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Ö REFERENCE

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DESCRIPTION

SOIL AND ROCK TEST RESULTS

BORE LOGS, CORE REPORT, AND CORE PHOTOGRAPHS

TITLE SHEET LEGEND SITE PLAN

CROSS SECTIONS

SITE PHOTOGRAPHS

PROFILE

SHEET NO.

5-8

9-15

3 3 STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY CHATHAM

PROJECT DESCRIPTION BRIDGE NO. 10 ON SR 1916 (CORINTH RD) OVER SHADDOX CREEK

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4461	1	17

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 1999 707-6805. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

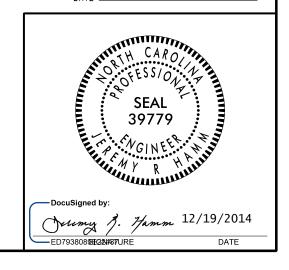
GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND 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 MOLCATED IN THE SUBSURFACE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC 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 CUARANTEE 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 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 FOR ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- IES:
 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.

W. S. HUNSBERGER
TRIGON EXP
NVESTIGATED BY WSH
DRAWN BY <i>WSH</i>
CHECKED BY <i>J.R. HAMM</i>
SUBMITTED BYFALCON
DECEMBER 2014

PERSONNEL



PROJECT REFERENCE NO. SHEET NO.

B-4461

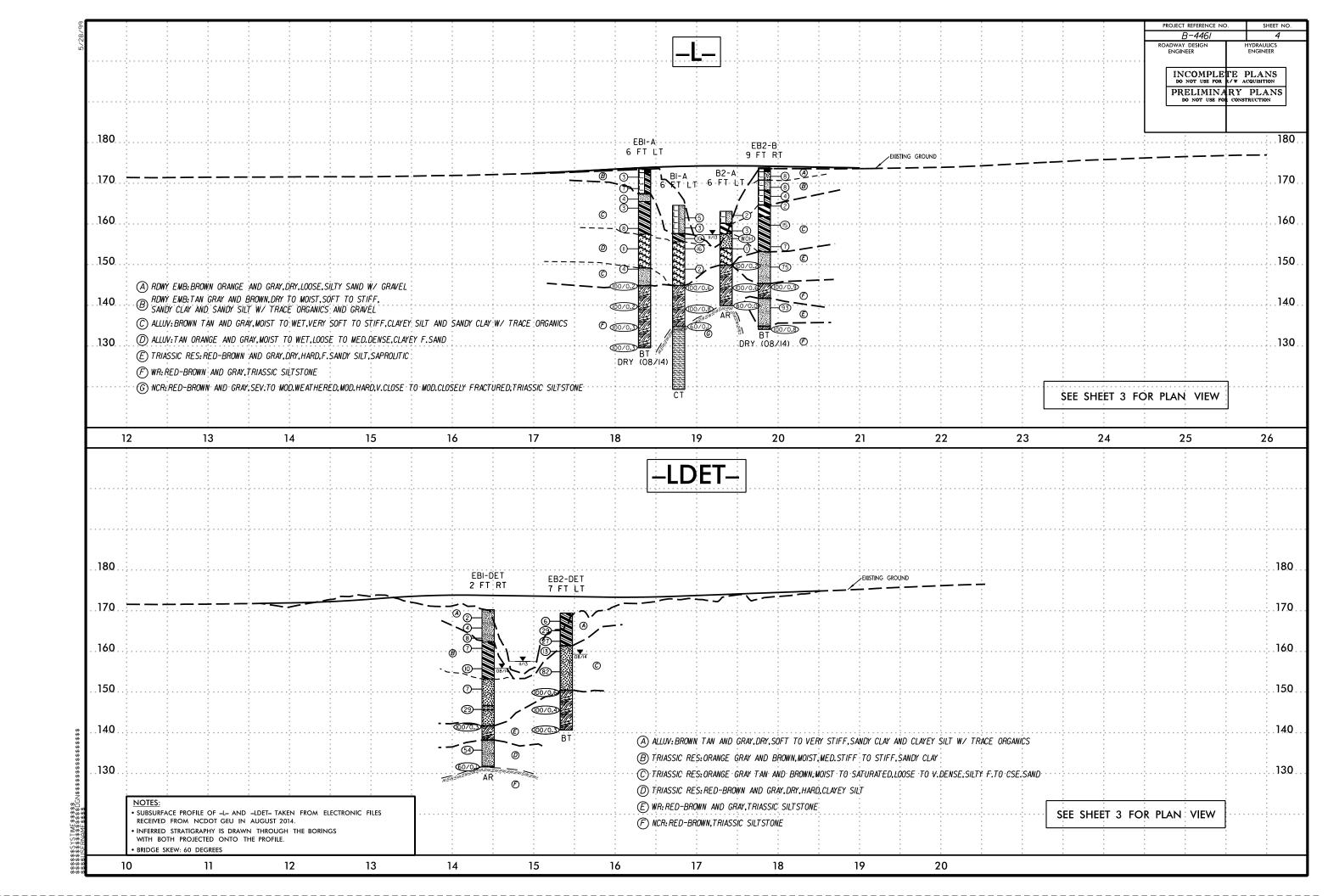
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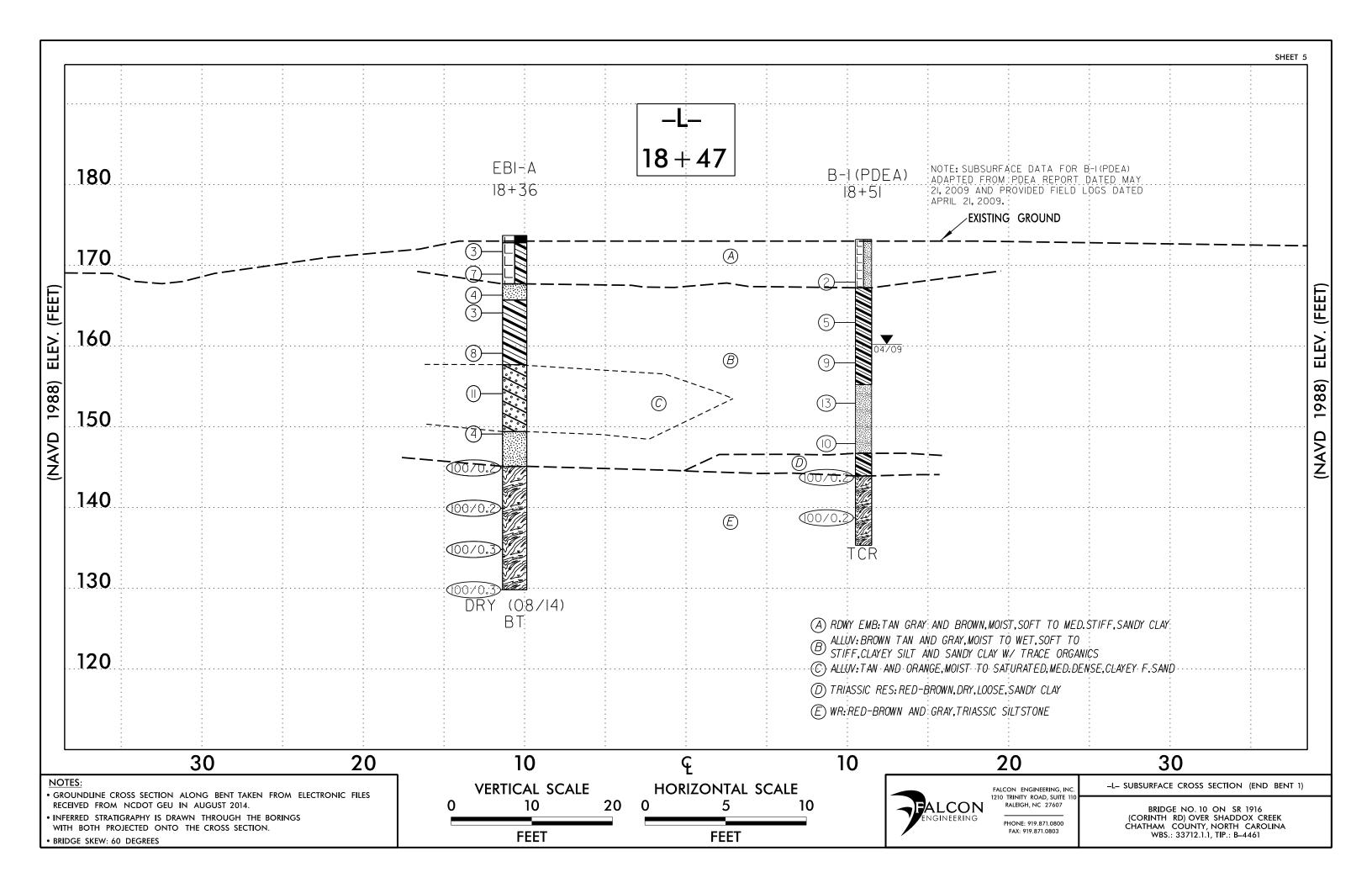
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

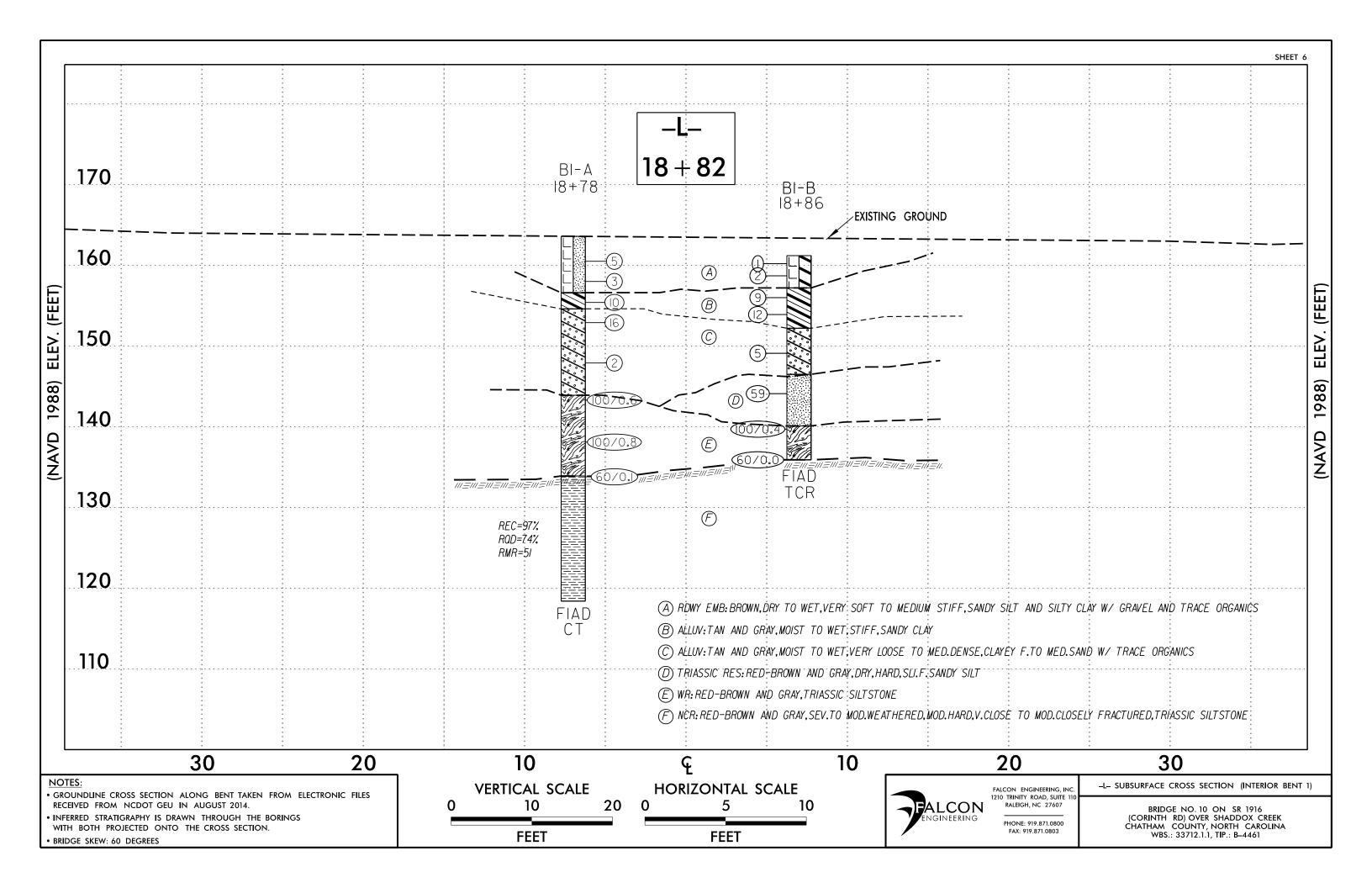
SUBSURFACE INVESTIGATION

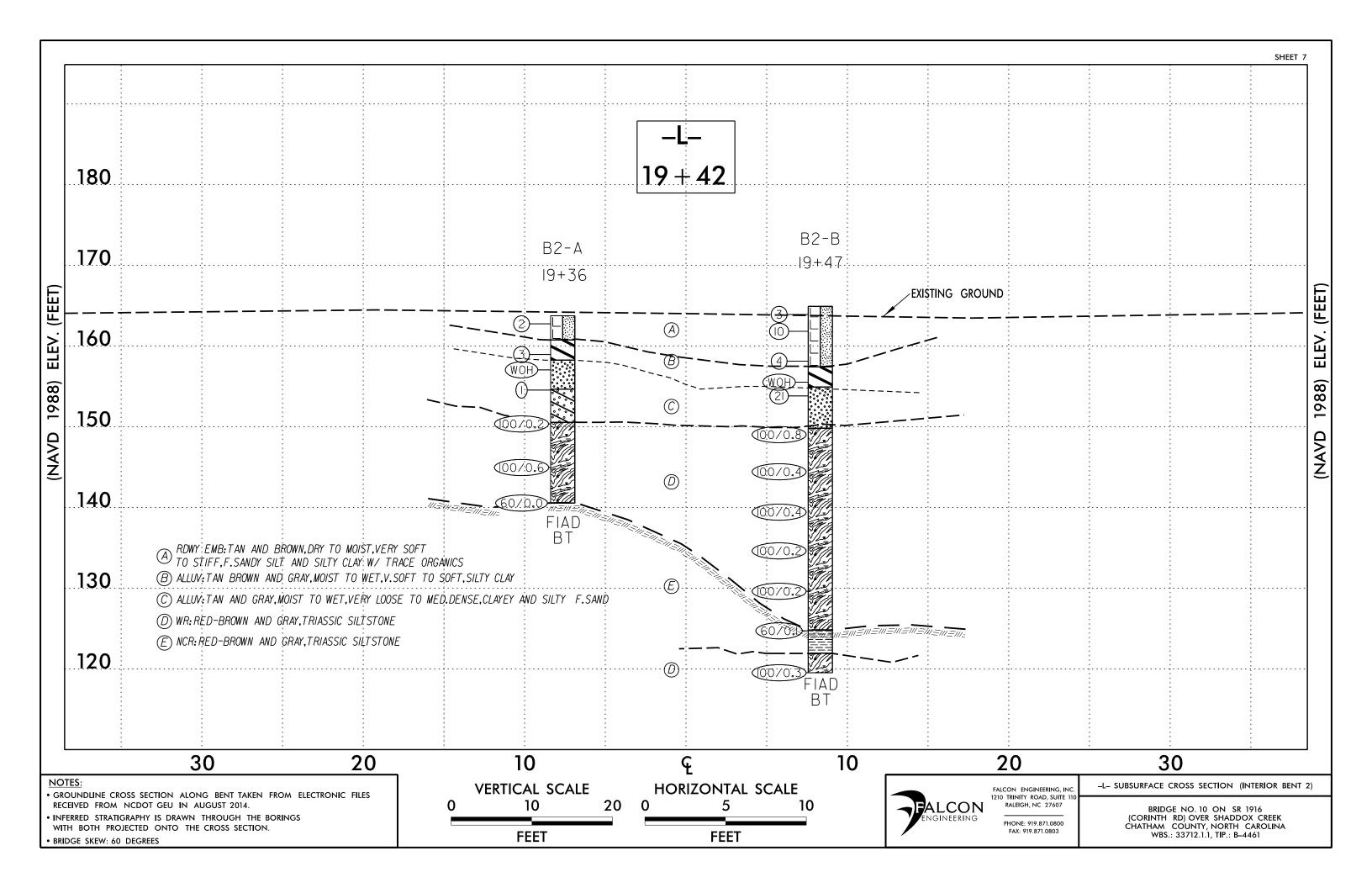
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

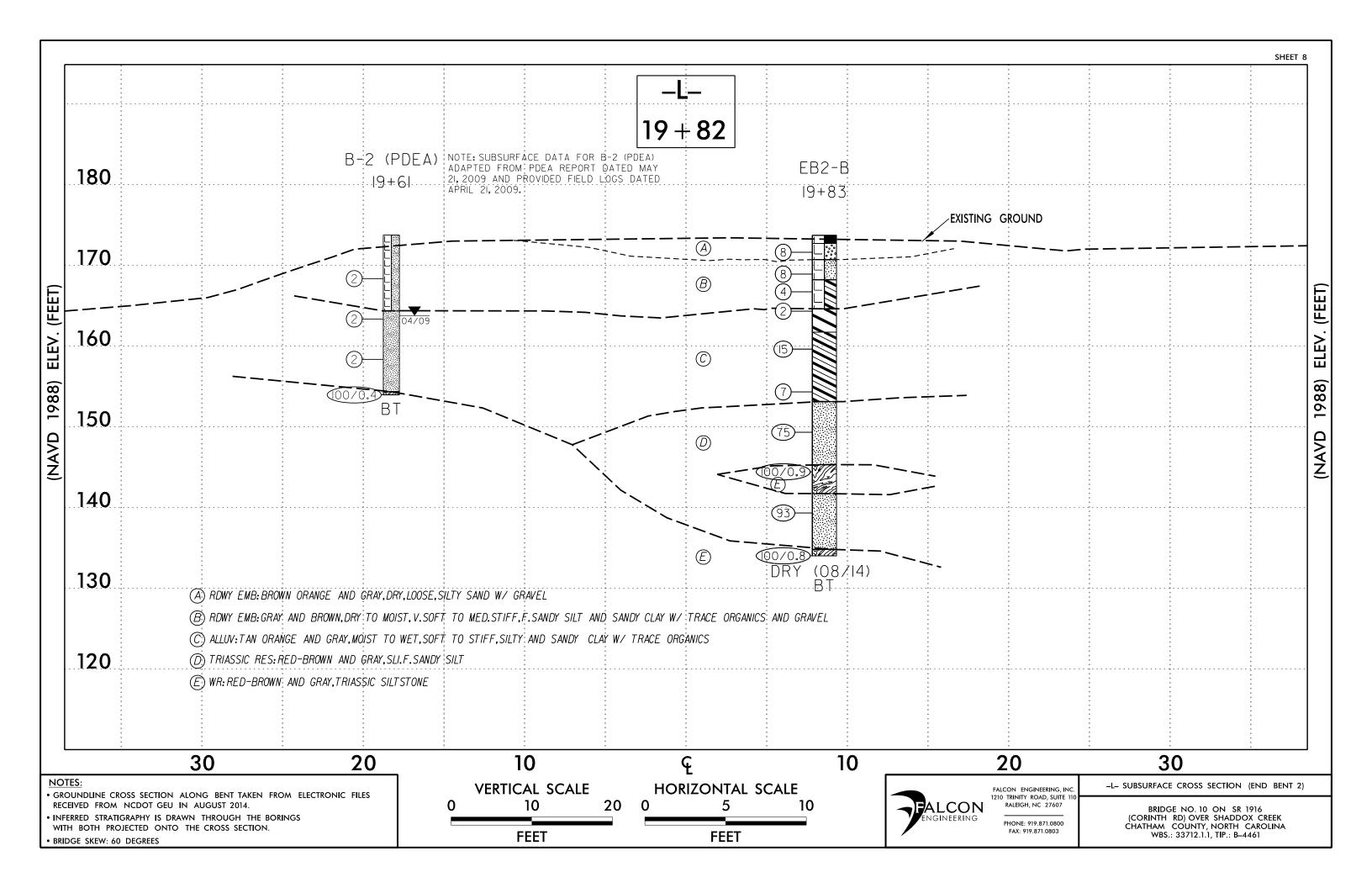
SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
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:	GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.	SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN	AQUIFER - A WATER BEARING FORMATION OR STRATA.
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	ANGULARITY OF GRAINS	REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:	SV/BV/A	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.
SOIL LEGEND AND AASHTO CLASSIFICATION	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED VILLE NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS ORGANIC MATERIALS	MINERALOGICAL COMPOSITION	CRYSTALLINE CRYSTALLINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
LLASS. (\$\(\sigma\) 100 (\$\(\sigma\) 35% PASSING "200)	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	ROCK (CR) WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.	SURFACE.
GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5 CLASS. A-1-a A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-2-6 A-2-7 A-3 A-6, A-7	COMPRESSIBILITY	NON-CRYSTALLINE - FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
000000000	SLIGHTLY COMPRESSIBLE LL < 31	ROCK (NCR) SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
SYMBOL 000000000000000000000000000000000000	MODERATELY COMPRESSIBLE LL = 31 - 50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED
7. PASSING GRANULAR SILT- MUCK,	HIGHLY COMPRESSIBLE LL > 50 PERCENTAGE OF MATERIAL	SEDIMENTARY ROCK SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.	BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
*40 30 MX 50 MX 51 MN SOILS SOILS SOILS	GRANULAR SILT - CLAY	- WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
אורי פל אורי פ	ORGANIC MATERIAL SOILS SOILS OTHER MATERIAL TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10%	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
MATERIAL PASSING *40	LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20%	HAMMER IF CRYSTALLINE.	HORIZONTAL.
LL - 40 MX 41 MN 11TTE OR	MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35%	VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, (V SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE
PI 6 MX NP IW MX IW MX II MN II MN IW MX IW MX II MN II MN IMN MODERATE ORGANIC	HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE GROUND WATER	OF A CRYSTALLINE NATURE.	LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
GROUP INDEX 0 0 4 MX 8 MX 12 MX 16 MX NU MX AMOUNTS OF SOILS		SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO (SLI.) I INCH. OPEN JOINTS MAY CONTAIN CLAY, IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
USUAL TYPES STUNE FRAUS. FINE SILTY OR CLAYEY SILTY CLAYEY MATTER	WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	CRYSTALS ARE DULL AND DISCOLORED, CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
MATERIALS SAND GRAVEL AND SAND SOILS SOILS	▼ STATIC WATER LEVEL AFTER <u>24</u> HOURS	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
GEN. RATING EXCELLENT TO GOOD FAIR TO POOR PAIR TO POOR UNSUITABLE	<u> </u>	(MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	PARENT MATERIAL.
AS SUBURADE PURK	SPRING OR SEEP	WITH FRESH ROCK.	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
PI OF A-7-5 SUBGROUP IS < LL - 30; PI OF A-7-6 SUBGROUP IS > LL - 30 CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, IN GRANITOID ROCKS, ALL FELDSPARS DULL	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.
DANCE OF STANDARD DANCE OF UNCONFINED	MISCELLHNEUUS STIMBULS	SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH (MOD. SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK.	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
PRIMARY SOIL TYPE COMPACTNESS OR PENETRATION RESISTENCE COMPRESSIVE STRENGTH	ROADWAY EMBANKMENT (RE) 25/025 DIP & DIP DIRECTION WITH SOIL DESCRIPTION OF ROCK STRUCTURES	<u>IF TESTED, WOULD YIELD SPT REFUSAL</u>	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
(N-VALUE) (TUNS/FT=)	SPI —	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT (SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED	ITS LATERAL EXTENT.
GENERALLY VERY LOOSE	SOIL SYMBOL OPT ONT TEST BORING SLOPE INDICATOR INSTALLATION	TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
GRANULAR MEDIUM DENSE 10 TO 30 N/A MATERIAL DENSE 30 TO 50	ARTIFICIAL FILL (AF) OTHER AUGER BORING CONE PENETROMETER	IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
DENSE 30 TO 50	THAN ROADWAY EMBANKMENT TEST	VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE SEVERE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE
VERY SOFT	── INFERRED SOIL BOUNDARY	(V SEV.) REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR	OF AN INTERVENING IMPERVIOUS STRATUM.
GENERALLY SOFT 2 TO 4 0.25 TO 0.5 SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0	TEST BORING WELL TEST BORING WITH SORE	VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</u> COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
MATERIAL STIFF 8 TO 15 1 TO 2	with core	SCATTERED CONCENTRATIONS, QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS, 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
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD > 30 > 4	TTTTT ALLUVIAL SOIL BOUNDARY A PIEZOMETER INSTALLATION - SPT N-VALUE	ALSO AN EXAMPLE.	RUN AND EXPRESSED AS A PERCENTAGE.
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	ROCK HARDNESS	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT
U.S. STD. SIEVE SIZE 4 10 40 60 200 270		VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.	ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND
OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	UNDERCUT UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE UNSUITABLE WASTE USED IN THE TOP 3 FEET OF	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	SHALLOW UNDERCUT UNCLASSIFIED EXCAVATION - EMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN.	THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
(BLDR.) (COB.) (GR.) (SE. SD.) (F SD.) (SL.) (CL.)	ABBREVIATIONS	MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK, GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
GRAIN MM 305 75 2.0 0.25 0.005 0.005	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST	HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF
SIZE IN. 12 3	BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT.	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL
SOIL MOISTURE - CORRELATION OF TERMS	CL CLAY MOD MODERATELY 7 - UNIT WEIGHT CPT - CONE PENETRATION TEST NP - NON PLASTIC 7 - DRY UNIT WEIGHT	HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.	WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER, SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
SOIL MOISTURE SCALE FIELD MOISTURE COURSE FOR FIELD MOISTURE DESCRIPTION	CSE COARSE ORG ORGANIC	SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK, CAN BE EXCAVATED IN FRAGMENTS	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY
(ATTERBERG LIMITS) DESCRIPTION GOIDE FOR FIELD MOISTORE DESCRIPTION	DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK	FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN	TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY	e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON	PIECES CAN BE BROKEN BY FINGER PRESSURE. VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH	STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY
(SAT.) FROM BELOW THE GROUND WATER TABLE	F - FINE SL SILT, SILTY ST - SHELBY TUBE FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK	SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY	THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
PLASTIC CEMICOLID. PEGULDES DRYING TO	FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL	FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
RANGE - WEI - (W) ATTAIN OPTIMUM MOISTURE	FRAGS FRAGMENTS	FRACTURE SPACING BEDDING	BENCH MARK: BL-102: 36" REBAR WITH ALUMINUM TRAVERSE CAP
"" PL L _ PLASTIC LIMIT	EQUIPMENT USED ON SUBJECT PROJECT	TERM SPACING TERM THICKNESS VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	N:671912.4092 E:1986960.5208
OM _ OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:	WIDE 3 TO 10 FEET THICKLY BEDDED 1.5 - 4 FEET	-L- STA 18+38, 14 ft LT ELEVATION: 172,86 FEET
SL SHRINKAGE LIMIT	CME-45C CLAY BITS X AUTOMATIC MANUAL	MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.03 - 0.16 FEET	NOTES:
- DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE	6. CONTINUOUS ELICHT AUCER	VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET	FIAD - FILLED-IN AFTER DRILLING
	X CME-55	THINLY LAMINATED < 0.008 FEET INDURATION	-
PLASTICITY	-	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	1
PLASTICITY INDEX (PI) DRY STRENGTH NON PLASTIC 0-5 VERY LOW	CME-550 HARD FACED FINGER BITS X -N Q2	BURBING WITH FINGER EREES NUMEROUS CRAINS.	
SLIGHTLY PLASTIC 6-15 SLIGHT	VANE SHEAR TEST ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	FRIABLE GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH	X CASING W/ ADVANCER POST HOLE DIGGER	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE;	
	PORTABLE HOIST X TRICONE 2-15/16 STEEL TEETH HAND AUGER	BREAKS EASILY WHEN HIT WITH HAMMER.	
COLOR	X MOBIL B-57 TRICONE TUNGCARB. SOUNDING ROD	INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).	X CORE BIT VANE SHEAR TEST	SHARP HAMMER RIGHS REGULTRED TO RREAK SAMPLE.	
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.		EXTREMELY INDURATED SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-1-









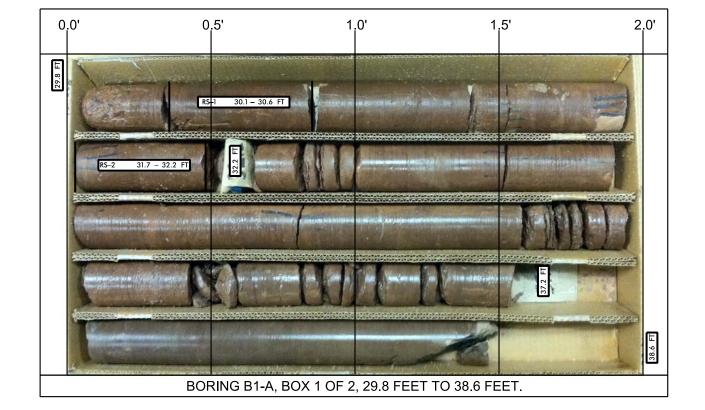


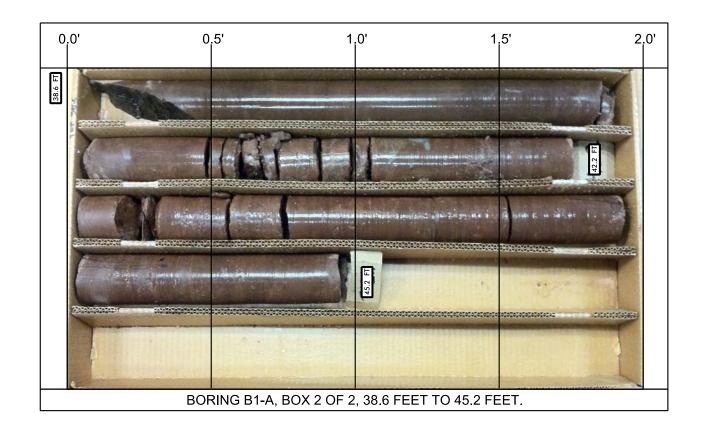
WBS	33712	2.1.1			TI	IP B-44	61	COUNT	Y CHATH	AM			GEOLOGIST Hunsber	ger, W. S.		
SITE	DESCF	RIPTIO	N BR	IDGE	NO. 10	ON SR	1916 (COR	NTH RD	OVER SH	ADDOX	CREE	K		GR	OUNE	WTR (fi
BOR	NG NO	. EB1	-A		S	TATION	18+36		OFFSET	6 ft LT			ALIGNMENT -L-	0	HR. C	i @ 12.0
COLI	LAR EL	EV. 1	73.5 ft		T	OTAL D	EPTH 43.91	ť	NORTHIN	G 671,9	913		EASTING 1,986,969	24	HR.	FIAC
DRILL	. RIG/HAI	MMER E	FF./DA	TE T	RI8016	MOBILE E	B-57 92% 02/0	7/2014		DRILL	VETHO	D H.	S. Augers	HAMMER T	YPE /	Automatic
DRII	LER G	OWFF	. S		S	TART D	ATE 08/21/	14	COMP. DA	<u> </u>			SURFACE WATER DE			
	DRIVE		1 .	DW CC				PER FOO		SAMP.		1 L T	OUN AUE WATER DE			
(ft)	ELEV (ft)	DEPTH (ft)	0.5ft		0.5ft	0		50	75 100		мо	O G	SOIL AND RO	CK DESCRIF	PTION	DEDTIL
	(11)		-								/ WO	G	ELEV. (ft)			DEPTH (
175		F										F	_ - 173.5 EXISTING	G PAVEMEN	т	C
-	172.5	1.0	3	1		<u> </u>							<u>172.6</u> 0.9' BITUMIN	OUS CONCF	RETE	
170		ļ	3	1	2	•3					М		ROADWAY TAN GRAY AND E	EMBANKME BROWN, SAN		ΑY
170	169.7-	3.8	1	3	4	1 7				11	М		- :	(A-6)		
	167.1	6.4	1		2	: 'ٽم							167.5 Δ I	LUVIAL		6
165	164.9_	8.6	'	2		• 4					М		165.5 BROWN AND TA	N, CLAYEY S	SILT (A-	<u>4)8</u>
	-	-	1	1	2	•3					W		BROWN AND GRA	AY, SANDY C E ORGANIC:		6)
	-	Ī				\							•			
160	159.9	13.6	00				· · · · ·			1			-			
	-	<u> </u>	22	3	5	- 68					М		157.5			16
	-	+										!	TAN AND ORAN		F. SAN	D
155	154.9	18.6	3	5	6	 		1		-	١٨/	//./. :///:	<u> </u>	A-2-6)		
	-	‡					1 : : : : :				W	////				
	-	<u> </u>				$ \cdot $ / $ \cdot $						<i>////</i>				
150	149.9	23.6	5	3	1	<i>j</i>		+	 	-	Sat.	%	149.2			2
	-	-									- Cuti	-	GRAY, CLAYEY OR	SILT (A-4) W GANICS	/ TRAC	E
145	144.9_	20.0										-	_ 144.9			28
140	144.9_	28.6	100/0.	2		<u> </u>			100/0.2	 		770	WEATH	ERED ROCK		
	-	ţ				• • •							RED-BROWN A SIL	ND GRAY, TF TSTONE	RIASSIC	2
140	139.9	33.6														
		_	100/0.	2					100/0.2	1			- ·			
	-	ļ											•			
135	134.9_	_ 38.6	100/0				· · · · ·			1			-			
	-	Ĺ	100/0.	3		: : :			100/0.3	T I						
	-	+								1						
130	129.9	43.6	100/0.	1			· · · · ·		100/0.3			H	<u> 129.6</u>		100.0.0	43
	-	‡	100/0.	1					100/0.3				Boring Terminated WR: TRIAS	l at Elevation SIC SILTSTC		in
	-	Ļ											·			
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NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

VBS	33712					P B-		ORT		Y CHATE	HAM			GEOLOGIST H	unsberaer.	W. S.	
			N BRI	IDGE I				6 (CORII		OVER SH		CREF	K		3 - 1 ,	GROUND	WTR (f
	ING NO						ON 18+			OFFSET				ALIGNMENT -L	_	0 HR.	N//
	LAR EL							45.2 ft		NORTHI		052		EASTING 1,986		24 HR.	N/,
								02/07/2014		NORTH		METHO	N W	/ash Boring	·	AMMER TYPE A	
								08/28/1		COMP, D				1			utomatic
	LER W			W CO		IAKI		BLOWS F			SAMI		1 L I	SURFACE WAT	EK DEPTE	1 N/A	
LEV (ft)	ELEV (ft)	DEPTH (ft)		0.5ft		0	25		50	, 75 10		MO	0		ND ROCK E	DESCRIPTION	
	(11)								1		1	/ IVIO	/ G	ELEV. (ft)			DEPTH
105																	
165	-	-				;								164.6 -	DWAY EME	BANKMENT	
	162.5	2.1	2	3	2							D		BROV	VN, F. SAND	DY SILT (A-4)	
60	160.0_	4.6				, 5 , 5		· · · ·						<u>-</u>			
	-	-	2	1	2	- 63						М		- - 157.6			
	157.4	7.2	5	5	5		10					М		_	ALLUVI		
55	154.9	9.7	6	7	9		\rightarrow				\dashv			TAN AND	GRAY, CLA	NDY CLAY (A-6) AYEY F. TO MED	
	-	-		,			, ●16					М	/ //	SAND (A	-2-6) W/ TRA	ACE ORGANICS	
_	-	- 				/	/						////	- -			
0	149.9 <u> </u>	_ 14.7	4	1	1	<u>'</u>					\dashv	w	///	 -			
	-	-											////	<u>-</u> -			
5	144.9	19.7				<u> </u> .			<u> </u>				\/\/\ \/\/\	_ _ 144.9			
			74	26/0.1]			· · · ·		100/0	6				VEATHEREI	D ROCK SRAY, TRIASSIC	
	-	-											9/13	- KED-BK	SILTST		
)	139.9	24.7		44/0.0			• • •				4			-			
	-	- -	56	44/0.3						100/0	в∳			<u>-</u> -			
	-	-				.								-			
5	134.9_	29.7	60/0.1	4				· · · ·		60/0	1		V/1 ×	134.9 NON	LCRVSTALI	LINE ROCK	2
	-	-	33,0.1								RS-				DWN AND G	RAY, TRIASSIC	
0	-	- -									KS-2	-1		- -	SILTSTO	JNE	
_	-	- -								1	1			- -			
	-	-												=			
5	-	-				.								-			
	-	-									71			- -			
	-	-												- -			
0	-	- -				.		 			4			- 119.4			
	-	-												Boring Terr		levation 119.4 ft SILTSTONE	
	-	-												_			
	-	_													ER LEVEL II DRILLING	NACCURATE DU METHOD	JE
	-	-												-			
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WBS	33712			RE B		B-446					CHATHAM	GEOLOGIST Hunsbe	rger, W.	S.	
SITE	DESCF	RIPTIO	N BRI	DGE NO	. 10 O	N SR	1916 (CC	DRINT	H RD) OV	ER SHADDOX CREEK			GROUN	ID WTR (f
BOR	ING NO	. B1-A			STA	ΓΙΟΝ	18+78			OF	FSET 6ft LT	ALIGNMENT -L-		0 HR.	N/A
COL	LAR EL	EV . 16	64.6 ft		тот	AL DE	PTH 45	.2 ft		NC	PRTHING 671,952	EASTING 1,986,954		24 HR.	N/A
ORILL	. RIG/HAI	MMER E	FF./DA	TE TRIOC)55 CM	E-55 73	3% 02/07/	2014			DRILL METHOD Was	sh Boring	HAMME	ER TYPE	Automatic
DRIL	LER V	VICHAF	RD, W.	•	STAI	RT DA	TE 08/2	8/14		СС	OMP. DATE 08/28/14	SURFACE WATER DE	PTH N/	A	
	E SIZE				TOTA	AL RU	N 15.51	t							
LEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)		JN	SAMP. NO.		RATA RQD (ft) %	L O G	DE ELEV. (ft)	ESCRIPTION AND REMAR	KS		DEPTH (
34.9	(/			(**************************************	70	70		70	/0		LLL V. (10)	Begin Coring @ 29.7 ft			DEI III
5 1.0	134.9	29.7	2.5	3:55/0.5 5:25/1.0 3:42/1.0	(2.5) 100%	(2.1) 84%	RS-1	(15.1) 97%	(11.4) 74%		_ 134.9	NON-CRYSTALLINE ROC D. SEV. TO MOD. WEATHE		ND 11 V DD	29
	132.4	32.2	5.0	5:17/1.0	(4.8)	(2.9)	RS-2	9176	7470			CLOSELY FRACTURED, TI			
130	_	‡		3.45/1.0 4.18/1.0	96%	58%					-				
	127.4	37.2		5:27/1.0 6:21/1.0							- R1=6, F -	R2=15, R3=6, R4=20, R5=4 CLASS III, TYPE B	, RMR=5 ²	1	
105			5.0	3.51/1.0 4.13/1.0	(4.9) 98%	(4.0) 80%					<u>-</u> -				
125	_	<u> </u>		4:33/1.0 5:25/1.0	0070	0070					- -				
	122.4	42.2	3.0	5:27/1.0 5:28/1.0	(2.9)	(2.4)					_				
120	119.4	45.2	3.0	5.52/1.0 4.13/1.0	97%	80%					_ ─ 119.4				45
	113.4	40.2		4.13/1.0								Elevation 119.4 ft in NCR:	TRIASSIC	SILTST	
	-	+									O HR WATER LEV	EL INACCURATE DUE TO	DRILLIN	G METHO	DD
	_	<u> </u>									<u></u>				
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	-	‡									- -				
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BRIDGE NO. 10 ON SR 1916 (CORINTH RD) OVER SHADDOX CREEK CHATHAM COUNTY, NC WBS NO.: 33712.1.1, TIP NO.: B-4461

NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

WBS	33712	.1.1			TI	IP B-4461	COUNT	Y CHATHA	AM			GEOLOGIST Hunsberger,	W.S.
SITE	DESCR	IPTIO	N BRI	DGE I	NO. 10	O ON SR 1916 (CC	RINTH RD	OVER SHA	DDOX (CREE	K		GROUND WTR (ft
BOR	NG NO.	B1-B	3		S	TATION 18+86		OFFSET	7 ft RT			ALIGNMENT -L-	0 HR. N/A
COLI	AR ELI	EV. 16	31.2 ft		T	OTAL DEPTH 25.	3 ft	NORTHIN	G 671,9	965		EASTING 1,986,963	24 HR. N/A
DRILL	RIG/HAN	MER E	FF./DA	TE TF	RI9435	CME-55 81% 02/07/2	2014		DRILL N	/IETHO	D W	ash Boring HAI	MMER TYPE Automatic
DRIL	LER W	'ICHAF	RD, W.		S	TART DATE 08/2	6/14	COMP. DA	TE 08/	26/14		SURFACE WATER DEPTH	N/A
ELEV	DRIVE	DEPTH	BLC	W CO	UNT	BLOW	S PER FOO	Γ	SAMP.	V /	L		
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25	50	75 100	NO.	моі	O G	SOIL AND ROCK D	ESCRIPTION DEPTH (f
165		_										_	
	-	- -										•	
	161.2	0.0	4	MOLL								161.2	0.
160	159.7	1.5	WOH	WOH	2	1				W		ROADWAY EMB. LT. BROWN, SILTY (CLAY (A-7) W/
	157.0	4.2								l vv		TRACE ORG 157.2	4.
155	154.9	6.3	4	4	5	9				М		ALLUVIA GRAY AND TAN, SAN	
	104.5	- 0.5	3	5	7) 12				W		- •	
	†	- -				:/:: :::						152.2 GRAY AND TAN, CLA	/EY F. TO MED9.º
150	150.1	11.1	3	2	3	/				w	///	SAND (A-2	
	†	-		_						VV	////	•	
145	145 1	16.1									<i>.</i> /	- 146.5 - TRIASSIC RE	14.° SIDUAL
140	145.1	16.1_	29	33	26		59			D		RED-BROWN AND GRA SILT (A-	Y, SLI. F. SANDY
	1	-						`.\.					• ,
140	140.1	21.1	100/0									140.1	21.
	_	-	100/0.4	1				100/0.4	'			WEATHERED RED-BROWN AND GI	
	135.9	25.3										SILTSTO	NE 25.
•		- 20.0	60/0.0					60/0.0	1			Boring Terminated by T Elevation 135.9 ft on N	ricone Refusal at
	-	-										SILTSTO	
	Ţ	-										O HR WATER LEVEL IN	
	7	-										TO DRILLING N	METHOD
	‡	-										•	
	1	-										• -	
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WBS	33712					G REPORT P B-4461		Y CHATHA	.M			GEOLOGIST Hunsberg	ger, W. S.		
			N BR	IDGE		ON SR 1916 (CORI				CREE	K	1			WTR (ft
	ING NO					TATION 19+36		OFFSET 6				ALIGNMENT -L-		HR.	N/A
	LAR EL				T	OTAL DEPTH 23.2 ft	:	NORTHING		07		EASTING 1,986,934	24	4 HR.	N/A
						CME-55 81% 02/07/2014					D Mu	ud Rotary	HAMMER		Automatic
DRIL	LER V	VICHA	RD, W		S ⁻	TART DATE 08/26/1	4	COMP. DA				SURFACE WATER DE	PTH N/A		
ELEV	DRIVE ELEV	DEPTH	BLC	ow co	UNT	BLOWS F	PER FOOT	-	SAMP.	V /	LO	SOIL AND ROO	CK DESCD	IDTION	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25 5	50	75 100	NO.	мо		ELEV. (ft)	JK DESCK	AFTION	DEPTH (fi
165		1										_			
	163.1	0.0	WOH	1 1	1			 			1 888	163.1 ROADWAY	EMBANKN	/ENT	0.
160	-	‡		'	'	● 2 · · · · · · · · · · · · · · · · · · ·				М		TAN, F. SAN			3.
100	159.3	3.8	2	1	2	1				М		ALL	UVIAL	7)	
	157.4	5.7	WOH	WOH	WOH	, 3				W		157.6 TAN, SILTY			5.
155	154.9	8.2	WOH	WOH	1	0		<u> </u>			_	_ 			9
	-	‡	WOII	VVOIT	'	1				W	***	GRAY, CLAYE	Y F. SAND	(A-2-6)	
150	149.9	122										149.9			13
100	149.9_	13.2	100/0.	4		 		100/0.2					RED ROC		
	-	‡ †											STONE	INAGGI	0
145	144.9_	18.2	71	29/0.1				100100				_			
	-	‡		20,011				100/0.6							
140	139.9	23.2										139.9			23
	100.0	20.2	60/0.0					60/0.0			-	Boring Termina Penetration Test	ated with St	tandard	
	-	‡										139.9 ft on NCR: T			
	-	‡										O HR WATER LEVE			UE
	-	‡										TO DRILLI	NG METH	OD	
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NCDOT GEOTECHNICAL ENGINEERING UNIT

VBS	33712	2.1.1			TI	IP B-4461	COUNT	TY CHATHA	M			GEOLOGIST Hunsberge	r, W. S.	
SITE	DESC	RIPTIO	N BRI	DGE	NO. 10	0 ON SR 1916 (Co	DRINTH RD) OVER SHA	DDOX (CREE	<		GROUND WT	ΓR (
BOR	ING NO). B2-E	3		S ⁻	TATION 19+47		OFFSET	6 ft RT			ALIGNMENT -L-	0 HR.	N/
COLI	LAR EL	. EV. 16	65.0 ft		TO	OTAL DEPTH 45	.4 ft	NORTHIN	3 672,0	21		EASTING 1,986,941	24 HR.	N/
RILL	. RIG/HA	MMER E	FF./DA	TE TE	RI9435	CME-55 81% 02/07/	2014	l	DRILL N	IETHO	D Wa	ash Boring H	IAMMER TYPE Auton	natic
RIL	LER V	VICHAF	RD, W.)	S	TART DATE 08/2	7/14	COMP. DA	TE 08/	27/14		SURFACE WATER DEPT	'H N/A	
LEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLC 0.5ft	0.5ft		BLOV 0 25	VS PER FOO 50	T 75 100	SAMP. NO.	▼ / /моі	L O G	SOIL AND ROCK ELEV. (ft)		PTH
165												165.0		
160	165.0 162.9	0.0 2.1 5.8	WOH 5	5	5	10				D D		ROADWAY EN TAN AND BROWN, SA GRAVEL AND TRA	ANDY SILT (A-4) W/	
	156.6	8.4	2 WOH	2 WOH	2 WOH	4				D W		157.5 ALLU 155.0 BROWN AND GRAY		
155	154.9 <u> </u>	10.1	5	8	13	•Q •21				М	-	GRAY AND TAN, SIL	AVEL /	1
150	149.9_	15.1	37	73/0.3	5			100/0:8			<u> </u>	149.9 		1
145	144.9	20.1	100/0.4	ļ ļ								RED-BROWN AND SILTST	GRAY, TRIASSIC ONE	
140	139.9_	25.1	100/0.4	į				. 100/0.4				-		
35	134.9_	30.1	100/0.2	1				100/0.2				-		
130	129.9_	35.1												
		-	100/0.2					100/0.2						
25	124.9	40.1	60/0.1	-				60/0.1			900_		GRAY, TRIASSIC	
20	119.9_	45.1	100/0.3					100/0.3	-			WEATHERI - 119.6 RED-BROWN AND SILTST	ED ROCK GRAY, TRIASSIC	
	-	† † + +										Boring Terminated at WR: TRIASSIC	SILTSTONE	
	• • •	† † +									-	TO DRILLING		
	- - -	 - 									-	-		
	- - -	 - 									-	- -		
	- - -	 - -										<u>-</u>		
		 - -												
	- - - -	 - -												
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GROUND WTR (
,
0 HR. CI @ 14.
24 HR. F I AI
ER TYPE Automatic
A
CRIPTION DEPTH
IENT (NCRETE 2
COURSE KMENT
RAY, SILTY
RAVELS BANDY SILT
GANICS Y CLAY (A-6)
<u>′ (A-7)</u> ——1 ²
SANDY CLAY SANICS
20
UAL ′ SILT (A-4)
28
OCK SILTSTONE
SLI. F. SANDY LITIC
LITIC
38
SILTSTONE /
tion 134.1 ft in
STONE

NCDOT GEOTECHNICAL ENGINEERING UNIT

NBS	33712	2.1.1			TI	P B-4461		COUNT	Y CHATHA	AM			GEOLOGIST Hunsberg	er, W. S.		
SITE	DESCR	IPTIO	N BRI	DGE	NO. 10	ON SR 19	916 (CORI	NTH RD)	OVER SHA	DDOX (CREE	K	•	GI	ROUNE	WTR
3OR	ING NO	. EB1	DET		S	TATION 1	4+44		OFFSET	2 ft RT			ALIGNMENT -LDET-	0	HR.	15
COL	LAR EL	EV. 17	71.0 ft		т	OTAL DEP	TH 38.6 f	t	NORTHIN	G 671,9	89		EASTING 1,987,002	24	HR.	14
RILL	. RIG/HAN	/MER E	FF./DA	TE TE	RI8016	MOBILE B-5	7 92% 02/0	7/2014		DRILL N	1ETHO	D H.S	S. Augers	HAMMER	TYPE /	Automatic
RIL	LER W	/ICHAF	RD, W.	i	S	TART DAT	E 08/25/1	4	COMP. DA	TE 08/	26/14		SURFACE WATER DEP	TH N/A		
LEV	DRIVE	DEPTH	BLC	W CO	UNT		BLOWS F	PER FOOT		SAMP.	V /		SOIL AND ROC	K DESCRI	DTION	
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25 5	50	75 100	NO.	моі	O G	ELEV. (ft)	K DESCKI	FIION	DEPTH
75		_											_			
	-	- -														
0	470.0	- 10						1				300000		OTMAT JVIAL		
U	170.0 -	1.0	WOH	1	1	•2					D	-	LT BROWN, F. SA SILT (A-4) W/ TF	NDY AND		Y
	167.5	3.5	2	2	2	4					D	-	31L1 (A-4) W/ 1F	VACE ORG	ANICS	
5	165.0_	6.0	3	4	4	7		<u> </u>			D		-			
	162.5 ⁻	- 8.5				-8							163.0 TRIASSIC	RESIDITA	i	
0	-	- -	2	3	4	7					М		LT. BROWN ORA		GRAY,	
	_	-											_ OANDI C)LAT (A 0)		
	157.5	13.5	3	4	6	●10					lacksquare					
5	-					-	ļ · · · · ·	ļ · · · ·	<u> </u>		М		_ 154.0			
	152.5	18.5	4	3	4								ORANGE AND TA	N, SILTY 2-4)	F. SAND)
0	-	=	4	3	4	•7					Sat.	_	(.	,		
	447.5	- 00 5											447.4			
	147.5	23.5	15	12	17		▶29				w	000-	147.4 146.4 GRAY, SILTY CSE		4-1-b) W	/
5	_	_					 		 				- GRAY, SILTY I	AVEL F. SAND (A	\-2-4)	
	142.5	28.5	100/0.3						100/0.3	,		477	142.5 WEATHER	RED ROCK	(
0	_	_							100/0.5				RED-BROWN, TRI			E
	- 137.5	- 33.5										<u>//</u>	139.0 TRIASSIC			
E	- 107.0	- - -	8	12	42			●54	1 : : : :		D	 -	RED-BROWN AND ((A	GRAY, CLA (-4)	AYEY SI	LT
5_	-	-										 -	-			
	132.5	38.5	60/0.1						60/0.1	-		- -	132.5 132.4_/\ NON-CRYSTA	ALLINE RO	ОСК	Λ_
	-	- -											RED-BROWN, TRI Boring Terminat	ASSIC SIL	TSTON	E
	=	=											Penetration Test F 132.4 ft in NCR: TR	Refusal at E	Elevation	
	-	-											102.4 10 111 11010. 110	170010 01	LIGION	
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WRS	33712					G REPORT P B-4461		Y CHATHA	M			GEOLOGIST Hunsberge	er W.S	
			N BR	DGF		ON SR 1916 (CORI				CREE	·K	GEOLOGIO Fidinopergi		OUND WTR (fi
	ING NO			DOL		FATION 15+40	, , , , , , , , , , , , , , , , , , ,	OFFSET		OIVEL		ALIGNMENT -LDET-	0 н	•
	LAR EL					OTAL DEPTH 28.7 f	<u> </u>	NORTHING		75		EASTING 1,986,959	24 H	,
						MOBILE B-57 92% 02/0		1			D H	1		PE Automatic
	LER V				-	TART DATE 08/25/1		COMP. DA				SURFACE WATER DEP		
ELEV	DDI) (E	DEPTH	Τ .	W CO		1	PER FOO		SAMP.		11			FIONI
(ft)	(ft)	(ft)		0.5ft	0.5ft	0 25	50	75 100	NO.	мо	O I G	SOIL AND ROCI	K DESCRIP	DEPTH (
170		-										_ 169.6 0.6' RO	OTMAT	0
	168.6	1.0	2	2	4					D			JVIAL	Y CLAY
405	166.3	3.3	7	12	17	•6.						(A-6) W/ TRACE OF	RGANICS, G	RAVEL
165	_ 	5.9				29				D		_		
	-	 	10	13	14	∳ 27				D		· 161 <u>.6</u>		8.
160	161.2	8.4	6	6	7	•13				M		TRIASSIC ORANGE AND BR	RESIDUAL OWN. SILTY	
	-	-				1		.				CSE SAN	ND (A-2-4)	
155	156.2	13.4	6	40	42									
155	-	-		10	72			82		М		- ·		
	151.2	101										,		
150		- 10.4	18	46	54/0.1			100/0.6	,		M	. 150.7 – WEATHEF	RED ROCK	18.
	-	 										RED-BROWN AND SILTS	O GRAY, TRI STONE	ASSIC
145	146.2	23.4	100/0.4					100/0.4			900	•		
140	-	 						100/0.4				- ·		
	141.2	28.4									975	. 140.9		28.
	171.2	20.4	100/0.3			<u> </u>	<u> </u>	100/0.3			القيارة	Boring Terminated a		40.9 ft in
	-	 -										. WR: TRIASSI	CSILISTON	1 ⊑
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NCDOT GEOTECHNICAL ENGINEERING UNIT

WBS	33712	2.1.1			TI	IP B-4461	COUNT	Y CHATHA	THAM GEOLOGIST Stickney, J. K.						
SITE	DESCR	RIPTIO	N BRI	IDGE	NO. 10	0 ON SR 1916 (CC	RINTH RD)	OVER SHA	NDDOX (CREE	K			GROUN	ID WTR (ft)
BOR	ING NO	. B-1	(PDEA	\)	S	STATION 18+51		OFFSET	10 ft RT			ALIGNMENT -L-		0 HR.	N/A
COL	LAR EL	EV. 1	73.2 ft		T	OTAL DEPTH 37.	9 ft	NORTHIN	G 671,9	933		EASTING 1,986,979		24 HR.	13.0
DRILL	. RIG/HAI	MMER E	FF./DA	TE N	/Α				DRILL N	/ETHO	D N	A	HAMM	ER TYPE	Automatic
DRILLER N/A			S	START DATE 04/2	COMP. DA	TE 04/	21/09		SURFACE WATER DEPTH N/A						
ELEV (ft) $P(t) = P(t) = P(t)$ $P(t) = P(t)$ $P(t)$				0 25	Г 75 100	SAMP. V L O NO. MOI G			SOIL AND RC	CRIPTION	N DEPTH (ft)				
175															
	-										1 600	173.2	EMB AN	1/84ENIT	0.0
170	- - - 168.9	- - - 4.3										ROADWAY BROWN AND C CLAYE		, F. SAND	Υ
	100.9	- 4.5	2	1	1	_ •2			SS-1	М		167.2			6.0
165	163.9	- - - 9.3										AL BROWN AND GRA	LUVIAL AY, SANI	DY CLAY	(A-6)
	-		1	2	3	5:			SS-2	М					
160	=					1				\blacksquare		_			
	158.9	_ 14.3	2	4	5				SS-3	M					
	-														40.0
155	153.9	_ _ 19.3				<u> </u>							Y SANDI	SILT (A-	<u>18.0</u> 4)
	-		3	6	7	13			SS-4	М					
150	-											_			
	148.9	24.3	5	5	5	. ;			SS-5	Sat.					
	=								000			. 146.7 . TRIASSI	C RESID	UAL	26.5
145	143.9	_ _ 29.3					- 	 				- RED/BROWN,	SANDY	CLAY (A-6	S) 29.3
	-		100/0.2					100/0.2	'			. WEATH . RED-BROWN, T	ERED RO		NE
140	-														
	138.9	34.3	100/0.2					100/0.2	•			- ·			
	-	Ī										•			
	-	- - -									SIE 18	Boring Terminated Elevation 135.3	ft on NCF	R: TRIASS	
	- - -	- - -										NOTE: SUBSUR		ATA FOR	
	- - -	- - -										(PDEA) ADAPTED DATED MAY 21, FIELD LOGS DA	2009 AN	D PROVID	DED
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WBS	33712					G REPORT P B-4461		Y CHATHA	M			GEOLOGIST Stickney, J	GEOLOGIST Stickney, J. K.				
SITE	DESCF	RIPTIO	N BRI	DGE	NO. 10	ON SR 1916 (CORI	NTH RD)	OVER SHA	DDOX (CREE	K		GROUND WTR				
30R	ING NO	. B-2 (PDEA	r)	S	FATION 19+61		OFFSET S	9 ft LT			ALIGNMENT -L-	0 HR. N				
COL	LAR EL	EV . 17	73.8 ft		TO	OTAL DEPTH 19.8 f	:	NORTHING	672,0	29		EASTING 1,986,921	24 HR . 10				
DRILL	. RIG/HAI	MMER E	FF./DA	TE N/	Ά		1		DRILL N	1ETHO	D N	Ά Ι	IAMMER TYPE Automati				
DRIL	LER N	/A			S	TART DATE 04/21/0	9	COMP. DA	TE 04/	21/09		SURFACE WATER DEP	ΓΗ N/A				
LEV DRIVE DEPTH BLOW COUN			W COUNT BLOWS PER FOOT				SAMP.			SOIL AND ROCK	DESCRIPTION						
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25 5	50	75 100	NO.	мо		ELEV. (ft)	DEPTH				
175		_									-	 _ 173,8					
	-	_										- ROADWAY EN - BROWN AND GRAY					
170	400.4											- -	,				
	169.4	4.4	1	1	1	∮ 2			SS-6	М		<u>.</u>					
	-											.					
65	164.4	9.4	1	1	1			 		\blacksquare		- 164.4	VIAT				
	-		'	1	1	2			SS-7	•		ALLU GRAY, SAND					
160		<u> </u>										- - _					
	159.4	14.4	WOH	1	2	1				М		<u>-</u>					
	-											- -					
155	154.4	19.4	100/0									- 154.4					
	-		100/0.4					100/0.4				TE 154.0 WEATHER RED-BROWN, TRIA	ASSIC SILTSTONE				
	-	F										Boring Terminated by Elevation 154.0 ft o					
	-	F										SILTS					
	-	 										NOTE: SUBSURFA					
	-	 										- (PDEA) ADAPTED FF - DATED MAY 21, 200	9 AND PROVIDED				
	-	 										- FIELD LOGS DATE -	D APRIL 21, 2009.				
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FALCON

1210 TRINITY ROAD, SUITE 110, RALEIGH, NORTH CAROLINA 27607

AASHTO SOIL CLASSIFICATION AND GRADATION SHEET

BRIDGE NO. 10 ON SR 1916 (CORINTH ROAD) OVER SHADDOX CREEK

TIP NO.: B-4461

CHATHAM COUNTY, NORTH CAROLINA FALCON ENGINEERING, INC. PROJECT NO: G14035.00

LABORATORY SUMMARY SHEET FOR ROCK CORE SAMPLES BRIDGE NO. 10 ON SR 1916 (CORINTH ROAD) OVER SHADDOX CREEK

TIP NO.: B-4461

CHATHAM COUNTY, NORTH CAROLINA FALCON ENGINEERING, INC. PROJECT NO: G14035.00

BOR	BORING SAMPLE			TAL SAM	PLE	Atter	berg Limi	t Test			SILT	CLAY
AASH	HTO Classific	ation	PEF	PERCENT PASSING			Results		COARSE SAND	FINE SAND		
STATION	OFFSET (FEET)	DEPTH (FEET)	#10	#40	#200	Ш	PL	PI	(%)	(%)	(%)	(%)
B-1 (P	DEA)	SS-1					22		2.2	18.9	50.5	
	A-4		100	99	88	30		8				28.4
18+51 -L-	10' RT	4.8-5.8										<u> </u>
B-1 (P		SS-2	100									
	A-6			100	91	33	21	12	0.4	16.4	45.0	38.1
18+51 -L-	18+51 -L- 10' RT 9.8-											
B-1 (P		SS-3	100									
	A-6 18+51 -L- 10' RT 14.8- ²			100	95	37	22	15	1.4	9.0	47.4	42.1
	18+51 -L- 10' RT											
B-1 (P	B-1 (PDEA) SS-4							_				
	A-4		100	99	81	27	20	7	3.2	23.9	44.8	28.1
18+51 -L-	10' RT	19.8-20.8										
B-1 (P		SS-5		82	40	17	15	2	39.3	25.5	23.2	
	A-4	24.8-25.8	100									12.0
	18+51 -L- 10' RT											
B-2 (P	B-2 (PDEA) SS-6							_				
A-4			99	98	78	24	19	5	1.6	32.7	39.6	26.1
19+61 -L-												
B-2 (P	B-2 (PDEA) SS-7					l		_				
	A-4		100	100	91	26	21	5	0.4	19.5	52.1	28.1
19+61 -L-	9' LT	9.9-10.9		į								

Sample No.	Boring	Depth (ft)	Rock Type	Geologic Map Unit	Run RQD	Length (ft)	Diameter (ft)	Unit Weight (PCF)	Unconfined Compressive Strength (PSI)	Young's Modulus (PSI)	Rock Mass Rating (RMR)
RS-1	B1-A	30.1-30.5	TRIASSIC SILTSTONE	TRcp	84%	0.35	0.16	165.9	10,020	1,316,005	51
RS-2	B1-A	31.7-32.0	TRIASSIC SILTSTONE	TRcp	84%	0.34	0.16	164.1	8,205	884,465	51











SITE PHOTOGRAPHS

BRIDGE NO. 10 ON SR 1916 (CORINTH RD) OVER SHADDOX CREEK CHATHAM COUNTY, NC WBS NO.: 33712.1.1, TIP NO.: B-4461