0 3 S Ö REFERENCE

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DESCRIPTION

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TITLE SHEET LEGEND (SOIL & ROCK)

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PROFILE

SHEET NO.

5-6

7-II

5695 4

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY **RANDOLPH**

PROJECT DESCRIPTION BRIDGE NO. 170 ON SR 2621 (FOUSHEE ROAD) OVER REED CREEK

STATE PROJECT REPERENCE NO. 12 B-5739

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSES 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 707-6550. THE SUBSURFACE 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 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 STIU IN-PLACET 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 NDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION, THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS THE 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 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 ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

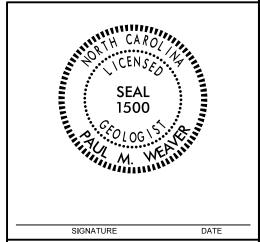
NOTES:

1. 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.

2. 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.

C.R. PASTRANA Trigon Exploration INVESTIGATED BY ESP Associates, P.A. DRAWN BY __T.T. WALKER CHECKED BY P. WEAVER SUBMITTED BY ESP Associates, P.A. DATE September 2016

PERSONNEL



DOCUMENT NOT CONSIDERED FINAL

UNLESS ALL SIGNATURES COMPLETED

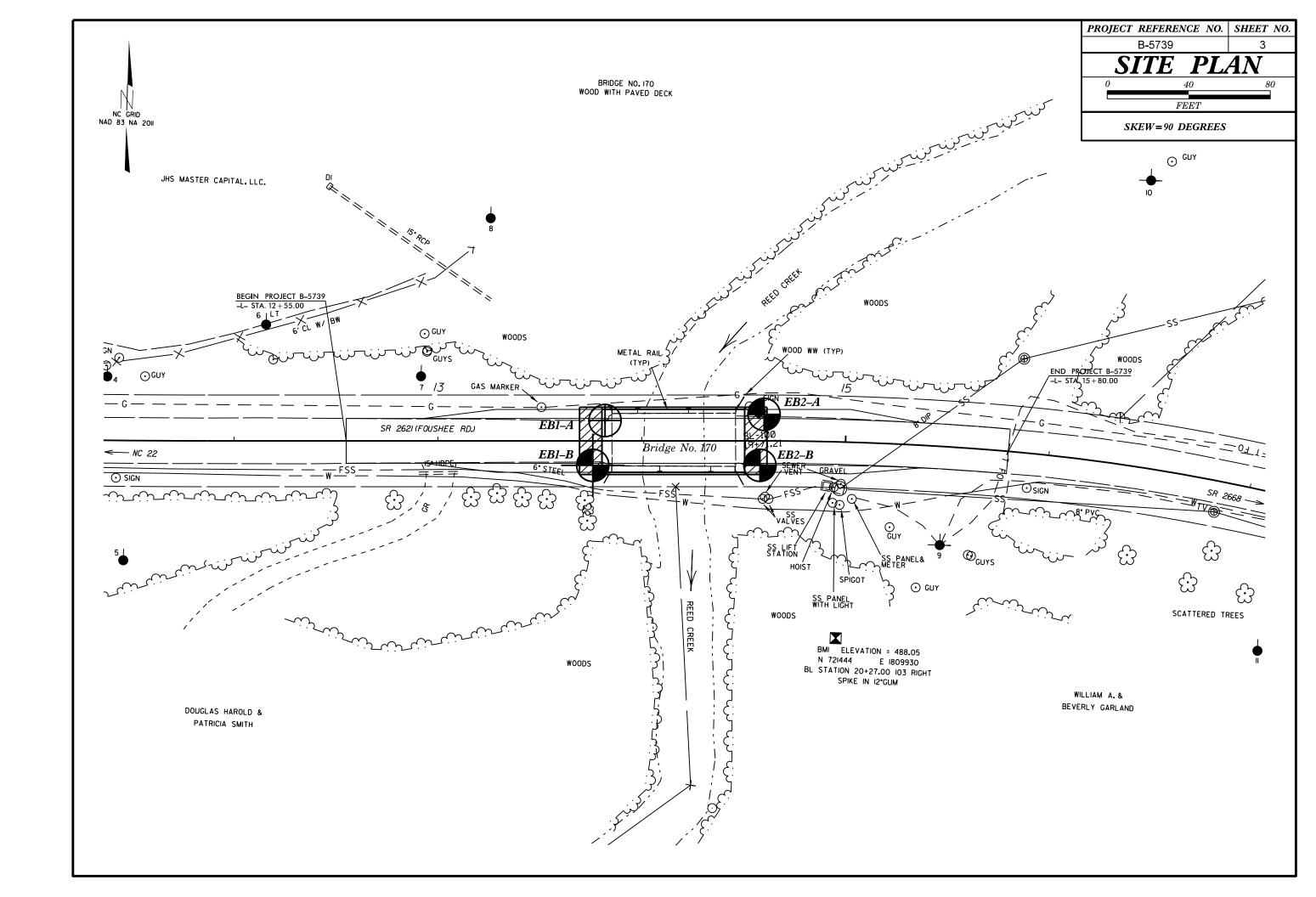
PROJECT REPERENCE NO.	SHEET NO.
B-5739	2

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	<u>WELL GRADED</u> - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. <u>UNIFORMLY GRADED</u> - 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.	ALLUYIUM (ALLUY.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM DI586). 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	ADUIFER - A WATER BEARING FORMATION OR STRATA.
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE,	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. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING
VERY STIFF, GRAY, SILTY CLAY, WOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: <u>ANGULAR, SUBANGULAR, SUBROUNDED</u> , OR <u>ROUNDED</u> .	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES >	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
SOIL LEGEND AND AASHTO CLASSIFICATION	MINERALOGICAL COMPOSITION	ROCK (WR) 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 CLASS. (≤ 35% PASSING "200) (> 35% PASSING "200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAQLIN, ETC.	CRYSTALLINE CRYSTALLINE WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE.	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.
CROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5	ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	CNEISS, GABBRO, SCHIST, ETC.	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
CLASS. A-1-6 A-1-6 A-2-4 A-2-5 A-2-6 A-2-7 A-7-6 A-7-6 A-7-6	COMPRESSIBILITY	NUN-CRYSTALLINE SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
SYMBOL 000000000000000000000000000000000000	SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50	ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC. COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD	OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED
7. PASSING SILT-	HIGHLY COMPRESSIBLE LL > 50	SEDIMENTARY ROCK SPT REFUSAL, ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.	BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
"18 58 MX CLAY PEAT "48 38 MX 59 MX 51 MN STAN STAN STAN STAN STAN STAN STAN STA	PERCENTAGE OF MATERIAL GRANULAR SILT - CLAY	WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
ואו של ואו של אוו של אוו של או כל	GRANULAR SILT - CLAY ORGANIC MATERIAL SOILS SOILS OTHER MATERIAL	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.	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%	VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN,	HORIZONTAL.
LL - 48 MX 41 MM LITTLE OR HIGHLY PI 6 MX MP 18 MX 18 MX 11 MM 11 MM 18 MX 18 MX 11 MM 11 MM LITTLE OR HIGHLY	MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE	(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 LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
CROINE INDEX A A A MY A MY 12 MY 15 MY UN MY AMOUNTS OF ORGANIC	GROUND WATER	OF A CRYSTALLINE NATURE. SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
USINAL TYPES STORE EDAGS ORGANIC SUILS	✓ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	(SLI.) I INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
OF MAJOR GRAVEL AND SAND GRAVEL AND SAND GRAVEL AND SAND SOILS SOILS	STATIC WATER LEVEL AFTER 24 HOURS	CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS. MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
CEN PATING.		(MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.
AS SUBGRADE EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITABLE	E SPRING OR SEEP	DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED 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	-	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.
CONSISTENCY OR DENSENESS COMPAGENESS RANGE OF STANDARD RANGE OF UNCONFINED	MISCELLANEOUS SYMBOLS	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 COMPACTIVES OF PENETRATION RESISTENCE COMPRESSIVE STRENGTH	ROADWAY EMBANKMENT (RE) 25/825 DIP & DIP DIRECTION	IF TESTED, WOULD YIELD SPT REFUSAL	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
CUNSISTENCT (N-VALUE) (TONS/FT ²) VERY LOOSE < 4	WITH SOIL DESCRIPTION → OF ROCK STRUCTURES SET OF ROCK STRUCTURES SET OF ROCK STRUCTURES SET OF ROCK STRUCTURES	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 LOOSE 4 TO 10	SOIL SYMBOL OF 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. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS
MATERIAL MEDIUM DENSE 10 10 30 N/A	ARTIFICIAL FILL (AF) OTHER AUGER BORING CONE PENETROMETER	IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS ARE DISCERNIBLE	USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
(NON-COHESIVE) VERY DENSE > 50		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 OF AN INTERVENING IMPERVIOUS STRATUM,
VERY SOFT < 2 < 0.25 GENERALLY SOFT 2 TO 4 0.25 TO 0.5	- INFERRED SOIL BOUNDARY - CORE BORING SOUNDING ROD	(V SEV.) REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0 MATERIAL STIFF 8 TO 15 1 TO 2	INFERRED ROCK LINE MONITORING WELL TEST BORING WITH CORE	COMPLETE ROCK REDUCED TO SOIL, ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND	ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4	→ → → → → → → ALLUVIAL SOIL BOUNDARY	SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.	ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
HARD → 300 → 4 TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	ROCK HARDNESS	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT
		VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES	ROCK.
U.S. STD. SIEVE SIZE 4 10 40 60 200 270 OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	UNSUITABLE WASTE	SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK. HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS 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
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	SHALLOW UNCLASSIFIED EXCAVATION - USED IN THE TOP 3 FEET OF UNDERCUT SHALLOW EMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN.	THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
(BLDR.) (COB.) (GR.) (CSE. SD.) (F SD.) (SL.) (CL.)	ABBREVIATIONS	MODERATELY 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	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
GRAIN MM 305 75 2.0 0.25 0.05 0.005	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST	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 CL CLAY MOD MODERATELY 7 - UNIT WEIGHT	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES I INCH MAXIMUM SIZE BY HARD BLOWS OF THE	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 PENETRATION EQUAL
SOIL MOISTURE - CORRELATION OF TERMS	CPT - CONE PENETRATION TEST NP - NON PLASTIC 7d- DRY UNIT WEIGHT	POINT OF A GEOLOGIST'S PICK.	TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
SOIL MOISTURE SCALE FIELD MOISTURE GUIDE FOR FIELD MOISTURE DESCRIPTION (ATTERBERG LIMITS) DESCRIPTION	CSE COARSE ORG ORGANIC DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS	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	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY	OPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON	PIECES CAN BE BROKEN BY FINGER PRESSURE.	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	VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES I INCH 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 SEMISOLID; REQUIRES DRYING TO	FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL	FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
(P) ATTAIN OPTIMUM MOISTURE	FRAGS FRAGMENTS	FRACTURE SPACING BEDDING	BENCH MARK: BM *1: SPIKE IN 12" IN GUM TREE; -L- STATION 14+97.78,
""PLL + PLASTIC LIMIT	HI HIGHLY V - VERY RATIO EQUIPMENT USED ON SUBJECT PROJECT	TERM SPACING TERM THICKNESS VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	96.32' RIGHT
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 MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET	ELEVATION: 488.05 FEET
SL SHRINKAGE LIMIT	CLAY BITS X AUTOMATIC MANUAL	CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.03 - 0.16 FEET	NOTES:
- DRY - (D) ATTAIN OPTIMUM MOISTURE	X 6° CONTINUOUS FLIGHT AUGER CORE SIZE:	VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET	F.I.A.D= FILLED IMMEDIATELY AFTER DRILLING
PLASTICITY	8 HOLLOW AUGERS	INDURATION]
PLASTICITY INDEX (PI) DRY STRENGTH	CME-550 HARD FACED FINGER BITS X -N Q	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	
NON PLASTIC 0-5 VERY LOW SLIGHTLY PLASTIC 6-15 SLIGHT	VANE SHEAR TEST UNGCARBIDE INSERTS	FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
MODERATELY PLASTIC 16-25 MEDIUM	CASING W/ ADVANCER POST HOLE DIGGER	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE;	
HIGHLY PLASTIC 26 OR MORE HIGH	PORTABLE HOIST TRICONE STEEL TEETH HAND AUGER	BREAKS EASILY WHEN HIT WITH HAMMER.	
COLOR	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). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.	CORE BIT VANE SHEAR TEST	CHARD HAMMED BLOWG DECUMPED TO DREAM CAMPLE.	
MODIFIERS SOUR HS LIURI, DHRK, SIREMKED, EIG, MRE USED ID DESCRIBE AFFERMANCE.		EXTREMELY INDURATED SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-14



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		 	. <u> </u>	 			FEET	B-5739	4
							VE = 1:1	PROFILE BORINGS ALONG -	PROJECTED -L-
500	EB1–B 13 + 76 12' RT					EB2- 14 + 12' F	58		500
490									490
480	Ground Surface Roadway Embankment: Mois Brown, Some Med. Silty CLAY Trace Crystalline Rock: 60/0.1 Gray, Slightly Weathered to Fresh, RE With Close to Wide Fracture Spacing RE BIT FIAD.		e; — A	REED CREEK ▼	Wet, Greenish Gro	Roadway Moist, Orange CLAY (A-7-5), Nate: Boulder Alluvial: Tay, Very Soft, Fine Sandy	Embankment: Brown, Soft, Sil Little Gravel from 2.8'-3.1'	h T=	480
470 <i>H</i>	Gray, Slightly Weathered to Fresh, lard to Very Hard, METAVOLCANIC ROCK with Close to Wide Fracture Spacing	C=90%, RQD=83% C=88%, RQD=88%	(),	//-//-/-/-/-/-/-/-/-/-/-/-/-/-/-	777 <u>-</u> 777-	7/7 <u>-7</u> /7 <u>-</u> 7/7 <u>-</u> 7	60/0.0		470
.460	EĬĀD								460
450			-						450
440									440
.430									430
420						(A) Alla (B) We	vial: Boulders athered Rock: Gro	y METAVOLCANIC ROCK	420
INFE	UNDLINE TAKEN FROM BSR FILE PROVIDED BY NCDO RRED STRATIGRAPHY IS DRAWN THROUGH THE BORI. RECTED ONTO THE PROFILE	;				© Res	idual: Dry, Greeni SAND (A-	sh Gray, Very Dehse, Silty, Fine to the silty of the second silty	o Coarse

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 							1 1 1 1 1 1			FEET $VE = 1:1$	SECTION THRO STA SKEW=	OUGH END BE 13+80.00 90 DEGREES	ENT 1
500					E	BI-A + 82		EB1-B	! ! ! !				500
500				<u></u>		+82 ''LT'	<u>E</u>	13 + 76 12' RT					500
490				<u> </u> 	 								490
 						Ground S	urface Embankment:						
480				Moist, (Prange Brown,	Soft to Med	ium Stiff, 🐠	Silty CLA	Y (A-7-5),				480
i 				.==	Alluvial: Wef.	Little to Ti BTGreenish	Gray, Medium 7 Fine Sandy CLAN	Stiff, Coo (A-6), Tr	arse to ace Gravel	(A)			
470						<u>B</u>	Crystalline Rock to Fresh, Hard t with Close to	7/7/— 7/ REC=90%. Gray, Sligh	7 <u> </u>	B			470
400					 		io Fresh, Hard t with Close to	Very Hard Wide Fra REC=88%	t,METAVOLCANIC cture Spacing k,RQD=88%	ROCK			400
460								; _EIAD					40
. 450				 	 								450
440				<u> </u>									44(
400									 				100
430										A Alluvial: Boulders			430
420					ļ 					A Alluvial: Boulders B Weathered Rock: 0	Pray METAVOLCANIO	C ROCK	420
1	GROUNDLINE TAKEN FROM INFERRED STRATIGRAPHY IS	i		i			; ; ; ; ; ; ;		; ; ; ; ; ; ;				
410	PROJECTED ONTO THE CROS	:	 	i ! !		1:0				3iO 4iO			410

	į.	!	!		I I	1		I I	! 0	10 20	PROJECT REFER	RENCE NO. SHEET	NO.
	; 				; }	¦ 		; ;	<u> </u>	10 20	B-5739		
										FEET $VE = 1:1$	SECTION THE	ROUGH END BENT 2 A. 14+50.00 = 90 DEGREES	2
									L	<u> </u>	SKEW	=90 DEGREES	
į					EB2–A			; EB2–B	! !				
.510		 			14 + 60	 		<u>l</u> 4+58	! ! !	 		ļ <u>.</u> 5	.510
;					13' LT	9	,	12' RT	! ! !				
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;	 	1			- 	Ground Su	rface	! ! !	! ! !				
! !									! ! !				
400	i !	i !		/		Roadway Em	bankmet:				i !		
480		 		Dry	to Moist,	Orange Brown to	Tan Brown,	Soft to Me	dium Stiff,	 		¦¦4	.480
;				Clayey SILT (A	' - {} 	ŞiIty CLAY (A−7-	5), and Fine	Sandy S	LT (A-4),				
ļ							Alluvial:	Wet, Gree	hish Gray,Very				
:			_	'	Gravel	L Daulders	Soft, Fine	Sandy CL	<u>AY (A-6)</u>	Rock Fragments			
470		i !			(100/0.3)	Silty, Fine	t <u>o Coarse</u> (93)	SA/	YD <u>(A−I−b</u>) <u>w</u> ith	Rock Fragments		4	.470
	 	 		Weathered TAVOLCANIC RO /— ///—/	Rock: G	rioy	T =	BT / 60/0.0	<u>7=77=7</u>	n			
i	i ! !	i !	M.E.	(AVULCANIC RUI 	60/0.I RT 7/	7= // Cryst	alline Rock: Gra	; METAVOLCANIO	ROCK		i !		
		1			DRY			! ! !	! ! !				
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;	GROUNDLINE TAKEN FROM .TIN	FILE PROVIDED	$\dot{\dot{B}}Y$ NCDOT DATED	08/23/2016.	! !			! ! !	! !				
!	INFERRED STRATIGRAPHY IS DR	•	HE BORINGS WITH	BOTH	! ! !	:		! ! !	! ! !				
420	PROJECTED ONTO THE CROSS S	SECTION !							1 1		; !		420
U ¦						-i- 1:0 (30 40			-740

GEOTECHNICAL BORING REPORT BORE LOG

											L	3 C	IK		_(DG			
WBS 456	95.1.1			1	TIP	В-	5739			С	OUN	ITY	RA	NDO	LF	PΗ			GEOLOGIST Pastrana, C.R.
SITE DESC	RIPTION	Brid	ge No	o. 170	on	sR	262	1 (Fc	oushe	ee R	oad)	ove	er Re	ed C	re	ek			GROUND WTR (fi
BORING N	0. EB1-	-A			STA	ATIO	N 1	3+8	2			7	OFFS	ET	10	ft LT			ALIGNMENT -L- 0 HR. Dr
COLLAR E	LEV . 48	35.1 ft		-	тот	ΓAL	DEP	ТН	9.8 f	t		1	NOR	THING	G	721,5	47		EASTING 1,809,813 24 HR. FIAE
DRILL RIG/H	AMMER E	FF./DA	TE S	IMCO-	2400	0 SK-	-1								T	DRILL IV	ETHO	D H	H.S. Augers HAMMER TYPE N/A
DRILLER	Toothma	an, R.			STA	ART	DATI	E 0	8/23/	′16		1	СОМ	P. DA	ιTI	E 08/2	23/16		SURFACE WATER DEPTH N/A
ELEV DRIVI	DEPTH (ft)	BLC 0.5ft	0.5ft	_	t	0		Bl 25	OWS	50	R FO	OT 7	5	100	11	SAMP. NO.	MOI	L O G	
490 485																			485.1 GROUND SURFACE ROADWAY EMBANKMENT Moist, Orange Brown, Soft to Medium Stiff, Sith CLAY (A.7.5) Liftle Gravel
480	****************************							:											AILUVIAL Wet, Greenish Gray, Very Soft to Soft, Coarse to Fine Sandy CLAY (A-6) Boulders Boring Terminated at Elevation 475.3 ft In Alluvial Boulders Auger Probe Without SPTs Was Used for This Boring Due to Overhead Powerlines Preventing Raising of a Drill Rig Mast

SHEET 7 OF 12

GEOTECHNICAL BORING REPORT BORE LOG

	D	ORE LOG		
BS 45695.1.1	TIP B-5739 COUNT	randolph	GEOLOGIST Pastrana, C.R.	
TE DESCRIPTION Bridge No. 1	170 on SR 2621 (Foushee Road) o	ver Reed Creek	GROUND W	/TR (ft
ORING NO. EB1-B	STATION 13+76	OFFSET 12 ft RT	ALIGNMENT -L- 0 HR.	Dry
OLLAR ELEV. 485.4 ft	TOTAL DEPTH 23.5 ft	NORTHING 721,524	EASTING 1,809,808 24 HR.	FIAD
RILL RIG/HAMMER EFF./DATE TRI94	0435 CME-55 85% 02/22/2016	DRILL METHOD SP	T Core Boring HAMMER TYPE Auto	omatic
RILLER Toothman, R.	START DATE 08/22/16	COMP. DATE 08/22/16	SURFACE WATER DEPTH N/A	
DRIVE DEPTH BLOW COUNT Count	NT BLOWS PER FOOT 0 25 50	75 100 NO. MOI G	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (f
35			. 485.4 GROUND SURFACE ROADWAY EMBANKMENT	0.
481.9 3.5 1 2	2 •4	M L	Orange Brown, Soft to Medium Stiff, Silty CLAY (A-7-5), Trace Gravel	
476.9 8.5 1 6	1	Sal.	476.1 ALLUVIAL Greenish Gray, Medium Stiff, Coarse to Fine 473.3 Sandy CLAY (A-6), Trace Gravel 471.7 Note: Blow Count Inflluence by Gravel	9. /— 12. // 13.
70 13.0 60/0.1			Boulders WEATHERED ROCK Gray METAVOLCANIC ROCK 466.9 CRYSTALLINE ROCK Gray, Slightly to Very Slightly Weathered,	18.
55			Hard, METAVOLCANIC ROCK with Close to Moderately Close Fracture Spacing CRYSTALLINE ROCK Gray, Very Slightly Weathered to Fresh, Hard to Very Hard, METAVOLCANIC ROCK with] 1
			Wide Fracture Spacing Boring Terminated at Elevation 461.9 ft In Crystalline Rock: METAVOLCANIC ROCK	J

SHEET 8 OF 12

GEOTECHNICAL BORING REPORT CORE LOG

									C	O	RE L	OG					
WBS	45695	.1.1			TIP	B-573	39	С	OUNT	Υ	RANDOL	PH	GEOLOG	IST Pastrar	a, C.R.		
SITE	DESCR	IPTION	I Brid	dge No. 1	70 on	SR 26	21 (Fous	hee R	oad) c	ver	Reed Cr	eek				GROUN	ND WTR (ft)
BORI	NG NO.	EB1	-B		STA	TION	13+76			OI	FSET	12 ft RT	ALIGNME	NT -L-		0 HR.	Dry
COLL	AR ELE	V. 48	35.4 ft		тот	AL DE	PTH 23	.5 ft		N	ORTHING	721,524	EASTING	1,809,808		24 HR.	FIAD
DRILL	RIG/HAI	MER E	FF./DA	TE TRI94	135 CM	IE-55 8	5% 02/22/2	2016				DRILL METHOD SP	T Core Boring	l	HAMN	IER TYPE	Automatic
DRILI	LER To	oothma	an, R.		STA	RT DA	TE 08/2	2/16		C	OMP. DA	ΓΕ 08/22/16	SURFACE	WATER DE	PTH N	/A	
CORE	SIZE	NQ2					N 9.8 ft										
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	RQD (ft) %	SAMP. NO.	STR REC. (ft) %	RATA RQD (ft) %	L O G	ELEV. (f		DESCRIPTION	N AND REMAR	KS		DEPTH (ft
471.7	474 7	40.7	ļ										Begin Cor	ring @ 13.7 ft			
470	471.7 _ _ -	_ 13.7 - -	4.8	2:55/0.8 5:51/1.0 5:26/1.0 3:58/1.0	90%	(4.0) 83%		90%	(4.0) 83%		471.7	Gray, Slightly to Ve with Clo	ry Slightly We	ALLINE ROCK athered, Hard, I tely Close Fract			13.7 DCK
105	466.9	_ 18.5 -	5.0	3:49/1.0 3:19/1.0		(4.4)		(4.4)	(4.4) 88%		466.9	Note: Core Loss from)', Fracture angl ining on Fractur		0 degrees t	to 70 18.5
465	-	_		4:32/1.0 3:29/1.0	88%	88%		88%	88%		1		CRYSTA	ALLINE ROCK			
	461.9	23.5		4:34/1.0 4:11/1.0							461.9			ered to Fresh, H K with Wide Fra			23.5
	_	-									_	Note: Core Lo		to 23.5' in Mod		eathered	
	-	<u>-</u> -									-	Boring Termi		LCANIC ROCK ation 461.9 ft In		e Rock:	
	-	_									<u> </u>	· ·	METAVO	LCANIC ROCK			
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SHEET 9 OF 12

CORE PHOTOGRAPH

WBS No. 45695.1.1 TIP No. B-5739

Site Description: Bridge No. 170 on SR 2621 (Foushee Road) over Reed Creek

EB1-B



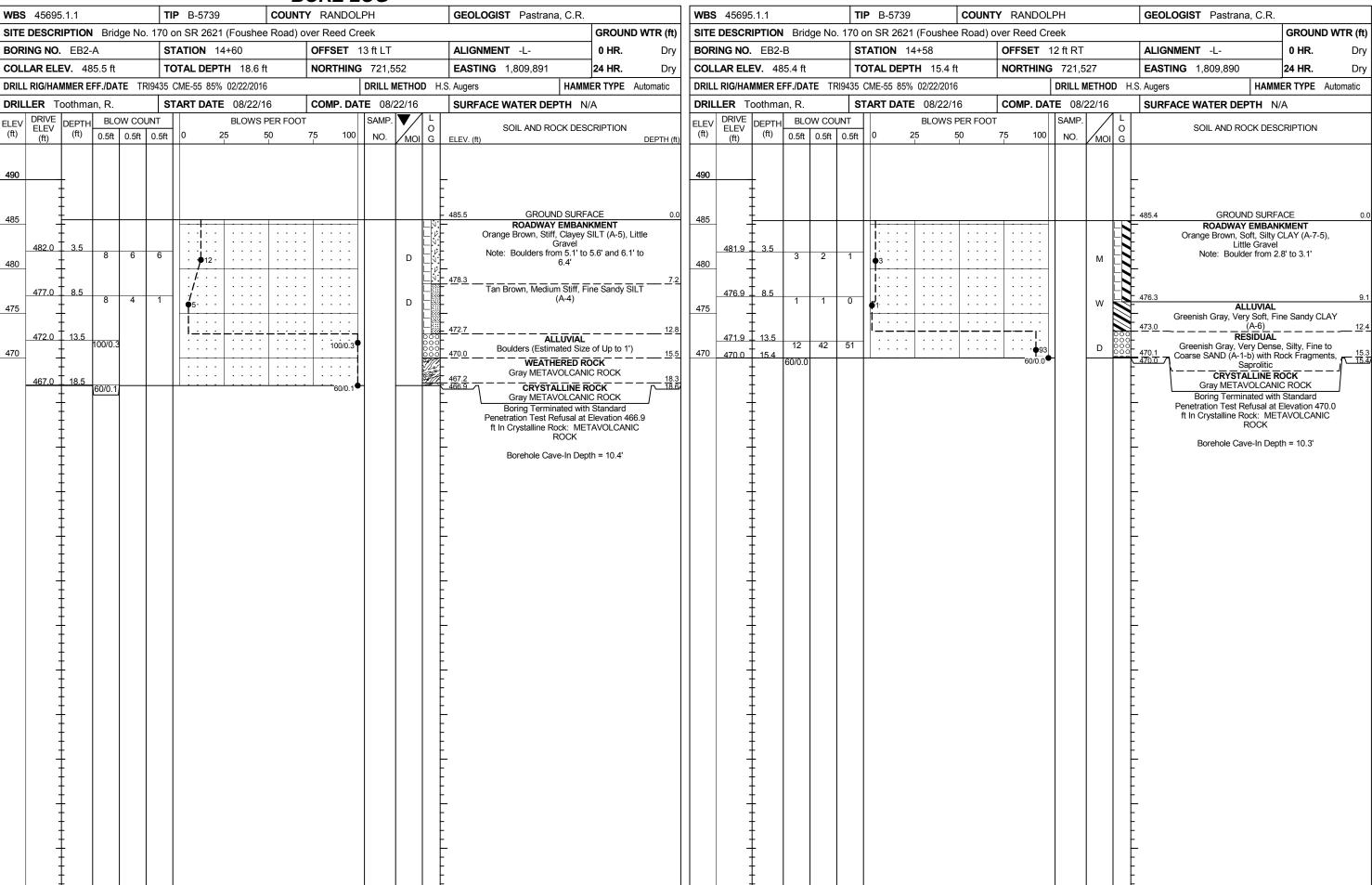
EB1-B 13.7 Feet to 18.5 Feet Box 1 of 2



EB1-B 18.5 Feet to 23.5 Feet Box 2 of 2



GEOTECHNICAL BORING REPORT BORE LOG



SITE PHOTOGRAPHS

State Project No. 45695.1.1 – TIP No. B-5739 – Bridge No. 170 on SR 2621 (Foushee Road) over Reed Creek - Randolph County, NC

