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REFERENCE

DESCRIPTION TITLE SHEET LEGEND (SOIL & ROCK) SITE PLAN PROFILE BORE LOGS SITE PHOTOGRAPH

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY LENOIR

PROJECT DESCRIPTION REPLACE BRIDGE 152 ON SR 1389 (HARDY BRIDGE ROAD) OVER NEUSE RIVER OVERFLOW AT -L- STA. 23+07

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CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOLI TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (1991) 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 STIU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEOREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOLL 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 OF CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBJURFACE 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 INTERRETATIONS 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 HINSELF 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 ACUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES: I. 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.

PERSONNEL

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION

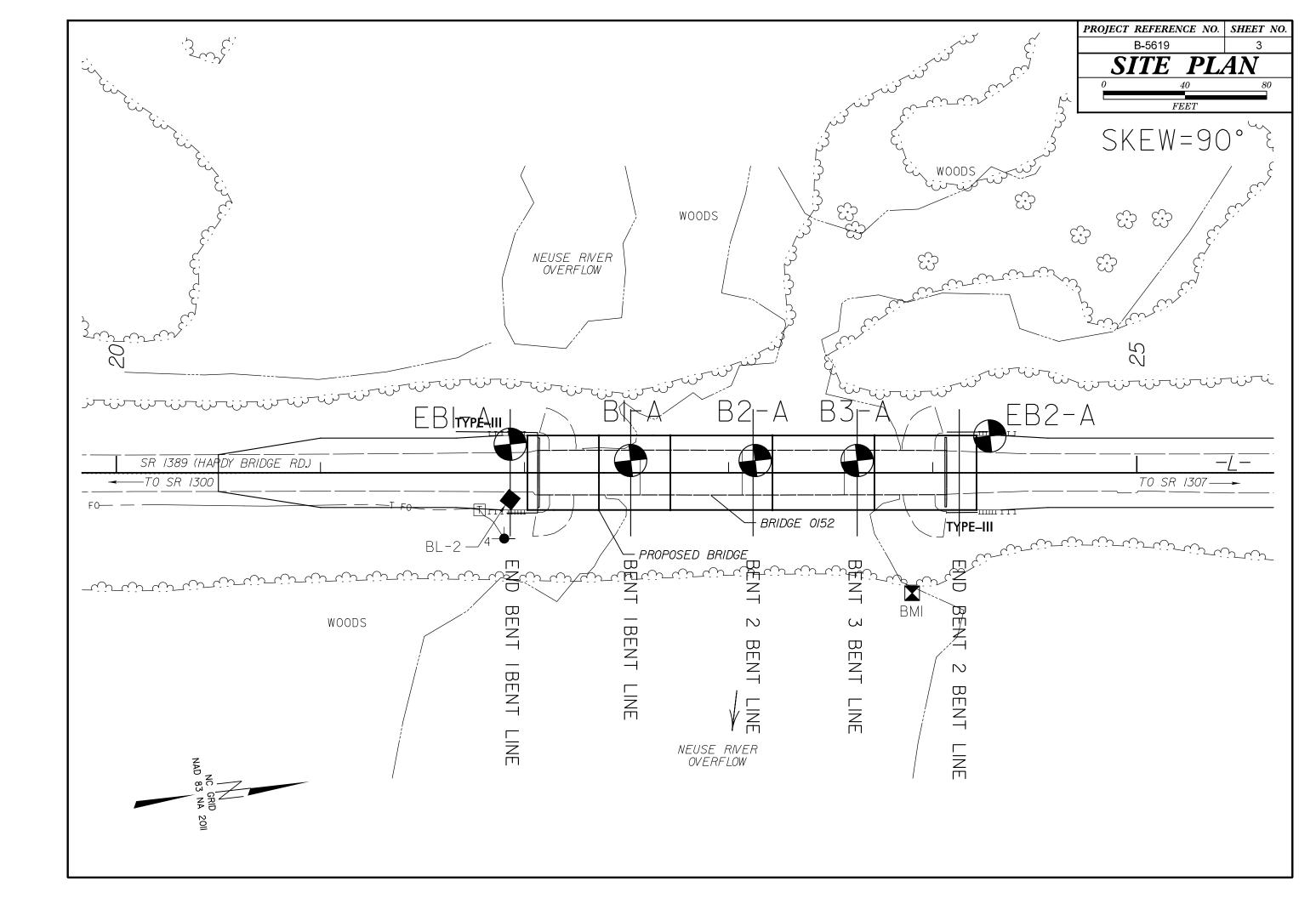
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

	GRADATION	BOCK DESCRIPTION	
SOIL DESCRIPTION SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN	GRADATION WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARS	ROCK DESCRIPTION HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED	TERMS AND DEFINITIONS
BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT	UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZ	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:	507720772	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 NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > ROCK (WR)	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
CENERAL CRANIILAR MATERIALS STIT-CI AV MATERIALS	MINERALOGICAL COMPOSITION	CRYSTALLINE FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
CLASS. (≤ 35% PASSING #200) (> 35% PASSING #200) ORGANIC MATERIALS	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		NON-CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
CLASS. A-1-a A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-7-5 A-3 A-6, A-7	COMPRESSIBILITY SLIGHTLY COMPRESSIBLE LL < 31	ROCK (NCR) SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
SYMBOL BOOOD STATE STA	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
X PASSING SII T-	HIGHLY COMPRESSIBLE LL > 50	SEDIMENTARY ROCK SET REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.	BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
*10 50 MX GRANULAR MUCK	PERCENTAGE OF MATERIAL	WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
*200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN	<u>ORGANIC MATERIAL</u> <u>ORGANIC MATERIAL</u> <u>GRANULAR</u> <u>SOILS</u> <u>OTHER MATERIAL</u>	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER	ROCKS OR CUTS MASSIVE ROCK.
MATERIAL	TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10%	HAMMER IF CRYSTALLINE.	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
PASSING #40	LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% 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,	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE
PI 6 MX NP 1/2 MX 1/2 M	HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE	(V SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY, ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE,	LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
CODUR TATLEY OF OF OR OF A MY R MY 12 MY 16 MY NO MY AMOUNTS OF ORGAN	GROUND WATER	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
USUAL TYPES STONE FRAGS. CTUT ON THE OLIVITY OF A VETY O	WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	(SLI,) 1 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 SILTY OR CLAYEY SILTY CLAYEY MATTER	STATIC WATER LEVEL AFTER <u>24</u> HOURS	CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
MATERIALS SANU	✓ Officiency ✓ Perched water, saturated zone, or water bearing strata	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN (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.
GEN.RATING AS SUBGRADE EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITA		DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
PI OF A-7-5 SUBGROUP IS ≤ LL - 3Ø :PI OF A-7-6 SUBGROUP IS > LL - 3Ø	- SPRING OR SEEP	WITH FRESH ROCK.	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH	FIELD.
COMPACTNESS OF RANGE OF STANDARD RANGE OF UNCONFINED		(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 COMPRETINESS ON PENETRATION RESISTENCE COMPRESSIVE STRENGTI CONSISTENCY (N-VALUE) (TONS/FT ²)	ROADWAY EMBANKMENT (RE) 25/025 DIP & DIP DIRECTION WITH SOIL DESCRIPTION FROCK STRUCTURES	IF TESTED, WOULD YIELD SPT REFUSAL	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
VERY LOOSE < 4		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 GRANULAR LOOSE 4 TO 10	SOIL SYMBOL SUBSCIENCE INDICATOR	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.
MATERIAL MEDIUM DENSE 10 TU 30 N/A		ER	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
(NON-COHESIVE) DENSE 30 TO 50 VERY DENSE > 50		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 < 2 < Ø.25	→ → · INFERRED SOIL BOUNDARY - ()- CORE BORING ● SOUNDING ROD	(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		VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</u>	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
SILT-CLAY MEDIUM STIFF 4 TO 8 Ø.5 TO 1.Ø MATERIAL STIFF 8 TO 15 1 TO 2	TIETRED ROCK LINE MONITORING WELL WITH CORE	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	ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
(COHESIVE) VERY STIFF 15 TO 3Ø 2 TO 4	ALLUVIAL SOIL BOUNDARY \triangle PIEZOMETER OF SPT N-VALUE	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.
		ROCK HARDNESS	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	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 DPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE	SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.	SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND
	SHALLOW UNCLASSIFIED EXCAVATION - USED IN THE TOP 3 FEET		RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	UNDERCUT ACCEPTABLE DEGRADABLE ROCK EMBANKMENT OR BACKFILL	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
(BLDR.) (COB.) (GR.) (GR.) (CSE. SD.) (F SD.) (SL.) (CL.)	ABBREVIATIONS	HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK, HAND SPECIMENS CAN BE DETACHED	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 γ - UNIT WEIGHT	MEDIUM CAN BE GROOVED OR GOUGED Ø.Ø5 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE	A 14Ø LB. HAMMER FALLING 3Ø 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 $\dot{\gamma}_{ m d}$ - DRY UNIT WEIGHT	POINT OF A GEOLOGIST'S PICK.	TO OR LESS THAN Ø.1 FOOT PER 60 BLOWS.
SOIL MOISTURE SCALE FIELD MOISTURE (ATTERBERG LIMITS) DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	CSE COARSE ORG ORGANIC DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST <u>SAMPLE ABBREVIATION</u>	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 TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
	DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK	FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.	
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY	e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON	VERY CAN BE CARVED WITH KNIFE, CAN BE EXCAVATED READILY WITH POINT OF PICK, PIECES 1 INCH	<u>STRATA ROCK QUALITY DESIGNATION (SRQD)</u> - 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 SEMISOLID; REQUIRES DRYING TO	FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIA	FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
(R) - WEI - (W) ATTAIN OPTIMUM MOISTURE	FRAGS FRAGMENTS w - MOISTURE CONTENT CBR - CALIFORNIA BEARIN HI HIGHLY V - VERY RATIO		BENCH MARK: BL-2; N: 538055.42 E: 2368196.98
	EQUIPMENT USED ON SUBJECT PROJECT	TERM SPACING TERM THICKNESS VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	
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	ELEVATION: 49.70 FEET
SL SHRINKAGE LIMIT		MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED Ø.16 - 1.5 FEET CLOSE Ø.16 TO 1 FOOT VERY THINLY BEDDED Ø.03 - Ø.16 FEET	NOTES:
- DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE		VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET	
		THINLY LAMINATED < 0.008 FEET	4
PLASTICITY			4
PLASTICITY INDEX (PI) DRY STRENGTH	CME-55Ø HARD FACED FINGER BITS -N	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. RUBBING WITH FINGER FREES NUMEROUS GRAINS;	
NON PLASTIC Ø-5 VERY LOW SLIGHTLY PLASTIC 6-15 SLIGHT	VANE SHEAR TEST	FRIABLE GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
MODERATELY PLASTIC 16-25 MEDIUM	CASING W/ ADVANCER	CRAINE CAN BE SERVICE FROM CAMPLE WITH STEEL DROPE.	
HIGHLY PLASTIC 26 OR MORE HIGH		MODERATELY INDURATED BREAKS EASILY WHEN HIT WITH HAMMER.	
COLOR		INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE;	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).		DIFFICULI IU BREAK WITH HAMMER.	
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.		EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-14
		- OHITLE DIENKS HURUSS ONHINS.	DAIE: 8-10-14

PROJECT REFERENCE NO.



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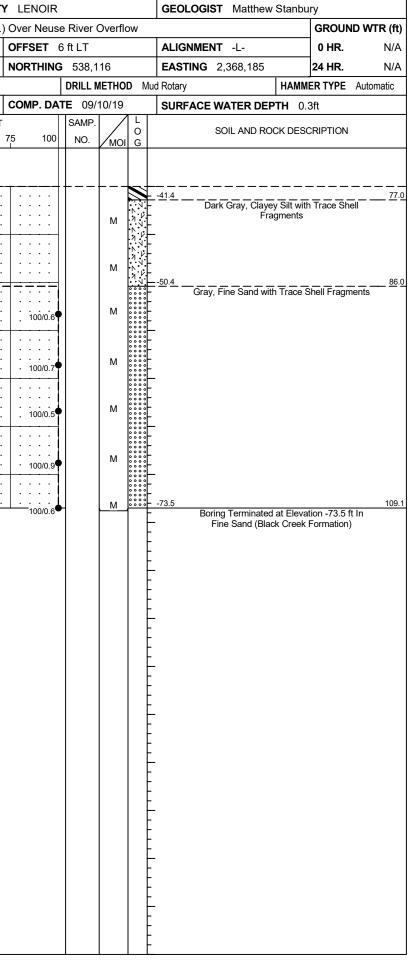
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50	<u></u>			
.40	ROADWAY EMBANKMENT, TAN, LOOSE TO MEDIUM DENSE, MOIST, FINE SAND			
.30	ALLUVIAL, GRAY, LOOSE, WET, SILTY SAND () GRAY VERY SOFT TO MEDIUM STIFF. MOIST SILTY CLAY WITH TRACE ROOTS GRAY, LOOSE TO MEDI. DENSE, MOIST, SILTY SAND AND COARSE SAND GRAY, LOOSE TO MED. DENSE, MOIST, SILTY SAND AND COARSE SAND			
.20	COASTAL PLAIN, DARK GRAY-GREEN, LOOSE	ε.		
. 10				
0	GRAY, GREEN, AND. TAN, MEDIUM DENSE TO VERY DENSE, MOIST, FINE SAND AND SILTY SAND WITH TRACE SHELL AND LIMESTONE FRAGMENTS SAND WITH TRACE SHELL AND LIMESTONE SAND WITH TRACE SHELL AND LIMESTONE	Γγ;;;		(A) C T (I
-10	GRAY, MEDIUM DENSE, MOIST, FINE SAND			
-20				
-30	GRAY, STIFF TO HARD, MOIST TO SAT. GRAY, STIFF TO HARD, MOIST TO SAT. SANDY SILT, CLAYEY SILT, SILTY CLAY AND SANDY CLAY WITH SHELL FRAGMENTS GUIDE GUIDE GUIDE GUIDE GUIDE GUIDE GUIDE GUIDE GUIDE GUIDE GUIDE GUIDE GUIDE GUIDE GUIDE GUIDE GUIDE GUIDE GUIDE GRAY, STIFF TO HARD, MOIST TO SAT. SANDY SILT, CLAYEY SILT, SILTY CLAY AND GUIDE GUI	ID		
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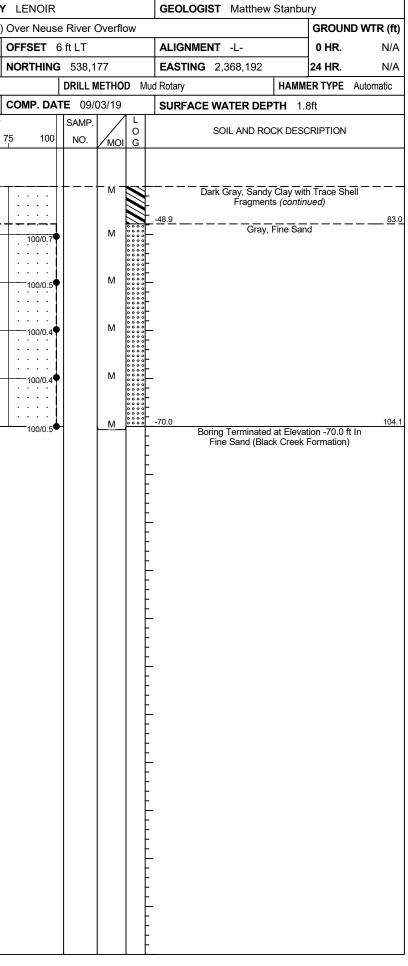
Mile Source 11 The Result Country Heading Genuine Teacher Genuine Teacher <t< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>LUG</th><th>•</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>1</th></t<>											LUG	•														1
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COLLAREDA: 46.51 TOTAL DEPTH: 0.3.1 WORTHING 338.020 LANTING 278.070 JUMBEL NAME Collar DEPL CollarDEPL Collar DEPL <	SITE	DESCR	RIPTION	Bric	lge No	. 152	on SR 1389	(Hardy	Bridge Ro	d.) Over N	euse Rive	er Ove	erflow			GROUN	D WTR (ft)	SITE	DESCR	IPTION	Brid	lge No	. 152 c	on SR 138	39 (Hardy E	Bridge Rd.)
Della Boundes Ger Ante Bergin Outrie Start Della Control D	BOR	ING NO	. EB1-	-A		5	STATION 21	+93		OFFSE	T 14 ft L	Т			ALIGNMENT -L-	0 HR.	N/A	BOR	ING NO.	EB1-	A		SI	TATION	21+93	0
DBALLER COMPACT 6/12/10 COMP DATE 0/12/10 COMPACT 6/12/10 DBALLER DBALLER COMPACT 6/12/10 DBALLER DBALLER COMPACT 6/12/10 DBALLER COMPACT	COLI	LAR EL	EV. 49	9.5 ft		1	OTAL DEPTI	H 90.3	3 ft	NORTH	ING 538	3,059			EASTING 2,368,170	24 HR.	7.0	COL	LAR ELE	EV. 49	9.5 ft		тс	OTAL DEF	•TH 90.31	ft I
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LENOIR				GEOLOGIST Nathan M	lohs, LO	3	
Over Neuse	River 0	Overflo	w			GROUN	D WTR (ft)
OFFSET 14	4 ft LT			ALIGNMENT -L-		0 HR.	N/A
NORTHING	538,0	59		EASTING 2,368,170		24 HR.	7.0
	DRILL N	IETHO	D Mu	Id Rotary	HAMME	R TYPE	Automatic
COMP. DAT	E 05/	13/19		SURFACE WATER DEP	TH N/	4	
	SAMP.		L O	SOIL AND ROC			
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				Gray, Sanuy		inueu)	
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· · · ·		м		-40.8			90.3
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				ige No				Bridge Rd.) Over Neu		Overf	IOW			GROUND WTR (ft)					ige No		on SR 1389		ridge Rd.)	. (
		. B1-A				TATION 2			OFFSET				_	MENT -L-	0 HR. N/A		RING NO					ATION 22			
		EV . 35				OTAL DEP			NORTHIN	· · · · · ·				IG 2,368,185	24 HR. N/A		LAR EL					DTAL DEPT			
						Diedrich D-50			1				lud Rotary		IER TYPE Automatic							Diedrich D-50			_
DRILI		Contract				TART DAT			COMP. D)	SURFA	CE WATER DEPTH 0.	.3ft	DRIL	LER C				_				(
ELEV (ft)	ELEV	DEPTH (ft)						PER FOOT		SAMP.				SOIL AND ROCK DES	CRIPTION	ELEV (ft)		DEPTH (ft)						PER FOOT	
(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0	25	50	75 10	0 NO.	Имо) G	ELEV. (ft)		DEPTH (ft)	(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0 2	25 5	50 I	7:
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		Ŧ											-				-42.8	78.4					/		
35	35.6 ·	0.0			WOH				-			-	35.6		09/04/19)0.0	-45		Ŧ	7	10	12		22		
	-	Ŧ				•••••••					M		- 32.6	ALLUVIAL Brown, Sandy Clay with	Trace Roots		-	Ŧ							1
		Ŧ										000	<u>- 32.0</u>	Gray, Coarse S	and3.0		-47.7	- 83.3	8	12	16		• • • • • • • 28. • •	· · · · ·	
30	30.6	+ <u>5.0</u>	5	7	11	` ,	18				м	000				-50		ŧ					T ^{20.}		_
		ŧ							· · · · · ·			00	<u>- 28.6</u>	COASTAL PLA			-52.7	- 88.3							
25	25.6	10.0											-	Dark Gray and Green, Cla Shell Fragmen	its	-55		ŧ	68	32/0.1					
	-	ŧ	2	3	6	. • • • •				1	M		-	(Black Creek Form	nation)		-	ŧ							
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5	5.6 ·	- 30.0					T					0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		Gray, Fine Sand with Tra Limestone Fragm	ace Shell and		-72.9	108.5	- 80	20/0.1					
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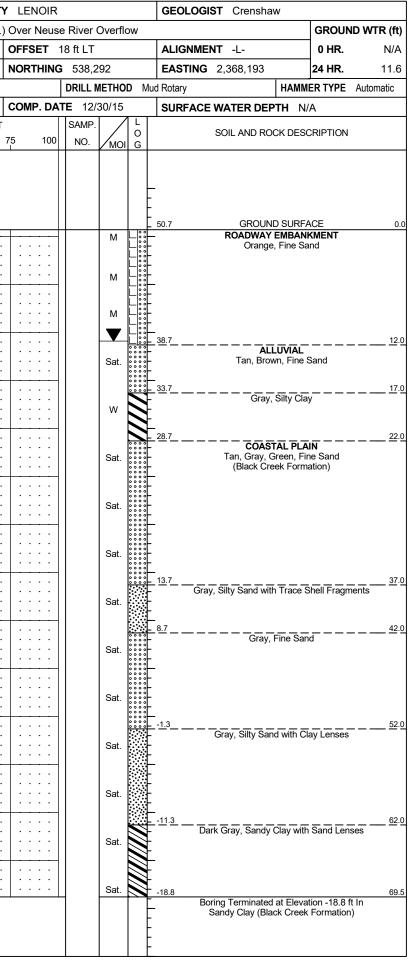
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BOR	ING NO.	. B3-A			S	TATION 23+63		OFFSET	6 ft LT			ALIGNMENT -L-	0 HR.	N/A	BOR	ING NO	. B3-A	۱		ST	ATION 2	3+63		OFFS
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SITE	DESCR	IPTION	Brid	ge No	. 152 0	on SR	1389	(Harc	dy Bi	ridge	Rd.)
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COLI	LAR ELE	EV. 50).7 ft		т	OTAL I	DEPT	H 69	9.5 ft		
DRILL	RIG/HAI	MMER E	FF./DA	TE GI	FO0075	CME-4	5C 87'	% 02/2	7/201	5	
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SITE PHOTOGRAPH

Bridge No. 152 on -L- (SR 1389) over Neuse River Overflow



SHEET 10 B-5619 (Bridge #152) Lenoir Co.

CONTENTS SHEET NO.

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REFERENCE

DESCRIPTION TITLE SHEET LEGEND (SOIL & ROCK) SITE PLAN PROFILE BORE LOGS SITE PHOTOGRAPH

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY LENOIR

PROJECT DESCRIPTION REPLACE BRIDGE 52 ON SR 1389 (HARDY BRIDGE ROAD) OVER NEUSE RIVER AT -L- STA. 30+80

STATE N.C

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CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOLI TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (1991) 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 STIU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEOREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOLL 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 OF CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBJURFACE 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 INTERRETATIONS 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 HINSELF 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 ACUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES: I. 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 HANVIG 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.

PERSONNEL

M. STANBURY M. SNYDER, PE

N. MOHS, LG

SUBTERRA EXP.

CAROLINA DRILLING

INVESTIGATED BY <u>N. MOHS</u>, LG

DRAWN BY ______. MOHS, LG

CHECKED BY __M. SNYDER, PE

SUBMITTED BY <u>N. MOHS</u>, LG

EICE of CAROLINAS, PLLC



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

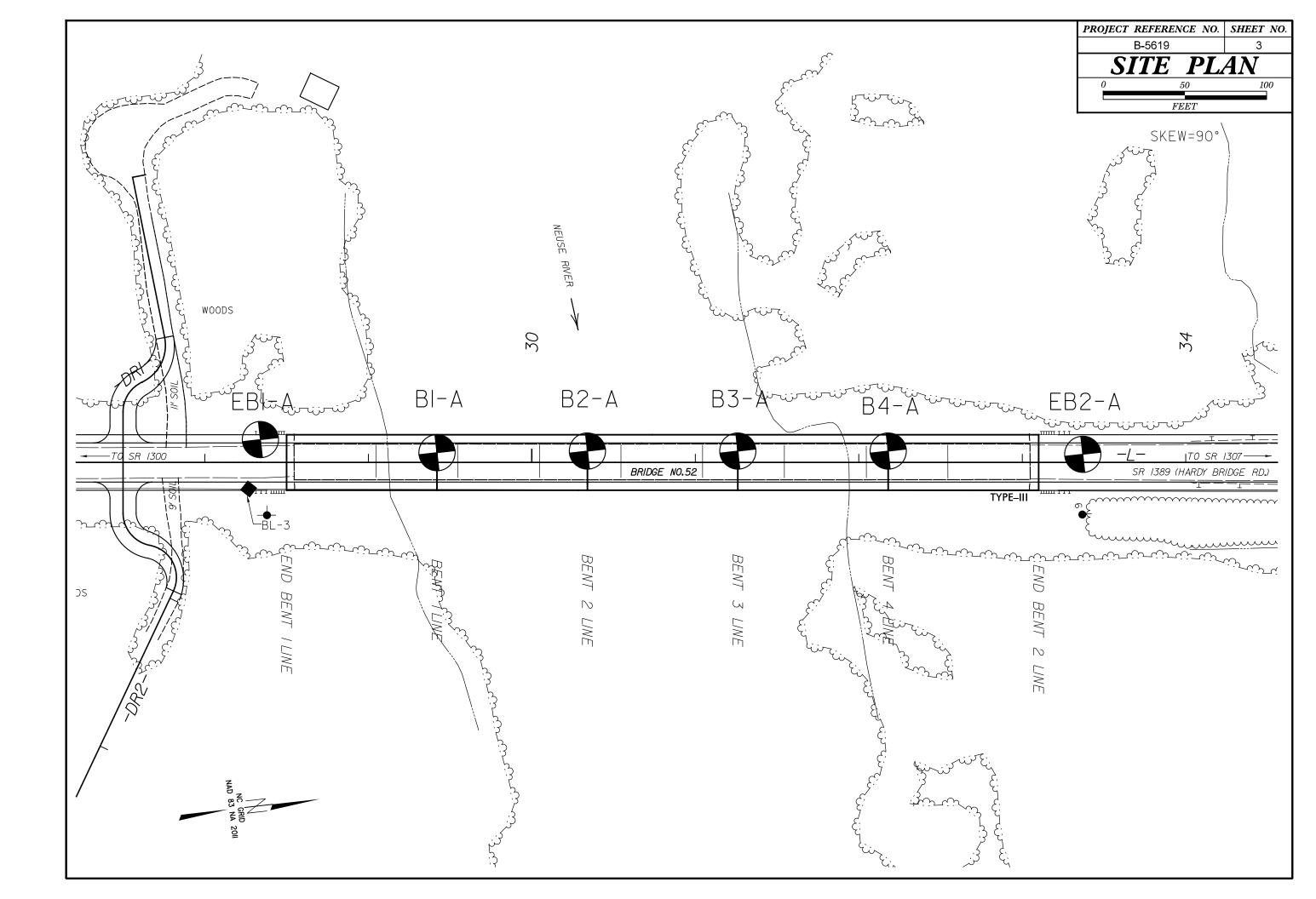
			SOIL DE	SCRIPT	ION				1		GF	RADATION			1			ROCK [DESCRIPTION
BE PENE	TRATED WIT	D UNCONSOLIDATED, H A CONTINUOUS FL	SEMI-CONSI _IGHT POWE	DLIDATED,O	R WEATHEREI ND YIELD LE	SS THAN 10	Ø BLOWS PE	R FOOT	WELL GRADED - INDICAT UNIFORMLY GRADED - IN		GOOD REPRESE	NTATION OF PARTIC			ROCK LINE I	NDICATES	S THE LEVER	AT WHICH NON-	T WOULD YIELD SPT REFUSAL IF TEST
IS	BASED ON T	STANDARD PENETRA THE AASHTO SYSTEM R, TEXTURE, MOISTUR	. BASIC DE	SCRIPTIONS	GENERALLY	INCLUDE TH	HE FOLLOWI	NG:	GAP-GRADED - INDICATE	SAM		IFORM PARTICLE SI		O OR MORE SIZES.	BLOWS IN N	ON-COAS	TAL PLAIN	Y A SPLIT SPOON MATERIAL, THE ATHERED ROCK,	SAMPLER EQUAL TO OR LESS THAN Ø. TRANSITION BETWEEN SOIL AND ROCK
	AS MINERALO	DGICAL COMPOSITION GRAY, SILTY CLAY, MOIST	I, ANGULARI	TY, STRUCT	JRE, PLASTIC	ITY, ETC. FO	IR EXAMPLE,				ROUNDNESS OF	SOIL GRAINS IS DE		BY THE TERMS:		ALS ARE	E TYPICALLY	DIVIDED AS FOL	
		SOIL LEGEND		ASHTO	CLASSIF				ANGULAR, SUBAN			OR <u>ROUNDED</u> .			WEATHERED ROCK (WR)			100 BLOWS PER	LAIN MATERIAL THAT WOULD YIELD SP FOOT IF TESTED.
GENERAL CLASS		GRANULAR MATERIALS (\leq 35% PASSING #200)		(> 35% P	Y MATERIALS ASSING *200)	OR	rganic materi	ALS		MES SU	JCH AS QUARTZ	Z, FELDSPAR, MICA, T N THEY ARE CONSID	ALC, KAOLI		CRYSTALLINE ROCK (CR)				E GRAIN IGNEOUS AND METAMORPHIC RO PT REFUSAL IF TESTED, ROCK TYPE IN
GROUP CLASS	A-1 A-1-a A-1-b	A-3 A-2 A-2-4 A-2-5		A-4 A-5	A-7-5		A-4, A-5 A-6, A-7		HILL USED IN			RESSIBILITY			NON-CRYSTAL	LINE		FINE TO COARS	E GRAIN METAMORPHIC AND NON-COAST
SYMBOL				7							COMPRESSIBLE Y COMPRESSIBL	F	LL < 3: LL = 3:		ROCK (NCR)			ROCK TYPE INC	LUDES PHYLLITE, SLATE, SANDSTONE, ET SEDIMENTS CEMENTED INTO ROCK, BUT
% PASSING							SILT-		2 HIGHL	LY COM	IPRESSIBLE		LL > 51		SEDIMENTARY				ROCK TYPE INCLUDES LIMESTONE, SANDS
*10 *40	50/ MX 30/ MX 50/ MX					GRANULAR SOILS	CLAY SOILS	MUCK, PEAT			GRANULAR	GE OF MATER	IAL					WEA	ATHERING
#200 MATERIAL	15 MX 25 MX	10/MX 35/MX 35/MX	35 MX 35 MX	36 MN 36 M	IN 36 MN 36 M	N	00120		ORGANIC MATERIAL TRACE OF ORGANIC M		SOILS	SILT - CLAY <u>SOILS</u> 3 - 5%	<u>OTH</u> TRACE	<u>ER MATERIAL</u> 1 - 10%	FRESH		RESH, CRYSTA		DINTS MAY SHOW SLIGHT STAINING, ROCK
PASSING #40						SOILS	s with		LITTLE ORGANIC MATT MODERATELY ORGANIC	TER	3 - 5% 5 - 10%	5 - 12% 12 - 20%	LITTLE SOME		VERY SLIGHT	ROCK G	ENERALLY FF	ESH, JOINTS STAIN	ED, SOME JOINTS MAY SHOW THIN CLAY C
LL PI	- 6 MX	— 40 MX 41 MN NP 10 MX 10 MX				1 LTT	'LE OR ERATE	HIGHLY	HIGHLY ORGANIC		> 10%	> 20%	HIGHLY		(V SLI.)		LS ON A BRO RYSTALLINE		CE SHINE BRIGHTLY, ROCK RINGS UNDER H
GROUP INDEX	Ø	ØØ	4 MX	8 MX 12 M	X 16 MX NO M	X AMOU	NTS OF GANIC	ORGANIC SOILS			GROL	UND WATER			SLIGHT				ED AND DISCOLORATION EXTENDS INTO RO
USUAL TYPES OF MAJOR	STONE FRAGS. GRAVEL, AND	FINE SILTY OR SAND GRAVEL AN		SILTY SOILS	CLAYEY SOILS		TTER					BORE HOLE IMMEDIA		R DRILLING	(SLI.)	CRYSTA	LS ARE DULL	AND DISCOLORED.	AY. IN GRANITOID ROCKS SOME OCCASIONA CRYSTALLINE ROCKS RING UNDER HAMME
MATERIALS	SAND			30123	30123	EATO TO	1		 ₽₩			VEL AFTER <u>24</u> H ATURATED ZONE,OR		ARING STRATA	MODERATE (MOD.)				DISCOLORATION AND WEATHERING EFFECT THE DULL AND DISCOLORED, SOME SHOW CLA
gen, Rating As subgrade							UNSUITABLE			ING OR SEEP		whiteh be				OUND UNDER RESH ROCK.	HAMMER BLOWS AN	D SHOWS SIGNIFICANT LOSS OF STRENGT	
															MODERATELY	ALL RO	СК ЕХСЕРТ С		O OR STAINED. IN GRANITOID ROCKS, ALL
	CONSISTENCY OR DENSENESS								<u> </u>		MISCELLA	NEOUS SYMBO	JLS		SEVERE (MOD. SEV.)	AND CA	N BE EXCAVA	TED WITH A GEOL	DW KAOLINIZATION. ROCK SHOWS SEVERE L DGIST'S PICK. ROCK GIVES "CLUNK" SOUND
PRIMARY	RY SOIL TYPE COMPACTNESS OR PENETRATION RESISTENCE COMPRESSIVE S CONSISTENCY (N-VALUE) (TONS/F							TRENGTH	L ROADWAY EMB			DIP & DIP DIR DIP & DIP DIR DF ROCK STRUE			SEVERE			<u>TELD SPT REFUSAL</u>) OR STAINED, ROCK FABRIC CLEAR AND E
GENER	ERALLY VERY LOOSE < 4								SOIL SYMBOL			OPT DAT TEST BOR	_	SLOPE INDICATOR	(SEV.)	REDUCE	D IN STRENG	TH TO STRONG SO	I. IN GRANITOID ROCKS ALL FELDSPARS
GRANUL	ALLY LOOSE 4 TO 10 LAR MEDIUM DENSE 10 TO 30 N/								ARTIFICIAL FI		-			/ INSTALLATION				UME FRAGMENTS U TELD SPT N VALUE	
MATER: (NON-C	DHESIVE)	DENSE VERY DENS	E		TO 50 50				THAN ROADWA			-) AUGER BORING	Q	TEST	VERY SEVERE) OR STAINED. ROCK FABRIC ELEMENTS AF O SOIL STATUS, WITH ONLY FRAGMENTS O
		VERY SOF			< 2		< Ø.25		· INFERRED SOI	IL BOUN	NDARY -	- CORE BORING	•	SOUNDING ROD	(V SEV.)	REMAIN	ING. SAPROLI	TE IS AN EXAMPLE	OF ROCK WEATHERED TO A DEGREE THAT
GENER SILT-C		SOFT MEDIUM STI	FF	4	TO 4 TO 8		Ø.25 TO 1 Ø.5 TO 1	.Ø		CK LIN	e ™C) MONITORING WE		TEST BORING WITH CORE	COMPLETE				NOT DISCERNIBLE, OR DISCERNIBLE ONLY
MATER: (COHES		STIFF VERY STIF	F		TO 15 TO 3Ø		1 TO 2 2 TO 4		ALLUVIAL SOI	IL BOU!		PIEZOMETER	Ť) SPT N-VALUE			RED CONCENT N EXAMPLE.	RATIONS, QUARTZ	MAY BE PRESENT AS DIKES OR STRINGERS
		HARD			эø NSIZE		> 4					DATION SYMB			-			ROCK	HARDNESS
U.C. OTD. C		4	10RE 0	40	60 20	0 270					NCLASSIFIED E			ASSIFIED EXCAVATION -	VERY HARD			IED BY KNIFE OR S	SHARP PICK, BREAKING OF HAND SPECIMEN
U.S. STD. S OPENING (N		4.76		40 Ø . 42	Ø.25 Ø.Ø					∠⁄ UN	NSUITABLE WAS	STE 🗋	ACCEF	TABLE, BUT NOT TO BE IN THE TOP 3 FEET OF	HARD				ONLY WITH DIFFICULTY, HARD HAMMER B
BOULD		OBBLE GRAVE		COARSE SAND	FIN	n l	SILT	CLAY			NCLASSIFIED E CCEPTABLE DEC	GRADABLE ROCK		NKMENT OR BACKFILL	MODERATELY		ACH HAND SF		, GOUGES OR GROOVES TO Ø.25 INCHES D
(BLDR		COB.) (GR.)		(CSE, SD.)	(F S		(SL.)	(CL.)				REVIATIONS			HARD	EXCAVA	ted by hard	BLOW OF A GEOL	OGIST'S PICK, HAND SPECIMENS CAN BE D
GRAIN M SIZE IN		75 3	2.Ø		Ø . 25	0.05	0.005	i	AR - AUGER REFUSAL BT - BORING TERMINATED	D		MEDIUM - MICACEOUS	WEA	- VANE SHEAR TEST WEATHERED	MEDIUM		GROOVED OF		HES DEEP BY FIRM PRESSURE OF KNIFE (
	ç	SOIL MOISTU	RE - C	ORRELA	TION OF	TERMS	;		CL CLAY CPT - CONE PENETRATION	N TEST		MODERATELY NON PLASTIC		- UNIT WEIGHT - DRY UNIT WEIGHT	HARD		EXCAVATED		O PEICES 1 INCH MAXIMUM SIZE BY HARD
	. MOISTURE TERBERG LI		FIELD MOI DESCRIP		GUIDE FOR	FIELD MOI	ISTURE DES	CRIPTION	CSE COARSE DMT - DILATOMETER TES		ORG	ORGANIC PRESSUREMETER TE		SAMPLE ABBREVIATIONS	SOFT	can be	GROVED OR	GOUGED READILY &	BY KNIFE OR PICK, CAN BE EXCAVATED IN
(H)									DPT - DYNAMIC PENETRA		TEST SAP	SAPROLITIC	s -	BULK				ERAL INCHES IN S KEN BY FINGER PR	IZE BY MODERATE BLOWS OF A PICK POIN ESSURE.
			- SATURAT (SAT.)	EU -		LIQUID; VERY OW THE GRO			e - VOID RATIO F - FINE		SL S	SAND, SANDY SILT, SILTY		- SPLIT SPOON - SHELBY TUBE	VERY SOFT				EXCAVATED READILY WITH POINT OF PICK. IN BY FINGER PRESSURE, CAN BE SCRATCH
PLASTIC						REQUIRES	DRYING TO		 FOSS FOSSILIFEROUS FRAC FRACTURED, FRAC 	TURES		SLIGHTLY TRICONE REFUSAL		- ROCK - RECOMPACTED TRIAXIAL		FINGER	NAIL.		
RANGE <	DI ACTI	IC LIMIT	- WET - (W	D		TIMUM MOIS			FRAGS FRAGMENTS HI HIGHLY		ω - Μ V - VE	OISTURE CONTENT	CBR	 CALIFORNIA BEARING RATIO 		RACT	URE SPA		BEDDING
, rec			- MOIST -							UIPM		ON SUBJECT	PROJE		VERY WID	Ē		<u>SPACING</u> THAN 10 FEET	TERM VERY THICKLY BEDDED
ON SL		UM MÕISTURE KAGE LIMIT	- MUIST -	(M)	SULID; AT	OR NEAR OF	PIIMUM MU	ISTURE	DRILL UNITS:		ANCING TOOLS:			TYPE:	WIDE MODERATE	LY CLOS	6E 1	TO 10 FEET TO 3 FEET	THICKLY BEDDED 1 THINLY BEDDED 0.
	T		- DRY - (D	ů.		ADDITIONAL)	X CME-45C		CLAY BITS		X A	UTOMATIC MANUAL	CLOSE VERY CLO	SE		6 TO 1 FOOT THAN Ø.16 FEET	VERY THINLY BEDDED 0.0 THICKLY LAMINATED 0.00
				-	ATTAIN OF	TIMUM MOIS	STURE		СМЕ-55		6' CONTINUOUS 8' HOLLOW AU	S FLIGHT AUGER	CORE	_				TNP	
				STICITY					СМЕ-550	H	HARD FACED		Ш-в	∐-+	FOR SEDIMEN	TARY R	CKS. INDURA		DENING OF MATERIAL BY CEMENTING, HE
	N PLASTIC		PLASTIC	ITY INDEX Ø-5	(171)	<u>Di</u>	RY STRENG VERY LOW				TUNGCARBID		<u> </u>		FRIAB			RUBBING WI	TH FINGER FREES NUMEROUS GRAINS;
	IGHTLY PLA: DERATELY P			6-15 16-25			SLIGHT MEDIUM		VANE SHEAR TEST		CASING	W/ ADVANCER		OOLS: OST HOLE DIGGER					DW BY HAMMER DISINTEGRATES SAMPLE. BE SEPARATED FROM SAMPLE WITH ST
HIC	HLY PLAST	IC		OR MORE			HIGH		PORTABLE HOIST		TRICONE 2	15/16 STEEL TEETH		AND AUGER	MODEF	ATELY I	NDURATED		SILY WHEN HIT WITH HAMMER.
<u> </u>			CI	DLOR					X D-50		TRICONE	" TUNGCARB.		OUNDING ROD	INDUR	ATED			DIFFICULT TO SEPARATE WITH STEEL TO BREAK WITH HAMMER.
		INCLUDE COLOR O UCH AS LIGHT, DAR									CORE BIT			ANE SHEAR TEST	EVTO		DURATED		MER BLOWS REQUIRED TO BREAK SAMPLI
1 M	Son iens St	UAP	IN, JINEHKI	, _ ; C, AN		DESCINDE P		-•		+L					L EXIRE	MELT IN	DORATED	SAMPLE BR	EAKS ACROSS GRAINS.

PROJECT REFERENCE NO.

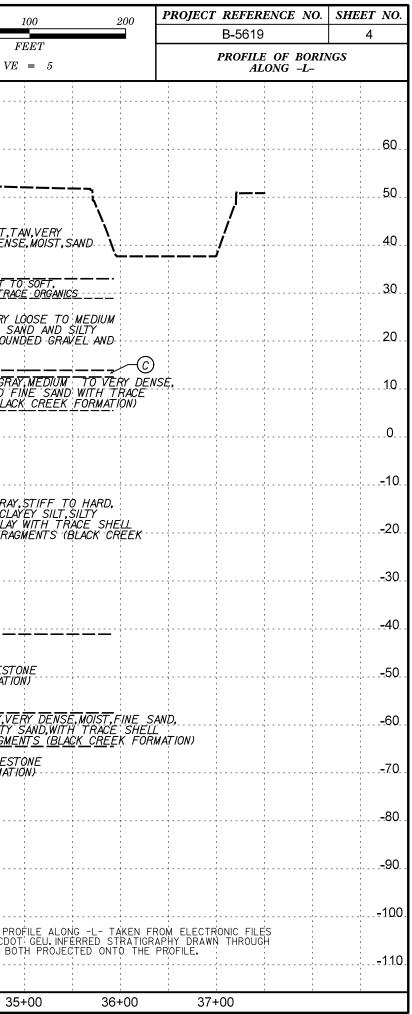


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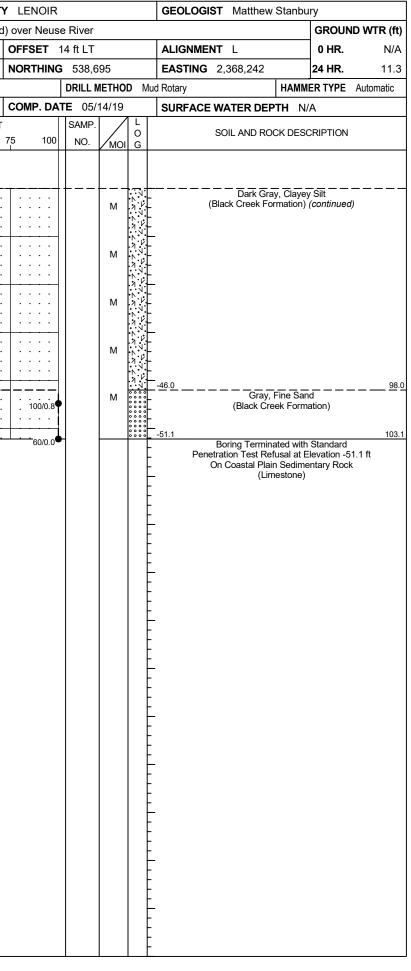
	TERMS AND DEFINITIONS
D, AN INFERRED SPT REFUSAL,	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
FOOT PER 6Ø IS OFTEN	AQUIFER - A WATER BEARING FORMATION OR STRATA.
	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING
N VALUES >	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
СК ТНАТ	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
CLUDES GRANITE,	
L PLAIN IF TESTED.	<u>CALCAREOUS (CALC.)</u> - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. <u>COLLUVIUM</u> - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
MAY NOT YIELD TONE, CEMENTED	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
RINGS UNDER	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
DATINGS IF OPEN, AMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
CK UP TO _ FELDSPAR	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
BLOWS. S. IN	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
Y. ROCK HAS AS COMPARED	PARENT MATERIAL.
ELDSPARS DULL	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.
DSS OF STRENGTH WHEN STRUCK.	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
VIDENT BUT	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
RE KAOLINIZED	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
E DISCERNIBLE STRONG ROCK	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE
only minor Alues < 100 BPF	OF AN INTERVENING IMPERVIOUS STRATUM. <u>RESIDUAL (RES.) SOIL</u> – SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
IN SMALL AND SAPROLITE IS	ROCK QUALITY DESIGNATION (RQD) - 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.
6 REQUIRES	NUN HNU EXTRESSED HS H FERCENTHUE. <u>SAPROLITE (SAP.)</u> - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
LOWS REQUIRED	<u>SILL</u> - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
EP CAN BE ETACHED	<u>SLICKENSIDE</u> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
R PICK POINT. BLOWS OF THE	STANDARD PENETRATION TEST (PENETRATION RESISTANCE)(SPT) - NUMBER OF BLOWS (N OR BPF)OF A 140 LB.HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
FRAGMENTS T. SMALL, THIN	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
PIECES 1 INCH ED READILY BY	<u>STRATA ROCK QUALITY DESIGNATION (SRQD)</u> – A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEOMENTS WITHIN A STRATUM EQUAL TO OR OREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
CO NEMOLET DI	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
THICKNESS	BENCH MARK: BL-3; N: 538684.91E: 2368271.43
THICKNESS 4 FEET	ELEVATION: 52.01 FEET
5 - 4 FEET 6 - 1.5 FEET	NOTES:
3 - 0.16 FEET 8 - 0.03 FEET 0.008 FEET	FIAD - FILLED IMMEDIATELY AFTER DRILLING
AT, PRESSURE, ETC.	
EEL PROBE;	
PROBE;	
nope,	
;	DATE: 8-15-14



	<u>EXISTING_GROUN</u>	14' L'	T 6' L'	T 7' LT	7' LT	$7^{\prime} LT$	5' L	/T ASPHALT
.50	ROADWAY EMBANKMENT,TAN,LOOS MEDIUM DENSE,MOIST,COARSE S TRACE ASPHALT GRAVEL	TO WD WITH	t \				₩ 	ROADWAY EMBANKMENT,
.40	ALLUVIAL, <u>GRAY, MEDIUM DENSE, N</u>	OIST, SILTY	SAND	NEUSE RN	/FR			LÕOSE TO MEDIUM DEN
.30	ALLUVIAL,GRAY,VERY SOFT TO MOIST,SILTY CLAY WITH TRACE	SOFT, ORGANICS (3-		NORMAL WL			<u>0</u> -00	ALLUVIAL, GRAY, VERY SOFT MOIST, SILTY CLAY WITH TR
.20				B ©			6	BROWN AND GRAY,VERY DENSE,MOIST,COARSE S SAND WITH TRACE ROU
40	COASTAL PLAIN, DARK GRAY, LOOSE DENSE, MOIST, SILTY SAND (BLACK FORMATION)	то 9— СREEК 5—						ORGANICS COAST AL PLAIN, DARK GR
.10				() () () () () () () () () () () () () (©		100	MOIST, SILTY SAND AND I SHELL FRAGMENTS (BLAU
.0		(4)	27-17-17 19-17-17-17-17-17-17-17-17-17-17-17-17-17-	@			-00 -00	
-10		3 -	@- U					
-20	DARK GRAY AND GRAY, STIFF TO MOIST, SANDY SILT, CLAYEY SILT, SIL CLAY, SANDY CLAY WITH TRACE SH	HARD, 22- TY ELL AND 10-	©- 11 ®- 11			® ®		DARK GRAY AND GRA MOIST, SANDY SILT, CL CLAY, AND SANDY CLAY
-20	LIMESTONE FRAGMENTS (BLACK C FORMATION)		29-	37 -1111	29-12			AND LIMESTONE FRA FORMATION)
-30		() () () () () () () () () () () () () (29 26				(1) (2) (1)	
-40			@/0.D	 @-/0.9				
-50			00/0.6	Q0/0.B	00/0.D 00/0.D			GRAY, VERY HARD, LIMEST
	GRAY,VERY HARD,LI (BLACK CREEK FOR	— — — <u>— 60/0.0</u> 800 MESTONE MATION)		©0/0.©	00/0.5	©0/0.A		BLACK CREEK FORMATI
-6.0			00/0.5	<u>₩0</u> 003	€0/0.0 €0/0.0		5	DARK GRAY AND GRAY,VI CLAYEY SAND,AND SILTY AND LIMESTONE FRAGMI
-70	DARK GRAY AI FINE SAND,CL WITH TRACE FRAGMENTS (D GRAY,VERY DEN AYEY SAND,AND SI SHELL AND LIMEST BLACK CREEK FOR	ISE, MOIST, (98) LTY SAND, ONE MATION) (0070,8)	<u>00/0</u> 2		©_/0.B ©_/0.D	BT FIA	GRAY,VERY HARD,UMES D (BLACK CREEK FORMAT
-80	, , , , , , , , , , , , , , , , , , ,		400/0 .5		00/0.9			
-90	DARK GRA	AND BLACK,VERY ,SANDY CLAY (BLA	STIFF TO 3			©/0.9 00/0.9 BT		
-90	FORMATION	, SANDI - CLAI - (BLA)	CK CREEK		32 - BT	····>	· · · · · · · · · · · · · · · · · · ·	-
-100				U BT				NOTE: GROUNDLINE PF RECEIVED FROM NCD(
-110								THE BORINGS WITH BO
2	5+00 26+00 27+00	28+00	29+00	30+00	31+00	32+00	33+00	34+00 34



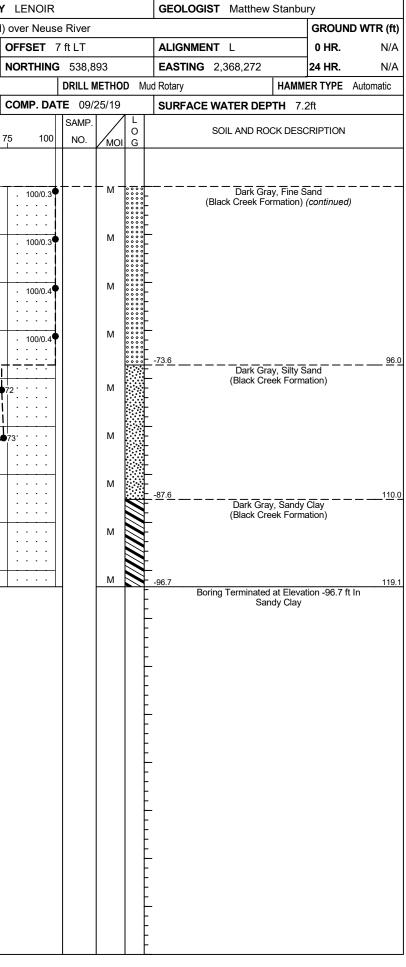
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	45574					IP B-561				Y LEN		<u> </u>			GEOLO	GIST Matthew Stan				3 4557					P B-561		
				dge No		on SR 138			dge Road								_	ND WTR (ft)					ige No				idge Road)
	NG NO					TATION				OFFSE					_	MENT L	0 HR.	N/A		RING NO					ATION		
	AR EL					OTAL DE				NORT						G 2,368,242	24 HR.	11.3	- I I	LAR EL						TH 103.1	
						CME-45C 9									lud Rotary			Automatic								% 02/20/201	
DRIL	LER C	Contract				TART DA				COMP) /	SURFA	CE WATER DEPTH	N/A		DRI	LLER (E 05/14/	
ELEV (ft)	DRIVE ELEV	DEPTH (ft)	·		-				PER FOOT			SAMP.	17			SOIL AND ROCK DE	SCRIPTION	1	ELE\ (ft)		DEPTH (ft)	· — —					PER FOOT
(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0	25	5	50 I	75 I	100	NO.	Имо) G	ELEV. (ft)			DEPTH (ft)	(11)	(ft)	(11)	0.5ft	0.5ft	0.5ft	0	25	50 7
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	52.0	T 0.0													52.0	GROUND SUF	RFACE	0.0		-20.1	+ /0.1	5	6	8	· · • • 14		
50		+ 0.0	3	4	3	4 7 ·							М		_	ROADWAY EMB/ Tan, Coarse Sand with		vel	-30		Ŧ						
	48.9	3.1	6	6	7	- · \ ·							М		-					-31.1	83.1	5	7	9	1		
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45	43.9	1 1 8.1					· ·	· · ·	••••						-				-35	-36.1	+ - - 88.1						· · · ·
	-10.3	+ 0.1	6	7	10	1	 17 ·			.			м		-					-00.1	+ 00.1	9	29	31			● 60 ·
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	38.9	13.1	6	9	9										37.9			14.1		-41.1	93.1	5	7	9		/	
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35	33.9	+ 					· ·									Gray, Silty Gray, Silty		<u> </u>	-45	-46.1	+ - - 98.1				\	<u> </u>	
		- 10.1 -	WOH	1	1	\bullet_2 · ·	: :	· · · ·					м		-	Gray, Only	Jidy			-40.1	+ 90.1	43	57/0.3			· • • • • • • •	
30		ŧ					· ·	· · · · · ·	•••						-				-50		ŧ					· · · · · ·	
	28.9	23.1	1	1	2	<u> </u>									-				-00	-51.1	103.1	60/0.0					
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-	23.9	28.1	WOH	3	2		: :	· · · · · ·					м		22.9	Oracia Ciltar)	<u>29.1</u> 30.0			‡						
20		ŧ					: :	· · · · · ·								Gray, Silty S COASTAL P		<u></u>			‡						
20	18.9	33.1	2	4	5	-+ -+									-	Dark Gray, Silt (Black Creek Fo				-	ŧ						
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15		‡					· ·			• • • •	· ·				-					-	‡						
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		‡	4	6	31			•37 ·		.			M			 Dark Gray, Sa		<u> </u>			‡						
5	-	‡				· · ·	· ·	<u>. ¦</u>							- 	Black Creek Fo	rmation)			.	‡						
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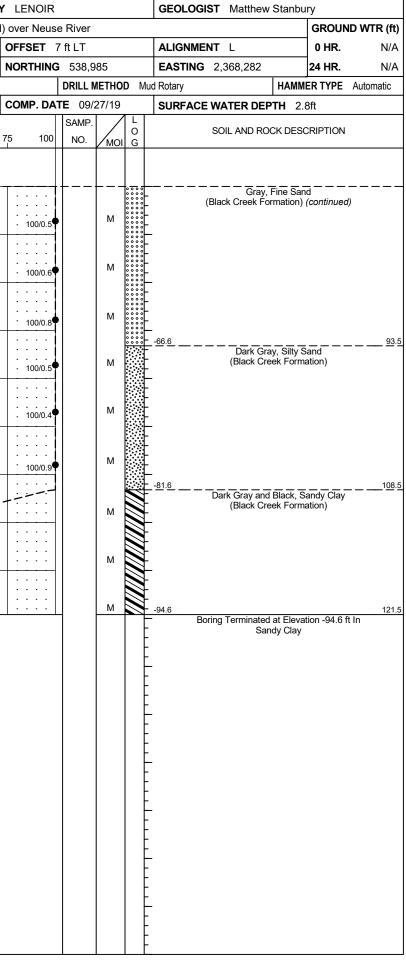
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	45574					IP B-56				Y LENOIF				GEOL	OGIST Matthew Stanbu	-		45574					P B-5619		COUN	
				lge No				-	dge Road	d) over Neu						GROUND WTR (ft)	I				ge No			9 (Hardy B	sridge Roa	<u> </u>
BOR	ING NO.	. B1-A	۱		S	TATION	29+4	42		OFFSET	6 ft LT			ALIGN	IMENT L	0 HR. N/A	BOR	NG NO	. B1-A	۱		ST	ATION 2	29+42		0
COLI	LAR ELE	EV. 26	6.6 ft		T (OTAL D	EPTH	118.5	ft	NORTHIN	G 538,8	802		EAST	NG 2,368,262	24 HR. N/A	COLI	AR EL	EV. 26	6.6 ft		ТС	TAL DEF	PTH 118.	.5 ft	N
DRILL	RIG/HAI	MMER E	FF./DA	TE IN	S0439	Diedrich D	0-50 90%	% 03/12/2	2019		DRILL	METHO	DD Mu	ud Rotary	HAMM	IER TYPE Automatic	DRILL	RIG/HA	MMER E	FF./DAT	re in	S0439 E	iedrich D-5	0 90% 03/12	2/2019	
DRIL	LER C	ontract	Drille	r	S	TART D	ATE	09/11/1	9	COMP. D	ATE 09/	/18/19	1	SURF	ACE WATER DEPTH 14	4.5ft	DRIL	LER C				ST	ART DAT	TE 09/11	/19	C
ELEV	DRIVE ELEV	DEPTH	BLC	ow cou	JNT		E	BLOWS I	PER FOOT	-	SAMP.		L		SOIL AND ROCK DES	CRIPTION	ELEV	DRIVE ELEV	DEPTH	BLO	w col	JNT		BLOWS	S PER FOO	Т
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	4	50	75 100	NO.	Имо		ELEV. (ft)		DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75
30		Ļ												_			-50							Ma	tch Line	
	-	Ł											ΙĿ					50.4	77.0	100/0.5						:
	26.6	0.0	WOH	WOH	WOH		.					w		26.6	GROUND SURF/ ALLUVIAL	ACE 0.0			ŧ							:
25	23.9	27			mon							vv			Brown, Sandy Clay with Tr	race Organics2.0	-55	-55.4 -	82.0	100/0.5			<u> </u>			-
		F	1	2	2	 4 · ·	.					w			Brown, Coarse Sand with T	race Organics			Ŧ	100/0.5						
20	-	Ŧ					.	· · · · ·		· · · · · ·							-60		Ŧ						· · · · ·	
	18.9	7.7	29	12	87/0.2									18.9	COASTAL PLAIN SEDIME			-60.4 -	- 87.0 -	100/0.5						
	-	ŧ	29	15	01/0.2		· · ·	· · · · · · · ·			• •		Ē		Gray, Limestor	ne		-	ŧ					· · · ·	· · · · ·	•
15	-	t						· <u></u> -	<u></u>		-11			15.6	<u>(Black Creek Form</u> COASTAL PLA		-65	-65.4 -	+ 92.0							•
	13.9	12.7	23	17	16		· · ·	 		.		м			Dark Gray, Sandy Silt with S (Black Creek Form	Shell Fragments			1	25	42	56				:
	-	ł					.			.			-		(Black Cleek Form	auon)			ł							•
10	8.9	I 17.7											F	_			-70	-70.4 -	97.0	45	45	55/0.3				
	- 0.9	+ 17.7	30	22	26		.		48			м						-	ŧ	40	40	55/0.3				:
5	-	ŧ					· · ·			· · · · · ·				5.6		21.0	-75		‡					· · · · · · · ·	· · · · · · · · ·	:
5	3.9 -	22.7						<u>, /</u>						-	Dark Gray, Claye (Black Creek Form		-75	-75.4 -	+ 102.0	100/0.5						
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0	-	Ł					/ .							_			-80									•
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-5	-	‡					i l :	· · · ·							Dark Gray, Silty (<u>31.0</u> Clay	-85	-85.4 -	+							•
	-6.1 -	32.7	8	8	12		. . • 20 •	· · · · · · · ·		. .		м	N		(Black Creek Form	nation)		•	ŧ	14	14	18		•32	 	:
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-15	-	Ŧ					· · ·	· · · · ·		. .									Ŧ							
	-16.1	42.7	6		10		·				11							-	ŧ							
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-20	-	t					. \ .							<u>-19.4</u>	Dark Gray, Sandy	v Silt 46.0		· -	t							
	-21.1 -	47.7	7	9	15			 1		.		м	E		(Black Creek Form	nation)		-	ŧ							
2.	-	ŧ				$ \cdot \cdot$	· · ¶ ²⁴	• • • • •					F						ŧ							
-25	-26.1	52.7							+				F	-					F							
-25 -30 -35 -40	-20.1 -	+ <u>52./</u>	7	12	13	1 :::	· · • • 25	 5 · · ·				м						-	Ŧ							
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LENOIR				GEOLOGIST Mat	thew Stanbu	ry	
over Neuse	e River			•		GROUN	D WTR (ft)
OFFSET 6	ft LT			ALIGNMENT L		0 HR.	N/A
NORTHING	538,8	02		EASTING 2,368,2	262	24 HR.	N/A
	DRILL N	IETHO	D M	ud Rotary	HAMM	ER TYPE	Automatic
COMP. DAT	E 09/*	18/19		SURFACE WATER	DEPTH 14	.5ft	
	SAMP.		L O	SOIL AN	D ROCK DESC		
75 100	NO.	моі	G		DINCONDECC		
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· · 100/0.8		М	0 0 0 0 0 0 0 0 0 0 0 0	-			
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		м	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	_			
100/0.5			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	78.4			105.0
					k Gray, Sandy	Clay	100.0
•••• • 92		м		- (Dia	ck Creek Forma	auon)	
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		М		-			
				-			
		м					118.5
				Boring Termi	nated at Eleval Silty Clay	ion -91.9 f	t In
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	45574					P B-5619		Y LENOIR				GEOLOGIST Matthew Stanb	-		45574.1.				P B-5619		COUNT	
				lge No		n SR 1389 (Hardy Br	idge Roa	-					GROUND WTR (ft)		DESCRIPT		dge No				dge Roa	Ť.
	ING NO.					TATION 30+34		OFFSET					0 HR. N/A		ING NO. E				ATION 3			0
	LAR ELE					OTAL DEPTH 119.1		NORTHING				EASTING 2,368,272	24 HR. N/A		LAR ELEV.				TAL DEPT			N
						Diedrich D-50 90% 03/12		1				· · · · · · · · · · · · · · · · · · ·	MER TYPE Automatic		RIG/HAMMI							1.
-		1	-			TART DATE 09/19/		COMP. DA			1.1	SURFACE WATER DEPTH 7	7.2ft		LER Cont							C
ELEV (ft)	ELEV	DEPTH (ft)		0W COL		BLOWS	PER FOOT 50	75 100	SAMP. NO.	17	Ō	SOIL AND ROCK DES		ELEV (ft)	DRIVE ELEV	PTH BL (ft) 0.5f	OW CC		0 3	BLOWS F	PER FOO 50	T 75
. ,	(ft)		0.51	0.511	0.51				NO.	/мо	G	ELEV. (ft)	DEPTH (ft)		(ft)	0.51	0.51	0.51			1	
																				Matal	6 I	
25		÷										-		-55	-55.2 7	7.6 <u>100/0</u>	<u> </u>	-			h Line	. T
	22.4	0.0	2	1	1						000	22.4 GROUND SURF			±						· · ·	
20	- 19.8 -	2.6		'	1	• ²				W		Brown, Coarse	Sand	-60	-60.2 + 8	2.6						•
		1	11	89/0.2		L		100/0.7		M	مَّمَّم	- 19.3 - ^{18.4}			1	100/0	.3					:
	-	Ŧ										Gray, Limesto Black Creek Forr	mation) I		l I							
15	14.8	7.6	5	10	12		+ • • •			м		Gray, Silty Sand with Trace		-65	-65.2 - 8	7.6	.4					-+-
	-	Ŧ				$\left \left \begin{array}{c} \cdot \cdot \cdot \cdot \cdot \bullet \\ \cdot \cdot \cdot \cdot \cdot \cdot \right \right \cdot \cdot \cdot \cdot \cdot \cdot \right $						(Black Creek Forr	mation)		Ŧ							
10	98 -	12.6				::::!					, V			-70	-70.2 9	2.6						
	9.0 -	+ 12.0 +	7	12	13	· · · · • • 25 · · ·				м	7 V V	- (Black Creek Forr	mation)		-70.2 - 9	2.0 100/0	.4					
	-	ŧ						· · · · · ·			7 V V				‡							:
5	4.8 -	17.6	9	11	10			· · · · ·			1 V V V	-		-75	-75.2 - 9	7.6 40	25	47				1
	-	ŧ	9	11	13	24 · · · · · • 24 · · · ·		· · · · · ·		M	л <i>V</i> Л V				‡	40	20	47			· · · ·	• 72
0	-	‡						· · · · · ·			N N N			-80	‡				· · · ·	· · · ·	· · · ·	· ·
0	-0.2 -	22.6	6	12	16	· · · · • • • 28 · · ·				м	N V V	-		-00	-80.2 - 10)2.6 30	40	33				
	-	‡						· · · · · ·			N V V	-3.6	26.0		‡					· · · ·	· · · /	
-5	-5.2 -	27.6				/						Dark Gray, Silty (Black Creek Forr	Clay	-85	-85.2 - 10	07.6					· j	·
	-	ŧ	7	8	11	· · · · • • 19 · · · · ·				м		(Didok Oreek i on	hatony		1	11	23	25		· · · · /	48	:
	-	ŧ				. .									1							:
-10	-10.2 -	- 32.6	7	8	11			<u> </u>		М		-		-90	-90.2 - 11	2.6	11	16				+
	-	ł				$ \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot$									<u>†</u>					$\mathbf{I}_{1}^{2'}$:
-15	-15.2 -	37.6										_		-95	-95.2 - 11	7.6						•
			6	8	12					м						8	10	15		25 · · ·		· _
	-	Ŧ										<u>18.6</u>	41.0		Ŧ							
-20	-20.2	42.6	6	25	12		+			М		Dark Gray, Sandy Clay with and Shell Fragn	nents		-							
	-	Ŧ		20								(Black Creek Forr										
-25	-25.2	47 6										Limestone Lense 48.9	to 49.1 Feet									
	-20.2 -	+ 47.0	9	13	67			. 80		м		-										
	-	Ŧ																				
-30	-30.2 -	52.6	8	10	12							-										
	-	ŧ			12	$\begin{bmatrix} \cdot & \cdot & \cdot & \bullet \\ \cdot & \cdot & \cdot & \bullet \end{bmatrix}^{22} \cdot \cdot \cdot \cdot \cdot$				M					‡							
-35	-	‡				$\left \left \begin{array}{cccc} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \right \left \begin{array}{cccc} \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot &$		· · · · · · ·							‡							
	-35.2 -	- 57.6 -	9	20	76	┤│ ╶╶╶╶┦│╶╶╶╸ ││ ・・・・┕┽╼╴╼╴╼╴			6	м		- -36.2	58.6									
	-	ŧ									0000	Dark Gray, Fine (Black Creek Forr	Sand mation)		‡							
-40	-40.2	62.6						· · · · · · · · · · · · · · · · · · ·			0000	-										
	-	ŧ	30	70/0.4				100/0 9		M	0000				1							
1	-	‡									0 0 0 0 0 0 0 0 0 0 0 0				‡							
-45	-45.2 -	67.6	50	50/0.3			<u> </u>			м	0 0 0 0 0 0 0 0 0 0 0 0	-			+							
50	-	ŧ									0 0 0 0 0 0 0 0 0 0 0 0				<u>†</u>							
-50	-50.2 -	72.6									0000	_			<u>+</u>							
		1	90	10/0.1				100/0.0		M	0000				I I							
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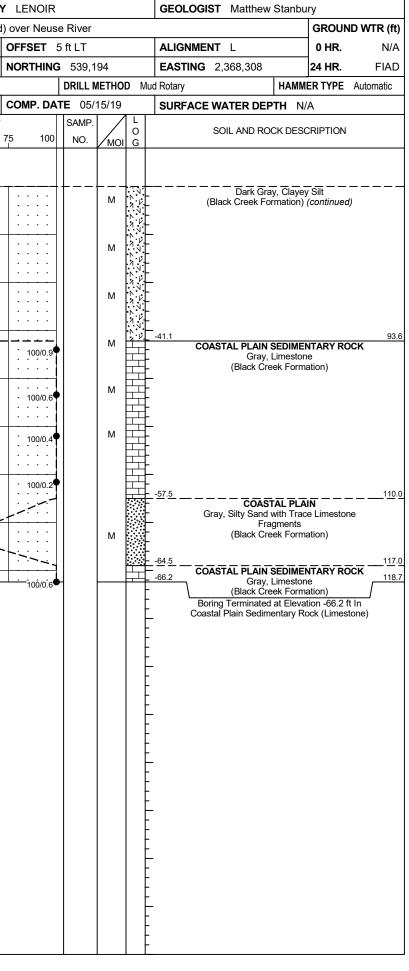
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	45574					P B-561				LENOIR				GEOLO	OGIST Matthew Stank		-	45574					P B-5619		COUN	
SITE	DESCR	RIPTION	Brid	ge No	. 52 oi	n SR 138	9 (Hardy	Bridge R								GROUND WTR (ft)	SITE	DESCF	RIPTION	Brid	ge No		n SR 1389		ridge Roa	id) o
BORI	NG NO	. B3-A			S	TATION	31+26		OF	FSET	7 ft LT			ALIGN	MENT L	0 HR. N/A	BOR	ING NO	. B3-A	\		S	TATION 3	1+26		0
COLL	AR EL	EV. 26	.9 ft		т	OTAL DEI	PTH 12	1.5 ft	NC	ORTHING	5 38,9	985		EASTI	NG 2,368,282	24 HR. N/A	COL	LAR EL	EV. 26	6.9 ft		т	DTAL DEP	TH 121.	5 ft	N
DRILL	RIG/HA	MMER E	FF./DA	TE IN	S0439 I	Diedrich D-5	50 90% 03	12/2019				NETHO	D N	lud Rotary	HAM	MER TYPE Automatic	DRIL	L RIG/HA	MMER E	FF./DA	TE IN	IS0439 [Diedrich D-50	90% 03/12	2/2019	
DRILI	LER C	Contract	Driller		S		TE 09/2	25/19	cc	OMP. DA	TE 09/	27/19		SURFA	CE WATER DEPTH 2	2.8ft	DRIL	LER C	Contract	t Driller		S	ART DAT	E 09/25/	/19	С
ELEV	DRIVE	DEPTH		W CO				VS PER FC			SAMP.		1 L				ELEV	DRIVE		1	W CO				PER FOO	
(ft)	ELEV (ft)	(ft)	0.5ft			0	25	50	75	100		Имо	O I G	ELEV. (ft)	SOIL AND ROCK DES	SCRIPTION DEPTH (f	(ft)	ELEV (ft)	(ft)	· – – – – –	0.5ft	-	0	25	50	75
	()																.,	()								
																								Mat	tah Lina	
30		ŧ												_			50	+	<u>+</u>						tch Line	. T
	26.9													26.9	GROUND SURI	FACE 0.	D	-53.1	I 80.0							
25	20.9	+ +	1	1	0	•1···			• •			м	000	-	ALLUVIAL	-	-55	-33.1	+ 00.0 +	100/0.5					· · · · ·	
	-	ŧ											000	-	Brown, Coarse	Sand	-00	-	ŧ							
	21.9	5.0					. _	· · · ·	· · ·	 .			000	21.9		5.)	-58.1	85.0							
20		ł	100/0.3					·;		100/0.3	•	M		20.9	COASTAL PLAIN SEDIM Gray, Limesto		-60		+	83	17/0.1					•
		Ŧ												Γ Ì	Black Creek For	mation)		-	Ŧ							
	16.9	10.0		10	0.1			,:::::::::::::::::::::::::::::::::::::		· · · ·				-	Gray, Silty Sa			-63.1	<u> </u>		07/0.0				· · · · · · · ·	
15	_	‡	14	16	24		• • • •	40 • •	•••			M		L	(Black Creek For		-65		‡	63	37/0.3					·
		ł					.	.\.						_ 13.4		<u>13</u> .	5		ł						.	•
	11.9	15.0	6	19	31								N V V	-	Dark Gray, Clay (Black Creek For	ey Silt mation)		-68.1	<u> </u>	100/0.5						:
10	_	‡	0	19	51			· · • • 50 ·				M	N V	-	,	,	-70		‡	100/0.3						÷
		t						/. 	.				N V	-					t						.	:
	6.9	20.0	7	10	15				.				N N	-				-73.1	+ 100.0	100/0.4						
5	-	‡					· • 25 ·			· · · ·		M	7 V V	-			-75		ŧ				· · · ·			·
		‡											N N V	-					‡							:
	1.9	25.0	6	10	15							м	トレ	_				-78.1	<u> 105.0</u>	18	82/0.4					:
0	-	Ŧ					-						N V V				-80		Ŧ					+ • • • •		
		‡					:/ : :		.				$\overline{}$	<u>-</u> - <u>1.6</u>	Dark Gray, Silty	<u></u> <u></u> <u></u> <u></u> <u></u> <u>28</u> .	5		‡							
	-3.1	30.0	6	9	12		$\frac{1}{21}$			· · · ·		М		-	(Black Creek For	mation)		-83.1	<u> </u>	19	23	27			·	-†
-5	-	ŧ															-85	-	t				<u> </u>			
	-8.1	I 35.0							.					-				-88.1	I 115.0							
-10	-0.1	+ 33.0	6	8	11		 19 · ·			· · · · · · · ·		м		-			-90	-00.1	+ 113.0	9	10	13				:
10	-	‡												-			-30	1 -	‡					1		
	-13.1	40.0				:::/	 							-				-93.1	120.0					N: : : :		
-15		+	6	6	10	· · ∳1	16 • •					м		_					+	14	13	19		•32·		
	-	Ŧ				· · · ·										<u>43</u> .	5	-	Ŧ							
	-18.1	45.0		_		:::!	· · · · · ·			 			N 1	- · · · · · · · · · · · · · · · · · · ·	Dark Gray, Clayey Silt w Fragments	ith Trace Shell			‡							
-20		±		1	11		18 • •	•••	•••			M	N N	<u>-</u>	(Black Creek For	mation)		_	±							
i]		ł					٦ ١		•••				N V	F					+							
-30	-23.1	50.0	22	13	15		. \			· · · · ·		<u>.</u> .	N V V	F					Ŧ							
-25		‡		13			• • • 28•	•••	•••	· · · ·		M	х V Х Х	<u>-</u>				-	‡							
<u> </u>		t					:/::		:: :				л V Л V	L I					t							
,	-28.1	55.0	6	9	11							м	N N V	_					ł							
-30	-	Ŧ		-						· · · ·			N N V	<u> </u>				-	Ŧ							
		‡					:\ : :			· · · ·			х 1	Ę					‡							
	-33.1	60.0	11	30	70/0.2		∶∖¦÷÷	<u>.</u>	÷:- -;	· · · · ·		м	N V	33.6 -	Croy Clayers	60.	5		±							
-35	-	╞								100/0.7	?		/./.	<u> </u>	Gray, Clayey S (Black Creek For	mation)		-	+							
	00.4	Ŧ							.	· · · · ·			/./.	-					Ŧ							
	-38.1	<u> </u>	47	53/0.3	1	· · · ·	· · · ·	· · · ·		· · · · ·		м	/./	-					‡							
	-	t					<u> </u>			100/0.6			/_/.					-	t							
	10 1	T 70.0							.				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<u>41.6</u>	Gray, Fine Sa	<u>68</u> . and	2		Ŧ							
AF	-43.1	+ (0.0	100/0.5				· · · · · ·			· · · · ·	•	м	0000	-	(Black Creek For	mation)			‡							
-45	-	t				<u> </u>	+						0000	<u>-</u>				-	t							
	-48.1	T 75.0							.				0000	F					+							
-45		- <u>().</u>	100/0.5					· · · · · · · ·		· · · · ·		м	0000	-					Ŧ							
-50		L			I							I	اه ه ه ه	L				-	1	1	I					



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	3 45574					P B-5619		Y LENOIR				GEOLOGIST Matthew Stanb	-		45574.1.				P B-5619		COUN	
				lge No		n SR 1389 (Hardy Bri	dge Roa	1				1	GROUND WTR (ft)		DESCRIPT		ridge No				ridge Roa	id) o
BOF	RING NO	. B4-A			S	TATION 32+18		OFFSET	7 ft LT				0 HR. N/A	BOR	NG NO. B	4-A		S	TATION 3	32+18		0
COL	LAR EL	EV. 34	.4 ft		T	DTAL DEPTH 121.1	ft	NORTHING	3 539,0	076		EASTING 2,368,292	24 HR. NM	COL	AR ELEV.	34.4 ft		т	OTAL DEP	TH 121.	1 ft	N
DRIL	L RIG/HA	MMER E	FF./DA	TE IN	S0439	Diedrich D-50 90% 03/12/2	2019		DRILL	METHO	DD Mu	d Rotary HAMM	IER TYPE Automatic	DRILL	. RIG/HAMME	R EFF./D	ATE I	VS0439 [Diedrich D-50) 90% 03/12	2/2019	
DRII	LER C	Contract	Drille	r	S	TART DATE 10/01/1	9	COMP. DA	TE 10/	/02/19)	SURFACE WATER DEPTH	I/A	DRIL	LER Cont	act Drill	er	S	TART DAT	E 10/01/	/19	C
ELEV	DRIVE ELEV	DEPTH		ow col		4	PER FOOT		SAMP.			SOIL AND ROCK DES	CRIPTION	ELEV	DRIVE ELEV DE		LOW CC	-			6 PER FOO	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25	50	75 100	NO.	Имо) G	ELEV. (ft)	DEPTH (ft)	(ft)	(ft)	t) 0.51	ft 0.5ft	0.5ft	0	25	50	75
ĺ																						
35	34.4											34.4 GROUND SURF	ACE 0.0	-45	-45.6 80					Mat	tch Line	
		1	WOH	WOH	WOH	● 0		· · · · · ·		М	N	ALLUVIAL 31.0 Brown, Silty Clay with Tr	ana Organica			87	13/0.1	1				:
		ŧ						 				Brown, Silty Sa	- 2.0	50	1						· · · · · · · ·	:
30	29.4	5.0	WOH	2	2									-50	-50.6 + 8	5.0 100/0	14					<u> </u>
		ŧ		2	2	$\left \begin{array}{c c c c c c c c c c c c c c c c c c c$		· · · · ·		W		26.9	7.5		ŧ	100/0						·
25		±										Brown, Sandy Clay with T	race Organics	-55								•
	24.4	<u>+ 10.0</u> 	5	8	4	12				м					-55.6 + 90 +	100/0	0.4					•
		Ŧ						· · · · · ·							Ŧ						· · · · ·	
20	19.4 -	15.0										18.9	15.5	-60	-60.6 + 9	5.0						·
		Ŧ	4	100/0.4						M		COASTAL PLAIN SEDIME	NTARY ROCK		Ŧ	65	35/0.2	2				:
15		ŧ						 			• • • • • • • • • •	(Black Creek Form	nation) j	-65	÷						· · · · ·	:
10	14.4	<u>+ 20.0</u>	35	65/0.4						м	•••••	Gray, Fine Sa			-65.6 + 10	0.0	33/0.3	3				
		‡					· · · ·	100/0.9 				11.9 (Black Creek Form	. 22.3		‡					•••	· · · · · · · ·	:
10	9.4 -	+ 25.0				· · · · · · · · ·		· · · · ·				Dark Gray, Clayey Silt wi		-70	-70.6 + 10	50					· · · ·	·
	<u> </u>	1 20.0	7	8	13	21		· · · · · ·		м		(Black Creek Forn	nation)			100/0	0.4					:
_		ŧ					· · ·	· · · · · ·							+							:
5	4.4	30.0	6	9	14		<u> </u>							-75	-75.6 + 11	0.0	51	49/0.3				+
		ł		9	14			· · · · ·		M					÷	29	51	49/0.3				•
0		Ŧ						• • • • •						-80						•••	• • • •	
	-0.6	+ 35.0 +	8	11	16					м	^ v -				<u>-80.6 + 11</u>	5.0	43	57/0.4				
		Ŧ						· · · · · ·				- <u>3.1</u> Dark Gray, Silty Clay wit	h Traco Sholl		Ŧ							:
-5	-5.6 -	+ 40.0				/	· · ·					. Fragments		-85	-85.6 + 12	0.0						-
		ŧ	6	8	11			 		м		(Black Creek Forn	nauon)		+	17	60	40/0.1				•
-10		‡						 							ļ ļ							
-10	-10.6	45.0	6	8	10										+							
		‡				$\left \begin{array}{cccccccccccccccccccccccccccccccccccc$	· · · ·	 							‡							
-15	-15.6 -	+ 50.0													1							
	- 10.0	1 ^{30.0}	6	8	10	 		 		м					1							
-20		ŧ					· · ·	· · · · · ·				- <u>18.1</u> Dark Gray, Clayey Silt wi Fragments	th Trace Shell 52.5		+							
	-20.6	55.0	6	6	11		<u> </u>					Fragments (Black Creek Forn	nation)		+							
		ł				1 Q 17				M	1	-23.1	, 57.5		ł							
-25		Ŧ										Dark Gray, Sandy Clay w Fragments	ith Trace Shell		Ŧ							
	-25.6	+ 60.0 +	12	15	16	· · · · · • • • • • • • • • • • • • • •				м		(Black Creek Forn	nation)		Ŧ							
-30		Ŧ										-28.1 Dark Gray, Clayov Silt wi	th Trace Sholl		Ŧ							
	-30.6 -	+ 65.0					· · ·	· · · · · ·				Dark Gray, Clayey Silt wi Fragments			-							
-35		ŧ	6	10	11	· · · · • • • • • • • • • • • • • • • •		 		м	ĭ, µ	(Black Creek Form	,		ļ ļ							
-35		‡						· · · · · · · · · ·				Gray, Silty Sa (Black Creek Forn	67.5		‡							
	-35.6	+ 70.0 +	7	14	60	$ \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot$	1			м		. (Black Creek Forn	nauon)		+							
		‡					· · · · · ·	$ \cdot \P^{4} \cdot \cdot \cdot \cdot $							‡							
-40	10.6-	- - 75.0						· · · · ·				-40.6	75.0		1							
-40	-40.0	+ / <u>5.0</u>	60/0.1	1				. 60/0.1		M		COASTAL PLAIN SEDIME	NTARY ROCK		ŧ							
-45		ŧ										Gray, Limesto	ne nation) <u>78.0</u>		Ŧ							
-45		Ī								1	****				Ī.							

LENOIR				GEOLOGIST Matthew S	tanbur	У	
over Neuse	e River					GROUND W	rr (ft)
OFFSET 7	ft LT			ALIGNMENT L		0 HR.	N/A
NORTHING	539,0	76		EASTING 2,368,292		24 HR.	NM
	DRILL N		D M		HAMME	RTYPE Autor	natic
COMP. DAT				SURFACE WATER DEPTI			
	SAMP.		L				
75 100	NO.	мо	O G	SOIL AND ROCK	DESC	RIPTION	
100/0.6	F	м	0 0 0 0 0 0 0 0 0 0 0 0	COASTA	L PLAI	N	
			0 0 0 0 0 0 0 0 0 0 0 0	Gray, Fir (Black Creek Form	ation) (continued)	
			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-			
100/0.4		М	0 0 0 0 0 0 0 0 0 0 0 0	-			
			0 0 0 0 0 0 0 0 0 0 0 0	-			
· 100/0.4		м	0 0 0 0 0 0 0 0 0 0 0 0	-			
			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-			
			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-			
100/0.7		М	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-			
			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-			
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100/0.4		М	0 0 0 0 0 0 0 0 0 0 0 0	-			
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100/0.9			0 0 0 0 0 0 0 0 0 0 0 0	-			
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100/0.6		_ <u>M_</u>		Boring Terminate			121.1
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SITE	DESCR		Brid	lge No	. 52 o	n SR 1389 (Hardy	Bridge Roa	d) over Neus	se River				GROUND WTR (ft)	SITE	DESCRIPTIO	DN Bri	dge No.	52 on	SR 1389 (H	Hardy Brid	lge Road)
BOR	ING NO.	EB2-	-A		S	TATION 33+37		OFFSET	5 ft LT			ALIGNMENT L	0 HR. N/A	BOF	RING NO. EE	2-A		ST	ATION 33	+37	(
COLL	AR ELI	EV. 52	2.5 ft		Т	OTAL DEPTH 11	8.7 ft	NORTHIN	G 539,7	194		EASTING 2,368,308	24 HR. FIAD	COL	LAR ELEV.	52.5 ft		то	TAL DEPTH	1 118.7 1	ft 🚺
DRILL	. RIG/HA	MMER E	FF./DA	TE BF	RI2974	CME-45C 91% 02/20/	2019		DRILL	METHO	D M	Id Rotary HAMN	IER TYPE Automatic	DRIL	L RIG/HAMMER	REFF./DA	TE BRI	2974 CI	ME-45C 91%	02/20/2019	I
DRIL	LER C	ontract	Drille	r	S	TART DATE 05/	15/19	COMP. DA	TE 05/	/15/19		SURFACE WATER DEPTH N	I/A	DRII	LER Contra	ct Drille	er	ST	ART DATE	05/15/19	9 (
ELEV	DRIVE	DEPTH	BLC	ow cou		11	NS PER FOO		SAMP.		1 - 1			ELEV			ow cou	_			PER FOOT
(ft)	ELEV (ft)	(ft)		0.5ft		4	50	75 100	NO.	мо	0	SOIL AND ROCK DES	CRIPTION DEPTH (ft)	(ft)	ELEV (ft)	····	0.5ft		0 25		50 7
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SITE PHOTOGRAPH

Bridge No. 52 on -L- (SR 1389) over Neuse River



Looking North from End Bent 1

SHEET 11 B-5619 (Bridge #52) Lenoir Co.