**CONTENTS** SHEET

810316

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DESCRIPTION TITLE SHEET LEGEND

3 SITE PLAN **PROFILE** 5-6 BORE LOGS STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

## STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 17BP.3.R.27 (SF-810316) F.A. PROJ. COUNTY SAMPSON PROJECT DESCRIPTION BRIDGE NO. 316 ON SR 1329 OVER LITTLE

COHARIE CREEK OVERFLOW AT -L- STA. 14+45

N.C. SF-810316

#### 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 VARROUS FIELD BORING LOOS, ROCK CORES, AND SOL TEST DATA AVAILABLE WAY EE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, CEOTECHNICAL ENGINEERING UNIT AT (19) 707-6850, NETHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOOS, 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 SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORNISS OR BETWEEN SAMPLED STRATA WITHIN THE BORRHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU IN-PLACED TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIBILITY INMERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOLL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATION, THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION, THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLUMATIC CONDITIONS INCLUDING 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 IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT, FOR BIDDING AND CONSTRUCTION PURPOSES, REPER TO THE CONSTRUCTION PLANS AND DOLOHENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT, THE DEPARTMENT DOES NOT WARRANT OR QUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOT HE INTERPRETATIONS AMODE, OR OPPOND OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE EXCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISTY HANSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS 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 DEFERNING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

**PERSONNEL** F&R, INC.

C.M. WRIKE

INVESTIGATED BY T.C. BOTTOMS

D.N. ARGENBRIGHT

SUBMITTED BY \_\_\_\_\_ D.N. ARGENBRIGHT

MAY 2014



DRAWN BY: C.P. TURNER, T.T. WALKER

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.

FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE

NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

#### NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

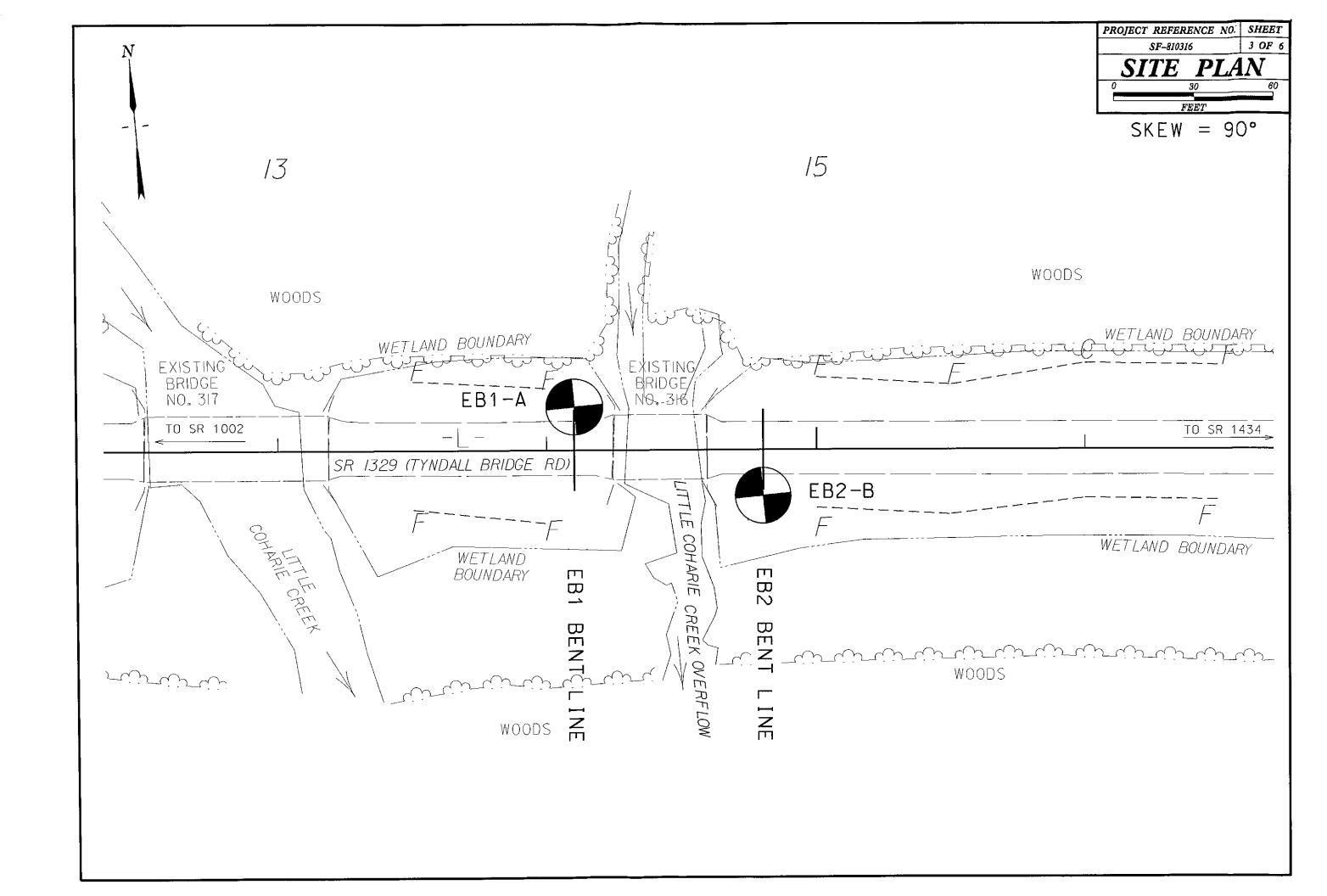
## SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS
	MELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.  UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL, 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.
SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN	POORLY GRADED)	SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.	ADUIFER - A WATER BEARING FORMATION OR STRATA.
100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SDIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE:	GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.	IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	ANGULARITY OF GRAINS	ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS.
AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100	OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.
VERY STAFF, GRAY, SULY CLAY, WOST WITH INTERBEDDED FINE SAMD LAVERS, HIGHLY PLASTIC, A-7-6	MINERALOGICAL COMPOSITION	ROCK (WR) BLOWS PER FOOT IF TESTED.	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
SOIL LEGEND AND AASHTO CLASSIFICATION	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS	CRYSTALLINE FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED, ROCK TYPE INCLUDES GRANITE,	GROUND SURFACE.
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS ORGANIC MATERIALS (≤ 35% PASSING *200) (> 35% PASSING *200)	WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.	GNEISS, GABBRO, SCHIST, ETC.	CALCAREOUS ICALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
	COMPRESSIBILITY	NON-CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
CLASS 4. A. J. J. A. G.	SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31	RULK (NCR) INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.	OF SLOPE.
SYMBOL 000000000000000000000000000000000000	MDDERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50	COASTAL PLAIN  COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD  SEDIMENTARY ROCK  SPT REFUSAL, ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL
000000000	HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50  PERCENTAGE OF MATERIAL	(CP) SHELL BEDS, ETC.	LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
% PASSING SILT- MUCK, GRANULAR CLAY MUCK,	YA 17 - T II 2 SA II INASC		DIKE - A TABULAR BODY OF IGNEDUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
* 40 30 HX 58 HX 51 MN   SOILS COTICS PEAT	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
■ 200 15 MX 25 MX 18 MX 35 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN	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.
LIQUID LIMIT 48 HX 41 MN 48 HX 41 MN 48 HX 41 MN 48 MX 41 MN SOILS WITH	LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35%	VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN,	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF
PLASTIC INDEX 6 MX NP 18 MX 18 MX 11 MN 11 MN 18 MX 18 MX 11 MN 11 MN LITTLE OR HIGHLY	HIGHLY ORGANIC >10% >20% HIGHLY 35% AND ABOVE	(V SLI,) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.	THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
GROUP INDEX 0 0 0 4 MX 8 MX 12 MX 16 MX No MX MODERATE ORGANIC	GROUND WATER	SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
USUAL TYPES STONE FRACS. FINE SILTY OR CLAYEY SILTY CLAYEY ORGANIC SOILS	✓ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	(SLI.) 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
OF MAJOR GRAVEL AND SOND GRAVEL AND SOND SOILS SOILS MATTER	▼ STATIC WATER LEVEL AFTER 24 HOURS	CRYSTALS ARE DULL AND DISCOLORED, CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	The state of the s
CEN DATING		MODERATE (MOD.)  SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELOSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.
AS A EXCELLENT TO GOOD FAIR TO POOR POOR POOR UNSUITABL	PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA	DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY
SUBGRADE	→ O-MM→ SPRING OR SEEP	WITH FRESH ROCK.	THE STREAM.
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30	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
CONSISTENCY OR DENSENESS  RANGE OF STANDARD RANGE OF UNCONFINED	COT 1	(MOD. SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK, ROCK GIVES 'CLUNK' SOUND WHEN STRUCK.	THE FIELD.
PRIMARY SOIL TYPE COMPACTNESS OR PENETRATION RESISTENCE COMPRESSIVE STRENGTH	ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION  ROADWAY EMBANKMENT (RE)  OFFI DMT TEST BORING W/ CORE	IF TESTED, WOULD YIELD SPT REFUSAL	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
W THEOLY THOUSE !	7 W	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED  (SEV.) IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KADLINIZED TO SOME	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
GENERALLY VERY LOOSE 4 TO 10	SOIL SYMBOL AUGER BORING SPT N-VALUE	EXTENT, SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.	ITS LATERAL EXTENT.
GRANULAR MEDIUM DENSE 10 TO 30 N/A	ARTIFICIAL FILL (AF) OTHER - CORE BORING (REF)— SPT REFUSAL	IF TESTED, YIELDS SPT N VALUES > 100 BPF	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
(NON-COHESIVE) DENSE 30 TO 50	THAN ROADWAY EMBANKMENT	VERY SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT (V SEV.) THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK	SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
	INFERRED SOIL BOUNDARY "O MONITORING WELL	(V SEV.) THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH DNLY FRAMENTS OF STHUNG RUCK REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN
VERY SOFT <2 <0.25 GENERALLY SOFT 2 TO 4 0.25 TD 0.50	THE INFERRED ROCK LINE A PIEZOMETER	VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. IF TESTED, YIELDS SPT N VALUES < 100 BPF	INTERVENING IMPERVIOUS STRATUM.
SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0	INSTALLATION	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.
MATERIAL STIFF 8 TO 15 1 TO 2 (COHESIVE) VERY STIFF 15 TO 30 2 TO 4	SLOPE INDICATOR INSTALLATION	SCATTERED CONCENTRATIONS, QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS, SAPROLITE IS ALSO AN EXAMPLE.	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD >30 >4	25/025 DIP & DIP DIRECTION OF	ROCK HARDNESS	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	ROCK STRUCTURES (A) CONE PENETROMETER TEST		SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE
	SOUNDING ROD	VERY HARD  CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.	PARENT ROCK.
U.S. STD. SIEVE SIZE 4 10 40 60 200 270 OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053		The second secon	SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND
	ABBREVIATIONS	HARD CAN BE SCRATCHED BY KNIFE OR PICK UNLY WITH DIFFICULTY. HARD HAMMER BLOWS REDUINED  TO DETACH HAND SPECIMEN.	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	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST  BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED	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 OR
(BLDR.) (COB.) (GR.) (CSE. SD.) (F SD.) (SL.) (CL.)	BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED  CL CLAY MOD MODERATELY 7 - UNIT WEIGHT	HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK, HAND SPECIMENS CAN BE DETACHED	SLIP PLANE.
GRAIN MM 305 75 2.0 0.25 0.05 0.005	CPT - CONE PENETRATION TEST NP - NON PLASTIC $\gamma_{ m d}^{ m c}$ DRY UNIT WEIGHT	BY MODERATE BLOWS.  MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT.	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS IN OR BPF) OF
SIZE IN. 12 3	CSE CDARSE ORG DRGANIC DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS	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 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS
SOIL MOISTURE - CORRELATION OF TERMS	DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS  DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK	POINT OF A GEOLOGIST'S PICK.	THAN 0.1 FOOT PER 60 BLOWS.
SOIL MOISTURE SCALE FIELD MOISTURE GUIDE FOR FIELD MOISTURE DESCRIPTION	e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON	SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH
(ATTERBERG LIMITS) DESCRIPTION	F - FINE SL SILT, SILTY ST - SHELBY TUBE FOSS - FOSSI IFFROIS SLI SLIGHTLY RS - ROCK	FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.	OF STRATUM AND EXPRESSED AS A PERCENTAGE.
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY (SAT.) FROM BELOW THE GROUND WATER TABLE	TOP - TRICONE PERIOD REPORTED TRICONE PERIOD RT - RECOMPACTED TRICATI	AL VERY CAN BE CARVED WITH KNIFE, CAN BE EXCAVATED READILY WITH POINT OF PICK, PIECES 1 INCH	STRATA ROCK QUALITY DESIGNATION (SROO) - 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
LL _ LIOUID LIMIT	FRAGS FRAGMENTS W - MOISTURE CONTENT CBR - CALIFORNIA BEARING	SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY	TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
PLASTIC SEMISOLIDE REQUIRES DRYING TO	HI HIGHLY V - VERY RATIO	FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
RANGE - WET - (W) ATTAIN OPTIMUM MOISTURE	EQUIPMENT USED ON SUBJECT PROJECT	FRACTURE SPACING BEDDING TERM SPACING TERM THICKNESS	
PLL + PLASTIC LIMIT	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:	VERY THICKLY BEDDED > 4 FEET	BENCH MARK: BM-I: -L- STA. 16+79.2, 31.7' LT
OM OPTIMUM MOISTURE - MOIST - (M) SOLID: AT OR NEAR OPTIMUM MOISTURE	- Y AUTOMATIC MANUAL	VERY WIDE MORE IMAN 10 FEET THICKLY BEDDED 1.5 - 4 FEET	ELEVATION: 123.12 FT.
OM DPTIMOM MOISTORE - MOIST - MAD SCENE - MOIST - MOIST - MAD SCENE - MOIST - MOIST - MAD SCENE - MOIST - MOIS	MOBILE B CLAY BITS	MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.03 - 0.16 FEET	ELEVATION: IZJ.IZ 11.
REQUIRES ADDITIONAL WATER TO	G' CONTINUOUS FLIGHT AUGER CORE SIZE:	CLOSE 0.16 TO 1 FEET THICKLY LAMINATED 0.008 - 0.03 FEET	NOTES:
- DRY - (D) ATTAIN OPTIMUM MOISTURE	BK-51 8' HOLLOW AUGERS -B	THINCT LAMINATED COLOR FEET	
PLASTICITY		INDURATION	
PLASTICITY PLASTICITY INDEX (PI)  DRY STRENGTH		FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	e d'as
NONPLASTIC 0-5 VERY LOW	TUNG,-CARBIDE INSERTS -H_	FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS;	
LOW PLASTICITY 6-15 SLIGHT	A CASING W/ ADVANCER HAND TOOLS:	DENILE BLUW BY HAMMER DISTRIBURATES SHIPPEE.	
MED. PLASTICITY 16-25 MEDIUM	PORTABLE HOIST X TRICONE 2 15/16 STEEL TEETH POST HOLE DIGGER	MODERATELY INDURATED  GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE;  BREAKS EASILY WHEN HIT WITH HAMMER.	
THE TENEDOTE TO THE TENEDOTE T	TRICONE 'TUNG,-CARB. HAND AUGER		
COLOR	The state of the s	INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.	, and the second
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).	CORE BIT SOUNDING ROD VANE SHEAR TEST	The state of the s	- 1 to 1 to 1
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.		EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE;  SAMPLE BREAKS ACROSS GRAINS.	

SHEET NO. 2 OF 6

PROJECT REFERENCE NO. SF-810316



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				VE = 1:1	PROFILE BORINGS PRO ALONG -L-	)JECTED
	EB1	-A	EB2-	-B		 
120	14 + 16' l	10	14 + c 17' F	80 X ARTEŞIA	w	130
130		44		/	·	       
		LITTLE COHARIE CREEK OVERFLOW	F		- ~ =	
	VERY LOOSE TO LOOSE 6	▼* TAN	VERY LOOSE 6	▼x TO LOOSE TAN	) 	
120	SAND, MOIST TO (2)	05/I4SATURATED	ORANGE SAND 2	05/14 (ROADWAY EMBANKMENT)	 	120
	(ROADWAY E	EMBANKMENT) WATER SURFACE 12/13	UNANGL SAND	(ROADWAI EMBANKMENT)	1 1 1	, t 1
	VERY LOOSE	TO LOOSE BROWN MODERATELY COOLING	2			! ! !
	0000	TO LOOSE BROWN MODERATELY ORGANIC SAND WITH WOOD	FRAGMENTS, SATURATED	(ALLUVIAL)	; 1 1	110
110	(4) - 000 000 000 000	LOOSE TO MEDIUM DENSE GRAY SAND, SATURA	TED			-1
		(ALLUVIAL)				
100	(25)		(17)			100
		MEDIUM DENSE TO GRAY SAND, SATURAT	TED (			
	29—	(BLACK CREEK FORMATION)	26—			
						90
90	(36)		(2) <del></del>			
	(21)		20		 	 
80	(16)		(18)	,		80
						4 4 1 1
	27-1	VERY STIFF TO HARD GRAY SILTY CLAY, WET	32			 
		(BLACK CREEK FORMATION)		DENSE CONV SAND SATURA	 TED	70
70			MEDIUM 27	DENSE GRAY SAND, SATURA (BLACK CREEK FORMATION		
	24					
60	(8)		(19)			60
						i ! !
	23—		8			
						50
50	29	VERY STIFF TO HARD GRAY RED MOTTLED SANL (CAPE FEAR FORMATION)	22			
		(CAPE FEAR FORMATION)	CLAY, WET			 
NOTE: GROUNT	DLINE PROFILE TAKEN FROM	<b>S</b>	(23)			1 1 1 1
	IC REPORT DATED 03/10/2014					40
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BORELOG REPORT	NUMBER CAMPOON	OFOLOGIST Misks C M	WBS 17BP.3.R.27	TIP SF-810316 COUNT	TY SAMPSON	GEOLOGIST Wrike, C. M.
	DUNTY SAMPSON	GEOLOGIST Wrike, C. M.  RFLOW GROUND WTR (ff)	SITE DESCRIPTION BRIDGE NO.			
SITE DESCRIPTION BRIDGE NO. 316 ON -L- (SR 1329) OVE	OFFSET 16 ft LT	ALIGNMENT -L- 0 HR. N/A	BORING NO. EB1-A	STATION 14+10	OFFSET 16 ft LT	ALIGNMENT -L- 0 HR. N/A
BORING NO. EB1-A   STATION 14+10	NORTHING 485,801	EASTING 2,140,963 24 HR. 2.6	COLLAR ELEV. 124.9 ft	TOTAL DEPTH 80.0 ft	NORTHING 485,801	EASTING 2,140,963 24 HR. 2.6
COLLAR ELEV.         124.9 ft         TOTAL DEPTH         80.0 ft           DRILL RIG/HAMMER EFF./DATE         F&R2175         CME-55         76%         02/22/2014	DRILL METHOD N	<del></del>	DRILL RIG/HAMMER EFF./DATE F&R2		DRILL METHOD N	
DRILLER N/A START DATE 05/21/14	COMP. DATE 05/21/14	SURFACE WATER DEPTH N/A	DRILLER N/A	START DATE 05/21/14	COMP. DATE 05/21/14	SURFACE WATER DEPTH N/A
ELEV DRIVE DEPTH BLOW COUNT BLOWS PER	FOOT SAMP.		ELEV DRIVE DEPTH BLOW COUNT		<del></del>	SOIL AND ROCK DESCRIPTION
(ft) ELEV (ft) (ft) 0.5ft 0.5ft 0.5ft 0	75 100 NO. MOI G	SOIL AND ROCK DESCRIPTION  ELEV. (ft)  DEPTH (ft)	(ft) ELEV (ft) 0.5ft 0.5ft 0.	5ft 0 25 50	75 100 NO. MOI G	SOIL AND ROOK DESCRIPTION
125		124.9 GROUND SURFACE 0.0	45	Match Line		Boring Terminated at Elevation 44.9 ft in
124.9 0.0 1 3 3		ROADWAY EMBANKMENT TAN SAND, MOIST TO SATURATED				Hard Clay
120 1214 3.5 3 1 1 62						Artesian Head at Elevation 122.3 Feet
120 +						
116.4 + 8.5		115.9				
115 1 2 2		ALLUVIAL BROWN MODERATELY ORGANIC SAND				<u>-</u> F
<u>                             </u>		112.9 WITH WOOD FRAGMENTS, SATURATED 12.0				F
110 111.4 13.5 1 1 3	0000	GRAY SAND, SATURATED				<b>⊦</b>   <del>-</del>
		108.3 16.6				<u>r</u>
105.4 + 18.5 3 8 6		<del>-</del>				
1014 + 23.5		COASTAL PLAIN  GRAY SAND, SATURATED (BLACK CREEK				
7 9 16		FORMATION)				<del>-</del> -
		-	<u> </u>			F
95 964 28.5 9 13 16						<u>-</u>
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91.4 + 33.5 8 15 21		<del> </del> 				[
90 - 15 21 - 236 - 246 -						<u></u>
86.4 7 38.5		COASTAL PLAIN GRAY SILTY CLAY, WET (BLACK CREEK				- -
85 9 10 11		FORMATION)				-
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패   †		52.9 COASTAL PLAIN	4			<u> </u>
50 51.4 + 73.5 7 12 17		GRAY SANDY CLAY, WET (CAPE FEAR FORMATION)				<u>}-</u>
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46.4 78.5 6 13 20		<u></u>				F
∑ 45		44.9 80.0	<u> </u>			

WBS	17BP.	3.R.27			TI	P SF-810316	COUNT	Y SAMPSO	ON			GEOLOGIST Wrike, C. M.							TIP SF-810316 (				
SITE	DESCR	IPTION	BRII	DGE N	NO. 31	6 ON -L- (SR 132	9) OVER LI	TLE COHA	RIE CRE	EK O	VER	LOW	GROUND WTR (ft)	SITE	DESCR	IPTION	BRID	GE N					
BORII	NG NO.	EB2-	В		S	TATION 14+80		OFFSET	17 ft RT			ALIGNMENT -L-	0 HR. N/A	BOR	ING NO.	EB2-E	В			ATION 14			
COLL	AR ELI	E <b>V</b> . 12	4.4 ft		TO	OTAL DEPTH 80.	0 ft	NORTHING	485,76	31		EASTING 2,141,030	<b>24 HR.</b> 2.6		LAR ELE					TAL DEPTH			
DRILL	RIG/HAI	MMER E	F./DA	TE F8	R2175	CME-55 76% 02/22/	2014		DRILL MI	ETHOD	) Mu	d Rotary HAMM	MER TYPE Automatic	DRIL	L RIG/HAI	MMER EF	F./DAT	E F&R	2175	CME-55 76%	02/22/2014		
DRILL	LER N	/A			S	TART DATE 05/2	2/14	COMP. DA	TE 05/2	2/14		SURFACE WATER DEPTH N	I/A	DRII	LER N	/A			ST	ART DATE	05/22/14		
ELEV	DRIVE	DEPTH	BLC	W CO	UNT	BLOV	VS PER FOOT		SAMP.	$\overline{ullet}$	L	SOIL AND ROCK DES	CRIPTION	ELEV	DRIVE ELEV	DEPTH		v cour			BLOWS PE		
(ft)	ELEV (ft)	(ft)	0.5ft	0,5ft	0.5ft	0 25	50	75 100	NO.	MOI		ELEV. (ft)	DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25	50		
																		ŀ					
125										1		124.4 GROUND SURF	FACE 0.0	45	ļ _ <b></b>					•	Match 3		
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		‡										WITH WOOD FRAGMENT	S, SATURATED 14.0		:	<u>†</u>							
110	110.9	13.5	1	5	6	11					0000	110.4 ALLUVIAL		11	-	1							
		‡							:		0000	GRAY SAND, SAT	URATED 17.0			<u> </u>			1				
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	70.9	53.5			<u> </u>	_  ::::  <i>[</i> ::						COASTAL PI GRAY SAND, SATURATE	L <b>AIN</b> D (BLACK CREEK			Ŧ							
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WBS 17BP.3.R.27	L	Y SAMPSON	GEOLOGIST Wrike, C. M.	ODOUND MED (C)
SITE DESCRIPTION BRIDGE NO.		· · ·		GROUND WTR (ft) 0 HR. N/A
BORING NO. EB2-B	STATION 14+80	OFFSET 17 ft RT	ALIGNMENT -L- EASTING 2,141,030	24 HR. 2.6
DRILL RIG/HAMMER EFF/DATE F&R21	TOTAL DEPTH 80.0 ft	NORTHING 485,761  DRILL METHOD Muc		ER TYPE Automatic
DRILL RIG/HAMMER EFF./DATE F&RZ	START DATE 05/22/14	COMP. DATE 05/22/14	SURFACE WATER DEPTH N/	
ELEV DRIVE DEBTU BLOW COUNT	<del></del>		SOIL AND ROCK DESC	
(ft) ELEV (ft) 0.5ft 0.5ft 0.5	5ft 0 25 50	75 100 NO. MOI G	- COLL AND ROOK BEGG	
45	Match Line  •23		GRAY AND RED MOTTLED WET (CAPE FEAR FOR (continued)  Boring Terminated at Elevation  Artesian Head at Elevation	SANDY CLAY, RMATION) attion 44.4 ft in

7BP.

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

#### **CONTENTS**

SHEET	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4	PROFILE
5-6	BORE LOGS
7	SOIL TEST RESULTS

## STRUCTURE SUBSURFACE INVESTIGATION

N.C. SF-810317 1 7

#### 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 SOL TEST DATA AVAILABLE MAY PE REVIEWED OR INSPECTED IN PALICINE DY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (1919) TOT-6850. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOLL 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 SUBSUBFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAWRED STRATA WITHIN THE BOREHOLE, THE LABORATORY SAWRLE DATA AND THE IN STILL HIN-PLACEITEST DATA CAN BE RELIED ON ONLY TO THE DECREE OF RELIABILITY INFERENT IN THE STANDARD TEST WETHOUT. THE OBSERVED WATER LEVELS OR SOL MOSTUME CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION, THESE WATER LEVELS OR SOL MOSTUME CONDITIONS TO CLIMATE CONDITIONS TO CLIMATE CONDITIONS INCLUDING 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 BY MANY CASES THE FINAL DESIGN DETAILS ARE DEFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROLUCT. THE DEPARTMENT DOES NOT WARRANT OR CLARANTEE THE SLEFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR POINDN 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 MANELE AS TO CONDITIONS TO BE ENCOUNTERED. ON THIS 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 DEFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

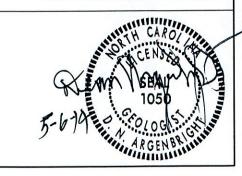
H.R. CONLEY
D.L. HUNNICUTT
J.R. LEWIS
BY_D.N. ARGENBRIGHT
D.N. ARGENBRIGHT

D.N. ARGENBRIGHT

MAY 2014

PERSONNEL

O.B. OTI



INVESTIGATED

SUBMITTED BY

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.

## SHEET NO. 2 of 7

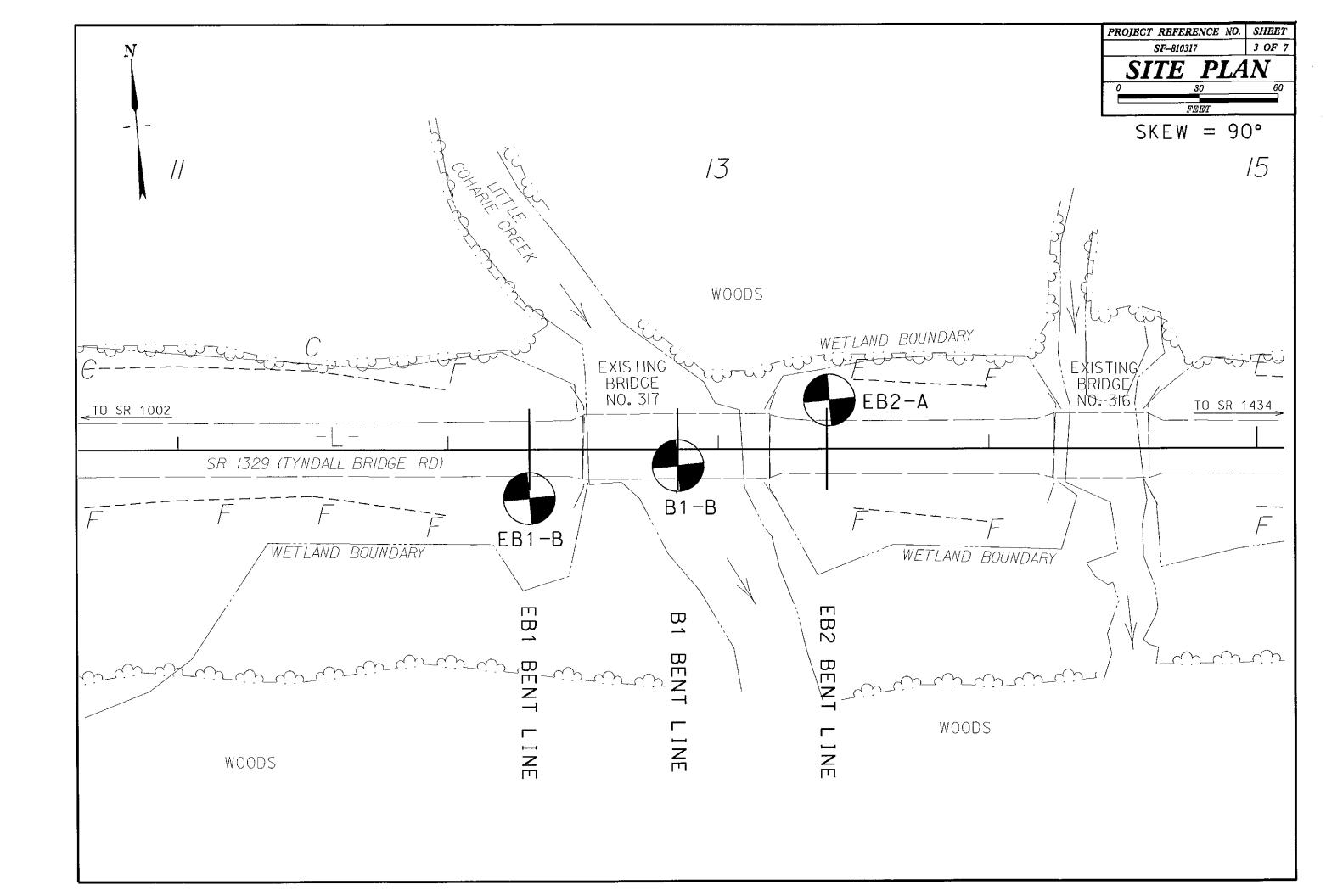
### NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

#### DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

# SUBSURFACE INVESTIGATION

	SOIL AND ROC	CK LEGEND, TERM	s, symbols, and <i>a</i>	ABBREVIATIONS		
SOIL DESCRIPTION	GRADATION			ROCK DESCRIPTION		TERMS AND DEFINITIONS
SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS	WELL GRADEO - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FF UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE	RDM FINE TO COARSE. SAME SIZE.(ALSO	ROCK LINE INDICATES THE LEVEL	i material that if tested, would yield spt refúsa At which non-coastal plain material would yield	SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 108 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO 1206, ASTM D-1586). SOIL	POORLY GRADED)  GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MI		SPT REFUSAL IS PENETRATION BY IN NON-COASTAL PLAIN MATERIAL	A SPLIT SPOON SAMPLER EQUAL TO DR LESS THAN 0.1 THE TRANSITION BETWEEN SOIL AND POCK IS OFTEN (	FOOT PER 60 BLOWS. REPRESENTED BY A ZONE	ADUIFER - A WATER BEARING FORMATION OR STRATA.  ARENACEOUS - APPLIED TO ROCKS THAT MAYE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	ANGULARITY OF GRAINS		OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY	DIVIDED AS FOLLOWS:		ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS.
AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE I SUBANGULAR, SUBROUNDED, OR ROUNDED.	TERMS: ANGULAR,	WEATHERED WEATHERED	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT	N VALUES > 100	OR HAYING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.
VERY STAT, CRAY, SULY CLAY, ADST. WITH INTERPEDDED FACE SHIP UNERS, MICH. PLASTIC, 147-6	MINERALOGICAL COMPOSITIO	N	ROCK (WR)	BLOWS PER FOOT IF TESTED.		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
SOIL LEGEND AND AASHTO CLASSIFICATION  GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS ODCANG MATERIALS	MINERAL NAMES SUCH AS DUARTZ, FELDSPAR, MICA, TALC, KADLIN, ETC. ARE US		RUCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC RO WOULD YIELD SPT REFUSAL IF TESTED, ROCK TYPE INC	CLUDES GRANITE,	GROUND SURFACE.
CLASS. ( \$35% PASSING #200) (> 35% PASSING #200) ORGANIC MATERIALS	WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.		dizidizi	GNEISS, GABBRO, SCHIST, ETC. FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAI	PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5 CLASS A-1, A-2 A-4, A-5 A-6, A-7	COMPRESSIBILITY	LCCC THAN 21	NUN-LKTSTALLINE	SECOMENTARY ROCK THAT WOULD YELD SPT REFUSAL II INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.	F TESTED. ROCK TYPE	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
		EQUAL TO 31-50	COASTAL PLAIN	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT SPT REFUSAL, ROCK TYPE INCLUDES LIMESTONE, SANDST		CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL
SYMBOL 000000000000000000000000000000000000	HIGHLY COMPRESSIBLE LIQUID LIMIT  PERCENTAGE OF MATERIAL	GREATER THAN 50	(CP)	SHELL BEDS, ETC.	ONC, CENERTED	TENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.  DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
X PASSING  10 58 MX GRANULAR SILT- CLAY MUCK,	CRONIII AR CHIT - CLAY	DIHER MATERIAL		WEATHERING		ROCKS OR CUTS MASSIVE ROCK.
" 40 30 MX 58 MX 51 MX  SOILS SOILS SOILS SOILS PEAT 40 15 MX 158	TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE		FRESH ROCK FRESH, CRYSTALS HAMMER IF CRYSTALLI	BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROC	K RINGS UNDER	<u>DIP</u> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
LINES LIMIT	LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE MODERATELY ORGANIC 5 - 10% 12 - 20% SOM	TLE 10 - 20%	VERY SLIGHT ROCK GENERALLY FRES	SH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY	COATINGS IF OPEN,	<u>DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF</u>
PLASTIC INDEX 6 MX NP 18 MX 18 MX 11 MN 10 MX 11 MN 10 MX 11 MN 11 MN 10 MX 11 MN 11	HIGHLY ORGANIC >10% >20% HIGH		(V SL1.) CRYSTALS ON A BROKE OF A CRYSTALLINE NA	IN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER TURF.	HAMMER BLOWS IF	THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH,
GROUP INDEX 8 8 4 MX 8 MX 12 HX 16 MX No MX MODERATE DRGANIC			SLIGHT ROCK GENERALLY FRES	SH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO	ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
USUAL TYPES STONE FRACE. FINE SILTY OR CLAYEY SILTY CLAYEY ORGANIC	✓ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DE	RILLING		MAY CONTAIN CLAY, IN GRANITOID ROCKS SOME OCCASION OF THE CONTAIN OF THE CONTAINS WHEN THE CONTAINS WH		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 MEATHERING EFFE	CTS. IN	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
GEN.RATING AS A EXCELLENT TO GOOD FAIR TO POOR POOR POOR UNSUITABLE	E PERCHED WATER, SATURATED ZONE, OR WATER BEARIN	NG STRATA	(MOD.) GRANITOID ROCKS, MOS DULL SOUND UNDER HA	T FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW ( AMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENC	CLAY, ROCK HAS GTH AS COMPARED	PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY
SUBGRADE	SPRING OR SEEP		WITH FRESH ROCK.			THE STREAM.
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 :PI OF A-7-6 SUBGROUP IS > LL - 30  CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	<del></del>	SEVERE AND DISCOLORED AND	IRTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALI A MAJORITY SHOW KADLINIZATION. ROCK SHOWS SEVERE	LOSS OF STRENGTH	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN
COMPACTATION OF RANGE OF STANDARD RANGE OF UNCONFINED	\$91	TEST RORING	(MDD. SEY.) AND CAN BE EXCAVATE  IF TESTED, WOULD YIE	D WITH A GEOLOGIST'S PICK. ROCK GIVES 'CLUNK' SOUN LD SPT REFUSAL	O WHEN STRUCK.	THE FIELD.  JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY PENETRATION RESISTENCE COMPRESSIVE STRENGTH (TONS/FT?)	<b></b>	W/ CORE	SEVERE ALL ROCK EXCEPT OU	ARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND		LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
GENERALLY VERY LOOSE <4	SOIL SYMBOL AUGER BORING	— SPT N-VALUE	(SEV.) IN STRENGTH TO STRE	ING SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KA INTS OF STRONG ROCK USUALLY REMAIN.	OLINIZED TO SOME	ITS LATERAL EXTENT.
GRANILAR LOOSE 4 TO 10  GRANILAR MEDIUM DENSE 10 TO 30  MATERIAL DENSE 10 TO 30	ARTIFICIAL FILL (AF) OTHER - CORE BORING	(REF) SPT REFUSAL	<u>IF TEŞTED, YIELDS SF</u>	T N VALUES > 100 BPF		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
(NON-COHESIVE) DENSE 30 TO 50  VERY DENSE >50	THAN ROADWAY EMBANKMENT		VERY SEVERE ALL ROCK EXCEPT OUT (V SEV.) THE MASS IS EFFECT!	RTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS YELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS	ARE DISCERNIBLE BUT OF STRONG ROCK	SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
VERY SOFT <2 <0.25	INFERRED SOIL BOUNDARY OMONITORING WEL	L	REMAINING, SAPROLITE	IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SU GINAL ROCK FABRIC REMAIN. IF TESTED, YIELDS SPI I	JCH THAT ONLY MINOR	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.
GENERALLY SOFT 2 TO 4 0.25 TO 0.50 SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0	INFERRED ROCK LINE  A PIEZOMETER INSTALLATION			L. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONL		RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
MATERIAL STIFF 8 TO 15 1 TO 2	***** ALLUVIAL SOIL BOUNDARY SLOPE INDICATO	OR .	SCATTERED CONCENTRA	TIONS, DUARTZ MAY BE PRESENT AS DIKES OR STRINGE		ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
(COHESIVE) VERY STIFF 15 TO 38 2 TO 4 HARD >30 >4	25/825 DIP & DIP DIRECTION OF		ALSO AN EXAMPLE.	ROCK HARDNESS	*****	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	ROCK STRUCTURES CONE PENETROM	ETER TEST	CANNOT BE SCOATCH	ED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECI	MENS DECILIPES	SAPPOLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE
U.S. STD. SIEVE SIZE 4 10 40 60 200 270	● SDUNDING ROD			S OF THE GEOLOGIST'S PIEK.	TIERO REPORTEO	PARENT ROCK.  SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND
OPENING (MM) 4.76 2.80 0.42 0.25 8.075 0.053	ABBREVIATIONS	·/	HARD CAN BE SCRATCHED I	BY KNIFE OR PICK DNLY WITH DIFFICULTY. HARD HAMME	R BLOWS REQUIRED	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	AR - AUGER REFUSAL MED MEDIUM	VST - VANE SHEAR TEST		ELIMEN. BY KNIFE OR PICK, GOUGES OR GROOVER TO 0.25 INCHE	S DEEP CAN BE	TO THE BECOING OR SCHISTOSITY OF THE INTRUDED ROCKS.  SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR
(BLDR.) (COB.) (GR.) (CSE. SD.) (F SD.) (SL.) (CL.)	BT - BORING TERMINATED MICA MICACEOUS CL CLAY MOD MODERATELY	WEA WEATHEREÓ Ƴ- UNII WEIGHT	HARD EXCAVATED BY HARD	BLOW OF A GEOLOGIST'S PICK, HAND SPECIMENS CAN B		SLIP PLANE.
GRAIN MM 305 75 2.0 0.25 0.05 0.005 SIZE IN. 12 3	CPT - CONE PENETRATION TEST NP - NON PLASTIC	$\dot{\gamma}_{ m d}$ - DRY UNIT WEIGHT	BY MODERATE BLOWS MEDIUM CAN BE GROOVED OR	GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNO	FE OR PICK POINT.	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (BPT) - 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
SOIL MOISTURE - CORRELATION OF TERMS	DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST	SAMPLE ABBREVIATIONS	HARD CAN BE EXCAVATED POINT OF A GEOLOGI	IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY H	ARD BLOWS OF THE	A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER, SPT REFUSAL IS PENETRATION EQUAL TO OR LESS
SOIL MOISTURE SCALE FIELD MOISTURE GUIDE FOR FIELD MOISTURE DESCRIPTION	DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC  B - VOID RATIO SD SAND, SANDY	S - BULK SS - SPLIT SPOON	SOFT CAN BE GROVED OR	GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED	IN FRAGMENTS	THAN 0.1 FOOT PER 60 BLOWS.  STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH
(ATTERBERG LIMITS) DESCRIPTION OUTDITION	F - FINE SL SILT, SILTY	ST - SHELBY TUBE	FROM CHIPS TO SEV	ERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK.	POINT. SMALL, THIN	DE STRATUM AND EXPRESSED AS A PERCENTAGE.
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY (SAT.) FROM BELOW THE GROUND WATER TABLE	FOSS, - FOSSILIFEROUS SLI SLICHTLY FRAC FRACTURED, FRACTURES TOR - TRICONE REFUSAL	RS - ROCK RT - RECOMPACTED TRIAXIAL	VERY CAN BE CARVED WITH	KNIFE. CAN BE EXCAVATED READILY WITH POINT OF P	ICK. PIECES 1 INCH	STRATA ROCK QUALITY DESIGNATION (SROO) - A MEASURE OF ROCK DUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE
LL LIOUID LIMIT	FRAGS, - FRAGMENTS W - MDISTURE CONTENT	CBR - CALIFORNIA BEARING RATIO	SOFT OR MORE IN THICKNE FINGERNAIL.	SS CAN BE BROKEN BY FINGER PRESSURE, CAN BE SCR	ATCHED READILY BY	TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
PLASTIC   SEMISOLID: REQUIRES DRYING TO ATTAIN DOTININ MOISTURE	EQUIPMENT USED ON SUBJECT P		FRACTURE SPACE	NG BEDDING		IDPSOIL (IS.) - SURFACE SOILS USUALLY CONTAINING DRGANIC MATTER.
(PI) PLASTIC LIMIT		HAMMER TYPE		ACING TERM	THICKNESS > 4 FEET	BENCH MARK: BM-I: -L- STA. 16+79.2, 31.7' LT
SOLIDI AT OR NEAR OPTIMUM MOISTURE		X AUTOMATIC MANUAL	VERY WIDE MORE THE	VERY THICKLY BEDDED THICKLY BEDDED	1.5 - 4 FEET	ELEVATION:  23,12 FT.
DM OPTIMUM MOISTURE - MOIST - (M) SOCIO: AT DR REAR DETIMUM MOISTURE  SL SHRINKAGE LIMIT - MOIST - (M) SOCIO: AT DR REAR DETIMUM MOISTURE	X MOBILE 8- 56 CLAY BITS		MODERATELY CLOSE 1 TO 3 8	EET VERY THINK Y REDDED	0.16 - 1.5 FEET 0.03 - 0.16 FEET	
REQUIRES ADDITIONAL WATER TO	6° CONTINUOUS FLIGHT AUGER	CORE SIZE	CLOSE 0.16 TO VERY CLOSE LESS TH	I FEE! THICKLY LAMINATED 0	.008 - 0.03 FEET < 0.008 FEET	NOTES:
HITAIN OCTABLE TOUSTONE		□-В		INDURATION	C BIBOB FECT	
PLASTICITY PLASTICITY	■ X CME-45B	и	FOR SEDIMENTARY ROCKS, INDURATION	IS THE HARDENING OF THE MATERIAL BY CEMENTING.	HEAT, PRESSURE, ETC.	
PLASTICITY INDEX (P)) DAY STRENGTH NONPLASTIC 0-5 VERY LOW	TUNGCARBIDE INSERTS	н	FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAIN		
LOW PLASTICITY 6-15 SLIGHT	L∆J CASING	HAND TOOLSE	- I HAVE	CENTLE BLOW BY HAMMER DISINTEGRATES SAM		
MED. PLASTICITY 16-25 MEDIUM HIGH PLASTICITY 26 OR MORE HIGH	PORTABLE HOIST X TRICONE 2 15/16 STEEL TEETH	POST HOLE DIGGER	MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH BREAKS EASILY WHEN HIT WITH HAMMER.	1 STEEL PROBE;	
COLOR	TRICONE TUNGCAR8.	HAND AUGER	INDURATEO	GRAINS ARE DIFFICULT TO SEPARATE WITH ST	EEL PROBE:	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, REC, YELLOW-BROWN, BLUE-GRAY).	CORE BIT	SOUNDING ROD  VANE SHEAR TEST		DIFFICULT TO BREAK WITH HAMMER.		
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.		THISE SHEMR ICS!	EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SA SAMPLE BREAKS ACROSS GRAINS.	MPLE;	
	<u> </u>		<u> 1</u>			A



150	PROI	TILE THR	OUGH BO	RINGS I	PROJECTE	D ALONG	-L-	PROJECT REFERENCE NO.  SF -8/03/7  ROADWAY DESIGN ENGINEER  INCOMPLE TE PI DO NOT USE FOR K/W ACCO  PRELIMINARY I DO NOT USE FOL CONSTRU	PLANS
145							 		<del></del> : 1
140		EBI-	·	BI-B		EB2-A		VE = 2.0	140
135		12+3 18' F	:	12+85 6′ RT		13+41 18' L T			13
130									13
125	<del> </del>								_ 12
120		(A)	₩A1	TERSURF-ACE 12/13	<b>V</b>		(A)		12
115	VERY LOG	DSE BLACK	MODERATELY		ORGANIC	05/9I SANE	WITH WOOD,	Ţ	11
110	\$ATURA		(ALLUVIAL)			9	B_ <b>_</b>	<del>†</del>	11
1.05	© <del></del>	B 34			CLAY WITH	(23)	GNITE, WET		10
1.00	STIFF TO V	/ERY \$TIFF	DARK GREEN SILT			(BLACK	CREEK FORMATION	+	10
95	- — — — — DENSE DAR	K CREEN	 SAND WITH	30	IGNITE, \$ATURATED	(BLACK	CREEK FORMATION	)	9
90				34		(39)		+	9
85	VERY S	TIFF TO 3	HARD DARK	24	GREEN SILTY	® CL.	AY WITH		8
8.0	LIGN	IITE, 58	WET	(5) <b>(</b> 3)	(BLACK CREEK	FOF	RMATION)		8
75		67		49		<b>33</b>			7
TO SAT	OOSE TO LOOSE TAN GR Y SAND AND SAND, MOIS TURATED (ROADWAY EMBA	NKMENT)		3)		35 B			7
SATURA	M DENSE BROWN SAND WI TED (ALLUVIAL) M DENSE TO DENSE DARK	; <del>-</del>				NOTE:	GROUNDLINE PROFILE FROM BRIDGE SURVEY DESIGN REPORT DAT	ALONG -L- TAKEN AND HYDRAULIC	6
60 WITH L	IGNITE, SATURATED (B DENSE DARK GREEN SAND ATED (BLACK CREEK FOR	LACK CREEK FORMA WITH LIGNITE,	TION)	27   \( \)		NOTE:	DESIGN REPORT DATI INFERRED STRATIGRAP THROUGH THE BORINI PROJECTED ONTO PR	HY IS DRAWN GS WITH BOTH	<b>b</b>
55 11+50	12-	+00	12+50		13+00	13+50		14+00	

P.3.R.27	TIP SF-810317	COUNT	ITY SAMPS	NC		GEOLOGIST Oti, O. B.		<b>─</b>	\$ 17BP.3				IP SF-8103			SAMPSO			GEO	OLOGIST Oti, O.	· · · · · · · · · · · · · · · · · · ·	
RIPTION BRIDGE NO	). 317 ON -L- (SR 1329	) OVER LI	LITTLE COHA	RIE CRE	EK	<u>.</u>	GROUND WTR	(ft) SITE	E DESCRIP	PTION	BRIDG	E NO. 3	17 ON -L- (S	R 1329) O				EEK				GROUND WTR
). EB1-B	STATION 12+30		OFFSET	18 ft RT		ALIGNMENT -L-	0 HR. N	N/A BOF	RING NO.	B1-B		s	TATION 12	2+85		OFFSET	6 ft RT		ALI	IGNMENT -L-		0 HR.
.EV. 124.5 ft	TOTAL DEPTH 50.0	) ft	NORTHIN	G 485,78	B4	EASTING 2,140,781	24 HR. 6	6.6 COL	LAR ELE	<b>/.</b> 113.	3 ft	T	OTAL DEPT	H 53.0 ft		NORTHING	485,7	791	EAS	STING 2,140,837		24 HR. N
AMMER EFF./DATE RFO	MOBILE B-56			DRILL M	ETHOD M	ud Rotary HAMI	MER TYPE Manual	DRIL	L RIG/HAMI	MER EFF	/DATE	RFO CM	E 45B				DRILL	METHOD	) Mud Rota	ıгу	HAMME	R TYPE Manual
V/A	START DATE 05/29	9/91	COMP. DA	TE 05/2	29/91	SURFACE WATER DEPTH	N/A	DRII	LLER N/A	١		s	TART DATE	06/04/91		COMP. DA	TE 06/	04/91	SUF	RFACE WATER DE	PTH 2.6	ft
DEPTH   BLOW COUNT (ft)   0.5ft   0.5ft   0.		S PER FOO 50	OT 75 100	SAMP. NO.	MOI G	SOIL AND ROCK DES	SCRIPTION DEPTH	ELEV (ft)		'- <u>'</u> '''	BLOW 0.	COUNT 5ft 0.5ft	0 2	8LOWS P8		75 100	SAMP.	MOI	L O G	SOIL AND RO	OCK DESC	RIPTION
						— 124.5 GROUND SURF	FACE	0.0 115										▼		WATER SU	JRFACE (06	/04/91)
0.0 3 3	2 5	: : : :		SS-1	- M	- -			1 1					<del>,</del>		1			<u> 113.3</u>		ND SURFA LLUVIAL	E
3.4 WOH WOH	1			SS-2		- 121.5 - ROADWAY EMBAI TAN GRAY SAND AND C		3.0	1 ‡						: : : :					BLACK MODERA		ANIC SAND,
1						- MOIST TO SA	AT.		107.7	5.6	6 1		: : :    :	: : : :					107.3			<b>_</b>
8.4					<u> - - -</u>	- - <u>116.0</u>		8.5	‡		י ו י	6   9	17						105.3	At	LL <b>UVIA</b> L ID W/ GRA\	EL, SAT.
‡   '   '	<del>                                </del>			SS-3		BLACK MODERATELY O	RGANIC SAND	1 100	1 I											DARK GREEN SAI	STAL PLAI	
<u> </u>						_ WITH WOOD, :	SAT.		102.8	10.5	5	7 10	17				SS-14	1 [			SAT.	
13.4	1			]		- -		100					/					1 [	} 	(BLACK CR	EEK FURM	ATION)
Ŧ						- 407.4		17.1	<u>†</u>					\::::		::::			7	DARK GREEN SIL	STAL PLAI	
18.4					000	105.5 PROMA COARDS ALLUVIAL		10.0	96.8	16.5	6 1	12 18		,		: : : :	SS-15	┤ :	3		WET	TITLIONITE,
10 19 1	15			-	000	105.5 BROWN COARSE SAND V		20.5	-{ +			1		1				1	94.3		STAL PLA	<del>-</del>
‡   <b>i</b>	:::::/:::					DARK GREEN SAM	ND, SAT.		91.8	21.5				1					MŁ	DARK GREEN SA		
23.4	10			SS-4	47%	COASTAL PL	AIN	90	1 1	المديد	5 1	14 20		34			SS-16		4			
†   '   '   '	17			55-4	41%	— DARK GREEN SILTY CLA\ - WET			7 ‡	i				/					89.3		STAL PLAI	<del></del>
<u>†</u>						- (BLACK CREEK FO)	RMATION)		86.8	26.5				[ <i>[.</i> :::					3	DARK GREEN SIL	.TY CLAY V WET	ATH LIGNITE,
28.5 6 10 1	12					_		85			6 1	11 13		24 · · ·			SS-17	<b>∤</b> }			***	
T				]]				31.0	+							1::::		}	3			
‡						COASTAL PL DARK GREEN SAND WITH	H LIGNITE, SAT.		81.8	31.5	9 2	25 26	:::::					}	7			
33.5 8 13 2	28	041		SS-5		(BLACK CREEK FOR	· · · · · · · · · · · · · · · · · · ·	35.5	<b>↓</b> ‡		"   <i>"</i>	20			<b>P</b> 51 1 1				<b>S</b>			
<u>†</u>						89.0 COASTAL PL	AIN	35.5							• • • •				3			
38.5						DARK GREEN SILTY CLAY WET			1	36.5	7 1	18 31	┨│::::		40	: : : :			3			
7 11	12			SS-6		(BLACK CREEK FOI	RMATION)	75	$\dashv$ $\pm$					<del>  / </del>		1		:				
1		[ ] [ ] [ ]		11				11	71.8	41.5			1	• • • •					3			
43.5 6 18	40-	``\\				<del> </del>		70	I 1	41.5	7 1	12 19	1	<b>4</b> 31 · ·			SS-18		7			
†   "   "   '	40	58-		1		-			1 ‡									[				
<u>†</u>     1									66.8	46.5			<u> </u>   :::::	<u>                                     </u>				] [				
48.5	40		67	SS-7		75.0		49.5 65			7   '	9   18		<b>●</b> 27・・・			SS-19	50%				
7			01	1	7.55.	DARK GREEN SAND WITH		50.0	1				: : : :	i::::				}	3			
‡						Boring Terminated at Ele	vation 74.5 ft in		61.8	51.5	9 1	11 16						}	<b>\</b>			
‡				1		Dense San	10		1		<u> </u>		<del>                                     </del>	[ <b>Q</b> 27 · · · ]		1			60.3	Boring Terminate		on 60.3 ft in
<u> </u>						_			‡										F	Ver	ry Stiff Clay	
<u>†</u>						ţ		11	‡		1						ĺ		ļ.			
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WBS	17BP	.3.R.27			TI	P SF-810317	COUNT	Y SAMPSO	ON			GEOLOGIST Oti, O. B.		
SITE	DESCR	IPTION	BRI	DGE I	NO. 31	17 ON -L- (SR 1329)	OVER LI	TTLE COHA	RIE CRI	EEK			GROUND V	VTR (ft)
30RI	NG NO	EB2	A		s	TATION 13+41		OFFSET	18 ft LT			ALIGNMENT -L-	0 HR.	N/A
COLL	AR ELI	EV. 12	24.6 ft		To	OTAL DEPTH 55.1	ft	NORTHING	485,8	09		EASTING 2,140,895	24 HR.	7.8
RILL	RIG/HA	MMER E	FF./DA	TE R	FO MO	BILE B-56		<del></del>	DRILL N	METHO	D M	ud Rotary I	IAMMER TYPE Ma	nual
	LER N					TART DATE 05/30/	91	COMP. DA	<u> </u>	SURFACE WATER DEPTI	H N/A			
ī	DRIVE	DEPTH	BLC	W CO			PER FOOT	<del></del> _	SAMP.	7	L	1 • • • • • • • • • • • • • • • • • • •		
(ft)	ELEV (ft)	(ft)		0.5ft		0 25	50	75 100	NO.	MOI	O G	SOIL AND ROCK ELEV. (ft)		DEPTH (1
	(11)				1	<del>                                     </del>	1		1	NOI	3	ELEV. (II)	<u> </u>	DEI IIIVI
125	124:6-	-0.0	5		<u> </u>		Tr.					124.6 GROUND S		0.
- 1		Ŧ		6	4	1,•10       1    1		.	SS-8	ł		TAN GRAY SLI. CLA		
120	121.0	3.6	MOH	WOH	11	/:::: :::::						<del>-</del> <del>-</del>		
120	-	‡	Won	WOR	'	1						<del>-</del> -		
		t				:::: ::::				$\blacksquare$	-[	- 117.6 — — — — — ALLU	<u> </u>	
115	116.0	8.6_	WOH	1	1			.	SS-9			<ul> <li>BLACK MODERATEL</li> </ul>	Y ORGANIC SAND,	
	-	Ŧ				\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\			00-5			MOIST 1	U SAT.	11.
		‡				$   \setminus    \cdot    \cdot    \cdot    \cdot    \cdot    \cdot    \cdot$		.   ! .			000	ALLU		13.
110	111.0	13.6	3	4	5						7	L 111.1 _ BROWN SAND W COASTA		. السر
		╁				. 🏋						– DARK GREEN SILTY ( – WE		Ξ,
	106.0	18.6		1								- (BLACK CREEK		
105	- 100.0.	<del> 18.8</del> -	10	13	10	23						- <del>-</del>		
		‡				::::/ :::::				1		- -		
	101.0.	23.6				] :::/: ::::						<u>-</u> -		
100	-	+	3	8	9	17	+		SS-10	61%				26.
		‡					: : :					COASTA		
0.5	96.0	28.6_	ļ	46								<ul> <li>DARK GREEN SAND</li> <li>(BLACK CREEK</li> </ul>		
95	-	<u>†</u>	8	16	23	<b>•</b> 39	1		SS-11	-		-	•	
		Ŧ										-		
90	91.0	33.6	12	15	24							-		
00	-	‡	'*	, "	-	39						89.1 COASTA		35
		1					1			İ		DARK GREEN SILTY	CLAY WITH LIGNITE	Ξ,
85	86.0	38.6	5	8	10				SS-12	46%		WI BLACK CREEK		
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80	81.0	43.6	8	12	19	31	1:::					<u></u>		
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	76.0	48.6										-		
75	. , , , ,	‡ <del>70.0</del>	9	15	18	33	1:::		SS-13	]		Ē		
		‡		1								-		
	71.0	53.6		<u> </u>								<u> </u>		
70		+	8	17	18	35			4	1		-69.5	d Claudian CO 5 8	55
	1	Ŧ								1			it Elevation 69.5 ft in Clay	
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WBS: 17BP.3.R.27 TIP: SF-810317
BRIDGE NO. 317 ON SR 1329 OVER LITTLE COHARIE CREEK

HOLE#	SAMPLE#	PASS 10	PASS 40	PASS 200	CSESAND	<u>FINESAND</u>	<u>SI</u>	<u>CL</u>	LL	<u>PI</u>	<u>CLASS</u>	<u>DEPTH</u>	MOIST. ORG.
EB1-B	SS-1 SS-2 SS-3 SS-4 SS-5 SS-6 SS-7	95	87	11 18 16 61 14 91 80	67.0 72.0 25.0 23.0 39.0 2.0 10.0	22.0 9.0 62.0 17.0 49.0 10.0 12.0	5.0 2.0 9.0 19.0 8.0 33.0 29.0	6.0 17.0 4.0 41.0 4.0 55.0 49.0	15 39 33 49 25 66 58	NP 21 NP 30 NP 41 37	A-2-4(0) A-2-6(0) A-2-4(0) A-7-6(14) A-2-4(0) A-7-6(20) A-7-6(20)	1.0 - 1.5 3.4 - 4.9 8.7 - 9.6 23.4 - 24.9 33.5 - 35.6 38.5 - 40.6 48.5 - 49.5	47.0
EB2-A	SS-8 SS-9 SS-10 SS-11 SS-12 SS-13	100	79	23 21 83 22 87 69	58.0 41.0 7.0 28.0 4.0 20.0	21.0 40.0 11.0 52.0 13.0 12.0	9.0 15.0 25.0 8.0 28.0 27.0	12.0 4.0 57.0 12.0 55.0 41.0	12 29 61 23 55 46	NP NP 37 NP 32 23	A-2-4(0) A-2-4(0) A-7-6(20) A-2-4(0) A-7-6(19) A-7-6(13)		61.0 46.0
B1-B	SS-14 SS-15 SS-16 SS-17 SS-18 SS-19			20 80 17 79 77 90	56.0 9.0 26.0 4.0 15.0 6.0	25.0 13.0 59.0 22.0 8.0 6.0	6.0 23.0 6.0 27.0 22.0 27.0	13.0 55.0 9.0 47.0 55.0 61.0	24 61 25 45 66 73	NP 36 NP 30 48 43	A-2-4(0) A-7-6(20) A-2-4(0) A-7-6(17) A-7-6(20) A-7-5(20)	10.5 - 12.0 16.5 - 18.0 21.5 - 23.0 26.5 - 28.0 41.5 - 43.0 46.5 - 48.0	50.0