

PROJECT: 33813.1.1 ID: B-4647

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4647	1	26
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33813.1.1	BRSTP-94(I)	P.E. CONST.	

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

STATE PROJECT 33813.1.1 I.D. NO. B-4647
 F.A. PROJECT BRSTP-94(I)
 COUNTY TYRRELL
 PROJECT DESCRIPTION BRIDGE No. 6
ON NC 94 OVER NORTHWEST FORK ALLIGATOR RIVER

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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.

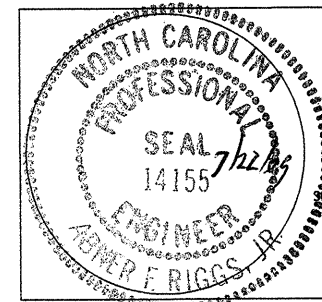
INVESTIGATED BY S&ME, INC. PERSONNEL N. BRADLEY
 CHECKED BY A.F. RIGGS, JR. J. WHITE
 SUBMITTED BY S&ME, INC. S. HARDEE
 DATE JUNE 12, 2009 P. PHELPS
T. PEREZ

Structure Design

DRAWN BY: T. PEREZ

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.



[Handwritten Signature]
SIGNATURE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

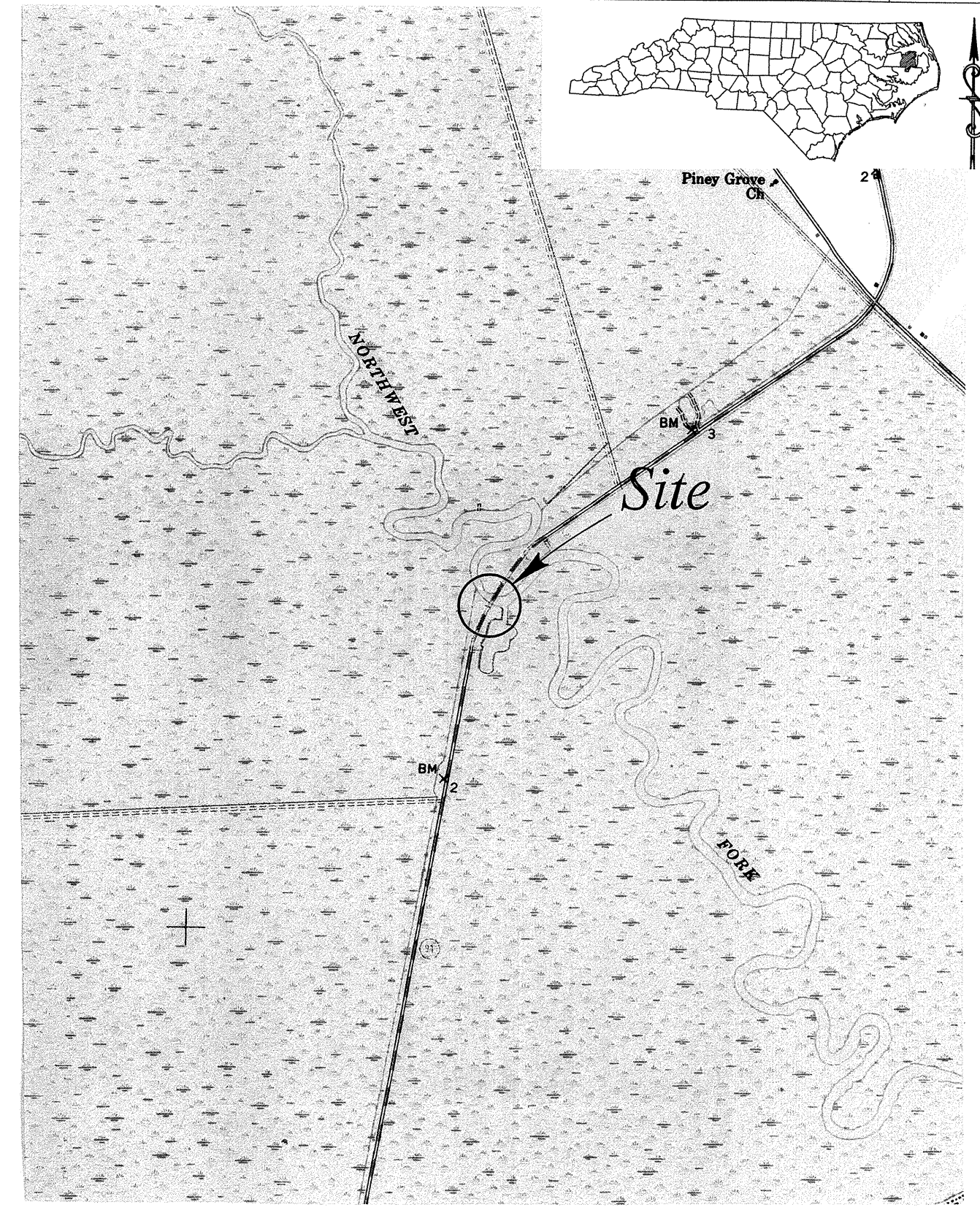
PROJECT REFERENCE NO. 33813.1.1	SHEET NO. 2
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SUBSURFACE INVESTIGATION

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 (ASHTO T298, 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. EXAMPLE:</p> <p style="text-align: center;"><i>VERY STIFF, GRAY SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY 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)</p> <p>GAP-GRADED: INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.</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>ALLUVIUM (ALLUV.) - SOILS WHICH HAVE BEEN TRANSPORTED BY WATER.</p> <p>AQUIFER - A WATER BEARING FORMATION OR STRATA.</p> <p>ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.</p> <p>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.</p> <p>ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.</p> <p>CALCAREOUS (CALC.) - SOILS WHICH CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.</p> <p>COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.</p> <p>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.</p> <p>DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.</p> <p>DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.</p> <p>DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.</p> <p>FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.</p> <p>FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.</p> <p>FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOGGED FROM PARENT MATERIAL.</p> <p>FLOOD PLAIN (F.P.) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.</p> <p>FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.</p> <p>JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.</p> <p>LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.</p> <p>LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.</p> <p>MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLED IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.</p> <p>PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.</p> <p>RESIDUAL SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.</p> <p>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.</p> <p>SAPROLITE (SAP.) - RESIDUAL SOIL WHICH RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.</p> <p>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.</p> <p>SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.</p> <p>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (IN 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.</p> <p>STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.</p> <p>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 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.</p> <p>TOPSOIL (T.S.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																																																																												
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ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.</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>ORGANIC MATERIAL</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> <tr> <td></td> <td></td> <td></td> <td>35% AND ABOVE</td> </tr> </table>		ORGANIC MATERIAL	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				35% AND ABOVE	<p>FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE.</p> <p>VERY SLIGHT (V. S.L.I.) 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.</p> <p>SLIGHT (S.L.I.) 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.</p> <p>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.</p> <p>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. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i></p> <p>SEVERE (SEV.) ALL ROCKS 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. <i>IF TESTED, YIELDS SPT N VALUES > 100 BPF</i></p> <p>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. <i>IF TESTED, YIELDS SPT N VALUES < 100 BPF</i></p> <p>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.</p>		<p>SOIL MOISTURE - CORRELATION OF TERMS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>SOIL MOISTURE SCALE (ATTERBERG LIMITS)</th> <th>FIELD MOISTURE DESCRIPTION</th> <th>GUIDE FOR FIELD MOISTURE DESCRIPTION</th> </tr> <tr> <td>LL - LIQUID LIMIT</td> <td>- SATURATED - (SAT.)</td> <td>USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE</td> </tr> <tr> <td>PL - PLASTIC LIMIT</td> <td>- WET - (W)</td> <td>SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE</td> </tr> <tr> <td>OM - OPTIMUM MOISTURE</td> <td>- MOIST - (M)</td> <td>SOLID; AT OR NEAR OPTIMUM MOISTURE</td> </tr> <tr> <td>SL - SHRINKAGE LIMIT</td> <td>- DRY - (D)</td> <td>REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE</td> </tr> </table>		SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION	LL - LIQUID LIMIT	- SATURATED - (SAT.)	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THICKLY BEDDED	1.5 - 4 FEET																																																																																																																																																																	
MODERATELY 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																																																																																																																																																																	

ID	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
B-4647	33813.1.1	3	26



S:\PROJECTS\2008\08-202\GEOTECH\CADD\U-2826A -SITEVIC

SCALE:	1:24,000
CHECKED BY:	AFR
DRAWN BY:	TRP
DATE:	JUNE 2009
JOB NO.	105 1-09- 124



SITE VICINITY MAP
 BRIDGE No. 6 ON NC 94
 OVER NORTHWEST FORK OF ALLIGATOR RIVER
 STATE PROJECT NO. 33813.1.1 TIP NO. B-4647
 FEDERAL I.D. NO. BRSTP-94(1)
 TYRRELL COUNTY, NORTH CAROLINA

S:\PROJECTS\2009\09-124\GEOTECH\CADD\B-4647 SITE PLAN.DGN

-L- STA. 25+12.71 (7.21' BT) =
-BL- STA. 38+16.02 (BL-4)

BEGIN BRIDGE
-L- STA. 25+05.00

BEGIN APPR. SLAB
-L- STA. 24+90.00

NORTHWEST FORK CREEK

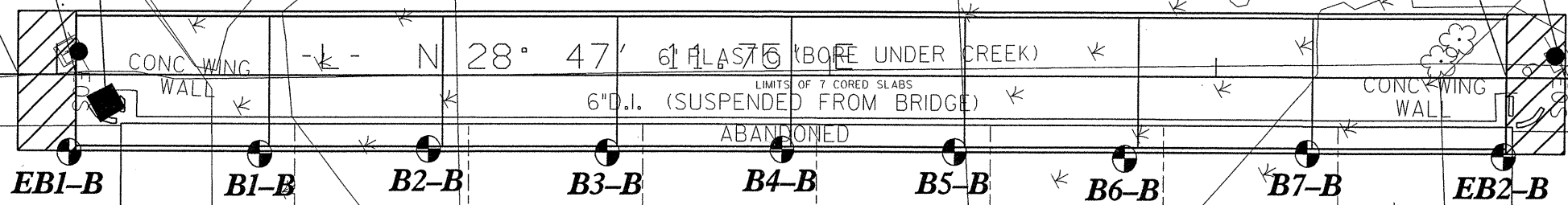
BRIDGE# 6
LOWEST SEAT ELEV 4.90'
HIGH WATER MARK
1.8' HURRICANE ISABEL 2003

END BRIDGE
-L- STA. 28+75.00

END APPR. SLAB
-L- STA. 28+90.00

TO KILKENNY

TO COLUMBIA

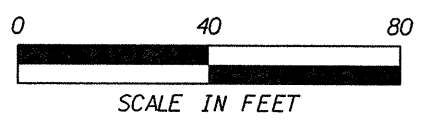


N 28° 47' 61" AS 75' (BORE UNDER CREEK)

6" PVC
8" PLASTIC

BENCHMARK:
BL-5 NCDOT TRAVERSE STATION REBAR & CAP STAMPED "BL-5"
LOCATED AT STA 48+40.36 -BL-
ELEV. = 1.56'

SKREW ANGLE FOR BENTS 90°00'00" (TYPICAL)



PT Sta. 24+30.89

PC Sta. 29+25.69

BORING LOCATION PLAN

BRIDGE No. 6
OVER NORTHWEST FORK ALLIGATOR RIVER ON NC 94
TIP No. B-4647 STATE PROJECT No. 33813.1.1 FEDERAL I.D. BRSTP-94(1)
TYRRELL COUNTY, NORTH CAROLINA

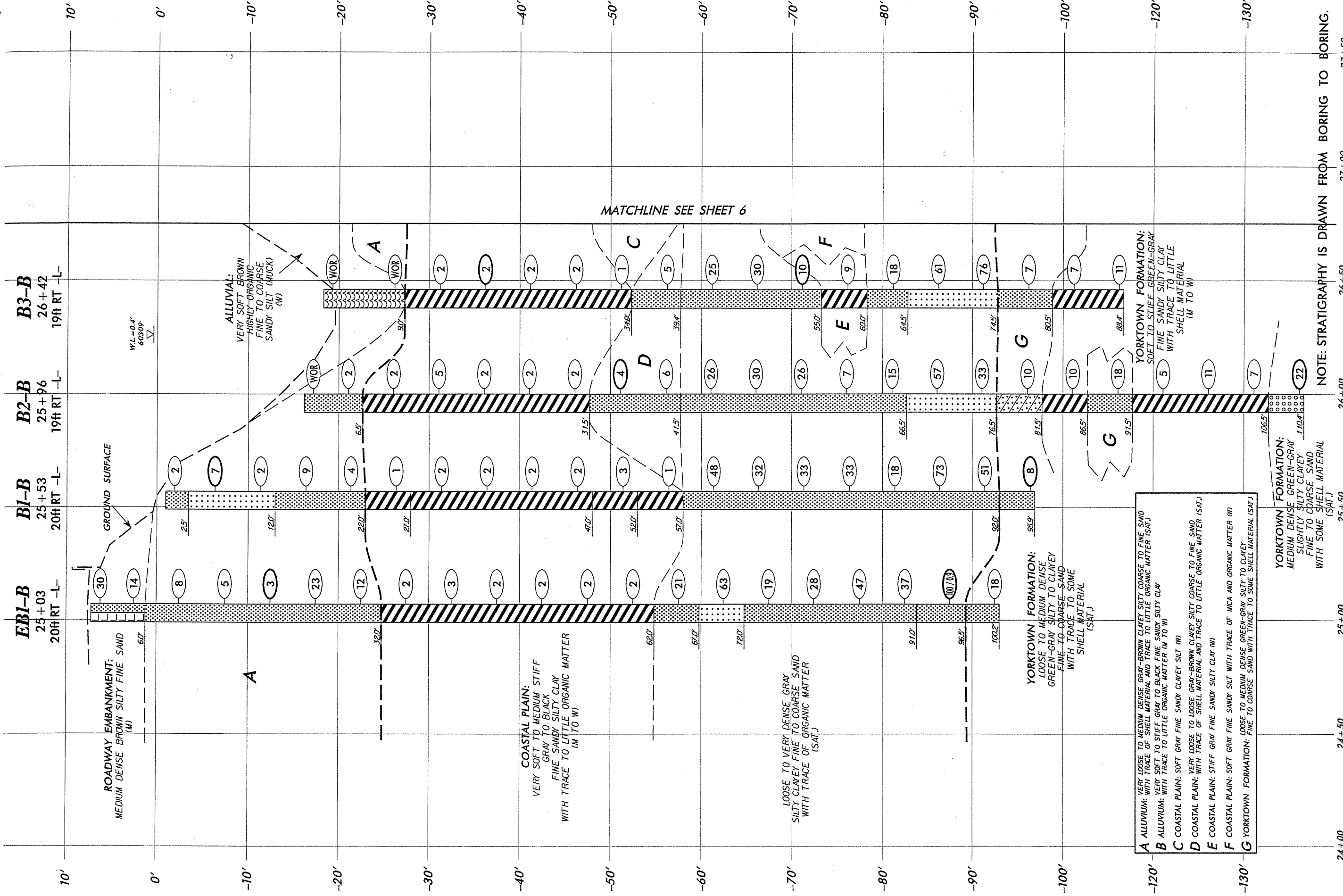


SCALE:	1" = 40'	APPROVED BY:	AFR
DATE:	JUNE 2009	DRAWN BY:	TRP
JOB NO.:	1051-09-124	FIGURE	4

GENERALIZED SUBSURFACE PROFILE 13' RIGHT OF -L-

TO KILKENNY

TO COLUMBIA



MATCHLINE SEE SHEET 6

NOTE: STRATIGRAPHY IS DRAWN FROM BORING TO BORING.

EB1-B 25+03 20HRT -L-
B1-B 25+53 20HRT -L-
B2-B 25+96 19HRT -L-
B3-B 26+42 19HRT -L-

ROADWAY EMBANKMENT:
MEDIUM DENSE BROWN SILTY FINE SAND (M)

W.L. = 0.4'
60309

ALLUVIAL:
VERY SOFT BROWN
HIGHLY-ORGANIC
FINE TO COARSE
SANDY SILT (MUCK) (W)

COASTAL PLAIN:
VERY SOFT TO MEDIUM STIFF
GRAY TO BLACK
FINE SANDY SILTY CLAY
WITH TRACE TO LITTLE ORGANIC MATTER (M TO W)

LOOSE TO VERY DENSE GRAY
SILTY CLAYEY FINE TO COARSE SAND
WITH TRACE OF ORGANIC MATTER (SAT)

YORKTOWN FORMATION:
LOOSE TO MEDIUM DENSE
GREEN-GRAY SILTY TO CLAYEY
FINE TO COARSE SAND
WITH TRACE TO SOME
SHELL MATERIAL (SAT)

A ALLUVIUM: VERY LOOSE TO MEDIUM DENSE GRAY-BROWN CLAYEY SILTY COARSE TO FINE SAND WITH TRACE OF SHELL MATERIAL AND TRACE TO LITTLE ORGANIC MATTER (SAT)
B ALLUVIUM: VERY SOFT TO STIFF GRAY TO BLACK FINE SANDY SILTY CLAY WITH TRACE TO LITTLE ORGANIC MATTER (M TO W)
C COASTAL PLAIN: SOFT GRAY FINE SANDY CLAYEY SILT (W)
D COASTAL PLAIN: VERY LOOSE TO LOOSE GRAY-BROWN CLAYEY SILTY COARSE TO FINE SAND WITH TRACE OF SHELL MATERIAL AND TRACE TO LITTLE ORGANIC MATTER (SAT)
E COASTAL PLAIN: STIFF GRAY FINE SANDY SILTY CLAY (W)
F COASTAL PLAIN: SOFT GRAY FINE SANDY SILT WITH TRACE OF MICA AND ORGANIC MATTER (W)
G YORKTOWN FORMATION: LOOSE TO MEDIUM DENSE GREEN-GRAY SILTY TO CLAYEY FINE TO COARSE SAND WITH TRACE TO SOME SHELL MATERIAL (SAT)

YORKTOWN FORMATION:
MEDIUM DENSE GREEN-GRAY
SLIGHTLY SILTY CLAYEY
FINE TO COARSE SAND
WITH SOME SHELL MATERIAL (SAT)

YORKTOWN FORMATION:
SOFT TO STIFF GREEN-GRAY
FINE SANDY SILTY CLAY
WITH TRACE TO LITTLE
SHELL MATERIAL (M TO W)

GENERALIZED SUBSURFACE PROFILE 13' RIGHT OF -L-

STATION 24+00 TO STATION 26+75
 BRIDGE No. 6
 OVER NORTHWEST FORK ALLIGATOR RIVER ON NC 94
 TIP No. B-4647 STATE PROJECT No. 33813.1.1 FEDERAL I.D. BRSTP-94(1)
 TYRRELL COUNTY, NORTH CAROLINA



SCALE:	(V) 1" = 10'	APPROVED BY:	AFR
	(H) 1" = 40'		
DATE:	JUNE 2009	DRAWN BY:	TRP
JOB NO.	1051-09-124	FIGURE	5

PROJECT NO. 33813.1.1	ID. B-4647	COUNTY Tyrrell	GEOLOGIST N. Bradley
SITE DESCRIPTION Bridge No. 6 over Northwest Fork Alligator River on N.C.94			GROUND WTR (ft)
BORING NO. EB1-B	STATION 25+03	OFFSET 20ft RT	ALIGNMENT -L-
COLLAR ELEV. 7.2 ft	TOTAL DEPTH 100.2 ft	NORTHING 729,162	EASTING 2,832,865
DRILL MACHINE CME-750	DRILL METHOD NW Casing/2-15/16" Tricone	HAMMER TYPE Automatic	
START DATE 05/28/09	COMP. DATE 05/28/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
10																
7.2	0.0		16	14	16										7.2	ASPHALT PAVEMENT
5	3.5	3.7	5	6	8										1.2	ROADWAY EMBANKMENT Medium Dense Brown Silty Fine SAND (A-2-4)
0	-1.5	8.7	5	4	4											ALLUVIAL Very Loose to Medium Dense Gray to Brown Clayey Silty Coarse to Fine SAND (A-2-4) With Trace of Shell Material and Organic Matter
-5	-6.5	13.7	2	3	2											2.9% Organics
-10	-11.5	18.7	1	1	2											
-15	-16.5	23.7	9	10	13											
-20	-21.5	28.7	7	8	4											
-25	-26.5	33.7	1	1	1											
-30	-31.5	38.7	1	1	2											
-35	-36.5	43.7	1	1	1											
-40	-41.5	48.7	1	1	1											
-45	-46.5	53.7	WOH	1	1											
-50	-51.5	58.7	WOH	1	1											
-55	-56.5	63.7	5	9	12											
-60	-61.5	68.7	14	25	38											
-65	-66.5	73.7	5	9	10											
-70																

NCDOT BORE SINGLE 124D.GPJ NC_DOT.GDT 7/20/09

PROJECT NO. 33813.1.1	ID. B-4647	COUNTY Tyrrell	GEOLOGIST N. Bradley
SITE DESCRIPTION Bridge No. 6 over Northwest Fork Alligator River on N.C.94			GROUND WTR (ft)
BORING NO. EB1-B	STATION 25+03	OFFSET 20ft RT	ALIGNMENT -L-
COLLAR ELEV. 7.2 ft	TOTAL DEPTH 100.2 ft	NORTHING 729,162	EASTING 2,832,865
DRILL MACHINE CME-750	DRILL METHOD NW Casing/2-15/16" Tricone	HAMMER TYPE Automatic	
START DATE 05/28/09	COMP. DATE 05/28/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
-70																
-75	-71.5	78.7	6	8	20											
-80	-76.5	83.7	13	20	27											
-85	-81.5	88.7	7	15	22											
-90	-86.5	93.7	20	45	55/0.4											
-95	-91.5	98.7	8	8	10											
-100																
-105																
-110																
-115																
-120																
-125																
-130																
-135																
-140																
-145																
-150																

NCDOT BORE SINGLE 124D.GPJ NC_DOT.GDT 7/20/09

Match Line

Medium Dense to Dense Gray Silty Fine to Coarse SAND (A-2-4) (continued)

Very Dense Gray Slightly Silty Fine to Coarse SAND (A-2-4)

Yorktown Formation:
Medium Dense Green-Gray Silty Clayey Fine to Coarse SAND (A-2-4)
With Some Shell Material
Boring Terminated at Elevation -93.0 ft in Medium Dense Green-Gray Silty Clayey Fine to Coarse Sand.

- 1) Advanced NW casing to 8.7 feet.
- 2) Advanced 2-15/16" Tricone to 98.7 feet.
- 3) River water used as drilling fluid.
- 4) Approximate drilling fluid density 62.4 pcf.
- 5) Some loss of drilling fluid observed.
- 6) Asphalt thickness 0.5 inches.

PROJECT NO. 33813.1.1	ID. B-4647	COUNTY Tyrrell	GEOLOGIST N. Bradley
SITE DESCRIPTION Bridge No. 6 over Northwest Fork Alligator River on N.C.94			GROUND WTR (ft)
BORING NO. B1-B	STATION 25+53	OFFSET 20ft RT	ALIGNMENT -L-
COLLAR ELEV. -1.0 ft	TOTAL DEPTH 95.9 ft	NORTHING 729,205	EASTING 2,832,889
DRILL MACHINE CME-750	DRILL METHOD NW Casing/2-15/16" Tricone	HAMMER TYPE Automatic	
START DATE 05/28/09	COMP. DATE 05/28/09	SURFACE WATER DEPTH 1.2ft	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
0	-1.0	0.0												0.0
			WOH	1	1	2						Sat.	ALLUVIAL Very Loose Gray Silty Fine SAND (A-2-4) With Trace of Organic Matter	2.5
-5	-5.4	4.4		3	3	7						SS-3 Sat.	Loose to Very Loose Gray Coarse to Fine SAND (A-3)	
-10	-10.4	9.4		1	1	2						Sat.	Loose Brown to Gray Silty Fine SAND (A-2-4)	12.0
-15	-15.4	14.4		2	2	9						Sat.		
-20	-20.4	19.4		1	2	4						Sat.		
-25	-25.4	24.4	WOH	WOH	1							W	COASTAL PLAIN Very Soft Gray Fine Sandy CLAY (A-7-5)	22.0
-30	-30.4	29.4										M	Soft Gray Silty CLAY (A-7-6)	27.0
-35	-35.4	34.4		1	1	2						M		
-40	-40.4	39.4		1	1	2						M		
-45	-45.4	44.4	WOH	WOH	2							M		
-50	-50.4	49.4		4	1	3						W	Soft Gray Fine Sandy CLAY (A-7-5)	47.0
-55	-55.4	54.4	WOH	WOH	1							W	Very Soft Gray Silty CLAY (A-7-5) With Trace of Organic Matter	52.0
-60	-60.4	59.4		12	20	48						Sat.	Medium Dense to Very Dense Gray Silty Fine to Coarse SAND (A-2-4) With Trace of Organic Matter	57.0
-65	-65.4	64.4		9	11	32						Sat.		
-70	-70.4	69.4		10	14	33						Sat.		

NCDOT BORE SINGLE 124D.GPJ NC_DOT.GDT 7/20/09

PROJECT NO. 33813.1.1	ID. B-4647	COUNTY Tyrrell	GEOLOGIST N. Bradley
SITE DESCRIPTION Bridge No. 6 over Northwest Fork Alligator River on N.C.94			GROUND WTR (ft)
BORING NO. B1-B	STATION 25+53	OFFSET 20ft RT	ALIGNMENT -L-
COLLAR ELEV. -1.0 ft	TOTAL DEPTH 95.9 ft	NORTHING 729,205	EASTING 2,832,889
DRILL MACHINE CME-750	DRILL METHOD NW Casing/2-15/16" Tricone	HAMMER TYPE Automatic	
START DATE 05/28/09	COMP. DATE 05/28/09	SURFACE WATER DEPTH 1.2ft	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
-75	-75.4	74.4												
-80	-80.4	79.4		4	8	11	16	17				Sat.	Medium Dense to Very Dense Gray Silty Fine to Coarse SAND (A-2-4) With Trace of Organic Matter(continued)	
-85	-85.4	84.4		16	28	18	45					Sat.		
-90	-90.4	89.4		16	24	73						Sat.		
-95	-95.4	94.4		5	4	51						Sat.	Yorktown Formation: Loose Green-Gray Slightly Silty Clayey Coarse to Fine SAND (A-2-4) With Trace of Shell Material	92.0
-100						6						SS-4 Sat.	Boring Terminated at Elevation -96.9 ft in Loose Green-Gray Slightly Silty Clayey Coarse to Fine Sand.	95.9
-105														
-110														
-115														
-120														
-125														
-130														
-135														
-140														
-145														
-150														
-155														

NCDOT BORE SINGLE 124D.GPJ NC_DOT.GDT 7/20/09

- 1) Advanced NW casing to 29.4 feet.
- 2) Advanced 2-15/16" Tricone to 94.4 feet.
- 3) River water used as drilling fluid.
- 4) Approximate drilling fluid density 62.4 pcf.
- 5) Some loss of drilling fluid observed.
- 6) Bridge deck to mudline 9.3 feet.

PROJECT NO. 33813.1.1	ID. B-4647	COUNTY Tyrrell	GEOLOGIST N. Bradley
SITE DESCRIPTION Bridge No. 6 over Northwest Fork Alligator River on N.C.94			GROUND WTR (ft)
BORING NO. B2-B	STATION 25+96	OFFSET 19ft RT	ALIGNMENT -L-
COLLAR ELEV. -16.2 ft	TOTAL DEPTH 110.4 ft	NORTHING 729,244	EASTING 2,832,909
DRILL MACHINE CME-750		DRILL METHOD NW Casing/2-15/16" Tricone	
START DATE 05/27/09		COMP. DATE 05/27/09	
SURFACE WATER DEPTH 16.3ft		DEPTH TO ROCK N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
0															
-5															
-10															
-15															
-16.2	-16.2	0.0													
-20	-20.1	3.9													
-25	-25.1	8.9													
-30	-30.1	13.9													
-35	-35.1	18.9													
-40	-40.1	23.9													
-45	-45.1	28.9													
-50	-50.1	33.9													
-55	-55.1	38.9													
-60	-60.1	43.9													
-65	-65.1	48.9													
-70	-70.1	53.9													
-75	-75.1	58.9													

PROJECT NO. 33813.1.1	ID. B-4647	COUNTY Tyrrell	GEOLOGIST N. Bradley
SITE DESCRIPTION Bridge No. 6 over Northwest Fork Alligator River on N.C.94			GROUND WTR (ft)
BORING NO. B2-B	STATION 25+96	OFFSET 19ft RT	ALIGNMENT -L-
COLLAR ELEV. -16.2 ft	TOTAL DEPTH 110.4 ft	NORTHING 729,244	EASTING 2,832,909
DRILL MACHINE CME-750		DRILL METHOD NW Casing/2-15/16" Tricone	
START DATE 05/27/09		COMP. DATE 05/27/09	
SURFACE WATER DEPTH 16.3ft		DEPTH TO ROCK N/A	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
-75															
-80	-80.1	63.9													
-85	-85.1	68.9													
-90	-90.1	73.9													
-95	-95.1	78.9													
-100	-100.1	83.9													
-105	-105.1	88.9													
-110	-110.1	93.9													
-115	-115.1	98.9													
-120	-120.1	103.9													
-125	-125.1	108.9													
-130															
-135															
-140															
-145															
-150															
-155															

NCDOT BORE SINGLE 124D.GPJ NC_DOT.GDT 7/20/09

NCDOT BORE SINGLE 124D.GPJ NC_DOT.GDT 7/20/09

- 1) Advanced NW casing to 13.9 feet.
- 2) Advanced 2-15/16" Tricone to 108.9 feet.
- 3) River water used as drilling fluid.
- 4) Approximate drilling fluid density 62.4 pcf.
- 5) Moderate loss of drilling fluid observed.
- 6) Bridge deck to mudline 24.8 feet.

PROJECT NO. 33813.1.1	ID. B-4647	COUNTY Tyrrell	GEOLOGIST N. Bradley
SITE DESCRIPTION Bridge No. 6 over Northwest Fork Alligator River on N.C.94			GROUND WTR (ft)
BORING NO. B3-B	STATION 26+42	OFFSET 20ft RT	ALIGNMENT -L-
COLLAR ELEV. -18.3 ft	TOTAL DEPTH 88.4 ft	NORTHING 729,284	EASTING 2,832,932
DRILL MACHINE CME-750	DRILL METHOD NW Casing /2-15/16" Tricone	HAMMER TYPE Automatic	
START DATE 05/26/09	COMP. DATE 05/26/09	SURFACE WATER DEPTH 18.1ft	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
0														
-5														
-10														
-15														
-18.3	0.0												WATER SURFACE (05/26/09)	
-20			WOR	WOR	WOR	WOR							ALLUVIAL Very Soft Brown Highly Organic Fine Sandy Silt (Muck)	0.0
-25	-25.2	6.9	WOR	WOR	WOR	WOR								
-30	-30.2	11.9	WOH	1	1								COASTAL PLAIN Soft to Very Soft Gray Fine Sandy Silty CLAY (A-7-5)	9.0
-35	-35.2	16.9	1	1	1									
-40	-40.2	21.9	1	1	1									
-45	-45.2	26.9	WOH	1	1									
-50	-50.2	31.9	WOH	WOH	1									
-55	-55.2	36.9	1	1	4									
-60	-60.2	41.9	7	10	15									
-65	-65.2	46.9	12	15	15									
-70	-70.2	51.9	4	3	7									
-75	-75.2	56.9	WOR	6	3									
-80	-80.2	61.9												

NCDOT BORE SINGLE 124D.GPJ NC_DOT.GDT 7/20/09

PROJECT NO. 33813.1.1	ID. B-4647	COUNTY Tyrrell	GEOLOGIST N. Bradley
SITE DESCRIPTION Bridge No. 6 over Northwest Fork Alligator River on N.C.94			GROUND WTR (ft)
BORING NO. B3-B	STATION 26+42	OFFSET 20ft RT	ALIGNMENT -L-
COLLAR ELEV. -18.3 ft	TOTAL DEPTH 88.4 ft	NORTHING 729,284	EASTING 2,832,932
DRILL MACHINE CME-750	DRILL METHOD NW Casing /2-15/16" Tricone	HAMMER TYPE Automatic	
START DATE 05/26/09	COMP. DATE 05/26/09	SURFACE WATER DEPTH 18.1ft	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
-80														
-85	-85.2	66.9	5	5	13								Medium Dense Silty Fine SAND (A-2-4) (continued)	64.5
-90	-90.2	71.9	15	26	35								Very Dense Gray Fine to Coarse SAND (A-3)	
-95	-95.2	76.9	24	30	46								Yorktown Formation: Loose Green-Gray Silty Fine SAND (A-2-4) With Trace of Shell Material	74.5
-100	-100.2	81.9	6	3	4								Medium Stiff to Stiff Green-Gray Fine Sandy CLAY (A-7-5) With Trace of Shell Material	80.5
-105	-105.2	86.9	2	3	4									
-110			5	5	6									
-115														
-120														
-125														
-130														
-135														
-140														
-145														
-150														
-155														
-160														

NCDOT BORE SINGLE 124D.GPJ NC_DOT.GDT 7/20/09

- 1) Advanced NW casing to 16.9 feet (45 feet total used).
- 2) Advanced 2-15/16" Tricone to 86.9 feet.
- 3) River water used as drilling fluid.
- 4) Approximate drilling fluid density 62.4 pcf.
- 5) No loss of drilling fluid observed.
- 6) Bridge deck to mudline 27.0 feet.

PROJECT NO. 33813.1.1	ID. B-4647	COUNTY Tyrrell	GEOLOGIST N. Bradley
SITE DESCRIPTION Bridge No. 6 over Northwest Fork Alligator River on N.C.94			GROUND WTR (ft)
BORING NO. B4-B	STATION 26+88	OFFSET 19ft RT	ALIGNMENT -L-
COLLAR ELEV. -4.5 ft	TOTAL DEPTH 112.0 ft	NORTHING 729,324	EASTING 2,832,953
DRILL MACHINE CME-750	DRILL METHOD NW Casing/2-15/16" Tricone	HAMMER TYPE Automatic	
START DATE 05/26/09	COMP. DATE 05/26/09	SURFACE WATER DEPTH 4.4ft	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
0														
-4.5	-4.5	0.0											WATER SURFACE (05/26/09)	
-5			WOR	WOR	WOR								MUDLINE	0.0
-10	-10.0	5.5	WOR	WOR	WOR								ALLUVIAL Very Soft Brown Highly Organic Fine Sandy Silt (Muck)	
-15	-15.0	10.5	WOR	WOR	WOR									
-20	-20.0	15.5	WOR	WOR	WOR									
-25	-25.0	20.5	2	1	1								Very Loose Brown Silty Fine SAND (A-2-4)	17.0
-30	-30.0	25.5	WOH	1	1								COASTAL PLAIN Soft to Very Soft Gray Silty CLAY (A-7-6)	23.0
-35	-35.0	30.5	WOH	1	1									
-40	-40.0	35.5	1	1	1									
-45	-45.0	40.5	WOH	WOH	WOH									
-50	-50.0	45.5	4	1	2						SS-9	30%	Soft Gray Fine Sandy Clayey SILT (A-4)	43.5
-55	-55.0	50.5	WOH	1	2									
-60	-60.0	55.5	6	4	5								Loose to Medium Dense Gray Silty Fine SAND (A-2-4)	53.5
-65	-65.0	60.5	3	4	7									
-70	-70.0	65.5	WOH	2	2						SS-10	42%	Soft Gray Fine Sandy Clayey SILT (A-4) With Trace of Mica and Organic Matter	62.0
-75	-75.0	70.5	2	2	1									
-80	-80.0	75.5												

NCDOT BORE SINGLE 124D.GPJ NC DOT.GDT 7/20/09

PROJECT NO. 33813.1.1	ID. B-4647	COUNTY Tyrrell	GEOLOGIST N. Bradley
SITE DESCRIPTION Bridge No. 6 over Northwest Fork Alligator River on N.C.94			GROUND WTR (ft)
BORING NO. B4-B	STATION 26+88	OFFSET 19ft RT	ALIGNMENT -L-
COLLAR ELEV. -4.5 ft	TOTAL DEPTH 112.0 ft	NORTHING 729,324	EASTING 2,832,953
DRILL MACHINE CME-750	DRILL METHOD NW Casing/2-15/16" Tricone	HAMMER TYPE Automatic	
START DATE 05/26/09	COMP. DATE 05/26/09	SURFACE WATER DEPTH 4.4ft	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
-80														
-85	-85.0	80.5	6	11	15								Match Line	
-90	-90.0	85.5	16	20	30								Medium Dense to Dense Gray Silty Fine to Coarse SAND (A-2-4) (continued)	
-95	-95.0	90.5	16	18	24									
-100	-100.0	95.5	7	6	4								Yorktown Formation: Medium Dense to Loose Green-Gray Clayey Fine SAND (A-2-6) With Trace of Shell Material	88.0
-105	-105.0	100.5	2	3	5									
-110	-110.0	105.5	4	2	4								Medium Stiff to Soft Green-Gray Fine Sandy CLAY (A-7-5) With Trace of Shell Material	98.0
-115	-115.0	110.5	2	2	2									
-120			2	2	2									
-125														
-130														
-135														
-140														
-145														
-150														
-155														
-160														

NCDOT BORE SINGLE 124D.GPJ NC DOT.GDT 7/20/09

- 1) Advanced NW casing to 30.5 feet.
- 2) Advanced 2-15/16" Tricone to 110.5 feet.
- 3) River water used as drilling fluid.
- 4) Approximate drilling fluid density 62.4 pcf.
- 5) No loss of drilling fluid observed.
- 6) Bridge deck to mudline 13.2 feet.

Boring Terminated at Elevation -116.5 ft in Soft Green-Gray Fine Sandy Clay.

PROJECT NO. 33813.1.1	ID. B-4647	COUNTY Tyrrell	GEOLOGIST N. Bradley
SITE DESCRIPTION Bridge No. 6 over Northwest Fork Alligator River on N.C.94			GROUND WTR (ft)
BORING NO. B5-B	STATION 27+32	OFFSET 19ft RT	ALIGNMENT -L-
COLLAR ELEV. -1.9 ft	TOTAL DEPTH 100.0 ft	NORTHING 729,363	EASTING 2,832,975
DRILL MACHINE CME-750	DRILL METHOD NW Casing/2-15/16" Tricone	HAMMER TYPE Automatic	
START DATE 05/22/09	COMP. DATE 05/22/09	SURFACE WATER DEPTH 1.5ft	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
0	-1.9	0.0											WATER SURFACE (05/22/09)	-1.9
													MUDLINE	0.0
-5	-5.4	3.5	WOR	WOR	WOR	WOR						SS-11	ALLUVIAL Very Soft Brown Highly Organic Fine to Coarse Sandy Clayey SILT (Muck) 23.4% Organics	6.0
-10	-10.4	8.5	WOH	1	2							Sat.	Very Loose Gray Silty Fine SAND (A-2-4)	
-15	-15.4	13.5	WOH	WOH	WOH							Sat.		
-20	-20.4	18.5	WOR	WOR	WOR							W	Very Soft to Soft Dark Gray Silty CLAY (A-7-6) With Trace of Organic Matter	16.0
-25	-25.4	23.5	WOR	WOR	WOR							W		
-30	-30.4	28.5	WOH	WOH	WOH							W		
-35	-35.4	33.5	WOH	1	2							W	COASTAL PLAIN Very Soft to Soft Dark Gray Silty CLAY (A-7-6) With Trace of Organic Matter	34.0
-40	-40.4	38.5		1	1	1						W		
-45	-45.4	43.5	WOH	1	1							W		
-50	-50.4	48.5	1	1	1							W		
-55	-55.4	53.5	2	2	2							Sat.	Loose Gray Silty Fine SAND (A-2-4)	51.0
-60	-60.4	58.5	2	2	4							Sat.		
-65	-65.4	63.5	2	4	8							Sat.	Loose to Very Dense Gray Slightly Silty Clayey Fine SAND (A-2-4)	59.5
-70	-70.4	68.5	6	4	13							Sat.		
-75	-75.4	73.5	10	14	22							Sat.		
-80												SS-12		

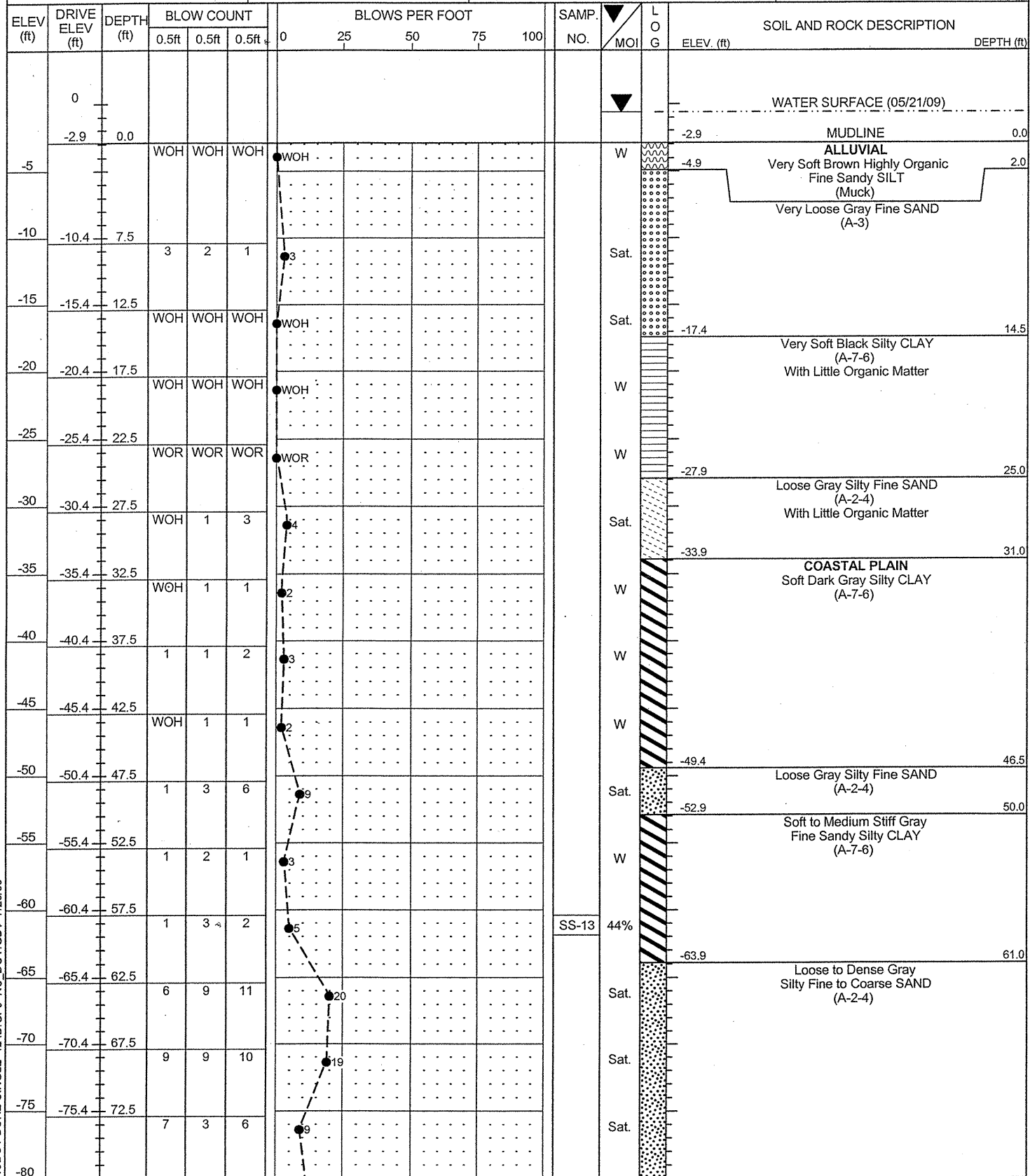
PROJECT NO. 33813.1.1	ID. B-4647	COUNTY Tyrrell	GEOLOGIST N. Bradley
SITE DESCRIPTION Bridge No. 6 over Northwest Fork Alligator River on N.C.94			GROUND WTR (ft)
BORING NO. B5-B	STATION 27+32	OFFSET 19ft RT	ALIGNMENT -L-
COLLAR ELEV. -1.9 ft	TOTAL DEPTH 100.0 ft	NORTHING 729,363	EASTING 2,832,975
DRILL MACHINE CME-750	DRILL METHOD NW Casing/2-15/16" Tricone	HAMMER TYPE Automatic	
START DATE 05/22/09	COMP. DATE 05/22/09	SURFACE WATER DEPTH 1.5ft	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
-80	-80.4	78.5											Match Line	
-85	-85.4	83.5	16	19	29							Sat.	Loose to Very Dense Gray Slightly Silty Clayey Fine SAND (A-2-4) (continued)	
-90	-90.4	88.5	17	28	45							Sat.	Very Dense Gray Fine to Coarse SAND (A-3)	86.0
-95	-95.4	93.5	20	40	43							Sat.		92.0
-100	-100.4	98.5	7	4	5							Sat.	Yorktown Formation: Loose Green-Gray Clayey Fine SAND (A-2-6) With Trace of Shell Material	96.5
-105			2	2	4							W	Medium Stiff Green-Gray Fine Sandy CLAY (A-7-5) With Trace of Shell Material	100.0
-110													Boring Terminated at Elevation -101.9 ft in Medium Stiff Green-Gray Fine Sandy Clay.	
-115													1) Advanced NW casing to 38.5 feet. 2) Advanced 2-15/16" Tricone to 98.5 feet. 3) River water used as drilling fluid. 4) Approximate drilling fluid density 62.4 pcf. 5) No loss of drilling fluid observed. 6) Bridge deck to mudline 10.4 feet.	
-120														
-125														
-130														
-135														
-140														
-145														
-150														
-155														
-160														

NCDOT BORE SINGLE 124D.GPJ NC_DOT.GDT 7/20/09

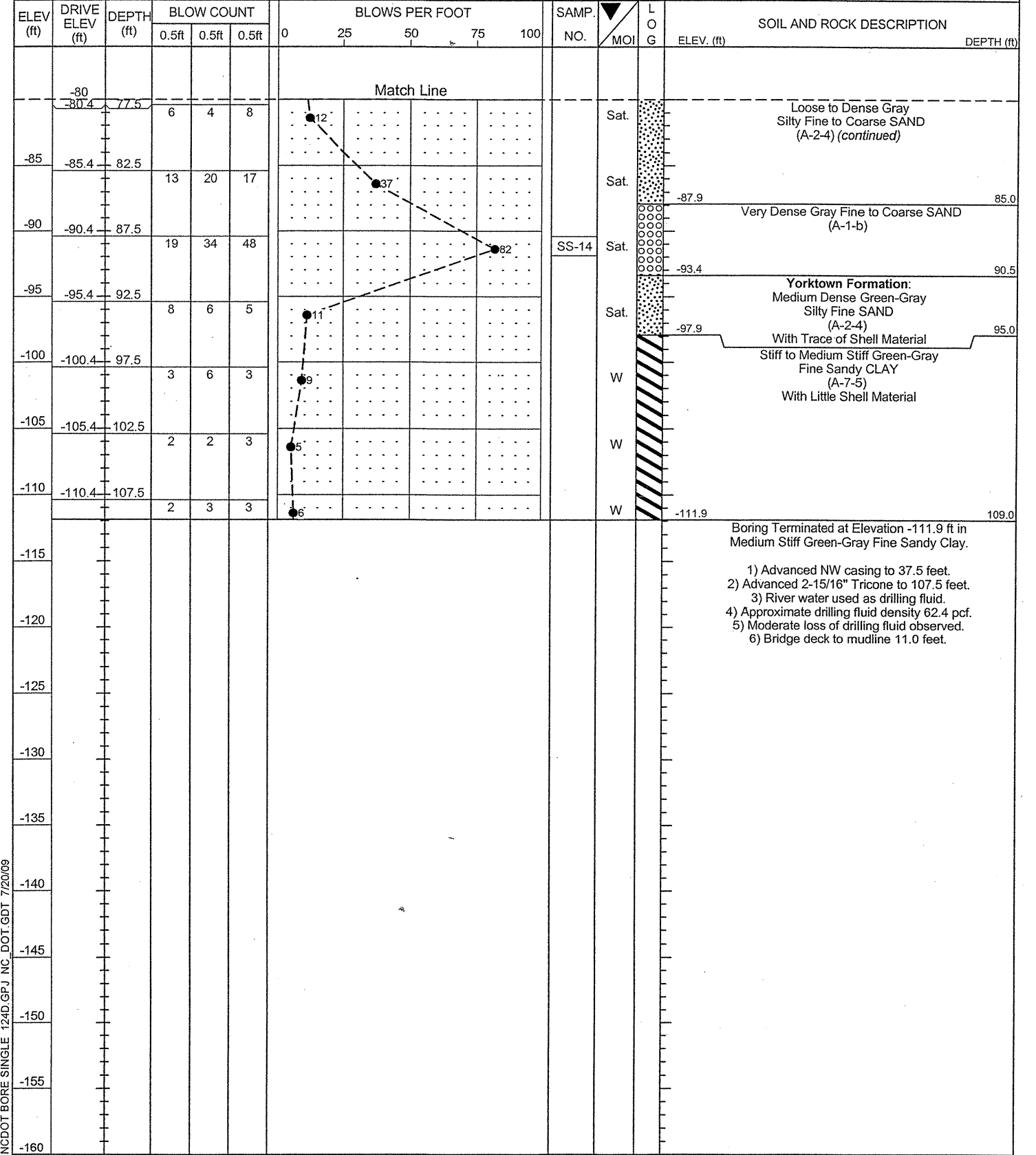
NCDOT BORE SINGLE 124D.GPJ NC_DOT.GDT 7/20/09

PROJECT NO. 33813.1.1	ID. B-4647	COUNTY Tyrrell	GEOLOGIST N. Bradley
SITE DESCRIPTION Bridge No. 6 over Northwest Fork Alligator River on N.C.94			GROUND WTR (ft)
BORING NO. B6-B	STATION 27+77	OFFSET 21ft RT	ALIGNMENT -L-
COLLAR ELEV. -2.9 ft	TOTAL DEPTH 109.0 ft	NORTHING 729,401	EASTING 2,832,998
DRILL MACHINE CME-750	DRILL METHOD NW Casing/2-15/16" Tricone	HAMMER TYPE Automatic	
START DATE 05/21/09	COMP. DATE 05/21/09	SURFACE WATER DEPTH 2.3ft	DEPTH TO ROCK N/A



NCDOT BORE SINGLE 124D.GPJ NC_DOT.GDT 7/20/09

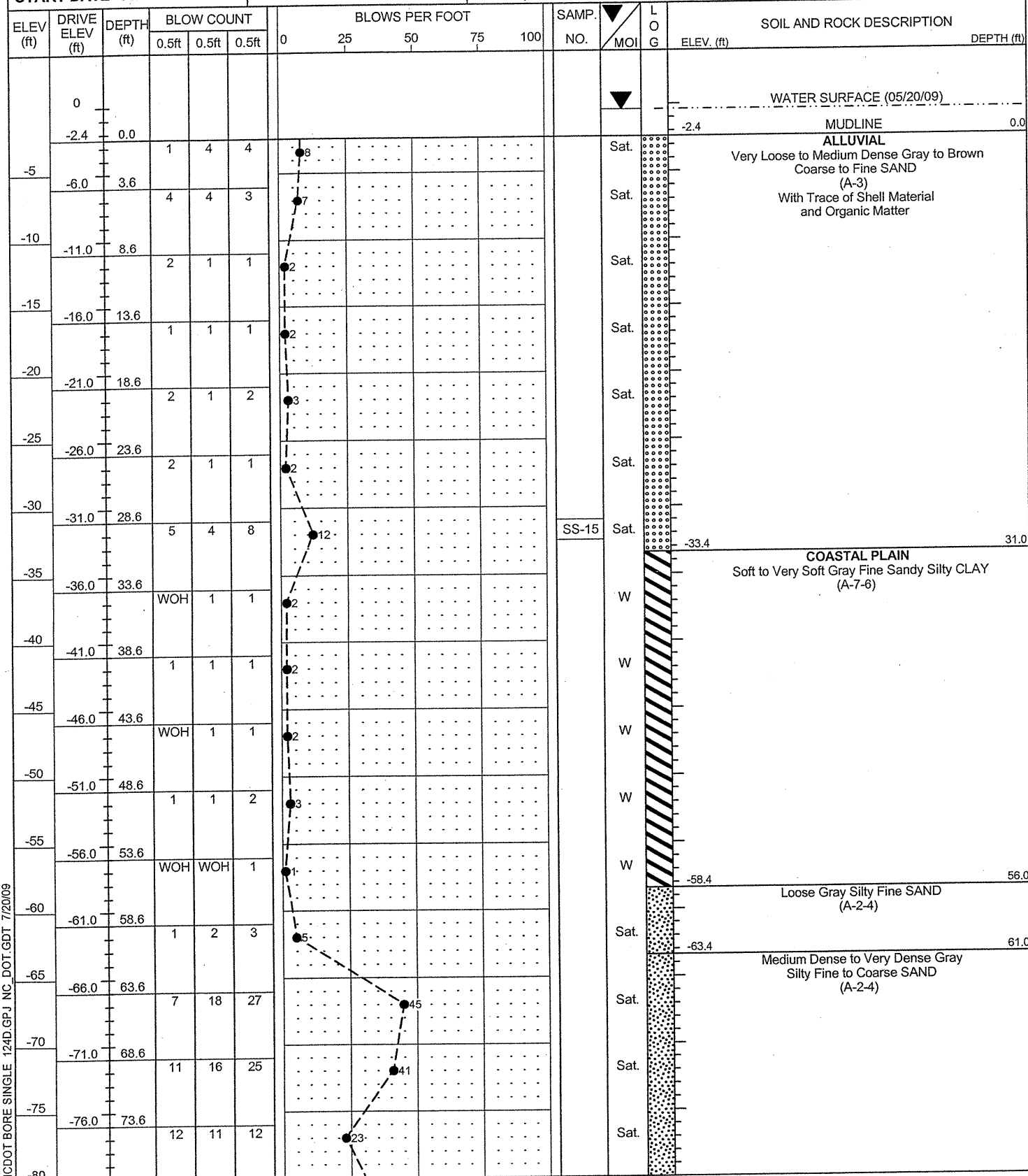
PROJECT NO. 33813.1.1	ID. B-4647	COUNTY Tyrrell	GEOLOGIST N. Bradley
SITE DESCRIPTION Bridge No. 6 over Northwest Fork Alligator River on N.C.94			GROUND WTR (ft)
BORING NO. B6-B	STATION 27+77	OFFSET 21ft RT	ALIGNMENT -L-
COLLAR ELEV. -2.9 ft	TOTAL DEPTH 109.0 ft	NORTHING 729,401	EASTING 2,832,998
DRILL MACHINE CME-750	DRILL METHOD NW Casing/2-15/16" Tricone	HAMMER TYPE Automatic	
START DATE 05/21/09	COMP. DATE 05/21/09	SURFACE WATER DEPTH 2.3ft	DEPTH TO ROCK N/A



NCDOT BORE SINGLE 124D.GPJ NC_DOT.GDT 7/20/09

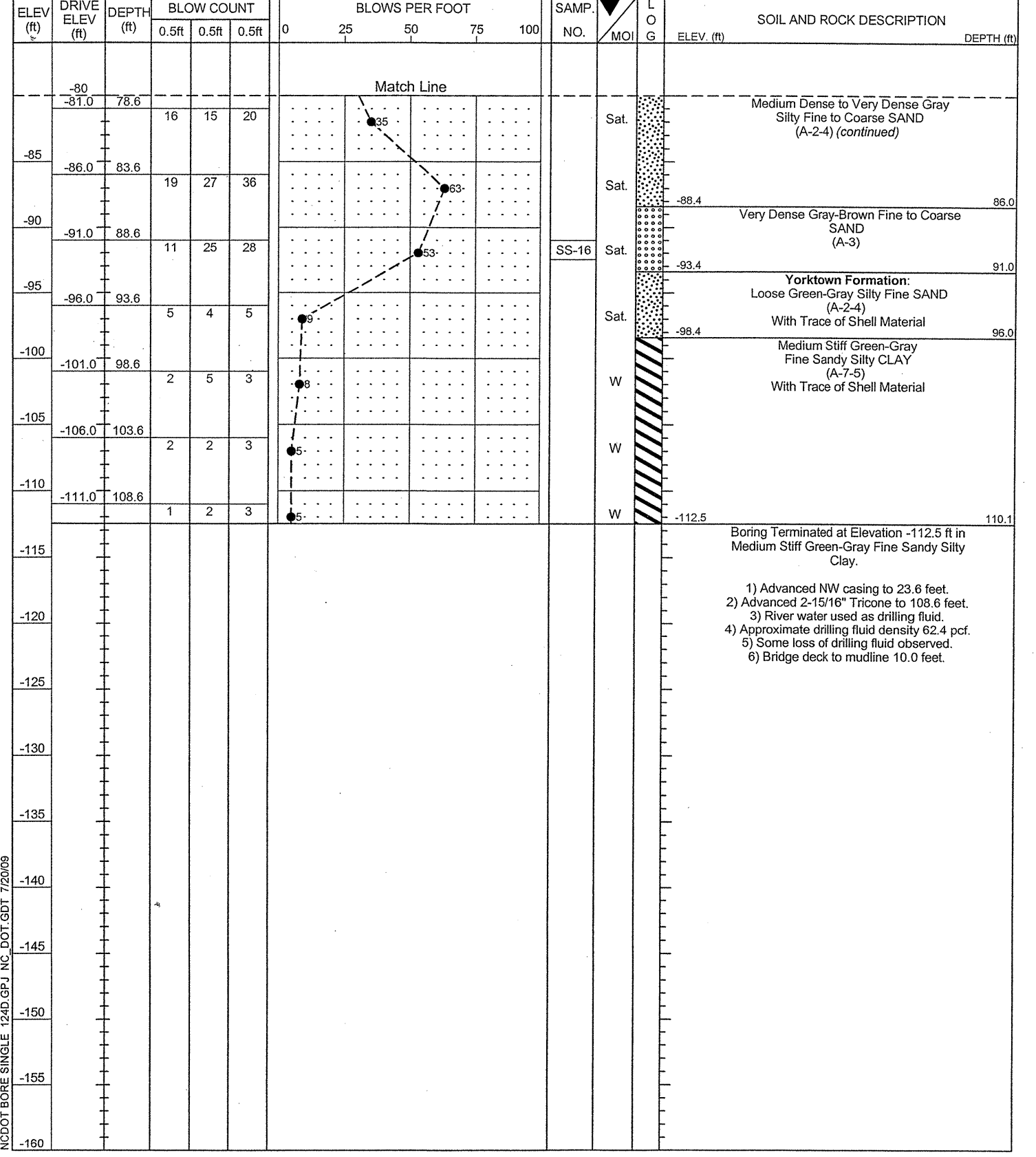
- 1) Advanced NW casing to 37.5 feet.
- 2) Advanced 2-15/16" Tricone to 107.5 feet.
- 3) River water used as drilling fluid.
- 4) Approximate drilling fluid density 62.4 pcf.
- 5) Moderate loss of drilling fluid observed.
- 6) Bridge deck to mudline 11.0 feet.

PROJECT NO. 33813.1.1	ID. B-4647	COUNTY Tyrrell	GEOLOGIST N. Bradley
SITE DESCRIPTION Bridge No. 6 over Northwest Fork Alligator River on N.C.94			GROUND WTR (ft)
BORING NO. B7-B	STATION 28+24	OFFSET 19ft RT	ALIGNMENT -L-
COLLAR ELEV. -2.4 ft	TOTAL DEPTH 110.1 ft	NORTHING 729,443	EASTING 2,833,019
DRILL MACHINE CME-750	DRILL METHOD NW Casing/2-15/16" Tricone	HAMMER TYPE Automatic	
START DATE 05/20/09	COMP. DATE 05/20/09	SURFACE WATER DEPTH 2.0ft	DEPTH TO ROCK N/A



NCDOT BORE SINGLE 124D.GPJ NC_DOT.GDT 7/20/09

PROJECT NO. 33813.1.1	ID. B-4647	COUNTY Tyrrell	GEOLOGIST N. Bradley
SITE DESCRIPTION Bridge No. 6 over Northwest Fork Alligator River on N.C.94			GROUND WTR (ft)
BORING NO. B7-B	STATION 28+24	OFFSET 19ft RT	ALIGNMENT -L-
COLLAR ELEV. -2.4 ft	TOTAL DEPTH 110.1 ft	NORTHING 729,443	EASTING 2,833,019
DRILL MACHINE CME-750	DRILL METHOD NW Casing/2-15/16" Tricone	HAMMER TYPE Automatic	
START DATE 05/20/09	COMP. DATE 05/20/09	SURFACE WATER DEPTH 2.0ft	DEPTH TO ROCK N/A

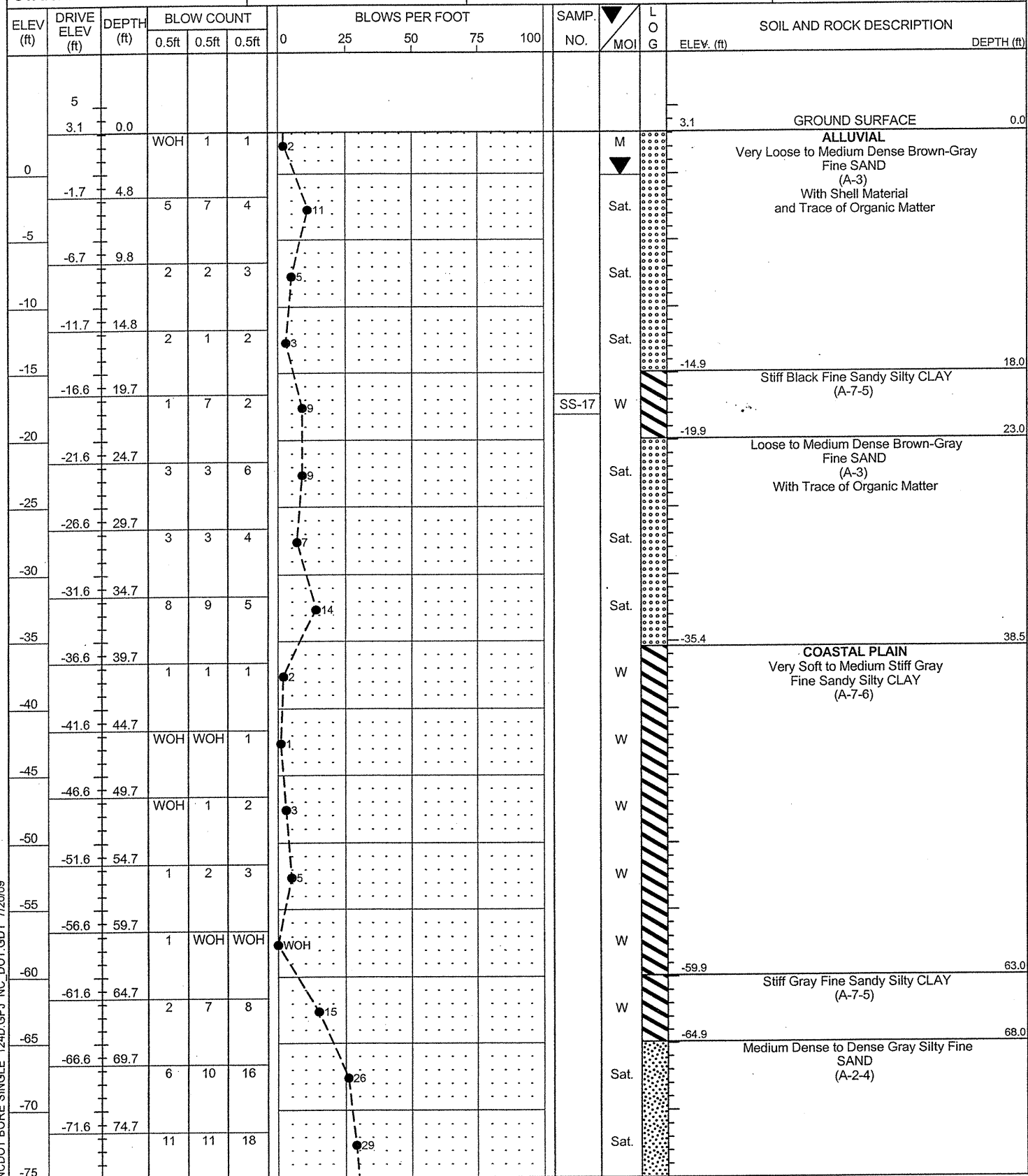


NCDOT BORE SINGLE 124D.GPJ NC_DOT.GDT 7/20/09

- 1) Advanced NW casing to 23.6 feet.
- 2) Advanced 2-15/16" Tricone to 108.6 feet.
- 3) River water used as drilling fluid.
- 4) Approximate drilling fluid density 62.4 pcf.
- 5) Some loss of drilling fluid observed.
- 6) Bridge deck to mudline 10.0 feet.

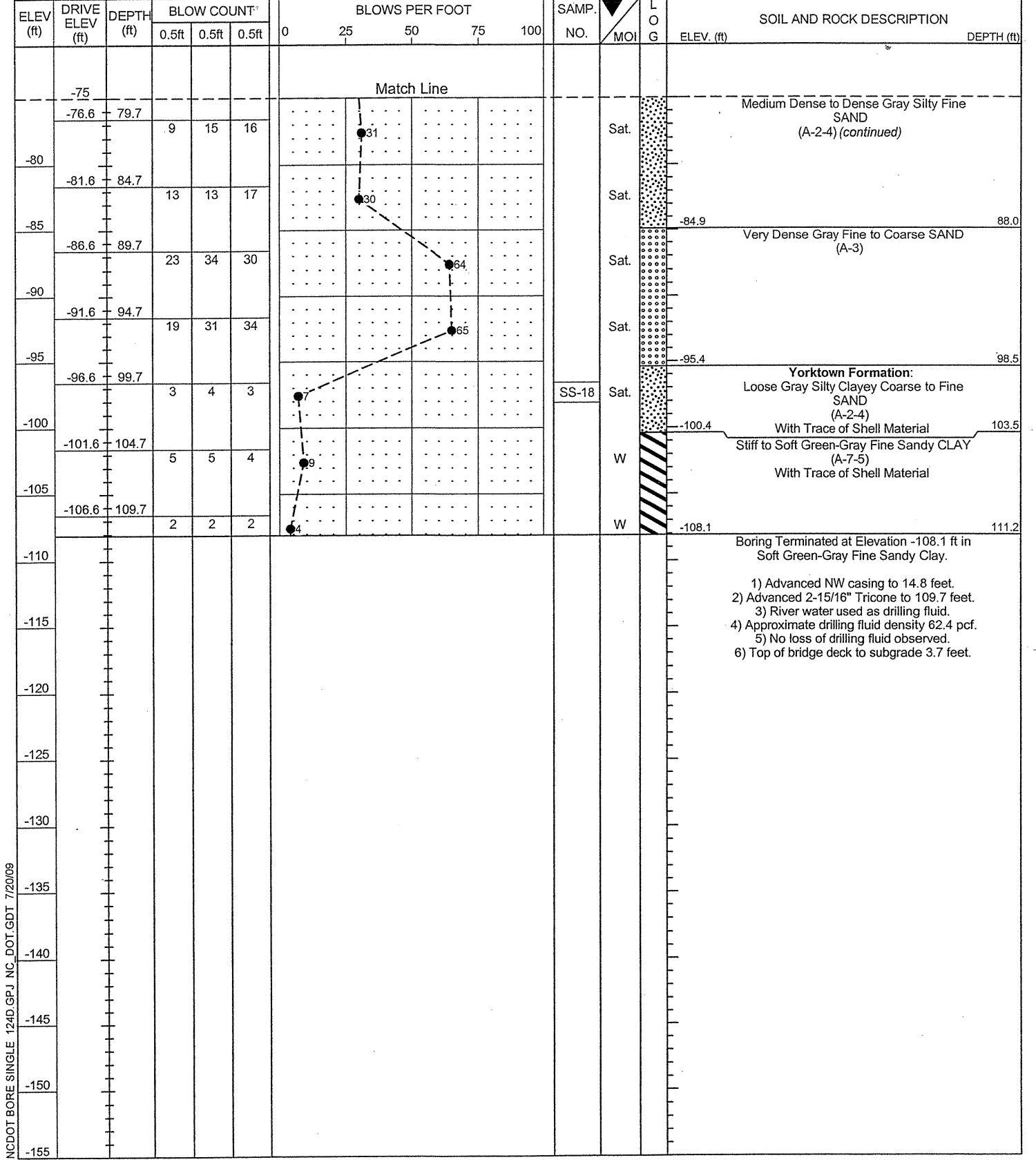
Boring Terminated at Elevation -112.5 ft in Medium Stiff Green-Gray Fine Sandy Silty Clay.

PROJECT NO. 33813.1.1	ID. B-4647	COUNTY Tyrrell	GEOLOGIST N. Bradley
SITE DESCRIPTION Bridge No. 6 over Northwest Fork Alligator River on N.C.94			GROUND WTR (ft)
BORING NO. EB2-B	STATION 28+74	OFFSET 20ft RT	ALIGNMENT -L-
COLLAR ELEV. 3.1 ft	TOTAL DEPTH 111.2 ft	NORTHING 729,487	EASTING 2,833,044
DRILL MACHINE CME-750	DRILL METHOD NW Casing/2-15/16" Tricone	HAMMER TYPE Automatic	
START DATE 05/19/09	COMP. DATE 05/19/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



NCDOT BORE SINGLE 124D.GPJ NC_DOT.GDT 7/20/09

PROJECT NO. 33813.1.1	ID. B-4647	COUNTY Tyrrell	GEOLOGIST N. Bradley
SITE DESCRIPTION Bridge No. 6 over Northwest Fork Alligator River on N.C.94			GROUND WTR (ft)
BORING NO. EB2-B	STATION 28+74	OFFSET 20ft RT	ALIGNMENT -L-
COLLAR ELEV. 3.1 ft	TOTAL DEPTH 111.2 ft	NORTHING 729,487	EASTING 2,833,044
DRILL MACHINE CME-750	DRILL METHOD NW Casing/2-15/16" Tricone	HAMMER TYPE Automatic	
START DATE 05/19/09	COMP. DATE 05/19/09	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



NCDOT BORE SINGLE 124D.GPJ NC_DOT.GDT 7/20/09

SUMMARY OF LABORATORY TEST DATA



Soil Classification and Gradation

S&ME Project #:	1051-09-124	Test Date(s):	5/29 - 6/6/09
State Project No.:	33813.1.1	County:	Tyrrell
Federal ID No.:	BRSTP-94(1)	Report Date:	6/6/2009
Project Name:	Bridge No. 6 on NC 94 over Northwest Fork Alligator River		
Client Name:	NCDOT		
Client Address:	Raleigh, North Carolina		

Boring No.	Sample No.	Sample Depth (feet)	AASHTO Classification	Total % Passing Sieve #					Total Mortar Fraction				LL	PL	PI	Organic Content %	Moisture Content %
				10	40	60	200	270	Coarse Sand	Fine Sand	Silt	Clay					
EB1-B	SS-1	18.7-20.2	A-2-4 (0)	99	94	85	33.1	19.4	14	66	14	6	24	0	N.P.	2.9	ND
EB1-B	SS-2	93.7-95.1	A-2-4 (0)	98	62	37	10.8	8.7	62	29	5	4	17	0	N.P.	ND	ND
B1-B	SS-3	4.4-5.9	A-3 (0)	100	100	96	4.4	2.5	4	94	0	2	25	0	N.P.	ND	ND
B1-B	SS-4	94.4-95.9	A-2-4 (0)	99	87	78	16.3	14.0	21	65	4	10	19	0	N.P.	ND	ND
B2-B	SS-5	33.9-35.4	A-2-4 (0)	100	100	86	30.4	22.8	14	63	11	12	19	0	N.P.	ND	ND
B2-B	SS-6	108.9-110.4	A-1-b (0)	86	46	37	11.5	9.7	57	32	3	8	22	0	N.P.	ND	ND
B3-B	SS-7	16.9-18.4	A-7-5 (28)	100	100	100	95.3	90.0	0	10	57	33	55	31	24	ND	57.7
B3-B	SS-8	51.9-53.4	A-2-4 (0)	100	100	100	17.2	9.1	0	91	4	5	25	0	N.P.	ND	ND
B4-B	SS-9	45.5-47.0	A-4 (0)	100	100	95	49.2	37.1	5	58	21	16	24	18	6	ND	30.3
B4-B	SS-10	65.5-67.0	A-4 (3)	100	100	99	58.9	49.4	1	50	24	25	28	19	9	ND	42.0
B5-B	SS-11	3.5-5.0	A-4 (0)	100	55	50	43.5	42.1	50	8	24	18	37	35	2	23.4	ND
B5-B	SS-12	73.5-75.0	A-2-4 (0)	100	100	99	11.9	7.2	1	92	3	4	26	0	N.P.	ND	ND
B6-B	SS-13	57.5-59.0	A-7-6 (12)	100	100	100	57.0	38.4	0	61	24	15	49	24	25	ND	43.9
B6-B	SS-14	87.5-90	A-1-b (0)	96	19	8	3.2	2.5	91	6	1	2	18	0	N.P.	ND	ND
B7-B	SS-15	28.6-30.1	A-3 (0)	100	94	77	3.7	2.9	22	75	1	2	23	0	N.P.	ND	ND
B7-B	SS-16	88.6-90.1	A-3 (0)	100	53	14	4.7	3.6	86	10	2	2	18	0	N.P.	ND	ND
EB2-B	SS-17	19.7-21.2	A-7-5 (15)	100	100	98	90.2	83.5	2	14	60	24	53	42	11	ND	ND
EB2-B	SS-18	99.7-101.2	A-2-4 (0)	100	100	87	24.9	21.0	13	66	6	15	23	0	N.P.	ND	ND

Note: N.P.=Non-plastic; ND=Not Determined.

References: AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes

AASHTO T89: Determining the Liquid Limit of Soils AASHTO T265: Laboratory Determination of Moisture Content of Soils

Mal Krajan, AET

Technician Name:

S&ME, Inc.

Signature

104-01-0703

Certification #

3201 Spring Forest Road, Raleigh, NC 27616

Abner F. Riggs, Jr., P.E.

Technical Responsibility:

Senior Engineer

Position

Summary Table.XLS

Particle Size Analysis of Soils

AASHTO T 88 as Modified by NCDOT



S&ME Project #: **1051-09-124**
 Project Name: **Bridge No. 6 on NC94 over Northwest Fork Alligator River**
 Client Name: **NCDOT**
 Client Address: **Raleigh, North Carolina**
 State Project #: **33813.1.1**

Report Date: **6/6/2009**
 Test Date(s): **5/29 - 6/6/09**

F.A. Project No: **BRSTP-94(1)** TIP NO: **B-4647**

Boring #: **EB1-B** Sample #: **SS-1** Sample Date: **5/19 - 5/28/09**
 Location: **STA 25+03** Offset: **20 FT RT.-L-** Depth (ft): **18.7 - 20.2**
 Sample Description: **Gray to Brown Clayey Silty Cse. to F. SAND with Trace of Organic Matter A-2-4 (0)**



As Defined by NCDOT		Fine Sand	< 0.25 mm and > 0.05 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.05 and > 0.005 mm
Coarse Sand	< 2.00 mm and > 0.25 mm	Clay	< 0.005 mm

Maximum Particle Size	3/8"	Coarse Sand	14.2%	Silt	14.0%
Gravel	0.6%	Fine Sand	65.8%	Clay	6.0%
Apparent Relative Density		Moisture Content		% Passing #200	33.1%
Liquid Limit	24	Plastic Limit	0	Plastic Index	N.P.

Soil Mortar (-#10 Sieve)

Coarse Sand 14.3% Fine Sand 66.2% Silt 14.0% Clay 5.5%

Description of Sand & Gravel Particles: Rounded Angular Hard & Durable Soft Weathered & Friable

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT
 AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test AASHTO T265: Laboratory Determination of Moisture Content of Soils
 AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils
 AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes

Technician Name: Mal Krajan

104-01-0703
 Certification #

Technical Responsibility: Mal Krajan

(Signature)
 Signature

Laboratory Manager
(Signature)
 Signature

Particle Size Analysis of Soils

AASHTO T 88 as Modified by NCDOT

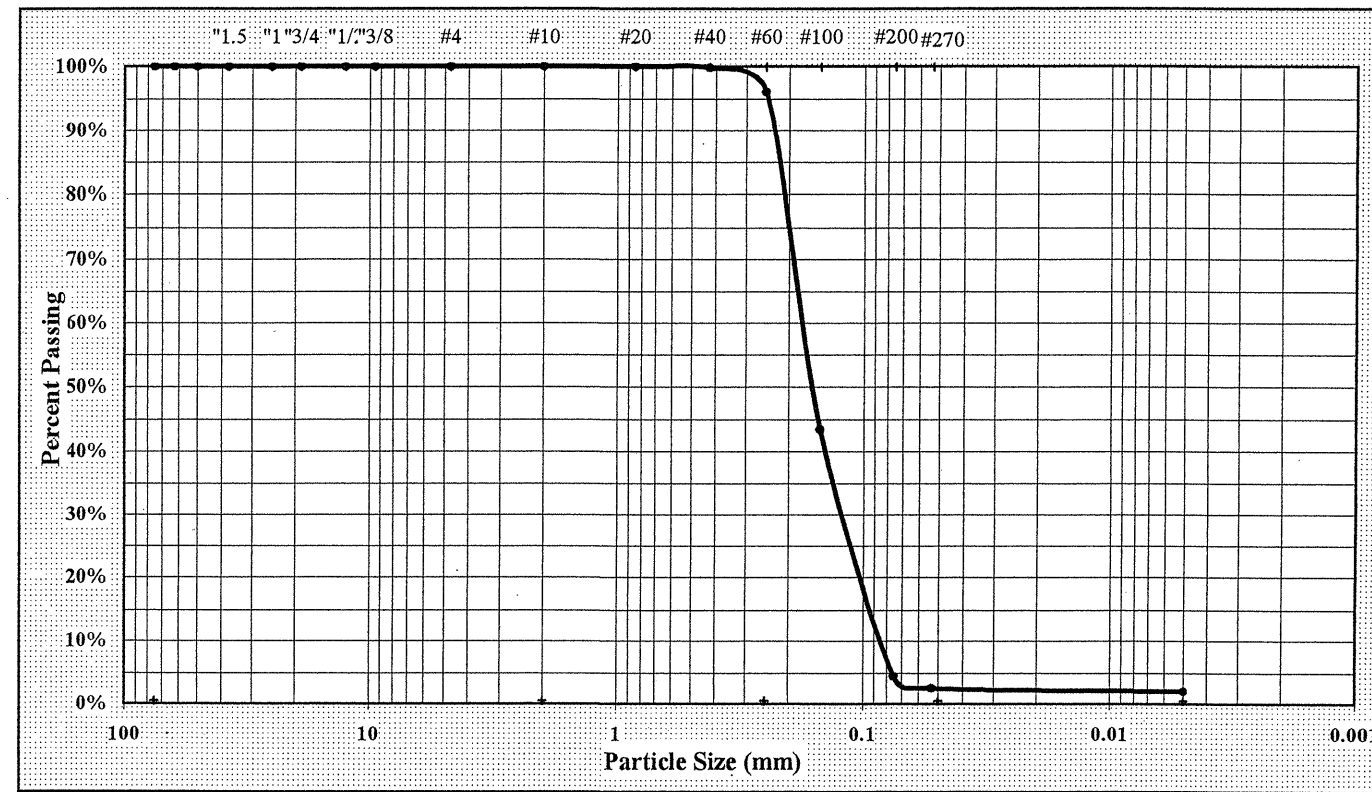


S&ME Project #: **1051-09-124**
 Project Name: **Bridge No. 6 on NC94 over Northwest Fork Alligator River**
 Client Name: **NCDOT**
 Client Address: **Raleigh, North Carolina**
 State Project #: **33813.1.1**

Report Date: **6/6/2009**
 Test Date(s): **5/29 - 6/6/09**

F.A. Project No: **BRSTP-94(1)** TIP NO: **B-4647**

Boring #: **B1-B** Sample #: **SS-3** Sample Date: **5/19 - 5/28/09**
 Location: **STA 25+53** Offset: **20 FT RT. -L-** Depth (ft): **4.4 - 5.9**
 Sample Description: **Gray Coarse to Fine SAND A-3 (0)**



As Defined by NCDOT		Fine Sand	< 0.25 mm and > 0.05 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.05 and > 0.005 mm
Coarse Sand	< 2.00 mm and > 0.25 mm	Clay	< 0.005 mm

Maximum Particle Size	3/8"	Coarse Sand	3.9%	Silt	1.0%
Gravel	0.0%	Fine Sand	93.6%	Clay	2.0%
Apparent Relative Density		Moisture Content		% Passing #200	4.4%
Liquid Limit	25	Plastic Limit	0	Plastic Index	N.P.

Soil Mortar (-#10 Sieve)

Coarse Sand 3.9% Fine Sand 93.6% Silt 0.5% Clay 2.0%

Description of Sand & Gravel Particles: Rounded Angular Hard & Durable Soft Weathered & Friable

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT
 AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test AASHTO T265: Laboratory Determination of Moisture Content of Soils
 AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils
 AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes

Technician Name: Mal Krajan

104-01-0703
 Certification #

Technical Responsibility: Mal Krajan

(Signature)
 Signature

Laboratory Manager
(Signature)
 Signature

Particle Size Analysis of Soils

AASHTO T 88 as Modified by NCDOT

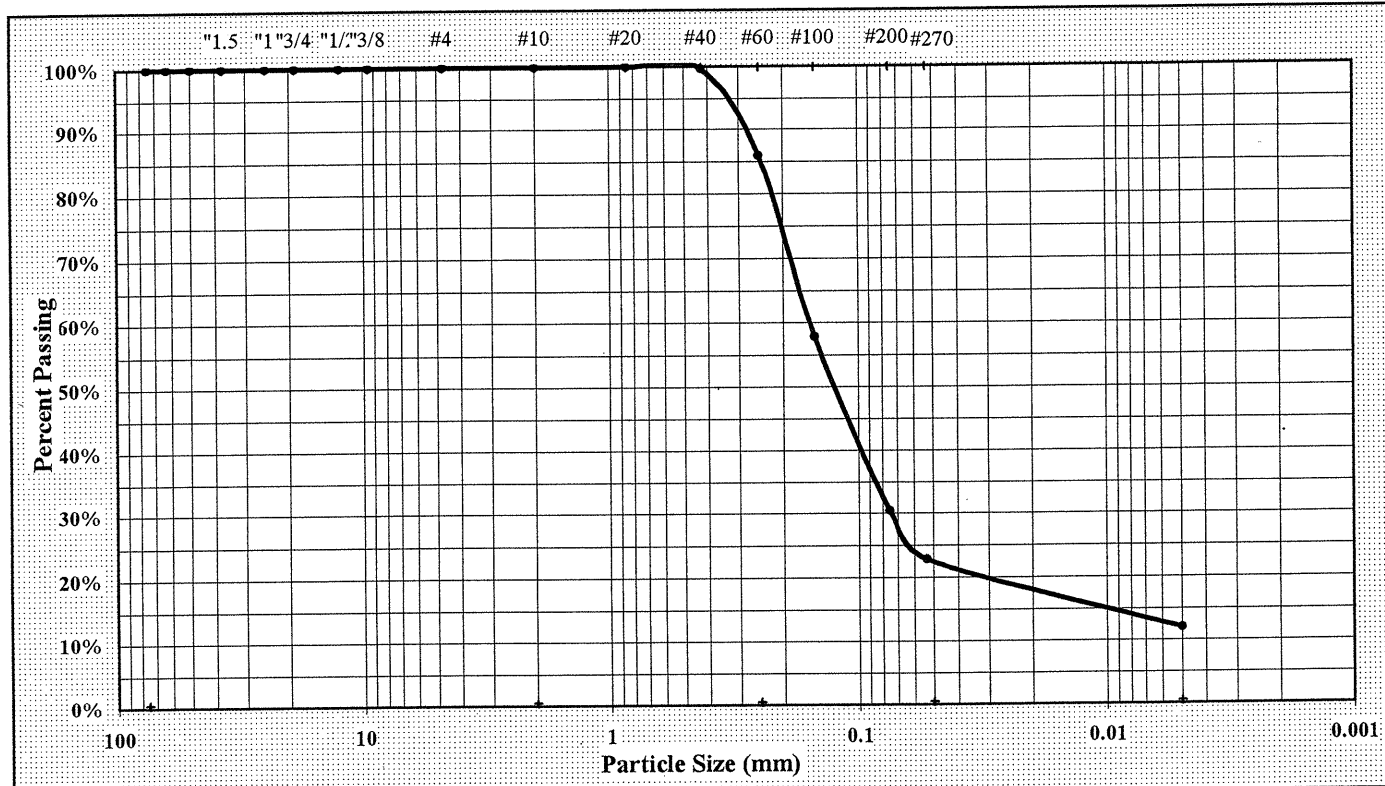


S&ME Project #: **1051-09-124**
 Project Name: **Bridge No. 6 on NC94 over Northwest Fork Alligator River**
 Client Name: **NCDOT**
 Client Address: **Raleigh, North Carolina**
 State Project #: **33813.1.1**

Report Date: **6/6/2009**
 Test Date(s): **5/29 - 6/6/09**

F.A. Project No: **BRSTP-94(1)** TIP NO: **B-4647**

Boring #: **B2-B** Sample #: **SS-5** Sample Date: **5/19 - 5/28/09**
 Location: **STA 25+96** Offset: **19 FT RT. -L-** Depth (ft): **33.9 - 35.4**
 Sample Description: **Gray Slightly Silty Clayey Coarse to Fine SAND A-2-4 (0)**



As Defined by NCDOT		Fine Sand	< 0.25 mm and > 0.05 mm		
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.05 and > 0.005 mm		
Coarse Sand	< 2.00 mm and > 0.25 mm	Clay	< 0.005 mm		
Maximum Particle Size	#20	Coarse Sand	14.1%	Silt	11.0%
Gravel	0.0%	Fine Sand	63.1%	Clay	12.0%
Apparent Relative Density		Moisture Content	32.0%	% Passing #200	30.4%
Liquid Limit	19	Plastic Limit	0	Plastic Index	N.P.

Soil Mortar (-#10 Sieve)

Coarse Sand	14.1%	Fine Sand	63.1%	Silt	10.8%	Clay	12.0%
Description of Sand & Gravel Particles: Rounded <input type="checkbox"/> Angular <input type="checkbox"/> Hard & Durable <input type="checkbox"/> Soft <input type="checkbox"/> Weathered & Friable <input type="checkbox"/>							
Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter							

References: AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT
 AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test AASHTO T265: Laboratory Determination of Moisture Content of Soils
 AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils
 AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes

Technician Name: Mal Krajan 104-01-0703
 Certification #
 Technical Responsibility: Mal Krajan *Signature* **Laboratory Manager**
Signature

Particle Size Analysis of Soils

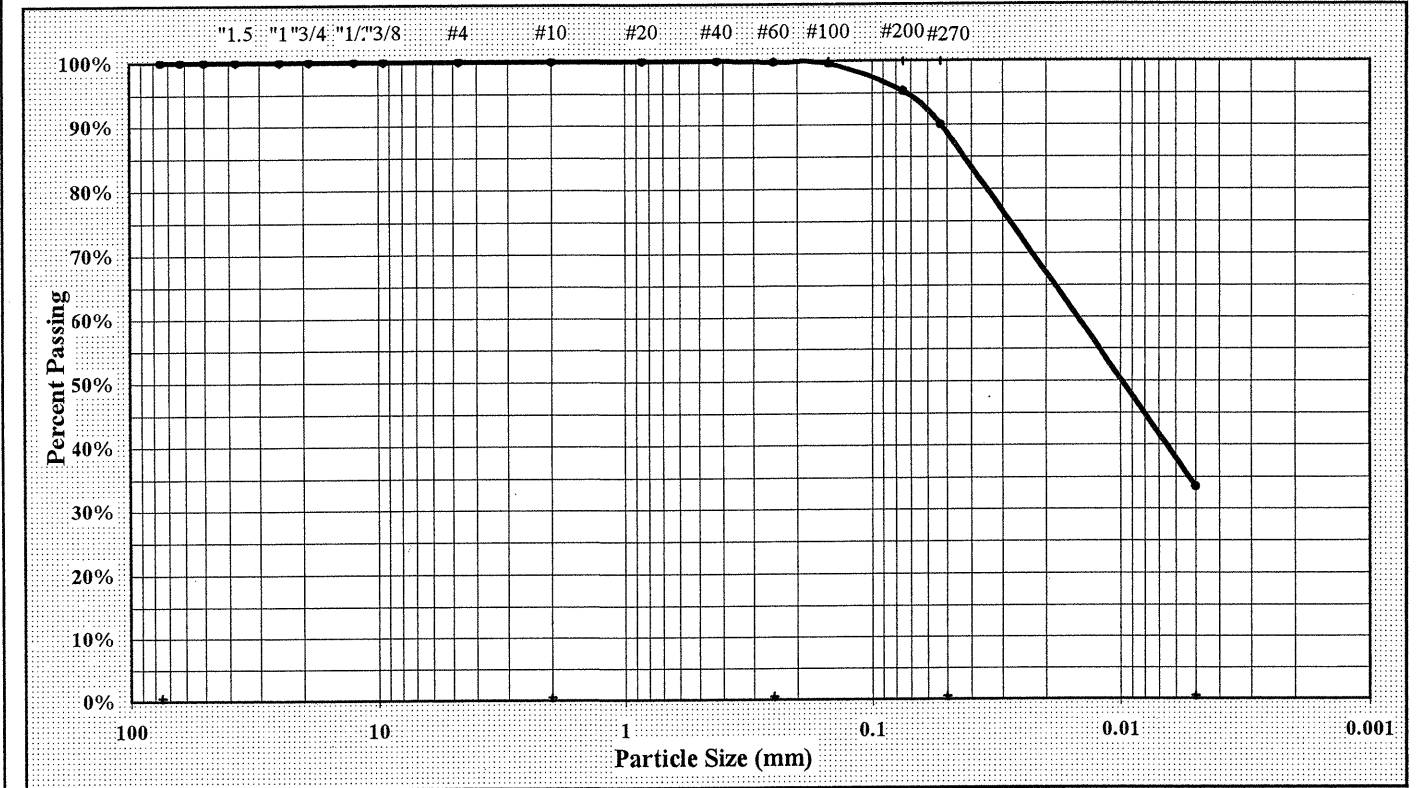
AASHTO T 88 as Modified by NCDOT

S&ME Project #: **1051-09-124**
 Project Name: **Bridge No. 6 on NC94 over Northwest Fork Alligator River**
 Client Name: **NCDOT**
 Client Address: **Raleigh, North Carolina**
 State Project #: **33813.1.1**

Report Date: **6/6/2009**
 Test Date(s): **5/29 - 6/6/09**

F.A. Project No: **BRSTP-94(1)** TIP NO: **B-4647**

Boring #: **B3-B** Sample #: **SS-7** Sample Date: **5/19 - 5/28/09**
 Location: **STA 26+42** Offset: **20 FT RT. -L-** Depth (ft): **16.9 - 18.4**
 Sample Description: **Gray Fine Sandy Silty CLAY A-7-5 (28)**



As Defined by NCDOT		Fine Sand	< 0.25 mm and > 0.05 mm		
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.05 and > 0.005 mm		
Coarse Sand	< 2.00 mm and > 0.25 mm	Clay	< 0.005 mm		
Maximum Particle Size	#40	Coarse Sand	0.2%	Silt	57.0%
Gravel	0.0%	Fine Sand	9.8%	Clay	33.0%
Apparent Relative Density		Moisture Content	57.7%	% Passing #200	95.3%
Liquid Limit	55	Plastic Limit	31	Plastic Index	24

Soil Mortar (-#10 Sieve)

Coarse Sand	0.2%	Fine Sand	9.8%	Silt	56.6%	Clay	33.4%
Description of Sand & Gravel Particles: Rounded <input type="checkbox"/> Angular <input type="checkbox"/> Hard & Durable <input type="checkbox"/> Soft <input type="checkbox"/> Weathered & Friable <input type="checkbox"/>							
Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter							

References: AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT
 AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test AASHTO T265: Laboratory Determination of Moisture Content of Soils
 AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils
 AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes

Technician Name: Mal Krajan 104-01-0703
 Certification #
 Technical Responsibility: Mal Krajan *Signature* **Laboratory Manager**
Signature

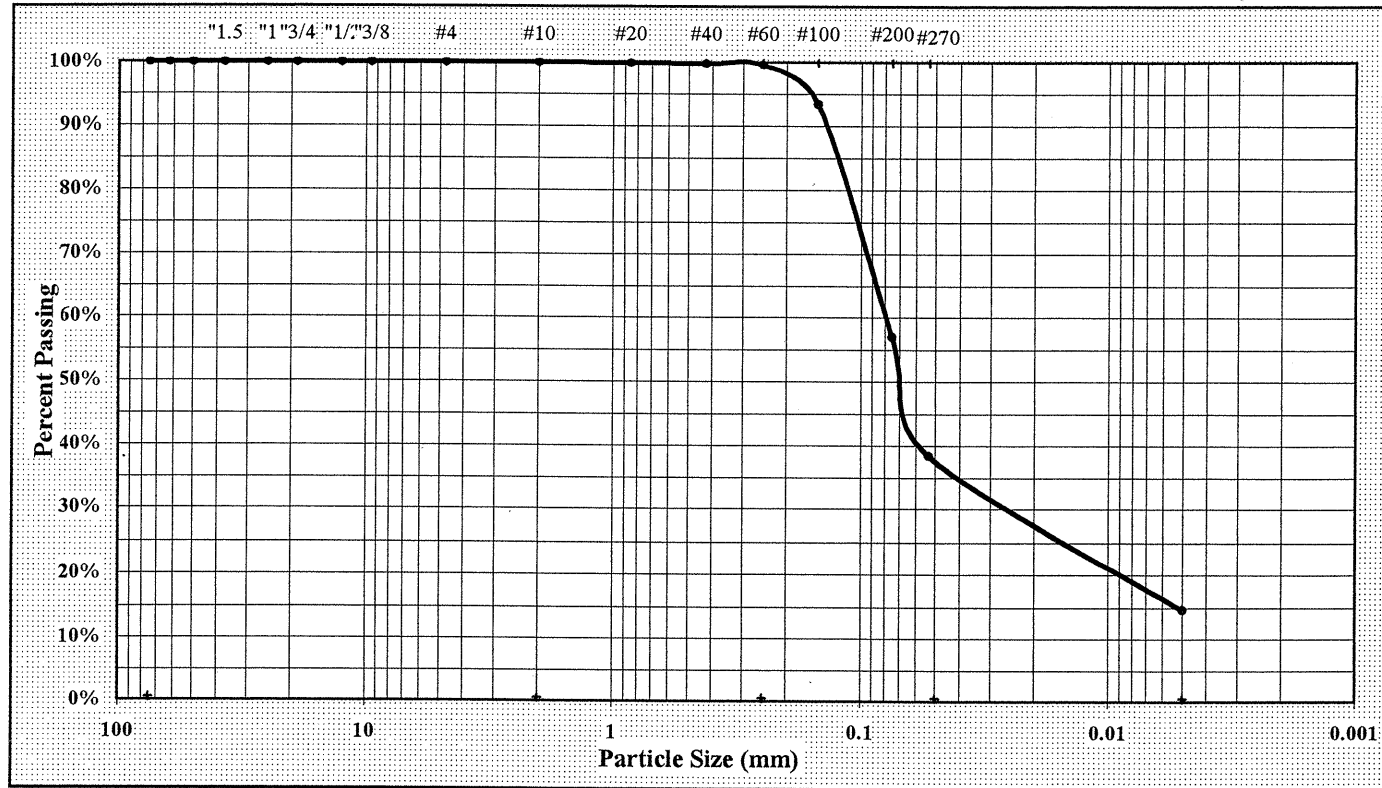
Particle Size Analysis of Soils

AASHTO T 88 as Modified by NCDOT



S&ME Project #: **1051-09-124**
 Project Name: **Bridge No. 6 on NC94 over Northwest Fork Alligator River**
 Client Name: **NCDOT**
 Client Address: **Raleigh, North Carolina**
 State Project #: **33813.1.1**
 Report Date: **6/6/2009**
 Test Date(s): **5/29 - 6/6/09**
 F.A. Project No: **BRSTP-94(1)**
 TIP NO: **B-4647**

Boring #: **B6-B** Sample #: **SS-13** Sample Date: **5/19 - 5/28/09**
 Location: **STA 27+77** Offset: **21 FT RT. -L-** Depth (ft): **57.5 - 59.0**
 Sample Description: **Gray Fine Sandy Silty CLAY A-7-6 (12)**



As Defined by NCDOT		Fine Sand	< 0.25 mm and > 0.05 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.05 and > 0.005 mm
Coarse Sand	< 2.00 mm and > 0.25 mm	Clay	< 0.005 mm

Maximum Particle Size	3/8"	Coarse Sand	0.4%	Silt	24.0%
Gravel	0.0%	Fine Sand	61.2%	Clay	15.0%
Apparent Relative Density		Moisture Content	43.9%	% Passing #200	57.0%
Liquid Limit	49	Plastic Limit	24	Plastic Index	25

Soil Mortar (-#10 Sieve)

Coarse Sand	0.4%	Fine Sand	61.2%	Silt	23.8%	Clay	14.6%
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Description of Sand & Gravel Particles: Rounded Angular Hard & Durable Soft Weathered & Friable
 Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT
 AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test AASHTO T265: Laboratory Determination of Moisture Content of Soils
 AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils
 AASHTO M 145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes

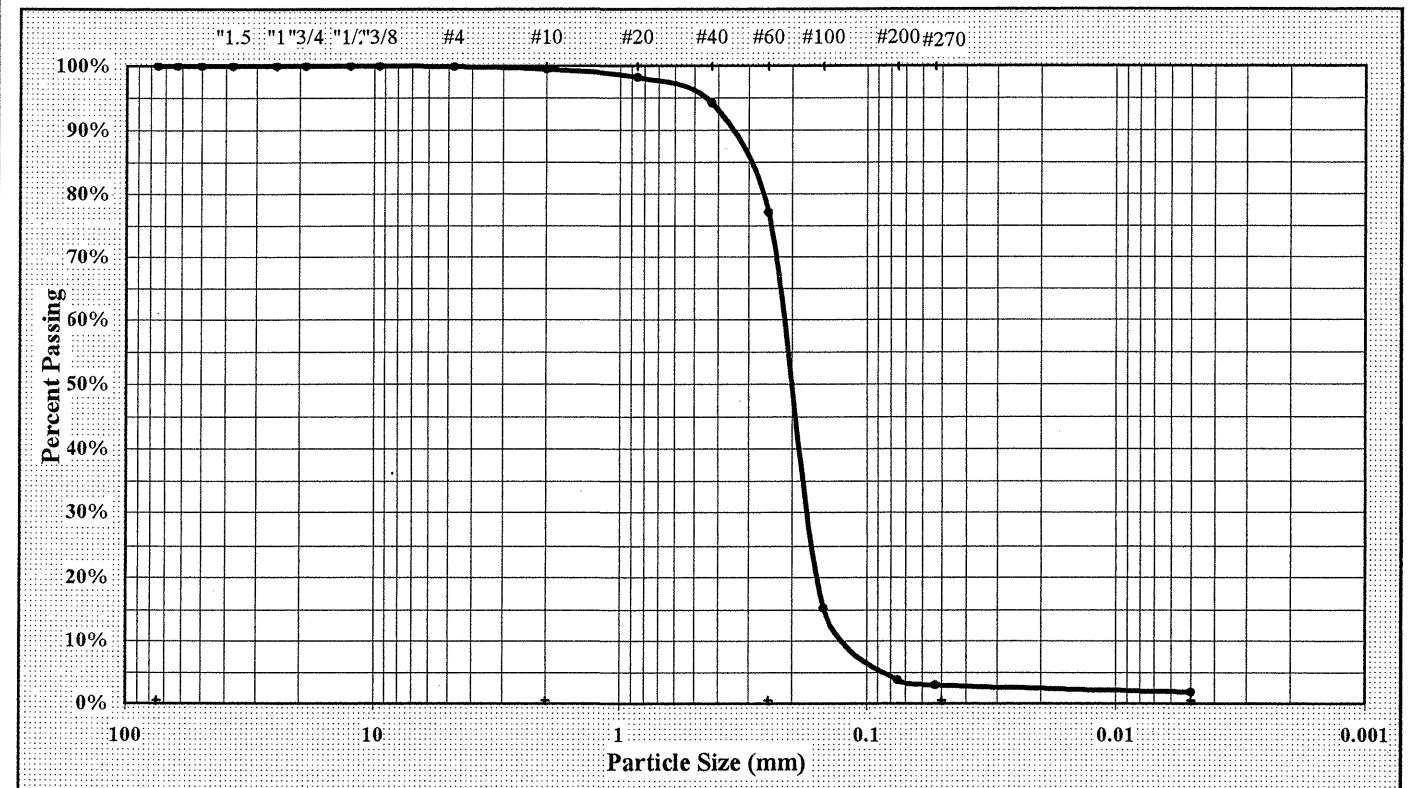
Technician Name: Mal Krajan 104-01-0703
 Certification #
 Technical Responsibility: Mal Krajan Laboratory Manager
 Signature

Particle Size Analysis of Soils

AASHTO T 88 as Modified by NCDOT

S&ME Project #: **1051-09-124**
 Project Name: **Bridge No. 6 on NC94 over Northwest Fork Alligator River**
 Client Name: **NCDOT**
 Client Address: **Raleigh, North Carolina**
 State Project #: **33813.1.1**
 Report Date: **6/6/2009**
 Test Date(s): **5/29 - 6/6/09**
 F.A. Project No: **BRSTP-94(1)**
 TIP NO: **B-4647**

Boring #: **B7-B** Sample #: **SS-15** Sample Date: **5/19 - 5/28/09**
 Location: **STA 28+24** Offset: **19 FT RT. -L-** Depth (ft): **28.6 - 30.1**
 Sample Description: **Gray to Brown Coarse to Fine SAND A-3 (0)**



As Defined by NCDOT		Fine Sand	< 0.25 mm and > 0.05 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.05 and > 0.005 mm
Coarse Sand	< 2.00 mm and > 0.25 mm	Clay	< 0.005 mm

Maximum Particle Size	3/8"	Coarse Sand	22.4%	Silt	1.0%
Gravel	0.5%	Fine Sand	74.2%	Clay	2.0%
Apparent Relative Density		Moisture Content		% Passing #200	3.7%
Liquid Limit	23	Plastic Limit	0	Plastic Index	N.P.

Soil Mortar (-#10 Sieve)

Coarse Sand	22.5%	Fine Sand	74.6%	Silt	1.1%	Clay	1.8%
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Description of Sand & Gravel Particles: Rounded Angular Hard & Durable Soft Weathered & Friable
 Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT
 AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test AASHTO T265: Laboratory Determination of Moisture Content of Soils
 AASHTO T89: Determining the Liquid Limit of Soils AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils
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Technician Name: Mal Krajan 104-01-0703
 Certification #
 Technical Responsibility: Mal Krajan Laboratory Manager
 Signature

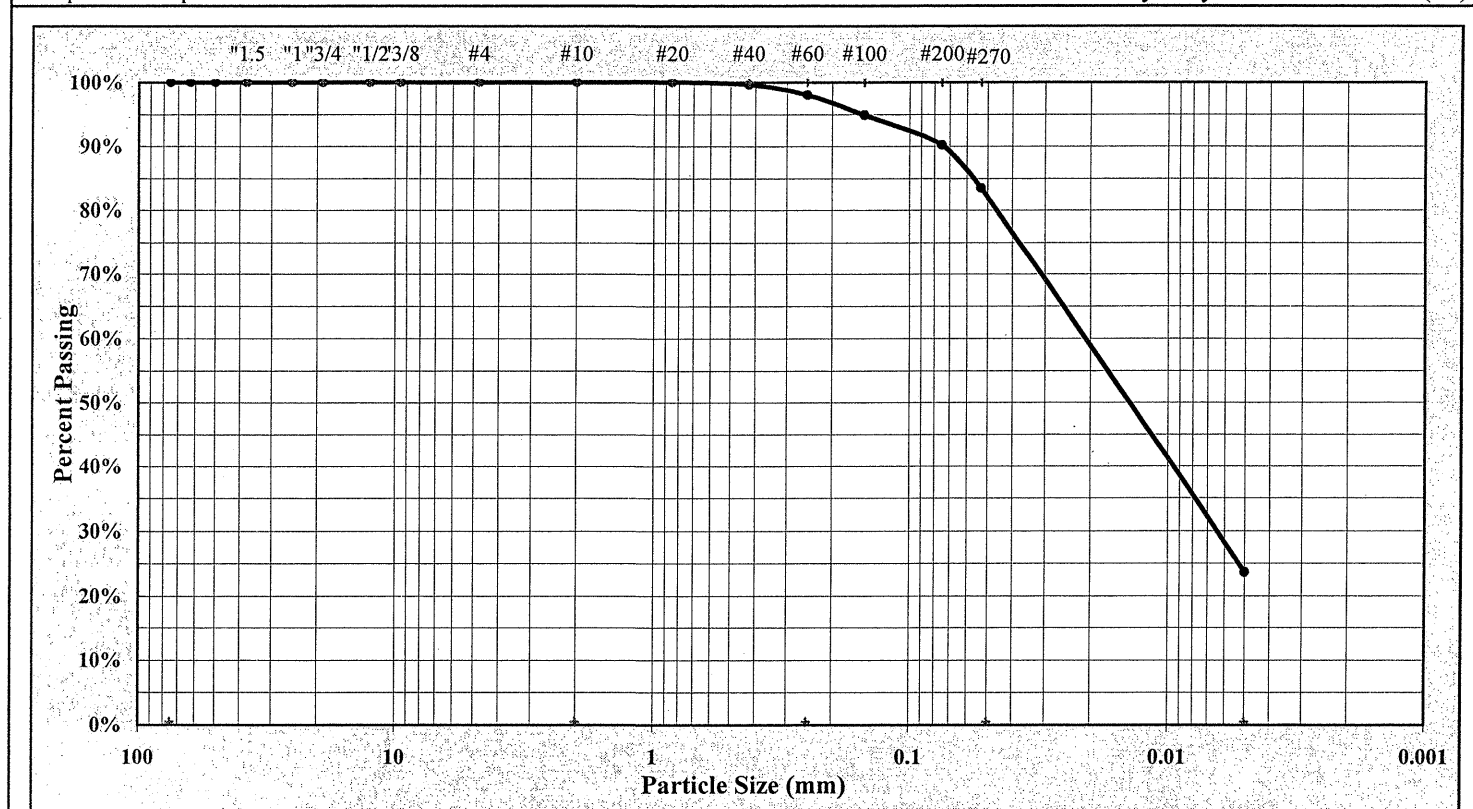


Particle Size Analysis of Soils

AASHTO T 88 as Modified by NCDOT

S&ME Project #: **1051-09-124** Report Date: 6/6/2009
 Project Name: **Bridge No. 6 on NC94 over Northwest Fork Alligator River** Test Date(s): 5/29 - 6/6/09
 Client Name: NCDOT
 Client Address: Raleigh, North Carolina
 State Project #: 33813.1.1 F.A. Project No: BRSTP-94(1) TIP NO: B-4647

Boring #: EB2-B Sample #: SS-17 Sample Date: 5/19 - 5/28/09
 Location: STA 28+74 Offset: 20 FT RT -L- Depth (ft): 19.7 - 21.2
 Sample Description: **Black Fine Sandy Silty CLAY A-7-5 (15)**



As Defined by NCDOT		Fine Sand	< 0.25 mm and > 0.05 mm
Gravel	< 75 mm and > 2.00 mm	Silt	< 0.05 and > 0.005 mm
Coarse Sand	< 2.00 mm and > 0.25 mm	Clay	< 0.005 mm

Maximum Particle Size	#10	Coarse Sand	2.0%	Silt	60.0%
Gravel	0.0%	Fine Sand	14.5%	Clay	24.0%
Apparent Relative Density		Moisture Content	119.1%	% Passing #200	90.2%
Liquid Limit	53	Plastic Limit	42	Plastic Index	11

Soil Mortar (-#10 Sieve)							
Coarse Sand	2.0%	Fine Sand	14.5%	Silt	59.9%	Clay	23.6%

Description of Sand & Gravel Particles: Rounded Angular Hard & Durable Soft Weathered & Friable
 Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g / Liter

References: AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT
 AASHTO T87: Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test AASHTO T265: Laboratory Determination of Moisture Content of Soils
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Technician Name: Mal Krajan 104-01-0703
 Certification #
 Technical Responsibility: Mal Krajan Laboratory Manager



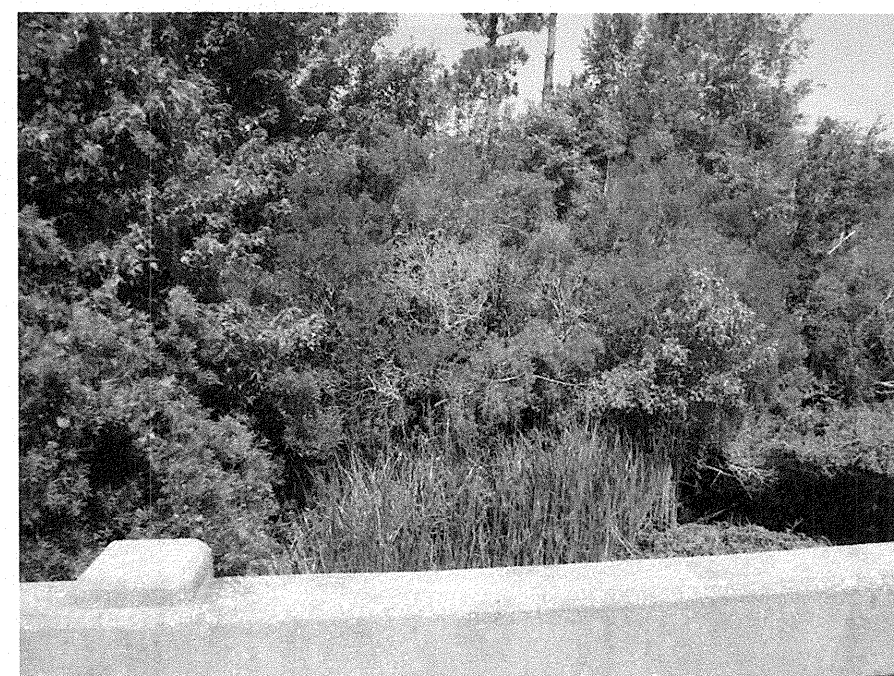
Photograph No. 1:
This photograph was taken from the south approach, right of the -L- alignment, looking north.



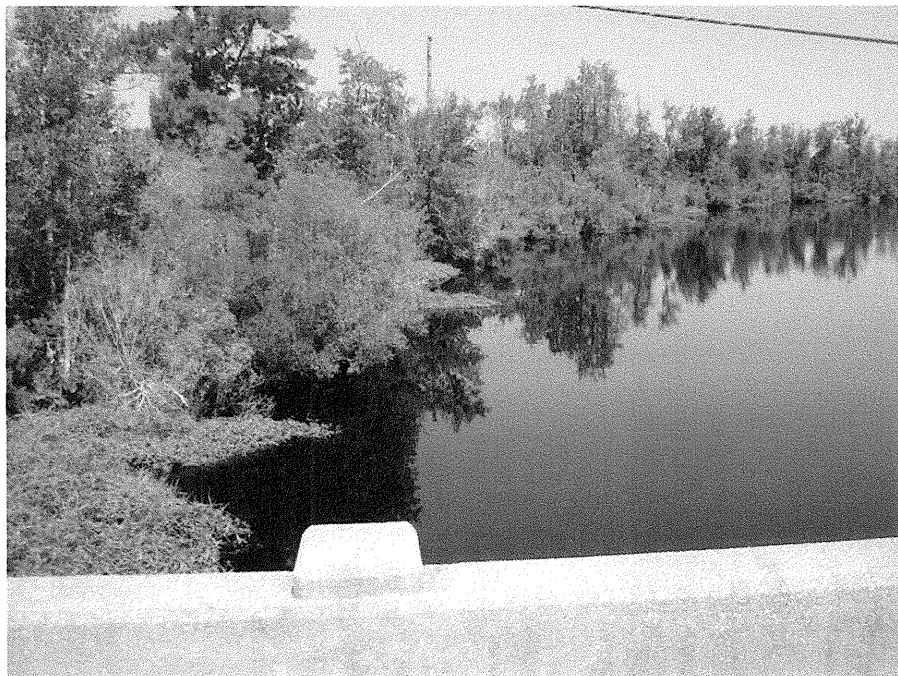
Photograph No. 3:
This photograph was taken from the right side of the -L- alignment, looking west, across proposed End Bent No. 1.



Photograph No. 2:
This photograph was taken at proposed End Bent No. 1, along the -L- alignment, looking north.



Photograph No. 4:
This photograph was taken from the right side of the -L- alignment, looking west, across proposed Interior Bent No. 1.



Photograph No. 5:
This photograph was taken from the right side of the -L- alignment, looking west, across proposed Interior Bent No. 2.



Photograph No. 7:
This photograph was taken from the right side of the -L- alignment, looking west, across proposed Interior Bent No. 4.



Photograph No. 6:
This photograph was taken from the right side of the -L- alignment, looking west, across proposed Interior Bent No. 3.



Photograph No. 8:
This photograph was taken from the right side of the -L- alignment, from the center of the existing bridge deck, looking west (up river).



Photograph No. 9:
This photograph was taken from the right side of the -L- alignment, from the center of the existing bridge deck, looking east (down river).



Photograph No. 11:
This photograph was taken from the right side of the -L- alignment, looking west, across proposed Interior Bent No. 6.



Photograph No. 10:
This photograph was taken from the right side of the -L- alignment, looking west, across proposed Interior Bent No. 5.



Photograph No. 12:
This photograph was taken from the right side of the -L- alignment, looking west, across proposed Interior Bent No. 7.



Photograph No. 13:
This photograph was taken from the right side of the -L- alignment, looking west, across proposed End Bent No. 2.



Photograph No. 15:
This photograph was taken from the north approach, right of the -L- alignment, looking south.



Photograph No. 14:
This photograph was taken at proposed End Bent No. 2, along the -L- alignment, looking south.