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#### **CONTENTS** SHEET NO.

3

710 5 REFERENCE

**DESCRIPTION** TITLE SHEET LEGEND SITE PLAN/PROFILE LAB SUMMARY SHEET

### STATE OF NORTH CAROLINA

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

# **STRUCTURE** SUBSURFACE INVESTIGATION

#### COUNTY \_WAKE

PROJECT DESCRIPTION WESTBOUND RAMPS ALONG I-540 AT SR 1839 (LEESVILLE ROAD), NC 50 (CREEDMOOR ROAD), SR 1005 (SIX FORKS ROAD), AND SR 2000 (FALLS OF NEUSE ROAD) SITE DESCRIPTION WESTBOUND RAMP ALONG I-540 AND SR 2000 (FALLS OF NEUSE ROAD)

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1

#### 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 SOLI TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICL ENCINEERING UNIT AT (1991 707-686). THE SUBSIFICATE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

CENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSUFFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSUFFACE 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 DECREE OF RELIBULITY INHERENT IN THE SUBSUFFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THES SUBJFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THES WATER LEVELS OR SOL MOSTUFE CONDITIONS MAY VARY CONSDERABLY WITH THE ACCOMPING OL CUMUTIC 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 WARANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPNION 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 SATISTY 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 ON OF FOR AN THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTES:

- ES: 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 REDUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAVES 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

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INVESTIGATED BY TERRACON CONSULTANTS

FIELDS, W.D. DRAWN BY

ALEXANDER, M. J.

SUBMITTED BY TERRACON CONSULTANTS

MAY 2016

DATE

CHECKED BY

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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

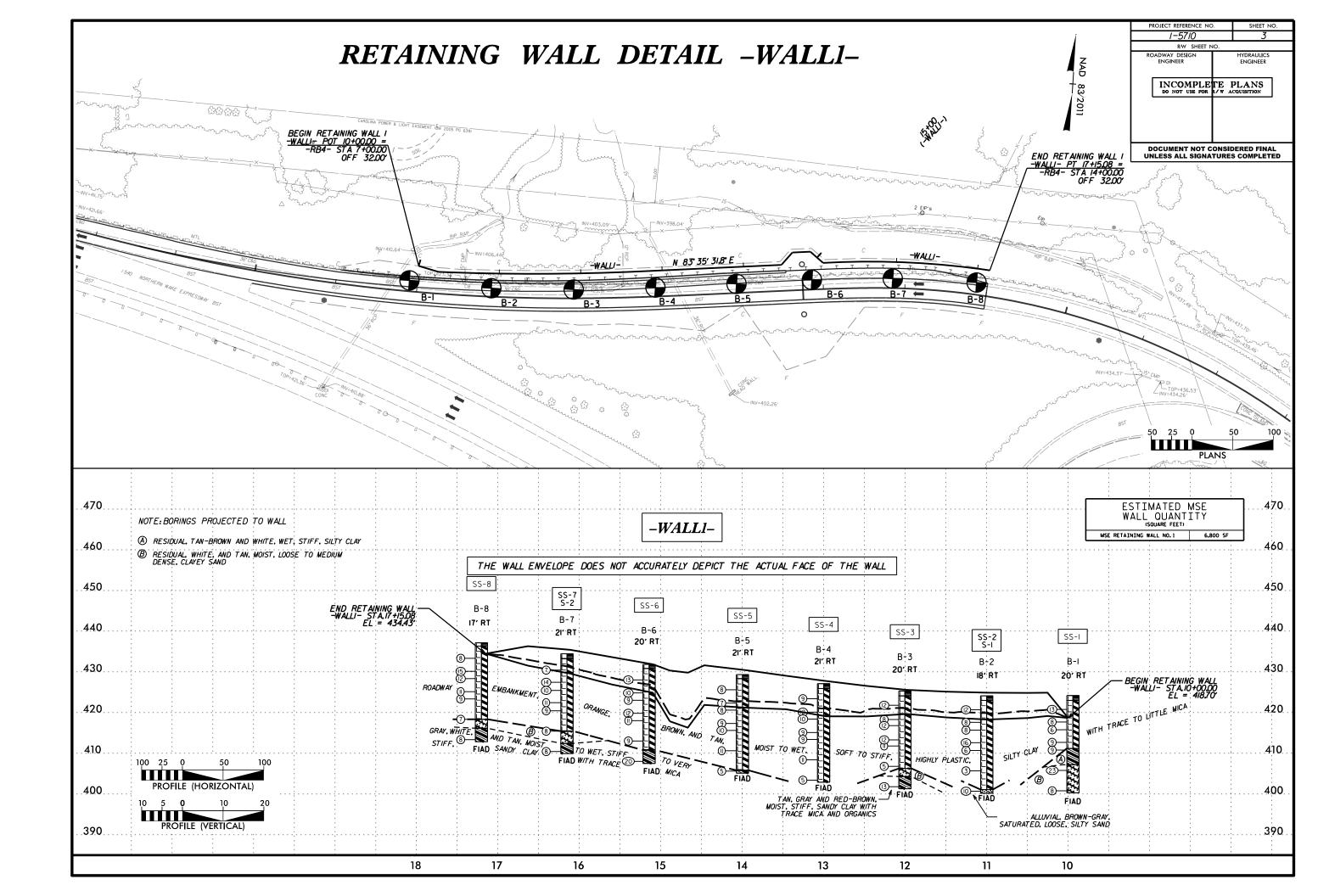
SOIL DESCRIPTION										T	ROCK DESCRIPTION											
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLICHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586), SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING;									R FOOT	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.						HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTE ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN Ø.1 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK						
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE,							ANGULARITY OF GRAINS								ZONE OF W		RED ROCK. DED AS FOLLOW	'S:				
VERY STIFF.GRAY.SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6								STIC.A-7-6		THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.							WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOUL					
051/504			END AND				CATION				ITION	ROCK (WR)		12/12	2	BLOWS PER FO						
GENERAL         GRANULAR MATERIALS         SILT-CLAY MATERIALS         ORGANIC MATERIALS           CLASS.         (≤ 35% PASSING *200)         (> 35% PASSING *200)         (> 35% PASSING *200)								GANIC MATERI	ALS	MINERAL NAM	TALC, KAOLIN.	CRYSTALLINE FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC										
GROUP	A-1	A-3	A-2	A-4	A-5 A-1		A-1, A-2	A-4, A-5		ARE USED IN	JERED OF SIC	RUCK (CR) GNEISS, GABBRO, SCHIST, ETC.										
							SLIGH	LL < 31	NON-CRYSTALLINE SEDIMENTARY ROCK THAT WOULD YELD SPT REFUSAL ROCK (NCR) ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, E													
SYMBOL	SYMBOL DODOGOGOOOG						MODEF	LL = 31 - LL > 50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT SEDIMENTARY ROCK SPT REFUSAL, ROCK TYPE INCLUDES LIMESTONE, SANDS													
% PASSING 10 5	а мх						GRANULAR	SILT-	MUCK,	HIGHL		RESSIBLE	GE OF MATER			(CP)				ELL BEDS, ETC.		
*40 3i	0 MX 50 MX	51 MN	5 MX 35 MX 35 I				SOILS	CLAY SOILS	PEAT			GRANULAR	SILT - CLAY SOILS			1					HERING	
MATERIAL PASSING •40 LL	-	- 40 MX 4	11 MN 40 MX 41 M	MN 40 MX	: 41 MN 40	MX 41 MN	SOILS			ORGANIC MATERIAL TRACE OF ORGANIC MA LITTLE ORGANIC MAT MODERATELY ORGANIC HIGHLY ORGANIC	TER	<u>SOILS</u> 2 - 3% 3 - 5% 5 - 10% > 10%	3 - 5% 5 - 12% 12 - 20%	UTHEF TRACE LITTLE SOME HIGHLY	<u>MATERIAL</u> 1 - 10% 10 - 20% 20 - 35% 35% AND ABOVE	H VERY SLIGHT R	HAMMEF ROCK C	R IF CRYST GENERALLY	FRESH, J	JOINTS STAINED,	IS MAY SHOW SLIGHT STAINING. ROCK SOME JOINTS MAY SHOW THIN CLAY C SHINE BRIGHTLY. ROCK RINGS UNDER H	
PI	6 MX		8 MX 11 MN 11 M	_			MODE	RATE	HIGHLY ORGANIC				> 20%		33% HND HBOVE			CRYSTALLIN				
OF MAJOR C	TONE FRAGS. GRAVEL.AND	U U U 4 MX 8 MX 12 MX 16 MX NU MX AMUUNIS OF SOIL INE FRAGS, FINE SILTY OF CLAYEY SILTY CLAYEY MATTER						SOILS		(SLI.) 1 C	I INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCC4 CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER H											
MATERIALS GEN, RATING	Sand			+		+	FAIR TO			 P₩			VEL AFTER <u>24</u> SATURATED ZONE, OF		RING STRATA	(MOD.) G	GRANIT	TOID ROCKS,	6, MOST FE	ELDSPARS ARE D	OULL AND DISCOLORED, SOME SHOW CLA	
AS SUBGRADE		EXCELLENT TO	JOOD		FAIR TO PO	.OR	POOR	POOR	UNSUITABLE			DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH WITH FRESH ROCK.										
	I		GROUP IS ≤ LL				> LL - 30										MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITO					
			NSISTENC		DENSE		PANG			<u> </u>	M	1ISCELLA	NEOUS SYMB	ULS							KAOLINIZATION. ROCK SHOWS SEVERE L ST'S PICK. ROCK GIVES "CLUNK" SOUND	
	PRIMARY SOIL TYPE         COMPACTNESS OR CONSISTENCY         RANGE OF STANDARD PENETRATION RESISTENCE         RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT <sup>2</sup> )           CELEDALLY         VERY LOOSE         < 4						ROADWAY EMB	SEVERE A	IF TESTED, WOULD YIELD SPT REFUSAL ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR REDUCED IN STRENGTH TO STRONG SOLL IN GRANITOID ROCKS ALL FELDSP													
GENERAL		LC	OSE	l	4 TO 10 10 TO 3			N/A		SOIL SYMBOL		D	OPT DMT TEST BO		SLOPE INDICATOR INSTALLATION CONE PENETROMETER					RAGMENTS OF ST	TRONG ROCK USUALLY REMAIN.	
MATERIAL         DENSE         30 TO 50           (NON-COHESIVE)         VERY DENSE         > 50							ARTIFICIAL FI	VERY A SEVERE B	ALL RO BUT MA	OCK EXCEPT IASS IS EFF	T QUARTZ FECTIVELY	Z DISCOLORED OR Y REDUCED TO S	R STAINED. ROCK FABRIC ELEMENTS AR SOIL STATUS, WITH ONLY FRAGMENTS OF ROCK WEATHERED TO A DEGREE THAT									
GENERAL		SI	SOFT DFT	l	< 2 2 TO 4			< 0.25 0.25 TO 0				MW	)- CORE BORING ) MONITORING W	<b>.</b>	SOUNDING ROD TEST BORING	v	VESTIG	GES OF ORIC	IGINAL RO	OCK FABRIC REMA	AIN. <u>IF TESTED, WOULD YIELD SPT N V</u>	
SILT-CLAY         MEDIUM STIFF         4 T0 8         0.5 T0 1.0           MATERIAL         STIFF         8 T0 15         1 T0 2           (COHESIVE)         VERY STIFF         15 T0 300         2 T0 4           HARD         > 30         > 4							INFERRED ROC	s	SCATTE		ENTRATION		T DISCERNIBLE, OR DISCERNIBLE ONLY ' BE PRESENT AS DIKES OR STRINGERS									
				OR G		IZE		74		+					ROCK H	ARDNESS						
U.S. STD. SIE	VE SIZE		4 10	40			270								Y KNIFE OR SHAR THE GEOLOGIST"	RP PICK. BREAKING OF HAND SPECIMEN S PICK.						
OPENING (MM	PENING (MM)         4.76         2.00         0.42         0.25         0.075         0.053           BOULDER         COBBLE         GRAVEL         COARSE         FINE         SILT         CLAY           BOULDER         COBBLE         GRAVEL         SAND         SAND         CLAY							SHALLOW UNDERCUT UNCLESSIFIED EXCAVATION - USED IN THE TOP 3 FEET OF ACCEPTABLE DEGRADABLE ROCK USED IN THE TOP 3 FEET OF ACCEPTABLE DEGRADABLE ROCK USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL						HARD C	TO DETACH HAND SPECIMEN.							
(BLDR.) GRAIN MM	(BLDR.) (CBL) (CR.) (CSE. SD.) (F SD.) (SL.) (CL.)							AR - AUGER REFUSAL	<ul> <li>MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BI BY MODERATE BLOWS.</li> </ul>													
SIZE IN. 12 3 SOIL MOISTURE - CORRELATION OF TERMS										BT - BORING TERMINATED CL CLAY CPT - CONE PENETRATION	HARD C	CAN BE		ED IN SMA	ALL CHIPS TO P	DEEP BY FIRM PRESSURE OF KNIFE C PEICES 1 INCH MAXIMUM SIZE BY HARD						
SOIL MOISTURE SCALE FIELD MOISTURE (ATTERBERG LIMITS) DESCRIPTION USED DESCRIPTION						$\begin{array}{c} \mbox{CPT} & -\mbox{CONE}\ \mbox{PRE}\ \mbox{Transform} \ \mbox{PRE}\ \$						F	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED I FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK PO PIECES CAN BE BROKEN BY FINGER PRESSURE.									
								e - VOID RATIO F - FINE FOSS FOSSILIFEROUS		SL 9 SLI	SAND, SANDY SILT, SILTY SLIGHTLY	ST - RS -		SOFT 0		RE IN THICK			AVATED READILY WITH POINT OF PICK. BY FINGER PRESSURE. CAN BE SCRATCH			
PLASTIC RANGE <			- WET -	(W)		MISOLID:RE				FRAC FRACTURED, FRAC FRAGS FRAGMENTS	TURES		TRICONE REFUSAL		RECOMPACTED TRIAXIAL CALIFORNIA BEARING			TURE SP	PACIN	G	BEDDING	
(PI) PL		C LIMIT								HI HIGHLY		V - VE			RATIO	TERM			SPAC	<u>CING</u>	TERM	
	OM OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE					DRILL UNITS:	ADVAN	NT USED	ON SUBJEC	HAMMER	TYPE:	VERY WIDE WIDE MODERATELY CLOSE	Y CLO	DSE	3 TO 10 1 TO 3	B FEET	VERY THICKLY BEDDED THICKLY BEDDED 1. THINLY BEDDED 0.1 VERY THINLY BEDDED 0.0					
	- DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE						G* CONTINUOUS FLIGHT AUGER CORE SIZE:						VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.00 THINLY LAMINATED <									
			PL	ASTIC	ITY							8" HOLLOW AU		□-в _	□-н						RATION	
PLASTICITY INDEX (PI)         DRY_STRENGTH           NON PLASTIC         0-5         VERY LOW           SLIGHTLY PLASTIC         6-15         SLIGHT						CME-550		HARD FACED		□-N _				UCKS, INDU			ING OF MATERIAL BY CEMENTING, HE FINGER FREES NUMEROUS GRAINS:					
						VANE SHEAR TEST		TUNGCARBID		HAND TO	DLS:	FRIABLE					BY HAMMER DISINTEGRATES SAMPLE.					
	RATELY P			16-25 26 OR MC	IORE			MEDIUM HIGH		PORTABLE HOIST		TRICONE	W/ ADVANCER STEEL TEETH		IT HOLE DIGGER	MODERAT	TELY	INDURATED			E SEPARATED FROM SAMPLE WITH ST Y WHEN HIT WITH HAMMER.	
				COLOR	{					X D-50 (TER346)			• TUNGCARB.		INDING ROD	INDURAT	ED				FFICULT TO SEPARATE WITH STEEL BREAK WITH HAMMER.	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY), MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.												CORE BIT			E SHEAR TEST	EXTREM	ELY I	NDURATED		SHARP HAMMER	BREAK WITH HAMMER. BLOWS REQUIRED TO BREAK SAMPLE S ACROSS GRAINS.	

#### PROJECT REFERENCE NO.



2

ED. AN INFERRED	TERMS AND DEFINITIONS
SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
1 FOOT PER 60 IS OFTEN	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.
T N VALUES >	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
ОСК ТНАТ	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
CLUDES GRANITE,	
AL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
IF TESTED. C.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
MAY NOT YIELD STONE, CEMENTED	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
RINGS UNDER	ROCKS OR CUTS MASSIVE ROCK. <u>DIP</u> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
OATINGS IF OPEN.	HORIZONTAL.
AMMER BLOWS IF	<u>DIP DIRECTION (DIP AZIMUTH)</u> - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP. MEASURED CLOCKWISE FROM NORTH.
ick up to Il Feldspar	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
R BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
S. IN	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
AY. ROCK HAS H AS COMPARED	PARENT MATERIAL.
	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
FELDSPARS DULL	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.
OSS OF STRENGTH WHEN STRUCK.	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
VIDENT BUT	ITS LATERAL EXTENT.
ARE KAOLINIZED	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.
RE DISCERNIBLE	USUALLY INDICATES POUR AERATION AND LACK OF GOUD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE
F STRONG ROCK ONLY MINOR	OF AN INTERVENING IMPERVIOUS STRATUM.
ALUES < 100 BPF	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
IN SMALL AND 5. SAPROLITE IS	ROCK QUALITY DESIGNATION (ROD) - 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.
S REQUIRES LOWS REQUIRED	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.
EEP CAN BE	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT
ETACHED	OR SLIP PLANE.
OR PICK POINT. BLOWS OF THE	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 I 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.
FRAGMENTS IT. SMALL, THIN	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
PIECES 1 INCH	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.
HED READILY BY	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
	BENCH MARK: • SEE NOTE
THICKNESS	DENGLI MININ; * JEL NUTE
4 FEET .5 - 4 FEET	ELEVATION: N/A FEET
16 - 1.5 FEET	NOTES.
03 - 0.16 FEET 08 - 0.03 FEET	NOTES:
0.008 FEET	FIAD - FILLED IN AFTER DRILLING
	ELEVATIONS DERIVED FROM GEOPAK AND THE TIN FILE:15710_Is_tin.tin.(DATED 06/03/2015)
AT, PRESSURE, ETC.	
EEL PROBE:	
DDOD5	
PROBE:	
Ξ;	
	DATE: 8-15-14



#### SOIL LABORATORY TESTING SUMMARY

PROJECT NUMBER: 50125.1.FS1

ID (TIP): 1-5710

COUNTY:

DESCRIPTION: Retaining Wall 1 along Ramp -RB4- from SR 2000 (Falls of Neuse Road) to Westbound I-540

Boring No.			Station	Offset (feet)	Depth Interval (feet)		L.L.	P.I.	% by Weight				%	% Passing (sieves)				
	Sample No.	Alignment				AASHTO Class.			Coarse Sand	Fine Sand	Silt	Clay	Retained #4 Sieve	#10	#40	#40 #200 <sup>%</sup> Mc	% Moisture	% Organic
B-1	SS-1	-WALL1-	10+00	13 RT	10.5 - 12.0	A-7-6 (24)	63	37	8.2	26.9	16.5	48.4	2	97	92	67	31.5	-
B-2	SS-2	-WALL1-	11+00	18 RT	7.4 - 8.9	A-7-6(24)	64	39	6.7	31.3	13.6	48.4	1	98	95	65	29.0	-
B-3	SS-3	-WALL1-	12+00	19 RT	11.0 - 12.5	A-7-5 (26)	74	39	12.5	20.7	12.2	54.6	3	93	85	66	32.8	-
B-4	SS-4	-WALL1-	13+00	21 RT	7.7 - 9.2	A-7-6 (15)	55	26	8.0	29.9	19.4	42.7	5	92	88	63	27.4	-
B-5	SS-5	-WALL1-	14+00	21 RT	12.7 - 14.2	A-7-6 (23)	64	41	11.1	28.0	11.7	49.2	1	95	88	61	29.6	-
B-6	SS-6	-WALL1-	15+15	21 RT	22.8 - 24.3	A-6 (3)	38	25	13.8	54.6	7.5	24.1	4	96	93	36	17.0	-
B-7	SS-7	-WALL1-	16+15	21 RT	6.0 - 7.5	A-7-6 (25)	66	42	7.3	28.0	16.2	48.5	5	94	90	64	28.8	-
B-8	SS-8	-WALL1-	17+20	17 RT	11.0 - 12.5	A-7-6 (14)	55	30	13.2	33.6	11.4	41.8	2	95	88	55	21.4	-
																		-
B-2	S-1	-WALL1-	11+00	18 RT	3.0 - 9.0	A-7-5 (8)	50	16	11.5	32.1	25.5	30.9	7	93	87	57	30.5	-
B-7	S-2	-WALL1-	16+15	21 RT	3.0 - 8.0	A-7-6 (12)	51	22	10.7	28.6	18.5	42.2	6	94	88	60	28.2	-
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Wake

Stephanie H. Huffman

Certified Lab Technician Signature

114-01-1203 Certification Number