

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

PROJ. REFERENCE NO. 34983.1.1 (U-3826) F.A. PROJ. STP - 1537(2)  
COUNTY EDGEcombe  
PROJECT DESCRIPTION SR 1537 (DANIEL ST. EXT.) FROM SR 1518  
(LOOP RD.) TO US 258NC 122

SITE DESCRIPTION BRIDGE ON SR 1537 (DANIEL ST. EXT.)  
OVER TAR RIVER AT -L- STATION 49+48

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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 IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

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

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION WARRANT 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.

PERSONNEL

J. R. SWARTLEY

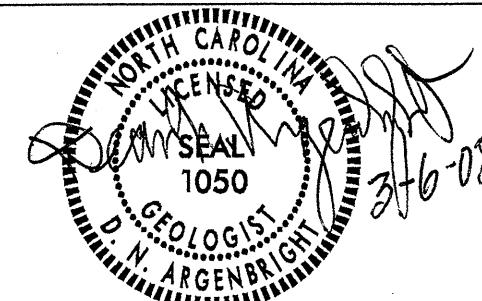
F & R PERSONNEL

INVESTIGATED BY F.M. WESCOTT III

CHECKED BY D.N. ARGENBRIGHT

SUBMITTED BY D.N. ARGENBRIGHT

DATE MARCH, 2008



**PROJECT: 34983.1.1 ID: U-3826**

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.

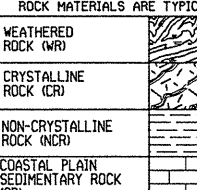
NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

PROJECT REFERENCE NO.	SHEET NO.
34983.IJ(U-3826)	2 OF 19

SOIL DESCRIPTION		GRADATION		ROCK DESCRIPTION		TERMS AND DEFINITIONS																																																																																		
<p>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 (ASHTO 1286, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE ASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, ASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE: VERY STIFF, GRAY, SILTY CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, HEAVY PLASTIC, A-7-6</p>		<p>WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES. ANGULARITY OF GRAINS THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.</p>		<p>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 60 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) - NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES &gt; 100 BLOWS PER FOOT IF TESTED. CRYSTALLINE ROCK (CR) - FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC. NON-CRYSTALLINE ROCK (NCR) - FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC. COASTAL PLAIN SEDIMENTARY ROCK (CPI) - COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.</p>		<p>ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. ADUFER - 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 DISLODGED 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 INTRODUCED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 60 BLOWS PER FOOT. 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.</p>																																																																																		
<p><b>SOIL LEGEND AND AASHTO CLASSIFICATION</b></p> <table border="1"><thead><tr><th>GENERAL CLASS.</th><th>GRANULAR MATERIALS (<math>\leq 35\%</math> PASSING #200)</th><th>SILT-CLAY MATERIALS (<math>&gt; 35\%</math> PASSING #200)</th><th>ORGANIC MATERIALS</th></tr></thead><tbody><tr><td>GROUP CLASS.</td><td>A-1-a, A-1-b, A-2, A-2-4, A-2-5, A-2-6, A-2-7</td><td>A-3, A-4, A-5, A-6, A-7</td><td>A-1, A-2, A-3, A-4, A-5, A-6, A-7</td></tr><tr><td>SYMBOL</td><td></td><td></td><td></td></tr><tr><td>% PASSING</td><td>50, 60, 70, 80, 90, 100</td><td>40, 50, 60, 70, 80, 90, 100</td><td>40, 50, 60, 70, 80, 90, 100</td></tr><tr><td>LIQUID LIMIT</td><td>6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50</td><td>40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100</td><td>40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100</td></tr><tr><td>PLASTIC INDEX</td><td>0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50</td><td>0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50</td><td>0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50</td></tr><tr><td>GROUP INDEX</td><td>0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50</td><td>0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50</td><td>0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50</td></tr><tr><td>USUAL TYPES OF MAJOR MATERIALS</td><td>STONE FRAGS, GRAVEL, SAND</td><td>FINE SAND, SILTY DR CLAYEY GRAVEL AND SAND</td><td>SILTY SOILS, CLAYEY SOILS</td></tr><tr><td>GEN. 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RATINGS AS A SUBGRADE	EXCELLENT TO GOOD		FAIR TO POOR, POOR, UNSATABLE	<p><b>MINERALOGICAL COMPOSITION</b></p> <p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.</p>		<p><b>WEATHERING</b></p> <p>FRESH - ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT (V SLI) - ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE. SLIGHT (SLI) - ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS. MODERATE (MOD) - SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK. MODERATELY SEVERE (MOD. SEV.) - ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES 'CLUNK' SOUND WHEN STRUCK. <i>IF TESTED, WOULD YIELD SPT REFUSAL.</i> SEVERE (SEV) - ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. <i>IF TESTED, YIELDS SPT N VALUES &gt; 100 BPF.</i> 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 &lt; 100 BPF.</i> 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><b>GROUND WATER</b></p> <p>WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING STATIC WATER LEVEL AFTER 24 HOURS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEP</p>																																														
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<p><b>CONSISTENCY OR DENSENESS</b></p> <table border="1"><thead><tr><th>PRIMARY SOIL TYPE</th><th>COMPACTNESS OR CONSISTENCY</th><th>RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)</th><th>RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT<sup>2</sup>)</th></tr></thead><tbody><tr><td>GENERALLY GRANULAR MATERIAL (NON-COHESIVE)</td><td>VERY LOOSE, LOOSE, MEDIUM DENSE, DENSE, VERY DENSE</td><td>&lt; 4, 4 TO 10, 10 TO 30, 30 TO 50, &gt; 50</td><td>N/A</td></tr><tr><td>GENERALLY SILT-CLAY MATERIAL (COHESIVE)</td><td>VERY SOFT, SOFT, MEDIUM STIFF, STIFF, VERY STIFF, HARD</td><td>&lt; 2, 2 TO 4, 4 TO 8, 8 TO 15, 15 TO 30, &gt; 30</td><td>&lt; 0.25, 0.25 TO 1.0, 1 TO 2, 2 TO 4, &gt; 4</td></tr></tbody></table>		PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT <sup>2</sup> )	GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE, LOOSE, MEDIUM DENSE, DENSE, VERY DENSE	< 4, 4 TO 10, 10 TO 30, 30 TO 50, > 50	N/A	GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT, SOFT, MEDIUM STIFF, STIFF, VERY STIFF, HARD	< 2, 2 TO 4, 4 TO 8, 8 TO 15, 15 TO 30, > 30	< 0.25, 0.25 TO 1.0, 1 TO 2, 2 TO 4, > 4	<p><b>MISCELLANEOUS SYMBOLS</b></p> <p>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 &amp; DIP DIRECTION OF ROCK STRUCTURES SOUNDING ROD</p> <p>SPT TEST BORING AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION SLOPE INDICATOR INSTALLATION SPT N-VALUE SPT REFUSAL</p>		<p><b>ROCK HARDNESS</b></p> <p>VERY HARD - CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK. HARD - CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN. MODERATELY HARD - CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS. MEDIUM HARD - CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK. SOFT - CAN BE GROOVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE. VERY SOFT - CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.</p>																																																																								
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<p><b>TEXTURE OR GRAIN SIZE</b></p> <table border="1"><thead><tr><th>U.S. STD. SIEVE SIZE (OPENING (MM))</th><th>4</th><th>10</th><th>40</th><th>60</th><th>200</th><th>270</th></tr></thead><tbody><tr><td></td><td>4.76</td><td>2.00</td><td>0.42</td><td>0.25</td><td>0.075</td><td>0.053</td></tr></tbody></table> <table border="1"><thead><tr><th></th><th>BOULDER (BLDR.)</th><th>COBBLE (COB.)</th><th>GRAVEL (GR.)</th><th>COARSE SAND (CSE. SD.)</th><th>FINE SAND (F SD.)</th><th>SILT (SL.)</th><th>CLAY (CL.)</th></tr></thead><tbody><tr><td>GRAIN SIZE MM</td><td>305</td><td>75</td><td>2.0</td><td>0.25</td><td>0.05</td><td>0.005</td><td></td></tr><tr><td>IN.</td><td>12</td><td>3</td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>		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		BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)	GRAIN SIZE MM	305	75	2.0	0.25	0.05	0.005		IN.	12	3						<p><b>ABBREVIATIONS</b></p> <p>AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FDS. - FOSSILIFEROUS FRAC. - FRACTURED, FRACTURES FRAGS. - FRAGMENTS</p> <p>HI. - HIGHLY MED. - MEDIUM MICA - MICAEOUS MOD. - MODERATELY NP - NON PLASTIC ORG. - ORGANIC PMT - PRESSUREMETER TEST SAP. - SAPROLITIC SD. - SAND, SANDY SL. - SILT, SILTY SLI. - SLIGHTLY TCR - TRICONE REFUSAL</p> <p>w - MOISTURE CONTENT V - VERY VST - VANE SHEAR TEST WEA. - WEATHERED γ - UNIT WEIGHT γ<sub>d</sub> - DRY UNIT WEIGHT</p>		<p><b>EQUIPMENT USED ON SUBJECT PROJECT</b></p> <p>DRILL UNITS: <input type="checkbox"/> MOBILE B-___, <input type="checkbox"/> BK-51, <input type="checkbox"/> CME-45C, <input checked="" type="checkbox"/> CME-550, <input type="checkbox"/> PORTABLE HOIST</p> <p>ADVANCING TOOLS: <input type="checkbox"/> CLAY BITS, <input type="checkbox"/> 6" CONTINUOUS FLIGHT AUGER, <input checked="" type="checkbox"/> 6" HOLLOW AUGERS, <input type="checkbox"/> HARD FACED FINGER BITS, <input type="checkbox"/> TUNG-CARBIDE INSERTS, <input checked="" type="checkbox"/> CASING, <input type="checkbox"/> W/ ADVANCER, <input checked="" type="checkbox"/> TRICONE 2 1/8" STEEL TEETH, <input type="checkbox"/> TRICONE " TUNG-CARB., <input type="checkbox"/> CORE BIT</p> <p>HAMMER TYPE: <input checked="" type="checkbox"/> AUTOMATIC, <input type="checkbox"/> MANUAL</p> <p>CORE SIZE: <input type="checkbox"/> -B, <input type="checkbox"/> -N, <input type="checkbox"/> -H</p> <p>HAND TOOLS: <input type="checkbox"/> POST HOLE DIGGER, <input type="checkbox"/> HAND AUGER, <input type="checkbox"/> SOUNDING ROD, <input type="checkbox"/> VANE SHEAR TEST</p>		<p><b>FRACATURE SPACING</b></p> <table border="1"><thead><tr><th>TERM</th><th>SPACING</th></tr></thead><tbody><tr><td>VERY WIDE</td><td>MORE THAN 10 FEET</td></tr><tr><td>WIDE</td><td>3 TO 10 FEET</td></tr><tr><td>MODERATELY CLOSE</td><td>1 TO 3 FEET</td></tr><tr><td>CLOSE</td><td>0.16 TO 1 FEET</td></tr><tr><td>VERY CLOSE</td><td>LESS THAN 0.16 FEET</td></tr></tbody></table> <p><b>BEDDING</b></p> <table border="1"><thead><tr><th>TERM</th><th>THICKNESS</th></tr></thead><tbody><tr><td>VERY THICKLY BEDDED</td><td>&gt; 4 FEET</td></tr><tr><td>THICKLY BEDDED</td><td>1.5 - 4 FEET</td></tr><tr><td>THINLY BEDDED</td><td>0.16 - 1.5 FEET</td></tr><tr><td>VERY THINLY BEDDED</td><td>0.03 - 0.16 FEET</td></tr><tr><td>THICKLY LAMINATED</td><td>0.008 - 0.03 FEET</td></tr><tr><td>THINLY LAMINATED</td><td>&lt; 0.008 FEET</td></tr></tbody></table> <p><b>INDURATION</b></p> <p>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</p> <p>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; SAMPLE BREAKS ACROSS GRAINS.</p>		TERM	SPACING	VERY WIDE	MORE THAN 10 FEET	WIDE	3 TO 10 FEET	MODERATELY CLOSE	1 TO 3 FEET	CLOSE	0.16 TO 1 FEET	VERY CLOSE	LESS THAN 0.16 FEET	TERM	THICKNESS	VERY THICKLY BEDDED	> 4 FEET	THICKLY BEDDED	1.5 - 4 FEET	THINLY BEDDED	0.16 - 1.5 FEET	VERY THINLY BEDDED	0.03 - 0.16 FEET	THICKLY LAMINATED	0.008 - 0.03 FEET	THINLY LAMINATED	< 0.008 FEET	<p><b>BENCH MARK:</b></p> <table border="1"><tr><td>BL-26 -L-</td><td>STA. 41+54.07</td><td>5.86 LT</td><td>ELEVATION:</td><td>29.41 FT.</td></tr><tr><td>BL-27 -L-</td><td>STA. 46+84.46</td><td>1.96 LT</td><td>ELEVATION:</td><td>31.83 FT.</td></tr><tr><td>BL-28 -L-</td><td>STA. 49+76.6</td><td>106.84 RT</td><td>ELEVATION:</td><td>35.2 FT.</td></tr></table> <p>NOTES:</p>		BL-26 -L-	STA. 41+54.07	5.86 LT	ELEVATION:	29.41 FT.	BL-27 -L-	STA. 46+84.46	1.96 LT	ELEVATION:	31.83 FT.	BL-28 -L-	STA. 49+76.6	106.84 RT	ELEVATION:	35.2 FT.
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# SITE PLAN

PROJECT REFERENCE NO. U-3826	SHEET NO. 3 OF 19
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR A/W ACQUISITION	
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

0      100      200  
**FEET**

SKREW=90°



TAR RIVER  
↓

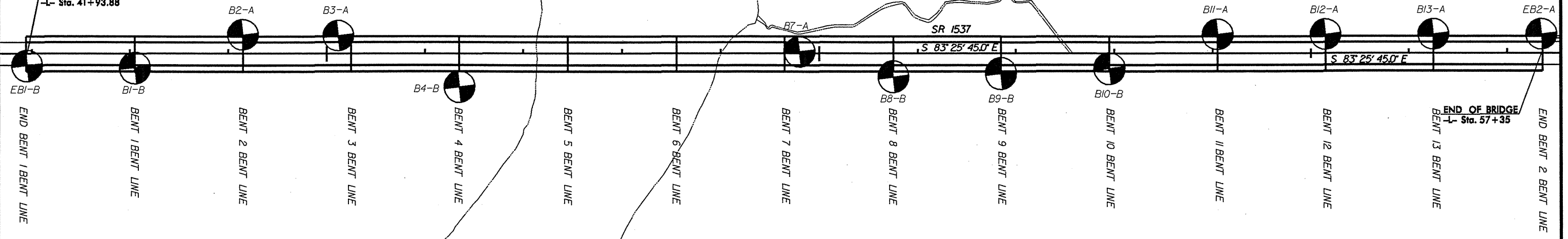
45+00

50+00

55+00

BEGIN BRIDGE  
 L- Sta. 41+93.88

END OF BRIDGE  
 L- Sta. 57+35

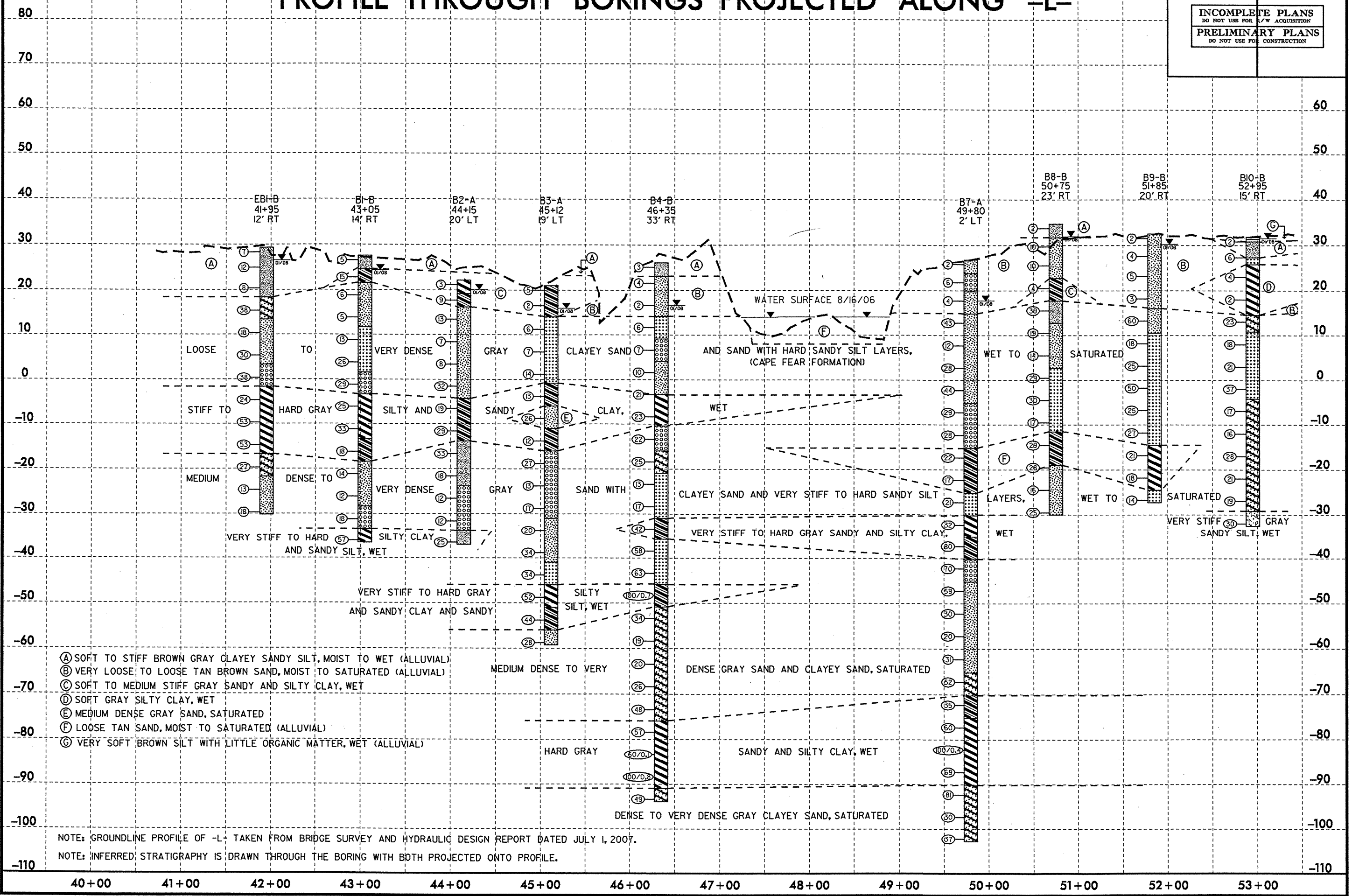


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PROJECT REFERENCE NO. <b>U-3826</b>	SHEET NO. <b>4 OF 19</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR ACQUISITION	
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION	

# PROFILE THROUGH BORINGS PROJECTED ALONG -L-



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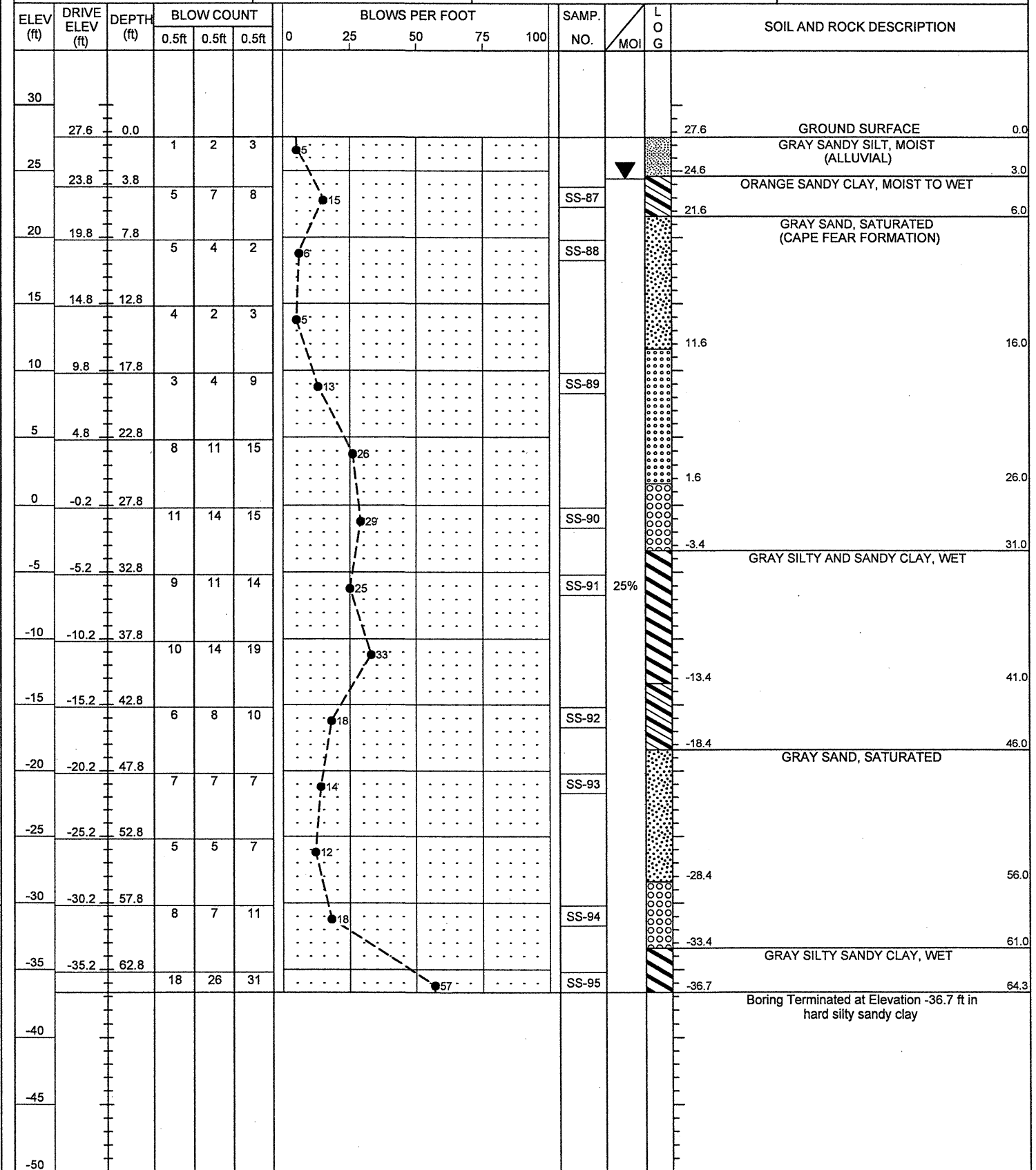
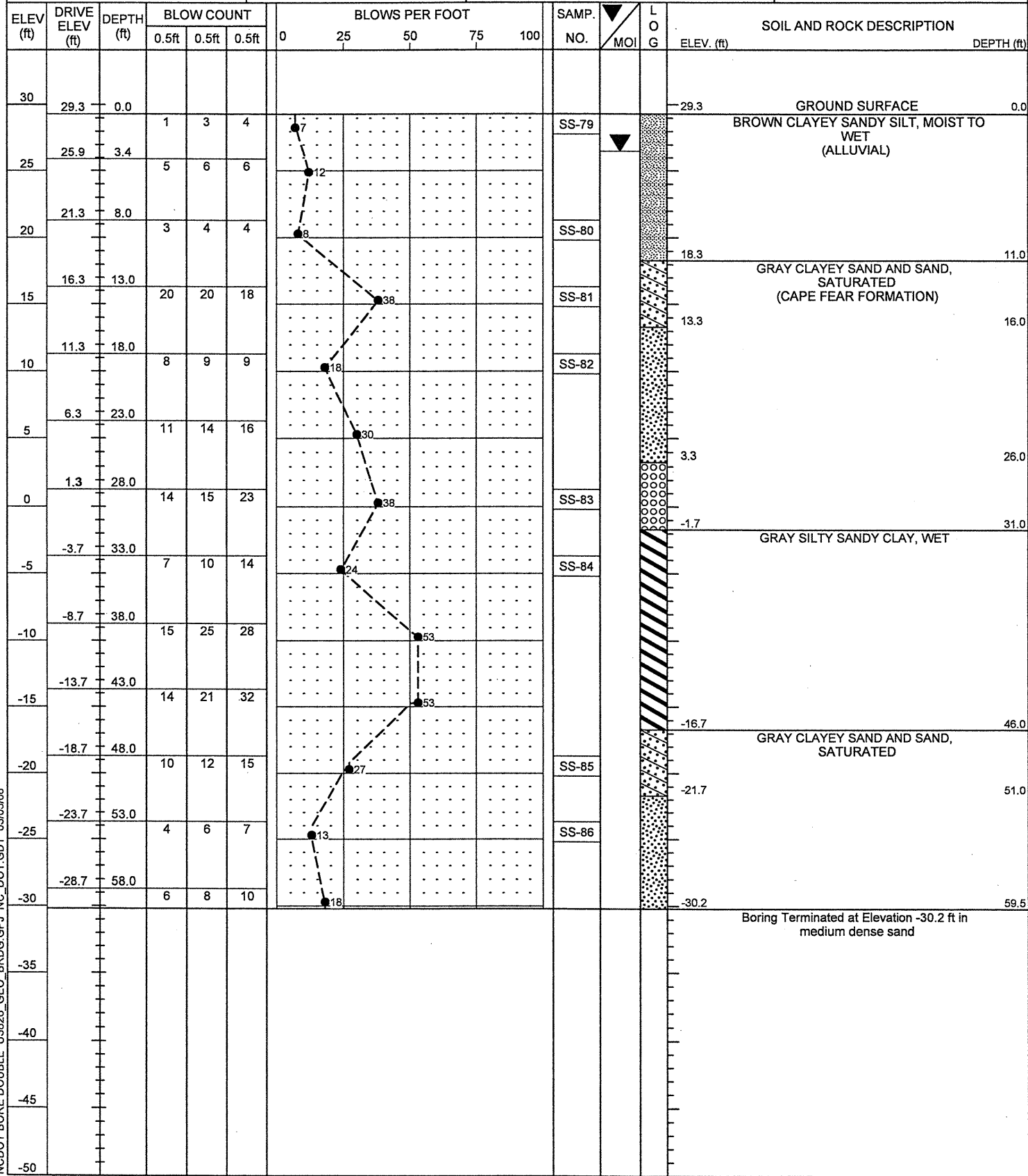




# NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

PROJECT NO. 34983.1.1		ID. U-3826		COUNTY EDGECOMBE		GEOLOGIST Swartley, J. R.	
SITE DESCRIPTION BRIDGE ON SR 1537 (DANIEL ST. EXT.) OVER TAR RIVER							GROUND WTR (ft)
BORING NO. EB1-B		STATION 41+95		OFFSET 12ft RT		ALIGNMENT -L-	
COLLAR ELEV. 29.3 ft		TOTAL DEPTH 59.5 ft		NORTHING 795,413		EASTING 2,441,581	
DRILL MACHINE CME-550		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic			
START DATE 01/22/08		COMP. DATE 01/22/08		SURFACE WATER DEPTH N/A		DEPTH TO ROCK N/A	

PROJECT NO. 34983.1.1		ID. U-3826		COUNTY EDGECOMBE		GEOLOGIST Swartley, J. R.	
SITE DESCRIPTION BRIDGE ON SR 1537 (DANIEL ST. EXT.) OVER TAR RIVER							GROUND WTR (ft)
BORING NO. B1-B		STATION 43+05		OFFSET 14ft RT		ALIGNMENT -L-	
COLLAR ELEV. 27.6 ft		TOTAL DEPTH 64.3 ft		NORTHING 795,398		EASTING 2,441,690	
DRILL MACHINE CME-550		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic			
START DATE 01/23/08		COMP. DATE 01/23/08		SURFACE WATER DEPTH N/A		DEPTH TO ROCK N/A	



NCDOT BORE DOUBLE U3826\_GEO\_BRDG.GPJ NC\_DOT.GDT 03/05/08

PROJECT NO. 34983.1.1	ID. U-3826	COUNTY EDGEcombe	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION BRIDGE ON SR 1537 (DANIEL ST. EXT.) OVER TAR RIVER			GROUND WTR (ft)
BORING NO. B2-A	STATION 44+15	OFFSET 20ft LT	ALIGNMENT -L-
COLLAR ELEV. 22.2 ft	TOTAL DEPTH 59.3 ft	NORTHING 795,419	EASTING 2,441,803
DRILL MACHINE CME-550	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 01/23/08	COMP. DATE 01/23/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)											
			0.5ft	0.5ft	0.5ft	0	25	50	75	100															
25																									
	22.2	0.0												22.2	GROUND SURFACE	0.0									
			1	1	2										BROWN SANDY AND SILTY CLAY, MOIST TO WET (ALLUVIAL)										
20	18.7	3.5	2	4	5									19.2		3.0									
														16.2	GRAY SAND, SATURATED (CAPE FEAR FORMATION)										
15	14.4	7.8	4	6	7																				
10	9.4	12.8	4	3	4																				
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0	-0.6	22.8	10	12	20																				
-5	-5.6	27.8	6	7	12																				
-10	-10.6	32.8	8	10	19																				
-15	-15.6	37.8	9	14	19																				
-20	-20.6	42.8	10	8	10																				
-25	-25.6	47.8	6	6	6																				
-30	-30.6	52.8	7	5	7																				
-35	-35.6	57.8	8	10	15																				
-40																									
-45																									
-50																									
-55																									

NCDOT BORE DOUBLE U3826\_GEO\_BRDG.GPJ NC\_DOT.GDT 09/05/08



# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

PROJECT NO. 34983.1.1	ID. U-3826	COUNTY EDGECOMBE	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION BRIDGE ON SR 1537 (DANIEL ST. EXT.) OVER TAR RIVER			GROUND WTR (ft)
BORING NO. B3-A	STATION 45+12	OFFSET 19ft LT	ALIGNMENT -L-
COLLAR ELEV. 21.0 ft	TOTAL DEPTH 80.3 ft	NORTHING 795,407	EASTING 2,441,900
DRILL MACHINE CME-550	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 01/29/08	COMP. DATE 01/29/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

PROJECT NO. 34983.1.1	ID. U-3826	COUNTY EDGECOMBE	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION BRIDGE ON SR 1537 (DANIEL ST. EXT.) OVER TAR RIVER			GROUND WTR (ft)
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START DATE 01/29/08	COMP. DATE 01/29/08	SURFACE WATER DEPTH N/A	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				
25														
20	21.0	0.0											GROUND SURFACE	0.0
	17.5	3.5	1	2	3						SS-118		BROWN SANDY CLAY, MOST TO WET (ALLUVIAL)	
15			2	1	1									
	12.2	8.8	2	1	5						SS-119		GRAY SAND, SATURATED (CAPE FEAR FORMATION)	7.0
10			3	4	3									
	7.2	13.8	6	6	8						SS-120			
5			9	6	7						SS-121		GRAY SANDY CLAY, WET	21.8
	2.2	18.8	8	13	13						SS-122		GRAY SAND, SATURATED	27.0
0			4	5	7						SS-123		GRAY SANDY CLAY, WET	32.0
	-2.8	23.8	11	11	16						SS-124		GRAY SAND, SATURATED	37.0
-5			4	7	6									
	-7.8	28.8	8	7	10						SS-125			
-10			7	7	13									
	-12.8	33.8	7	11	23						SS-126			
-15			13	14	20									
	-17.8	38.8	15	19	33						SS-127		GRAY SILTY AND SANDY CLAY, WET	67.0
-20			10	14	30						SS-128			
	-22.8	43.8												
-25														
	-27.8	48.8												
-30														
	-32.8	53.8												
-35														
	-37.8	58.8												
-40														
	-42.8	63.8												
-45														
	-47.8	68.8												
-50														
	-52.8	73.8												
-55														

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				
-55														
	-57.8	78.8	7	10	18						SS-129		GRAY SAND, SATURATED	77.0
-60													Boring Terminated at Elevation -59.3 ft in medium dense sand	80.3
-65														
-70														
-75														
-80														
-85														
-90														
-95														
-100														
-105														
-110														
-115														
-120														
-125														
-130														
-135														

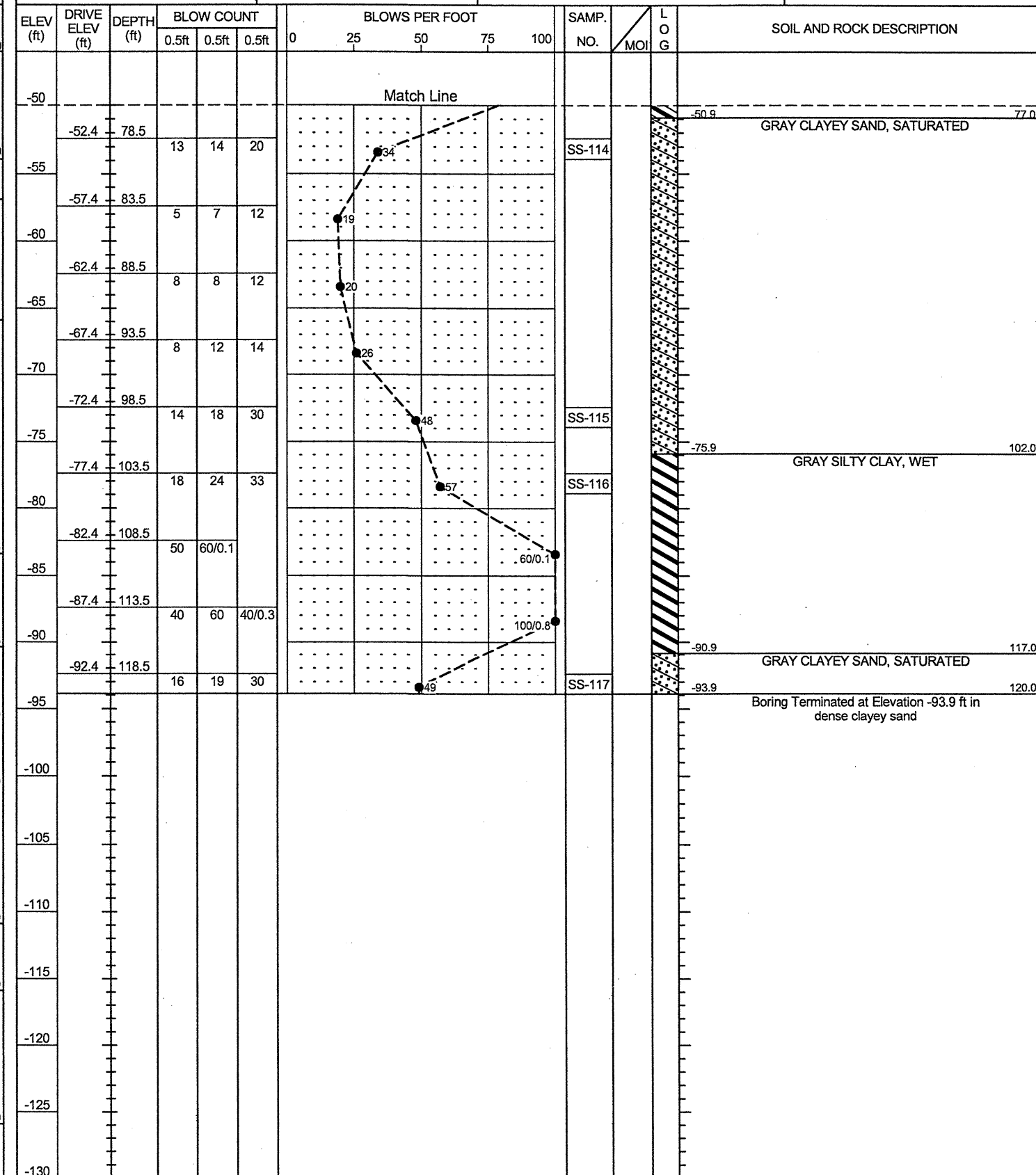
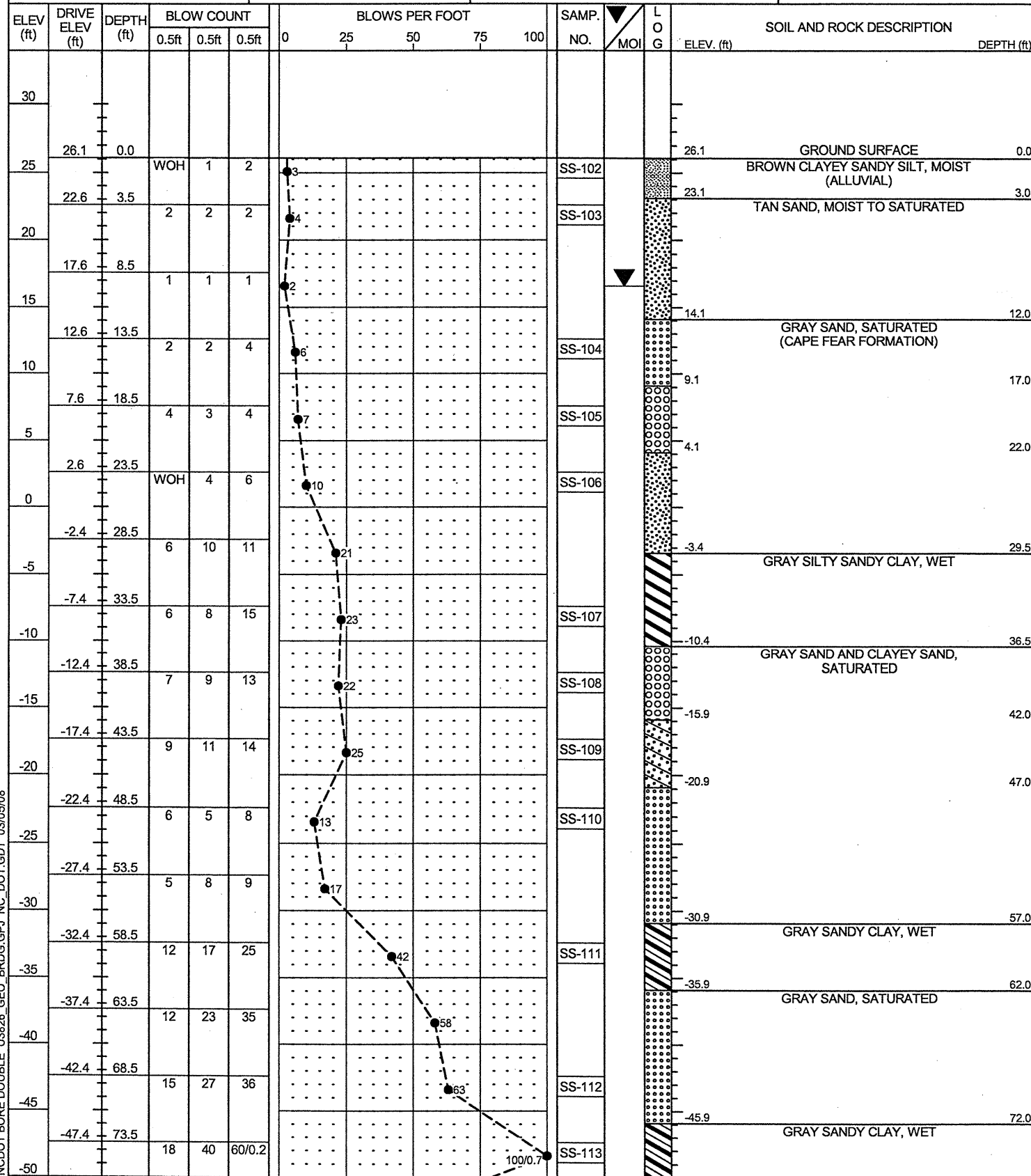
NCDOT BORE DOUBLE U3826 GEO. BRDG.GPJ NC\_DOT.GDT 09/05/08





PROJECT NO. 34983.1.1	ID. U-3826	COUNTY EDGECOMBE	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION BRIDGE ON SR 1537 (DANIEL ST. EXT.) OVER TAR RIVER			GROUND WTR (ft)
BORING NO. B4-B	STATION 46+35	OFFSET 33ft RT	ALIGNMENT -L-
COLLAR ELEV. 26.1 ft	TOTAL DEPTH 120.0 ft	NORTHING 795,342	EASTING 2,442,016
DRILL MACHINE CME-550	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 01/24/08	COMP. DATE 01/24/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

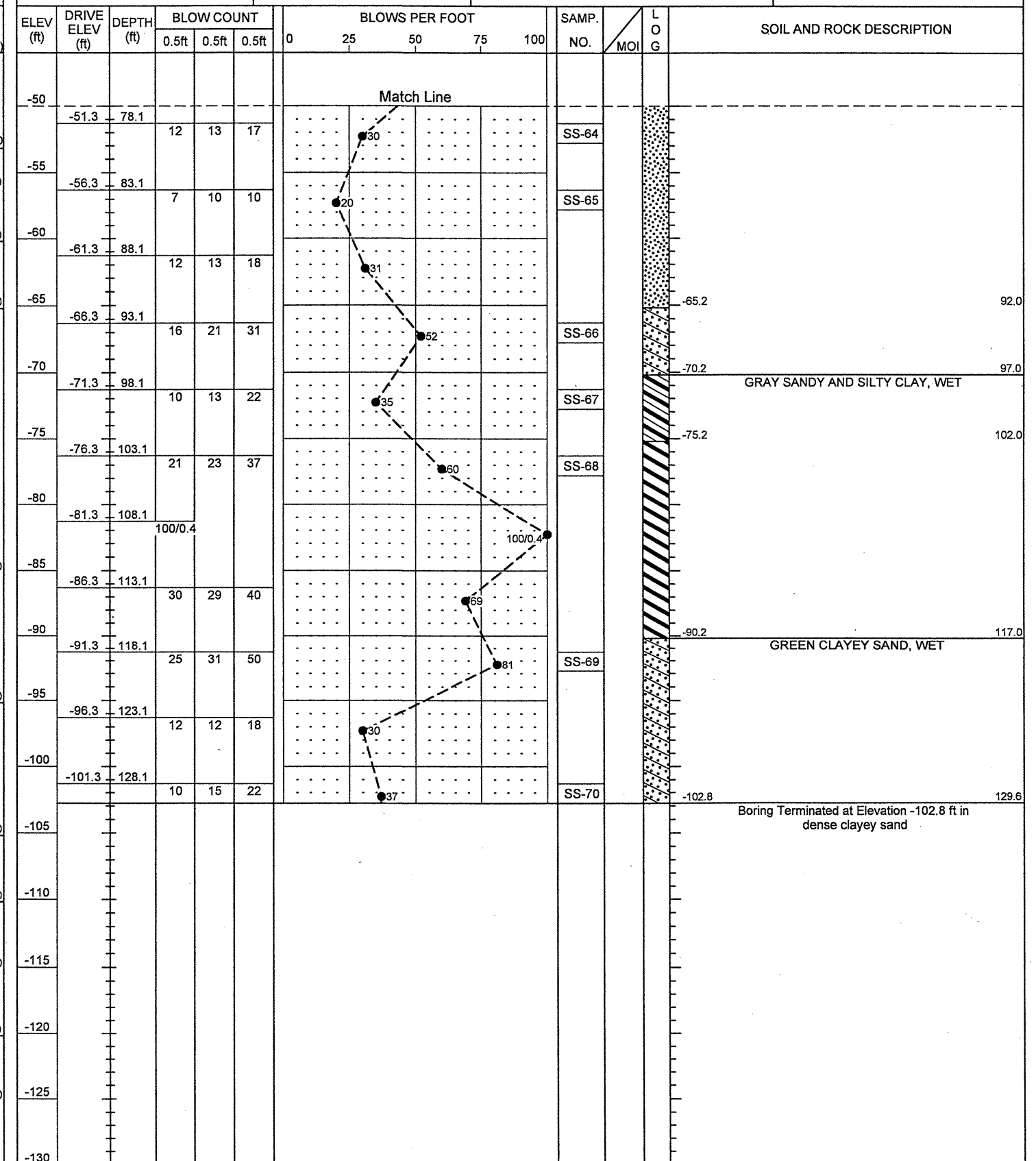
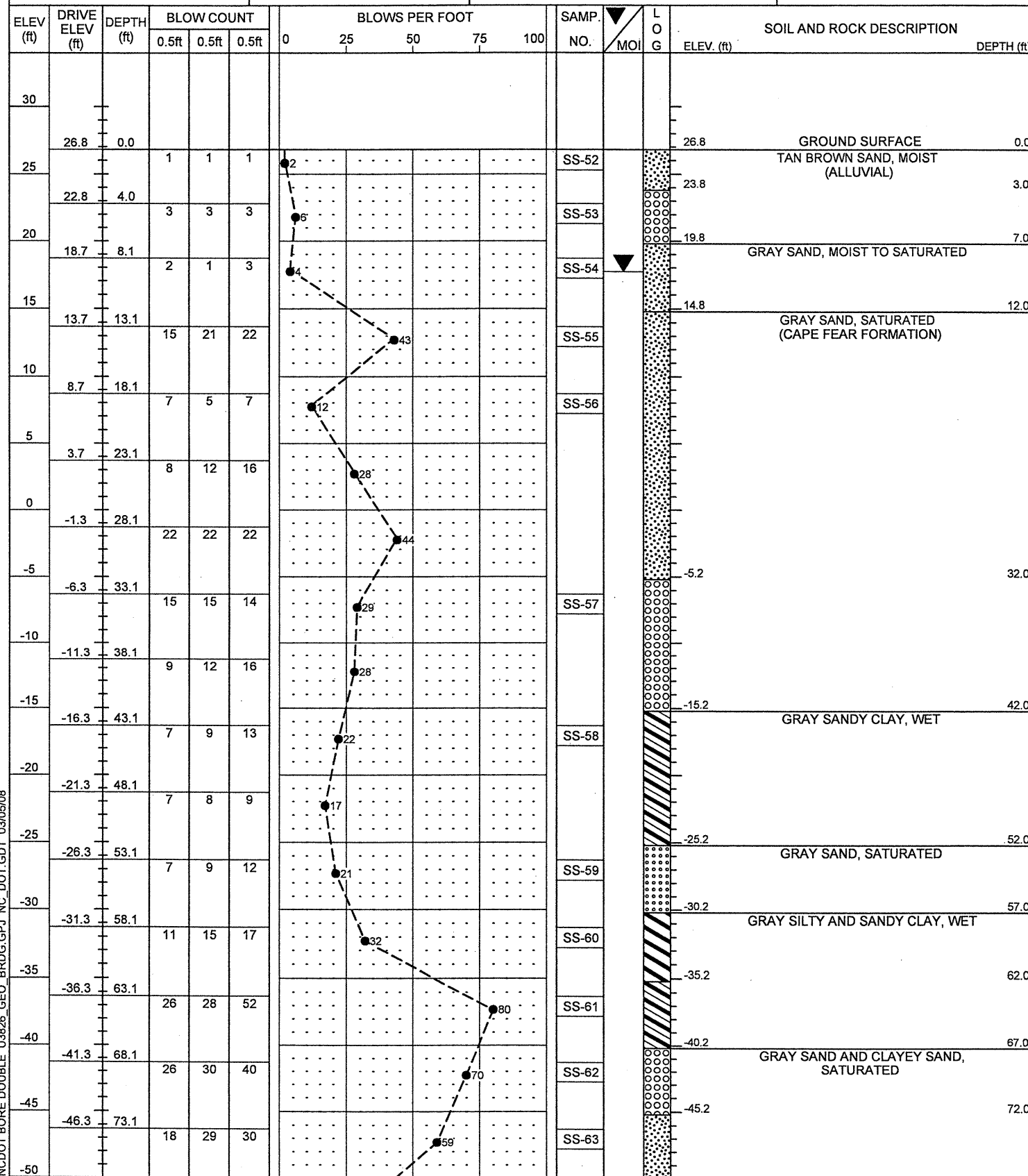
PROJECT NO. 34983.1.1	ID. U-3826	COUNTY EDGECOMBE	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION BRIDGE ON SR 1537 (DANIEL ST. EXT.) OVER TAR RIVER			GROUND WTR (ft)
BORING NO. B4-B	STATION 46+35	OFFSET 33ft RT	ALIGNMENT -L-
COLLAR ELEV. 26.1 ft	TOTAL DEPTH 120.0 ft	NORTHING 795,342	EASTING 2,442,016
DRILL MACHINE CME-550	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 01/24/08	COMP. DATE 01/24/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



NCDOT BORE DOUBLE U3826\_GEO\_BRDG.GPJ NC\_DOT.GDT 03/05/08

PROJECT NO. 34983.1.1	ID. U-3826	COUNTY EDGECOMBE	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION BRIDGE ON SR 1537 (DANIEL ST. EXT.) OVER TAR RIVER			GROUND WTR (ft)
BORING NO. B7-A	STATION 49+80	OFFSET 2ft LT	ALIGNMENT -L-
COLLAR ELEV. 26.8 ft	TOTAL DEPTH 129.6 ft	NORTHING 795,337	EASTING 2,442,362
DRILL MACHINE CME-550	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 01/16/08	COMP. DATE 01/16/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

PROJECT NO. 34983.1.1	ID. U-3826	COUNTY EDGECOMBE	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION BRIDGE ON SR 1537 (DANIEL ST. EXT.) OVER TAR RIVER			GROUND WTR (ft)
BORING NO. B7-A	STATION 49+80	OFFSET 2ft LT	ALIGNMENT -L-
COLLAR ELEV. 26.8 ft	TOTAL DEPTH 129.6 ft	NORTHING 795,337	EASTING 2,442,362
DRILL MACHINE CME-550	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 01/16/08	COMP. DATE 01/16/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



NCDOT BORE DOUBLE U3826 GEO\_BRDG.GPJ NC\_DOT.GDT 03/05/08

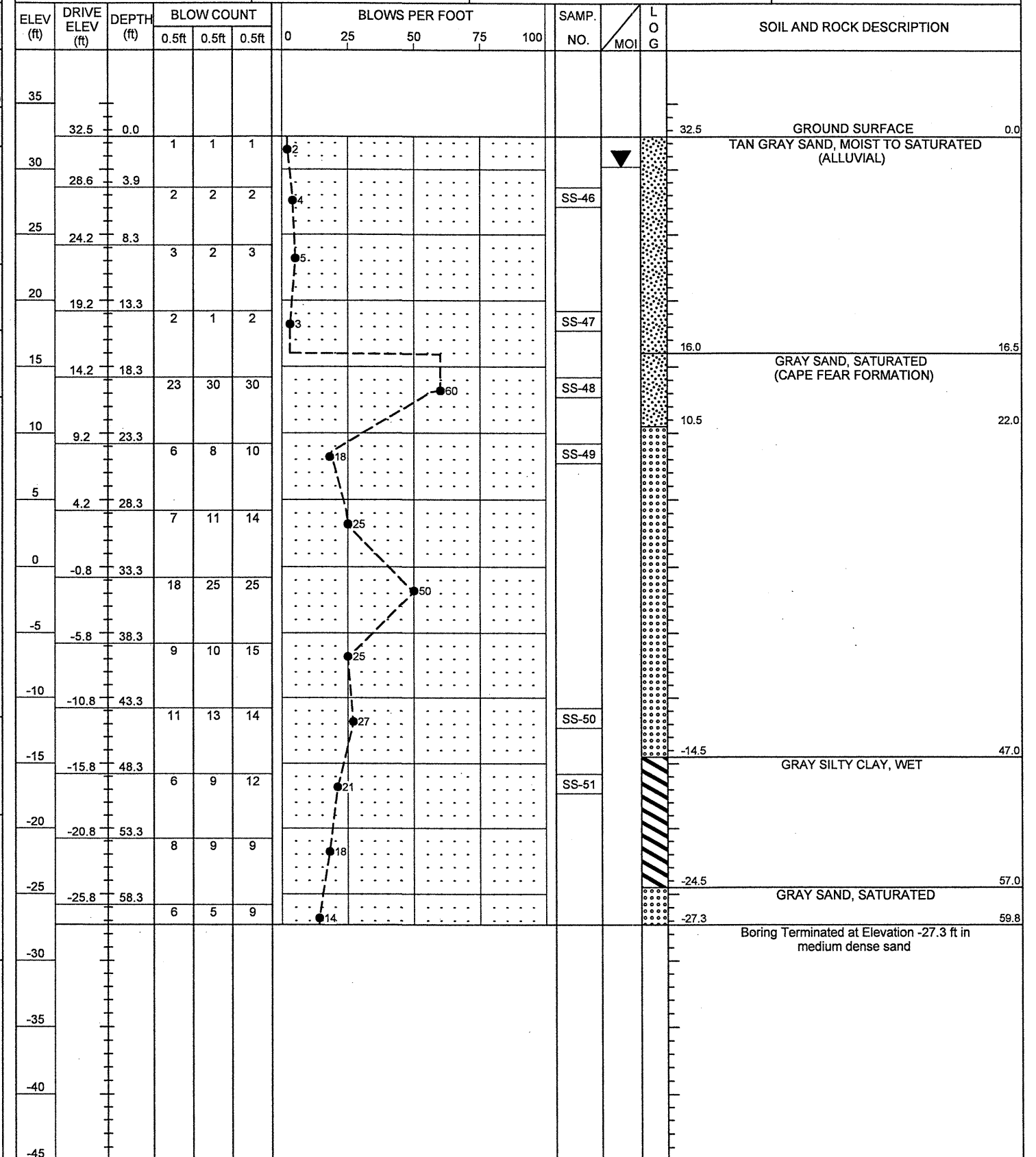
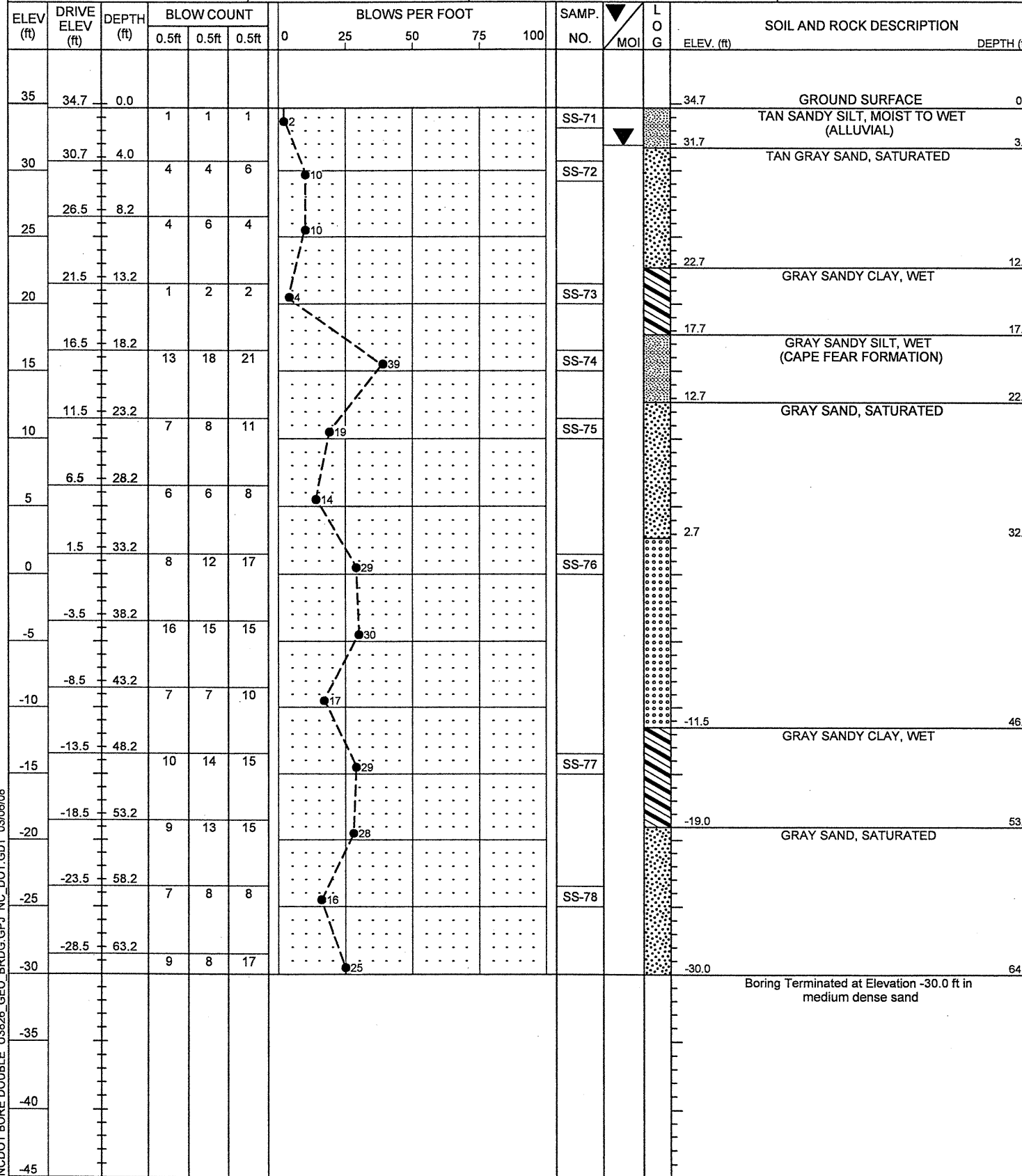


# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

PROJECT NO. 34983.1.1	ID. U-3826	COUNTY EDGEcombe	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION BRIDGE ON SR 1537 (DANIEL ST. EXT.) OVER TAR RIVER			GROUND WTR (ft)
BORING NO. B8-B	STATION 50+75	OFFSET 23ft RT	ALIGNMENT -L-
COLLAR ELEV. 34.7 ft	TOTAL DEPTH 64.7 ft	NORTHING 795,301	EASTING 2,442,454
DRILL MACHINE CME-550	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 01/18/08	COMP. DATE 01/18/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

PROJECT NO. 34983.1.1	ID. U-3826	COUNTY EDGEcombe	GEOLOGIST Wescott, F. M.
SITE DESCRIPTION BRIDGE ON SR 1537 (DANIEL ST. EXT.) OVER TAR RIVER			GROUND WTR (ft)
BORING NO. B9-B	STATION 51+85	OFFSET 20ft RT	ALIGNMENT -L-
COLLAR ELEV. 32.5 ft	TOTAL DEPTH 59.8 ft	NORTHING 795,291	EASTING 2,442,564
DRILL MACHINE CME-550	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 01/15/08	COMP. DATE 01/15/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A



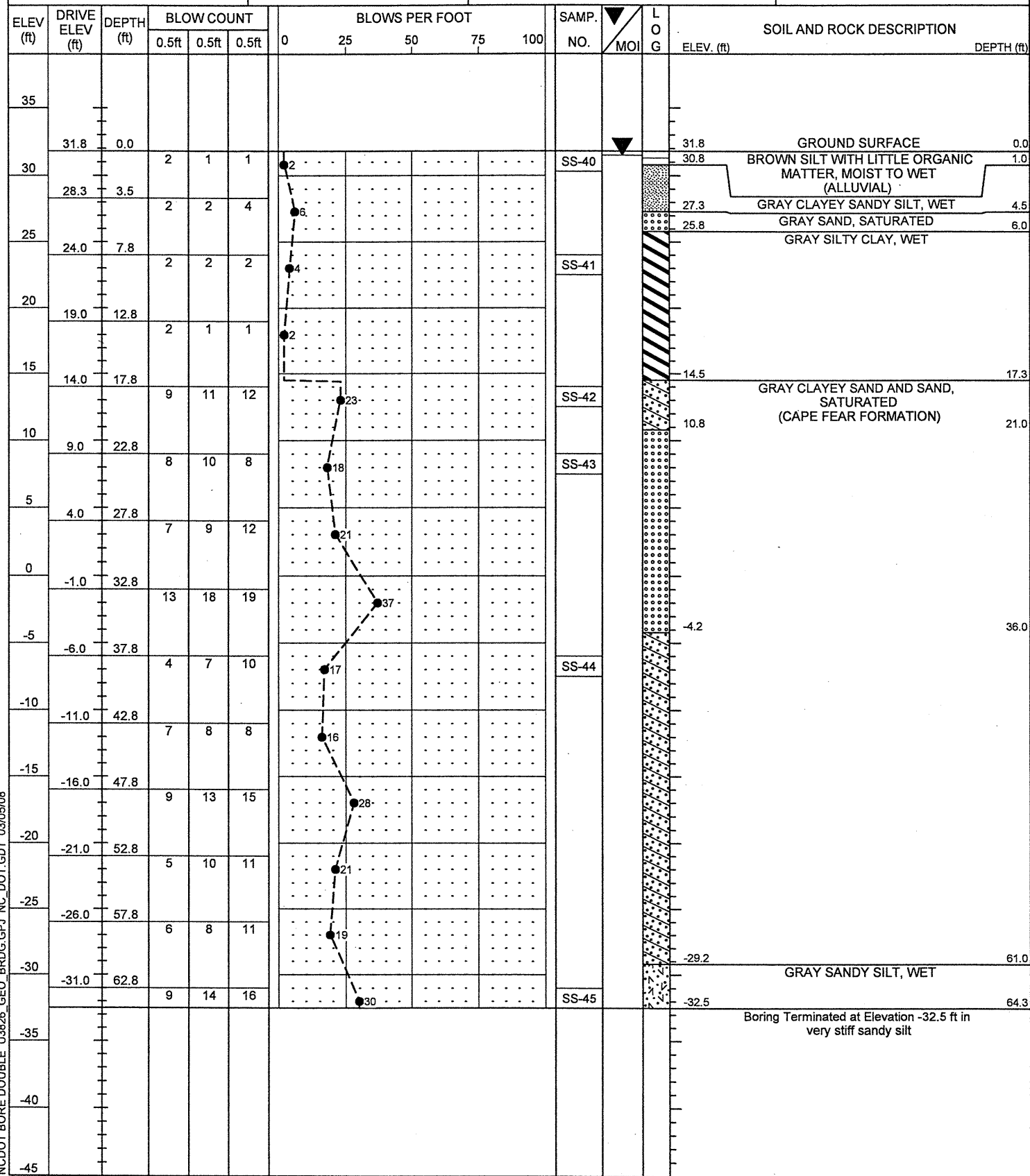
NCDOT BORE DOUBLE U3826\_GEO\_BRDG.GPJ NC\_DOT\_GDT 03/06/08



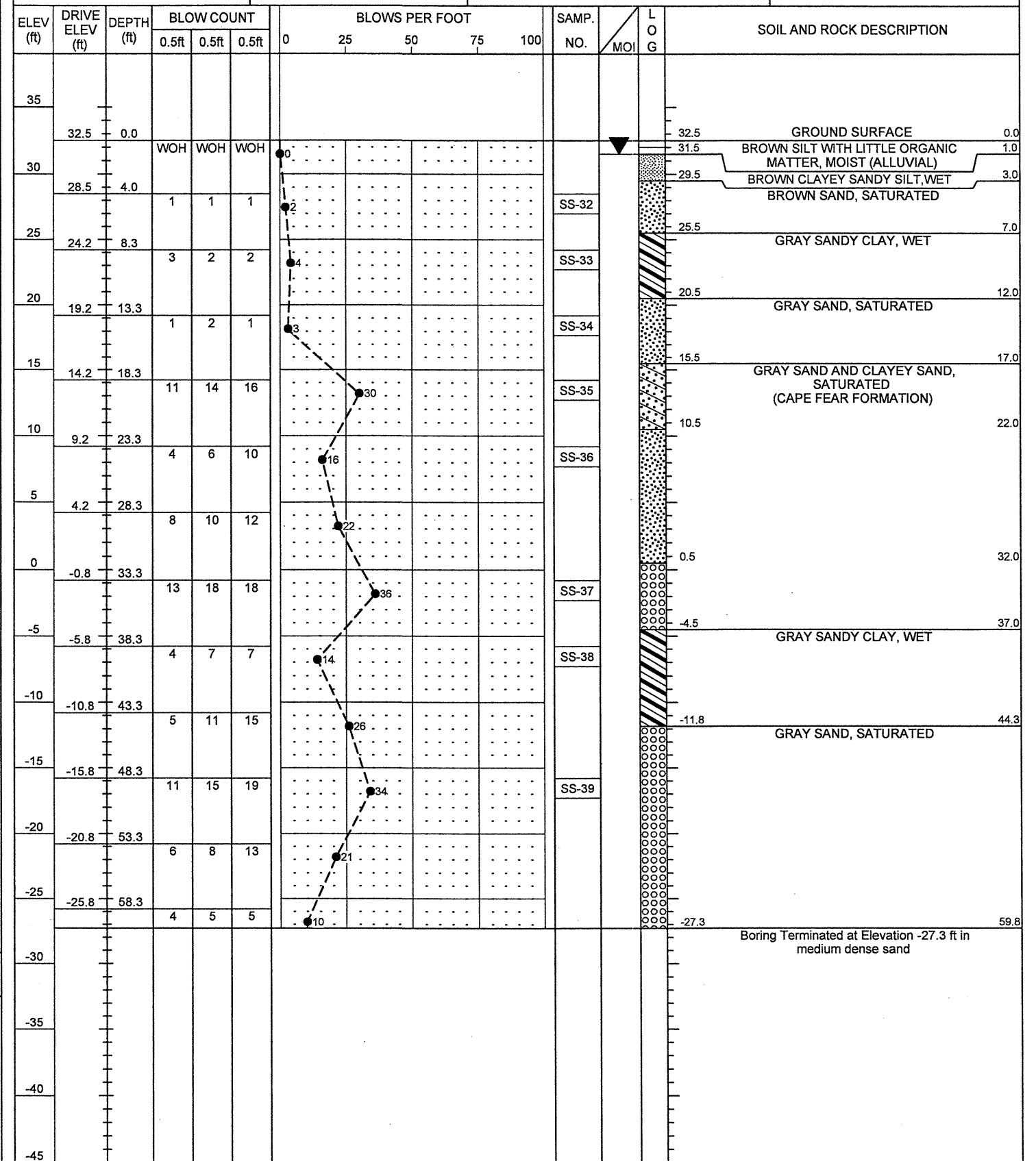
# NCDOT GEOTECHNICAL ENGINEERING UNIT

## BORELOG REPORT

PROJECT NO. 34983.1.1	ID. U-3826	COUNTY EDGEcombe	GEOLOGIST Wescott, F. M.	
SITE DESCRIPTION BRIDGE ON SR 1537 (DANIEL ST. EXT.) OVER TAR RIVER				GROUND WTR (ft)
BORING NO. B10-B	STATION 52+95	OFFSET 15ft RT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 31.8 ft	TOTAL DEPTH 64.3 ft	NORTHING 795,284	EASTING 2,442,673	24 HR. 0.3
DRILL MACHINE CME-550	DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
START DATE 01/15/08	COMP. DATE 01/15/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A	



PROJECT NO. 34983.1.1	ID. U-3826	COUNTY EDGEcombe	GEOLOGIST Swartley, J. R.	
SITE DESCRIPTION BRIDGE ON SR 1537 (DANIEL ST. EXT.) OVER TAR RIVER				GROUND WTR (ft)
BORING NO. B11-A	STATION 54+05	OFFSET 20ft LT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 32.5 ft	TOTAL DEPTH 59.8 ft	NORTHING 795,306	EASTING 2,442,787	24 HR. 1.0
DRILL MACHINE CME-550	DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
START DATE 01/14/08	COMP. DATE 01/14/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A	



NCDOT BORE DOUBLE U3826\_GEO\_BRDG.GPJ\_NC\_DOT.GDT 03/05/08





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

PROJECT NO. 34983.1.1	ID. U-3826	COUNTY EDGECOMBE	GEOLOGIST Swartley, J. R.
SITE DESCRIPTION BRIDGE ON SR 1537 (DANIEL ST. EXT.) OVER TAR RIVER			GROUND WTR (ft)
BORING NO. EB2-A	STATION 57+35	OFFSET 20ft LT	ALIGNMENT -L-
COLLAR ELEV. 33.6 ft	TOTAL DEPTH 70.0 ft	NORTHING 795,268	EASTING 2,443,115
DRILL MACHINE CME-550	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
START DATE 01/09/08	COMP. DATE 01/09/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
35																
	33.6	0.0												33.6	GROUND SURFACE	0.0
			WOH	1	1										BROWN SAND, MOIST TO SATURATED	
30	29.6	4.0		2	2						SS-1			27.1	GRAY SANDY CLAY, WET (ALLUVIAL)	6.5
25	25.1	8.5		1	2	4					SS-2	31%		22.1	GRAY SAND, SATURATED	11.5
20	20.1	13.5		2	1	2					SS-3			17.6	GRAY SAND, SATURATED (CAPE FEAR FORMATION)	16.0
15	15.1	18.5		5	7	7					SS-4					
10	10.1	23.5		5	8	10					SS-5					
5	5.1	28.5		7	11	13								2.1		31.5
0	0.1	33.5		4	6	6										
-5	-4.9	38.5		6	7	10					SS-6					
-10	-9.9	43.5		5	8	13					SS-7			-10.6	GRAY SILTY CLAY, WET	44.2
														-12.9	GRAY SANDY SILT, WET	46.5
-15	-14.9	48.5		7	12	18					SS-8			-17.9	GRAY SAND, SATURATED	51.5
-20	-19.9	53.5		2	4	7					SS-9					
-25	-24.9	58.5		5	5	8								-27.9	GRAY SILTY CLAY, WET	61.5
-30	-29.9	63.5		10	15	22					SS-10			-32.9	GRAY SAND, SATURATED	66.5
-35	-34.9	68.5		8	8	13					SS-11			-36.4	Boring Terminated at Elevation -36.4 ft in medium dense sand	70.0
-40																
-45																

NCDOT BORE DOUBLE U9826 GEO. BRDG.GPJ NC\_DOT.GDT 09/05/08



**U-3826**  
**Bridge on SR 1537 over Tar River**

HOLE #	SAMPLE #	PASS 10	PASS 40	PASS 200	CSESAND	FINESAND	SI	CL	LL	PI	CLASS	DEPTH	MOIST.	ORG.	
EB2-A	SS-1	100	91	17	28.6	55.7	4.6	11.1	21	NP	A-2-4(0)	4.0-5.5	30.6		
	SS-2	100	96	52	14.7	35.7	13.2	36.3	37	16	A-6(5)	8.5-10.0			
	SS-3	100	96	31	10.3	60.8	8.7	20.2	24	4	A-2-4(0)	13.5-15.0			
	SS-4	100	84	34	27.0	46.2	16.6	10.1	36	7	A-2-4(0)	18.5-20.0			
	SS-5	100	76	11	54.7	35.1	3.1	7.1	21	NP	A-2-4(0)	23.5-25.0			
	SS-6			NOT ENOUGH SAMPLE											38.5-40.0
	SS-7	100	98	94	2.4	8.1	45.1	44.4	47	15	A-7-5(18)	44.2-45.0			
	SS-8	98	93	60	7.3	41.8	32.8	18.2	35	6	A-4(3)	48.5-50.0			
	SS-9	99	84	14	43.5	43.9	5.5	7.1	19	NP	A-2-4(0)	53.5-55.0			
	SS-10	100	91	50	20.4	38.5	29.0	12.1	49	16	A-7-5(6)	63.5-65.0			
	SS-11	100	97	35	8.5	61.3	19.2	11.1	28	NP	A-2-4(0)	68.5-70.0			
B13-A	SS-12	99	81	50	20.4	32.3	19.1	28.3	32	9	A-4(2)	4.0-5.5	56	10.1	
	SS-13	100	94	49	15.3	38.1	14.2	32.3	34	14	A-6(4)	8.0-9.5			
	SS-14	99	96	25	10.7	66.2	9.0	14.1	24	NP	A-2-4(0)	13.0-14.5			
	SS-15	99	78	26	54.6	20.3	7.0	18.2	25	7	A-2-4(0)	18.0-19.5			
	SS-16	100	71	11	44.3	46.1	2.5	7.1	22	NP	A-2-4(0)	23.0-24.5			
	SS-17	85	40	6	82.2	11.4	3.3	3.0	18	NP	A-1-b(0)	33.0-34.5			
	SS-18	97	92	83	6.9	16.5	48.3	28.3	46	20	A-7-6(18)	38.0-39.5			
	SS-19	100	91	70	26.2	39.0	20.7	14.1	33	14	A-6(8)	43.0-44.5			
	SS-20	86	56	11	50.6	37.9	5.4	6.1	18	NP	A-2-4(0)	48.0-49.5			
	SS-21	100	78	12	57.6	32.7	6.7	3.0	31	NP	A-2-4(0)	53.0-54.5			
	SS-22	100	91	48	14.7	48.4	30.8	6.1	32	8	A-4(1)	58.0-59.5			
	SS-23	100	79	47	31.3	28.5	30.2	10.1	48	9	A-5(3)	63.5-64.5			
	B12-A	SS-24	100	91	57	17.9	33.0	29.0	20.1	33	11	A-6(4)			1.0-1.5
SS-25		99	71	11	49.4	40.9	3.6	6.0	19	NP	A-2-4(0)	4.0-5.5			
SS-26		100	96	27	12.7	62.5	7.7	17.1	24	5	A-2-4(0)	13.1-14.6			
SS-27		100	86	32	35.5	33.7	7.6	23.1	33	19	A-2-6(2)	18.1-19.6			
SS-28		100	87	12	62.1	27.0	4.9	6.0	22	NP	A-2-4(0)	23.1-24.6			
SS-29		95	54	7	81.2	12.2	2.6	4.0	23	NP	A-3(0)	33.1-34.6			
SS-30		97	69	12	67.2	21.5	5.2	6.0	23	NP	A-2-4(0)	43.1-44.6			
SS-31		100	76	16	51.9	34.9	7.1	6.0	28	NP	A-2-4(0)	53.1-54.6			
B11-A	SS-32	100	88	34	28.6	41.4	13.9	16.1	24	6	A-2-4(0)	4.0-5.5			
	SS-33	100	94	49	16.1	37.0	14.7	32.2	32	15	A-6(4)	8.3-9.8			
	SS-34	100	95	31	11.8	59.8	9.4	19.1	25	6	A-2-4(0)	13.3-14.8			
	SS-35	99	85	32	44.6	24.5	6.7	24.1	30	14	A-2-6(1)	18.3-19.8			
	SS-36	100	67	12	66.7	21.9	5.3	6.0	23	NP	A-2-4(0)	23.3-24.8			
	SS-37	90	37	7	82.9	11.0	2.1	4.0	20	NP	A-1-b(0)	33.3-34.8			
	SS-38	100	93	52	12.5	47.3	22.1	18.1	28	11	A-6(3)	38.3-39.8			

**U-3826**  
**Bridge on SR 1537 over Tar River**

HOLE #	SAMPLE #	PASS 10	PASS 40	PASS 200	CSESAND	FINESAND	SI	CL	LL	PI	CLASS	DEPTH	MOIST.	ORG.
B11-A	SS-39	96	40	6	82.0	12.6	2.4	3.0	18	NP	A-1-b(0)	48.3-49.8		
B10-B	SS-40	100	89	47	24.5	33.6	19.7	22.1	23	6	A-4(0)	1.0-1.5		
	SS-41	100	97	68	8.2	26.4	21.1	44.3	42	25	A-7-6(15)	7.8-9.3		
	SS-42	100	71	26	60.2	15.1	8.7	16.1	34	15	A-2-6(1)	17.8-19.3		
	SS-43	100	78	10	71.2	19.7	3.0	6.0	24	NP	A-3(0)	22.8-24.3		
	SS-44	100	24	10	83.1	7.9	3.9	5.0	38	18	A-2-6(0)	37.8-39.3		
	SS-45	100	71	37	41.4	26.4	22.1	10.1	44	9	A-5(0)	62.8-64.3		
B9-B	SS-46	100	91	23	31.0	49.6	7.3	12.1	19	NP	A-2-4(0)	3.9-5.4		
	SS-47	100	96	24	9.5	68.7	8.8	13.1	23	4	A-2-4(0)	13.3-14.8		
	SS-48	100	91	29	39.4	34.0	11.5	15.1	25	7	A-2-4(0)	18.3-19.8		
	SS-49	100	66	8	71.4	21.2	3.3	4.0	20	NP	A-3(0)	23.3-24.8		
	SS-50	100	59	9	69.5	22.1	1.3	7.0	20	NP	A-3(0)	43.3-44.8		
	SS-51	100	87	53	22.1	33.4	28.4	16.1	46	17	A-7-6(7)	48.3-49.8		
B7-A	SS-52	100	73	11	63.4	26.4	2.2	8.0	23	NP	A-2-4(0)	1.0-1.5		
	SS-53	87	24	3	87.9	9.3	0.8	2.0	24	NP	A-1-b(0)	4.0-5.5		
	SS-54	100	95	27	13.3	63.4	13.3	10.1	23	5	A-2-4(0)	8.1-9.6		
	SS-55	100	92	30	32.7	40.6	16.6	10.1	29	10	A-2-4(0)	13.1-14.6		
	SS-56	100	75	11	65.0	24.7	4.2	6.0	23	NP	A-2-4(0)	18.1-19.6		
	SS-57	69	28	8	75.4	14.0	4.6	6.0	23	4	A-1-b(0)	33.1-34.6		
	SS-58	100	95	47	12.7	51.5	23.7	12.1	28	11	A-6(2)	43.1-44.6		
	SS-59	98	73	8	67.5	26.4	2.1	4.0	29	NP	A-3(0)	53.1-54.6		
	SS-60	100	92	58	14.9	35.4	37.6	12.1	46	20	A-7-6(10)	58.1-59.6		
	SS-61	100	94	61	8.5	46.9	30.6	14.1	28	12	A-6(5)	63.1-64.6		
	SS-62	100	48	17	72.0	13.6	7.3	7.0	32	NP	A-1-b(0)	68.1-69.6		
	SS-63	100	56	11	74.2	15.8	3.9	6.0	21	NP	A-2-4(0)	73.1-74.6		
	SS-64	99	77	32	46.4	23.0	3.4	27.2	21	6	A-2-4(0)	78.1-79.6		
	SS-65	98	49	24	68.0	8.2	0.6	23.1	22	9	A-2-4(0)	83.1-84.6		
	SS-66	94	44	17	69.6	14.1	10.3	6.0	30	14	A-2-6(0)	93.1-94.6		
	SS-67	100	99	54	1.6	56.7	15.5	26.2	28	11	A-6(3)	98.1-99.6		
	SS-68	100	96	72	8.2	27.2	32.4	32.2	45	29	A-7-6(19)	103.1-104.6		
	SS-69	99	81	34	45.1	22.4	12.4	20.1	38	16	A-2-6(1)	118.1-119.6		
SS-70	97	63	18	67.0	16.5	12.5	4.0	30	12	A-2-6(0)	128.1-129.6			
B8-B	SS-71	100	92	<u>41</u>	20.6	46.9	14.3	18.2	18	<u>3</u>	<u>A-4(0)</u>	1.0-1.5		
	SS-72	100	81	13	44.4	46.0	3.5	6.1	19	NP	A-2-4(0)	4.0-5.5		
	SS-73	100	97	<u>41</u>	9.1	52.0	14.7	24.3	<u>29</u>	12	A-6(1)	13.2-14.7		
	SS-74	100	90	42	30.5	32.7	23.7	13.1	27	9	A-4(1)	18.2-19.7		
	SS-75	100	90	<u>20</u>	43.9	37.1	4.9	14.2	19	NP	A-2-4(0)	23.2-24.7		

**U-3826**  
**Bridge on SR 1537 over Tar River**

HOLE #	SAMPLE #	PASS 10	PASS 40	PASS 200	CSESAND	FINESAND	SI	CL	LL	PI	CLASS	DEPTH	MOIST.	ORG.
<b>B8-B</b>	SS-76	99	60	7	81.0	13.2	1.7	4.0	21	NP	A-3(0)	33.2-34.7		
	SS-77	100	99	74	3.4	33.0	39.3	24.3	40	18	A-6(13)	48.2-49.7		
	SS-78	100	79	11	56.7	34.5	4.8	4.0	27	NP	A-2-4(0)	58.2-59.7		
<b>EB1-B</b>	SS-79	100	98	64	6.5	31.5	27.6	34.4	35	8	A-4(4)	1.0-1.5		
	SS-80	100	99	37	6.9	61.2	11.7	20.2	22	4	A-4(0)	8.0-9.5		
	SS-81	98	76	29	51.4	20.7	11.7	16.2	31	16	A-2-6(1)	13.0-14.5		
	SS-82	98	66	12	67.8	21.5	4.6	6.1	21	NP	A-2-4(0)	18.0-19.5		
	SS-83	98	43	6	81.5	13.5	0.9	4.0	16	NP	A-1-b(0)	28.0-29.5		
	SS-84	100	93	64	12.7	31.1	31.9	24.3	43	15	A-7-6(9)	33.0-34.5		
	SS-85	99	80	25	52.0	24.8	12.1	11.1	28	11	A-2-6(0)	48.0-49.5		
	SS-86	100	82	12	64.3	24.5	3.1	8.1	21	NP	A-2-4(0)	53.0-54.5		
<b>B1-B</b>	SS-87	100	99	71	4.7	26.3	18.5	50.6	35	14	A-6(9)	3.8-5.3		
	SS-88	100	99	26	9.8	67.2	5.8	17.2	21	NP	A-2-4(0)	7.8-9.3		
	SS-89	100	94	8	38.4	54.5	2.0	5.1	23	NP	A-3(0)	17.8-19.3		
	SS-90	92	29	7	82.7	11.0	2.2	4.0	24	NP	A-1-b(0)	27.8-29.3		
	SS-91	98	84	47	23.1	37.2	25.6	14.2	42	13	A-7-6(3)	32.8-34.3	24.8	
	SS-92	100	96	71	6.5	44.7	34.7	14.2	35	13	A-6(8)	42.8-44.3		
	SS-93	99	67	15	62.8	24.4	5.8	7.1	24	NP	A-2-4(0)	47.8-49.3		
	SS-94	98	42	8	77.9	15.8	2.3	4.0	23	NP	A-1-b(0)	57.8-59.3		
	SS-95	100	96	65	9.3	35.4	37.1	18.2	42	14	A-7-6(8)	62.8-64.3		
	<b>B2-A</b>	SS-95A	100	94	71	13.1	18.0	20.3	48.5	44	15	A-7-6(11)	1.0-1.5	
SS-96		100	96	79	6.5	18.0	23.0	52.6	40	20	A-6(15)	3.5-5.0		
SS-97		100	58	13	69.9	17.8	1.2	11.1	16	NP	A-2-4(0)	7.8-9.3		
SS-98		90	40	11	72.6	15.4	6.0	6.1	24	9	A-2-4(0)	22.8-24.3		
SS-99		100	77	41	30.7	36.4	24.8	8.1	39	11	A-6(1)	27.8-29.3		
SS-100		100	96	36	13.8	57.4	18.7	10.1	28	8	A-4(0)	37.8-39.3		
SS-101		98	33	5	85.6	10.2	1.1	3.0	28	NP	A-1-b(0)	47.8-49.3		
SS-102A		100	97	72	5.1	53.7	29.1	12.1	27	8	A-4(4)	57.8-59.3		
<b>B4-B</b>	SS-102	100	99	50	9.9	43.1	14.7	32.4	28	9	A-4(2)	1.0-1.5		
	SS-103	100	96	30	30.9	41.5	5.4	22.2	18	NP	A-2-4(0)	3.5-5.0		
	SS-104	100	100	9	11.7	79.6	3.6	5.1	26	NP	A-3(0)	13.5-15.0		
	SS-105	71	12	0	89.5	8.8	0.7	1.0	22	NP	A-1-b(0)	18.5-20.0		
	SS-106	99	68	29	37.9	39.6	11.4	11.1	22	NP	A-2-4(0)	23.5-25.0		
	SS-107	98	79	59	27.1	19.0	37.7	16.2	45	21	A-7-6(10)	33.5-35.0		
	SS-108	94	45	9	76.5	15.3	4.1	4.0	14	NP	A-1-b(0)	38.5-40.0		
	SS-109	100	84	29	52.5	21.6	15.8	10.1	30	16	A-2-6(1)	43.5-45.0		
	SS-110	99	62	9	69.2	23.5	3.2	4.0	25	NP	A-3(0)	48.5-50.0		

**U-3826**  
**Bridge on SR 1537 over Tar River**

HOLE #	SAMPLE #	PASS 10	PASS 40	PASS 200	CSESAND	FINESAND	SI	CL	LL	PI	CLASS	DEPTH	MOIST.	ORG.
<b>B4-B</b>	SS-111	100	88	53	19.4	35.8	32.6	12.1	37	13	A-6(4)	58.5-60.0		
	SS-112	100	83	10	58.1	34.7	4.1	3.0	26	NP	A-3(0)	68.5-70.0		
	SS-113	100	86	55	22.3	27.9	25.5	24.3	33	15	A-6(5)	73.5-74.7		
	SS-114	99	63	33	60.5	7.1	7.1	25.3	31	14	A-2-6(1)	78.5-80.0		
	SS-115	99	60	28	59.2	16.8	11.8	12.1	32	15	A-2-6(1)	98.5-100.0		
	SS-116	100	95	88	8.9	5.1	33.4	52.6	72	40	A-7-5(41)	103.5-105.0		
	SS-117	99	79	33	48.1	20.2	13.5	18.2	34	13	A-2-6(1)	118.5-120.0		
<b>B3-A</b>	SS-118	100	98	51	10.7	41.3	15.6	32.4	28	11	A-6(3)	1.0-1.5		
	SS-119	96	70	8	52.1	41.3	1.5	5.1	24	NP	A-3(0)	8.8-10.3		
	SS-120	98	55	6	81.2	14.0	1.8	3.0	20	NP	A-3(0)	18.8-20.3		
	SS-121	100	88	75	13.6	34.4	37.9	14.2	36	13	A-6(9)	23.8-25.3		
	SS-122	99	64	12	35.2	54.4	4.4	6.1	22	NP	A-2-4(0)	28.8-30.3		
	SS-123	100	94	46	16.8	44.1	28.9	10.1	31	14	A-6(3)	33.8-35.3		
	SS-124	100	27	8	70.2	24.0	2.7	3.0	28	NP	A-1-b(0)	43.8-45.3		
	SS-125	100	87	29	17.9	56.8	18.2	7.1	24	5	A-2-4(0)	53.8-55.3		
	SS-126	99	85	9	52.7	39.9	3.3	4.0	23	NP	A-3(0)	63.8-65.3		
	SS-127	100	90	61	18.8	25.3	27.5	28.3	41	21	A-7-6(10)	68.8-70.3		
	SS-128	100	88	43	34.9	22.5	7.2	35.4	31	17	A-6(3)	73.8-75.3		
	SS-129	96	49	22	66.5	10.6	2.6	20.2	22	9	A-2-4(0)	78.8-80.3		



**FIELD  
SCOUR REPORT**

WBS: 34983.1.1 TIP: U-3826 COUNTY: Edgecombe

DESCRIPTION(1): Bridge On SR 1537 (Daniel St. Ext.) over Tar River

**EXISTING BRIDGE**

Information from: Field Inspection  Microfilm \_\_\_\_\_ (reel \_\_\_\_\_ pos: \_\_\_\_\_)  
Other (explain) \_\_\_\_\_

Bridge No.: N/A Length: N/A Total Bents: N/A Bents in Channel: N/A Bents in Floodplain: N/A  
Foundation Type: N/A

**EVIDENCE OF SCOUR(2)**

Abutments or End Bent Slopes: N/A

Interior Bents: N/A

Channel Bed: None

Channel Bank: None

**EXISTING SCOUR PROTECTION**

Type(3): N/A

Extent(4): N/A

Effectiveness(5): N/A

Obstructions(6): N/A

**INSTRUCTIONS**

- 1 Describe the specific site's location, including route number and body of water crossed.
- 2 Note scour evidence at existing end bents or abutments (e.g. undermining, sloughing, degradations).
- 3 Note existing scour protection (e.g. rip rap).
- 4 Describe extent of existing scour protection.
- 5 Describe whether or not the scour protection appears to be working.
- 6 Note obstructions such as dams, fallen trees, debris at bents, etc.
- 7 Describe the channel bed material based on observation and/or samples. Include any lab results with report.
- 8 Describe the channel bank material based on observation and/or samples. Include any lab results with report.
- 9 Describe the material covering the banks (e.g. grass, trees, rip rap, none).
- 10 Determine the approximate floodplain width from field observation or a topographic map.
- 11 Describe the material covering the floodplain (e.g. grass, trees, crops).
- 12 Use professional judgement to specify if the stream is degrading, aggrading, or static.
- 13 Describe potential and direction of the stream to migrate laterally during the bridge's life (approx. 100 years).
- 14 Give the design scour elevation (DSE) expected over the life of the bridge (approx. 100 years). This elevation can be given as a range across the site, or for each bent. Discuss the relationship between the Hydraulics Unit theoretical scour and the DSE. If the DSE is dependent on scour counter measures, explain (e.g. rip rap armoring on slopes). The DSE is based on the erodability of materials, giving consideration to the influence of joints, foliation, bedding characteristics, % core recovery, % RQD, differential weathering, shear strength, observations at existing structures, other tests deemed appropriate, and overall geologic conditions at the site.

**DESIGN INFORMATION**

Channel Bed Material(7): Sand

Channel Bank Material(8): Sandy silt and sand (SS-64 and SS-102)

Channel Bank Cover(9): Wooded

Floodplain Width(10): 2000+/- feet

Floodplain Cover(11): Wooded

Stream is(12): Aggrading \_\_\_\_\_ Degrading  Static \_\_\_\_\_

Channel Migration Tendency(13): East toward End Bent 2

Observations and Other Comments: \_\_\_\_\_

**DESIGN SCOUR ELEVATIONS(14)**

Feet  Meters \_\_\_\_\_

**BENTS**

B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
24	21	20	21	-3	-3	-2	24.5	29	28.5	29
<b>B12</b>	<b>B13</b>									
29	29									

**Comparison of DSE to Hydraulics Unit theoretical scour:**

Design Scour Elevation agrees with the Hydraulics Unit's 100 yr theoretical scour at all bents except Bents 5, 6, & 7. Due to the presence of stiff to hard cohesive formational soils & dense sand at Bents 5, 6, & 7, the Design Scour Elevations at Bent 5, 6, & 7 are 12.2, 12.8, 14.0 ft higher; respectively, than the theoretical scour.

**SOIL ANALYSIS RESULTS FROM CHANNEL BED AND BANK MATERIAL**

Bed or Bank										
Sample No.										
Retained #4										
Passed #10										
Passed #40										
Passed #200										
Coarse Sand										
Fine Sand										
Silt										
Clay										
LL										
PI										
AASHTO										
Station										
Offset										
Depth										

See Sheets 16,17  
"Soil Test Results",  
for samples:  
Channel Bank SS-64, SS-102

Reported by: Paul M. Wood

Date: 3/6/08