

NOTE: SEE SHEET 2A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4517	1	6
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33741.1.1	BRSTP-1103(15)	PE	
33741.2.1	BRSTP-1103(15)	R/W & UTIL	
33741.3.1	BRSTP-1103(15)	CONST.	

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LINE	STATION	PLAN	PROFILE	XSECT
-L-	11+95.00 to 20+76.77	4	5	
SAMPLES		6		

ROADWAY
SUBSURFACE INVESTIGATION

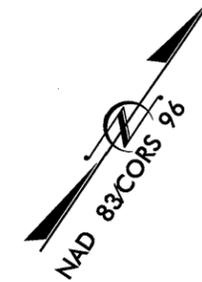
PROJ. REFERENCE NO. 33741.1.1 (B-4517) F.A. PROJ. BRSTP 1103(15)
COUNTY GASTON
PROJECT DESCRIPTION BRIDGE NO. 49 OVER CROWDERS CREEK
ON SR 1103

INVENTORY

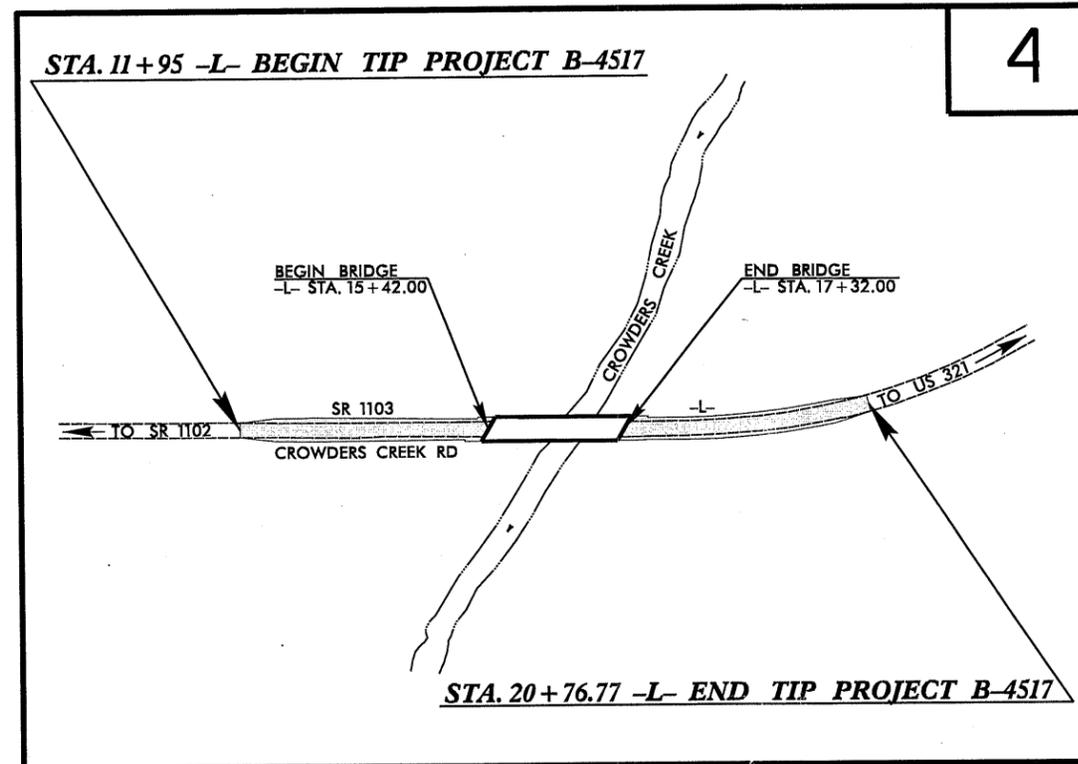
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THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 250-4088. 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.



CONTRACT: C202378 ID: B-4517



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SUBMITTED BY C.B. LITTLE
DATE SEPTEMBER 2008



DRAWN BY: J.K. McCLURE

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.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

PROJECT REFERENCE NO.
33741.1(B-4517) SHEET NO.
2

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 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: VERY STIFF, SANDY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGH PLASTICITY A-7-6		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.		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 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 DISLOADED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (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		ROCK HARDNESS					
GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS		MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.		FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT (V SLI.) ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE. SLIGHT (SLI.) ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS. MODERATE (MOD.) SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK. MODERATELY SEVERE (MOD. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES 'CLUNK' SOUND WHEN STRUCK. SEVERE (SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. VERY SEVERE (V SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.		SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50		WEATHERED ROCK (WR) CRYSTALLINE ROCK (CR) NON-CRYSTALLINE ROCK (NCR) COASTAL PLAIN SEDIMENTARY ROCK (CP)		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 PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK. SOFT CAN BE GROOVED 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.	
GROUP CLASS. A-1, A-2, A-3, A-4, A-5, A-6, A-7		ORGANIC MATERIAL GRANULAR SOILS SILT-CLAY SOILS OTHER MATERIAL		TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10% LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC >10% >20% HIGHLY 35% AND ABOVE		VERY HARD HARD MODERATELY HARD MEDIUM HARD SOFT VERY SOFT					
SYMBOL		PERCENTAGE OF MATERIAL		WEATHERING		ROCK HARDNESS					
% PASSING		GROUND WATER		WEATHERING		ROCK HARDNESS					
LIQUID LIMIT PLASTIC INDEX		ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION		WEATHERING		ROCK HARDNESS					
GROUP INDEX		ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT		WEATHERING		ROCK HARDNESS					
USUAL TYPES OF MAJOR MATERIALS		INFERRED SOIL BOUNDARY		WEATHERING		ROCK HARDNESS					
RATING AS A SUBGRADE		INFERRED ROCK LINE		WEATHERING		ROCK HARDNESS					
PI OF A-7-5 SUBGROUP IS <= LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30		ALLUVIAL SOIL BOUNDARY		WEATHERING		ROCK HARDNESS					
CONSISTENCY OR DENSENESS		DIP & DIP DIRECTION OF ROCK STRUCTURES		WEATHERING		ROCK HARDNESS					
PRIMARY SOIL TYPE		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
COMPACTNESS OR CONSISTENCY		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
U.S. STD. SIEVE SIZE OPENING (MM)		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
BOULDER (BLDR.) COBBLE (COB.) GRAVEL (GR.) COARSE SAND (CSE. SD.) FINE SAND (F. SD.) SILT (SL.) CLAY (CL.)		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
GRAIN SIZE		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
SOIL MOISTURE - CORRELATION OF TERMS		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
SOIL MOISTURE SCALE (ATTERBERG LIMITS)		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
FIELD MOISTURE DESCRIPTION		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
GUIDE FOR FIELD MOISTURE DESCRIPTION		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
LIQUID LIMIT		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
PLASTIC LIMIT		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
OPTIMUM MOISTURE SHRINKAGE LIMIT		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
MOIST - (M)		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
DRY - (D)		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
PLASTICITY		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
PLASTICITY INDEX (PI)		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
DRY STRENGTH		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
NONPLASTIC LOW PLASTICITY MED. PLASTICITY HIGH PLASTICITY		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
COLOR		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
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.		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
MISCELLANEOUS SYMBOLS		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
INFERRED SOIL BOUNDARY		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
INFERRED ROCK LINE		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
ALLUVIAL SOIL BOUNDARY		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
DIP & DIP DIRECTION OF ROCK STRUCTURES		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
SOUNDING ROD		SOUNDING ROD		WEATHERING		ROCK HARDNESS					
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

September 24, 2008

STATE PROJECT: 33741.1.1 (B-4517)
COUNTY: Gaston
DESCRIPTION: Bridge 49 over Crowder's Creek on SR 1103
SUBJECT: Geotechnical Report - Inventory

PROJECT DESCRIPTION

The project is in southern Gaston County, southwest of Gastonia. It is a bridge replacement project. The bridge will be replaced in the current location with an off-site detour. This report addresses the roadway approaches. The project limits are: 11+95 to 20+76.77 -L- for a total length of 881.77' or 0.167 miles. The roadway crosses Crowder's Creek.

The geotechnical investigation consisted of 2 Standard Penetration Test borings conducted with a CME 550 drill rig with automatic hammer, utilizing 8" hollow stem augers.

AREAS OF SPECIAL GEOTECHNICAL INTEREST

The entire project is within the floodplain limits of Crowder's Creek. The existing roadway is on embankment, 15' to 20' in height. Alluvial soils are present below the embankment. These soils are generally soft or loose and saturated. The predominant soils are sandy silts (A-4), silty sands (A-2-4), and coarse sands (A-1-B).

PHYSIOGRAPHY AND GEOLOGY

The project is in the Piedmont Province, Kings Mountain Geologic Belt. No rock outcrops were noted. The project site is near the contact between schists of the Kings Mountain Group and the High Shoals Granite. The abundance of coarse sands in the floodplain deposit indicates the granitic source.

As noted, the project is almost entirely within the floodplain limits, therefore the topography is relatively flat. The floodplain surface elevation is 638-640'. The existing and proposed roadway grade elevation is near 655'. All surface drainage is into Crowder's Creek.

SOIL PROPERTIES

Roadway embankment fill: The existing roadway embankment contains tan-red-brown, soft to medium stiff, silty clay (A-6, A-7-6). Standard Penetration Test values were 5 to 7 blows per foot. Maximum height is about 20'.

Alluvium: Depositional soils within the floodplain of Crowder's Creek are predominately sandy silt (A-4), silty sand (A-2-4), and coarse sand (A-1-B). A thin surface layer of sandy clay (A-6) was encountered in the boring on the east side of the stream. Standard Penetration counts were 3 to 11 blows per foot. Overall thickness of the alluvial deposit is 18' to 20'.

Residual soil: These soils were encountered only at depth (below the alluvium). They were described as gray-white micaceous silty sand (A-2-4). They were medium dense near the alluvial contact; density increases with depth.

GROUNDWATER PROPERTIES

Groundwater was present near the natural ground surface in the floodplain (approx. elevation 636). During wet periods, the base of the embankment likely becomes saturated.

Respectfully submitted,

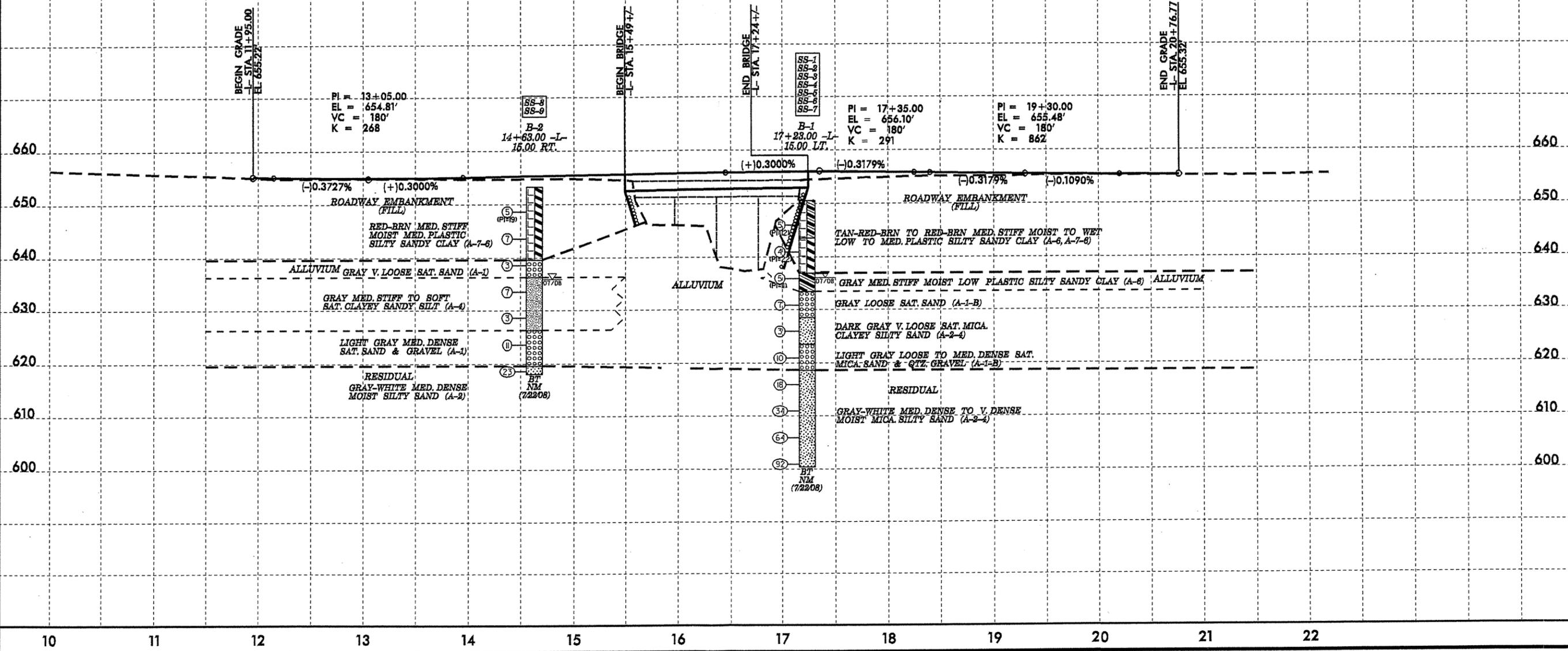
Clint Little
Regional Geologic Engineer
Geotechnical Engineering Unit
Western Regional Office

-L-

BM #1 8" SPIKE IN BASE OF POWER POLE
-BY- STA. 5+58.46' LT.
ELEV. = 688.88'

BM #2 CHISELED SQUARE IN S.W. CORNER
ON TOP OF CONC. FORCED SEWER BOX
-BL- STA. 21+53.204' LT.
ELEV. = 647.93'

BM #3 CHISELED SQUARE IN S.W. CORNER
OF CONC. FOUNDATION OF A POWER BOX
-BL- STA. 28+41.190' RT.
ELEV. = 663.75'



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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAY
 MATERIALS & TESTS UNIT
 SOILS LABORATORY

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T. I. P. No. B-4517

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REPORT ON SAMPLES OF SOILS FOR QUALITY

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Project 33741.1 County GASTON Owner _____
 Date: Sampled 7/21/08 Received 7/29/08 Reported 7/31/08
 Sampled from ROADWAY By J E BEVERLY
 Submitted by N WAINAINA 1995 Standard Specifications

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747811 TO 747819
 8/12/08

747811 TO 747819
 8/12/08

TEST RESULTS

Proj. Sample No.	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6
Lab. Sample No.	747811	747812	747813	747814	747815	747816
Retained #4 Sieve %	-	-	-	3	-	26
Passing #10 Sieve %	98	96	100	87	100	58
Passing #40 Sieve %	75	71	96	39	97	41
Passing #200 Sieve %	48	44	69	6	33	7

TEST RESULTS

Proj. Sample No.	SS-7	SS-8	SS-9			
Lab. Sample No.	747817	747818	747819			
Retained #4 Sieve %	-	-	-			
Passing #10 Sieve %	97	99	100			
Passing #40 Sieve %	79	79	100			
Passing #200 Sieve %	26	55	52			

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%						
Coarse Sand Ret - #60 %	34.5	37.6	8.3	77.0	17.7	50.2
Fine Sand Ret - #270 %	19.3	19.1	30.7	17.5	56.9	40.2
Silt 0.05 - 0.005 mm %	13.7	12.8	24.5	3.6	15.3	3.6
Clay < 0.005 mm %	32.5	30.5	36.5	2.0	10.2	6.1
Passing #40 Sieve %	-	-	-	-	-	-
Passing #200 Sieve %	-	-	-	-	-	-

MINUS NO. 10 FRACTION

SOIL MORTAR - 100%						
Coarse Sand Ret - #60 %	36.1	29.2	4.9			
Fine Sand Ret - #270 %	43.0	18.3	54.2			
Silt 0.05 - 0.005 mm %	14.7	13.9	20.6			
Clay < 0.005 mm %	6.1	38.6	20.3			
Passing #40 Sieve %	-	-	-			
Passing #200 Sieve %	-	-	-			

L. L.	30	41	34	24	27	24
P. I.	12	22	11	NP	NP	NP
AASHTO Classification	A-6(3)	A-7-6(5)	A-6(6)	A-1-b(0)	A-2-4(0)	A-1-b(0)
Station	17+23	17+23	17+23	17+23	17+23	17+23
OFFSET	15 LT	15 LT	15 LT	15 LT	15 LT	15 LT
ALIGNMENT	L	L	L	L	L	L
Depth (Ft)	4.10	9.10	14.10	19.10	24.10	29.10
to	5.10	10.10	15.10	20.10	25.10	30.10

L. L.	33	45	29			
P. I.	NP	19	8			
AASHTO Classification	A-2-4(0)	A-7-6(8)	A-4(2)			
Station	17+23	14+63	14+63			
OFFSET	15 LT	15 LT	15 LT			
ALIGNMENT	L	L	L			
Depth (Ft)	34.10	4.20	19.20			
to	35.10	5.20	20.20			

cc: J E BEVERLY
 Soils File