

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-410119	1	7

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

STRUCTURE
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 17BP.4.R.25 (SF-410119) F.A. PROJ. _____
COUNTY HALIFAX
PROJECT DESCRIPTION BRIDGE NO. 119 ON SR 1003 (MOONLIGHT ROAD) OVER TRIBUTARY OF DEEP CREEK AT -L- STA. 12+17.70

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CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED BY RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1919 TOT-6850. NEITHER THE SUBSURFACE PLANS NOR REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT FOR BIDDING AND CONSTRUCTION PURPOSES. REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

PROJECT: 17BP.4.R.25 ID: SF-410119

PERSONNEL

C.M. WRIKE

R.E. SMITH

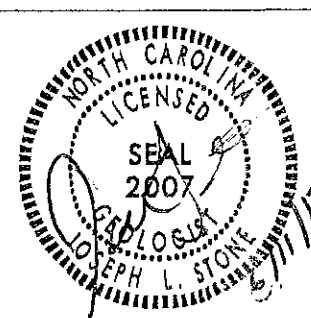
D.G. PINTER

INVESTIGATED BY J.L. STONE

CHECKED BY D.N. ARGENBRIGHT

SUBMITTED BY D.N. ARGENBRIGHT

DATE JUNE 2013



DRAWN BY: C.P. TURNER

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IS IT CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

PROJECT REFERENCE NO. SF-41019
SHEET NO. 2 OF 7

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION: 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)...

GRADATION: 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.
ROCK DESCRIPTION: 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.
TERMS AND DEFINITIONS: ALLOUVIUM (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.
SOIL LEGEND AND AASHTO CLASSIFICATION: Table with columns for General Class, Group Class, Symbol, % Passing, Liquid Limit, Plasticity Index, etc.
MINERALOGICAL COMPOSITION: MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.
COMPRESSIONIBILITY: SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31; MODERATELY COMPRESSIBLE LIQUID LIMIT EQUAL TO 31-50; HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50.
PERCENTAGE OF MATERIAL: ORGANIC MATERIAL, GRANULAR SOILS, SILT-CLAY SOILS, OTHER MATERIAL.
GROUND WATER: WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING; STATIC WATER LEVEL AFTER 24 HOURS; PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA; SPRING OR SEEP.
MISCELLANEOUS SYMBOLS: ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION; SOIL SYMBOL; ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT; INFERRED SOIL BOUNDARY; INFERRED ROCK LINE; ALLUVIAL SOIL BOUNDARY; DIP & DIP DIRECTION OF ROCK STRUCTURES.
ABBREVIATIONS: AR - AUGER REFUSAL; BT - BORING TERMINATED; CL - CLAY; CPT - CONE PENETRATION TEST; CSE - COARSE; DMT - DILATOMETER TEST; DPT - DYNAMIC PENETRATION TEST; F - FINE; FOSS - FOSSILIFEROUS; FRAC - FRACTURED, FRACTURES; FRAGS - FRAGMENTS; HI - HIGHLY; MED - MEDIUM; MICA - MICA; MOU - MODERATELY; NP - NON PLASTIC; ORG - ORGANIC; PMT - PRESSUREMETER TEST; SAP - SAPROLITIC; SD - SAND, SANDY; SIL - SILT, SILTY; SLL - SLIGHTLY; TCR - TRIAXIAL REFUSAL; W - MOISTURE CONTENT; V - VERY; VST - VANE SHEAR TEST; WEA - WEATHERED; WU - UNIT WEIGHT; WUa - DRY UNIT WEIGHT; S - BULK; SS - SPLIT SPOON; ST - SHELBY TUBE; RS - ROCK; RT - RECOMPACTED TRIAXIAL; CBR - CALIFORNIA BEARING RATIO.
EQUIPMENT USED ON SUBJECT PROJECT: DRILL UNITS: MOBILE B-51, BK-51, CME-45C, CME-550, PORTABLE HOIST; ADVANCING TOOLS: CLAY BITS, 6" CONTINUOUS FLIGHT AUGER, 8" HOLLOW AUGERS, HARD FACED FINGER BITS, TUNG-CARBIDE INSERTS, CASING W/ ADVANCER, TRICONE 2 1/2" STEEL TEETH, TRICONE TUNG-CARB, CORE BIT; HAMMER TYPE: AUTOMATIC, MANUAL; CORE SIZE: B, N, H; HAND TOOLS: POST HOLE DIGGER, HAND AUGER, SOUNDING ROD, VANE SHEAR TEST.
FRACTURE SPACING: TERM: VERY WIDE, WIDE, MODERATELY CLOSE, CLOSE, VERY CLOSE; SPACING: MORE THAN 10 FEET, 3 TO 10 FEET, 1 TO 3 FEET, 0.16 TO 1 FEET, LESS THAN 0.16 FEET.
BEDDING: TERM: VERY THICK BEDDED, THICKLY BEDDED, THINLY BEDDED, VERY THINLY BEDDED, THICKLY LAMINATED, THINLY LAMINATED; THICKNESS: > 4 FEET, 1.5 - 4 FEET, 0.16 - 1.5 FEET, 0.03 - 0.16 FEET, 0.008 - 0.03 FEET, < 0.008 FEET.
INDURATION: FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. FRIABLE: 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; SHARP BREAKS ACROSS GRAINS.
TEXTURE OR GRAIN SIZE: U.S. STD. SIEVE SIZE OPENING (MM): 4, 10, 40, 60, 200, 270; COEFFICIENTS: 4.76, 2.00, 0.42, 0.25, 0.075, 0.053.
SOIL MOISTURE - CORRELATION OF TERMS: SOIL MOISTURE SCALE (ATTERBERG LIMITS), FIELD MOISTURE DESCRIPTION, GUIDE FOR FIELD MOISTURE DESCRIPTION.
PLASTICITY: PLASTICITY INDEX (PI), DRY STRENGTH (VERY LOW, SLIGHT, MEDIUM, HIGH).
COLOR: 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.

SITE PLAN



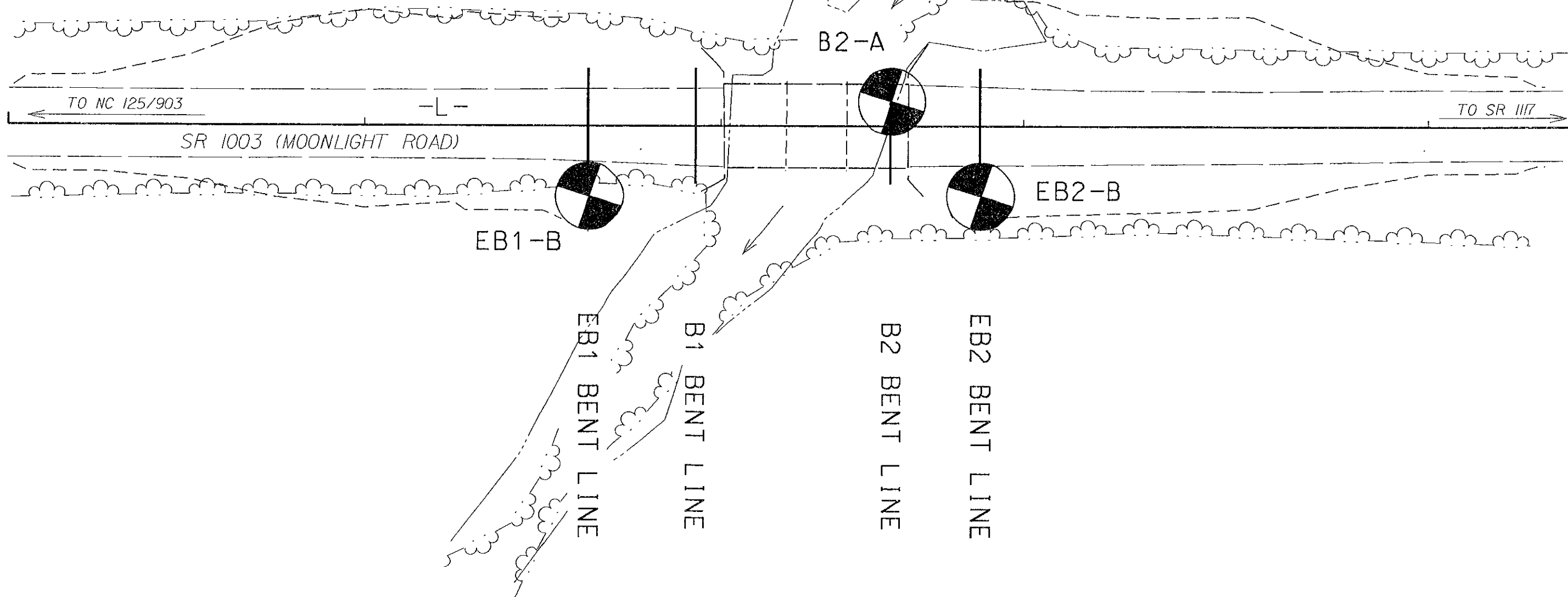
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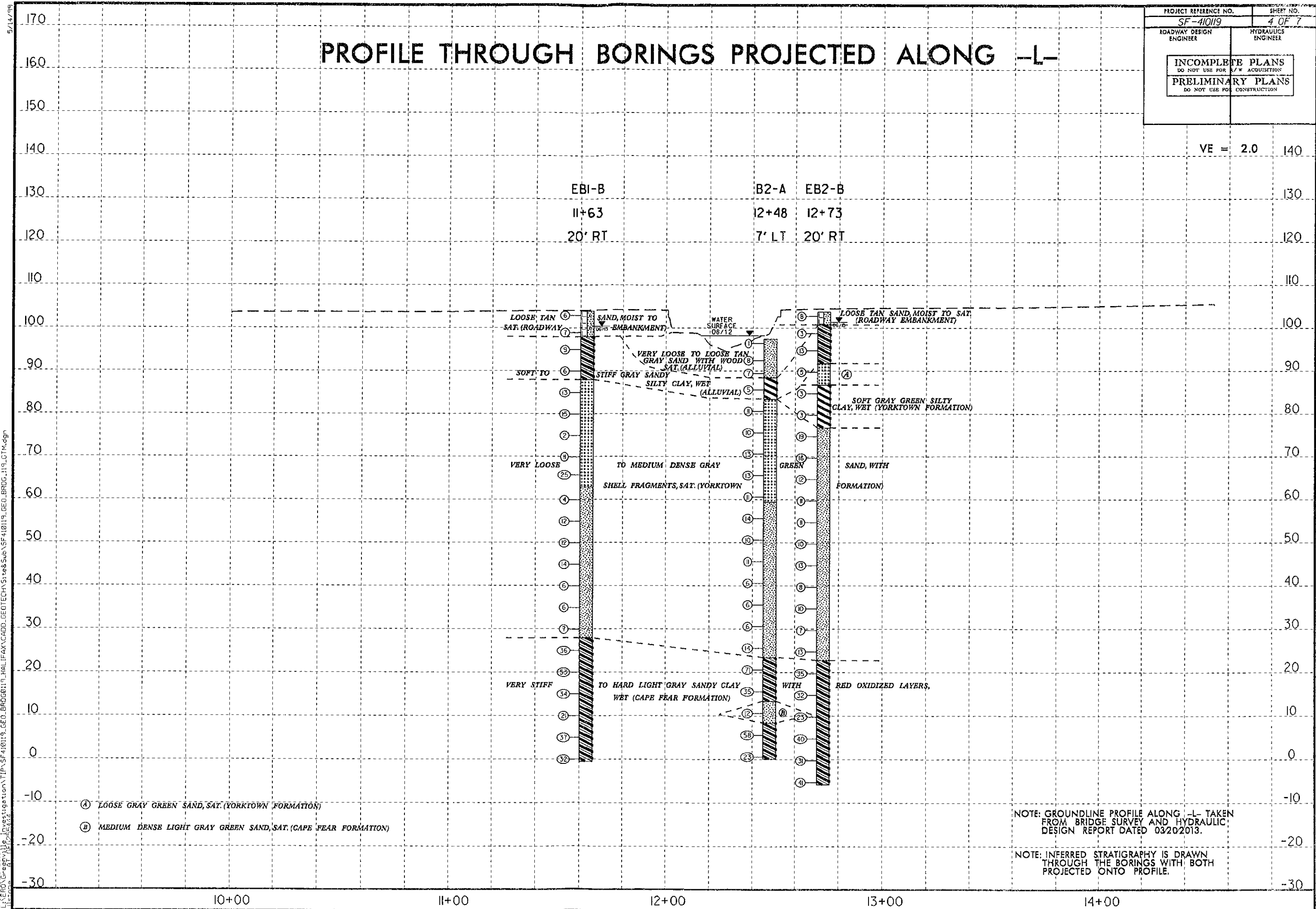
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PROJECT REFERENCE NO. SF-410119	SHEET NO. 4 OF 7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

PROFILE THROUGH BORINGS PROJECTED ALONG -L-

VE = 2.0



- (A) LOOSE GRAY GREEN SAND, SAT. (YORKTOWN FORMATION)
- (B) MEDIUM DENSE LIGHT GRAY GREEN SAND, SAT. (CAPE FEAR FORMATION)

NOTE: GROUNDLINE PROFILE ALONG -L- TAKEN FROM BRIDGE SURVEY AND HYDRAULIC DESIGN REPORT DATED 03/20/2013.

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

5/14/99
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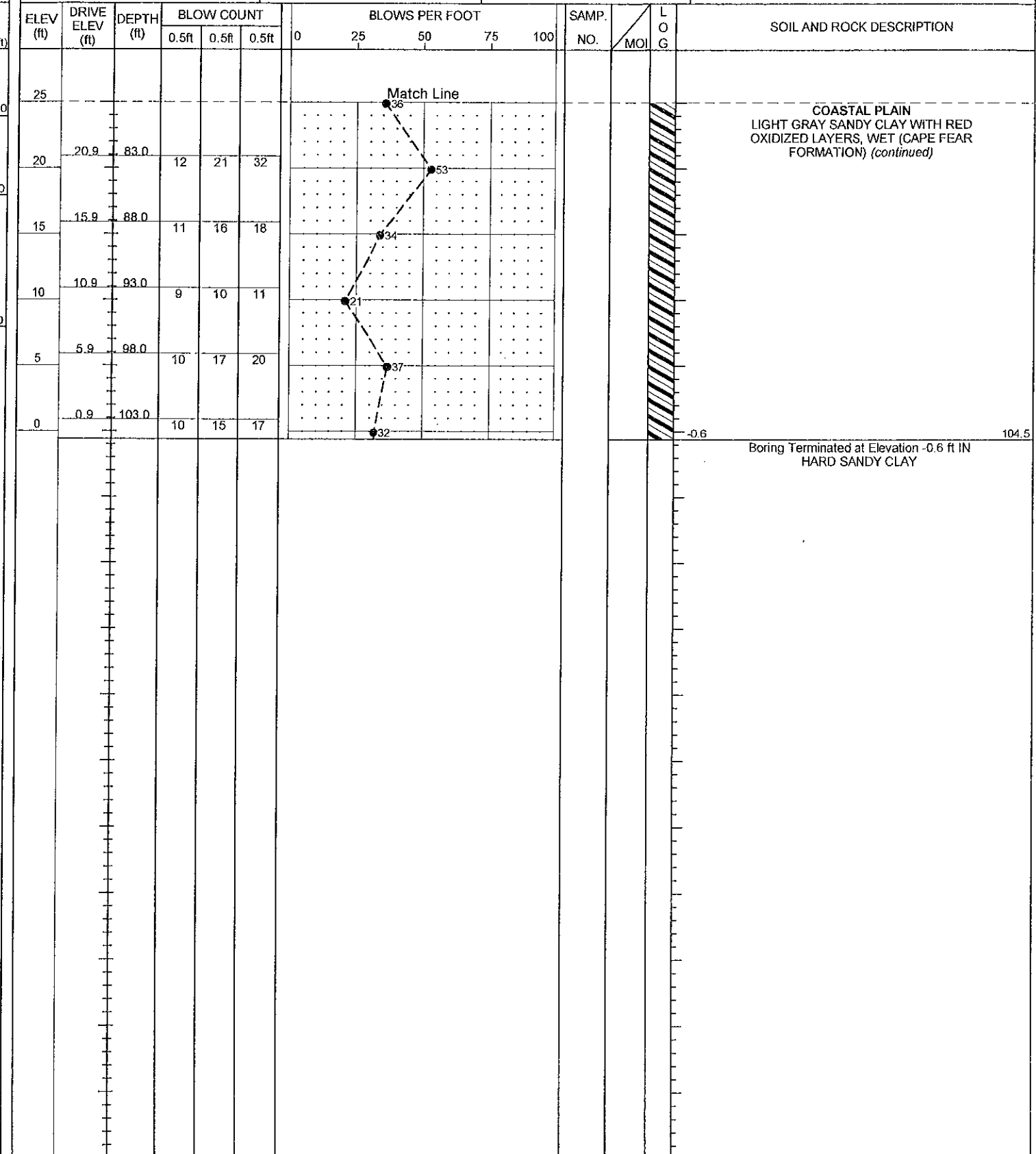
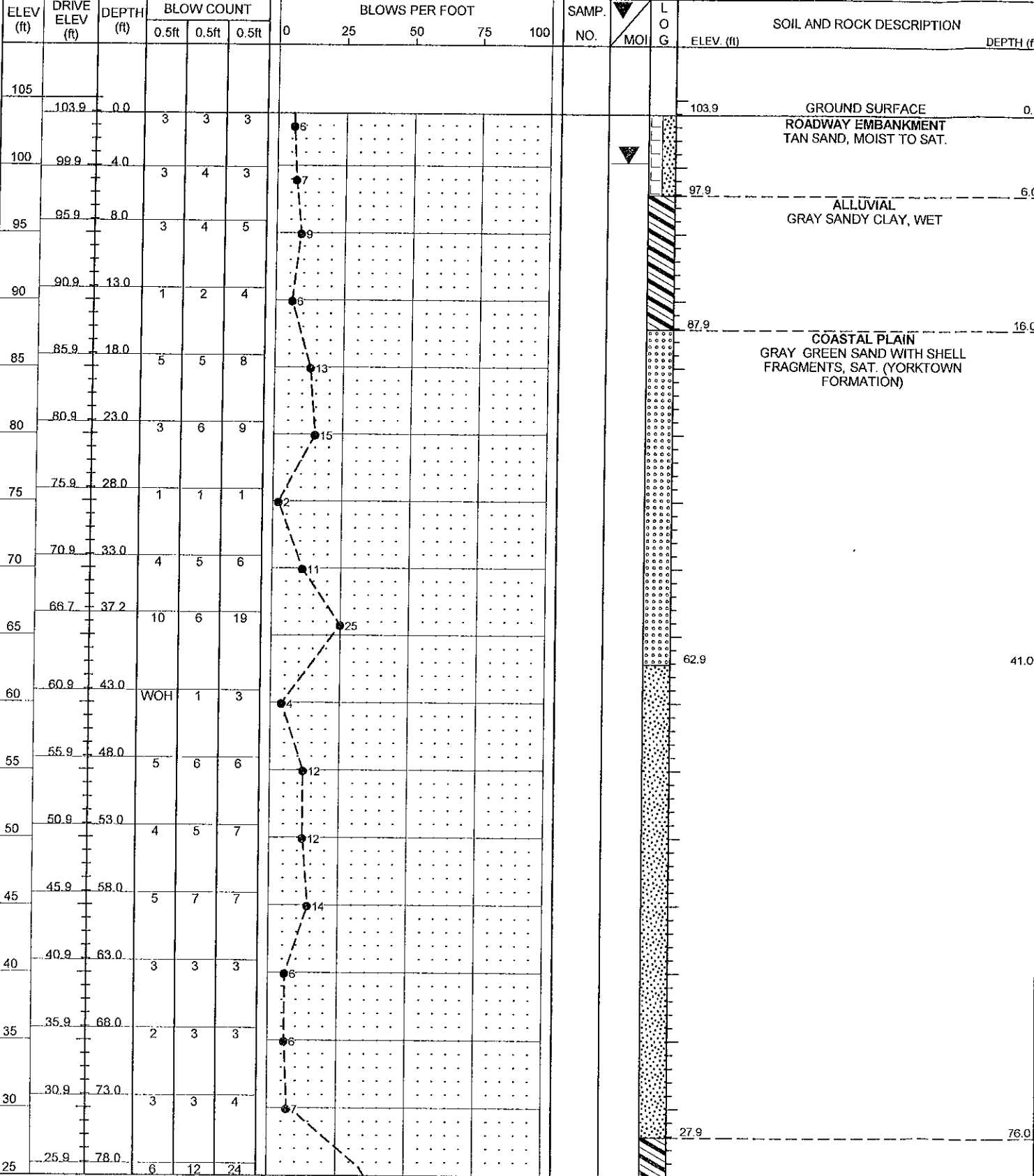


NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 17BP.4.R.25	TIP SF-410119	COUNTY HALIFAX	GEOLOGIST Wrike, C. M.
SITE DESCRIPTION BRIDGE NO. 119 ON -L- (SR 1003) OVER TRIBUTARY OF DEEP CREEK			GROUND WTR (ft)
BORING NO. EB1-B	STATION 11+63	OFFSET 20 ft RT	ALIGNMENT -L-
COLLAR ELEV. 103.9 ft	TOTAL DEPTH 104.5 ft	NORTHING 889,988	EASTING 2,451,360
DRILL RIG/HAMMER EFF./DATE GFO1042 CME-550 91% 05/23/2012		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 06/04/13	COMP. DATE 06/06/13	SURFACE WATER DEPTH N/A

WBS 17BP.4.R.25	TIP SF-410119	COUNTY HALIFAX	GEOLOGIST Wrike, C. M.
SITE DESCRIPTION BRIDGE NO. 119 ON -L- (SR 1003) OVER TRIBUTARY OF DEEP CREEK			GROUND WTR (ft)
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DRILLER Smith, R. E.	START DATE 06/04/13	COMP. DATE 06/06/13	SURFACE WATER DEPTH N/A



NCDOT BORE DOUBLE BORINGS GPJ NC DOT GDT 6/11/13

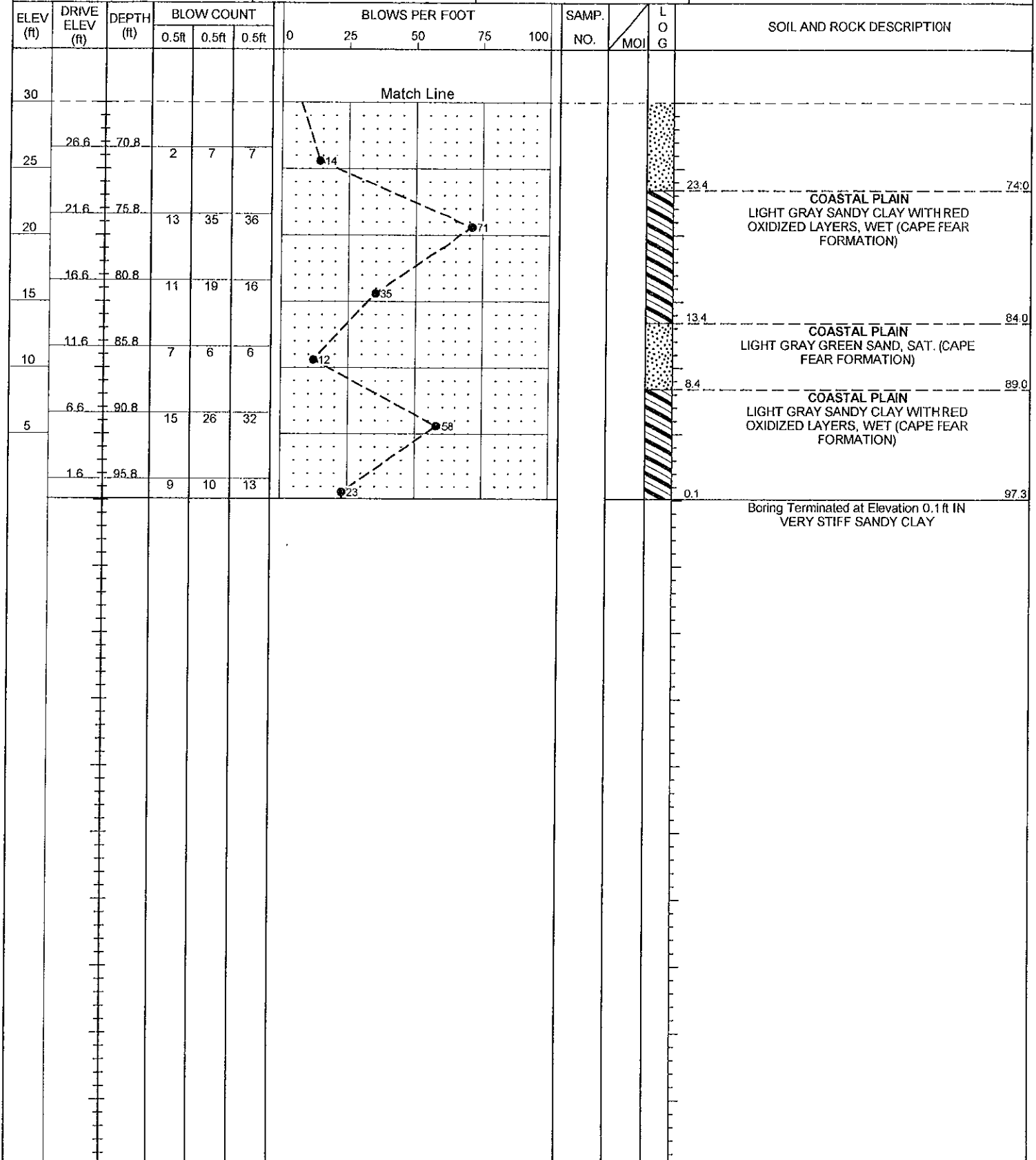
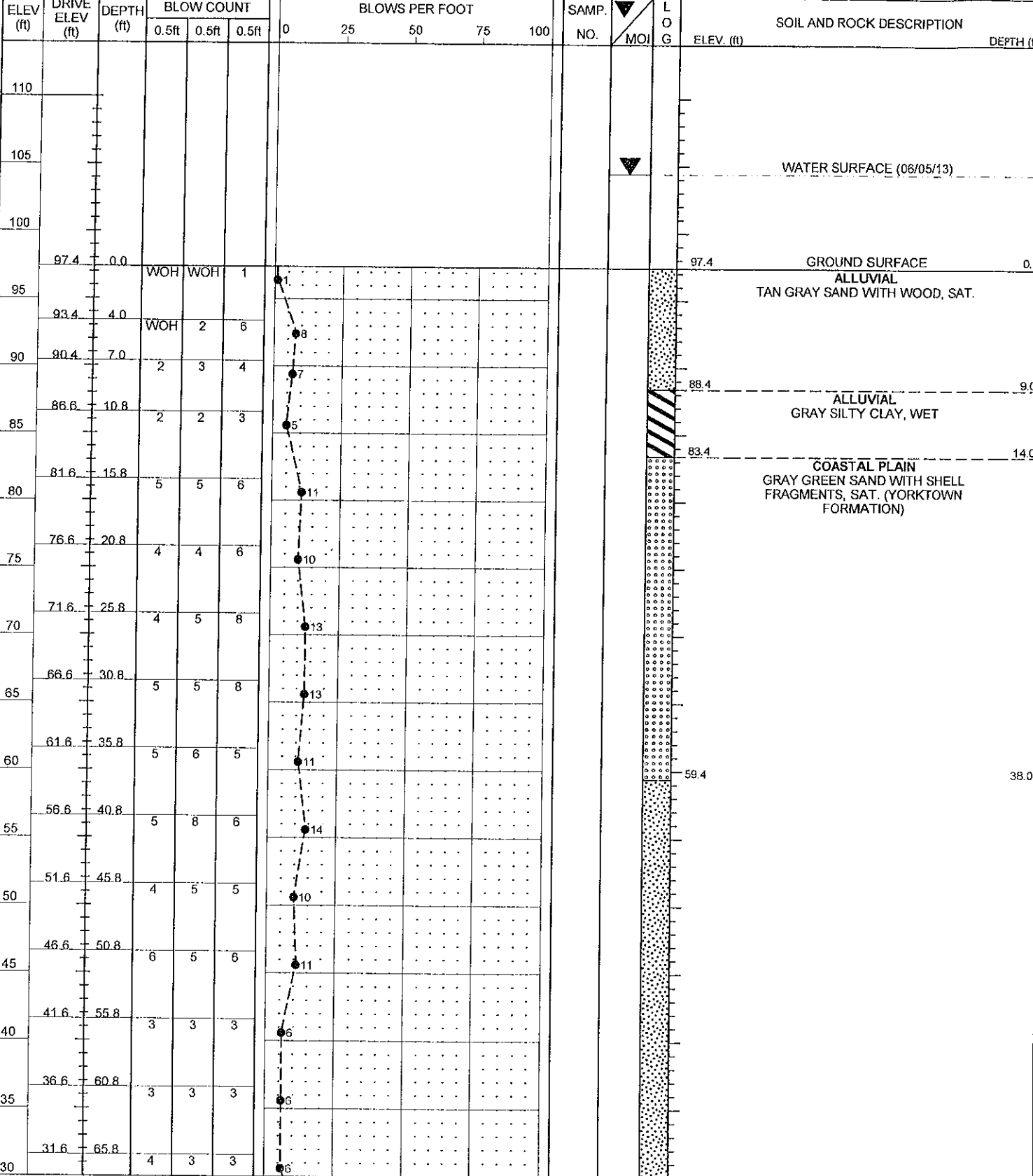


NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

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SITE DESCRIPTION BRIDGE NO. 119 ON -L- (SR 1003) OVER TRIBUTARY OF DEEP CREEK			GROUND WTR (ft)
BORING NO. B2-A	STATION 12+48	OFFSET 7 ft LT	ALIGNMENT -L-
COLLAR ELEV. 97.4 ft	TOTAL DEPTH 97.3 ft	NORTHING 890,039	EASTING 2,451,433
DRILL RIG/HAMMER EFF./DATE GFO1042 CME-550 91% 05/23/2012		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 06/05/13	COMP. DATE 06/05/13	SURFACE WATER DEPTH 7.0ft

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DRILLER Smith, R. E.	START DATE 06/05/13	COMP. DATE 06/05/13	SURFACE WATER DEPTH 7.0ft



NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 6/11/13

WBS 17BP.4.R.25	TIP SF-410119	COUNTY HALIFAX	GEOLOGIST Wrike, C. M.
SITE DESCRIPTION BRIDGE NO. 119 ON -L- (SR 1003) OVER TRIBUTARY OF DEEP CREEK			GROUND WTR (ft)
BORING NO. EB2-B	STATION 12+73	OFFSET 20 ft RT	ALIGNMENT -L-
COLLAR ELEV. 103.7 ft	TOTAL DEPTH 109.5 ft	NORTHING 890,021	EASTING 2,451,465
DRILL RIG/HAMMER EFF./DATE GFO1042 CME-550 91% 05/23/2012		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 06/03/13	COMP. DATE 06/04/13	SURFACE WATER DEPTH 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					
105															
103.7	103.7	0.0											GROUND SURFACE	0.0	
100	99.7	4.0	2	4	4								ROADWAY EMBANKMENT TAN SAND, MOIST TO SAT.	3.0	
95	95.7	8.0	2	2	1								ALLUVIAL GRAY SANDY CLAY, WET		
90	90.7	13.0	2	5	8										
85	85.7	18.0	2	2	3								COASTAL PLAIN GRAY GREEN SAND, SAT. (YORKTOWN FORMATION)	12.0	
80	80.7	23.0	1	1	2								COASTAL PLAIN GRAY GREEN SILTY CLAY, WET (YORKTOWN FORMATION)	17.0	
75	75.7	28.0	1	2	1										
70	70.7	33.0	6	8	11								COASTAL PLAIN GRAY GREEN SAND WITH SHELL FRAGMENTS, SAT. (YORKTOWN FORMATION)	27.0	
65	65.7	38.0	6	8	8										
60	60.7	43.0	5	6	6										
55	55.7	48.0	4	5	6										
50	50.7	53.0	3	5	6										
45	45.7	58.0	3	4	6										
40	40.7	63.0	8	6	7										
35	35.7	68.0	3	4	4										
30	30.7	73.0	3	5	5										
25	25.7	78.0	3	3	4										

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DRILLER Smith, R. E.	START DATE 06/03/13	COMP. DATE 06/04/13	SURFACE WATER DEPTH 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					
25															
20	20.7	83.0	6	6	7										
15	15.7	88.0	10	16	19										
10	10.7	93.0	11	13	19										
5	5.7	98.0	6	10	13										
0	0.7	103.0	15	17	23										
-5	-4.3	108.0	13	16	15										
			11	17	24										

NCDOT BORE DOUBLE BORINGS.GPJ NC_DOT.GDT 6/11/13