

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
NC	17BP.8.R.23	1A	14

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

PROJECT 17BP.8.R.23
COUNTY RANDOLPH
PROJECT DESCRIPTION REPLACE STRUCTURE
NO. 750346 ON SR 1179 OVER LANIERS
CREEK
SITE DESCRIPTION PROPOSED BRIDGE ON
SR 1179 OVER LANIERS CREEK

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WAS 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 UNIT ☉ (919) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA IS PART OF THE CONTRACT.

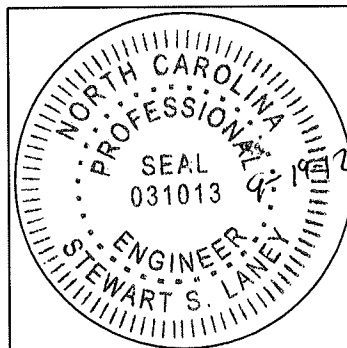
GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND 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 THIS 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.

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - 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.

INVESTIGATED BY S&ME, INC. PERSONNEL J. WILLIAMSON
CHECKED BY STEWART S. LANEY L. CAMPOS
SUBMITTED BY S&ME, INC. K. HILL
DATE 9/19/2012 C. ODOM
J. JACKSON



SEAL

SIGNATURE

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION


DIVISION OF HIGHWAYS

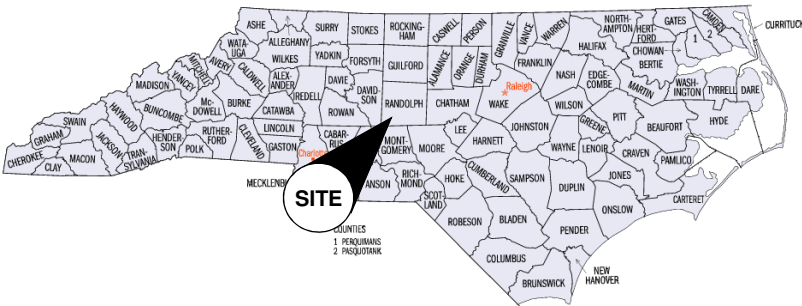
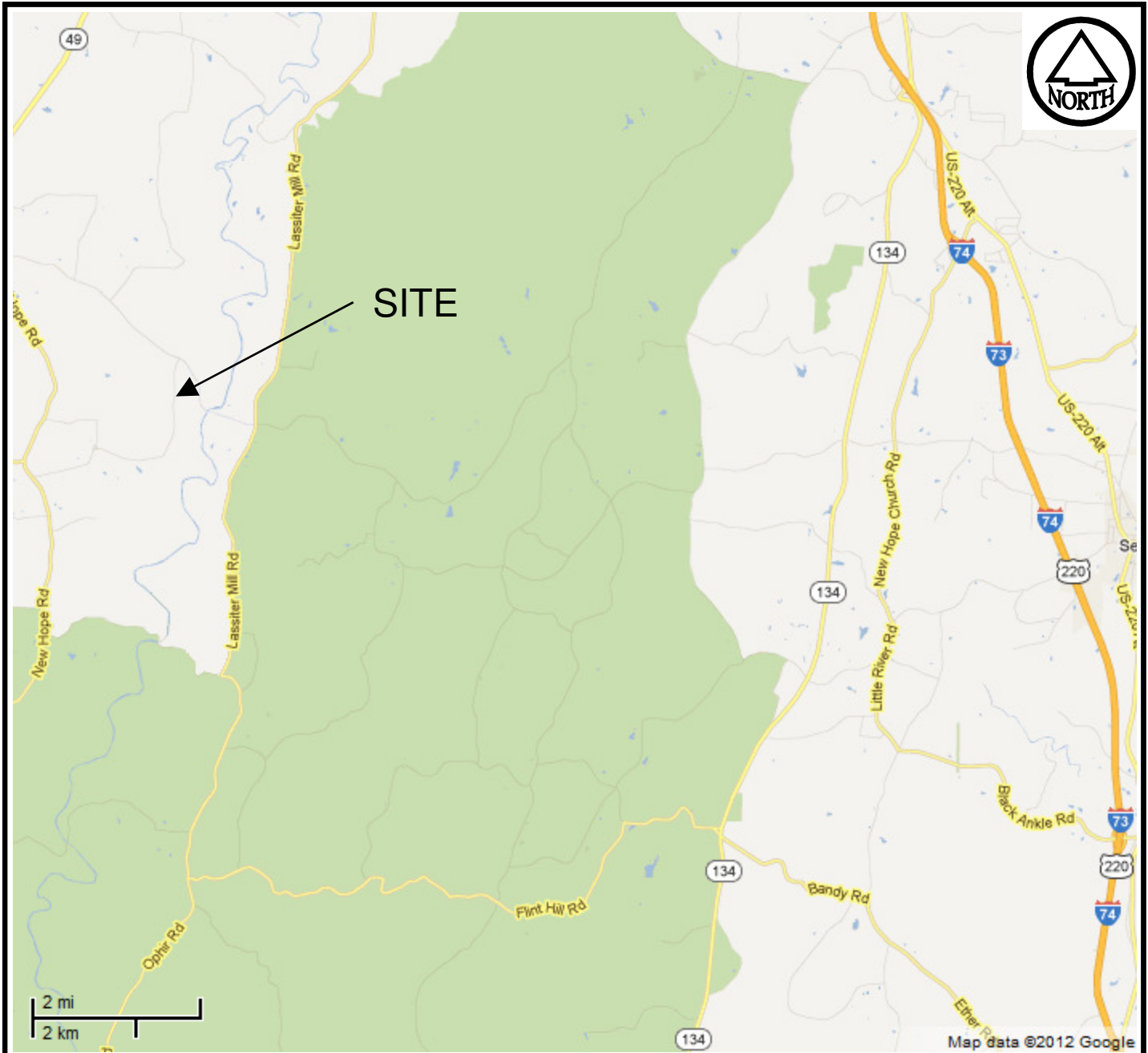
GEOTECHNICAL UNIT

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION										GRADATION																																																																																																																																																																																																										
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL UNIT SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

ROCK DESCRIPTION		TERMS AND DEFINITIONS	
<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WHEN TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:</p>		<p>ALLUVIUM (ALLUV.) – SOILS WHICH HAVE BEEN TRANSPORTED BY WATER.</p> <p>AQUIFER – A WATER BEARING FORMATION OR STRATA.</p> <p>ARENACEOUS – APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.</p> <p>ARGILLACEOUS – APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.</p> <p>ARTESIAN – GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.</p> <p>CALCAREOUS (CALC.) – SOILS WHICH CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.</p> <p>COLLUVIUM – ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.</p> <p>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.</p> <p>DIKE – A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.</p> <p>DIP – THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.</p> <p>DIP DIRECTION (DIP AZIMUTH) – THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.</p> <p>FAULT – A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.</p> <p>FISSILE – A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.</p> <p>FLOAT – ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.</p> <p>FLOOD PLAIN (F.P.) – LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.</p> <p>FORMATION (FM.) – A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.</p> <p>JOINT – FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.</p> <p>LEDGE – A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.</p> <p>LENS – A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.</p> <p>MOTTLED (MOT.) – IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.</p> <p>PERCHED WATER – WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.</p> <p>RESIDUAL SOIL – SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.</p> <p>ROCK QUALITY DESIGNATION (R.Q.D.) – 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.</p> <p>SAPROLITE (SAP.) – RESIDUAL SOIL WHICH RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.</p> <p>SILL – AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, WHICH HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.</p> <p>SLICKENSIDE – POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.</p> <p>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) – NUMBER OF BLOWS (N OR B.P.F.) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS LESS THAN 0.1 FOOT PENETRATION WITH 60 BLOWS.</p> <p>STRATA CORE RECOVERY (SREC.) – TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.</p> <p>STRATA ROCK QUALITY DESIGNATION (S.R.Q.D.) – A MEASURE OF ROCK QUALITY DESCRIBED BY: TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.</p> <p>TOPSOIL (T.S.) – SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>	
WEATHERED ROCK (WR)		NON-COASTAL PLAIN MATERIAL THAT YIELDS SPT N VALUES > 100 BLOWS PER FOOT.	
CRYSTALLINE ROCK (CR)		FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.	
NON-CRYSTALLINE ROCK (NCR)		FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.	
COASTAL PLAIN SEDIMENTARY ROCK (CP)		COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.	
WEATHERING			
FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.		
VERY SLIGHT (V. SL.)	ROCK GENERALLY FRESH, JOINTS STAINED. SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.		
SLIGHT (SL.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.		
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN 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 WITH FRESH ROCK.		
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i>		
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. <i>IF TESTED, YIELDS SPT N VALUES > 100 BPF</i>		
VERY SEVERE (V. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, YIELDS SPT N VALUES < 100 BPF</i>		
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.		
ROCK HARDNESS			
VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.		
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.		
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.		
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.		
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.		
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.		
FRACTURE SPACING		BEDDING	
TERM	SPACING	TERM	THICKNESS
VERY WIDE	MORE THAN 10 FEET	VERY THICKLY BEDDED	> 4 FEET
WIDE	3 TO 10 FEET	THICKLY BEDDED	1.5 - 4 FEET
MODERATELY CLOSE	1 TO 3 FEET	THINLY BEDDED	0.16 - 1.5 FEET
CLOSE	0.16 TO 1 FEET	VERY THINLY BEDDED	0.03 - 0.16 FEET
VERY CLOSE	LESS THAN 0.16 FEET	THICKLY LAMINATED	0.008 - 0.03 FEET
		THINLY LAMINATED	< 0.008 FEET
INDURATION			
FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.		
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.		
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.		
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.		
		ELEVATION: 383.40'	
NOTES:			
BENCH MARK: RR SPIKE IN 18" OAK TREE			



SCALE: AS SHOWN		SITE VICINITY MAP REPLACE STRUCTURE NO 750346 ON SR 1179 OVER LANIERS CREEK RANDOLPH COUNTY, NORTH CAROLINA	SHEET NO.
DRAWN BY: LAC			3
CHECKED BY: SSL			
DATE: 9/19/2012			



BEGIN APPROACH SLAB
-L- STA 12+47.00

PC Sta. 10+85.79

WOODS PRC Sta. 12+25.24

LANIERS CREEK

15

END APPROACH SLAB
-L- STA 13+66.00

WOODS

EB1-A

N.C.S.R. 1179 (LOU CRANFORD RD.)

-BL-

EB2-A

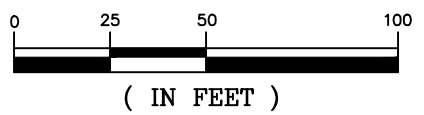
EB2-B

EB1-B

BEGIN BRIDGE
-L- STA. 12+85.00

END BRIDGE
-L- STA. 13+55.00

BENCHMARK
RR SPIKE IN
18" OAK TREE
ELEV. 383.40'



LEGEND

APPROXIMATE BORING LOCATION

SCALE: 1" = 50'	DATE: 9/19/2012
PROJECT NO. 17BP.8.R.23	DRAWN BY: LAC
CHECKED BY: SSL	


S&ME
 WWW.SMEINC.COM
 ENGINEERING LICENSE NO: F-0176

FIELD EXPLORATION PLAN

REPLACE STRUCTURE 750346
 ON SR 1179 OVER LANIERS CREEK
 RANDOLPH COUNTY, NORTH CAROLINA

SHEET NO.
4



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS N/A		TIP 17BP.8.R.23		COUNTY Randolph		GEOLOGIST J. Williamson											
SITE DESCRIPTION Proposed Bridge on SR 1179 Over Laniers Creek									GROUND WTR (ft)								
BORING NO. EB1-A		STATION 12+76		OFFSET 13 ft LT		ALIGNMENT -L-		0 HR. Dry									
COLLAR ELEV. 381.4 ft		TOTAL DEPTH 17.9 ft		NORTHING 662,290		EASTING 1,707,768		24 HR. Caved									
DRILL RIG/HAMMER EFF./DATE CME-55 90% 8/17/2012				DRILL METHOD 3 1/4" HSA		HAMMER TYPE Automatic											
DRILLER C. Odom		START DATE 07/25/12		COMP. DATE 07/25/12		SURFACE WATER DEPTH N/A											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
385														381.4	GROUND SURFACE	0.0	
380	380.4	1.0	2	10	7							M			ROADWAY EMBANKMENT Tan Brown Silty CLAY (A-7-5), Some Gravel		
	377.9	3.5	2	2	3							M		376.7		4.7	
375	375.4	6.0	2	15	23							M		374.6	RESIDUUM Gray Brown Silty CLAY (A-7-5)	6.8	
	372.9	8.5	8	18	30							D			RESIDUUM Tan Brown Sandy SILT (A-4), Some Rock Fragments		
370														369.4	WEATHERED ROCK (Metamudstone)	12.0	
	367.9	13.5	60/0.2										D				
365														363.5		17.9	
	363.5	17.9	60/0														
															Boring Terminated with Standard Penetration Test Refusal at Elevation 363.5 ft On Non-Crystalline Rock (Metamudstone) 1) 3 1/4" Hollow Stem Augers Advanced to 17.9 Feet 2) Standard Penetration Test Refusal at 17.9 Feet		

NCDOT BORE SINGLE 346.GPJ NC_DOT.GDT 9/19/12



NCDOT GEOTECHNICAL ENGINEERING UNIT

CORE BORING REPORT

WBS N/A		TIP 17BP.8.R.23		COUNTY Randolph		GEOLOGIST J. Williamson							
SITE DESCRIPTION Proposed Bridge on SR 1179 Over Laniers Creek									GROUND WTR (ft)				
BORING NO. EB1-B		STATION 12+79		OFFSET 13 ft RT		ALIGNMENT -L-		0 HR. N/A					
COLLAR ELEV. 382.7 ft		TOTAL DEPTH 21.1 ft		NORTHING 662,285		EASTING 1,707,794		24 HR. FIAD					
DRILL RIG/HAMMER EFF./DATE CME-55 90% 8/17/2012				DRILL METHOD 3 1/4" HSA/NQ2 CORE		HAMMER TYPE Automatic							
DRILLER C. Odom		START DATE 07/26/12		COMP. DATE 07/26/12		SURFACE WATER DEPTH N/A							
CORE SIZE NQ2		TOTAL RUN 9.4 ft											
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)	
					REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %				
371	371.0	11.7	4.4	2:45/1.0	(4.4)	(3.7)		(9.3)	(5.9)			11.7	
370				3:30/1.0	100%	84%		99%	63%			<p>Begin Coring @ 11.7 ft</p> <p>NON-CRYSTALLINE ROCK</p> <p>Gray Metamudstone, Fresh to Very Slightly Weathered, Hard to Moderately Weathered, Close to Moderately Close Fracture Spacing with 26 Joints at 30° and 2 Joints at 60°</p>	
				3:15/1.0									
				3:00/1.0									
	366.6	16.1		5:00/0.4									
			5.0	3:00/1.0	(4.9)	(2.2)							
365				3:15/1.0	98%	44%							
				3:30/1.0									
				3:30/1.0									
	361.6	21.1		4:00/1.0									
													21.1
<p>Boring Terminated at Elevation 361.6 ft In Non-Crystalline Rock (Metamudstone)</p> <p>1) 3 1/4" Hollow Stem Augers Advanced to 11.7 Feet 2) Standard Penetration Test Refusal at 11.7 Feet 3) NW Casing Advanced to 11.7 Feet 4) NQ2 Coring From 11.7 to 21.1 Feet 5) Water Used as Coring Fluid 6) Approximate Coring Fluid Density 62.4 pcf</p>													

NCDOT CORE SINGLE 346.GPJ NC_DOT.GDT 9/19/12



NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

WBS N/A		TIP 17BP.8.R.23		COUNTY Randolph		GEOLOGIST J. Williamson									
SITE DESCRIPTION Proposed Bridge on SR 1179 Over Laniers Creek							GROUND WTR (ft)								
BORING NO. EB2-A		STATION 13+65		OFFSET 12 ft LT		ALIGNMENT -L-	0 HR. Dry								
COLLAR ELEV. 385.4 ft		TOTAL DEPTH 15.8 ft		NORTHING 662,375		EASTING 1,707,789	24 HR. FIAD								
DRILL RIG/HAMMER EFF./DATE CME-55 90% 8/17/2012				DRILL METHOD 3 1/4" HSA		HAMMER TYPE Automatic									
DRILLER C. Odom		START DATE 07/25/12		COMP. DATE 07/25/12		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
390															
385	384.4	1.0	6	5	4									385.4	0.0
	381.9	3.5	2	2	2									382.4	3.0
380															
	379.4	6.0	1	3	4									379.9	5.5
	376.9	8.5	8	11	18									377.4	8.0
375															
	371.9	13.5	60/0.3											373.4	12.0
370															
	369.6	15.8	60/0											369.6	15.8

NCDOT BORE SINGLE 346.GPJ NC_DOT.GDT 9/19/12



NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS N/A	TIP 17BP.8.R.23	COUNTY Randolph	GEOLOGIST J. Williamson
SITE DESCRIPTION Proposed Bridge on SR 1179 Over Laniers Creek			GROUND WTR (ft)
BORING NO. EB2-B	STATION 13+69	OFFSET 8 ft RT	ALIGNMENT -L-
COLLAR ELEV. 385.7 ft	TOTAL DEPTH 20.2 ft	NORTHING 662,375	EASTING 1,707,810
DRILL RIG/HAMMER EFF./DATE CME-55 90% 8/17/2012		DRILL METHOD 3 1/4" HSA/NQ2 CORE	HAMMER TYPE Automatic
DRILLER C. Odom	START DATE 07/25/12	COMP. DATE 07/25/12	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
390																
385	384.7	1.0	3	3	4									385.7	GROUND SURFACE	0.0
	382.2	3.5	2	2	2											
380	379.7	6.0	2	1	3									380.2	RESIDUUM Tan and Blue Gray Silty CLAY (A-7-5), Little Organic Matter (Roots)	5.5
	377.2	8.5	2	25	75/0.1											
375	374.0	11.7	60/0											376.7	WEATHERED ROCK (Metamudstone)	9.0
														374.0	NON-CRYSTALLINE ROCK (Metamudstone)	11.7
														372.4	NON-CRYSTALLINE ROCK (Metamudstone)	13.3
														370.6	NON-CRYSTALLINE ROCK (Metamudstone)	15.1
370																
														366.5	NON-CRYSTALLINE ROCK (Metamudstone)	19.2
														365.5	NON-CRYSTALLINE ROCK (Metamudstone)	20.2
Boring Terminated at Elevation 365.5 ft In Non-Crystalline Rock (Metamudstone)																
1) 3 1/4" Hollow Stem Augers Advanced to 11.7 Feet 2) Standard Penetration Test Refusal at 11.7 Feet 3) NW Casing Advanced to 11.7 Feet 4) NQ2 Coring From 11.7 to 20.2 Feet 5) Water Used as Coring Fluid 6) Approximate Coring Fluid Density 62.4 pcf																

NCDOT BORE SINGLE 346.GPJ NC_DOT.GDT 9/19/12



NCDOT GEOTECHNICAL ENGINEERING UNIT

CORE BORING REPORT

WBS N/A		TIP 17BP.8.R.23		COUNTY Randolph		GEOLOGIST J. Williamson					
SITE DESCRIPTION Proposed Bridge on SR 1179 Over Laniers Creek									GROUND WTR (ft)		
BORING NO. EB2-B		STATION 13+69		OFFSET 8 ft RT		ALIGNMENT -L-		0 HR. N/A			
COLLAR ELEV. 385.7 ft		TOTAL DEPTH 20.2 ft		NORTHING 662,375		EASTING 1,707,810		24 HR. 6.5			
DRILL RIG/HAMMER EFF./DATE CME-55 90% 8/17/2012				DRILL METHOD 3 1/4" HSA/NQ2 CORE		HAMMER TYPE Automatic					
DRILLER C. Odom		START DATE 07/25/12		COMP. DATE 07/25/12		SURFACE WATER DEPTH N/A					
CORE SIZE NQ2		TOTAL RUN 8.5 ft									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %			
374		11.7	5.0	3:30/1.0	(5.0) 100%	(2.4) 48%	(1.6) 100%	(0.9) 56%		Begin Coring @ 11.7 ft	
				3:15/1.0						NON-CRYSTALLINE ROCK	11.7
				2:15/1.0			(1.8) 100%	(0.0) 0%		Bluish Gray Metamudstone, Fresh to Very Slightly Weathered, Hard, Close to Moderately Close Fracture Spacing with 3 Joints at 10°	13.3
				2:30/1.0						NON-CRYSTALLINE ROCK	
				3:15/1.0			(4.1) 100%	(3.8) 93%		Bluish Gray Metamudstone, Fresh to Very Slightly Weathered, Hard, Close to Moderately Close Fracture Spacing with 10 Joints at 60°	15.1
370				3:45/1.0	(3.4) 97%	(2.3) 66%				NON-CRYSTALLINE ROCK	
	369.0	16.7	3.5	3:30/1.0						Bluish Gray Metamudstone, Fresh to Very Slightly Weathered, Hard, Close to Moderately Close Fracture Spacing with 5 Joints at 30° and 1 Joint at 60°	
				4:15/1.0							
	365.5	20.2		3:45/0.5			(0.9) 90%	(0.0) 0%		Bluish Gray Metamudstone, Slightly to Moderately Weathered, Hard, Close to Moderately Close Fracture Spacing with 7 Joints at 10-20° and 1 Joint at 60°; Other Joints Indiscernible	19.2
										Boring Terminated at Elevation 365.5 ft In Non-Crystalline Rock (Metamudstone)	20.2
<p>1) 3 1/4" Hollow Stem Augers Advanced to 11.7 Feet</p> <p>2) Standard Penetration Test Refusal at 11.7 Feet</p> <p>3) NW Casing Advanced to 11.7 Feet</p> <p>4) NQ2 Coring From 11.7 to 20.2 Feet</p> <p>5) Water Used as Coring Fluid</p> <p>6) Approximate Coring Fluid Density 62.4 pcf</p>											

NCDOT CORE SINGLE 346.GPJ NC_DOT.GDT 9/19/12

<i>Project No:</i> 1351-11-343G	<i>Project ID:</i> 17BP.8.R.23	<i>County:</i> Randolph	<i>Boring No.:</i> EB1-B
<i>Site Description:</i> Proposed Bridge on SR 1179 over Laniers Creek			<i>Driller:</i> C. Odom
<i>Collar Elev.:</i> 382.7	<i>Core Size:</i> NQ-2	<i>Equipment:</i> CME-55	<i>Geologist:</i> J. Williamson
<i>Elev. at T.D.:</i> 361.6	<i>Total Depth:</i> 21.1'	<i>Total Run:</i> 9.4'	<i>Date:</i> 7/26/2012



Box 1 of 1

Top of Box @ 11.7 feet; Bottom of Box @ 21.1 feet

<i>Project No:</i> 1351-11-343G	<i>Project ID:</i> 17BP.8.R.23	<i>County:</i> Randolph	<i>Boring No.:</i> EB2-B
<i>Site Description:</i> Proposed Bridge on SR 1179 over Laniers Creek			<i>Driller:</i> C. Odom
<i>Collar Elev.:</i> 385.7	<i>Core Size:</i> NQ-2	<i>Equipment:</i> CME-55	<i>Geologist:</i> J. Williamson
<i>Elev. at T.D.:</i> 365.5	<i>Total Depth:</i> 20.2'	<i>Total Run:</i> 8.5'	<i>Date:</i> 7/25/2012



Box 1 of 1

Top of Box @ 11.7 feet; Bottom of Box @ 20.2 feet



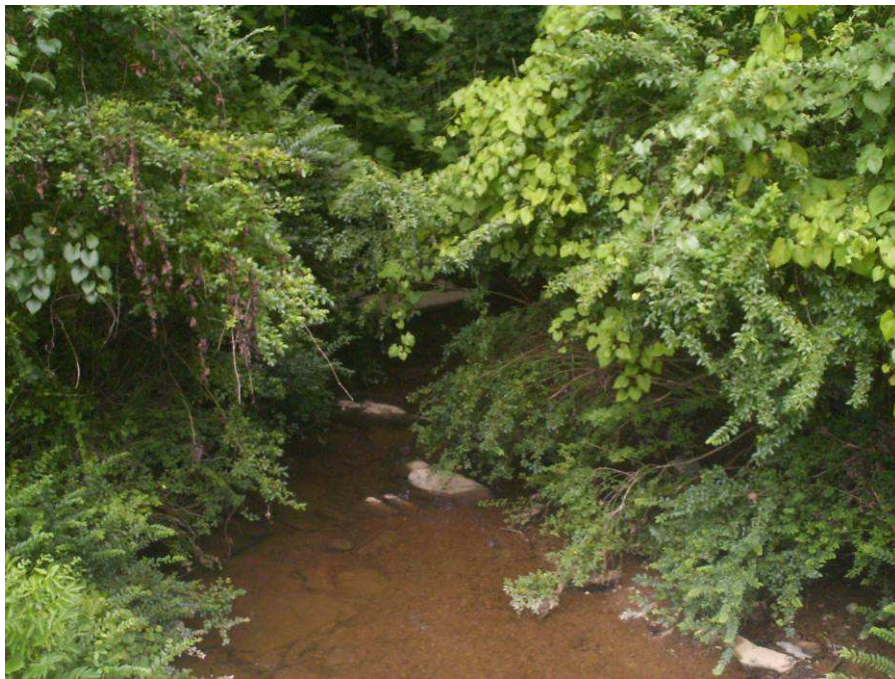
Photograph No. 1:
View looking north up-station from south approach



Photograph No. 2:
View looking south down-station from north approach



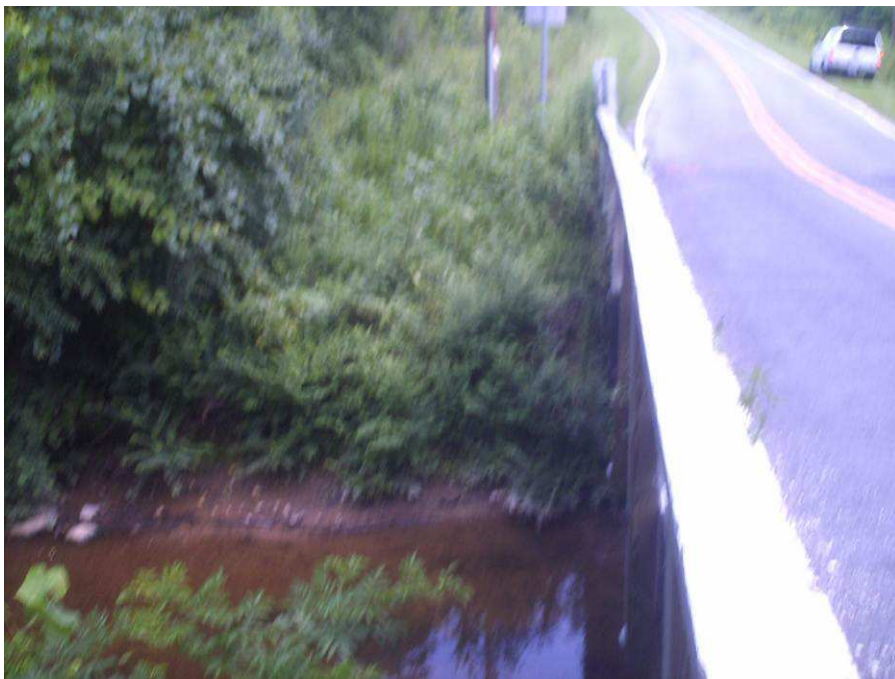
Photograph No. 3:
View looking west upstream from bridge deck



Photograph No. 4:
View looking east downstream from bridge deck



Photograph No. 5:
View looking south at left side of End Bent 1



Photograph No. 6:
View looking south at right side of End Bent 1



Photograph No. 7:
View looking north at left side of End Bent 2



Photograph No. 8:
View looking north at right side of End Bent 2