STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5798A	1	15

REFERENCE: U-5798A

PROJECT: 44369

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY CUMBERLAND

PROJECT DESCRIPTION WIDEN SR 1102 (GILLIS HILL ROAD) TO MULTI-LANES FROM US 401 (RAEFORD ROAD) TO SR 1112 (STONY POINT ROAD)

SITE DESCRIPTION DUAL BRIDGES NO. 75 (LEFT) AND 501 (RIGHT) ON SR 1102 (GILLIS HILL ROAD) OVER LITTLE ROCKFISH CREEK

CONTENTS

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 (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

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

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SIGNATURE 5/1/20 DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-5798A	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

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 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: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH 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

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5, A-7-6			
SYMBOL														
% PASSING #10 #40 #200	50 MX 30 MX 15 MX	50 MX 25 MX	51 MN 10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
MATERIAL PASSING #40 LL PI	— 6 MX		— NP	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	NO MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	< 4 4 TO 10 10 TO 30 30 TO 50 > 50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	< 2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 > 30	< 0.25 0.25 TO 0.5 0.5 TO 1.0 1 TO 2 2 TO 4 > 4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005
	IN.	12	3				

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NON PLASTIC	0-5	VERY LOW
SLIGHTLY PLASTIC	6-15	SLIGHT
MODERATELY PLASTIC	16-25	MEDIUM
HIGHLY PLASTIC	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY), MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

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.
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LL < 31
MODERATELY COMPRESSIBLE	LL = 31 - 50
HIGHLY COMPRESSIBLE	LL > 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE	1 - 10%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE	10 - 20%
MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME	20 - 35%
HIGHLY ORGANIC	> 10%	> 20%	HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW — PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 — DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT, DPT, DMT, VST PMT — TEST BORING
- AUGER BORING
- CORE BORING
- MW — MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING WITH CORE
- SPT N-VALUE

RECOMMENDATION SYMBOLS

- UNDERCUT
- SHALLOW UNDERCUT
- UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE
- UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK
- UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
w - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

SAMPLE ABBREVIATIONS

S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] CME-45C
- [ ] CME-55
- [ ] CME-550
- [ ] VANE SHEAR TEST
- [ ] PORTABLE HOIST
- [X] DIEDRICH D-50 (SME275)
- [X] ACKER RENEGADE (TER92-0)

ADVANCING TOOLS:
- [X] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [ ] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [X] CASING [ ] W/ ADVANCER
- [X] TRICONE 2⅜ " STEEL TEETH
- [ ] TRICONE _____ " TUNG.-CARB.
- [ ] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC
- [ ] MANUAL

CORE SIZE:
- [ ] -B _____
- [ ] -H _____
- [ ] -N _____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

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. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FOOT
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

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 A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.

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 SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

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.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

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.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

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.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

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.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

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.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: BL-204, N: 461,655; E: 1,983,850

ELEVATION: 157.3 FEET

NOTES:

FIAD - FILLED IMMEDIATELY AFTER DRILLING

DATE: 8-15-14

PROJECT REFERENCE NO.	SHEET NO.
U-5798A	3

SITE PLAN

0 50 100

FEET

END BENT 1 SKEW ANGLE - 65°
BENT 1 SKEW ANGLE - 90°
END BENT 2 SKEW ANGLE - 90°

-L- 75+00

-L- 80+00

EB1-A
75+39 -L-
85' LT

EB2-A
78+43 -L-
35' LT

B2-A
77+80 -L-
17' LT

EB2-C_REV
78+46 -L-
CL

EB2-B
78+46 -L-
13' RT

EB1-B
75+51 -L-
6' RT

B2-B
77+89 -L-
28' RT

B1-B
76+47 -L-
85' RT

B1-B_REV
76+79 -L-
86' RT

BRIDGE NO. 250075

BRIDGE NO. 250501

-BL-204

TYPE-III

CAT-1

TO SR 1112
(STONEY POINT ROAD)

TO US 401
(RAEFORD ROAD)

SR 1102
GILLIS HILL RD.
28' PAVED

LITTLE ROCKFISH CREEK

WOODS

MTL

CONC

JS

F

C

NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ON TO THE EXISTING GROUND PROFILE ALONG THE CENTERLINE OF -L- TAKEN FROM THE PROVIDED PROJECT TIN FILE (U5798_LS_TIN.tin).

HORIZONTAL 0 40 80 FEET

VERTICAL 0 20 40 FEET

VE = 2

PROJECT REFERENCE NO.	SHEET NO.
U-5798A	4

CENTERLINE PROFILE ALONG -L- AT BRIDGES NO. 75 AND 501

EB1-B
75+51 -L-
6' RT

B1-B_REV
76+79 -L-
86' RT

B2-A
77+80 -L-
17' LT

EB2-C_REV
78+46 -L-
CL

SS-84
SS-85
SS-87
SS-91

ST-4

NWS ELEV.147.9'
09/18/2019

FIAD
03/20

COASTAL PLAIN, LOOSE TO VERY DENSE, BROWN, GRAY, TAN, ORANGE, FINE TO COARSE SAND, TO CLAYEY FINE TO COARSE SAND, MOIST TO SATURATED (MIDDENDORF FORMATION)

COASTAL PLAIN, MEDIUM STIFF TO HARD, BLUE, GRAY, DARK GRAY, SILTY CLAY, SANDY CLAY, WET, TRACE (CAPE FEAR FORMATION)

LOOSE TO MEDIUM DENSE, WHITE, LIGHT GRAY, DARK GRAY, SILTY SAND, MEDIUM STIFF TO VERY STIFF, GRAY, SILTY CLAY, MOTTLED BROWN, GRAY, MAROON, MODERATELY PLASTIC

MEDIUM DENSE TO VERY DENSE, GRAY, CLAYEY SAND, SATURATED, TRACE MICA

VERY STIFF TO HARD, MAROON, MOTTLED GRAY, TAN, BROWN, SILTY CLAY, FINE TO COARSE SANDY CLAY, WET, TRACE MICA

DENSE TO VERY DENSE, GRAY, MAROON, CLAYEY FINE TO COARSE SAND, SATURATED, TRACE MICA

PAVEMENT (ASPHALT)

ALLUVIAL, VERY LOOSE, GRAY, TAN, MUCK, WET

DARK BROWN SILTY FINE TO COARSE SAND, TRACE MICA,

DENSE, TAN, GRAY, MICA, MODERATELY SATURATED, FINE SANDY CLAY, FINE SAND, SATURATED

SILTY CLAY, FINE TO COARSE SAND, DENSE, GRAY, TAN, MAROON, TRACE MICA

CLAYEY FINE TO COARSE SAND, VERY DENSE, GRAY, CLAYEY

SOFT, GRAY, DARK BROWN, BLACK, FINE TO COARSE SAND, WET TO SATURATED, TRACE ORGANICS, TRACE ROCK FRAGMENTS

FINE TO COARSE SAND, SATURATED (CAPE FEAR FORMATION)

TO HIGHLY PLASTIC WET, MODERATELY TO HIGHLY PLASTIC

(A) COASTAL PLAIN, MEDIUM STIFF, GRAY, BROWN, SANDY SILT, MOIST (MIDDENDORF FORMATION)

(B) ROADWAY EMBANKMENT, VERY LOOSE, TAN, SILTY FINE TO COARSE SAND, MOIST TO WET

220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20

74+00 75+00 76+00 77+00 78+00 79+00 -L-

CROSS SECTION THROUGH END BENT 1 AT STA. 75+61 –L–

0 10 20
FEET

PROJ. REFERENCE NO.	SHEET NO.
U-5798A	5

NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS AND PROJECTED ON TO THE CROSS SECTION. GROUND LINE TAKEN FROM PROVIDED TIN FILE: U5798_ls_tin.tin (DATED: 11/06/2019)

SKEW ANGLE - 65°

℄

SS–164
SS–173

EB1-A
75+39 -L-
85' LT

EB1-B
75+51 -L-
6' RT

EXISTING GROUND

COASTAL PLAIN, STIFF, GRAY, BROWN, SANDY SILT, MOIST (MIDDENDORF FORMATION)

COASTAL PLAIN, MEDIUM DENSE TO DENSE, BROWN, GRAY, ORANGE, TAN, RED, COARSE TO FINE SAND, SILTY SAND, MOIST TO SATURATED (MIDDENDORF FORMATION)

MEDIUM DENSE TO DENSE, TAN, GRAY, ORANGE, CLAYEY FINE TO COARSE SAND, SATURATED

COASTAL PLAIN, VERY STIFF TO HARD, GRAY, BLUE, LIGHT TO DARK GRAY, SILTY CLAY, FINE SANDY CLAY, WET (CAPE FEAR FORMATION)

MEDIUM DENSE, LIGHT GRAY, GRAY, CLAYEY FINE TO COARSE SAND, SATURATED

STIFF, YELLOW, BROWN, GRAY, FINE SANDY CLAY, WEI

MEDIUM DENSEM GRAY, CLAYEY FINE TO COARSE SAND, SATURATED

HARD, GRAY, YELLOW, BROWN, SILTY CLAY, WET

06/19

06/19

BT

BT

CROSS SECTION THROUGH END BENT 2 AT STA. 78+00 –L–

0 10 20
FEET

PROJ. REFERENCE NO.	SHEET NO.
U-5798A	6

NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS AND PROJECTED ON TO THE CROSS SECTION. GROUND LINE TAKEN FROM PROVIDED TIN FILE: U5798_ls_tin.tin (DATED: 11/06/2019)

SKEW ANGLE - 90°

℄

SS–84
SS–85
SS–87
SS–91

B2-A
77+80 -L-
17' LT

B2-B
77+89 -L-
28' RT

EXISTING GROUND

05/19

ALLUVIAL, VERY SOFT, GRAY, BROWN, BLACK, MUCK, WET

VERY LOOSE TO LOOSE, GRAY, BROWN, TAN SAND, SATURATED, TRACE ORGANIC MATTER

COASTAL PLAIN, MEDIUM DENSE, TAN SAND, SATURATED (CAPE FEAR FORMATION)

(CAPE FEAR FORMATION)

MEDIUM STIFF TO VERY STIFF, GRAY, SILTY CLAY, FINE SANDY CLAY, WET

LOOSE, LIGHT GRAY, GRAY, WHITE, SILTY FINE SAND, CLAYEY FINE TO COARSE SAND, SATURATED

STIFF TO VERY STIFF, GRAY, BROWN, SILTY CLAY, FINE SANDY CLAY, WET, HIGHLY PLASTIC

MEDIUM DENSE TO VERY DENSE, GRAY, CLAYEY FINE TO COARSE SAND, SATURATED

VERY STIFF TO HARD, GRAY, RED, PURPLE, BROWN, SILTY CLAY, FINE SANDY CLAY, WET

MEDIUM DENSE, GRAY, CLAYEY FINE TO COARSE SAND, SATURATED

BT

BT

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 44369.1.2	**TIP** U-5798A	**COUNTY** CUMBERLAND	**GEOLOGIST** Blythe A	
SITE DESCRIPTION DUAL BRIDGES NO. 75 AND 501 ON SR 1102 (-L-) OVER LITTLE ROCKFISH CREEK				**GROUND WTR (ft)**
BORING NO. EB1-A	**STATION** 75+39	**OFFSET** 85 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 164.0 ft	**TOTAL DEPTH** 60.0 ft	**NORTHING** 461,556	**EASTING** 1,983,645	**24 HR.** 7.8
DRILL RIG/HAMMER EFF./DATE SME275 DIEDRICH D-50 90% 11/08/2018		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER Williams,T	**START DATE** 06/03/19	**COMP. DATE** 06/03/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
165	164.0	0.0	3	3	9	12 46	SS-164	11%		GROUND SURFACE **COASTAL PLAIN** BROWN, GRAY, ORANGE, TAN AND RED, SILTY SAND AND SAND (MIDDENDORF FORMATION)	164.0	0.0
160	160.5	3.5	15	23	23			M				
155	155.5	8.5	11	11	12	23 17		Sat.			157.0	7.0
150	150.5	13.5	4	6	11			Sat.				
145	145.5	18.5	8	33	67/0.4	100/0.9		W		**COASTAL PLAIN** GRAY, BLUE AND DARK GRAY, SANDY CLAY AND SILTY CLAY (CAPE FEAR FORMATION)	147.0	17.0
140	140.5	23.5	14	17	31	48		W				
135	135.5	28.5	10	16	17	33		W			137.0	27.0
130	130.5	33.5	6	12	22	34		W				
125	125.5	38.5	6	11	9	20		Sat.		LIGHT GRAY, CLAYEY SAND	127.0	37.0
120	120.5	43.5	4	4	10	14	SS-173	20%		YELLOW, BROWN AND GRAY, SANDY CLAY	120.0	44.0
115	115.5	48.5	4	6	8	14		W				
110	110.5	53.5	8	11	15	26		Sat.		GRAY, CLAYEY SAND	112.0	52.0
105	105.5	58.5	11	13	18	31		W		GRAY, YELLOW AND BROWN, SILTY CLAY	107.0	57.0
										Boring Terminated at Elevation 104.0 ft IN HARD SILTY CLAY (COASTAL PLAIN)	104.0	60.0

NCDOT BORE SINGLE U5798A_GEO_BRDG_REV.GPJ NC_DOT.GDT 4/30/20

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 44369.1.2	**TIP** U-5798A	**COUNTY** CUMBERLAND	**GEOLOGIST** Blythe A	
SITE DESCRIPTION DUAL BRIDGES NO. 75 AND 501 ON SR 1102 (-L-) OVER LITTLE ROCKFISH CREEK				**GROUND WTR (ft)**
BORING NO. EB1-B	**STATION** 75+51	**OFFSET** 6 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 177.6 ft	**TOTAL DEPTH** 60.4 ft	**NORTHING** 461,563	**EASTING** 1,983,737	**24 HR.** 20.5
DRILL RIG/HAMMER EFF./DATE SME275 DIEDRICH D-50 90% 11/08/2018		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER Williams,T	**START DATE** 05/31/19	**COMP. DATE** 05/31/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
180	177.6	0.0	2	4	6	10 45		M		GROUND SURFACE **COASTAL PLAIN** GRAY AND BROWN, SANDY SILT (MIDDENDORF FORMATION)	177.6	0.0
175	173.7	3.9	17	22	23			M			174.6	3.0
170	168.7	8.9	9	16	18	34		M		GRAY, TAN AND ORANGE, SILTY SAND AND SAND	170.1	7.5
165	163.7	13.9	14	27	49	76		M			165.1	12.5
160	158.7	18.9	9	25	23	48						
155	153.7	23.9	7	11	20	31		Sat.		TAN, GRAY AND ORANGE, CLAYEY SAND	155.1	22.5
150	148.7	28.9	6	10	19	29		Sat.				
145	143.7	33.9	27	73/0.4		100/0.9		W		**COASTAL PLAIN** GRAY, BLUE AND LIGHT GRAY, SILTY CLAY AND SANDY CLAY (CAPE FEAR FORMATION)	145.1	32.5
140	138.7	38.9	13	22	37	59		W				
135	133.7	43.9	15	37	63/0.4	100/0.9		W				
130	128.7	48.9	8	13	15	28		W			130.6	47.0
125	123.7	53.9	5	7	7	14		W		GRAY AND LIGHT GRAY, CLAYEY SAND	125.6	52.0
120	118.7	58.9	6	11	11	22		Sat.				
								Sat.		Boring Terminated at Elevation 117.2 ft IN MED. DENSE CLAYEY SAND (COASTAL PLAIN)	117.2	60.4

NCDOT BORE SINGLE U5798A_GEO_BRDG_REV.GPJ NC_DOT.GDT 4/30/20

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 44369.1.2	**TIP** U-5798A	**COUNTY** CUMBERLAND	**GEOLOGIST** Blythe A	
SITE DESCRIPTION DUAL BRIDGES NO. 75 AND 501 ON SR 1102 (-L-) OVER LITTLE ROCKFISH CREEK				**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 76+47	**OFFSET** 85 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 157.1 ft	**TOTAL DEPTH** 64.2 ft	**NORTHING** 461,654	**EASTING** 1,983,821	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE SME275 DIEDRICH D-50 90% 11/08/2018		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic
DRILLER Williams,T	**START DATE** 05/30/19	**COMP. DATE** 05/30/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) / DEPTH (ft)
160										
	157.1	0.0								157.1 GROUND SURFACE 0.0
			9	5	7	12		M		156.3 **ROADWAY EMBANKMENT** 0.8
155	154.4	2.7								(PAVEMENT)
			5	3	3	6		M		**ALLUVIAL** GRAY AND BROWN, SILTY SAND
150	149.4	7.7								151.1 6.0
			1	2	2	4		M		**COASTAL PLAIN** GRAY AND TAN, SILTY SAND AND SAND (MIDDENDORF FORMATION)
145	144.4	12.7								146.1 11.0
			1	4	15	19		W		143.9 13.2 GRAY, SILTY CLAY
140	139.4	17.7								141.1 16.0
			22	26	31	57		W		**COASTAL PLAIN** GRAY, SILTY CLAY (CAPE FEAR FORMATION)
135	134.4	22.7								
			12	17	29	46		W		
130	129.4	27.7								131.1 26.0 GRAY AND LIGHT GRAY, SILTY SAND
			6	9	12	21	SS-143	20%		
125	124.4	32.7								
			4	4	4	8		Sat.		121.1 36.0 LIGHT GRAY, GRAY, BROWN AND RED, SANDY CLAY AND SILTY CLAY
120	119.4	37.7								
			4	5	9	14		W		
115	114.4	42.7								116.1 41.0
			4	6	8	14		W		
110	109.4	47.7								111.1 46.0 LIGHT GRAY, CLAYEY SAND
			11	16	11	27		Sat.		
105	104.4	52.7								106.1 51.0 GRAY, BROWN AND RED, SILTY CLAY AND SANDY CLAY
			13	25	29	54		W		
100	99.4	57.7								101.1 56.0
			8	13	21	34		W		
95	94.4	62.7								96.1 61.0 LIGHT GRAY, CLAYEY SAND
			15	17	21	38		Sat.		92.9 64.2 Boring Terminated at Elevation 92.9 ft IN DENSE CLAYEY SAND (COASTAL PLAIN)

NCDOT BORE SINGLE U5798A_GEO_BRDG_REV.GPJ NC_DOT.GDT 4/30/20

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 44369.1.2	**TIP** U-5798A	**COUNTY** CUMBERLAND	**GEOLOGIST** RUSSEK, S. C.
SITE DESCRIPTION DUAL BRIDGES NO. 75 AND 501 ON SR 1102 (-L-) OVER LITTLE ROCKFISH CREEK			**GROUND WTR (ft)**
BORING NO. B1-B_REV	**STATION** 76+79	**OFFSET** 86 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 156.7 ft	**TOTAL DEPTH** 128.3 ft	**NORTHING** 461,685	**EASTING** 1,983,822	**24 HR.** 4.6
DRILL RIG/HAMMER EFF./DATE TER92-0 ACKER RENEGADE 90% 02/04/2020		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER DUGGINS, W. T.	**START DATE** 03/16/20	**COMP. DATE** 03/16/20	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
160												
										GROUND SURFACE	156.7	0.0
155	154.9	1.8								**PAVEMENT** (ASPHALT)	155.7	1.0
			4	2	1	3		M		**ROADWAY EMBANKMENT** TAN, SILTY FINE TO COARSE SAND		
150	149.9	6.8									150.7	6.0
			1	1	0	1		W		**ALLUVIAL** GRAY, TAN, SILTY FINE TO COARSE SAND, TRACE ORGANICS, TRACE ROCK FRAGMENTS		
145	144.9	11.8									145.7	11.0
			1	2	3	5		Sat.		**COASTAL PLAIN** GRAY, FINE TO COARSE SAND (MIDDENDORF FORMATION)		
140	139.9	16.8									141.7	15.0
			7	16	26	42		W		GRAY, FINE SANDY CLAY, TRACE MICA (CAPE FEAR FORMATION)		
135	134.9	21.8										
			12	18	33	51		W				
130	129.9	26.8									131.7	25.0
			4	4	4	8		Sat.		GRAY, SILTY FINE TO COARSE SAND		
125	124.9	31.8										
			3	5	5	10		Sat.				
120	119.9	36.8									121.7	35.0
			2	3	4	7		W		GRAY, FINE TO COARSE SANDY CLAY, TRACE MICA		
115	114.9	41.8										
			3	4	8	12		W				
110	109.9	46.8									111.7	45.0
			8	11	13	24		Sat.		GRAY, CLAYEY FINE TO COARSE SAND		
105	104.9	51.8									106.7	50.0
			18	26	31	57		W		MOTTLED BROWN, GRAY, MAROON, SILTY CLAY, TRACE MICA		
100	99.9	56.8										
			7	8	15	23		W				
95	94.9	61.8									96.7	60.0
			15	18	24	42		Sat.		GRAY, TAN, MAROON, CLAYEY FINE TO COARSE SAND, TRACE MICA		
90	89.9	66.8										
			10	14	23	37		Sat.				
85	84.9	71.8									86.7	70.0
			9	9	18	27		W		MAROON, GRAY, BROWN, FINE TO COARSE SANDY CLAY, TRACE MICA		
80												

NCDOT BORE SINGLE U5798A_GEO_BRDG_REV.GPJ NC_DOT.GDT 4/30/20

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 44369.1.2	**TIP** U-5798A	**COUNTY** CUMBERLAND	**GEOLOGIST** RUSSEK, S. C.
SITE DESCRIPTION DUAL BRIDGES NO. 75 AND 501 ON SR 1102 (-L-) OVER LITTLE ROCKFISH CREEK			**GROUND WTR (ft)**
BORING NO. B1-B_REV	**STATION** 76+79	**OFFSET** 86 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 156.7 ft	**TOTAL DEPTH** 128.3 ft	**NORTHING** 461,685	**EASTING** 1,983,822	**24 HR.** 4.6
DRILL RIG/HAMMER EFF./DATE TER92-0 ACKER RENEGADE 90% 02/04/2020		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER DUGGINS, W. T.	**START DATE** 03/16/20	**COMP. DATE** 03/16/20	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)
80						Match Line						
	79.9	76.8	11	22	36	58		W		MAROON, GRAY, BROWN, FINE TO COARSE SANDY CLAY, TRACE MICA *(continued)*		
75	74.9	81.8	13	19	27	46		W				
70	69.9	86.8	14	22	41	63		W				
65	64.9	91.8	9	12	28	40		W				
60	59.9	96.8	12	16	25	41		W				
55	54.9	101.8	18	28	32	60		W				
50	49.9	106.8	16	23	37	60		W				
45	44.9	111.8	19	36	47	83		W				
40	39.9	116.8	25	32	50	82		W			41.7	115.0
										MOTTLED GRAY, MAROON, TAN, SILTY CLAY		
35	34.9	121.8	28	33	62	95		W			36.7	120.0
										GRAY, MAROON, CLAYEY FINE TO COARSE SAND, TRACE MICA		
30	29.9	126.8	14	21	24	45		Sat.			28.4	128.3
										Boring Terminated at Elevation 28.4 ft IN COASTAL PLAIN CLAYEY SAND (CAPE FEAR FORMATION)		

NCDOT BORE SINGLE U5798A_GEO_BRDG_REV.GPJ NC_DOT.GDT 4/30/20

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 44369.1.2	**TIP** U-5798A	**COUNTY** CUMBERLAND	**GEOLOGIST** Blythe A
SITE DESCRIPTION DUAL BRIDGES NO. 75 AND 501 ON SR 1102 (-L-) OVER LITTLE ROCKFISH CREEK			**GROUND WTR (ft)**
BORING NO. B2-A	**STATION** 77+80	**OFFSET** 17 ft LT	**ALIGNMENT** -L- — **0 HR.** N/A
COLLAR ELEV. 149.7 ft	**TOTAL DEPTH** 64.7 ft	**NORTHING** 461,793	**EASTING** 1,983,728 — **24 HR.** 1.5
DRILL RIG/HAMMER EFF./DATE SME275 DIEDRICH D-50 90% 11/08/2018	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER Williams,T	**START DATE** 05/23/19	**COMP. DATE** 05/23/19	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
150											
	149.7	0.0	1	0	0	0				149.7 GROUND SURFACE	0.0
	146.5	3.2								**ALLUVIAL** BLACK, MUCK	
145			WOH	WOH	WOH	0		W			
	141.5	8.2								143.2 TAN SAND	6.5
140			1	2	2	4		Sat.			
	136.5	13.2								138.2 **COASTAL PLAIN** TAN SAND (CAPE FEAR FORMATION)	11.5
135			4	6	7	13		Sat.			
	131.5	18.2								133.2 GRAY, SANDY CLAY	16.5
130			4	3	4	7	SS-84	18%			
	126.5	23.2								128.2 LIGHT GRAY AND WHITE, SILTY SAND	21.5
125			3	3	4	7	SS-85	20%			
	121.5	28.2								123.2 GRAY, SANDY CLAY AND HIGHLY PLASTIC, SILTY CLAY	26.5
120			2	4	6	10		W			
	116.5	33.2								118.2	31.5
115			3	6	8	14	SS-87	28%			
	111.5	38.2								113.2 GRAY, CLAYEY SAND	36.5
110			14	32	49	81		Sat.			
	106.5	43.2								108.2 GRAY, SANDY CLAY	41.5
105			7	33	40	73		W			
	101.5	48.2									
100			11	15	26	41		W			
	96.5	53.2									
95			13	21	32	53	SS-91	20%			
	91.5	58.2									
90			20	43	57/0.4	100/0.9		W			
	86.5	63.2								88.2 GRAY, CLAYEY SAND	61.5
85			10	11	13	24		Sat.		85.0	64.7
										Boring Terminated at Elevation 85.0 ft IN MED. DENSE CLAYEY SAND (COASTAL PLAIN)	

NCDOT BORE SINGLE U5798A_GEO_BRDG_REV.GPJ NC_DOT.GDT 4/30/20

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 44369.1.2	**TIP** U-5798A	**COUNTY** CUMBERLAND	**GEOLOGIST** Blythe A
SITE DESCRIPTION DUAL BRIDGES NO. 75 AND 501 ON SR 1102 (-L-) OVER LITTLE ROCKFISH CREEK			**GROUND WTR (ft)**
BORING NO. B2-B	**STATION** 77+89	**OFFSET** 28 ft RT	**ALIGNMENT** -L- — **0 HR.** N/A
COLLAR ELEV. 149.8 ft	**TOTAL DEPTH** 75.2 ft	**NORTHING** 461,799	**EASTING** 1,983,772 — **24 HR.** 1.0
DRILL RIG/HAMMER EFF./DATE SME275 DIEDRICH D-50 90% 11/08/2018	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER Williams,T	**START DATE** 05/29/19	**COMP. DATE** 05/29/19	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
150											
	149.8	0.0	2	1	0	1				149.8 GROUND SURFACE	0.0
	146.1	3.7								**ALLUVIAL** GRAY AND BROWN, MUCK	
145			1	0	0	0		Sat.			
	141.1	8.7								142.8 GRAY AND BROWN, SAND WITH TRACE ORGANIC MATTER	7.0
140			1	1	1	2		Sat.			
	136.1	13.7								137.8 **COASTAL PLAIN** GRAY, SILTY CLAY AND SANDY CLAY (CAPE FEAR FORMATION)	12.0
135			3	6	10	16		W			
	131.1	18.7								132.8	17.0
130			2	4	5	9		W			
	126.1	23.7								130.1 GRAY, CLAYEY SAND	19.7
125			3	3	4	7		Sat.			
	121.1	28.7								122.8 BROWN AND GRAY, SANDY CLAY AND SILTY CLAY	27.0
120			4	10	14	24		W			
	116.1	33.7								117.8	32.0
115			3	5	8	13		W			
	111.1	38.7								112.8 GRAY, CLAYEY SAND	37.0
110			10	12	17	29		Sat.			
	106.1	43.7								107.8 GRAY, RED, PURPLE AND BROWN, SANDY CLAY AND SILTY CLAY	42.0
105			8	15	36	51		W			
	101.1	48.7								102.8	47.0
100			10	14	10	24		W			
	96.1	53.7								97.8	52.0
95			14	20	35	55		W			
	91.1	58.7									
90			10	25	45	70		W			
	86.1	63.7									
85			9	13	14	27		W			
	81.1	68.7									
80			14	25	30	55		W			
	76.1	73.7									
75			13	28	30	58		W		74.6	75.2
										Boring Terminated at Elevation 74.6 ft IN HARD SANDY CLAY (COASTAL PLAIN)	

NCDOT BORE SINGLE U5798A_GEO_BRDG_REV.GPJ NC_DOT.GDT 4/30/20

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 44369.1.2	**TIP** U-5798A	**COUNTY** CUMBERLAND	**GEOLOGIST** Blythe A
SITE DESCRIPTION DUAL BRIDGES NO. 75 AND 501 ON SR 1102 (-L-) OVER LITTLE ROCKFISH CREEK			**GROUND WTR (ft)**
BORING NO. EB2-A	**STATION** 78+43	**OFFSET** 35 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 149.4 ft	**TOTAL DEPTH** 74.8 ft	**NORTHING** 461,857	**EASTING** 1,983,713	**24 HR.** 1.7
DRILL RIG/HAMMER EFF./DATE SME275 DIEDRICH D-50 90% 11/08/2018		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER Williams,T	**START DATE** 05/24/19	**COMP. DATE** 05/24/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
150											
	149.4	0.0	1	0	1	1				149.4 GROUND SURFACE	0.0
										ALLUVIAL BLACK, MUCK	
145	146.1	3.3	1	0	1	1		W			
										142.9 GRAY, SILTY SAND	6.5
140	141.1	8.3	1	0	1	1		Sat.		137.9	11.5
										COASTAL PLAIN GRAY SAND (CAPE FEAR FORMATION)	
135	136.1	13.3	7	10	10	20		Sat.			
										132.9 GRAY, SANDY CLAY	16.5
130	131.1	18.3	2	3	5	8		W			
										127.9 GRAY, SILTY SAND	21.5
125	126.1	23.3	3	5	6	11		Sat.			
120	121.1	28.3	4	6	6	12		Sat.			
										117.9 GRAY, SANDY CLAY	31.5
115	116.1	33.3	4	8	12	20		W			
										112.9 GRAY, CLAYEY SAND	36.5
110	111.1	38.3	6	8	11	19		Sat.			
										107.9 GRAY AND BROWN, SANDY CLAY AND SILTY CLAY	41.5
105	106.1	43.3	13	25	22	47		W			
										101.9	47.5
100	101.1	48.3	6	12	21	33		W			
										97.9 GRAY, CLAYEY SAND	51.5
95	96.1	53.3	12	22	28	50		Sat.			
										92.9 GRAY, SANDY CLAY	56.5
90	91.1	58.3	9	15	21	36		W			
										87.9 RED AND GRAY, CLAYEY SAND	61.5
85	86.1	63.3	11	15	15	30		Sat.			
										82.9 GRAY, SANDY CLAY	66.5
80	81.1	68.3	21	30	49	79		W			
75	76.1	73.3	15	23	29	52		W		74.6	74.8
										Boring Terminated at Elevation 74.6 ft IN HARD SANDY CLAY (COASTAL PLAIN)	

NCDOT BORE SINGLE U5798A_GEO_BRDG_REV.GPJ NC_DOT.GDT 4/30/20

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 44369.1.2	**TIP** U-5798A	**COUNTY** CUMBERLAND	**GEOLOGIST** Blythe A
SITE DESCRIPTION DUAL BRIDGES NO. 75 AND 501 ON SR 1102 (-L-) OVER LITTLE ROCKFISH CREEK			**GROUND WTR (ft)**
BORING NO. EB2-B	**STATION** 78+46	**OFFSET** 13 ft RT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 150.2 ft	**TOTAL DEPTH** 64.5 ft	**NORTHING** 461,857	**EASTING** 1,983,761	**24 HR.** 1.9
DRILL RIG/HAMMER EFF./DATE SME275 DIEDRICH D-50 90% 11/08/2018		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER Williams,T	**START DATE** 05/28/19	**COMP. DATE** 05/28/19	**SURFACE WATER DEPTH** N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
155											
	150.2	0.0	1	2	1	3				150.2 GROUND SURFACE	0.0
										ALLUVIAL BROWN, MUCK	
150	147.2	3.0	1	0	1	1		W			
										144.2 BROWN, CLAYEY SAND	6.0
145	142.2	8.0	WOH	4	4	8		Sat.		141.7	8.5
										TAN, SAND	
140	137.2	13.0	4	8	8	16		Sat.		138.2	12.0
										COASTAL PLAIN TAN, SAND (CAPE FEAR FORMATION)	
135	132.2	18.0	2	4	4	8		W		134.2 GRAY, SANDY CLAY AND HIGHLY PLASTIC, SILTY CLAY	16.0
130	127.2	23.0	3	3	3	6		Sat.		132.2	18.0
										GRAY, SILTY SAND	
125	122.2	28.0	3	4	6	10	SS-112	21%		128.2	22.0
										GRAY, SANDY CLAY AND HIGHLY PLASTIC, SILTY CLAY	
120	117.2	33.0	3	5	7	12	SS-113	28%		124.2	26.0
										GRAY, CLAYEY SAND	
115	112.2	38.0	7	9	14	23		W		119.2	31.0
										GRAY AND BROWN, SILTY CLAY AND SANDY CLAY	
110	107.2	43.0	59	41/0.3		100/0.8		Sat.		109.2	41.0
										GRAY, CLAYEY SAND	
105	102.2	48.0	8	8	13	21		W		104.2	46.0
										GRAY AND BROWN, SILTY CLAY AND SANDY CLAY	
100	97.2	53.0	11	13	87/0.4	100/0.9		W		99.2	51.0
95	92.2	58.0	8	13	19	32		W		89.2 GRAY, CLAYEY SAND	61.0
90	87.2	63.0	12	13	15	28		Sat.		85.7	64.5
										Boring Terminated at Elevation 85.7 ft IN MED. DENSE CLAYEY SAND (COASTAL PLAIN)	
										Shelby Tube was pushed at 78+51, 13 RT, -L-	
										Other Samples: ST-2 (16.0 - 18.0)	

NCDOT BORE SINGLE U5798A_GEO_BRDG_REV.GPJ NC_DOT.GDT 4/30/20

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 44369.1.2	**TIP** U-5798A	**COUNTY** CUMBERLAND	**GEOLOGIST** RUSSEK, S. C.	
SITE DESCRIPTION DUAL BRIDGES NO. 75 AND 501 ON SR 1102 (-L-) OVER LITTLE ROCKFISH CREEK				**GROUND WTR (ft)**
BORING NO. EB2-C_REV	**STATION** 78+46	**OFFSET** CL	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 150.4 ft	**TOTAL DEPTH** 39.4 ft	**NORTHING** 461,858	**EASTING** 1,983,748	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE TER92-0 ACKER RENEGADE 90% 02/04/2020		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic
DRILLER DUGGINS, W. T.	**START DATE** 03/17/20	**COMP. DATE** 03/17/20	**SURFACE WATER DEPTH** N/A	

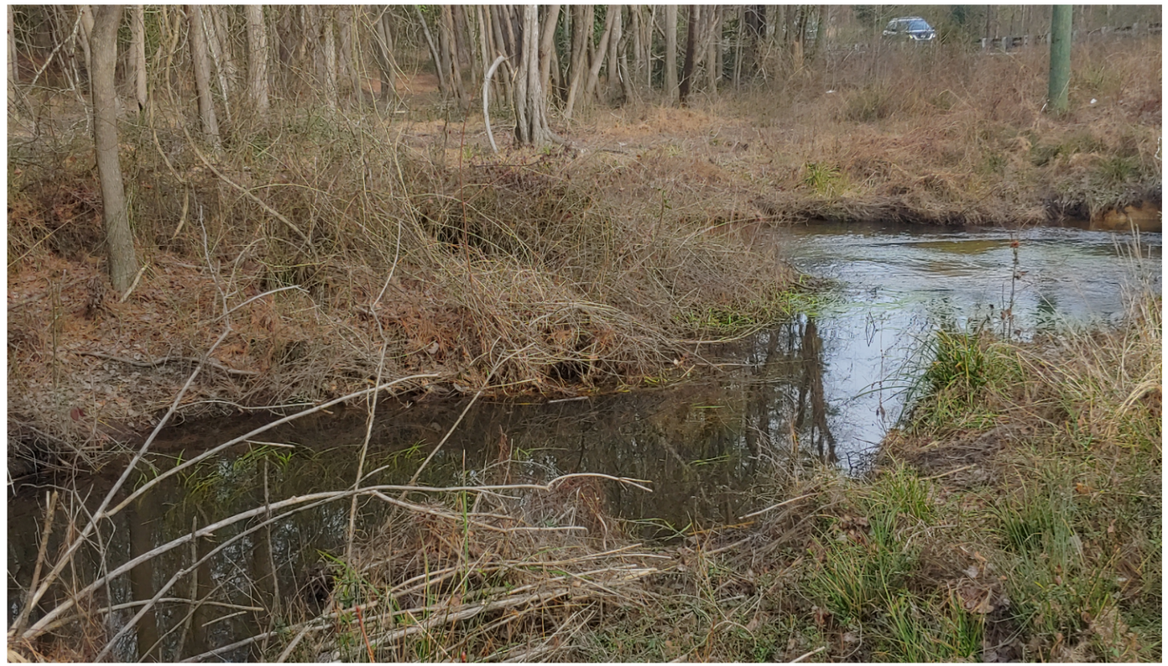
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) / DEPTH (ft)
										150.4 GROUND SURFACE 0.0
	150.4	0.0	WOH	WOH	WOH	0		W		**ALLUVIAL** GRAY, DARK BROWN, MUCK
	146.4	4.0	1	2	1	3		Sat.		146.0 4.4 TAN, SILTY FINE TO COARSE SAND, TRACE MICA, TRACE ORGANICS
	142.5	7.9	1	2	2	4		Sat.		139.4 11.0 **COASTAL PLAIN** TAN, GRAY, FINE TO COARSE SAND, TRACE ROCK FRAGMENTS (CAPE FEAR FORMATION)
	137.5	12.9	5	7	6	13		Sat.		132.9 17.5 GRAY, FINE TO COARSE SANDY CLAY, TRACE MICA
	127.5	22.9	2	3	3	6		Sat.		127.9 22.5 WHITE, LIGHT GRAY, CLAYEY FINE TO COARSE SAND
	122.5	27.9	2	3	3	6		W		122.9 27.5 GRAY, FINE TO COARSE SANDY CLAY. TRACE MICA
	117.5	32.9	3	3	5	8		W		117.9 32.5 TAN, RED, GRAY, SILTY CLAY
	112.5	37.9	5	7	9	16		W		111.0 39.4 Boring Terminated at Elevation 111.0 ft IN COASTAL PLAIN SILTY CLAY (CAPE FEAR FORMATION)

Other Samples:
ST-4 (2.0 - 4.0)

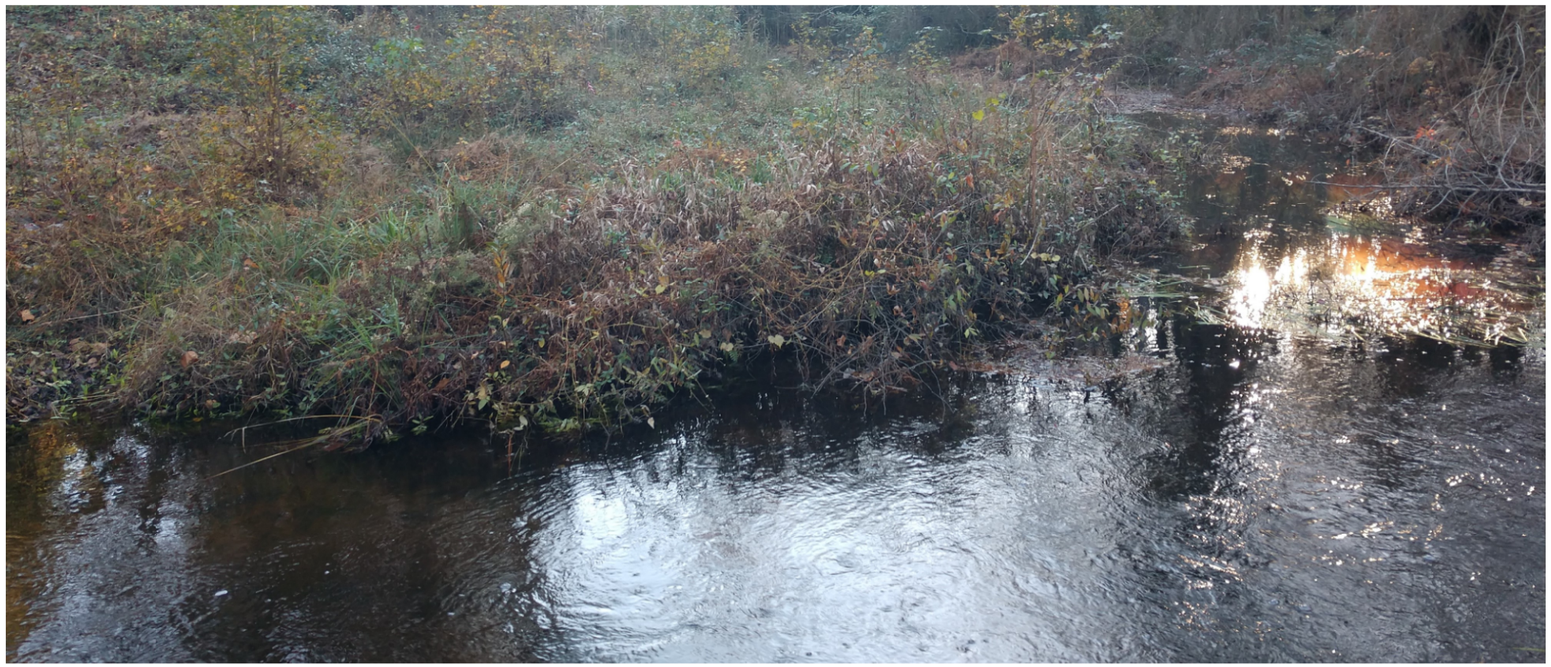
PROJECT REFERENCE NO.	SHEET NO.
U-5798A	13

SITE PHOTOGRAPHS

DUAL BRIDGES NO. 75 AND 501 ON SR 1102 (GILLIS HILL ROAD) OVER LITTLE ROCKFISH CREEK



SOUTH APPROACH TO END BENT 1 LOOKING NORTH



NORTH APPROACH TO END BENT 2 LOOKING SOUTH

SUMMARY OF LABORATORY TEST DATA

Soil Classification and Gradation

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project #:	6235-19-007			Date Report:	6/21/2019
State Project No.:	44369.1.2	County:	Cumberland	Date Tested:	5/25-6/18/19
Federal ID No.:	N/A	TIP No.:	U-5798A		
Project Name:	Dual Bridges No. 75 and 501 on SR 1102 (Gillis Hill Rd) over Little Rockfish Creek				
Client Name:	NCDOT GEU	Client Address:	Raleigh, NC		

Sample No.	Station	Offset	Alignment	Sample Depth (ft)	AASHTO Classification		Total % Passing Sieve #				Total Mortar Fraction (%)				LL	PL	PI	Moist. %
							10	40	60	200	Coarse Sand	Fine Sand	Silt	Clay				
SS-84	77+80	17 LT	-L-	18.2-19.7	A-6	(3)	100	81	65	42	36	27	9	28	29	13	16	18.2
SS-85	77+80	17 LT	-L-	23.2-24.7	A-2-4	(0)	96	46	31	19	68	13	5	14	22	13	9	20.1
SS-87	77+80	17 LT	-L-	33.2-34.7	A-7-6	(38)	100	99	99	97	1	4	22	73	55	20	35	27.5
SS-91	77+80	17 LT	-L-	53.2-54.7	A-6	(3)	99	75	58	40	42	20	12	26	38	22	16	20.3
SS-112	78+46	13 RT	-L-	28.0-29.5	A-6	(5)	99	72	55	42	44	14	5	37	37	15	22	20.7
SS-113	78+46	13 RT	-L-	33.0-34.5	A-7-6	(41)	100	100	100	98	1	3	24	72	57	19	38	28.0
SS-143	76+47	85 RT	-L-	27.7-29.2	A-2-4	(0)	98	62	41	25	58	19	7	16	26	17	9	19.5
SS-164	75+39	85 LT	-L-	0.0-1.5	A-2-4	(0)	96	67	53	25	45	31	12	12	23	15	8	11.1
SS-173	75+39	85 LT	-L-	44.0-45.0	A-6	(18)	100	94	93	86	8	10	30	52	40	19	21	19.9
ST-2	78+51	13 RT	-L-	16.0-18.0	A-7-6	(27)	100	87	81	67	19	15	4	62	64	22	42	27.7

References / Comments / Deviations: ND=Not Detemined. NP=Non-Plastic.

AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT

AASHTO T89: Determining the Liquid Limit of Soils

AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

AASHTO M145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes

Mal Krajan, ET		104-01-0703	Thomas J. Daily, PE	Project Manager
Technician Name:	Signature	Certification #	Technical Responsibility:	Position

LABORATORY TESTING SUMMARY

PROJECT NUMBER: 44369.1.1 **TIP:** U-5798A **COUNTY:** CUMBERLAND

DESCRIPTION: DUAL BRIDGES NO. 75 AND 501 ON SR 1102 (GILLIS HILL ROAD) OVER LITTLE ROCKFISH CREEK

Sample No.	Station	Alignment	Offset (feet)	Depth Interval (feet)	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
								Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
ST-4	78+46	-L-	0	2.0-4.0	A-7-5 (25)	73	24	14.0	9.9	26.7	49.5	0	100	91	79	115.6	26.0
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PERFORMED BY GEOTECHNICS 2200 Westinghouse Blvd., Suite 103 Raleigh, NC 27604

Certified Lab Technician Signature

129-07-0411

Certification Number