## STATE OF NORTH CAROLINA

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

**STRUCTURE** SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. <u>17BP.2.R.21 (SF-530162)</u> F.A. PROJ. COUNTY <u>LENOIR</u> PROJECT DESCRIPTION <u>CULVERT NO. 162 ON SR 1913 (ELIJAH</u> LOFTIN RD.) OVER MOTT SWAMP CREEK AT -L- STA. 13+60.15

21010	STATE PROJECT REFERENCE NO.	100	aliceTs.
N.C.	SF-530162	1	5

### **CAUTION NOTICE**

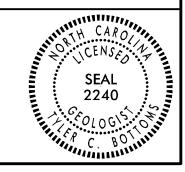
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORNING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, CEOTECHNICAL ENGINEERING LUIT AT (19) 707-6850. NETHER THE SUBSURFACE PLANS AND REPORTS. NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSUMFACE DATA AND MAY NOT NECESSARLY REFLECT THE ACTUAL SUBSUMFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BORRHOULE, THE LABORATION'S ANAPLE DATA AND THE IN SITU IN-PLACED TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY IN-HERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LÉVELS OR SOIL MOSTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOSTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLUMATIC CONDITIONS INCLUDING TEALDERAY REPER PREPIRITATION AND WAND AS WELL AS OTHER NON-CENTRE OPERIOR AND AND AND AS WELL AS OTHER NON-CENTRE OF PERIOR AND AND AND AS WELL AS OTHER NON-CENTRE OF PERIOR AND AND AND AS WELL AS OTHER NON-CENTRE OF PERIOR AND AND AND AS WELL AS OTHER NON-CENTRE OF PERIOR AND AND AND AS WELL AS OTHER NON-CENTRE OF PERIOR AND AND AND AS WELL AS OTHER NON-CENTRE OF PERIOR AND AND AND AS WELL AS OTHER NON-CENTRE OF PERIOR AND AND AND AS WELL AS OTHER NON-CENTRE OF PERIOR AND AND AND AS WELL AS OTHER NON-CENTRE OF PERIOR AND AND AND AS WELL AS OTHER NON-CENTRE OF PERIOR AND AND AND AND AS WELL AS OTHER NON-CENTRE OF PERIOR AND AND AND AS WELL AS OTHER NON-CENTRE OF PERIOR AND AND AND AND AS WELL AS OTHER NON-CENTRE OF PERIOR AND AND AND AND AS WELL AS OTHER NON-CENTRE OF PERIOR AND AND AND AND AS WELL AS OTHER NON-CENTRE OF THE THE OFTEN AND AND AND AS WELL AS OTHER NON-CENTRE OF THE THE OTHER OF THE OTHER OF THE OTHER OF THE OTHER OF THE OTHER TEMPERATURES, PRECIPITATION, AND WIND. AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETALS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND N MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT, FOR BIDDING AND CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN ROOMSTON ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR CUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OFINION 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 MINSELE AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAM FOR ADDITIONAL CONFIDENCE ON THIS PROJECT. THE STORY MAY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THAS CTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

_	
_	
_	
_	
_	
INVESTIGATED BY	T.C. BOTTOMS
CHECKED BY	D.N. ARGENBRIGHT
SUBMITTED BY	D.N. ARGENBRIGHT
DATE	NOVEMBER 2012

PERSONNEL C.M. WRIKE R.E. SMITH D.G. PINTER



DRAWN BY: \_\_C.P. TURNER

**CONTENTS** 

**DESCRIPTION** TITLE SHEET

LEGEND

**PROFILE** 

SITE PLAN

BORE LOG

<u>SHEET</u>

2

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

NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

# PROJECT REFERENCE NO. SHEET NO. SF-530162 2 OF 5

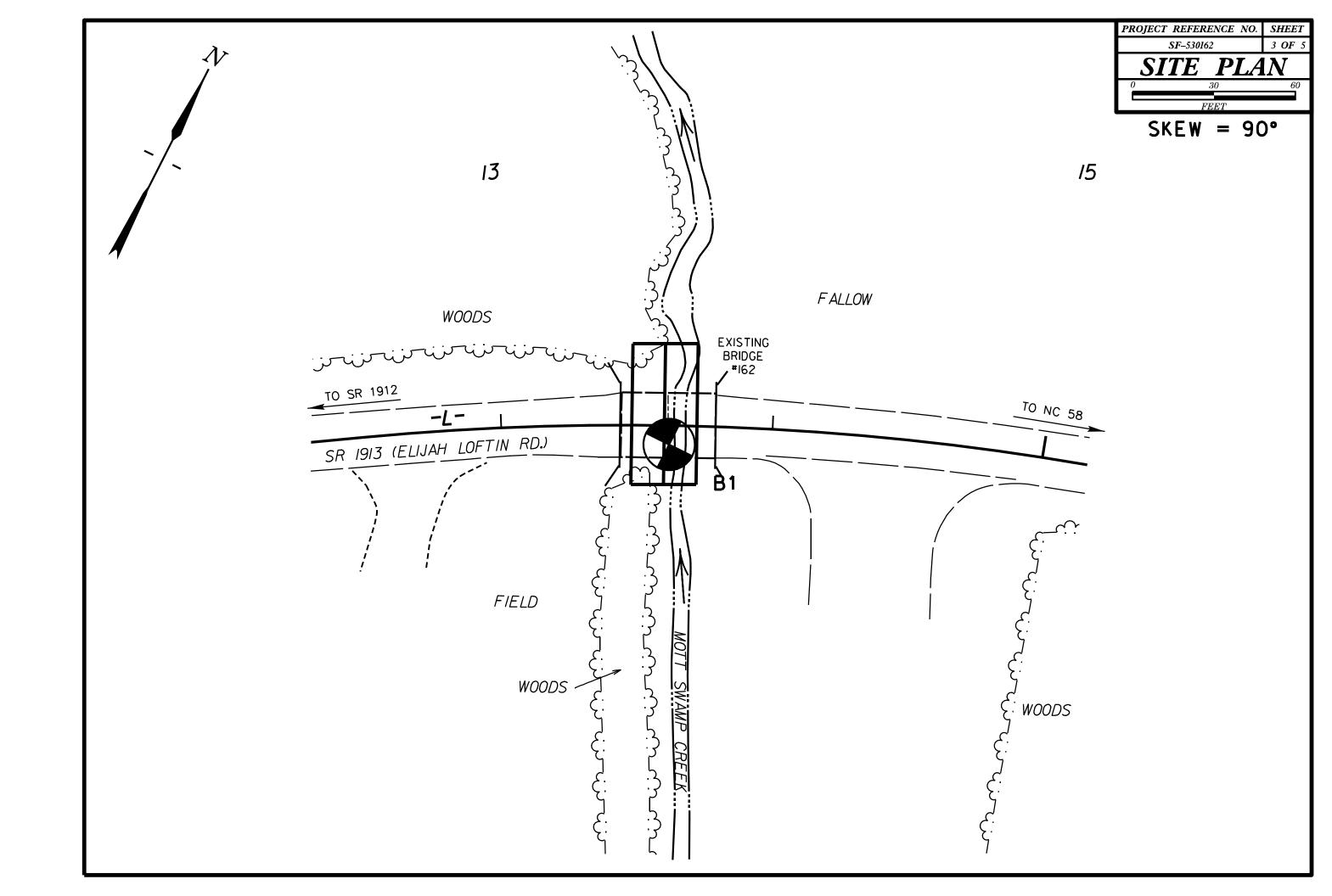
### NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

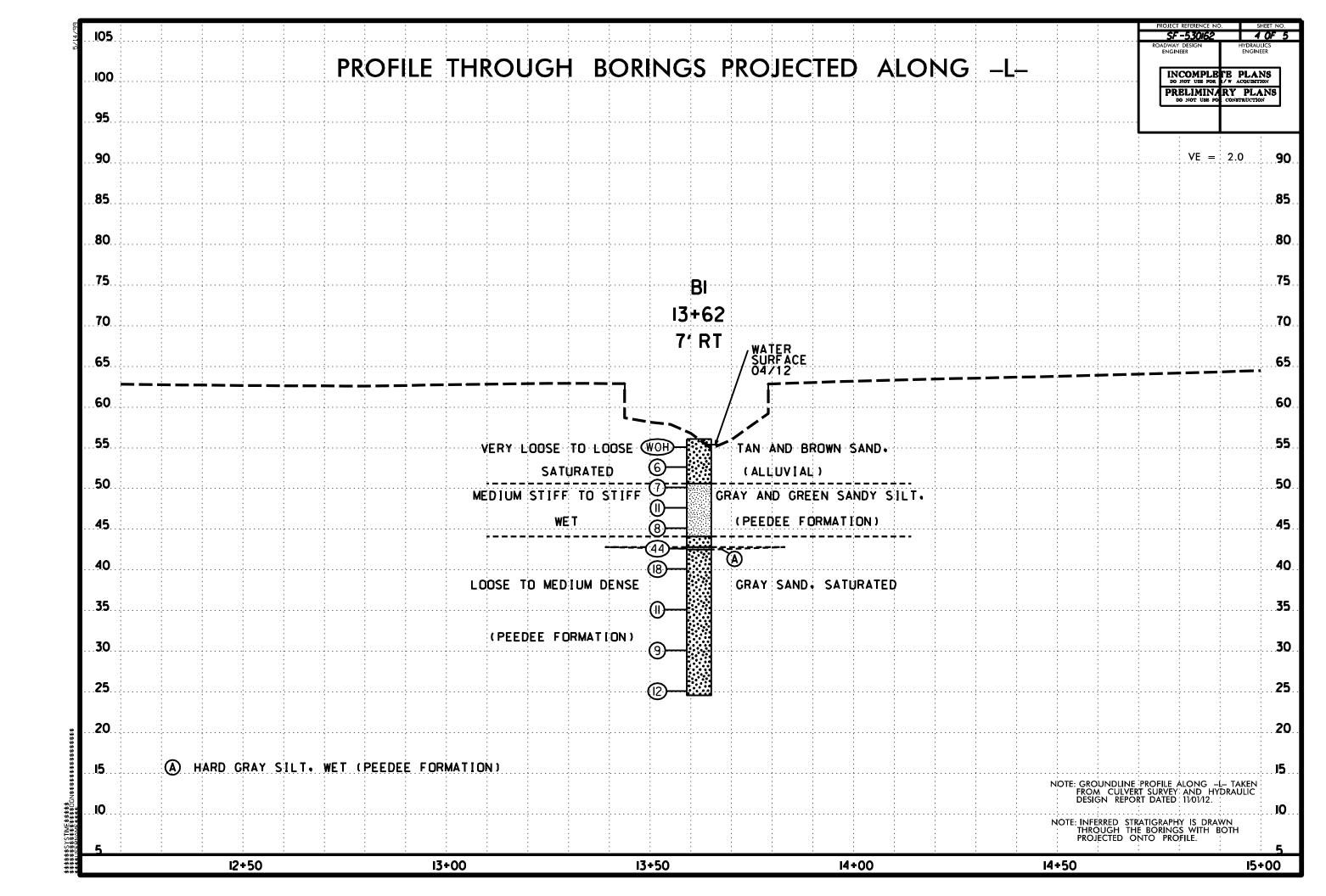
### DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

# SUBSURFACE INVESTIGATION

	SOIL AND DOCK I EGEND TEDM	S, SYMBOLS, AND ABBREVIATIONS	
eal occalation			TERMS AND REPUILING
SOIL DESCRIPTION  SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR MEATHERED EARTH MATERIALS THAT CAN BE PRETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND VIELD LESS THAN 180 BLOWS PER FOOT ACCORDING TO SHANDARD PERETRATION ITEST MASAFIOT 2506, ASTM. D-15869, SOIL	GRADATION  WELL GRADED INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.  JUNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)  GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.	MARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IT TESTED, WOLLD YIELD SPT REFUSAL, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL MOULD YIELD SPT REFUSAL, SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0, I FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFFER REPRESENTED BY A ZONE	TERMS AND DEFINITIONS  ALLUVIUM (ALLUY) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.  ADUIFER - A WATER BEARING FORMATION OR STRATA.
CLASSIFICATION IS BASED ON THE BASHTO SYSTEM, BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, ASSHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:  VEN STAT, ONLY, MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:  VEN STAT, ONLY, MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:	ANGULARITY OF CRAINS  THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBRINGULAR, SUBRING	OF WEATHERED ROCK.  ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:  WEATHERED  NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100	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, AS SHALE, SLATE, ETC.
SOIL LEGEND AND AASHTO CLASSIFICATION	MINERALOGICAL COMPOSITION  MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KADLIN, ETC, ARE USED IN DESCRIPTIONS	ROCK (NR)  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.	ARTESIAN - CROUND 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 CROUND SURFACE.
CLASS. (≤ 35% PASSING =200) (> 35% PASSING =200) UNDANIC PRINCEPHALES  GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5	WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.  COMPRESSIBILITY	ON-CRYSTALLINE OF TESTED, ROCK TYPE  SCOMETIARY ROCK THAT WOULD VEILD SPT REFUSAL IF TESTED, ROCK TYPE	CALCAREOUS ICALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.  COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
SYMBOL SYMBOL	SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 MIGNLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50	COASTAL PLAIN  COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD  SEDIMENTARY ROCK  SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED  SMELL BEDS, ETC.	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.
2: PASSING - 10 59 MX - 40 30 MX 50 MX 51 MN - 40 30 MX 50 MX 51 MN	PERCENTAGE OF MATERIAL  ORGANIC MATERIAL GRANULAR SILT - CLAY SOILS SOILS OTHER MATERIAL	WEATHERING FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER	<u>DIKE</u> - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. <u>DIP</u> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
- 2000 13 PM (23 PM 10 PM 133 PM 135	TRACE OF ORGANIC MATTER	HAMMER IF CRYSTALLINE.  VERY SLICHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN,	HORIZONTAL. <u>OP DIRECTION (OIP AZIMUTH) -</u> THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF
GROUP INDEX 0 0 0 4 Mx 8 Mx 12 Mx 16 Mx No MX MODERATE ORGANIC SOIL S	HIGHLY ORGANIC >10% >20% HIGHLY 35% AND ABOVE  GROUND WATER	(V SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.  SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO	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.
OF MAJOR GRAVEL, AND SAND SAND SOILS SOILS MATTER	▼ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER ORILLING  STATIC WATER LEVEL AFTER 24 HOURS	INCH. OPEN JOINTS MAY CONTAIN CLAY, IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED, CRYSTALLINE ROCKS RING LINDER MAHER BLOWS.  MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOGGED FROM
GEN, RATING AS A EXCELLENT TO GOOD FAIR TO POOR POOR POOR UNSUITABLE	PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA  O-Mills Spring or Seep	(HOO.) GRANTOID 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.	PARENT MATERIAL.  FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM,
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 : PI OF A-7-6 SUBGROUP IS > LL - 30  CONSISTENCY OR DENSENESS  RANGE OF STANDARD  COMPACTNESS OR  RANGE OF STANDARD  COMPACTNESS OR  COMPAC	MISCELLANEOUS SYMBOLS	MODERATELY ALL ROCK EXCEPT DUARTZ DISCOLOREO OR STAINEO. IN GRANITOID ROCKS, ALL FELDSPARS DULL SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH MOD. SEV.I AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUMX" SOUND WHEN STRUCK.	THE FIELD.  THE FIELD.
CONSISTENCY FEE HAI IN RESISTENCE CONFESSION STREET	ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION  SOIL SYMBOL  ROADWAY EMBANKMENT (RE) WITH TEST BORING W/ CORE  AUGER BORING  SPT N-VALUE	I <u>F TESTED. WOULD YIELD SPT REFUSAL</u> SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED (SEV.) IN STRENGTH TO STRONG SOIL. IN CRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.  LEGGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
GRANULAR MEDIUM DENSE 4 TO 10  MATERIAL (NON-COHESIVE) DENSE 30 TO 50  VERY DENSE >50	ARTIFICIAL FILL (AF) OTHER	EXTENT. SOME FRACMENTS OF STRONG ROCK USUALLY REMAIN.  IF TESTED. YIELOS SPT N VALUES > 100 BPF  VERY SEVERE ALL ROCK EXCEPT OUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT  IV SEV.)  THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRACMENTS OF STRONG ROCK	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.  MOTTLED (NOT.) - IRRECULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
VERY SOFT 4 4 (8.25  GENERALLY SOFT 2 TO 4 8.25 TO 8.59  SILT-CLAY MEDIUM STIFF 4 TO 8 8.5 TO 1.6	INFERRED ROCK LINE A PIEZOMETER INSTALLATION	REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK MEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED YIELDS SPT N VALUES &lt; 100 RPE</i> COMPLETE ROCK REQUED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND	<u>PERCHED WATER</u> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. <u>RESIDUAL (RES.) SOIL</u> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
MATERIAL STIFF 8 TO 15 1 TO 2 (COMESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD >30 >4	25/825 OIP & DIP DIRECTION OF ROCK STRUCTURES SCORE PENETROMETER TEST	SCATTERED CONCENTRATIONS, QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS, SAPROLITE IS ALSO AN EXAMPLE.  ROCK HARDNESS	ROCK QUALITY DESIGNATION (ROD) - 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,
TEXTURE OR GRAIN SIZE           u.s. std. sieve size         4         10         40         60         200         270	SOUNDING ROD	VERY MARD CANNOT BE SCRATCHED BY KNIFE OR SMARP PICK. BREAKING OF MAND SPECIMENS REQUIRES SEVERAL MARD BLOWS OF THE CEOLODIST'S PICK.	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
OPENING (MM)	ABBREVIATIONS  AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.	<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.
(BLDR.) (COS.) (GR.) (CSE. SD.) (F SD.) (SL.) (CL.)  GRAIN MM 385 75 2.0 0.25 0.05 0.005	BT - BORING TERMINATED MICA - MICACEOUS WEA MEATHERED CL CLAY CD CLOY CPT - CONE PENETRATION TEST NP - NON PLASTIC 7- ORY UNIT MEIGHT	MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK, GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK, HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS IN OR BPF) OF
SIZE IN. 12 3  SOIL MOISTURE - CORRELATION OF TERMS  SOIL MOISTURE SCALE FIELD MOISTURE GUIDE FOR FIELD MOISTURE DESCRIPTION	CSE COARSE   ORG ORGANIC   DMT - DILATOMETER TEST   PMT - PRESSUREMETER TEST   SAMPLE ABBREVIATIONS	MEDIUM CAN BE GROOVED OR COUGED 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 COUGED READILY BY KNIFE OR PICK, CAN BE EXCAVATED IN FRAGMENTS	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.
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY	F - FINE SL SILTY ST - SMELBY TUBE FOSS FOSSILIFEROUS SLI - SLICHTLY RS - ROCK FRAC FRACTURED, FRACTURES TOR - TRICOME REFUSAL RT - RECOMPACTED TRIANIAL	FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.  VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK, PIECES 1 INCH	STRATA CORE RECOVERY ISRECA - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.  STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY
PLASTIC LIQUID LIMIT (SAT.) FROM BELOW THE GROUND WATER TABLE  PLASTIC SEMISOLIDE REQUIRES DRYING TO  WET - (W) SEMISOLIDE REQUIRES DRYING TO	FRAGS, - FRAGMENTS	SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.	TOTAL LENGTH OF ROCK SECHENTS WITHIN A STARTUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.  TOPSOIL ITS.J - SUFFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
RANGE - WET - (W) ATTAIN OPTIMUM MOISTURE	EQUIPMENT USED ON SUBJECT PROJECT  ADVANCING TOD C. HANNER TYPE:	FRACTURE SPACING BEDDING  TERM SPACING TERM THICKNESS	BENCH MARK: BM-I: RAILROAD SPIKE IN 24' TWIN HARDWOOD AT -L- STA.
OM OPTIMUM MOISTURE - MOIST - (M) SOLID: AT OR NEAR OPTIMUM MOISTURE SL. SHRINKAGE LIMIT	MOBILE B- CLAY BITS X AUTOMATIC MANUAL	VERY WIDE         MORE THAN 10 FEET         VERY THICKLY 8E00E0         3 4 FEET           MIDE         3 TO 10 FEET         THICKLY 8E00E0         1.5 - 4 FEET           MODEPATELY CLOSE         1 TO 3 FEET         THIMLY 8E00ED         0.16 - 1.5 FEET	12+40,29, 34,21' RT ELEVATION: 63,25 FT.
- DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE	6° CONTINUOUS FLIGHT AUGER CORE SIZE:  8° HOLLOW AUGERS	CLOSE 0.16 TO 1 FEET VERY THINLY BEDDED 0.03 - 0.15 FEET VERY CLOSE LESS THAN 0.16 FEET THICKLY 1 AMINATED 0.000 F.0.03 FEET THINLY LAMINATED < 0.000 FEET	NOTES:
PLASTICITY	CME-45C HARD FACED FINGER BITS -N	INDURATION  FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	
PLASTICITY INDEX (PI)         ORY STRENGTH           NONPLASTIC         0-5         VERY LOW           LOW PLASTICITY         6-15         SLIGHT	X CME-550 TUNG,-CARBIDE INSERTS	FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS, GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
MED. PLASTICITY 16-25 MEDIUM HIGH PLASTICITY 26 OR MORE HIGH  COLOR	PORTABLE HOIST X TRICONE 2 15/6 - STEEL TEETH POST HOLE DIGGER TRICONE TUNGCARB. HAND AUGER	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE: BREAKS EASILY WHEN HIT WITH HAMMER.	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY), MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.	CORE BIT SOUNDING ROD VANE SHEAR TEST	INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE:  OIFFICULT TO BREAK WITH HAMMER,  EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE:	
	<u> </u>	SAMPLE BREAKS ACROSS GRAINS.	







WBS 17BP	2.2.R.21			TI	<b>P</b> SF-530	162	COUNT	Y LENOIR				GEOLOGIST Wrike, C. M.	
SITE DESC	RIPTION	CUL	VERT	NO. 16	62 ON -L- (	SR 1913)	OVER MO	TT SWAM	CREEK			<b>.</b>	GROUND WTR (ft
BORING NO	<b>).</b> B1			ST	TATION 1	3+62		OFFSET	7 ft RT			ALIGNMENT -L-	0 HR. N/A
COLLAR EL	<b>.EV.</b> 56	6.1 ft		TO	OTAL DEP	<b>ГН</b> 31.5 f	t	NORTHIN	<b>G</b> 530,1	59		<b>EASTING</b> 2,427,570	<b>24 HR.</b> N/A
ORILL RIGHA	MMER EF	TADAT	E GFO	)1042C	ME-550 91%	05/23/2012	2		DRILL	1ETHOD	Mu	d Rotary HA	MMER TYPE Automatic
DRILLER F	Pinter, D.	.G.		ST	TART DAT	<b>=</b> 11/16/1	2	COMP. D	ATE 11/	16/12		SURFACE WATER DEPTH	0.0ft
LEV DRIVE	DEPTH	BLC	w co	UNT		BLOWS	PER FOOT		SAMP.	lacksquare	L	COUL AND DOOK D	FOODIDTION
(ft) ELEV	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75 100	NO.	MOI	O G	SOIL AND ROCK D	ESCRIPTION DEPTH (
60	<u></u>											<del>-</del>	
56.1	+ 0.0	WOH	WOH	WOH		<del>,</del>	<del>,</del>			▼	20000	56.1 WATER SURFAC	
53.6	2.5				0							TAN AND BROWN SAI	
	1	2	2	4	6						_		
51.1	5.0	3	3	4	7						=	- 50.6 - COASTAL F	PLAIN 5.
48.6	7.5	4	6	5							t	GRAY AND GREEN SA (PEEDEE FOR	
46.1	10.0				. <b>F</b> 1.1 .							(I LEBEL I OK	WINTER ()
43.6	+ + 12.5	3	3	5			<u> </u>		-				12
	1	5	37	7			  4 					42.8 COASTAL F 42.5 GRAY SAND, SATUR	ATED (PEEDEE F-13
41.1	15.0	4	7	11	· · · j.						L	FORMATI COASTAL F	
	İ				$  :::_{I}^{r}$	1					Ł	GRAY SILT, WET (PEEL	DEE FORMATION)
36.1	1 20.0				/							COASTAL F GRAY SAND, SATUR	ATED (PEEDEE
35	Ŧ	3	5	6	<b>—— ♦</b> 11—	1	ļ					FORMATI	ON)
	Ŧ											•	
31.1	25.0	5	4	5	:[::::						_	•	
30	‡				• <b>\                                   </b>				11			<del>-</del> ·	
00.4	‡				. 1						_		
26.1	30.0	4	6	6	12-						_	–24.6	31
	<u> </u>				*	<u> </u>	<u> </u>	'			E	Boring Terminated at E	levation 24.6 ft in