B REFERENCE

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### STATE OF NORTH CAROLINA

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

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

EEI NO.	DESCRIF ITON
1	TITLE SHEET
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3	SITE PLAN
4	PROFILE
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# **STRUCTURE** SUBSURFACE INVESTIGATION

COUNTYEDGECOMBE
PROJECT DESCRIPTION REPLACE BRIDGES 320003,
320004 AND 320005 OVER SWIFT CREEK ON
SR 1404 (SEVEN BRIDGES ROAD)
SITE DESCRIPTIONBRIDGE NO. 320003
AT -L- STA. 35 + 90.50

STATE PROJECT REFERENCE NO. 9 BR-0111

#### **CAUTION NOTICE**

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1991 707-6805. 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 LABDRATORY SAMPLE DATA AND THE IN SITU (IM-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS NIDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO 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.

PERSONNEL RUSSEK, S. C. DUGGINS, W. T. TURNER, A. D. INVESTIGATED BY \_\_RUSSEK, S. C. FIELDS, W.D. DRAWN BY NASH, A. A. CHECKED BY SUBMITTED BY \_\_ALEXANDER, M. J. NOVEMBER 2019

Prepared in the Office of: **Consulting Engineers and Scientists** 



Matthew J. Alexanthe 13/2019

**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED** 

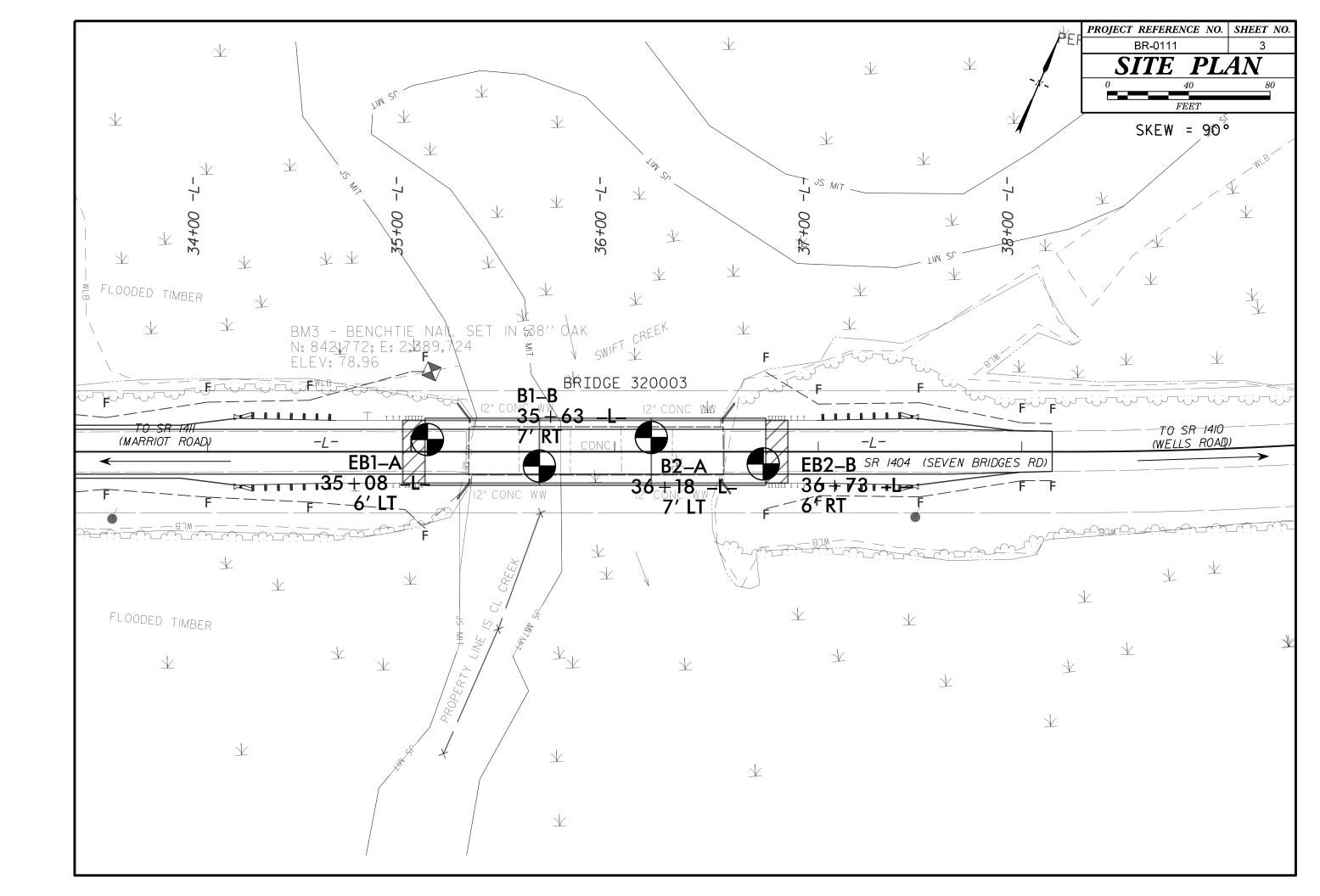
PROJECT REFERENCE NO. SHEET NO. 2

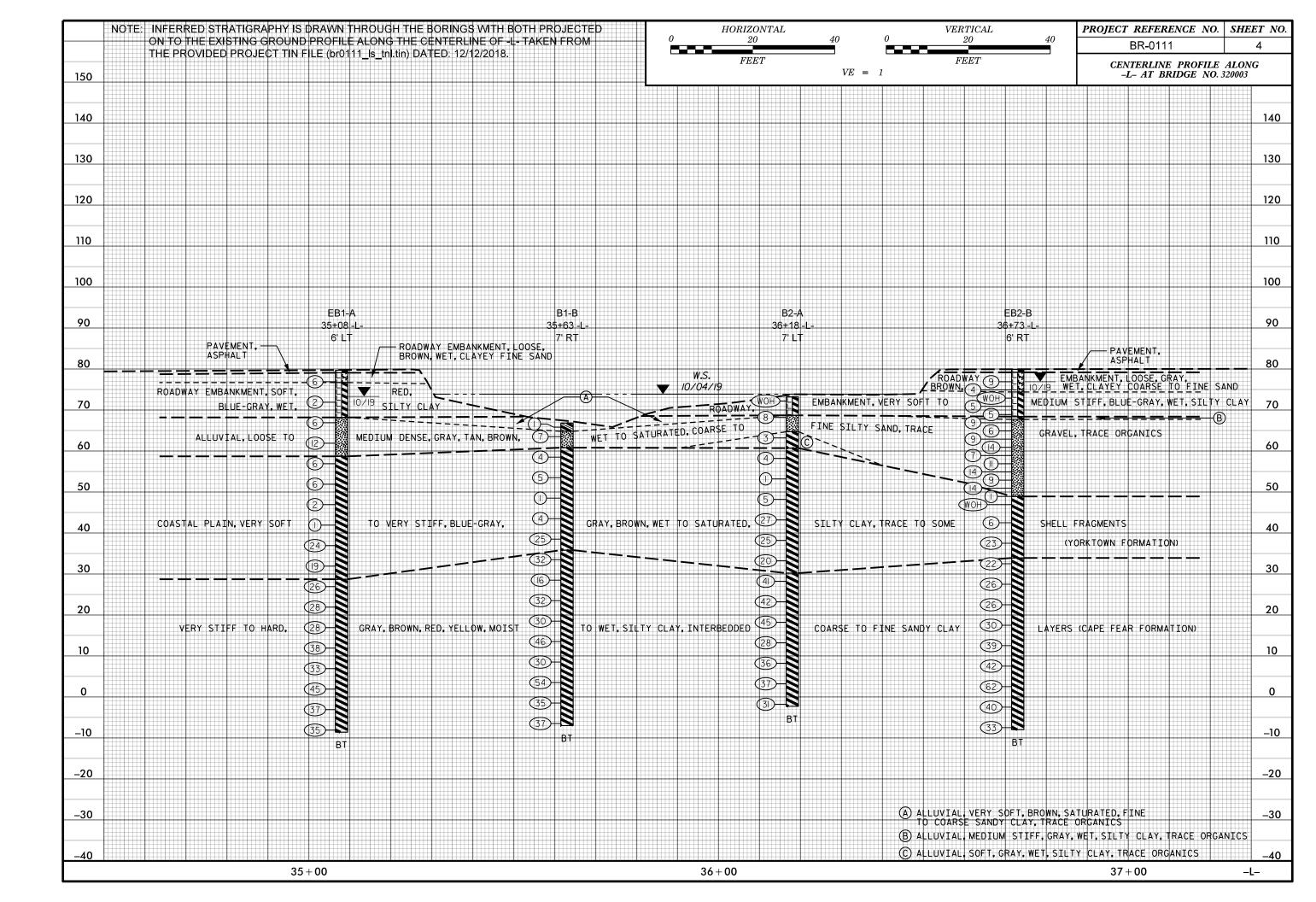
# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

# 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	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.  UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION	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	<u>AQUIFER</u> - A WATER BEARING FORMATION OR STRATA.
IS BASED ON THE AASHTO SYSTEM, BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	ANGULARITY OF GRAINS	REPRESENTED BY A ZONE OF WEATHERED ROCK.	ARENACEDUS - 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:	ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	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) 100 BLOWS PER FOOT IF TESTED.	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
CEMEDAL COMMILLAD MATERIAL C CILIT-CLAY MATERIAL C	MINERALOGICAL COMPOSITION	FINE TO COARSE CRAIN ICNEOUS AND METAMORPHIC POCK 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.	LOCATS HALLINE WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE,	SURFACE.
GROUP 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.	ONEISS, GABBRO, SCHIST, ETC.  NON-CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN  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-7-6 A-3 A-6, A-7	COMPRESSIBILITY  SLIGHTLY COMPRESSIBLE LL < 31	ROCK (NCR)  SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
SYMBOL   00000000000000000000000000000000000	MODERATELY COMPRESSIBLE LL = 31 - 50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED
7. PASSING 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.
*10 50 MX GRANULAR CLAY MUCK, *40 30 MX 50 MX 51 MN SOILS CRIC PEAT	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.
*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 36 MN	ORGANIC MATERIAL SOILS SOILS OTHER MATERIAL	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
MATERIAL  PASSING *40	TRACE OF ORGANIC MATTER 2 - 3%, 3 - 5%, TRACE 1 - 10%, LITTLE ORGANIC MATTER 3 - 5%, 5 - 12%, LITTLE 10 - 20%	HAMMER IF CRYSTALLINE,	HORIZONTAL.
LL 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN 40 MX 41 MN 501L5 WITH	MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35%	VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, (V SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE
PI 6 MX NP 10 MX 10 MX 11 MN 11 MN 10 MX 10 MX 11 MN 11 MN MODERATE OPENANCE	HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE  GROUND WATER	OF A CRYSTALLINE NATURE.	LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.  FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
GROUP INDEX W W 4 MX 8 MX 12 MX 16 MX NO MX AMOUNTS OF SOILS		SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO  (SLI.) 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
OF MATOR GRAVEL AND FINE SILTY OR CLAYEY SILTY CLAYEY MATTER	√ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
MATERIALS SAND SAND GRAVEL AND SAND SOILS SOILS	STATIC WATER LEVEL AFTER 24 HOURS	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
GEN. RATING EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITABLE	PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA	(MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	PARENT MATERIAL.
AS SUBGRADE POOR POOR POOR POOR POOR POOR POOR POO	- O-MM⊶ SPRING OR SEEP	WITH FRESH ROCK.	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
PI OF A-7-5 SUBGROUP IS ≤ LL - 3Ø ; PI OF A-7-6 SUBGROUP IS > LL - 3Ø  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	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.
DANCE OF CTANDARD DANCE OF LINCONFINED	THISCELE RIVEOUS STILLOUS	(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 CONSISTENCY PENETRATION RESISTENCE COMPRESSIVE STRENGTH	ROADWAY EMBANKMENT (RE)  25/025  DIP & DIP DIRECTION  OF ROCK STRUCTURES	IF TESTED, WOULD YIELD SPT REFUSAL	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
(N-VALUE) (TONS/FT <sup>2</sup> )  VERY LOOSE < 4	SPT SINDICATOR	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.
GRANIII AP LOOSE 4 TO 10	SOIL SYMBOL  OPT DMT TEST BORING  INSTALLATION  SECRET INDICATION	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 THAN ROADWAY EMBANKMENT 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	THE TOPOWAT EMPHRICAL CO.	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         < 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. <i>IF TESTED, WOULD YIELD SPT N VALUES &lt; 100 BPF</i>	OF AN INTERVENING IMPERVIOUS STRATUM.
GENERALLY SOFT 2 TO 4 0.25 TO 0.5 SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0	INFERRED ROCK LINE MN MONITORING WELL TEST BORING WITH CORE	COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.  ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
MATERIAL         STIFF         8 TO 15         1 TO 2           (COHESIVE)         VERY STIFF         15 TO 30         2 TO 4	THE ALLUMIAN COTH POINDARY A PIEZOMETER COTH NO VOLUE	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
HARD > 30 > 4	TTT ALLUVIAL SOIL BOUNDARY A INSTALLATION SPT N-VALUE	ROCK HARDNESS	RUN AND EXPRESSED AS A PERCENTAGE.
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
U.S. STD. SIEVE SIZE 4 10 40 60 200 270	UNDERCUT UNCLASSIFIED EXCAVATION - UNCLASSIF	SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.	SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND
OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053		HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	SHALLOW UNCLASSIFIED EXCAVATION - USED IN THE TOP 3 FEET OF ACCEPTABLE DEGRADABLE ROCK EMBANKMENT OR BACKFILL	TO DETACH HAND SPECIMEN.  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.) (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 A 140 LB, HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL
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	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 $\gamma_{ m d}$ - 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.
CATURATED HOUSE VERY VET HOUSE V	DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK	PIECES CAN BE BROKEN BY FINGER PRESSURE.	STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY (SAT.) FROM BELOW THE GROUND WATER TABLE	e - VOID RATIO   SD SAND, SANDY   SS - SPLIT SPOON   F - FINE   SL SILT, SILTY   ST - SHELBY TUBE	VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK, PIECES 1 INCH SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY	LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
PLASTIC PLOUID LIMIT	FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK	SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
BANGE - WET - (W) SEMISOLID; REGULRES DRYING TO	FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL FRAGS FRAGMENTS W - MOISTURE CONTENT CBR - CALIFORNIA BEARING	FRACTURE SPACING BEDDING	BENCH MARK: BM3 - BENCTIE NAIL SET IN 38" OAK,
(PI) PL _ PLASTIC LIMITATTAIN OPTIMUM MOISTURE	HI HIGHLY V - VERY RATIO	TERM SPACING TERM THICKNESS	39.52' LEFT OF -L- STA. 35+10
- MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE	EQUIPMENT USED ON SUBJECT PROJECT	VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET WIDE 3 TO 10 FEET THICKLY BEDDED 1.5 - 4 FEET	N: 842,772; E: 2,389,724 ELEVATION: 78.96 FEET
OM OPTIMUM MOISTURE SULTS HIT ON NEAR OFTIMUM MOISTURE  SL SHRINKAGE LIMIT	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:	MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET	NOTES:
- DRY - (D) REQUIRES ADDITIONAL WATER TO	CME-45C CLAY BITS X AUTOMATIC MANUAL	CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.03 - 0.16 FEET VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET	
ATTAIN OPTIMUM MOISTURE	CME-55 6* CONTINUOUS FLIGHT AUGER CORE SIZE:	THINLY LAMINATED < 0.008 FEET	
PLASTICITY	8* HOLLOW AUGERS	INDURATION	
PLASTICITY INDEX (PI) DRY STRENGTH	CME-550 HARD FACED FINGER BITS	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 TUNG,-CARBIDE INSERTS	FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
MODERATELY PLASTIC 16-25 MEDIUM	X 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 X TRICONE 25% STEEL TEETH HAND AUGER	MODERATELY INDURATED	
COLOR	TRICONE TUNGCARB. SOUNDING ROD	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; INDURATED DIFFICULT TO BREAK WITH HAMMER,	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).	CORE BIT VANE SHEAR TEST		
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.	X ACKER RENEGADE (TER92-0)	EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-14
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WRS	67	111.1.1				<b>IP</b> BR-01	11	CC		EDGEC				GEOL	OGIST	BLING	CH, C. M	1			WRS	<b>S</b> 6711	1 1 1			Т	<b>IP</b> BR-01	11		COLINT	Y EDGEC	OMRE				GEOLOGIST BUNCH	I C M	
-				PEDLΔCE		GE 320003						VEN F	RIDGE			DOING	OI 1, O. 1V		OUND W	TR (ft)				REP	N ACE						EK ON SR 1			I BRII			•	GROUND WTR (ft
		NO. EE		(L) L) (O)		STATION :				OFFSET					NMENT	· -I -				N/A	-	RING NO					TATION				OFFSET			· Di tii		ALIGNMENT -L-		0 HR. N/A
		ELEV.		ft	-+	OTAL DEF		3 ft	-	NORTHIN		740		+	ING 2,		 15	24 H		6.4	-	LAR EL				-	OTAL DE				NORTHIN					<b>EASTING</b> 2,389,735		24 HR. 6.4
						ACKER RENE				- TOTALINA			D Mu	d Rotary		,000,70			PE Autor						F TER		CKER RENI			15/2019	THO KITIM				Mud R			ER TYPE Automatic
		DUG				START DAT				COMP. D				<del></del>	ACF W	ΔTFRI	DEPTH		T L Mator	riatio		LLER D					TART DA				COMP. D					SURFACE WATER DE		
ELEV	DRI	VE DE		BLOW CO				VS PER				) <b>V</b>	71	Joona								, DRIVE			OW CO					ER FOO		SAI		$\overline{}$	<del>-                                     </del>			
(ft)	ELE (ft	– V   /£		.5ft 0.5f		<b> </b>  0	25	50	7	75 100	NO.	M	O   OI G	ELEV. (ft		OIL AND	ROCK D	DESCRIPT		EPTH (ft)	(ft)	ELEV (ft)	(ft)		0.5ft		0	25	5	)	75 100	o N	o. /	MOI	O   G	SOIL AND R	OCK DESC	CRIPTION
							•							•																								
80														_79.7		GRO	DUND SL	JRFACE		0.0	0				<u> </u>				Match	Line		<u> </u>						
	77.	.9 1				1								79.1	\		PAVEME ASPHA			0.6		-2.1	81.8				] :::	:   :	: /:							GRAY, BROW	<b>D BROWN</b>	SILTY FINE
		+		5 3	3	6		.				W		76.7			VAY EME	BANKMEN		3.0			<u> </u>	11	17	20	] :::		37 ·		.			М	3	SAN CAPE FEAR FO	ND LAYERS	
_ 75	1	+				<del>                                 </del>	<del>                                     </del>				+			<u>-</u>				FINE SA , SILTY C		<sup>'</sup>	-5	-	ŧ				<del> </del>		-			+			3	`		, ,
	72.	.9 + 6.	i.8 W	OH 1	1	- 1		-				W										-7.1	86.8	10	15	20		:   : ,	35 .					М	<b>\</b>	9.6		88
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		Ŧ		1 2	4	<b>│</b>						Sat		-	GRAY	Y, TAN,	ALLUVI SILTY C	OARSE T	O FINE				±												Ŀ			
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60		Ŧ				12						Joan		-									Ŧ												E			
	57	.9 T 21	18			٠٠٠					]			<u> 58.7</u>			ΤΑ ΕΤΑΙ	PI AIN		21.0			Ŧ												F			
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ž		, ‡ <u>.</u> ,					\\				11									<u>51</u> .0		-	‡												F			
GPJ	27.	.9 <u>+ 51</u> +	1.8	6 9	17	: : : :	26	:   :	: : :	: : : :		w		- -		RBEDD	ED BRO	D, SILTY WN SILT					‡												ļ.			
EDGECOMBE	-	‡					1::							- -		S (CAPE I	AND LAY	YERS DRMATIO	N)			-	‡												F			
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WBS 67111.1.1 TIP BR-0111 COUNTY EDGECOMBE	GEOLOGIST BUNCH, C. M.	<b>WBS</b> 67111.1.1	TIP BR-0111 COUNT	TY EDGECOMBE	GEOLOGIST BUNCH, C. M.
SITE DESCRIPTION REPLACE BRIDGE 320003 OVER SWIFT CREEK ON SR 1404 (SEVEI	·	SITE DESCRIPTION REPLACE BI			<u>'</u>
BORING NO. B1-B STATION 35+63 OFFSET 7 ft RT		BORING NO. B1-B	<b>STATION</b> 35+63	OFFSET 7 ft RT	ALIGNMENT -L- 0 HR. N/A
COLLAR ELEV. 66.8 ft TOTAL DEPTH 73.8 ft NORTHING 842,750		COLLAR ELEV. 66.8 ft	TOTAL DEPTH 73.8 ft	NORTHING 842,750	<b>EASTING</b> 2,389,791 <b>24 HR</b> . N/A
		DRILL RIG/HAMMER EFF./DATE TER92		1	
DRILLER DUGGINS, W. T. START DATE 10/02/19 COMP. DATE 10/03		DRILLER DUGGINS, W. T.	START DATE 10/02/19	COMP. DATE 10/03/19	SURFACE WATER DEPTH 7.0ft
ELEV DEPTH BLOW COUNT BLOWS PER FOOT SAMP.		ELEV DRIVE DEPTH BLOW COUN	<u> </u>	OT SAMP.	-
(ft) ELEV (ft) 0.5ft 0.5ft 0.5ft 0 25 50 75 100 NO.	MOI G ELEV. (ft) SOIL AND ROCK DESCRIPTION DEPTH (ft)	(ft) ELEV (ft) 0.5ft 0.5ft (	0.5ft 0 25 50	75 100 NO. MOI 0	SOIL AND ROCK DESCRIPTION
75	_	_5	Match Line		
	WATER SURFACE (10/02/19)	-5.5 72.3 9 17	20	·   · · · ·   M	-7.0 73.8
					Boring Terminated at Elevation -7.0 ft IN COASTAL PLAIN SILTY CLAY (CAPE
					FEAR FORMATION)
66.8 + 0.0	66.8 GROUND SURFACE 0.0				-
65 645 + 23	Sat. ALLUVIAL BROWN, FINE TO COARSE SANDY 2.0				-
7	Sat. CLAY, TRACE ORGANICS TAN, SILTY COARSE SAND, TRACE				-
60 505 70	ORGANICS 6.0				-
59.5 🕇 7.3	Sat. BLUE-GRAY, TAN, SILTY CLAY, TRACE				-
	TO SOME SHELL FRAGMENTS (YORKTOWN FORMATION)				F
55 54.5 12.3					-
	Sat.				Ę. I
50   105   170					-
49.5 🛨 17.3	Sat.				-
					-
45 44.5 22.3		‡			-
_	w <b>3</b>				-
40					-
39.5 + 27.3	w <b>5</b>				F
	35.8				-
35 34.5 32.3 10 15 17	RED, GRAY, TAN, SILTY CLAY (CAPE FEAR FORMATION)				-
o	W (CAPE FEAR FORMATION)				[-
$\begin{bmatrix} 0 \\ 0 \end{bmatrix}$					E
	w E				-
5					-
25 24.5 42.3 1 1 21 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	w <b>B</b>				<u> </u>
[ [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [	" <b>\bar{2}</b>				_
20 19.5 47.3 9 14 16 43.5					_
9 14 16	w <b>2</b>				_
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15 14.5 52.3 12 21 25	M 📑				-
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5 4.5 62.3 U	M 📑	‡			F
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₩ 0 -0.5 + 67.3					<u> </u>
+	M 🚉				F
	<b>\$</b>				F

GROUND WTR (ft)

N/A

N/A

HAMMER TYPE Automatic



<b>WBS</b> 67111.1.1	TIP BR-01		/ EDGECOMBE	GI	EOLOGIST BUNCH, C. M.		<b>WBS</b> 67111	.1.1	ті	IP BR-0111 COUNT	Y EDGECON	 ИВЕ	GEOLOGIST BUNCH, C. M.	
SITE DESCRIPTION REF		t			•	GROUND WTR (ft)				GE 320003 OVER SWIFT CRE				GROUI
BORING NO. B2-A	STATION		OFFSET 7 ft LT		LIGNMENT -L-	0 HR. N/A	BORING NO.			<b>TATION</b> 36+18	OFFSET 7	•	ALIGNMENT -L-	0 HR.
COLLAR ELEV. 73.2 ft			NORTHING 842,785		<b>ASTING</b> 2,389,836	24 HR. N/A	COLLAR ELE			OTAL DEPTH 75.5 ft	NORTHING		<b>EASTING</b> 2.389.836	24 HR.
DRILL RIG/HAMMER EFF./DAT				THOD Mud Rota	· · ·	ER TYPE Automatic				CKER RENEGADE 86% 02/15/2019	<del></del>	DRILL METHOD Mu	d Rotary HAW	J MMER TYPE
DRILLER DUGGINS, W.			COMP. DATE 10/04		JRFACE WATER DEPTH 0.		DRILLER DI			TART DATE 10/04/19	1	E 10/04/19	SURFACE WATER DEPTH	
ELEV DRIVE DEPTH BLO	OW COUNT	BLOWS PER FOOT	SAMP.		SOIL AND ROCK DES	CDIDTION	ELEV DRIVE	DEPTH BLO	OW COUNT	BLOWS PER FOO	T	SAMP.	SOIL AND ROCK DE	ECCDIDITIO
(ft) (ft) (ft) 0.5ft	0.5ft 0.5ft 0	25 50	75 100 NO.	/   '	V. (ft)	DEPTH (ft)	(ft) (ft)	(ft) 0.5ft	0.5ft 0.5ft	0 25 50	75 100	NO. MOI G	SOIL AND ROCK DE	ESCRIPTIO
75				<b>V</b>	WATER SURFACE (	10/04/10)	5		<b></b>	Match Line			FEAR FORMA	
73.2 ± 0.0	HWOH WOH 60: ::	<del>-    </del>		W - 73.2	WATER SURFACE ( GROUND SURF ROADWAY EMBAN			-					- FEAR FORIVIA	ATION)
70   +			1	" E <b>S</b>	BLUE-GRAY, SILT		-	-					• •	
69.2 4.0	3 5		1	Sat. 68.7	, ALLUVIAL	4.5		-					<del>-</del> ·	
					GRAY, TAN. SILTY COAR SAND, TRACE ORG		-						• •	
65 64.2 9.0			<del>                                     </del>	64.7	GRAY, SILTY CLAY, TRACE	8.5						[	<u>-</u>	
	0 3			w 🗦	Older, Older Folder, Free	DE ONO/WIGO							- - -	
60			<u> </u>	<u> </u>	COASTAL PLA	<u>IN</u> <u>12.5</u>	-	-					-	
59.2 T 14.0 WOF	1 2 2			w 📑	BLUE-GRAY, TAN, SILTY TO SOME SHELL FRA	CLAY, TRACE		-						
55 +	/::::				(YORKTOWN FORM		-	-					• •	
54.2 19.0	0 1			w St			-	-					<del>-</del> ·	
	1 1 1 1 1 1 1			" 🔰			-	-					• •	
50 49.2 24.0							-	-					- <del>-</del>	
1	1 4 5			w S				-					•	
45   ‡							-	-					• •	
44.2 7 29.0 4	12 15	27		w				-					<del>-</del> •	
													- - -	
39.2 34.0	0 16	<del>.    </del>	<del>   </del>				-	-					<del>_</del>	
	9   16   1 1 1 1	A .		w <b>S</b>				-						
35 34.2 39.0		-/	<u> </u>					-					<del>-</del>	
	8 12	20		w 🕽			-	-					• •	
30				30.2	!	43.0	-	-					<del>.</del> -	
29.2 7 44.0	17 24			м	RED, YELLOW, GRAY, S INTERBEDDED COARS			-					<del>-</del> ·	
		!!!			SANDY CLAY LAY (CAPE FEAR FORM								· -	
25 24.2 49.0		<del>.   <u>.</u> .  </del>	<del>   </del>		·		-	-					<del>-</del>	
Tage     12	17   25	1 1		M				-						
20 19.2 54.0 13							-	-					- <del>-</del>	
9 19.2 54.0	18 27	45		м				-					• •	
		:   : :/:   : : : :					-	-					• •	
15 14.2 59.0 9	11 17			м			-	-					<del>-</del> •	
		.   \frac{7}{2} \cdot \cd		<sup>**</sup>   <b>3</b>				-					• •	
9.2 64.0			<del>                                     </del>					-					· <del>-</del>	
	17   19	. • •36		М									•	
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1 1 42 1 69 0 1	15 22			м				:				[	• •	
		-   - 1						-					- -	
9 -0.8 74.0 9	13 18	<del>: :/::: ::::</del>	<del>  : : : :  </del>	,,			-	-					<u>-</u>	
	13 16	.   •31	<u> </u>	M -2.3	Boring Terminated at Elev			:					• •	
jo †				<del> </del>	COASTAL PLAIN SILTY	CLAY (CAPE							-	



		BORE LOG					
<b>WBS</b> 67111.1.1			DLOGIST BUNCH, C. M.	<b>WBS</b> 67111.1.1		ITY EDGECOMBE	GEOLOGIST BUNCH, C. M.
		EEK ON SR 1404 (SEVEN BRIDGES ROA			EPLACE BRIDGE 320003 OVER SWIFT CR	<u> </u>	<del></del>
BORING NO. EB2-B	<b>STATION</b> 36+73	OFFSET 6 ft RT ALIG	GNMENT -L- 0 HR. N/A	BORING NO. EB2-B	<b>STATION</b> 36+73	OFFSET 6 ft RT	ALIGNMENT -L- 0 HR. N/A
COLLAR ELEV. 79.9 ft	TOTAL DEPTH 87.9 ft	<u> </u>	<b>TING</b> 2,389,891 <b>24 HR.</b> 3.0	COLLAR ELEV. 79.9 ft	TOTAL DEPTH 87.9 ft	NORTHING 842,795	<b>EASTING</b> 2,389,891 <b>24 HR.</b> 3.0
DRILL RIG/HAMMER EFF./DATE TER	92-0 ACKER RENEGADE 86% 02/15/2019	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	DRILL RIG/HAMMER EFF./D/	ATE TER92-0 ACKER RENEGADE 86% 02/15/201	DRILL METHOD N	Mud Rotary HAMMER TYPE Automatic
DRILLER DUGGINS, W. T.	<b>START DATE</b> 10/02/19	<del></del>	FACE WATER DEPTH N/A	DRILLER DUGGINS, V		COMP. DATE 10/02/19	SURFACE WATER DEPTH N/A
ELEV (ft) DEPTH BLOW COU		75 100 NO. MOI G ELEV.	SOIL AND ROCK DESCRIPTION  DEPTH (ft)  DEPTH (ft)	ELEV DRIVE ELEV (ft) DEPTH 0.5	LOW COUNT         BLOWS PER FO           6ft         0.5ft         0.5ft         0         25         50	OT SAMP. C C C C C C C C C C C C C C C C C C C	
80		79.9	GROUND SURFACE 0.0 PAVEMENT	0	Match Line		GRAY, BROWN, RED, YELLOW, SILTY
77.9 2.0 3 4	5   . <b>i</b>		ASPHALT ROADWAY EMBANKMENT	-1.5 + 81.4   12 +   12	2 17 23 440	:: ::::   M	CLAY (CAPE FEAR FORMATION) (continued)
75 75.9 4.0 4 3	1		GRAY, BROWN, CLAYEY COARSE TO FINE SAND 5.5	-5 + 86.4			<del>-</del>
71.9 + 8.0   WOH WOH	WOH 0		BLUE-GRAY, SILTY CLAY	-b.5 8b.4 + 8	13 20		-8.0 8
70 69.9 10.0	3						Boring Terminated at Elevation -8.0 ft IN COASTAL PLAIN SILTY CLAY (CAPE
67.9 12.0 1 3	3 6 5		11.5 ALLUVIAL 12.2				FEAR FORMATION)
65.9 14.0 3 2	4		GRAY, SILTY CLAY, TRACE ORGANICS TAN, SILTY COARSE TO FINE SAND,				-
63.9 16.0 3 4	5	-	TRACE GRAVEL, TRACE ORGANICS	‡			-
61.9 18.0 5 7	7	-		‡			
60 59.9 <u>1</u> 20.0 3 4	3	<del> </del>        <del>   -</del>					
57.9 22.0 1 4	7						
55 24.0 4 6	8	w   &					-
53.9 + 26.0 2 4	5 . 49						
51.9 28.0 5 6	8	:   : : : :					-
50 49.9 30.0	1	W 48.9	31.0				<u>-</u>
47.9 1 32.0 WOH WOH		.	COASTAL PLAIN BLUE-GRAY, GRAY, BROWN, TRACE TO				- -
45 +	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	- <del></del>     <b>&gt;</b> -	LITTLE SHELL FRAGMENTS (YORKTOWN FORMATION)				
43.5 + 36.4   1   1	5						
40 +		: ::::     📑					
38.5 + 41.4	10			†			
	13			‡			
35		33.9	46.0				
33.5 + 46.4   6   10	12	:   : : : :     w	GRAY, BROWN, RED, YELLOW, SILTY  CLAY				
$\begin{bmatrix} 3 \\ 30 \end{bmatrix}$			CLAY (CAPE FEAR FORMATION)				
28.5 + 51.4 7 11	15						_
	P <sup>26</sup>	·   · · · · ·					
25 23.5 7 56.4		<del>: ::::</del>     <b>\S</b> t					-
7 9	17	:   : : : :         w   <b>&gt;</b>					<u>-</u>
20 +							-
18.5 + 61.4   8   13	17	:   : : : :         M 📑					-
		: ::::     📑					
13.5 + 66.4		<del>-  </del>     <b> \$</b>					-
12 16	<del> </del> 39			‡			F
10 +		- <del> </del>     <b>S</b> +		‡			<u>-</u>
8.5 † 71.4   14   18		·   · · · ·         M 🔀-					[
				‡			E
35 35 36 46.4 6 10 30 28.5 51.4 7 11 25 25 23.5 56.4 7 9 20 18.5 61.4 8 13 15 15 16.4 12 16 10 8.5 71.4 14 18 15 16.5 16.5 16.5 17.4 14 18 15 16.5 16.5 17.5 17.5 17.5 17.5 17.5 17.5 17.5 17	38						E
	30	2:   : : : :     M   M					Ŀ
<u> </u>				1 1 1			

# SITE PHOTOGRAPHS

REPLACE BRIDGE NO. 320003 OVER SWIFT CREEK ON SR 1404 (SEVEN BRIDGES ROAD)



FROM END BENT 1 LOOKING EAST



FROM END BENT 1 RIGHT LOOKING EAST