

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

STRUCTURE
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 45347.1.10 (BD-5101I) F.A. PROJ. BRZ-1110(7)
COUNTY BERTIE
PROJECT DESCRIPTION BRIDGE NO. 72 ON SR 1110 (QUITSNA ROAD)
OVER FROG LEVEL SWAMP AT -L- STA. 12+71.50

CONTENTS

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CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6960. NEITHER 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 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 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 DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

PROJECT: 45347.1.10 ID: BD-5101I

PERSONNEL

C.M. WRIKE

R.E. SMITH

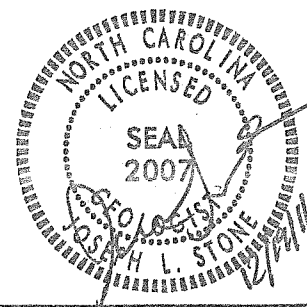
J.M. EDMONDSON

INVESTIGATED BY J.L. STONE

CHECKED BY D.N. ARGENBRIGHT

SUBMITTED BY D.N. ARGENBRIGHT

DATE DECEMBER 2011



DRAWN BY: C.P. TURNER

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IS IT 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.

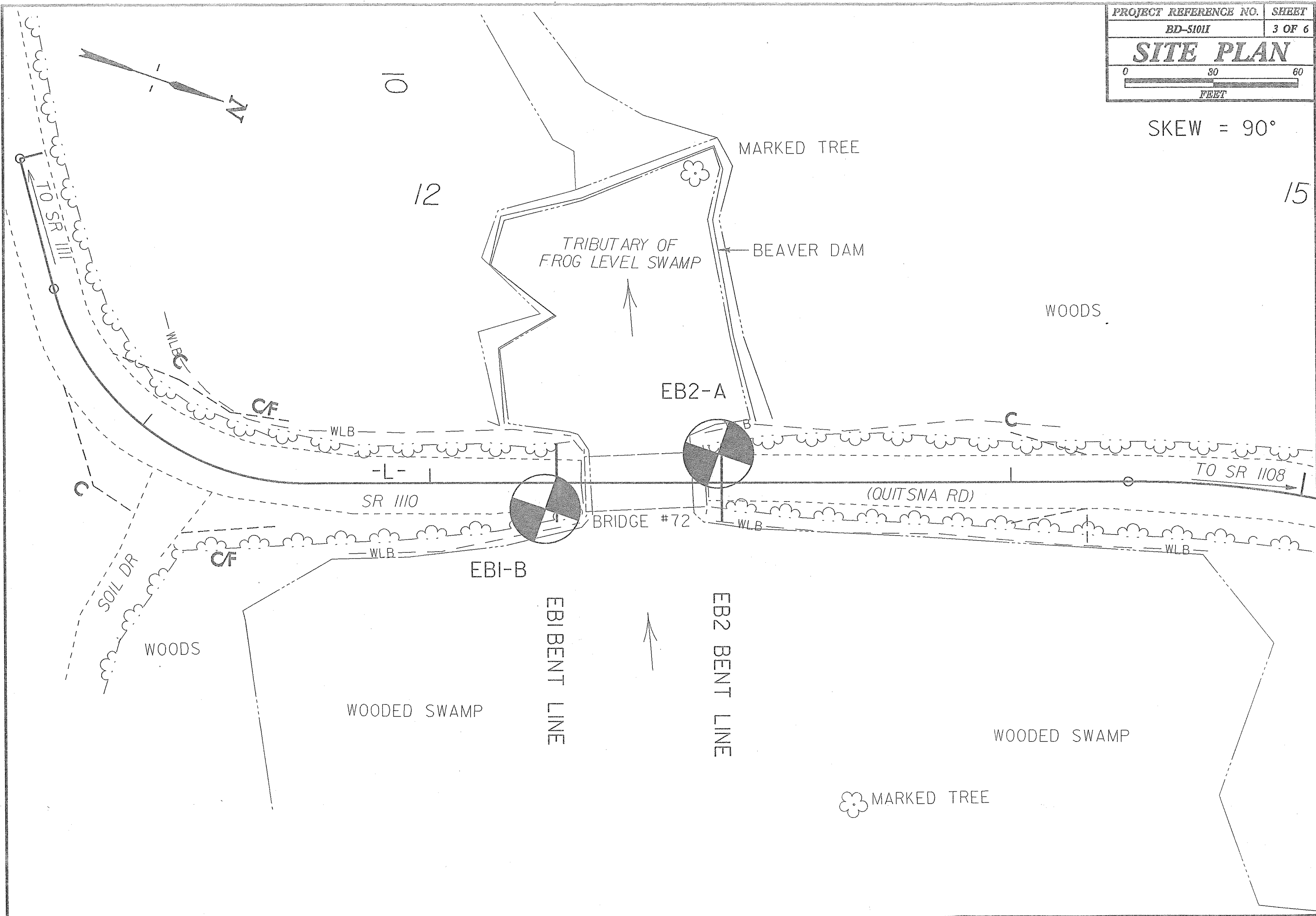
**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT**

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION			GRADATION			ROCK DESCRIPTION			TERMS AND DEFINITIONS		
SOIL IS CONSIDERED TO BE THE 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 STANDARD PENETRATION TEST (ASTM 7206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE: <i>VERY STIFF, GRAY, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>			WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORM - 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. ANGULARITY OF GRAINS THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.			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. 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: 			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, 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 SURFACES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. 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 (MOTT) - 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 INTRODUCED 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 (IN 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 (SCRC) - 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.		
SOIL LEGEND AND AASHTO CLASSIFICATION			MINERALOGICAL COMPOSITION			WEATHERING					
GENERAL CLASS. GROUP CLASS. SYMBOL % PASSING LIQUID LIMIT PLASTIC INDEX GROUP INDEX USUAL TYPES OF MAJOR MATERIALS GEN. RATING AS A SUBGRADE			MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.			FRESH VERY SLIGHT (V SL.) SLIGHT (SL) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) VERY SEVERE (V SEV.) COMPLETE					
CONSISTENCY OR DENSENESS			PERCENTAGE OF MATERIAL			GROUND WATER			MISCELLANEOUS SYMBOLS		
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (G-VALLE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)			ORGANIC MATERIAL TRACE OF ORGANIC MATTER LITTLE ORGANIC MATTER MODERATELY ORGANIC HIGHLY ORGANIC			WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING STATIC WATER LEVEL AFTER 24 HOURS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEP			ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT INFERRED SOIL BOUNDARY INFERRED ROCK LINE ALLUVIAL SOIL BOUNDARY DIP & DIP DIRECTION OF ROCK STRUCTURES		
U.S. STD. SIEVE SIZE OPENING (MM)			COMPRESSIONIBILITY SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE			ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT INFERRED SOIL BOUNDARY INFERRED ROCK LINE ALLUVIAL SOIL BOUNDARY DIP & DIP DIRECTION OF ROCK STRUCTURES			SPT TEST BORING AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION SLOPE INDICATOR INSTALLATION CONE PENETROMETER TEST SOUNDING ROD		
TEXTURE OR GRAIN SIZE			COMPRESSIONIBILITY			ABBREVIATIONS			ROCK HARDNESS		
U.S. STD. SIEVE SIZE OPENING (MM)			SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE			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 H. - HIGHLY			VERY HARD HARD MODERATELY HARD MEDIUM HARD SOFT VERY SOFT		
SOIL MOISTURE - CORRELATION OF TERMS			PERCENTAGE OF MATERIAL			MED. - MEDIUM MICA - MICA MOD. - MODERATELY NP - NON PLASTIC ORG. - ORGANIC PMT - PRESSUREMETER TEST SAP. - SAPROLITE SD. - SAND, SANDY SL. - SILT, SILTY SLI. - SLIGHTLY TCR - TRICONE REFUSAL w - MOISTURE CONTENT V - VERY			CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK. CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN. 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. 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. 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. 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 FINGER NAIL.		
SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION			ORGANIC MATERIAL			VST - VANE SHEAR TEST WEA - WEATHERED W - UNIT WEIGHT W _s - DRY UNIT WEIGHT			VERY HARD HARD MODERATELY HARD MEDIUM HARD SOFT VERY SOFT		
LL - LIQUID LIMIT PL - PLASTIC LIMIT OM - OPTIMUM MOISTURE SL - SHRINKAGE LIMIT			ORGANIC MATERIAL			SAMPLE ABBREVIATIONS S - BULK SS - SPLIT SPOON ST - SHELBY TUBE RS - ROCK RT - RECOMPACTED TRIAXIAL CBR - CALIFORNIA BEARING RATIO			VERY HARD HARD MODERATELY HARD MEDIUM HARD SOFT VERY SOFT		
PLASTICITY			COMPRESSIONIBILITY			EQUIPMENT USED ON SUBJECT PROJECT			FRACTURE SPACING		
NONPLASTIC LOW PLASTICITY MED. PLASTICITY HIGH PLASTICITY			SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE			DRILL UNITS: MOBILE B- BK-51 CME-45B CME-550 PORTABLE HOIST			TERM VERY WIDE WIDE MODERATELY CLOSE CLOSE VERY CLOSE		
COLOR			PERCENTAGE OF MATERIAL			ADVANCING TOOLS: CLAY BITS 6" CONTINUOUS FLIGHT AUGER 8" HOLLOW AUGERS HARD FACED FINGER BITS TUNG-CARBIDE INSERTS CASING w/ ADVANCER TRICONE 2 15/16" STEEL TEETH TRICONE " TUNG-CARB. CORE BIT			TERM VERY WIDE WIDE MODERATELY CLOSE CLOSE VERY CLOSE		
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.			OTHER MATERIAL TRACE LITTLE MODERATELY HIGHLY			HAMMER TYPE: AUTOMATIC MANUAL CORE SIZE: B N H HAND TOOLS: POST HOLE DIGGER HAND AUGER SOUNDING ROD VANE SHEAR TEST			TERM VERY WIDE WIDE MODERATELY CLOSE CLOSE VERY CLOSE		
									BEDDING		
									TERM VERY THICKLY BEDDED THICKLY BEDDED THINLY BEDDED VERY THINLY BEDDED THICKLY LAMINATED THINLY LAMINATED		
									THICKNESS > 4 FEET 1.5 - 4 FEET 0.16 - 1.5 FEET 0.03 - 0.16 FEET 0.008 - 0.03 FEET < 0.008 FEET		
									INDURATION		
									FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.		
									FRIABLE MODERATELY INDURATED INDURATED EXTREMELY INDURATED		
									RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.		

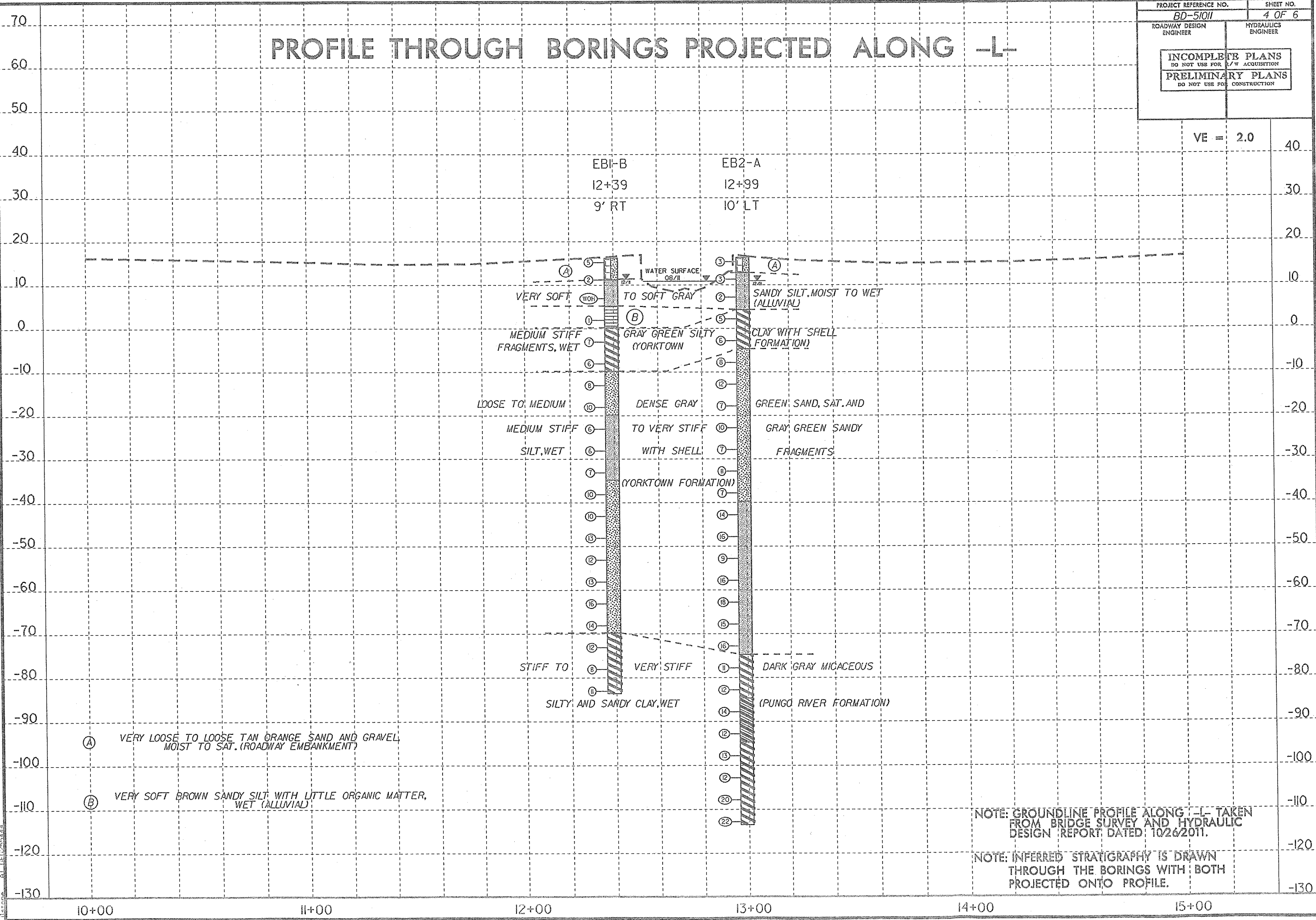
SKEW = 90°



PROFILE THROUGH BORINGS PROJECTED ALONG -L-

VE = 2.0

5/14/99
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NOTE: GROUNDLINE PROFILE ALONG -L- TAKEN FROM BRIDGE SURVEY AND HYDRAULIC DESIGN REPORT DATED 10/26/2011.

NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO PROFILE.

WBS 45347.1.10													TIP BD-51011			COUNTY BERTIE			GEOLOGIST Wrike, C. M.									
SITE DESCRIPTION BRIDGE NO. 72 ON -L- (SR 1110) OVER FROG LEVEL SWAMP																GROUND WTR (ft)												
BORING NO. EB1-B				STATION 12+39				OFFSET 9 ft RT				ALIGNMENT -L-				0 HR. N/A												
COLLAR ELEV. 16.2 ft				TOTAL DEPTH 99.8 ft				NORTHING 810,773				EASTING 2,564,579				24 HR. 4.9												
DRILL RIG/HAMMER EFF./DATE GFO0062 CME-45B 96% 6/27/2011										DRILL METHOD Mud Rotary			HAMMER TYPE Automatic															
DRILLER Smith, R. E.				START DATE 12/06/11				COMP. DATE 12/07/11				SURFACE WATER DEPTH N/A																
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)			BLOW COUNT					BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION		DEPTH (ft)								
		0.5ft	0.5ft	0.5ft	0	25	50	75	100																			
	16.2	0.0	1	3	2																	16.2	GROUND SURFACE	0.0				
	12.2	4.0	1	1	1																	11.2	ROADWAY EMBANKMENT TAN SAND AND GRAVEL, MOIST TO SAT.	5.0				
	7.9	8.3	WOH	WOH	WOH																	5.2	ALLUVIAL GRAY SANDY SILT, WET	11.0				
	2.9	13.3	WOH	WOH	1																	0.2	ALLUVIAL BROWN SANDY SILT WITH LITTLE ORGANIC MATTER, WET	16.0				
	-2.1	18.3	1	3	4																		0.2	COASTAL PLAIN GRAY GREEN SILTY CLAY WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)	16.0			
	-7.1	23.3	2	3	3																		-9.8	COASTAL PLAIN GREEN SAND WITH SHELL FRAGMENTS, SAT. (YORKTOWN FORMATION)	26.0			
	-12.1	28.3	3	3	5																			-9.8	COASTAL PLAIN GREEN SAND WITH SHELL FRAGMENTS, SAT. (YORKTOWN FORMATION)	26.0		
	-17.1	33.3	3	4	6																				-19.8	COASTAL PLAIN GREEN SANDY SILT WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)	36.0	
	-22.1	38.3	3	3	3																					-34.8	COASTAL PLAIN GREEN SAND WITH SHELL FRAGMENTS, SAT. (YORKTOWN FORMATION)	51.0
	-27.1	43.3	2	3	3																							
	-32.1	48.3	3	4	3																							
	-37.1	53.3	2	5	5																							
	-42.1	58.3	3	5	5																							
	-47.1	63.3	6	6	7																							
	-52.1	68.3	3	6	6																							
	-57.1	73.3	4	6	7																							

NCDOT BORE DOUBLE BORINGS.GPJ, NC_DOT.GDT, 12/13/11

WBS 45347.1.10													TIP BD-51011			COUNTY BERTIE			GEOLOGIST Wrike, C. M.																				
SITE DESCRIPTION BRIDGE NO. 72 ON -L- (SR 1110) OVER FROG LEVEL SWAMP																GROUND WTR (ft)																							
BORING NO. EB1-B				STATION 12+39				OFFSET 9 ft RT				ALIGNMENT -L-				0 HR. N/A																							
COLLAR ELEV. 16.2 ft				TOTAL DEPTH 99.8 ft				NORTHING 810,773				EASTING 2,564,579				24 HR. 4.9																							
DRILL RIG/HAMMER EFF./DATE GFO0062 CME-45B 96% 6/27/2011										DRILL METHOD Mud Rotary			HAMMER TYPE Automatic																										
DRILLER Smith, R. E.				START DATE 12/06/11				COMP. DATE 12/07/11				SURFACE WATER DEPTH N/A																											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)			BLOW COUNT					BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION		DEPTH (ft)																			
		0.5ft	0.5ft	0.5ft	0	25	50	75	100																														
	-62.1	78.3	3	6	10																																		
	-67.1	83.3	8	6	8																																		
	-72.1	88.3	4	5	7																																		
	-77.1	93.3	3	3	5																																		
	-82.1	98.3	3	5	6																																		

Match Line

COASTAL PLAIN
GREEN SAND WITH SHELL FRAGMENTS,
SAT. (YORKTOWN FORMATION)
(continued)

COASTAL PLAIN
DARK GRAY MICACEOUS SILTY CLAY,
WET (PUNGO RIVER FORMATION)

Boring Terminated at Elevation -83.6 ft IN
STIFF SILTY CLAY

WBS 45347.1.10	TIP BD-5101I	COUNTY BERTIE	GEOLOGIST Wrike, C. M.	
SITE DESCRIPTION BRIDGE NO. 72 ON -L- (SR 1110) OVER FROG LEVEL SWAMP				GROUND WTR (ft)
BORING NO. EB2-A	STATION 12+99	OFFSET 10 ft LT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 16.3 ft	TOTAL DEPTH 129.6 ft	NORTHING 810,824	EASTING 2,564,541	24 HR. 5.4
DRILL RIG/HAMMER EFF./DATE GFO062 CME-45B 96% 6/27/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER Smith, R. E.	START DATE 11/30/11	COMP. DATE 12/06/11	SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
20														
15	16.3	0.0	1	2	1								GROUND SURFACE ROADWAY EMBANKMENT ORANGE SAND, MOIST	0.0
10	12.3	4.0	3	2	1								ALLUVIAL GRAY SANDY SILT, MOIST TO WET	3.5
5	8.2	8.1	1	1	1								COASTAL PLAIN GRAY GREEN SILTY CLAY WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)	12.0
0	3.2	13.1	2	2	3								COASTAL PLAIN GREEN SAND WITH SHELL FRAGMENTS, SAT. (YORKTOWN FORMATION)	21.0
-5	-1.8	18.1	3	3	3								COASTAL PLAIN GREEN SANDY SILT WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)	56.0
-10	-6.8	23.1	3	3	5									
-15	-11.8	28.1	5	6	6									
-20	-16.8	33.1	2	3	4									
-25	-21.8	38.1	4	4	6									
-30	-26.8	43.1	2	3	4									
-35	-31.8	48.1	3	5	6									
-40	-36.8	53.1	WOH	2	5									
-45	-41.8	58.1	5	7	7									
-50	-46.8	63.1	6	7	9									
-55	-51.8	68.1	3	4	5									
-60	-56.8	73.1	6	8	8									

WBS 45347.1.10	TIP BD-5101I	COUNTY BERTIE	GEOLOGIST Wrike, C. M.	
SITE DESCRIPTION BRIDGE NO. 72 ON -L- (SR 1110) OVER FROG LEVEL SWAMP				GROUND WTR (ft)
BORING NO. EB2-A	STATION 12+99	OFFSET 10 ft LT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 16.3 ft	TOTAL DEPTH 129.6 ft	NORTHING 810,824	EASTING 2,564,541	24 HR. 5.4
DRILL RIG/HAMMER EFF./DATE GFO062 CME-45B 96% 6/27/2011		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER Smith, R. E.	START DATE 11/30/11	COMP. DATE 12/06/11	SURFACE WATER DEPTH N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
-60														
-65	-61.8	78.1	6	9	9								Match Line	
-70	-66.8	83.1	5	7	8								COASTAL PLAIN GREEN SANDY SILT WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION) (continued)	
-75	-71.8	88.1	5	6	10								COASTAL PLAIN DARK GRAY MICACEOUS SILTY AND SANDY CLAY, WET (PUNGO RIVER FORMATION)	91.0
-80	-76.8	93.1	4	5	6									
-85	-81.8	98.1	5	6	6									
-90	-86.8	103.1	3	7	7									
-95	-91.8	108.1	3	6	6									
-100	-96.8	113.1	4	6	7									
-105	-101.8	118.1	3	6	6									
-110	-106.8	123.1	5	9	11									
-113.3	-111.8	128.1	6	10	12								Boring Terminated at Elevation -113.3 ft IN VERY STIFF SILTY CLAY	129.6

NCDOT BORE DOUBLE BORINGS.GPJ INC_DOT_GDT 12/13/11