



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

December 11, 2018

MEMORANDUM TO: Christopher A. Peoples, P.E.
State Materials Engineer

Brenda L. Moore, P.E. CPM
Acting State Roadway Design Engineer

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

DocuSigned by:
John Pilipchuk
52C44B94B8BE444...

STATE PROJECT: 44398.1.1 (U-5826) Turnkey
COUNTY: Wake

DESCRIPTION: SR 2000 (Falls of Neuse Road) from I-540 to SR 2006
(Durant Road)

SUBJECT: Geotechnical Recommendations for Pavement Design

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

The proposed work consists of widening and upgrading the existing multi-lane roadway.

Soil Type: The soils encountered on the project beneath the existing roadway consist of roadway embankment and residual soils. Predominant soil types include sandy clay (A-6) and silty clays (A-7-5, A-7-6).

Anticipated borrow will likely consist of residual sandy clays and silty clays.

The design soil type is Silty Clay (A-7).

The length of this project is 1.177 miles.

DESIGN SOIL TYPE(S)	PASSING #200 SIEVE (%)	OPTIMUM MOISTURE CONTENT (%)	MAXIMUM DRY DENSITY (pcf)	LL	(PI)	SPECIFIC GRAVITY (G _s)	CBR
Silty Clay (A-7-5)	NT	18.5	104.3	NT	NT	NT	2.5
Silty Clay (A-7-6)	NT	17.0	107.2	NT	NT	NT	5.1

NT = Not Tested

Areas of Special Geotechnical Interest

- 1) Highly Plastic Clays encountered beneath the existing roadway with PI ≥ 26:

Line	Station and offset	PI
-L-	70+90 SB RTL (LT)	37
-L-	70+83 SB ISL	52
-L-	66+03 SB RTL (LT)	32
-L-	18+55 LT PS	41
-L-	13+64 SB OSL	44
-L-	13+58 NB LTL	62
-L-	32+25 NB OSL	26
-L-	58+03 NB ISL	28

- 2) Sample Locations with High Moisture Content:

Line	Station and Offset	Moisture Content
-L-	39+40 SB ISL	17.2%
-L-	32+20 SB RTL (LT)	27.7%
-L-	33+25 NB OSL	38.6%
-L-	39+40 SB OSL	17.3%
-L-	18+55 LT PS	33.1%

DESIGN AND CONSTRUCTION RECOMMENDATIONS

I. Subgrade Stability

A. Aggregate Stabilization

Recommend a quantity of 50 tons of Stabilizer Aggregate to be included in the project contract as a contingency item.

II. Miscellaneous

A. Proof Rolling

It is recommended that proof rolling not be performed on this project.

Note: For additional recommendations and quantities refer to the Geotechnical Report-Final Design and Construction Recommendations dated August 29, 2018.

JLP/JBB

ATTACHMENT 1:	Pavement and Subgrade Inventory	25
ATTACHMENT 2:	Core Evaluation Sheet	3
ATTACHMENT 3:	Dynamic Cone Penetrometer Tests	11



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT

Summary of Quantities

WBS Number: 44398.1.1

County: Wake

Project Engineer: _____

TIP Number: U-5826

Field Office: Central

Project Geologist: J. B. Barfield

Description: Falls of Neuse Rd. from I-540 to Durant Rd.

Pay Item No.	Pay Item/ Quantity Adjustment	Spec Book Section No. or Special Provision (SP) Reference	Report Section	Alignment	Begin Station	End Station	Quantity	Units / %
1110000000-E	Stabilizer Aggregate	510 - Aggregate Stabilization	I. A	Contingency	N/A	N/A	50	TON
Total Quantity of Stabilizer Aggregate =							50	TON

REFERENCE: U-5826

PROJECT: 44398

CONTENTS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
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2	LEGEND (SOIL & ROCK)
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8-11	PAVEMENT DATA
12-18	DCP LOGS
19-23	CORE PHOTOS
24	LAB SUMMARY
25	SUMMARY TABLE PROCTOR AND CBR

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

ROADWAY
SUBSURFACE INVESTIGATION

COUNTY WAKE
 PROJECT DESCRIPTION FALLS OF NEUSE ROAD
(FROM I-540 TO DURANT ROAD)

PAVEMENT AND SUBGRADE INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5826	1	25

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

J. NELSON

INVESTIGATED BY J. SWARTLEY

DRAWN BY J. NELSON

CHECKED BY V. MITCHEV

SUBMITTED BY V. MITCHEV

DATE JUNE 2018



3201 SPRING FOREST ROAD
 RALEIGH, NC 27616
 (919) 872-2660



DocuSigned by:


Vladimir G. Mitchev 6/14/2018

BCFD5C... SIGNATURE DATE

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

8/17/99

MATCHLINE -RPC- 17+00.00

PROJECT REFERENCE NO. U-5826	SHEET NO. 3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 KCI Engineers • Planners • Scientists • Construction Managers 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-5270 Phone (919) 783-9214 • Fax (919) 783-9266	

-L- 13+64 SB RTL LT		-L- 13+64 SB OSL LT		-L- 13+63 SB ISL LT	
Pavement Structure		Pavement Structure		Pavement Structure	
Asphalt	10.0"	Asphalt	11.0"	Asphalt	11.0"
ABC	6.0"	ABC	5.0"	ABC	YES

-L- 18+55 PS LT	
Pavement Structure	
Asphalt	10.75"
ABC	8.0"

-L- 13+57 NB LTL		-L- 13+58 NB LTL	
Pavement Structure		Pavement Structure	
Asphalt	15.75"	Asphalt	13.5"
ABC	-	ABC	-
-L- 13+58 NB ISL RT		-L- 13+58 NB OSL RT	
Pavement Structure		Pavement Structure	
Asphalt	16.5"	Asphalt	13.5"
ABC	-	ABC	-

X=2114877.2682
Y=781365.9577

X=2114884.4559
Y=781353.7692

X=2114889.2048
Y=781342.8393

X=2114898.5779
Y=781315.9914

X=2114911.7436
Y=781292.4189

X=2114891.8576
Y=781325.9832

X=2114901.9912
Y=781309.8800

X=2115237.3010
Y=781672.2232

REVISIONS

MATCHLINE -L- 24+00.00
SEE SHEET 4

SYTIME

PROJECT REFERENCE NO.	SHEET NO.
U-5826	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 <small>Engineers • Planners • Scientists • Construction Managers</small> <small>4595 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-2270 Phone (919) 783-9214 • Fax (919) 783-9266</small>	

MATCHLINE -L- 24+00.00
SEE SHEET 3

SYTIME\$\$\$\$
SYTIME\$\$\$\$
SYTIME\$\$\$\$



-L- 32+20 SB RTL LT	
Pavement Structure	
Asphalt	10.0"
ABC	8.0"

X=2116164.1610
Y=782679.4564

-L- 32+20 SB RTL LT

-L- 33+25 NB OS� RT	
Pavement Structure	
Asphalt	9.0"
ABC	6.0"

X=2116283.1459
Y=782704.3151

-L- 33+25 NB OS� RT


X=2116385.5308
Y=782789.2330

-L- 34+58 NB RTL RT

-L- 34+58 NB RTL RT	
Pavement Structure	
Asphalt	7.5"
ABC	6.0"

MATCHLINE -L- 38+00.00
SEE SHEET 5

REVISIONS

PROJECT REFERENCE NO. U-5826	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR B/TW ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 KCI Engineers • Planners • Scientists • Construction Managers 4595 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-5270 Phone (919) 783-9214 • Fax (919) 783-9266	

MATCHLINE -L- 38 + 00.00
SEE SHEET 4

-L- 39+40 SB OSL LT		-L- 39+40 SB ISL LT		-L- 39+42 SB LTL	
Pavement Structure		Pavement Structure		Pavement Structure	
Asphalt	10.5"	Asphalt	10.0"	Asphalt	25.0"
ABC	7.0"	ABC	6.0"	ABC	-

X=2116703.4128
Y=783163.1246
-L- 39+40 SB OSL LT
X=2116703.4128
Y=783163.1246
-L- 39+40 SB ISL LT
X=2116718.5883
Y=783163.1246
-L- 39+42 SB LTL
X=2116718.5883
Y=783163.1246
-L- 39+37 NB ISL RT
X=2116717.9320
Y=783120.6847
-L- 39+37 NB OSL RT
X=2116717.9320
Y=783120.6847
-L- 39+38 NB RTL RT
X=2116717.9320
Y=783120.6847

-L- 39+37 NB ISL RT		-L- 39+37 NB OSL RT		-L- 39+38 NB RTL RT	
Pavement Structure		Pavement Structure		Pavement Structure	
Asphalt	22.0"	Asphalt	21.0"	Asphalt	6.0"
ABC	6.0"	ABC	6.0"	ABC	PRESENT

NAD 83 / NA 2011

MATCHLINE -L- 52 + 00.00
SEE SHEET 6

\$\$\$SYTIME\$\$\$\$\$
\$\$\$SUSERRMCH\$\$\$\$\$

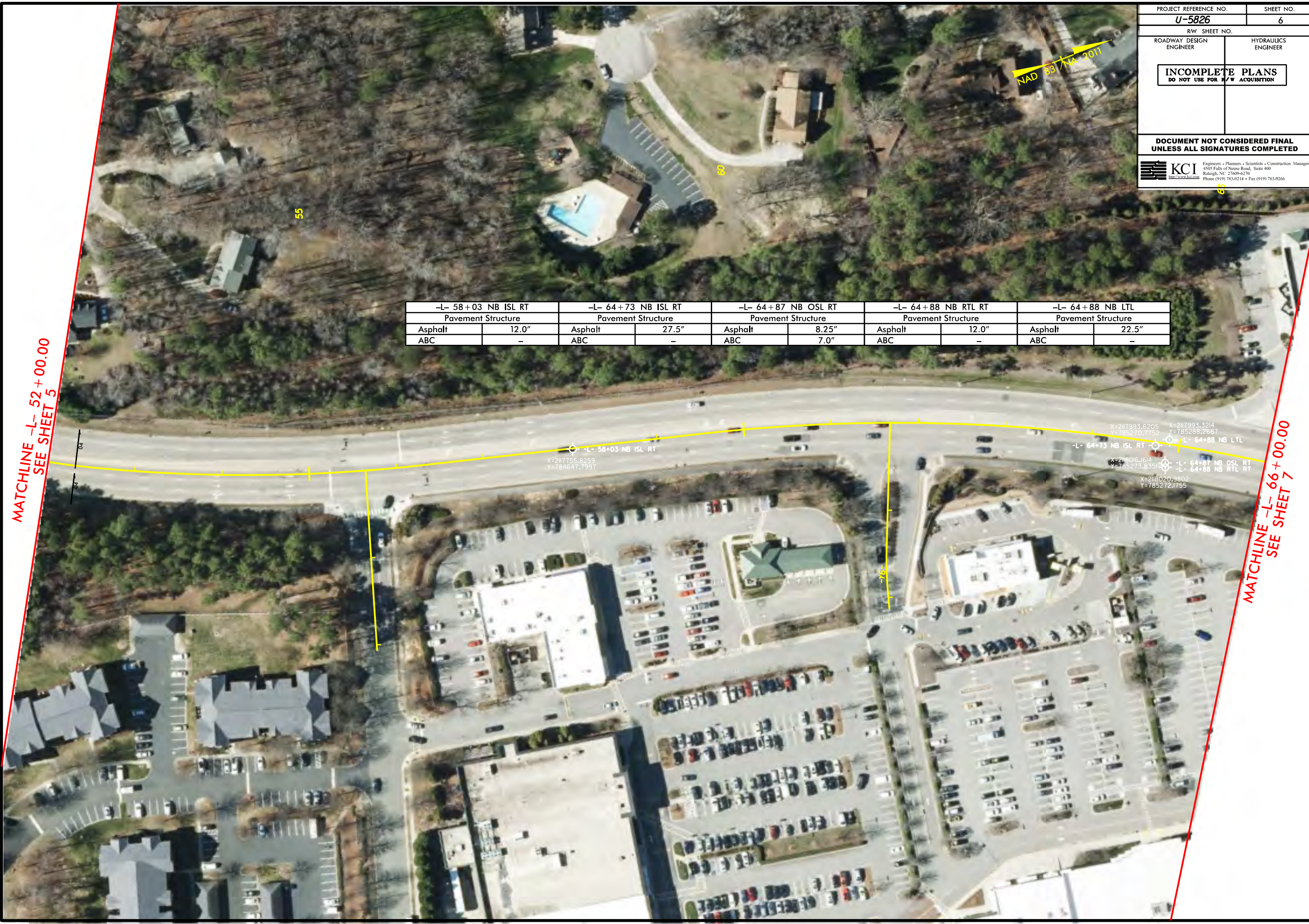
8/17/99

PROJECT REFERENCE NO. U-5826		SHEET NO. 6	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION </div>			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
KCI		Engineers • Planners • Scientists • Construction Managers 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-5270 Phone (919) 783-9214 • Fax (919) 783-9266	

MATCHLINE -L- 52 + 00.00
SEE SHEET 5

MATCHLINE -L- 66 + 00.00
SEE SHEET 7

-L- 58+03 NB ISL RT		-L- 64+73 NB ISL RT		-L- 64+87 NB OSL RT		-L- 64+88 NB RTL RT		-L- 64+88 NB LTL	
Pavement Structure		Pavement Structure		Pavement Structure		Pavement Structure		Pavement Structure	
Asphalt	12.0"	Asphalt	27.5"	Asphalt	8.25"	Asphalt	12.0"	Asphalt	22.5"
ABC	-	ABC	-	ABC	7.0"	ABC	-	ABC	-



REVISIONS

\$\$\$\$SYTIME\$\$\$\$
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\$\$\$\$\$\$\$\$\$\$\$\$

8/17/99


REVISIONS

MATCHLINE -L- 66+00.00
SEE SHEET 6



-L- 66+03 SB RTL LT		-L- 70+83 SB ISL LT		-L- 71+10 SB OSL		-L- 70+90 SB RTL LT	
Pavement Structure		Pavement Structure		Pavement Structure		Pavement Structure	
Asphalt	8.25"	Asphalt	12.25"	Asphalt	10.0"	Asphalt	9.5"
ABC	8.0"	ABC	4.0"	ABC	8.0"	ABC	6.0"

7/15/83 N/A 2011

PROJECT REFERENCE NO. U-5826	SHEET NO. 7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 <small>KCI Engineers • Planners • Scientists • Construction Managers 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-5270 Phone (919) 783-9214 • Fax (919) 783-9266</small>	

\$\$\$SYTIME\$\$\$\$\$
\$\$\$SYTIME\$\$\$\$\$
\$\$\$SYTIME\$\$\$\$\$

PAVEMENT INVESTIGATION DATA SHEET

Project: 44398.1.1
TIP: U-5826

County: WAKE
Route: Falls of Neuse

Date: 6/27/2018-6/28/2018
Notes By: J. Swartley

Position (Sta., Lane, Shldr.)	Cut/Fill (Est. of Amount)	Width		Offset Distance (See Notes)	Crown "C" or Super "S"	Gross to Top of Soil	Thickness			Pavement Layering	Subgrade				Asphalt Notes	GPS Coordinates					
		Lane(s)	Shoulder(s)				Asphalt	Concrete	ABC		Stabilized Soil Subgrade	Description	Sample Number	AASHTO Classification		Soil Moisture	Probe Depth	Northing	Easting		
-L-70+90 SB RTL LT	3.0' FILL	12.0'	Curb	9.5' Curb	S	15.5"	9.5"		6.0"	Asphalt ABC	0.0'-3.0' Roadway Embankment, Dark, Brown, Coarse to Fine, Sandy Clay 3.0'-5.0' Residual, Brown, Coarse to Fine, Sandy Clay				S-1 S-2	A-7-6 A-7-6	M M	5.0'	Moderate Severity Fatigue Cracking in Both Wheel Paths, Moderate Severity Transverse. 3-4' Length Severe Oxidation, Some Stripping in Core.	785801.74	2118312.80
C-25																					
-L-71+10 SB OSL	3.5' FILL	11.5'	Curb	14.3' Curb	S	18.0"	10.0"		8.0"	Asphalt ABC	0.0'-3.5' Roadway Embankment, Dark, Brown, Coarse to Fine, Sandy Clay 3.5'-5.0' Residual, Brown, Coarse to Fine, Sandy Clay				Reference S-1 Reference S-2	A-7-6 A-7-6	M M	5.0'	Moderate to Severe Transverse, Moderate to Severe Fatigue Cracking in Both Wheel Paths, Moderate Rutting 1/4 to 1/2", top-down, Core 0-5"	785814.48	2118330.31
C-23																					
-L-70+83 SB ISL LT	5.0' FILL	12.0'	Curb	26.1' Curb	S	14.25"	12.25"		4.0"	Asphalt ABC	0.0'-2.0' Roadway Embankment, Light Brown, Coarse to Fine, Sandy Clay 2.0'-5.0' Orange, Brown, Fine, Sandy Clay				S-3 S-4	A-7-6 A-7-5	M M	5.0'	Moderate Transverse, Moderate Longitudinal Cracking	785780.34	2118329.74
C-22																					
-L-66+03 SB RTL LT	2.0' FILL	12.5'	Curb	4.0' Curb	S	16.25"	8.25"		8.0"	Asphalt ABC	0.0'-2.0' Roadway Embankment, Brown, Coarse to Fine, Sandy Clay 2.0'-5.0' Residual, Brown, Coarse to Fine, Sandy, Clay				S-5 Reference S-5	A-7-6 A-7-6	M M	5.0'	No Visual Distress	785424.08	2117995.28
C-24 (O/S towards Walgreens on other side of pll.)																					
-L-39+40 SB OSL LT	5.0' FILL	11.7'	Curb	3.6' Curb	C	17.5"	10.5"		7.0"	Asphalt ABC	0.0'-5.0' Roadway Embankment, Dark, Gray, Brown, Coarse to Fine, Sandy, Silty Clay				S-6	A-6	M	5.0'	Moderate Transverse, Moderate Longitudinal Cracking	783162.81	2116693.83
C-15																					
-L-39+42 SB LTL	5.0' FILL	11.3'	Curb	29.5' Curb	C	25.0"	25.0"			Asphalt	0.0'-5.0' Roadway Embankment, Brown, Coarse to Fine, Sandy Clay				S-7	A-6	M	5.0'	Minor Transverse Cracking at Edges of Lane.	783146.01	2116714.39
C-13 (Shared left turn lane)																					
-L-39+40 SB ISL LT (OSWP)	5.0' FILL	11.0'	Curb	16.5' Curb	C	16.0"	10.0"		6.0"	Asphalt ABC	0.0'-5.0' Roadway Embankment, Gray, Brown, Coarse to Fine, Sandy, Silty Clay				S-8	A-6	M	5.0'	Severe Transverse, Longitudinal Cracking, Severe Oxidation, Moderate Rutting (1/4"-1/2")	783154.32	2116703.96
C-14																					
-L-32+20 SB RTL LT	5.0' FILL	11.7'	Curb	5.7' Curb	C	18.0"	10.0"		8.0"	Asphalt ABC	0.0'-2.5' Roadway Embankment, Brown, Coarse to Fine, Sandy, Silty Clay 2.5'- 5.0' Dark, Brown, Coarse to Fine, Sandy Clay				S-9 S-10	A-6 A-6	M M	5.0'	Minor Oxidation, Minor Transverse, Longitudinal Cracking 3'- Up Station, Top 2" of Core Fell Apart When Trying to Retrieve from Barrel	782679.27	2116163.90
C-16																					

Notes:

OSL = Outside Lane	CTL = Center Turn Lane	OSS = Outside Shoulder	PS = Paved Shoulder	RT = Right	NB = Northbound
ISL = Inside Lane	RTL = Right Turn Lane	ISS = Inside Shoulder	RT LN = Right Lane	LT = Left	SB = Southbound
CL = Center Lane	DECEL = Deceleration Lane	GM = Grass Median	LT LN = Left Lane	(I) = Inside	FW = From White
LTL = Left Turn Lane	ACCEL = Acceleration Lane	OGS = Outside Grass Shoulder	COL = Collector Lane	(O) = Outside	FY = From Yellow

PAVEMENT INVESTIGATION DATA SHEET

Project: 44398.1.1
TIP: U-5826

County: WAKE
Route: Falls of Neuse

Date: 6/27/2018-6/28/2018
Notes By: J. Swartley

Position (Sta., Lane, Shldr.)	Cut/Fill (Est. of Amount)	Width		Offset Distance (See Notes)	Crown "C" or Super "S"	Gross to Top of Soil	Thickness				Pavement Layering	Subgrade					Asphalt Notes	GPS Coordinates	
		Lane(s)	Shoulder(s)				Asphalt	Concrete	ABC	Stabilized Soil Subgrade		Description	Sample Number	AASHTO Classification	Soil Moisture	Probe Depth		Northing	Easting
-L-18+55 SB RTL PS LT	5.0' FILL		6.0'	2.1' Curb	S	18.75"	10.75"		8"		Asphalt ABC	0.0'-5.0' Roadway Embankment, Orange, Brown, Coarse to Fine, Sandy, Silty Clay	S-11	A-7-5	M	5.0'	No Visual Distress, Recently Resurfaced	781671.61	2115236.85
C-8A (Paved Shoulder)																			
-L-13+64 SB RTL LT	5.0' CUT	12.5'		3.3' Curb	S	16.0"	10.0"		6"		Asphalt ABC	0.0'-5.0' Residual, Brown, Coarse to Fine, Sandy, Silty Clay	S-17 Bulk 1	A-7-6	M	5.0'	No Visual Distress, Recently Resurfaced	781366.19	2114877.28
C-1																			
-L-13+64 SB OSL LT	4.0' CUT	12.0'		5.0' FW	S	16.0"	11.0"		5"		Asphalt ABC	0.0'-5.0' Residual, Red, Brown, Fine, Sandy, Silty Clay	S-12	A-7-5	M	5.0'	No Visual Distress, Recently Resurfaced	781353.52	2114884.45
C-2																			
-L-13+63 SB ISL LT	2.0' Cut	12.0'		13.0' FW	S		11.0"		visually present		Asphalt ABC	NA					No Visual Distress, Recently Resurfaced	781343.32	2114889.03
C-3	1.0' CUT																		
-L-13+58 NB OSL RT	5.0' FILL	12.0'		2.7' Curb	S	13.50"	13.50"				Asphalt	0.0'-5.0' Residual, Red, Brown, Fine, Sandy, Silty Clay	Reference S-12	A-7-5	M	5.0'	No Visual Distress, Recently Resurfaced	781292.65	2114912.42
C-7																			
-L-13+58 NB ISL RT	5.0' FILL	12.0'		9.0' FW	S	16.50"	16.50"				Asphalt	No auger conducted due to utilities					No Visual Distress, Recently Resurfaced	781310.31	2114901.71
C-6																			
-L-13+58 NB LTL	3.0' FILL	12.0'		6.0' FW	S	13.50"	13.50"				Asphalt	0.0'-5.0' Roadway Embankment, Orange, Brown, Fine, Sandy Clay	S-13	A-7-5	M	5.0'	No Visual Distress, Recently Resurfaced	781315.81	2114899.44
C-5																			
-L- 13+57 NB LTL	1.0' FILL	11.5'		4.4' FW	S	15.75"	15.75"				Asphalt	No auger conducted due to utilities					No Visual Distress, Recently Resurfaced	781325.60	2114891.68
C-4																			

Notes:

OSL = Outside Lane
ISL = Inside Lane
CL = Center Lane
LTL = Left Turn Lane

CTL = Center Turn Lane
RTL = Right Turn Lane
DECEL = Deceleration Lane
ACCEL = Acceleration Lane

OSS = Outside Shoulder
ISS = Inside Shoulder
GM = Grass Median
OGS = Outside Grass Shoulder

PS = Paved Shoulder
RT LN = Right Lane
LT LN = Left Lane
COL = Collector Lane

RT = Right
LT = Left
(I) = Inside
(O) = Outside

NB = Northbound
SB = Southbound
FW = From White
FY = From Yellow

PAVEMENT INVESTIGATION DATA SHEET

Project: 44398.1.1
TIP: U-5826

County: WAKE
Route: Falls of Neuse

Date: 6/28/2018-6/29/2018
Notes By: J. Swartley

Position (Sta., Lane, Shldr.)	Cut/Fill (Est. of Amount)	Width		Offset Distance (See Notes)	Crown "C" or Super "S"	Thickness				Pavement Layering	Subgrade				Asphalt Notes	GPS Coordinates					
		Lane(s)	Shoulder(s)			Asphalt	Concrete	ABC Stone	Stabilized Soil Subgrade		Description	Sample Number	AASHTO Classification	Soil Moisture		Probe Depth	Northing	Easting			
-L-33+25 NB OSL RT	3.0' FILL	12.0'		5.6' FW	S	15.0"	9.0"	6.0"		Asphalt ABC	0.0'-4.2' Roadway Embankment, Brown, Coarse to Fine, Sandy, Silty Clay 4.2'-5.0' Residual, Orange, Sandy Silt				S-14 REF-6	A-7-5 A-4	M M	5.0'	Moderate to Severe Transverse and Longitudinal Cracking, Low Severity Rutting in IWP, Moderate Oxidation, ABC Contaminated	782705.19	2116283.27
C-8																					
-L-34+58 NB RTL RT	3.0' FILL	12.2'		8.0' Curb	S	13.50"	7.50"	6.0"		Asphalt ABC	0.0'-5.0' Roadway Embankment, Orange, Brown, Fine, Sandy Clay				REF-13	A-7-5	M	5.0'	No Visual Distress, ABC Contaminated W/ Clayey Sand	782788.87	2116385.99
C-9																					
-L- 39+37 NB OSL RT	3.0' FILL	12.5'		5.4' FW	S	27.0"	21.0"	6.0"		Asphalt ABC	0.0'-5.0' Roadway Embankment, Gray, Brown, Coarse to Fine, Clayey Sand				S-15	A-2-6	M	5.0'	Moderate Transverse and Longitudinal Cracking, ABC Contaminated W/ Silty Clay	783126.37	2116728.07
C-11																					
-L-39+38 NB RTL RT	3.0' FILL	12.5'		5.0' FW	S		6.0"	visually present		Asphalt ABC	NA								No Visual Distress, Newer Asphalt Then Surrounding Lanes	783120.87	2116734.65
C-10 (Pavement core only, multiple utilities)																					
-L-39+37 NB ISL RT	3.0' FILL	11.2'		5.7' FW	S	28.0"	22.0"	6.0"		Asphalt ABC	0.0'-5.0' Roadway Embankment, Gray, Brown, Coarse to Fine, Clayey Sand				REF-15	A-2-6	M	5.0'	Moderate Transverse and Longitudinal Cracking, ABC Contaminated W/ Silty Clay, Did not Auger ABC	783135.11	2116718.58
C-12																			(More cracks near center of lane)		
-L-58+03 NB ISL RT	3.0' FILL	11.9'		7.9' FW	S	12.0"	12.0"			Asphalt	0.0'-4.0' Roadway Embankment, Orange, Brown, Coarse to Fine, Sandy Clay 4.0'-5.0' Residual, Orange, Brown, Coarse to Fine, Sandy Clay				S-16	A-7-6	M	5.0'	Moderate Transverse and Longitudinal Cracking	784647.87	2117756.27
C-17																					
-L-64+73 NB ISL RT	3.0' FILL	11.7'		8.0' FW	S	27.5"	27.5"			Asphalt	0.0'-5.0' Gray, Sandy Clay				S-18 Bulk 2 not enough soil for testing	A-6	M	5.0'	Moderate Transverse and Longitudinal Cracking	785271.49	2117993.85
C-20																					
-L-64+88 NB LTL	3.0' FILL	11.0'		5.5' FW	S	22.5"	22.5"			Asphalt	0.0'-2.9' Roadway Embankment, Brown, Coarse to Fine, Sandy, Silty Clay 2.9'-5.0' Residual, Orange, Brown, Coarse to Fine, Sandy Clay				REF S-14 REF S-16	A-7-5 A-7-6	M M	5.0'	Minor to Moderate Transverse and Longitudinal Cracking	785288.25	2117992.70
C-21																					

Notes:
 OSL = Outside Lane CTL = Center Turn Lane OSS = Outside Shoulder PS = Paved Shoulder RT = Right NB = Northbound
 ISL = Inside Lane RTL = Right Turn Lane ISS = Inside Shoulder RT LN = Right Lane LT = Left SB = Southbound
 CL = Center Lane DECEL = Deceleration Lane GM = Grass Median LT LN = Left Lane (I) = Inside FW = From White
 LTL = Left Turn Lane ACCEL = Acceleration Lane OGS = Outside Grass Shoulder COL = Collector Lane (O) = Outside FY = From Yellow



PAVEMENT INVESTIGATION DATA SHEET

Project: 44398.1.1
TIP: U-5826

County: WAKE
Route: Falls of Neuse

Date: 07/10/18
Notes By: J. Swartley

Position (Sta., Lane, Shldr.)	Cut/Fill (Est. of Amount)	Width		Offset Distance (See Notes)	Crown "C" or Super "S"	Gross to Top of Soil	Thickness				Pavement Layering	Subgrade				Asphalt Notes	GPS Coordinates					
		Lane(s)	Shoulder(s)				Asphalt	Concrete	ABC Stone	Stabilized Soil Subgrade		Description	Sample Number	AASHTO Classification	Soil Moisture		Probe Depth	Northing	Easting			
-L-64+88 NB RTL RT	3.0' FILL	11.6'	Curb	9.0' Curb	S	-	12.0"		visually present		Asphalt ABC	Pavement core only, multiple utilities				Moderate to Severe Transverse and Longitudinal Cracking	785272.10	2118020.80				
C-18																						
-L-64+87 NB OSL RT	3.0' FILL	12.0'	Curb	2.7' FW	S	15.25"	8.25"		7.0"		Asphalt ABC	Pavement core only, multiple utilities				Moderate to Severe Transverse and Longitudinal Cracking	785273.90	2118016.20				
C-19																						
-L-64+52	2.0' CUT											0.0-1.5' Brown, Coarse to Fine, Sandy, Silty Clay				S-19	A-6	M	1.5'	Line: -L-, Station: 64+52, O/S: 88' LT,	785297.20	2117903.30
Bulk Sample taken from shoulder																						

Notes:
 OSL = Outside Lane CTL = Center Turn Lane OSS = Outside Shoulder PS = Paved Shoulder RT = Right NB = Northbound
 ISL = Inside Lane RTL = Right Turn Lane ISS = Inside Shoulder RT LN = Right Lane LT = Left SB = Southbound
 CL = Center Lane DECEL = Deceleration Lane GM = Grass Median LT LN = Left Lane (I) = Inside FW = From White
 LTL = Left Turn Lane ACCEL = Acceleration Lane OGS = Outside Grass Shoulder COL = Collector Lane (O) = Outside FY = From Yellow



CONE PENETROMETER DATA CODE SHEET				TIP		PROJECT I.D.		ROUTE			
				U-5826		44398.1.1		Falls of Neuse Road			
				COUNTY		ENGINEER		TECHNICIANS			
				WAKE		VLAD MITCHEV		S&ME			
TEST LOCATIONS DESCRIPTION				DATE RUN		TEST LOCATION DESCRIPTION				DATE RUN	
-L-70+90 SB RTL (LT)-(C25)				6/27-6/28/2018		-L-71+10 SB OSL-(C23)				6/27-6/28/2018	
DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING
ABC	FILL	785801.7	2118312.8	ABC	FILL	785814.5	2118330.3				
Cumulative Penetration in Centimeters						Cumulative Penetration in Centimeters					
0.6	15.1	55.7	75.0								
0.8	15.5	56.0	75.8								
1.3	16.0	56.3	76.8								
1.8	16.5	56.6	77.7								
2.1	17.0	56.9	78.7								
2.4	17.5	57.2	79.7								
2.6	18.0	57.4	80.7								
2.9	18.5	57.6	81.8								
3.2	19.0	57.8	82.9								
3.5	19.4	58.0	84.1								
3.7	19.8	58.3	85.3								
4.0	20.1	58.6	86.5								
4.3	20.8	58.8	88.0								
4.5	21.5	59.0	89.5								
4.8	22.2	59.2	90.7								
4.9	22.9	59.4	91.9								
5.0	23.7	59.7	93.1								
5.2	24.5	60.0	94.4								
5.3	25.4	60.3	95.5								
5.4	26.2	60.6	96.6								
5.5	29.1	60.8	97.7								
5.6	30.7	61.0	98.8								
5.7	32.0	61.2	99.9								
5.9	33.5	61.4	101.2								
6.2	35.1	61.6									
6.5	36.6	61.8									
6.8	38.3	61.9									
7.1	40.1	62.1									
7.4	41.2	62.3									
7.7	43.1	62.5									
8.0	45.0	62.8									
8.3	46.8	63.1									
8.6	48.5	63.4									
9.0	49.0	63.6									
9.4	49.8	63.9									
9.6	50.0	64.2									
9.8	50.3	64.5									
10.0	50.6	65.0									
10.3	51.2	65.5									
10.6	51.8	66.0									
10.9	52.1	66.5									
11.2	52.4	67.0									
11.4	52.7	67.5									
11.7	53.1	68.0									
11.9	53.6	68.5									
12.2	53.7	69.0									
12.5	53.9	69.6									
12.8	54.3	70.4									
13.1	54.5	71.2									
13.4	54.8	72.0									
13.8	55.0	72.7									
14.3	55.2	73.4									
14.7	55.4	74.2									

CONE PENETROMETER DATA CODE SHEET				TIP		PROJECT I.D.		ROUTE			
				U-5826		44398.1.1		Falls of Neuse Road			
				COUNTY		ENGINEER		TECHNICIANS			
				WAKE		VLAD MITCHEV		S&ME			
TEST LOCATIONS DESCRIPTION				DATE RUN		TEST LOCATION DESCRIPTION				DATE RUN	
-L-70+83 SB ISL LT-(C22)				6/27-6/28/2018		-L-66+03 SB RTL LT-(C24)				6/27-6/28/2018	
DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING
ABC	FILL	785780.3	2118329.7	ABC	FILL	785424.1	2117995.3				
Cumulative Penetration in Centimeters						Cumulative Penetration in Centimeters					
1.7	21.7	56.1									
2.4	21.8	57.6									
3.0	21.9	59.3									
3.5	22.0	60.8									
4.1	22.3	62.2									
4.6	22.4	63.8									
5.0	22.6	65.3									
5.4	22.7	67.0									
5.8	22.9	68.5									
6.1	23.1	70.1									
6.5	23.2	71.4									
6.7	23.3	72.7									
7.0	23.4	74.3									
7.4	23.7	75.9									
7.7	23.9	77.5									
8.2	24.2	79.0									
8.6	24.4	80.6									
9.1	24.6	82.3									
9.5	24.9	83.8									
9.9	25.1	85.5									
10.5	25.3	87.0									
11.1	25.6	88.7									
11.8	25.8	90.2									
12.3	26.1	92.0									
12.9	26.4	93.6									
13.3	26.7	95.4									
14.0	27.0	97.4									
14.8	27.2	99.4									
15.3	27.6	101.2									
15.7	28.0										
16.2	28.4										
16.7	28.8										
17.5	29.2										
17.7	29.6										
18.0	30.8										
18.3	31.7										
18.5	32.8										
18.7	33.8										
19.0	34.7										
19.2	35.7										
19.3	36.7										
19.4	37.4										
19.6	38.2										
19.8	39.7										
20.0	41.3										
20.3	42.8										
20.6	44.2										
20.8	45.5										
21.0	47.5										
21.2	49.4										
21.3	51.0										
21.5	53.0										
21.6	54.7										

SG = Subgrade
SS = Stabilized Soil
CTBC = Cement-Treated Base Course
ABC = Aggregate Base Course
ESG = Estimated Subgrade

CONE PENETROMETER DATA CODE SHEET				TIP		PROJECT I.D.		ROUTE	
				U-5826		44398.1.1		Falls of Neuse Road	
				COUNTY		ENGINEER		TECHNICIANS	
				WAKE		VLAD MITCHEV		S&ME	
TEST LOCATIONS DESCRIPTION				DATE RUN		TEST LOCATION DESCRIPTION		DATE RUN	
-L-39+40 SB OSL LT-(C15)				6/27-6/28/2018		-L-39+42 SB LTL-(C13)		6/27-6/28/2018	
DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING		
ABC	FILL	783162.8	2116693.8	SG	FILL	783146.0	2116714.4		
Cumulative Penetration in Centimeters				Cumulative Penetration in Centimeters					
Augered 15.2 cm	56.6	78.0		0.7	15.8	30.8	74.9		
	57.0	78.3		1.3	15.9	31.1	75.7		
	57.4	78.5		2.1	16.0	31.4	76.2		
2.5	57.8	78.9		2.5	16.1	31.8	76.9		
4.0	58.2	79.4		2.8	16.2	32.2	77.6		
5.5	58.7	79.7		3.3	16.3	33.2	78.2		
7.0	59.0	80.0		3.7	16.5	34.5	78.8		
8.3	59.5	80.4		4.1	16.6	35.7			
9.5	60.0	80.7		4.7	16.8	36.5			
11.0	60.4	81.1		5.1	17.0	37.4			
12.3	60.9	81.5		5.5	17.1	38.3			
13.9	61.4	82.0		5.9	17.2	39.0			
15.2	62.0	82.4		6.2	17.4	39.8			
16.3	62.8	82.8		6.7	17.6	40.7			
17.4	63.1	83.3		7.0	17.8	41.5			
18.6	63.4	83.6		7.2	18.0	42.6			
19.8	63.9	84.0		7.7	18.2	43.7			
21.1	64.2	84.3		8.0	18.4	44.8			
22.0	64.7	84.7		8.3	18.6	45.7			
23.0	65.0	85.1		8.5	18.7	46.7			
23.8	65.5	85.5		8.9	18.8	47.5			
25.0	65.9	85.9		9.2	18.9	48.4			
26.2	66.7	86.3		9.6	19.0	49.7			
27.3	67.5	86.6		9.9	19.2	50.9			
28.6	67.9	87.0		10.2	19.5	52.0			
29.6	68.1			10.5	19.8	52.8			
30.3	68.5			10.9	20.1	53.5			
31.2	68.8			11.2	20.4	54.3			
32.0	69.0			11.5	20.6	55.0			
32.9	69.4			11.7	20.9	55.8			
33.7	69.9			11.9	21.2	56.7			
34.5	70.4			12.1	21.6	57.6			
35.3	71.0			12.3	22.1	58.8			
36.2	71.8			12.5	22.4	60.0			
37.2	72.1			12.6	22.9	61.4			
38.0	72.3			12.8	23.4	62.2			
39.0	72.6			13.0	23.9	63.2			
39.8	72.9			13.1	24.5	64.0			
40.5	73.2			13.3	25.0	64.6			
41.4	73.6			13.4	25.4	65.2			
42.2	73.9			13.6	25.9	65.9			
43.2	74.2			13.8	26.3	66.6			
44.8	74.4			13.9	26.8	67.4			
46.5	74.8			14.1	27.2	68.3			
48.1	75.0			14.3	27.5	69.1			
49.4	75.3			14.5	27.7	69.7			
51.0	75.8			14.7	28.0	70.3			
52.1	76.4			14.9	28.2	70.9			
52.9	77.1			15.1	28.6	71.5			
53.9	77.3			15.3	29.1	72.2			
54.9	77.5			15.5	29.7	73.2			
55.9	77.7			15.6	30.0	73.9			
56.3	77.8			15.7	30.4	74.4			

SG = Subgrade
 SS = Stabilized Soil
 CTBC = Cement-Treated Base Course
 ABC = Aggregate Base Course
 ESG = Estimated Subgrade

CONE PENETROMETER DATA CODE SHEET				TIP		PROJECT I.D.		ROUTE	
				U-5826		44398.1.1		Falls of Neuse Road	
				COUNTY		ENGINEER		TECHNICIANS	
				WAKE		VLAD MITCHEV		S&ME	
TEST LOCATIONS DESCRIPTION				DATE RUN		TEST LOCATION DESCRIPTION		DATE RUN	
-L-39+40 SB ISL LT (OSWP)-(C14)				6/27-6/28/2018		-L-32+20 SB RTL LT-(C16)		6/27-6/28/2018	
DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING		
ABC	FILL	783154.3	2116704.0	ABC	FILL	782679.3	2116163.9		
Cumulative Penetration in Centimeters				Cumulative Penetration in Centimeters					
Augered 15.2 cm	25.7	94.0		Augered 15.2 cm	17.9	57.4	74.0		
	26.2	95.7			18.2	57.8	74.4		
	26.8	97.4			18.7	58.2	74.8		
1.8	27.7	99.3		1.3	19.2	58.5	75.4		
2.6	28.6			2.1	19.8	58.8	76.0		
3.2	29.2			2.9	20.4	59.2	76.5		
3.8	29.7			3.7	20.9	59.6	77.2		
4.3	30.8			4.3	21.4	59.9	77.9		
4.7	31.9			5.0	21.8	60.1	78.6		
5.3	33.3			5.8	22.1	60.4	79.4		
5.9	34.6			6.4	22.6	60.6	79.9		
6.3	36.0			7.0	23.0	60.8	80.6		
6.7	37.0			7.6	23.5	61.0	81.4		
7.0	38.0			8.2	23.7	61.2	82.2		
7.4	39.0			8.6	24.1	61.4	82.9		
7.9	40.0			8.9	24.5	61.5	83.7		
8.3	40.8			9.3	25.0	61.6	84.3		
8.8	41.8			9.5	25.4	61.8	85.0		
9.1	42.7			9.8	25.7	62.0	85.7		
9.8	43.7			10.1	26.2	62.3	86.3		
10.2	44.8			10.3	26.6	62.5	87.0		
10.7	46.1			10.6	26.9	62.7	87.8		
11.0	47.4			10.8	27.4	63.0	88.8		
11.4	48.4			11.3	27.9	63.2	89.5		
12.0	49.6			11.4	28.3	63.5	90.2		
12.5	50.6			11.5	28.4	63.9	91.0		
12.9	51.8			11.6	29.2	64.4	91.8		
13.3	53.5			11.7	29.5	64.9	92.5		
13.9	54.8			11.8	29.8	65.3	93.2		
14.5	56.3			11.9	30.1	65.6	93.9		
15.0	57.5			12.0	30.5	66.0	94.6		
15.5	58.8			12.2	30.8	66.3	95.3		
15.9	60.7			12.4	31.2	66.6	96.0		
16.3	62.5			12.6	31.7	66.9			
16.8	64.2			12.8	32.1	67.1			
17.2	65.7			13.1	33.0	67.4			
17.7	67.5			13.3	33.6	67.7			
18.2	69.3			13.6	34.1	68.0			
18.7	71.0			13.8	34.7	68.3			
19.5	73.0			14.1	35.4	68.5			
19.8	74.5			14.2	36.3	68.7			
20.2	75.8			14.4	37.9	69.0			
20.5	77.6			14.7	39.6	69.3			
21.0	79.1			14.9	41.8	69.5			
21.5	81.0			15.1	43.9	69.7			
22.0	82.3			15.4	45.6	69.9			
22.3	83.6			15.7	48.1	70.4			
22.8	85.1			16.1	50.3	71.2			
23.2	87.0			16.4	51.5	71.5			
23.7	88.7			16.6	52.7	72.0			
24.2	90.0			17.0	54.4	72.5			
24.6	91.3			17.2	56.0	73.0			
25.1	92.5			17.5	56.6	73.5			

CONE PENETROMETER DATA CODE SHEET				TIP		PROJECT I.D.		ROUTE			
				U-5826		44398.1.1		Falls of Neuse Road			
				COUNTY		ENGINEER		TECHNICIANS			
				WAKE		VLAD MITCHEV		S&ME			
TEST LOCATIONS DESCRIPTION				DATE RUN		TEST LOCATION DESCRIPTION		DATE RUN			
-L-18+55 SB RTL PS LT-(C8A)				6/27-6/28/2018		-L-13+64 SB RTL LT-(C1)		6/27-6/28/2018			
DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING
ABC	FILL	781671.6	2115236.8	ABC	CUT	781366.2	2114877.3				
Cumulative Penetration in Centimeters						Cumulative Penetration in Centimeters					
Augered 20.3 cm	76.9			Augered 15.2 cm	90.1						
	77.5				93.3						
	78.4				95.8						
4.7	79.6			4.8	98.8						
10.3	80.7			9.2	101.4						
15.3	81.9			12.7							
18.0	82.9			15.8							
20.4	83.7			18.4							
23.7	84.5			19.5							
25.8	85.7			22.5							
28.3	86.7			24.1							
31.4	87.8			25.7							
34.4	88.6			27.3							
37.0	89.6			30.1							
39.5	90.4			32.9							
42.5	91.4			35.0							
44.8	92.4			37.0							
47.1	93.5			38.4							
49.2	94.2			39.7							
50.8				41.4							
52.4				42.9							
53.9				44.0							
55.7				45.0							
56.8				45.5							
59.2				46.3							
60.6				47.0							
61.9				47.9							
63.0				48.5							
64.2				49.2							
65.5				49.8							
66.8				50.5							
68.0				51.0							
69.1				51.5							
69.5				52.9							
70.1				53.9							
70.5				54.6							
70.9				55.4							
71.2				56.4							
71.6				57.7							
72.0				58.8							
72.3				60.0							
72.7				61.9							
73.0				63.7							
73.3				65.7							
73.6				67.6							
73.9				69.6							
74.3				71.6							
74.5				74.4							
74.8				76.5							
75.2				78.5							
75.6				81.8							
76.1				84.5							
76.5				87.4							

CONE PENETROMETER DATA CODE SHEET				TIP		PROJECT I.D.		ROUTE			
				U-5826		44398.1.1		Falls of Neuse Road			
				COUNTY		ENGINEER		TECHNICIANS			
				WAKE		VLAD MITCHEV		S&ME			
TEST LOCATIONS DESCRIPTION				DATE RUN		TEST LOCATION DESCRIPTION		DATE RUN			
-L-13+64 SB OSL LT-(C2)				6/27-6/28/2018		-L-13+63 SB ISL LT -(C3)		6/27-6/28/2018			
DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING
ABC	CUT	781353.5	2114884.4	ABC	CUT	781343.3	2114889.0				
Cumulative Penetration in Centimeters						Cumulative Penetration in Centimeters					
Augered 15.2 cm				No DCP taken							
3.9											
7.5											
11.4											
15.4											
19.7											
23.7											
28.4											
32.7											
37.1											
41.6											
46.3											
50.9											
55.1											
59.4											
63.5											
67.7											
72.1											
76.4											
80.2											
83.5											
86.5											
89.6											
92.8											
95.8											
98.9											

SG = Subgrade
SS = Stabilized Soil
CTBC = Cement-Treated Base Course
ABC = Aggregate Base Course
ESG = Estimated Subgrade

CONE PENETROMETER DATA CODE SHEET				TIP	PROJECT I.D.	ROUTE	
				U-5826	44398.1.1	Falls of Neuse Road	
TEST LOCATIONS DESCRIPTION				COUNTY	ENGINEER	TECHNICIANS	
				WAKE	VLAD MITCHEV	S&ME	
-L-13+58 NB OSL RT-(C7)				DATE RUN	TEST LOCATION DESCRIPTION	DATE RUN	
				6/27-6/28/2018	-L-13+58 NB ISL RT-(C6)	6/27-6/28/2018	
DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING
SG	FILL	781292.7	2114912.4	SG	FILL	781310.3	2114901.7
Cumulative Penetration in Centimeters				Cumulative Penetration in Centimeters			
5.7	98.3			3.5	68.5		
9.5	98.6			6.2	70.7		
15.0	98.8			8.8	73.0		
21.2	99.1			10.9	75.4		
23.6	99.3			12.4	77.5		
26.0	99.5			13.7	79.9		
28.2	99.8			13.9	81.9		
30.4	100.0			14.2	84.3		
32.6	100.3			14.4	86.4		
34.9	100.5			14.7	88.8		
37.1				14.9	90.8		
38.5				15.3	93.0		
39.9				15.7	94.9		
40.9				16.1	97.0		
41.8				16.5	99.0		
43.4				16.9	101.3		
45.0				17.5	103.5		
46.6				18.0	105.5		
48.3				18.6	107.8		
50.2				19.1			
51.8				19.7			
53.7				20.2			
60.0				20.6			
63.3				21.1			
66.4				21.5			
69.5				22.0			
72.5				22.7			
74.8				23.4			
77.0				24.2			
78.6				25.0			
80.2				25.7			
81.7				26.4			
83.2				27.2			
84.4				27.9			
85.7				28.7			
87.1				29.4			
88.4				31.0			
89.5				32.6			
90.5				34.1			
92.1				35.7			
93.7				37.3			
94.5				38.9			
95.5				40.5			
95.9				42.1			
96.3				44.7			
96.6				47.0			
97.0				49.6			
97.4				52.0			
97.5				54.9			
97.7				57.6			
97.8				61.0			
98.0				63.9			
98.1				66.2			

SG = Subgrade
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CONE PENETROMETER DATA CODE SHEET				TIP	PROJECT I.D.	ROUTE	
				U-5826	44398.1.1	Falls of Neuse Road	
TEST LOCATIONS DESCRIPTION				COUNTY	ENGINEER	TECHNICIANS	
				WAKE	VLAD MITCHEV	S&ME	
-L-13+58 NB LTL-(C5)				DATE RUN	TEST LOCATION DESCRIPTION	DATE RUN	
				6/27-6/28/2018	-L-13+57 NB LTL-(C4)	6/27-6/28/2018	
DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING
SG	FILL	781315.8	2114899.4	SG	FILL	781325.6	2114891.7
Cumulative Penetration in Centimeters				Cumulative Penetration in Centimeters			
1.9	67.8			4.0	47.7	69.4	
2.7	70.0			6.9	48.2	69.7	
3.0	72.7			9.2	48.7	70.0	
3.4	75.2			10.7	49.2	70.2	
3.7	78.0			12.2	49.8	70.5	
4.1	80.8			13.3	50.5	70.8	
4.4	83.6			14.5	51.0	71.1	
4.7	86.0			16.0	51.5	71.5	
5.0	88.1			17.0	52.0	71.9	
5.3	90.4			18.0	52.5	72.2	
5.6	92.5			19.2	52.9	72.5	
5.8	94.5			20.1	53.3	72.8	
6.1	96.7			21.0	53.7	73.1	
6.4	98.9			22.0	54.1	73.4	
6.6	101.2			22.8	54.5	73.7	
6.9	103.6			23.8	55.0	74.0	
7.1	106.1			25.0	55.5	74.3	
7.3	108.5			25.7	55.9	74.7	
7.6				26.5	56.3	75.0	
7.9				27.5	56.7	75.3	
8.3				28.3	57.0	75.7	
8.7				29.0	57.3	76.0	
9.0				29.8	57.7	76.4	
9.5				30.4	58.1	76.8	
10.1				31.1	58.5	77.1	
10.7				31.9	58.8	77.5	
11.4				32.6	59.2	77.8	
12.1				33.3	59.6	78.3	
13.0				34.0	60.0	78.7	
14.2				34.6	60.4	79.2	
15.7				35.1	60.7	79.6	
17.5				35.9	61.1	80.1	
19.1				36.4	61.5	80.4	
21.3				37.0	61.9	80.8	
23.4				37.7	62.3	81.1	
25.9				38.3	62.7	81.5	
28.1				38.9	63.1	81.8	
30.5				39.5	63.4		
32.8				40.0	63.7		
35.4				41.0	64.1		
37.7				41.5	64.5		
40.5				41.8	65.0		
42.9				42.2	65.3		
45.4				42.7	65.6		
48.0				43.2	65.9		
50.4				43.7	66.2		
52.6				44.2	66.6		
54.8				44.7	67.0		
56.8				45.2	67.4		
58.9				45.7	67.8		
61.1				46.2	68.2		
63.4				46.7	68.6		
65.4				47.2	69.0		

CONE PENETROMETER DATA CODE SHEET				TIP		PROJECT I.D.		ROUTE			
				U-5826		44398.1.1		Falls of Neuse Road			
				COUNTY		ENGINEER		TECHNICIANS			
				WAKE		VLAD MITCHEV		S&ME			
TEST LOCATIONS DESCRIPTION				DATE RUN		TEST LOCATION DESCRIPTION		DATE RUN			
-L-33+25 NB OSL RT-(C8)				6/27-6/28/2018		-L-34+58 NB RTL RT-(C9)		6/27-6/28/2018			
DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING				
ABC	FILL	782705.2	2116283.3	ABC	FILL	782788.9	2116386.0				
Cumulative Penetration in Centimeters				Cumulative Penetration in Centimeters							
Augered 15.2 cm	83.1			Augered 15.2 cm	68.8						
	83.8				69.9						
	84.5				71.2						
2.8	86.3			1.5	72.8						
5.4	87.3			2.1	74.7						
7.2	88.3			2.8	76.2						
8.2	89.2			3.7	77.7						
9.1	90.0			5.1	79.1						
10.0	90.9			6.6	81.1						
11.0	91.8			7.9	83.1						
11.8	92.7			9.2	84.8						
12.8	93.7			11.2	86.3						
13.8	94.7			13.0	88.1						
18.5	95.7			15.8	89.8						
25.6	96.5			18.3	91.4						
31.5	97.5			23.5	92.8						
36.0	98.4			28.1	93.9						
40.2	99.3			29.8	94.9						
44.1	100.5			31.6	96.4						
47.1	101.4			32.8	97.8						
49.9	102.3			34.2	99.4						
52.3	103.4			34.5	101.0						
54.2	104.4			34.7	102.8						
55.7	105.6			35.7	104.5						
56.8	106.5			36.6							
58.1	107.4			37.4							
59.3				38.2							
60.5				38.9							
61.5				39.6							
62.6				40.1							
63.7				40.6							
64.9				41.1							
65.7				41.5							
66.7				42.1							
67.7				42.7							
68.4				43.6							
69.3				44.9							
70.5				46.3							
71.3				47.5							
72.2				49.0							
73.0				50.5							
73.7				52.1							
74.4				53.8							
75.2				55.2							
75.8				56.5							
76.6				57.8							
77.5				59.4							
78.2				60.8							
79.0				62.1							
79.8				63.5							
80.6				64.7							
81.5				66.2							
82.3				67.7							

CONE PENETROMETER DATA CODE SHEET				TIP		PROJECT I.D.		ROUTE			
				U-5826		44398.1.1		Falls of Neuse Road			
				COUNTY		ENGINEER		TECHNICIANS			
				WAKE		VLAD MITCHEV		S&ME			
TEST LOCATIONS DESCRIPTION				DATE RUN		TEST LOCATION DESCRIPTION		DATE RUN			
-L-39+38 NB RTL RT-(C10)				6/27-6/28/2018		-L-39+37 NB OSL RT-(C11)		6/27-6/28/2018			
DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING				
SG	FILL	783120.9	2116734.6	ABC	FILL	783126.4	2116728.1				
Cumulative Penetration in Centimeters				Cumulative Penetration in Centimeters							
No DCP taken				Augered 15.2 cm							
								2.9			
								4.4			
								5.4			
								7.3			
								8.9			
								10.0			
								11.4			
								12.8			
								13.9			
								15.1			
								16.2			
								17.2			
								18.2			
								20.5			
								22.1			
								23.7			
								26.9			
								29.8			
								35.3			
								41.9			
								54.5			
								60.8			
								63.1			
								67.8			
								71.3			
								73.4			
								75.0			
								76.9			
								78.7			
								80.4			
								82.3			

SG = Subgrade
SS = Stabilized Soil
C I B C = Cement-Treated Base Course
ESG = Estimated Subgrade

CONE PENETROMETER DATA CODE SHEET				TIP		PROJECT I.D.		ROUTE			
				U-5826		44398.1.1		Falls of Neuse Road			
				COUNTY		ENGINEER		TECHNICIANS			
TEST LOCATIONS DESCRIPTION				DATE RUN		TEST LOCATION DESCRIPTION				DATE RUN	
-L-39+37 NB ISL RT-(C12)				6/27-6/28/2018		-L-58+03 NB ISL RT-(C17)				6/27-6/28/2018	
DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING
ABC	FILL	783135.1	2116718.6	SG	FILL	784647.9	2117756.3				
Cumulative Penetration in Centimeters						Cumulative Penetration in Centimeters					
1.4	11.8	52.4				3.2	50.2	72.7	86.8		
1.5	12.1	53.6				5.7	50.8	73.0	87.1		
1.6	12.5	54.8				7.3	51.7	73.3	87.4		
1.8	13.1	56.1				8.3	52.3	73.6	87.7		
2.0	13.7	57.5				9.4	53.0	73.9	88.0		
2.2	14.4	58.8				10.1	53.5	74.2	88.3		
2.5	15.0	59.8				11.1	54.1	74.6	88.5		
2.8	15.6	61.0				12.1	54.8	74.9	88.7		
3.0	16.2	62.0				13.2	55.4	75.1	88.8		
3.2	16.8	63.1				14.2	56.1	75.4	89.0		
3.4	17.5	64.2				15.2	56.7	75.7	89.2		
3.5	18.1	65.2				15.8	57.1	76.0	89.4		
3.7	18.7	66.5				16.6	57.6	76.3	89.6		
3.8	19.7	67.7				17.3	58.0	76.6	89.7		
4.0	20.7	69.1				18.0	58.6	76.9	89.9		
4.2	21.7	70.3				18.7	59.0	77.2	90.1		
4.4	22.7	71.5				19.3	59.3	77.5	90.4		
4.5	23.7	72.7				20.0	59.7	77.8	90.6		
4.7	24.7	73.7				20.5	60.2	78.0	90.9		
4.9	25.5	74.9				21.2	60.8	78.2	91.1		
5.1	26.4	76.0				22.0	61.2	78.4	91.4		
5.3	27.0	77.2				22.7	61.5	78.7	91.6		
5.4	27.7	78.6				23.4	61.9	79.0	91.9		
5.5	28.3	79.6				24.2	62.4	79.2	92.1		
5.6	28.9	80.7				25.0	62.9	79.4	92.4		
5.7	29.7	81.8				26.0	63.2	79.7	92.6		
5.8	30.3	83.1				27.0	63.7	80.0			
5.9	31.1	84.6				28.2	64.0	80.3			
6.0	31.9	86.0				29.3	64.4	80.6			
6.1	32.7	87.4				30.3	64.9	80.8			
6.2	33.6					31.3	65.3	81.0			
6.4	34.5					32.3	65.6	81.3			
6.6	35.5					33.4	65.9	81.5			
6.8	36.5					34.3	66.2	81.7			
7.1	37.5					35.3	66.7	82.0			
7.3	38.4					36.3	67.0	82.2			
7.5	39.2					37.1	67.3	82.5			
7.7	40.0					37.9	67.6	82.8			
7.8	40.7					38.9	67.9	83.0			
8.0	41.7					39.7	68.5	83.2			
8.2	42.8					40.6	68.8	83.5			
8.3	44.0					41.4	69.1	83.7			
8.5	45.3					42.0	69.4	84.0			
8.6	45.9					42.8	69.7	84.2			
8.8	46.4					43.5	70.0	84.5			
8.9	47.0					44.4	70.4	84.7			
9.3	47.4					45.1	70.7	85.0			
9.6	48.0					45.9	71.0	85.2			
10.0	48.6					46.5	71.3	85.5			
10.3	49.4					47.2	71.5	85.7			
10.7	50.2					48.0	71.8	85.9			
11.0	50.8					48.7	72.1	86.2			
11.4	51.5					49.6	72.4	86.5			

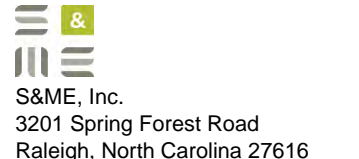
CONE PENETROMETER DATA CODE SHEET				TIP		PROJECT I.D.		ROUTE			
				U-5826		44398.1.1		Falls of Neuse Road			
				COUNTY		ENGINEER		TECHNICIANS			
TEST LOCATIONS DESCRIPTION				DATE RUN		TEST LOCATION DESCRIPTION				DATE RUN	
-L-64+73 NB ISL RT-(C20)				6/27-6/28/18		-L-64+88 NB LTL-(C21)				6/27-6/28/2018	
DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING
SG	FILL	785271.5	2117993.9	SG	FILL	785288.3	2117992.7				
Cumulative Penetration in Centimeters						Cumulative Penetration in Centimeters					
6.6	17.9					0.9	75.2				
7.7	18.0					1.8	76.8				
8.2	18.1					2.4	78.3				
8.7	18.2					2.9	80.0				
9.2	18.3					3.5	81.5				
9.7	18.4					4.1	83.3				
10.2	18.5					4.7	84.8				
10.5	18.6					5.4	86.5				
10.9	18.7					6.2	88.0				
11.3	18.8					8.0	89.4				
11.7	18.9					9.5	90.9				
12.0	19.0					11.4					
12.2	19.1					13.0					
12.4						15.2					
12.6	DCP REFUSAL					17.9					
12.8						20.4					
12.9						22.0					
13.1						23.7					
13.3						25.2					
13.5						26.4					
13.7						27.6					
13.9						28.7					
14.1						29.9					
14.3						31.2					
14.7						32.2					
14.9						33.4					
15.1						34.5					
15.2						35.7					
15.3						36.8					
15.4						37.9					
15.5						39.2					
15.6						40.5					
15.7						41.8					
15.8						43.2					
15.9						44.4					
16.0						45.5					
16.2						47.0					
16.3						48.4					
16.4						50.0					
16.5						51.9					
16.6						53.6					
16.7						55.6					
16.8						57.5					
16.9						59.5					
17.0						61.3					
17.1						62.8					
17.2						64.2					
17.3						65.9					
17.4						67.4					
17.5						69.0					
17.6						70.5					
17.7						72.1					
17.8						73.7					

SG = Subgrade
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 CTBC = Cement-Treated Base Course
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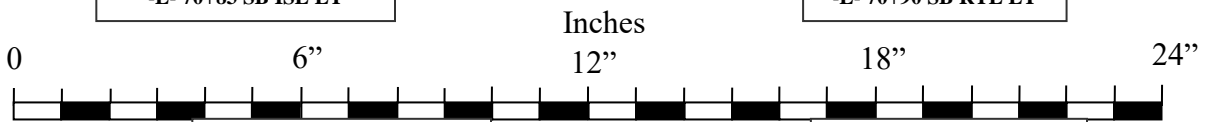
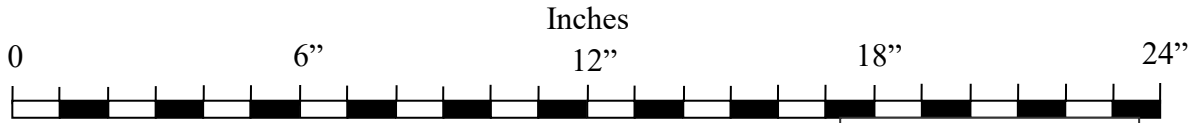
CONE PENETROMETER DATA CODE SHEET					TIP	PROJECT I.D.		ROUTE			
					U-5826	44398.1.1	Falls of Neuse Road				
TEST LOCATIONS DESCRIPTION					COUNTY	ENGINEER		TECHNICIANS			
					WAKE	VLAD MITCHEV	S&ME				
-L-64+88 NB RTL RT-(C18)			DATE RUN		TEST LOCATION DESCRIPTION			DATE RUN			
-L-64+88 NB RTL RT-(C18)			7/10/2018		-L-64+87 NB OSL RT-(C19)			7/10/2018			
DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING
SG	FILL	785272.1	2118020.8	ABC	FILL	785273.9	2118016.2				
Cumulative Penetration in Centimeters					Cumulative Penetration in Centimeters						
No DCP taken					Augered 7.6cm	50.2					
						50.9					
						51.6					
					0.6	53.2					
					0.9	54.7					
					1.2	57.8					
					1.4	60.8					
					1.7	63.6					
					2.0	66.6					
					2.4	69.5					
					2.7	72.3					
					3.1	75.2					
					3.4	77.8					
					3.8	80.3					
					4.2	82.6					
					4.6	84.9					
					4.9	87.4					
					5.3	89.2					
					5.7	91.1					
					6.0	93.1					
					6.3	95.0					
					6.5	97.1					
					6.8	98.4					
					7.1	99.6					
					7.5	100.5					
					7.9	101.6					
					8.4	102.4					
					8.8	103.2					
					9.2	104.2					
					9.7	105.2					
					10.2	106.3					
					10.7	107.3					
					11.2	108.3					
					11.7	109.3					
					12.8	110.4					
					14.0	111.5					
					15.2	112.6					
					16.3	113.7					
					17.5	115.0					
					20.0	116.1					
					22.4	117.6					
					25.4	119.0					
					28.5	120.4					
					30.7	121.8					
					33.1						
					37.0						
					41.3						
					43.6						
					45.3						
					46.9						
					47.5						
					48.3						
					49.2						

CONE PENETROMETER DATA CODE SHEET					TIP	PROJECT I.D.		ROUTE			
					U-5826	44398.1.1	Falls of Neuse Road				
TEST LOCATIONS DESCRIPTION					COUNTY	ENGINEER		TECHNICIANS			
					WAKE	VLAD MITCHEV	S&ME				
-L-64+88 NB RTL RT-(C18)			DATE RUN		TEST LOCATION DESCRIPTION			DATE RUN			
-L-64+88 NB RTL RT-(C18)			7/10/2018		-L-64+87 NB OSL RT-(C19)			7/10/2018			
DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING	DATUM	CUT/FILL	NORTHING	EASTING
SG	FILL	785272.1	2118020.8	ABC	FILL	785273.9	2118016.2				
Cumulative Penetration in Centimeters					Cumulative Penetration in Centimeters						

SG = Subgrade
 SS = Stabilized Soil
 CTBC = Cement-Treated Base Course
 ABC = Aggregate Base Course
 ESG = Estimated Subgrade



Project No.: 44398.1.1	I.D. No.: U-5826	County: WAKE	Dates: 6/27/18- 6/28/18
Site Description: Falls of Neuse Rd. (from I-540 to Durant Rd.)			
Consultant: S&ME, Inc.	Core Size: 4 - inch	Drill Machine: CME-55	
Geologist / Engineer: Jarett Swartley, LG			



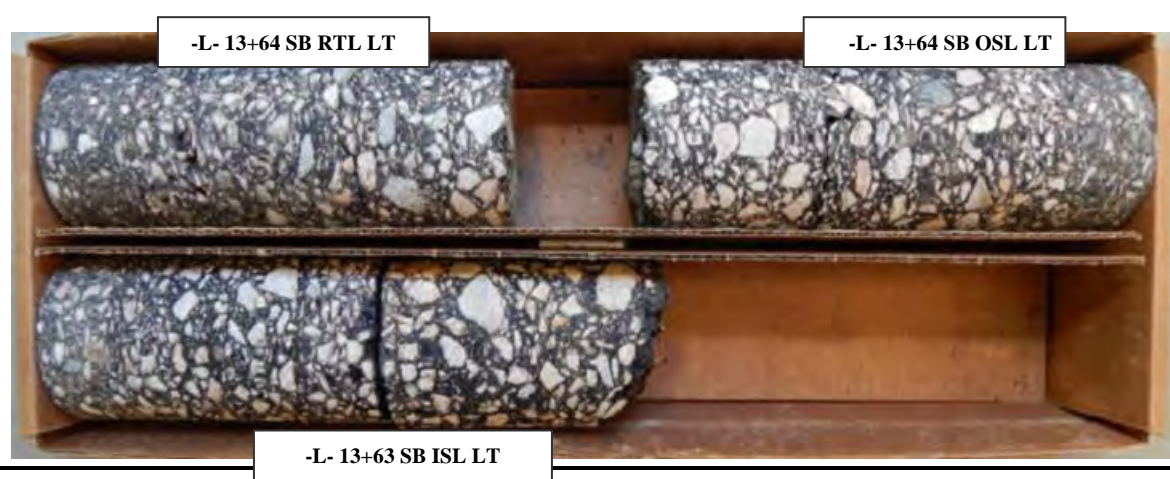
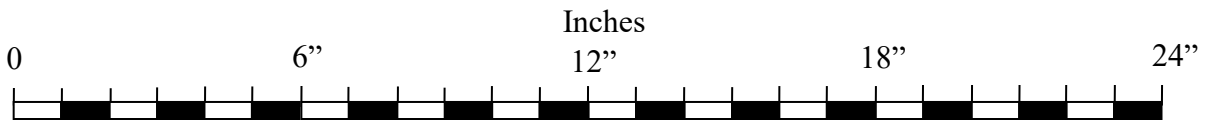
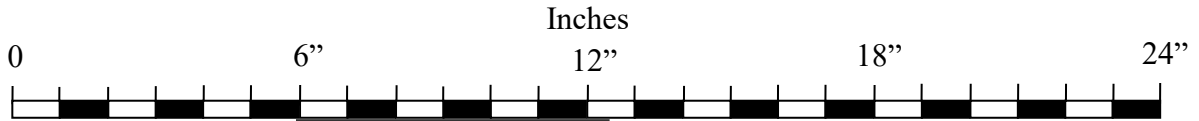
Notes:

- | | | |
|------------------------|---------------------------|--------------|
| OSL = Outside Lane | ACCEL = Acceleration Lane | MED = Median |
| ISL = Inside Lane | PS = Paved Shoulder | |
| RTL = Right Turn Lane | LTL = Left Turn Lane | |
| OSS = Outside Shoulder | ISS = Inside Shoulder | |



S&ME, Inc.
3201 Spring Forest Road
Raleigh, North Carolina 27616

Project No.: 44398.1.1	I.D. No.: U-5826	County: WAKE	Dates: 6/27/18- 6/28/18
Site Description: Falls of Neuse Rd. (from I-540 to Durant Rd.)			
Consultant: S&ME, Inc.	Core Size: 4 - inch	Drill Machine: CME-55	
Geologist / Engineer: Jarett Swartley, LG			



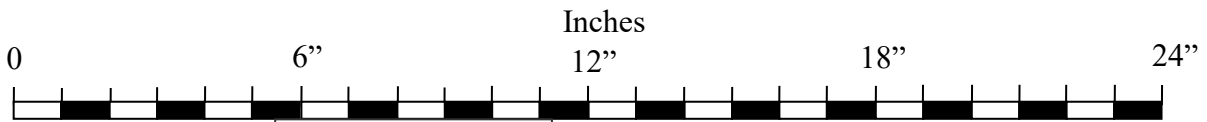
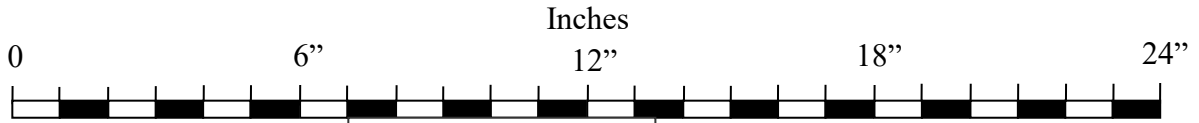
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- | | | |
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Site Description: Falls of Neuse Rd. (from I-540 to Durant Rd.)			
Consultant: S&ME, Inc.	Core Size: 4 - inch	Drill Machine: CME-55	
Geologist / Engineer: Jarett Swartley, LG			



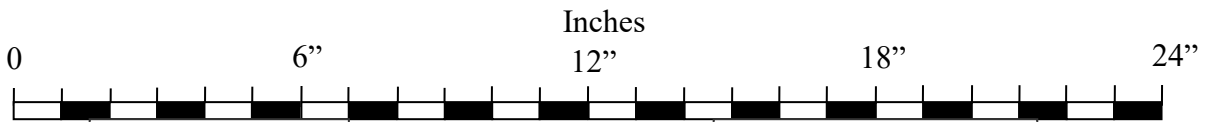
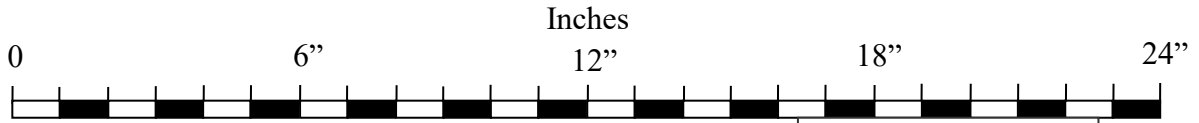
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- | | | |
|------------------------|---------------------------|--------------|
| OSL = Outside Lane | ACCEL = Acceleration Lane | MED = Median |
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Site Description: Falls of Neuse Rd. (from I-540 to Durant Rd.)			
Consultant: S&ME, Inc.	Core Size: 4 - inch	Drill Machine: CME-55	
Geologist / Engineer: Jarett Swartley, LG			



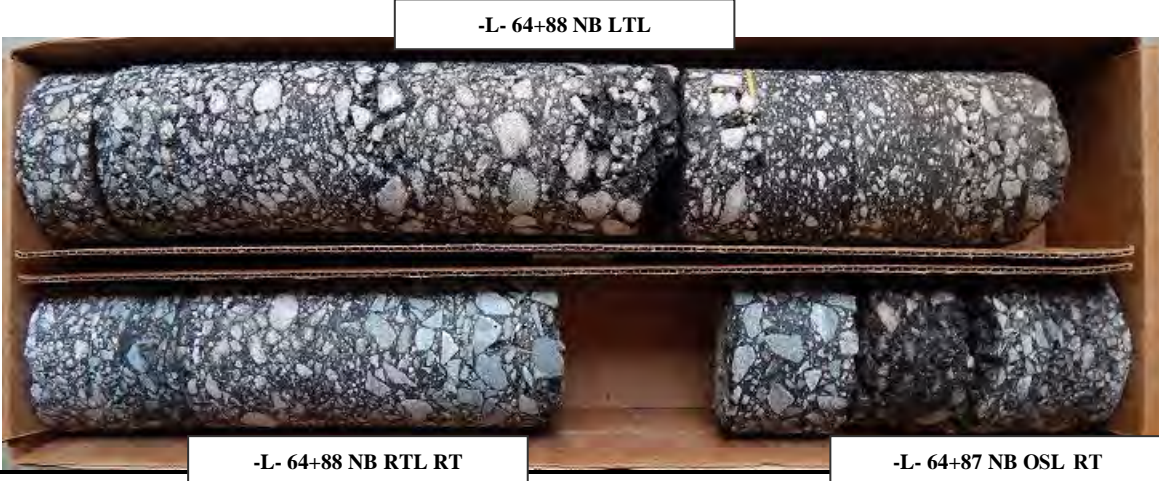
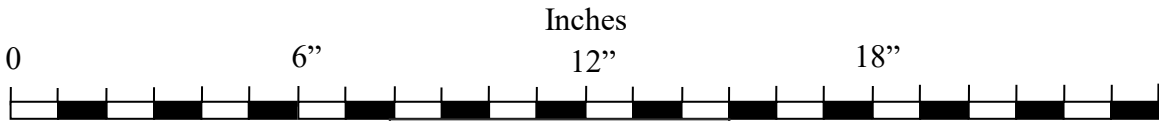
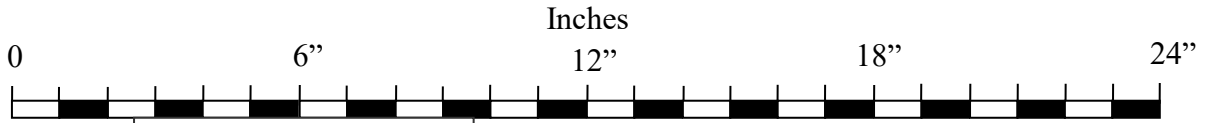
Notes:

- | | | |
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 Raleigh, North Carolina 27616

Project No.: 44398.1.1	I.D. No.: U-5826	County: WAKE	Dates: 6/27/18- 6/28/18
Site Description: Falls of Neuse Rd. (from I-540 to Durant Rd.)			
Consultant: S&ME, Inc.	Core Size: 4 - inch	Drill Machine: CME-55	
Geologist / Engineer: Jarett Swartley, LG			



Notes:

- | | | |
|------------------------|---------------------------|--------------|
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S&ME, Inc.
 3201 Spring Forest Road
 Raleigh, North Carolina 27616

SUMMARY OF LABORATORY TEST DATA

Soil Classification and Gradation



S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project #:	6205-18-008	Date Report	7/13/2018
State Project No.:	44398.1.1	County:	Wake
Federal ID No.:	N/A	TIP No.:	U-5826
Project Name:	U-5826 Falls of Nuese (PDI)		
Client Name:	NCDOT	Client Address:	3301 Jones Sausage Road, Garner, North Carolina

Sample No.	Station #	Offset	Alignment	Sample Depth (ft)	AASHTO Classification	Total % Passing					Total Mortar Fraction (%)				LL	PL	PI	Moist. %
						Sieve #					Coarse Sand	Fine Sand	Silt	Clay				
						10	40	60	200	270								
S-1	-L-70+90	9.5'	SB RTL LT	0.0-3.0	A-7-6 (4)	86	71	60	42.1	38.4	30	25	12	33	42	21	21	16.7
S-2	-L-70+90	9.5'	SB RTL LT	3.0-5.0	A-7-6 (18)	97	87	79	57.3	54.6	19	25	7	49	60	23	37	17.8
S-3	-L-70+83	26.1'	SB ISL LT	0.0-2.0	A-7-6 (8)	98	89	78	49.6	45.8	20	33	7	40	43	20	23	14.9
S-4	-L-70+83	26.1'	SB ISL LT	2.0-5.0	A-7-5 (51)	100	98	96	83.3	80.1	4	16	13	67	94	42	52	34.8
S-5	-L-66+03	4.0'	SB RTL LT	0.0-2.0	A-7-6 (11)	93	80	69	47.9	45.2	26	25	8	41	52	20	32	14.7
S-6	-L-39+40	3.6'	SB OSL LT	0.0-5.0	A-6 (4)	89	76	68	47.7	42.2	24	29	19	28	32	17	15	15.1
S-7	-L-39+42	29.5'	SB LTL LT	0.0-5.0	A-6 (3)	90	75	64	40.1	36.6	29	30	10	31	36	17	19	12.8
S-8	-L-39+40	16.5'	SB ISL LT	0.0-5.0	A-6 (7)	89	79	72	55.4	49.6	19	25	22	34	35	17	18	17.2
S-9	-L-32+20	5.7'	SB RTL LT	0.0-2.5	A-6 (6)	95	86	78	55.4	50.2	18	29	19	34	34	18	16	14.1
S-10	-L-32+20	5.7'	SB RTL LT	2.5-5.0	A-6 (8)	96	86	77	54.0	51.5	20	26	6	48	40	20	20	22.7
S-11	-L-18+55	2.1'	SB RTL LT	0.0-5.0	A-7-5 (30)	99	92	87	69.9	65.8	12	22	18	48	75	34	41	33.1
S-12	-L-13+64	5.0'	SB OSL LT	0.0-5.0	A-7-5 (27)	90	85	82	62.9	58.8	9	26	13	52	80	36	44	34.2
S-13	-L-13+58	6.0'	NB LTL RT	0.0-5.0	A-7-5 (51)	100	96	94	75.5	73.5	6	21	4	69	98	36	62	32.8
S-14	-L-33+25	5.6'	NB OSL RT	0.0-4.2	A-7-5 (14)	90	83	78	59.8	54.0	13	27	24	36	59	33	26	38.6
S-15	-L-39+37	5.4'	NB OSL RT	0.0-5.0	A-2-6 (2)	82	68	57	35.4	32.7	30	30	8	32	37	17	20	17.3
S-16	-L-58+03	7.9'	NB ISL RT	0.0-4.0	A-7-6 (14)	100	93	83	58.1	56.0	17	27	7	49	53	25	28	21.2

References / Comments / Deviations: ND=Not Determined.

AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT

AASHTO T89: Determining the Liquid Limit of Soils

AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

AASHTO M145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes

Mal Krajan, ET

Technician Name:

Signature

104-01-0703

Certification #

Vladimir Mitchev, PE

Technical Responsibility:

Project Manager

Position

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PAVEMENT CORES FOR
44398.1.1, U-5826, Wake County

LINE	STATION	ABC (in)	LAYER THICKNESS (in)	LAYERS	REMARKS
-L-	13+57 NB LTL (I) 15.75" Asphalt	-	2.50	S	1 lift
			3.75	I	1 lift, aggregate highly fractured, mechanical break at contact
			5.25	S	4 lifts, sandy matrix with fine aggregate
			1.50	I	1 lift
			1.00	MS	1 lift, moderate severity stripping with material missing and voids present
			1.75	B	1 lift
-L-	13+58 NB LTL (O) 13.5" Asphalt	-	2.00	S	2 lifts
			5.75	I	2 lifts, 1st lift 4.5", mechanical crack at 2.5", 2nd lift 1.25" numerous small-medium voids, low severity stripping, high aggregate content
			2.50	S	2 lifts, mechanical crack at contact
			1.00	MS	2 lifts, 1st lift 0.25", fine aggregate, 2nd lift 0.75" cse. Aggregate
			2.00	B	1 lift, sandy matrix, minor oxidation
-L-	13+58 NB ISL (RT) 16.5" Asphalt	-	2.00	S	1 lift
			7.25	I	2 lifts, few small-medium voids, aggregate fractured, low severity stripping, lifts delaminated
			2.75	S	2 lifts, white line between lifts, delaminated from I
			4.50	B	1lift, low severity stripping, minor oxidation
-L-	13+58 NB OSL (RT) 13.5" Asphalt	-	2.00	S	1 lift
			3.50	I	1 lift, numerous small-medium voids, minor oxidation, delaminated
			8.00	B	1 lift, few small-medium voids, minor oxidation
-L-	13+63 SB ISL (LT) 11.75" Asphalt	-	3.00	S	2 lifts
			2.75	I	1 lift
			1.50	S	1 lift
			4.50	B	1 lift, high severity stripping in bottom 0.5"
-L-	13+64 SB OSL 11" Asphalt	5.00	1.75	S	1 lift
			1.50	I	1 lift, low severity stripping
			7.75	B	1 lift, mechanical break at 4"
-L-	13+64 SB RTL (LT) 10" Asphalt	6.00	2.00	S	1 lift
			1.50	I	1 lift, low progressing to moderate severity stripping, moderate oxidation
			6.50	B	1 lift
-L-	18+55 SB PS 10.75" Asphalt	8.00	2.00	S	1 lift
			4.75	I	1 lift, numerous small-medium voids, delaminated
			4.00	B	1lift, few small-medium voids
-L-	32+20 SB RTL (LT) 9" Asphalt	6.00	-	S	Top 2" crumbled in core barrel
			6.50	B	1 lift, numerous small-medium voids, mechanical break at 1.5" , low severity stripping
-L-	33+25 NB OSL (RT) 9" Asphalt	8.00	2.00	S	1 lift, 1.25" top-down crack, numerous small voids, low severity stripping
			7.00	B	1 lift, numerous small-medium voids, mechanical break, low severity stripping
-L-	34+58 NB RTL (RT) 7.5" Asphalt	6.00	2.00	S	1 lift
			5.50	B	1 lift

PAVEMENT CORES FOR
44398.1.1, U-5826, Wake County

LINE	STATION	ABC (in)	LAYER THICKNESS (in)	LAYERS	REMARKS
-L-	39+37 NB ISL (RT) 22" Asphalt	6.00	5.00	S	3 lifts, lifts 1 & 2 delaminated, low to mod. severity stripping, some small voids, some aggregate fractured
			12.00	B	1 lift
			2.50	S	2 lifts
			1.00	MS	1 lift, small-medium voids
			1.50	B	1 lift, sandy matrix
-L-	39+37 NB OSL (RT) 21" Asphalt	6.00	3.00	S	2 lifts, 1st lift numerous small voids, moderate oxidation, 2nd lift high severity stripping with material missing, lifts delaminated
			18.00	B	2 lifts, sections within lifts have small-medium voids, low to moderate severity stripping, minor oxidation
-L-	39+38 NB RTL (RT) 6" Asphalt	-	2.50	S	2 lifts
			3.50	I	1 lift
-L-	39+40 SB OSL (LT) 10.5" Asphalt	7.00	2.25	S	1 lift, minor oxidation, numerous small-medium voids, low severity stripping
			8.00	B	2 lifts, some small-medium voids, low severity stripping at contact with material missing
-L-	39+40 SB ISL (LT) 10" Asphalt	6.00	2.00	S	1 lift, numerous small-medium voids, low severity stripping, high aggregate content
			7.75	B	1 lift, mechanical break at 1.5"
-L-	39+42 SB LTL (LT) 25" Asphalt	-	3.75	S	2 lifts, 1st lift some small-medium voids, low severity stripping, 2nd lift moderate severity stripping with material missing, delaminated
			15.25	B	2 lifts
			1.50	S	1 lift
			4.50	B	1 lift, moderate progressing to high severity stripping, material missing with large voids present
-L-	58+03 NB ISL (RT) 12" Asphalt	-	2.00	S	2 lifts, high severity stripping with material missing
			10.00	B	1 lift, high severity stripping in top 0.5" at contact with surface
-L-	64+73 NB ISL (RT) 27.5" Asphalt	-	1.50	S	1 lift, 1.5" top-down crack, few voids, moderate oxidation, low severity stripping
			5.50	I	2 lifts, few medium size voids, moderate oxidation
			14.25	B	2 lifts few medium voids, low severity stripping new contact with I, moderate oxidation
			2.50	S	1 lift
			3.75	B	1 lift, numerous small voids, low severity stripping
-L-	64+87 NB RTL ISL 8.25" Asphalt	7.00	3.00	S	2 lifts, numerous small-medium voids, delaminated from I
			2.50	I	1 lift, low progressing to moderate severity stripping, delaminated from base, moderate oxidation
			2.75	B	1 lift, low severity stripping at contact with I
-L-	64+88 NB RTL (RT) 12" Asphalt	-	3.00	S	2 lifts
			4.00	I	1 lift, low severity stripping at contact with base
			4.00	B	1 lift, low progressing to moderate severity stripping in bottom 1"
-L-	64+88 NB LTL 22.5" Asphalt	-	1.75	S	1 lift, few small voids
			1.50	I	1 lift, numerous small voids, low severity stripping
			15.00	B	2 lifts, numerous small to large voids, low to high severity stripping, delaminated from surface
			4.00	S	2 lifts, yellow line
			2.00	I	1 lift, numerous small-medium voids, low severity stripping
-L-	66+03 SB RTL (LT)	8.00	3.50	S	2 lifts
			5.00	B	1 lift

PAVEMENT CORES FOR
44398.1.1, U-5826, Wake County

LINE	STATION	ABC (in)	LAYER THICKNESS (in)	LAYERS	REMARKS
-L-	70+83 SB ISL (LT) 12.25" Asphalt	4.00	~ 3.00	S	2 lifts, 1st lift high severity stripping, 2nd lift moderate severity stripping
			3.00	I	1 lift, some small voids
			~ 5.00	B	1 lift, high severity stripping with material missing
-L-	70+90 SB RTL (LT) 9.5" Asphalt	6.00	1.25	S	1 lift, few small voids
			2.00	I	1 lift, moderate severity stripping, numerous medium-large voids, high aggregate content
			6.25	B	1 lift, low severity stripping, some small-medium voids
-L-	71+10 SB OSL (LT) 10" Asphalt	8.00	3.00	S	2 lifts, some small voids, low severity stripping
			7.00	B	1 lift, some small voids, low severity stripping

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

PROJECT NO.	44398.1.1
PROJECT ID	U-5826
ROUTE	FALLS OF NEUESE RD
COUNTY	WAKE

GEOLOGIST	J.B.BARFIELD
GEOTECHS	S&ME

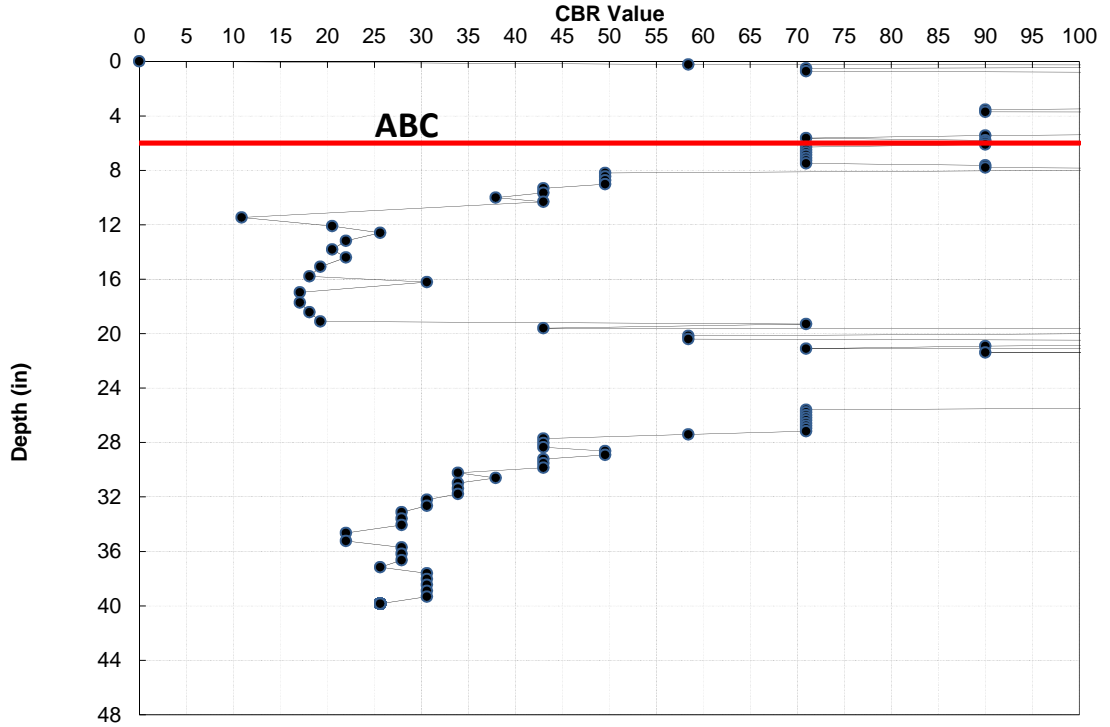
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-L-70+90 SB RTL (LT)

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FILL
06/27/18

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# of Values	54
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	58.4

Interval	
5.9	to 39.8
# of Values	129
Avg CBR	92.6
Wghtd Avg.	52.1
Max CBR	100+
Min CBR	10.9



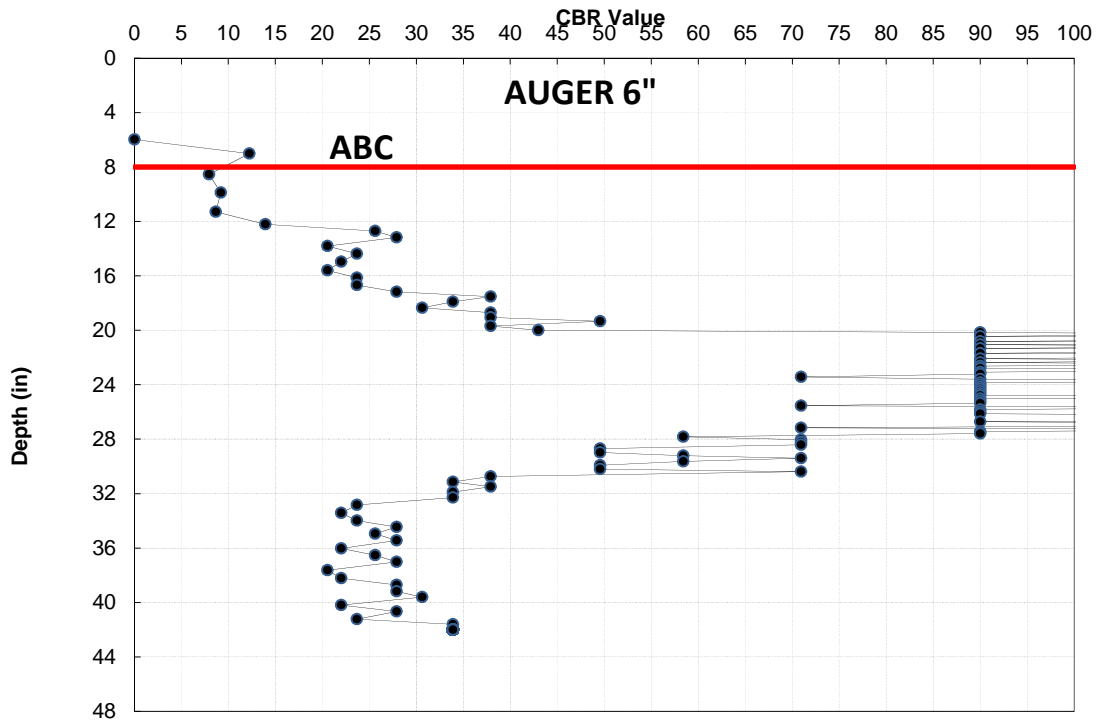
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-L-71+10 SB OSL

Datum = SG
RAW
FILL
06/27/18

Interval	
6.0	to 7.0
# of Values	1
Avg CBR	12.2
Wghtd Avg.	12.2
Max CBR	12.2
Min CBR	12.2

Interval	
7.0	to 42.0
# of Values	111
Avg CBR	69.8
Wghtd Avg.	42.9
Max CBR	100+
Min CBR	7.9



2

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

PROJECT NO.	44398.1.1
PROJECT ID	U-5826
ROUTE	FALLS OF NEUESE RD
COUNTY	WAKE

GEOLOGIST	J.B.BARFIELD
GEOTECHS	S&ME

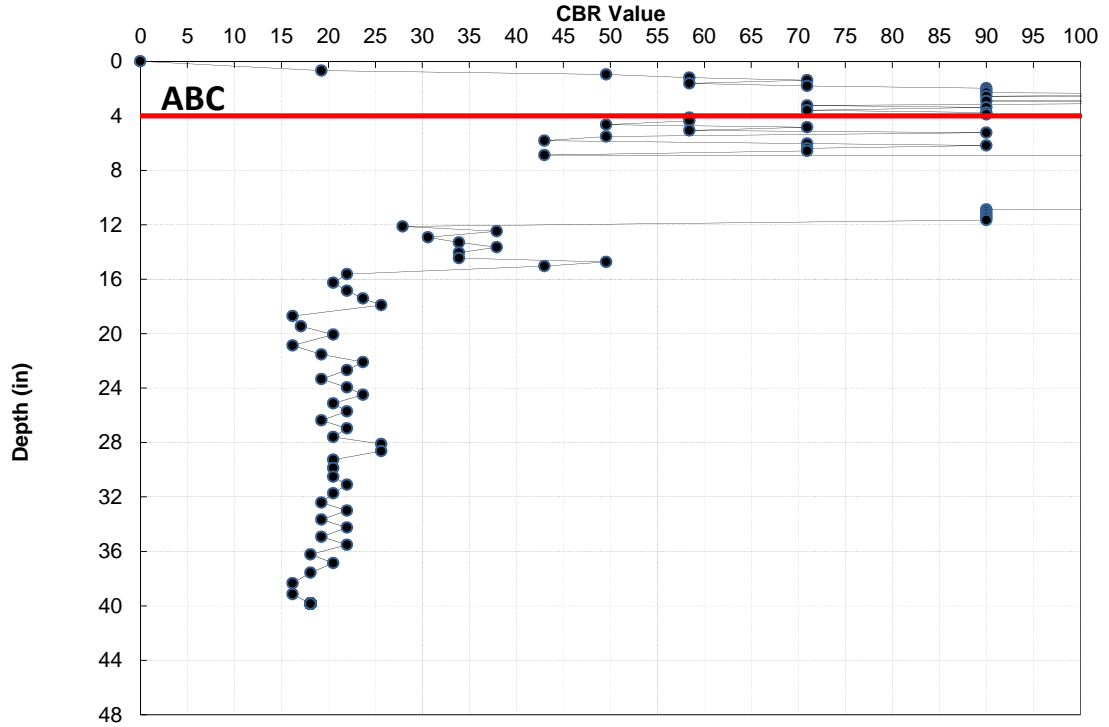
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-L-70+83 SB ISL LT

Datum = SG
RAW
FILL
06/27/18

Interval	
0.0	to 3.9
# of Values	20
Avg CBR	87.2
Wghtd Avg.	71.7
Max CBR	100+
Min CBR	19.2

Interval	
3.9	to 39.8
# of Values	115
Avg CBR	100+
Wghtd Avg.	43.3
Max CBR	100+
Min CBR	16.2



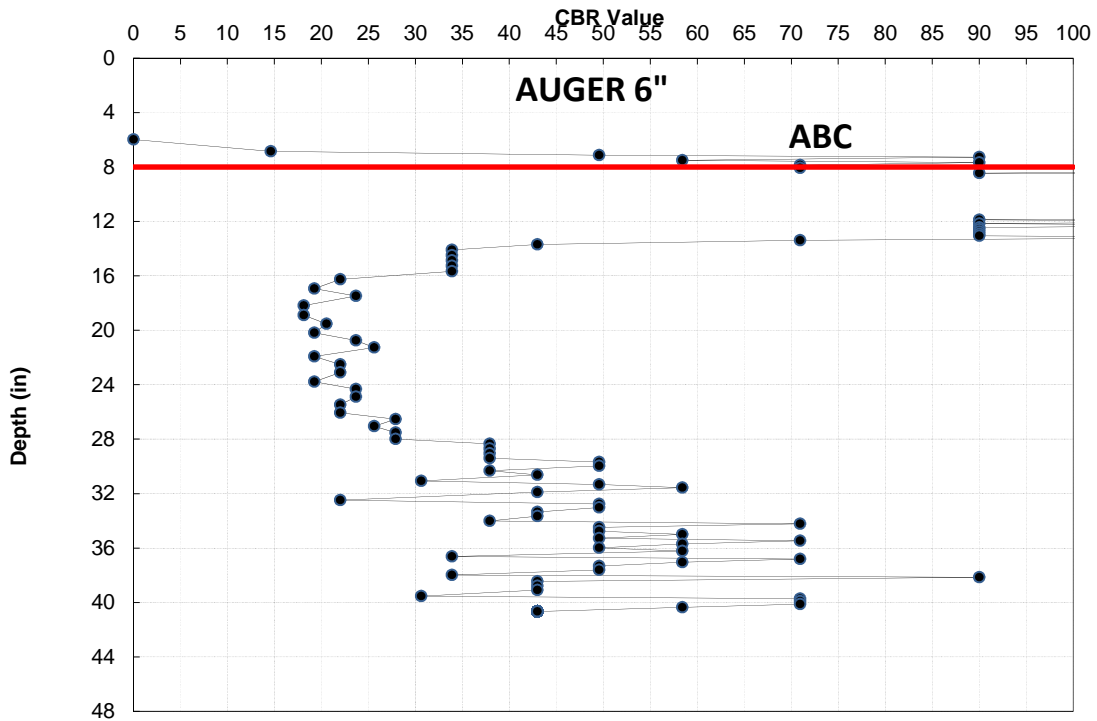
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-L-66+03 RTL LT

Datum = SG
RAW
FILL
06/27/18

Interval	
6.0	to 7.9
# of Values	6
Avg CBR	62.3
Wghtd Avg.	43.0
Max CBR	90.0
Min CBR	14.6

Interval	
7.9	to 40.7
# of Values	118
Avg CBR	79.5
Wghtd Avg.	49.1
Max CBR	100+
Min CBR	18.1



4

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

PROJECT NO.	44398.1.1
PROJECT ID	U-5826
ROUTE	FALLS OF NEUESE RD
COUNTY	WAKE

GEOLOGIST	J.B.BARFIELD
GEOTECHS	S&ME

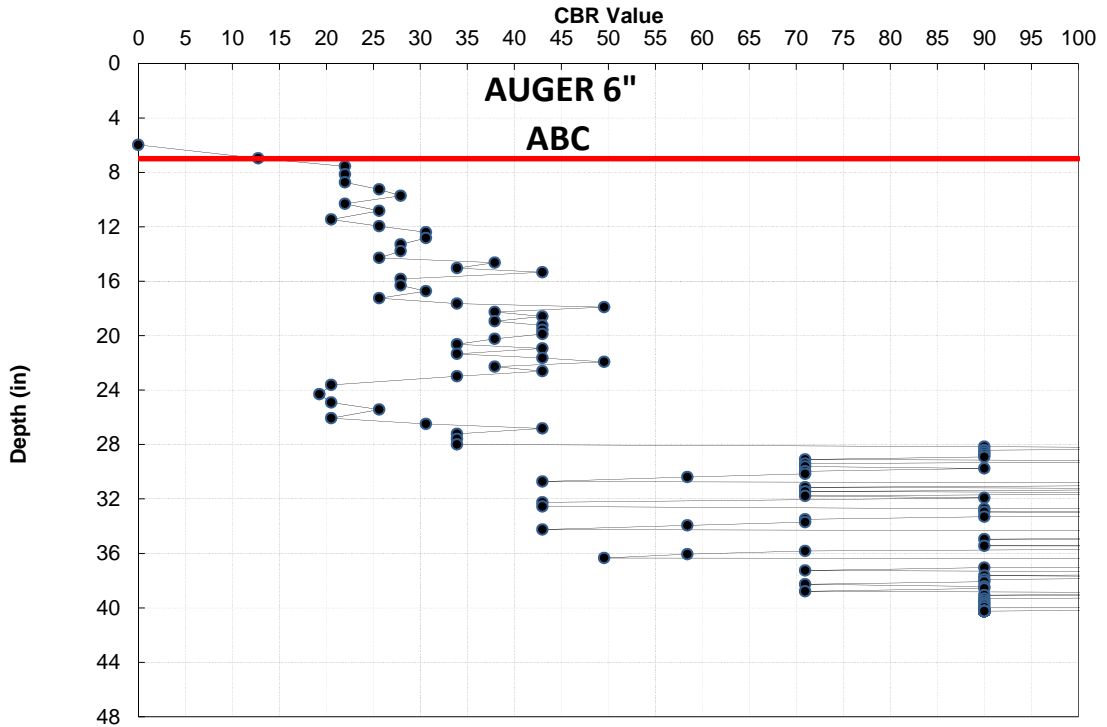
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-L-39+40 SB OSL LT

Datum = SG
RAW
FILL
06/27/18

Interval	
6.0	to 7.0
# of Values	1
Avg CBR	12.8
Wghtd Avg.	12.8
Max CBR	12.8
Min CBR	12.8

Interval	
7.0	to 40.2
# of Values	127
Avg CBR	79.0
Wghtd Avg.	52.3
Max CBR	100+
Min CBR	19.2

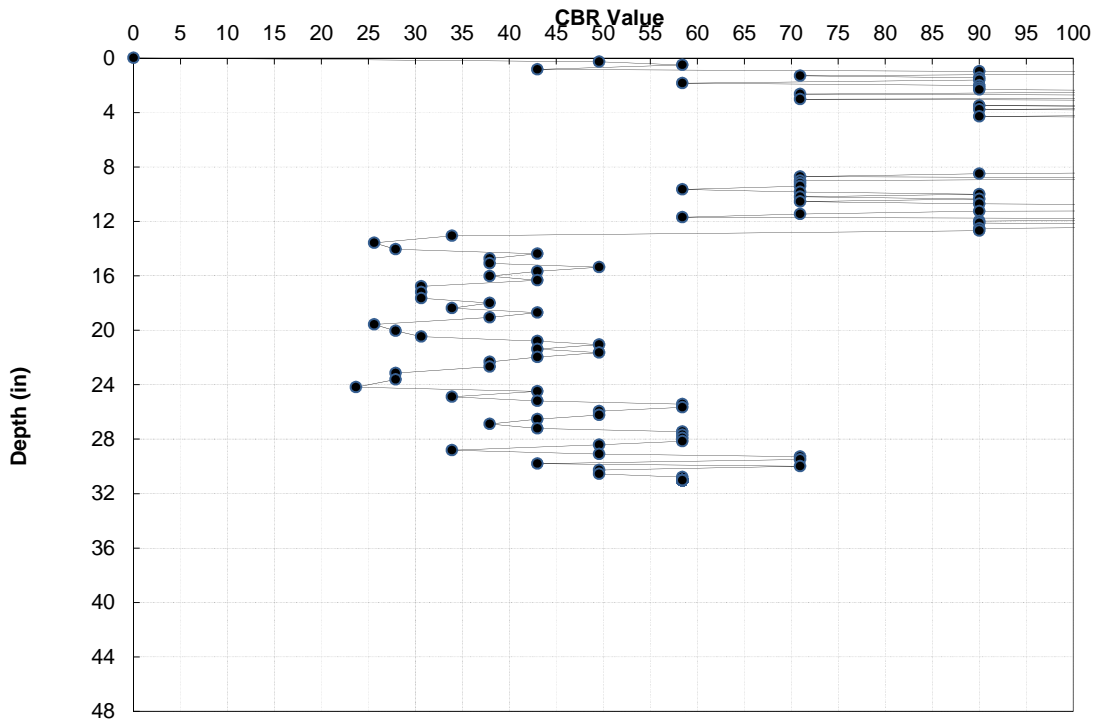


-L-39+42 SB LTL

Datum = SG
RAW
FILL
06/27/18

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 31.0
# of Values	166
Avg CBR	100+
Wghtd Avg.	75.0
Max CBR	100+
Min CBR	23.7



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

PROJECT NO.	44398.1.1
PROJECT ID	U-5826
ROUTE	FALLS OF NEUESE RD
COUNTY	WAKE

GEOLOGIST	J.B.BARFIELD
GEOTECHS	S&ME

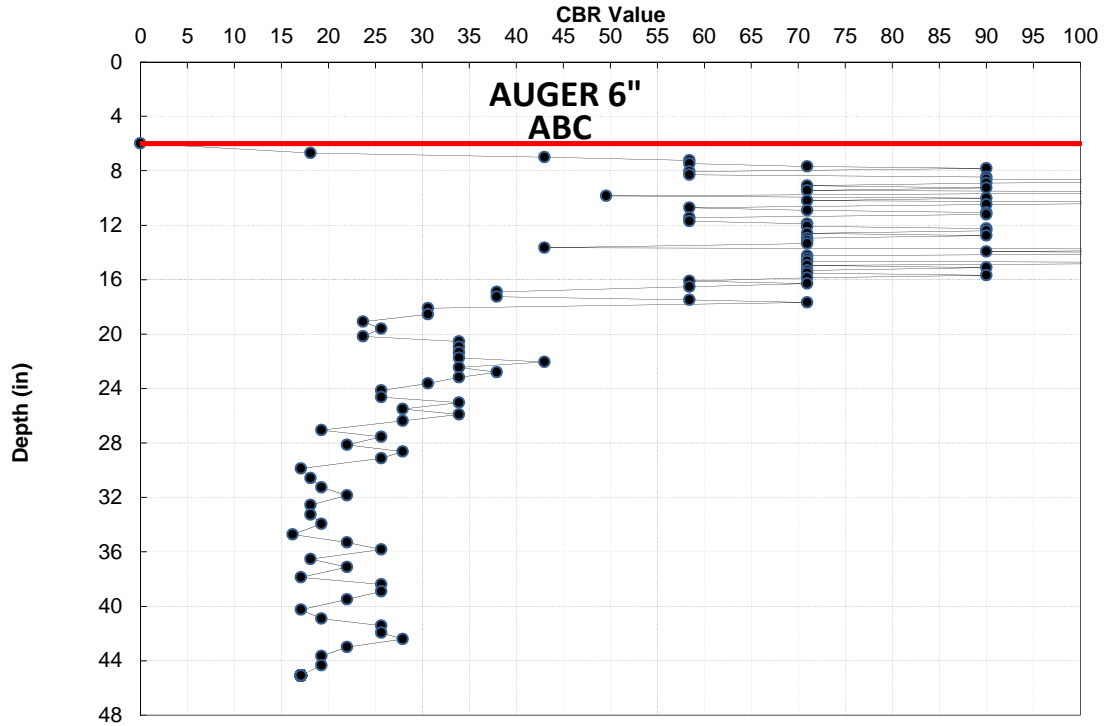
FILE	U5826 DCP TEMPLATE_10_8
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-L-39+40 SB ISL LT (OSWP)

Datum = SG
RAW
FILL
06/27/18

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	
0.0	to 45.1
# of Values	107
Avg CBR	52.1
Wghtd Avg.	36.7
Max CBR	100+
Min CBR	16.2



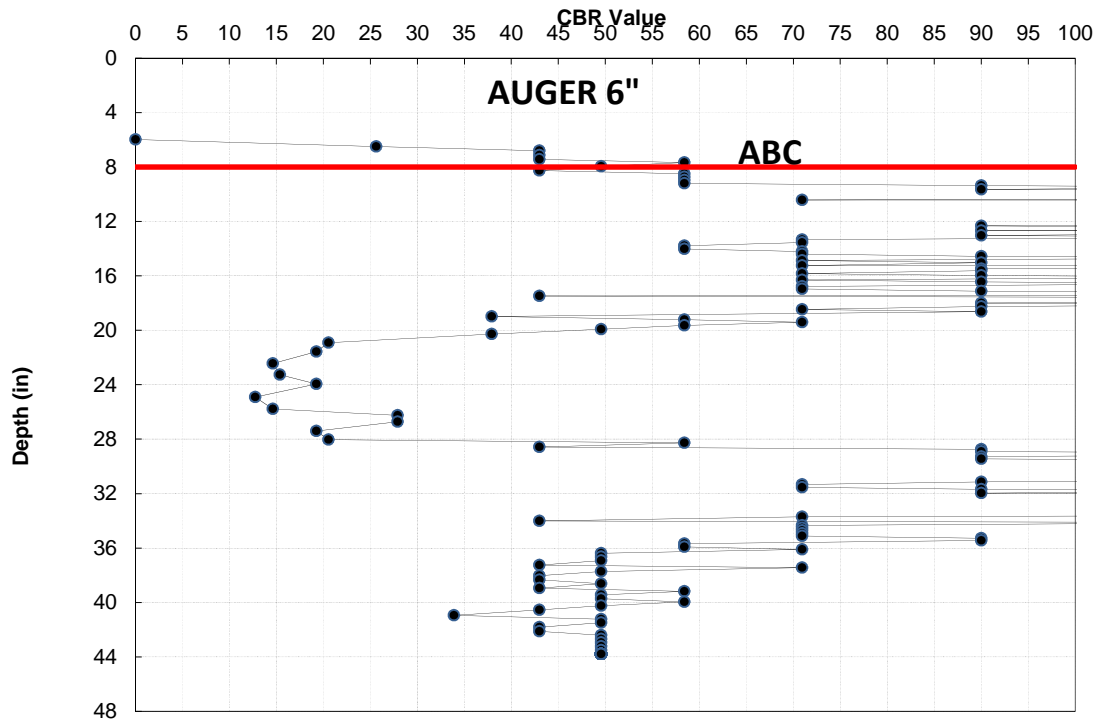
7

-L-32+20 SB RTL LT

Datum = SG
RAW
FILL
06/27/18

Interval	
6.0	to 8.0
# of Values	6
Avg CBR	#DIV/0!
Wghtd Avg.	#DIV/0!
Max CBR	0.0
Min CBR	0.0

Interval	
8.0	to 43.8
# of Values	183
Avg CBR	100+
Wghtd Avg.	71.4
Max CBR	100+
Min CBR	12.8



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

PROJECT NO.	44398.1.1
PROJECT ID	U-5826
ROUTE	FALLS OF NEUESE RD
COUNTY	WAKE

GEOLOGIST	J.B.BARFIELD
GEOTECHS	S&ME

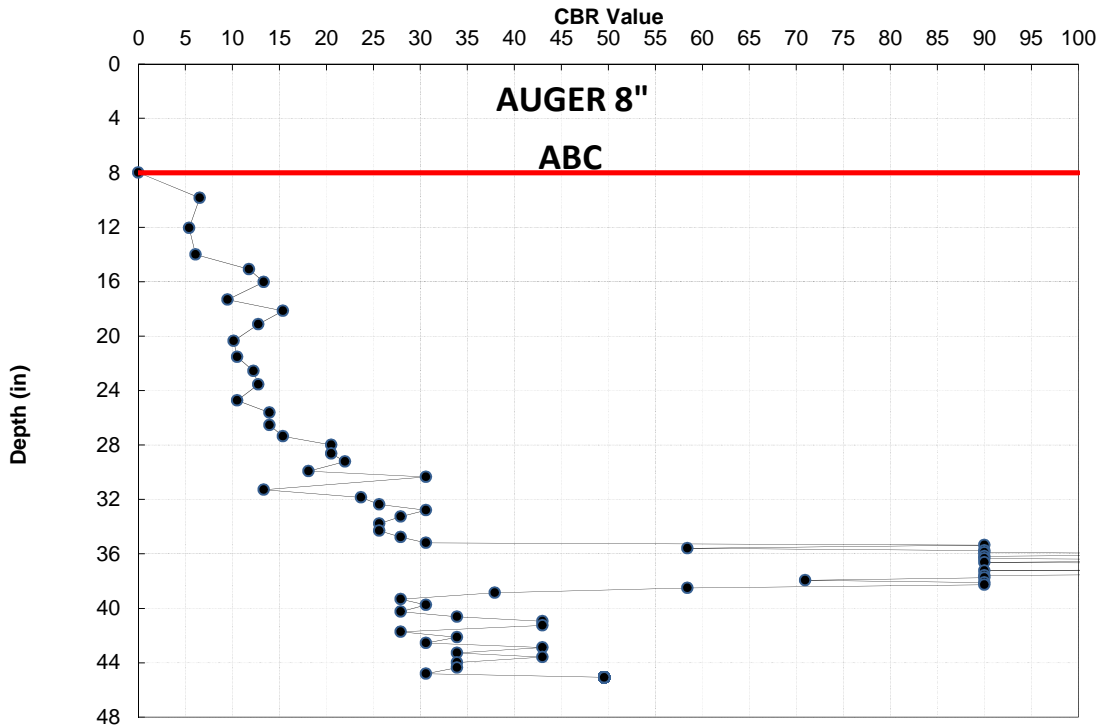
FILE	U5826 DCP TEMPLATE_10_8
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-L-18+55 SB RTL PS LT

Datum = SG
RAW
FILL
06/27/18

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	
0.0	to 45.1
# of Values	69
Avg CBR	48.5
Wghtd Avg.	24.3
Max CBR	100+
Min CBR	5.4

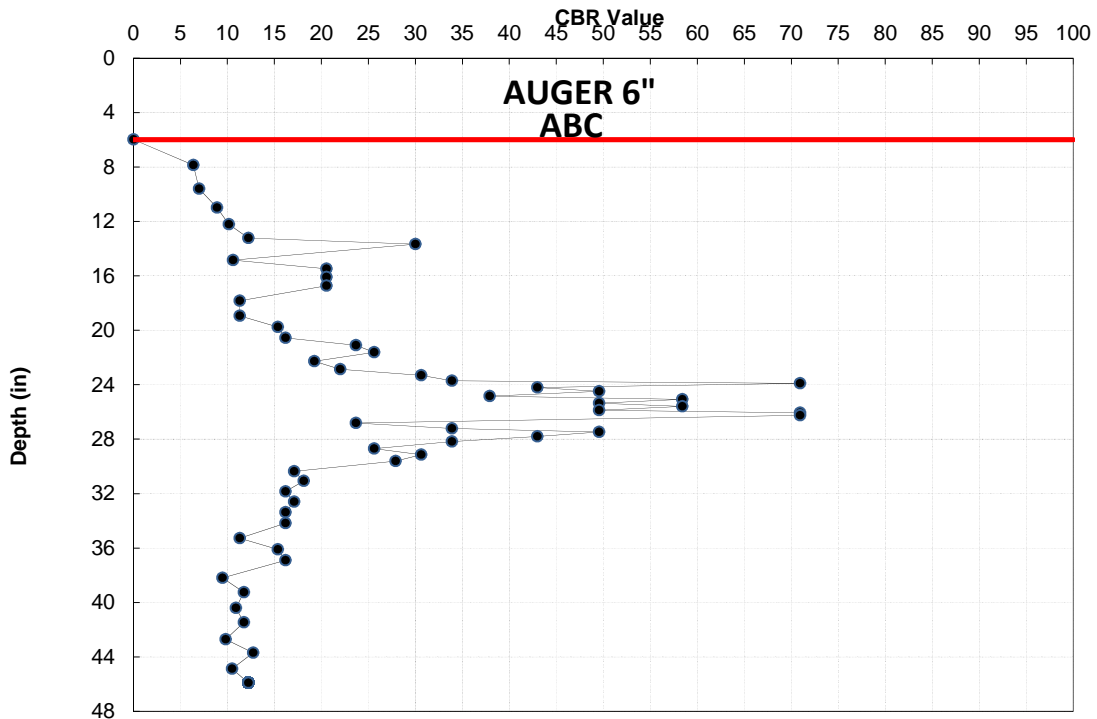


-L-13+64 SB RTL LT

Datum = SG
RAW
CUT
6/27/2018

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	
0.0	to 45.9
# of Values	55
Avg CBR	25.7
Wghtd Avg.	17.7
Max CBR	70.9
Min CBR	6.4



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

PROJECT NO.	44398.1.1
PROJECT ID	U-5826
ROUTE	FALLS OF NEUESE RD
COUNTY	WAKE

GEOLOGIST	J.B.BARFIELD
GEOTECHS	S&ME

FILE	U5826 DCP TEMPLATE_10_8
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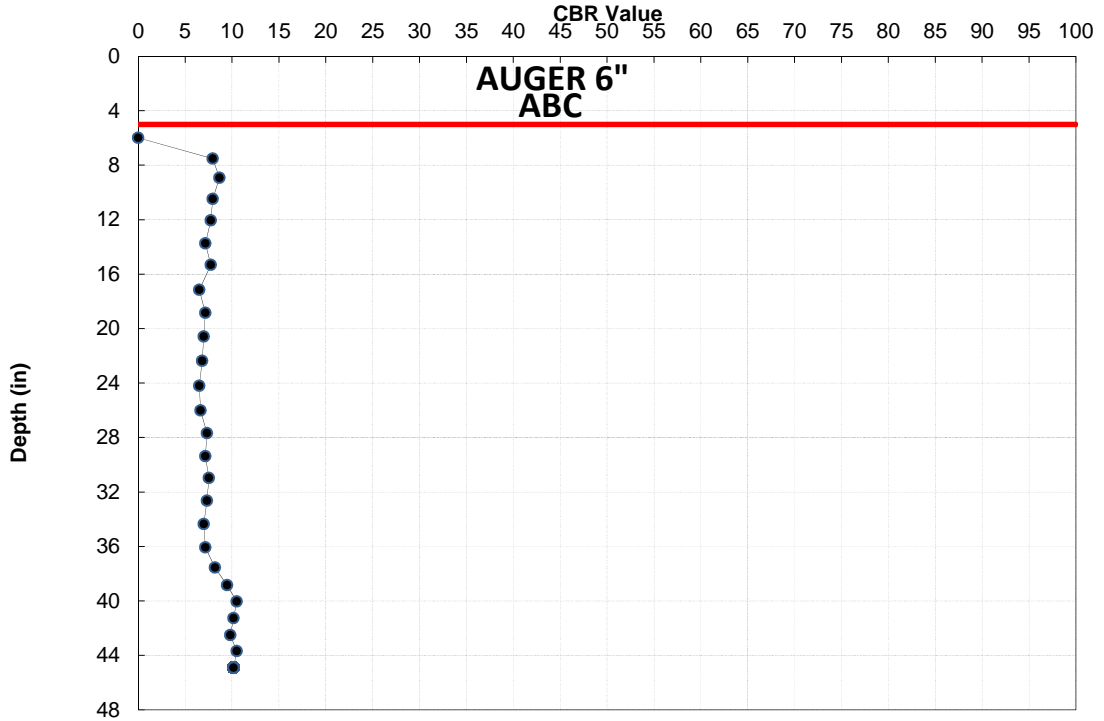
-L-13+64 SB OSL LT

11

Datum = SG
RAW
CUT
06/27/18

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 0.0 to 44.9	
# of Values	25
Avg CBR	8.0
Wghtd Avg.	7.8
Max CBR	10.5
Min CBR	6.5



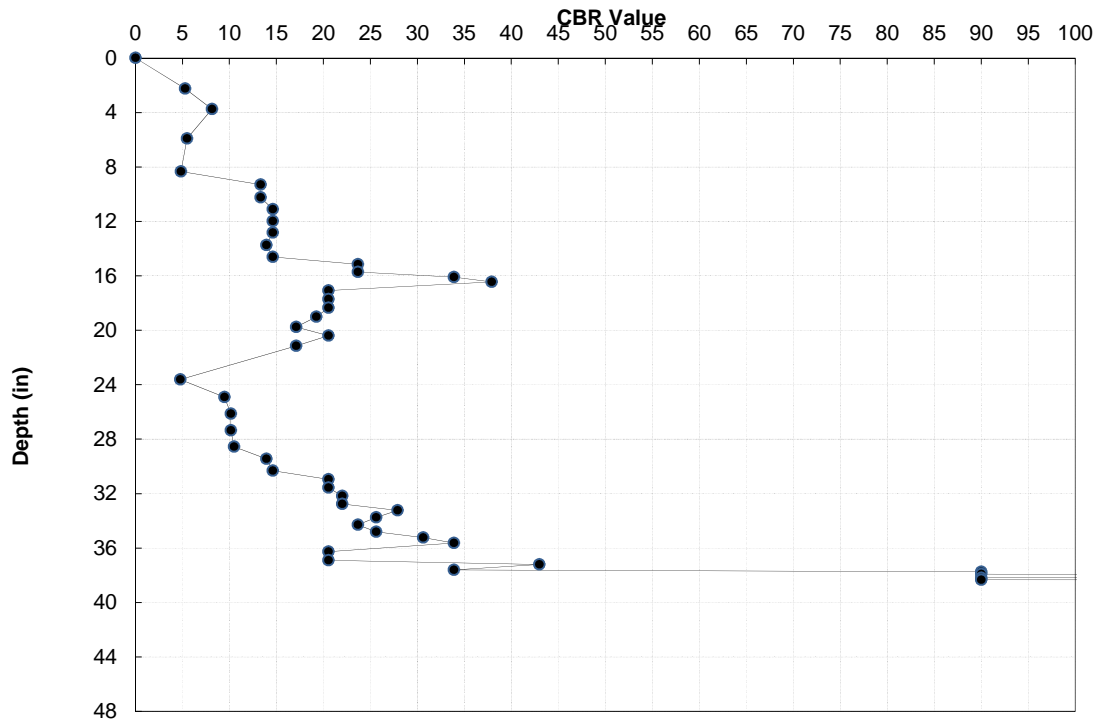
-L-13+58 NB OSL RT

12

Datum = SG
RAW
FILL
06/27/18

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 39.6	
# of Values	63
Avg CBR	71.2
Wghtd Avg.	20.6
Max CBR	100+
Min CBR	4.8



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

PROJECT NO.	44398.1.1
PROJECT ID	U-5826
ROUTE	FALLS OF NEUESE RD
COUNTY	WAKE

GEOLOGIST	J.B.BARFIELD
GEOTECHS	S&ME

FILE	U5826 DCP TEMPLATE_10_8
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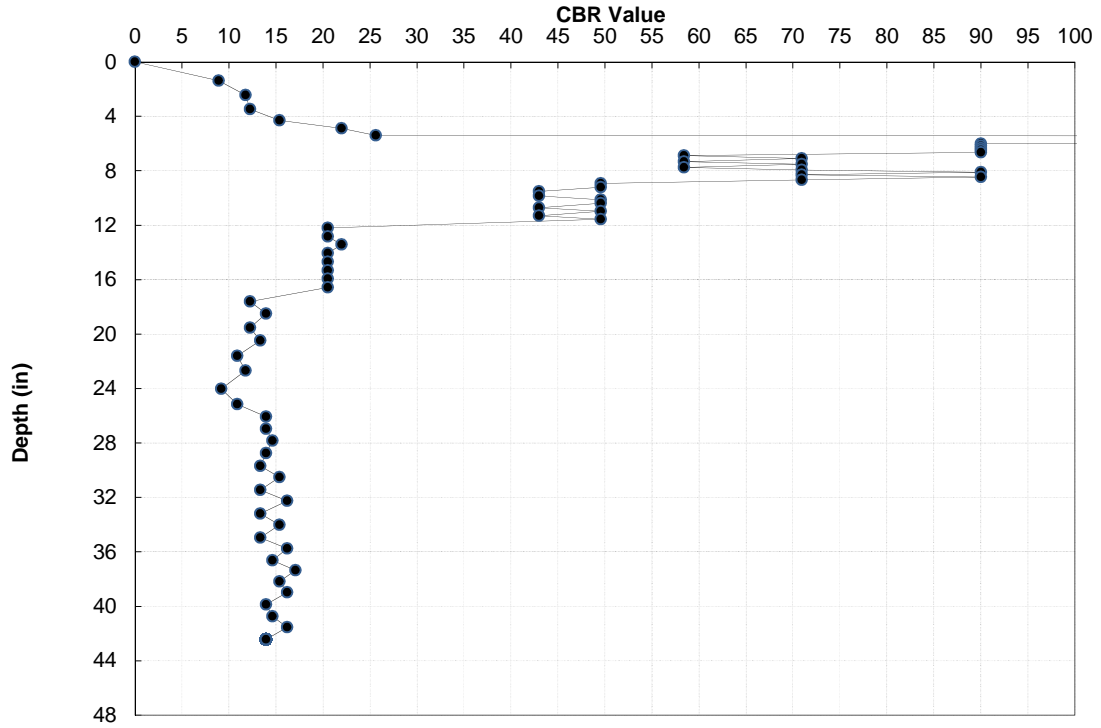
-L-13+58 NB ISL RT

13

Datum = SG
RAW
FILL
06/27/18

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 42.4	
# of Values	72
Avg CBR	42.9
Wghtd Avg.	22.0
Max CBR	100+
Min CBR	8.9



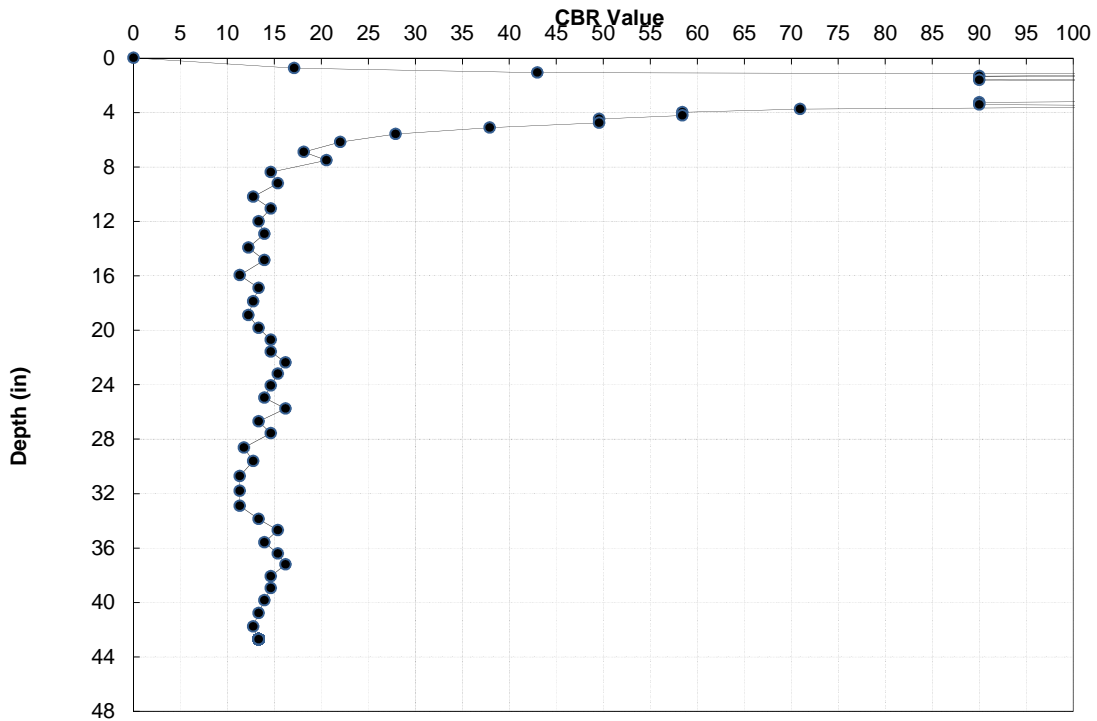
-L-13+58 NB LTL

14

Datum = SG
RAW
FILL
06/27/18

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 42.7	
# of Values	71
Avg CBR	52.1
Wghtd Avg.	21.6
Max CBR	100+
Min CBR	11.3



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

PROJECT NO.	44398.1.1
PROJECT ID	U-5826
ROUTE	FALLS OF NEUESE RD
COUNTY	WAKE

GEOLOGIST	J.B.BARFIELD
GEOTECHS	S&ME

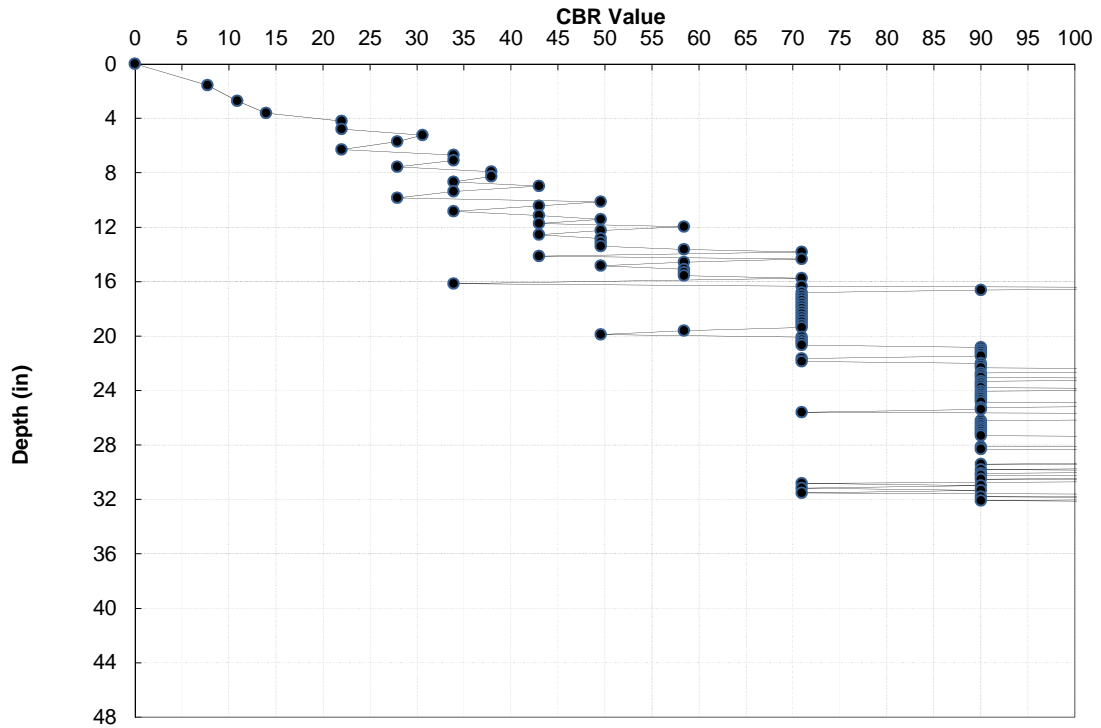
FILE	U5826 DCP TEMPLATE_10_8
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-L-13+57 NB LTL

Datum = SG
RAW
FILL
06/27/18

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 32.2	
# of Values	143
Avg CBR	80.5
Wghtd Avg.	59.8
Max CBR	100+
Min CBR	7.7



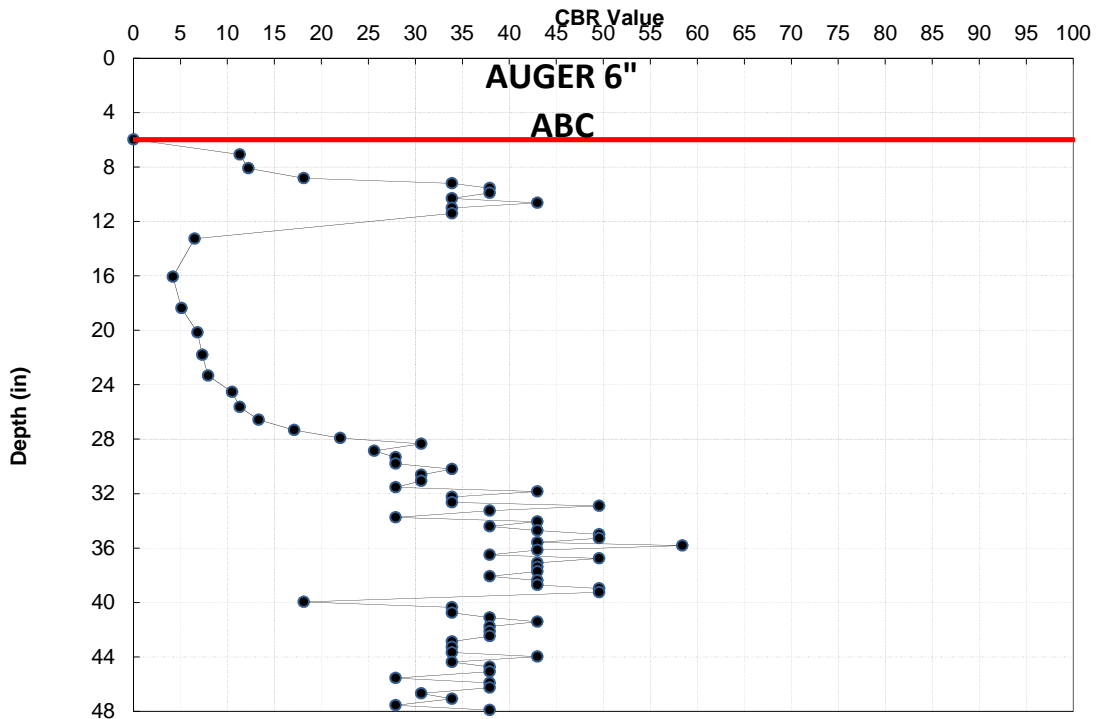
15

-L-33+25 NB OSL RT

Datum = SG
RAW
FILL
06/27/18

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 0.0 to 48.3	
# of Values	76
Avg CBR	32.7
Wghtd Avg.	23.4
Max CBR	58.4
Min CBR	4.2



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

PROJECT NO.	44398.1.1
PROJECT ID	U-5826
ROUTE	FALLS OF NEUESE RD
COUNTY	WAKE

GEOLOGIST	J.B.BARFIELD
GEOTECHS	S&ME

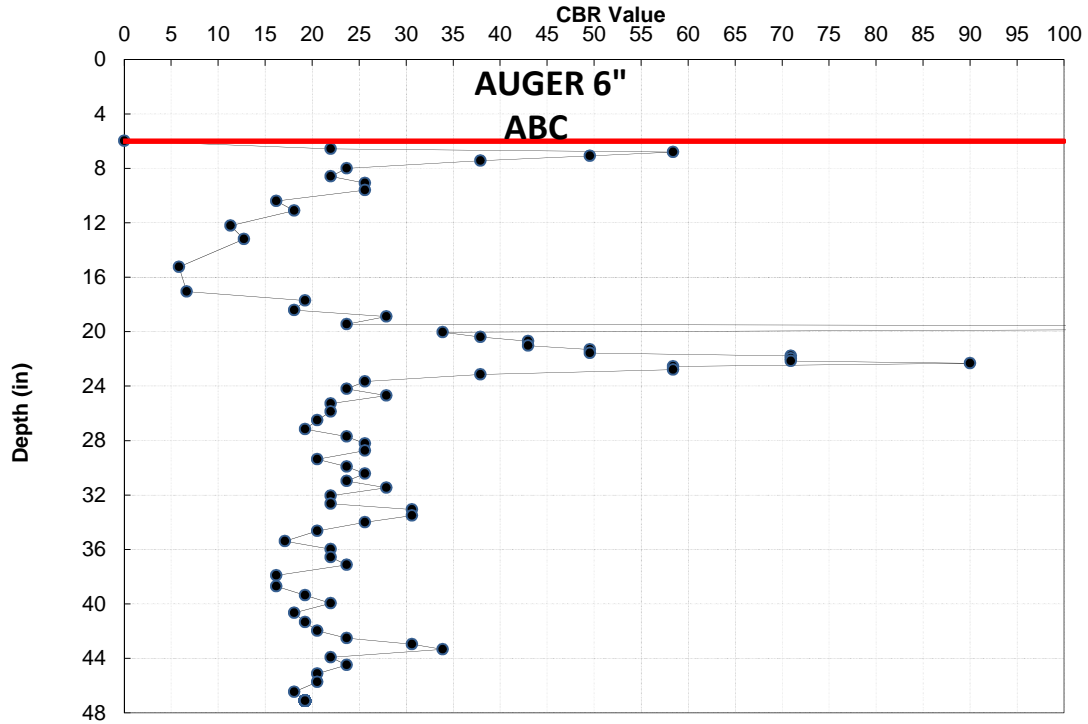
FILE	U5826 DCP TEMPLATE_10_8
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-L-34+58 NB RTL RT

Datum = SG
RAW
FILL
06/27/18

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 0.0 to 47.1	
# of Values	74
Avg CBR	32.3
Wghtd Avg.	23.5
Max CBR	100+
Min CBR	5.8



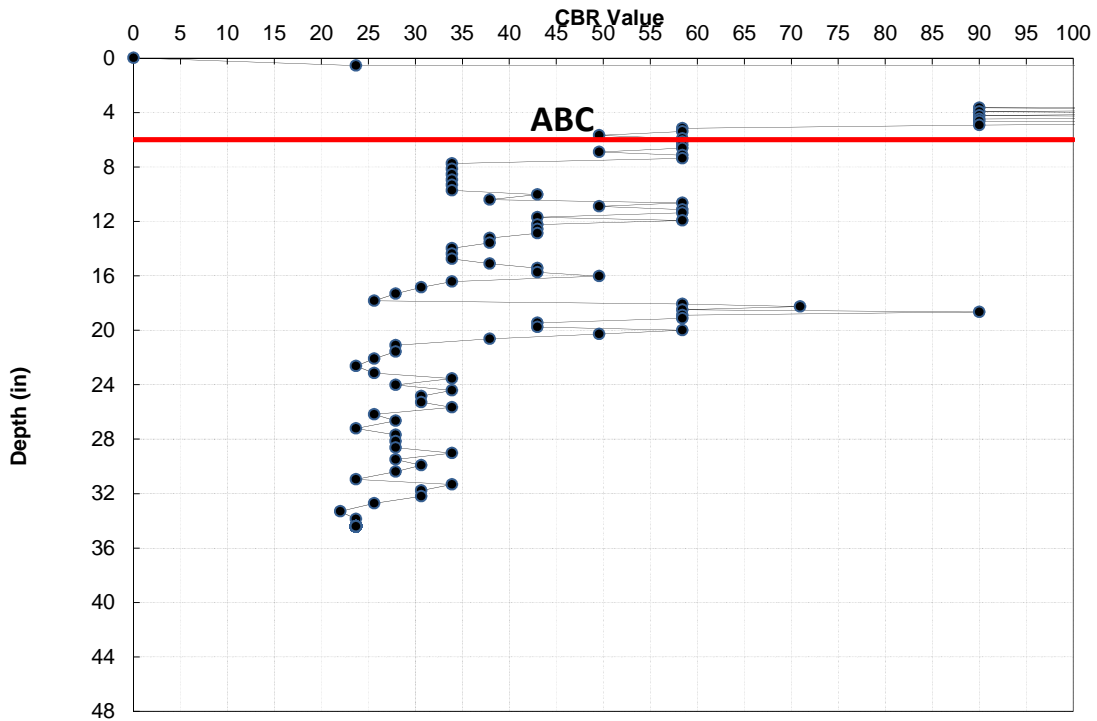
17

-L-39+37 NB ISL RT

Datum = SG
RAW
FILL
06/27/18

Interval 0.0 to 5.9	
# of Values	60
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	23.7

Interval 5.9 to 34.4	
# of Values	76
Avg CBR	39.4
Wghtd Avg.	35.7
Max CBR	90.0
Min CBR	22.0



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

PROJECT NO.	44398.1.1
PROJECT ID	U-5826
ROUTE	FALLS OF NEUESE RD
COUNTY	WAKE

GEOLOGIST	J.B.BARFIELD
GEOTECHS	S&ME

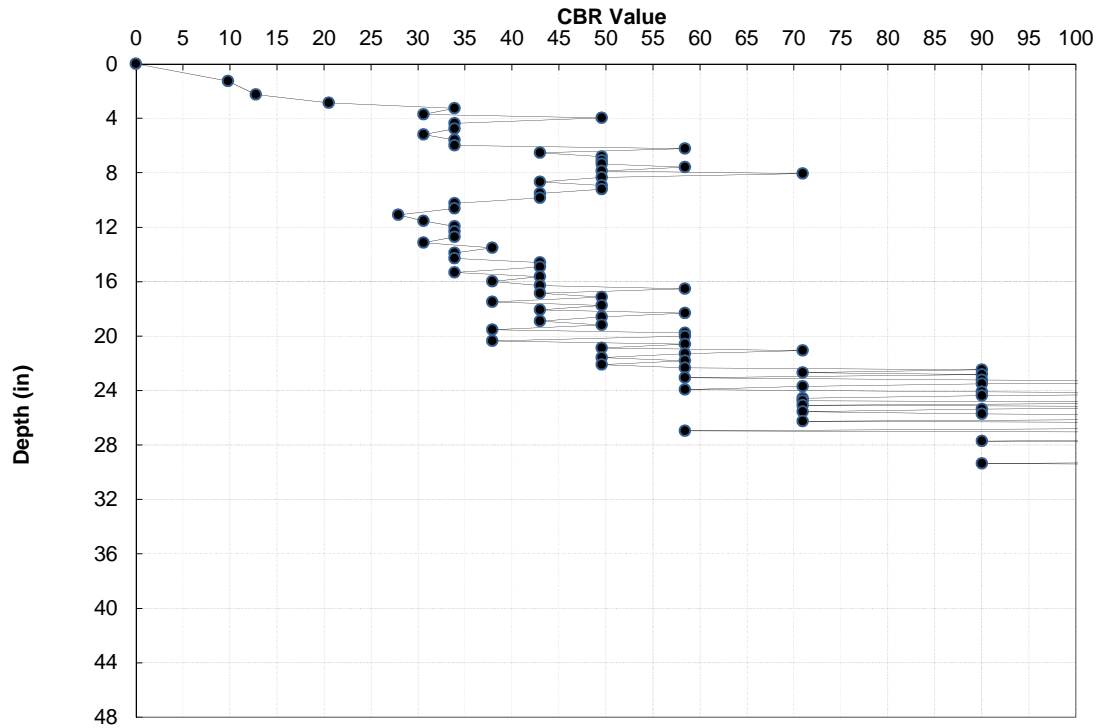
FILE	U5826 DCP TEMPLATE_10_8
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-L-58+03 NB ISL RT

Datum = SG
RAW
FILL
06/27/18

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 36.5	
# of Values	185
Avg CBR	100+
Wghtd Avg.	70.9
Max CBR	100+
Min CBR	9.8



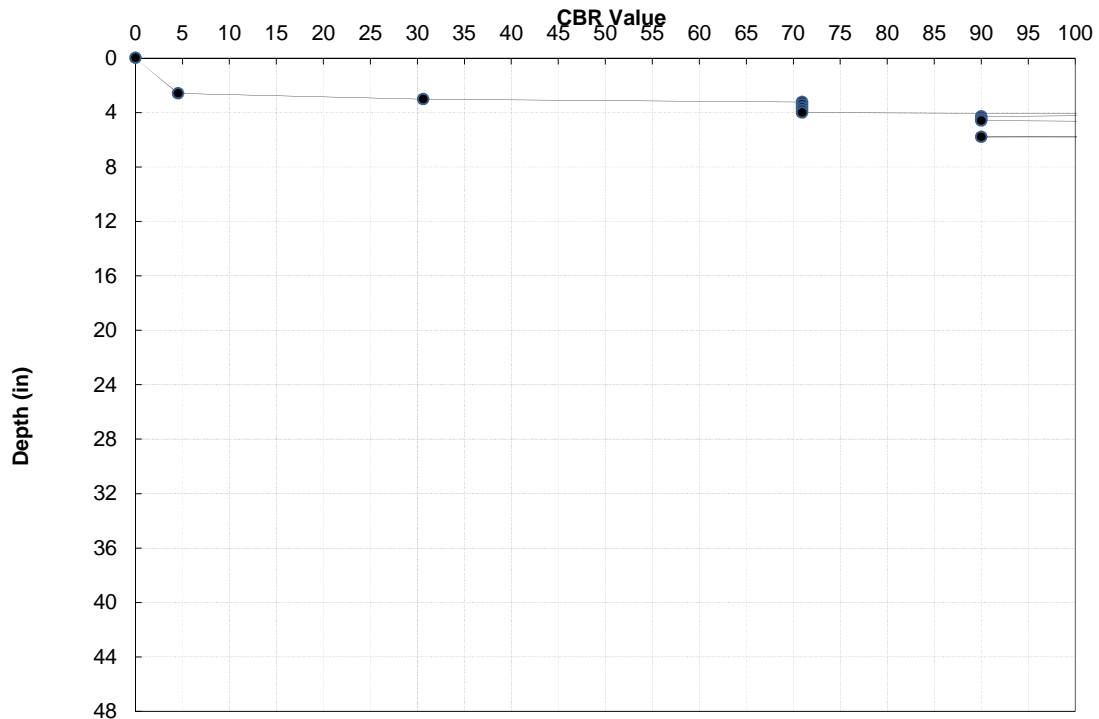
19

-L-64+73 NB ISL RT

Datum = SG
RAW
FILL
06/27/18

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 7.5	
# of Values	66
Avg CBR	100+
Wghtd Avg.	100+
Max CBR	100+
Min CBR	4.5



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

PROJECT NO.	44398.1.1
PROJECT ID	U-5826
ROUTE	FALLS OF NEUSE RD.
COUNTY	WAKE

GEOLOGIST	J.B. BARFIELD
GEOTECHS	S&ME

FILE	U5826 (2) DCP_10_18
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