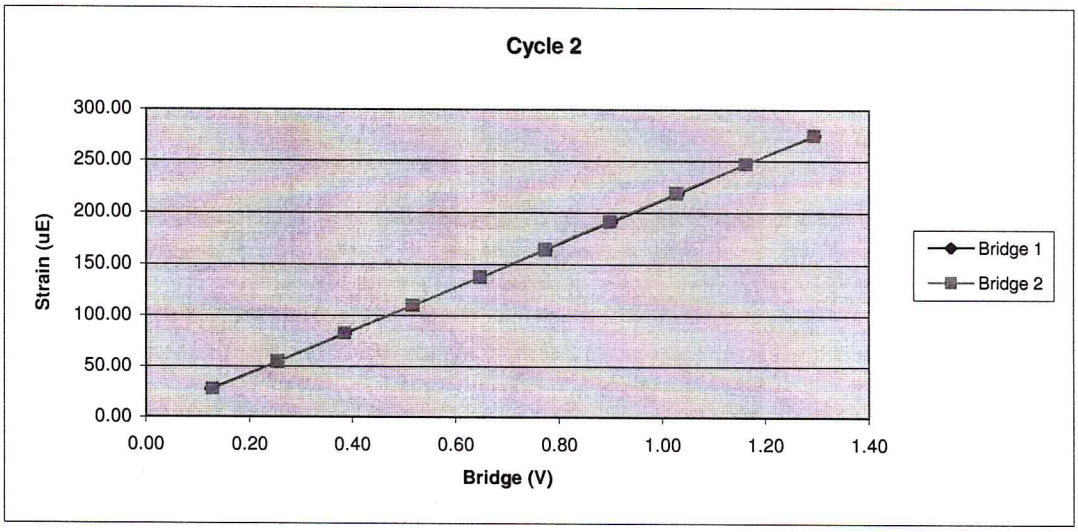
| **Force Strain Calibration** | |
|---|---|
| **EA (Kips)** | **35521.42** |
| Offset | -14.35 |
| Correlation | 0.999999 |



| 264AWJ | | Cycle 2 | | |
|---|---|---|---|---|
| **Sample** | **Force (lb)** | **Strain (µE)** | **Bridge 1 (V)** | **Bridge 2 (V)** |
| 1 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | 963.16 | 27.64 | 0.13 | 0.13 |
| 3 | 1933.52 | 54.81 | 0.25 | 0.25 |
| 4 | 2923.36 | 82.31 | 0.39 | 0.38 |
| 5 | 3916.50 | 109.78 | 0.52 | 0.52 |
| 6 | 4906.34 | 137.34 | 0.65 | 0.65 |
| 7 | 5865.02 | 164.46 | 0.77 | 0.77 |
| 8 | 6822.33 | 191.44 | 0.90 | 0.90 |
| 9 | 7813.34 | 218.71 | 1.03 | 1.03 |
| 10 | 8812.71 | 246.59 | 1.16 | 1.16 |
| 11 | 9818.71 | 274.88 | 1.29 | 1.29 |

| **Bridge 1** | | **Bridge 2** | |
|---|---|---|---|
| **Force Calibration (lb/V)** | **7582.07** | **Force Calibration (lb/V)** | **7602.95** |
| Offset | **2.50** | Offset | **-6.19** |
| Correlation | **0.999999** | Correlation | **0.999997** |
| **Strain Calibration (µE/V)** | **211.65** | **Strain Calibration (µE/V)** | **212.24** |
| Offset | **0.75** | Offset | **0.51** |
| Correlation | **0.999998** | Correlation | **0.999993** |

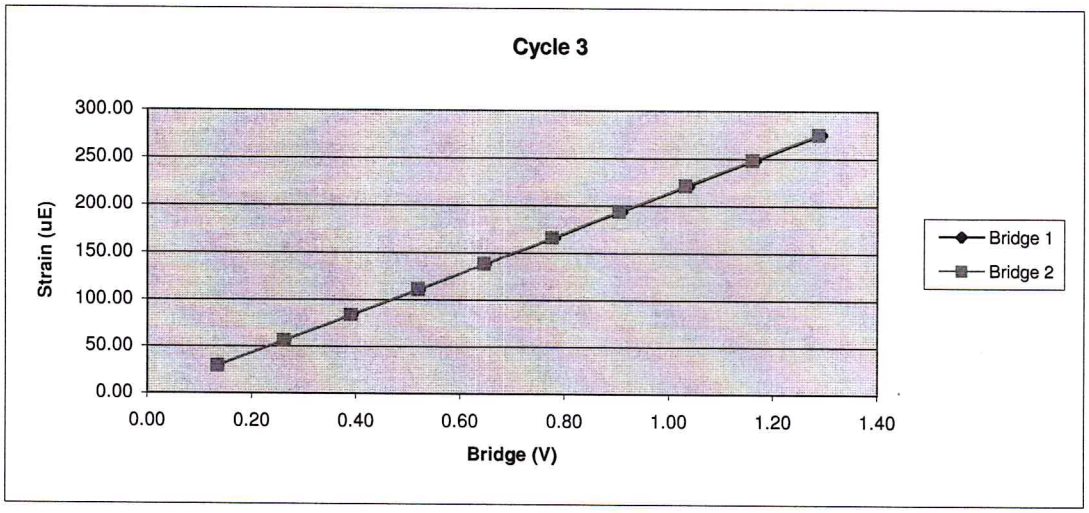
| **Force Strain Calibration** | |
|---|---|
| **EA (Kips)** | **35822.86** |
| Offset | **-24.41** |
| Correlation | **0.999998** |



| 264AWJ | | Cycle 3 | | |
|---|---|---|---|---|
| **Sample** | **Force (lb)** | **Strain (µE)** | **Bridge 1 (V)** | **Bridge 2 (V)** |
| 1 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | 1028.78 | 29.18 | 0.13 | 0.13 |
| 3 | 1998.95 | 56.25 | 0.26 | 0.26 |
| 4 | 2972.23 | 83.52 | 0.39 | 0.39 |
| 5 | 3949.41 | 111.03 | 0.52 | 0.52 |
| 6 | 4906.53 | 137.97 | 0.65 | 0.65 |
| 7 | 5912.53 | 166.04 | 0.78 | 0.78 |
| 8 | 6888.35 | 193.72 | 0.91 | 0.90 |
| 9 | 7857.54 | 221.19 | 1.04 | 1.03 |
| 10 | 8839.20 | 248.57 | 1.17 | 1.16 |
| 11 | 9805.08 | 275.56 | 1.29 | 1.29 |

| **Bridge 1** | | **Bridge 2** | |
|---|---|---|---|
| **Force Calibration (lb/V)** | **7580.78** | **Force Calibration (lb/V)** | **7614.62** |
| Offset | **3.06** | Offset | **2.46** |
| Correlation | **0.999999** | Correlation | **0.999997** |
| **Strain Calibration (µE/V)** | **213.05** | **Strain Calibration (µE/V)** | **214.00** |
| Offset | **0.18** | Offset | **0.16** |
| Correlation | **0.999998** | Correlation | **0.999995** |

| **Force Strain Calibration** | |
|---|---|
| **EA (Kips)** | **35581.90** |
| Offset | **-3.36** |
| Correlation | **0.999999** |



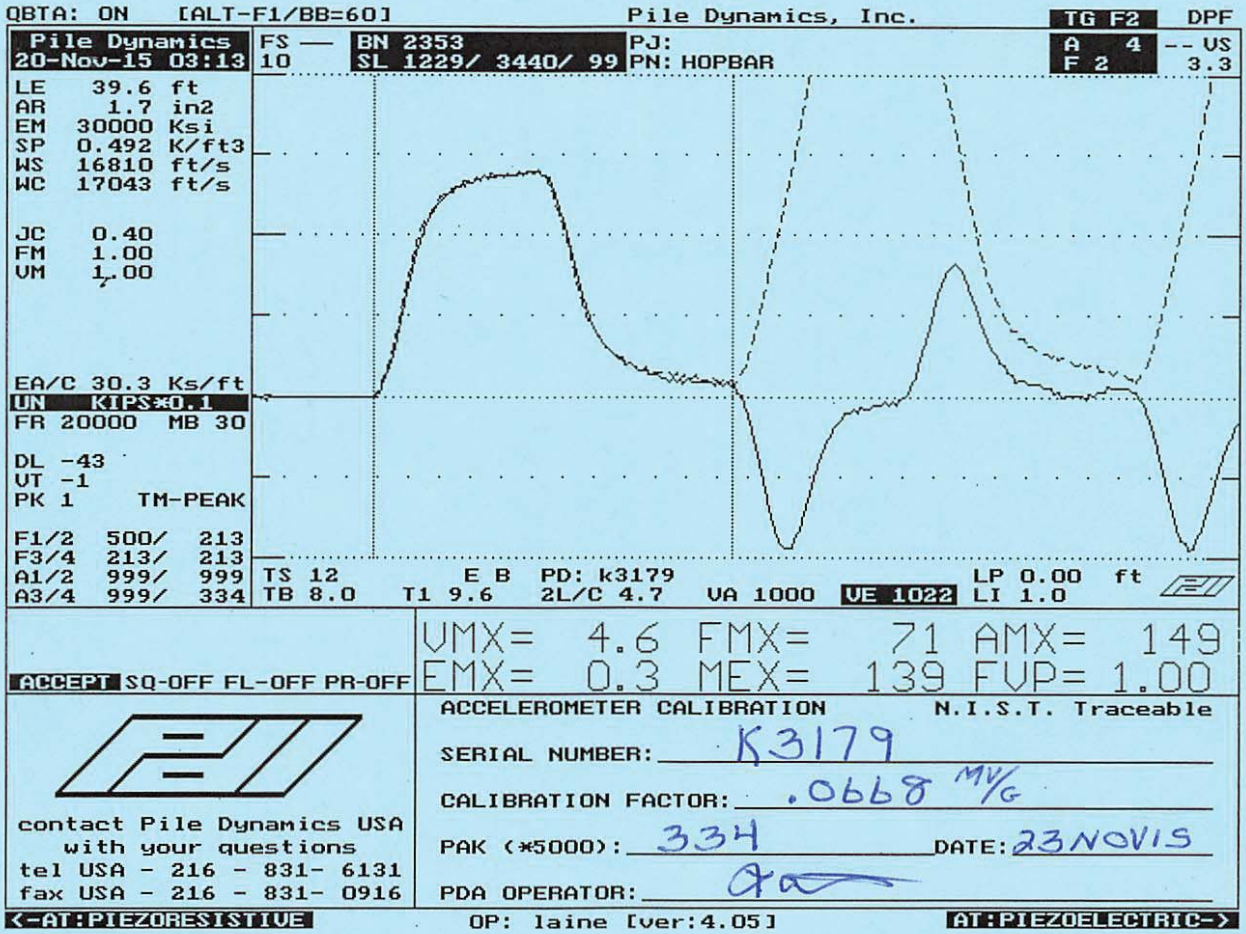
| | |
|---|---|
| Bridge Excitation (V) | 5 |
| Shunt Resitor (ohm) | 60.4k |

| | | | |
|---|---|---|---|
| **Calibration Factors** | **264AWJ** | | |
| **Bridge 1 (µE/V)** | **212.81** | **Bridge 2 (µE/V)** | **213.48** |
| **EA Factor (Kips)** | **35642.06** | **Area (in^2)** | **1.19** |

Calibrated by: David Burnell
Calibrated Date: 2/4/2016

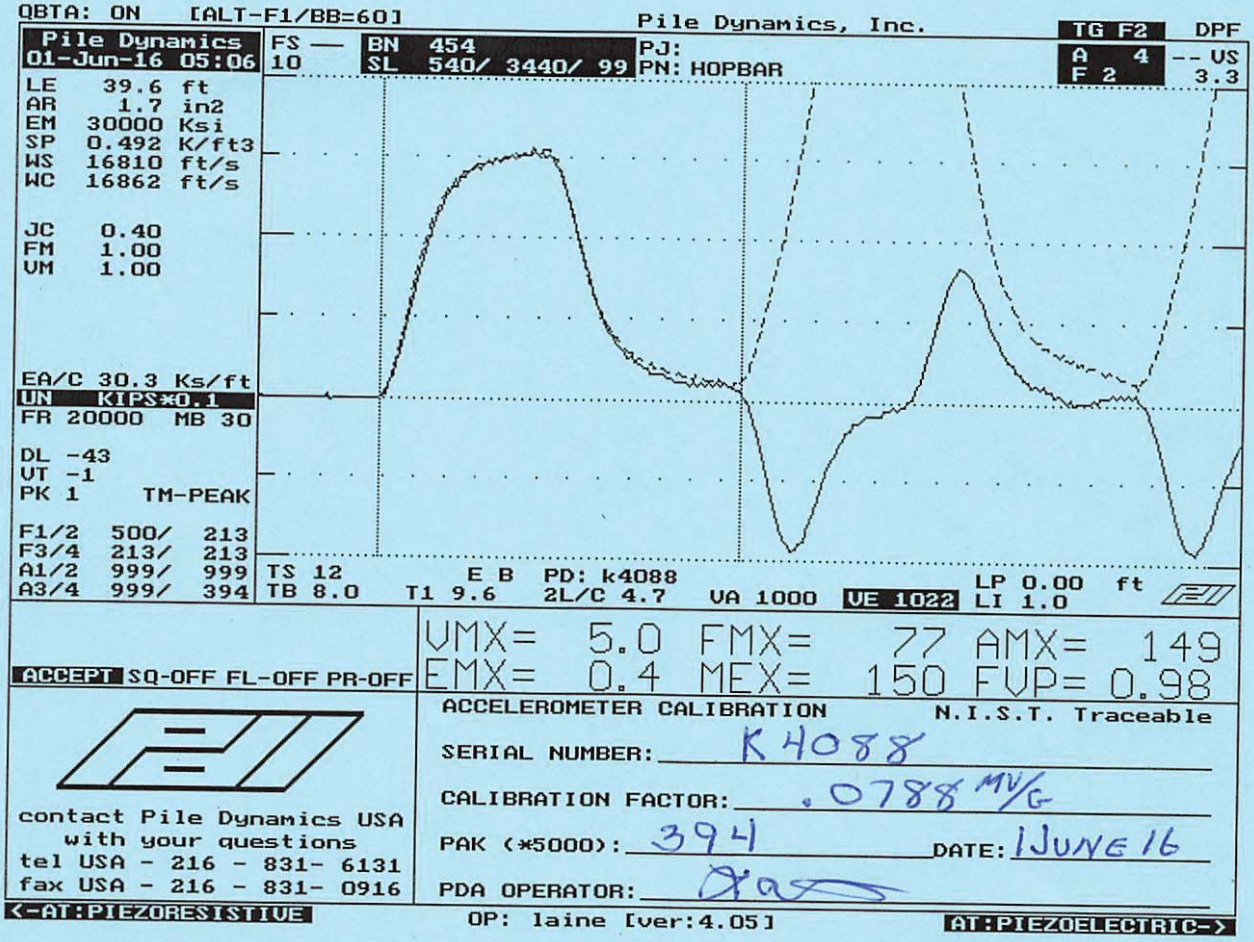
Pile Dynamics Inc
30725 Aurora Rd
Solon, OH 44139

Traceable to N.I.S.T.




**Smart Sensor**

**Smart Chip Programmed By** M.W. **on** 23NOV15 **CRC Value** B5FC




**Smart Sensor**

**Smart Chip Programmed By** J.M.W. **on** 1JUNE16 **CRC Value** 1002

# Appendix G

## Field Engineer Dynamic Measurement and Analysis Proficiency Test Certificate

## SPT Calibration
## CME Rig, Model 550
## Serial No. 170055

PDCA
PILE DRIVING CONTRACTORS ASSOCIATION

Pile Dynamics, Inc.

This documents that

**Michael Simpson**
**Applied Foundation Testing**

has on December 20, 2013 achieved the rank of

# ADVANCED

on the **Dynamic Measurement and Analysis Proficiency Test.**

The individual identified on this document demonstrated to the degree granted above an understanding of theory, data quality evaluation, interpretation and signal matching for high strain dynamic testing of deep foundations. ***It is recommended*** **that Individuals at the Advanced level seek Master or Expert levels through additional study within four years of the date of this document.**

The ability of the individual named to provide appropriate knowledge and advice on a specific project is not implied or warranted by the Pile Driving Contractors Association or Pile Dynamics, Inc. **This certificate can be verified at www.PDAproficiencytest.com.** The Pile Driving Contractors Association or Pile Dynamics, Inc. assumes no liability for foundation testing and analysis work performed by the bearer of this certificate.

Steven A. Hall, Executive Director
Pile Driving Contractors Association

Garland Likins, President
Pile Dynamics, Inc

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