

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5331	1	8

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

PROJ. REFERENCE NO. 46045.1.1 (B-5331) F.A. PROJ. BRZ-1849(1)  
COUNTY COLUMBUS  
PROJECT DESCRIPTION BRIDGE NO. 269 ON SR 1849 (DELCO-PROSPER RD.) OVER BIG BRANCH AT -L- STA. 15+20

**CONTENTS**

<u>SHEET</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4	PROFILE
5-8	BORE LOGS

**CAUTION NOTICE**

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6950. 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 UN-PLACED 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: 46045.1.1 ID: B-5331**

**PERSONNEL**

R.E. SMITH

A.A. MOORE

**SUMMIT PERSONNEL**

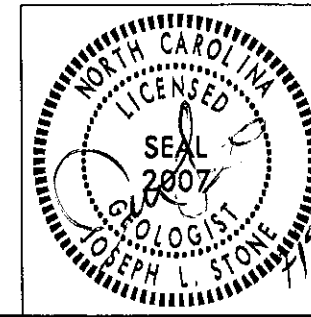
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

INVESTIGATED BY J.L. STONE

CHECKED BY D.N. ARGENBRIGHT

SUBMITTED BY D.N. ARGENBRIGHT

DATE JULY 2014



DocuSigned by:  
Lee Stone  
29AA9934F4A2414...

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. B-5331  
 SHEET NO. 2 OF 8

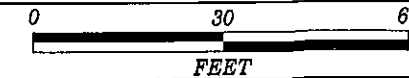
**SUBSURFACE INVESTIGATION**

**SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**

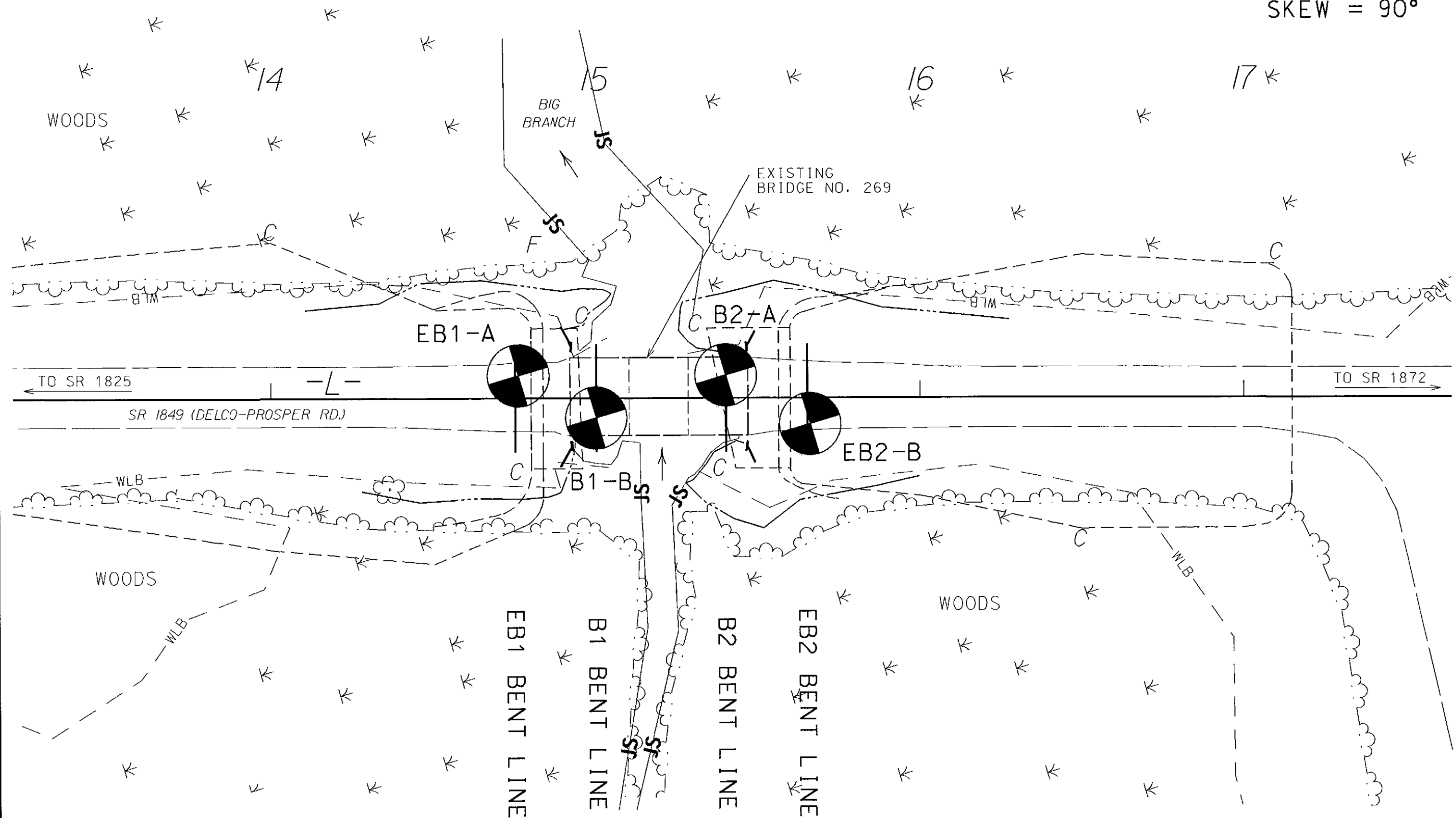
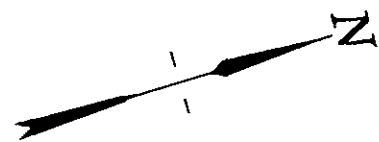
SOIL DESCRIPTION				GRADATION				ROCK DESCRIPTION				TERMS AND DEFINITIONS																																																																																																																																																																					
SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, 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, HIGHLY PLASTIC, 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. THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.				HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 20 BLOWS PER FOOT 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: WEATHERED ROCK (WR) CRYSTALLINE ROCK (CR) NON-CRYSTALLINE ROCK (NCR) COASTAL PLAIN SEDIMENTARY ROCK (CP)				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 DISLOCATED 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 IN OR BPF OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC) - 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.																																																																																																																																																																					
<b>SOIL LEGEND AND AASHTO CLASSIFICATION</b>				<b>MINERALOGICAL COMPOSITION</b>				<b>WEATHERING</b>				<b>ROCK HARDNESS</b>																																																																																																																																																																					
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>GENERAL CLASS.</th> <th colspan="7">GRANULAR MATERIALS (≤ 35% PASSING #200)</th> <th colspan="7">SILT-CLAY MATERIALS (&gt; 35% PASSING #200)</th> <th colspan="3">ORGANIC MATERIALS</th> </tr> <tr> <th>GROUP CLASS.</th> <th>A-1</th><th>A-1-b</th><th>A-3</th><th>A-2-1</th><th>A-2-5</th><th>A-2</th><th>A-2-7</th> <th>A-4</th><th>A-5</th><th>A-6</th><th>A-7</th> <th>A-1, A-2</th><th>A-4, A-5</th><th>A-6, A-7</th><th colspan="3"></th> </tr> <tr> <th>SYMBOL</th> <td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td></td><td></td><td></td><td></td> <td></td><td></td><td></td><td colspan="3"></td> </tr> <tr> <th>% PASSING</th> <td>100</td><td>100</td><td>100</td><td>100</td><td>100</td><td>100</td><td>100</td> <td>100</td><td>100</td><td>100</td><td>100</td> <td>100</td><td>100</td><td>100</td><td colspan="3"></td> </tr> <tr> <th>LIQUID LIMIT</th> <td>≤ 5</td><td>≤ 5</td><td>≤ 5</td><td>≤ 5</td><td>≤ 5</td><td>≤ 5</td><td>≤ 5</td> <td>≤ 5</td><td>≤ 5</td><td>≤ 5</td><td>≤ 5</td> <td>≤ 5</td><td>≤ 5</td><td>≤ 5</td><td colspan="3"></td> </tr> <tr> <th>PLASTIC INDEX</th> <td>≤ 4</td><td>≤ 4</td><td>≤ 4</td><td>≤ 4</td><td>≤ 4</td><td>≤ 4</td><td>≤ 4</td> <td>≤ 4</td><td>≤ 4</td><td>≤ 4</td><td>≤ 4</td> <td>≤ 4</td><td>≤ 4</td><td>≤ 4</td><td colspan="3"></td> </tr> <tr> <th>GROUP INDEX</th> <td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td> <td>0</td><td>0</td><td>0</td><td>0</td> <td>0</td><td>0</td><td>0</td><td colspan="3"></td> </tr> <tr> <th>USUAL TYPES OF MAJOR MATERIALS</th> <td colspan="2">STONE FRAGS, GRAVEL AND SAND</td><td>FINE SAND</td><td colspan="3">SILTY OR CLAYEY GRAVEL AND SAND</td><td>SILTY SOILS</td><td colspan="2">CLAYEY SOILS</td><td colspan="3">SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER</td><td colspan="3">HIGHLY ORGANIC SOILS</td> </tr> <tr> <th>GENERAL RATING AS A SUBGRADE</th> <td colspan="7">EXCELLENT TO GOOD</td><td colspan="4">FAIR TO POOR</td><td>POOR</td><td colspan="3">UNSATURABLE</td> </tr> </thead> </table>				GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)							ORGANIC MATERIALS			GROUP CLASS.	A-1	A-1-b	A-3	A-2-1	A-2-5	A-2	A-2-7	A-4	A-5	A-6	A-7	A-1, A-2	A-4, A-5	A-6, A-7				SYMBOL																		% PASSING	100	100	100	100	100	100	100	100	100	100	100	100	100	100				LIQUID LIMIT	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5				PLASTIC INDEX	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4				GROUP INDEX	0	0	0	0	0	0	0	0	0	0	0	0	0	0				USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS, GRAVEL AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND			SILTY SOILS	CLAYEY SOILS		SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER			HIGHLY ORGANIC SOILS			GENERAL RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				POOR	UNSATURABLE			MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.				COMPRESSIBILITY SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE				PERCENTAGE OF MATERIAL ORGANIC MATERIAL TRACE OF ORGANIC MATTER LITTLE ORGANIC MATTER MODERATELY ORGANIC HIGHLY ORGANIC				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			
GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)							ORGANIC MATERIALS																																																																																																																																																																		
GROUP CLASS.	A-1	A-1-b	A-3	A-2-1	A-2-5	A-2	A-2-7	A-4	A-5	A-6	A-7	A-1, A-2	A-4, A-5	A-6, A-7																																																																																																																																																																			
SYMBOL																																																																																																																																																																																	
% PASSING	100	100	100	100	100	100	100	100	100	100	100	100	100	100																																																																																																																																																																			
LIQUID LIMIT	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5																																																																																																																																																																			
PLASTIC INDEX	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4																																																																																																																																																																			
GROUP INDEX	0	0	0	0	0	0	0	0	0	0	0	0	0	0																																																																																																																																																																			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS, GRAVEL AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND			SILTY SOILS	CLAYEY SOILS		SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER			HIGHLY ORGANIC SOILS																																																																																																																																																																				
GENERAL RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				POOR	UNSATURABLE																																																																																																																																																																				
U.S. STD. SIEVE SIZE OPENING (MM) 4 10 40 60 200 270 4.76 2.00 0.42 0.25 0.075 0.053																																																																																																																																																																																	

 RANGE OF STANDARD PENETRATION RESISTANCE (IN VALUE)   <4   4 TO 10   10 TO 30   30 TO 50   >50 | | | | RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT<sup>2</sup>)   <0.25   0.25 TO 0.50   0.5 TO 1.0   1 TO 2   2 TO 4   >4 | | | | 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 | | | | TEST BORING WITH CORE   TEST BORING W/ CORE   AUGER BORING   CORE BORING   MONITORING WELL   PIEZOMETER INSTALLATION   SLOPE INDICATOR INSTALLATION   CONE PENETROMETER TEST   SOUNDING ROD | | | || | BOULDER (BLOR)              | COBBLE (COB) | GRAVEL (GR) | COARSE SAND (CSE, SD) | FINE SAND (F SD) | SILT (SL) | CLAY (CL) | |-----------------------------|--------------|-------------|-----------------------|------------------|-----------|-----------| | GRAIN SIZE MM 305<br>IN. 12 | 75<br>3      | 2.0         | 0.25                  | 0.05             | 0.005     |           | | | | | SOIL MOISTURE - CORRELATION OF TERMS   SOIL MOISTURE SCALE (ATTERBERG LIMITS)   FIELD MOISTURE DESCRIPTION   GUIDE FOR FIELD MOISTURE DESCRIPTION   SATURATED - (SAT)   WET - (W)   MOIST - (M)   DRY - (D) | | | | ABBREVIATIONS   AR - AUGER REFUSAL   BT - BORING TERMINATED   CL - CLAY   CPT - CONE PENETRATION TEST   CSE - COARSE   DMT - DILATOMETER TEST   DPT - DYNAMIC PENETRATION TEST   F - VOID RATIO   F - FINE   FOSS - FOSSILIFEROUS   FRAC - FRACTURED, FRACTURES   FRAGS - FRAGMENTS   HL - HIGHLY   MED - MEDIUM   MICA - MICACEOUS   MOD - MODERATELY   NP - NON PLASTIC   ORG - ORGANIC   PMT - PRESSUREMETER TEST   SAP - SAPROLITIC   SD - SAND, SANDY   SL - SILT, SILTY   SLI - SLIGHTLY   TCR - TRICONE REFUSAL   W - MOISTURE CONTENT   V - VERY   VST - VANE SHEAR TEST   WEA - WEATHERED   WU - UNIT WEIGHT   WU - DRY UNIT WEIGHT   SAMPLE ABBREVIATIONS   S - BULK   SS - SPLIT SPOON   ST - SHELBY TUBE   RS - ROCK   RT - RECOMPACTED TRIAXIAL RATIO   CBR - CALIFORNIA BEARING RATIO | | | |
| PLASTICITY   NONPLASTIC   LOW PLASTICITY   MED. PLASTICITY   HIGH PLASTICITY | | | | EQUIPMENT USED ON SUBJECT PROJECT   DRILL UNITS:   MOBILE B-   BK-51   CME-45C   CME-55B   PORTABLE HOIST | | | | 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 THICKLY BEDDED   THICKLY BEDDED   THINLY BEDDED   VERY THINLY BEDDED   THICKLY LAMINATED   THINLY LAMINATED   THICKNESS   > 4 FEET   1.5 - 4 FEET   0.16 - 1.5 FEET   0.03 - 0.16 FEET   0.008 - 0.03 FEET   < 0.008 FEET | | | |
| 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. | | | | INDURATION   FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.   FRIABLE   MODERATELY INDURATED   INDURATED   EXTREMELY INDURATED | | | | NOTES:   BENCH MARK: BM-1- YELLOW BM-NAIL SET IN 17' MAPLE AT -BLX- STA. 35+36, 270' RT (N 201364 E 223712)   ELEVATION: 36.94 FT. | | | |

# SITE PLAN



SKEW = 90°



5/14/99

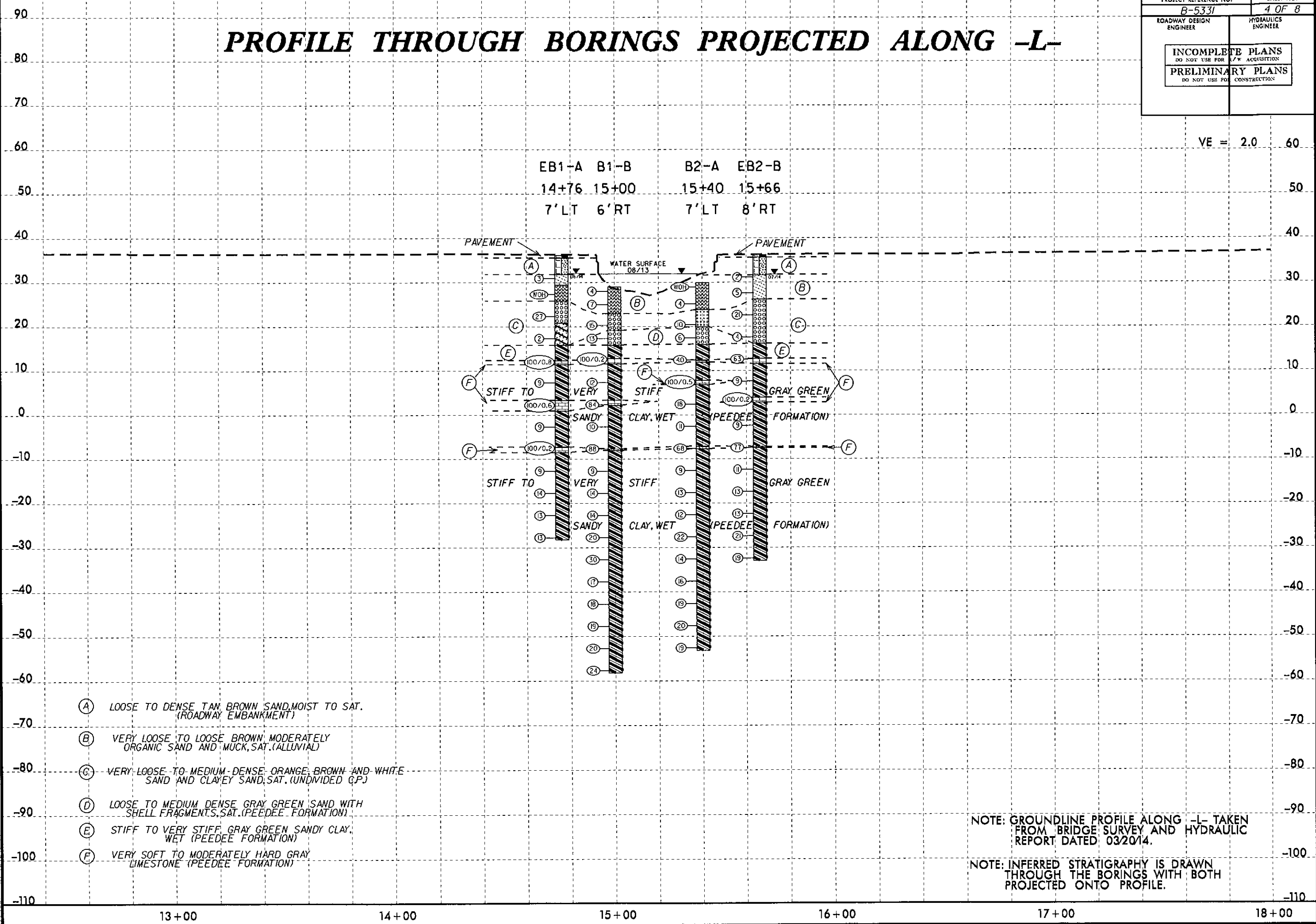
09-111-204 10:38  
L:\ERD\br-cspv\16\_investigation\TIP\B5331.GED\_BROG\_269.CAD\UMBUS\CA00\_GEO\TECH\Site&Sub\B5331.GED\_BROG\_269.GTM.dgn

PROJECT REFERENCE NO. B-5331	SHEET NO. 4 OF 8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR ACQUISITION	
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

# PROFILE THROUGH BORINGS PROJECTED ALONG -L-

VE = 2.0 60

EB1-A	B1-B	B2-A	EB2-B
14+76	15+00	15+40	15+66
7' LT	6' RT	7' LT	8' RT



- (A) LOOSE TO DENSE TAN BROWN SAND, MOIST TO SAT. (ROADWAY EMBANKMENT)
- (B) VERY LOOSE TO LOOSE BROWN MODERATELY ORGANIC SAND AND MUCK, SAT. (ALLUVIAL)
- (C) VERY LOOSE TO MEDIUM DENSE ORANGE BROWN AND WHITE SAND AND CLAYEY SAND, SAT. (UNDIVIDED C.P.)
- (D) LOOSE TO MEDIUM DENSE GRAY GREEN SAND WITH SHELL FRAGMENTS, SAT. (PEEDEE FORMATION)
- (E) STIFF TO VERY STIFF GRAY GREEN SANDY CLAY, WET (PEEDEE FORMATION)
- (F) VERY SOFT TO MODERATELY HARD GRAY LIMESTONE (PEEDEE FORMATION)

NOTE: GROUNDLINE PROFILE ALONG -L- TAKEN FROM BRIDGE SURVEY AND HYDRAULIC REPORT DATED 03/20/14.

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



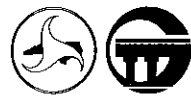
# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

WBS 46045.1.1		TIP B-5331		COUNTY COLUMBUS		GEOLOGIST Contract Geologist										
SITE DESCRIPTION BRIDGE NO. 269 ON -L- (SR 1849) OVER BIG BRANCH							GROUND WTR (ft)									
BORING NO. EB1-A		STATION 14+76		OFFSET 7 ft LT		ALIGNMENT -L-	0 HR. N/A									
COLLAR ELEV. 36.1 ft		TOTAL DEPTH 64.3 ft		NORTHING 201,156		EASTING 2,236,767	24 HR. 4.1									
DRILL RIG/HAMMER EFF./DATE GFO0057 CME-550X 82% 05/19/2014				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER Smith, R. E.		START DATE 06/26/14		COMP. DATE 06/26/14		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
40																
35																
	31.9	4.2	2	1	2									36.1	0.0	GROUND SURFACE
														35.5	0.6	PAVEMENT
														31.8	4.3	ROADWAY EMBANKMENT TAN BROWN SAND, MOIST TO SAT.
														29.4	6.7	ALLUVIAL BROWN MODERATELY ORGANIC SAND, SAT.
	28.3	7.8	WOH	WOH	WOH									25.8	10.3	ALLUVIAL BROWN MUCK, SAT.
														23.3	12.8	UNDIVIDED COASTAL PLAIN BROWN AND WHITE SAND, SAT.
														20.8	15.3	UNDIVIDED COASTAL PLAIN ORANGE BROWN CLAYEY SAND, SAT.
														18.3	17.8	UNDIVIDED COASTAL PLAIN ORANGE BROWN CLAYEY SAND, SAT.
														15.8	20.3	COASTAL PLAIN GRAY GREEN SANDY CLAY, WET (PEEDEE FORMATION)
														13.3	22.8	COASTAL PLAIN GRAY GREEN SANDY CLAY, WET (PEEDEE FORMATION)
														12.3	23.8	GRAY LIMESTONE
														11.4	24.7	GRAY LIMESTONE
														8.3	27.8	COASTAL PLAIN GRAY GREEN SANDY CLAY, WET (PEEDEE FORMATION)
														3.3	32.8	GRAY LIMESTONE
														0	35.2	GRAY LIMESTONE
														-1.7	37.8	COASTAL PLAIN GRAY GREEN SANDY CLAY, WET (PEEDEE FORMATION)
														-6.7	42.8	GRAY LIMESTONE
														-11.7	47.8	GRAY LIMESTONE
														-16.7	52.8	COASTAL PLAIN GRAY GREEN SANDY CLAY, WET (PEEDEE FORMATION)
														-21.7	57.8	COASTAL PLAIN GRAY GREEN SANDY CLAY, WET (PEEDEE FORMATION)
														-26.7	62.8	COASTAL PLAIN GRAY GREEN SANDY CLAY, WET (PEEDEE FORMATION)
														-28.2	64.3	Boring Terminated at Elevation -28.2 ft IN STIFF SANDY CLAY

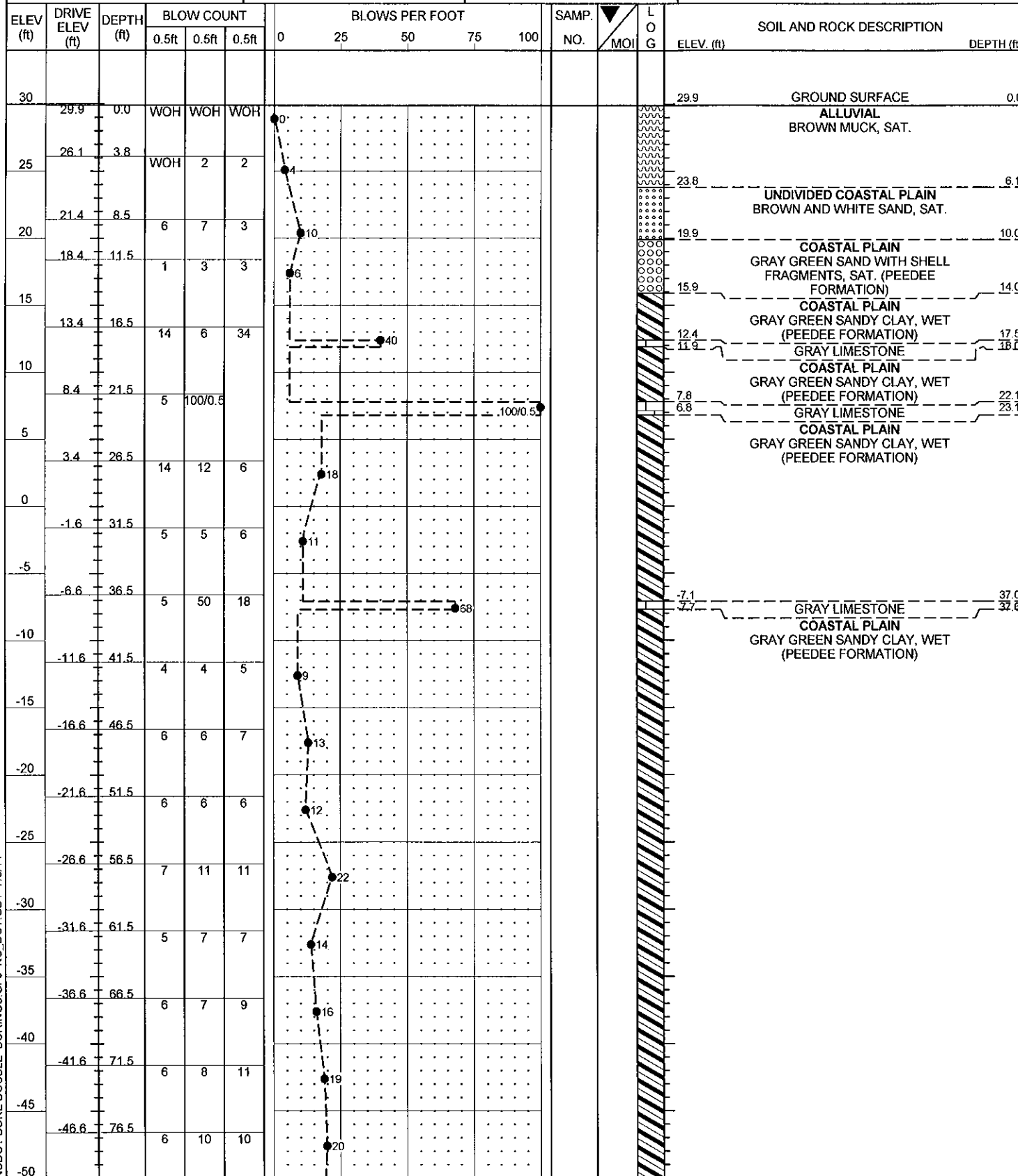
NCDOT BORE DOUBLE BORINGS.GPJ NC\_DOT\_GDT\_7/8/14





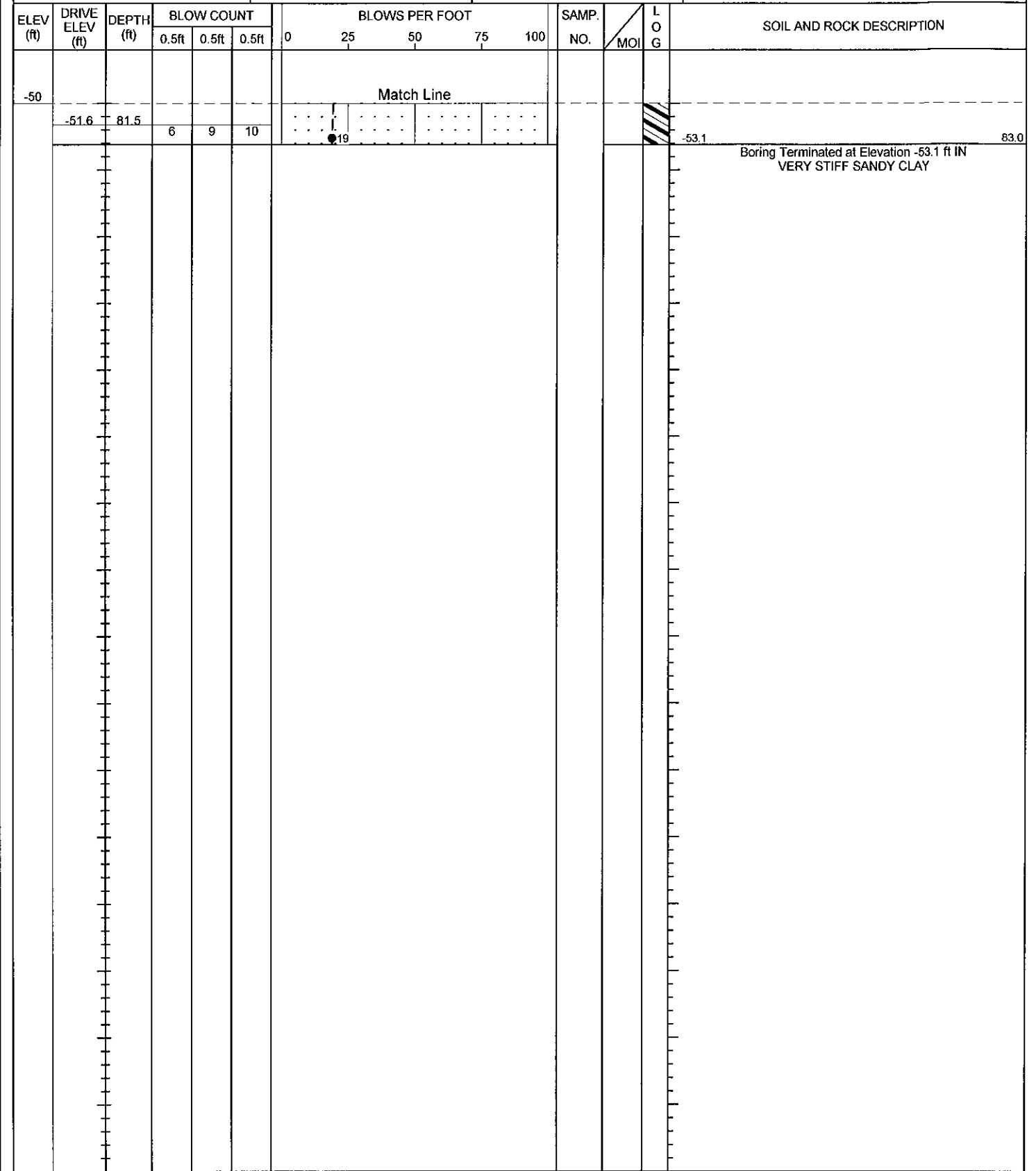
**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**BORELOG REPORT**

WBS 46045.1.1	TIP B-5331	COUNTY COLUMBUS	GEOLOGIST Contract Geologist
SITE DESCRIPTION BRIDGE NO. 269 ON -L- (SR 1849) OVER BIG BRANCH			GROUND WTR (ft)
BORING NO. B2-A	STATION 15+40	OFFSET 7 ft LT	ALIGNMENT -L-
COLLAR ELEV. 29.9 ft	TOTAL DEPTH 83.0 ft	NORTHING 201,217	EASTING 2,236,785
DRILL RIG/HAMMER EFF./DATE GFO0057 CME-550X 82% 05/19/2014		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 07/02/14	COMP. DATE 07/02/14	SURFACE WATER DEPTH N/A



NCDOT BORE DOUBLE BORINGS.GPJ NC\_DOT\_GDT\_7/8/14

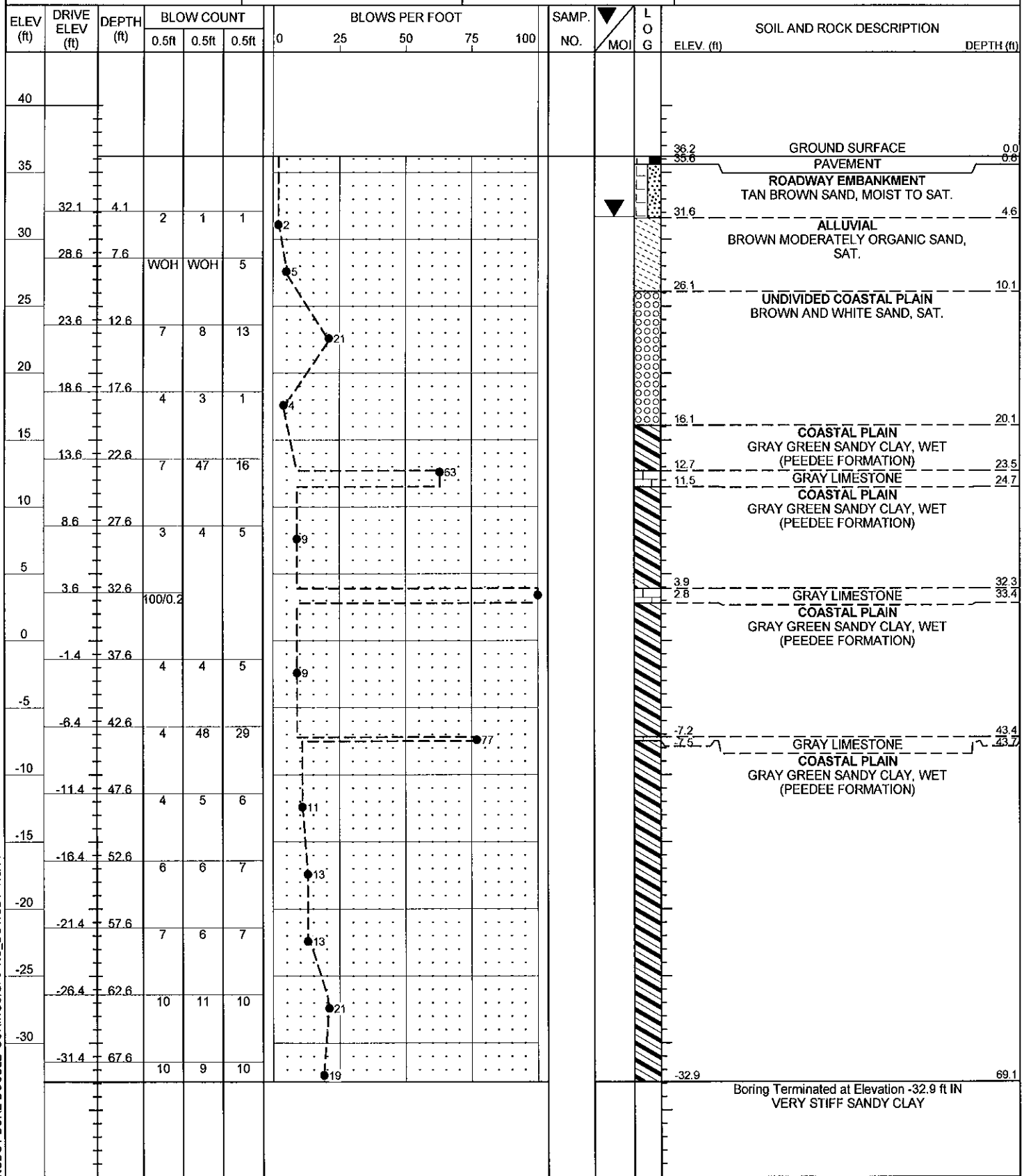
WBS 46045.1.1	TIP B-5331	COUNTY COLUMBUS	GEOLOGIST Contract Geologist
SITE DESCRIPTION BRIDGE NO. 269 ON -L- (SR 1849) OVER BIG BRANCH			GROUND WTR (ft)
BORING NO. B2-A	STATION 15+40	OFFSET 7 ft LT	ALIGNMENT -L-
COLLAR ELEV. 29.9 ft	TOTAL DEPTH 83.0 ft	NORTHING 201,217	EASTING 2,236,785
DRILL RIG/HAMMER EFF./DATE GFO0057 CME-550X 82% 05/19/2014		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 07/02/14	COMP. DATE 07/02/14	SURFACE WATER DEPTH N/A





**NCDOT GEOTECHNICAL ENGINEERING UNIT**  
**BORELOG REPORT**

WBS 46045.1.1	TIP B-5331	COUNTY COLUMBUS	GEOLOGIST Contract Geologist
SITE DESCRIPTION BRIDGE NO. 269 ON -L- (SR 1849) OVER BIG BRANCH			GROUND WTR (ft)
BORING NO. EB2-B	STATION 15+66	OFFSET 8 ft RT	ALIGNMENT -L-
COLLAR ELEV. 36.2 ft	TOTAL DEPTH 69.1 ft	NORTHING 201,238	EASTING 2,236,807
DRILL RIG/HAMMER EFF./DATE GFO0057 CME-550X 82% 05/19/2014		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Smith, R. E.	START DATE 06/30/14	COMP. DATE 06/30/14	SURFACE WATER DEPTH N/A



NCDOT BORE DOUBLE BORINGS.GPJ NC\_DOT.GDT 7/8/14