

REFERENCE: SF-810194

PROJECT: BP3.R009

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY SAMPSON
 PROJECT DESCRIPTION BRIDGE NO. 194 ON -L-
(SR 1746) OVER GREAT COHARIE CREEK AT
STA. 14 + 29

CONTENTS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4	PROFILE
5-8	BORE LOGS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SF-810194	1	8

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

J.K. CRENSHAW

T.W. MILLER

R.E. SMITH

C.M. WALKER

CATLIN

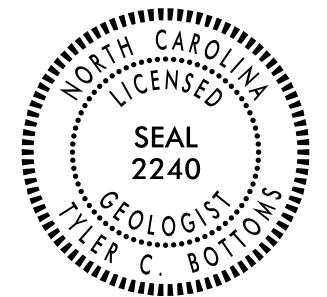
INVESTIGATED BY T.C. BOTTOMS

DRAWN BY S.N. ZIMARINO

CHECKED BY D.N. ARGENBRIGHT

SUBMITTED BY D.N. ARGENBRIGHT

DATE JULY 2022



DocuSigned by:
Tyler Bottoms 07/29/2022

48A2D3BD08CFE4A6...
 SIGNATURE DATE

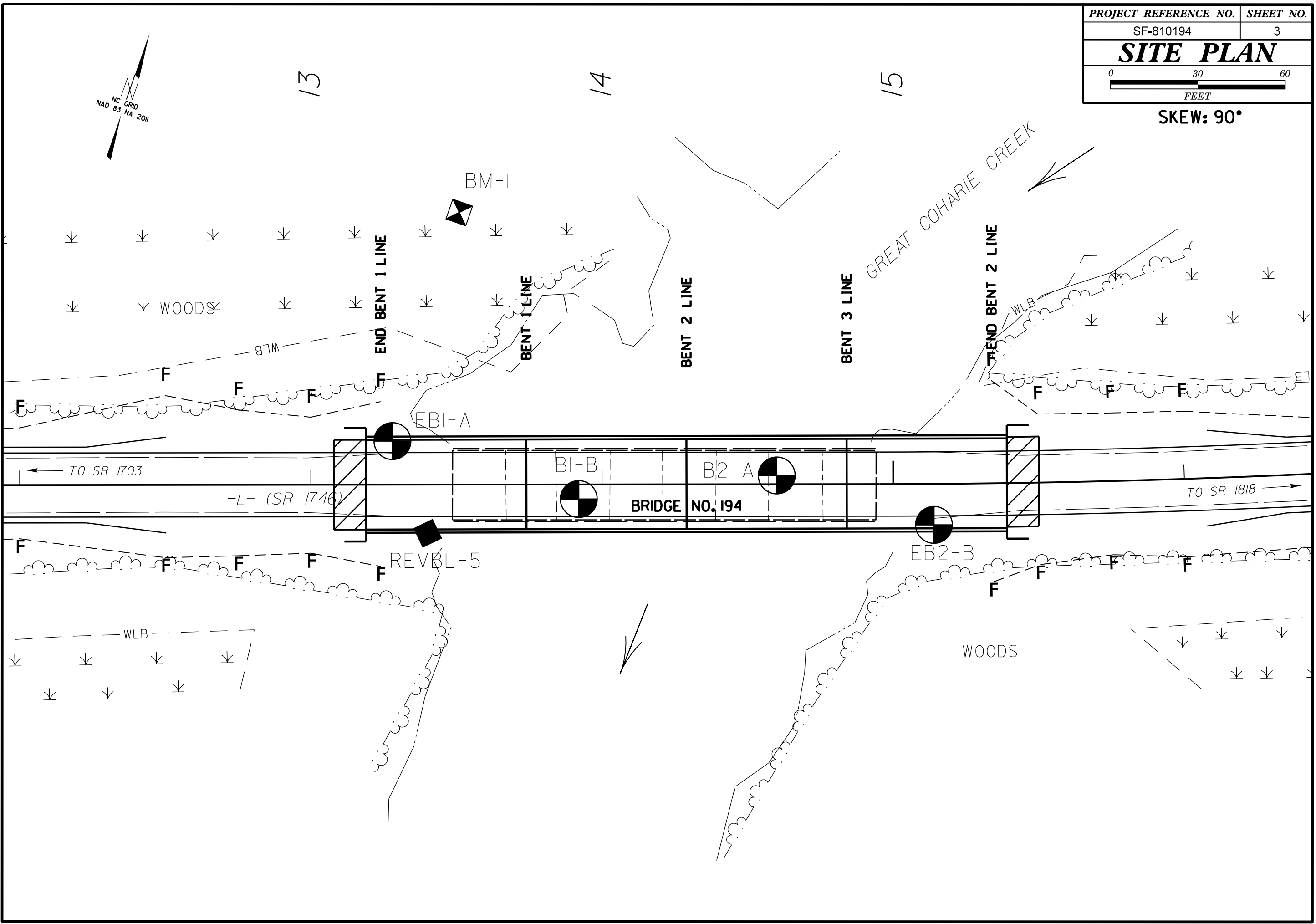
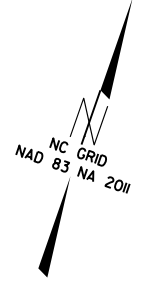
**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

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 (ASTM 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, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6										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: WEATHERED ROCK (WR) CRYSTALLINE ROCK (CR) NON-CRYSTALLINE ROCK (NCR) COASTAL PLAIN SEDIMENTARY ROCK (CPS)										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 DISLOGGED 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 (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 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.																																																																																																																																																															
SOIL LEGEND AND AASHTO CLASSIFICATION										MINERALOGICAL COMPOSITION										WEATHERING																																																																																																																																																																									
<table border="1"> <tr> <th>GENERAL CLASS.</th> <th colspan="5">GRANULAR MATERIALS (≤ 35% PASSING #200)</th> <th colspan="5">SILT-CLAY MATERIALS (> 35% PASSING #200)</th> <th colspan="5">ORGANIC MATERIALS</th> </tr> <tr> <th>GROUP CLASS.</th> <th>A-1</th> <th>A-1-b</th> <th>A-3</th> <th>A-2-4</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</th> <th>A-3</th> <th>A-4, A-5</th> <th>A-6, A-7</th> <th></th> </tr> <tr> <th>SYMBOL</th> <td colspan="5">[Pattern]</td> <td colspan="5">[Pattern]</td> <td colspan="5">[Pattern]</td> <td></td> </tr> <tr> <th>% PASSING #10 #200</th> <td>50 MX</td> <td>30 MX</td> <td>15 MX</td> <td>25 MX</td> <td>50 MX</td> <td>10 MN</td> <td>35 MX</td> <td>35 MX</td> <td>35 MX</td> <td>35 MX</td> <td>35 MN</td> <td>36 MN</td> <td>36 MN</td> <td>36 MN</td> <td>36 MN</td> <td></td> </tr> <tr> <th>MATERIAL PASSING #40 LL PI</th> <td>-</td> <td>6 MX</td> <td>-</td> <td>NP</td> <td>40 MX</td> <td>41 MN</td> <td>40 MX</td> <td>41 MN</td> <td>40 MX</td> <td>41 MN</td> <td>40 MX</td> <td>41 MN</td> <td>40 MX</td> <td>41 MN</td> <td>40 MX</td> <td>41 MN</td> <td></td> </tr> <tr> <th>GROUP INDEX</th> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>4 MX</td> <td>8 MX</td> <td>12 MX</td> <td>16 MX</td> <td>NO MX</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>USUAL TYPES OF MAJOR MATERIALS</th> <td colspan="2">STONE FRAGS. 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">SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER</td> <td colspan="5">HIGHLY ORGANIC SOILS</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> </table>										GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)					SILT-CLAY MATERIALS (> 35% PASSING #200)					ORGANIC MATERIALS					GROUP CLASS.	A-1	A-1-b	A-3	A-2-4	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		SYMBOL	[Pattern]					[Pattern]					[Pattern]						% PASSING #10 #200	50 MX	30 MX	15 MX	25 MX	50 MX	10 MN	35 MX	35 MX	35 MX	35 MX	35 MN	36 MN	36 MN	36 MN	36 MN		MATERIAL PASSING #40 LL PI	-	6 MX	-	NP	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN		GROUP INDEX	0	0	0	0	0	4 MX	8 MX	12 MX	16 MX	NO MX								USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND		SILTY OR CLAYEY GRAVEL AND SAND		SILTY SOILS		CLAYEY SOILS		SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER					HIGHLY ORGANIC SOILS					GEN. RATING AS SUBGRADE	EXCELLENT TO GOOD					FAIR TO POOR					FAIR TO POOR					POOR					UNSATURABLE					<p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.</p> <p>COMPRESSIBILITY</p> <p>PERCENTAGE OF MATERIAL</p> <p>GROUND WATER</p> <p>MISCELLANEOUS SYMBOLS</p> <p>RECOMMENDATION SYMBOLS</p> <p>ABBREVIATIONS</p> <p>EQUIPMENT USED ON SUBJECT PROJECT</p>										<p>FRESH</p> <p>VERY SLIGHT (V SLI.)</p> <p>SLIGHT (SLI.)</p> <p>MODERATE (MOD.)</p> <p>MODERATELY SEVERE (MOD. SEV.)</p> <p>SEVERE (SEV.)</p> <p>VERY SEVERE (V SEV.)</p> <p>COMPLETE</p> <p>ROCK HARDNESS</p> <p>FRACTURE SPACING</p> <p>BEDDING</p> <p>INDURATION</p>										<p>PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30</p> <p>COMPACTNESS OR CONSISTENCY</p> <p>RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)</p> <p>RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²)</p> <p>TEXTURE OR GRAIN SIZE</p> <p>U.S. STD. SIEVE SIZE OPENING (MM)</p> <p>BOULDER (BLDR.)</p> <p>COBBLE (COB.)</p> <p>GRAVEL (GR.)</p> <p>COARSE SAND (CS, SD.)</p> <p>FINE SAND (F SD.)</p> <p>SILT (SL.)</p> <p>CLAY (CL.)</p> <p>GRAIN SIZE</p> <p>SOIL MOISTURE - CORRELATION OF TERMS</p> <p>PLASTICITY</p> <p>PLASTICITY INDEX (PI)</p> <p>DRY STRENGTH</p> <p>COLOR</p>									
GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)					SILT-CLAY MATERIALS (> 35% PASSING #200)					ORGANIC MATERIALS																																																																																																																																																																																		
GROUP CLASS.	A-1	A-1-b	A-3	A-2-4	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																																																																																																																																																																														
SYMBOL	[Pattern]					[Pattern]					[Pattern]																																																																																																																																																																																		
% PASSING #10 #200	50 MX	30 MX	15 MX	25 MX	50 MX	10 MN	35 MX	35 MX	35 MX	35 MX	35 MN	36 MN	36 MN	36 MN	36 MN																																																																																																																																																																														
MATERIAL PASSING #40 LL PI	-	6 MX	-	NP	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN																																																																																																																																																																													
GROUP INDEX	0	0	0	0	0	4 MX	8 MX	12 MX	16 MX	NO MX																																																																																																																																																																																			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND		SILTY OR CLAYEY GRAVEL AND SAND		SILTY SOILS		CLAYEY SOILS		SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER					HIGHLY ORGANIC SOILS																																																																																																																																																																													
GEN. RATING AS SUBGRADE	EXCELLENT TO GOOD					FAIR TO POOR					FAIR TO POOR					POOR					UNSATURABLE																																																																																																																																																																								
<p>GENERAL CLASS.</p> <p>GROUP CLASS.</p> <p>SYMBOL</p> <p>% PASSING #10 #200</p> <p>MATERIAL PASSING #40 LL PI</p> <p>GROUP INDEX</p> <p>USUAL TYPES OF MAJOR MATERIALS</p> <p>GEN. RATING AS SUBGRADE</p>										<p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.</p> <p>COMPRESSIBILITY</p> <p>PERCENTAGE OF MATERIAL</p> <p>GROUND WATER</p> <p>MISCELLANEOUS SYMBOLS</p> <p>RECOMMENDATION SYMBOLS</p> <p>ABBREVIATIONS</p> <p>EQUIPMENT USED ON SUBJECT PROJECT</p>										<p>FRESH</p> <p>VERY SLIGHT (V SLI.)</p> <p>SLIGHT (SLI.)</p> <p>MODERATE (MOD.)</p> <p>MODERATELY SEVERE (MOD. SEV.)</p> <p>SEVERE (SEV.)</p> <p>VERY SEVERE (V SEV.)</p> <p>COMPLETE</p> <p>ROCK HARDNESS</p> <p>FRACTURE SPACING</p> <p>BEDDING</p> <p>INDURATION</p>										<p>PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30</p> <p>COMPACTNESS OR CONSISTENCY</p> <p>RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE)</p> <p>RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT²)</p> <p>TEXTURE OR GRAIN SIZE</p> <p>U.S. STD. SIEVE SIZE OPENING (MM)</p> <p>BOULDER (BLDR.)</p> <p>COBBLE (COB.)</p> <p>GRAVEL (GR.)</p> <p>COARSE SAND (CS, SD.)</p> <p>FINE SAND (F SD.)</p> <p>SILT (SL.)</p> <p>CLAY (CL.)</p> <p>GRAIN SIZE</p> <p>SOIL MOISTURE - CORRELATION OF TERMS</p> <p>PLASTICITY</p> <p>PLASTICITY INDEX (PI)</p> <p>DRY STRENGTH</p> <p>COLOR</p>																																																																																																																																																															
<p>NON PLASTIC</p> <p>SLIGHTLY PLASTIC</p> <p>MODERATELY PLASTIC</p> <p>HIGHLY PLASTIC</p>										<p>DRILL UNITS:</p> <p>ADVANCING TOOLS:</p> <p>HAMMER TYPE:</p> <p>CORE SIZE:</p> <p>HAND TOOLS:</p>										<p>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</p> <p>FRIABLE</p> <p>MODERATELY INDURATED</p> <p>INDURATED</p> <p>EXTREMELY INDURATED</p>										<p>BENCH MARK: REVBL-5</p> <p>N: 510204.6205</p> <p>E: 2184500.1830</p> <p>ELEVATION: 121.78 FEET</p> <p>NOTES:</p>																																																																																																																																																															
<p>DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.</p>																																																																																																																																																																																													

PROJECT REFERENCE NO.	SHEET NO.
SF-810194	3
SITE PLAN	

SKEW: 90°

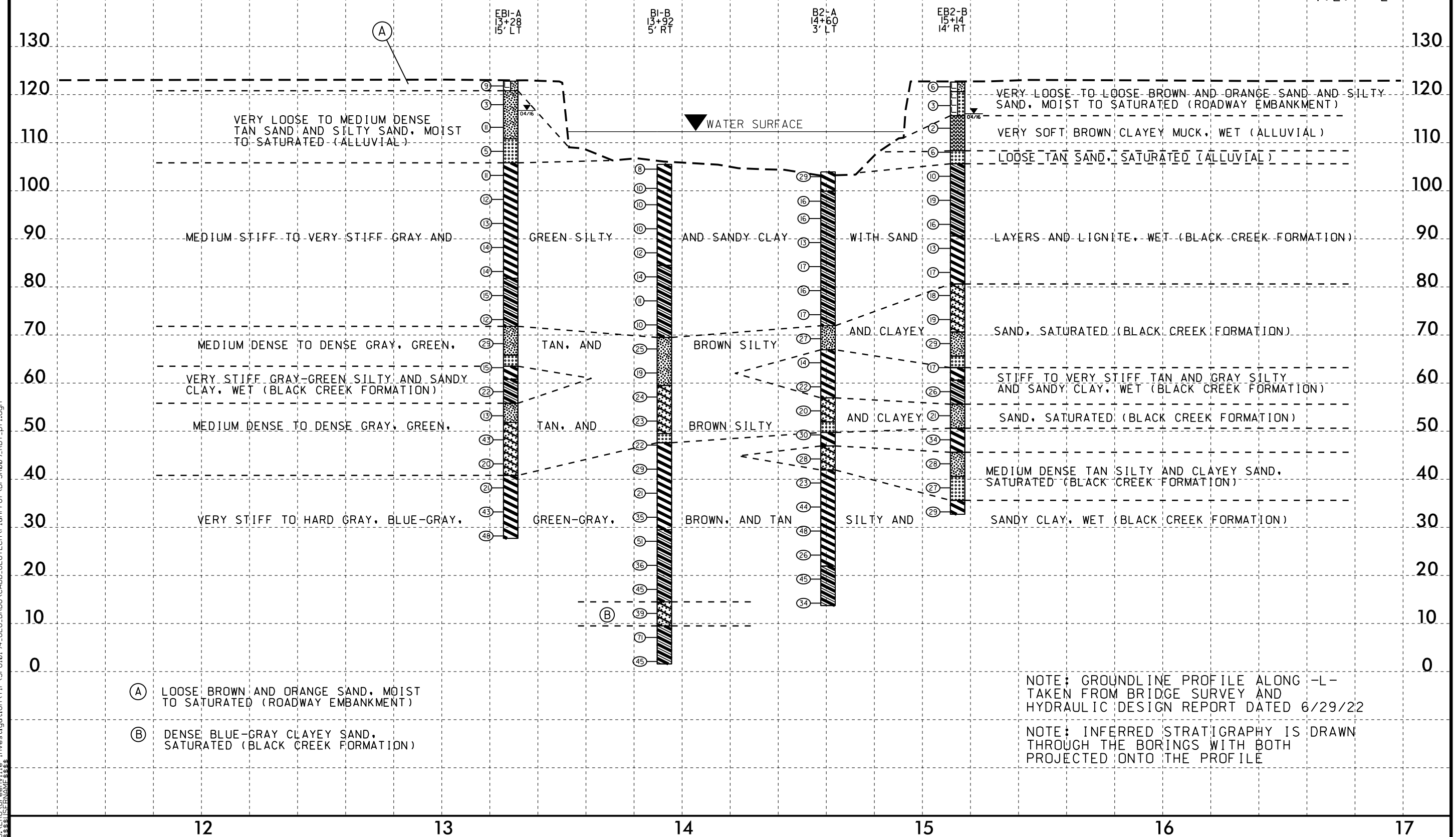


5/14/99

PROJECT REFERENCE NO. SF-810194	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PROFILE THROUGH BORINGS PROJECTED ALONG -L-

V.E. = 2



- (A) LOOSE BROWN AND ORANGE SAND, MOIST TO SATURATED (ROADWAY EMBANKMENT)
- (B) DENSE BLUE-GRAY CLAYEY SAND, SATURATED (BLACK CREEK FORMATION)

NOTE: GROUNDLINE PROFILE ALONG -L- TAKEN FROM BRIDGE SURVEY AND HYDRAULIC DESIGN REPORT DATED 6/29/22

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

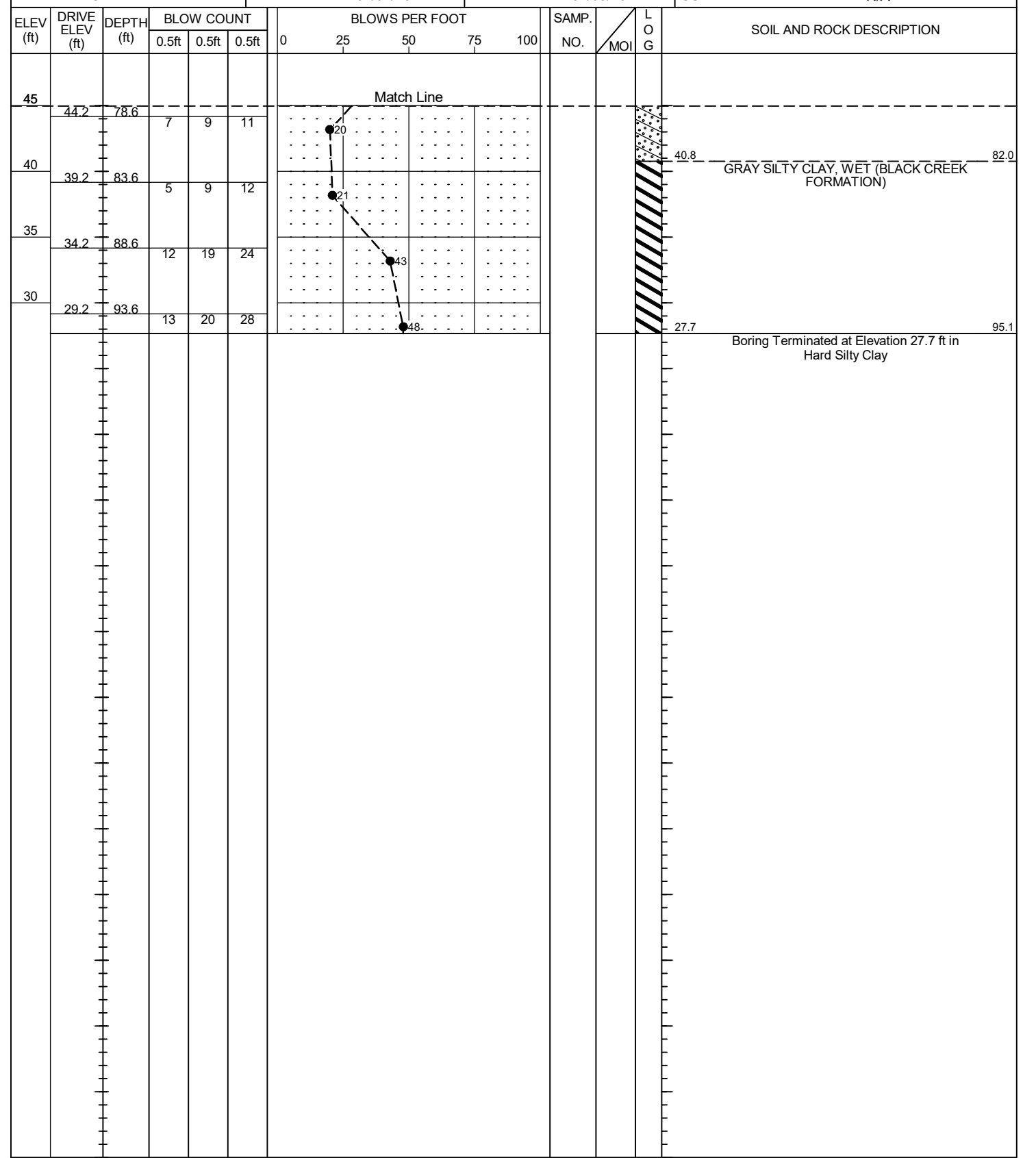
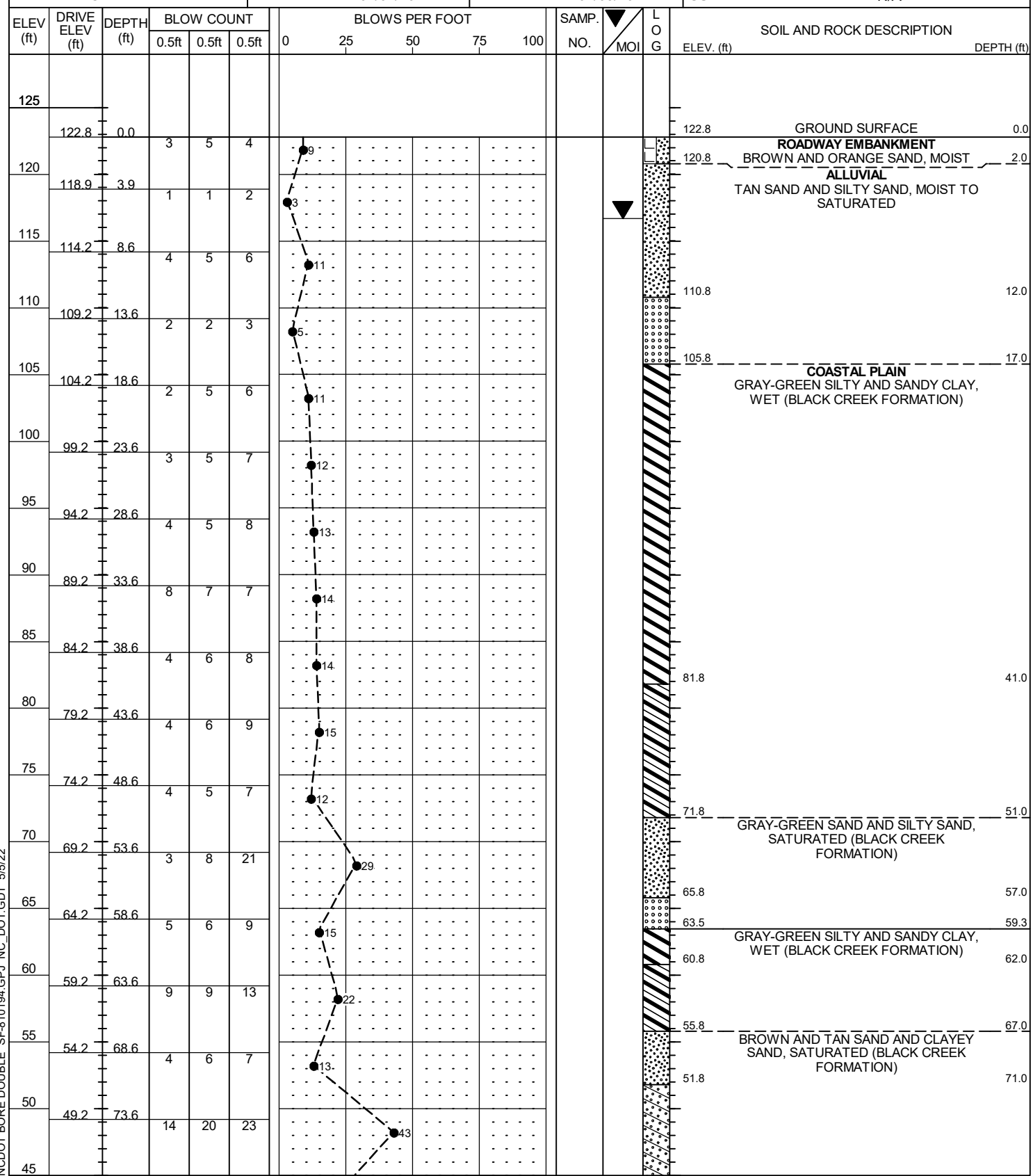
12-Jul-2022 12:40
S:\ERDC\Greenville_Investigation\TIP_SF810194_GEO_BRDG\CADD_GEO\TECH\PlanPrOf\BP_3R009_RDY_pfl.dgn
\$\$\$\$

GEOTECHNICAL BORING REPORT

BORE LOG

WBS BP3.R009.1	TIP SF-810194	COUNTY SAMPSON	GEOLOGIST Crenshaw, J.K.
SITE DESCRIPTION BRIDGE NO. 194 ON -L- (SR 1746) OVER GREAT COHARIE CREEK			GROUND WTR (ft)
BORING NO. EB1-A	STATION 13+28	OFFSET 15 ft LT	ALIGNMENT -L-
COLLAR ELEV. 122.8 ft	TOTAL DEPTH 95.1 ft	NORTHING 510,231	EASTING 2,184,478
DRILL RIGHAMMER EFF./DATE CAT1314 CME-45B 95% 11/13/2019		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller		START DATE 04/04/16	COMP. DATE 04/05/16
		SURFACE WATER DEPTH N/A	

WBS BP3.R009.1	TIP SF-810194	COUNTY SAMPSON	GEOLOGIST Crenshaw, J.K.
SITE DESCRIPTION BRIDGE NO. 194 ON -L- (SR 1746) OVER GREAT COHARIE CREEK			GROUND WTR (ft)
BORING NO. EB1-A	STATION 13+28	OFFSET 15 ft LT	ALIGNMENT -L-
COLLAR ELEV. 122.8 ft	TOTAL DEPTH 95.1 ft	NORTHING 510,231	EASTING 2,184,478
DRILL RIGHAMMER EFF./DATE CAT1314 CME-45B 95% 11/13/2019		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller		START DATE 04/04/16	COMP. DATE 04/05/16
		SURFACE WATER DEPTH N/A	



NCDOT BORE DOUBLE SF-810194.GPJ NC_DOT.GDT 5/5/22

GEOTECHNICAL BORING REPORT

BORE LOG

WBS BP3.R009.1		TIP SF-810194		COUNTY SAMPSON		GEOLOGIST Miller, T. W.	
SITE DESCRIPTION BRIDGE NO. 194 ON -L- (SR 1746) OVER GREAT COHARIE CREEK							GROUND WTR (ft)
BORING NO. B1-B		STATION 13+92		OFFSET 5 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 105.5 ft		TOTAL DEPTH 103.9 ft		NORTHING 510,233		EASTING 2,184,545	
DRILL RIGHAMMER EFF./DATE GFC0075 CME-45C 87% 11/23/2021				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER Walker, C. M.		START DATE 05/02/22		COMP. DATE 05/03/22		SURFACE WATER DEPTH 6.8ft	

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					
115															
105	105.5	0.0	2	3	5									105.5	GROUND SURFACE
100	101.5	4.0	3	4	6										COASTAL PLAIN GRAY AND GREEN SILTY AND SANDY CLAY WITH SILTY SAND LAYERS, WET (BLACK CREEK FORMATION)
95	98.1	7.4	3	4	6										
90	93.1	12.4	3	4	6										
85	88.1	17.4	4	5	7										
80	83.1	22.4	4	6	8										
75	78.1	27.4	5	5	6										
70	73.1	32.4	5	5	5										
65	68.1	37.4	6	12	13										
60	63.1	42.4	7	9	10										
55	58.1	47.4	7	10	14										
50	53.1	52.4	12	11	12										
45	48.1	57.4	9	10	12										
40	43.1	62.4	9	11	18										
35	38.1	67.4	12	9	12										

WBS BP3.R009.1		TIP SF-810194		COUNTY SAMPSON		GEOLOGIST Miller, T. W.	
SITE DESCRIPTION BRIDGE NO. 194 ON -L- (SR 1746) OVER GREAT COHARIE CREEK							GROUND WTR (ft)
BORING NO. B1-B		STATION 13+92		OFFSET 5 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 105.5 ft		TOTAL DEPTH 103.9 ft		NORTHING 510,233		EASTING 2,184,545	
DRILL RIGHAMMER EFF./DATE GFC0075 CME-45C 87% 11/23/2021				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER Walker, C. M.		START DATE 05/02/22		COMP. DATE 05/03/22		SURFACE WATER DEPTH 6.8ft	

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					
35															
	33.1	72.4	12	14	21										
	28.1	77.4	15	21	30										
	23.1	82.4	16	16	20										
	18.1	87.4	13	21	24										
	13.1	92.4	14	13	26										
	8.1	97.4	19	30	41										
	3.1	102.4	12	20	25										

NCDOT BORE DOUBLE SF-810194.GPJ NC_DOT.GDT 5/5/22

GEOTECHNICAL BORING REPORT BORE LOG

WBS BP3.R009.1		TIP SF-810194		COUNTY SAMPSON		GEOLOGIST Miller, T. W.	
SITE DESCRIPTION BRIDGE NO. 194 ON -L- (SR 1746) OVER GREAT COHARIE CREEK							GROUND WTR (ft)
BORING NO. B2-A		STATION 14+60		OFFSET 3 ft LT		ALIGNMENT -L-	
COLLAR ELEV. 103.9 ft		TOTAL DEPTH 90.2 ft		NORTHING 510,263		EASTING 2,184,607	
DRILL RIGHAMMER EFF./DATE GFO075 CME-45C 87% 11/23/2021			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic	
DRILLER Walker, C. M.		START DATE 05/04/22		COMP. DATE 05/04/22		SURFACE WATER DEPTH 8.6ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
115																
110																
105	103.9	0.0	5	12	17											
100	98.8	5.1	5	7	9											
95	95.2	8.7	8	7	9											
90	90.2	13.7	4	6	7											
85	85.2	18.7	4	8	9											
80	80.2	23.7	5	7	9											
75	75.2	28.7	5	7	10											
70	70.2	33.7	5	12	15											
65	65.2	38.7	5	6	8											
60	60.2	43.7	7	9	13											
55	55.2	48.7	9	9	11											
50	50.2	53.7	10	11	19											
45	45.2	58.7	9	11	17											
40	40.2	63.7	7	9	14											
35	35.2	68.7														

NCDOT BORE DOUBLE SF-810194.GPJ NC_DOT_GDT 5/5/22

WBS BP3.R009.1		TIP SF-810194		COUNTY SAMPSON		GEOLOGIST Miller, T. W.	
SITE DESCRIPTION BRIDGE NO. 194 ON -L- (SR 1746) OVER GREAT COHARIE CREEK							GROUND WTR (ft)
BORING NO. B2-A		STATION 14+60		OFFSET 3 ft LT		ALIGNMENT -L-	
COLLAR ELEV. 103.9 ft		TOTAL DEPTH 90.2 ft		NORTHING 510,263		EASTING 2,184,607	
DRILL RIGHAMMER EFF./DATE GFO075 CME-45C 87% 11/23/2021			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic	
DRILLER Walker, C. M.		START DATE 05/04/22		COMP. DATE 05/04/22		SURFACE WATER DEPTH 8.6ft	

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
35																
30	30.2	73.7	14	15	33											
25	25.2	78.7	9	11	15											
20	20.2	83.7	16	18	27											
15	15.2	88.7	13	15	19											

Match Line

GREEN-GRAY, BROWN, AND BLUE-GRAY SILTY AND SANDY CLAY WITH SHELL FRAGMENTS, WET (BLACK CREEK FORMATION) (continued)

GROUND SURFACE
COASTAL PLAIN
GRAY AND GREEN SILTY AND SANDY CLAY WITH LIGNITE, WET (BLACK CREEK FORMATION)

GREEN-GRAY SILTY SAND WITH SILTY CLAY LAYERS, SATURATED (BLACK CREEK FORMATION)

TAN AND GRAY SILTY CLAY, WET (BLACK CREEK FORMATION)

GREEN-GRAY MICACEOUS SAND AND CLAYEY SAND, SATURATED (BLACK CREEK FORMATION)

TAN AND GRAY SILTY CLAY, WET (BLACK CREEK FORMATION)

TAN AND GRAY CLAYEY SAND, SATURATED (BLACK CREEK FORMATION)

GREEN-GRAY, BROWN, AND BLUE-GRAY SILTY AND SANDY CLAY WITH SHELL FRAGMENTS, WET (BLACK CREEK FORMATION)

Boring Terminated at Elevation 13.7 ft in Hard Sandy Clay

GEOTECHNICAL BORING REPORT

BORE LOG

WBS BP3.R009.1		TIP SF-810194		COUNTY SAMPSON		GEOLOGIST Crenshaw, J.K.	
SITE DESCRIPTION BRIDGE NO. 194 ON -L- (SR 1746) OVER GREAT COHARIE CREEK							GROUND WTR (ft)
BORING NO. EB2-B		STATION 15+14		OFFSET 14 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 122.6 ft		TOTAL DEPTH 89.9 ft		NORTHING 510,265		EASTING 2,184,663	
DRILL RIGHAMMER EFF./DATE CAT1314 CME-45B 95% 11/13/2019			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic		
DRILLER Contract Driller		START DATE 03/23/16		COMP. DATE 04/04/16		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						
125																
	122.6	0.0		5	3	3								122.6	GROUND SURFACE	0.0
														120.6	ROADWAY EMBANKMENT	
120															BROWN AND ORANGE SAND AND SILTY SAND, MOIST TO SATURATED	2.0
	118.7	3.9		2	1	2										
														115.6	ALLUVIAL	
115															BROWN CLAYEY MUCK, WET	7.0
	114.0	8.6		1	1	1										
														108.3	TAN SAND, SATURATED	14.3
110																
	109.0	13.6		1	2	4								105.6	COASTAL PLAIN	
															GRAY SANDY AND SILTY CLAY, WET (BLACK CREEK FORMATION)	17.0
	104.0	18.6		4	4	6										
100																
	99.0	23.6		5	8	11										
95																
	94.0	28.6		4	6	10										
90																
	89.0	33.6		5	5	8										
85																
	84.0	38.6		6	6	11										
80																
	79.2	43.4		5	8	10										
75																
	74.2	48.4		5	8	11										
70																
	69.2	53.4		8	11	18										
65																
	64.2	58.4		6	8	9										
60																
	59.2	63.4		5	10	16										
55																
	54.2	68.4		7	10	11										
50																
	49.2	73.4		11	16	18										
45																

NCDOT BORE DOUBLE SF-810194.GPJ NC_DOT.GDT 5/5/22

WBS BP3.R009.1		TIP SF-810194		COUNTY SAMPSON		GEOLOGIST Crenshaw, J.K.	
SITE DESCRIPTION BRIDGE NO. 194 ON -L- (SR 1746) OVER GREAT COHARIE CREEK							GROUND WTR (ft)
BORING NO. EB2-B		STATION 15+14		OFFSET 14 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 122.6 ft		TOTAL DEPTH 89.9 ft		NORTHING 510,265		EASTING 2,184,663	
DRILL RIGHAMMER EFF./DATE CAT1314 CME-45B 95% 11/13/2019			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic		
DRILLER Contract Driller		START DATE 03/23/16		COMP. DATE 04/04/16		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					
45															
	44.2	78.4		9	12	16									
40															
	39.2	83.4		10	12	15									
35															
	34.2	88.4		9	13	16									

Match Line

TAN SAND AND SILTY SAND, SATURATED (BLACK CREEK FORMATION) (continued) 82.0

40.6

35.6

BROWN SILTY CLAY, WET (BLACK CREEK FORMATION) 87.0

32.7

Boring Terminated at Elevation 32.7 ft in Very Stiff Silty Clay 89.9