

REFERENCE: B-4967

PROJECT: 40158

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4967	1	17

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9 - 16	BORE LOGS, CORE LOGS, AND CORE PHOTOS
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STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY HOKE
PROJECT DESCRIPTION BRIDGE NO. 8 OVER LUMBER RIVER ON SR 1203 /SR 1412

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) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT 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 THE 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.

- NOTES:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 2. 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.

PERSONNEL

- S. CROCKETT
- G. LANG
- B. FOWLER
- M. WIGGINS
- M. WITMORE

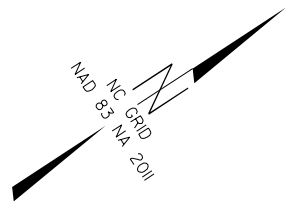
INVESTIGATED BY M. WITMORE
DRAWN BY S. CROCKETT
CHECKED BY G. LANG
SUBMITTED BY AECOM
DATE JUNE, 2015



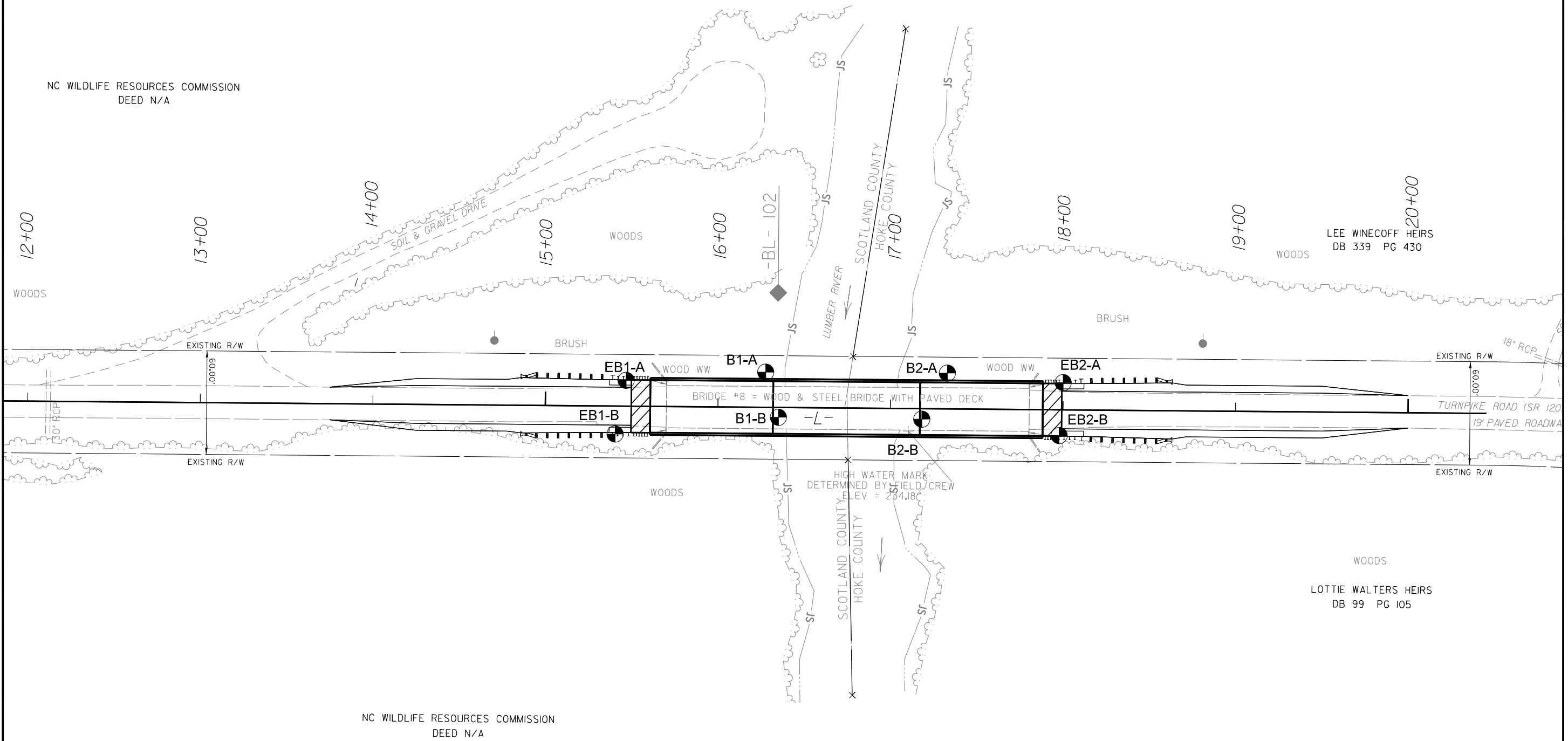
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Gabriel Lang 8/12/2015
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**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS**

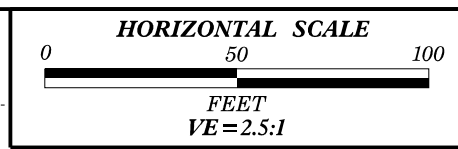
SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
SOIL IS CONSIDERED 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 THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>										WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.										HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:										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, SUCH 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 DISLOADED 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 (ROD) - 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 (SROD) - 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.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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GRAVEL, AND SAND</td> <td colspan="2">FINE SAND</td> <td colspan="2">SILTY OR CLAYEY GRAVEL AND SAND</td> <td colspan="2">SILTY SOILS</td> <td colspan="2">CLAYEY SOILS</td> <td colspan="5"></td> <td colspan="5"></td> </tr> <tr> <th>GEN. RATING AS SUBGRADE</th> <td colspan="5">EXCELLENT TO GOOD</td> <td colspan="5">FAIR TO POOR</td> <td colspan="5">FAIR TO POOR</td> <td colspan="5">POOR</td> <td colspan="5">UNSATURABLE</td> </tr> <tr> <td colspan="10">PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30</td> <td colspan="10"></td> <td colspan="10"></td> </tr> </table>										SOIL LEGEND AND AASHTO CLASSIFICATION										GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)					SILT-CLAY MATERIALS (> 35% PASSING #200)					ORGANIC MATERIALS					GROUP CLASS.	A-1	A-3	A-2	A-4	A-5	A-6	A-7	A-1, A-2	A-3	A-4, A-5	A-6, A-7						SYMBOL																% PASSING #10 #40 #200	50 MX 30 MX 15 MX	50 MX 25 MX	51 MN 35 MX 35 MX	35 MX 35 MX	35 MX 35 MX	36 MN 36 MN	36 MN 36 MN									MATERIAL PASSING #40 LL PI											SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER					HIGHLY ORGANIC SOILS					GROUP INDEX																					USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND		SILTY OR CLAYEY GRAVEL AND SAND		SILTY SOILS		CLAYEY SOILS												GEN. 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ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.</td> </tr> <tr> <th colspan="10">COMPRESSIBILITY</th> </tr> <tr> <td colspan="10">SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50</td> </tr> <tr> <th colspan="10">PERCENTAGE OF MATERIAL</th> </tr> <tr> <td colspan="10"> <table border="1"> <tr> <th>ORGANIC MATERIAL</th> <th>GRANULAR SOILS</th> <th>SILT - CLAY SOILS</th> <th>OTHER MATERIAL</th> </tr> <tr> <td>TRACE OF ORGANIC MATTER</td> <td>2 - 3%</td> <td>3 - 5%</td> <td>TRACE 1 - 10%</td> </tr> <tr> <td>LITTLE ORGANIC MATTER</td> <td>3 - 5%</td> <td>5 - 12%</td> <td>LITTLE 10 - 20%</td> </tr> <tr> <td>MODERATELY ORGANIC</td> <td>5 - 10%</td> <td>12 - 20%</td> <td>SOME 20 - 35%</td> </tr> <tr> <td>HIGHLY ORGANIC</td> <td>> 10%</td> <td>> 20%</td> <td>HIGHLY 35% AND ABOVE</td> </tr> </table> </td> </tr> <tr> <th colspan="10">GROUND WATER</th> </tr> <tr> <td colspan="10"> <p>▽ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING ▽ STATIC WATER LEVEL AFTER 24 HOURS ▽ PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA ○ SPRING OR SEEP</p> </td> </tr> <tr> <th colspan="10">MISCELLANEOUS SYMBOLS</th> </tr> <tr> <td colspan="10"> <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 & DIP DIRECTION OF ROCK STRUCTURES SPT DMT VST PMT TEST BORING AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION SLOPE INDICATOR INSTALLATION CONE PENETROMETER TEST SOUNDING ROD TEST BORING WITH CORE SPT N-VALUE</p> </td> </tr> <tr> <th colspan="10">RECOMMENDATION SYMBOLS</th> </tr> <tr> <td colspan="10"> <p>UNDERCUT EXCAVATION SHALLOW UNDERCUT UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</p> </td> </tr> <tr> <th colspan="10">ABBREVIATIONS</th> </tr> <tr> <td colspan="10"> <table border="1"> <tr> <td>AR - AUGER REFUSAL</td> <td>BT - BORING TERMINATED</td> <td>CL - CLAY</td> <td>CPT - CONE PENETRATION TEST</td> <td>CSE - COARSE</td> <td>DMT - DILATOMETER TEST</td> <td>DPT - DYNAMIC PENETRATION TEST</td> <td>e - VOID RATIO</td> <td>F - FINE</td> <td>FOSS. - FOSSILIFEROUS</td> <td>FRAC. - FRACTURED, FRACTURES</td> <td>FRAGS. - FRAGMENTS</td> <td>HI. - HIGHLY</td> <td>MED. - MEDIUM</td> <td>MICA. - MICACEOUS</td> <td>MOD. - MODERATELY</td> <td>NP - NON PLASTIC</td> <td>ORG. - ORGANIC</td> <td>PMT - PRESSUREMETER TEST</td> <td>SAP. - SAPROLITIC</td> <td>SD. - SAND, SANDY</td> <td>SL. - SILT, SILTY</td> <td>SLI. - SLIGHTLY</td> <td>TCR - TRICONE REFUSAL</td> <td>w - MOISTURE CONTENT</td> <td>V - VERY</td> <td>VST - VANE SHEAR TEST</td> <td>WEA. - WEATHERED</td> <td>UNIT WEIGHT</td> <td>DRY UNIT WEIGHT</td> </tr> <tr> <td colspan="10">SAMPLE ABBREVIATIONS</td> <td colspan="10"></td> </tr> <tr> <td colspan="10">S - BULK</td> <td colspan="10"></td> </tr> <tr> <td colspan="10">SS - SPLIT SPOON</td> <td colspan="10"></td> </tr> <tr> <td colspan="10">ST - SHELBY TUBE</td> <td colspan="10"></td> </tr> <tr> <td colspan="10">RS - ROCK</td> <td colspan="10"></td> </tr> <tr> <td colspan="10">RT - RECOMPACTED TRIAXIAL</td> <td colspan="10"></td> </tr> <tr> <td colspan="10">CBR - CALIFORNIA BEARING RATIO</td> <td colspan="10"></td> </tr> </table> </td> </tr> <tr> <th colspan="10">TEXTURE OR GRAIN SIZE</th> </tr> <tr> <td colspan="10"> <table border="1"> <tr> <th>U.S. STD. SIEVE SIZE OPENING (MM)</th> <td>4</td> <td>10</td> <td>40</td> <td>60</td> <td>200</td> <td>270</td> <td colspan="3"></td> </tr> <tr> <td></td> <td>4.75</td> <td>2.00</td> <td>0.42</td> <td>0.25</td> <td>0.075</td> <td>0.053</td> <td colspan="3"></td> </tr> <tr> <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> <td colspan="3"></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>GRAIN SIZE</th> <td>MM 305</td> <td>75</td> <td>2.0</td> <td>0.25</td> <td>0.05</td> <td>0.005</td> <td colspan="3"></td> </tr> <tr> <td></td> <td>IN. 12</td> <td>3</td> <td></td> <td></td> <td></td> <td></td> <td colspan="3"></td> </tr> </table> </td> </tr> <tr> <th colspan="10">SOIL MOISTURE - CORRELATION OF TERMS</th> </tr> <tr> <td colspan="10"> <table border="1"> <tr> <th>SOIL MOISTURE SCALE (ATTERBERG LIMITS)</th> <th>FIELD MOISTURE DESCRIPTION</th> <th>GUIDE FOR FIELD MOISTURE DESCRIPTION</th> </tr> <tr> <td rowspan="2">LL - LIQUID LIMIT PL - PLASTIC LIMIT</td> <td>- SATURATED - (SAT.)</td> <td>USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE</td> </tr> <tr> <td>- WET - (W)</td> <td>SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE</td> </tr> <tr> <td rowspan="2">OM - OPTIMUM MOISTURE SL - SHRINKAGE LIMIT</td> <td>- MOIST - (M)</td> <td>SOLID; AT OR NEAR OPTIMUM MOISTURE</td> </tr> <tr> <td>- DRY - (D)</td> <td>REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE</td> </tr> </table> </td> </tr> <tr> <th colspan="10">PLASTICITY</th> </tr> <tr> <td colspan="10"> <table border="1"> <tr> <th>NON PLASTIC</th> <th colspan="2">PLASTICITY INDEX (PI)</th> <th>DRY STRENGTH</th> </tr> <tr> <td>SLIGHTLY PLASTIC</td> <td>0-5</td> <td></td> <td>VERY LOW</td> </tr> <tr> <td>MODERATELY PLASTIC</td> <td>6-15</td> <td></td> <td>SLIGHT</td> </tr> <tr> <td>HIGHLY PLASTIC</td> <td>16-25</td> <td></td> <td>MEDIUM</td> </tr> <tr> <td></td> <td>26 OR MORE</td> <td></td> <td>HIGH</td> </tr> </table> </td> </tr> <tr> <th colspan="10">COLOR</th> </tr> <tr> <td colspan="10">DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). 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BENCH MARK: BM-1, RR SPIKE IN BASE OF 18" OAK, BL STATION 10+25 N: 445761 E: 1886536 ELEVATION: 234.34 FEET																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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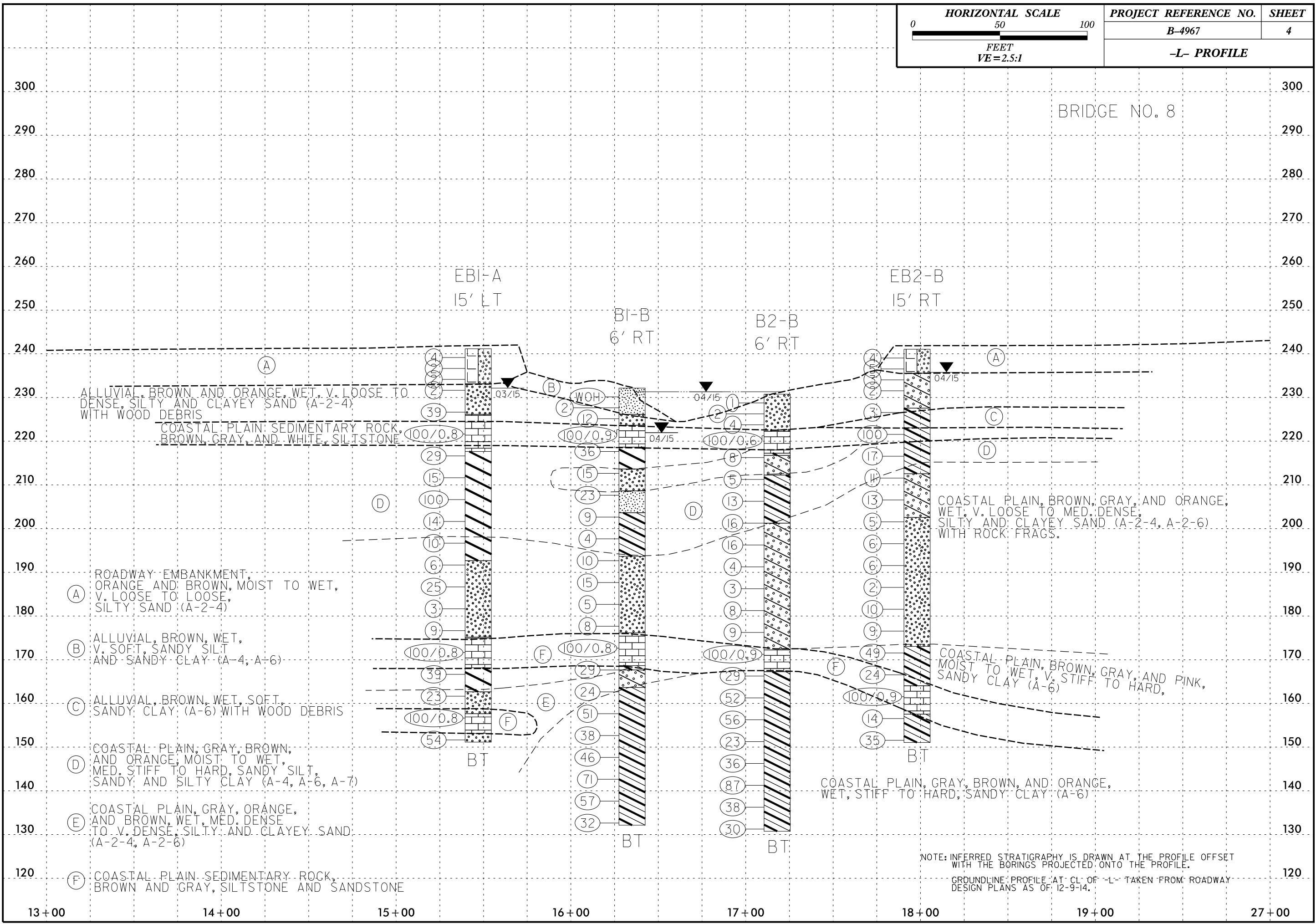
BM 1 ELEVATION = 234.34'
SEE SHEET IC-1

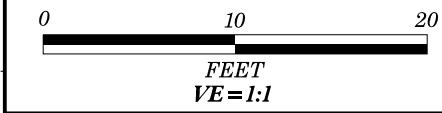


BRIDGE NO. 8
OVER LUMBER RIVER
SKEW = 90°

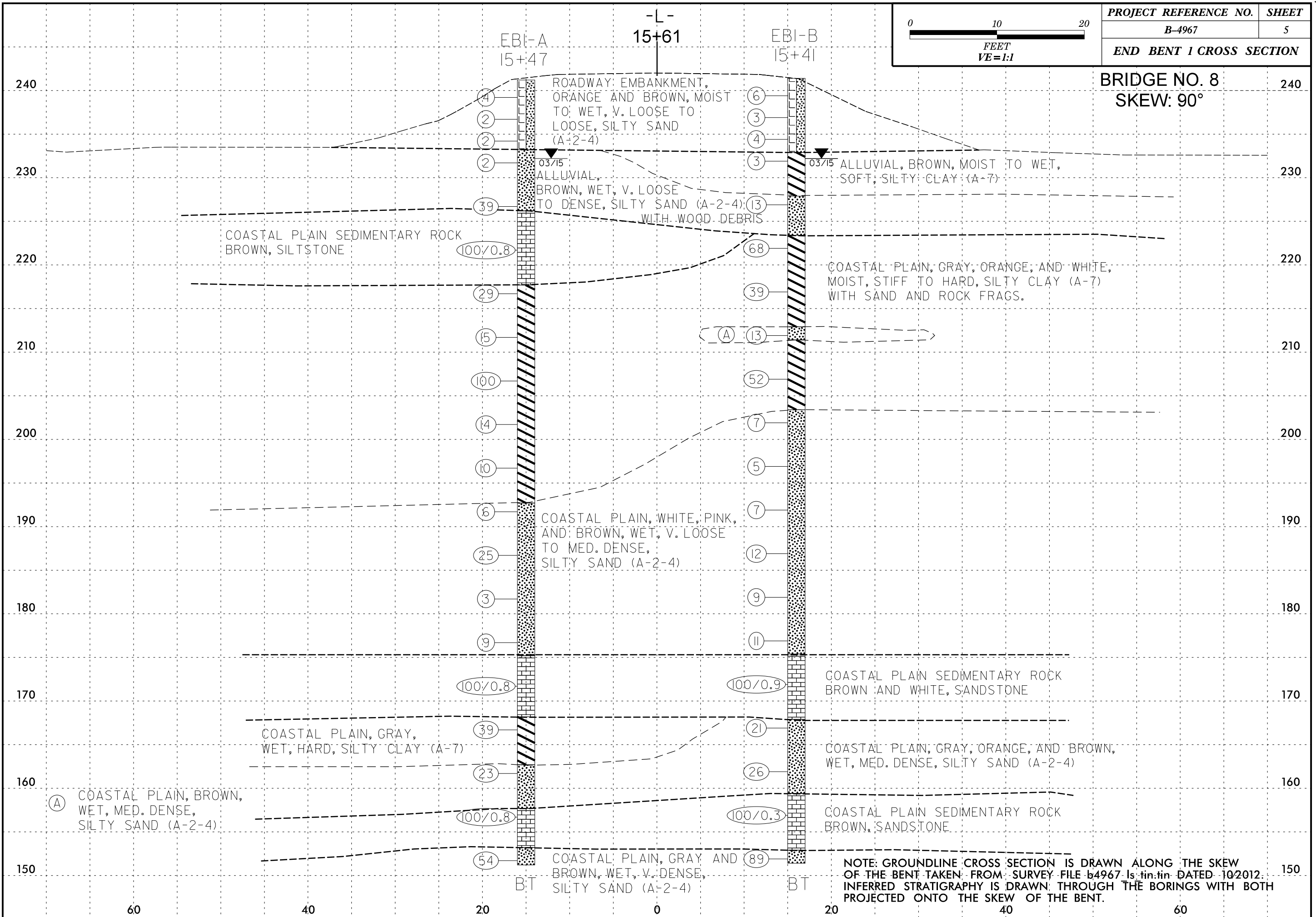


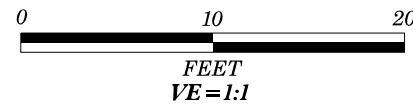
PROJECT REFERENCE NO.	SHEET
B-4967	4
-L- PROFILE	





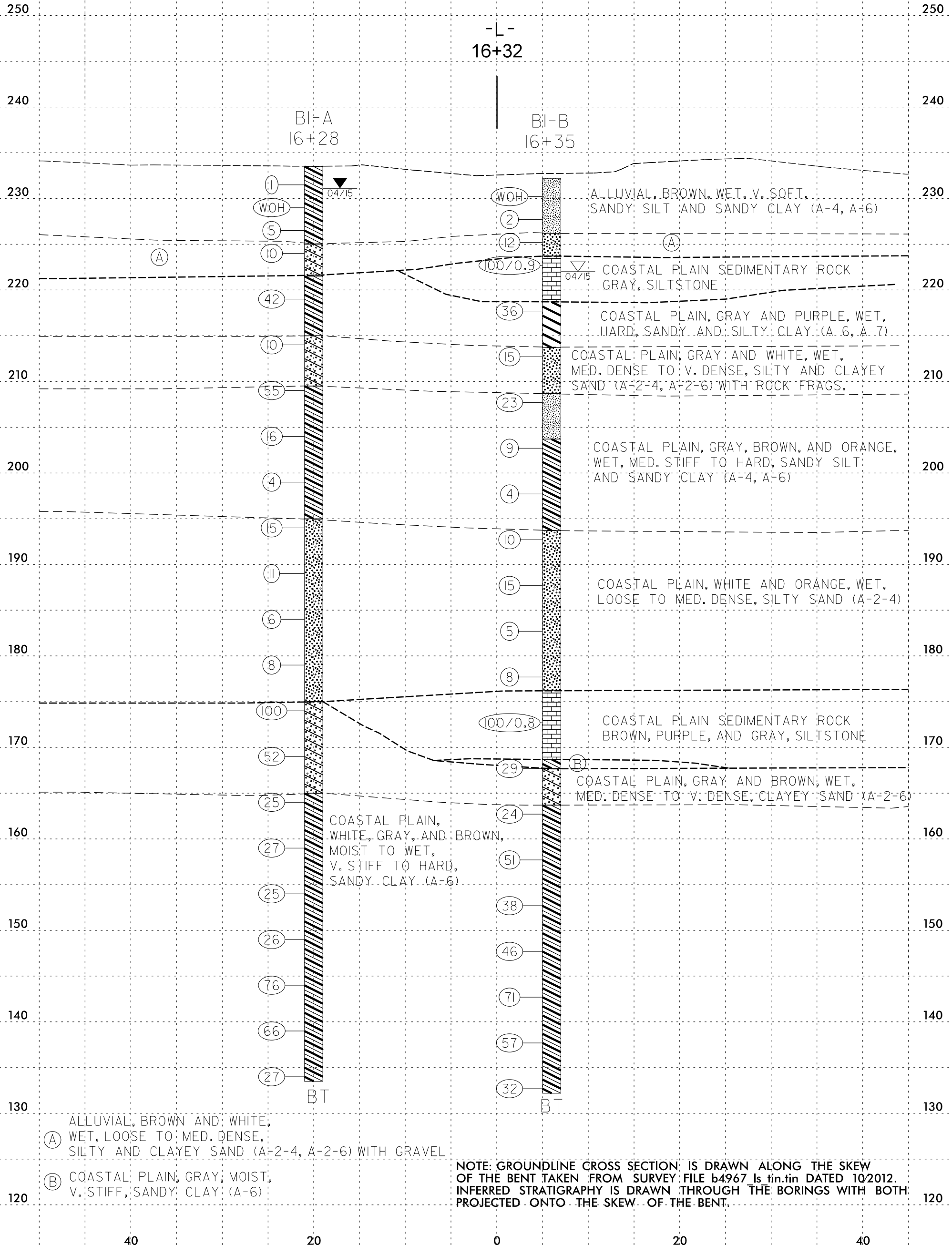
BRIDGE NO. 8
SKEW: 90°





SKEW: 90°

BRIDGE NO. 8
SKEW: 90°

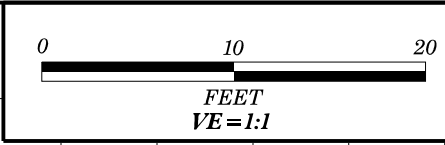


(A) ALLUVIAL, BROWN AND WHITE, WET, LOOSE TO MED. DENSE, SILTY AND CLAYEY SAND (A-2-4, A-2-6) WITH GRAVEL

(B) COASTAL PLAIN, GRAY, MOIST, V. STIFF, SANDY CLAY (A-6)

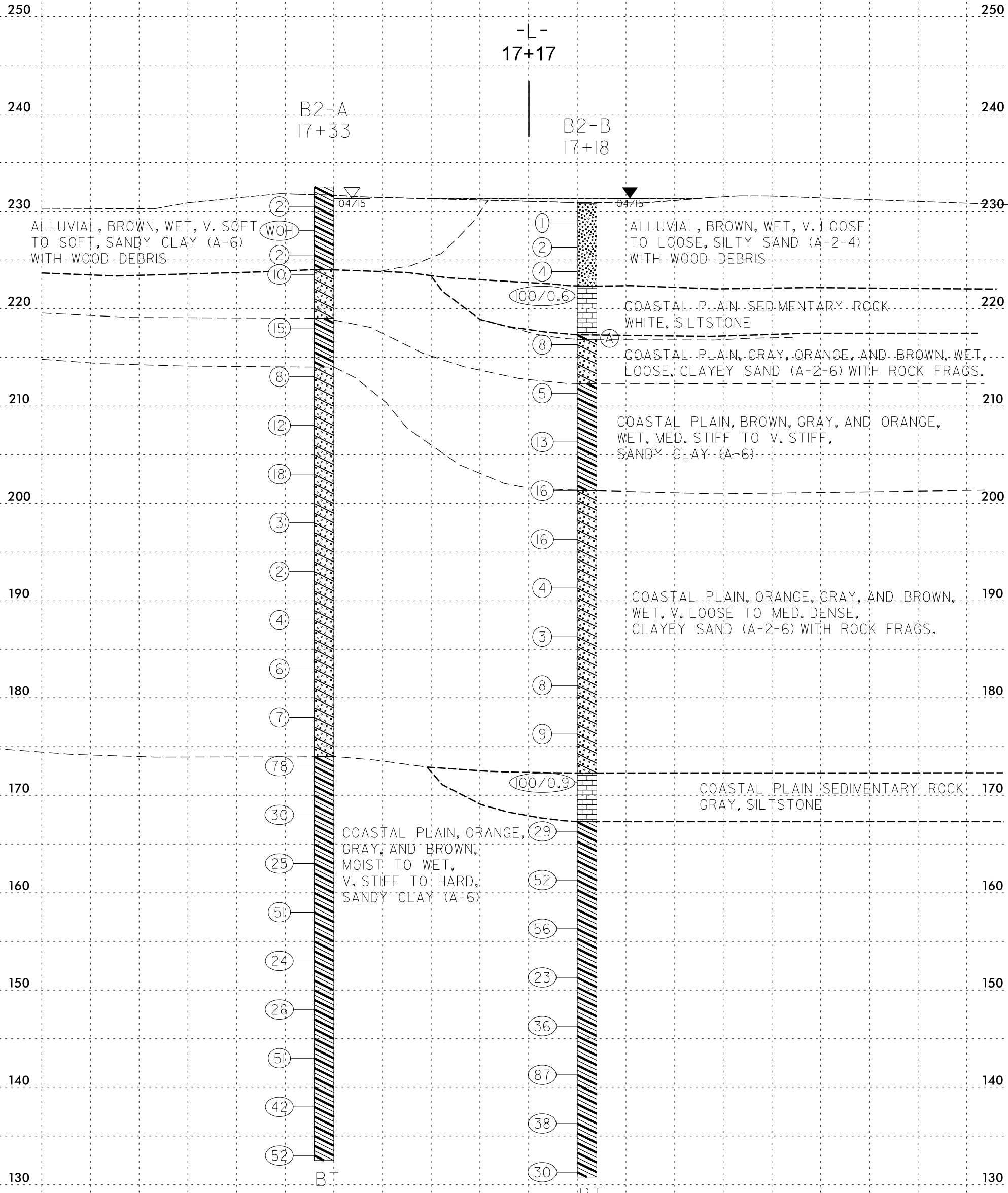
NOTE: GROUNDLINE CROSS SECTION IS DRAWN ALONG THE SKEW OF THE BENT TAKEN FROM SURVEY FILE b4967 IS DATED 10/2012. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE SKEW OF THE BENT.

40 20 0 20 40



SKEW: 90°

BRIDGE NO. 8
SKEW: 90°



-L-
17+17

B2-A
17+33

B2-B
17+18

ALLUVIAL, BROWN, WET, V. SOFT TO SOFT, SANDY CLAY (A-6) WITH WOOD DEBRIS

ALLUVIAL, BROWN, WET, V. LOOSE TO LOOSE, SILTY SAND (A-2-4) WITH WOOD DEBRIS

COASTAL PLAIN SEDIMENTARY ROCK WHITE, SILTSTONE

COASTAL PLAIN, GRAY, ORANGE, AND BROWN, WET, LOOSE, CLAYEY SAND (A-2-6) WITH ROCK FRAGS.

COASTAL PLAIN, BROWN, GRAY, AND ORANGE, WET, MED. STIFF TO V. STIFF, SANDY CLAY (A-6)

COASTAL PLAIN, ORANGE, GRAY, AND BROWN, WET, V. LOOSE TO MED. DENSE, CLAYEY SAND (A-2-6) WITH ROCK FRAGS.

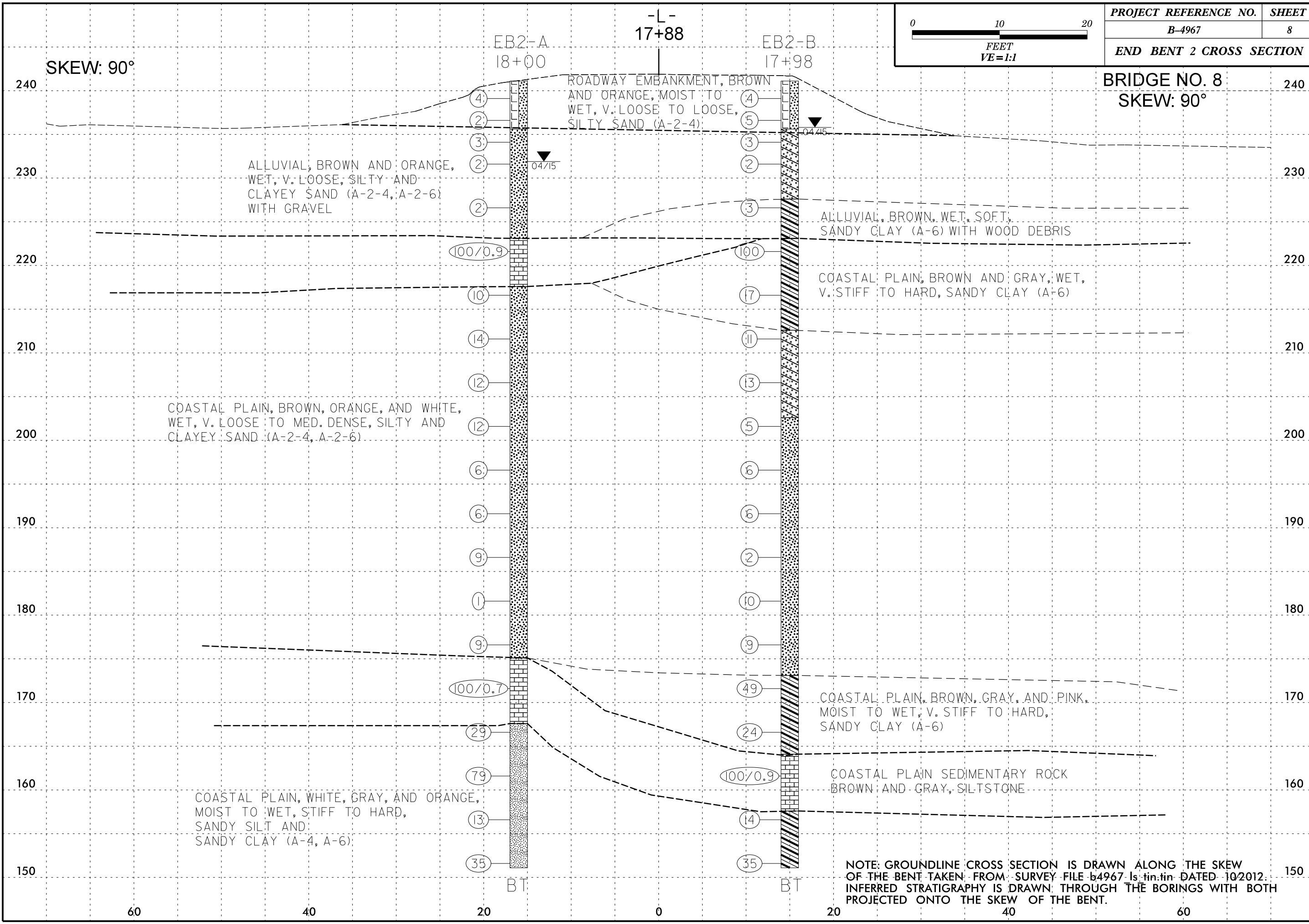
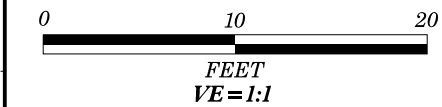
COASTAL PLAIN SEDIMENTARY ROCK GRAY, SILTSTONE

COASTAL PLAIN, ORANGE, GRAY, AND BROWN, MOIST TO WET, V. STIFF TO HARD, SANDY CLAY (A-6)

(A) COASTAL PLAIN, GRAY, MOIST, STIFF, SILTY CLAY (A-7)

NOTE: GROUNDLINE CROSS SECTION IS DRAWN ALONG THE SKEW OF THE BENT TAKEN FROM SURVEY FILE b4967 IS DATED 10/2012. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE SKEW OF THE BENT.

40 20 0 20 40



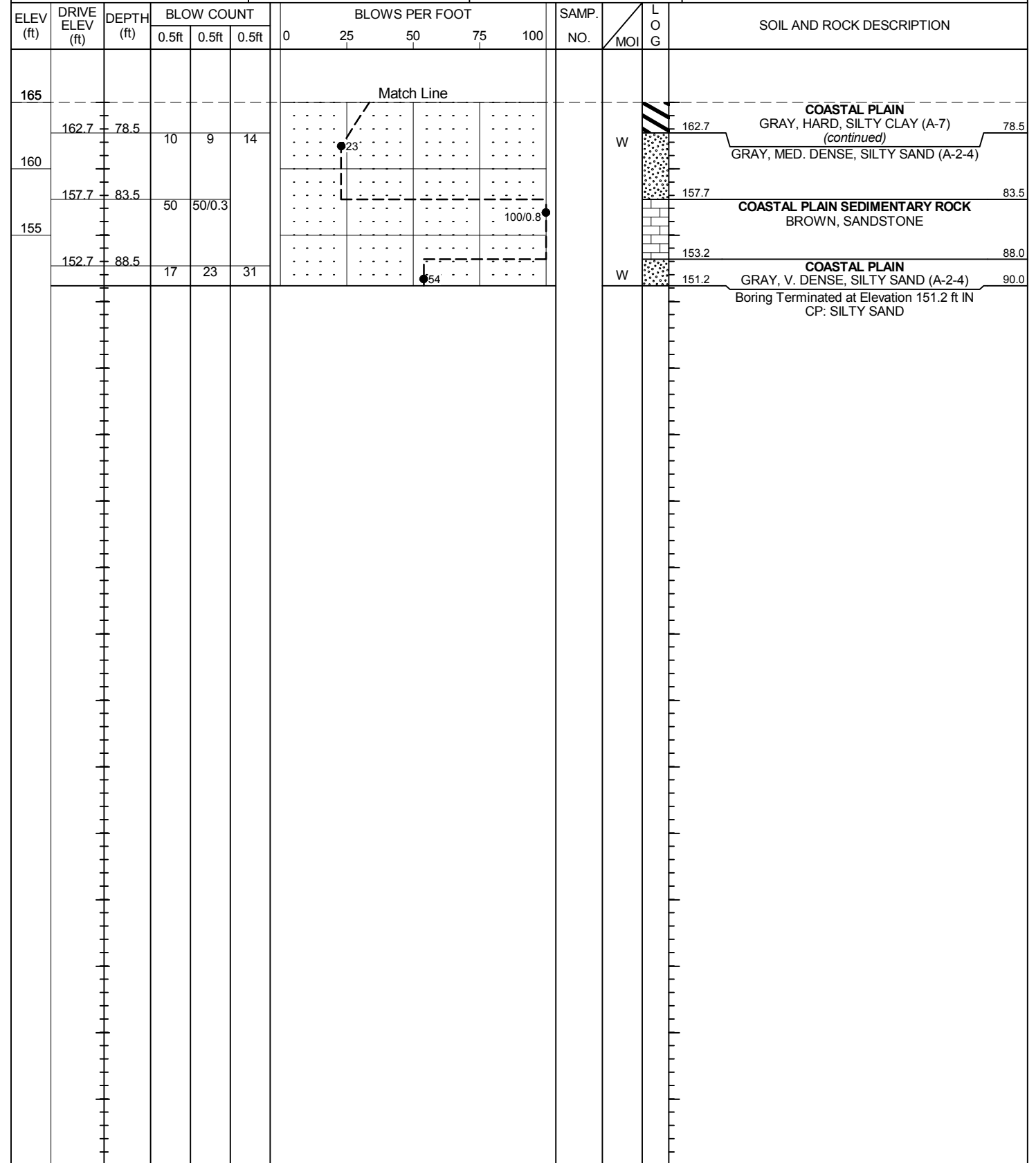
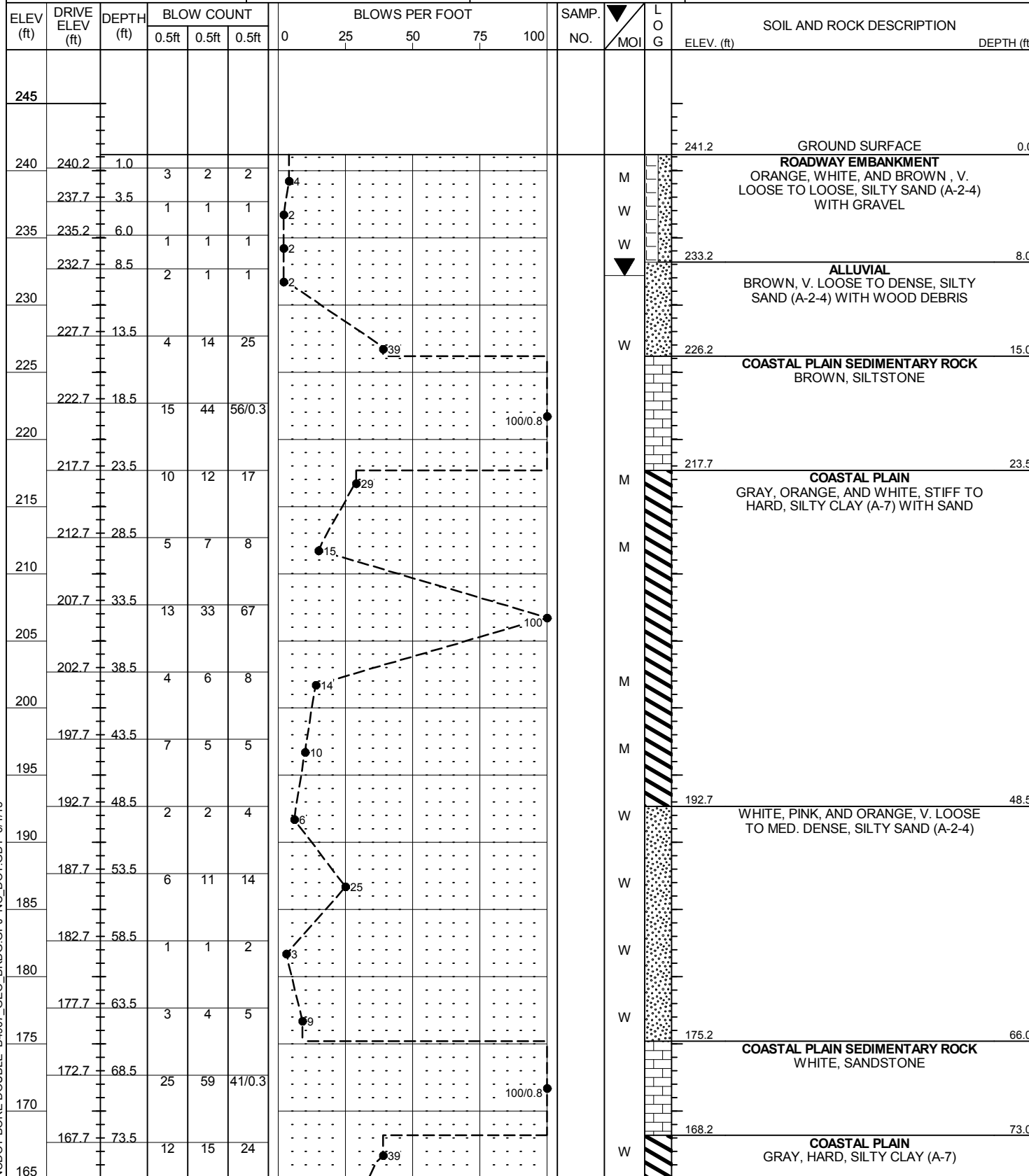


NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 40158.1.1	TIP B-4967	COUNTY HOKE	GEOLOGIST M. WITMORE	
SITE DESCRIPTION REPLACE BRIDGE NO. 8 OVER LUMBER RIVER ON SR 1203 / SR 1412				GROUND WTR (ft)
BORING NO. EB1-A	STATION 15+47	OFFSET 15 ft LT	ALIGNMENT -L-	0 HR. 3.0
COLLAR ELEV. 241.2 ft	TOTAL DEPTH 90.0 ft	NORTHING 445,557	EASTING 1,886,722	24 HR. 9.0
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 86% 08/07/2014		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER B. FOWLER	START DATE 03/30/15	COMP. DATE 03/30/15	SURFACE WATER DEPTH N/A	

WBS 40158.1.1	TIP B-4967	COUNTY HOKE	GEOLOGIST M. WITMORE	
SITE DESCRIPTION REPLACE BRIDGE NO. 8 OVER LUMBER RIVER ON SR 1203 / SR 1412				GROUND WTR (ft)
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DRILLER B. FOWLER	START DATE 03/30/15	COMP. DATE 03/30/15	SURFACE WATER DEPTH N/A	



NCDOT BORE DOUBLE B4967_GEO_BRDG.GPJ NC_DOT.GDT 6/1/15

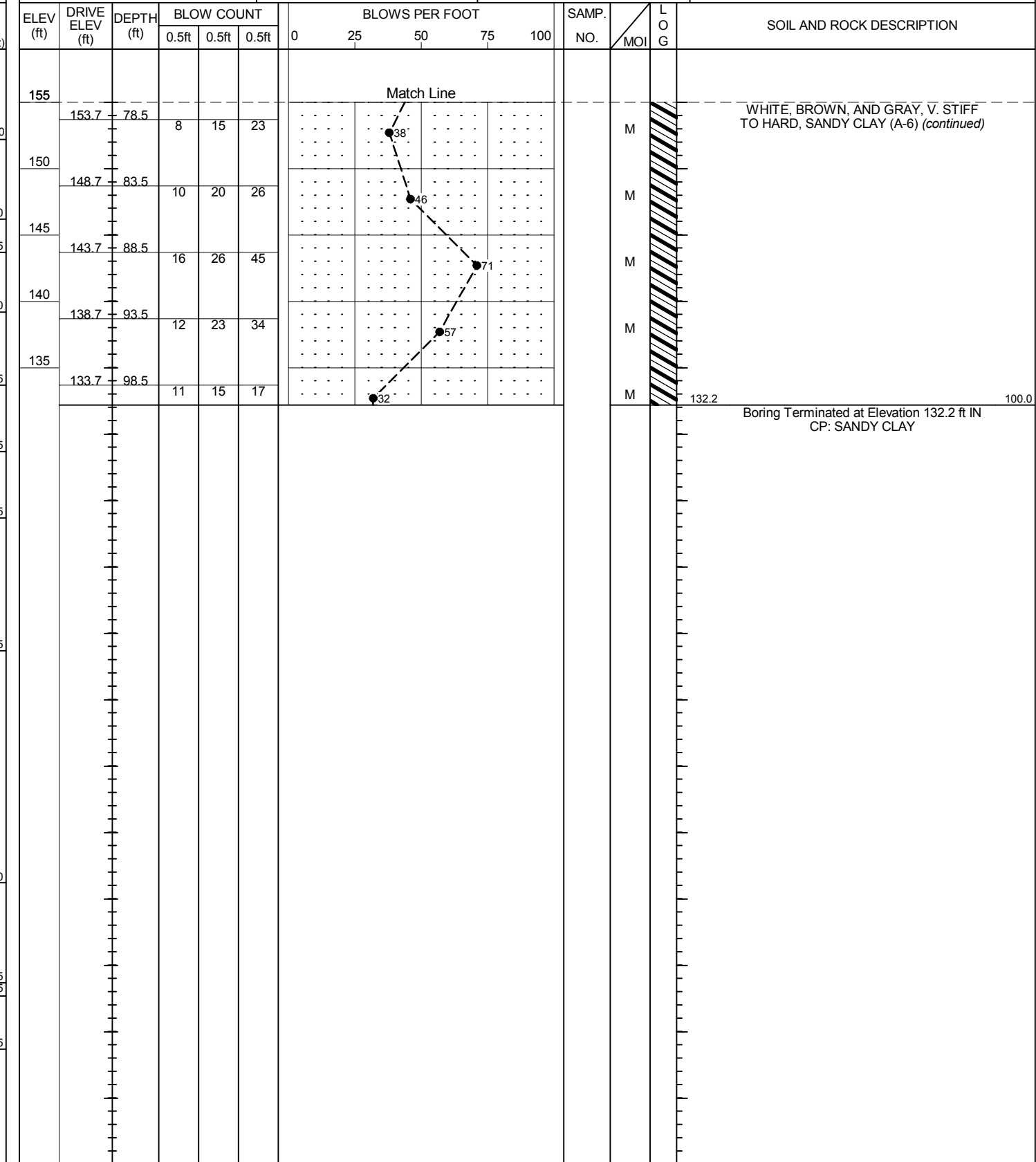
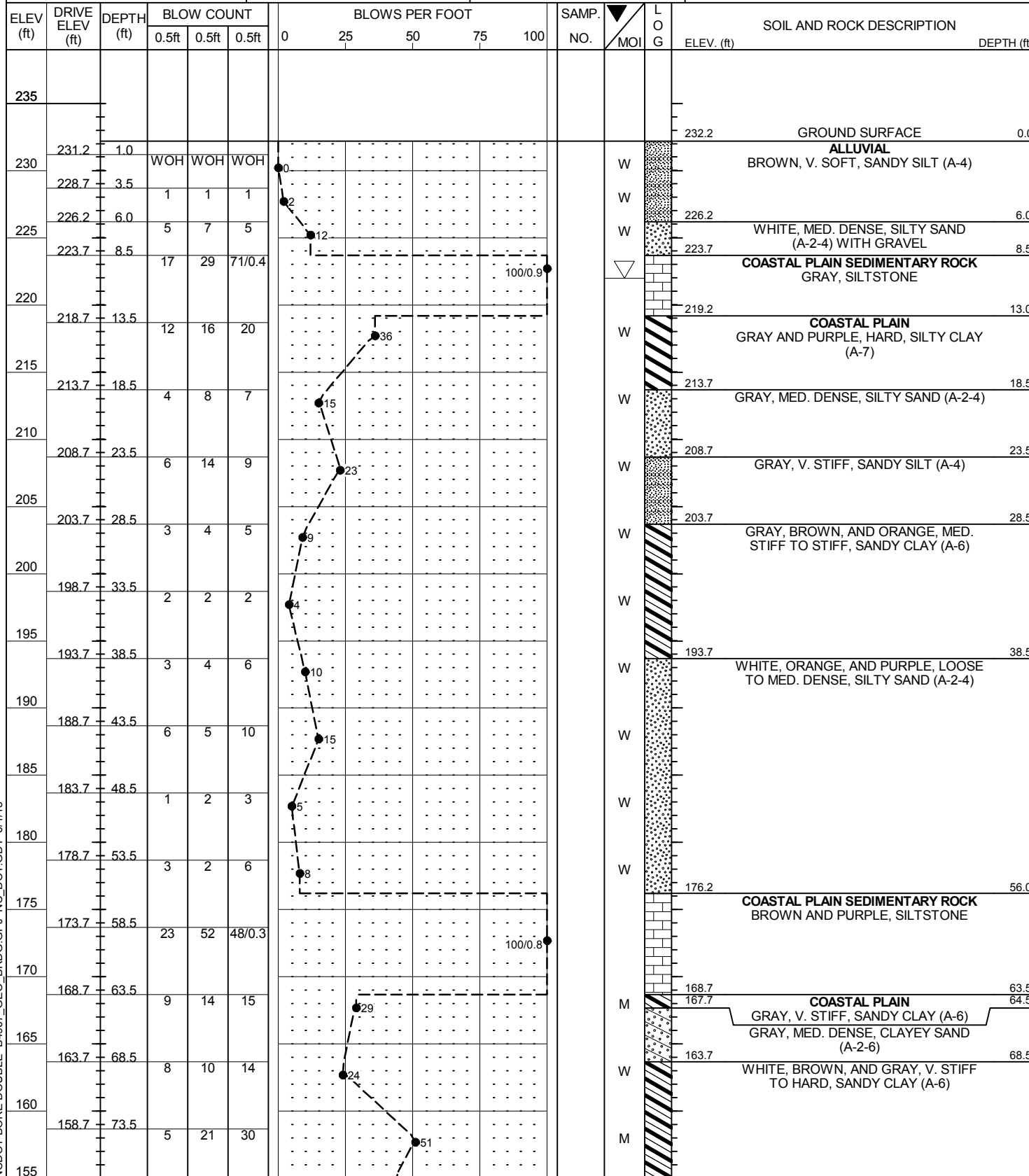


NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

WBS 40158.1.1	TIP B-4967	COUNTY HOKE	GEOLOGIST M. WITMORE	
SITE DESCRIPTION REPLACE BRIDGE NO. 8 OVER LUMBER RIVER ON SR 1203 / SR 1412				GROUND WTR (ft)
BORING NO. B1-B	STATION 16+35	OFFSET 6 ft RT	ALIGNMENT -L-	0 HR. 10.2
COLLAR ELEV. 232.2 ft	TOTAL DEPTH 100.0 ft	NORTHING 445,619	EASTING 1,886,788	24 HR. FIAD
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 86% 08/07/2014		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER B. FOWLER	START DATE 04/01/15	COMP. DATE 04/02/15	SURFACE WATER DEPTH N/A	

WBS 40158.1.1	TIP B-4967	COUNTY HOKE	GEOLOGIST M. WITMORE	
SITE DESCRIPTION REPLACE BRIDGE NO. 8 OVER LUMBER RIVER ON SR 1203 / SR 1412				GROUND WTR (ft)
BORING NO. B1-B	STATION 16+35	OFFSET 6 ft RT	ALIGNMENT -L-	0 HR. 10.2
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DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 86% 08/07/2014		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic	
DRILLER B. FOWLER	START DATE 04/01/15	COMP. DATE 04/02/15	SURFACE WATER DEPTH N/A	



NCDOT BORE DOUBLE B4967_GEO_BRDG.GPJ NC_DOT.GDT 6/1/15

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 40158.1.1		TIP B-4967		COUNTY HOKE		GEOLOGIST M. WITMORE									
SITE DESCRIPTION REPLACE BRIDGE NO. 8 OVER LUMBER RIVER ON SR 1203 / SR 1412							GROUND WTR (ft)								
BORING NO. EB2-B		STATION 17+98		OFFSET 15 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 241.1 ft		TOTAL DEPTH 90.0 ft		NORTHING 445,750		EASTING 1,886,886									
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 86% 08/07/2014			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER B. FOWLER		START DATE 04/03/15		COMP. DATE 04/03/15		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
245															
240	240.1	1.0	2	2	2								W	GROUND SURFACE	0.0
	237.6	3.5	1	2	3								W	ROADWAY EMBANKMENT	
	235.1	6.0	1	2	1								W	BROWN, LOOSE, SILTY SAND (A-2-4)	
235	235.1	6.0	1	2	1								W	ALLUVIAL	5.5
	232.6	8.5	2	1	1								W	BROWN, V. LOOSE, CLAYEY SAND (A-2-6) WITH GRAVEL	
230	232.6	8.5	2	1	1								W		
	227.6	13.5	1	1	2								W	BROWN, SOFT, SANDY CLAY (A-6) WITH WOOD DEBRIS	13.5
225													W		
						29	71						W	COASTAL PLAIN	18.0
220													W	BROWN AND GRAY, V. STIFF TO HARD, SANDY CLAY (A-6)	
	217.6	23.5	5	9	8								W		
215													W		
	212.6	28.5	5	5	6								W	BROWN, ORANGE, AND WHITE, MED. DENSE, CLAYEY SAND (A-2-6)	28.5
210													W		
	207.6	33.5	5	9	4								W		
205													W		
	202.6	38.5	4	2	3								W	WHITE AND BROWN, V. LOOSE TO LOOSE, SILTY SAND (A-2-4)	38.5
200													W		
	197.6	43.5	2	2	4								W		
195													W		
	192.6	48.5	2	3	3								W		
190													W		
	187.6	53.5	4	1	1								W		
185													W		
	182.6	58.5	5	4	6								W		
180													W		
	177.6	63.5	4	3	6								W		
175													W		
	172.6	68.5	15	19	30								W		
170													M	BROWN, GRAY, AND PINK, V. STIFF TO HARD, SANDY CLAY (A-6)	68.0
	167.6	73.5	10	9	15								W		
165													W		

WBS 40158.1.1		TIP B-4967		COUNTY HOKE		GEOLOGIST M. WITMORE									
SITE DESCRIPTION REPLACE BRIDGE NO. 8 OVER LUMBER RIVER ON SR 1203 / SR 1412							GROUND WTR (ft)								
BORING NO. EB2-B		STATION 17+98		OFFSET 15 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 241.1 ft		TOTAL DEPTH 90.0 ft		NORTHING 445,750		EASTING 1,886,886									
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 86% 08/07/2014			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER B. FOWLER		START DATE 04/03/15		COMP. DATE 04/03/15		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
165															
	162.6	78.5	22	41	59/0.4										
160															
	157.6	83.5	6	4	10								W	COASTAL PLAIN SEDIMENTARY ROCK	77.0
													W	GRAY, SILTSTONE	
155													W	COASTAL PLAIN	83.5
	152.6	88.5	8	15	20								W	WHITE AND GRAY, STIFF TO HARD, SANDY CLAY (A-6)	
													W		
													W	Boring Terminated at Elevation 151.1 ft IN CP: SANDY CLAY	90.0

NCDOT BORE DOUBLE B4967_GEO_BRDG.GPJ NC_DOT.GDT 6/1/15



LUMBER RIVER, LOOKING DOWNSTREAM TOWARDS EXISTING BRIDGE.



-L-, LOOKING UPSTATION FROM STA. 15+00.

SITE PHOTOGRAPHS

**BRIDGE NO. 8 OVER LUMBER RIVER
ON SR 1203 / SR 1412
WBS NO.: 40158, TIP NO.: B-4967**



AECOM – North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville, NC 27560
Tel: 919-461-1100 Fax: 919-46-1415