

CONTRACT: ID: B-411

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL UNIT

STRUCTURE SUBSURFACE INVESTIGATION

STATE PROJECT 33466.1.1 I.D. NO. B-4111
F.A. PROJECT BRZ-1135(6)
COUNTY EDGECOMBE
PROJECT DESCRIPTION BRIDGE NO. 19
OVER COKEY SWAMP ON SR 1135
AT -L- STA. 16+21.5

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	33466.1.1 (B-4111)	1	10
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
		P.E.	
		CONST.	

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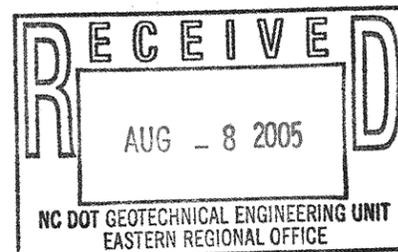
SHEET	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	REPORT
4	TEST SITE PLAN
5	PROFILE
6-7	BORE LOGS
8	SOIL TEST RESULTS
9	SCOUR REPORT
10	SITE PHOTOGRAPH

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WAS 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 UNIT # (919) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA IS 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.

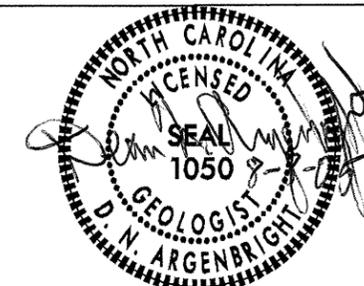


INVESTIGATED BY K. B. MILLER PERSONNEL K.B. QUICK
 CHECKED BY D. N. ARGENBRIGHT J.L. STONE
 SUBMITTED BY D. N. ARGENBRIGHT J.N. JORDAN
 DATE AUGUST, 2005 L.W. DALE
W.N. CHERRY
R.E. SMITH
F.M. WESCOTT

DRAWN BY: K. B. MILLER

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 UNIT

ID	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
B-4111	33466.1.1	2	10

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS																																																																																																																																																																																																																																																																																						
<p>SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED OR WEATHERED EARTH MATERIALS WHICH CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND WHICH YIELDS LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM AND BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLES:</p> <p style="text-align: center;"><i>VERY STIFF, GRAY SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HEAVY PLASTIC, A-7-6</i></p>	<p>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.</p> <p style="text-align: center;">ANGULARITY OF GRAINS</p> <p>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS ARE DESIGNATED BY THE TERMS: <u>ANGULAR</u>, <u>SUBANGULAR</u>, <u>SUBROUNDED</u>, OR <u>ROUNDED</u>.</p>	<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WHEN 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:</p> <p>WEATHERED ROCK (WR)  NON-COASTAL PLAIN MATERIAL THAT YIELDS SPT N VALUES > 100 BLOWS PER FOOT.</p> <p>CRYSTALLINE ROCK (CR)  FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.</p> <p>NON-CRYSTALLINE ROCK (NCR)  FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.</p> <p>COASTAL PLAIN SEDIMENTARY ROCK (CP)  COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.</p>	<p>ALLUVIUM (ALLUV.) - SOILS WHICH 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 WHICH CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. FLOOD PLAIN (F.P.) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (R.Q.D.) - 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 WHICH 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, WHICH HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR B.P.F.) 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 LESS THAN 0.1 FOOT PENETRATION WITH 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (S.R.Q.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY: TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 10 CENTIMETERS DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (T.S.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																																																																																																																																																																																																						
<p style="text-align: center;">SOIL LEGEND AND AASHTO CLASSIFICATION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th rowspan="2">GENERAL CLASS.</th> <th colspan="7">GRANULAR MATERIALS (>35% PASSING #200)</th> <th colspan="7">SILT-CLAY MATERIALS (>85% PASSING #200)</th> <th colspan="3">ORGANIC MATERIALS</th> </tr> <tr> <th>A-1</th> <th>A-3</th> <th colspan="2">A-2</th> <th>A-4</th> <th>A-5</th> <th>A-6</th> <th>A-7</th> <th>A-1, A-2</th> <th>A-4, A-5</th> <th>A-6, A-7</th> <th colspan="3"></th> <th colspan="3"></th> </tr> <tr> <td>GROUP CLASS.</td> <td>A-1-a</td> <td>A-1-b</td> <td>A-2-4</td> <td>A-2-5</td> <td>A-2-6</td> <td>A-2-7</td> <td></td> <td></td> <td>A-7-a</td> <td>A-7-b</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>SYMBOL</td> <td></td> </tr> <tr> <td>% PASSING</td> <td>10</td> </tr> <tr> <td>LIQUID LIMIT PLASTIC INDEX</td> <td>6 MX</td> <td>N.P.</td> <td>40 MX</td> </tr> <tr> <td>GROUP INDEX</td> <td>0</td> </tr> <tr> <td>USUAL TYPES OF MAJOR MATERIALS</td> <td>STONE FRAGS. GRAVEL AND SAND</td> <td>FINE SAND</td> <td colspan="2">SILTY OR CLAYEY GRAVEL AND SAND</td> <td colspan="2">SILTY GRAVEL AND SAND</td> <td colspan="2">SILTY SOILS</td> <td colspan="2">CLAYEY SOILS</td> <td colspan="3">SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER</td> <td colspan="3">HIGHLY ORGANIC SOILS</td> </tr> <tr> <td>GENERAL RATING AS A SUBGRADE</td> <td colspan="6">EXCELLENT TO GOOD</td> <td colspan="3">FAIR TO POOR</td> <td>FAIR TO POOR</td> <td>POOR</td> <td colspan="5">UNSATURABLE</td> </tr> </table> <p style="text-align: center;">P.I. OF A-7-5 ≤ L.L. - 30 ; P.I. OF A-7-6 > L.L. - 30</p>	GENERAL CLASS.	GRANULAR MATERIALS (>35% PASSING #200)							SILT-CLAY MATERIALS (>85% PASSING #200)							ORGANIC MATERIALS			A-1	A-3	A-2		A-4	A-5	A-6	A-7	A-1, A-2	A-4, A-5	A-6, A-7							GROUP CLASS.	A-1-a	A-1-b	A-2-4	A-2-5	A-2-6	A-2-7			A-7-a	A-7-b								SYMBOL																		% PASSING	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	LIQUID LIMIT PLASTIC INDEX	6 MX	N.P.	40 MX	GROUP INDEX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL AND SAND	FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND		SILTY GRAVEL AND SAND		SILTY SOILS		CLAYEY SOILS		SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER			HIGHLY ORGANIC SOILS			GENERAL RATING AS A SUBGRADE	EXCELLENT TO GOOD						FAIR TO POOR			FAIR TO POOR	POOR	UNSATURABLE					<p style="text-align: center;">MINERALOGICAL COMPOSITION</p> <p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.</p> <p style="text-align: center;">COMPRESSIBILITY</p> <p>SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 30 MODERATELY COMPRESSIBLE LIQUID LIMIT 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50</p> <p style="text-align: center;">PERCENTAGE OF MATERIAL</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th></th> <th>GRANULAR SOILS</th> <th>SILT-CLAY SOILS</th> <th>OTHER MATERIAL</th> </tr> <tr> <td>TRACE OF ORGANIC MATTER</td> <td>2 - 3%</td> <td>3 - 5%</td> <td>TRACE</td> </tr> <tr> <td>LITTLE ORGANIC MATTER</td> <td>3 - 5%</td> <td>5 - 12%</td> <td>LITTLE</td> </tr> <tr> <td>MODERATELY ORGANIC</td> <td>5 - 10%</td> <td>12 - 20%</td> <td>SOME</td> </tr> <tr> <td>HIGHLY ORGANIC</td> <td>>10%</td> <td>>20%</td> <td>HIGHLY</td> </tr> </table> <p style="text-align: center;">GROUND WATER</p> <p> WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING.  STATIC WATER LEVEL AFTER 24 HOURS.  PERCHED WATER, SATURATED ZONE OR WATER BEARING STRATA  SPRING OR SEEPAGE</p> <p style="text-align: center;">MISCELLANEOUS SYMBOLS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td></td> <td>ROADWAY EMBANKMENT WITH SOIL DESCRIPTION</td> <td></td> <td>SPT TEST BORING</td> <td></td> <td>SAMPLE DESIGNATIONS</td> </tr> <tr> <td></td> <td>SOIL SYMBOL</td> <td></td> <td>AUGER BORING</td> <td></td> <td>S- BULK SAMPLE</td> </tr> <tr> <td></td> <td>ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS</td> <td></td> <td>CORE BORING</td> <td></td> <td>SS- SPLIT SPOON SAMPLE</td> </tr> <tr> <td></td> <td>INFERRED SOIL BOUNDARIES</td> <td></td> <td>MONITORING WELL</td> <td></td> <td>ST- SHELBY TUBE SAMPLE</td> </tr> <tr> <td></td> <td>INFERRED ROCK LINE</td> <td></td> <td>PIEZOMETER INSTALLATION</td> <td></td> <td>RS- ROCK SAMPLE</td> </tr> <tr> <td></td> <td>ALLUVIAL SOIL BOUNDARY</td> <td></td> <td>SLOPE INDICATOR INSTALLATION</td> <td></td> <td>RT- RECOMPACT TRIAXIAL SAMPLE</td> </tr> <tr> <td></td> <td>DIP/DIP DIRECTION OF ROCK STRUCTURES</td> <td></td> <td>SPT N-VALUE</td> <td></td> <td>CBR - CBR SAMPLE</td> </tr> <tr> <td></td> <td>SOUNDING ROD</td> <td></td> <td>SPT REFUSAL</td> <td></td> <td></td> </tr> </table> <p style="text-align: center;">ABBREVIATIONS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>AR - AUGER REFUSAL</td> <td>PMT - PRESSUREMETER TEST</td> </tr> <tr> <td>BT - BORING TERMINATED</td> <td>SD. - SAND, SANDY</td> </tr> <tr> <td>CL. - CLAY</td> <td>SL. - SILTY, SILTY</td> </tr> <tr> <td>CPT - CONE PENETRATION TEST</td> <td>SLI. - SLIGHTLY</td> </tr> <tr> <td>CSE. - COARSE</td> <td>TCR - TRICONE REFUSAL</td> </tr> <tr> <td>DMT - DILATOMETER TEST</td> <td>U - UNIT WEIGHT</td> </tr> <tr> <td>DPT - DYNAMIC PENETRATION TEST</td> <td>U_d - DRY UNIT WEIGHT</td> </tr> <tr> <td>e - VOID RATIO</td> <td>WOH - WEIGHT OF HAMMER</td> </tr> <tr> <td>F. - FINE</td> <td>WOR - WEIGHT OF ROD</td> </tr> <tr> <td>FOSS. - FOSSILIFEROUS</td> <td>W - MOISTURE CONTENT</td> </tr> <tr> <td>FRAC. - FRACTURED</td> <td>V. - VERY</td> </tr> <tr> <td>FRAGS. - FRAGMENTS</td> <td>VST - VANE SHEAR TEST</td> </tr> <tr> <td>MED. - MEDIUM</td> <td></td> </tr> </table>		GRANULAR SOILS	SILT-CLAY SOILS	OTHER MATERIAL	TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE	LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE	MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME	HIGHLY ORGANIC	>10%	>20%	HIGHLY		ROADWAY EMBANKMENT WITH SOIL DESCRIPTION		SPT TEST BORING		SAMPLE DESIGNATIONS		SOIL SYMBOL		AUGER BORING		S- BULK SAMPLE		ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS		CORE BORING		SS- SPLIT SPOON SAMPLE		INFERRED SOIL BOUNDARIES		MONITORING WELL		ST- SHELBY TUBE SAMPLE		INFERRED ROCK LINE		PIEZOMETER INSTALLATION		RS- ROCK SAMPLE		ALLUVIAL SOIL BOUNDARY		SLOPE INDICATOR INSTALLATION		RT- RECOMPACT TRIAXIAL SAMPLE		DIP/DIP DIRECTION OF ROCK STRUCTURES		SPT N-VALUE		CBR - CBR SAMPLE		SOUNDING ROD		SPT REFUSAL			AR - AUGER REFUSAL	PMT - PRESSUREMETER TEST	BT - BORING TERMINATED	SD. - SAND, SANDY	CL. - CLAY	SL. - SILTY, SILTY	CPT - CONE PENETRATION TEST	SLI. - SLIGHTLY	CSE. - COARSE	TCR - TRICONE REFUSAL	DMT - DILATOMETER TEST	U - UNIT WEIGHT	DPT - DYNAMIC PENETRATION TEST	U _d - DRY UNIT WEIGHT	e - VOID RATIO	WOH - WEIGHT OF HAMMER	F. - FINE	WOR - WEIGHT OF ROD	FOSS. - FOSSILIFEROUS	W - MOISTURE CONTENT	FRAC. - FRACTURED	V. - VERY	FRAGS. - FRAGMENTS	VST - VANE SHEAR TEST	MED. - MEDIUM		<p style="text-align: center;">ROCK HARDNESS</p> <p>VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK. HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN. MODERATELY HARD CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS. MEDIUM HARD CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK. SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE. VERY SOFT CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.</p> <p style="text-align: center;">FRACTURE SPACING</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>TERM</th> <th>SPACING</th> </tr> <tr> <td>VERY WIDE</td> <td>MORE THAN 10 FEET</td> </tr> <tr> <td>WIDE</td> <td>3 TO 10 FEET</td> </tr> <tr> <td>MODERATELY CLOSE</td> <td>1 TO 3 FEET</td> </tr> <tr> <td>CLOSE</td> <td>0.16 TO 1 FEET</td> </tr> <tr> <td>VERY CLOSE</td> <td>LESS THAN 0.16 FEET</td> </tr> </table> <p style="text-align: center;">BEDDING</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>TERM</th> <th>THICKNESS</th> </tr> <tr> <td>VERY THICKLY BEDDED</td> <td>> 4 FEET</td> </tr> <tr> <td>THICKLY BEDDED</td> <td>1.5 - 4 FEET</td> </tr> <tr> <td>THINLY BEDDED</td> <td>0.16 - 1.5 FEET</td> </tr> <tr> <td>VERY THINLY BEDDED</td> <td>0.03 - 0.16 FEET</td> </tr> <tr> <td>THICKLY LAMINATED</td> <td>0.008 - 0.03 FEET</td> </tr> <tr> <td>THINLY LAMINATED</td> <td>< 0.008 FEET</td> </tr> </table> <p style="text-align: center;">INDURATION</p> <p>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</p> <p>FRIBLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p>	TERM	SPACING	VERY WIDE	MORE THAN 10 FEET	WIDE	3 TO 10 FEET	MODERATELY CLOSE	1 TO 3 FEET	CLOSE	0.16 TO 1 FEET	VERY CLOSE	LESS THAN 0.16 FEET	TERM	THICKNESS	VERY THICKLY BEDDED	> 4 FEET	THICKLY BEDDED	1.5 - 4 FEET	THINLY BEDDED	0.16 - 1.5 FEET	VERY THINLY BEDDED	0.03 - 0.16 FEET	THICKLY LAMINATED	0.008 - 0.03 FEET	THINLY LAMINATED	< 0.008 FEET														
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HIGH PLASTICITY	16-25	MEDIUM																																																																																																																																																																																																																																																																																							
	26 OR MORE	HIGH																																																																																																																																																																																																																																																																																							
<p style="text-align: center;">EQUIPMENT USED ON SUBJECT PROJECT</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td> <p>DRILL UNITS:</p> <input type="checkbox"/> MOBILE B- <input type="checkbox"/> BK-51 <input checked="" type="checkbox"/> CME-45B <input type="checkbox"/> CME-550 <input type="checkbox"/> PORTABLE HOIST <input type="checkbox"/> OTHER _____ <input type="checkbox"/> OTHER _____ </td> <td> <p>ADVANCING TOOLS:</p> <input type="checkbox"/> CLAY BITS <input type="checkbox"/> 6" CONTINUOUS FLIGHT AUGER <input type="checkbox"/> 8" HOLLOW AUGERS <input type="checkbox"/> HARD FACED FINGER BITS <input type="checkbox"/> TUNG.-CARBIDE INSERTS <input type="checkbox"/> CASING <input type="checkbox"/> W/ ADVANCER <input checked="" type="checkbox"/> TRICONE <input checked="" type="checkbox"/> STEEL TEETH <input type="checkbox"/> TRICONE _____ TUNG.-CARB. <input type="checkbox"/> OTHER _____ </td> <td> <p>HAMMER TYPE:</p> <input checked="" type="checkbox"/> AUTOMATIC <input type="checkbox"/> MANUAL <p>CORE SIZE:</p> <input type="checkbox"/> -B _____ <input type="checkbox"/> -N _____ <input type="checkbox"/> -H _____ <p>HAND TOOLS:</p> <input type="checkbox"/> POST HOLE DIGGER <input type="checkbox"/> HAND AUGER <input type="checkbox"/> SOUNDING ROD <input type="checkbox"/> VANE SHEAR TEST <input type="checkbox"/> OTHER _____ </td> </tr> </table>	<p>DRILL UNITS:</p> <input type="checkbox"/> MOBILE B- <input type="checkbox"/> BK-51 <input checked="" type="checkbox"/> CME-45B <input type="checkbox"/> CME-550 <input type="checkbox"/> PORTABLE HOIST <input type="checkbox"/> OTHER _____ <input type="checkbox"/> OTHER _____	<p>ADVANCING TOOLS:</p> <input type="checkbox"/> CLAY BITS <input type="checkbox"/> 6" CONTINUOUS FLIGHT AUGER <input type="checkbox"/> 8" HOLLOW AUGERS <input type="checkbox"/> HARD FACED FINGER BITS <input type="checkbox"/> TUNG.-CARBIDE INSERTS <input type="checkbox"/> CASING <input type="checkbox"/> W/ ADVANCER <input checked="" type="checkbox"/> TRICONE <input checked="" type="checkbox"/> STEEL TEETH <input type="checkbox"/> TRICONE _____ TUNG.-CARB. <input type="checkbox"/> OTHER _____	<p>HAMMER TYPE:</p> <input checked="" type="checkbox"/> AUTOMATIC <input type="checkbox"/> MANUAL <p>CORE SIZE:</p> <input type="checkbox"/> -B _____ <input type="checkbox"/> -N _____ <input type="checkbox"/> -H _____ <p>HAND TOOLS:</p> <input type="checkbox"/> POST HOLE DIGGER <input type="checkbox"/> HAND AUGER <input type="checkbox"/> SOUNDING ROD <input type="checkbox"/> VANE SHEAR TEST <input type="checkbox"/> OTHER _____	<p style="text-align: center;">NOTES:</p> <p>BENCH MARK: B.M. NO.2 RAILROAD SPIKE IN BASE OF 24' GUM 30.43' RIGHT OF -L- STA. 16+88.05 ELEVATION: 82.58'</p>																																																																																																																																																																																																																																																																																					
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

August 8, 2005

STATE PROJECT: 33466.1.1 B-4111
F.A. PROJECT: BRZ-1135(6)
COUNTY: Edgecombe
DESCRIPTION: Bridge No. 19 Over Cokey Swamp on SR 1135
SUBJECT: Geotechnical Report – Structure Inventory

Site Description

The proposed structure is 135 feet long and comprised of 3 spans. The project is located in Edgecombe County approximately four miles southwest of the city of Rocky Mount. The proposed bridge is on a 90° skew and will replace the existing bridge. An offsite detour will be used to re-direct traffic during construction.

Borings were advanced with bentonite drilling fluid using a CME-45B drill machine. Standard Penetration Tests were performed and representative soil samples were collected for visual classification in the field and for laboratory analysis by the Materials and Tests Unit.

Physiography and Geology

The project is located in flat to gently sloping terrain within the Inner Coastal Plain Physiographic Province. The project comprises an area where Coastal Plain sediments of the Pliocene age Yorktown Formation overlie Residual soils and weathered Pennsylvanian to Permian age granitic rocks of the Eastern Slate Belt.

Soil Properties

Soils encountered at the project site include roadway embankment soils, alluvial sediments, coastal plain deposits, residual soils and weathered rock.

Roadway Embankment soils comprised of 2 to 4 feet of loose sand (A-2-4) overlying 2 to 4 feet of soft to medium stiff sandy clay and sandy silt (A-6, A-4) were encountered in borings EB1-A and EB2-A.

Alluvial deposits were noted in all borings. Alluvial material consists of 4 to 7 feet of soft to medium stiff sandy clay (A-6) at EB1-A, B1-A and EB2-A overlying 2 to 5 feet of very loose to medium dense coarse sand (A-1-b).

Coastal Plain deposits at the site belong to the Pliocene age Yorktown Formation. The Yorktown Formation is primarily composed of 20± feet of very loose to medium dense sand and clayey sand (A-2-4, A-2-6). A 5± foot thick layer of soft silty clay (A-7-5) overlies the sand in boring B2-A.

Residual clayey sand and sandy clay soils (A-2-7, A-6) were encountered below the Yorktown Formation at an elevation of 45 to 50 feet and range in thickness from 7 to 16 feet. Weathered Granitic Rock and Crystalline Rock underlies the Residual material at an elevation between 34 and 38 feet.

Groundwater

Groundwater elevations were measured at elevation 80± feet at the time of the investigation. Surface water elevation in Cokey Swamp at the time of the investigation was 79 feet.

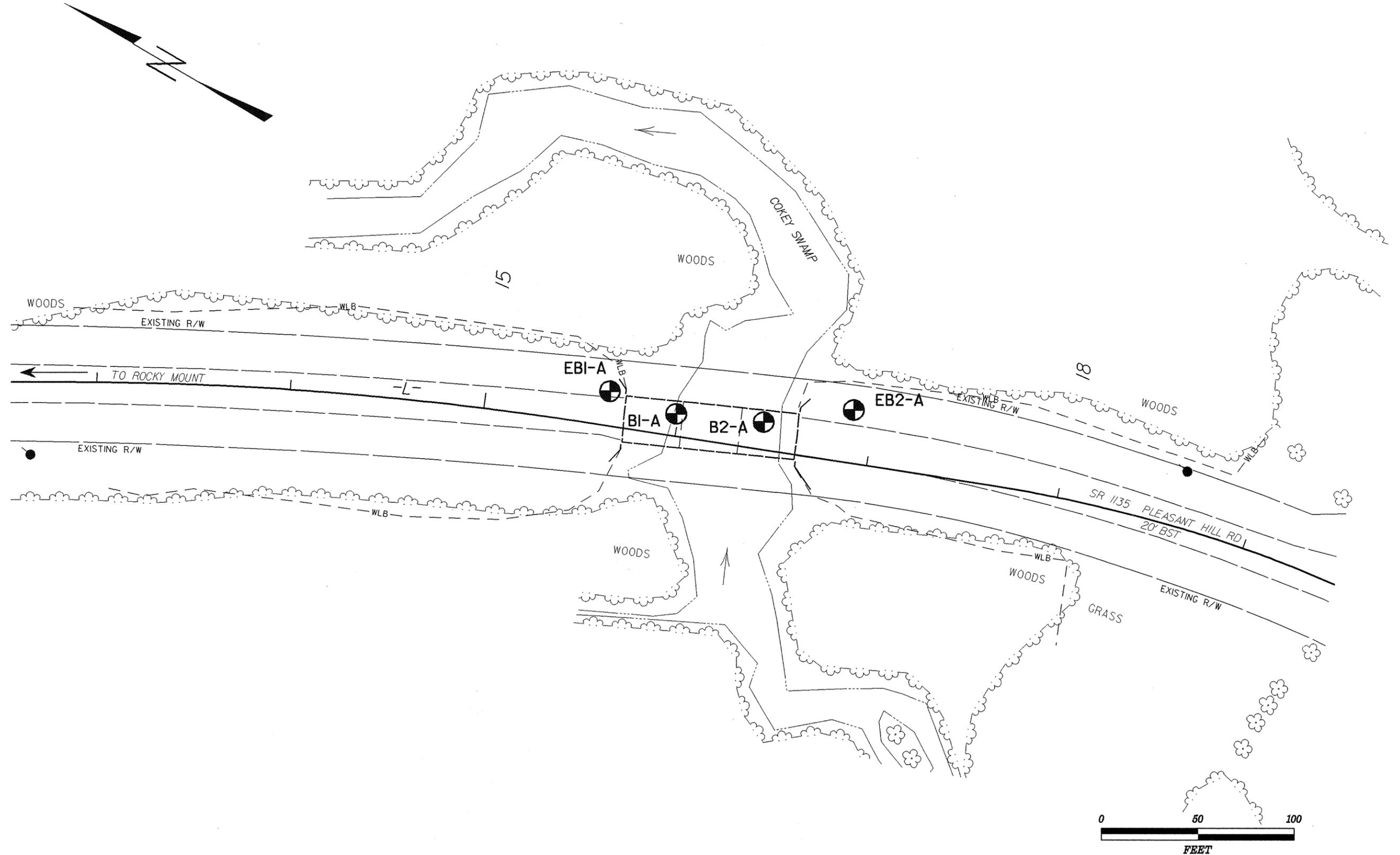
Notice

This Geotechnical foundation report is based on the bent locations provided in the “Bridge Survey and Hydraulic Design Report”, dated May 4, 2005. If significant changes are made in the design, or location of the proposed structure, the subsurface information should be reviewed and modified as necessary.

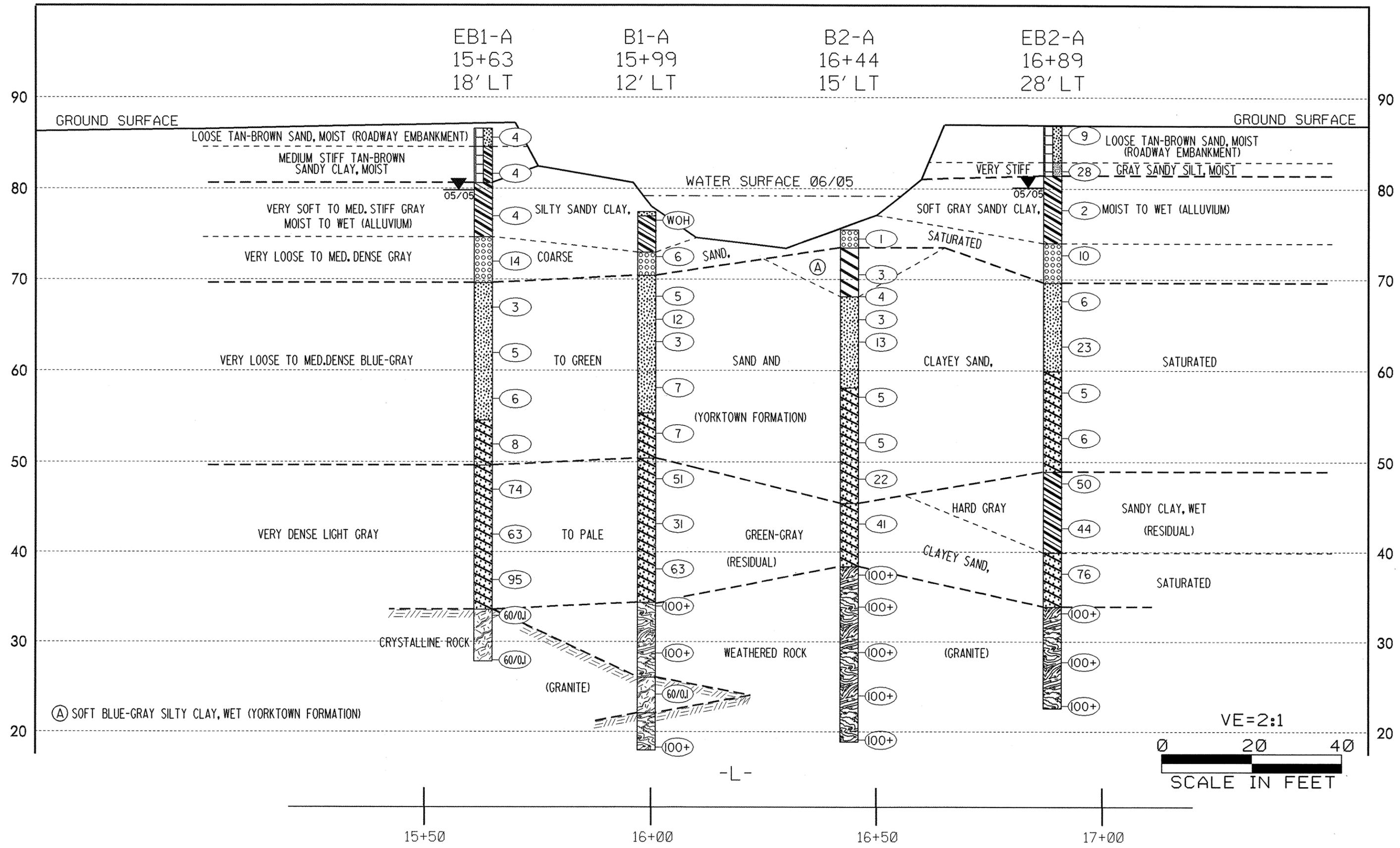
Prepared by:

Kevin B. Miller, GIT
Engineering Geologist II

TEST SITE PLAN



PROFILE THROUGH BORINGS PROJECTED ALONG -L-



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

PROJECT NO. 33466.I.I		ID. B-4III		COUNTY EDGECOMBE		GEOLOGIST F.M. WESCOTT									
SITE DESCRIPTION BRIDGE NO. 19 OVER COKEY SWAMP ON SR 1135							GROUND WATER								
BORING NO. EBI-A		BORING LOCATION 15+63		OFFSET 18' LT		ALIGNMENT -L-									
COLLAR ELEVATION 86.6'		NORTHING 781277		EASTING 2367924		0 HR. N/A									
TOTAL DEPTH 58.8'		DRILL MACHINE CME-45B		DRILL METHOD ROTARY W/MUD		HAMMER TYPE AUTOMATIC									
START DATE 7/19/02		COMPLETION DATE 7/19/02		SURFACE WATER DEPTH N/A		DEPTH TO ROCK N/A									
ELEV. (FT.)	DEPTH (FT.)	BLOW COUNT			PEN. (FT.)	BLOWS PER FOOT					SAMPLE NUMBER	LOG	SOIL AND ROCK DESCRIPTION		
		0.5'	0.5'	0.5'		0	25	50	75	100					
86.6	0.0	1	1	3	1.0	X 4									
85.0	4.0	3	2	2	1.0	X 4						SS-1	M	TAN-BROWN SAND, MOI. (ROADWAY EMBANKMENT)	
80.0	8.7	1	2	2	1.0	X 4						SS-2	W	TAN-BROWN SANDY CLAY, MOI.	
75.0	13.7	6	7	7	1.0	X 14						SS-3	S	GRAY SILTY SANDY CLAY, MOI. TO WET (ALLUVIUM)	
70.0	18.7	2	1	2	1.0	X 3						SS-4	S	GRAY COARSE SAND, SAT.	
65.0	23.7	2	2	3	1.0	X 5						SS-5	S	GRAY SAND AND CLAYEY SAND, WITH PHOSPHATE, SAT. (YORKTOWN FORMATION)	
60.0	28.7	2	3	3	1.0	X 6						SS-6	S	GRAY BROWN COARSE SAND, SAT. (RESIDUAL)	
55.0	33.7	4	4	4	1.0	X 8								CRYSTALLINE ROCK (GRANITE)	
50.0	38.7	20	30	44	1.0					74					
45.0	43.7	12	29	34	1.0					63					
40.0	48.7	20	30	65	1.0					95					
35.0	53.7	60			0.1					60/0.1					
30.0	58.7	60			0.1					60/0.1					
25.0						BORING TERMINATED AT ELEVATION 27.8 FEET IN CRYSTALLINE ROCK (GRANITE)									

PROJECT NO. 33466.I.I		ID. B-4III		COUNTY EDGECOMBE		GEOLOGIST K.B. QUICK								
SITE DESCRIPTION BRIDGE NO. 19 OVER COKEY SWAMP ON SR 1135							GROUND WATER							
BORING NO. BI-A		BORING LOCATION 15+99		OFFSET 12' LT		ALIGNMENT -L-								
COLLAR ELEVATION 77.4'		NORTHING 781240		EASTING 2367931		0 HR. N/A								
TOTAL DEPTH 59.4'		DRILL MACHINE CME-45B		DRILL METHOD ROTARY W/MUD		HAMMER TYPE AUTOMATIC								
START DATE 6/14/05		COMPLETION DATE 6/14/05		SURFACE WATER DEPTH 1.8'		DEPTH TO ROCK N/A								
ELEV. (FT.)	DEPTH (FT.)	BLOW COUNT			PEN. (FT.)	BLOWS PER FOOT					SAMPLE NUMBER	LOG	SOIL AND ROCK DESCRIPTION	
		0.5'	0.5'	0.5'		0	25	50	75	100				
77.4	0.0	WOH	WOH	WOH	1.0	X 0								
75.0	4.0	1	2	4	1.0	X 6						SS-7	W	GRAY SILTY SAND, SAT. (ALLUVIUM)
70.0	8.3	1	2	3	1.0	X 5						SS-8	S	GRAY SANDY CLAY, WET
65.0	10.8	1	3	9	1.0	X 12								GRAY COARSE SAND, SAT.
60.0	13.3	WOH	1	2	1.0	X 3								BLUE-GRAY SAND AND CLAYEY SAND, SAT. (YORKTOWN FORMATION)
55.0	18.3	6	3	4	1.0	X 7								
50.0	23.3	3	3	4	1.0	X 7						SS-9	34%	
45.0	28.3	10	19	32	1.0					51		SS-10	S	
40.0	33.3	11	14	17	1.0					31		SS-11	S	LIGHT GRAY TO GREEN SAND, SAT. (RESIDUAL)
35.0	38.3	16	24	39	1.0					63				
30.0	43.3	100			0.3					100+				WEATHERED ROCK (GRANITE)
25.0	48.3	33	67		0.8					100+				CRYSTALLINE ROCK (GRANITE)
20.0	53.3	60			0.1					60/0.1				WEATHERED ROCK (GRANITE)
15.0	58.3	23	72	28	0.6					100+				
10.0						BORING TERMINATED AT ELEVATION 18.0 FEET IN WEATHERED ROCK (GRANITE)								

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

PROJECT NO. 33466.1.1		ID. B-4111		COUNTY EDGECOMBE		GEOLOGIST K.B. QUICK									
SITE DESCRIPTION BRIDGE NO. 19 OVER COKEY SWAMP ON SR 1135							GROUND WATER								
BORING NO. B2-A		BORING LOCATION 16+44		OFFSET 15' LT		ALIGNMENT -L-									
COLLAR ELEVATION 75.4'		NORTHING 781201		EASTING 2367954		0 HR. N/A									
TOTAL DEPTH 56.5'		DRILL MACHINE CME-45B		DRILL METHOD ROTARY W/MUD		HAMMER TYPE AUTOMATIC									
START DATE 6/13/05		COMPLETION DATE 6/13/05		SURFACE WATER DEPTH 3.8'		DEPTH TO ROCK N/A									
ELEV. (FT.)	DEPTH (FT.)	BLOW COUNT			PEN. (FT.)	BLOWS PER FOOT					SAMPLE NUMBER	MOI.	LOG	SOIL AND ROCK DESCRIPTION	
		0.5'	0.5'	0.5'		0	25	50	75	100					
75.4	0.0	WOR	WOR	1	1.0	X1									
75.0	0.0														GRAY COARSE SAND, SAT. (ALLUVIUM)
	3.9	2	1	2	1.0	X3									BLUE-GRAY SILTY CLAY, WET (YORKTOWN FORMATION)
70.0	6.3	2	1	3	1.0	X4									
	8.8	2	1	2	1.0	X3									
65.0	11.3	3	10	3	1.0	X13									
	16.3	3	3	2	1.0	X5									BLUE-GRAY SAND AND CLAYEY SAND, SAT.
55.0	21.3	2	2	3	1.0	X5									
	26.3	2	5	17	1.0	X22									
45.0	31.3	12	18	23	1.0	X41									TAN TO LIGHT GREEN SAND, SAT. (RESIDUAL)
40.0	36.3	23	43	57	0.9										
35.0	41.3	100			0.4										
30.0	46.3	92	8		0.6										WEATHERED ROCK (GRANITE)
25.0	51.3	100			0.4										
20.0	56.3	100			0.2										
BORING TERMINATED AT ELEVATION 18.9 FEET IN WEATHERED ROCK (GRANITE)															

PROJECT NO. 33466.1.1		ID. B-4111		COUNTY EDGECOMBE		GEOLOGIST J.L. STONE									
SITE DESCRIPTION BRIDGE NO. 19 OVER COKEY SWAMP ON SR 1135							GROUND WATER								
BORING NO. EB2-A		BORING LOCATION 16+89		OFFSET 28' LT		ALIGNMENT -L-									
COLLAR ELEVATION 86.9'		NORTHING 781173		EASTING 2367996		0 HR. N/A									
TOTAL DEPTH 64.4'		DRILL MACHINE CME-45B		DRILL METHOD ROTARY W/MUD		HAMMER TYPE AUTOMATIC									
START DATE 5/31/05		COMPLETION DATE 5/31/05		SURFACE WATER DEPTH N/A		DEPTH TO ROCK N/A									
ELEV. (FT.)	DEPTH (FT.)	BLOW COUNT			PEN. (FT.)	BLOWS PER FOOT					SAMPLE NUMBER	MOI.	LOG	SOIL AND ROCK DESCRIPTION	
		0.5'	0.5'	0.5'		0	25	50	75	100					
86.9	0.0	3	5	4	1.0	X9									
85.0	4.0	7	14	14	1.0	X28									TAN-BROWN SAND, MOI. (ROADWAY EMBANKMENT)
	8.3	1	1	1	1.0	X2									GRAY SANDY SILT, MOI.
80.0	8.3	1	1	1	1.0	X2									GRAY SANDY CLAY, MOI. TO WET (ALLUVIUM)
	13.3	3	2	8	1.0	X10									
75.0	13.3	3	2	8	1.0	X10									GRAY COARSE SAND, SAT.
	18.3	1	3	3	1.0	X6									
70.0	18.3	1	3	3	1.0	X6									
65.0	23.3	7	18	5	1.0	X23									
	28.3	2	3	2	1.0	X5									GREEN SAND AND CLAYEY SAND WITH SHELLS, SAT. (YORKTOWN FORMATION)
60.0	28.3	2	3	2	1.0	X5									
55.0	33.3	1	2	4	1.0	X6									
	38.3	8	21	29	1.0	X50									
50.0	38.3	8	21	29	1.0	X50									
45.0	43.3	18	20	24	1.0	X44									GRAY SANDY CLAY, WET (RESIDUAL)
	48.3	38	44	32	1.0	X76									
40.0	48.3	38	44	32	1.0	X76									LIGHT GREEN TO GRAY SAND, SAT.
	53.3	34	66		0.9										
35.0	53.3	34	66		0.9										
	58.3	40	50	50	0.8										
30.0	58.3	40	50	50	0.8										
	63.3	34	59	41	0.6										
25.0	63.3	34	59	41	0.6										
BORING TERMINATED AT ELEVATION 22.5 FEET IN WEATHERED ROCK (GRANITE)															

E1-A

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-1	18 LT	15+63	4.00-5.50	A-6(4)	30	13	18.3	38.5	18.7	24.4	96	84	53	-	-
SS-2	18 LT	15+63	8.70-10.20	A-6(13)	34	23	6.5	33.8	21.0	38.7	100	97	68	-	-
SS-3	18 LT	15+63	13.70-15.20	A-1-b(0)	18	NP	74.1	17.0	2.7	6.1	84	33	9	-	-
SS-4	18 LT	15+63	18.70-20.20	A-2-4(0)	23	NP	15.9	64.5	4.4	15.3	99	96	21	-	-
SS-5	18 LT	15+63	33.70-35.20	A-2-6(1)	36	17	22.1	45.7	6.7	25.5	72	60	24	-	-
SS-6	18 LT	15+63	38.70-40.20	A-2-7(3)	46	29	54.4	18.0	13.3	14.3	97	56	29	-	-

B1-A

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-7	12 LT	15+99	1.00-1.50	A-6(10)	37	23	13.8	32.4	11.0	42.8	100	95	59	-	-
SS-8	12 LT	15+99	8.30-9.80	A-2-4(0)	26	6	26.0	48.1	8.7	17.3	100	95	27	-	-
SS-9	12 LT	15+99	23.30-24.80	A-2-6(1)	33	18	22.3	43.1	9.2	25.5	78	64	30	33.8	-
SS-10	12 LT	15+99	28.30-29.80	A-2-6(2)	37	22	44.5	31.7	15.7	8.1	97	68	29	-	-
SS-11	12 LT	15+99	33.30-34.80	A-2-7(2)	44	21	54.4	15.7	17.7	12.2	95	51	31	-	-
SS-12	12 LT	15+99	58.30-59.40	A-6(11)	39	24	25.7	20.2	29.7	24.4	99	81	58	-	-

B2-A

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-13	15 LT	16+44	1.00-1.50	A-1-b(0)	19	NP	89.1	7.7	1.1	2.0	96	31	3	-	-
SS-14	15 LT	16+44	3.90-5.40	A-7-5(43)	73	40	6.5	4.3	42.4	46.8	100	96	91	66.3	-
SS-15	15 LT	16+44	8.80-10.30	A-2-4(0)	23	2	19.9	60.8	4.1	15.3	100	97	20	-	-
SS-16	15 LT	16+44	21.30-22.80	A-2-6(0)	34	16	27.8	44.5	5.3	22.4	77	60	22	-	-
SS-17	15 LT	16+44	31.30-32.80	A-2-7(2)	41	21	55.0	12.3	16.4	16.3	90	47	32	-	-
SS-18	15 LT	16+44	51.30-51.70	A-2-4(0)	35	7	59.5	18.5	11.8	10.2	74	37	19	-	-

EB2-A

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-19	18 LT	16+89	4.00-5.50	A-4(0)	18	NP	27.7	45.2	12.8	14.3	98	81	37	-	-
SS-20	18 LT	16+89	8.30-9.80	A-6(7)	34	19	20.0	31.2	10.2	38.7	100	90	54	-	-
SS-21	18 LT	16+89	13.30-14.80	A-1-b(0)	21	NP	78.2	15.7	2.0	4.1	97	37	8	-	-
SS-22	18 LT	16+89	18.30-19.80	A-2-4(0)	29	NP	28.9	50.5	12.4	8.1	100	96	21	-	-
SS-23	18 LT	16+89	28.30-29.80	A-2-6(0)	31	11	27.9	45.4	6.3	20.4	80	64	22	-	-
SS-24	18 LT	16+89	38.30-39.80	A-6(3)	37	20	32.0	33.2	18.5	16.3	98	80	40	-	-
SS-25	18 LT	16+89	48.30-49.80	A-2-7(1)	41	19	49.8	18.9	19.0	12.2	81	49	29	-	-

PROJECT: 33466.1.1 ID: B-4111 COUNTY: EDGEcombe

DESCRIPTION(1): Bridge NO. 19 over Cokey Swamp on SR 1135

INFORMATION ON EXISTING BRIDGE

Information obtained from: field inspection
 microfilm (Reel: _____ Pos: _____)
 other: Bridge Survey Report

BR. NO.: 19 BR. LENGTH: 91' NO. BENTS: 4 NO. BENTS IN: CHANNEL: 2 FLOODPLAIN: 2

FOUNDATION TYPE: Timber Piles

EVIDENCE OF SCOUR(2):

ABUTMENTS OR END BENT SLOPES: Some undermining at End Bent 2

INTERIOR BENTS: None noted.

CHANNEL BED: Not visible.

CHANNEL BANKS: None noted.

EXISTING SCOUR PROTECTION:

TYPE(3): Timber abutment and wing walls

EXTENT(4): From outside edge of bridge approximately 15' to toe of fill

EFFECTIVENESS(5): Appears satisfactory

OBSTRUCTIONS(6) (DAMS,DEBRIS,ETC.): Some fallen trees approximately 40' upstream

DESIGN INFORMATION

CHANNEL BED MATERIAL(7): Very loose gray coarse sand (SS-13)

CHANNEL BANK MATERIAL(8): Soft gray sandy clay (SS-2, SS-7, SS-20)

CHANNEL BANK COVER(9): Grass and trees

FLOOD PLAIN WIDTH(10): Approximately 1,200'

FLOOD PLAIN COVER(11): Trees and shrubs

DESIGN INFORMATION CONT.

STREAM IS: _____ DEGRADING _____ AGGRADING X EQUILIBRIUM (12)

OTHER OBSERVATIONS AND COMMENTS: _____

CHANNEL MIGRATION TENDENCY (13): Moderate tendency towards End Bent 1

GEOTECHNICALLY ADJUSTED SCOUR ELEVATIONS(14):

The Geotechnical Engineering Unit agrees with the scour elevation of 62' as calculated by the Hydraulics Unit.

REPORTED BY: _____


 Kevin B. Miller

DATE: 3 August 2005

INSTRUCTIONS

- (1) GIVE THE DESCRIPTION OF THE SPECIFIC SITE, INCLUDING ROUTE NUMBER AND BODY OF WATER CROSSED.
- (2) NOTE ANY EVIDENCE OF SCOUR AT THE EXISTING END BENTS OR ABUTMENTS (UNDERMINING, SLOUGHING, SCOUR LOCATIONS, DEGRADATIONS, ETC.)
- (3) NOTE ANY EXISTING SCOUR PROTECTION (RIP RAP, ETC.)
- (4) DESCRIBE THE EXTENT OF ANY EXISTING SCOUR PROTECTION.
- (5) DESCRIBE WHETHER OR NOT THE SCOUR PROTECTION APPEARS TO BE WORKING.
- (6) NOTE ANY DAMS, FALLEN TREES, DEBRIS AT BENTS, ETC.
- (7) DESCRIBE THE CHANNEL BED MATERIAL BASED ON OBSERVATION AND/OR SAMPLES.
- (8) DESCRIBE THE CHANNEL BANK MATERIAL BASED ON OBSERVATION AND/OR SAMPLES.
- (9) DESCRIBE THE BANK COVERING (GRASS, TREES, RIP RAP, NONE, ETC.)
- (10) GIVE THE APPROXIMATE FLOOD PLAIN WIDTH (ESTIMATE).
- (11) DESCRIBE THE FLOOD PLAIN COVERING (GRASS, TREES, CROPS, ETC.)
- (12) CHECK THE APPROPRIATE SPACE AS TO WHETHER THE STREAM IS DEGRADING OR AGGRADING.
- (13) DESCRIBE THE POTENTIAL OF THE BODY OF WATER TO MIGRATE Laterally DURING THE LIFE OF THE BRIDGE (APPROXIMATELY 100 YEARS).
- (14) GIVE THE GEOTECHNICALLY ADJUSTED SCOUR ELEVATION EXPECTED OVER THE LIFE OF THE BRIDGE (APPROXIMATELY 100 YEARS). THIS CAN BE GIVEN AS AN ELEVATION RANGE ACROSS THE SITE, OR ON A BENT BY BENT BASIS WHERE VARIATIONS EXIST. DISCUSS THE RELATIONSHIP BETWEEN THE HYDRAULICS THEORETICAL SCOUR AND THE GEOTECHNICALLY ADJUSTED SCOUR ELEVATION. IF THE GEOTECHNICALLY ADJUSTED SCOUR ELEVATION IS DEPENDENT ON SCOUR COUNTER MEASURES, EXPLAIN. (RIPRAP ARMORING ON SLOPES, ETC.) THE GEOTECHNICALLY ADJUSTED SCOUR ELEVATION IS BASED ON THE ERODABILITY OF MATERIALS WITH CONSIDERATION FOR JOINTING, FOLIATION, BEDDING ORIENTATION AND FREQUENCY, CORE RECOVERY PERCENTAGE, PERCENTAGE RQD, DIFFERENTIAL WEATHERING, SHEAR STRENGTH, OBSERVATIONS AT EXISTING STRUCTURES, OTHER TESTS DEEMED APPROPRIATE, AND OVERALL GEOLOGIC CONDITIONS AT THE SITE.

SITE PHOTO

BRIDGE NO. 19 ON SR 1135 OVER COKEY SWAMP



LOOKING NORTHEAST TOWARD END BENT 1