



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

February 17, 2023

MEMORANDUM TO: Clark Morrison PhD, P.E.
State Pavement Design Engineer

Tatia L. White, P.E., PLS
State Roadway Design Engineer

Jeffrey A. Stroder, P.E.
Division Project Engineer

FROM: J. L. Pilipchuk, P.E., L.G.
State Geotechnical Engineer

DS

DocuSigned by:
John Pilipchuk
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STATE PROJECT: 48548.1.1 (R-5930)

COUNTY: Chatham

DESCRIPTION: Chatham Park Way from US 64 to US 15-501

SUBJECT: Pavement and Subgrade Investigation Report

The Geotechnical Engineering Unit has completed the evaluation of the pavement and subgrade investigation for this project and presents the following.

The proposed work consists of constructing a four-lane divide roadway on new location for -L- and improvements to US 15-501 (-Y11-).

The subgrade for -Y11- consists of roadway embankment and residual soils. Predominant soil types encountered consists of sandy, and silty clays (A-6, A-7) with lesser amounts of silty sand (A-2-4), and sandy silty (A-4).

Anticipated borrow will likely consist of sandy and silty clays (A-6, A-7) and sandy and clayey silts (A-4, A-5).

The length of this project is 2.336 miles.

Existing Pavement:

Pavement coring was conducted on US 15-501 (-Y11-) in both the eastbound and westbound directions. Representative cores were extracted in the shoulders, running lanes and turn lanes. Pavement distresses were minimal in both directions.

The eastbound lanes consist of 4 pavement structures, asphalt over ABC, asphalt over cement stabilization, asphalt over concrete and full-depth asphalt.

The westbound lanes consist of 2 pavement structures, asphalt over cement stabilization and full-depth asphalt.

AREAS OF SPECIAL GEOTECHNICAL INTEREST

A. Highly Plastic Clays:

Locations of clays with a PI of 26 or greater

LINE	STATION AND OFFSET	PI
-Y11-	12+50 RT (Bulk)	29
-Y11-	21+00 RT (Bulk)	40
-Y11-	23+07 EB LTL	32
-Y11-	23+07 EB OSL	27
-Y11-	30+03 EB ISL	34
-L-	75+00 LT (Bulk)	34

B. Trapped Water within the Pavement:

Trapped water was not observed during this investigation.

C. Ground Water:

Ground water was not encountered during this investigation.

D. Soils with a High Moisture Content:

Locations of soils that were classified as wet or saturated.

LINE	STATION AND OFFSET	MOISTURE CONTENT
-Y11-	30+03 EB ISL, OSS	Wet - Moist

JLP/MJA/JBB

ATTACHMENT 1:	Pavement and Subgrade Inventory	22
ATTACHMENT 2:	DCP Graphs	07
ATTACHMENT 3:	Pavement Core Evaluation	02
ATTACHMENT 4:	Soil Cement Lab Results	01



DocuSigned by:

Jeffrey Brian Barfield

03/10/2023

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REFERENCE: R-5930

PROJECT: 48548

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

ROADWAY
SUBSURFACE INVESTIGATION

COUNTY CHATHAM
 PROJECT DESCRIPTION CHATHAM PARK WAY - NEW
LOCATION ROADWAY FROM NORTH OF SUTTLES
ROAD TO US 15/501

PAVEMENT AND SUBGRADE INVESTIGATION

CONTENTS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	ROADWAY TITLE SHEET
4, 5	PLAN SHEETS
6	PAVEMENT DATA SHEETS
7, 8	DCP RAW DATA LOGS
9, 10	PAVEMENT CORE PHOTOS
11	LABORATORY TEST RESULTS
12-22	PROCTOR & CBR TESTING

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5930	1	22

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:
- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 - BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

S. JOHNSON, PE, PG
M. STANBURY
SUBTERRA EXP.

INVESTIGATED BY S. JOHNSON, PE, PG
 DRAWN BY N. MOHS, LG
 CHECKED BY N. MOHS, LG
 SUBMITTED BY S. JOHNSON, PE, PG
 DATE FEBRUARY 2023



DocuSigned by:
shane johnson 03/13/2023
 1B567BB0E0DD425 SIGNATURE DATE

**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT**

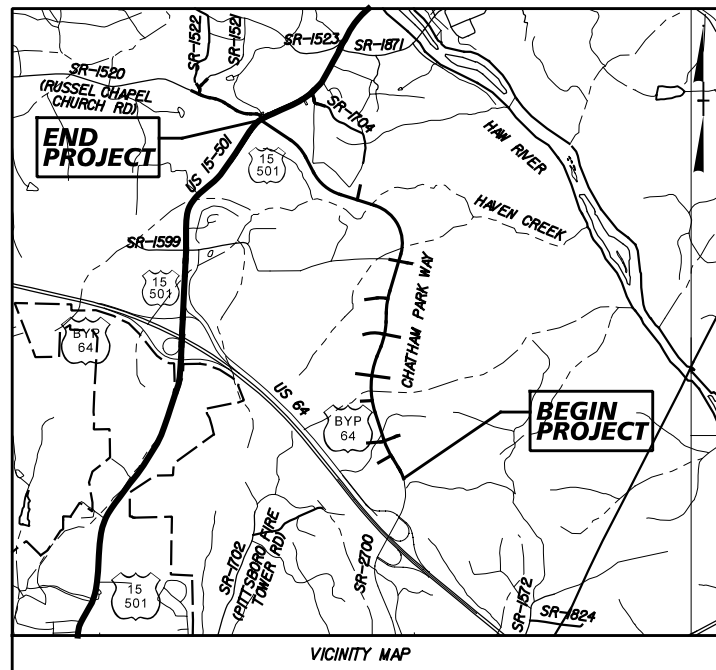
SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS																																																																																																																																																																																																																																																																																																																																																																		
<p>SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 208, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i></p>										<p>WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.</p>										<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:</p>										<p>ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																																																																																																																																																																																																																																																																																		
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PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE																																																																																																																																																																																																																																																																																																																																																																																														
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SL - SHRINKAGE LIMIT	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE																																																																																																																																																																																																																																																																																																																																																																																														

09/08/2019

SEE SHEET 1A FOR INDEX OF SHEETS
SEE SHEET 1B FOR CONVENTIONAL PLAN SHEET SYMBOLS



----- PITTSBORO CITY LIMITS

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

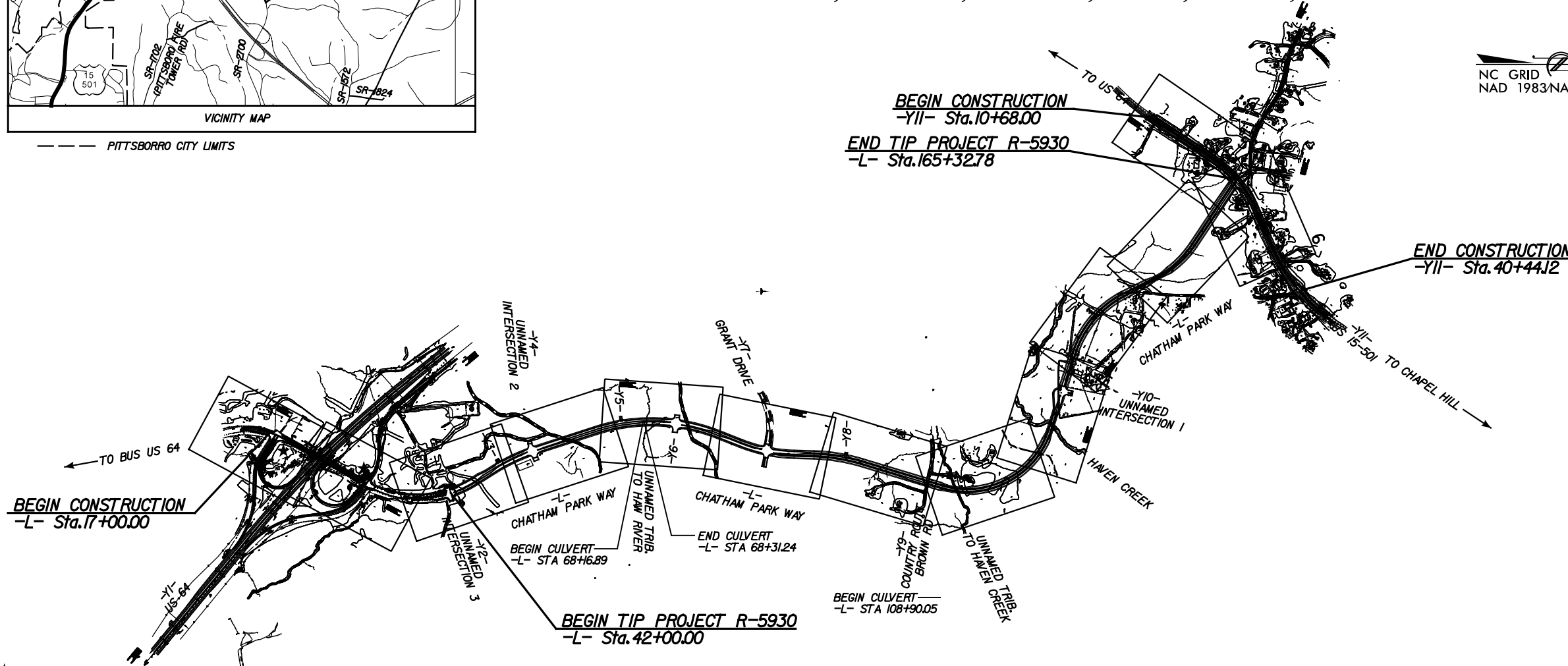
CHATHAM COUNTY

LOCATION: CHATHAM PARK WAY FROM US 64 TO US 15-501

TYPE OF WORK: GRADING, DRAINAGE, CULVERTS, PAVING, SIGNALS, AND RETAINING WALLS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5930	3	11
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
48548.1.1		PE	
48548.2.1		RW & UTIL	
48548.3.1		CONST.	

TIP PROJECT: R-5930



NC GRID
NAD 1983/NA 2011

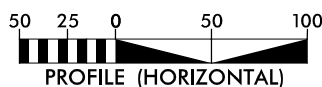
★ TRAFFIC SIGNAL

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACT:

GRAPHIC SCALES



R-5930 DESIGN DATA

ADT 2024 = 0
 ADT 2045 = 30000
 K = 8%
 D = 65
 T = 5%*
 V = 50 MPH
 * (TTST 2% + DUAL 3%)
 FUNCTIONAL CLASSIFICATION:
 URBAN ARTERIAL
 SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-5930 = 2.326 MILES
 LENGTH STRUCTURE TIP PROJECT R-5930 = 0.010 MILES
 TOTAL LENGTH TIP PROJECT R-5930 = 2.336 MILES

PLANS PREPARED FOR THE NCDOT BY:

Kimley Horn

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 18, 2022

LETTING DATE:
JUNE 18, 2024

VANCE W. BLANTON, P.E.
PROJECT ENGINEER

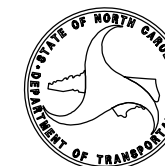
TYLER G. SPRING, P.E.
PROJECT DESIGN ENGINEER

JEFFREY L. TEAGUE, P.E.
PROJECT MANAGER
NCDOT HIGHWAY DIVISION 8

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.
ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



10/19/2022

5/14/99

REVISIONS

10/28/2022

Kimley Horn
 421 FAYETTEVILLE STREET, SUITE 600
 RALEIGH, NC 27601

RIGHT-OF-WAY REV.
 CONST. REV.

PROJECT REFERENCE NO. R-5930	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



-Y11- PC Sta. 10+00.00

-Y11- PT Sta. 12+35.04

-Y11- 16+52 WB OSS	
PAVEMENT STRUCTURE	
ASPHALT	10.0 IN
SOIL CEMENT	7.0 IN
-Y11- 16+52 WB ISL	
PAVEMENT STRUCTURE	
ASPHALT	9.5 IN
SOIL CEMENT	7.5 IN
-Y11- 16+52 WB ISS	
PAVEMENT STRUCTURE	
ASPHALT	9.0 IN
SOIL CEMENT	7.0 IN

-Y11- 16+52 WB OSS
 -Y11- 16+52 WB ISL
 -Y11- 16+52 WB ISS

-Y11- 15+84 EB ISS

-Y11- 15+84 EB ISS	
PAVEMENT STRUCTURE	
ASPHALT	10.5
SOIL CEMENT	6.5

-Y11- PC Sta. 20+25.93

NAD 83 / N/A 2011

MATCHLINE -Y11- STA 22+50 (SEE SHEET 5)

5/14/99

10/28/2022

REVISIONS

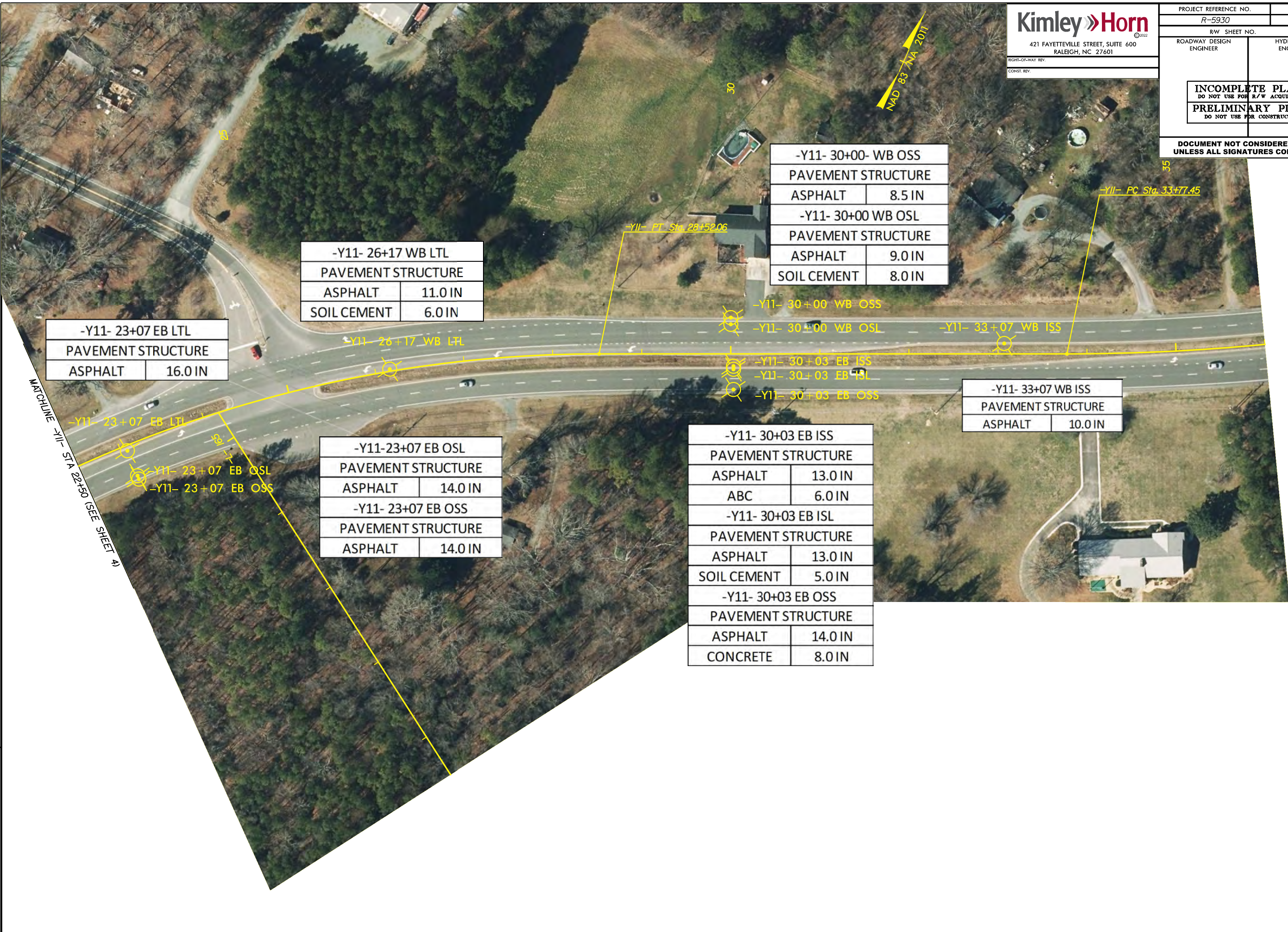
Kimley Horn

421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO. R-5930	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



-Y11- 23+07 EB LTL	
PAVEMENT STRUCTURE	
ASPHALT	16.0 IN

-Y11- 26+17 WB LTL	
PAVEMENT STRUCTURE	
ASPHALT	11.0 IN
SOIL CEMENT	6.0 IN

-Y11- 30+00- WB OSS	
PAVEMENT STRUCTURE	
ASPHALT	8.5 IN
-Y11- 30+00 WB OSL	
PAVEMENT STRUCTURE	
ASPHALT	9.0 IN
SOIL CEMENT	8.0 IN

-Y11- 33+07 WB ISS	
PAVEMENT STRUCTURE	
ASPHALT	10.0 IN

-Y11-23+07 EB OSL	
PAVEMENT STRUCTURE	
ASPHALT	14.0 IN
-Y11- 23+07 EB OSS	
PAVEMENT STRUCTURE	
ASPHALT	14.0 IN

-Y11- 30+03 EB ISS	
PAVEMENT STRUCTURE	
ASPHALT	13.0 IN
ABC	6.0 IN
-Y11- 30+03 EB ISL	
PAVEMENT STRUCTURE	
ASPHALT	13.0 IN
SOIL CEMENT	5.0 IN
-Y11- 30+03 EB OSS	
PAVEMENT STRUCTURE	
ASPHALT	14.0 IN
CONCRETE	8.0 IN

PAVEMENT INVESTIGATION DATA SHEET

Project: 48548.1.1
TIP: R-5930

Route: US 15/501
County: Chatham

Date: 9/28-9/29/2022
Notes By: S. Johnson

Position (Sta., Lane, Shldr.)	Cut/Fill (Est. of Amount) (ft)	Width		Offset Distance (See Notes) (ft)	Crown "C" or Super "S"	Gross to Top of Soil (in)	Thickness					Pavement Layering	Subgrade					GPS Coordinates			
		Lane(s) (ft)	Shoulder(s) (ft)				Asphalt (in)	CONCRETE (in)	RPCC (in)*	ABC (in)	Soil Cement (in)		Description	Sample Number	AASHTO Classification	Soil Moisture	Probe	Boring Depth (ft)	Asphalt Notes	Northing	Easting
-Y11- 15+84 EB ISS	Fill 5'	ISL = 12.5' OSL = 12.5'	ISS = 1.5' OSS = 4.0'	0.5' LT FY	C	17.0"	10.5"				6.5"	Asphalt Soil Cement Soil Subgrade	1.4' - 3.0' - RE Tan-Brown, Fine Sandy Silt 3.0' - 4.3' - RE Red-Brown, Silty Clay	S-13 S-14	A-4 A-7-6	M M	DCP	4.3	No Pavement Distress	732,795	1,952,092
-Y11- 23+07 EB LTL	Fill 5'	LTL = 11.5' ISL = 12.5' OSL = 12.5'	ISS = 2.5' OSS = 3.5'	3.5' RT FY	C	16.0"	16.0"					Asphalt Soil Subgrade	1.3' - 3.3' - RE Brown-Gray, Silty Clay 3.3' - 4.3' - RE Brown, Sandy Clay	S-15 S-16	A-7-6 A-6	M M	DCP	4.3	No Pavement Distress	733,386	1,952,503
-Y11- 23+07 EB OSL	Fill 5'	LTL = 11.5' ISL = 12.5' OSL = 12.5'	ISS = 2.5' OSS = 3.5'	2.5' LT FW	C	14.0"	14.0"					Asphalt Soil Subgrade	1.2' - 2.5' - RE Brown-Orange, Silty Clay 2.5' - 4.3' - RE Brown-Orange, Silty Clay	S-1 S-2	A-7-6 A-7-5	M M	DCP	4.3	No Pavement Distress	733,364	1,952,525
-Y11- 23+07 EB OSS	Fill 5'	LTL = 11.5' ISL = 12.5' OSL = 12.5'	ISS = 2.5' OSS = 3.5'	1.5' RT FW	C	14.0"	14.0"					Asphalt Soil Subgrade	1.2' - 2.5' - RE Brown-Orange, Silty Clay 2.5' - 4.3' - RE Brown-Orange, Silty Clay	R-1 R-2	A-7-6 A-7-5	M M	DCP	4.3	No Pavement Distress	733,362	1,952,528
-Y11- 30+03 EB ISS	Fill 6'	OSL = 12.5' ISL = 11.5'	ISS = 1.5' OSS = 5.0'	0.5' LT FY	C	19.0"	13.0"			6.0"		Asphalt ABC Soil Subgrade	DCP indicated possible utility trench. Only Auger through possible ABC.	NA	NA	NA	DCP	NA	No Pavement Distress	733,744	1,953,089
-Y11- 30+03 EB ISL	Fill 6'	OSL = 12.5' ISL = 11.5'	ISS = 1.5' OSS = 5.0'	3.0' RT FY	C	18.0"	13.0"			5.0"		Asphalt Soil Cement Soil Subgrade	DCP indicated possible utility trench. 1.5' - 2.5' - RE Gray, Fine Sandy Clay 2.5' - 4.3' - RE Red-Brown, Silty Clay	S-17 S-18	A-6 A-7-6	W M	DCP	4.3	No Pavement Distress	733,741	1,953,091
-Y11- 30+03 EB OSS	Fill 6'	OSL = 12.5' ISL = 11.5'	ISS = 1.5' OSS = 5.0'	1.5' RT FW	C	22.0"	14.0"	8.0"				Asphalt Concrete Soil Subgrade	1.7' - 2.0' - Gravelly Soil 2.0' - 4.3' - RE Brown-Orange, Silty Clay	- R-18	A-7-6	W M	DCP	4.3	No Pavement Distress	733,720	1,953,100
-Y11- 16+52 WB OSS	Fill 5'	ISL = 12.5' OSL = 12.5'	ISS = 1.5' OSS = 3.0'	1.0' RT FW	C	17.0"	10.0"			7.0"		Asphalt Soil Cement Soil Subgrade	1.4' - 4.3' - RE Brown, Coarse Sand	S-12	A-1-b	M	DCP	4.3	No Pavement Distress	732,881	1,952,084
-Y11- 16+52 WB ISL	Fill 5'	ISL = 12.5' OSL = 12.5'	ISS = 1.5' OSS = 3.0'	2.5' RT FY	C	17.0"	9.5"			7.5"		Asphalt Soil Cement Soil Subgrade	1.4' - 4.3' - RE Brown, Silty Fine Sand with Trace Rock Fragments	R-9	A-2-4	M	DCP	4.3	No Pavement Distress	732,868	1,952,104
-Y11- 16+52 WB ISS	Fill 5'	ISL = 12.5' OSL = 12.5'	ISS = 1.5' OSS = 3.0'	1.5' LT FY	C	16.0"	9.0"			7.0"		Asphalt Soil Cement Soil Subgrade	1.3' - 4.3' - RE Brown, Silty Fine Sand with Trace Rock Fragments	S-9	A-2-4	M	DCP	4.3	No Pavement Distress	732,866	1,952,107
-Y11- 26+17 WB LTL	CUT	RTL = 13.5' LTL = 12' ISL = 12' OSL = 12'	ISS = NA OSS = 1.5'	1.5' RT FY	S	17.0"	11.0"			6.0"		Asphalt Soil Cement Soil Subgrade	1.4' - 4.0' - Res Brown, Fine Sandy Clay 4.0' - 4.3' - WR (Augers Grinding)	S-7	A-6	M	DCP	4.3	No Pavement Distress	733,587	1,952,737
-Y11- 30+00 WB OSS	Fill 6'	OSL = 12.5' ISL = 12' RTL = 14'	ISS = NA OSS = 4.0'	2.5' RT FW	C	8.5"	8.5"					Asphalt Soil Subgrade	0.7' - 4.3' - RE Brown, Fine Sandy Clay	S-11	A-6	M	DCP	4.3	No Pavement Distress	733,793	1,953,065
-Y11- 30+00 WB OSL	Fill 6'	OSL = 12.5' ISL = 12' RTL = 14'	ISS = NA OSS = 4.0'	5.0' LT FW	C	17.0"	9.0"			8.0"		Asphalt Soil Cement Soil Subgrade	1.4' - 4.3' - RE Brown, Fine Sandy Clay	R-11	A-6	M	DCP	4.3	No Pavement Distress	733,786	1,953,068
-Y11- 33+07 WB ISS	CUT	OSL = 12.5' ISL = 11.5'	ISS = 2.5' OSS = 4.5'	1.5' LT FY	C	10.0"	10.0"					Asphalt Soil Subgrade	0.8' - 3.3' - Res Tan-Brown, Silty Fine Sand (Auger Refusal = 3.3')	S-6	A-2-4	M	DCP	3.3	No Pavement Distress	733,890	1,953,358

Notes:
 OSL = Outside Lane CTL = Center Turn Lane OSS = Outside Shoulder DECEL = Deceleration Lane COL = Collector Lane RT = Right I = Inside PCC = Portland Cement Concrete CSS = Chemical Stabilized Soil
 ISL = Inside Lane LTL = Left Turn Lane ISS = Inside Shoulder IGM = Inside Grass Median FW = From White LT = Left SB = South Bound RPCC = Rubblized Portland Cement Concrete
 RTL = Right Turn Lane PS = Paved Shoulder ACCEL = Acceleration Lane OGS = Outside Grass Shoulder FY = From Yellow O = Outside NB = North Bound ABC = Aggregate Base Course

Dynamic Cone Penetrometer Data Sheet
Project: R-5930 Chatham County

Location		Location		Location		Location		Location		Location	
-Y11- 15+84 EB ISS		-Y11- 23+07 EB LTL		-Y11- 23+07 EB OSL		-Y11- 23+07 EB OSS		-Y11- 30+03 EB ISS		-Y11- 30+03 EB ISL	
Datum	Date	Datum	Date	Datum	Date	Datum	Date	Datum	Date	Datum	Date
SG	9/29/2022	SG	9/29/2022	SG	9/28/2022	SG	9/28/2022	ABC	9/29/2022	SG	9/29/2022
Cut/Fill		Cut/Fill		Cut/Fill		Cut/Fill		Cut/Fill		Cut/Fill	
Fill		Fill		Fill		Fill		Fill		Fill	
Subgrade		Subgrade		Subgrade		Subgrade		Subgrade		Subgrade	
A-4, A-7-6		A-7-6, A-6		A-7-6, A-7-5		A-7-6, A-7-5		ABC		A-6, A-7-6	
Cumulative DCP Blows in CM		Cumulative DCP Blows in CM		Cumulative DCP Blows in CM		Cumulative DCP Blows in CM		Cumulative DCP Blows in CM		Cumulative DCP Blows in CM	
0.0	56.1	0.0	62.0	0.0	91.8	0.0	93.2	0.0		0.0	
2.2	57.0	3.0	62.4	1.1	93.0	2.9	93.7	2.1		5.9	
4.7	58.1	5.3	63.0	3.9	94.1	3.9	94.6	3.5		8.0	
6.2	59.1	8.6	63.5	6.0	95.3	6.7	95.3	4.1		9.4	
7.1	60.2	11.6	64.1	8.5	96.4	9.5	96.2	4.6		10.0	
8.2	61.4	13.9	64.7	11.1	97.4	11.7	97.0	5.1		10.5	
9.5	63.0	16.0	65.2	13.6	98.6	13.6	97.6	5.5		11.0	
11.7	64.1	17.8	65.7	16.4	99.6	15.4	98.0	5.7		11.4	
14.0	65.5	19.4	66.4	18.2	100.4	17.1	98.5	5.9		11.6	
15.7	67.2	20.9	66.8	19.3	101.1	18.7	99.0	6.3		11.8	
17.7	69.0	22.3	67.3	20.1	101.7	20.5	99.4	6.7		12.2	
19.5	70.5	23.6	67.9	20.9	102.1	22.8	99.6	7.0		12.6	
22.0	71.8	24.7	68.4	21.8	102.7	24.7	100.0	7.4		12.9	
24.9	72.5	25.6	68.9	22.7	103.1	26.8	100.5	7.6		13.3	
28.5	73.0	26.7	69.4	23.6	103.5	28.4	101.0	8.1		13.5	
30.6	73.6	27.6	70.0	24.5	104.0	30.4	101.6	8.4		14.0	
32.2	74.4	28.7	70.4	25.5	104.4	31.9	102.0	8.8		14.3	
33.4	75.0	29.5	71.0	26.5	104.7	32.9	102.5	9.1		14.7	
34.4	75.7	30.5	71.6	27.5	105.1	33.9	103.2	9.6		15.0	
35.3	76.4	31.4	72.1	28.6	105.5	35.0	103.6	10.0		15.5	
35.9	77.3	32.1	72.7	30.0	105.8	36.1	104.1	10.4		15.9	
36.6	78.1	33.0	73.4	31.6	106.2	37.3	104.8	11.3		16.3	
37.2	78.7	33.9	73.7	33.5	106.8	38.9	105.2	11.6		17.2	
37.7	79.4	34.7	73.9	35.0	107.2	40.8	105.7	12.1		17.5	
38.2	80.3	35.5	74.3	36.1	107.7	42.6	106.1	12.6		18.0	
38.7	81.4	36.2	74.8	37.0	108.2	44.4	106.7	13.0		18.5	
39.3	82.5	37.0	75.0	37.8	108.6	45.9	107.2	13.4		18.9	
39.7	83.7	37.8	75.6	38.6	109.1	47.6	108.0	14.0		19.3	
40.2	84.9	38.5	76.1	39.4	109.6	49.5	108.6	14.5		19.9	
40.7	86.1	39.3	76.5	40.2	110.1	51.5	109.3	15.1		20.4	
41.0	87.5	40.0	77.0	41.0	110.6	53.4	109.9	15.7		21.0	
41.4	88.8	40.8	77.5	42.0	111.1	55.4	110.5	16.4		21.6	
41.7	90.5	41.5	78.0	43.0	111.9	57.4	111.3	17.2		22.3	
42.1	92.2	42.3	78.4	44.2	112.6	59.1	111.9	18.1		23.1	
42.5	93.8	43.0	78.9	45.4	113.2	61.0		19.2		24.0	
42.9	95.2	43.7	79.4	46.7		62.7		20.5		25.1	
43.3	96.6	44.4	79.8	48.2		64.4		21.8		26.4	
43.7	97.8	45.1	80.3	49.9		66.1		22.7		27.7	
44.0	99.2	45.9	80.7	52.0		67.6		23.9		28.6	
44.4	100.5	46.5	81.1	53.6		68.9		25.7		29.8	
44.8	101.9	47.4	82.0	55.0		70.0		28.1		31.6	
45.2	103.2	48.0	82.4	56.4		70.9		30.1		34.0	
45.6		48.7	82.9	58.3		71.6		34.6		36.0	
46.1		49.4	83.4	60.1		72.4		38.0		40.5	
46.5		50.0	83.8	61.8		73.3		43.5		43.9	
47.0		50.7	84.1	63.4		74.3		47.9		49.4	
47.3		51.5	84.5	65.0		75.4		53.9		53.8	
47.7		52.1	84.8	66.7		76.5		64.4		59.8	
48.1		52.8	85.0	68.7		77.6		73.3		70.3	
48.4		53.5	85.2	70.6		78.9		81.6		79.2	
48.9		54.2	85.3	72.4		79.9		103.8		87.5	
49.5		54.9	85.3	74.4		81.1				109.7	
50.1		55.5	85.4	76.5		82.0					
50.7		56.2	85.5	78.9		83.0					
51.3		56.9	85.5	81.2		84.2					
51.8		57.5	85.6	83.0		85.1					
52.3		58.2	85.7	84.8		86.1					
52.8		58.8	85.7	86.4		87.2					
53.4		59.4	85.8	87.5		88.4					
53.9		60.2	85.9	88.5		89.6					
54.6		60.7	85.9	89.5		90.6					
55.5		61.5	86.0	90.5		91.8					

NOTES:
 ABC - Aggregate Base Course
 SG - Subgrade
 ESG - Estimated Subgrade (DCP blows reported from approximately 1 ft below existing ground surface)
 SS - Stabilized Subgrade
 CTBC - Cement Treated Base Course

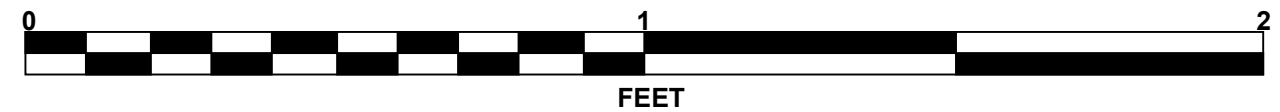
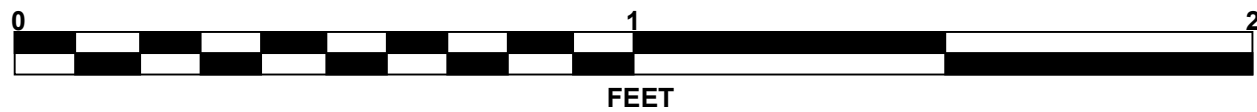
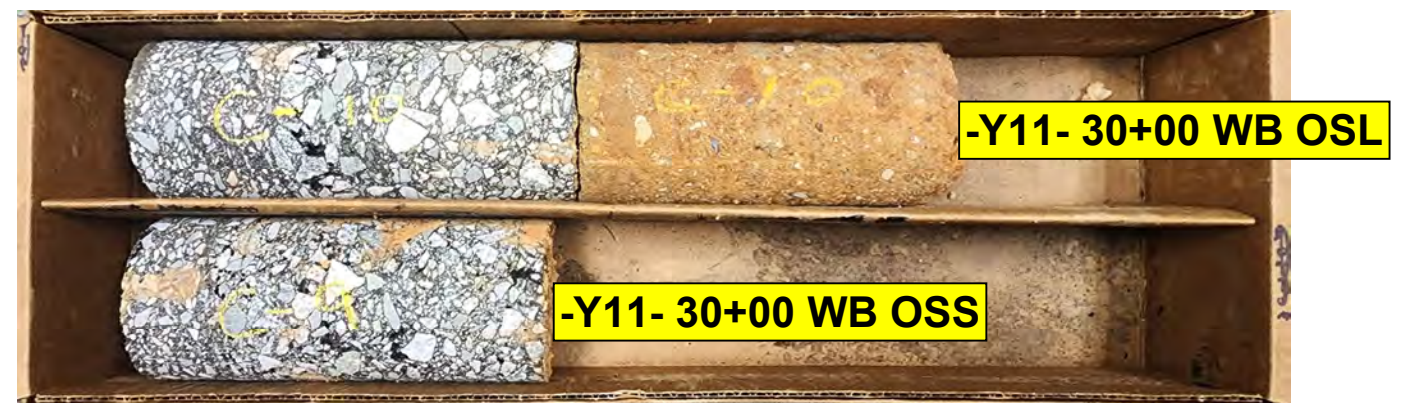
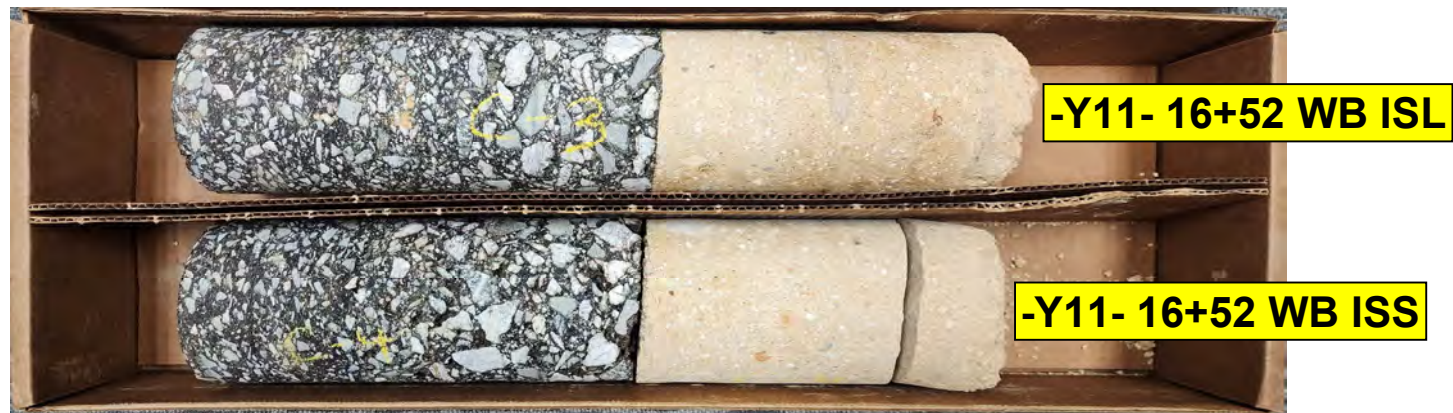
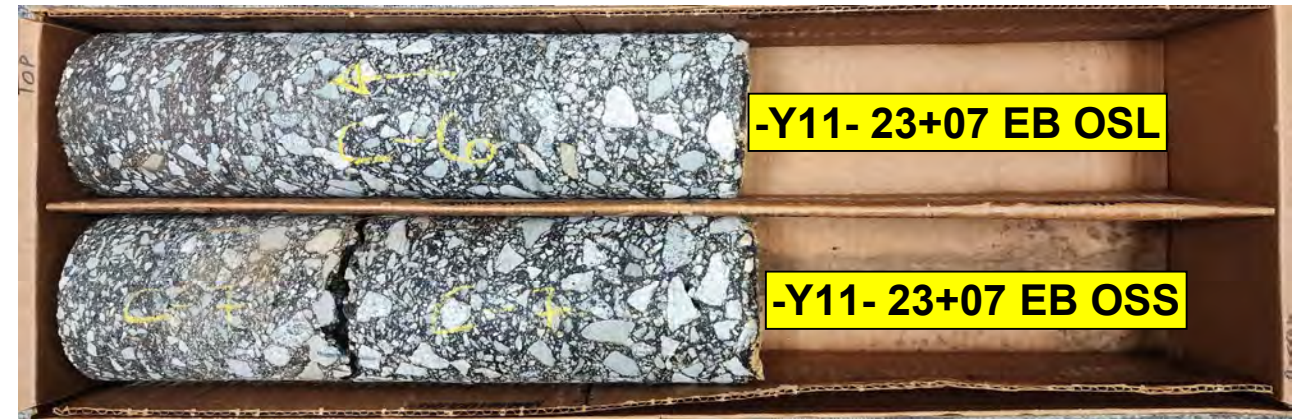
Dynamic Cone Penetrometer Data Sheet
Project: R-5930 Chatham County

Location			Location			Location			Location			Location			Location					
-Y11- 16+52 WB OSS			-Y11- 16+52 WB ISL			-Y11- 16+52 WB ISS			-Y11- 26+17 WB LTL			-Y11- 30+00 WB OSS			-Y11- 30+00 WB OSL			-Y11- 33+07 WB ISS		
Datum	Date		Datum	Date		Datum	Date		Datum	Date		Datum	Date		Datum	Date		Datum	Date	
SG	9/29/2022		SG	9/28/2022		SG	9/29/2022		SG	9/28/2022		SG	9/29/2022		SG	9/29/2022		SG	9/28/2022	
Cut/Fill	Fill		Cut/Fill	Fill		Cut/Fill	Fill		Cut/Fill	Cut		Cut/Fill	Fill		Cut/Fill	Fill		Cut/Fill	Cut	
Subgrade	A-1-b		Subgrade	A-2-4		Subgrade	A-2-4		Subgrade	A-6		Subgrade	A-6		Subgrade	A-6		Subgrade	A-2-4	
Cumulative DCP Blows in CM			Cumulative DCP Blows in CM			Cumulative DCP Blows in CM			Cumulative DCP Blows in CM			Cumulative DCP Blows in CM			Cumulative DCP Blows in CM			Cumulative DCP Blows in CM		
0.0	42.6	78.3	0.0	41.5	55.8	85.2	0.0		0.0	42.3		0.0	50.3	81.3	0.0	51.6	91.2	0.0	38.0	
5.6	43.7	78.6	3.5	41.7	56.4	85.6	7.0		9.3	42.4		2.9	51.2	81.4	6.8	51.9	91.5	1.7	38.2	
8.2	44.7	78.9	4.9	41.8	56.9	86.0	8.6		11.4	42.4		4.2	52.0	81.6	10.4	52.1	91.9	2.7	38.5	
10.2	46.1	79.1	6.3	42.0	57.6	86.4	9.9		13.7	42.4		5.2	52.8	81.8	13.6	52.4	92.4	3.5	38.7	
11.5	47.1	79.3	7.5	42.1	58.4	86.8	10.9		16.4	42.5		6.2	53.8	82.0	15.6	52.6	92.9	4.1	39.0	
12.5	48.4	79.5	8.8	42.2	59.2	87.2	11.7		20.4	42.5		7.3	55.2	82.2	17.0	52.8	93.3	4.6	39.3	
13.2	49.4	79.7	9.8	42.4	60.3	88.0	12.5		24.7	42.6		8.7	56.5	82.5	18.8	53.0	93.9	5.2	39.6	
14.0	50.3	80.1	10.7	42.5	61.2	88.7	13.4		24.8	42.6		10.4	58.7	82.7	19.9	53.4	94.4	5.7	40.0	
14.7	51.1	80.3	11.4	42.7	62.0	89.0	14.4		24.9	42.6		11.5	61.2	82.9	20.9	53.7	95.0	6.1	40.3	
15.2	51.9	80.5	12.0	42.8	62.7	89.3	15.5		25.0	42.7		12.0	62.8	83.1	21.9	54.0	96.0	6.6	40.6	
16.1	52.7	80.9	12.7	42.9	63.1	89.6	16.7		25.1	42.7		12.4	64.2	83.3	22.6	54.3	97.0	7.0	40.9	
16.6	53.4	81.3	13.5	43.0	63.7	90.0	18.3		25.7	42.8		12.7	66.7	84.0	23.1	54.6	98.1	7.5	41.2	
17.2	53.9	81.6	14.1	43.1	64.5	90.4	19.7		29.1	42.8		13.2	67.2	84.5	23.4	55.0	99.1	8.0	41.7	
17.8	54.5	82.0	14.8	43.2	65.0	90.7	21.3		32.6	42.8		13.5	68.5	85.2	23.7	55.4		8.4	42.2	
18.3	55.1	82.5	15.5	43.3	65.4	91.0	22.8		33.6	42.9		13.7	70.0	86.0	24.2	55.8		8.7	42.7	
18.9	55.8	83.0	16.2	43.3	65.7	91.4	24.4		34.4	42.9		14.0	71.3	86.8	24.7	56.3		9.3	43.2	
19.4	56.5	83.5	17.0	43.4	66.0	92.1	25.9		35.2	43.0		14.3	71.6	87.7	25.3	56.8		9.9	44.0	
19.9	57.4	84.3	17.7	43.5	66.3	92.6	27.7		35.7	43.0		14.8	71.9	88.7	25.6	57.4		10.3	44.8	
20.4	58.3	85.1	18.5	43.6	66.6	93.6	29.7		36.4	43.0		15.1	72.1	88.8	26.1	58.0		10.8	45.9	
20.7	59.0	86.0	19.3	43.7	66.9	93.8	30.9		37.3	43.1		15.6	72.2	91.0	26.6	58.5		11.4	46.8	
21.3	59.7	86.8	20.1	43.8	67.2	94.0	31.8		37.8	43.1		16.1	72.7	92.1	27.3	59.1		11.9	47.1	
21.8	60.6	87.7	21.1	43.8	67.4	94.9	32.5		38.2	43.2		16.6	72.8	93.3	28.0	59.8		12.5	47.4	
22.3	61.5	88.6	22.2	43.9	67.7	95.3	33.0		38.5	43.2		17.2	72.9	94.5	28.6	60.5		13.0	47.5	
22.8	62.4	89.4	23.4	44.0	68.0	95.7	33.6		38.7	43.3		18.1	73.1	95.5	29.4	61.4		13.4	47.7	
23.2	63.5		24.8	44.1	68.3	96.1	34.1		39.0	43.3		18.9	73.3	96.7	29.9	62.1		14.0	48.0	
23.6	64.7		26.4	44.1	68.5	96.6	34.5		39.1	43.4		19.7	73.5	97.9	30.2	62.9		14.6	48.1	
24.0	65.7		28.3	44.2	68.8	97.5	35.0		39.2	43.4		20.7	73.8	98.9	30.5	63.4		15.1	48.2	
24.5	66.8		30.1	44.3	69.1	97.9	35.4		39.4	43.5		21.5	74.0		30.7	64.1		15.7	48.3	
24.9	67.8		31.0	44.3	69.3	98.8	35.9		39.5	43.6		22.4	74.2		31.0	64.6		16.2	48.5	
25.3	68.8		31.8	44.4	69.6	99.0	36.3		39.6	43.6		23.3	74.4		31.3	65.1		16.7		
25.7	69.7		32.4	44.6	69.9	99.5	36.5		39.7	43.7		24.3	74.6		31.5	65.9		17.3		
26.3	70.3		33.0	44.7	70.2	100.0	36.6		39.8	43.7		25.2	74.8		31.9	66.9		17.9		
26.7	71.1		33.6	44.9	70.4	100.3			40.0	43.8		26.0	75.0		32.1	67.8		18.5		
27.3	71.9		34.1	45.0	70.7	100.8			40.1	43.8		26.6	75.2		32.3	68.8		19.2		
27.7	72.5		34.6	45.2	71.0				40.2	43.8		27.3	75.5		32.7	69.6		19.8		
28.2	73.2		35.0	45.4	71.3				40.3	43.8		27.9	75.7		33.0	70.6		20.5		
28.7	73.8		35.3	45.5	71.6				40.4	43.8		28.6	75.9		33.3	71.7		21.1		
29.4	74.4		35.8	45.7	71.8				40.6	43.9		29.1	76.1		33.5	72.7		21.7		
30.3	74.7		36.1	45.8	72.1				40.7	43.9		29.6	76.3		33.8	73.8		22.5		
30.9	75.1		36.4	46.0	72.4				40.8	43.9		30.1	76.5		34.3	74.8		23.4		
31.0	75.4		36.8	46.3	74.1				40.9	43.9		30.6	76.7		34.8	75.8		24.3		
31.9	75.5		37.1	46.6	75.2				41.0	43.9		31.3	76.9		35.6	76.8		25.3		
32.5	75.7		37.4	46.8	76.7				41.2	43.9		32.0	77.2		37.0	77.9		26.2		
32.9	75.8		37.7	47.1	78.6				41.3			33.0	77.4		38.0	78.8		27.1		
33.1	76.0		38.0	47.4	78.9				41.4			33.7	77.6		38.6	79.7		27.9		
33.5	76.1		38.2	47.7	79.2				41.5			34.5	77.8		39.1	80.6		28.7		
33.7	76.2		38.5	48.0	79.5				41.5			35.3	78.0		39.5	81.4		29.5		
34.1	76.4		38.7	48.2	79.8				41.6			36.0	78.2		40.0	82.1		30.2		
34.6	76.5		39.0	48.5	80.1				41.6			36.7	78.4		42.6	82.6		30.8		
34.9	76.6		39.2	48.8	80.4				41.7			37.5	78.6		43.6	83.2		31.1		
35.5	76.7		39.6	49.4	80.7				41.8			38.5	78.8		44.5	83.6		31.6		
35.7	76.9		39.8	49.9	81.0				41.8			39.6	79.1		45.4	84.1		32.2		
36.0	77.0		40.0	50.5	81.3				41.9			40.7	79.3		46.6	84.6		32.9		
36.3	77.1		40.1	51.0	81.6				41.9			41.8	79.5		47.4	85.1		33.8		
36.7	77.3		40.3	51.6	82.0				42.0			42.7	79.7		48.4	85.6		34.4		
37.2	77.4		40.4	52.2	82.4				42.0			43.6	79.9		49.2	86.4		34.9		
37.9	77.5		40.6	52.7	82.8				42.1			44.5	80.1		49.9	87.3		35.4		
38.5	77.7		40.8	53.3	83.2				42.1			45.5	80.3		50.3	88.3		35.9		
39.2	77.8		40.9	53.8	83.6				42.2			46.6	80.5		50.6	89.4		36.5		
39.8	77.9		41.1	54.4	84.0				42.2			47.5	80.8		50.8	90.1		37.3		
40.6	78.0		41.2	54.8	84.4				42.2			48.3	81.0		51.1	90.7		37.6		
41.6	78.2		41.4	55.3	84.8				42.3			49.3	81.2		51.4	90.9		37.9		

NOTES:
 ABC - Aggregate Base Course
 SG - Subgrade
 ESG - Estimated Subgrade (DCP blows reported from approximately 1 ft below existing ground surface)
 SS - Stabilized Subgrade
 CTBC - Cement Treated Base Course

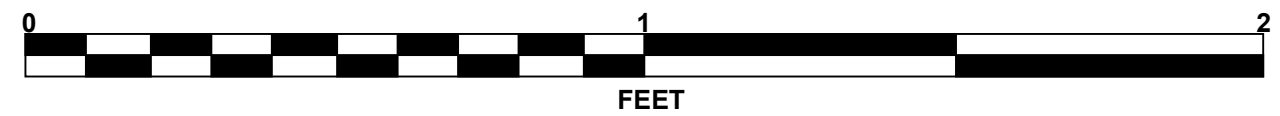
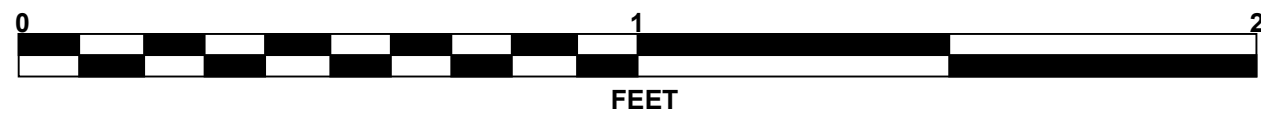
PAVEMENT CORE PHOTOGRAPHS

R-5930 Chatham Park Way Extension



PAVEMENT CORE PHOTOGRAPHS

R-5930 Chatham Park Way Extension



Laboratory Testing Summary

Project Number: 48548.1.1
 TIP Number: R-5930
 City/County/State: Pittsboro, Chatham, NC
 Description: Chatham Park Way - New Location Roadway From North of Suttles Rd. to US 15/501

Boring No.	Sample No.	Station	Offset (feet)	Depth Interval (feet)	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
								Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
-Y11- 15+84 EB ISS	S-13	15+84	12 RT	1.4-3.0	A-4 (1)	28	8	23.1	26.7	29.7	20.5	5.0	82	71	46	12.8%	-
-Y11- 15+84 EB ISS	S-14	15+84	12 RT	3.0-4.3	A-7-6 (15)	45	21	11.2	15.7	27.7	45.4	2.0	95	87	74	23.7%	-
-Y11- 23+07 EB LTL	S-15	23+07	6 RT	1.3-3.3	A-7-6 (26)	57	32	10.9	9.8	25.5	53.8	1.0	95	87	78	27.1%	-
-Y11- 23+07 EB LTL	S-16	23+07	6 RT	3.3-4.3	A-6 (6)	37	16	23.2	17.3	25.1	34.4	8.0	85	71	54	38.6%	-
-Y11- 23+07 EB OSL	S-1	23+07	36 RT	1.2-2.5	A-7-6 (25)	56	27	5.4	11.7	31.0	51.9	2.0	96	92	84	28.1%	-
-Y11- 23+07 EB OSL	S-2	23+07	36 RT	2.5-4.3	A-7-5 (24)	57	27	4.5	12.8	28.5	54.2	2.0	93	90	82	30.1%	-
-Y11- 30+03 EB ISL	S-17	30+03	17 RT	1.5-2.5	A-6 (1)	32	12	20.2	17.1	34.7	28.0	7.0	59	51	40	19.6%	-
-Y11- 30+03 EB ISL	S-18	30+03	17 RT	2.5-4.3	A-7-6 (30)	63	34	10.0	7.2	26.1	56.7	2.0	95	87	81	25.8%	-
-Y11- 16+52 WB OSS	S-12	16+52	42 LT	1.4-4.3	A-1-b (0)	25	6	45.2	21.8	20.7	12.3	21.0	65	43	24	7.3%	-
-Y11- 16+52 WB ISS	S-9	16+52	14 LT	1.3-4.3	A-2-4 (0)	25	6	45.6	20.6	18.2	15.6	16.0	70	46	26	9.3%	-
-Y11- 26+17 WB LTL	S-7	26+17	13 LT	1.4-4.0	A-6 (2)	37	17	32.8	16.4	22.8	28.0	28.0	68	51	37	12.2%	-
-Y11- 30+00 WB OSS	S-11	30+00	41 LT	0.7-4.3	A-6 (4)	36	14	21.0	14.0	32.4	32.6	11.0	70	59	49	18.0%	-
-Y11- 33+07 WB ISS	S-6	33+07	13 LT	0.8-3.3	A-2-4 (0)	30	9	32.3	16.3	29.8	21.6	24.0	64	47	35	7.2%	-
Y11_12+50	Bulk	12+50	98 RT	0.0-3.0	A-7-5 (22)	66	29	4.0	6.5	15.6	73.9	3	78	76	71	33.7%	-
Y11_21+00	Bulk	21+00	94 RT	0.0-3.0	A-7-5 (45)	79	40	2.6	4.5	15.0	77.9	0	95	94	90	39.1%	-
45+00	Bulk	45+00	50 LT	0.0-3.0	A-4 (5)	38	8	15.1	14.6	46.8	23.5	0	89	79	66	13.3%	-
75+00	Bulk	75+00	38 LT	0.0-3.0	A-7-6 (11)	44	20	15.2	18	27.4	39.4	1	90	80	65	20.5%	-

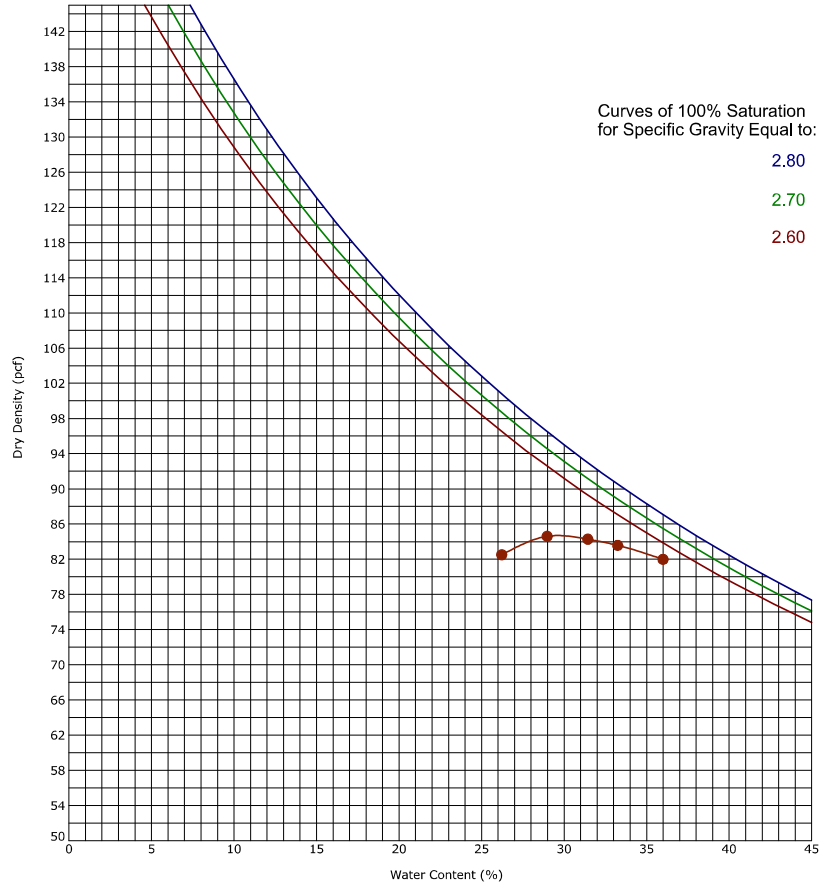
Stephanie H. Huffman
 Certified Lab Technician Signature

114-01-1203
 Certification Number

Laboratory Soils Testing for ICE
 | Raleigh, North Carolina
 Terracon Project No. 70181226



Moisture-Density Relationship
AASHTO T99



Sample Identification					Description of Materials			
Station 12+50, 98RT @ 0-3'					ELASTIC SILT with SAND(MH) - AASHTO A-7-5 (22)			
Fines (%)	Fraction >19mm size (%)	LL	PL	PI	Test Method	Maximum Dry Density (pcf)	Optimum Water Content (%)	
71	29	66	37	29	AASHTO T99 Method A	84.7	29.6	

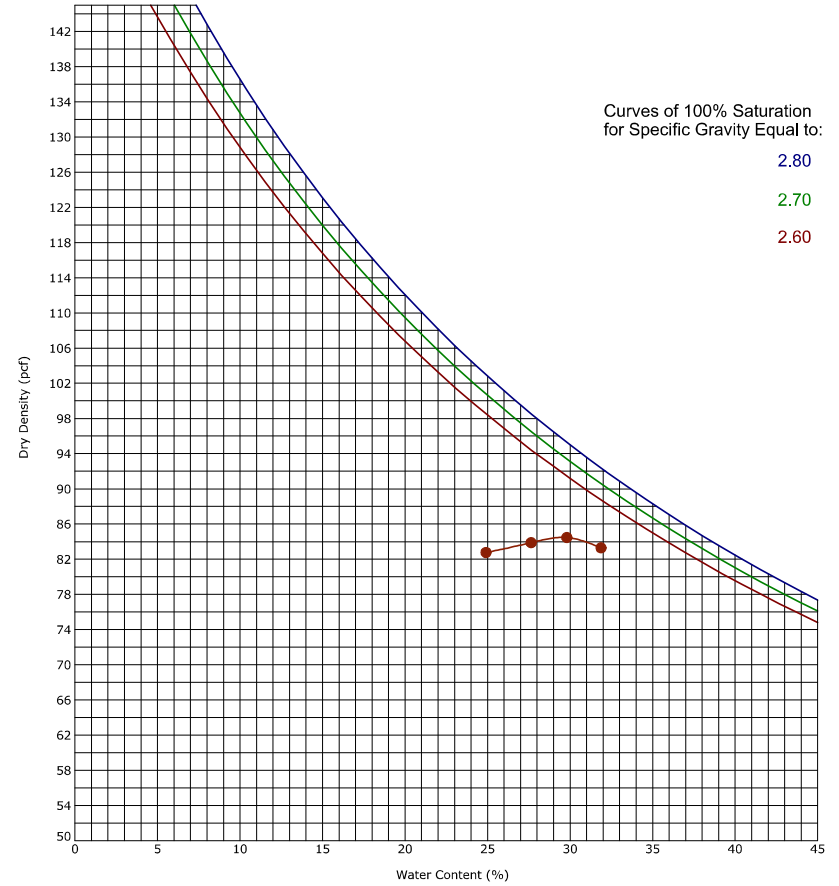
Laboratory tests are not valid if separated from original report.

Facilities | Environmental | **Geotechnical** | Materials

Laboratory Soils Testing for ICE
 | Raleigh, North Carolina
 Terracon Project No. 70181226



Moisture-Density Relationship
AASHTO T99



Sample Identification					Description of Materials			
Station 12+50, 98RT @ 0-3' - 4% Lime								
Fines (%)	Fraction >19mm size (%)	LL	PL	PI	Test Method	Maximum Dry Density (pcf)	Optimum Water Content (%)	
					AASHTO T99 Method A	84.5	29.6	

Laboratory tests are not valid if separated from original report.

Facilities | Environmental | **Geotechnical** | Materials

REPORT FOR CALIFORNIA BEARING RATIO



Service Date: 10/17/22
Report Date: 10/26/22

Laboratory Soils Testing for ICE
| Raleigh, North Carolina
Terracon Project No. 70181226



Client	Project
ICE of Carolinas, PLLC Attn: Nathan Mohs 4505 Falls of Neuse Road Suite 110 Raleigh, NC 27609-6271	Laboratory Soils Testing for ICE Client Project Reference: R-5930
Project No. 70181226	

SAMPLE INFORMATION

Sample Number: Bulk Sample	Proctor Method: AASHTO T99 - Method A
Boring Number: Y 11 - Station 12+50, 98RT	Maximum Dry Density (pcf): 84.7
Sample Location: Y 11 - Station 12+50, 98RT	Optimum Moisture: 29.6
Depth: 0-3'	Liquid Limit: 66
Material Description: AASHTO A-7-5 (22)	Plasticity Index: 29

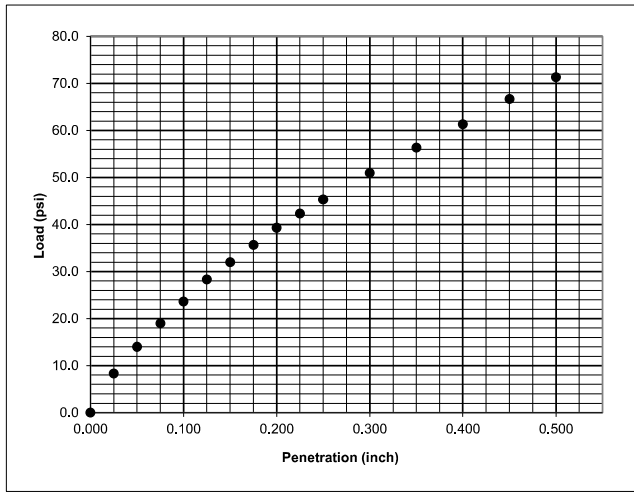
CBR TEST DATA

CBR Value at 0.100 inch: 2.4
CBR Value at 0.200 inch: 2.6

Surcharge Weight (lbs): 10
Soaking Condition: Soaked
Length of Soaking (hours): 96
Swell (%): 4.8

DENSITY DATA
Dry Density Before Soaking (pcf): 85.3
Compaction of Proctor (%): 100.7

MOISTURE DATA
Before Compaction (%): 28.2
After Compaction (%): 27.7
Top 1" After Soaking (%): 38.4
Average After Soaking (%): 35.8



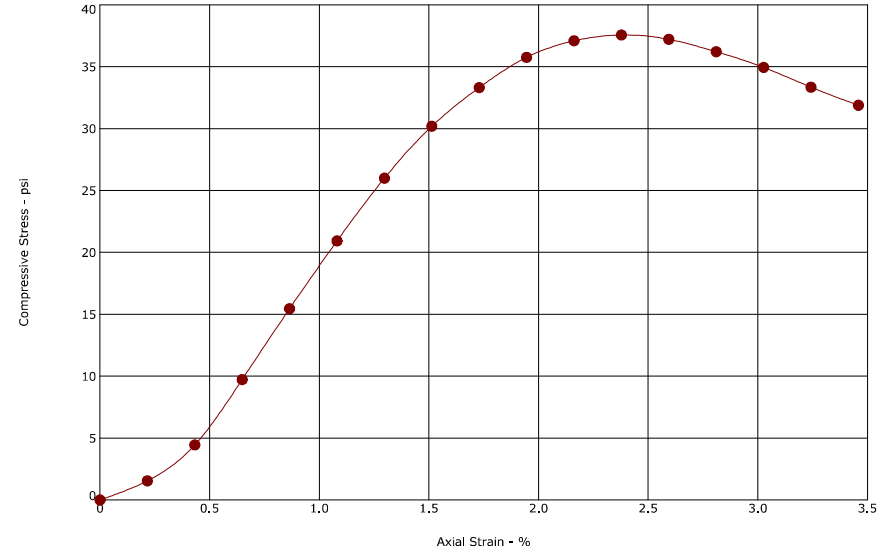
Comments:
Services: Obtain soil sample and test for California Bearing Ratio

Terracon Rep: Stephanie Huffman
Reported To: Nathan Mohs
Contractor:
Report Distribution

Reviewed by: Nathan Mohs LG
Engineering Geologist Manager

Test Methods: AASHTO T193
The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written approval of Terracon. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

Unconfined Compression Test
ASTM D2166



Boring ID	Depth (Ft)	Sample type	LL	PL	PI	Fines (%)	Description
Sation 12+50 4% Lime - S1	0-3'	Remolded					

Specimen Failure Mode	Specimen Test Data
	Moisture Content (%): 26.8
	Dry Density (pcf): 82
	Diameter (in.): 4.00
	Height (in.): 4.63
	Height / Diameter Ratio: 1.16
	Calculated Saturation (%): 69.52
	Calculated Void Ratio: 1.02
	Assumed Specific Gravity: 2.65
	Failure Strain (%): 2.38
	Unconfined Compressive Strength (psi): 38
	Undrained Shear Strength (psi): 19
	Strain Rate (in/min): 0.0600
	Remarks:



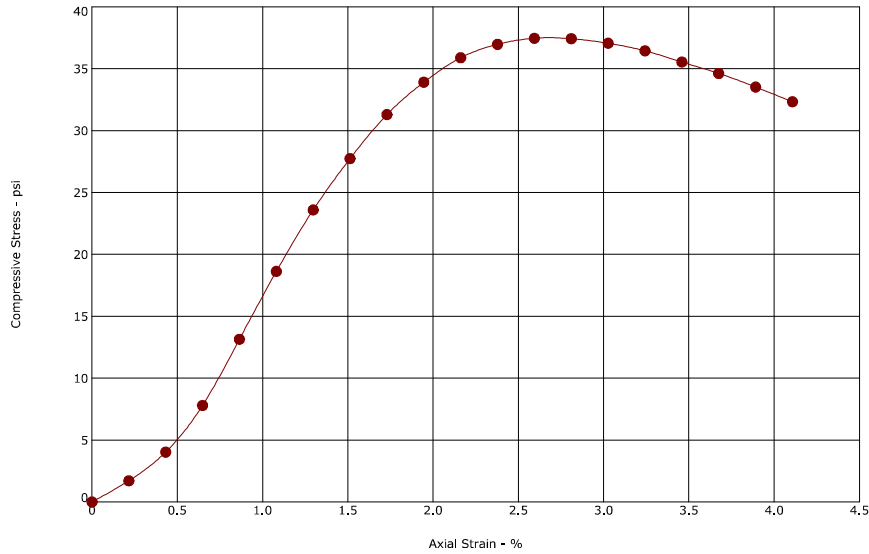
Laboratory tests are not valid if separated from original report.

Facilities | Environmental | Geotechnical | Materials

Laboratory Soils Testing for ICE
 | Raleigh, North Carolina
 Terracon Project No. 70181226



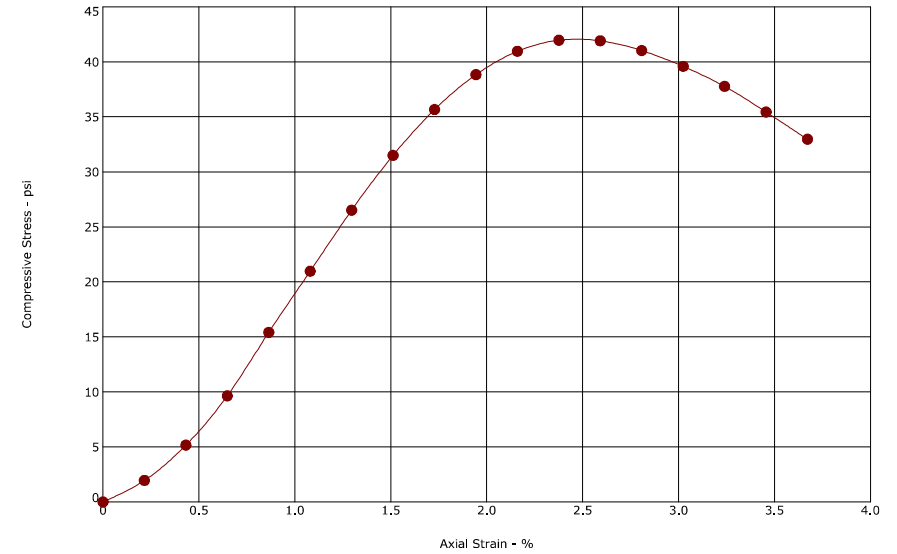
Unconfined Compression Test ASTM D2166



Laboratory Soils Testing for ICE
 | Raleigh, North Carolina
 Terracon Project No. 70181226



Unconfined Compression Test ASTM D2166



Boring ID	Depth (Ft)	Sample type	LL	PL	PI	Fines (%)	Description
Saton 12+50 4% Lime - S2	0-3'	Remolded					

Specimen Failure Mode		Specimen Test Data	
	Moisture Content (%):		27.9
	Dry Density (pcf):		82
	Diameter (in.):		4.00
	Height (in.):		4.63
	Height / Diameter Ratio:		1.16
	Calculated Saturation (%):		72.51
	Calculated Void Ratio:		1.02
	Assumed Specific Gravity:		2.65
	Failure Strain (%):		2.59
	Unconfined Compressive Strength (psi):		37
	Undrained Shear Strength (psi):		19
	Strain Rate (in/min):		0.0600
	Remarks:		
	<p>STATION 12+50 4% LIME SAMPLE 2</p>		

Boring ID	Depth (Ft)	Sample type	LL	PL	PI	Fines (%)	Description
Saton 12+50 5% Lime - S1	0-3'	Remolded					

Specimen Failure Mode		Specimen Test Data	
	Moisture Content (%):		27.0
	Dry Density (pcf):		81
	Diameter (in.):		4.01
	Height (in.):		4.63
	Height / Diameter Ratio:		1.16
	Calculated Saturation (%):		69.15
	Calculated Void Ratio:		1.03
	Assumed Specific Gravity:		2.65
	Failure Strain (%):		2.38
	Unconfined Compressive Strength (psi):		42
	Undrained Shear Strength (psi):		21
	Strain Rate (in/min):		60.0000
	Remarks:		
	<p>STATION 12+50 5% LIME SAMPLE 1</p>		

Laboratory tests are not valid if separated from original report.

Facilities | Environmental | **Geotechnical** | Materials

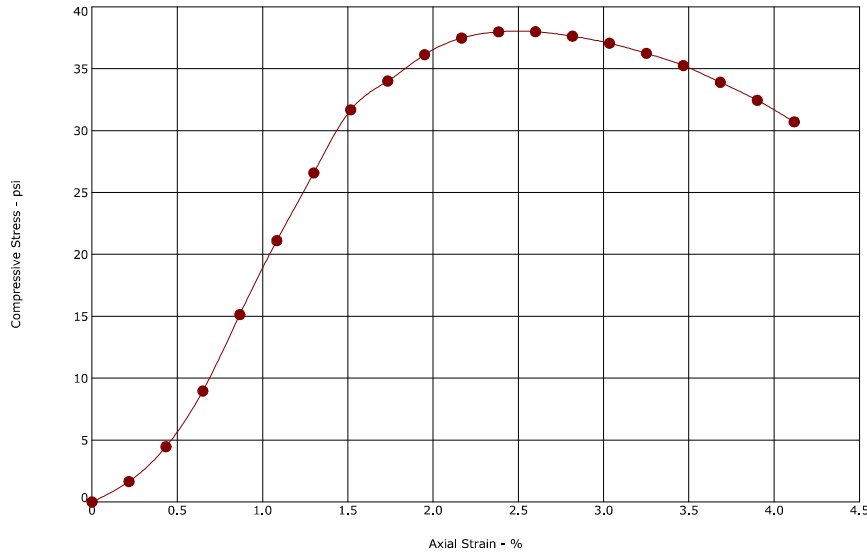
Laboratory tests are not valid if separated from original report.

Facilities | Environmental | **Geotechnical** | Materials

Laboratory Soils Testing for ICE
 | Raleigh, North Carolina
 Terracon Project No. 70181226



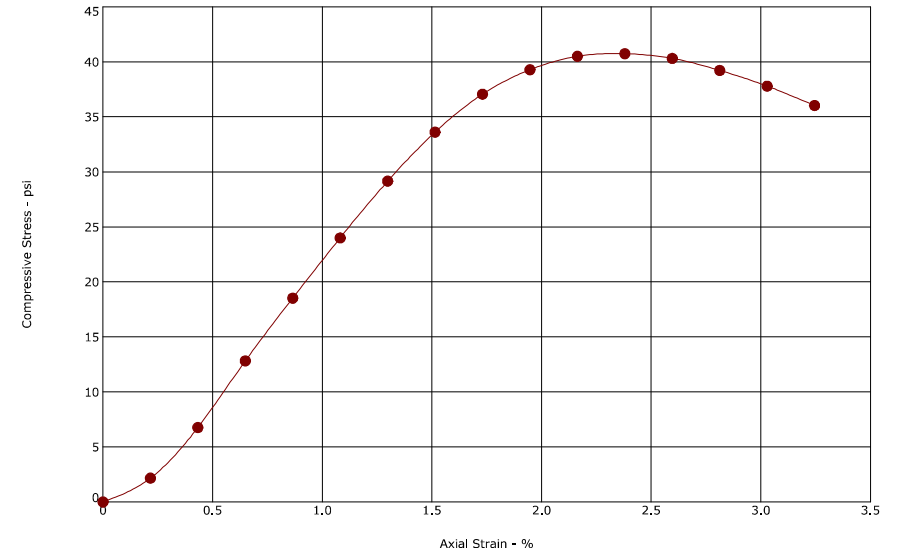
Unconfined Compression Test ASTM D2166



Laboratory Soils Testing for ICE
 | Raleigh, North Carolina
 Terracon Project No. 70181226



Unconfined Compression Test ASTM D2166



Boring ID	Depth (Ft)	Sample type	LL	PL	PI	Fines (%)	Description
Station 12+50 5% Lime - S2	0-3'	Remolded					

Specimen Failure Mode	Specimen Test Data
<p>STATION 12+50 5% LIME SAMPLE 2</p>	Moisture Content (%): 28.2
	Dry Density (pcf): 82
	Diameter (in.): 4.00
	Height (in.): 4.61
	Height / Diameter Ratio: 1.15
	Calculated Saturation (%): 74.19
	Calculated Void Ratio: 1.01
	Assumed Specific Gravity: 2.65
	Failure Strain (%): 2.60
	Unconfined Compressive Strength (psi): 38
	Undrained Shear Strength (psi): 19
	Strain Rate (in/min): 0.0600
	Remarks:

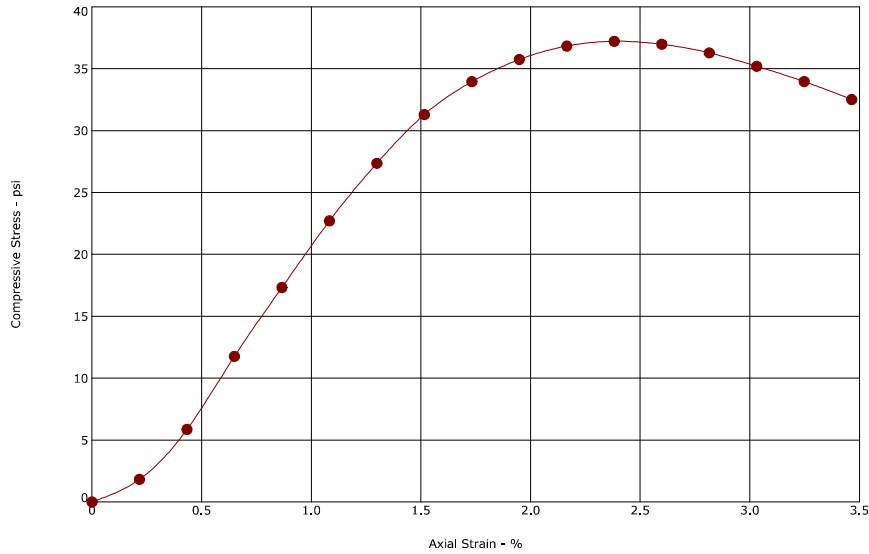
Boring ID	Depth (Ft)	Sample type	LL	PL	PI	Fines (%)	Description
Station 12+50 6% Lime - S1	0-3'	Remolded					

Specimen Failure Mode	Specimen Test Data
<p>STATION 12+50 6% LIME SAMPLE 1</p>	Moisture Content (%): 26.8
	Dry Density (pcf): 82
	Diameter (in.): 4.00
	Height (in.): 4.62
	Height / Diameter Ratio: 1.16
	Calculated Saturation (%): 69.32
	Calculated Void Ratio: 1.02
	Assumed Specific Gravity: 2.65
	Failure Strain (%): 2.38
	Unconfined Compressive Strength (psi): 41
	Undrained Shear Strength (psi): 20
	Strain Rate (in/min): 0.0600
	Remarks:

Laboratory Soils Testing for ICE
 | Raleigh, North Carolina
 Terracon Project No. 70181226



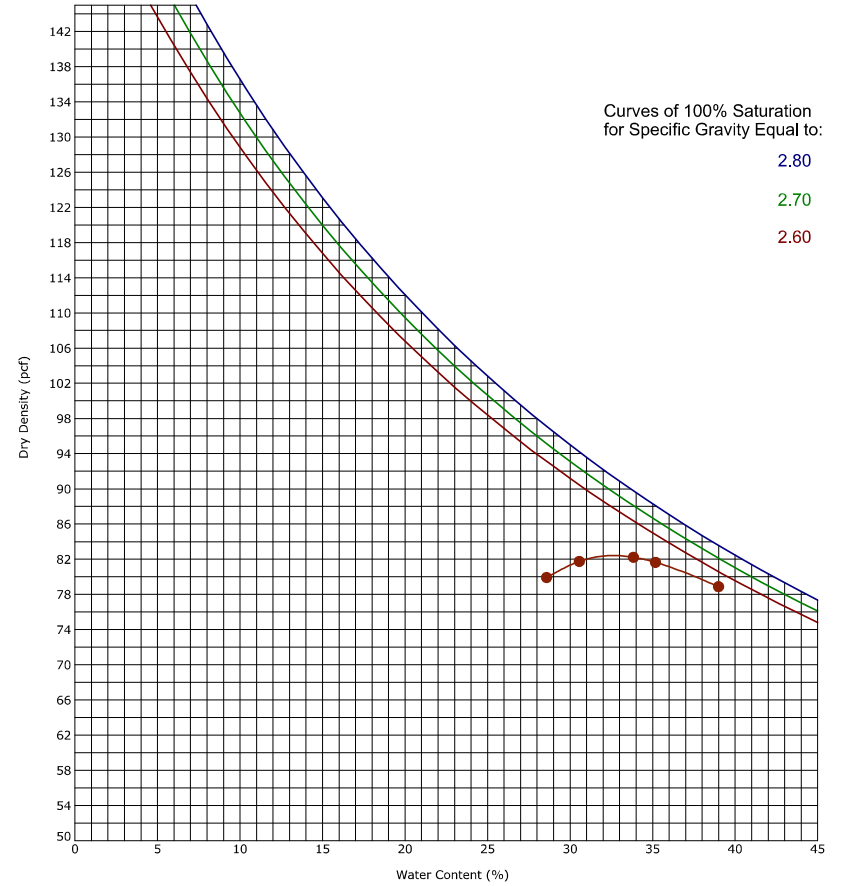
Unconfined Compression Test ASTM D2166



Laboratory Soils Testing for ICE
 | Raleigh, North Carolina
 Terracon Project No. 70181226



Moisture-Density Relationship AASHTO T99



Boring ID	Depth (Ft)	Sample type	LL	PL	PI	Fines (%)	Description
Sation 12+50 6% Lime - S2	0-3'	Remolded					



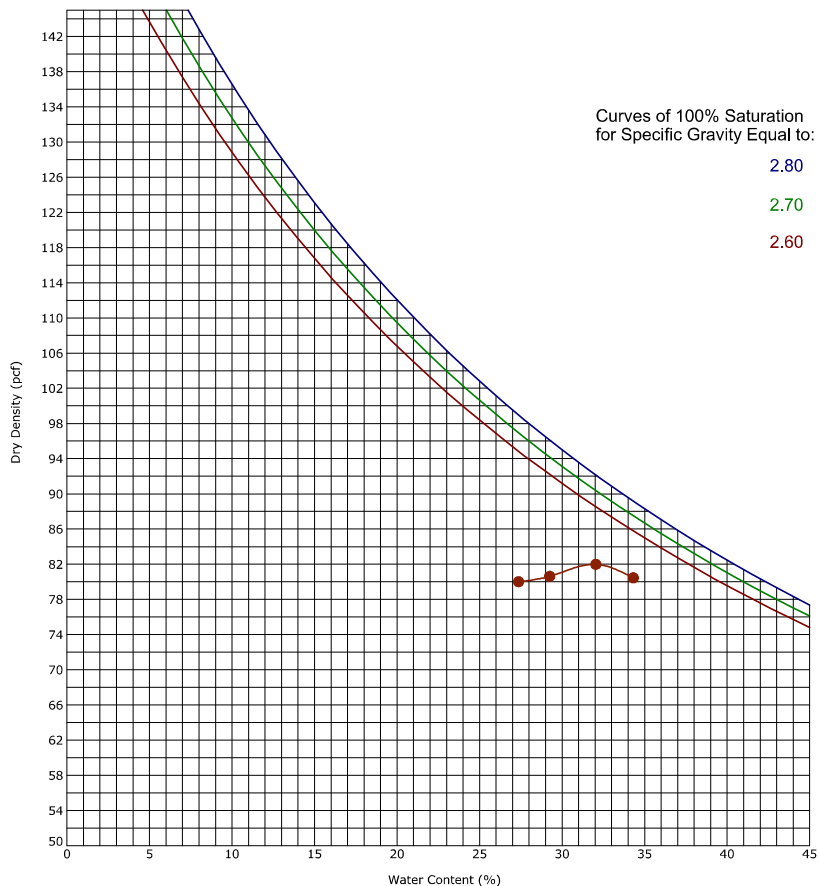
Specimen Failure Mode		Specimen Test Data	
Moisture Content (%):			27.1
Dry Density (pcf):			81
Diameter (in.):			4.00
Height (in.):			4.62
Height / Diameter Ratio:			1.15
Calculated Saturation (%):			69.28
Calculated Void Ratio:			1.04
Assumed Specific Gravity:			2.65
Failure Strain (%):			2.38
Unconfined Compressive Strength (psi):			37
Undrained Shear Strength (psi):			19
Strain Rate (in/min):			0.0600
Remarks:			

Sample Identification					Description of Materials			
Station 21+00, 94RT @ 0-3'					ELASTIC SILT(MH) - AASHTO A-7-5 (45)			
Fines (%)	Fraction >19mm size (%)	LL	PL	PI	Test Method	Maximum Dry Density (pcf)	Optimum Water Content (%)	
90	10	79	39	40	AASHTO T99 Method A	82.4	32.6	

Laboratory Soils Testing for ICE
 | Raleigh, North Carolina
 Terracon Project No. 70181226



Moisture-Density Relationship AASHTO T99



REPORT FOR CALIFORNIA BEARING RATIO

Service Date: 10/17/22
 Report Date: 10/26/22



Client ICE of Carolinas, PLLC Attn: Nathan Mohs 4505 Falls of Neuse Road Suite 110 Raleigh, NC 27609-6271	Project Laboratory Soils Testing for ICE Client Project Reference: R-5930 Project No. 70181226
---	--

SAMPLE INFORMATION

Sample Number: Bulk Sample	Proctor Method: AASHTO T99 - Method A
Boring Number: Y 11 - Station 21+00, 94RT	Maximum Dry Density (pcf): 82.4
Sample Location: Y 11 - Station 21+00, 94RT	Optimum Moisture: 32.6
Depth: 0-3'	Liquid Limit: 79
Material Description: AASHTO A-7-5 (45)	Plasticity Index: 40

CBR TEST DATA

CBR Value at 0.100 inch	2.5
CBR Value at 0.200 inch	2.2

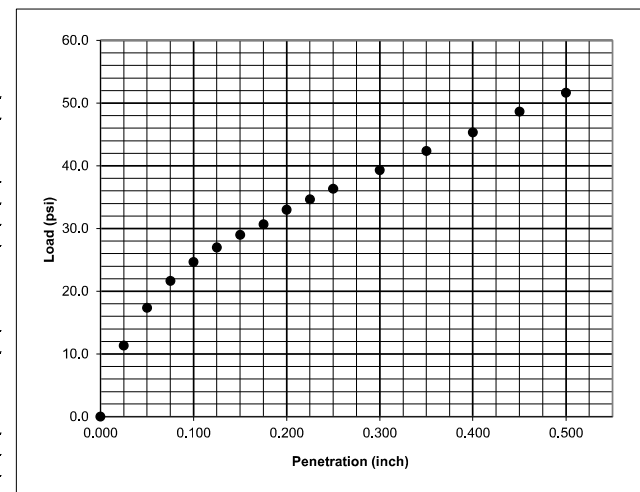
Surcharge Weight (lbs)	10
Soaking Condition	Soaked
Length of Soaking (hours)	96
Swell (%)	4.2

DENSITY DATA

Dry Density Before Soaking (pcf)	82.0
Compaction of Proctor (%)	99.5

MOISTURE DATA

Before Compaction (%)	32.2
After Compaction (%)	31.7
Top 1" After Soaking (%)	40.7
Average After Soaking (%)	37.5



Comments:

Services: Obtain soil sample and test for California Bearing Ratio

Terracon Rep: Stephanie Huffman

Reported To: Nathan Mohs

Contractor:

Report Distribution

Reviewed by: _____
 Nathan Mohs LG
 Engineering Geologist Manager

Test Methods: AASHTO T193

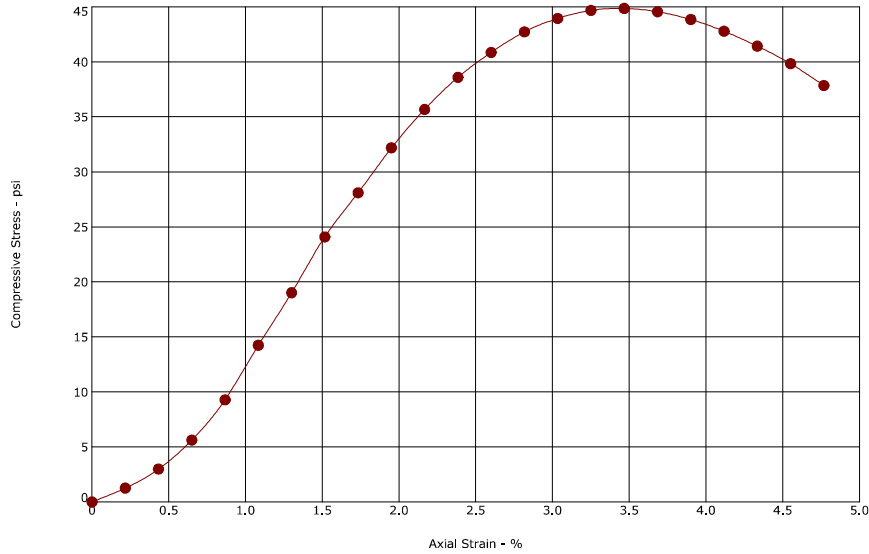
The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written approval of Terracon. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

Sample Identification					Description of Materials		
Station 21+00, 94 RT @ 0-3' - 4% Lime							
Fines (%)	Fraction >19mm size (%)	LL	PL	PI	Test Method	Maximum Dry Density (pcf)	Optimum Water Content (%)
					AASHTO T99 Method A	82.0	31.9

Laboratory Soils Testing for ICE
 | Raleigh, North Carolina
 Terracon Project No. 70181226



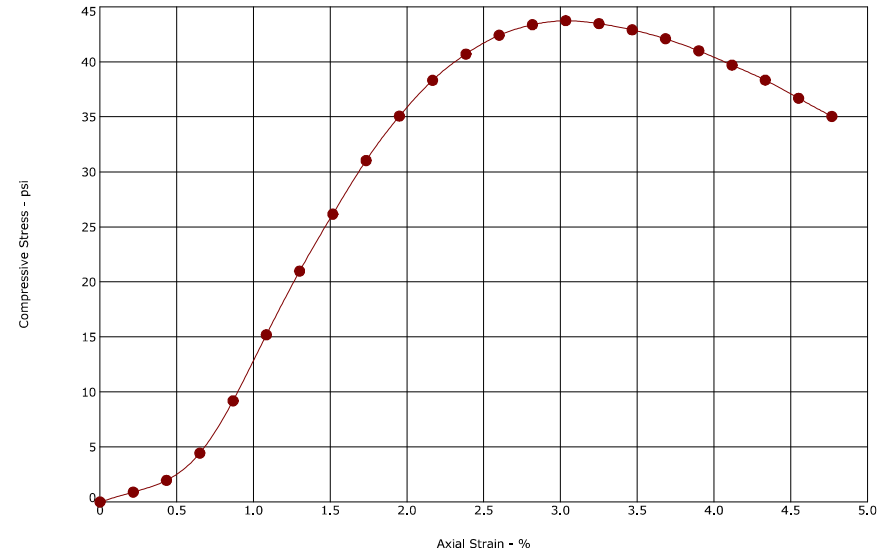
Unconfined Compression Test ASTM D2166




Laboratory Soils Testing for ICE
 | Raleigh, North Carolina
 Terracon Project No. 70181226




Unconfined Compression Test ASTM D2166



Boring ID	Depth (Ft)	Sample type	LL	PL	PI	Fines (%)	Description
Station 21+00 4% Lime - S1	0-3'	Remolded					

Specimen Failure Mode	Specimen Test Data
	Moisture Content (%): 29.3
	Dry Density (pcf): 81
	Diameter (in.): 4.01
	Height (in.): 4.61
	Height / Diameter Ratio: 1.15
	Calculated Saturation (%): 74.82
	Calculated Void Ratio: 1.04
	Assumed Specific Gravity: 2.65
	Failure Strain (%): 3.47
	Unconfined Compressive Strength (psi): 45
	Undrained Shear Strength (psi): 22
	Strain Rate (in/min): 0.0600
	Remarks:
	<p>STATION 21+00 4% LIME SAMPLE 1</p>

Boring ID	Depth (Ft)	Sample type	LL	PL	PI	Fines (%)	Description
Station 21+00 4% Lime - S2	0-3'	Remolded					

Specimen Failure Mode	Specimen Test Data
	Moisture Content (%): 29.7
	Dry Density (pcf): 80
	Diameter (in.): 4.00
	Height (in.): 4.61
	Height / Diameter Ratio: 1.15
	Calculated Saturation (%): 74.42
	Calculated Void Ratio: 1.06
	Assumed Specific Gravity: 2.65
	Failure Strain (%): 3.03
	Unconfined Compressive Strength (psi): 44
	Undrained Shear Strength (psi): 22
	Strain Rate (in/min): 0.0600
	Remarks:
	<p>STATION 21+00 4% LIME SAMPLE 2</p>

Laboratory tests are not valid if separated from original report.

Facilities | Environmental | **Geotechnical** | Materials

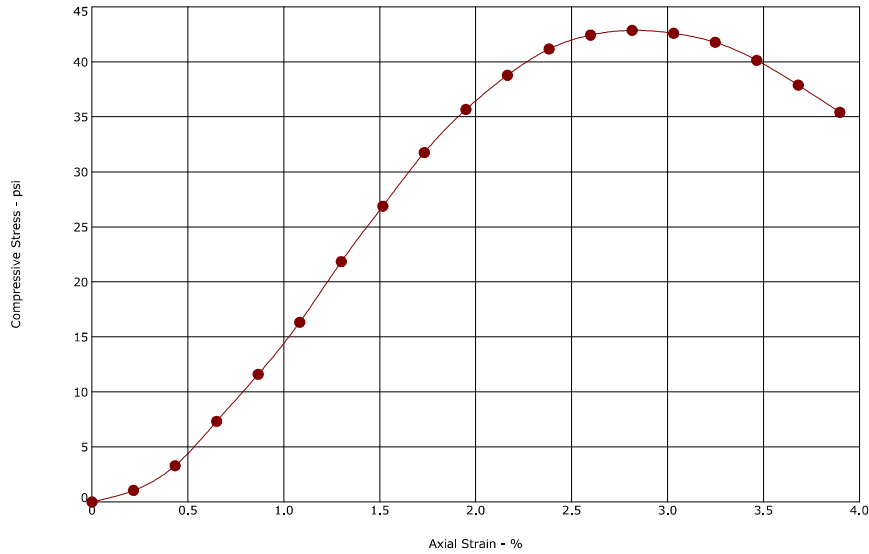
Laboratory tests are not valid if separated from original report.

Facilities | Environmental | **Geotechnical** | Materials

Laboratory Soils Testing for ICE
 | Raleigh, North Carolina
 Terracon Project No. 70181226



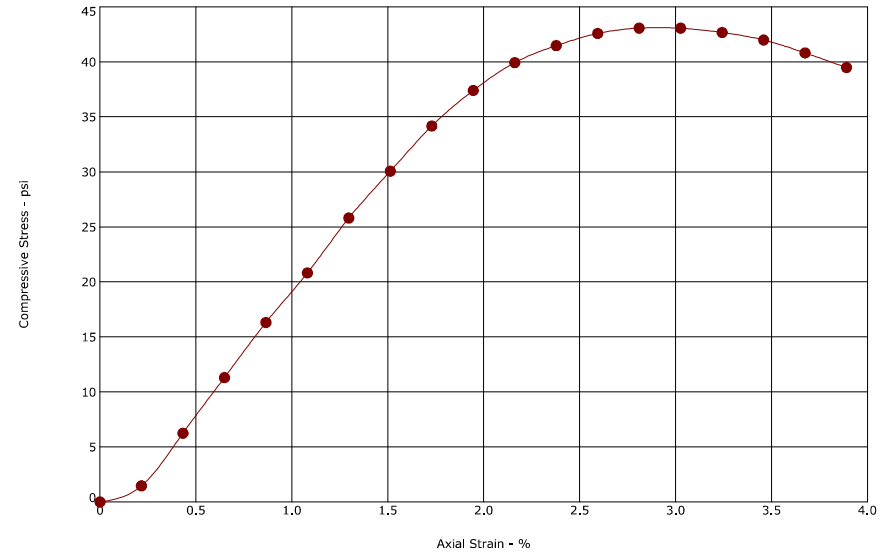
Unconfined Compression Test ASTM D2166



Laboratory Soils Testing for ICE
 | Raleigh, North Carolina
 Terracon Project No. 70181226



Unconfined Compression Test ASTM D2166



Boring ID	Depth (Ft)	Sample type	LL	PL	PI	Fines (%)	Description
Station 21+00 5% Lime - S1	0-3'	Remolded					

Specimen Failure Mode	Specimen Test Data
	Moisture Content (%): 29.0
	Dry Density (pcf): 80
	Diameter (in.): 4.00
	Height (in.): 4.62
	Height / Diameter Ratio: 1.15
	Calculated Saturation (%): 71.64
	Calculated Void Ratio: 1.07
	Assumed Specific Gravity: 2.65
	Failure Strain (%): 2.82
	Unconfined Compressive Strength (psi): 43
	Undrained Shear Strength (psi): 21
	Strain Rate (in/min): 0.0600
	Remarks:

Boring ID	Depth (Ft)	Sample type	LL	PL	PI	Fines (%)	Description
Station 21+00 5% Lime - S2	0-3'	Remolded					

Specimen Failure Mode	Specimen Test Data
	Moisture Content (%): 29.0
	Dry Density (pcf): 80
	Diameter (in.): 4.01
	Height (in.): 4.63
	Height / Diameter Ratio: 1.15
	Calculated Saturation (%): 71.85
	Calculated Void Ratio: 1.07
	Assumed Specific Gravity: 2.65
	Failure Strain (%): 2.81
	Unconfined Compressive Strength (psi): 43
	Undrained Shear Strength (psi): 22
	Strain Rate (in/min): 0.0600
	Remarks:

Laboratory tests are not valid if separated from original report.

Facilities | Environmental | **Geotechnical** | Materials

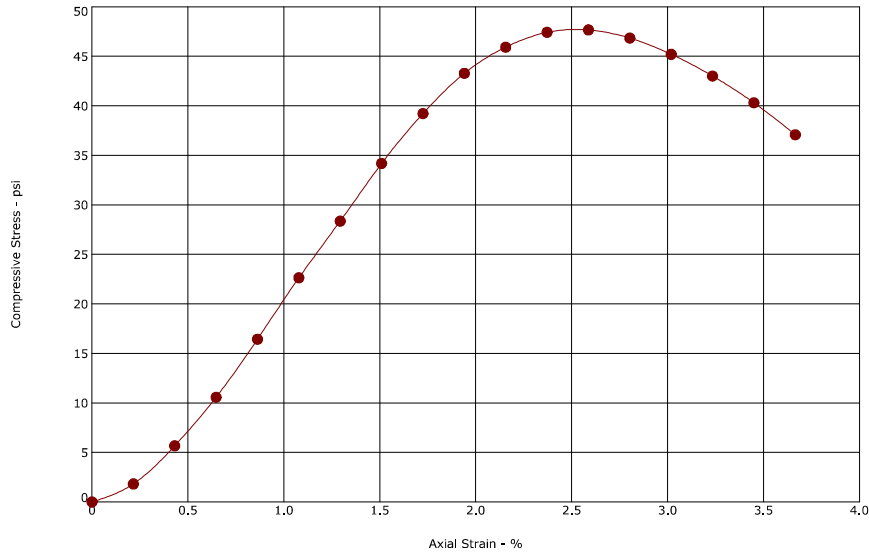
Laboratory tests are not valid if separated from original report.

Facilities | Environmental | **Geotechnical** | Materials

Laboratory Soils Testing for ICE
 | Raleigh, North Carolina
 Terracon Project No. 70181226



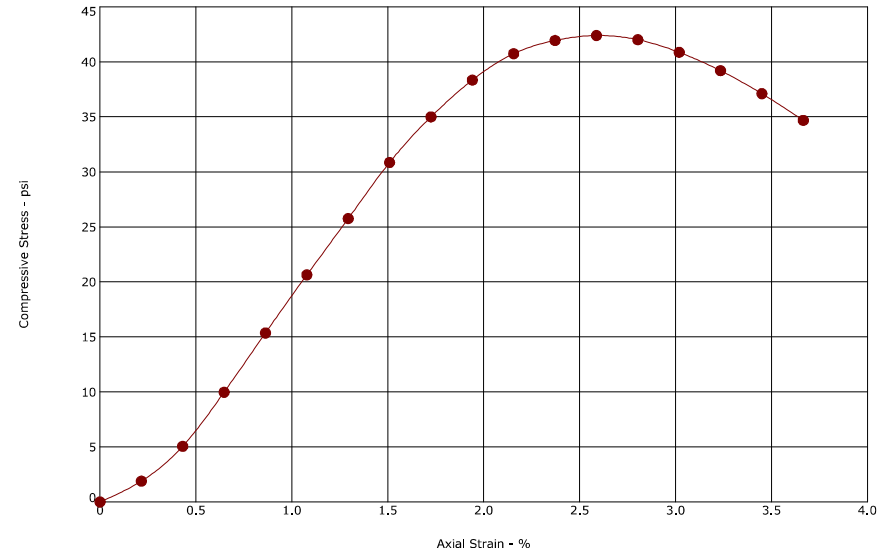
Unconfined Compression Test ASTM D2166



Laboratory Soils Testing for ICE
 | Raleigh, North Carolina
 Terracon Project No. 70181226



Unconfined Compression Test ASTM D2166



Boring ID	Depth (Ft)	Sample type	LL	PL	PI	Fines (%)	Description
Station 21+00 6% Lime - S1	0-3'	Remolded					

Specimen Failure Mode	Specimen Test Data
	Moisture Content (%): 28.9
	Dry Density (pcf): 80
	Diameter (in.): 4.01
	Height (in.): 4.64
	Height / Diameter Ratio: 1.16
	Calculated Saturation (%): 72.35
	Calculated Void Ratio: 1.06
	Assumed Specific Gravity: 2.65
	Failure Strain (%): 2.59
	Unconfined Compressive Strength (psi): 48
	Undrained Shear Strength (psi): 24
	Strain Rate (in/min): 0.0600
	Remarks:

Boring ID	Depth (Ft)	Sample type	LL	PL	PI	Fines (%)	Description
Station 21+00 6% Lime - S2	0-3'	Remolded					

Specimen Failure Mode	Specimen Test Data
	Moisture Content (%): 29.3
	Dry Density (pcf): 78
	Diameter (in.): 4.01
	Height (in.): 4.64
	Height / Diameter Ratio: 1.16
	Calculated Saturation (%): 69.98
	Calculated Void Ratio: 1.11
	Assumed Specific Gravity: 2.65
	Failure Strain (%): 2.59
	Unconfined Compressive Strength (psi): 42
	Undrained Shear Strength (psi): 21
	Strain Rate (in/min): 0.0600
	Remarks:

Laboratory tests are not valid if separated from original report.

Facilities | Environmental | **Geotechnical** | Materials

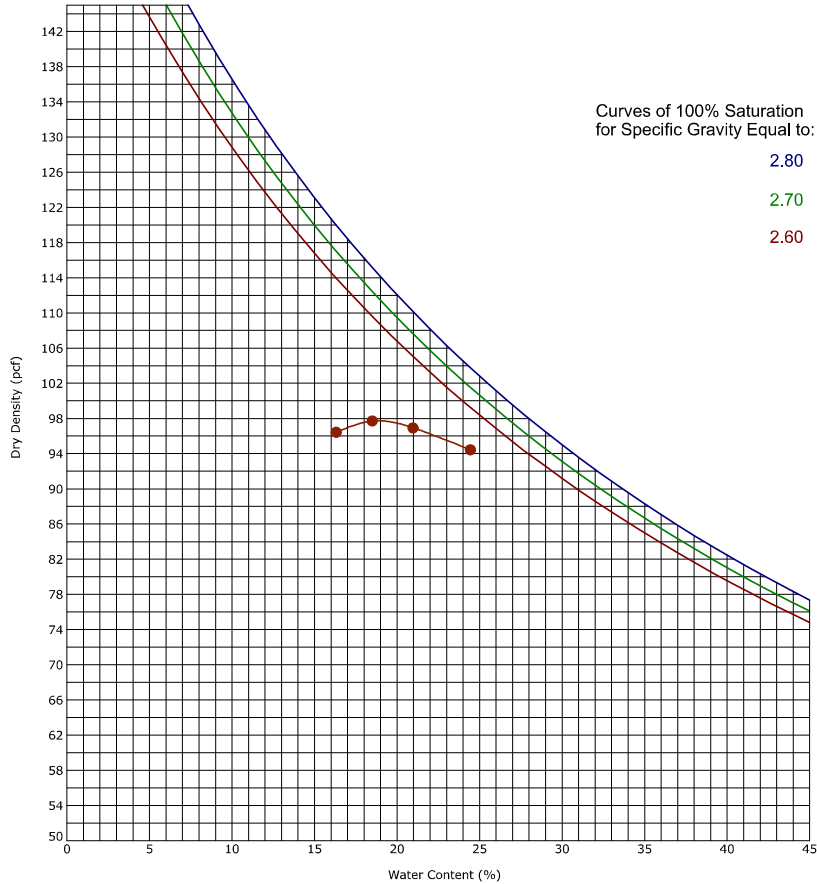
Laboratory tests are not valid if separated from original report.

Facilities | Environmental | **Geotechnical** | Materials

Laboratory Soils Testing for ICE
 | Raleigh, North Carolina
 Terracon Project No. 70181226



Moisture-Density Relationship
AASHTO T99



REPORT FOR CALIFORNIA BEARING RATIO

Service Date: 10/17/22
 Report Date: 10/26/22



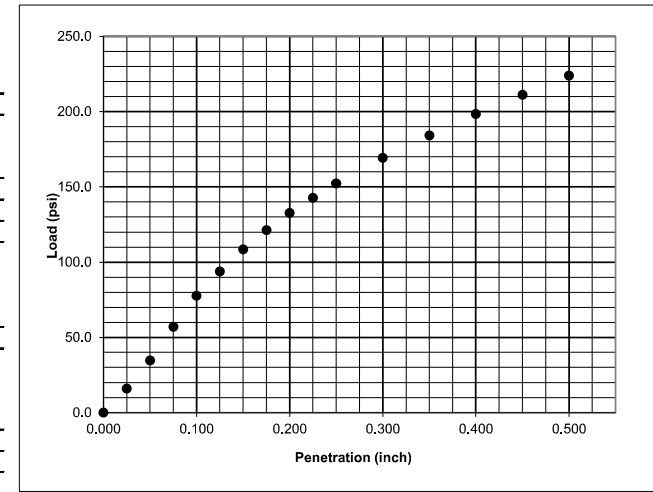
Client	ICE of Carolinas, PLLC Attn: Nathan Mohs 4505 Falls of Neuse Road Suite 110 Raleigh, NC 27609-6271	Project	Laboratory Soils Testing for ICE Client Project Reference: R-5930
		Project No.	70181226

SAMPLE INFORMATION

Sample Number:	Bulk Sample	Proctor Method:	AASHTO T99 - Method A
Boring Number:	Station 45+00, 50 LT	Maximum Dry Density (pcf):	97.8
Sample Location:	Station 45+00, 50 LT	Optimum Moisture:	18.9
Depth:	0-3'	Liquid Limit:	38
Material Description:	AASHTO A-4 (5)	Plasticity Index:	8

CBR TEST DATA

CBR Value at 0.100 inch	7.8
CBR Value at 0.200 inch	8.8
Surcharge Weight (lbs)	10
Soaking Condition	Soaked
Length of Soaking (hours)	96
Swell (%)	1.2



DENSITY DATA

Dry Density Before Soaking (pcf)	97.6
Compaction of Proctor (%)	99.8

MOISTURE DATA

Before Compaction (%)	17.9
After Compaction (%)	17.9
Top 1" After Soaking (%)	24.8
Average After Soaking (%)	24.7

Comments:
Services: Obtain soil sample and test for California Bearing Ratio

Terracon Rep: Stephanie Huffman
Reported To: Nathan Mohs
Contractor:
Report Distribution

Reviewed by: _____
 Nathan Mohs LG
 Engineering Geologist Manager

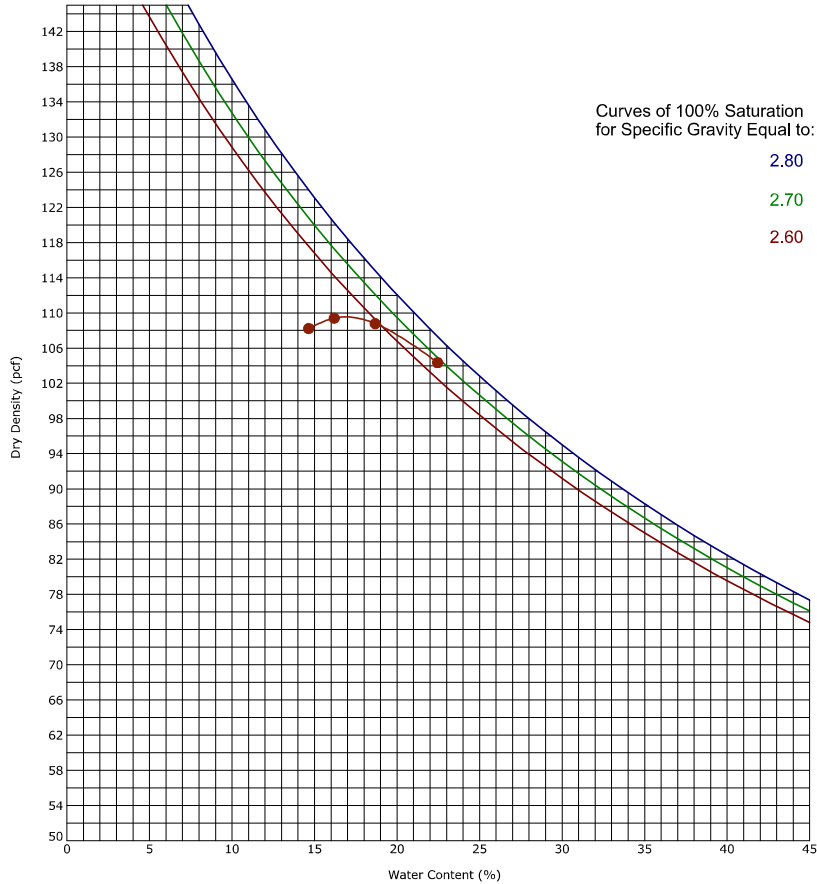
Test Methods: AASHTO T193
 The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written approval of Terracon. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

Sample Identification				Description of Materials				
Station 45+00, 50 LT @ 0-3'				SANDY SILT(ML) - AASHTO A-4 (5)				
Fines (%)	Fraction >19mm size (%)	LL	PL	PI	Test Method	Maximum Dry Density (pcf)	Optimum Water Content (%)	
66	34	38	30	8	AASHTO T99 Method A	97.8	18.9	

Laboratory Soils Testing for ICE
 | Raleigh, North Carolina
 Terracon Project No. 70181226



Moisture-Density Relationship
AASHTO T99



REPORT FOR CALIFORNIA BEARING RATIO



Service Date: 10/17/22
 Report Date: 10/26/22

Project
 Laboratory Soils Testing for ICE
 Client Project Reference: R-5930

Client
 ICE of Carolinas, PLLC
 Attn: Nathan Mohs
 4505 Falls of Neuse Road
 Suite 110
 Raleigh, NC 27609-6271

Project No. 70181226

SAMPLE INFORMATION

Sample Number:	Bulk Sample	Proctor Method:	AASHTO T99 - Method A
Boring Number:	Station 75+00, 38 LT	Maximum Dry Density (pcf):	109.5
Sample Location:	Station 75+00, 38 LT	Optimum Moisture:	16.8
Depth:	0-3'	Liquid Limit:	44
Material Description:	AASHTO A-7-6 (11)	Plasticity Index:	20

CBR TEST DATA

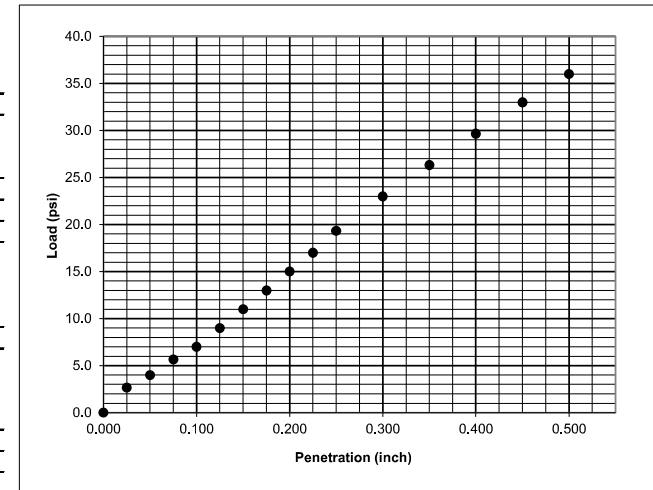
CBR Value at 0.100 inch	0.7
CBR Value at 0.200 inch	1.0
Surcharge Weight (lbs)	10
Soaking Condition	Soaked
Length of Soaking (hours)	96
Swell (%)	7.2

DENSITY DATA

Dry Density Before Soaking (pcf)	109.0
Compaction of Proctor (%)	99.5

MOISTURE DATA

Before Compaction (%)	16.7
After Compaction (%)	16.2
Top 1" After Soaking (%)	28.3
Average After Soaking (%)	24.7



Comments:

Services: Obtain soil sample and test for California Bearing Ratio

Terracon Rep: Stephanie Huffman

Reported To: Nathan Mohs

Contractor:

Report Distribution

Reviewed by: _____
 Nathan Mohs LG
 Engineering Geologist Manager

Test Methods: AASHTO T193

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written approval of Terracon. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

Sample Identification					Description of Materials		
Station 75+00, 38 LT @ 0-3'					SANDY LEAN CLAY(CL) - AASHTO A-7-6 (11)		
Fines (%)	Fraction >19mm size (%)	LL	PL	PI	Test Method	Maximum Dry Density (pcf)	Optimum Water Content (%)
65	35	44	24	20	AASHTO T99 Method A	109.5	16.8

**CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT**

PROJECT NO.	48548.1.1
PROJECT ID	R-5930
ROUTE	US 15-501
COUNTY	Chatham

GEOLOGIST	J.B.B.
GEOTECHS	ICE

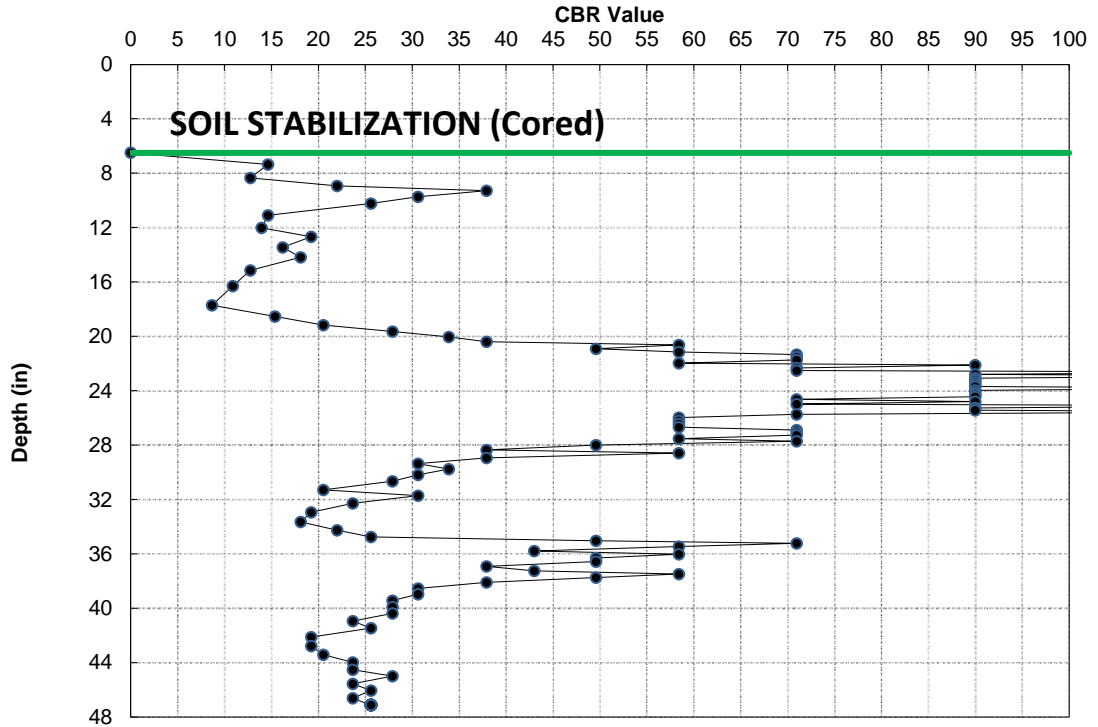
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-Y11- 15+84 EB ISS

Datum = SG
RAW
FILL
09/29/22

Interval 6.5 to 0.0	
# of Values	0
Avg CBR	#DIV/0!
Wghtd Avg.	#DIV/0!
Max CBR	0.0
Min CBR	0.0

Interval 6.5 to 47.1	
# of Values	103
Avg CBR	49.8
Wghtd Avg.	33.8
Max CBR	100+
Min CBR	8.6



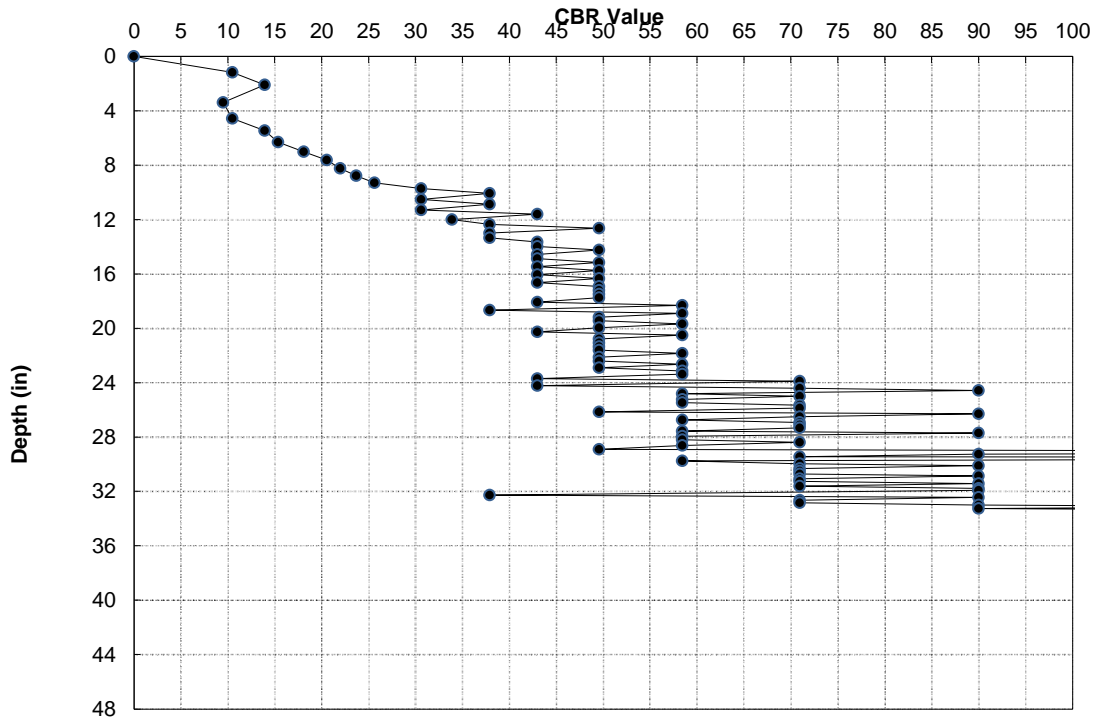
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-Y11- 23+07 EB LTL

Datum = SG
RAW
FILL
09/29/22

Interval 0.0 to 0.0	
# of Values	0
Avg CBR	#DIV/0!
Wghtd Avg.	#DIV/0!
Max CBR	0.0
Min CBR	0.0

Interval 0.0 to 34.8	
# of Values	161
Avg CBR	100+
Wghtd Avg.	64.1
Max CBR	100+
Min CBR	9.5



2

**CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT**

PROJECT NO.	48548.1.1
PROJECT ID	R-5930
ROUTE	US 15-501
COUNTY	Chatham

GEOLOGIST	J.B.B.
GEOTECHS	ICE

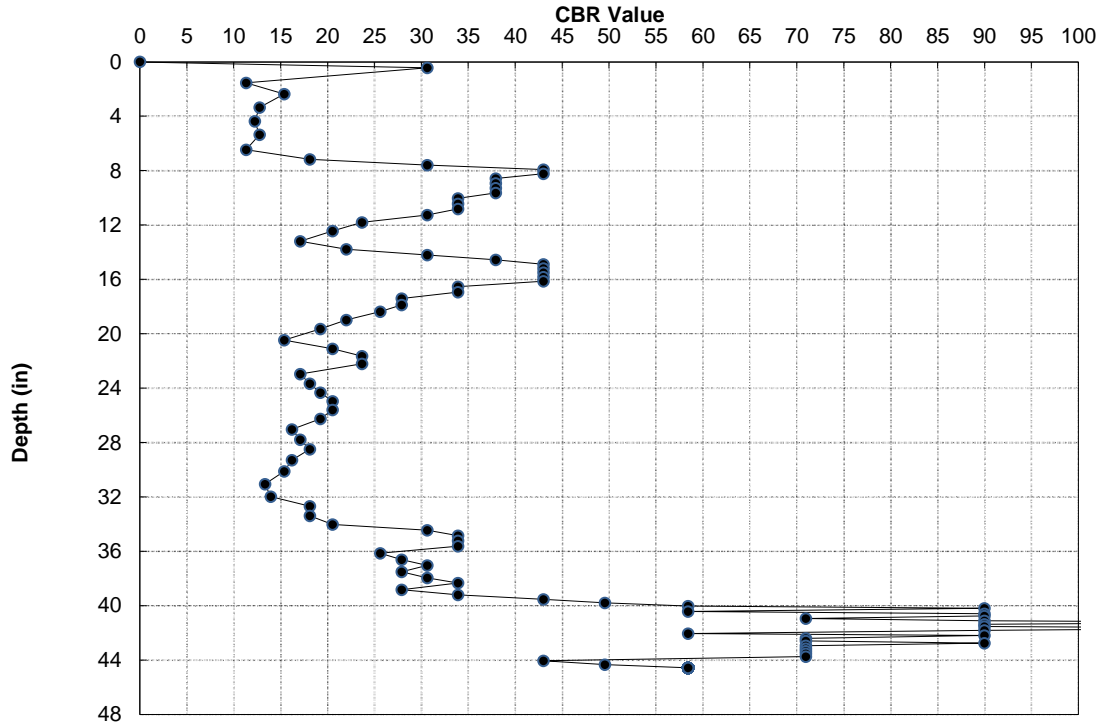
FILE	R5930_DCP_Graphs
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-Y11- 23+07 EB OSL

Datum = SG
RAW
FILL
09/28/22

Interval	
0.0	to 0.0
# of Values	0
Avg CBR	#DIV/0!
Wghtd Avg.	#DIV/0!
Max CBR	0.0
Min CBR	0.0

Interval	
0.0	to 44.6
# of Values	96
Avg CBR	40.2
Wghtd Avg.	28.4
Max CBR	100+
Min CBR	11.3

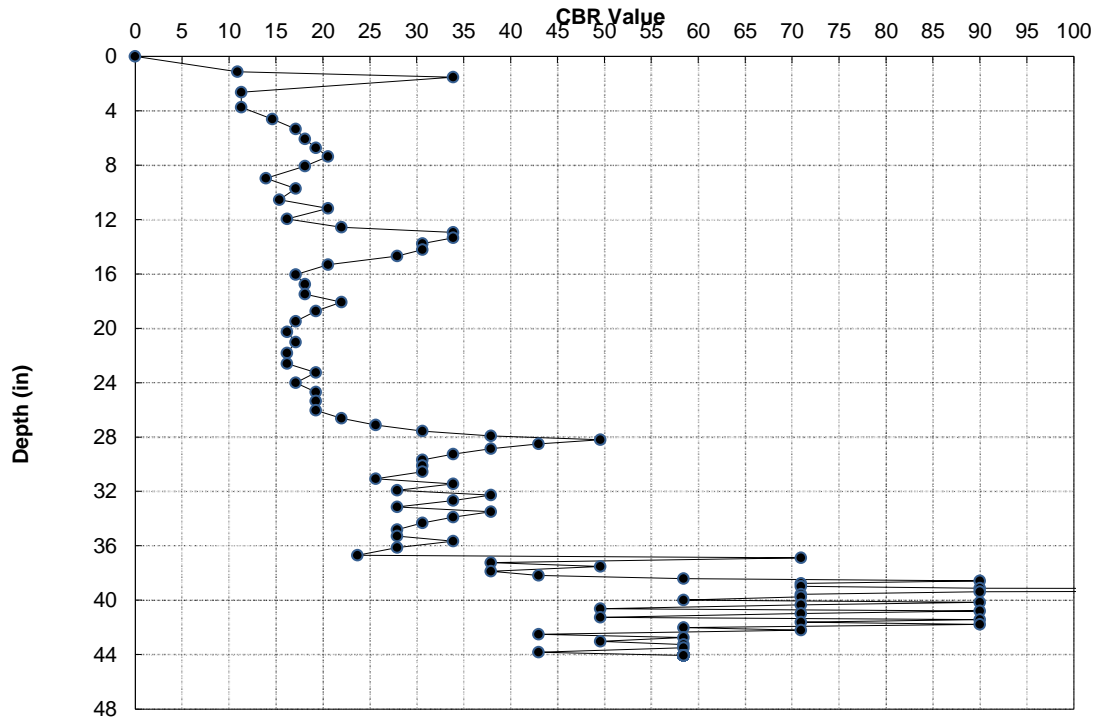


-Y11- 23+07 EB OSS

Datum = SG
RAW
FILL
09/28/22

Interval	
0.0	to 0.0
# of Values	0
Avg CBR	#DIV/0!
Wghtd Avg.	#DIV/0!
Max CBR	0.0
Min CBR	0.0

Interval	
0.0	to 44.1
# of Values	95
Avg CBR	40.0
Wghtd Avg.	28.5
Max CBR	100+
Min CBR	10.9



**CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT**

PROJECT NO.	48548.1.1
PROJECT ID	R-5930
ROUTE	US 15-501
COUNTY	Chatham

GEOLOGIST	J.B.B.
GEOTECHS	ICE

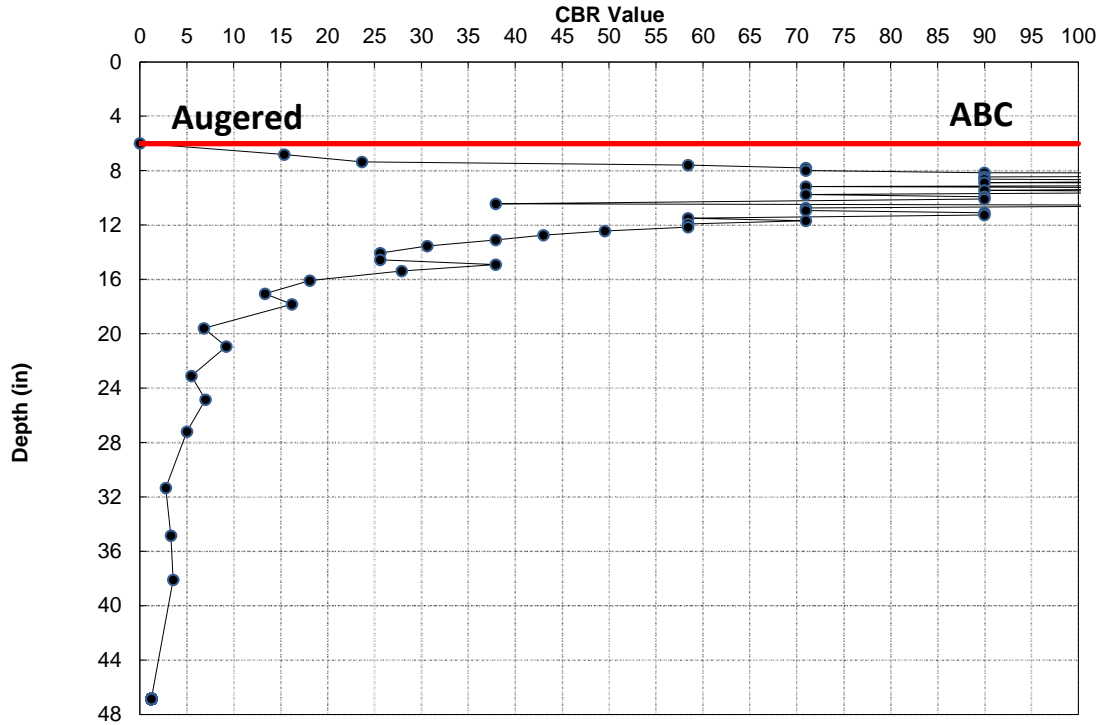
FILE	R5930_DCP_Graphs
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-Y11- 30+03 EB ISS

Datum = ABC
RAW
FILL
09/28/22

Interval 6.0 to 0.0	
# of Values	0
Avg CBR	#DIV/0!
Wghtd Avg.	#DIV/0!
Max CBR	0.0
Min CBR	0.0

Interval 6.0 to 46.9	
# of Values	50
Avg CBR	60.8
Wghtd Avg.	15.6
Max CBR	100+
Min CBR	1.2

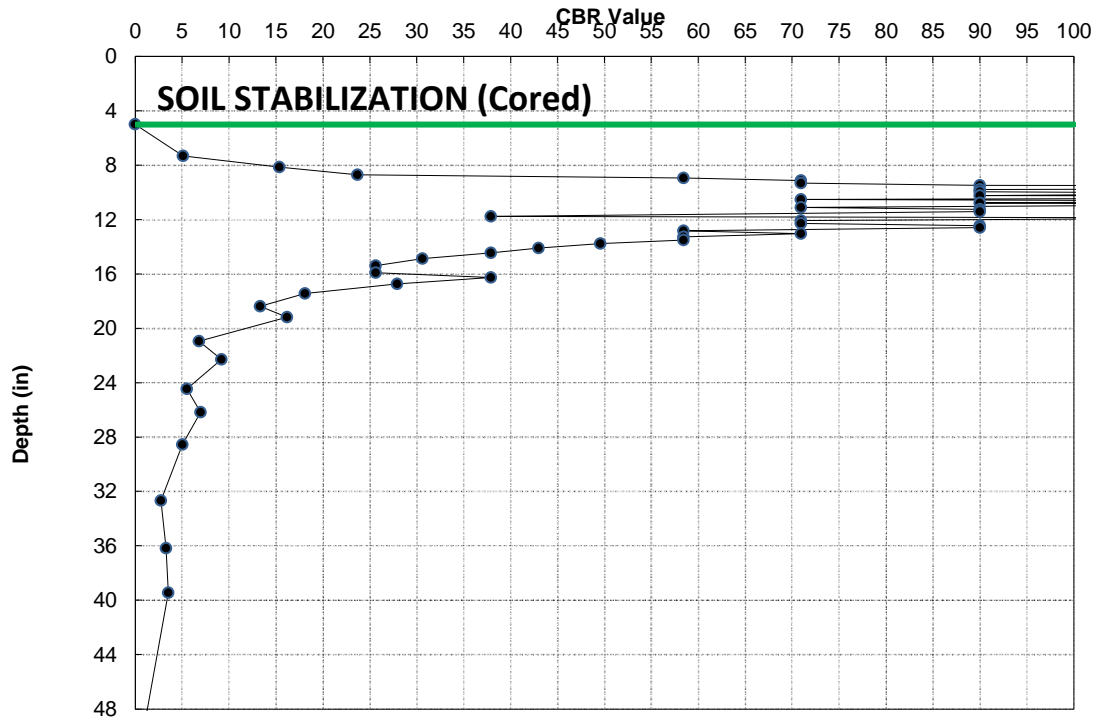


-Y11- 30+03 EB ISL

Datum = SG
RAW
FILL
09/29/22

Interval 5.0 to 0.0	
# of Values	0
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Wghtd Avg.	#DIV/0!
Max CBR	0.0
Min CBR	0.0

Interval 5.0 to 48.2	
# of Values	51
Avg CBR	59.7
Wghtd Avg.	15.0
Max CBR	100+
Min CBR	1.2



**CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT**

PROJECT NO.	48548.1.1
PROJECT ID	R-5930
ROUTE	US 15-501
COUNTY	Chatham

GEOLOGIST	J.B.B.
GEOTECHS	ICE

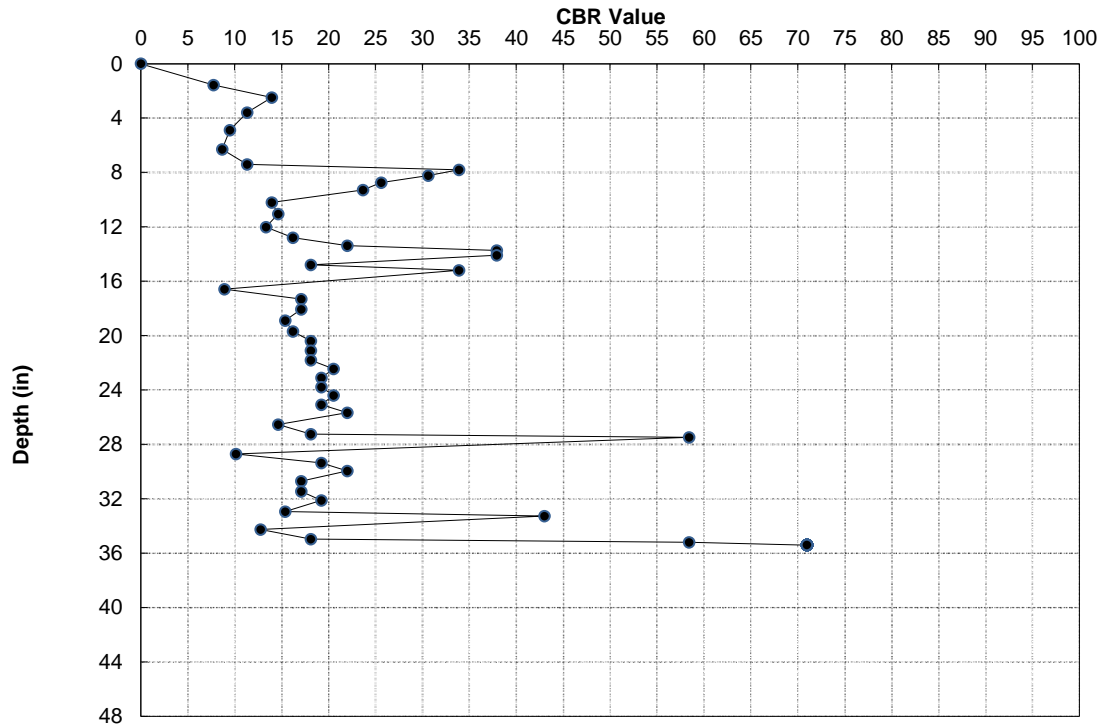
FILE	R5930_DCP_Graphs
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-Y11- 30+03 EB OSS

Datum = SG
RAW
FILL
09/28/22

Interval	
0.0	to 0.0
# of Values	0
Avg CBR	#DIV/0!
Wghtd Avg.	#DIV/0!
Max CBR	0.0
Min CBR	0.0

Interval	
0.0	to 35.4
# of Values	48
Avg CBR	21.8
Wghtd Avg.	17.4
Max CBR	70.9
Min CBR	7.7



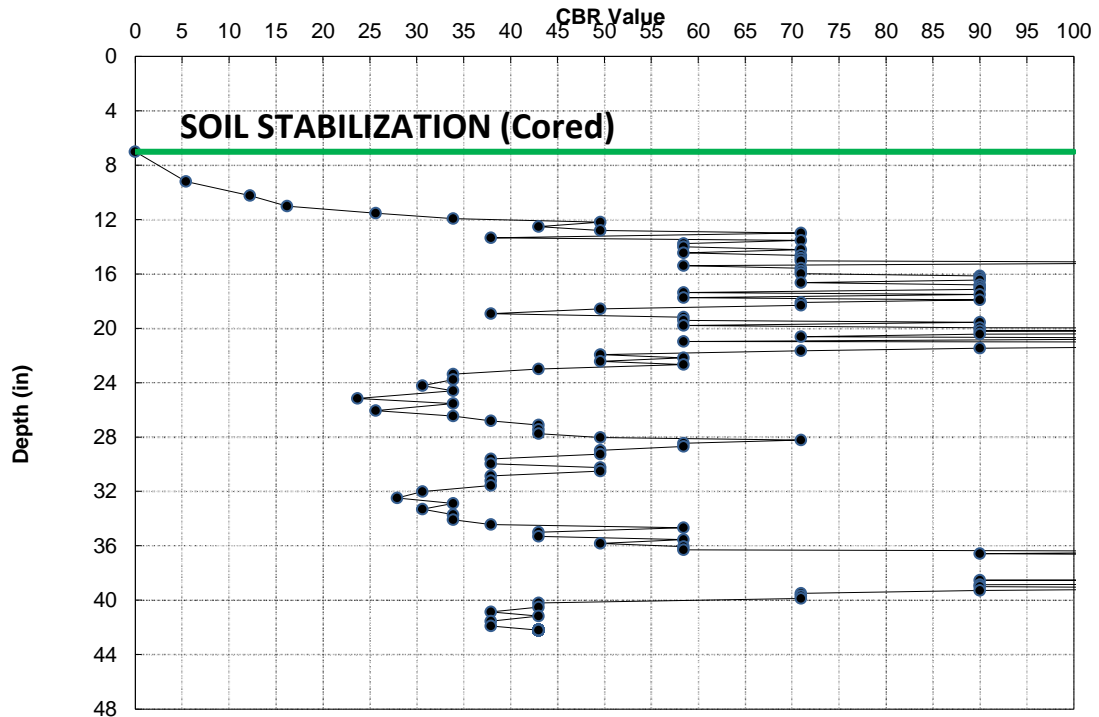
7

-Y11- 16+52 WB OSS

Datum = SG
RAW
FILL
09/29/22

Interval	
0.0	to 0.0
# of Values	0
Avg CBR	#DIV/0!
Wghtd Avg.	#DIV/0!
Max CBR	0.0
Min CBR	0.0

Interval	
7.0	to 42.2
# of Values	147
Avg CBR	100+
Wghtd Avg.	57.6
Max CBR	100+
Min CBR	5.4



8

**CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT**

PROJECT NO.	48548.1.1
PROJECT ID	R-5930
ROUTE	US 15-501
COUNTY	Chatham

GEOLOGIST	J.B.B.
GEOTECHS	ICE

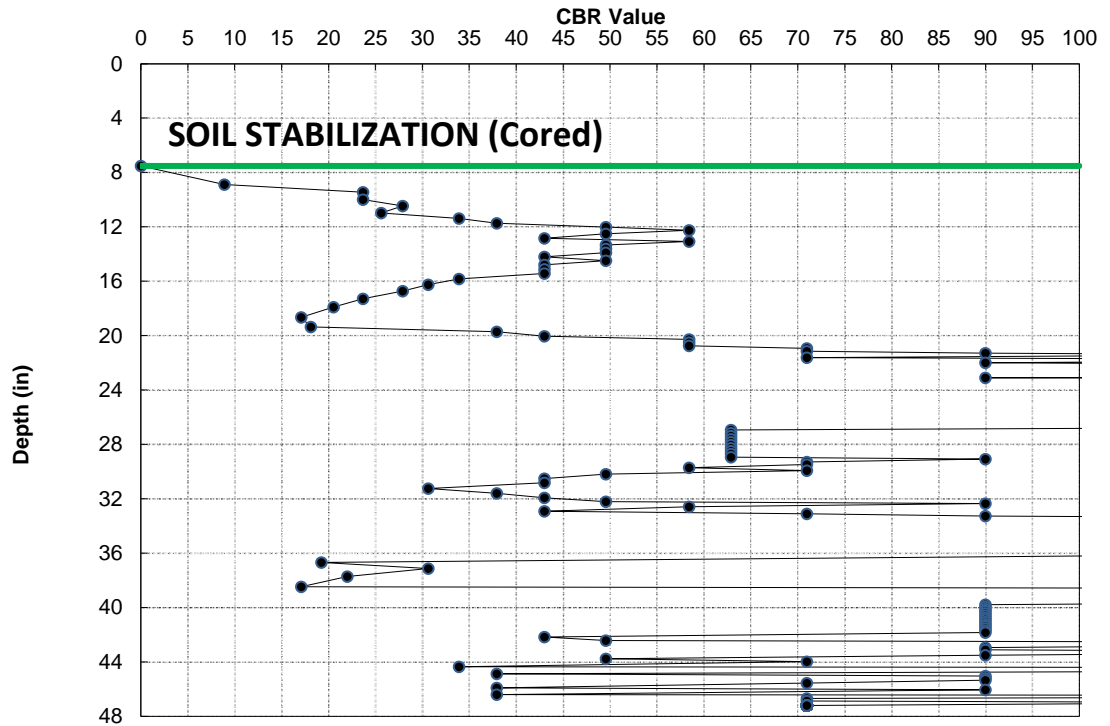
FILE	R5930_DCP_Graphs
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-Y11- 16+52 WB ISL

Datum = SG
RAW
FILL
09/28/22

Interval	
0.0	to 0.0
# of Values	0
Avg CBR	#DIV/0!
Wghtd Avg.	#DIV/0!
Max CBR	0.0
Min CBR	0.0

Interval	
7.5	to 47.2
# of Values	219
Avg CBR	100+
Wghtd Avg.	77.5
Max CBR	100+
Min CBR	8.9

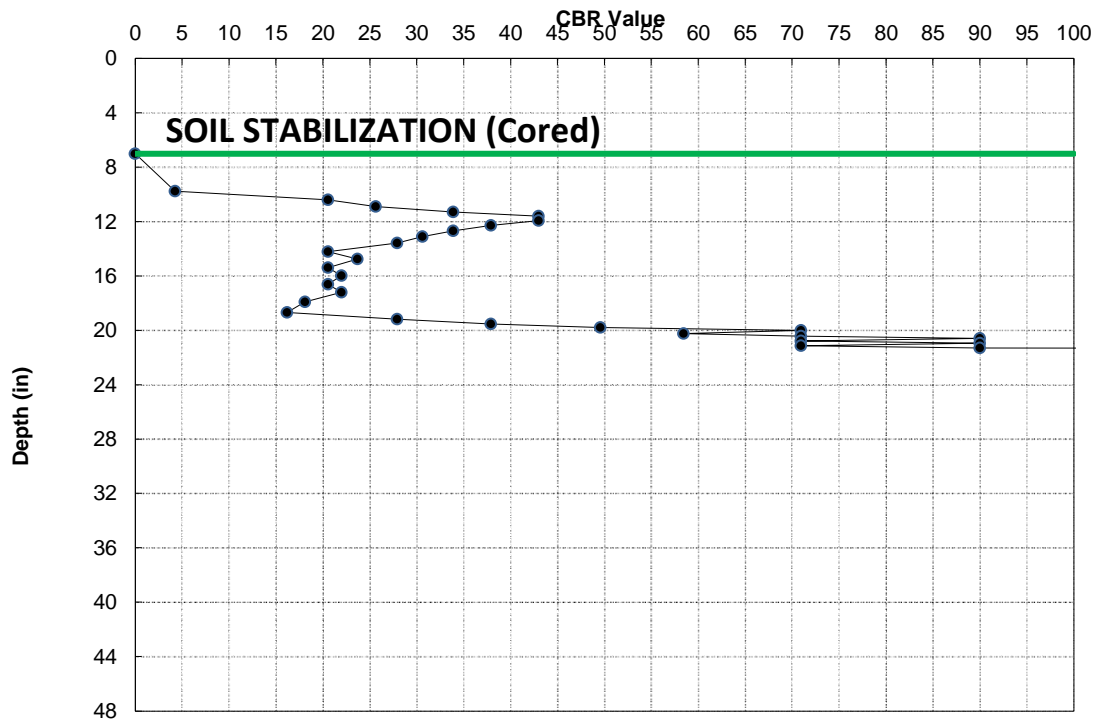


-Y11- 16+52 WB ISS

Datum = SG
RAW
FILL
9/29/2022

Interval	
0.0	to 0.0
# of Values	0
Avg CBR	#DIV/0!
Wghtd Avg.	#DIV/0!
Max CBR	0.0
Min CBR	0.0

Interval	
7.0	to 21.4
# of Values	31
Avg CBR	57.2
Wghtd Avg.	28.4
Max CBR	100+
Min CBR	4.3



**CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT**

PROJECT NO.	48548.1.1
PROJECT ID	R-5930
ROUTE	US 15-501
COUNTY	Chatham

GEOLOGIST	J.B.B.
GEOTECHS	ICE

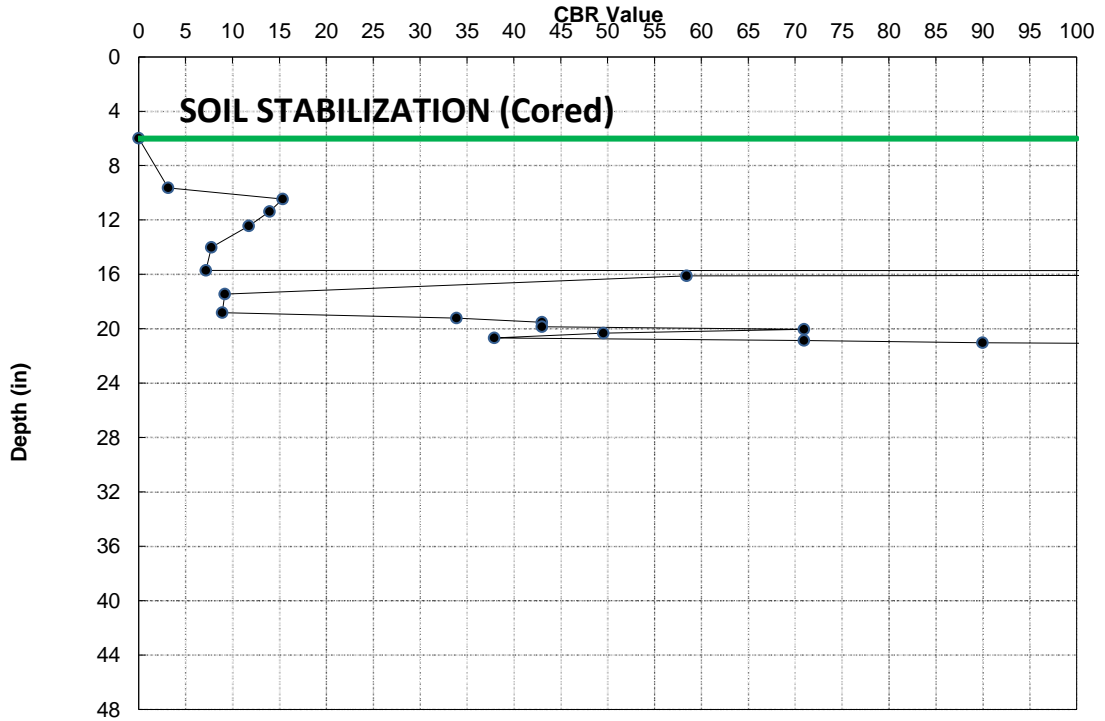
FILE	R5930_DCP_Graphs
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-Y11- 26+17 WB LTL

Datum = SG
RAW
FILL
09/28/22

Interval 6.0 to 0.0	
# of Values	0
Avg CBR	#DIV/0!
Wghtd Avg.	#DIV/0!
Max CBR	0.0
Min CBR	0.0

Interval 6.0 to 23.3	
# of Values	104
Avg CBR	100+
Wghtd Avg.	85.0
Max CBR	100+
Min CBR	3.1

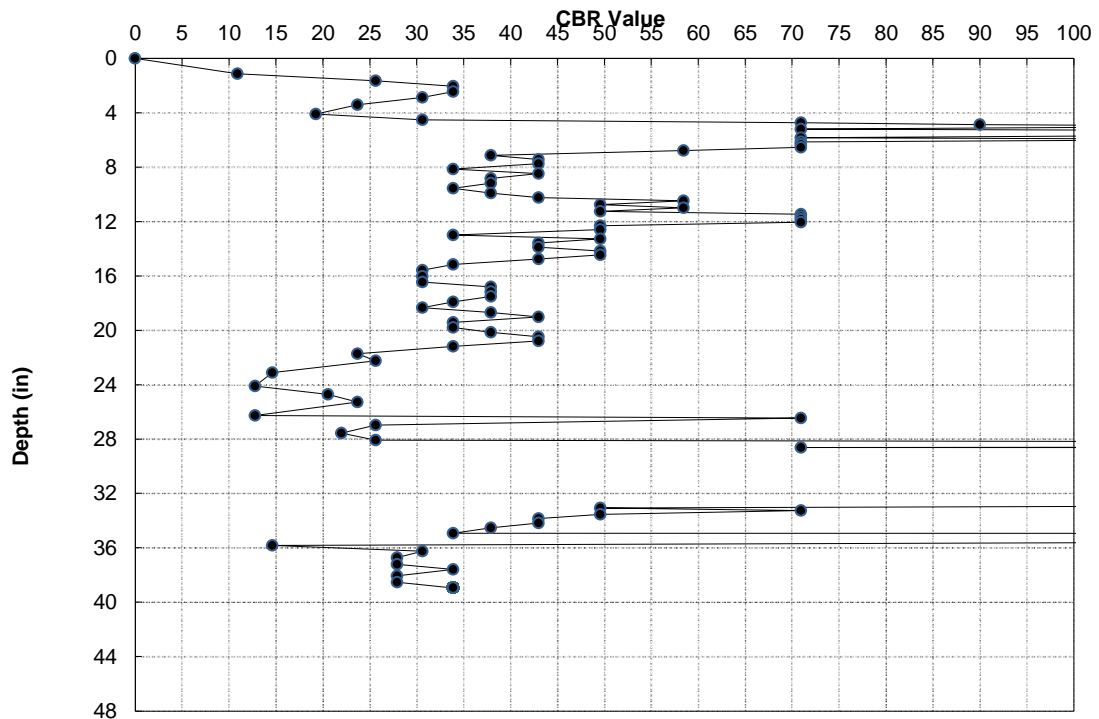


-Y11- 30+00 WB OSS

Datum = SG
RAW
FILL
09/29/22

Interval 0.0 to 0.0	
# of Values	0
Avg CBR	#DIV/0!
Wghtd Avg.	#DIV/0!
Max CBR	0.0
Min CBR	0.0

Interval 0.0 to 38.9	
# of Values	150
Avg CBR	100+
Wghtd Avg.	52.8
Max CBR	100+
Min CBR	10.9



**CONE PENETROMETER RESULTS
NCDOT, GEOTECHNICAL ENGINEERING UNIT**

PROJECT NO.	48548.1.1
PROJECT ID	R-5930
ROUTE	US 15-501
COUNTY	Chatham

GEOLOGIST	J.B.B.
GEOTECHS	ICE

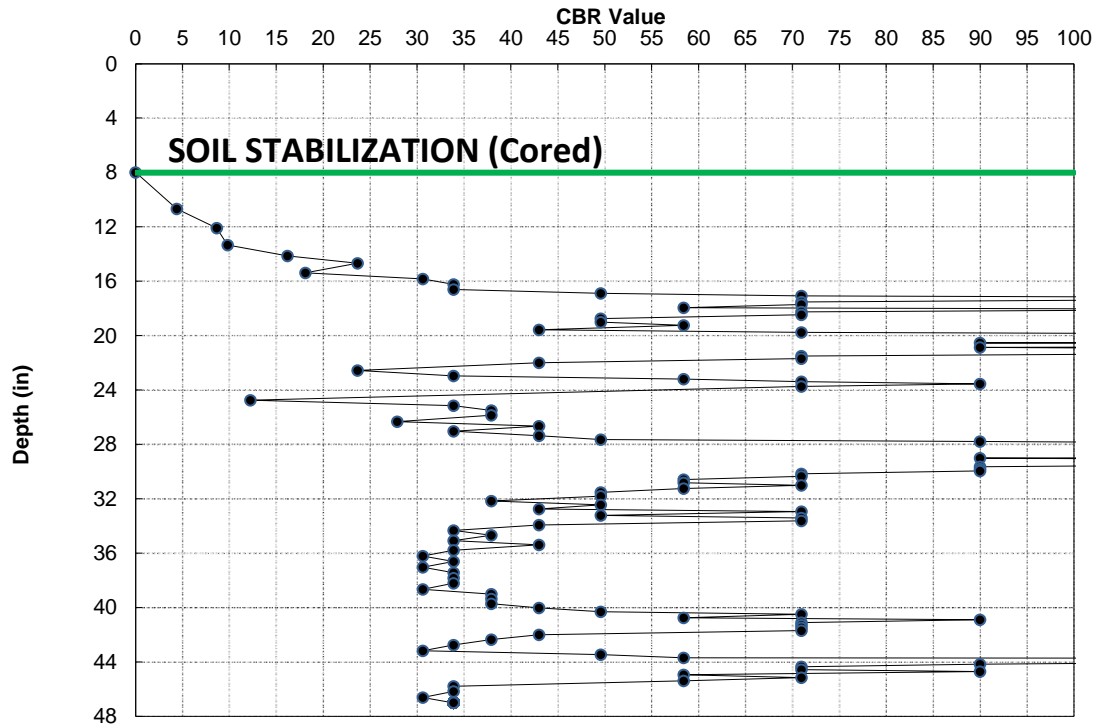
FILE	R5930_DCP_Graphs
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-Y11- 30+00 WB OSL

Datum = SG
RAW
FILL
09/29/22

Interval	
8.0	to 0.0
# of Values	0
Avg CBR	#DIV/0!
Wghtd Avg.	#DIV/0!
Max CBR	0.0
Min CBR	0.0

Interval	
8.0	to 47.0
# of Values	136
Avg CBR	74.7
Wghtd Avg.	47.5
Max CBR	100+
Min CBR	4.4



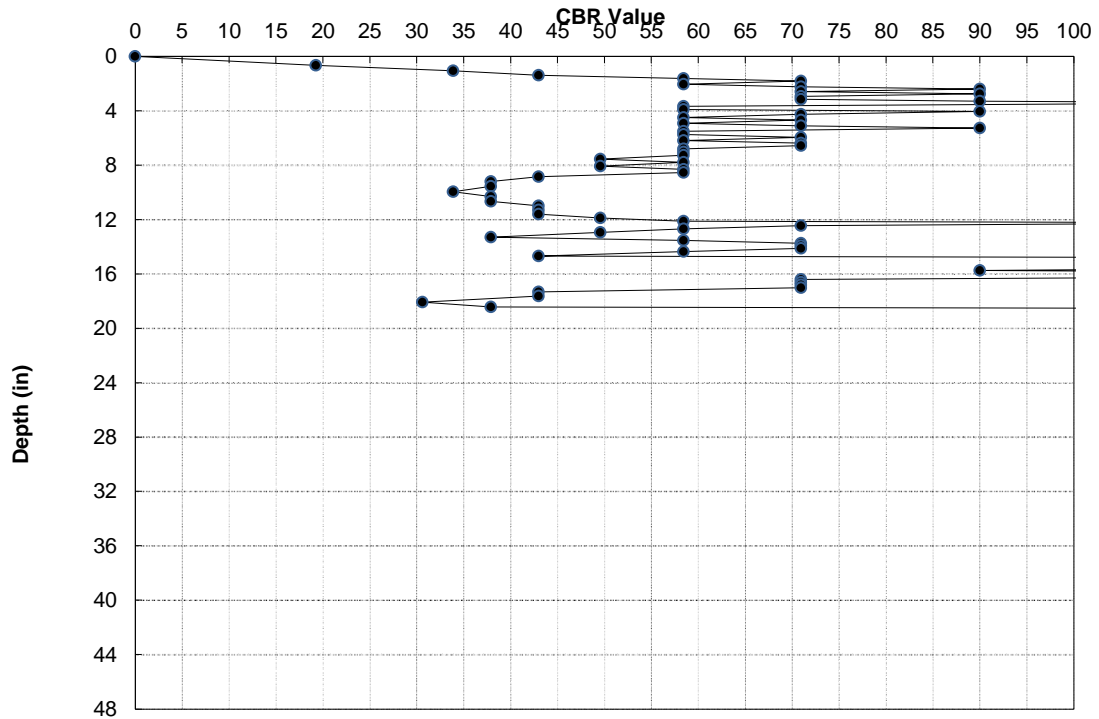
13

-Y11- 33+07 WB ISS

Datum = SG
RAW
CUT
09/28/22

Interval	
0.0	to 0.0
# of Values	0
Avg CBR	#DIV/0!
Wghtd Avg.	#DIV/0!
Max CBR	0.0
Min CBR	0.0

Interval	
0.0	to 19.1
# of Values	90
Avg CBR	93.8
Wghtd Avg.	65.5
Max CBR	100+
Min CBR	19.2



14

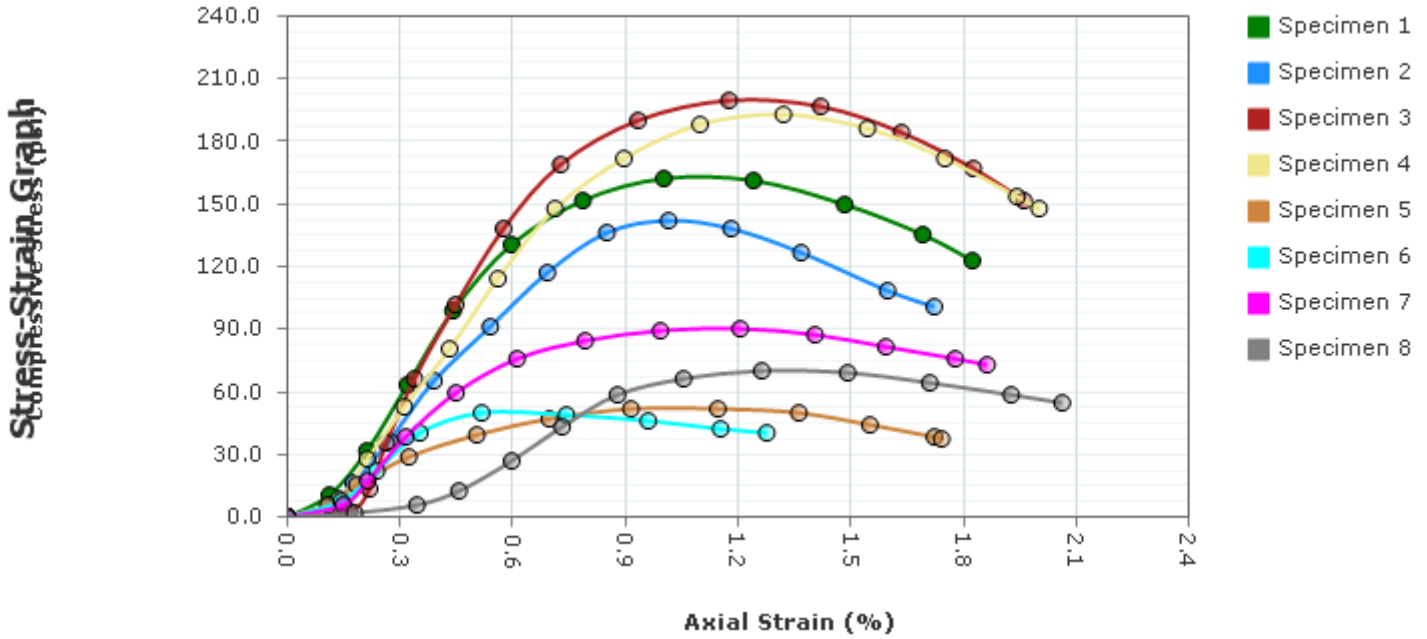
PAVEMENT CORE EVALUATION
48548.1.1 (R-5930) Chatham County

LINE	STATION	ABC (in)	LAYER THICKNESS (in)	LAYER	LIFT(S)	REMARKS
-Y11-	15+84 EB ISS	-	3.50	S	2-3	low oxidation
	10.5" Asphalt		7.00	B	1	moderate stripping
			6.50	SC	1	delaminated
-Y11-	16+52 WB OSS	-	2.50	S	2	
	10" Asphalt		7.50	B	1-2	
			7.00	SC	1	mechanical break
-Y11-	16+52 WB ISL	-	5.25	S	4-5	
	9.5" Asphalt		4.25	B	1	
			7.50	SC	1	low to moderate stripping
-Y11-	16+52 WB ISS	-	4.75	S	4-5	
	9" Asphalt		4.25	B	1	
			7.00	SC	1	low to moderate stripping, mechanical break
-Y11-	23+07 EB LTL	-	9.00	S	5	lift 1 (2.75")
	16" Asphalt		7.00	B	2	low to moderate stripping
-Y11-	23+07 EB OSL	-	3.50	S	2-3	lifts distinguishable
	14" Asphalt		11.50	B	1	low stripping
-Y11-	23+07 EB OSS	-	3.50	S	2-3	lifts indistinguishable
	14" Asphalt		11.50	B	1	low stripping, lift 1 broken, near boundary with lift 2
-Y11-	26+17 WB LTL	-	4.50	S	4	low stripping
	11" Asphalt		6.50	B	2	low stripping, lift 1 (2.5") possibly intermediate mix
			6.00	SC	1	low stripping
-Y11-	30+00 WB OSS	-	1.75	S	2	low stripping
	8.5" Asphalt		2.50	I	1	low to moderate stripping
			4.25	B	1	low stripping
-Y11-	30+00 WB OSL	-	3.00	S	2-3	
	9" Asphalt		2.25	I	1	moderate stripping
			3.75	B	1	
			8.00	SC	1	
-Y11-	30+03 EB ISS	6.00	4.50	S	4	
	13" Asphalt		8.50	B	2	lift 2 delaminated (possibly mechanical), low to moderate stripping
-Y11-	30+03 EB ISL	-	4.75	S	4	
	13" Asphalt		8.25	B	2	lift 2 delaminated from soil cement
			5.00	SC	1	soil cement highly stripped
-Y11-	30+03 EB OSS	-	3.50	S	2	
	14" Asphalt		3.75	B	1	low stripping
			5.00	S	3	lift 1 delaminated from lift 2, lift 2 and 3 low to moderate oxidation
			1.75	SA	1	
			8.00	CONC	1	delaminated

PAVEMENT CORE EVALUATION
48548.1.1 (R-5930) Chatham County

LINE	STATION	ABC (in)	LAYER THICKNESS (in)	LAYER	LIFT(S)	REMARKS
-Y11-	33+07 WB ISS	-	3.50	S	2	
	10" Asphalt		2.50	I	1	delaminated from lower lift, rough break, possibly mechanical, low stripping
			4.00	B	1	low stripping

Unconfined Compression Test (STANDARD)



BEFORE TEST	1	2	3	4	5	6	7	8
Moisture Content (%):	27.2	27.2	28.1	28.1	31.8	31.8	32.2	32.2
Dry Density (pcf):	92.1	92.1	92.4	91.5	85.6	84.8	85.8	85.2
Saturation (%):	87.7	87.8	91.2	89.4	88.1	86.4	89.6	88.3
Void Ratio:	0.845	0.843	0.837	0.855	0.983	1.002	0.979	0.993
Diameter (in):	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
Height (in):	4.5840	4.5840	4.5840	4.5840	4.5840	4.5840	4.5840	4.5840
TEST DATA	1	2	3	4	5	6	7	8
Unconfined Compressive Strength (psi):	162.7	142.1	199.3	193.3	52.3	50.0	90.0	70.5
Undrained Shear Strength (psi):	81.4	71.1	99.7	96.6	26.1	25.0	45.0	35.2
Rate of Strain (in/min):	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Strain at Failure (%):	1.0	1.0	1.2	1.3	1.1	0.5	1.2	1.3

PROJECT INFORMATION	SPECIMEN DESCRIPTION
Project Number: 48548.1.1	1 S-1X-MOLD#111-8%CEMENT-45+00
Project: CHATHAM	2 S-1X-MOLD#114-8%CEMENT-45+00
Sampling Date: 7DAYS	3 S-1X-MOLD#83-10%CEMENT-45+00
Sample Number: S-1X-S-2X	4 S-1X-MOLD#123-10%CEMENT-45+00
Client Name: TW JASKOLKA/GEOTECH	5 S-2X-MOLD#87-8%CEMENT-75+00
Remarks:	6 S-2X-MOLD#125-8%CEMENT-75+00
	7 S-2X-MOLD#82-10%CEMENT-75+00
	8 S-2X-MOLD#134-10%CEMENT-75+00

Project Name: CHATHAM Project Number: 48548.1.1

Test Date: 1/26/2023

Checked By: _____ Date: _____

Report Created: 1/26/2023