

PROJECT: 33397.1.1 ID: B-4030

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4030	01	20

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

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO.: 33397.1.1 F.A. PROJ.: BRSTP-0130(3)
 COUNTY: BRUNSWICK
 PROJECT DESCRIPTION: Bridge No. 9 over Bear Branch on NC 130

SITE DESCRIPTION:

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 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.

FOR LETTING

PERSONNEL:

- TOM STETLER
- MICHAEL D. MASON
- BOBBIE FOWLER
- JON WOOD

INVESTIGATED BY: CATLIN ENGINEERS AND SCIENTISTS

CHECKED BY: STEVEN V. HUDSON, P.G.

SUBMITTED BY: STEVEN V. HUDSON, P.G.

DATE: OCTOBER 3, 2007

SEAL 1583 10/3/07 SEAL

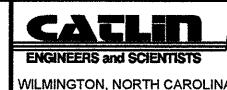
SIGNATURE *Steven V. Hudson*

DRAWN BY: STEVEN HUDSON

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

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

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT



207-057

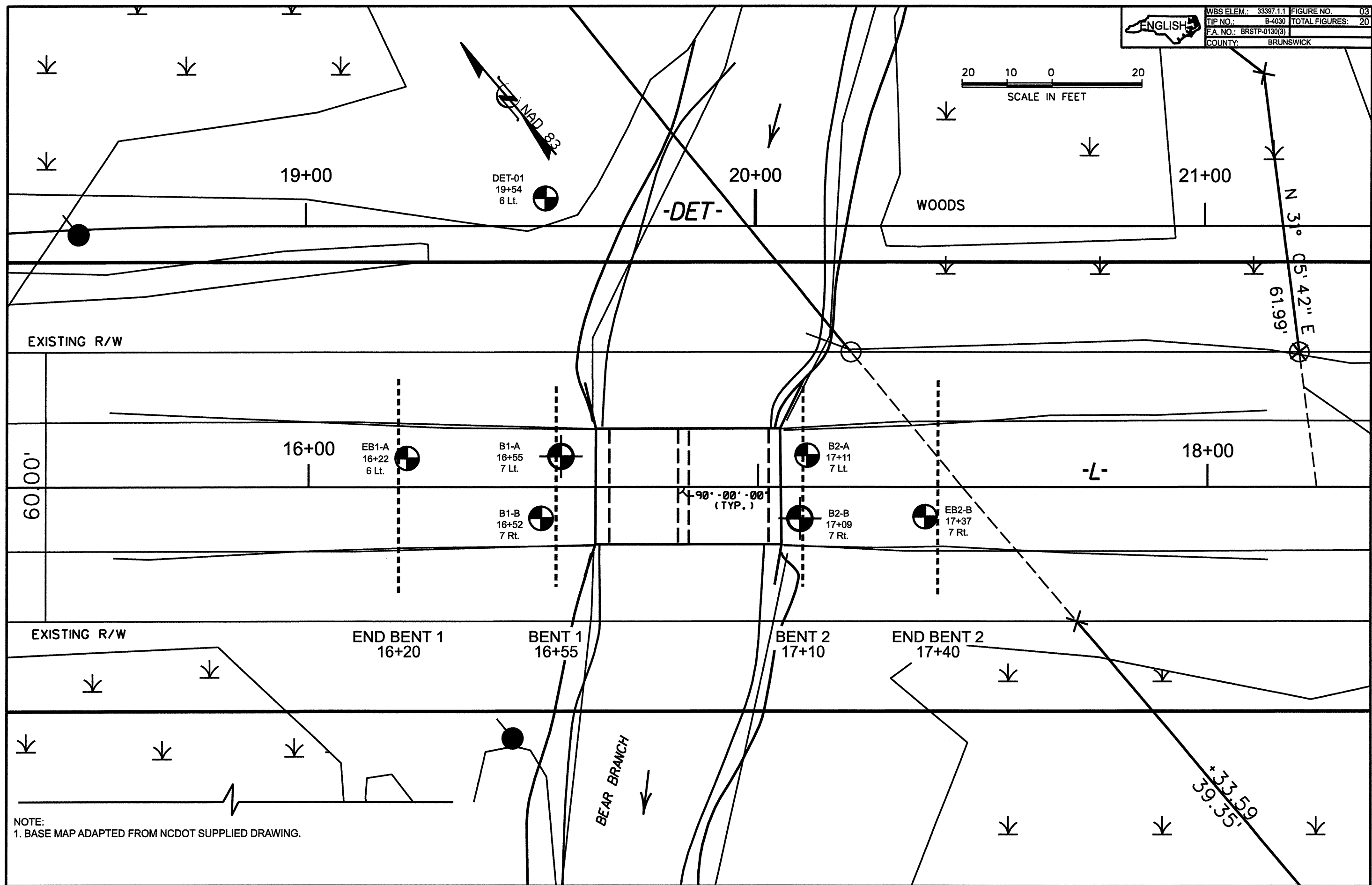
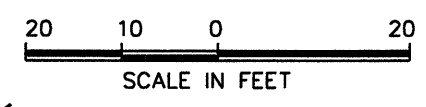


PROJ. NO.: 33397.1.1 SHEET NO.: 02
T.I.P. NO.: B-4030 TOTAL SHEETS: 20
F.A. NO.: BRSTP-0130(3) RW SHEET NO.:
COUNTY: BRUNSWICK

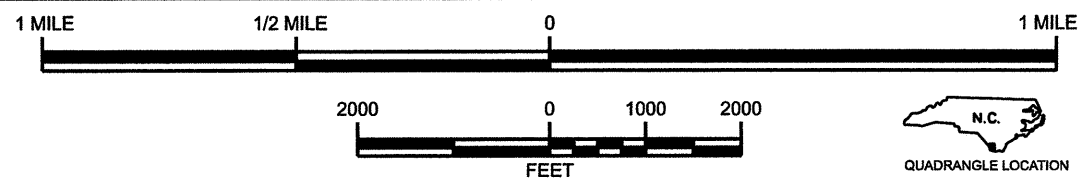
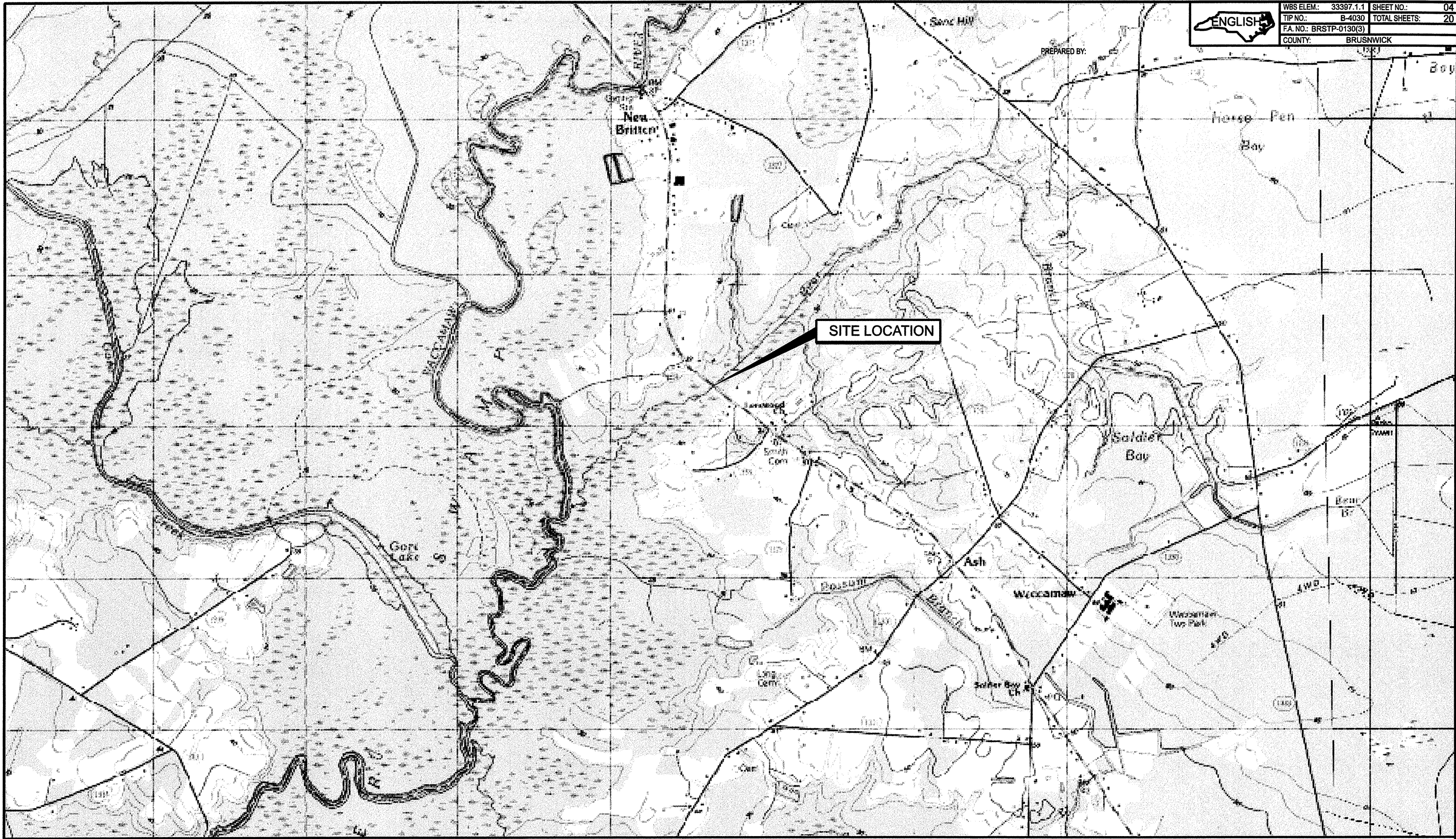
SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

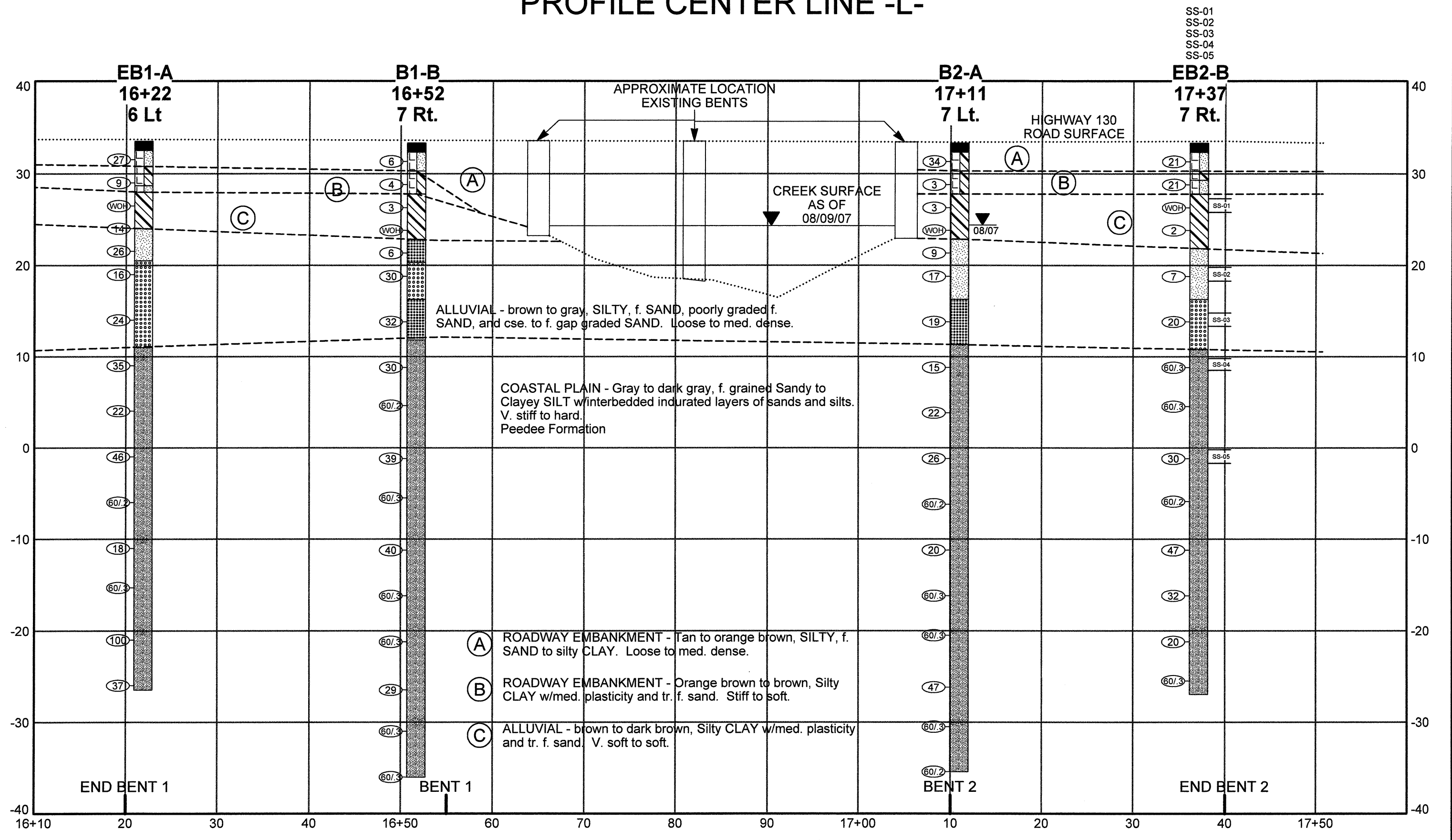
SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS																																																																																																																																																																																																																																											
<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 (AASHTO T208, 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: <i>VERY STIFF, GRAY SILTY CLAY, MOIST 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) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.</p> <p style="text-align: center;">ANGULARITY OF GRAINS</p> <p>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS ARE DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED OR ROUNDED.</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 AS FOLLOWS:</p>	<p>ALLUVIUM (ALLUV.) - SOILS WHICH 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 WHICH 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. DIRECT PUSH - ADVANCEMENT OF SAMPLE TOOLING UTILIZING DIRECT PUSH METHODOLOGY (ex. GEOPROBE) 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 (F.P.) - 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. HYDRAULIC PUSH (HP) - ADVANCEMENT OF SAMPLING TOOLS UTILIZING MECHANICAL/HYDRAULIC DOWN-FORCE OF DRILLING MACHINE. 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 SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. 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. SAPROLITE (SAP.) - RESIDUAL SOIL WHICH 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, WHICH HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR 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. 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 (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. TOPSOIL (T.S.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>																																																																																																																																																																																																																																											
<p style="text-align: center;">SOIL LEGEND AND AASHTO CLASSIFICATION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">GENERAL CLASS.</th> <th colspan="7">GRANULAR MATERIALS (<= 35% PASSING #200)</th> <th colspan="7">SILT-CLAY MATERIALS (>35% PASSING #200)</th> <th colspan="3">ORGANIC MATERIALS</th> </tr> <tr> <th>A-1-a</th> <th>A-1-b</th> <th>A-3</th> <th>A-2-4</th> <th>A-2-5</th> <th>A-2-6</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, A-3</th> <th>A-4, A-5, A-6, A-7</th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>GROUP CLASS.</td> <td colspan="7">[Symbol]</td> <td colspan="7">[Symbol]</td> <td colspan="3">[Symbol]</td> </tr> <tr> <td>SYMBOL</td> <td colspan="7">[Symbol]</td> <td colspan="7">[Symbol]</td> <td colspan="3">[Symbol]</td> </tr> <tr> <td>% PASSING</td> <td colspan="7">[Symbol]</td> <td colspan="7">[Symbol]</td> <td colspan="3">[Symbol]</td> </tr> <tr> <td>LIQUID LIMIT</td> <td colspan="7">[Symbol]</td> <td colspan="7">[Symbol]</td> <td colspan="3">[Symbol]</td> </tr> <tr> <td>PLASTIC INDEX</td> <td colspan="7">[Symbol]</td> <td colspan="7">[Symbol]</td> <td colspan="3">[Symbol]</td> </tr> <tr> <td>USUAL TYPES OF MAJOR MATERIALS</td> <td colspan="7">[Symbol]</td> <td colspan="7">[Symbol]</td> <td colspan="3">[Symbol]</td> </tr> <tr> <td>GEN. RATINGS AS A SUBGRADE</td> <td colspan="7">[Symbol]</td> <td colspan="7">[Symbol]</td> <td colspan="3">[Symbol]</td> </tr> </tbody> </table>	GENERAL CLASS.	GRANULAR MATERIALS (<= 35% PASSING #200)							SILT-CLAY MATERIALS (>35% PASSING #200)							ORGANIC MATERIALS			A-1-a	A-1-b	A-3	A-2-4	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	A-7	A-1, A-2, A-3	A-4, A-5, A-6, A-7				GROUP CLASS.	[Symbol]							[Symbol]							[Symbol]			SYMBOL	[Symbol]							[Symbol]							[Symbol]			% PASSING	[Symbol]							[Symbol]							[Symbol]			LIQUID LIMIT	[Symbol]							[Symbol]							[Symbol]			PLASTIC INDEX	[Symbol]							[Symbol]							[Symbol]			USUAL TYPES OF MAJOR MATERIALS	[Symbol]							[Symbol]							[Symbol]			GEN. RATINGS AS A SUBGRADE	[Symbol]							[Symbol]							[Symbol]			<p style="text-align: center;">MINERALOGICAL COMPOSITION</p> <p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.</p> <p style="text-align: center;">COMPRESSIBILITY</p> <p>SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 30 MODERATELY COMPRESSIBLE LIQUID LIMIT 31 - 50 HIGHLY COMPRESSIBLE LIQUID LIMIT GRATER THAN 50</p> <p style="text-align: center;">PERCENTAGE OF MATERIAL</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>ORGANIC MATERIAL</th> <th>GRANULAR SOILS</th> <th>SILT-CLAY SOILS</th> <th>OTHER MATERIAL</th> </tr> </thead> <tbody> <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> </tbody> </table> <p style="text-align: center;">GROUND WATER</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 SEEPAGE</p> <p style="text-align: center;">MISCELLANEOUS SYMBOLS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td> ROADWAY EMBANKMENT WITH SOIL DESCRIPTION</td> <td> TEST BORING</td> <td> SAMPLE DESIGNATIONS</td> </tr> <tr> <td> SOIL SYMBOL</td> <td> AUGER BORING</td> <td>S - BULK SAMPLE</td> </tr> <tr> <td> ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS</td> <td> CORE BORING</td> <td>SS - SPLIT SPOON SAMPLE</td> </tr> <tr> <td> INFERRERD SOIL BOUNDARIES</td> <td> MONITORING WELL</td> <td>ST - SHELBY TUBE SAMPLE</td> </tr> <tr> <td> INFERRERD ROCK LINE</td> <td> PIEZOMETER INSTALLATION</td> <td>RS - ROCK SAMPLE</td> </tr> <tr> <td> ALLUVIAL SOIL BOUNDARY</td> <td> SLOPE INDICATOR INSTALLATION</td> <td>RT - RECOMPACTED TRIAXIAL SAMPLE</td> </tr> <tr> <td> DIP/DIP DIRECTION OF ROCK STRUCTURES</td> <td> SPT N-VALUE</td> <td>CBR - CBR SAMPLE</td> </tr> <tr> <td> SOUNDING ROD</td> <td> SPT REFUSAL</td> <td></td> </tr> </tbody> </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	ROADWAY EMBANKMENT WITH SOIL DESCRIPTION	TEST BORING	SAMPLE DESIGNATIONS	SOIL SYMBOL	AUGER BORING	S - BULK SAMPLE	ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS	CORE BORING	SS - SPLIT SPOON SAMPLE	INFERRERD SOIL BOUNDARIES	MONITORING WELL	ST - SHELBY TUBE SAMPLE	INFERRERD ROCK LINE	PIEZOMETER INSTALLATION	RS - ROCK SAMPLE	ALLUVIAL SOIL BOUNDARY	SLOPE INDICATOR INSTALLATION	RT - RECOMPACTED TRIAXIAL SAMPLE	DIP/DIP DIRECTION OF ROCK STRUCTURES	SPT N-VALUE	CBR - CBR SAMPLE	SOUNDING ROD	SPT REFUSAL		<p style="text-align: center;">WEATHERING</p> <p>FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT (V. SL.) 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 (SL.) 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 ARE DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. SEVERE (SEV.) ALL 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. VERY SEVERE (V. SEV.) ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.</p> <p style="text-align: center;">ROCK HARDNESS</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 FINGERNAIL.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">FRACTURE SPACING</th> <th colspan="2">BEDDING</th> </tr> <tr> <th>TERM</th> <th>SPACING</th> <th>TERM</th> <th>SPACING</th> </tr> </thead> <tbody> <tr> <td>VERY WIDE</td> <td>> 10 FEET</td> <td>VERY THICKLY BEDDED</td> <td>> 4 FEET</td> </tr> <tr> <td>WIDE</td> <td>3 TO 10 FEET</td> <td>THICKLY BEDDED</td> <td>1.5 - 4 FEET</td> </tr> <tr> <td>MODERATELY CLOSE</td> <td>1 TO 3 FEET</td> <td>THINLY BEDDED</td> <td>0.16 - 1.5 FEET</td> </tr> <tr> <td>CLOSE</td> <td>0.16 TO 3 FEET</td> <td>VERY THINLY BEDDED</td> <td>0.03 - 0.16 FEET</td> </tr> <tr> <td>VERY CLOSE</td> <td>< 0.16 FEET</td> <td>THICKLY LAMINATED</td> <td>0.008 - 0.03 FEET</td> </tr> <tr> <td></td> <td></td> <td>THINLY LAMINATED</td> <td>< 0.008 FEET</td> </tr> </tbody> </table> <p style="text-align: center;">INDURATION</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>	FRACTURE SPACING		BEDDING		TERM	SPACING	TERM	SPACING	VERY WIDE	> 10 FEET	VERY THICKLY BEDDED	> 4 FEET	WIDE	3 TO 10 FEET	THICKLY BEDDED	1.5 - 4 FEET	MODERATELY CLOSE	1 TO 3 FEET	THINLY BEDDED	0.16 - 1.5 FEET	CLOSE	0.16 TO 3 FEET	VERY THINLY BEDDED	0.03 - 0.16 FEET	VERY CLOSE	< 0.16 FEET	THICKLY LAMINATED	0.008 - 0.03 FEET			THINLY LAMINATED	< 0.008 FEET
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DRILL UNITS:	ADVANCING TOOLS:	HAMMER TYPE:																																																																																																																																																																																																																																												
<input checked="" type="checkbox"/> DIEDRICH D-50	<input type="checkbox"/> CLAY BITS	<input type="checkbox"/> AUTOMATIC <input checked="" type="checkbox"/> MANUAL																																																																																																																																																																																																																																												
<input type="checkbox"/> DIEDRICH D-25	<input type="checkbox"/> 6" CONTINUOUS FLIGHT AUGER	CORE SIZE:																																																																																																																																																																																																																																												
<input checked="" type="checkbox"/> CME-45B ATV	<input type="checkbox"/> 8" HOLLOW AUGERS	<input type="checkbox"/> B <input type="checkbox"/> H																																																																																																																																																																																																																																												
<input type="checkbox"/> CME-550	<input type="checkbox"/> HARD FACED FINGER BITS	<input checked="" type="checkbox"/> NWD4 <input type="checkbox"/> -																																																																																																																																																																																																																																												
<input type="checkbox"/> PORTABLE HOIST	<input type="checkbox"/> TUNG-CARBIDE INSERTS	HAND TOOLS:																																																																																																																																																																																																																																												
<input type="checkbox"/> AMS POWER PROBE	<input checked="" type="checkbox"/> CASING <input type="checkbox"/> W/ADVANCER	<input type="checkbox"/> POST HOLE DIGGER																																																																																																																																																																																																																																												
<input type="checkbox"/> OTHER _____	<input checked="" type="checkbox"/> TRICONE 2 7/8" STEEL TEETH	<input checked="" type="checkbox"/> HAND AUGER																																																																																																																																																																																																																																												
	<input type="checkbox"/> TRICONE " " TUNG-CARBIDE	<input type="checkbox"/> SOUNDING ROD																																																																																																																																																																																																																																												
	<input type="checkbox"/> CORE BIT	<input type="checkbox"/> VANE SHEAR TEST																																																																																																																																																																																																																																												
	<input type="checkbox"/> OTHER _____	<input type="checkbox"/> OTHER _____																																																																																																																																																																																																																																												
<p>DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YEL-BRN, BLUE-GRAY) MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.</p> <p style="text-align: center;">COLOR</p>																																																																																																																																																																																																																																														



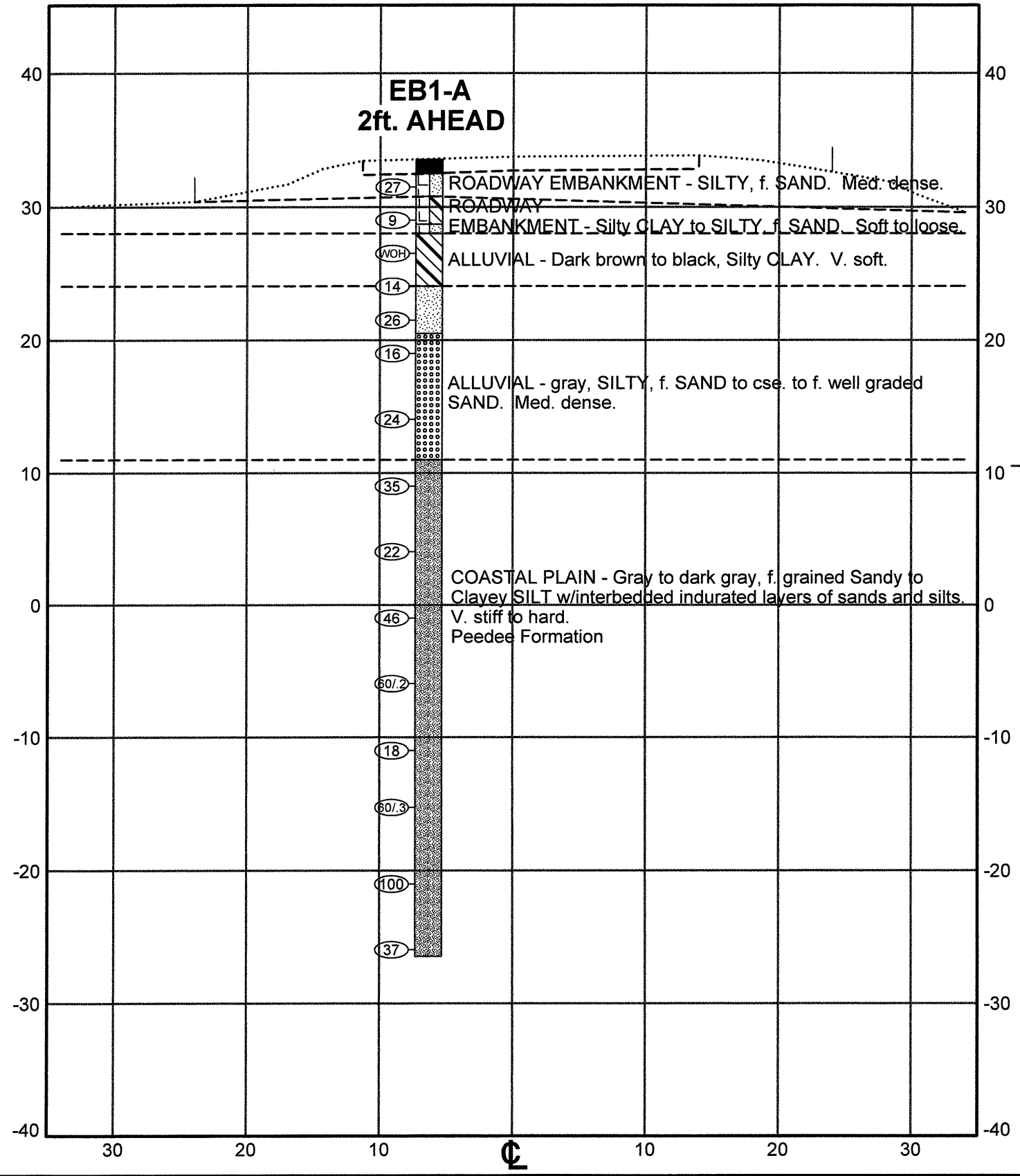
NOTE:
 1. BASE MAP ADAPTED FROM NCDOT SUPPLIED DRAWING.



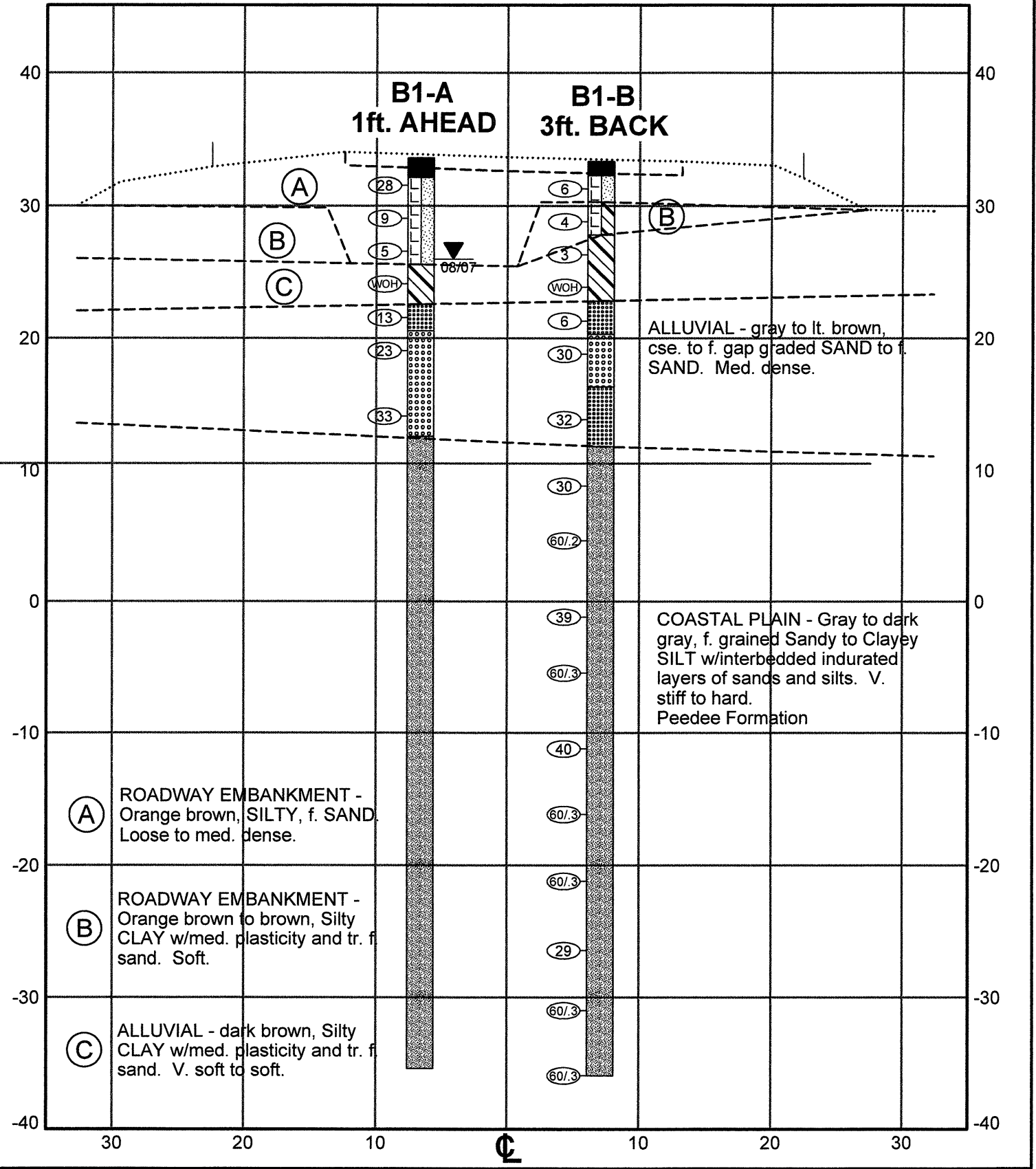
PROFILE CENTER LINE -L-



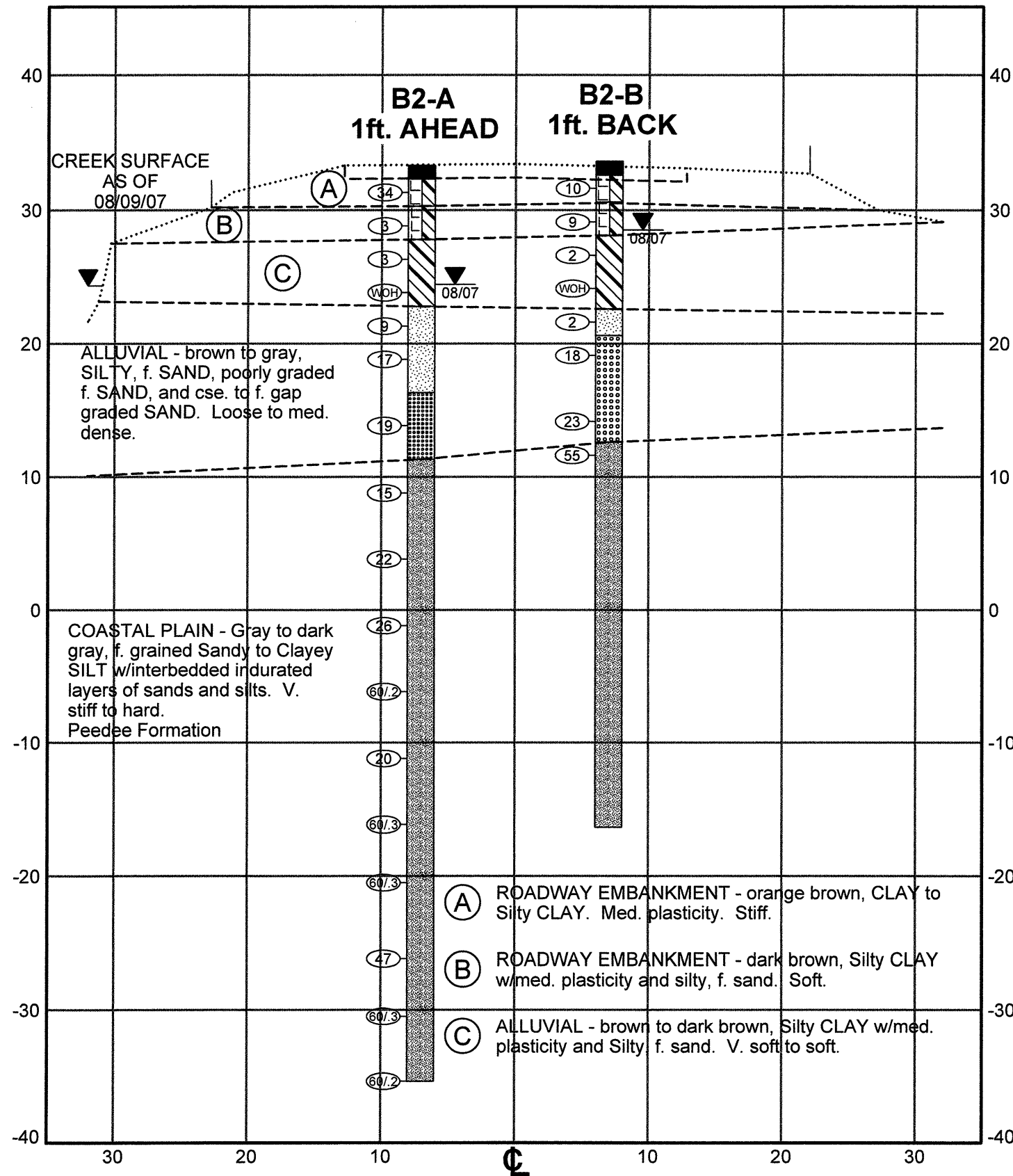
CROSS SECTION THROUGH END BENT 1 @ -L- 16+20



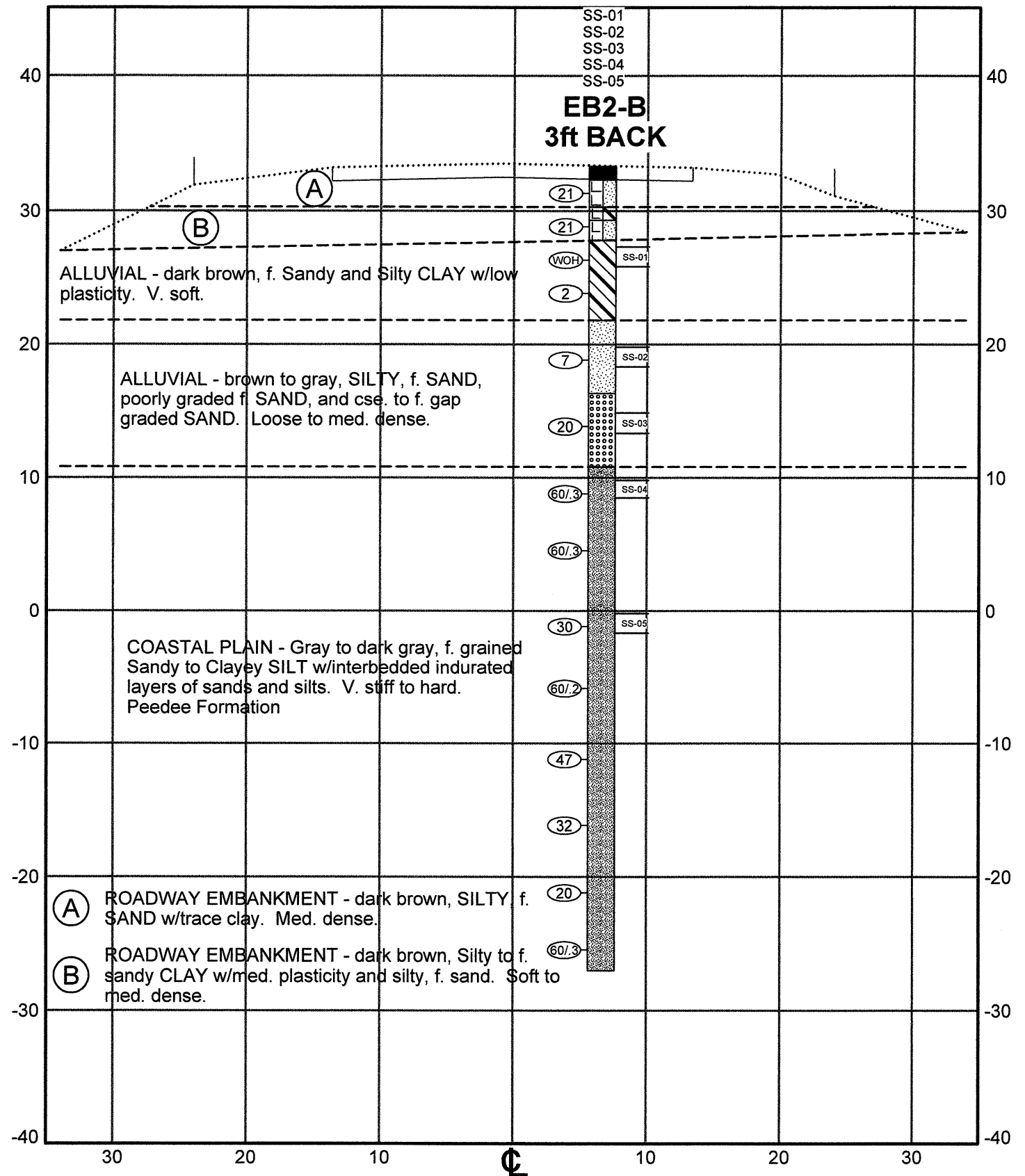
CROSS SECTION THROUGH BENT 1 @ -L- 16+55



CROSS SECTION THROUGH BENT 2 @ -L- 17+10



CROSS SECTION THROUGH END BENT 2 @ -L- 17+40





**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT**

PROJ. NO.: 33397.1.1 SHEET NO.: 09
T.I.P. NO.: B-4030 TOTAL SHEETS: 20
F.A. NO.: BRSTP-0130(3) RAW SHEET NO.:
COUNTY: BRUNSWICK

CATLIN PROJECT NO.: 207-057 PAGE 1 OF 1

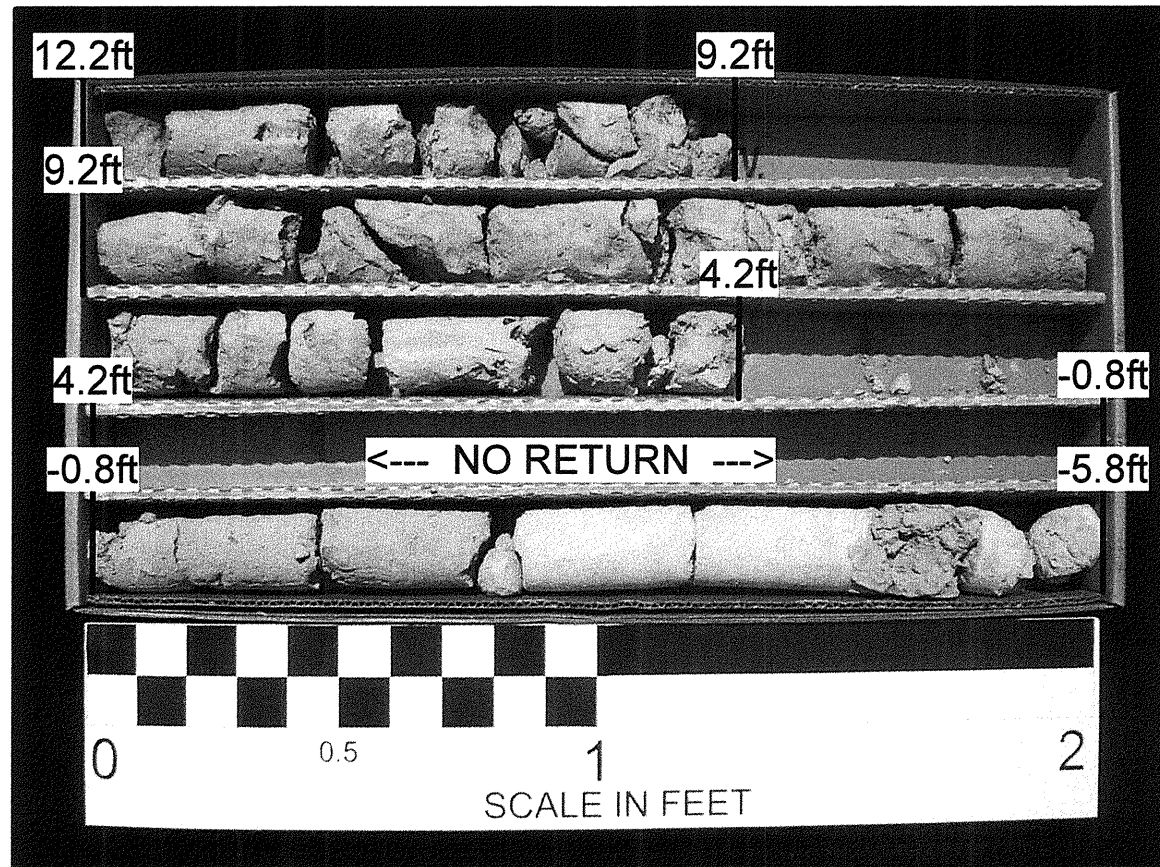
PROJECT NO.: 33397.1.1	ID.: B-4030	COUNTY: BRUNSWICK	GEOLOGIST: Tom Stetler
SITE DESCRIPTION: Bridge No. 9 over Bear Branch on NC 130			GROUND WATER (ft) 0 HR. 1.6 24 HR. 7.6
BORING NO.: B1-A	BORING LOCATION: 16+56	OFFSET: 7ft Lt	
COLLAR ELEV.: 33.2	NORTHING: 119,545	EASTING: 2,138,300	
TOTAL DEPTH: 69.0 ft	DRILL MACHINE: Diedrich D-50	DRILL METHOD: SPT Core Boring	HAMMER TYPE: Manual
DATE STARTED: 8/13/07	COMPLETED: 8/14/07	CORE BARREL TYPE: NWD4	SURFACE WATER DEPTH: N/A

CORE SIZE NWD4 TOTAL RUN 48.0 ft DRILLER Bobbie D. Fowler

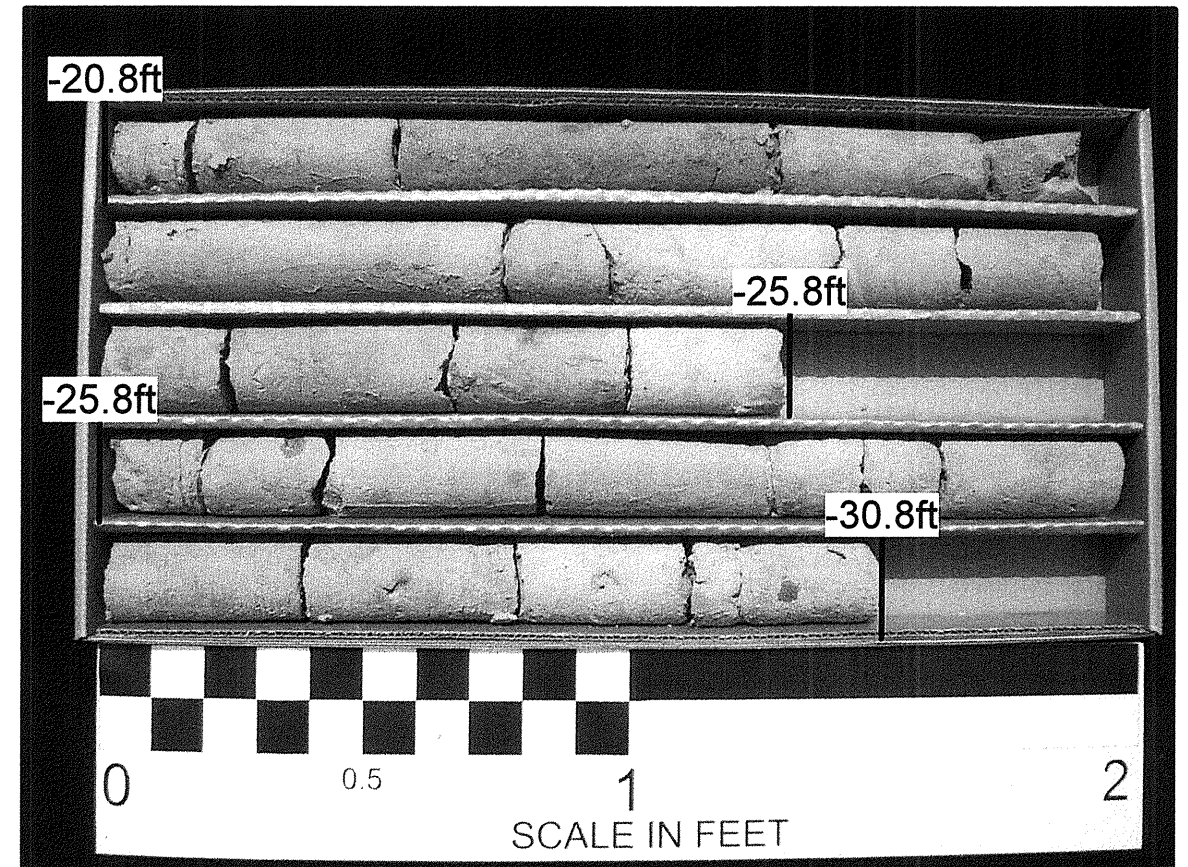
ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
				REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %			
										Begin Coring @ 21.0 ft	21.0
12.2	21.0	3.0	3:02	(1.2)						COASTAL PLAIN	
9.2	24.0		1:28	40%						Gray, clayey silt to silty/clayey f. sand. Mod. indurated to friable.	
		5.0	0:26							Peedee Formation	24.0
			0:37	(3.2)						COASTAL PLAIN	
			0:18	64%						Same as above w/layering up to 0.2ft. thick. Friable. Dominantly clayey material.	
4.2	29.0		0:25								4.2
			0:43								
		5.0	1:19							COASTAL PLAIN	
			0:52	(0.0)						No Return	
-0.8	34.0		0:40	0%							-0.8
			0:28								
		5.0	1:13							COASTAL PLAIN	
			1:46								
			0:42	(2.0)						COASTAL PLAIN	
-5.8	39.0		1:26	40%						Gray, clayey silt w/moderately indurated silty, f. sand (limestone) up to 0.7ft thick.	
			2:47								
		5.0	0:37								
			0:33	(3.4)						COASTAL PLAIN	
-10.8	44.0		2:24	68%						Same as above w/layering up to 0.5ft thick.	
			2:28								
		5.0	1:53							COASTAL PLAIN	
			0:53								
			0:49	(1.5)						COASTAL PLAIN	
-15.8	49.0		1:31	30%						Same as above w/layering up to 0.2ft thick.	
			1:05								
		5.0	0:37							COASTAL PLAIN	
			0:24								
			5:13	(3.3)						COASTAL PLAIN	
-20.8	54.0		4:07	66%						Same as above w/layering up to 1.3ft thick.	
			0:31								
		5.0	0:32							COASTAL PLAIN	
			4:18	(5.0)						Predominantly unindurated friable f. grained sandy silt. Trace moderately indurated layers up to 0.4ft. thick.	
			0:24								
			1:07	100%						COASTAL PLAIN	
-25.8	59.0		1:38							Gray, unindurated to friable f. grained sandy to clayey silt.	
			1:32								
		5.0	0:59								
			0:25	(3.4)						COASTAL PLAIN	
-30.8	64.0		0:36	68%							
			1:45								
			0:54								
		5.0	0:42							COASTAL PLAIN	
			0:38	(5.0)						Same as above.	
-35.8	69.0		0:57	100%							
			1:54								
			1:08								
			1:36								

Boring Terminated at Elevation -35.8 ft in friable to moderately indurated f. grained sandy silt. Peedee Formation

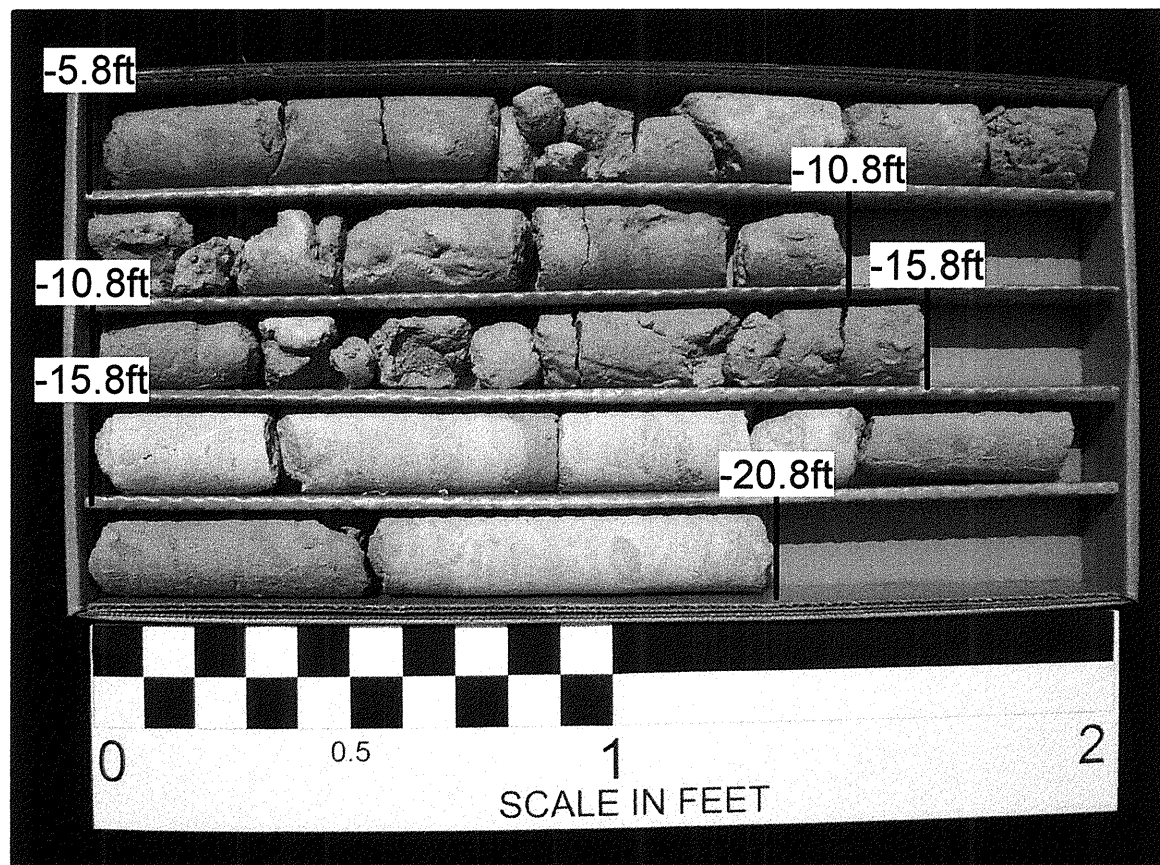
NCDOT BORE DOUBLE 207-057 NCDOT BRIDGE NO. 9 G.P.I. CATLIN GDT 8/22/07



B1-A (BOX 1 of 4) = ELEV. 12.2ft to -5.8ft



B1-A (BOX 3 of 4) = ELEV. -20.8ft to -30.8ft



B1-A (BOX 2 of 4) = ELEV. -5.8ft to -20.8ft



B1-A (BOX 4 of 4) = ELEV. -30.8ft to -35.8ft



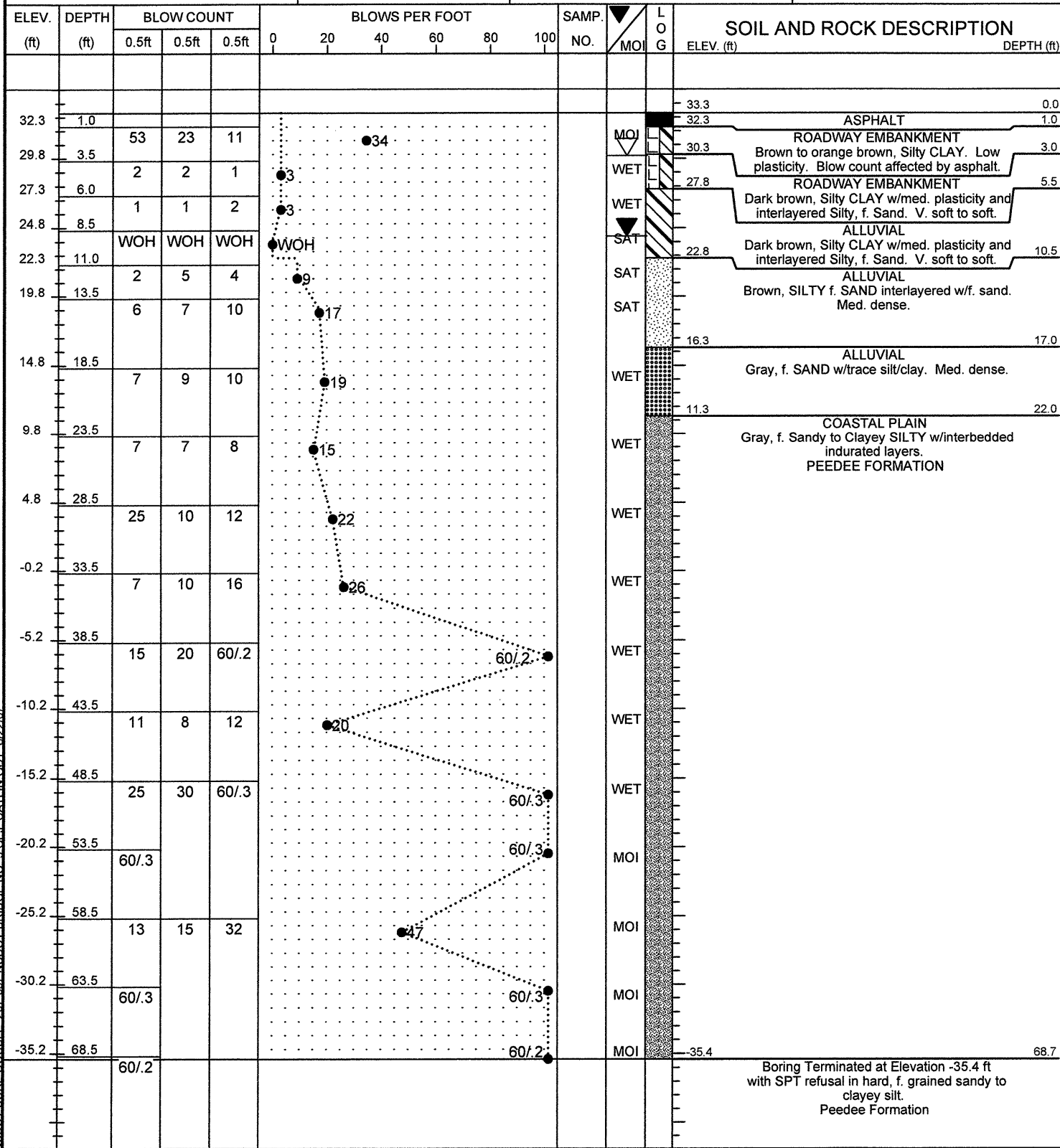
**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT**

BORING REPORT



CATLIN PROJECT NO.: 207-057 PAGE 1 OF 1

PROJECT NO.: 33397.1.1	ID.: B-4030	COUNTY: BRUNSWICK	GEOLOGIST: Tom Stetler
SITE DESCRIPTION: Bridge No. 9 over Bear Branch on NC 130			GROUND WATER (ft) 0 HR. 3.1
BORING NO.: B2-A	BORING LOCATION: 17+11	OFFSET: 7ft Lt	ALIGNMENT: -L-
COLLAR ELEV.: 33.3	NORTHING: 119,511	EASTING: 2,138,343	24 HR. 8.9
TOTAL DEPTH: 68.7 ft	DRILL MACHINE: Diedrich D-50	DRILL METHOD: Mud Rotary	HAMMER TYPE: Manual
DATE STARTED: 8/15/07	COMPLETED: 8/15/07	CORE BARREL TYPE: N/A	SURFACE WATER DEPTH: N/A



NCDOT BORE DOUBLE 207-057 NCDOT BRIDGE NO. 9 GEL CATLIN GDT 8/22/07



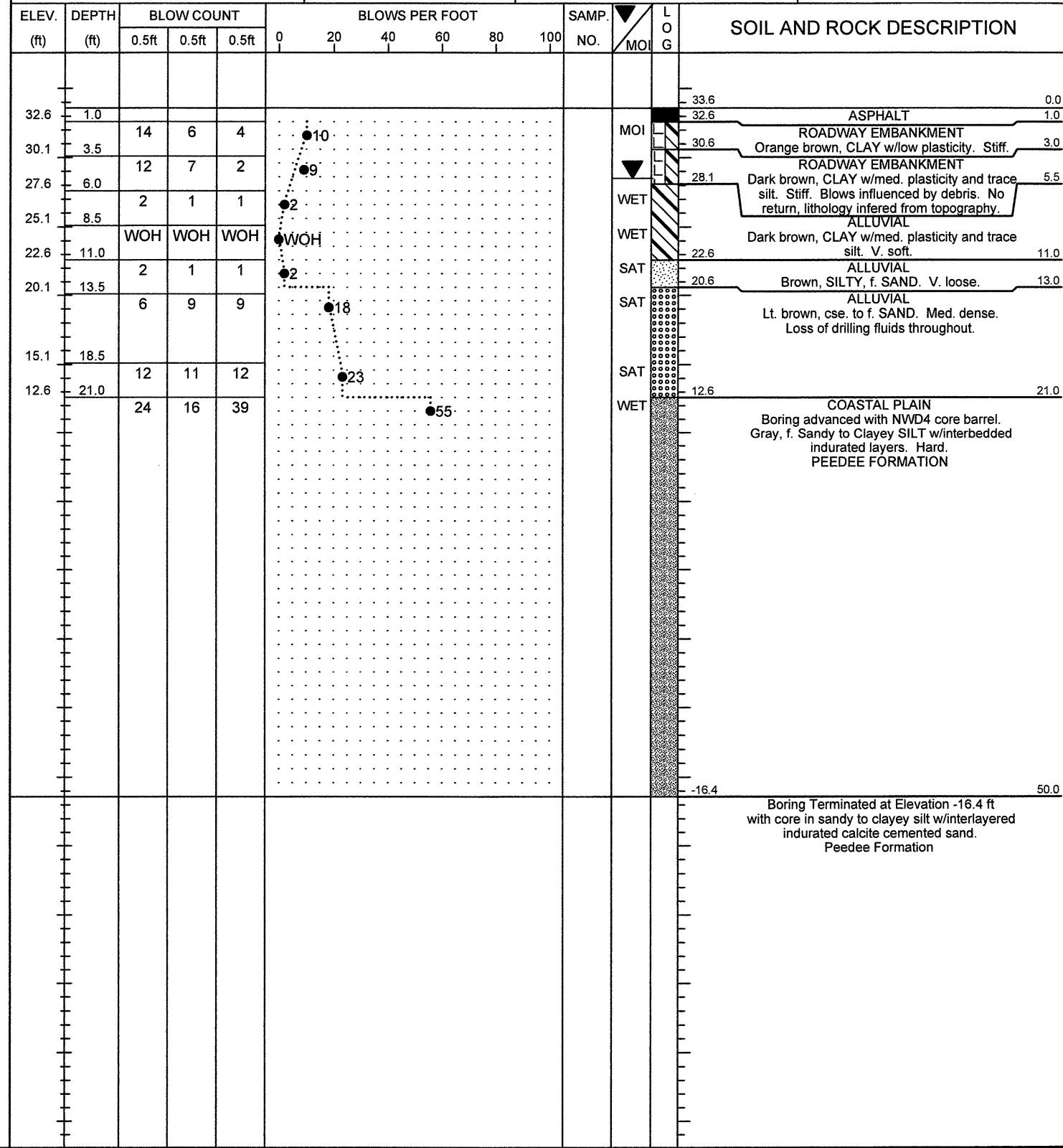
**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT**

BORING REPORT

PROJ. NO.: 33397.1.1 SHEET NO.: 12
T.I.P. NO.: B-4030 TOTAL SHEETS: 20
F.A. NO.: BRSTP-0130(3) R/W SHEET NO.:
COUNTY: BRUNSWICK

CATLIN PROJECT NO.: 207-057 PAGE 1 OF 1

PROJECT NO.: 33397.1.1	ID.: B-4030	COUNTY: BRUNSWICK	GEOLOGIST: Tom Stetler
SITE DESCRIPTION: Bridge No. 9 over Bear Branch on NC 130			GROUND WATER (ft) 0 HR. NM
BORING NO.: B2-B	BORING LOCATION: 17+09	OFFSET: 7ft Rt	ALIGNMENT: -L-
COLLAR ELEV.: 33.6	NORTHING: 119,501	EASTING: 2,138,333	24 HR. 5.1
TOTAL DEPTH: 50.0 ft	DRILL MACHINE: Diedrich D-50	DRILL METHOD: SPT Core Boring	HAMMER TYPE: Manual
DATE STARTED: 8/16/07	COMPLETED: 8/17/07	CORE BARREL TYPE: NWD4	SURFACE WATER DEPTH: N/A



Boring Terminated at Elevation -16.4 ft with core in sandy to clayey silt w/interlayered indurated calcite cemented sand. Peedee Formation



**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT**

CATLIN PROJECT NO.: 207-057 PAGE 1 OF 1

PROJ. NO.: 33397.1.1 SHEET NO.: 13
T.I.P. NO.: B-4030 TOTAL SHEETS: 20
F.A. NO.: BRSTP-0130(3) R/W SHEET NO.:
COUNTY: BRUNSWICK

PROJECT NO.: 33397.1.1	ID.: B-4030	COUNTY: BRUNSWICK	GEOLOGIST: Tom Stetler
SITE DESCRIPTION: Bridge No. 9 over Bear Branch on NC 130			GROUND WATER (ft) 0 HR. 5.1
BORING NO.: B2-B	BORING LOCATION: 17+09	OFFSET: 7ft Rt	ALIGNMENT: -L-
COLLAR ELEV.: 33.6	NORTHING: 119,501	EASTING: 2,138,333	24 HR. 5.1
TOTAL DEPTH: 50.0 ft	DRILL MACHINE: Diedrich D-50	DRILL METHOD: SPT Core Boring	HAMMER TYPE: Manual
DATE STARTED: 8/16/07	COMPLETED: 8/17/07	CORE BARREL TYPE: NWD4	SURFACE WATER DEPTH: N/A

CORE SIZE NWD4NWD4 TOTAL RUN 25.0 ft DRILLER Bobbie D. Fowler

ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	RQD (ft) %	LOG	DESCRIPTION AND REMARKS	DEPTH
8.6	25.0	5.0	1:21 0:56 1:53 1:50	(2.0) 40%						Begin Coring @ 25.0 ft COASTAL PLAIN Gray, f. grained sandy to clayey SILT w/intermittent moderately indurated layering. Light colored impressions/casts. Pee Dee Formation	25.0
3.6	30.0	5.0	2:07 0:48 1:34 0:36 1:23	(3.1) 62%						COASTAL PLAIN Same as above w/moderately indurated calcareous sand layers up to 0.4ft thick.	30.0
-1.4	35.0	5.0	0:23 0:21 1:47 1:40 0:46	(3.7) 74%						COASTAL PLAIN Same as above.	35.0
-6.4	40.0	5.0	1:02 0:27 2:08 0:48 0:30	(4.8) 96%						COASTAL PLAIN Same as above but dominantly friable w/interlayered moderately indurated layers up to 0.4ft thick.	40.0
-11.4	45.0	5.0	3:02 3:57 1:53 2:57 2:39	(1.8) 36%						COASTAL PLAIN Same as above w/fines washed from barrel. Very low circulation due to clogged inner barrel.	45.0
-16.4	50.0									Boring Terminated at Elevation -16.4 ft in f. grained sandy to clayey silt w/moderately indurated layers. Pee Dee Formation	50.0

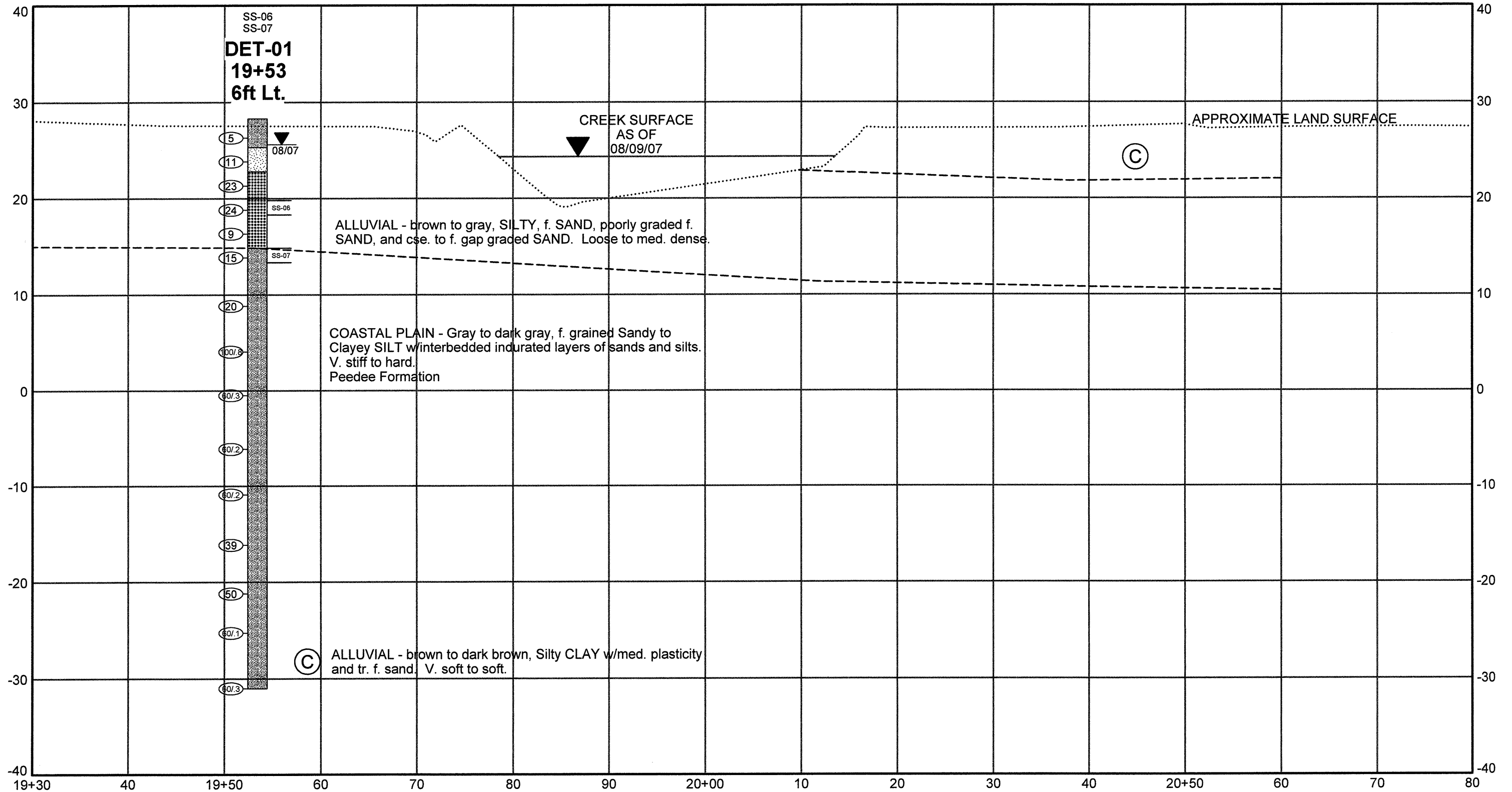


B2-B (BOX 1 of 2) = ELEV. 8.6ft to -6.4ft



B2-B (BOX 2 of 2) = ELEV. -6.4ft to -16.4ft

PROFILE CENTER LINE -DET-





**FIELD
 SCOUR REPORT**

WBS: 33397.1.1 TIP: B-4030 COUNTY: BRUNSWICK

DESCRIPTION(1): Bridge No. 9 over Bear Branch on NC 130

EXISTING BRIDGE

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

Bridge No.: 9 Length: 41 Total Bents: 3 Bents in Channel: 1 Bents in Floodplain: 3
 Foundation Type: Concrete deck on steel I-beams. Timber piles and timber endbent abutments.

EVIDENCE OF SCOUR(2)

Abutments or End Bent Slopes: Stable. No obvious evidence of scour. Looks like fill may have been placed behind abutments (pavement patches on each side of bridge).

Interior Bents: Stable. No obvious evidence of scour.

Channel Bed: Stable. No obvious evidence of scour.

Channel Bank: Stable. No obvious evidence of scour.

EXISTING SCOUR PROTECTION

Type(3): Wooden wing walls.

Extent(4): Wing walls cover endbents and extend approximately 10ft. Upstream and downstream.

Effectiveness(5): Appears adequate.

Obstructions(6): None.

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): Dark brown, SILTY to clayey, f. SAND w/little cse. sand and organic debris.

Channel Bank Material(8): Dark brown, Silty, f. grained Sandy CLAY. Trace cse. Sand.

Channel Bank Cover(9): Grass and brush with some trees.

Floodplain Width(10): Approximately 900ft.

Floodplain Cover(11): Forest and residences.

Stream is(12): Aggrading _____ Degrading _____ Static

Channel Migration Tendency(13): Slight potential for NW miration.

Observations and Other Comments: _____

Reported by: Steven Hudson Date: 8/9/2007

DESIGN SCOUR ELEVATIONS(14)

Feet Meters _____

	BENTS									
	B1	B2								
100 Year	21.1	25.1								
500 Year	19.0	22.0								

Comparison of DSE to Hydraulics Unit theoretical scour:
 The Geotechnical Engineering Unit agrees with the theoretical scour elevations shown on the Bridge Survey and Hydraulics Report.

DSE determined by: Charles M. Whalen, Jr. Date: 9/26/2007

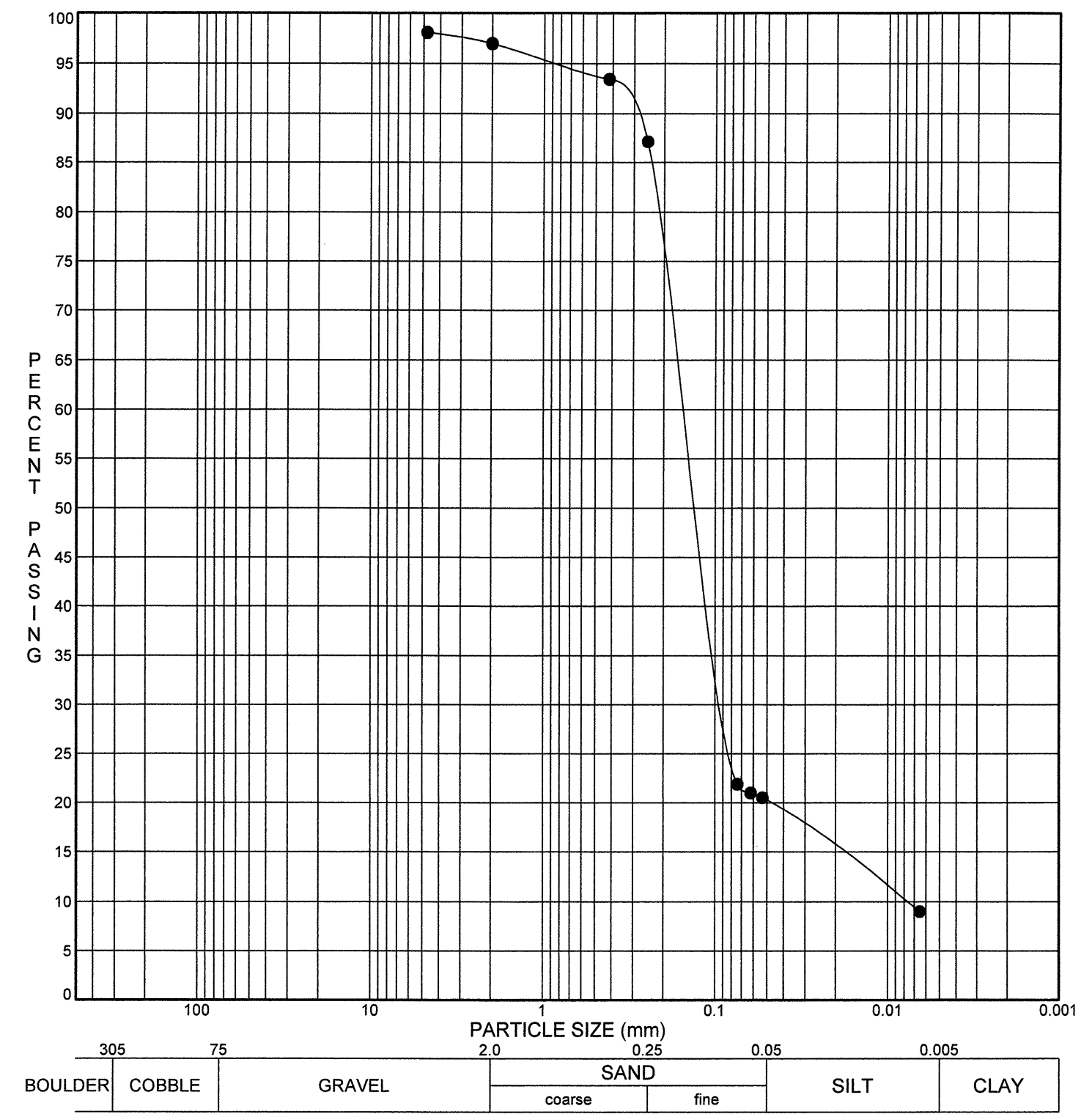
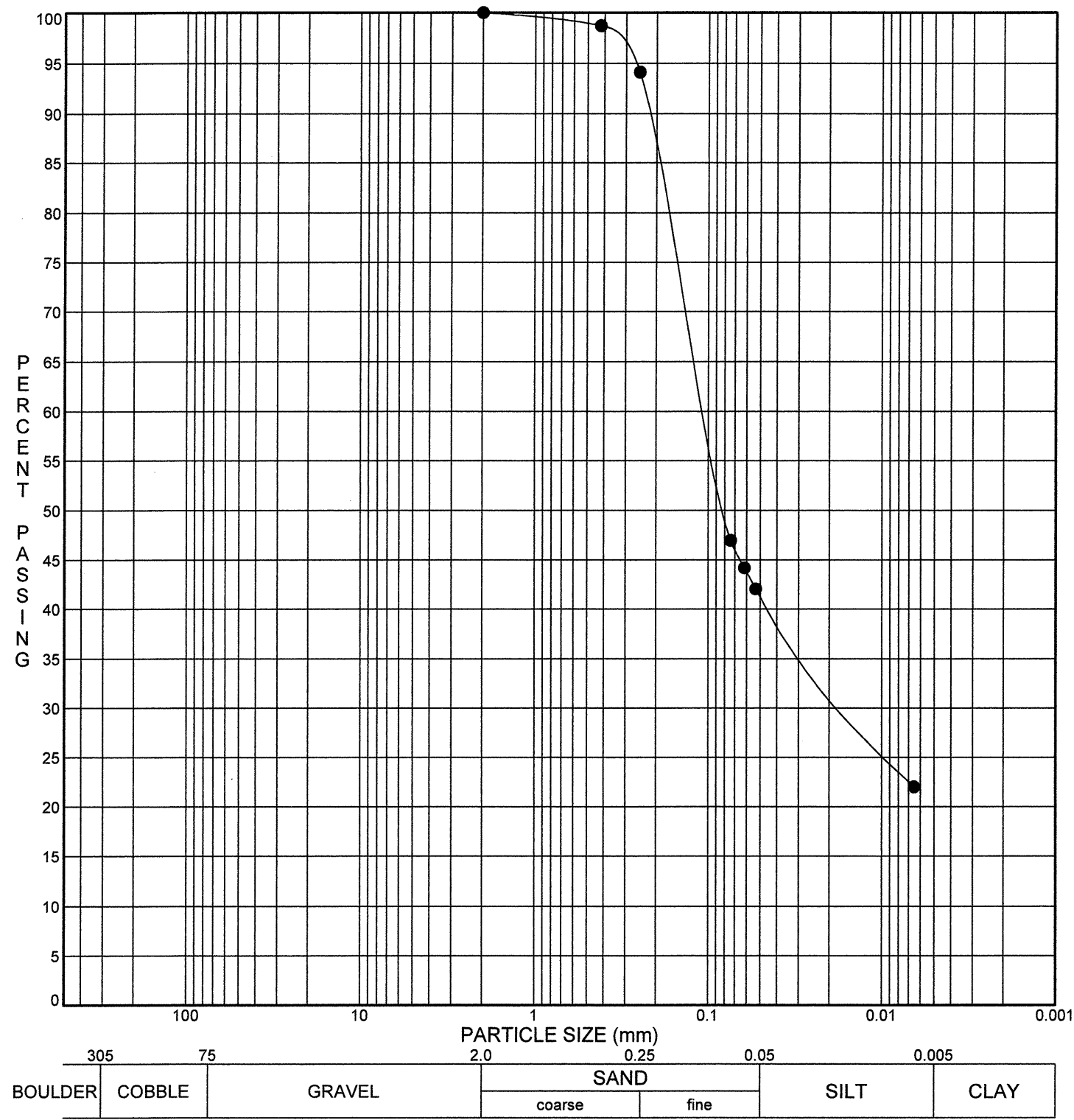
SOIL ANALYSIS RESULTS FROM CHANNEL BED AND BANK MATERIAL

Bed or Bank	BANK-01	BED-01					
Sample No.	BANK-01	BED-01					
Retained #4	0	2					
Passed #10	100	97					
Passed #40	99	93					
Passed #200	47	22					
Coarse Sand	5.9	12.8					
Fine Sand	52.1	66.7					
Silt	20.0	11.5					
Clay	22.0	9.0					
LL	26	23					
PI	11	NP					
AASHTO	A-6(2)	A-2-4(0)					
Station	17+13	16+80					
Offset	30 Lt	13 Lt					
Depth	0.0 - 1.0	0.0 - 1.0					

GRAIN SIZE DISTRIBUTION GRAPHS

BORING NO.: BANK-01
SAMPLE ID: BANK-01
STATION: 17+13
OFFSET: 30ft Lt
DEPTH: 0 - 1

BORING NO.: BED-01
SAMPLE ID: BED-01
STATION: 16+80
OFFSET: 13ft Lt
DEPTH: 0 - 1





305	75	2.0	0.25	0.05	0.005		
BOULDER	COBBLE	GRAVEL		SAND		SILT	CLAY
			coarse	fine			

305	75	2.0	0.25	0.05	0.005		
BOULDER	COBBLE	GRAVEL		SAND		SILT	CLAY
			coarse	fine			

NCDOT LABORATORY SUMMARY SHEET

AASHTO Standard Specifications (As modified by NCDOT, Material and Tests Unit, 2000.)

DESCRIPTION: Bridge No. 9 over Bear Branch on NC 130	ENGLISH	PROJ. NO.: 33397.1.1 SHEET NO.: 19 T.I.P. NO.: B-4030 TOTAL SHEETS: 20 F.A. NO.: BRSTP-0130(3) R/W SHEET NO.: COUNTY: BRUNSWICK
	CATLIN PROJECT: 207-057	 ENGINEERS and SCIENTISTS GEOTECHNICAL LABORATORY Wilmington, North Carolina

TEST RESULTS

Field Sample Number	BANK-01	BED-01	SS-01	SS-02	SS-03	SS-04	SS-05	SS-06	SS-07				
Lab Sample Number	BANK-01	BED-01	SS-01	SS-02	SS-03	SS-04	SS-05	SS-06	SS-07				
Retained #4 Sieve %	0	2	0	0	8	4	4	0	0				
Passing #10 Sieve %	100	97	100	100	70	96	96	100	100				
Passing #40 Sieve %	99	93	99	98	28	94	92	98	99				
Passing #200 Sieve %	47	22	59	21	3	42	37	4	44				
MINUS NUMBER 10 FRACTION													
SOIL MORTAR - 100%													
Coarse Sand Ret.-#60 %	5.9	12.8	6.3	8.4	85.4	7.5	10.6	29.7	2.9				
Fine Sand Ret.-#270 %	52.1	66.7	37.8	75.0	12.5	57.3	59.5	66.7	59.1				
Silt 0.05 - 0.005mm %	20.0	11.5	27.6	12.8	0.2	15.3	14.0	2.7	18.1				
Clay <0.005mm %	22.0	9.0	28.3	3.8	1.9	19.9	15.9	0.9	19.9				
Liquid Limit (LL)	26	23	37	24	18	23	23	22	23				
Plasticity Index (PI)	11	NP	15	NP	NP	NP	NP	NP	NP				
AASHTO Classification /Group Index	A-6(2)	A-2-4(0)	A-6(7)	A-2-4(0)	A-1-b(0)	A-4(0)	A-4(0)	A-3(0)	A-4(0)				
Station	17+13	16+80	17+37	17+37	17+37	17+37	17+37	19+53	19+53				
Offset	30ft LT	13ft LT	7ft RT	7ft RT	7ft RT	7ft RT	7ft RT	6ft LT	6ft LT				
Alignment	-L-	-L-	-L-	-L-	-L-	-L-	-L-	-DET-	-DET-				
Boring Identification	BANK-01	BED-01	EB2-B	EB2-B	EB2-B	EB2-B	EB2-B	DET-01	DET-01				
Depth ()	0.0	0.0	6.0	13.5	18.5	23.5	33.5	8.5	13.5				
to	1.0	1.0	7.5	15.0	20.0	24.8	35.0	10.0	15.0				
Field Moisture Content	18	50	36	24	13	26	29	23	27				
Tested By	MDMason	MDMason	MDMason	MDMason	MDMason	MDMason	MDMason	MDMason	MDMason				
Submitted By	Steve Hudson	Steve Hudson	Steve Hudson	Steve Hudson	Steve Hudson	Steve Hudson	Steve Hudson	Steve Hudson	Steve Hudson				
Date Submitted	08/14/07	08/14/07	08/08/07	08/08/07	08/08/07	08/08/07	08/08/07	08/14/07	08/14/07				

NP = Non-Plastic


 Laboratory Manager

Report Date: 8/21/2007
 Laboratory Report Page 1 of 1



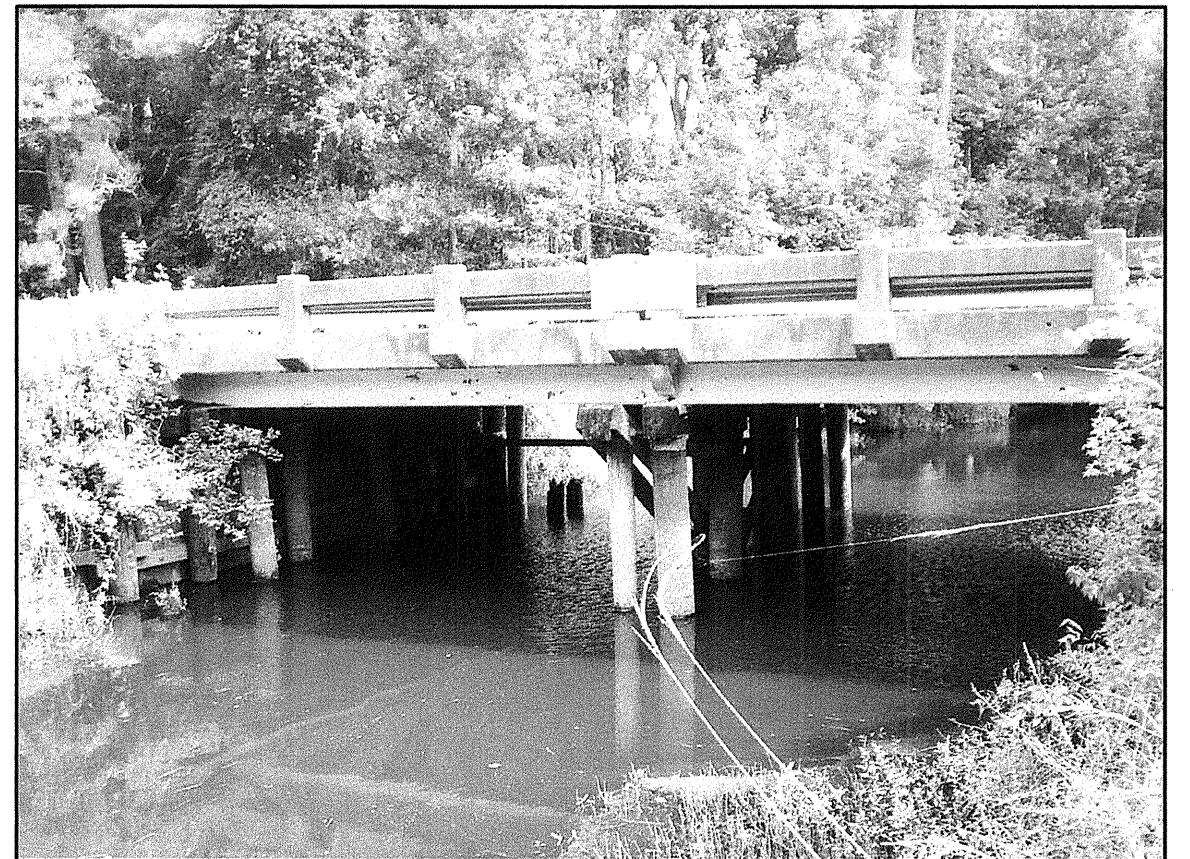
CENTER LINE -L- FACING SOUTHEAST



CENTERLINE -L- FACING NORTHWEST



BRIDGE 9 FACING DOWNSTREAM (SOUTHWEST)



BRIDGE 9 FACING UPSTREAM (NORTHEAST)