

REFERENCE: R-3830

PROJECT: 38887

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY LEE
PROJECT DESCRIPTION NC 42 FROM US 421 TO SR 1579
(MAIN STREET) IN SANFORD AND ALONG SR 1579
FROM NC 42 TO SR 1538 (E. HARRINGTON AVE.) IN
BROADWAY
SITE DESCRIPTION RETAINING WALL 1 ON -L- FROM
19+27.37 TO 21+44.74, RIGHT

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN & PROFILE
4-6	BORE LOGS
7	SOIL TEST RESULTS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3830	1	7

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.

KLEINFELDER PERSONNEL	F&R PERSONNEL
<u>D. KUBINSKI</u>	<u>S. WOODS</u>
<u>E. ESTEP</u>	<u>S. DAVIS</u>
	<u>J. DAVIS</u>

INVESTIGATED BY F&R, Inc.
KLEINFELDER
DRAWN BY T.T. WALKER
CHECKED BY P. ALTON
SUBMITTED BY P. ALTON
DATE JANUARY 2018

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

Table with 4 main columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, and TERMS AND DEFINITIONS. Includes sub-sections like SOIL LEGEND AND AASHTO CLASSIFICATION, CONSISTENCY OR DENSENESS, TEXTURE OR GRAIN SIZE, SOIL MOISTURE - CORRELATION OF TERMS, PLASTICITY, and COLOR.

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 38887.1.1		TIP R-3830		COUNTY LEE		GEOLOGIST D. Kubinski									
SITE DESCRIPTION Retaining Wall 1 on -L- from 19+27.37 to 21+44.74, Right							GROUND WTR (ft)								
BORING NO. RW1-1		STATION 10+52		OFFSET 1 ft RT		ALIGNMENT -WL1-									
COLLAR ELEV. 442.8 ft		TOTAL DEPTH 14.9 ft		NORTHING 622,234		EASTING 1,956,748									
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 90% 02/22/2016			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER E. Estep		START DATE 02/20/17		COMP. DATE 02/20/17		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
445	442.8	0.0	2	5	7								M	GROUND SURFACE	0.0
440	439.4	3.4	7	11	22								M	COASTAL PLAIN Brown, silty fine to coarse SAND (A-2-4)	2.5
435	434.4	8.4	4	5	5								M	Reddish-brown/yellowish-brown, silty clayey fine to coarse SAND (A-2-6)	
430	429.4	13.4	2	1	2								M	Yellowish-brown, gray to purple-gray, highly plastic, fine to coarse sandy silty CLAY (A-7-6)	12.5
													W	SAND (A-2-4)	14.0
														Yellowish-brown, gray to purple-gray, highly plastic, fine to coarse sandy silty CLAY (A-7-6)	14.9
														Boring Terminated at Elevation 427.9 ft in CLAY (COASTAL PLAIN)	
														Topsoil (0.0 to 0.3 foot)	

WBS 38887.1.1		TIP R-3830		COUNTY LEE		GEOLOGIST S. Woods									
SITE DESCRIPTION Retaining Wall 1 on -L- from 19+27.37 to 21+44.74, Right							GROUND WTR (ft)								
BORING NO. W1-1G		STATION 11+09		OFFSET 1 ft LT		ALIGNMENT -WL1-									
COLLAR ELEV. 443.1 ft		TOTAL DEPTH 10.0 ft		NORTHING 622,268		EASTING 1,956,793									
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER S. Davis		START DATE 12/04/17		COMP. DATE 12/04/17		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
445	442.6	0.5	3	3	6								M	GROUND SURFACE	0.0
440	439.6	3.5	11	13	16								M	ASPHALT	0.5
435	434.6	8.5	4	5	4								W	ARTIFICIAL FILL Orange-brown, clayey fine to coarse sandy SILT (A-4)	2.0
														COASTAL PLAIN Red-brown, clayey fine to coarse sandy SILT (A-4), with trace quartz fragments	7.0
														Yellow-brown, clayey fine to coarse SAND (A-2-6)	10.0
														Boring Terminated at Elevation 433.1 ft in SAND (COASTAL PLAIN)	

NOTES:
1) Boring Filled Immediately After Drilling (FIAD) due to location in parking lot

NCDOT BORE DOUBLE R3830_GEO_BH_WALLS.GPJ NC_DOT.GDT 1/1/18

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 38887.1.1		TIP R-3830		COUNTY LEE		GEOLOGIST D. Kubinski										
SITE DESCRIPTION Retaining Wall 1 on -L- from 19+27.37 to 21+44.74, Right							GROUND WTR (ft)									
BORING NO. RW1-2		STATION 11+54		OFFSET 1 ft RT		ALIGNMENT -WL1-										
COLLAR ELEV. 443.6 ft		TOTAL DEPTH 15.5 ft		NORTHING 622,284		EASTING 1,956,836										
DRILL RIG/HAMMER EFF./DATE TRI8016 MOBILE B-57 90% 02/22/2016				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER E. Estep		START DATE 02/20/17		COMP. DATE 02/20/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
445																
	442.6	1.0	1	4	8								M	443.6 GROUND SURFACE 0.0		
													M	442.6 ASPHALT 1.0		
440	439.6	4.0	7	10	12								M	441.1 ARTIFICIAL FILL 2.5		
													M	Reddish-brown, highly plastic, fine to coarse sandy silty CLAY (A-7-6)		
													M	COASTAL PLAIN		
													M	Reddish-brown, gray, orange, fine to coarse sandy CLAY (A-6)		
435	434.6	9.0	3	3	4								M	436.1 Yellowish-brown, clayey fine to coarse SAND (A-2-6) 7.5		
													M			
430	429.6	14.0	2	2	2								W	431.1 Purple, reddish-brown, gray, highly plastic, fine to coarse sandy silty CLAY (A-7-6) 12.5		
													W	428.1 Boring Terminated at Elevation 428.1 ft in CLAY (COASTAL PLAIN) 15.5		

WBS 38887.1.1		TIP R-3830		COUNTY LEE		GEOLOGIST S. Woods										
SITE DESCRIPTION Retaining Wall 1 on -L- from 19+27.37 to 21+44.74, Right							GROUND WTR (ft)									
BORING NO. W1-2G		STATION 12+09		OFFSET 3 ft RT		ALIGNMENT -WL1-										
COLLAR ELEV. 442.4 ft		TOTAL DEPTH 15.0 ft		NORTHING 622,304		EASTING 1,956,887										
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER S. Davis		START DATE 12/04/17		COMP. DATE 12/04/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
445																
	441.9	0.5	4	5	6									442.4 GROUND SURFACE 0.0		
														441.9 ASPHALT 0.5		
440	438.9	3.5	7	12	14								SS-1	440.4 ARTIFICIAL FILL 2.0		
														Orange-brown, clayey fine to coarse sandy SILT (A-4)		
														COASTAL PLAIN		
														Red-brown-gray, clayey fine to coarse sandy SILT (A-4)		
435	433.9	8.5	2	3	3								SS-2	435.4 Red-brown-gray, clayey fine to coarse sandy SILT (A-4) 7.0		
														Yellow-brown, clayey fine to coarse SAND (A-2-6)		
430	428.9	13.5	3	3	4								SS-3	427.4 Boring Terminated at Elevation 427.4 ft in SAND (COASTAL PLAIN) 15.0		
													W			

NOTES:
1) Boring Filled Immediately After Drilling (FIAD) due to location in parking lot

NCDOT BORE DOUBLE R3830_GEO_BH_WALLS.GPJ NC_DOT.GDT 1/1/18

**North Carolina Department of Transportation
Division of Highways
Materials and Test Unit
Soils Laboratory**

T.I.P. ID NO.: R-3830
DESCRIPTION: Retaining Wall 1 on -L- from 19+27.37 to 21+44.74, Right

REPORT ON SAMPLES OF: SOIL FOR QUALITY

WBS No.: 38887.1.1
DATE SAMPLED: 12/17
SAMPLED FROM: -WL1-
SUBMITTED BY: D. Racey

COUNTY: Lee
RECEIVED: 12/17
REPORTED: 12/17
BY: S. Alkhafaji
Certification No. 101-01-0603

PROJ. SAMPLE NO.	SS-1	SS-2	SS-3											
BORING NO.	W1-2G	W1-2G	W1-2G											
Retained #4 Sieve %	0.2	0.8	0.0											
Passing #10 Sieve %	99.3	97.9	99.9											
Passing #40 Sieve %	80.4	73.0	78.7											
Passing #200 Sieve %	51.3	43.2	29.7											

SOIL MORTAR - 100%														
Coarse Sand Ret - #60 %	32.3	41.3	46.8											
Fine Sand Ret - #270 %	18.1	16.0	24.4											
Silt 0.053 - 0.010 mm %	6.0	4.5	2.2											
Clay < 0.010 mm %	43.6	38.2	26.6											
L.L.	30	38	37											
P.L.	NP	NP	23											
P.I.	NP	NP	14											
AASHTO Classification	A-4(0)	A-4(0)	A-2-6(0)											
Station	12+09	12+09	12+09											
Offset	3' RT.	3' RT.	3' RT.											
Depth (ft)	0.5	3.5	8.5											
to	2.0	5.0	10.0											
Alignment	-WL1-	-WL1-	-WL1-											
Moisture Content (%)	19.5	16.4	21.3											
Organic Content (%)	NT	NT	NT											

NP = Not plastic
NT = Not tested
ND = Not Determined
CL = Centerline

W.P. Alton, P.E.
Soils Engineer